THE ROYAL ENGINEERS AND SETTLEMENT PLANNING IN THE CAPE COLONY 1806-1872: APPROACH, METHODOLOGY AND IMPACT

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SUMMARY

The majority of the existing urban areas in South Africa began as colonial centres. This study seeks to evaluate the role the Royal Engineers played in the development of the Cape Colony from 1806 until the acceptance of responsible government by the Cape Colony in 1872.

The Colonial State implemented a capital works programme of staggering breadth and scale. During this time South Africa was delineated, urbanised, developed and connected to the world markets. This was achieved via a highly trained and professional military establishment; the Royal Engineers. The role of the Royal Engineers and the legacy of towns, forts and infrastructure are studied in depth in this thesis.

British imperial approach to colonial expansion and development in both a spatial and theoretical manner forms the basis of this thesis. The case study covers the Eastern Cape of South Africa. The physical and spatial development of this region are analysed in order to glean any lessons which could be learnt from the approach adopted to colonial settlement.

This Study illustrates that a small highly trained group of military engineers had a significant impact on the establishment of early towns and infrastructure in South Africa. They have left a lasting footprint on South Africa's spatial development and many of the towns and much of the infrastructure is still in use today (specifically the harbours, railways and mountain passes). The Royal Engineers' approach to development and

background training is studied and then reduced to its theoretical approach. This theoretical approach is then analysed in order to glean the lessons history can teach us about development, specifically development on 'terra nova'.

An attempt is made to extract planning theory from historical analysis of developmental elements which worked in the past. The study begins by analysing the background and training of the Royal Engineers and then moves on to assessing the spatial and physical impact their plans had on the development of South Africa. The discussion then moves beyond what the Royal Engineers did to understand how they made it happen; to arrive at a positive theory of planning or to ask when does planning work ?

The Royal Engineers were schooled in the sciences and trained to be experts in almost all things; they were the master craftsmen and skilled problem solvers of the era. The training they received at Chatham, is a very early example of professional training; it was comprehensive, high quality and practical. Those who emerged from this training carried out vast public works around the British Empire; they produced very few theories of development but they did challenge ideas. The *avant- garde* designs of some colonial towns such as Queenstown, Khartoum, Adelaide and Savannah show a desire to improve on settlement forms and to provide design solutions to urban problems.

The Royal Engineers adopted a pragmatic approach to development, they initially received a very good scientific academic training, they then learnt by example whilst serving under engineer commanders. As a unit they learnt by observation, experimentation and example. What is striking in their approach is that they saw a problem and simply went about solving it and their solutions were inevitably physical structures and infrastructure.

KEY WORDS

Royal Engineers; Queenstown; Eastern Cape; Spatial Development; Grahamstown; Simon's Town; Land tenure; town planning; King William's Town; Durban

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PROLOGUE

For me the fascination with the Planning History of South Africa began in High School, when as a family we would often take extended touring holidays via the small Karoo towns and along the Cape Coast. The small, uniform towns with their central, majestic Churches in the middle of nowhere fascinated me. Why towns began and the rationale for their establishment led me to study town planning at the University of the Witwatersrand.

As an undergraduate study I looked at the South African New Towns, which were predominantly mining towns (Cardy, 1988). Being fixed location industries, towns were laid out to house the workers; the layouts were strongly influenced by the British towns of the 'Enlightened Industrialists', Ebenezer Howard's 'Garden Cities' and the American 'New Deal Communities'. This begged the question why layouts and solutions from Britain and America worked on the arid Highveld of South Africa.

In 1991 I pursued this question further by analysing the Dutch and Afrikaans settlement patterns as a Masters dissertation (Cardy, 1991). As a British immigrant to South Africa the different culture was an interesting contrast to the tightly compact, organic layout of villages I was used to growing up in the United Kingdom. An article by Haswell (1980) listing the differences in layout between towns established by Dutch an d British settlers in South Africa had prompted this in-depth study of all the early Transvaal towns. The towns of the Transvaal Republic were very uniform and all followed a very specific pattern of grid layouts with broad north-south main roads and narrower east-west cross roads, a central church, irrigation ditches, large stands and graveyards on the outskirts.

Leading on from this as a lecturer in the Department of Town and Regional Planning at the University of the Witwatersrand I wrote a number of planning history articles, one of which was about the British towns of South Africa, which was rejected by Planning History as they required street measurements, stand sizes and quantitative proof of the generalised statements. Around the same time I was first introduced to Yvonne Garson who was writing a book cataloguing the collection of Royal Engineer maps owned by the University. Colonial planning history of America, Australia and India were replete with historic designs Philadelphia, Savannah, Adelaide, Khartoum - where were the South African grand designs? The most striking layout in South Africa is Queenstown with its radial streets but

little is known of its origin other than the plan is signed by the Surveyor General Robinson (Refer to the Section C). It occurred to me that the lack of a grand planning history for South Africa may very simply be that it hasn't been written. Trips to America, Canada and Australia also helped to highlight the elements of the South African colonial situation which were unique.

Shortly after this I took up a post at the Royal Town Planning Institute in London and set about making use of the brilliant archives at the Public Records Office and British Library to satisfy the requirement for quantitative proof of development patterns. After much primary research, I found that I could not prove an absolute model or grand design. There simply were no standard street widths or stand sizes, which in itself is interesting. What did however become clear was that there were recurring themes, and key parties involved. The Royal Engineers and their work popped up in the most unlikely places. It became evident that the British military were the implementation arm of imperialism and that the Royal Engineers were the specialists. What also became overwhelmingly clear was that the Royal Engineers seemed to perform most duties and have the greatest impact in times of peace rather than war.

In order to understand the Royal Engineers as a unit as well as individuals, I spent many hours at the library of the Royal Engineers Academy in Chatham. I wanted to understand the training that equipped these men to 'layout an Empire'. What I found was an overwhelmingly scientific training of very high standard. The training of the Royal Engineers had not been looked at in any great depth specifically from the point of view of the Royal Engineers as a Colonial development agency, other than Weiler (1987) he however focused on architecture.

After the death of my first husband I returned to South Africa and finally decided to write up the story of British Imperial planning in South Africa. In this introduction I use the name South Africa loosely as obviously South Africa only existed after union in 1910 – the study analyses the Cape Colony and the Natal Colony, of what was later to become South Africa. I discuss South Africa generally (that is the geographic area which became South Africa) because the tensions between the *Boers* (farmers of Dutch descent) in the interior and the British are primary influences in the early history of the country. Many aspects of the development during this era were unique both to British Imperialism as well as unique

due to the specific conditions in South Africa. British imperial expansion did not follow a blue print and no standard design can be found; the street widths are not uniform, the stand sizes vary and policies change over time; there is however a very strong development trend generally for British imperialism and specifically a South African story born out of the unique conditions on the Southern most tip of Africa.

This study is descriptive in style as the research highlighted trends rather than absolute blue prints. The study seeks to tell a fascinating story of the settlement of South Africa, those who planned it and its lasting legacy. The study is never quantitative and absolute as the study of the history proved that it never was. South Africa developed following the broad trend of British colonialism, yet it had unique conditions which impacted on the development model. The towns may not satisfy the statisticians who wish to prove absolute patterns but they very clearly illustrate a far more subtle yet pervasive trend. Perhaps the most striking aspect of the study is the acknowledgement that the colonial development pattern is more about the evolution of the colonial free market system rather than British culture; land and development were key to colonial control – land was seen as having a monetary value as well as a means of production and so mapping, demarcation, registration of land and ownership are introduced and entrenched in the colonial system.

This study is a testament to "the endurance of the plan", South Africa has been through two different phases of colonialism (Dutch then British), the Anglo Boer Wars, the establishment of Union, The formation of a Republic, apartheid and now post apartheid and still the towns persist – they have expanded and changed over time but the reason for their establishment was colonial and the central layouts remain relatively unchanged. Even cities like New Orleans (in America), devastated by hurricane induced floods, redeveloped on the same spot and with the same street layout, because of entrenched property rights – the colonial cadastral system is a very powerful tool (even if not always logical – perhaps New Orleans ought to have moved).

This study has however shown that the approach that the Royal Engineers adopted to development delivered. Given the pressing needs for service delivery and housing in South Africa today this study seeks to analyse this approach to glean any valuable lessons.

SECTION A

PROBLEM STATEMENT, HISTORIC BACKGROUND AND ANALYSIS OF ROYAL ENGINEERS BACKGROUND AND TRAINING

CHAPTER ONE

PROBLEM STATEMENT, AIM AND METHODOLOGY OF THE STUDY

1.1   INTRODUCTION

The colonial legacy of Africa has been cited as a major cause for the continued underdevelopment and dependency of Africa on the Western world. It has caused many economic and developmental imbalances which continue to thwart development and progress. Africa is saddled with an economic system, administrative structure and physical layout almost wholly imported from Europe.

As Africa slowly emerged with self governed democratic countries it has struggled to reconcile the systems, processes and physical patterns with its new identity. Many countries have sought to impose an African imprint with varying degrees of success (Meredith,2006; Baker,2000; Ake,1991; Ake,1993).

In order to truly understand Africa, especially its settlements, planning and governance systems today, it is necessary to analyse the colonial past. Only through a thorough understanding of the settlement patterns, administrative structures and military impositions is it possible to understand the strengths and weaknesses of the system which has been inherited and which now needs to be adapted as an inclusive rather than exclusionary system. It is the contention of this study that it is possible to better understand Africa today by understanding the settlement, planning and governance of the past. The colonial era could also offer valuable lessons as it was an era of very rapid physical development, the approach adopted may well offer valuable insights given the need today for rapid service delivery.

The origins of planning in South Africa is a field of study which, to date has not been examined in great detail. Haswell (1980) and Cardy (1990) have analysed the impact of the Dutch and *Voortrekker* (Dutch migrants who left the Cape Colony and formed the Afrikaner

Nation) groups and have contrasted their settlement patterns with those of the British settlers. These were descriptive studies, which did not attempt to analyse the impact of these settlements on the present day. However, the British settlements have not been analysed in any great depth. There is a need to carry out scholarly study of the origins of planning in this country. Although there have been studies of the military influences on planning in Canada, Australia and the United States (Home,1997; Stelter,1983; Reps,1965; Hamnett and Freestone,1999; Hall, 2004) the South African context has not been addressed.

In this study the use of the term "South Africa" specifically refers to the geographic area of what is today the Republic of South Africa, obviously the time frame of this study predates the establishment of South Africa. In the early colonial period the land colonised was limited to the Cape Colony; the northern and western borders of which were vague and expanding. Subsequently farmers migrated into the interior and as the history of the area illustrates (see Section A Chapter Two) there was always a complex and unresolved tension between the former colonial settlers (the Dutch) and the British. The two geographic regions which were British colonies at the time were the Cape and Natal Colonies; however, at times it is important to speak of the whole geographic region of South Africa as forces within this area had a profound impact on the colonial history.

This study will show that British Imperial planning in South Africa in the early years was based primarily on militaristic and administrative control criteria. These criteria were manifest in the selection of sites and in the physical layout of colonial towns, only later after the discovery of gold and diamonds did the commercial interests take over. This is unique, as most British colonies were major suppliers of raw materials and markets for British manufactured goods from the early stages. South Africa by contrast hid its riches for many years and agriculture was not easy in the arid climate. Having no rivers which are navigable by ocean-going ships, the primary mode of transport in the era was also a major curb on opening up the interior (Lamar and Thompson, 1981). It was however, on the sea route to India and thus of strategic significance. Military influences therefore, predominated in South African settlements for many years. South Africa is also unique in that in spite of the *Mfecane* (the wars amongst the African tribes in Southern Africa – circa 1815-1840)

and the wars of conquest, indigenous Africans have always constituted the vast majority of the population of the entire region (Thompson, 2006). This is the greatest and most fundamental difference between the outcome of the conquest of the indigenous peoples in North America and South Africa. The Native Americans were reduced to a tiny proportion of the population of North America and were confined to scattered reservations forming a minute percentage of the land area. The African population had experienced havoc and losses, but survivors still occupied substantial parts of their ancestral land. Colonial control in South Africa was political and economic rather than outright conquest of land (Thompson, 2006:128). In many ways this is more akin to the colonisation of India, however unlike India there was no pre-existing urban tradition.

South Africa was also unique in that the British took over the territory from the Dutch East India Company (*Vereenigde Oost-Indische Compagnie* or VOC in Dutch) which managed the settlement at the Cape, but which had already to all intents and purposes lost control of its free settlers. Once the British sought to better control the frontier settlements most of the existing frontier farmers left to form two new independent settlements. In the concluding act of partition of Africa, Britain, at the height of its Imperial power, set out to take over the *Boer* (farmers of Dutch decent) Republics, the Transvaal and the Orange Free State, and incorporate them into the British Empire, assuming that a war of conquest would take at most a matter of months. It turned into a gruelling campaign lasting three years, requiring half a million Imperial troops to finish it, and left a legacy of bitterness and hatred among Afrikaners. Faced with guerrilla warfare for which they were unprepared, British military commanders resorted to scorched-earth tactics, destroying thousands of farmsteads, razing villages to the ground and slaughtering livestock on a massive scale, reducing the *Boers* to an impoverished people. Women and children were rounded up and put in concentration camps, where conditions were so appalling that some 26, 000 died from disease and malnutrition (Meredith, 2006:3). South Africa was the scene of not only colonial conquest of Europeans over local populations but also a conquest of a major colonial power over an independent European population left by the previous colonial power (Thompson, 2006; Meredith, 2006; Welsh, 2000).

Other colonies such as America were considered as "spaces of production" from the outset. South Africa became a colony because of its strategic situation on the sea route to India – colonial development has thus always been for strategic reasons and has always been influenced by the Indian trade route. No major study has attempted to address this or the impact these unique conditions had on colonial settlement patterns. This study seeks to analyse one aspect of this colonial history, namely the role which the British played in the spatial development of South Africa. This study acknowledges that South Africa today evolved as a collage of different people's influences and attitudes. It does not claim that the British had any pre-eminent influence on the development of South Africa, it does however; acknowledge that they were key characters in the story of South Africa's spatial development. No study to date has attempted to look at the role the British played in the spatial development of colonial South Africa and this topic will be the focus of this investigation.

The majority of the existing urban areas in South Africa began as colonial centres. Early colonial planning and site selection for the towns has thus, had a major impact on the present urban landscape. *It is the contention of this thesis that British colonial planning relied primarily on military concepts and military personnel; the towns' plans thus are reflections of the rationale underpinning British Imperialism. The developmental expertise of the British Army rested in the Royal Engineers and Surveyors. This study aims to investigate the impact the Royal Engineers had on the spatial development of South Africa. The study focuses both on the physical legacy as well as analysing the approach they adopted to spatial development, with a view to analysing the impacts this has had on South Africa and its future.* The period of the study spans the time from the second British occupation of the Cape (1806) to the date of Union 1910, 104 years. The main case studies, however, occur in the Eastern Cape which allows for the restriction of the time period from 1806 until the acceptance of responsible government by the Cape Colony in 1872; in other words the period of true British imperial dominance. If one analyses the entire time frame during which the British were involved in one way or another in South Africa, it is not surprising that the study finds no absolute design standards nor standard dimensions for towns and streets. The study does however illustrate a definite pattern and trend. Given this finding

the study has been written as a broad and overarching synopsis of development trends rather than as a detailed and analytical study. Detail is focused on the Eastern Cape area as this is where the British Imperial development is most clearly seen. The study identifies clear patterns and rationales, approaches and trends but also finds neither absolute standard nor design.

This thesis seeks to illustrate the impact that the military engineers and surveyors had on colonial expansion and particularly urban form and spatial development, using the Eastern Cape as a case study. The military influence can be traced to physical, economic, social, professional and theoretical aspects. The study concentrates on the Royal Engineers and Surveyors, as they are the physical planning and implementation arm of the British military as well as the Colonial Office. It is the contention of this thesis that the military influence in the planning of colonies has had a fundamental and far-reaching impact on urban form. Town plans in many former British colonies show remarkable similarities. Similar patterns of development occur in different places at different times, but the obvious trend implies some standard conception of what towns ought to look like, as well as a common philosophy on which the settlements were based. The similarities, it is argued, stem from a uniform training of those who laid out the towns and a cross-fertilisation of ideas from one colony to another. There was a great deal of cross fertilisation of ideas from one colony to another due to the movement of colonial officials. A transitory civil service was facilitated in its mobility by the military basis and the notion of deployment of troops and assigning temporary postings (Home, 1997;Stelter, 1983;Wieler, 1987;Whitworth-Porter, 1889).

1.2   AIM OF THE STUDY

The aim of the study is to document and evaluate the impact the Royal Engineers and Surveyors had on the colonial spatial development of South Africa and to analyse any lasting impacts and lessons which can be learnt from past experience and the methodology used. The study looks both at the physical development of this era as well as trying to analyse the design/development philosophy and methodology. The study focuses mainly on the period of true British Imperial dominance (1806 until the acceptance of responsible government by the Cape Colony in 1872) although the broader colonial period

is discussed by way of trends analysis. The study seeks to analyse the developmental methodology used: that is 1) why did the spatial pattern develop? 2) who planned these areas and the infrastructure? 3) what was provided by the state and why? 4)how did they go about the development?

It is fascinating that even though colonial development is now generally seen in a very negative light most of the colonial towns and infrastructural developments not only endure, but have twice been successfully adapted to fundamentally different social groups – firstly for the use of the Afrikaner groups during the National Party rule and lately to multi-cultural and predominantly African groups under the democratic governance. The towns have not been abandoned and the infrastructure has been augmented and developed further. This tends to imply that certain basic necessities or elements of development transcend time and culture and that often a good product will transcend the process through which it was developed (even when the process like colonisation has so many negative elements). The best example of this would be Haussmann's redesign of Paris (1852-1870), at the time vast slum clearances occurred which displaced large portions of the most vulnerable sectors of society, yet today people marvel at the stunning cityscape and vistas. This study seeks to analyse the colonial development in order to distil the valuable elements from the negative connotation of colonialism generally. The colonial era succeeded in developing a vast network of infrastructure, towns, ports and primary industries; it is necessary to unpack this process in order to understand which elements are worth replicating and retaining and which elements fostered all the negative connotations of colonialism (of which there are undoubtedly many).

1.3   RESEARCH METHODOLOGY

In the social sciences the generally accepted approaches to research methodology are twofold: quantitative and qualitative. Qualitative research involves an in-depth understanding of human behaviour and the reasons that govern human behaviour. Unlike quantitative research, qualitative research relies on reasons behind various aspects of behaviour. Simply put, it investigates the **why** and **how** of decision making, as compared to **what**, **where**, and **when** of quantitative research. Hence, the need is for smaller, but

focused samples rather than large random samples. Qualitative research categorizes data into patterns as the primary basis for organising and reporting results. Unlike quantitative research, which relies exclusively on the analysis of numerical or quantifiable data, data for qualitative research comes in many media - including text, sound, still and moving images (Bernard, 2000;Mouton, 1986;Mouton, 2000;Mouton and Marais, 1988;Scheurich, 1997;Alvesson and Skoldberg,2000).

Qualitative research approaches began to gain recognition in the 1970s. The phrase 'qualitative research' was until then marginalised as a discipline of anthropology or sociology, and terms like ethnography, fieldwork, participant observation and Chicago school (sociology) were used instead. During the 1970s and 1980s qualitative research began to be used in other disciplines, and became a dominant - or at least significant - type of research. One way of differentiating Qualitative research from Quantitative research is that Qualitative research is largely exploratory, while Quantitative research hopes to be conclusive. However, it may be argued that each reflects a particular discourse; neither being definitively more conclusive or 'true' than each other. Quantitative data is measurable, while Qualitative data cannot be put into a context that can be graphed or displayed as a mathematical term.

When studying history a number of research methodologies can be utilised; of necessity, however, all historic research relies on secondary information and primary sources and is of an analytical and narrative nature; it is qualitative not quantitative. Obviously primary sources of information are the most sought after, but often the exact information which the researcher seeks is not available or needs to be deduced or inferred from other sources. Most sources of information are secondary, where the researcher relies on the research and writings of others. The primary concern is the slant or biases of both primary and secondary research. Historic perspective changes as do social norms and values and it is important to understand that primary sources are often written from a different social viewpoint to today's notions of good and bad. Very often secondary sources have definite opinions and perspectives which need to be understood as the work of the author and not necessarily history itself. Churchill stated it best when he said "History is written by the victors". Colonialism today is seen in very pejorative terms yet at the time that colonial

expansion occurred it was viewed very differently and so the values utilised by the researcher of history will colour the account. When analysing colonisation in Africa it is also important to note that the written history of the time was penned by the Europeans, very few documented accounts from an African viewpoint were written until the period prior to independence when a significant and highly educated African elite emerged; often from the European education system. Again Churchill expressed it best when he stated: "History will be kind to me for I intend to write it" and "Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing ever happened." (Sir Winston Churchill; *British politician (1874 – 1965) Book of Quotes*).

It is impossible to avoid value statements in historical research; in this study sources of information are highlighted and the opinions of the author will be noted as such to allow readers to distinguish historic record from interpretation and conclusions drawn from the research. Given the research topic and intention of this study the collection of primary data has been focused on the Royal Engineers and the settlements of the Eastern Cape; a great deal of secondary literature exists about colonisation and the general history of the era. This study seeks to make a specific contribution with respect to the settlement patterns of South Africa and the background of those who planned them and the research has thus deliberately been focused in this manner.

The research approach adopted is that of a Narrative analysis as described by Mouton, (2001:170) it attempts to reconstruct a chain of events and identify those events that caused or triggered other significant events; in this case the findings were that the colonial towns in South Africa during the British colonial period were laid out primarily by the military. This is significant as the military were trained in a scientific and empirical manner which impacted on the manner in which towns and settlements were formed.

This study is based on qualitative research, background analysis and case studies; it neither tries to be comprehensive nor to give quantifiable answers. It seeks to explain the settlement patterns of South Africa today fully acknowledging the limits of colonial history, which was almost exclusively written by the colonisers.

1.4 STRUCTURE OF THE STUDY

Section A is devoted to the historic background to colonisation and specifically the colonial settlement history of South Africa. The background history of South Africa aims to explain the development of South Africa to those not familiar with South African history and set the context of the study which follows. It is fully acknowledged that the development of South Africa is a collage of many cultures and influences, indeed the Dutch input was the focus of the author's Masters Degree (Cardy, 1990); this study however, focuses on one colonial group – the British. The study begins in-depth in Chapter Three with a detailed analysis of the Royal Engineers and their training as it is shown during the case studies (Section C) that the Royal Engineers played a significant role in the colonial development of the Eastern Cape. It is therefore necessary to begin by explaining who the Royal Engineers were and what training they received. Section B of the study looks at the various aspects of British colonial development, beginning with ports, mapping, surveying and land tenure and moving on to defence, town layout and various infrastructural developments such as railways, water and sanitation. Section C contains the case study focusing on the area of true British Imperial influence, the Eastern Cape. The study concludes, in Section D, with a theoretical / methodological evaluation of the work done by the Royal Engineers and an analysis of the impact the Royal Engineers and Surveyors had on the spatial development of South Africa, and highlights lessons which could be learnt from the past.

CHAPTER TWO

COLONISATION AND A SYNOPSIS OF SOUTH AFRICAN[1] COLONIAL HISTORY

2.1   IMPERIALISM

The definition of what constitutes an "empire" is open to debate. The Latin word *imperium*, from which the term "empire" derives, literally means "dominion" or "legitimate authority". Twentieth century political science has tended to restrict the term to a very precise model in which one state colonises another for economic gain and political or cultural domination. (Farrington,2003:6) "Few questions have engaged as much reappraisal, reinterpretation and recasting as western imperialism in the late nineteenth century…a majority of countries represented in the United Nations blame imperialism for the poverty, illiteracy and the generally unsettled condition of the Third World." (Davis and Huttenback, 1986:1).

All empires throughout history share a number of characteristics. There is necessarily a ruling figurehead who utilises a successful military arm to gain new territories and maintain existing ones. He (or occasionally she) fortifies key strategic ports and cities, exploits economic resources such as fertile land or mineral reserves, and keeps the population in line through either fear or propaganda or both. Laws – and sometimes religion – are then imposed on a range of different cultures across a large geographic area. Grand public building works and monuments record the ruler's greatness. Wealth is pursued aggressively through any combination of diplomacy, cajolery, reward and threat (Farrington, 2003:6). Any work that claims to deal with the development of empires cannot help but be concerned with the motives for grasping and holding an empire; in the literature, indeed these motives are legion. There are geographical explanations for

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[1] Please refer to the definition used in this study for "South Africa" on page 2

particular acts of conquest, although attempts to generalise from these experiences have not proved too enlightening. The turbulent frontier hypothesis is one example of such a geographical theory. It conjectures that if an area of order is surrounded by a zone of disorder, the government of the frontier must eventually, for its own protection, conquer the latter. Thus, empires tend to expand until they reach some natural barrier (oceans or mountains) or until they reach the borders of another stable power (Davis and Huttenback, 1986). This theory would apply to the South African context in that the rationale behind the British expansion into South Africa (prior to the discovery of diamonds and gold) was always in the name of stabilising the borders against the *Boers* and the black populations.

The dearth of truly political theories is in contrast with the abundance of conceptual frameworks. Much debate has centred on the concept of "Informal Empire" and the influence of free trade on the establishment of British hegemony in so many parts of the world (Gallagher and Robinson, 2008; Thompson, 1992; Naylor,1989). Informal Empire implies that formal empire or the acquisition of territory was a last resort; that the British government much preferred to support British business in what were in essence client states. Another approach as argued by Joseph Schumpeter (1951) is that imperialism is a social atavism not prompted by economic reason or national interest, but purely by the "objectless disposition on the part of the state to unlimited forcible expansion", a tendency encouraged, according to David Landes, by "…the disparity of force between Europe and the rest of the world… that created the opportunity and possibility of domination." (Davis and Huttenback, 1986:4). Similarly, but at the other end of the sociological scale, humanitarianism rather than atavistic behaviour has been advanced as an explanation of imperial adventures. In West Africa as well as South Africa it is argued, the British anti-slavery movement virtually forced the government to acquire unwanted territory in order to protect the native population (Drescher, 1977; Midgley, 1998; Hyam, 1993; Coleman, 2005). Other theories rest on individual or social psychology for their inspiration. Examples abound; and among these, those that assume irrationality was the driving force behind the advance of empire must be given place. How else, it can be argued, can we explain the strange triumphs of mindless ambition and the insane desire to "paint the map red" or whatever other colour represented national ego? In the age of slow communications the man on the spot could influence events according to his own designs, unrestrained by the

wishes of the home government; and empire thus might be considered the result of a series of idiosyncratic decisions. Cecil Rhodes in South Africa, Frederick Lugard in East Africa and Charles Napier in India are all examples of this phenomenon; and the British government was allegedly presented in each case with territory it would much rather have done without. One cannot leave this argument without mentioning the best example of this case, Charles "Chinese" Gordon, who stubbornly disobeyed orders and thereby brought about not only his own death but the massacre of the entire garrison of Khartoum. This so aroused the passions of the British populace that the government was forced to acquire the province; the conquest of which it had tried studiously to avoid (Davis and Huttenback, 1986:4). But irrationality is always hard to stomach as historical explanation. It is possible that in the case of British imperial expansion it involved all of the above theories, Britain started colonial expansion almost due to a competition with other European powers, then moved into commercial trade with little government control, government control came later more to defend the British economy than for any other reason. These factors all happened to various degrees in different locations at various times with a liberal sprinkling of mavericks thrown in for good measure.

Modern colonisation has been categorised by the work of Bergeson and Schoenberg (1980) and Taylor (1985) as falling into two long waves of colonial expansion and contraction. The first wave of colonisation was from 1500 to 1800; the second, from 1800 to 1925, these time frames related to long wave cycles of expansion and decline in the world economy. In modern history, there have been twelve formal imperial states, only five of which have been major colonizers: Spain, Portugal, and the Netherlands (principally between 1500 and 1750); and France and Great Britain, from 1600 to 1925 (King, 1990a:3). The first phase (especially 1600 to 1750) also includes the first "minor" colonizing states of the Baltic: Denmark, Sweden and Brandenburg/Prussia.

In the second wave of colonial expansion from 1800, were Belgium, Germany, Italy, Japan and the USA. There were also the colonial activities of Russia, which took Ussuri from China in 1860, and Austria-Hungary, which took Bosnia-Herzegovina from the Ottoman Empire in 1878 (King, 1990a).

Table 1, below lists the fifteen regions of colonisation together with the period of colonisation (divided into 50 year bands). It clearly indicates that the colonisation of Africa started as coastal enclaves, primarily geared for the exportation of slaves, and that interior development occurred in a latter period. This study focuses primarily on the expansion into the interior, which is the latter period of colonisation or formal colonisation.

Table 1: Establishment of Colonies by time period

Table 1.1 Establishment of colonies: arenas of first competitive era

1. Iberian America	1500–1800*
2. Greater Caribbean	1500–1880**/1925
3. Northern America	1600–1800/1850
4. African ports	1500–1850
5. Indian ports	1500–1800
6. East Indies	1500–1925

Source: Taylor, 1985: 82–4.
Note: *Intervals indicated cover creation of colony, reorganisation of territory and, in certain cases, transfer of sovereignty.
**Period of main colonial activity.

Table 1.2 Establishment of colonies: arenas of second competitive era

7. Indian Ocean islands	1600–1900
8. Australasia	1750–1925
9. Interior India	1750–1925
10. Indo-China	1850–1900
11. Interior Africa	1825–1925
12. Mediterranean	1500–1925
13. Pacific Ocean Islands	1750–1925
14. Chinese ports	1500–1925
15. Arabia	1800–1925

Source: Taylor, 1985: 82–4.

Taylor (1985) also provides a brief overview of the economies of formal imperialism, illustrated by two classic cases, the Caribbean, and Africa, and the manner in which they were incorporated into the economies of the core.

The Caribbean zone from northeast Brazil to southeast North America was converted into "plantation America", largely to produce tobacco and sugar for the new "tastes" of consumers in the core region (colonising state). By 1700, labour-intensive production was met by African slaves with the sugar plantations becoming, according to some interpretations, 'the precursors of the organization that was to become the factory system in the industrial revolution in the core' (King, 1990a).

In Africa, coastal stations were first established for exporting slaves. Drawing particularly on the work of Wallerstein, Taylor (1985) shows that in the final quarter of the nineteenth century, with the colonisation of the entire continent, Africa became incorporated into the world-economy as a new periphery, with its space economy divided into three zones: the first, producing for the world market, with each European colony having its own administration and infrastructure to channel commodities into the world market; the second, a zone of production for the local market where peasant farmers produced for labour working in the first zone; the third, a large zone of subsistence agriculture, integrated into the world-economy through its export of labour to the first zone.

King (1990a), Taylor (1985) and Christopher (1988) all demonstrate a theoretically well-established, symbiotic and interdependent relationship of the first international division of labour, with peripheral colonies producing primary products and raw materials for the industries of the core and receiving manufactured goods in return. The shift to urban industrial capitalism at the core is part of the same process as the shift to agricultural and mining capitalism in the periphery. As Christopher (1988) indicates, from 1875 the Empire was becoming increasingly important to Britain, so that by 1931 two-thirds of exports, by value, went to British possessions or dominions overseas and something of the order of half the imports came from there.

The factory system that centralized production in Britain depended for many of its basic raw materials (cotton, wool, rubber, tin and other materials) on supplies from its colonies. The main economic function of the colonies was the production of mineral and agricultural raw materials, hence, the focus was rural, the manifestations of colonialism were however
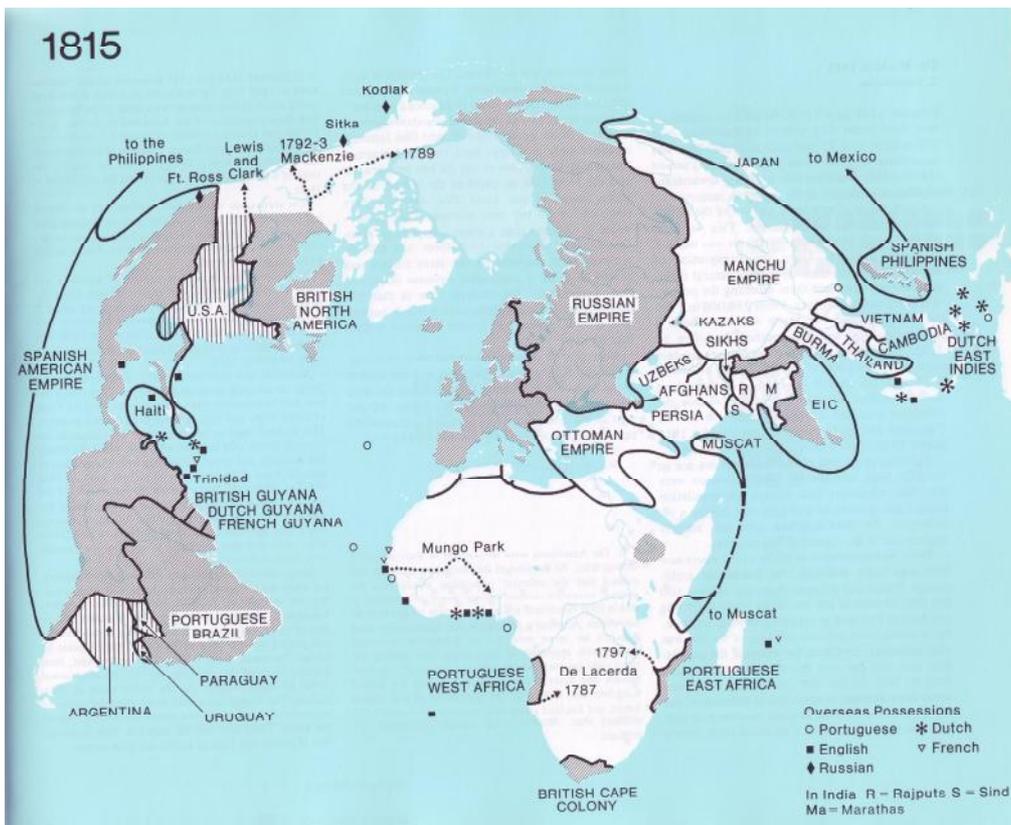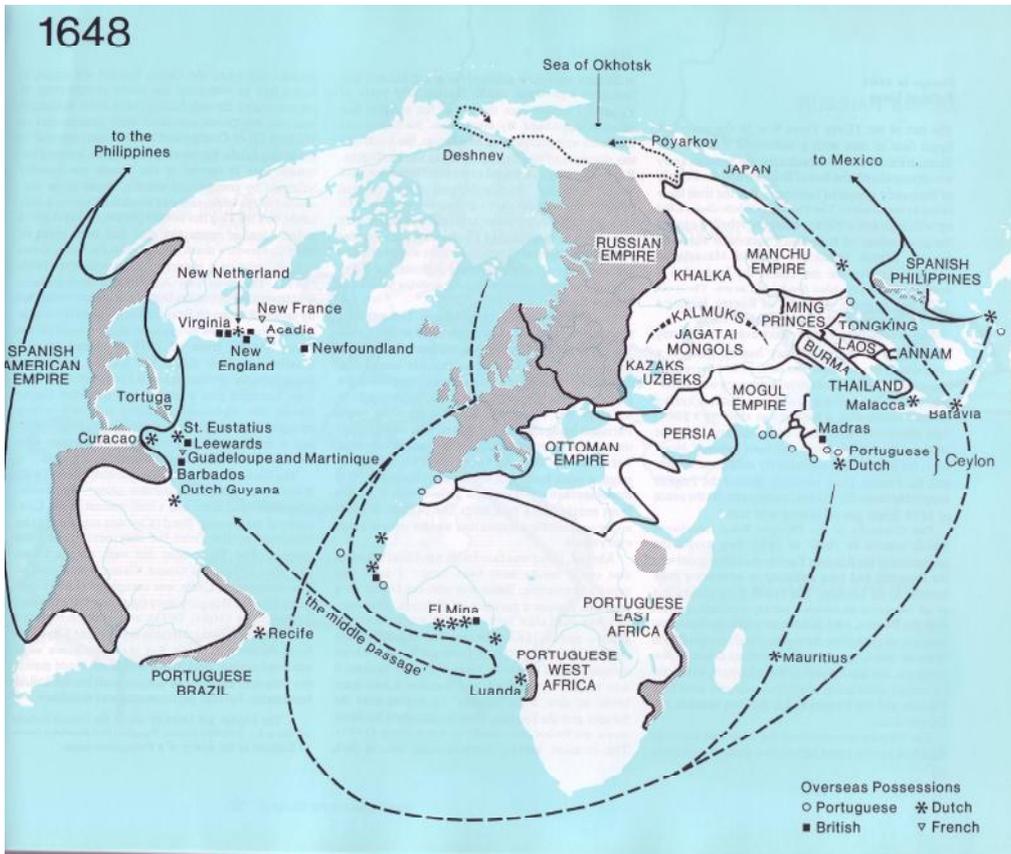
Figure 2: Colonial Expansion in the 1600 and 1800's (source: McEvedy,1972:49,83)

urban. The political, administrative and economic role of colonial towns and cities was to function as centres of control and surplus extraction: subsequently, in their increasingly significant role as markets, they became centres for consumption and 'theatres of accumulation' (Armstrong and Mc Gee, 1985).

Stelter (1983:170) and others argue that colonial expansion follows the "dependency theory" (Baran,1968; Bratton, 1982; Smith, 1979; Chase-Dunn, 1975; Chilcote, 1974). A central point of this theory is that an imperial power literally develops "underdevelopment" in its colonies by using its political and economic power to prevent the emergence of modern forms of government or enterprises inimical to its own interests. Advanced technology and organisation are applied to those aspects of development most desirable to imperial interests. The benefits of this arrangement go both to the advanced society and to a small client class within the colony. Direct political control becomes less necessary after the client class is firmly established, for their decisions are made in the context of their dependence. King (1990a) argues that peripheral colonies and metropolitan cores are essentially integrated and interdependent. They form part of a single division of labour of the capitalist world economy. Colonial urban development cannot be understood separately from developments in the metropole but also similarly, urbanism and urbanisation in the metropole cannot be understood separately from developments in the colonial periphery – they are parts of the same process. The metropole is dependant on the colonies for raw materials (cotton, wool, rubber, metals and minerals) and food (wheat, rice, sugar and tea). Likewise the colonies depend largely on British capital, shipping, insurance, managerial expertise as well as cultural products in their broadest sense: education, science, language, religion and also architecture, town planning and urban design.

Towns and cities are thus, a direct element of colonial control; they are the vanguards of imperial expansion. Most of the settlements were "planted" in the sense that they were planned at the outset as substantial settlements; no one seems to have consciously planned anything as small and limited as towns or villages. In early Canada colonial officials felt always that they were founding cities, and named them as such, even when the town literally had no population (Stelter, 1983). This was also the case in South Africa

where most British towns were planned as complete towns, at least on paper, at the outset. Towns of Dutch decent in South Africa by contrast grew more organically (Haswell, 1984; Cardy, 1990). The Dutch settlements tended to start as central meeting places for '*nagmaal'* (quarterly communion) and over time a school would be built and a permanent church; older residents would also leave the farms to their sons and live on town plots near the church, thus a town would emerge. They all started as a '*rydorp'* (a single street lined with houses) and once the street started to get too long a second one would emerge parallel to the first. The British by contrast pre-planned the need for a town and designed and sited it prior to occupation (Haswell, 1984; Cardy, 1990; Lamar and Thompson,1981). There are however, exceptions where settlement occurred prior to planning – the diamond rush at Kimberley and the gold rush at Johannesburg being two good examples.

Like colonial towns of earlier eras, notably those of Rome and the medieval bastides, early British colonial towns were fairly regular in form, in sharp contrast to the relatively spontaneous and unplanned form of London. While current European planning ideas were exported to some extent in laying out these colonial towns, this regularity represented the purely functional motives of central control (Haswell, 1984). This observation forms the starting point of this study; why when settlements are mostly organic in England are British colonial settlements so uniform, geometric and spacious? This is unpacked during the course of this thesis – a major reason, it is argued, is because the towns were planned by the military engineers to be practical and functional, the towns were a response to the problems of the British organic settlements not a replication of familiar environments. British towns were also much older and predated this interest in planned settlements. Kimberley however, which developed spontaneously, was organic and very similar to British settlements.

2.2   THE 'GRAND MODELL'

In his book Of Planting and Planning: the making of British Colonial Cities, Robert Home (Home, 1992:8-29) explains the evolution of a British colonial spatial development strategy. The strategy evolved over a period of two centuries, ending in the 1840's. During the period of evolution England planted new settler colonies in Ireland, the New World and

the Antipodes in accordance with a centrally devised scheme. In the 1670's Lord Shaftesbury formulated (or at least refined) a scheme he called the 'Grand Modell'. Its aims included commercial gain, strategic manoeuvring in the game of international geopolitics, and later, the removal of unwanted social groups (political or religious dissenters, debtors, and the unemployed). In the nineteenth century emigration was also a means of reducing population pressure at home (Home,1992:8).

The main components of the model can be summarised as:

2.2.1 POLICY OF DELIBERATE URBANISATION

Towns were seen as the centres of trade and defence and a civilising influence. The unsatisfactory alternative to such a policy, as perceived by Shaftesbury, was that settlers 'will expose themselves to the inconvenience and barbarisme' of 'straggling and distant habitations' in the countryside (Brown in Home, 1992:9). The policy was intended to advert the danger of a rejection of central authority, as occurred in Bacon's rebellion in Virginia in 1676. The policy is best summed up by a quote from the Board of Plantations, predecessor of the Colonial Office:

> *"…it has been found by long experience that the settling (of) planters in townships hath rebounded very much to their advantage, not only with respect to the assistance they have been able to afford each other in their civil concerns, but likewise with regard to the security thaey have thereby acquired against the insults and incursions of neighbouring Indians or other enemies"* (Labaree in Home, 1992:10)*.*

Although it has been argued that Colonial development was primarily interested in primary resources such as minerals and agriculture which are rural, the method of colonisation was unmistakably urban.

2.2.2 ALLOCATION OF TOWN AND COUNTRY LAND RIGHTS

The policy of deliberate urbanisation was to be secured through land settlement , by structuring a symbiotic relationship between town and country. Under the Shaftesbury 'Grand Modell' land was allocated to the settlers in both town and country lots (and

sometimes suburban or garden plots as well). Thus a land owner would have both types of property to occupy him. Home (1992:10) interprets this as the royal authority after the restoration attempting to reassert authority after the civil war. In the commonwealth they attempted to replicate the power relationships of town and country – royal authority over the aristocracy was partly maintained by a seasonal pattern of attendance at court and London residence, alternating with periods living on landed estates (Home, 1992:10).

2.2.3   TOWN PLANNING IN ADVANCE OF SETTLEMENT

The town site was laid out in advance of occupation, according to a prepared plan. This assumed that a sufficient number of colonists to begin a settlement, a figure which was set at forty families in Ulster and fifty in New Hampshire. Such advanced planning was intended, in the words of an observer of the Carolina Colony in 1680, to avoid the '*undecent and incommodious irregularities which other Inglish Collonies are fallen unto for want of ane early care in laying out the townes*' (reps in Home, 1992:11).

2.2.4   WIDE STREETS IN GEOMETRIC FORM

The physical form of the colonial planned town was a rectilinear or grid-iron layout of wide streets, embodying classical ideals of symmetry, order and proportion. 'The ultimate symbol of the imposition of human order on the wilderness' (Home, 1992:11).

2.2.5   PUBLIC SQUARES

The centrepiece of this regular grid of wide, straight streets was the square reserved for public use, often framed by four or more satellite squares.

2.2.6   STANDARD SIZED, RECTANGULAR PLOTS

The street blocks of the colonial grid were subdivided into large, rectangular town plots. Plot dimensions varied. Plot frontages of fifty feet wide or more – two or three times those found in British towns of the period. The colonial plan actively discouraged continuous built-up frontages, partly reflecting the ready supply of land, but more as a response to the two great dangers of urban life at the time – fire and disease. Thus did London's Great Plague of 1665 and Great Fire of 1666 (which both Shaftesbury and Penn lived through) leave their mark on colonial planning (Home, 1992:13). In Philadelphia, according to Penn,

'…every house be placed, if the person pleases, in the middle of its plot, as to the breadth way of it, so that there may be ground on each side for gardens, or orchards, or fields, that it may be a green country town, which will never be burnt and always be wholesome' (Morris in Home, 1992:13).

2.2.7 PUBLIC LAND RESERVATIONS

Land was to be reserved fro public purposes or as a source of public revenue, for example houses for public affairs, a meeting house, assembly or state house, market house, school house, etc (Home, 1992:14).

2.2.8 GREEN BELTS

A green belt, or physical separation of town and country first appears in colonial towns and was later adopted in England. These areas were town lands for common sheep pasturing (Home, 1992:14).

The model settlement presented above emerged early on in Britain's overseas expansion, this study will seek to analyse whether it is evident in British colonial settlements in the Eastern Cape of South Africa.

Despite their divergent national origins, the various groups involved in the colonisation process each acted with some degree of international cohesion. The politicians, most of whom never visited the colonies, drew the boundaries. The soldiers carried out the conquests and frequently chose the ports from which to control the population. The military often formed the first colonial governments and coercion was an essential part of the maintenance of colonial administration (Christopher, 1977). "Indeed the demarcation between soldier and administrator in the colonies was rarely defined. The administrators determined the pattern of urban settlement by selecting the administrative posts and deciding upon the nature of the administrative regime" (Christopher, 1977:3), this bias towards functional administration and the use of military personnel to implement it had a profound impact on the spatial development of South Africa; it was ordered, spacious, functional and logical (from a colonial point of view).

2.3   THE SCRAMBLE FOR AFRICA

The term Scramble for Africa was apparently coined in 1884 and although the exact dates are disputed the final hectic phase of dividing up the continent occurred between 1876 and 1912. As Pakenham (1991) so accurately states "the Scramble for Africa bewildered everyone, from the humblest African peasant to the master statesmen of the age, Lord Salisbury and Prince Bismarck" (Pakenham,1991:xv).

Why this undignified rush? Many theories have been put forward over the years from the Surplus Capital in Europe approach (Hobson, 1965; Lenin,1999), through the Afro-centric idea of sub-imperialism to the work of Robinson and Gallagher (1981); but from a British point of view the strongest argument was public opinion. In May 1873 David Livingstone, the celebrated missionary-explorer, died at Ilala, in the unknown heart of the continent, and his sun-dried body was brought home and buried in Westminster Abby. The funeral raised public awareness of the Arab and Swahili slave trade in East Africa and it was in Protestant Britain, where God and mammon[2] seemed made for each other, that Livingstone's words struck the deepest cords. The three "C's" would redeem Africa: Commerce, Christianity and Civilization. That was not the way Africa perceived the scramble. There was a fourth "C" -conquest – and it gradually predominated (Pakenham,1991).

Little was known of the African continent, prior to 1876, other than the trading posts on the coastal fringe. Africa had proved an unhealthy climate for Europeans. Acemoglu, Johnson and Robinson (2000) point out that, European colonialists adopted very different colonisation policies in different colonies, and adopted different associated institutions. The choice of colonisation strategy was, at least in part, determined by whether Europeans could settle in the colony. In places where Europeans faced high mortality rates, they could not settle and they were more likely to adopt extractive institutions, with the intention of transferring resources rapidly to the metropole; the most extreme case being the slave

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[2] Mammon: *New Testament.* riches or material wealth. Matt. 6:24; Luke 16:9,11,13. (Oxford English Dictionary)

trade from equatorial Africa. Europeans adopted very different colonisation strategies, with different associated institutions in areas where they could settle, such as the United States, Australia and New Zealand. In these cases they set up colonies with institutions that enforced the rule of law and encouraged investment, primarily via recognising property rights. The authors point out that those colonies which were intended for European settlement did better after independence than colonies set up for extraction as the institutions were better suited to economic development (Acemoglu, Johnson and Robinson,2000). If mortality rates per 1 000 are compared based on information in Curtin (1989) which covers the pre-1870 period, South Africa was 15.5 whereas New Zealand was 8.5. There is little doubt that mortality rates were a key determinant of European settlements. Curtin (1964 and 1998) documents how both the British and French press informed the public of the mortality rates in the colonies. For example, early European attempts to settle in West Africa foundered due to high mortality from disease. In the "Province of Freedom" European mortality in the first year was 46%, in Bulama (April 1792 –April 1793) there was 61% mortality among Europeans, and in the first year of the Sierra Leone Company (1792 -1793) 72% of the European settlers died. On Mungo Park's second expedition (May – November 1805), 87% of the Europeans died during the overland trip from Gambia to Niger, and all the Europeans died before completing the expedition. Such rates of mortality were shockingly high for Europeans at the time (Curtin: 1964 & 1998). Africa had thus, been left largely alone during the first phase of colonisation. It had remained a supplier of the slave trade with coastal trading posts. The slave trade transformed the history of the Americas, Africa and of Europe itself. Africa provided the labour so eagerly sought by Europeans on the African coast over a period of centuries, the labour built America where, until the mass exodus of Europe due to the Great Depression in 1820, when Europeans began to flee poverty in large numbers, Africans far outnumbered European settlers.

European encroachment into Africa in the fifteenth and sixteenth century was physically limited; they tapped into and obviously promoted through increased demand existing African and Arab slave trades. It developed into an enormously complex trading system that reached deep into Africa and which ensured that millions of Africans were passed

Figure 3: Colonial Settlement of Africa c 1870 (pre "Scramble for Africa") (Dalziel,2006:72)
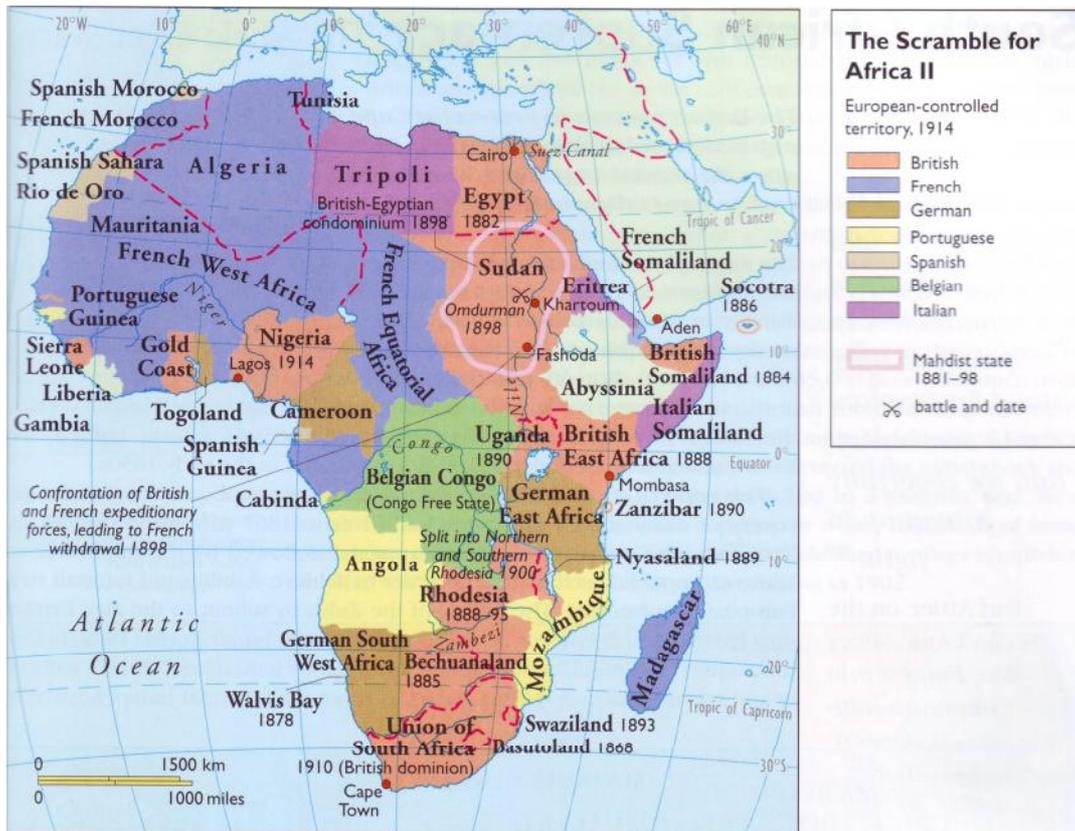
Figure 4: Colonial Partition of Africa as at 1914 (Dalziel,2006:73)

from hand to hand, from one internal African trading system to another, until finally the victims were delivered to the Europeans or their representatives on the coast. This system reached its height in the 1790's. All the major European powers became embroiled with slavery to varying degrees. Yet in a political and economic *Volte-face* of staggering dimensions they all turned against slavery. Europeans, who had all been deeply involved in slavery from the fifteenth century, transformed themselves into fierce abolitionists in the nineteenth. Lead primarily by British public opinion, Europeans turned their view of slavery on its head and by the nineteenth century viewed slavery as immoral and uneconomic (Walvin,2006:1-4). It is not surprising that the period of the Scramble for Africa (1876-1912), abolition of slavery (19th century) and the Great Depression (1820) coincide. They are all merely part of the same change in world economic forces. The need for new markets for the massive stocks pilling up in the Manchester warehouses, the vast number of unskilled, unemployed people in Europe, the desire to exploit the riches of Africa and the need to decant the surplus population from Europe to the colonies were all related.

Suddenly in half a generation the scramble gave Europe virtually the whole continent: including thirty new colonies and protectorates, 10 million square miles of new territory and 110 million dazed new subjects, acquired by one method or another.

2.4   COLONISATION OF SOUTH AFRICA

South African colonisation was unique primarily for geographic reasons. For thousands of miles along the western and eastern coasts of Africa there are few practicable harbours except for those around the Cape of Good Hope. Once having left São Paolo de Luanda in Angola, ships had no other refuge until they reached India or Mozambique; and since dangerous currents swept the coast the whole region was to be avoided. For an even greater distance, from the mouth of the Congo to the Zambezi, no river was navigable for more than a few miles, a grave disincentive to exploration at a time when water transport was often the only method of penetrating the interior. Access by land was rendered difficult by the coastal mountain ranges, the great swathe of desert that stretched from the Atlantic

to the Vaal River, and by the unhealthy swamps of Mozambique (Lamar and Thompson, 1981; Welsh, 2000; Caffrey, 1973).

As a result of this geographical isolation, while other regions of Africa were, for better or worse, part of the world economy, trading with Europe and Asia, Southern Africa was left to develop at its own pace (Welsh, 2000).

"'This Cape', declared Sir Francis Drake in 1580, 'is a most stately thing and the fairest Cape we saw in the whole circumference of the Earth'" (Caffrey,1973:1). But he was not the first European navigator to pass that way, the Portuguese got there first – Bartholomew Diaz with two caravels at Mossel Bay in February 1488; Vasco da Gama, naming Natal on Christmas Day, en route to India in 1497, followed by Antonio da Saldanha who discovered Table Bay and climbed Table Mountain; and Francisco d'Almeida who was killed in a scuffle with local people at Table Bay on his way home as retiring Viceroy of India in 1510. But the Portuguese preferred to use St Helena as a refreshment station partly due to the friction with the local population and partly because of the dangerous tides, so they left the Cape alone. The next visitors were the Dutch, who in 1602 formed the United Chartered East India Company (*Vereenigde Oost-Indische Compagnie* or *VOC* in Dutch, referred to in the South African context as the Dutch East India Company). From then on both Dutch and English ships began to make landfall at Table Bay out and back on the six-month-long voyages between Europe and the Indies; leaving letters under stones for the next crew to find. In 1647 the Haarlem, an East Indiaman, was wrecked in Table Bay without loss of life. The crew did a 'Robinson Crusoe', camping at Green Point with their salvaged cargo that obligingly included vegetable seeds and garden tools. They planted the seeds and bartered with the local inhabitants for cattle and sheep. News of this colony carried back to Holland on subsequent ships and caused the Dutch East India Company to send out an expedition in 1652 headed by a ships surgeon named Jan van Riebeeck (Caffrey, 1973:1-3).

2.4.1 DUTCH SETTLEMENT AT THE CAPE

The first European settlement of what is today South Africa, began in 1652 when the Dutch East India Company established a market garden at the foot of Table Mountain. At

the time the area was sparsely inhabited by a transitory group of cattle herders – the *Khoikhoi*[3]. The station under the leadership of Jan van Riebeeck, and manned by approximately a hundred men, aimed purely at providing fresh produce to the *VOC* fleets en route to India to prevent the crews from contracting scurvy. Van Riebeeck was given the title of 'Commander', not 'Governor' underlining that there was no intention in the *VOC* directors' minds of founding a formal settlement colony (Welsh, 2000; Nixon, 1972).

All the directors required van Riebeeck to do was to build a primate fort, an earth work on which cannon salvaged from the *Haarlem* could be mounted to cover the watering place. Vegetables and fruit enough to provision visiting company ships were to be grown, while for meat the Commander was to trade with the *Khoikhoi*. However, the station proved to be extremely expensive. In an attempt to boost production and cut costs van Riebeeck allowed private farming and so began the colonisation of South Africa (Cardy, 1990; Welsh, 2000; Nixon, 1972). Farmers were given thirteen and a half acres of land apiece, tax free, on which they promised to live for twenty years, but they were not free to trade, nor to grow tobacco, both Company monopolies. Eventually they imported slaves from the Guinea coast and from Malaya. In 1662 when van Riebeeck relinquished his command the Colony's population was 1394, of whom thirty-six were *free burghers* (free citizens) who had come with their families (Christopher,1976). In 1688 two hundred French Huguenots arrived, with names like de Villiers, Marais, de la Rey, Joubert, Malan, and brought the grape to the Cape. They settled mainly in the Drakenstein Valley, centred on the area of Paarl (Caffrey,1973).

The early farmers soon learnt that the intensive Dutch farming practices were inappropriate in South Africa outside the fertile valleys in the Cape; instead they turned to extensive stock farming, which was often of a transitory nature. With extensive farming

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[3] Khoikhoi – the name they used for themselves meaning 'men of men' in the sense of men *par excellence*, or people of pure race. They were renamed by the original Dutch settlers as Huttentut (stammer or stutter) because of the peculiar clicks which gave their speech its distinctive character (Maclennan,1986:25). The name was later anglicised to Hottentots. Another group of people at the Cape when the Dutch settled were the San, nomadic groups of hunter gatherers who lived primarily in the more arid northern Cape area, they were also often referred to as Bushmen, by the colonialists. Often mixed groups are referred to as the Khoisan in historic texts.

techniques, white settlement gradually extended. The Company lost control over the distant frontiers, which spread to the Eastern Cape (Cardy, 1990).

The frontier population was isolated and independent; they did not care much for the Company and its laws. "…the outlaying *Boers* (farmers), under the nominal dominion of the East India Company, had been intolerant of the stern and partial rule of their masters. They fled into the wilderness in the first instance to escape the domination of the company and naturally they did not give much heed to its orders" (Nixon, 1972:14). In 1806 the census indicated that the colony covered approximately 150 000 square miles – a density of one person per 20 square miles. Equally livestock densities were low. The number of sheep in the colony rose from approximately 75 000 in 1721 to 203 000 in 1760 and to 1.2 million by 1806; cattle numbers in the same years were 18 000, 34 000 and 208 000 (Christopher, 1976; Cardy,1990).

When population densities were so low, village settlement was not spontaneous. The concern about the isolation of the stock farmers prompted the establishment of magisterial seats at Swellendam on the southern coastal plain (1743) and Graaff-Reinet on the eastern frontier (1786).

Ten years after the establishment of Graaff-Reinet, Barrow described the town as: "…an assemblage of mud huts placed at some distance from each other, in two lines, forming a kind of street. At the upper end stands the house of the *landdrost* (magistrate), built also of mud, and a few miserable hovels, that were intended as offices for the transaction of public business; most of these in so ruinous a condition as not to be habitable…"(Christopher, 1976:51).

In 1804 Uitenhage was founded, which was the last village prior to British occupation two years later. All the villages in the grazing districts remained small, provided few services, and through lack of trade they were unable to attract potential artisans.

Cape Town, however, remained as cosmopolitan as anywhere, but in the end it was the *trek boer* (migrant/transitory farmer), who opened up the country. In the apparently endless

silent land, isolated from the world, hard, brave, stubborn and tenacious men moved inland, for ever moving out of sight of their neighbour's smoke and the law, clinging to the Old Testament and the rifle (deKlerk,1975; Caffrey, 1973; Cardy,1990). They were self enclosed, self-reliant and they simplified everything down to its basics including their language, so high Dutch gave way to Afrikaans (Caffery:1973).

2.4.2 BRITISH OCCUPATION OF THE CAPE

England became concerned that the Cape, and hence the sea route to India, would fall to the French due to the shift in power in Europe brought about by the French Revolution. The French and the English raced for the Cape in 1780, two rival squadrons speeding south through the Atlantic and clashing briefly at Porto Praya in the Cape Verde Islands from which the French Admiral Suffren got away some hours ahead and landed in Simon's Bay. For three years the French made Cape Town a little Paris, constructing elegant buildings that have left a flavour to this day, and spending freely, which gave Cape Town a short period of light-hearted prosperity. They left the Cape to the Dutch in 1784, but on the French invasion of Holland after the French Revolution the Prince of Orange fled to England and authorized a British force to go to Simon's Bay and hold the Cape until he returned to power. In 1795 the Cape was annexed by England, but reverted to Dutch rule between 1802 and 1806. In 1806 it was retaken by England in the dramatic battle of Blaauwberg (Couzens, 2004).

Figure 5: The First Annexation: hoisting the British Flag at Cape Colony, 1795 (from a painting by Caton Woodville) (Caffrey:1973:7)

The British Governor, Sir George Yonge, made a telling remark in 1800: "I know very well this has been presented to us as a useless Colony, and even a heavy burden, and a place not worth retaining. The assertion is false and I assert that whoever has the Cape is master of the commerce of India." (Caffrey,1973:6).

Cape Town during this time was described by a Mr Tuckey as one of the handsomest colonial towns in the world. "The streets, which are wide and perfectly straight, are kept in the highest order, and planted with rows of oaks and firs. The houses are built in a style of very superior elegance, and inside are in the cleanest and most regular order…" (Caffrey,1973:8).

The British concern to protect the Cape was frustrated by *Boer* expansion and African opposition to European encroachment. The Cape government struggled to achieve stability on the frontier, and so opened an era of reluctant British colonial expansion. Only after the second Anglo-Boer War did British power finally become a reality across the whole of South Africa.

The British expansion of the Cape into what is today South Africa can be broken down into five broad geographic/temporal categories, although nothing about South African Colonisation fits neatly into clear logical patterns. Firstly the Colony consisted of the Cape peninsula and its' hinterland, the second distinct colonial trend was the expansion into the Eastern Cape, the third zone of expansion was Natal (simultaneous with the resolution of the conflict zone around the district of Queen Adelaide), the fourth phase defined the northern limits of present day South Africa by the establishment of the British colonies of Bechuanaland (Botswana) and Rhodesia (Zimbabwe), the final settlement zone was expansion into the interior and the annexation of the Orange River Colony and the *Zuid Afrikaanse Republiek* (ZAR) (Orange Free State and Transvaal respectively).

2.4.2.1   The Western Cape

As previously stated the original Dutch East India Company (VOC) had no intention of forming a colony and thus, never intended to establish a town, however, when Company

servants were released from their contracts some chose to remain at the Cape. They were allowed to remain on agricultural plots and to build houses near the fort for protection (Christopher,1976; Haswell,1984). At this stage Cape Town consisted of a fort (in which all the Company servants lived), two inns, a hospital, store, cow and sheep sheds, bakery and mill; beyond which were thirty-five acres of gardens.

Van Riebeeck wrote to the VOC in reply to their criticisms about the free settlers: "our idea of laying out a town here had always been very little. We can very well feel the burden of freemen exclusive of agriculturalists and therefore, will allow no more than there are already, for which, should they build any houses here, we have in proper order, as an incipient town, marked off fifty roods outside the fort's walls, so that it has a present more the name than the reality" (Christopher,1976:31).

"By 1660 the settlement along the shores of Table Bay began to take on the appearance of a typical Dutch canal-town. Dwellings were not to be built within fifty Rhineland Roods (188.35 meters) of the fort, and methodically the Dutch *freebughers* (free citizens) built along this line which produced the first street. A stream which flowed down the slope of the mountain was canalized, diverted down this street and named after its Amsterdam counterpart, the *Heerengracht*. When oaks were planted and bridges gave access to the cottages and their irrigated gardens, the atmosphere was unmistakably Dutch" (Haswell,1984:14).

Cape Town grew by the addition of streets parallel to the Heerengracht. "By 1693 additional streets …had been formed, with *erwe* (erven/plots) now extending from street to street, and by 1751 Cape Town consisted of more than fifty blocks, demarcated by the intersection of long main streets and shorter cross streets". Bernardin de St. Pierre described Cape Town as follows: "The streets are very straight, some of them are watered with canals and most of them are planted with oak trees…. When a man has seen one Dutch town he has seen them all" (Haswell,1984). The grid pattern had thus, been introduced. During the governorship of Simon van der Stel substantial improvements were made to the town. The gardens were moved back seven hundred and fifty feet and redesigned, which effectively opened up land for the town's expansion. The city blocks
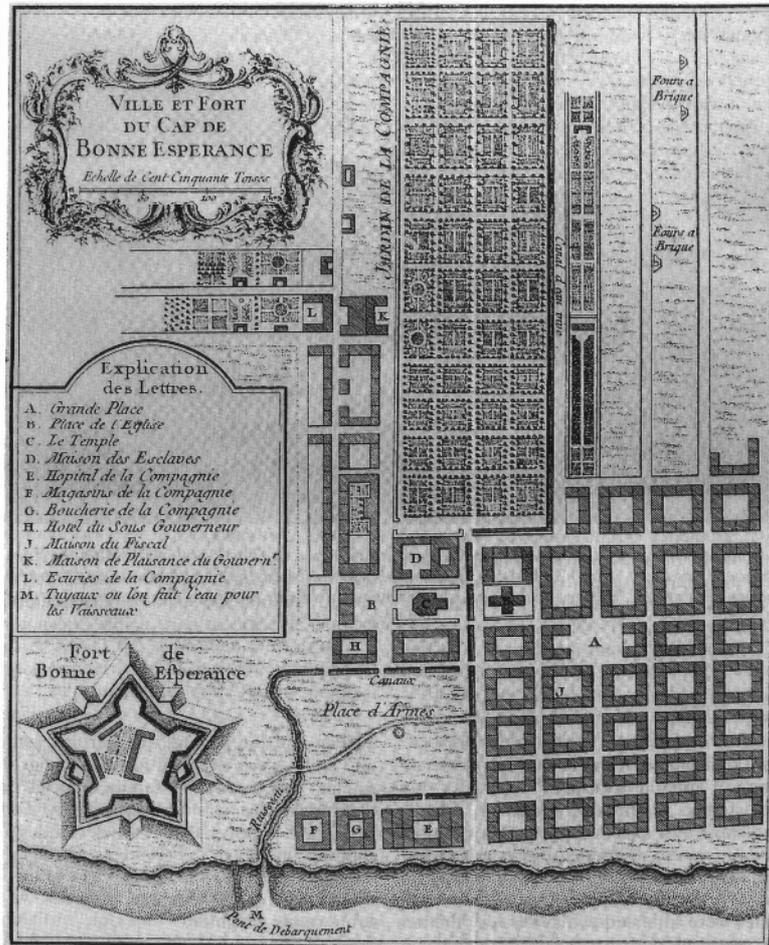
Cape Town in 1764. The oldest colonial settlement by Europeans in southern Africa was founded by the Dutch East India Company. The plan shows the regular street layout of the Dutch surveyors before the British conquest in 1796. (Source: Reproduced from the facsimile by Historic Urban Plans, Ithaca, New York, of Bellin's Petit Atlas Maritime)

Figure 6: Cape Town 1764 (Home:1997:52)

were small - generally three hundred feet square (8919 m^2) with plots of a sixth of an acre (667 m^2). The main roads were sixty feet wide and the minor cross streets forty feet wide. The site of the original fort was turned into a parade ground which was the only open space until the late eighteenth century (Christopher,1976; Cardy,1990; Haswell,1984).

As the colony expanded so problems occurred as the settlers left the arable area of the south west. In the south west wheat farming predominated which lead to a relatively settled population and towns such as Stellenbosh, Tulbugh, Ceres and Franschhoek flourished. Where fertile land existed in the valleys around Cape Town slowly a stable population established itself. However, under the divided inheritance practiced at the Cape

families could soon be reduced to poverty, it was only on the frontier of settlement that a man with a small sum of money could make a start in farming. Due to the arid conditions beyond the south west most farmers turned to livestock farming, the Company's pressing need to supply meat to the passing ships made them relax their control over the rapidly expanding frontier. These areas were allocated on a loan place system (land rented from the Company); this was a highly insecure tenure and consequently little improvement was made to the land; this is clearly illustrated by Barrow's comment in 1797: "The miserable hovels in which the graziers live are the pictures of want and wretchedness. Four low mud-walls, with a couple of square holes to admit the light and a door of wicker work, a few crooked poles to support a thatch of rushes, slovenly spread over them, serves for the dwelling of many a peasant whose stock consists of several thousand sheep and as many hundred heads of cattle" (Christopher,1976:48).

Figure 10 (page 33) clearly illustrates that the main limitation on early expansion was the vast Hottentots Holland mountain range at the end of False Bay, not only was it a physical barrier in terms of traversing it but it was also a boundary between the Mediterranean climate of the Cape peninsula and the semi-arid interior. A number of attractive and well planned towns existed in the established cultivated areas; settlements such as Stellenbosch flourished and became the seat of the wine industry. With the importation of the French Huguenots a number of towns such as Franschhoek and Tulbugh were established which have an unmistakably French atmosphere. It was the Huguenots who introduced the grape to South Africa (Figures 7-9).

Figure 7: Samuel Davis - Stellenbosch – 1779 (http://commons.wikimedia.org)

Figures 8 and 9: The Stellenbosch Valley and 'Lanzerac' – wine estate on the outskirts of Stellenbosch, note the Cape Dutch architecture (www.capevillacollection.co.za)
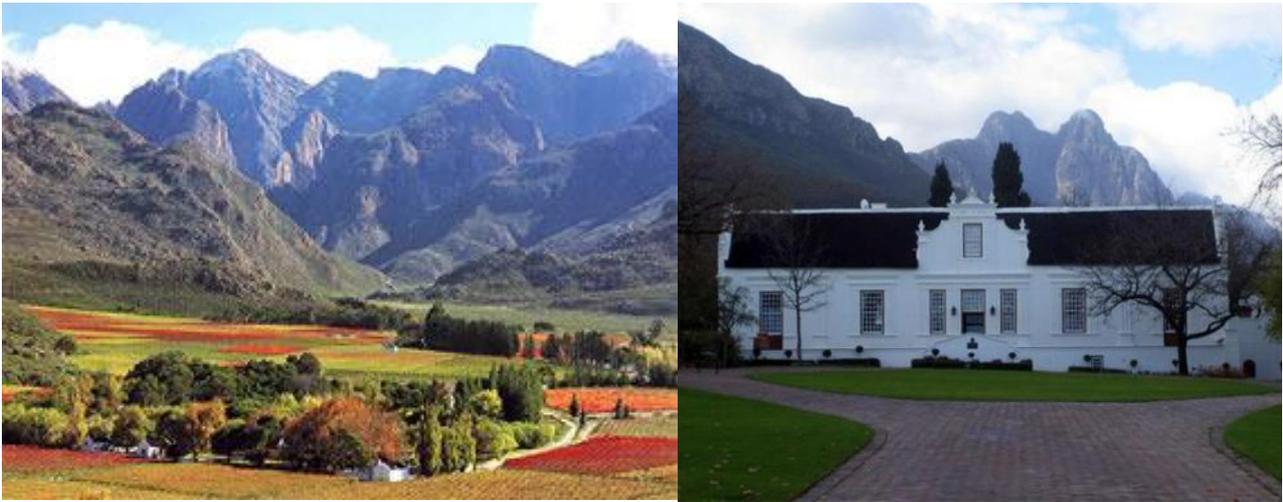
All of these early Dutch towns were agricultural centres; they had long, broad and straight streets and were serviced by diverting a river to flow in small water canals down the sides of the streets. The unique Cape Dutch architecture replicated the gables of Holland but with no need to conserve land the houses were large, barnlike and often one or two storeys. A central church dominated the skyline.

By 1806 some 15 000 immigrants had settled in the Cape and Natal (Caffrey:1973:9). In 1814 the King of the Netherlands finally ceded the colony to Great Britain. "Its liberation from the tyranny of the despotic East India Company gave a great impetus to its progress" (Nixon, 1972:13). The British colony consisted originally of only the Cape, even though there was already a small settlement in Natal at what is today Durban. The boundaries of the colony had not been defined and after British occupation in 1806 the lack of towns for the control of the population was immediately felt. As a result a series of new government towns were established for administrative, trade and commercial reasons. Unlike the settlements of the Dutch period, which tended to be small and which grew by the laying out of new streets and plots as the need arose, the British established substantial and complete towns (Cardy, 1990). These towns were predesigned and approved in London prior to establishment, in many cases they were plans on paper; in reality the actual settlements were initially little more than hamlets with a grand name.

From the outset the British settlements were fundamentally different from those of the Dutch and Afrikaners, the towns of this era were not self sufficient and survived on trade, administration and commerce. The urban fabric reflected this as the towns, although still based on grid layouts were less regular than those of the Dutch and had a far finer grain. Land around houses was used as gardens or for the stabling of horses (being the primary means of transport of the day). British towns were not focused on the Church but rather the administration buildings, in the British tradition churches were surrounded by graveyards and thus tended to be close to the outskirts. British settlement also occurred after the reformation so there was no single religion for the British settlers and accordingly no one church dominated. Most British towns were planned, at least on paper, as complete settlements and were laid out as such. Often a complete town plan was approved in London even when there were no existing residents there. The need for approval for settlement from the Colonial Government, necessitated that a plan be drawn up for the settlement prior to pegging and that this plan be approved in London. The plans were also always referred to as town or city plans, no one ever consciously planned villages or hamlets, yet in reality that is exactly what they were. British towns also deviated from the Dutch settlements in terms of infrastructure, linkages between towns were important, fording points on rivers, pontoons and bridges were all created as part of the settlement and often the towns were supplied with wells instead of the water furrow system of the Dutch (Cardy, 1990; Haswell, 1984; Christopher, 1973).

British rule was not appreciated on the frontier. The frontier people had always been opposed to government interference and thus, with the more extensive and competent control of the colony by the British, the *Boers* began to rebel (Cardy, 1990). The Cape Colony proved to be harder to rule than was anticipated by the British. They never fully came to terms with the relations between the original Dutch and French Huguenot settlers and the British. Although Cape Town and the surrounding farming areas were well established and stable communities, the farmers on the frontier were transitory stock farmers who had no formal title to land and hence had a very unstable existence. Around this time the northern and eastward expansion of the Europeans started to clash with the southern expansion of the Zulu in Natal and the western expansion of the Xhosa around

the region of the Great Fish River. The second phase of colonial expansion had started before the British had the time to consider the limits of the colony (Welsh, 2000).

Figure 10: Topographical map of the Cape Colony in the eighteenth century by L.S.de la Rochette, 1795. Rembrandt van Rijn Art Foundation: Burger House, Stellenbosch (Smuts, 1979:15)

2.4.2.2 The Eastern Cape

The history of the Eastern Cape is discussed in depth in Chapter 8 and hence is not discussed here. Figures 11 and 12 give a sense of the geography of the area.

2.4.2.3 Durban and Natal

A settlement at Durban was founded by Lieutenant Farewell, Henry Fynn and their group of travellers who landed at the Bay of Natal in 1824. The bay was first discovered and named by the Portuguese seafarer Vasco da Gama who arrived at the present location of Durban on Christmas Eve in the year 1497, and called it "*Terra do Natal*", Christmas country. Because the Portuguese had already established an excellent port at Delagoa Bay now Maputo, Mozambique, they were not interested in settling in a bay surrounded by mangrove swamps and dense coastal forests. Even then, the bay was one of the few natural harbours along South Africa's eastern coastline. Only sporadically some pirates and ivory or slave dealers laid anchor, and it was much later, in the year 1824, that a proper settlement started, initially named "Port Natal". In 1824 Henry Fynn and Francis Farewell used the port to trade ivory (Cardy, 1990; Caffrey, 1973; Haswell,1980; Lynsky, 1982).

A contingent of British pioneers, under the leadership of Flynn, had reached a contractual agreement with the mighty Zulu King, Shaka, authorising them to establish a trading station. The settlement of Port Natal encompassed just 30 people and was renamed "Durban" on the 23rd June 1835 in honour of Cape Governor, Sir Benjamin D'Urban as proclaimed by Captain Allen Gardiner, the newly arrived naval officer (Lynsky, 1982).

Natal had been for several years the resort of English adventurers. The question of its occupation as a British settlement had been mooted and decisively answered in the negative by Lord Glenelg. When, however, the Dutch emigrants proceeded to take possession of the Port Natal, the hands of Napier were forced, and an occupation of Natal became inevitable, however 'temporary and purely military'. Whatever the words of statesmen, the English Imperial spirit was not dead though sleeping, and the material
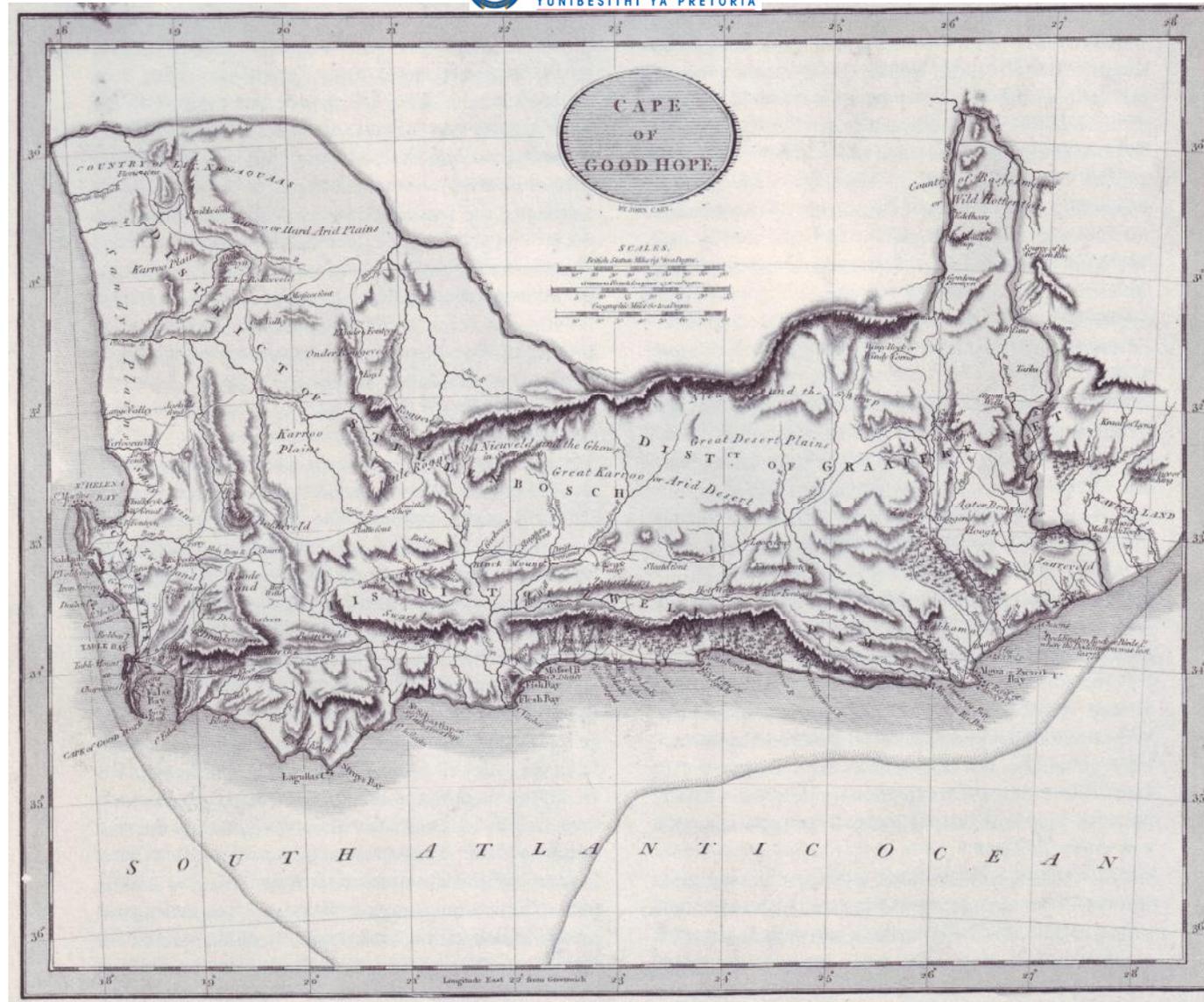
Figure 11: Topographical map of the Cape c 1800, by John Cary. Note the expansion of the Colony when compared to the map of 1795 (figure 4) (Cape Archives)
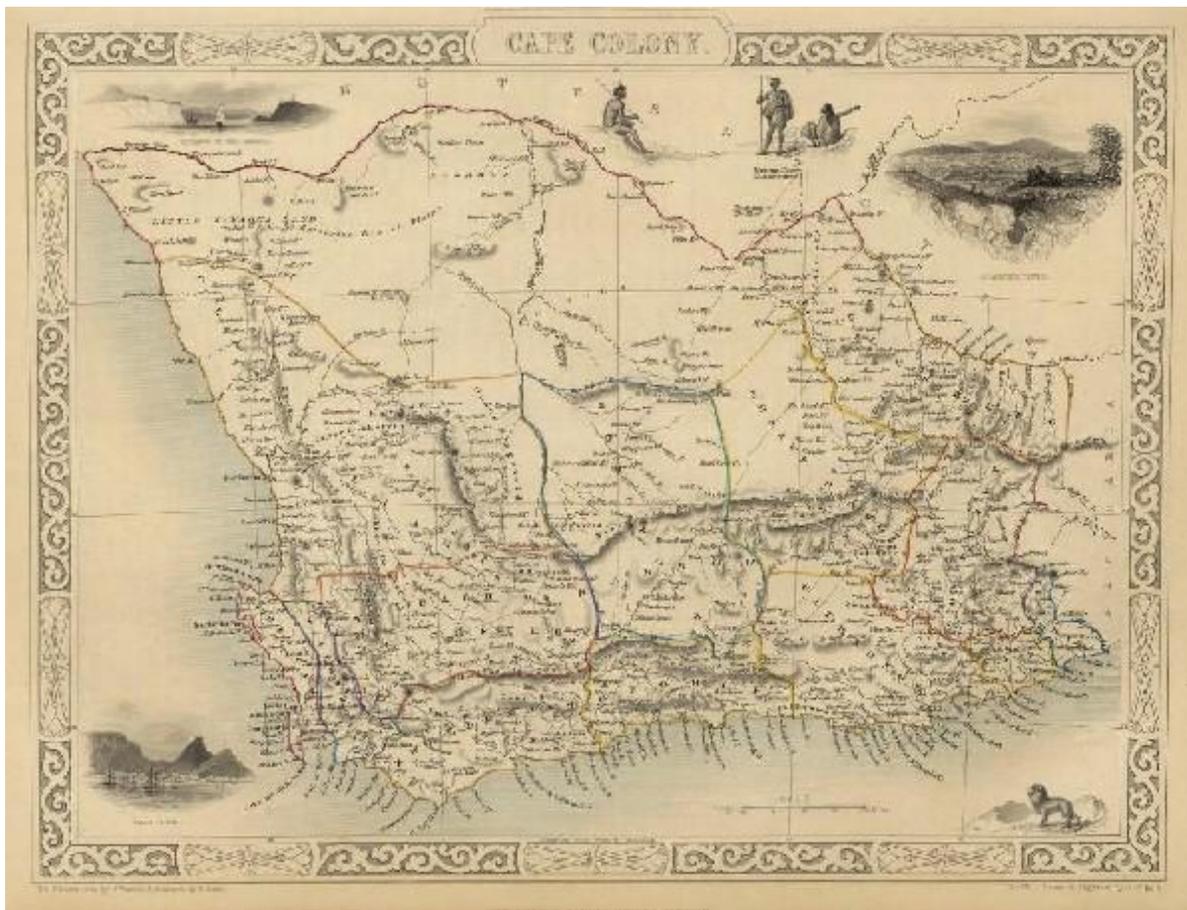
Figure 12: Cape colony 1851 Authors Martin R.M and Tallis J.F (1851) The Illustrated Atlas, and Modern History of the World Geographical, Political, Commercial and Statistical, Edited by R.Montgomery Martin Esq – J and F Tallis, London

interests of Cape Colony would not allow that an independent republic should be established upon the coast with a harbour through which access would be given to the interior. British Colonial Secretaries, however, could not yet reconcile themselves to facts, and so, in 1840, Napier, believing that the colonisation of that country would never be sanctioned, felt the further retention of the port might give rise to hopes or even fears, which it was probably the wish of Her Majesty's Government not to foster. The withdrawal of the English troops from Durban was almost simultaneous with the great victory of Panda, the ally of the *Boers*, over Dingaan's army (King Shaka's successor). The result was that Pretorius (a *Boer* Commander) was able to issue a proclamation taking possession of a territory more extensive both to the north and the south than is the latter Colony of Natal. The description given by Theal (1943) of the condition of things in the Natal Republic is very suggestive : 'The result was utter anarchy . . . public opinion of the

hour in each section of the community was the only force in the land. A loose kind of alliance had been formed between the Natal *Volksraad* (People's Council) and the Government of the settlers in the districts of Winburg and Potschefstroom. Roughly speaking, the Winburg district corresponded to about half of the latter day Orange Free State, the Potschefstroom district to the South African Republic (ZAR), while, between the Vet River and the Orange, there were several parties of emigrants acting independently. The Natal *Volksraad* proposed to send Commissioners to the Cape Colony to treat for acknowledgment of their independence with the rights of British subjects. Meanwhile English public opinion was moving, and in 1840 Lord John Russell wrote that he was favourable to the settlement of Natal as a British Colony, though not prepared to expend large sums of money in conquering the country from the emigrant farmers. The precarious state of affairs on the eastern frontier of Cape Colony prevented, for some time, any attempt to enforce this policy, and it was the action of the *Boers* in pressing the Pondos southward which finally caused the interference of the English. At the close of 1840 Napier issued a proclamation declaring that the Queen would not recognize the emigrants as an independent State, and that he was about to resume military occupation of Durban.

In May 1843, Natal was proclaimed a British Colony. When the British Commissioner, Mr Cloete, arrived at Maritzburg (Pietermaritzburg) he found 'the machinery of government at a complete standstill; there was not a sixpence in the treasury . . . The sentences of the law courts were in most instances completely disregarded . . . There was hardly one who had been in office but who candidly admitted that the *Boer* Republic of Natal was a failure' (KAB, Accession A457, Documents of Cloete family 1685 – 1893). The Natal *Volksraad* submitted; the more violent section of the farmers retiring beyond the Drakensberg Mountains to their kinsmen on the other side. Mr. Cloete next came to terms with Panda, the Zulu king, obtaining the formal cession of St. Lucia Bay, by which means the *Boers* were prevented from obtaining the seaport they coveted. Natal was to be a dependency of the Cape, though separate for judicial, financial and executive purposes. The Lieutenant Governor was to be aided by an executive Council. The Lieutenant Governor and Council might recommend laws to the Cape Colony authorities for their enactment. Lord Stanley was urgent that national preferences should be, as far as possible, indulged. Notwithstanding these good intentions, the rule that actual occupation for the twelve months preceding the inquiry must be shown to give a good title to land was difficult for the

Dutch settlers to prove and was the cause of a new emigration. Feelings were further embittered by the refusal of the Governor, Sir H. Pottinger, to see the Natal envoy, Mr Pretorius.

Sir Harry Smith, who became Governor in 1847, was convinced that he could bring them to terms. He had already served in South Africa and won all hearts. He assumed the government with a fully matured plan for the settlement of affairs north of the Orange River.

A new British Colony must be formed, and a general control exercised over the African chiefs. For this purpose Sir H. Smith proceeded to Bloemfontein. The picture which he gave in his dispatches of the state of feeling among the *Boers* is very vivid : 'Jealous to a degree of what they regard as their rights ', ' constantly at variance with one another ', ' the world has at no period produced a race of men so prone to give credit of evil reports, however monstrous and impossible their nature, as the Dutch emigrant *Boer* '. He frankly recognized that 'it must not be expected that perfect cordiality can at once be established among men who have for so many years led so unsettled a life as these emigrant farmers.' Unfortunately, though Sir H. Smith was well suited to the task of conciliation, he was in a great hurry, and his passage through the country, as was afterwards said, was like that of a meteor. He was anxious to reach Natal so as to prevent any further exodus of the Dutch from that Colony, and in this object he was successful. As a consequence of his hurry, the proclamation (1848) under which the government of the Orange River Sovereignty was carried on contained provisions, which caused future trouble. Especially the clause which required every able-bodied man to turn out in defence of the Queen and her allies, whenever called upon to do so, became, as interpreted by the British resident, Major Warden, a fertile cause of mischief. Under it the lives of European settlers might be risked in pursuing the quarrels of native chiefs. In any case, however, the assumption of sovereignty was at first, upon the whole, unpopular. It had reluctantly been assented to in England on the ground that the black people required protection from the Dutch, and that the better-disposed farmers, being in a condition of anarchy, would gladly submit to a settled government. For the moment, however, the more violent spirits obtained the upper hand, and it was necessary to use force to maintain the sovereignty.

Upon the defeat of the *Boers*, the most anti-British of them moved over the Vaal River, while fresh immigrants from the Cape Colony filled their places. According to a statement drawn up by the inhabitants in 1851, "no sooner had your Excellency extended the authority of the Queen than order and subordination were established, the confidence of the peaceful and well disposed revived . . . flourishing villages suddenly sprang up and the apparently waste land of a year or two previous became studded with substantial homesteads." Doubtless other considerations had to be borne in mind. It is unfair to rail at the disinclination of English Ministers to extend British possessions in South Africa. It must be remembered that South Africa was a casket, which jealously hid its riches to the last. For a long time it was a continuous source of expense to the Empire, with no apparent corresponding advantages.

So began a period of continual debate and ineffectual policy towards the Transvaal and Orange Free State Governments. It is important to remember that diamonds and gold were only discovered late in the colonial process and invariably lead to the British finding a reason to regain control of the regions. In all honesty the British view until the discoveries of diamonds and gold was that Simon's Bay was the only thing really worth caring about. Simon's Bay was strategically important in maintaining the trade route to India; the jewel in Britain's imperial crown.

The British established a sugar cane industry in Natal in the 1860s. Farm owners had a difficult time attracting Zulu labourers to work on their plantations, so the British brought thousands of indentured labourers from India on five-year contracts. As a result of the importation of Indian labourers, Durban became the settlement with the largest Asian community in South Africa (Brookes and Webb, 1967; Stuart, Webb and Wright,1976; Welsh,2000).

Durban became one of the most important seaports of the British Empire. Particularly significant was the boom of the sugar cane industry in Natal towards the end of the 19th century, when Durban's seaport became the largest sugar terminal in the world.
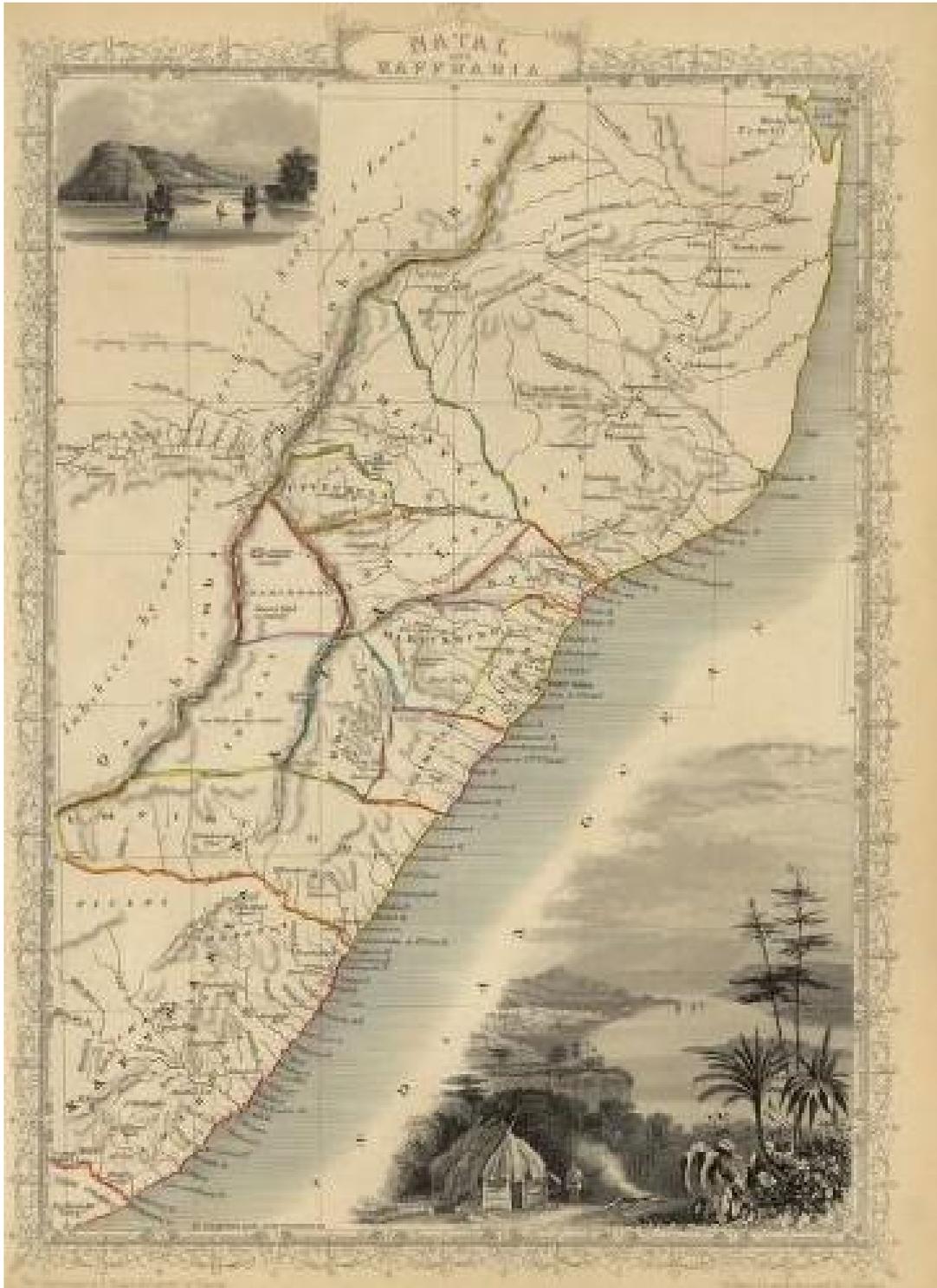
Figure 13: Natal and Kaffraria (sic)

Authors Martin R.M and Tallis J.F (1851) The Illustrated Atlas, and Modern History of the World Geographical, Political, Commercial and Statistical, Edited by R.Montgomery Martin Esq – J and F Tallis, London

2.4.2.4 Defining the Northern Limits of South Africa

The next period of British colonial expansion started with the discovery of diamonds at Kimberley. At the time Kimberley was somewhere on the ill-defined border of the Cape Colony, the Orange Free State and the Transvaal Republic. The British seized the initiative and defined the border with Kimberley as part of the Cape Colony. An extension of this policy also lead to the creation of the British colonies of Bechuanaland and Rhodesia. This was also the beginning of the scramble for Africa and so possession and delineation of territory was starting to become important, until this time the northern extent of the Cape Colony had been vague – not surprising given the extremely arid nature of the territory.

The British established not only the northern limits of South Africa but also two colonies to the north, Bechuanaland (Botswana) and Rhodesia (Zimbabwe). Perhaps one of the most astounding settlements in Africa was that of Rhodesia, for its sheer scale; although Rhodesia is not part of South Africa it was an important phase of development for South Africa as it closed off the frontier to continued *Boer* expansion northwards. Cecil Rhodes, as Prime Minister of the Cape, dreamed of an all red route from Cape to Cairo, he also wanted to out-flank the unfriendly *Boers* of the Transvaal Republic, he advocated that British influence would be good for the Africans and of course he thought there was gold in the North. He therefore induced King Lobengula of Matabeleland, who held some sort of sway over both the Matabele and the Mashonas, to grant him a mining concession in those areas, and then persuaded the British Government to allow him a Royal Charter, authorising him to govern and administer them. He formed a Chartered Company, the British South Africa Company, to occupy the country and in 1890 he sent a column of pioneers northwards into Mashonaland (Morris,1968:84).

Two hundred young men had formed the nucleus of this column, with an escort of five hundred police. They had been carefully picked as an embryo of a new white colony, and included farmers, miners, engineers, lawyers, doctors, builders, artisans and miscellaneous adventurers. They travelled under military discipline as soldiers, but they were disbanded and let loose as civilian settlers once they reached Mashonaland (Morris,1968). They made the march in eleven weeks and on the 12th September 1890 they halted at Harare, renamed it Fort Salisbury in honour of the British Prime Minister,

hoisted a Union Jack and launched Rhodesia, without the loss of a single life. It was not all smooth sailing however, and trouble soon erupted, the treaty with Lobengula was morally dubious, Rhodes had acquired the full mining rights for an enormous and carefully ill-defined slab of territory. Lobengula had little idea how much he was signing away, and the Company's right to administer the country at all, however confidently it gained the imperial assent, was morally shaky. The rights Lobengula signed away were rights with ..."full powers to do all things that might be deemed necessary…" (Caffrey,1973:57). This was achieved at a cost of £100 a month paid to Lobengula, 1 000 rifles with 100 000 rounds of ammunition, and the promise of a gun boat on the Zambesi (Caffrey,1973:57). Once occupation occurred, Lobengula, finding himself dispossessed proved a bitter enemy until his death in 1893; by which time there had been two major wars against the Matabeles and a war with the Mashonas still raging. Disease ravaged the settlers' cattle. The gold reef proved disappointing. "All in all things had not been easy; and Salisbury had developed a wiry, rather bitter, often bigoted kind of self-sufficiency, mud on the boot and guns on its shoulders" (Morris, 1968:84).

In terms of physical planning, Rhodes ordered that the towns of Salisbury and Bulawayo should have streets wide enough to allow an eight pair team of oxen to turn comfortably. Rhodes looked to the Afrikaner model of town building and rectilinear surveying when laying out Rhodesia and the towns of Rhodesia look remarkably similar to those of the Transvaal. The cadastral system adopted was a crude system of riding on horse back for half an hour from the farm homestead, or pacing out of urban plots. In reality the settlers in Rhodesia were not really intending to make their living from farming, they were looking for the legendary King Solomon's Mines, though as it turned out mining there was always chancy (Caffrey, 1973:60).

Rhodesia is however, of enormous interest to this study as colonisation was by a company. As Morris (1968:85) notes "The New Imperialism was easily fired by dreams of freebooter and buccaneer, and was also much concerned with private profit: and prominent in its lore were the grand old companies which had created the original Empire, established the imperial routes and planted the first trading posts – the Levant Company, Hudson's Bay, the Gold Coast and Gambia Companies, above all the East India

Company, a major power in itself, with its own armies, warships, diplomats and currencies."

Rhodesia was a return to the old style of colonialism, company lead and mercantile in nature, it was the only period of southern African colonisation, bar a small interest in the 1820's, during which the British actively colonised a region with the view to permanent settlement and British capitalist markets, everything else in South Africa had happened begrudgingly and in a reactionary way in response to other pressures such at thwarting Napoleon, the *Boers* or the African tribes.

2.4.2.5 The Anglo-Boer War and the Acquisition of the Transvaal and the Orange Free State

The southern part of the African continent was dominated in the 19th century by a set of epic struggles to create within it a single unified state. British aggressiveness into southern Africa was fuelled by three prime motivations: initially, in order to control the trade routes to India that passed around the Cape; second, the discovery, in 1868, of huge mineral deposits of diamonds around Kimberley on the joint borders of South African Republic (called the Transvaal by the British), Orange Free State and the Cape, and thereafter in 1886 in the Transvaal of a major gold find, all of which offered enormous wealth and power; and finally this was a time of rapid European colonisation, as part of a general colonial expansion into Africa. Other potential colonisers included Portugal (who already controlled East and West Africa including modern day Mozambique to the East and Angola to the west), Germany (modern day Namibia), and further north, Belgium (Congo) and France (West and Equatorial Africa, and Madagascar).

The origins of the Anglo Boer War were complex, resulting from over two centuries of conflict between the *Boers* and the British. The British had in 1806, during the Napoleonic Wars, taken permanent possession of the Cape Colony and over subsequent decades successive waves of *Boers* had migrated away from the rule of the British Empire in the Cape Colony, first along the eastern coast towards Natal and then, after Natal was annexed in 1843, northwards towards the interior where two independent Boer republics (the Orange Free State, and the South African Republic) were established. The British

recognised the two *Boer* Republics in 1852 and 1854 but the annexation of the Transvaal in 1877 lead to the First Boer War, 1880-1. After British defeats, most heavily at the Battle of Majuba, Transvaal independence was restored subject to certain conditions but relations were uneasy.

When in 1886 massive deposits of gold were discovered in the Transvaal, a huge inflow of *uitlanders* (foreigners/ non-citizens), mainly from Britain, came to the region in search of employment and fortune. Gold made the Transvaal the richest and potentially the most powerful nation in southern Africa but it also resulted in the number of *uitlanders* in the Transvaal eventually exceeding the number of *Boers* and precipitated confrontations over the old order and the new. Disputes over *uitlander* political and economic rights resulted in the failed Jameson Raid of 1895. This raid led by (and named after) Dr Leander Starr Jameson, the Administrator in Rhodesia of the Chartered Company was intended to encourage an uprising of the *uitlanders* in Johannesburg. However, Johannesburg failed to rise and Transvaal government forces surrounded the column and captured Jameson's men before they could reach Johannesburg.

As tensions escalated from local to national level, there were political manoeuvrings and lengthy negotiations to reach a compromise ostensibly over the issue of *'uitlander* rights' but ultimately over control of the gold mining industry and the British desire to incorporate the Transvaal and the Orange Free State in a federation under British control. Given the number of British *uitlanders* already resident in the Transvaal and the ongoing inflow, the *Boers* recognised that the franchise policy demanded by the British would inevitably result in the loss of independence of the Transvaal. The negotiations failed and in September 1899, Chamberlain (the British Colonial Secretary) sent an ultimatum to the *Boers*, demanding full equality for those *uitlanders* resident in the Transvaal. President Kruger, seeing no other option than war, issued his own ultimatum giving the British 48 hours to withdraw all their troops from the border of the Transvaal, failing which the Transvaal, allied with the Orange Free State, would declare war against the British. The rejection of the ultimatum followed and war was declared.

The war had three distinct phases. First, the *Boers* mounted pre-emptive strikes into British-held territory in Natal and the Cape Colony, besieging the British garrisons of

Ladysmith, Mafeking and Kimberley. The *Boers* then won a series of tactical victories at Colenso and Spion Kop against a failed British counter-offensive to relieve the three sieges. Second, after the introduction of greatly increased British troop numbers under the command of Lord Roberts, another and this time successful British offensive was launched in 1900 to relieve the sieges. After Natal and the Cape Colony were secure, the British were able to invade the Transvaal and the Republic's capital, Pretoria, was captured in June 1900.

Finally, beginning in March 1900, the *Boers* engaged in protracted hard-fought guerrilla warfare against the British forces. This lasted a further eighteen months during which the *Boers* raided targets such as British columns, telegraph sites, railways and storage depots. In an effort to cut off supplies to the raiders, the British, now under the control of Lord Kitchener, responded with a scorched earth policy of destroying *Boer* farms and by moving civilians into concentration camps.

The campaign had been expected by the British to be over within months, and the protracted war became increasingly unpopular back in Britain, especially after revelations about the conditions in the concentration camps (where thousands died of disease and malnutrition). The demand for peace led to a settlement of hostilities, and in 1902 the Treaty of Vereeniging was signed. The two Republics were absorbed into the British Empire, although the British were forced to make a number of concessions and reparations to the *Boers* and to the establishment of the Union of South Africa. The war had a lasting effect on the region and on British domestic politics. The war, known as the last British imperial war, was the longest (almost three years), the most expensive (over £200 million), and the most disastrous of all wars for Britain between 1815 and 1914.
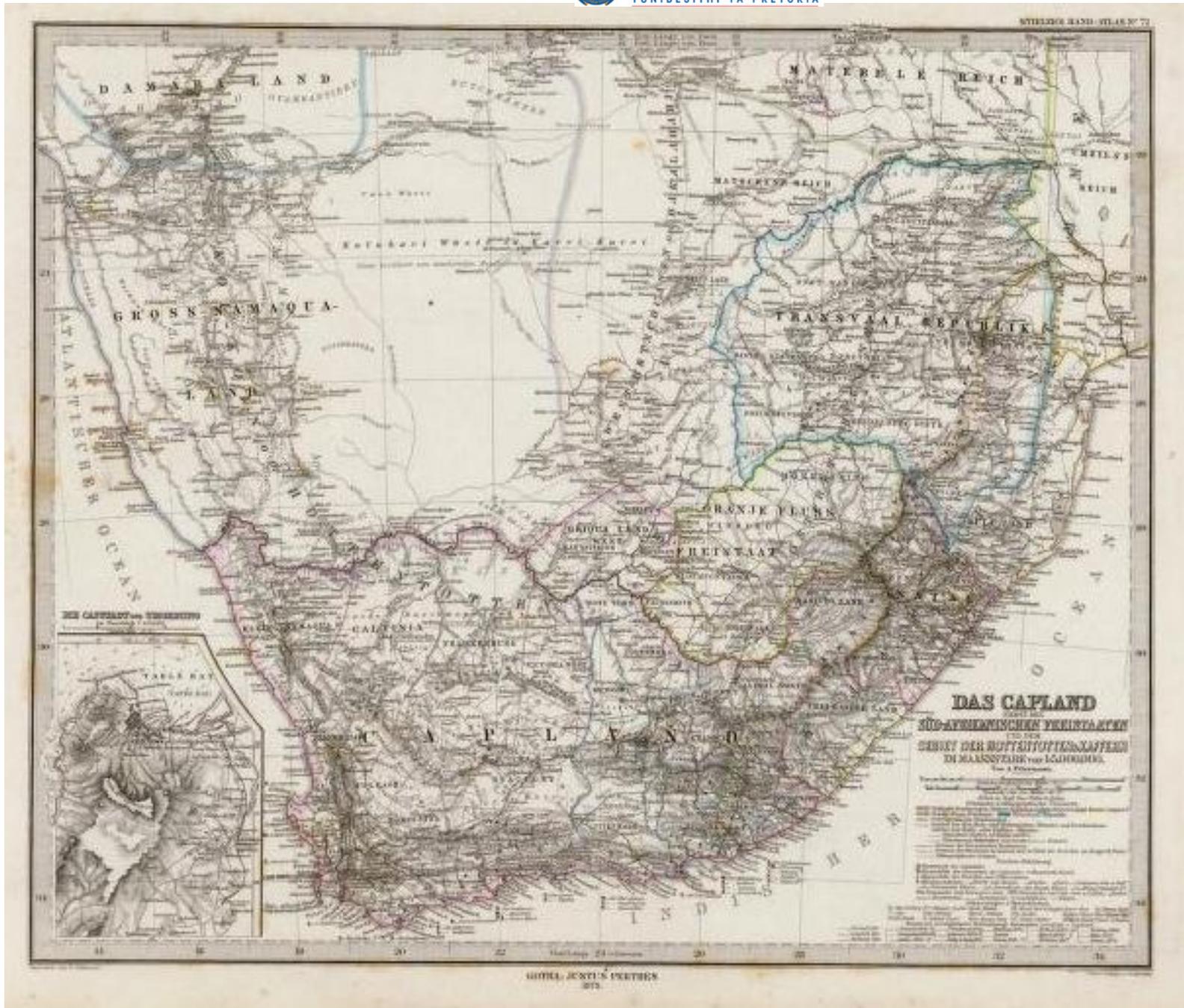
Figure 14: Map of the Cape Colony and Transvaal Republic (Das Capland Nebst Den Sud-Afrikanischen Freistaaten) (1875) Stieler, A. (1875)Hand Atlas Uber Alle Theile Der Erde Und Uber Das Weltgebaude. Herausgegeben Von Adolf Stieler. Gotha Justus Perthes.

2.5 CONCLUSIONS

As illustrated the history of colonial settlement in South Africa is complicated. From the British point of view colonial settlement was not their main objective in securing the Cape Colony. The British wanted to protect the trade route with India, which at the time (before the Suez Canal) went around the Cape.

The colonial expansion in South Africa occurred in a reactionary way, the colony was never intended as a plantation or settlement colony. In an era when agriculture predominated the lack of fertile land and the absence of major rivers penetrating the interior was a major disincentive.

Even though colonial expansion was not the primary aim the British still sought to better control the colony and thus established public administration and massively increased the urban foot print. Although the colonies were overwhelmingly rural in nature the control of the colonies was through urban centres.

This study focuses on the Royal Engineers contribution to the story of South African colonial development. Annexure A, taken from Floyd (1960), tabulates all the towns established in South Africa pre 1900. Note the phenomenal rate of town establishment during the time frame of this study; this was the time in which the vast majority of the South African settlement pattern was determined. Research into the British colonial development of South Africa repeatedly highlighted the involvement of the Royal Engineers. A staggering amount of work was carried out by this institution, especially in the Eastern Cape. In order to fully understand the settlement patterns discussed later it is first necessary to take a step back and to research the Royal Engineers and their training as this research sets the scene for much of the spatial analysis that follows. Chapter Three is devoted to understanding the Royal Engineers and their training as it is demonstrated later that they had a significant impact on British colonial development in the Cape and Natal Colonies.

CHAPTER THREE

THE ROYAL ENGINEERS: BACKGROUND, TRAINING, DUTIES AND DEPLOYMENT

3.1   INTRODUCTION

Prior to any meaningful analysis of the contribution of the Royal Engineers to spatial development in South Africa it is first necessary to study who the Royal Engineers were and assess the training they received. This chapter seeks to explain the broad background history of the Royal Engineers as a unit and then analyses in depth the training they received. The training is inferred from all available literature and records. The aim of this chapter is to understand the academic background of the people who were responsible for much of the spatial development of South Africa.

3.2   BACKGROUND

To quote from the Royal Engineers on their website: "The story of the Corps of Royal Engineers covers over nine hundred years. The Corps can claim direct descent from the military engineers brought to England by William the Conqueror and an unbroken record of service to the Crown since then.

The Corps has no battle honours of its own, its motto *'ubique'* ("everywhere"), awarded by King William IV in 1832, signifying that members of the Corps have taken part in every battle fought by the British Army in all parts of the world. As well as the Royal Engineer's role in war, their skills have been in even greater demand in peace, where Sappers have built the infrastructure of 'civilization', wherever British interests have led." (www.army.mod.uk)

This sweeping historic statement is unpacked in the following historic background analysis – the broad background history has been compiled from secondary sources, most notably Porter (1951:vol. I and II), Watson (1954: vol. III), Baker Brown (1952: vol. IV), Buchanan (1989), Chandler (1995), Finch (1951) and Napier (2005), however the training and skills have all been researched via primary references mostly housed in the British Library, Euston London; Public Records Office, Kew and the Royal Engineers Library, Chatham. Higham (1972) offers a valuable guide to reference sources. In the case of this section the primary references were the original Royal Engineer publications, training manuals, pocket books and general accounts written at the time of the study.[1]

3.2.1 THE NORMANS

For his invasion of Saxon England, William of Normandy brought in Humphrey de Tilleul from France as his Chief Engineer. He is shown in the Bayeux Tapestry building a prefabricated fort, brought in sections from Normandy, on an earthen mound formed by throwing up the soil dug from a ditch surrounding it.   From the outset the Normans used a "shock and awe" strategy to subjugate the native peoples of Britain. "Shock" in the ferocity of their troops and "awe" in the pomp of their lieutenants and in the edifices erected by their engineers (Buchanan, 1989; Chandler, 1995).

Humphrey defected back to Normandy, and was replaced by a young monk from Bec, called Gundulph. The skills needed to build a castle were little different from those required to build an abbey so it was appropriate that a man of the church should be appointed as the principal military engineer. Gundulph built a great edifice to overawe the

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[1] The following original material was studied at the Royal Engineers Library however, they offered no more information pertinent to the training of REs than the training manuals and pocket books and thus are not quoted directly often, they are however of research interest on the RE's more generally: a) RE Unit Diaries (Boer War -16 boxes) (housed in the Annex) these were fascinating accounts of the Boer War but offered little insight into the training nor civil works; b)RE Corps Orders 1813 – 1894 16 vols (355.133) c)Connolly Papers: Captain Connolly's original MS biographical notes on RE officers (8 volumes) (strong room) – these give a fascinating insight into the kind of people involved in the REs and their approach to life – These records would form a fascinating future study if one were to follow the life and career of one of the officers and contrast it with a modern counterpart; d) List of soldiers graves in South Africa 1899 -1902 (92/650) – sobering reading; e) Royal School of Military Engineering order books, letter books and annual reports, 19th – 20th century – after the time frame of the study but still interesting reading.

Saxon citizens of London. It still stands today as the White Tower within the Tower of London. He also strengthened the castle at Rochester (Chandler, 1995).

Appointed Bishop of Rochester, he developed the Saxon church there into a cathedral, the second oldest in England. Gundulph's Tower still stands against the South Trancept. Today the Cathedral is the Church of the Corps and houses many memorials. From the outset therefore there is a very strong link between engineering and the building of Cathedrals, since the stone masons were formed as the guild for those involved in the construction of early churches, it is highly possible that it explains why so many Royal Engineers in South Africa were also Freemasons and in fact why most early British settlements have a Masonic hall. Freemasons have certain sacred forms and shapes, which may have been carried through to the layout of early towns in South Africa.[2]

In feudal times levies (taxes and the claim of artisans and troops for military service from the feudal lord) supplied skilled craftsmen to construct the King's castles. By the time of Richard I (1189-99) the King's Engineers and their skilled levies had gained a reputation of being among the finest castle builders in Christendom, building castles in both England and France. Their renown stemmed from their innovations in design and their craftsmanship; they introduced the concept of building a series of barriers to form a coherent defence system for fortified towns (Finch, 1951).

A hundred years later Edward I (1272-1307) used the construction of strategically sited castles as part of his strategy to conquer and rule Wales. The castles were designed and constructed under the guidance of the King's Engineers, in particular Master James of St George, who enjoyed the title of 'Master of the King's Works in Wales' (Buchanan, 1989; Chandler, 1995; Finch, 1951).

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[2] Freemasons: Most early British colonial towns in South Africa have a Masonic lodge and a very large percentage of military engineers and public administrators are listed as members. It is possible that some of the beliefs and patterns of development are Masonic in origin. Symbolism is central to Freemasonry; symbols such as squares, circles, triangles, arrows and crosses predominate. Regular angles are also revered as true forms. The regular grid layout of the settlements may also have been appropriate to the designers for this reason. It is impossible to prove, however many of the Royal Engineers of this era are listed as Freemasons (Roll of officers in the Corps of the Royal Engineers, manuscript RE Library – see reference list) and Masonic lodges appear in most early British Colonial towns. More detail is available in Verlag (1989); Worrel (2002) and Gnosis (2002). This would be an interesting field of further study.

In medieval times of war King's Engineers were responsible for designing and organising the building of siege engines such as belfries (wooden movable siege towers), catapults (engines worked by a lever and rope to discharge darts, stones etc.) and trebuchets (engines for casting heavy missiles using a sling) (Finch, 1951; Chandler, 1995).

3.2.2 THE BOARD OF ORDNANCE

With the development of cannon the Office of Ordnance - later, the Board of Ordnance - was set up in Gundulph's Tower in London to control the King's cannon, arsenals and fortifications. The first Master of Ordnance was Nicholas Merbury who had been Chief Engineer to Henry V at Agincourt. Until its abolition in 1855, the Board held all Gunners and Engineers on its permanent establishment, in effect a private army. The advent of cannon fire necessitated a fundamental redesign of fortifications and the arrow shaped bastion, introduced in Britain from Europe in the 16th century, became widely accepted as the most effective. The Dutch castle in Cape Town is a good example of the use of this design (Whitworth Porter,1889).
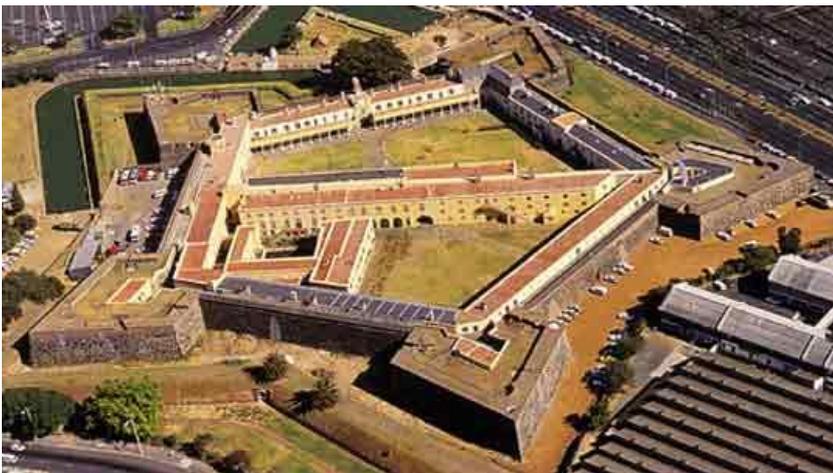
Figure 15: The Castle Cape Town
(**www.south-africa.me.uk**)

Until the establishment of the Royal Military Academy at Woolwich in 1741 young engineers had been trained on the continent and mainly studied fortifications and siege warfare. It was the construction of saps or trenches to enable the enemy fortifications to be assaulted which gave the Corps its nickname of 'Sappers'.

Although the Royal Engineer's roots can be traced to Norman times, it was not until 1716 that a Royal Regiment of Artillery and a corps of Engineers were formed. By 1741 the Royal Military Academy had been founded at Woolwich to train them (Weiler, 1987, p1). The word 'Engineer' derives from an Old French word 'engigneor' meaning one who designs and constructs military engines or works (Oxford English Dictionary). The medieval records often use the word 'ingeniator' to describe the engineers who were not only skilled builders but also served on the King's campaigns for siege engine duties.

On 26 May 1716 a Royal Warrant of George I authorized the Royal Regiment of Artillery and the Corps of Engineers as separate entities. In 1787 they were granted the title Royal and Engineer officers were styled Royal Engineer. Commissions were awarded on merit, unlike the cavalry or infantry, where they were purchased. It was customary at the time for noble families to buy officer ranks for their children, regardless of their talent (or often lack thereof); the Royal Engineers was fundamentally different because it set entrance exams and selected cadets based on their intellectual (rather than family) merits. Engineer and Gunner officers received rigorous professional training at the Royal Military Academy. The Engineer workforce was recruited from civilian tradesman as required for particular campaigns but this system faltered in Gibraltar. After several sieges the Chief Engineer, William Green, persuaded the Ordnance Board in 1772 to allow him to recruit some soldier artificers, skilled tradesman who would wear uniform and be subject to military discipline. The Soldier Artificer Company was so successful during the Great Siege of 1779-1783 that in 1787 a similar unit, the Royal Military Artificers, was formed in England for service worldwide. It is important to distinguish the Royal Engineers from the Artificers (later known as Royal Sappers and Miners), the artisan soldiers who served under the command of engineer officers (Weiler, 1987).

The Peninsular Wars against France showed the need for a trained body of field or combat engineers. In 1812, on the authority of the Duke of Wellington, Major Charles Pasley RE set up a school for this purpose at Chatham. It continues today as the Royal School of Military Engineering (RSME). The first trainees saw action in Spain in 1813 and in 1814. After the Napoleonic Wars, the Royal Engineers and Royal Sappers and Miners were

employed around the world both on active service and in the peaceful development of the Empire. Tasks were many and varied. Campaigns in North and South America, Africa, China, Australia and New Zealand all had Engineer support (Napier, 2005).

Royal Engineers who also carried out the Great Trigonometrical Survey of India and set out the international boundary between Canada and the United States of America. They staffed the Ordnance Survey of Great Britain and Ireland. Throughout the Empire, towns were set out and public buildings, roads, canals, railways and water supply systems were designed and built by the Royal Engineers (Simpson and Sweeny, 1973; Owen, 1992).

The Royal Engineers were also responsible for the introduction of much new technology to the Army - telegraphy during the Crimean War of 1854 - 1856, photography in the Abyssinian Campaign of 1867 and steam road traction in the Ashanti Campaign of 1873 (Weiler, 1987; Napier, 2005).

3.3   THE ENGINEERING PROFESSION

At the beginning of the nineteenth century it was only in France that engineering was clearly and definitely established as a learned profession. It had emerged there during the previous century first in the military and then in civil practice and under state-supported scientific education. Indeed the word 'engineer' had been used from the Middle Ages to denote someone engaged in the design of military engines and defence works. This use of the term persisted to the late eighteenth century and retained a military connotation in France and America well into the nineteenth. The title 'civil engineer' developed to distinguish non-military engineers. In Britain civil engineering was a skilled craft not an intellectual pursuit and was the work of artisans. John Smeaton, who combined practical skill with scientific interests, is said to have been the person through whom the profession of civil engineering emerged in Britain in the late eighteenth century. The profession was still in its infancy with the establishment of the Institute of Civil Engineers in 1818 (Weiler, 1987).

Notwithstanding the establishment of an institute, both civil engineers and architects were decidedly below military engineers in social status until the latter part of the century. In an attempt to increase their standing in society both adopted the 'gentleman' behaviour. This is interesting if one considers the social origins of the professions around this time; Weiler's analysis (Weiler, 1987, p.6) suggests that in the Institute of Civil Engineers 14 percent were upper class, 49 percent middle class and 23 percent lower middle class; for architects only 3 percent were upper class, 69 percent middle class and 17 percent lower middle class. This contrasted strongly with the military. Although the Royal Engineers were unique in the use of entrance examinations rather than purchasing commissions, they still operated the military system of reserving officer rank for those of appropriate class.

Given the dates of emergence of the civil engineering and architecture professions in the early nineteenth century neither profession was in a position to influence early colonial settlements in any significant way. Therefore there was a very heavy reliance on military officers. Most colonial civil governments also recruited retired Royal Engineers and hence the influence remained very strong throughout the nineteenth century.

3.4 THE TRAINING OF THE ROYAL ENGINEERS

This study has stated in a number of places that the Royal Engineers had a significant impact on the colonial development of South Africa; before illustrating this with the case study of the Eastern Cape, this section seeks to better understand the Royal Engineers. This chapter focuses on the training of the Royal Engineers in order to understand their background and knowledge prior to their deployment to South Africa. The training will be theoretically analysed after the case study in order to place and interrogate their training and approach within the framework of modern planning theory and education.

The formal training of an engineer officer in the nineteenth century was a two-stage process. A cadet would first enter the Military Academy at Woolwich where he studied for up to five years. Upon graduation he would receive his first commission as a junior engineer officer and be sent to Chatham (founded 1812, School of Military Engineering

after 1869) where he completed his training in a course lasting a year at the beginning of the century but later extended to eighteen months and then two years. The emphasis at the former was on theoretical knowledge and the latter on practical skill. Engineer officers in the service of the East India Company also had the benefit of further formal training at the Royal Engineer headquarters in India accompanied by a formal apprenticeship (Weiler, 1987; RE Corps Orders 1813-1894, RE Library 355.133; Connolly Papers, RE Library; Pasley,1822-1866).

The Royal Military Academy at Woolwich was for nearly two hundred years the cadet training institution for the majority of Royal Engineers and Royal Artillery. It was essentially a militarised public school until reforms occurred in the late nineteenth century. During the eighteenth and early nineteenth centuries recruits were as young as thirteen or fourteen years of age, but from 1835 admission age was fixed at not under fifteen or over seventeen. Admission was by nomination by the Master General of the Ordnance (until 1857) and subject to an entrance examination which tested proficiency in writing English, maths, French, geography, history and the elements of drawing. Recruits had therefore to have received suitable primary and some secondary education in schools or through private tuition before entry. An analysis of the early educational background of some Royal Engineers (Weiler, 1987, p.8) revealed that the vast majority had attended public school, college, an academy or other private school.

As previously stated the course of study was in two parts, namely theoretical and practical. Below is a synopsis of the entrance examinations, the courses offered and a few pertinent specialised courses which give a feel for the type and extent of the training:

3.4.1 ENTRANCE EXAMINATIONS

Until 1855 the Master-General of Ordnance, under which the Royal Regiment of Artillery and the Corps of Royal Engineers fell, could select cadets for entry into the Academy at Woolwich. From 1855, however, all cadets were required to go through a course of instruction at the Royal Military academy, for which competitive entrance examinations were held in London twice a year. All cadets were between 16 and 19 years of age and had to sit examinations in: (Source: Head, 1869, p.4-5)

- Mathematics: Arithmetic, algebra, euclid, plane trigonometry, spiracle trigonometry, elements of co-ordinate geometry, differential and integral calculus, statistics, dynamics and hydrostatics.

- English language and composition

- History of England, its Dependencies and colonies.

- Geography

- Classics: Latin language and Greek language

- French language

- German language

- Hindustani language

- Experimental Sciences: Chemistry, heat, electricity, including magnetism

- Natural Sciences: Mineralogy and geology

- Drawing: Free-hand drawing of machinery, architectural, topographical, landscape or figure subjects.

Bearing in mind this was the admissions examination the academic standards were high. Forty entrants were accepted from each exam.

3.4.2   THEORETICAL TRAINING

(This information is extracted from Guggisberg, 1900, pp 28-29)

The four year theoretical training course was divided (in 1772) into two academies, the upper and lower and both of these were divided into four distinct classes. The qualification for each course was laid down and a cadet's promotion from the lower to the upper academy was conditional on his passing an examination held in the presence of an inspector.

3.4.2.1   Lower Academy

First Class

Mathematics: The elements of arithmetic

Classics: Latin grammar and cordory.

Drawing: Simple and easy drawings in black-lead

French: Boyer's grammar, and *Abrégé de L'Histoire de L'Angleterre*, *par demande et réponse*.

Second Class

Mathematics: The elements of arithmetic applied to practice

Classics: Phædrus, Erasmus, Ovid's *Epistles*, and Nepos.

Drawing: Easy but instructive drawings in indian ink

French: Louis XIV par Voltaire; *Revolutions de Portugal*, par Vertet.

Third Class

Mathematics: Vulgar and decimal fractions, with extraction of square and cube roots.

Classics: Ovid's Metamorphoses and Cæsar's Commentaries, Virgil and Sallust

Drawing: Landscapes and military embellishments

French: *Mémoires du Marquis de Fenchières*, et *Gil Blas*

Fourth Class

Mathematics: The principles of algebra, as far as quadratic equations

Classics: Horace and Cicero

Drawings: Theory and practice of perspective

French: *Travels of Cyrus and Belisarius*, by Marmontel to be translated into French.

3.4.2.2   Upper Academy

First Class

Fortification: The elements of fortification regularly explained

Mathematics: The elements of euclid

Drawing Landscapes in indian ink

Second Class

Fortification: The attack and defence of fortifications, practical geometry, and the art of surveying

Mathematics: Trigonometry applied to fortification, and the mensuration of superficies and solids

Drawing: Large and more difficult landscapes, coloured.

Third Class

Artillery: The theory of artillery, with the construction of its carriages and the principles on which all pieces of ordinance are constructed according to the tables used in the Office of Ordinance

Mathematics: Conic sections. Mechanics applied to the raising and transporting heavy bodies, together with the use of the lever, pulley, wheel, wedge and screw, etc.

Drawing: Landscapes, coloured from nature

Fourth Class

Fortifications: The theory of mining, together with the use and construction of fougasses

Mathematics: The laws of motion and resistance, projectiles and fluxions

Drawing: Perspective applied to buildings, fortifications, etc.

Lieutenant Colonel Buchanan-Dunlop further elaborated these educational requirements in 1892 when he listed the content of the key courses of instruction: (Buchanan-Dunlop, 1892, p 33) See details of course content in table below:

FORTIFICATION.

1. The definitions and explanations of the works of both Regular and Irregular Fortification, correctly wrote and understood.
2. The construction of the 1st, 2nd and 3rd Systems of M. De Vauban, described on paper.
3. The same of M. Coehorn's System.
4. The same of M. de Cormontaigne's System.
5. Irregular Fortification described on paper.
6. The Attack and Defence of Fortified Places.
7. The Art of Mining.
8. The Elements of Field Fortification.
9. How to Trace on the Ground: Permanent end Field Fortification, with and without Mathematical Instruments.
10. To take Plans with and without Instruments.
11. Theory and Practice of Levelling.
12. How to estimate the Works of a Fortification, viz. : Revetments, Ramparts, Ditches, Batardeaux, Powder Magazines, Turned and Groined Arches.
13. To produce a fair copy of the book containing Calculations, Plans, and Sections relative to the Estimates.
14. To produce a complete Course of the above, neatly drawn, containing the Plans, Sections, and Geometrical Elevations, composed of 68 plates.
15. To produce the Field Book containing the Practice on the Ground, the Tracing, and Works of Permanent and Field Fortification, Surveying, and Levelling.

Printed and Manuscript Book3 made use of in the above Course.

- The Course of Fortification from M. Landmann, comprised in 68 plates.
- The Estimates from M. Landmann's Manuscripts.
- Surveying and Tracing Outworks on the Ground, from M. Laudmann's Manuscripts.
- The Attack and Defence of Fortified Places, by Mr. Muller.
- Pleydell's Field Fortification.

ARTILLERY.

1. The definitions and explanations of the several parts of Artillery ; also tables containing the general dimensions and construction of Guns and Mortars, correctly wrote and understood.
2. The general construction of Brass and Iron Guns; Sea and Land Mortars and Howitzers, described on paper.
3. The general construction of Ship and Garrison Carriages, Travelling Carriages, Land and Sea Mortar Beds, described as above.
4. The same of the Iron Work for Ship, Garrison, and Travelling Carriages.
5. The different kinds of Wood made use of for the several sorts of Gun Carriages and Mortar Beds.
6. How to find the Weight of Guns. Mortars, and Howitzers.
7. To find the Quantity of Powder which a Chamber contains.
8. To find the Diameter of Shot and Bores of Guns.
9. To find the Weight of Shot and Shells.
10. To find the Number of Shot and Shells contained in a Pile.
11. To ascertain the Number of Horses necessary to draw the different natures of Ordnance.
12. The Number of Men required to construct a Battery in one night.
13. To produce a Complete Course of the above neatly drawn, containing the Plans, Sections, and Geometrical Elevations, composed of 57 Plates.

Printed and Manuscript Books made use of in the above Course.
- The Course of Artillery from M. Lendmann, in 57 Plates.
- The Construction of Artillery from Major Bloomfield, Inspector, of the Royal Artillery.
- Muller's Artillery.

MATHEMATICS

1. Arithmetic in all its parts.
2. Logarithms: Their nature, use, and construction.
3. Geometry : The Theory from Euclid's Elements ; four first books.
4. Algebra : From the first Elements to the Solution of Cubic and Higher Equations.
5. Trigonometry with Heights and Distances.
6. Mesuration : In Superficies and Solids ; in Theory and Practice, with Surveying and Measuring of Artifice& Works, Buildings, Timber, &c.
7. Conic Sections.
8. Mechanics : Including Motions equable and variable ; Forces constant, variable, and percussive ; Gravity, Sound, and Distances ; Inclined Planes ; Projectiles ; Practical Gunnery ; Pendulums ; Centres of Gravity ; Percussion, Oscillation, and Gyration ; Ballistic Pendulum.
9. Fluxions.
10. Hydrostatics and Hydraulics : Including the pressure, motion, and issuing of Fluids ; the filling and exhausting of Vessels, &c. ; Specific Gravities of Bodies ; Syphons ; Pumps ; Diving Bells.
11. Pneumatics: Including the nature, properties, and effects of the Air and the atmosphere ; with the Air Pumps, Syringes, Condensing Engine, Thermometer, Barometer ; with the method of measuring altitudes by the Barometer and Thermometer.
12. Practical Exercises : Concerning these and various other branches ; as the weight and dimensions and piling of Shot and Shells ; bulk or capacities of various vessels or figures to contain certain weights of Powder ; distances by the motion of Sound ; concerning the effects of variable and constant forces.
13. Resistance of Fluids, as Water, Air, &c., with their action on bodies in motion.
14. Gunnery : Robin's new principles of Gunnery ; Experiments, particularly with the Ballistic Pendulum.

Printed and Manuscript .Books made use of in the above Course of Mathematics.

- Books.-Dr. Hutton's Arithmetic : Logarithms, Mensuration, Conic Sections, and select exercises; Tracts.-Mr. Robin's Gunnery, the 1st vol. of his Works ; Professor Simpson's (of Glasgow) Elements of Algebra ; Rossignal's Geometry ; Bonnycastle's Algebra ; Simpson's Algebra for application to Geometry.
- Manuscripts.-Dr. Hutton's Fluxions, Mechanics, Hydrostatics, Pneumatics.
- The above Course of Mathematics is correctly wrote down by the Gentlemen Cadets in their books, with Drawings applicable to the several parts of it.

> *DRAWING.*
>
> With the 2nd Drawing-Master.
> - Figure Drawing : The several parts of the Human Figure, from Drawings by the Master.
> - Perspective : In Theory and Practice : lst, Theory of Perspective; 2nd Putting Planes in Perspective ; 3rd, Elevations ; 4th, Measures and Proportions of Figures at different distances ; 5th, Lights and Shadows, Thus far with the Jesuit's Perspective.
>
> With the 1st Drawing-Master.
> - With Mr. P. Sandby : Putting Perspective in Practice by copying from Drawings, which qualifies them for Drawing from nature; teaches them the effect of Light and Shade ; and makes them acquainted also with Aerial Perspective. Then to proceed to take views about Woolwich end other places ; which teaches them at the same time to break ground, and forms the eye to the knowledge of it. (Buchanan-Dunlop, 1892, p33)

It is interesting to note that the course is very scientific and although it delves into languages and classics it does not cover any of the humanities. The process of engineering was about understanding the requirements and the terrain and solving problems. Nothing in their training would lead the Royal Engineers to consider societal forces, communities, customs, nor cultures. The course also illustrates that the officers were training to be gentlemen - well read and with knowledge of the classics and classical languages.

With respect to subjects relevant to the technology of building, the theoretical course was heavy on mathematics and physics including arithmetic, algebra, logarithms, geometry, hydrodynamics and pneumatics. The method of teaching was to divide the cadets into classes or levels of competence and provide lectures and examinations both oral and written given by professors (Weiler, 1987).

The theoretical course also included the study of fortification, which comprised practical geometry, perspective in theory and practice and measured drawing. Cadets had to copy

drawings, take views around Woolwich and other places and prepare plans, sections and elevations of an ordinary simple building, with conventional colouring, to show the different building materials and with technical names of different parts printed. The practical course included lectures in chemistry, geology and metallurgy intended to equip engineer and artillery officers with useful knowledge on materials and structures or architecture (Weiler, 1987).

A major benefit of the engineer officer's training was the exposure to some of the finest mathematicians and scientists of the time in Britain. Among these were Charles Hutton (1737-1823), Olinthus Gilbert Gregory (1774-1841), Michael Faraday (1791-1867), Sir Frederick Able (1827-1902) and Peter Barlow (1776-1862). Hutton was appointed Professor of Mathematics in 1773 and remained in the position until 1807. He was author of several publications including <u>A course of Mathematics for the use of Cadets in the Royal Military Academy</u> (1709-1801) which ran through several editions. On Hutton's recommendation, Gregory became mathematics master in 1802 and was appointed Professor of Mathematics in 1807, a position which he held until 1838. Gregory also authored several publications, most notably <u>A Treatise on Mechanics</u> (1806). Faraday, who is best known for his work in electricity and his professorship at the Royal Institution (1833-1862), lectured at the Academy in chemistry from the 1820's to 1852. He was succeeded in the post by Able, chemist to the War Office, another distinguished Victorian man of science. Barlow was appointed in 1801 as an additional mathematics master under Hutton. His career at the Academy lasted until 1847, making him the longest serving member of the educational staff. Barlow was an early member of the Institute of Civil Engineers (1820). Most influential was his publication in 1817 of an <u>Essay on the Strength and Stress of Timber</u>, which went through five editions.

In glancing through the lists of the staff, one can not help being struck by the very long time that some of the instructors filled their billets. Professor Barlow heads the list with forty-one years service, although he is run very close for first honours by the thirty-nine years of Doctor Bonnycastle (mathematics) and thirty-eight years of Mons. Landmann (fortifications). Mons. Landmann was a French gentleman of great ability. Previous to his appointment to the Academy, he had held the position of professor of fortification and

artillery at the *École Royale Militaire* in Paris (Guggisberg, 1900, p 23-24). The Royal Engineer cadets thus, not only received extensive training, but they were also trained by some of the best minds of the time. This was quality education meant to fully equip the army with highly skilled and very versatile elite.

3.4.3 PERTINENT TRAINING MANUALS

A number of training manuals and pocket books from the era remain in the Royal Engineer's Library at Chatham and in the British Library collections; these cover a range of courses and give detailed content. The pocket books are fascinating as they are specifically designed to be carried around in the pockets of Royal Engineers when on tours of duties. The content of a pocket book is brief and explicit. They contain detailed, dimensioned drawings and plans of items discussed. The various pocket books cover both general topics as well as specific tasks, examples are the Regulations for Encampments (1853) later revised as Encampments Made Easy (1908) and the Pioneer Pocket Book: India (1922).

A couple of the training manuals are discussed in the table below to highlight the training pertinent to the founding and laying out of colonies, as well as the skills and tools used by the Royal Engineers. These pocket books were found scattered between the Military Museum library, Saxonwold, Johannesburg, The Public Records Office, the British Library and the Royal Engineers' Library.

Training Manuals
Course of Instruction- Practical Geometry and Principles of Plan Drawing (Pasley, 1814) From studying the contents of this manual it offered an intensive course, based on a former geometry training, in plan drawing. It covers solids, superficies surfaces (e.g. surface of a brick (Pasley, 1814, p 4)), plan superficies, curved superficies, line point, right line, curved line, mixed line, parallels, tangents, angles, right angle, perpendicular, oblique

lines, acute angles, triangles, all major shapes e.g. rhomboid, trapezium, etc. cylinders, pyramid etc. The manual goes on to list the tools used as a pair of compasses, drawing pen, ink pot, flat ruler (1 foot long) and a wooden right angle length 6 inches and height 6 inches, slate and pencils. From this it is possible to summarise that the Royal Engineer were trained to draw with a high degree of accuracy and the minimum of tools, a skill necessary when posted to remote locations.

Course of Practical Surveying and Astronomy (Sandham, 1855, p. 60) The section begins by stating it is a course of survey instruction "…in which junior Officers of the Royal and Honourable East India Company's Engineers are taught and practised at the Royal Engineer Establishment is intended to be such as shall fully qualify them for survey operations, - either for general purposes, such as occasion may demand, whether on Home Service or in the Colonies, but which may be considered as perhaps more especially applicable to the latter, - or for military purposes, as Reconnaissance, or sketches of Positions, etc. on active service in the field, - or for special purposes, as the purchase and sale of lands, **the framing of Plans for the purpose of laying out Towns or Fortifications** (in which the practice of contouring forms an essential part), -or finally, for taking part in the operations of the great national survey, under the Ordinance…"(Sandham, 1855, p.60) The training covered General Survey, The Selection and Measurement of a Base Line, Triangulation, Traversing, Plotting of Detail, Drawing from Models, Levelling, Special Survey, Contouring, Military Reconnaissance, Barometrical Measurements (to check heights trigonometrically obtained), Practical Astronomy (specifically to find time, latitude and Longitude, direction of the Meridian and the variation of the needle), Meteorological observations, construction and adjustment of instruments. The manual specifically mentions training in the use of the Gunter's Chain, 5 inch Theodolite, Spirit Level, barometer, as well as several astronomical and meteorological instruments.

Course of Architecture (Sandham, 1855, p.58) Each cadet was given a series of plates in order to familiarise him with the various properties and proportions, as well as the application of the materials used in the buildings. It was expected that by careful examination of the plates the officers would acquire a degree of useful information which would qualify them for ordinary duties of the Corps, in designing buildings for all military purposes. The officers also attended courses on properties of materials, on brick making and lime burning, on the conversion of timber, and on roofing and foundations. They were also trained to measure and make abstracts and bills of quantities. During the time they were engaged on the course they were also required to read some of the best authors on Architectural Construction such as Tredgold, Barlow, Nicholson, etc.

Architectural Course- 1867 (Wray, 1867, pp.2-3) Further detail of the Architecture training is gained from the 1867 Synopsis of Courses of Instruction.

The course is divided into 5 parts.

- PART 1 THEORY OF CONSTRUCTION.

    This part consists of a series of examples in construction, about 50 in number (Appendix: A.), which will be varied from time to time. They are drawn up with a special view to the application of the mathematical knowledge already possessed by the Officers to some of the cases, which they are likely to have to deal with in practice.

    References are given in the margin of the printed-paper of examples to some of the many books in which the information necessary for their solution can be found.

    The Instructing Officer will explain every morning, except Saturday, as many of the examples as he considers the Officers

can work during the remainder of the day.

The object of these short explanations is two fold :-1st. To explain the principles on which the particular cases or similar cases are to be dealt with. 2nd. To impart in a condensed form some of the varied information which is familiar to all Engineers of experience, but which an Engineer at the commencement of his career, often has a difficulty in finding. The Officers will take notes of these explanations and write each morning's notes at the head of the fair copy of the examples to which they refer.

The examples explained on each day are to be worked out on that day in the fullest manner; the reasoning of each step is to be stated ; and all rough calculations are to be left on the paper, so as to lessen as much as possible the labour of examination. They are to be brought to the Instructing Officer the following morning, and, after examination, are to be written out fair on ruled fools- cap, quarter margin, on the right hand sheet, with explanatory diagrams to a large scale, where necessary, on the left hand sheet.

The weights, strength of materials, and other information will be found in the printed tables.

This part of the course occupies about 5 weeks, and while it continues leave will be granted on Saturdays and Sundays only.

- PART II. MATERIALS.

The object of this part of the course is to give the Officers some sort of guide in judging of the quality of the principal materials which they will have to use, as well as to afford them Information as to the particular material most suitable for a building or engineering work.

It may be subdivided into 3 parts, viz.,-Lectures given by Professors in the Lecture Theatre ; Lectures given by the Instructing Officer ; and visits made by the officers to Lime Works,

Cement Works, Brickfields, &c.

The lectures in the Lecture Theatre are delivered at the periods most convenient to the lecturer, but the notes taken by the Officers form a part of this course, and will be bound up with the rest of the papers.

The notes of the lectures delivered by the Instructing Officer are to be written out fair, in accordance with the instructions given further on, (Tour Reports and Lectures) and brought to the Instructing Officer on the following morning.

A printed paper detailing the particular points to which officers visiting manufacturing works are to direct their attention will be given to each officer, and a report is to be sent in as soon as possible after each visit to the Instructing officer.

Sketches-which should be dimensioned-to illustrate the lectures and visits, are to be as numerous and complete as possible.

This part of the course, occupies about 3 weeks, inclusive of the time required to visit the works referred to.

The officers will also be instructed after they leave the Architectural Course, in the method of testing the quality of some of the materials by chemical analysis, for which a fortnight is allowed.

- PART III. PRACTICE OF CONSTRUCTION.

Subdivision 1: Military Buildings.

The notes of this part are printed under the title, of, '(Notes on Military Building" by Colonel Collinson, R.E., and a copy is issue to each officer. They are to be carefully read. The lithographed, drawings (Appendix B) are intended to illustrate these notes, and the officers will colour such parts of them as are coloured in the patterns books deposited in the Hall of Study. This colouring is to be done from the original copies, and not from- the pattern books

or drawings of other officers.

There are a few corrections and additions to be made on these lithographs, which are indicated by a red cross on the lithographs in the pattern book.

It is to be understood that these drawings are not intended to be models of their kind, but are merely good examples which may be of, use to Officers in designing buildings or works of a similar character.

Appendix C is a list of photo-lithographs, which afford useful information as to dimensions required in designing different buildings.

Subdivision 2: Ordinary Buildings.

The notes of this part of the course are printed under the title "Notes on the practice of Building," by Colonel Collinson, R.E., and are issued to each Officer. They are a collection of short practical memoranda, extracted by Colonel Collinson, R.E., from good authorities on the application of theory to practice in construction, and on practical details in construction. They are to be carefully read.

The 'copper-plates (Appendix D) issued to each officer contain most of the details of the construction of an ordinary building. Some few details, which it appeared desirable to add are to be supplied by the sketches detailed in Appendix E.

Portions of the copper-plates (Appendix 0.) are to be coloured by the Officers from pattern drawings deposited in the Hall of Study.

The sketches (Appendix E.) are to be drawn and coloured (to scale or freehand as the Officer prefers; but in either case with dimensions written b) from the originals deposited in the Hall of Study. c) All the drawings in this part are, in order to prevent loss of the originals, to be executed in the Hall of Study.

Two weeks are allowed for these drawings, in all of which the

colouring should be of a decided character.

Subdivision 3: Workshops.

Each 0fficer will in turn be attached to the Officer in charge of the Workshops for a short time, probably a fortnight, with the object of giving him an opportunity of becoming acquainted with the books and forms in ordinary use in Royal Engineer Offices, as well as of seeing some of the ordinary building work in course of preparation.

- PART IV. VALUATION AND MEASUREMENT OF WORK.

This part will commence with one or two lectures on the different systems of carrying out work-by day work, piecework, or contract-of which the officers will take notes.

They will ultimately be printed.

A printed form of estimate for a building, of which a model has been made, will then be issued to each Officer. In this form the different kinds of work required is filled in, but the Officers will write in the quantities. The Instructing officer will go through the estimate with the officers, explaining by means of models and sketches the different kinds of work, and the mode of measuring them, and each officer will fill in the dimensions as he proceeds. These dimensions need not be squared out, but the method of completing the estimate will be explained so as to enable each officer to take away with him a pattern estimate for his future guidance.

The Officers will afterwards measure some part of one of the buildings in course of execution in the district, squaring out the dimensions and abstracting the quantities preparatory to bringing the work into bill. Two weeks will probably be sufficient for this part of the course.

- PART IV. DESIGN.

    The design is intended to afford to each officer an opportunity of applying the knowledge he may have acquired on the course to some case which he may actually hereafter have to deal with. About 6 weeks are available for this part of the-course, and the conditions under which the design is to be made will be furnished to each officer.

    As a rule, the design will consist of a general plan and report, with some part worked out in detail; this part being specified for and estimated.

    The drawings are to be prepared in accordance with the instructions deposited in the Hall of Study. (Wray, 1867, pp.2-3)

Notes on Military Buildings (Collinson, 1865) This manual covered detailed aspects of design for the following Barracks (infantry, cavalry, artillery), Cookhouse, Latrine and Drainage, Wash-house, Hospital, Commissariat Department, Military Store, Barrack Department, Educational Buildings, Recreational Buildings, Revetments, Casements, etc. What is particularly interesting in this book are the numerous drawings of platoons, wagon trains, etc with dimensions. Examples provide very practical information which could easily be translated into street widths, parade sizes etc. (Figures 118 -123)

Figure 16: Example of Royal Engineer's Pocket book (actual size)
(Regulations for Encampments, 1853:105)
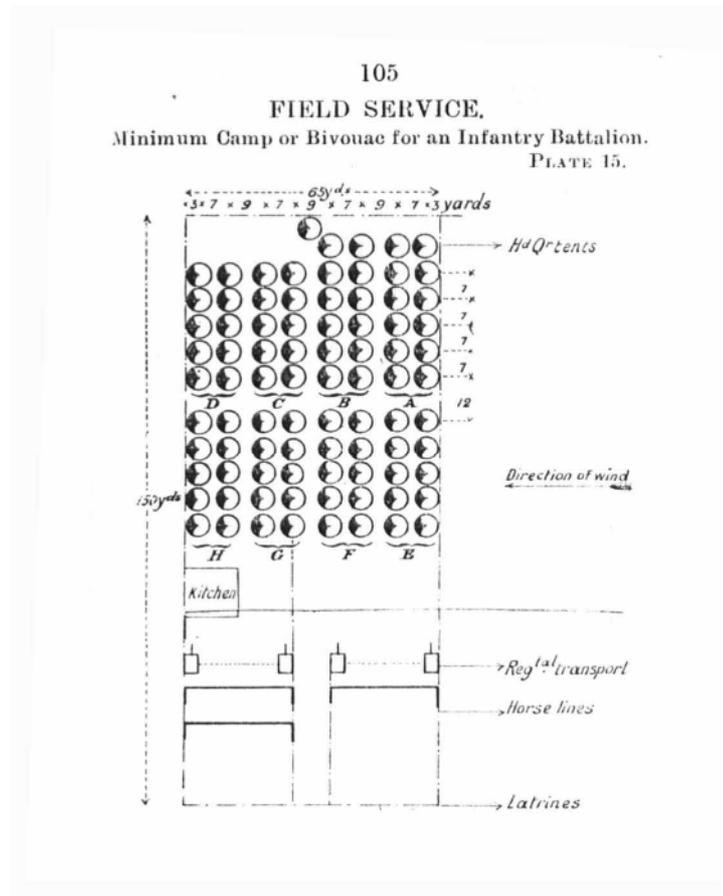
Figures 17 – 21 Examples from Royal Engineers Pocket Books (all actual size)

(Regulations for Encampments, 1853)

MILITARY TRAIN (BAGGAGE WAGON.)

REAR VIEW
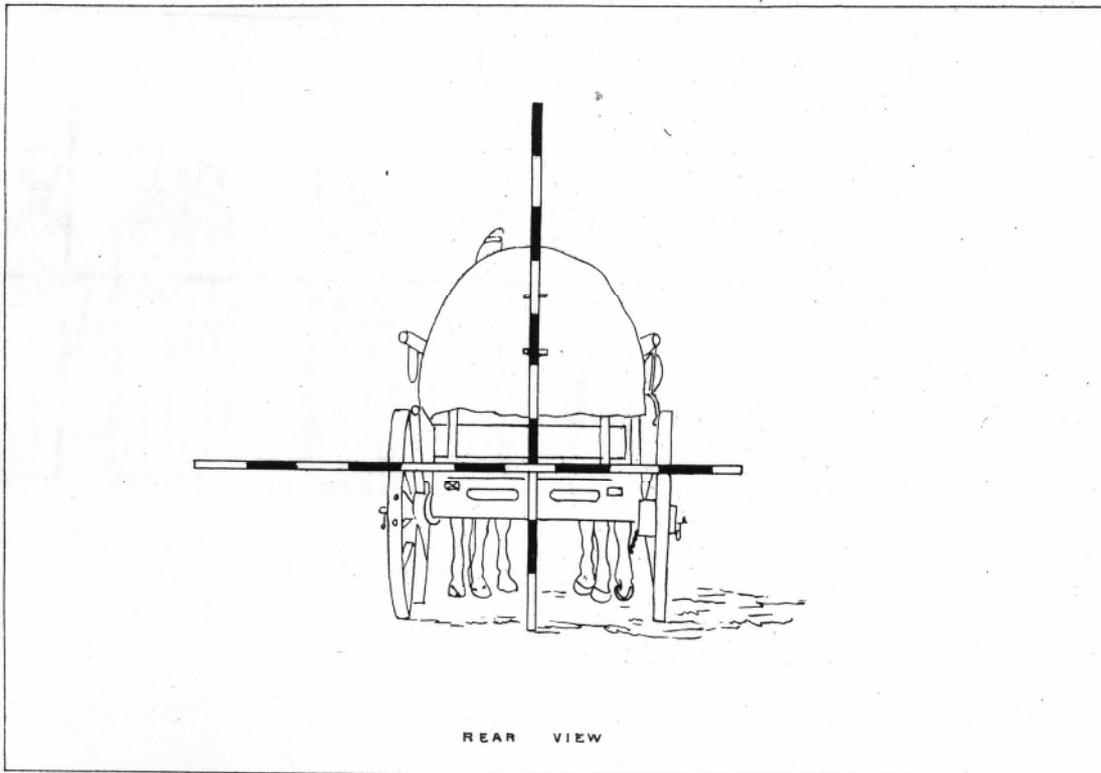
THE RODS ARE DIVIDED INTO FEET.

MEN IN POSITION
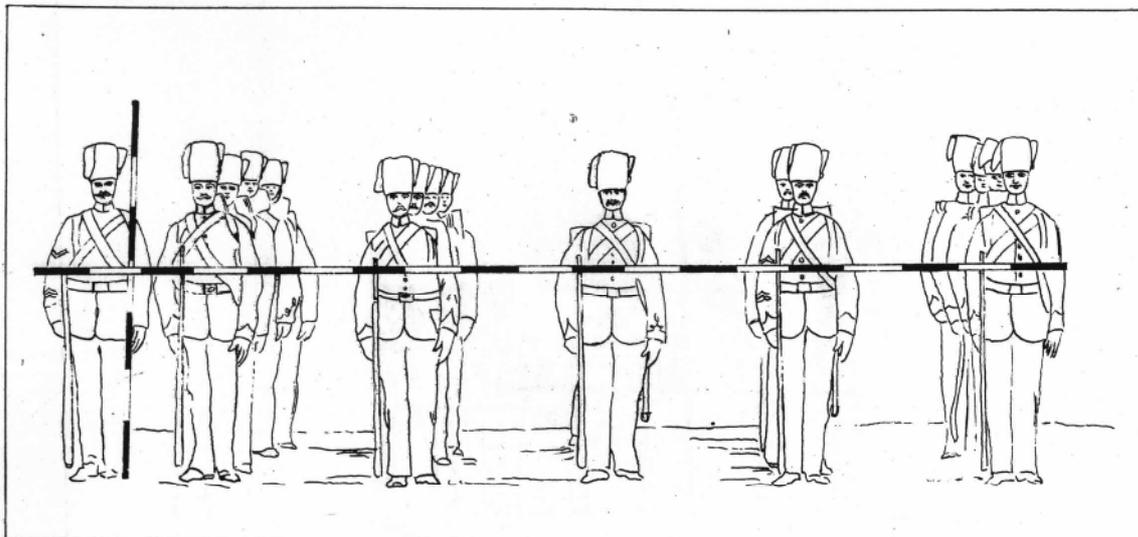
STANDING, FOUR DEEP, MARCHING ORDER.
THE RODS ARE DIVIDED INTO FEET.

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FIELD SERVICE. PLATE 14.

Minimum Camp or Bivouac for [a Battery, Ammunition Column
or other unit having many Vehicles.
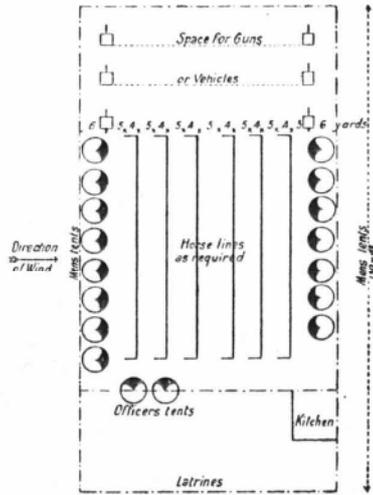
NOTES.—1. The minimum frontage allowed depends on the
number of horse lines necessary. For units having 2 horse lines
allow 35 yards, and add 9 yards for each additional horse line.

2. A brigade R.A., including its Ammunition Column, will
usually camp or bivouac in the same way as a Cavalry Regiment.

3. When plenty of ground is available, an additional interval
of four yards may be allowed in rear of each row of heel pegs,
to allow the horses to be swung round on their heel pegs on to
fresh ground.

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FIELD SERVICE.

Minimum Camp or Bivouac for a Cavalry Regiment.

PLATE 13.
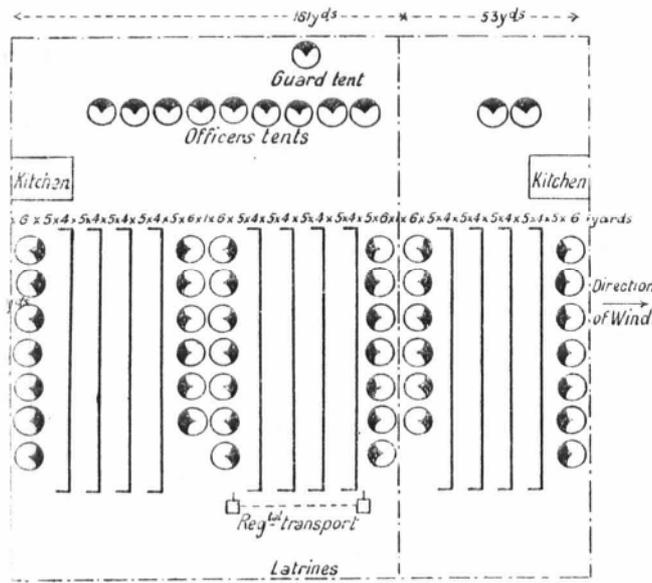
1 Squadron.

NOTE.—Mounted Infantry camp and bivouac in exactly the same
way as Cavalry.
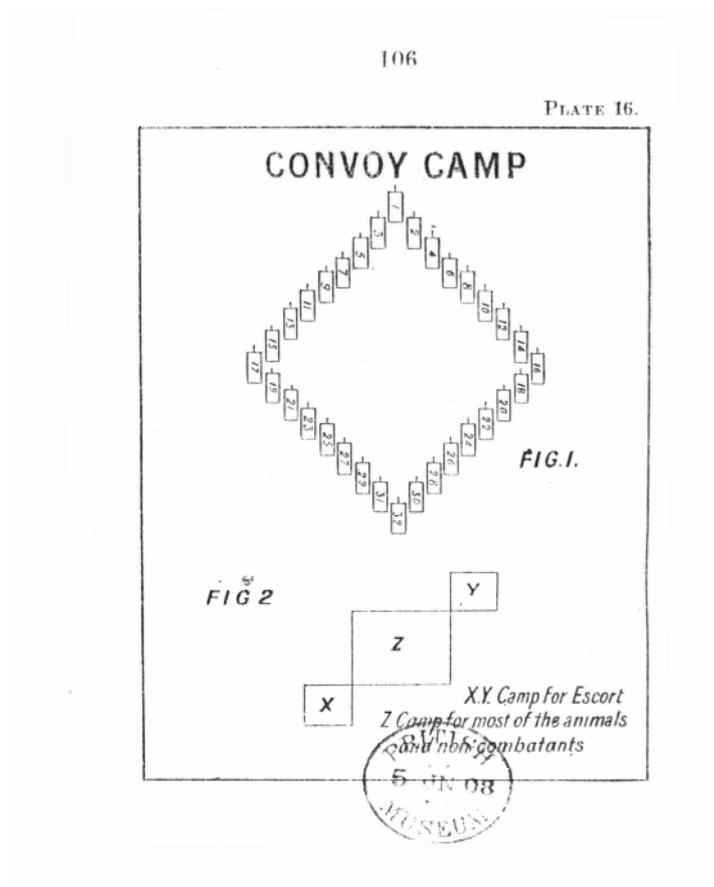
(Regulations for Encampments, 1853)

3.4.4 POCKET BOOKS

Numerous pocket books are available in the Royal Engineer's Library at Chatham as well as in the British library, which are also of relevance to this study, in that they are comprehensive and explicit manuals in the field. A few examples of those in the British Library are:

The Royal Engineers Pocket Book, 1936. [With maps.] ENGLAND. Departments of State and Official Bodies. Army. Royal Engineers. London, 1936. 8o.
The Royal Engineers Field-Service Pocket-Book. By Major G. K. Scott-Moncrieff. ENGLAND. Departments of State and Official Bodies. Army. Royal Engineers

pp. vi. 367. Royal Engineer Institute: Chatham, 1894. obl. 12o.
Royal Engineers Supplementary Pocket Book. ENGLAND. Departments of State and Official Bodies. Army. Royal Engineers [London,] 1948- . 8o.
Abstracts from the meteorological observations taken at the stations of the Royal Engineers in the year 1853-4. with a brief discussion of some of the results and notes on meteorological subjects. edited by H. James 1855
Notes for officers proceeding to India. Compiled by A.T. Moore Moore. A. T. 1912
Papers on subjects connected with the duties of the Corps of Royal Engineers 1837-1876
Abstracts from the meteorological observations taken in the years 1860-61, at the Royal Engineer Office, New Westminster, British Columbia. edited by Sir Henry James 1862

Several of these warrant specific description:

- Regulations for Encampments (1853) This pocket sized book spells out the principles and gives practical examples of how to layout encampments. It is however, very pragmatic as it states: "Although troops must be guided in the position and form of their encampments by the shape and nature of the ground, the proximity of wood and water, and in actual warfare by the variety of considerations

which defy all rules, it is nevertheless desirable that certain definite forms of encampments should be established by authority, to be departed from in all cases whenever circumstances shall make it desirable to do so for the convenience and efficiency of the troops" (Regulations for Encampments, 1853, p.1). The pocket book goes on to give four broad principles to govern the disposition of all camps of whatever form, these are a) the front of the camp be made to correspond in extent with the front occupied by the troops in line, b)that means of passing freely through the encampment with a large front be maintained, c)that tents be disposed with a view to the greatest amount of order, cleanliness, ventilation and salubrity, and d)that the camp be as compactly arranged as the above considerations permit (Regulations for Encampments, 1853, p.2).

- <u>Encampments Made Easy</u> (1908) This pocket sized book (actual size 8.5cm x 12cm), although published after the time frame of this study is interesting as it represents the information learnt in the establishment of encampments over the period between the two books and hence over the period of this study. The most striking advance is the incorporation of public health and concerns over drinking water, sanitation and ventilation. This is not surprising if one considers the lessons learnt in public health and hygiene over the Crimean War and the disastrous concentration camps run by the military during the Anglo Boer War. Selected sections of this book are highlighted as they spell out the laying out of camps in technical terms as well as giving the rationale behind instructions. This is of relevance to the study as it is possible that many of these principles could have been applied to town layout. The points below are laid out in the order in which they appear in the book and under the headings given in the book, the layout of the book and the headings used make the book very easy to use as a quick reference work.

- <u>Choice of Ground</u> In the presence of an enemy, tactical considerations, e.g. favourable ground for defence in the event of attack, concealment, facilities for protection, and consequently, economy in outposts, are of first importance. The comfort of the troops, in conjunction with the sanitary conditions, is the next consideration.(p2)

- **Water Supply** A good water supply is essential. But considerations of safety may necessitate a camp or bivouac being placed at some distance from it. Other points to be considered are the facilities, which a site offers for obtaining shelter, fuel, forage and straw.(p3)

- **Site to be Dry** The site for a camp or bivouac should be dry, and on grass if possible. Steep slopes must be avoided, but gentle slopes facilitate drainage. Large woods with undergrowth, low meadows, and newly turned soil are apt to be unhealthy. Clay is usually damp. Ravines and watercourses are dangerous sites, as a sudden fall of rain may convert them into large streams. (p.3)

Allotment of Ground

- **Each Body of Troops to be Kept Together** Each commander, in his own degree divides the area available for bivouacking, billeting or camping among the bodies of troops under his orders. Each organized body of troops should be kept together under its own commander. There should seldom be difficulty in effecting this, where bivouacs or camps are concerned; in billets, however, to admit of stabling being fully utilised, it may be necessary to mix the arms. (p.4)

- **Boundaries to be Clearly Defined** When ground is allotted either by the commander of an army to the officers commanding divisions, or by these officers to brigadiers, or by them again, to officers commanding units, the boundaries of the area for which each commander is responsible must be clearly defined. If a road, a ditch, a stream, or any similar feature is the dividing line, the responsibility for looking after it must be assigned to one of the commanders. (p.4)

- **The ground to be allotted before Troops Arrive** The allotment of ground should, if possible be completed in time to admit of officers commanding units, or their representatives, making adequate arrangements before the troops arrive. (p.5) The book goes on to explain how to dispose of dead animals, where and how to position latrines and kitchens (these are at opposite ends front, rear or flank) and what roads are to be used by various ranks and regiments.

- **Prominent Features of the Ground to be Communicated** The names of prominent features of the ground near camps, bivouacs or billeting areas should, if they are

not shown on the map, be communicated to officers taking over areas. Names should be invented for such features if none exist. (p.7)

- <u>Camp and Bivouac Spaces</u> The following tables are given as an aid in working out the space required in bivouacs or camps, on field service, in a fairly level and open country, and in estimating the accommodation of a billeting area. In the table the first number is the frontage and the second the depth. (pp.7-8) These dimensions are very interesting and show similarities to the dimensions of towns laid out by Royal Engineers.

  - o In this section it also states that dwellings should be divided into classes and a type of each class examined and then the number and distribution of each class ascertained. This is an obvious physical manifestation of the army hierarchy into the class system expressed in the quality and size of accommodation.

- <u>Water Supply to be Marked with Flags</u> An advance party composed of engineers will mark the water supply with flags as follows: white for drinking water, blue for watering animals and red for washing and bathing places. (p.22)

- <u>Horses, How watered</u> At a stream below the place where troops drink, but above the place where troops wash. (p.22)

- <u>Administrative Districts</u> when large forces, e.g. one or more divisions are concerned, bivouacking, billeting or camping areas will, for purposes of good order, supply sanitation and the necessary measures of internal defence, be divided into administrative districts, the senior officer in the district being termed the district commandant. (p.11)

- <u>Market Place</u> In each district a place for a market will, if necessary, be selected, and a tariff of prices arranged. All persons coming into the district to sell articles of any kind must be confined to this place. (p.13)

- <u>Frontage Required for a Horse</u> Horses should be picketed in lines, facing away from the prevailing wind if possible. A horse when picketed requires a frontage of about 4 feet 9 inches and a distance of four yards from picket line to heel peg. (p.24)

- <u>Sanitation</u> Latrines must be at least 100 yards from (and Leeward of) water supply and kitchens.

- <u>Ventilation and movement</u> A space of one yard must be left between pegs of one tent and those of the tents adjoining it. A gangway of ten yards is the usual interval between units. (p.31)

  There are a number of scale drawings in the pocket book depicting the layout of encampments. These layouts clearly depict a grid layout

- <u>Pioneer Pocket Book India</u> (1922) This book although after the period of focus in this study is interesting as it illustrates the purpose of the pocket books, it begins by stating that this pocket book "…aims to be a handy book of ready reference, portable enough to be carried in the field". The book is based on the Manual of Field Works (1921), Pioneer Manual (1909) and Notes on Hill Road Making, Useful data for bridging, and light railways.

These books were thus practical reminders of the courses the Royal Engineers studied, they contained the main dimensions statistics, formulae and other readily needed reference material.

3.5   DEPLOYMENT

Royal Engineer officers were never deployed as units; they were used as skilled staff added to other military units, the Corps of Royal Engineers are considered as a combat support arm. That is why in the beginning of this chapter it was stated: "The Corps has no battle honours of its own, its motto *'ubique'* ("everywhere"), awarded by King William IV in 1832, signifying that members of the Corps have taken part in every battle fought by the British Army in all parts of the world" (www.army.mod.uk). Royal Engineers were assigned as needed as individuals or small groups and very often as officers in command of non-engineering troops. They were considered the professional staff and assigned judiciously. The non-commissioned officers who served under the Royal Engineer Officers were the sappers and miners; the Royal Engineers also raised a number of militia and volunteer units.

Evolution of the Corps

(Royal Engineers' Museum www.remuseum.org.uk)

Officers	Soldiers
King's Engineers of Norman and Medieval times. 1716 Corps of Engineers (controlled by Board of Ordnance) in 1757 military rank was granted to Corps of Engineers. 1787 Corps of Royal Engineers (controlled by Board of Ordnance).	Skilled levies 1772 Company of Soldier Artificers raised in Gibraltar (controlled by Board of Ordnance, commanded by Corps of Engineers). 1787 Corps of Royal Military Artificers (controlled by Board of Ordnance, commanded by Corps of Royal Engineers). 1812 Corps of Royal Sappers and Miners(controlled by Board of Ordnance, commanded by Corps of Royal Engineers).
1856 The soldier Corps of Royal Sappers and Miners amalgamates with the officer Corps of Royal Engineers to form the Corps of Royal Engineers (controlled by the War Office). 1862 Bengal Engineers, Bombay Engineers and Madras Engineers of the late Honourable East India Company Army (HEICA) transferred into the Corps of Royal Engineers. 1957 Gurkha Engineers (raised in 1948 and granted Royal title Queen's Gurkha Engineers in 1977) affiliated to the Corps of Royal Engineers. 1992 Women of the Women's Royal Army Corps serving with Royal Engineer units were transferred into the Corps of Royal Engineers.	

The auxiliary forces (the militia and volunteer units) have their origins in the Militia Act (1757) and the Volunteer movements of the 1790's and 1860. The demands placed upon Britain to provide the recruits for the British forces engaged in overseas conflicts against the French during the Seven Years War (1756-63), seriously depleted the home defence capability. In 1757 the Militia Act was passed to enrol 32 000 men by ballot for a term of three years service at home. The Act and its terms were amended in following conflicts to include, in some cases, overseas service and so set the precedence for the terms of engagement for military service when the Board of Ordnance was finally abolished in 1856 and the Corps came under the command of the War Office. Until that time the Board of Ordnance had its own system of recruiting for the Ordnance Trains which were raised to accompany the field army for each campaign (Napier, 2005).

The other source of auxiliary troops was the Volunteer movements of 1790's and 1860, where individuals volunteered their services for home defence. They were raised in an atmosphere of fear of invasion from France. These Volunteers, which ran in parallel with the Militia, cost the Government little for their members provided their own arms and covered all their personal expenses except for when they were on active service. Some examples of these units were:

- **Engineer and Railway Volunteer Corps - 1865-1993**: The Engineer and Railway Volunteer Corps was raised in 1865 as one of the Volunteer units. It consisted of entirely Volunteer officers drawn from the managers and engineers of the principal railways of the day.

- **Royal Monmouthshire Royal Engineers (Militia):** One of the first militia units to become part of the Corps of Royal Engineers was The Royal Monmouthshire Royal Engineers (Militia), which traces it history back to 1539 when it was an infantry unit. In 1877 it converted to an engineer role with opportunities for overseas service. At the beginning of the **Anglo-Boer War** (1899-1902) the Regiment was embodied and sent three companies to South Africa to carry out building, bridging and railway work.

- **Royal Anglesey Royal Engineers (Militia):** Shortly after the Royal Monmouthshire Militia had become a Royal Engineers unit another Welsh militia unit, the Royal Anglesey joined the Corps (1877). The unit was first raised as the Anglesey Militia in 1762. During the Napoleonic Wars (1809-15) it was titled 'Royal Anglesey Light Infantry Militia' (1810). As an engineer unit it saw service in the **Anglo-Boer War** (1899-1902).

- **Submarine Miners Militia and Volunteers –** 1880's: During the 1880's the defence of the ports in the British Isles and the Empire became a priority. The responsibility for their defence fell jointly upon the Royal Navy and Royal Engineers, the Corps' contribution was the Submarine Mining Service. After 1885 the service was expanded rapidly, and that expansion was met by the formation of Militia and Volunteer Submarine Mining units both at home and abroad

- **Telegraph and Postal-** 49th Middlesex Rifle Volunteers Corps -1870: After the nationalisation of the private Telegraph Companies in 1870, the Royal Engineers provided two companies to assist the General Post Office (GPO) in telegraphy work. This event gave rise to the formation of a Telegraph company raised from the Telegraph branch of the GPO as part of the 49th (later 24th) Middlesex Rifle Volunteer Corps. In 1880 the 49th was renumbered 24th. Sanction was given in 1883 to increase the strength of the company to 200 and that branch of the 24th Middlesex Rifle Volunteer Corps thereafter appeared separately in the Army List as 'Telegraph Companies'.

- **Corps of Electrical Engineers – 1897:** In 1897 a new volunteer corps was organised to assist the Submarine Mining Service. They provided search lighting. The officers of the Corps of Electrical Engineers were recruited from men of science and leading members of the electrical profession; the rank and file were practical electricians or students of electrical engineering. The Corps of Electrical Engineers provided the 2nd Searchlight section for service during the Anglo-Boer war (1899-1902).

Engineer Auxiliary Establishment - 1886

In 1886 the establishment for the Auxiliary Forces of the Royal Engineers in Britain stood as follows (Royal Engineers' Museum www.remuseum.org.uk):

Unit	Size	Type
Royal Anglesey, Royal Monmouthshire	Battalion (x 2)	Militia
1st (Hampshire), 2nd (Hampshire) 3rd (Devonshire), 4th (Kent) Submarine Mining	Company (x 4)	Militia
Aberdeenshire, Cheshire 1st Gloucestershire, 2nd Gloucestershire Hampshire, Lanarkshire, 1st Lancashire, 2nd Lancashire 1st London,1st Middlesex Newcastle-on-Tyne, Northamptonshire Tower Hamlets 1st Yorkshire, 2nd Yorkshire	Battalion (x 15)	Volunteer
Engineer and Railway Volunteer Corps		Volunteer

It is interesting when studying biographies of various Royal Engineers (see Section C) how many posts they had and how individuals moved around the British Empire, most of them moved from colony to colony and many of them became governors.

The Colonial Governors - 1776-1914
The choice of a Royal Engineer officer as governor was often determined by the needs of the colony at the time of his appointment (e.g. major military or civil works project or boundary settlement). Below is a list of Royal Engineer officers who have held governors appointments (Royal Engineers' Museum www.remuseum.org.uk).
This table was taken from the Royal Engineers Museum, however there seem to be some glaring omissions for example Gordon, Kitchener, Guggisberg which have been added by the author. The rest of the table should be read as a guide only.

Name	Colony	Dates
Lt Col Blount	St Helena	1886
Sir James Carmichael Symth	British Guiana (now Guyana)	1833-1836
Sir Frederick Chapman	Bermuda	1867-70
Maj Sir JR Chancellor	Mauritius	1911-1914
Lt Gen Sir HC Chermside	Queensland, Australia	1902-1905
Lt Gen Sir Andrew Clarke	Straits Settlement (now Singapore)	1873-1875
Lt Gen Sir W Denison	Van Dieman's Island (now Tasmania)	1846-?
	New South Wales, Australia	?-?
	Madras, India	? - 1866
Lt Gen GA Elliott	Gibraltar	1776-1790
Sir Charles Fox Smith	Trinidad, West Indies	1828-1831
Lt Gen Sir TLJ Gallwey	Bermuda	1882-1888
Sir George Gipps	New South Wales, Australia	1838-1846
Col Sir EPC Girouard	Northern Nigeria	1907-1909
	East African Protectorate (now Kenya)	1909-1912
Gordon	Governor –General Sudan	1874-1879
Guggisberg	Governor of the Gold Coast	1919-1927

Name	Colony	Dates
Lt Gen Sir William FD Jervois	Straits Settlement (now Singapore)	1875-1877
	South Australia	1877-1882
	New Zealand	1883-1889
Kitchener	Consul-General Egypt	1911-1914
Maj Gen Sir R Laffan	Bermuda	1877-1882
Col Sir HE McCallum	Lagos (now Nigeria)	1897-1899
	Newfoundland (now part of Canada)	1899-1901
	Natal, South Africa	1901-1907
	Ceylon (now Sri Lanka)	1907-1913
Capt RC Moody	Falkland Islands	1842-1848
FM Lord Napier	Gibraltar	1876-1882
Lt Col Sir M Nathan	Gold Coast (now Ghana)	1900-1903
	Hong Kong	1903-1907
	Natal, South Africa	1907-1910
Maj Gen Sir Harry Ord	Dominica	1857-1861
	Bermuda	1861-1863
	Straits Settlements (now Singapore)	1867-1873
	Western Australia	1987-1880
Maj Gen Sir William Reid	Bermuda	1839-1846
	Barbados and Windward Islands	1846-1848
	Malta	1851-1858
FM Sir JLA Simmons	Malta	1884-1888
Col Lord Sydenham	Victoria, Australia	1901-1904
Lt Gen H Wray	Jersey, Channel Islands	1887-1892

It is difficult with any degree of certainty to establish exactly how many Royal Engineers were in South Africa at any given point. In the early years three Royal Engineer officers

were in the Cape and later only one Royal Engineer was in post (See Section C). During the time frame of this study a variety of names appear in the archives and text and on maps and plans drawn at the time these are discussed in section C. It was the intention of the author to list all the Royal Engineers involved in South Africa and offer biographies where available however, the fragmented historic records made this impossible. The study offers the names and biographies of Royal Engineers known to be in South Africa during the time frame of this study in Section C. In the period immediately after the study however, the Royal Engineers' Museum lists the Royal Engineers numbers during the Zulu Wars and the Anglo Boer Wars as follows:

- **Zulu War - 1878-79:** The British forces were commanded by General Lord Chelmsford (1827-1905), who lost a major part of his army to Cetshwayo's Zulu impis at the battle of Isandhlwana (22 January 1879), among those killed was Colonel A W Durnford (1830-1879), Royal Engineers, commander of the Natal Native Contingent. The engineer units involved in the war were:
  - 2nd Field Company (Captain WRC Wynne RE) - despatched from England 2 December 1878
  - 5th Field Company (Captain WP Jones RE) - despatched from England 2 December 1878
  - 7th Field Company (Major FW Nixon RE) - the resident Royal Engineer unit in South Africa at the time.
  - C Telegraph Troop (Major AC Hamilton RE) - arrived in South Africa in May 1879
- **Anglo-Boer War - 1899-1902:** During the Anglo-Boer War (1899-1902) engineer Militia and Volunteers units were deployed in the Lines of Communication (L of C) areas, carrying out building, bridging, telegraph, electrical and railway work.

Their deployment figures for the period December 1899 to January 1909 were:

Type of Unit	Officers	Other ranks	Total
Militia	8	250	258
Volunteers	23	407	430
Totals	31	657	688

In May 1901 the figures were:

Type of Unit	Officers	Other ranks	Total
Militia and Volunteers	49	1,020	1,069

(Royal Engineers' Museum www.remuseum.org.uk)

3.6 THE RELEVANCE OF THE ROYAL ENGINEER'S TRAINING IN THE COLONIAL CONTEXT

It is interesting to note from the structure of the training course and all of the pocket books and manuals that the overriding method of instruction was to learn from example. Cadets were introduced to examples of buildings and learnt by copying, apprenticeships and reading recognised experts. This would go a long way to explaining the high degree of similarity of town layouts, as the Royal Engineers would apply a known solution to a problem. Creativity and unique designs would have been considered less important than functionality and order. Even the freehand art courses aimed at recording surroundings rather than abstract art. The cadets were taught to observe and to learn by example, thus having visited a town which functioned they would be inclined to emulate it if they had to lay out a new town. The courses are also overwhelmingly scientific with a strong emphasis on mathematics and its application.

It is also very interesting to note that many of the skills are directed at peace-time needs and not just war. Indeed The Report of the Committee on Duties and Training of Royal Engineers Field Units (1899) specifically states "A sapper should always be employed at civil work when he is not training, he must be perfectly trained, but the training should be arranged so as to interfere with civil work as little as possible." (1899, p.19)

It would seem that the military side was a necessary addition to the Royal Engineers skills rather than the only rationale for his training. Weiler summarised the main characteristics of the Royal Engineers; firstly with regards their formal training he states (Weiler, 1987, p.439) "(the) Royal Engineers had superior theoretical education but inferior practical training to Civil Engineers and Architects of their time. They learned principally on the job

and arguably best in civil employment as opposed to military duty. Their sound theoretical education, albeit not as good in some respects as foreign military engineers, especially the French, seems to have been a major factor in their considerable versatility and ability to learn a succession of new jobs quickly and well. It also served as an excellent background for an experimental aptitude." Records note that the Royal Engineers sought technical and scientific advice from others and often employed experts to help with design thus, further enhancing their 'on-the-job' training (Napier, 2005; Weiler, 1987; Porter, 1951; Finch, 1951).

The Corps of Royal Engineers was small in numbers compared to civil engineers as a profession, but its contribution was arguably considerable for its size. Moreover, the Corps' achievements were particularly notable considering the extremely low percentage of engineer officers whose fathers were engineers or from other building professions or occupations, in marked contrast to civil engineers and architects where the percentage was high. It was probably an advantage to be from a building profession family in times when the apprenticeship system prevailed as the usual route to knowledge and skill. Even so, Royal Engineers, by virtue of their 'scientific' education and social position as military officers, were highly regarded as professionals. It was because of their social and professional status that Royal Engineer officers were entrusted by the state with important civil appointments, notwithstanding the fact that their services could be obtained more cheaply than civilians of comparable knowledge and skill (Weiler, 1987,p.449). Promotion for Royal Engineers in the army was by strict seniority only and therefore there was no incentive to seek advancement by meritorious works. Nevertheless no explicit evidence has been found that this situation discouraged excellence. The call of duty seems to have been a strong substitute (Weiler, 1987, p.441). It could also be argued that removing the need for self-advancement may well have promoted a greater sharing of ideas and teamwork (Napier, 2005; Weiler, 1987; Porter, 1951; Finch, 1951).

The Royal Engineers made major contributions both at home and abroad. They played a major role in the global diffusion of building technology through the British imperial expansion in the nineteenth century. Technology transfer in building materials, structural forms and methods of construction was a two way process. It involved the interaction of

European experience with indigenous environments, traditions and techniques. The Royal Engineers provided both military and building technology expertise for British imperial expansion and were therefore in the front line of European interaction with colonial conditions and cultures. Still, this important global phenomenon has been little exposed by scholars except in general terms (Morris, 1983; Weiler, 1987).

The fact that most of the lecturers were people of immense ability is also important. The Royal Engineers were exposed to the best minds of the time; the education was of a high standard and comprehensive. The lecturers also all served long tenures thus; successive years of engineers all received the same training from the same lecturers ensuring a standardised programme and continuity. Analysis of the courses shows that the training was overwhelmingly technical, scientific and rational; it was a practical course in building an empire, there was never any pretence of asking residents what they wanted in the modern "public participation mode", the engineers were trained to solve problems, come up with practical solutions and then implement them. But importantly they were trained to emulate good solutions and designs, so they learnt to analyse other solutions and implement the best known designs.

It is important to note that although the Royal Engineers had a scientific training many of them showed notable artistic flare. Many paintings by Royal Engineers survive which show more than technical skill. Furthermore, certain town designs such as Adelaide, Khartoum and Queenstown show a design flair. Modern planning training course materials often speak of the "art and science" of planning. The Royal Engineers show that although they were taught the science of development this clearly did not limit those with natural artistic flair.

The detail in the pocket books demonstrates that the Royal Engineers clearly had standard ideas of street widths, turning room, sanitation, separation of land uses (for example separating latrines and stables from living areas), these were however guides and were not imposed standards.

SECTION B

BRITISH COLONIAL DEVELOPMENT PLANNING:

SYNOPSIS OF AGENCIES, APPROACH, METHODOLOGY AND IMPACT

PREFACE

Section A of this study set the broad framework of colonisation, specifically South African colonial development and gave a background to the Royal Engineers and their training. The study has stated that the Royal Engineers were the primary implementation arm of British colonialism and has thus concentrated on understanding the training which these men received.

Section B investigates the main fields in which the Royal Engineers influence was felt in South Africa. Many Royal Engineers went on to senior government posts and even political posts, this study will however, focus on spatial development. This section will investigate the major elements of colonial development starting with an analysis of who the development agencies were and then continuing with ports and harbour development. The section then moves on to land surveying and land tenure; following this other aspects of colonial development such as: road, railway development, architecture and construction technology are broadly addressed. This section of the study seeks to give a synoptic view of the approach adopted by the British to colonial development generally.

Section C of the study will thereafter move on to the case study.

CHAPTER FOUR

BRITISH COLONIAL DEVELOPMENT AGENCIES

4.1 INTRODUCTION

Prior to 1768 responsibility for the affairs of the British colonies was part of the duties of the 'Secretary of State for the Southern Department' and a committee of the 'Privy Council' known as the 'Board of Trade and Plantations'. In 1768 the separate 'American or Colonial Department' was established, in order to deal with colonial affairs in British North America. With the loss of the American colonies, however, the department was abolished in 1782. Responsibility for the remaining colonies was given to the 'Home Office', and subsequently (1801) transferred to the 'War Office'.

In 1801 the 'War Office' was renamed the 'War and Colonial Office' under a new 'Secretary of State for War and the Colonies' to reflect the increasing importance of the colonies. In 1825 a new post of 'Permanent Under-Secretary for the Colonies' was created within this office.

In 1854 this office was divided into two and a new 'Colonial Office' was created to deal specifically with the needs of the colonies and assigned to the 'Secretary of State for the Colonies'. The Colonial Office did not have responsibility for all British possessions overseas. British possessions in India and certain other nearby areas were under the authority of the 'India Office', and certain informal protectorates and other areas (particularly Egypt) were under the authority of the Foreign Office. In 1907 the Dominion Division of the Colonial Office was created, and from 1925 separate 'Secretaries of State for Dominion Affairs' were appointed. After the independence of India in 1947, the Dominion Office was merged with the India Office to form the 'Commonwealth Relations Office'. In

1966, the Commonwealth Relations Office re-merged with the Colonial Office, forming the 'Commonwealth Office'. Two years later, this department was itself merged into the Foreign Office, establishing the modern 'Foreign and Commonwealth Office'.

This chapter analyses who within the British colonial establishment carried out colonisation. It seeks to highlight the individual roles and functions in order to understand the scope and limitations of the Royal Engineers role. This sets the framework against which the rest of this section studies the British colonial development approach.

4.2   THE AGENCIES OF BRITISH COLONIAL DEVELOPMENT

During the first two decades of British occupation the Cape colony was administered by autocratic and predominantly military governors who tended to pursued conservative policies, similar to those adopted in Britain, which were intended to maintain an inherited social order. By the 1820s, however, the middle classes' ongoing struggle against aristocratic hegemony in industrialising Britain was undermining the status quo in the Cape as well as in the metropolis. In 1807, a campaign fought largely by middle-class evangelicals culminated in the abolition of the transatlantic slave trade for British ships, bringing labor shortages to many parts of the colony. Further British humanitarian intervention led to the amelioration of the Cape slaves' conditions during the 1820s. The colony's aristocratic governor, Lord Charles Somerset, was directly challenged by British settlers such as the journalists Thomas Pringle and John Fairbairn, who were advocates of reformist programs in Britain. Among the 4 000 "1820 settlers" located on the eastern frontier of the colony, the majority of the gentry, who had emigrated as leaders of group parties, joined in the pressure for an end to the governor's unmitigated powers. An official commission of inquiry appointed in 1823 recommended reforms that were the first step away from the old autocratic

and mercantilist system and toward freer trade under an advisory legislative council (le Cordeur, 1981).

British administration created favourable conditions for British merchants to operate from the Cape, especially once sterling had replaced the rixdollar as local currency and once British preference for Cape wine exporters had been removed, breaking the established Dutch elite's economic stranglehold. Dutch-speaking merchants soon assimilated within this English-speaking elite and, from the 1830s, both helped to finance settler capitalist expansion, based on wool production, in the eastern Cape. These merchants were also behind the complex of scientific, literary, and artistic institutions centred on the company gardens in Cape Town—institutions that did much to bolster a sense of respectability and pride in a Cape colonial identity (le Cordeur, 1981).

It was partly the "respectable" colonists' desire for metropolitan recognition that led to the "Convict Crisis." In 1848, the British government ordered that the Cape be used as a penal colony in order to appease Australian settlers, who had repeatedly complained about the "export" of British convicts to their territories. Dutch- and English-speaking commercial interests forged an alliance of classes in Cape Town to protest at this challenge to the Cape's status as a colony of free settlement. Governor Harry Smith, despite securing the support of Eastern Cape settlers, found that he could not govern effectively as long as the Cape Town elite boycotted the legislative council. He was forced to order the first and only convict ship to arrive in Table Bay on to Tasmania, saving the Cape from degradation in the eyes of its bourgeois elite. Victory in this struggle with metropolitan authority gave the colonial elite the confidence and the determination to follow Canada in securing greater powers of self-government (le Cordeur, 1981).

When representative government was granted to the Cape in 1872, it came in the form of a compromise. Eastern Cape British settlers, many of whom

supported a separatist movement which aimed to bring governmental authority under more direct settler expansionist influence, had generally argued for a franchise qualification that would include only wealthier capitalists such as themselves. But western Cape commercial and Afrikaner farming interests were generally in favour of a more inclusive franchise that would empower the entire white population. The constitution finally adopted contained the relatively low franchise qualification of £25 worth of property, regardless of race. It has been argued that the inclusion of a small minority of blacks within the enfranchised classes acted as a kind of "safety valve" for black grievances in the wake of the Frontier War of 1850–1852. The non-racial constitution served as a counter to the destabilising effects of settler expansionism which had caused the rebellion, giving blacks the aspiration to join the governing elite rather than overthrow it (le Cordeur, 1981).

By the time the British colonised South Africa, they had over two centuries of experience and were at the height of their industrial and maritime power. They had a history of colonisation which stretched back to the colonisation of Ulster and Wales. During the early seventeenth century until the 1840's; England planted new settler colonies in Ireland, Wales, the New World and the Antipodes (Home, 1997:36). Those tasked with colonial settlement had hard-won knowledge of the business and formulated a policy or 'Grand Modell' (associated with Shaftebury); its aims included commercial gain, strategic manoeuvring in the game of international geopolitics, and, later, the removal of unwanted social groups (political or religious dissenters, debtors and the unemployed). In the nineteenth century emigration was also a means of reducing population pressure at home.

During the nineteenth century the task of laying out new colonies usually fell to the governors, usually with a military background from the Napoleonic Wars.

Among these military governors were Brisbane[1] and Darling[2], Bourke[3] and D'Urban[4], some of whom gave their names to new cities (Home, 1997:37). This was most definitely the case in the Cape Colony. Being military men it is not surprising that the officers and functionaries that reported to these governors were primarily military people.

The British army in the pre Victorian era, like all armies, was used to further the foreign policy of the British Government. As the first industrial society, sources of raw materials, markets for finished goods and room for population expansion were wanted. As a consequence Britain established the 'old' colonies in North America, Australasia and the West Indies. As this empire emerged in the seventeenth and eighteenth centuries, the Royal Navy and the army were used to support the establishment of colonies, protect trading posts and suppress the activities of rivals such as the Dutch, Spanish and, most of all, the French. Britain's wars throughout this period were usually the result of imperialist rivalry, such as the Anglo-Dutch wars in 1667, or the control of colonies such as the American War of Independence.

The British army was however, also used in Britain for functions which today would be considered governmental posts; for example the policing role of the army in the United Kingdom only came to an end when Peel set up the Metropolitan Police in 1829, but it was not until 1856 that the new Police Act established a properly organised civilian police force for the entire country. The army was then only used in times of civil emergency such as the National Strike in 1926.

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[1] **Sir Thomas Brisbane** (1773-1860) Governor of New South Wales 1821-5 – the capital of Queensland was named after him.
[2] **Sir Ralph Darling** (1775-1858) Governor of New South Wales 1825-1831
[3] **Sir Richard Bourke** (1777-1855) Governor of the Eastern Cape 1825-28, and New south Wales 1831-37, where he was involved in the planning of Melbourne.
[4] **Sir Benjamin D'Urban** (1777-1849) Governor of the Cape 1834-38 after whom Durban is named. (Home, 1997:59)

The organisation and structure of the army hardly changed from the end of the Napoleonic war up until the Crimean war (1853-1856), The Crimean war revealed serious deficiencies in the organisation and management of the army. More soldiers died of hunger and disease in the Crimea than died as a result of enemy action. As a result of this, the army went through a period of reorganisation. The medical service was overhauled along lines suggested by Florence Nightingale. The supply service, which so disastrously let down the troops, was reorganised as the Army Commissariat. Buying commissions was ended, proper training instituted, and the treatment and equipment of the common soldier improved: flogging was banned, and better weapons supplied, such as breech-loading guns. It was during these reforms that specialist functions gained prominence in the army; posts such as medics, engineers, supply specialists and support staff.

From the end of the Crimean war until the outbreak of the First World War in 1914, Britain was not engaged in a war with any of its European rivals, however, it was involved in a long series of colonial wars. Some of these wars were wars of conquest, such as the Zulu war in 1879. Other wars were fought to suppress rebellions such as the Indian mutiny in 1857. An army regiment or corp. might see action in a dozen or more different places in a forty-year period. Charles Gordon's career from 1854 to 1871 typified the world wide nature of military service. When he was commissioned into the Royal Engineers in 1854, he served in Wales, he moved on to service in the Royal Engineers depot in Chatham in Kent. Next, he saw service in the Crimea, from there he served as a boundary commissioner in Turkey. He then went to China with the Allied Expeditionary force. Then he returned to Gravesend to supervise the building of defensive works from 1865 to 1871. Gordon's subsequent career consisted of service on the Danube, India, Southern Africa and in the Sudan. This mixture of combat duty, administration and home defence can be observed in the careers of other prominent Victorian officers such as Kitchener (Napier, 2005).

By 1914 Britain ruled an empire that covered nearly a quarter of the world's land surface because they effectively deployed a relatively small professional army of about two million men (about ten times the size of the modern army). The British also used large numbers of native troops, such as the Sepoys in India. The Indian army was largely made up of Indian soldiers led by British officers.

This leadership role enabled the British officers to gain considerable administrative expertise which could be put to use in other roles. Senior army officers were often appointed as governors of colonies. Charles Gordon served as Governor General of the Sudan twice, similarly, Viceroys of India were often high ranking military officers (the last Viceroy in 1947 was Lord Louis Mountbatten, an admiral in the Royal Navy). More junior officers might serve as what might now be seen as civil servants, such as district commissioners, political agents or controllers of customs (Napier, 2005).

The demands of colonial management, as well as the new technologies of the Industrial Revolution, soon created new occupational roles. New professions rapidly diversified from the three of divinity, law and medicine. As new lands were acquired, a first priority was to survey them. Secondly physical infrastructure was required and then the areas needed to be managed in terms of health, use and design. Over time therefore, the governors recruited firstly surveyors, who surveyed and demarcated the colonies, then came the engineers who installed the basic physical infrastructure of transport and utilities. The doctors, especially sanitary specialists, tried to control public health through a drastic re-ordering of the urban fabric and lastly the architects and planners. Post colonialism this professional sequence seems to continue with the valuers who specialised in marketing and selling the spaces created (Home, 1997:37).

In the early days these specialists emerged from the military and were trained by the military, especially the surveyors and the Royal Engineers, later the civilian

professions took over. When studying British colonial development it is important to remember that this was a government sponsored effort and thus largely a team effort. Although the Royal Engineers designed and constructed many of the projects described in Section C of this study it is important to remember that they were very often carrying out orders and thus, the idea to site a town was not necessarily that of the Royal Engineers, but rather part of the larger colonial government. In short the Royal Engineers and Surveyors were the professionals tasked with the development of the British colony, at the time of the case study in Section C they were military officials with military training. The British colonial development approach was however, larger than the Royal Engineers and was based on British colonial experience of earlier colonies.

CHAPTER FIVE

PORTS

5.1   INTRODUCTION

This chapter will analyse early colonial port development both generally around the British Empire and specifically two South African examples. When researching the two South African case studies it was evident that the Royal Engineers carried out much of the early survey and construction work, however they did this work under the command of the Admiralty. It is thus hard to say that the Royal Engineers developed the harbours; more a case of the Royal Engineers provided recognised professional expertise to the British in the development of their harbours. This chapter looks more broadly at the role and development of harbours in the British colonial period.

Two major South African ports are discussed in order to highlight the South African trend in colonial port development. The British established many small ports and harbours along the South African southern and eastern coastlines. This chapter will highlight the two main harbours; Simons Town and Durban however, a great deal of information is available on the other ports such as Port Alfred Harbour (1871- 1915: Manuscript: JPL Strange Collection: Johannesburg Public Library; 1862-1899: KAB VC813-817; 1874:Cory Library for Historical Research MS16929); Port Elizabeth (1864: KAB Map M1/2787; 1822: KAB Map M1/1390); Port Shepstone (1896: NAB Map M1/51).

Two regional maps of the era (1862: NAB Map M4/74; NAB Map M2/125) show the interest in detailed mapping of the coast. The Sir James Percy Fitzpaterick (1924-1925: NELM Grahamstown Manuscript 1073/1-162) and Roger Curtis' journal (1799-1802: Brenthurst Library, Johannesburg Manuscript MS.053) offer interesting accounts of the southern coastal area of South Africa and travelling along the coastline.

5.2   THE IMPORTANCE OF PORT CITIES TO THE BRITISH EMPIRE

The history of port creation in the British Empire has had a far reaching effect on world trade and development. Many of the largest cities in the world today are creatures of British colonialism. They are links in the world economy and global networks of cities, through which trade and production is organised. By 1775 London was in the view of Braudel "unequivocally the centre of the world" by then "the octopus grip of European trade had extended to cover the whole world" (Braudel, 1984).

The earliest phase of port development was the plantation colonies of North America and the Antipodes which aimed at permanent European settlements and thus formulated the 'Grand Modell'. Their port towns were planned by social theorists, like John Locke or Granville Sharp, who devised the physical form of an alternative society. The colonialists of the 'Grand Modell' did not expect to return to Britain but to make new lives for themselves under foreign skies (Home, 1997:62).

Then came the great port cities of the British East India Company; Madras (1639), Bombay (1665) and Calcutta (1690). They were the cornerstones of British power in the Far East. From these towns the British tightened their grip on the Indian sub-continent. In the Seven Years War (1756-63) they displaced the rival French and conquered Bengal. The British in Bengal administered an economy that systematically exported wealth to England. British merchants in the tropics behaved very differently from those in the plantation areas. They generally expected to make their fortunes as quickly as possible and return home before their health, and indeed their lives, gave out (Home, 1997). Europeans did not fare well in tropical climates and these areas were thus, never attractive to Europeans for large scale settlement (Acemoglu, Johnson and Robinson, 2000; Curtin, 1989; Curtin, 1998, Curtin, 1995).

The next wave of port development was for purposes of safeguarding British sea routes and opening new markets. In the Mediterranean, Gibraltar was captured from the Spanish and Malta from the French. During this period the French Revolutionary Wars forced the

British to relieve the Dutch of ports at Cape Town, Colombo and Malacca. The first British Governor of Cape Town (1797) called it "the master link of connection between the western and eastern world" (Ross & Telkamp, 1985:107; Home, 1997:63). These gains were confirmed by the Treaty of Vienna in 1815.

The next phase was that of British maritime supremacy (after the treaty of Vienna) during which they established more ports to consolidate their world-trade network. The opening of the Suez Canal (1869) cut travelling time and distance between Europe and the East, a global achievement which benefited mainly British East interests and brought Egypt, Cairo and Aden more firmly into the British sphere of influence (Home:1997). Other additions to the British Imperial port network came with the First World War. Port Harcourt (1915) was created to open up the Eastern Nigerian coal deposits. The British mandates from the League of Nations at the end of the war brought control of Haifa in Palestine, and Dar-es-Salaam in Tanganyika. At this stage the network of ports was vastly improved by advancements in land transport. Railways, roads and canals fanned out from them, opening up the hinterland to economic development. This led to plantation agriculture in areas such as India and Ceylon and mineral extraction such as tin in Malaya, copper in Northern Rhodesia, gold and diamonds in South Africa. At this stage some ports developed their own processing such as the jute mills of Calcutta and cotton mills of Bombay but mostly the ports needed unskilled dock labour. All across the empire there was a shortage of labour, which after the abolition of slavery in 1834 was solved by the importation of migrant and indentured workers. The vast populations of the Indian and Chinese subcontinents provided an ample supply of usually docile workers. India, China and Africa fed workers to their new colonial cities, such as Bombay, Calcutta, Madras, Lagos and Johannesburg through internal migration. Smaller, less populated colonies, such as the geographically remote islands of Mauritius, Fiji and the West Indies, had to organise the mass importation of labour (Home,1997:64; Walvin, 2006).

Table 22 indicates the populations of the top British colonial ports in 1911 and the annual average tonnage handled by the ports.

Table 3.1. Main ports in Britain and the British Empire in 1911 (ranked by population in thousands).		Table 3.2. Annual average tonnage of vessels entered and cleared at ports in Britain and the British Empire (1907–11, millions of tons).	
London	4,522	Hong Kong	22.5
Calcutta	1,222	London	20.1
Bombay	947	Liverpool	14.7
Glasgow	784	Cardiff	14.5
Liverpool	746	Singapore	14.2
Manchester	714	Colombo	13.3
Madras	518	Gibraltar	10.3
Belfast	387	Valletta	8.0
Singapore	303	Aden	6.7
Rangoon	293	Glasgow	4.8
Colombo	211	Durban	4.7
Cape Town	162	Calcutta	3.5
Penang Island	142	Bombay	3.5
Durban	90	Cape Town	3.4
Lagos	73	Montreal	3.0
		Victoria, BC	3.0

Source: Oxford (1914).

Table 22: British Ports ranked by population and tonnage (After Home:1997:65)

Home (1997) notes that in the early days of colonial port development municipal administration was limited to justices of the peace (appointed by the governor-general), with powers to levy a property rate and hire scavengers and watchmen, thus, following a similar structure to smaller English towns of the time. This minimalist approach was espoused by a governor of St Lucia, who in 1807 wrote that: 'Few things can be of less interest, than the interior details of a colony' (Home,1997:65). The British laissez-faire approach was contrasted with the French absolutism. "Private property and social order became so closely linked in England that government interference with the former was thought to disrupt the latter; how different this was from the situation on the Continent" (Konvitz, 1978).

The nineteenth century saw successive innovations in shipping technology; the replacement of sail by steam propulsion. Screw propellers allowed ships to travel faster, without reference to the prevailing wind. Reliable timetables of arrivals and departures could be drawn up. Steel hulls vastly increased the carrying capacity and reduced shipping costs. Freight rates fell rapidly and Britain's trade with India grew threefold. As Jan Morris (1983:148) states: "if there was one thing the imperial British knew how to do, it was to organize a port… You sailed your ship from Port Said to Aden, from Aden to Bombay, from

Bombay to Penang or Singapore, from Singapore on to Hong Kong, and everywhere there were British charts to guide you, British pilots to see you into port, British harbour-masters to accommodate you, British agents to re-provision your ship, British shipwrights to make your repairs, and ships of the Royal Navy, swinging at their anchors in the roadstead, to protect you on your way." These developments in transport led to trade being concentrated in fewer and larger ports. By 1903 the experts considered that all first-class ports in the future would need to provide for ships up to a thousand feet in length, with a hundred feet breadth of entrance and up to 35 feet depth of water (Home:1997). Such facilities required vast capital expenditures, the associated urban areas also expanded rapidly and it was acknowledged that municipal administration required overhauling; investments were made in roads, trams, water supplies and drainage systems. However, when it came to colonial ports, it was considered too an important task to be left to the new municipal authorities. A form of democratic urban government might have been conceded, but the colonial authorities made sure that they kept control over the dock development, vital as it was for British and colonial interests (Home:1997; Brookes and Webb, 1967; Welsh, 2000; Meredith, 2006).

Against this broad backdrop two South African ports are discussed.

5.3   SIMONS TOWN

The primary reason for the British occupation of the Cape was to control the harbour at Simons Town and thereby the sea route to India. Simon's Bay was established by the Dutch and named after the First Governor of the Cape of Good Hope, Simon van der Stel, who personally surveyed False Bay in 1687. He recommended Simon's Bay as a sheltered safe winter anchorage - but it was only in 1741, after many shipwrecks in Table Bay, that the Dutch East India Company decreed that their vessels anchor in Simon's Bay from May to August (Dommisse,2008).

The development of the small settlement, Simon's Vlek, was slow due to the steep topography which made overland access to Cape Town almost impossible. However stores were built, ships repaired and fresh provisions supplied. A three-gabled hospital

was built as well as a few more substantial houses (Dommisse,2008; Brock and Brock, 1976).

The change of government in 1795, during the first British occupation of the Cape, made little difference to the inhabitants of Simons Town. The British forces took possession of the buildings and other property belonging to the Dutch East India Company, but all private property was scrupulously respected. The residents of the town had long been accustomed to dealing with sailors and merchants of many different backgrounds and in fact found the change of government very prosperous. The Dutch East India Company had for many years been on the verge of bankruptcy and the paper currency had devalued considerably; British occupation saw the number of merchant ships visiting the bay increase and this was supplemented by the large number of ships of the Royal Navy, which used the port as its base during the winter months. In fact the town had never known such prosperity (Brock and Brock,1976:28).

Under the terms of the treaty of Amiens, the British forces evacuated the Cape in 1803 and government of the settlement was handed over to the Batavian Republic. War however, broke out again, even before the evacuated forces arrived back in England. Once more the British Government felt it expedient to take possession of the Cape of Good Hope and this operation was carried out in 1806. Simon's Town, as we know it today, grew more rapidly with the establishment of the Royal Naval Base there soon after the second British occupation (Wilkinson, 2000; Brock and Brock,1976:28; Dommisse,2008). The principal naval base was Cape Town; however, the navy resorted to Simon's Town every winter due to unfavourable conditions in the Cape harbour. It was soon realized that Simon's Bay afforded a secure anchorage for vessels of all sizes throughout the year. There was also a sheltered beach in the Bay where ships could be careened[1] in comparative safety to enable underwater repairs to be done and the ships hull cleared of marine growth. Careening could not be carried out in Table Bay owing to the prevailing swell, from which there was no shelter anywhere. Plans were drawn up in 1811 to move the naval base from Cape Town to Simon's Town and approved by the Lords Commissioners of the Admiralty in London and the move took place in 1814. Even before the move took place a range of buildings were built to accommodate the new naval

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[1] Careened: nautical transitive and intransitive verb to turn a boat over on its side, especially for repairs or cleaning (Encarta English Dictionary)

base including a hospital and residences for the permanent staff of surgeons (Brock and Brock,1976).

Lord Lowther's report (watermarked 1814) on the importance of the Cape of Good Hope to the Governments' world wide interests and urging a preference for establishing a naval base at Saldahna Bay instead of at Simons Town makes for interesting reading and illustrates both the strategic importance of the area and the debate about suitable harbours (D LONS/L13/1/91, Cumbria Records Office).

From 1815 to 1822 Simons Town went through an exceptionally busy period, as it became the base from which the needs of the troops and ships guarding Napoleon on St Helena were supplied. In addition the small ships engaged in the suppression of the slave trade and the vessels surveying the coasts of Africa resorted to the Bay for refitting, revictualling and the recuperation of those members of their crew, who had survived the ravages of a tropical climate (Broke and Broke,1976; Wilkinson, 2000).

Given the strategic importance of Simons Town to the British it is not surprising that early maps, plans and records exist. The 1788 plan of Simon's Bay showing the town, HMS Vestal at anchor, rocks and surroundings drawn by Charles White is one of the earliest British maps of the area (MPI 1/324/18). Two more general maps of the coastal area and the broader region are from 1802 (1802: WO 78/2719) and the general papers inherited by the War Office (WO 334/93).

Many plans of individual buildings survive, some of which are interesting as they show broader surrounding developments, plans such as those of 1838 (MFQ 1/519/17), 1880 (WO 78/4564) and the plans of Fort Knokke (WO 78/2719/1).

The number of steam ships started to rapidly increase towards the end of the century and a large reserve of coal fuel had to be built up, land was under pressure so some of the coal was stored on hulks and moored on the bay, but land was purchased at the south-east end of the naval yard, this proved to be inadequate due to the need for associated blacksmiths and other metal workers shops. In 1860 the old government-owned public wharf and jetty (which had been in service for nearly a hundred years) was acquired by the Navy in exchange it for land already owned by the Navy in Knysna. Much of the sea

bottom in front of the dockyard was reclaimed by building a sea wall. In 1858 a group of the more prominent businessmen in the town got together and formed a company and collected funds to build a dry-dock. It had been found that careening ships was a difficult and risky manoeuvre. In the end the project changed nature and eventually a slipway was built instead of a dry dock.

By the beginning of the 1900's the dock was proving to be inadequate for the larger and more complex ships of the modern navy. There was no further space available for expansion in the dockyard, as it was entirely surrounded by private property; a new site had to be found. The area selected was at the south end of Simon's Bay around the southern battery, blockhouse and powder magazine; where the Navy owned a considerable amount of land. Work on the new dockyard began in January 1901 and was referred to as the 'East Yard' in contrast to the original 'West Yard'. Construction was virtually completed in 1910 and the opening ceremony was performed by H.R.H. the Duke of Connaught on the 3rd November. The base at the southernmost tip of Africa and at the most important focal point on the trade route between Europe and the East proved invaluable to the Royal Navy during the two world wars, as it had done through the Napoleonic Wars one hundred years or more previously (Brock and Brock,1976; Dommisse,2008). Details of day to day discussions on the expansion of Simon's Town harbour and the general running of the harbour both commercially and as a naval establishment can be gleaned from the Long Papers (T1/3513) and correspondence from the era (ADM 123 156)

The railway line eventually reached Simon's Town in 1890 and furthered the development of the town and harbour. The Royal Navy was responsible for the care of the Boer prisoners-of-war in Bellevue Camp - now a golf course - during the Anglo-Boer War (1899 - 1902). The Simon's Town harbour and the Selborne dry-dock were completed in 1910 and more than 300 ships underwent repairs in Simon's Town during the Second World War. In April 1957 the Naval Base was handed over to the South African Government at which point the harbour was extended.

The first known plan of the residential settlement of Simon's Town (as opposed to military posts) is the Thibault plan of 1815; Mr Thibault, was engaged to "limit all the divisions of the ground and regular(ise) (sic) lines for the street upon the spot" because as Mr Brand

profoundly said "it is impossible to build a regular town without a plan" (Brock and Brock,1976). Thibaults letter accompanying his final survey clearly explains the geographical problems of the settlement:

(Brock and Brock:1976:32)

A number of maps and plans of Simon's Town (see figures 23-28) show the development of the town. It began in an organic manner with more emphasis on the dock planning than the town and has always been constrained by the mountain and sea; the town design thus, does not follow any of the normal patterns of development. The town has been established in the most inconvenient location from a settlement point of view with extremely difficult mountain passes linking it to Cape Town, it is however, the most important settlement in South Africa from a colonial strategic point of view and the harbour and its command of the Indian trade route are its *raison d'être*.

The bay is surrounded by gun positions in the British tradition of stone built forts, barracks and gun stations. It is a well protected and fortified harbour. Many maps, plans and records remain of the defensive positions and structures. The records of the Colonial Office, Commonwealth and Foreign Offices contain large collections of confidential correspondence (1878: CO 537/193) about the defence of Simons Town. The four sheet drawings of the batteries at Simon's Town dated 1806 (MPH 1/694); the gun positions

(1899:WO78/4081), the battery and magazine map of 1803 (MR1/1297/2) and the Royal Engineers' 1891-1894 plan of War Department Property and position finding station (MPHH 1/533) being a few good examples.
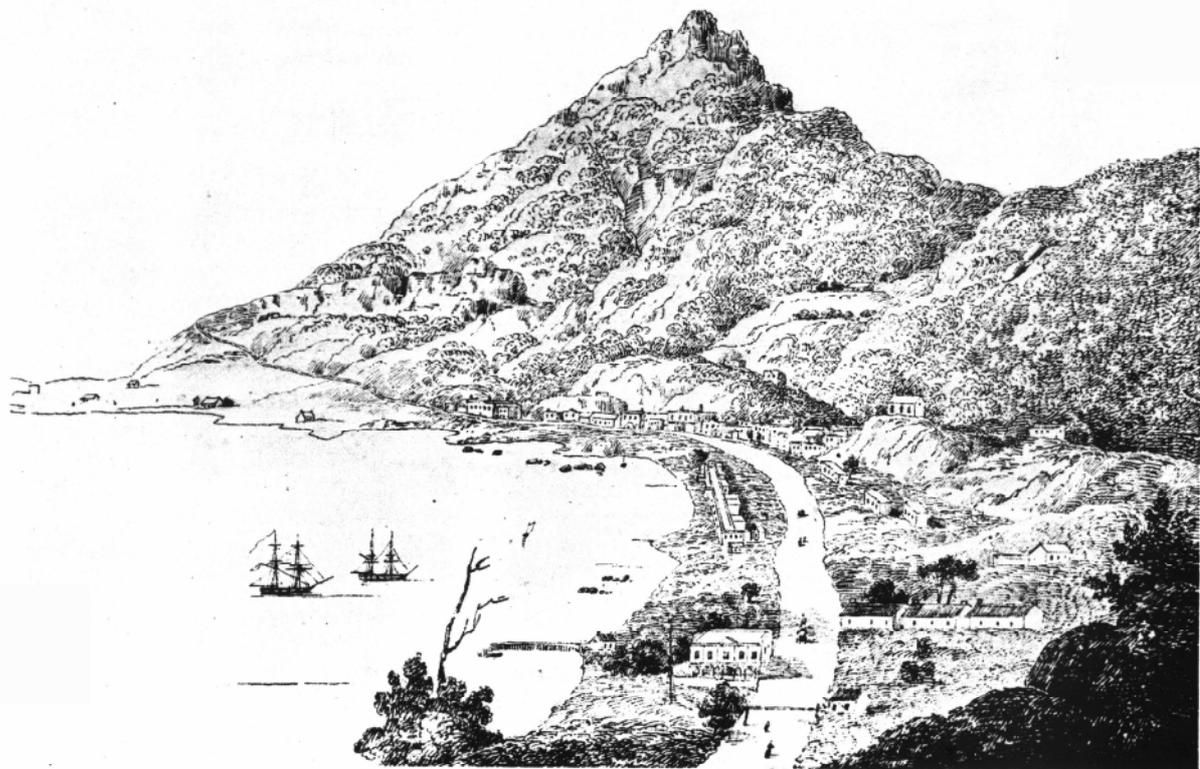
View of Simon's Town from the slopes of Red Hill, by Sir Charles D'Oyly, c1833

Figure 23: Simon's Bay (Brock and Brock,1976)

Figure24: Chart of Ship Wrecks around the Cape Peninsula. (Brock and Brock,1976)
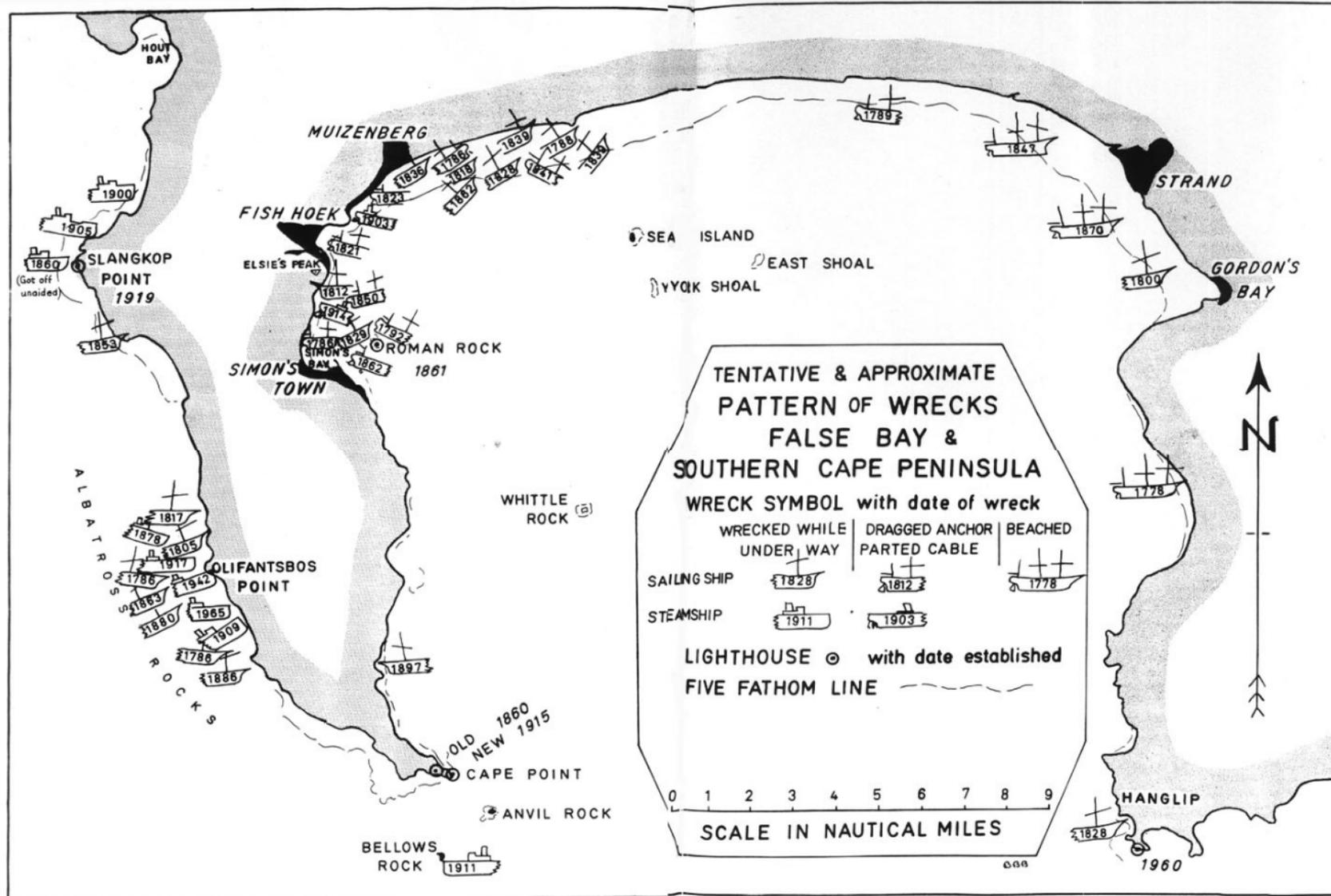
Figures 25 and 26: Paintings of Simon's Bay (Brock and Brock,1976)

Figure 27: General Plan of Simon's Town 1815 (Brock and Brock,1976)

Figure 28: Plan of Simon's Town showing Historic Buildings (Broc k and Brock,1976)
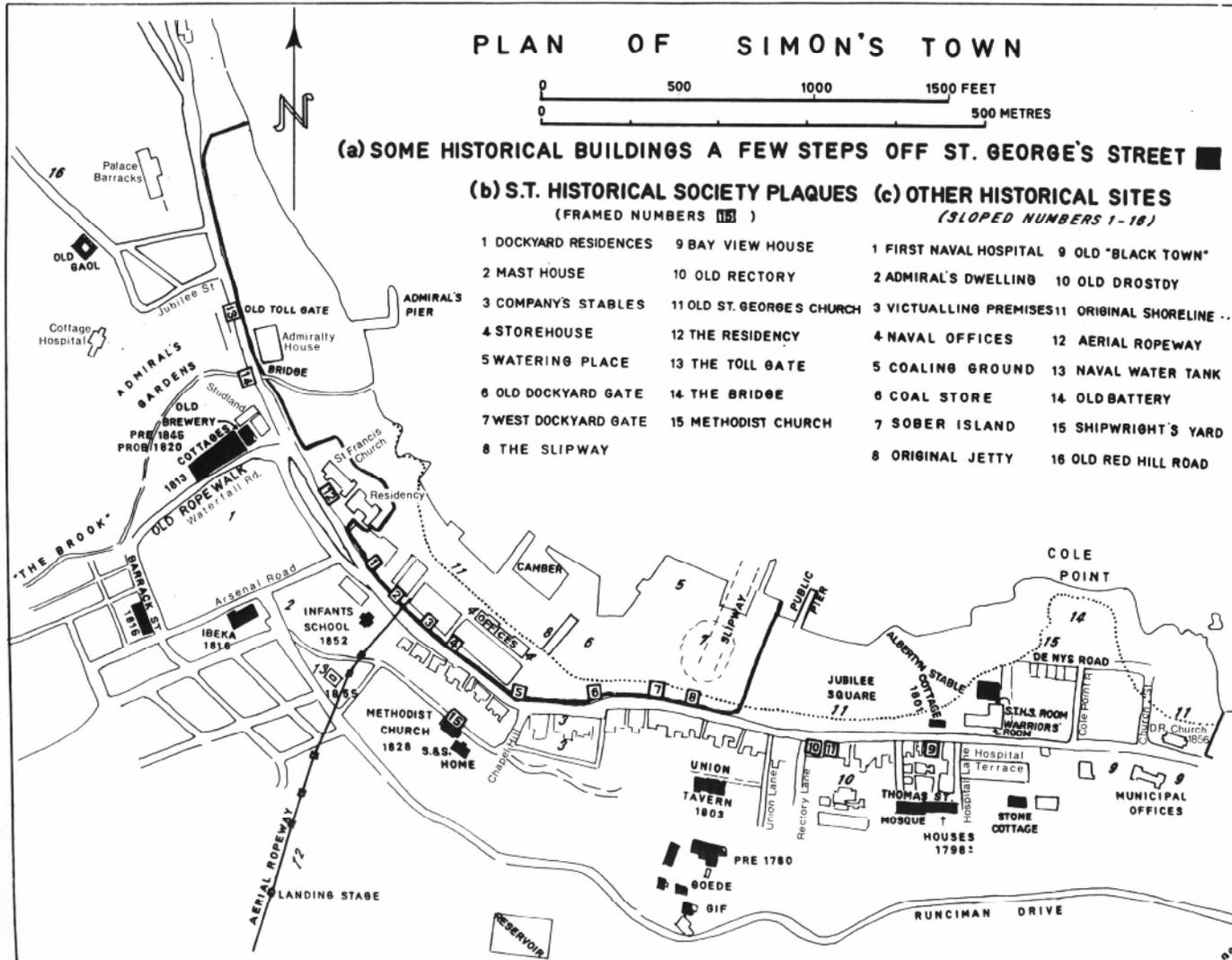
5.4   DURBAN

As previously stated in chapter two page 38, the settlement at Durban was founded by Lieutenant Farewell, Henry Fynn and their group of travellers who landed at the Bay of Natal in 1824. Please refer to chapter two for the background history.

The first active engineering venture of any sizable nature was undertaken by missionary, Captain Allan Gardner, who laid out a plan for the embryonic settlement in 1835. The plan however, was never implemented and remained on paper only. The actual laying out of Durban was undertaken between 1838 and 1840 by George Christopher Cato under the commission of the Republic of Natalia *Volksraad* (people's council). Reminiscing in 1882, Cato recalled that when the *Volksraad* ordered him to layout a town with *erven* (stands) of 100ft by 150ft he refused. His site was accepted, but the measurement of *erven* was shelved and the people could not wait, "but began to squat and build as it took their fancy. On this the Government found they were losing the price of sale of the *erven*. They then ordered me to go on with the survey with 100 ft streets. The difficulty was that every squatter wanted his shanty to fall into an *erf* (stand). One man threatened to 'pluck me like a goose' so took to my wings and flew away from him" (Lynsk, 1982:3).

In June 1840 the first public sale of Cato's lots took place followed by a second in October 1841 – payment was however, never forthcoming. The earliest buildings were in the centre of the town by the Market Square bound by Aliwal Street, West Street, Smith Street and Gardiner Street. When Cato originally planned the town the western end was a swamp, however, after British occupation and the demise of the Republic of Natalia in 1842, Dr William Stanger, the first Surveyor General and his staff set about remedying the situation. Cato recalled that he recommended to Stanger that the Government should make free grants of the 'West End' *erven*, 'on condition that the same were built on and drained before titles were issued' (Lynsky,1982:3).

 Cato surveyed and marked out the *erven* and most were taken by soldiers discharged from the garrison. In 1846, Thomas Okes, a surveyor, made a general plan of the town which consisted of an area of more than 7 000 acres (Figures 29 and 30). At this stage the majority of the inhabitants lived in shacks or shanties; roads were sandy tracks and there

was no water supply or drainage other than a few shallow unhygienic wells. Bishop John Colenson observed in 1855 "…indeed if the Dutch had founded the town of Durban, as they did that of Maritzburg (Pietermaritzburg), they would long ago have had the Umgeni pouring its beneficent streams through every street and bringing health and cleanliness to every door. How long will it be before the public spirit of Englishmen will achieve this?" (Lynsky,1982:5). Initially the 45th Regiment supplied most of the labour in the town and were responsible for creating a bridge and ditch between the fort site and the town, which was unfortunately washed away the same year. Later the town's people banded together to drain and bridge the swamp across West Street that divided the 'East End' and 'West End' of the settlement. In 1854 the Council turned its attention to the foul water supply and a town pump was installed and made available for the use of the public. The town pump was situated on what is today known as Old Well Court between Smith and West Streets (Lynsky,1982; Duminy and Guest, 1989; Stuart, Webb and Wright, 1976).

The rapid suburbanisation of Durban was a very British feature. Even before pressures of land shortage and high prices forced home builders away from the centre of town it was fashionable to live on the Berea hills. In 1855 the Council decided to lease 150 acres on the Berea and appointed Robert Sellars Upton to survey it. The lease of the town lands on the Berea caused him endless problems. The common method of survey in the thick Berea forest was for Upton to climb a large tree while his Zulu assistant would do likewise some distance away. He would take a reading with his pocket compass, and then flags would be secured to the respective trees. A path would then be cut through the bush between two points and survey pegs hammered into property boundaries. "Finding the bush pegs afterwards was always a matter of difficulty; should a tree stump be in the way, what more natural than for the settler to erect his beacon a foot or two clear of it" (Lynsky,1982:6). Of course a tree would always be in the way as they were the corner beacons.

During the 1860's and 1870's the issues which arise in the Council minutes reflect concerns with un-surfaced roads and approaches to bridges washing away, during this era Berea and Western Embankment Roads were surfaced, the eastern *vlei* (marsh) was also receiving attention. The harbour engineer, John Milne, suggested a method of draining the *vlei* through Cato's Creek to the bay. After some delay Milne and Captain Grantham from the Royal Engineers, aided by the labour of the 45th Regiment, started work on the drain

which was later named 'Milne's Drain' in his honour. The 1860's also saw the establishment of many ornamental gardens; Market Square, Albert and Victoria Parks. Water supply continued to be an issue; in 1878 Durban's public wells with hand pumps totalled 18 and produced 47 049 imperial gallons of water daily. Durban existed entirely on public wells and rainwater tanks. Durban's position with regard to its water supply was a serious problem at this stage was in dire straights. In 1879 the then Mayor made arrangements with the Natal Government Railway for water to be brought by railway tankers from the Umgeni River to a siding in Pine Street where it was sold for a penny a bucket – probably the most expensive water ever supplied in Durban. The year before the Zulu War (1879-1884), the Council placed the well boring operations entirely under the control of a Mr Currie; luckily his first borehole site below the Botanic Gardens yielded 50 000 gallons a day (Council minutes; Lynsky,1982; Archives University of Natal; Stuart, Webb and Wright, 1976).

Durban's fortunes changed dramatically after the Zulu war, the disintegration of Zulu power meant that the region could be opened up to European commercial farming and the sugar industry emerged. Suddenly Durban was a valuable commercial harbour and consequently there was an interest in its development. Until that point the British had occupied Durban more to prevent the *Boers* from obtaining a port, and hence a trade route to Europe, than as a port for their own purposes.

In 1881 Durban harbour was still inaccessible to ships; passengers landed in boats over the bar and through the surf. Harry Escombe, destined to become Prime Minister of Natal, had long recognised the need to open the harbour and allow Durban to realize its full potential – it was already 'the great forwarding station of Natal and … the seat of the sugar industry.' In 1881 he was appointed chairman of the infant port authority, the Natal Harbour Board (1877:KAB Map M1/2834; 1877: KAB Map M1/2835; 1867: KAB Map M2/476; 1889: NAB Map M2/90; 1887: NAB Map M2/374; 1854: NAB Map M3/261; 1875: NAB Map M3/319; 1871: NAB Map M5/54; Twyman:1991).

Other advances of the late 1800's were the construction of an earthen dam on the Umbilo River and the establishment of a gravitational water supply. The Council was still discussing sewerage in 1883 when a recommendation was made to install a Victorian pneumatic system (a Shone's system) augmented by a pail system, this went before the

Council for a decision in 1888 (Lynsky, 1982:24). Figures 31 to 33 show how the town and harbour developed.

Figure 29: Thomas Okes' General Plan of Durban 1846 (Lynsky,1982:1)
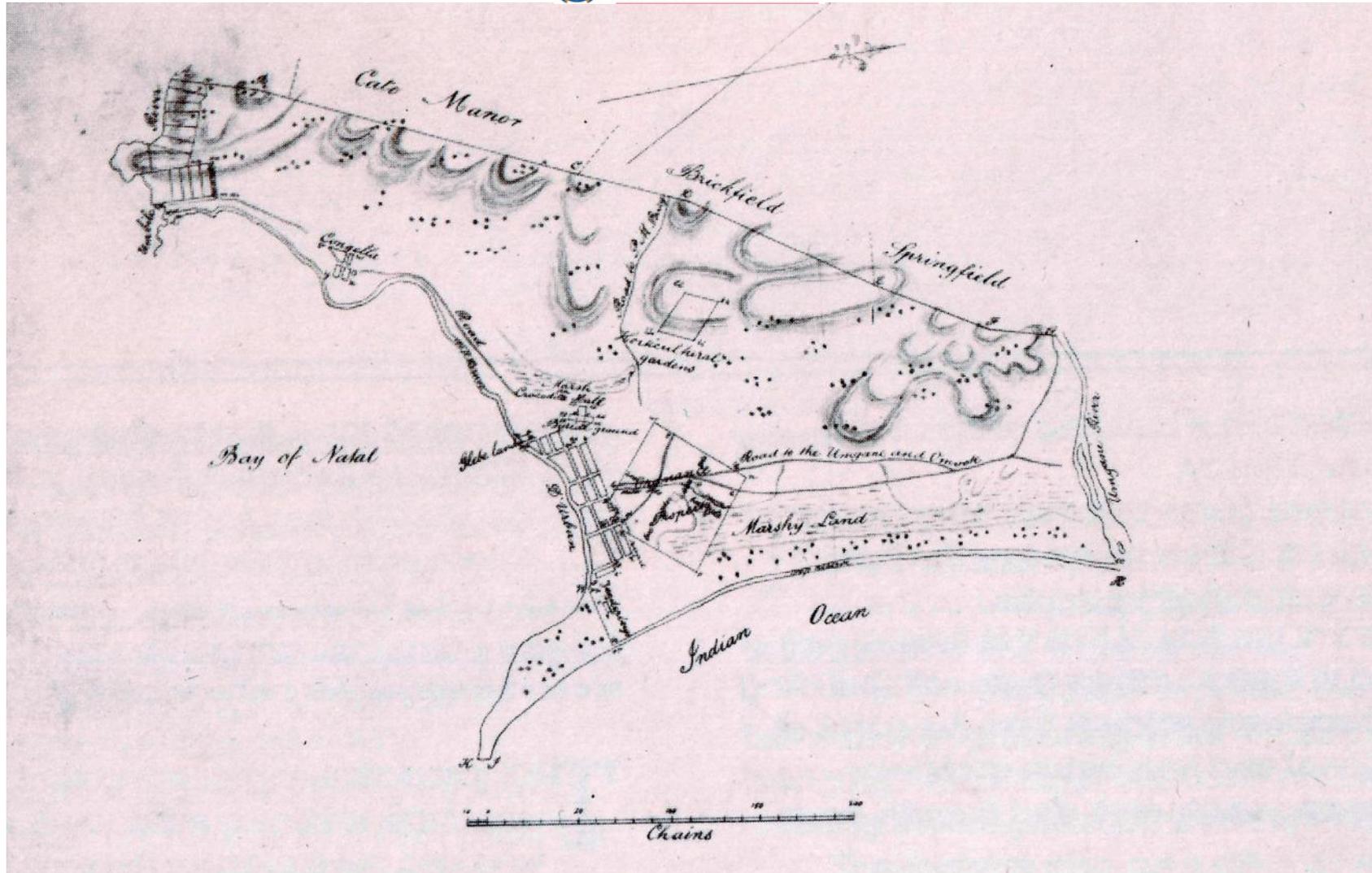
Figure 30: This Map is an enlargement of a section of the map on the previous page: Thomas Okes' general plan of Du rban in 1846 (Lynsky:1982:1)
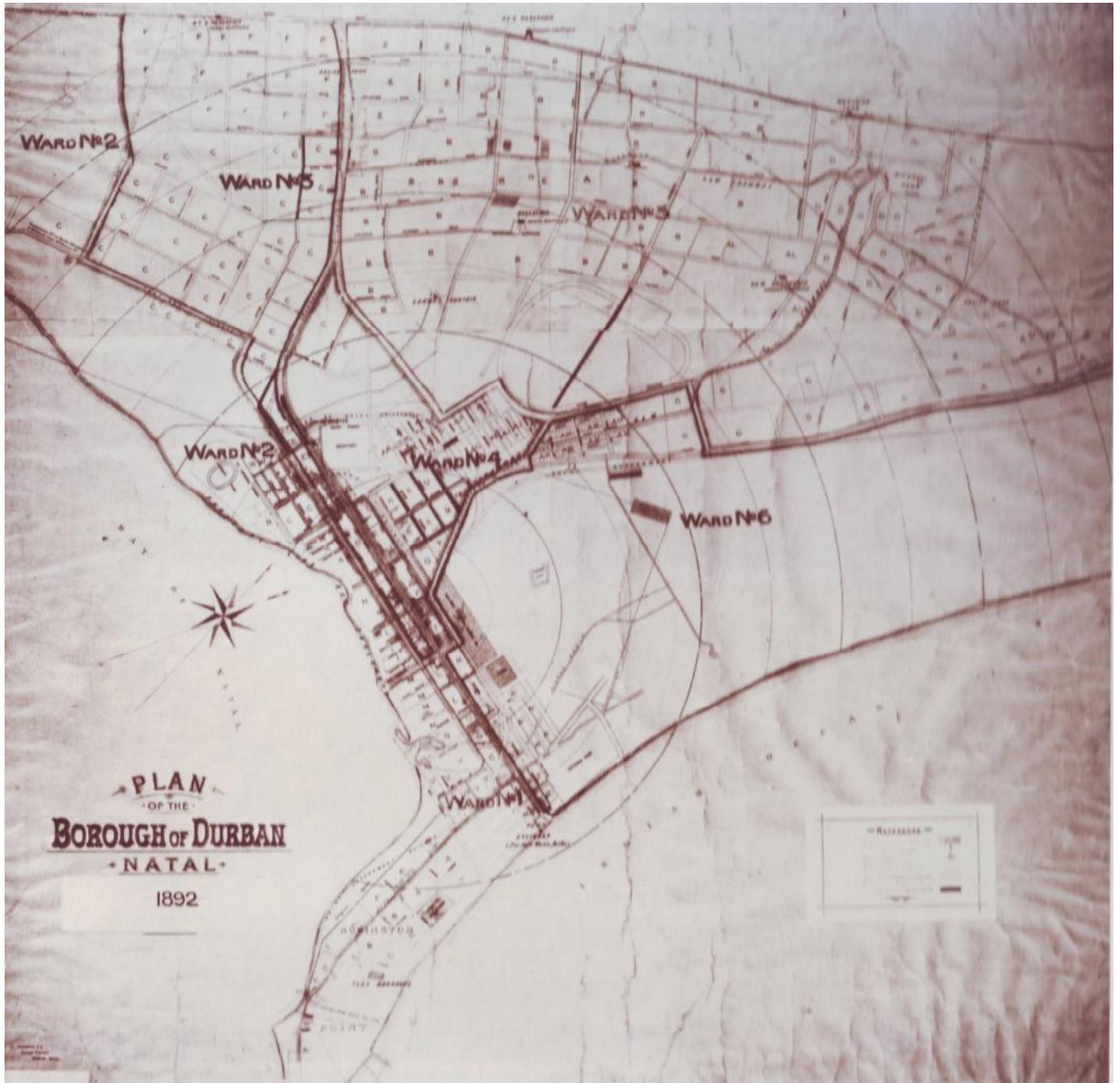
Figure 31: Borough of Durban 1892 (Lynsky:1982:inside cover)

Figure 32: Enlargement of section of Map cited on next page

Figure 33: General Plan of Durban Central Business District (Source: Surveyor General's Office)
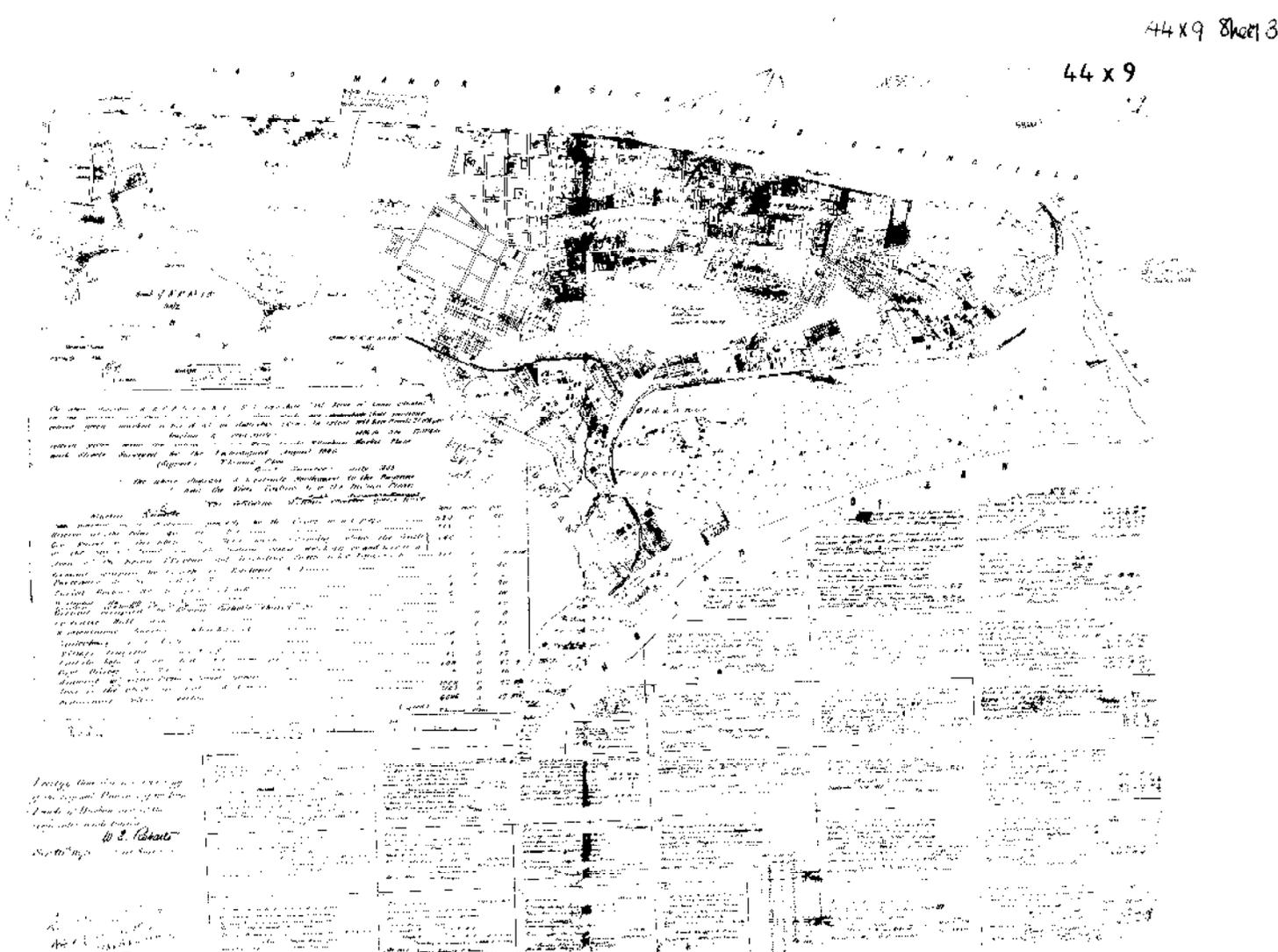
5.5   CONCLUSIONS

The reason the British captured Simon's Town and Port Natal was strategic, they didn't want Napoleon or the *Boers* (respectively) to establish a harbour and hence a trading route to Europe in competition with their own. Strategic control of harbours was vital to the British. Later Simon's Town became a major naval yard and a vital port in the British defence of the Empire. Port Natal became important as a commercial harbour and became a major export harbour. The two ports thus, have fundamentally different purposes, both are however vital elements in the British colonial strategy. In both cases commerce and trade were at the heart of the port development, in the case of Durban this was a direct link as it was a commercial harbour, but even in the case of Simon's Town the need for a naval defensive post was to protect the trade routes with India.

Secondly much of the early engineering work in the port settlements and harbour construction was carried out by the military, although the level of services provided were rudimentary. If one analyses the copious records of King William's Town, it is reasonable to imagine that the level of services available in the fort for the troops was far higher than those provided for the average citizen, King William's Town records clearly indicate that latrines, water supply, ventilation and layout were all addressed in fort designs and encampments; in fact designs still exist for a bowling alley – yet the services in early Durban were more primitive than those provided in early *Voortrekker* towns (which only had water furrows along streets and pit latrines).

Thirdly port development and infrastructure were so important to the empire that the harbour authorities were set up independently from the Town Council, harbours were not subject to civil administration, they were retained under the colonial government's control. The main harbours in South Africa not only follow the colonial trend but they also linked South Africa firmly into the British colonial network and economy.

CHAPTER SIX

MAPPING, SURVEY AND LAND TENURE

6.1   INTRODUCTION

As soon as the British landed at the Cape they were acutely aware of the lack of maps, they wrongly assumed that the Dutch had not mapped the area. The Dutch in fact had produced numerous wonderful maps, many of which are today in the Netherlands, they were however, taken back to Holland prior to British occupation. Once the British took control they immediately set about mapping the area, beginning with the creation of accurate navigational charts of the coast line.

"The first engineering work called for in any developing country arises from the need for people to move around, to explore unknown territory, to carry men, women and goods from one place to another. This means vehicles, roads, bridges and mountain passes. Communication by transport – and South Africa has been no exception. But, before any of this can happen properly, it is necessary for the rivers, mountains and plains to be measured and for accurate maps to be drawn, so that the roads, bridges and passes can be built in exactly the right places and designed correctly" (Bozzoli, 1997: xiii).

There were a number of reasons why land surveying and mapping were vital to British colonial expansion: firstly for military purposes; maps formed the base of all intelligence, strategic and tactical decisions, supporting the planning and execution of all battlefield functions. The Cape was occupied as a strategic harbour on the route to India it is, thus, not surprising that the early efforts centred on coastal charts and harbours – most notably Simon's Town. Secondly maps were necessary to describe and delineate Britain's domains, to define the colony, its size and boundaries. Thirdly mapping was necessary as a process of exploring - of surveying and recording the rivers, mountains and plains of the new territories. Finally mapping and survey were the basis of land tenure, one of the most powerful colonising tools.

6.2   BACKGROUND

After two centuries of British overseas expansion, the nineteenth century confirmed Britain as a world industrial and maritime power, with a vast empire to manage. Firstly the colonies needed physical planning, colonial ports and towns needed to be established and these tasks often fell to governors, usually with a military background from the Napoleonic Wars. Home (1997:36) cites Brisbane, Darling, Bourke and D'Urban as examples, many of whom gave their names to major colonial cities. Home (1997) goes on to explain that the demands of colonial management, as well as the new technologies of the Industrial Revolution, soon created new occupational roles. New professions rapidly diversified from the traditional three of law, medicine and divinity. It was also a time after the Reform Act (1832)[1], when a new breed of professional government inspectors arose, committed to improvement, demanding state intervention, and deepening government's hold of civic society. Home argues that the different professions associated with British colonial expansion each enjoyed their 'Kondratieff waves' of influence; first the land surveyors surveyed the new empire primarily between 1820 -1870, then engineers both civil and military installed the basic physical infrastructure in the period 1850 -1900, then the doctors took over as sanitary specialists in the provision of public hygiene (1880 -1930). Public health often had a very physical form, such as slum clearances and redevelopment projects. The last wave prior to the end of colonialism saw the rise of the architects and town planners who in the period from 1910 -1960 brought in ideas such as the garden city, suburbia, zoning schemes, a legal framework to manage development and land mark buildings symbolic of the empire. Ironically these waves of colonial professionals mirror any modern capital works project, first you survey, then you construct and finally you need

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[1] Reform Act 1832 – The full title is An Act to amend the representation of the people in England and Wales (2 & 3 Wm. IV, c. 45). This was the first time universal manhood suffrage was proposed. Thomas Rainsborough declared, "I think it's clear, that every man that is to live under a government ought first by his own consent to put himself under that government." More conservative members disagreed, arguing instead that only individuals who owned land in the country should be allowed to vote. Statutes passed in 1430 and 1432, during the reign of Henry VI, standardized property qualifications for county voters. Under these acts, all (male) owners of freehold property or land worth at least forty shillings in a particular county were entitled to vote in that county, the vast majority of individuals were unable to vote; the size of the English county electorate in 1831 has been estimated at only 200,000. Although the Reform Act of 1832 did not give the vote to all men it was the beginning of the move towards true democracy and greater accountability in England. Other reform measures were passed later during the nineteenth century; as a result, the Reform Act of 1832 is sometimes called the First, or Great Reform Act.

on-going management and maintenance. In short the empire's development was a vast state funded capital works programme which operated for years, covered vast territory and developed a phenomenal physical infrastructure around the colonial world. In keeping with the trend highlighted by Home some of the first colonial funded professional work carried out in South Africa was mapping.

6.3   MAPPING THE COLONY

The Royal Engineers' first contact with South Africa came when the Cape was occupied by British forces in 1795, ending nearly a hundred and fifty years of Dutch rule. For the seven years' duration of the occupation, a small detachment of Royal Engineer officers carried out fortifications, territorial and coastal surveys, utilising the few and in many cases unreliable maps and plans at their disposal, and producing new maps of their own. Among the instructions to Lord Macartney (1737-1806), when he took office as the first civilian governor of the Cape Colony in 1796, was an order to "cause a survey to be made of … rivers, landing places and harbours" (Bergh and Visagie,1985:34). The fortifications and surveys were largely the work of Captain James Carmichael Smyth, Captain George Bridges and Lieutenant Henry Smart. Of these men Smyth (1779-1838) then aged eighteen, soon demonstrated his talents as an engineer and an administrator, becoming *aide-de-camp* to the governor, Sir Francis Dundas (1759-1824) in 1800, and commanding the Royal Engineers and acting as Colonial Secretary in the early years of the Second British Occupation of the Cape in 1806. He was responsible for mapping, coastal surveys and fortifications and he gained considerable knowledge of the interior of the colony, providing information for Aaron Arrowsmith's map of the Cape Colony, 1805, which was dedicated to him (Garson:1992).

The lack of maps and plans which would have provided a basis for the Royal Engineers to work from gave rise to the belief that the Dutch had made no maps of the colony, and that the first serious attempts at mapping the Cape Colony were made after the British arrival; this is however incorrect as in the 1950's Cornelius Koeman, an eminent Dutch historian of cartography, discovered a portfolio of nearly a hundred maps and plans in the Ordinance Survey Archive at Delft in the Netherlands. There he found a fine collection of manuscripts drawn between 1784 and 1791, most of them having been commissioned from skilled Dutch surveyors by Cornelius Jacob van de Graaf (1734-1812), governor of the Cape

Colony from 1785-1791 and himself a military engineer. On being recalled to Holland to give account of his alleged maladministration of the colony, he took the collection with him. Another important set of eighteenth century maps and plans which may have been of use were spirited away from the Cape in 1795 on the death of the man responsible for their compilation, Robert Jacob Gordon (1743-1795). These are now in the Gordon collection of maps and plans at the Rijksmuseum in Amsterdam (Garson:1992:2).

Figure 34: the Oldest Known Map on which Stellenbosch is depicted as an already developed community. The van Riebeeck Society date it between 1688-1690 (Smuts,1979:66)

Figure 34 illustrates the level of detail on early maps and gives an idea of the limited extent of the initial Colony. The map is pictographic in many respects as the villages depicted are not in scale with the map base.

With the Second British Occupation of the Cape in 1806, an equally small group of Royal Engineer Officers arrived, under the command of Captain Smyth on his second tour of duty to the Cape, which lasted until 1808. He was replaced as commanding officer by Captain Henry Smart, who was at times, until 1818, the sole engineer in office. By then the

steadily growing need for the fortification of the eastern frontier against the dispossessed Xhosa brought to the colony five Royal Engineer Officers under the command of Major William Cuthbert Holloway. By the time of the second occupation the training of the Royal Engineers had been improved by the creation of the Royal Engineer training base at Chatham. In addition to the training provided at Chatham, practical experience in topographical work was gained at the Ordnance Survey at Southampton, by then a well-established institution in which the Royal Engineers were prominent participants. Obviously the maps of this era centre largely around the eastern frontier and cover both terrain mapping for military purposes and detailed plans of buildings at the various forts – King Williams' Town being notable for the vast number of plans which survive at the Cape Archives; everything from broad regional surveys to plans of privies (toilets) and even a bowling alley. Frustratingly once British colonialism ended many of the records were taken back to Britain and seem to have been split and housed at a number of different locations such as the House Guards in Whitehall, The Royal Engineers Establishment at Chatham, the Public Records Office and the British Library. Locally the plans and records are equally fragmented and reside in the Cape Archives, the Grahamstown Museum, the Cullen Library at the University of the Witwatersrand and a number of private collections. It is apparent from bibliographical enquiry that the Royal Engineer maps and plans of the colonies were on the whole not published as separate entities neither as sheet maps nor in atlases. There were however, some notable exceptions relating to South Africa. Sheet maps by Henry Hall of the Royal Engineers' Department and a beautiful map of British Kaffraria (sic) by Lieutenant William Jervois, were compiled in South Africa and printed in England (Garson,1992). The maps and plans were predominantly for two purposes, firstly they illustrated official reports and articles in professional journals and monographs, of which the Royal Engineers were prolific writers and secondly they supplied accurate information to the map-makers of the day who were producing maps of southern Africa. These cartographers were reliant on information from a number of sources; the writings and sketches of colonial officials, travellers and missionaries such as John Barrow, William Burchell, Thomas Baines, Hinrich Lichtenstein, Robert Moffat, Christian Latrobe provided a rich resource to draw from. But it was without a doubt the Royal Engineers whose communications on cartographic matters would have been the most accurate and workmanlike, based as these were on scientific geodetic principles (Grason,1992). The expansion of the Cape Colony and quality of mapping in the era is clearly seen in Figure 35.

Figure 35: Early Map of the Cape Colony, Orange Free State and Transvaal 1849

Source Public Records Office, Kew MR 1/144(8)

While some of the earliest British systematic and complete surveys were made in Egypt after the battle of Tel el Kebir (1882), the Anglo Boer War provided impetus for systematic mapping in the British Army. In 1899 the only available maps on the *Boer* republics were a few sketches of farms. The first mapping section, sent out in that year, comprised two Royal Engineer Officers, four non-commissioned officers (NCO's) and a sapper. By the end of the war there were four survey sections and three mapping sections in South Africa. During the war Captain Charles Close (later Aden-Close) Royal Engineer oversaw the first complete map reproduction in the field – surveying, drawing and printing maps – by the British Army (Jacobs and Smit, 2004:34).

At the outbreak of the Anglo Boer War the British possessed maps on the scale of twelve and a half miles to the inch for the Cape Colony, the Orange Free State and part of Natal. These maps were issued to their army in South Africa. For the northern part of Natal two military maps were available. These however, were known to be inaccurate and hopelessly out of date (Jacobs and Smit, 2004:34). Although the Anglo Boer War falls at the end of the time frame of this study it is useful to note the progress to this point as well as the reaction of the British military to the lack of maps.

Figures 36 - 42 provide an illustration of the many regional and route maps drawn by the Royal Engineers, they illustrate both the skill of the map makers as well as the pragmatic approach to the mapping of new territories; since the level of detail along major transportation routes contrasts with the lack of detail in the interior or in many places blank spaces occur on maps. The maps of the Eastern Frontier forts and signals clearly show the military purpose they were intended for. They also clearly illustrate the scientific approach to warfare as the Royal Engineers designed a number of small isolated forts with a well established communication signal system – they were defending a frontier for farming expansion which was very different from the European fortified towns. This was orchestrated and tactical expansion and is discussed in the case study.

Stone (1988) makes an interesting observation in his paper "Imperialism, colonialism and cartography"; he distinguishes between imperialism and colonialism. In Stone's view imperialism began long before colonialism and occurred when Africa entered the world trade system; firstly with the Arab trade routes but notably for this study with Europeans as

part of the slave trade and the trade in ivory and precious metals. Colonialism on the other hand was the direct settlement and control of African states which occurred much later and lasted only a brief period, the level of control and hence the detail required of cartography was very different in each phase (Stone:1988). It is thus, not surprising that the mapping of Africa began as coastal charts, many of the early maps of the interior marked legendary areas such as King Soloman's mines being based on word of mouth rather than fact, later mapping became more accurate but was only partial in coverage; systematic and detailed coverage in terms of world mapping is a relatively modern phenomenon.

The pre-colonial phase was characterized by its use of the Ptolemaic concept of mapping[2], and was centred on discoveries like finding the source of the Nile. The turning point in cartography is located in the "age of reason". A scientific approach leads to the removal of many legends and assumptions by the innovators who achieved marked gains in accuracy and were famous for their blank spaces or areas of the map devoid of any information, in other words the information given was accurate but limited to what had been surveyed, the rest of the map was left blank. The change to the colonial system of mapping saw marked changes due to the need to establish administrations on the ground, mapping was necessary to define districts, establish routes, define colonial borders and an unprecedented amount of detail was applied to the counting and mapping of people and resources – these maps were however, often drawn up by administrators and were very inaccurate and patchy, the few Royal Engineers who were in the country were used for more important tasks such as laying out of towns and infrastructure development. The first major mapping in South Africa was brought about by the Anglo Boer War – it was a military need which drove the accurate mapping of South Africa.

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[2] The Ptolemy world map is a map of the known world to Western society in the 2nd century A.D. It was based on the description contained in Ptolemy's book Geographia, written circa 150. Although authentic maps have never been found, the Geographia contains thousands of references to various parts of the old world, with coordinates for most, which allowed cartographers to reconstruct Ptolemy's world view when the manuscript was re-discovered around 1300 AD.

Perhaps the most significant contribution of Ptolemy and his maps is the first uses of longitudinal and latitudinal lines and the specifying of terrestrial locations by celestial observations. When his Geographia was translated from Greek into Latin and introduced into Western Europe at the beginning of the fifteenth century, the idea of a global coordinate system revolutionized European geographical thinking and put it upon a scientific and numerical basis.

Figure 36: Port Natal to Colesberg: Sketch showing the route travelled between the Natal and Cape Colonies by the Commanding Royal Engineer on a tour of inspection from sketches made by Lieut. Jervois (RE) Signed by J.Reid 25th March 1847 (Garson,1992:41)

Port Natal to Colesberg

Figure 37: District of Graaff-Reinet: Sketch map showing the ground between the northern boundary of the Cape colony in 1822 and Kuruman. Signed by Lt. Bonamy (Garson,1992:11)
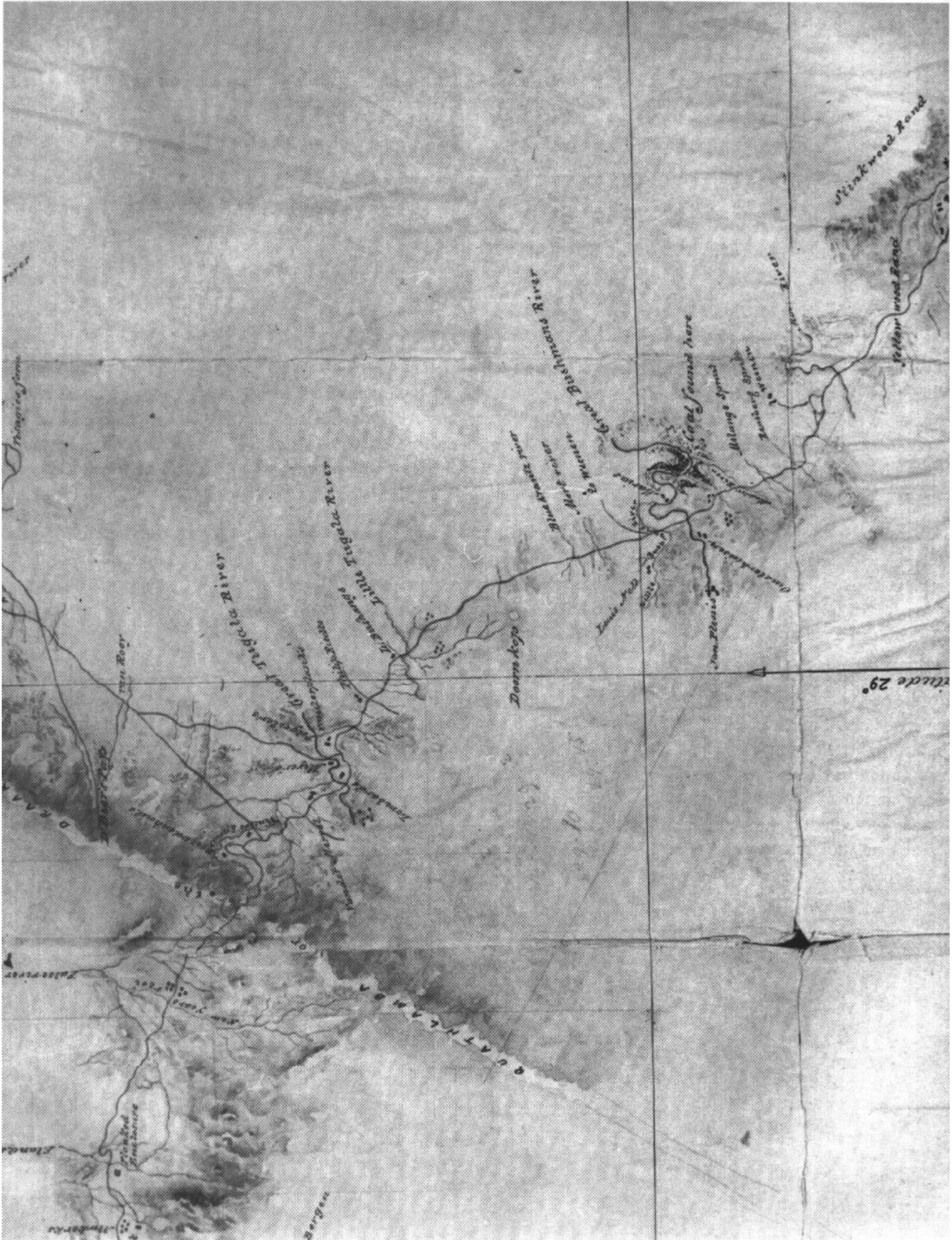
Figure 38: 1823 District of Somerset, Photographed by author from the original Royal Engineers Collection of Maps at William Cullen Library, University of the Witwatersrand, Map 3 Sketch showing the north-eastern frontier of the Cape of Good Hope signed by J.Bonamy

Figure 39: Signal Towers, Eastern Frontier. Photographed by author from the original Royal Engineer's collection William Cullen Library, University of the Witwater srand

Signal Towers

Figure 41: Eastern Frontier Cape of Good Hope and adjacent country of the Kaffir (sic) tribes. Signed by J.Ried December 1846 Photographed by author from the original Royal Engineer's Collection William Cullen Library, University of the Witwatersrand.
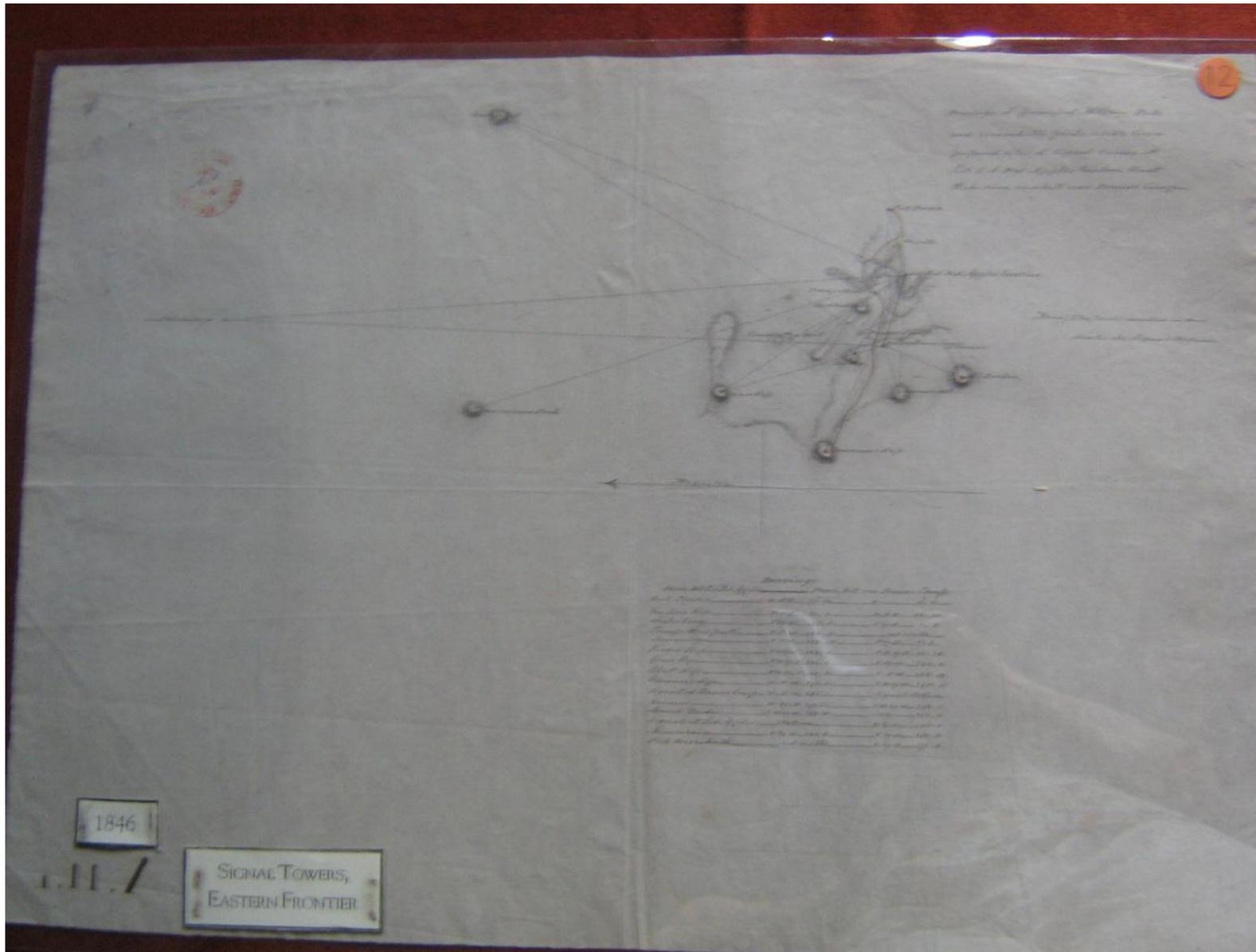
Figure 42: Detail of Previous Map as depicted in Garson(1992:37)

Eastern Frontier
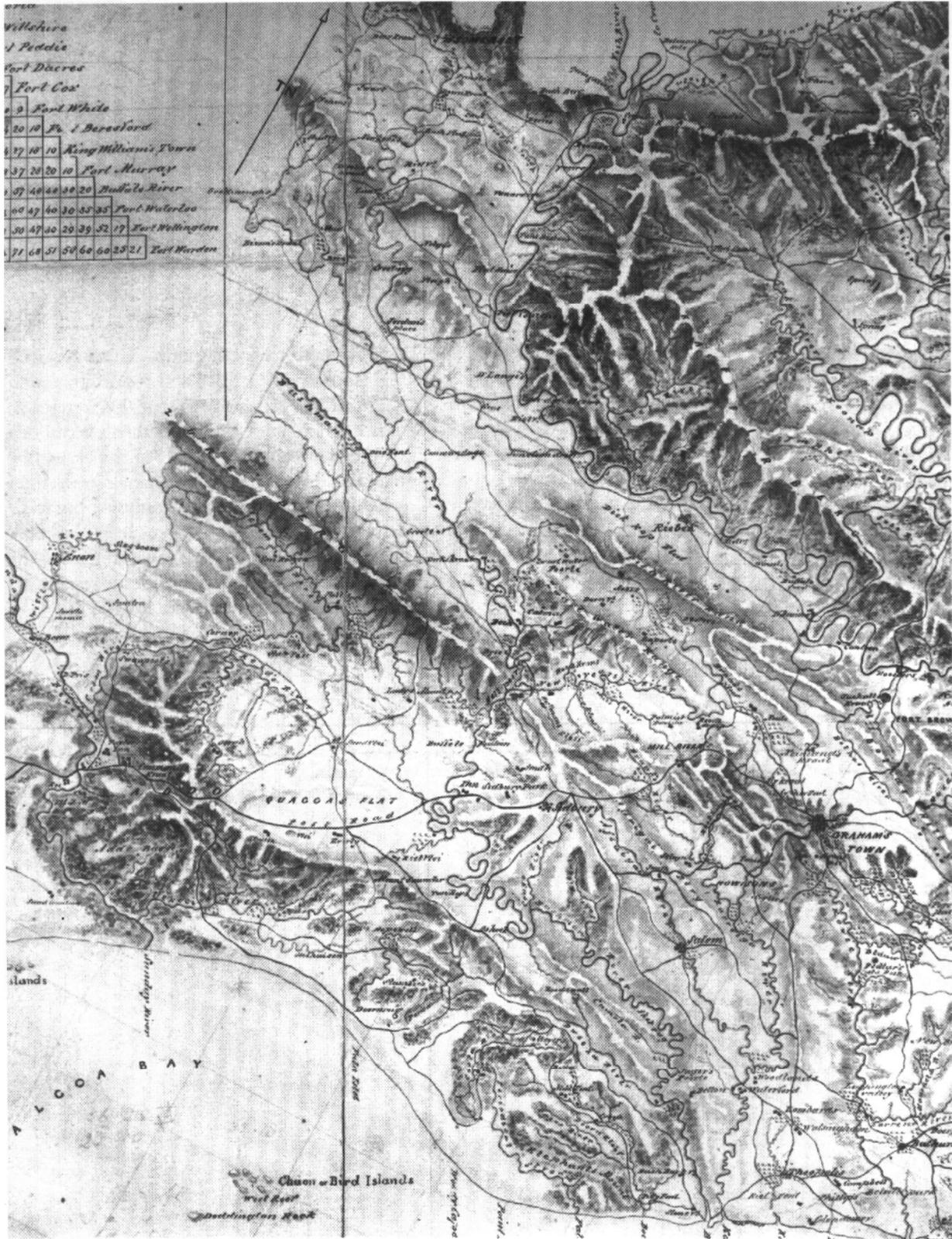
6.4 LAND TENURE

Perhaps the most lasting legacy of colonial control in South Africa is evident in the land registration system. Prior to colonial settlement, land in South Africa was valued for its grazing potential and tribes fought for the use of various regions and often migrated with their cattle throughout the year. Individual ownership was unheard of. Colonialism saw the introduction of a market economy; a central element of which is the ownership and control of land – a fundamentally different concept to the pre-colonial tribal system. Colonialism also eventually lead to closed settlement, where open land was no longer available – hence conflict arose.

Colonial South Africa has been influenced by two systems of land tenure, the first, introduced by the Dutch, was a very informal system and the latter the more formal British imperial system. The two had varying effects upon settlement, and were applied to different areas for very different periods of time. The British imperial system affected Natal for most of the second half of the nineteenth century and the Cape of Good Hope for only a short period. In the remainder of South Africa the Cape Dutch system, sometimes modified by ideas from the United States, was dominant. Figure 43 is an example of an early Dutch Title Deed.
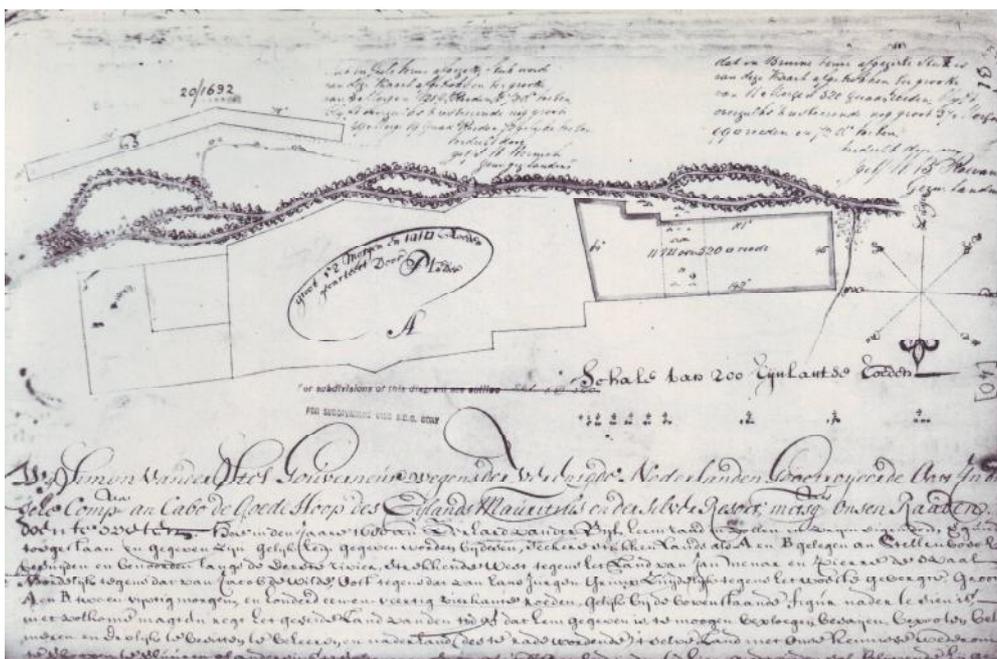
Figure 43: Example of Early Title Deed, in this case for the farm Vredenburg, which borders on Stellenbosch. The farm was granted in 1680 and registered on February 29th 1692. (Deeds Office Cape Town)

A very cursory and brief description of land tenure in South Africa follows; it is not intended to be exhaustive but merely a backdrop against which the Royal Engineer's contribution can be assessed[1].

The first land survey at the Cape was carried out by Peter Potter in 1652, when he surveyed a piece of land for released Dutch East India Company servant Jacob Cloeten (the land was registered by J.G van Grevenbroek) Potter's cadastral survey was topographical in nature, it therefore relied on distinguishing features as reference points. The area was lacking in striking features, thus, apart from the Liesbeeck River, which formed a suitable natural boundary, two posts were erected to demarcate the other boundaries. The positions of these beacons and boundaries thus demarcated were surveyed and delineated on a diagram forming part of the document of title; the deed of title also contained information on the ownership rights (full property), location and extent of the site (twenty morgen) (Simpson and Sweeny,1973:107; Cardy, 1990).

The survey system was inadequate as it became impossible to relocate the original corner beacons with any degree of certainty. Thus van Riebeeck in 1662 advised his successor: "…in order to prevent disputes among the freemen it would perhaps be advisable to force them to surround their lands by walls and dry ditches, because they shift their beacons at every moment, frequently causing trouble thereby" (Simpson and Sweeny,1973:108; Cardy, 1990).

The size of land grants however, increased rapidly when the settlers moved into areas remote from Cape Town. Cattle farms in particular needed extensive areas. The settlers evolved their own system of appropriating farms, which was recognized by the Company in 1732. There were either few or no surveyors in the Cape at the time; farms however, had to be demarcated in a land which had few natural reference points. It became established custom that a man could possess all the land within half an hours horseback ride at walking pace, from his house or the centre of the farm (giving an area of

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[1] For greater understanding of the topic please consult the two volumes of Collected Papers on the History of Surveying and Land Tenure published in 1884 (Vol 1) and 2004 (Vol 2) by the Institute of Professional Land Surveyors of the Western Cape; "British Land Policy at the Cape 1795-1844" by Lc Duly; the Masters' dissertation of E C Liebenberg entitled "Die Topografiese Kartering van Suid-Afrika, 1819-1972 (Unisa, 1973)"; the work on land policy and tenure by Prof Rodney Davenport, as well as the various articles on maps, mapping, and land registration by Vernon Forbes, Nigel Penn, Jane Carruthers, Lindsay Braun and Elri Liebenberg which have been published in historical journals.

approximately 3000 -3500 Morgan) (refer to Figure 44). Thus farms could be spaced an hours ride from each other (Christopher,1971:3; Cardy, 1990).
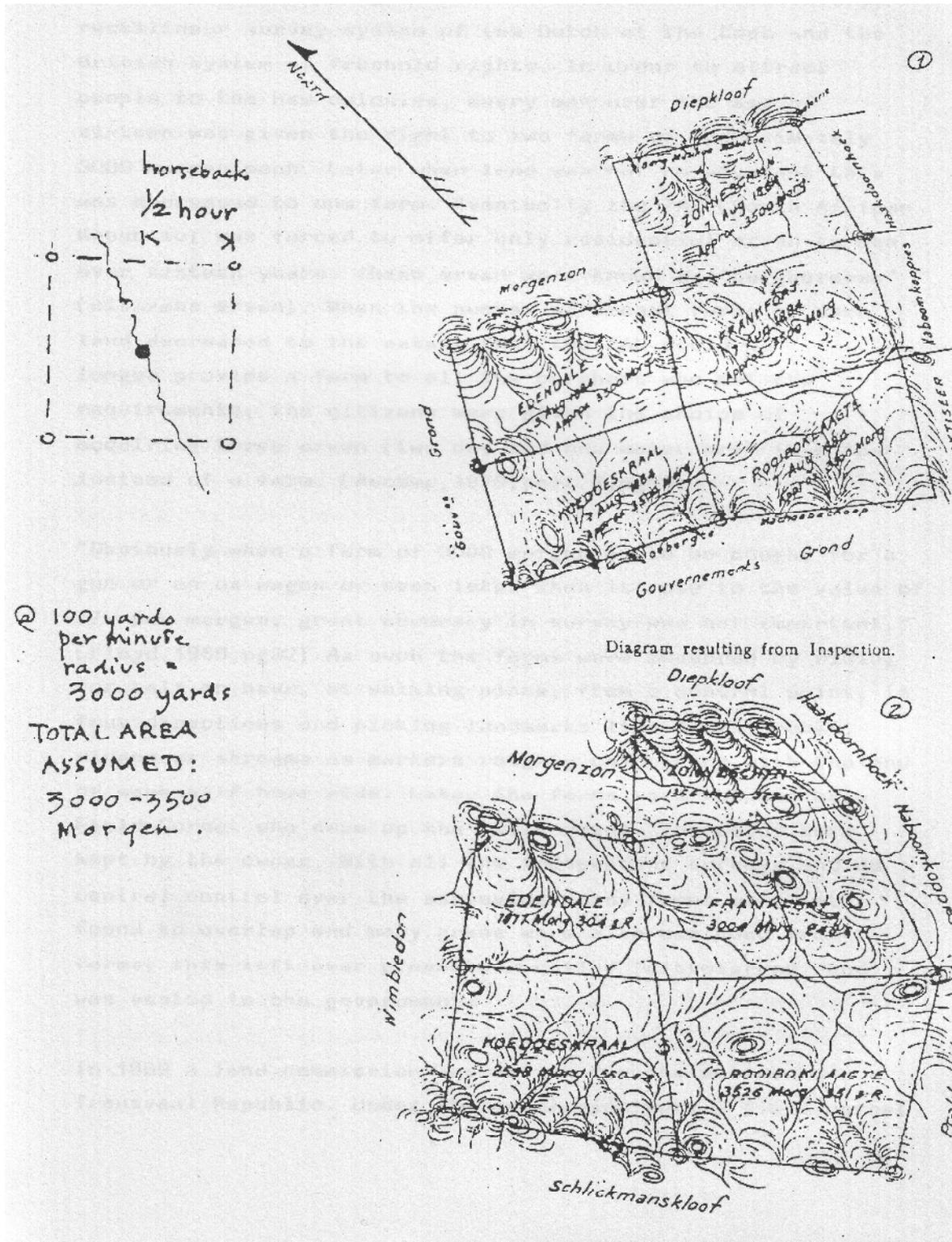
Figure 44: Surveying of Farm boundaries in South Africa; 1 shows the presumed boundary and 2 shows the boundary after accurate survey (from Professor W Mallow's private papers - Department of Town and Regional Planning University of the Witwatersrand)

The farmer would choose a landmark often a tree or ant hill, or place a small stone cairn at the corner; later a Field Cornet[2] would check the farm and draw up the title deeds, which would be kept by the owner. As there was no accurate systematic survey at the time there was no way of relating individual surveys, many farms were later found to overlap or were not contiguous with each other; but obviously when land was plentiful on the frontier and could be bought for a gun or an ox-wagon accuracy in survey was not important (Cardy,1990).

As far as land tenure was concerned the Dutch East India Company (VOC) allocated farms on an annual rental basis. In 1657 van Riebeeck allocated land to nine former company servants who formed two groups of "*free burghers*" (free citizens). Under the initial conditions of settlement the *free burghers* were to receive in freehold as much land as they could cultivate in three years (Guelke,1984:9).

When the British took over the Cape they started to change the land policy. The British began to formulate and implement a land policy in all of its colonies during the nineteenth century. In the last sixty years of the nineteenth century there was considerable demand for settlers in various "New Lands" of the world. To a large extent the governments of the countries and colonies involved competed with one another for suitable colonists. Assisted passage was offered, and rural land policies were formulated which, it was hoped would attract settlers. Agencies in the major European centres were established to publicise the attractions of the colony or state concerned, and a flood of propaganda was issued. (Figures 45 - 47).

Figure 45: Advertisement for Land in America
(Ward:1998:16)

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[2] Field Cornet: A civilian acting as a military officer. Term used in South Africa, a civilian invested with the authority of a military officer and empowered to act as a magistrate. It was later a rank in the Boer commandos, and subsequently in the former South African army. (Encarta Dictonary)

Figure 46: Advertisement for the settlement of South Dakota (Ward:1998:19)
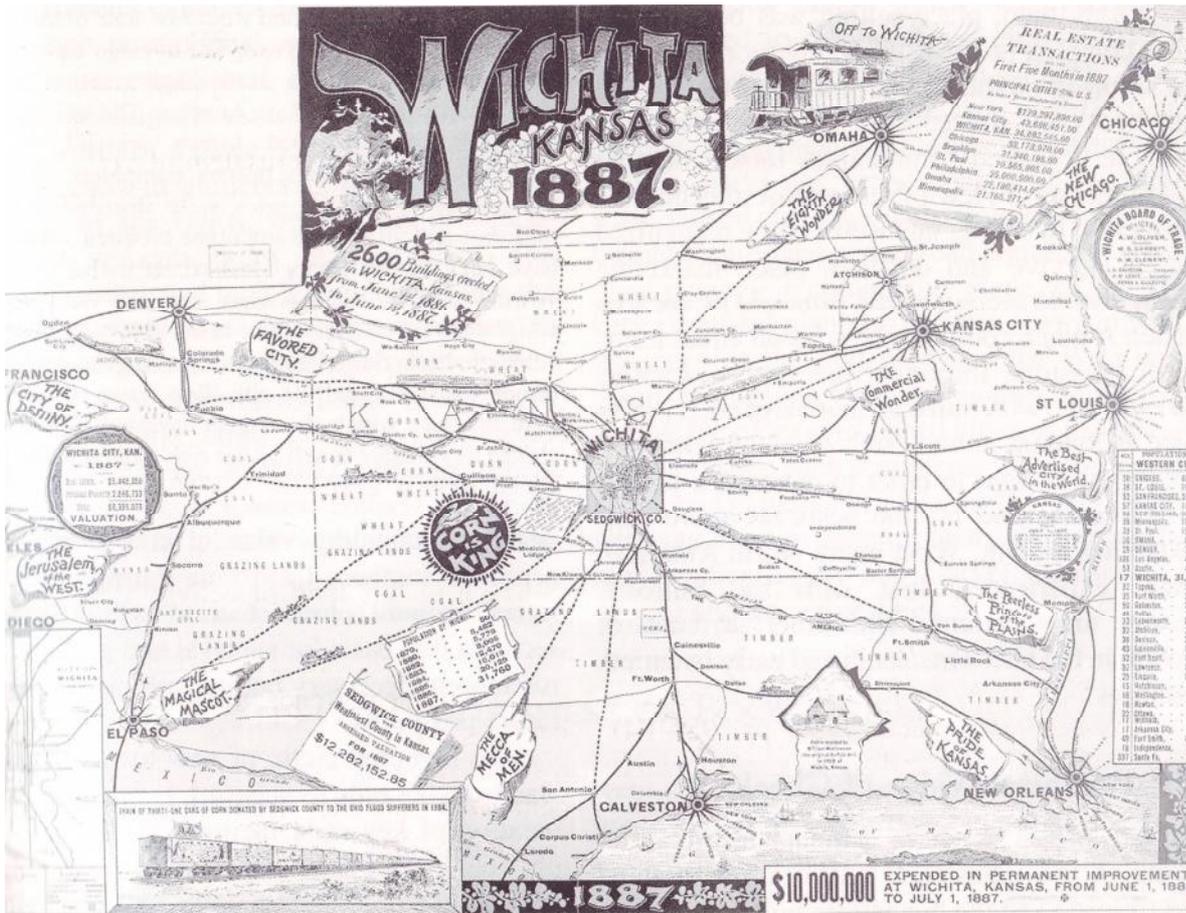
Figure 47: Promotional Map of Wichita produced by the local board of trade (Ward:1998:23)

The Victorian Era saw a great drive to extend European settlement and make use of land which was 'lying idle'. Settlement promotion was undertaken with the utmost optimism that a better way of life lay ahead for the colonist and that the opening up of the "New Worlds" would make the existing one a better place to live in (Christopher,1971).

There was no fixed agreement of how this would be achieved, however land was seen as the key, it was viewed in one of two ways: The first regarded land as being of intrinsic value and therefore a price could be placed upon any parcel of land; land in fact was a reserve of revenue which could be called upon by the state to meet other expenditure; often that of financing immigration. The second regarded land as only of value once improvements had been effected, and therefore land could be given to a settler on the understanding that it be improved and therefore the total capital value of the rural areas of the country in question would be increased. British settlements (or former British settlements) like the United States, Canada, Australia, New Zealand and to a lesser extent South Africa were all in competition for settlers and there was, thus, a keen interest in the developments of other states and frequent adjustments to land policy. The United States in particular provided a model for land regulations because of the success of the settlement of North America.

The British imperial system of land settlement owed much to the operation of the Congressional system of land division and sale. The United States of America formulated its land policy in the period immediately after the American War of Independence. In 1785 Congress adopted a Land Ordinance which was to apply to the federal public domain. The Ordinance provided for the survey of the land and its disposal by public auction at a minimum price of $1 per acre. The system was improved by the passage of the Land Act of 1796, which became the model for much legislation in other parts of the world. The system envisioned a close settlement of the public domain by an agricultural community, on lots of 80 – 160 acres in extent (South African farms as previously stated tended to be 3 000 – 3 500 morgen which translates to approximately 1850 – 2 160 acres). The lots were systematically arranged into sections and townships. The system of regular survey and auction was extended westwards from Ohio as the lands were opened up. Undoubtedly the scheme attracted many settlers who were able to buy land at reasonable rates. The government looked upon the disposal of land at first as a means of raising revenue, and the minimum price varied according to the economic conditions. However,

attitudes changed as the volume of immigrants increased in the 1830's when they felt that settlers could be placed on the Western boundary to make the United States internally strong – that is the settlers were used as a buffer – so alternate plots were sold. The system had a number of inherent problems firstly there was a lack of provision for pastoral farming, all land was supposed to be farmed with crops, secondly there was no recognition of different environments and as the development spread westward increasingly arid land was encountered – this however, only happened in the 1870 – 1880's so the policy was adapted to South Africa before this problem became evident (Christopher,1971).

British land policy was first formulated in 1832 and it copied many features of the American system, but in order to attract colonists away from America to other British colonies it needed to be more favourable. The colonial reformers attempted to mould the American system to British needs and introduce a system common to the entire British Empire, but it seems doubtful whether prospective conditions outside America were seriously considered. The basic thinking behind the policy was the desire to establish across the globe a series of colonies socially similar to England. The best features of the English rural community were to be transplanted to new environments and the evils associated with industrialisation were to be left behind. In so doing, it was hoped that there would be an increase in health and prosperity, not only for the new communities, but also for England, where contemporaries were faced with what appeared to be over-population. The whole policy of emigration was seen to be bound up with the price of land in the colonies. The colonial reformers felt that to develop a successful colony, there must be a balance between the supply of land, labour and capital. Land had to be used to attract settlers and the price had to be low enough to allow settlers to buy land they could afford and leave some capital for investing in buildings, machinery and animals. Critically however the land price had to be high enough to prevent labourers from buying land; it was necessary to maintain a labour force to work the land. It was also important however that land should not be totally unattainable to labourers who wished to work up to proprietor status (Christopher,1971).

The new policies of 1832 were a departure from the previous approach to colonial land where land had been granted at a moderate rental to anyone who would occupy it. The hope was some cultivation or pasturing of animals. The old approach was felt to be wasteful and the new fixed price or minimum upset price was introduced throughout the

Empire, nowhere was its introduction more troubled than in South Africa. When the policy was imposed on the Cape Colony it led to stagnation. The land the government held in the Cape was rocky "left over" land and there was little demand for it when settlers could simply move beyond the colonial borders and claim land. A sizable body of Cape farmers left the Cape colony, the *trekkers* (migrants) took their own ideas of land policy with them and so the Orange Free State and the Transvaal never adopted the imperial system. It was only in Natal that any direct clash of ideas occurred. The area had been settled by the *Voortrekkers* first and they were allowed to retain title upon British annexation, so three million acres out of ten million acres were already allocated, this area constituted the best agricultural land, however, it remained largely undeveloped due to its sale to speculators. Secondly the reports sent to Britain suggested greater soil fertility and rainfall than actually existed, the picture was of a lush tropical and sub-tropical region and prices were fixed in London accordingly. On the basis of considerable propaganda the Government of Natal was able to encourage settlers through a series of immigration schemes. The Byrne scheme was the most famous.[3] The Natal Government attempted many more schemes yet the policy led to the stagnation of the area and in 1857 the Government once again resorted to the granting of farms in return for a moderate rental, it proved popular but London intervened and forced the Natal government back to the Imperial policy, and once again stagnation of the rural areas occurred (Christopher,1971).

By 1860 the British imperial land policy in South Africa was seen to be unsuccessful. The Cape Colony abandoned it in 1860, while the Orange Free State and the Transvaal had never adopted it, it was only in Natal that it lingered. By the 1860's there was little in the way of imperial land policy left internationally as Australia and North America began to

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[3] The term 'Byrne Settler' is any emigrant brought to Natal by the company, J. C. Byrne & Co. These people landed in Natal on 20 ships during the years 1849 to 1851. Allotments were laid out in the Byrne Valley, near Richmond.

J. C. Byrne & Co. offered prospective emigrants a passage to Natal and 20 acres of land. Byrne's miscalculations eventually scuttled his scheme. He would have been saved these had he actually visited the Colony. First, he thought there were vast open spaces just waiting to be settled, as a result of the Boers' withdrawal from Natal once British rule had been established. However, he was out of date. In 1848 Sir Harry Smith, the Cape Governor (Natal was then a district of the Cape), made an attempt to halt the exodus of Boers by relaxing the regulations under which lands were granted. Thus the Government had very little left in the way of Crown lands in sufficiently large blocks to allow the settlement of large numbers of emigrants. Then his 20-acre lot plan was quite unrealistic, taking into account the Natal countryside – where was no way an immigrant could make a living here on 20 acres.

Thus Moreland his appointed surveyor, found it extremely difficult to obtain suitable land, i.e. well-watered, with good soil, access to timber for firewood and building purposes, and within easy distance of either Pietermaritzburg or Durban. Many emigrants rejected their allotments as not worth the payment of survey fees, and either found jobs in the towns, or purchased or leased land at very little cost elsewhere. They were certainly not going to buy Byrne's land at 5/- an acre.

Things went from bad to worse, and eventually in Sep. 1850 Byrne surrendered his estate.

administer their own policies and there was general liberalisation of land policy the most famous of which was the American Homestead Act of 1861.[4]

The Crown Lands Act of the Cape Colony in 1860 allowed for a return to rents on land and importantly did not limit the size of farms, this allowed a move away from cultivated farms to grazing and vast sheep farming districts emerged. Close settlement was no longer the aim of the Cape legislators - they sought men with capital and were no longer interested in close European settlement or the importation of either European farm labourers or industrial workers. The new system allowed for land to be sold at public auction and taxed thereafter by means of a perpetual rent. Taxes and rent were low as both were calculated on the land value for pastoral farming. The areas were large and varied which made the system highly flexible. The Surveyor General's Office was able to adjust rents, minimum prices and extent according to the capabilities of the land, a system which was only possible when the volume of work at the Surveyor General's Office was small (Christopher,1971:6). The basis of the policy at the Cape was that there was an inexhaustible supply of land, which for the Cape was true until the end of the century, however, the same policy in the Orange Free State and Transvaal led to a build up of pressure on available land, and sons found that there was no longer land to claim and that subdivision was not practical. At several stages in South African history during the nineteenth century military conquests established new zones of settlement to relieve pressure on the old established areas. In each case, use was made of tribal warfare among the African populations to introduce a small army of Europeans, who having defeated one of the contenders in the tribal war exacted their price in land from the victor (Christopher,1971).

Land policy and the alienation of land was seen as vital to colonial settlement and colonial settlement was seen as vital as it established new producers of raw materials, new markets for European goods and a way of decanting the growing population of Europe. Land was allocated as a way of attracting settlers, it was perceived as having an intrinsic

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[4] **The Homestead Act** was a United States Federal law that gave freehold title to 160 acres (one quarter section or about 65 hectares) of undeveloped land outside of the original 13 colonies. The new law required three steps: file an application, improve the land, and file for deed of title. Anyone, including freed slaves, who had never taken up arms against the U. S. Government could file an application and improvements to a local land office. The Act was signed into law by President Abraham Lincoln in May 20, 1862. Eventually 1.6 million homesteads were granted and 270 million acres (1.1 million km^2) were privatised between 1862 and 1986, a total of 10% of all lands in the United States.

market value. The Imperial policy was overwhelmingly a rural land policy, firstly as a reaction to the problems of industrial towns in Europe but also because the colonies were seen as the producers of raw materials, industrial goods were produced almost exclusively in Europe and shipped back for sale to the colonial markets. Towns at this time in the colonies were for administrative purposes and as markets for the rural commodities.

The frontier only truly closed after the Anglo Boer War when a large number of poor whites flooded to the urban areas. Increases in urban populations combined with the developing mining industry led to the industrial development of South Africa and a move away from an agricultural subsistence frontier.

6.5 THE ROYAL ENGINEER'S CONTRIBUTION TO LAND SURVEY, TENURE AND MAPPING

It has been shown that the Royal Engineers were a critical component in the systematic mapping of South Africa, they began with coastal surveys and route maps and extended to producing regional surveys and maps of frontier terrain and fortifications. Many present day towns owe their origin to Eastern Frontier forts e.g. King Williams Town. The maps were drawn in the scientific tradition with detailed scales and measurements.

Military mapping formed the basis of much of the demand for accurate mapping as was evidenced by the mapping of the Eastern Frontier and the demand for accurate surveys during the Anglo Boer War. There are classic accounts of what happened when mapping was not accurate such as occurred in the Zulu wars in Northern Natal, where the British suffered a number of major losses largely through lack of preparation and poor knowledge of the terrain.

After British occupation of the Cape, the first Engineers were used to produce accurate coastal charts. This clearly illustrates the strategic reason for the colony. Effort and expertise were focused on the sea route to India and its defence. The next major mapping was of an exploratory nature mapping routes inland. The exploratory maps depict soil types, vegetation, peoples and game, they are exploring the land with a view to its commercial value. Sources of raw materials are noted and good grazing delineated.

The wars on the Eastern Cape frontier required terrain mapping for military purposes. These maps and plans were most often produced to illustrate reports to London and to site military buildings such as forts and signal towers. Maps and plans formed part of the reporting system of the Colonial government, they were not produced for the colonialists, as is evidenced by the fact that very few Royal Engineer maps were reproduced or printed.

The Royal Engineers seldom became involved in the land surveying for registration of ownership other than in towns. When farm land was so plentiful and surveyors scarce, they were primarily used to lay out towns and infrastructure; farm survey was left on a more *laisse-faire* basis until increasing demand and pressure on land required more accuracy. This is quite different from the America, Canada and Australia where surveying of property rights was more comprehensive, the impact of the *laisse-faire* approach is evident in the cadastral plans, if you view property boundaries in Canada, America, Australia and South Africa you can clearly see that although all of the policies aimed at square farms the South African cadastral landscape is far more random. Much of America was surveyed as the railways expanded westward. This difference in approach was due to the fact that South Africa was never viewed by the British as a permanent European production/agricultural settlement. The British only really wanted South Africa so that other colonial powers would be prevented from controlling the sea route to India. Later in the 'Scramble for Africa' it was more about asserting British domination than a desire to create new production colonies. America, Canada, New Zealand and Australia were all created as permanent European agricultural settlements from the outset. The agricultural land was thus critical and more systematic surveys were done from the outset. (Refer to figures 48 - 50.)

The influence of land surveyors in South Africa follows the colonial trend at the time; as new lands were acquired, a first priority was to survey them. The mapped cadastral survey was one of the most powerful instruments available in the colonies for allocating the prime resource – land. In the long-settled lands of Europe, the land surveyor's work was largely confined to demarcating and mapping, but in the colonies he was doing much more. He was the instrument for imposing a whole new economic and spatial order on the territory. The land surveyor was an explorer, resource appraiser, town planner, delineator of route-ways and the shaper of landscapes both urban and rural. Until he had traversed the land with chain and compass, and the results recorded on a map, it could not be fully converted

into private property; however, in South Africa, as was shown above, the mapping was subsequent to settlement and land ownership was established prior to detailed and comprehensive mapping of South Africa.

Home (1997) points out that it was the land surveyor who subdivided colonial towns into their ample lots; and this established the character of the low-density suburban landscapes characteristic of the colonies. These low density suburbs in turn influenced the 'Garden Suburb' movement in Britain.

To this day South Africa operates on the basis of surveyed private properties. Many towns and cities in South Africa are characterised by the low density suburban plots and stand alone houses of the colonial era; indeed in many respects these are lifestyle choices still aspired to by many, especially those denied these standards by the Apartheid era. In the following chapters the focus will be on the establishment of towns, infrastructure and technological advances made by the Royal Engineers.

Figure 48: Example of regular Survey America (Rand Mc Nally Road Atlas, 1990)

Figure 49: Example of Regular Farm Survey Canada (Rand Mc Nally Road Atlas, 1990)
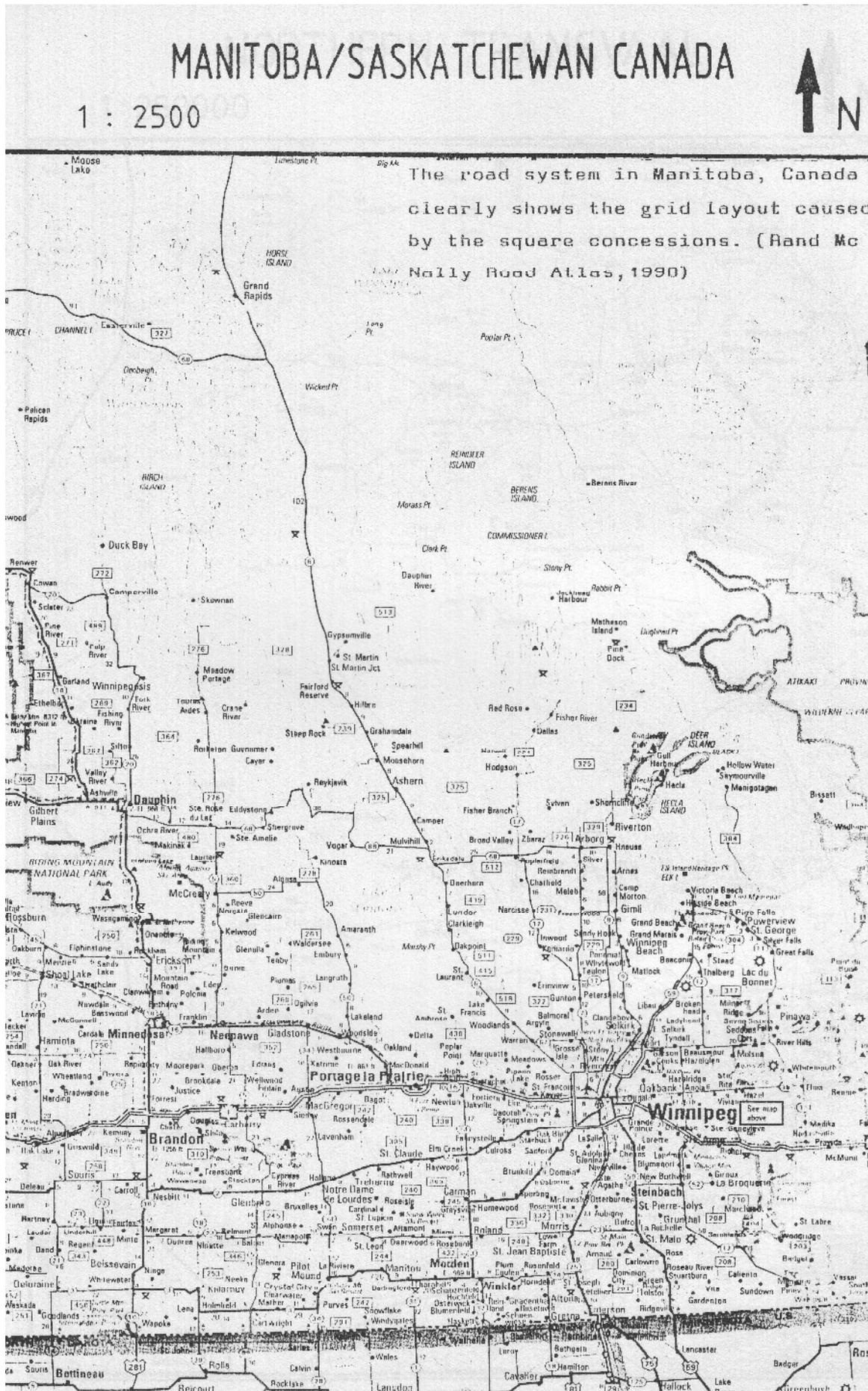
Figure 50: Irregular Farm Surveys South Africa (Topo-cadastral Map Series, Government Printers Pretoria, 1990)
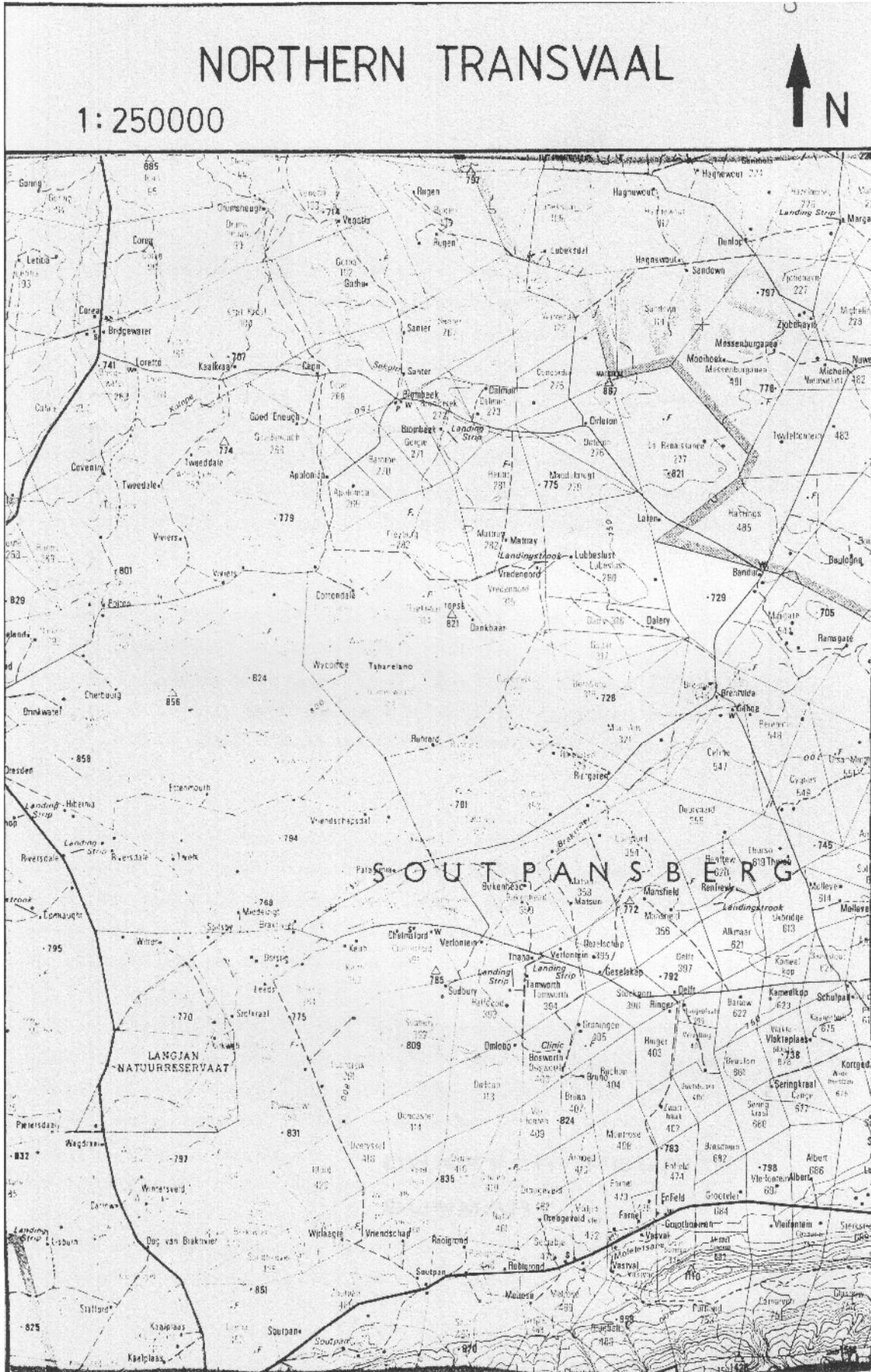
CHAPTER SEVEN

FURTHER ELEMENTS OF BRITISH COLONIAL DEVELOPMENT

7.1   INTRODUCTION

This chapter seeks to give a synoptic overview of the type of areas where the British left a mark on the spatial and economic development of South Africa. Obviously it is possible to write a thesis on each of these aspects but this chapter attempts merely to highlight the types of impact in order to set the framework against which the case study (Section C) can be assessed and conclusions drawn with respect to the developmental methodology used (Section D). Not all of these aspects can be ascribed solely to the Royal Engineers; many of these trends are colonialism generally. The contribution of the Royal Engineers to various spheres of development is noted in the text.

7.2   ARCHITECTURE

The most obvious impacts of colonial development were the buildings and statues left behind.

> *"It was by their buildings that earlier Empires were most arrestingly remembered. Storks upon a Roman viaduct, proud towers in an Andean plaza, the square menace of the Pyramids … any of these could instantly suggest to an unlettered visitor the age and power of a lost dominion."*
> *(Morris, 1968:317)*

In the early days of the British Empire there was no clear colonial style, if only due to the shared urban influences of Europe at the time. Early colonies such as the Americas show a scattering of buildings of Queen Anne and Georgian styles, reflecting the ordered security of society at home. The Europeans brought with them to the colonies their sense of urban form, housing and order. Often in the Americas the urban form was a deliberate

utopian attempt at addressing the perceived ills of the domestic settlements – hence Pennsylvania, Salt Lake City and Savannah.

The buildings gave a sense of continuity to the British presence, linking the plantations of the old Empire with the Chartered Companies and railway workshops of the new. But the truly recognisable British Colonial style emerged in the Victorian era. "The characteristic form of the height of the British Empire was romantically picturesque, loosely derived from Gothic or Byzantine models, and ornamented all over with eclectic variety. It was not exactly imperious. But in the elaboration of its hybrid forms, the towering exuberance of its fancy, its readiness to accept a touch of the exotic here and there, its colossal scale and its frequent impression of enthusiasm wildly out of control it showed off a grand face of empire" (Morris, 1968:318).

"Cities were focal points of the decision-making process; therefore, controlling them in a social sense was the first step to economic and political continuity for those in power. It was thus, important for colonial powers to develop an urban network, a cultural hegemony, a social make-up and a physical imprint that was recognisable throughout the colony"(Mundigo and Crouch, 1977:398). In short it was important to control the colony by controlling the markets and trade routes and to physically look the part – the towns needed to be recognisably British, be they in the middle of the veldt of South Africa, the steaming tropics or the shores of Australia. All over the Empire buildings copied elements of each other; the cathedrals at Calcutta and Salisbury used to be very similar (until an earthquake knocked the spire off the Calcutta Cathedral) (Mundigo and Crouch, 1977; Morris, 1968).

The domestic architecture of the Victorian Empire was everything it was at home in England, with tropical overtones. Often these designs were hopelessly ill suited to tropical settings. In Johannesburg Sir Herbert Baker (famous for his design of the Union Buildings in Pretoria) is known to have made some basic errors, his home 'Stone House' in Parktown, Johannesburg is orientated south, as it would have been in the northern hemisphere, making the home cold and dull, many have speculated that this was deliberate due to the hot climate however, this does not explain the sun dial in the garden which is also incorrectly orientated and hence useless.
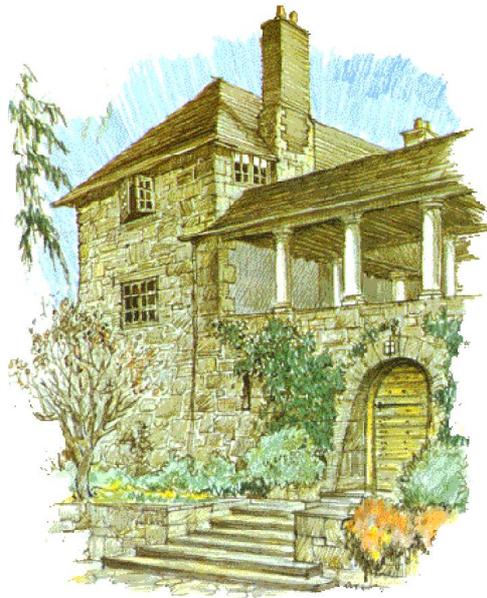
Figure 51: Stone House, Parktown Johannesburg designed by Sir Herbert Baker
(Source: http://www.parktownheritage.co.za/)

The first thing any conventional colonial magnate did when he had made his fortune was to build himself a really lurid gothic mansion. Public buildings of the most august elaboration honoured the Queen, the Arts and Sciences or the principle of imperial government. Town Halls were scarcely less imposing than Parliament buildings, and clock towers were ubiquitous. Many of these enormous buildings were designed by soldiers, others by celebrated English Architects. It was the spirit of Art for Empires sake (Morris, 1968:322).

A course of architecture was started at the Royal Engineers establishment in 1825 and this was really the foundation of the construction school, barrack construction becoming one of the most important peacetime duties of the Corps. Paisley's School of Architecture produced many outstanding men. The Dublin National Gallery, the Museum of Science and Art in Edinburgh, the Albert Hall, the International Exhibition (1851) and the London Victoria and Albert Museum illustrate a few notable buildings designed by the Royal Engineers (Whitworth Porter, 1889; Weiler, 1987).

7.3   CONSTRUCTION METHODS AND MATERIALS

The Royal Engineers played an important role in the global diffusion and development of building technology. Technology transfer in building materials, structural forms and methods of construction was a two way process. It involved the interaction of European experience with local environments, traditions and techniques. The Royal Engineers provided both military and building technology expertise for British imperial expansion and were therefore in the front line of European interaction with colonial conditions and cultures (Weiler, 1987:364).

The Royal Engineers made their greatest contribution to building technology in the fields of limes and cements, colonial woods, rubber and asphalt. All of these were developed and tested in both Britain and the colonies, demonstrating the importance of the imperial connections of the Royal Engineers and their global building experience. The Royal Engineers contribution to the knowledge of materials was based on informed observation, systematic experimentation and practical verification (Weiler, 1987:450).

7.4   ROADS

The era of colonial expansion under which South Africa developed was not known for its road building. Initially all transport was by ocean going ships thus, development occurred along the coasts of the continents and inland via navigatable rivers. The inland of South Africa (having no navigatable rivers) developed slowly, at the pace of the ox which pulled the wagons over open veldt. A wagon route had developed but prior to any major road construction the railroad was introduced. South Africa was thus opened up by railway, the roads which were built were more a question of bridges, mountain passes and pontoons rather than continuous hard surface routes as we would define roads today, they built only the sections of roads necessary to keep goods and people moving. The great road building era of the Roman Empire was not evident in the British colonies as Morris explains: "It was not an age of great roads, and by the end of the century few of the roads the British were building were on the grand scale: roads into the Ashanti country, to keep the defeated kingdom down, into northern Burma and Rhodesia, into the mountainous interior of Ceylon to supply the new tea plantations. … Not many of the imperial roads

were surfaced and most were very elementary. In the open frontier country of India they used simply to light a fire at a distant point, and aim their road at the smoke" (Morris, 1968:364; Whitworth Porter, 1889).

7.5   MOUNTAIN PASSES

Andrew Geddes Bain was engaged to construct a military road through the Ecca Pass (between Grahamstown and Fort Beaufort), and displayed engineering talents which led to his being permanently employed as surveyor of military roads under the Corps of Royal Engineers in the Cape Colony in 1836. During this period he had a part in building the Fish River Bridge, then the largest bridge in the country.

He constructed the Queen's Road from Grahamstown to Fort Beaufort. He was appointed inspector by the Cape Roads Board in 1845 and built Michell's Pass near Ceres in 1848 and Bain's Kloof Pass near Wellington in 1853. He was presented with table silver and a candelabrum by grateful colonists. Returning to the Eastern Cape in 1854, he built numerous roads and passes including the Katberg Pass near Fort Beaufort. This occupation created an interest in geology, inspired in 1837 by a copy of Lyell's Elements of Geology. In 1852 he prepared the first comprehensive geological map of South Africa, a work of great merit, which was published by the Geological Society of London in 1856. Most of the early mountain passes in South Africa were built by either Andrew Bain or his son Thomas. His son Thomas Charles John Bain (1830-1893) served as his father's assistant in the construction of Michell's Pass and, after passing first in the Government examinations in 1854, he was appointed road inspector. Thomas Bain built 24 major mountain roads and passes in the second half of the 1800s - Andrew Geddes Bain built eight during the first half of the same century. One of the few passes not built by a Bain during that period was Montagu Pass from George to Oudtshoorn, which was built by a road engineer from Australia named Henry Fancourt White in 1843-47.

The mountain passes were key to opening up the interior of Southern Africa; the Cape Fold Mountains posed a formidable constraint on development beyond the coastal plain.

7.6 RAILWAYS

The era in which South Africa changed to a British colony was also the tail-end of the railway age in Britain. "These were the years of the snort, the hiss and the green-gold livery, mahogany booking offices like gigantic confessionals, railway stations of diocesan gravity. All the ritual of the railways was transferred by the British to the ends of their grateful Empire"(Morris, 1968:365).

Britain's experience in railway building was unrivalled and the Engineers (both civil and military) and private financiers built impressive railway schemes all over the Empire. The railroad spread west with the colonial expansion in America, in South Africa the railways truly started with the discovery of diamonds and gold in the interior, suddenly there was a need to transport large numbers of people and goods into and out of the interior.

The chronology of railways development is listed below after Kleingeld (2003):

7.6.1 1845 - CAPE OF GOOD HOPE WESTERN RAILWAY

In 1845 the Chairman of the Cape of Good Hope Western Railway, banker and merchant Mr. Harrison Watson, announced his company's planned railway, in the more populous districts in the neighbourhood of Cape Town. The reaction towards this notice was negative and the Cape of Good Hope Western Railway was never constructed.

7.6.2 1860 - NATAL RAILWAY COMPANY

The first railway line in Southern Africa was laid along the Bluff in Durban, capital of Natal, and was not hauled by a steam locomotive but by oxen. The Natal Railway Company was formed in 1859, and its line from Point into Durban, barely two miles long, was opened on 26 June 1860.

7.6.3 1862 - CAPE TOWN RAILWAY AND DOCK COMPANY

The contract to build the first railway line in the Cape of Good Hope was awarded to the Cape Town Railway and Dock Company on 6 August 1858.

Figure 52: 0-4-2 locomotive built in 1859 , Cape Town station (Kleingeld ,2003)

The first line proposed was from Cape Town to Wellington, a short but important line of 45 miles that would serve the wine-growing districts of the Western Cape. The first sod on the construction of the line was turned on 31 March 1859, and the first trains in the Cape Colony started running on this line on the Cape Town to Eersterivier section in February 1862. The 0-4-2 locomotive used during the construction was also used on the inaugural run when the Wellington line was finally opened in 1865. It was built in 1859 by Hawthorns of Leith, and it is at Cape Town station.

7.6.4   1864 - WYNBERG RAILWAY COMPANY

This company was formed in 1861 and their endeavour was to build a line from Cape Town to Wynberg, which was opened in December 1864.

7.6.5   1890 - RAND TRAM

Because of strong anti-railway sentiments in the *Zuid-Afrikaansche Republiek* (ZAR), railways did not materialise there until much later. The first concession to build a railway was given to Mr. George Pigot Moodie on 26 August 1872. A short route of sixteen miles between the Johannesburg metropolis and the Boksburg coal mines was completed in 1890. It was named Rand Tram, although it was actually a railway in every aspect. This was officially the first working railway line in the Transvaal. It was also extended to Krugersdorp (20 Miles) and from Boksburg on to Springs in that same year. This was an east-west route along the gold reef. President Paul Kruger deliberately prevented the line from following the more logical north south route to the ports, as most of the Boers were making considerable money in wagon haulage for the mines and did not want the

competition. It was said that shortly before the opening of the railway link to the British rail head the route was lined with dead draught animals.

7.6.6   1892 - THE LINK-UP BEGINS

By September 1892, the lines of the Cape Government Railways from Port Elizabeth and East London on the east coast of the Cape Colony reached Bloemfontein in the Orange Free State, and both the Bloemfontein and Cape Town lines reached the Transvaal, thus opening three ports to the Rand gold fields.

7.6.7   1894   -   NEDERLANDSCHE   ZUID   AFRIKAANSCHE   SPOORWEG MAATSCHAPPIJ

The *Nederlandsche Zuid-Afrikaansche Spoorweg Maatschappij* (NZASM) was formed on 21 June 1887 and officially received a concession from *Zuid-Afrikaansche Republiek* (ZAR) President Paul Kruger to build a railway line in the Transvaal from Pretoria to Delagoa Bay (later named Lourenco Marques and since renamed Maputo, in Mozambique). The *Volksraad* of the ZAR gave the company until 31 December 1894 to complete the construction. On 2 November 1894 this line was officially opened.

7.6.8   1898 - THE LINK-UP COMPLETED

By 16 December 1898 the Natal Government Railways also linked into the railway system. Britain, and more specifically the then Prime Minister of the Cape of Good Hope, Cecil John Rhodes, was anxious to control the whole of Southern Africa, and by then the Cape Government Railways was already extending its reach from Kimberley via Mafeking (now Mafikeng) to Northern Rhodesia (Zambia). This line through the southern part of Bechuanaland (Botswana) and Southern Rhodesia (Zimbabwe) was eventually sold to the Southern Rhodesian government in 1947.

7.6.9   1900 - IMPERIAL MILITARY RAILWAYS

After defeating the Afrikaner Republics in the second Anglo-Boer war and renaming the Orange Free State and the Zuid-Afrikaansche Republiek (ZAR) to, respectively, the Orange River Colony and the Transvaal, the Imperial Military Railways was established in 1900 under the supervision of Lieutenant-Colonel Sir Percy Girouard (Kleingeld,2003).

Girouard was a controversial character born in Canada to an eminent Montreal legal family. He studied first at Montreal College and then entered the Royal Military College,

Kingston when he was fifteen. Following a shortage of young officers in the Royal Engineers, Britain offered four commissions in the Corps to graduates of the RMC who held a diploma in Engineering; he immediately applied and graduated towards the end of 1888 (Kirk-Greene,1984).

Girouard seems to have been an exceptional achiever; he was appointed Governor of Northern Nigeria at 40, he had been knighted at 33. He then became Governor of British East Africa (Kenya) between 1896 and 1908, during which time he laid down a network of railways in northern, south and west Africa, lines which are still in use. Yet at 45 he was compelled by the secretary of state to offer his resignation as governor-general of Nigeria. A similar fate awaited him at the end of his South African Railways term. A comment in the <u>African World</u> concludes "…the ancient truth that the man most capable in war is sometimes most incapable in peace" (Kirk-Greene, 1984:219).

Girouard was a railway engineer of outstanding technical skill, consummate organizing ability and awesome energy. During the Boer War when his requisition was turned down by the War Office, he simply went straight to Chamberlain, who told him to order everything he thought necessary. Without Chamberlain's *carte blanche* Lord Robert's march on Pretoria would not have been possible. Girouard was able to double the line between Bloemfontein and Johannesburg, at one place laying eighty miles of track in forty-eight hours. No wonder that, in his history of the Boer War, Arthur Conan Doyle felt able to refer to the 'famous Girouard' when describing the role of the trustworthy trains in the lines of communication (Kirk-Greene, 1984:217-218).

7.6.10   1902 - CENTRAL SOUTH AFRICAN RAILWAYS

The Imperial Military Railways proceeded to assume control of all lines in the Transvaal and Orange River Colony, thereby also absorbing the NZASM, and it eventually became the Central South African Railways (CSAR), still under the control of Lieutenant-Colonel Sir Percy Girouard.

7.6.11   1916 - SOUTH AFRICAN RAILWAYS AND HARBOURS

The Union of South Africa was established on 31 May 1910, consisting of the four former colonies, the Cape of Good Hope, Natal, Orange River and Transvaal. As a self-governing state of the British Empire, the Union remained under the formal rule of the British Crown,

represented in South Africa by a Governor-General. All railways in South Africa finally became a unified state-owned railway system in 1916 when the Central South African Railways, the Cape Government Railways and the Natal Government Railways were all merged by an Act of Parliament. Thus was born the South African Railways and Harbours (SAR&H). Later, when commercial aviation developed, the South African Airways also became a part of this huge land, sea and air transport system.

Railways were central to British colonial expansion, in the previous era ocean-going ships had discovered new lands and developed new ports; railways opened up interiors to large scale settlement. The romance of the imperial railways was very dear to the New Imperialists. When Rhodes first planned his railway across the chasm of the Victoria Falls, where the spray rises from the cataract like a cloud across the plain, he saw the meeting of the steel lines and the eternal waters as a meeting of equals, and decreed that the bridge must stand so close to the falls that the passengers would see the spray upon their windows (Morris, 1968:366). There was no grand plan for the railways of the Empire. In general they were built to British standards and methods, but no attempt was made to standardize the different gauge. Nevertheless, there was grandeur in their conception; Rhodes saw his Cape-to Cairo railway in epic terms – a British highway up the spine of Africa. All round the African coast railways were for the first time taking European trade and technology into the tribal areas of the interior. The South African Railways according to Bryce "…had made Cape Town, Kimberley, Johannesburg and Pretoria a single social unit, where all important people knew each other – Johannesburg and Cape Town" he said "were in closer social touch than Liverpool and Manchester, or New York and Philadelphia" (Morris, 1968:368).

The strategic importance of the railway for carrying supplies and communication can clearly be seen by the number of block houses built along the route during the Anglo-Boer War. Other key infrastructure was also protected by block houses such as town water supplies.

When studying the routes of today's railways it is evident that they were constructed in an era when the economic and political geography of South Africa was different. The railways are skewed towards the diamond fields of Kimberley and the link to the gold fields is clumsy. Railways could play a vital role in the South African economy if new routes,

services and high speed links for both passenger and goods trains were developed. Today the management of the railways needs a great deal of attention as is evidenced by the steady shift in bulk transport to the roads.

Figure 53: This blockhouse was constructed near the town's water supply- Harrismith. The garrison was to protect it in the event of an attack.(Watt, 1989)

Figure 54: Now a national monument this blockhouse is in the botanic garden of Harrismith. (Watt,1989)

7.7   WATER SCHEMES

Water works had always been the hall-mark of great civilizations and imperial climax, the aqueducts of the Romans strode across France and Spain masterfully, to crumble when the barbarians took over. The irrigation works of Egypt and Mesopotamia flourished under strong rulers; and so the British turned to grand water work schemes. Perhaps the most notable being the irrigation of the Indus Basin through a series of dams and canals. Some of the imperial works were on a colossal scale. In India the whole British-built irrigation system included some 40 000 miles of canals, irrigating nearly 20 million acres. The Aswan Dam was built in Egypt allowing for perennial irrigation for the first time. In Canada the Welland Canal was cut to circumvent the Niagara Falls, in Australia water was piped 350 miles to Kalgoorlie goldfields. In the west of India an astonishing tunnel under the mountains, called the Ghats, conveyed water from the Periyar River on the coastal plain to the flat lands on the eastern side of the mountains (Morris, 1968; Home, 1997). The South African water schemes were less impressive but just as vital. Town water schemes and dams were constructed all over the country. Agricultural irrigation schemes were less evident but South Africa by then was considered a mining economy. The mines, of course, required impressive water schemes, which the mining companies developed.

7.8   TIME

One of the obsessions of Victorian England was punctuality – a vital component of industrial development. Whereas the Afrikaner settlements had at their centre the church and bell tower the British towns were dominated by the Administrative building and the clock tower. Victorians were slaves to time, everything in its place and at the right time. It was the basis of the industrial economy. Accurate time keeping was only truly possible with the advent of the railway system in the UK, in order to keep timetables; a uniform time needed to exist across the country, this was achieved by setting a pocket watch in Greenwich and transferring the time from the watch to all stations as the train passed through.

7.9 POSTAL SERVICE

Initially postal arrangements were private arrangements which had been in operation since the time the Dutch settled on Manhattan Island and on the shores of the Hudson, and the English in Virginia and Massachusetts, continuous, though irregular, communication was maintained with the respective mother-countries by means of trading vessels. On the European side the arrangements were subject to few inconveniences. If the sailing-masters, on their arrival in Holland and England, were regardful of their trust, they would see that the letters placed in their mailbags by the colonists were posted at the nearest post-office, and the postal systems in those countries could be depended on to do the rest. Within the colonies the situation was less happy. As there were no post-offices, those sending or expecting letters had to depend on their own exertions or on the precarious goodwill of friends for information as to the time of arrival or departure of vessels, and for the necessary visits to the vessels. The first colony to apply a remedy for these inconveniences was Massachusetts Bay. On November 5, 1639, the general court of that colony issued an ordinance directing that all letters arriving at Boston from beyond seas should be taken to Richard Fairbank's tavern. In the Cape initially passing ships were known to have left post under the postal stone and ships captains would collect the post which was heading in the same direction as his vessel and leave any mail which needed to head in the opposite direction.

In 1711 an act was passed by the British Parliament which affected profoundly not only the post-office of Great Britain but that of the colonies as well. The whole system throughout the empire was placed under the direction of the postmaster-general of England, who appointed his deputies for the different colonies. The charges for the conveyance of letters were no longer a matter of negotiation between the postal authorities and the local legislatures but were fixed by this act of the British Parliament. As one of the purposes of the act of 1711 was to raise money to help defray the expenses of the War of the Spanish Succession, there was a general augmentation of the rates (Smith, 1916).

Initially the Post Office fell under the Colonial Service (the sixteen divisions of which were: Colonial Administrative Service, Colonial Agricultural Service, Colonial Audit

Service, Colonial Chemical Service, Colonial Customs Service, Colonial Education Service, Colonial Forest Service, Colonial Geological Survey Service, Colonial Legal Service, Colonial Medical Service, Colonial Mines Service, Colonial Nursing Service, Colonial Police Service, Colonial Postal Service, Colonial Survey Service, and Colonial Veterinary Service). Before the 1930s there was no unified Colonial Service and not even any unified sub-services. Each colony and protectorate had its own services and prospective officers applied directly to each one. If they wanted to transfer to another colony or protectorate they had to apply separately to the government of that entity.

It is however, evident that the dissemination of information was vital to colonial expansion and trade and therefore, no wonder that the mail service fell under colonial control.

7.10 PUBLIC HEALTH

By the 1850's the British were becoming aware of the link between disease and hygiene, Florence Nightingale started her famous statistical work based on her experiences in the Crimean War and military hospitals were fundamentally reworked following the outcomes.

The British also started to pay attention to tropical health and hygiene. The first school in the world exclusively concerned with tropical medicine was built in Liverpool, home port for the West African trade. In many parts of the world the British were the first heralds of the message that cleanliness and health went together, and they were just beginning to understand a few tropical diseases. They knew that beri-beri was caused by rice from which the outer grain layers had been stripped. They knew that leprosy and cholera were bacterial, and that the filarial worm was the cause of elephantiasis. Sir Ronald Ross, in India, was pursuing the theory that malaria was caused by the anopheles mosquito and Patrick Manson medical advisor to the Colonial Office convinced most that the health hazards of the tropics were seldom due simply to heat (Morris, 1968:373; Home, 1997).

7.11 AGRICULTURE

Alfred Crosby (1986) notes that when the Europeans colonised (in the case he mentions, Australia) "…said meat was not roasted wapiti or kangaroo, but mutton, pork and beef." At first colonists out of necessity ate what was available, "…but in time, in all these locations, they were able to return to a diet based on Old World staples." In short other than exploiting a few new key mass crops from the colonies such as sugar cane, tobacco and maize, the colonists adapted the agriculture to their norm rather than adopting foreign diets. Thus, vast tracks of land were converted to European crops. In all the colonies agriculture strove to produce an excess for export and to this day many former colonies are net exporters of food.

7.12 CONCLUSION

The British Empire was a development agency, distributing technical knowledge around the world, and erecting what economists were later to call the infrastructure of industrial progress – roads, railways, ports, posts and telegraphs. Initially this was achieved in a *laissez faire* manner however, Chamberlain, upon moving into the Colonial Office saw to the systematic diffusion of modern technique as a duty of Empire. To him the Empire was an underdeveloped estate so he turned to technology to make the most of the assets.

After the 1890's the Colonial Office worked on the systematic improvement of agriculture, veterinary medicine and husbandry, tropical disease and social welfare in the Empire, and great strides were made in all these sciences. The main providers of the technical expertise were the engineers, primary military but the British never bothered too much about the distinction between military and private engineers; skills were critical and military engineers often fulfilled civilian posts and equally often co-opted skilled non-military people when needed or when they discovered people with a talent; Andrew Geddes Bain being a case in point.

Having, in the last few chapters, discussed the development of South Africa it is evident that British colonisation was very physical. The British built the infrastructure required to develop the colonial capitalist system. This was done largely through state spending. Very

often the expertise necessary came from the military. The technical experts of the British Army were the Royal Engineers and as such the Royal Engineers had an enormous impact on colonial development and a military order is still evident in the layout and infrastructure today.

SECTION CONCLUSION

This section has sought to give a very broad brush feel of the types of infrastructure and administration which were important to the British in establishing colonies. Not all aspects of which were handled by the Royal Engineers. Two crucial aspects, that is port development and land registration, were unquestionably military in nature. To a lesser extent the railways also showed a strong military influence, specifically during the Anglo-Boer War.

Section C highlights the military influence on British Colonial settlement by using the Eastern Cape and a case study. The section begins by explaining the history of the Eastern Cape and then moves on to the detailed analysis.

SECTION C

CASE STUDY

THE SPATIAL DEVELOPMENT OF THE EASTERN CAPE REGION OF SOUTHERN AFRICA 1806-1872

PREFACE

This section seeks to understand the British imperial approach to colonial expansion and development. The Eastern Cape has been chosen as the case study as it was colonised at the peak of British imperial development of South Africa and it offers a fascinating insight into colonial development, towns and attitudes and also the military approach to a turbulent and hostile frontier.

This section focuses on the spatial and the physical development of the Eastern Cape region of South Africa, it is however, impossible to interpret or understand the physical development without placing it within the social and historical context. This section thus, begins with the historical context to set the scene and to paint the picture of the main forces, characters and attitudes of the time. It also aims to give a clear geographic sense of where this history played out and the context of why it developed the way it did. The section then goes on to discuss the physical settlement pattern that resulted from these forces. Chapter 8 deals with the historic background to the Eastern Cape, chapter 9 investigates the forts and defensive structures on the Eastern Frontier and chapter 10 analyses the major towns of the Eastern Cape.

CHAPTER EIGHT

HISTORIC BACKGROUND: EASTERN CAPE

8.1 EARLY SETTLEMENT

The Eastern Cape region of South Africa is the area in which the class, racial and cultural prejudices of the colonial authorities played out. It is an area which experienced a period of one hundred years of intermittent warfare. The Eastern Cape is the region where the differences between the four main groups of people in South Africa became most evident. The four groups were the Khoikhoi, the Bantu (Xhosa), the original Dutch settlers and the British. It was however, far more complex than a simple cultural difference as the area also saw class struggles (particularly within the British settler groups), the difference between agricultural societies (the Dutch and the Xhosa) and commercial agricultural estates (the British) and later the British were further differentiated as skilled artisans. There were also vast differences in public opinion from the liberal humanitarian missionary attitude to the commercial and imperial British colonial government and this was contrasted with the Dutch attitude that they were the chosen race. The Xhosa had tensions within their various tribes as well (De Klerk, 1975; le Cordeur, 1981).

The area historically stretches from the Sundays River in the west to the Great Fish River in the east and from the sea in the south to the mountains of the north (the Zuurberg, Swartwatersberg and the Rietberg). It is the region where the winter rainfall Mediterranean climate of the Western Cape changes to the summer rainfall area of the east and the arid clime of the north. The region goes through periods of both drought and floods but it also experiences perfect growing conditions. Some of the earliest colonial explorers were impressed by the beauty and fertility of the rolling grasslands (Maclennan, 1986:43). (Figures 55 – 57.)
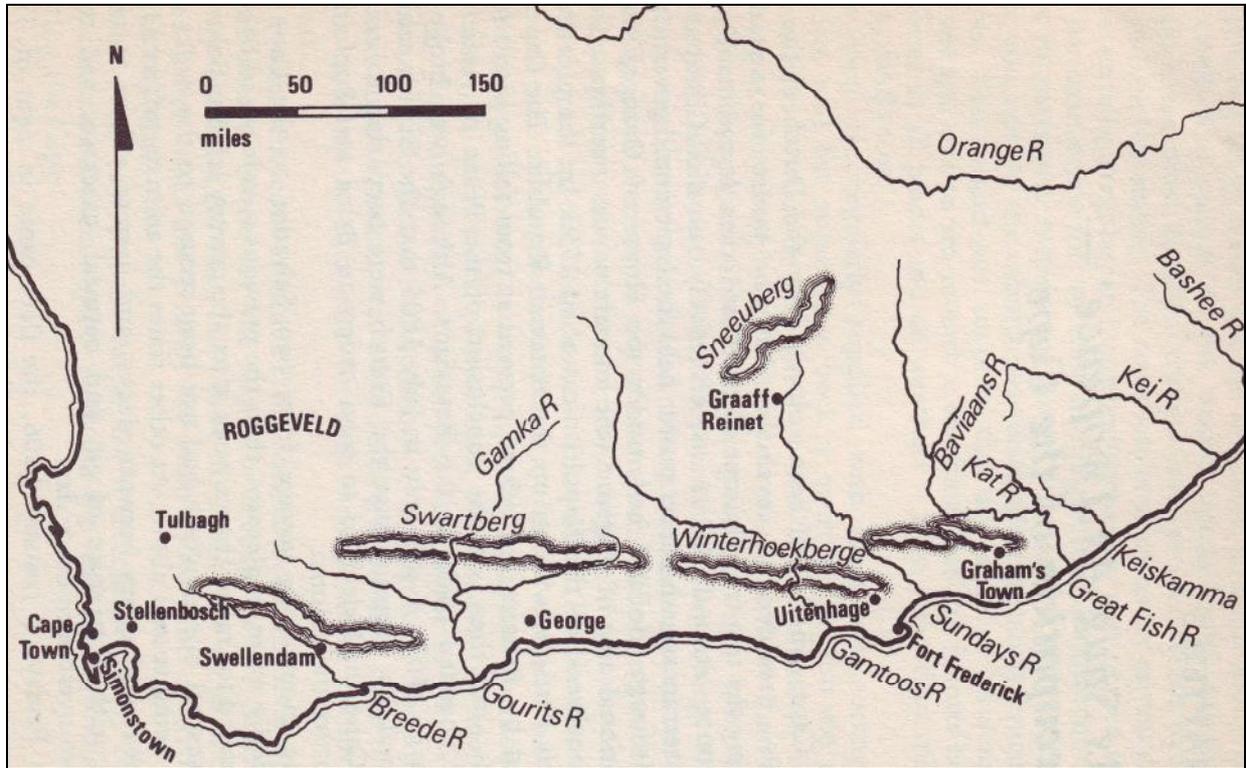
Figure 55: The Cape Colony (Maclennan, 1986:18)
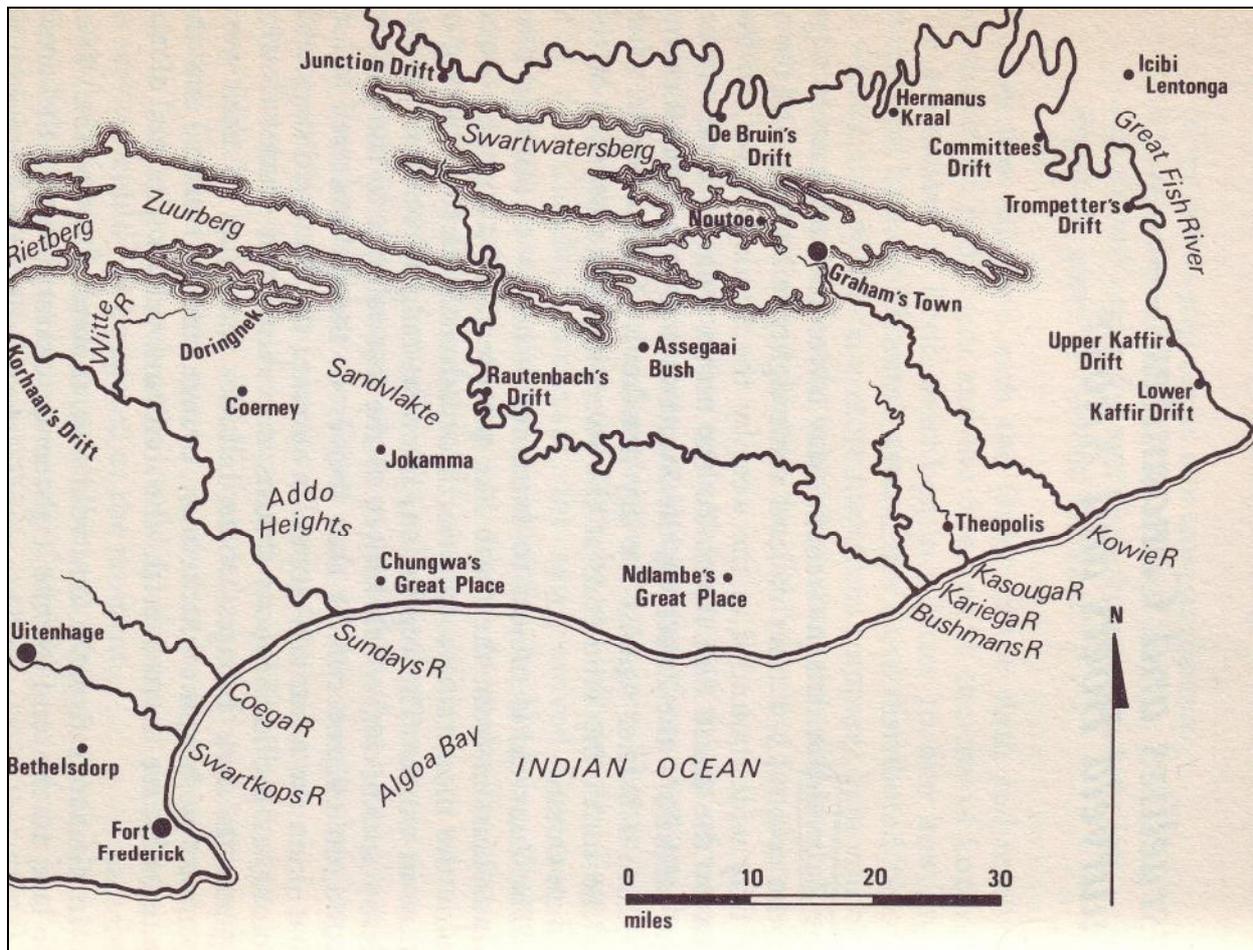
Figure 56: The Zuurveld 1812- 1819 (Maclennan, 1986:42)
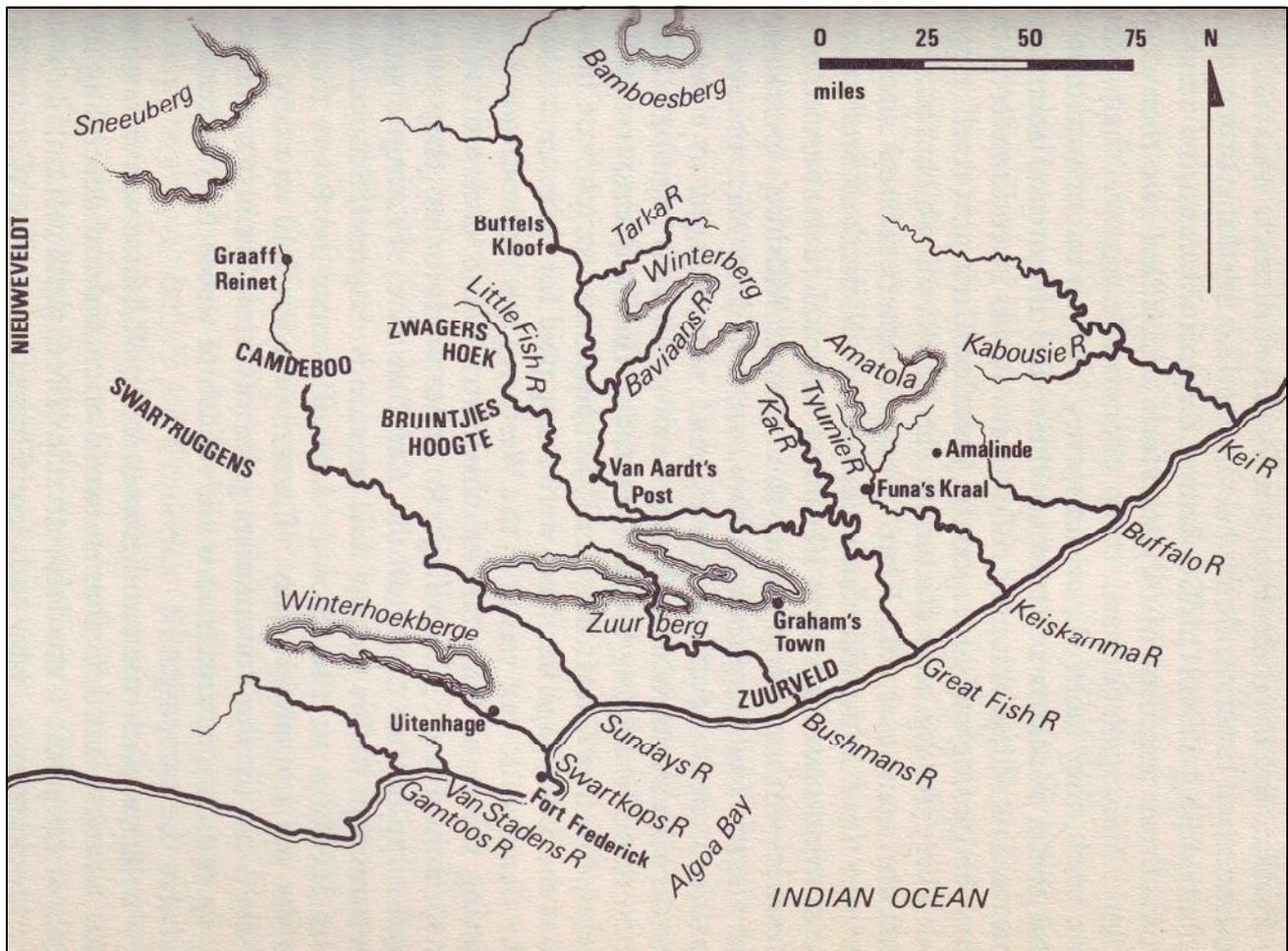
Figure 57: The Eastern Frontier 1812- 1819 (Maclennan, 1986:201)

The history books of this region covering the British imperial period are fascinating as they range from the typical British imperial writings, which are a combination of propaganda and an unerring belief that they were civilizing heathen territory and hence an unquestionable force of good; to the liberal writings of post-apartheid South Africa. Writers such as Egerton (1945) typify the Afrikaner view point of the history of the region. Between all the accounts lies the truth and few involved in the region in the Imperial Era come out smelling of roses. All parties were essentially interested in personal wealth, land and power and they unsurprisingly divided along racial, cultural and class lines.

In the 1760s *Boer* people (Dutch farmers) started moving into what is now the Eastern Cape and in 1786 the first recognized town in the Eastern Cape, Graaff-Reinet (Figure 58), was established by the Dutch. It was in the Eastern Cape that the *Boers* began to refer themselves not as "Dutch" or "*Boers*" but as Afrikaners. They started the missionary endeavour that has had such an influence on South Africa, and it was from the Eastern

Cape that the *Boers* departed on the Great Trek that led to the founding of the other provinces of South Africa (de Klerk, 1975; Lamar and Thompson,1981).

Some of the earliest settlers in the area were the Khoikhoi. The Khoikhoi were a people, who two centuries before, had been scattered over much of South Africa's fertile coastal belt. In the Western Cape various groups lived a fragile existence as transitory pastoralists. As cattle herders the first Khoikhoi and European contact was mutually beneficial, however, once the Dutch established a permanent station at the Cape and allowed free settlers, the steady expansion of the *freeburghers* (free citizens), and the accompanying dispossession of the Khoikhoi led to the break up of the Khoikhoi nation. The final death knoll occurred in February 1713 when a visiting fleet sent its linen ashore to be washed by the Company slaves. The laundry bore the smallpox virus, which killed hundreds of Europeans and their slaves. The Khoikhoi, who had no natural immunity to the virus, were decimated; some estimates state that the Khoikhoi population dropped from 50 000 to less than 5 000. Some Khoikhoi moved east away from the Cape and its aggressive labour demands and settled in the Eastern Cape shortly before the *Boers* moved into the area (Maclennan, 1986:24).

The Xhosa, who were Iron Age pastoralists, moved westward down the coast, there were a series of clashes with the Khoikhoi, but the Khoikhoi deserted their chief and became part of the Xhosa tribe. When the first *Trekboers* (migrant farmers) arrived in the area, the Xhosa and the *Trekboers* had much in common. In particular, both took intense pride in their cattle. One early traveller recorded of the *Boers* that it was in the number and thriving condition of their cattle, and chiefly the stoutness of their draught-oxen, that these peasants vie with each other. The Xhosa, for their part, had twenty-five names to describe different cattle colours and skin patterns, and seven different names for the shapes of their animals' horns, which they bent in a variety of fantastical forms by scraping almost to the quick the side of the horn towards which they wanted the tip to bend. Both *Boer* and Xhosa lived to a great extent on milk and meat, which were supplemented by corn if the rain had

Figure 58: Graaff-Reinet (Save Reinet Foundation – pamphlet)
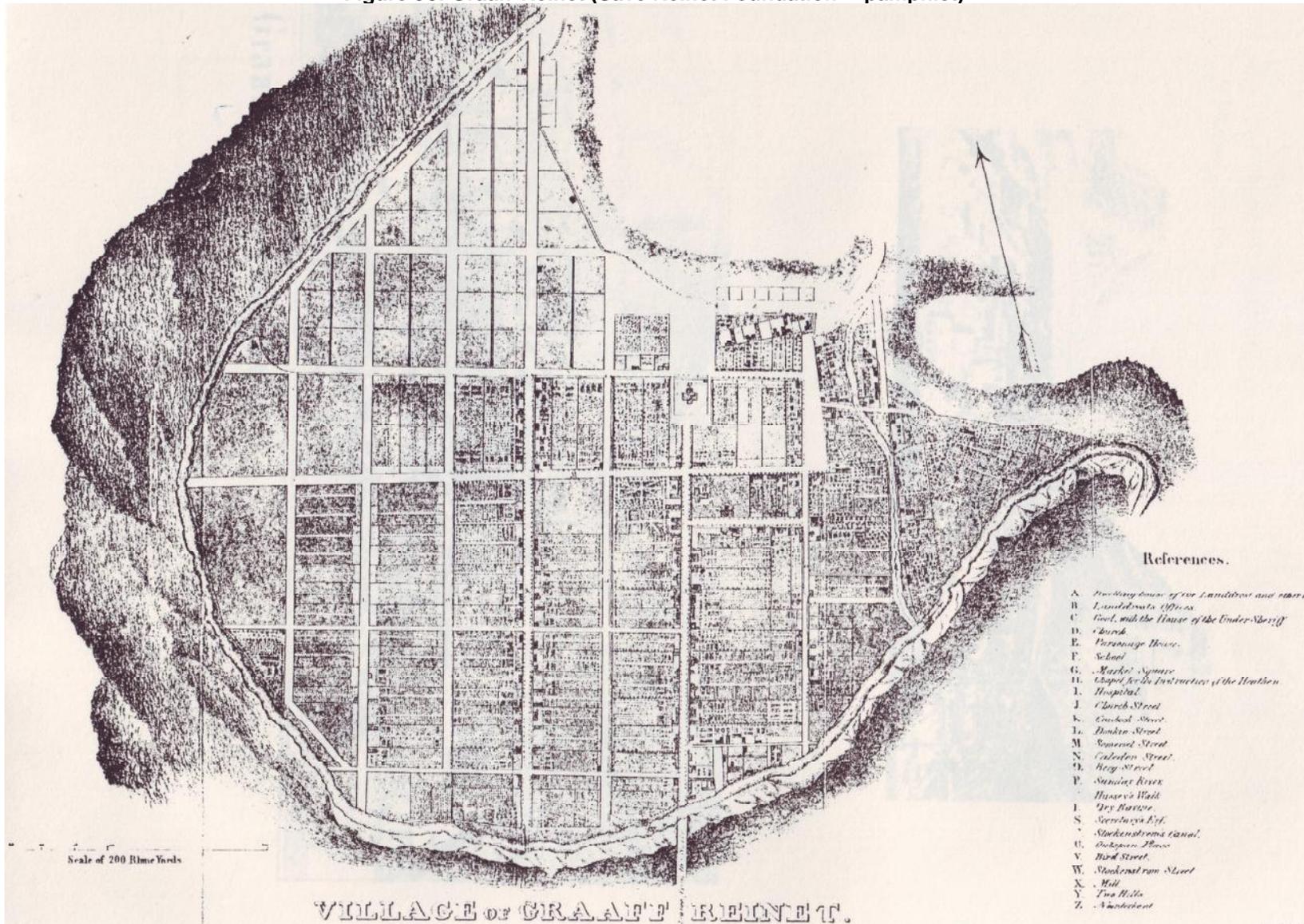
been good. Both *Boer* and Xhosa lived in huts made of a mixture of cow dung and mud plastered over a skeleton of branches and bush and both invariably placed the cattle-yard immediately before the front door. Like his Xhosa counterpart the *Boer* child would be dressed in skins, for it was a wealthy farmer who could boast a jacket of handmade cloth or even cutlery to eat with. But although the lifestyle was so similar there was at the same time a vast cultural gulf between the two peoples. A journey from the frontier to the Cape and back took from two to three months by ox-wagon, and many farmers only made the trip once in their lifetime – to get married. Faced with this isolation, the *Boers*, in an attempt to maintain a sense of cultural identity, developed a belief which, based on the texts of the massive Bible that almost every family possessed, set them firmly apart in their minds as a chosen people (Maclennan, 1986:45; de Klerk, 1975).

In the early days the area was relatively peaceful and the two sides traded. Although the colony was later to lay claim to the Zuurveld, there was never any question that the area was originally Xhosa territory; in 1778 Governor van Plettenberg sealed a boundary agreement with several minor Xhosa chiefs recognising the Zuurveld as Xhosa territory. The following year however, tensions flared over the expansion of the *Boer* farming, competition over water sources and cattle rustling (Maclennan, 1986:46).

8.2   THE FRONTIER WARS

The Frontier Wars covered a period of 100 years of intermittent warfare between the Cape colonists and the Xhosa. This was one of the most prolonged struggles by African peoples against European intrusion; it ended in the annexation of Xhosa territories by the Cape Colony and the incorporation of its peoples. This section aims to give a synoptic and objective overview of the wars; the major skirmishes, the tensions, the characters and the reactions.

8.2.1   THE EARLY FRONTIER WARS (1779 – 1781 AND 1793)

The early Frontier Wars occurred as a result of a clash over land as the settlers moved eastward and the Xhosa expanded westward. At this time there were internal tensions between the Xhosa chiefdoms. In 1778 the Xhosa monarch, Gcaleka, died and was

succeeded by his son Khawuta. Seeking power for himself, Rharhabe, brother of the dead paramount, made an unsuccessful attack on the young king. Rharhabe's defeated followers were driven north-west away from the mother chiefdom and across the Kei River. Within a few years they had absorbed many scattered Khoi and San communities and become the dominant force between the Kei and Fish Rivers (Stapleton,1994:21). Rharhabe and his son were killed in battle, leaving an underage grandson as heir. A paternal uncle, Ndlambe, became regent until the grandson came of age and the Rharhabe flourished and drove smaller Xhosa chiefdoms west over the Fish River (also referred to as the Great Fish River). The tribes fleeing westwards battled with the Dutch settlers in the Frontier Wars of 1779-81 and 1793. When Rharhabe's grandson, Ngqika, came of age Ndlambe refused to relinquish power; civil war erupted and Ngqika's forces expelled Ndlambe and his followers across the Fish River, increasing the conflict for land with the Dutch settlers (Stapleton,1994:21).

In the first three Frontier Wars (1779, 1793, and 1799–1801), frontier Dutch colonists fought against members of several minor Xhosa chiefdoms that had moved westward from the main body of the Xhosa east of the Kei River into the area known as the Zuurveld, between the Fish and Boesmans Rivers. These wars were caused by disagreements regarding access to land, water and the cattle trade that dominated the colonial economy, and they ended in a stalemate. For the colonists the third of these wars—in which the Xhosa were joined by an uprising of Khoisan servants, who deserted their white masters, taking guns and horses—was particularly serious. British troops, occupying the Cape during the Napoleonic Wars, appeared on the eastern frontier in 1811, in the fourth war (Welsh, 2000; Thompson, 2006; Lamar and Thompson, 1981; Meredith, 2006; Caffrey, 1973; Garson, 1992).

The chiefdom system at the time is described by Stapleton (1994:22) as a system of cattle patronage. Under the patronage system the royal herds were lent out to subordinate chiefs on an increase-sharing basis. In turn, commoners cared for the animals and received their milk and blood. The vassals were kept in line by the ever-present threat of cattle repossession or fines. A commoner could not reduce the herd by a single head and only aristocrats were empowered to slaughter cattle. As late as the 1850's William Holden, a British missionary, reported that: "the retainers of a chief serve him for cattle; nor is it expected that he could maintain his influence, or indeed secure any number of followers, if

unable to provide them with what at once constitutes their money, food and clothing" (Stapleton, 1994:22). Commoners relied on agriculture as their primary means of subsistence, the chiefs controlled the time of planting and received tribute from the harvest (Stapleton,1994:22).

The hostilities that flared in 1779 continued as sporadic skirmishes throughout 1780, so the Cape Colony proclaimed the Fish River as the boundary of the colony and authorised a commando unit to 'forcibly compel' the Xhosa to cross the Fish River (Maclennan, 1986:46).

This commando unit was the first of many that were to go charging about the frontier with varying degrees of success over the next two decades. The climax came in 1799, in the wake of an unsuccessful rebellion against the first British administration by the *Boers* of the frontier districts. The British commander, having quelled the *Boer* uprising, then decided to kill two birds with one stone and 'gently push the Xhosa back into their own country'. The Khoikhoi and Xhosa combined in a campaign that cleared the country as far west as the Gamtoos River of all Europeans except for a besieged detachment of troops at Algoa Bay. The British were forced to negotiate a peace in terms of which the Zuurveld Xhosa were to be allowed to 'remain at their kraals on the banks of the Sundays and Bushmans Rivers', or in other words the situation in which the British found them (Maclennan, 1986:47).

It was not an auspicious start for the British in the Eastern Cape, neither morally nor tactically.

8.2.2 BRITISH OCCUPATION AND CONTINUED WAR ON THE FRONTIER

The conflict which began between the *Boers* and the Xhosa over land and grazing rights in 1779 continued after British occupation, this was to be the longest colonial struggle in the history of Africa. At the same time events in Europe were coming to one of their perennial crises and the French Revolution and the rise of Napoleon caused the British to become concerned about the French taking over the Cape, especially after Holland was overrun in

1799. Consequently in 1806 the British took over the Cape Colony but to their horror this also included the Eastern Cape region, which was now in its second decade of conflict.

In 1799, recognising the need for a military base in the eastern parts of the Colony, which would be easily accessible from Cape Town and from which troops could be deployed to trouble spots involving either the *Boers* or the Xhosa, the British constructed Fort Frederick at Algoa Bay. The creation of new administrative centres in the interior was continued when in 1804 the southern districts of Graaff-Reinet were in turn formed into the separate districts of Uitenhage, and after the expulsion of the Xhosa from the Zuurveld the garrison post at Grahamstown (in 1812) and Cradock (in 1813) became sub-*drostdies* (Sub-magisterial districts) of Uitenhage and Graaff-Reinet respectively, each under a deputy *Landrost* (magistrate) (le Cordeur,1981:2).

In the period after 1815, following the final defeat of Napoleon, the British embarked upon a more systematic policy of converting the Cape Colony into a fully-fledged and permanent British possession. There was a marked degree of centralisation and a far greater assertion of governmental authority. When such power was enforced the *Boers* rebelled. The Graaff-Reinet Rebellion was easily suppressed by the British by cutting off the *Boers'* ammunition supply, but tensions continued to simmer. The enforcement of power by the British was often sporadic exposing the Cape Colonial government to be a 'weak despotism' (Macmillan,1927:41).

The *Boers* had acquired land on a quit rent basis, the British however, only recognised title if the land had been settled and improved. The *Boers* thus, had very insecure rights to the land on which they farmed. At the same time the British abolished slavery and thus, the *Boers* lost their labour and through corruption few if any of them received the promised compensation from London. Consequently resentments amongst the *Boers* continued to grow.

Public opinion in Britain - the opinion of the few people who took interest in the subject - and colonial public opinion were at hopeless issue on the question of the treatment of the African population. The fixed idea of the English was that the constant practice of the Dutch colonists was to enslave and tyrannize the local inhabitants. In accordance with this view, Lord Goderich directed that Dutch farmers should not be allowed to settle in the new

frontier districts. As stated previously the history of this region varies depending on when and by whom the history was written. Egerton (1945) wrote from the Afrikaner view point: "Thus Sir Lowry Cole wrote with regard to the alleged ill-treatment of the "coloured" (sic) people: 'It might suit the views of some writers to hold up the local government and the colonists to the detestation of mankind . . . and to represent the native tribes (sic) as the most injured and innocent of human beings, but those who have the opportunity of taking a dispassionate view of the subject would judge differently'" (Egerton, 1945:290).

By 1817 the Gcaleka, under a new chief Hintsa, had regained strength and showed interest in re-establishing rule over the Rharhabe chiefdoms west of the Kei River. A potential alliance between Ndlambe and Hintsa threatened Ngqika's already declining dominance – he sought allies, firstly with the large Thembu chiefdoms to the north but the main aim was to secure alliances with the colonialists. The chief who gained the favour of the powerful Cape Colony could exercise control over all the Xhosa groups between the Fish and the Kei Rivers (Stapelton,1994:25). Thus when the British governor, Lord Charles Somerset, requested a meeting with Ngqika, the paramount leapt at the opportunity. At the meeting (referred to as Kat River Conference) Ngqika expressed a great desire that his people should be allowed to trade with the colony. Somerset agreed that the Xhosa might come to Grahamstown, the colonial frontier capital, twice a year for that purpose provided they obtained permission from Ngqika himself. By this statement the colonial officials recognised Ngqika as the senior Xhosa chief west of the Kei River. In return, the paramount conceded to a Spoor Law which permitted settlers to track stolen stock beyond the colonial Fish River boundary and seize animals from kraals suspected of harbouring thieves. The paramount chief had no option but to agree, he was desperate to secure the assistance of European firearms against any future anti-Ngqika alliance of rival chiefs. Throughout the remainder of 1817 and the beginning of 1818, Ngqika placated the colony by sending scores of horses and cattle to Grahamstown. This prevented settler patrols from entering his domain and ensured the goodwill of the colonial government. Two colonial agents, Agnatius Mulder and William Nell, visited Ngqika's kraal and demanded tribute. These settlers were given several dozen head of cattle and returned to the colony with favourable reports. Subsequently, stock-hungry whites descended on other chieftains. Within a month of the Kat River Conference one hundred British dragoons raided the kraal of the Dange chief, Habana. In the subsequent skirmish five Xhosa men were shot dead, many more wounded, and a large quantity of cattle taken to the colony. The colonial press

portrayed Ndlambe as a 'restless freebooter' who 'encouraged those depredations which have proved so ruinous to our borders' (PP C538 of 1836 Report from the Select Committee on Aborigines (British Settlements) p 589). In late 1817 a small *Boer* commando attempted to seize stock from some of the chief's villages but was repelled by an overwhelming number of warriors. Ndlambe refused colonial demands that he surrender 2 000 head of cattle; to a chief dependent on pastoral patronage that would have been suicidal. On 8 January 1818, Major George Fraser led an expedition of 300 British infantrymen and 150 mounted settlers across the Fish River and into Ndlambe's territory. Marching for several days the expedition reached the Keiskamma River and met Ndlambe with 2000 warriors. Two days of stand-off did not persuade the chief to comply with the colonial ultimatum and Fraser decided to use brute force. When a detachment of horsemen began gathering nearby cattle, Ndlambe's men surrounded them and shouted threats. The British infantry fired a thunderous musket volley over the warriors' heads causing them to retreat in fear. Fraser seized 2 060 of Ndlambe's cattle, only 600 of which were identified as colonial stock. The cattle were distributed to white farmers (PP C538 of 1836 Report from the Select Committee on Aborigines (British Settlements) p 589; Stapleton,1994:27).

Over the following years Ngqika's Xhosa showed increasing interest in christianity and European ways; allowing a christian convert to become an important councillor and also allowing a missionary, Joseph Williams, to set up a mission station near Maqoma's village. Ndlambe, for his part became increasingly resentful of Ngqika and his aggressive European allies. Tensions then reached a climax. Retaliating against Ngqika for the incursion of the Fraser commando, Ndlambe seized stock from one of his rival nephew's sub-chiefs (Pringle, 1835:278). While requesting military assistance from the colony, Ngqika mobilized his entire army, they marched on Ndlambe, and straight into an ambush. The carnage lasted most of the day, finally at sunset the remnants of Ngqika's army managed to detach and fled to the slopes of Ntaba ka Ndoda. They sent repeated and desperate messages to the colony for help. In November 1818, Major Fraser visited the paramount in his mountain hiding place and assured him of British support (Stapleton, 1994:31).

Returning to Grahamstown, Fraser briefed his superiors and Lieutenant Colonel Thomas Brereton, military commander of the colony's eastern frontier, was detailed to gather all the

regular soldiers and mounted *burghers* (Dutch citizens), who were available. On 1 December Brereton's force, with two artillery pieces, left Grahamstown and two days later were joined by Ngqika and his surviving warriors on the banks of the Koonap River. On the 5 December they crossed the Kat River and began driving Ndlambe's people south. They captured 6 000 head of cattle. By 7 December Brereton had crossed the Tyumie and Keiskamma Rivers to enter the enemy heartland. For several days the soldiers bombarded the warriors, destroyed kraals and burned fields. When the expedition headed back to the colony on 15 December, they had taken 23 000 head of cattle, 11 000 of which were presented to Ngqika. Within the colony the rest of the booty was sold to farmers in order to offset the expense of the Brereton adventure (Cape Town Gazette, 2 January 1819).

Shortly thereafter, Ndlambe counter-attacked by launching a sweeping invasion of the colony. The Europeans were caught completely by surprise and many isolated farms were destroyed. Throughout the early months of 1819, British soldiers and Afrikaner settlers were besieged in Grahamstown and a few other small posts (Stapleton, 1994: 32).

Lord Charles Somerset declared martial law and despatched the 38th Regiment of Foot to Grahamstown, he also ordered the *Landrost*, Andries Stockenstroom, to organise a large *burgher* militia (citizen force) (The Cape Town Gazette, 28 August and 11 September 1819; Stapleton, 1994:32). However, before the British could assemble their forces Ndlambe's warriors appeared to withdraw. In reality, they were assembling for a massive attack on Grahamstown itself. On 22 April 1819, 10 000 warriors, led by the prophet Nxele, shocked Wilshire by a daylight assault on the frontier capital. "Facing the Xhosa were forty-five men of the Light Infantry of the 38th, thirty-nine horsemen of the Colonial Troop, most of them exhausted by the race across the flats, one hundred and thirty-five red-jacketed men of the Royal Africa Corps, eighty-two of the Cape Corps, thirty-two armed civilians and a handful of artillerymen with their weapons – nearly three hundred and fifty men" (Maclennan, 1986:192). After initial confusion the defenders rallied and brought murderous firepower to bear against the spear-wielding enemy. Hundreds of Xhosa were killed (Stapleton, 1994:32; Stretch, 1876:297-303; The Cape Town Gazette, 15 May 1819). The settlers, vastly outnumbered, had no compunction about using their technology to their advantage. The mixture of substantial buildings for fortified shelter and massively superior military technology was fully exploited.

For the Xhosa, the battle had been more than a mere military defeat. In 1812, encumbered by their women, children and herds, they were forced to give way. In 1819, they had to acknowledge that there was no chance of regaining what they had, it was a question of hanging grimly onto what little they had left in the face of the inexorable advance of a vastly superior foe (Maclennan, 1986:199).

Lord Charles Somerset visited the frontier again in October 1819 after the Battle of Grahamstown. He conferred once more with Ngqika and the assembled chiefs, and the Xhosa agreed to cede a strip of country between the Keiskamma, Tyumie and Great Fish Rivers. This was to be a neutral zone, unoccupied but patrolled by troops stationed at two military posts, Fort Willshire and Fort Holloway within the ceded territory. The latter was never built but the first Fort Willshire, the most ambitious and most forward military station, was started in November, 1819 (Garson, 1992; Meredith, 2006; Thompson, 2006). On the 14th October 1819, Somerset declared the whole area between the Fish and the Keiskamma Rivers a neutral zone, to remain depopulated. This neutral territory comprised upwards of a million acres of the most beautiful and fertile country in the eastern frontier districts. The neutral zone, which was cleared of Xhosa by the usual methods, soon came to be referred to by Somerset as the Ceded Territory, and the Keiskamma River was eventually regarded by the colonial authorities as the eastern boundary of the Cape Colony (Stapleton, 1994:38).

8.2.3 THE 1820 SETTLERS

In an attempt to try to secure the frontier, the authorities in Whitehall decided on a scheme to settle people from across the British Isles in the Zuurveld. Cuyler (a controversial colonial official) was soon to rename the Zuurveld after his birthplace, Albany, the capital of the State of New York. The authorities felt that British settlers would act as a buffer against the Xhosa to protect the Cape, and at the same time relieve the economic difficulties at home.

"The 1820 settlers, some of whom had arrived at Algoa expecting to find apricots growing wild in the thorn bush soon discovered how brash Somerset's words about the new land

had been. There were the inevitable Xhosa raids; the locations were too small for cattle farming and unsuitable for growing crops; they experienced both drought and floods which, in October, 1823, swept away much of the produce of all the best available lands, and disease, which destroyed three successive wheat crops" (Maclennan,1986:226). Many settlers flocked to the towns where they found outlets for their skills. Others, after the government belatedly realized its folly and in 1825 enlarged the grants of land, began to breed Merino and other types of wooled sheep. Not least among the reasons for the popularity of this type of farming was the belief that since the Xhosa were not themselves sheep farmers they would seldom steal more than the odd one for food. In 1826, the shipment of wool from the colony totalled only 53 500lbs in weight, valued at £545. A decade later the weight of export wool from the Eastern districts alone was more than £100 000; and Thomas Pringle could write that "there are about 12 000 fine-wooled sheep in Albany, the owners of which are realizing large profits; this promises to prove a mine of inexhaustible wealth for South Africa" (Maclennan,1986:226). Sheep farming however, was more labour intensive than stock farming as sheep need to be sheared and the fleeces washed before shipping.

The earliest stirrings of settler protest in Albany were prompted by the acute distress caused by the breakdown of the emigration scheme which had brought the settlers to the colony (Edwards, 1934:50). 'Rust' destroyed the wheat crops in three successive years, and in October 1823 torrential rains washed the soil for ten days until the rocks were exposed. The essential cause of the failure of the scheme though, was that it had been ill-conceived. Since land grants were limited to 100 acres for each immigrant, the only type of farming that was possible was agricultural production. But in view of the poverty of much of the soil, the scarcity of water and other factors, of which both the colonial and imperial governments were ignorant, agricultural production on 100 acre allotments was impracticable in Albany. Nor did the immigrants generally possess the skills necessary for the successful cultivation of the soil: about fifty per cent of them came from English industrial cities; their absurd efforts at farming were ridiculed as being those of 'Cockney gardeners' (le Cordeur,1981:2). Coming from the northern hemisphere they even planted some early crops in the wrong season. Even when they were able to produce an agricultural surplus, they had great difficulty in disposing of it; the government's Somerset Farm at the foot of the Boschberg enjoyed a monopoly on production for the colonists of

the east and freight rates were so high that easterners could not sell their products on the Cape Town market except at considerable loss (le Cordeur,1981:3).

The acting Governor, Sir Rufane Donkin, made conscientious efforts to provide relief for the settlers. He issued full rations to them until September 1821 and half rations for the remainder of the year. After the failure of the first crop, he had seed corn despatched from Cape Town. He persuaded the colonial office to remit the charges for the hire of wagons by the settlers at the time of arrival. By the end of the first year he had agreed to allow those in the 'ornamental trades', who could not easily be employed on the locations, to seek work where they wished; a year later, the governor, Lord Charles Somerset, extended this right to all. Artisans, labourers and indentured servants, favoured by the labour shortage and the current high wages, deserted masters who could no longer pay or feed them, and readily obtained employment in Grahamstown and other parts of the colony. Some were soon in far better circumstances than the men of means to whom they had originally been indentured (Butler(ed),1974:175-6).

To the self styled 'gentry' or 'proprietors' of Albany the breakdown of the scheme dealt a far heavier blow. They were men of standing or education; some were retired army or navy officers; not a few of them were socially well-connected in Britain. They had seen in the emigration scheme an opportunity for the profitable investment of their capital by bringing out parties of labourers under indentures to work on their locations or estates for a specified number of years. For the most part the gentry hoped to reproduce in the colony the stratified society of the mother country. In Britain the Colonial Office had negotiated directly only with the 'heads of parties', who fancied themselves as future squirearchy (le Cordeur,1981:3). Once arrived in the colony, they noted with satisfaction that the Cape government, too, had had the good sense to issue instructions to all its officials 'to communicate only with heads of parties' (Circular of deputy colonial secretary (Henry Ellis) to heads of parties, 1 May 1820, enclosed in Ellis to Captain H. Somerset, 1 May 1820, 1/ay, 8/1). Their authority and prestige were systematically bolstered by Donkin, who appointed them to public office and enlarged their land-holdings, 'so as to generate, by degrees', he explained to the colonial secretary, 'a sort of aristocracy or intermediate class between the government and the labourers…' (Donkin to Bathurst, 29 September 1822, Records 1/AY 8/1 p 104). For at least the first half-dozen years after 1820, leadership in the settler community was assumed by the gentry as a matter of right (le Cordeur,1981:3).

Donkin, believing that Somerset's 1819 policy of an uninhabited neutral belt on the frontier between the Fish and the Keiskamma Rivers would not assure the colonists sufficient protection, had extended the district of Albany to include the whole of the neutral territory, the Zuurveld and the Uitenhage division east of the Sundays River. Somerset was furious. Contrary to Somerset's intention that the settlers should provide their own protection, Donkin had taken steps to afford them military protection by the erection of forts in what had previously been the 'ceded territory'; and at Fredericksburg, in the heart of the territory, he had attempted to settle Khoikhoi officers and men being discharged from the Royal African Corps by granting them land around Fredericksburg (leCordeur,1981:7).

Tensions were rising. "Stockenstrom, who went on to become a controversial Lieutenant-Governor of the Cape, and sat as an elected member of the colony's first parliament, wrote with cynical insight in 1827 that the colony could not expect a large influx of labourers from Xhosaland so long as that region was 'in a state of peace and space aplenty' (le Cordeur, 1981:228). Collins, in 1809, had estimated the strength of the Xhosa nation at about fifty thousand people, scattered over a swathe of territory from the Fish to the Bashee Rivers. The traveller George Thompson's estimate fifteen years later, was one hundred thousand. As the colonial authorities, by sword and pen, extended British domination to cover the whole of Xhosaland and beyond, 'independent' Xhosaland shrunk until by 1855, according to Governor George Grey, ninety thousand people living west of the Kei were crammed into nine locations totalling only two thousand four hundred and fifty square miles. At the time when the average frontier farm considered sufficient to support one colonial family was over nine square miles in extent, the Xhosa area gave a density of just over thirty-six persons per square mile. Starvation makes a good servant; as Stockenstroom predicted, the sheep farmers got the labourers they wanted (le Cordeur,1981:228-9).

The labour shortage at the Cape dated back to van Riebeeck's time. Solved in some measure by the importation of slaves from West Africa, Mozambique, Madagascar and the East Indies, the demand for cheap labour increased as steadily as the colony's relentless eastward expansion, and by the beginning of the nineteenth century labour was still scarce and expensive (Maclennan, 1986:50). When slaves deserted they often headed to Xhosaland, where according to van Reenen, 'they enjoyed the same privileges as the Xhosa'. Besides his value as a labourer, a slave was a valuable piece of property, worth

from five to six hundred rixdollars, thus as early as 1780 there were proposals that slaves who had escaped to Xhosaland, and been recaptured, be put in irons to prevent them from repeating the bid. The *Boers* hit hardest by these desertions were, of course, those closest to the Xhosa. Often the slaves who deserted took with them the firearms with which they had been provided for the protection of the livestock entrusted to them. However, while the *Boer* had to pay for a slave the Khoikhoi were readily available – and readily expendable. The Khoikhoi constantly complained to the *Landdrost* that they did not receive their promised wages. Another frequent complaint was that when the agreed period of service expired, they were not permitted to leave, their women and children being detained by the *Boer* to ensure that the man remained (Maclenna, 1986:51).

The colonial labour shortage became acute in 1827. Indentured Khoikhoi servants and captive San were not meeting settler requirements. Covertly, Afrikaner and English farmers in the Eastern Cape were purchasing Sotho and Tswana people who had been seized by Griqua horsemen north of the Orange River. This was doubly illegal. London had banned the slave trade and Cape Town had forbidden Africans from independent chiefdoms from entering the colony (PP, C252of 1835, pp 21-23; Bourke to Goderick, 15 October 1827).

The settlers began to demand cheap labour to support their agricultural enterprises (Cobbing, 1991:8). With experience as agriculturalists, Xhosa women and children were a tempting target. However, London had banned the slave trade in 1807 and Xhosa people were not interested in abandoning the familiar safety of traditional society for the uncertainty of alien rule. Additionally, Governor Somerset's border arrangements of 1819 forbade members of independent chiefdoms to enter the colony. Local officials were besieged by labour-hungry colonialists (Stapleton, 1994:38).

Throughout the early 1820's, the colony developed an increasingly aggressive and violent policy towards its Rharhabe neighbours. Captain Richard Blakeman, commander of the newly constructed Fort Willshire, had been ordered to shoot any Xhosa who wandered into the neutral zone. Luring some of Ngqika's subjects across the boundary by promises of trade, British soldiers shot these unsuspecting people and confiscated the agricultural produce and stock they had planned to barter (PP, C538of 1836; 143-145 Evidence of Captain Richard Blakeman).

Although subordinate to acting Governor Major General Bourke, Somerset's interests were initially bound with those of the frontier settlers. With correspondence to Cape Town taking nearly two weeks, officials in Grahamstown could easily circumvent colonial regulations and invent cover stories that would never be investigated. Somerset needed a powerful justification to bring many more Africans into the Eastern Cape. Under the watchful eyes of a few idealistic missionaries and philanthropists, it was difficult to launch large-scale labour raids against the Rharhabe chiefdoms on the frontier. People further away from the colony ideally would become the targets. The mythical image of the wicked Zulu King Shaka had already been publicized by illegal British slavers operating in Natal. It had been an effective cover-up. Enhancing this concept, Somerset and his settler henchmen invented the image of 'Fetcani' hordes, set in motion by Shaka's wars of conquest, threatening the colony and driving refugees towards the border (Stapelton,1994:49).

Throughout 1827 and 1828, the commandant dispatched patrols beyond the colonial frontier and informed Cape Town that he was collecting intelligence on the 'Fetcani' threat and protecting helpless Africans. According to Stapelton (1994) in reality, these expeditions were capturing people for service on settler farms. Somerset was the real raider. Official reports claimed that the labourers were refugees who had fled Shaka[1] and were brought to the colony and 'apprenticed' to Europeans for humanitarian reasons (Cobbing, 1988:29; (CA) CO333, Somerset to Colonial Secretary, 1 Jan 1827).

A separate, but related cover story was fabricated for the enslavement of the Rharhabe. Displaced by the colonial cattle raids, many frontier Xhosa living around certain mission stations were described as 'Fingoes' who had fled Zulu-ravaged Natal. This allowed them to be brought into the colony and hired out to settlers – a sort of coercive labour recruitment camouflaged as philanthropy. Supposedly these Fingoes were being delivered

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[1] Shaka was the Zulu King responsible for the Mfecane – a series of Zulu and other Nguni wars and forced migrations of the second and third decades of the 19th century that changed the demographic, social, and political configuration of southern and central Africa and parts of eastern Africa. The Mfecane was set in motion by the rise of the Zulu military kingdom under Shaka (c. 1787–1828), who revolutionized Nguni warfare. The rise of Shaka's kingdom, which took place during a time of drought and social unrest, was itself part of a wider process of state formation in South-eastern Africa, which probably resulted from intensified competition over trade at Delagoa Bay. The pattern of the Mfecane, in which tribe was set against tribe over an ever-increasing radius, was highly successful in areas weakened by overpopulation and overgrazing.

from the barbarity of their own society ((CL)MS 9037, minutes of the Presbytery of Kaffaria, Vol I, Report of Thompson, 8 August 1827; Webber, 1991:30).

Around this time Somerset intended to promulgate Ordinances 49 and 50, which would free indentured Khoi servants and also allow Africans from independent Chiefdoms to entre the colony as employees for colonial farmers (Macmillan, 1963:50). Officially passed in July 1828, Ordinance 49 gave the settlers permission to invite African workers into the colony. Later in the same month Major William Dundas, a frontier *Landdrost* (magistrate), led a mounted expedition of thirty-one *Burghers* (civilians) and twelve British soldiers beyond the Kei and Mbashe Rivers. Somewhere near the modern town of Umtata, this force attacked what Dundas described as 'Fetcani'. Bringing back 25 000 captured cattle and 100 slaves, the *Landdrost* fabricated the story that the region beyond the Kei River was about to be invaded by the Zulu army ((CA) CO357, Somerset to Colonial Secretary, 8 May 1818; (CA) CO357, Captain Armstrong to Somerset, 14 May 1828; Brownlee, 1828; Cobbing,1988:21).

Under the guise of defending the colony from Shaka and protecting the distant Gcaleka, Thembu and Mpondo, Lieutenant Colonel Somerset mustered the largest European army ever assembled in South Africa. One thousand strong, the column crossed the Kei and rendezvoused with 26 000 warriors from Hintsa' Gcaleka, Vusani's Thembu and Faku's Mpondo. These chiefs allied with the European raiders in order to capture large herds of cattle and prevent colonial aggression against their own subjects. On 28 August 1828 a massive force attacked Chief Matiwane's Ngwane. According to the commandant, his African allies slaughtered thousands of men, women and children and seized all the victim's livestock. Somerset captured 100 women and children in order to 'save them from Hintsa and Vusani'. The prisoners were brought to Fort Beaufort and sold to colonial farmers (Stapleton, 1994:56; (CL) MS 9037, minutes, Reports Ross, 15 September, 6 November, 4 December 1828).

In 1834 D'Urban was assigned to administer a new policy. The civil establishments were to be greatly reduced, the expenditure was to be brought within the revenue, and the balance scrupulously applied to the payment of the public debt. The system of dealing with the Xhosa was to be altered, and friendly alliances were to be formed with the chiefs. D'Urban started with the sincere belief that the colonists were wholly in the wrong, the experience

of the war, which broke out at the end of 1834, taught him the value of the idyllic picture as drawn by the missionaries. After the close of the war he considered it necessary to annex to the British possessions the tract of country between the Keiskamma and the Kei Rivers. The dispatch announcing his intentions was thus answered by Lord Glenelg (December 26 1835): ' In the conduct which was pursued towards the Kaffir (sic) nation by the colonists and the public authorities of the Colony through a long series of years, the Kaffirs (sic) had an ample justification of the war into which they rushed with such fatal imprudence . . . urged to revenge and desperation by the systematic injustice of which they had been the victims, I am compelled to embrace, however reluctantly, the conclusion that they had a perfect right to hazard the experiment, however hopeless, of extorting by force that redress which they could not expect otherwise to obtain. In these circumstances the claim of sovereignty over the new province . . . must be renounced. It rests upon a conquest resulting from a war in which . . . the original justice is on the side of the conquered not of the victorious party' (KAB, Accession, A519 Papers Sir B D'Urban Collection, Cape Archives 1823 – 1854). Lord Glenelg further announced that a Lieutenant-Governor would be sent out to the eastern district, and that an Act was being drafted to enable courts of law to take cognisance of offences committed by British subjects beyond the borders of the Colony. The new Lieutenant Governor proved to be Captain A. Stockenstrom, whose main title to distinction at the time was that he had just been bringing the strongest accusations against his fellow-countrymen before a Committee of the House of Commons. The composition and findings of that Committee indicated very clearly the tone of the English public opinion of the day. The missionaries who highlighted the unjust way in which the local population were treated shaped public opinion in Britain.

The new Lieutenant Governor, in accordance with his instructions, negotiated treaties with the chiefs, under which the two parties were placed on a footing of perfect political equality. ' Colonists were to have no more right to cross the boundary eastwards without the consent of the chiefs than the Xhosa had to cross westwards without the consent of the Colonial Government. In D'Urban's words, the new and reckless policy had '… sufficed to dispel the salutary fear of our power…to shake-if not altogether to alienate the respect and confidence with which we have been regarded by our friends, to banish the flower of the frontier farmers, and to leave those who yet remained in a state of the most fearful insecurity '. D'Urban, at least, was not wanting in the courage of his opinions. His reply to Lord Glenelg's indictment of the colonists was to demand compensation for 'faithful

subjects who had been visited with calamities rarely paralleled, undeserved by any act of the sufferers' (Egerton, 1943). The result was the exodus of the Dutch farmers, which began in 1836. This had a far-reaching result on South African history.

What, then, were its causes? To the omniscient Lord Glenelg they seemed clear enough: 'The motives of the emigrants were the same as had in all ages impelled the strong to encroach upon the weak, and the powerful and unprincipled to wrest by force or fraud from the comparatively feeble and defenceless wealth or property or dominion' (KAB, Accession, A519 Papers Sir B D'Urban Collection, Cape Archives 1823 – 1854). In a similar spirit, he afterwards wrote that the proceedings of the emigrants must be checked 'in order to put an end to the scenes of havoc and destruction which have hitherto attended their course'. To D'Urban, on the other hand, who was on the spot, and had the opportunity of testing theory by fact, the causes of the exodus were the insecurity of life and property occasioned by the recent measures, 'inadequate compensation for the loss of the slaves, and despair of obtaining recompense for the ruinous losses by the Xhosa invasion'(KAB, Accession, A519 Papers Sir B D'Urban Collection, Cape Archives 1823 – 1854). The view of the emigrants themselves was thus stated: 'We despair of saving the Colony from those evils which threaten it, by the turbulent and dishonest conduct of vagrants who are allowed to infest the country in every part . . . .We complain of the severe loss . . . by the emancipation of our slaves and the vexatious laws which have been enacted respecting them. We complain of the continual system of plunder, which we have for past years endured from the Kaffirs (sic). We complain of the unjustifiable odium, which has been cast upon us by interested and dishonest persons under the name of religion. We are resolved that wherever we go we will uphold the just principles of liberty, but, whilst we will take care that no one is brought by us into a condition of slavery, we will establish such regulations as may suppress crime and preserve proper relations between master and servant. We quit this Colony under the full assurance that the English Government has nothing more to require of us and will allow us to govern ourselves without its interference in future' (Egerton, 1943). The argument has been put forward that the primary cause of the Great Trek was the emancipation of the slaves. It has however, been pointed out that, whilst 56 per cent of the total slave population belonged to the districts of Cape Town and Stellenbosch, 98 per cent of the emigrants were from the districts of Beaufort, Graaff-Reinet, Somerset, Albany and Uitenhage, wherein there had only been 16 per cent of the slave population. In these circumstances, it is impossible to connect the

emancipation of the slaves and the emigration as cause and effect. Another opinion maintained is that the emigration was merely a continuation of what had been going on since the beginning of the eighteenth century, but there is all the difference in the world between the movement necessitated by defective methods of agriculture and the need of new lands, and the deliberate exodus of masses of people who abandoned or sold for small sums some of the choicest land in South Africa, and who left the colony with the avowed determination to set up independent communities.' D' Urban remarked that the Dutch farmers who were leaving the colony were 'a brave, patient, industrious, orderly and religious people - the cultivators, the defenders, and the tax-contributors of the country'(Egerton, 1943). (Refer to figures 59 and 60)

The English government found itself confronted with a most difficult question. The strict legal aspects of the case might be clear enough. The maxim *nemo potest exuere patriam* [2] applied no doubt to the case of subjects who had become such by conquest. But when the case was transferred from the grounds of dry law to its merits, every kind of difficulty stood in the way. In the first place, the emigrants could not be detained. The Attorney General recognized that 'it seemed next to an impossibility to prevent persons passing out of the Colony, by laws in force, or by any which could be framed '. The emigrants must therefore be allowed to leave, but it seemed equally clear that the new country, to which they might proceed, must not be claimed as British territory. On this point, of the necessity of no further extension, all English statesmen were agreed. Yet if the emigrants were to still be regarded as British subjects, while the country in which they lived remained foreign territory, were they still subject to British law. The State, which abjures responsibilities, will in the long run find itself to have lost rights. The English however, saw themselves as the trustees of the African peoples, and, according to the received view of the Dutch emigrants, their action would almost certainly imperil those interests. Moreover, in a direct fashion, the doings of the emigrants might affect the Cape Colony. Their relations with the Africans might result in the pressing southwards upon the Cape frontiers of masses of

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[2] The old doctrine of nationality was stringent: *nemo potest exuere patriam*. Everyone born in the land owed allegiance to its King—and this tie continued unbroken until severed by death. A breach of allegiance, which was consequent thus on the mere accident of birth, might expose the offender to the inhuman horrors inflicted upon traitors. (Magna Carta, see bibliography)

Figure 59: Trek Routes and the opening up of the interior, note the dates of annexations in the Eastern Cape (Dalziel,2006:75)

Figure 60: British and Boer Territories at the time of the Second Anglo-Boer War (1899-1902) (Dalziel,2006:75)

Xhosa: a danger to the colony, which must at all costs be averted. The *Voortrekkers*[3], thus never truly broke free of British interference and the entire nineteenth century was marked by the British inability to clearly resolve the issue. This saw a series of treaties, annexations and recognitions of independent states, but ultimately it culminated in the Anglo-Boer Wars.

In early October 1844 the Governor summoned all of the Ngqika chiefs, including Maqoma, to Fort Beaufort, where in the presence of 400 mounted Dragoons they were informed of the Colony's new border policy. The new Governor of the Cape Colony, Maitland, decided after the murder of a white farmer, allegedly by Xhosa rustlers, that Stokenstroom's treaties were no longer valid and reaffirmed the right to armed patrols. Additionally the Xhosa living at mission stations would no longer be subject to traditional law. The disposed Xhosa had many internal problems of their own at this stage, caused in no small part by their loss of land, overcrowding and continual threat of cattle raids; Stapleton's book <u>Maqoma: Xhosa resistance to Colonial Advance</u> (1994) gives a good account of all the characters and motives.

Shortly thereafter, the Jingqi, who had resettled in the upper Kat River area were forcibly evicted. On the morning of 4 May 1829 the colonial expedition escorted 3 000 cattle south to Fort Beaufort, and Maqoma led his warriors east of the neutral zone. Reluctantly they entered Ngqika's domain. Under the supervision of Nothonto, the Jingqi women worked feverishly all day to harvest the crops. Since this process usually required several weeks, not half of the produce was salvaged. The following day a weeping Helen Ross (the missionary's wife) observed hundreds of displaced women and children walking east with huge burdens on their heads. Ngcwenxa was abandoned; the chiefdom expelled (Stapleton, 1994:60-61; (CL)MS 7720, J Ross to mother, 6 May 1829; (CL)MS 9037, minutes, reports of Thompson, 4 May 1829; PP, C252 of 1835, pp 32-43, Sir L Cole to Sir George Murray, 14 June 1829).

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[3] Voortrekker: a member of a band of Afrikaner pioneers who, in the early 19th century, left the British-ruled Cape for the interior of South Africa

Towards the end of 1834–35 fighting erupted again, and for the first time the war was carried into the territory of the Gcaleka Xhosa, whose paramount chief, Hintsa, was shot while in British custody. After the failure of several treaties, war broke out again, in 1846, over a trivial incident, and in a bitter struggle the Xhosa were defeated once more. After this war the British government annexed the old neutral territory as the Crown Colony of British Kaffraria (sic). After the deposition of the Xhosa paramount, Sandile, in 1851, this territory was reserved, apart from the British military outposts, for occupation by Africans. Resentments in British Kaffraria (sic), however, resulted in the eighth and most costly of the wars. Once again the Xhosa resistance was immensely strengthened by the participation of Khoisan tribesmen, who rebelled at their settlement of Kat River. By 1853 the Xhosa had been defeated, and the territory to the north of British Kaffraria (sic) was annexed to the Cape Colony and opened to white settlement (Welsh, 2000; Thompson, 2006; Lamar and Thompson, 1981; Meredith, 2006; Caffrey, 1973; Garson, 1992).

Part of Sir George Grey's policy of creating a predominantly European British Kaffraria (sic) after the Eighth Frontier War was to recruit members of the German Legion to the colony in exchange for land and village settlements. About 2 500 arrived early in 1857, however the scheme was not a success and many left to fight the Indian Mutiny of 1857 - 1859 (Garson, 1992). Many small settlements were however created by the German settlers such as Hannover. (Refer to figure 61)

In 1857 the Xhosa were induced by a prophecy to slaughter their cattle in a mass sacrifice that was predicted to be followed by a miraculous overthrow of the British. This disastrous act caused widespread starvation and effectively ended Xhosa military resistance for two decades. The cattle killing has been a subject of much debate over the years, many feel that Sir George Grey incited the visions, but in an in-depth study Peires (1989) came to the conclusion that the visions were believed mainly due to the desperate circumstances of the Xhosa people and a widespread lung sickness epidemic of 1855 which killed as many as half to two thirds of their cattle. Peires' book The Dead will Arise: Nongqawuse and the Great Xhosa Cattle Killing Movement of 1856-7 (Peires,1989) gives an in depth account of this sad episode. From the point of view of this study the movement broke the back of the Xhosa resistance and vast sections of Xhosa territory were taken over by the British.

In 1877–78 the Ngika and Gcaleka sections of the Xhosa, who had acquired guns on the diamond fields and were eager to regain lost lands, unsuccessfully took up arms against the colonists. After these wars the remaining Xhosa territories were gradually incorporated into the Cape Colony (Welsh, 2000; Thompson, 2006; Lamar and Thompson, 1981; Meredith, 2006; Caffrey, 1973; Garson, 1992).

8.3   CONCLUSIONS

This background history serves to illustrate the fraught and complex nature of the settlement and expansion of the Eastern Cape. The military and political approach to the problem has been presented. The next two chapters seek to analyse the spatial development approach adopted in this area. The study has previously highlighted that the British army was used both militarily and as a development agency, these two aspects are explored. The background history presented in this chapter sought mainly to present the story of the development of the Eastern Cape and the main wars, the next chapter seeks to analyse the defensive structures established in an attempt to pacify the frontier. Chapter 10 will look at the development of frontier towns.

Figure 61: German Villages Cape Eastern Frontier (Garson,1992)
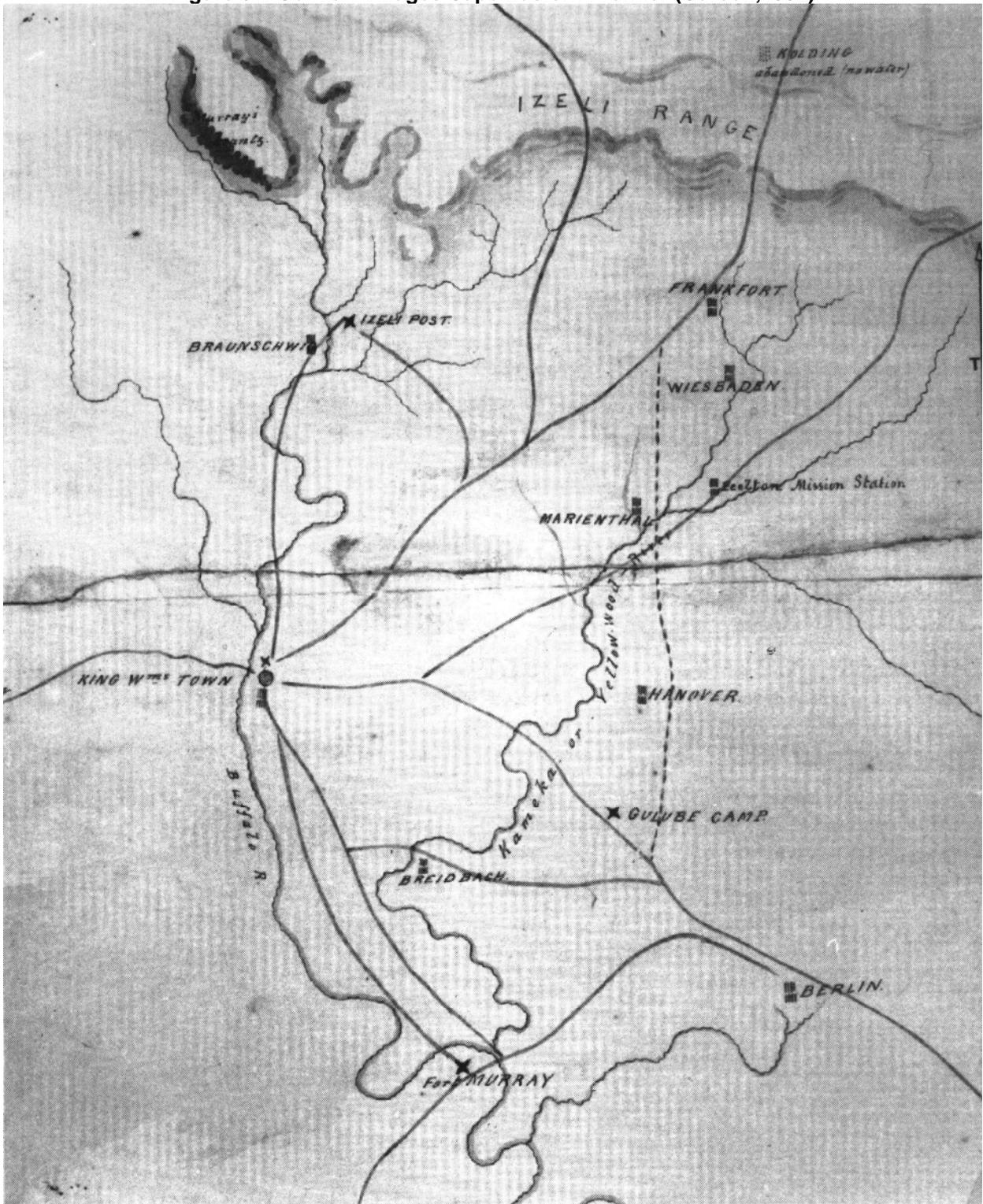
CHAPTER NINE
FRONTIER DEFENSIVE STRUCTURES

9.1   INTRODUCTION

The period of the first British occupation at the Cape produced a flurry of fortification work including the upgrading of existing fortifications (most notably around Cape Town) and the building of several new ones (Tomlinson, 2006:1). This chapter focuses on the second period of British occupation and investigates Eastern Cape military structures and infrastructure built and/or designed by the Royal Engineers. The fortifications in the Eastern Cape cover a large region and clearly show the advance and withdrawals according to the fortunes of the combatants and the policies of the home government. The troops were assisted until the late 1830's by *Boer* commandos, after 1822 by British immigrants formed into the 'Albany Levy' (Albany Museum Manuscript SM43), by Fingo tribesmen after 1835 and by the British German Legion from 1857. The wars resulted in a number and variety of fortifications, spread over an area from Port Elizabeth to East London and as far inland as Queenstown (totalling about 80 sites) (Tomlinson, 2006:1).

9.2   EARLY ROYAL ENGINEER DEPLOYMENTS TO THE CAPE COLONY

The Royal Engineers' first contact with the South Africa came when the Cape was occupied by British forces in 1795. During this seven year period of occupation a small Royal Engineer detachment was sent to the Cape, three names which arise out of the archive documents of this era are Captain James Carmichael Smyth[1](Royal Engineer), Captain George Bridges (Royal Engineer) and Lieutenant Henry Smart (Royal Engineer).

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[1] **Maj.-Gen. Sir James Carmichael Smyth, 1st Bt.** (22 February 1780 -4 March 1838)

Maj.-Gen. Sir James Carmichael Smyth, 1st Bt. went to school at Charterhouse School, Godalming, Surrey, England. He furthered his education at the **Royal Military Academy, Sandhurst**, Berkshire, England. He held the position of 24th Chief of the Name and Arms of Carmichael. He was **Colonial Secretary at Cape of Good Hope under Sir David Baird**. He fought in the retreat from Corunna. He fought in the Battle of Bergen

Of these men, Smyth (1780-1838) then eighteen, soon demonstrated his talents as an engineer and an administrator, becoming aide-de-camp to the governor, Sir Francis Dundas[2] in 1800, and Commanding Royal Engineer and acting Colonial Secretary in the early years of the second British occupation of the Cape Colony in 1806 (Bergh and Visagie, 1985:34). He was responsible for mapping, coastal surveys and fortifications, and gained considerable knowledge of the interior of the colony, providing information for Aaron Arrowsmith's map of the Cape Colony, 1805, which was dedicated to him (Garson, 1992:2; Bergh and Visagie, 1985:34).

With the second British occupation of the Cape in 1806, an equally small group of Engineer officers arrived, under the command of Captain Smyth on his second tour of duty

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op Zoom, where he was ***commander Royal Engineers*** in Netherlands under Lord Lynedoch. He was decorated with the award of Order of St. Vladimir of Russia (3rd Class). He fought in the Battle of Waterloo, on the personal staff of Duke of Wellington. He fought in the Battle of Quatre Bras in 1815, on the personal staff of Duke of Wellington. He was decorated with the award of Order of Maria Theresa of Austria (3rd Class). He was invested as a Companion, Order of the Bath (C.B.). He was created 1st Baronet Carmichael Smyth [U.K.] on 29 August 1821. He was invested as a Knight Commander, Hanoverian Order (K.C.H.) in 1829. He held the office of Governor of Bahamas between 1829 and 1833. He held the office of Lieutenant-Governor of Bahamas between 1833 and 1836. He held the office of Governor of British Guiana between 1836 and 1838, where he emancipated the slaves. (Reference: Charles Mosley, editor, Burke's Peerage, Baronetage & Knightage, 107th edition, 3 volumes) and (Wilmington, Delaware, U.S.A.: Burke's Peerage (Genealogical Books) Ltd, 2003), volume 1, page 696)

[2] **Major-General Francis Dundas** (c.1759 – 15 January 1824) was a British general and acting governor of the Cape Colony between 1798 and 1803. Francis Dundas was the second son of Robert Dundas of Arniston and Jean Grant, and the nephew of Henry Dundas, 1st Viscount Melville and War Secretary. He was ordered to the Cape in August 1796 after the first British occupation to become major-general and commander of the forces in May 1797. He first acted as governor from 21 November 1798 to 9 December 1799 and again from 20 April 1801 to 20 February 1803, when the Colony was returned to the Batavian Republic in accordance with the Treaty of Amiens signed on 27 March 1802. During his governorship the Graaff Reinet Revolt of 1798 and the Third Frontier War took place. His administration was seen to be autocratic but fair.

After the Cape he held several important military appointments in Britain. He commanded the Kent division of the army collected on the south coast of England under Sir David Dundas during part of the invasion alarms of 1804-5. (Wikipedia)

to the Cape which lasted until 1808. He was replaced as commanding officer by Captain Henry Smart, who was at times, until 1818, the sole Royal Engineer in office. By then the steadily growing need for the fortification of the eastern frontier against the dispossessed Xhosa brought to the Colony five Royal Engineer officers under the command of Major William Cuthbert Holloway. During his time as head of the Colonial Royal Engineer's department, Holloway chaired a commission to examine the feasibility of building a pass to service Franschhoek. The valley was originally settled in 1688 by French Huguenot refugees, many of whom were given land by the Dutch government in a valley called *Olifantshoek* (elephants' corner), so named because of the vast herds of elephants that roamed the area. The name of the area soon changed to Franschhoek (French corner), with many of the settlers naming their new farms after the areas in France from which they came. La Motte, La Cotte, Cabrière, Provence, Chamonix, Dieu Donné and La Dauphine were among some of the first established farms — most of which still retain their original farm houses today. These farms have grown into renowned wineries.

The first route over the Franschhoek Mountains, the *Olifants Pad* (elephants path/road), was the path that the elephants used when they did their seasonal migration into the valley. This route, however, was not suitable for wagons and could only be crossed on foot or horseback. In 1818 a contract was awarded to a local farmer S.J. Cats to construct a pass. His best efforts resulted only in a very rough road (the Cats Pass), very steep on both sides of the mountain and could not be traversed by a fully laden wagon.

When Lord Charles Somerset authorised the construction of the Franschhoek Pass in 1823, there was no proper-engineered road over the mountains from Cape Town. Holloway built the first stone-arch bridge, Jan Joubert's Gat Bridge, on the eastern side over a *kloof* (gorge) with the same name. This bridge was included in all later constructions and was proclaimed a National Monument in 1979. It is still the oldest bridge in the country still in use. The pass served as the main gateway to the *Overberg* (literally over mountain) until 1830, when the Sir Lowry's Pass was constructed. The pass remained unaltered until 1932, when it was reconstructed with improved geometries. In the 1960's further improvements were made, including a bitumen surface. Labour for the construction

of the pass was provided by the 150 soldiers of the Royal Africa Corps stationed temporarily in Cape Town while waiting to be deployed to Sierra Leone. The pass was completed in 1825 and the road was broad enough to allow two wagons to pass each other. Franschhoek Pass was the first professionally designed and constructed mountain pass in the colony.

During Major William Cuthbert Holloway's time in the colony the devastating frontier wars meant that the resources of the Royal Engineers were increasingly utilised. The Royal Engineers' work in the Eastern Cape forms the content of this chapter. Where possible names of the Royal Engineers involved are highlighted in the text, however, in many cases the maps and plans are simply stamped Royal Engineers, the names are not present. Most of the fort construction, design, as well as the surveying of the frontier was carried out by the Royal Engineers; although other military and colonial officials were also involved (for example the Surveyor General Robinson surveyed Queenstown – see chapter 10). Many plans are signed by the Governor and thus it is hard to find who surveyed and drew the plans – if they are stamped Royal Engineers then it is evident that one of the Royal Engineer Officers were involved).

9.3   THE FRONTIER WARS

9.3.1 FORT FREDERICK – ALGOA BAY

The advantage of Algoa Bay as a landing place for the defence of the country up to Graaff-Reinet was realised during the first British occupation. In the immense frontier district of Graaff-Reinet that had been established by the Dutch in 1786, the *burghers* (Dutch citizens) were beginning to exercise that freedom of speech and independence of action which had been spread by the ideals of the French Revolution. The English arriving in 1795, inherited both the incipient rebellion of the Graaff-Reinet *burghers* and the warlike raids of both the *Boers* and the Xhosa on each other.

Figure 62: Fort Frederick, Port Elizabeth (author's own photo 2007)

Figure 63: Locations of Forts and Towns in the Eastern Cape (http://cape-slavery-heritage.iblog.co.za)

Major-General Francis Dundas, Acting-Governor of the Cape, placed General Vandeleur in command of 200 dragoons and disciplined Khoikhoi soldiers with orders to establish a military post at Algoa Bay. A prefabricated wooden blockhouse was built in Cape Town and sent round in pieces on board the 'Camel' to Algoa Bay where it arrived in August 1799 with artificers to erect it. It was placed near the beach so as to command both the fort over the Baakens River and the landing place on the shore. It was capable of housing sixty men and was armed with two three-pounders mounted on a flat square roof (Garson, 1992; de Klerk, 1975).

On the hill behind the blockhouse, a second blockhouse was erected surrounded by a massive, square stone redoubt. This was named Fort Frederick in honour of the Duke of York, Commander-in-Chief of the British Army. It is said that this was the first piece of 'substantial and permanent building ever erected in the Eastern Province' and it is still in existence today.

The Fort has a commanding view of the whole of Algoa Bay. Its walls are eighty feet long and nine feet high, the wide arched entrance with double gate being situated on the western side. Inside the fort was a powder magazine capable of holding 2 000 lbs of gunpowder and to the left of the entrance was a small guardhouse. Inside the wall was a raised platform for patrol duty and defence. The heavy armament consisted of eight twelve-pounders and the garrison consisted of 350 men, most of whom were housed in barracks near the fort and the first blockhouse. In 1803, the Batavian Government took over the Cape by treaty from the British and in 1804, the new district of Uitenhage was created. And so the development of a civilian centre around Fort Frederick was for a time delayed although it apparently remained the military headquarters (KAB Map M1/2004; KAB Map M1/2249; KAB Map M1/2393; KAB Map M2/924; SAB X6/52/39 Historical Monuments Commission).

The second British occupation took place in 1806 when Britain's line of communication with the Far East was being threatened by the ambitious plans of the new French regime and the decline of the Batavian Government (Gledhill,2008).

The British occupation of the eastern frontier illustrates the British approach to colonisation as they expanded via defendable positions and then consolidated their land gains by settling the area. The fort was as much about the control of the colonial civilian population as it was a statement of power to the Xhosa tribes. Unlike the Dutch settlers who moved into the interior, established farms first and then administrative centres; the British started by creating a fort at a natural harbour manned by military people. The move into the interior was in response to the conflict over land between the settlers and the Xhosa and was met by the establishment of military headquarters and lines of defensive forts and signal posts. Civilian settlements came later and generally grew up around the military posts. The forts formed a front line that was largely defensive in nature; however, in times

of battle troops were deployed from Cape Town making use of the ocean as a means of rapidly moving troops to the area. Overland transportation between the Eastern Frontier and Cape Town was limited, slow and unreliable. The harbour posts were thus a fundamental link in the military strategy.

Figure 64 illustrates the importance of the coastal defences; the map, drawn in 1862, is marked with red semi-circular areas in the bay mapping the lines of sight and distances from the coast of 2 500 yards and 6 000 yards. It shows positions of beacons, lighthouses, the breakwater in the harbour and an area marked out for ships riding at anchor. Dangerous reefs and heavy breakers at Cape Recife are depicted and information is also given about the visibility of lights beyond a certain distance out to sea. The plan is signed by Colonel W.T. Renwick (Royal Engineer) and was drawn to accompany his report to Lieutenant-General Wynyard CB (Garson, 1992:77). Although there is little information concerning the function of this map, there is a possibility that it may have been connected with the coastal survey conducted by Captain Bailey (Royal Engineer) and a number of Royal Engineer officers between 1859 and 1862. After the completion of the work the survey party sailed to England from Algoa bay, only to be shipwrecked on the rocks off Struys Point, an ironic stroke of misfortune. Instruments, drawings and observations were lost "to my infinite regret and annoyance", wrote Captain Bailey. The work had to be reassembled (Garson, 1992:77; KAB 1/413 Cape Archives Report of the Goedetic Survey - Royal Engineers 1892- 1897).

Figure 65, drawn in 1837, depicts the early development of the town with the fort in the north-west and a small linear town along the coast. The plan was drawn to accompany a report by Lieutenant-Colonel Griffith George Lewis (Royal Engineer) after the Sixth Frontier War (1834-1835) and bears the Royal Engineers' stamp. Lewis is discussed later in the chapter. The plan is included in this section to show the growth of the town after the establishment of the fort.

Figure 64: Coastal Chart around Algoa Bay 1862 (Port Elizabeth) Photographed by author from original Royal Engineer's C ollection, William Cullen Library, University of the Witwatersrand
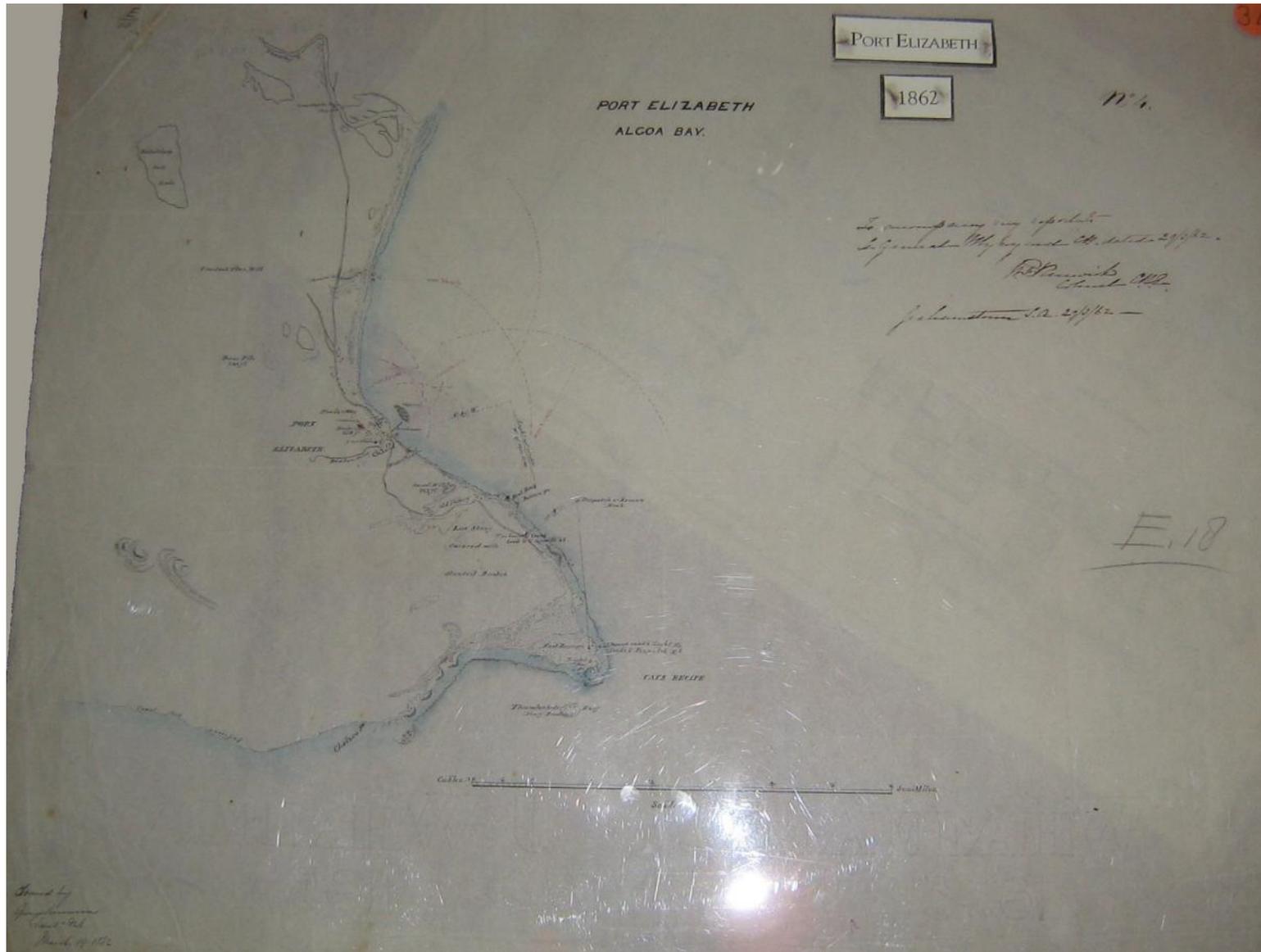
Figure 65: Plan of Port Elizabeth showing the relative situation of the existing and proposed military buildings to accompany an estimate report from Lt Col Lewis Comg. R1 Engr to the Inspector General Fortifications Dated March 18th 1837 Signed by H.W.Piers. Note Donkin's Pyramid, this was a memorial to Elizabeth Donkin, Sir Rufane Donkin's young wife, put up in 1821. Port Elizabeth is named in her honour (Garson,1992:25). (KAB Jeffreys Collection 1894- Photo Donkin Memorial)
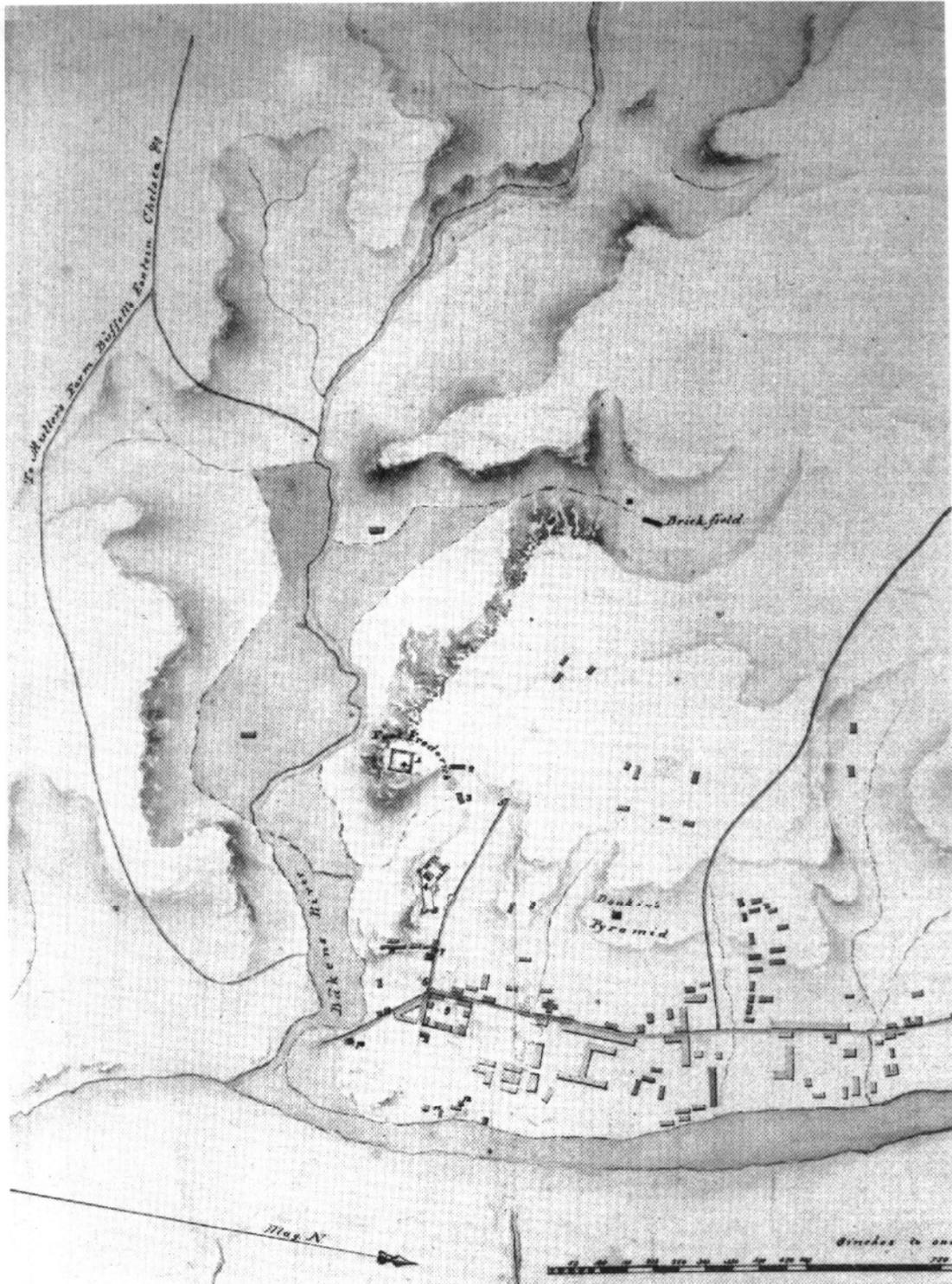
9.3.2 THE FIRST ERA OF FRONTIER FORTS

From the earliest British administration fortifications were planned. Colonel Graham[3] instituted a series of frontier posts from which patrols could guard the drifts across the Fish River. They were first manned by *burghers* from George and Swellendam. These posts were either rehabilitated farmhouses of wattle-and-daub or stone built shelters enclosed by primitive earthen redoubts. Van Aardt's Post, near the present Longhope siding, was the furthest north and was the recognised crossing place for communication between the colonialists and the Xhosa. Three other posts were the abandoned farm of Conraad Buys; Kranz Drift near the present Pigot Bridge; and Old Kaffir (sic) Drift Post which was later called Cawood's Post. This was about an hour's ride from Upper Kaffir (sic) Drift Post, established about two year's later on the heights overlooking the actual drift, and is not to be confused with Lower Kaffir (sic) Drift about 3km further down the Fish River and about 13km from the mouth (Gledhill, 2008).

Figure 66: Lombard's Post, buildings and walls forming a hexagonal farmyard (the buildings pictured are from the post 1820 settler era).(Gledhill, 2008).

Colonel Graham recommended that two additional military posts be established. One was to be at Noutoe, a farm 13km west of Grahamstown, formerly belonging to the de Lange family and situated on the road between Bruintjies Hooghte and Uitenhage. It was soon abandoned and the site later developed as Table Farm by the 1820 Settler Major T.C. White (KAB GH 23/4 Papers despatched to Secretary of State, London reporting upon

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[3] **John Graham** is the founder of Grahamstown and is discussed in Chapter 9.

Colonel Graham's military operation 1811, 1812, 1813, 1815; KAB GH 1/19 Papers received from Secretary of State, London Appointment of Colonel Graham as Commandant at Simons Town, 1816).

The other post was established on the loan place (a farm granted on the quit rent basis – see chapter 5) of Commandant Piet Lombard, about 48km west of Fish River Mouth. A few kilometres south-west of it Theopolis, a London Mission Station for Khoikhoi, was founded in 1814. Lombard's Post was a key point in border raids and frontier wars, particularly later on when the area was taken over by settler Benjamin Keeton. In 1835 he erected a fortified farmhouse close to the site of the old post. The stone buildings of the farm, now called Lombard's Post, were placed so as to enclose a spacious hexagonal farmyard and the outer walls were loop holed (Figure 66) (Gledhill, 2008). The stone fortified farms are discussed later as they were a result of later frontier wars.

During the war of 1850-51 Lombard's Post saw its last action; Whittles laager was formed near it and the farm buildings were filled with refugees. From it also a patrol was sent out to quell the rebel Khoikhoi at Theopolis (Gledhill, 2008; Garson, 1992).

These early posts were little more than strategic farms manned by local citizens but linked to the military intelligence as a series of observation and early warning posts (KAB GH 23/4 Papers despatched to Secretary of State, London reporting upon Colonel Graham's military operation 1811, 1812, 1813, 1815). One of the most important contributions of Colonel Graham was the establishment of Grahamstown, named in his honour. The town of Grahamstown is discussed in greater detail in the next chapter.

9.3.3 SOMERSET'S OBSERVATION POSTS 1814-1819

Lord Charles Somerset signed a treaty with Ngqika, chief of the Xhosa west of the Kei. Troops on the frontier were warned that they were on duty at the outposts for observation and not for aggression. "It is his Excellency's wish that these posts should be improved so as to attain that solidity which many of them (constructed of the slightest materials) had not when he inspected them; but this is a service which must not be hurried, and the greatest attention possible should be paid to having the men's Barracks dry and airy…" (KAB GH

23/5, 1814 Papers despatched to Secretary of State, London Lord Charles Somerset reporting his arrival at the Cape).

Figure 67: Fort Brown, the gun tower from the parade grounds (Gledhill, 2008).

Somerset in his dispatch on September 4, 1818 (KAB GH 23/6, 1818) also urged the officer commanding on the frontier to hasten with the erection of previously recommended Signal Stations so that communication with the front line might be improved, depredations reported and culprits apprehended before they vanished across the Fish River. A Field Officer was to be stationed at van Aardt's on the left wing and another at one of the Kaffir Drift (sic) posts on the right wing (Garson, 1992; Gledhill, 2008).

A series of Outer and Inner Post Lines were created mostly on farms. The most northerly post was Kruger's Farm, near Slager's Nek (1815), followed by Somerset Farm, Prinsloo's and Roodewal (Cookhouse). Going down the river and about an hour's ride from each other were Van Aardt's, Paul Bester's, De Lange's and van der Merwe's. Following the eastward meanders of the river were Junction Drift, Wentzel Coetzee's or Espag's (Carlisle Bridge), De Bruin's, Kranz Drift, Koester's and Hermanus Kraal (Fort Brown). It is uncertain whether Double Drift, Committees and Trompetter's Drift were garrisoned at this time, as they were deep in the valley in dense bush. Waai Plaats and Old Kaffir (sic) Drift (Cawood's) on the flats and Upper and Lower Kaffir (sic) Drifts on the river completed the line to the river mouth, with Lombard's Post further west (Tomlinson, 2006; Garson, 1992; Gledhill, 2008).

The inner line of posts was over the Zuurberg from Grahamstown on the road to Uitenhage; these were Assegai Post, Rautenbach's Drift, Vermaak's Farm, Sandflats, Nieuwepos, Coerney, Addo Drift and Jacobus Oosthuizen's with Klaas Kraal north-west of Uitenhage. (Figures 68 to 70) (KAB GH 23/4 (1814), 23/5 (1814), 23/6 (1818), 23/7 (1825)

Papers despatched to the Secretary of State, London, from Lord Charles Somerset; KAB VC542, Letter from James Barry, 1825).

Figures 68 -70 below are a series of maps accredited to Private John Reid, Royal Sappers and Miners, they demonstrate a remarkable quality of draghtmanship. John Reid would have been well trained at the Royal Engineer establishment at Chatham, where Royal Sappers and Miners who showed and interest in and aptitude for the subjects were given instruction in surveying and draughting techniques. The first significant detachment of Sappers was sent to the Cape in 1834 after repeated requests from the commanding Royal Engineer, at the time Lieutenant-Colonel Robert Thompson. Their services were urgently required for the building of forts, roads, bridges and clerical work as well as for military purposes (Garson, 1992:23; Connolly,1855:271).

The reference table on Figure 69 is interesting; it is in the form of a diagram headed: "Assumed population of Kaffraria (sic) in the year 1834". It consists of a analysis of tribes under headings such as 'Nation', 'Principal Chiefs', 'Men', 'Women and Children' and 'Remarks'. The last heading refers by different colours to the locations on the map of the individual tribes. The grand total of the population was 395 000. Below the diagram is a note: "those marked thus "x" where (sic) hostile tribes in the late war". This refers to the Sixth Frontier War (Garson, 1992:23).

Bearings and distances between Military Posts
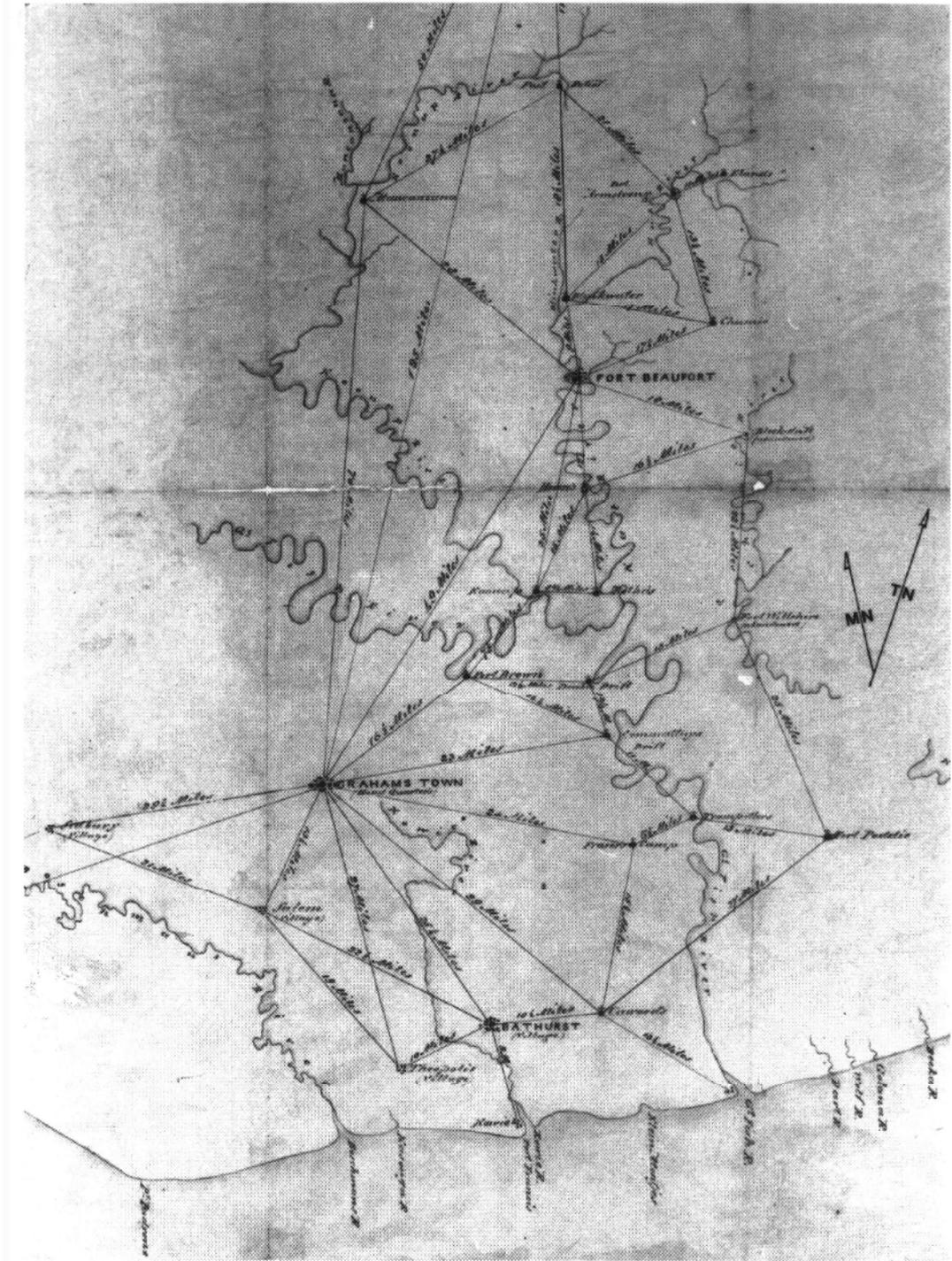
Figure 68: 1844-1845 Bearings and Distances between Military Posts, Eastern Frontier. Sketch showing relative bearings and distances per wagon route between the different military posts on the Eastern Frontier of the Cape of Good Hope (Garson,1992:31)

Figure 69: Eastern Frontier 1844 Photographed by Author from the Royal Engineer's collection, William Cullen Library, University of the Witwatersrand

Figure 70: Detail of Figure 49 taken from Garson(1992:23)

Eastern Frontier
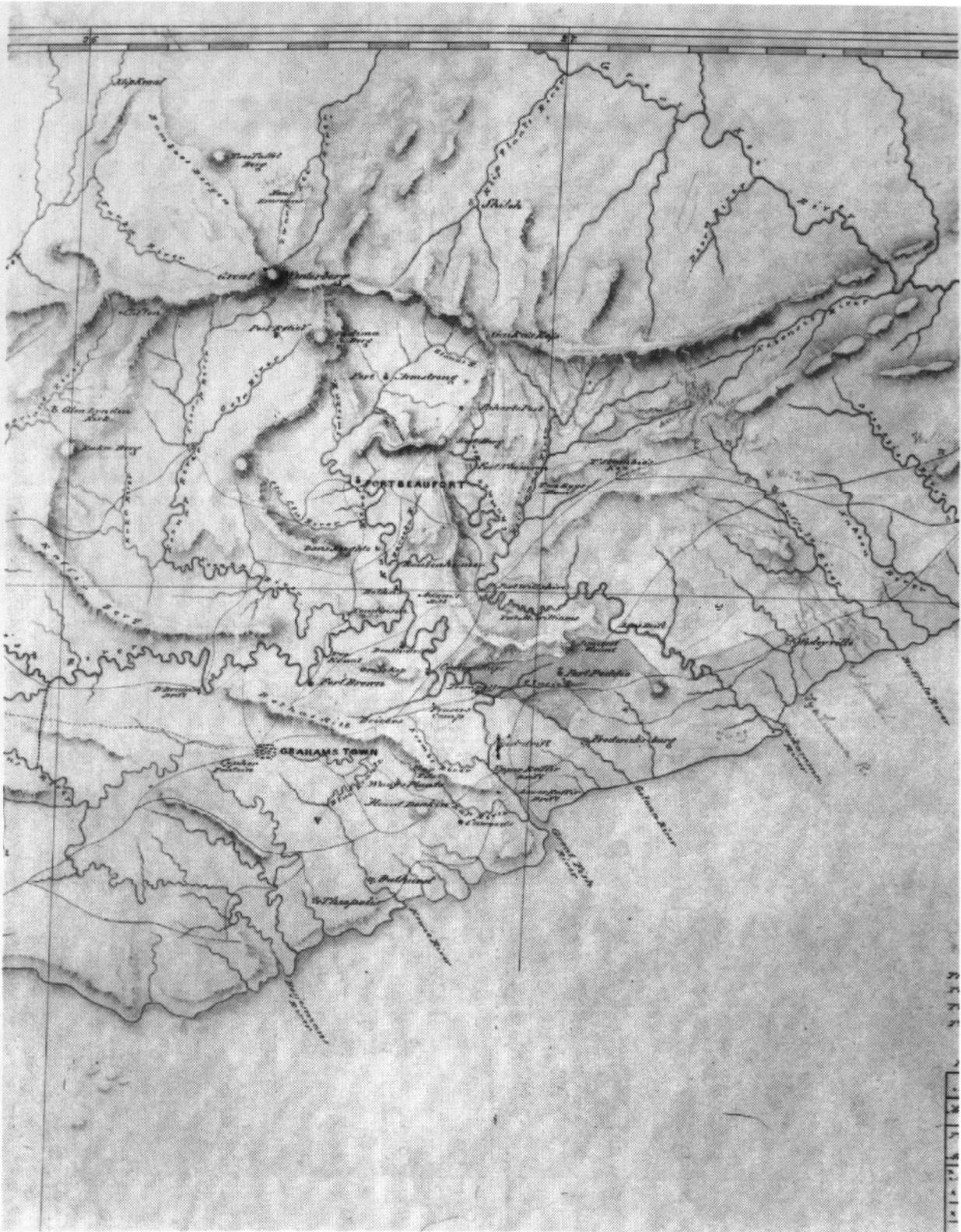
As previously explained in chapter 7; Lord Charles Somerset visited the frontier again in October 1819 after the Battle of Grahamstown. He conferred once more with Ngqika and the assembled chiefs, and the Xhosa agreed to cede a strip of country between the Keiskamma, Tyumie and Great Fish Rivers. This was to be a neutral zone, unoccupied by either colonists or Xhosa; and patrolled by troops stationed at two military posts, Fort Willshire and Fort Holloway within the ceded territory. The latter was never built but the first Fort Willshire, the most ambitious and most forward military station, was started in November, 1819 (Garson, 1992; Meredith, 2006; Thompson, 2006). (Figures 71 and 72) Fort Willshire is actually two fortified barracks about 800m apart. The first fort was built on the orders of Somerset, the plan being an irregular pentagon with curtain walls of lengths 2/66m, 2/60m and 1/81m, with bastions at angles and ranges of buildings against the curtains and freestanding in the interior. However, Somerset went on leave to England in December 1819; only one third of the scheme, including all five bastions, was completed by May 1820, after eight months work; when the Acting Governor, General Sir Rufane Donkin, suspended construction and ordered a second fort to be built nearer to the Keiskamma River, which was the eastern border of the 'neutral territory' at the time. Donkin's barracks was sited on lower ground, it consisted of a square of about 180m with four angle bastions and two castle enclosures forming a blunt arrowhead on one side; the arrangement of the interior was similar to Somerset's fort with the addition of a powder magazine (KAB Accession A1619 1820-1880 Dr van Heerden Papers, Letters by Sir Rufane Donkin 1820; VAB AMPT PUBS IBB, communications between colonial Department and Lieut-General Sir Rufane Donkin, 1827). The second fort was successful until 1830 as a trading station on the eastern frontier (Tomlinson,2006).

Figure 71: A Fair at Fort Willshire Barracks, 1828 (Gledhill, 2008)
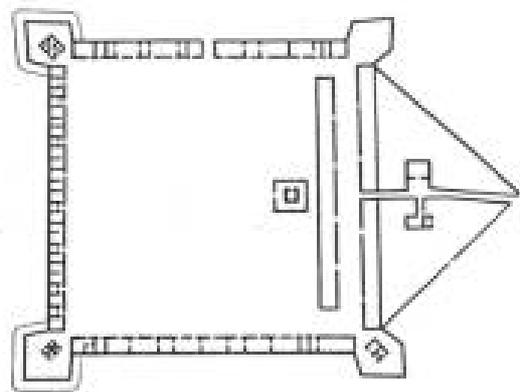
Figure 72: Plan of Fort Willshire Barracks erected in lieu of the first Fort Willshire.(Gledhill, 2008)

9.3.4 THE FRONTIER FORTS 1835 – 1845 - PROVINCE OF QUEEN ADELAIDE

By 1822 the spread of Xhosa tribes westwards along the foothills of the Amatole Mountains was now causing some alarm. Maqoma and his followers had settled in the valley near the source of the Kat River. In order to check and watch his movements, Colonel Scott, in 1822, erected a blockhouse and stationed troops on the north-east bank of the Kat River, naming the site Fort Beaufort in honour of Lord Charles Somerset's family. On the route between Grahamstown and Fort Beaufort, Hermanus Kraal grew in significance and Tomlinson's Post, near the juncture of the Fish and Koonap Rivers was established.

Towards the end of 1834 events moved swiftly to a climax, over 12,000 Xhosa invaded the colony, known as the Sixth Frontier War; Fort Willshire was abandoned and refugees poured into Grahamstown. Colonel Harry Smith, after an epic ride from Cape Town, arrived to take command. He directed a three pronged attack from Committees Drift, Trompetter's Drift and Upper Kaffir (sic) Drift. (Figures 73 to 79)

The attack was pushed past the Keiskamma River and troops eventually crossed the Kei River. Governor Sir Benjamin D'Urban joined in the final conduct of the campaign, proclaimed the new boundary of the colony to be the Kei River and named the new Province Queen Adelaide (Gledhill, 2008; Garson, 1992; Thompson, 2006; Meredith, 2006).

The first measure Governor D'Urban took for the protection of the new province was to erect Fort Warden, on the west bank of the Kei, overlooking the river crossing, about fifteen miles downstream from the present rail bridge. Fort Waterloo was then established as a temporary observation post on the road east of Gonubie River.

Lieutenant, later Major, Thomas Charles White, 70th Foot, led a party of English settlers to Albany in 1820, where over many years he was a prominent and popular citizen. His former experience of survey in the West Indies brought him to the attention of Major William Cuthbert Holloway, Commanding Royal Engineer (the designer of Franschhoek Pass discussed earlier in the chapter), White was made an assistant engineer on the eastern frontier where he conducted surveys and compiled maps for some years.

Figure 73: 1837 District of Albany: Photographed by author from the original, Royal Engineer's Map Collection: William Cullen Library, University of the Witwatersrand.

District of Uitenhage
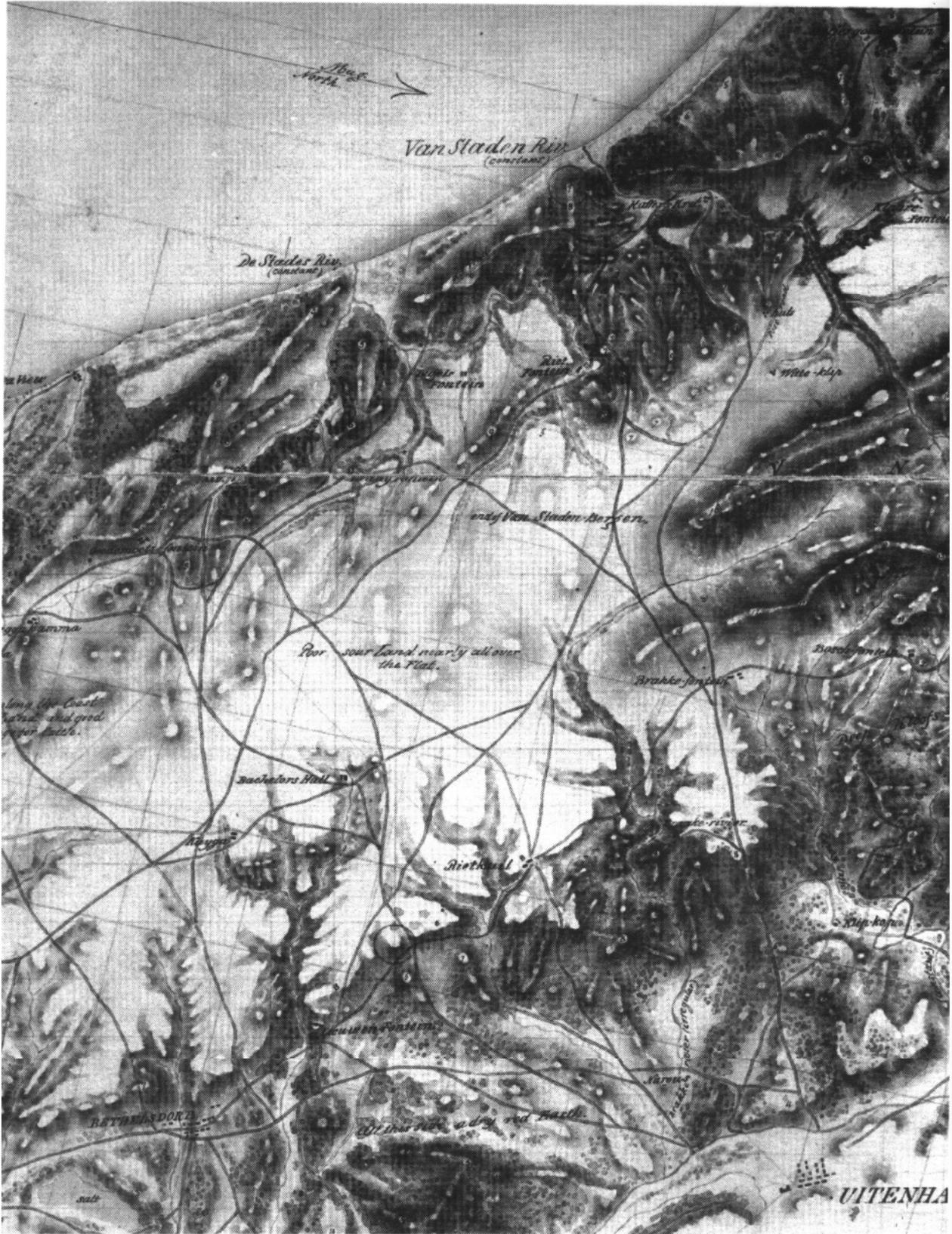
Figure 74: 1822 District of Uitenhage, military survey of part of the district of Uitenhage, signed by T.C.White (Garson,1992:13)
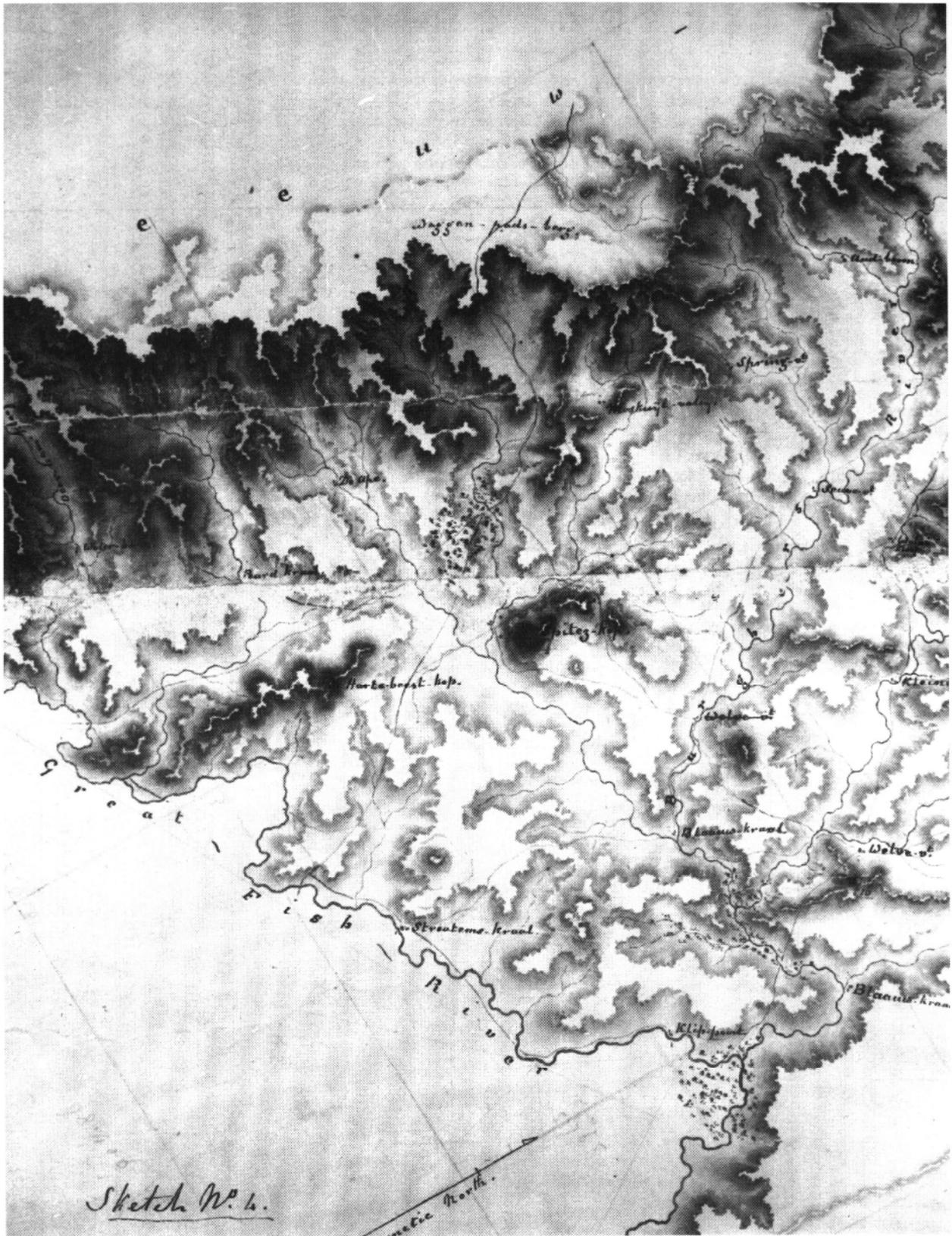
Figure 75: 1823 District of Graaff-Reinet. Sketch of the north-eastern frontier of the cape of Good Hope, signed by J.Bonamy Capt h.p. 6th Regiment (Garson,1992:17)

9.3.5 FORTS AND SIGNAL TOWERS OF THE LEWIS LINE (1837 – 1846)

After the war of 1835 the planning of the system of frontier defence fell on three men, Lieutenant- Colonel Griffith George Lewis, Commanding Royal Engineer[1] (1784-1850), Captain W F D Jervois (Royal Engineer), and a civilian employee of the War Office, Henry L Hall (Benyon,1985:71). Lewis was the commanding Royal Engineer in the colony at the time. He repeatedly expressed his frustration at the tardiness of the British government in allocating funds for the effective defence of the frontier districts. He wrote extensively on frontier defence policy, and complained that for years after the close of the war no clear decisions had been taken on how funds were to be utilised (Garson, 1992:25). Lewis' career was one of great distinction; he was decorated several times for his courage and resource as an Engineer. Owing to severe wounds, one of his legs was amputated above the knee in 1813, when he was twenty-nine years old (Dictionary of National Biography, v.33:184). Jervois, also had a notable career; the young Lt William Drummond Jervois served on the frontier from 1841-8; he is known to have worked on Forts Peddie, Trompetter's Drift, Double Drift and Brown. Four years later Jervois was in Alderney in the

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[1] **Griffith George Lewis –** A familiar landmark in Cape Town, the Egyptian building, the first structure of the South African College, built in 1840 and now used by the Fine Arts students of the University of Cape Town; first designed by James Constantine Adamson, was adapted and enlarged by Colonel Lewis, then commanding Royal Engineer. Lewis supervised the building of the structure which is now a national monument (Garson, 1992:6).

Lewis's name also appears in connection with the Geodetic survey in South Africa. Geodetic survey in South Africa is said to have begun in 1751 with the arrival at the Cape of the noted French astronomer and member of the French Academy of the Sciences, Abbé Nicolas Louis de la Caille who provided the groundwork for geodetic and topographical surveys by his remarkable observations and calculations (Garson, 1992:4). But for the interest of Captain George Everest, convalescent in Cape Town from India where he was chief assistant on the Indian trigonometric survey, and after whom Mount Everest was named, de la Caille's work might have remained in obscurity. In 1820 Everest wrote a treatise on Cape geodesy which had the effect of encouraging Sir Thomas Maclear, Astronomer Royal at the Cape from 1834 – 1870, to reassess de la Caille's findings (Dictionary of National Biography, v.18, pp 86-87). In conducting the revision from 1837 to 1848, Maclear was assisted by the Royal Engineers and Sappers. "I must here acknowledge my obligation to my friend Lieutenant (Montgomery) Williams who smoothed the way … and to Colonel (Griffith George) Lewis the commandant, for various kinds of assistance throughout the work; indeed the value of the zealous co-operation of the engineer department can only be estimated by those acquainted with the Cape of Good Hope. In the friendship of these two gentlemen I was particularly fortunate" (Maclear, 1866:89-90).

Channel Islands, where he spent the 1850's designing and supervising the construction of a whole series of fortifications (it was he who built the Solent forts). He went on to serve as the secretary to the Royal Commission on the Defences of the United Kingdom, subsequently becoming Lieutenant General Sir William Jervois, KCMG, CB, Deputy Director-General of Fortifications, Governor of South Australia 1877-83 and of New Zealand 1883-89 (Tomlison,2006 :9-10).

At the time when a number of rather flimsy forts were being built in the new Province of Queen Adelaide (most of them to be abandoned within twelve months) Lieutenant Colonel Lewis, Commanding Officer of the Royal Engineers at the Cape, drew up the Lewis Scheme (referred to as the Lewis Line) for a series of strongly fortified barracks at Trompetter's Drift, Double Drift, Fort Brown, Botha's Post, Post Retief along the Fish River then the line turned north via the existing Fort Beaufort and finally west to Fort Armstrong. The six forts of the "Lewis Line" were rectangular fortified barracks for infantry and cavalry, each surrounded by a loop-holed wall three meters high. Officer's and men's quarters, commissariat stores, stables, cookhouse, bakery, etc, were ranged around the inside of the enclosure and many of the forts incorporated a two storey piquet or gun tower projecting from one corner, on the flat roof of which was mounted a light 6-pounder or a 4.5 or 5.5-inch howitzer. Some of the forts also exhibit a similar projection at the corner diagonally opposite the gun tower; giving flanking fire along the other two walls. Several of these forts were placed to defend 'drifts' or fords over the Fish River, which marked the border at the time (Tomlinson,2006;Garson, 1992,Benyon,1985:71).

The imperial government also approved of Lewis's scheme for signal towers, and new roads and bridges to improve communications between these forts and the headquarters at Grahamstown where new barracks were to be built on the old Drostdy Ground (Gledhill, 2008). Circa 1843 Henry Hall compiled a map which was later copied by Private John Reid (Sapper); it shows the bearings of principal military posts and remarkable peaks visible from proposed sites of signal towers in the Fish River region (see Figure 76)(Garson,1992:33).

In 1837 Lewis recommended that communications with Fort Beaufort and Fort Peddie be improved by a series of signal towers based on Fort Selwyn in Grahamstown. The system was devised by Lewis and executed by Jervois and Hall between 1837 and 1842 (Benyon,

1985:73). The survey to establish suitable points on which to erect the stations was done by Henry Hall, stationed in the Eastern Cape, 1842 – 1858. The stone-built towers were about 30 metres high. They had only one entrance, to the first floor, and it was provided with a ladder which could be drawn up before the door was closed. A staircase led to the flat roof of the tower on which was mounted a semaphore, a type of signalling mast first developed by Claude Chappe during the French Revolution (Benyon, 1985;Garson, 1992;Tomlinson,2006).

The mast was composed of a 'regulator', pivoted at its centre so that it could rotate and also slide up and down. At either end of the regulator were indicator arms which could each be placed in seven different positions. In practice only 196 combinations of positions were used although there was the possibility of more.

The Fort Beaufort Line of signal stations went from Governor's Kop to Grass Kop, Botha's Post, Dan's Hooghte and Fort Beaufort. When war broke out in 1846, all the towers on this line had been completed and equipped with semaphore masts. A projected extension to Zwart Kei Post was never carried out. Henry Hall, when testing the section between Dans Hooghte and Fort Beaufort, found that the signals made to Fort Beaufort from Dans Hooghte could not easily be read although his signals from Dan's Hooghte were clearly visible at Fort Beaufort. Unless the towers were placed against the skyline, it was difficult and sometimes impossible to read the signals, furthermore the telescopes supplied were not sufficiently powerful. So the signalling system was less than successful.

The signal towers were in fact of very little use for the signals were difficult to decipher, the up-keep of the garrisons expensive and water supply was always a problem. Henry Hall later recorded that 'Within one month of the outbreak of war (1846) all these towers were in ruins, abandoned by us or burnt by the enemy" (Cape Quarterly Review, July 1882:714-716; Rochlin,1961:714; Hall,1859:257) (See Figure 39 p122). Henry Hall became an accomplished geographer and map maker as well as writing extensively, examples of his work are housed in the Cape Archives (KAB Map M1/2180-2185; KAB Map M3/361;KAB Map M1/110; KAB Map M1/1219; KAB Map M1/2047-2054; KAB Map M1/2158-2161; KAB Map M1/2162-2165; KAB Map M1/2621-2624; KAB Map 624, KAB Bound Map PWD2/74; VAB Kaart 1/269;VAB Kaart 1/270; NAB Map M1/93/1-4; NAB Map M2/158/1-4) there is

also a book on Henry Hall as well as his published magazine articles (Cape Quarterly Review, July 1882:714-716; Rochlin,1961:714; Hall,1859:257).

Prior to these signal towers there had been a certain amount of signalling in Table Bay and False Bay areas, but nothing as substantial as the eastern frontier semaphore system existed elsewhere in South Africa, and possibly in the British Empire (Benyon, 1985:73). Probably only in Britain itself was the system as extensive as here. In the Cape Monthly Magazine of November 1859 Hall wrote a description of the system. There were two lines of communication, one from Grahamstown (Fort Selwyn) through Governor's Kop tower, Gras Kop, Botha's Post, Dans Hoogte, to Fort Beaufort; the other from Grahmstown again through Governor's Kop tower to Fraser's Camp, Piet Appel's tower and Fort Peddie. A third line down to Bathurst from Fraser's Camp was never constructed. The entire system cost five thousand pounds. The cost of each tower was five hundred pounds. Each was manned by a sergeant and five men (Benyon, 1985:74).

After the Sixth Frontier War of 1834 – 1835, the eastern frontier was considerably strengthened by increasing the number of troops, military engineers and forts (Kirby, 1960; Gledhill, 2008; Garson, 1992).

Vicinity of Fort Beaufort
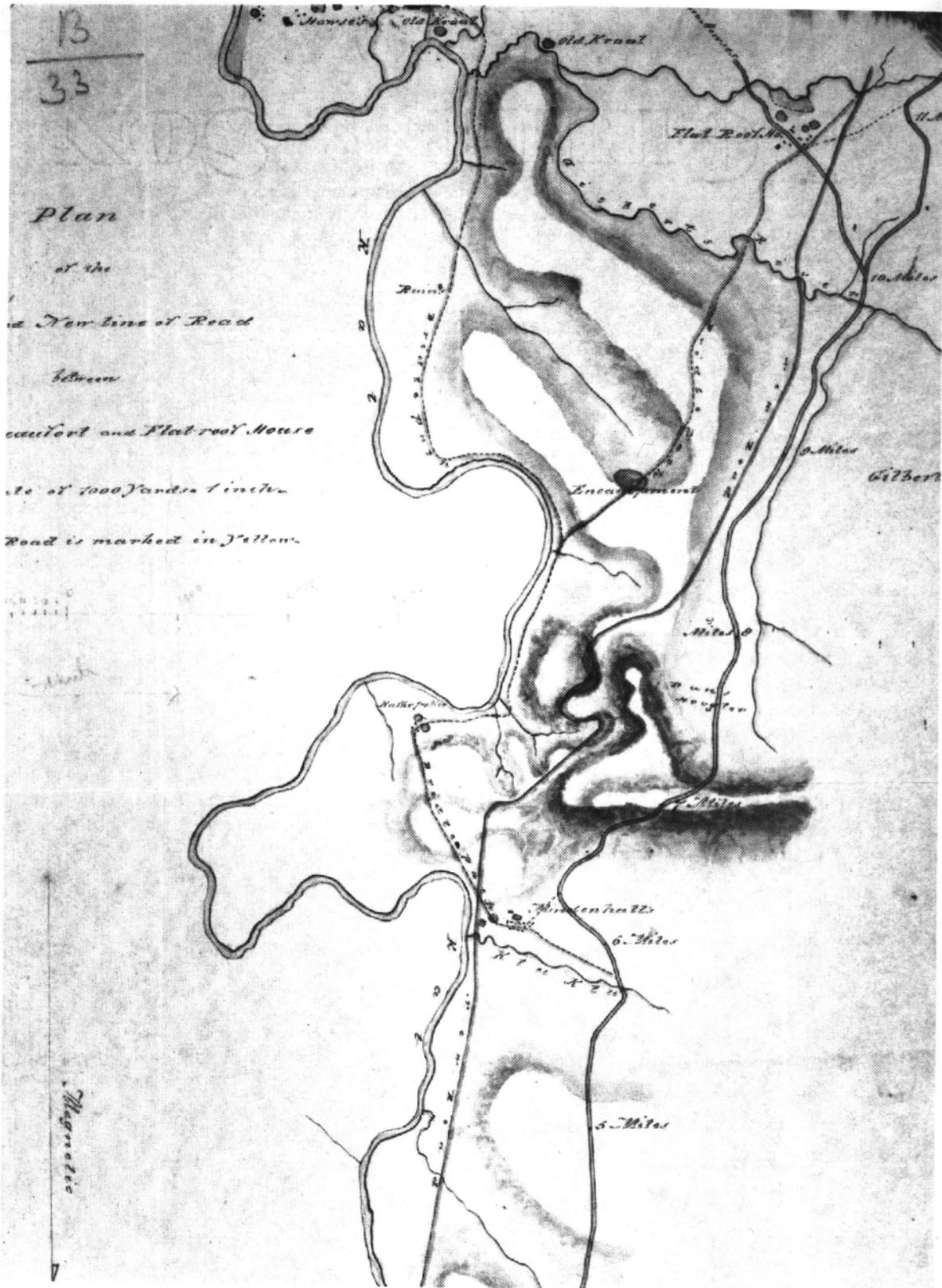
Figure 76: c1844 Vicinity of Fort Beaufort, plan of the old and new line of road between Fort Beaufort and flat-roof house (Garson,1992:35)

Figure 77: 1835 Amatola Mountains, Vicinity of Fort Cox. Copy of a sketch of the country in the vicinity of Fort Cox from an actual survey by C.L.Stretch. Capt P.C.Infantry, signed by H.W.Piers (Garson,1992:21)
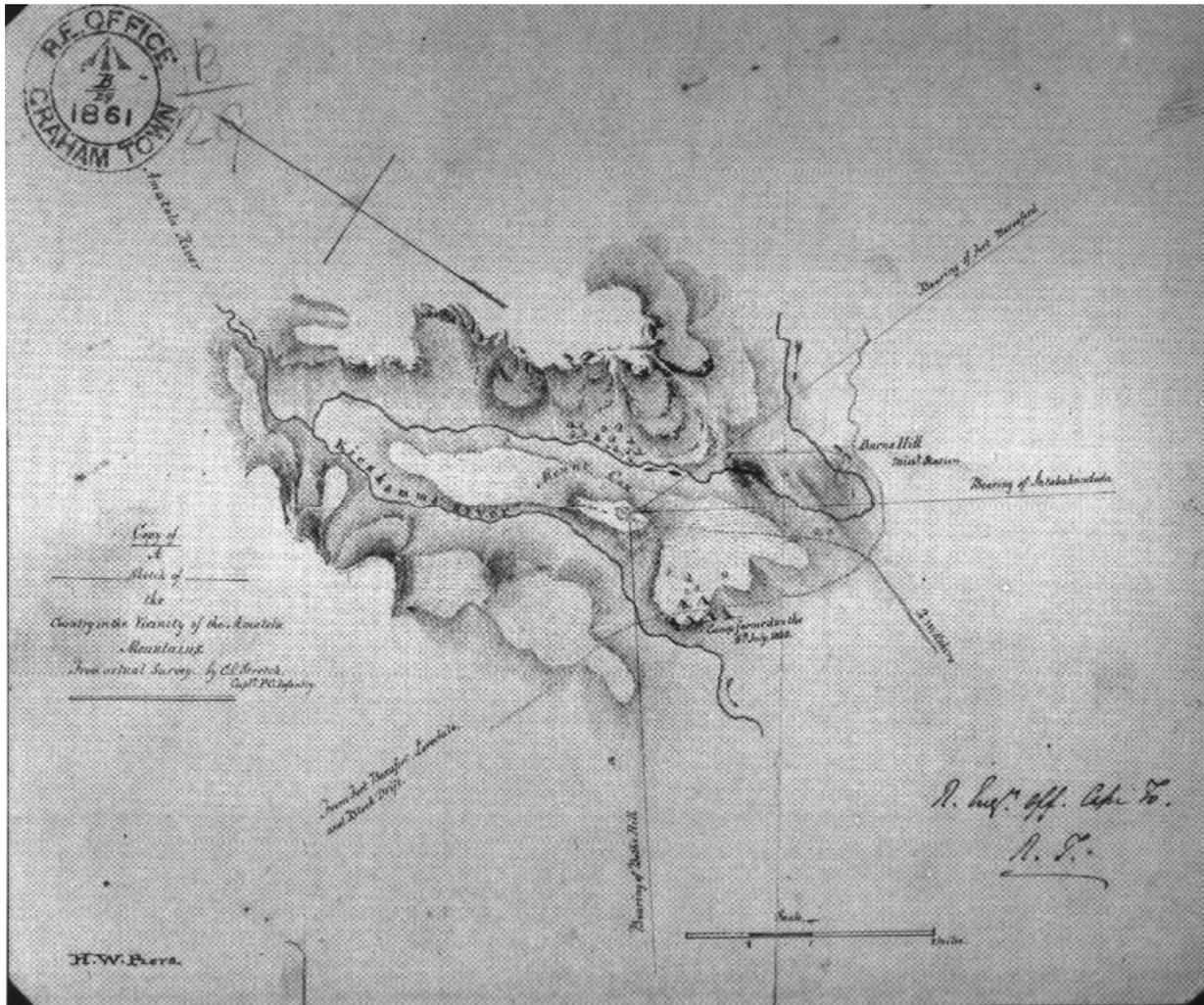
9.3.6 THE SEVENTH FRONTIER WAR 1846 – 1847

The initial disasters of the war which commenced in March, 1847 were severe. Elands Post was abandoned. A strong punitive force under Colonel Somerset which had pushed across the border of the colony to Burn's Hill near Fort Cox, had to retreat to Block Drift but at the Keiskamma River crossing another heavy attack resulted in the loss of half of the 125 oxwagons carrying military stores. Fort Peddie was overwhelmed. In Lower Albany, Cuylerville, Bathurst and the fortified farmhouses were besieged. Refugees flocked to Grahamstown where the streets were barricaded.

Eventually Fort Peddie was relieved via Committees Drift and Trompetter's Drift and the Battle of the Gwanga ended in a resounding victory for the colonial forces.

A temporary earthen fort was built by seamen of H.M.S. President on the west bank at the mouth of the Fish River as a base for troops crossing into the war zone. It was named after Admiral Dacres. Reinforcements also came by sea from Cape Town and some were landed at Waterloo Bay immediately east of the river mouth. The campaign was pushed eastwards and an advance base was set up at old Fort Warden for the final push across the Kei River.

The new Governor, Sir Harry Smith arrived in December 1847. On landing he issued two proclamations: the first extended the boundary of the colony to the Keiskamma River thus re-incorporating the old Ceded Territory. The chief town was to be Alice and Fort Hare was built to protect it.

By the second proclamation the territory between the Keiskamma and Kei Rivers became British Kaffraria (sic), this was virtually the former Province of Queen Adelaide. Re-occupation of Sir Benjamin Durban's old forts started immediately. Fort Hill was in ruins but King William's Town was re-built as headquarters for the troops in British Kaffraria (sic). Colonel Evelyn wrote of the Rifle Brigade "They built a town, they built a barracks, they built houses for their officers, some of 'wattle and daub', some of bricks, and roofed with various materials. They also made an aqueduct some 3 or 4 miles long to supply the camp with water and for irrigation. When we left they had more than half built permanent barracks of stone…" (Garson, 1992:79)

Fort Glamorgan was established on the west bank at the mouth of the Buffalo River and on January 14, 1848 Sir Harry Smith named the new port East London (Kirby, 1960; Gledhill, 2008; Garson, 1992).

9.3.7 THE EIGHTH FRONTIER WAR 1850 – 1853

The defection of the Khoikhoi began in the Kat River Valley and spread to Theopolis and Whittlesea. Hermanus, the Kat River leader, was killed early in January, 1851 when leading an assault on Fort Beaufort. William Uithaalder, a Cape Corps[2] pensioner assumed command and with augmented forces led an attack on Fort Armstrong. The colonialists managed to escape and the fort became Uithaalder's stronghold and storehouse for plunder. In February a force assembled at Post Retief consisting of 200 English, 400 *Burghers*, 200 Fingoes and volunteers from Grahamstown under

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[2] **The Cape Corps** started as the first mixed race unit the *Corps Bastaard Hottentoten* (Dutch for "Corps of Bastard Hottentots"), which was organized in 1781 by the Dutch colonial administration of the time. Based in Cape Town and drawing its members from men of mixed Hottentot and White ancestry, this unit had about 400 members. However, the unit was disbanded in 1782.

In 1793 this unit was re-formed in Cape Town as the *Corps van Pandoeren* (Pandour Corps), only to be disbanded again in 1795.

The unit was re-formed again under the British colonial administration in May 1796, this time under the name *Hottentot Corps*. It was headquartered in Wynberg and consisted of about 300 men. In 1798 the headquarters were moved to Hout Bay.

On 25 June 1801 the *Cape Regiment* was formed. It was organized as a British imperial regiment of ten companies and retained all the personnel of the *Hottentot Corps*.

With the Dutch taking over colonial administration of the Cape once again, the *Corps Vrye Hottentotten* ("Corps of Free Hottentots") was formed on 21 February 1803. It was later re-named the *Hottentot Ligte Infanterie* ("Hottentot Light Infantry").

When the British returned to the Cape, they formed *The Cape Regiment* in October 1806. Headquartered in Cape Town, it was organized as a typical colonial unit with British officers and Coloured (sic) other ranks. In later years, the Regiment also had a troop of light cavalry added.

On 24 September 1817 the Regiment was reduced in size (a previous order to completely disband having either been ignored or rescinded) to two small units of about 200 men for the defence of the Cape Colony's eastern frontier. The two units were named the *Cape Cavalry* (consisting of one troop of dragoons) and the *Cape Light Infantry*.

In 1820 these two units were again combined under a unified command and renamed the Cape Corps. (Wikipedia)

Commandant Currie. They proceeded to Fort Armstrong where they met with stubborn resistance. Reinforcements arrived under Colonel Somerset from Fort Hare when other rebels had been successfully repulsed. The attack was pressed home with two howitzers, the walls were breached and 400 women and children were taken into custody.

Sir George Cathcart took office as Governor in March 1852 and by August a large force had been assembled for a concerted drive across the Kei. Sandile fled and Kreli, chief of the Ngqika sued for peace which was proclaimed in March 1853. In response Cathcart introduced his blockhouse policy to police the frontier which called for the erection of eight towers in the area between the Keiskamma and the Kei. Only one of these was ever built, this was 'Castle Eyre', called after Colonel Eyre of the 75th Regiment, and erected on the outskirts of Keiskammahoek. The tower of two storeys was fifteen square foot, with a flat roof which provided emplacement for a swivel gun (Kirby, 1960; Gledhill, 2008; Garson, 1992). (figures 60 and 61)
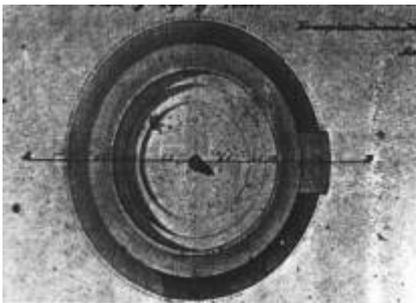
Figure 78: Martello Tower, Keiskammahoek Emplacement for rotating canon at top of tower (Gledhill, 2008).

Figure 79: Sectional view showing basement-magazine, left and store room, right: barrack floor with entry port; Gun emplacement on top (Gledhill, 2008).

9.3 CONTEMPORARY MILITARY ARCHITECTURE

The analysis of the Eastern Cape defences above begs the question "how did the approach adopted in the Eastern Cape compare with standard British military defence of the time?" This section aims to give a broad overview of the contemporary military architecture and defence. Obviously defensive structures are as old as human settlement

itself and this study does not seek to analyse all defensive structures nor to study fortified towns in any great detail, this section seeks merely to highlight the trend in military architecture and defence around the time of the settlement of the Eastern Cape of South Africa by way of comparison.

The Peninsular War[3] found Britain sadly short of sappers and miners (the non-commissioned soldiers who served under the Royal Engineer Officers), and those they had were used wastefully. The British began to pay attention to military architecture and planning. And so emerged the 'Science of Fortifications', one of the first in a long line of works on the subject was C.W.Pasley's Course of Elementary Fortifications aimed at the training of the professional engineer. In the book he describes the geometrical methods involved in the setting out of fortresses, leaning heavily on the practice of Vauban. His book is the first fully comprehensive English work (Hughes,1974:156). Lt Henry Yule (1820-89) of the Bengal Engineers, later to be knighted and best known for his glossary of Anglo-Indian words, produced in 1851 his Fortifications for Officers of the Army and Students of Military History , meanwhile in 1849 James Fergusson had published An Essay on a Proposed New System of Fortifications. Fergusson was an architect and his book contains a summary of the ideas and recommendations of many of his contemporary European Engineers (Hughes,1974:159). The most thorough, competent and all-embracing early book on fortifications in the English language was written by Captain A. F. Lendy A Treatise on Fortifications or Lectures delivered to Officers reading for the Staff published in 1862. These works showed that by the mid-century the British were not only conversant with contemporary developments but were beginning to put forward new ideas especially in the field of coastal defence. But why the sudden flurry of publications and the interest in military architecture?

The years following the downfall of Napoleon saw the restoration of authority and former kingdoms and an attempt to reassert old orders. Napoleon had however, fundamentally changed warfare by introducing conscription, which had enabled him to raise a standing

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[3] The Peninsular War was a contest between France and the allied powers of Spain, the United Kingdom, and Portugal for control of the Iberian Peninsula during the Napoleonic Wars. The war began when French armies invaded Portugal in 1807 and Spain in 1808 and lasted until the Sixth Coalition defeated Napoleon in 1814. – As previously stated British troops, occupying the Cape during the Napoleonic Wars, appeared on the Cape Eastern Frontier in 1811.

army of 732 000 in 1796. This had an impact on defence. Prior to this war had been limited by funds and the seasons as the army was only available when the population were not required in the planting or harvesting of crops. When armies were seasonal, defensive structures made sense as you could withdraw into a strong hold and wait out a siege; huge standing armies however, would mow down opposition and fortresses would become no more than knots holding together a strategic web. Fortresses were now no longer fortified towns aimed at protecting the town's population for extended periods, they became secure depots for the vast arsenal and stores required by a modern army and their function was as a tactical point of connection to secure the flank of an army in the field (Hughes: 1974, 160). The response was to add a ring of outer forts to towns designed to prevent a *coup de main*[4]. The next main invention was that of swivel guns; in 1830 Prince Maximillian fortified Linz with 32 round towers. Each tower was sunk into the ground and surrounded by a narrow ditch, in the centre was a three floor structure with only the top floor protruding above the ditch. The roof of the tower housed 11 guns mounted on newly modelled carriages so that they could be easily swung round on the inner circle of the tower (Hughes,1974).

British inventions around this time focused on coastal defence. Coastal defence had often been a problem for the British. King Edward's castles in Wales were serviced from the sea, defences were designed to counter French naval raids up the river Thames and King Henry VIII's forts lined the foreshores of southern England, and the fort at Tilbury was built to pre-empt a repeat of the 1667 raid by the Dutch. One would think that a powerful naval nation would have least need of coastal defences, but no fleet was large enough to be everywhere at once. Before the middle of the nineteenth century the disposition of the fleet was largely determined by the direction of the winds and, although steam power gave it greater manoeuvrability, the advantage was largely offset by the need to patrol ever-increasing areas of the world's oceans to protect the outposts of the British Empire (Hughes,1974).

Up to the time of the Spanish Armada the use of hand to hand combat had predominated and ships were designed primarily as mobile infantry platforms, but from about 1588 the gun became the main naval weapon. The one great advantage that ships had over shore

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[4] *coup de main*: a sudden, fierce, and successful surprise attack against an enemy

defences was that they could swing round and bring a heavy broadside to bear and then make haste to move out of range of retaliation. The number and size of guns was gradually increased so that a ship of the line in the time of Nelson was capable of delivering a broadside of 50 – 60 guns. However, ships suffered from three disadvantages: they were at the mercy of the weather, their rolling decks made accurate gun fire difficult and the ships themselves were combustible. On the other hand coastal defence batteries fired from a stable platform, could be given bombproof protection, and their faces could be constructed of durable materials such as brick and stone and later iron. Gradually more and more guns were introduced until the advantages were slowly eroded by the introduction of shell-firing guns (adopted by the British navy in 1837). Tactics had to change with the introduction of steamships and also metal hulled ships. Coastal defences had to be moved inland out of range of the exploding shell ammunition and coast lines defended with underwater obstacles (Hughes, 1974).

During the Napoleonic wars coastal defence theory was in its infancy, the navies being dominated at that time by the large timber-hulled ships of the line. In 1783 two British frigates bombarded a tower on the coast of Corsica and failed to make any impact. The navy was so impressed that on naval advice the British Government commissioned the construction of similar 'Martello towers' along the coast of Britain and the Channel Islands. The location of the Martello towers was decided upon after General Twiss's review of the defences of the south-east coast in 1803 (Hughes,1974). As indicated previously in this study a Martello tower was built on the Cape Eastern Frontier circa 1853; although it had a very different purpose at that time being an inland defence position designed to form a platform for a swivel gun (Hughes, 1974).

The next major advance in coastal warfare was the introduction of iron-plated vessels.

In 1794 the Americans, with their extended coastline and innumerable coastal cities, started to look to their defence. Early American forts were traditional, consisting of open works and earth parapets. Some had scraps riveted with timber and others had stone. In 1807, on the threat of another war with Britain they started to construct multi-gun forts of masonry with guns housed in well-ventilated casements. In 1821 the Bernard Board recommended an integrated national defence system for the harbours of the United States. Eighteen first class works and thirty-two smaller ones were planned. In 1850 the

stone walls of these forts were reinforced with iron. Iron was soon to become one of the major materials in defensive works.

The American Civil War of 1861-65 saw the large scale introduction of modern artillery. Muzzle velocity and accuracy were both increased by the introduction of rifling and by the explosive power of shells which had began to replace solid shot – this spelt the end of masonry forts.

The war also illustrated that the fort alone was powerless at preventing a large fleet from penetrating any channel unless they had underwater obstacles. The torpedo and mine were introduced as well as the historic obstacles such as sunken vessels, rocks, piles, booms and chains. At this stage iron clad fleets started to win out against larger wooden-hulled fleets.

Over time defensive structures started to be provided with fewer guns. The Suez Canal (1869) for example, had forts with no more than four or five guns. Gradually there was also a separation of gun positions and observation posts, made possible by the introduction of field telephones. Colonel Watkin invented a position finder so that guns could be fired by electricity from a distant position finder station. Once soldiers could retreat a safe distance and observe and fire remotely; gun housings no longer needed to be as heavily fortified and forts gave way to isolated lines of guns often only protected by barbed wire and mine fields.

Gradually the gun and defensive factor began to assume greater importance than the bricks and mortar of the fortifications which housed it. The casemate was abandoned, as two major factors emerged. Firstly, the growing popularity of open gun positions, helped by the introduction of smokeless gun powder in 1884. Previous to smokeless gun powder large puffs of smoke had revealed the exact positions of guns – hence the need to defend them. Secondly on the other extreme lay the development of the armoured cupola[5] with the gun and its mechanisms sunk deep into the earth. With the advent of protected guns which could be fired without tell-tail smoke trails from distant finder stations, long lines of

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[5] Cupola: military - a domed structure protecting a gun, e.g. on a warship; in military railways - a glass observation dome on the roof of an armoured vehicle or railway van

dispersed guns evolved. At first the disappearing guns, were popular, the barrel sometimes sliding below an overhead metal shield providing some protection for the gunners, but with the advent of effective breech loading guns (Britain introduced them in 1882) it was possible to use high-angle rifled ordnance. The guns placed behind the continuous parapet of the cliff were completely obscured from any attacking ships. Not only did guns develop greater accuracy after 1855 but gradually their range improved. In early forts the need had been to provide sufficient interior space for a comparatively large garrison to man inefficient cannon. With the introduction of quick-firing guns and pre-prepared shell and cartridge ammunition the garrison could be drastically reduced and hence also the size of any structure. With the introduction of the magazine rifle, forts could be more easily defended and in any case there was less likelihood of their being attacked by landing parties because warships in the late nineteenth century before the introduction of assault craft, had little space spare for landing parties.

In America the Endicott Board, formed in 1885, shifted the emphasis from the structure of the fort to the weapons contained within it. Forts became simple low-lying structures in reinforced concrete blending with the countryside. Earlier the guns of a fort had cost anything between a sixth and a tenth of the total cost, now they began to assume three-quarters of the overall cost. Their numbers were also reduced.

In 1887 Colonel Voorduin of the Dutch Corps of Engineers produced a simple fort consisting of a low mass of concrete from which projected iron cupolas housing twin guns. The design allowed the guns to fire across the intervening space between forts.

Over the colonial period in question it can be seen that forts and defensive structures gradually gave way to guns, ammunition, surveillance and communication. The need swung from physical defence to strategic defence.

9.5   CONCLUSIONS

A study of strategic defence strategies of the era is informative as the approach adopted in the Eastern Cape, was not only in line with British policy at the time but was also very *avant-garde,* illustrating the flow of information between Britain and its colonies. In short

the British military not only theorised about defence they regularly tested it in the field and the two way flow of information lead to a pragmatic re-evaluation and refining of strategies. British colonisation illustrates the incredible flowering of the sciences and the flow of information throughout the Empire, much of the British dominance can be ascribed to intellectual dominance and the maintenance of their intellectual advantage.

It is also important to note that the British were keen to try new ideas and ready to abandon those which did not work, such as the Lewis Line signals. The approach was pragmatic and theory was regularly tested by practice. It is interesting that even though they were defending the frontier against an enemy armed with assegais and sticks the British did not revert to fortified towns, instead they created defendable lines of signal towers and forts as observation posts, an early warning system and a visual deterrent. One reason for this was that they were trying to defend a vast marginal farming frontier rather than towns serviced by smaller more fertile intensive agricultural areas such as in Europe.

The Eastern Cape frontier illustrates most clearly the British colonial policy of exerting control over an area by means of settlements. All of the settlements in the Eastern Cape have a very strong military component and were very often surveyed and largely constructed by military people – most notably the Royal Engineers. The British tried to subdue the turbulent frontier by settling British immigrants in the area, by establishing towns and when that failed by creating military defence lines by means of a series of forts, military garrisons and signal towers. At this stage the British policy was not to wage war and exterminate the threat but to slowly encroach into tribal areas and cement these gains by settling the area and creating towns and infrastructure in order to manage and maintain the area. Far from wanting to exterminate the Xhosa the British were intent on forcing them into a servile state to provide a labour force for the colony. Military personnel were not only used to create this infrastructure and to layout the towns but in the case of Grahamstown and King William's Town were also the main occupants of the towns.

CHAPTER TEN
MAJOR TOWNS OF THE EASTERN CAPE

10.1 INTRODUCTION

The Eastern Cape saw the establishment of a number of British government sponsored settlements (mostly military in origin). This is unusual in South Africa as most of the towns were established by either the Dutch (as agricultural centres) or were commercially driven such as the mining towns (Kimberely, Johannesburg, Barberton and Pilgrim's Rest) and the towns established at advantageous points on trading routes such as at the major river fording points (Escourt and Howick). This chapter investigates some of the major early Eastern Cape settlements, the rationale behind their establishment and the role of the military and specifically the Royal Engineers in their establishment.

10.2 GRAHAMSTOWN BACKGROUND

The British were determined to end the conflicts in the unwanted eastern areas, and at the behest of the *Landrosdt* (Magistrate) of the area, Colonel Glen Cuyler[1], launched an offensive in the Zuurveld under the command of a Scottish officer of noble birth, Colonel John Graham[2] and the deputy *Landrosdt* of the area, Andries Stockenstroom. The object

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[1] **Colonel Cuyler** of the 59th Regiment of Foot, was born at Albany (previously Orange) in the colony of New York, but his United Empire Loyalist family moved to Nova Scotia when he was still a boy as a result of their refusal to support the separation of the United States from the British Crown. Being from a Yankee (Nieuw Nederland Dutch) family, he spoke the Dutch language. He held a Nova Scotian commission, and it was unusual in his time for a colonial commission to be recognised by regular forces.

He was appointed as military commander on the eastern frontier in the Cape Colony and later became landdrost of the Uitenhage. Cuyler's first task as landdrost was to have a drostdij (Magistrates house/ office) building erected, but lack of labour (commandeered from farmers in the district) meant that it took eight years to complete. The drostdij still stands, and is today a museum (http://www.oocities.com)

[2] Colonel **John Graham** 93rd Regiment of Foot (24 April 1778– 13 March 1821) was a soldier notable for founding Grahamstown, South Africa in 1814. Grahamstown went on to become a military, administrative, judicial and educational centre for its surrounding region.

was to "clear the Zuurveld" of the Xhosa (Butler, 1974; Danzinger,1978). In 1812, the Colonial Office in Whitehall received a dispatch informing them that Graham had succeeded in his task by using "a proper degree of terror" (KAB GH 23/4,1812 Papers despatched to Secretary of State, London Reporting the operations of Colonel Graham on the Frontiers).

The war of 1811-1812 was in fact a very nasty and bloody conflict, unlike the earlier skirmishes. Stockenstroom was killed and Graham was lucky to escape with his life. Before the action in which Stockenstroom died he and Graham were scouring the countryside and looking for a place where they could establish a military base. They came across an overgrown and abandoned *Boer* farm called Rietfontein which seemed to be a most ideal spot, and the military base began to grow. The tree which they sat under is now marked by a plinth in High Street. Cuyler named the town in Graham's honour – Grahamstown (Butler,1974; Edwards,1934; Danzinger,1978).

After the war the Xhosa had come to a crisis, they had just been expelled from the areas to the west of the Fish River, and a family squabble had turned very bloody indeed. Into this confusion stepped a most remarkable man, Makana, or as some called him, Nxele, the left-handed one. Makana rallied the Xhosa behind him and prepared to attack Grahamstown which was correctly seen as the centre of colonial rule in the area. On April

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John Graham was born in Dundee, Scotland. He was the second son of Robert Graham, the last laird of the demesne of Fintry and 12th representative of the Grahams of Fintry in Forfarshire, Scotland. Later in life, John became the 13th representative of the Fintry Grahams following the death of his elder brother in 1799 and his father in 1816.

At the age of 16, John was commissioned in the British Army, joining the 90th Regiment of Foot, which had been raised in 1794 by his kinsman, Thomas Graham of Balgowan (later Lord Lynedoch). Two expeditions to France in the late 1790s were followed by an appointment as aide-de-camp to the Earl of Chatham, who Graham served in the Netherlands. After three years on Guernsey with his regiment, Graham was sent to Ireland in 1803 and became assistant quartermaster-general.

January 1806 found him raised to the rank of Major in the 93rd Regiment of Foot, in which capacity he took part in the Battle of Blaauwberg, helping Great Britain to re-occupy the Cape of South Africa. Rapid promotion to Lieutenant Colonel led to him being given charge of the Cape Regiment (refer to footnote 5 chapter 8 page 214), based at Wynberg, which Graham trained as light infantry capable of delivering outstanding performance in wooded terrain (Wikipedia).

22nd 1819 Makana and his forces attacked Grahamstown. The forces gathered in full view of the British Garrison under the command of Colonel Tom Willshire, in the morning allowing them to prepare their defences. There are many stories about the battle of Egazini (the Xhosa name for the battle of Grahamstown meaning 'place of blood'). One of the myths is that Makana told his men not to worry about the bullets, "as they would be turned into water", a recurring theme in African anti-colonial struggle, as shown in the Maji-Maji revolt in German controlled Tanganyika in 1912. What Makana probably said was that he would wait for the rain that would dampen the gunpowder. When it was obvious that it would not rain he unleashed his forces on the garrison (Danzinger,1978; Maclennan, 1986; Le Cordeur, 1981).

It was "a close run thing". The garrison now had artillery and the Xhosa had their first experience of grapeshot that ripped through their ranks. Grahamstown in those days had a small civilian population that lived about a mile from the military base which was known as Fort England. This too was attacked by a smaller force, but managed to hold on. Word came through from Fort England that the base was running low on gunpowder. Mrs Elizabeth Salt, the wife of a sergeant at the base, put a small barrel of powder in her bodice to give the impression that she was pregnant, and knowing that the Xhosa would never harm a woman or a child, walked through their ranks to Fort England (Maclennan, 1986; Stapleton,1994).

Towards evening, the surviving Xhosa retreated back beyond the Fish River, leaving thousands dead and wounded. Egazini, which many historians consider to be "the most significant battle in South Africa's history", was over. Makana surrendered to Willshire but instead of being treated like a prisoner of war he was sent to Robben Island, the first political prisoner to be incarcerated on that now famous place. He later drowned trying to escape, his body was never recovered (Stapleton,1994).

Grahamstown grew from its initial military post into a town during the 1820s. The frontier was by no means secure and it would take much more resources to pacify the frontier, which in the post Napoleonic War slump, the British were reluctant to commit. The Xhosa also learnt of the power and horror of artillery, they would rarely confront cannon again. From henceforth they would fight a guerrilla war using the bush that they knew so well for their advantage.

The authorities in Whitehall decided on a scheme to settle people from across the British Isles in the Zuurveld, to try to secure the frontier.

The 1820 Settlers introduced a new dynamic into the South African scene that went beyond their agricultural struggles. The imperious governor of the Cape at that time, Lord Charles Somerset, the second son of the Duke of Beaufort, was astonished when one of the settlers, the Scottish poet Thomas Pringle, informed him that although he was not as well born as the noble lord, he, Pringle, did have rights and he was going to exercise them. It was possibly the first time that the concept had been so articulated. Pringle went on to establish the first newspaper in South Africa (Le Cordeur, 1981; TAB Microfilm M2951 – Grahamstown Journal; KAB Microfilm ZD/P4 – Pringle Papers 1819-1826).

Not long after their arrival the settlers started agitating for parliamentary representation, another unforeseen consequence of the scheme. The first newspaper in Grahamstown, The Grahamstown Journal was first published in 1831 (TAB Microfilm M2951-Grahamstown Journal). Schools would follow, and formal education begun.

The other change brought about by the settlers was their attitude to cattle. All other groups viewed cattle with an almost religious fervour. The British settlers viewed cattle as simply another commodity to be bought or sold. After their failure at crops, the settlers began to look at the native sheep with increased interest. In the 1840s Richard Daniell imported merino sheep. The area was ideal for sheep and the economy of the entire Cape was transformed as wool exports began to grow. The introduction of Angora goats started the mohair industry which continues to this day. The fledgling town of Port Elizabeth, which had been founded to accommodate the arrival of the settlers, suddenly found itself to be an increasingly important export harbour, and soon overtook Cape Town as the busiest port in South Africa. The Cape Colony had always been a drain on the resources of the Governing Authority, less than twenty years after the arrival of the 1820 Settlers it was paying for itself (Le cordeur, 1981; MS16929 – Grahamstown Chamber of Commerce Papers).

During this time Grahamstown began to take form. The town was laid out from the wall of the first structure in town, the yellow house which still stands in high street. Before long a

second street was needed and because it was new, the second oldest street in town, is still known as "New Street".

Amongst the settlers was a group of Methodist priests, including the Reverends William Shaw and John Ayliff who tended to the spiritual needs of the settlers. As a result the Albany area became a Methodist stronghold and the place where the Methodist missionary endeavour in South Africa was launched. The first place of worship, the First Wesleyan Chapel, was erected in what is now Chapel Street in 1822, where the remains are preserved as a ruin. The first Anglican church, St Georges Church was built on Church Square in 1824. Over the next 130 years the modest little box-like church was enlarged and expanded to become the current Cathedral of St Michaels and St George. The first public buildings, the court and the gaol were erected at about the same time (Caffrey, 1973, Cardy, 1990, Welsh, 2000, Haswell, 1980).

Figure 80: Landing of the 1820 British settlers at Algoa bay - painting by Thomas Baines in the Albany museum in Grahamstown - 1820 settlers (www.south-africa-tours-and-travel.com/images/...)

10.2.1 GRAHAMSTOWN'S LAYOUT

The town was laid out in a grid form with very wide main streets (100 feet wide) running east west and 15m wide secondary roads, running north-south (figure 84). All of the buildings were built along the front property boundary creating a very urban feel. The town centre is a triangle of land with a church on axis with the main road (that is the church front

forms a central vista when looking east up the hill of the main street). The road terminates at the *drosty* (magistrates court) on the western side of town. (Note that the north point on the plan of Grahamstown, figure 84, points to the bottom of the page unlike modern convention which would point to the top of the page). It is unclear who designed Grahamstown, the plan below is drawn by H.W.Piers and it is noted that this is a duplicate as the original never arrived in London. A number of plans from the time drawn by Piers note that they are copies from sketches by Stretch (refer to figures 65, 73 and 77). Charles Lennox Stretch (1797-1882) arrived at Cape Town in 1818 with the 38th Regiment as an ensign on half pay (before 1871 an ensign was a commissioned officer in the British infantry of the lowest rank). He transferred to the eastern frontier to become assistant engineer to Major Cuthbert Holloway, commanding Royal Engineer in the Cape Colony. Stretch was appointed government surveyor in 1824 and was employed on a military survey of the colony until 1827. He took up this appointment again in 1835 after the Sixth Frontier War of 1834-1835; at that time he was captain in the 2nd Battalion, Provisional Colonial Infantry, and became active in the design and building of forts (le Cordeur, 1988; Garson, 1992:19). It could thus, be inferred that the Royal Engineers were involved in the design of the town, however the actual person who drew the plan was not a Royal Engineer, what is clear is that the military drew the plan. It is also clear that the Royal Engineers co-opted people of ability when required.

The 1820 Town regulations are still available in the Albany Museum (Manuscript SM370 – Albany Museum), they are signed by John Knight the Field-Cornet (a civilian invested with the authority of a military officer and empowered to act as a magistrate) and cover issues such as: regulations over nuisances, *outspanning* in the street (a place for people travelling to stop to rest their animals), cattle or cow stalls, riding violently, loose cattle damages, straw huts and brick kilns.

10.2.2 CONCLUSIONS ABOUT THE GRAHAMSTOWN LAYOUT

Grahamstown shows a very strong military influence, not only was the site of the town selected for military purposes but the military surveyed and planned the town. The military also formed a major proportion of the residents of the town. If you analyse the layout in

relation to the 'Grand Modell' (as discussed on page 17) it meets many of the elements of the Model.

Firstly, although the aim was to establish a military base the original design included an urban settlement. Secondly the area around Grahamstown was divided into farms and urban plots were established in town. The allotments shown in figure 87 illustrates that sub-urban plots were provided as well. The streets, as with all British colonial towns, are wide and straight and the town plan was approved in London before pegging and sale of plots. A public square, or in the case of Grahamstown a triangle, was provided. All the plots were large, rectangular and of equal size. the town was also surrounded by town common lands. The layout thus, shows a strong correlation with the 'Grand Modell' – the colonial policy of the time.
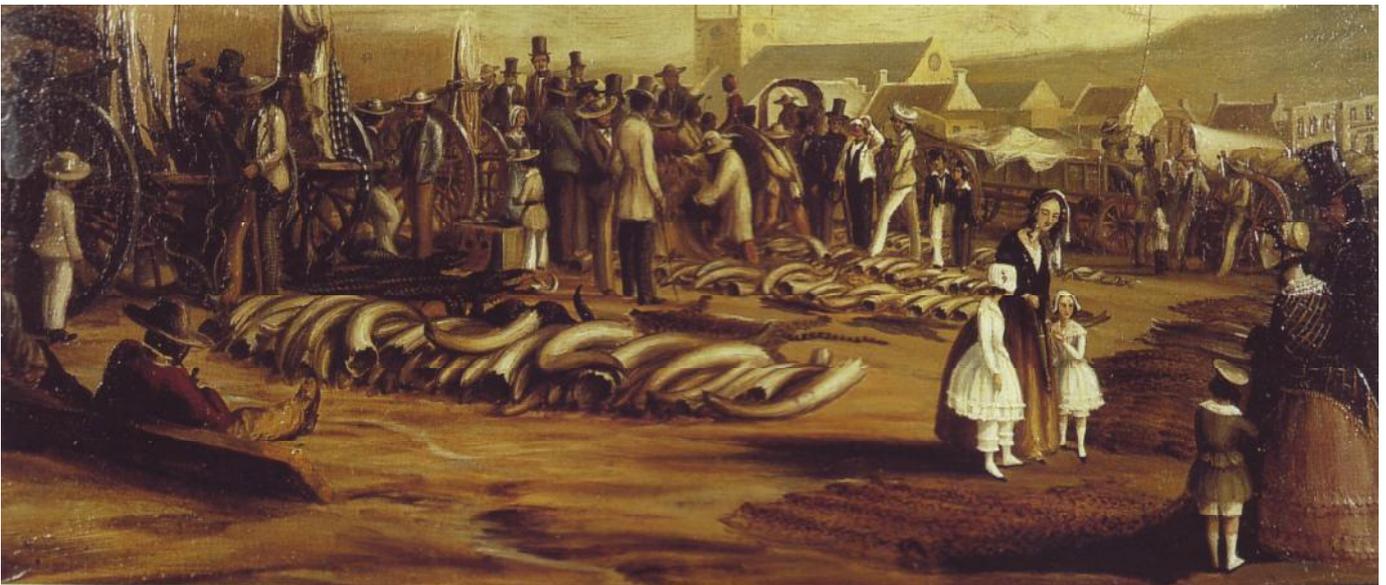
Figure 81:The Market Square circa 1850, a Baines Painting in the Albany Museum (after O'Meara:1995:21)

Figure 82: Grahamstown from Fort Selwyn, painted in 1850 by Thomas Baines (After O'Meara:1995:13)

Figure 83: Early Painting of Grahamstown (Haswell:1984)

Figure 84: WO 44/4 No 11 Map of Cape Colony: Grahamstown (now in Eastern Cape Provi nce, South Africa). 'Plan of Grahams Town': shows Scott's Barracks, other military buildings, private buildings in the area; waterways, roads. Scale: 1 inch to 220 yards. Reference table. Compass indicator. Drawn by H W Piers, October 1838, to accompany du plicate of a letter dated 17 September 1838 from the Respective Officers at the Cape of Good Hope to R Byham, Secretary to the Board of Ordnance, the original having failed to reach London. Public Records Office Kew

Figure 85: Sunday Morning, High Street Grahamstown, December 28, 1848, by Thomas Baines (the Troops marching to Church) (After O'Meara:1995:90)

Figure 86: The Town Square Grahamstown 1903 note the ox wagons. Most early South African towns have extremely wide streets to allow a fully spanned ox-wagon to U-turn. (O'Meara:1995:16)
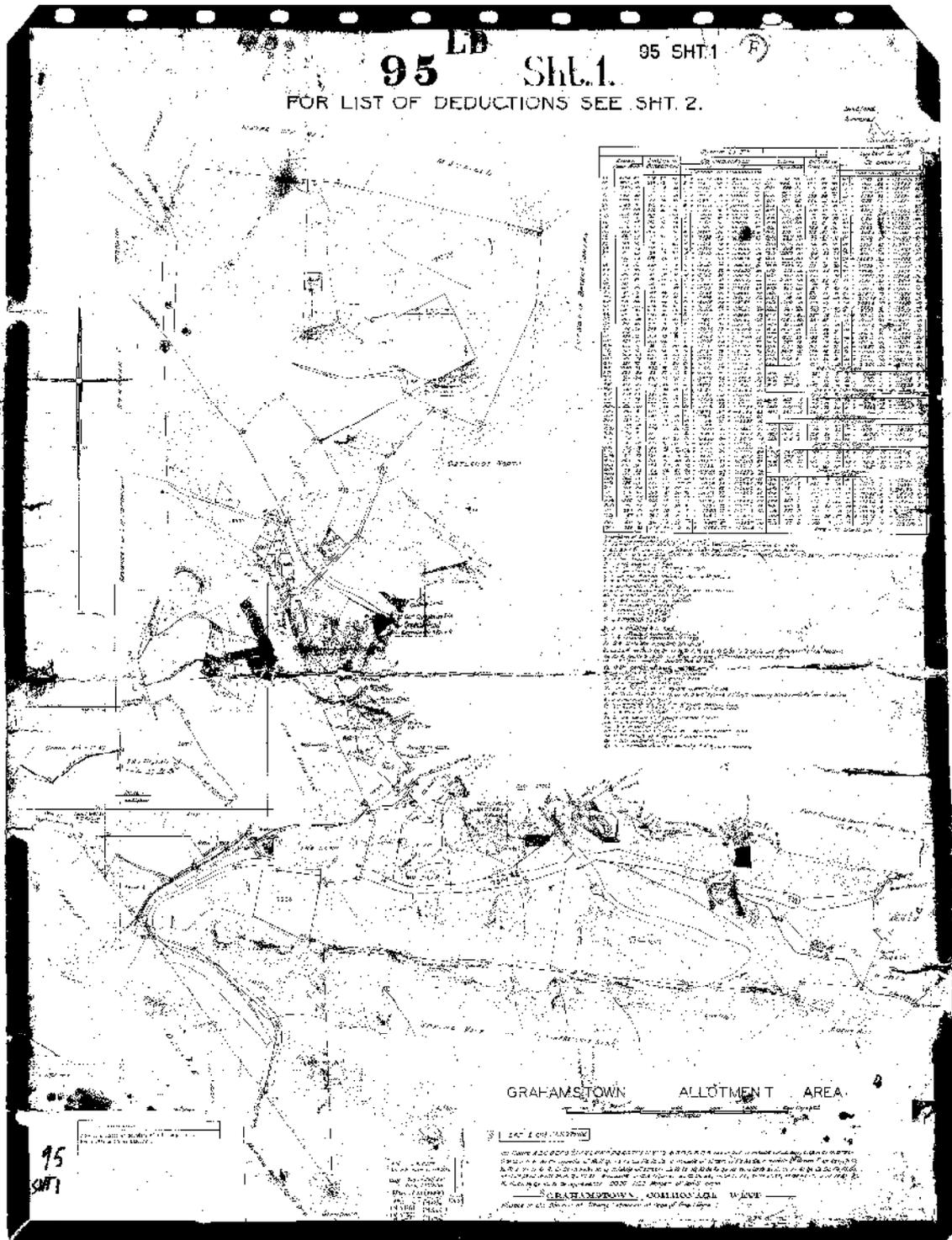
Figure 87: Grahamstown Allotment Area 1934 (Source Surveyor General)

10.3   KING WILLIAM'S TOWN

The history of King William's Town begins with the founding of the Buffalo Mission on the east bank of the Buffalo River in 1826 by John Brownlee of the London Missionary Society. During the Sixth Frontier War of 1834 – 1835 the mission was burnt down and after the war the settlement was declared a township and named after King William IV. It was to serve as a military and administrative centre for the new province of Queen Adelaide in 1835. It was surrounded by a ring of defensive forts Fort Beaufort, Fort Cox, Fort Thompson, Fort Peddie, Fort Willshire (was re-occupied) and Fort Montgomery-Williams. Fort Hill (King William's Town) was built in 1835. However this hastily-instituted defence system was of no avail as Lord Glenelg recalled Colonel Harry Smith and terminated Sir Benjamin D'Urban's appointment. On July 28, 1836 the British Government renounced its claim to the province of Queen Adelaide and ordered the withdrawal of all troops in the area, retaining only King William's Town and Fort Cox. Sir Andries Stockenstrom (son of the Andries Stockenstrom referred to on page 237) was appointed Lieutenant-Governor of the Eastern Cape (Welsh, 2000; Garson, 1992; Lamar and Thompson, 1981; Caffrey, 1973).

For the next ten years John Brownlee continued the mission and the town grew as a trading post. The War of the Axe in 1847 brought destruction to the mission once again and Brownlee was forced to leave. The importance of King William's Town was re-established on 23 December 1847 when it was made the capital of a new colony, British Kaffraria (sic). A considerable number of forts were built to protect the new territory. By the end of the Eighth Frontier War King William's Town had become a large military base and a number of structures had been built (Figures 88 - 94 show the development). These plans are interesting as they show cadastral information as well as building footprints. Military maps of the era tended to show structures and natural features. The property boundaries were purely pragmatic as the military began to allocate land to officers. The notes indicate that most of the plots were owned by military people. The town was largely planned by the

Royal Engineers and built with military labour. The fine quality of the dressed stonework buildings can still be seen today. The vast number of records which survive from the early days of King William's Town is notable – the Royal Engineers in King William's town not only built a great deal of the town but they also kept detailed records about all projects, supplies and inventory. There are plans of toilet blocks, skittle alleys (Figure 96), Mess Halls (Figure 95), stables etc. In April 1862 the military headquarters for the Eastern Frontier were moved from Grahamstown to King William's Town. Grahamstown was already experiencing an economic depression and the removal of the troops added considerably to the problem, as well as creating something of a social and cultural vacuum. King William's Town on the other hand was hopelessly inadequate for the additional troops and when proposed extensions for King William's Town came in at 65 000, The Cape Colony High Commissioner Sir Philip Wodehouse, recommended the re-establishment of Grahamstown as the military headquarters (Welsh, 2000; Garson, 1992; Lamar and Thompson, 1981; Caffrey, 1973).

The streets of King William's Town follow an irregular layout and the settlement has a far more organic feel than Grahamstown however, the area divided into individual stands follows a grid layout with north-south and east-west street orientation. Interestingly the streets follow magnetic north, not true north. A large area was left in front of the fort and barracks as a parade ground. The origins of the town are unmistakable with the mission station and the fort side by side in the town centre.

The plans reproduced below have been signed by a number of officials, mostly Royal Engineers. The maps of King William's Town are signed by or drawn by Captain Tylden (Royal Engineer), Robert William Duff[3] (Lieutenant

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[3] **Maj.-Gen. Robert William Duff:** (26 October 1831 - 3 December 1913) Maj.-Gen.Robert William Duff was born on 26 October 1831 at London, England. He was the son of Adam Duff and Eleanor Fraser. He married Beatrice Maxse, daughter of James Maxse and Lady Caroline Fitz Hardinge Berkeley, on 9 January 1866 at St. George Hanover Square, London, England. He died on 3 December 1913 at age 82. Maj.-Gen. Robert William Duff gained the

in the Royal Engineers), M.C. Molesworth (Lieutenant in the Royal Engineers) and Charles Lennox Stretch[4] (military surveyor).

In Liebenberg's (2006:19) article about Henry Hall and his maps of the colony, many of these same names appear. Liebenberg states "To give credibility to his work Hall followed the same method as in the compilation of his previous maps and listed the "authorities" from whom information had been obtained. Many of these names also feature on his 1849 and 1850 manuscript maps. For the divisions of Albany, Fort Beaufort, Somerset, Cradock, Colesberg, Graaff-Reinet and Uitenhage he acknowledges the names of the surveyors who, from 1819-22, undertook a trigonometrical survey of the North-East Frontier under the supervision of Captain Holloway, namely Captain Bonamy, Lieutenants Hope and Pettingall, Royal Engineer, surveyor C.L. Stretch, and H. White. For the representation of the division of Albert, Hall relied on information provided by Government Surveyor M. Robinson (See Queenstown below), and for the area designated North Victoria he made use of sketches and corrections obtained from Captain Richard Tylden, Royal Engineer, and Messrs R.E.W. Shepstone, C. Orpen, and T. Baines" (Liebenberg, 2006:19). In his journal Stretch observed that 'As the work we performed was not published by the government, a clerk in the Engineer's Office, having access to the papers and sketches, published our drawings some years after under the title of "Hall's Map of the Eastern Frontier"'(Le Cordeur,1988).

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rank of Major-General in the service of the Royal Engineers (Charles Mosley, editor, Burke's Peerage, Baronetage & Knightage, 107th edition, 3 volumes, Wilmington, Delaware, U.S.A).

[4] **Charles Lennox Stretch** (1797-1882) trained as a military surveyor and came to the Cape in 1818. He helped the Royal Engineers build fortifications on the Eastern Frontier and during the 1820s he participated in the survey of the North-Eastern Frontier under Captain Holloway. During the Sixth Frontier War he was an officer in the Cape Corps and after peace was declared he served as a diplomatic agent amongst the Xhosa. After the Seventh Frontier War he practised as a surveyor and in 1869 he was elected a member of the Legislative Council for the eastern districts.

10.3.1 CONCLUSIONS ABOUT THE LAYOUT OF KING WILLIAM'S TOWN

King William's town is nowhere near as regular in layout as Grahamstown, it is also fundamentally different in that there is no record of a complete plan being approved prior to establishment. Given that King William's Town was primarily a fort and mission station, on a very turbulent frontier, it had very few non-military or missionary residents – need for the town was thus not immediately evident. When plots were laid out (mainly for officers) they were pre-approved and did tend to follow a more regular layout, with similar dimensions. The residential blocks at the southern end of town begin to take on the classic colonial town model. The town, during the time frame of the study however, never really established a commercial basis and thus never really expanded beyond the military and missionary nucleus. It is evident that had the town expanded it would have adopted a grid layout for the expansion as the start of this is clearly evident.
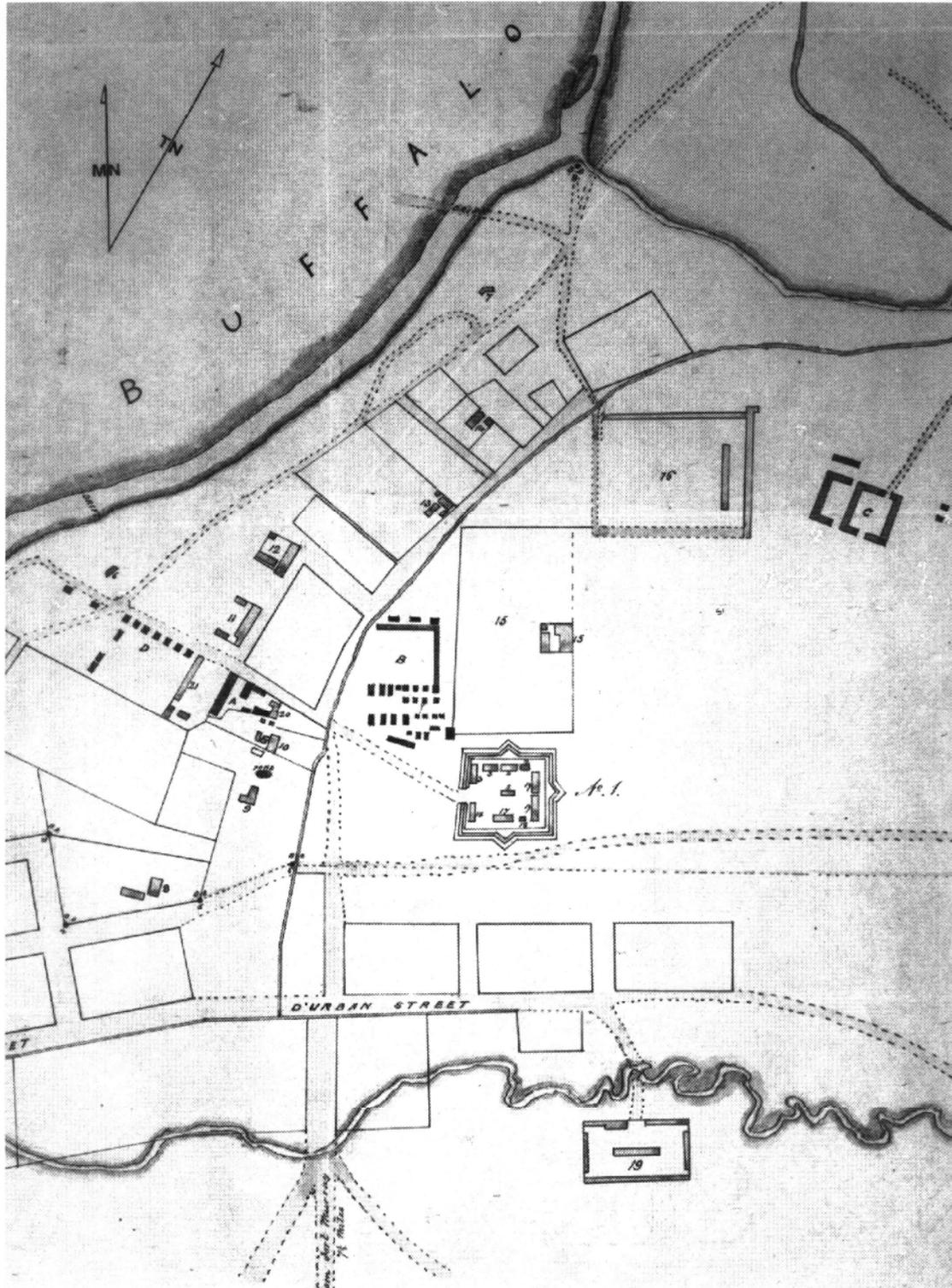
Figure 88: 1853 King William's Town, Plan showing the position of all the government buildings at King William's Town, signed Rd Tylden Capt CRI Engineer. (Garson,1992:61)
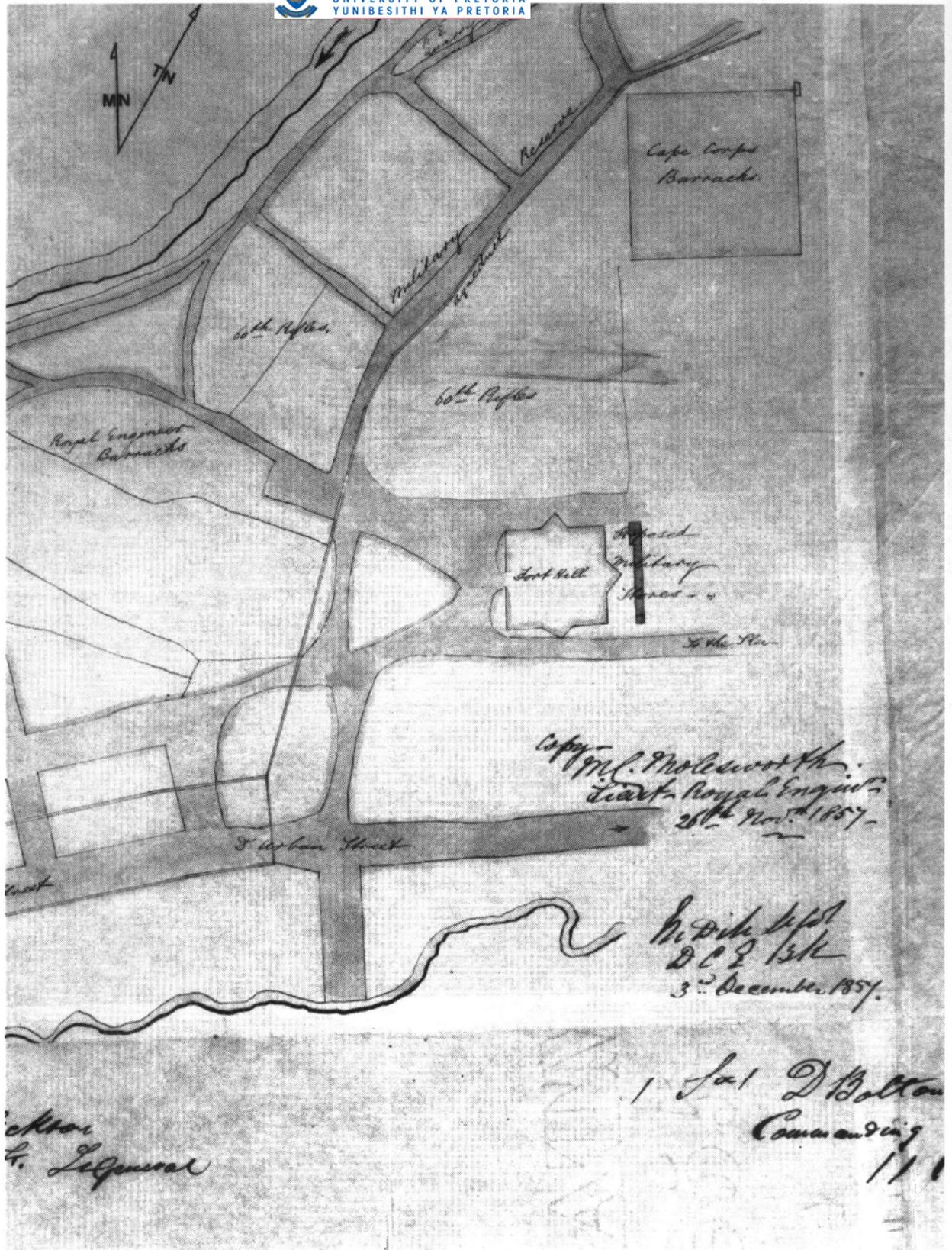
Figure 89: 1857 King Williams' Town, rough block plan to show the site of the military stores, proposed to be erected. (Garson,1992:65)
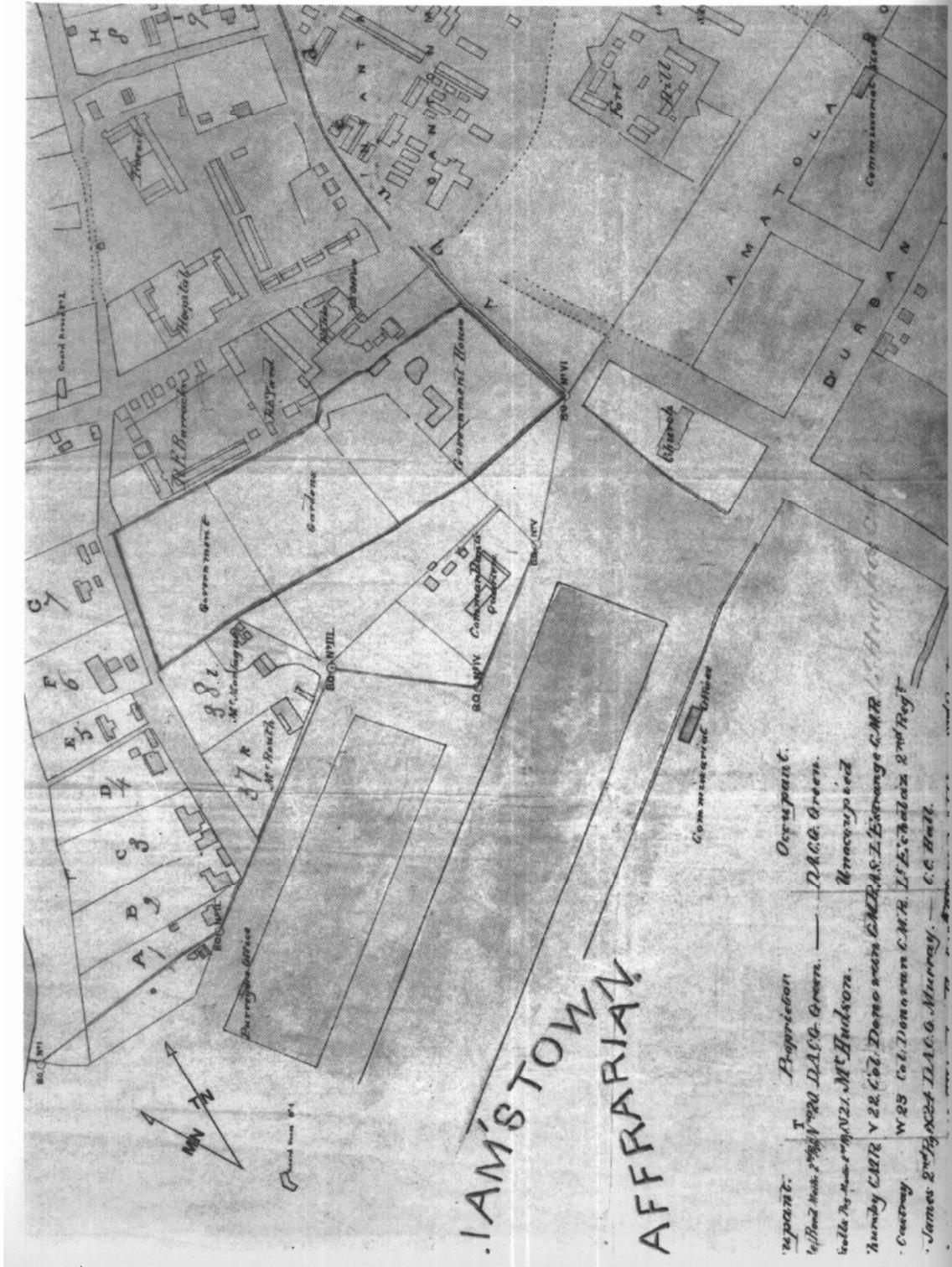
Figure 90: 1859 King William's Town British Kaffaria. Copy drawn by Francis R Gubbins Lieut 2nd Queen's Royal Regt. Assistant Engineer. (Garson,1992:71)
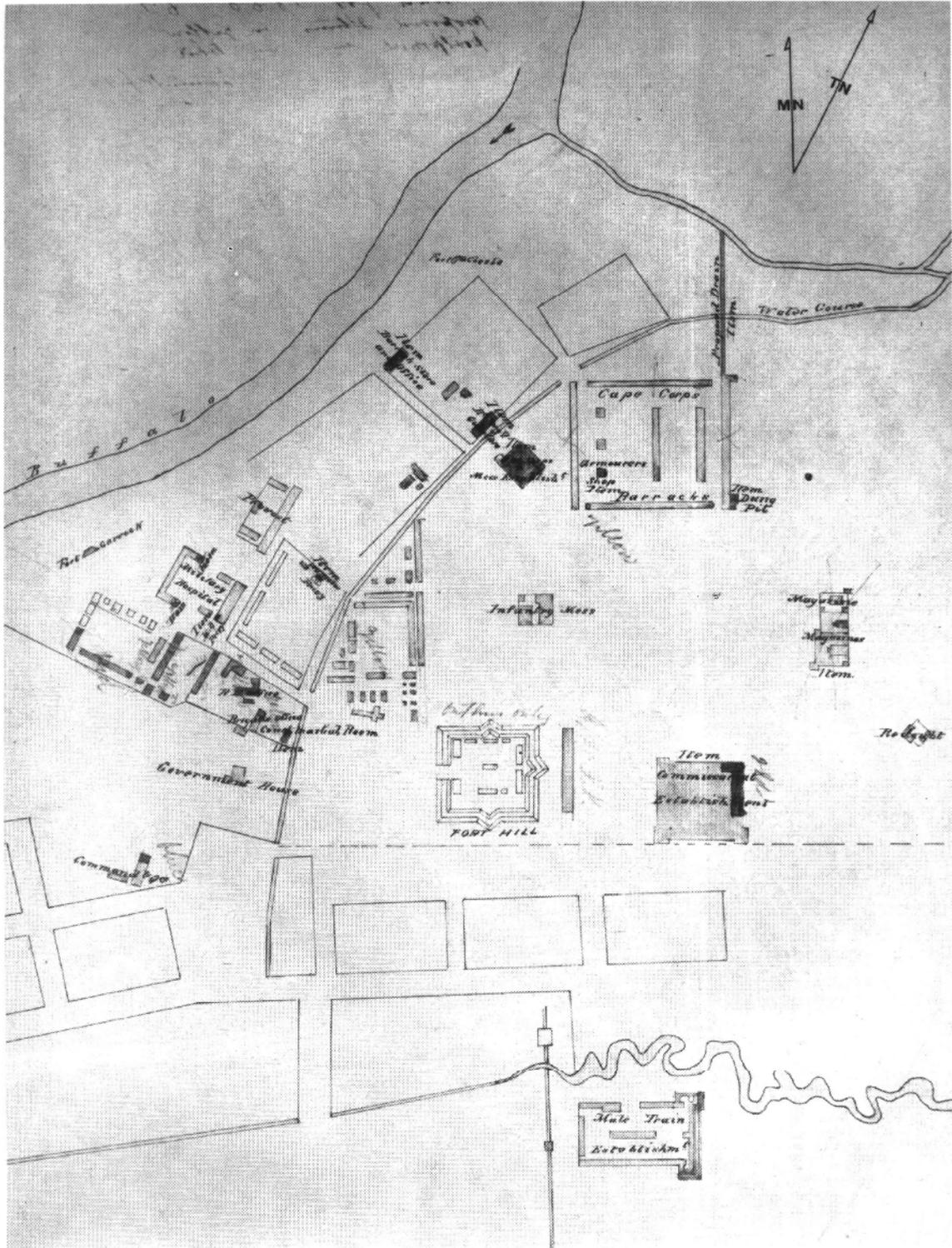
Figure 91: 1860 King William's Town site plan showing the position of several items proposed to be extended during the year 1860-61. (Garson,1992:73)

Figure 92: 1861 King William's Town sketch showing approximately the boundaries of the Borough of King William's Town. (Garson,1992:75)
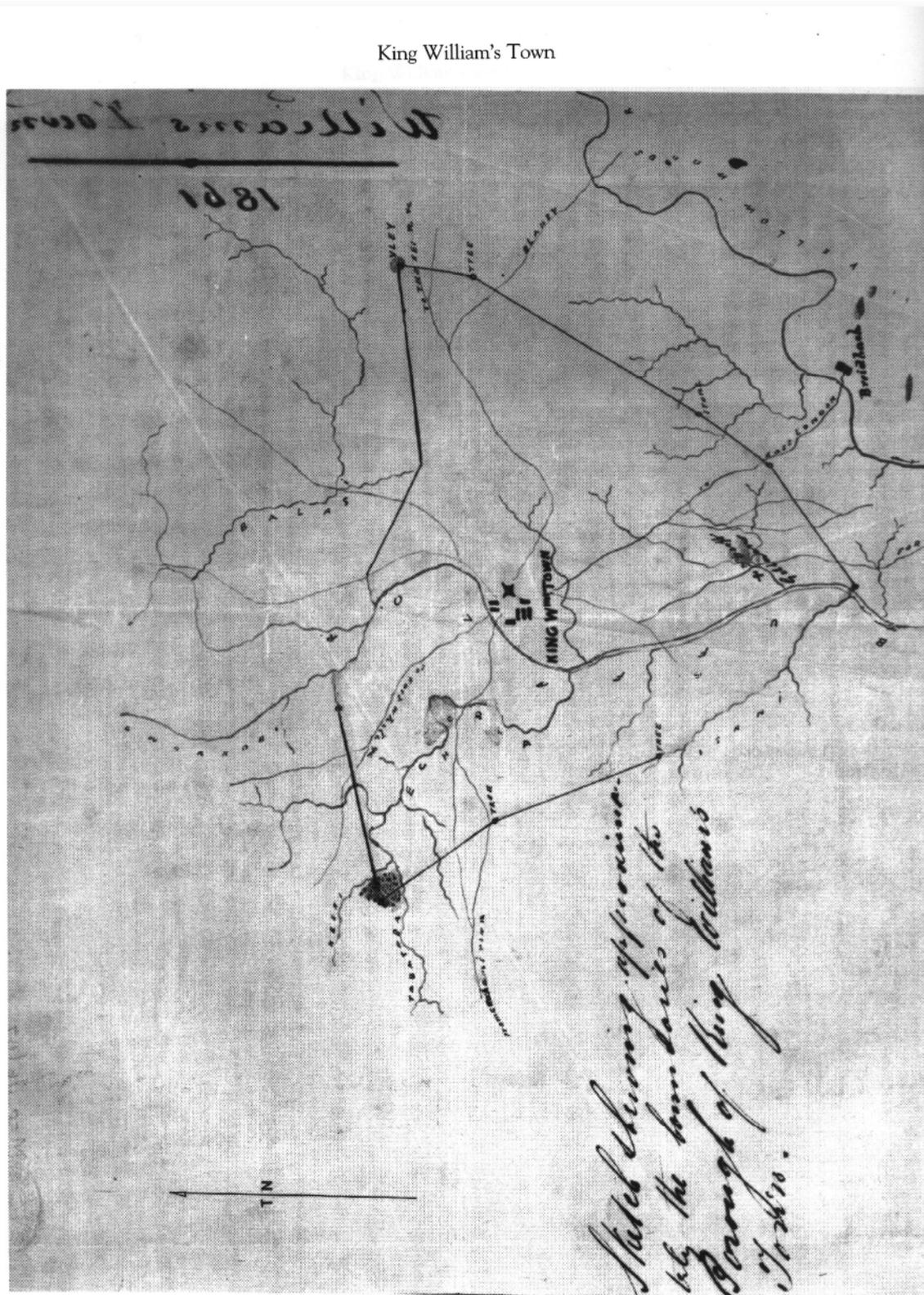
Figure 93: 1870 King William's Town. Traced by I.Graham Sergt RE 28/9/70

(Garson,1992:85)
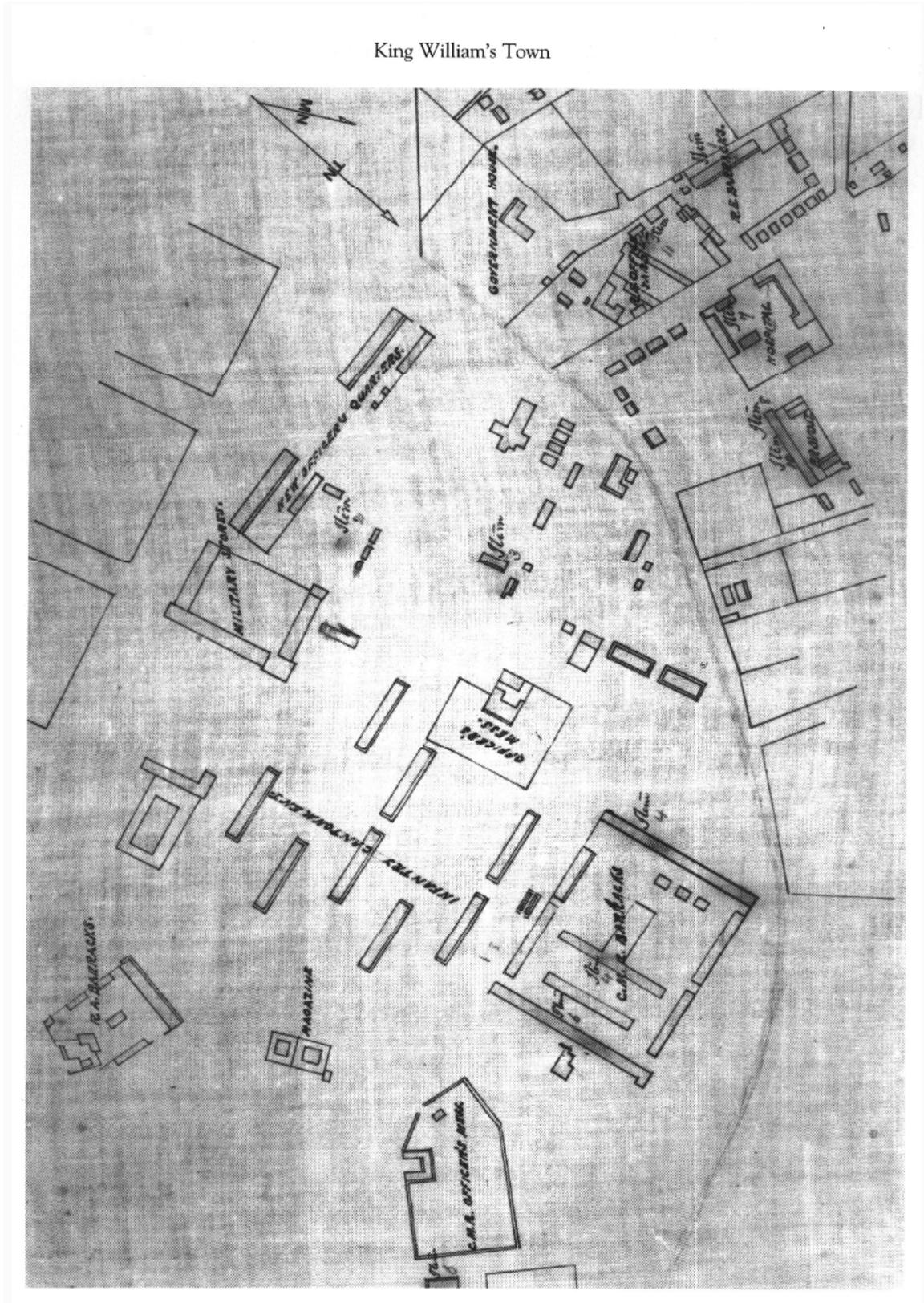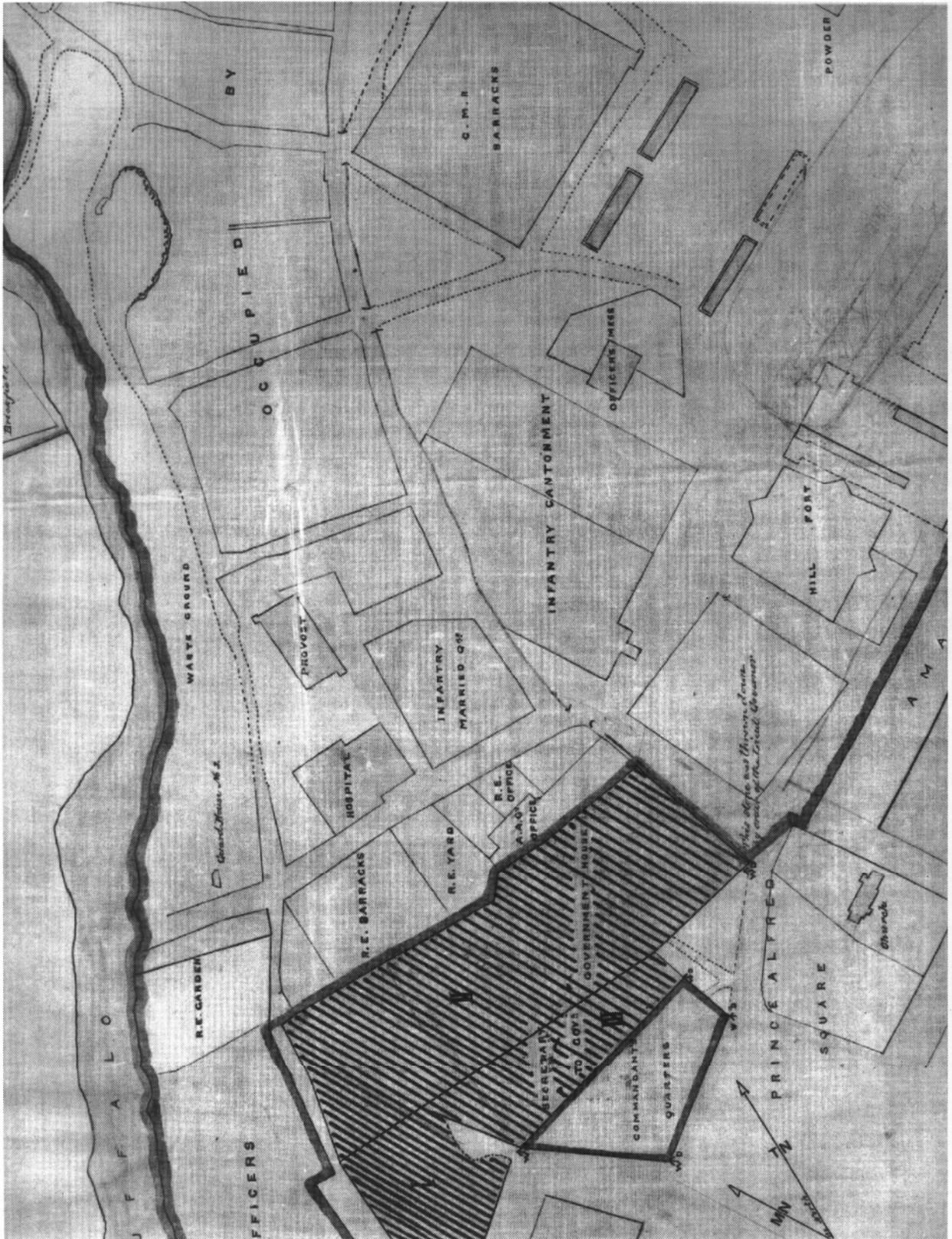
King William's Town

Figure 94: 1863 King William's Town Plan showing military reserve and proposed extension (hatched) (Garson,1992:81)

Mess Establishment, King William's Town
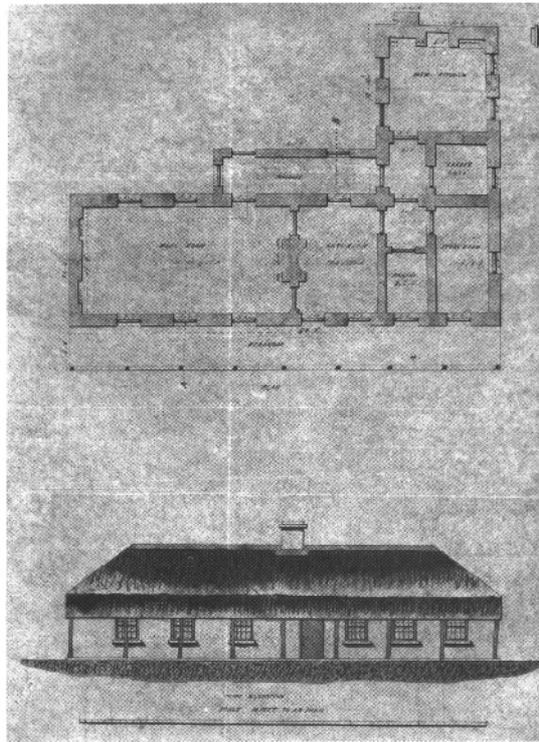
Skittle-Alley, King William's Town
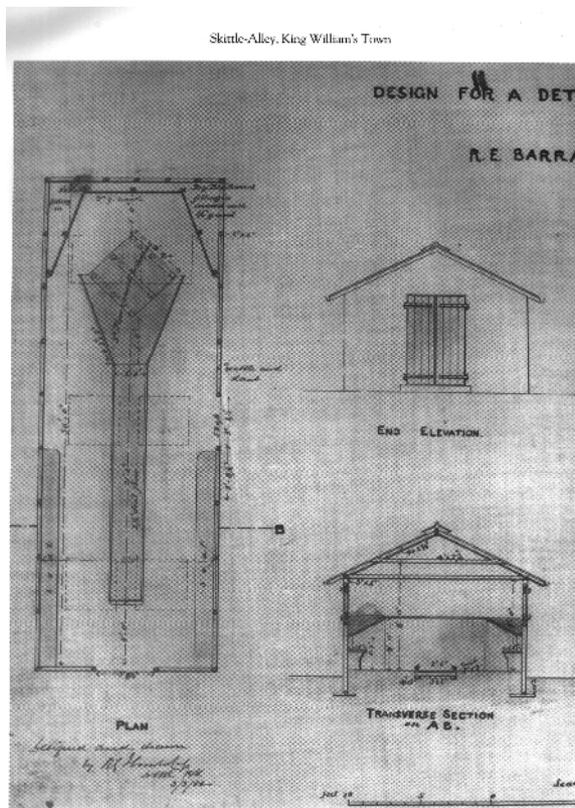
Figures 95 and 96: Mess Establishment King William's Town and Skittle Alley, King William's Town (Garson,1992)

10.4 QUEENSTOWN

During the on-going frontier wars Harry-Smith[1] founded the town of Whittlesea (named after his birth town). In the Sixth Frontier War the town was attacked and overrun. Sir George Cathcart (governor of the Cape of Good Hope 1852-1853) proclaimed, after the British killed the attacking chief, that he would

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[1] Lieutenant General **Sir Henry George Wakelyn Smith,** 1st Baronet of Aliwal GCB (28 June 1787-12 October 1860), known as **Sir Harry Smith**. He was born in Whittlesey, Cambridgeshire, the son of a surgeon. Harry Smith was educated privately and entered the army in 1805. His first active service was in South America in 1806 during the British invasions of the Río de la Plata. He distinguished himself at the Battle of Montevideo in 1807, but first came to real prominence during the Peninsular War in which he served from 1808 through to the end of the war at the Battle of Toulouse in 1814. Smith served throughout these campaigns with the 95th Rifles. On 7 April 1812 (the day following the storming of Badajoz) a well-born Spanish lady, whose entire property in the city had been destroyed, presented herself at the British lines seeking protection from the licence of the soldiery for herself and her sister, a child of fourteen. The latter, Juana Maria de Los Dolores de León, had but recently emerged from a convent; but notwithstanding her years she was married to Harry Smith a few days later. She accompanied him throughout the rest of the war. At the close of the war Harry Smith volunteered for service in the United States, where he was present at the Battle of Bladensburg on 24 August 1814, and witnessed the burning of the capitol at Washington.Returning to Europe he was a brigade major at the Battle of Waterloo in 1815.

In 1828 he was ordered to the Cape of Good Hope, where he commanded a division in the Xhosa Wars of 1834-36. In 1835 he accomplished the feat of riding from Cape Town to Grahamstown, in less than six days; and having restored confidence among the settlers by his energetic measures, he was appointed governor of the Province of Queen Adelaide, where he gained unbounded influence over the "native tribes" (sic), whom he vigorously set himself to civilize and benefit.

But though supported by Sir Benjamin D'Urban, the high commissioner, the ministry in London reversed his policy and, to quote Smith's own words, directed the Province of Queen Adelaide to be restored to barbarism. Smith himself was removed from his command, his departure being deplored alike by the Xhosa and the Dutch; and numbers of the latter, largely in consequence of this policy of Lord Glenelg began the migration to the interior known as the Great Trek

grant pardon to the tribe provided they withdrew from the area. Cathcart went on to explain… "the only way in which South African Aborigines (sic) whom it may have been necessary to expel from their former locations can be prevented from returning is by immediately replacing them by some other occupants" (Murray: correspondence of Sir George Cathcart: Cathcart : Pakington 29 Nov 1852 p 156). Thus a policy arose to allocate farms in this area to settlers. The most important aspect of the scheme was that the community which was established there must be self-sufficient and defendable. The area was to serve as a buffer zone. Lombard (1952) in his study identified six main policies behind the settlement from his extensive study of Cathcart's correspondence:

1. to occupy the territory;
2. to establish a town for defensive purposes and to cause the surveyor general to immediately lay out streets and plots;
3. to establish the farming and pastoral area;
4. to connect the area via a road to the established settled areas;
5. receive applications from people who were prepared to become resident of the town and establish the town first and then the farms and finally;
6. to give preference to people with an active interest in the area.

It was felt that the plan would gain support from London as it was a cost effective local defensive strategy instead of mustering troops for the area. Cathcart declared that should the policy be carried out in full then there was no chance of another Kaffir (sic) War, and that a great and disastrous war will be impossible (Chase: History of the Cape of Good Hope from 1820-1868 p 474). A board was thus, established "…for the purposes of reporting upon and carrying out, measures for the occupation and security of that part of North Victoria which has become forfeited to the Crown by the rebellion of the Tambookie Tribes, and especially for the establishment of a village or town on the Kommane or Bush River, about 18 miles from Whittlesea and for providing for the pastoral and agricultural occupation of the territory between Whittlesea and the proposed village" (Lombard:1952).

Cathcart wrote of the establishment of the new town as early as November 1852: "I have appointed a provisional land commission … to select and recommend in the first place a site for a village, with the advantages of water and capabilities of irrigation; these are requisites generally as difficult to be found as they are indispensible in this arid country, but a place has already been suggested which is likely to answer the purpose on the Bush or Komane River, only 20 miles in advance of the present occupied line" (Murray: Correspondence of Sir George Cathcart: Cathcart – Pakington 29 Nov 1852 pg 157).

Cathcart named the town Queenstown (in honour of Queen Adelaide) and it lay on the direct route from Aliwal-North to East London. M.R. Robinson, who from 1856 to 1859 was stationed in Grahamstown as Deputy Surveyor-General of the Eastern Districts, left with six police to survey the site. He was to be joined later by Woodifield, a land surveyor from Cape Town, and was assisted by surveyor van Reenen. The team laid out the first *erven* (urban plots) in the first week of February 1853 and by the 9th February 1853 Robinson sent the first sketch plan to the Secretary of the Governor to present to the Governor. The original plan is now housed in the Public Records Office, Kew (Figure 97). In the attached letter Robinson explains that 53 *erven* were already allocated and that people were in the process of fencing and building on them and that 20 *erven* had been set aside for the *Nerderduits Gereformeerde Kerk* (Dutch Reformed Church). The main street had been named Cathcart, and Robinson requested that Cathcart himself name the other streets. In closing Robinson writes "…the site of Queenstown is admirably adapted for the purpose for which it has been selected and there is every prospect of it becoming rapidly a thriving frontier town" (Deputy Surveyor General Eastern Cape 25: Letters Despatched 9.2.1853- 26.5.1854 p1).

The first 50 *erven* (plots) each of half an acre were sold to 'bone fide' residents at a cost of £4 10s per *erf* (one plot). The cost breakdown was explained as £2 for the land, £1 10s for the surveying the area and to cover the costs of the town lands and £1 for the building of a dam and water

reticulation for the town. Each property had to be fenced and built on in a specified time period. 50 more *erven* were surveyed and sold at £7 10s each on the basis of personal applications. These *erven* were intended for the farmers of the district so they could build a *tuinhuis* (garden house or house in town) and ensure their commitment to the town and the district. These stands were £5 each with the same surveying and infrastructure costs as the first 50 stands. These stands as well as the stands for the church are clearly marked on Robinson's plan. Cathcart approved that £50 of the proceeds of the sales be used to build the dam. The rest of the stands were sold in the normal manner of a public auction. The land granted to the *Nerderduits Gereformeerde Kerk* is interesting as the land was granted on condition that:

1. It could only be sold to people who would live on it within six months;
2. any profit from the sale of the land must be used to build the church in Queenstown;
3. if the first two conditions were not met within six months from the 28th January 1853 then the land would revert to government ownership (Lombard:1952).

The British government did this to give the Afrikaans people a stake in the town and hence an interest in it. The British, as ever pragmatic people, knew that the majority of the farming community were of Dutch descent and they also knew that the church would give them a base in the town.

The layout of Queenstown is unique. It was laid out around a central hexagon, which was to be the *laager* (a camp protected by a circle of wagons or other vehicles, formerly used by the *Boers* in South Africa) to which the citizens would flee in time of trouble. Although still a distinguishing feature of the town today, the hexagon was never used for its intended purpose.

Figure 97: Queenstown (Public Records Office, Kew (MPG106) 1 item extracted from CO 48/339. Cape colony: Queenstown. Plan of proposed village, shows roads, the Kommane River, plots for sale or grant, Crown and Hottentot (sic) reserves. Reference table. Scale 1inch: to about 190 feet. Compass indicator. Signed M R Robinson, Assistant Surveyor General, August 1853.

Cathcart wrote to Robinson "…you have precisely carried into effect, the idea I had formed, of a town equally adapted for convenience and comfort in quiet times, and for defensibility and security in case of Tambookie or Kaffir (sic) annoyances should they ever again disturb the peace of that part of the country in which it is situated" (Deputy Surveyor General Eastern Cape 1: Government letters received Cathcart- Robinson 16 Feb 1853 No 5a). He goes on to acknowledge that he was honoured that the main road was named after him and to suggest that the road circling the hexagon be named Robinson and the other streets named after the other committee members – Calderwood, Shepstone, Bowker and Zeiler (Lombard:1952).

On the 14th April 1853 Sir George Cathcart wrote "…my endeavours to fill up an important part of the country … have been attended with complete success, so that a promising town of some thirty houses has already sprung up" (Blouboek: "further papers relative to the state of the Kaffir Tribes (in continuation of papers presented 31 May 1853) 1855 Cathcart – Newcastle 14 April 1853 pg 3). The development of the town was remarkable, a correspondent of the Graham's Town Journal, who visited the town on the 17th March 1853 (a mere six weeks after the allocation of the first stands) reported a house built of bricks and a number of houses being built with 6 inch unbaked bricks almost complete. Many people were living in wagons, tents, *pondokke* (shanties) and wattle and daub houses. He commented that wood, food and drink were expensive. He reported that the town consisted of 154 *erven*; the great majority of which were sold. He sung the praises to the town's plan and commented on the three main streets which were 100 feet wide (Lombard:1952).

Indeed the town grew so fast that in February 1855 the need to build within a limited time period was removed …."it is with great pleasure that His Excellency observes that the flourishing prospects of Queenstown admit of the obligation being withdrawn, without danger to the prosperity of the town. The Registrar of Deeds has accordingly been instructed to pass transfer without reference to the clause adverted to" (Colonial Office 5026 letters despatched: Letter Book, Civil Country II October 1854 p415)(Lombard:1952).

In the late 19th century, Queenstown prospered, and the huge local sandstone public buildings were built, most still standing today. The magnificent Town Hall facade is an example of such, as are the Methodist Church, the Anglican Church and the Dutch Reformed Church.

After the 10920'sdepression, Queenstown once again entered a period of prosperity while still acting as a supply and educational centre for surrounding farmers and smaller towns. After 1948, at the beginning of the *Apartheid* era, the district changed character as white-owned farms were bought out and the land incorporated in the nearby Transkei and Ciskei homelands.

10.4.1   CONCLUSIONS ON THE LAYOUT OF QUEENSTOWN

The historical background of Queenstown can be seen in its layout, which is quite unique. The original objective of the town was to serve as a defensive stronghold and buffer zone for the frontier area. There was a central hexagonal area where cannon or rifle fire could be directed down six thoroughfares radiating from the centre. This seems to be the only town on the Eastern Frontier specifically designed on a conscious plan. Queenstown is a famous example, being designed in a modified radial-concentric shape to provide uninterrupted views of approaching enemies down the main streets. This shows marked similarities to Khartoum City, redesigned by the Royal Engineers in 1898, according to a generally-accepted pattern of Union Jacks, in a symbolic statement of British dominance (Home:1997:41). Queenstown's design however, predates Khartoum. It is interesting also in that the design emulates the Union Jack and the patriotic design would be helpful in selling ideas to parliament in Britain (Home, 1997, Welsh, 2000; Garson, 1992; Lamar and Thompson, 1981; Caffrey, 1973).

The fanned out line-of-sight design of Queenstown also shows similarities to the design of the Provost Prison, Grahamstown (1838), which was based on Jeremy Bentham's eighteenth century 'Panopticon' system for the 'ceaseless

surveillance of prisoners'. The prison formed part of Governor Sir Benjamin D'Urban's fortified barrack establishment for the military headquarters of the Eastern Frontier. The prison comprises eight cells, each with an exercise yard in front, arranged around a quadrant, with a two storey round tower overlooking all cells and yards (Tomlinson,2006:8-9).

Queenstown adheres to a number of the principles of the "Grand Modell'. It was clearly a policy of deliberate urbanisation in order to stabilize and 'civilise' the frontier. Land was allocated as both farms and urban plots this is evident from the reference to '*tuinhuise'* for the Afrikaners, that is a house in town for use when attending quarterly communion. The plan was obviously laid out in advance of settlement; in fact it was laid out specifically to attract settlers to the area. The streets are wide and straight, although the design is an adapted grid-iron layout. The plots are all standard size and rectangular and a large central area is left open as public space. The reservation of plots for public purposes is clearly evident from the allocated plots on the plan. Lastly the town is surrounded by extensive town commons.

SECTION CONCLUSIONS

It is evident from the case studies that it was not only the Royal Engineers who were involved in colonial development; rather that the Royal Engineers were the design and implementation arm of British colonialism. The Royal Engineers carried out orders; they were ordered to survey regions, establish military bases and stabilise the frontier. What is interesting is how this was achieved. The Royal Engineers displayed a very pragmatic and technically competent approach to their work. Bases were carefully selected, surveys scientifically executed. In short they were good at what they did and their competence is evident in the fact that much of their work still exists. Despite the technocratic and scientific training the Surveyors and Royal Engineers received they also showed artistic flare and design sensitivity, Queenstown's layout being a case in point. It seems that the scientific training did not stifle artistic flare.

The work executed by the Royal Engineers to this day is the physical display of colonisation. The roads, railways, mountain passes, ports and sandstone buildings.

All three towns discussed above clearly show the British colonial philosophy of settling areas in order to dominate and control them. British dominance was achieved with relatively few troops but with a systematic land allocation system. Towns were vital components of the settlement of the area and were used not only as military outposts (as in the case of Grahamstown and King William's Town) but as strongholds in an ever-expanding frontier. The British colonised the area more by way of continuously encroaching settlement than by direct warfare and land clearance.

The rate at which these towns developed is phenomenal given the turbulent frontier and the relatively low population of the time. Queenstown went from an idea on paper to a town with over one hundred mostly-developed stands within three years.

It is also interesting to note that the British government actively used the allocation of land to colonise the frontier; the towns were surveyed and serviced by the proceeds of the sale of the land, the government never sought to provide houses. The government's stimulation came from the recognition of surveyed land rights and from the provision of infrastructure such as water schemes, roads, churches, schools and libraries.

The Eastern Cape also clearly illustrates that the colonial economic model desperately needed labour and a class structure to operate. The need for labour and the desire to create a market economy drove much of the conflict in the area. This conflict was however, not purely racial – it is important to remember that the British brought out numerous indentured labourers from England as part of the 1820's scheme. So in many ways the upper class British exploited their own lower classes in much the same way as they exploited the Xhosa once the indenture scheme failed. What is fascinating is that life on the frontier lead to a breakdown of the British class structures and the colonial government had to allow more than the landed gentry to vote and participate in colonial structures – The Pringle Papers (KAB Microfilm ZD/P4) and Le Cordeur (1981) offer fascinating insights into the class struggle on the frontier.

Queenstown illustrates most clearly the pre-planning of settlements, they did not simply grow, and settlements were designed on paper and approved in London prior to pegging, land sale and occupation. A search of the National Archives shows that the British placed a great deal of emphasis on land survey, access and suitable areas for colonisation. Examples of this work are:

- KAB Map M2/452 - a general map of the country between Grahamstown and the mouth of the Fish River showing the different situations fit for settlements and habitations,
- KAB Map M2/460 - a map of the public roads from Uitenhage to Fort Beaufort via Grahamstown, Somerset and Graaff-Reinet,

- KAB Map M1/2671 - a map of the Eastern Districts, showing Grahmastown and Bathurst and showing the military posts and forts occupied in February 1837,

- KAB Map M3/49- 1838 - a plan of the survey of roads from Grahamstown to Fort Brown, Koonap Drift, Committee's Drift, Trompetter's Drift, Frazer's Camp and Fort Peddie.

Much of the settlement approach adopted in the Eastern Cape broadly follows the "Grand Modell" as explained by Home (1997). British colonial development relied heavily on physical development. Development of infrastructure, land demarcation and registration where key to economic and social development.

Physical development was carried out by a number of agencies. Colonial government was set up to regulate, tax and structure society. Surveyors were utilised to explore, chart and demarcate territories and to convert land into demarcated marketable portions. Military personnel were utilised not only in times of war but interestingly the military were key to the construction of civil infrastructure within the colonies. The military often performed many functions; they were the colonial police force, a source of state controlled labour (for example for building the Franschhoek Pass). The officers of the Royal Engineers (and indeed other military officers) were key members of society – military officers not only took on key colonial posts but were also considered the gentry of colonial society, members of literary circles and contributors to academic articles. The cultural vacuum felt in Grahamstown when the military post moved to King William's Town bears testament to this.

In the early colonial period the most common military specialists were surveyors and the Royal Engineers. In the latter periods the military role decreased and specialists such as public health authorities became prominent. Town Planning in South Africa became prominent in the era in which management of urban areas took over from the physical development of the area. The Royal Engineers and surveyors were involved in

development and building of infrastructure and the opening up of new territories. They were less involved in the management and maintenance of areas once they were established. The Royal Engineers were the pioneers of today's development professions, they developed an approach to the opening up of new territories – a state sponsored development agency. This was different from what happened in plantation America, which had been developed by private companies. The military influence in South Africa was far stronger than it had been in earlier plantation colonies.

It is interesting to study a map of Africa today, former British colonies stand out because of the road, rail and urban networks. Colonies such as Portuguese Angola and Mozambique have little infrastructure outside the port cities. The Belgium Congo relied heavily on the river system and thus, added little in the way of road or rail networks. The British developed colonies – they saw the communications infrastructure, ports and towns – as vital to the development of the colonial economy. Infrastructure provision went hand in hand with commercial development. It is difficult to ascertain if the physical development lead to the commercial development or *vice versa* – they were interrelated and symbiotic. The massive government investment in physical infrastructure, it could be argued, was also dictated by the response of the officials involved. The Royal Engineers were scientifically trained and unsurprisingly their response to development was physical infrastructure. Equally it could be argued that the training of the Royal Engineers evolved out of the need for these technocratic skills.

The towns and infrastructure of the Eastern Cape which the Royal Engineers and other colonial officials designed and built has endured; it is still in use and the towns still functional. The merino sheep industry also still exists. What is interesting is that these elements are all the civilian work carried out; the military work, the forts, signals and posts became redundant as soon as the military need fell away. In short only the elements which serve today's needs endure, the military threats have gone so the defensive structures are redundant. Argued from the other point of view, the defensive structures must have worked as the frontier is now stable. It is also clear that the civilian

infrastructure is still relevant and thus, endures. This speaks to the timeless (and largely cultureless) nature of well executed design. If a design is technically competent and functional it will transcend time, class and culture.

SECTION D

THEORETICAL ASSESSMENT OF THE ROLE AND APPROACH OF THE ROYAL ENGINEERS AND LESSONS FOR DEVELOPMENT PLANNING

CHAPTER ELEVEN

THEORETICAL EVOLUTION OF PLANNING - STRENGTHS AND WEAKNESSES OF THE EARLY COLONIAL APPROACH

11.1 INTRODUCTION

This chapter seeks to understand the British imperial approach to colonial expansion and development in a theoretical or methodological manner and in a contemporary way. How did this period of development relate to modern planning? The previous section focused on the physical and spatial development; this section aims to list the main elements of the approach to development. The section begins by analysing the evolution of modern town planning, as town planning is the profession today which would handle the type of spatial development which occurred during the colonial period. The Royal Engineers' approach to development and background training is then reduced to its theoretical approach. This theoretical approach is then analysed in order to glean the lessons history can teach us about development, specifically development on 'terra nova'. Learning positive planning approaches from history is always tricky as all development happens within a socio-cultural, economic and political reality and often one would not wish to replicate these – colonisation being an excellent example of what not to replicate. However, the colonial era saw a great deal of physical and spatial development. This sort of development aimed at establishing viable economies is still needed in developing countries, so lessons can be learnt from the past. I would however, stop short of implying that the historic approach could offer a theoretical framework for modern planning. elements of spatial development worked in colonial times and could thus be investigated within the broader modern approach to planning.

This Study has illustrated that a small highly trained group of military engineers had a significant impact on the establishment of early towns and infrastructure in South Africa (today the spatial development process would fall under the town planning profession). They have left a lasting footprint on South Africa's spatial development and many of the

towns and much of the infrastructure is still in use today (specifically the harbours, railways and mountain passes). This chapter seeks to describe the development of town planning, planning education and the theory of planning in South Africa (with reference to world trends) in order to understand the approach adopted by the Royal Engineers and to analyse the strengths and weaknesses thereof and ask if any elements of it have merit today.

This chapter begins by investigating what was happening in Europe during this period and how the planning profession emerged in South Africa after this period in order to better compare and contrast the approach of the Royal Engineers to later developments and modern concepts of planning. The chapter also aims to locate the work of the Royal Engineers which was analysed earlier in this study within a theoretical framework. In other words an attempt is made to extract planning theory or approach to planning from historical analysis of developmental elements which worked in the past. This chapter seeks to move beyond what the Royal Engineers did and to understand how they made it happen; to arrive at a positive theory of planning or to ask when does planning work or which elements of past planning worked?

11.2 WHAT IS THEORY?

The Oxford English Dictionary defines theory as:
- a supposition or a system of ideas intended to explain something, especially one based on general principles independent of the thing to be explained: Darwin's theory of evolution
- a set of principles on which the practice of an activity is based: a theory of education[mass noun] :music theory
- an idea used to account for a situation or justify a course of action: my theory would be that the place has been seriously mismanaged
- Mathematics a collection of propositions to illustrate the principles of a subject

Origin: late 16th century (denoting a mental scheme of something to be done): via late Latin from Greek the ria 'contemplation, speculation', from the ros 'spectator'" (Oxford English Dictionary, http://oxforddictionaries.com)

In philosophy, **theory** refers to contemplation or speculation, as opposed to action. A classical example uses the discipline of medicine to explain the distinction: Medical theory and theorising involves trying to understand the causes and nature of health and sickness, while the practical side of medicine is trying to make people healthy. These two things are related but can be independent, because it is possible to research health and sickness without curing specific patients, and it is possible to cure a patient without knowing how the cure worked. Pythagoras changed the word to mean a passionate sympathetic contemplation of mathematical and scientific knowledge. This was because Pythagoras considered such intellectual pursuits the way to reach the highest plane of existence. Pythagoras stressed the killing of one's emotions and the lusts of the body in order to release the intellect to soar into the exalted domain of *theory*. Thus it was Pythagoras who gave the word "theory" the specific meaning which leads to the classical and modern concept of a distinction between theory as uninvolved, neutral thinking, and practice.

Theories are analytical tools for understanding, explaining, and making predictions about a given subject matter. Theories are constructed to explain, predict, and master phenomena (e.g., inanimate things, events, or behaviour of animals).

11.3 THE APPROACH OF THE ROYAL ENGINEERS REDUCED TO ITS THEORETICAL AND METHODOLOGICAL ROOTS

Although the introduction of the rational comprehensive approach to planning has been ascribed to Meyerson and Banfield's publication in 1955 (Muller, 1992:134), it is argued that the rational approach to planning, more specifically Cartesian rationality, is the manner in which colonial towns were planned. The Royal Engineers were trained in the sciences, with little thought for humanities (as demonstrated in chapter three). Engineering and survey were seen as exact sciences and consequently towns, which were laid out by these engineers, were functional and rational. Given that the towns were planned by the Royal Engineers, military principles such as strategic locations, clear lines of communication, structured and ordered settlements also dominate. Looking to Roman colonial expansion the importance of military camps in colonising of areas becomes

apparent. The military control, regularity, order and logic gave rise to standardised plans which evolved as tested solutions to problems. In Roman camps the plans were uniform, street widths standard and all troops knew what their role was in establishing camps. To this military control the British added science, initially the scientific solutions to fortifications and siege tactics, but over time public health and hygiene lead to specifications of space between tents, ventilation, sanitation and other aspects of design.

It is argued that the military background and the era of the emergence of the sciences in Britain combined to give rise to a rational mode of planning.

"His Royal Highness the Duke of Cambridge in describing in the House of Lords the operations of the Abyssinian General … declared that his every step had been a success and a triumph … because … before he took to the field – as a philosopher in his study – he planned (the strategy beforehand)" (Head,1869:376).

The records of the Royal Engineers are littered with references to the rational mode of thought, indeed it was even applied to discipline; in his book Sir Frances Head (1869:16) describes the "black hole", forty-eight hours solitary confinement. He argues that when "…left entirely to himself, with nothing in the whole world to do or look at, it forces (a person) to think. And his reasoning faculties, strengthened by his mathematical studies, soon demonstrate, or, at all events, under the cold-water cure, have a fair opportunity of demonstrating to him, that he had acted insubordinately."

It is interesting to note that two of the major development phases in South Africa, those of the colonial era and of the immediate post World War II period were both based on rational modes, on engineering projects and large state involvement. In the case of the laying out of Halifax, in Canada, the local governor proudly stated his imperial vision of town building: "…without money you could have no town – no settlement and indeed no settlers. 'Tis very certain that the public money cleared the ground, built the town, secured it … The money is laid out in building forts, Barracks, storehouses, hospitals, church, wharf, public works, all that seem absolutely necessary." He also stated that the lots were worth 50 guineas because of the stimulation of public works spending(Stelter,1983: 179).

11.3.1   CARTESIAN RATIONALITY

As is generally known, René Descartes (1596 –1650), also known as Renatus Cartesius (Latinised form), was a highly influential French philosopher, mathematician, scientist, and writer. He has been dubbed the "Father of Modern Philosophy" and the "Father of Modern Mathematics," and much of subsequent Western philosophy is a reaction to his writings, which have been closely studied from his time down to the present day. His influence in mathematics is also apparent, the Cartesian coordinate system that is used in plane geometry and algebra being named after him, and he was one of the key figures in the Scientific Revolution (Keeling,1968). A very brief synopsis is given here by way of introduction and to frame the argument. This section is by no means a rigorous analysis of Cartesian rationality.

Descartes was a major figure in 17th century continental rationalism, later advocated by Baruch Spinoza and Gottfried Leibniz, and opposed by the empiricist school of thought consisting of Hobbes, Locke, Berkeley, and Hume. Leibniz, Spinoza and Descartes were all versed in mathematics as well as philosophy. As the inventor of the Cartesian coordinate system, Descartes founded analytic geometry, the bridge between algebra and geometry crucial to the invention of calculus and analysis. Descartes' reflections on mind and mechanism began the strain of Western thought that much later, impelled by the invention of the electronic computer and by the possibility of machine intelligence, blossomed into the Turing test and related thought. His most famous statement is: *Cogito ergo sum* (I think, therefore I am), found in the Principles of Philosophy (Latin) (Keeling,1968)(Clarke,2006) (Gaukroger,1995).

Descartes is often regarded as the first modern thinker to provide a philosophical framework for the natural sciences as these began to develop. In his discourse on the method he attempts to arrive at a fundamental set of principles that one can know as true without any doubt. To achieve this, he employs a method called methodological scepticism: he rejects any idea that can be doubted, and then re-establishes them in order to acquire a firm foundation for genuine knowledge.

The laws of the Cartesian method are four:

- Accept nothing as true which is not clear and distinct;
- Analyse a problem into its parts and discuss it part by part;

- Arrange thoughts from simple to complex as the order of study;
- Enumerations must be full and complete and nothing must be omitted.

This is the method adopted in mathematics; Descartes transferred it to philosophy with the intention of constructing metaphysics on a new basis.

11.3.2   RATIONALISM

In epistemology and in its broadest sense, rationalism is "any view appealing to reason as a source of knowledge or justification". In more technical terms it is a method or a theory "in which the criterion of truth is not sensory but intellectual and deductive". Different degrees of emphasis on this method or theory lead to a range of rationalist standpoints, from the moderate position "that reason has precedence over other ways of acquiring knowledge" to the radical position that reason is "the unique path to knowledge" (Audi,1999:771).

Within the Western philosophical tradition, "rationalism begins with the Eleatics, Pythagoreans, and Plato, whose theory of the self-sufficiency of reason became the *leitmotif* of Neoplatonism and idealism"(Bourke,1962:263). Since the Enlightenment, rationalism has been associated with the introduction of mathematical methods into philosophy, as in Descartes, Leibniz, and Spinoza (Bourke,1962:263). This is commonly called continental rationalism, because it was predominant in the continental schools of Europe, whereas in Britain empiricism dominated.

Rationalism is often contrasted with empiricism. Taken very broadly these views are not mutually exclusive, since a philosopher can be both rationalist and empiricist (Lacey:1996:286–287). Taken to extremes the empiricist view holds that all ideas come to us through experience, either through the five external senses or through such inner sensations as pain and pleasure, and thus that knowledge is essentially based on or derived from experience. At issue is the fundamental source of human knowledge, and the proper techniques for verifying what we think we know.

Proponents of some varieties of rationalism argue that, starting with foundational basic principles, like the axioms of geometry, one could deductively derive the rest of all possible

knowledge. The philosophers who held this view most clearly were Spinoza and Leibniz, whose attempts to grapple with the epistemological and metaphysical problems raised by Descartes led to a development of the fundamental approach of rationalism. Both Spinoza and Leibniz asserted that, in principle, all knowledge, including scientific knowledge, could be gained through the use of reason alone, though they both observed that this was not possible in practice for human beings except in specific areas such as mathematics. On the other hand, Leibniz admitted that "we are all mere Empirics in three fourths of our actions" (Monadology § 28, cited in Audi,1999: 772).

The contention of this thesis is that this rational approach to problem solving lay at the heart of the Royal Engineers approach; they were trained in advanced mathematics and taught to analyse, learn through observations and solve problems. They seemed capable of finding solutions to all problems through their training and deductive reasoning.

11.3.3   THE ROYAL ENGINEER'S METHODOLOGY

If you analyse what the Royal Engineers did in terms of the basic idea of a theory, that is a model for formulating a set of principles on which the practice of an activity is based, you would arrive at a recipe for development on '*terra nova*' - a way of developing virgin territory. In order to better understand the process the regional development (or development of the colony generally) has been separated from the development of towns or the local scale. (In the text a summary of the stages of the process is provided in italics to allow for a quick overview of the process.)

The first step was a strategic assessment of the colony, in the case of the Cape this involved the securing of Simon's Town and the sea routes around the Cape (*STRATEGIC OVERVIEW / EVALUATION*). Secondly the colony was mapped and surveyed. These maps sought to understand the territory, many of the maps have annotations on them about the quality of the grazing, the peoples and their numbers, routes, geology and topography, in other words the classic '*SURVEY*' stage. The British then set about controlling the frontier districts through the establishment of administrative centres (*ESTABLISHMENT OF AN ADMINISTRATIVE NETWORK*), they also controlled the flow of goods from the ports to the interior, mainly as a means of controlling the Dutch population by controlling the supply of gun powder and other goods which arrived through

the Cape ports (*ESTABLISH GOVERNANCE*). At the same time the Colonial Government encouraged agricultural development through the allocations of land and a land registration system. Colonial officials were instructed to investigate the geology in search for mining potential as well as natural resources, such as rubber, sisal, timber as the supply of raw materials was critical to the development of the colonial economy (*DEVELOP THE ECONOMY*). Infrastructure was developed: firstly ports and then railroads, mountain-passes, bridges, water schemes as well as social infrastructure such as schools, libraries and sports grounds. The sports grounds were seen as critical to social stability as in all of the colonies there was a preponderance of young men and often few women or families. The sports grounds were seen as necessary to keep the men busy and thus prevent trouble (*PROVIDE INFRASTRUCTURE*). A key element of British colonies was the desire to maintain the supply of materials and this could best be achieved in a stable environment; stable and predictable governance and services (such as harbour services, railways, post and later telecommunications) were vital to this process (*ESTABLISH AND MAINTAIN STABLE PREDICTABLE GOVERNANCE*).

At the Local scale, the first major element of the development process was to ascertain the need for a settlement or administrative area (*ESTABLISHMENT OF NEED*), followed by site selection (*SITE SELECTION*). The site selection was critical especially in terms of defending areas and supplying them with water. The site was then designed and the plans sent to London for approval (*DESIGN AND APPROVAL OF DESIGN*). Construction began with the surveying of the town and pegging of properties (*SURVEY AND PEGGING OF LAND*), stands were then sold to offset the cost of infrastructure development (mainly water supply) (*SALE OF PROPERTIES*). The costs of the infrastructure development were already known at the time of the sale of the properties thus it must have been designed and budgeted for at the design stage. Infrastructure was developed (*DEVELOPMENT OF INFRASTRUCTURE*) and the town managed by means of title deed restrictions (*MANAGEMENT OF SETTLEMENT*). The state then set about building public buildings such as town halls, schools, and libraries, many towns although not containing many parks in the modern sense had sports grounds such as cricket ovals and public gardens around the town hall (*DEVELOPMENT OF INFRASTRUCTURE*). The streets tended to remain as dirt roads, however, the examples from Durban show that effort was expended on the building of bridges, causeways and fording points such as pontoons. Routes between

towns were developed as the moving of goods was vital to the economy (*DEVELOPMENT OF TRADE ROUTES / LINKS*).

In summary the development process adopted by the Royal Engineers was a rational process by which they provided the administrative and infrastructural framework to allow for free enterprise. The process is in no way creating a social state and never attempts to supply individuals with houses or financial assistance, it sets out to provide a framework within which people can provide for themselves (indeed the British Government always sought to create self sustaining colonies – although this did not always happen).

It is the contention of this thesis that the scientific training received by the Royal Engineers lead to a rational and pragmatic development process. It was a developmental process which delivered a vast amount of infrastructure around the British Empire in a relatively short timeframe and with limited manpower. Much of the infrastructure and most of the settlements still exist and are still functional, economies set up in the 1800's still function, the Eastern Cape is still a sheep farming district. There are thus certain elements of development which transcend time and culture and rational pragmatic development can both deliver and it has been shown can also be very creative.

South Africa today could learn much from this pragmatic approach to planning, having highly skilled professionals with strong technical abilities and management acumen is essential to rapid, competent development. as a cautionary note however, the role of truly democratic governance and public participation can not be overlooked. What the Royal Engineers achieved is impressive in the implementation sense – the complete lack of social input is however, a major negative in their approach.

How then does this approach compare with developmental processes today?

11.4 THE EMERGENCE OF THE MODERN PLANNING PROFESSION, PLANNING EDUCATION AND PLANNING THEORY

This section seeks to give a broad background to the evolution of the planning profession, planning education and planning theory. The detail is limited to a narrative as it is presented to explain where in the evolutionary process the Royal Engineer's approach resides.

11.4.1   THE PLANNING PROFESSION

The town planning profession is a relatively young profession having its roots in the establishment of the Town Planning Institute in England in the early twentieth century; the institute received a royal charter a few years later becoming the Royal Town Planning Institute. Town planning in Britain has its origins in reform. The early town planners were members of a social movement which sought to persuade government and public of the benefits of town planning (Evans,1993). Social reformers in Britain, responding to the urban squalor caused by the industrial revolution, sought to develop new urban forms as well as to improve existing urban areas through health and safety bylaws and building controls. A long history emerged of industrialists providing better housing conditions for their workers, know as 'the Enlightened Industrialists', people like Salt, Rowntree, Cadbury and Lever all built model communities which aimed to solve the perceived 'ills' of the industrial city (overcrowding, pollution, congestion and unsanitary conditions). These ideas were carried forward by Ebenezer Howard in his Garden City Movement and in America in the New Deal Communities. It was at the height of the Boer War clash that the Garden City Association was established and in 1903 that Letchworth was established and only a few years later that the first thoughts of establishing a Garden City in the Cape of Good Hope started germinating. The result was Pinelands, designed by Thompson in the late 1920's (Muller, 1999:5-7). "In the end Pinelands lacked the elemental principles of the Garden City: the reformist convictions, the public ownership prerequisite, the population limitation, the self-containment proposition and the greenbelt spatial constraint, and assumed the form of a suburban housing development. It (however) broke new ground in South Africa in planning and environmental terms, and in a legal sense. It became the subject of the country's first formal town planning scheme and thus emulated Unwin's Hampstead Garden Suburb which in 1906 had become a pace-setter in British town

planning legislation" (Muller, 1999:7). This shows a direct transfer of ideas between Britain and South Africa and a rapid transfer at that. In 1925 Henry Lanchester, in his book <u>The Art of Town Planning</u> describes the prevailing planning in the colonies. "The towns laid out in the Dominions, mainly during the nineteenth century, have mostly followed the conventionally rectangular plotting usually regarded as typical of America (Lanchester, 1925:196).

It is interesting to note here that town planning emerged as a response to the problems of industrialised cities, in other words it emerged as a profession concerned largely with the management of existing areas. What the Royal Engineers were doing in South Africa was development on undeveloped land. Interestingly many of the early responses to industrial city problems were new developments, for example the garden cities, not necessarily improvements to existing areas. The improvements to the existing areas began as health and building by-laws.

The period from 1910 – 1935 saw an explosion in the zeal for town planning. Patrick Geddes, one of the leading exponents of the 'new art of Town Planning' stated: "The town planner fails unless he can become something of a miracle-worker to the people. He must be able to show them signs and wonders, to abate malaria, plague, enteric, child-mortality, and to create wonders of beauty and veritable transformation schemes. Sometimes he can do this in a few weeks, or even in a few days, by changing a squalid slum into a pleasant courtyard … Within a few weeks he can change an expanse of rubbish mounds, befouled in every hollow and defiling every home with their germ-laden dust, into a restful and shady open space, where the elders can sit in the evening watching the children play and watering the new trees they have helped to plant (Patrick Geddes, Report on Indore, 1918; quoted in Home,1997:141). Home (1997:141) expresses it best …"this rose tinted view of the potential offered by the new 'art of town planning' was typical of Patrick Geddes, who was not burdened by excessive modesty". The quote however, clearly illustrates a number of early influences in planning, firstly the reformist attitude, the belief that through adequate design, aspects such as public health and hygiene could be improved, that planning could offer a better life for all. Design, order, beauty and structure went hand in hand with public health, civic order and civilized society. The enthusiasm for town planning in the decade after 1910 coincided with Imperial federation. Grandiose plans for new capitals at New Delhi, Pretoria, Canberra and Ottawa were being formulated and, as an editorial in 1913 in

the <u>Town Planning Review</u> put it, "what better reply to those who hold that there is no use for Town Planning, all our cities being built?" (vol. 4, No 3:185). "These new capitals in the Grand Manner 'transported dominion and showcased it', highlighting the difference between the civilization of the colonizers and the old order of the indigenous population" (Home, 1997:144). Colonial dominance was expressed in the management, control and use of land. In the early twentieth century the idea of town planning emerged as a new approach to managing the colonial city. It offered a 'tool box' of techniques, packaged within a new professional and legislative structure. These included the following: land-use zoning, public authority control of urban expansion and urban renewal, financial provisions for land-owners involved with the planning and development process (through compulsory purchase and betterment levies), the garden city, or garden suburb model of low-density family housing, and policies of urban containment and decentralization (Home, 1997:219).

In South Africa, the notion of statutory development control took root in the 1930's and an innovative venture – the Witwatersrand and Pretoria Joint Town Planning Scheme – was introduced in 1932. Its purpose was the resolution of the problem of uncoordinated development in and around the towns making up the Witwatersrand region (Muller, 1999:10).

Planning has never truly lost its missionary zeal and successive approaches to planning - from design, through legislation to slum clearance and redevelopment - have largely failed to live up to the expectations raised by the professions reformist nature. More recently the communicative approach has tried to understand and accommodate the diverse communities and competing demands on land. For the context of this study town planning as a profession comes after the date of the study, it is however interesting that the correspondence with respect to the establishment of Queenstown discussed in an earlier chapter clearly points to a desire to provide better living environments than those found in the industrial towns of England – the reformist attitude began in the colonial period when new settlements were founded - attempts were made to keep them open, clean and healthy. This to a large extent explains the long straight wide roads and large stands in colonial cities (obviously rectilinear plans were also practical and easy to layout).

11.4.2 PLANNING EDUCATION

Planning education has followed the developmental trend of the profession. "Planning education began in the early twentieth century as reformers clamoured for more cohesive approaches to urban problems of the industrial cities, and as architects, landscape architects and engineers thirsted for more direct training in the urban-scale design process they found themselves tasked to compete. For half a century the planning schools movement was small and limited to the major industrial countries, but by the late 1960's there were schools on all continents and enrolments were in the thousands. Growth had been fuelled by Keynesian government economic interventions, responses to urban unrest, and a growing environmental movement (Stiftel,2009:38).

University urban planning education began in the early twentieth century (The University of Liverpool is widely cited as having offered the first course in 1907) with courses taught for the benefit of architects, landscape architects and engineers who wished to expand their practices into the city planning domain (Stiftel, 2009:38). The early schools were firmly set in the design profession tradition, while drawing on the growing sentiment for scientific applications in government and industry. Growth in the early decades was modest, by the end of the decade; however, design was no longer the sole orientation of planning schools, with new schools formed in social science settings. Even schools with purely design backgrounds began to admit students whose prior work had not been in a design setting (Stiftel, 2009:39). Rooted in the New Deal, the Chicago school of planning was set up in the late 1940's. It gave an enormous stimulus to planning education and research by formulating the 'generalist-with-a-specialism' model. In the wake of this came trail blazing publications in planning theory (Faludi, 2009:22). The Chicago school was a meeting ground of pioneers in the application of the social sciences as city and regional planners tried to broaden the foundations of their professional experience (Faludi, 2009:22).

As the design orientation of planning weakened, applied social science tools were adopted and planning schools were free to branch into wider ranges of policy concerns, building regional coverage and adding transportation, housing, social welfare, environmental resource issues and economic development. By the late 1970's, many planning schools covered much of the range of domestic policy matters affecting human settlements. At the same time, the breadth led inevitably to weakened focus, there were challenges that the

boundaries of planning had become too diffuse (Stiftel, 2009:39). Policy scientist Aaron Wildavsky famously asked 'if planning is everything, maybe it is nothing' (Wildavsky, 1973:127). The number of schools and number of students skyrocketed in the 1960's and 1970's, co-incident with the broadening scope, there was much debate about the changing nature of the profession on the one hand the lack of hard technical skills and design ability was challenged whilst others felt the skill changes followed the changing nature of the job from design consultant to staff policy analyst in government, 'generating information for decision makers' (Hemmens, 1988:87).

Concepts of planning widespread in the mid-twentieth century emphasized rationalist top-down models of planning embodied in concepts such as master, comprehensive and general planning. The rational model articulated by Meyerson and Banfield (1955) became the principal language of planning method. Data analysis was central, as were new tools of computer-based analysis. The social unrest of the 1960's subjected these modernist approaches to intense criticism. Radical planners such as Goodman (1971) saw the rational model as a tool used by the elites to disenfranchise poor, inner city residents. The legacy of this criticism and the planning profession's responses have been a series of models for greater involvement of community, residents and stakeholders in the planning process including advocacy planning, citizen participation, empowerment and civic engagement (Stiftel, 2009:40). This 'communicative turn' in planning research and practice remains a major force today, but at the same time there has been a resurgence of design in planning schools driven by the wide interest in new urbanism, urban design, 'walk-able' communities and in Europe the emphasis on spatial planning (Stiftel, 2009:39).

"As planners we are expected to (re)solve the problems of the future before they occur through the activity called planning…. Planning has been reduced to solving today's problems rather than creating a vision of the future. The problems of the world have become complex and imprecise while the methods, techniques and tools used by planners to forecast the future are predictive and deterministic but do not offer imaginative or creative solutions" (Meng, 2009:48). Planning education has also been significantly tied to the industrial, legal and cultural context of specific countries. When planning schools in the major industrial countries found they were enrolling students from developing countries in significant numbers, they initiated specialisations orientated toward practice in the developing country setting (Stiftel, 2009:45). This transition faced challenges of adequately

illustrating general principles in the context of widely divergent countries, as well as questions of the appropriateness of industrial-nation originated concepts to developing-country problem solving (Qadeer, 1988:64; Sanyal, 1989:139). Much planning scholarship assumes the context of democratic governance and market-based economics (Gunder and Fookes, 1997:54).

11.4.3 PLANNING THEORY AND METHODOLOGY

After the founding of the Planning Profession in the early 1900's, the emergence of planning approaches and theories can be formally analysed. Early Planning was guided more by methodologies rather than full blown theories. As early as Britain's Housing, Town Planning, etc. Act of 1909 methodologies emerged. The Act made provision for the preparation of town planning schemes but did not prescribe an approach (Muller, 1992). Patrick Geddes, through the Cities Committee of the Sociological Society offered the first recorded planning approach:

> "We welcomed and highly appreciated the Town Planning Act of 1909, and …. have addressed ourselves … to the nature and method of the City Survey which we are unanimously of opinion is necessary before the preparation of any Town Planning Scheme can be satisfactorily undertaken… Without this, municipalities and others interested are in danger of taking the very opposite course, that of planning before survey. Our suggestion towards guarding against this is hence of the most definite kind, *viz*: before proceeding to the preparation of a Town Planning Scheme, it is desirable to institute a Preliminary Local Survey…" (Geddes, 1949: 124-6)

Muller (1992) explains that the Geddesian 'survey-analysis-plan' was the planning method taught in all planning schools between 1920 and around1960. Geddes derived the system from his application of biological evolutionary principles to the growth of cities; from an acknowledgement of the organic interdependence of the component elements of an environment. His survey system was comprehensive and included geology, climatology through communications and manufacturing to population characteristics and urban conditions (Muller, 1992:126-7). The Geddes approach gave a 'scientific validation' to the work of planners. Breheny stated "(Geddes) certainly was in favour of an explicit planning process, and a scientifically based process, at that …" (Breheny, 1989 after Muller, 1992).

Geddes system began to fall out of favour as it "…led to a tendency towards collecting information for its own sake, unselective and uncritical wallowing in facts and figures… almost as if survey or information collecting was a kind of ritual behaviour" (McLoughlin, 1969:125). Perhaps one of Gedde's greatest lasting contributions was in the field of

Regional Planning. His emphasis on synopticism and the context within which planning was to be pursued led him to question the interpretation of town in relation to country. Geddes' thinking on civic and regional planning spread rapidly and inspired the Regional Planning Association of America, which was established in the early 1920's. Until Geddes applied his sociological insight and his biological knowledge to the region, regionalism was an archaic and backward looking movement. In promoting the ideal of decentralised urban settlement within a region Mumford advocated a four stage process, commencing with a thorough survey of the region's resources, followed by a 'revaluation' of conventional assumptions about the region on the basis of the latest information. The third stage involved the preparation of the plan, and the process ended with implementation including, where necessary, modifications to the plan (Mumford,1947). These planning ideas led to the planning of Radburn in the 1920's which carried through in the work of the Greenbelt towns of the Resettlement Administration formed under Roosevelt's New Deal Policy in the 1930's. These methodologies were essentially derived and developed from practice; from practical necessity of making decisions that were defensible and sensible in social, economic and environmental terms (Muller, 1992).

At around the same time as the New Deal Policy the National Resources Planning board was formed (It served from the depression of the 1930's until 1943) shortly before the demise of the NRPB it published a guide for community planning, under the title <u>Action for Cities</u>. The Guide introduced the notion of citizen participation in the determination of objectives (Muller,1992). Krueckeberg (1983) notes that the emphasis of the NRPB was not on physical design, but rather on a systematic and linked process of study, analysis and public participation in policy making. By the 1950's implementation was added to the process (1950 Schuster Report and Keeble's 1952 textbook), this represents a move beyond the analytical and synthetic plan-making exercise to operational programmes and physical development (Muller, 1992).

In the 1950's Meyerson and Banfield's work for the Chicargo Housing Authority led to the promulgation of a new approach to planning. In 1955 they published <u>Politics, Planning and the Public Interest</u> (Meyerson and Banfield, 1955). The authors unequivocally link 'good planning' with 'rational decision-making' and in so doing introduce the notion of rationality into the planning process. The model they introduce draws on the conception of the public interest as a basis for goal definition (ends) and decision making in planning. Meyerson

and Banfield describe their thinking in the following way: "Since planning is designing a course of action to achieve ends, 'efficient' planning is that which under given conditions leads to the maximization of the attainment of the relevant ends. We will assume that a planned course of action which is selected rationally is most likely to maximize the attainment of the relevant ends and that therefore 'rational' planning and 'efficient' planning are the same "(Meyerson and Banfield, 1955:11). Rationality was however, challenged by Parsons who explained that "…action is rational in so far as it pursues ends possible within the conditions of the situation and by means which, among those available to the actor, are intrinsically best adapted to the end for reasons understandable and verifiable by positive empirical science" (Muller, 1992:135). Marsh and Simon (1959, after Muller, 1992) note that pure rationalism is supplemented by the concept of satisficing which, in seeking a realistic/satisfactory decision rather than an unattainable optimal one, acknowledges the limits or bounds of rationality. So the notion of 'bounded rationality' entered planning theory.

Meyerson and Banfield's correlation of 'efficient' and 'rational' planning was carried forward by Davidoff and Reiner in their article <u>Choice Theory of Planning</u> (1962). They suggest that efficiency is measured in terms of the satisfaction of aggregated individual preferences, and describe rationality in two senses: increasing the reasonableness of decisions and involving full knowledge of the system in question. Their planning process commences with a 'value formulation' stage that addresses the interface between fact and value, and implicitly ascribes a rational base to values – which are statements of preferences, of criteria and, in particular, of ends and goals (Muller,1992).

In the decades that followed, increased attention was accorded to planning method. A broadening of the interpretation of rationalism was marked with a coupling with comprehensiveness, leading to Charles Lindblom's 'Rational Comprehensive' approach (Lindblom, 1973).

> "…much of the 1950's and 1960's, Western planning thought became almost conterminous with the Rational Comprehensive model…which attempted to apply logical positivism to society. It defined rationality exclusively in terms of positive knowledge and instrumental calculation. Such knowledge was claimed to be objective and universal" (Weaver, Jessop and Das, 1985:157-158).

Methodology in Planning thus developed as a mix in which the procedural requirements of scientific method, of empiricism, of logical positivism, stood alongside the reason-based precepts of philosophical rationalism.

After the second World War interest in, and development of, the fields of operations research, cybernetics and systems analysis took hold in the planning profession. Writers such as Mc Loughlin (1969), Chadwick (1971), Marshall and Masser (1981), Catanese and Steiss (1970) all include a form of systems analysis procedure, which is an extension of an applied scientific research process that in turn is a modification of the 'hypothesis-observation-test hypothesis-modify' cycle of scientific enquiry. The approach thus accords planning methodology the attributes of scientific method supported by a form of normative rationality theory. Chadwick suggests that what is needed "…is a theory of planning which recognises the limits on rationality, and gives rise to methods in which both intuition and rational techniques can play appropriate parts" (Chadwick, 1971:10). Thus, in a 15 year period following the introduction of rationality to planning thinking, the sphere of methodology moved away from the basic issues attaching to practical *modus operandi* and progressively into the domain of theory. The concern with practical planning procedure was supplanted by a preoccupation with procedural planning theory.

It is in some ways paradoxical that the theoretical refinement of the rational planning model that occurred in the 1960's was accompanied by the emergence of a practical concern with citizen involvement in planning processes. Demands for the democratization of planning following the abuses of urban renewal and disregard for constitutional civil rights which surfaced in the United States, coincided with the findings of the Planning Advisory Group on the need for community involvement in planning in the United Kingdom (Muller, 1992:143).

Planning theories today look at aspects of power and politics, Watson (2001), Foucault (1972), Faubion (1994), Forester (1989), Innes (1998), Hoch (2002), Flyvbjerg (1998), Allmendinger (2002) and community participation and empowerment, e.g. Healy (2003, 1997, 1993, 1997). "With the demise of rational scientific planning as the dominant form of planning theory, the space was opened up for the emergence of a range of new theoretical positions, concerned both to explain planning as a phenomenon and to provide ideas for how planning should be conducted, and to what ends. Some of these theorists, influenced

by a growing disillusion with modernist thinking and technocratic planning, were persuaded that social movements in liberal democracies, and the development of civil society more generally, held the key to social transformation. Their new interest in localized and empirical approaches centres on the empowerment of groups outside (and sometimes against) the state" (Watson,2002:29). Key among these new theories was communicative planning approaches such as Forester and Habermas. They saw: interaction (with stakeholders or interest groups), communicating ideas, forming arguments, debating differences in understandings, and finally reaching consensus on a course of action; replace detached, expert-driven plan-making as the primary activity of planners. These ideas are developed to their most sophisticated form by Patsy Healey, who also introduces 'institutionalism' as an explanatory theory of social dynamics to inform the normative position of communicative planning. "These ideas about state, citizenship and participation are … firmly rooted in current Western political and social theory, from which planning theory also takes its cue" (Watson,2003:397).

Communicative action theory has for some time been criticized on the grounds that it fails to recognize the operation of power (Flyvbjerg, 1998a; Huxley, 2000; Huxley & Yiftachel, 2000) within consensus seeking processes, and the issue of power remains problematic in multicultural positions as well. Other writers (e.g. Abram, 2000; Neuman, 2000) have pointed to the great difficulty or impossibility of achieving consensus around planning issues however carefully formulated the process: differences can be underestimated and planners can assume a shared rationality where it does not exist (Watson, 2003:403).

As with planning education and the planning profession; planning theory is in flux. The reformist roots of planning are undeniable and the evolutionary trend from physical design to social reform and citizen participation undeniable; so where does the Royal Engineers' approach fit within this evolution? Obviously the answer is at the beginning - firmly in the design tradition and unquestionably it was a very physical response to social and physical constraints.

11.5 CONCLUSIONS

The approach adopted by the Royal Engineers fits into the evolution of planning; it was a rational, design lead approach and very much in the vogue of the early planning approaches. In much the same way as early town planning solutions the Royal Engineers looked to the design and implementation of new development as the solution. What the evolution of Town Planning theory and education illustrates most clearly is not necessarily a change in approach as much as a change in the problem – today planning does not deal with the need to develop new undeveloped areas, town planning is a tool and approach for managing existing built up areas and multi-cultural societies. Planning has become far more democratic and sensitive to the needs of the population.

What the Royal Engineers approach illustrates best is an approach for the development of new areas on virgin territory. It is an approach which can be adapted to today's new developments and city expansion rather than the management of existing developed areas. What history illustrates most clearly is that the approach adopted depends very much on the problem at hand, if you are looking to new physical developments then the historic approach of the Royal Engineers as the implementation stage (that is provided the strategy resides within a far more democratic and participatory process) is as valid today as it was in the 1700 and 1800's; it is however, inappropriate to the management of existing urban areas, where modern approaches are far more relevant. The Royal Engineer's approach is also little suited to multi-cultural, dynamic societies – it is utilitarian top down planning, its merit lies in the limited field of implementation. The strong training and hard technical skills are vital to physical implementation and it is argued that these design skills should not be dropped from planning education, especially in developing areas where physical development and expansion are vital. Planning has however, come a long way from the top down approach of the past and thus the approach of the Royal Engineers must be understood as an implementation approach only. It is not a sensitive or consultative process. The value of their training and pragmatism today rests in the physical design and development stages of a far boarder and more consultative planning process.

Perhaps the greatest legacy of the Royal Engineers is that the training system which evolved was a precursor to the professions. This was the fore runner of professional education and training.

CHAPTER TWELVE
LESSONS FROM THE SOUTH AFRICAN CASE STUDY

12.1 INTRODUCTION

Reflecting on the basis of this study it is necessary to distil what the case studies and history of South Africa's colonial development can teach us about the British colonial approach, methodology and impact and to ask what lessons can be learnt for this.

12.2 THE BRITISH APPROACH TO COLONIAL DEVELOPMENT

The British colonial influence on South Africa has been immense and is an enduring feature of South Africa today. This study has highlighted that the British colonial development was very physical; the British built a vast network of infrastructure and urban centres and established the land registration system still in use today. The historic background and case studies have painted the picture of a state controlled and funded development-led approach to colonisation. The approach of the British in South Africa clearly follows the 'Grand Modell' as described in Home (1997:9). Home summarised the main components of the model as:

- 'A policy of deliberate urbanisation in preference to dispersed settlement': During the British colonial era many administrative centres were set up to better control the colony and public administration improved. The British colonial towns were dominated by the town hall and clock tower, the towns also became commercial centres with skilled craftsmen; they were not the sleepy ecclesiastical centres of the Dutch era.
- 'Land rights allocated in a combination of town, suburban and country lots': The British continued this trend in South Africa. The official correspondence in the case of Queenstown clearly demonstrates this.
- 'The town is planned and laid out in advance of settlement': again Queenstown clearly demonstrates that this was the case in the Eastern Cape as well.

- 'Wide streets laid out in geometric, usually grid-iron form': All of the case studies demonstrate geometric layouts, however, in the cases of Grahamstown and King William's Town the geometric layout applied to the urban plots not the military bases. The military bases had a layout and logic of their own, however, once *erven* were laid out for the construction of houses these were in a grid form. Queenstown is a fascinating radial concentric layout.

- 'Public squares': Grahamstown has a triangular 'square' at the top of the hill of the main street, King Williams' Town has a large parade ground in the centre and Queenstown is laid out around the strategic defensive space for a *laager* (a camp protected by a circle of wagons) in the centre.

- 'Standard size, rectangular plots, spacious in comparison with those in British towns of the time': There were no standard plot sizes in South Africa, however, all the plots were large by British standards and all were rectangular.

- 'Some plots reserved for public purposes': All three of the towns used as case studies have public buildings clearly demarcated on the plans.

- 'A physical distinction between town and country, usually by common land or an encircling green belt': The municipal boundary of King William's Town is clearly evident in Figure 92, the town lands are extensive. The official correspondence of Queenstown also speaks of town common lands. There are no references in the South African examples to greenbelts.

The South African British colonial era was the era in which the developmental infrastructure of the country was installed. It is true that the purpose for which it was developed – capital extraction – is abhorrent by today's standards. It must nevertheless be acknowledged that although it may have been done for the wrong reasons by today's standards it is still developmental – the process and the product are valid today. The 'why?' has changed dramatically over the years but the 'what?' and 'how?' of the developmental process are still appropriate. The British model was developmental since it created a market economy and through the vast infrastructural network it linked all British colonies into a global market. Obviously it was not democratic as no one ever asked the local population if they wanted a market economy. It was assumed that a market economy was technologically advanced and thus unquestionably good.

12.3 THE COLONIAL METHODOLOGY

The development of the Eastern Cape region of South Africa is a story about development of a region with, in the British view, no pre-colonial permanent settlement pattern. The British did not consider the scattered *Boer* huts or dispersed Xhosa *kraals* as an urban infrastructure.

The British set about building the infrastructure necessary to develop the colony. This was a state funded and controlled process. All land prior to delineation and sale was considered crown land. The colonial government set about delineating the land, servicing it and creating the 'civilising' influence of an urban network. The cost of this was covered by the sale of the land. It was achieved by deploying technical specialists – the surveyors and Royal Engineers.

The British over the centuries of colonial expansion had established both the policies and expertise necessary to execute colonial expansion. The military were used as both conquerors and developers. Specialised expertise had been created within the armed forces in order to facilitate this process. The evolution of the ordinance survey, land surveying and engineering led to the establishment of specialised training centres which were the pre-cursors to the development of the professions. These specialists began in the military; it was a state-run initiative.

Colonisation occurred in accordance with an evolving policy approach based on years of colonial expansion. It was a physical development approach as Edmund Spenser stated (after Home, 1997:9) "…nothing doth sooner cause civility in any country than many market towns, by reason that people repairing often thither for their needs will daily see and learn civil manners … Besides there is nothing doth more stay and strengthen the country than such corporate towns, as proof in many rebellions hath been proved".

In order to execute this form of colonial development the British developed the educational and training infrastructure necessary. The Royal Engineers were the professionals trained to carry out these strategies. Interestingly the British did not base this training on the contemporary apprentice approach to training but rather the training system turned to the

sciences. They developed a training system based on sound education, scientific principles and technical training. This was the pre-cursor to the development of the professional education and precedes the civil evolution of the professions.

The military did not focus only on defence and warfare – this was a strategic approach to conquering territory. The development of the physical and social infrastructure and urban network was as much a military strategy as a developmental one. 'Civilisation' was seen as urban and seen to be a stabilising force.

12.4 THE IMPACT OF BRITISH COLONIAL DEVELOPMENT IN THE CAPE COLONY

The impact of the British on South Africa can be clearly seen when analysing Annexure A during the 154 years of Dutch rule the Cape settlement and infrastructure was largely around Cape Town and within the coastal belt defined by the Cape Fold Mountains. Only centres such as Graaff-Reinet and Uitenhage lay beyond the mountains and both of these settlements were little more than a couple of mud huts.

During the period of this study 1806-1872, only sixty-six years, some forty-four towns were established, all of the main mountain passes built, and a couple of significant harbours created: Port Elizabeth, East London and Durban. Two major agricultural industries were also established; wool in the Eastern Cape and sugar cane in Natal. Port Elizabeth, East London and Durban have become three of the five major cities in South Africa. The other two being Cape Town which existed prior to British occupation and Johannesburg, which although being established after the time frame of this study and being in one of the *Boer* Republics had a very strong British influence.

The towns and rural economies established by the British have thus had a significant influence on South Africa's economy today.

The Royal Engineers had a very specific agenda to expand British colonial influence and they went ahead and built what ever was necessary to further that agenda. Development

was aimed at furthering colonial economic interests; however, often these interests coincided with modern developmental needs. The Royal Engineers developed the infrastructure that was of strategic importance to the development of the economy and thus although they did this for colonial reasons the infrastructure is still valid for development generally. The strategic nature of what was developed in the colonial era is the reason why it endures today.

Many of the original towns of the Eastern Cape established during the study period still exist today and in the case of Queenstown the basic economic base remains unaltered. In other areas such as Grahamstown the original military foundation no longer exists. Grahamstown has evolved into an academic centre with a major university and has become a cultural centre with an arts festival. The university and arts festival could have developed in a variety of locations; however, towns tend to gain a momentum and life of their own. Although the original function of Grahamstown no longer exists; the developed centre and population, the infrastructural links and the existing cultural services allowed the centre to evolve and attract new functions. The town layout has adapted to a new economic base and a new function. Over time the port cities have become far more important to the region, although the network of smaller inland towns still exist the two major ports East London and Port Elizabeth have developed into major commercial centres.

The key lessons which can be learnt from the Royal Engineers and their impact on South Africa are:
- Strategic infrastructure development is key to sustainable economic growth.
- Logical, strategic and technically competent development endures and remains useful and relevant.
- Established centres gain a life and momentum of their own. Once a centre has been developed and the infrastructure provided it will attract population and economic development. Port Elizabeth and East London are good examples the established harbour and strategic infrastructure together with the wool industry in the hinterland has led to the growth of two major commercial centres.
- Infrastructure which is provided for a very specific and limited function will become redundant. The forts, military posts and signals of the eastern frontier are all

redundant and today are little more than places of historic interest as their original function is no longer necessary. The military bases at Grahamstown and King William's Town have however, evolved into major settlements as the infrastructure was more general.

- A well-trained scientific professional can have a remarkable impact on the development of an area and its economy. There were never many Royal Engineers in South Africa yet their impact in the legacy of the infrastructure which they started has been immense. The ports, roads, mountain passes, railways, towns and communications systems all still exist and have been augmented and adapted to modern requirements.

The Royal Engineers' training at Chatham, is a very early example of professional training; it was comprehensive, high quality and practical. Those who emerged from this training carried out vast public works around the British Empire; they produced very few theories of development but they did challenge ideas. The *avant-garde* designs of some colonial towns such as Queenstown, Khartoum, Adelaide and Savannah show a desire to improve on settlement forms and to provide design solutions to urban problems. The evolution of defensive structures in the Eastern Cape clearly shows the development of the defensive sciences and a considered approach and strategy.

The study has made the case that one of the main developmental arms of the British Empire were the Royal Engineers. They were schooled in the sciences and trained to be experts in almost all things; they were the master craftsmen and skilled problem solvers of the era.

It has been shown that they adopted a pragmatic approach to development, they initially received a very good scientific academic training, they then learnt by example whilst serving under engineer commanders. As a unit they learnt by observation, experimentation and example. What is striking in their approach is that they saw a problem and simply went about solving it and their solutions were inevitably physical structures and infrastructure, often they reported these solutions after the fact. This is in striking contrast with today's approach to planning. Planning today is about problem identification, community input and policy formulation; this precedes physical planning and implementation, which is why it is important to acknowledge that the Royal Engineers

approach had major limitations and should be seen as an implementation stage rather than a full blown planning approach if applied today.

12.5 THE LEGACY OF COLONISATION

Colonisation of South Africa has left a considerable legacy. Much of Africa's failure to thrive has in recent years been blamed on colonisation and its legacy. Many colonial attitudes and policies are blatantly abhorrent by today' standards and practices, policies such as slavery, racist polices and large-scale 'land grabs'. Today the terms 'Imperialism' and 'Colonialism' are seen in pejorative terms. It is however, important to remember that this was not always the case and the 'civilising' influence of Britain was seen at the time in laudatory terms.   For better or for worse (and in many cases both better and worse simultaneously) colonisation was a reality for South Africa and colonial development, attitudes and polices have had, and continue to have, a significant influence on the country and its development.

Despite the indisputable negative consequences of colonial development it is important to acknowledge that there have been some positive impacts. The global economy we speak of today is unquestionably the natural extension of the world trade routes and infrastructure established by the Colonial powers. Although television, mass media, the internet and the fact that air flights are not only the preserve of the wealthy makes the global economy a visible reality of these times, it was established over a hundred years ago by sail ships, buccaneers and adventurers.

South Africa is part of the global economy with established infrastructure, trade routes, commercial agriculture, mining and many primary industries. The challenge is to develop the secondary and tertiary sectors as these were deliberately developed in Britain not the colonies. It is also important to integrate the African population into the property and company ownership structures as the colonial system although establishing a capitalist system sought equally to maintain a labour pool and often this was along racial lines.

The positive aspects of Colonial development however, can be listed as:
- Well developed ports and harbour infrastructure linked into world trade routes.

- An established and functional rail network.

- A commercial farming sector which produces a surplus for export.

- Mountain passes and a road network.

- An urban infrastructure and established market and administration network of cities, towns and villages.

- Administrative Infrastructure such as water works, sewerage, health care, administration, schools, post and telecommunications.

But perhaps the greatest lesson from colonial development which this study uncovered was that this was achieved largely by a pragmatic approach to development. Much of the development of the Eastern Cape was planned and executed by a highly skilled, academically trained engineering unit which, although being part of the military and having their roots in fortifications and military engineering, spent most of their time on civil development and peacetime duties. In short the state controlled and deployed a highly skilled and pragmatic unit of the Royal Engineers to build the infrastructure and development of 'civilisation' around the world. The Royal Engineers were never the only officials involved, yet the case studies of the Eastern Cape show a remarkable number of designs and plans signed by them, which illustrates that they were a significant force in the development process. British colonial development was largely a team effort, of which the Royal Engineers played a part. The British had centuries of experience in establishing colonies and so all officials from the governors, to military commanders and civilian officials, followed a broadly agreed strategy of an urban and infrastructural development led approach. Over time the British developed the skills necessary to do this.

The state implemented a capital works programme of staggering breadth and scale around the British Empire through the use of both the military and other colonial officials. Because the Cape Colony was developed by the military and administration, British Imperial planning in South Africa was based primarily on militaristic and administrative control criteria. This influenced the selection of sites as well as the physical layout of colonial towns (Queenstown being the best example).

When it comes to planning it is interesting to note that under the British colonial model public opinion was very important and had a huge impact; yet it was confined to the

political level. Issues such as the anti-slavery movement had far reaching results yet it was London public opinion which largely impacted on the colonies. London public opinion was equally skewed as only landed gentry were allowed the vote. It was a very elitist system for upper class, wealthy, educated men. Indeed it is argued that had the modern public participation process been applied in the colonial era; the outcome would have been essentially the same as women, labour or the Xhosa would not have been consulted. The debate would have been with the educated and empowered of the day. It is also interesting to observe that London politicians, journalist and clergy had a significant impact on the debates about the colonies, even though very few of them ever left England – first hand experience was obviously unimportant. Issues of town design and layout were not issues of public debate – the need for a town arose, the town was functionally laid out based on a pre-conceived notion of what towns were, the plan was approved in London and then a few settlers moved in. This was not however, a static rigid process. Those who laid out towns learnt from good examples, refined principles and improved on problems.

Well trained professionals providing strategic infrastructure are key to the development of new territory. In an era when new territory is scarce planning has adapted to become a largely management profession aimed at guiding and refining existing urban areas. What the past can teach us is that in the developing world bold, strategic investment can dramatically impact on economic development. In order to effect this development technically trained, highly skilled people are vital developmental tools within a broader more democratic planning process.

It is necessary to now return to the original questions which informed this study:

12.5.1 WHY DID THE SPATIAL PATTERN DEVELOP?

The spatial pattern which evolved in the Eastern Cape shows a strong correlation with the 'Grand Modell'. Urban settlements were seen as a way of pacifying and civilising new territory. The British in South Africa implemented much the same policy that had evolved over centuries of colonisation. The fact that South Africa was developed for largely strategic reasons did not prevent the British from implementing a known policy to pacify and control a colony.

12.5.2 WHO PLANNED THESE AREAS AND THE INFRASTRUCTURE?

The study has made the case that the planning and implementation of the towns and key infrastructure was handled by colonial officials (that is state implemented) and that the staff utilised were the military. Within the military those with the technical expertise were the Royal Engineers and surveyors. These were military men with rigorous scientific training deployed around the British Empire to carry out the capital works projects deemed necessary to control and develop Britain's colonies.

12.5.3 WHAT WAS PROVIDED BY THE STATE AND WHY?

In the early phases of British Colonial development that state delineated land and sold land parcels (both urban and rural), provided and urban network of towns in order to control the colony and to establish markets, provided strategic infrastructure such as ports, railways, roads, mountain passes and water schemes and provided social infrastructure such as halls, libraries, schools, museums and public administration. the British never sought to provide social assistance in the modern sense of benefits, housing or health care. the provisions made were clearly based on the attitude that is you create a viable economy and stable government people can take care of themselves.

The state infrastructure and towns were provided to establish and economy in the colonies, for better control of the population and (often-mentioned in the historic texts) towns were seen as a civilising influence as those visiting the towns mingled with others and were exposed to more urbane behaviour.

12.5.4 HOW DID THEY GO ABOUT THE DEVELOPMENT?

The short answer is in a very pragmatic way. The state defined the need for a town or infrastructure and assigned trained professionals (mostly from the military) to supply it. the British had evolved a training system and engineering unit within the military over years of colonial development and they deployed these trained professional around the empire. Much of the development provided was funded via the sale of colonial land, thus the pegging and demarcation of land was vital. The infrastructure provided was of a strategic nature aimed at establishing viable economic development, colonial control and linking the colony with Britain via functional harbours.

Morris (1968: 325) expresses it best:

'It was a paradox of Empire that the British, the most pragmatic of peoples, should have best expressed themselves architecturally in planned townscapes – in groups rather than individual buildings, skylines rather than facades. This was partly because soldiers so often laid out settlements, and partly because in their overseas possessions the British allowed themselves to be more formal and methodical than they often were at home. There were no sentimental yearnings for the crooked way, the rolling way. Right angles were 'de rigueur' in the Imperial towns, streets were often numerically named: many cities, like Adelaide, were built to a grid. Streets were often immensely wide, to allow ox-trains to turn in them, and the setting of spire against dome, tree against clock tower, was often arranged with methodical finesse. Foreigners were frequently struck by what seemed to them to be an uncharacteristic logic of design: van Hubner, surveying the straight broad streets of Australia, concluded that the young Englishmen of the Colonies 'lean to the American'. Certainly the cities which the British had summoned into existence across the world were notable for a spaciousness, an airiness, that suggested boundless promise – as though the colonial planners foresaw from the very start their couple of shacks and a lean-to shop transformed into a metropolis.' Morris (1968: 325)

REFERENCE LIST

PRIMARY REFERENCES

SOUTH AFRICA

National Archives Cape Town

1/AY, 8/1 (1820) **Circular of deputy colonial secretary (Henry Ellis) to heads of parties, 1 May 1820, enclosed in Ellis to Captain H. Somerset, 1 May 1820**; National Archives, Cape Town

KAB Map M1/2834 (1877) **Plan of Port Natal sowing harbour works recommended in Sir John Coode's report to the Crown Agents for the Colonies. Sheet 1;** Dated 31/03/1885 Sir John Coode. Photocopy from Public Records Office UK; Cape Town Archives Repository

(CA) CO357 (1828) **Captain Armstrong to Somerset 14 May 1828**

(CA) CO357 (1828) **Letters: Somerset to Colonial Secretary, May 1828**

(CA)CO122 (1820) **Letter Rogers to Willshire, 3 July 1820** ;Cape Archives

(CL) MS9037 (1827) **Minutes of the Presbytery of Kaffrana, Vol I, Report of Thompson, 8 August 1827** Cape Archives

1/AY 8/1 (1822) **Correspondence: Donkin to Bathurst, 29 September 1822,** National Archives Cape Town

Brownlee, John (1828) **Bufflo River**; The Colonist: 12 August 1828

CA(CO333) (1827) **Letter: Somerset to Colonial Secretary, January 1827**; Cape Archives

CAD Library J968.7 BOY (1834) **William B Boyce: Notes of South African Affairs from 1834 to 1838**; Jeffreys Book Collection. Grahamstown Aldum and Harvey 1838; Cape Archives

KAB 968.7054 SMI (1985) **Neville Mapham: Sir Harry Smith's Manuscripts**; Neville Mapham, 1985; Cape Archives

KAB Accession A147 (1863) **Col WA Gordon**; Donor: Col. WA Gordon, 1937; 0,09m; 2 vols; George Hamilton Gordon, Captain in the Royal Engineers; National Archives of South Africa, National Registers of Manuscripts and Photographs

KAB Accession A1619 (1820) **Map of the district of Albany, formerly the Zuurveld being the Eastern Frontier of the Cape Colony;** Map shows the locations of settlers from England and the situation of the town of Bathurst established by Suir Rufane Donkin, Acting Governor of the Cape colony. Includes Algoa Bay, Port Elizabeth, Uitenhage and missionary settlements.; Cape Archives

KAB Accession A457 (1685-1893) **Documents of the Cloete family**; Cape Archives

KAB Accession A519 (1823 - 1854) **Sir B D'Urban Collection Collection of Papers**; Cape Archives

KAB Accession A611 (1834-1899) **R Southey Collection; ;** Corresponence from R Southey to falimly and friends. Re the Sixth Frontier War; Cape Town Archives

KAB Bound Map CO186 (1823) **Plan of officer's quarters in Scott's Barracks being erected in Grahamstown by Mr Retief**; Drawing enclosure to letter No 28 dated 17/02/1823; Cape Archives

KAB Bound Map PWD2/74 (1874) **Printed Map of South Africa;** Map indicates various regions for the conservation of forests and vegetation, regarding estimates of expenditure of the financial year 1882-1883; Drawn by Henry Hall RE; Cape Archives

KAB Copy VC553 (1836) **Letter of P Retief;** Letter from Field-Cornet P Retief to the Civil Commissioner of Grahmastown, 11 April 1836, on behalf of the inhabitants of the Winberg. Retief describes the losses and compensation after the last forntier war mentioning farms, cattle, horses, militia, black tribes, etc.; Cape Archives

KAB File 1/2/1 (1800 - 1825) **Cape Town Gazette**; Quoted Articles from 2 January 1819 and 15 May 1819; Cape Archives

KAB GH 1/255 (1856) **Royal Engineer Papers;** Papers received from the Secretary of State, London to Colonel Bolton Commanding Royal Engineer at the Cape; dealing with buildings for the German military settlers; National Archives South Africa, Cape Town Repository

KAB GH 1/291 (1862) **Royal Engineer Papers;** Papers received from the Secretary of State, London re: Meteorological observations taken at the stations of the Royal Engineers between 1853 and 1859 presented to the observatory of the Cape of Good Hope; National Archives of South Africa, Cape Town Repository

KAB GH 1/310 (1865) **Royal Engineer Papers;** papers received from the Secretary of State, London expressing need for the trigonometrical survey be resumed and entrusted to the charge of a detachment of Royal Engineers at the expense of the Colonial Government; National Archives of South Africa, Cape Town Repository

KAB GH 1/33 (1820-1830) **Papers Received from the Sectretary of State, London** ; Cape Archives

KAB GH 1/434 (1885) **Royal Engineer Papers;** papers received from the Secretary of State, London General dispatches re the employment of Royal Engineers by the Cape government; National Archives of South Africa, Cape Town Repository

KAB GH 1/435 (1885) **Royal Engineer Papers;** papers received from the Secretary of State, London: Royal Engineer Commissions would be offered to a limited number of members from colonial universities; National Archives of South Africa, Cape Town Repository

KAB GH 23/27 (1857) **Royal Engineer Papers;** papers despatched to the Secretary of State, London: Request that Royal Engineers be sent from England to Natal; National Archives of South Africa, Cape Town Repository

KAB GH 23/39 (1886) **Royal Engineer Papers;** general despatches regarding direct commissions in the Royal Engineers; National Archives of South Africa, Cape Town Repository

KAB GH File 1/15 (1815) **Papers received from the Secretary of State, London to Col. Graham**; Cape Archives

KAB GH File 1/42 -46 (1825) **Papers received from the Secretary of State, London to Lord Charles Somerset**; Cape Archives

KAB GH File 23/1- 7 (1814 - 1821) **Papers despatched to the Secretary of State, London**; General despatches from Lord Charles somerset reporting his arrival at the Cape and remarks on the state of the Colony; Cape Archives

KAB GH File 23/4- 5 (1811-1815) **Papers Despatched to the Secretary of State, London from Colonel Graham**; Cape Archives

KAB GH23/ 7 (1820-1830) **Papers despatched to Secretary of State London**; Cape Archives

KAB Map M1/110 (1851) **Plan of part of British Kaffraria in connection with Capt. Jervois' Survey**; Drawn and signed by Henry Hall; Cape Archives

KAB Map M1/1219 (1859) **Map of South Africa showing churches, military posts, mission stations, etc**; Drawn by Henry Hall; Cape Archives

KAB Map M1/1390 (1822-1867) **Hydrographical map of the coastline from Hollams Island to Cape Correntes**; Inserts Spencer Bay, Hottentot Bay, Elizabeth Bay, Port Nolloth, Roodewall Bay and Mc Dougal. Cartographer: WFW Owen Photocopy from Leupe Collection; Cape Town Archives Repository

KAB Map M1/2004 **Plan of Fort Frederick with the enclosed Blockhouse**; Photocopy of original housed at Public Records Office, Kew; Cape Archives

KAB Map M1/2047-2054 (1849) **Map of South Africa (8 Sheets)**; Cape Archives

KAB Map M1/2158-2161 **Map of South Africa dedicated to Sir G Grey (4 sheets);** ; Drawn by Henry Hall RE;Cape Archives

KAB Map M1/2162-2165 **Ethnological map of South Africa dedicated to Sir G Grey (4 sheets)**; Drawn by Henry Hall RE (Photocopy of original at Public Records Office, Kew); Cape Archives

KAB Map M1/2180-2185 (1856) **Map of the Cape Province and the Eastern Frontier (6 sheets)**; Drawn by Henry Hall RE; Cape Archives

KAB Map M1/2180-2185 (1856) **Map of the Cape Province and Eastern Cape Frontier (6 Sheets)**; Drawn by Henry Hall RE (photocopy of original at the Public Records Office Kew); Cape Archives

KAB Map M1/2249 (1799) **Plan of Sections of the redoubt and blockhouse at Fort Frederick**; Signed by N Elphinstone of the Royal Engineers; Cape Archives

KAB Map M1/2393 (1800) **Military Sketch of Fort Frederick, landing place and adjacent country, district of Albany**; Signed by N Elphinstone of the Royal Engineers; Cape Archives

KAB Map M1/2621-2624 (1850) **Ethnological map of South Africa (4 sheets)**; Drawn by Henry Hall RE (Photocopy of original at Public Records Office, Kew); Cape Archives

KAB Map M1/2671 (1837) **Map of the Eastern Districts, Grahmastown and Bathurst showing military posts and forts occupied in February 1837**; Cape Archives

KAB Map M1/2787 (1864) **Plan of part of Port Elizabeth showing War Department property and ground granted to the Harbour Board;** Royal Engineers Drawing; Cape Town Archives Repository

KAB Map M1/2835 (1877) **Plan of Port Natal showing harbour works recommended in Sir John coode's report to the Crown Agents for the colonies. Sheet 2;** Dated 31/03/1885. Sir John Coode. Photocopy from the Public Records Office UK; Cape Town Archives Repository

KAB Map M1/2867 **Plan of Durban Harbour showing proposed scheme for future development of the port, with additions and alterations suggested by His Ex the Governor;** Natal harbour Department, photocopy from Public Records Office UK; Cape Town Archives Repository

KAB Map M1/59 (1862) **Royal Engineers;** Plan showing the newly constructed embrazures, Amsterdam Battery, Cape Town. 1862 G Simmons. Royal Engineers. Drawing.; National Archives of South Africa, National Registers of Manuscripts and Photographs

KAB Map M1/75 (1858) **Royal Engineers;** Map of the Eastern Frontier of the Cape Colony and of British Kaffraria showing military posts and camps, the sites of German villages, etc. 1858 P Smith. Royal Engineers. Drawing.; National Archives of South Africa, National Registers of Manuscripts and Photographs

KAB Map M1/76 (1853) **Royal Engineers;** Map of proposed extension of the Gaika boundary. 1853 E Belfield. W McLintock. Surveyed by Major Tylden. Royal Engineers. Drawing; National Archives of South Africa, National Registers of Manuscripts and Photographs

KAB Map M1/79 (1888) **Royal Engineers;** Map of the piece of ground purchased by the Cape Government from Nquiliso showing land grants, with names of owners, along the banks of the St. John's River and a list of township land grants allowed. 1888 FS Watermeyer. EJ Whindus. Royal Engineers. Drawing.; National Archives of South Africa, National Registers of Manuscripts and Photographs

KAB Map M2/425 (1820) **General Plan of the country between Grahmstown and the mouth of the Great Fish River;** showing the different situations fit for settlements and habitations, Drawn by J Knobel; Cape Archives

KAB Map M2/460 (1827) **Map of the public roads from Uitenhge to Fort Beaufort via Grahamstown, Somerset and Graaff-Reinet**; Cape Archives

KAB Map M2/476 (1867) **Plan showing lots of land leased by the War Department and occupied by the Point Junction of the Umgeni Railway for supplying stone for the harbour;** works at Port Natal. Royal Engineers Drawing; Cape Town Archives Repository

KAB Map M2/924 (1866) **Plan Showing Fort Frederick and Surrounding Area**; Drawing by N Thomas; Cape Archives

KAB Map M3/361 (1856) **Map of the Eastern Frontier of the Cape Colony from military and other surveys** dedicated by permission of Sir IF Burgoyne, showing the districts of Albany, Fort Beaufort, Somerset,

Cradock, Colesberg, Graaff-Reinet, Uitenhage, Albert, Victoria, British Kaffraria Sovereignty and Kaffirland (sic); Drawn by Henry Hall RE - Print;Cape Archives

KAB Map M3/400 (1848) **Plan of King William's Town laid out by command of Sir Harry Smith showing lots with owner's names**;Cape Archives

KAB Map M3/49 (1838) **Plan of survey of roads from Grahmstown to Fort Brown, Koonap Drift, Double Drift, Committee's Drift, Trompetter's Drift, Frazer's Camp & Fort Peddie**; Cape Archives

KAB Map M4/771 (1824) **Street Plan of Grahmstown showing boundaries of original grants**; Cape Archives

KAB Photo J1670 (1894) **Lighthouse and memorial pyramid to the wife of Sir Rufane Donkin, Port Elizabeth** Cape Archives

KAB VC246 (1812-1835) **Drosty Grahamstown**; Report of Captain CJ Selwyn on the occupation of Drosty House at Garhamstown by military and burgher forces;Cape Archives

KAB VC813-817 (1862-1899) **Letter Books of the Chief Engineer, Public works Department;** Copy of original. Letters despatched by Chief Engineer, PWD, on Port Alfred (Kowie) and East London harbour works, Orange River bridges, Rawson Bridge, Cook Huis Bridge, Fish River Bridge, Albany General Hospital, appointments, contracts, quarrying by unemployed, etc.; ;Cape Town Archives Repository

KAB ZD/P4 (1819-1826) **Pringle Papers**; Papers dealing with the 1820 settlers, Albany disctrict; Cape Archives

M1/1484 (KAB) (1870) **Map of the city of Grahamstown;** showing names of streets, important buildings, public grounds, Kowie River, etc; National Archives of South Africa; South Africa

M1/1693 (1829) **Plan of the proposed alterations to the Grahamstown Drosty**; National Archives of South Africa; South Africa

M1/2671 (KAB) (1837) **Map of the Eastern Districts, Grahamstown and Bathurst, showing military posts and forts occupied in February**; National Archives of South Africa; South Africa

M1/2727 (KAB) (1836) **Map of part of the Eastern Province showing roads and proposed roads;** connecting the following places: Grahamstown, Fort Brown, Fort Beauforst, Fort Willshire, Fort William, Fort Peddie, Trupeters Drift, Committee Drift. Drawing John Smith; National Archives of South Africa; South Africa

Moore Smith, G.C. (editor) (1901) **The Autobiography of Lieutenant-General Sire Harry Smith;** Copy found at Cape Archives KAB 920SMI; John Moore, 1901; London

MS6515 (1815-1848) **George Barker Collection**; George Barker (1789-1861) of the London Missionary Society, re missions at Bethelsdorp, Theopolis and Paarl; SA Library, Cape Town

MSB211 (1838) **John Graham Collection**; ;South African Library, Cape Town

PP C538 (1836) **Report from the Select Committee on Aborigines (British Settlements) p 589**

PP, C252 (1835) **Correspondence Bourke to Goderick, 15 October 1827;** pp 21-23; National Archives Cape Town

PP, C538 (1836) **Evidence of J Read Snr, 5 August 1836 page 603 and 143-145 Evidence of Captain Richard Blackeman**; Cape Archives

ZP1/1/1-1/1/423 (1807-1910) **Colonial Office: CO48 series**; Microfilm of originals held by the Public Records Office, Kew. Correspondence, reports, proclaimations, diverse miscellaneous and other papers regarding the Cape Colony - covering amoungst others the 1820 settlers and Lord Chales Sommerset.; Cape Archives

(1882) **Henry Hall**; Cape Quarterly Review, July 1882, pp 714-716

(1893-1900) **Dictionary of National Biography;** Lewis, Memoir on Military Locations for Defense of the Eastern Frontier of the Cape of Good Hope, v33 p.184; Smith, Elder; London

National Archives Free State Repository

VAB 968.7 THE (1825) **Records of the cape colony. From November - December 1825;** Official letters, reports, memorials, notes, claims for cattle lost, list of all appointments made by Lord Charles Somerset, Revenue and expenditure, Imports, exports, minutes of meetings of council, ordinances, poclaimations, advertisements; George Mc Call Theal (ed) Vol IX 1903

VAB 967.9THE (1809-1825) **Records of Southern Africa;** Official letters, reports, memorials, notes, claims for cattle lost, list of all appointments made by Lord Charles Somerset, Revenue and expenditure, Imports, exports, minutes of meetings of council, ordinances, poclaimations, advertisements.; George Mc Call Theal (ed) Vol IX 1903

VAB Map 1/269 **Map of South Africa compiled from all the available oficial authorities in the Surveyor General and Royal Engineer Offices (4 sheets)**; Dedicated to Sir G Grey by Henry Hall RE; Free State Archives Repository

National English Literary Museum (NELM) Grahamstown

1073/1-162 (1924-1925) **Sir James Percy FitzPatrick;** Letters, telegrams and postcards from Sir Percy Fitzpatrick; NELM Grahamstown

National Archives Pietermaritzburg

NAB Map M1/19 **Natal Harbour Department: General Plan showing proposed relief for future development of the port;** Cartographer: Charles J Crofts; 35.5 cm x 34 cm; scale 1 inch: 1 200 feet. Photocopy; Pietermaritzburg Archives Repository

NAB Map M1/51 (1896) **Plan of the entrance of Port Shepstone Harbour;** Showing the effect of the Westerly sea. Sand-spit, existing and proposed groynes, bores, water marks, beacons, line of spit. Cartographer: N Barnes Kinsey; 44.8 cm x 25 cm: scale 1 inch: 120 feet; hand drawn; Pietermaritzburg Archives Repository

NAB Map M1/93/1-4 **Ethonological Map of South Africa showing settlements of various groups and topography;** ; Drawn by Henry Hall RE; Pietermaritzburg Archives Repository

NAB Map M2/125 **Natal and Kaffraria. From Keiskamma River to Delegoa Bay, rivers, towns, topography;** 38.5 cm x 30.5 cm; scale 1 inch: 40 miles; lithograph; insets of durban and entrance to Port Natal Harbour; Pietermaritzburg Archives Repository

NAB Map M2/158/1-4 **Map of South Africa showing tribal districts, mission stations, military posts and settlements;** ; Drawn by Henry Hall RE; Pietermaritzburg Archives Repository

NAB Map M2/374 (1887) **Plan of habrour of Port Natal;** Plan shows various propsed and partially carried out plans for increasing the depth of the water over the bar. Soundings and various proposals. Cartographer: Peter Paterson; 72 cm x 78.5 cm; hand-drawn to accompany report dated 17 July 1887; Pietermaritzburg Archives Repository

NAB Map M2/90 (1889) **Harbour works at Port Natal;** The point, Prince, Scott, Shepstone, Bell Streets and Erskine Terrace. Cartographer: Cathcart W Methuen; 32.5 cm x 68 cm; scale 1inch to 500 feet; lithograph; Pietermaritzburg Archives Repository

NAB Map M3/261 (1854) **Africa, South East Coast, Port Natal;** Cartographer: Dayman; 76 cm x 97.5 cm; scale 1,5 cm: 1 nautical mile; Pietermaritzburg Archives Repository

NAB Map M3/319 (1875) **Improvement proposals outer harbour Port Natal;** Sketch showing various propsals for the improvement of the outer Harbour at Port Natal. Bluff, Point, Annabella Rocks, Paterson's Modification of Vetch's scheme, wreck. Cartographer: AH Hime; 68cm x 61cm; hand drawn; GHR 3114/1875; old number B155; Pietermaritzburg Archives Repository

NAB Map M4/74 (1862) **Map of the colony of Natal, South Africa, from the most recent surveys.;** Farms with numbers and owner's names, settlements, rivers, roads, towns, villages, boundaries, Durban Harbour, missions, inset of Port Natal. Cartographers: J Masser, J Cullingworth; 98 cm x 75.5 cm; scale 1 inch: 6 miles. Photocopy; Pietermaritzburg Archives Repository

NAB Map M5/54 (1871) **Natal Harbour works;** plan showing line of new wharves proposed by Mr Coode. Also modifications of same as suggested. Customs house, port offices, railway station, existing and proposed wharves. 47cm x 162 cm; scale 1 inch to 50 feet; hand drawn; old number D6; Pietermaritzburg Archives Repository

National Archives Western Cape

NRA 28119 (c1840) **Lt- General Sir Benjamin D'Urban: corresp and papers**; Western Cape Provincial Archives; South Africa

NRA 28120 (c1840) **Sir Richard Southey, colonial administrator: corresp and papers**; Western Cape Provincial Archives; South Africa

Albany Museum Grahamstown

SM 43 (1835) **Graham's Town Volunteers**; Manuscript; Albany Museum

SM370 (1820) **Town Regulations Grahamstown;** Regulations cover nuisances, outspanning in the street, cattle or cow stalls, riding violently, loose cattle damages, straw huts and brick kilns; Signed by John Knight, Field-Cornet.; Albany Museum

SM5272 (1846-1847) **Graham's Town Mounted Burgher Force**; Albany Museum

Stretch, C.L. (1876) **Makana and the attack on Grahamstown**; Cape Monthly Magazine Vol 12 1876 pp 297-303

University of the Witwatersrand – Cullen Library

A1350f Manuscript Wits University Library (1803-1851) **C Andrews Manuscript**; Photocopies of originals held at Government Archives Cape Town. Captain Caesar Andrews (1809 - 1879), Private Secretary to Sir Harry Smith. Reminiscences of the Kaffir Wars, 1834 - 1835 and sketch map; Universtiy of the Witwatersrand

A1859 Manuscript Wits University Library (1847 -1857) **Sir EA Holdich Diaries**; Originals in the Regimental Museum Staffordshire. Diaries kepth by Lt (Later Lt Col.) Holdich of the 80th Regiment of Foot (now the Staffordshire Regiment), describing the life of a military man on the Cape Eastern Frontier; University of the Witwatersrand

A655f Wits University Library (1850) **R Godlonton Collection**; Journal (original at Parliament Cape Town) of Robert Godlonton (1794 - 1884), 1820 settler, editor of the Grahamstown Journal and one of the original representatives in the Cape Parliament of 1854; University of the Witwatersrand

A738 (1799-1802) **Sir R Curtis;** 73pp; microfiche negative of Hg vol; MIC (incorrectly numbered 91p). Original is in the possession of Mr. H Oppenheimer. No. 6675. SUMMARY: Sir Roger Curtis (1747-1816), British admiral, Commander in Chief at the Cape of Good Hope 1799-1802). A book containing views of headlands, coasts, etc., descriptions of harbours and roadsteds, and miscellaneous Sir Roger Curtis (1747-1816), British admiral, Commander in Chief at the Cape of Good Hope 1799-1802); Wits University Library

Bousfield, H.B. (1886) **Six Years in the Transvaal: notes of the founding of the church there**; Society for promoting Christian knowledge; London

Brown, William, Harvey (1899) **On the South African Frontier: the adventures and observations of an American in Mashonaland and Matabeleland**; Sampson Low, Marston and Co; London

Map 1 (1822) **District of Graaff-Reinet;** Sketch map of ground lying between the northern boundary of the Cape colony in 1822, and Kuruman/ Signed by Lt Bonamy - Scale ca 4 inches = 50 British Miles. Ink drawing linen-backed 86 x 33 cm. Royal Engineers' Stamp 1861.; Royal Engineers;William Cullen Library, Universtiy of Witwatersrand

Map 10 (1840?) **Port Frances;** Township of Port Frances / Signed by I.Hopkins Col. Serjt R.S.M - scale of 100 yards to an inch. Ink Drawing on fine woven paper 53 x 39 cm. Orientation True North - Royal Engineers' stamp 1860; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 11 (1844-1845?) **Bearings and Dostances Between Military Posts, Eastern Frontier;** Sketch showing the relative bearings and distances per waggon route between the different military posts on the Eastern Frontier Cape of Good Hope / Unsigned scale 8 miles to an inch, ink drawings on fine woven paper 40x 46cm Orientatiuon Magnetic and True North. Not Stampped with Royal Engineers' stamp; Royal Engineers; William Cullen Library, Uiversity of the Witwatersrand

Map 12 (1843-46?) **Signal Towers, Eastern Frontier;** Bearings of principal military posts and remarkable peaks visible from poposed sites of signal towers at hills of Piet Apples Location, Great Fish River, and hill over Fraser's Camp / Unsigned scale 1 inch equals 44 furlongs, ink drawing on finely woven paper. Orientation magnetic north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 13 (1844) **Vicinity of Fort Beaufort;** Plan of the old and new line of the road between Fort Beaufort and flat-roof house / unsigned. Scale 1000 yards = 1 inch, ink drawing on finely woven paper 45 x 28 cm. Royal Engineers stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 14 (1846) **Eastern Frontier;** Plan of the Eastern Frontier Cape of Good Hope and the adjacent country of the Kaffir (sic) tribes / signed by J.Reid Dec 1846 Scale 8 miles to an inch. Ink drawing on linen-backed paper 46 x 86cm Orientation magnetic and true north. Royal Engineers stamp 1861.; Royal Engineers;William Cullen Library, University of the Witwatersrand

Map 15 (1846) **Vicinity of Fort Hare;** Plan of the ground in the neighbourhood of block Drift, near to the Chumie River in British Kaffirland (sic), showing the position whereon the Commander in Chief has directed a temporary post to be erected. / Signed by J.Stokes Lieut. R.E. 18th Dec 1846 - scale 3 inches to the mile, ink drawing on woven paper 32 x51cm Orientation True North. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 16 (1847) **Port Natal to Colesberg;** Sketch showing the route travelled between the Natal and Cape Colonies by the Commanding Royal Engineer on a tour of inspection from sketches made by Lieut Jervois Royal Engineers / Signed J.Ried 25th March 1847. Scale 2.5 inches = 30 miles, ink drawing on woven paper 48 x 89cm. Captions in English and Dutch. Orientation true north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 17 (1848) **Buffalo River Mouth;** Sketch of the mouth of the Buffalo River previous to the 1 Feb 48 / Signed by J.Walpole Capt R.E.E.F. 12 Feb '48. Scale 8 inches to the mile, ink drawing on woven paper 41 x 26 cm. Orientation magnetic and True north. Lacks RE's stamp; Royal Engineers; William Cullen Library, Universtity of the Witwatersrand

Map 18 (1849) **Mess Establishment, King William's Town;** Plan elevations and sections of front of buildings of mess establishment as compliled at King William's Town co, Middlesex British Kaffraria (sic) as completed / not signed copied by W.McLintock 2nd Corpl R.S&M 1849.; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 19 (1850) **Fort Murray;** Sketch showing the site of the new military post at Fort Murray County Lincoln British Kaffraria (sic) / Signed by Edw. Stanton Lieut R. Engineers 20th September 1850. Roayl Engineers Stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 2 (1822) **District of Uitenhage;** Military survey of part of the district of Uitenhage / Signed by T.C.White - scale 2 miles to 1.09 inches. Ink drawing linen backed, 60x99cm. Captions mainly in English; some

Dutch, orientation true and magnetic north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 20 (1851) **Fort Pato;** Sketch of the ground on the right bank of the Buffalo River, British Kaffraria (sic) showing site selected for an intrenched camp to be named Fort Pato. Vide Genr, Order No 97 unsigned - scale one inch to the mile, ink drawing on woven paper 22 x 28cm. Orientation magnetic and true north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 21 (1852 ?) **Fort Fordyce;** Sketch of ground about Forts Fordyce district of Beaufort Cape of Good Hope / unsigned. Scale 200ft = 1 inch, ink drawing on woven paper. 56 x 75cm - orientation magnetic north. Royal Engineers' stamp 1860; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 22 (1852) **Whittlesea to Burgersdorp;** Sketch showing route from Whittlesea to Bughersdorp called for by Qr Mr Genl's letter 21st October 1852 / not signed. Copied by Corp. McLintock R.S&M 3rd July 1853 - scale 4 miles to 1 inch, ink drawing woven paper. 75 x 48cm. Lacks Royal Engineers' stamp; Royal Engineers;William Cullen Library, University of the Witwatersrand

Map 23 (1853) **Bailie's Grave, Area of Keiskamma Hoek;** Sketch showing the amended route of the road from Baily's (sic) grave to Keiskamma Hoek / Signed H.Siborne, lt R.E. 10 June 1853. scale 3 inches to 1 mile, ink drawing on woven paper 28 x 22cm, orientation magnetic north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 24 (1853) **Keiskamma Hoek to Fort Hare;** Sketch of ground between the Keiskamma Hoek and Fort Hare showing proposed line of waggon road / Signed Srd R.Tylden Roayl Engineers British Kaffraria (sic) 28 July 1853 scale 2 miles to 1 inch, ink drawing on woven paper 26 x 41 cm Orientation magnetic north. Royal Enginners' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 25 (1853) **King William's Town;** Plan showing the position of all the government buildings at King William's Town county of Middlesex British Kaffraria (sisc) / Signed Rd Tylden Capt C.R1 Engineers British Kaffraria (sic) 24th September 1853 - scale 1 inch to 100 yards, ink drawing on woven paper 45 x 57 cm, orientation true and magnetic north. Lacks Royal Engineers' stamp; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 26 (1857) **German Villages;** Sketch showing position of military posts and German villages on the line of the road between East London and Dohne Post British Kaffraria (sic) / Signed R.W.Duff Lieut R.E. ink drawing on woven paper 77x 55 cm. Orientation true north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 27 (1857) **King William's Town;** King william's Town - British Kaffraria (sic) - Rough block plan to show the site of the military stores, proposed to be erected, coloured yellow / Not signed - copied by M.C.Molesworth Lieut Royal Engineers 26th Nov 1857 ink drawing on woven paper 35 x 52 cm. Lacks Royal Engineers' stamp. Approved by Sd J.Jackson Lt General Headquarters Graham's Town 12th Dec 1857, to accompany special estimate dated Dec 1857; Royal Engineers; Willaim Cullen Library, University of the Witwatersrand

Map 28 (1859) **Port Elizabeth;** Cape of Good Hope Command, Eastern Province Division Port Elizabeth / Not signed, copied by R.B.Tatham Pte CM.Riflemen. Ink on woven paper 45 x 56cm Orientation true and magnetic north, Lacks Royal Engineers stamp but signed by Percy Smith Lieut Royal Engineers 8 Dec 1859 and Sd D Bolton Major General Commanding Royal Engineer 8th Dec 1859.; Royal Engineers;William Cullen Library, University of the Witwatersrand

Map 29 (1859) **Posts and Signal Towers, Eastern Frontier;** Cape of Good Hope Command, Eastern Province Division. General Plan of position of posts and signal towers / not signed copied by R.B.Tatham Pte C M Riflemen. Scale 8 miles to an inch, ink drawing on woven paper 45 x 57 cm - orientation true and magnetic north. Lacks Royal Engineers' stamp. Signed by Percy Smith Lieut Royal Engineers 8 Dec 1859 and Sd D Bolton Major General Commanding Royal Engineer 8th Dec 1859 S.Fanshawe Col CRE 27 Feb 1869.; Royal Engineers;William Cullen Library, University of the Witwatersrand

Map 3 (1823) **District of Somerset;** Sketch for a plan of the north-eastern frontier of the Cape of Good Hope / Signed by J.Bonamy Scale 1" = 18 furlongs, ink drwaring linen-backed, 41x28cm Captions in English and dutch - Orientation true and magnetic north - Royal Engineers' stamp 1861.; Royal Engineers;William Cullen Library, University of the Witatersrand

Map 30 (1859) **King William's Town;** King William's Town British Kaffraria (sic)/ not signed by compiler. Copy drawn by Francis R Gubbins Lieut 2nd Queen's Royal Regt. Assistant Engineer. Ink drawing on woven paper 43 x 81 cm. Orientation true and magnetic north. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 31 (1860) **King William's Town;** Site Plan showing in yellow the position of several items proposed to be extended during the year 1860-1861. Scale 100 yards to one inch, ink drawing on woven paper 45 x 56 cm - orientation true and magnetic north. Note on back: "Site Plan to accompany Barrack Annual Estimate for 1860-1861. Propsed items in yellow, postponed items in blue. Francis R Gubbins Lieut"; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 32 (1861) **King William's Town;** Sketch showing approximately the boundaries of the Borough of King William's Town / not signed by compiler. Scale 3 inches to 3 miles. Ink drawing on woven paper 24 x 32 cm - Orientation true north.; Royal Engineers;William Cullen Library, University of the Witwatersrand

Map 33 (1862) **Port Elizabeth;** Port Elizabeth Algoa Bay / not signed by compiler; traced by George Simmons Lieut RE March 19th 1862 scale in cables and sea miles, ink drawing on woven paper 45 x 56 cm, orientation true north. Note: "To accompany my report to Lt General Wynyard CB dated 29/3/62 W.T.Renwick Colonel CRE Grahamstown.; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 34 (1862) **King William's Town;** Sketch showing, in yellow, the approved site of wattle and daub huts. Aslo the approved site for officers quarters 1. Infantry 2. Cape Mounted Rifles / Signed Curtis Johnson Clerk of Works 19/7/62 - scale 200 feet to an inch ink drawing on woven paper 32 x 45 cm; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 35 (1863) **King William's Town;** Plan showing military reserve (bounded by red) and proposed extension (in yellow) / Signed Henry Crozier Lieut RE 23/11/63 - scale 1 inch to 200 feet, ink drawing on linen paper 94 x 83 cm. Orientation true and magnetic north. Notes: "Called for by War Office memo 4th September 1863. Natal 8/110.2. To accompany my report to the Commanding Royal Engineer Cape and Natal of this date: H.A.White Lt Colonel Royal Engineers 23rd November 1863".; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 36 (1866) **King William's Town;** Design for a detached skittle-alley for the RE Barracks King William's Town / Designed and drawn by RG Thorold Cap. CRE.B.K. Scale 6 feet to 1 inch, ink drawing on fine linen 29 x 48 cm.; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 37 (1870) **King william's Town;** Site Plan. Traced by I.Graham Sergt RE 28/09/70. ink drawing on woven linen 46 x 58 cm. Orientation true and magnetic north. Note "to accompany B.A.E 1871-2".; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 4 (1823) **District of Graaff-Reinet;** Sketch for a plan of the north-eastern frontier of the Cape of Good Hope / Signed by J.Bonamy: Capt.h.p. 6th Regt - Scale 1" = 18 furlongs. Ink drawing, linen-backed. 70x87cm - Captions in English and Dutch. Orientation magentic North. Royal Engineers' stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 5 (1824) **District of Albany;** Junction of the Little with the Great Fish River right bank as far as Kooste's Drift in front of Grahamstown / Signed by C.L.Stretch H.P. 38th Regt Ast Engineer - Scale 2 miles to 1 inch ink drawing linen-backed paper 49x76 cm - captions in English and Dutch - oreintation magnetic north. Royal Engineers' Stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 6 (1835?) **Amatola Mountains, Vicinity of Fort Cox;** Copy of a sketch of the country in the vicinity of the Amatola Mountains. From an actual survey by C.L.Stretch Capt. P.C.Infantry / Signed H.W.Piers. Scale

2 miles to two inches. Ink Drawing, linen-backed paper 21x 25 cm Orientation magnetic north. Roayl Engineers' Stamp 1861; Royal Engineers; William Cullen Library, Universtiy of the Witwatersrand

Map 7 (1844) **Eastern Frontier;** Map of the Eastern Frontier of the Cape of Good Hope and of the bordering country of the Kafir (sic) tribes to explain Lt Colonel Lewis's report dated 18th March / Copied by John Reid Private R.S & Miners 28th October 1844 - scale 69.1 English miles = 1 degree; 15 Dutch miles = 1 Degree, ink drawing, fine woven paper. 38 x48 cm Orientation true and Magentic north. Royal Engineers' Stamp 1861; Royal Engineers; William Cullen Library, University of the Witwatersrand

Map 8 (1837) **Port Elizabeth;** Plan of Port Elizabeth, Cape of good Hope shewing the relative situation of the exisiting and proposed military buildings to accompany an estimate and report from Lt Col Lewis Comg. R1 Engr to the Inspector General of Fortifications. Dated 18th March 1837 / Signed by H.W.Piers Oct 1837 - scale 8 inches to 1 mile. Woven paper. 39 x 47 cm - oreintation magnetic north. Royal Engineers' stamp 1861. All military buildings are coloured red, proposed buildings yellow and private property in Indian Ink.; Roayl Engineers; William Cullen Library, University of the Witwatersrand

Map 9 (1837) **District of Albany;** Sketch of the District of Albany Cape of Good Hope / Unsigned scale 4 miles = 1 inch. Ink drawing on linen-backed paper. No RE Stamp. Note on map - "to explain the boundary on the Eastern Frontier as defined by the Treaty with Amakosa Kafirs (sic), dated 5th December 1836 and the Treaty with the Fingoes, dated 10th December 1836".; Royal Engineers;William Cullen Library, University of the Witwatersrand

Methley, James. E. (1850) **The New Colony of Port Natal: with information for emigrants**; Houlston and Stoneman; London

Ward, Harriet (1851) **The Cape and the Kaffirs: A diary of Five Years residence in Kaffirland**; H.G.Bohn; London

Cory Library for Historical Research- Rhodes University

Bowler, Thomas. William (1869) **The Kafir Wars and the British Settlers in South Africa: a series of picturesque views from original sketches**; Day and Son (Source Cory Library for Historical Research-Rhodes University 968(75) BOW; 11212270; London

Jervois, Lieut-Col RE (1853) **Testimonial Letter to be Governor and Commander of South Australia**; The Cory Library for Historical Research- Rhodes University CO PR 2169CSL Manuscript 090; Rhodes University

MS 16929 (1874-1942) **Grahamstown Chamber of Commerce;** Papers: of the Chamber (formerly the Grahamstown and Port Alfred Chamber of Commerce) - (1) minute books, 1876 - 1942; (2) letterbooks, 1874 - 1934; (3) Kowie Harbour Works Committee, 1900; (4) press cuttings, 1925 - 1931, (5) rules & bye-laws, 1885; (6) postage register 1918 - 1924; Cory Library for Historical Research

MS.053 (1799-1802) **Roger Curtis Journal;** Roger Curtis, 1780 - c.1803. Elder son of Admiral Sir Roger Curtis and his wife, Sarah (nee Brady). Along with his younger brother, Lucius, Roger followed in his father's footsteps and joined the navy. In 1799 Vice Admiral Curtis was appointed Commander-in-Chief at the Cape of Good Hope and both his sons were on board the ships bound for the Cape. Roger served on HMS Rattlesnake, as captain for a period, and in his journal includes accounts of Madeira, Saldanha Bay, Mauritius, Reunion, Rodrigues Island, Nosy Borah (off Madagascar), Algoa Bay and St. Helena. He returned to England in 1802 on board the Helena; includes 3 wash drawings showing the profile of St. Helena; Brenthurst Library, Johannesburg

MS2107-MS2120 (1812-1838) **Grahamstown buildings**; Manuscript, copies of documents in the Cape Archives relating to early civil and military buildings in and around Grahamstown; Cory Library for Historical Research

MS5702-MS5781 (1846-1872) **Manuscript: Henry Hall**; Papers, diary and letters to family; Cory Library for Historical Research

MS6661 (1830) **Lord Charles Sommerset**; Transcription of notes of the margin in a copy of Cowper Rose's Four Years in Southern Africa by Somerset; Cory Library for Historical Research

William, Ainslie (1899) **Sixty-six years' residence in South Africa: an autobiographical sketch**; Fort Beaufort Printing and Publishing Company. (source Cory Library for Historical Research - Rhodes University CO968(75) CSL 11212281 CSL R 090; Fort Beaufort

University of Cape Town

BC534 (1826-1849) **Bergh Papers**; UCT Libraries Manuscript, Cape Town

Bailey, William (Capt. RE) (1865) **The Chief Results of the Trigonometric Survey between Cape L'Agulhas and the Kei River**; Government Publication Solomon; Cape Town

BC887 (1747-1834) **Land Transfer Documents, 18th and 19th century**; UCT Libraries Manuscripts; Cape Town

BCZA94 (1823-1828) **Somerset Papers**; UCT Libraries Manuscript; Cape Town

Johannesburg Public Library

JPL Strange Collection (1871-1915) **JPL Strange Collection: Port Alfred Harbour Master**; Johannesburg Public Library

MSA649 (1850) **Kaffir Wars**; Manuscript; JP Strange Collection, Johannesburg Public Library

Cape Town Public Library

TAB Microfilm M2951 (1839) **Grahamstown Journal**; Public Library Cape Town

Tuttle, Charles.R. (1877) **An Illustrated History of the Dominion**; D.Downie and Co and Tuttle and Downie Publishers; Montreal and Boston

UNITED KINGDOM

Her Majesty's Stationery Office

Cape of Good Hope (Colony) Parliament (1848) **Correspondence with the Governor of the Cape of Good Hope Relative to the State of the Kafir Tribes**; William Clowes for Her Majesty's Stationery Office, London

National Archives Kew

ADM 123/56 (1898-1903) **Correspondence etc. relating to the dockyard extension at Simonstown**; Records of Rear-Admiral A.Moore;National Archives, Kew

Chase, John Centlivres (1843) **The Cape of Good Hope and the Eastern Province of Algoa Bay**; Pelham, Richardson; London

CIHM/ICMH 21179 (1824) **Report of the committee of the Society for the Relief of the Distresses Settlers at the Cape of Good Hope**; with letters and other documents, illustrative of their present condition; Society for the relief of Distressed Settlers at the Cape of Good Hope Charities, Printed for T and G Underwood 1824, London British Library; South Africa

CO 537/193 (1878) **Defence of Simonstown, Cape (243)**; Colonial Office; National Archives, Kew

CUST. Sir Reginald John (1865) **Laws and Statutes IV Collections and Abridgements on Particular Subjects. West Indies. A trestise on the West Indian Incumbered Estates Act 17 and 18;** British Public Library 6605.aa.32; William Amer; London

Earnshaw, William. (1818) **A Digest of the Laws (from 12 Charles II to 58 George III inclusive) relating to Shipping, Navigation, Commerce, and Revenue in the British Colonies;** British Public Library 504.d.5; London 1818; London

East India Company (1819) **By-Laws, Constitutions, Orders and Rules for the governement of the Corporation of the United Company of Merchants of England, trading to East Indies;** British Public Library 8022.a.15; London 1819; London

East India Company (1817) **By-Laws, Constitutions, Orders and Rules for the governement of the Corporation of the United Company of Merchants of England, trading to East Indies;** British Public Library 8244.aa.9; London 1817; London

Maclear, Sir T. (1866) **Verification and Extension of La Caille's Arc of Meridian at the Cape of Good Hope**, Lords Commissioners of the Admiralty, London

MFQ 1/519/17 (1838) **Section of the roof of the Royal Engineer and Commissariat Store;** Cape Colony: Simon's Town (Simonstown), (now in Western Cape province, South Africa). Reference table to dimensions. Scale: 1 inch to 4 feet. Drawn by H W Piers, [Barrack Master], June 1838. Originally accompanying a letter dated 15 June 1838; National Archives, Kew

MPG 106 Singed:M R Robinson Assistant Surveyor Gen (1853) **Queenstown: Plan of Proposed Village;** 1 item extracted from CO 48/339. Cape Colony: Queenstown. Plan of proposed village, showing roads, the Kommane River, plots for sale or grant, Crown and 'Hottentot' reserves. Reference table. Scale: 1 inch to about 190 feet. Compass indicator. Signed by M R Robinson, Assistant Surveyor General, August 1853; Public Records Office, Kew (File from Colonial Office); London

MPG 1078 (1875) **Kimberley;** (originally enclosure number 5 in despatch number 64 of 5 August 1875) extracted from CO 48/475 (folio 508). 'Kimberley. Plan of township and mines': map showing Kimberley (in Cape Colony, now in South Africa) and Old De Beer's mines, with named streets, market square, buildings. Scale: 1 inch to 200 feet; Colonial Office; Public Records Office, Kew

MPH 1/524 (1812) **Copy of Military Sketch of the Eastern Frontier of the Cape of Good Hope.;** Drawn by Lieut. Colonel T.Arbuthnot, Deputy Quarter Master General, signed Henry Smart Captain CRE and T Anzerond Draftsman; Public Records Office; London

MPH 1/693 (c1858) **Map by Henry Hall R.E.D;** 'South Africa, Compiled from all the available official authorities in the Surv r Gen l & Royal Engineer Offices Cape of Good Hope... by Henry Hall R.E.D.'. Map of the continent of Africa as far north as 16°S. Reference table. Scale not stated: latitudes and longitudes shown; calculated as 1 inch to about 50 miles. The title includes a list of authorities consulted (the area north of 20°S is 'from Dr. Livingston'). The assistance of the Colonial Secretary, R W Rawson, in giving Hall access to official documents, is acknowledged. Dedicated to Sir George Grey, KCB. Engraved and printed by J A Crew, 8 Shortmarket Street, Cape Town. The words 'No 2 Ethnological' have been added in MS above the title: coloured MS additions show distribution of European and African races; areas using the Kaffir language and its dialects; colonial boundaries and dates of extensions. MS reference tables to additions. Endorsed: Rec d March 1858; National Archives Kew; London

MPH 1/694 (1806) **Four Sheet Drawings of batteries at Simonstown, Cape of Good Hope.;** (1) Sections through the North Battery. Scale: 1 inch to 6 feet. (2) Plan of the North Battery. Scale: 1 inch to 12 feet. (3) Sections through the South Battery. Scale: 1 inch to 6 feet. (4) Plan of the South Battery. Scale: 1 inch to 12 feet. Intended for Lt General Morse, Inspector General of Fortifications. Each sheet is signed by J Carmichael-Smyth, Capt CRE., 1 September 1806. Dimensions of sheets: (1) 34.5 cm x 51.5 cm; (2) 42 cm x 51.5 cm; (3) 40.5 cm x 65 cm; (4) 55 cm x 48.5 cm; National Archives, Kew

MPH 1/862/27-28 (1848) **Fort Cox (two sheets);** Two sheets of drawings of Fort Cox, British Kaffraria (now in Eastern Cape Province, South Africa). (27) 'Plan of a Barrack to be Constructed near Fort Cox in the Amatola Mountains in British Kaffraria ...agreeably to the Orders of... Sir Harry Smith ...'. With sections. Reference table to intended accommodation. Scale: plan 1 inch to 20 feet; sections 1 inch to 8 feet. (28) 'Plan shewing the Position of the proposed new buildings at Fort Cox'. Scale: 1 inch to 20 feet. Reference table to buildings. Compass indicator. Both sheets signed by Henry Hall, Clerk of Works, January 1848; by J Walpole, Capt RE; and by W Faris, Maj RE, 9 March 1848. Dimensions of sheets: (27) 40 cm x 51 cm; (28) 32 cm x 41 cm; National Archives, Kew; London

MPH 1/862/29 (1848) **British Kaffraria - Map;** British Kaffraria (now in Eastern Cape Province, South Africa). 'Plan of Fort Waterloo. To be constructed on the Gonoobie River in British Kaffraria, agreeably to the orders of Sir Harry Smith. With sections. Notes on construction and building materials. Scale: 1 inch to 20 feet. Signed by Henry Hall, Clerk of Works, 31 January 1848; by J Walpole, Capt RE; and by W Faris, Maj RE, 9 March 1848; National Archives, Kew; London

MPH 1/862/30 (1848) **Map East London;** British Kaffraria: East London (now in Eastern Cape Province, South Africa).'Fort Glamorgan. To be constructed near London in British Kaffraria': plan and sections. Notes on construction and building materials. Scale: plan 1 inch to 20 feet; sections 1 inch to 8 feet. Signed by Henry Hall, Clerk of Works, 18 January 1848; by J Walpole, Capt RE; and by W Faris, Maj RE, 9 March 1848; National Archives, Kew; London

MPH 1/874/1 (1846) **Map Fort Beaufort;** Cape Colony: Fort Beaufort (now in Eastern Cape province, South Africa). 'Sketch shewing position of abattis round Main Barracks & Stores': plan. Scale: 1 inch to about 46 yards. (Signed) Henry Hall, Clerk of Works, 12 April 1846, and Richard Howarth, Capt RE. Originally drawn to accompany special estimate of 12 April 1846. Copied by J W Newton, Royal Sappers and Miners, 1846; National Archives, Kew; London

MPH 692 (1857) **Map of South Africa showing British Colonies, Boer Republics, etc.;** By Henry Hall RED engraved and printed by J.A.Crew Cape Town. (Table showing relative distances from Cape Town of towns and villages); Public Records Office; London

MPH 859 (11) (1838) **Plan of Grahmstown;** Cape Colony: Grahamstown (now in Eastern Cape Province, South Africa). 'Plan of Grahams Town': shows Scott's Barracks, other military buildings, private buildings in the area; waterways, roads. Scale: 1 inch to 220 yards. Reference table. Compass indicator. Drawn by H W Piers, October 1838, to accompany duplicate of a letter dated 17 September 1838 from the Respective Officers at the Cape of Good Hope to R Byham, Secretary to the Board of Ordnance, the original having failed to reach London; Public Records Office, Kew; London

MPH1/692 (1857) **Map by Henery Hall R.E.D;** 'South Africa, Compiled from all the available official authorities in the Surv r Gen l & Royal Engineer Offices Cape of Good Hope... by Henry Hall R.E.D.'. Map of the continent of Africa as far north as 16°S. Reference table. Scale not stated: latitudes and longitudes shown; calculated as 1 inch to about 50 miles. The title includes a list of authorities consulted (the area north of 20°S is 'from Dr. Livingston'). The assistance of the Colonial Secretary, R W Rawson, in giving Hall access to official documents, is acknowledged. Dedicated to Sir George Grey, KCB. Engraved and printed by J A Crew, 8 Shortmarket Street, Cape Town. Endorsed: 'Rec d March 1858'. (2) Table of distances and bearings between principal towns in Cape Colony, British Kaffraria, the Sovereignty [Orange Free State], Natal and the Transvaal Republic; lists principal towns with dates of foundation. Compiled by Henry Hall, October 1857. Printed by Saul Solomon & Co, Steam Printing Office, Cape Town; National Archives, Kew; London

MPHH 1/533 (1891-1894) **Cape Colony: Simonstown (now in Cape Province, Republic of South Africa).;** South Africa - Simonstown Record Plan of WD (War Department) Property at Lower North and Upper North Batteries. Reference table to enclosures. Scale 1 inch to 208.3 feet. Compass indicator. Drawn by Company Sergant Major C H Smith, Royal Engineers. Signed by Walsh, DS (Captain William J Walsh

Surveyor 2nd class) South Africa, 4 July 1891; and Colonel G Philips, Commanding Royal Engineer, South Africa, 6 July 1891. Later MS additions show area reserved for a position-finding station; initialled CEI, 21 February 1894; War Office; National Archives, Kew

MPI 1/324/18 (1788) **Plan of Simmon's Bay (now Simonstown, western Cape Province, South Africa) showing the town, HMS Vestal at anchor, rocks and soundings.;** Scale 2 inches to 1 mile. Compass indicator. Drawn by Charles White; National Archives, Kew

MR 1/1284 (1809) **Military Survey of the Country between Paarl and the Drosty of Tulbagh Cape Province 1809;** Surveyed by Lieut. Payne and Lieut. C. Dixon RE copy by Herny Smart Captain CRE Beautiful hand drawn relief map showing individual farms and owners - all boer names. Plots, roads, rivers, buildings, farm yards and orchards, etc.; Public Records Office; London

MR 1/1297/2 (1803) **Plan of Sections of the South Battery and Magazine and their position with the Block House;** Cape of Good Hope: Simon's Town. Scale 1 inch to about 28 feet (1:336)(one section); 1 inch to 15 feet (1:180) (remainder). Signed Major Kersteman; National archives, Kew

MR 1/144 (8) (1849) **Map: South of the Orange and Vaal;** i.e Cape Province, Orange Free State, Natal, Basutoland, with geological section; Public Records Office (Maps & Plans, Africa); London

MR 1277 (1854) **Map of the Districts about the Great Kei River and its tributaries including the country from the Keiskamma, South Africa;** Signed P.Cole, Lieut. Col CRE 15th March 1854; Public Records Office; London

MR 1283 (1856) **Map of the Eastern Frontier of Cape Colony;** Compiled by Henry Hall, (Draftsman to the RE Cape Town) from Military and other surveys 1856 1 inch = 8 miles; Public Records Office; London

MR 144 (1849) **South Africa south of the Orange and Natal i.e. Cape Province, Organge Free State, Natal, Basutholand, with Goelogical section;** Engraver Henry Hall. Clk Wks 1inch= 12 miles; Public Records Office; London

Parker, Furnivall and Parker (1853) **Regulations for Encampments**; Quarter Master General's Office, Horse Guards; Military Library Whitehall, London

RE's (1908) **Encampments Made Easy: Inaccordance with combined training and manual of military enginnering, together with details of pitching and striking tents**; and marquees; Aldershot, Wellington Works

Royal Engineer Institute (1887) **Professional papers of the Corps of Royal Engineers**; Royal Enginner Institute occasional papers Vol 1-30 and index 1837-1892; Oxford University

Royal Engineers (1899) **Report of Committee on Duties and Training of royal Engineer Field Units**; The War Office; London

T 1/3513 (1790-1840) **Long Papers: Treasury Board Papers and In-Letters T 1/3513;** Long Papers, bundle 92: Cape of Good Hope: Customs reforms in establishment; complaints and charges, 1835, against Abraham Levien, Collector, and Port Captain at Simonstown; claims by Levien for retired allowance; National Archives, Kew

WO 334/93 (1889-1890) **Annual Sick Returns and Reports, Army Medical Services**; South Africa, Cape Town, Entonjanini, Eshoive, Pietermaritzburg, Simonstown, Wynberg, St Helena; National Archives, Kew

WO 44/4 No 11 (1838) **Map Grahamstown;** Cape Colony: Grahamstown (now in Eastern Cape Province, South Africa). 'Plan of Grahams Town': shows Scott's Barracks, other military buildings, private buildings in the area; waterways, roads. Scale: 1 inch to 220 yards. Reference table. Compass indicator. Drawn by H W Piers, October 1838, to accompany duplicate of a letter dated 17 September 1838 from the Respective Officers at the Cape of Good Hope to R Byham, Secretary to the Board of Ordnance, the original having failed to reach London; War Office; Public Records Office Kew

WO 78/2719 (1802) **Cape Town: Durban: Simonstown;** Covering dates 11 April 1899 to 23 July 1802; Prev Ref WO:297; National Archives, Kew

WO 78/2719/1 (1899-1802) **Fort Knokke. New Market Street AOD enclosure and stores**; National Archives, Kew

WO 78/4081 (1899) **Simonstown Lower North Battery site plan of proposed 6 Pounder QF Guns;** Scale 30' to 1"; National Archives, Kew

WO 78/4564 (1880) **Simonstown plan of the residence of False Bay**; Former Ref WO:B.33; National Archives, Kew

Cumbria Record Office, Carlisle Headquarters

D LONS/L13/1/91 (1814) **Lord Lowther's Manuscripts - Earls of Lonsdale**; Manuscript Report on the 'Importance of the Cape of good Hope to the Government's world wide interests' and urging a preference for establishing a naval base at Saldahna Bay instead of at Simonstown. Not dated circa 1815, Watermark 1814; Cumbria Record Office, Carlisle Headquarters – copy obtained by post

Patents Office; London

Day. C.A. (1895) **Complete handbook on British Colonial and foreign patents, trade marks and designs;** ; Patents Office; London

Royal Engineer's Library, Chatham

(1813-1894) **Royal Engineers Corps Orders 1813-1894;** 16 Vols. (355.133); Original Manuscripts, Royal Engineers Library; Chatham

Royal Engineers Unit War Diaries; Boer War (16 boxes); Original Manuscripts - Royal Engineers Library; Chatham

(1757 - present day) **Roll of officers in the Corps of the Royal Engineers;** originally copied from manuscript notes of the late Captain T.W.J Connolly RE and subsequently maintained by the Corps Librarian, 1757 - present day, 1 vol; Manuscript, Royal Engineers Library; Chatham

(1899-1902) **List of soldiers graves in South Africa;** 1899 -1902 (92/650); Original Manuscript, Royal Engineers Library; 1899-1902

Barlow, P. (1817) **Essay on the Strength and Stress of Timber**; Royal Engineers Library; Chatham

Buchanan-Dunlop, H.D Lieutenant-Colonel RE (1892) **Records of the Royal Military Academy 1741-1892**; Royal Engineers; Chatam

Collinson (1865) **Notes on Military Buildings**; Royal Engineers; Chatham

Collinson, T.B. RE (1865) **Architectual Course - Part III Division I Notes on Military Buildings**; Royal Engineers; Chatham

Connolly, Captain (1855) **Connolly Papers: Captain Connolly's original Manuscripts - biographical notes on Royal Engineer Officers;** 8 Vols - Strongroom.; Original Manuscripts, Royal Engineers Library; Chatham

Gregory, O.G. (1806) **A Treatise on Mathermatics**; Royal Engineers Library; Chatham

Hassard, F.C. Major, RE (1858) **Field Instruction at the Royal Engineer Establishmen**; Royal Engineers; Chatham

Head, Rt Hon Sir Francis (1869) **The Royal Engineer**; John Murray; London

Hutton, C. (1709) **A Course of Mathermatics for the use of Cadets in the Royal Military Academy**; Royal Engineers; Chatham

Jacob, C.W. General (1922) **Pioneer Pocket Book - India;** ; Royal Engineers; Chatham

James, H. (1855) **Paper;** Abstracts from the meteorological observations taken at the stations of the Royal Engineers in the year 1853-4. with a brief discussion of some of the results and notes on meteorological subjects; Royal Engineers; Chatham

James, H. (1862) **Paper;** Abstracts from the meteorological observations taken in the years 1860-61, at the Royal Engineer Office, New Westminster, British Columbia.; Royal Engineers; Chatham

Moore, A.T. (1912) **Notes for officers proceeding to India;** ; Royal Engineers; Chatham

Mutlan, W.F. (1902-c1930) **Memiors of life in the Royal Engineers;** (92(Mutlan)); Transcript Journal, Royal Engineers Library; Chatham

Pasley, C.W. Capt. RE and Breuet Lieut-Colonel (1814) **Course of Instruction: Practical Geometry and Principles of Plan Drawing Vol 1**; Royal Engineers; London

Pasley, General Sir William (1822-1866) **Records of various operations executed at the RE Establishment and elsewhere 1822- 1866, 10 vols.;** Vols 1- 5 written by General Sir William Pasley): 623 "1823/66" (vols I-V); 623 "1842/45" (vol VI); 623 "1845/49 (vol VII); 623 "1822/66" (vol VIII); 623 "1856/62 (vol IX); 623 "1864/1865" (vol X).; Originals - Royal Engineers Library, Official Manuscripts; Chatham

Royal Engineers (1936) **The Royal Engineers Pocket Book**; Royal Engineers; Chatham

Royal Engineers (1837-1876) **Folio - Papers on subjects connected with the duties of the Corps of Royal Engineers**; Royal Engineers Library; Chatham

Royal Engineers (1948) **Royal Engineers Supplementary Pocket-Book**; Departments of State and Official Bodies. Army. Royal Engineers; London

Royal Engineers **Records of the Royal Militray Academy**; Various Training manuals all at Library of the Royal Engineers, Chatham

Royal Engineers (1899) **The Report of the Committee on Duties and Training of Royal Engineers Filed Units;** ; Royal Engineers; Chatham

SAB UOD File 427 X6/52/39 (1935-1936) **Historical Monument's Commission: Fort Frederick, Port Elizabeth**

Sandham (1855) **Course of Architecture**; Royal Engineers; Chatham

Sandham (1855) **Course of Practical Surveying and Astronomy**; Royal Engineers; Chatham

Sandham, H. Colonel RE (1855) **Course of Military Instruction Practical and Scientific**; Royal Engineers; Chatham

Scott-Moncrieff, Major G.K. (1984) **The Royal Engineers Field-Service Pocket-Book**; Royal Engineers; Chatham

Sim, Lieutenant Colonel G.H. (1899-1902) **Journal of the campaign in South Africa;** 1899-1902 (968"1800/02"); Original journal, Royal Engineers Library; Chatham

Whitworth Porter (1889) **The History of the Corps of Royal Engineers Vol II**; Institution of Royal Engineers; Chatham

Whitworth Porter (1889) **History of the Corps of Royal Engineers Vol 1**; Longmans, Green and Co.; London

Wray (1867) **Architectural Course**; Royal Engineers; Chatham

Wray, H. Lieut-Colonel RE (1867) **Synopsis of Course of Instruction**; Royal Engineers; Chatham

ON-LINE ARCHIVES

Baker, W.T. (1857) **Notes to Accompany the Plan of Queenstown, South Africa, sent by the Royal Geographic Society**; Proceedings of the Royal Geographical Society of London, Vol 2 No 6 (1857-1858) pp 371-372, http://www.jstor.org/stable/1799114

Hall, Henry (1859) **On Telegraphic Communications**; Cape Monthly Magazine vol 7 1859, pp 257-266; South Africa

Maslen, T.J. (1830) **The Friend of Australia: Or, a plan for Exploring the Interior, and for Carrying on a Survey of the Whole Continent of Australia. By a Retired Officer**; Hurst, Chance and Co (Source www.library.cornell.edu/Reps/DOCS/maslen_1.htm)

Sharp, Granville (1794?) **A Greneral Plan for the Laying Out Towns and Townships, on the New-Acquired Lands in the East Indies, America or Elsewhere**;

www.library.cornell.edu/Reps/DOCS/sharp.htm;USA

SECONDARY REFERENCES:

(2010) **Fake Appeal data probe**; Planning Issue 1854, 5 February 2010

Acemoglu, Daron; Johnson, Simon; Robinson, James. (2000) **The colonial Origins of Comparative Development: An Empirical Investigation**; Working Paper 7771; NBER Working Paper Series; National Bureau OF Economic Research;Cambridge, MA

Ake, C. (1991) **Rethinking African Democracy**; Journal of Democracy, 2(1) Winter 1991: 32-44;

Ake, C. (1993) **The Unique Case of African Democracy**; International Affairs Journal, Vol 69 Number 2 : 239 - 244;London

Aldridge, B (1983) **The Pictorial History of South Africa**; Centaur; Cape Town

Allmendinger, P. (2002) **Towards a Post-Positivist Typology of Planning Theory**; Planning Theory Vol 1 No 1 pp 77-99 Sage Publishers;

Alvesson, M. and Skoldberg, K (2000) **Reflexive Methodology: New Vistas for Qualitative Research**; SAGE; London

Anderson, P.R. (1958) **A Review of a South African New Town: Vanderbijlpark**; South African Architectual Record No43 January 1958

Armstrong, Frederick. H. (1969) **Urban History in Canada**; UHGN 28 (1969); pp 1-10; Canada

Armstrong, W. and Mc Gee, T.G. (1985) **Theatres of Accumulation. Studies in Asian and Latin American Urbanisation**; Methuen; London

Army (2002) **Royal Engineers**; http://www.army.mod.uk/royalengineers/heritage; Search of site conducted 10/06/2002

Artibise, Alan.F.J and Stelter, Gilbert.A. (1981) **Canada's Urban Past: A bibliography to 1980 and guide to Canadian Urban Studies**; University of British Columbia Press; Vancouver and London

Artibisie, Alan and Stelter, Gilbet (1979) **The Past in the Present: exploring the relevance of Canada's Urban Past**; In: Artibisie and Stelter (Editors) The Usable Urban Past: planning and politicas in the modern Canadian City. Mac Millan; Toronto

Aston, Maj DP (RE) (editor) (2006) **A Short History: The Royal Engineers**; Institution of Royal Engineers; Chatham

Aucamp, P. (1975) **Die Stigting, opmeting en Ontwikkeling van die dorp in die Noord Transvaal - met speciale verwysing na Pietersburg**; South African Survey Journal Part 2, pg 50; South Africa

Audi, Robert (editor) (1999) **The Cambridge Dictionary of Philosophy;** Second Edition; Cambridge University Press; Cambridge

Baran, P.A. (1968) **The Political Economy of Growth**; Modern Reader Paperbacks; New York

Batten A.G.M. (1983) **Proceedings of the Army Post Office Corps in South Africa 1899-1902**; PFSA; Bloemfontein

Bawcombe, Philip (1976) **Philip Bawcombe's Kimberley**; Rufus and Joubert (Pty) Ltd; Johannesburg

Beinart, William. (2001) **Twentieth-century South Africa**; Oxford University Press; Oxford

Benyon, J (1985) **Trompetter's Drift and the Signal Towers**; pp70-74 in Grahamstown and its Environs, second edition Edited by: J B Mcl Daniel, W Holleman and A Jacot Guillarmod; Albany Museum, printed by Rhodes University Printing Unit.

Bergensen, A. (1980) **Studies of the Modern World System**; Sage; London

Bergenson and Schoenberg (1980) **Long Waves of Colonial Expansion and Contraction, 1415 - 1969;** in A. Bergeson (ed) Studies of the Modern World System; Sage; London

Bergh J.S. and Visagie J.C. (1985) **Eastern Cape Frontier Zone, 1660-1980: A Cartographic Guide for Historical Research**; Butterworths; Durban

Bergh, J.S. (1985) **The Eastern Cape Frontier Zone, 1660 -1980: A cartographic guide for historical research**; Butterworths;Durban, London

Bernard, H.R. (2000) **Social Research Methods: Qualitative and Quantitative Approaches**; Sage; London

Bertocchi, Graziella and Canova, Fabio (1996) **Did Colonization Matter for Growth? An Empirical Exploration into the Historical Causes of Africa's Underdevelopment**; CEPR Discussion paper No 1444

Blainey, G. (1965) **Lost Causes of the Jameson Raid**; Economic History Review 18:2 (1965) pp 350-66; Blackwell Publishers

Benyon (1985) **Grahamstown And Its Environs. Chapter on signal towers**; Grahamstown: Albany Museum, 1985. Second Edition; Grahamstown

Boahen, A.Adu (1987) **African Perspectives on Colonialism**; John Hopkins University Press; Maryland

Boden, Roger (1999) **Historical Analysis in Historically unprepared Planning Contexts**; Planning History Journal Vol 21, No 2 1999 pp 20-32

Borah, W; Hardoy, J. and Stelter, G. (Editors) (1981) **Urbanisation in the Americas: the background in comparative perspective**; NMM; Ottawa

Bosman (1947) **After Haswell (1980)**

Bothma, A. (2008) **Architecture of Grahamstown**
http://www.grahamstownhandbook.co.za/grahamstown3.asp; South Africa

Bourke, Vernon. J (1962) **"Rationalism"** p 263 in Runes(1962)

Boyden, P.B. (1990) **Tommy Atkins Letters - the History of the British Army Postal Service from 1795**; National Army Museum; London

Bozzoli G R (1997) **"Forging Ahead" South Africa's Pioneering Engineers**; Witwatersrand University Press; Johannesburg

Bradlow, Edna and Bradlow, Frank (1955) **Thomas Bowler of the Cape of Good Hope: his life and works**; Balkema (source Cory Library for Historical Research- Rhodes University CO 968(71) BOW:10040799); Cape Town

Bratton, M. (1982) **Patterns of Development and Underdevelopment;** ; International Studies Quarterly, Vol 26 No 3 Sep 1982 333-372;

Braudel, F. (1984) **Civilization and Capitalism 15th -18th Century: Vol 3 The Persepective of the World**; Collins (translation); London

Brock, B.B.B. and Brock B.G.B. (editors) (1976) **Historical Simon's Town;** ISBN 086910554; A.A.Balkema for the Simon's Town Historical Society; South Africa

Brockett, Linda. G. (1998) **The Historic Grid Towns of the Transvaal (1838-1860)**; Planning History Vol 20 No 1; UK

Brooke Simons, Phillida (1998) **The Life and Works of Charles Bell**; Fernwood Press; South Africa

Brookes, E.H. and Webb, C de B (1967) **A History of Natal**; University of Natal Press; Pietermaritzburg

Buchanan, R.A. (1989) **The engineers : a history of the engineering profession in Britain, 1750-1914**; J Kingsley Publishers; London

Bulpin, T.V. (2002) **Lost Trails of the Transvaal;** First published 1956; Stephan Phillips, Africana Series; Cape Town

Burman, Jose. (1984) **Early Railways at the Cape**; Human and Russeau; Cape Town

Butler, G. (Editor) (1974) **The 1820 Settlers: an illustrated Commentary;** pp 175-176; Cape Town

Caffrey, Kate (1973) **Great Emigrations: The British to Southern Africa**; Gentry Books; London

Cain, Philip. J. and Hopkins, Anthony.G. (1993) **British Imperialism: Innovation and Expansion 1688-1914**; Longman; New York

Cangi, C.M. (1993) **Civilizing the people of South-east Asia: Sir Stamford Raffles' town plan for Sigapore**; Planning Perspectives 8(2) pp 166-187, Taylor and Francis; Oxford

Cardy, L.G. (1990) **The Historic Grid Towns of the Transvaal: Cultural and Cadastral Influences on Planning (1836-1860)**; Unpublished Master's dissertation, University of the Witwatersrand; Johannesburg

Cardy, L.G. (1988) **South African New Towns**; Unpublished Honors Dissertation, University of the Witwatersrand; Johannesburg

Careless, J.M.S (1974) **Urban Development in Canada**; UHR 1-74 (June 1974) pp 9-13;

Cartwright, A.P. (1978) **Valley of Gold;** ; Timmins; Cape Town

Catanese, A.J. and Steiss, A.W. (1970) **Systemic planning: theory and application**, Lexington, MA: Lexington Books.

Chadwick, G.F.(1971) **Systems View of Planning – towards a history of the urban and regional planning process** 2nd Edition, Pergamon Press,Oxford

Chandler, D.G. (1976) **The art of warfare in the age of Marlborough**; Hippocrene Books; New York

Chase-Dunn, C. (1975) **The Effects of International Economic Dependence on Development and Inequality: A Cross-National Study;** American Sociological Review, 1975 - JSTOR Vol 40 No 6 (Dec 1975) p 720-738

Chilcote, R.H. (1974) **Dependency: a Critical Synthesis of the Literature**; Latin American Perspectives, Vol. 1, No. 1, 4-29 (1974)

Chilvers, H.A. (1930) **Johannesburg: Out of the Crucible**; Frederick A Stokes; New York

Christopher, A.J (1976) **Southern Africa**; Dawson. Archon Books; Cape Town

Christopher, A.J (1977) **Early Settlement and Cadastral Framework: Salisbury; a geographical survey of the capital of Rhodesia**; Editors Kay and Smout; Hodder and Stoughton; London

Christopher, A.J. (1976) **Southern Africa**; Dawson Archon Books; South Africa

Christopher, A.J. (1971) **Land Policy in Southern Africa During the Nineteenth Century**; African Journals, Journal Zambesia Vol 2, No. 1, pp 1-9; Zambesia Jnl

Christorpher, A.J (1988) **The British Empire at its Zenith**; Croom Helm; London

Clarke, Desmond (2006) **Descartes: A Biography**; Cambridge University Press; Cambridge

Close, Charles (1926) **The Early Years of the Ordinance Survey**; Institute of Royal Engineers; Chatham

Close, Charles (1905) **Text Book of Topographical and Geographical Surveying**; HMSO; London

Clout, Hugh and Gosme, Cyril (2003) **The Naval Intelligence Handbooks: a Monument in geographical writing**; Progress in Human Geography Journal, Vol 27, 2(2003) pp 153-173;

Cobbing (1988) **The Roots of Violence**

Cobbing, Julian (1988) **The Mfecane as Alibi; thoughts on the battles of Dithakong and Mbolompo**; Journal of African History 29(1988)

Cobbing, Julian (1991) **Rethinking the Roots of Violence in Southern Africa, 1790-1840**; Seminar Paper, University of the Witwatersrand, September 1991; Johannesburg

Coleman, D. (2005) **Romantic Colonization and British Anti-slavery**; Cambridge University Press; Cambridge

Colonial Office (1952) **An Economic Survey of the Colonial Territories, 1951 Vol 1 The Central African and High Commission Territories**; Colonial Office (Source HMSO); London

Colvin (1912) **After Haswell, 1984**

Comaroff, J.L. (1998) **Reflections on the Colonial State, in South Africa and Elsewhere: Factions, Fragments, Facts and Fictions**; Social Identities, Vol 4 Number 3, 1 October 1998, pp 321-361(41), Routledge

Condit, C.W (1968) **American building: materials and techniques from the first colonial settlements to the present**; University of Chicago Press; London and Chicago

Cooper, Linda and Kaplan, Dave.(Editors) (1982) **Selected research papers on aspects of organisation in the Western Cape**; Cape Town Dept. of Economic History, University of Cape Town; Cape Town

Cory, G.E. (1940) **The Rise of South Africa**; Longmans; London

Couzens, T (2004) **Battles of South Africa**; New Africa Books (Pty) Ltd;Claremont, South Africa

Crais, C.C (1992) **White Supremacy and Black Resistance in Pre-industrial South Africa: The Making of the Colonial Order in the Eastern Cape, 1770-1865**; Cambridge University Press, 1992; Cambridge

Crosby, Alfred. W. (1986) **Ecological Imperialism: The biological Expansion of Empire 900-1900**; Cambridge University Press; Cambridge

Curror, W.D. (1972) **Golden Memories of Barberton**; Barberton and District Publicity Association; Barberton

Curtin, P; Feierman, S;Thompson, L and Vansina, J (1995) **African Histroy: from Earliest Times to Independence**; Longman;London and New York Second Edition

Curtin, Philip. D. (1968) **Epidemiology and the Slave Trade**; Political Science Quarterly;83:181-216

Curtin, Philip.D. (1989) **Death by Migration: Europe's Encounter with the Tropical World in the Nineteenth Century**; Cambridge University Press; New York NY

Curtin, Philip.D. (1964) **The Image of Africa**; University of Wisconsin Press; Madison

Curtin, Philip.D. (1998) **Disease and Empire: The Health of European Troops in the Conquest of Africa**; Cambridge University Press; New York NY

Dalziel, Nigel (2006) **The Penguin Historical Atlas of the British Empire**; Penguin Books; China

Danzinger, Christopher (1978) **The Restless Frontier**; Mac Donald; Cape Town

Davidoff, P. and Reiner, T.A. (1962) **Choice Theory of Planning**; Journal of the American Institue of Planners, 28, 1962;

Davis, K. (1955) **The Origin and Growth of Urbanisation in the Western World**; AJS 60(1955): pp 429-37

Davis. Lance, E and Huttenback. Robert, A (1986) **Mammon and the Pursuit of Empire: the political economy of British Imperialism 1860 -1912;** ISBN 0521236118; Cambridge University Press

De Bruijne, G.A. (1985) *The Colonial City and the Post-Colonial World*; in "**Colonial Cities: Essays on Urbanism in a Colonial Context**" Editors Ross, R. and Telkamp J.T.(1985); Martinus Nijhoff Publishers; Dordrecht

de Klerk, W. (1975) **The Puritans in Africa: A Story of Afrikanerdom**; Rex Collings; London

de V Minnaar, A. (1987) **Graaff-Reinet and the Second Anglo-Boer War (1899-1902)**; Military History Journal, The South African Military History Society, Vol 7 (June 1987) No 3; South Africa

Denoon, Donald (1983) **Settler Capitalism: the dynamics of dependent development in the Southern Hemisphere**; Clarendon Press; Oxford UK

Dommisse, Dr B. (2008) **Simon's Bay and Simon's Town - an historical perspective**; http://www.gosimonstown.com/history.htm; South Africa

Doves, S.; Edgecombe, R. and Guest, B. (Editors) (2002) **South Africa's environmental history : cases and comparisons**; Cape Town : David Philip ; Athens, Ohio : Ohio University Press, 2002

Doxey, G.V. (1961) **The Industrial Colour Bar in South Africa;** ; Oxford University Press; Oxford

Drescher, S. (1977) **Econocide: British Slavery in the Era of Abolition**; Univ of Pittsburgh Press; Pittsburg

Duminy, A. and Ballard, C. (1981) **The Anglo-Zulu War : new perspectives**; University of Natal Press; Pietermaritzburg

Duminy, A. and Guest, B. (1989) **Natal and Zululand from earliest times to 1910 : a new history**; University of Natal Press: Shuter and Shooter; Pietermaritzburg

Dyos, H.J (Editor) (1968) **The Study of Urban History**; Edward Arnold; London

Dyos, H.J and Wolff, M (editors) (1973) **The Victorian City: Images and Realities**; 2 Vols; Routledge and Kegan Paul; London and Boston

Edwards, I.E. (1934) **The 1820 Settlers in South Africa: a study in British Colonial Policy**;London

Egerton, Hugh Edward (1945) **A Short History of British Colonial Policy 1606-1909**; Revised by A.P.Newton; Methuen and Co; London

Eldredge, Elizabeth.A. (1992) **Sources of Conflict in Southern Africa, c1800-30: The Mfecane reconstructed**; Journal fo African History Vol 33 (1992) pp1-35; Great Britain

Eldridge, C.C (1973) **England's Mission: The Imperial Idea in the Age of Gladstone and Disraeli, 1868-1880**; University of North Carolina Press; Chapel Hill

Elphic, Richard. and Giliomee, Herman (editors) (1989) **The Shaping of South African society 1652 - 1840**; Maskew Miller Longman; South Africa

Epstein, E.J. (1982) **The Rise and Fall of Diamonds**; Simon and Schuster; New York

Evans, B (1993) **Why we no longer need a town planning profession**; Planning Practice & Research; Jan93, Vol. 8 Issue 1, p9, 7p;

Faludi. A, (2009) **Why can't the future of planning education be more like the past?**; The Australian Planner Vol 46 No 1 March 2009 pp22-27;

Farrington, Karen (2003) **Historical Atlas of Empires;** ISBN 1-904668-02-X; Mercury books; London

Faubion, J.D. (1994) **Power. Essential works of Foucault 1954-1984.** Volume 3; The New Press; New York

Ferreira, O.J.O (1990) **Thomas Ignatius Ferreira (C1743-c1814) Oosgrenspionier en "Britse" bevelvoerder van Fort Frederick**; Historia Journal Vol 35; November 1990 No 2;

Finch, J.K. (1951) **Engineering and Western Civilization**; McGraw-Hill; New York

Fitzpatrick, Sir Percy (1984) **Jock of the Bushveld**; A D Donker; Craighall, Johannesburg

Floyd, T.B. (1960) **Town Planning in South Africa**; Shuter and Shooter, Pietermartizburg

Flyvbjerg, B. (1998) **Rationality and Power: Democracy in Practice**; University of Chicago Press; Chicago

Forester, J. (1989) **Planning in the Face of Power**; University of California Press; Berkeley

Forward, Charles. N. (1969) **A Canadian's Eye-View of Australian Cities**; CGEJ 78(1969): pp 26-39;

Foucault, M. (1972) **The Archaeology of Knowledge**; Pantheon; New York

Fraser, D. and Sutcliff, A.(ed) (1983) **The Pursuit of Urban History**; Edward Arnold; London

Freestone, Robert (1993) **Heritage, Urban Planning and the Postmodern City**; Australian Geographer Vol 24, Issue 1 May 1993 pp 17-24; Australia

Galbraith, J.S (1963) **Reluctant empire: British Policy on the South African Frontier, 1834-1854**; Berkeley University; California

Gallagher, J. and Robinson, R. (2008) **The Imperialism of Free Trade**; The Economic History Review, Vol 6 Issue 1 pp1-15;Economic History Society, Bognor Regis

Garson, Y. (1992) **Versatile Genius: The Royal Engineers and Their Maps;** Limited Edition; University of the Witwatersrand Library (African Series No3); Johannesburg

Gaukroger, Stephen (1995) **Descartes: An Intellectual Biography**; Oxford University Press; Oxford

Geddes, P. (1949) **Cities in Evolution;** New and Revised Edition; Williams and Norgate; London

Gledhill, Eily (2008) **Forts of Frontier Country**; Compiled for the Grahamstown Historical Society by Eily Gledhill. Photographs by Rex and Barbara Reynolds. Published by the 1820 Settlers National Monument Foundation.;Grahamstown

Gnosis, R.A (2002) **Freemasonry and The Hermetic Tradition**; www.thefreemason.com

Goodman, R. (1971) **After the Planners**; Touchstone; New York

Gordon, R.J and Spiegel, A.D. (1993) **Southern Africa Revisited**; Annual Review of Anthropology 1993 22:83-105; University of Chicago Press

Grant, J. (2005) **Planning the Good Community**; New Urbanism in Theory and Practice, Routledge; London

Gregory, T.E. (1977) **Ernest Oppenheimer and the Economic Development of Southern Africa**; Arno Press; New York

Gulke, Leonard. (1984) "Land Tenure and Settlement at the Cape: 1652-1812" in L. Martin and 27

K.J. Friedlaender, eds., **History of Surveying and Land Tenure in South Africa**:
Surveying and Land Tenure in the Cape, 1652-1812. Cape Town: UCT Dept. of
Surveying

Guggisberg, Captain F.G. RE (1900) **The Shop: The Storey of the Royal Military Academy**; Casswell and
Company, Ltd; London

Gunder, M. and Fookes, T. (1997) **Planning school programmes in Australia and New Zealand**; Australian
Planner 14(1): 54-61;

Hall, P.G. (2004) **Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the
Twentieth Century;** 3rd Edition; Blackwell Publishing; Oxford

Halsall, Paul (1998) **Samuel de Champlain: The foundation of Quebec, 1608**; Modern History Sourcebook;
Quebec

Hamnett, S and Freestone, R. (Editors) (1999) **The Australian Metropolis: A Planning History**; Allen & Unwin;
Sydney

Hancock, Peter (1995) **Capital City Urban Design: with special reference to a Parliamentary Capital for
South Africa**; Unpublished Doctroate; University of the Orange Free State

Haswell, R.F. (1983) **South African Towns on European Plans**; Latern Jnl pp-686-694; South Africa

Haswell, R.F. (1980) **An Historic Townscapes Conservation Scheme for Natal**; Natal Town and Regional
Planning Commission Report, Vol 61;Pitermaritzburg

Hatfield, Denis (Editor) (1967) **Some South African Monumnets**; Purnell; Cape Town and Johannesburg

Headrick, D. (1981) **The Tools of Empire: Technology and European Imperialism in the Nineteenth Century**;
Oxford University Press; New York

Healey, P. (1993) **Planning Through Debate: The Communicative Turn in Planning Theory**; Duke University
Press; Durham

Healey, P. (1997) **Collaborative Planning-Shaping Places in Fragmented Societies**; Macmillan; London

Healey, P. (2003) **Collaborative Planning in Perspective**; Planning Theory Vol 2 No 2 pp 101-123

Hemmens, G. (1988) **Thirty Years of Planning Education**; Journal of Planning Education and Research 7(2):85-
91

Herbert, I (1972) **The Diamond Diggers: South Africa 1866 to the 1970's**; Tom Stacey Ltd; London

Heydt. Johann Wolfgang (1967) **Scenes of the Cape of Good Hope in 1741, as drawn by Johann Wolfgang
Heydt**; Translated by R. Raven-Hart from the German; C. Struik; Cape Town

Higham, R.D.S. (1972) **A Guide to the Sources of British Military History**; Routledge; Oxford

Higham, Robin.D.S. (1972) **A Guide to the sources of British Military History**; Routledge

Hobson, J.A. (1965) **Imperialism**; University of Michigan Press; Michigan

Hoch, C.J. (2002) **Evaluating Plans Pragmatically**; Planning Thoery Vol 1 No 1 53-75 Sage Publishers

Hodges, Ian. (2007) **The Colonial Period 1788-1901**; Australian War Memorial.
www.awm.gov.au/atwar/colonial.htm; Australia

Hogg, Ian.V (1985) **The British Army in the 20th Century**; Allan; London

Home, R (1997) **Of Planting and Planning: the Making of British Colonial Cities**; Eand FN Spon; London

Home, R.F. (1993) **Barrack Camps for the unwanted people: a negeleted planning tradition**; Planning
History Jnl Vol 15 No 1;UK

Home, Robert (2006) **Scientific survey and land settlement in British Colonialism, with particular reference
to land tenure reform in the Middle East 1920-50**; Planning Perspectives, Vol 21, Issue 1, January
2006 pp 1-22;UK

Home, Robert (1990) **Town Planning and the Garden cities in the British colonial empire 1910 - 1940**;
Planning Perspectives Vol 5 (1990) pp 23-37

Home, Robert (1993) **Transferring British Planning Law to the Colonies: the case of the 1938 Trinidad
Town and Regional Planning Ordinance**; TWPR Vol 15 (4) 1993

Home, Robert (1990) **British colonial town planning in the Middle East: the work of W.H.McLean**; Planning History Vol 12 No 1 pp 4-9;UK

Home, Robert. (1997) **Transformation of the Urban Landscape in British Malaya and Hong Kong**; Journal of Southeast Asian Architecture 1997 1: 63-72

Home, Robert. (1992) **The evolution of the use calss order**; Town Planning Review Vol 63 (2); UK

Home, Robert. K. (2000) **From barrack compaounds to single family house: planning worker housing in colonial Natal and Nrthern Rhodesia**; Planning Perspectives Vol 15 (2000) pp 327-347, Taylor and Francis Ltd; UK

Hoskins, G.H. (1956) **The Making of the English Landscape**; Hodder & Stoughton; London

Howard, E. (1945) **Garden Cities of To-Morrow**; Faber and Faber Ltd; London

Hughes, Quentin (1974) **Military Architecture**; London Evelyn; London

Huxley, M. and Yiftachel, O. (2008) **New Paradigm or Old Myopia? Unsettling the Communicative Turn in Planning Theory**; Symposium paper

www.geog.bgu.ac.il/members/yiftachel/new_papers_eng/huxyif.pdf

Hyam, R. (1993) **Britain's Imperial Century, 1815-1914: A Study of Empire and Expansion**; Barnes & Noble Imports; New York

Immelman, R.F.M. and Quinn, G.D.(Editors) (1968) **The Preservation and Restoration of Historic Buildings in South Africa**; A.A.Balkema; Cape Town

Innes, J.E. (1998) **Information in Communicative Planning**; Journal of the American Planning Association Vol 64 Issue 1 March 1998 pp 52-63

Jacobs, Lt Col Andre and Smit, Cdr Hennie (2004) **Topographic Mapping Support in the South African Militray During the 20th Century**; Scientia Militaria - Vol 32, No 1, 2004, pp 32-50;South African Journal of Militray Studies

Jame, W.Ely Jnr (Editor) (1997) **Property Rights in American History: from the colonial era to the present**; Garland Publishing Inc; New York and London

Jeffers, H.Paul (2005) **Freemasons: Inside the World's Oldest Secret Society**; Citadel Press; New York

Johnson, P (1983) **A History of the Modern World: from 1917 to the 1980's**; Weidenfield and Nicolson; London

Kain, Roger.J.P. (2002) **The Role of Cadastral Surveys and Maps in Land Settlement from England**; Landscape Research, Vol 27, Issue: 1, January 2002, pp11-24; UK

Keegan, Timothy (1996) **Colonial South Africa and the origins of the racial order**; Leicester University Press; Leicester

Keeling, S.V. (1968) **Descartes**; Oxford University Press; Oxford

King, A.D (1990a) **Urbanism, Colonialism and the World- Economy: cultural and spatial foundations of the world urban system**; Routledge; The International Library of Sociology; London

King, A.D (1976) **Colonial Urban Development: culture, social Power and Environment**; Routledge and Kegan Paul Ltd; London

King, A.D (1990b) **Global Cities: Post-Imperialism and the Internationalization of London**; Routledge; The International Library of Sociology; London

King, Anthony (2000) **Re-Worlding the City**; Planning history Journal Vol 22, No 3, pp 5-16; UK

Kirby, P.R. (1960) **South Africa's first Telegraph**; Africana Notes and News vol 14, 1960, pp. 123-129;South Africa

Kirk-Greene, A.H.M. (1984) **Canada in Africa: Sir Percy Girourard, Neglected Colonial Governor**; African Affairs Vol 83. No 331. (april 1984) pp 207-239;Oxford University Press on behalf of the Royal African Society

Kleingeld, Christo and Kritzinger, Col Andre (Ed) (2003) **A South African Railway History**;

http://mysite.mweb.co.za/residents/grela/transnet.html;

Knowles, L.C.A. (2005) **The Economic Development of the British Overseas Empire**; Taylor and Francis; Oxford

Konvitz, J.V (1978) **Cities and the Sea: Port City Planning in Early Modern Europe**; Johns Hopkins University Press; Baltimore

Kosambi, M. and Brush, J.E. (1988) **Three Colonial Port Cities in India**; The Geographical Review JSTOR Vol 78, No 1 (Jan 1988) pp 32-47; American Geographical Society

Kosambi, Meera and Brush, John.E. (1988) **Three Colonial Port Cities in India**; Geographical Review Vol 78 No 1 (Jan 1988) pp 32-47; JSTOR

Kostof, Spiro (1999) **The city shaped : urban patterns and meanings through history / Spiro Kostof ; original drawings by Richard Tobias**; London : Thames and Hudson, c1999.; London

Kretschmer, T. (2003) **de Beers and Beyond: The History of the International Diamond Cartel**; New York University http://pages.stern.nyu.edu/~lcabral/teaching/debeers3.pdf; New York

Krikler, J (2005) **The Rand Revolt: the 1922 isurrection and racial killing in South Africa**; Jonathan Ball Publishers; Johannesburg

Krueckeberg, D.A.(editor) (1983) **Introduction to Planning History in the United States**; Center for Urban Policy Research, Rutgers University; New Brunswick

Lacey, A.R. (1996) **A Dictionary of Philosophy;** Third Edition; Routledge and Kegan Paul; London

Lai, Lawrence Wai-Chung (1999) **Reflections on the Abercrombie Report 1948**; Town Planning Review Vol 70 No 1 pp 61-87; UK

Lamar and Thompson (1981) **The Frontier in History: North America and Southern Africa Compared**; Yale University Press; New Haven and London

Lamb, Charles. R. (1904) **City Plan**; The Craftsman 6(April 1904) 3-13
ww.library.cornell.edu/Reps/DOCS/lamb.htm

Lampard, Eric (1965) **Historical Aspects of Urbanisation**; In Schnore, L.F (eds) (1965)"The Study of Urbanistation" Wiley; New York

Lanchester, H.V. (1925) **The Art of Town Planning**; Universal Art Series. Chapman and Hall Ltd; London

le Cordeur, Basil.A (1981) **The Politics of Eastern Cape Separatism 1820-1854**; Oxford University Press; Cape Town

le Cordeur, Basil.A. (editor) (1988) **Journal of Charles Lennox Stretch** Maskew Miller Longman, Cape Town

Lenin, V.I. (1999) **Imperialism: the Highest Stage of Capitalism**; Resistance Books; Chippendale NSW

Lester, A. (1997) **The margins of order: strategies of segregation on the eastern Cape frontier, 1806-c. 1850**; Journal of South African Studies, Volume 23, Issue 4 December 1997 , pages 635 - 653, Routledge; Oxford

Lester, A. (1998) **'Otherness' and the frontiers of empire: the Eastern Cape Colony, 1806–c.1850;** ; Journal of Historical Geography Volume 24, Issue 1, January 1998, Pages 2-19

Lester, A. ; Nel, E.L. and Binns, T. (2000) **South Africa, past, present and future : gold at the end of the rainbow?** Longman, 2000, 4th Edition;Harlow, England

Lewinsohn, R. (1938) **Barney Barnato: From Whitechapel Clown to Diamond King**; Dutton'co inc; New York

Lewis, W.H (1955) **The Sunset of the Splendid Century: the life and times of Louis Auguste de Bourbon Duc Du Maine 1670-1736**; Eyre and Sottiswoode; London

Liebenberg, Elri (1997) **Mapping British South Africa: The Case of G.S.G.S. 2230**; Imago Mundi Vol 49 (1997) pp 129-142

Liebenberg, Elri (2006) **Providing a tolerably correct map of South Africa"1: the cartography of Henry Hall** International Symposium on "Old Worlds-New Worlds": The History of Colonial Cartography 1750-1950; Utrecht University, Utrecht, The Netherlands, 21 to 23 August 2006; Working Group on the History of Colonial Cartography in the 19th and 20th centuries; International Cartographic Association (ICA-ACI)

Lindblom, C.E. (1973) **The science of 'muddling through**; A Reader in Planning Theory, Pergamon Press, p 154, in A Faludi (editor) A Reader in Planning Theory; Oxford

Lloyd, Greg (Prof) (2006) **Planning and the public interest in the modern world**; Sir Patrick Geddes Commemorative Lecture 2006: Royal Town Planning Institute in Scotland and the Saltaire Society; Edinburgh

Lombard, P.J. (1952) **Die Stigting en vroee geskiedenis van Queenstown (1853-1859)**; Archieves Year Book for South African History, Fifteenth Year Vol.II, 1952; Universtiy of the Witwatersrand Library DT 1701.S6

Lunn, J and Moore, C. (2000) **The Story of Canada**; Key Porter Books Limited; Canada

Lynsky, Roy (1982) **They Built a City: Durban City Enginner's Department 1882-1982**; Concept communications (Natal) (Pty) Ltd; South Africa

Maclennan, B (2003) **The Wind Makes Dust: four centuries of travel in Southern Africa; **; Tafelberg Publishers Ltd;Cape Town

Maclennan, Ben (1986) **A Proper Degree of Terror: John Graham and the Cape Eastern Frontier**; Raven Press; Johannesburg

Macmillan, W.M. (1927) **The Cape Colour Question: a historical survey**; London

Macmillan,W.M. (1963) **Buntu, Boer and Briton: the making of the South African native problem;** Refer to Ordinances 49 and 50; Claredon Press; Oxford

Maland, D (1983) **Europe in the Seventeenth Century; **(second edition); Macmillan Education; London

Malherbe, Janie (1965) **Port Natal: A Pioneer Story**; Howard Timms; Cape Town

Malherbe, V.C. (2002) **How the Khoekhoen were drawn into the Dutch and British defensive systems, to 1809**; Military History Journal: The South African Military History Society, Vol 12 No 3 June 2002

Marshall, R.J and Masser **British planning methodology: three historical perspectives**; Built Environment Vol 7 1981

Mason, P (1974) **A Matter of Honour: an account of the Indian Army, its officers and men**; Purnell Book Services Ltd; London

Mauer, K .F. and Retief, A. I. (Editors) (1987) **HSRC Investigation into Research Methodology : Research Report series : 4 -Psychology in context Cross cultural research trends in South Africa; **; HSRC Pretoria; South Africa

Mc Call Theal, G. (1908) **History of South Africa since September, 1795**; Swan Sonnenschein & Co.; London

Mc Carthy, M. (2003) **Historicial geographies of a colonial world: the regeneration of New English colonialism in early modern urban Ireland, c 1600-10**; Irish Geography Volume 36(1) 2003, pp 59-76;The Georaphical Society of Ireland

Mc Evedy, Colin (1972) **The Penguin Atlas of Modern History to 1815**; Penguin Books

McKechnie, William Sharp (1914) **Magna Carta: A Commentary on the Great Charter of King John, with an Historical Introduction CHAPTER FORTY–TWO. paragraph 1383**; Maclehose; Glasgow

McLeod, C (2001) **Industry and Invention**; Web Page - BBC1 on-line - History, Society and Economy, Industralisation, http://www.bbc.co.uk/history/lj/victorian_britainlj/; UK

McLoughlin (1969) **Urban and Regional Planning – a systems approach**; Faber and Faber, 1969

Meng, Lee. Lik. (2009) **Mega trends driving planning education: how do we future-proof planners?** The Australian Planner Vol 46 No 1 March 2009 pp 48-50

Meredith, M. (2007) **Diamonds, Gold and War**; Simon and Scuster; New York

Meredith, Martin (2006) **The State of Africa: A history of fifty years of independence**; Jonathan Ball Publishers (second Edition); Johannesburg, Cape Town

Meyerson, M. and Banfiled, E.G. (1955) **Politics, Planning and the Public Interest**; The Free Press; Glencoe

Midgley, C. (1998) **Gender and Imperialism**; Manchester Univ Press; Manchester

Miller, Mervyn (2000) **Transatlantic dialogue: Raymond Unwin and the American planning scene**; Planning History Vol 22 No 2; UK

Mills, G. and Williams, D (2006) **Seven Battles that Shaped South Africa**; Tafelberg; Cape Town

Mills, Richard. Charles (1968 (reprint)) **The Colonisation of Australia**; The Colonial History Series:Simpson D.H (Series editor) Dawsons of Pall Mall; London

Mills, Stephen (1890) **On the Laying-out of Towns: Remarks on Mr Sulman's paper published in the Febraury number of this journal;** ; The Surveyor 2 (March 4, 1890) , pp 5-9
www.library.cornell.edu/Reps/DOCS/mills.htm

Mohamed Salih, M.A. (2001) **African Democracies and African Politics**; Pluto Press; London

Morris, J. (1983) **Stones of Empire: the Buildings of the Raj**; Oxford University Press; Oxford

Morris, James (1968) **Pax Britannica: the climax of an Empire**; W & J Mackay & Co Ltd; Chatham, Kent

Morton, H.V. (1948) **In Search of South Africa**; Methuen and Co; London

Mostert, N. (1992) **Frontiers : the epic of South Africa's creation and the tragedy of the Xhosa people**; Knopf : Distributed by Random House, 1992, 1st American Edition; New York

Mouton, J. and Marais, H.C. (1988) **HSRC Studies in Research Methodology:** Series Editor : Johann Mouton ; **Basic Concepts in the methodology of the social science;** ; HSRC Pretoria;South Africa

Mouton, Johann (2006) **How to succeed in your Master's and Doctoral Studies: a South African Guide and Resource Book**; Van Schaik Publishers, Sixth Edition; Pretoria

Mouton, Johann (editor) (1986) **RGN –ondersoek na Navorsingsmetodologie : Navorsingsverslaereeks : 3 Social Science, society and power**; HSRC Pretoria; South Africa

Muller, J.G. (1999) **The Oak, the Acorn and the Bent Twig: Thoughts on the British/South African Planning connection**; Town and country Planning summer School, 1999; Swansea

Muller, J.G. (1993) **From Survey to Strategy: twentieth century developments in western planning methods**; Planning Perspectives Vol 7 No 2; UK

Muller, John. (1999) **Although God cannot alter the past, historian can: reflections on the writing of planning histories**; Planning History Vol 21 No 2 pp 11-19

Muller, John.G. (1983) **Theory and Practice: the janus face of planning**; Witwatersrand University Press; Johannesburg

Mumford, L (1947) **Introduction to J.Tyrwhitt, Patrick Geddes in India**; Lund Humphries; London

Mumford, Lewis (1938) **The Culture of Cities**; Harcourt, Brace and Company; New York

Mundigo and Crouch (1977b) **The City Planning Ordinances of the Laws of the Indies Revisited: Three American Cities**; Town Planning Review Part II, Vol 48 No 3 pp 379-418; UK

Mundigo and Crouch (1977a) **The City Planning Ordinances of the Laws of the Indies Revisited: their philosophy and implications**; in Town Planning Review - Part I, Vol. 48, No 3, July 1977, p259;Liverpool University Press

Napier, Gerald (2005) **Follow the Sapper**; Institute of Royal Engineers; Chatham

Naylor, R.A. (1989) **The Mosquito Shore and the Bay of Honduras, 1600-1914: A Case Study in British Informal Empire**; Fairleigh Dickinson Univ Press;Madison, New Jersey

Newbury, C.W. (1989) **The Diamond Ring**; Oxford University Press; Oxford

Newitt, Malyn (2004) **A history of Portuguese Overseas Expansion 1400 -1668**; Routledge; London

Nge-fong, Cheng and Conrad, Tang Hong-wai (2002) **An analysis and implementation of Cadastral Survey System in Hong Kong**; Symposium on Geographical Theory, Processing and Applications; Ottawa

Nixon, J. (1972) **The Complete Story of the Transvaal**; Struik; Cape Town

Nowers Col J **Steam Traction in the Royal Enginners**; North Kent Books; Kent

Obtuary Notices (1953) **Charles Frederick Arden-Close 1865-1952**; Obituary Notices of Fellows of the Royal Society: Vol 8 No 22 (Nov 1953) pp 327-339; JSTOR

O'Meara, Emily (1995) **Grahamstown Reflected**; Creda Press; Cape Town

Omer-Cooper, J.D. (1987) **A history of Southern Africa**; J. Currey ; Portsmouth, N.H. : Heinemann, Eighth Edition; London

Oner Yurtseven, H. (2002) **How Does the Image of Engineering Affect Student Recruitment and Retention? A Perspective from the USA**; Global Journal of Engineering Education Vol 6 No 1; Australia

Orpen, N.D (1981) **Salute the Sappers.** Part 1; The Formation of the South African Engineer Corps and its operations in East Africa and the Middle East to the Battle of Alamein; Sappers; Johannesburg

Owen, Tim and Pilbeam, Elaine. (1992) **Ordnance Survey: Map makers to Britain since 1791**; Ordnance Survey, Southampton; London: HMSO

Pakenham, Thomas (1991) **The Scramble for Africa**; Jonathan Ball Publishers (Pty) Ltd;Jeppestown, South Africa

Parnell, Sue ((Darft)) **Cahanges in the British Colonial Office's Policy towards Urban Africa 1939-1945**; Unpublished draft submitted to the Journal Of Imperial and Commonwealth History;

Peires, J.B. (1989) **The Dead will Arise: Nongqawuse and the Great Xhosa Cattle Killing Movement of 1856-7**; Raven Press; Johannesburg

Peires, Jeffrey.B. (1989) **The dead will arise : Nongqawuse and the Great Xhosa Cattle Killing Movement of 1856-7**; Raven Press; Johannesburg

Perham, Margery (1961) **The Colonial Reckoning**; Collins; London

Perkins, Roger (1994) **Regiments and Corps of the British Empire and the Commonwealth 1758-1993: A Critical Bibliography of their published histories**; Newton Abbot; UK

Philip, Peter. (1981) **British residents at the Cape 1795 - 1819. biographical records of 4800 pioneers**; David Philip Global Distributor;Cape Town, London

Pick, F.L. and Knight, N. (1954) **The Pocket History of Freemassonry**; Frederick Muller Ltd; London

Price, W.H. (1912) **Description of Scheme for Laying out the Federal Capital of Australia**; Proceedings of the Institution of Municipal and County Enginners 34 (1912-1913) pp 42-57
www.library.cornell.edu/Reps/DOCS/price_Oz.htm

Price, W.H. (1912) **Town Planning: Laying out New Towns and Cities;**
www.library.cornell.edu/Reps/DOCS/price.htm; Proceedings of the Institution of Municipal and County Engineers 34 (1912-1913) pp 42-57

Pringle, Thomas (1835) **Narrative of a Residence in South Africa** ; London

Proudfoot, Peter. R (2000) **Political symbolism in the Canberra Landscape;** Planning HistoryVol 22 No 2; Uk

Qadeer, M. (1988) **Planning in the Third World in Western Universities; ** ; Ekistics 328:64-68

RE Museum (1996) **Red Earth- Royal Engineers and the Zulu War 1879**; RE Museum Special Exhibition Souvenir Booklet; Chatham

Readers Digest (1978) **Illustrated Guide to Southern Africa**; First Edition; Cape Town

Readers Digest (2008) **Illustrated History of South Africa; ** p. 114-120; Web www.sahistory.org.za; South Africa

Reps, John (1965) **The Making of Urban America**; Princeton University Press; USA

Roberts, J.M. (1983) **The Pelican History of the World**; Pelican books; Middlesex, England

Roberts, J.P. (2003) **Glitter and Greed**; Published by The Disinformation Company, 2003; New York

Roberts, Michael (1951) **Lord Charles Somerset and the "Beaufort Influence"**; Archives Year Book for South African History, Fourteenth Year, Vol II 1951;Cape Town

Robinson, D and Groves, J (1999) **Introducing Philosophy**; Icon Books; Cambridge UK

Robinson, R. and Gallagher, J (1981) **Africa and the Victorians: the official mind of Imperialiam; ** Second Edition - first published 1961; Macmillan; London

Rochlin, S.A. (1961) **Henry Hall: Pioneer South African Cartographer and Litterateur**; African Notes and News, vol.14, 1961, pp 251-265

Ross, R and Telkamp, J.T (1985) **Colonial Cities: essays on Urbanism in a Colonial Context**; Martinus Nijhoff Publishers;Dordrecht

Ross, R. (1999) **A Concise History of South Africa**; Cambridge University Press; Cambridge

Rotberg, Robert. I. (1988) **The Founder: Cecil Thodes and the Pusuit of Power**; Jonathan Ball Publishers; Johannesburg and Cape Town

Rothery, Agnes (1943) **The Ports of British Columbia: The study of Canada's great Pacific Seaport Cities, Vancouver and Victoria**; Mand S; Toronto

Runes, Dagobert (1962) **Dictionary of Philosophy**; Littlefield, Adams and Company; Totowa, NJ.

Sanyal, B. (1989) **Poor Countries Students in rich countries universities: possiblilities of planning education for the twenty first century**; Journal of Planning Educacation and Research 8(3) 139-155;

Scheurich, J.J. (1997) **Research Method in the Postmodern**; Routledge; Oxford

Schumpeter, J.A (1951) **Imperialism and Social Classes**; Meridian Books; New York

Seymour, W.A. (Editor) (1987) **The History of the Ordinance Survey**;

Simons, Phillida. Brooke (1998) **The Life and Work of Charles Bell**; Fernwood Press; South Africa

Simpson and Sweeney (1973) **The Land Surveyor and the Law**; University of Natal Press; Pietermaritzburg

Smith, Daniel. C. (2003) **The importance and Challenges of Being Interesting;** Journal of the Academy of Marketing Science. Vol 31, No.3, pp 319-322; USA

Smith, T. (1979) **The Underdevelopment of Development Literature: The Case of Dependency Theory**; JSTOR

Smith, William (1916) **The Colonial Post-Office**; American Historical Review 21 (January 1916) pp 258-275;America

Smuts, Francois (editor) (1979) **Stellenbosch Three Centuries**; Oude Meester Group; South Africa

Southey, N.M. (1946) **Kimberley and the diamond fields of Griqualand West, 1869-1900 : a bibliography**; School of Librarianship, Univ. of Cape Town; Cape Town

Stapleton, Timothy. J. (1994) **Maqoma: Xhosa resistance to colonial advance 1798-1873**; Jonathan Ball; Johannesburg

Stelter, G.A. (1983) **The Polictical Economy of the City-Building Process: Early Canadian Urban Development;** in The Fraser, D. and Sutcliff, A. (ed) (1983); Eward Arnold; London

Stelter, Gilbert and Artibise, Alan (Editors) (1982) **Shaping the urban landscape: aspects of the Canadian city-building process**; Carleton University Press; Ottawa

Stelter, Gilbert. A and Artibise, Alan.F.J (1981) **Canada's urban past: abibliography to 1980 and guide to Canadian urban studies**; University of British Columbia Press; Vancouver

Stelter, Gilbert. And Artibise, Alan (Editors) (1986) **Power and place: Canadian urban development in the North American context**; University of British Columbia; Vancouver

Stelter. Gilbert.A. (Editor) (1990) **Cities and urbanisation: Canadian historical perspectives**; Copp Clark Pitman; Toronto

Stiftel, Bruce. (2009) **Planning the paths of planning schools**; The Australian Planner Vol 46 No 1 March 2009 pp 38 - 47

Stock, E. (1997) **The history of the Church Missionary Society its environment, its men and its work**; Adam Matthew Publications.; Church Missionary Society, 26th Edition; London

Stone, Jeffrey. C. (1988) **Imperialism, colonialism and cartography**; Trans. Inst. Goerr. N.S 13:57-64 (1988) ISSN 0020-2754; Great Britain

Strausz-Hupe, R. and Hazard, H.W (1958) **The Ideal of Colonialism**; Atlantic Books; London

Stuart, J; Webb, C deB and Wright, J.B. (1976) **The James Stuart archive of recorded oral evidence relating to the history of the Zulu and neighbouring peoples**; University of Natal Press; Pietermaritzburg

Taylor, P.J. (1985) **Political Geography. World-Economy, Nation-State and Locality**; Longman; London

Theal, G.M. (1943) **History of South Africa 1834 - 1854**; After Egerton (1943)

Thomas, Hugh (1981) **An Unfinished History of the World**; Pan Books; London and Sydney

Thompson, A. (1992) **Informal Empire? An Exploration in the History of Anglo-Argentine Relations, 1810-1914**; Journal of Latin American Studies; JSTOR

Thompson, D.H. (1952) **A short history of Grahamstown**; Grocott & Sherry; Grahamstown

Thompson, Leonard (2006) **A History of South Africa**; Jonathan Ball Publishers, second edition; Cape Town

Tibaijuka, Anna. K (2006) **Keynote Address World Planners' Congress: The Importance of Urban Planning in Urban Poverty Reduction and Sustainable Development**; World Planners' Congress, Vancouver June 2006; Canada

Ting, Lisa and Williamson, Ian (1999) **Cadastral Trends: A synthesis**; Australian Surveyor Vol 4 No 1 pp 46-54; Australia

Tomlinson, Richard (2006) **Three centuries of fortifications in South Africa 1652 to 1958**; The Fortress Study Group, FORT 34, 2006; www.fsgfort.com

Trapido, Stanley (1971) **South Africa in a Comparative Study of Industrialization**; Jnl of Development Studies Vol 7 Issue 3 April 1971, pp 309-320; Routledge

Twyman, L.J. (1991) **Port Natal Harbour and the colonial politics of Natal 1894-1897**; Historia, Vol.36; Nov 1991; No 2

van der Merwe, Werner (2007) **The Berlin Missionary Society**; www.sahistroy.org.za; South Africa

van der Riet, F (1974) **Grahamstown in Early Photographs;** ; David Philip;Claremont, Cape Town

van Onselen, C (1982) **New Babylon New Nineveh: early life on the Witwatersrand 1886 - 1914**; Jonathan Ball Publishers; Johannesburg

van Straaten, Z (editor) (1981) **Basic Concepts in Philosophy**; Oxford University Press; Cape Town

van Straaten, Zak. (Editor) (1987) **HSRC Investigation into Research Methodology Research report series 5 Ideological beliefs in the social sciences**; HSRC Pretoria; South Africa

van Zyl, Wallace (1995) **Conservation in Kimberley, South Africa: Dilemmas of development**; Planning History, International Planning History Society Vol 17 No 2 pp 23-28; UK

Verlag, Weiss (1989) **Signs and Sysmbols: Their Design and Meaning**; Weiss Verlag GmbH; West Germany

Violich (1977) **in Mundigo and Crouch**; Town Planning Review; UK

Walker, E.A. (1944) **Colonies**; Cambridge University Press; Cambridge

Walker, E.A. and Wyndham, H.A. (1941) **A History of South Africa**; Journal of African Affairs, Volume XL, Number CLVIII Pp. 11-18; Oxford

Walvin, J. (2006) **Atlas of Slavery**; Pearson Longman; UK

Ward Col B.R. (1909) **The School of Military Engineering 1812-1909**; Institution of Royal Engineers; Chatham

Ward et al (Editors) (2000) **The Cambridge History of English and American Literature: An encyclopedia in eighteen volumes;** Editors: Ward; Walter; Trent; Erskine; Sherman and Van Doren Published online by Bartleby.com January 2000; G.P. Putnam's Sons; New York

Ward, Stephen V. (1998) **Selling Places: The marketing and promotion of towns nd cities 1850-2000**; E& FN Spon; London

Watson Sir C.M. (1915) **History of the Corps of Royal Engineers** Vol II; W and J Mac Kay and Co Ltd; Chatham

Watson, Vanessa (2006) **Deep Difference: Diversity, Planning and Ethics**; Planning Theory;

Watson, Vanessa (2009) **'The planned city sweepsthe poor away…': Urban planning and 21st century urbanisation**; Progress in Planning

Watson, Vanessa (2000) **Learning from Planning Practice**; Planning Research 2000 Conference, London School of Economics and Political Science March 27-29 2000;UK

Watt, S.A. (1989) **Harrismith: a militray town during the Anglo-Boer War, and After Part 1;** ; Militray History Journal, The South African Militray History Society Vol 8 (June 1989) No 1;South Africa

Watt, S.A. (1989) **Harrismith** Part II; Militray History Journal, The South African Militray History Society Vol 8 (december 1989) No 2;South Africa

Weaver, C. , Jessop, J. and Das, V. (1985) **Rationality in the public interest: notes towards a new synthesis**; In Breheny and Hooper (editors) Rationailty in Planning, Pion, p.155; London

Webster, A.C. (1991) **Land Expropriation and Labour Extraction**; Unpublished MA Thesis; Rhodes University

Weiler, J. (1987) **Army Architects: The Royal Engineers and the Development of Building Technology in the Nineteenth Century**; Unpublished Doctoral Thesis; University of York

Welsh, F. (2000) **A History of South Africa**; Harper Collins; London

Western Cape Surveyor General (2007) **History of Geodectic Surveying in South Africa**; http://w3sli.wcape.gov.za/SURVEYS/MAPPING/svyhist.htm; South Africa

Western, John (1985) **Undoing the colonial city**; Geographical Review Vol 75 No 3 (Jul 1985) pp 335-357;JSTOR

Wilber, Charles. K. (1973) **The Political Economy of Development and Underdevelopment;** ; Randon House, Second Edition;New York

Wildavsky, A. (1973) **If Planning is Everything, Maybe it is Nothing**; Policy Sciences 4(2): 127-53

Wilkinson, P (2000) **City Profile: Cape Town**; Cities Jnl Vol 17, Issue 3 June 2000 pp 195-205

Williams, G.B. (1907) **Report on the sanitation of Nairobi with report on the townships of Naivasha, Nakuru and Kisumu**; Colonial Office; London

Wilson, Colonel I.T.C. etc (editors) (1986) **History of the Corps of Royal Engineers Vol X 1945-1960**; List of Editors: Colonel I.T.C Wilson MBE MC; Colonel H.W.B. Mackintosh; Brigadier R.A. Blomfield ADC; Colonel E.E.Peel; Brigadier J.B. Wilks CBE ADC; Colnel G.W.A. Napier; The Institution of Royal Engineers; Chatham

Worrel, Thomas.D. (2002) **The Initiatic Symbolism of Freemasonry**; www.thefreemason.com

Wren, Major D. RAE (2001) **Royal Engineers and their role in the Founding of the Australian Nation and the Corps of Royal Australian Engineers**; The Royal Engineers Journal Vol 115 (August 2001) No 2;Chatham, Kent

Zakiewicz, Tomasz (2005) **The Cape Geodectic Standards and their Impact on Africa**; FIG Working Week 2005 and GSDI-8 From Pharaohs to Geoinformatics. April 16-21 2005;Cairo, Egypt

Zoellner, T. (2007) **The Heartless Stone: A journey Through the World of Diamonds, Deceit and Desire**; Picador; New York

Chronological order of town establishment in South Africa based on Floyd (1960:20-26), note that the presentation of the information has been grouped differently from Floyds original presentation. Although the information remains unchanged the data has been sorted according to the date of establishment and the geographic region: the Cape Colony, Natal, the Orange Free State and the Transvaal. The Early towns in the Cape were established by the Dutch, in 1806 the British took over. Towns in Natal were of both Dutch and British origin until the British assumed control. The towns in the Transvaal and the Orange Free State were established by the *Voortrekkers* (Dutch farmers who left the Cape Colony *en masse* in 1838)

CAPE COLONY			
TOWN	**DATE ESTABLISHED**	**WHO ESTABLISHED THE TOWN**	**REASON FOR ESTABLISHMENT AND REMARKS**
Cape Town	1652	Dutch East India Company (VOC)	Market Garden to supply ships
Stellenbosch	1679	Governor (VOC)	Administrative purposes
Simonstown	1680	Governor (VOC)	Naval Base
Malmesbury	1745 (approx)	Governor (VOC)	Church and Administrative purposes
Swellendam	1746	Governor (VOC)	Administrative purposes
Graaff-Reinet	1786	Governor (VOC)	Administrative purposes
Tulbagh	1795	Dutch Reformed Church	Church purposes
Port Elizabeth	1806 (Floyd gives the dates 1812-1820)	British Navy	Harbour, fort and trade centre
Uitenhage	1804	Governor (Batavian Republic)	Administrative purposes
Clan William	1806	(British)	Church district, Administrative and military purposes
Caledon	1811	(British)	Church and district centre

CAPE COLONY (CONTINUED)			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
George	1811	Governor (British)	Administrative purposes
Griquatown	1812	London Missionary Society	Old mission settlement of Klaarwater later called Griquatown
Cradock	1816	Governor (British)	Administrative and military purposes
Beaufort West	1818	(British)	
Worcester	1819	Governor (British)	Administrative purposes
Bathurst	1820	Governor (British)	Town for Settlers, Administrative purposes
Grahamstown	1820	Governor (British)	Military purposes, fort first established 1812
Fort Beaufort	1822	Governor (British)	Military purposes
Durbanville	1825	Dutch Reformed Church	Church and district centre
Somerset East	1825	Governor (British)	Administrative purposes
Colesberg	1830	Governor (British)	Administrative purposes
King William's Town	1835	Governor (British)	Started as mission and trade station became a military post
Riversdale	1838	Dutch Reformed Church	Church and district centre
Napier	1838	Dutch Reformed Church	Church and district centre
Wellington	1840		
Piketberg	1840	Dutch Reformed Church	Church and district centre

CAPE COLONY (CONTINUED)			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Schoemansdorp	1841		
Villiersdorp	1841		
Prince Albert	1842		Originally named Zwartberg and renamed in 1845
Richmond	1843	Dutch Reformed Church	Church and district centre
Victoria West	1844	Dutch Reformed Church	Church and district centre
Burghersdorp	1846	Dutch Reformed Church	Church and district centre
Calvinia	1851	Dutch Reformed Church	Church and district centre
Mafeking	1852	Governor (British)	Administrative purposes
Middelburg	1852	Dutch Reformed Church	Church and district centre
Queenstown	1853	Governor (British)	Administrative and Military purposes
Robertson	1853	Dutch Reformed Church	Church and district centre
Carnarvon	1853	Governor (British)	Administrative purposes
Bedford	1854	Governor (British)	District centre
Ceres	1854	Jan Munnik	District centre
Greytown	1854		
Jansenville	1854		
Stanford	1856		
Aberden	1856	Dutch Reformed Church	Church and district centre

CAPE COLONY (CONTINUED)			
TOWN	**DATE ESTABLISHED**	**WHO ESTABLISHED THE TOWN**	**REASON FOR ESTABLISHMENT AND REMARKS**
Montagu	1856	Dutch Reformed Church	Church and district centre
Oudtshoorn	1857		District centre
Adendorp	1858		
Cathcart	1858	Governor (British)	Military purposes
McGregor	1861		
Kokstad	1871		
Knysna	1871		Harbour
East London	1872	Governor (British)	Started as harbour and trading post 1846
Barkley East	1873		
Sterkstroom	1875	Dutch Reformed Church	Church and district centre
Engobo	1876		
Vryburg	1880		
Morreesburg	1882	Dutch Reformed Church	Church and District centre

NATAL COLONY			
TOWN	**DATE ESTABLISHED**	**WHO ESTABLISHED THE TOWN**	**REASON FOR ESTABLISHMENT AND REMARKS**
Dundee	1835	Voortrekkers	Initially a trading settlement, but Voortrekkers laid out the town
Pietermaritzburg	1839	Voortrekkers	Capital of Natalia Republic
Weenen	1839	Voortrekkers	District centre

NATAL COLONY (CONTINUED)			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Estcourt	1848		District centre
Pinetown	1849		
Howick	1850		District centre
Ladysmith	1850		District centre
Richmond	1850		District centre
Verulam	1850		
Utrecht	1853		Administrative centre
Greytown	1854		District centre
Scottburgh	1860		
Newcastle	1863	Dr Sutherland	Mining centre
Port Shepstone	1867		
Stanger	1873		
Durban	1880		Harbour
Eshowe	1880		District centre
Vryheid	1884	Lukas Meyer	Capital of New Republic
Paulpietersburg	1888		Administrative centre
Charlestown	1889		

TRANSVAAL			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Andries-Ohrigstad	1845	Hendrik Potgieter (Voortrekkers leader)	Capital of Transvaal Republic
Bloemhof	1864		District centre
Christiana	1870		District centre
Ermelo	1880	Dutch Reformed Church	Church and district centre
Barberton	1884		Mining centre (gold)

TRANSVAAL (CONTINUED)			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Germiston	1886	Government	Mining town laid out under gold law
Heidelberg	1886	Dutch Reformed Church	Church and district centre
Johannesburg	1886	Government	Mining town laid out under gold law
Boksburg	1887	Government	Mining town laid out under gold law
Bethal	1898		District centre

ORANGE FREE STATE			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Philipolis	1823		Mission station
Winburg	1835	Voortrekkers	Site selected by Hendrik Potgieter as capital of "Repiblic of Natalia"
Bloemfontein	1846	Government	Site selected in 1846 by Major Warden as a seat of British control; became the Capital of the Orange Free State
Fauresmith	1849	Dutch Reformed Church	Church and district centre
Harrismith	1849	British Governor of the Cape, Sir Harry Smith	Administrative centre and military base
Smithfield	1849		Church and district centre

ORANGE FREE STATE (CONTINUED)			
TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Jagersfontein	1852		Commenced as diamond diggings in 1870
Kroonstad	1854		Site selected and town designed by J.M.Orpen (Land Surveyor)
Boshoff	1856	Dutch Reformed Church	Church and district centre
Bethlehem	1859		First called Pretoriuskloof
JAcobsdal	1859		Formerly Kalkfontein
Reddersburg	1861	Dutch Reformed Church	Church and administrative centre
Edenburg	1862		
Bethulie	1863	Missionaries	French Mission station (Name changed often from: Boesmanskool, Caledon, Heidelberg and finally Bethulie)
Rouxville	1863	Church	District centre
LAdybrand	1868	Government	Administrative purposes
Heilbron	1872		
Bultfontein	1873		Private initiative
Hoopstad	1873	Government	Administrative centre
Brandfort	1875		
Lindley	1875	Dutch Reformed Church	Church and district centre

ORANGE FREE STATE (CONTINUED)

TOWN	DATE ESTABLISHED	WHO ESTABLISHED THE TOWN	REASON FOR ESTABLISHMENT AND REMARKS
Wepener	1875	Church	District centre
Zastron	1875		District Centre
Vrede	1876		
Senekal	1877		
Frankfort	1878	Dutch Reformed Church	Church and district centre
Vredefort	1878	Dutch Reformed Church	Church and Social centre
Dewetsdorp	1880		
Parys	1882	Private	Town established by private enterprise
Bothaville	1889		District centre
Reitz	1890		Administrative centre
Ficksburg	1891		District centre
Petrusburg	1891	Private	Town laid out with 50 water and 375 dry erven before it was officially established (A water erf is one supplied by a water ditch which ran along the side of the street).
Villiers	1891		
Fouriesburg	1892		District centre
Koffiefontein	1892		Commenced as diamond diggings
Thaba 'Nchu	1892	Church	Missionary station