Bakgatla ba Kgafela

Design proposal for the Cultural Precinct of Saulspoort, Pilanesberg

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Glossary of terms

After use	The use of which a mining site, or part of a site, is determined when mineral extraction is completed.
Closure	Closure, in the case of mining operations discontinued or abandoned prior to the coming into force of the Minerals Act, 1991, means where a closure certificate has been issued in terms of Regulation 2.11 under the Mines and Works Act, 1956, or in any other case, where a closure certificate has been issued in terms of Section 12 of the Minerals Act, 1991 or in terms of Regulation 2.11 there under, and where a closure certificate provided for in Section 32(2) of the Atmospheric Pollution Prevention Act, 1965, has been issued.
Corridor	Corridors build up along well used linkages and serve as spines for the opening up of new tourism development.
Cutanic	A property of subsurface horizons showing clay movement downwards from topsoil horizons. Cutans consist of material which is usually finer than and has an organisation different to the material that makes up the surface on which they occur. A relatively recent soil-forming process.
Decommissioning	The activity or process that begins after cessation of prospecting activities or mineral production (including metallurgical plant production) and ends with closure. It involves, inter alia, the removal of unwanted infrastructure, the making safe of dangerous excavations and surface rehabilitation with a view to minimising the adverse environmental impacts of mining activities remaining after cessation of mineral production. It includes the aftercare or maintenance that may be needed until closure.
Environmental Impact Assessment (EIA)	An EIA is an assessment of the positive and negative environmental consequences of the development of the proposed project. The primary objective of the EIA section is to aid decision-making by providing factual information on the assessment of the impacts and determining their significance and on which to base valued judgements in choosing one alternative over another.
Hillslope units	Configuration of the landform consisting of crest, scarp, midslope, footslope and valley bottom.
Identified Resource	Resources whose location, grade, quality are known, or estimated from specific geological evidence, and includes economic, marginally economic and sub-economic components. It is also encompasses demonstrated and inferred subdivisions (DME 2000c).
Landfill	Disposal of relatively inert domestic and industrial wastes by burial in holes and tips.
Magnitude of impact	Magnitude of impact means the combination of the intensity, duration and extent of an impact occurring.
Melanic	A dark-coloured, structured topsoil horizon with high base status.
Mining	Mining is the making of any excavation for the purpose of winning a mineral, and it includes any other associated activities and processes (DME 2000).
Mining area	Mining area means the area comprising the subject of mining authorization, including: • any adjacent surface of land; • any non-adjacent surface of land, if it is connected to such an area by means of any road, railway line, power line, pipe line, cable way or conveyer belt; and • any surface of land on which such road, railway line, power line, pipe line, cableway or conveyer belt is located, under the control of the holder of such permit or authorization and which he is entitled to use in Connection with the operations performed or to be performed under such permit or authorization.
Mineral	A mineral includes inter alia sand, soil, clay, gravel, rock, ore, coal and tailings. A mineral occurs in, on or under the earth, water or tailings, as a liquid, solid or gas (DME 2000).

Non-renewable resources	Resources that exist in a fixed quantity in the Earth's crust and thus theoretically can be completely depleted are called non-renewable resources. It must be noted that these resources can be depleted much faster than they are formed.
Overburden	Non-processable material overlying mineral deposits that must be stripped off before extraction can proceed.
Paraduplex	A soil with a relatively permeable topsoil overlying a horizon with a significant higher clay content, stronger developed structure and harder consistence.
Partial closure	The closure of a part, section or portion of a mine. the environmental management issues that need to be addressed for partial closure are the same as those required for closure of the whole mine.
Potentially renewable resource	A potentially renewable resource can be renewed fairly rapidly (hours to several decades) through natural processes. Examples of such resources include forest trees, grassland grasses, wild animals, fresh lake and stream water, fresh air, and fertile soil.
Reclamation	Process of bringing back a derelict or disused site to some productive or useful purpose.
Renewable resources	Solar, wind and wave energy is considered to be a renewable resource because on a human time scale it is essentially inexhaustible. It is expected to last at least 6.5 billion years while the sun completes its life cycle.
Restoration	Process of bringing back a derelict or disused site to a properly functioning state; often used to imply the original or similar land use.

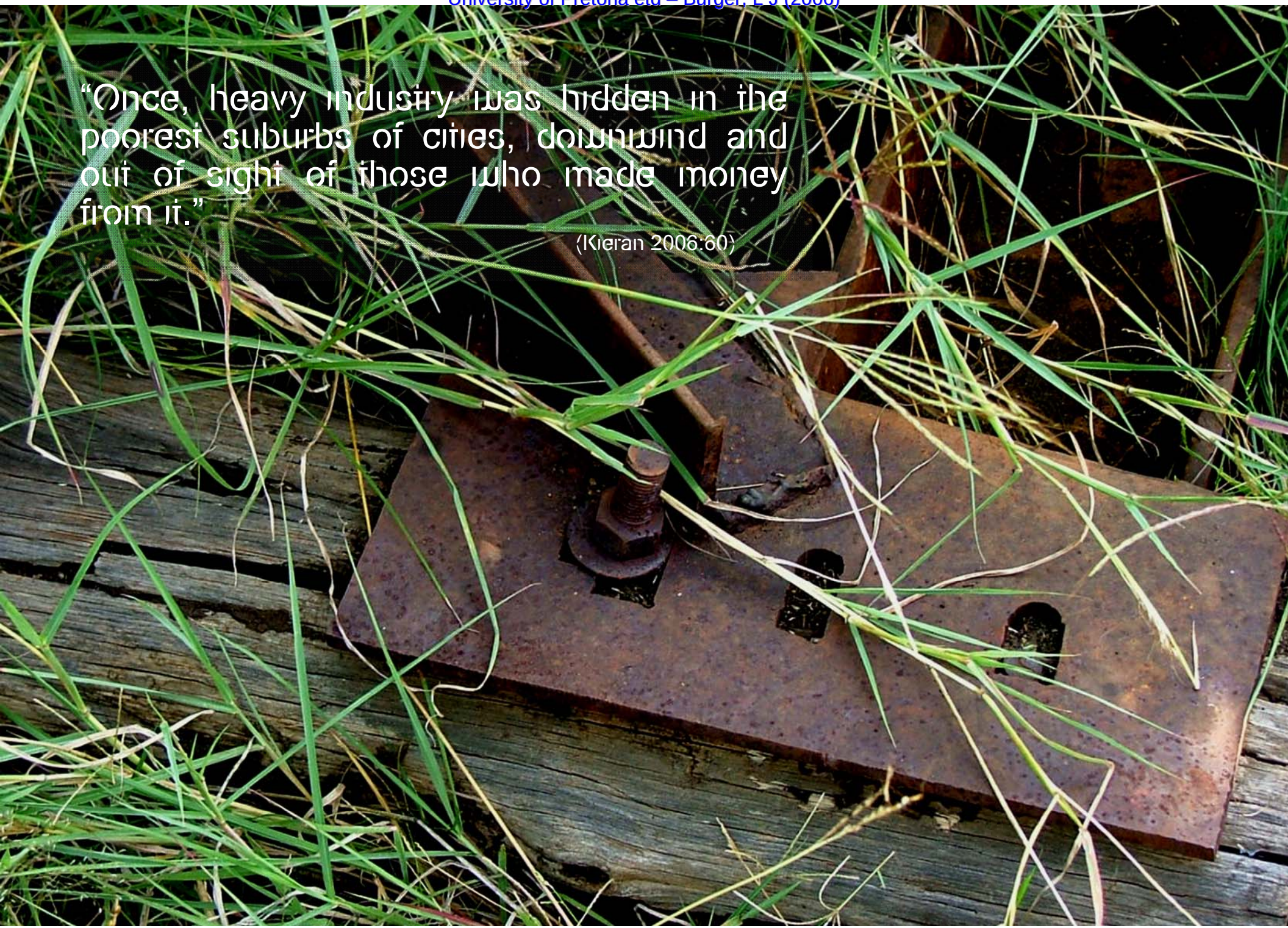
Registered / licensed disposal facility	Registered / licensed disposal facility means a facility as determined by the Director: Mineral Development after consultation with the Department of Water Affairs and Forestry, for the disposal of waste.
Reserve base	According to DME 2000c a reserve base is defined as that of an identified resource that meets specified minimum physical and chemical criteria related to current mining and production practices, including those for grade, quality, thickness, and depth. The reserve base is the in situ demonstrated resource from which reserves are estimated. It may encompass those parts of the resource that have a reasonable potential for becoming economically available within planning horizons beyond those that assure proven technology and current economics. The reserve base includes those resources that are currently economic (Demonstrated reserves) and marginally economic (Demonstrated Marginal Reserves)
Reserves	Reserves refer to that part of the reserve base, which could be economically extracted at the time of determination
Ripping	Deep cultivation of compacted soil using a shanked ripping tool attached to a crawler tractor.
Scarification	Light cultivation of soil surface to improve the seedbeds, prevent lamination between successive soil layers and increase water infiltration.
Sensitive Area	A sensitive area or environment can be described as an area or environment where a unique ecosystem, habitat for plant and animal life, wetlands or conservation activity exists or where there is a high potential for ecotourism.
Sensitive environments	Sensitive environments are the following: • Limited development areas (section 23 of the Environment Conservation Act, 1989 (Act No. 73 of 1989).

	• Protected natural environments and national heritage sites. • National, provincial, municipal and private nature reserves. • Conservation areas and sites of conservation significance. • National monuments and gardens of remembrance. • Archaeological and palaeontological sites. • Graves and burial sites • Lake areas, offshore islands and the admiralty reserve. • Estuaries, lagoons, wetlands and lakes. • Streams and river channels, and their banks. • Dunes and beaches. • Caves and sites of geological significance. • Battle and burial sites. • Habitat of Red Data Book species. • Areas or sites of outstanding natural beauty. • Areas or sites of special scientific interest. • Areas or sites of special social, cultural or historical interest.
Significant impact	An impact can be deemed significant if consultation with the relevant authorities and other interested and affected parties, on the context and intensity of its effects, provide reasonable grounds for mitigating measures to be included in the environmental management report. The onus shall be on the proponent to include the relevant authorities and other interested and affected parties in the consultation process. Present, and potential future, cumulative and synergistic effects should all be taken into account.
Soil form	Higher category of the Soil African soil classification system, defined by a unique vertical sequence of diagnostic horizons and/or materials.
	Describe a programme of strategic initiatives by Government aimed at unlocking the inherent and underutilised economic development potential of certain specific spatial locations in South Africa.
Spoil	Bulk waste material produced along with the marketable mineral: production waste, substandard and unmarketable material, overburden, etc. that has to be disposed of.
Subsoil	Subsoil means those layers of soil and weathered rock immediately beneath the topsoil that overlay the hard rock formation.
Tailings	Tailings are any waste materials, slimes or residue produced form mining or the professing of minerals (DME 2000).
Topsoil	Topsoil means the layer of soil covering the earth and which provides a suitable environment for the germination of seed, allows the penetration of water, is a source of micro-organisms, plant nutrients and in some cases seed, and of a depth of 0.5 m or any other depth as may be determined by the Director: Mineral Development for each mining area.
Vertic	Soils high in expanding clay that form large cracks on drying; self-mixing.

List of abbreviations and units

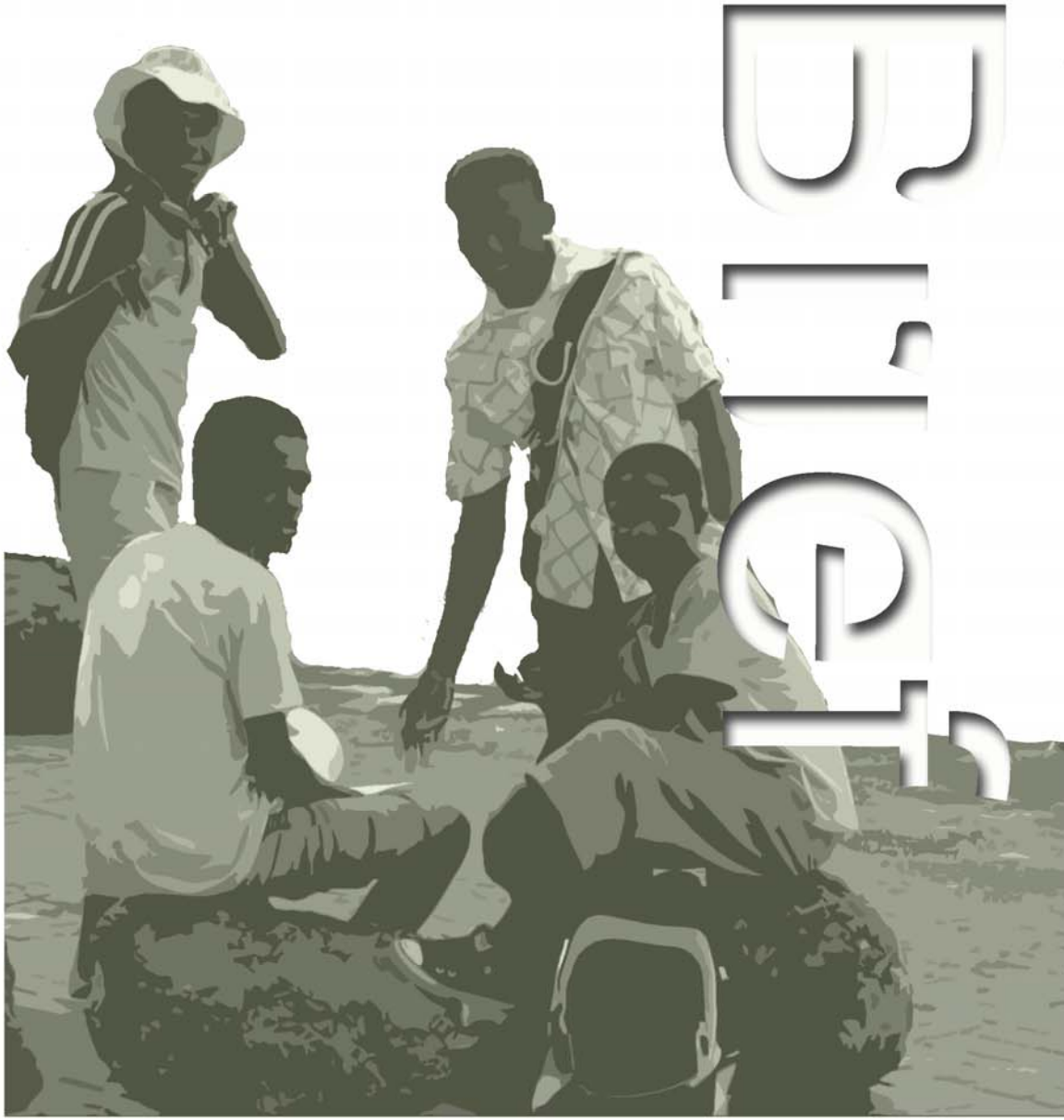
Au	Gold
ACP	Anglo Platinum Converting Process
BDM	Bojanala District Municipality
BRPM	Bafokeng-Rasimone Platinum Mine
DACE	Department of Agriculture, Conservation and Environment
DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
DME	Department of Minerals and Energy
EAMP	Environmental Assessment and Management Programme
EIA	Environmental Impact Assessment
EIM	Environmental Impact Management
EMP	Environmental Management Plan
EMS	Environmental Management System
EMPR	Environmental Management Programme Report
GDP	Gross Domestic Product
IEC	Independent Environmental Consultant
IEM	Integrated Environmental Management
Ir	Iridium
KP	Kruidfontein Project
LDO	Land Development Objective
LED	Local Economic Development
MAE	Mean Annual Evaporation
MAR	Mean Annual Runoff
MAP	Mean Annual Precipitation
MEM	Mining Environmental Management
MKLM	Moses Kotane Local Municipality
NDA	National Department of Agriculture
NEMA	National Environmental Management Act (Act No. 36 of 1998)
NWPTB	North West Parks and Tourism Board
Os	Osmium
PATII	Priority Area for Tourism Infrastructure Investment
Pd	Palladium
PGEs	Platinum Group Elements
PGM	Platinum Group Metal
PNP	Pilanesberg National Park
Pt	Platinum
Rh	Rhodium
RPM	Rustenburg Platinum Mines Limited
Ru	Ruthenium
SABS	South African Bureau of Standards
SDI	Spatial Development Initiative
tpm	tons per month
tpa	tons per annum
VAC	Visual Absorption Capacity
WTO	World Tourism Organisation

List of figures and tables



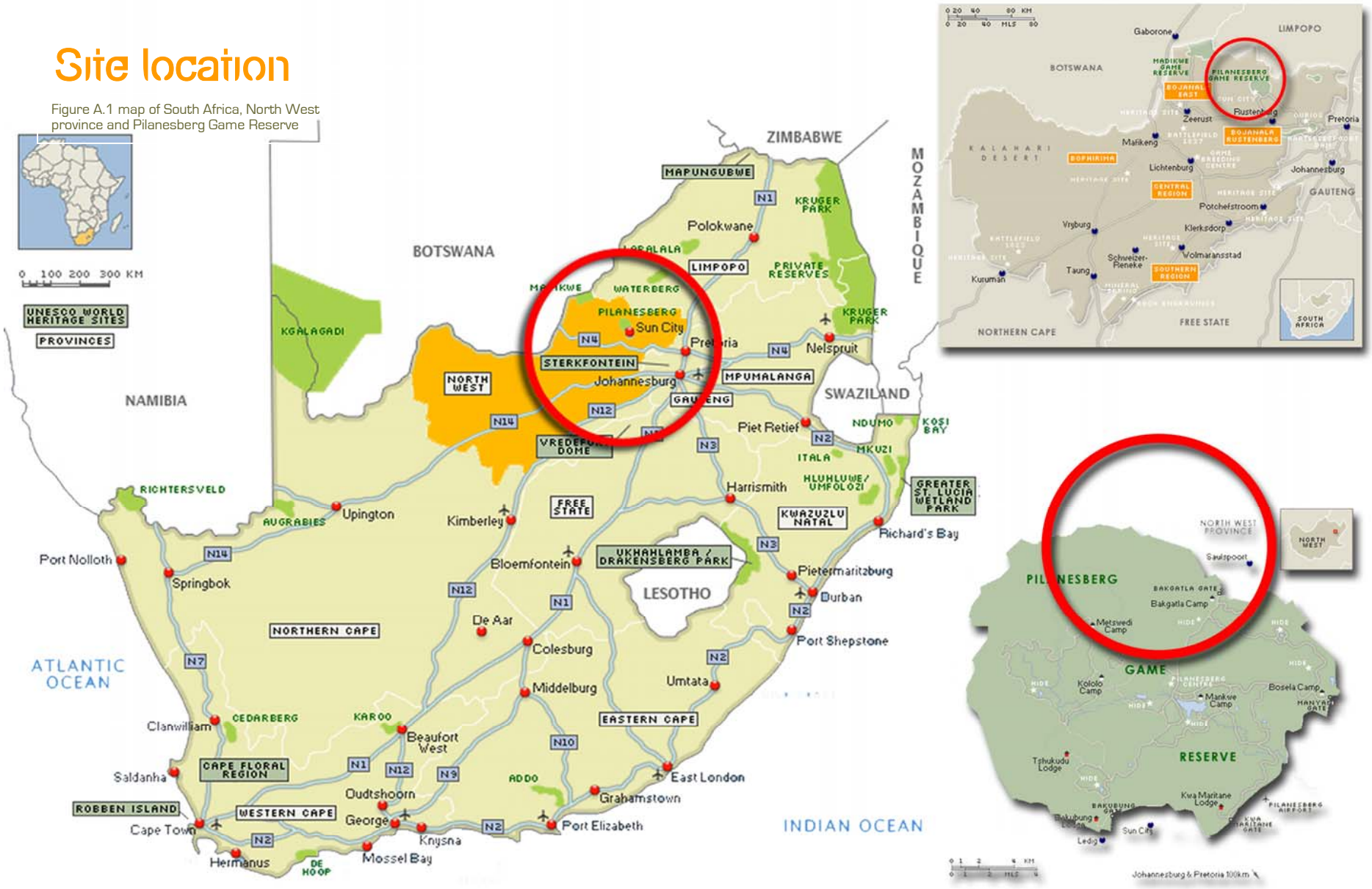
A Brief development

Introduction



Site location

Figure A.1 map of South Africa, North West province and Pilanesberg Game Reserve



Brief development

Introduction

Mining engineers, not particularly concerned with the design of aesthetics, follow a practical approach in both the architecture and landscaping of a potential mining project. Factory warehouse like facilities are designed to protect expensive equipment, from dust and rain, usually resulting in unsightly, elementary structures intruding in the landscape. The landscape design does not reflect the specific context. Transport interchanges, gathering places for potential workforce, nearby towns, and cultural values are neglected in the design process, resulting in societal problems and conflict. Offices, change rooms, workshops and gathering spaces, amongst others, are designed to function well, but usually result in mundane, uninspiring spaces, contributing to the adverse visual impact of the site.
Buildings and landscapes are function-specifically designed, with little or no sustainable approach, no vision for the future and only erected to serve the immediate purpose of the mine for 30 to 50 years.

Apart from the obvious visual impact, the problem does not cease to exist once the mine closes down. Because of the nature of the infrastructure it is difficult to re-implement a mine successfully. This results in the buildings slowly degrading and going to ruin, an unsightly picture in our otherwise beautiful South African landscape. Unfortunately at this stage in the mining process degrading buildings is not the only concern. Due to the ignorance concerning cultural history and values, and designs that that was purely functional at the time, the surrounding communities are also degrading, and their heritage and character is lost.

A. 1 Brief development

In an attempt to shift the paradigms that govern the perceptions of mining, one should endeavour to explain and investigate the concept of mining accommodated in a larger, broader sense and location. In this respect the mine can be seen as a catalyst for the introduction of values, spaces and urban areas that are not without meaning or belonging.

This dissertation investigates a paradigm shift that contains mining as a temporary intervention as key to a more sustainable and socially acceptable end land use. There is a need for a design model stipulating guidelines for sustainable mining and its social and infrastructural implications that can lead to invaluable communities within which spin-off activities can be introduced, grown and nurtured. This paradigm shift is necessary in formulating a new approach for an industry that is otherwise perceived as exploitative and exhaustive on the natural, social and bio-physical environments.

A. 2 Project background

The Pilanesberg National Park (hereinafter referred to as PNP), situated within the Bophuthatswana homelands, was founded in 1979. Situated 150 km. North West of Pretoria in the North West Province, this 55 000 ha National Park was quoted as being the first game reserve in Africa to have adopted the basic philosophy that 'nature conservation was to be utilized to the benefit of the local community.' (Keenan, 1984, p.6-7).

Initially only 35 000 ha were considered for the PNP while a large portion of the remaining land was community owned and was used predominantly for subsistence farming. The Bophuthatswana government realized that without negotiations and community involvement, they would be faced with great resistance in the development of the PNP and Sun City complex. It is not purely speculative to believe that the Bophuthatswana government had no choice but to include the local community in the establishment and management of the Park if they wanted to increase the area to 55 000 ha.

Three prominent tribes live around the PNP, with the small Baleema tribe concentrated in Malawi Village on the western side of the PNP, the Bakabung tribe from Ledig village in close proximity of Sun City on the southern side, and the Bakgatla Tribe on the north eastern periphery of the Park.

The Bakgatla tribe is the largest of all tribes with 32 villages falling within the Bakgatla Tribal Area (Nyalala Pilane, Chief of Bakgatla Tribe, 12 August 2003). As a result they own much of the land in the vicinity of the PNP and also benefit from their platinum mining rights. According to their agreement with the Bophuthatswana Government (Collingson & Magome, 1998), the tribe agreed to relinquish their grazing rights of the 8500 ha. that they owned and relocated the portion of their community living within the proposed Park to areas outside the Park (Collingson & Magome, 1998 & Honey, 2000). Today the Bakgatla Tribal headquarters are situated in the small town of Saulspoort, on the northeastern periphery of the Park, with the community living in the surrounding towns and villages.

Mining activities in the area are also very important since this provides employment for a large part of the community. Anglo Platinum's steady state operations, amongst others, are currently under way in the Amandebult and Union Sections near the town of Northam, with Bafokeng Rasimone Platinum Mine (BRPM), and the Rustenburg Section in operation southwest of the Pilanesberg National Park.

A. 3 The site

Rustenburg Platinum Mines (as part of the Anglo Platinum Group) are investigating the possible development of a platinum mining operation, known as the Kruidfontein Project, on the northern periphery of the Pilanesberg National Park, inclusive of the farms Rooderand 46JQ; Tuschenkomst 135JP; Wilgerspruit 2JQ; Koedoesfontein 42JQ; Legkraal 45JQ and Magazynskraal 3JQ . (S.E.F. 2001:i)

Early on in the initial investigations and with the stakeholders' involvement process it was brought under the project team's attention that a strategic green corridor initiative was planned in the vicinity of the aforementioned mining project. It was soon realised that a section of the Kruidfontein Project (the farms Rooderand 46JQ and Legkraal 45JQ) overlaps with a part of the broader regional proposed Heritage Park development.

In the event of the corridor development being pursued, it would open up an important tourism node and conservation area for the North West Province. This conservation effort will hold vast potential for development in the Saulspoort area and it is essential that the heritage, culture and activities of the Bakgatla community form part of both the mining and the management plan for this area.

A. 4.1 Overall objectives

The overall objectives for the project are:

- To design a node from where the people of Saulspoort will commute to the mine and their other daily activities.
- To preserve the very specific character of the town Saulspoort and enhance it in such a way that it can benefit parts of the community in all the phases of the mining operation.
- Enclose the cultural precinct which consists of the tribal office and a large arena like space which hosts weekly, monthly and annual gatherings.
- It must be a design aesthetic that can be recurring and become part of the distinctiveness of the area as well as express the identity of the people who use it.

A .4.2 Approach

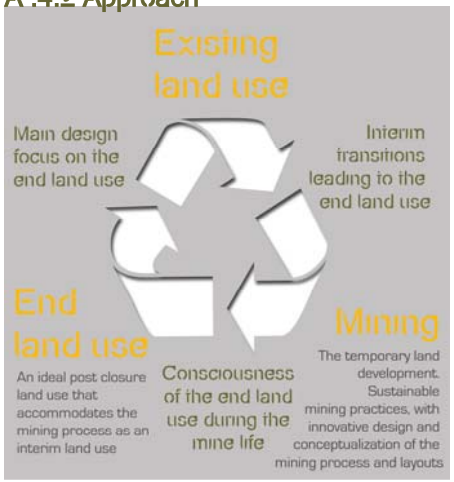


Figure A.2 the design approach

A. 4.2.1 Preconstruction to Closure/Decommissioning

This includes the design of the cultural precinct area to capture the heritage an character of Saulspoort. The design must serve as a mitigation measure to the various influences mining operations usually encompass like influx of people, cultural stresses, visual impacts, traffic and financial stresses. It must also fulfil the present needs of community like promotion of tourist interest, upgrading of the cultural precinct, promote the cultural attractions like museums and trade.

After decommissioning of the mine the design must enhance the developments that occurred during the mining operations and tie in with the architectural influences proposed by the project team, and planned end land uses projected for the shaft infrastructures just outside the Sualspoort periphery

A. 5.1 Project aims and objectives

- The effective planning and design of the transportation system node/s in Saulspoort
- The creation of a safe, aesthetically pleasing environment for the tourist, residents and workforce of the mine.
- The linkage of the mine site with the town
- Include historical and cultural facets in the design
- Designated end land-use
- Tourist-friendly facility
- Sensitivity towards the park and surrounds
- Pedestrian friendly design to lessen traffic impact
- Easy access
- Icon of prosperity and influence of mining
- Growth of a second industry whilst mine is in operation
- Community participation and decision making
- The ease of converting, enlarging, or reduction of the transportation interchange into the designated end-land use
- Reuse of materials
- Urban ease of incorporation into the heritage park
- Upliftment of the community
- Conglomeration of activities to support the whole
- Create new job opportunities; skills training and community development

A. 5.2 Constraints

Linkage to town due to proximity of the mining operations.
Project falls whithin a specific cultural & physical context
The scope of project
Time span of project
Low visual pattern of landscape

A. 6 Methodology

A **scenario-based** approach to problem solving will be used as part of the research and development process. Due to the nature, scale and time span of the project, the scenario-based approach allows for flexibility and appropriation of the design proposal presented.

Also used is the descriptive survey method:

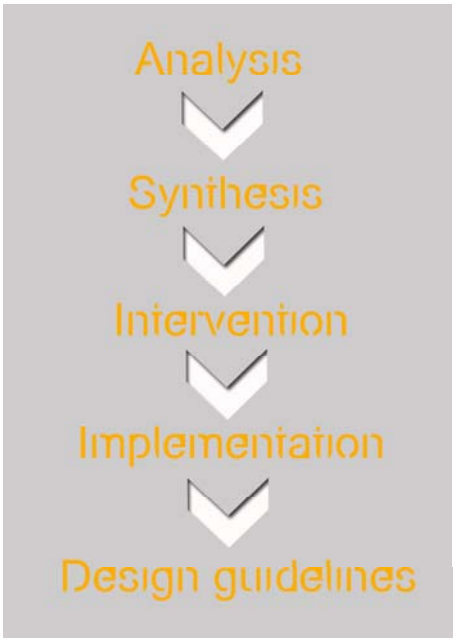


Figure A.3 the design approach

A. 7 The Clients

A. 7.1Non place-based actors:

A. 7.1.1 International

- World Tourism Organization (WTO)
- World Conservation Union (IUCN)
- United Nations Environment Programme (UNEP)
- World Wildlife Fund (WWF)
- World Bank (WB)
- World Trade Organization (WTO)

A. 7.1.2 National

- Department of Environmental Affairs and Tourism (DEAT)
- South African Tourism (SATOUR)
- Anglo Platinum Limited

Figure A.4 Anglo platinum insignia

A. 7.1.3 Regional

- North West Parks and Tourism Board (NWPTB)

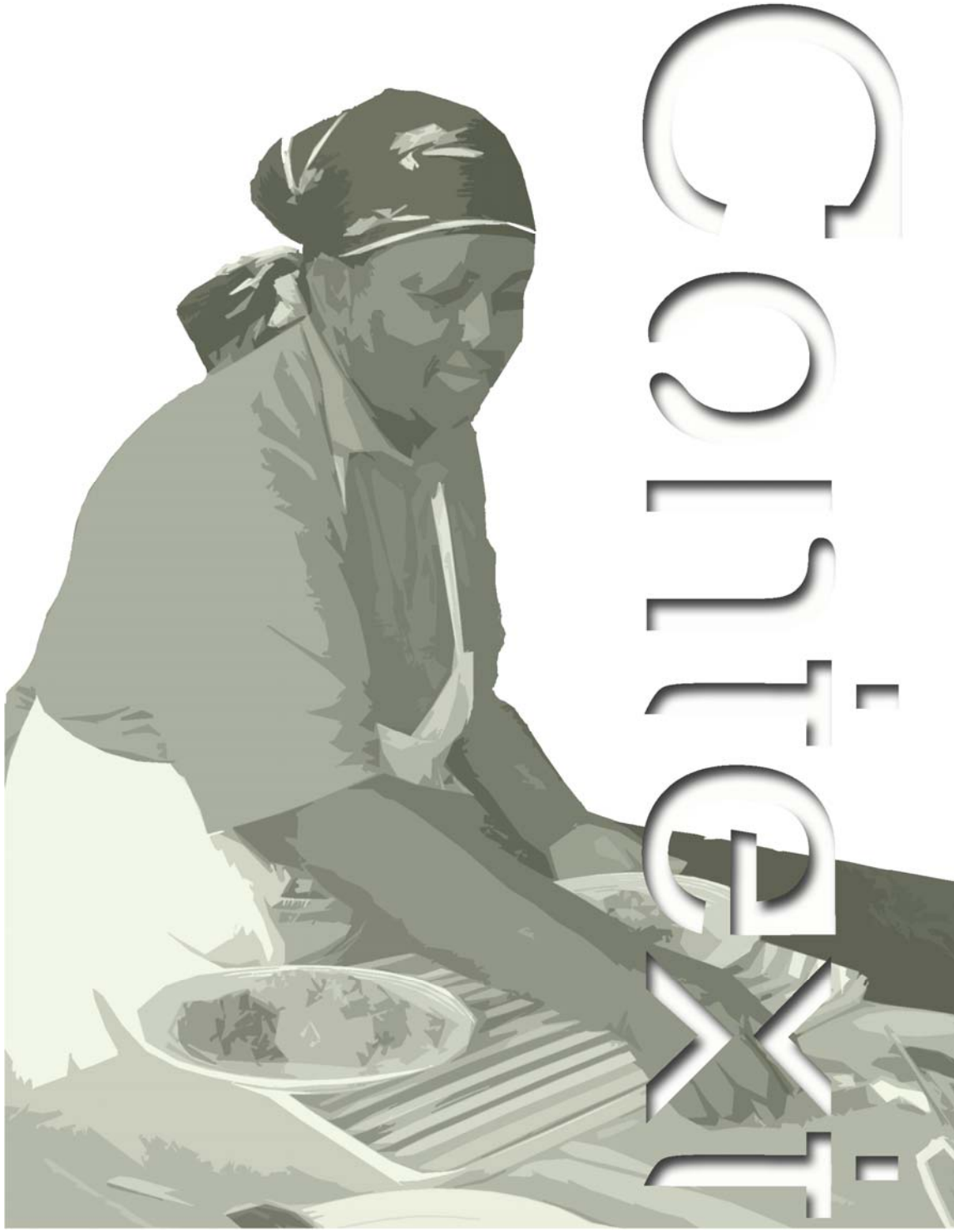
A. 7.1.4 Donors

- Gold Fields
- De Beers
- Anglo American
- SA Breweries
- Sun City
- SAPPI

A. 7.2 Place-based actors:

- Community
- Tribal Authorities
  - Bakgatla-ba Kgafela
  - Bakubung-ba Ratheo
  - Batlha Ko-ba Baleema
- Community Development Organisation (CDO)
- Pilanesberg Park Management
- Moses Kothane Local Municipality
- Concessionaires
  - Legacy Hotel Group
  - Golden Leopard Resorts
- Sun City
- NGO's
  - Friends of the Pilanesberg Society (FOPS) (Ringdahl, 2001: 11)

B context analysis:



Bio-physical analysis

Historical context

Socio-economic analysis

Site location

Figure B.1 map of South Africa, North West province and Pilanesberg Game Reserve

Figure B.2 Ariel view of Saulspoort

The site is located in the North West Province of the Republic of South Africa, on the Northern foot slopes of the Pilanesberg. The site falls within the Moses Kotane municipality district.

Figure B.3 Moses Kotane local municipality

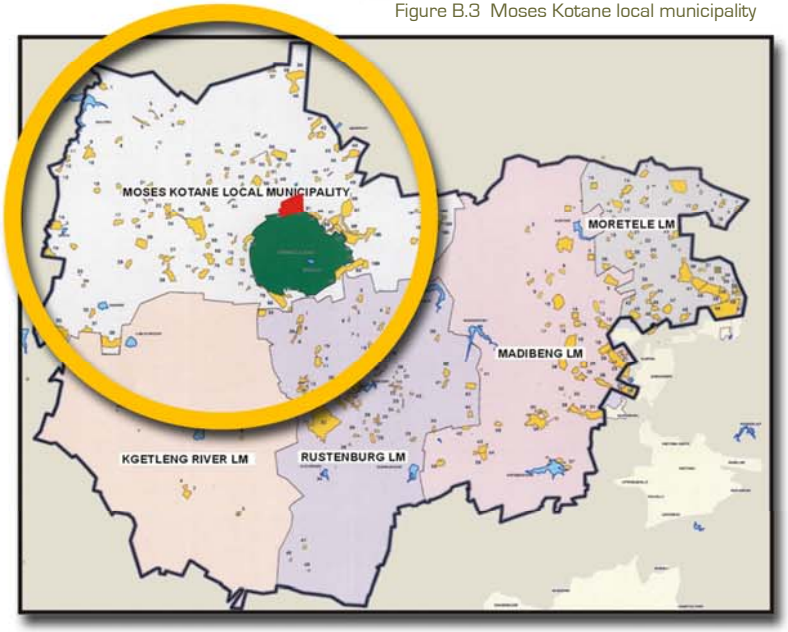
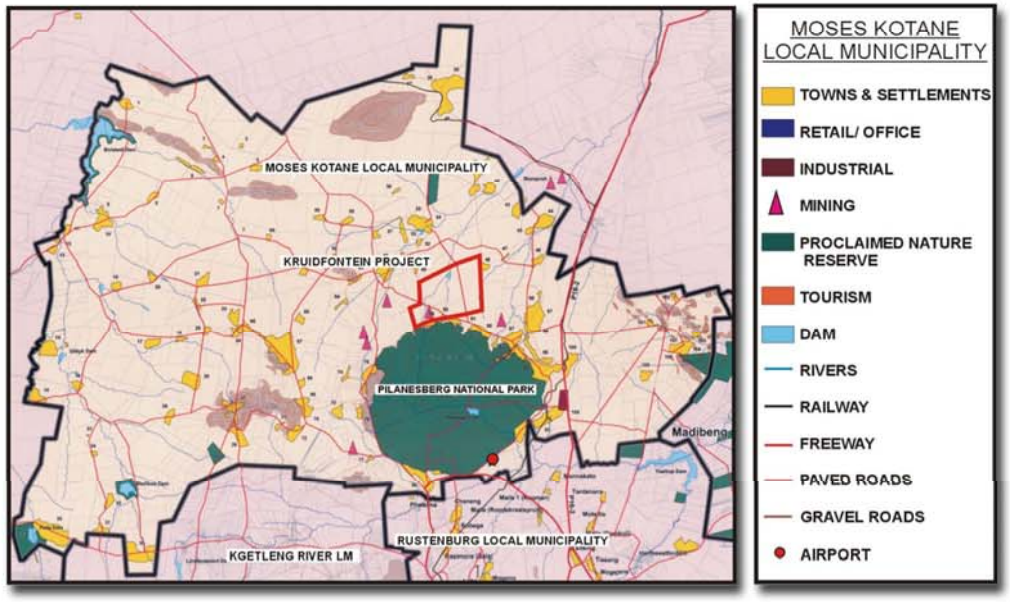


Figure B.4 Moses Kotane local municipality



Context Analysis

Bio-physical analysis

B.1 Climate
The Kruidfontein Project falls within an area with warm to hot summer and mild to cold winter months. Climate is considered under the following parameters:

B. 1.1 Rainfall
The Kruidfontein project fall within the Highveld climatic zone, where mean annual precipitation for the region can be expected to vary from 500mm to 700mm. Most of the rainfall results from showers and thunderstorms of short duration. (Shulze 1986)

B. 1.2 Evaporation
Evaporation is expected to be between 1700mm and 2000mm per annum. (S.E.F. 2001: 41)

B. 1.3 Wind
Fine condition with little or no rainfall, and light variable with a Northerly component occur over the region. The dominant direction of the prevailing surface winds is in a North-Westerly and North-Easterly direction. Crop damage and wind erosion are unlikely due to low average wind speed of 11 km/h. (S.E.F. 2001: 43)

B. 1.4 Temperature
The average temperature per annum is approximately 18.6 ºC. The daily temperatures higher than 32.5 ºC and lower than 14.5 ºC during the summer months are very seldom. The hottest months are December to February. During April and May there is a noticeable drop in temperature, with the coldest months being June and July. (S.E.F. 2001: 43-44)

B. 2 Geological and mineral resources
The geological source of Anglo Platinum's current production is the Bushveld Complex of South Africa, the largest known layered igneous complex of its type in the world. Extending 350 kilometers from east to west and 250 kilometres from north to south it is roughly saucer-shaped. Unique to the Bushveld is the presence of two strataform deposits that can be traced for hundreds of kilometers along the rim, containing economically exploitable quantities of PGMs. (S.E.F. 2001:46)

B. 2.1. Reef Types

B. 2.2. Merensky Reef
Since mining first began in the 1920s, the uppermost of the two layers, the Merensky Reef, has been the most important PGM source; it is especially rich in platinum, which makes up some 60% of the 4E grades quoted by Anglo Platinum. Reef width and grade are highly variable and for this reason the value of the MR in the proposed Kruidfontein Project has been discounted on the assumption that only 25% of the reef area will be amenable to extraction. (S.E.F. 2001:46)

B. 2.3. UG2 Chromitite
At a vertical distance of 16 and 400 meters below the Merensky Reef, depending on location, the second PGM-bearing layer known as the UG2 chromitite is situated. This has become an important alternative source of PGMs in recent years. (S.E.F. 2001:49)

B. 3 Topography
Slope angles are generally shallow indicating a gently undulating topography across the whole site. The lowest point in the study area is 1043m above mean sea level. The Pilanesberg an oval series of concentric hill ranges and valleys composed of a unique suite of alkaline volcanic rocks, with the outer most rings of mountains rising abruptly 300m to 600m above the surrounding plains. The valleys of streams in the area are mainly broad; some narrow, open, and exhibit rather low gradients. The Bierspruit, Wilgespruit and Lesele non-perennial streams drain the area. (S.E.F. 2001:51)

B. 4 Soils Landform

B. 4.1 Description of soil-landform resources
Two broad soil-landform uses can be distinguished, each related to geology, topography and age. The northern flat plains with underlying grabbo of the Bushveld Complex are covered by a black-red clay soil association, whereas the foot slopes of the Pilanesberg, in the southern part of the project area, constitute of loamy and clayey, cutanic soils derived from alkali rocks of the Pilanesberg Complex, and are of relatively younger age than the black-red association.

B. 4.2 Identification of sensitive areas

B .4.2.1. Soil Erosion
The natural water erosion hazard of the soil-landform is low, however, if plant cover is removed or the land surface abused the erosion susceptibility increases appreciable. Cattle and human trials are also responsible for sediment production. (S.E.F. 2001:55)

B. 4.2.2. Soil Compaction
A very hard, compacted soil will limit the ease of landscaping and plant growth as well as increase water runoff. Further more, the soils of the Shortlands, Hutton, Valsrivier and Oakleaf forms have a moderately to high compaction potential in the topsoil. (S.E.F. 2001:55)

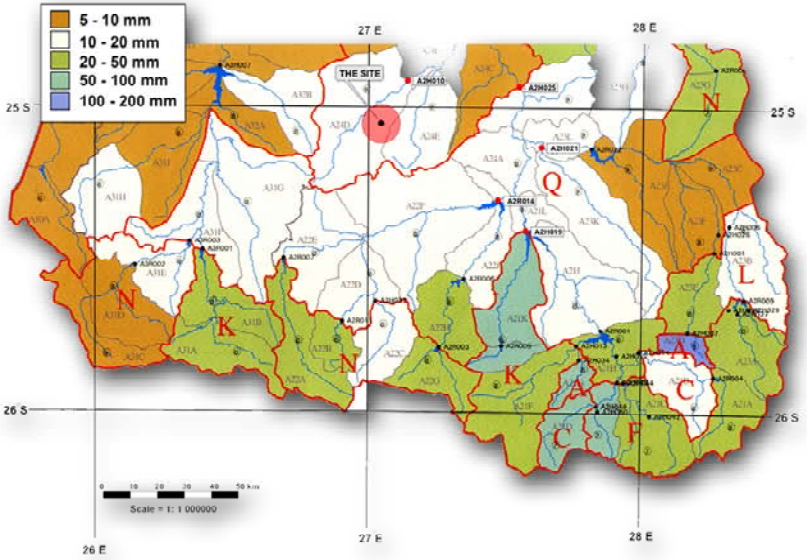
B. 4.2.3 Dustiness
No sensitive sites are expected due to the low potential dust qualities of the soils in the project area.

B. 4.2.4 Soil-landform stability
With regard to the soil-landform, the stability of the landscape is mainly moderate to high for the more level laying soils. However, rock falls, slides and soil creep may occur on steeper slopes. (S.E.F. 2001:55)

B. 5 Land capability and land use
The turf soils are naturally fertile and if well managed it can be productive. Crops commonly produced on these soils include sunflowers, maize and sorghum. Livestock farming, under normal circumstances, is also constrained by low rainfall and the low carrying capacity of the surrounding veld.

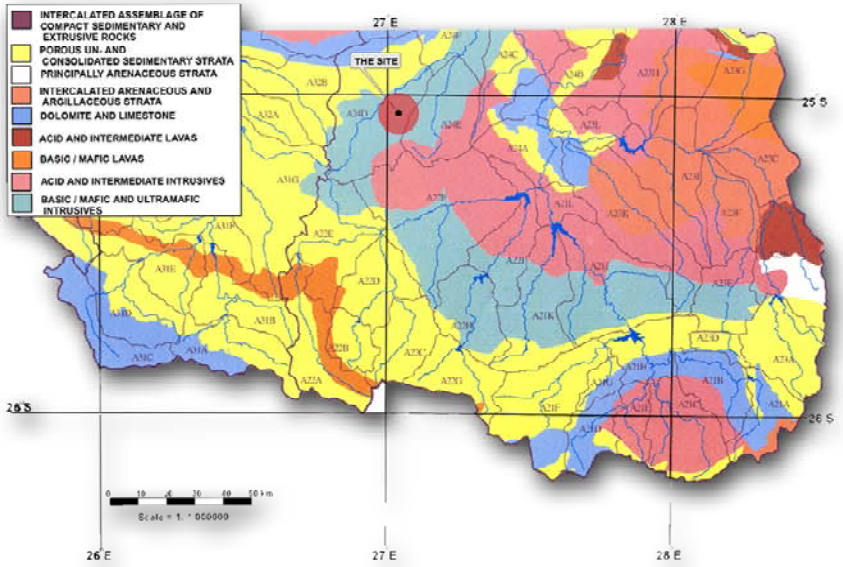
Mean anual runoff

Figure B.5 Mean annual runoff



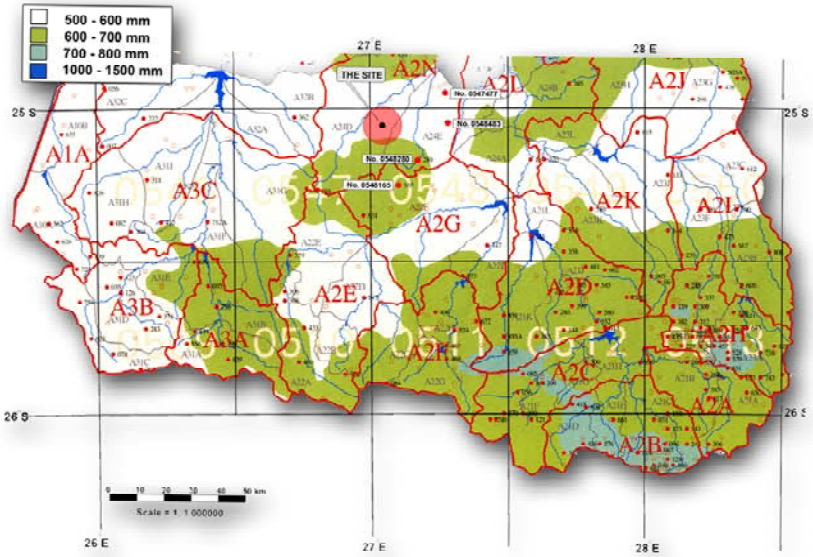
Litostratigraphic map

Figure B.6 Litostratigraphic map



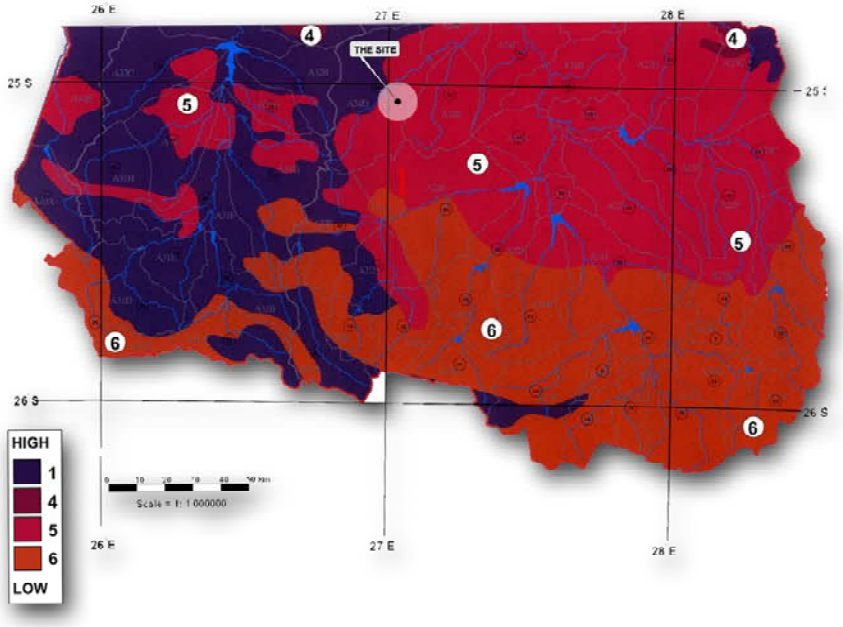
Mean anual presipitation

Figure B.7 Mean annual precipitation



Erodability index

Figure B.8 Erodability index



B. 5.1. Land capability

Three classes of land capability have been identified:

- Medium to low potential arable land For the purpose of the Kruidfontein project, arable land is described as medium potential agricultural land used for dry land crop cultivation.
- Grazing land The Veld is capable of supporting a stand of indigenous grass species and is utilized by domesticated livestock.
- Wilderness land/open savanna patches; and watercourses

(S.E.F. 2001:64)

B. 5.2 Land use

The current use of the land of the Kruidfontein Project study area is mainly for grazing and some agricultural purposes. The land uses in the study areas as follows:

Agriculture – not a predominant land use per say but to some extent a part of the economic generation in the region.

Mining – is to date a prominent activity in the regional context with platinum, chrome, gold and diamonds mines in the region.

Urban development and settlement – economic opportunities created by mining development in the region has encouraged to a large extent the growth of villages, towns and settlements in the region.

Mine related industry – secondary and tertiary industries have developed to support the mining industry.
(S.E.F. 2001:64)

B. 6 Vegetation and animals

The Kruidfontein Project study area is located within the savanna biome, which consists of scattered trees and shrubs and a continuous ground layer dominated by grass species. According to Van Wyk & Malan (1997), fire plays an important role in this environment as it aids in the regulation of the density of the woody component. The black turf soils of the area are rich in clay and plant nutrients and support a dense bushveld, which is dominated by *Acacia* species such as A. *mellifera* (Black Thorn), A. *tortillis* (Umbrella Thorn), A. *niJotica* (Scented Thorn) and A. *caffra* (Common Hook-thorn). Large stands of *Dichorstachys cinerea* (Sickle bush) occur and are indicative of over-grazing. Grasses are 'soft' and fibrous and retain much of their nutritive value and palatability after flowering and through the dry season. Grassspecies include *Ischaemum afrum* (Turf Grass), *Sehima galpinii,* (Deck Grass) and *Setaria incrassata* (Canary Millet). (S.E.F. 2001:69)

B. 7 Animal life

The occurrence of flora in any area depends on habitat. Since the area has already been altered by human activities, most natural wildlife habitats have been disturbed. The only animal in the study area is common birds reptiles and small rodents. (S.E.F. 2001:76)

Timeline

B. 8 Timeline of the Bakgatla-Baga-Kgafela settlement and events in the Pilanesberg

1441-1560
Masiloand son Malope (mythical ancestors of the Bakgatla

1600-1650
Chief Mokgatla dies, Bakgatla split into Bakgatla of Kgafela, Mmanaana and Mosetlha

Early 19th century
Bakgatla-Baga-Kgafela under Pheto are strongest power in Pilanesberg by incorporating other tribes. Pheto's capital is at Sefikile (Spitzkop, west of Northam)

1824-1825
Motole is assassinated and is succeeded by Pi lane (senior surviving son of Pheto's second hut)

1835
Pilane goes into exile in the Zoutpansberg when he suspects Mzilikazi plotting against him. Molefi becomes acting chief again.

1837
Voortrekkers arrive in the Pilanesberg area

1860's
Increasing Boer pressure on the BBK to pay for taxes and land rights and to provide land and labour for Boer farmers

1866
Saulspoort becomes the DRC mission centre at Pilanesberg. Satellite stations managed by black teacher-evangelists are established.

26 April 1870
Chief Kgamanyane and half the Bakgatla-Baga-Kgafela leave Pilanesberg.

1890
ZAR government requests British government to incorporate the Kgatla country in Bechuanaland into the ZAR, but this is refused

1895
ZAR Plakkerswet restricts number of Africans living on Boer farms to five families. Many Bakgatla-Baga-Kgafela are scattered all over Pilanesberg as a result of this. At least 2000 go to Bechuanaland where Linchwe resettles them into the Kgatleng (land of the Bakgatla)

17th century
Bakgatla enter the Pilanes district

1780-1790
Armed conflict between Bakgatla-Baga-Kgafela (under Mogotso) and Batlokwa against Bafokeng, Batlako, Bakubung and Bapo

1805-1823
Internal strife after Pheto's death: Letsebe, Senwelo and Motlole succeed each other as chiefs. Motlole rules from Magakwe or Dithubaruba on the farm Kruidfontein

1825-1830
Pilane conspired with the Griqua against Mzilikazi. Mzilikazi punishes the Bakgatla-Baga-Kgafela by destroying their villages, taking their cattle and drafting young men into his regiments. Pilane goes into exile in the Soutpansberg. His half-brother Molefi acts as chief.

1837
Pilane returns when Mzilikazi is expelled from the Transvaal by the Voortrekkers. Settles on the Kgetleng River at Mmasebudule (Rhenosterfontein)

1850
Death of Pilane. He is succeeded by Kgamanyane who settles at Morulen g (Saulspoort)

1863
The DRC missionary HL Gonin visits the Pilanesberg. Kgamanyane requests Commandant Paul Kruger to allow Gonin to settle at Saulspoort to teach and preach the gospel

April 1870
Commandant SJP (Paul) Kruger flogs Chief Kgamanyane at Saulspoort because the Bakgatla-Baga-Kgafela refuse to work on a Boer wheat-irrigation project

1887
Some small villages in the Pilanesberg district are relocated to the centre of the tribal area at Saulspoort

1892
Linchwe converts to Christianity and many Bakatla-Baga-Kgafela follow his example. T Phiri returns to Saulspoort after training at Morija (Lesotho)

16 February 1900
Battle at Kayaseput (between Derdepoort and Dwarsberg) between Bakgatla-Baga-Kgafela and Boers

1899
BBK own portions of farms Saulspoort, Modderkuil, Kruidfontein, Holfontein. Only Saulspoort is fully residential farm.

Middle 1900
Bakgatla-Baga-Kgafela are effective military force in the ZAR and also serve as scouts, guides, and drivers. Large-scale looting of Boer cattle and property in Pilanesberg begins.

1903
Seven schools in the Pilanesberg with a total pupil population of 560

1906
G Stegman joins Gonin as his assistant. T Phiri becomes the first Mokgatla to become a DRC minister.

1910
Death of Gonin. Stegman becomes head of the DRC mission at Saulspoort

1914
Outbreak of World War I: Three Bakgatla-Baga-Kgafela regiments from Mochudi and Pilanesberg serve on British side in German South-West Africa. Another Pilanesberg regiment under Ramatlari serves in France.

1921
Isang (oldest son of Linchwe) becomes acting paramount chief of the Bakgatla-Baga-Kgafela at Mochudi because of ill health of Linchwe. Dialwa resigns.

1924
Death of Linchwe. Isang succeeds him.

1929
Death of Isang. He is succeeded by Molefi (son of Linchwe's oldest son Kgafela who died in 1914)

1937
First properly built government school opened at Saulspoort

1937
First borehole sunk for BBK on Saulspoort to alleviate water shortage. T Phiri leaves Saulspoort and Malolwane as evangelist where he has been stationed since 1883.

1937
First farms bought by SA Native Trust

1942
Death of Ofentse.

1951
Tswana homeland established in terms of Bantu Authorities Act of 1951: Tribal and regional councils established

1961
Tswana Territorial Authority established in terms of Promotion of Bantu Self-Government Act (1959)

1963-1965
Farms bought by SA Bantu Development Trust

1971
The Tswana homeland becomes a self-governing territory and changes its name to Bophuthatswana

1977
Tswana homeland becomes "independent"

1979
Pilanesberg National Park established

1994
End of Bophuthatswana and incorporation into North-West Province

[Archival 2001]

Saulspoort

Figure B.9

Context Analysis

Saulspoort and community

B. 9 Saulspoort

Saulspoort/Moruleng is a small rural settlement situated on the north eastern foot slopes of the Pilanesberg, 30 km from Sun City. Due to mining activities dominating the economical scene in Northam and Amandebult, the town grew rapidly over the past few years, resulting in a number of settlements conglomerated around the small town.

B. 9.1Architectural facilities

The town resembles a low-density cell-like structure with a one plot/one house development bordered by pedestrian and vehicular dirt roads. A few informal structures are found scattered about town. Most of the infrastructure is brick-built with low-pitch corrugated iron roofs and parapet walls. Brightly painted facades of general dealer depot's and taverns are a common trend. Although tradition and culture are paramount to the Bakgatla people, very little of this is evident in the architecture, with mostly western-influenced design, and very little traditional Tswana architecture in the surround. Agricultural practices in town are limited to vegetable gardens of corn and sorghum in back yards, and cattle, goats and chickens walk freely amongst the buildings.

B. 9.2 School and recreational facilities

46 Primary and Secondary schools are located in and around Saulspoort. These buildings are characteristically robust, well-built structures with steel windows and pitched roofs. A point of concern, however, is the underdeveloped sport- and recreational facilities of these schools, where children tend to play on make-shift soccer fields and open areas next to busy streets.

In the early 90's a recreational area, the Rasparane Park, was created for the community at the Bakgatla gate of the PNP. Due to noise disturbance and complaints from visitors to the camp, the Park was moved to Raserpane in Moruleng, which included a swimming pool, stage, performing area, soccer field and picnic area. The relocation was decided by the tribal authority and the PNP without consulting the local community, resulting in much resistance and dissatisfaction amongst the community. The project was never completed. To date, Rasparane has been under utilized and is falling under disrepair.

It is important to understand the concept of community participation regarding the planning and facilitation of any intervention that may directly or indirectly impact on the town. Success relies on the participation of the community in the decision-making-, implementation- and management process of any project. This in turn promotes empowerment of the people, resulting in the community having a sense of ownership over the project, and by doing so, avoiding the risk of interventions becoming white elephants, as in the case of Raserpane.

B. 9.3 Hospitals

The George Stegman Hospital, approximately 3km from the Bakgatla Gate, is the only formalized hospital in the area. A few doctor's consulting rooms are located along the main road, although a large part of the community still prefer traditional medicine and methods of healing over modern practices.

B. 9.4 Activity from main road

A series of small businesses, taverns, general dealers and offices are situated next to the main road. The Bakgatla ba Kgafela Tribal Office, the Mphebatho Cultural Museum, two Dutch Reformed Churches and the Moruleng Primary School form part of the central assembly district on the main road. The tribal office is the authoritative headquarters of the Bakgatla ba Kgafela tribal leaders, addressing the social, economical and infrastructural needs and issues of the community. The leaders are frequently in negotiations with mining companies over leases on tribal lands in the area. These mining companies provide the greatest sector of employment for the people living in and around Saulspoort.

Housed in a renovated school, the Mphebatho Cultural Museum was launched in 1999 by the Bakgatla Tribal Authority in response to the communal idea to restore and collect artifacts and history of the Bakgatla tribe. All artifacts have been donated by members of the community. The purpose of the centre is to not only serve as a recollection of the Bakgatla history and culture, but also as a traditional and cultural knowledge learning centre for children in the surrounding villages. It also serves as a base for traditional conservation clubs and for an adult training centre in indigenous knowledge. Apart from the very strong community focus on the Centre, it also targets the tourist with the provision of a traditional café, medicinal herb garden, internet café and curio shop, supplied with locally produced crafts.

B. 9.5 Religion

Only one of the two Dutch Reformed churches is in use. The community is predominantly Christian, although many still believe in traditional healers and ancestral spirits. Some consider the Pilanesberg as a symbol of superior power, with a mystic serpent living in the hills. This serpent, according to some, comes down from the mountain on special occasions, surrounded with a bright light, to drink water from the Moruleng dam.
A designated layer of exposed bedrock across the road from the museum serves as a place where only men, traditional healers and tribal leaders are allowed to pray for rain. Women aren't allowed, apparently, because they gossip too much and can't keep a secret!

B. 9.6 Transportation

The main transport interchange in Saulspoort is situated across the only petrol station on the main road. Taxi's and cars park haphazardly on the dusty road reserve where people stand waiting in front of an old rundown tuck shop. No shade or seating has been provided for taxi passengers up to date, leaving them to face whatever the elements has to offer. Other main

Museum

Hosts activities such as an Internet café, traditional food kitchen and a cultural tour. It also provides additional information on crafts and activities in the aera.

New NG Church

The church is built next to the old NG Church, a historical landmark. The Sunday services are relatively small. There are no other functions accommodated by this building

Tribal office and cultural arena

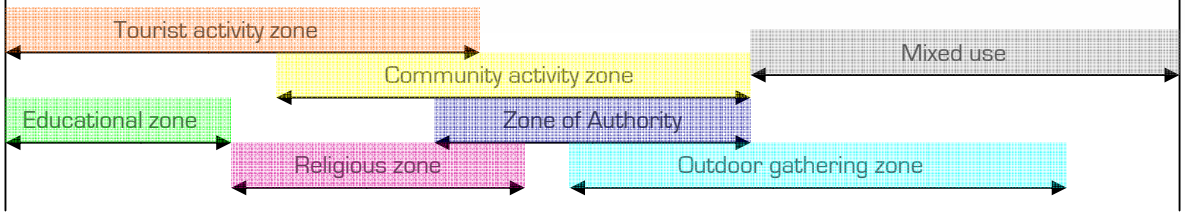
This is the communities' heart. The building is too small to accommodate all of its functions. It accommodates daily and weekly activities inside the building and monthly and annual activities outside.

Building entrances

Main vehicular route

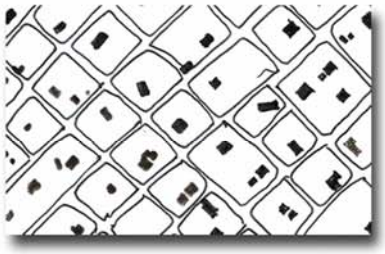
Secondary vehicular routes

Main pedestrian routes



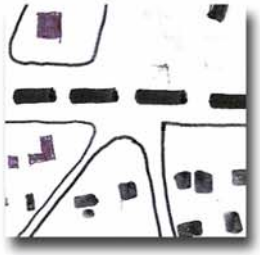
Saulspoort

Figure B.10



Right:
In this one can see how the character of Saulspoort is expressed in the way in which the roads are of unequal width and organic.

Left :
This is the newer settling patterns in the Saulspoort area.




1. View towards the South


2. View into the settlement towards the east


3. View towards the West From the settlement


4. View of the road reserve looking North East

Cell structure of Saulspoort

Figure B.11

transport interchanges occur next to the busy streets in and around town, also with no provision for shelter or basic infrastructure. Still, the predominant means of transport is by foot.

B. 9.7 Culture

Pottery is an integral part of the area's culture and tradition, and also a significant export product to the Pilanesberg National Park and Sun City. Women and young girls craft pots of various sizes as wedding gifts, for the brewing of beer, storage and even burial caskets. Pots resemble the cycle of life and even pieces of broken pots are used in healing ceremonies and passed on from one generation to another. These pots and other curios provide a substantial income to some, and is a good example of empowerment of women in these communities.

B. 9.8 Criticism of Saulspoort

Positive:

- Saulspoort is set in a perfect location to benefit from tourism initiatives derived from the PNP and Sun City.
- Friendly hospitable community.
- Rich Cultural Heritage Preservation value
- The town centre has a vibrant dynamic character.
- The Museum and local kitchen is an important tourism node in the area.

Negative:

- The settlements are characterized by low-density, fragmentation and sprawl.
- Poor preservation and maintenance of buildings in town.
- Inadequate facilities and services for tourists.
- The transportation interchanges around town are poorly designed with little or no provision of basic infrastructure and shelter.
- Littering in some streets, and in open spaces and riverbeds.

Context Analysis

Socio-economic analysis

B. 10 North West Province in a National Context

During the past 10 years North West's contribution to the Gross Demographic Product (GDP) consistently ranked as the third lowest of all provinces. North West's contribution to the GDP dropped from 5,6% in 1991 to 4,9% in 1996.

Whereas North West's mining industry's contribution to GDP on a sectoral basis outperformed the other provinces since 1991. During 1996 this situation was reversed, with Gauteng contributing 21,8%, closely followed by North West 21,6%; Mpumalanga 20,8%; and, the free State with 13,8%. It can, however, be expected that the steep rise in platinum prices during recent times increased the relative importance of North West's mining industry.

On a national basis, North West represents 28,4% of total employment in the mining sector. The average establishment of businesses in North West is smaller than the national average. Establishments in the province employ an average of 50 people (national average 64), produce R1,9 million of net output (national average R 3,3 million) and utilize R 1,6 million of fixed assets (national average R 2,2 million). (S.E.F. 2001: 125)

B. 11 Vision and key leverage areas for the Rural Areas of the Moses Kotane Local Municipality

According to Plan Associates (2001) the vision for the MKLM in terms of the key leverage areas concerning social facilities and economic development reads as follows:

"Sufficient social facilities such as clinics, community centers, police stations and training centers will be provided to achieve a balanced social structure and create a safe and secure environment". (Plan Associates. 2001)

This vision will be pursued through specific focus on the following Key Leverage Areas:

- Health clinics.
- Streetlight to reduce crime.
- Multi-purpose community centers.
- Mini police stations.
- Training centers.

(S.E.F. 2001: 126)

and to

"Promote economic development in the rural areas by supporting the potential of economic activities such as agriculture, mining, tourism and industrial and commercial development to maximize job creation for local communities". (Plan Associates. 2001)

This vision will be pursued with specific focus on the following Key Leverage Areas:

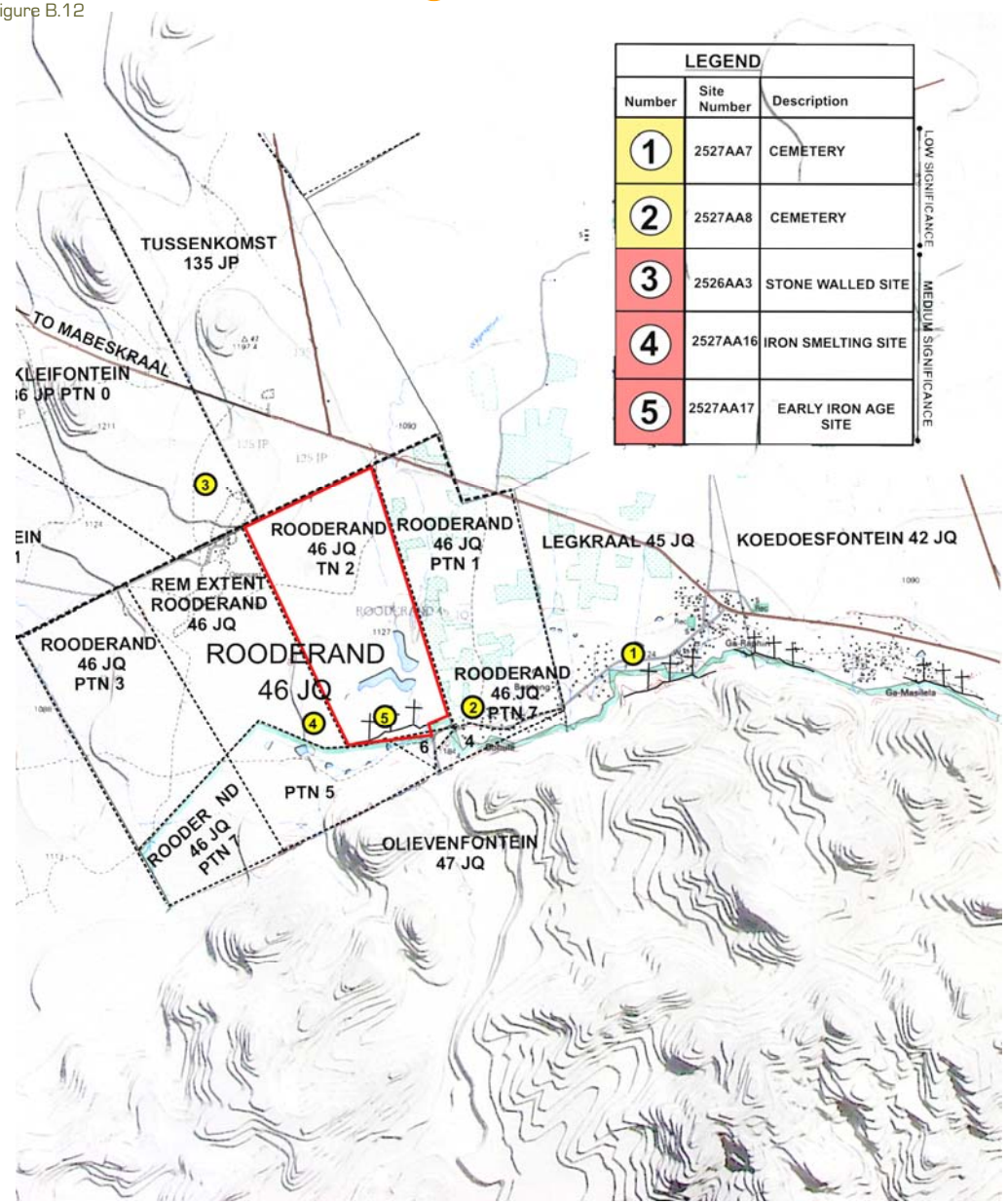
- Support for projects/strategies to optimize job creation opportunities.
- Promote industrial/commercial development.

B. 12 Guiding principles/policies and standards

In terms of Section 21 and 26 of the Environment Conservation Act of 1989 (Act No. 73 of 1989) (Government Gazette No 5999 of 5 September 1997)

Sites of archeological importance

Figure B.12



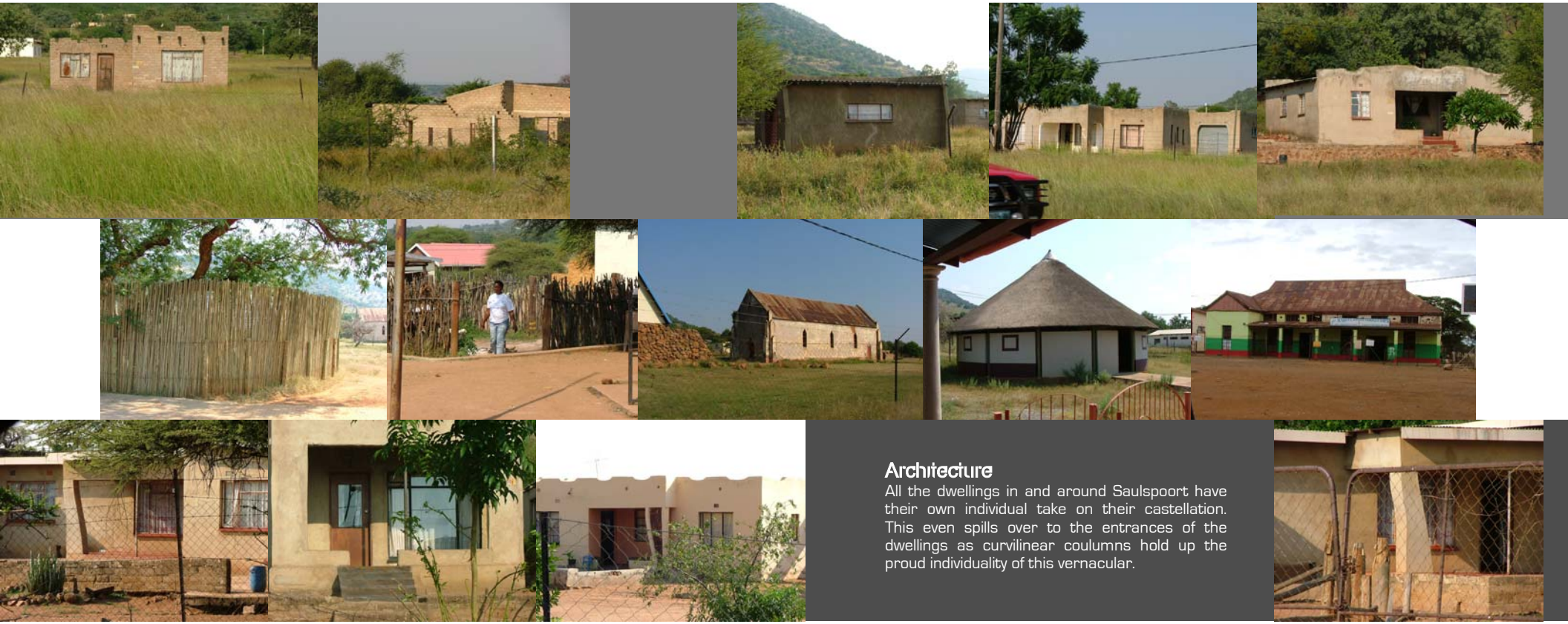
developers have to submit Environmental Impact Assessments (EIA) to the relevant authority for consideration in order to undertake an activity, as identified in Section 22(i) of the Act, which could have a substantial detrimental effect on the environment.

An environmental management policy was promulgated in Government Notice 51 in Government Gazette No 15428 of 21 January 1994. This policy is based on a number of strategic premises and principles covering Environmental Management Systems, Environmental Education, Land Uses, Nature Conservation of Natural Resources, Economic Measures, Environmental Research and International Co-operation. In line with the basic requirements of the Constitution (Act No. 108 of 1996) the foundation of the above policy declaration is the following:

"Every inhabitant of the Republic of South Africa has the right to live, work and relax in a safe, productive, healthy and aesthetically and culturally acceptable environment and therefore also has a personal responsibility to respect the same right of his fellow man".

Furthermore, one of the most important requirements under the above policy is the demand for a "planned analysis", an EIA, within the framework of the Integrated Environment Management (IEM) procedure published by the Department of Environmental Affairs and Tourism. Within a rural development context, environmental policies should lead to:

1. Greater equity in access to resources, through the land reform programmes that widen access to education and successful entrepreneurial development;
2. The development of appropriate economic instruments to ensure sustainable natural resource use (including drought years);
3. Institutional support for environmental management and sanitation;
4. Institutional support for appropriate land use planning, water use, and marine and mining development (of which the first two are the responsibility of local government);



Architecture

All the dwellings in and around Saulspoort have their own individual take on their castellation. This even spills over to the entrances of the dwellings as curvilinear coulumns hold up the proud individuality of this vernacular.

Figure B.13

5. Measures to maintain bio-diversity within management of the environment;

6. Support for the restoration and rehabilitation of degraded and over-exploited
7. lands;
8. Continued and strengthened promulgation and monitoring of regulations on chemical use, chemical pollution and effluent, and other waste

B. 13 Demography

The 1996-Census results were used to compile the demographic profile of the population by magisterial district. (S.E.F. 2001:127)

B. 13.1 Population

The 1996 census reflected a total of 229 992 people in Moses Kotane Local Council of which 98.4% were of an African culture, 0.2% Coloured, 0.2% Asian/Indian, 0.7% were White and 0.5% unspecified population. The population of Moses Kotane Local Council constituted only 21.6% of the total population of Bojanala Platinum District Municipality (BPDM).

According to (Plan Associates, 2001) the largest concentration of population in the
MKLM is in:

- Tlokweng (12206)
- Pella (9 662)
- Ledig/Koedoesfonteinl Frischgewaagd (18 368)
- Mabele-a-PudilMogwase/Klipfontein (11 221)
- Manamakgotheng/Legogolwe/Koedoespruit (11 024)
- Mabeskraal (12 264)
- Mabodisa/Saulspoort (10 016)
- Makgawana/Mokgalwaneng (8 503)
- Batlhalerwa/Phalane (8 559)
- Doringpoort (7 140).

The above eleven villages in Moses Kotane Local Council are classified as small towns and constitute about 43% of the total population.

B. 13.2 Income Distribution

66,0% of the total population of the Local Municipality does not receive any income, with about 22,5% receiving a monthly income of less than R 3500. This implies the majority of the population falls in the low-income bracket. This could also be attributable to lack of job opportunities. (S.E.F. 2001:128)

B. 13.3 Work Status

The proportion of economically active people constituting 31,4% of the total population of Moses Kotane Local Council is lower as compared to Bojanala Platinum District Municipality (BPDM) which is 37,9%. In both Moses Kotane Local Council and Bojanala Platinum District Municipality (BPDM) people in the "not economically active category" constitute the largest proportion. The proportion of employed people in Moses Kotane Local Council is higher (51,7%) than that of the unemployed (48,3%).(S.E.F. 2001:128)

B. 13.4 Percentage and type of dwellings

More than half of the households live in formal dwellings (75,2%) comprising of houses on separate stands (66,7%) and traditional dwellings (8,5%).
People living on informal settlements constitute 15,1%, which implies that although the proportion of people occupying informal dwellings is low, the need to give attention to addressing this problem is serious. Such informal settlements most exist near places of job opportunities, for instance mining areas, urban areas such as Madikwe, Mogwase and Sun City. (S.E.F. 2001:128-129)

B. 13.5 State of housing

Moses Kotane local Council comprises mainly of permanent structures on separate stand whether they are built from mud or cement brick and mortar. From a total of 49318 types of dwellings, about 38 036 are formal dwellings on separate stand, 7436 are informal dwellings either on separate stands or as backyard shacks constituting a large proportion of the housing backlog. In order to alleviate the housing backlog in the Rustenburg Local Municipality Area, several housing applications were submitted to the Provincial Housing Board since September 1996 to date. (S.E.F. 2001:129)

B. 14 Economy

The community, social and personal services sector employs a comparatively large number of people (20,7%), followed by mining and quarrying (20,4%), and then wholesale and retail (18,9%). Retail outlets are the most dominant; followed by government departments, light industrial, beer halls, municipal services, business services and filling stations. The largest contributing sector to economy of Moses Kotane Local Council in 1994 was mining, followed by services, construction, trade and industry and agriculture.

The economy of Moses Kotane Local Council as compared to Bojanala Platinum District Municipality (BPDM) is underdeveloped. There is much focus on the primary sector (mining) with little contribution to the economy in its unprocessed form and very little secondary, tertiary and quaternary activities contributing little to the GDP. There is a need for diversification of the economy by improving all the sectors and not growth in one sector in order to make it less vulnerable to external pressure.

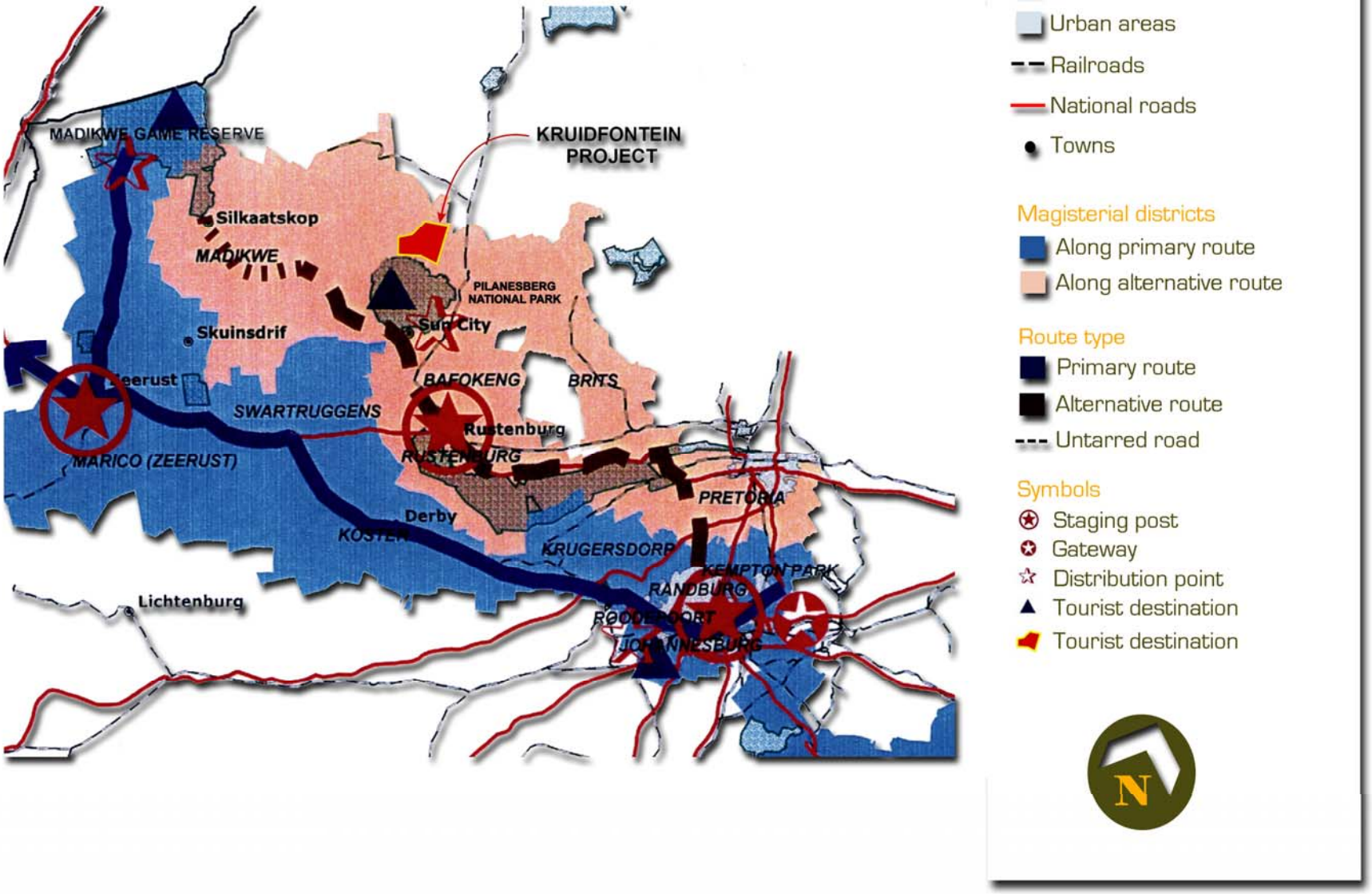
Mining activities dominate the economy in the area where agriculture was part of the region's income, which has dropped off dramatically due to climatic conditions. (S.E.F. 2001:129)


“A positive future is not a spectator’s future,
it’s a participant’s future.”
Philip Spies (Bowes 2004:14)
Bakgatla Gate
George Stegma
Motlhabe

Tourism

Priority area for tourism infrastructure investment

Figure C.1



Tourism

Introduction

Tourism in the Pilanesberg area might well be a second industry that can grow alongside mining operations. With careful planning and innovative design outcomes the tourism industry can act as a mitigation measure against the typical stresses mining can exert on a specific region.

The following tourism initiatives have been considered:

- Pilanesberg National Park to the south of the proposed Kruidfontein Project;
- the proposed extension of Pilanesberg National Park to the north-east by incorporating the Pilane Reserve (also part of the Heritage Park Concept);
- the proposed Heritage Route;
- the Madikwe Area PATII, a route from Johannesburg to Madikwe Game Reserve as an Priority Area for Tourism Infrastructure Investment (PATII) initiative;
- tourism initiatives within the North West Province Master Plan;
- the Platinum Spatial Development Initiative (SDI).

C. 1 Pilanesberg National Park

An immediate strategy identified by PNP, is to phase out accommodation facilities and visitor comfort stations from the basin (centre) and to explore new opportunities on the periphery. The peripheral development should include the facilitation of new developments outside PNP that can divert this internal pressures, stimulate the creation of new regional products and generate new opportunities for local communities.
As part of the PNP's Land Expansion and Incorporation Objective, it is recognised that certain expansion opportunities exist along the periphery of PNP that may add significantly to the biodiversity and the size of PNP. Contour Project Managers (2000) continue to state that every effort should be made to ensure that these areas are incorporated into PNP, as this can expand the socio-economic benefits from PNP through new tourism projects and can offer new commercial opportunities for neighbouring communities and land owners. It was proposed to incorporate the Pilane Reserve as on of the incorporation and expansion initiatives.

C. 2 Pilane Reserve and Heritage Park

The concept of the Heritage Park will be to establish a conservation corridor linking Pilanesberg National Park (PNP) and Madikwe Game Reserve as a nature-based tourism anchor project and primary economic catalyst for the region. This proposed Heritage Park Project could be the synergistic culmination of a number of regional initiatives that identified the need and the potential for further development in this area (Contour Project Managers, 2001).

The Heritage Park Project is proposed between other existing Protected Areas and can become the catalyst in launching an important regional initiative. It has the potential to link up with a number of other regional projects such as Marakele, Welgevonden, Thaba Tholo, Atherstones and Rhino Eco-Ranch to form a significant Conservation Area of some one million hectares.

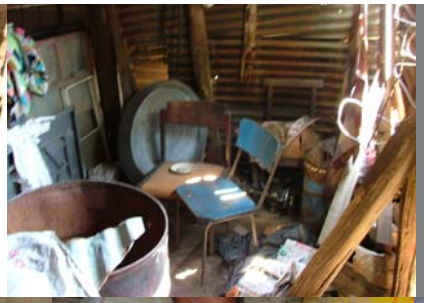
It is anticipated that full incorporation and development of the corridor over a period of twenty years should keep track with the current growth trend in tourism markets for this region. It is also stated that a major advantage of this proposed project is that the land (surface rights) is predominantly owned by the state and mainly used by a community (various tribes in the area) that is generally in favour of such an endeavour, provided adequate benefits to the community at large and compensations to current occupants could be generated by the project.
The land earmarked for incorporation into the proposed Heritage Park includes the Pilane Reserve, which is seen as a compatible conservation initiative. The Pilane Reserve is a joint venture currently being negotiated between the Bakgatla BaKgafela community, the private sector and the North West Parks and Tourism Board (NWPTB), to develop the land as a Big Five area for incorporation into PNP. (S.E.F. 2001: 137-139)

C. 2.1 Tourism Demand Analysis

The aim of the market assessment and product options study was to identify the realistic market demand, site potentials and capacities for the proposed PNP and MGR expansion areas.
MGR contributes 30% of total room supply while PNP contributes 70%. MGR focuses mostly on products in the up market range, while PNP has a large proportion accommodation available in the mid- and budget market range. The supply and demand analysis shows a slight oversupply of mid-to-up market rooms and a shortage in the mid-to-budget and budget accommodation supply in the HP area. Although the upper end of the market might be slightly saturated, it has high growth potential and would still require additional products within the short to medium term.

C. 2.2 The survey results of the proposed products to be included in the HP are summarized below:

Products	Verdict	Recommendations
1. Luxury Lodge	yes	
2. Mid-market resort	yes	
3. Family Resort	yes	
3. Camping & Caravan park	yes	
4. Guesthouses in local village	no	
5. History museum/Cultural Centre	yes	The history, culture & wildlife interpretive centre to be combined in one facility - must be easily accessible
6. Wildlife Interpretive centre	yes	Replace with sectional title developments aimed at the mid-market investor
7. Wildlife Residential Estate	no	

The art of pottery

When clay pots brake they are not thrown away. The pieces are used in healing ceremonies and are passed on to families as it resembles the continuous life of the clay pot. The potters believe that the life of a pot resembles the life of humans; from dust we are made and to dust we shall return





The pots are sold at nearby craft markets and serves as the only income for some of the women of the area. All the pots are made using traditional methods of grinding to make clay and fired with organic materials. This time consuming process and the rich pot making heritage is somewhat lost when the pots are simply sold at craft markets.




There is an enormous demand for this art form, but to the people of Saulspoort pottery is a way of life. Pots are used in every facet of their lives, they use it to store, to heal, to celebrate and even to burry. Every stage of the pots' life is precisely planned for; from the collection of rock and soil to the drying and firing. Pots truly resemble the cycle of life



Figure C..2

8. Hunting Camp	yes	
Activities		
1. Sports, Adventure/Survivor centre	yes	
2. Game viewing by boat, river cruises	yes	
3. Eco-tourism, hiking, biking, 4x4, etc.	yes	
4. Heritage tours	yes	To combine with interpretive centre in Pilanesberg

Table C.1 Survey result of the proposed products to be included in the HP

Based on the demand assumptions the HP attracted 600 000 visitors in 2004. With an average compound growth of 2,5% per annum, the HP will be able to attract in the order of 720 000 visitors in the medium (5 to 10 years) and 850 000 visitors in the long term (15 to 20 years).
20 % of future overnight demand will be derived from overseas visitors, while 45% will be derived from domestic visitors and 35% from conference visitors.
Based on the above assumptions, the market surveys and the calculated tourism carrying capacities the following products are proposed:

C. 2.3 Proposed PNP expansion products

Product	Proposed facilities
Mid-market Resort	80 lodge rooms (3/4 star - 160 beds) Conference (160 delegates) Restaurant Game drives
Mid-market Family Resort (1)	80 Lodge rooms (3-star - 160 beds); 40 self-catering units (3-star - 160 beds) ; Restaurants; and Conference facilities (160 delegates); Game drives & viewing by boat (sunset cruises, canoes, etc) Eco-tourism activities
Mid-market Family Resort	80 Self-catering units (3 star - 320 beds) 150 camping/caravan sites Recreation/eco-tourism facilities Restaurant & fast food outlet Self –drive wildlife viewing
Adventure Sports Centre	80 Rustic en-suite units (Stone or fixed tents - 160 beds) Adventure facilities (nature track for hiking, cycling, etc.) Conference facilities (4 separate halls accommodating 20 to 30 people each) Teambuilding facilities (high ropes, survivor game equipment, etc) Restaurant or communal catering facilities
Wildlife & Heritage Interpretive Centre	Indoor interpretation facility of +/- 1000m^2 Outdoor interpretation facility of +/- 1000 m^2 Restaurants & fast food outlets; Crèche; Lecturing facilities; Craft & curio selling outlets; and a small theatre for cultural demonstrations
Hunting Camp	4 en-suite units (8 beds) Communal catering facilities
Sectional Title Holiday Units	2 Phases of 40-50 units (200 beds)

Table C.2 Proposed PNP expansion products

C. 2.4 Expected Socio-Economic Benefits

The total investment in the expansion of MGR and PNP over the next ten years is estimated to amount to R569 million of which North West government has to contribute R92 million (16%), which could;

- Leverage a further investment of R477 000 000 into tourism infrastructure into the region.
- Generate more than 1500 jobs in construction related jobs.
- Create approximately 2600 (905 permanent direct and 1730 indirect) jobs in park and lodge management.
- Over the first ten years generate a wage bill for temporary jobs in excess of R123 000 000.
- Deliver within the community a direct annual wage bill in excess of R32 000 000 pa by year ten.

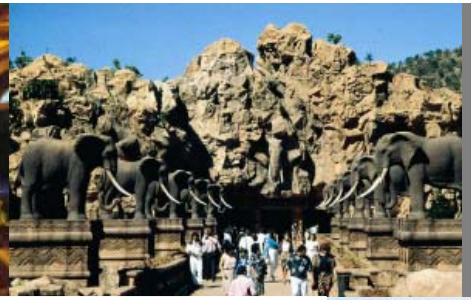
The unique selling features of the Heritage Park were captured as follows:

- Strongest wildlife, leisure and entertainment destination close to main markets;
- One of the most popular wildlife destinations in South Africa;
- Tourism products perform above average;
- Most successful conference wildlife destination in South Africa;
- Ability to attract a wide spectrum of the market;
- On the forefront of conservation in South Africa;
- Real investment opportunities.

The brand basis for the Heritage Park can be summarized as follows:

" ...An outstanding wildlife, leisure and entertainment destination a stone's throw from the major economic centers."



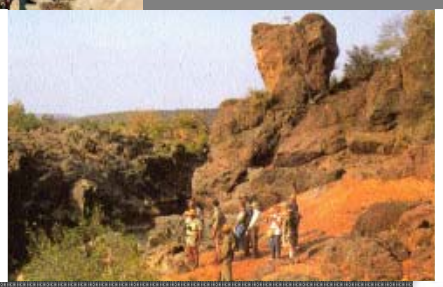


Sun City resorts

The resort hotels of Sun City and the Palace of the Lost City support an economy and labour force equivalent to those of any large town. The resort is self-contained and provides lively entertainment for the whole family. The resort is 30 km from Rustenburg and frequent bus and air trips are conducted to and from Gauteng. It is also 10 km from the Pilanesberg International Airport. The Sun City resort includes the Palace of the Lost City, the Cabanas Hotel, the Cascades Hotel and the Sun City Hotel and casino. The resort offers a wide range of adventure and conference activities as well as shopping and entertainment, Sun City is also the proud host of the **Kora Music Awards** and the annual **Miss South Africa** beauty pageant.

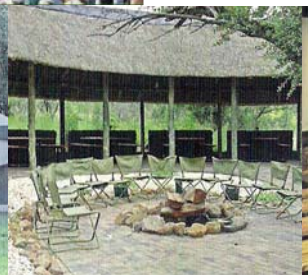
Golf

The resort has two excellent golf courses, namely the Gary Player Golf Course and the Lost City Golf Course. The International Nedbank Two Million Dollar Golf Challenge is hosted annually at Sun City. This international golfing event draws top international players and many avid fans to Sun City during the hot month of December. Gary Player designed both the desert-style Lost City course and the Sun City course. A Putt-Putt course is also available for novices.



Outdoor activities

Other activities that offer all year round tourist interest are hiking trails, mountain biking, horse trails, game viewing, bird watching, parasailing, cultural tours, and adventure playground, 4X4 routes and hot air balloon rides.


Golden leopard Resorts

The golden leopard resorts group offers a more affordable alternative to the Pilanesberg area. There are two resorts namely the Manyane resort and the Bakgatla resort. The Bakgatla resort is situated 2 km from Saulspoort at the Bakgatla Gate into the Pilanesberg Nature reserve. Both resorts offer self catering chalets, camping and caravan facilities, bed and breakfast options, swimming pools, and game drives into the Park. The Bakgatla resort attracts a lot of tourists to Saulspoort as this is the nearest retail center.

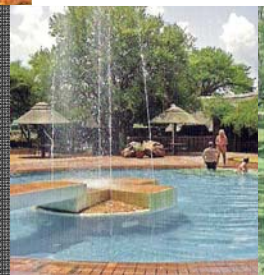



Figure C.3

C. 3 Heritage Route

The Pilanesberg area plays an important role in the development of the Heritage route. This tourism initiative is based upon the rich palaeontological, archaeological, historical and cultural resource base around the Magaliesberg Mountains and Pilanesberg in the North West Province. The Rustenburg & Eastern Districts Strategic Tourism Committee drives the initiative, which is the government leg of a proposed multi-stakeholder tourism organisation for the Rustenburg and Eastern Districts.

The route is also called the "Seat of Humankind", as the volcanic mountains of Pilanesberg represent the head of the person, the Magalies Mountain Rage provides the skeletal framework and the body is the sphere of direct influence and conservation focus (Contour Project Managers, 2001).

C. 4 Priority Area for Tourism Infrastructure Investment (PATII)

KPMG determined priority areas for infrastructure investment in South Africa. The Madikwe Area, a route from Johannesburg to Madikwe Game Reserve was selected as one of the priority areas.

Various tourism activities were found in the Pilanesberg, Sun City and Madikwe area. According to KPMG, this area has an "anchor tenant" on which tourism development could be based. KPMG also states that the establishment of Sun City was an anomalous form of development that had the effect in many instances of opening up the Pilanesberg region to both international and domestic tourists. West of Pilanesberg is the Madikwe Game Reserve situated on the Botswana border. The relative proximity of these two destinations coupled with increasing cross-border tourism, highlights the growing maturity of the tourist product in this region (DEAT, 1999).

The report states that emphasis should be placed on maximising the strengths of Sun City and growing tourism from this distribution point. There is also a requirement of maximise linkages with Botswana. Gaborone is approximately 25 km from Madikwe and is an important source of day visitors. It also has an international airport, which could act as a feeder to North West. According to KPMG in DEAT (1999), the Madikwe area, linked to Sun City, does have the potential to grow into an adventure / ecotourism region district from the eastern Lowveld, offering district experiences. It does not possess much transport infrastructure and very little delivery infrastructure, and logical links would appear to run from Sun City as a staging post and distribution point in the short term. According to KPMG, the opportunity is to build upon the success of Hartebeespoort, use Sun City and achieve maximum benefit from infrastructure investments on the N4 and R512.

C. 5 North West Province Tourism Master Plan

Within the Tourism Master Plan a framework for tourism growth and development in the North West Province is compiled and outlines a new tourism focus for the province. According to this criteria Sun City / Pilanesberg complex is an existing tourism node that has substantial possibilities for further expansion. . The Bafokeng and Bakgatla communities in particular have already initiated a number of tourism related developments. The study indicates the importance of upgrading of the Pilanesberg Airport to accommodate direct international flights, to become an important regional gateway for international tourists.

Madikwe / Molatedi is also classified as an existing tourism node with substantial potential. It is situated in an attractive rural and wilderness landscape, but also one of the most poverty-stricken areas of the north West Province. According to the Master Plan the area has vast potential despite its isolation. The Master Plan states that Madikwe should capitalise on its location by establishing linkages with the Pilanesberg / Sun City complex, with Botswana via Gabarone Airport, with Namibia via the Trans-Kalahari route and with the overall route to Okavango Delta and Victoria Falls. An upgraded tar surfaced access road between Pilanesberg and Madikwe is necessary to bring development and access to one of the poorest regions of the North West Province.

The proposed link between the Pilanesberg / Sun City complex and the Madikwe / Molatedi tourism node, as well as possible link to Gaberone is identified as a medium density corridor and is according to the Master Plan critical for tourism development. It can open new opportunities and offer a regional overland link with Okavango Delta and Victoria Falls.

C. 6 Platinum Spatial Development Initiative (SDI)

The North West Province does not currently have a comprehensive development facilitation process aimed at promoting new tourism investment opportunities to developers and operators. The Platinum SDI aiming to attract investments along the N4 is according to the Master Plan a move in the right direction, but will not address all the potential growth nodes. The SDI route and the Gauteng / Rustenburg / Pilanesberg / Sun City corridor has a common alignment for approximately 60 km between Rustenburg and the Brits / Hartebeespoort intersection and thus, according to the Master Plan, will not form the needed link between the primary tourism markets in Gauteng and the tourism nodes within North West Province.

Conclusion

The Pilanesberg National Park and Sun City are two of the most important tourism attractions in the North West, drawing more than 500 000 local and international tourists annually. Because of the success of these initiatives, it has become evident that new tourism proposals has to be introduced to divert the internal pressures that the PNP and Sun City currently face.

An immediate strategy identified by the PNP is to phase out accommodation facilities and visitor comfort stations from the centre and to explore new opportunities on the periphery. This will stimulate the creation of new regional products and offer vital commercial opportunities for neighbouring communities and land owners.

Of all the proposed initiatives, the Heritage Park seems the most feasible, and probably the venture that will be implemented in the next five to ten years. The Park will become the catalyst in launching an important regional initiative, linking a number of other regional projects to form a significant conservation area of some one million hectares.

The realistic market demand shows that the HP area has a slight over supply of mid-to-up market accommodation and a shortage in the mid-to-budget market. Although the upper end of the market may be slightly over saturated, it has high growth potential and would still require additional products. Proposed PNP expansion products include Mid-market Family Resorts, Adventure Sport Centres, Wildlife and Heritage Interpretive Centres, Conference Facilities, Hunting Camps and Sectional Title Holiday Units.

To conclude, the Kruidfontein project including Saulspoort, as part of the proposed Heritage Park corridor, is perfectly located to accommodate any of the above mentioned tourism expansion products. The land owners are in favour of such an endeavour, provided adequate benefits to the community could be generated by the project and the cultural heritage of the Bakgatla baga Kgafela is preserved.

D Mining overview

Mining overview

Mining in general

South Africa is one of the world's and Africa's most important mining countries in terms of the variety and quantity of minerals produced. It has the world's largest reserves of chrome, gold, vanadium, manganese and Precious Group Metals (hereinafter referred to as PGM's). South Africa is the leading producer of nearly all of Africa's metal and mineral production apart from diamonds (Botswana and the Democratic Republic of Congo), uranium (Niger), copper and cobalt (Zambia and the Democratic Republic of Congo) and phosphates (Morocco).

D. 1 Structure of the mining industry

The mining industry in South Africa has seen significant restructuring and changes since the early 90's with the traditional "big six" mining houses - Anglo American / De Beers, Gencor / Billiton, Goldfields, JCI, Anglovaal and Rand Mines - being restructured and extending their global presence. These companies traditionally controlled gold, platinum, chrome, coal and base metal production in South Africa. The advent of a new democratic constitution and rising costs from gold mining activities resulted in several changes in the industry.

As the South African mining industry is still predominantly white controlled, emphasis is being placed on stimulating black empowerment in the industry. As a result, several black or union owned firms are now beginning to play an important role in the industry. This is particularly the case following the impending legislation of the Minerals Bill that favors involvement of previously disadvantaged communities in South Africa's mineral resources.
This process, coupled with the anticipated change in mineral rights legislation in the country, should see South Africa developing its mineral resources to the benefit of all South Africans.

D. 2 Minerals Legislation

The long awaited White Paper on Minerals and Mining Policy has been released in 1998. The underlying objective of the White Paper was the proposed change in ownership of mineral rights. Currently, two thirds of South Africa's mineral rights are privately owned, with the remainder vested in the Goverment.
In late 2000, the draft Minerals Development Bill was released for public comment. The Bill (based on the White Paper on Minerals and Mining Policy) will usher in a new era of mineral and mining law in South Africa. The core objectives of this Bill are to:

- Recognize that mineral resources are the common heritage of all South Africans and collectively belong to all the peoples of South Africa;
- Ensue that a proactive social plan is implemented by all mining companies;
- Attract foreign direct investment;
- Ensure a vigorous beneficiation drive in the mining industry;
- Contribute to rural development and the support of communities surrounding mining operations;
- Redress the results of past racial discrimination and ensure that historically disadvantaged persons participate meaningfully in the mining industry;
- Guarantee security of tenure to existing prospecting and mining operations.

D. 3 Mining Process

D. 3.1 Status Quo

The site as it currently stands taking cognizance of the disturbance and impacts regimes operating.

D. 3.2 Pre construction phase

This includes all activities on site up to the start of construction, including the initial site preparations (surveying etc.), environmental assessments, scoping reports and authoritative decision-making. (S.E.F. 2001:34)

D. 3.3 Construction Phase

This entails all the construction and construction related activities on site, until the contractor leaves and developments are commissioned.
Typical mining infrastructure on site includes:

- Open pit/decline shaft systems depending on the geological setting
- Temporary and permanent access roads
- Access control
- Offices, change houses and training facilities
- Power and water supply with the necessary servitudes
- Crushing, milling and screening facilities
- Conveyor belts transporting ore
- Flotation facilities with tailings and concentrate thickeners
- Nominal concentrator capacity of 100 000 tpm
- Waste water purification plants; and
- A Tailings dam in close proximity of the concentrator.

(S.E.F. 2001:12)

D. 3.4 Operational phase

All activities, including the operation and maintenance of the proposed mining development.
The Concentrator plant is designed to treat a total of 60 000 tonnes per month of Merensky and UG2 ore. The tails from the concentrator is pumped to a tailings disposal facility with a return water reticulation system. To achieve this availability the plant is fully automated, incorporating a high level of instrumentation, automatic pump changeover stations and dedicated pipelines.

The final tails are thickened in a high rate thickener before being pumped to the tailings facility. A return

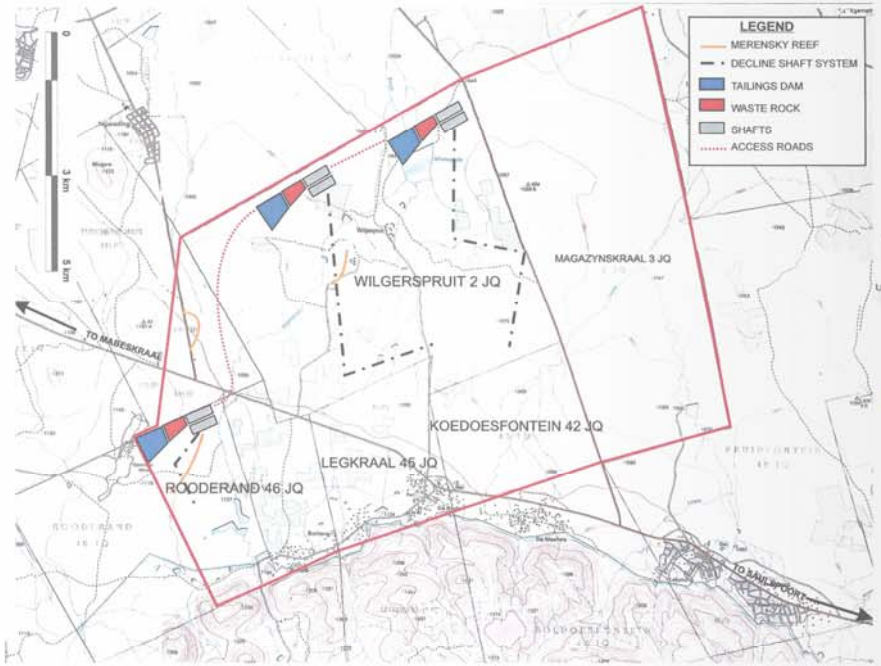


Figure D.1 Proposed zones and footprint areas for surface infrastructure

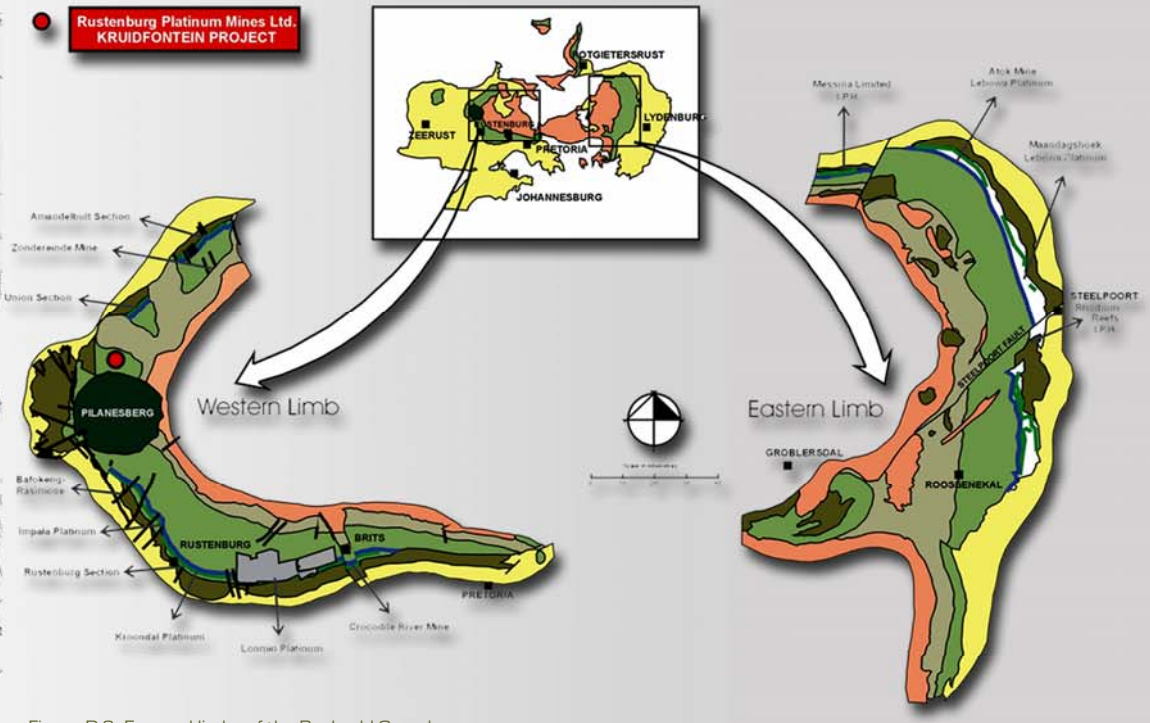


Figure D.2 Exposed limbs of the Bushveld Complex

water pump station returns decant water to the plant for recycling. The final concentrates are thickened in a high rate thickener and then dispatched as slurry via road transport to the Rustenburg/Union Section smelter. (S.E.F. 2001:15)

D. 3.5 Closure/Decommissioning

The goal upon decommissioning and closing of any mining project will include the removal of all buildings, structures and equipment, and the rehabilitation of the site to ensure a stable and self-sustaining environment. This will further include the mitigation of all significant impacts, and no alterations to the environment that are apparent as far as it is practically possible. All land should be rehabilitated to a state that facilitates compliance with current national environmental quality objectives.

Mine closure is anticipated to occur after 20 to 50 years, except for the areas occupied by the tailings dam, rock dumps, buildings and infrastructure, which can be commercially employed or converted for any other purpose. Otherwise, it should be returned to its original agricultural capability.

After closure the tailings disposal facility and waste rock dumps will remain on site.

D. 3.6 Post closure phase

The main closure objective for any mining site is the return of land to its pre-mining state where possible. This includes the resale/removal of the entire infrastructure and building materials other than the waste rock dumps and tailings dam, covering all disturbed and exposed surfaces with new vegetation, and the removal of rubble and waste. Engineering works (re-shaping, earthworks etc.) and rehabilitation of areas (especially during operational phase) is very important during post closure. Whereas the mine itself is concerned, the decline shafts will be sealed, fenced off and shaped to prevent runoff from drainage inwards. No rehabilitation will be done inside the mine. (S.E.F. 2001:146)

Kruidfontein project

D. 4.1 Location

Anglo Platinum proposes the establishment of new mining operations north of the Pilanesberg National Park and south west of the Rustenburg Platinum Mines Ltd. Union Section operations, in the North West Province. The proposed infrastructure will be established to exploit the UG2 Reef in and upon portions of the farms Rooderand 46JQ, Tuschenkomst 135JP, Wilgerspruit 2JQ, Koedoesfontein 42JQ, Legkraal 45JQ and Magazynskraal 3JQ. (S.E.F. 2001:i)

D. 4.2 Mineral deposit

The proposed Kruidfontein Project is situated in the middle of the Bushveld Complex's Western Limb – a layered igneous complex consisting of alternating layers of chromitite, pyroxenite, norite and a variety of anorthosites. The Kruidfontein Project will access the UG2 and Merensky Reef. (S.E.F. 2001:v)

D. 4.3 The need and the benefits of the project

Market research of PGMs and the close involvement with the global market's needs and future requirement plans lead the PGM mining industry to believe, with a fair deal of confidence, that the Kruidfontein Project is compatible with future demand. (S.E.F. 2001:19)

The project will mine the six platinum group metals (PGM's), including Platinum, Palladium, Rhodium, Ruthenium and Iridium. All six of the PGM's share many of the same physical and chemical properties:

- Rarity;
- Outstanding catalytic properties;
- Resistance to oxidation;
- Resistance to high temperature corrosion;
- Stable electrical properties.

D. 5 Life of Mine

A 20 year life of operation is anticipated. Note however, that annual rate of production is contingent on prevailing market forces and ruling metal prices.

D. 6 Job opportunities

There will be an increase in the workforce related to the project, with estimated 1800-2000 new mine-related jobs.

D. 7 Hours of operation

Expected operations will take place 24 hours a day. Undue noise disturbances will be restricted to the hours of 06H00 to 18H00 or otherwise as agreed with the Department of Minerals and Energy. (S.E.F. 2001:14)

D. 8 Pre construction phase

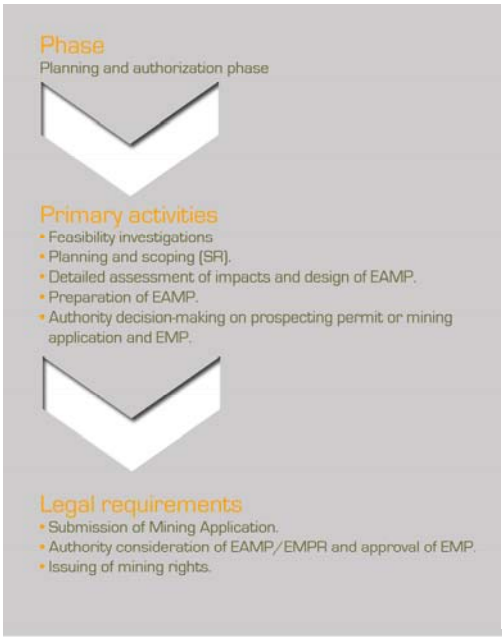


Figure D.3 Pre-construction components

D. 9 Construction phase

The proposed Kruidfontein Project will require the following infrastructure:

D. 9.1 Wilgespruit 2JQ & Magazynskraal 3JQ:

- Two decline shaft systems on the farm Wilgerspruit 2JQ, owing to the geological faulting which has displaced the mineralised reefs subsequent to the formation. The eastern shaft system on Wilgerspruit 2JQ will also provide access to shallow ore underlying the farm Magazynskraal 3JQ;
- Roads; workshops; explosive sheds;
- Tailings dam;
- Waste rock dumps.

(S.E.F. 2001:151)

D. 9.2 Rooderand 46 JQ:

- Access road from the Saulspoort / Mabeskraal provincial road;
- A decline shaft system with associated waste rock dump;
- concentrating plant;
- offices, ablutions, change houses and workshops;
- Tailings- and return water dam;
- Training facility;
- Storage silos;
- Explosive sheds.

(S.E.F. 2001:150)

D. 9.2.1 Shaft systems required

The decline shaft system will consist of 2 declines developed parallel to one another on an apparent dip of 10°. The declines will be sunk 25 m below the reef horizon and 20 m apart.

A conveyor belt system will be installed in one decline and during sinking broken waste from both shafts will be loaded and tipped directly onto the conveyor belt. The second decline will be reserved for men and materials. (S.E.F. 2001:5)

D. 9.2.2 Roads, railways and power lines

The Rooderand 46JQ Project is linked with a tarred road to the provincial road between Saulspoort and Mabeskraal. The tarred internal roads connects the main office complex, the shaft; the training facility, workshops and change houses. Approximately three trucks will use the roads per day.No railway lines will be used for the Rooderand 46JQ project. (S.E.F. 2003:4.1)

It is envisaged that Eskom Transmission and Distribution will supply power to a substation on the mine from Spitzkop. The overhead line will run adjacent to the main access road to the mine complex.

D. 9.2.3 Workshops, administration and other buildings

Workshops and administration buildings will be in the centralised surface complex where mining and other services require them.

D. 9.2.4 Housing, recreation and other employee facilities

It is the intention of Anglo Platinum to source the majority of employees from the local surrounds; therefore it will not be necessary to provide any housing or recreational facilities.

D. 9.2.5 Proposed river diversions

No river diversions will be constructed or necessary during the Rooderand 46JQ Project.

D. 9.2.6 Immediate adjacent land use

The Pilanesberg National Park is located directly south of the study area. Subsistence crop and cattle farming dominate additional adjacent land use.
It should be noted that all mine infrastructure would be located in the far northwestern part of the farm in order to mitigate against any potential impacts that might occur.

D. 9.2.7 Tailings facility

The proposed site of the tailings facility on the eastern periphery of the farm Rooderand 46JQ is considered to have the following environmental advantages:

- The underlying geo-hydrological conditions are considered favourable;
- It is located outside the proposed Heritage Park;
- The site is in a slight depression thereby minimising the visual impacts from the west.

In addition to the above the proposed rehabilitation of the tailings dam is likely to result in a significant decrease in fugitive dust emissions as well as the visual impact that the facility may have on the surrounding area. (S.E.F. 2003:3.10)

D. 10 Operational phase

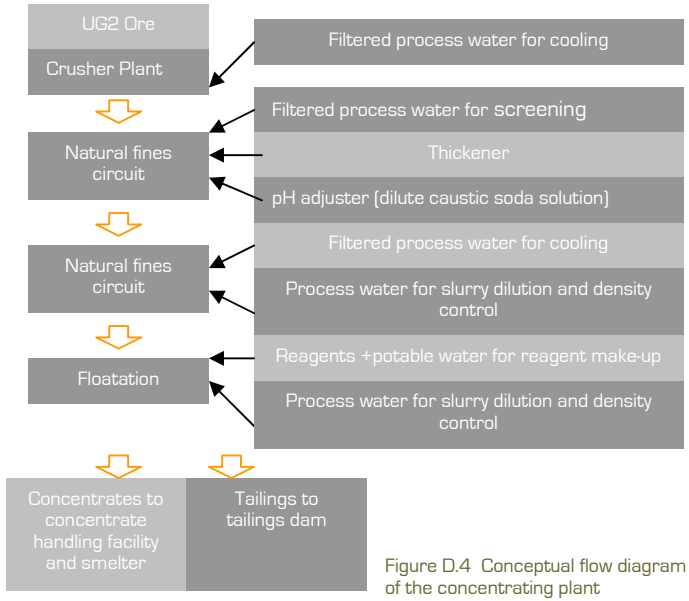


Figure D.4 Conceptual flow diagram of the concentrating plant

Figure D.5 Mining infrastructure

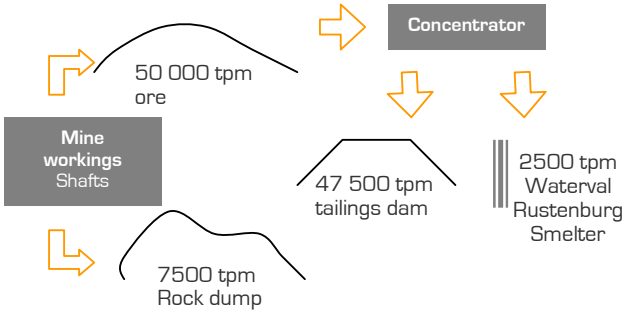


Figure D.6 Materials balance diagram

D. 11 Closure/decommissioning

To date, no post-closure plans for the Kruidfontein project has been identified other than the overall decommissioning objectives for any Anglo Platinum mining operation.

Environmental Impacts

D. 12.1 Water pollution

Contaminated surface run-off from construction and operational areas has the potential of polluting natural water resources. The main source of pollution will be the tailings dam with drainage and seepage into underground water resources. (S.E.F. 2001:ix-xi)

D. 12.2 Dust fallout

Ore transfer points at the shafts, waste rock dumps, mills, spills from tailing pipelines, tailings dams and disturbed land may be the primary source of dust. The dust from these sources is relatively inert and is more likely to be a nuisance than a health hazard. (S.E.F. 2001:ix-xi)

D. 12.3 Soil disturbances

The loss of soil as a non-renewable resource will take place. Soil erosion, degradation of soils and subsequent pollution and contamination has to be considered and mitigated. (S.E.F. 2001:ix-xi)

D. 12.4 Land Use and Land Capability

The mine related activities will cause a loss to medium potential arable and grazing land during operation. The tailings dam surface area will cause a permanent loss to land. (S.E.F. 2001:ix-xi)

D. 12.5 Fauna and Floral displacement

Mining activities will cause loss of natural habitats within the proposed site. It can however be envisaged that this will be limited because of previous agricultural activities on large parts of the site. (S.E.F. 2001:ix-xi)

D. 12.6 Traffic Impact

There will be an increase in mine-related traffic on the site, on privately owned internal mine roads as well as on public roads in the surrounding area. (S.E.F. 2001:ix-xi)

D. 12.7 Noise and Visual Impacts

Noisy mine activities are expected. The relatively flat terrain aggravates the level of visual intrusion caused by mining operations when viewed from elevated positions. (S.E.F. 2001:ix-xi)

D. 12.8 Socio-Economic Impacts

Mining will impact positively on local, national and international economies. There will be an increase in the workforce related to the project, with an estimated 1800-2000 new mine-related jobs.
Some of the effects include:

- Relocation of individuals and families;
- Influx and efflux of temporary workers;
- Population changes;
- Introduction of new social classes;
- Disruption of social networks and the alteration of family structures;
- Disruption of daily movement patterns;
- Change in community infrastructure;
- Impact on local government;
- Perceptions of public health and safety;
- Change in tourism and leisure opportunities.

(S.E.F. 2001:130)

D. 12.9 Sensitive landscapes

The mining activities may possibly be in conflict with tourism related initiatives in the surrounding area. The farm Rooderand overlaps with a portion of the Proposed Heritage Park, a green corridor initiative that will link Madikwe Lodge in the North with the Pilanesberg National Park. (S.E.F. 2001:135)


1.1: Processing Plant main building


1.2: Storage sheds


1.3: Transport interchange


2: Rock dump


3: Main shaft

Location

The Bafokeng Rasimone Platinum Mine (BRPM), one of Anglo Platinum's steady state operations, is located 30 km north west of Rustenburg, in the North West Province.

1 Processing Plant

2 3 Shaft & Rock dump

4 Informal settlement

5

6

North


4: Informal settlement next to main roads


5.1: Royal Bafokeng Sports Palace


5.2: Royal Bafokeng Sports Palace


6: Smaller satellite shaft

Case study: Bafokeng Rasimone Platinum Mine

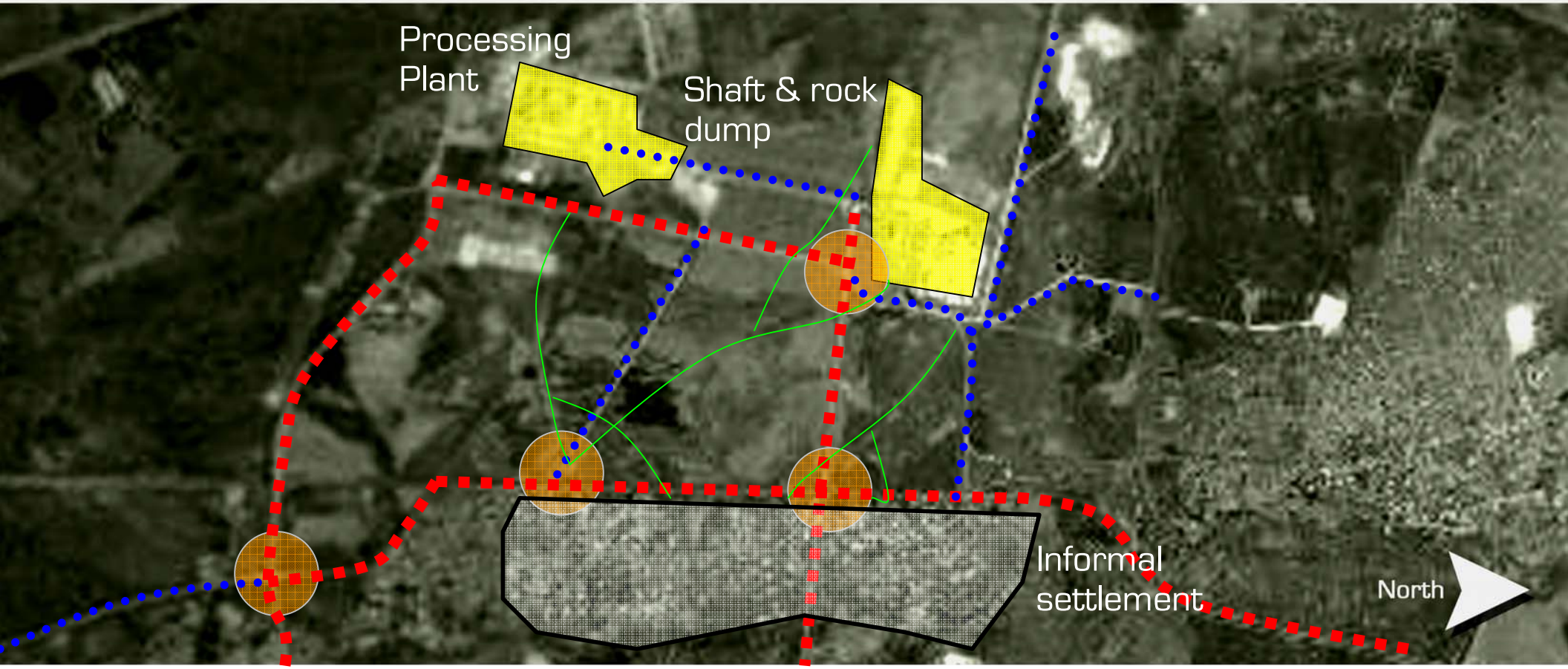
Figure D.7 BRPM regional layout

Precis

BRPM, which involves the Royal Bafokeng Nation as a 50% joint venture partner, is said to be the 'most sustainable' mining operation in the western Bushveld limb. Some of these sustainable approaches include cleaner, more environmentally friendly methods of ore-extraction and processing, rehabilitation of open pit excavations and other disturbed areas on site during operational phase, and small gestures such as painting the buildings green to minimize the visual impact of the infrastructure. Mining activities on the farm Rooderand 46JQ and in Saulspoort will probably resemble the scale, infrastructural layout and operations of BRPM.

Infrastructural Layout

Overall, BRPM resembles a fragmented layout, with the four site-specific shaft compounds situated between 3 and 10 kilometers from the plant complex. The tailings dam and series of rock dumps are also in close proximity to the mining activities and the suburban areas next to the main road.



Main vehicular route

Secondary vehicular routes

Main pedestrian routes

Main intersections

Informal settlement along main route

Processing plant, offices, warehouses and storage

Shafts, rock dump, and storage yards

Case study: Bafokeng Rasimone Platinum Mine

Figure D.8 BRPM mine component layout

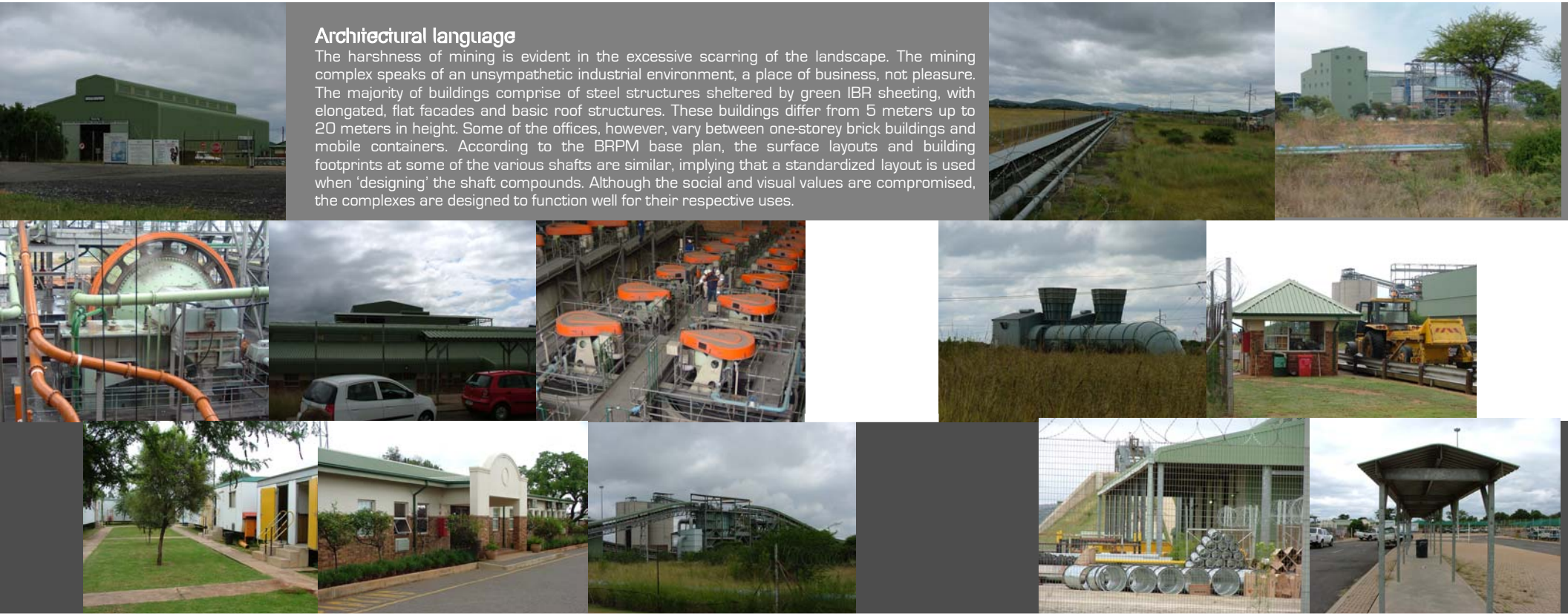
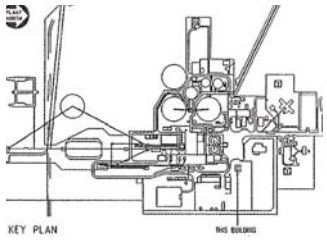
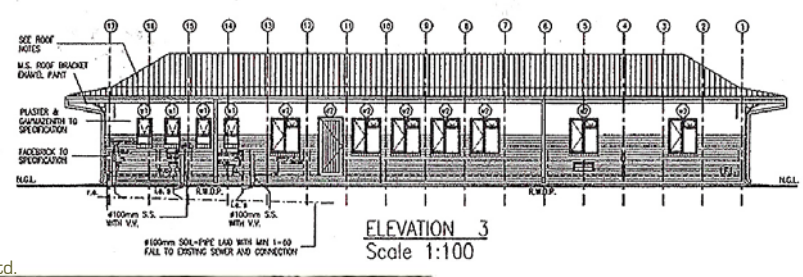
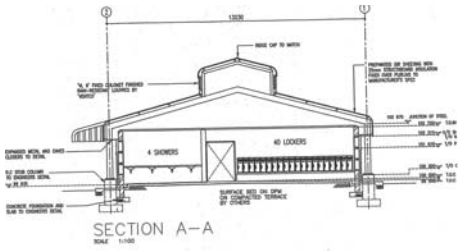

Architectural language
The harshness of mining is evident in the excessive scarring of the landscape. The mining complex speaks of an unsympathetic industrial environment, a place of business, not pleasure. The majority of buildings comprise of steel structures sheltered by green IBR sheeting, with elongated, flat facades and basic roof structures. These buildings differ from 5 meters up to 20 meters in height. Some of the offices, however, vary between one-storey brick buildings and mobile containers. According to the BRPM base plan, the surface layouts and building footprints at some of the various shafts are similar, implying that a standardized layout is used when 'designing' the shaft compounds. Although the social and visual values are compromised, the complexes are designed to function well for their respective uses.

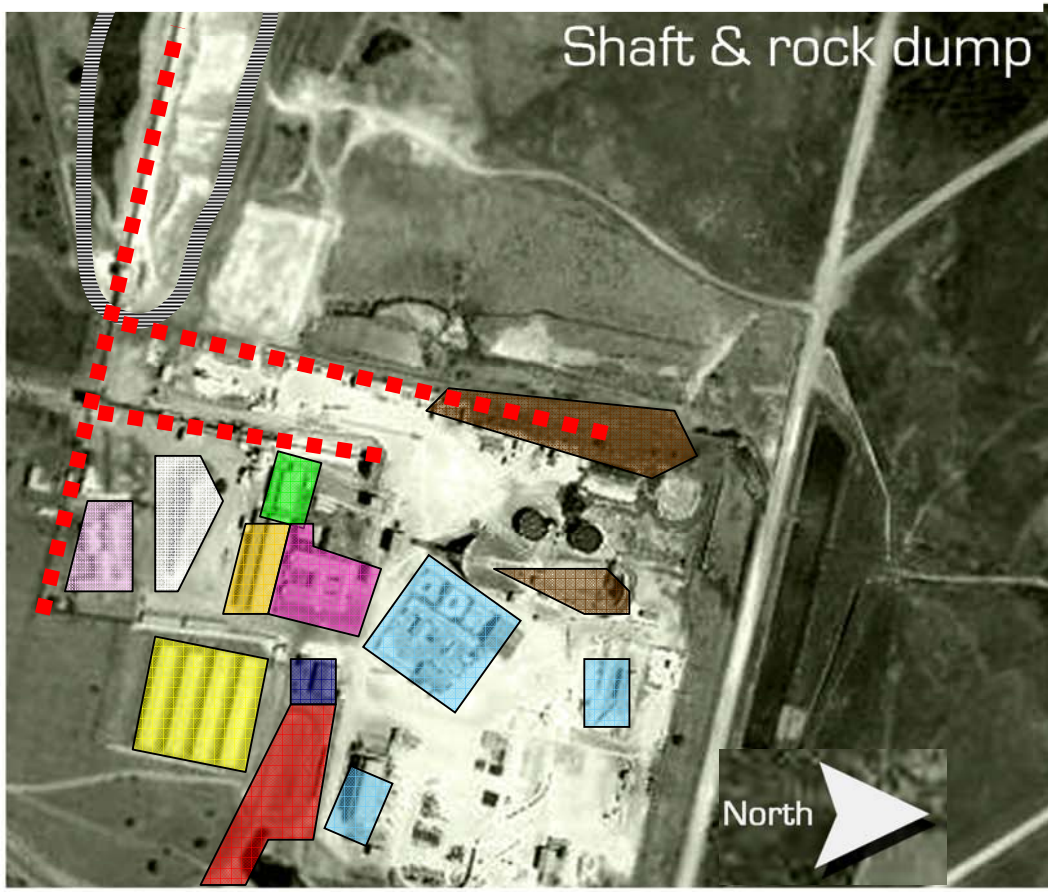
Figure D.9







Sections and elevations courtesy of Anglo Platinum Ltd.



Parking

Taxi and bus terminal

Access control

Change house

Lamp room

Main office complex and safety offices

Training belt

Work and repair shops

Shaft for men and equipment

Shaft for ore extraction

Rock dump

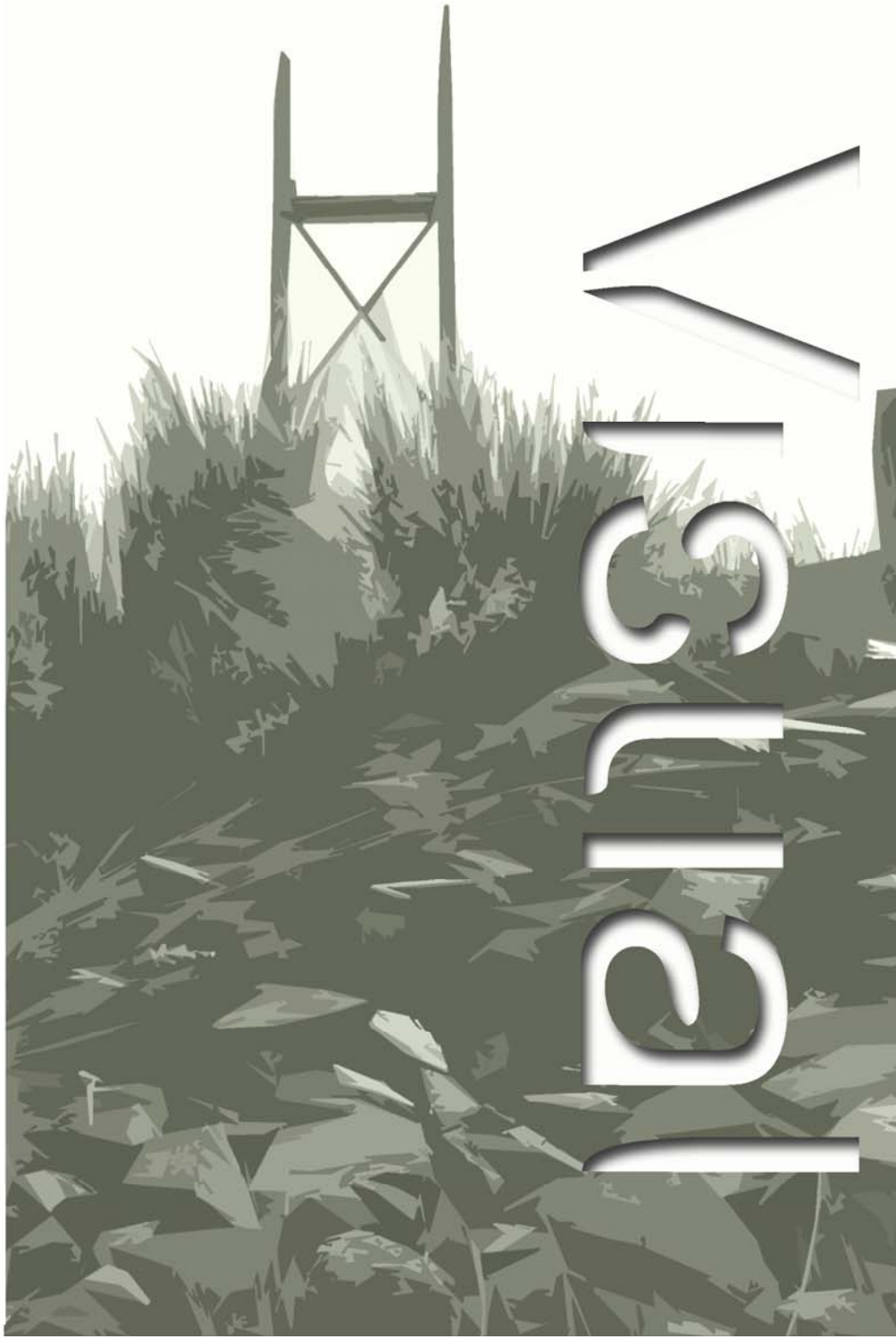
Conveyor belt

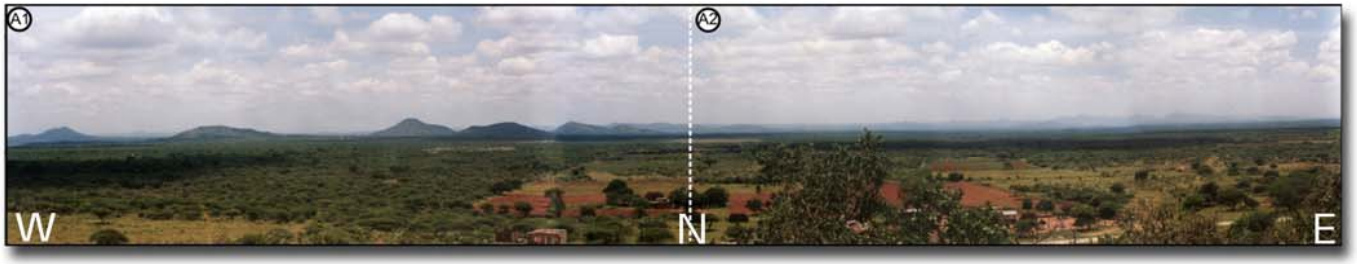
Training center

Case study: Bafokeng Rasimone Platinum Mine

Figure D.10 Shaft complex layout

E Visual aspects





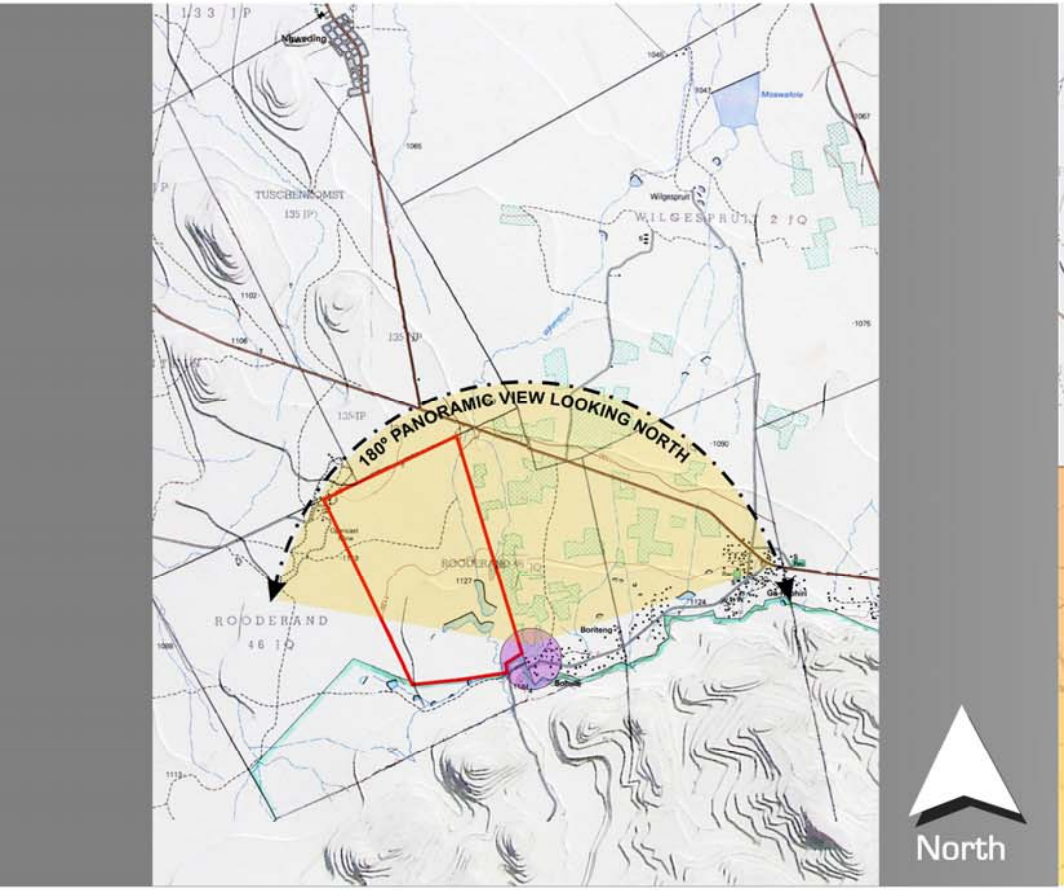


Figure E.1 Panoramic view looking north

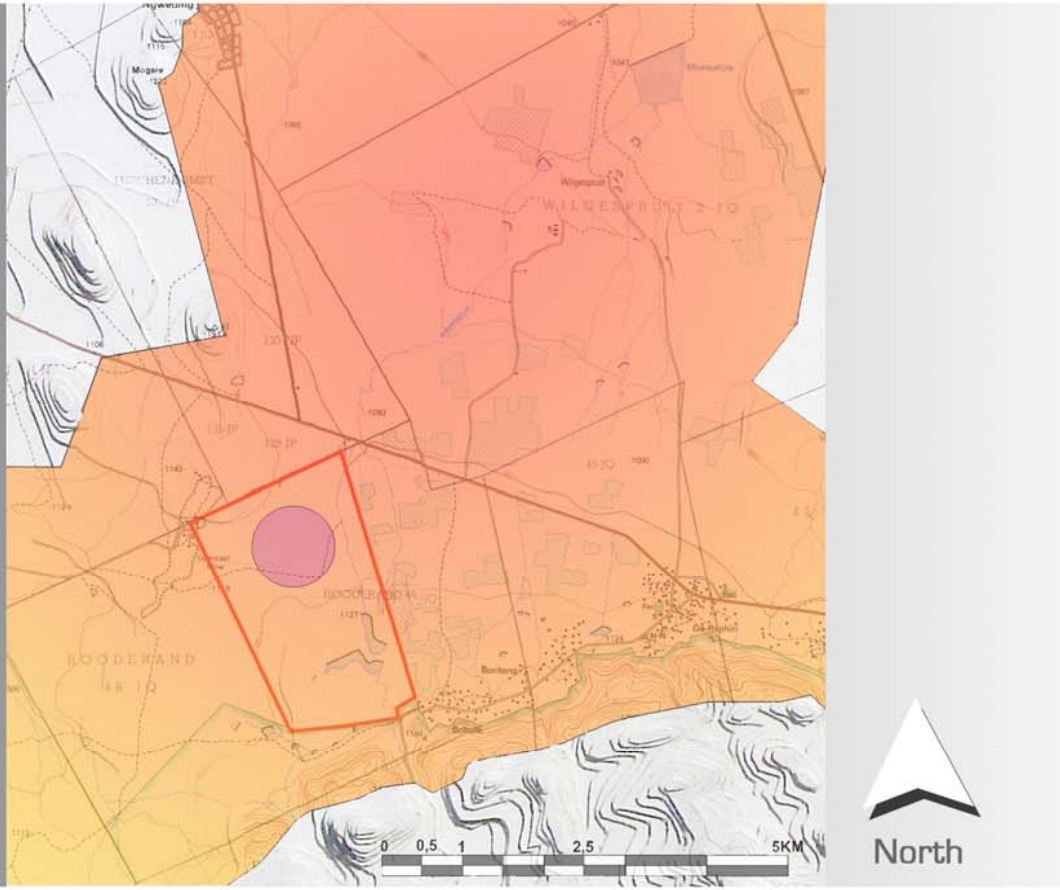


Figure E.2 Viewshed

View Shed

Low impact High impact

Panoramic view and viewshed

Visual aspects

E. 1 Description of the affected environment

The site in which the project components will be located covers an area of 10,000 ha. The visual setting in which the site is located is bordered to the south by the Pilanesberg range, to the west by a number of koppies running in a north-south line, to a distant mountain range on the horizon to the north and extends to the western horizon. (S.E.F. 2001:107)

E. 2 Topography

The dominant landscape type is the Clay Thorn Bushveld, which is characterised by a gently undulating almost flat topography dropping in altitude to the north. The site is located within the savannah biome, which consists of scattered trees and shrubs and a continuous ground layer dominated by grass species. (S.E.F. 2001:107)

E. 3 Views/Visibility

The views from the Pilansberg's south higher lying hills towards the site are extensive and uninterrupted for several kilometres. The views within the flat landscape of the site are restricted by the lack of elevated viewpoints. The landscape creates an uninterrupted view shed to the north that extends often beyond a distance of five kilometres. Any vertical object within this view shed is readily visible depending on its size and distance from the viewer. (S.E.F. 2001:107)

E. 4 The scale of the landscape

The vertical scale of the area is largely due to the definition of the Pilanesberg towards the south. The broad undulating valley, where very little vertical definition is evident, strengthens the horizontal scale of the landscape.

When viewed from the north relatively tall structures or changes to landform can be accommodated due to the presence of the backdrop created by the Pilanesberg to the south. (S.E.F. 2001:109)

Project structures which are elevated will become highly visible from viewpoints nearby because of the possibility of the project features breaking the skyline through silhouette or due to the visual contrast caused by the relatively flat and undulating landscape in especially the east-west lying valley landscape.

E. 5 The Visual Analysis

This section describes the aspects, which have been considered in order to determine the intensity of the visual impact on the area. The criteria include the area from which the project can be seen (the view-shed), the viewing distance, the capacity of the landscape to visually absorb structures and forms placed upon it (the visual absorption capacity), and the appearance of the project from important or critical viewpoints within established and existing planned land uses. (S.E.F. 2001:109)

E. 6 The View shed

The view-shed is a topographically defined area, which includes all possible observation sites from which the project will be visible. The boundary of the view-shed, which connects high points in the landscape, is the boundary of possible visual impact (Alonso, et al, 1986). Local variations in topography and man-made structures would cause local obstruction of views. (S.E.F. 2001:109)

E. 7 The Viewing Distance

Visual distance zones can be defined by distances of 500, 1 000, 2 500 and 5 000 m from the project components. The visual impact of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases (Hull and Bishop, 1988). The view of the project components would appear so small from a distance of 5000 m or more that the visual impact at this distance is insignificant. On the other hand the visual impact of the project components from a distance of 500 m or less would be at its maximum. (S.E.F. 2001:109)

E. 8 Visual Absorption Capacity

The visual absorption capacity (VAC) is a measure of the landscape's ability to visually accept / accommodate or embrace a development. Areas, which have a high visual absorption capacity, are able to easily accept objects so that their visual impact is less noticeable. Conversely areas with low visual absorption capacity will suffer a higher visual impact from structures imposed on them. (S.E.F. 2001:109-110)

E. 8.1 Visual Absorption Capacity (VAC) factors and their numerical values

VAC Factor		Categories		
Slope	Range Numerical Value VAC	0-3 % 3 Low	3-7 % 2 Moderate	> 7 % 1 High
Vegetation Height	Range Numerical Value VAC	< 1 m 3 Low	1-5 m 2 Moderate	5 m 1 High
Visual Pattern	Description Numerical Value VAC	Uniform 3 Low	Moderate 2 Moderate	Diverse 1 High

Table E.1 Visual absorption capacity factors and numerical values

It is concluded that the VAC of the study area as a whole is Moderate to Low while that of the dominant landscape type, the Clay Thorn Bushveld is Low. The VAC of the Agricultural and Fallow land sub-type is Low while that of the Peri-urban landscape is High.


Possible visual impact of mining infrastructure


Trees as a possible mitigation measure


Colour as possible mitigation measure

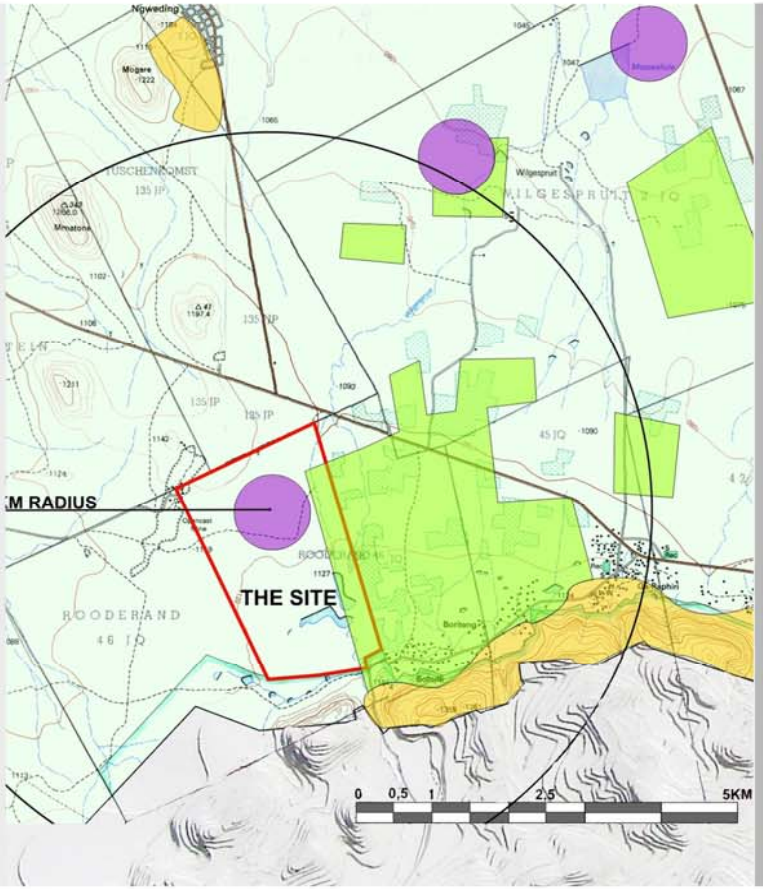


Figure E.3 Landscape types

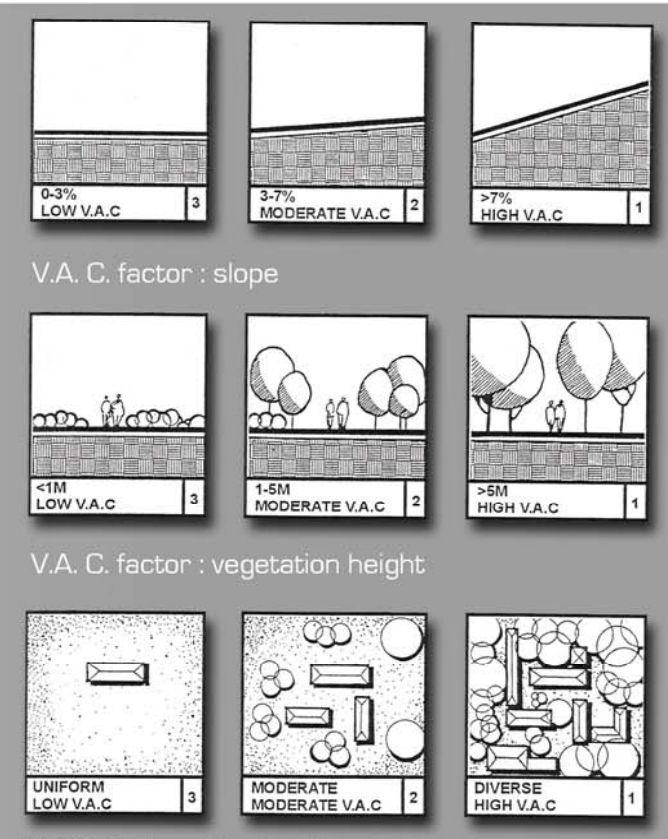


Figure E.4 V.A.C. factors

North

Clay Thorn Bushveld

Peri-urban

Agricultural and Fallow Land

Decline Shafts

Landscape types

E. 8.2 Landscape type VAC factors

Landscape Types	VAC Factors		
	Slope	Vegetation Height	Visual Pattern
Study Area	3 (Low)	2 (Moderate)	2 (Moderate)
Clay Thorn Bushveld	3 (Low)	2 (Moderate)	3 (Low)
Agricultural and fallow lands	3 (Low)	3 (Low)	3 (Low)
Peri-urban	1 (High)	2 (Moderate)	2 (Moderate)

Table E.2 Landscape type VAC factors

The Kruidfontein Project will exert a negative impact on the visual environment. This is largely due to:

- High visibility of construction activity within a zone of uniform visual pattern;
- The low visual absorption capacity of the setting which is attributable to:

1. Relatively flat topography;
2. the low vegetation height (less than one meter);
3. The lack of visual diversity;
4. A general lack of rising landforms as a backdrop, although the Pilanesberg to the south will act as a backdrop.
5. The size of the operations will expose it to many viewers;
6. The need to cut across or expose the existing landform to accommodate the surface infrastructure; and
7. The height of the project components such as the waste rock dumps, processing plant and tailings dam could be dominant in the landscape.

(S.E.F. 2001:113)

This impact is a function of subjective factors. These subjective factors are based on the cultural and experiential associations of the viewers as well as the value they place on the visual environment over other social and biophysical considerations.

E. 9 Impact of vertical structures and general mine infrastructure

Structures in the processing plant that have a vertical dimension of more than three to five metres will become increasingly visible from nearby viewpoints as their visibility increases with decreasing distance, since they would extend above the skyline in the relatively flat and undulating landscape.

Mine infrastructure and facilities that have vertical dimensions greater than five metres include:

- Single storey buildings of approximately 6 or more m high (office, workshop);
- Power lines with pylons of up to 10 m high;
- Silo's of 25 m in height;
- Tailings dam from 4 m to 25 m above natural ground level;
- Waste rock dumps up to 25 m high; and
- Stockpiles of overburden that may exceed 10 m in height.

The vertical features associated with the proposed Rooderand mine such as the tailings facility, waste rock dumps and processing plant infrastructure will greatly modify the landscape characteristics of the immediate area. (S.E.F. 2003:5.60)

E. 10 Mitigation measures of vertical structures and general mine infrastructure during operational phase

1. The project components with vertical dimensions exceeding 15m should be avoided on the farm Rooderand 46 JQ or located in a relatively low lying portions as the topography of the site is elevated relative to the surrounding area;
2. The land forming and planting design of the project needs to respect the surrounding indigenous vegetation. The interface between new planting and the existing should be gradually blended. Plant material should tend more towards local indigenous species of trees and grassland;
3. The building forms must be broken by roof overhangs and steps in the façade. This will create shadow lines, which in turn assist in the mottling or breaking up of the visible plant and other infrastructure;
4. To limit the visual impact of the project on the adjacent community and from the roads close to the site, screening berms need to be well maintained from material removed from the site. Where feasible, the use of waste material for screening berms should be considered. These berms must be of sufficient height, be graded at a slope of 1:3 on both sides and be vegetated with indigenous vegetation. To be effective, the berms should be constructed as close as possible to the viewer. The forms of the berms should be organic (non geometric);
5. Screen the plant and other infrastructure from the surrounding roads and properties using existing undisturbed trees and undergrowth, and where practical, by planting additional trees and shrubs using species that occur locally;
6. The design should make provision for accent lighting that will be directed downwards to prevent light spill skywards;
7. Colours of the infrastructure must be matt, not glossy so as to reduce reflection and glare from the surfaces. This is important when considering the night scene and reflective light.

(S.E.F. 2003:5.66-5.66)

E. 11 Current Mitigation measures of vertical structures and general mine infrastructure during decommissioning phase

1. Dismantling of mine infrastructure, including the buildings;

2. Shaping of the soil profile within the mining area to blend in with the surrounding topography;
3. Modify the form of the tailings dam, through cut and fill operations, to arrive at a 'natural' topographical profile that is in keeping with nearby elevated topographical features;
4. Covering the dam and mining area with topsoil prior to establishing vegetation.

(S.E.F. 2003:6.15-6.16)

On closure of the mine the only structures that will remain will be the vegetated tailings dam and buildings that can be utilised.

Conclusion

The Kruidfontein project is characterised by an almost flat undulating topography with uninterrupted views for several kilometres over the landscape. Except for the backdrop that the Pilanesberg will provide from the northern viewpoint, it is evident that the visual impact of the mine will be moderate to high from the surrounding areas.

Although general mitigation measures for visual impacts of mining activities exist, these measures are still more concerned with minimising the visual intrusion by physical barriers, such as trees and berms, than investigating new approaches towards more aesthetically pleasing structures. This implies that mining companies will rather take the path of least resistance, than address the root of the problem.

With this information in mind it is imperative to design facilities and landscapes in such a way that they are able to adopt to the specific environment, taking into account visual traits of the area like, materials uses, building heights, the surrounding environment, cultural context and the facilities' end land use. The design should thus visually enhance the end land use whilst accommodating the temporary mining operations, rather than screen function specific mining facilities.

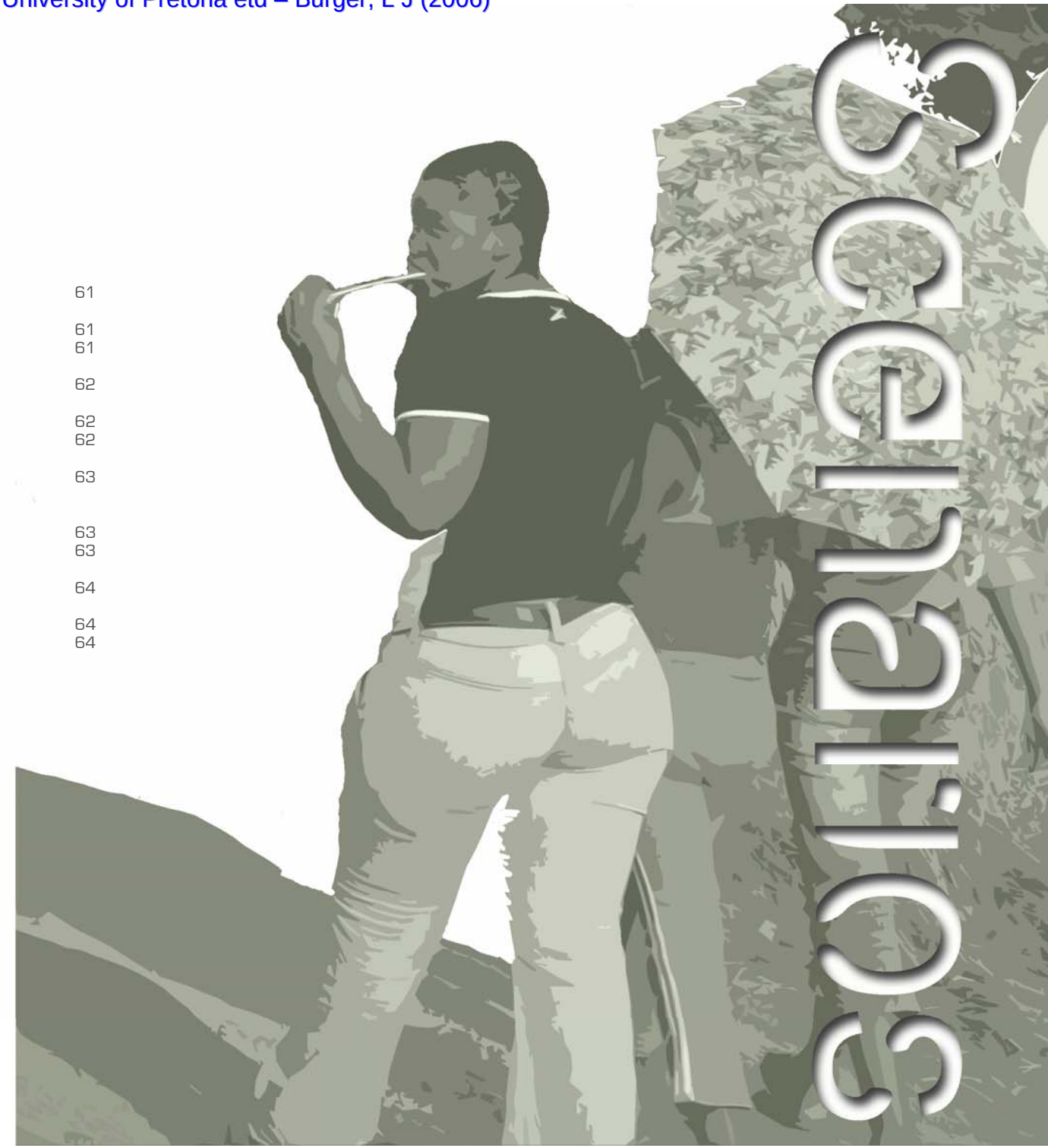
"Assembling a puzzle requires patience and time; scenario planning is discussing possible and desirable future outcomes given different inputs."

(By author)

F Scenarios

Introduction

Conclusion



Introduction

Scenario planning is a discussion of possible outcomes given different inputs. In this chapter the different outcomes for different areas of investment and development is explored. This is necessary to determine where the Anglo Platinum mining group should invest to obtain optimum cultural, financial and environmental benefit. The different scenarios discussed do not exist in isolation from one another. It is possible that one scenario can be pursued together with another or all scenarios can occur collectively. It is thus important to identify the most likely scenarios in the Kruidfontein project namely: a linear development next to the main road, development near the shaft at the farm Rooderand 46JQ, development near major intersections, or development in Saulspoort which is the closest established town to the Pilanesberg Nature Reserve and the proposed extension to the Park,

Furthermore it was necessary to identify the most likely positive and negative outcomes for each particular scenario of investment. Several outcomes can inherit both positive and negative behaviors within the same scenario. These outcomes are based on information from: the visual analysis *(see Fig. E.1, Fig E.2, Sections E.1 -E.9),* the tourism analysis *(see Fig. C.1. Sections C.1-C.4),* the context analysis *(see sections B.9-B.9.8),* typical mining infrastructure aesthetics *(see Fig. D.5),* the case study of Bafokeng Rasimone Platinum mine and its environment *(see Fig. D.7 –D.10),* and the Bio-physical analysis *(see Sections B.4.2-B.5.1.).*

Scenario 1

F. 1 Linear development next to main road

F. 1.1 Positive outcomes

- Linear corridor between Saulspoort and Rooderand
- Implementation of retail and social facilities for the community
- Possibility for new housing initiatives along the road
- The dynamics of Saulspoort are minimally hindered
- Meeting the client brief
- Mine infrastructure can be incorporated into the intervention
- Close enough to Saulspoort to commute
- It is in close proximity to all the settlements in the area
- Intervention next to main road – quick and easy transportation
- Intervention can play a part in the development of an entrance gate for the proposed Heritage Park

F. 1.2 Negative outcomes

- The mine is still not addressed in terms of the visual impact from the mountaintop
- The opportunity to upgrade town facilities will be lost
- Sprawl, uncontrolled development
- Services will have to be put in place (roads water electricity)
- Existing infrastructure and services are scattered and not well planned

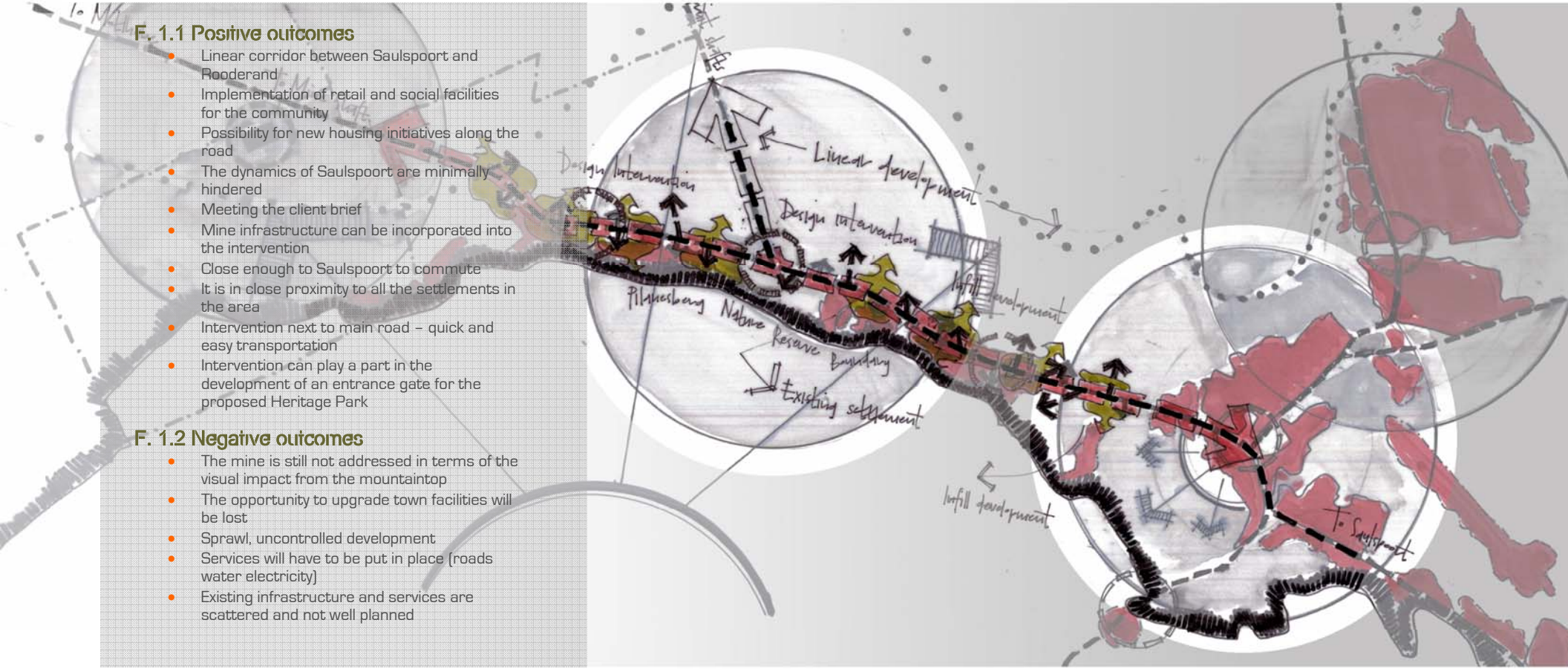
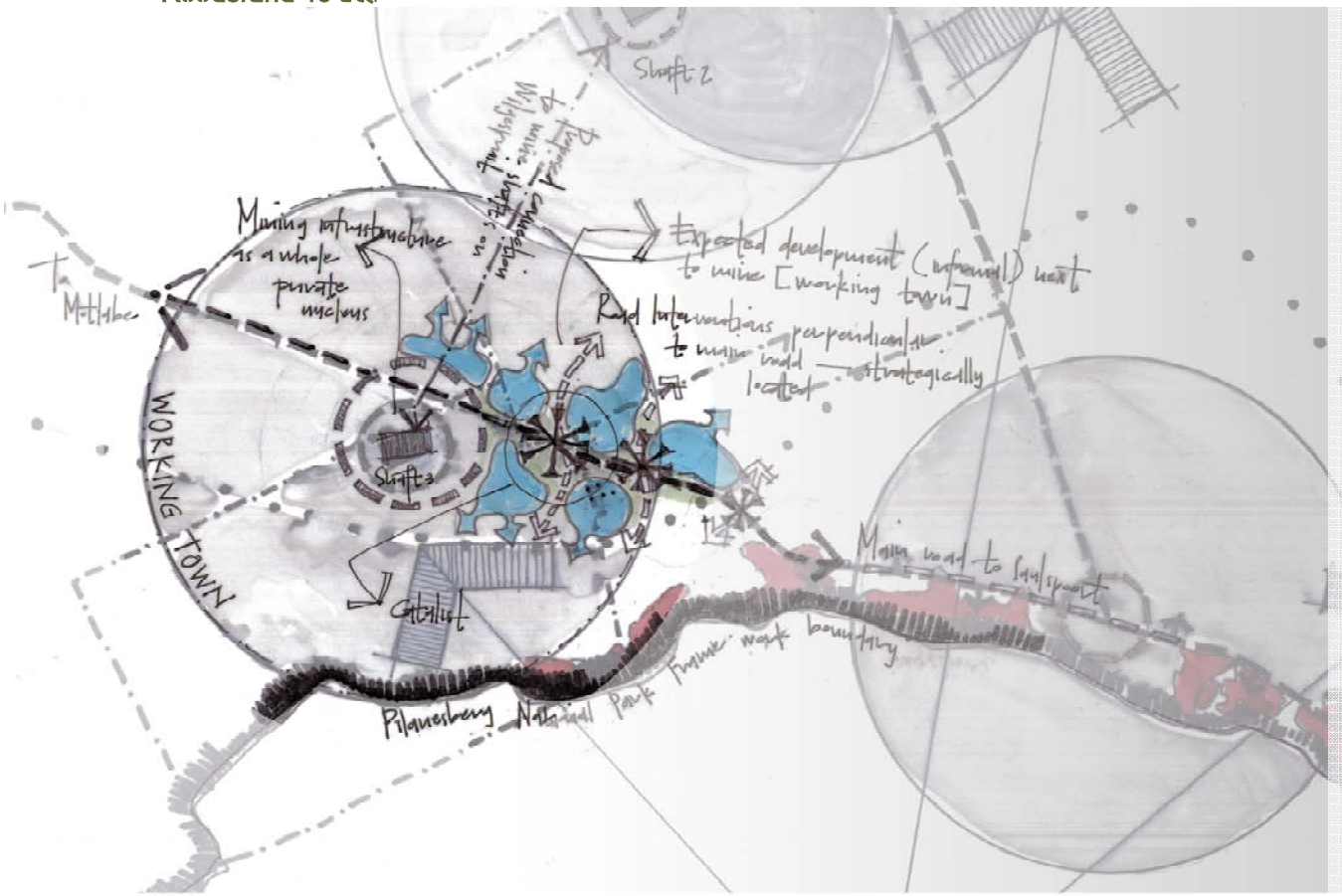


Figure F.1 Linear development next to main road

Scenario 2

F. 2 Development on the farm Rooderand 46 JQ



With this scenario the development between around the mine location in Rooderand are explored. The intervention acts as a catalyst for development.

Positive outcomes

- Walking distance from any point of the intervention to town and the mine location
- The possibility of a creative transport alternative e.g. a tram railway route
- Extension of the existing town to form a corridor
- Proximity of intervention to the mining operations is comfortably close
- Privacy to the mine and operations
- Intervention will benefit from roads and infrastructure implemented by the mine

Negative outcomes

- Visual impact from mountaintop
- The opportunity to upgrade town facilities will be lost
- Larger impact on the land
- Cultural values and sacraments will be watered down and possibly even lost
- Distance from mining infrastructure in relation to the town
- The disturbance of the dynamics of the town
- Aesthetic impact and identity of the Bakgatla architecture will be lost and replaced
- Intervention far from social and retail services
- If there is no planning around Saulspoort there is a possibility of uncontrolled and unpleasant urban sprawl.

Figure F.2 Development on the farm Rooderand

Scenario 3

F. 3 Development at major intersection between Saulspoort and Rooderand

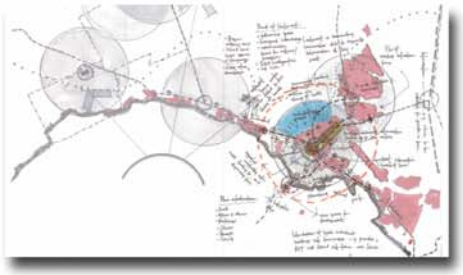
Positive outcomes

- Proximity of intervention to the mining operations is comfortably close
- Intervention will benefit from roads and infrastructure implemented by the mine
- Possibility of a gateway into the proposed Heritage Park
- The dynamics of Saulspoort are left unhindered
- The possibility to introduce mine infrastructure into the intervention
- Close enough to Saulspoort to commute
- Adjacent farms also demarcated for mining, will be able to reuse some of the mining infrastructure introduced in the intervention
- Central location of intervention between settlements
- Existing government road stretching from the Bakgatla Gate to the farm Rooderand 46 JQ

Negative outcomes

- Visually unappealing mine site from mountaintop
- The opportunity to upgrade town facilities will be lost
- Sprawl, no control over development
- Services will have to be put in place (roads water electricity)
- No existing infrastructure and services to use as a starting point

Figure F.3 Development at major intersection between Rooderand and Saulspoort



Scenario 4

F. 4 Development in Saulspoort.

In this scenario an intervention is proposed in the town of Saulspoort near the farm Rooderand 46 JQ

Positive outcomes

- Densification of the center core of Saulspoort
- Less significant impact on environment of Rooderand by introducing some of the mine infrastructure into the town.
- It is in close proximity to all the settlements in the area
- Established transportation routes
- Urban fabric of the town densifies
- Close to the major cities Johannesburg and Tshwane
- The opportunity to anticipate and design for the rapid urban sprawl that will result from the Mine implementation
- Upgrading and reclaiming of existing urban fabric and infrastructure
- Proximity to the Bakgatla gate of the Pilanesberg National Park.
- Economic growth in the town of Saulspoort

Negative outcomes

- Distance from mining infrastructure in relation to the town
- Aesthetic impact and identity of the Bakgatla architecture might be lost.
- Informal settlements
- Seclusion of the Anglo from the community will be compromised
- Less attention to the closure plan will be given since the Plant might not be used for other purposes after operation ceases

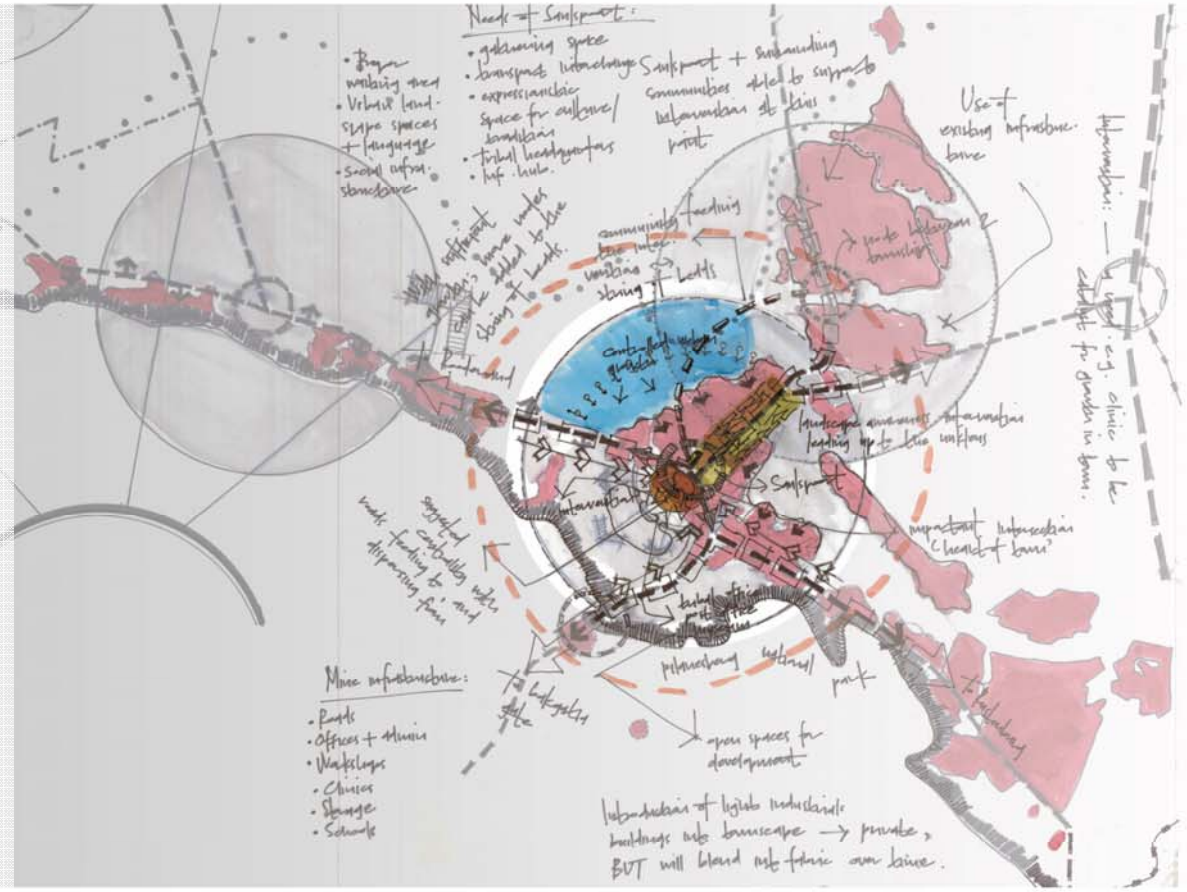


Figure F.4 Development in Saulspoort

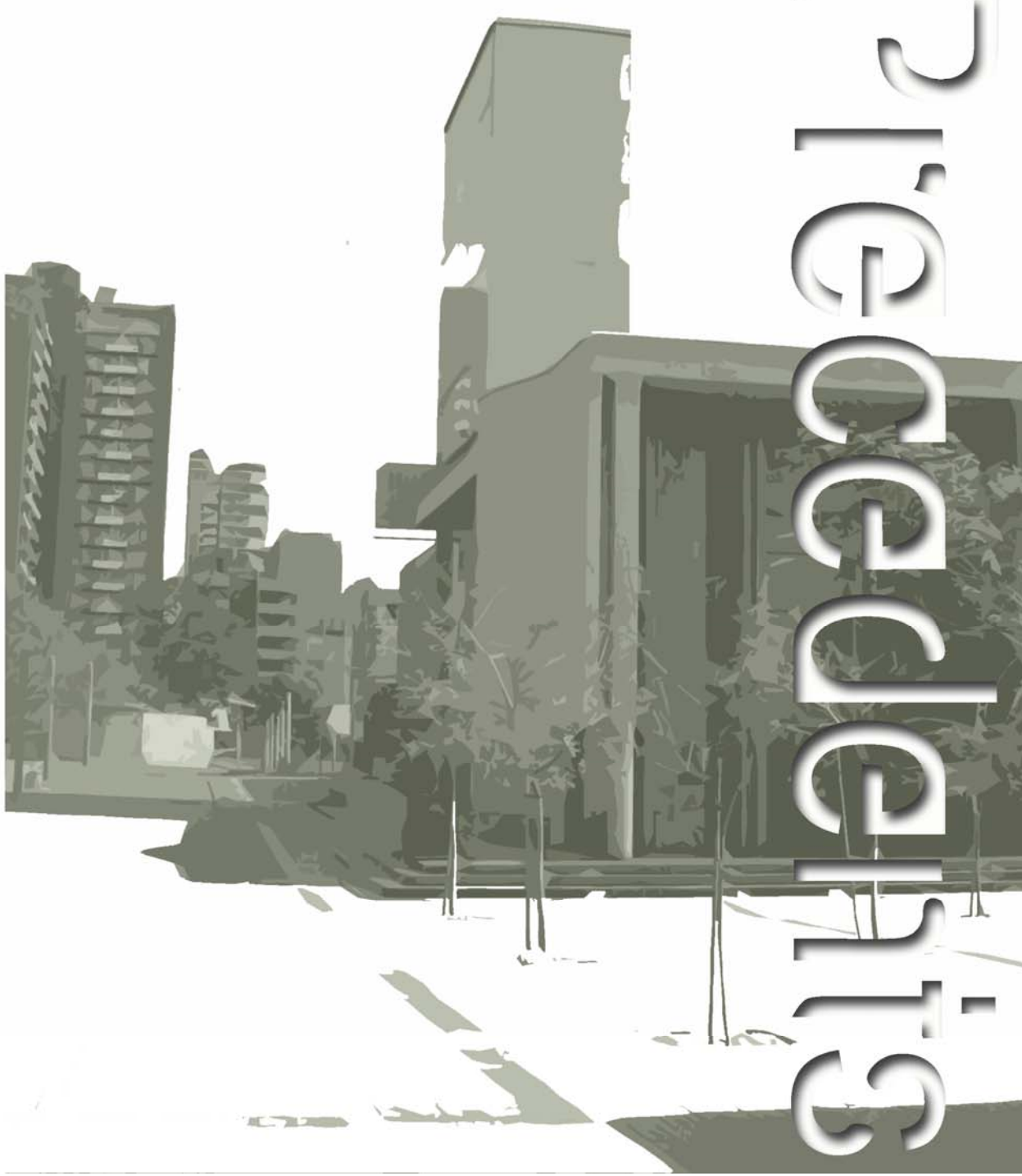
Conclusion

Although all the scenarios are viable, scenario 4, a design intervention in Saulspoort, proves to be the unsurpassed scenario to pursue. This scenario requires the least amount of input in terms of transport routes and new infrastructure, Saulspoort is an established town at the Bakgatla gate into the Pilanesberg National Park, offering tourists on the northern region of the Park amenities such as cultural information of the area, traditional food, insight into the heritage of the Bakgatla baga Kgafela ethnic group, and some degree of retail facilities. Saulspoort is also the town that will probably need several mitigation measures against the influences of a typical mining operation the most. The town has a high cultural heritage preservation value and could be a key link to the secondary industry proposed to run alongside the mining operations and eventually surpass the temporary mining process. Dilapidated buildings and facilities like the tribal office, hospitals, museum and some smaller buildings can be easily refurbished to enhance the character of the town. The large open arena like space in front of the tribal office (see Fig B.20) is used to host larger cultural gatherings for the greater Pilanesberg region, indicating that that this scenario might suffer from rapid development outside the town of Saulspoort. The initial initiative was to mitigate the influence of the proposed mining operations in the area. Scenario 4 can address more than just the visual impact and end land use of the mining operations, but also preserve the cultural heritage and strengthen the surrounding area to withstand a variety of stresses affecting the town.

G Precedent studies

Introduction

Conclusion



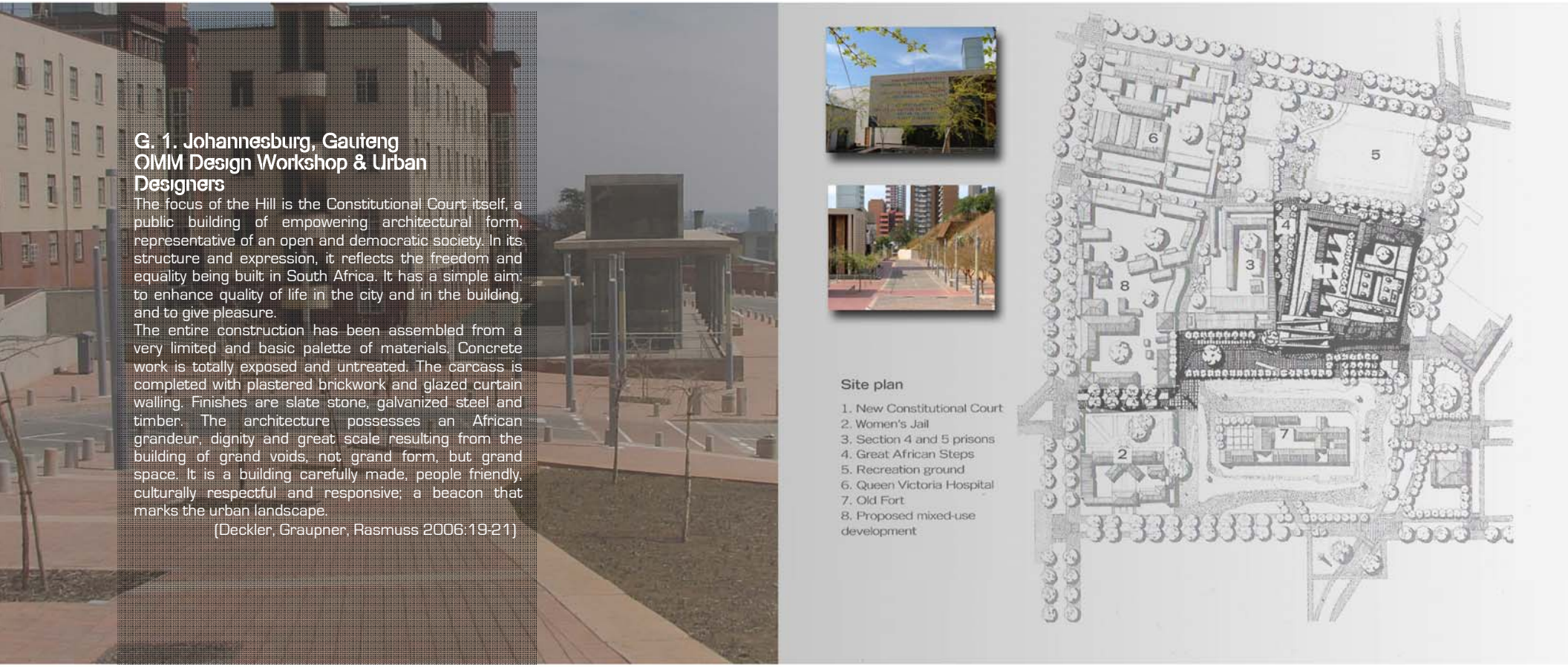
Precedents

Introduction

The following precedents were considered for their ability to integrate with the surrounding environments' cultural, aesthetical and physical aspects. These precedents are South African examples of design that suits the individual needs of the specific surroundings. The final design proposal may not include the specific functions accommodated by the precedents, but they form the basis from which issues like circulation, character, milieu, symbolism, space, structure, operation, connection between design and community, heritage and culture can be resolved. The discussed transport interchanges can provide invaluable information on aspects of the chosen scenario, the development in Saulspoort, like the continuity of movement, assembly of people and the intense amount of interactions in a limited time period. The cell structure of Saulspoort (see Fig. B.11) inherits a very different quality of movement and gathering than the following precedents do, it is much slower and free, and the spaces are to some degree trapped within the circulation. This is where projects like the constitutional Court and Constitution Hill: Johannesburg, and Red Location Museum: Port Elizabeth, can aid in portraying the identity of a place and community.

Constitution Court and Constitution Hill

Figure G.1



G. 1. Johannesburg, Gauteng
OMM Design Workshop & Urban Designers

The focus of the Hill is the Constitutional Court itself, a public building of empowering architectural form, representative of an open and democratic society. In its structure and expression, it reflects the freedom and equality being built in South Africa. It has a simple aim: to enhance quality of life in the city and in the building, and to give pleasure.

The entire construction has been assembled from a very limited and basic palette of materials. Concrete work is totally exposed and untreated. The carcass is completed with plastered brickwork and glazed curtain walling. Finishes are slate stone, galvanized steel and timber. The architecture possesses an African grandeur, dignity and great scale resulting from the building of grand voids, not grand form, but grand space. It is a building carefully made, people friendly, culturally respectful and responsive; a beacon that marks the urban landscape.

(Deckler, Graupner, Rasmuss 2006:19-21)

Site plan

1. New Constitutional Court
2. Women's Jail
3. Section 4 and 5 prisons
4. Great African Steps
5. Recreation ground
6. Queen Victoria Hospital
7. Old Fort
8. Proposed mixed-use development

Red Location Museum

Figure G.2

G. 2.Port Elizabeth, Eastern Cape
Nocro Wolff Architects

Red Location, near Port Elizabeth in the Eastern Cape, is an important site of South Africa's struggle for freedom, and the home of many cultural and political leaders. Visitors are not treated as consumers but active participants. The convention of representing history as a single story is challenged and turned on its head. The past is represented as a set of memories that are consciously disconnected yet bound together by themes. The lesson of Red Location is that South Africa is a country with a tumultuous history marked by the striving of various groups to be free.

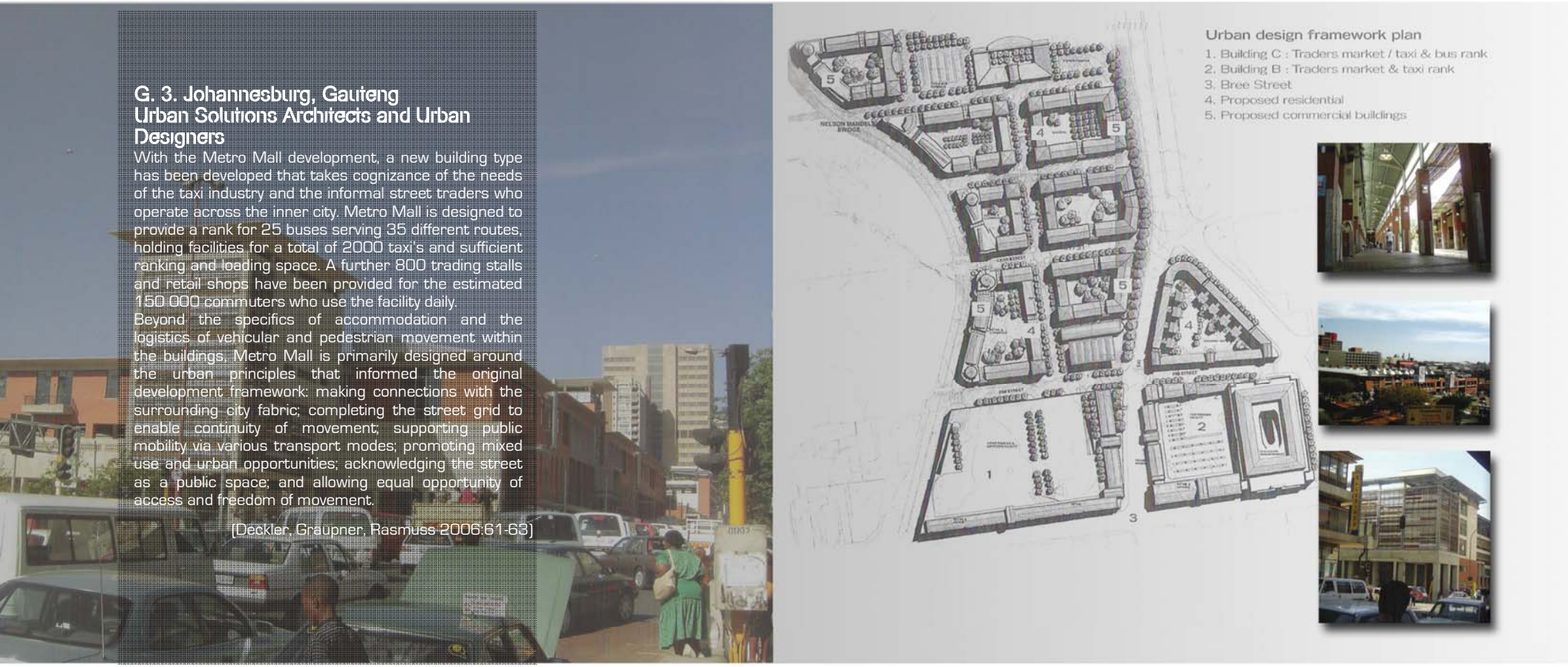
The museum includes an auditorium, library, art gallery and offices, a memorial space to commemorate local heroes of the struggle, and a tomb for Raymond Mhlaba, a national struggle hero. Formal design influences are drawn partly from documentary artifacts, such as artworks and posters depicting the struggle for freedom. The saw-tooth factory roof is a recurring theme in trade union posters. Materials are used to reflect those used in the surrounding areas. These materials are given a new dignity; standard steel windows are used in unconventional ways, the corrugated sheets on the memory boxes are intentionally rusted, and the concrete blocks traditionally used in township houses have been used very precisely as though they were clay facebricks.

The museum is remarkable for the ambition of its narrative scheme: to offer a genuine alternative to the partisan readings of history in a divided country with an all too resent violent past. It relies on the drama of light and space and on the didactic expression of assembly for its architectural presence.

(Deckler, Graupner, Rasmuss 2006:43-45)

Metro Mall Transport Facility and Traders Market

Figure G.3



G. 3. Johannesburg, Gauteng
Urban Solutions Architects and Urban Designers

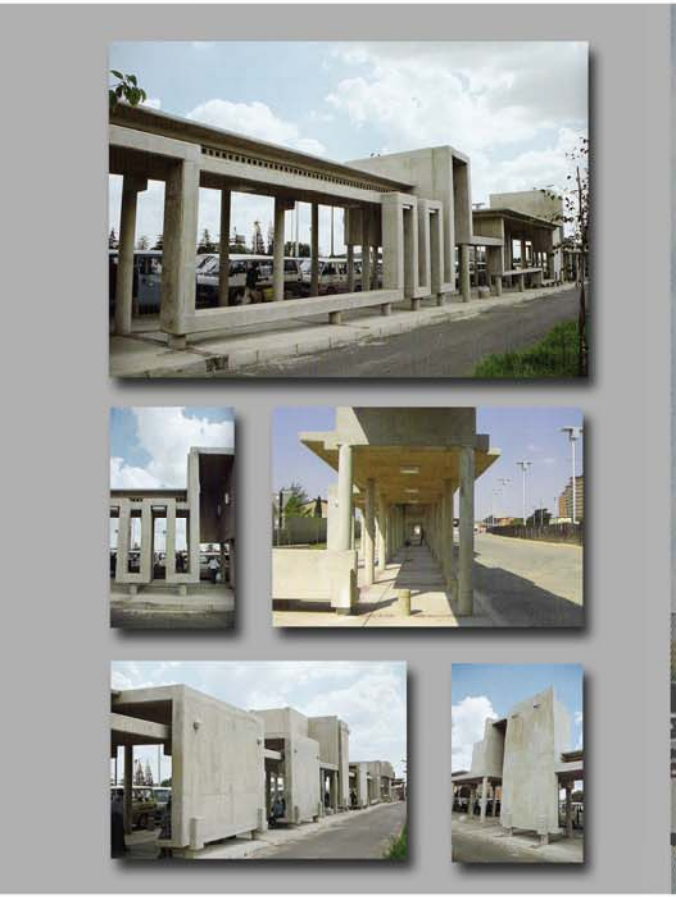
With the Metro Mall development, a new building type has been developed that takes cognizance of the needs of the taxi industry and the informal street traders who operate across the inner city. Metro Mall is designed to provide a rank for 25 buses serving 35 different routes, holding facilities for a total of 2000 taxi's and sufficient ranking and loading space. A further 800 trading stalls and retail shops have been provided for the estimated 150 000 commuters who use the facility daily.

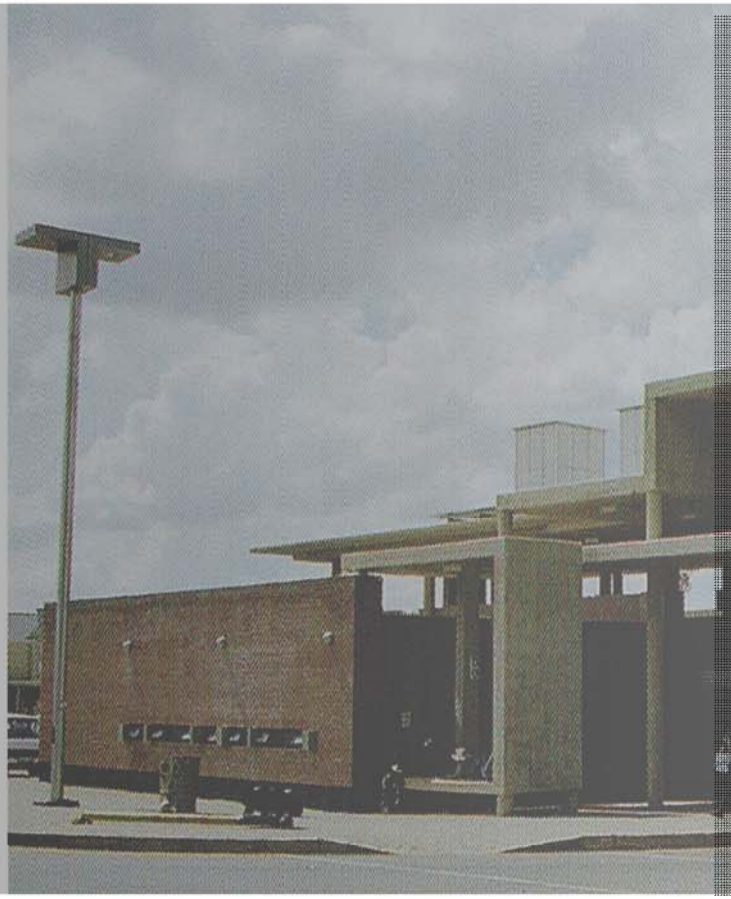
Beyond the specifics of accommodation and the logistics of vehicular and pedestrian movement within the buildings, Metro Mall is primarily designed around the urban principles that informed the original development framework: making connections with the surrounding city fabric; completing the street grid to enable continuity of movement; supporting public mobility via various transport modes; promoting mixed use and urban opportunities; acknowledging the street as a public space; and allowing equal opportunity of access and freedom of movement.

[Deckler, Graupner, Rasmuss 2006:61-63]

Baragwanath Public Transport Interchange and Traders market

Figure G.4





G. 4. Soweto, Gauteng
Urban Solutions Architects and Urban Designers

Longstanding competitions between busses, minibus taxis and street traders for space in the area was the most critical design challenge. In the past, very few formal facilities were provided for any of these sectors.

The site stretches for 1.3 kilometers along the Old Potchefstroom Road the most important access route into Soweto, and is on average only 50m wide. The oblong shape of the street posed a serious challenge to meet the extended accommodation requirements and the proper functioning of the building.

The planning principle is to provide an arcade as a structural spine along the whole length of the site. This arcade, constructed of sculpturally formed concrete elements, becomes the binding element onto which all the various functional requirements are attached. The spine connects commuters from the public facility or transport station to the next. The arcade is the focal point of the development within which the greatest number of traders and public amenities and spaces are positioned.

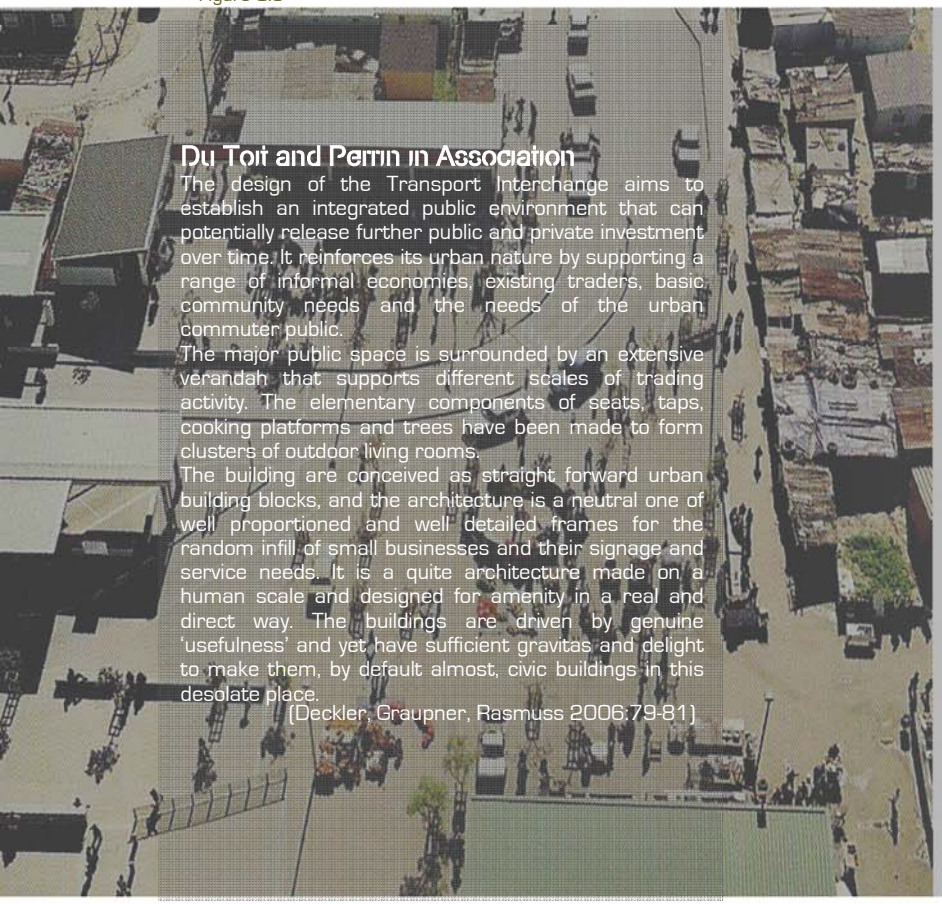
The enormous length of the arcade was spatially differentiated in reference to the functions that happen along it. Landmark structures have been positioned at focal points and public entry points to ensure a greater sense of orientation. These landmark towers also become the focus of artwork by local residents and scholars, ensuring a sense of identity and ownership.

The Baragwanath Public Transport Facility presents a public catalyst for the development of new urban spaces and fabric in once underdeveloped and marginalized environments.

(Deckler, Graupner, Rasmuss 2006:65-67)

Phillipi Public Transport Interchange

Figure G.5



Du Toit and Perrin in Association

The design of the Transport Interchange aims to establish an integrated public environment that can potentially release further public and private investment over time. It reinforces its urban nature by supporting a range of informal economies, existing traders, basic community needs and the needs of the urban commuter public.

The major public space is surrounded by an extensive verandah that supports different scales of trading activity. The elementary components of seats, taps, cooking platforms and trees have been made to form clusters of outdoor living rooms.

The building are conceived as straight forward urban building blocks, and the architecture is a neutral one of well proportioned and well detailed frames for the random infill of small businesses and their signage and service needs. It is a quite architecture made on a human scale and designed for amenity in a real and direct way. The buildings are driven by genuine 'usefulness' and yet have sufficient gravitas and delight to make them, by default almost, civic buildings in this desolate place.

(Deckler, Graupner, Rasmuss 2006:79-81)

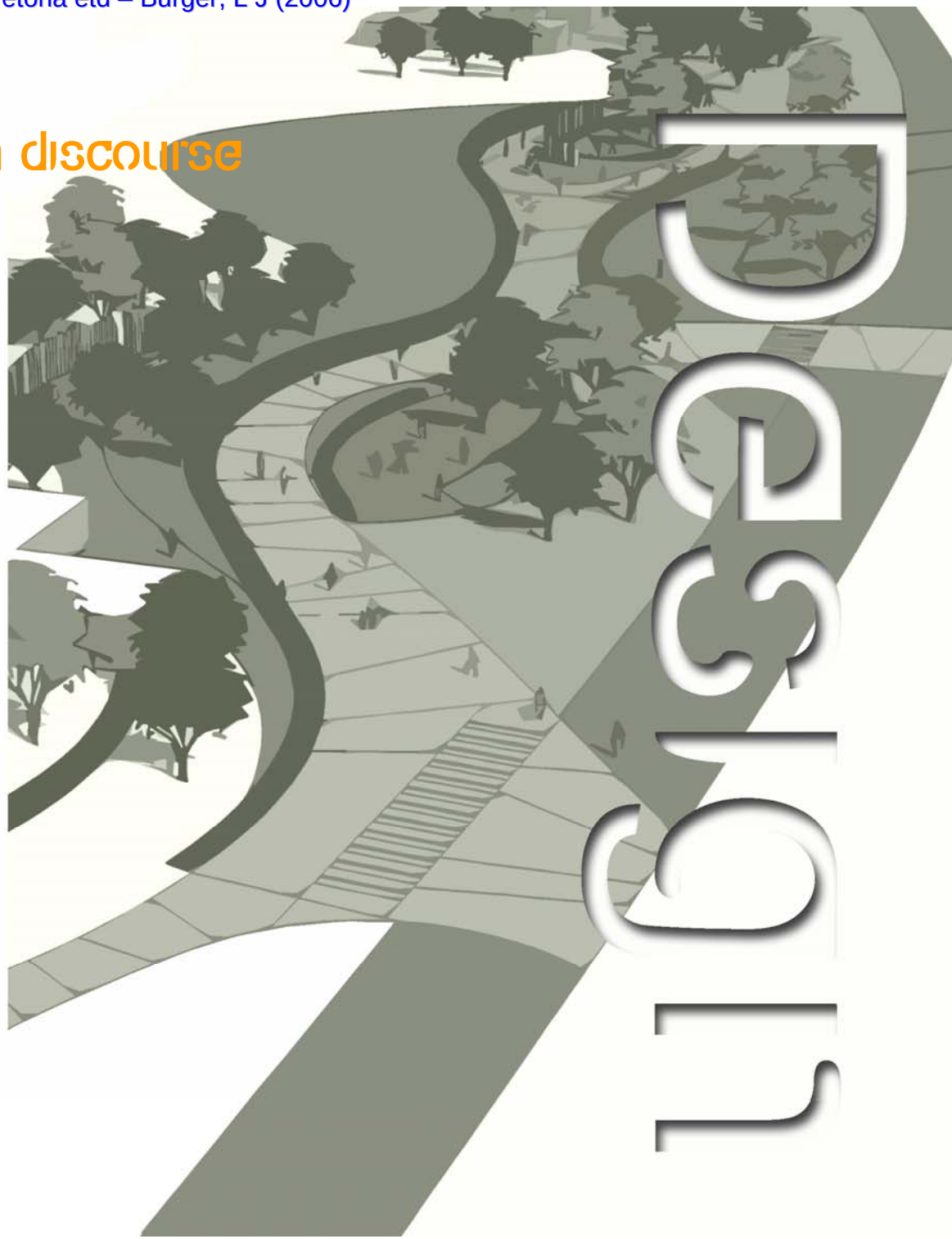
Conclusion

It is evident that all the designs concerned with transportation must be made up out of robust materials to withstand harsh wear, but that the design does not have to be mundane as a result of the material choices. Another observation is that true magnificence laze in simplicity and links to the individual on other levels than merely what one can see and touch. Most spaces are significant because of the presence of other people, and the character of the design enhances or deters this experience. Design which is not connected to human feelings is somewhat fictitious. Complex ideas can be expressed in remarkably simple ways like the Constitution Courts' translucent building expressing our democracy and the use of monumental scale, light and space to communicate our struggle for freedom in the Red Location Museum. Even though the final design can not be a trade space due to the nature of the project, the type of craft and the culture, some form of trade space is necessary to enhance activity, tourist interest and provide an opportunity to the potters of the Pilanesberg to benefit from the development. It is apparent from the Phillipi Public Transport Interchance: Cape Town and the Metro Mall Transport Facility and Traders Market: Johannesburg, that this needn't be a jumbled add-on function that did not enjoy the attention it needed in the planning phases of the design. Thus even though there are limited craft opportunities other than pottery in the chosen scenario it is essential to provide an opportunity for trade in a space that does not impose a specific type operation.


“We don’t change the city, the city changes us.”
(By author)

H Design and construction discourse

Introduction



Bakgatla ba Kgafela

Cultural precinct: Saulspoort

Introduction

The design intervention will exert itself within scenario 4; Development in Saulspoort. (see Fig. F.4). This scenario was chosen for the numerous positive outcomes and possibilities. According to the Context analysis (see timeline B.8, sections B.9.7 & B.9.8, C.3 and Fig C.3) Saulspoort is ideally situated to benefit from the secondary tourism industry proposed to mitigate the effect of post-closure mining operations. Saulspoort also have a high Cultural Heritage Preservation value. It is thus necessary to preserve and protect the rich cultural heritage of the Bakgatla ba Kgafela community by means of design.

One of the ways to preserve the character of the community is to secure the way in which the community live and move. It is not so much the space as what is happening in the space (Gooding 2002: 125) This is captured in the patterns the community engrave on the landscape in the form of the dust roads that are narrow and widens at places where people congregate. According to Betsky (2005:7) Architects can think of design as the thoughtful gathering together of what already exists to reveal the nature of a place. The design aspires to capture this at a place where there is a culmination of heritage, culture, movement and activity.

H. 1 What the design must do.

The design must be mitigation against the cultural and physical influences a mine can have on the community. The design must be a place of awareness and a place of rediscovery and meeting.

The design must preserve how people meet for a brief moment in their daily movements, and become a place that represents the way in which the people of Saulspoort live.

When people move and live, their way of live becomes evident in the patterns they form on the land. Richard Long (Landscape Artist) makes these patterns by continuously walking in different directions to leave a Physical mark on the landscape. The art is a physical mark or pattern that connects to people on a psychological level. (Gooding. 2002:124) The design proposal for the cultural precinct of Saulspoort must capture the movement patterns and the way of life that the people of Saulspoort imprinted on the land, in a similar manner. (see Fig B.11)

The design intervention must remind the people of their cultural heritage and their present milieu. This might not transpire physically but it will most probably come about on a psychological level. Thus the intervention is a regeneration of an obvious, misunderstood, daily part of Saulspoort. It could be perceived as a membrane or place where transition happens.

H. 2. The design is the following:

- A place where people are made aware of their environment
- A compass, focusing the user and orientating the user
- A path junction
- A celebration of the way of life of the people of Saulspoort
- It can be a transport interchange
- It provides the opportunity for trade
- A meeting place
- A situate where people can wait
- A place where young people can come in search of employment from the mines and visa versa
- A symbol of hope and empowerment
- A gate to the cultural arena
- A intervention aimed at movement and orientation

H. 3 What the design is not

- A tourist attraction
- A tourist drop-off point
- It is not a Transport interchange but rather an expression of how transport is accommodated throughout Saulspoort
- It is not a trade center, but provides opportunities for specific trade that enhance the cultural heritage of the people of Saulspoort namely pottery
- A museum
- It does not house functions that continues for long periods of time

H. 4 How people will view the design

The proposed part of Saulspoort for development, (see Fig. H.1) is already seen as a place of culture, religion, authority, opportunity and expectation. The design might be seen as some sort of monument or park, but that is not the intention. It will be seen as a place of how people imprint their lives on the landscape. It is a celebration of their routine.

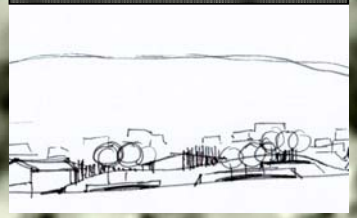
The intervention will enhance the sense of family and community as it is in this precinct where families gather to wait for family members returning from the nearby mines on Fridays.It will be seen as a destination of opportunity as taxi owners, traders and young people in search of employment will gather here. Most of all, it will be seen as a place of meeting and orientation as the design recognizes the views, routes and attractions of importance in the area. (see Fig.H.11) The tourist or newcomer will not necessarily understand this space with their first encounter. To the people of Saulspoort however it is an expression of their daily routines. This is further articulated in the elevation of the design intervention as horizontal undulating lines echo the topography and outlines the cell structure of the town. (see Fig. H.7)

One can appreciate the architecture of the area by simply taking a leisurely drive on the main routes but the actual experience and importance of the town is somewhat lost on plan. The design attempts to explain this visually to the tourist driving past and the pedestrian provoking them to explore some more.

The museum and the primary school constitute part of the educational component of the cultural terrain. (see FigB.10) The museum has ample parking space that is currently fenced off with a low dilapidated fence. The museum consists of exhibition halls, an internet café, one of only a few public ablution facilities and a traditional kitchen where tourist and residents can enjoy traditionally prepared foods.

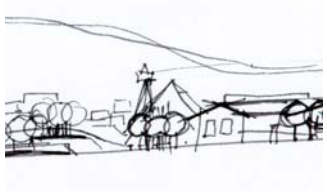
This area is currently used by young people waiting for employment and by woman and children waiting on the arrival of their husbands from the mines on Friday afternoons. It is a well shaded area with existing Acacia karoo and Acacia galpinii trees.

This is the current outdoor gathering space for large events. This space is used for annual and monthly events of short duration as well as funerals and Church gatherings



(Also see Fig. B.9 –B.11)

North



This area is the religious core of the whole cultural precinct and comprises of the a historical NG Church building, which was the first missionary station in the area and the new NG Church.

The Tribal office of the Bakgatla baga Kgafela. This is the authorative core of Saulspoort. The building itself houses daily weekly and monthly gatherings. Larger monthly and annual meetings are held outside.

H.5 Site background

Figure H.1 Background information

H. 6 How will people experience the design?

What makes any design work is people. A place without people is like a body without a soul as the precedent studies suggests. The design intervention encourages the meeting of people in the course of their daily activities, and it is this interaction between people that enhances the experience of the design.

People also experience any design by moving through it. Thus the experience of the striking environment is enhanced by the design, and to some not the design itself. Furthermore the design can be experienced by the motorist through a series of different road surfaces to focus the attention on the cultural precinct of Saulspoort.

The design of over 100 m is an elavational expression of what happens on plan throughout Saulspoort. The pedestrian experiences views the surrounding area offers as well as textures that inspired by the precinct. The smaller sub-spaces will accommodate trade and small gatherings of people for short periods of time. The design thus enhances interaction between people. The road-facing component of the design is hidden from the residents and the reverse of the design is a subtle enclosure of the cultural arena. (see Fig. B.9 – B.10)

This enables the design to be less intrusive to the constant viewer and resident and more intense in its use and view from the road, giving the area instant recognition as more important in the urban fabric, acting as a gateway to the cultural arena.

H. 7 To what extent is the design going to regulate?

The design regulates the speed of the user and the motorist by changing road surfaces and noise producing strips but other than this no decision is irreversible and the intervention is seen more as a series of choices than a stringent regulator.

H. 8 What information will guide the design?

H. 8.1 The beliefs:

Information gathered in the context analysis regarding the values of the residents of Saulspoort will form the basis from which decisions can be made in the design process. (see B.9.5 and B.9.10)
Natural features that protrude or that appears to be rising from the surface is regarded as significant or even sacred by the community. Examples of this are the Pilanesberg mountain itself where a mystical serpent lives that guards the community. Other examples are the rocky outcrops near the Moruleng dam and the Rain praying site, an exposed piece of bedrock where men pray for rain in times of drought. (see Fig. H.11)

H. 8.2 The history:

The Dutch reformed Church Plays an integral part in the community, in its history and in the present. They are constructed from natural rock from the area. This might inform some of the material choices in the design as the design also serve as a gate or poort to the cultural and religious heart. There is an abundance of this rock in the area and through observation only buildings of importance or religion is built from rock. (see Timeline B.8 and Fig. B.9)

H. 8.3 The people:

Ultimately the design is for the people and people must be able to participate in the building process. Thus construction methods, materials and design must accommodate for the training of community members that are interested in the building trade, the ease of maintenance in the case of damage, make use of local labour and knowledge as supposed to specialist knowledge that require what is not available to the layperson, and lastly, be able to expand as the community's needs grow or shrink. According to the mining analysis, (see section D.6), the mine intends to employ and train people in the mine related industry which include improving the building industry.

H. 8.4 Sustainability:

Sustainability can not be guaranteed, but we do things in hopes of sustainability. In order for any design to be sustainable it must be sustainable in its planning or design, its construction and its maintenance, of which maintenance is the longest and ongoing influence. The design must thus be low in maintenance, make use of waste materials from the mine, and be constructed with sustainable building practice

H. 8.5 The context:

The analysis for the town of Saulspoort (see pages B18-B22) shows that most of the activities happen outside under trees. One could say that buildings of cultural importance like the Tribal head office is placed in an open space or landscape void whilst other are surrounded by trees or a landscape grey zone. This enhances the authority and importance of such buildings. This is also the reason for the why the new tribal office will inherit the most architectural presence in the Cultural Arena. The building will form the pinnacle of the design elevation. (see Fig. H.9) The design must enclose the space surrounding these buildings in such a way so as not to disturb the landscape void. The architectural character of the design precinct can be seen in Figure H.2. The site is relatively flat and dusty. Even though dustiness might be seen as an obstacle to overcome, it is part of the overall character of the town. It is because of the dust roads and widening at certain sections in the routes that the movement outline and living patterns is so evident. Like Richard Long (Gooding. 2002:125) puts forward it is this borderless landscape that provides the freedom to etch individual motion onto the landscape, and in this freedom people choose the routes and places they love. Other factors concerning the context are the specific views the site present of the majestic mountains as a backdrop. (see Fig. H.2). The beauty of the scenery allows one to constantly escape for a few minutes to the splendor of the surrounding environment.

The Landscape

The Pilanesberg manifests itself on almost all the views From the South to the West. Saulspoort is situated almost entirely on a level grade at the foot of the mountain, and development does not occur higher up on the mountain due to traditional beliefs.

Architecture

Most of the Architecture related to retail and administrative functions encompass Western influences, but the dwellings poses an individual identity expressed mostly by the wall castleation of the walls and crimped columns

Figure H.2

In the early stages of the design the initiative was to create a mitigation measure against the influences the mining operations might have on the culture of the Bakgatla ba Kgafela community. One of the ways to preserve the character of the community is to secure the way in which members of the community is moves around. This is captured in the patterns the community live in the form of the dust roads that are narrow and wider at places where people meet. (see Fig B.11) The design aspires to capture this at a place where there is serendipity of sorts, thus a design that offers people the opportunity to meet. If different forms of transportation meet it provides the ideal opportunity. (See Fig H.3)

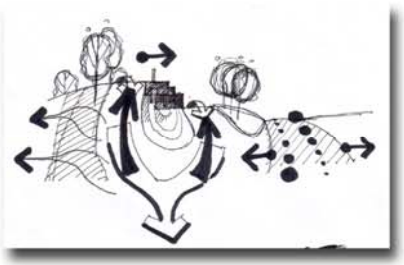
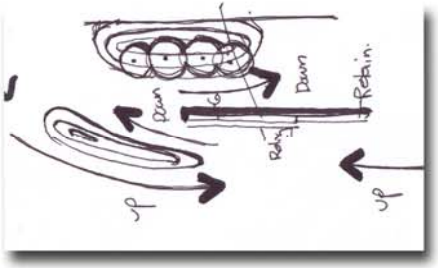
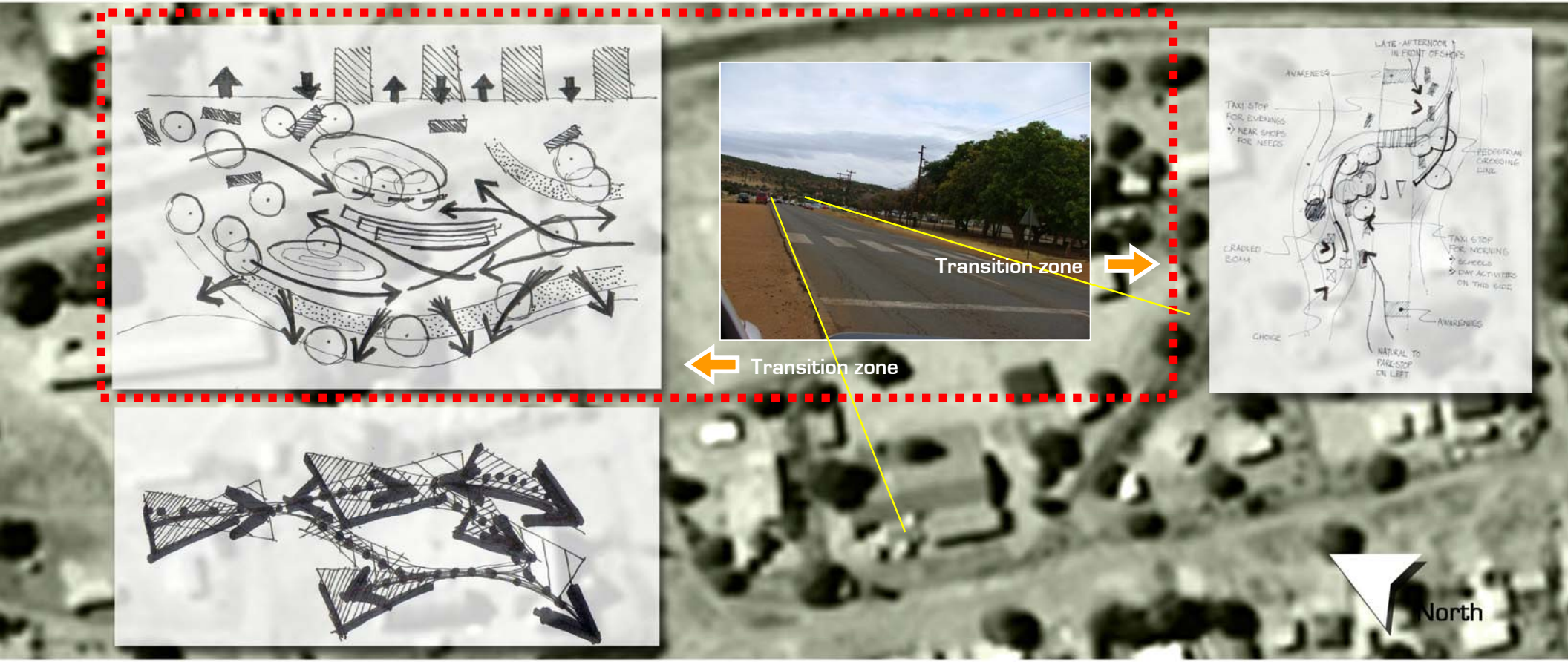
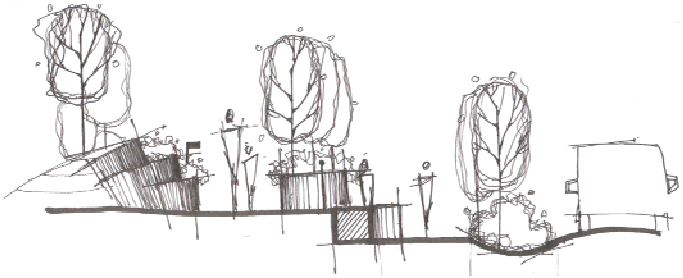


Fig H.3 Left
Depiction of how different forms of transport can meet at the same place and time

Fig H.4 Right
How the safety of pedestrians can be achieved through elevating the surface members







Transition zones

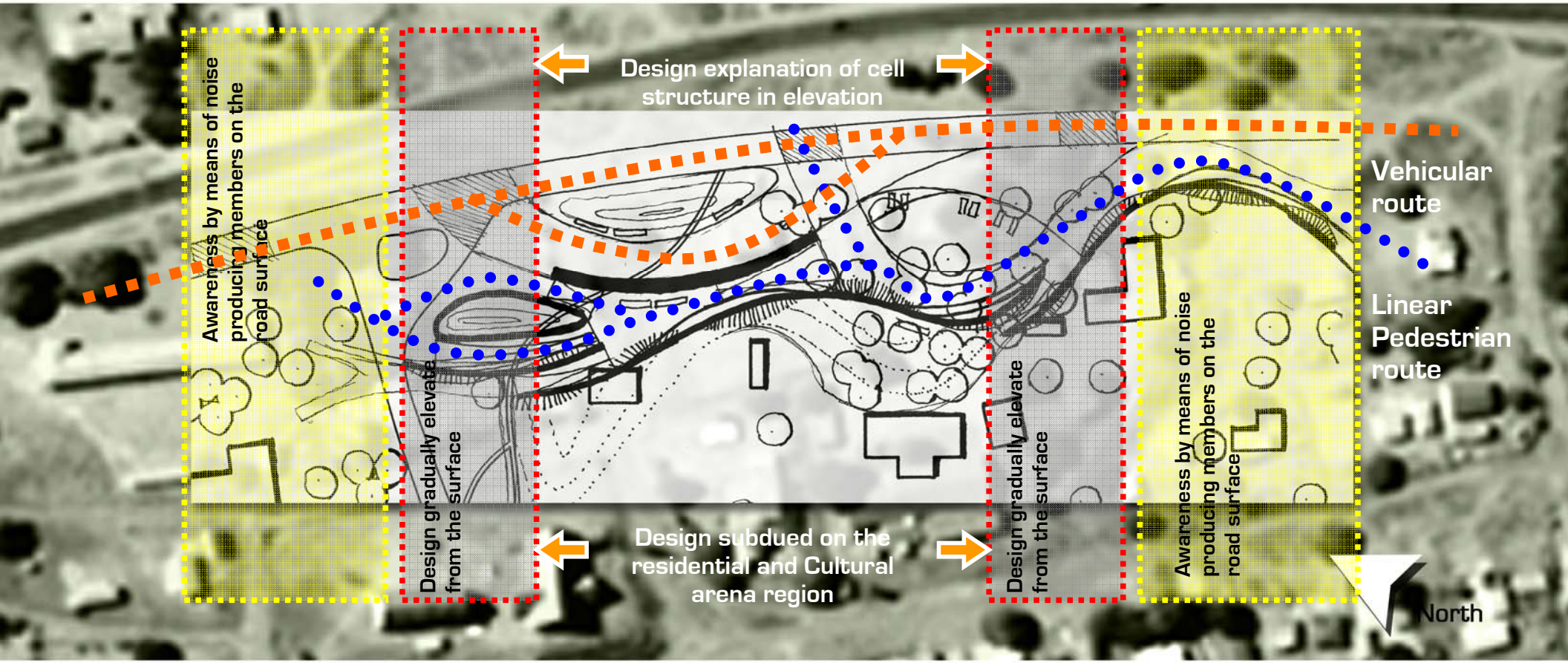
Next to the road the urban fabric of Saulspoort gradually changes from on zone to the other. Right next to the road there is a wide road reserve where the pedestrian and vehicle meet. There are no designated parts of the road for this interaction. It occurs along the whole length of the road and the design had to address this. There are also no curb stones to prohibit this interaction between pedestrian and vehicle. The definition of what a urban block is, differs from other cities as the boundaries are overlapping with each other sharing their influences. This zone can also be described as the glue or gel that transpire in the urban Fabric of Saulspoort. (see fig B.10-B.11)

H.9.1 Design process: movement

Figure H.5 Design process: movement

The elevation

The architecture of Saulspoort is in its own a travelers' marvel. All the dwellings can be observed when driving past. This was the inspiration to explain in the elevation of the design the inner workings of the cell structure of Saulspoort. The design gradually rises to its peak, the proposed new Tribal offices, and descends slowly down on the other side, mimicking the transition zones of the area. The undulating wall crowns represent the castellations of the dwellings and the different enclosures, together with the enclosing wall of the cultural terrain, express the moving patterns of the residents on plan, in elevation. (see Fig. H.6)



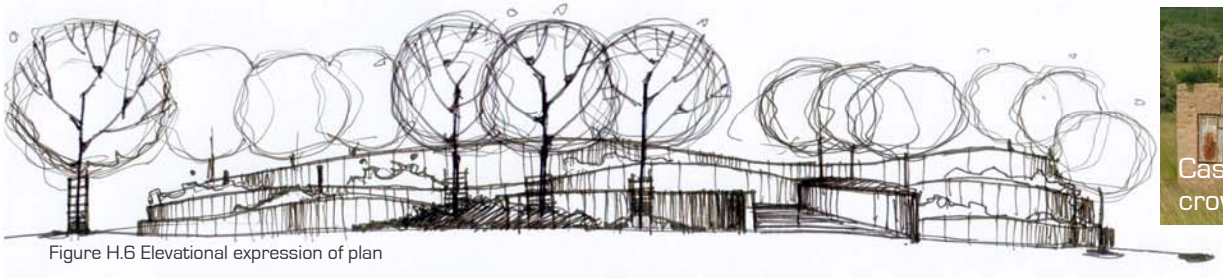
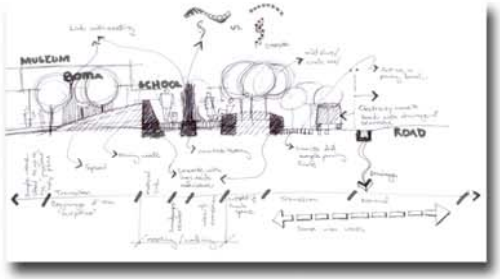


Figure H.6 Elevational expression of plan

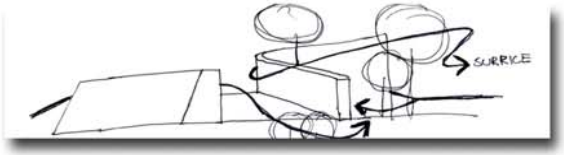
H.9.2 Design process: elevation

Figure H.7 Design process: elevation



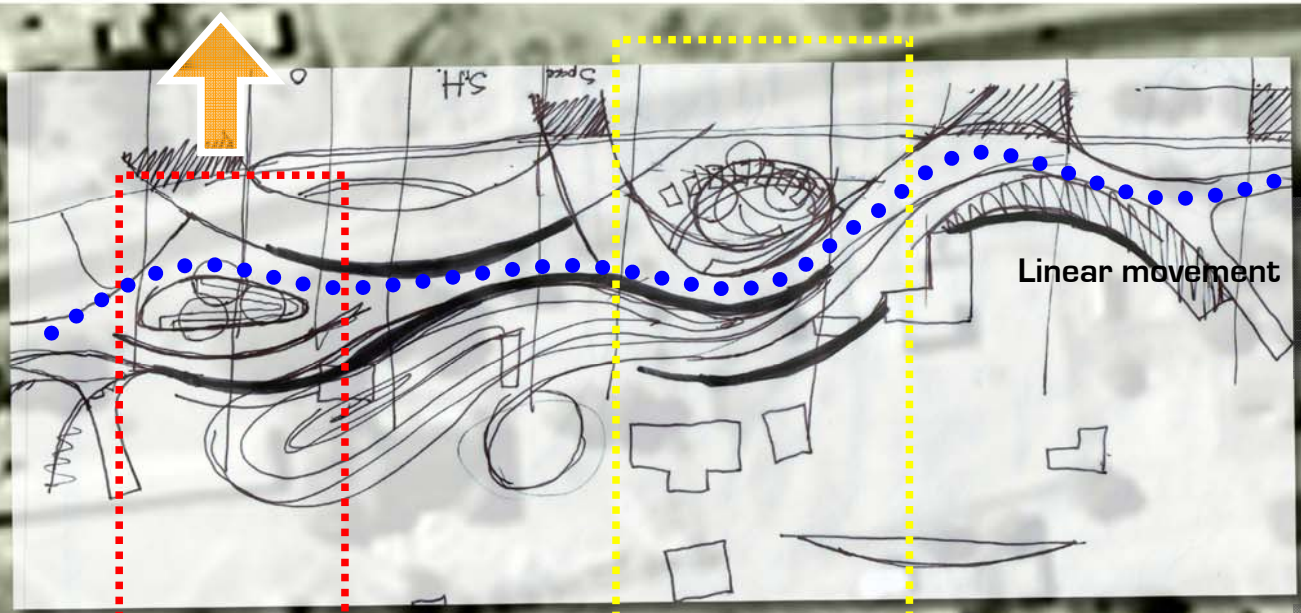
The trade space

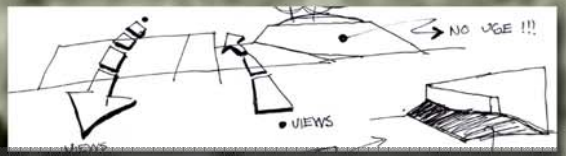
Local crafts consist primarily out of handmade clay pots. These pots are often sold at Sun City but there is an enormous need to trade with pots in Saulspoort as the town is situated on the route to the Bakgatla gate into the Pilenesberg National Park. The process of making the clay pots is time consuming and even though there is a tremendous interest it is not viable to create a pottery studio in this space. A more feasible solution would be to convert an unused building to a studio and to have a separate outdoor trade space for finished clay products. In order for this space to benefit from tourist interest it must be situated in close proximity which attracts the most interest in Saulspoort. (See G. Conclusion)



Circulation

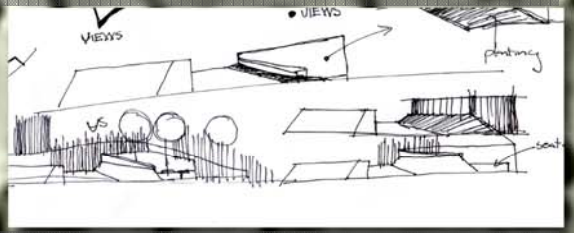
The circulation in and around the trade space was designed in such a way that the main route would terminate in the space if one approach from the north





Access

Initially the access into the space would have been on a higher level of the incline. This would have made it difficult to carry larger pots into the space and might have influenced the exposure of the space and the decision was made to design on ground level with the entrance to the north facing the Museum.



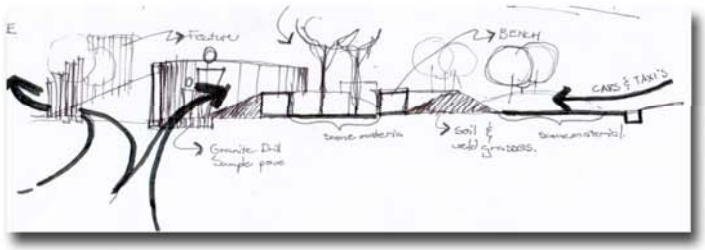
Form

The oval shape was partly inspired by the rounded shapes of the pots that will be sold here but is mainly derived from the cell structure of Saulspoort in an attempt to preserve the way in which the residents imprint their daily lives onto the landscape.

North

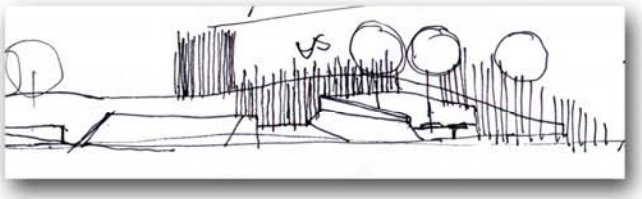
Gathering space

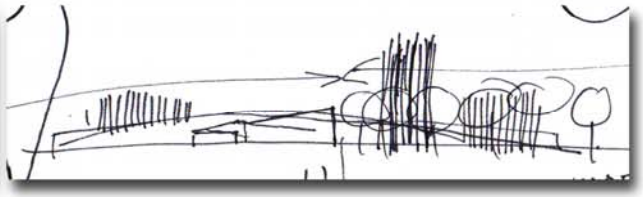
A second gathering space was needed to accommodate the youth that gather in the shade on a daily basis and women and children who await the homecoming of their husbands from the mines on Friday afternoons. This space was designed to share the architectural language of the trade space but the circulation differs in the way that this is a pass through space with lower levels of enclosure to access transport quickly.



H.9.3 Design process: space

Figure H.8 Design process: space



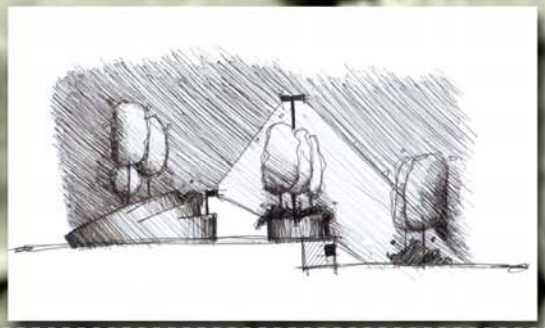


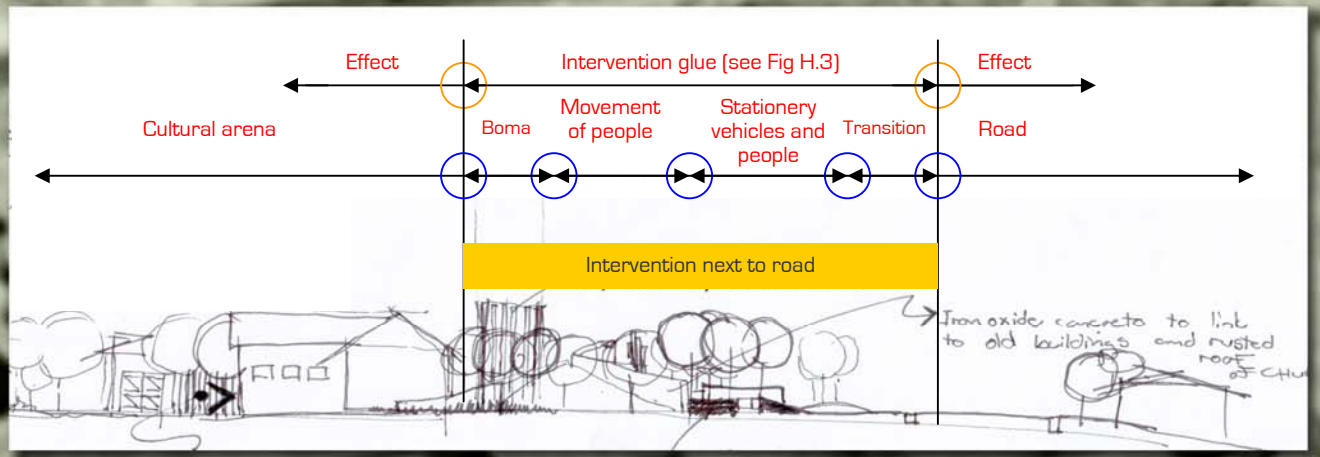
Linear elements of enclosure

To enhance the legibility of the gathering spaces linear vertical elements had to be introduced. These linear elements read as gathering spaces to the people of Saulspoort as smaller gathering spaces are usually fenced off with vertical wooden members. The new tribal office will form the pinnacle of the design inheriting architectural features from the landscape design which capture the linear movement patterns of the people on plan and elevation.

Light

Lighting is an almost essential component in most design schemes. For the design intervention proposed for the cultural precinct of Saulspoort however this is not the case. Although Saulspoort is situated in a less sensitive visual field than Rooderand where the mining operation will be developed, it is still not preferred to light up spaces at night. The town is relatively safe at night. Due to this, the visual impact at night, and milieu of Saulspoort, night lighting was decided against. Provision for lighting will be made for future development.

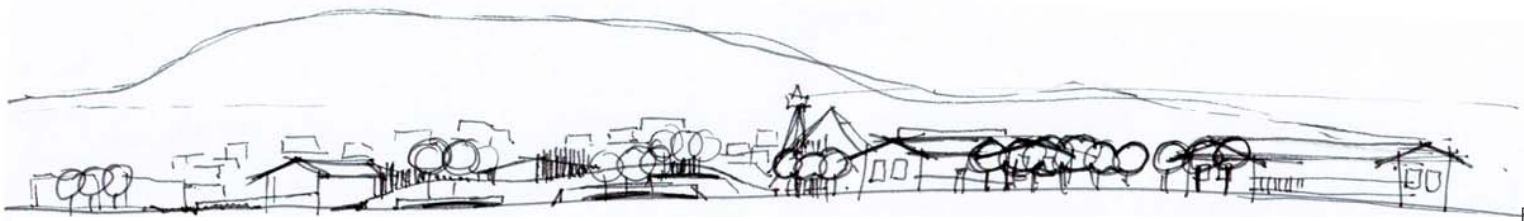




Design intervention next to road

The design gradually protrudes from the surface to enhance the idea that the Cultural terrain is more momentous than the surroundings. This terrain can be seen as the heart or core of the design and it consists out of the tribal center for the Bakgatla baga Kgafela for North West, religious buildings of Saulspoort, the museum, historical buildings like the first missionary station of the area, a large outdoor gathering space, and the traditional kitchen.

North



The proposed design for the cultural precinct in the context of Saulspoort

H.9.4 Design process: Legibility

Figure H.9 Design process: legibility

Cast in place concrete with expansion joints (see materials H.17.1)

Granite drill sample paving (see materials H.17.1)

Toned brown asphalt (see materials H.17.2)

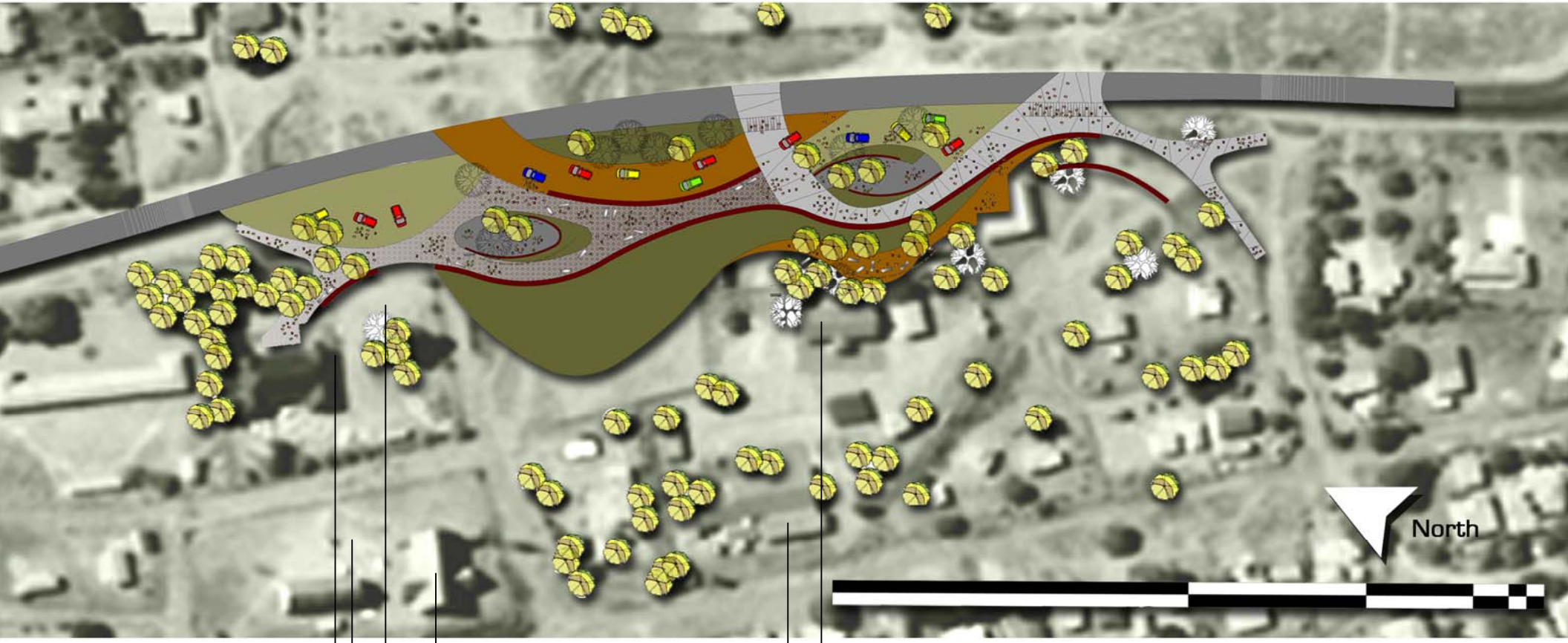
Soil stabilized with grasses (see materials H.17.1)

Dry packed retaining rock wall. (see materials H.17.2 and detail H. 18.1)

Tanalith pole structure (see materials and H.17.2 and detail H.17.2.1)

Gravel from mining operations

Pre-cast concrete benches / Bollards



Museum

Old NG Church

New NG Church

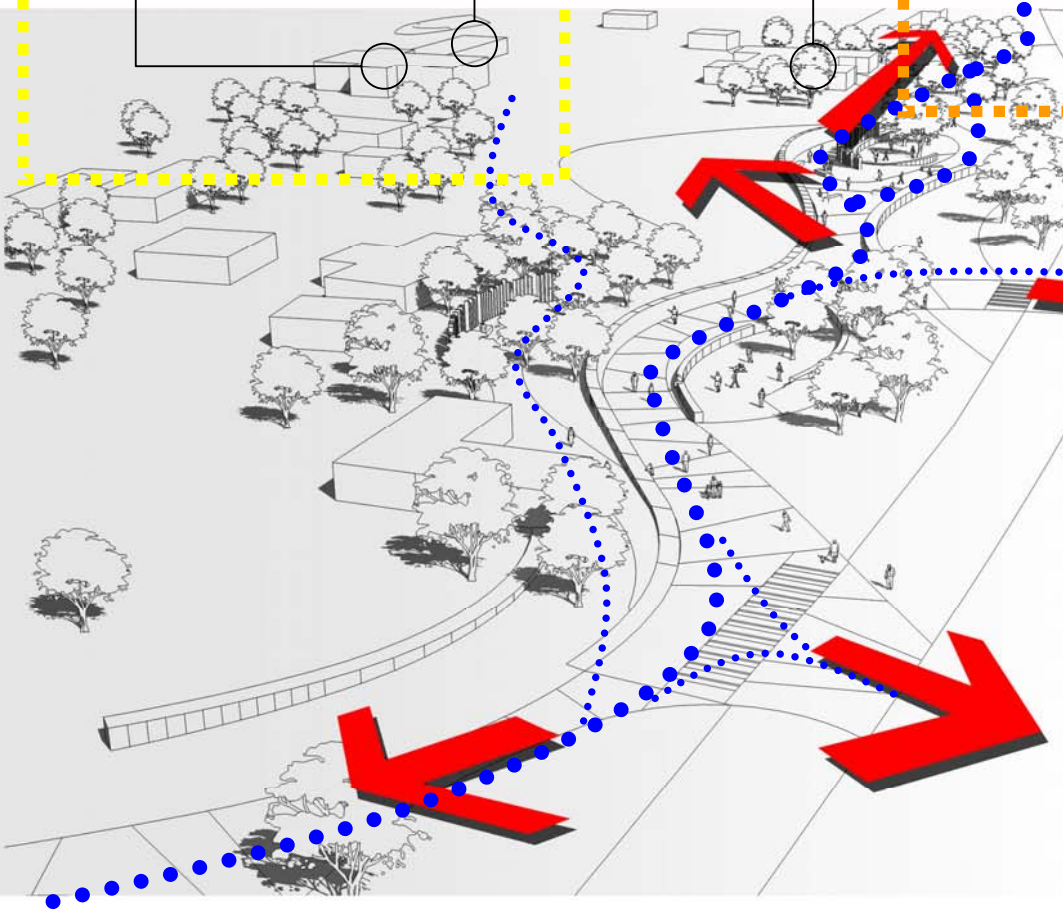
Boma kitchen

Magalies Water

Tribal office

H.10 Site plan for the Bakgatla ba Kgafela Cultural precinct

Figure H.10 Site plan



Religion

The design offers, at its summit, a view of the historical NG Church that was the first missionary station in the area alongside the new Church that continues the long commitment to religion in the area.

Museum and primary school

This precinct of the design can be viewed as the educational precinct by both the tourist and the resident. The wall does not continue beyond the museum and this indicates that knowledge is accessible to all. This is where the design enhance the character of Saulspoort by exposing the beautifully decorated Museum and the buildings that are set deep into the urban fabric and not as close to road as one would typically expect. The low existing fence surrounding the museum will be removed to over the tourist ample views and parking.

Retail

This route leads one to the oldest general dealer. The current waiting area is currently in front of this shop in the scorching sun

Rain praying site

This route acknowledges the historical events and traditions of the area. It provides one with beautiful views and physically leads one to the Rain praying site and the house of the first chief of the Bakgatla baga Kgafela

Welgeval

Here the design welcomes and send off the people of Welgeval, on the most prominent pedestrian route acknowledging this neighboring settlement

South

This route leads the user to the south of Soulspoort, and to the Bakgatla gate into the Pilanesberg National Park

Far left:
George Stegman hospital

Left:
Bakgatla Resort

Right:
T-junction to Sun City

H.11 Routes and destinations

Figure H.11 Routes and destinations

Trade zone [see Fig. H.14]

As previously mentioned the most probable trade is the selling of traditionally made clay pots. This space opens up to the North allowing visitors to the Museum the opportunity to walk to and through the space. The fact that it opens up to the Northern side is also due to the reality that most tourists will park in front of the museum for information on activities in the area, traditional meals from the kitchen, and the use of its facilities.

Selling of clay pots

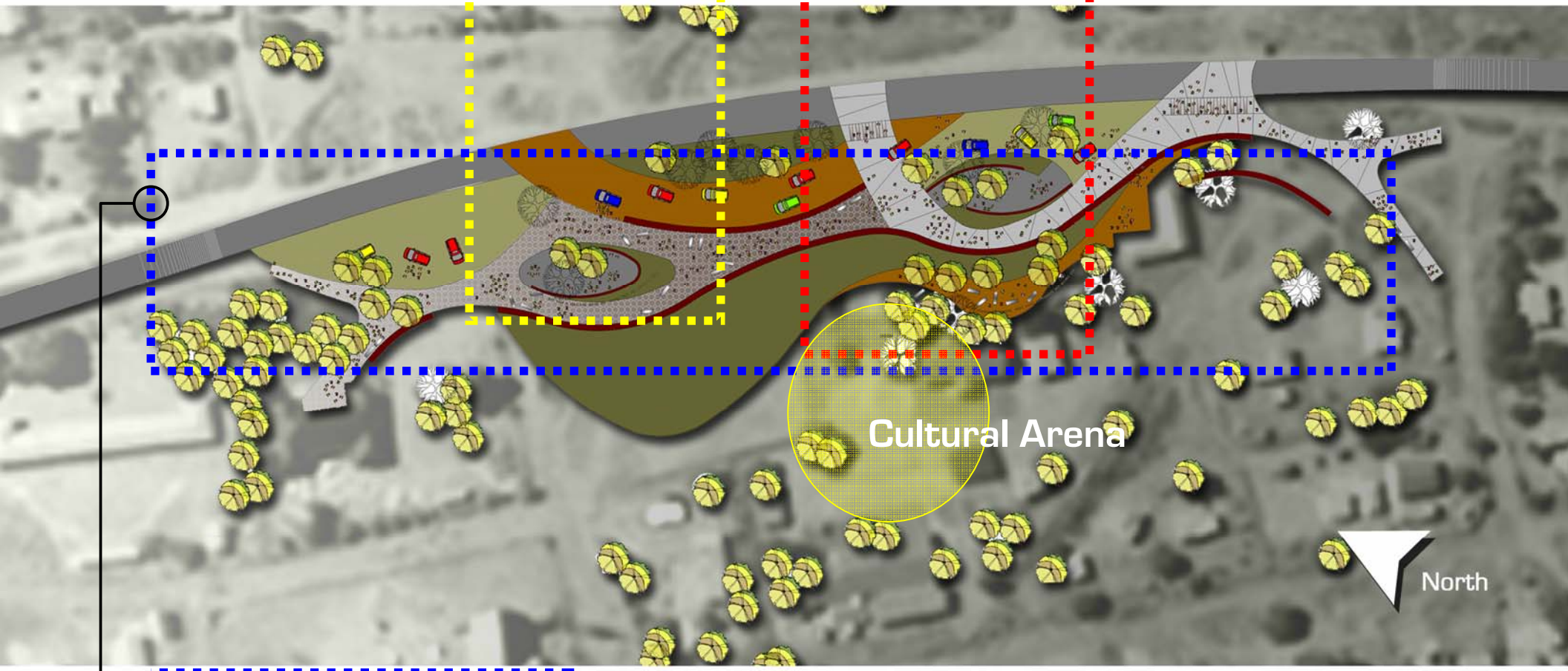
Linkage to the Museum

Job opportunities
Youth social facilities

Waiting area for women and children on Fridays

Waiting and gathering zone [see Fig. H.13]

This area is currently used as a gathering space where possible young workforce gather in search of work opportunities. In the design this space is divided up into two zones. One that is closer to the road and transportation stops, and a second that is next to the cultural arena and serves as an entrance to the people approaching it from the South. There are ample existing trees to pride shade. On Fridays this space is also used as a waiting area where woman and children wait for their husbands that has been working at nearby mines



Mitigation measure against the cultural influences of the proposed mine.

Large annual and weekly gatherings. Spill over space for Sunday services. Funeral services.

Cultural arena wall [see Fig. H.15]

This wall serves a remembrance of the Bakgatla baga Kgafela's Tswana heritage. It also offers enclosure to the cultural arena which now operates just like a Kgotla in Tswana cultures did. The arena is used for larger gatherings concerning community issues, as well as host annual and monthly events. This upgrading of the cultural terrain includes a new tribal office designed by the architects in the project team. The wall does not surround the Tribal area because it is specifically designed to include the residents living to the back of the terrain. The street façade is thus secondary and provides the tourist with some idea of how the town works on plan

H.12 Zones within the design

Figure H.12 Design zones

Walls are made out of stone from the area due to availability, and its prominence as a building material

Waste rock from the mine that is crushed into gravel

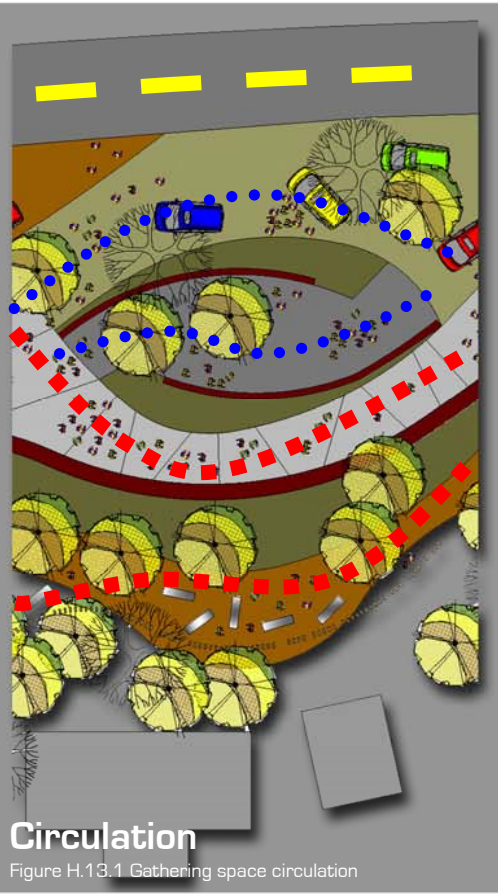
Cast in place concrete walkways that mimic the unplastered walls of the dwellings

Zone 1 & 2 (see Fig. H.13.2)

This section of the design will serve a more social purpose. It is divided up into zones that spread from the main road. The two zones closest to the road will be used for the washing of vehicles and taxi's and it shifts to a transitional zone comprising of a mound barrier, a gathering space through which movement is possible but the surface material hinders, and a concrete walkway.

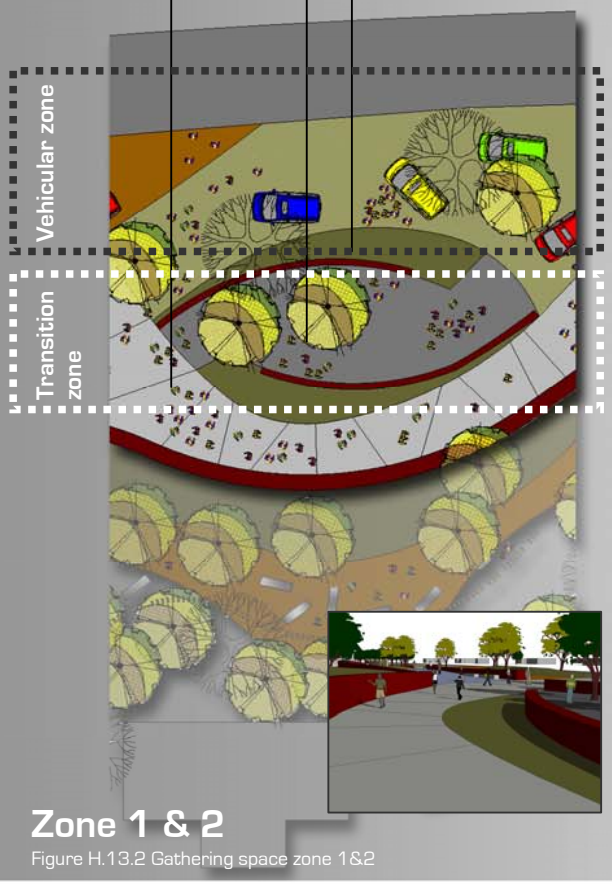
Zone 3 (see Fig. H.13.3)

This zone is set behind the lowest part of the enclosing wall. This provides a save place for women to await their husbands, weekly occurrence, and an entrance "foyer" to the Cultural arena.



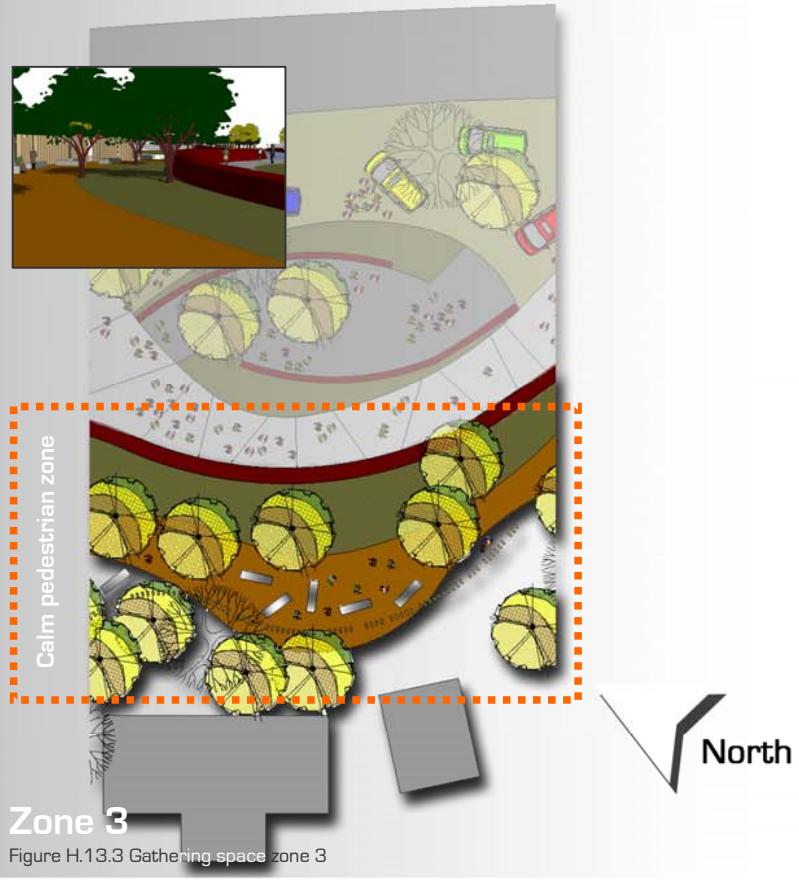
Circulation

Figure H.13.1 Gathering space circulation



Zone 1 & 2

Figure H.13.2 Gathering space zone 1&2



Zone 3

Figure H.13.3 Gathering space zone 3

Main vehicular road

Main pedestrian route

Secondary pedestrian route

Circulation

The circulation was designed to enhance the experience of meeting people. The walkways are a combination of open on one side, open on both sides and semi-enclosed on different linear routes. The main circulation route from the north is closed on he left hand side, after an immaculate view of the mountain and is open to the Left hand side to enhance the gathering space. From the south the pedestrian is offered a choice of either entering the cultural terrain or continuing on towards the museum. An alternative route is to pass through the space where the surface material is specifically chosen to slow the user down.

H.12.1 Gathering space

Figure H.13 Gathering space

Trade space

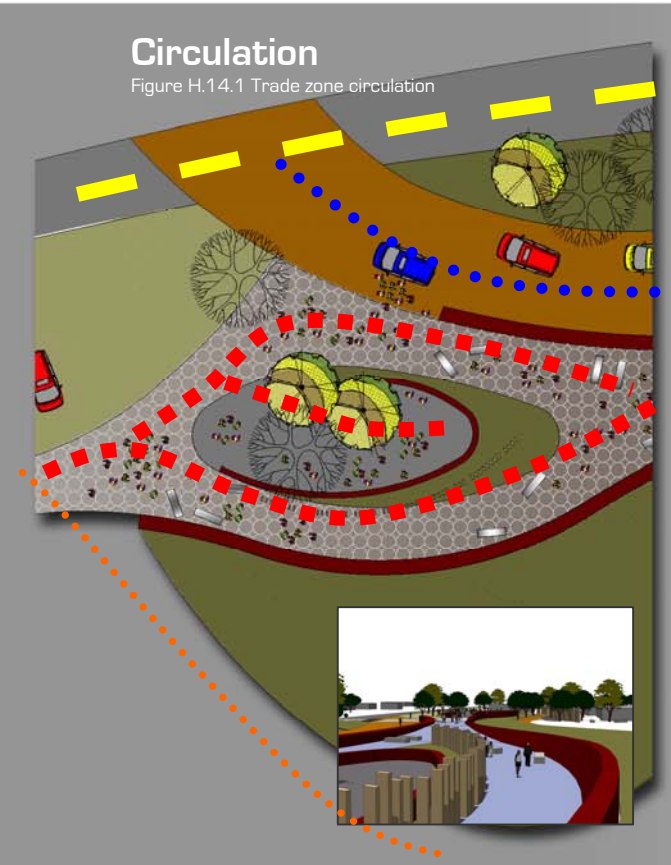
This part of the design will provide local potters to sell and exhibit their work. The space is orientated to the north and opens on ground level for ease of movement of the pots and to link with the Museum.

Circulation

This space is situated in a fork in the main pedestrian route. The route to some extent terminates in this trade space when one walks from north to south. When the user walks in a opposite direction the broader circulation space is enclosed on both sides with the trade space in between. Because the user walks down the mound when walking from south to north there is a natural tendency to enter the trade space. Most tourists however will still enter from the north. (see Fig. H.14.1)

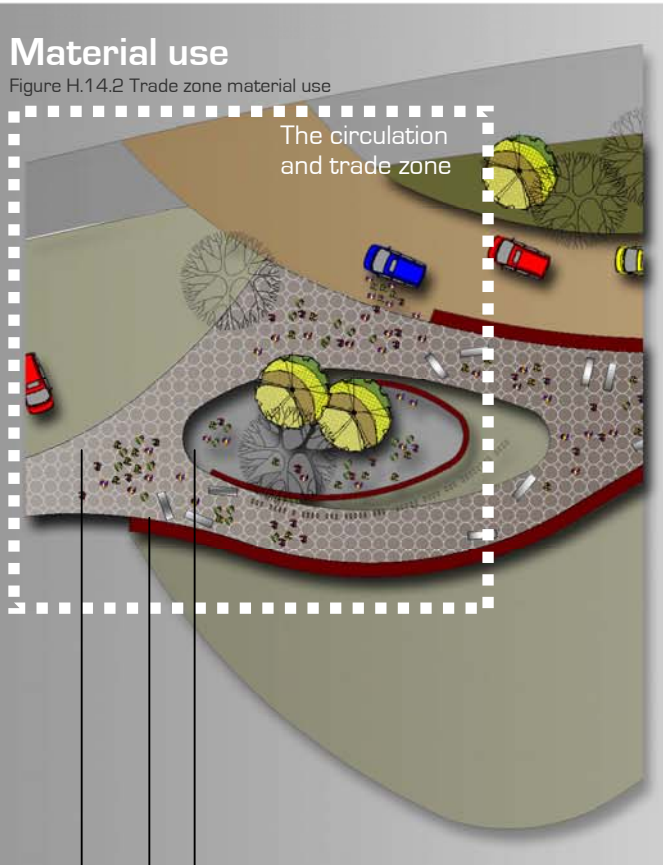
Circulation

Figure H.14.1 Trade zone circulation



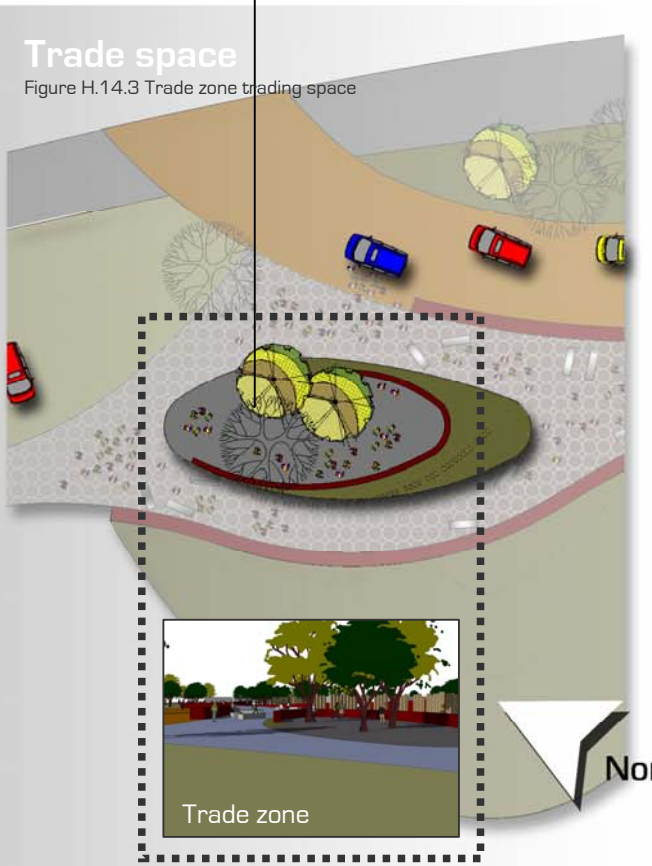
Material use

Figure H.14.2 Trade zone material use



Trade space

Figure H.14.3 Trade zone trading space



Main vehicular road

Secondary vehicular drop-off road

Main pedestrian route

Secondary pedestrian route

Waste rock from the mine that is crushed into gravel

Walls are made out of stone from the area due to availability, and its prominence as a building material

This section will be paved with waste granite drill samples and resembles the mines' involvement to the project

H.12.2 The trade zone

Figure H.14 Trade zone

The Kgotla

The design aid in the functioning of the kgotla and does not address the physical requirements. The design suggests kgotla, but does not define it.
The internal organization of the Tswana settlements was not geometrically organized according to physical elements buts its form was derived from the conceptual model of the social structure of the society. A settlement started with the strategic placement of the main kgotla. This is a large open space surrounded by stout poles and a low rock wall, usually with a few big trees for shade. In this main kgotla would be the cattle kraal that housed the community livestock and that of the chief or Ama Kgosi. Everything was then radiated hierarchically from the kgotla. The chief Ama Kgosi would have his compound right off the main kgotla and next to settle closest to him were his abasiimane. His "boys" or guards and after this the royal family settled. (Archival 2001)

Material use

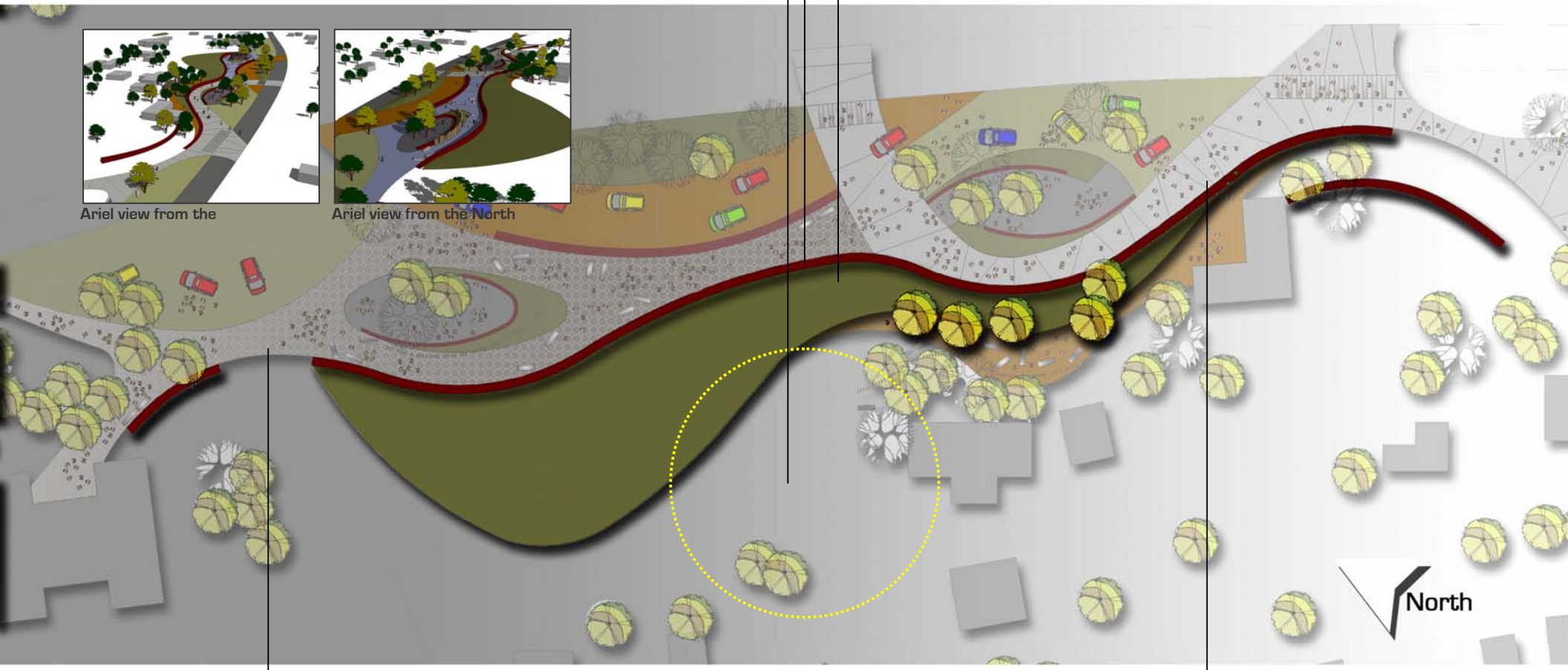
Only two materials that are also prominent in the area will be able to bring forth such a wall namely concrete and stone. There are numerous stone masons available and with the mining operations stone from the area can be sourced. Traditionally the Kgotla would have been built from stone and that informed the decision on the material

The mound

All the natural elements that protrude from the surface is considered by the people as important or even holy. In order to create a sentiment of prominence it was necessary to raise this area of the design from the surface.

Ariel view from the

Ariel view from the North



The vehicular entrance gate

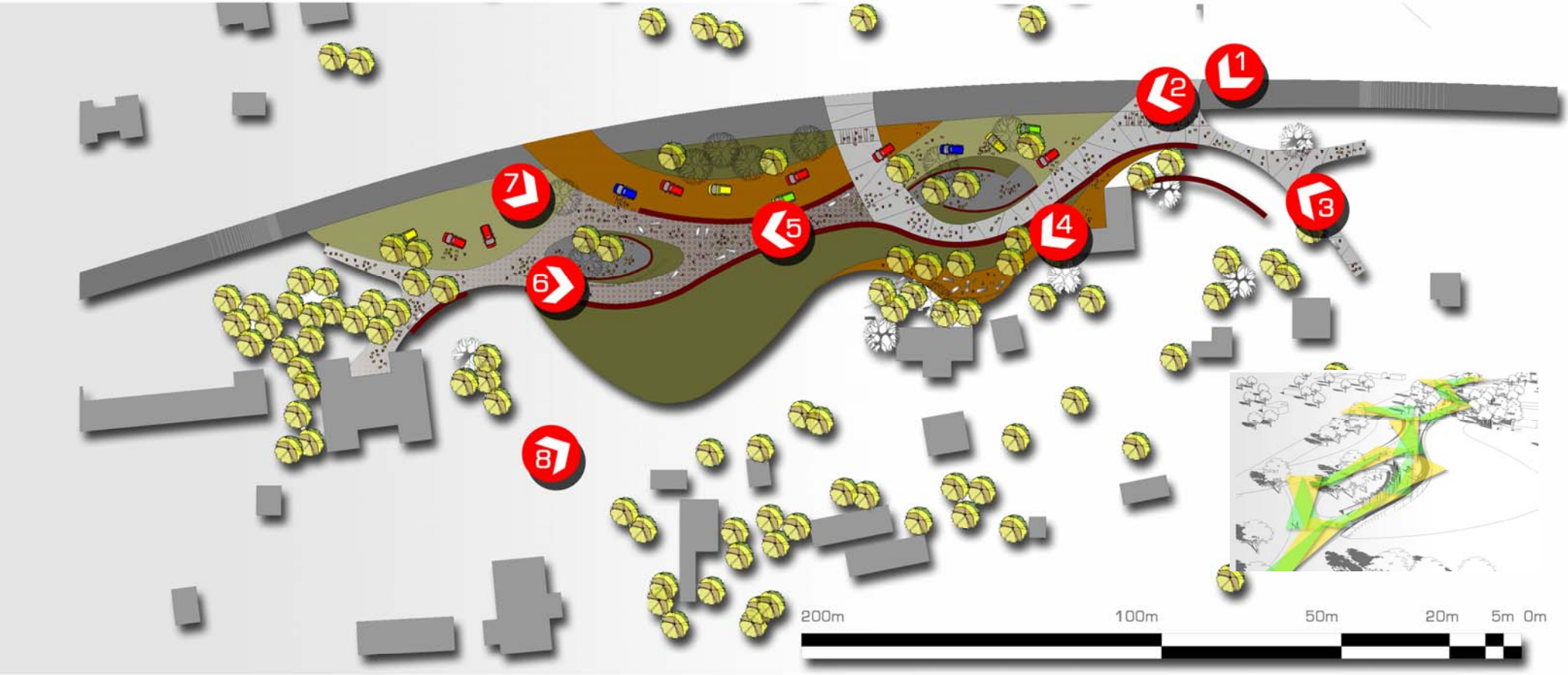
Traditionally a Kgotla would only have one entrance. For this reason the only disappearance of the wall material or gate had to be the vehicular entrance. This entrance is situated on the most prominent dust road entering the Western side of the main road.

Pedestrian entrance from the South

In order not to weaken the legibility of the wall as the enclosing element of the Cultural arena the wall simply declines into a pattern on the ground but is not broken to form an entrance on this side of the terrain. More openings would weaken the effect of the wall. This entrance is within comfortable walking distance from the other entrance. (see Fig. H.16)

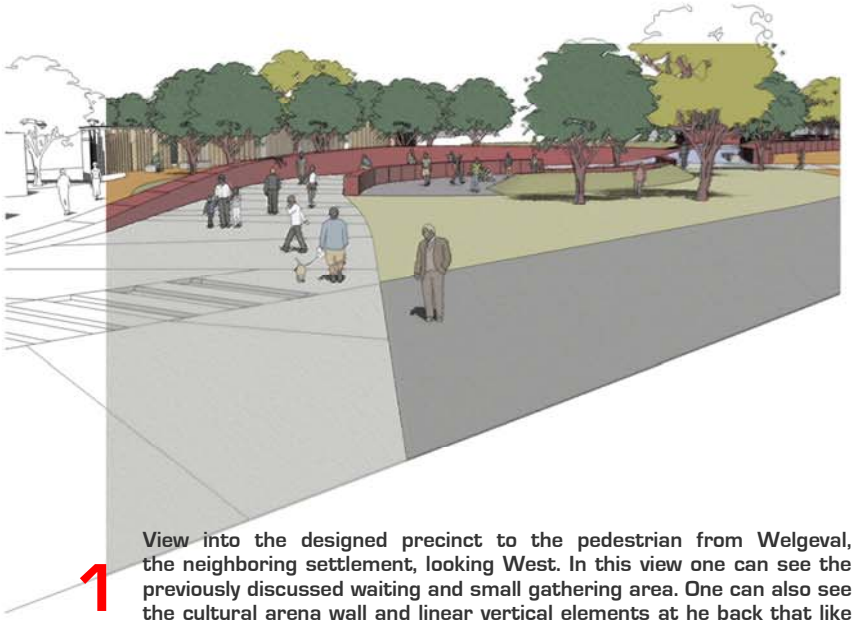
H.12.3 The Cultural arena wall

Figure H.15 cultural arena wall

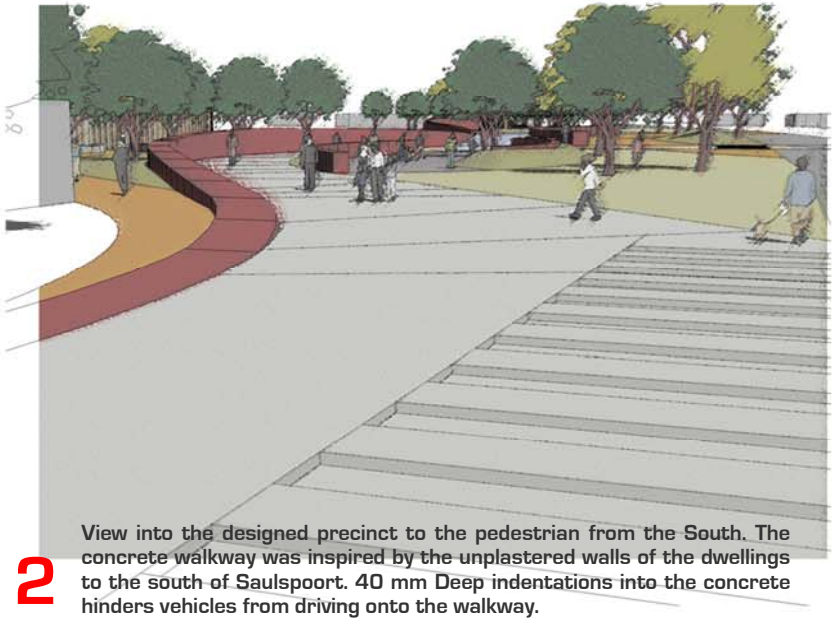


H.13 Views of the design intervention

Figure H.16 Views of the design intervention

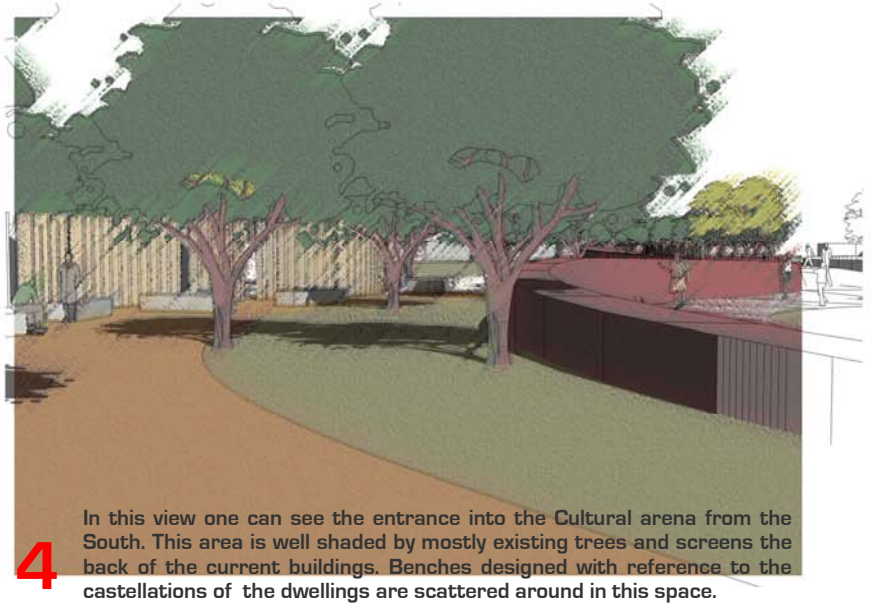


1 View into the designed precinct to the pedestrian from Welgeval, the neighboring settlement, looking West. In this view one can see the previously discussed waiting and small gathering area. One can also see the cultural arena wall and linear vertical elements at he back that like the numerous boma's in the area suggests a place of gathering.



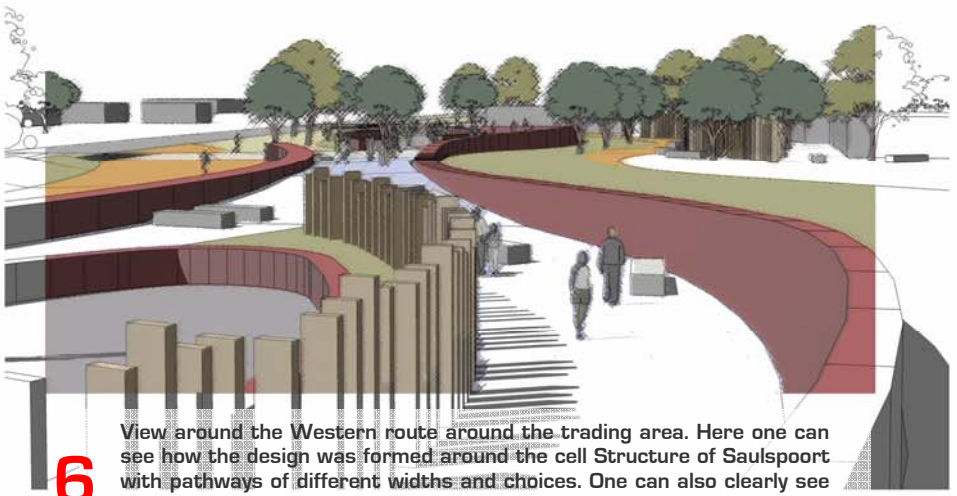
2 View into the designed precinct to the pedestrian from the South. The concrete walkway was inspired by the unplastered walls of the dwellings to the south of Saulspoort. 40 mm Deep indentations into the concrete hinders vehicles from driving onto the walkway.

3 View as the pedestrian approaches the design intervention from the south and the immediate residential area. The crossing to the Right leads the pedestrian to Welgeval, a neighboring settlement. One can also see the beginning of the Cultural arena wall as itInvites the pedestrian into the Tribal area.



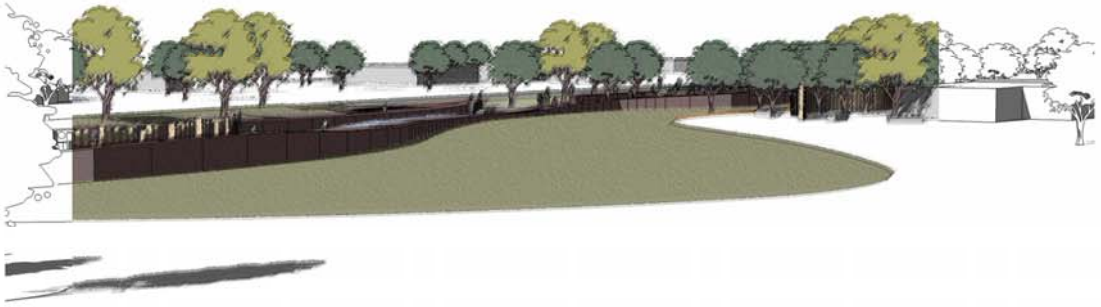
4 In this view one can see the entrance into the Cultural arena from the South. This area is well shaded by mostly existing trees and screens the back of the current buildings. Benches designed with reference to the castellations of the dwellings are scattered around in this space.

5 View as the pedestrian approaches the summit of the mound. When the user reaches this point in the design he/she have a 360 degree view of the entire precinct. If the pedestrian is walking north the view of the museum and NG churches are emphasized. If the Pedestrian is walking South though, the Majestic mountain forms part of the visual realm



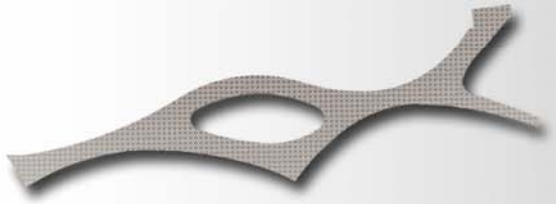
6 View around the Western route around the trading area. Here one can see how the design was formed around the cell Structure of Saulspoort with pathways of different widths and choices. One can also clearly see the Idea of the Kgotla surrounded with a Rock wall taking

7 This is the view to the tourist looking south traveling from Northam and the proposed mine at Rooderand. This offers optimum exposure to the traders displaying clay pots and also links to the Museum benefiting both parties. The linear vertical poles reads as a place of gathering to the people of Saulspoort



8 This is the view to most residents and visitors once they are inside the cultural terrain. The design is less demanding, emphasizing the proposed Tribal office and other historical buildings. The raised mound protruding from the surface, though gradual, signifies the Cultural area.

H.14 Material use (Refer to Fig. H.10)



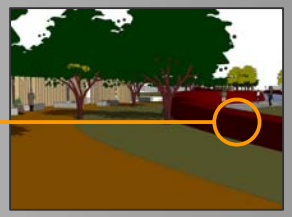
Cast-in-place concrete is defined as concrete that is poured directly on site. An advantage to this site-specific method is that the concrete is cast specifically for one work, allowing for an unlimited sculptural quality with no restrictions on size or shape since it is cast exactly where it will remain. However, the construction process can be slow since more time is needed to build or set the formwork at the site. Additionally, the costs can be higher since the formwork is made on site and in some cases is not reused .This cost can be defrayed if pre-made, reusable formwork is used. The formwork into which the concrete is cast acts as a mold that holds the shape of the concrete until it has hardened and has developed sufficient strength to support its own weight. Formwork can be a major cost consideration. It can be reusable, prefabricated units of standard lumber, plywood, metal, fiberboard, or reinforced synthetics. The key to typical formwork is that it be strong and stiff enough to support the large weight and fluid pressure of wet concrete. Forms must also be tight to prevent loss of liquid or cement paste. Generally, the higher the quality of formwork, the better the resulting concrete will be. Formwork is usually coated with a suitable release agent or other material before the concrete is cast to prevent water absorption or unwanted bonding between the form and the concrete. (Bell 2006:55)

Granite drill sample used as pavers. There is an abundance of these drill samples before mining operation start. When used as a paving stone it can provide a continuous slip resistant, durable, grey brown surface. Due to the size of the test drill samples the process of laying them can be labour intensive, but the there are no costs involved to obtain the product as it is regarded as waste after testing have been done.

Grasses to stabilize soil mound

Figure H.17.1 Material use

Rammed Earth and Tinted Asphalt Rammed Earth construction is the forceful tamping to compact a mixture of earth and cement into a formwork system to create a dense and structurally stable surface. Professionally constructed rammed earth involves using heavy mechanized pneumatic equipment with a rubber or steel tip to efficiently compact the suit. The mix is approximately 8% water, 3% cement, and 89% soil. Ideal soil contains both sand and clay, but should not contain organic materials such as peat or loam, which would decompose. Formwork must be reinforced to withstand the force of the compactor. Disadvantages include the risk of not ensuring the correct earth mix.
In order for the road surfaces to carry heavy traffic over the main road, asphalt of a different colour will be used. This is done by adding a neutral base to the liquid road tar, enabling the contractor to tint the tar into a variety of mainly browns and reds, using a colour tint or seal. Testing samples are made beforehand to ensure the correct colour mix. Product: APMS asphalt products: Brownstone colour SealMaster.



Dry packed retaining rock wall
(see H.18.1)

Rock cladded Clay brick seating wall
(see H.18.2)

Tanalith wooden post structure with concrete footing.

Figure H.17..2.1 Tanalith post foundation

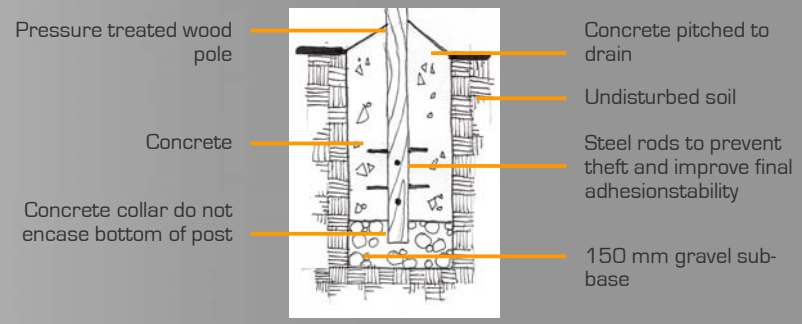
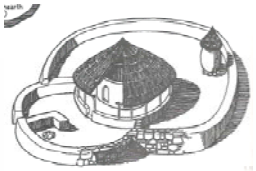
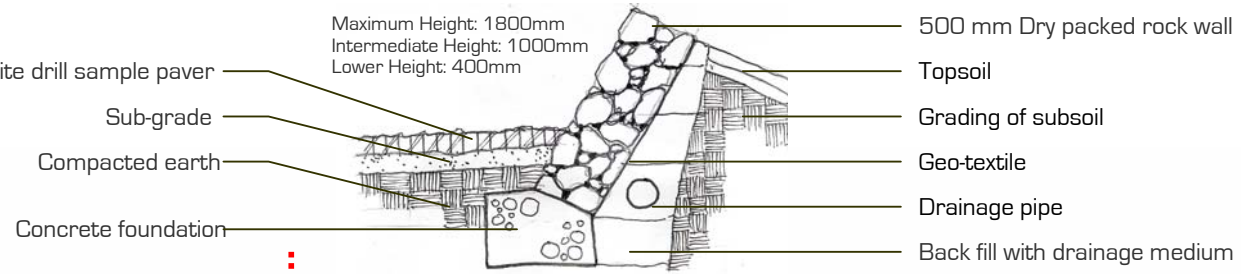
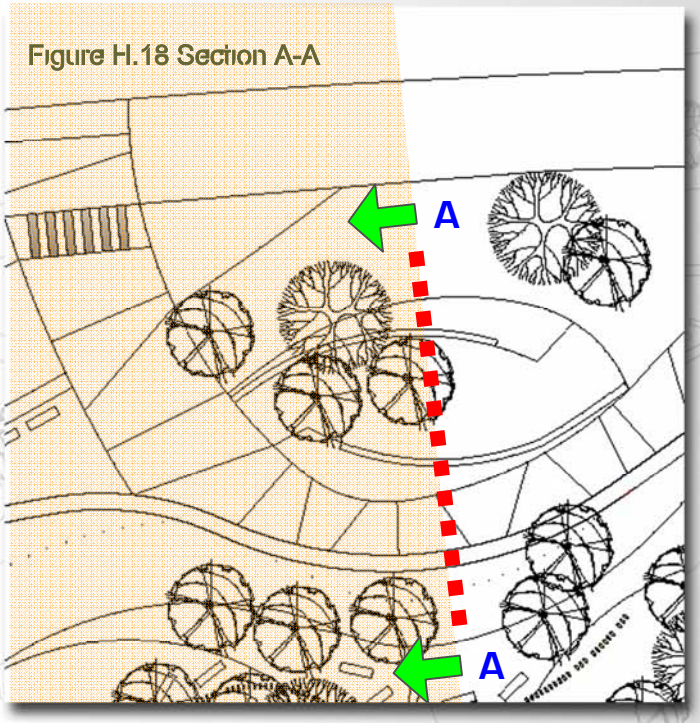


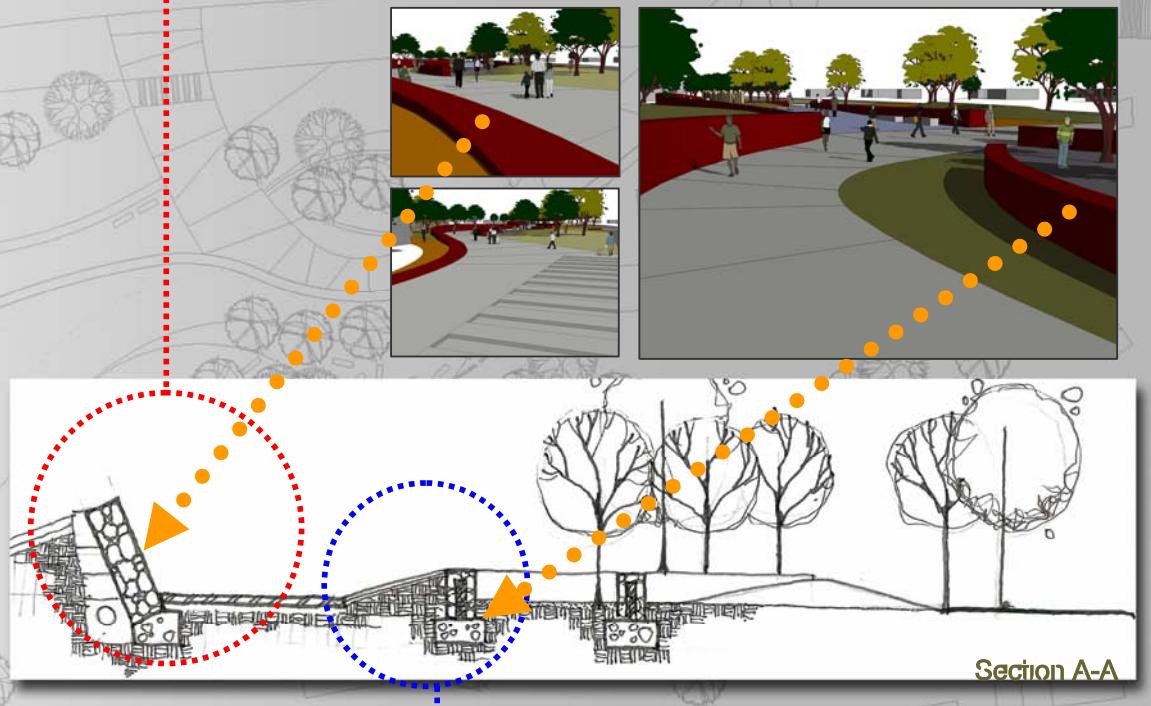
Figure H.17..2 Material use

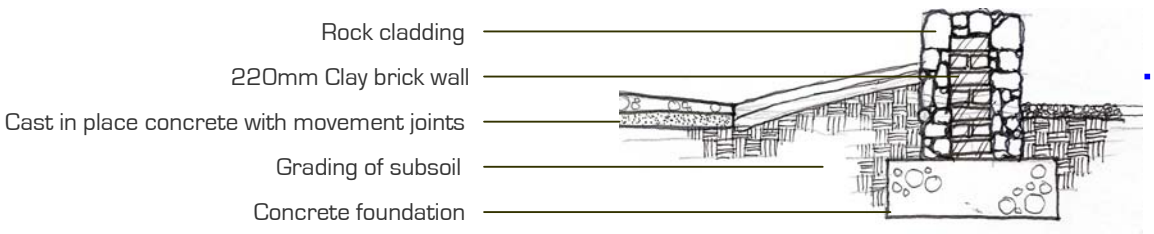
Detail of Retaining Rock wall
Figure. H.18.1











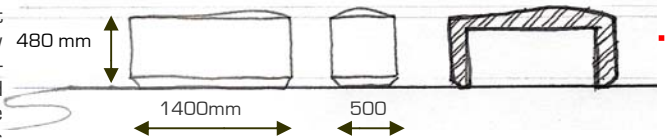
Detail of Low seating wall
Figure. H.18.2

H.15 Construction details for the gathering space

Pre-cast concrete benches.

Pre-cast concrete is generally made at a factory before being moved to and installed at the site. It uses an automated system of mixing and casting in a controlled environment, which yields consistency in craft and materials. It can be cast as panels, slabs, and beams, as well as complex shapes for structural or enclosure elements, or any other form in the building construction. The formwork in which pre-cast concrete is cast is usually made of high-quality steel, coated plastic, or wood, and can be used many times, yielding a more consistent and controlled concrete member. Since the form- work is not made on site or used only once, this reduces the unit cost of the concrete products. Time is also saved since there is no formwork to fabricate or remove from the site. Pre-cast units are usually cured with steam to create the ideal amount of moisture and heat for the concrete to cure quickly.

Detail of concrete bench
Figure. H.19.1



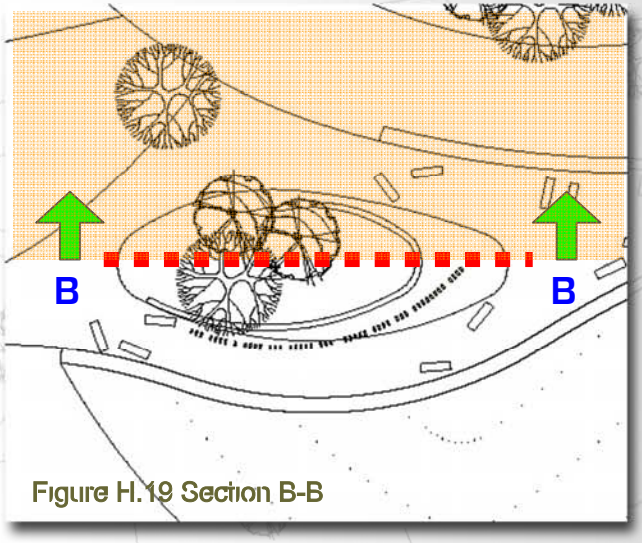
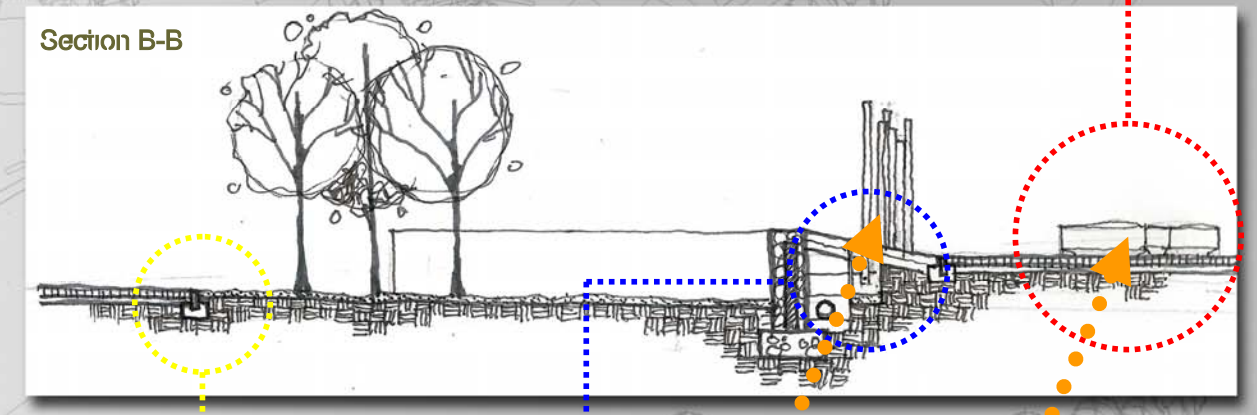
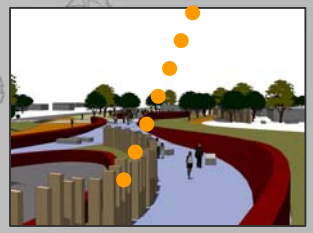
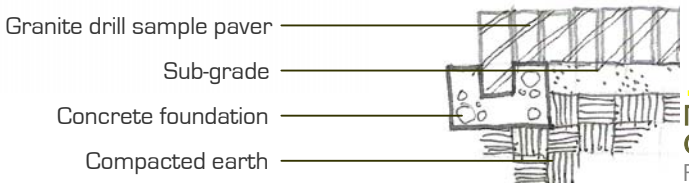


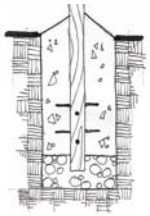
Figure H.19 Section B-B







Detail for Granite paver
Figure. H.19.2



Detail of Tanalith post foundation
(See Figure. H.17.2)

H.16 Construction details for trade space

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