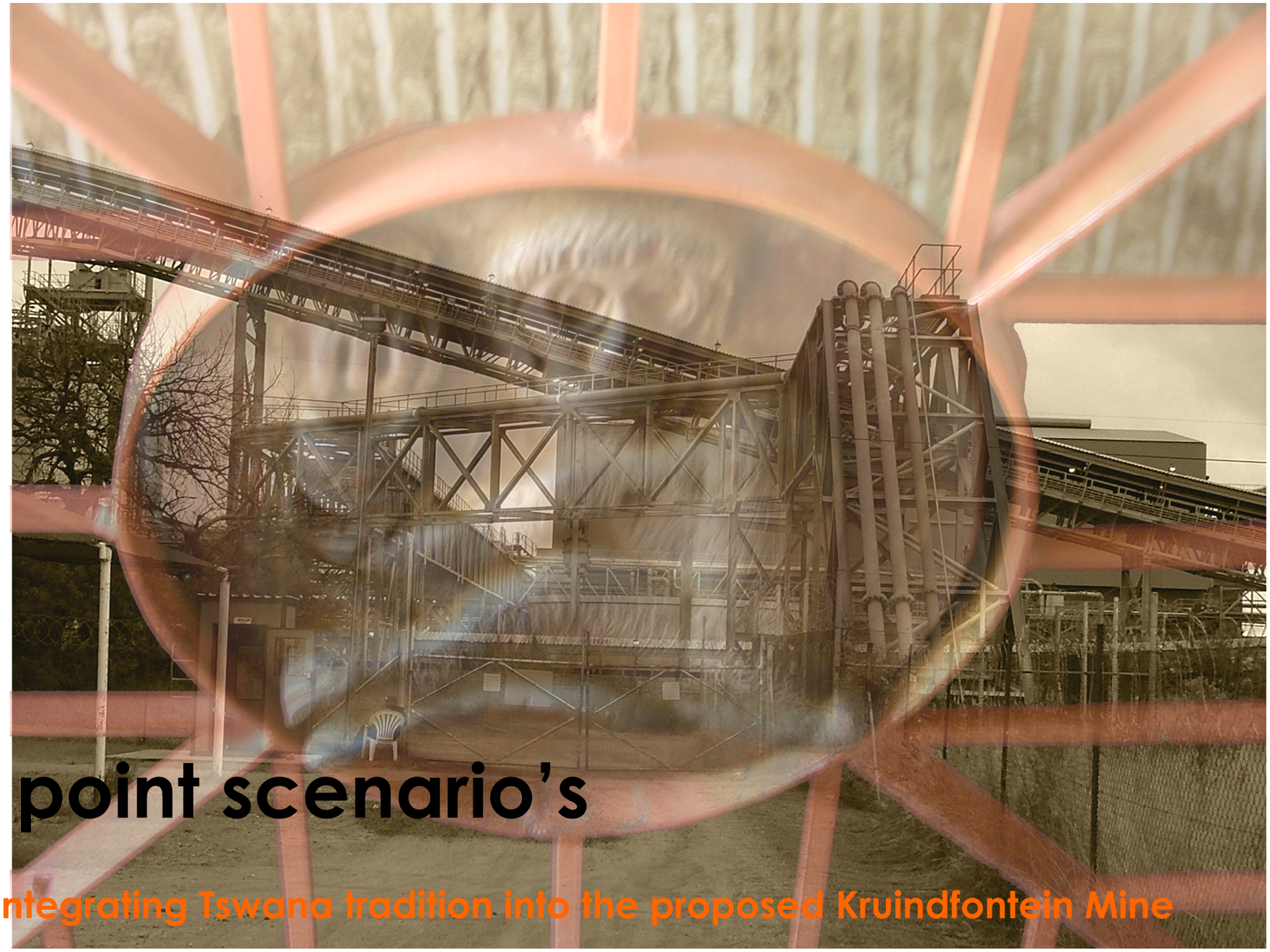
IN MEMORY OF MY TWIN SISTER PHIONA NYANGOMA TUMUBWEINEE
22 MARCH 1979 – 05 APRIL 2005



counter – point scenario's

a methodology of integrating Tswana tradition into the proposed Kruindfontein Mine

COUNTERPOINT: (*from Lat. contrapunctus, from contrapunctum 'against note'; Fr. Contrepoint; Ger. Kontra-punket; It. contrapunto*)

A term first used in the 14th century, to describe the combination of simultaneously, different sounding musical lines according to a system of rules.[2] The difference in quality between the two groups particularly shown in their directions referring to important sections in its composition or to the parallelism:

[2] The New Grove Dictionary of Music and Musicians, 2001:551

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November 2006
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Mining is one of the major industries that support the South African economies. With a role as important as this it should be looked on with a degree of importance and acknowledgment. This is however not the case. The attitude towards the mining industry is continually worsening as the evils that dog this industry grow.

This thesis attempts to propose a design model for future reference, which it is believed will endeavours to explain and investigate the idea that a paradigm shift in the perceptions that dog the mining industry can be changed. The goal towards this shift would be the view of mining as a process and industry that is sustainable and benefits the greater community society and country.

The values learnt here would culminate in a design model that will attempt to address the negative attitudes and effects that are wrought upon the landscape and communities as a result of the mining process.

A **paradigm shift,** where the mining process, seen as a temporary land-use happens as a part of a much broader end land-use. [3]A design models that allows for a **scenario based solution** to the long term planning rehabilitation and eventual appropriation of a mine its functions contributions and effects in any given locality.

This thesis also acknowledges the planning methods that are being applied to date in the entire country and attempts to borrow and incorporate most aspects of this.

Modernity cannot in all essence return to a state of the primordial. What can however be achieved is a reinstatement of the traditional primordial values into modernity. an attempt at a sustainable mining practice where the conversion of a linear process is in which the Mine per say does not just commence with an empty acre of land and end as a colossal rock dump, but as a land use that can sustain the pre, the current and the post-mining alternative functions. A paradigm shift proposed in an attempt to be able to harness the energy from the economic, urban, and social boom created by a mine to empower and encourage sustainable representative communities and economies.

Therefore planning the end-land use, and implementing it through out the mining operations, will most definitely lessen the severity of the impacts associated with closure in mining.

a methodology of integrating Tswana tradition into the proposed Kruindfontein Mine

[3] Radameyer, Interview, 13 March 2006

introduction

1 context

2 the problem

3 precedent studies

ntroduction

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, protecting such from external elements like dust and rain, usually resulting in unsightly, elementary structures intruding in the landscape.[4] Offices, change rooms, workshops, gathering spaces and so forth are designed to function, usually resulting in mundane, uninspiring spaces, contributing to the adverse visual social and physical impact of the site.

In an attempt to shift the dogmas that govern the perceptions of mining one must endeavor to explain and investigate the concept of mining accommodated in a larger, broader sense and location, in which the mine can be seen as a catalyst for the introduction of values, spaces and urban areas that are not without meaning and belonging.
A paradigm shift in the approach to mining in an industry that is otherwise perceived as exploitative and exhaustive on the natural, social and bio-physical environments. The term 'paradigm' borrowed from the Greek word 'paradegima' which is literally a model. A model from which builders could extract detailed dimensions with calliphers, thereby achieving repetition for replicas.[5] With this basis this thesis investigates a possible paradigm shift that contains mining as a temporary intervention as a key to a more sustainable and "socially" acceptable practise. A design model that stipulates guidelines that allow for sustainable mining practices incorporating the social and infrastructural impacts of the mining process. This design model should accommodate and start from a culturally sensitive point that allows for its users, the community, to understand and recognise how their activities and beliefs are represented and accommodated within the new context.

The locality within with the proposed Kruindfontein Mine falls, is located within the Moses Kothane Local Municipality (MKLM), Bonjanala District in the North West Province, north of the Pilanesberg National Park, in the vicinity of the town Saulspoort, including the farms Rooderand 46JQ; Tuschenkomst 135JP; Wilgerspruit 2JQ; Koedoesfontein 42JQ; Legkraal 45JQ and Magazynskraal 3JQ, as indicated in Fig.1. [6]
Two proposed focus areas were identified within this locality:

The first proposal falls within the boundaries of the town Saulspoort. The focus of this study is on community development. The urban and economic development, and the preservation and presentation of the social dynamics within and around the town of Saulspoort are paramount in this project.

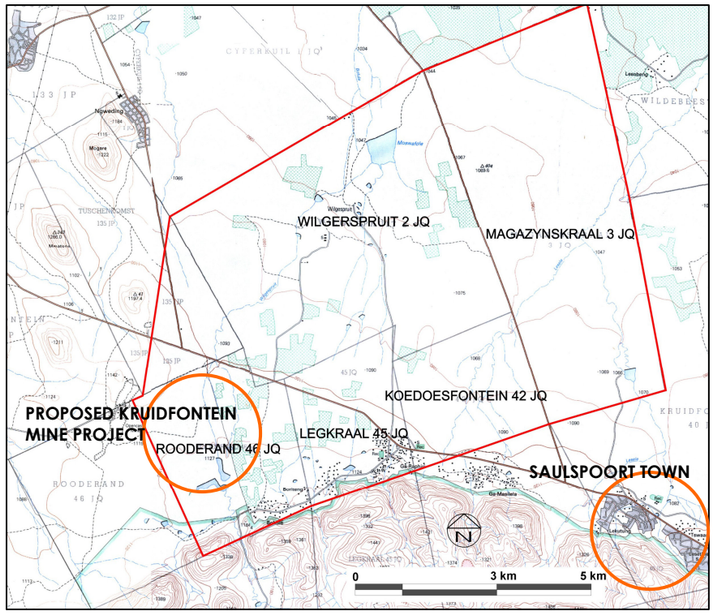


Fig 1: - Moses Kotane Local Municipality (Strategic Environmental Focus, 2002: pg A-2

The second proposal investigates innovative ways of designing the infrastructure at the future shaft-location on the farm Rooderand 46JQ. This will provide a long-term plan to connect alternative functions to the mining site, and designing for an enduring land-use.

The two proposals are however not separate from each other, as both are essential for the well being of the natural-, social-, and economical- environments, the mines' impact, and the community. Both attempt to address issues pertaining to formalized economic centres, upgrading of medical and social facilities and so forth. Allowing for a comprehensive, coherent master plan that aligns itself with the interests of the Pilanesberg National Park, Anglo Platinum Mining group, the Bakghatla ba Kgafela tribe and the inevitable secondary industry that would grow as a result of the suggestions and solutions proposed within this locality.

This dissertation attempts to addresses the social and cultural context of the Kruidfontein project, investigating the current spatial, functional and infrastructural context of the area through appropriate design and urban planning.

The dissertation also attempts to addresses the fragmentation of mining infrastructure. By proposing an adequate design guidelines and planning that allow for minimal environmental impact bearing in mind, the allowance for a post-closure land use.

In creating an active, working urban environment that embodies the present cultural usage patterns.

In not only recognising the benefits the mining industry contributes to the economy, but also looking at this industry as a catalyst, a multiplier through which significant effects on a more localised scale can be introduced and encouraged in South Africa.[7]

Overall goals:

- Focus on the proposed end-land use and the accommodation of mining as a temporary land use.
- Presentation of various options that can justify and reinforce the possible reclamation of the Kruidfontein Project.
- An approach to a more sustainable mining process that will ease the transition to the proposed end land use.
- A detailed and comprehensive process/design proposal that allows for the gradual conversion of the Kruidfontein Project into a sustainable community- sensitive intervention that adds value to the area.
- Allowing for the mine to become a part of the community, thereby making its appropriation after closure easier.
- Addressing the visual impact of mining infrastructure in the landscape, both from an aesthetical and sustainable point of view.
- Proposing a pre-designed and designated end land use of the mine site and its infrastructure that is sustainable and developmental to the communities in the areas in which the mine site is located.
- The integration of the Mine as a living growing entity into a community that also is alive with various layers of tradition culture power structures and so forth.

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 proposals presented.
Scenario planning is seen as anticipating various options, and enabling broad-based "participative and diverse" dialogue. [8]Through a multi-lateral systemic process that has the ability to dissolve the issues faced by changing the conditions that support them.

[4] Radameyer, Interview, 13 March 2006
[5] Fischer, A Paradigmatic Approach to Architectural History Postmordernism1989:pg4
[6] Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2002:pg1
[7] South Africa 2014, 2004:pg 103
[8] South Africa 2014, 2004:pg 13

Taking into account a process of analysis, interpretation, intervention, the implementation and finally a scenario presented as a set of flexible broad based guidelines as explained in Fig.2.

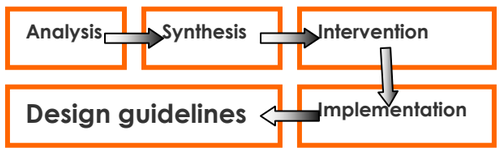


Fig 2: The descriptive survey method (Schulz 2004:102)

The Clients:

Non place-based actors:

- 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)
  - AngloPlatinum

- National
  - Department of Environmental Affairs and Tourism (DEAT)
  - South African Tourism (SATOUR)
- Regional
  - North West Parks and Tourism Board (NWPTB)
- Donors
  - Gold Fields
  - De Beers
  - Anglo American
  - SA Breweries
  - Sun City
  - SAPPI

Place-based actors:

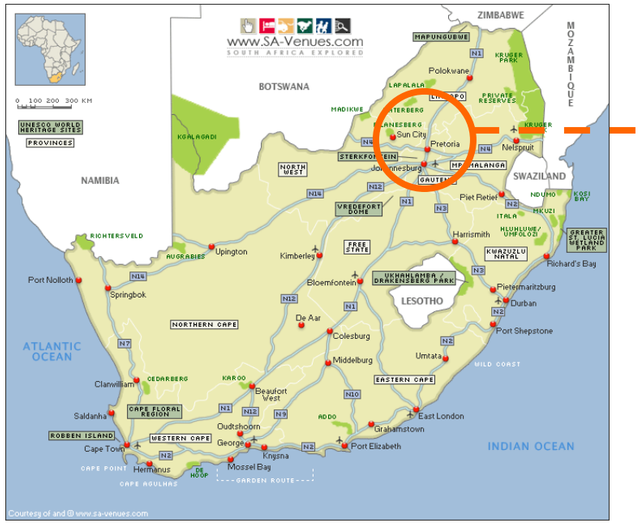
- The local community
- Tribal Authorities
  - Bakgatla-ba Kgafela
  - `Bakubung-ba Ratheo
  - Batlha Ko-ba Baleema
- Community Development Organisation (CDO)
- Pilanesberg Park Management
- Moses Kothane Local Municipality
- Concessionaires

1 context

south africa

north west province

moses kotane local municipality



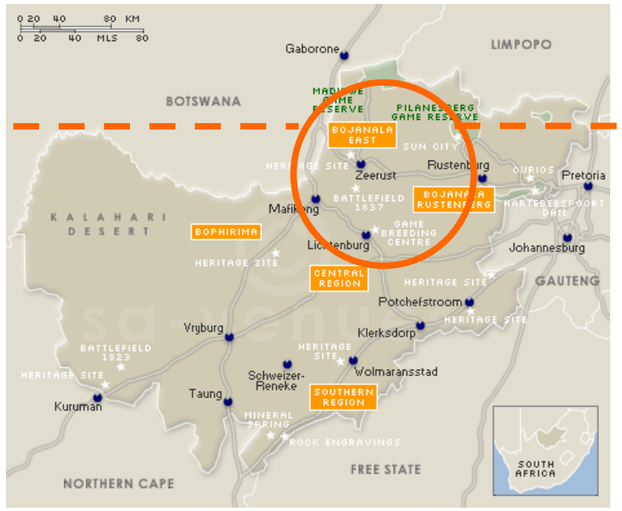


Fig 3 context

This falls within the the North West Province in the Bonjala Municipality. The proposed study area falls under the jurisdcition of the Moses Kotane Local Municipality (MKLM) area.

As per Fig 4, the study area is approximately 10 000 hectares and is north of the Pilanesburg National Park. This was determined by a 15km radius around one and/or all of the proposed mining zones.

The Moses Kotane Local Municipality was enacted on the 5 December 2001 in terms of the 1996 – Census results. It is bordered by the Northern Province in the north and the north-east; madibeng Municiplaity in the east; Rustenburg Local Municipality in the south; and Botswana in the the west.
The Moses Kotane Local Municipality (MKLM) is made up of 30 dispersed villgaes, characterised by a combination of mining and substitence farming practices.

Distance and direction to nearest towns:
The proposed Kruindfontein Mining project to located between 2km and 5km north of the folllowing rural settlements, which lie on the northern slopes of the Pilanesburg Range and in an east west direction

- Lekutung
- Ga – Masilela
- Ga – Raphiri
- Boriteng and
- Bohula

The nearest town Saulspoort is about 12km south-east of the Kruindfontein project.[2]

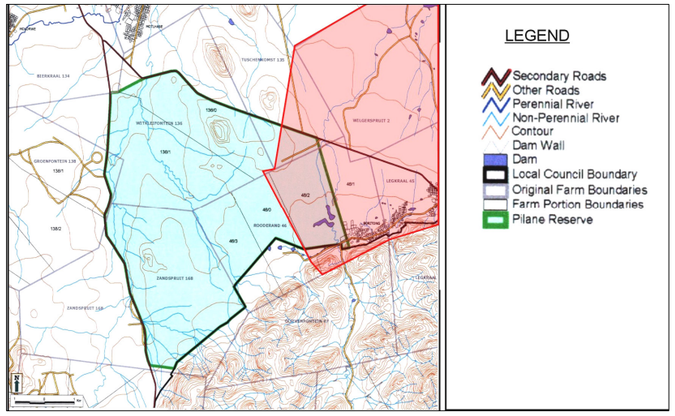


Fig 4: Regional Locality map[3]

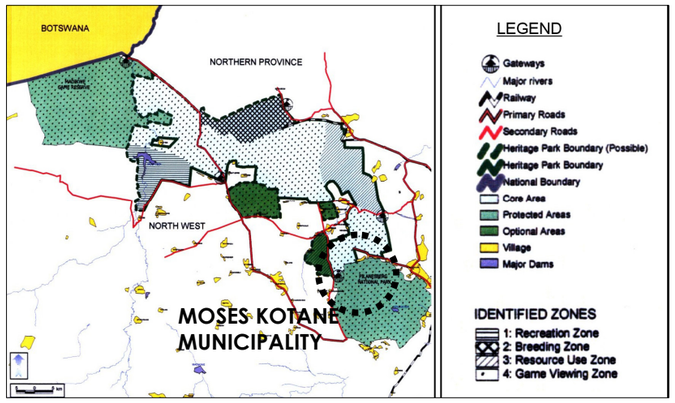


Fig 5: Municipal Locality map[4]

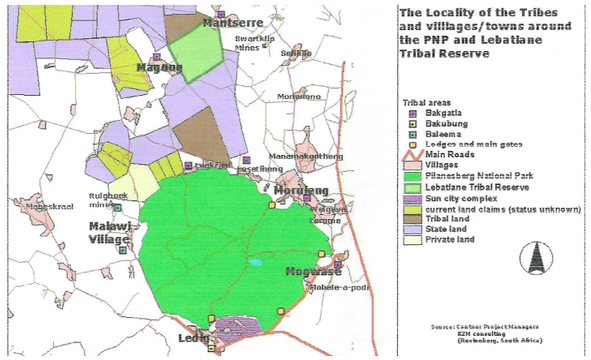


Fig 6: Locality map of the three different tribes in the PNP area [5]

[2] Strategic Environmental Focus, Kriundfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg B-12, C-8

[3] Strategic Environmental Focus, Kriundfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg A-2

[4] Strategic Environmental Focus, Kriundfontein Project Impact Assessment prepared for AngloPlatinum, 2002:pg C-9

[5] Strategic Environmental Focus, Kriundfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg C-8

context 1.1

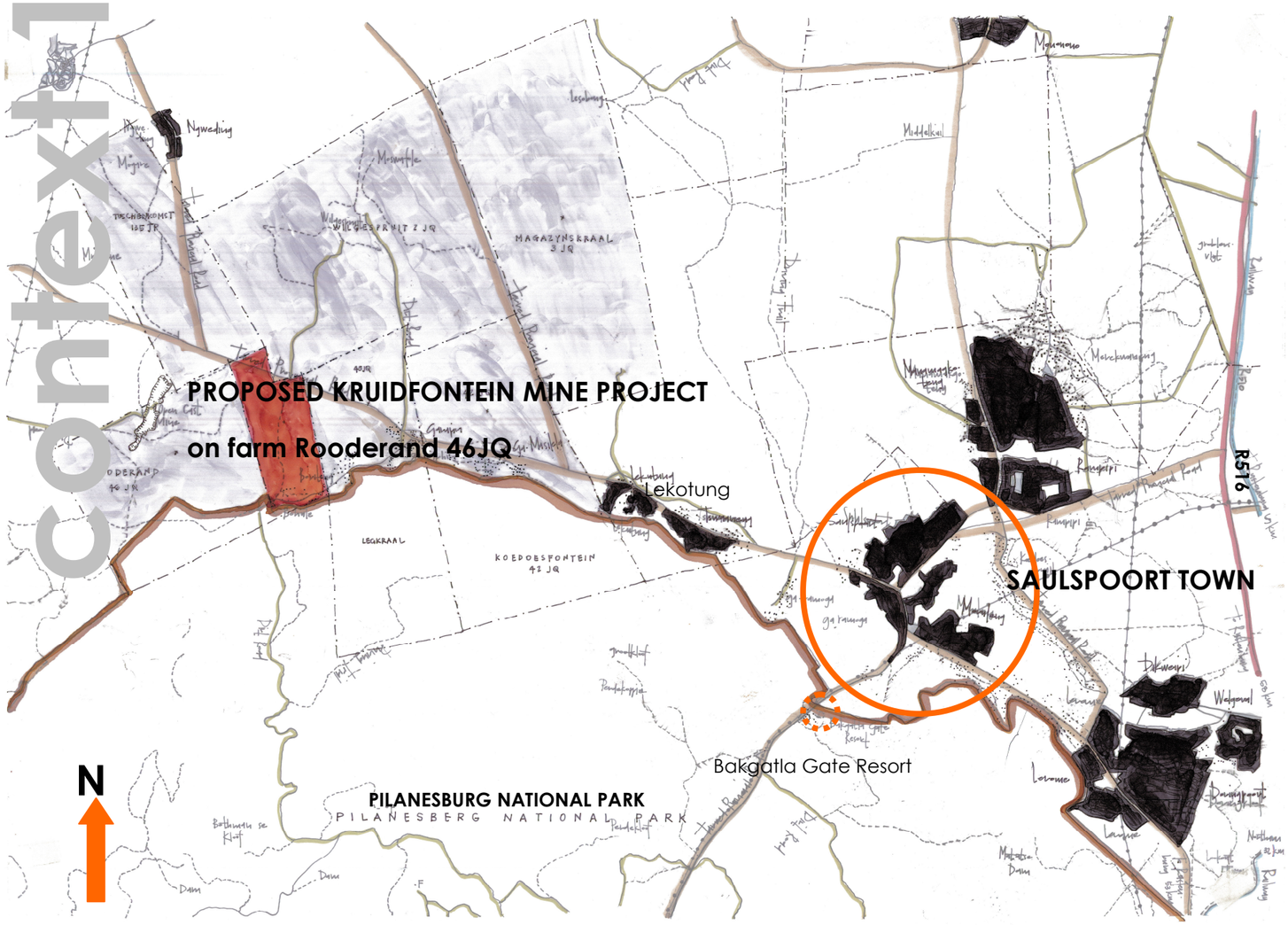


Fig 7: Map after State topographic map 2528CA, Pretoria; Showing the Urban densities within the Moses Kotane Locality[6]

[6]Burger, LeRoux & Tumubweinee, 2006

Project situation:
Located directly north of the Pilanesberg National Park (PNP), the project is situated within the Bophuthutswana homelands. Situated 150km North West of Pretoria in the North West Province, this is known as an area with low grazing and agricultural potential and hence the creation of a nature reserve within it, in terms with the economic and conservation benefits.[7]

The Pilanesberg National Park initiative was lead by the Bophuthutswana Presedent, Lucas Mangope, who decided to promote conservation and tourism with the formation of the 55 000ha Park. 46 000ha of the area to be included in the park was State land, purchased by the then Department of Bantu Affairs from white farmers, a further 8500ha belonged to the Bakgatla tribe and the remaining 1000ha belonged to private landowners.[8]

The Tswana peoples are dominant in this area, with three prominent tribes, as indicated in Fig.6. These are 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 within 32 villages falling within the Bakgatla Tribal Area who's Chief is Nyalala Pilane. [9]

As a result they own much of the land in the vicinity of the PNP and also benefit from their platinum mining rights. Stemming from their agreement with the Bophututswana Government, the tribe agreed to relinquish their grazing rights of the 8500ha that they owned and relocate the portion of their community living within the proposed park to areas outside.

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 of the essence and accommodate a large sector of the communities' employment. 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.

[7] Brett, The Pilanesburg Jewel of Bophuthatswana, 1989: pg
[8] Honey, Ecotourism and Sustainable Development South Africa: People and Parks under majority rule, 1999: Chap10,
[9] Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg

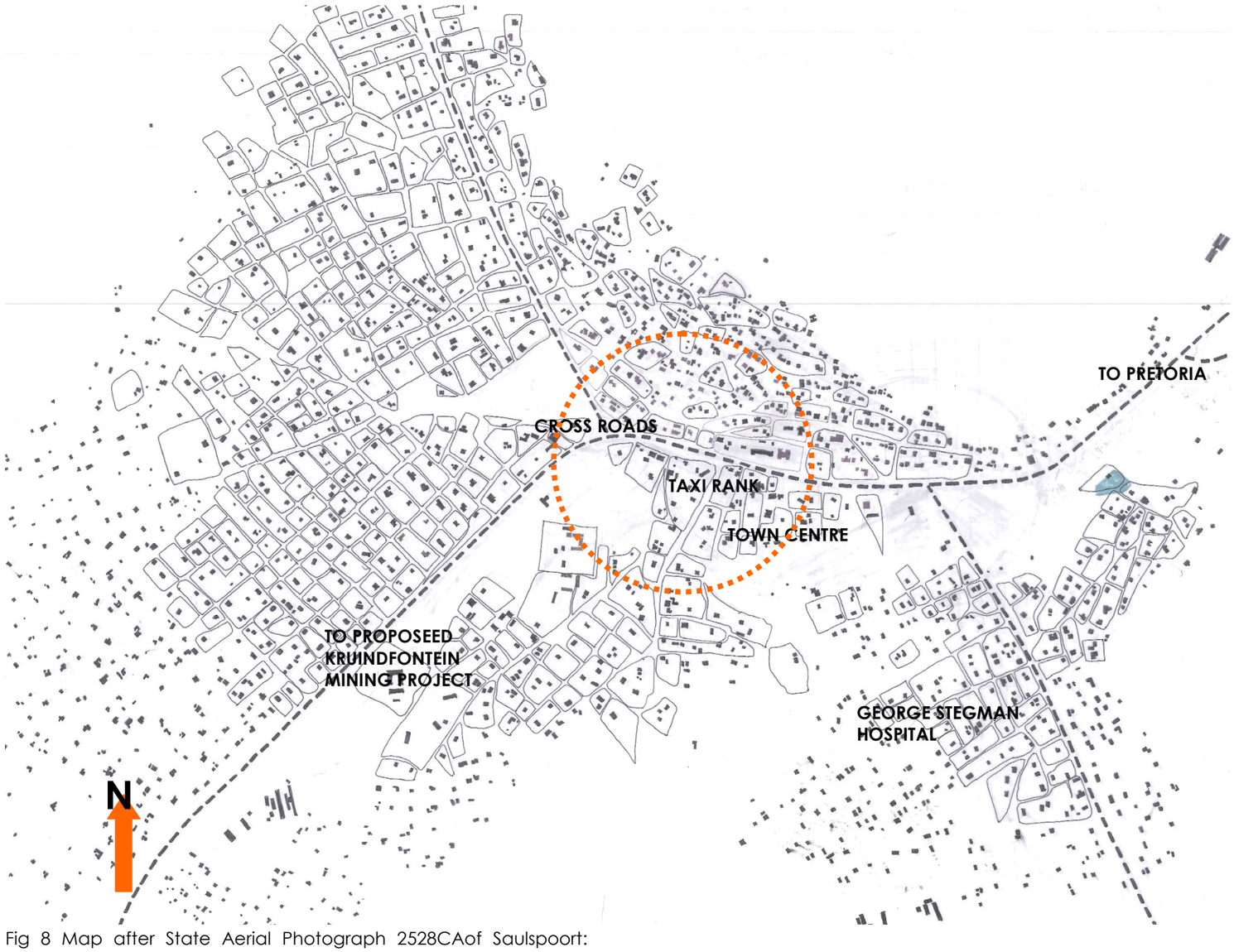


Fig 8 Map after State Aerial Photograph 2528CAof Saulspoort: showing the urban fabric within the town of Saulspoort[10]

[10] Burger, LeRoux & Tumubweinee, 2006

With the need to integrate and relate the MINE to the nearest community, the proposed intervention seems best done within an existing community. The closest of which is the town of Saulspoort;.

Looking at the town of Saulspoort as a combination of the economic, social, cultural and recreational opportunities and facilities; which are and can be generated through the physical agglomeration of large numbers of people [11].
The scenario being investigated focuses on the daily life of the people of Saulspoort. With the emphasis on the spaces where people gather, interact and work. The impacts of which are felt on a political, economical and cultural tribulations, indicative of the life in Saulspoort. [12]. While attempting to strategize and select a space that accommodates the above several factors have been considered. These include:

Access

All urban inhabitants should enjoy relatively easy and equitable access to urban opportunities. In the scenario suggested the need for both visual and physical access is paramount in conceptualizing a space that is multi-lateral in its layout, function and perception. The spatial implication of the concern with ease of access is the primary physical barrier of cost to overcome the friction [13]created between the built and physical environment.

Promotion of collective activities and contact

The places of greatest interactions in cities and this case the town of Saulspoort, are the places of greatest opportunity[14]. In the case of Saulspoort bearing in mind the cultural dynamics prevalent in the area this would be the gathering spaces and the points of transport interchange.

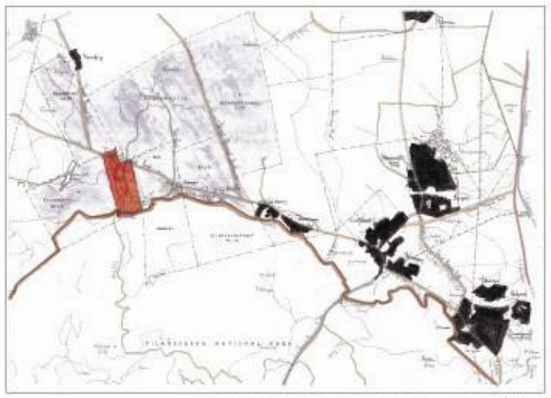
Needs

These include physical needs: shelter food, social needs; opportunities for interaction, psychological needs; security identity. Sensory needs; visual accessibility textures a sense of place. By investigating a suitable design approach in the town of Saulspoort this thesis attempt to satisfy those needs. In addressing and allowing for qualities that provide a critical base from which urban policies, plans and physical actions can be evaluated[15].

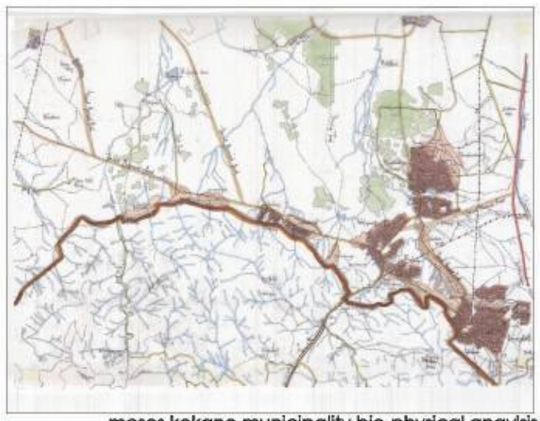
Balance

Balance; balance between society and the cosmos concerning matters like traditions culture and the prevailing social dynamics: with the design as an expression of wholeness; recognition, celebration of the natural, cultural and historical uniqueness of different places and times.

[11] Dewar, South African Cities: A Manifesto for Change, 1991: pg16
[12] Gooding, Song of the Earth, 2002:20
[13] Dewar, South African Cities: A Manifesto for Change, 1991: pg16
[14] IBID, 1991: pg17
[15] IBID, 1991: pg18

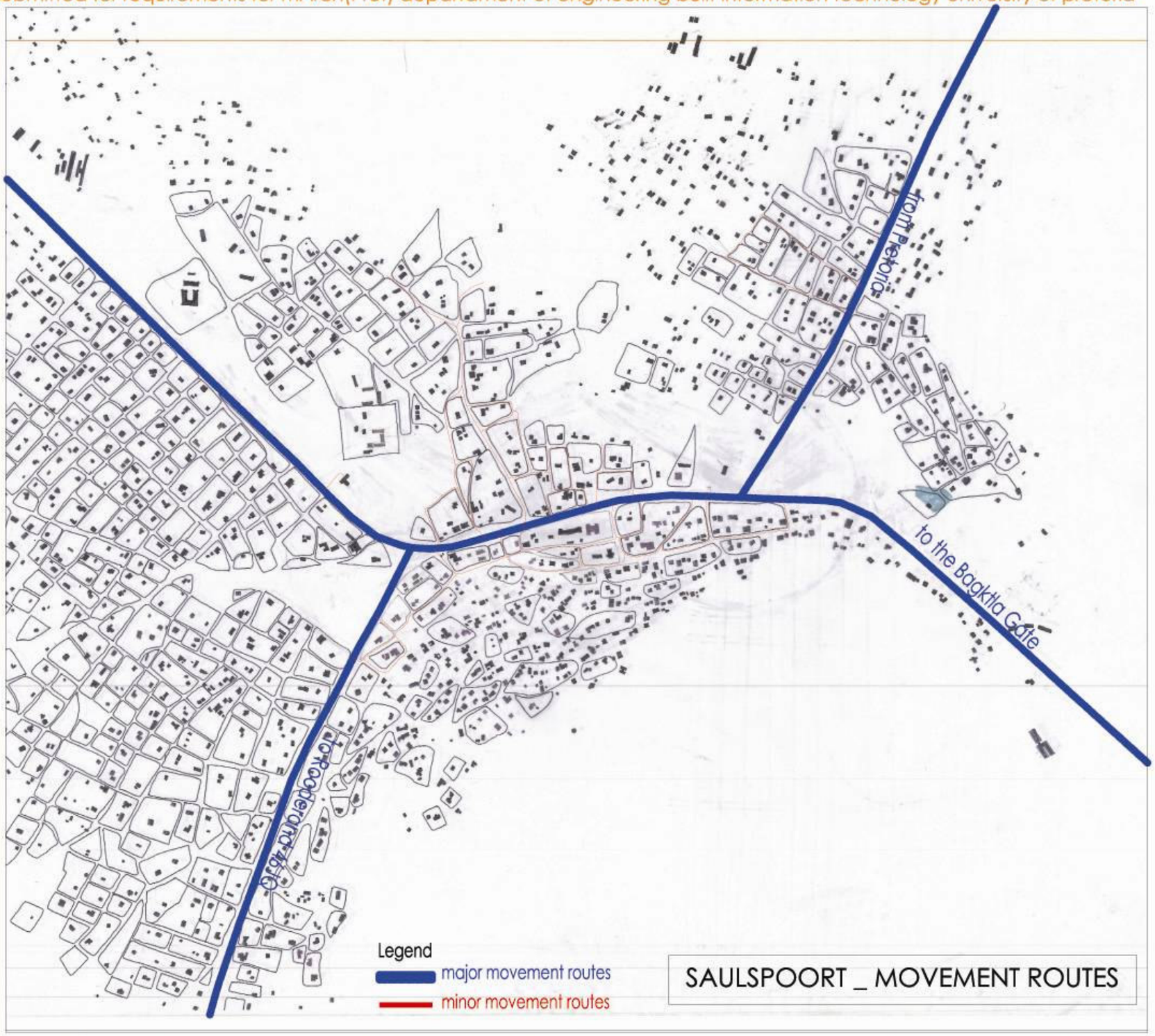


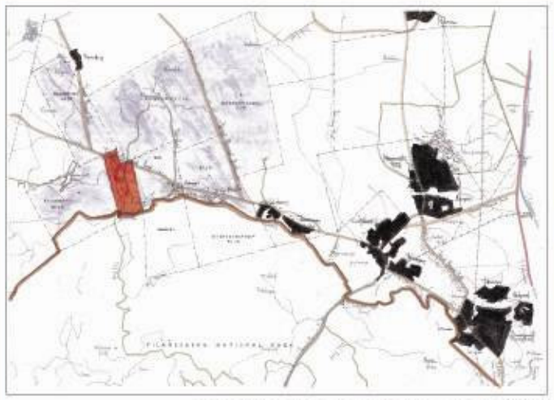
moses kokane municipality urban fabric



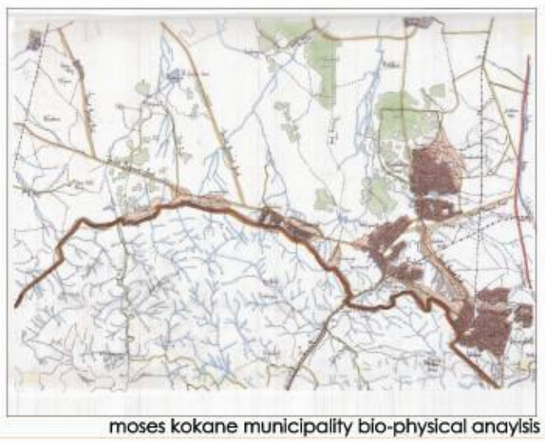
moses kokane municipality bio-physical anaylsis

aerial view_SAULSPOORT TOWN



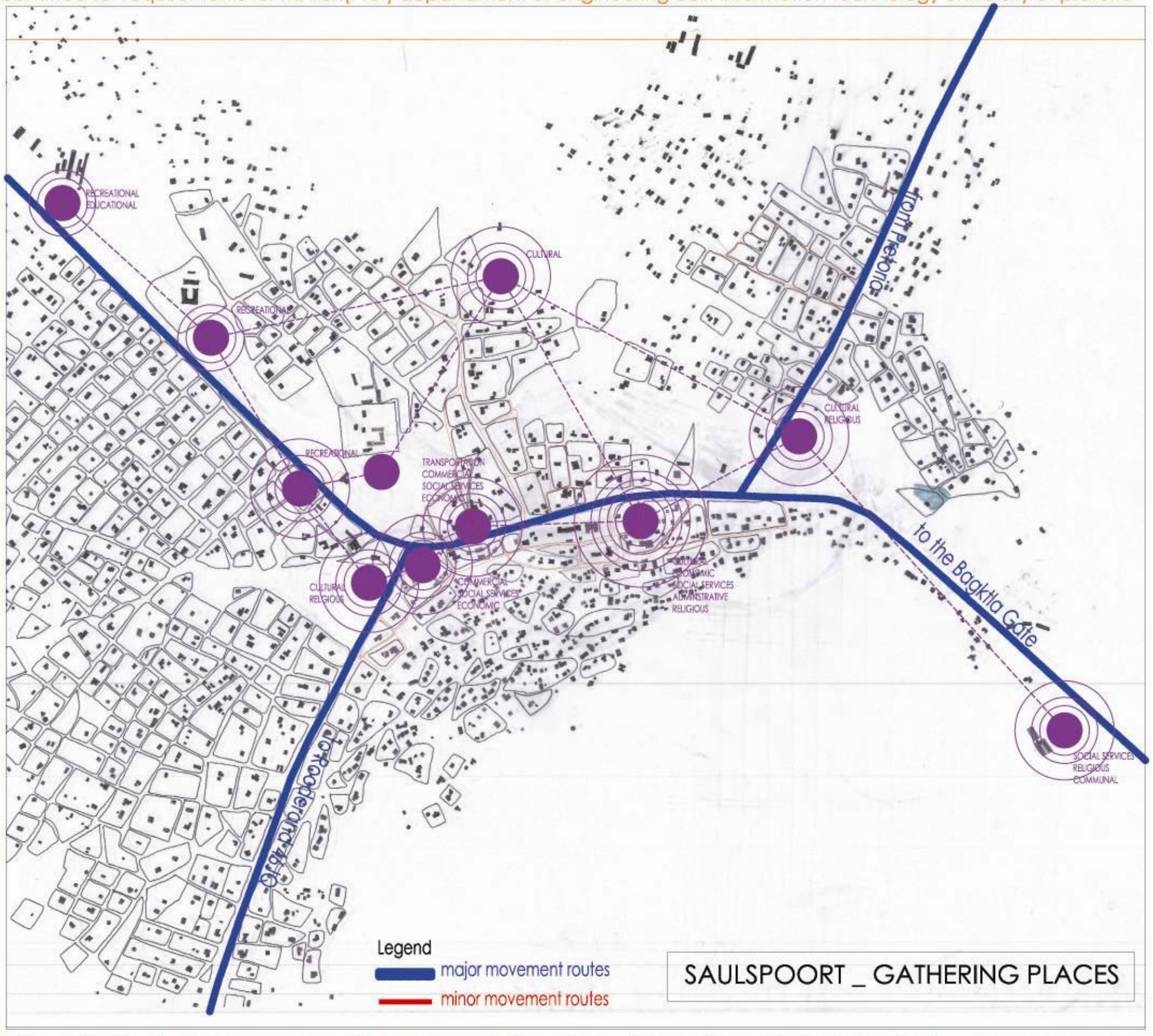


moses kokane municipality urban fabric



moses kokane municipality bio-physical anaylsis

aerial view_SAULSPOORT TOWN



The second is the balance between society and nature. Allowing people to be part of the totality of the place in which they live.
The third is the concept of balance in the relationship between people as expressed through urban activities. By the creation of spaces that serve as a platform on which activity can occur. Arguably the urban environment is made up of created activity and not just a platform. Where the activity is part of the design before the spaces created are planned around their planned activities. A place therefore designed around the activity is much more than just a place that is designed waiting for spontaneous commotion[16] .

Intensity, diversity and necessary complexity: A variety of overlapping conditions and activities provides for the spontaneous and unexpected to occur. Here again suggested with the multi-lateral use and function of the proposed spaces.

Integration: Communities can benefit from a greater range of opportunities and facilities than can be generated by their operating in isolation. Again as stated previously spaces and buildings should be multifunctional[17].

Community: The sense of identity, and belonging; this is largely dependant on interaction and communication and cannot be artificially forced. Identity is largely dependant on an assortment of complex forms of social organization and institutions operating over many different scales[18].

Idea context and programme
Idea: identifies spatial relationships, which contribute to the meeting of need: it has form but not yet design.

Context: the application of idea to place: it gives reality to the idea and is the design response to the particularities of place. The design process is not a linear process but a cyclical one: understandings gained in one stage feed back into and lead to adjustments in the others [19]

Programme: develops out of need. It establishes some of the constraints within which the idea must be developed and reflects an expression of the nature of environments within which urban life must be lived (Dewar 1991: 15).

With the above factors in mind, five scenarios were identified within the town of Saulspoort that embodies all if not three of the discussed elements.

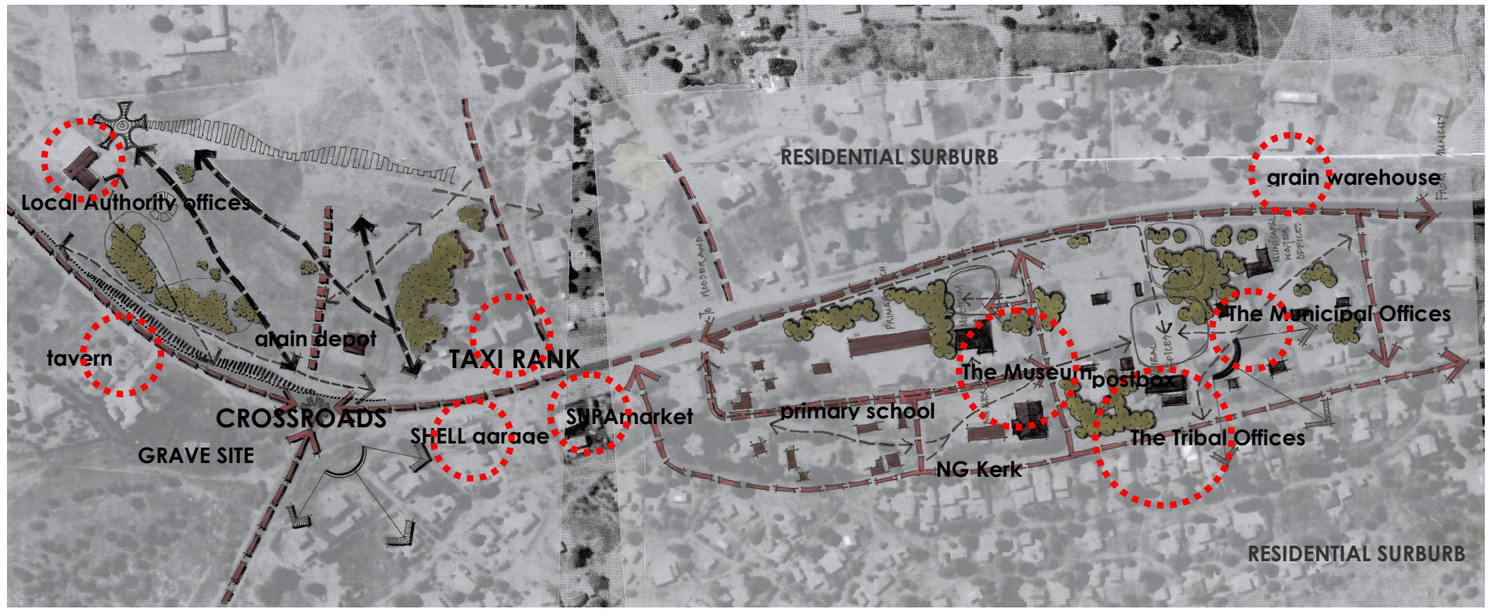


Fig 9: Map after State Aerial Photograph showing Saulspoort: the site and adjacent urban blocks [20]

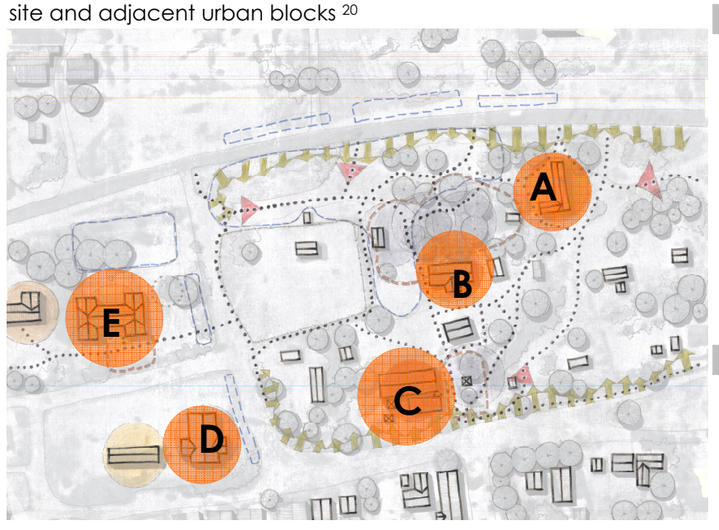


Fig 10: Map after State Aerial Photograph 2528 CA showing Saulspoort: nuclei points on the site[21]

context

A: Municipal Office
The Rand Water Offices, which are fenced off and removed from the dynamic's on the site

B: Dental Surgery
A place that encourages gathering on the site, making this a focal point on the site

C: The Tribal Office Complex
Place of authority, within the town of Saulspoort. This complex is the largest contributor to pedestrian movement and interaction on site. This building(s) represents the cultural and social make-up of Saulspoort

D: NG Kerk
In spite of the strong traditional culture in Saulspoort, there is still a big influence of Christianity within Saulspoort. A combination of Western idea into the traditional beliefs and culture.

E: The Mphebatho Place-Dome Museum
Exhibits of what indigenous Tswana culture consisted of are the key points of focus on display in this Museum. Also incorporated into this complex are various social activities like the only Restaurant in Saulspoort, and a computer training centre.

[16] Gooding, Song of the Earth, 2002: pg16-21
[17] Dewar, South African Cities: A Manifesto for Change, 1991: pg 20
[18] IBID, 1991: pg 21
[19] IBID, 1991: pg 14

[20] Burger, LeRoux & Tumubweinee, 2006
[21] IBID, 2006

BIO-PHYSICAL ANALYSIS

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:

Rainfall
Evaporation
Wind
Temperature

Rainfall
The Kruidfontein project falls 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.[22]

Evaporation
Evaporation is expected to be between 1700mm and 2000mm per annum.[23]

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. In late winter fresh to strong Westerly winds sometimes occur. Wind erosion is unlikely due to low average wind speed of 11 km/h.[24]

Temperature
The average temperature in the region for a whole year is approximately 18.6 °C. The daily temperatures are higher than 32.5 °C and lower than 14.5 °C during the summer months that are seldom. The hottest months are December to February. The coldest months are June and July.[25]

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.[26]

Reef Types
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.

UG2 Chromitite:
At a vertical distance of 16 and 400 metres below the Merensky Reef, depending on location, the second PGM-bearing layer known as the UG2 chromitite can be found. This has become an important alternative source of PGMs in recent years.

Platreef:
On the Northern Limb of the Bushveld, the UG2 is not developed on Anglo Platinum's properties. A layer known as the Platreef, which is substantially thicker than the Merensky and UG2 reefs, occurs and can support open-pit mining operations to depths in excess of 200 metres.[27]

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.[28]

Soils Landform
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.[29]

Fig 12: Images of the Saulspoort area landscape [30]

[22] Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg D-5
[23] IBID, 2001:pg D-8
[24] IBID, 2001:pg D-10
[25] IBID, 2001:pg D-11

[26] Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg A-14
[27] IBID, 2001:pg B-7
[28] IBID, 2001:pg D-18
[29] IBID, 2001:pg D-21

[30] Burger, LeRoux & Tumubweinee, 2006

Identification of sensitive areas

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.

Dustiness:

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

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.

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.

Land capability and 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.[31]

Three classes of land capability have been identified:

- Medium to low potential arable land.
- Grazing land. The Veld is capable of supporting a stand of indigenous grass species and is utilized by domesticated livestock.
- Wilderness land/open savannah patches; and watercourses

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.

[31] Strategic Environmental Focus, Kriundfontein Project Impact Assessment prepared for Anglo Platinum, 2001:pg D-41

Fig 13: Images of the Saulspoort [32]

Fig 14: Images of the Saulspoort [33]

[32] Burger, LeRoux & Tumubweinee, 2006

[33] IBID, 2006

Vegetation

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. Fire plays an important role in this environment as it aids in the regulation of the density of the woody component. The study area lies within the Sourish Mixed Bushveld , which is found in a narrow east-west belt surrounding the Pilanesberg.

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).[34]

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 bird's reptiles and small rodents. [35]

Water resource

The proposed Kriundfontein Project is located in Sub-Catchments A24E (Surface Water Resources of South Africa, Volume 2, 1990: Drainage Regions A and B, WRC Report No. 298/2.1/94), which forms part of the Crocodile River Catchments.

The more important hydrological parameters of the Sub-Catchments are:

- Rainfall Area A2G: 500 mm to 700 mm mean annual precipitation (MAP).
- .Evaporation Area 2B: 1 700 mm to 1 800 mm mean annual S-Pan evaporation (MAE).
- Runoff Area Q: 10 mm to 20 mm mean annual runoff (MAR)[36]

[34]Strategic Environmental Focus, Kriundfontein Project Impact Assessment prepared for Anglo Platinum, 2001:pg D-46

[35] IBID, 2001:pg D-57

[36] IBID, 2001:pg D-15

SOCIAL ANALYSIS

According to the 1996 Census data the total population in the Moses Kotane Local Municipality area is estimated at 229 992. The more densely populated towns in the area include the town of Saulspoort and Moruleng.
The educational levels in this area are significantly low, in-spite of the physical presence of a number of schools in the Saulspoort and Moruleng area. This lends itself to the deduction that the schools are not functioning to full capacity and are either under-resourced or mismanaged and in some instance non-functional. A very small percentage of the population has tertiary education. [37]

The towns of Moruleng and Saulspoort are made up of family units that compose by far a large part of the urban dynamic and fabric. There appears to be strong relationship between these family units and this is demonstrated in the knowledge and understanding exhibited by the community's interaction with each other.

There is a high level of unemployment with an estimated percentage of 48% unemployed. This is also attributed to the fact that due to the limited employment opportunities in the area most of the economically active people are employed outside the area. Allowing for a gap whereby the MINE can have a significant impact on the employment levels in the area.[38]

The Mphebatho Place-Dome Cultural Museum
Located in Moruleng Saulspoort, this museum is the heart and the showcase for the Tswana, Bakgatla culture in the area. It is found in a building that was the second school to be built in the entire Municiplaity by the then MaKgosi of the Bakgathla-ba-Kgafala, Kgosi Ofantse.[39] Restored and upgraded on the 24 September 1998 by the Place-Dome mining group the Museum is still in need of further restoration and upgrade. It is currently being run by volunteers from within the community of Saulspoort and serves as the initial contact with the culture and social structure in the area.

The Mphebatho Place-Dome Museum exhibition includes:

- Pictures of the Ama Kgosi in the 1899 – 1902 AngloBoer War
- Pots and pottery, which formed an integral and symbolic part of a traditional Tswana household.
- Medicinal plants, with explanations on how these were used.
- Artworks
- Recreations of the traditional dress of the Bakgatla
- Trophies and photographs from the colonial and apartheid era

[37] Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg D-159
[38] IBID, 2001:pg D-160 - 162
[39] Lesego, Interview 5 April 2006

Fig 15: Decorative wall patterns, the Mphebatho Place-Dome Cultural Museum[40]

Fig 16: Images showing pot making process[41]

Painted in the Tswana traditional, the Museum attempts to depict a part of the beliefs and culture in the area. This is done through the use of color. These are:

- Grey – on the walls and columns. This is the color of the totem monkey of the Bakgathla
- Orange – door and window frames. The color on the tip of the totem monkey.
- Blue – on the roof. A representation of the sky and the heavens.
- Purple – as a band along the base of the walls. A color representing the Earth.

The walls are decorated with patterns representative of the patterns that would have been used by the Bakgathla to adorn their dwellings. These patterns are smeared onto the walls by the women in the community, although today the traditional mixture of earth and cow dung is mixed with an adhesive for durability.
In contrast to the two NG Kerk Churches to the back of the Museum that does not in anyway reflect the ideals or culture of the Bakgathla ba Kgafelo. Rather they stand out in the landscape symbols of a colonial past.
On the same site stand the Tribal offices, a primary school and the NG Kerk. The school was constructed under the supervision and initiative of the then chief Kgosi Ofaste in 1937.
In a recreation of what used to be an important hierarchical system of spaces in urban Tswana citadels that culminated in a kgotla.
Further towards the Bakgathla Gate Resort is the George Stegman Hospital that is still in operation to date as the only hospital in Saulspoort

The rain – making site, situated within the urban context though undefined also constitutes itself as cultural nucleus within the town of Saulspoort.
Pottery is a very important facet of the Bakgathla culture. Though not formally established the people of Saulspoort exhibit great skill in pottery making. This part of their culture has attracted a great deal of interest especially from the foreign tourists that come through, as they are given an opportunity to interact with the potters and given a culture tour centred around this.

[40] Burger, LeRoux & Tumubweinee, 2006
[41] IBID, 2006

INFRASTRUCTURAL ANALYSIS

This includes:

- The George Stegman Hospital
- The Mphebatho Place-Dome Cultural Museum
- A taxi rank
- The NG Kerk church complex. Made up of two structures, where the older structure was put up in 1888 by the Dutch Reformed missionaries. This contrasts the newer modern church adjacent to it, giving an insight into the layers of history that are con-existent in the area.
- The Bakgathla Gate Resort.
- 63 schools in 30 villages, each of which is named after a Makgosi, tree or mountain.
- The Tribal office complex.
- A tarred road connecting the resort to the town and through to SunCity
- The Local Municipal offices
- A central grain collection and storage central
- A tavern
- Convenience stores
- A Shell garage
- Two grave-sites
- Dental surgery
- Mechanic workshop
- Post box
- Eskom sub-station
- Informal trade along the main road
- Secondary dirt roads
- Rand water offices

The built environment in Saulspoort is predominantly made up of small residential dwellings with a few roundavels. There is an inexistent presence of shack and/or temporary presence. Meaning that the settlement patterns in Saulspoort are formalized and the residents are more or less "indigenous" and/or permanent residents in the area.

Urban fabric

The urban fabric in the town of Saulspoort is made up of individual houses on plots. Grouped together to define and create the spaces that define Saulspoort. Aside from the main tarred road, the secondary access routes are defined by the plot boundaries, creating a cell like urban typology that is organic in its nature and feel.

Building typology

The buildings in Saulspoort are of a small scale with an absence of any building over one storey. The building both commercial and residential exhibit a unique aesthetic quality, where by the walls have been castellated and slanted , an indication of the attention and pride of the community to their built environment.

The use of ordinary elements such as bottles, corrugated iron sheeting, and plastic bags to adorn and as functional parts of the building also indicates sensitivity to the environment, but also shows that the concept of re-use and appropriation is rife among the residents of Saulspoort.

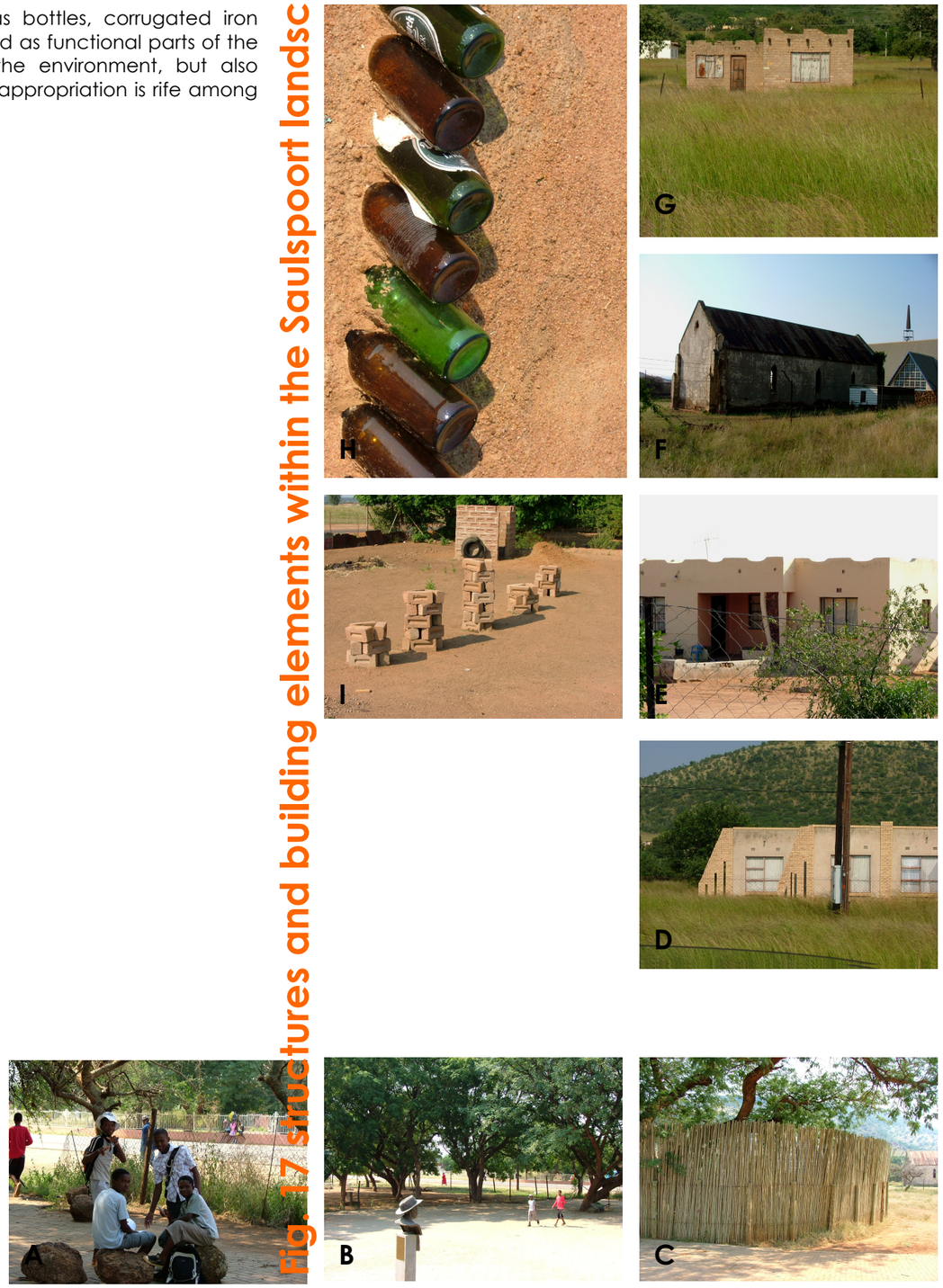


Fig. 17 structures and building elements within the Saulspoort landscape

ECONOMIC ANALYSIS

Tourism and mining are the two predominant industries that provide for economic empowerment with the community of Saulspoort.

Mining:
The mines in and around this area include

- The Amandabault Mines
- Union Section Mines

The above mines provide majority economic opportunities for the peoples of Saulspoort who tend to commute to and from the town to work. This is also indicative of the tight and rooted attachment of the people in this area to their town and community.

Tourism:

The Bakgathla Gate Resort, within 10km from the centre of the town, this makes it another major economic player in Saulspoort.

SunCity though further away is also a source of economic opportunity in this region.

The Pilanesburg National Park, a major tourist destination this facility provides for employment opportunities such as supporting staff, tour guides and gamekeepers for the residents within the area. This Park as focal point allows for the movement of tourists in and out of Saulspoort, allowing for the creation of various platforms on which the local residents can establish small businesses that are supported by the tourism industry such as curio's, cultural tours and experiences and bead work. With the low employment levels in the area, this serves as a boost to the economic setup of Saulspoort.

A proposal for a Heritage Park Corridor is also in the pipeline for this area. The proposed Corridor links up with other regional projects such as Marakele, Thaba Tholo, Atherstones, and the Rhino Eco-Ranch to form a significant Conservation and Tourism Area. Developed as an initial discussion document this Heritage Corridor, is expected to significantly boost the economical status of the area through tourism and conservation. Providing a platform for an alternative secondary industry, that would also act as an economic catalyst during and after the Kruindfontein Mine life. [42]

The other form of economic empowerment in Saulspoort comes from the foreign and local tourists that drive through the town as they head to the Pilanesburg National Park. This allows for the community to showcase its culture and in the sell of crafts and pottery.

Another economic generator in Saulspoort is from the small and medium sized businesses that serve the town. These include:

- Grain depots
- Spaza shops
- Supa-markets
- Roadside semi-formalised trade
- Mechnical workshops
- Health care services
- The Shell garage
- Restaurant services
- Fruit and vegetables depot
- The Taxi Rank

Fig. 18 existing economic activities within the town of Saulspoort

[42] Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg D-192

HISTORIC ANALYSIS

The Kruindfontein project is located in an area that was part of what was referred to as Bophuthatswana homelands in the apartheid government.

The Bophuthatswana homelands predominantly made of Tswana people were governed by the indigenous Chiefs known as Ama Kgosi that were then overseen by the apartheid government. These Chiefs it is said were sent through from the Tswana royal house of the Bakgathla from what is known as the country of Botswana.
The Bakgathla chieftaincy came as a result of the Sotho – Tswana wave after a period of fission and secession from the original nucleus at Mmatau [43]

The Bakgathla in this area are known as the Bakgathla ba Kgafelo. Due to the fact that this area fell under the Bophuthatswana homeland the colonial influence though apparent did not completely erode the cultural values of the peoples inhabiting this area. Left behind is an interesting way of life that is still relatively rural and though not entrenched in tradition there are still traces of this.
This can be seen in the still existing Tribal Council that though curbed in terms of power and operation plays an important role in terms of dispute settlement and local governance.

Also in existent is the kgotla that fronts the Tribal Offices. In Tswana culture everything took place in the kgotla. The kgotla was the place of places, the village meeting place. In simpler terms it is where the chief Ama Kgosi had his residence and administration "offices". It was in this place that disputes were settled and contracts verified or nullified. Littered with big trees this was the heart of a Tswana settlement.[44]
The kgolta stands for courtesy belonging and a sense of community. In Saulspoort this is still manifested in the way that the space in front of the Tribal Offices is used as such.

SETTLEMENT PATTERNS OF THE SOTHO - TSWANA

The later Iron – Age is characterized by stone walled sites reflective of Sotho – Tswana settlements[45] (Pistoriuos, 1992). These were laid out in Kraal complexes that though were separate were coherent geographical and spatial units each joined by primary and secondary enclosures.
The enclosures of the kraal and/or Kgotla complexes were generally more neatly stacked than the secondary walls of the dwellings or wards.

[43] Breutz, The Tribes of Rustenburg and Pilanesburg Districts, 1953: pg81
[44] Tau, The Place of Culture in Architecture, 2001: pg 6
[45] Prstorious, Molokwane an Iron Age Bakwena Village 2001: pg

The Tswana people built villages that looked like this from above

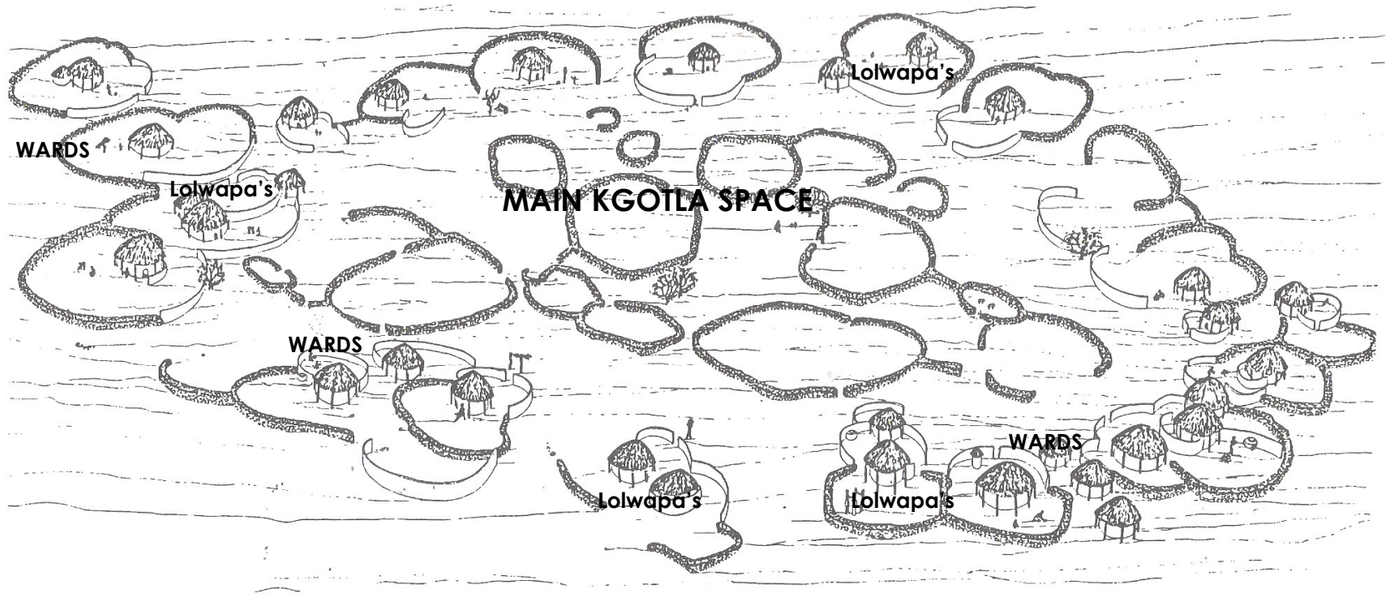


Fig 19: Image showing impression of a Traditional Tswana village [46]

Placement in relation to the Kgotla
The Kgotla

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. [47]
A settlement started with the strategic placement of the main Kgotla. This is a large open space surrounded by stout poles and 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, the 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. [48]

[46] Mason, Origins of the African People of the Johanessburg Area, 1987: pg 8
[47] Tau, The Place of Culture in Architecture, 2001: pg 6
[48] Tau, The Place of Culture in Architecture, 2001: pg 6

The Ward

The pattern of settlement was by wards. This is a grouping of closely related kinsmen. Each ward was located by rank and position in relation to the physical head of the state the chief Ama Kgosi and the main kgotla. In spite of the movement and or growth of the village the proximity of the various wards remained the same. This system of proximity was carried through into the internal ward organization where each individual compound was placed in relation to the head of the ward.
Where the village formed a community, the ward formed another closer knit family unit. All compounds faced into the public space (secondary kgotla) that was used as a meeting place for any of the ward activities, from weddings funerals or dispute settlement among the ward members. [49]

This secondary kgotla was less formal and was used by children in the ward as a play area. Also found in these smaller kgotla's were cattle pens for temporary livestock storage. Much like the main

[49] Tau, The Place of Culture in Architecture, 2001: pg 11

kgotla the smaller kgotla's would also have a few large trees as its hearth.

The lolwapa

The lolwapa, the individual compound did not differ much from the spatial organization of the kgotla or the ward. This is the most intimate part of the settlement spatial organizations were the Tswana culture can be closely observed and experienced. In the lolwapa the varying degrees of privacy can be pointed out in the various gathering spaces.
After greeting one can then venture further into the lolwapa, the threshold into the hut or dwelling place.
Within the compound exist various degrees of privacy. The first threshold would be crossed at the compound enclosure, a place usually signified by a tree or natural feature. The second is the lolwapa that gives access to the hut and the third the entrance into the hut.[50]

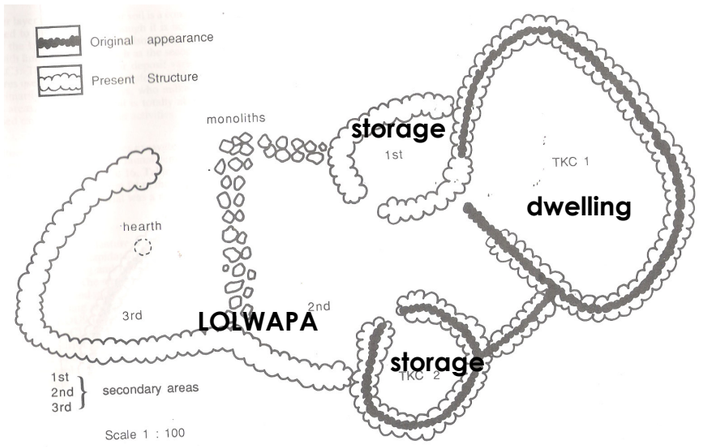


Fig 20: Image showing impression of a Traditional Tswana lolwapa[51]

The lolwapa is built upon a step to differentiate it from the outer parts of the compound. The raising of this gives it importance in the entire compound. This is the place where the family would gather for meals around a fire and get told stories by the elders. The lolwapa was an intimate part of the compound entered and used by only family and those close to it.

Other guests were attended to under a tree in the compound. To enter one's hut one steps down into. In itself a symbolic gesture, sensitizing the user to the fact that dwellings were built from the earth and were inherently a part of it and not dominating over it. Huts were made of adobe and strengthening using cow dung. Sometimes patterns in various pigmentations were marked upon its surface and these usually had cultural connotations.

The walls of the hut are free standing and columns are placed on the outside of these walls to hold up the roof. A space was left in between the walls and the thatch roof to allow for air movements through the hut. Roof overhangs were wide and the overall height of the structure is low, so one bends as they enter it and then stretch out when inside.[52] A ritual, signifying a crossing over: from one space into another. A definition of thresholds: That was as much a part of the physical building, as to the culture that governs the Tswana peoples.

[50] Tau, The Place of Culture in Architecture, 2001: pg 11,13
[51] Pisttorious, Molokwane An Iron Age Bakwena Village, 1992: pg33
[52] Tau, The Place of Culture in Architecture, 2001: pg 13

MINING

Mining is one of the major industries that support the South African economies. With a role as important as this it should be looked on with a degree of importance and acknowledgment. This is however not the case. The attitude towards the mining industry is continually worsening as the evils that dog this industry grow.

Mining is in its nature unsustainable. The effects of this are felt more so as a mine approaches the end of its life. Leaving in its wake disempowered people, abandoned settlements. Not to mention the trail of devastation to the environment, inclusive of visually intrusive infrastructure much of which can not be disassembled and used elsewhere.

This project is a hypothetical exploration into the long-term land uses of a mining area. The aim is for it, an attempt at a plan and design for an end land use that can accommodate the mine as a temporary land use.

Rustenburg Platinum Mines, as part of the Anglo Platinum Group, investigates the possible development of a platinum mining operation, known as the Kruidfontein Project, in the North West Province, north of the Pilanesberg National Park, in the vicinity of the Saulspoort community. This area is known as the Western Limb.

This thesis attempts to propose a design model for future reference, which it is believed will endeavor to explain and investigate the idea that a paradigm shift in the perceptions that dog the mining industry can be changed.

The goal towards this shift would be the view of mining as a process and industry that is sustainable and benefits the greater community society and country. The values learnt here would culminate in a design model that will attempt to address the negative attitudes and effects that are wrought upon the landscape and communities as a result of the mining process. Where mining processes seen as a temporary land-use happens as a part of a broader end land-use.

A design models that allows for a scenario based solution to the long term planning rehabilitation and eventual appropriation of a mine its functions contributions and effects in a locality.

This thesis also acknowledges the planning methods that are being applied to date in the entire country and attempts to borrow and incorporate most aspects of this.

On most mine sites factory warehouse like facilities are designed to protect expensive equipment, protecting such from external elements like dust and rain, usually resulting in unsightly, elementary structures intruding in the landscape. Offices, change rooms, workshops, gathering spaces and so forth are designed to function well, but usually result in mundane, uninspiring spaces, contributing to the adverse visual impact of the site. The buildings are function-specific designed, with little or no sustainable approach, no vision for the future, only erected to serve the immediate purpose of the mine for 30 to 50 years. This poses a problem when the mine eventually shuts down, as the buildings and layout are not suitable for any other use and or uses. Ultimately, the mining plant and associated components are dismantled after operation ceases estimated at a timeframe of 30 –50 years. Tailings Disposal Facilities, waste rock dumps and some infrastructure however remain.

Typical mining infrastructure that need not be disassembled after the mining operation ceases consists of the following:

- Offices: Fig. 21.1 (Burger, Le Roux, Tumubweinee, 2006)
- Changing rooms
- Parking: Fig. 21.4 (Burger, Le Roux, Tumubweinee, 2006)
- Storage facilities: Fig. 21.2 (Burger, Le Roux, Tumubweinee, 2006)
- Roads
- Electricity: Fig. 21.3 (Burger, Le Roux, Tumubweinee, 2006)
- Water storage and pipes
- Large warehouses: Fig. 21.6 (Burger, Le Roux, Tumubweinee, 2006)
- Temporary offices: Fig. 21.5 (Burger, Le Roux, Tumubweinee, 2006)
- Clinics

Another dilemma facing the mining industry is the influx of people and rapid growth of human settlement (mainly informal) as these people flock to the mining area in search of economic empowerment and employment. This does not happen in isolation as it concerns the environment, well being of the individual and the sense of ownership and belonging.

Life-of-mine

This can be categorized into three phases:

- Pre-mining
- Exploitation
- The "Closure concept"

This study is concerned with the pre-defined closure and end land use plan resulting in a long-term sustainable and productive land-use. Mining is an unsustainable practice because it is a linear process with a start date and finish date.
Government as much as Society accepts the fact that mining cannot continue into perpetuity even though the mining industry is largely accountable for the wealth of the country.

Fig 22: Life of a Mine[53]

Environmental impacts and effects

It is very evident that industries like mining always have associated with it a negative impact on not only the environment but also the associated economy. Society and government are applying more

[53] Radameyer, Interview 3 March 2006

and more stringent measures to establish realistic and innovative end-land-use plans on different scales within the environmental legislation.

Air polution

Tailings facilities and unvegetated areas are the largest contributors to air polution in this industry. Other forms of air polution can come from burning preocesses. The paticles become airbourne due to the wind and this dust can spread over the area for several kilometers. This can be particularly hazardous around residential areas and can be a major health risk.[54]

Soil pollution

Leaching of through tailing facility is the greatest source of soil pollution. Often acid rock drainage occurs due to the chemical reactions taking place in the tailings. (Van den Berg. 2004: 3)Other forms of soil pollution occur where soil is compacted by heavy vehicles and frequent traffic, oil leaks, and faulty pipelines possibly resulting in a loss of agricultural potential and a loss of environmental capital.

Water Pollution

Mines require immense amounts of water. Recycling of water is implemented as far as possible. Water pollution in only the area of the mine influences the entire catchments area. Water pollution affects ground water and surface water and possible results of mismanagement of this resource are health risks, losses in agricultural potential and a loss of Environmental capital.[55]

Aesthetic Pollution

This is where the main concern of this project should lay. To reuse the infrastructure that accommodates the mine in terms of the criteria laid out for the after closure land-use. The aesthetic pollution that a mine causes can have hazardous effects on the tourism industry.

Light Pollution

This type of pollution occurs at night where the mine needs to be illuminated. It can however have serious effects on animal life and on our human wellbeing.

Noise pollution

This is kept to the minimum required levels but never the less influences the buildings and the people who occupy them as one nears the plant. This can also result in a health risk with continuous exposure.[56]

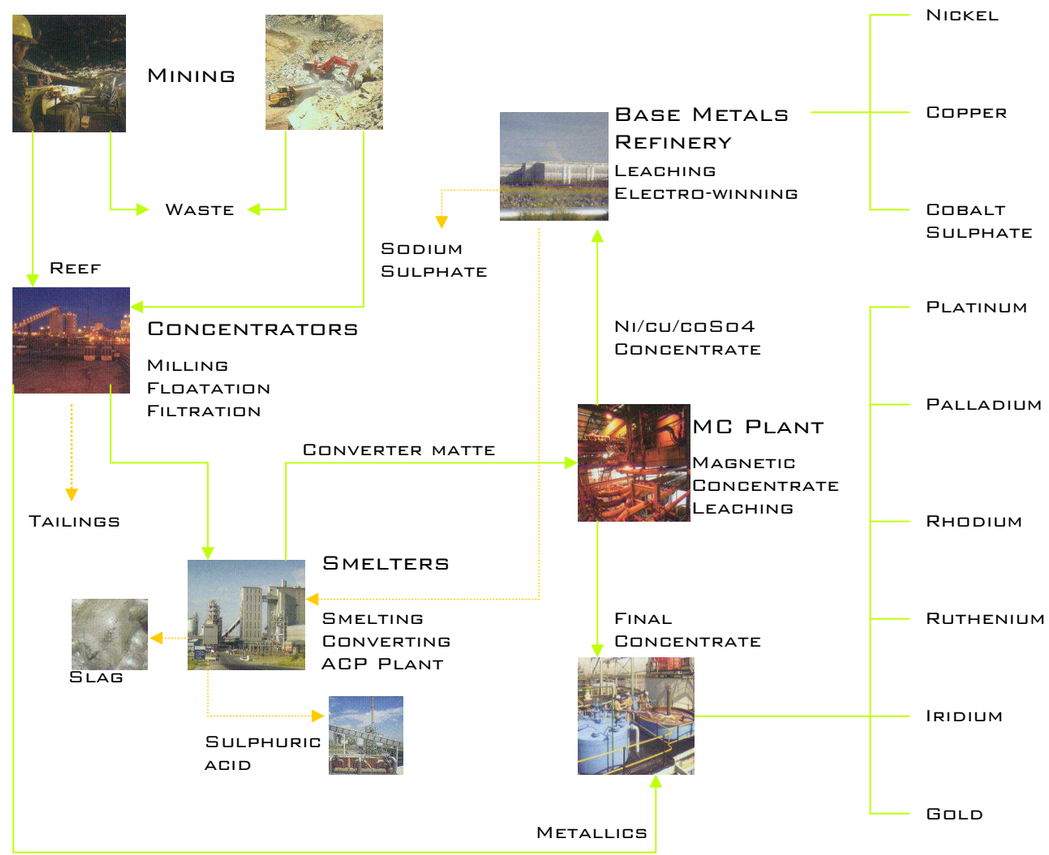


Fig 23 Mining processes that need to be accommodated in the temporary Land-use[57]

[54]Strategic Environmental Focus, Kruindfontein Project Impact Assessment prepared for AngloPlatinum, 2001:pg A-6
[55]IBID, 2001:pg A-21, A-22
[56]IBID, 2001:pg D-105

[57]Burger, LeRoux & Tumubweinee, 2006

Problems faced by the MINE

This is split into two phases

- While the mine is in operation
- Post mine closure

The Mine in operation:

INFRASTRUCTURAL/BIOPHYSICAL

- Fragmentation of the urban fabric
- Lack of town/settlement planning
- The lack of adequate housing
- Uncontrolled urbanization
- Infrastructural needs in the town
- Negative visual impact of the mining infrastructure
- Exclusion of the mining infrastructure from the urban fabric
- Inadequate transportation system for the rapid urban growth
- Pollution of the water, air and the soil
- Vegetation loss
- Loss of arable land
- Loss of the species diversity
- Depletion of the natural resources

ECONOMIC

- Unemployment.
- Need for an economic activity other than the Mine that can accommodate the people that do not get employment from the Mine.
- The costs involved in laying water, electricity and sewerage facilities.
- Depletion of natural resources
- The negative impact of the Mine regarding the existing tourism industry in the Pilanesberg area.
- The job creation for the people that are already settled and from the area of the Pilanesberg area.

SOCIAL

- Resentment by the peoples to foreign investment as a result of previous sidelining.
- Influx of peoples into the area that leads to crime, sewerage issues and over crowding.
- Urban sprawl
- Informal settlements
- Unwanted occupations onto the land by migrants.
- HIV Aids
- Under development of the social facilities to accommodate the migration explosion.
- Morality
- Rules versus human needs.
- Working conditions in the Mine.
- Health and safety in the Mine and the community related to pollution.
- Privacy. Pertaining to the informal settlements
- A lack of appropriation by the community of the squalor that they live in.
- Family degeneration due to the migration of members of the family to the mining area, leading to broken/dysfunctional homes.
- A lack of a sense of community in the informal settlements
- A lack of flexibility in terms of the urban formations and settlements.

The Post –Closure phase:

INFRASTRUCTURAL/BIO –PHYSICAL

- Scarring of the landscape
- Unsightly infrastructure left behind after the Mine closes
- The lack of appropriate mining infrastructure planning before mining commences makes it difficult and expensive for rehabilitation
- TIME
- The death and decay of the urban fabric that grows as a result of the close of the Mine. This in turn leads to ruination of infrastructure and facilities that have grown as a result.
- Tailing dams
- Rock piles

Applicable legislation:

South African Minerals Legislation:

The Mineral and Petroleum Resources Development Act, No 28 of 2002 (MPRDA) came into effect on 1 May 2004. It brings about a radical departure from the common-law concept of privately owned mineral rights and provides for a system in which, as in most other countries, the state grants and regulates prospecting and mining rights. Among others, the objects of the Act are to:

- Promote equitable access of the nation's mineral and petroleum resources to all the people of South Africa;
- Expand opportunities for HDSAs to enter the mineral industry and to benefit from the exploitation of the nation's mineral resources.
- Promote economic growth and mineral development in the Republic;
- Promote employment and advance the social and economic welfare of all South Africans;
- Provide for security of tenure in respect of present prospecting, exploration, mining and production operations; and
- Ensure that holders of mining rights contribute towards the socio-economic development of the areas in which they operate.

The immediate challenge for Anglo Platinum is to convert its privately held mineral rights to those granted by the state under the MPRDA. Anglo Platinum complies with the legislative requirements for conversion and has already lodged application for conversion of some of its old rights in respect of its current operations for conversion. All old rights in respect of existing operations remain in force for five years as from 1 May 2004. (Anglo Platinum annual report 2005:83)

The development of South Africa's new mineral rights regime

- 1998 to 2000: Government publishes a Green and White paper announcing a policy which foreshadows the vesting of private mineral rights in the people of South Africa and under the custodianship of the government; 2002: Draft legislation published to implement the policies with regard to the vestment of mineral rights and the 'use it or lose it principle';
- June 2002: The Minerals and Petroleum Resources Development Act No. 28 of 2002 (MPRDA) passed by parliament;
- July 2002: The Mining Charter, which sets out the guidelines according to which the government aims to achieve the so-called Broad-based Socio-economic Empowerment objectives of the MPRDA, was leaked to the media. The leaked charter proposed a 51 % transfer of ownership of South African mines to historically disadvantaged South Africans (HDSAs). This resulted in a significant loss of confidence in the future of the South African mining industry and caused an immediate sell-off of South African mining shares;
- July to October 2002: Negotiations between the Mining Industry, Department of Minerals and Energy and Labor on the provisions of the Mining Charter resulted in a settlement, which provides for, among others, a transfer of 15% of all South African mining assets to HDSAs within five years and 26% within ten years;
- March 2003: Publication of the Mineral and Petroleum Royalty Bill, which proposes a royalty of 4% of revenue derived from PGM sales;
- April 2004: Announcement that the publication of a new draft of a royalty bill is postponed to early 2005 and that the proposed new state royalties will not become payable before 2009;
- 1 May 2004: The MPRDA becomes effective which means the commencement of the five-year transition period for operating mines to convert from the present private mineral rights regime to state-issued mining rights. Also commencement of the five-year and ten-year periods for ownership transfer of mining assets provided for in the Mining Charter;
- 3_ April 2005: Last date for holders of unused old rights to apply for new rights under the MPRDA. Where no application has been made, these old rights will cease to exist on 1 May 2005 (Anglo Platinum annual report 2005:93).

2 the problem

THE PROBLEM

Problem statement:
In an attempt to shift the paradigms that govern the perceptions which are characteristic of mining one must endeavour to explain and investigate the concept of mining accommodated in a larger broader sense, operation and location.
Can a mine as a catalyst introduce represent and integrate the evolving values, spaces and urban areas that are not without meaning and belonging, into the communities that are directly or otherwise affected by mining activities within their vicinity?

Sub- problems
Sub- problem 1:
What is the paradigm shift that is being suggested?

The paradigm shift being suggested is one that allows for the reconciliation between the MINE and the communities around it to function together in a symbiotic relationship. This would allow for the communities around the MINE to benefit from the physical and economic infrastructure put in place for any MINE to operate.

A way of thinking that sees the mining process as a temporary land that will lead to a function that remain utilized and benefit the community's post- closure of the mine. The integration of a MINE as part the surrounding communities.

Sub- problem 2:
How does the paradigm shift suggested affect the MINE?
A paradigm shift in the approach to mining provides several opportunities and some "draw-backs for the MINE."

Opportunities:
- The MINE can inline with the Mining Charter accommodate and fulfill its requirement for local labor employment. As a result of the integrated training services that can be provided for with the integration of the MINE into the community.
- The perceptions surrounding the MINE are vastly altered, as by becoming a part of the community the MINE humanizes its operations and existence.
- The process of appropriation post- closure would be addressed as the community would be able to identify with the MINE
- The question of ghost towns post- closure would be addressed as the integration of the MINE into the community would allow for a secondary industry[s] to happen, grow and mature.
- The MINE would be able to better quantify and validate its contributions in an existing community.

Draw- backs:
- The MINE would have to spread out parts of its operational back up services into the nearest community.
- There would have to be a detailed research conducted per- mining and this would include a number of studies ranging from the urban to social dynamics of the communities that surround the area demarcated for mining.

Sub- problem 3:

How does the incorporation of the MINE into the community affect the urban dynamics, the cultural values and the sense of place in the community?
A paradigm shift in the approach to mining provides several opportunities and some "draw-backs" for the community

Opportunities:
- The upgrading of various existing infrastructure
- The use of the infrastructure that is laid out by the MINE pre-mining. This would include electricity, sewerage systems, roads, offices, training centres, design workshops and the like.
- Up-liftment of the urban fabric within Saulspoort.
- Economic investment.
- Increased understanding between the MINE and the community.

Sub- problem 4:
How does one integrate the MINE into the community?
Through the integration of various operational back- up services that can be relocated into the surrounding community.

Opportunities:
- The introduction of new infrastructure into the community
- Upgrade of the various supporting infrastructure like electricity, sewerage, roads, communal spaces
- Opportunity for appropriation with the MINE closure

Sub-problem 5:
What elements of the MINE would facilitate integration into the community?
- Administration infrastructure and services
- Workshops
- Medical facilities
- Housing
- Commercial facilities
- Storage depots
- Training centres
- Transport interchanges
- Recreational facilities

Sub-problem 6:
How does one translate the community values culture and social dynamics into a feasible proposal that integrates the MINE and or its related activities?

Opportunities:
- The introduction of socio-cultural values and principles into the building language.
- The creation of an "integrated" building system. This would combine both traditionally indigenous materials and principles with modernity.
- The establishment of a stage, a sense of place that allows for appropriation and integration into the community, following the mine closure.

THE HYPOTHESIS
An attempt at the translation of the socio-cultural dynamics, of the Tswana culture and traditions into the present context of Saulspoot. Rituals that remind and allow their memory to translate itself into an activity that becomes relevant in the present context and function. Through this, allowing for the various layers that over time made what the community of Saulspoort what it is; a platform on which derived activities are played out relived appropriated acknowledged. A reflection of the various tensions, represented within these layers.

THE DELIMITATIONS
The study does not cover the effects of the actual MINE infrastructure on the environment rather focuses on the social cultural and economic implications on the communities that surround it, in this instance that community being the town of Saulspoort.

The study does deal with the nature of the actual mining process.

The study does not cover the possible urban growth around the actual MINE.

ASSUMPTIONS
There is a strong Tshwana culture predominant in the community of Saulspoort.

The inclination of mining groups to invest and develop the communities directly affected by the MINE

There is a "minor" relationship between the MINE and the communities that surround it.

The MINE will continue with the practice of implementing this paradigm shift and further investigations will be done in the areas not thoroughly addressed by this study.

3 precedent studies

Gasworks Park, Seattle

POST CLOSURE CONCEPT

Riverfronts once devoted to trade and industry-these so-called brownfields are among the badly treated sites that have become our new parks. Their former uses exhausted, architects, landscape architects, and urban planners are asked to envisage their postindustrial transformation into places for leisure activities and redevelopment. The Kruidfontein Project is no different from this apart from the fact that it is a pre-planning and design exercise and not dressing on the wound afterwards. Traditionally, industry and urban infrastructures pose a danger to our concept of landscape, at least one based on a countrified ideal. While those pastoral ideals mirror the values and landscape of a pre-industrial, largely agrarian world, today the designer's task is to transform what we might think of as ruined sites into places that challenge not only our presumption of what makes a park but also what makes a landscape beautiful. This change in attitude was prefigured in the artwork and writings of American artist Robert Smithson. Smithson's work was prophetic and influenced the way some designers, Peter Latz and George Hargreaves among them, look at the relationship between the industrial landscape and nature, between the ugly and beautiful.[2]

The adaptation of industrial ruins in a contemporary park has an important precedent in Richard Haag Associates' Gas Works Park in Seattle (1971-75).

The gas plant on Lake Union had shut down in 1956. The industrial structures was scheduled to be removed where seen by Richard Haag, as works of abstract art, who then and decided to keep them.[3] The designer met with community conflict in the process. Haag described his personal evolution of seeing the industrial past in a new light "I began with the site. I haunted the buildings and let the spirit of the place enjoin mine. I began seeing what I liked and then 1 liked what I saw-new eyes for old. Permanent oil slicks became plains with outcroppings of concrete, industrial middens were drumlins, the towers were ferro-forests and their brooding presence became the most sacred of symbols. 1 accepted these gifts, and decided to absolve the community's vindictive feeling towards the gas plant. This vanishing species of the industrial revolution was saved from extinction through adaptive use."[4]

When Peter Latz designed Duisburg-Nord Landscape Park on the grounds of the former Thyssen Steelworks in western Germany, one of the most important new parks of the last decade, like Haag he believed the opposition of the natural and the industrial was not a sensible model. The site's industrial ruins-including towering smokestacks, cavernous ore bunkers, and bermed railroad tracks-constituted not only an imperative part of the region's history but were in themselves extraordinary structures.

Latz resisted the desire to abolish the industrial traces, believing that if the realms of nature and industry were combined the experience would be richer. His proposal raised the fury of many landscape architects who supposed that parks should conform to more conventional designs and conservationists who had other thoughts about remediating a toxic area. The ground had varying levels of toxicity and pH levels suited to different kinds of vegetation. Some areas were capped, hopelessly polluted soil was removed, and the remaining areas, if left alone, will be naturally remediated over time by pioneer species such as birch and poplar. Latz understood that a designer cannot manage such a huge and intricate site, and that natural processes will to some extent resolve the character of the varying landscape.[5]

the sheer size of the park led Latz to organize the land in terms of zones based on activities, systems of plants and water, even layers of paths, such as the elevated catwalks, belvederes, and the land art-like berms of the former railroad tracks that fan out across the site. The industrial skeletons have surpassed their original rational function. [6] Structures evoke associations, emotions, and an aura of secrecy that inspired Latz to create narratives and stories that alluded to a mythic past. His admiration of the industrial infrastructure also evokes the cult of ruins that was so fashionable in the great landscape parks of the eighteenth century, such as at Fountains Abbey, designed by William Aislabie. At Duisburg-Nord, Latz has reintroduced metaphor and a sense of the sublime into contemporary landscape. We can identify these relics in awe-metaphorically as mountains, as Latz himself has suggested, or perhaps more ominously as reminders of the human and natural devastation wrought by the twentieth-century ferro-industrial complex so narrowly familiar with the Emscher region.[7] The traces of the past characterize not only the park and the region's culture, but also establish the park's future as much by the many recreational and cultural programs taking place at Duisburg-Nord as by the diverse native and exotic plants that are colonizing the site and launching a process of natural succession. There is a certain irony to be found in a site that once existed solely to function.

The Gasworks, is a typical scenario where we see a planned "closure concept" taking effect.

Lessons:

- A predetermined "post closure" plan, allowing for the appropriation of the mine
- The use of mining as a temporary land use
- The integrity of perceived MINE infrastructure, used in an aesthetically amiable manner.

[2] Reed, Groundswell 2005: pg 25
[3] IBID: pg 28
[4] IBID: pg 28
[5] IBID: pg 28
[6] IBID: pg 28
[7] IBID: pg 28

The Dogon, Mali

TRANSALATION OF RITUALS MYTHS TRADITION INTO ARCHITECTURE

Taken as a whole, the habitation of the Dogon is a balanced structure that makes constant reference to the mythic tradition, yet is nevertheless open to a great variety of solutions and interpretations.

Though having a segmented political sphere the Dogon consider themselves related through myths of origin that all the various groupings have in common. In understanding Dogon architecture there is definite distinction between the "theoretical" sphere of the ideal solutions that form part of the mythic ritual and the "practical" sphere, the actual building.[8]

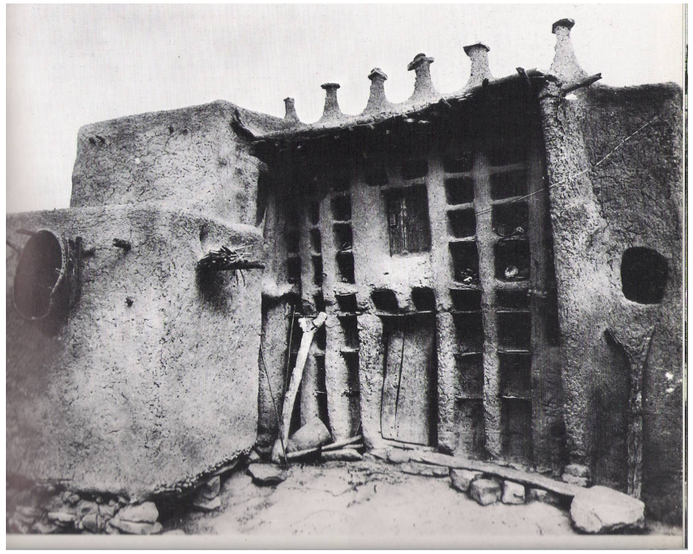


Fig 27: Dogon family house[9]

How do the Dogon translate their beliefs rituals and traditions into architecture? Taking the common family residence as a case in point, this comprises of an enclosure with stalls for animals, granaries and the dwelling itself. A door opening on the street leads into the vestibule (dolu) and a courtyard (gono); the latter is divided into an area for the animals and another for the granaries (guyo togu) and the dwelling. Access to the house is by an entrance (day) that leads into a central room (den bere) flanked by two side rooms and a circular kitchen (obolo) through which one goes up to a terrace on which open one to two store rooms. The entire construction is of banco (beaten clay shaped into the desired form) with wooden supports and beams to hold up the roof, and this is interpreted symbolically as an anthropomorphic figure:

1. The soil of the ground-floor is the symbol of the earth and of Lebe, restored to life in the earth.
2. the flat roof, square like that of the flying granary, represents heaven, and the ceiling which separates the upper storey from the ground-floor represents the space lying between earth and heaven
3. The four small rectangular around it indicate the four cardinal points, as does the hearth itself.

Inside the house, the several rooms represent caves of this world inhabited by men. The vestibule, which belongs to the master of the house, represents the male partner of the couple, the outside door being his sexual organ. The big central room is the domain and symbol of the woman. In the Dogon tradition and beliefs the female is considered to be the life giver and means through which life is carried on. The store-rooms to the side are her arms, and the communicating doors her sexual parts. The central room and store-rooms together represent the woman lying on her back with out-stretched arms, the door open ready for intercourse. The room at the back which contains the hearth and looks out onto the flat roof shows the breathing of the woman, who lies in the central room under the ceiling , which is the symbol of the man, its beams representing his skeleton; their breath finds its outlet through the opening above. The four upright poles are the couple's arms, those of the woman supporting the man who rests his own on the ground. The earth platform that serves as a bed lies north south and the couple sleep on it with their heads to the north, like the house itself, the front wall of which is its face.

This typology of building in an ordinary family dwelling in human form creates a harmony with the spaces created and adds a vitality that allows for the interpretation of the functions of these spaces translated from the human body.

By recognising in the house connotations of the human figure and those of a couple whose fertility the house is not only custodian of but also inducer, the Dogon through this simple case in point stress the importance of the value of the family unit within the social grouping[10]. In addition, this fundamental cultural belief then translated and becomes the built form.

Characteristic of the Dogon's translation and interpretation of the culture, rituals and traditions into the built environment the settlements on the overhanging cliffs of the Bandiagara range are a good reflection of this. The dwellings are built on the rocky slope between the great masses of fallen rock wall. Below this in the lower slopes are the fields; while higher up in the steepest places and under overhanging rocks where advantage can often be taken of the natural shelters are located the granaries, sanctuaries, mask storage places and burial grounds[11]. Creating a hierarchical layout where the actual village appears to be a healing over the fracture in the natural landscape where the looming cliffs hang over it and the fields below. In this way the built environment becomes a mediator between the divine higher presence and the human productive activity below.

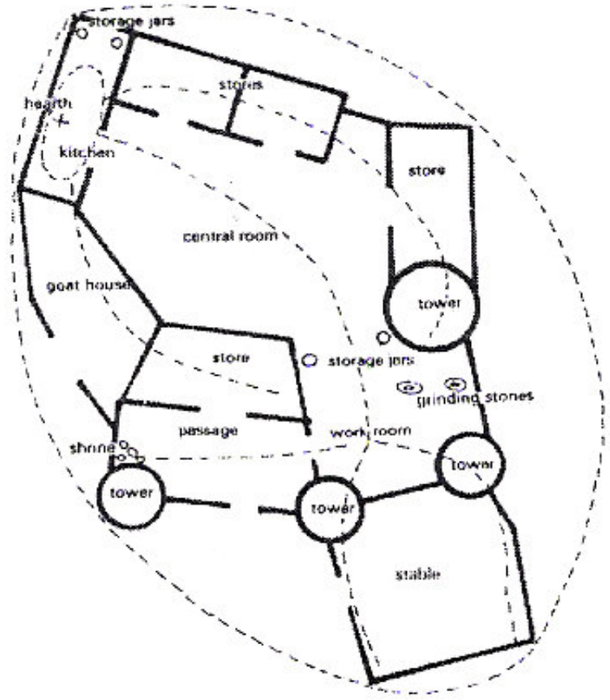


Fig 28: Dogon House plan showing the body representation[12]

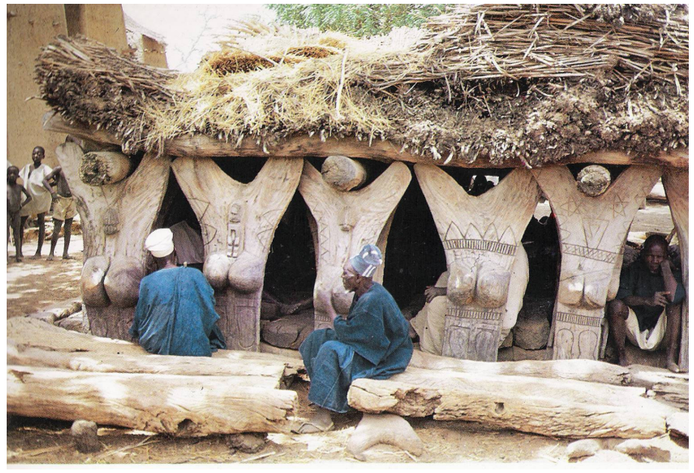


Fig 29: Dogon relief carving as building ornamentation[13]

[8] Guidoni, Primitive Architecture, 1975: pg 145
[9] IBID: pg 146
[10] IBID : pg 148
[11] IBID: pg 153
[12] Denyer, African Traditional Architecture, 1978: pg24
[13] Guidoni, Primitive Architecture, 1975: pg 154

Purple Daisy, Pretoria

ALTERNATIVE BUILDING METHODS

An eco-friendly complex in Lynwood-Ridge, the Purple Daisy combines rudimentary building techniques with modern materials to create a unique architectural typology.

It consists of:

- A nursery
- An art exhibition space
- The restaurant
- And several out buildings that houses plants
- A pottery studio
- Antiques shop.

The uniqueness of the Purple Daisy, also stems out of the fact that the designer and builder of this complex is in fact not an Architect. Which allows for an understanding into the rather robust details, the choice of materials that give this building its particular character.

Materials:

As a roof covering standard greenhouse polythene has been used. Suspended ob steel beams it allows for a natural pleasant ambience at all times. The idea of outside is perpetuated.

The diffused light not only becomes ideal for the various artworks on display but gives softness to a space that is bordered by harsh and/or industrial materials like corrugation, steel and gum-poles.

There is also an interesting combination of materials in this complex. The combination of materials, like wood, steel, glazing and corrugated iron sheeting: to create a building type and style that gives texture vibrancy and a sense of rudimentary while stile applying 21st century techniques.

Heating:

The use of under-floor heating a unique and innovative of method only adds to the unique quality of the Purple Daisy. The mechanical driven hot air that channelled through buried chimney flues allows for a warm cosy environment winter. The buried flue's also contribute to the character that allows the Purple daisy to stand out as a creative innovative building in Lynwood Ridge, Pretoria.

Lessons

- Combination of different materials to create a vibrant style and building type
- The abstraction of standard building elements such as doors and openings. Eliminating the idea of a door as a door but rather as a feature within its context that enhances and divides spaces
- Robust practical solutions to the South Africa climate
- The use of "rudimentary" building methods to celebrate structure
- Building technique: the simplicity and logic with which a building comes together
- An understanding of materials and structure

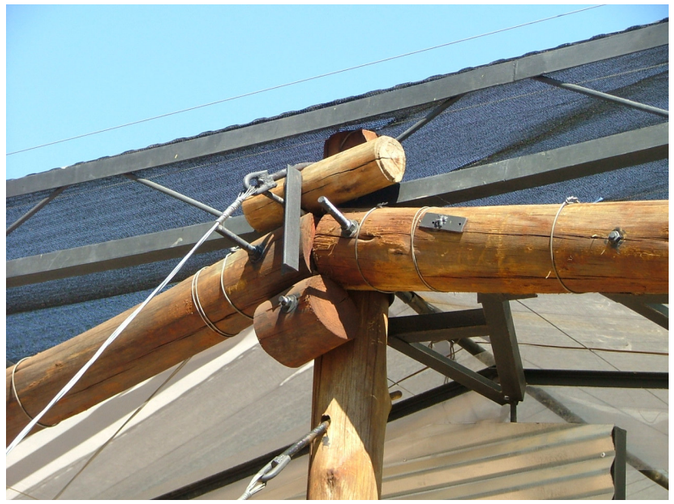


Fig 30: Purple Daisy images: Robust detailing (Tumubweinee, 2006)

Fig 31: Purple Daisy images: Green house polythene as roof covering, and the combination of various materials to create an interesting facade (Tumubweinee, 2006)

Fig 32: Purple Daisy images: ambient diffused light as a result of the roofing material. The allowance for large uninterrupted spaces, as the need for columns and supports is eliminated (Tumubweinee, 2006)

Fig 33: Purple Daisy images: combination of materials to create an interesting facade (Tumubweinee, 2006)

4 scenarios

The study will investigate the impact of mining operations, with emphasis on the urban, cultural, social and bio-physical environments. This will be done using a scenario-based design solution; addressing the different possibilities.

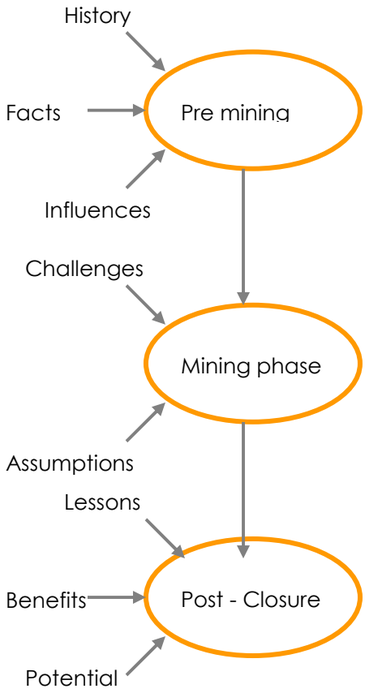


Fig 34: Scenario based approach[2] (Burger, Le Roux, Tumubweinee, 2006)

Industries like mining can cause havoc on an area. In terms of the people living around it, the issues investigated can broadly be divided into four categories of attention that will need to be focused on:

- Unwanted occupations; as a result of the influx of people into the area. Who would be looking for employment associated with mining activities, that would inevitably lead to sprawl and informal settlement that carries with it a vast number of social evils. For example HIV Aids, prostitution, the social breakdown of family units, poor services and overcrowding.
- Land use; the re-use of the land on which mining has happened is extremely limited, and in most cases does not allow for proper reclamation.
- Pollution; including noise, air, dust and visual pollution.
- Economic dependence of the community on the MINE. Meaning that with the inevitable closure of the MINE, the community is left desolate leading to the creation of ghost towns that were originally dynamic growing urban environments.

[2]Burger, LeRoux & Tumubweinee, 2006

With a scenario based approach: there is an attempt to allow for the thoughtful gathering together of what already exists revealing the nature of a place. Something that merely replaces the land with something that is as new and artificial as any building, but which continues the contours or appearance of the land[3]. Introducing a paradigm shift, in the thinking and approach in the mining industry.

This way of thinking has however been lacking as a result of the unilateral thinking that governs the mining industry. This project in essence aims to plan, from the beginning, a system, a scenario based system that allows for a continual cycle where there is no end and there was no beginning. Merely layers and processes making the proposed mine a temporary state of a particular layer. This concept perpetuates that building with the land in mind is not just the result of ecological concerns. But can be understood as drawing on an ancient tradition of hidden or secret architecture[4], an argument towards a more sustainable approach to the mining industry.

This thesis attempts to focus on the land, as that which constitutes the very essence of the social, cultural and economic aspect of the area. The source, from which life is born, nurtured and inevitably returns to. The transformation of the land into territory, and the meaning of such assigned space through the most elemental social relationships come from the continual contestation of such space[5], a representation in the built environment of the layering of spatial assignment to various social practices[6]. A perception of the same as an accumulation of millennia of appropriations and re-appropriations of land cultures traditions and or activities.

What we experience, in other words, is a collection of forms, facades and spaces that are translations of endless negotiations combinations expressed individually but with the same identity in the built environment.

An ideal carried through with a scenario based approach that not only allows for translation and mutation, but also allows for the various forces within each scenario a platform on which it can be played out. An amalgamation of sorts, bringing together the various tensions, differences. A harmonious intersection, within the melody. A combination of one world with another: modernity and the culture traditions that where.

[3] Betsky, Land scrappers, 2005:7
[4] IBID:10
[5] IBID:10
[6] IBID:11

Several parameters have been set in the identification of a scenario that will address the problems raised while also continuing in dialogue with other proposed and evolved scenarios. These are:

Access

All urban inhabitants should enjoy relatively easy and equitable access to urban opportunities[7]. In the scenario suggested the need for both visual and physical access is paramount in conceptualizing a space that is multi-lateral in its layout, function and perception. The spatial implication of the concern with ease of access is the primary physical barrier of cost to overcome the friction[8] created between the built and physical environment.

Promotion of collective activities and contact. The places of greatest interactions in cities and this case the town of Saulspoort, are the places of greatest opportunity[9]. In the case of Saulspoort bearing in mind the cultural dynamics prevalent in the area this would be the gathering spaces and the points of transport interchange.

Needs

These include physical needs: shelter food, social needs; opportunities for interaction, psychological needs; security identity. Sensory needs; visual accessibility textures a sense of place. By investigating a suitable design approach in the town of Saulspoort this thesis attempt to satisfy those needs. In addressing and allowing for qualities that provide a critical base from which urban policies, plans and physical actions can be evaluated[10].

Balance

Balance; balance between society and the cosmos concerning matters like traditions culture and the prevailing social dynamics. The design of an expression of wholeness; recognition, celebration of the natural, cultural and historical uniqueness of different places and times.

The second is the balance between society and nature. Allowing people to be part of the totality of the place in which they live.

The third is the concept of balance in the relationship between people as expressed through urban activities. By the creation of spaces that serve as a platform on which activity can occur[11].

Arguably the urban environment is made up of created activity and not just a platform. Where the activity is part of the design before the spaces created are planned around their planned

[7] Dewar, South African Cities: A Manifesto for Change, 1991: pg 16
[8] IBID: pg 16
[9] IBID: pg 17
[10] IBID: pg 18
[11] IBID: pg 16

activities. A place therefore designed around the activity is much more than just a place that is designed waiting for spontaneous commotion[12].

Intensity, diversity and necessary complexity
A variety of overlapping conditions and activities provides for the spontaneous and unexpected to occur. Here again suggested with the multi-lateral use and function of the proposed spaces.

Integration

Communities can benefit from a greater range of opportunities and facilities than can be generated by their operating in isolation. Again as stated previously spaces and buildings should be multifunctional[13]

Community

In essence community relates to creating a sense of identity and belonging. This is largely dependant on interaction and communication and cannot be artificially forced. Identity is largely dependant on an assortment of complex forms of social organization and institutions operating over many different scales[14].

Idea context and program
Idea identifies spatial relationships, which contribute to the meeting of need: it has form but not yet design[15].

Context is the application of idea to place: it gives reality to the idea and is the design response to the particularities of place

The design process is not a linear process but a cyclical one: understandings gained in one stage feed back into and lead to adjustments in the others[16].

Program develops out of need. It establishes some of the constraints within which the idea must be developed and reflects an expression of the nature of environments within which urban life must be lived[17].

[12]Gooding, Song of the Earth, 2002: pg16-21
[13]Dewar, South African Cities: A Manifesto for Change, 1991: pg 20
[14]IBID: pg 21
[15]IBID: pg 14
[16]IBID: pg 14
[17]IBID: pg 15

SCENARIO 1

Linear development; in this scenario the option whereby urban settlement, and development happens along the road that connects the proposed Kriundfontein Mine Project to the town of Saulspoort is investigated. The introduction of various interventions along this route is the focus of the study, allowing and planning for a linear development. This would deal with the possible settlement from the influx of peoples into the area with the MINE set up, tapping into this human resource to create an urban environment that allows for a platform for growth and development within a proposed framework.

Why?

- The proximity of the intervention from the mining operations, allowing this to draw from the energies that are associated with the MINE.
- There is an element of privacy, retained by the MINE from the proposed development area.
- The linear development allows for the implementation of retail and social facilities for the community
- Within this scenario, lies the possibility for new housing initiatives along the main road connecting the town to the MINE.
- There is an allowance for the preservation of the current socio-cultural dynamics within the town of Saulspoort.
- The Client brief to provide for an intervention that is not directly connected to the MINE is met.
- There is an opportunity for some of the moveable elements of the MINE to be integrated into the proposed linear development along the road.
- The proposed intervention is within a 10km radius that eases the transport issue for the workers to and from the MINE.
- The proposed linear development is also within close proximity of the neighboring settlements, and can act as a catalyst that starts to link these settlements together to create a more coherent urban fabric.
- This proposed intervention could play an important role in the development of an entrance gate for the proposed Heritage Park

Why not?

- The issue of the visual impact as a result of the MINE is not addressed within this scenario.
- The opportunity to upgrade town facilities will be lost
- Uncontrolled this intervention could lead to unwanted urban sprawl, and/or uncontrolled development
- The MINE would have to put up additional services and infrastructure. This would have huge financial implications, which are not in line with the agenda of the MINE.
- An opportunity to utilize and upgrade the existing infrastructure within Saulspoort would be lost with this proposed intervention.

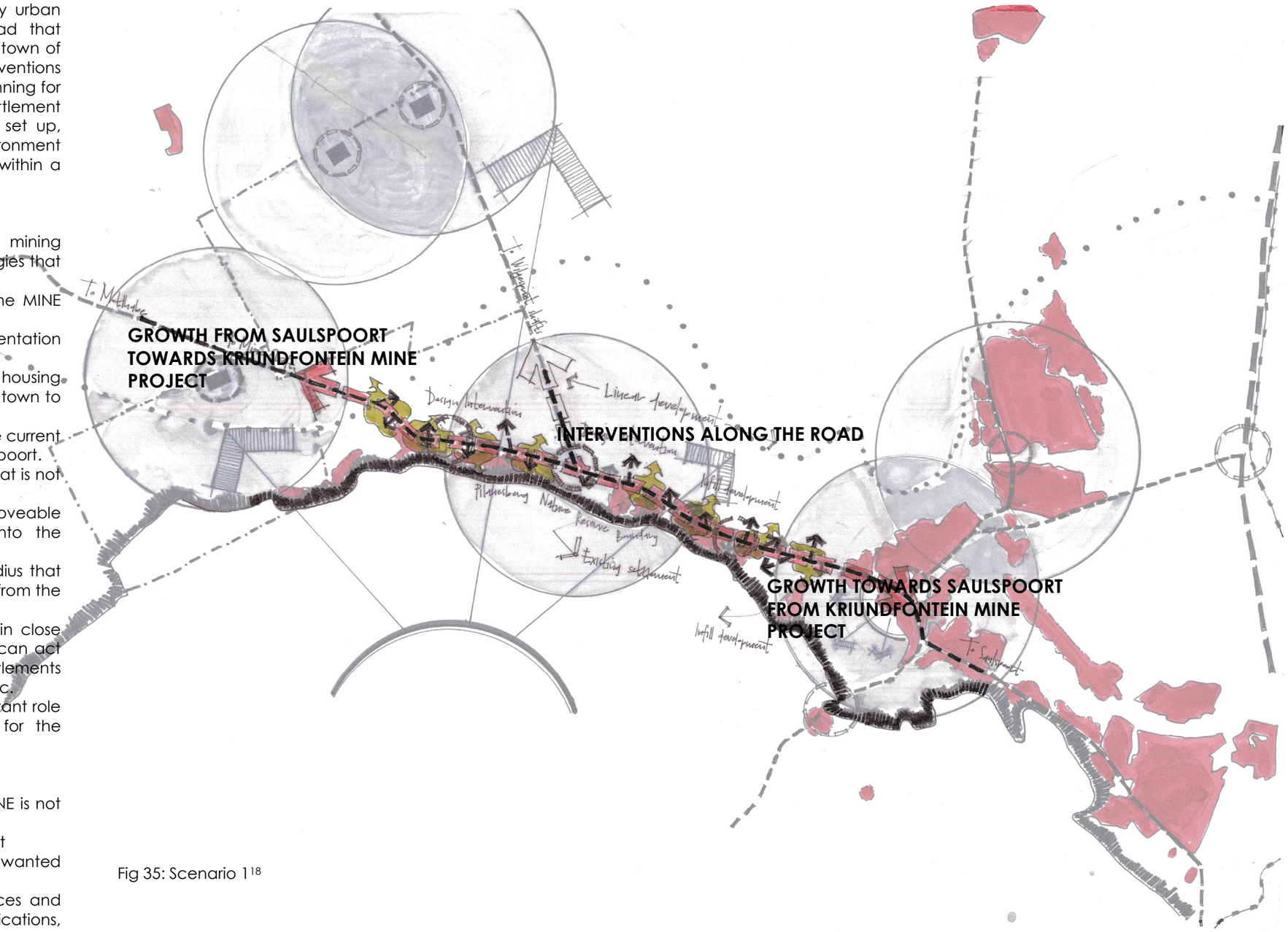


Fig 35: Scenario 1[18]

[18] Burger, LeRoux & Tumubweinee, 2006

SCENARIO 2

Development around the proposed Kruindfontein Mining Project; this scenario addresses the development in and around the MINE location. This implies that the MINE acts as a catalyst for development. Within this scenario the possibility of the MINE as a nucleus that holds the proposed urban development is investigated. With emphasis on a more systemic design for both the MINE and its operation in relation to the built and urban environment created around it.

Why?

- Walking distance from any point of the intervention to the MINE location.
- The possibility of a creative transport alternative e.g. a tram railway route is allowed for.
- This scenario allows for the creation of a "mining town" that would be able to fed off the infrastructure set up for the function of the MINE.
- There is an element of privacy retained by the MINE as the proposed development would not be within the MINE but around it.
- Typically informal settlements do tend to occur around the MINE site, this scenario allows for more formalized approach to this. This in turn would allow for the addressing of the socio-cultural issues associated with these informal settlements.
- With the introduction of a secondary industry post-closure; this proposed point of intervention allows an established urban fabric that would be able to support and endow much needed skills and being into this.
- The emphasis of the design on the area directly surrounding the MINE site, allows for a solidification of the intervention on the landscape. In turn reducing the visual impact that would have been caused as a result of the mining process.

Why not?

- The proposed Kruindfontein Mining Project lies at the foot of the Pilaneserg National Park. This approach to problem solving would further escalate the visual, noise and dust pollution, directly affecting the Pilanesburg National Park and the proposed heritage corridor in this area. Having a negative effect on what is fast growing tourism industry in the area.
- An opportunity to utilize and upgrade the existing infrastructure within Saulspoort would be lost with this proposed intervention.
- The cultural values and sacraments within Saulspoort would be watered down and possibly even lost. As a result of the creation of a parallel culture around the MINE site.
- An increment in the distance from mining infrastructure in relation to the town. The separation of the two would further be increased denying an opportunity for the integration of both the MINE and the community in Saulspoort.
- With an intervention around the MINE, there would a drawing of the urban energies out of the town of Saulspoort. Leading to a decline in the already fragile urban coherence within Saulspoort.
- The proposed intervention is not within walking distance of the existing social and retail services. Denying the existing small industries a chance to draw on the spin offs that are related to a MINE set up.
- The scenario lends itself to possible urban sprawl and over development and around the MINE site.
- There is a level to which you can densify, to before the urban fabric becomes a barrier to animal and plant species. This intervention makes no allowance for this. Implying a possible loss of the natural landscape to urban and built environments.

Fig 36: Scenario 2[19]

[19]Burger, LeRoux & Tumubweinee, 2006

SCENARIO 3

This scenario investigates the introduction of catalytic interventions, at all the major intersections between the proposed Kruindfontein Mining Project site and the town of Saulspoort.

Why?

- There is an element of privacy retained by the MINE as the proposed development would not be within the MINE but around it.
- With the introduction of a secondary industry post-closure; this proposed point of intervention allows an established urban fabric that would be able to support and endow much needed skills and being into this.
- This proposed intervention could play an important role in the development of an entrance gate for the proposed Heritage Park
- There is an allowance for the preservation of the current socio-cultural dynamics within the town of Saulspoort.
- The Client brief to provide for an intervention that is not directly connected to the MINE is met.
- The possibility to introduce mine infrastructure into the intervention
- Within this scenario, lies the possibility for new housing initiatives along the main road connecting the town to the MINE.
- Adjacent farms also demarcated for mining, will be able to reuse some of the mining infrastructure introduced in the intervention
- This scenario provides an opportunity for the integration of the moveable elements of the MINE into the community.
- This scenario makes use of the existing link between the Bakgatla Gate Resort to the proposed Kruindfontein Mining Project. Allowing for further growth in the tourism industry, while allowing for some sort of connection between the community and the MINE.

Why not?

- An opportunity to utilize and upgrade the existing infrastructure within Saulspoort would be lost with this proposed intervention.
- The scenario lends itself to possible urban sprawl and over development and around the MINE site.
- An increment in the distance from mining infrastructure in relation to the town. The separation of the two would further be increased denying an opportunity for the integration of both the MINE and the community in Saulspoort.
- The cultural values and sacraments within Saulspoort would be watered down and possibly even lost. As a result of the creation of a parallel culture around the MINE site.
- The MINE would have to put up additional services and infrastructure. This would have huge financial implications, which are not in line with the agenda of the MINE.
- This intervention makes no allowance for over-development in the built environment. Implying a possible loss of the natural landscape to urban and built environments.

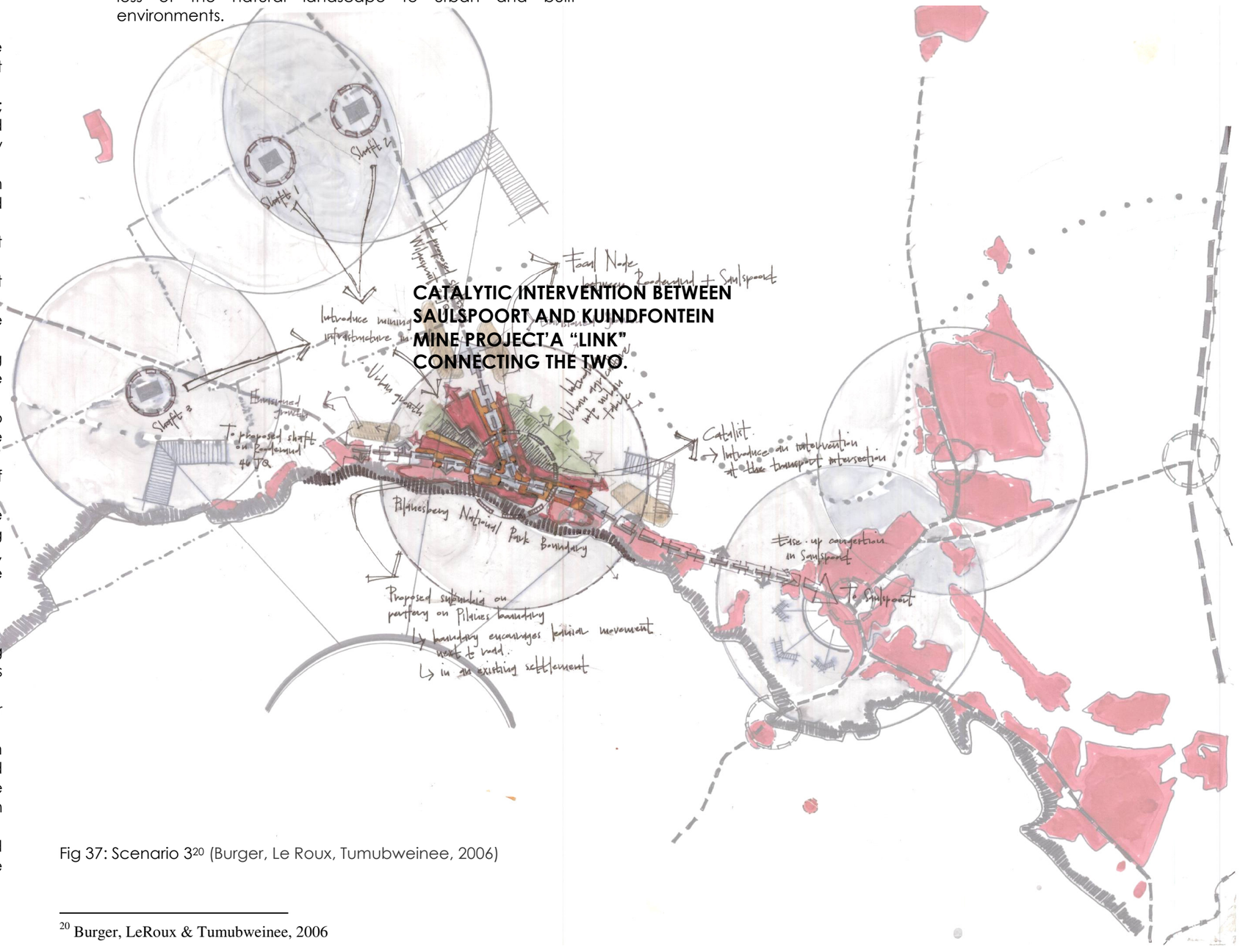


Fig 37: Scenario 3[20] (Burger, Le Roux, Tumubweinee, 2006)

[20] Burger, LeRoux & Tumubweinee, 2006

SCENARIO 4

In this scenario an intervention is proposed in the town of Saulspoort.
Why?

- In proposing an intervention in the town of Saulspoort, this scenario reduces on the noise, visual and dust pollution. This would be as a result of densification of Saulspoort and the condensation of the MINE; as its moveable elements could then b located in an already existing urban fabric.
- Saulspoort being the closest town to the proposed MINE site would be the most affected. This scenario allows for the opportunity where the MINE can start a community partnership and being to erase the stigma's that dog the mining industry.
- The opportunity to anticipate and design for the rapid urban sprawl that will result from the Mine implementation
- Saulspoort has as its interface with the Pilanesberg National Park the Bakgatla Gate Resort. This fact coupled with an investment of the MINE into the community would increase the traffic both vehicular and human within the town. Allowing for a platform on which various other activities be they social, cultural and/or economic a chance to grow and play themselves out. A key issue in the attempt to create a paradigm shift in the effects and approach to mining in rural communities.
- An opportunity to utilize and upgrade the existing infrastructure within Saulspoort is created with this scenario. This would allow for an economic investment into the community.
- This proposed intervention could play an important role in the development of an entrance gate for the proposed Heritage Park
- This scenario provides an opportunity for the integration of the moveable elements of the MINE into the community.
- By proposing for an intervention in Saulspoort, the issue of appropriation post-closure is addressed. As a result of proximity of the intervention to the community.

Why not?

- The cultural values and sacraments within Saulspoort would be watered down and possibly even lost. As a result of the creation of a parallel culture around the MINE site.
- An increment in the distance from mining infrastructure in relation to the town. The separation of the two would further be increased denying an opportunity for the integration of both the MINE and the community in Saulspoort.
- The built environment proposed as a result of this scenario may not be atrue reflection of the context of the town.
- Only a limited number of mining and/or activities that one can integrate into an existing urban fabric.
- The scenario opens the privacy of the MINE up to exposure and abuse.
- Less attention to the closure plan will be given since the Plant will not be used for other purposes after operation ceases.

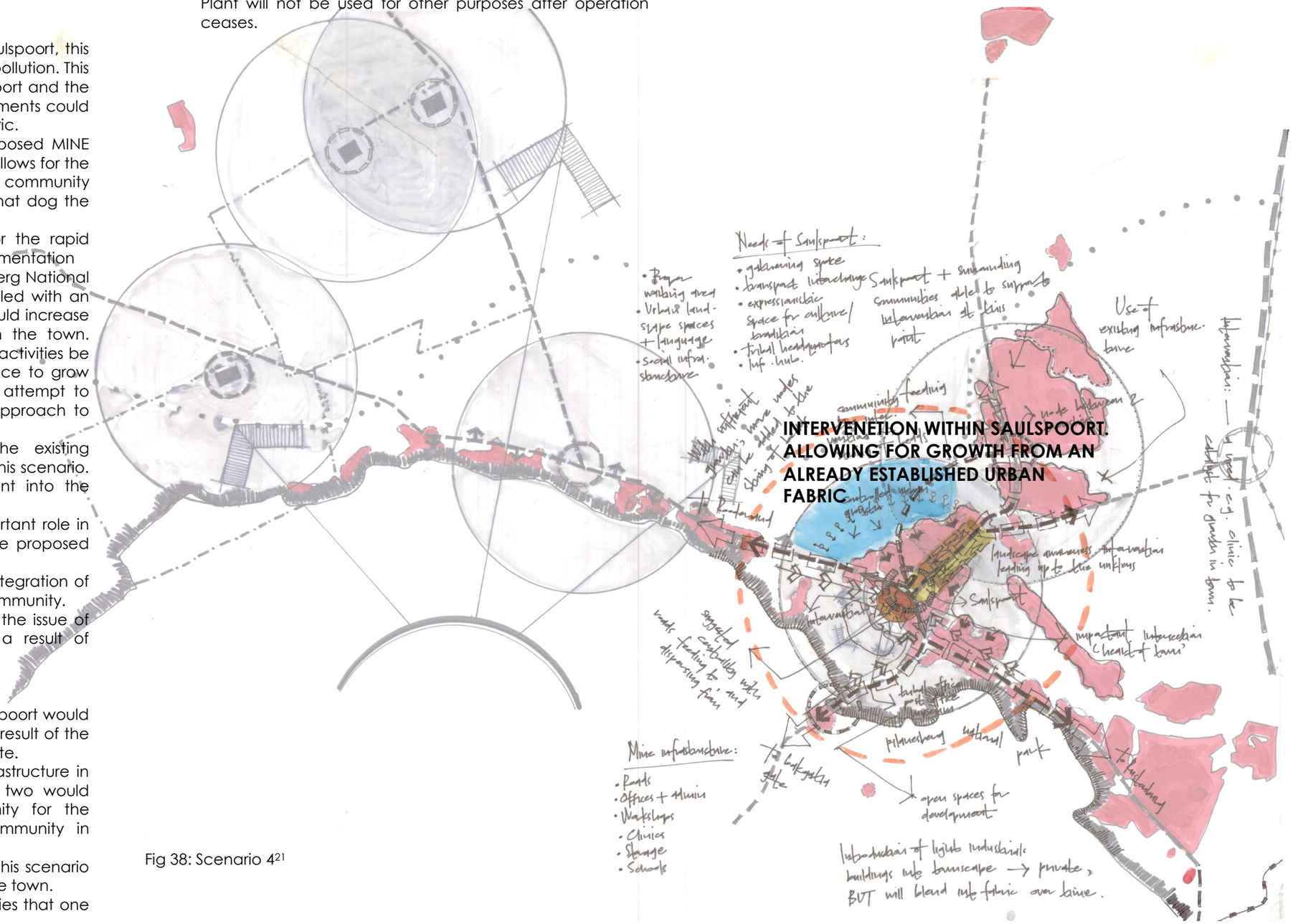


Fig 38: Scenario 4[21]

[21]Burger, LeRoux & Tumubweinee, 2006

Scenario 4A

Identified at the main cross roads, the location in relation to the rest of the town lends this scenario to a more commercial based intervention.

Opportunities:

- The site is at a cross road that allows for easy access onto and off it. It is also located next to the taxi rank in Saulspoort allowing it to draw from the energies associated with transport interchanges.
- There is a sense of visual security from the site into the town centre and towards the MINE
- An intervention further out of the town centre allows for a balance between the old and the new.
- The introduction of a more commercial industrial hub would diversify the activities within the town of Saulspoort, creating more economic opportunities and allow for growth.
- The site is adjacent to a residential area, allowing for an incorporation of the same into it. Creating the opportunity for a multi-lateral multi-functional space and intervention.
- This intervention allows for the possible expansion and upgrade of the existing commerce happening on it.
- This scenario would function as the gateway to and from the MINE. A point at which the town and the MINE are integrated and/ or linked together. A connection point from which they both draw reference.

Scenario 4B

Situated at the heart of Saulspoort, this scenario covers the site on which the Mphebatho Place-Dome Museum, the Tribal and Municipal Offices, the Dental Surgery, a primary school, the NG Kerk Church and the Post Box sit.

Opportunities:

- There is a sense of visual security from the site into and from the town centre.
- An intervention in the centre of Sauspoort allows for maximum exposure of the MINE to the community.
- The integration of some of the MINE elements into the heart of Saulspoort allows for the MINE to align itself to the administrative and cultural authorities. Allowing for a more favorable response from the community.
- This intervention allows for the possible expansion and upgrade of the existing infrastructure happening on it.
- The issue of later appropriation by the community is resolved, as the set up infrastructure would be integrated into the Saulspoort urban fabric.
- The intervention would be able to draw on the already existing energies of gathering and movement (as a result of the location of the Tribal Offices) associated with the site.
- The Museum as a link to the Arts & Crafts in the area would serve to bring into this intervention a multi-lateral component that would allow for the diversity in functionality of this development.
- The proposed site is adjacent to the main road in Sauslpoort, allowing for easy access onto and off the site.

Scenario 4C

The area covered by this intervention incorporates the cross roads that form the gateway into Saulspoort from Johannesburg and Pretoria. Also included is the site on which the Tribal and Municipal offices sit.

Opportunities:

- There is a sense of visual security from the site into and from the town centre.
- An intervention in the town of Sauspoort allows for maximum exposure of the MINE to the community.
- The integration of some of the MINE elements into the heart of Saulspoort allows for the MINE to align itself to the administrative and cultural authorities. Allowing for a more favorable response from the community.
- This intervention allows for the possible expansion and upgrade of the existing infrastructure happening on it.
- The issue of later appropriation by the community is resolved, as the set up infrastructure would be integrated into the Saulspoort urban fabric.
- The intervention would be able to draw on the already existing energies of gathering and movement (as a result of the location of the Tribal Offices) associated with the site.
- The proposed site has two major routes crossing through it, allowing for easy access onto and off the site.
- The site is adjacent to a residential area, allowing for an incorporation of the same into it. Creating the opportunity for a multi-lateral multi-functional space and intervention.
- The available land for development.

Scenario 4D

This scenario is located at the George Stegman Hospital, and a secondary school. Situitaed further out of saulspoort, the site is located enroute to the Bakgathla Gate Resort.

Opportunities:

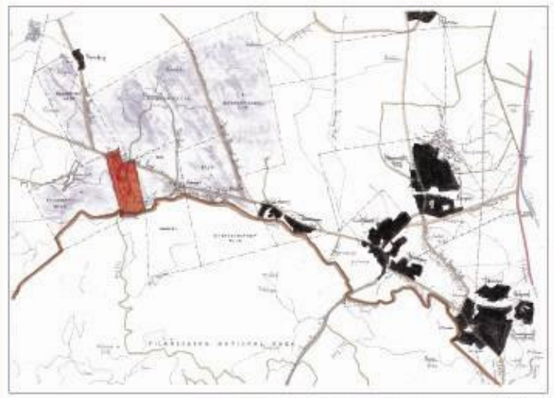
- An intervention further out of the town centre allows for a balance between the old and the new, while allowing for the privacy required by the MINE.
- This intervention allows for the possible expansion and upgrade of the existing infrastructure happening on it. Namely the George Stegman Hospital.
- The intervention would be able to draw on the already existing energies of gathering and movement (as a result of the location of the George Stegman Hospital) associated with the site.
- The proposed site has a major route crossing through it, allowing for easy access onto and off the site.
- The site is adjacent to a residential area, allowing for an incorporation of the same into it. Creating the opportunity for a multi-lateral multi-functional space and intervention.
- The site is on route to the Bakgathla Gate Resort. Giving the intervention a chance to tap into the Tourism element of Saulspoort. This would also allow for the diversification in the functions that could be accommodated within this development.
- Development as centre of learning, and training.

Scenario 4E

Located furthest from the centre of Saulspoort, this scenario includes a Mechanic workshop, Local Government offices and is adjacent to two schools.

Opportunities:

- An intervention further out of the town centre allows for a balance between the old and the new, while allowing for the privacy required by the MINE.
- This intervention allows for the possible expansion and upgrade of the existing infrastructure happening on it. Namely the schools adjacent to it.
- The proposed site has a major route crossing through it, allowing for easy access onto and off the site.
- The site is adjacent to a residential area, allowing for an incorporation of the same into it. Creating the opportunity for a multi-lateral multi-functional space and intervention.
- Located in an under-developed part of Saulspoort, this intervention allows for a bigger development opportunity.
- The Town Tavern directly opposite this site brings a social aspect into the scenario. Creating the opportunity for a multi-functional space and development.
- With vehicular and pedestrian routes crossing this site, the MINE's exposure to the community is further enhanced.
- Its location lends itself to being a link between Saulspoort and the surrounding communities.
- The adjacent football field allows for a recreational aspect in the developme



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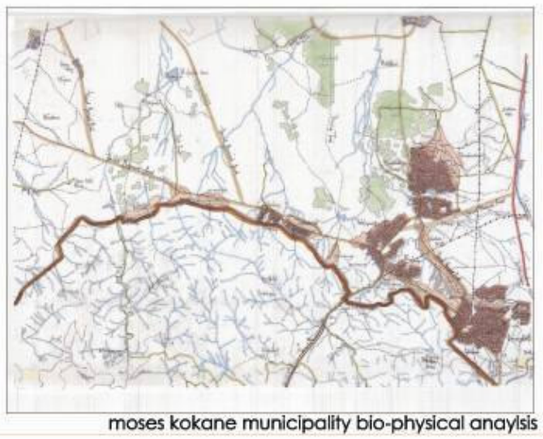

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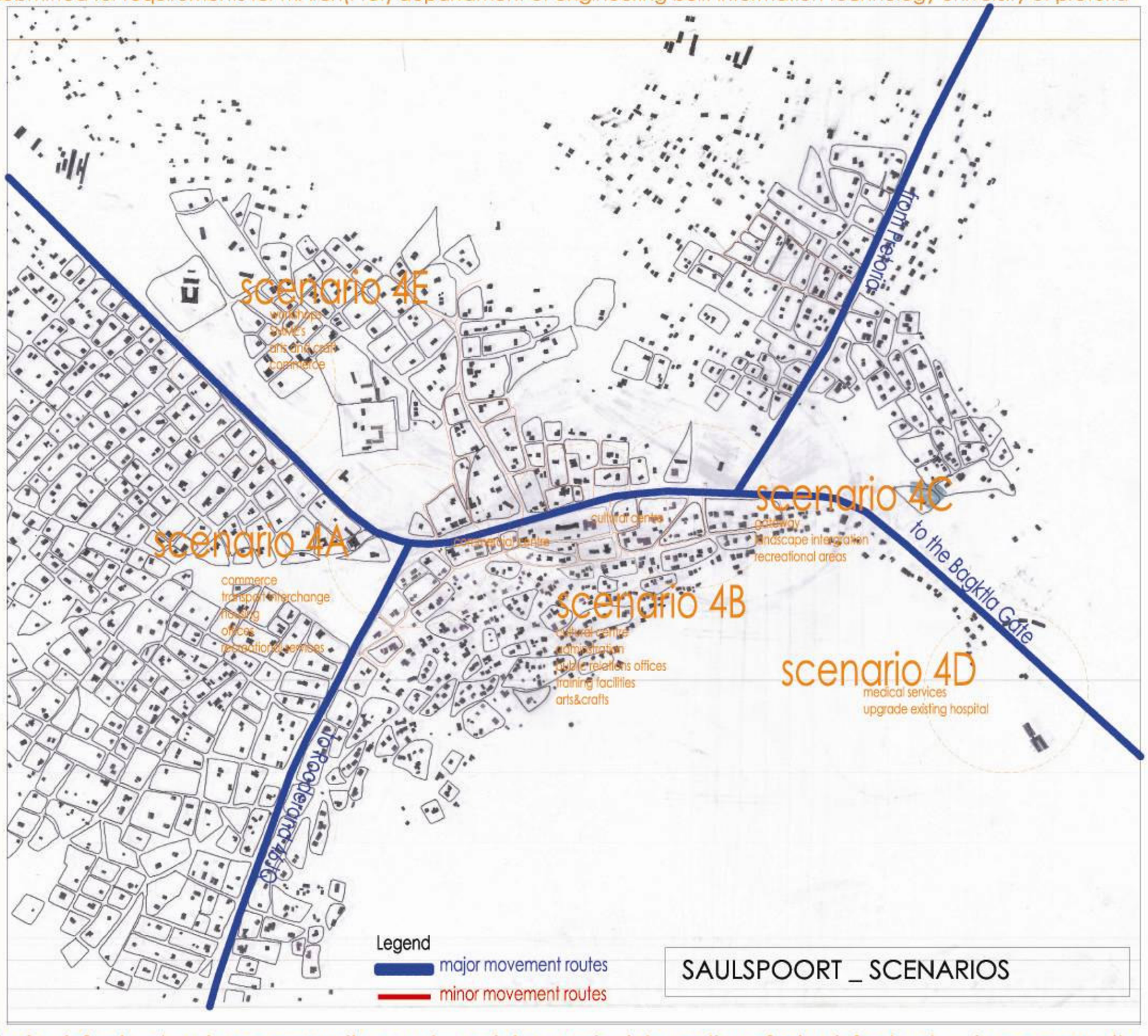
aerial view_SAULSPOORT TOWN



5 design development

DESIGN PHILIOSPOHY

Counter-point, the integration: of the MINE related activities into the community of Saulspoort through the translation of the socio-cultural dynamics.

COUNTERPOINT: (*from Lat. contrapunctus, from contrapunctum 'against note'; Fr. Contrepoint; Ger. Kontra-punket; It. contrapunto*)

A term first used in the 14th century, to describe the combination of simultaneously, different sounding musical lines according to a system of rules.[2] The difference in quality between the two groups particularly shown in their directions referring to important sections in its composition or to the parallelism:

A composition that though made up of two different and opposing pieces of melody, the horizontal bar: creates a harmony, the vertical point at which two notes are played at the same time. The harmony in this instance being the factor that then brings the piece or rather composition together.

In the same way this thesis attempts to create a point of joining, a harmony between the two contradictory melodies played out by the MINE on the hand and the community of Saulspoort on the other.

A point at which though recognizing the vast and parallel differences exhibited by both, a point of harmony a place where the two meet in a reconciliatory cohesive and sustainable manner. This thesis attempts through the process of integration of MINE into an already existing community, the community of Saulspoort to allow for the two forces and influences a platform on which the various activities can then be played out. The creation of a point of harmony that is then identifiable by both the MINE and the community of Saulspoort.

Tradition: tradition though a seemingly rigid age-old custom is actually a dynamic process by which knowledge and values passed on from generation to generation[3]. Tradition, like history, rituals and culture, is something that is continually being recreated and remodeled in the present. Although represented as fixed and unchanging, a case in point is the spatial organization of the Tswana settlements (which is traditional) not geometrically organized according to physical elements. For instance, the forms are rather derived from the conceptual model of the social structure of the society.

Rituals and tradition govern the movement and interaction of people with each other. The spaces that they interacted within and the interaction of the various spaces with each therefore playing a significant role in not just the socio-cultural dynamics of the area but also in the built forms and the spaces that surround them.
An important ritual in Tswana culture is gathering and this offers itself up for analysis. The Tswana gathered for various reasons both political and social. Traditional Tswana settlements were set out and built up following the various gathering activities. These gathering spaces served as thresholds from one function to another.

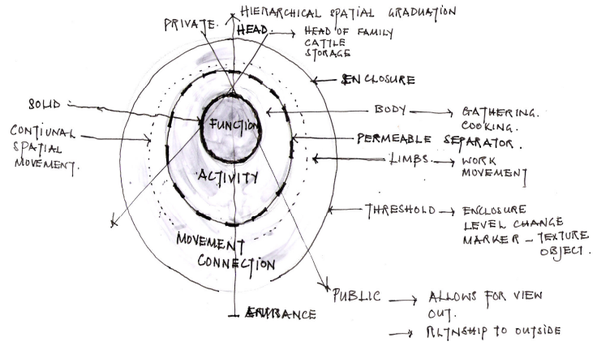


Fig 39: Traditional Tswana spatial hierarchy[4]

The culture of gathering translated into the built environment by the use of transitional spaces. Emphasizing the function of meeting outside, though a result of the physical environment adapted into their culture.

In this instance the use of void as the creator of the building rather than the other way around has been translated to emphasize the importance of the outside rather than the inside.

For example in the layout of a lolwapa that is probably the most intimate spatial layout in this culture. Within the lolwapa exist varying degrees of privacy can be pointed out in the various gathering spaces. After greeting, one can then venture further into the lolwapa, the threshold into the hut or dwelling place. The first threshold crossed at the compound enclosure, a place usually signified by a tree or natural feature. The second is the lolwapa that gives access to the hut and the third the entrance into the hut. The lolwapa is built upon a step to differentiate it from the outer parts of the compound. The raising of this gives it importance in the entire compound. Where the family would gather for meals around a fire, gathering places were oral tradition myths and stories got told[5]

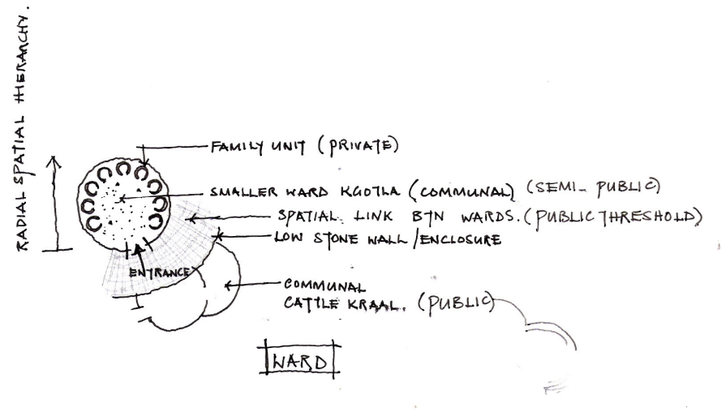


Fig 40 Spatial organization of the traditional people[6]

The lolwapa was an intimate part of the compound entered and used by only family and those close to it. To enter one's hut one-steps down. In itself a symbolic gesture, sensitizing the user to the fact that dwellings are built from the earth and are inherently a part of it and not dominating over it.
This introduction of tradition and rituals into the most mundane part(s) of the Tswana culture becomes the basis on which one can then remind and allow their memory to translate itself into an activity that becomes relevant in the present context and function.

Through this allowing for the various layers that over time made what the community of Saulspoort what it is. A platform on which derived activities played out relived appropriated acknowledged reflect the various tensions that these layers represent.

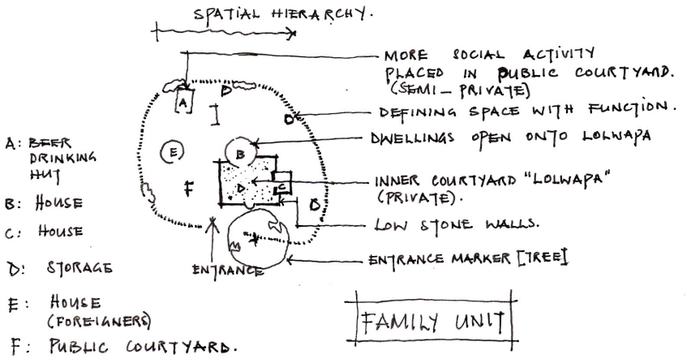


Fig 41 Spatial organization of the Lolwapa[7]

[2] The New Grove Dictionary of Music and Musicians, 2001:551
[3] Guidoni, Primitive Architecture, 1975:7
[4] Tumubweinee, 2006
[5] Tau, The Place of Culture in Architecture, 2001: pg 13
[6] Tumubweinee, 2006
[7] Pisttorious, Molokwane An Iron Age Bakwena Village, 1992: pg33

An architectural history that translated into local history represents a combination of local materials and building methods, cultures and settings, clients and builders to create a built environment that cannot be reduced to generalisations. Rather a translation of culture rituals and traditions into a built form, an environment that allows for these to be repeated relived and remembering through the various activities encouraged and or stimulated by the transition from one space into another.

An architecture whose function and significance in relation to the society furnishes its own interpretation, attitude, associations, and explanations of why it is and what was. A multi-lateral approach, to space making. As the function happens with void/space and not the building. This also allows for flexibility and change in the proposed design.
Allowing for stage on which the political, socio-cultural, economic and urban implications, give anchor to the stage on which multiple activities can play out. Gamut activities that transform space place and the interpretation within a particular society considered in relation to the traditions rituals that are characteristic of its context. This translation has been physically applied through the use of the following elements within the design:

- Thresholds
- Spatial graduation on the site
- Definition of change in spaces
- Level changes
- The hierarchy with which the buildings have been laid ou
- The combination of building materials and methods

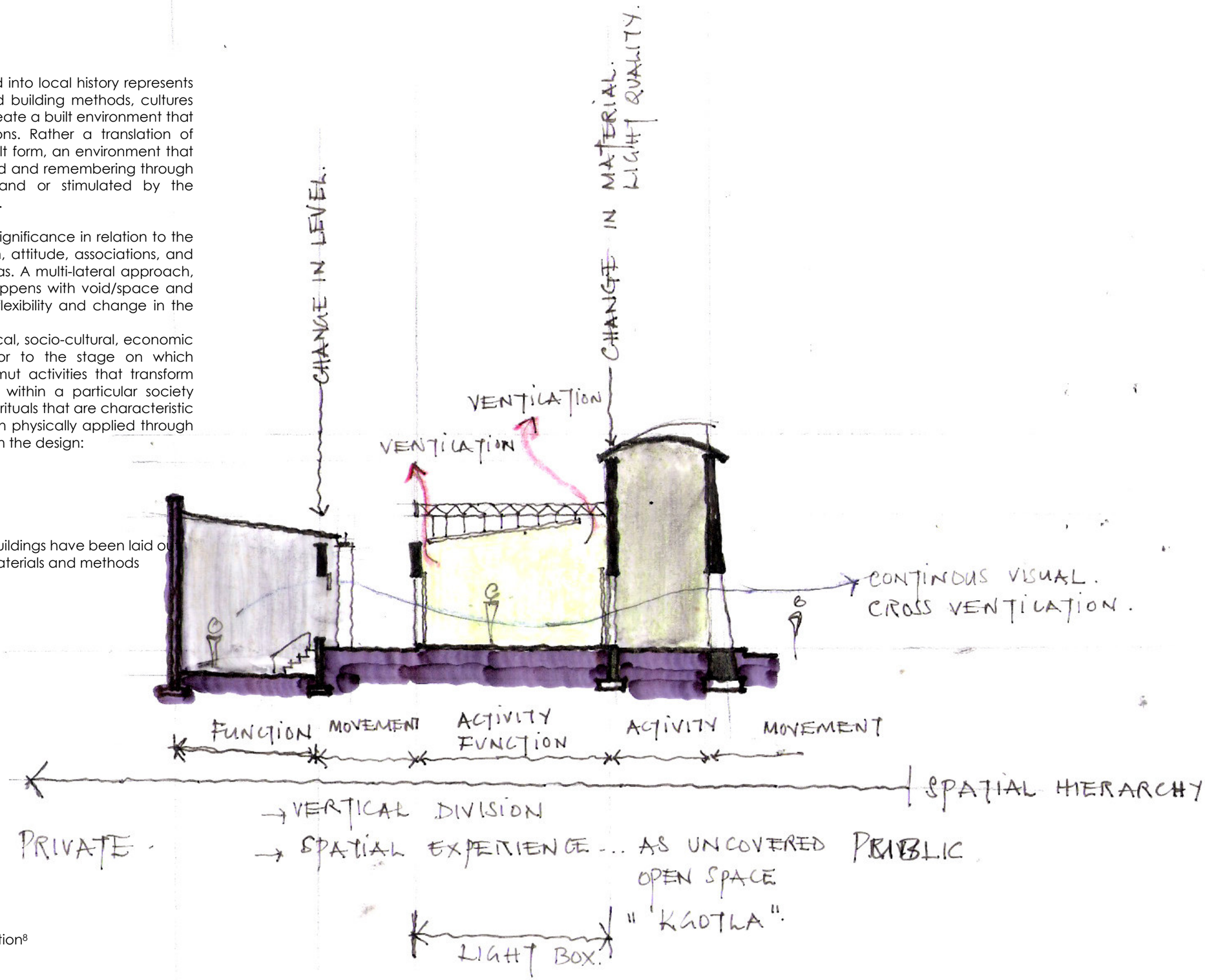


Fig 42 Sketch showing spatial organization[8]

[8] Tumubweinee, 2006

Thresholds:

Allowing for these to function as hierarchical points at which the functions of the various interlinking spaces are separated. In the use of light, height and depth of the space, a subtle division can be accommodated within design. Decentralization of space function and form: with decentralization it is implied that there should be a break down from large spaces to more intimate communities that can then start to function independently, with only the necessary relations to those around it. This would then encourage the use of smaller scale technology that would in turn have a less devastating and negative effect on the whole "mother nature".

The shift of traditional building values in architecture using modern materials a way in which the culture and heritage has been maintained. In decentralizing the spaces and allowing for a more flexible spatial graduation the idea of counter-point.

As indicated in Fig 41 and 42, this continual movement of space within a "modern" functional building such as an office reinforces the idea of integration and connection between the MINE and the community of Saulspoort. Allowing for later appropriation of the MINE by the community, into the community post closure.

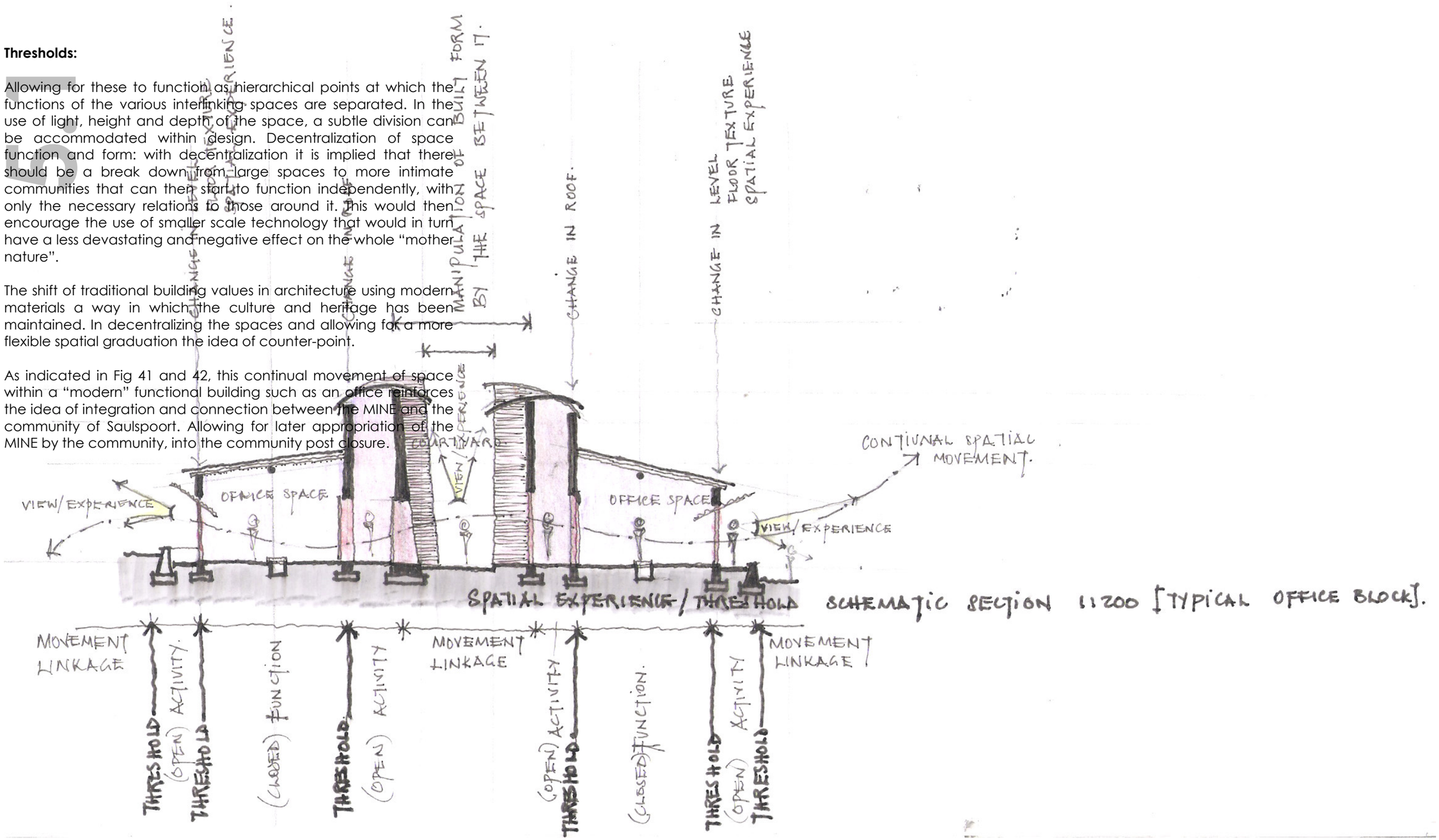


Fig 43 interpretation of thresholds into the proposed design[9]

[9] Tumubweinee, 2006

CONCEPTUAL SITE LAYOUT

The site layout has been based on traditional Tswana spatial principles. The spaces are arranged around a main kgotla or kraal.

The idea of transitional multilateral functioning spaces has been carried through by emphasizing the space as opposed to the built form. Taking the idea of gathering into consideration the site ahs been laid out such that the spaces encase the buildings allowing for a free flowing interlocking spaces that give importance to the various elements within them.

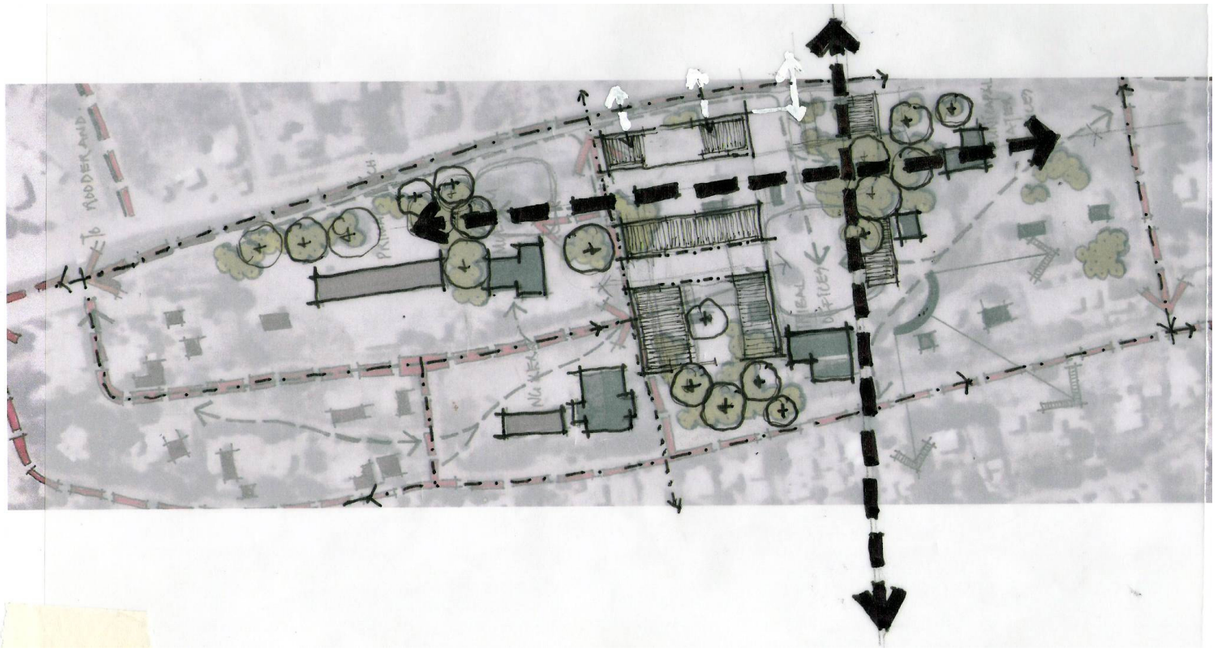
The existing Tribal offices are left within a cleared void. This void allows for the Tribal offices, and hence the culture predominant in Saulspoort to have a prominence on site. From the Tribal offices various visual and authority lines have been followed. These further emphasize the hierarchical spatial arrangement in Tswana traditional culture.

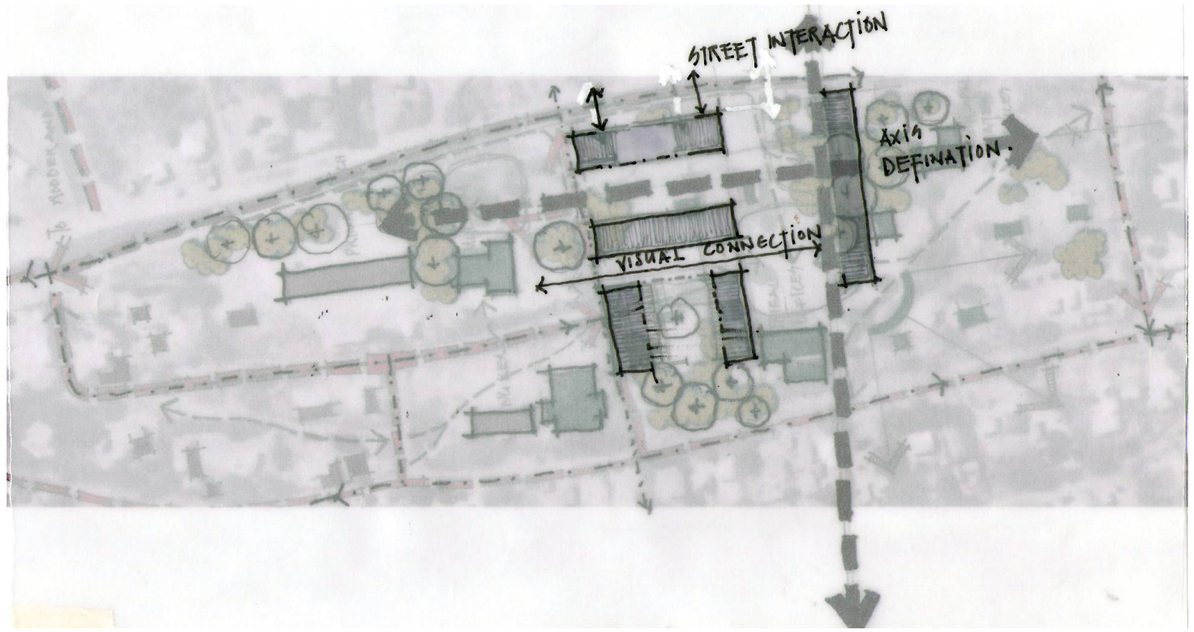
The buildings are encased within a void held together by the landscape. In this manner the emphasis is laid on the space, the communal as opposed to the built form, the closed the individual. The "gel" energy interconnecting the buildings proposed on site all lead to and come from the central authoritative body the Tribal offices.

The landscape that then holds these buildings together also plays a pivotal role in providing for a multilateral platform on which the interaction of the spaces through and with the buildings can be acted out.

Cells, through which the various tensions between the void, and the built form meet to create a harmony on the site. A counter-point. This connection point like a pattern can be said to be representative of the connection from "traditional" into "modernity".

Fig 44 Conceptual Site Analysis[10]





[10] Tumubweinee, 2006

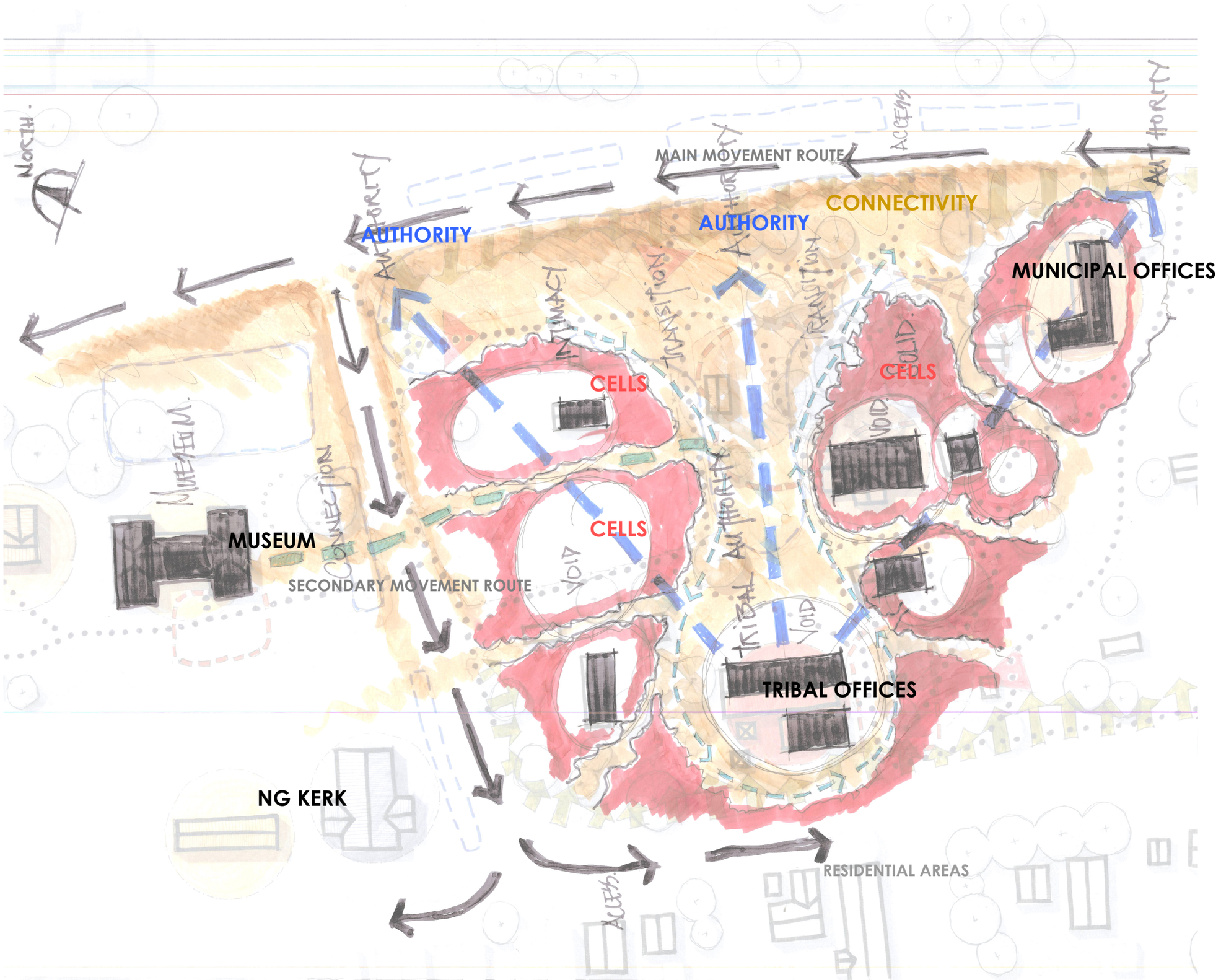


Fig 45: Conceptual site spatial organization.

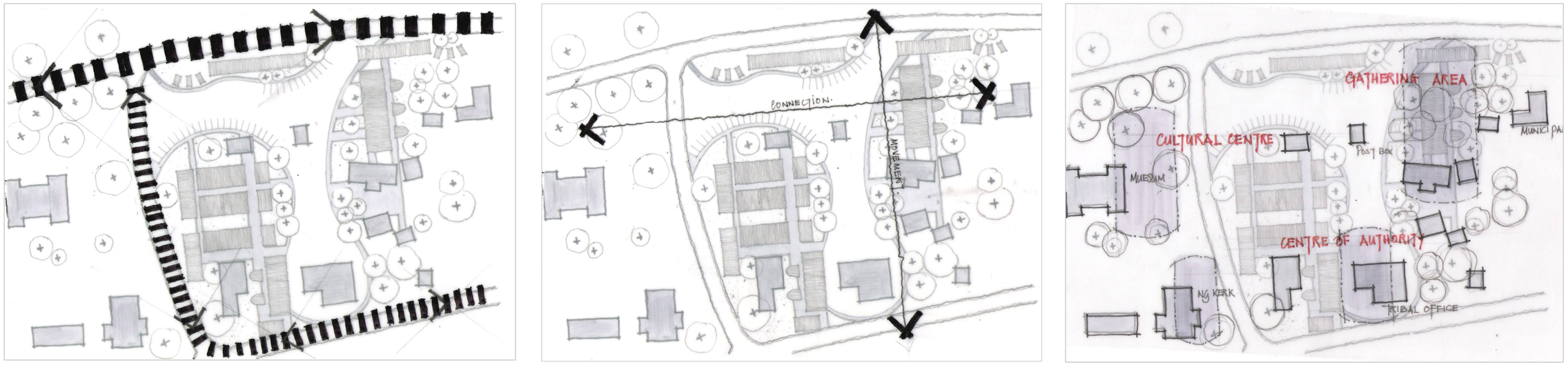


Fig 46: Conceptual site layout

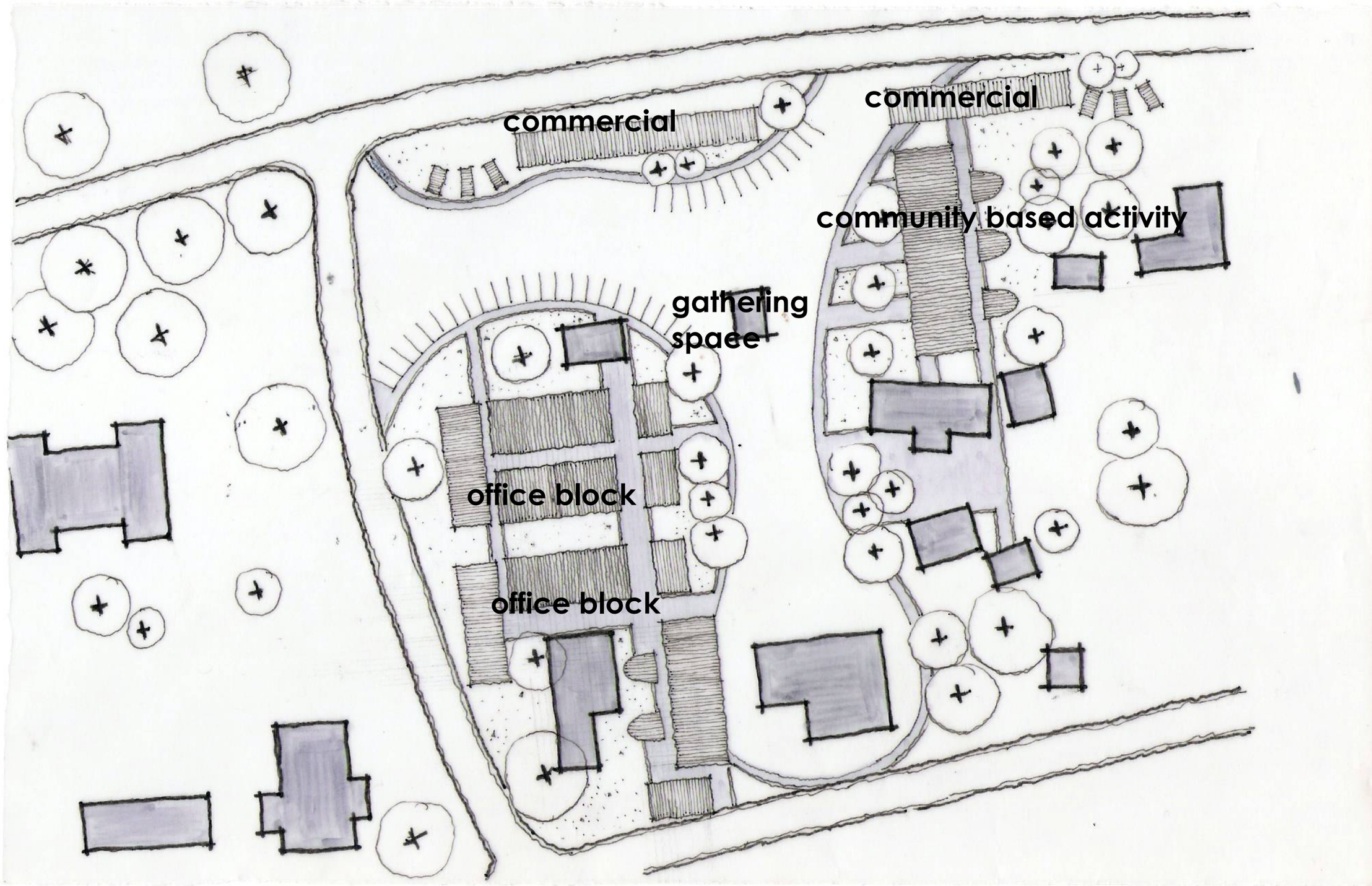


Fig 47: Conceptual site layout

ACCOMODATION SCHEDULE

[A] OFFICE BLOCK A
Ground floor:

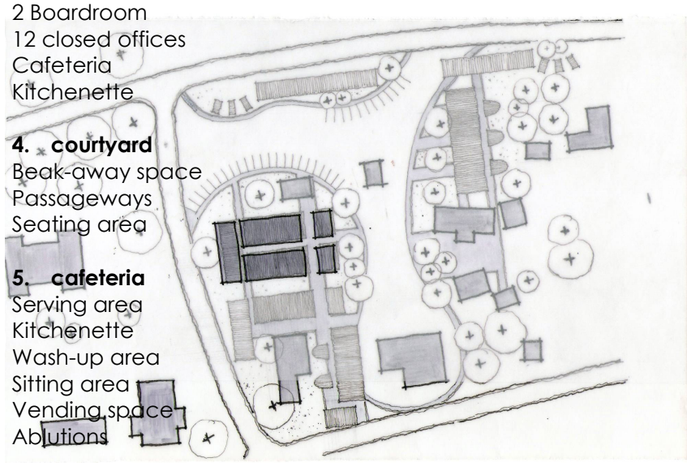
1. **reception area**
Foyer/security
Security control area
Information desk/kiosk
Thoroughfare
Security ablutions

2. **training area**
Ablution area
Reception area
Administrations space
Office space:
Trainers
Clerk
Receptionist

3. **offices**
Ablution area
Break-away spaces
Passageways
2 Boardroom
12 closed offices
Cafeteria
Kitchenette

4. **courtyard**
Beak-away space
Passageways
Seating area

5. **cafeteria**
Serving area
Kitchenette
Wash-up area
Sitting area
Vending space
Ablutions



[B] OFFICE BLOCK B
Ground floor:

1. **reception area**
Foyer/security
Security control area
Information desk/kiosk
Thoroughfare
Security ablutions

2. **training area**
Ablution area
Reception area
Administrations space
Office space:
- Trainers
- Clerk
- Receptionist

3. **offices**
Ablution area
Break-away spaces
Passageways
1 Boardroom
6 closed offices
Cafeteria
Kitchenette

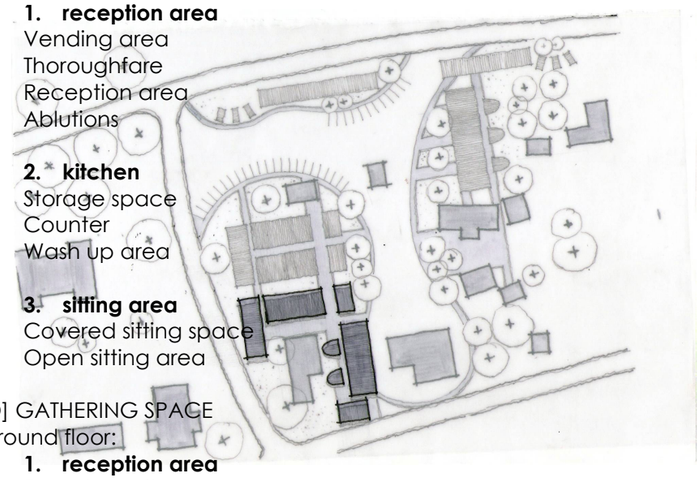
4. **courtyard**
Beak-away space
Passageways
Seating area

[C] CAFETREIA
Ground floor:

1. **reception area**
Vending area
Thoroughfare
Reception area
Ablutions

2. **kitchen**
Storage space
Counter
Wash up area

3. **sitting area**
Covered sitting space
Open sitting area



[D] GATHERING SPACE
Ground floor:

1. **reception area**
Foyer/security
Security control area
Information desk/kiosk
Thoroughfare
Security ablutions

2. **meeting area**
Ablution area
Reception area
Administrations space
Office space:
- Break-away spaces
- Passageways

3. **courtyard**
Beak-away space
Passageways
Seating area

4. **cafeteria**
Serving area
Kitchenette
Wash-up area
Sitting area
Vending space
Ablutions

[E] EXHIBITION SPACE
Ground floor:

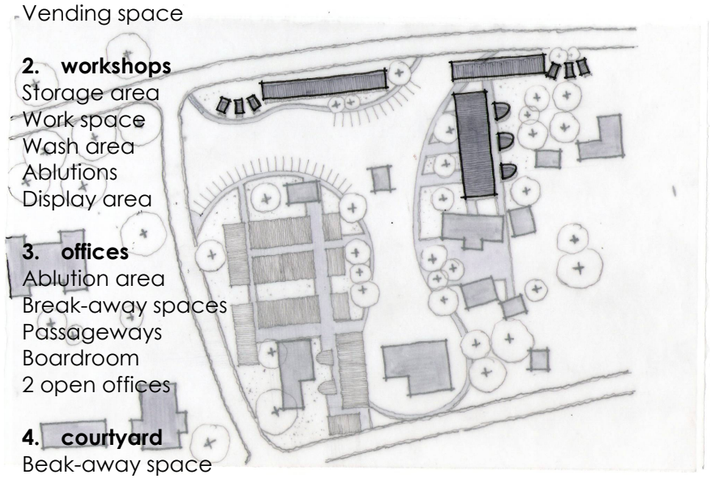
1. **covered exhibition areas**
Foyer
Security control area
Information desk/kiosk
Thoroughfare
Ablutions
Vending space

2. **workshops**
Storage area
Work space
Wash area
Ablutions
Display area

3. **offices**
Ablution area
Break-away spaces
Passageways
Boardroom
2 open offices

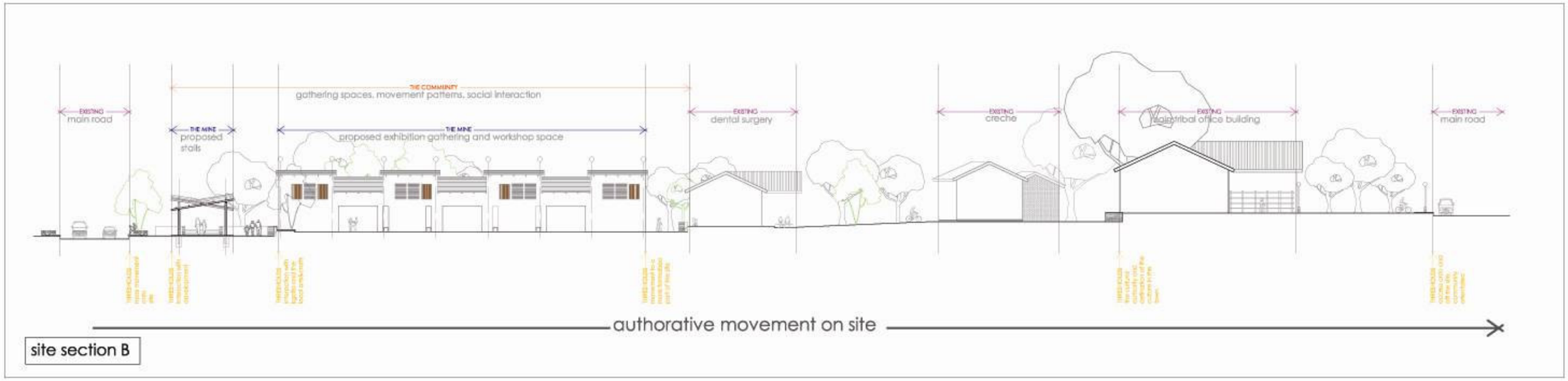
4. **courtyard**
Beak-away space
Passageways
Seating area

5. **uncovered exhibition area**
Foyer
Security control area
Information desk/kiosk
Thoroughfare
Ablutions
Vending space
Ablutions

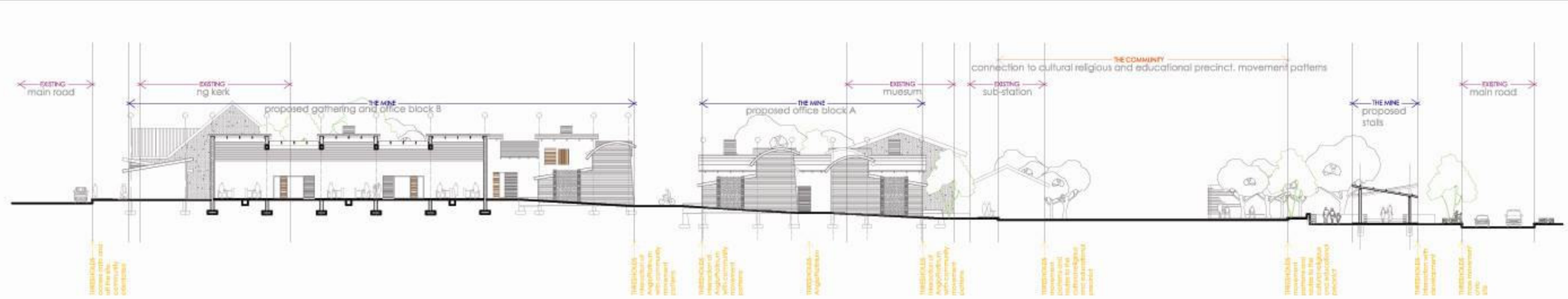


6 technical documentation

6.1 Site layout



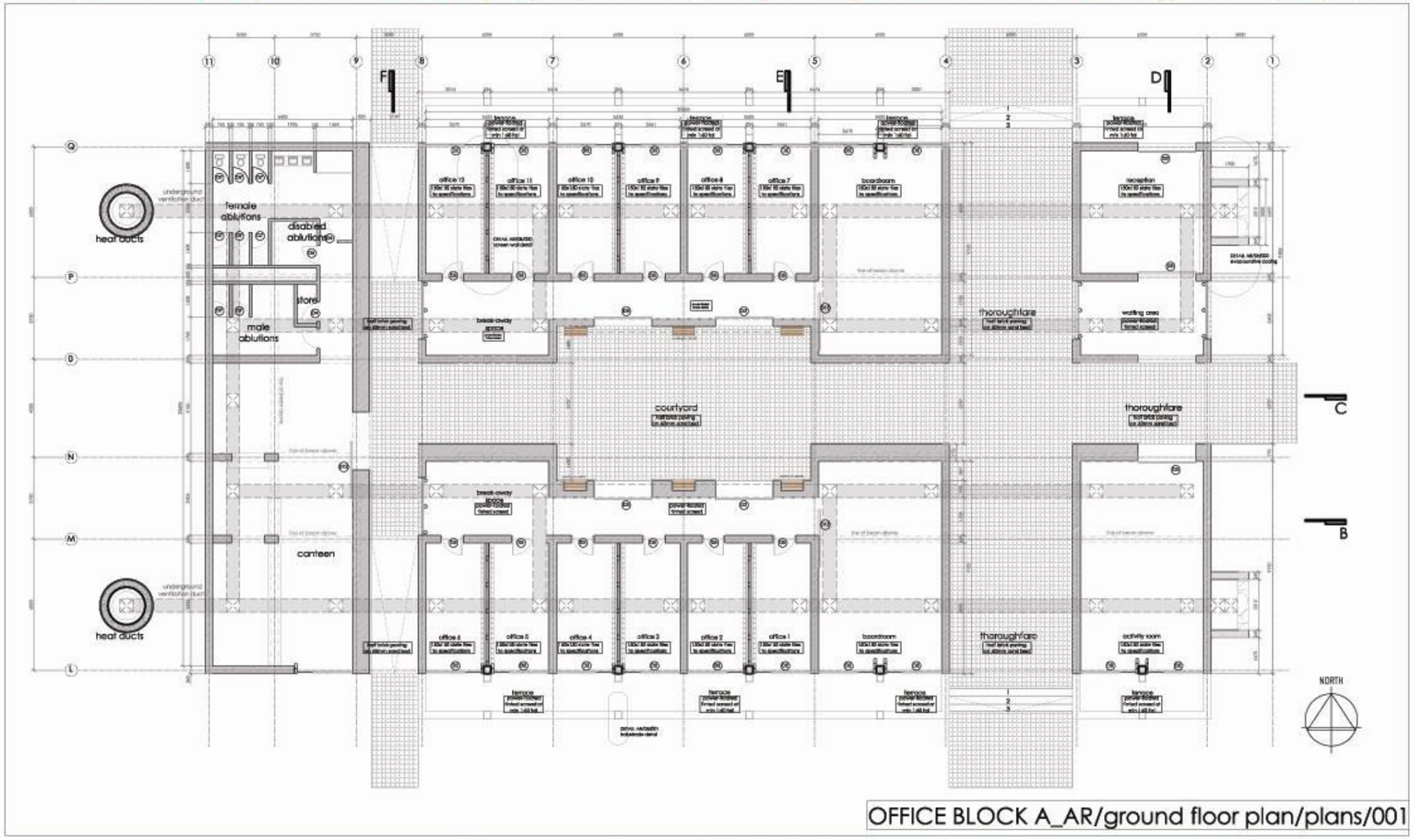
site section B



site section A

6.1 Site sections

6.2 block A ground floor plan

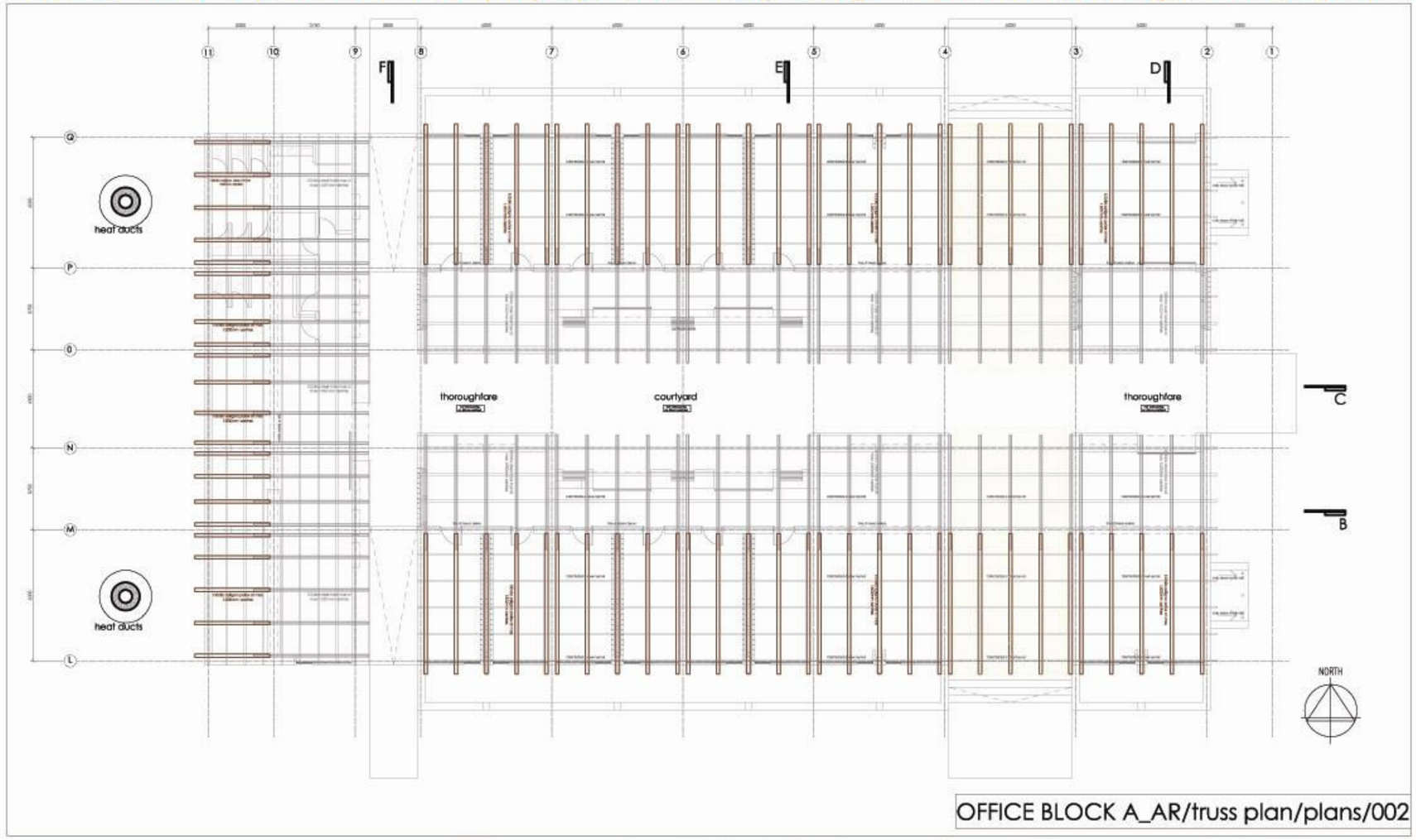


OFFICE BLOCK A_AR/ground floor plan/plans/001

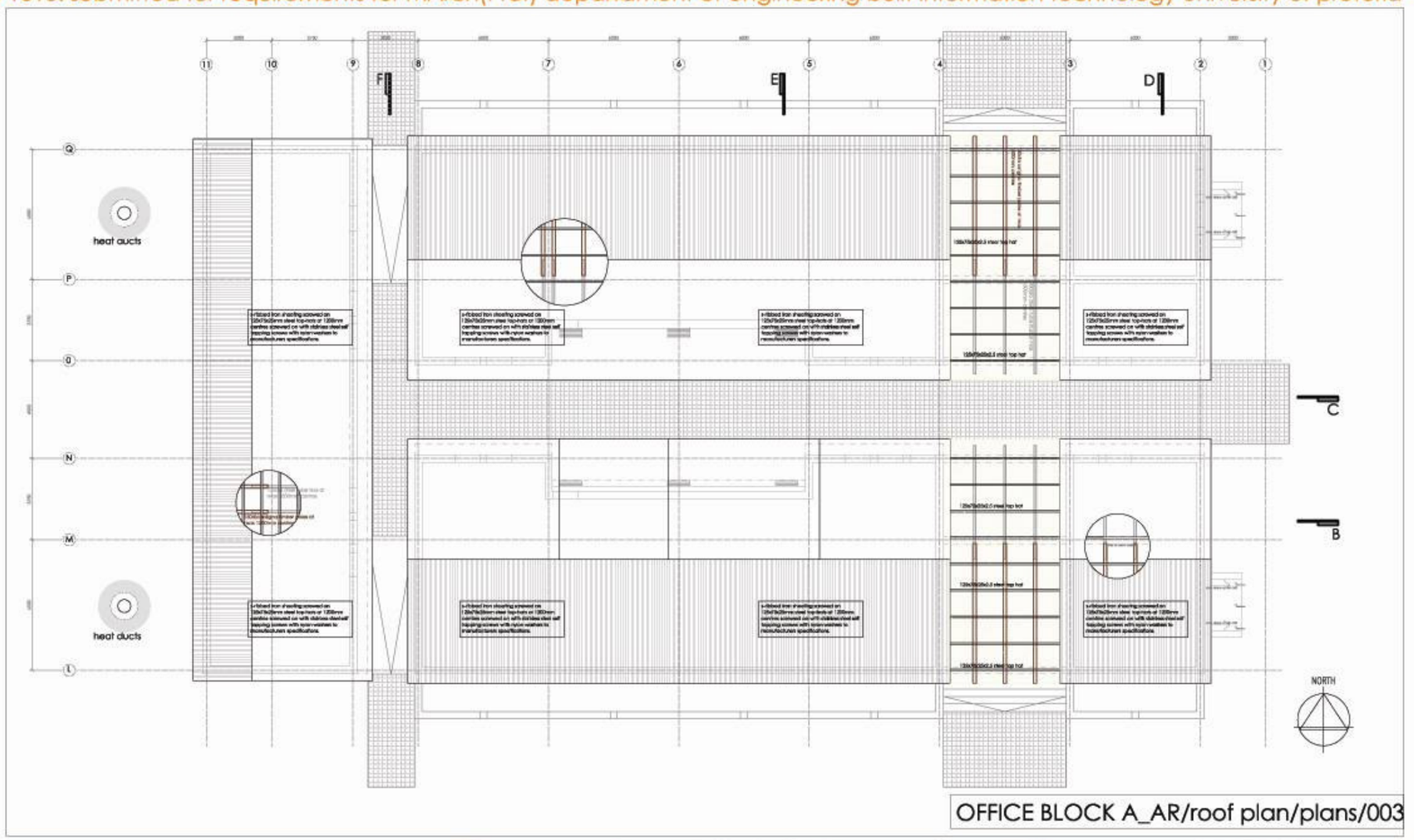
site plan 1:1250

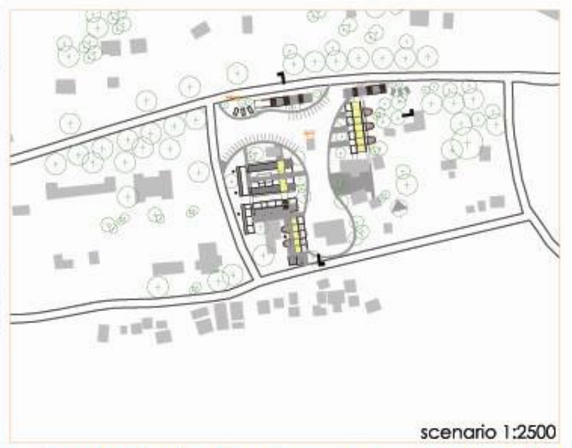
scenario 1:2500

6.2 block A roof truss plan

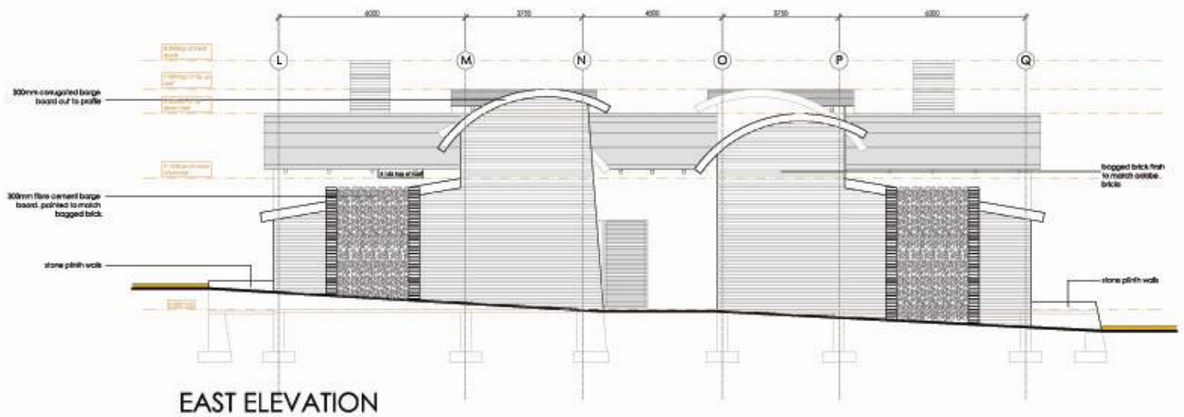


6.2 block A roof plan

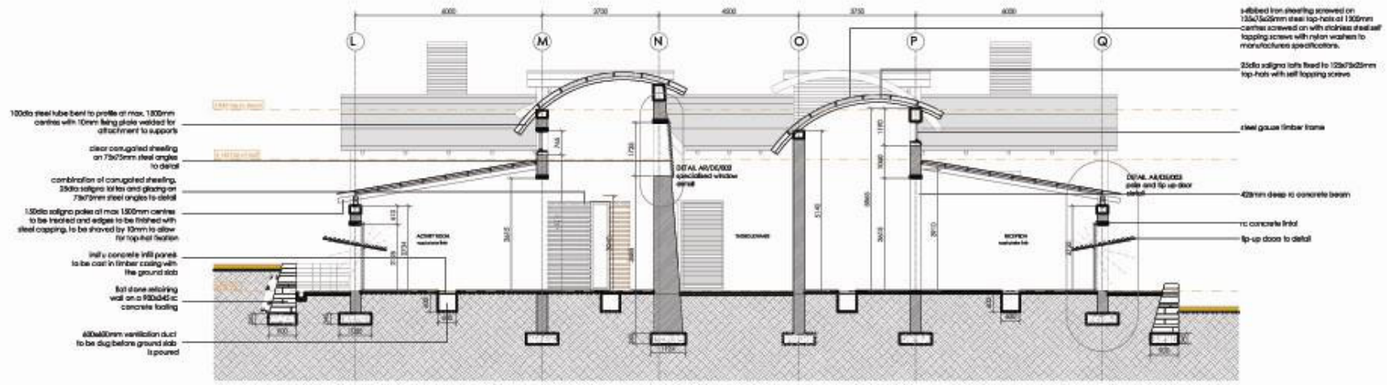




6.2 block A sections & elevations



EAST ELEVATION

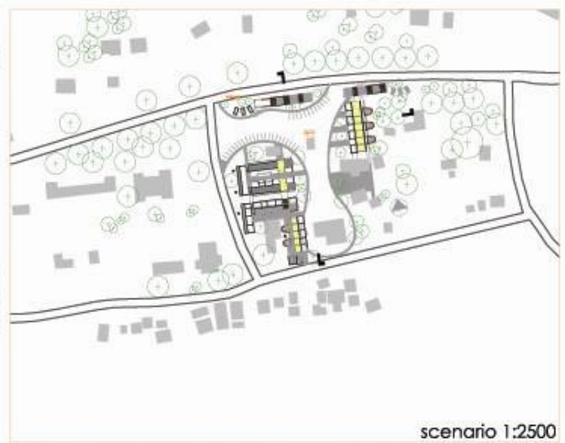


SECTION D

OFFICE BLOCK A_AR/sections&elevations/001

ground flr plan [nts]

site plan 1:1250

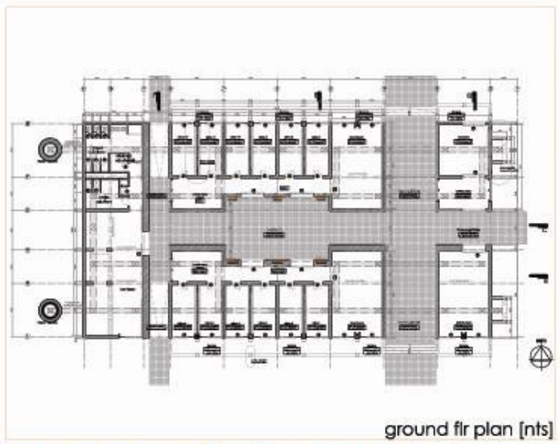


scenario 1:2500

NORTH ELEVATION
nts

SOUTH E ELEVATION
nts

OFFICE BLOCK A_AR/sections&elevations/004



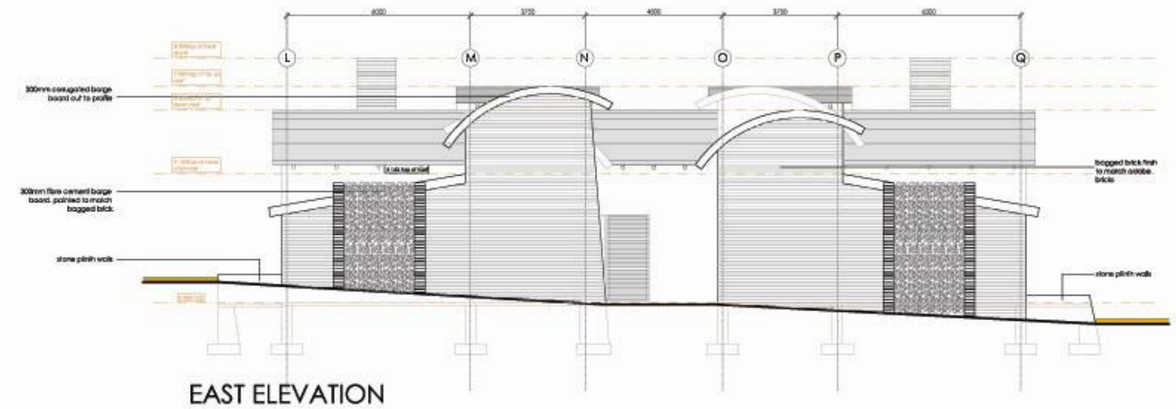
ground flr plan [nts]

site plan 1:1250

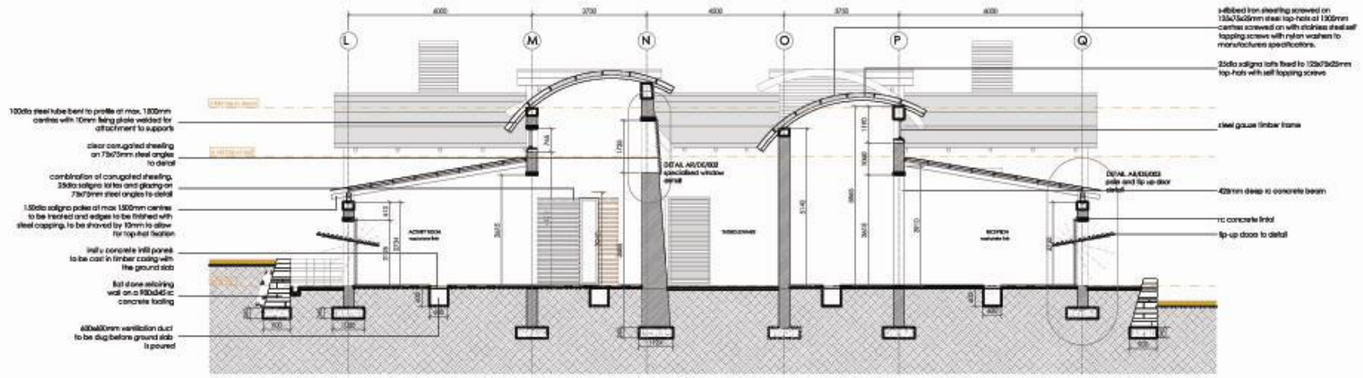
scenario 1:2500

counter-point scenarios.intergration of mine infrastructure in a community.counter-point scenarios.intergration of mine infrastructure in a community

6.2 block A sections & elevations

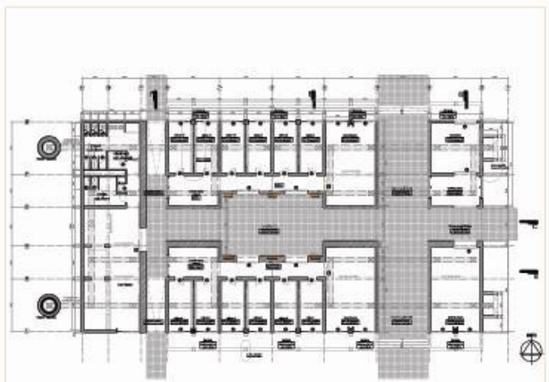


EAST ELEVATION



SECTION D

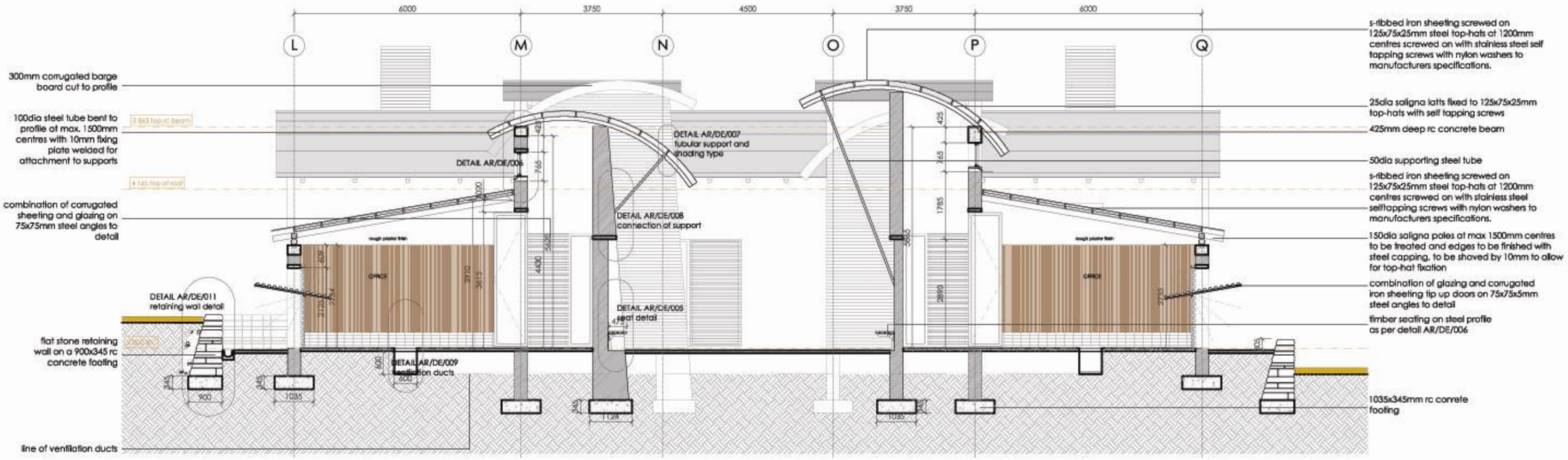
OFFICE BLOCK A_AR/sections&elevations/001



ground flr plan [nts]

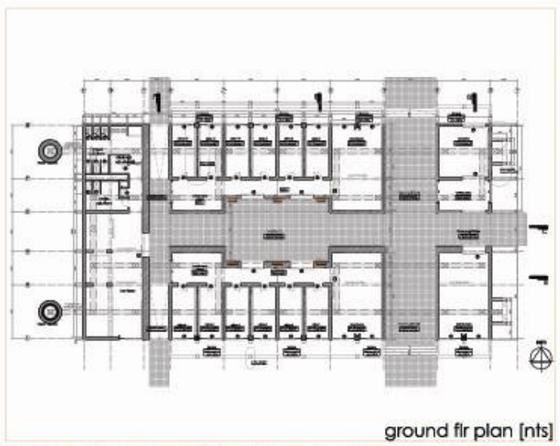
site plan 1:1250

scenario 1:2500



SECTION E
1:50

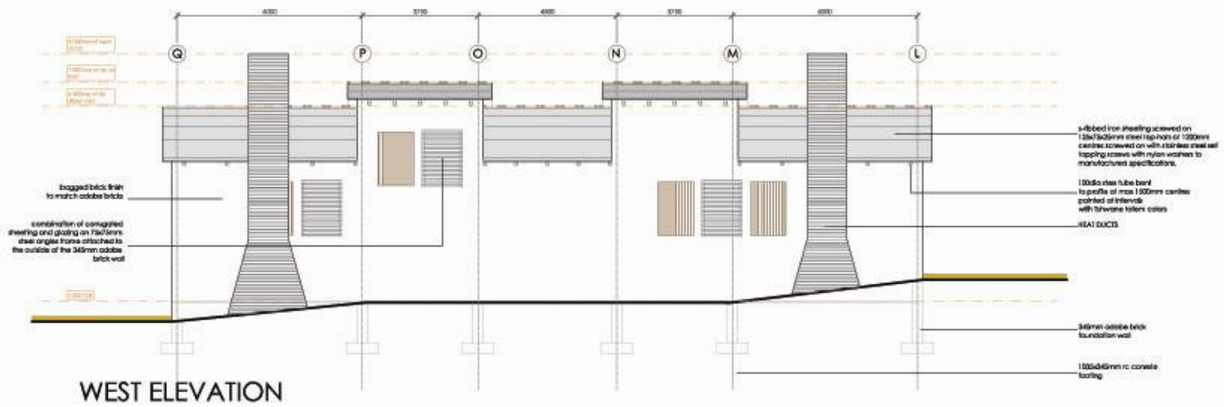
OFFICE BLOCK A_AR/sections&elevations/003



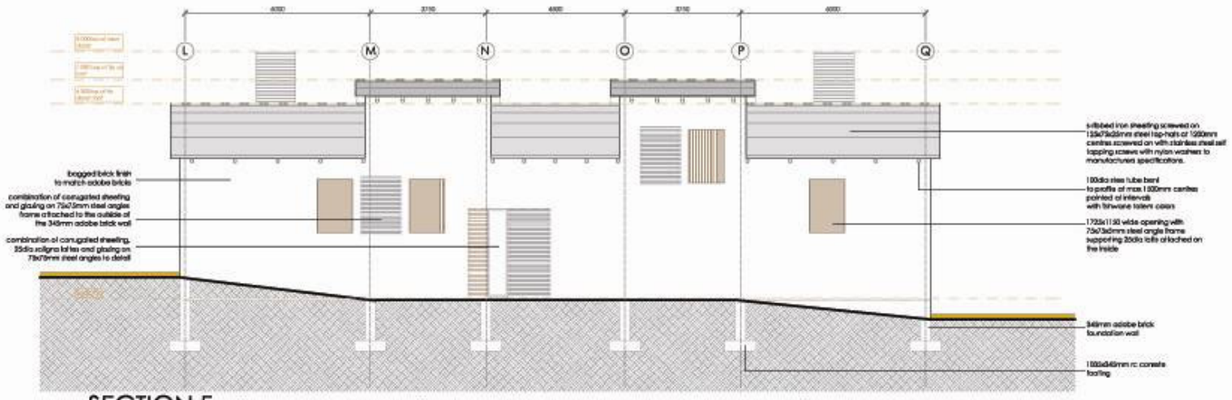
ground flr plan [nts]

site plan 1:1250

scenario 1:2500

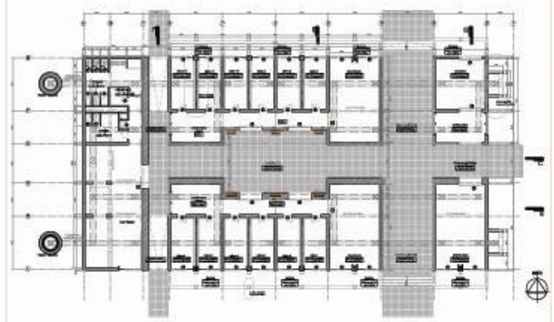


WEST ELEVATION



SECTION F

OFFICE BLOCK A_AR/sections&elevations/002



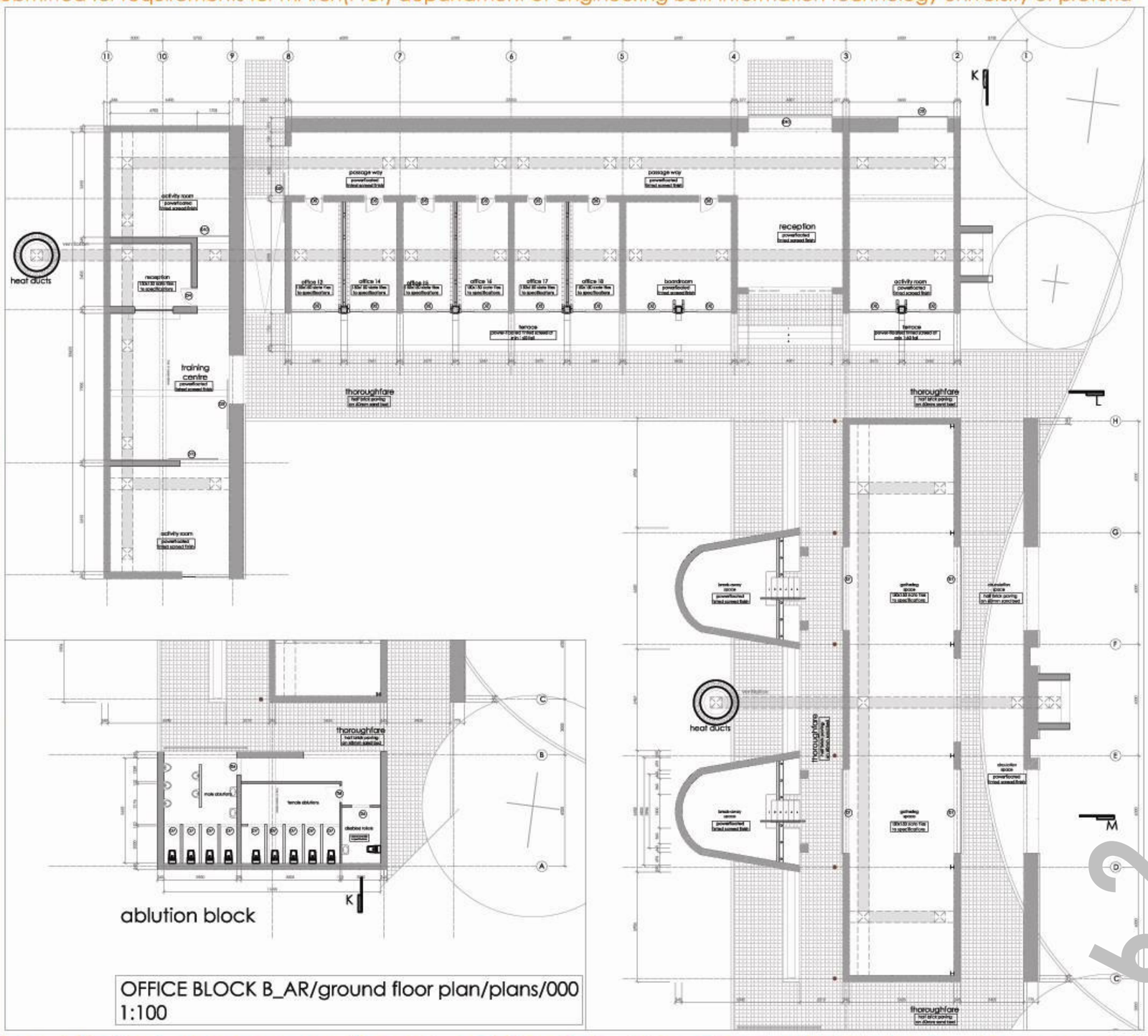
ground flr plan [nts]

site plan 1:1250

scenario 1:2500

block A sections & elevations

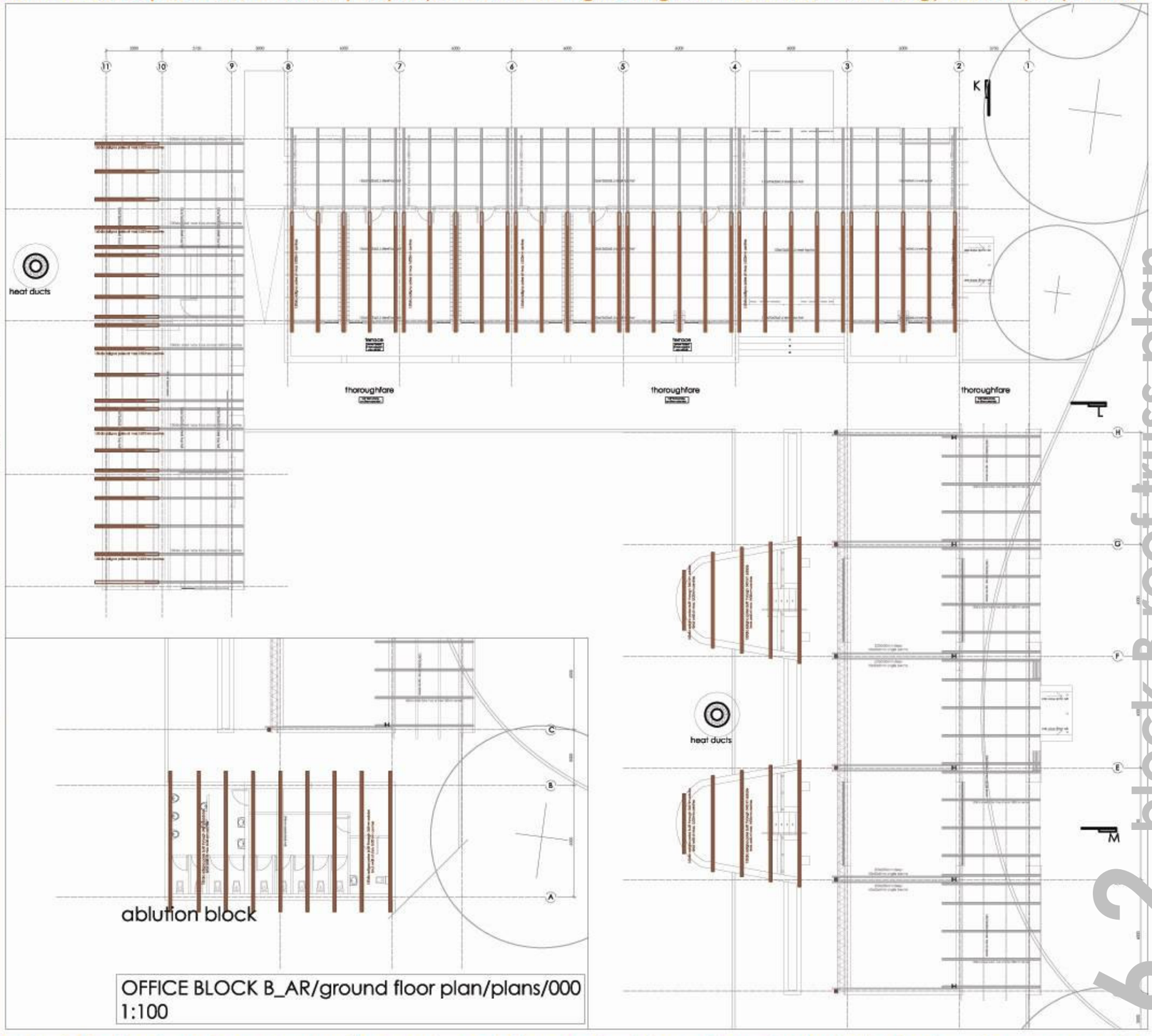
6.2

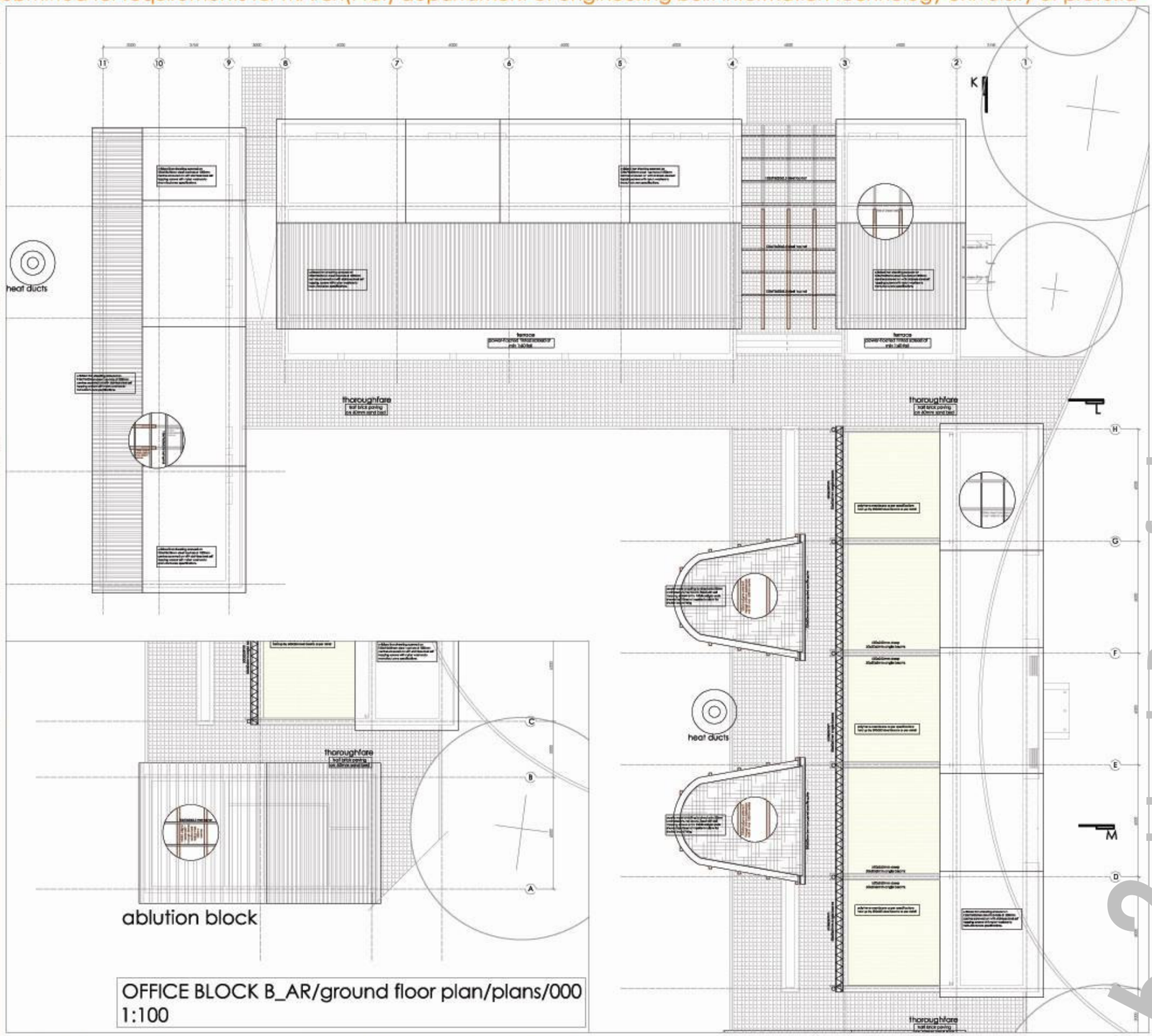


6.2 block B ground floor plan

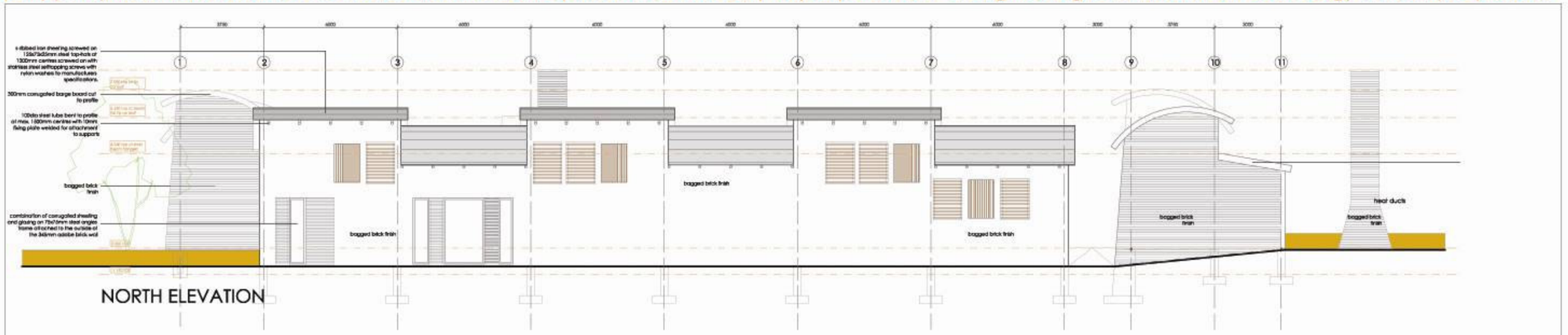

scenario 1:2500

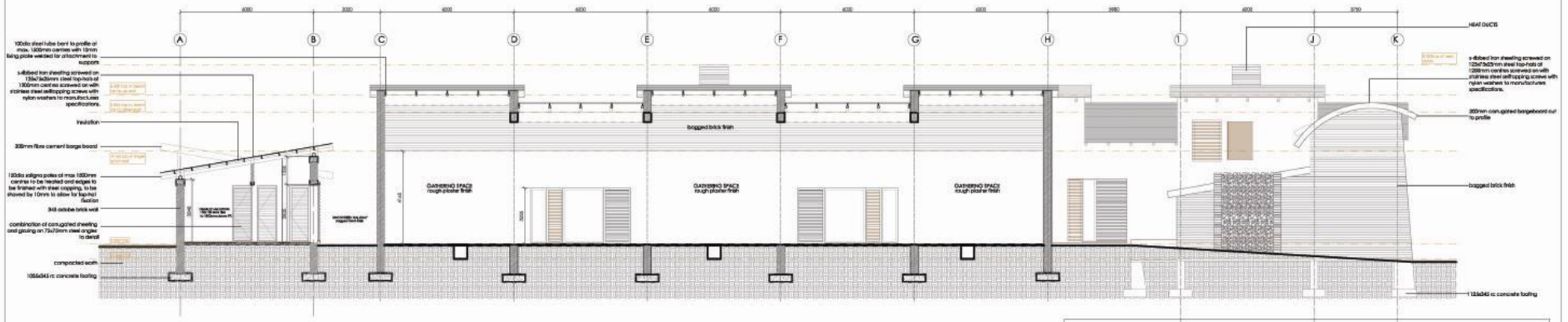

office block
ablution block
site plan 1:1250


heat ducts
thoroughfare
thoroughfare
thoroughfare
heat ducts
ablution block
OFFICE BLOCK B_AR/ground floor plan/plans/000
1:100
6.2 block B roof truss plan



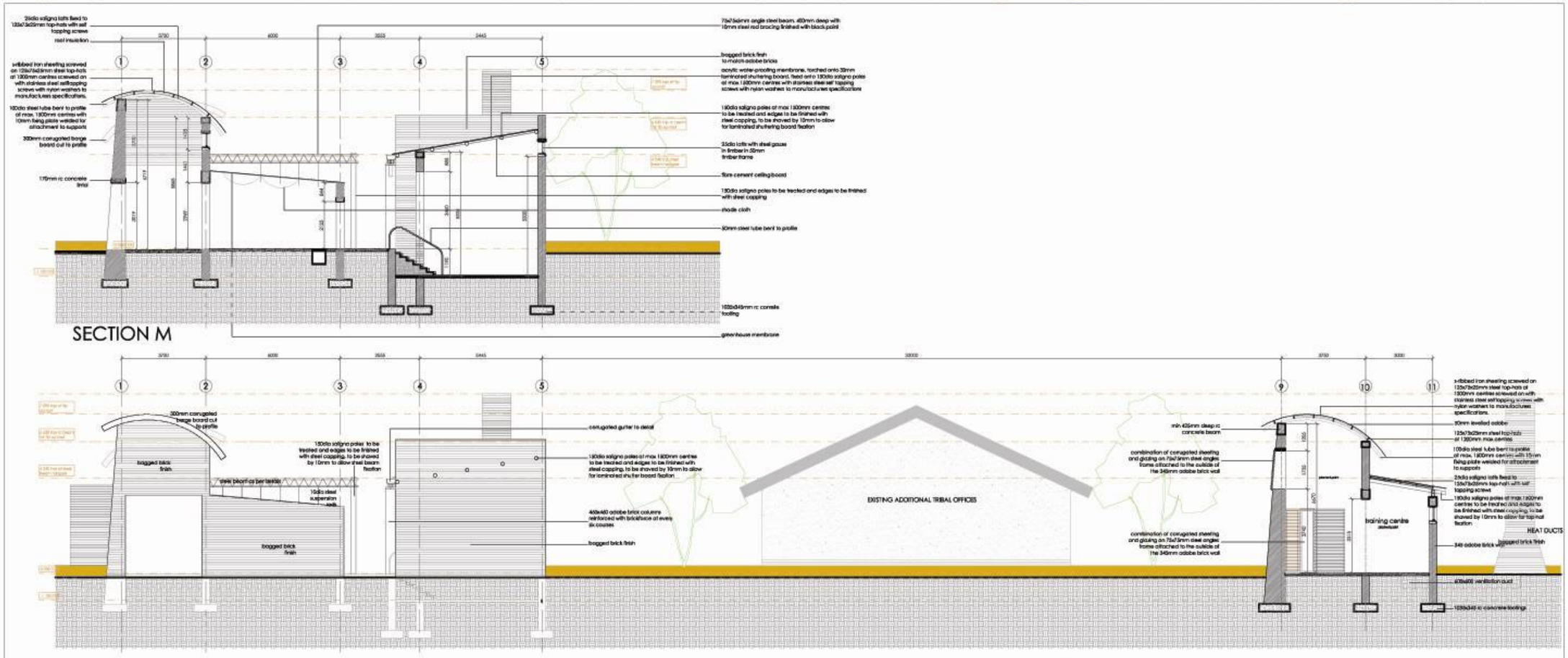
6.2 block B roof plan


NORTH ELEVATION
bagged brick finish
heat ducts


SECTION K
OFFICE BLOCK B_AR/sections&elevations/plans/001
bagged brick finish
HEAT DUCTS
GATHERING SPACE rough plaster finish


office block
ablution block
site plan 1:1250


scenario 1:2500

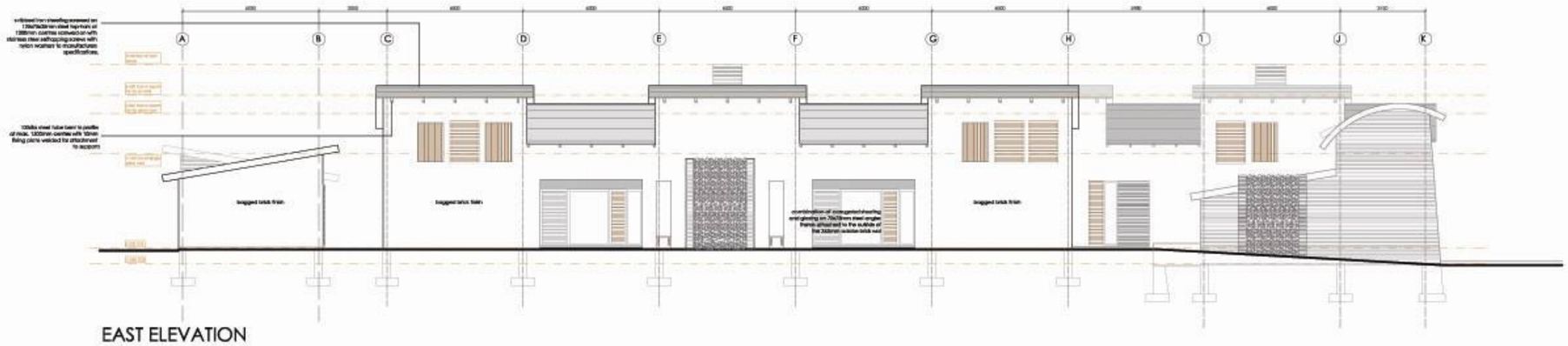


OFFICE BLOCK B_AR/sections&elevations/plans/001

site plan 1:1250

scenario 1:2500

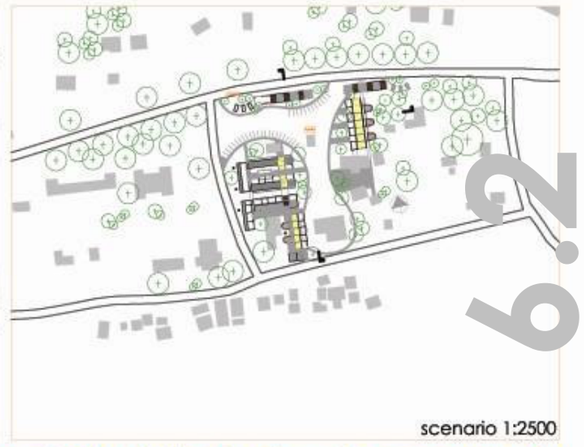
6.2 block B sections & elevations



EAST ELEVATION

OFFICE BLOCK B_AR/sections&elevations/plans/001

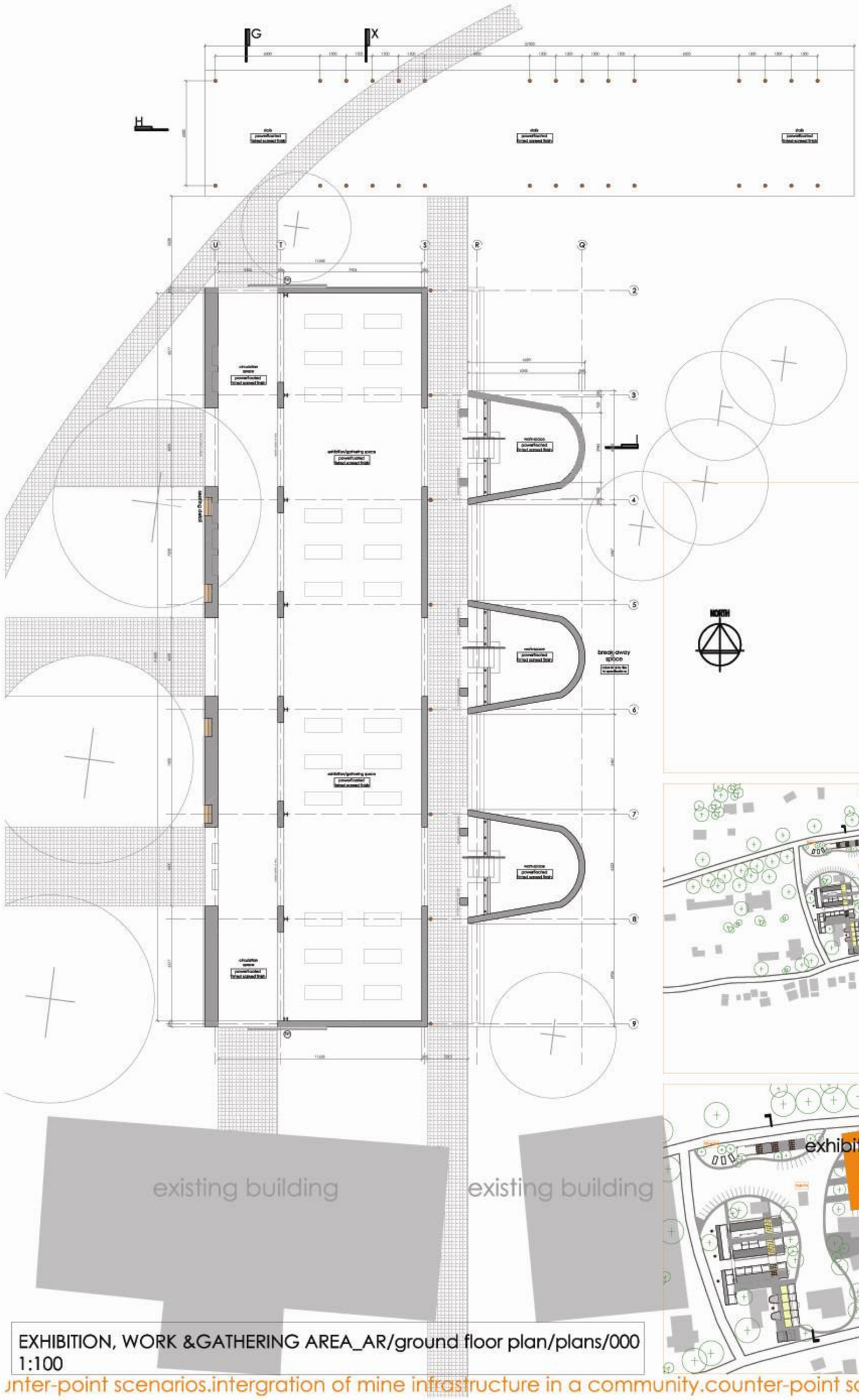
site plan 1:1250



scenario 1:2500

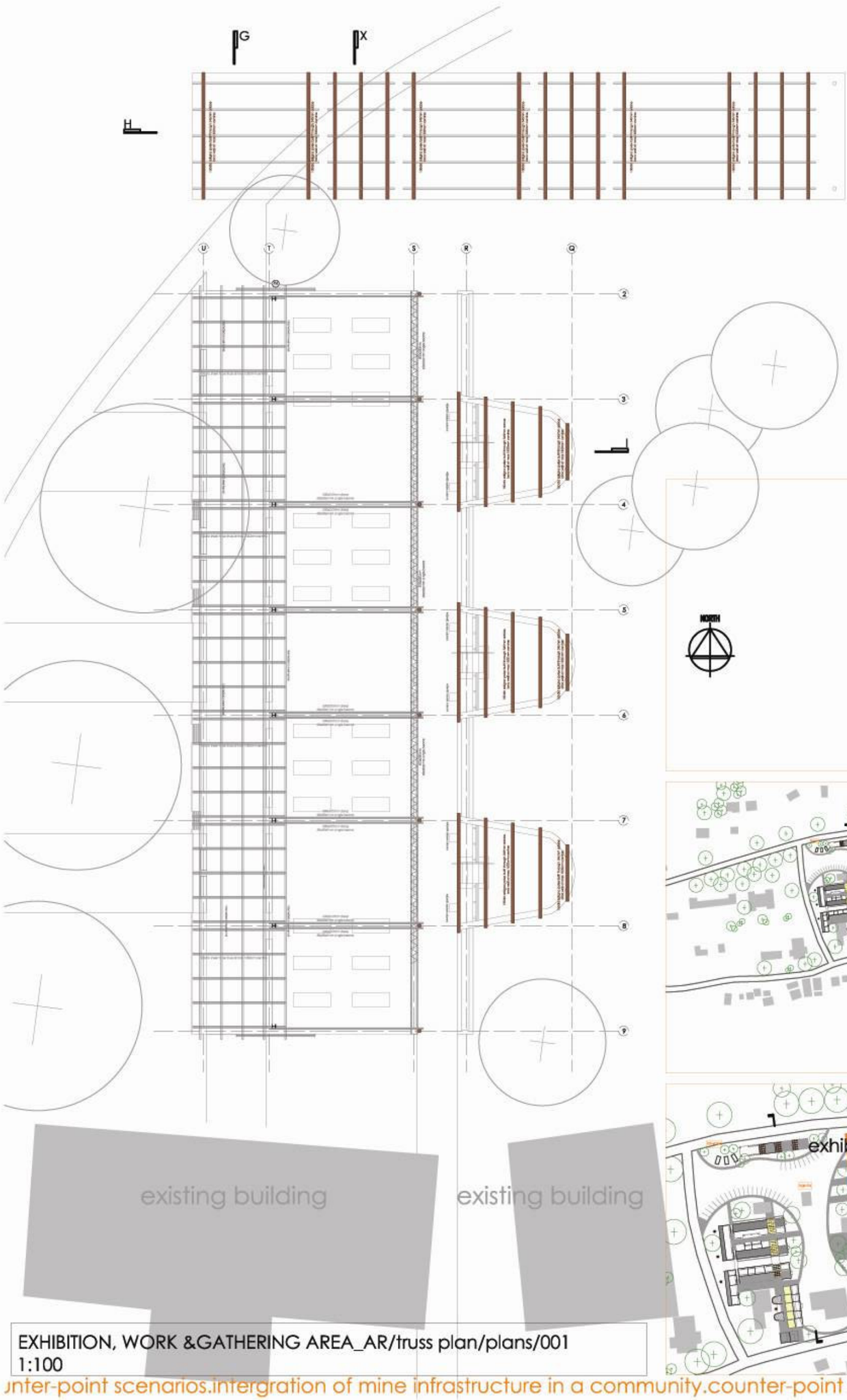
6.2 block B sections & elevations

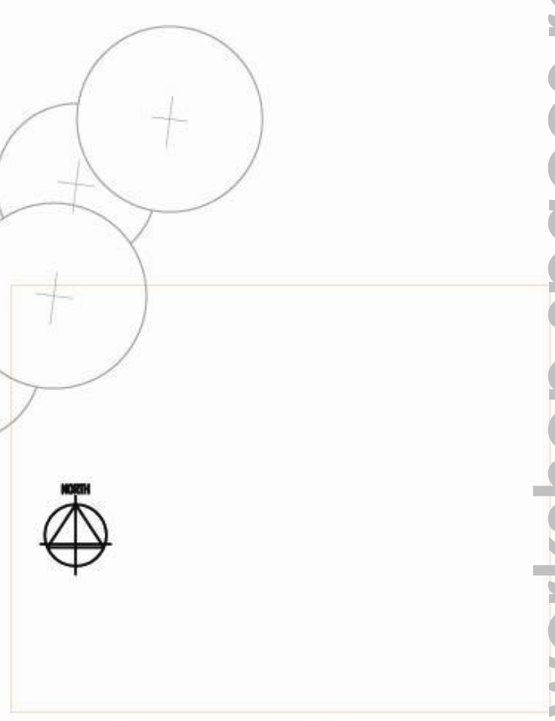
6.2 Exhibition workshop spaces ground floor plan



EXHIBITION, WORK &GATHERING AREA_AR/ground floor plan/plans/000
1:100

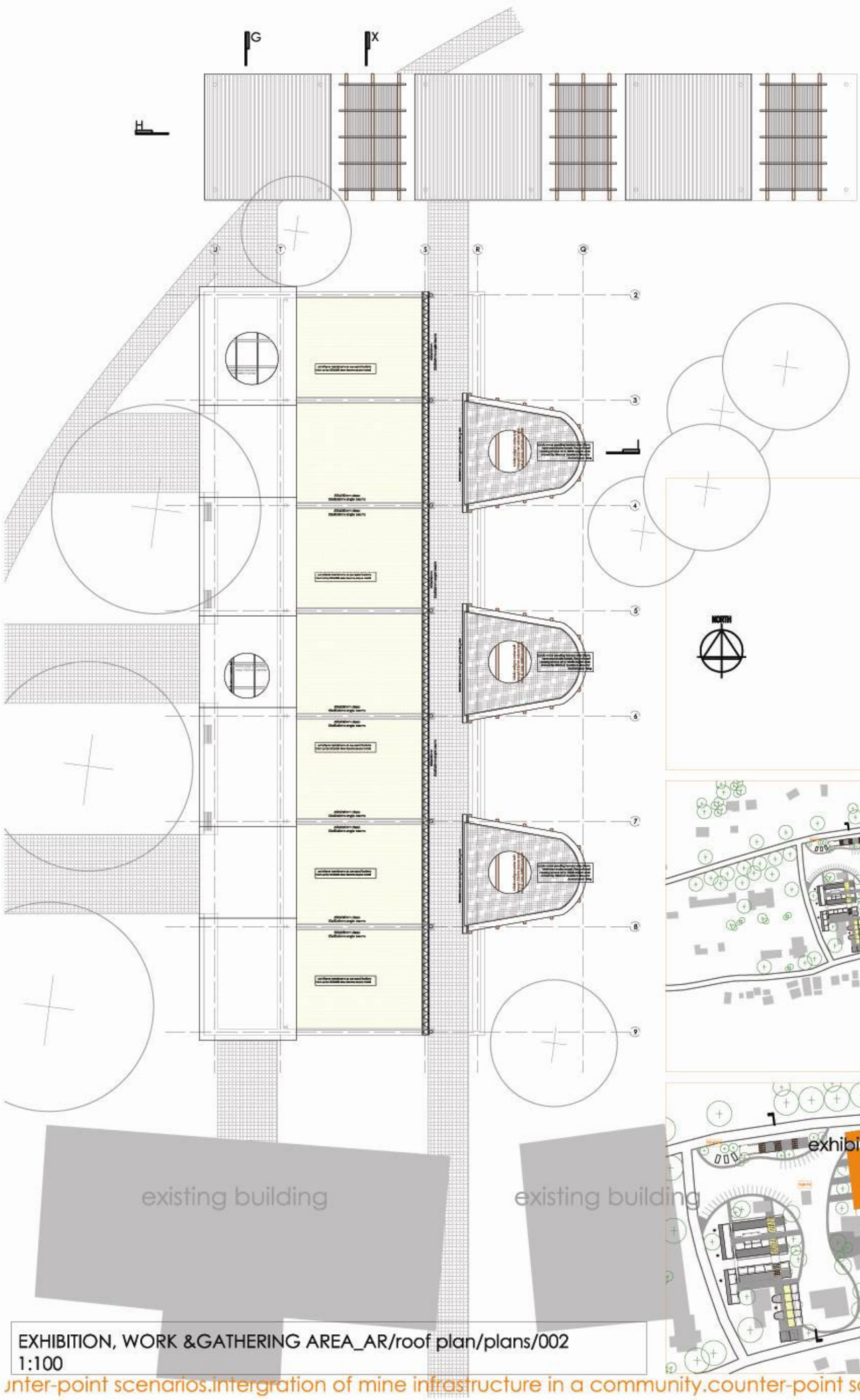
6.2 Exhibition workshop spaces roof truss plan



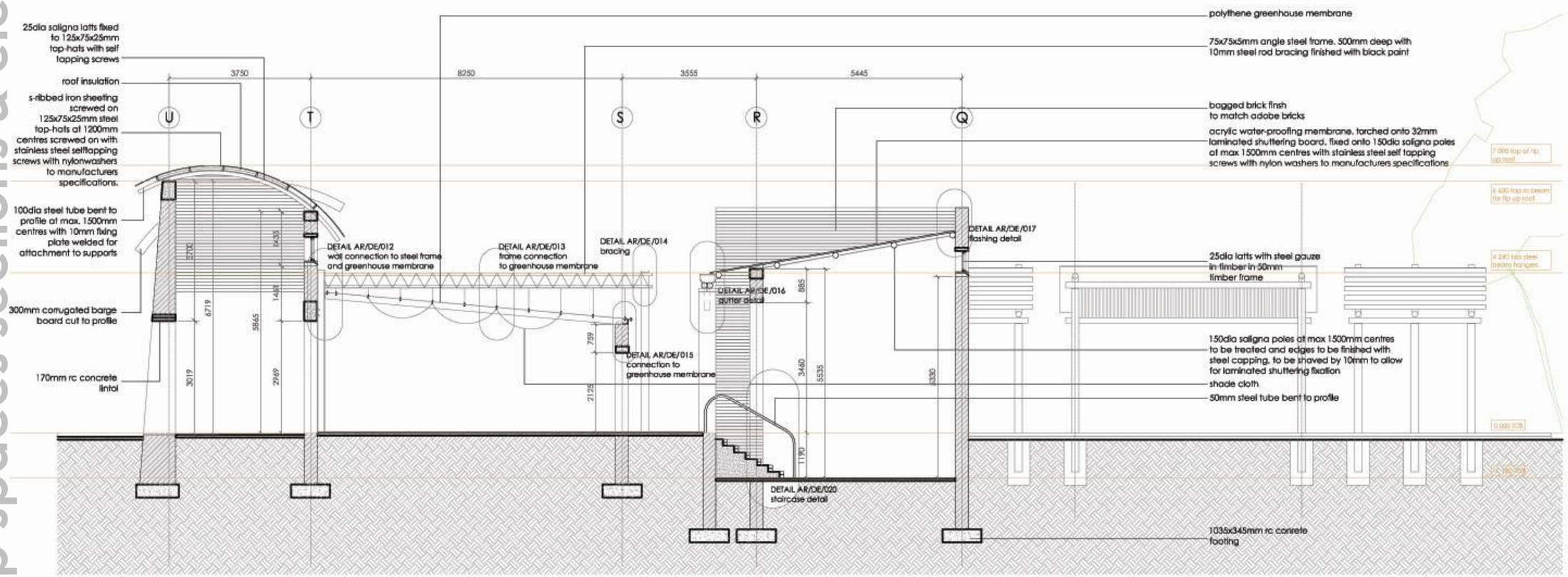


EXHIBITION, WORK &GATHERING AREA_AR/truss plan/plans/001
1:100

6.2 Exhibition workshop spaces roof plan

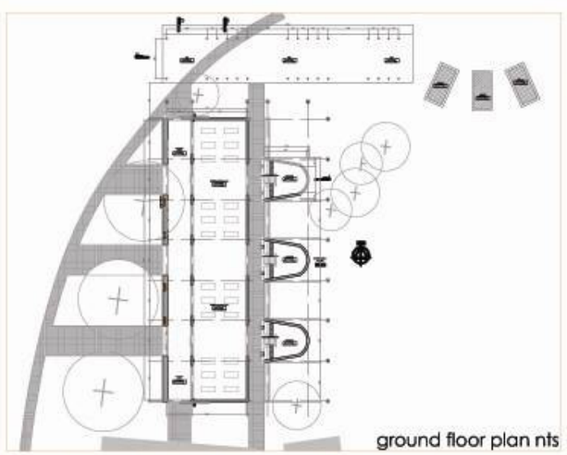


EXHIBITION, WORK &GATHERING AREA_AR/roof plan/plans/002
1:100



SECTION I
1:50

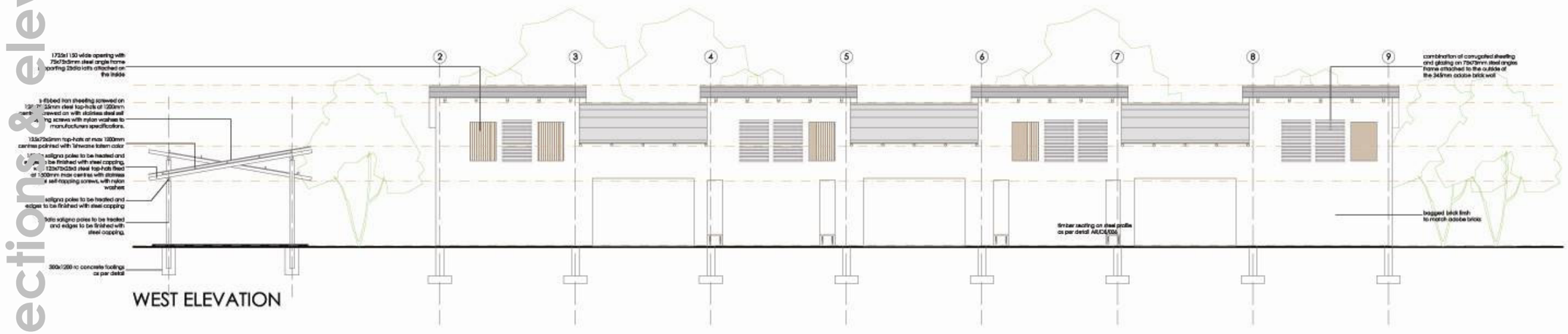
EXHIBITION, WORK &GATHERING AREA_AR/sections&elevations/001


ground floor plan nts

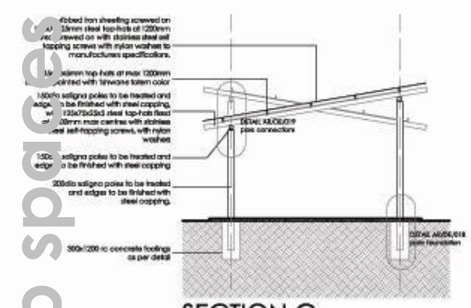
site plan 1:1250


scenario 1:2500

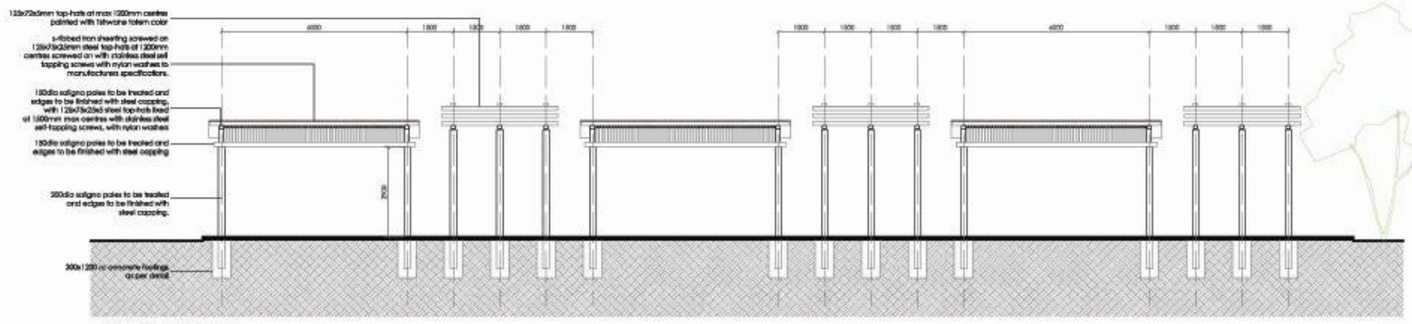
6.2



WEST ELEVATION

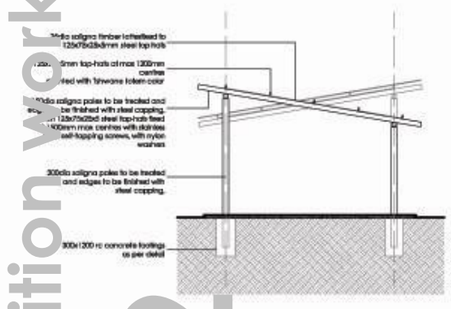


SECTION G

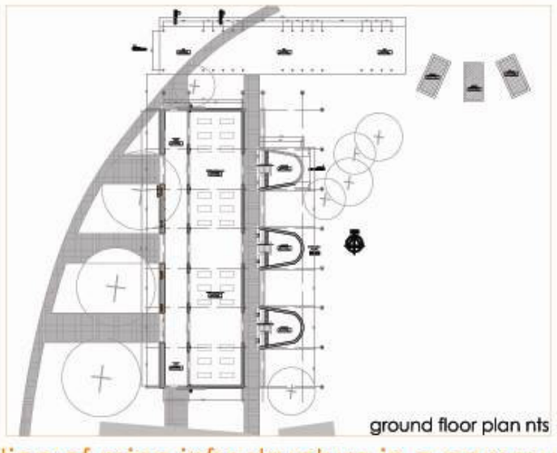


SECTION H

EXHIBITION, WORK &GATHERING AREA_AR/sections&elevations/002



SECTION X

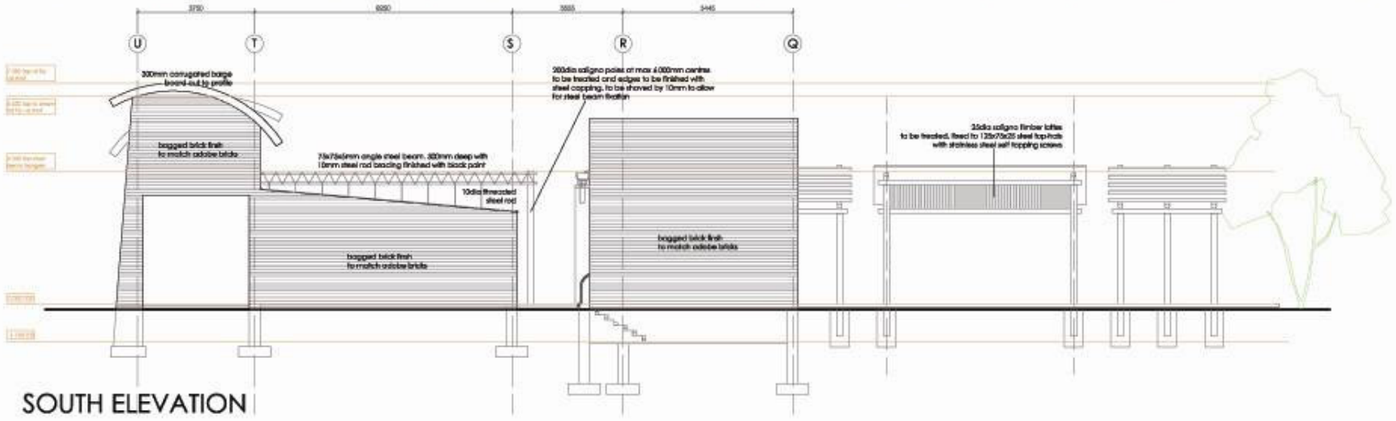


ground floor plan nts

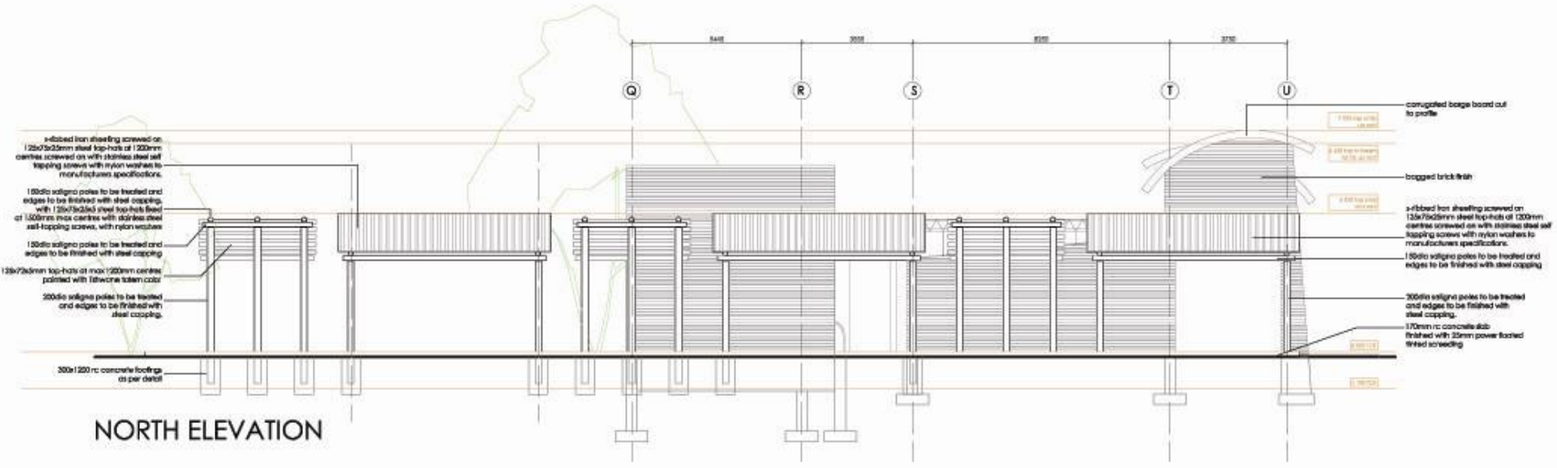
site plan 1:1250

scenario 1:2500

6.2

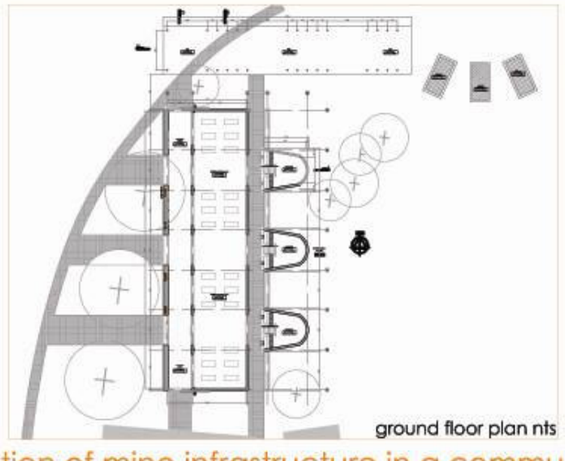


SOUTH ELEVATION



NORTH ELEVATION

EXHIBITION, WORK &GATHERING AREA_AR/sections&elevations/002



ground floor plan nts

site plan 1:1250

scenario 1:2500

6.2

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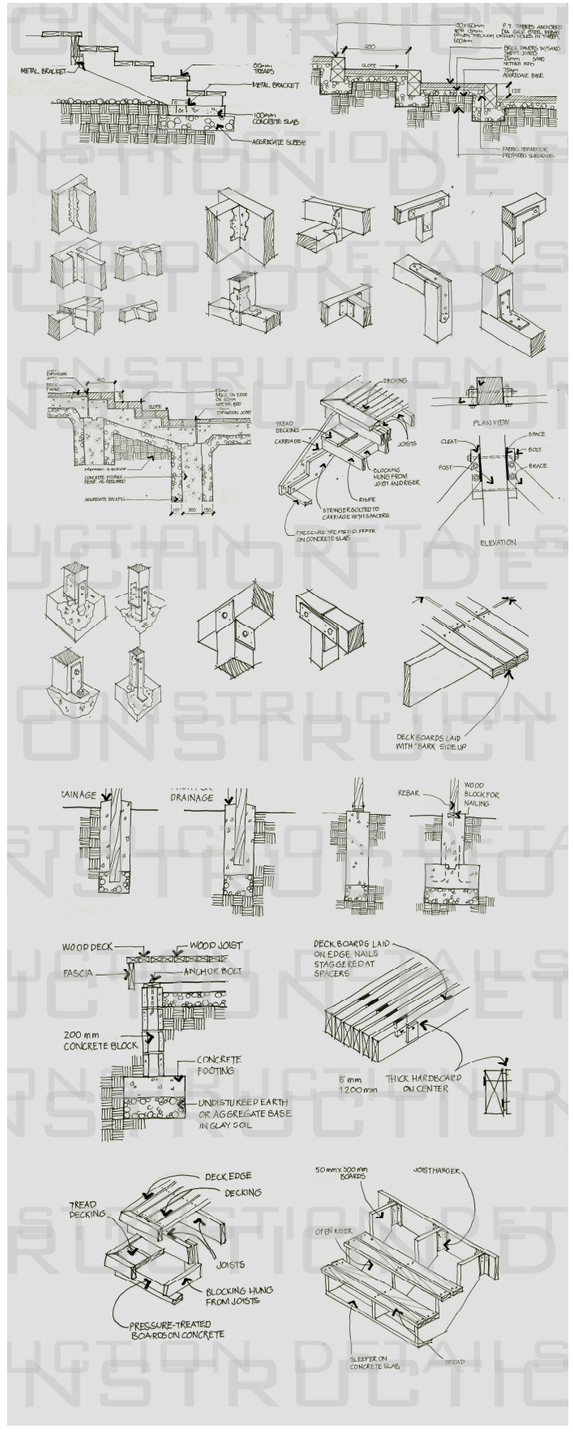
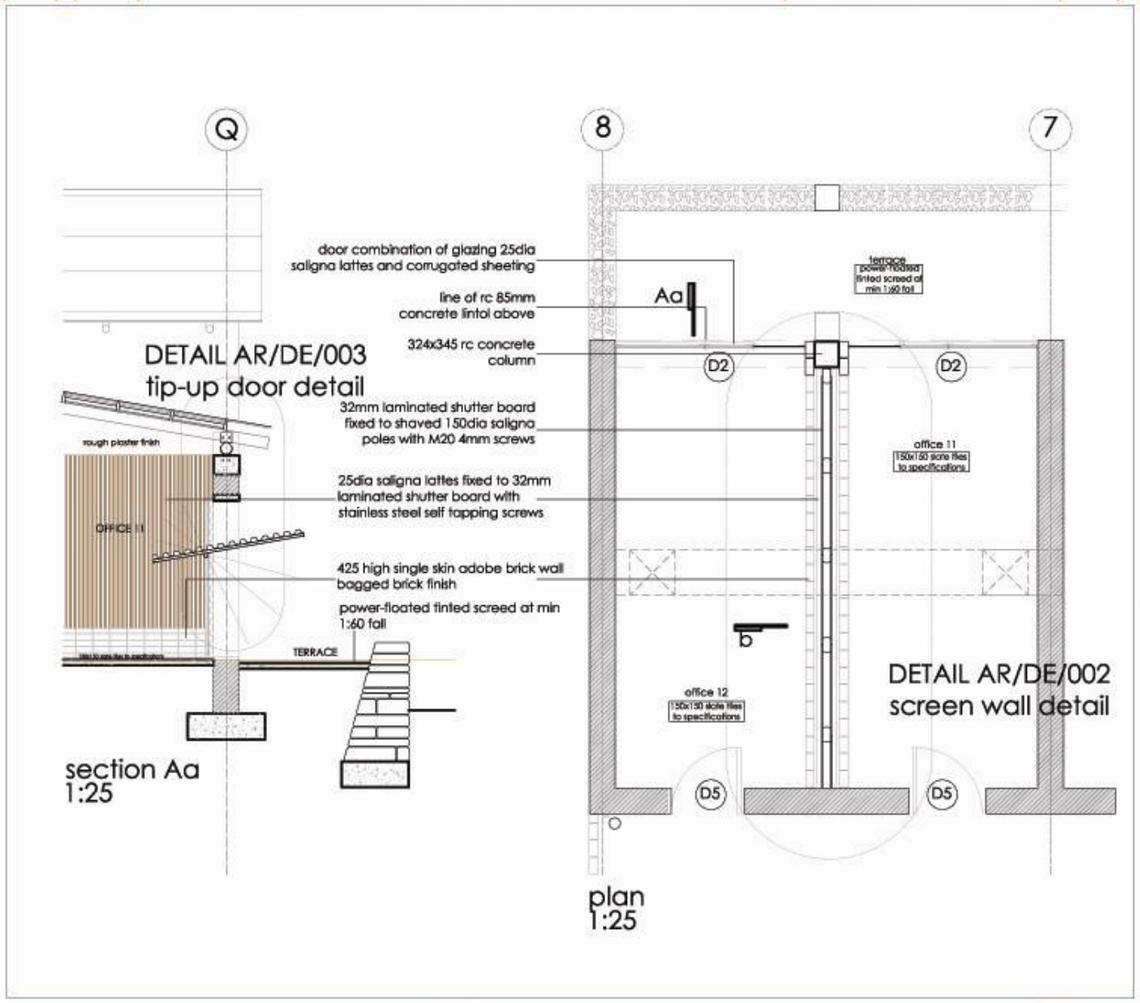
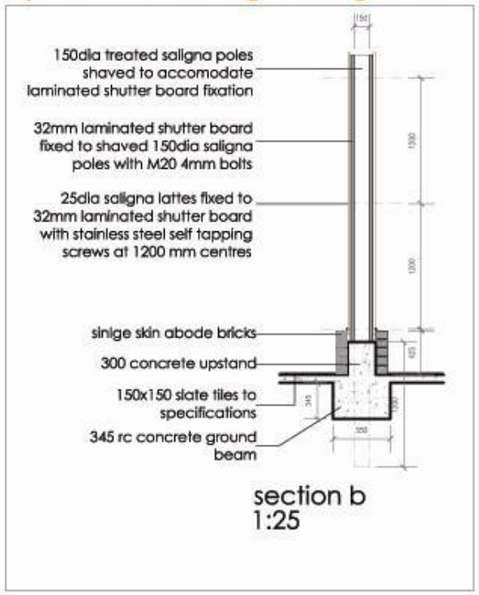
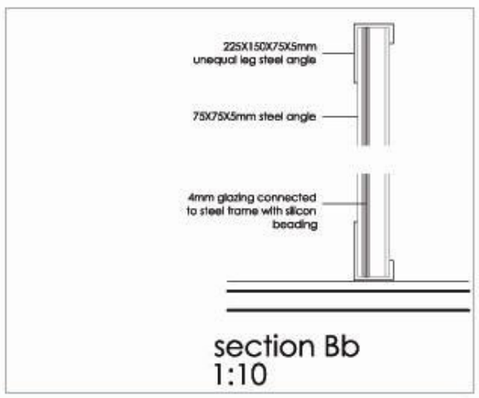
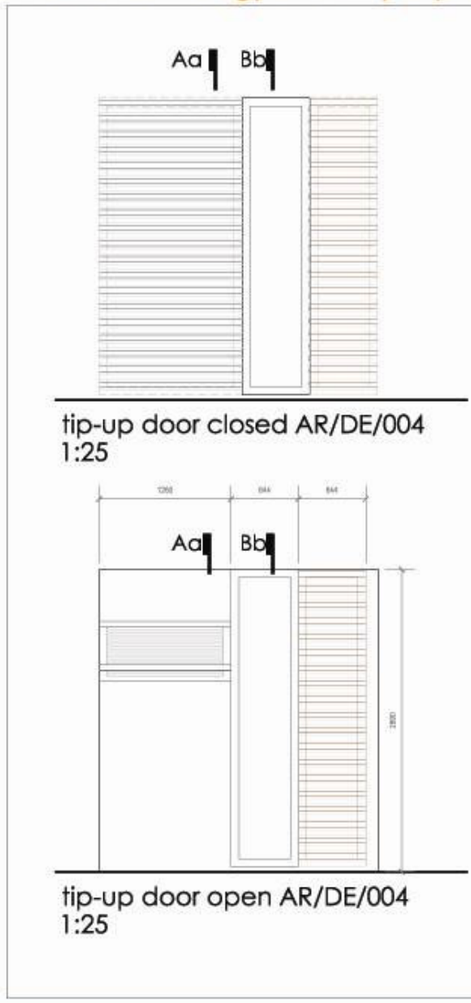


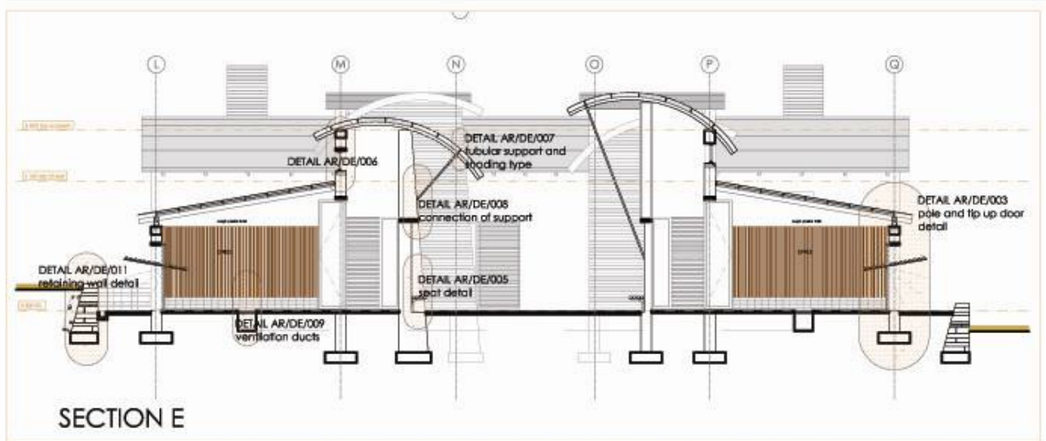
6.3 Materials and structure

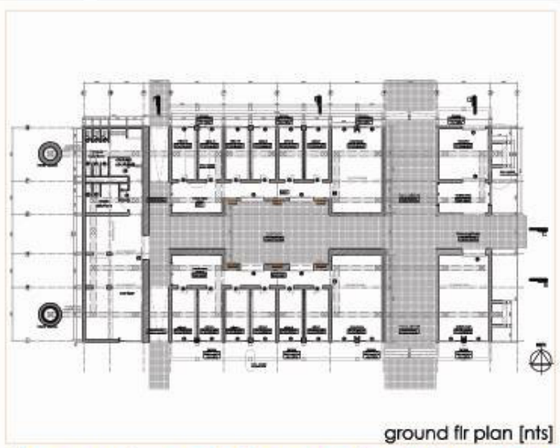

Q
8
7
door combination of glazing 25dia saligna lattes and corrugated sheeting
line of rc 85mm concrete lintol above
324x345 rc concrete column
DETAIL AR/DE/003
tip-up door detail
32mm laminated shutter board fixed to shaved 150dia saligna poles with M20 4mm screws
25dia saligna lattes fixed to 32mm laminated shutter board with stainless steel self tapping screws
425 high single skin adobe brick wall bagged brick finish
power-floated tinted screed at min 1:60 fall
rough plaster finish
OFFICE 11
TERRACE
section Aa
1:25
Aa
D2
D2
terrace
power-floated tinted screed at min 1:60 fall
office 11
150x150 slate tiles to specifications
b
office 12
150x150 slate tiles to specifications
DETAIL AR/DE/002
screen wall detail
D5
D5
plan
1:25


150dia treated saligna poles shaved to accomodate laminated shutter board fixation
32mm laminated shutter board fixed to shaved 150dia saligna poles with M20 4mm bolts
25dia saligna lattes fixed to 32mm laminated shutter board with stainless steel self tapping screws at 1200 mm centres
sinlge skin abode bricks
300 concrete upstand
150x150 slate tiles to specifications
345 rc concrete ground beam
section b
1:25

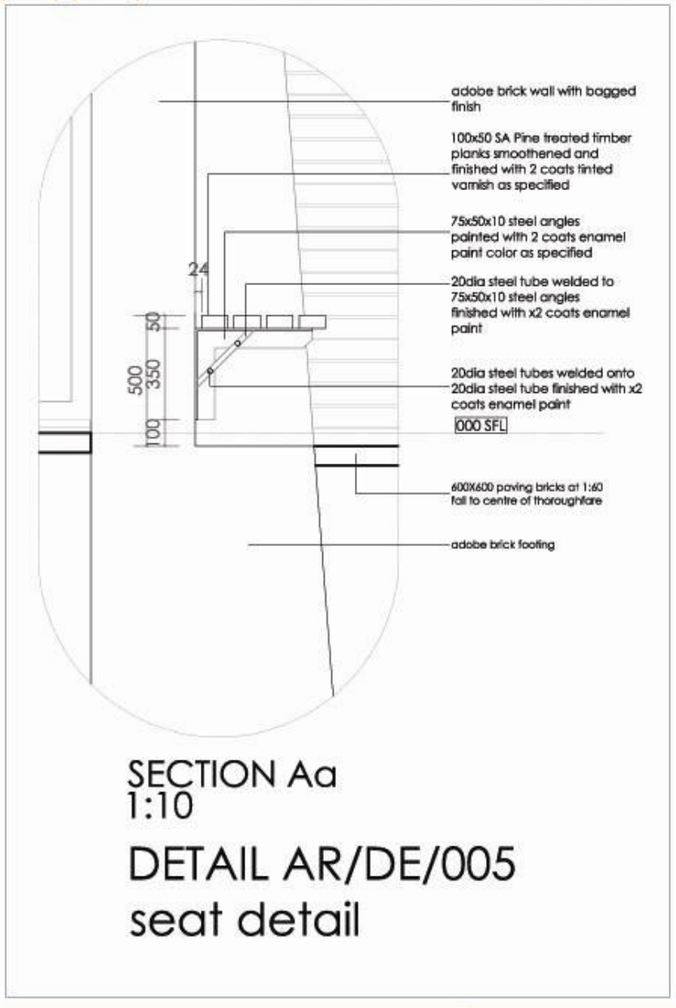

225X150X75X5mm unequal leg steel angle
75X75X5mm steel angle
4mm glazing connected to steel frame with silicon beading
section Bb
1:10


Aa
Bb
tip-up door closed AR/DE/004
1:25
Aa
Bb
tip-up door open AR/DE/004
1:25


L
M
N
O
P
Q
DETAIL AR/DE/006
DETAIL AR/DE/007 tubular support and shading type
DETAIL AR/DE/008 connection of support
DETAIL AR/DE/003 pole and tip up door detail
DETAIL AR/DE/011 retaining wall detail
DETAIL AR/DE/005 spot detail
DETAIL AR/DE/009 ventilation ducts
SECTION E

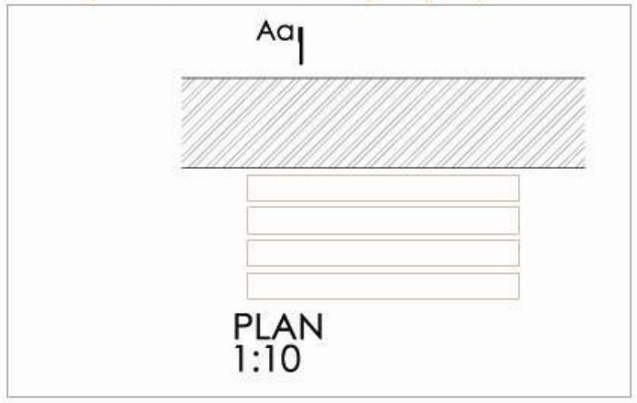

ground flr plan [nts]

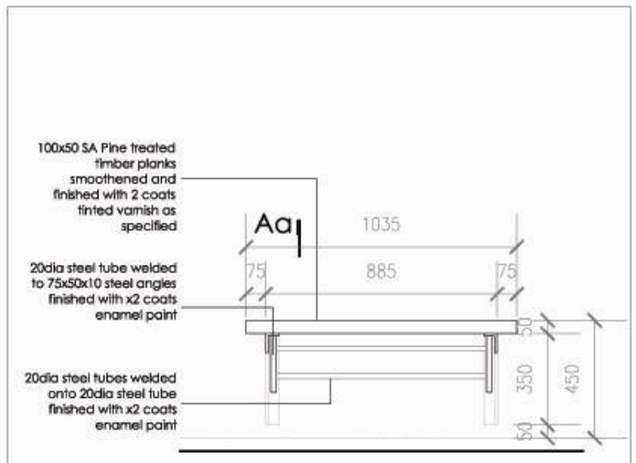

office block A
site plan 1:1250



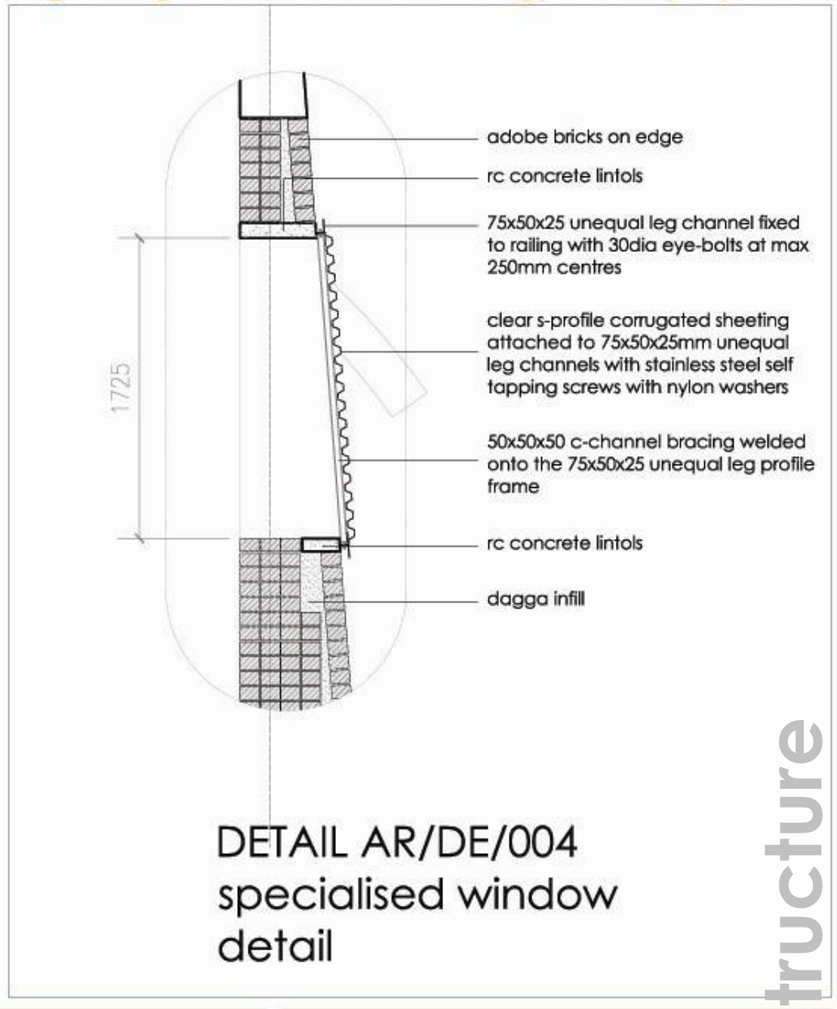
SECTION Aa
1:10

DETAIL AR/DE/005
seat detail

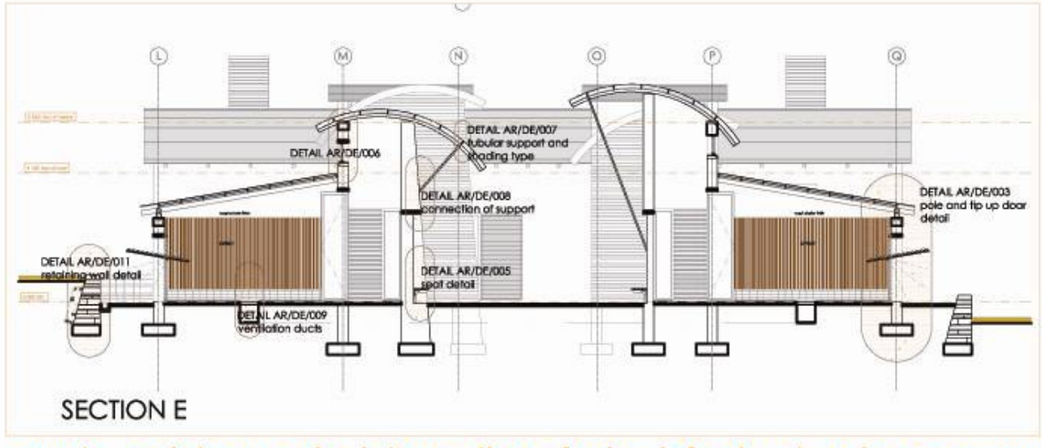




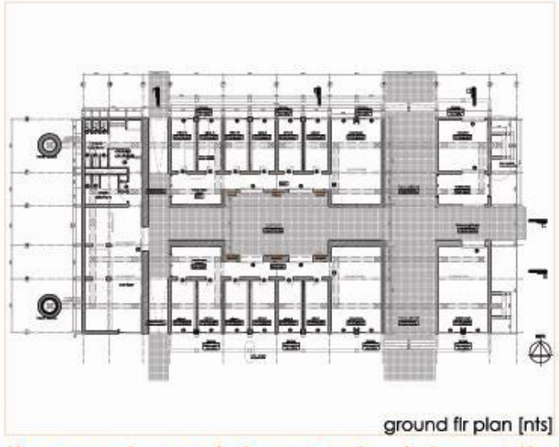
FRONT ELEVATION
1:10



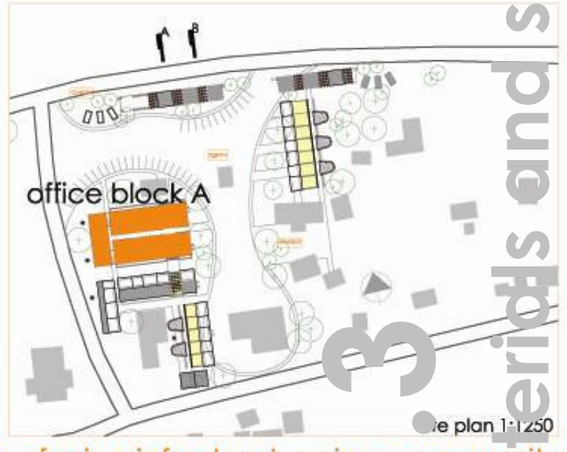
DETAIL AR/DE/004
specialised window
detail



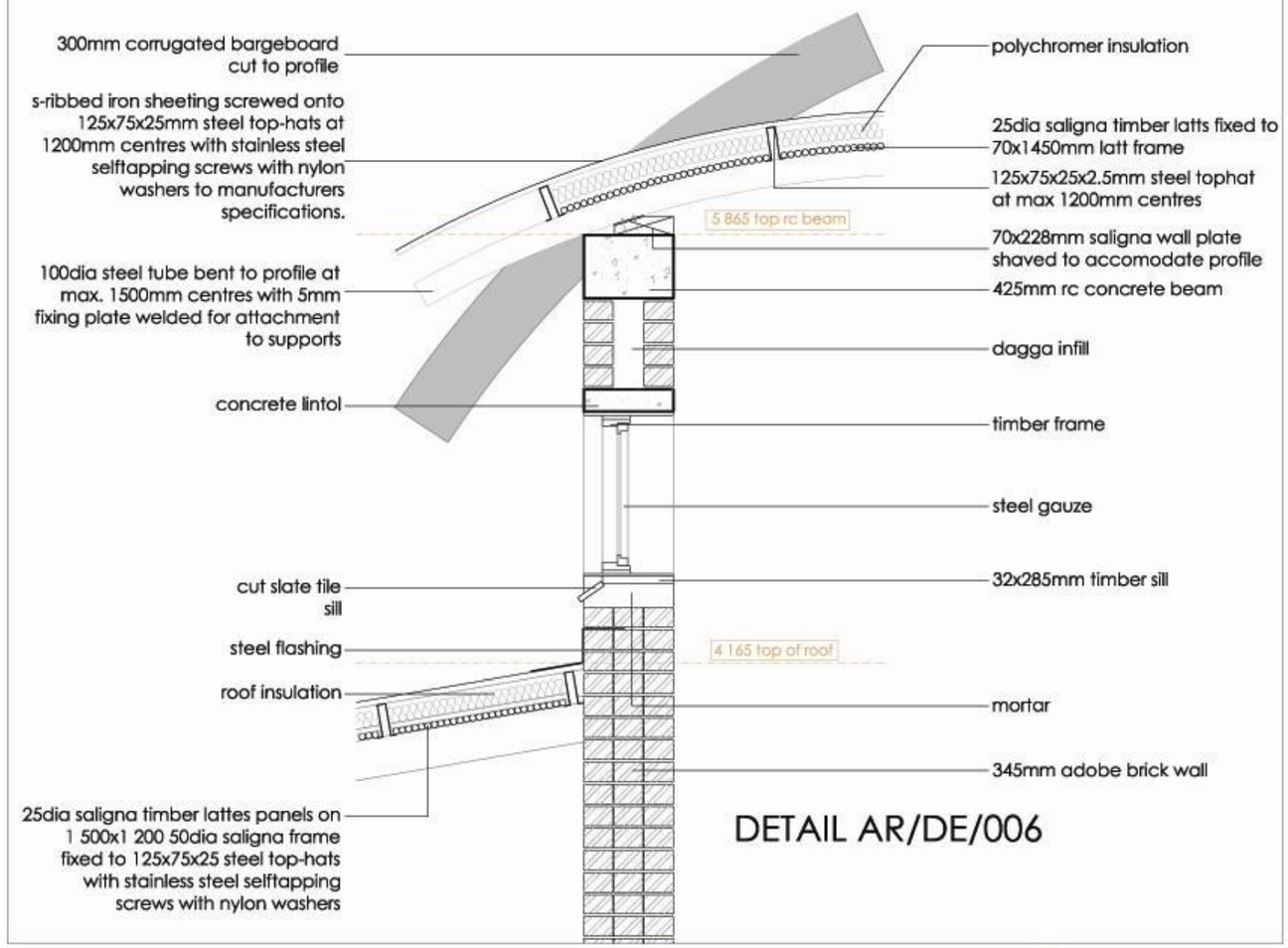
SECTION E



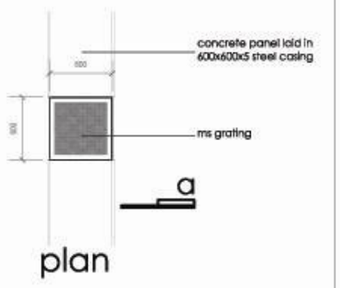
ground flr plan [nts]



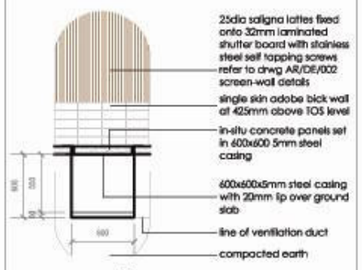
e plan 1:1250



DETAIL AR/DE/006

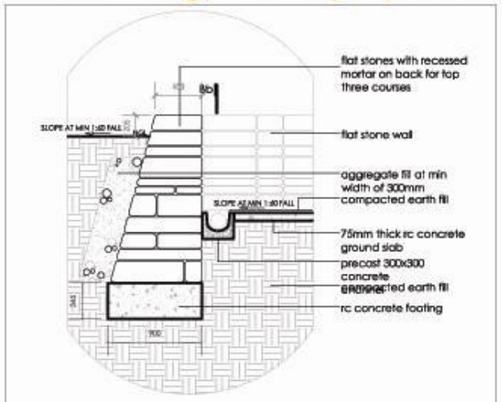


plan

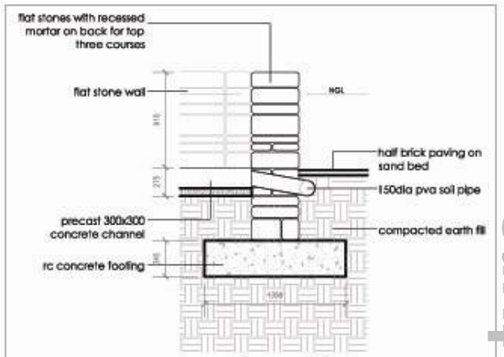


section a

DETAIL AR/DE/009
ventilation ducts

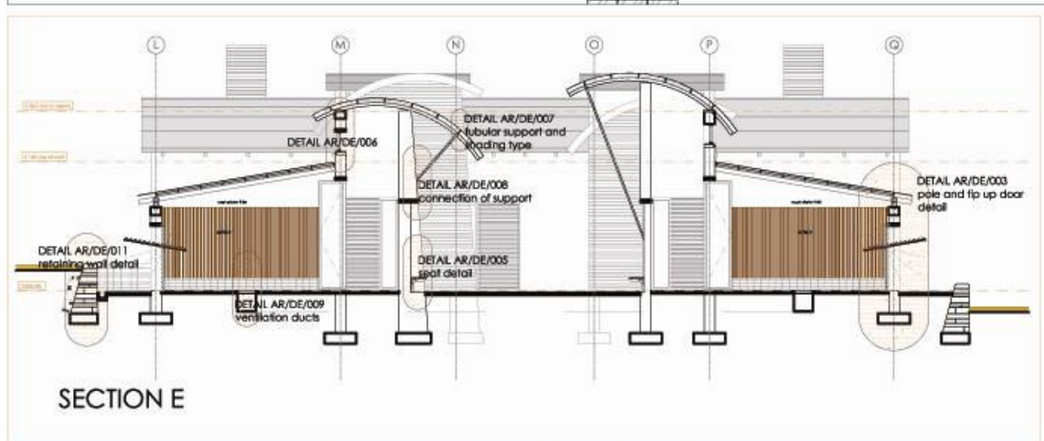


DETAIL AR/DE/011
retaining wall detail

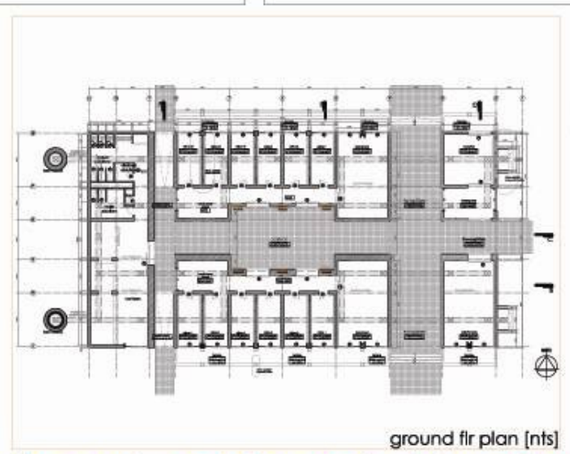


section Bb

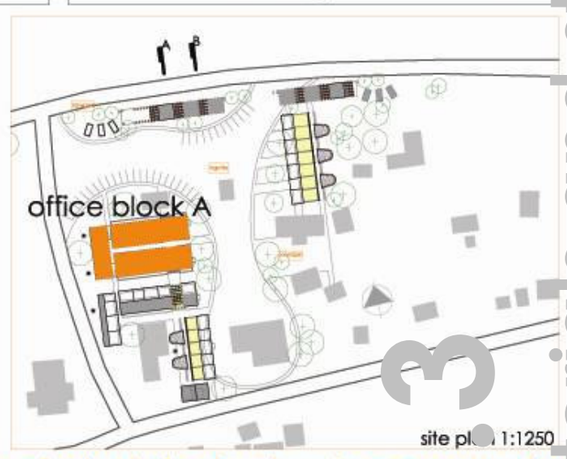
DETAIL AR/DE/011
retaining wall detail



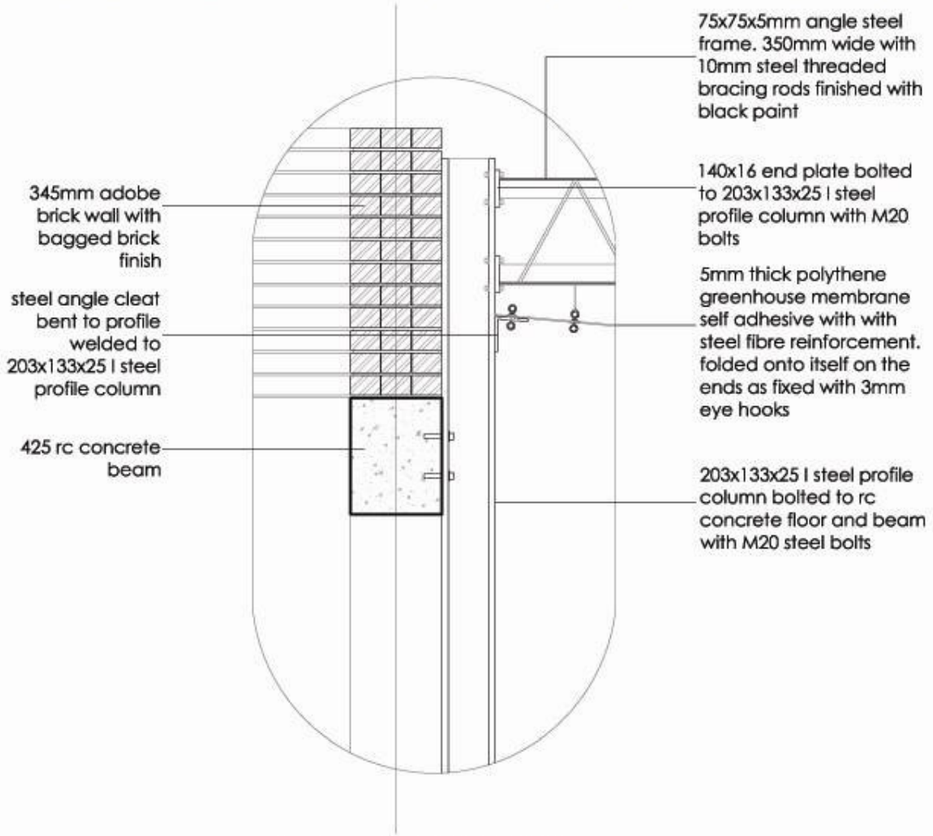
SECTION E



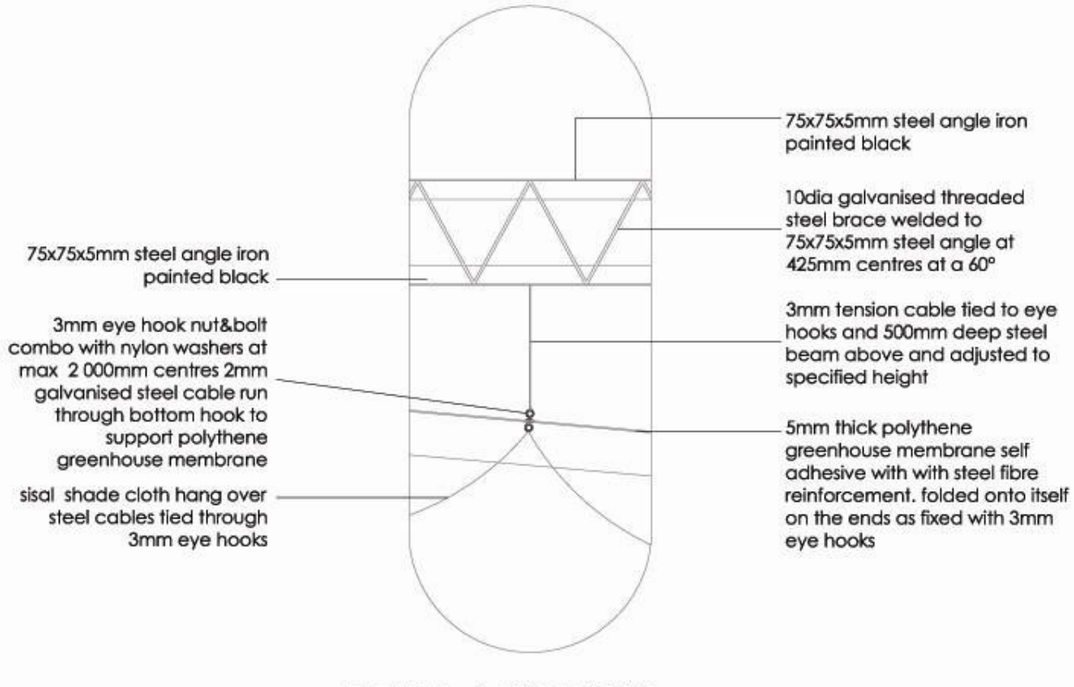
ground flr plan [nts]



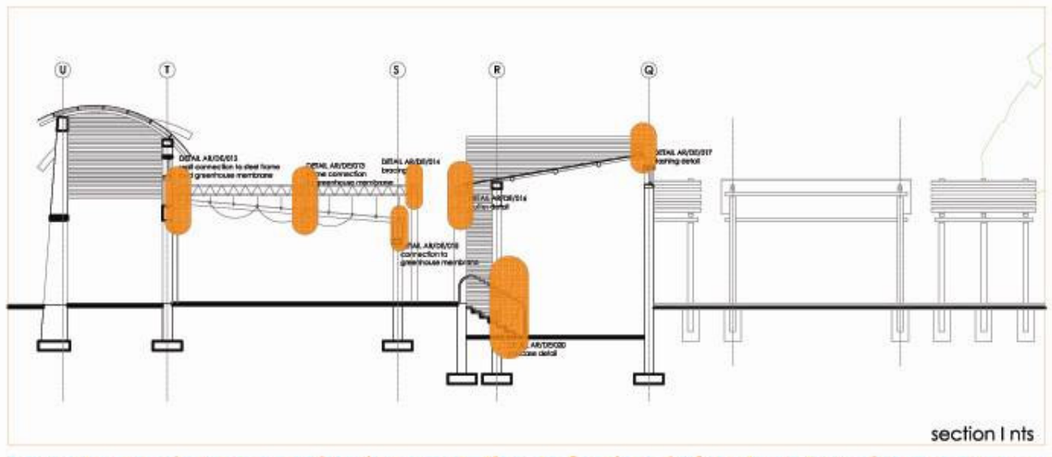
site plan 1:1250

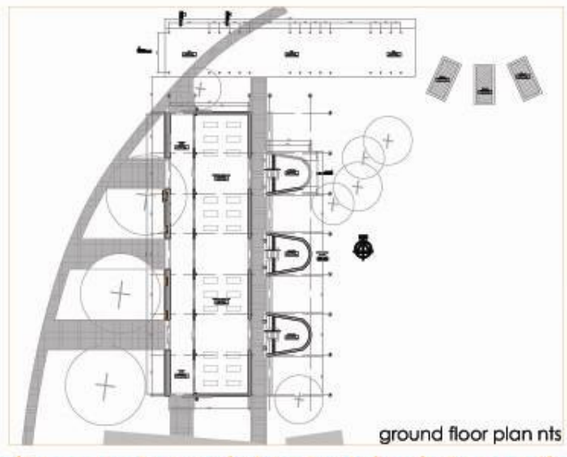


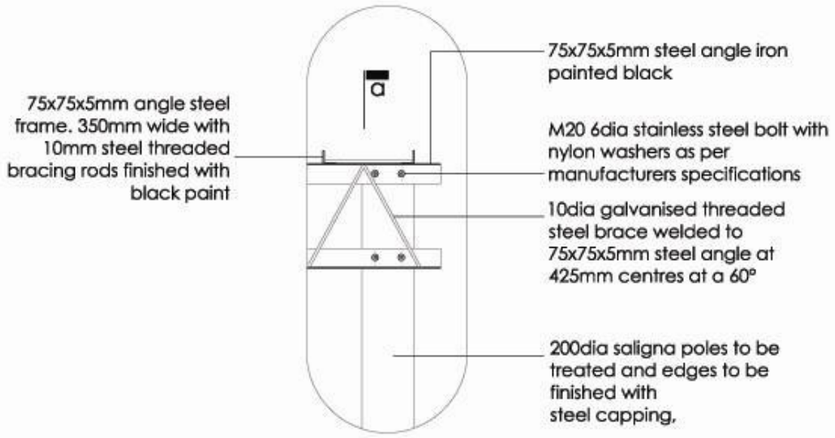
DETAIL AR/DE/012
connection of greenhouse and overhead steel frame to 345mm adobe brick wall



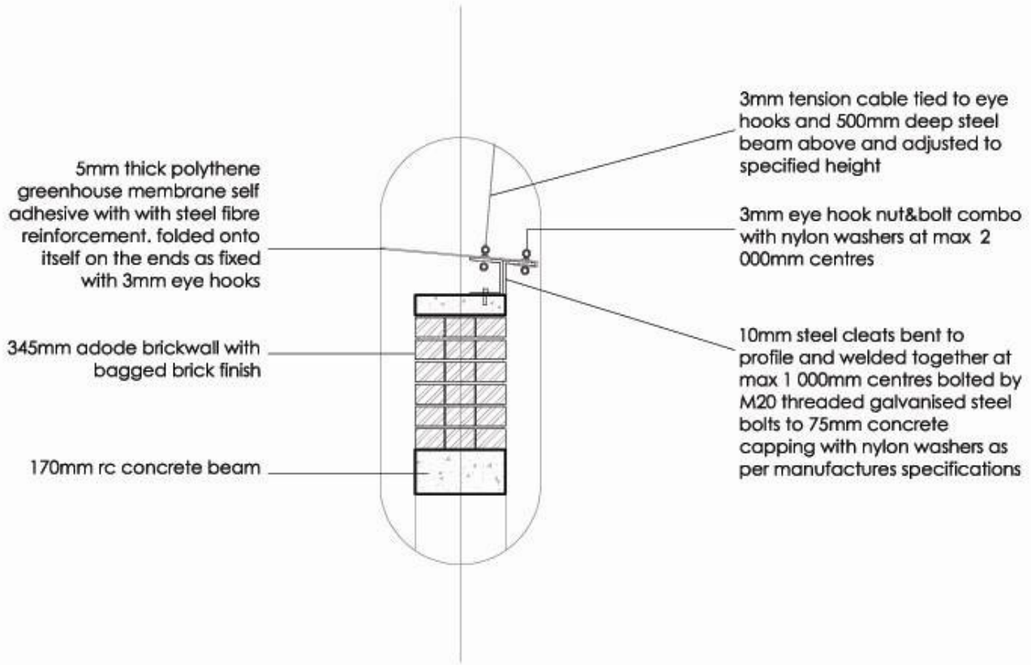
DETAIL AR/DE/013
connection of greenhouse to overhead steel frame



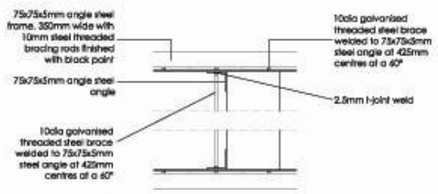




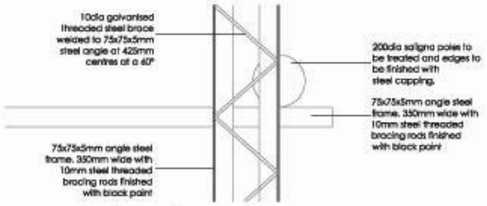
DETAIL AR/DE/014
bracing



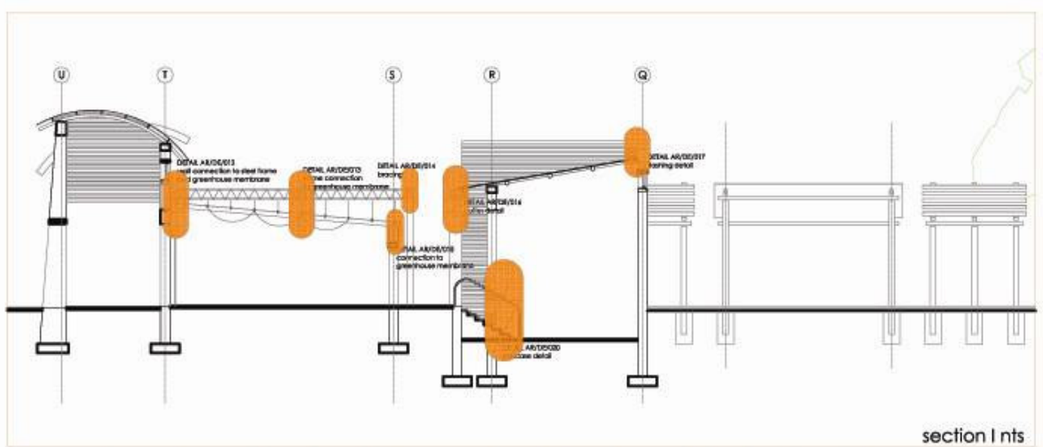
DETAIL AR/DE/015
end connection of greenhouse membrane



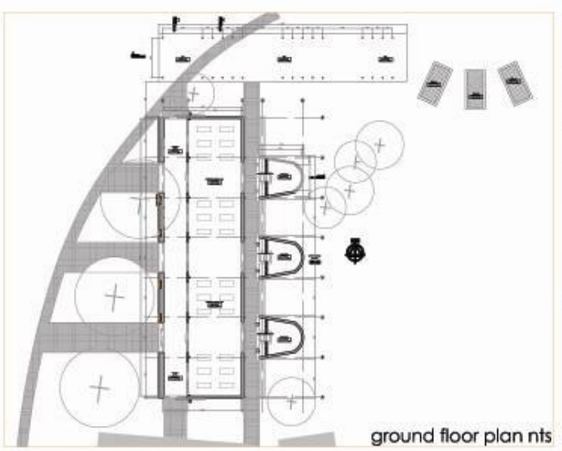
section a
showing 500mm deep steel frame



plan view
at brace

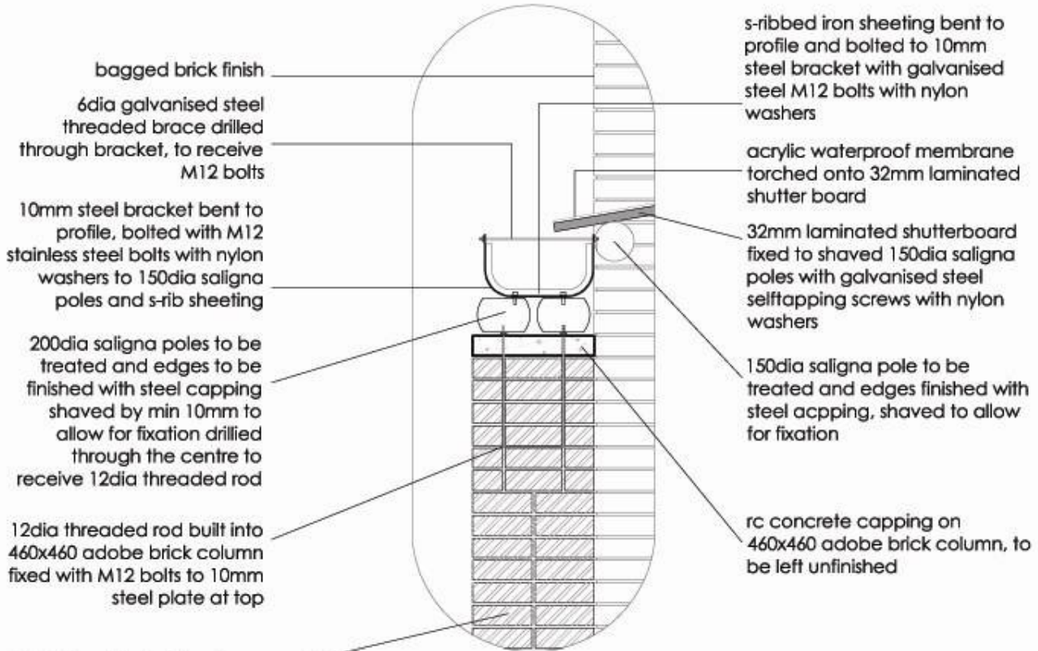


section I nts

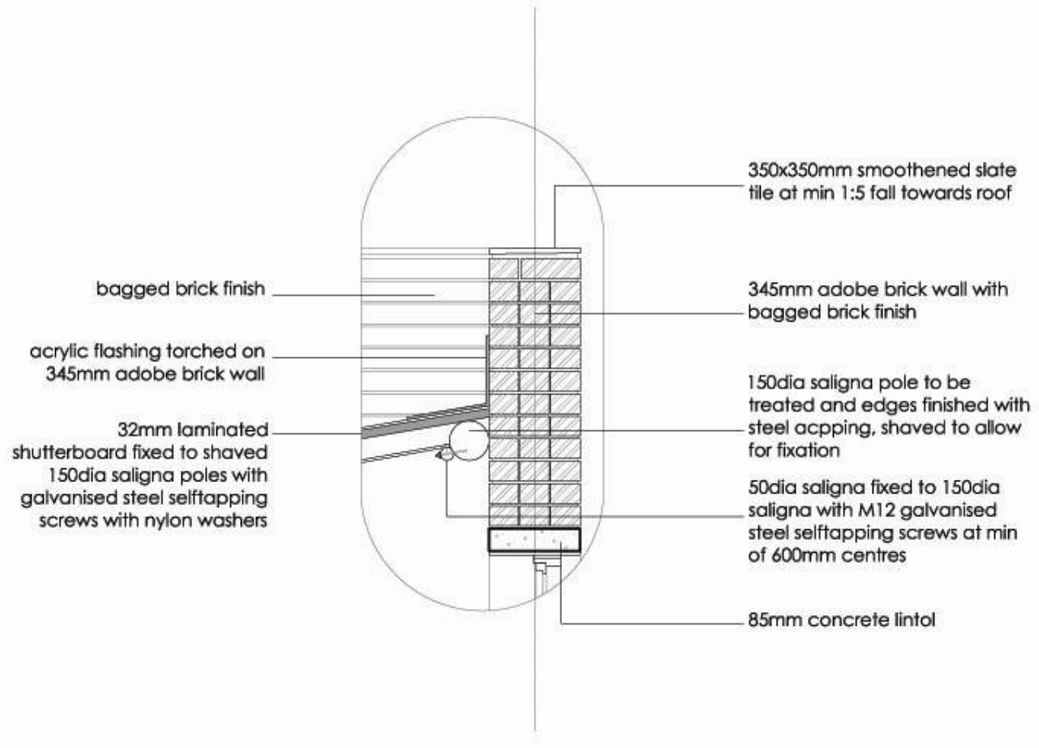


ground floor plan nts

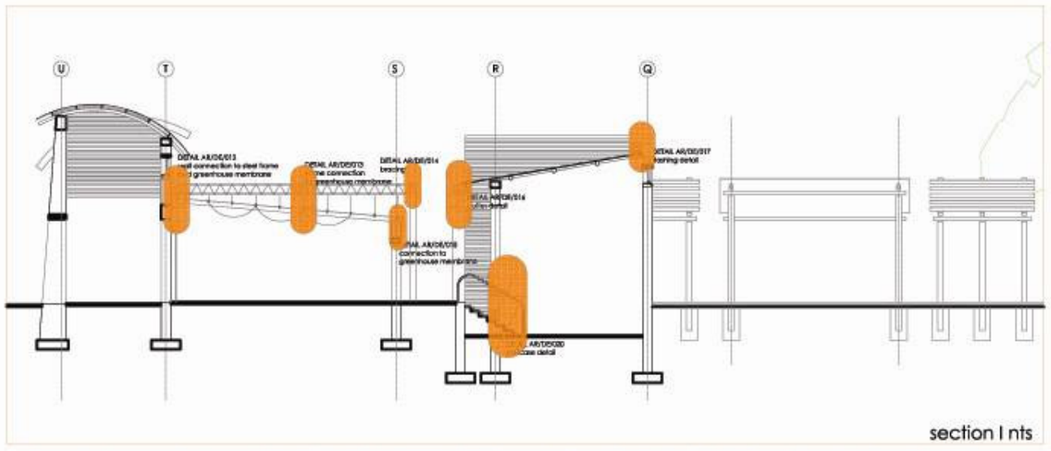
site plan 1:1250



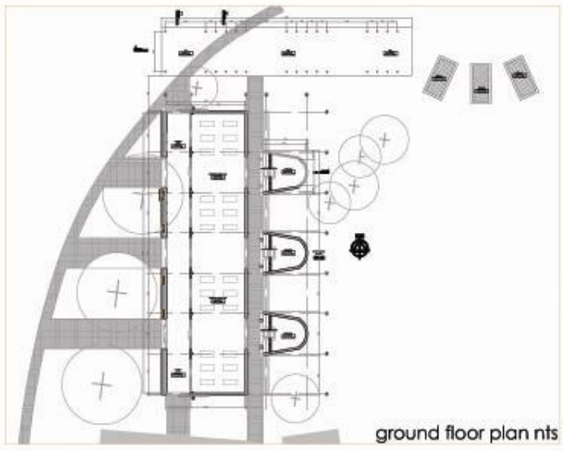
DETAIL AR/DE/016
s-rib corrugated gutter



DETAIL AR/DE/017
wall flashing detail

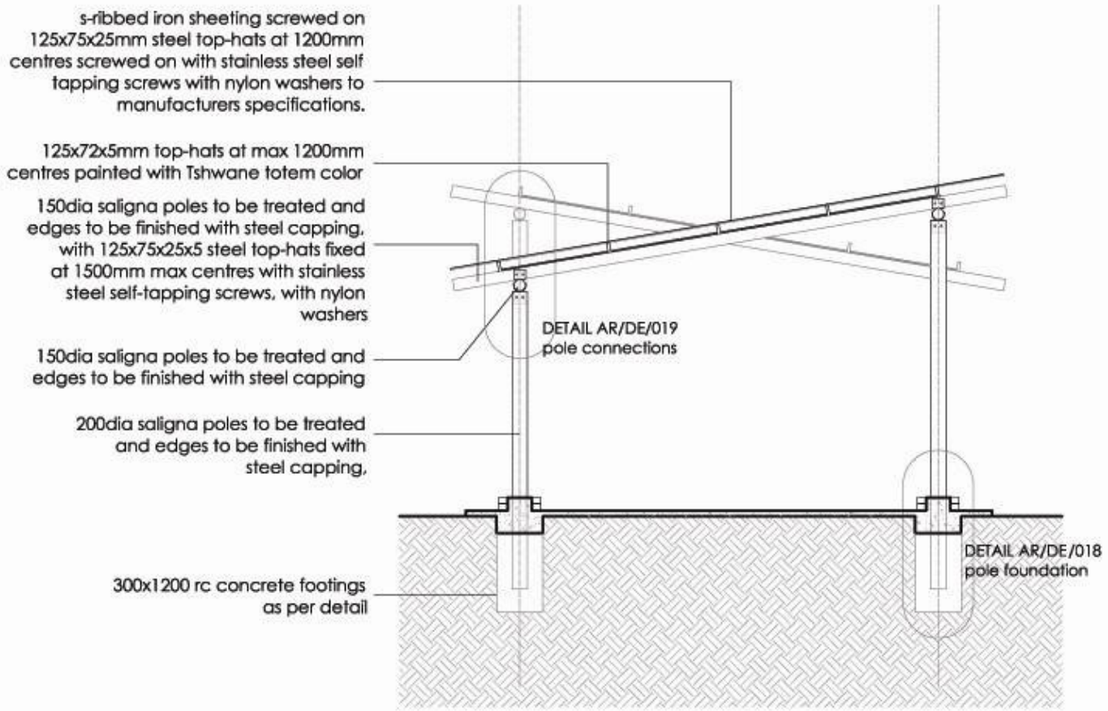


section I nts

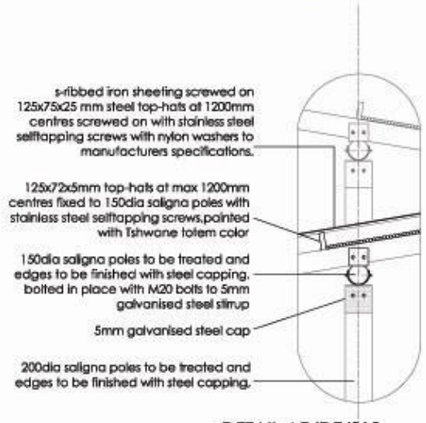


ground floor plan nts

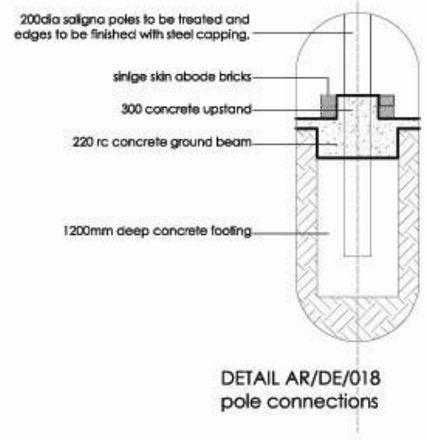
site :1250



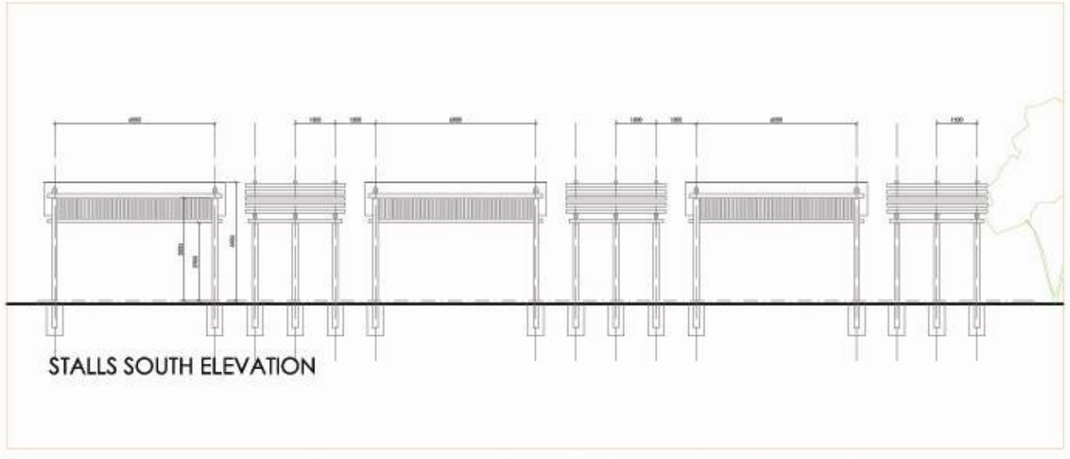
SECTION G
nts

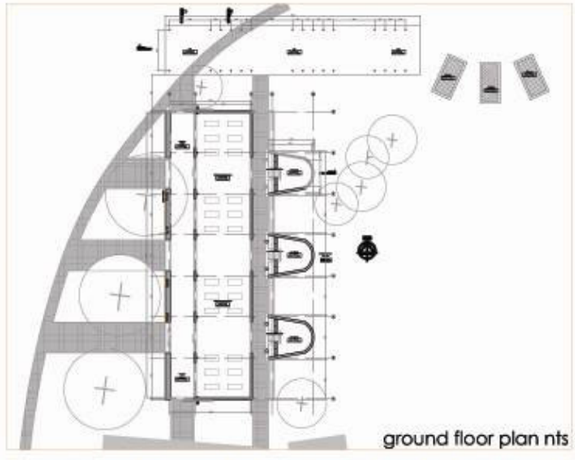


DETAIL AR/DE/019
pole connections

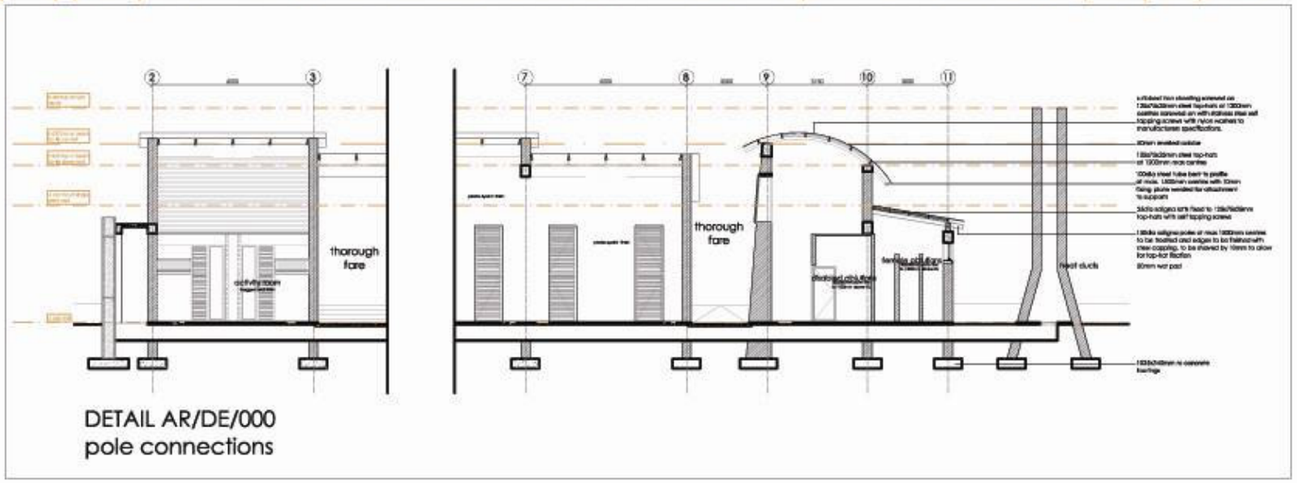


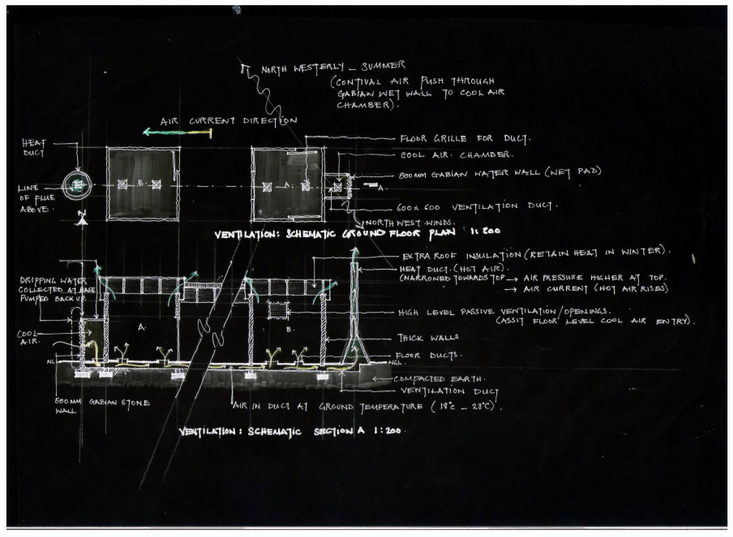
DETAIL AR/DE/018
pole connections

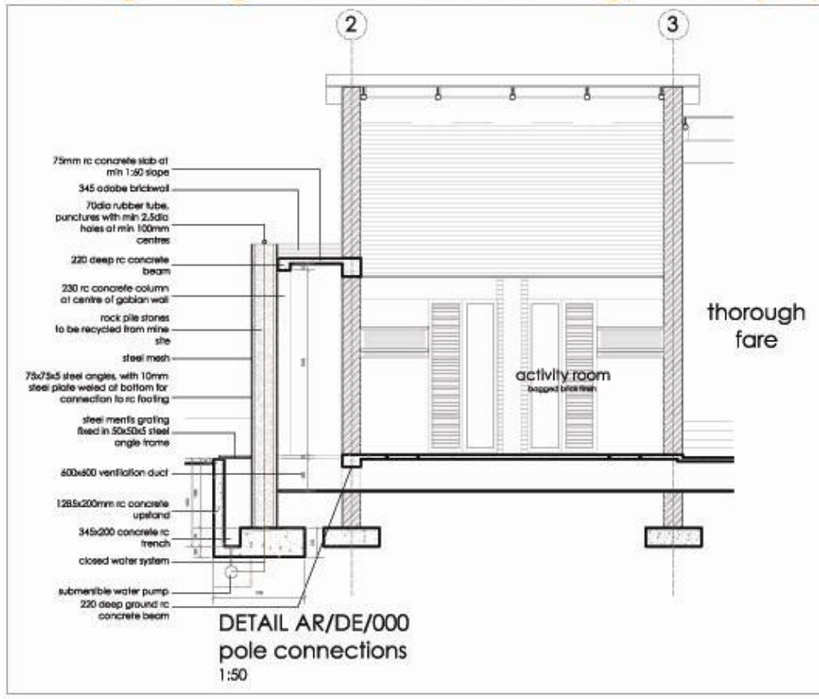


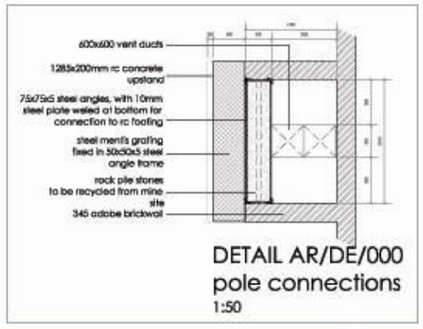


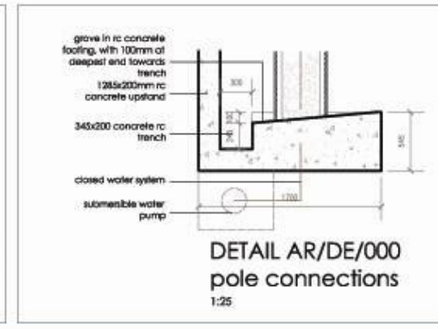
site plan 1:125

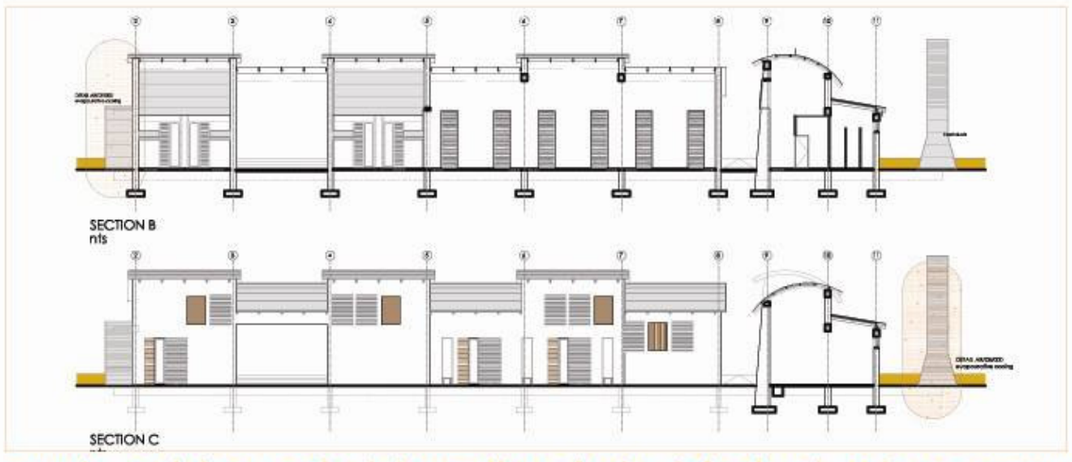

thorough fare
thorough fare
DETAIL AR/DE/000
pole connections

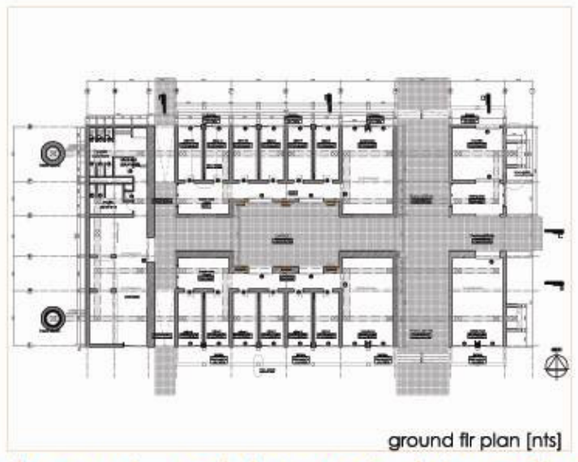

NORTH WESTERLY _ SUMMER
(CONTINUAL AIR FLOW THROUGH GABIAN WET WALL TO COOL AIR CHAMBER).
AIR CURRENT DIRECTION
HEAT DUCT
FLOOR GRILLE FOR DUCT.
COOL AIR CHAMBER.
800 MM GABIAN WATER WALL (WET PAD)
600 X 600 VENTILATION DUCT.
LINE OF FLUE ABOVE.
VENTILATION: SCHEMATIC GROUND FLOOR PLAN 1:200
EXTRA ROOF INSULATION (RETAIN HEAT IN WINTER).
HEAT DUCT (HOT AIR) CHANNELLED TOWARDS TOP
AIR PRESSURE HIGHER AT TOP.
AIR CURRENT (HOT AIR RISES)
DRIPPING WATER COLLECTED AT BASE PUMPED BACK UP
HIGH LEVEL PASSIVE VENTILATION/OPENINGS. CASSIT FLOOR LEVEL COOL AIR ENTRY).
COOL AIR
THICK WALLS
FLOOR DUCTS
COMPACTED EARTH
VENTILATION DUCT
800MM GABIAN STONE WALL
AIR IN DUCT AT GROUND TEMPERATURE (18°C – 23°C).
VENTILATION : SCHEMATIC SECTION A 1:200

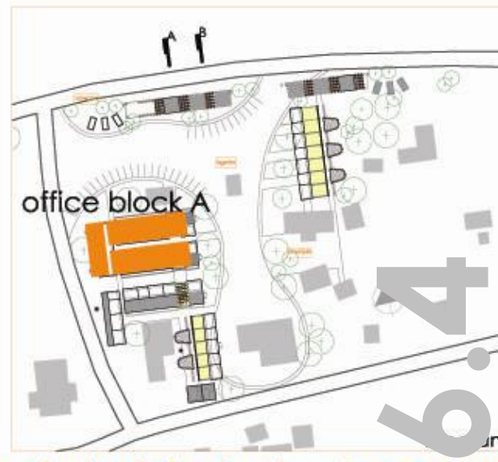

75mm rc concrete slab at min 1:60 slope
345 adobe brickwall
70dia rubber tube, punctures with min 2,5dia holes at min 100mm centres
220 deep rc concrete beam
230 rc concrete column at centre of gabion wall
rock pile stones to be recycled from mine site
steel mesh
75x75x5 steel angles, with 10mm steel plate welded at bottom for connection to rc footing
steel mentis grating fixed in 50x50x5 steel angle frame
600x600 ventilation duct
1285x200mm rc concrete upstand
345x200 concrete rc trench
closed water system
submersible water pump
220 deep ground rc concrete beam
activity room
thorough fare
DETAIL AR/DE/000
pole connections
1:50


600x600 vent ducts
1285x200mm rc concrete upstand
75x75x5 steel angles, with 10mm steel plate welded at bottom for connection to rc footing
steel mentis grating fixed in 50x50x5 steel angle frame
rock pile stones to be recycled from mine site
345 adobe brickwall
DETAIL AR/DE/000
pole connections
1:50


grove in rc concrete footing, with 100mm at deepest end towards trench
1285x200mm rc concrete upstand
345x200 concrete rc trench
closed water system
submersible water pump
DETAIL AR/DE/000
pole connections
1:25


SECTION B
nts
SECTION C


ground flr plan [nts]


office block A
1:1250

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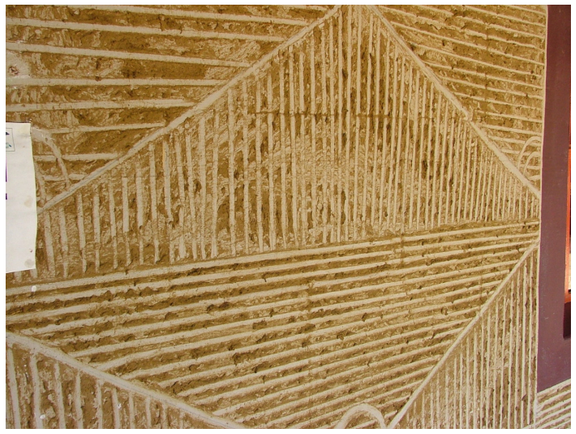
list of figures



ACKNOWLEDGMENTS:

"The Lord is my Shepard I shall not want". And He lived to that promise this year, in every way possible.

Alleluia

Daddy and Amooti, you are the reason that I am here. Life is so much better because you are who you are.

The boys, Twine, Roy, SugarRay and Roni thank you for the constant support and encouragement. Roy the softie's were a life line!! Na no lulara!

Jacki and Ethan you were always o my mind. Thank you for the prayers and support.

Rose, for being the best niece ever.

Thania, what can I say? My stoep will never be the same! You are a good friend! And that's putting that lightly.

Selepe, am as surprised as you are that you made it to this page. Inspite of you and despite me you are truly special and a good friend!

Lee Burger. Let's say that I learnt to live in the sink and dishwasher, when I get one.

John Duran. You insight into alternative building methods and informal architecture within suburbia was invaluable. Thank you.

Derrick deBryn for constantly challenging me, and dragging this work out of me. Thank you