field

public space infrastructure

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1. Introduction

"I could tell you how many steps make up the streets rising like stairways, and the degree of the arcades' curves, and what kind of zinc scales cover the roofs; but I already know this would be the same as telling you nothing. The city does not consist of this, but of relationships between the measurements of space and the events of its past…" (Calvino 1972:10)

"Public spaces are where communities rediscover their unity" (Aymonino & Paolo Mosco 2006: 361) – this is the space where events take place and it is defined by the architectural object. The author is of the opinion that relatively few formal public spaces exist in South African cities. This does not prevent the public from creating their own public space. Open space and empty parking lots are turned into informal spaces where people with similar interests meet (fig. 1). Regular events take place over the weekends in parks, where crafts and food is sold (fig. 2-3). The street is also used as public space even though it lacks the basic public amenities, such as seating, shade and ablutions.

Bearing this in mind an open terrain between the suburb of Salvokop and the railway tracks that border the centre of Pretoria is selected for the investigation. Its proximity to Freedom Park and the city centre, and the large scale of the site makes it ideally suited as a contemporary public space. Freedom Park is the latest urban intervention in Pretoria. However, the value of the park suffers due to its nature as an island in a sea of infrastructure. Access to the park is made difficult by the surrounding railway tracks, empty fields of the former marshalling yard. Investors already show interest in this open space next to the railway (Freislich 2006, interview, 17 May), but commercial buildings with no social agenda may exacerbate the problem of access. This is not a unique problem in Pretoria. Little provision is made for pedestrians and people using public transport. New developments do not grow from the core of the city, resulting in fragmented urban clusters that can only be reached by car.

Cleared land at the base of Salvokop Hill is the only reminder of the rail industry that once occupied the site. Underneath a thin layer of contaminated soil lie the tracks of a vanished marshalling yard. Half [1]of the plants that grow in this place are exotic (Siebert 2002:2). There is a small rubbish dump, high tension wires, twin footpaths and the Pretoria skyline looming to the north. It is quiet save the trains and taxis clattering and calling as they pass nearby.

The focus of this dissertation is the dialectic between an object and the spaces it creates. This dialectic is investigated by way of 18th century English and French Picturesque traditions, contemporary art and the work of contemporary urban theorists Stan Allen and James Corner of Field Operations, Raoul Bunschoten of Chora and Michel de Certeau.

The site analysis attempts to look beyond the objective information provided by traditional analysis. This implies a methodology that approaches the site from eye level - the way a pedestrian would approach it. Activities and user groups are identified around the site. Precedent studies on international and national; formal and informal public spaces are investigated in order to gather appropriate working concepts, models and methodologies. A scenario is then diagrammatically presented. After the design investigation a conclusion is reached after which a detailed technical investigation of one of the three proposed buildings synthesizes the theoretical and conceptual work into a concrete architectural form and closes the dissertation.

[1] Forty species have been recorded for the study area. 75% are exotics of which only 10% has a potential use for the local community. 40% of the indigenous species can be used by the community but these plants are already threatened by invasive exotics. Therefore development is encouraged in this area (Siebert 2003:2).

Fig. 1 *Heys Memorial Hall* parking (Author 2006)

Fig. 2 *Magnolia Dal,* vietnamese festival(Author 2006)

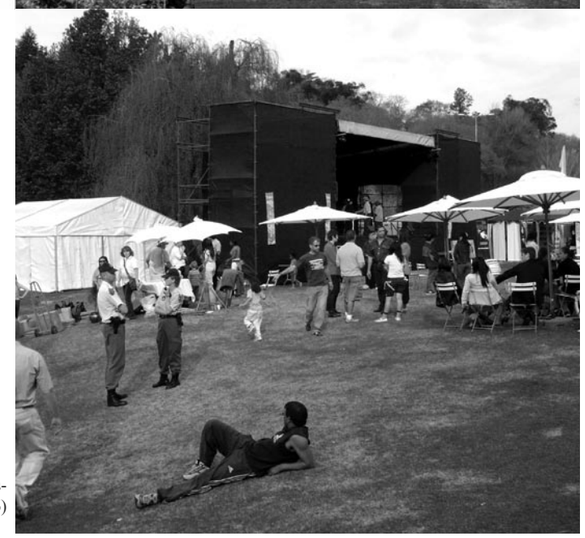


Fig. 3 *Magnolia Dal,* vietnamese festival (Author 2006)

2. Theoretical discourse

In 1992 Rachel Whiteread turned an old Victorian house inside out (Townsend 2004:19). The shuttering used to construct Whiteread's *House* (fig. 4) was to be demolished along with the houses next to it as part of an urban renewal. The project is humanist. It is about the human subject and architectural space.

Adrian Searle (*ibid:* 19) points out that: "What, finally, has been exposed is an empty setting, a place where people once led a life of intimacies, grew up, grew old and died. And one might add, fucked, rowed, worried, slept, ate, shat, fought, laughed and lied. No one looks out of the windows anymore, no one puts out the milk-bottles on the stoop; no on shouts 'Kevin come in your tea's ready' or returns home late from the pub and fumbles with the keys to the lock." Whiteread's work privileges space and not the object.

Focus is shifted from architectural objects to the spaces they create - the role of the object is being re-examined. Spaces and their associated atmospheres have been a sustained interest in the West. In the minimalist art of the 1960s much was made of the viewer's movement through the field surrounding the objects (Mariño 2004:105). In post-minimal practices place, surrounding objects is redefined as the enactment of a situation (*ibid:* 105). Also, the French sociologist, Michel de Certeau, in his seminal text *The practice of everyday life (*1984) writes on the movement of pedestrians through the spaces of cities and how this movement is influenced by objects. In South Africa this interest is evident in Ivan Vladislavić's recently published *Portrait with keys.* Vladislavić has a recurring theme of flaneurism, with strangers meeting in the leftover spaces of Johannesburg and Pretoria. Thus, public space is no longer simply a platform for viewing architecture, but rather architecture becomes a tool to manipulate urban spaces.

Fig. 4 *House* - Rachel Whiteread, 1993, concrete (Dimitrakaki 2004:118)

2.1 Manipulation of space

"I say it is the sculptor who orders and animates space, gives it meaning." (Isamu Noguchi cited by Hunter 1979:85)

The architectural object need not be a mere container of space, but is able to create an atmosphere - similar to props on a stage used to create ambience. To echo Ilhyun Kim's sentiment on objects: objects matter when "architecture embraces the entire atmosphere in which human activities are engaged" (Kim 2006:164).

To exemplify: in July 2005 Richard Serra's installation *A matter of time* opened in the Guggenheim Bilbao's largest space – the Arcelor Gallery (fig. 5). This gallery, measuring one hundred and thirty by thirty meters, has always been considered to be too large to host contemporary art. Moreover, the space dwarfed Serra's eight piece installation. Once all eight of the pieces were installed, the experience of the gallery changed dramatically. Serra leads the viewer down dark corridors, dead ends and open spaces. The monotonous gallery space is turned into a series of different experiences. The metal plates have an emotional impact as the heavy sculptures bear down on the viewer with no visible connections keeping them in place. Some of the walls are sandblasted and appear to be soft, but on contact the cold metal underneath is felt. The installation, although unsettling, heightens the viewer's awareness of the space created by it.

Objects need not be at the same scale as the Serra sculptures to influence the space around them, in fact they can be on the scale of graffiti. *Paint drip risks* is a group of three graffiti artists, active in the

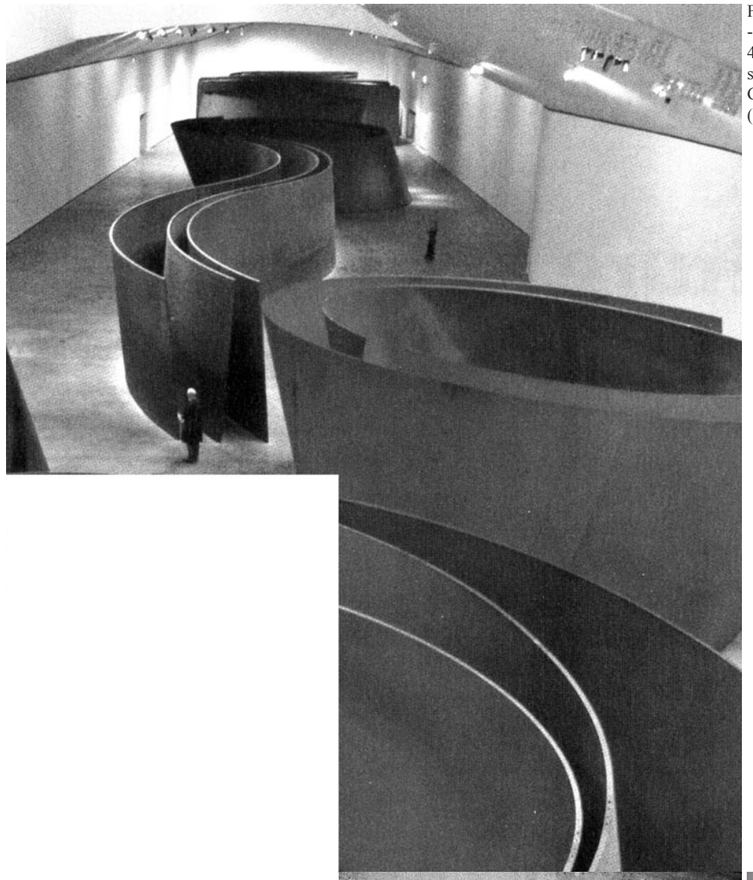
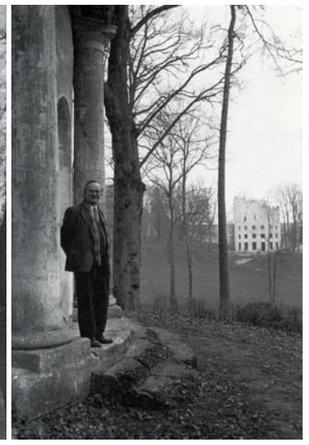


Fig. 5 *Matter of Time* - Richard Serra, 2005, 430cm high 6cm thick sandblasted steel sheets, Guggenheim, Bilbao. (McGuirk 2005:86).

Fig. 6 *The Broken Column* - François Nicolas Henri Racine de Monville, (1774-1789), photographer Michael Kenna (1988) (Ketcham 1994:76)



Left: Fig. 7 Restoration architect, Olivier Choppin de Janvry, co-owner of Désert de Retz, in front of the unrestored *Temple of Pan,* 1993 (Ketcham 1997:90)

Middle: Fig. 8 *Tartar Tent, Isle of Happiness,* construction 1774-1789, restored 1972-1993 (Ketcham 1997:84)

Far left: Fig. 9 Graffiti - Paint Drip Risks, Cape Town (Spot 2006:14)

southern suburbs of Cape Town. Their graffiti often appears in circulation routes that are used by people who have no choice but to walk there because they can't afford private transport (fig. 9). The graffiti object draws the passer-by's attention to the fact that the space is frequently used, although no-one else is in sight – whether a comforting or discomforting idea. The subject of the graffiti also comments on the conditions of pedestrians – a leaking tap is ironic because very little public facilities for water, ablution or seating is provided in a typical South African public space.

2.2 Sluces and streams: movement through space

Objects change the way people move through space, by either serving as markers on a map, guiding movement from one point to the next, or by manipulating the topography. Objects placed in urban space only allow a few possible routes through the space. Pedestrians will only use a few of the routes. However the walker also increases the number of possibilities when using shortcuts and detours (De Certeau 1988: 98) – this causes unpredictable emergent behaviour. The implication is that the arrangement of architectural objects does not necessarily dictate the way that urban space is used.

Raoul Bunschoten, director and most prominent member of *Chora* (a cross between an academic research institute, urban design office and think-tank for urban policy), uses the term *Prototype* to explain this arrangement of architectural objects (Bunschoten 2002:5). According to Bunschoten a prototype is an organisational structure that is part of the architecture of urban spaces that results in emergent spatial, social and political structures. By giving urban spaces prototypical character the designer creates identity which in turn stimulates the evolution of society.

Psychogeography was invented by a cultural movement in Paris, the Lettrist International (formed by Isidore Isou and Gabriel Pomerand), between 1946 and 1957 in an attempt to reconfigure their movement according to a nomadic lifestyle (Ford 2005:34). "Psychogeography. The study of the specific effects of the geographical environment, consciously organised or not, on the emotions and behaviour of individuals ." The description was made by 1958, after three years of experimentation. The chief means of psychogeographical investigation was the *dérive* (*ibid:* 34), and was continued by the Situationist International, an artistic movement led by Guy Debord that aimed to upset establishment. The *dérive* entails a roaming pedestrian drift that undermines the structure of the city by locating transient atmospheres outside the control of centralized authority (*ibid* :35) The first *dérive* (fig. 11) in the streets of Paris (1953 - 1956) was more about drifting from bar to bar where they met Algerians, West Indians, and Jewish people (*ibid:* 35).

The main elements of *dérive,* as explained by Guy Debord: "In a *dérive* one or more persons during a certain period drop their usual motives for movement and action, their relations, their work and leisure activities, and let themselves be drawn by the attractions of the terrain and the encounters they find there. (…) From the *dérive* point of view cities have a psychological relief, with constant currents, fixed points and vortexes which strongly discourage entry into or exit from certain zones." (Guy Debord, 1956 as cited by Ford 2006:35). This explanation implies that the organisation of architecture, by restricting movement, has an influence on the psychology of pedestrians.

Another example of how objects influence movement is the English Picturesque Garden, popularised during the eighteenth century by garden designers such as William Kent, Lancelot 'Capability' Brown and Humphrey Repton (Murray 1987:17). The word 'picturesque' is derived from the Italian *Pitteresco*, meaning 'after the manner of painters'. In the second half of the eighteenth century, Picturesque, as a way of looking at nature as if it were a series of pictures, was elevated to a visual philosophy. This is evident through the writings of William Gilpin, Uvedale Price, Richard Payne Knight and Humphry Repton. "Nature", wrote Sir William Chambers (Murray 1987:31), "is incapable of pleasing without the assistance of art." The Picturesque Landscape is a reconstruction that fascinates. It is dotted with objects (fig. 6-8, 10) testifying of a nostalgia for the arcane village and a lost civilisation suggested by Gothic or Grecian ruins (Van Eeden 2005:55). These objects encourage movement through a landscape that otherwise would have

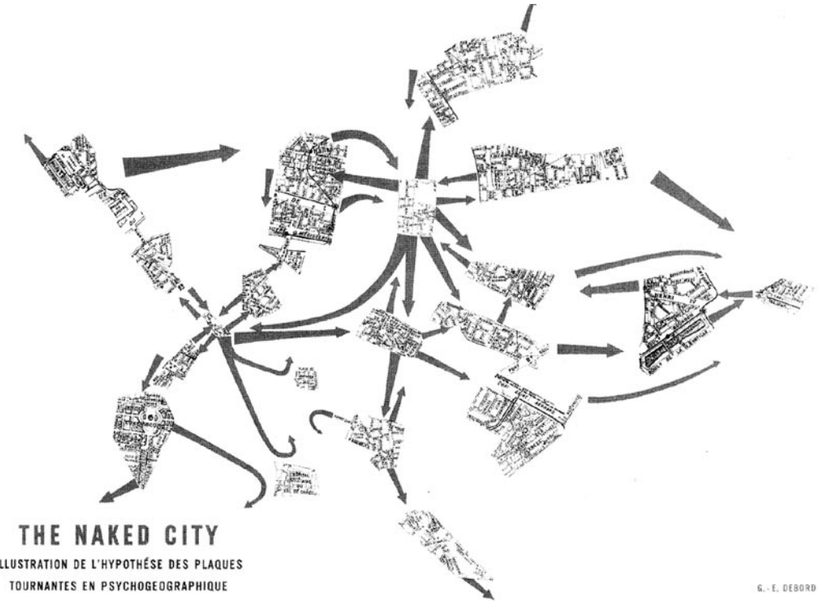


Fig. 10 *Carte générale du desert* - Georges Le Rouge, 1785, engraved map (Ketcham 1994:1)

Fig. 11 *The naked city* - Guy Debord, 1958 (Ford 2005:35)

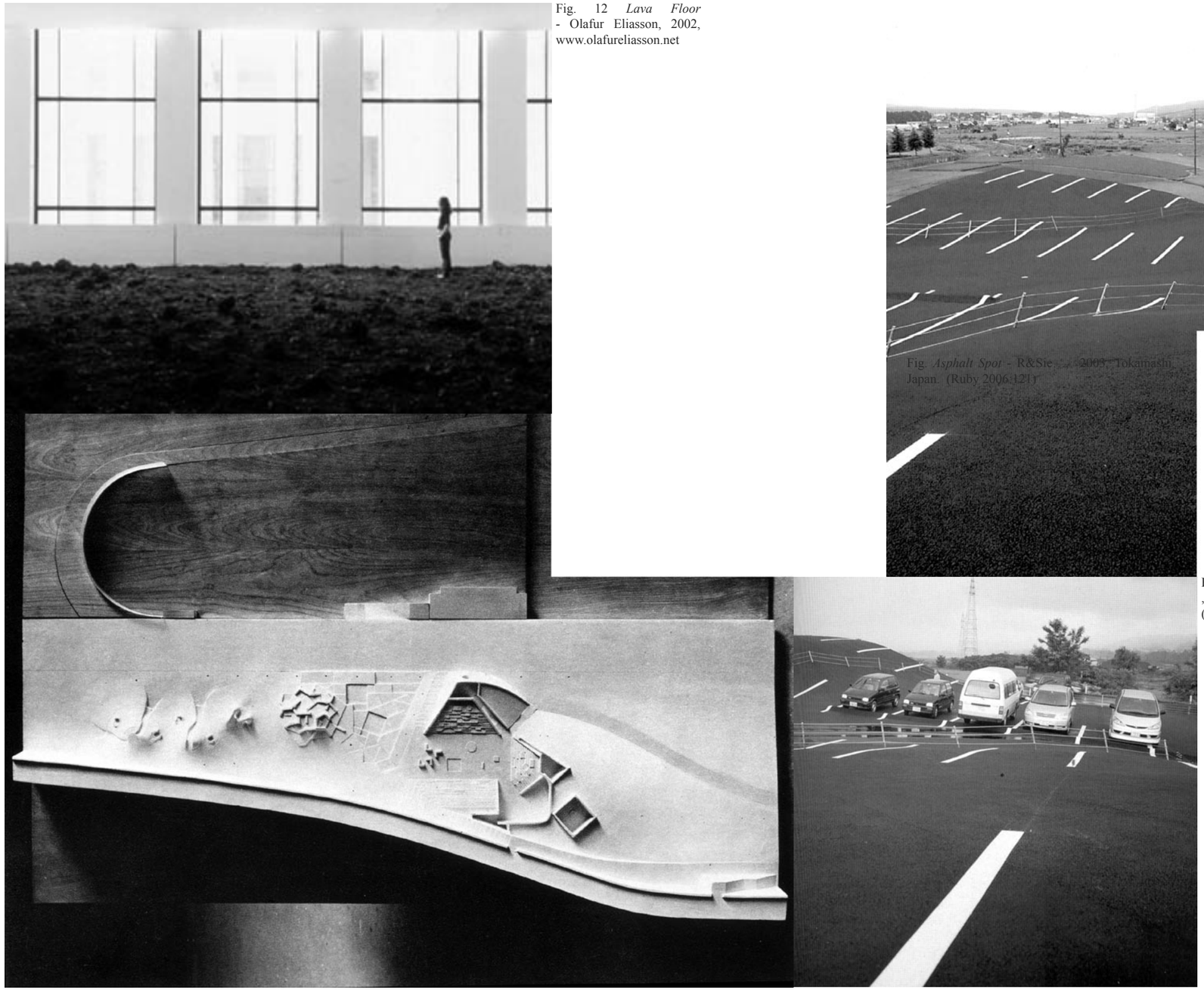


Fig. 12 *Lava Floor* - Olafur Eliasson, 2002, www.olafureliasson.net

Fig. 13 Isamu Noguchi, playground planned for Riverside Drive Park, New York (with Louis Kahn), 1964, plaster model (Hunter 1979:59)

Fig. *Asphalt Spot* - R&Sie… , 2003, Tokamashi, Japan. (Ruby 2006:121)

Fig. 14 *Asphalt Spot* - R&Sie… , 2003, Tokamashi, Japan. (Ruby 2006:121)

Fig. 15 *Asphalt Spot* - R&Sie… , 2003, Tokamashi, Japan. (Ruby 2006:121)

Fig. 16 *Contoured Playground* (planned for Central Park, New York) - Isamu Noguchi,1940, plaster (Hunter 1979: 57).

held no interest. The placing of the objects within the modified landscape creates an atmosphere which is commodified for leisure and entertainment.

In an attempt to bring sculpture closer to the experience of space, the Japanese-American artist Isamu Noguchi (1904-1988), examined the idea of sculpture as landscape (Hunter 1979:55). The result is a play-park for children called *Play Mountain* (1933). *Play Mountain* was designed as a communal playground, including a pool, gymnasium and skating facilities (*ibid* :56). The playground was to be built in the shape of a gently sloping, tiered pyramid, with a usable interior. The design was presented to New York's Park Commissioner, Robert Moses, who rejected the design. *Contoured Playground* (1940) (fig. 16) followed *Play Mountain,* and was a more practical and functional scheme of a manageable scale. The design principle of biomorphic abstraction was applied. *Contoured Playground* was not built either and was part of a series of 'tactless and pointed rebuffs' over the following three decades (fig. 13) (*ibid* :57). Furthermore, Noguchi stated that his interest was "the creation of space as an extension of sculpture" (*ibid* :55).

Another example of the attraction of objects is *Echigo-Tsumari Art Necklace Project*, a venture in which architecture and art projects are used as tourist attractions to entice visitors to the disused landscape around Tokyo (Ruby 2006:118). R&Sie…'s contribution was a car park (fig. 14 & 15). The asphalt appears to be cast directly onto the meadows without levelling the site, resulting in an undulating asphalt terrain. Sightseeing spots are usually accompanied by car parks, however in this instance it is the car park that is the attraction.

The movement of the observer through space is one of the themes investigated by the Danish artist Olafur Elliasson. *Lavafloor* (2002) is an installation that features a gallery floor covered igneous rocks imported from Iceland (fig. 12). As the observer moves through the space his/her balance is unsettled while the rocks crunch underfoot. By manipulating topography, movement through space becomes awkward, heightening the observer's awareness of movement and the art work underfoot.

It seems we can deduce that objects do not inherently have the ability to influence space; they are capable of being merely decorative, alternatively they alter their environment and encourage people to congregate around them. However, such objects capable of influencing their environment are not always clearly distinguishable from the ground on which they stand. Architecture, as is often the case, can be placed haphazardly on its site, having negligible effect on the use of the surrounding public space (fig. 17). Alternatively it can be employed to organise and suggest ways in which the space may be used (fig. 18).

Fig. 17 *Plains* - William Lamson, 2004, Kansas (Lanson 2005:42)

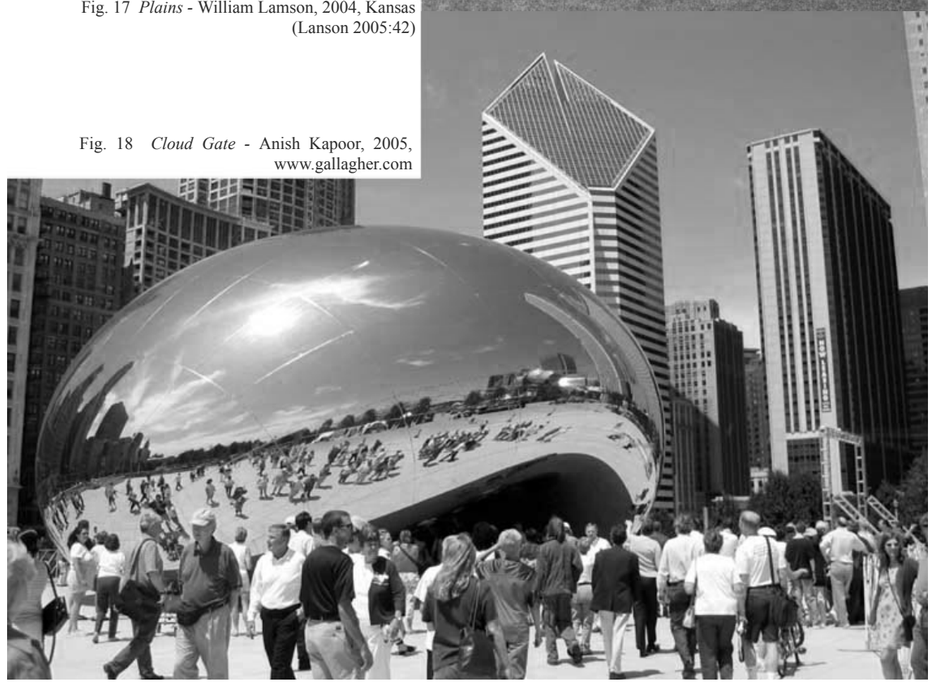


Fig. 18 *Cloud Gate* - Anish Kapoor, 2005, www.gallagher.com

3. Context

Pretoria, the capital city of South Africa located in the municipal area of Tshwane. It is bounded by Salvokop Hill, Skanskop and the Witwaters Mountain range through which the Apies River[1] flows. The study area is located south of Pretoria's central business district and is characterized by gentle northward sloping land, bordered by the southern edge of the city grid, formed by Scheiding Street, and Salvokop Hill (also known as Bron Koppie, Signal Hill, Time Ball Hill and Railway Hill). Historically, Scheiding Street formed the border between city and the adjacent grazing fields (Salvokop Steering Committee 2003:12).

Salvokop is a suburb on the northern slopes of Salvokop Hill. Adjacent to Pretoria Station, it is one of two suburbs in Tshwane with an important railway heritage (*ibid*:32). Although not the only example of railway suburbs, it is one of the best preserved. This is due to its semi-isolated location without pressure from urban development (*ibid*:34). Established in 1892 as a permanent railway camp, Salvokop was to house the erstwhile Dutch South African Railway Company's (Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij) employees. Its history spans six railway administrations:

- Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM), 1892-1900
- Imperial Military Railways (IMR), 1900-1902
- Central South African Railways (CSAR), 1902-1910
- South African Railway (SAR), 1910-1981
- South African Transport Services, 1981-1990
- Transnet and its subsidiaries, since 1900 (*ibid:* 11)

Currently the national railway operator Transnet, regards the suburb as a burden on its asset register (*ibid* : 35). Employees of Transnet and private tenants live in the suburb.

South of Salvokop, on Salvokop Hill, is a new tourism and heritage-based development called Freedom Park. The park aims to tell the story of South Africa in a visual interactive way (Freedom Park Trust 2004). The development of the park includes improvement to Salvokop neighbourhood and urban regeneration in the surrounding areas.

North of the study area is a region associated with government institutions. To the west of Salvokop lie the National Defence Force headquarters and staff housing. The Pretoria and Central Prisons, Weskoppies Psychiatric Institute and the SAPS College are also in the vicinity (Salvokop Steering Committee 2003:33). In the final draft of the NDPW-Tshwane inner city project, spatial development framework (September 2005), a proposal was made to move the Department of Correctional Services to the north-western part of Salvokop (City of Tshwane 2005:238). A move that will add to the institutional and institutionalised nature of the area.

[1] The first occupants called the pools of water along the Apies River, the river and the valley, *Ezwebuhlungu, Mbibane* and *Tshwane* (Salvokop Steering Committee 2003:11).

Fig. 19 *Salvokop* - Marshalling yard in summer, looking north towards the city. *Chief Engineering* in the front and *Department of Home Affairs* on the right. (Author 2006)

Fig. 20 *Salvokop* - marshalling yard in winter. Looking north-east towards *Pretoria Station* designed by Herbert Baker. (Author 2006)

Fig. 21 *Salvokop* - marshalling yard in winter. Looking south towards the neighbourhood. (Author 2006)

3.1 Context analysis

Fig. 22 *Pretoria* in the greater context (Author 2006)

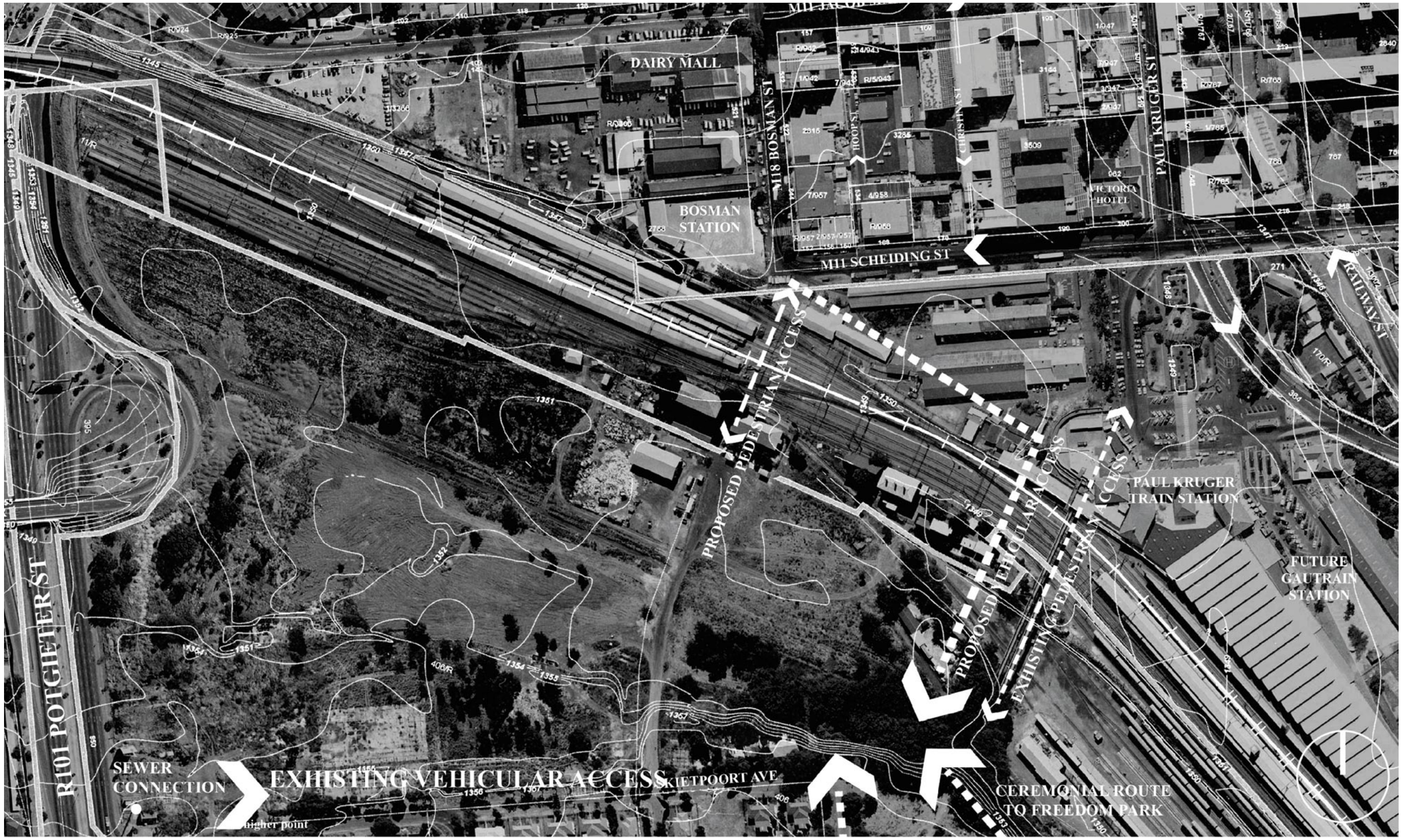
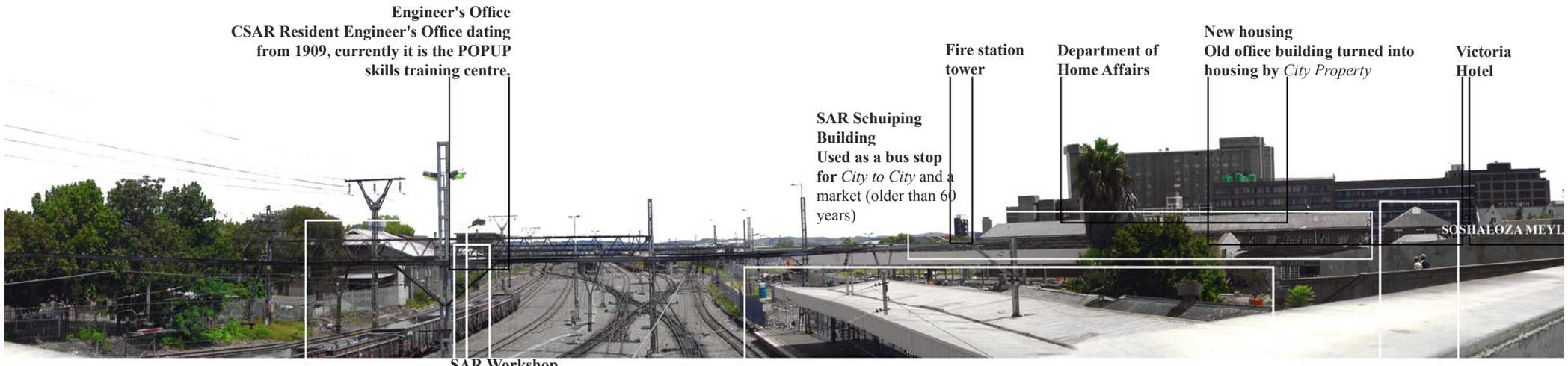


Fig. 23 Physical context of *Salvokop* (Author 2006)



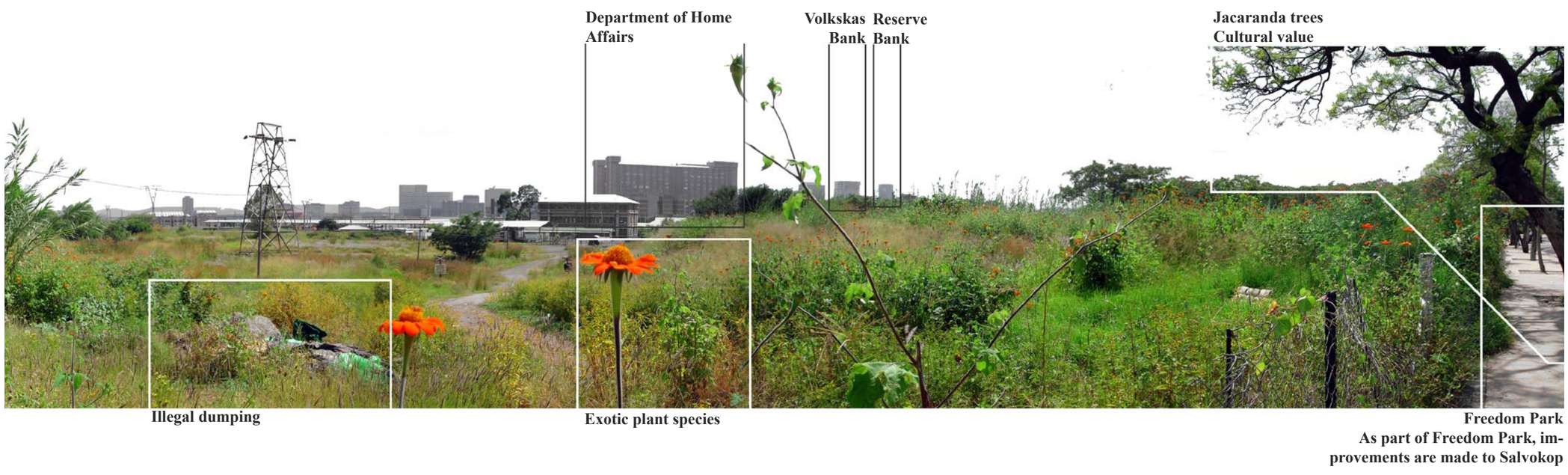
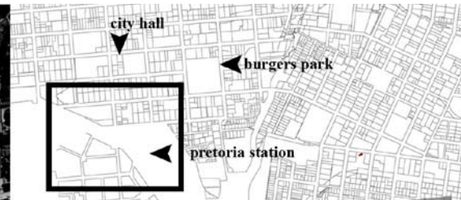


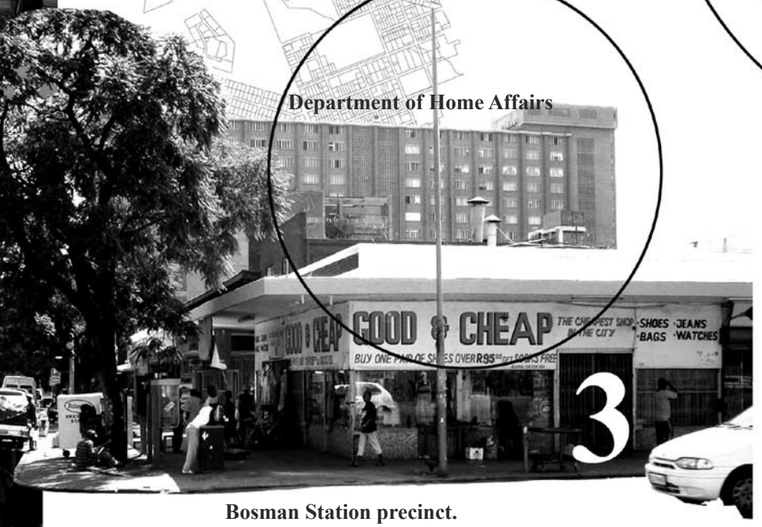
Fig. 24 Context analysis (Author 2006)



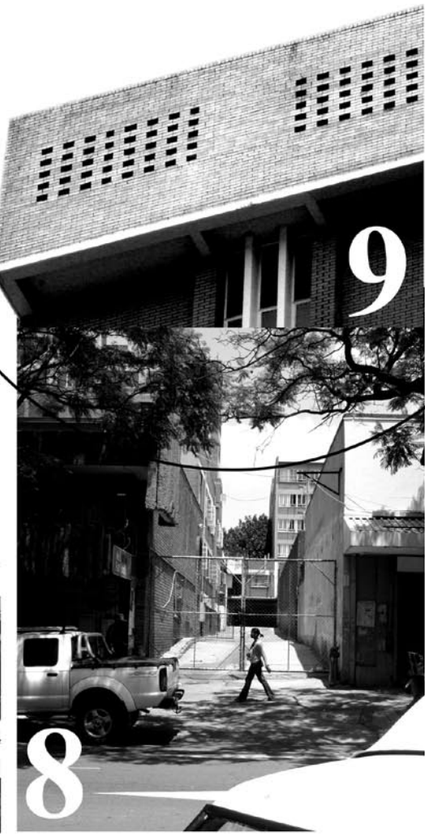
Dairy Mall Taxi Rank

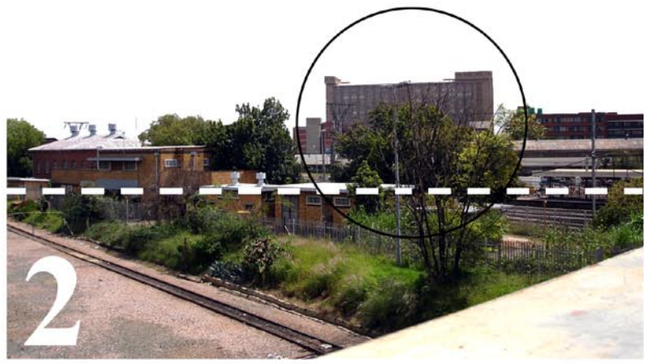
Dairy Mall

SAR Schuiping Building
A long-distance bus stop (*City to City*) that is also used as a market selling fresh produce.



Bosman Station precinct.
Shops such as second-hand stores, security training, a Christian church and informal shops on the sidewalks.





Pedestrian bridge between Salvokop and the city centre.

Fig. 25 Context analysis (Author 2006)

3.2 The city and *Salvokop*

The area between Salvokop suburb and the railway tracks has been functioning as a railway precinct since 1892. It has always been separate from the 'normal' urban fabric (Salvokop Steering Committee 2003:39). Although the suburb has a finer grained street grid, the road pattern aligns with that of the city. The alignment emphasizes the urban design intention of the township - reading as a continuous grid divided by the railway reserve (*ibid*: 45).There have been numerous unsuccessful attempts to regenerate and reintegrate the suburb in the past - the 1974/5 and the 1999/2000 attempt, to name a few. In the Integrated Spatial Development Framework (ISDF 1999) for Pretoria, the preservation of the residential environment is encouraged as well as the development of more housing (Salvokop Steering Committee 2003:38). The author is of the opinion that it would be ideal if the new housing is integrated with other essential urban facilities, such a the open space network, recreation facilities and acces to transport infrastructure.

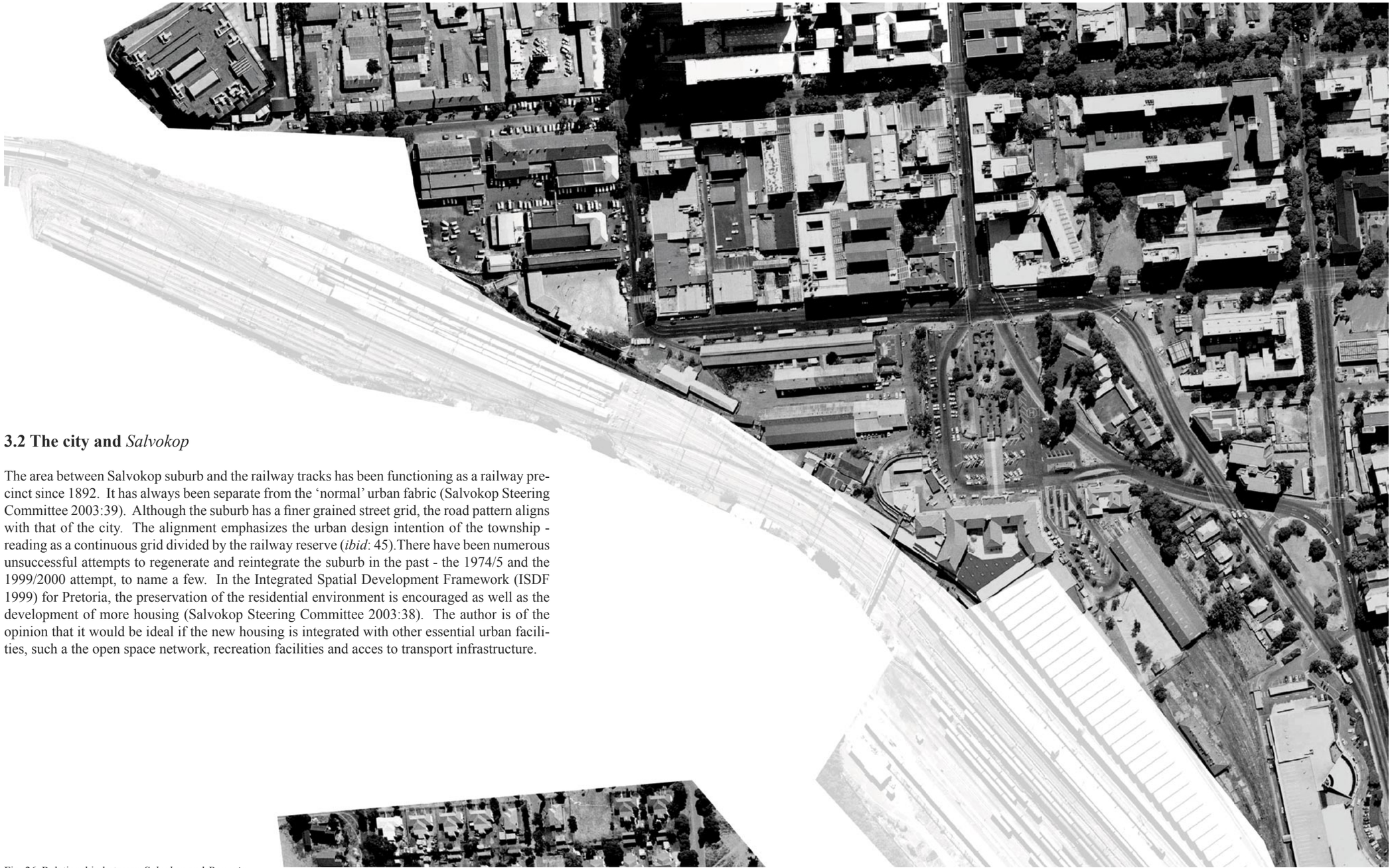


Fig. 26 Relationship between *Salvokop* and *Pretoria* centre (Author 2006)

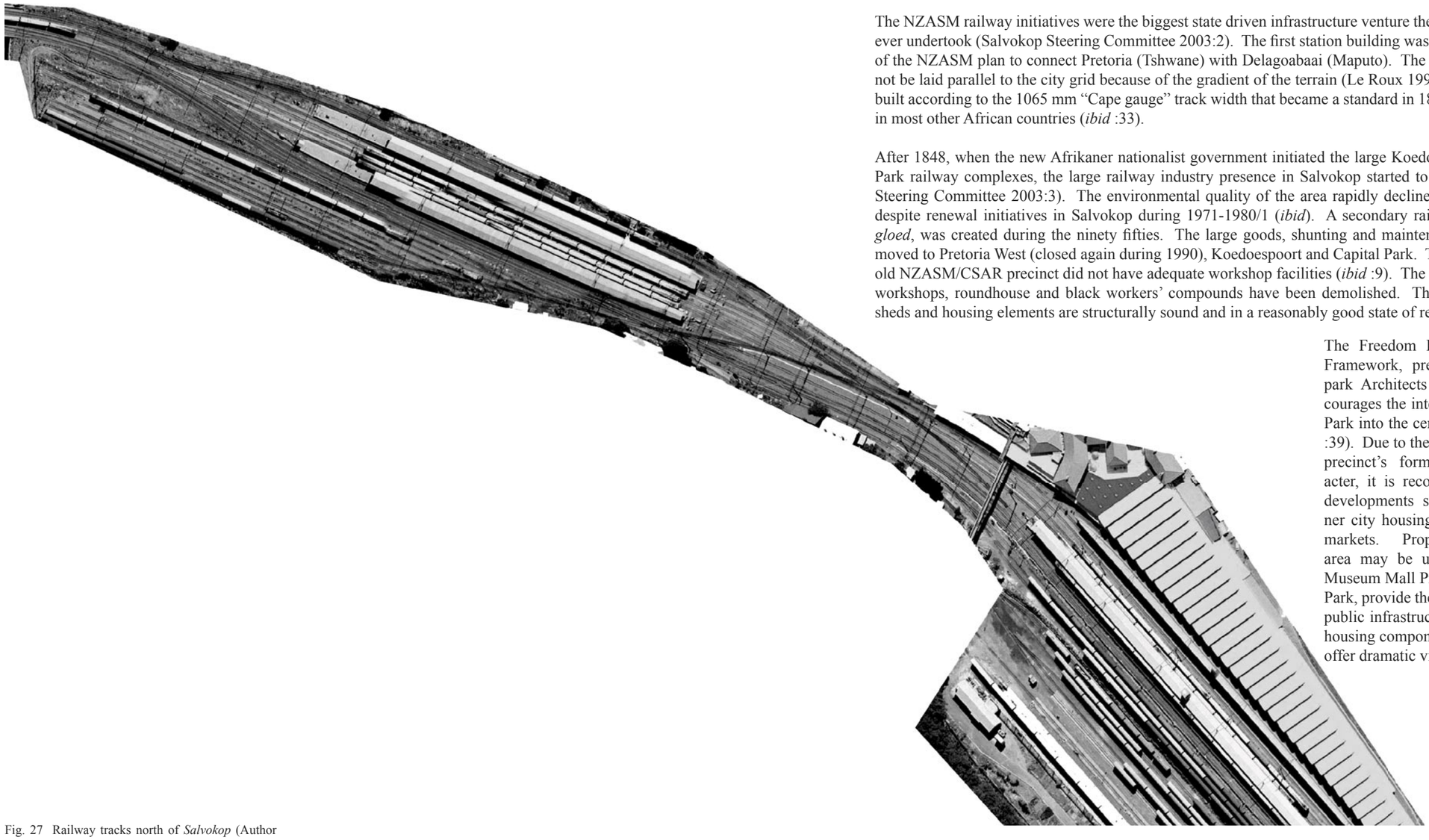


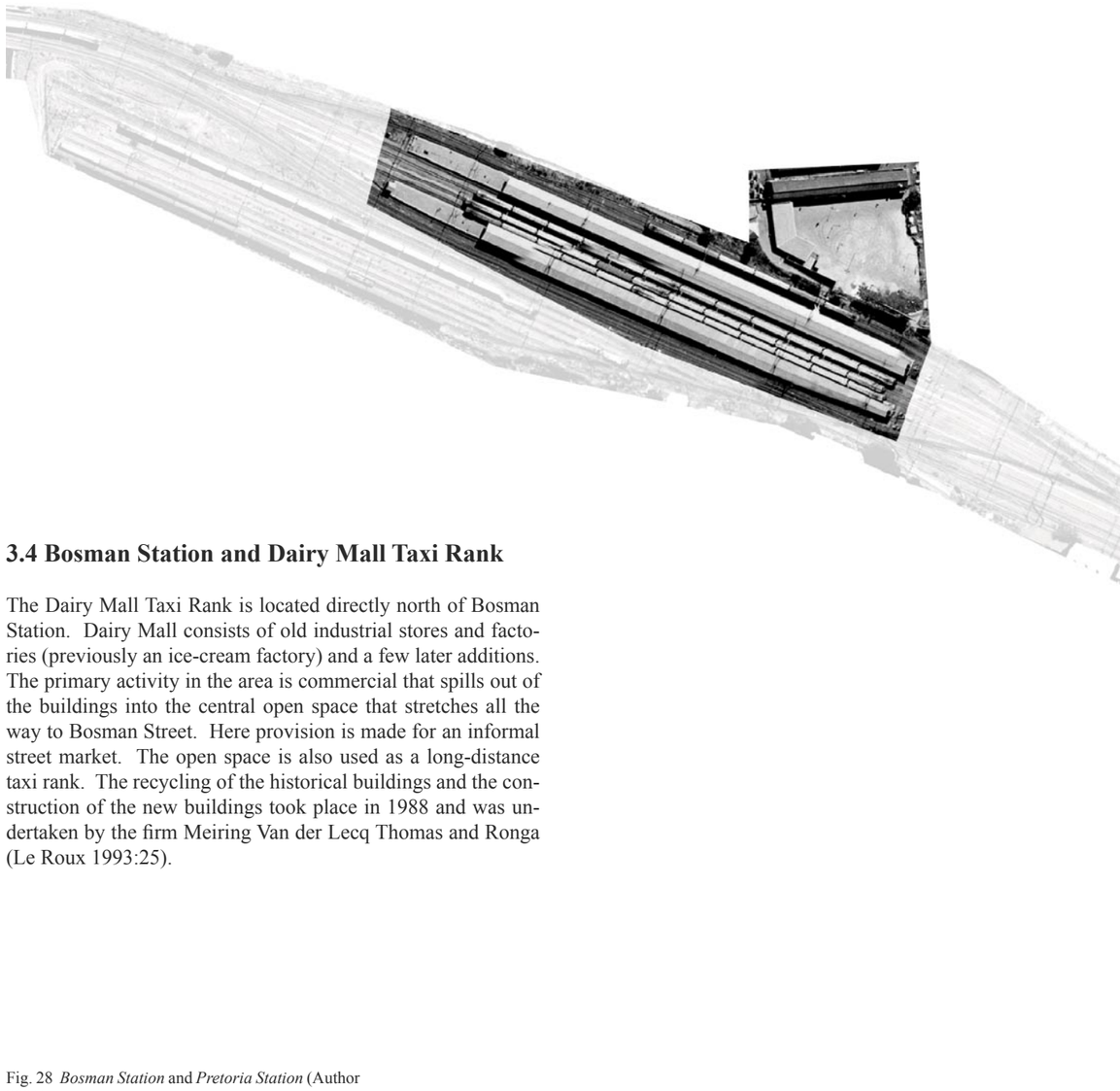
Fig. 27 Railway tracks north of *Salvokop* (Author 2006)

3.3 Railway tracks

The NZASM railway initiatives were the biggest state driven infrastructure venture the Transvaal Republic ever undertook (Salvokop Steering Committee 2003:2). The first station building was built in 1892 as part of the NZASM plan to connect Pretoria (Tshwane) with Delagoabaai (Maputo). The railway tracks could not be laid parallel to the city grid because of the gradient of the terrain (Le Roux 1993:26). The lines are built according to the 1065 mm "Cape gauge" track width that became a standard in 1873 and was adopted in most other African countries (*ibid* :33).

After 1848, when the new Afrikaner nationalist government initiated the large Koedoespoort and Capital Park railway complexes, the large railway industry presence in Salvokop started to decrease (Salvokop Steering Committee 2003:3). The environmental quality of the area rapidly declined during 1981-2002 despite renewal initiatives in Salvokop during 1971-1980/1 (*ibid*). A secondary railway suburb, *Moregloed*, was created during the ninety fifties. The large goods, shunting and maintenance facilities were moved to Pretoria West (closed again during 1990), Koedoespoort and Capital Park. This was because the old NZASM/CSAR precinct did not have adequate workshop facilities (*ibid* :9). The central and ancillary workshops, roundhouse and black workers' compounds have been demolished. The remaining offices, sheds and housing elements are structurally sound and in a reasonably good state of repair (*ibid*: 39).

The Freedom Park Urban Design Framework, prepared by Freedom park Architects in Association encourages the integration of Freedom Park into the centre of Pretoria (*ibid* :39). Due to the old NZASM/CSAR precinct's former industrial character, it is recommended that new developments should focus on inner city housing, light industry and markets. Properly designed this area may be used to connect the Museum Mall Precinct and Freedom Park, provide the urban facilities and public infrastructure required by the housing component of Salvokop and offer dramatic views of the city.



3.4 Bosman Station and Dairy Mall Taxi Rank

The Dairy Mall Taxi Rank is located directly north of Bosman Station. Dairy Mall consists of old industrial stores and factories (previously an ice-cream factory) and a few later additions. The primary activity in the area is commercial that spills out of the buildings into the central open space that stretches all the way to Bosman Street. Here provision is made for an informal street market. The open space is also used as a long-distance taxi rank. The recycling of the historical buildings and the construction of the new buildings took place in 1988 and was undertaken by the firm Meiring Van der Lecq Thomas and Ronga (Le Roux 1993:25).

Fig. 28 *Bosman Station* and *Pretoria Station* (Author 2006)

3.5 Pretoria Station

The precinct around Pretoria Station is considered an important public place because it is the primary point of arrival and departure in Pretoria by train. It is the focal point of Paul Kruger Street south, and it has various important historical resources related to the railway, such as buildings with significant architectural merit and cultural value, dating from the early twentieth century (Salvokop Steering Committee 2003:39). A proposed Gautrain station will be laid out east of the existing station. This will enhance the importance of Pretoria Station as an attractive tourist area.

Gautrain is a high-speed railway connection between Johannesburg and Pretoria. The train is meant to relieve the congestion on the N1 highway that connects the two cities, and forms part of the infrastructural development for the Soccer World Cup in 2010. The alignment of the railway tracks, frequency of the trains, noise level and speed of the train are all likely to have a negative impact on Salvokop. The Salvokop Development Framework (SDF 2003) the only way to avoid the negative impact of the train would be to tunnel it through Salvokop Hill, alternatively to circumvent Salvokop while the proposed station east of the current main station building is retained (*ibid*:42).

The massing of the proposed buildings of Gautrain should take into account the current heritage resources of the precinct in order not to hinder the new developments proposed for Salvokop and Time Ball Hill.

3.6 Bosman Station Bridge

The pedestrian bridge connecting Salvokop to Bosman Station was built concurrently with the Chief Engineering Office in 1909 (Salvokop Steering Committee 2003:16). According to the oral history as related in Prof. K. Bakker, of the University of Pretoria, report titled "Preserving intangible heritage resources: Examples from South Africa" (2003) this bridge was exclusively used by 'blacks' (*ibid:*19). The *Works Restaurant* was located just north-east of the CE Office; this created a small public space next to the stairs of the bridge. An aerial photo from 1948 shows the bridge already demolished (*ibid*).

According to the NDPW-Tshwane Inner City Project (2005:238) and the Salvokop Development Framework (2003:61) a new pedestrian bridge is proposed for the site of the former bridge. It is hoped that this will improve pedestrian movement and precinct permeability.

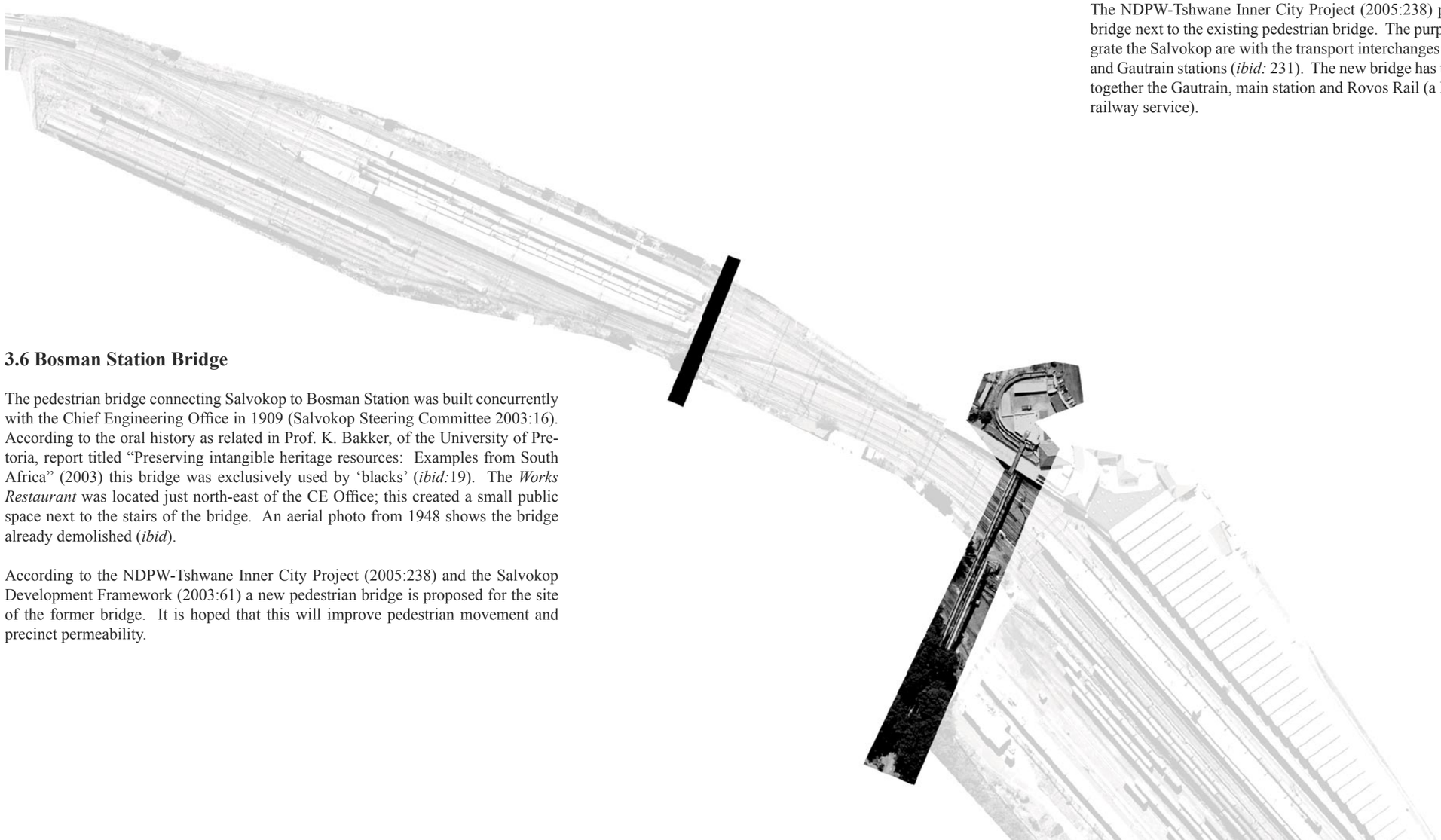


Fig. 29 Bridges crossing the railway tracks (Author 2006)

3.7 Pretoria Station Bridge

In a photograph from 1932 a new pedestrian bridge is plainly visible. The bridge has a double staircase perpendicular to its walkway (Salvokop Steering Committee 2003:17). A 1937 aerial photograph shows a new, curved ramp around the station annex that replaced the stairs (*ibid* :18).

The NDPW-Tshwane Inner City Project (2005:238) proposes a vehicular bridge next to the existing pedestrian bridge. The purpose of this is to integrate the Salvokop are with the transport interchanges of Bosman, Pretoria and Gautrain stations (*ibid:* 231). The new bridge has the potential of tying together the Gautrain, main station and Rovos Rail (a luxury long-distance railway service).

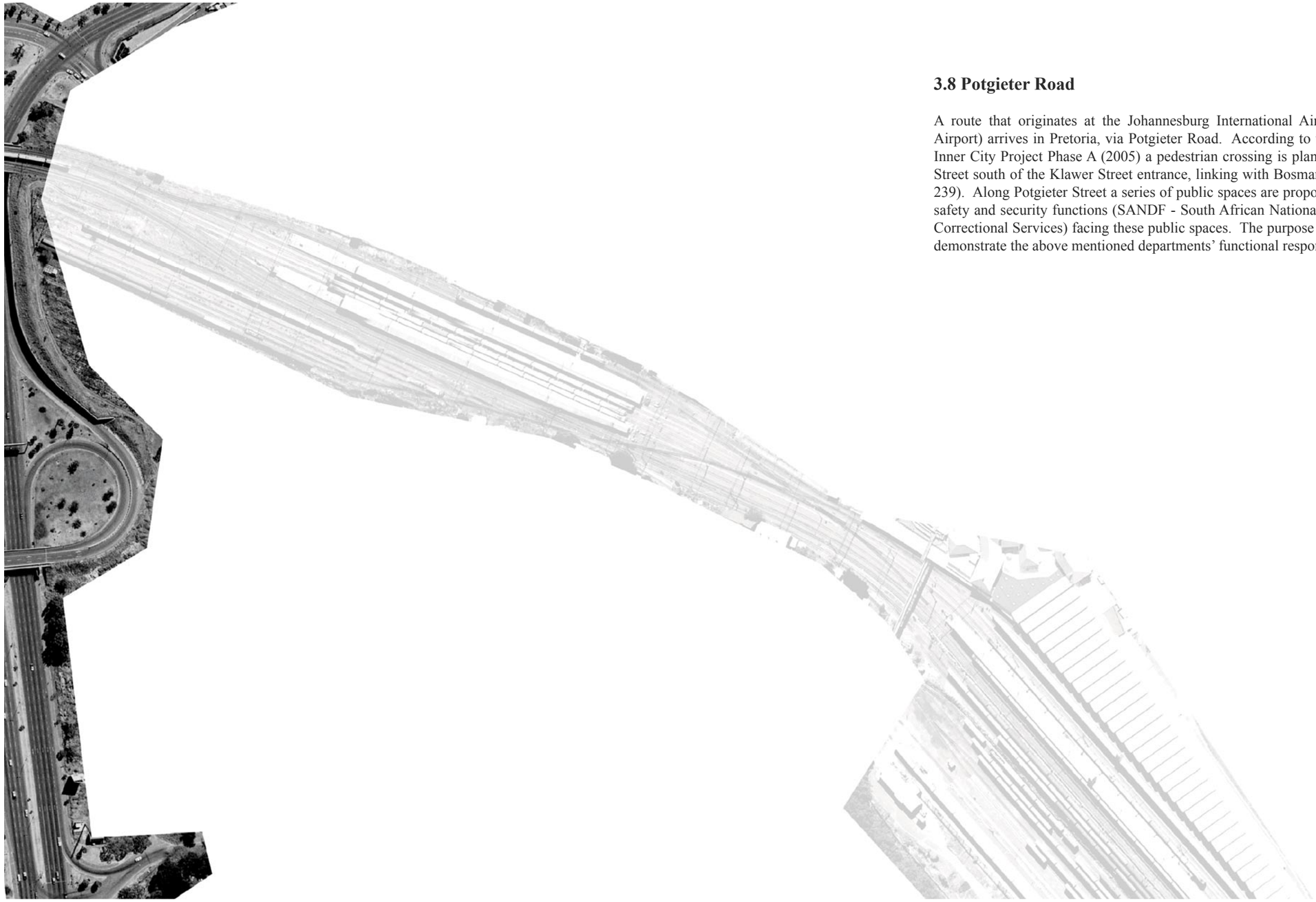


Fig. 30 Relationship between *Salvokop* and *Potgieter Road* (Author 2006)

3.8 Potgieter Road

A route that originates at the Johannesburg International Airport (O.R. Thambo Airport) arrives in Pretoria, via Potgieter Road. According to the NDPW Tshwane Inner City Project Phase A (2005) a pedestrian crossing is planned across Potgieter Street south of the Klawer Street entrance, linking with Bosman Rail Station (ibid: 239). Along Potgieter Street a series of public spaces are proposed with a cluster of safety and security functions (SANDF - South African National Defence Force and Correctional Services) facing these public spaces. The purpose of this decision is to demonstrate the above mentioned departments' functional responsibility (ibid: 238).

3.9 Historical context

CSAR Resident Engineer's Office, 1909

The CE Office was built west of the Koch Street alignment on an 'island' between the main railway lines. From a 1906 CSAR plan it is evident that the nearby pedestrian connection of Bosman Street and Salvokop (now removed) was built at the same time as the CE Offices (Salvokop Steering Committee 2003:15). The SDF (2003:55) suggests that the idea of the CE Office and adjacent building as objects on an island between the railway lines, be retained.

Currently this building is used by *POPUP* as a training facility (M. Freislich 2006, pers. comm., 17 May). *POPUP* is a non-governmental organisation initiated by the Doxa Deo Christian church group. It started as a shelter for the homeless but was subsequently turned into a training facility. Currently the skills training programme involves only women, but a planned expansion will also cater for men.

SAR Schuiping Building and addition, before 1937

SAR Accounting Building, before 1937

SAR Workshop, 1930's

Steam Hammer Workshop (older than 60 years)

On the 1906 CSAR plan a building known as the *Steam Hammer Mill Shed* is indicated as the *Smithy/Fitting* shop (Salvokop Steering Committee 2003:16).

SAR Traffic Control Centre, 1940's

SAR Type P 95 A/5 Variation C, older than 60 years

CSAR Semi-detached Quarters, 1905-1906

Type P 128A

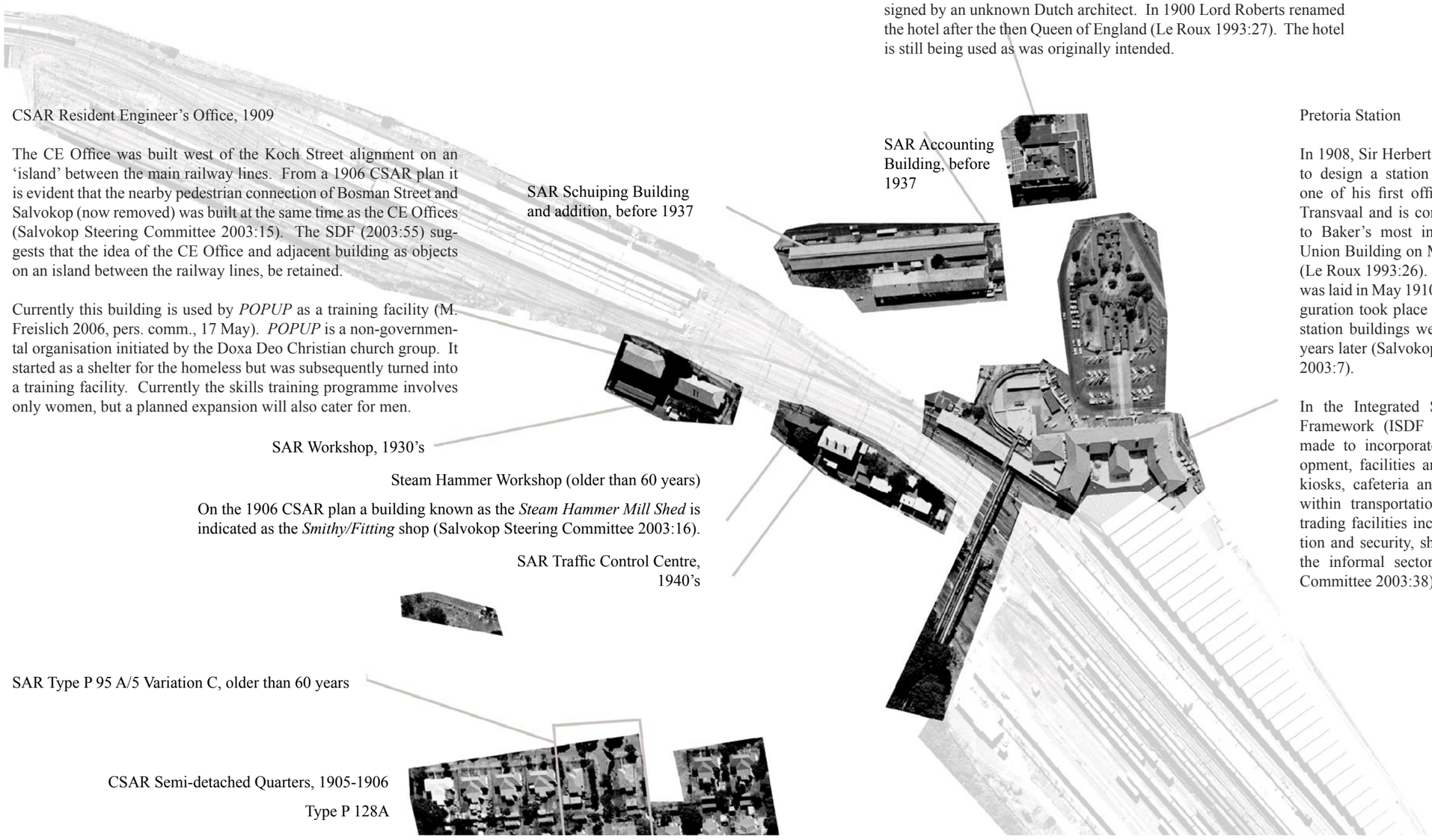


Fig. 31 Historical context of the marshalling yard of *Salvokop* (Author 2006)

Victoria Hotel

The site of the Victoria Hotel was acquired in 1890 by T.W. Beckett from the Dutch Reformed Church. From 1894 the site was leased out with the intention to erect a hotel on it. The *Hollandia Hotel* was designed by an unknown Dutch architect. In 1900 Lord Roberts renamed the hotel after the then Queen of England (Le Roux 1993:27). The hotel is still being used as was originally intended.

Pretoria Station

In 1908, Sir Herbert Baker was appointed to design a station building. This was one of his first official buildings in the Transvaal and is considered a forerunner to Baker's most important work – the Union Building on Meintjieskop, Pretoria (Le Roux 1993:26). The foundation stone was laid in May 1910 and the official inauguration took place in 1912. The former station buildings were demolished a few years later (Salvokop Steering Committee 2003:7).

In the Integrated Spatial Development Framework (ISDF 1999) a proposal is made to incorporate commercial development, facilities and amenities such as kiosks, cafeteria and information points within transportation facilities. Proper trading facilities including lock-up, ablution and security, should be provided for the informal sector (Salvokop Steering Committee 2003:38).

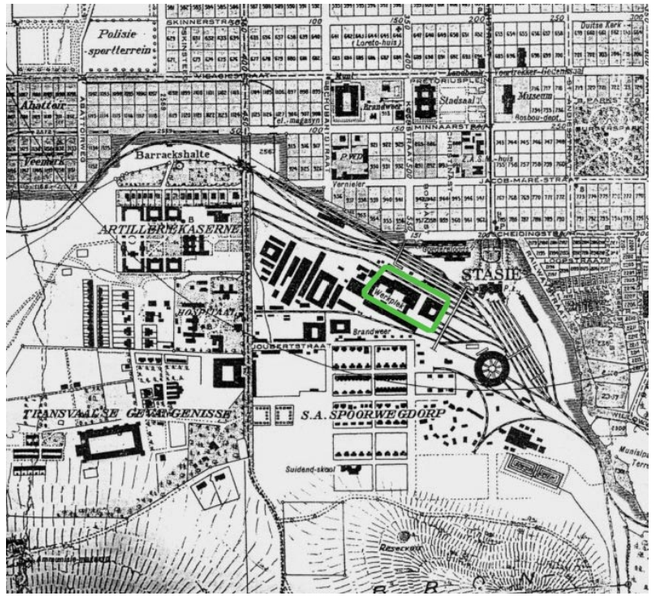


Fig. 32 *Pretoria* - Surveyor General 1932 update of 1911 survey (Photocopy Van der Waal Collection, Merensky Library, University of Pretoria Green indicate the site under investigation.

Fig. 33 *Pretoria* (Pretoriana Collection, Merensky Library, University of Pretoria)

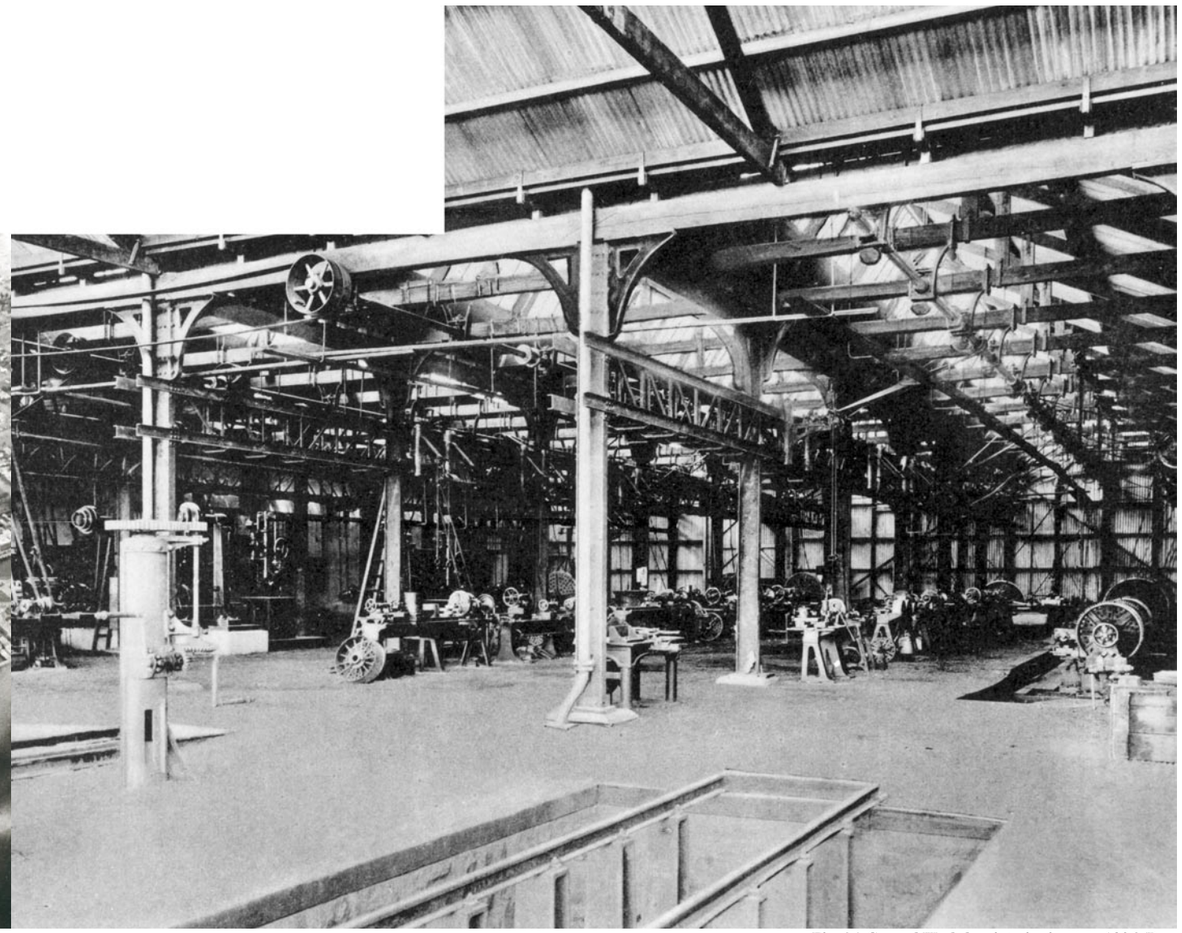


Fig. 34 *Central Workshop* interior in *circa* 1896 (Pretoriana Collection, Merensky Library, University of Pretoria)

3.10 Freedom Park

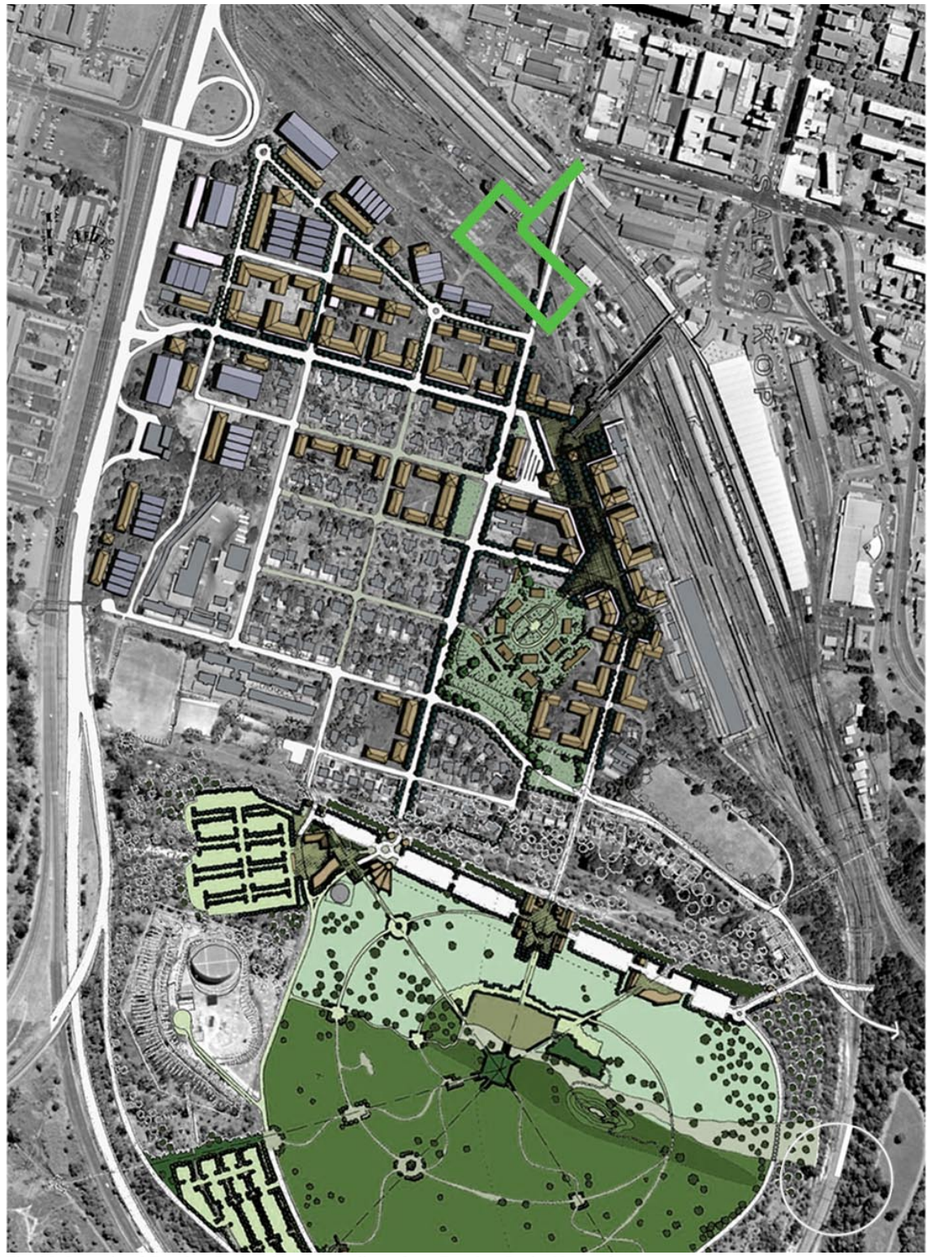


Fig. 35 Scenario of *Freedom Park* and its surroundings, from *Freedom Park: National Legacy Project* (2002), prepared by Freedom Park Architects in Association

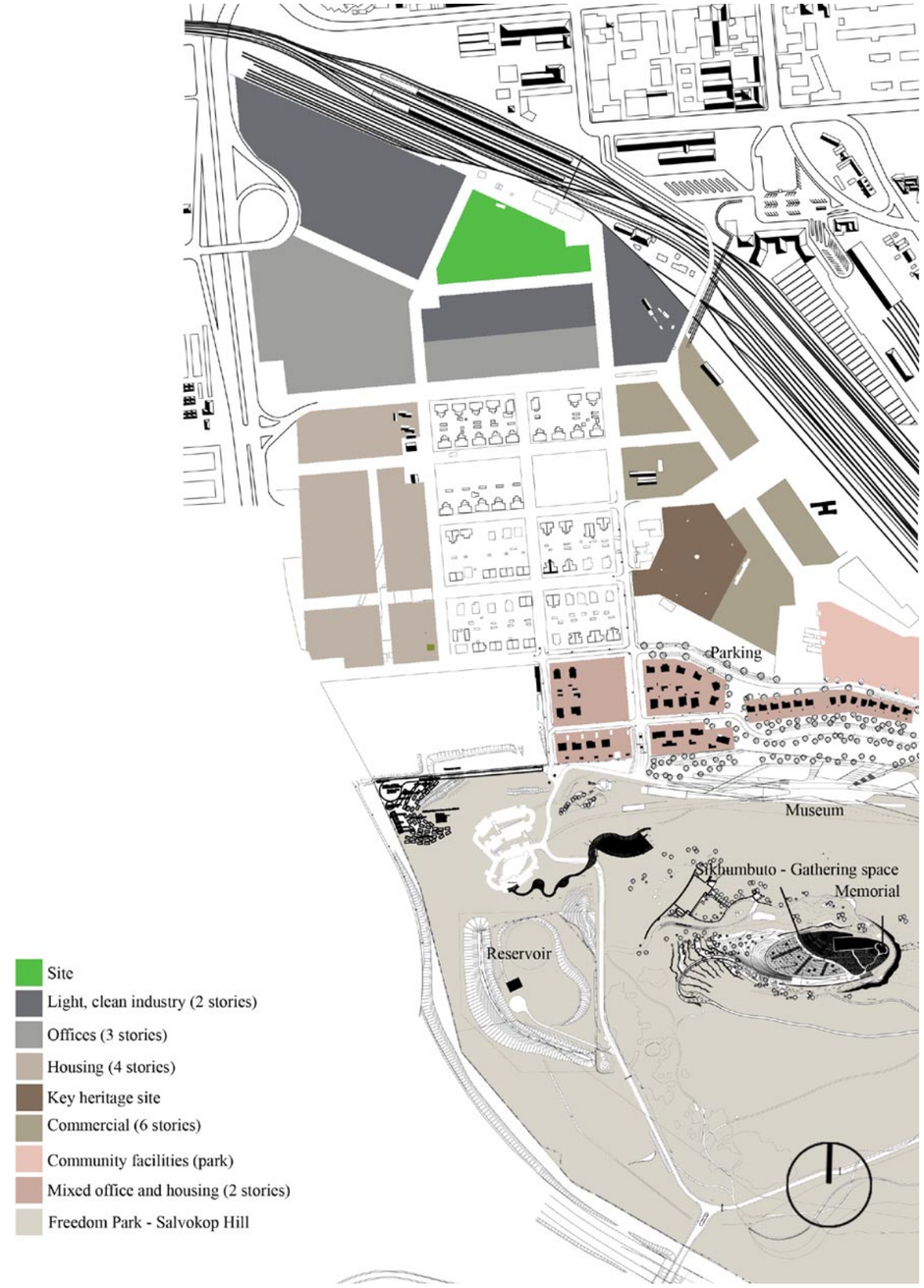


Fig. 36 Urban proposal for *Salvokop*

3.11 Preceding context studies

A thorough investigation on the history of Salvokop and the value of the history was done by Prof. K. Bakker and compiled in a report with the title: "Preserving intangible heritage resources: Examples from South Africa" (2003). This report was used to compile a proposal for Tshwane; the "NDPW-Tshwane inner city project – spatial development framework: Phase 2 – Overall executive report" (2005). These documents were assessed by the author and a map showing the historical traces and appropriate urban design information is provided (fig. 37).

Fig. 37 Traces of the marshalling yard (Author 2006)

Fig. 38 *Roundhouse* (et Waterval-Onder) interior, *circa* 1895 (Pretoriana Collection, Merensky Library, University of Pretoria)

Fig. 39 Railway tracks of the marshalling yard (Author 2006)

Fig. 40 Workshop in marshalling yard (Pretoriana Collection, Merensky Library, University of Pretoria)

Fig. 41 Workshops 1895 (Pretoriana Collection, Merensky Library, University of Pretoria)

3.12 Spatial stories

Master planning has the inherent weakness of little or no adaptability. The urban design framework (as employed by GAPP architects and urban designers) attempts to overcome this weakness by distributing a series of 'working mechanisms' throughout the city fabric. These mechanisms are capable of change over time and adapt to changing patterns of use. A simple example of this kind of mechanism on a macro-scale is the precinct - a thematically coherent collection of programmes in a defined area. On a micro-scale a mechanism might be as simple as the relationship of a building to an adjacent open area. When a given situation in the city changes, it is up to the design professional to use the mechanisms built into the urban design framework to guide decision making process.

While the urban design framework goes some way to overcome the limiting nature of the masterplan, it has its own weaknesses. An example of this kind of weakness is that it relies heavily on the competence of the designer that uses the framework. The apparent lack of *status quo* information in the final framework, renders current occupancies, uses and users invisible to the designer. The top-down planning approach, despite having been generated from a set of on-ground conditions, easily results in large homogenous use patterns. A methodology premised on integrating existing patterns of use (be they desirous, institutional, commercial or illicit) is thus proposed.

Activities taking place in and around the site were analysed as follows: A series of user groups were identified. The terrain traversed and occupied by each group was mapped. The external and local forces that influence the use of spaces are mapped in turn. By identifying these forces it allows the researcher to come into contact with the dynamic forces that operates on the city. Ongoing changes and imperceptible factors can be identified. The mapping process draws on Michel de Certeau's theory of 'spatial stories'. The term refers to the everyday acts that connect places, as well as the nature of these connections (De Certeau 1983:115, 121).

The following groups of activities have been identified for the analysis:

3.12.1. Residential: The residents north of the railway tracks and Salvokop Suburb move between their residence and the areas where they shop and play; such as the Dairy Mall, Burgers Park and the Church Square precinct.

3.12.2. Criminality: This group is made up of petty criminals. They operate in busy areas such as the train stations targeting tourists. Spaces around the railway tracks and in-between disused buildings are hiding places and somewhere to rest.

3.12.3. Institutional: Many buildings in central Pretoria are government owned (City of Tshwane 2005: 126). Movement occurs between departments, parking areas and transport nodes.

3.12.4. Tourism: Numerous hotels can be found in the area, including the Victoria Hotel, Belgrave Hotel, Manhattan Hotel and Burgers Park Hotel. Movement is restricted to sidewalks and tourist attractions

3.12.5. Building conversion: Companies such as the City Property Group are market and profit driven. Redundant office space is converted into housing which has a positive, if perhaps unintentional effect on the area.

3.12.1 Activity Group: Residential

A.Historical railway works. A natural buffer is located between the residential area and the railway tracks. Before the Second World War this area used to be an important railway precinct (Bakker 2003:4). Railway operations were moved to Gezina due to inadequate space available and the majority of the railway buildings in Salvokop were demolished.
B.Freedom Park. It is hoped that this development will increase tourism and private sector investment in the area.
C.Gautrain. A high-speed train network that will connect the affluent areas and inner cities of Johannesburg and Pretoria. A stop is planned for the Pretoria Station.
D.Train stations.
E.Dairy Mall Taxi Rank.

1. Railway tracks - defines the edge of the city.
2. Bridge - allows the residents to cross the railway into the city.
3. The functions of these buildings changes according to their users' needs. These buildings would not have been able to sustain themselves without the Bosman Train Station and the Dairy Mall Taxi Rank.
4. Porosity. No large scale buildings were built on the block between Scheiding St., Bosman St., Mare St. and Paul Kruger St.
5. Terrain Vague.
6. Government buildings.
7. Parking for the government buildings.
8. Public parks. Planned recreation.
9. Heritage resource
10. Museums
11. Tourist information centre
12. Private ownership. Profit driven with no social agenda.
13. Careless management.
14. Companies do not rely on these properties for profit, e.g. Salvokop neighbourhood.

Fig.. 42 Activity group: Residential (Author 2006)

3.12.2 Activity Group: Criminality

Fig. 43 Activity group: Criminality (Author 2006)

3.12.3 Activity Group: Institutional

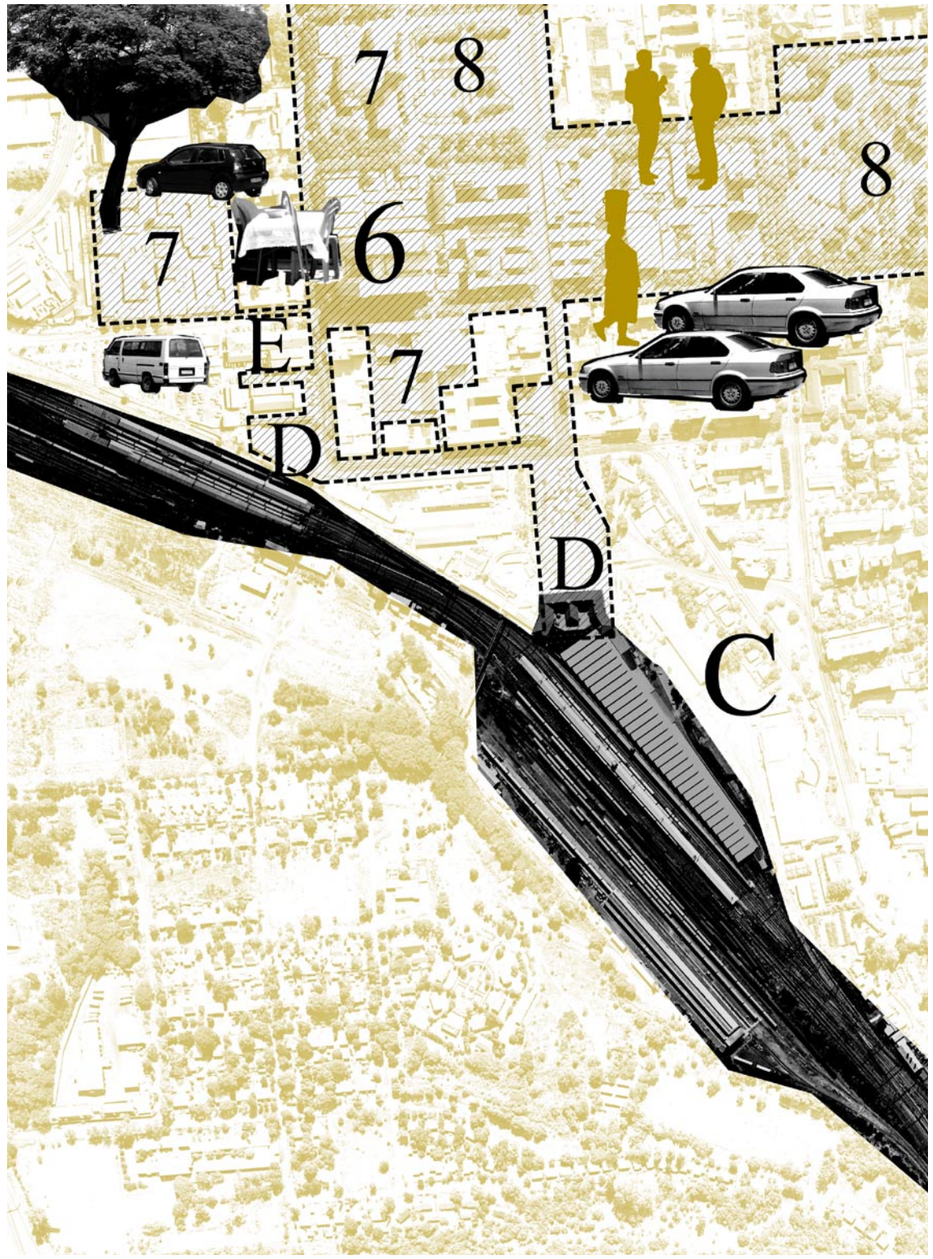


Fig. 44 Activity group: Institutional (Author 2006)

3.12.4 Activity Group: Tourism

Fig. 45 Activity group: Tourism (Author 2006)

3.12.5 Activity Group: Building conversion

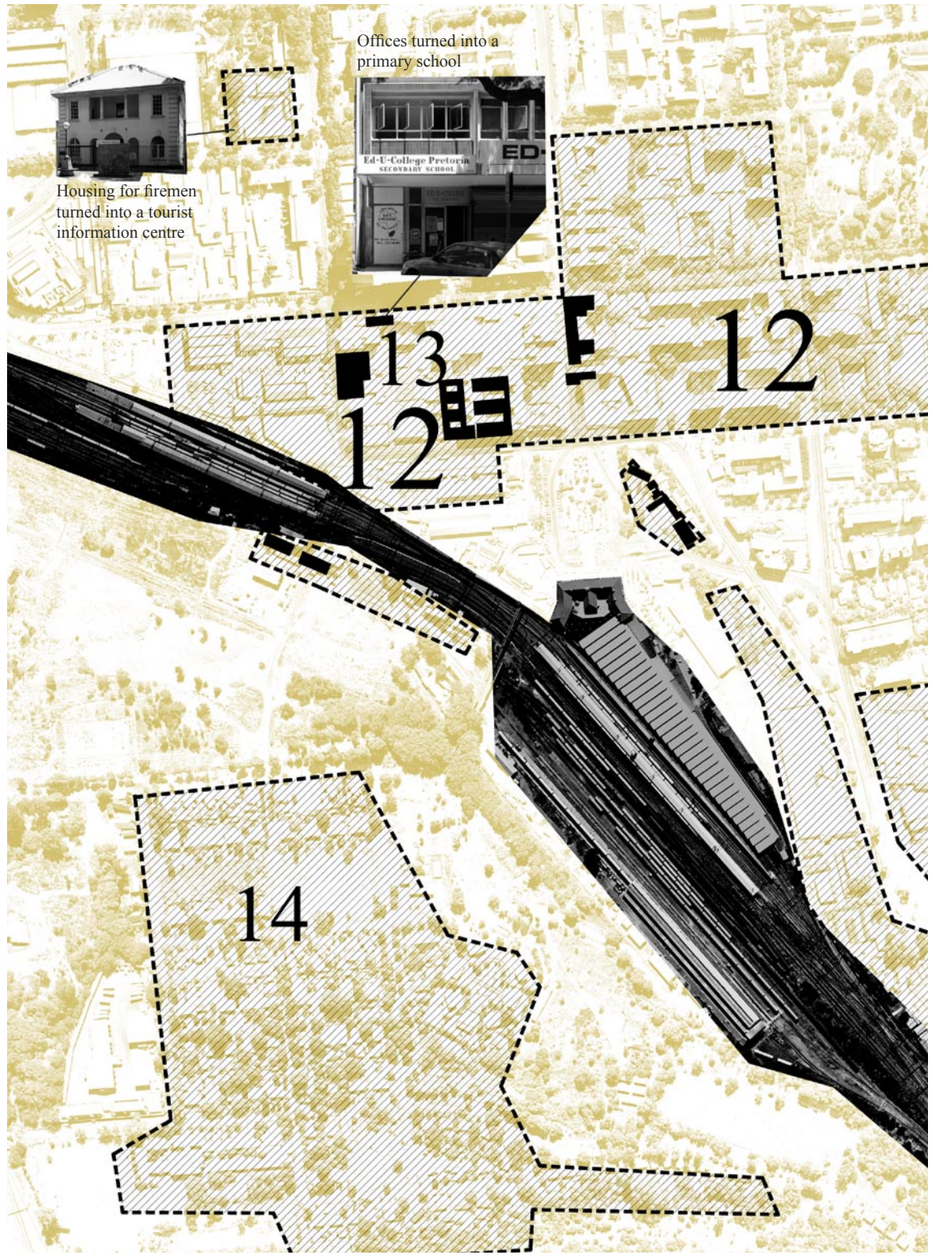
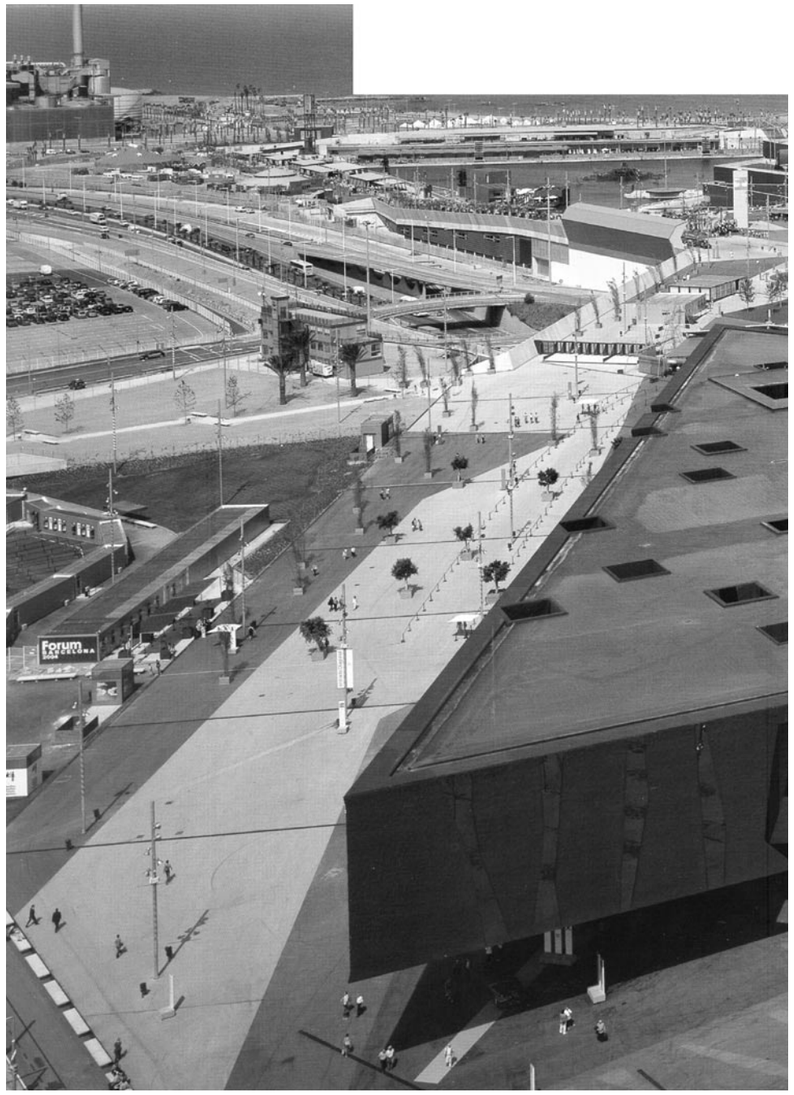


Fig. 46 Activity group: Building conversion (Author 2006)

4. Precedent studies

4.1 Precedent study 1: Forum 2004, Barcelona, Spain



Design: 2000

Construction: 2001-2004

Architects: Herzog & De Meuron - Carlos Bautista, Aeneas Bracklo, Béla Berec (Modelbau), Marcos Carreño, Maria Flaccavento, Alex Franz, Silvia Gil, Albert Gonzalez, Jacques Herzog, Matthias Hilgert, Blanca Hueso, Ana Inacio, Luis Jativa, David Koch, Nicholas Lyons, Ana Marques, Ascan Mergenthaler, Pierre de Meuron, Marta Mitjas, Julio Muñoz, Holger Othmar, Christopher Pannett, Nuno Ravarra, Aurora Rebello, Miquel Rodriguez, Mónica Serra, Yoana Urralburu, Stephan Wedrich, Mika Woll

Client: Ayuntamiento de Barcelona represented by Infrastructures del Llevant de Barcelona S.A.

Program: auditorium (3200 seats), exhibition space (8000m²) and public spaces

Site area: 16 000 m²

Built area: 13 000m²

The triangular building provides no enclosure to the plaza. Space is defined using trees, level differences and various types of objects.

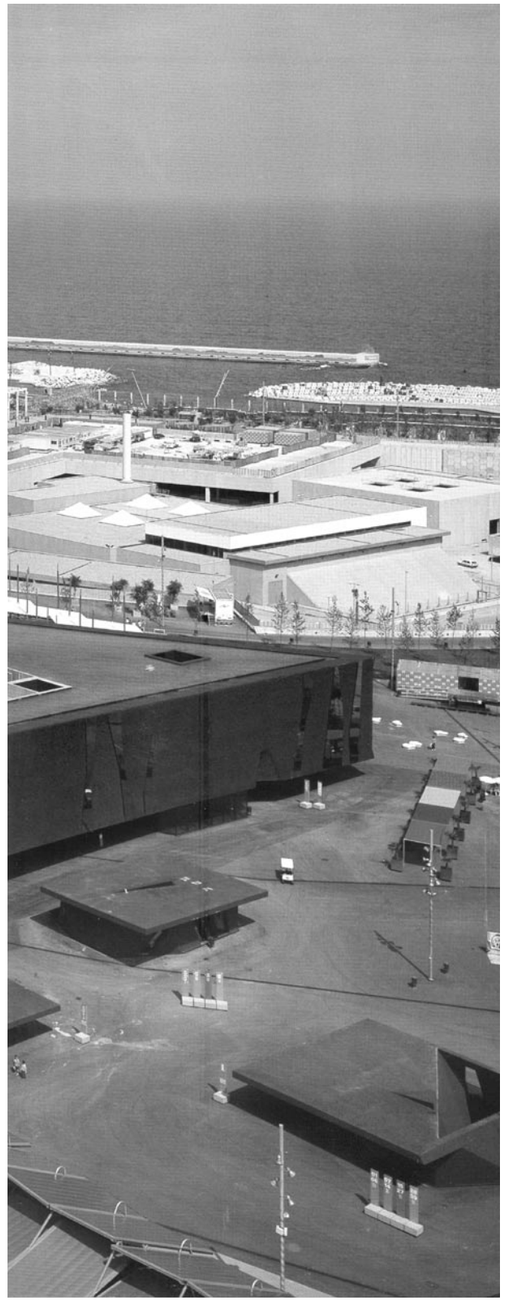


Fig. 47 *Forum 2004,* Barcelona, Spain (Futagawa 2005:33)

The Forum 2004 site is located at the end of Avenida Diagonal, where Barcelona meets the Mediterranean. The street is connected to a new artificial platform, spanning over the Ronda Litoral. The area was formerly occupied by an industrial installation, with a residual water treatment plant and a petrol station (Herzog & De Meuron 2004:108). According to the brief this site was to become an architecturally organised and well-defined space, in a period of three years. The aim was to turn this area into the most important district of twenty first century Barcelona.

Barcelona is a European metropolis that uses its outdoor spaces as a living room (*ibid* :108). These are the sites of social interaction. Instead of designing the building as an independent object within an open space, the design team chose to use the building to generate and organise the environment. Traditional urban proportion systems, such as the one to four, building to space ratio, are eschewed by lifting the triangular building of its artificial plane. This provides shade to the plaza and allows unobstructed use of the ground plane. Gradual level differences provide variety and lead the pedestrians toward the views of the Mediterranean. Space is defined with trees and the placing of various architectural objects.

The design team chose to add programs in order to generate and maintain vitality and interaction (*ibid* :108). These include an open market space with a large fountain, a meditative place around a dripping water courtyard, a small intimate chapel, a bar, a kiosk, and various other facilities that complement the conference and exhibition centre. The programs cater for tourists and citizens, cultural enthusiasts and conference attendees, the young and old. The interior spaces adapt easily to the changing program – the auditorium is neither a conference centre nor a philharmonic music hall, the exhibition area is neither a conventional centre nor a classical museum space.

Forum 2004 demonstrates that contemporary urban space can be defined by lifting the building mass above the ground plane, with level differences, the placing of objects and trees. A variety of programmes lead to a variety of users, which in turn results in the vitality of the project.

Fig. 48 *Forum 2004,* Barcelona, Spain (Herzog & de Meuron 2005:33)
Artificial platform functioning as

Fig. 49 *Forum 2004,* Barcelona, Spain (Herzog & de Meuron 2005:33)
Site plan illustrating the various spaces

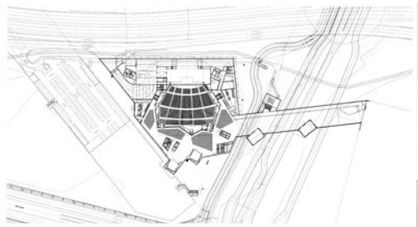


Fig. 50 *Forum 2004,* Barcelona, Spain
Level -1 ()

Dark green indicates the objects spread through the plaza instead of framing it. Triangular shape is the building overhead providing shade.

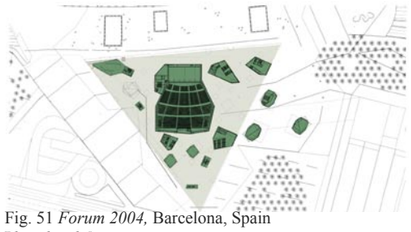


Fig. 51 *Forum 2004,* Barcelona, Spain
Plaza level ()

Top: Fig. 52 *Forum 2004,* Barcelona, Spain
North facade (Author 2004)

Above: Fig. 53 *Forum 2004,* Barcelona, Spain
View from below through a roof opening (Author 2004)

The triangular building is lifted from the plaza, providing shade. Some of the objects spread through the plaza can be seen, in this instance, doubling as a skateboard ramp.

Fig. 54 *Forum 2004,* Barcelona, Spain
View from below the triangular building. as it is lifted of the plaza, providing shade
(Author 2004)

4.2 Precedent study 2: Heys Memorial Hall parking, Sunnyside, Pretoria

Proprietor: City of Tshwane
Design: Public waste department
Construction: Unknown
Architects: City of Tshwane municipality
Program: Parking lot for Heys Memorial Hall, play park, public swimming pool and housing

The parking lot is situated on the corner of Kotze and Bourke Street in the high density residential suburb of Sunnyside. It is adjacent to the Heys Memorial Hall, which is rarely used. On one of the corners a well maintained play park is frequented by the children of the neighbourhood. On another corner a public swimming pool is located, and on the remaining corner another block of flats.

Because of a lack of management, the parking lot is available for any purpose. No fences restrict access to the site and nobody prevents the use of the terrain. The parking lot is quiet during the week, and is mainly used as a practice area for learner drivers. But over the weekends an informal gathering of men between the age of 20 and 40 takes place. These men come together to have their cars washed whilst sitting in the shade talking and listening to music while watching others doing the chore. By means of the smallest cultural element, the music, the site is appropriated. Exchange takes place between those who wash the cars and those whose cars are being washed. One of the important purposes of the gathering on the weekend is showing – what car you are driving and what clothes you are wearing.

This parking lot next to the Heys Memorial Hall proves that open spaces with no predetermined function do have a role in the city. The unprogrammed nature of the parking lot/terrain has a built-in flexibility that can accommodate change over time. Furthermore, it is clearly evident that location and proximity play a vital role. By designing a public space that caters for the needs of the neighbouring habitants, the success of the public space is ensured.

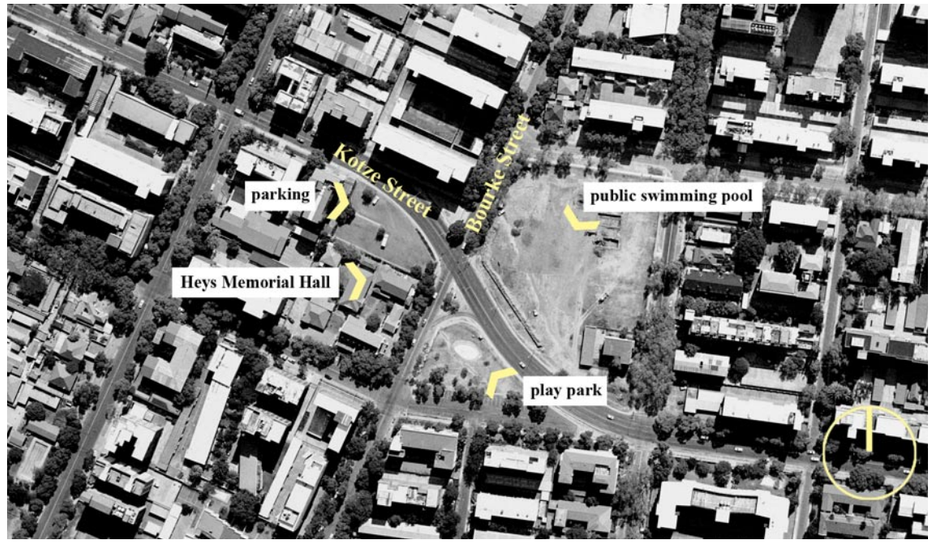


Fig. 57 Aerial of part of Sunnyside (public swimming pool not yet built) (Author 2006)

Fig. 58 Parking next to *Heys Memorial Hall* on the weekend (Author 2006)

Fig. 55 *Heys Memorial Hall* (Author 2006)

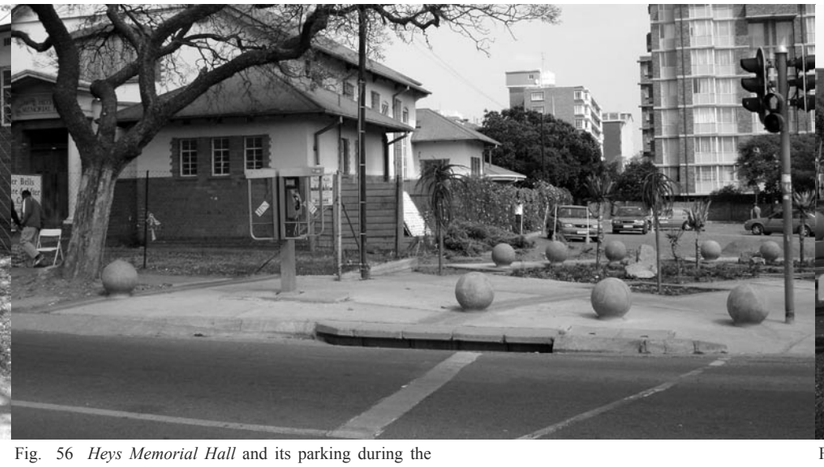


Fig. 56 *Heys Memorial Hall* and its parking during the week (Author 2006)

Fig. 59 Play park on the corner of Kotze and Bourke Street on the weekend (Author 2006)

Fig. 60 Parking next to *Heys Memorial Hall* on the weekend (Author 2006)

4.3 Precedent study 3: Central Station, Rotterdam

Design: 2001
Architects: Alsop & Störmer (William Alsop)
Client: *Breeze of AIR,* AIR Foundation (Architecture International Rotterdam) – an interdisciplinary event on the subject of public garden
Program: Flamingo pool, aquarium, terrarium, housing, offices, shops, train station, tram stop, bus stop, parking and a public space

The project was for the expansion of Rotterdam's Central Station into a terminal in order to house the high-speed railway line (Atelier Quadrat 2002:58). Housing, offices, shops, urban entertainment facilities and parking had to be accommodated in the twenty hectare site around the terminal.

According to the design team contemporary cities are characterised by compartmentalization and concentration with unattractive connections in-between (*ibid* :58). The station area was considered to be a peripheral zone with very little interest to the north of it. A requirement of the design team was that the station area had to be an attraction in order to entice residents and visitors to cross the traffic artery. By changing the morphology of the station area, so that it is not the edge of the centre, new links were established with existing urban areas further away, making the decentralization and expansion of urbanity possible. Also, new links were forged with existing and interesting urban activities.

The design team chose to provide the conditions for change, growth and interaction, because it is not possible to plan for it (*ibid* :58). The conditions were given form through structure. The structure can exist on many levels. For example, a garden can include a number of gardens, in which the group of gardens forms a whole. Because of the structure the project as a whole can work; private, collective and public initiatives can flourish (*ibid* :58). The design team chose to design the station area as a neutral public space with the potential for various public and private activities as well as growth and development beyond the planning area.

With this project the importance of the east-west streets such as Middellandstraat, Binnenweg and Hoogstraat were reduced and the north-south axis became more prominent. The railway tunnel was placed underground in order to create continuity between north and south. On top of the railway tunnel a public space was created where tourists, commuters, city residents and travellers would be able to meet and interact. The metro station, car parks and cycle shelter was placed underground with the tram and bus stops at street level. The public space became an annex for Rotterdam's Blijdorp Zoo with a flamingo pond, a terrarium inhabited by monkeys and an aquarium containing fish.

Rotterdam's Central Station uses a strategy of enticing users to an area with little interest, by placing leisure amenities in it. It also illustrates that in order to bridge an infrastructure barrier, ease of movement across the barrier and permeability is important. The project serves as a mixing-chamber for different social, cultural and economic groups – fostering social cohesion.

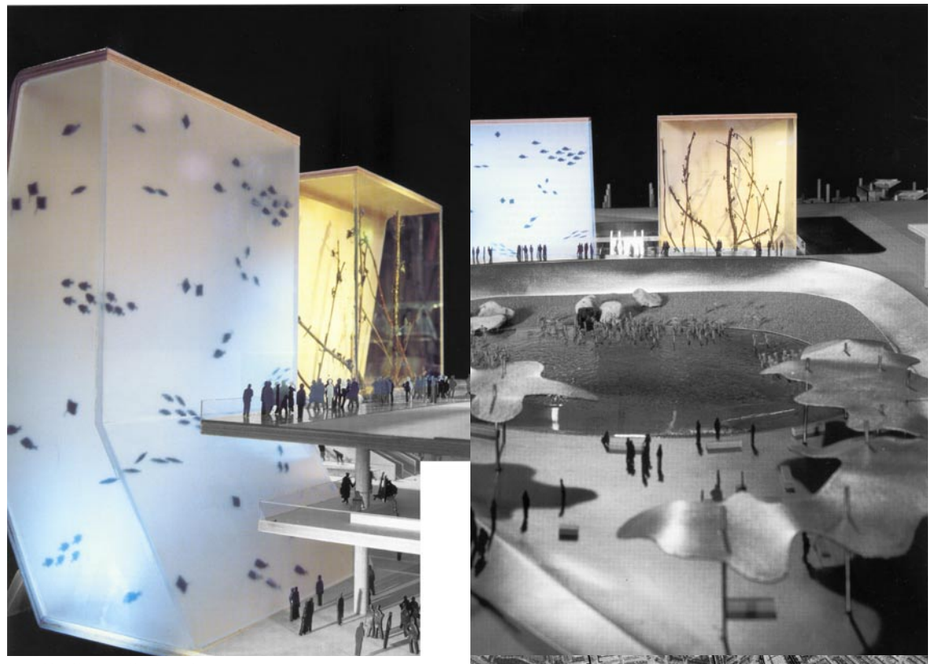
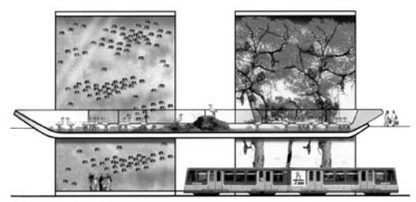


Fig. 61 *Central Station,* Rotterdam. Terrarium, aquarium and underground station concourse (Atlier Quadrat 2002: 64)

Top-right: Fig. 62 *Central Station,* Rotterdam. Flamingo pool with terrarium and aquarium at reat (Atelier Quadrat 2002:65)

Bottom-right: Fig. 63 *Central Station,* Rotterdam. Future scenario: redevelopment of station area after extending railway tunnel as a linking structure (Atelier Quadrat 2002:61)

Bottom: Fig. 64 *Central Station,* Rotterdam. Section including metro shuttle to Blijdorp (Atelier Quadrat 2002:63)



5. Design development

Architectural theory, if it is to be of any use, should be composed of a set of what Cedric Price (1934-2003) terms working concepts. A working concept is a theoretical tool which allows the designer to make a series of consistent reasoned decisions. Good concepts are those that have the potential to shape the strategies that solve a stated design problem. The theory that precedes the design is not translated into a form, but is used to make informed decisions and to create connections with contemporary ideas: "Theory is not intended to defend, justify, or promote design." (Tschumi 1994:11) Decisions regarding massing, program layout, materials and finishing can thus be brought in line and given coherence. Taken in this light it is clear that there is no inherent separation between theory and practice.

5.1 Your surroundings positioned: organisation of space

5.1.1 Scenarios

"When there was fire we brought gasoline." (Guy Debord (1962-1972))

Connecting the inner city to Salvokop Suburb and Freedom Park is used as a starting point for the urban proposal. Attractions placed on the side of Salvokop Suburb encourage pedestrian and vehicular flow across the railway lines from the city. Selected activities in Pretoria are identified, amplified and synthesized to generate a scenario. Thus, a scenario is a speculative predictive tool to generate appropriate program and activity for a given site. There is no intention at prescriptive master-planning, but rather an illustration of potential amongst many possibilities. Three scenarios are sketched:

5.1.1.1 Something old, something new: urban terrain

This scenario is premised on an amalgamation of traditional urban design principles, and the *field condition*, a contemporary theory by Stan Allan and James Corner of *Field Operations*. According to Allen, *field conditions* refer to a network of actions, objects or places; a formal or spatial matrix that is capable of merging various elements while each element retains its individuality (1997 :24). Small local connections are privileged above the master plan. Porosity and local interconnectivity are its definitive characteristics (*ibid* :24). Thus, the ingredients for a successful urban terrain, traditionally *directional permeability*, *ease of access, perimeter block-typologies* and *mixed use programming* (in this case leisure amenities, restaurants and ablutions) are combined in a porous lattice that is inextricably tied to its immediate surroundings. A square in Kobe, Japan (2005) designed by Barbara Agnoletto and Laura Mascino, illustrates an urban terrain providing seating, lighting and entertainment to its users (fig. 66-68) (Bossi 2006:52).

5.1.1.2 Something borrowed: sculpture park / art research

The terrain is made available as a deinstitutionalised site for the contemporary arts - creating an open landscape housing site specific sculpture, performance and critique. Government and commercially commissioned work begins to jostle for attention with private projects in a highly visible public environment; scheduled events and festivals modulate daily practice; the terrain is in constant flux, moulded by and pressing back on its context.

Jinhua Architecture Park is a sculpture park with seventeen public pavilions next to the river Yiwu south of Shanghai. The architects and designers were brought together by the artist, designer and curator Ai Wei Wei (Capezzuto & Grima 2006:19). Ai Wei Wei was approached by the municipal authority of Jinhua to design a park dedicated to the memory of his father, a well-known poet and intellectual. It is a permanent exhibition, consisting of pavilions containing the programmes that the park requires (tearooms, bookshops, toilets). The park is a collaboration between Ai Wei Wei and Herzog & de Meuron architects (*ibid* :19).

5.1.1.3 Something dark and dirty

What at first glance appears to be abandoned landscape is revealed as an obstacle course under the cover of darkness. The open terrain verging on the railway tracks is a favourite haunt of off-road bicycle enthusiasts. Nocturnal runs, with up to twelve cyclists participating, regularly criss-cross the site. As discussed earlier, a conscious effort is made to preserve existing use patterns on the site. To this effect dedicated bike lanes separating cyclists and pedestrians is introduced. The obstacle course is formalised and partially buried in the site. The submerged half-pipe channels high speed riders through the site, accommodates skateboarders, and becomes a rain water culvert during storms. The route dips below the surface of the terrain, revealing its stratified archaeology and affording glimpses into the gallery space below. Emerging next to the soccer field the route reverts to its off-road state as it drains into the sculpture park.

5.1.1.1 Something old, something new: urban terrain

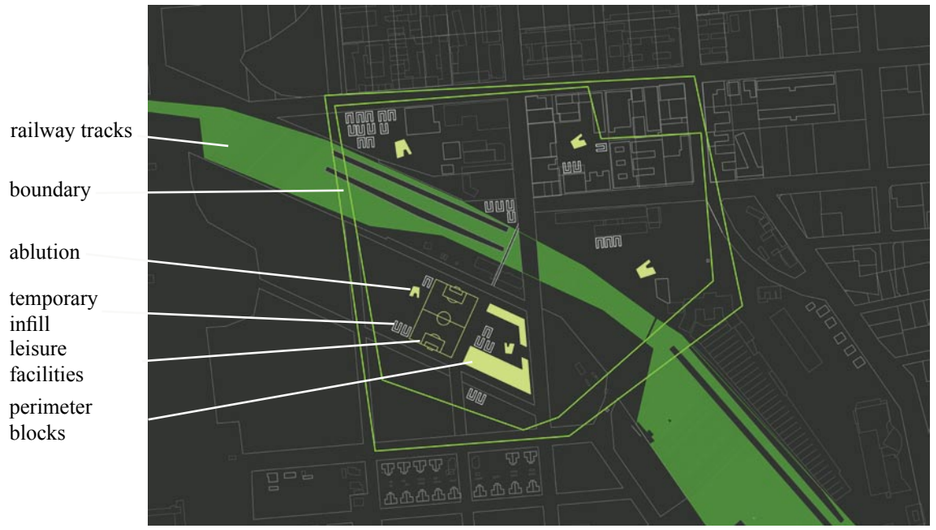


Fig. 65 Urban terrain scenario (Author 2006)

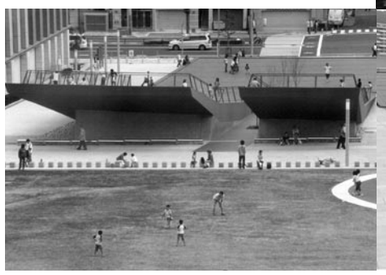


Fig. 66 Square in Kobe, Japan, 2005, Barbara Agnoletto & Laura Mascino - night time (Capezzuto & Grima 2006:52)

Fig. 67 Square in Kobe, Japan, 2005, Barbara Agnoletto & Laura Mascino (Capezzuto & Grima 2006:51)

Fig. 68 Square in Kobe, Japan, 2005, Barbara Agnoletto & Laura Mascino (Capezzuto & Grima 2006:51)

Fig. 69 Fireworks (Konrad 2003:62)

5.1.1.2 Something borrowed: sculpture park / art research

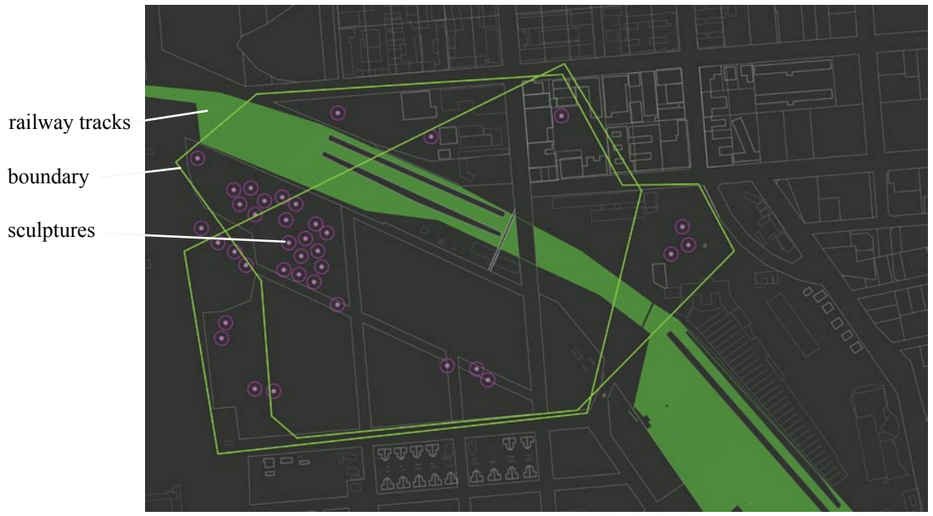


Fig. 70 Sculpture park scenario (Author 2006)

Fig. 71 *The reading space pavillion,* Herzog & De Meuron, 2006 (Baan 2006:21)

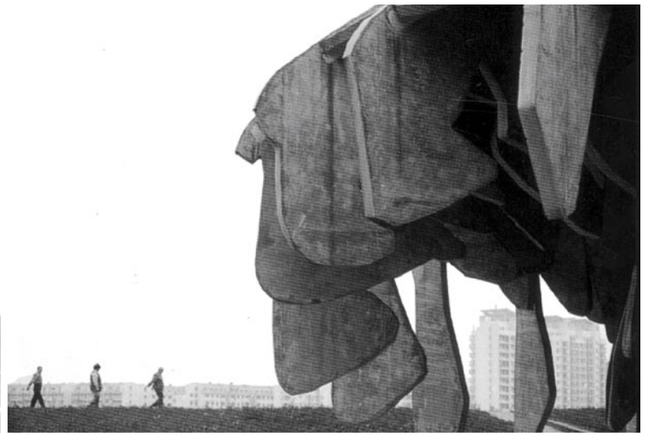


Fig. 72 *The ancient tree,* Emanuel Christ & Christoph Ganterbein, 2006 (Baan 2006:26)

5.1.1.3 Something dark and dirty

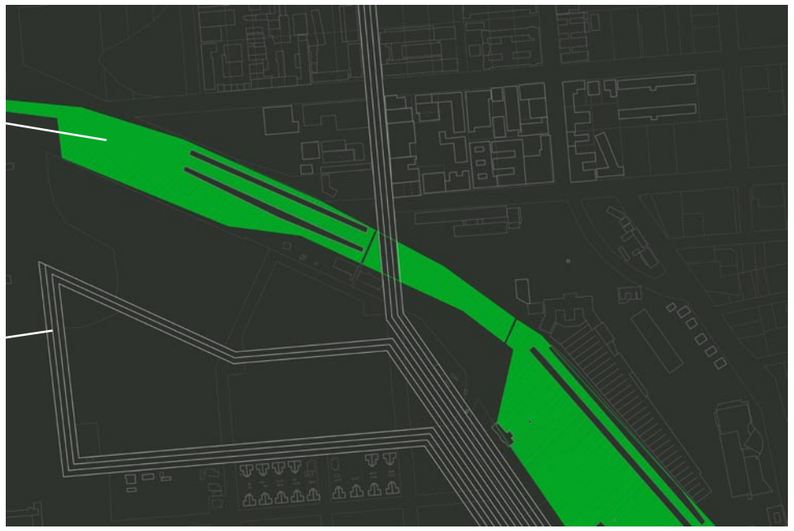


Fig. 73 Art research scenario (Author 2006)

Fig. 74 Skate-boarder

Fig. 75 Bicycle rally (www.son-art.com)

5.1.2 Programming a street edge

Chora's *spatial stories* (see p. 50-55) are used to map the effects of the scenarios and the programmes they generate, as they simultaneously unfold (see fig.76 & 78). The politically charged and officially sanctioned Freedom Park complex to the south of the site attracts local and international tourists, feeding into the proposed exhibition space next to the railway tracks. Public amenities (such as a soccer field, stalls, swimming pool and a space for events) are provided for the proposed residential area to the west of Salvokop. The presence of state institutions (Department of Correctional Services, City of Tshwane 2005:238), though not finalised at the time of writing, necessitate restaurants, and entertainment for office workers. In turn, illicit activities, such as illegal dumping, are curbed by the twenty four hour presence of people on the site. Taken in concert the spatial stories sketch one of many possible effects the project might have on its context.

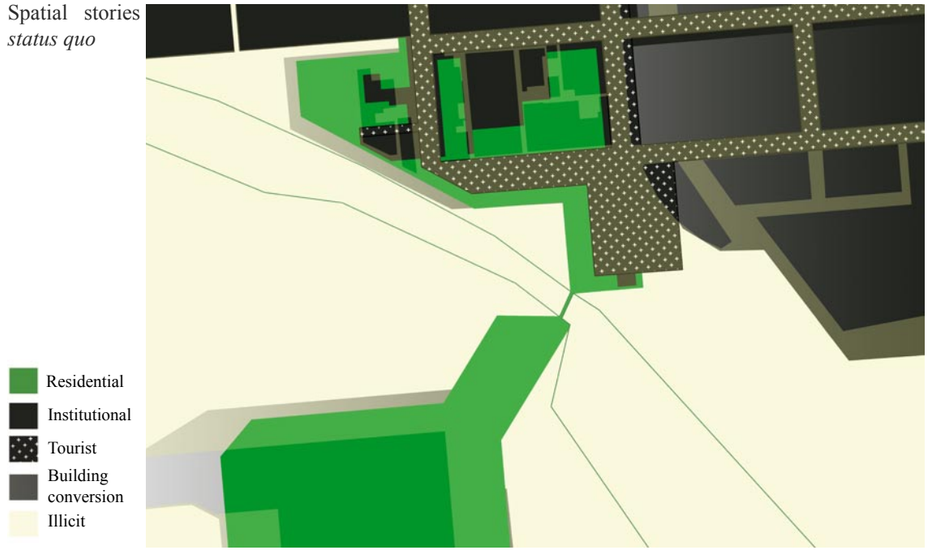


Fig. 76 Spatial stories *status quo* (Author 2006)

Combined urban proposal

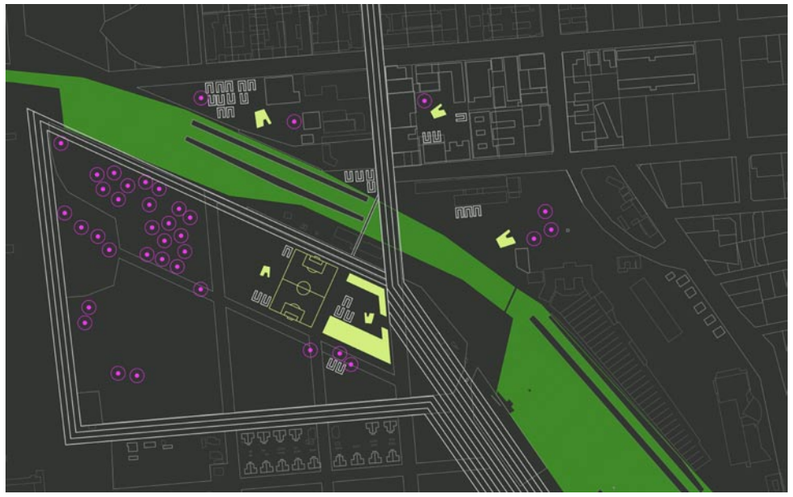


Fig. 77. Urban proposals combined (Author 2006)

Scenario of the spatial stories after the intervention

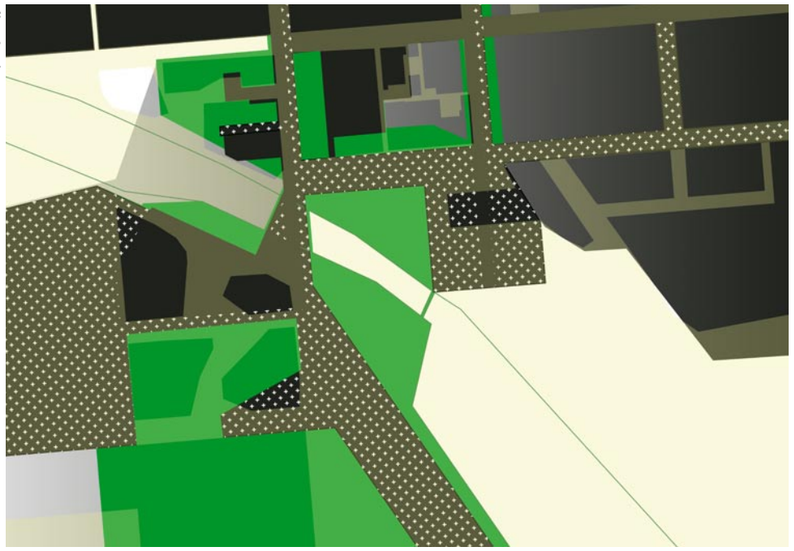


Fig. 78. Spatial stories after intervention (Author 2006)

5.1.3 De-programming a core

An unprogrammed space behind the street edge, facing the railway tracks serves as a platform for events. These events are the consequences of the *urban terrain, art research* and *dark and dirty* scenarios (as discussed on p.). From the precedent studies conducted during the course of this dissertation it is clear that unprogrammed space if not adequately serviced, ceases to be viable, sustainable or functional. Bearing this in mind cafés, exhibition spaces and a subterranean parking lot serve as enabling 'infrastructure' for the open space.

The 'infrastructure' is housed in architectural objects that shape and organise their surroundings (see fig. 79). Pedestrian movement is directed towards the central public space; moving through the site requires traversing the open area in its centre.

Fig. 79 Accommodation July (Author 2006)

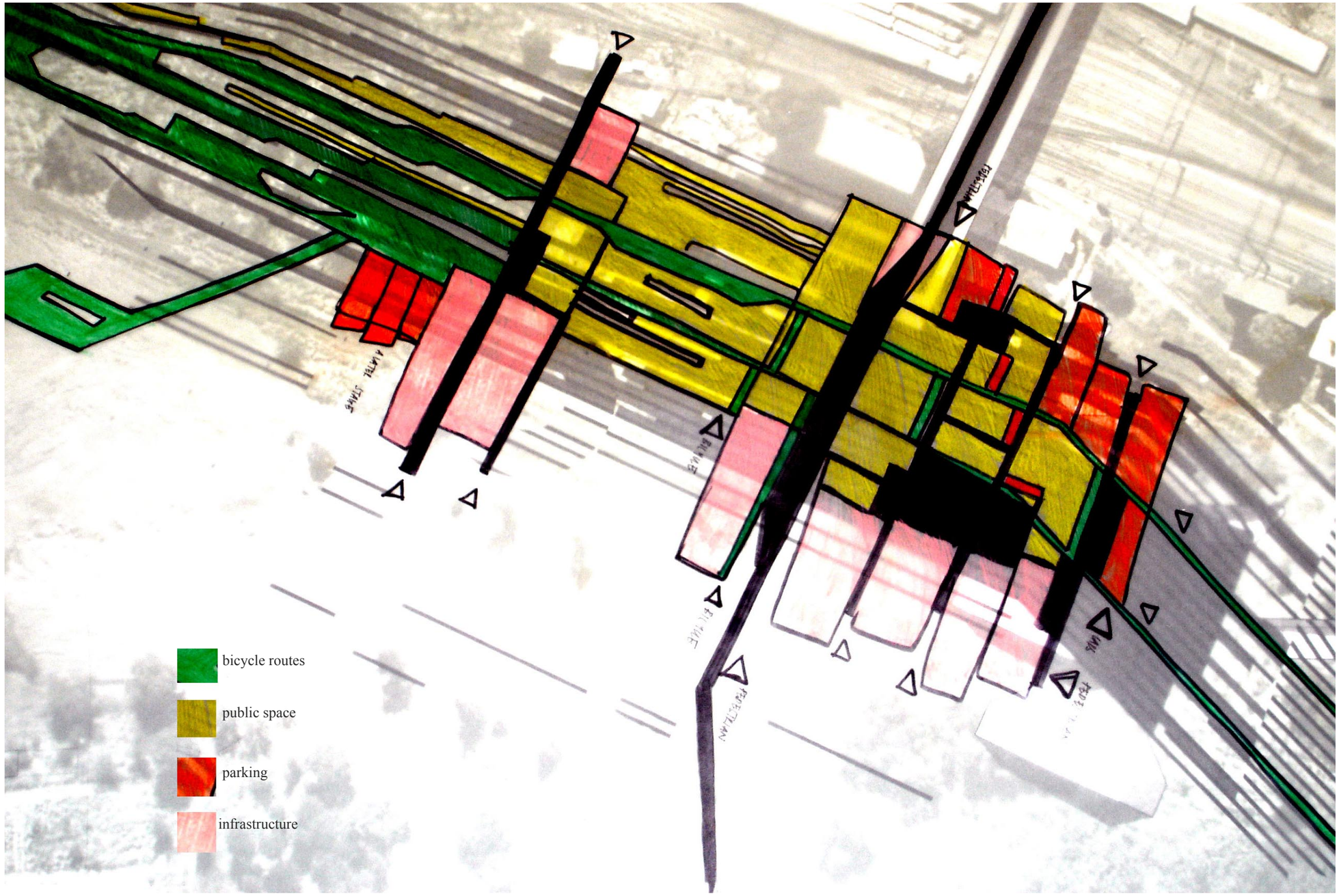


Fig. 80 Design process - planning (June) (Author 2006)

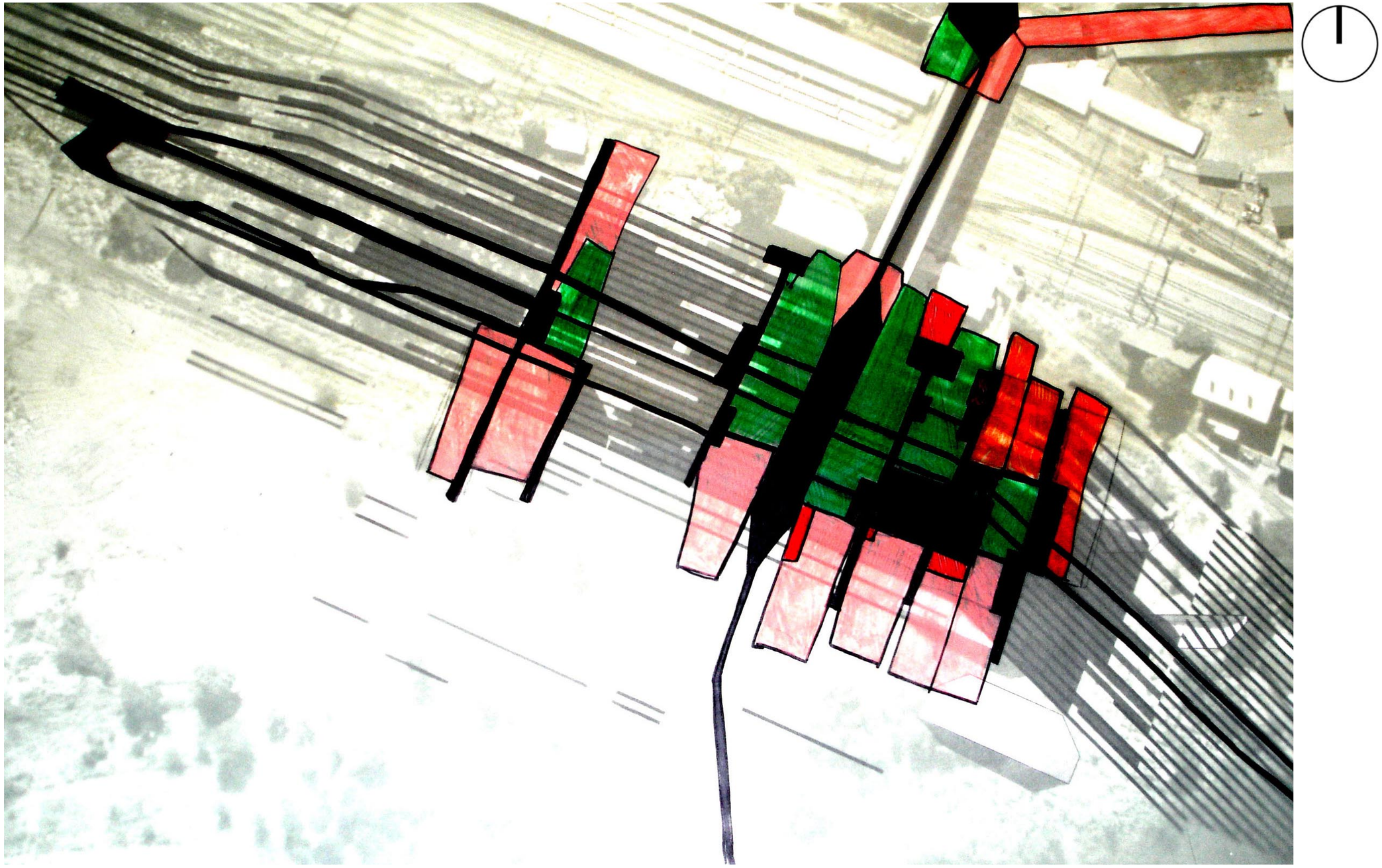


Fig. 81 Design process - planning (June) (Author 2006)

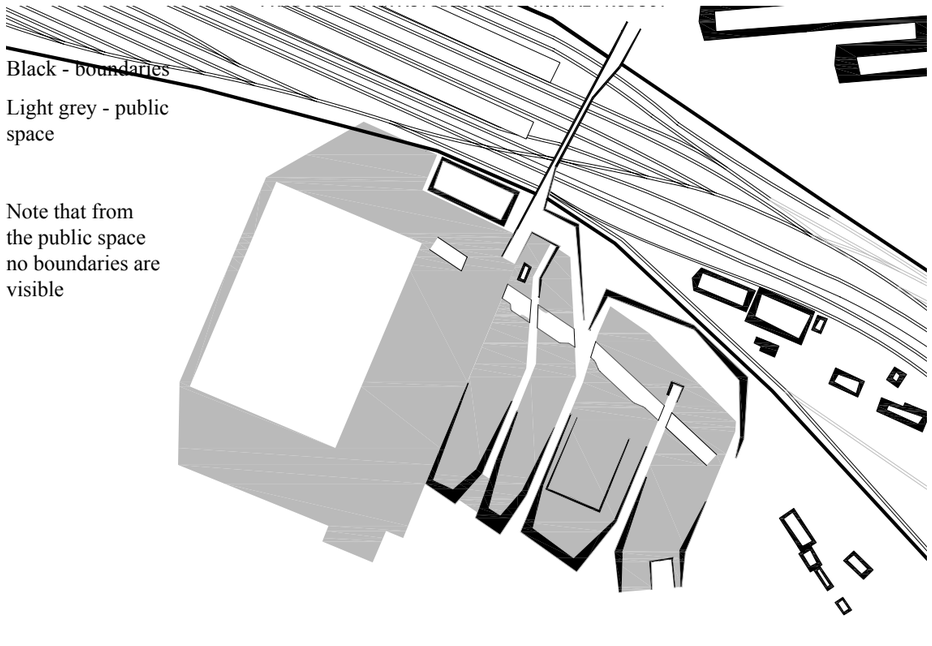


Fig. 82 Boundaries (Author 2006)

Fig. 83 Shade (Author 2006)

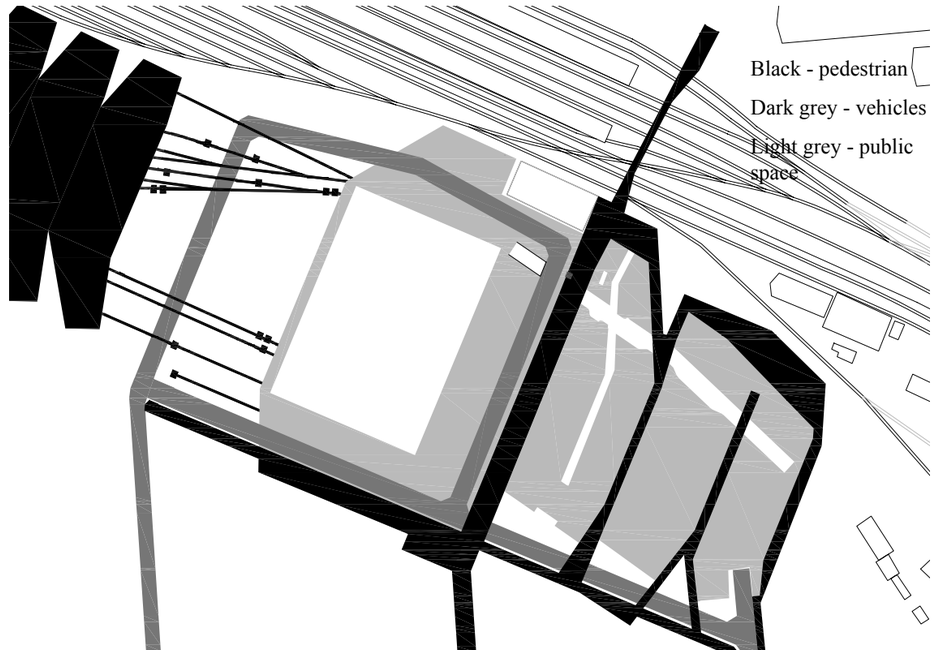


Fig. 84 Paths (Author 2006)

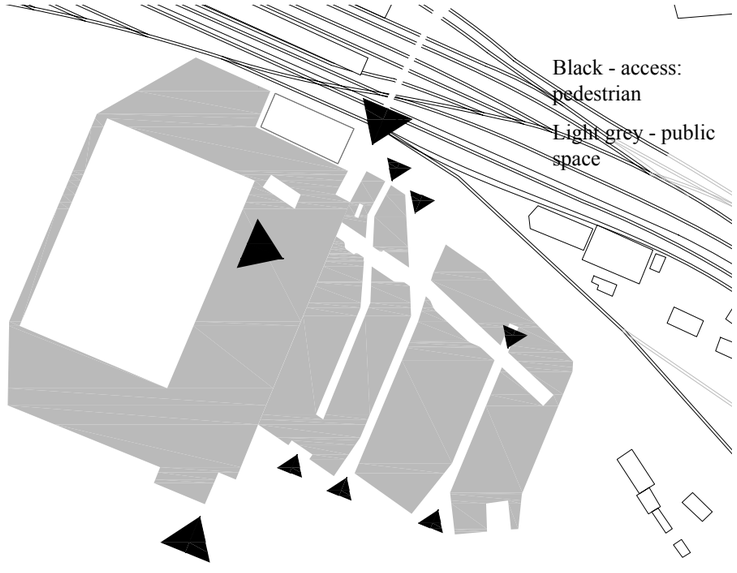


Fig. 85 Access (Author 2006)

5.2 Your position surrounded: atmosphere

The project does not begin with an image or a form; it starts with the inherent potential of the site – the *terrain vague*. Ignasi de Solà-Morales Rubió uses the term *terrain vague* to explain the post-urban residual spaces of abandoned industrial terrains:

The relationship between the absence of use, of activity, and the sense of freedom, of expectancy, is fundamental to understanding the evocative potential of the city's *terrain vagues*. Void, absence, yet also promise, the space of the possible, of expectation" (Daskalakis & Perez 2001:79).

The design sets out to recognise the industrial archaeological nature of the terrain, without inhibiting the creation of a recognisable place in this ill-defined terrain. The form-giving process is an attempt at examining the relationship between objects and its surrounding field. Premised is a collapsing of the indoor-outdoor dichotomy; a form that is at once a threshold, platform and background.

Fig. 86 *Terrain Vague II* - Constant Nieuwenhuys, 1973, oil on canvas, collection Ton Berends, The Hague (Wigley 1998:224)

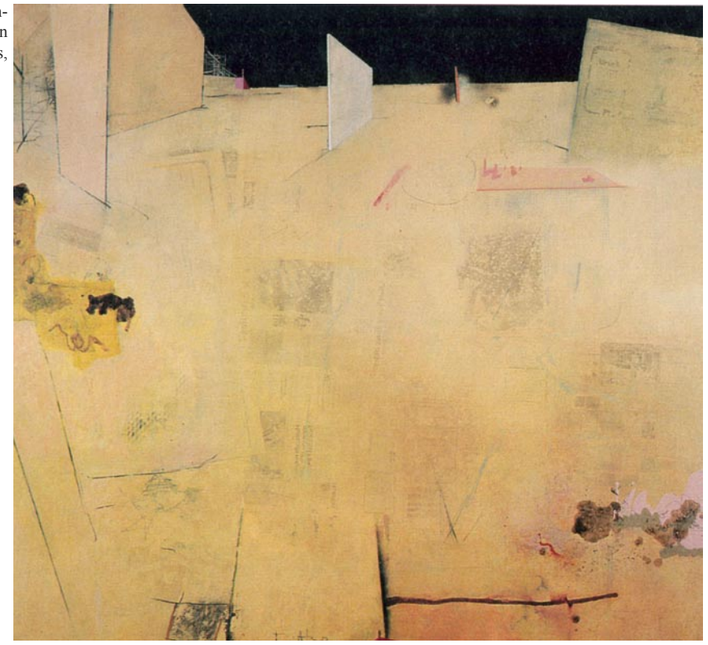


Fig. 87 *Terrain Vague III* - Constant Nieuwenhuys, 1973, oil on canvas, collection Ton Berends, The Hague (Wigley 1998:224)

5.2.1 Model 1: invisible infrastructure

Public space is the primary focus of this model. From the side of the suburb, only a platform rising towards a view of the city is visible. It is the view from the railway tracks that reveals the architecture. The notion of architecture as invisible infrastructure is explored.

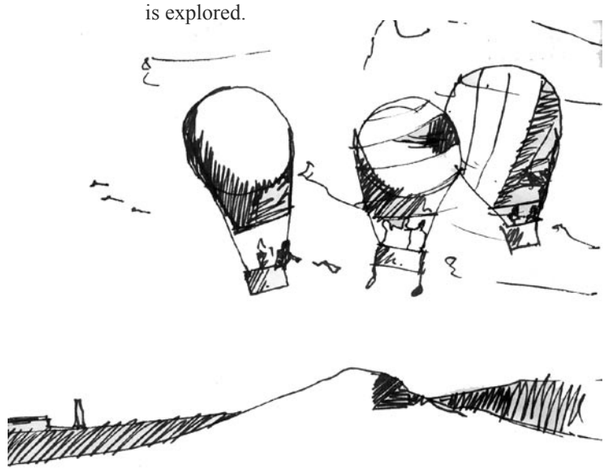


Fig. 88 Events, February 2006, pen (Author 2006)

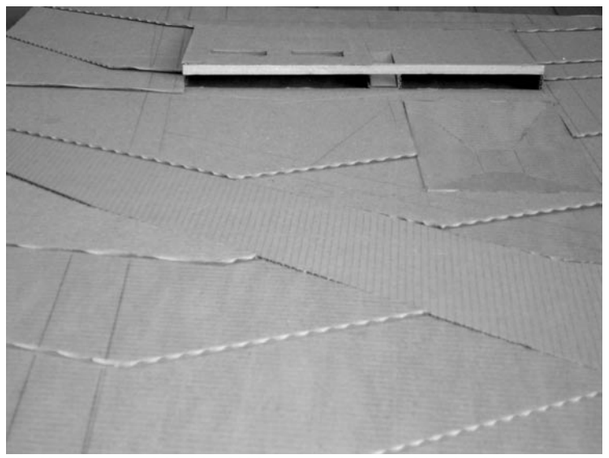


Fig. 89 Concept model 1, May 2006, corrugated cardboard (Author 2006)

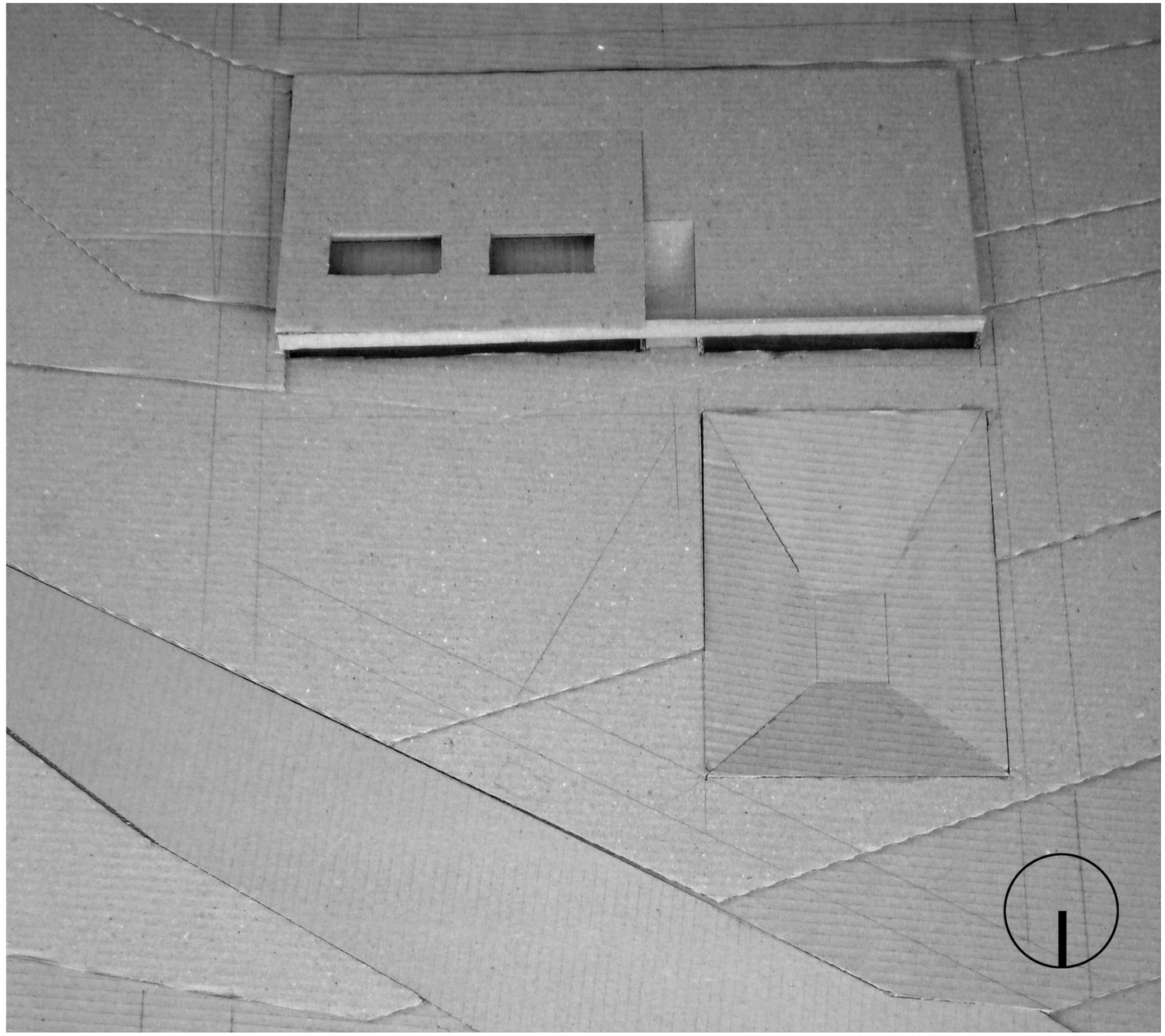


Fig. 90 Concept model 1, March 2006, corrugated cardboard (Author 2006)

5.2.2 Model 2: polite urbanism

More enclosure is provided than the previous design. What emerges is an urban perimeter-block typology, acknowledging the city street grid beyond the railway tracks and absorbing proposed routes through the site. However, this proposal ignores the existing nature of the terrain.

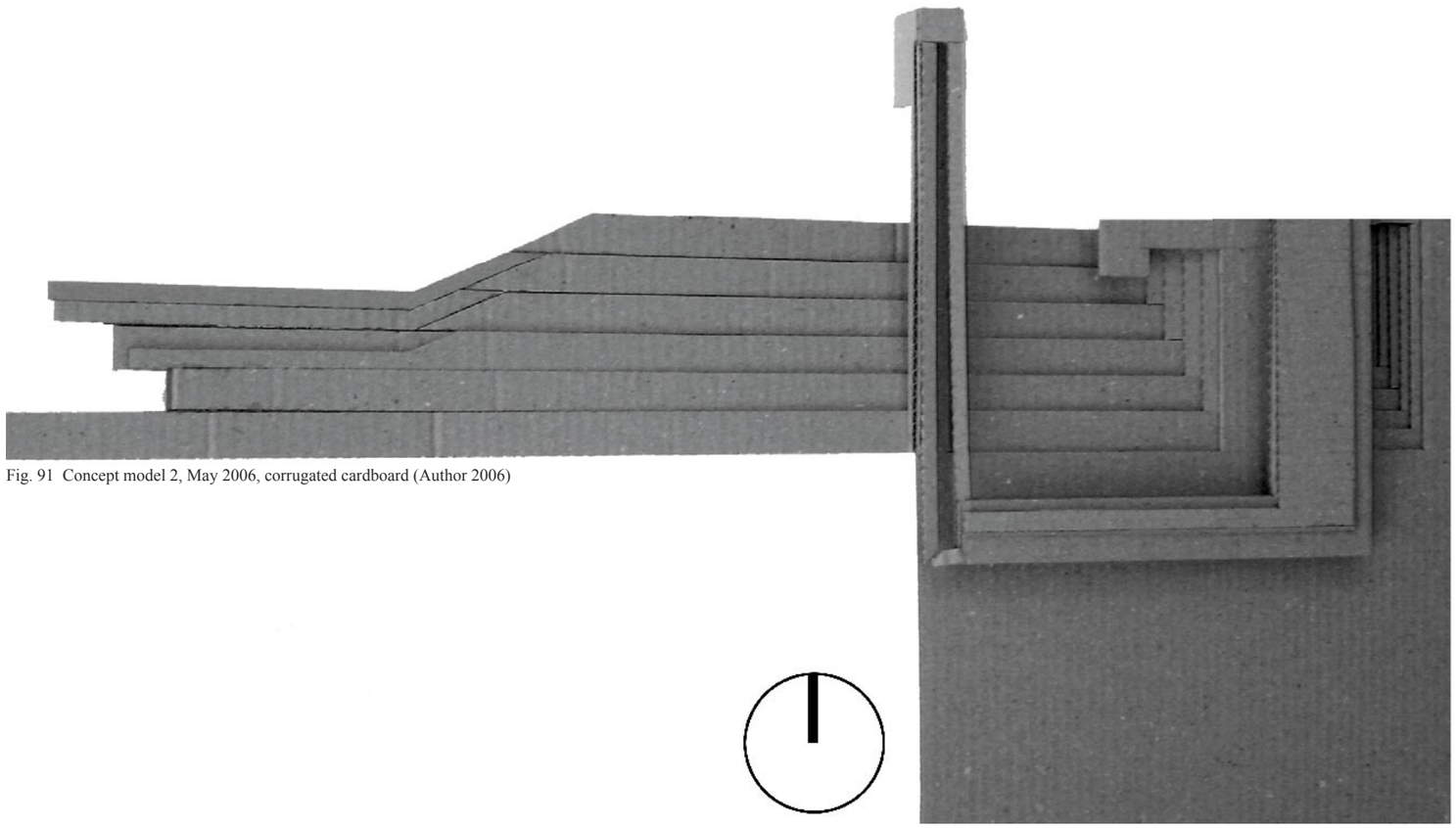


Fig. 91 Concept model 2, May 2006, corrugated cardboard (Author 2006)

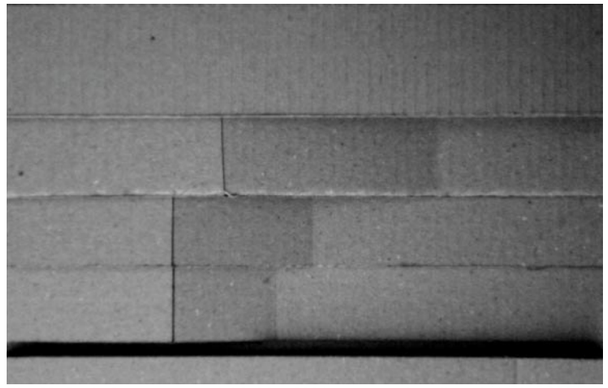


Fig. 92 Study for concept model 2, May 2006, corrugated cardboard (Author 2006)

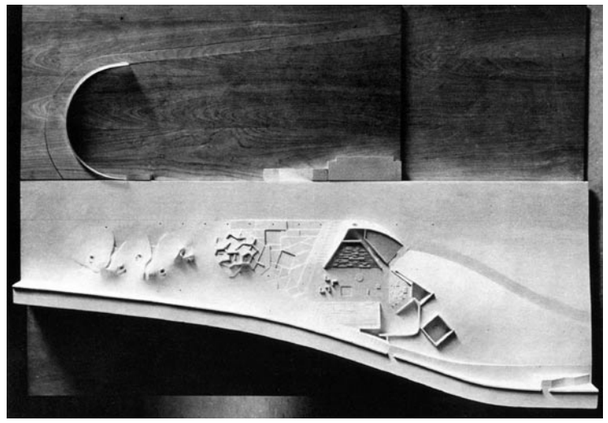


Fig. 93 Influences: Isamu Noguchi, playground planned for Riverside Drive Park, New York (with Louis Kahn), 1964, plaster model (Hunter 1979:59)

5.2.3 Model 3: landscape as text

Ground plane and building surfaces are marked with successive layers and textures. These layers contain information regarding the history of the site, while acting as route and suggesting future use patterns. The architectural 'objects' are scattered throughout the terrain to form composed views - an approach similar to the follies of the English and French *Picturesque* Gardens. A large amount of open area to building mass needs to be maintained to ensure the legibility of the terrain as a 'field'. Very few amenities exist in the area, thus containing the necessary functions in the small amount of buildings proposed by this model becomes problematic.

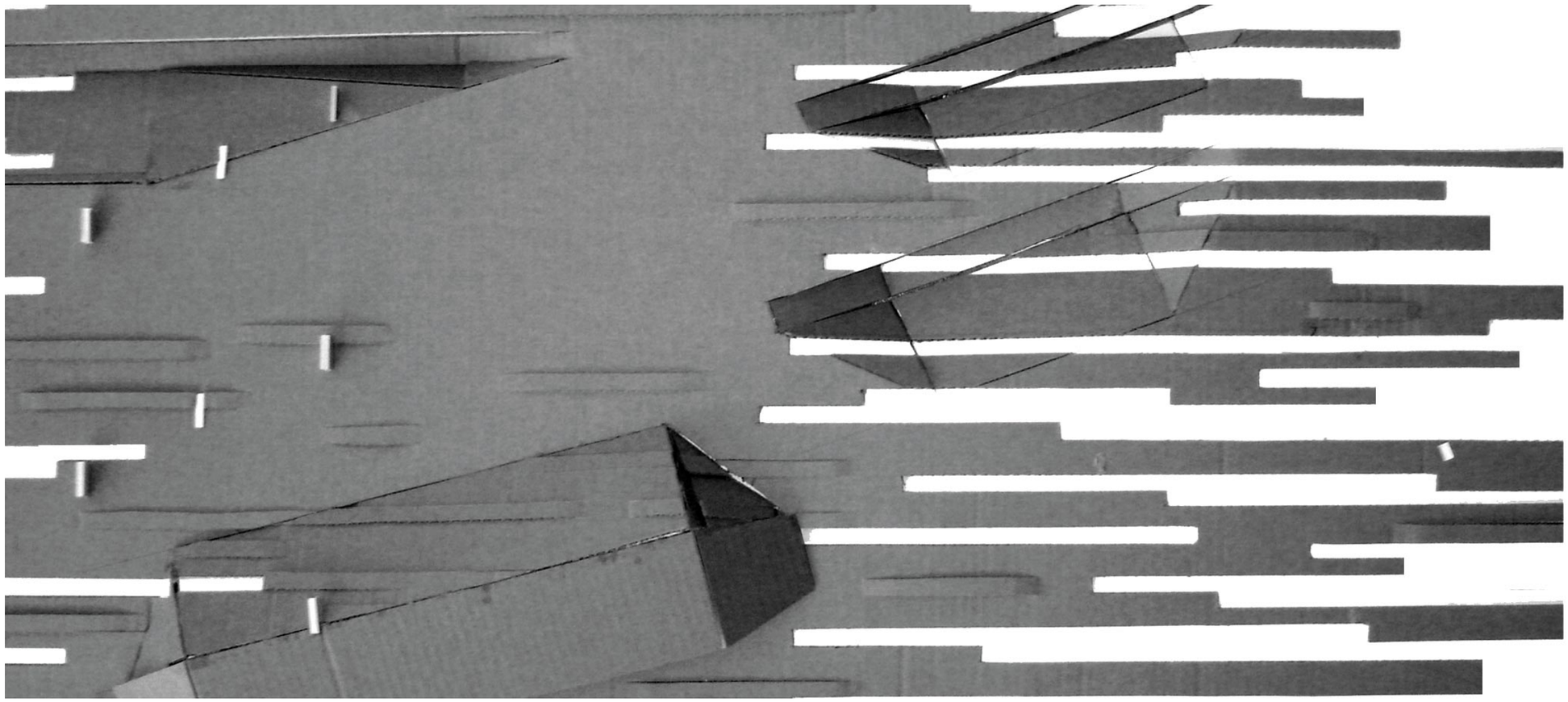


Fig. 94 Concept model 3, June 2006, corrugated cardboard (Author 2006)

5.2.4 Model 4: presence and absence

An appropriate balance between field and object is achieved. From the central public space, only the field is visible, whilst from the outside the supporting objects are prominent. By placing objects next to the railway tracks, the design brings the railway tracks into focus as significant objects within the landscape. This idea is carried trough by framing the tracks between objects and in some instances displaying them behind glass (the exhibition). From the central public space the intervention is perceived as part of the field that surrounds it (see fig. 99). From the street the buildings frame the sidewalks, creating a boulevard that can easily extend with the addition of conventional building typologies - thus responding to future development (see fig.104). Buildings are massed to align with the former position of the demolished sheds of the CSAR buildings. The question arises weather this in of any significance to future users of the site. Thus, a similar shape is employed, adapted to future movement patterns across the terrain. The result is evident from the final proposal

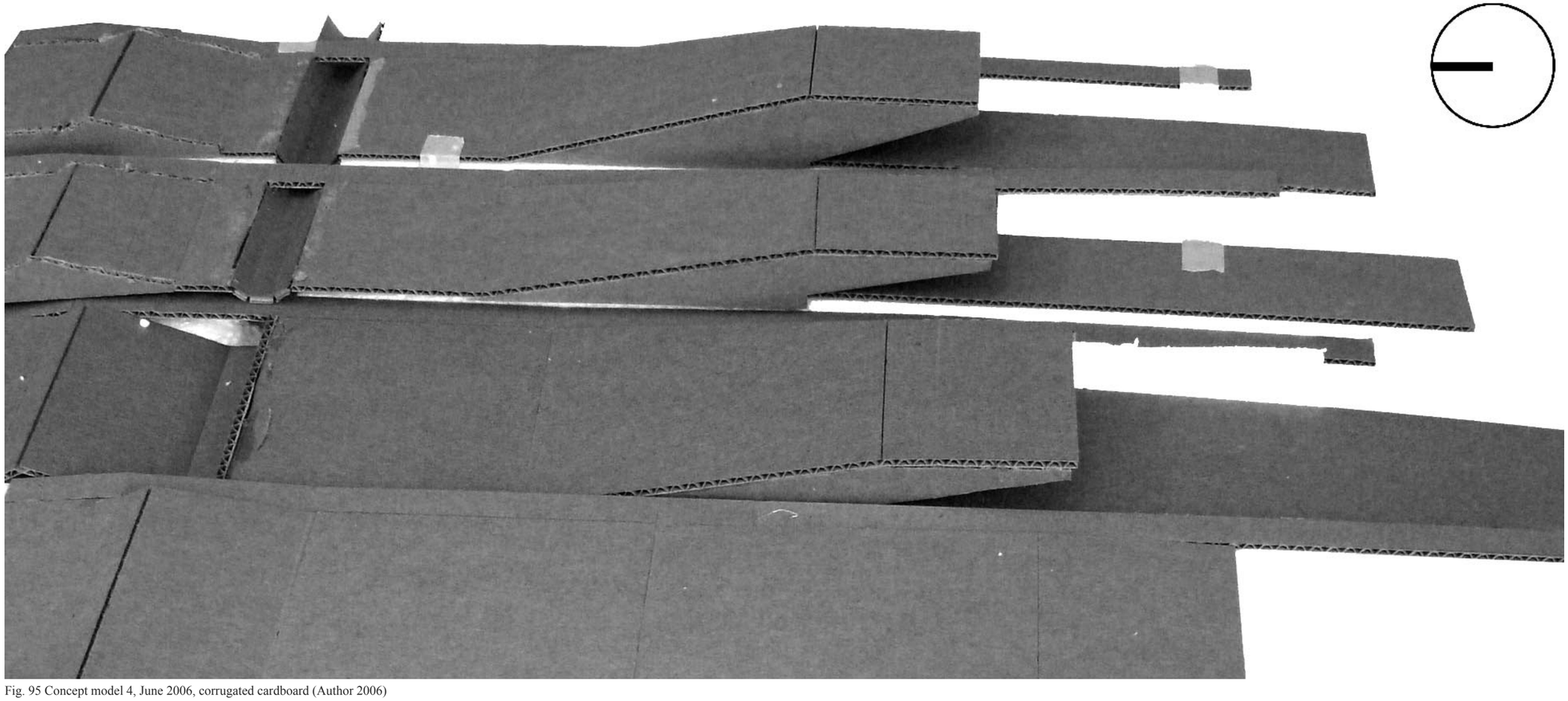


Fig. 95 Concept model 4, June 2006, corrugated cardboard (Author 2006)

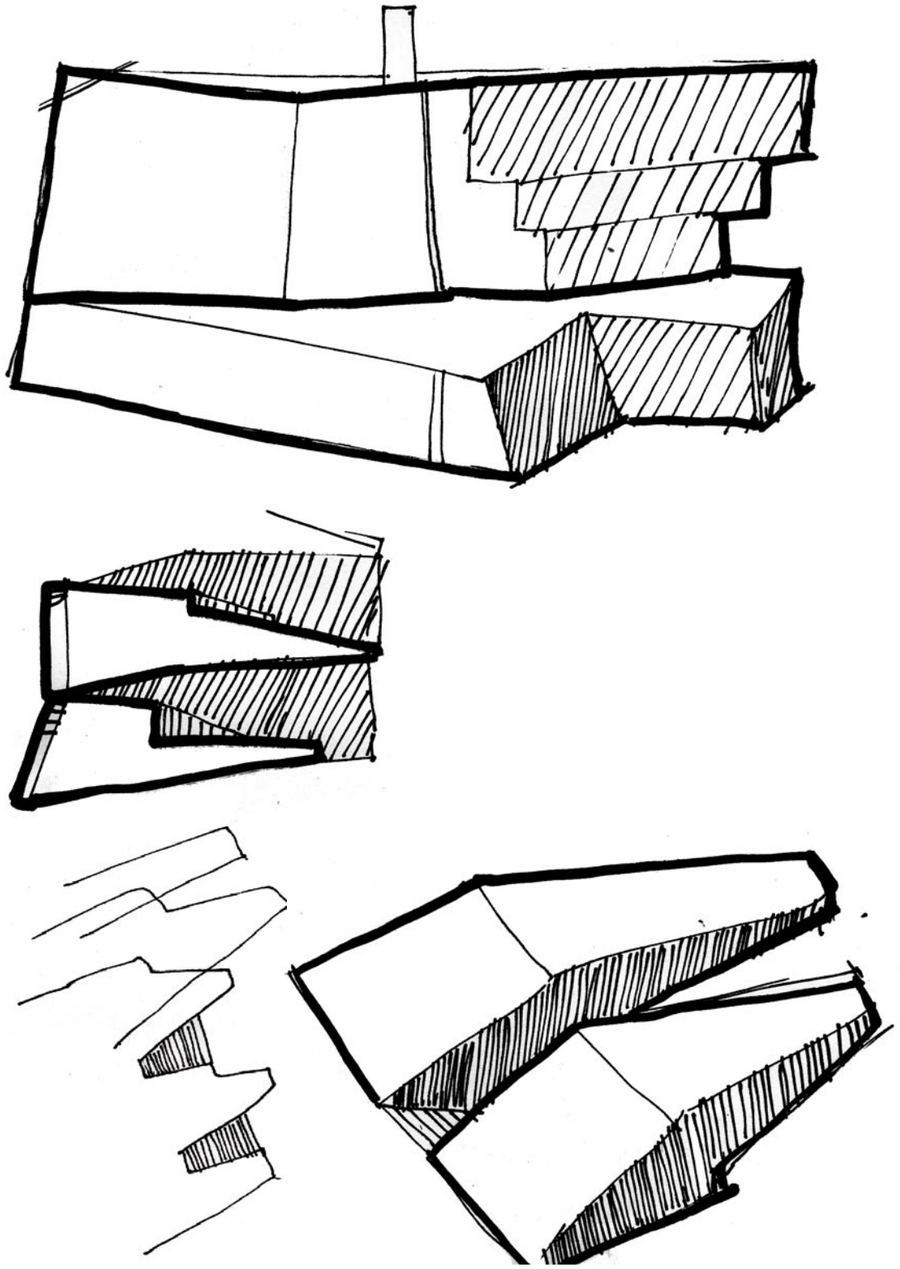


Fig. 95 Study for concept model 4, June 2006, pen (Author 2006)

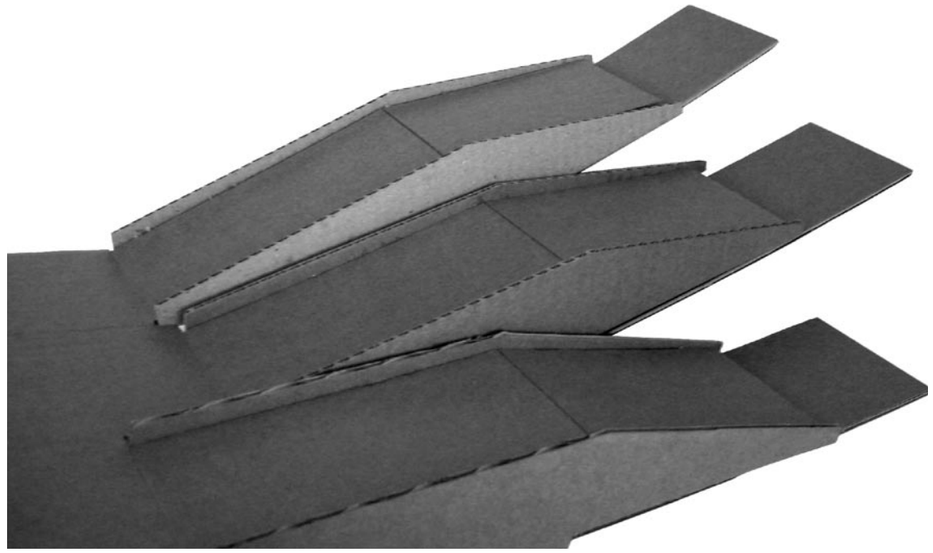


Fig. 96 Study for concept model 5, June 2006, pen (Author 2006)

Fig. 97 Study for concept model 5, June 2006, pen (Author 2006)

5.2.5 Model 5: Mnemonic field

The terrain is viewed as a palimpsest - traces of the history of the place are retained as metonymical objects. "Memory takes root only half in the folds of the brain: half's in the concrete streets we have lived along." (Lionel Abrahams as cited by Vladislavić 2006: vi) Where the unused railway tracks occur in the new intervention, the idea of movement is retained – the one set is used as a bicycle and skateboard track and the other as a future vehicular road; the tracks are preserved selectively. Demolished sheds are marked by variance in pattern and texture of surfaces.

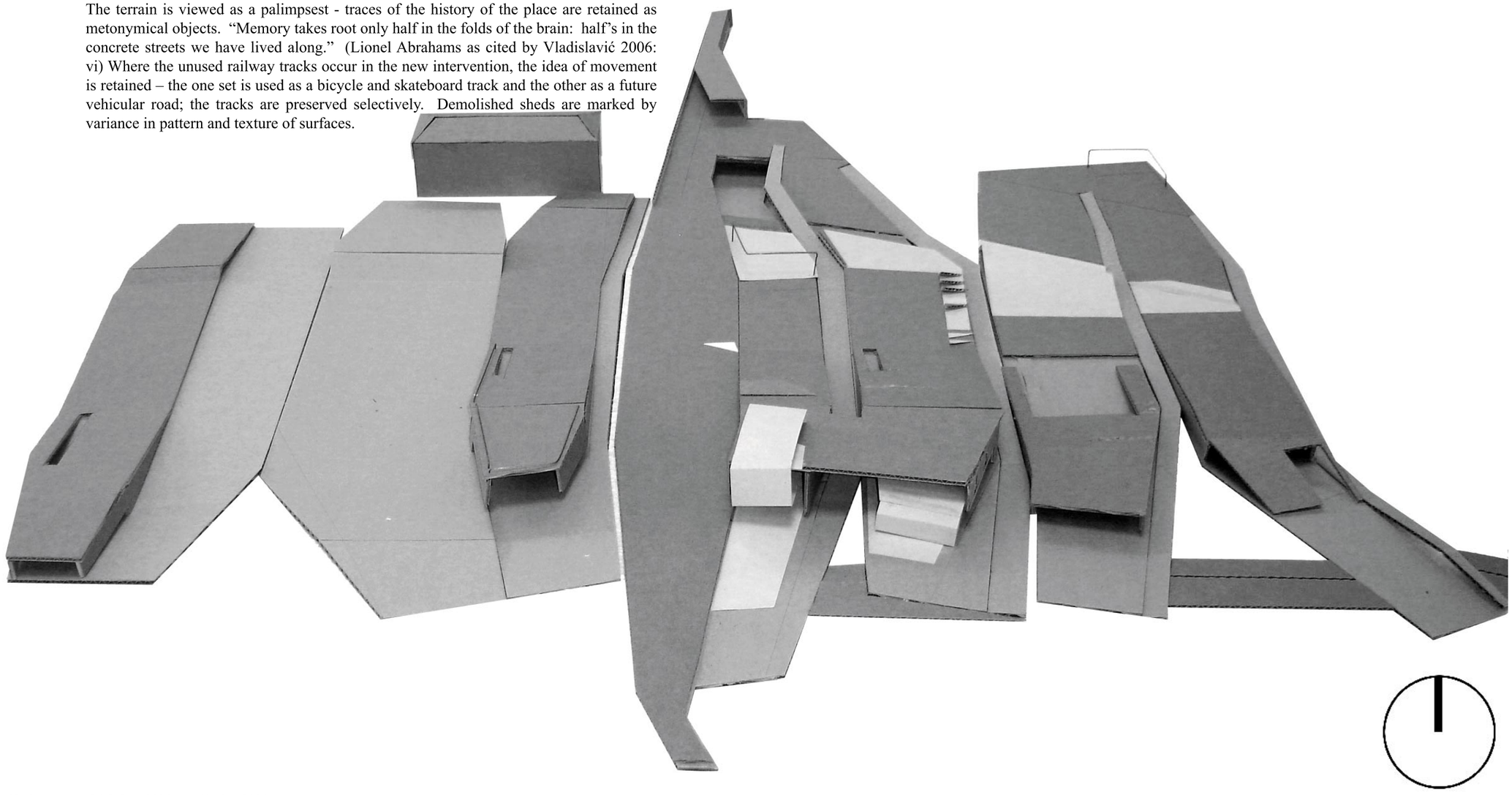


Fig. 98 Concept model 5, June 2006, pen (Author 2006)

5.2.6 Field

This dissertation has dealt with the ramifications of acknowledging the inherent nature of the site as an open field. Field has been understood as an expanse or the background of a picture, while also referencing Stan Allen's theory of *field urbanism* (Allen 2003:17). Allen's theory sets out to formulate the emergent horizontal field-like settlement and use patterns of contemporary cities, generated by the suburban ideal of private housing. This form of urbanism is marked by points of what Allen terms 'intensity and exchange' – points where various programmes (work, residential, commerce and leisure) overlap. The social theorist, Christopher Alexander, uses the term *semilattice* in his text 'A city is not a tree' (1988) to explain this complex overlapping of relations of people. The result of overlapping programme demography is best understood in terms of the moiré.

5.2.7 Moiré

The phenomenon of the moiré refers to the visual distortion caused by overlapping patterns, thus altering the structure of the composite patterns. This implies that overlapping programs result in a structural change in which the programmes operate. The astute designer will overlap programmes that are not merely complementary, but which influence behaviour beneficially. The final proposal is an attempt to create a place where a variety of people and programmes overlap, causing interesting situations and stimulating atmospheres.

Fig. 99 Boundaries (Author 2006)

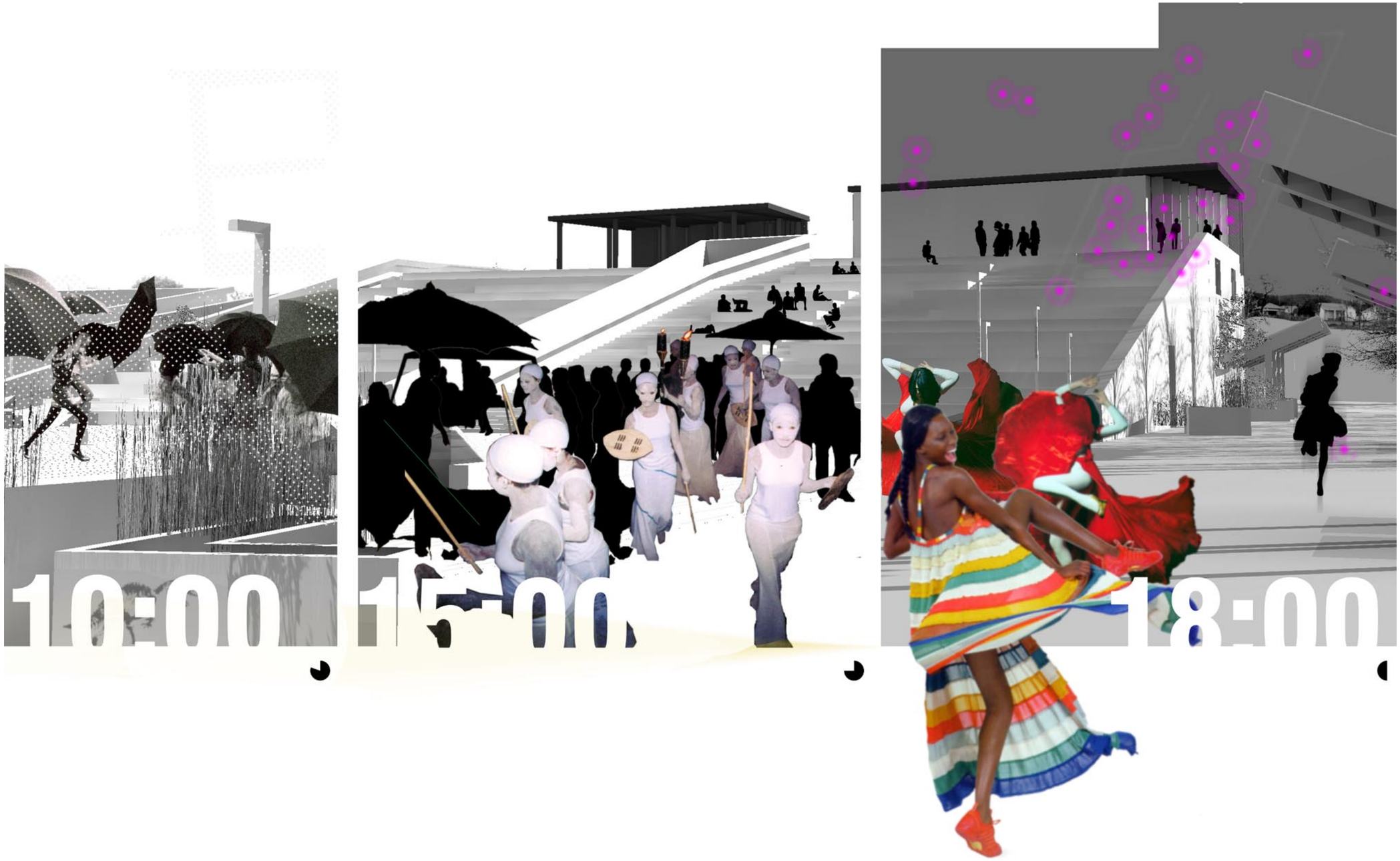


Fig. 100 View of the public space - towards the south-east (Author 2006)

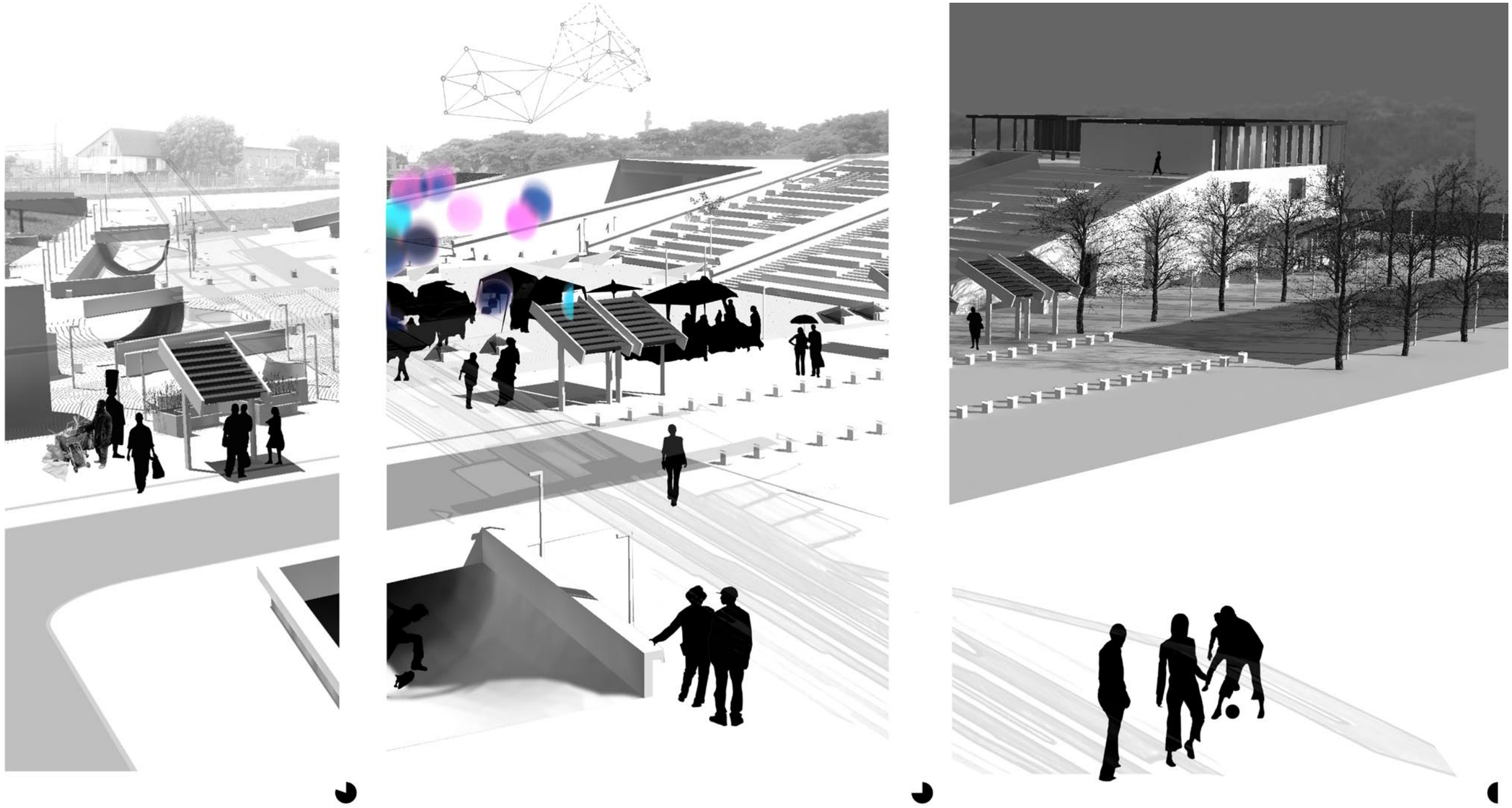


Fig. 101 View of the public space - towards the east (Author 2006)

Fig. 102 View of the restaurant and gallery entrance - towards the north (Author 2006)

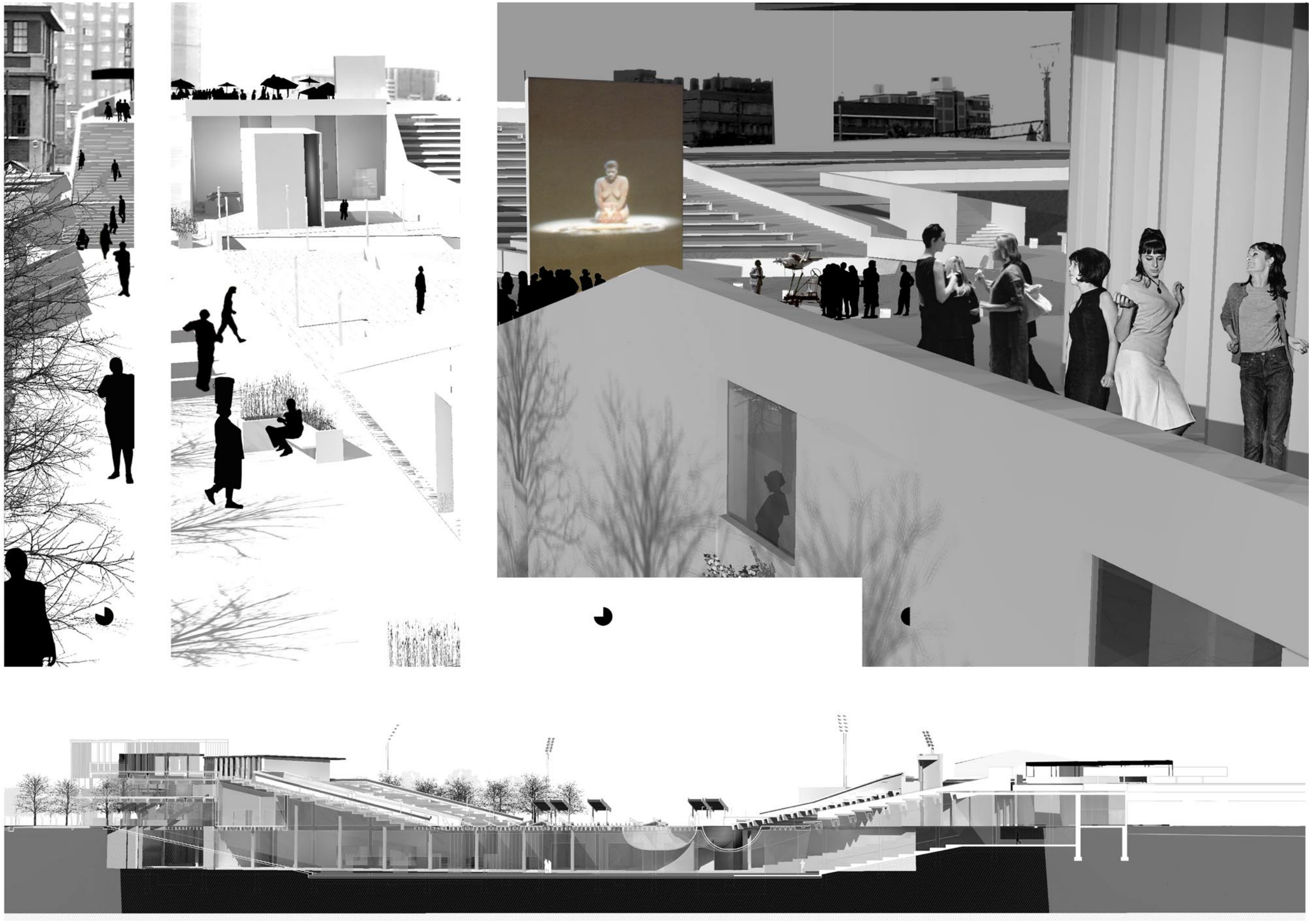


Fig. 103 View of the public space and bar - towards the north (Author 2006)

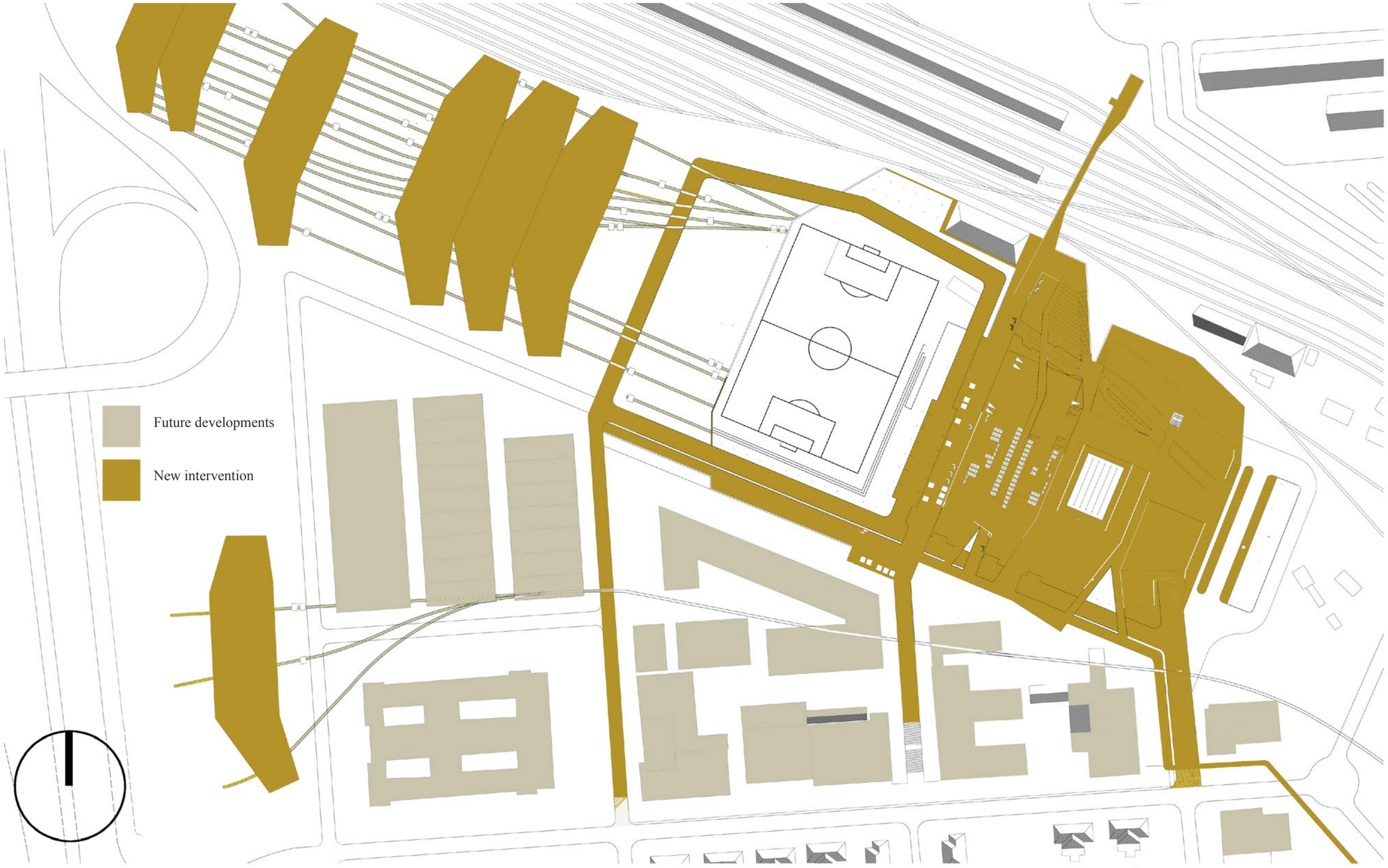


Fig. 104 New intervention surrounded by future developments (Author 2006)

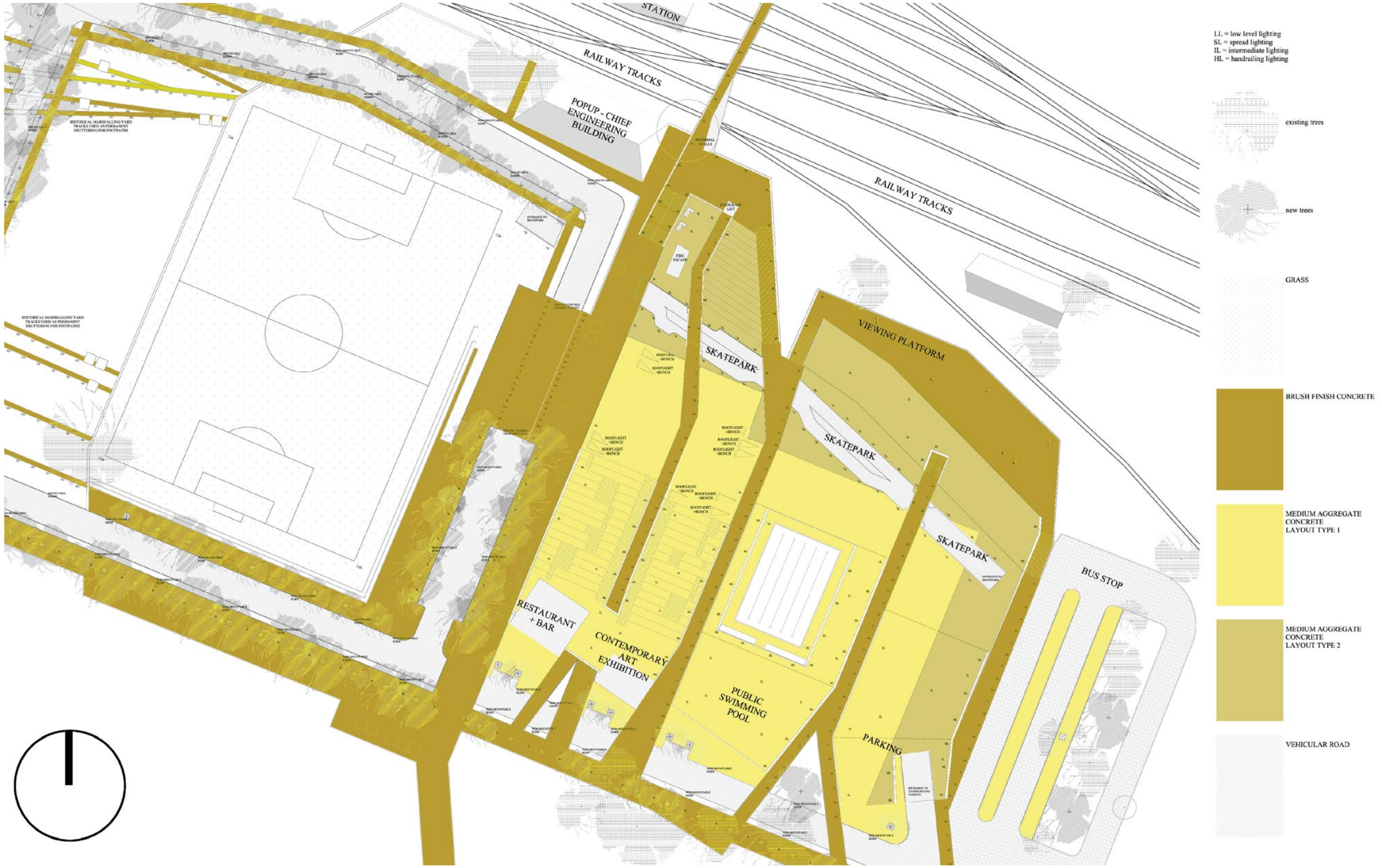
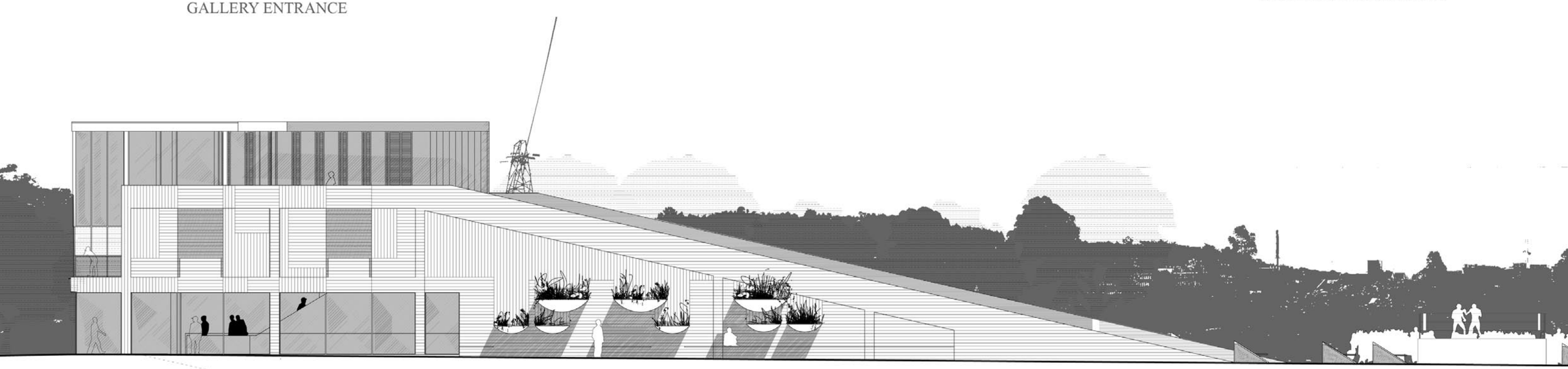


Fig. 105 Site plan with floor finishes (Author 2006)

BAR
GALLERY ADMINISTRATION
GALLERY ENTRANCE

PAVILLION

SOCCER FIELD
CENTRAL PUBLIC SPACE



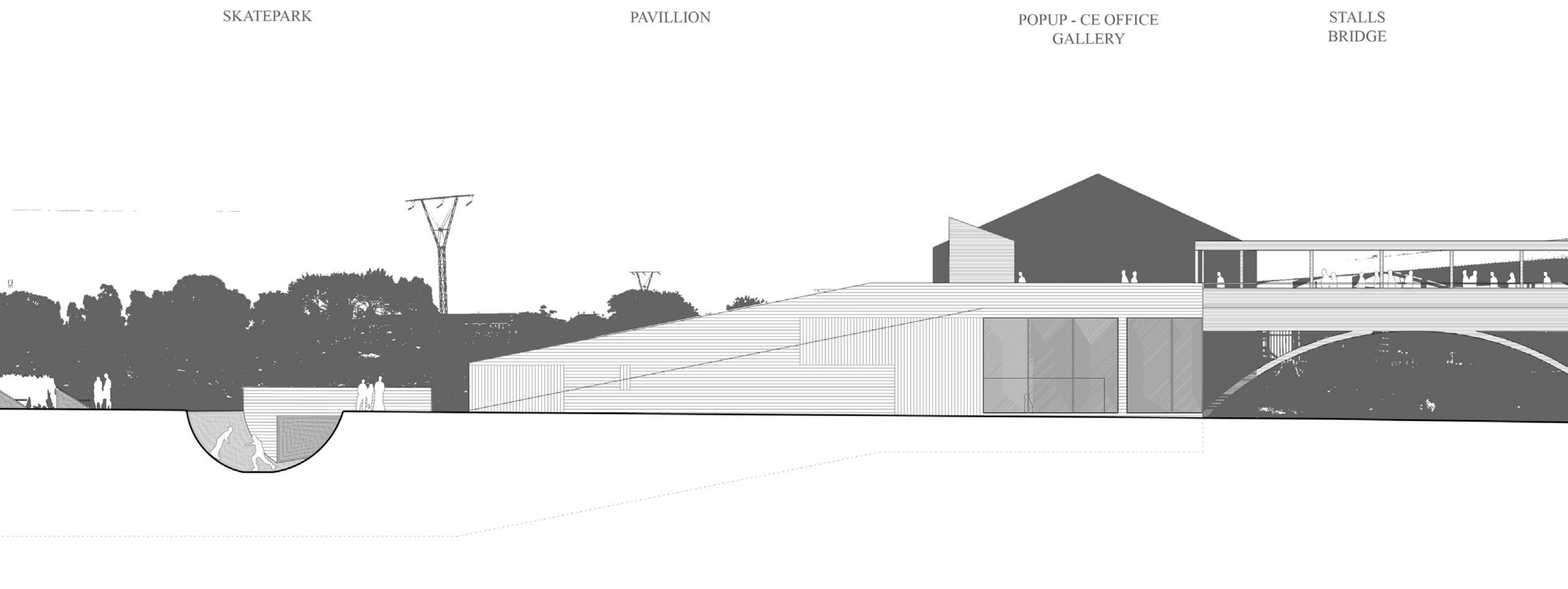
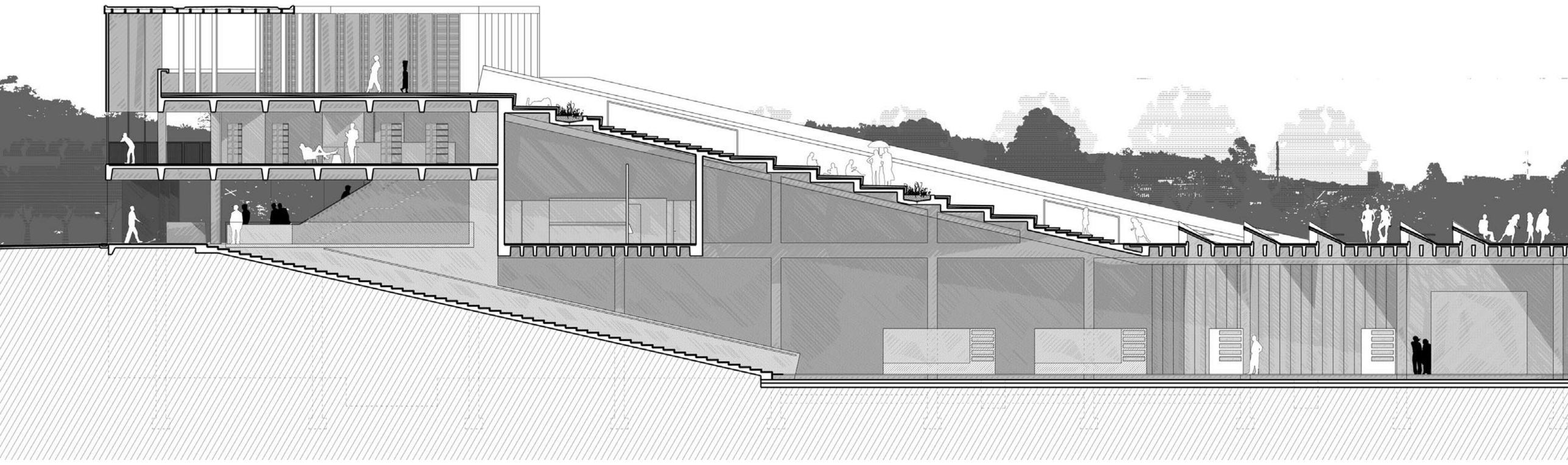


Fig. 106 East elevation, n.t.s (Author 2006)

BAR
GALLERY ADMINISTRATION
GALLERY ENTRANCE

PAVILLION

SOCCER FIELD
CENTRAL PUBLIC SPACE



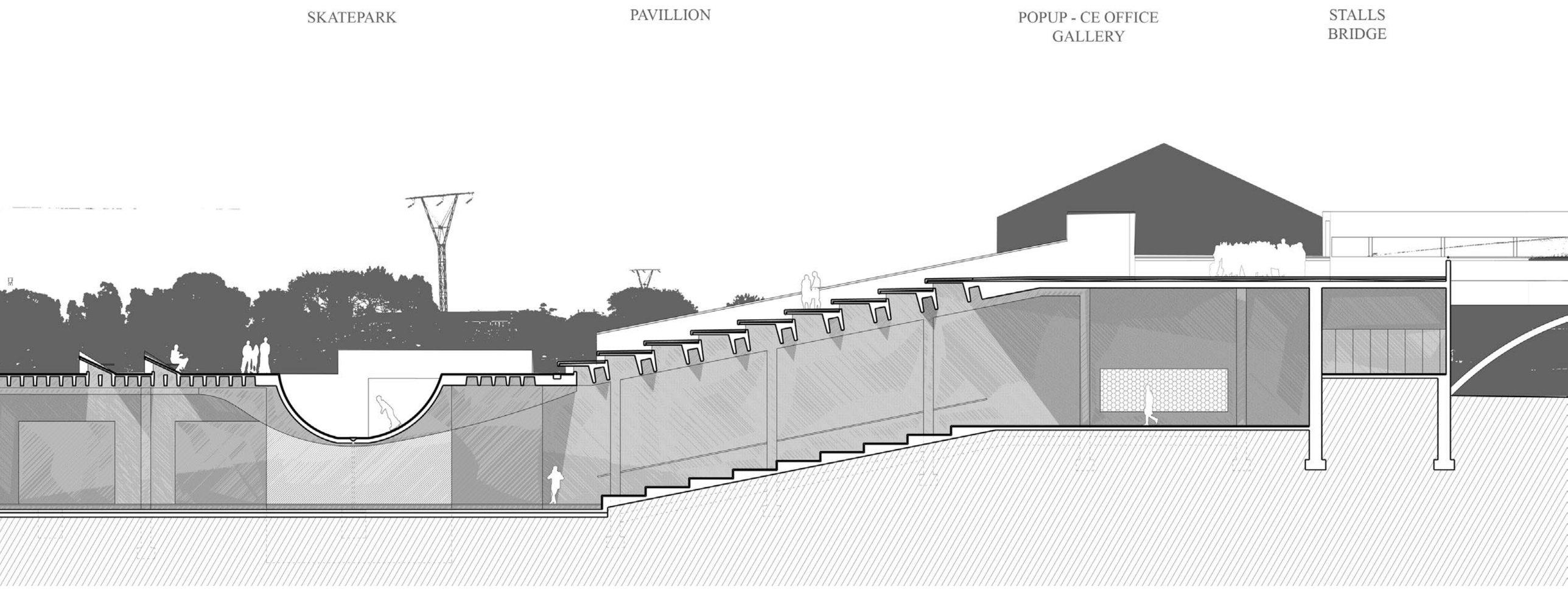


Fig. 107 Longitudinal section, n.t.s (Author 2006)

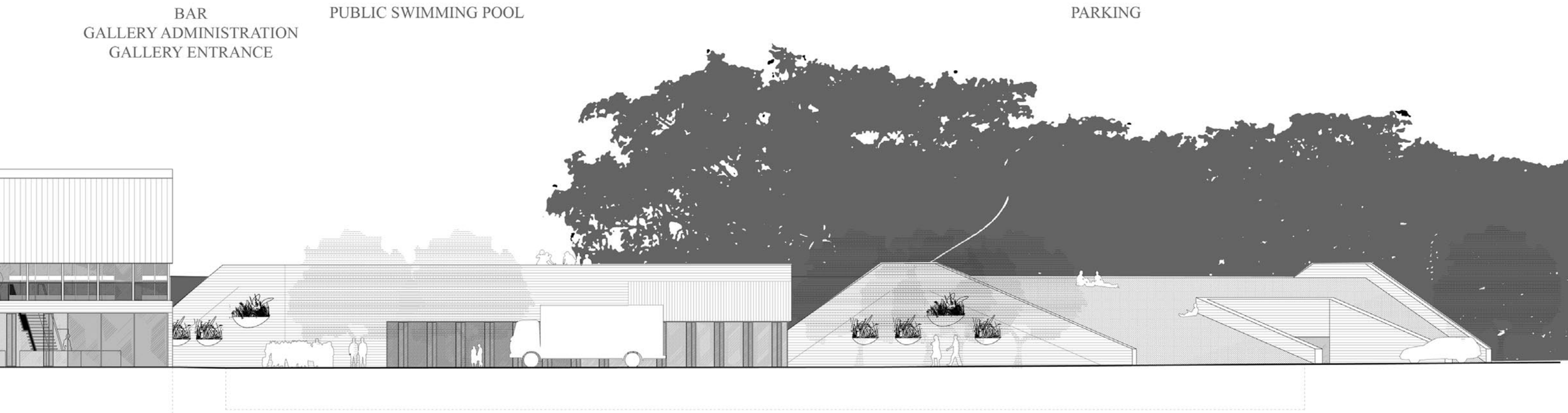


Fig. 108 South elevation, n.t.s (Author 2006)

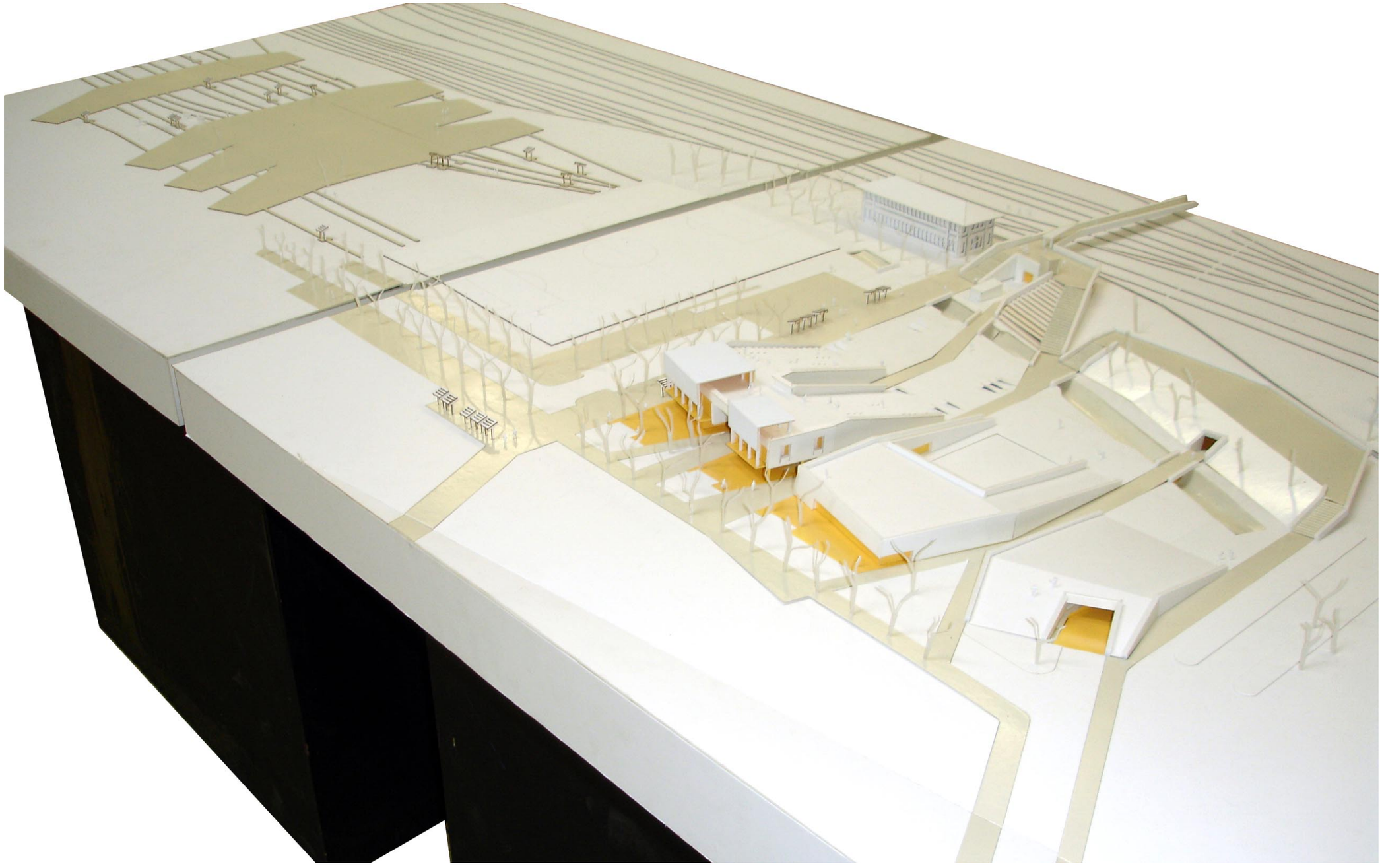


Fig. 109 Final model looking from south-east (Author 2006)

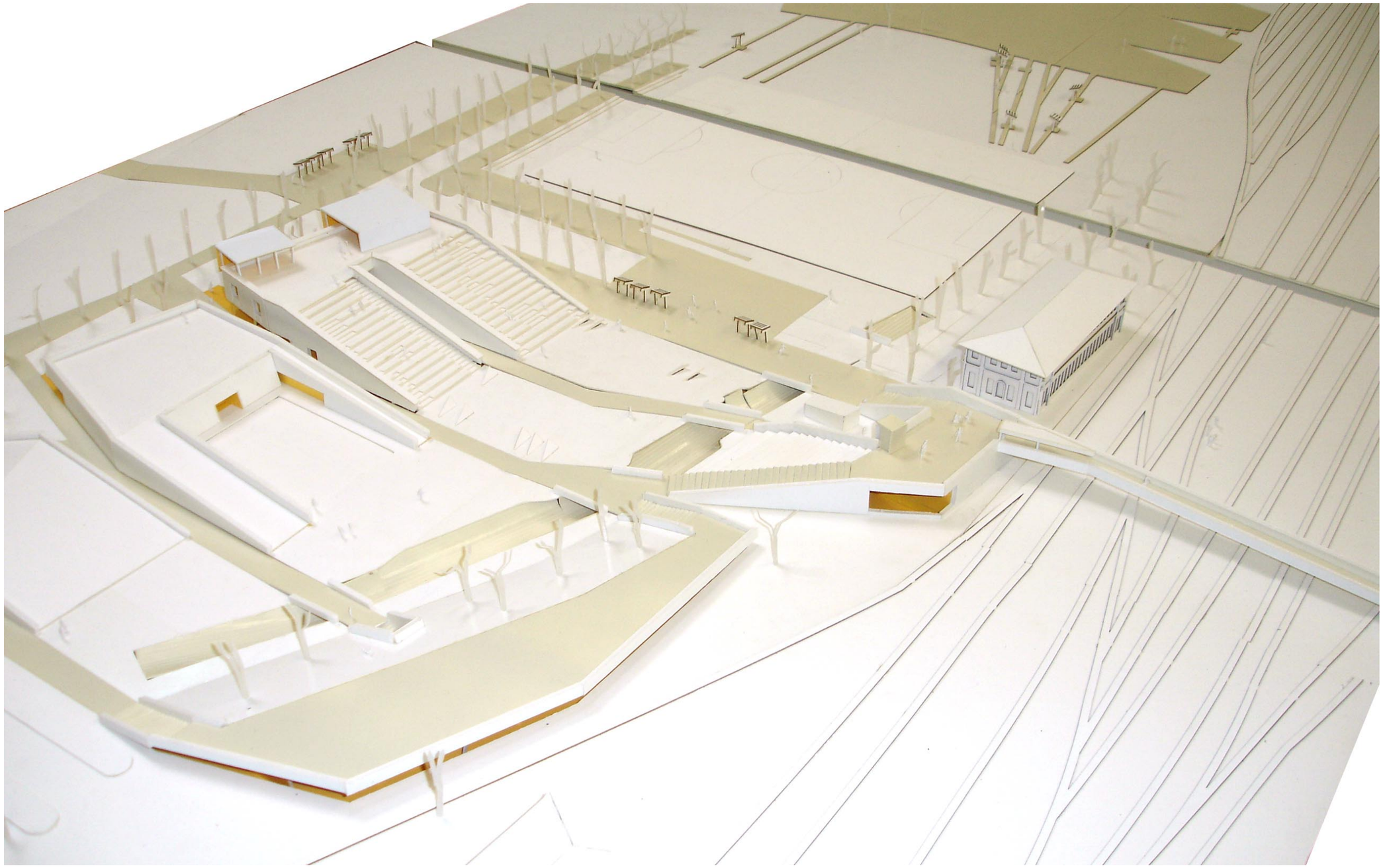


Fig. 110 Final model looking from north-east (Author 2006)

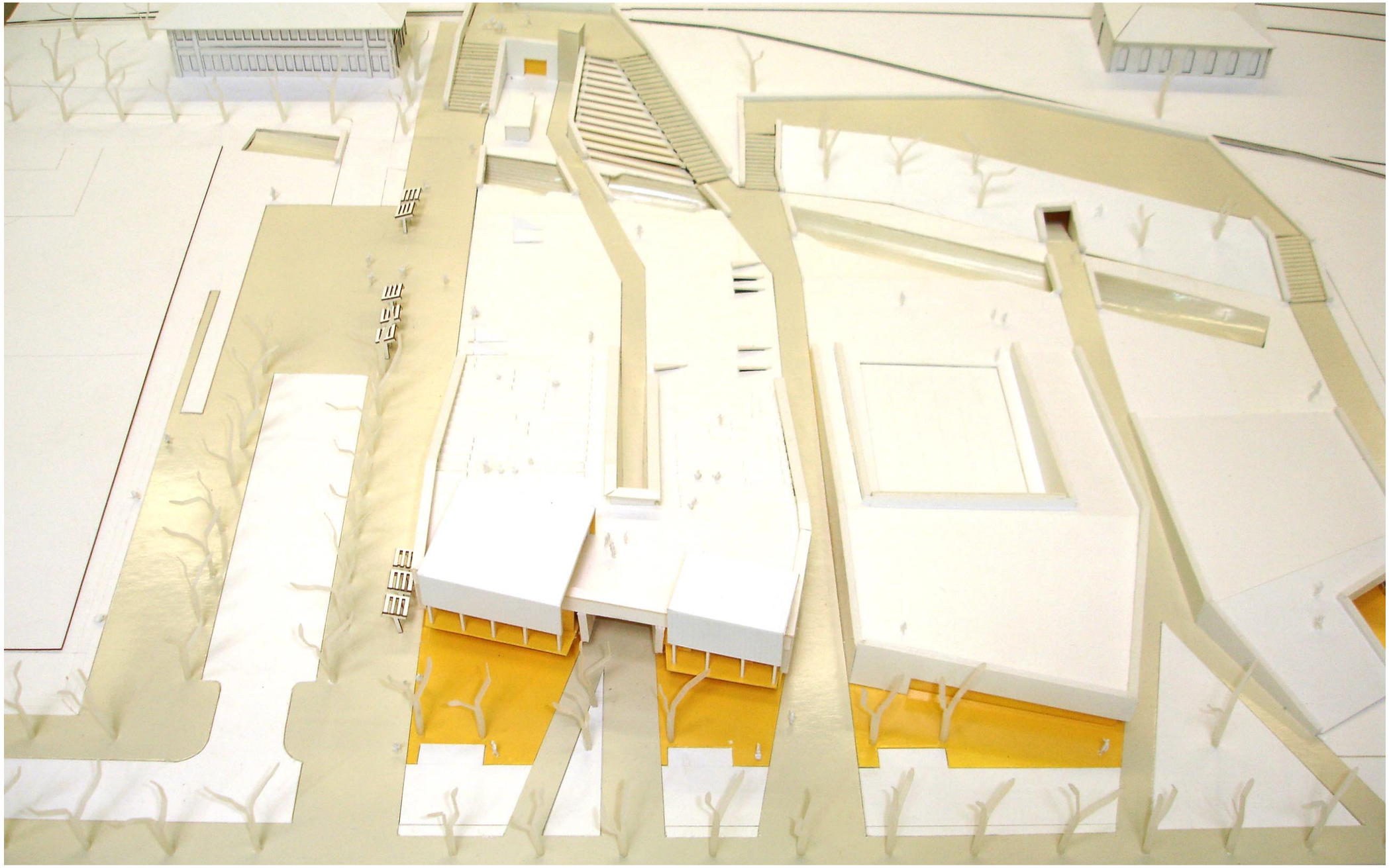


Fig. 111 Final model looking from south (Author 2006)

6. Conclusion

The dissertation is an investigation of public space - specifically, the architecture surrounding public space. The author is of the opinion that the notion of architecture as a container of programme is not adequate for the creation of stimulating and productive environments. Cedric Price echoes this opinion:

"I think that at the present architecture doesn't do enough, it doesn't enrich or enliven people's lives as much as, say, the internet does, or a good story, or music. Architecture is a poor performer…"
(Price 2003:64).

A key determinant of this investigation was the influence of Situationist thought, that privileges atmosphere above buildings and artefacts and promotes the *gesamt Kunstwerk* (Wigley 1998 :12). However, it is acknowledged that ambiance and atmosphere are the effects of objects in their surroundings. This led to a sustained interest in art and its influence on its context. Not constrained by the basic tenets of architecture (budget, time, client and gravity), the artist can explore what the architect can not. By examining how an object or situation is able to alter behavioural patterns and influence thought, art hints at a method of creating an aesthetic, affective, memorable and humane architecture.

Some lessons gleaned from the work of the artists under investigation:

6.1. Size does not matter
The effect of an object on its surroundings is not a direct consequence of its physical scale. The subjective nature of observation means that the impact of an object depends on the relationship (both spatially and metaphorically) that it assumes to its surroundings.

6.2. Absence as a tool
Bearing in mind the importance of the relationship between an object and its environment, it is clear that this surrounding space influences the observer's perception of that object. Thus, providing a large space around, within or next to an object highlights its significance. Absence becomes a signifier when applied with clear intent. However, high-modernist architecture has been criticised specifically on these grounds.

6.3. Charged terrain
The key to countering the dead-space that is the scourge of High-Modernism, lies in the artist ability to orchestrate transient events. Designers can follow this example through careful programming with changing occupancies. Conversely, by equipping unprogrammed space with a variety of services the designer is able to 'charge' a terrain to accommodate potential events.

6.4. The value of perceptible mechanisms
The work of the Danish artist Olafur Eliasson points to the importance of perceptible mechanisms. On the one hand, the mechanism that causes an effect or atmosphere should possess aesthetic merit in itself. On the other hand, Rachel Whiteread's sculptural casts bear out the marks of their manufacturing. Thus, the object as mechanism of effect, becomes an instructive tool, allowing insight into the process of its manufacture and the means in which it manufactures an effect.

This dissertation draws selectively on the work of a handful of contemporary and near-contemporary artists. Artists were selected on the grounds of their strategic approach to creating immersive, atmospheric environments. Intensive study on a broader field of art will no doubt yield numerous strategies for the architecture to draw on.

The terrain under investigation posed its own challenges. The railway tracks separate the site from the rest of the city fabric – an ambivalent situation that the designer undertook to preserve. Traces of the site's historic past remain visible – train tracks, retaining walls and foundations. The significance of these traces had to be considered and the author chose to use the traces to guide design decisions.

On returning to the site in November, many of the existing railway tracks and concrete foundations had been damaged or removed. No doubt, in time, these will disappear entirely, erasing the site's industrial legacy.

The dissertation proposes an architecture that fulfils its programmatic requirements eloquently and efficiently - an architecture that is a product of its environment and social context.

Not merely because it fits in, but rather because it alters its surroundings through active engagement.

7. Technical investigation

7.1 Structure

In the restaurants and offices where a larger span is ideal, a cast in-situ beam and slab system is used. The depth of the slab is 670mm at intervals of 2400mm and spans 12m. In the exhibition a ten meter span is required for ideal viewing of the art; therefore, a ribbed slab with a depth of 500mm at intervals of 600mm is employed. Underneath the overhead stairs a system of slab and beam is used. The columns are spaced at a distance of 7,2m throughout.

A steel frame with cantilevering beams is used on the roof of the building where a lighter structure is required (in order to reduce the concrete column sizes of the structure below) and a large span is not necessary. The steel members of the structure are hidden except for the bottom flange of the I-beams. The structure is clad on the outside with black powder-coated steel flat sheets with welted seams and on the inside with white painted and plastered gypsum board.

7.2 Surfaces

Reference to the industrial archaeological nature of the terrain is made by creating a vertical texture on the concrete façade with horizontal timber board shuttering. The texture refers to the metal sheeting used on the facades of the demolished workshops of the marshalling yard. The boards used to create the texture, are 150mm wide and 38mm thick with chamfered edges and tight butt joints that create the characteristic fins. The timber is unplanned resulting in a darker coloured concrete.

Public spaces are defined with precast- concrete pavement blocks with natural rounded cubicle exposed aggregate in a medium colour. The concrete blocks are placed on adjustable spacers to level the roof surfaces. 10mm open grooves are cast into the blocks to allow water drainage. Demolished buildings dating from the NZASM period are delineated with a difference in paving block sizes. On circulation routes a concrete block with a brush finish is used to allow easier movement for wheelchair users. Planters containing hardy plants interrupt the concrete surface. Surfaces around the soccer field are compacted soil and grass irrigated by collected and stored storm water.

The ceilings on the inside of the exhibition space are steel fabric that will partially hide the services.

7.3 Lighting

The routes are indicated with low-level lighting in the shape of a bollard. The height of the bollard is 350mm – a comfortable height to sit on. The lighting is only on one side of the route to avoid confusion when viewed from the side. In the public space, intermediate lighting is placed randomly, repeating the randomness of the floor pattern. Spread lighting is placed around the soccer field and public space. The public space's spread lighting will only be used during events - adequate intermediate lighting is placed in the space.

Fig. 112 Concrete texture created by rough sawn timber boards (Deplazes 2005: 57)

Fig. 113 Off shutter concrete wall patterned by the grain of timber shuttering planks. GPY Architectos. San Bernardo Assebly hall and workshop space, 1999-2001, Los Silos, Tenerife, Spain. (Hadid, Z. Forster, K. Sudjic, D. et al. 2005: 131)

Fig. 114 Cedar wood off shutter concrete and recycled cedar shuttering planks wall. Sambuichi Architects, Miwa Gama ceramic studios, 2001 -2002. Hagi, Japan.

Fig 115 Powder coated black intumescent paint on steel sheeting. Waro Kishi & K. Associates, Hu Tong Private residence, 2002, western Japan. (Hadid, Z. Forster, K. Sudjic, D. et al. 2005: 398 - 399)

Fig. 116 Pre-cast concrete block floor. Atelier Barani, Youth Studio at the concrete art centre, 1997-1998, Mouans-Sartoux, France. (Hadid, Z. Forster, K. Sudjic, D. et al. 2005: 46 – 47)

Fig. 117 Planter laid flush in concrete screed. J. Miguel Hernandes León, Muralles de Ceuta, 1992-1999, Ceuta Spanish enclave in Marocco (A. Aymonino, V. P. Mosco 2006: 48)

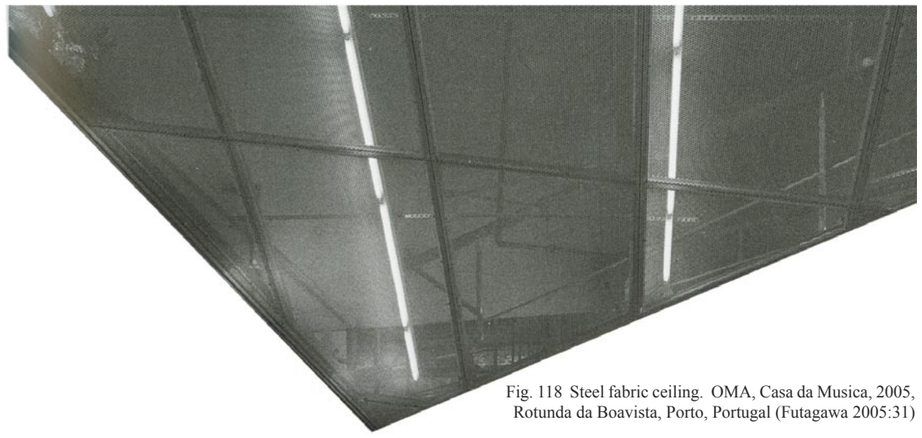


Fig. 118 Steel fabric ceiling. OMA, Casa da Musica, 2005, Rotunda da Boavista, Porto, Portugal (Futagawa 2005:31)

7.4 Stainless steel wire mesh ceiling

The advantage of stainless steel wire mesh ceilings is that it does not need to be replaced as often as conventional ceilings and it requires less maintenance. Stainless steel becomes resistant to corrosion by forming a passive layer. The layer is a result of the reaction between the chrome contents in the steel and the oxygen in the air. If the layer is damaged due to external penetration, it reproduces itself within seconds. The corrosion resistance can be increased by adding nickel, molybdenum or other alloys. No special maintenance is required – the wire mesh can be cleaned using brushes or high-pressure cleaning equipment and with alkaline non-abrasive cleaners.

The ceilings have good acoustic values – the sound is interrupted as a result of the structure of the wire mesh and is then transmitted to the layers located further back and absorbed by them. Stainless steel is 100% recyclable.

The wire mesh is inserted into a frame made out of galvanised steel angle profiles and is secured around its perimeter using a galvanised steel flat and hexagonal countersunk screws.

7.5 Soil contamination

The following information has been gathered from the web site: "Total – Corporate Social Responsibility" (www.total.com 2006). Soil pollution caused by industries are most likely to consist of heavy metals, hydrocarbons, acids, solvents, tar, radioactive substances or other more or less persistent compounds. The presence of contaminants in the soil is not a danger in itself. The contaminants become dangerous when it is absorbed into an edible plant or is absorbed into an aquifer that supplies a drinking water network. But because of the age of the marshalling yard, the pollution will not cause an immediate risk for the residents of Salvokop.

A thorough investigation of the degree of contamination of the site has not yet been done. Before remediation goals can be identified, a proper contamination analysis should be done. A contamination analysis consists of geological and hydrological studies, historical review of the industrial activities at the site, sample collection and analysis.

In order to determine the appropriate remediation technique the following factors need to be considered: type of contaminant, the site's profile and cost issues. Normally, a combination of remediation techniques is used on various parts of a site, over time.

A few of the remediation techniques, considered by the author to be appropriate for the site under investigation, is discussed.

Biological technologies:
Biodegradation: Microorganisms are used to break down organic contaminants, such as hydrocarbons. The bacteria transform the contaminants into water and carbon dioxide, through the digestive process.
Bioventing: This is a combination of soil venting and biological treatment. The air circulation through the soil stimulates biodegradation. Molecules, produced by the microorganisms, are extracted with vapors from the soil.
Natural attenuation: In this process the toxicity of certain contaminants are allowed to degrade naturally over time. The site needs to be monitored to ensure that proper conditions continue throughout the attenuation process.

Physicochemical technologies
Soil vapour extraction: Extraction wells pull volatile contaminants out of the ground, during which the vapours are condensed to liquids. The liquids are absorbed onto active charcoal or incinerated.
Thermal desorption: The soil contaminants are vaporized at a temperature of less than 500°C, without destroying the soil.
Solidification/stabilization: A binding agent, such as cement, is added to the soil to keep the contaminants from spread. The soil is then left on side, used as a material or landfilled.

7.6 Building cooling

The main characteristics of a warm temperate climate are the following:
- Low diurnal temperature range near coast to high diurnal range inland;
- Summer and winter can exceed human comfort range;
- Spring and autumn are ideal for human comfort;
- Mild to cool winters with low humidity;
- Hot to very hot summers with moderate humidity.

The following climate control systems can be used in a warm temperate climate (Green Building Council of Australia 2005:19):
- Natural ventilation;
- Thermal mass;
- Earth and geothermal conditioning;
- Labyrinth;
- Displacement ventilation;
- Chilled structure.

7.6.1 Natural ventilation

Natural ventilation includes single sided ventilation, cross ventilation and stack ventilation. It results in cheaper capital costs, lower operating costs, increased flexibility in workspaces and reduced environmental impact. Reliance on users for the effectiveness of this system often results in its failure. In circumstances where the effects of natural ventilation are not sufficient, a smaller plant can be used in a mixed mode operation (Green Building Council of Australia 2005:31). Natural ventilation can only be used in buildings that are aboveground and the depth of the building should be restricted.

7.6.2 Thermal mass

Thermal mass is the use of free cooling available when the outside air is cooler than that in the interior of the building. Concrete has excellent thermal mass properties and requires a minimum thickness of 50mm (Green Building Council of Australia 2005:40). In summer, the heat absorbed by the concrete during the day is radiated into the space at night; the concrete is cooled down by ventilating the space resulting in reduced temperatures in the daytime. In winter, the space is not ventilated during the night in order to retain the heat. Unfortunately this system relies on the user for its effectiveness.

7.6.3 Earth and geothermal conditioning

The earth below 500mm has a constant temperature and can be used to cool the air before it enters the building. Earth pipes are used for the heating/cooling effect. The amount of cooling depends on the moisture content and soil type and varies throughout the year. Rock fill can be used to surround the pipe to increase the thermal capacity (Green Building Council of Australia 2005:41). Unfortunately geothermal conditioning is only feasible in exceptionally large buildings or in areas with high electricity costs (reference).

7.6.4 Labyrinth

Air is pumped into an artificial tunnel underneath the building. A labyrinth is constructed inside the tunnel to maximise the surface for heat transfer. The cooled air is returned to the interior of the building. This option should only be used if the labyrinth serves other engineering/structural purposes due to the amount of embodied energy contained in constructing this structure (Green Building Council of Australia 2005:41).

7.6.5 Displacement ventilation (UAD)

Ventilation is supplied at the bottom of the space and the natural convective movement pick up the pollutants and it is extracted at a high level. In conventional overhead ventilation systems, fresh air is introduced at ceiling height and results in a mixture of fresh and used air. A displacement ventilation systems supply air at 18°C and return it at 26°C; an overhead systems supplies air at 12°C and return it at 24°C (Green Building Council of Australia 2005:46).

The displacement ventilation system is only effective in tall spaces as the temperature gradient is crucial in order to reduce the cooling loads. The floor vents can be controlled by individual users to supply air towards or away from the occupant (Green Building Council of Australia 2005:47). With this system the total cooling requirement to achieve comfort is greatly reduced as well as the plant size and running costs (Mansel-Thomas 34).

7.6.6 Chilled structure

Exposed concrete is already able to absorb heat and consequently reduce internal temperature. By passing temperature–controlled water through the concrete the cooling capacity is increased. The water is passed through unseen pipe work 50mm below the surface and does not need to be exceptionally cold (around 13ºC) (Green Building Council of Australia 2005:50). Individual control, zone control, north and south orientation or overall building control is possible with a building management system (Tarmac p. 5). Chilled technologies are ideal in areas where large amounts of groundwater sources are available and require little maintenance. Chilled technologies can also be used for space-heating and will require a larger plantroom.

In order to control the environment in the exhibition, the stable thermal conditions of the earth are employed. To ensure that the exhibition is in the human comfort zone, water pipes are laced throughout the roof structure for space heating and cooling purposes. A mechanical system provides fresh air to the space, using displacement ventilation. The offices will be cooled using passive systems such as thermal massing and natural ventilation. Because of the heat storing capacity of concrete roofs, the interior temperature is likely to rise to an uncomfortable level in summer – chilled technologies is applied to reduce the temperature. The restaurant and the entrance to the exhibition do not require any mechanical systems because it is located on the southern side; natural ventilation and thermal massing will be adequate.

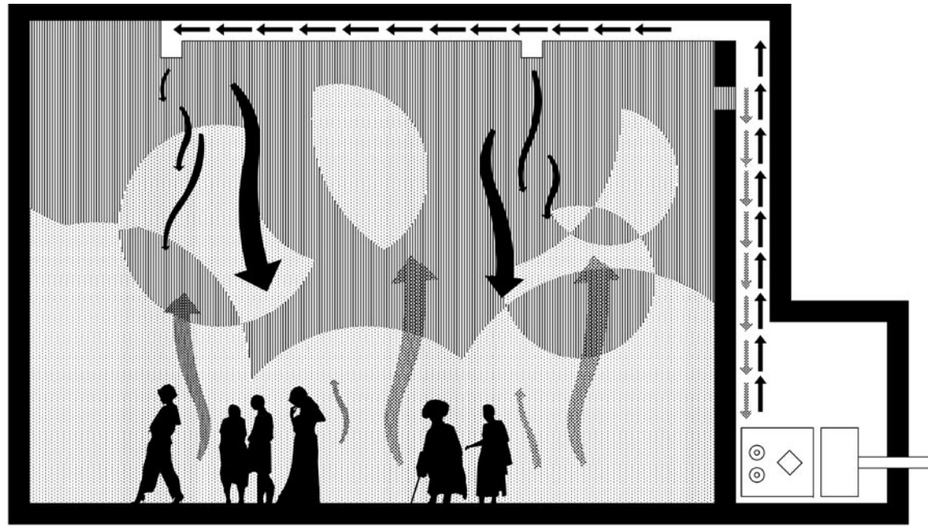


Fig.119 Conventional overhead ventilation (Author 2006)

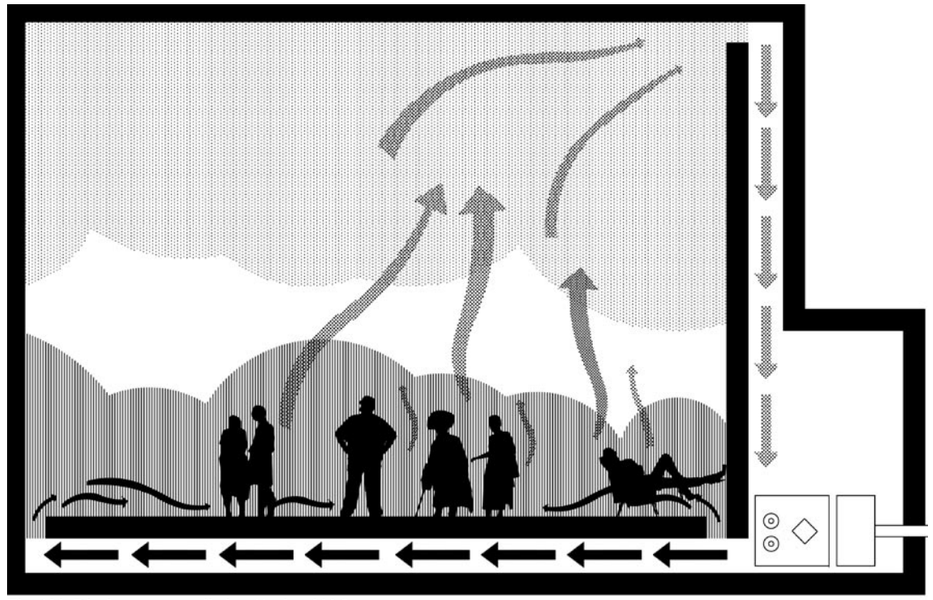
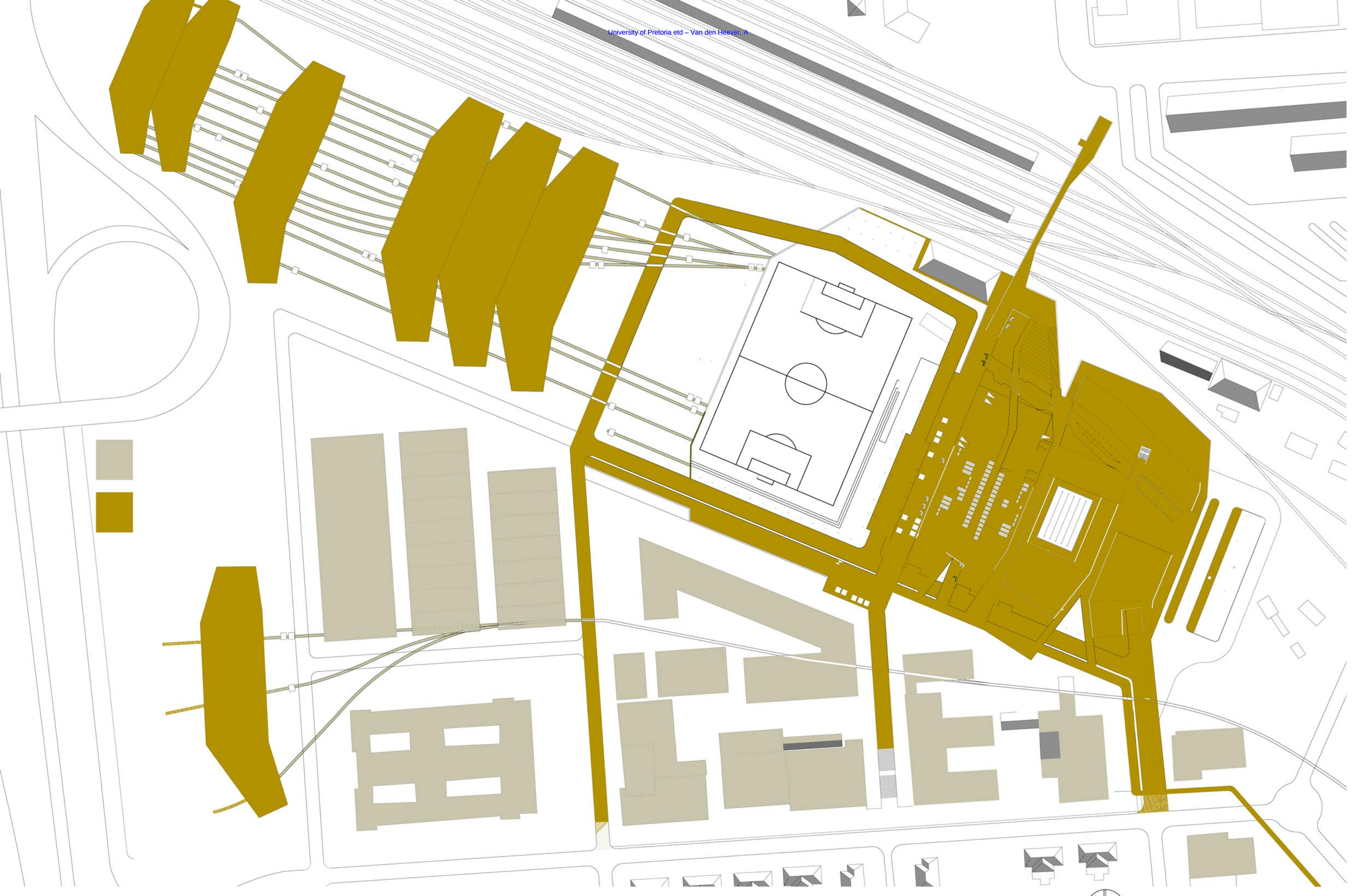


Fig. 120 Displacement ventilation (Author 2006)



NEW INTERVENTION SURROUNDED BY FUTURE DEVELOPMENTS

LL = low level lighting
SL = spread lighting
IL = intermediate lighting
HL = handrailing lighting

existing trees

new trees

GRASS

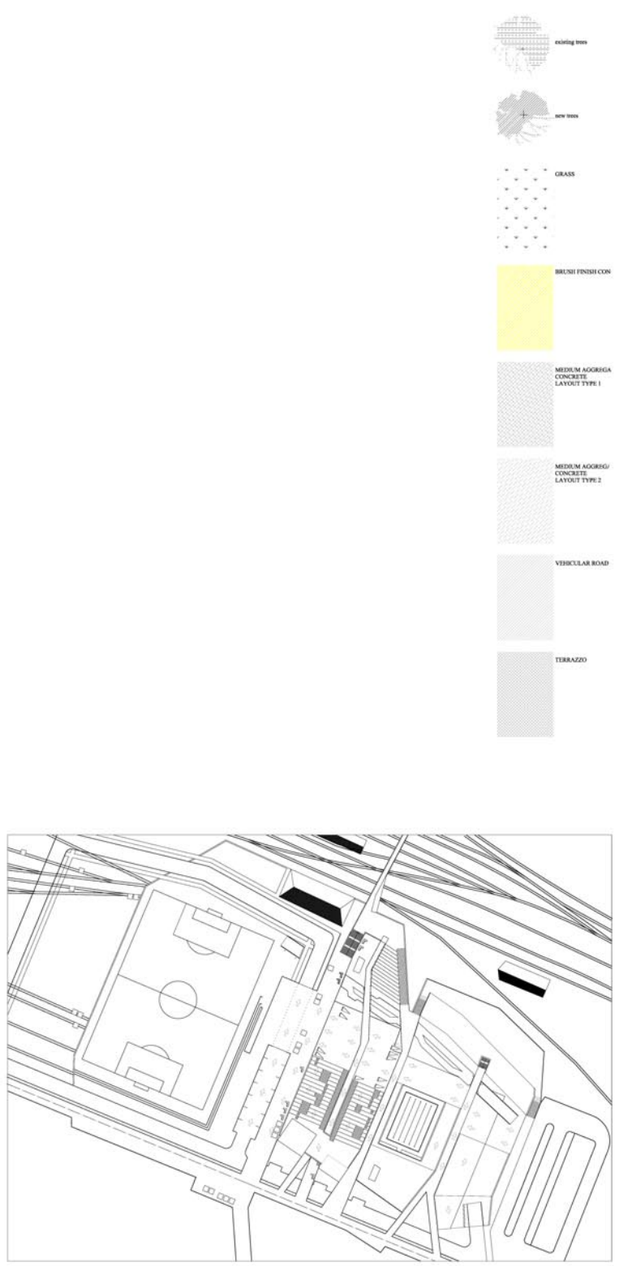
BRUSH FINISH CON

MEDIUM AGGREGA CONCRETE LAYOUT TYPE 1

MEDIUM AGGREG/ CONCRETE LAYOUT TYPE 2

VEHICULAR ROAD

TERRAZZO



DRAINAGE

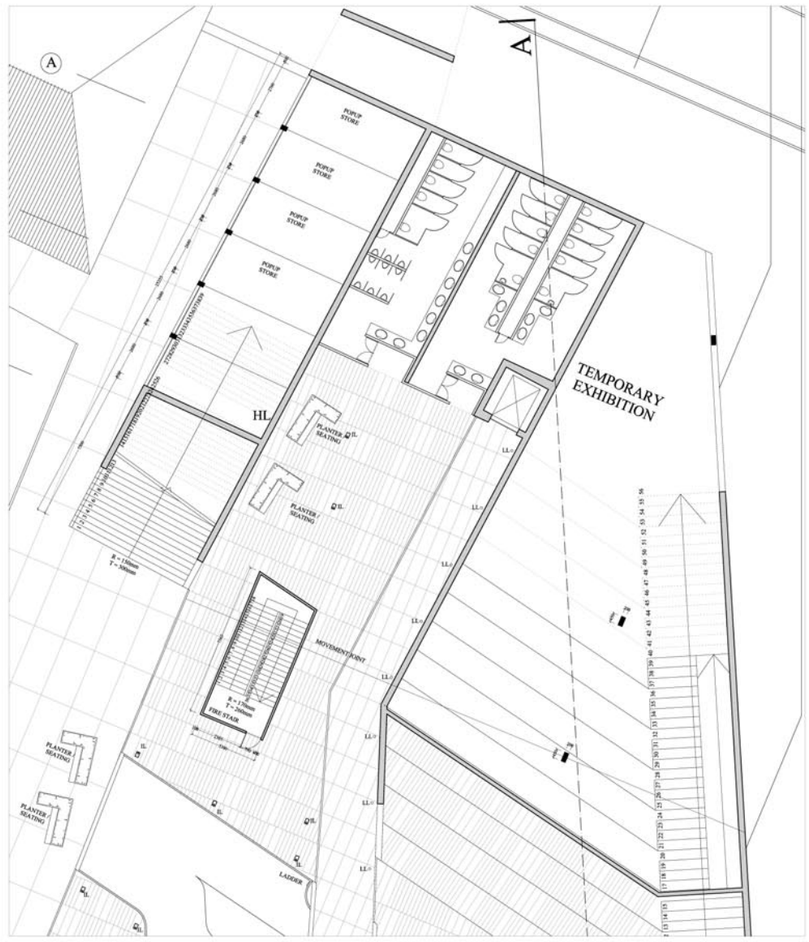
CUT AND FILL

0 6250 12500 18750

SITE PLAN SCALE 1:250

LEVEL -1: BASEMENT SURFACES SCALE 1:200

LEVEL -1: BASEMENT STRUCTURE SCALE 1:200



0 2500 5000 7500

LEVEL 0: GROUND SCALE 1:100

0 5000 10000 15000

LEVEL 0: GROUND SCALE 1:200

0 2500 5000 7500

LEVEL 1: OFFICES SCALE 1:100

0 5000 10000 15000

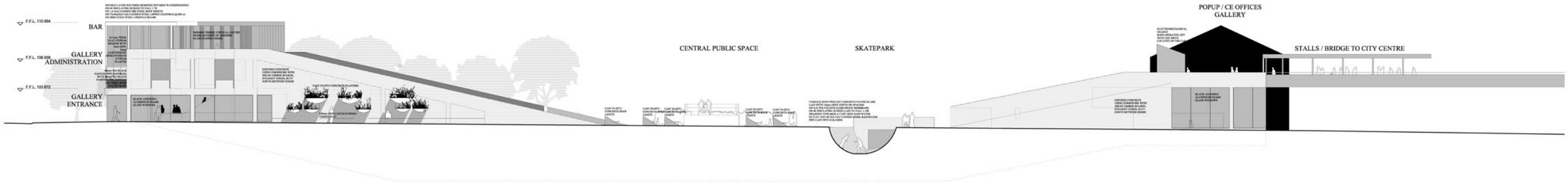
LEVEL 1: OFFICES SCALE 1:200

0 2500 5000 7500

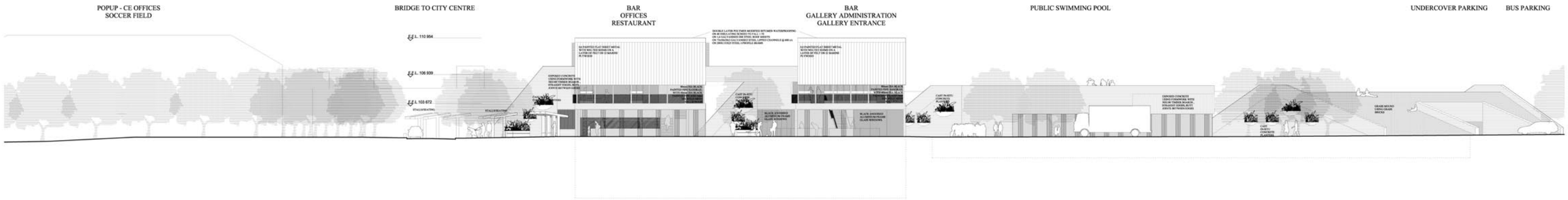
LEVEL 2: BAR SCALE 1:100

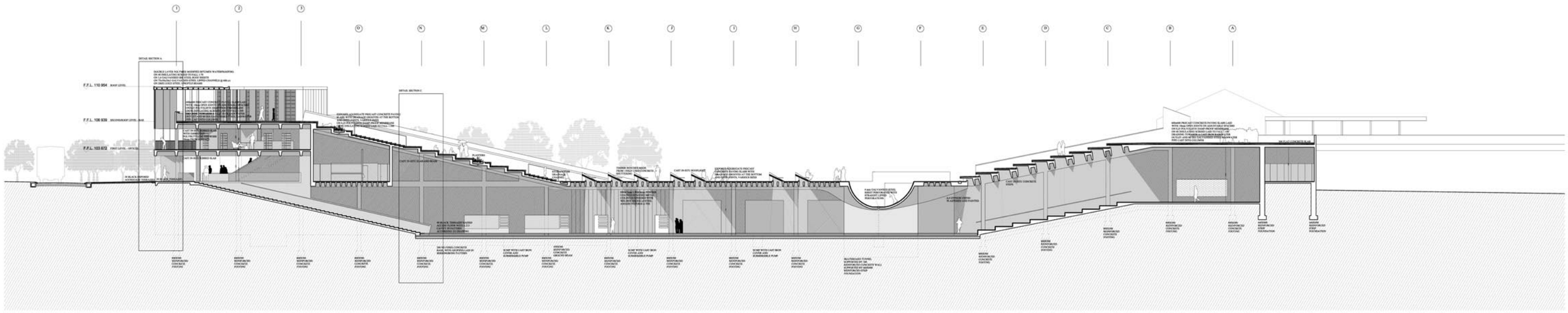
0 5000 10000 15000

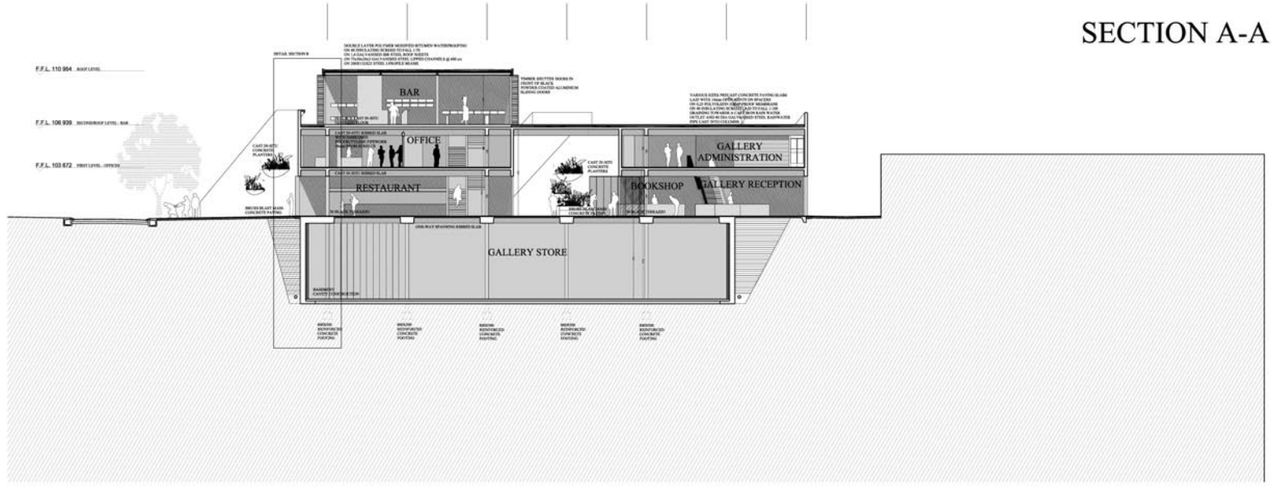
LEVEL 2: BAR SCALE 1:200



EAST ELEVATION
SCALE 1:100

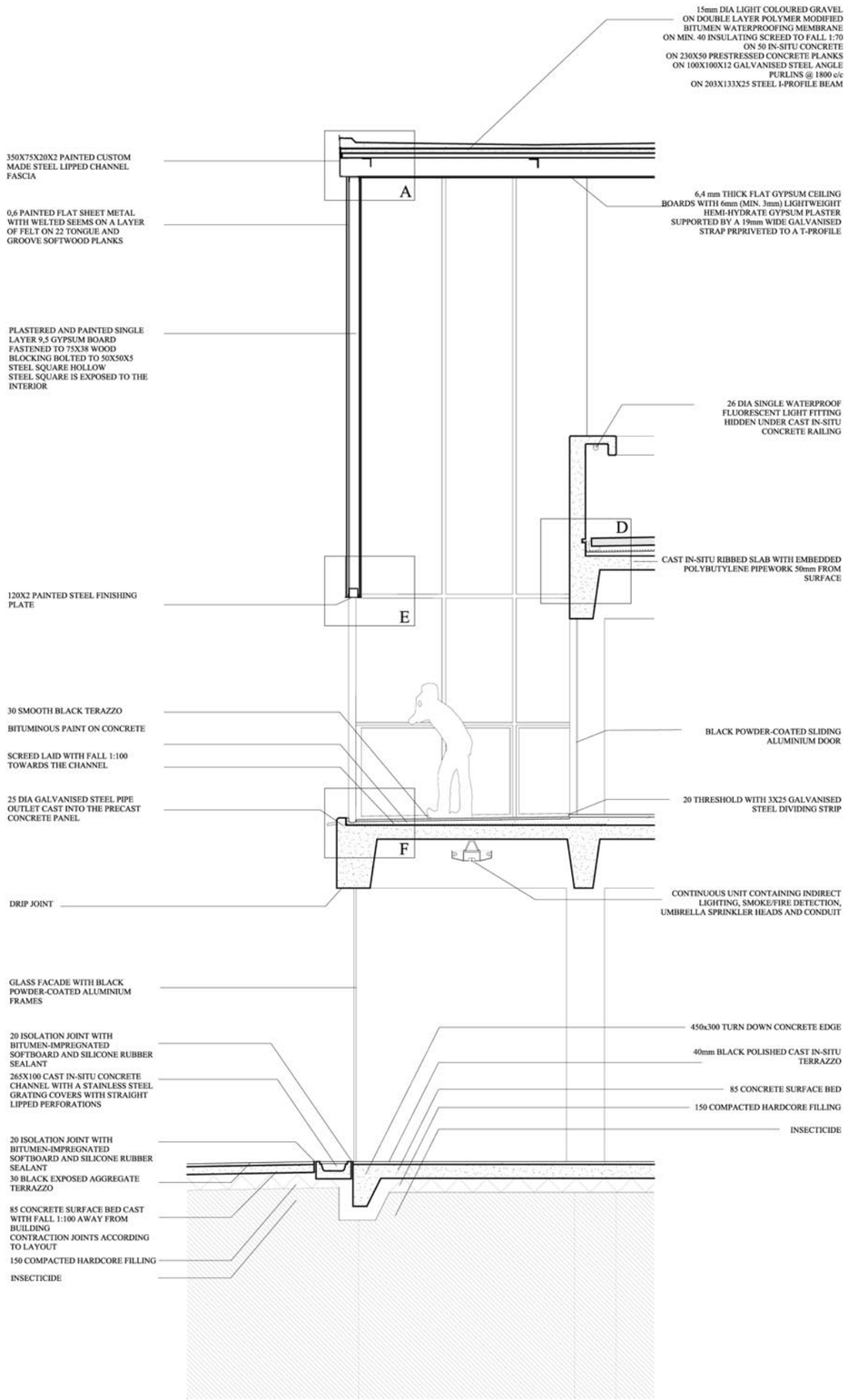




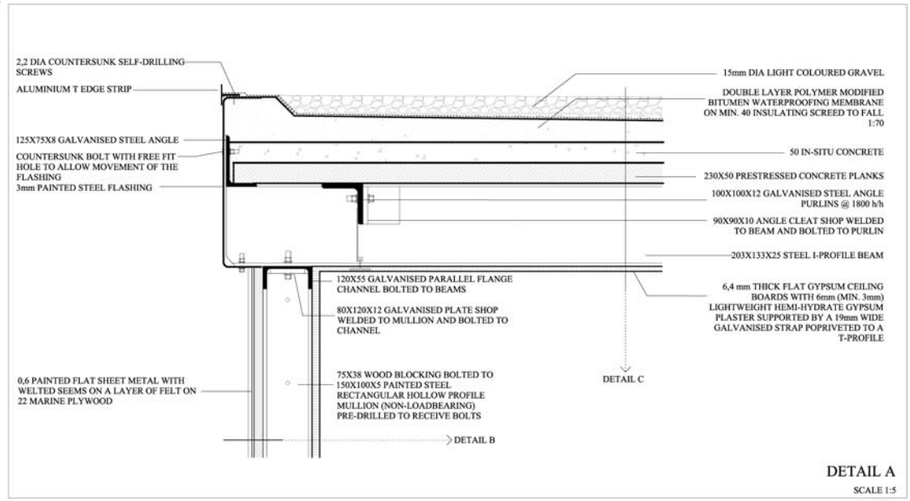


SECTION A-A

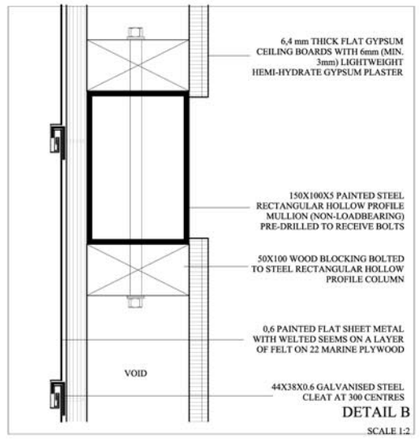
5000



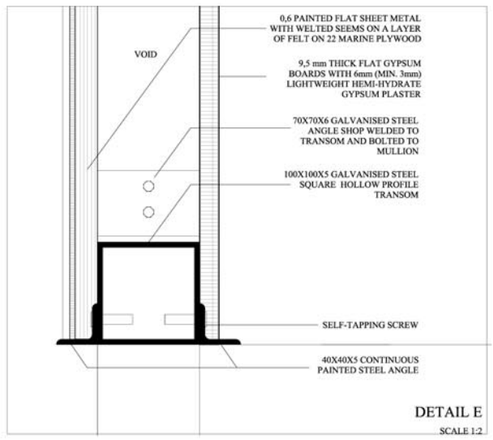
DETAIL SECTION A
SCALE 1:25



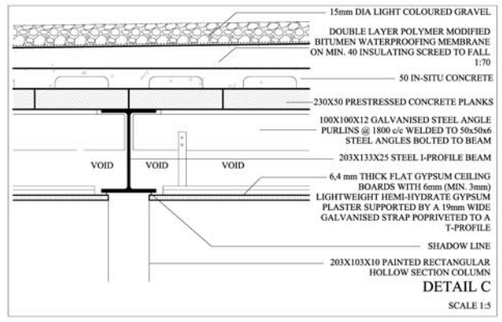
DETAIL A
SCALE 1:5



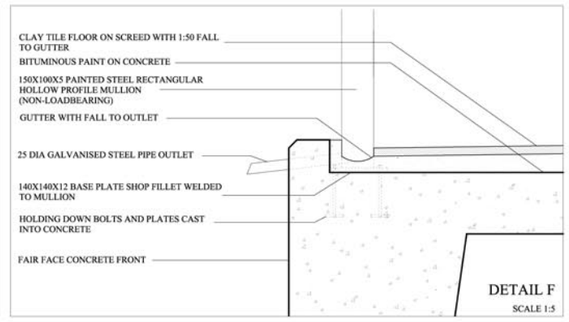
DETAIL B
SCALE 1:2



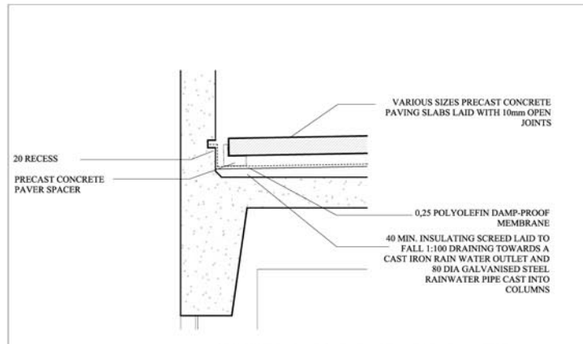
DETAIL E
SCALE 1:2



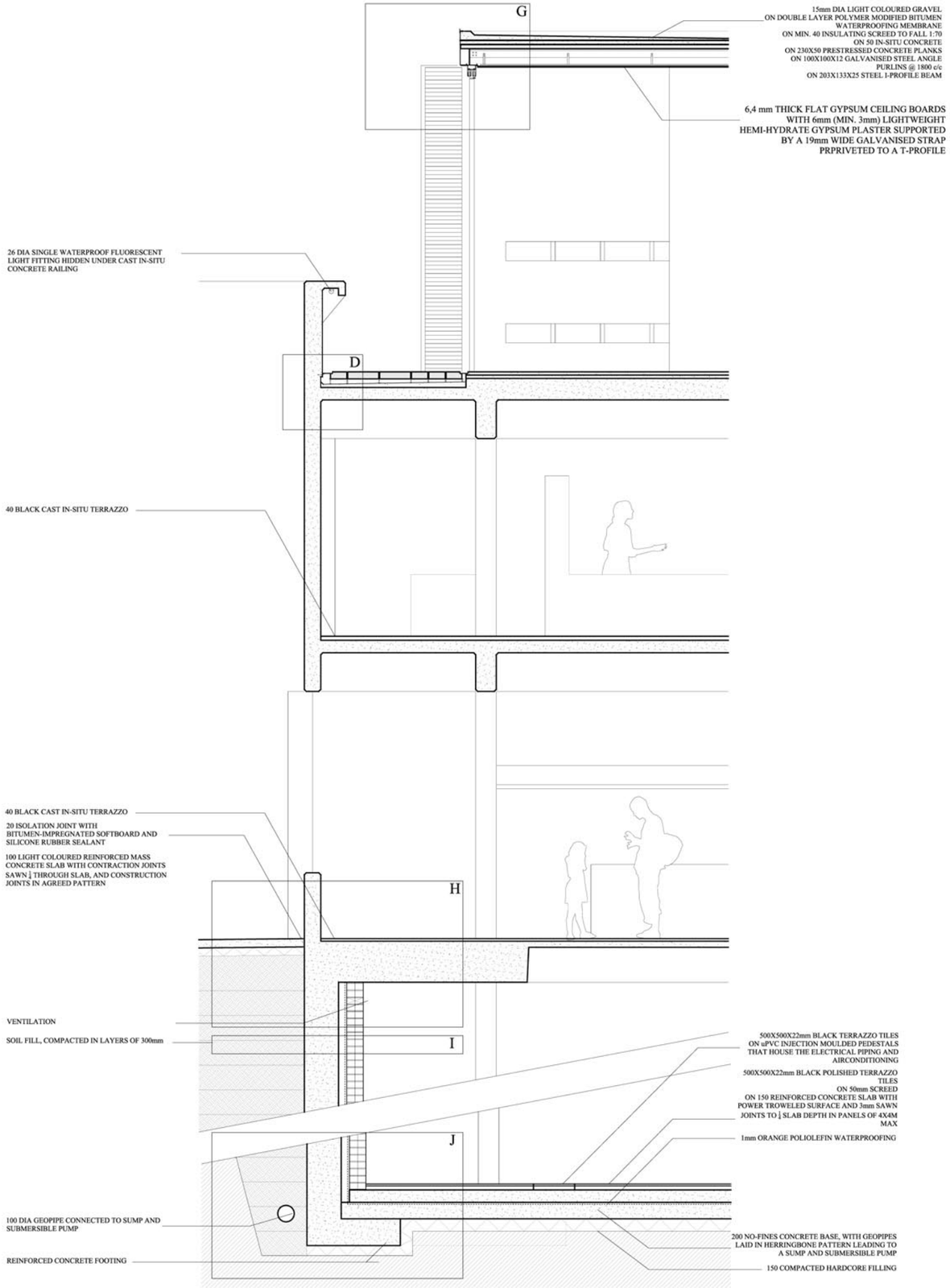
DETAIL C
SCALE 1:5



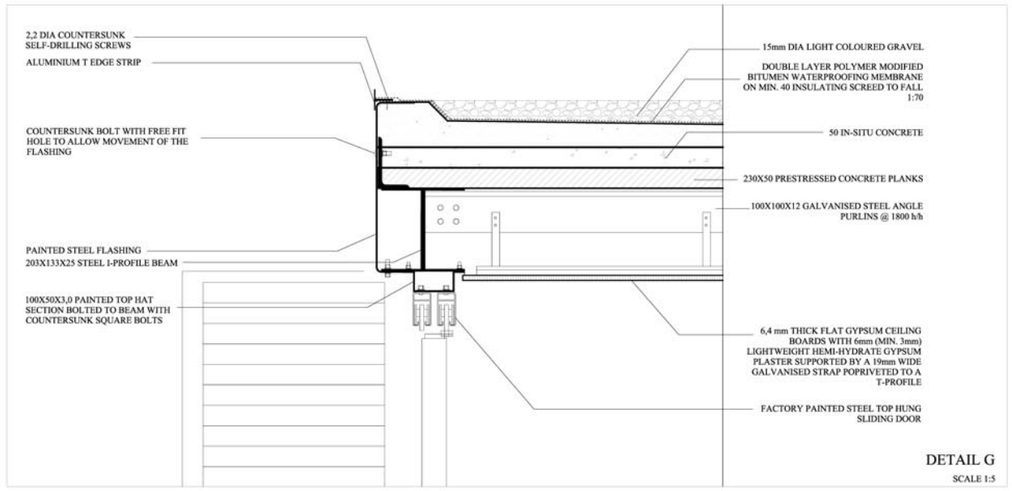
DETAIL F
SCALE 1:5



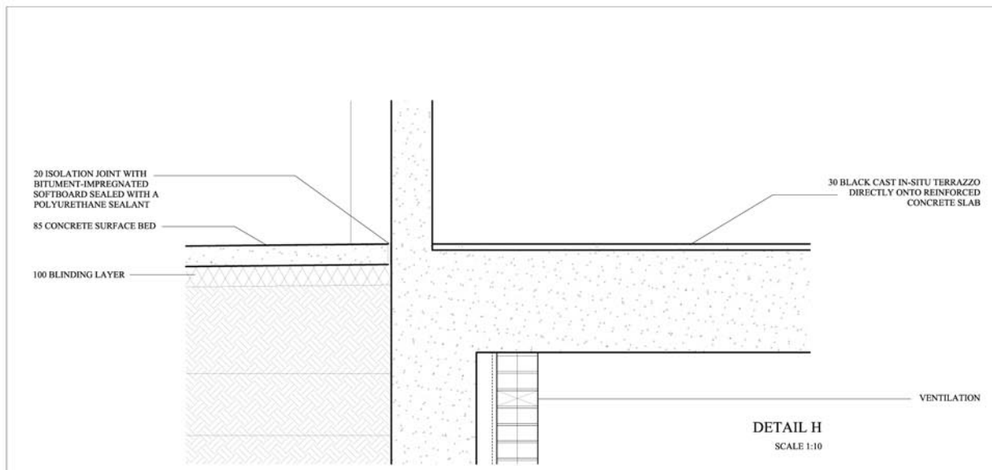
ACCESSIBLE ROOF TO PARAPET WALL DETAIL
DETAIL D
SCALE 1:10



DETAIL SECTION B
SCALE 1:20

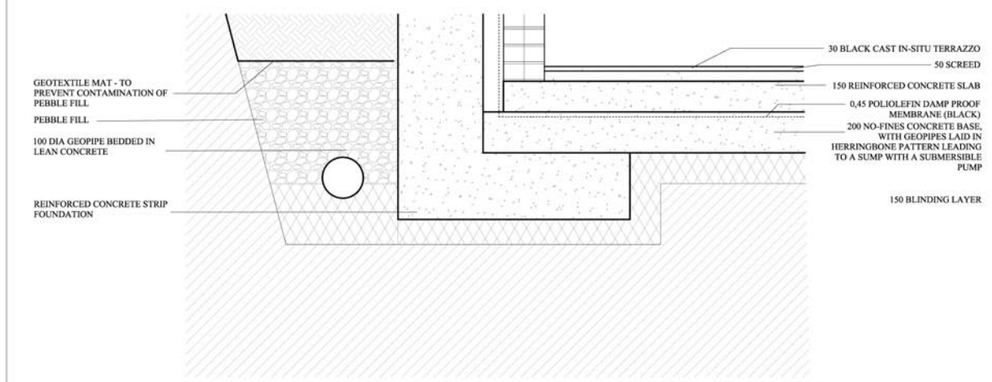


DETAIL G
SCALE 1:5

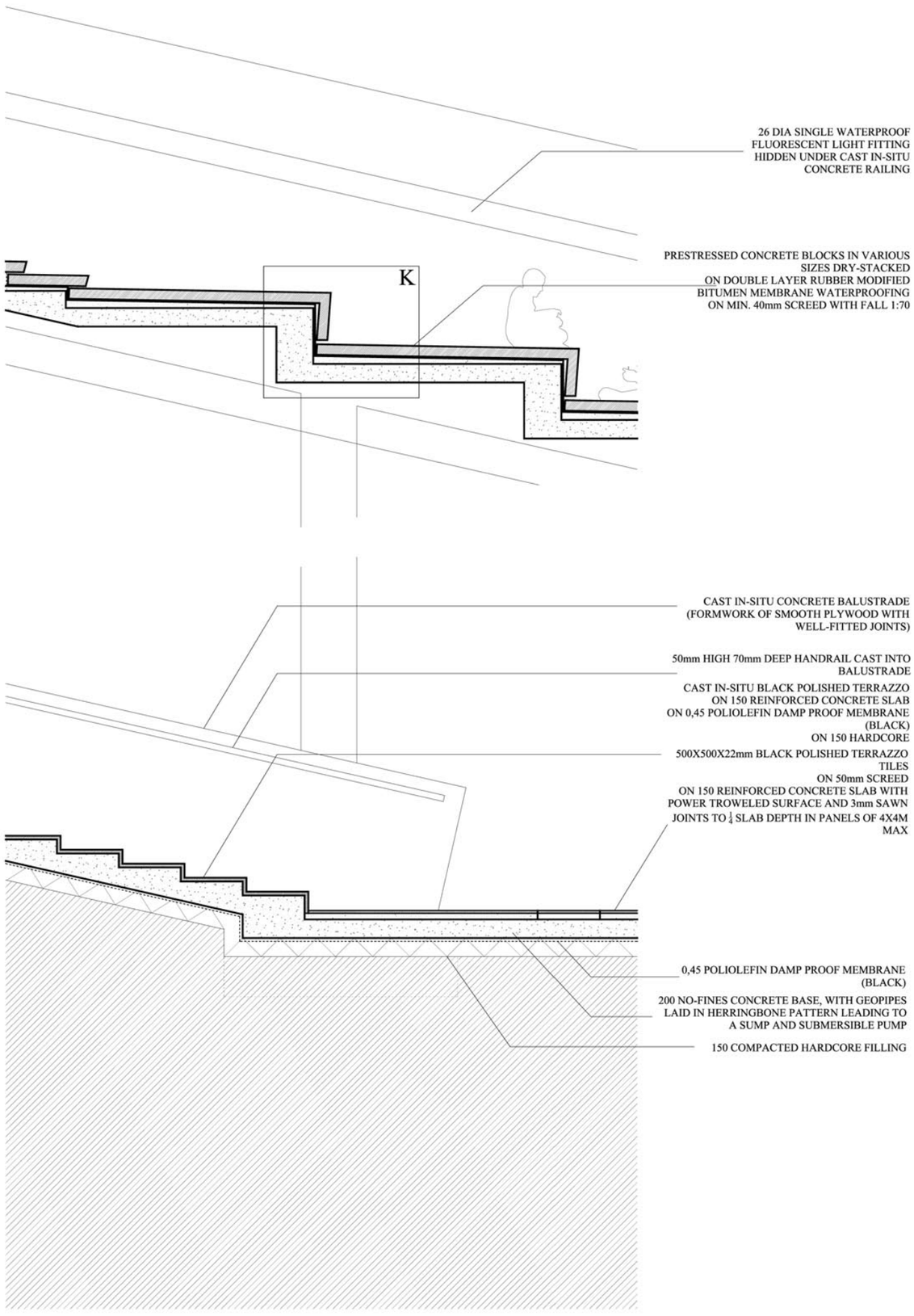


DETAIL H
SCALE 1:10

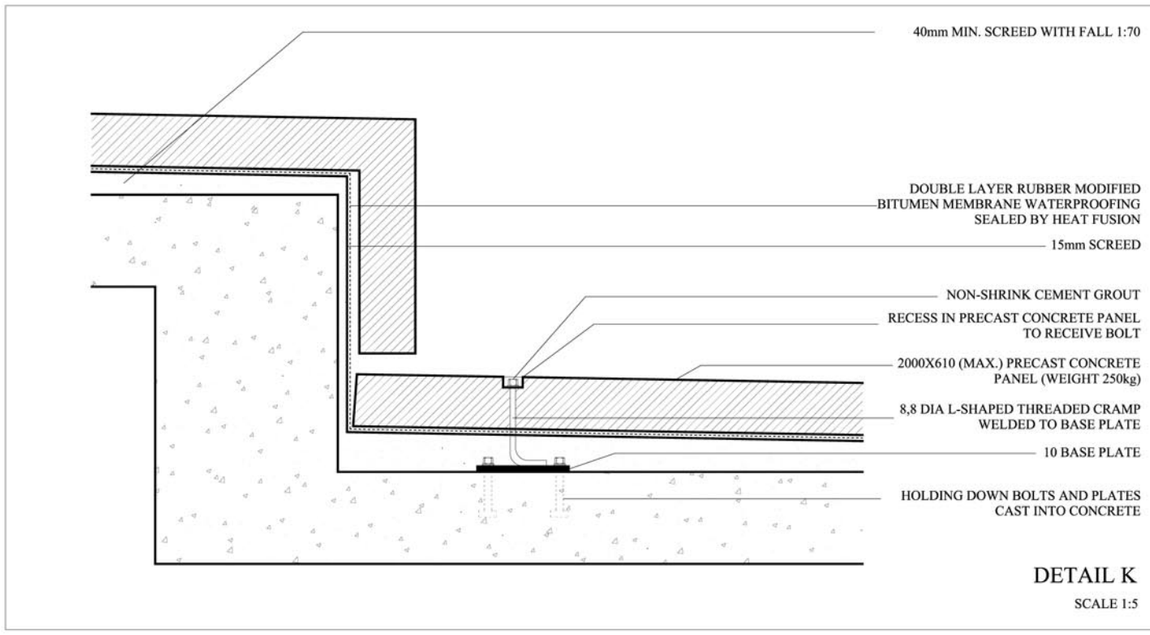
WEEP HOLES
DETAIL I
SCALE 1:10



BASEMENT - CAVITY WALL
DETAIL J
SCALE 1:10



DETAIL SECTION C
SCALE 1:20



DETAIL K
SCALE 1:5

Indoor/outdoor swimming pool

		Sub-categories	b	l	h	unit					Requirements
1	**Entrance**	**Entrance area to pool**	3			m					
2	**Restaurant**	**Seating area**	2			m2	70	140.00		m2	Seats take up 1-2 m2 At least 50 seats
		Service and ancillary						140.00		m2	
		Stores and cold rooms							35.00	m2	Part of the service ancillary
		Empties stores							28.00	m2	
		Kitchen, servery, office and staff							77.00	m2	
3	**Toilets**										
4	**Staff rooms Administration**										
5	**Ticket office**										
6	**Change area**	**Locker space**	0.25	0.5	1.8	m	150	75.00		m2	0,25m/0,33m wide 1,8m/0,9m high depth 0,5m
		Change space		0.2		m	150	30.00		m2	
		Change cubicles		0.6	2	m	150	90.00		m2	10% for families and people with disabilities ratio for cubicles to clothes locker 1:4 up to 1:8 minimum dimensions: 1m wide, 1,25m deep, 2m high families: 1,5m wide, 1,25m deep, 2m high door width: 0,8m wheelchair users: 2m wide, 1m deep, 2m high door: 0,8m
		Hairstyling space		0.03		m	30	0.90		m2	
		Basins		0.015		m					
		Cleaning materials room						2.00		m2	
7	**Toilets**	**Toilet cubicles (opening inwards**	0.9	1.4	2	m					room ceiling height 2,75m (at least 2,5m)
		Slab urinal	0.5	0.6		m					
		Hand basin	0.6	0.8		m					
8	**Showers**		0.95	0.8	1.45	m					shower place with separating screens circulation space between shower rows: 1,1m at least 10 showers for each shower room (swimming pools larger than 150 m2)
9	**Steam room**		3	2				6.00		m2	separate steam rooms
	Sauna		2.3	2				4.60		m2	separate saunas
10	**Pool area**	**General pool**	16.66	25	4	m	1	416.50		m2	
		Area around starting blocks	3			m					
		Paddling pool	15	25	2.5	m	1	375.00		m2	water depth: 0,4-0,6m
		Access area to paddling pool	2			m					
		Diving boards									1 board and 3 platforms
		Area around diving boards	4.5			m					clear passageway at least 1,25m wide behind 1m boards
		Pool surround area						791.50		m2	Equals total pool area
		Between pools	3-4			m					
11	**Fitness room**										
12	**Swimming supervisor**				2.5	m		6.00		m2	
13	**First aid room**				2.5	m		8.00		m2	
14	**Equipment room**							20.00		m2	
15	**Plant room**	**Outdoor swimming pool**						791.50		m2	without water storage, storerooms, transformer room and gas meter room
		Indoor swimming pool						554.05		m2	
		Water storage									
		Store rooms									
		Transformer room									
		Gas meter room									
16	**Sunbathing terrace**										
17	**Sitting area**										

Exhibition

		Sub-categories	b	l	h	unit					Requirements
1	**Entrance**		3			m					
2	**Check-in entrance**		5			m					needs to be large enough for the art
3	**Services and ancillary**								100.00	m2	
		Stores and cold rooms						25.00			
		Empties stores						20.00			
		Kitchen, servery, office and staff						55.00			
4	**Dining room**		2			m2	50		100.00	m2	
5	**Shop**								100.00	m2	
6	**wc**	women									
		men									

7	**Temporary exhibition**	10	30	7	m		300.00	m2
8	**Permanent exhibition**	10	60	7	m		600.00	m2
9	**Store**						450.00	m2
10	**Reception**						6.00	m2
11	**Curator**						6.00	m2
12	**Lecture theatre**	2			m2	100.00	200.00	m2
13	**Research**						20.00	m2
14	**Filing**						20.00	m2

Restaurant(seats < 100) from NEUFERT, E & NEUFERT, P. Baich, B & Walliman, N [eds.]. 2000. *Architects' Data,* Third Edition. UK: Blackwell Science. P.460.

		Sub-categories			seats			
1	**Supplies and waste disposal**		0.15		96.00	14.40	m2	
		goods receipts	0.06		96.00	5.76	m2	
		empties	0.05		96.00	4.80	m2	
		waste/refuse	0.04		96.00	3.84	m2	
		office - store manager	0		96.00	0.00	m2	
2	**Chilled goods storage**		0.04		96.00	3.84		
		pre-cooling room			96.00			cupboards or storage surfaces
		cold meat store			96.00			
		dairy products stores			96.00			
		cold vegetable/fruit store			96.00			
		deep-freeze room			96.00			
		other cold stores			96.00			
3	**Ambient storage**		0.25		96.00	24.00		
		dry goods / food store	0.13		96.00	12.48		
		vegetable store	0.08		96.00	7.68		
		daily supplies	0.04		96.00	3.84		
4	**Kitchen area**		0.61		96.00	58.56		
		vegetable preparation	0.08		96.00	7.68		
		meat preparation	0.06		96.00	5.76		
		hot meals	0.26		96.00	24.96		
		cold meals	0.13		96.00	12.48		
		patisserie	0		96.00	0.00		
		container washing	0.05		96.00	4.80		
		office - kitchen manager	0.03		96.00	2.88		
5	**Dishwasher**		0.1		96.00	9.60		
6	**Servery/waiters' equipment**		0.06		96.00	5.76		
7	**Staff washing facilities and WC**		0.4		96.00	38.40		
	TOTAL					154.56		

9. Addendum 2: Baseline document

Baseline (after Gibbert 2004)

	Criteria	Target Set (ideals)	Design Performance	Achieved Y/N
1	***pedestrians***			**5**
1.1	public amenities	provision of amenities such as ablutions and shade	Ablutions, shade, seating, drinking fountains and leisure activities is provided for	1
1.2	routes	routes clearly visible and a comfortable finish to walk on	Routes are indicated with low-level lighting only on one side, to avoid confusion when viewed from the side. The routes have a brush finish to prevent slippage, but it is still easy to move on for wheelchair users	1
1.3	protection	protection from vehicles	Vehicles and pedestrians routes are separated. Where they do coincide, trees are used to separate them	1
1.4	public transport	public transport within 100m	public train transport is within 150m, but taxi and bus are max. within 80m	1
2	***context***			**3.75**
2.1	visual appropriateness	character of the intervention complement the character of the site	the industrial archaeological nature of the site was used as a starting point for the design	1
2.2	historic retention	use of the historic layers of the site instead of *tabula rasa*	the demolished buildings are traced with pavement textures and colour	1
2.3	views	views retained for future developments by restricting the building height to 6m	a building height of 8m is used	0
2.4	railway tracks	appropriate response to the railway tracks - intervention should not treat the railway tracks as a backside	railway tracks are framed by the new intervention and is used as a novelty to attract users	1
3	***public space***			**3**
3.1	framing	communal public spaces to have a building height to open space ration of 1:4	instead of framing, the public space is delineated	1
3.2	permeability	movement through the public space should not be controlled	it is not possible to control movement through the public space	1
3.3	choice	framework dictates amount of functions but not the nature thereof.	ISDF has functions on non responsive precinct basis	0
3.4	distribution	75% mixed use	50%	0
3.5	functional grouping	functional groups coordinating complimentary uses should be grouped together.	social activities are played out on unprogrammed open spaces, while amenities anchor function into these spaces	1
4	***scale***			**4**
4.1	context appropriate	buildings next to the railway should be no higher than 12m, to allow unhindered views	height restriction is not exceeded except for in one instance, where it is exceeded by 2m	0.5
4.2	human scale	public spaces and circulation should be environmentally controlled and psychologically pleasing to the user	Indigenous planting is provided (Celtis Africana). Celtis Africana is deciduous and provides a dense shadow in summer	0.5
4.3	enclosure	communal public spaces to have a building height to open space ration of 1:4	there exist social spaces on the street level that correlate with the 1:4 ratio	1
4.4	urban morphology	building scale should correlate to and fit within the composition of the city	intervention in existing register of scales	1
4.5	program appropriate	building unit scale should communicate civic and functional importance.	large public space communicate the civic nature of the project	1
5	***control***			**5**
5.1	consultation	urban intervention should take place with due professional guidance	adequate	1
5.2	demographic	representative distribution of population	adequate	1
5.3	personalization	individuality is encouraged within the private and semi public domain.	adequate	1
5.4	professional involvement	professionals should be involved at the appropriate time according to a set project timeline	adequate	1
5.5	resource allocation	resources should be allocated in a sustainable, regenerative and even-handed manner.	material libraries set up on the perimeter of the city receive and sell surplus building material during construction process. Where demolition is carried out, salvageable materials and fittings are also removed to the material library	1
6	***legibility***			**5**
6.1	function articulation	building fabric should be representative of its intended use	Typological manipulation enhances legibility	1
6.2	hierarchy	space and scale of urban fabric should serve to orientate users	repetition of programme occupation	1
6.3	connectivity	urban fabric should serve to enhance path finding ability	routes have lighting on only one side to avoid confusion when viewed from the side	1
6.4	urban syntax	urban interventions should adhere to logical composition and respect existing urban structure and morphology	scale is respected as is evident from the elevations, and adheres to the urban guidelines	1
7	***adaptability***			**2**
7.1	ease	urban fabric should be able to absorb programmatic and ideological change over time	adequate	1
7.2	Mega structure	bulk servicing should be easily accessible and designed to accommodate future expansion	surplus capacity is available	0
7.3	infill	infill material should be easily altered and universally re-used	concrete shells	0
8	***efficiency of use***			**2.5**
8.1	useable space	non-useable spaces such as ablutions and circulation does not make up more than 205 of the total area	adequate	1
8.2	occupancy	spaces are occupied for an average of 30 hours per week	cannot be confirmed	0
8.3	space of use	use of space intensified through space management	not a priority	0
8.4	technology	communications and information technologies used to reduce space requirements, ex. Video conference	part of management and not the design of the building	1
9	***adaptability and flexibility***			**3**
9.1	vertical dimension	structural dimension minimum of 3m	floor to underside of roof, or slab of the floor above is minimum 3m high	1
9.2	internal partitions	internal partitions are of non-load bearing walls	adequate	1
9.3	services	easy access to services provided. Easy modification of the system.	was not a priority	0
10	***ongoing costs***			**5**
10.2	maintenance	material specification for low maintenance, or low cost maintenance. All plant and fabric maintenance cycle of at least 2 years.	important consideration during design process	1
10.2	cleaning	limit requirement for cleaning. Hard wearing solid flooring (limited or no carpeting) specified. Windows easily accessible for cleaning	only hard wearing floors such as terrazzo is used - no carpeting. Windows are rarely higher than 2,3m.	1
10.3	security	limited requirement for security	development includes mixed use development, as well as buildings and spaces overlooking neighbouring buildings.	1
10.4	disruption	electrical and communication services, HVAC and plant is located where it can easily be accessed	access to HVAC is away from the entrance to the building, next to a road	1
11	***site***			**3.5**
11.1	brownfield	building constructed on a site that has previously been built on	building is built on a historical marshalling yard	1
11.2	neighbouring buildings	has no negative impact on the neighbouring buildings	very little neighbouring buildings	1
11.3	vegetation	site has extensive vegetation. Every opportunity has been taken to plant in car parking areas, and in and around buildings	trees are planted in areas where people are expected to congregate	0.5
11.4	habitat	site provides a habitat for animals. Includes a coordinated landscaping strategy, taking into account planting, water and habitat	not a consideration	0
11.5	landscape inputs	landscape does not require heavy input, ex. Watering, fertilizer, insecticide	does not require any	1
12	***water***			**2.5**
12.1	use	the use of water efficient devices		1
12.2	rainwater	rainwater is harvested and used		0
12.3	runoff	runoff is avoided by using porous surfaces or it is stored and used	the runoff is stored and used for irrigation for the soccer field	1
12.4	grey water	grey water is recycled		0
13	***energy***			**2**
13.1	location	public transport within 100m	Two train stations and a national bus stop is located within 100 m.	1
13.2	ventilation	passive ventilation system	The gallery requires a mechanical ventilation system.	0
13.3	heating and cooling		heating and cooling is required only during extreme climate conditions	0
13.4	light fittings	the use of fluorescent lighting		1
13.5	renewable energy	use of light or wind energy		0
14	***materials***			**4**
14.1	vandal proof	because of the intensive use of the area the materials need to be vandal proof	cast in-situ concrete is used in most instances	1
14.2	embodied energy	materials with low embodied energy includes local timber and concrete	in most instances concrete is used as a construction material	1
14.3	recycled materials	the use of recycled materials in the construction of the building		0
14.4	maintenance	materials that require low maintenance	concrete requires very little maintenance - needs only to be cleaned	1
14.5	thermal mass	in a temperate climate thermal massing is the most effective means of passive environmental control	concrete has excellent thermal massing properties	1

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