UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Transforming Public Space

Re-generating Rissik Station

by Johannes Calvyn le Roux

Submitted in fulfillment of part of the requirements for the degree Master in Architecture (Professional), in the Faculty of Engineering, Built-Environment and Information Technology, University of Pretoria.

Mentor: Nico Botes
Study leader: Raymund Königk

November 2008

Soli Deo Gloria

Thank you also to: Nico Botes, Raymund Königk, my family

Table of contents

List of figures

Chapter 5: Railways

Chapter 6: Design philosophy

Chapter 7: Precedent studies

Chapter 8: Design development

Chapter 9: Technical resolution

List of terms & abbreviations

Adaptive reuse. Austin (1988:49) defines adaptive reuse as the principles through which "structurally sound older buildings are developed for economically viable new uses". This simply means that buildings are "modified to some degree to meet contemporary demand" (Reynolds 1982:45).

Anglo-Boer War. Refers to the war fought between the two Boer Republics (ZAR and Orange Free State) against Britain between 1899 and 1902. The war ended with the signing of the Treaty of Vereniging in 1902 at Melrose House, Pretoria. The war is sometimes also revered to as the Second Anglo-Boer War and the South African War.

NHRA. *National Heritage Resources Act (No.25 of 1999).*

NZASM. *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* (*Dutch South African Railway Company*). The railways in the ZAR did not belong to the state. They were run by this private company. There were some other private railroads as well.

Preserve / Preservation. The objective is to keep the object in its existing state. Repairs must be carried out when necessary to prevent further decay. Damage and destruction caused by water, chemical agents and by all types of pests and micro-organisms must be stopped (Feilden 1994:6).

Rehabilitate / Rehabilitation. According to Feilden (1994:6) the best way to preserving buildings as opposed to objects is to keep them in use, and involve modernization with or without adaptive alteration. The original use is generally the best for conservation as it means fewer changes. Adaptive reuse of buildings thus falls under this method. It often is the only way that historic and aesthetic values can be saved economically and historical buildings brought up to contemporary standards.

SAHRA. *South African Heritage Resources Agency.*

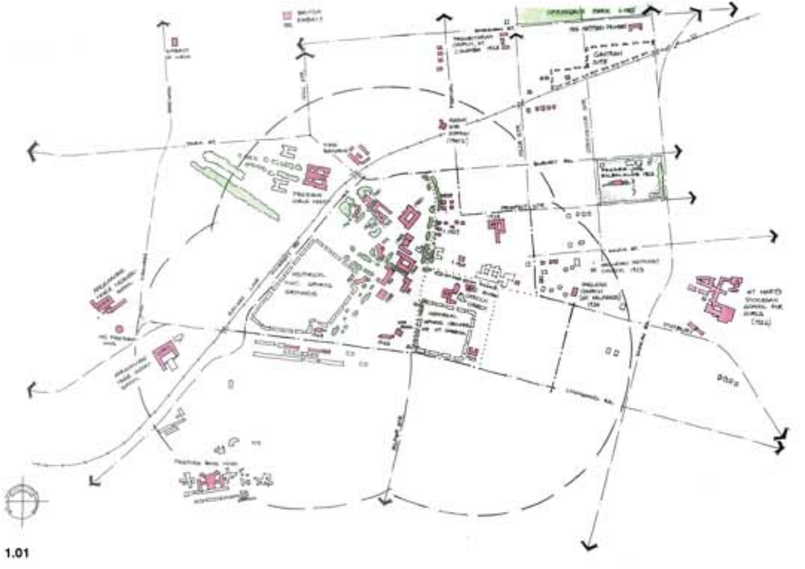
ZAR. *Zuid-Afrikaansche Republiek* (*South African Republic*). It comprised the former Transvaal province, including the districts of Utrecht and Vryheid (Kwa-Zulu Natal). The Transvaal was divided into four smaller provinces after 1994, with the result that the Transvaal as a province ceased to exist.

Chapter 1
Introduction

Introduction

The proposed project aims to transform the selected site and buildings to new uses, along with the restoration and reuse of historical buildings. In effect, this amounts to a recycling and improved use of existing resources. For this reason, the contextual precinct was given serious consideration in the design process. Together they are indicative of the extent to which the proposed project and its conceptualisation of urban design, public space, and the built environment, reflect the values put forward by the design philosophy.

The study was initiated by a matrix investigation of historical sites around Hatfield (fig. 1.01), analysing their constraints and opportunities.



1.01

1.01 Overview of historical sites around Hatfield within a 500 meter radius around the University of Pretoria
1.02 Old Fire Station opposite Pretoria Girls' High School along Park Street
1.03 Old Post Office building along Festival Street. The building dates back to 1923
1.04 Old Art Building of the University of Pretoria. This building dates back to 1911 (UP Archive, University of Pretoria)
1.05 Old Agriculture building of the University of Pretoria, dating back to 1920 (UP Archive, University of Pretoria)
1.06 The first Roman Catholic Church in Hatfield. The church building dates back to 1923. Today it falls within the University of Pretoria's grounds and is home to the Student Counsel's offices.

Background

The phenomenon of urbanisation in South Africa is a fairly recent occurrence, and has mainly occured over the past 50 years (Dewar 2000:209). Urbanisation among the black population is even more recent. It is estimated that around 54% of the country's population is urbanised (Republic of South Africa 1996). This number is quickly growing as more people relocate to the cities.

Dewar (2000:209) argues that the unsustainable nature of our cities is clearly demonstrated by the social and environmental consequences that stem from it. One way of bettering the condition is through a process of urban densification. It should be said that densification in itself is not a sufficient condition for improving the urban context. It has to be used in conjunction with other positive structural changes.

A combination of forces has resulted in the three spatial characteristics of low density, fragmentation and separation which characterise South African cities. The result is an urban context where separation of land-use, urban elements, and racial and class groups leads to mono-functionality rather than a mix of uses. Traffic congestion is increasingly becoming a daily occurrence. Poverty and inequality are exaggerated even more since it is the poor who are most effected. Life is both inconvenient and expensive for the many who cannot afford to own a car. Public transport is inefficient and often non-existing, and many households are effectively trapped in remote and isolated settings.

Despite large numbers of people spending most of their time in public spaces, the quality of these spaces are almost collectively poor. Curran (1983:22) has described this well when he said that "the overwhelming impression is that when you get there, there's no there, there". Building structures in general fail to define, protect or give scale to the public spatial environment.


1.07


1.08


1.09

1.07 Scene along Station Place Street, Hatfield. The buildings are fenced off and do not respond to the street
1.08 Mozambique Café (to the left) responds to the street, while the rest of the buildings do not. The result is a lack of place and identity with no scale given to the site
1.09 This urban scene in Europe is in stark contrast to those presented in Fig. 1.07 and 1.08. Here, the buildings help define the street while giving scale and a sense of place

Research questions

The following research question is posed:

What can be done to improve the urban experience and historical reference at the selected site?

In addition, a number of sub-questions are posed:

a. How can Rissik Station, which is centrally located in terms of the Hatfield CBD, the Gautrain station, University of Pretoria and office and diplomatic services in the area, be rehabilitated into a truly responsive public amenity?
b. In what way can the negative image of the site, when measured against the character of the area, be overcome so it positively contributes to the Hatfield area as a whole?
c. How can the memory of Rissik Station be preserved?

Assumptions and delimitations

a. It is assumed that the area will in future serve a broader user group with multi-cultural properties;
b. It is assumed that the proposals put forward by the Hatfield Development Framework are applicable;
c. This thesis does not attempt to address urban regeneration in its entirety;
d. Establishing the nature and degree of the significance of intangible heritage at the Rissik Station proved to be difficult;
e. Available information resources were limited to interviews and old photographs;
f. The existing plans of Rissik Station could not be located by many researchers.

Structure of the study

This thesis is structured around a number of chapters. Chapter Two investigates the Macro context of Pretoria.

Hatfield as study area was chosen for both its potential and its inadequacies. Its physical attributes, historical importance and its critical role in the urban context are discussed in Chapter Three. Chapter Four investigates the selected site on a micro context level. The functioning of rail transport locally and internationally is investigated in Chapter Five.

Chapter Six deals with the design philosophy and approach to creating a successful public space, while precedents are critically analysed and alternatives are explored in Chapter Seven. This helps to set up requirements and guidelines for the design intervention. The conclusions drawn from these chapters serve as generators for the functional design process.

In Chapter Eight, design strategies are defined and consequently employed. The progression of the design from the general concept to specific end product is visually illustrated. The study concludes with the technical investigation contained in Chapter Nine.

Research design

A combination of research designs was employed within the scope of the thesis. Field studies undertaken in the study area took the form of site assessment surveys; by taking photographs and gathering other data to get an idea of the site's physical condition.

A number of undertaken case studies took the form of personal interviews with the site users and related authorities to gain an understanding of the functioning, constraints and opportunities of the site. The mechanism of case studies also encompassed an investigation onto precedents which in turn informed the design process and thinking.

The above mentioned research designs culminated with the proposed building and urban development presented in this document.

Data analysis

Within the scope of this thesis, quantitative data analysis relates to information such as statistics on rainfall, user numbers and the like. This helps inform the study in a number of ways when the building accommodation schedule and functions are determined. Qualitative data analysis in this thesis relates to the personal interviews that were conducted.

Chapter 2

Macro scale

2.01

Introduction

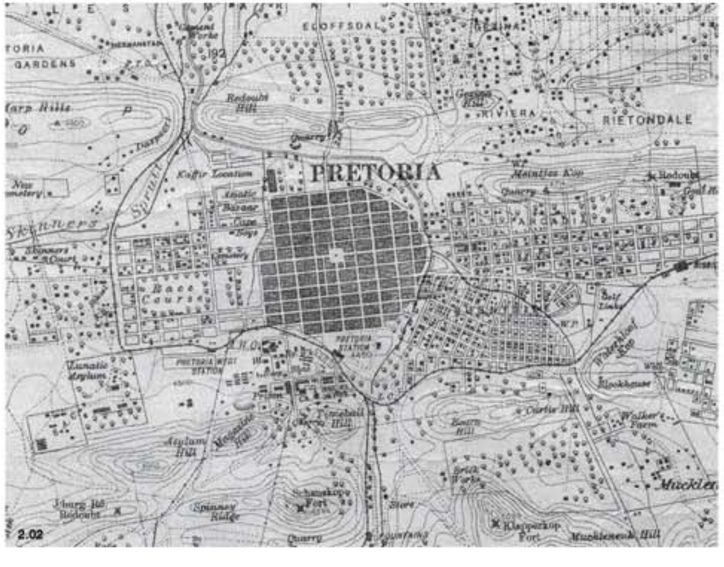
Pretoria is located in the Province of Gauteng. It is one of the three South African capital cities, along with Cape Town and Bloemfontein. Located around 50km north of Johannesburg, the city lies between natural ridges formed by the Magaliesberg range in the north and Salvokop in the south.

Founding of Pretoria

The city was founded in 1855 by Marthinus Wessels Pretorius, who was a leader among the Voortrekkers (Andrews & Ploeger 1989:2). He gave the name Pretoria in honour of his father Andries Pretorius, who became a hero after the victory at the Battle of Blood River against the Zulus. Pretoria became the capital city of the Zuid-Afrikaansche Republiek (ZAR) on 1 May 1860 (Andrews & Ploeger 1989:6) The ZAR ceased to exist following the Second Anglo-Boer War of 1899-1902, but Pretoria once more played a dominant role in South Africa when it became the country's administrative capital following the formation of the Union of South Africa in 1910. It is an honour the city retained after the country became a republic in 1961 and which it continues to have to date. Today, the city forms part of the City of Tshwane Metropolitan Municipality that was formed in the year 2000 (fig. 2.01).

Originally, the city was laid out on an orthogonal grid imposed onto its natural surroundings (fig 2.02). Any symbolic reference to its natural surroundings is suggestive of an interpretation of the *genius loci* (Holm 1998:61). This grid form was the work of a Dutch engineer and architect named Sytze Wopkes Wierda.

2.01 Pretoria metro area today
2.02 A 1906 map of Pretoria (Van der Waal Collection, University of Pretoria)



2.02

Pretoria's development

Since its founding in 1855, Pretoria grew steadily. This growth is illustrated by fig. 2.03.

Demographics

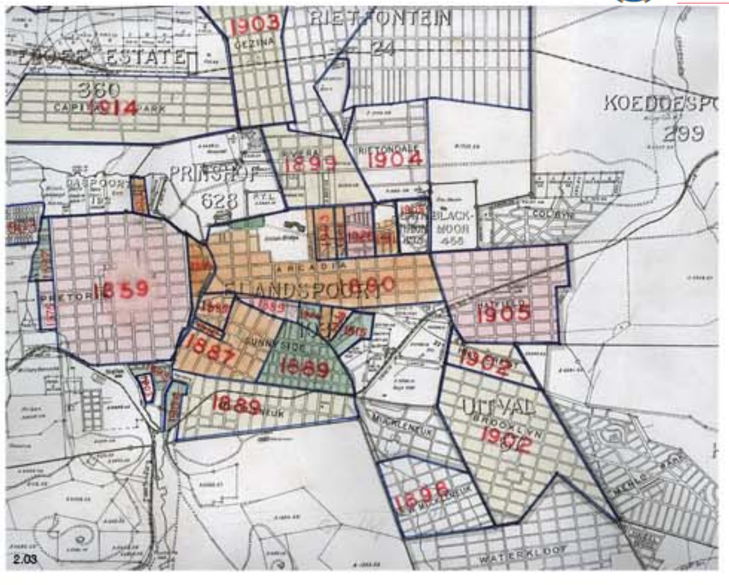
Over one million people live in the city and its surrounding areas. The languages most dominantly spoken include Afrikaans, English, Tswana, Ndebele and Sepedi.

Academic culture

Pretoria is home to a number of prominent academic and research institutions such as the Universities of Pretoria and South Africa (UNISA), the Tshwane University of Technology (TUT), as well as the Counsel for Scientific and Industrial Research (CSIR). This makes Pretoria one of South Africa's leading academic cities.

The name issue

After 1994, the issue of Pretoria's name has been a controversial subject with some voices calling for a change of name while others strongly resist it. The South African Geographical Names Counsel approved such a change of name proposal on 26 May 2005. However, the matter is still under investigation and awaiting approval from the Minister of Arts and Culture, Pallo Jordan. The name Pretoria will be used for the purpose of this thesis.



2.03


2.04


2.06


2.07

2.03 Map showing Pretoria's growth (Van der Waal Collection, University of Pretoria)
2.04 The original "Trapgewel Kerk" on Church Square, circa 1860s (Van der Waal Collection, University of Pretoria)
2.05 Mass rally at Church Square (Van der Waal Collection, University of Pretoria)
2.06 The Netherlands Bank on Church Square (Van der Waal Collection, University of Pretoria)
2.07 Paul Kruger Street looking south towards Pretoria Station (Van der Waal Collection, University of Pretoria)

Architectural context

Pretoria's early architectural character was largely the result of people imported from the Netherlands during the administration of President Paul Kruger. People such as Sytze Wierda, De Zwaan and Soff had a huge influence which can still be seen today around Church Square in Pretoria's CBD (Meiring 1980:9).

The more recent architectural style that developed in Pretoria is referred to by Fisher (1998:123) as "The Third Vernacular". It is a style characterised by a regional adaptation of the International Style. The work of Le Corbusier had a major influence, with special reference to his climatic response in the form of the *brise soleil*. Pretoria Regionalism, or the Third Vernacular, is a response to the local climate, materials, economy and cultural expression found in Pretoria. This has resulted in the buildings in Pretoria's inner city falling predominantly in the idiom of Modern Movement architecture. Architects such as Herbert Baker, Gerhard Moerdyk, Gordon Leith, Norman Eaton and Gordon McIntosh have had a strong influence on the city (Meiring 1980:10).

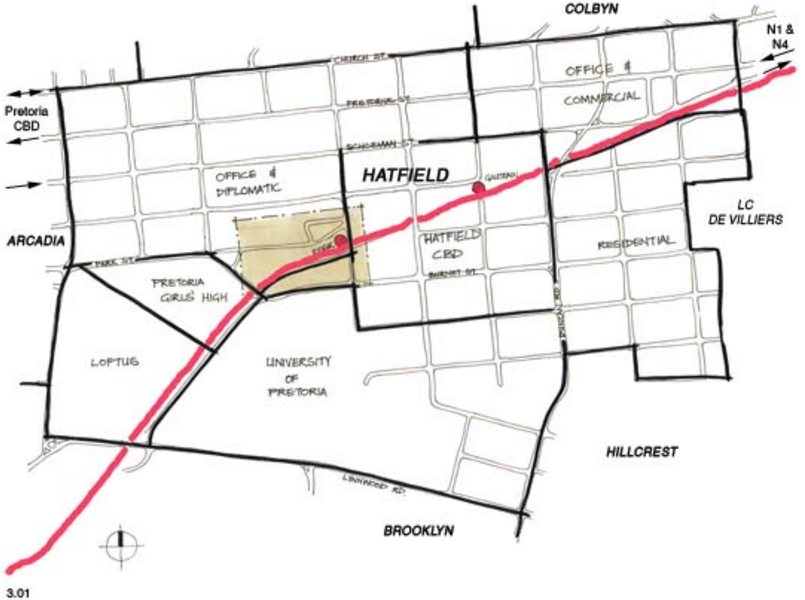
Chapter 3

Meso scale

Hatfield in context

Hatfield is located approximately 3km east from Pretoria's CBD. Church Street forms the most northern border, and acts as a natural boundary with the residential areas of Colbyn and Rietondale. The western boundary is delineated from Athlone Street southwards down Roper Street, separating it from the high density residential areas of Sunnyside and Arcadia. Lynnwood Road comprises the southern border, while End Street between the University Sports Grounds (LC de Villiers) and the residential area of Hatfield Village demarcates the eastern border.

The area is easily accessible from both the N1 and N4 highways in the east and link up with Pretorius and Schoeman Streets. Hatfield is separated into two districts due to a division caused by the railway line running through the area.



3.01 Hatfield, its boarders and areas

3.01

Beginnings of Hatfield

Hatfield is situated on a portion of the Farm Koedoespoort no. 299 (323JR). Lourens Cornelius Bronkhorst obtained ownership of the farm in 1859. His descendents later in 1885 sold the farm to the Wesleyan Methodist Society, who constructed a hospital on the site during the Anglo-Boer War of 1899-1902 (Laubscher 1992:1). In 1903 the Wesleyan Church sold the grounds to Patrick Duncan who was the then Colonial Secretary of the Transvaal for the purpose of establishing the neighbourhood of Hatfield. As a result, W.R. Lanham was commissioned in 1905 to start measurements of the area and there was decided on a north-south orientation. Hatfield officially became a neighbourhood of Pretoria in 1916 (Andrews & Ploeger 1989:34).

The name Hatfield was given in honour of the second Earl of Selbourne, William Waldegrave Palmer, who was appointed as the British Governor of the Transvaal in 1905 and became a High Commissioner in 1909. Hatfield was the name of his property in Hertfordshire, England (Laubscher 1992:3). The name Hatfield has its origin from an Old English heap field, meaning "heather-covered-field" (City of Tshwane 2008).

Following their occupation of Pretoria on 5 June 1900, the British built several blockhouses in and around Pretoria. Four blockhouese were constructed in Hatfield (Van Vollenhoven 1995:87). Johnston Redoubt, located on the grounds of the Presidency, is the only remaining one of the four. Fig 3.02 shows three of these blockhouses.

The first church to be constructed was the Presbyterian Church St. Columba in Hilda Street. The building dates back to 1923 with later additions to the structure undertaken in 1959 (Laubscher 1992:11). Pretoria East Bowling Club is the oldest sports club in the area and dates back to 1923.

3.02


3.03


3.05

Road linkages and transportation

Routes

A number of through-routes exist in Hatfield, mainly those to the North (Church, Schoeman & Pretorius Streets) and the East (Duncan). The grounds covered by the University of Pretoria and the four major secondary schools to the west and south thereof form a natural barrier to the south-western parts.

Transportation

Transportation to and within Hatfield comprise largely of private vehicles and mini-bus taxis. Municipal bus services do serve the area with routes running along Church Street, Pretorius Street, Schoeman Street, parts of Duncan Road, Burnet Street and Lynnwood Road, but it is by no means a preferred mode of transport.

Metrorail also offers passenger railway services along the railway line to Rissik Station, Loftus Station and Hartbeesspruit Station. Peak hours for this mode of transportation are mainly during the mornings and afternoons.

Due to the fact that neither trains nor bus services are fully utilised as primary modes of transport to Hatfield, the area currently experiences heavy traffic congestion caused by a dependency on private vehicles and taxis.

In addition, pedestrian and cycling movement is not actively catered for as a mode of movement in the area. The matter may need to be addressed, since many students do cycle between the University and the residences.


3.06


3.07


3.08

3.02 A 1908 map of Pretoria and Hatfield with the blockhouses indicated (Van der Waal Collection, University of Pretoria).
3.03 A 1929 aerial photo of Hatfield with the Old Agriculture building of the University of Pretoria in the foreground (UP Archive, University of Pretoria)
3.04 St. Columba's Presbyterian Church dating 1923.
3.05 Pretoria East Bowling Club dating 1923.
3.06 Street schene in Burnet Street, Hatfield.
3.07 Forms of public transport.
3.08 Dominance of private transport.

Significance of the railway line

The construction of a railway line between Pretoria and Lourenço Marques (today Maputo) in Mozambique was the invention of George P. Moody, a land surveyor, who submitted his idea to the government of the Zuid-Afrikaansche Republiek (ZAR) in 1872 (De Jong, Van der Waal & Heydenrych 1988:26). Under Thomas François Burgers, who was then president and after whom Burgers Park is named, the ZAR granted Moodie a concession in 1873 for building a railway line linking the Lebombo mountains on the eastern border with Portuguese East Africa (today Mozambique) with Klipstapel on the Highveld near the present town of Ermelo. Due to financial constraints nothing came of Moodie's plans, and the following year in 1874 the concession lapsed without any progress being made to materialise this link (Van Winter 1937:9).

The story of the realisation of the Eastern Line is one of determination and struggle. Financing this railway line proved more difficult what was originally anticipated (Engelenburg 1987:15). If this wasn't enough, the ZAR was firstly forced into a war with the Pedi of Sekhukhune and finally with Britain during the First Anglo-Boer War (1877-1881) on 12 April 1877 when Sir Theophilis Shepstone annexed the ZAR for Britain (De Jong, Van der Waal & Heydenrych 1988:27).

In 1881 the Transvaal Boers regained their independence from Britain. In May 1883 Stephanus Johannes Paulus (Paul) Kruger was elected as president, and became the personification of the ZAR's drive to independence by establishing a railway link between Pretoria and Lourenço Marques (Engelenburg 1987:16). The discovery of gold on the Witwatersrand in July 1886 positively enabled the construction of the Eastern Line and many other railway lines in the ZAR (De Jong, Van der Waal & Heydenrych 1988:35). On 21 June 1887 the Nederlansche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM) was founded in Amsterdam with the objective of developing the railway line to Lourenço Marques (Van Winter 1937:172).

Progress on the Eastern Line came to a halt in 1887 due to a crisis in the gold-mining industry, but by June 1890 things could continue (Van Winter 1937:209). Despite many a crisis a major achievement occurred on 14 May 1891 when the first locomotive steamed across the Komati-bridge (Engelenburg 1987:25). On 2 November 1894 the last screw was ceremoniously fastened by President Paul Kruger at Brugspruit Station. The official opening of the Eastern Line took place on 8 to 10 July 1895 (De Jong, Van der Waal & Heydenrych 1988:48).

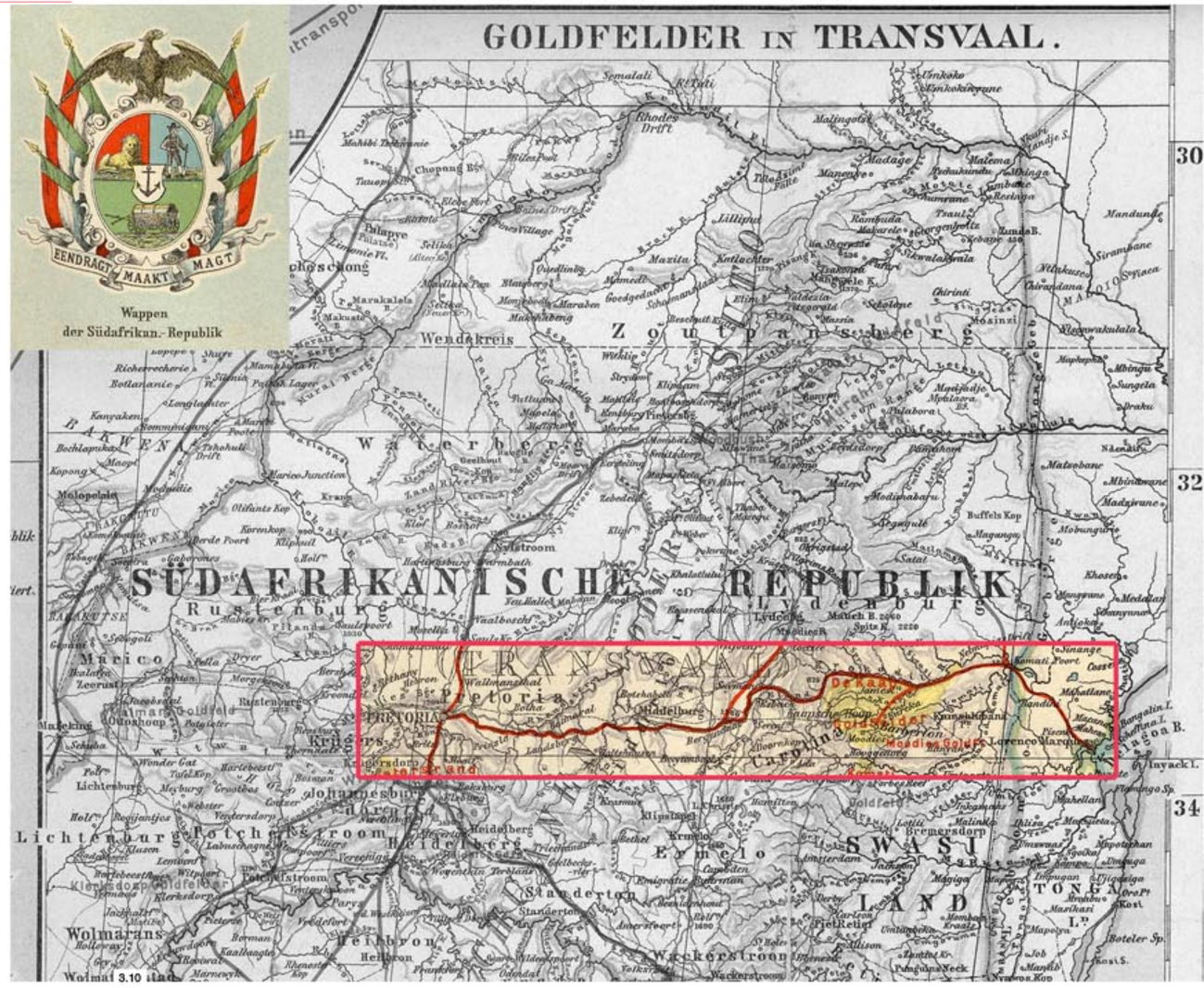
The completed Eastern Line played a fundamental role in the economic development of the ZAR by providing fast and relatively affordable transportation (Greyling 2000:49). A total number of 3,526 white people were full-time employees of the NZASM in 1897 with the number of full-time black employees at the same period reaching 7,171 (De Jong, Van der Waal & Heydenrych 1988:59). The 1,050,598 passengers who made use of the train in 1895 more than doubled two years later in 1897 to reach 2,363,938.

It wasn't just white people who made use of this passenger service on the NZASM Eastern Line. During 1898 more than 64,379 black people made use of the train to leave the ZAR, while 87,799 used it to enter. This is mainly due to an influx of black people into the ZAR from Portuguese East Africa (De Jong, Van der Waal & Heydenrych 1988:66). The railways had thus significantly increased the mobility of all people, white as well as black.

Finally, the ZAR's gold deposits would result in conflict with Britain during the Second Anglo-Boer War (1899-1902). The Eastern Line provided an escape route for President Paul Kruger on 29 May 1900 as he fled to Lourenço Marques (Greyling 2000:14). Boer forces fought two battles along the Eastern Line: on 11-12 June 1900 at Diamond Hill, and 27 August 1900 at Dalmanutha. Lord Roberts annexed the ZAR for Britain on 1 September 1900 (Greyling 2000:17).

The Eastern Line would also provide an escape route for Sir Winston Churchill. At the time he worked as a war correspondent for the London Morning Post. He was taken captive by Boer forces in Natal and taken to Pretoria. Churchill, along with three other prisoners, escaped during the night of 12 December 1899 and made their escape along the Eastern Line (Greyling 2000:65).

3.09 First train at Pretoria Station in 1893 (Van der Waal Collection, University of Pretoria)
3.10 Map of ZAR showing the Eastern Line (in block) and the ZAR Crest in the top left corner (Van der Waal Collection, University of Pretoria)



Hatfield today

Density & land use

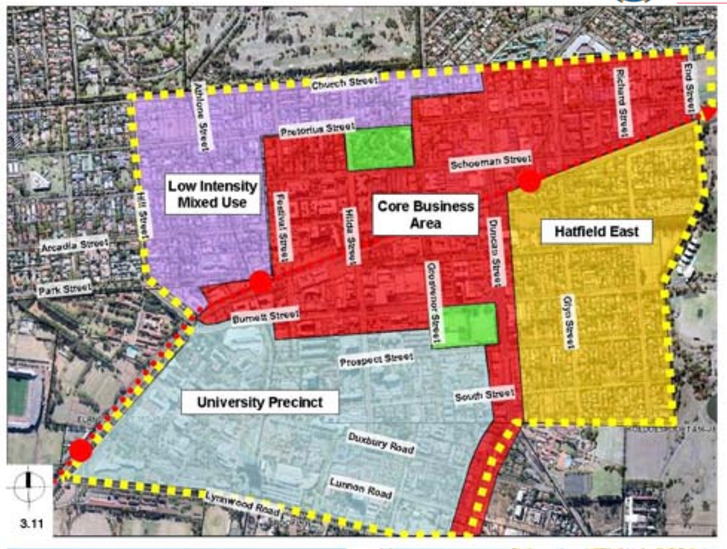
Hatfield can be roughly divided into four very diverse areas, each with its own unique density character (fig 3.11).

The Hatfield CBD (between Festival and Duncan Streets south of the railway line) has the highest density, owing to the multitude of retail, business and residential functions. Burnet Street is the spine around which this area functions, and houses the Hatfield Square Centre, the Hatfield Plaza Centre, the newly completed City Property's "The Fields" complex, and a large number of other retail amenities.

Hatfield East (or Hatfield Village) between Duncan Street and the University of Pretoria sports grounds (LC de Villiers). The area is characterised by single residential dwellings, though several medium rise flats have recently been constructed here. Many of the dwellings function as communal housing for university students. The sites along Duncan Street house a number of retail amenities.

The area west of Festival Street is home to a great number of house offices, guesthouses, dwelling houses and a sizeable amount of embassies. It is an area characterised by low densities. Along with Hatfield East, this part of Hatfield presents one of the best development opportunities.

The University of Pretoria dominates the area south of Burnet Street, along with student accommodation, hostels and flats.



3.11


3.12


3.14


3.13


3.15

3.11 The four distinctive areas of Hatfield (Hatfield Metropolitan Development Framework, August 2007)
3.12 Retail along Burnet Street
3.13 New mixed-use City Property development
3.14 Residential complex
3.15 Social activity in open green space
3.16 Demographics in Hatfield

3.16

Demographics

Students make up the majority of residents as this is the home of the University of Pretoria's main campus. Females between the ages of 19 and 25 form the predominant group since central Hatfield is home to the ladies residences. Residence facilities for male students are mainly located along Lynnwood Road and therefore outside the boundaries of Hatfield.

Over the last couple of years the number of black students has significantly increased.

Income

Statistically 48% of households in Hatfield are reported to have no annual income. This data is a direct result of the large number of full-time students residing in the area. Around 8.7% of household reported an annual income of up to R4,800 while only 0.5% reported an annual income of R2.4-million and more (City of Tshwane 2008).

Hatfield Metropolitan Core Urban Development Framework

The latest draft Urban Development Framework for Hatfield (August 2007) is a first attempt at creating a holistic and long-term strategic development framework for the area. Three previous frameworks ("Development Guidelines for Eastclyffe, Kilberry, Eastwood, Lisdogan Park, Brynterion, Blackmoor, Colbyn, Hatfield, Hillcrest and parts of Arcadia and Sunnyside: Cell 25, 1992"; "Hatfield East Spatial Development Framework, 2003" and "Development Framework for the Hatfield Station Functional Area, November 2005") failed to address the contextual needs of the area and did not aspire to make a significant contribution to the development of the public domain or a desired urban character (City of Tshwane Metropolitan Municipality 2007).

The way in which Hatfield is developing demands a renewed interest in the area for two reasons: (a) Hatfield has been identified as one of six Metropolitan Cores in terms of the Tshwane Metropolitan Spatial Development Framework (MSDF). The MSDF contains specific guidelines as to how a Metropolitan Core should develop; and (b) Hatfield is the location of one of the three Gautrain Stations that is to be constructed in Pretoria.

In addition, several other factors have an effect on the future development of Hatfield:

- The proposed Bus Rapid Transit (BRT) as part of Pretoria's preparations for the 2010 FIFA Soccer World Cup;
- The University of Pretoria which attracts around 32,000 students per year to its main campus in Hatfield;
- A National Sports Node due to the presence of Loftus Versfeld and the LC de Villiers Sports Ground; and
- An intricate network of highways, railways and arterial roads to and through Hatfield has made it one of the most accessible locations in Pretoria.

Hatfield is to be developed is a "Transit Oriented Development" (TOD). This implies the creation of compact, walkable communities centred around high quality train systems (City of Tshwane Metropolitan Municipality 2007). The following component form part of a TOD:

- Design with pedestrians as the highest priority;
- The train station as a prominent feature of the town centre;
- A regional node containing a mixture of uses in close proximity including office, residential, retail and civic uses;
- High density, high-quality development within a 10-minute walking radius surrounding the train station;
- Collector support transit systems including trolleys, streetcars, light rail and buses;
- Designed to include the easy use of bicycles, scooters and walking as daily support transportation systems; and
- Reduced and managed parking inside a 10-minute walking radius around the town centre or train station.

According to the latest draft framework, the vision stated for Hatfield is "to become a vibrant, safe, mixed-use, high quality urban area that renews investor confidence by promoting the development of an attractive, interesting flow of interlinking activities and public spaces that augment the pedestrian and public transport environment" (City of Tshwane Metropolitan Municipality 2007).

This framework thus envisions a more intensified land-use that contributes to Hatfield's civic identity and sense of place. It therefore follows that the area is thought to evolve into an accessible destination for people to dwell, meet, work, visit, walk and be entertained in (City of Tshwane Metropolitan Municipality 2007).

3.17 Hatfield Metropolitan Core (Hatfield Metropolitan Core Urban Development Framework August 2007).
3.18 Driving factors in Hatfield (Hatfield Metropolitan Core Urban Development Framework August 2007).
3.19 Photo montage of envisioned look for Hatfield (Hatfield Metropolitan Core Urban Development Framework August 2007).

3.17

3.18

3.19

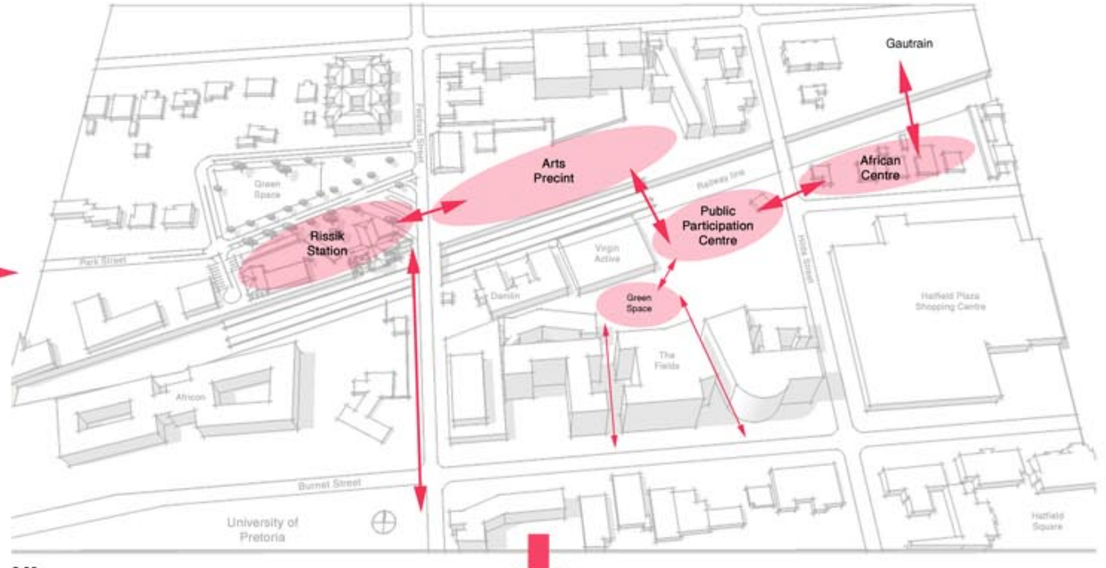
Group Framework

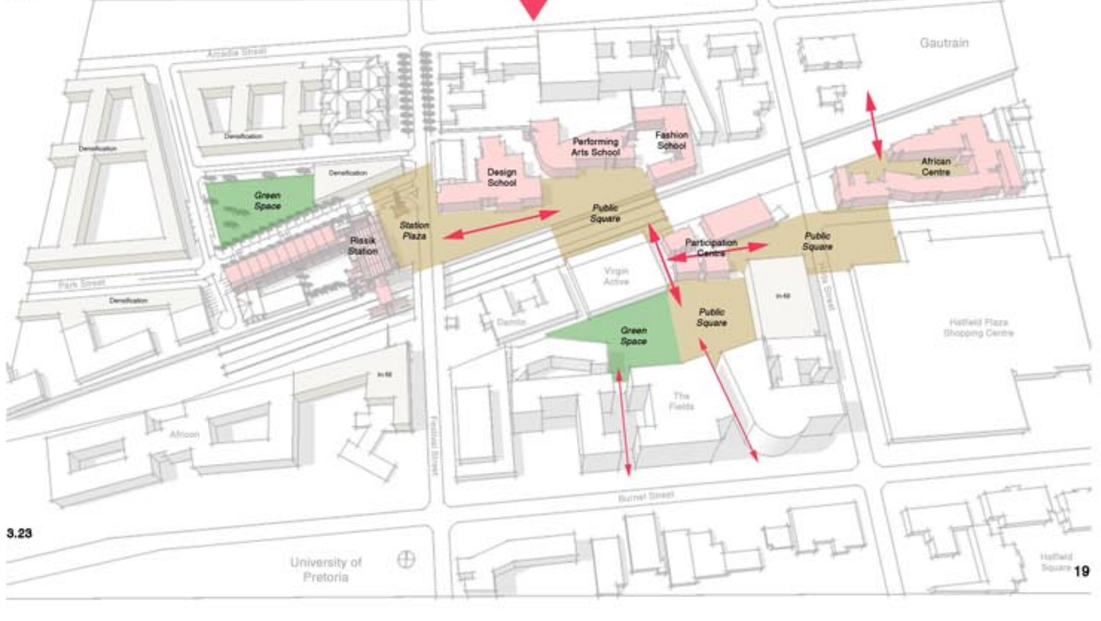
Social Transition through Activation of Regenerative Techniques (START)

The vision for Hatfield is to see it grow into a bustling, vibrant, destination node in Pretoria. With the new Gautrain station at its heart, Hatfield becomes an area of high accessibility, making it a favourable place to live. The proposal therefore initiates certain strategies to enhance public transportation routes, density residential backup and commercial activities, and provide high quality public space as the canvas for social interactions and expression.

The group framework envisions the creation of a pedestrian link from the Gautrain Station to Rissik Station, and again from the latter to the University of Pretoria. It envisions the creation of public space and mixed-use activities surrounding this spine that facilitates an urban living environment.

This spine starts at the corner of Hilda and Park Streets, south of the Gautrain site, with a proposed African Diplomatic Facilities. From here is crosses over Hilda Street to facilities aimed at promoting civil participation in the issues concerning the area. North of the railway line the spine is proposed to house the Arts Precinct with a fashion school, design school as well as a visual performance facilities. Finally the spine terminates at the Rissik Station precinct, which is proposed in this thesis (fig. 3.22 & 3.23).





3.20 Identified gateways, paths and thresholds
3.21 Proposed two precincts
3.22 Spatial framework for the Hatfield Precinct and START Framework
3.23 Proposed spaces & buildings

Chapter 4

Micro scale

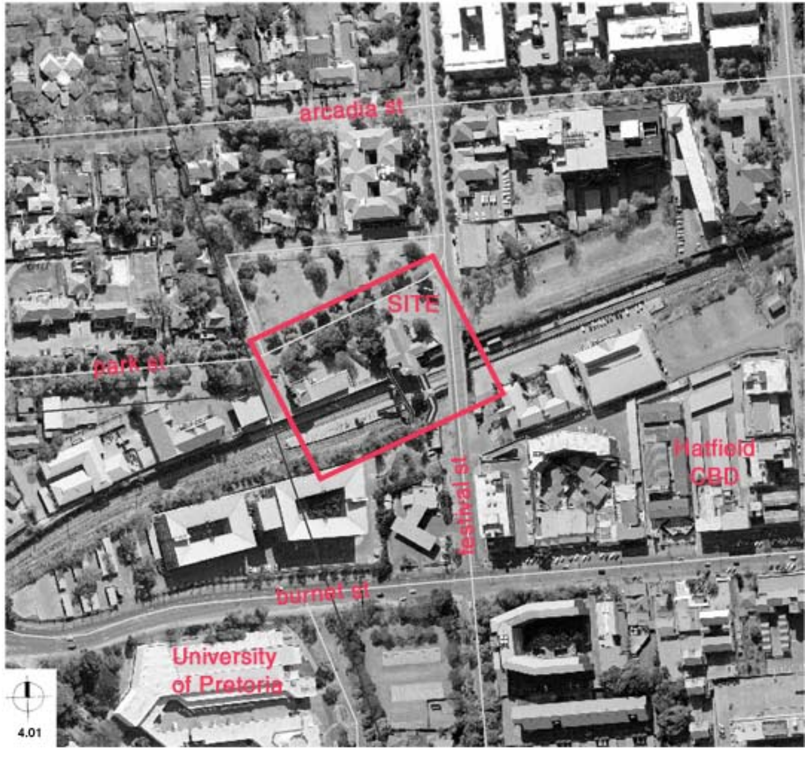
Site selection

The selected site on Portions 1, 4 and 8 of Erf 620 Hatfield is owned by the South African Rail Commuters' Corporation (SARCC). The SARCC consists of Metrorail and Intersite; the latter being responsible for managing SARCC buildings and structures (Taute 2008). Rissik Station owes its existence to the NZASM railway line constructed in 1892 as well as the development of the Hatfield suburb in 1905. It carries the name of Johan Rissik who was the surveyor-general at the time and who became the first Administrator of the Transvaal in 1910 (Laubscher 1992:4).

The station is located next to the intersection of Festival and Station Place Streets, and to the north of the railway line. It is situated among diplomatic and office parks, and a number of residential houses on the western edge of the bustling Hatfield CBD, and north from the University of Pretoria.

Festival Street bridge was constructed around 1996 to connect the areas on both sides of the railway line. The construction of this bridge has stimulated the economic development of this area in Hatfield, albeit at a much slower tempo than the bustling Hatfield CBD just across Festival Street.

Currently, the area has a calm and secluded feel to it, which is broken during peak traffic hours.



4.01

Historical description

Rissik Station already existed by 1910. The present station complex replaced the original design during 1948-1950, when the railway line between Pretoria Main Station and Richard Street was lowered and raised to eliminate level crossings (Küsel & Miller 2007:5). The construction of the new station complex entailed massive earthworks. In contrast to the other halts along this section of the line, Rissik was a proper station with ticket offices, ablutions and other facilities. It is much larger than the other halts due to its unique design with a siding, two overhead footbridges, and two elevator shafts providing access to the two platforms. Rissik served a unique purpose, since it was the station from where government documents would annually be transported between Pretoria and Parliament (Cape Town) via the so-called "White Train" (Küsel & Miller 2007:5; Bakker 2008).

Heritage value

Following his investigation of heritage and cultural sites in Hatfield, Van der Waal (1990) identified Rissik Station as an "exceptional cultural-historical resource worth preserving". More recently, a Heritage Impact Assessment (HIA) undertaken by Bombela Civils Joint Venture - Gautrain Project, had heritage experts coming to the same conclusion (De Jong 2006; Küsel & Miller 2007). These experts found Rissik Station to be the only of its kind in the country and that it has intangible heritage value that is worth conserving. The effects that the Gautrain project has on the station building are discussed in the next section.

The station design reflects the "two stream effect" of racial segregation during the apartheid era. After 1994 any such discriminatory signage was removed (Küsel & Miller 2007:9).

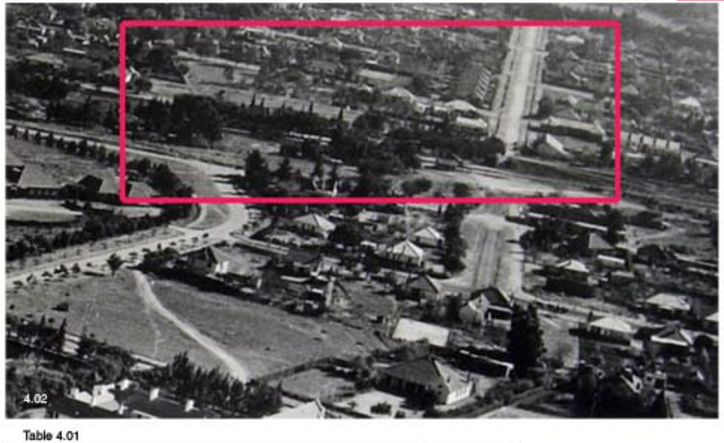

4.02

Table 4.01

No	Criteria	Rating
a	Importance in the community or pattern of history	Medium
b	Possession of uncommon, rare or endangered aspects of natural or cultural heritage	High
c	Potential to yield information to understand the natural or cultural heritage	High
d	Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects	Medium
e	Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group	High
f	Importance in demonstrating a high degree of creative or technical achievement at a particular period	Medium
g	Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons	Medium
h	Strong or special association with the life and work or a person, group or organisation of importance in history	Medium
i	History of slavery/labour	Low
j	Economic importance	High

4.02 A 1929 aerial photo with the Rissik Station area in block (Van der Waal Collection, University of Pretoria)
4.03 Graphic representation of the impact of the Gautrain project at Rissik Station. Shaded areas indicate those structures that are to be demolished for the purpose of the Gautrain

Table 4.1 Cultural significance of Rissik Station (adopted from Küsel & Miller 2007:6)

Impact of the Gautrain project

The Gautrain will run past Rissik on the southern track. Currently, this is only a single track line and has to be upgraded to include a second line for the function of the Gautrain. Construction of this second line is currently underway. However, this second line presented challenges to Bombela CJV as it has to run between the Festival Street bridge footing and the footings of the parking garage in front of Damelin College. This translates into the demolition of the two overhead footbridges, the southern elevator shaft, and the siding at Rissik Station. The impact is thus high and negative as is illustrated by fig 4.03 below.

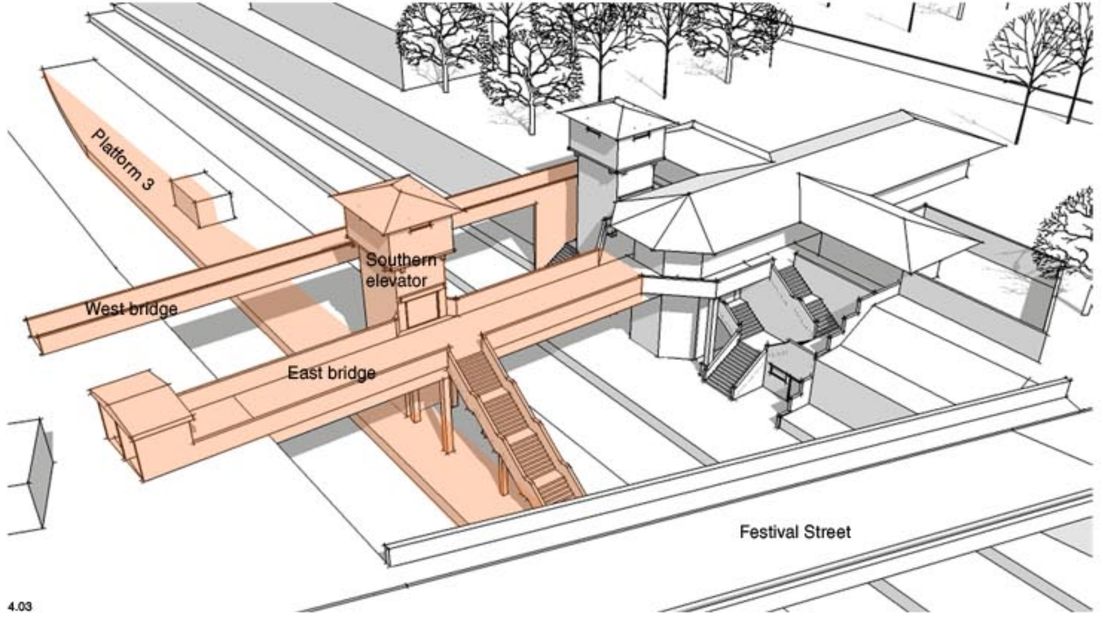
Current conservation status

The station dates back to the late 1940s and is only now approaching the 60 year mark. As of date, strictly speaking, it does not enjoy general protection under the provision of the NHRA (25 of 1999). However, since it is the only station of its kind in South Africa and has intangible heritage value, it enjoys a high conservation status and significance (Küsel & Miller 2007:5).

Legal requirements

According to Section 38 of the NHRA (25 of 1999) the following legal requirements affect the design proposal:

- Provide site interpretation at Rissik Station;
- Preserve the memory of any structural alterations through appropriate design;
- Preserve memory of the southern elevator shaft through appropriate design; and
- Preserve memory of the two footbridges through appropriate design.

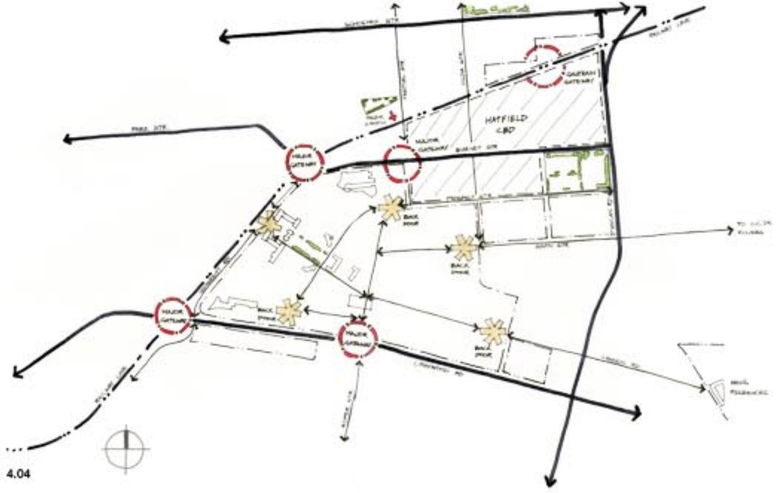


4.03

Site analysis

Accessibility

The starting point was an investigation of the existing routes, links and gateways into Hatfield. An analysis is made of the links between the selected site, Hatfield and the city of Pretoria as a whole. This gives a general indication of the accessibility of the selected site.

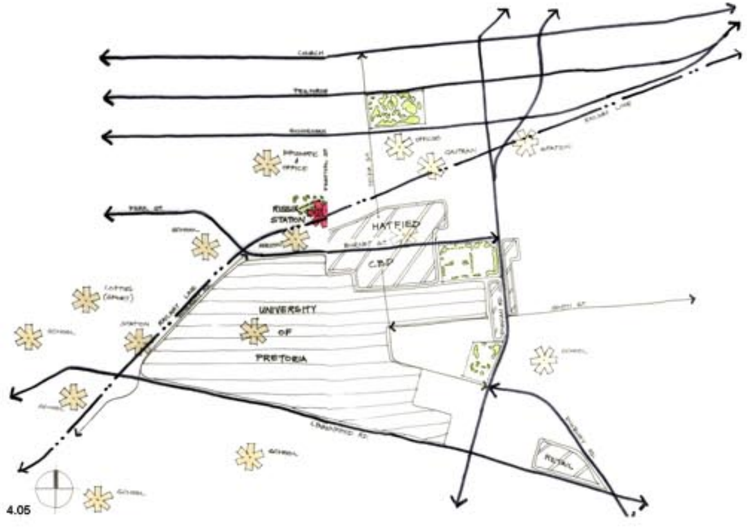


4.04

Primary uses

Primary uses are those use types which in themselves "bring people to a specific place because they are anchorages" (Jacobs 1972:173). Such use types include offices, factories, dwellings, places of entertainment, education and recreation.

Fig. 4.05 explores the relative importance and location of primary uses surrounding Rissik Station. The distribution of these usage types have a direct influence on determining the relative importance of the station as point of access to and from these. It also give and idea of the type of users most likely to utilise the proposed building.



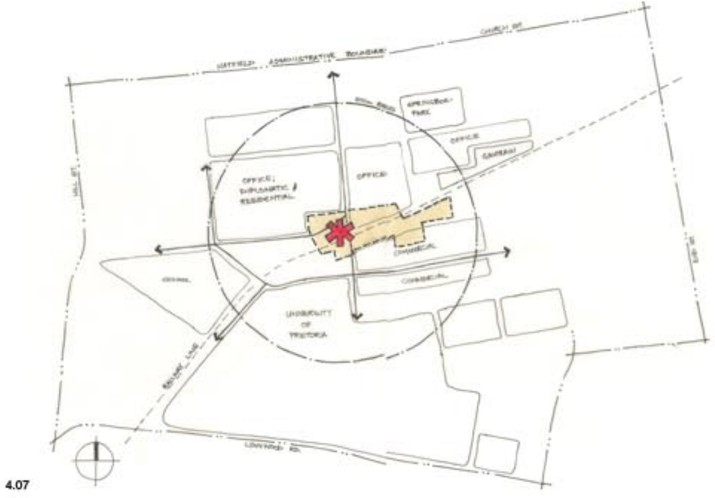
4.05

4.04 Accessibility
4.05 Primary uses
4.06 Use distribution
4.07 Node-place

4.06

Use distribution

An analysis of the distribution of various use types in relation to Rissik Station, gives an indication of diversity and development trends in the area. This analysis reveals what use types is most likely to succeed or enhance the use of the selected site, and which should therefore be provided within the scope of the proposed project.



4.07

Node-Place

Fig. 4.07 explores the concept (which will be discussed in the next chapter) of railway stations functioning as both a node and a place within their context.

This analysis investigates Rissik Station's potential to function as node-place. From this it becomes clear that the station has a potentially strong node-place function as it is located in close proximity to commercial, entertainment, residential, office and educational facilities.

It therefore becomes clear that Rissik Station offers development opportunities that could help to enhance the user's experience of his/her environment.

Movement patterns

Vehicular and pedestrian movement patterns around Rissik Station were analysed as is shown by fig. 4.08, with the majority of movement situated along Festival Street. Station Place Street shows more subdued patterns of movement, which mainly coincide with peak traffic hours.

The figure also shows the current bus and taxi stop next to Rissik Station, as well as the parking area to the north. The existance of pedestrian movement and transport allows for informal trading to occur.

Potential intervention areas

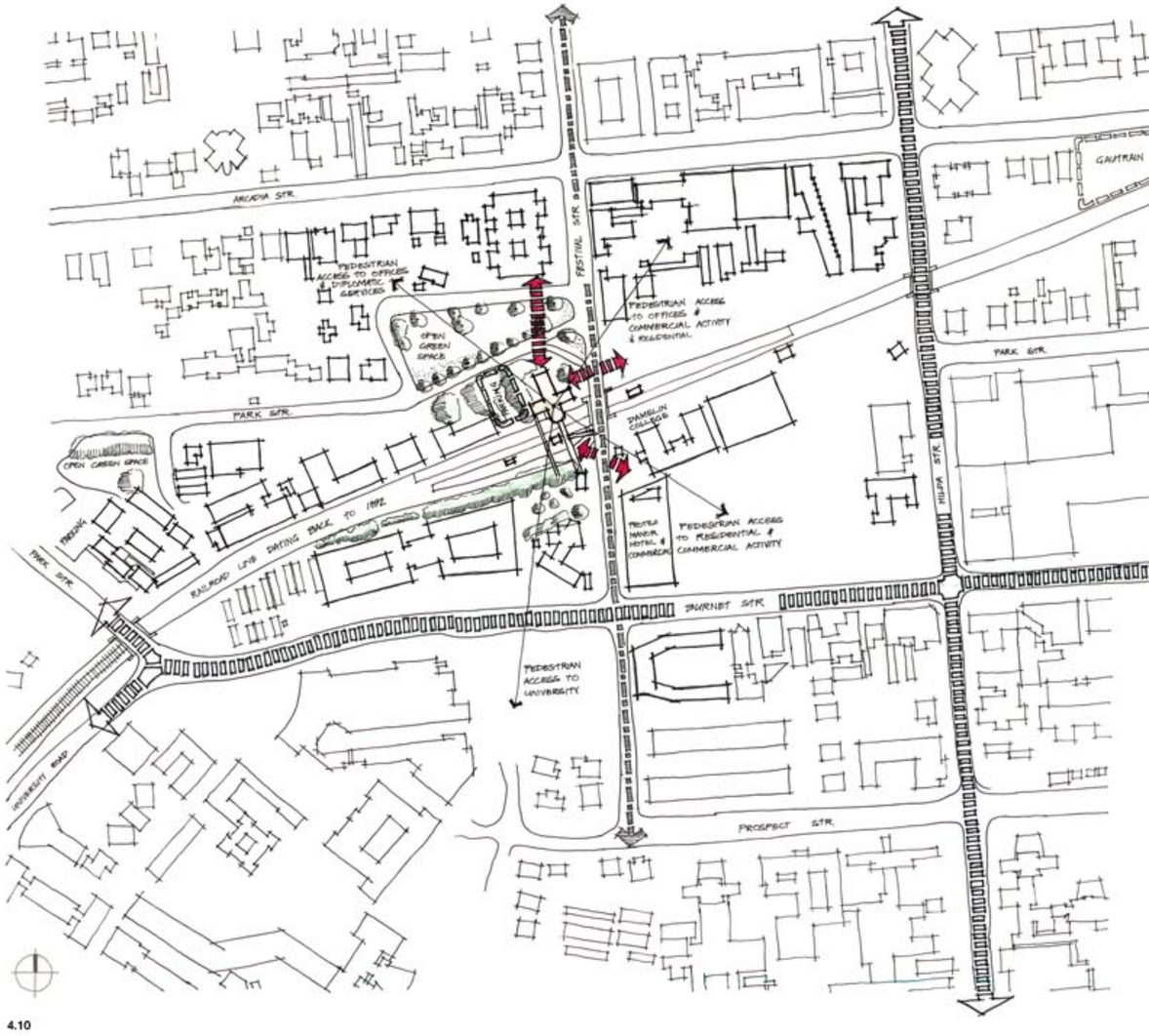
Fig. 4.09 investigates the areas suitable for potential intervention on the selected site. The area marked A was found to have the best potential and most suited.

User distribution

In fig. 4.10 the distribution of users from Rissik Station to its immediate surrounding area is analysed. From this it becomes clear that the station plays an important role in commuting people to work in a great variety of settings.

4.08

4.09



4.10

4.08 Movement patterns
4.09 Potential intervention areas at Rissik Station
4.10 Pedestrian access & user distribution

Urban analysis and proposal

In an attempt to address the proposals put forward by the Group Framework and to improve the urban experience at Rissik Station, the following urban development is proposed. The issues investigated to achieve this are discussed below.

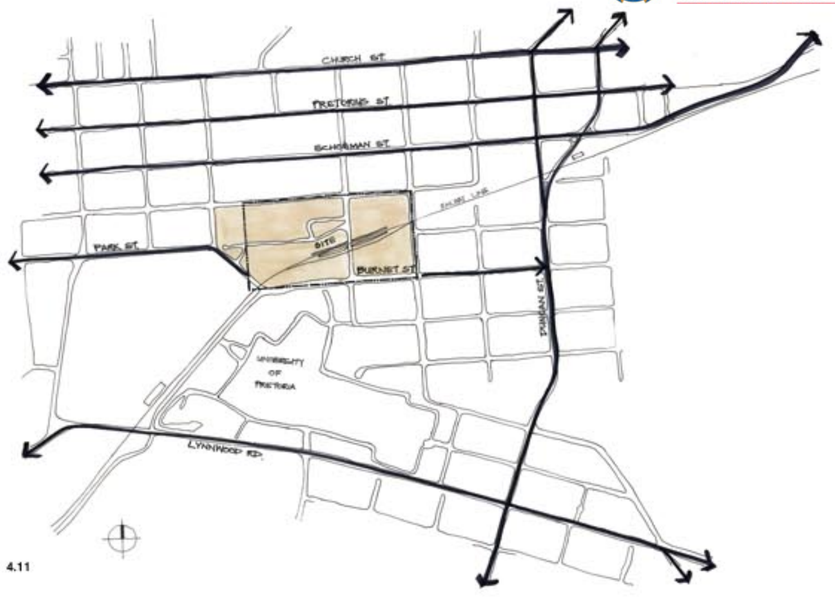
Permeability

The key question here was where people can or cannot go. Bentley (1985:10) states that only accessible places can offer choice to people. Permiability, therefore, concerns the number of alternative ways through an environment.

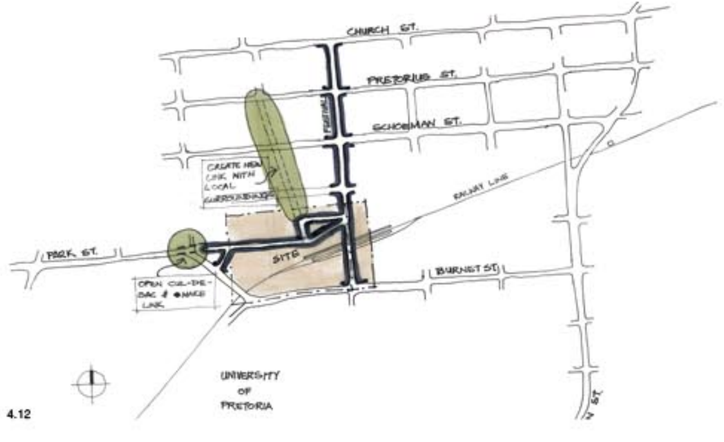
In fig. 4.11 the site's existing connections from the city of Pretoria as a whole are analysed. These are the main streets that carry through traffic, linking the various parts of Pretoria.

Next, the routes connecting the selected site at Rissik Station with the main routes are identified. From this, it is apparent that Festival Street plays an important role in connecting Rissik Station with the rest of Pretoria (fig. 4.12).

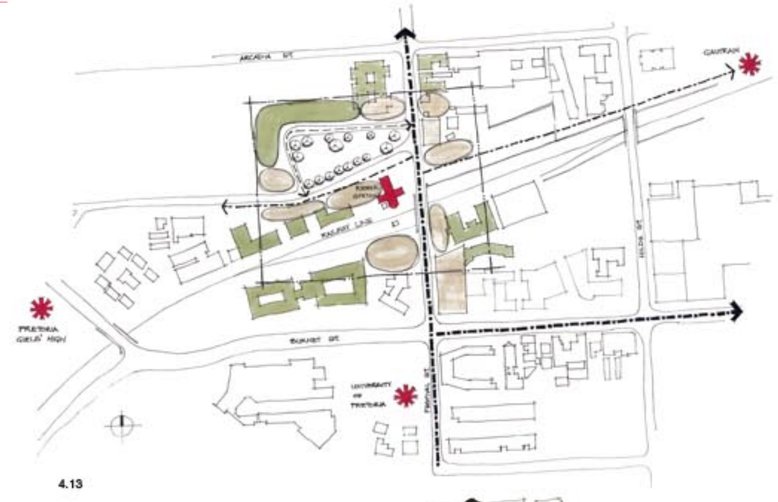
To achieve permeability at the local scale, it is proposed that a new street be made and that the cul-de-sac at Park Street be opened.



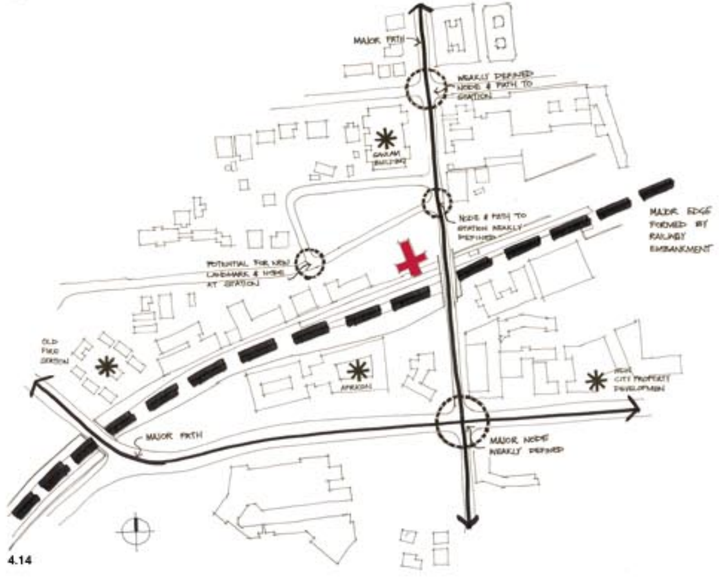
4.11



4.12



4.13



4.14

4.11 Connections to the city as a whole
4.12 Connections to the main streets and local surroundings
4.13 Concentrating pedestrian flows
4.14 Legibility analysis

Variety

According to Bentley (1985:10) the second key quality to have in order to obtain a "responsive environment" is that of variety in uses. This is important in offering the user a choice of experiences.

To achieve this, the levels of demand for different types of uses on the site were analysed. This was done by an investigation of the concentration of pedestrian flows (fig. 4.13), as this factor directly influence the economic and functional feasibility of the proposed project.

Magnets in the form of the Gautrain Station, University of Pretoria, Hatfield CBD, and the schools, stimulate a flow of pedestrian to and from them. Rissik Station's central location between these magnets offer opportunities for commercial and office functions. In addition, Rissik Station contributes to the pedestrian flow in the area by bringing people from all over Pretoria via the so-called Ring-rail system.

Legibility

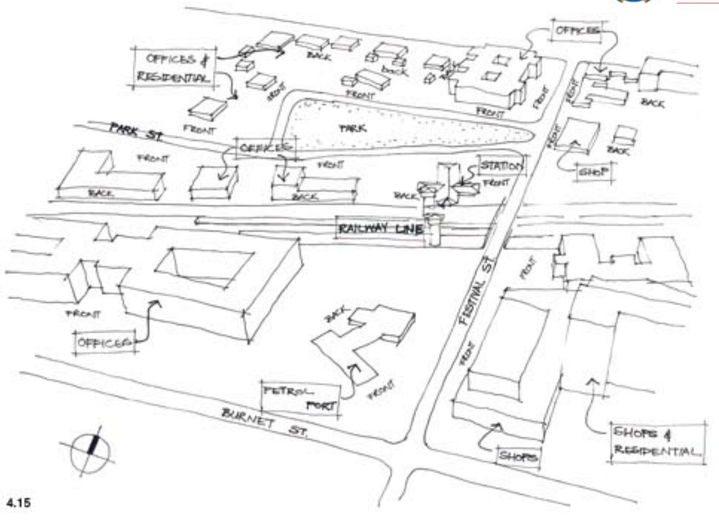
This aspect relates to how easily users can understand the area layout. In fig. 4.14 the selected site is analysed in terms of certain physical features that play a key role in how people make sense of their surroundings. Kevin Lynch (1960) suggests that these features can be grouped into five key elements namely: nodes, edges, paths, districts and landmarks.

Variety of uses

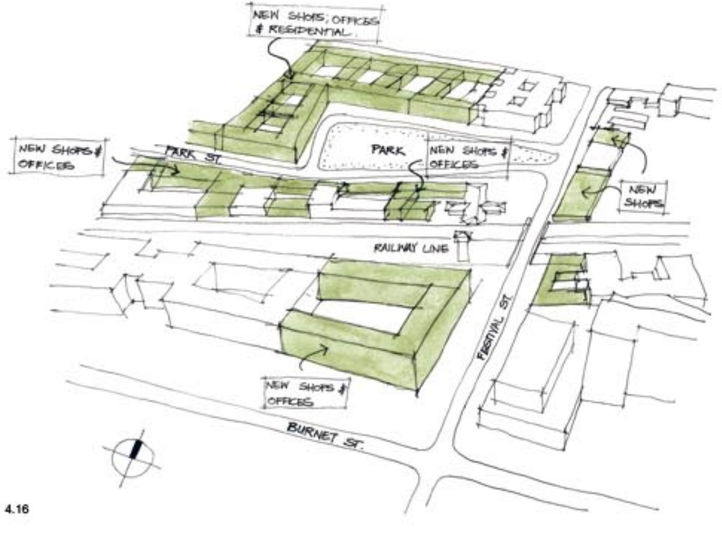
Some uses are incompatible because of functional factors like noise or traffic generation. These cannot be located close together. The first step, therefore, was to note the existing uses on and around the selected site (fig. 4.15), in order to decide on appropriate uses for the proposed building. These uses will have to function in conjunction with the station's existing use.

The second step was to locate new uses compatible with the existing (fig. 4.16). From this it becomes clear that the proposed buildings have the potential to house office and retail facilities.

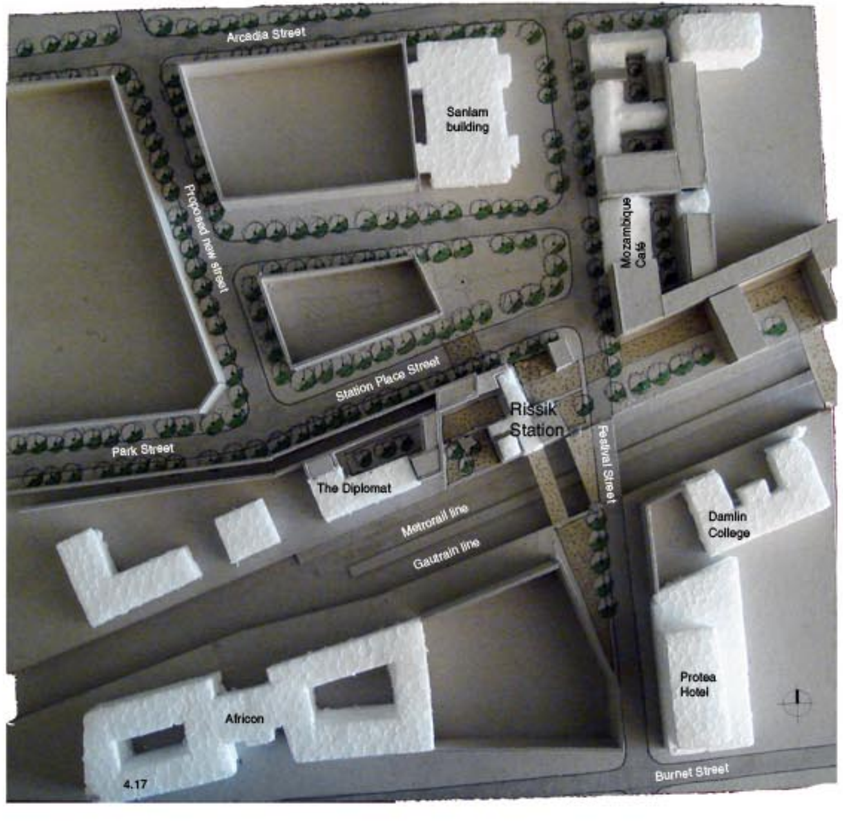
It is proposed that the same process be followed in determining new uses for the entire proposed urban development scheme.



4.15



4.16



4.17

4.18

4.19

Proposed urban development concept model

The concept model exploses the principles put forward by the proposed urban development. It attempts to give definition to the street edges, create public and private spaces, and contribute to a positive urban experience at Rissik Station. All existing structures are in white on the model.

4.15 Existing structures and uses
4.16 Proposed new structures and uses
4.17 Top view of proposed urban development concept model
4.18 View to the south
4.19 View to the north

Streetscapes

Festival Street:
Festival Street is a busy two-way street and one of the ways Hatfield connect with Church, Pretorius and Schoeman Streets. The street is less active than Burnet Street.

The sidewalks are pedestrian unfriendly and uncomfortable. With the exception of the Mozambique Café, all other buildings lining the street have inactive street frontages as they are fenced off with palisades and other forms of fencing. There are little to no trees lining the street to provide shade for any pedestrian activity.

Currently, the street is dominated by office activities. Office blocks offer no street activity. Visitors to these offices habitually park their motor vehicles on the road side.

4.20

Station Place Street:
This street is a relatively quiet two-way street. It is the extension of Park Street running through Arcadia and past Pretoria Girls' High School, but a cul-de-sac at the intersection with Hill Street cuts it off. Apart from busses transporting people to Rissik Station early on week day mornings, only sporadic vehicular traffic makes use of it. There are plans to re-open the cul-de-sac to the rest of Park Street.

The sidewalks are wide and offer a tranquil walk, but are unfriendly in the way building frontages are inactive and fenced off. House office and residential use dominate the street.

Jacaranda trees (*Jacaranda mimosifolia*) line the street. They provide an "avenue-like" quality to the street and help to extend a colonnade effect to the street.

4.21


4.22


4.23


4.24


4.25


4.26


4.27


4.28

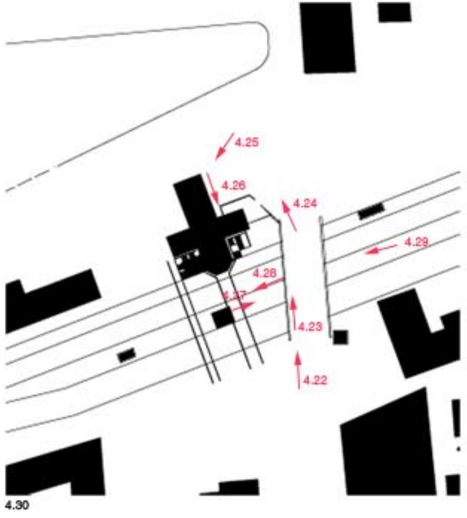

4.29

Serial vision

The eight sequencial images try to capture the sense of discovery and drama that is experienced in moving towards and through Rissik Station. The two elevator shafts continiously shift as one moves past, and create an interplay of new alignments and grouping.

There are lines of advantage which can be colonised, such as the parapet of the footbridges or staircases (fig 4.27). It allows for an immediacy of views and position.

Dramatic level changes allows for intimacy, enclosure, exhilaration, and exposure.



4.30

Assessment of existing structure

The fact that two elevator towers were constructed at Rissik Station give the impression that the facilities were designed to handle large volumes of documents to and from the platforms. This serves to emphasise the importance Rissik Station had in previous times.

An investigation by Küsel & Miller (2007:10) has found that many structural elements at the station show signs of stress. There is also noticable problems with water penetration (fig 4.35).

Many alterations have previously been made to the station building as is evident from the images.


4.31


4.32


4.33


4.34


4.35


4.36

4.22 North view of Rissik Station along Festival Street
4.23 Looking west from the Festival Street bridge
4.24 Looking west from Festival Street
4.25 North view of Rissik Station
4.26 Rissik Station entrance
4.27 Stairs to platform
4.28 Platforms, tracks and eastern overhead footbridge
4.29 Waiting commuters on platform
4.30 Plan of Rissik Station showing viewpoints

4.31 Previous alterations on the eastern facade
4.32 Previous alterations on the western facade
4.33 Previous alteration work
4.34 Southern elevator tower
4.35 Water penetration problems
4.36 Alterations at ticket office (east wing)

SWOT analysis

Strengths:
- Tree-lined walkways;
- Presence of buildings with heritage and cultural value;
- Zones of tranquillity and energy;
- Few derelict areas;
- Existing infrastructure moderate to good;
- Roads, electricity, water, sewerage and waste disposal services;
- Formal and informal economic activity;
- Mixture of office, retail, residential, and institutional activities;
- Good volumes of pedestrian movement along Festival and Park Streets;
- Presence of taxi and bus interchange facility; and
- High volumes of taxi, bus and private vehicles along Festival Street.

Weaknesses:
- Presence of derelict spaces, especially along railway line;
- Existing open green space is under-utilised and becomes unsafe at night;
- Irregular build-to lines along Festival and Park Streets;
- Restricted activities after 7pm due to closure of other activities in the area;
- Limited permeability as a direct result of the "gated buildings";
- Weakly defined public space; and
- Rissik Station doesn't function as place-node in its area, due to the fast moving traffic along Festival Street.

Opportunities:
- Convert the open and green space into well-defined public space;
- Integration of formal and informal economic activities;
- Diversity of spaces and activities;
- Increase pedestrian movement along walkways;
- Use of urban design principles to transform Rissik Station into a place-node;
- Densification in land-use of the proposed site;
- Increased economic activity due to increase of taxi, bus and train uses;
- Attractiveness and ease of public transportation; and
- Development of intermodal facilities at Rissik Station.

Threats:
- Garbage pile-up on derelict site across Festival Street from station;
- Lack of public space;
- General security is low with little police presence;
- Specific market conditions due to low-income clientele;
- Low maintenance of infrastructure and services;
- Demolition of many significant features of the station building as a result of the Gautrain project; and
- Tension between formal and informal traders.

Client body and user group

According to Metrorail (2008) an estimated average 1.7 million paying customers make use of their services on a weekly basis. Around 70% of these commuters are black people with a monthly household income of up to R2,499. The majority (63%) of commuters are between the ages of 24 and 49 years, with 64% being male. According to a 2005 estimate, Metrorail held a 14.7% share in the South African public transport industry.

Recently, the South African Government committed itself to upgrading the commuter railway infrastructure. Mr. Trevor Manuel (current Minister of Finance), announced a R1.5 billion capital investment in this transport service for the current 2008-2009 financial year. According to Pressly (2006) capital subsidies in rail transport increased from R655 million in 2004 to R2 billion in 2008-2009.

This proposed project envisions that railway transport will increase as the preferred form of public transport, given the recent sharp increase in petrol prices. It is envisioned that more age and race groups will make use of this form of public transportation. Due to the presence of the University of Pretoria, a large portion of the user group is envisioned to be consisting of students as well as young professionals.

The property is currently owned by the South African Rail Commuters Corporation (SARCC). Intersite manages the facilities as the property development and investment wing of the SARCC.


4.37

4.38


4.39

4.37 Rail commuters
4.38 Metrorail forms part of the South African Rail Commuters Corporation (SARCC)
4.39 Metrorail train, Hatfield

Conclusion

Following the investigation in this chapter it becomes clear that the existing Rissik Station building does not adequately address the future needs as is envisioned by the two presented frameworks. A balance has to be achieved between the station's heritage and the demands and needs of the urban context. This requires a transformation of the existing station facilities to address the envisioned future demands and needs.

Chapter 5

Railways

International redevelopment of railways

Internationally, there seems to be renewed energy in the redevelopment of railway stations (Bertolini & Spit 1998:5). There are a variety of factors driving this initiative, such as the promotion of sustainable transport and land use, the stimulation of local economies, technological and institutional change, the business cycle and the spatial impact of globalisation (Bertolini & Spit 1998:3). A successful redevelopment of such railway areas can prove vital for the attractiveness of the city and the region.

Of the many changes that are accompanying the roles of public and private parties involved in the transport industry, the most striking influence on railway companies is the idea captured by privatisation (Bertolini & Spit 1998:6). This has serious implications for the industry as a whole. However, despite what may be said about privatisation, it is an open-ended rather than a fixed state. In addition, the term has different meanings in different countries.

Railway stations play an important part in a larger European approach to urban planning. Internal borders have virtually come to an end with the establishment of the European Union (EU), and capital flow is increasingly becoming footloose. Accordingly, metropolitan areas will do their utmost to promote themselves. The redevelopment of certain inner-city areas is an important element in this campaign. Along with waterfronts, railway station areas can be considered one of the most important assets in this endeavour (Bertolini & Spit 1998:8).

In Japan's major metropolitan areas, interchange stations (where passengers can transfer between commuter trains and local transport) have been the focus of intense property development, mostly promoted by private railway companies (Bertolini & Spit 1998:43). Three factors contribute to this phenomenon namely: (1) the much more central role of the train in mobility patterns in Japan; (2) the large share of railway travel in passenger transport in Japan is possible only because of the much higher net population density; and (3) institutional differences of the roles between more conventional national public railway companies and the private railway conglomerates (Bertolini & Spit 1998: 44-45).


5.01


5.02

5.01 TGV station at Aix-en-Provence, France (Botes 2004)
5.02 Waterloo Station, London, England (http://www.networkrail.co.uk/waterloo.html)

South African railway industry

Several characteristics of the railway industry in South Africa have previously been mentioned (p.37). In addition, it can be stated that South Africa currently has around 2,228km of open railway tracks (Metrorail 2008). Around 279 train sets and 3,290 coaches are in service, and operated 511.9 million passenger trips during the 2005/2006 period. There are 471 operating railway stations in the country.

Gautrain Rapid Rail Link

First announced in 2000, the Gautrain Rapid Rail Link is a proposed high-tech rail network for the Gauteng Province. The rail network is aimed at connecting Pretoria with Johannesburg and then with the OR Tambo International Airport. The three major stations will be located in Pretoria, Johannesburg and at the airport, with several minor stations on route between these. Hatfield Station is one of these minor on-route stations. The station is a terminal station as this is the point where the Gaitrain line terminates in Pretoria.

The project has the objective of boosting economic growth in the province, and is expected to generate around 148,000 jobs (ProjectPro 2008). In addition, the project is aimed at encouraging public transport use and to alleviate the congestion experienced on the N1 highway between Pretoria and Johannesburg. An estimated 300,000 vehicles currently commute between these two cities (ProjectPro 2008).

Construction on the Gautrain line between Sandton and OR Tambo Airport began in 2006, and aims to be completed in time for the 2010 FIFA Soccer World Cup. The project was originally estimated to cost around 7 billion Rand (ProjectPro 2008).

Vision for the Hatfield Station:

The Hatfield Gautrain station complex is situated within Hatfield's CBD, between Hilda and Duncan Streets. The actual station building is located next to Grosvenor Street and on top of the railway line. It thus sits between the Metrorail stations of Rissik and Hartbeesspruit. Facilities provided for at the Hatfield Gautrain Station include a multi-story parking garage, drop-off stops, as well as facilities for bicycles. Public transport (in the form of busses and taxis) is also planned to stop at the station and provide users with access to various locations within easy reach of the Gautrain station.

The Gautrain station provides direct access to businesses and residential developments in the surrounding area. One major consideration with the project is "safe, efficient and pleasant pedestrian linkages" (ProjectPro 2008). In effect this helps to strengthen the already existing pedestrian flow along the railway line that occurs between Rissik and Hartbeesspruit Metro stations. Hatfield Gautrain station's access to its immediate surroundings will be further enhanced with the extension of Grosvenor Street across the railway line (ProjectPro 2008).

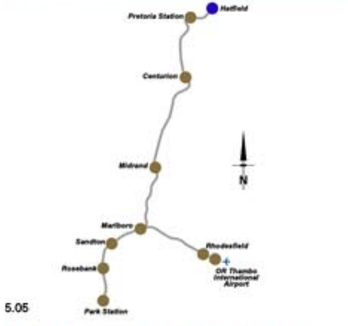
Access to the Hatfield station:

Potential Gautrain passengers are anticipated to walk, cycle, or to make use of public and private transport to arrive at, and depart from the station. In this sense, the existing Metrorail services will play an integral part as a form of public transport which links the Gautrain station with its immediate surroundings and areas as far away as Soshanguve and Mamelodi (Gautrain 2008).

Construction on the Hatfield station is currently underway.

5.03

5.04



5.05

5.03 Artist impression of the Hatfield Gautrain Station (http://www.gautrain.co.za/hatfield.html)
5.04 Board outside the Gautrain construction site in Hatfield
5.05 Gautrain route (http://www.gautrain.co.za/hatfield.html)

Railway station redevelopment

Railway station as node and place

Railway stations have the unique characteristic in that they function both as node and place. As a node it is a point of access to trains and, increasingly, to other transportation networks. At the same time it is a place, a specific section of the city with a concentration of infrastructure but also with a diversified collection of buildings and open spaces.

The unique challenge of the development of node-places is the need to deal, simultaneously, with both transport and urban development issues (Bertolini & Spit 1998:17). This entails among other things two distinct and at least partly autonomous and often conflicting sorts of policies, markets, administrative and management structures, and technical domains.

In contrast to airports and seaports, railway stations have a much more articulated place as opposed to a node dimension. This implies that for station areas the leading, "ordering" role of transport development is much less undisputed than in the other categories of node. As a result, autonomous urban development trends have a much greater weight.

Development potential

The development potential of railway stations is closely connected to their features as both nodes and places. Since the 1930s the railway network has not grown globally and has declined locally. This is especially so after the Second World War, and a direct result of the train's lower flexibility than that of the car. Another fatal situation proved to be that trains travelled at lower speeds than that of the aeroplane. Under-investment and ineffective management have added to these weaknesses, together with a generalised trend towards spatial spreading of homes and jobs. This accumulation of factors has brought rail transport into a spiral of declining market shares and profitability (Bertolini & Spit 1998:2).

More recently, however, there have been signs of a comeback. The dominant car-centred transport system may be approaching saturation, and could possibly open up windows of opportunity for alternative transport solutions (Grübler 1990; Grübler & Nackicenovic 1991). Concerns about the negative impact of other modes on congestion and the environment, together with technical and organisational innovations within the railways, may lead to the advent of "a second railway age" (Banister & Hall 1993).

The statistics for railway infrastructure in Europe at the end of the twentieth century isn't particularly encouraging (Cornet 1993; Batisse 1994). Market shares have dropped in all sectors, with the exception of high-speed and commuter services. Whereas in 1970 trains accounted for 10.4% of Europe's passenger-kilometres, by 1993 that figure was down to 6.6%.

Japan is the industrialised country where travel by train has the largest market share by far. There, about 150 railways carry 19 billion passengers each year. In comparison, passenger transport by rail has virtually disappeared from the USA, with the partial exception of the North East Corridor.

Capitalising on strengths

Frequently cited strengths of the train are that it is relative environment-friendly, it is safe, and it is reliable. Its frequently cited weaknesses are its lack of flexibility, its generally non-reactive and cumbersome organisation, and (with a few exceptions) its poor performance and image.

From an environmental point of view, the advantages of rail transport seem significant. While the visual and acoustic impacts of road and rail transport are roughly comparable, rail scores much better on land uptake, chemical pollution, energy consumption, and safety. Congestion is another area of externalities where a shift towards the train would be welcome. The costs of road congestion are high and growing.

Implications for redevelopment

If a series of conditions can be met, including the internalisation of the social and environmental costs of travel, adequate investment, and appropriate land-use planning, then railway traffic might be expected to grow, even if moderately, and at least hold on to its share of the market.

The essential condition for growth of railway transport is integration with other forms of transport. From a qualitative point of view, a railway station's essential feature thus appears to be its function as an intermodal interchange, rather than as a "place where trains arrive and depart". The railway station is to be seen, as Amar (1996) suggests, as an urban exchange complex. The railway station has to offer full connectivity in both infrastructure and services. Integration involves many different actors in a unified terminal management.

Outside Europe, the integration of railway and other operations in Japan could provide food for thought. In most cases the required transformation would be a matter of (re)ordering the existing elements, and of dealing with continuous change, rather than of creating something from scratch. In the process, a railway station turns into a place to be, not just a place to pass through.

Conclusion

An integrated framework of analysis would have to comprise both node and place variables, but also process and context factors. In this regard, the urban context plays a dominant role.

Chapter 6

Design philosophy & approach

Design philosophy: space and the city

Cities, on their own and in association to other cities, are spatial phenomena, but they are more than their mere spatial reality. Increasingly the spaces through which we live our lives, and through which the world (and cities) come to be organised are understood as being social products (Lefebvre 1991) formed out of the relations which exist between people, agencies, and institutions. One way of understanding cities, then, might be as particular patterns of such connections set within wider patterns of the relations with other cities and with the rest of the world (Massey 1999:159).

Three elements outline what can be meant by thinking the city spatially. These are discussed below.

The city as specifically spatial

Intensity is one of the outstanding features that characterise cities. This characteristic can be witnessed in the way in which cities congregate and merge people and activities. Mumford (1937:185) coined the term "geographical plexus" to try to capture this.

For Mumford, one of the best definitions of the city had been given by John Stow. For both John Stow and Lewis Mumford:

"Men are congregated into cities and commonwealths for honesty and dignity's sake, these shortly be the commodities that do come by cities, communities and corporations. First, men by this nearness of conversation are withdrawn from barbarous fixity and force, to certain mildness of manners, and to humanity and justice…Good behaviour is yet called urbanitas because it is rather found in cities than elsewhere" (John Stow; cited by Mumford 1937:184).

Stow's definition condors up images of privileged merchants and aristocratic Englishmen, but Mumford is especially interested in what Stow has to say about the character of social relations within the city. In particular, Mumford (following Stow) is suggesting that forms of social interaction occur in cities that are not found anywhere else.

The city can thus be likened to the human body that lives on its different functions such as manufacturing and assembling, warehousing and storage, sheltering and domestic bliss, and personality clashes and political intrigue. These functions have both particular physical locations, and also sets of networks which sustain them.

However, what Mumford is suggesting is characteristic of urban life goes even further. A mere simplistic view of the city does not do justice to its vibrancy and creativity. In addition to being a personal drama, the city is also a social drama. The sheer quantity of possible social interactions means that the city becomes a stage for all kinds of stories. All the more, the city exaggerates and focuses these interactions (Pile 1999:17).

6.01 Displaying particular systems of symbols in public space develops a visible framework to establish patterns of similarity and difference and a distictive identity for an urban area (Times Square, New York City)

What both Pile (1999) and Mumford (1937) stresses is the sheer quantity of possible social interactions in the city, and that the city has the distinctive nature of bringing people together.

To capture even more of this notion of intensity, one might add the simple density of built space, and the city as captor and transformer of nature. Massey (1999:159) argues that, what is most important is that this intensity is something which "emerges as an effect of all these constellations and intersections".

Allen (1999:95) states that this intensity can be felt in what is termed "this expressive side to city life". Jane Jacobs (1972) in *The Death and Life of Great American Cities* describes this in observing street life in New York in the 1950s. She likens the movement and flow to an "intricate ballet" in which individual dancers with their own choreographed parts move around and across one another to compose a daily dance of the street. City intensity is therefore the result of the gathering of large numbers of people and from this emerges the social interactions within the city.

6.02

Therefore, the city can at first be conceptualised as a specific spatial phenomenon, as a region of particularly dense networks of interaction, from which emerge intense effects, set within areas where interactions are sparser and spaced out.

Henri Lefebvre (1996:230) draws attention to the fact that the experience of the city is more than our mere perception. It is also, as Jane Jacobs (1972) relates, about what distracts or assures us through its familiar and not so familiar sounds and smells. According to Allen (1999:95) the distinctive feel and presence of the city is the result of this close proximity of many others in all manners of arrangements and relationships between them. The discovery of many worlds in the form of multiple narratives and rhythms is enabled by this intensity of the city. Shift of rhythms, and of those who live them, bears witness to the coexistence of the formal and informal worlds. There are different social stories, with distinct rhythms, and which create and weave together their own spaces. Such are the daily rhythms and movements of cities which routinely code and divide city space (Allen 1999:56-62).

The city as a kind of open intensity enables us to imagine the complexity of the many worlds inside it (Massey 1999:161). These connections enable cities to both hold together and maintain their individualities. Furthermore, it emphasises movement, fluidity and mixing, which in turn, emphasise the dynamic order of cities.

Spatial configuration as generative

That cities have a particular spatial form only introduces the discussion. The city's spatiality produces effects. Lewis Mumford (1937) argues that the city is not just a place where lots of things happen to be. By assembling people, cities both allows new relations to be formed, and also requires of people to interact in new ways.

As one of the earliest modern thinkers George Simmel (1908) was one of the first to consider these effects. He argued that the effect of concentrated spatial closeness was a necessary social distancing. Others followed him in this. Louis Wirth (1938), for example, explores how people's behaviour might be affected by the intense spatial proximities of the city. He argues that the close physical contact of numerous individuals necessarily produces a shift. People tend to acquire and develop sensitivity to a world of artefacts and become progressively further removed from the world of nature. This kind of social distancing is also described by Sennett (1994:18) in his account of single, enclosed drivers cruising along the freeways of urban America.

From these accounts it becomes clear, either implicitly or explicitly, that spatial configurations produce effects. That is, the way in which society (and more specifically, the city) is organised spatially can have an impact on how that society/city works. The city itself is not a sole actor, and yet, cities in the specific form of "city-being" can indeed have effects. It is in this sense that Simmel, Wirth and Sennett seek to capture it.

Massey argues that the impact of the city can be detected at levels beyond that of the social interaction of individuals. These are effects of spatial interconnections and of what Massey (1999:110) calls "geographical juxtapositions". These new "geographical juxtapositions" produce new histories. So, too, do interconnections over long distances. The networks of communication, power and influence which connect cities together have their effects on each of them. Interconnections of this sort somewhat contributes to that which make cities the cosmopolitan places they so often are.

Detachment can have equally major repercussions. Castells (1996) writes of the inequalities which can be entailed in disconnection, and of the potential social consequences. Detached cities may

6.03

struggle to find a new role. Mumford (1937: 184) laments on the potential outcomes of the low-density spreading-out of the city.

It thus becomes clear that cities may be understood spatially. The particular form of the spatial configurations which constitute them will affect what happens next.

The openness of the outcome

It is a mistake to think that a particular spatial form necessarily gives rise to a particular social effect. It is not a simple cause-and-effect relation. In contrast to Simmel's (1908) statement on the impact of city life, Jane Jacobs (1972) describes a much more active mixing and interaction. It could, perhaps, mean that both these things co-exist at the same time. Wirth (1938) argues that cities present the opportunity for people to form new kinds of social interaction and form bonds that do not rely on kinship ties, neighbourliness, communal sentiments, tradition, and "folk" attitudes (fig 6.04).

Richard Sinnett's (1994) account of the disconnected drivers of the motor-centred urban community was a lament, but also something he believed could be changed. Both Pile (1999) and Massey (1999) argue that spatial proximity is not enough to guarantee any particular outcome. For proximity to be turned into a city, something else needs to happen.

The article entitled *A decent life* by Ismail Serageldin (1997:25) presents a clear case of the openness of such outcomes. The spatial juxtapositions which are "Third World" cities do not have inevitable outcomes. What can be made of them will depend on resources, on what happens to levels of inequality, and on political commitment.

Conclusion

The relation between space and the city is an open one, as it depends on human action. Cities can embody in general terms particular spatial forms, but what is made of them, and what can be made of them, and indeed how they can be altered, is up to human actions, ingenuity, and human political will.

6.02 Trafalgar Square, London, England (http://en.wikipedia.org/wiki/Trafalgar_Square)
6.03 Effect of spatial configuration as seen in New York City (http://www.wikipedia.org/wiki/New York City)
6.04 People form bonds that do not rely on kinship ties, neighbourliness, tradition or "folk" attitudes

6.04

Design approach: adaptive reuse

According to Feilden (1994:1) an historic building is "one that gives us a sense of wonder and makes us want to know more about the people and culture that produced it". A historical building is a symbol of our cultural identity and continuity and as such it has an emotional impact on us. It is a document of our history and a source of information. According to Strike (1994:18) historical buildings are "evidence which can be experienced by each generation". It provides answers to the "what, why and how" questions of those who come after us.

Causes of decay

Several sources are responsible for the decay of historical buildings and can be grouped in one of two overarching categories, namely natural disasters (earthquakes, volcanic eruptions, hurricanes, floods, landslides, fires caused by lightning) or human factors (generally the by-products of industrial productivity) (Feilden 1994:2).

According to Cunnington (1988:113) one of the human factors causing historic building to become redundant is that the original use for which it was constructed has ceased to exist. A second reason is that it was superseded by new processes for which the old building is unsuited. Furthermore, the use could have expanded to such an extent that the old building is no longer large enough to house it. Finally, decay could be the result of a general economic decline in the area, as is often the case with railroad services due to a decline in the transport system.

It is this decline in passenger railroad services on all but a few rail corridors that requires creative new uses for the stations. Adaptive reuse of railroad stations can be economically feasible and also assists in taking major action to preserve and rehabilitate historic or architecturally significant structures and cultural resources (Webber 1978b:1). Many railway stations have in the past been converted in this way while still retaining their original function, though at times in a reduced manner. Other times adaptive reuse results in an increase in the passenger service of railroad systems (Webber 1978a:22).

What is conservation?

Feilden (1994:3) defines conservation as "the action taken to prevent decay. It embraces all acts that prolong the life of our cultural and natural heritage, the object being to present to those who use and look at historical buildings with wonder the artistic and human messages that such buildings possess". When it comes to the conservation of historical buildings, the slogan of "less is more" rings true.

On the other hand, Austin (1988:4) prefers to speak of "preservation" rather than "conservation". According to Austin (1988:4) preservation is "the act of retaining all or any part of the structure, even if it is moved from its original location". Restoration on the other hand is "any treatment given to a building after the decision has been made to preserve it". Such acts of restoration include rehabilitation, remodelling, repair, adaptive reuse and so forth.

Rehabilitation of historic buildings: adaptive reuse

Often it is necessary to find an appropriate use in order to prevent a building's decay or destruction (Cunnington 1988:17). Problems time and again arise with the disappearance of a building's original use. Providing a new use could ensure the survival of such a building.

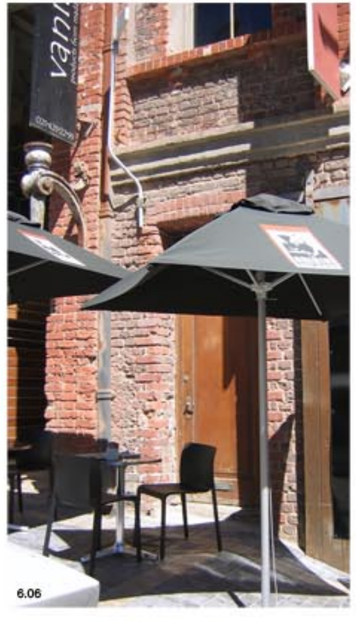
Austin (1988:49) describes adaptive reuse as the principles through which "structurally sound older buildings are developed for economically viable new uses". This simply means that buildings are "modified to some degree to meet contemporary demand" (Reynolds 1982:45).

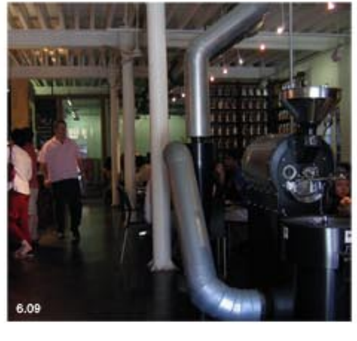
Adaptive reuse of historic buildings was a common pattern until the start of the Industrial Revolution by the mid-19th century, and spread all over the world during the 20th century. Only since then has it become more usual to demolish the old and build new buildings (Cantacuzino 1989:8).

There are social, cultural and economic advantages to adaptive reuse (Feilden 1994:259):

- Social in that people and towns keep their identity;
- Cultural in that artistic, architectural, archaeological and documentary values can be preserved both for their intrinsic value and their contribution to the identity of the town; and
- Economic in that existing capital is used, energy is saved, demolition costs are avoided and the existing infrastructure of roads and services is utilized.

In addition, it causes far less human upheaval, political friction and physical delay, so when the total budget is considered, in most cases, money is saved.


6.06


6.09

6.05 Adaptive reuse in Cape Town, Origin Coffee
6.06 Waiting area
6.07 Surface detail
6.08 Street facade
6.09 Origin Coffee interior
6.10 Contrast between old and new

Conclusion

The need to transform and re-generate Rissik Station has previously been identified in chapter 4. An approach of adaptive reuse provides some answer as to how the station can be re-generated while remaining sensitive to its history. From chapter 4 it is also clear that not all of the existing structures can be preserved as is advocated by proponents like Feilden and Austin. There has to be a balance between preserving the existing station and addressing future development needs. For this reason, selected structural elements will be retained, while others will be demolished in an attempt to address such needs. This will become clearer in chapters eight and nine.

Precedent studies

FUNCTIONAL PRECEDENTS

TGV station at Aix-en-Provence

Aix-en-Provence, France (2001)
Jean-Marie Duthilleul & Etienne Tricaud (AREP Architects)

Of the latest three TGV stations in France, the southernmost one is at Aix-en-Provence. It lies to the south-west of the town, halfway between Aix and Marseilles, and within easy reach of Marseilles airport.

The wave-shaped roof gradually rises from the railway tracks and concourse below, giving the impression that the station rises from its surrounding landscape. It is supported on a double row of timber columns that follow the wave-form. This gives the impression that the roof floats, as if separate, from the tracks and concourse below it, and creates an impression of it being light and spacious (Slessor 2003:50).

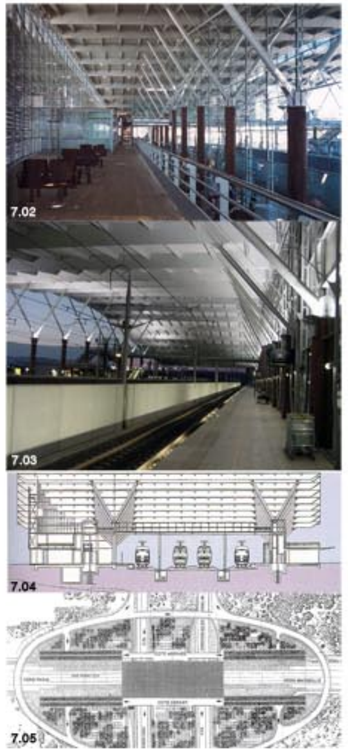
The station is entered from the western façade where the building bulges slightly as the glass wall curves outward. An external layer of timber louvers protects the glass, and helps to lessen any heat build-up and glare. It has the additional effect of giving the station a rustic feel. The eastern wall is clad in clear glass, which allows for views to Mont Sainte-Victoire in the distance. The station is surrounded by car parking that is connected by an oval ring-road that crosses the tracks to the north and south of the station. Busses and cars run in tunnels beneath the station building (Slessor 2003: 50).

The curved roof is clad in aluminium panels and supported on a series of v-shaped tubular steel members that tie up into metal plates on the top of the timber columns. There are small square roof lights on the surface of the roof which helps to illuminate the interior below. The underside of the roof is painted white. It can thus be said that Aix Station is responsive to its site, climate and programme (Slessor 2003:50).

Influence on design:

- Steel structure floating roof supported in a series of columns to cover the consourse;
- Use of glazing and the screening thereof.

7.01 Main approach to the station building (Botes 2004)
7.02 Interior view of building structure (Botes 2004)
7.03 View of the platforms (Botes 2004)
7.04 Section drawing (Slessor 2003:50)
7.05 Site plan (Slessor 2003:50)



TGV station at Valence

Valence, France (2001)
Jean-Marie Duthilleul & Etienne Tricaud (AREP Architects)

Gare de Valence TGV is located in eastern Valence, about ten kilometres from the town centre. The station opened its doors in 2001 and plays a key role in a regional road and rail transport hub. The regional TER rail line intersects with the station at its north end, while slip roads to the south connect it with a motorway link to Valence. Immediate surroundings to the station are split between agriculture and industry. It is anticipated that the improved transport link created by this station will help boost the local economy (Slessor 2003:46).

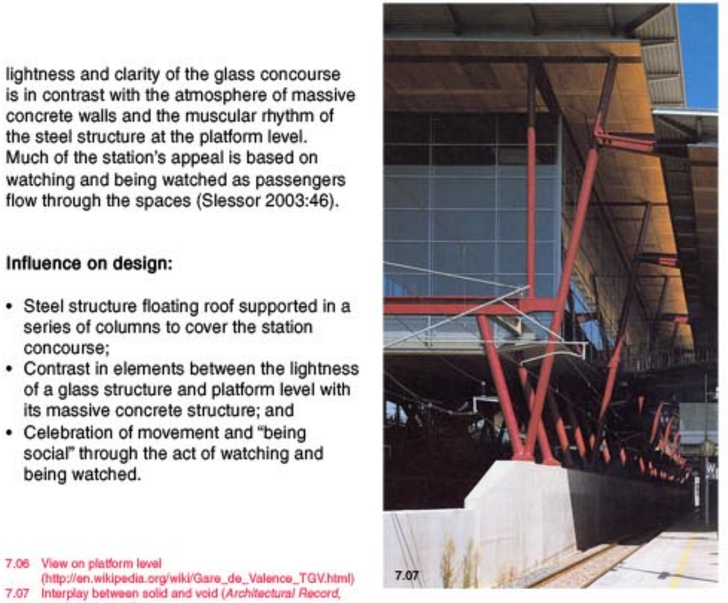
The station building design draws on traditional railway precedents of metal and glass train sheds. Conceptualised as a long glazed volume, the new structure seems to float above the tracks and platforms which are dug 7m below natural ground level. Station facilities such as a ticket office, information outlets, shops and services are housed on the upper level, while the lower level is dominated by the platforms (Slessor 2003:46). A tubular steel structure, resting on concrete walls at the platform level, supports the glass box design. The station facilities offer views out over the surrounding landscape to the hills at Vercours. As with the TGV at Aix-en-Provence, a major design concept for Valence TGV is the connection with the landscape. This helps ensure that the new station building conveys some sense of place, rather than being a closed cut-off domain (Slessor 2003:46).

The platforms, dug 7m below natural ground level, required special attention to generate a sense of arrival and anticipation. A series of bridges link the station building with the car park that surrounds it. These bridges cut at various angles into the glass box of the building. On both sides, the bridges are protected by flat roofed canopies that extend the length of the station like side aisles. From the concourse, glass lifts and timber stairs wind down to the platform level. The lightness and clarity of the glass concourse is in contrast with the atmosphere of massive concrete walls and the muscular rhythm of the steel structure at the platform level. Much of the station's appeal is based on watching and being watched as passengers flow through the spaces (Slessor 2003:46).

Influence on design:

- Steel structure floating roof supported in a series of columns to cover the station concourse;
- Contrast in elements between the lightness of a glass structure and platform level with its massive concrete structure; and
- Celebration of movement and "being social" through the act of watching and being watched.

7.06 View on platform level (http://en.wikipedia.org/wiki/Gare_de_Valence_TGV.html)
7.07 Interplay between solid and void (*Architectural Record, 213(1274):46-47*)
7.08 Cross section (*Architectural Record, 213(1274):46-47*)
7.09 Internal view with circulation (*Architectural Record, 213(1274):46-47*)
7.10 Long section (*Architectural Record, 213(1274):46-47*)

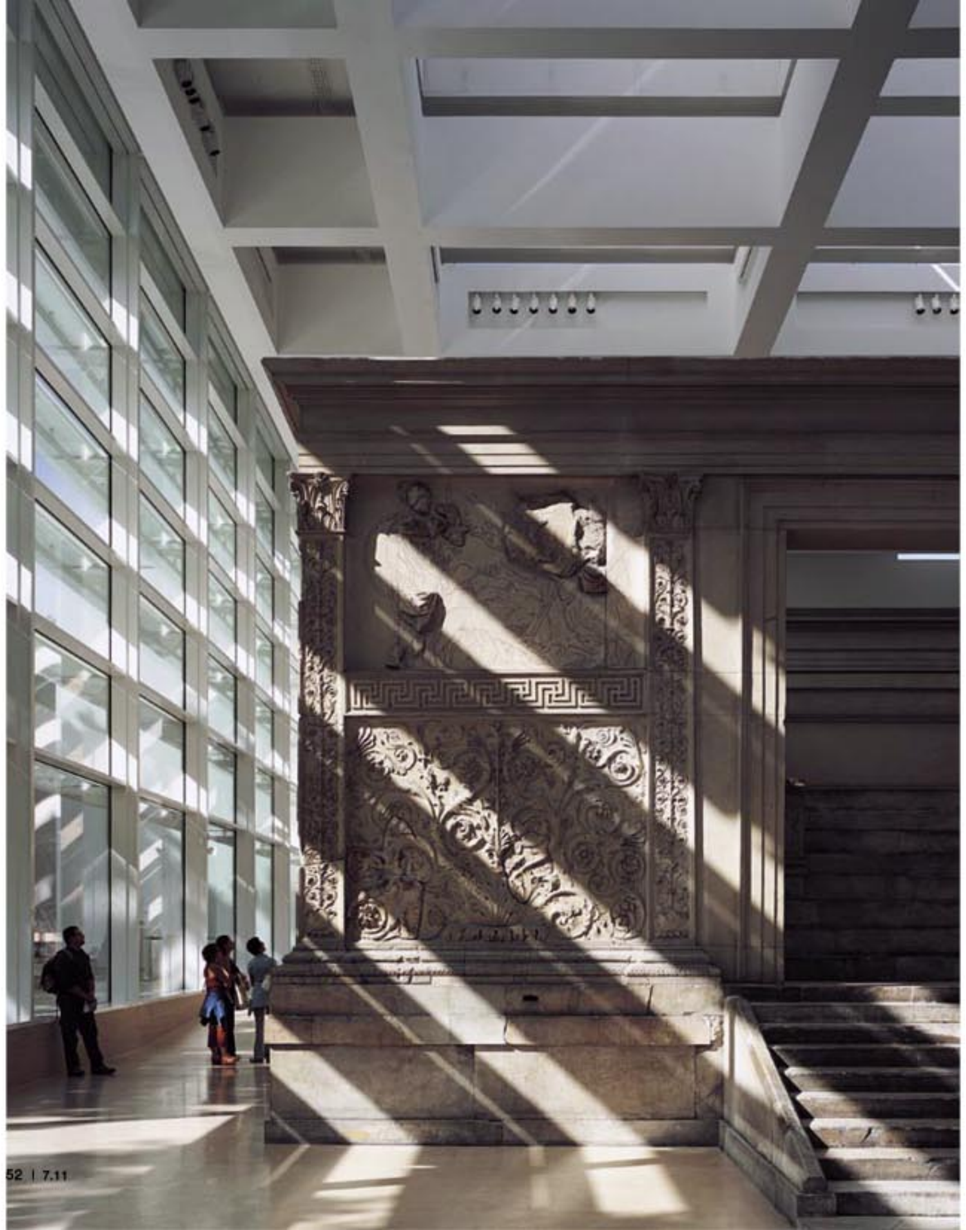


7.07

7.09

7.08

7.10



THEORETICAL PRECEDENTS

Ara Pacis Museum

Rome, Italy (2006)
Richard Meier & Partners Architects

The Ara Pacis Museum, designed by Richard Meier, is located next to the Piazza del Popolo in Rome, Italy. The Piazza del Popolo is a national heritage site in Italy. It houses some important historical Roman artefacts such as the tomb of Augustus Caesar (Roman Emperor at the time of Christ's birth) and the Altar of Peace built by Augustus Caesar between 13 and 9 BC to commemorate his military victories in Gaul (France) and Spain (Davey 2006:56). The altar stone on which sacrificial animals were slay is sheltered by a stone enclosure with two friezes decorating the exterior walls. Of the two friezes, the top one is perhaps most significant as it is a portrayal of Augustus, his family and aristocratic friends. Meier's design is the first major project to be undertaken inside the Aurelian walls for more than 60 years (Davey 2006:56).

Two controversial issues have been associated with the project. The first relates to its scale, and the second is concerned with the fact that the city major decided to make use of Meier rather than opening the scheme for a design competition. However controversial Meier's museum might be the fact remains that the site required immediate intervention as one of the best preserved site of Rome's imperial era (Davey 2006:56).

During the time of Mussolini (Italian Fascist leader at the time of the Second World War) in 1938, Vittorio Ballio Morpurgo was commissioned to build a structure aimed at keeping the elements away from the altar. By the 1980's Morpurgo's structure required serious maintenance, as the altar was increasingly exposed to the elements, pollution and vibrations caused by increasing vehicular traffic. A new shelter for the altar was thus needed (Davey 2006:56).

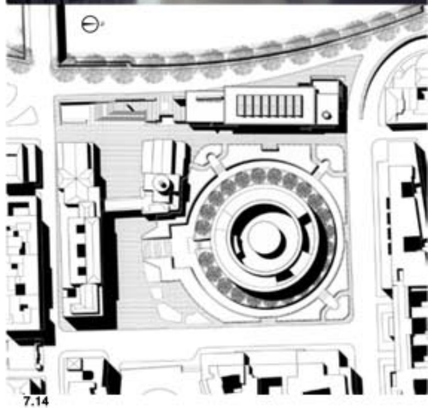
Meier's Ara Pacis Museum had to fit into a long thin site with the Tiber River to the one side and the Piazza Augusto Imperatore on the other. Adding to this the museum had to work around the altar which could not be moved, provide an appropriate setting for the altar, define the fourth side of the square, and expose the altar to external views (Davey 2006:58). The new museum is therefore designed to be transparent and permeable as is required by its context. In addition to the exhibition areas, there is a small auditorium, museum shop, offices and storage facilities (Richard Meier & Partners Architects 2008).

Influence on design:

- New structure envelopes the old structure;
- Use of a reinforced concrete structure;
- Use of glazed facades to allow for views into the interior;
- Employ the use of natural light; and
- Use of glass solar shading system

7.12

7.13



7.14

7.11 Interior view of the Ara Pacis Museum with the Altar of Peace by Augustus Caesar in the foreground (*Architectural Review, 220(1316):56-61*).
7.12 Main entrance (*Architectural Review, 220(1316):56-61*).
7.13 Entrance lobby (*Architectural Review, 220(1316):56-61*).
7.14 Site plan (*Architectural Review, 220(1316):56-61*).

Mill City Museum

Minneapolis, USA (2003)
Meyer, Scherer & Rockcastle Architects

The original Mill City structure was designed by an Austrian engineer named William de a Barre and constructed in 1878. At its time, it was the world's largest and most technologically advanced mill (Minnesota Historical Society 2005). At peak production, it ground enough flour for 12 million loaves of bread per day. In 1928 the Mill was rebuilt after an explosion devastated the facilities. Following the decline of the milling industry after World War I, the Mill finally closed in 1965 (LeFevre 2004:122). In 1971 the Mill was added to America's National Register of Historic Places. Twenty years later, in 1991, a fire destroyed the whole of its interior after it fell in disuse (Minnesota Historical Society 2005).

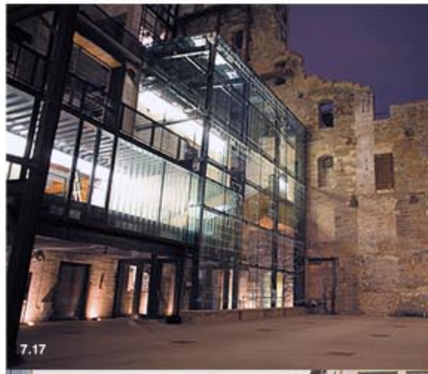
In 2003 the old mill was converted into a multipurpose building housing the Mill City Museum and office space (LeFevre 2004: 122). The museum, an independent space of glass and steel, was carefully integrated into the remains of the complex. According to the Minnesota Historical Society (2005) the project includes the conversion of the silos and the transformation of the factory's old offices into shops, small offices and lofts. Through their choice of building materials and by retaining most of the building's historic fabric, the architects were able to create a building that, in itself, acts as a multilayered exhibition about the city's history (LeFevre 2004:125). The challenge of the design was to "draw out the meaning and purpose of the building and orchestrate that, not create it". At some points, new elements were installed in positions where the original building elements once stood, so as to celebrate their historic memory.

The interior is designed to be a series of vignettes, and was derived from an initial survey of the abandoned building. Some historic building facilities changed in use, such as the old east engine room that once housed boilers, now houses classrooms. The design philosophy is therefore "to do everything the way the millers did – work with simple material that is readily available…" (LeFevre 2004:125).

Influence on the design:

- The use of a glass and steel structure that is independent from the original structure of the existing building;
- The creation of a multi-functional building that responds to the context and its systems;
- The use of a glass and steel structure inserted between the old and the new building creates a new awareness of the old structure's historical value.

7.16 The ruin courtyard (LeFevre 2004:121)
7.17 Courtyard view (http://www.millcitymuseum.org.html)
7.18 Etched glass facades in the ruin courtyard (LeFevre 2004:125)



7.17

7.18

The Faculty of Law

University of Pretoria, Pretoria, South Africa (2005)
Kruger-Roos Architects

The Faculty of Law on the University of Pretoria's main campus was completed in 2005, and is the result of a design competition held in 2003. Facilities housed in the building complex include a library, offices and lecture rooms. The building has a strong north-south axis which forms the entrance to the facilities, while an east-west axis allows circulation inside the building. This axial organisation is a direct result from the building's contextual response (Le Roux & Botes 2005:37).

The building is orientated north with the main internal circulation running east-west. Moving along this circulation routes, the visitor passes by and through both enclosed areas and open courtyards. This seems to create interplay between inside and outside spaces, and appears to merge these. Vertical circulation is located along this circulation route.

According to Le Roux & Botes (2005:38) an architectural language of opposites seems to characterise the building: solid versus open; heavy versus light; protection versus freedom. The use of materials such as glass, steel and concrete convey an important part of this interplay.

Influence on design:

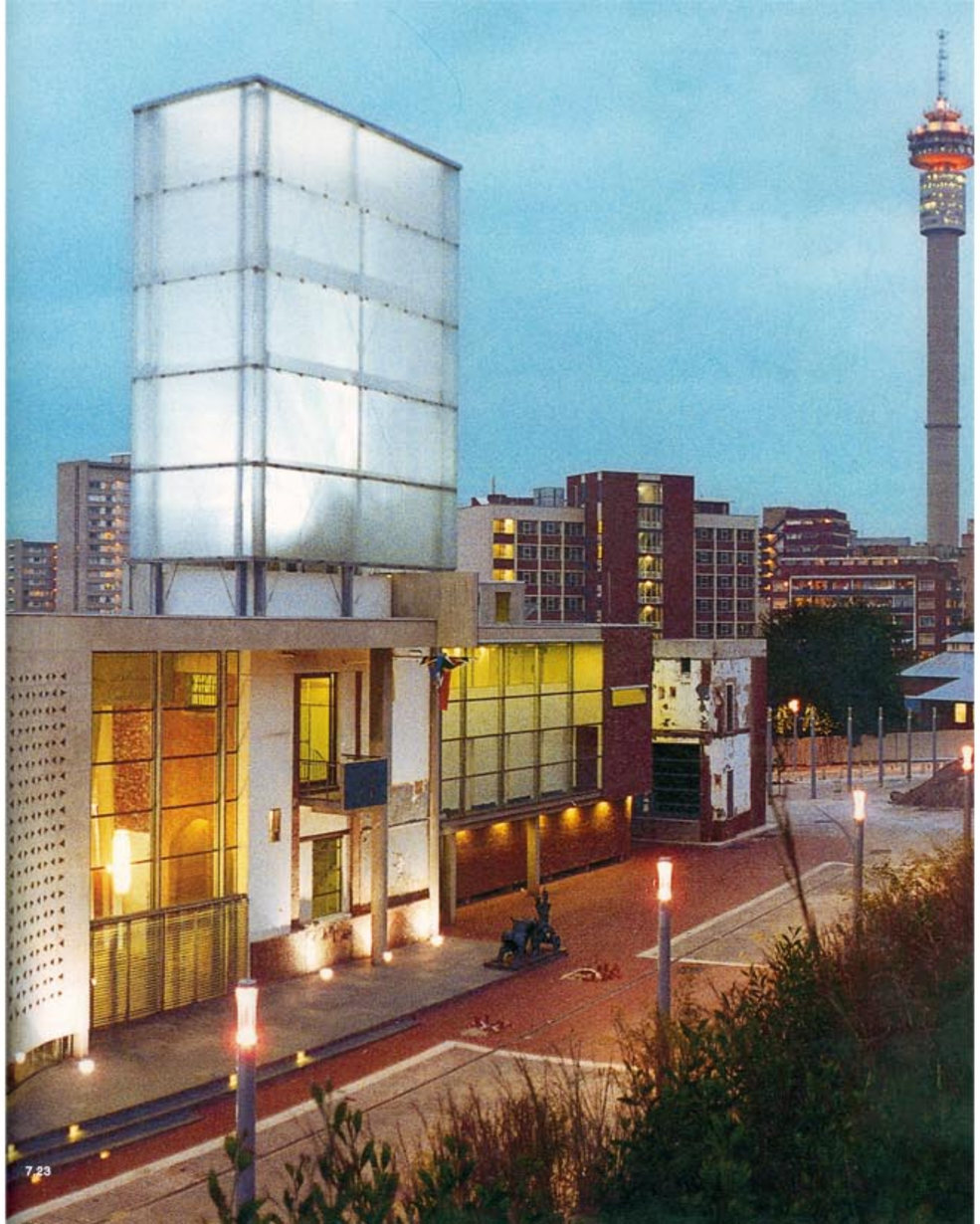
- Transparency and openness as design metaphors; and
- Material use of glass, steel and concrete.

7.19 Approach
7.20 Library interior
7.21 Circulation bridge
7.22 Internal courtyard


7.20


7.21


7.22



7.23

Constitutional Court

Johannesburg, South Africa (1998)
OMM Design Workshop & Urban Solutions

The Constitutional Court is the result of an international design competition issued in July 1997. Architects Andrew Makin, Paul Wygers and Janina Masojada were the design team of this winning project (Darrol 2003:22). The site is located on the northern face of Braamfontein ridge in Johannesburg and covers an area of about 12.5ha (Peters 2004:2). Today the site is revered to as "The Fort" or "The Old Fort" and has a rich history dating back to the time of the ZAR and president Paul Kruger. It was built in 1892 and originally as a prison and police barracks. Shortly afterwards, it was remodelled as a fort with buttresses and battlement, and was finished just in time before the start of the Second Anglo-Boer War between 1899-1902 (Darrol 2003:19; Peters 2004:2). Following the British soldiers' capture of Johannesburg, "The Fort" was reverted to it prison function and remained like this for the next 80 years.

In its heydays under the apartheid government, the facilities housed not only criminals but also people who opposed the apartheid government. Some of the people who were once detained here include amongst others Robert Sobukwe, Albert Luthuli, Mahatma Gandhi and Nelson Mandela (Darrol 2003:19; Peters 2004:2). Finally, in 1983, the facilities ceased to operate as a prison.

The design of the Constitutional Court was careful not to imply any particular resolution for the building. One of the objectives was to establish connections with the immediate surroundings so that the site itself becomes a connector (Darrol 2003:20). This allows for an interconnected network of streets and squares that form open spaces and allow outdoor recreation. Within this design proposal the existing stair towers stand as beacons of light and liberty, and stand out as landmarks. In this way, the new Constitutional Court seeks to "transform this negative history into a positive force; not to deny it but to assert that what sometimes seems hopeless is achievable" (Darrol 2003:26). In addition to the incorporation of former prison structures, the new Constitutional Court also retrieved and recycled materials such as bricks (Peters 2004:2).

This principle of reuse is consistent with the building's approach to energy conservation. Green architecture principles employed in the design range from taking advantage of the high diurnal range in Johannesburg to maintain interior comfort, to minimising the use of artificial amplification (Peters 2004:3).

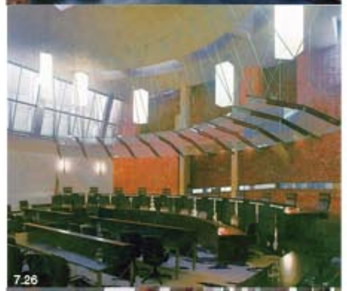
Influence of design:

- The use of concrete as construction material;
- Recycling of bricks and materials of the historic structure into the new structure;
- Employing energy conservation principles; Many existing structures are demolished with only a few selective structures being retained; and
  A consideration of the broader urban context from which design inspiration and direction is drawn.

7.23 The new Constitutional Court building as viewed from the ramparts of the Old Fort (Buckland 2004)
7.24 Great African Steps (Buckland 2004)
7.25 The foyer with its slanting columns make reverence to being under a tree (Buckland 2004)
7.26 Court chamber (Buckland 2004)
7.27 Foyer with gallery to the left (Buckland 2004)

7.24

7.25



7.26

7.27

Chapter 8

Design development

Introduction

The object of the design proposal is to allow city inhabitants and visitors to experience both the urban and historical value of the surrounding context. As such, the form of the proposed building is strongly determined by its surrounding urban context. In an attempt to create a greater appreciation for the local heritage resources of Hatfield, the proposed project aims to create the opportunity for a richer experience of the historic built environment.

This chapter explores the design process and the various design generators. Much of these design generators are adopted from Francis D.K. Ching's book entitled *Architecture: form, space, and order*.

Design generators

Generator 1: Urban context

- Existing Rissik Station complex

The exiting Rissik Station complex served as a design generator through its inspiration of the exiting two elevator towers. These two towers function as landmark elements that give identity to the station, as these are the elements that make the station unique. The loss of the southern elevator shaft due to the Gautrain works has sparked the concept of working with the memory of the station building through the use of vertical elements.

The proposed new station concourse is similarly orientated as is suggested by the existing station building, and thus extends the memory of existing movement patterns. In addition, the proposed new station concourse partially encloses the public space, which forms the connection between old and new, and between the public space of the plaza and the railway platforms.

8.01 View from the south onto Rissik Station with its two elevator shafts and foot bridges
8.02 Western façade of Rissik Station

Generator 2: Form & Space

- Other existing buildings

Two other exiting buildings in particular influenced the design, namely Mozambique Café and The Diplomat building west of Rissik Station. Inspiration was drawn from Mozambique Café in the way it strives to respond to the streetscape with its active building front and overhang.

The Diplomat office building influenced the design in the sense that it was an existing structure onto which the proposed building will attach itself. This allows for a new entrance that will serve both the proposed and this existing building. In addition to this, The Diplomat also determines the extent of development for the proposed building. Along with the existing Rissik Station building, The Diplomat determines the position of the circulation spine, the point of vertical circulation, as well as the extent of the two internal courtyards.

It thus becomes clear that the initial shape of the proposed building was, therefore, determined by a process of subtractive form. This means that portions of volumes were removed from the initial mass without deteriorating the street edge, corners and overall profile thereof. With these spatial volumes subtracted, it allowed the creation of recessed entrances, positive courtyard spaces, and window openings shaded by the horizontal and vertical surfaces of the recess.

- Linear form

The proposed building has a linear form that is derived from an arrangement of a series of forms along a path. While the series of forms are repetitive in most instances, others are dissimilar in nature and organised by a separate and distinct element which creates a point of focus. The proposed new ticket sales office is a point in case. At times the linear form front on or define an edge of an exterior space (such as the main circulation bridge), while at other times it defines a plane of entry into the spaces behind it (as is the case with the proposed new station concourse). Another use of the linear form can be observed with the landmark element, where the linear form is oriented vertically as a tower element to establish a point in space, and thus acts as a landmark for Rissik Station.

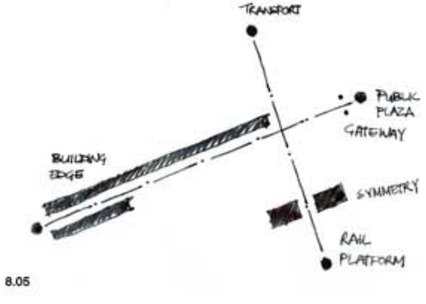
8.03 Mozambique Café
8.04 The Diplomat office building
8.05 Linear form
8.06 Base plane
8.07 Overhead plane

8.03

8.04

- Grid form

The geometry of the square is used to create a 6 meter by 6 meter grid form on plan. This allows an equality of dimensions that is essentially non-hierarchical and non-directional. Vertically the gird form is used to break the scale of the façade surface down to the human scale while at the same time giving the façades and even texture. In so doing, it wraps the building surfaces and unifies them with its repetitive geometry. The result is a spatial network of reference points and lines. Any number of forms and spaces can be organised within this modular framework.

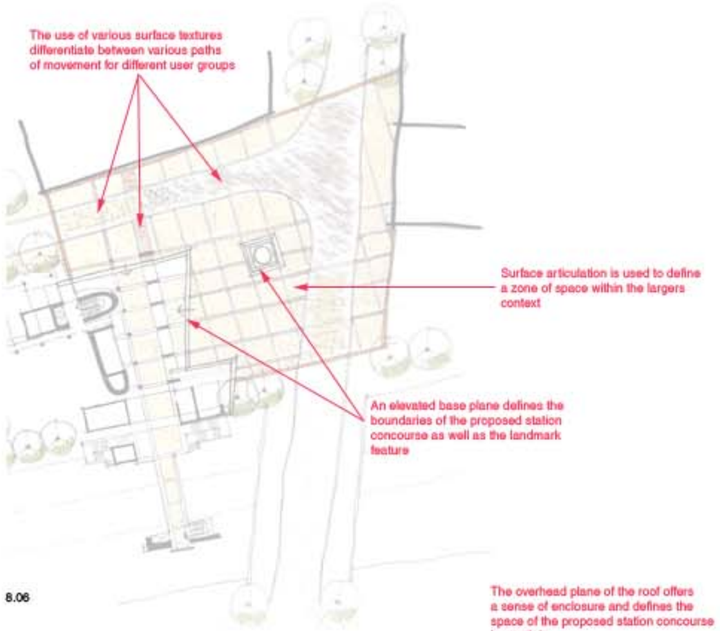


8.05

- Base plane

The surface articulation of the ground plane of the proposed plaza is used to define a zone of space within the larger context growing from Festival Street, to Hatfield, and even Pretoria as city. Texture is used to differentiate between a path of movement and places of rest, and establish a field from which the form of the building rises out of the ground.

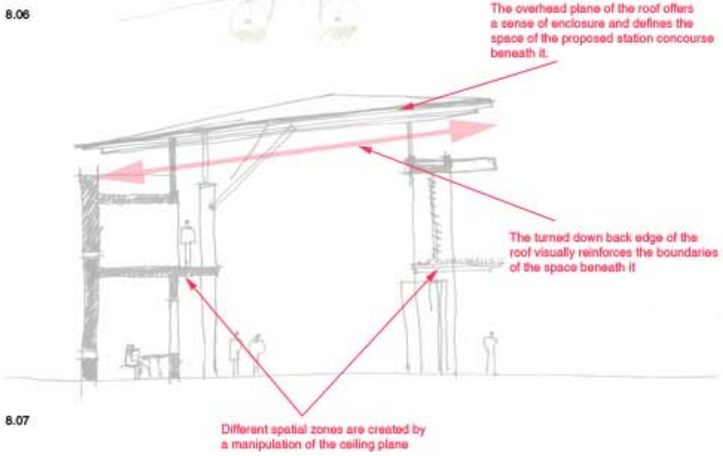
An elevated portion of the base plane along the proposed new station concourse creates a specific domain within the larger spatial context of the plaza. This helps to define the boundaries of the station concourse and interrupts the flow of space across its surface. The fact that the surface characteristics of the plaza base plane continues up and across the elevated plane, helps to establish that the field of the elevated plane forms part of its surrounding space.



8.06

- Overhead plane

The boundaries of the proposed new station concourse is spatially defined both by and elevated base plane and the roof plane with its one edge turned downward. Not only does it shelter the interior spaces of the proposed new station concourse from the natural elements of rain and sun, but it is proportioned to its structural system and the manner is which is transfers its loads across the space to its support columns. The roof plane is the major space-defining element of the proposed new station concourse. It visually organise a series of forms and spaces beneath its sheltering canopy.



8.07

• Vertical elements defining space

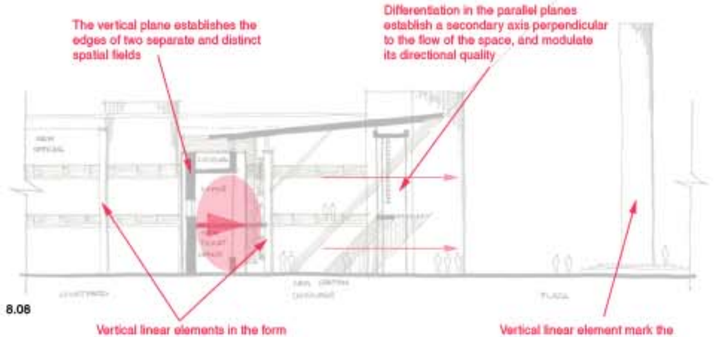
Vertical element were used in two distinctive ways, namely to serve as structural supports for floor and roof planes, and to provide shelter and protection from the climatic elements.

> Vertical linear elements
Vertical linear elements define the perpendicular edges of a volume of space.

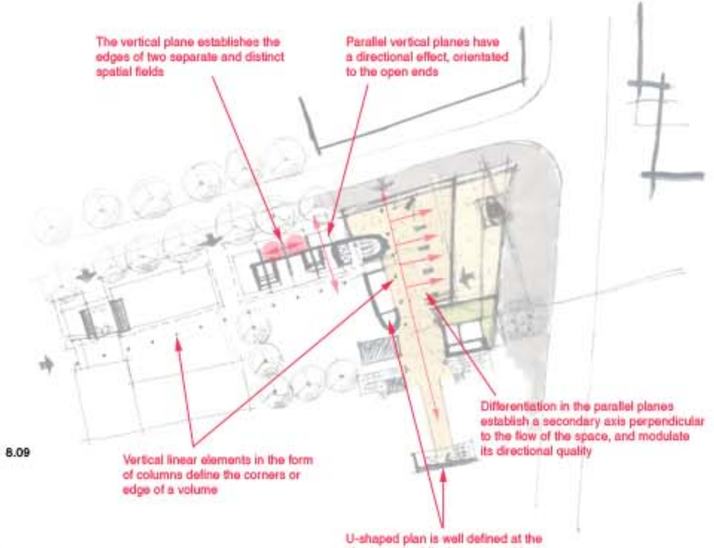
> Single vertical plane
A single vertical plane articulates the space on which it fronts.

> Parallel planes
Two parallel vertical planes define a volume of space between them that is oriented axially toward both open ends of the configuration.

> U-shaped plan
A U-shaped configuration of vertical planes defines a volume of space that is orientated primarily toward the open end of the configuration.

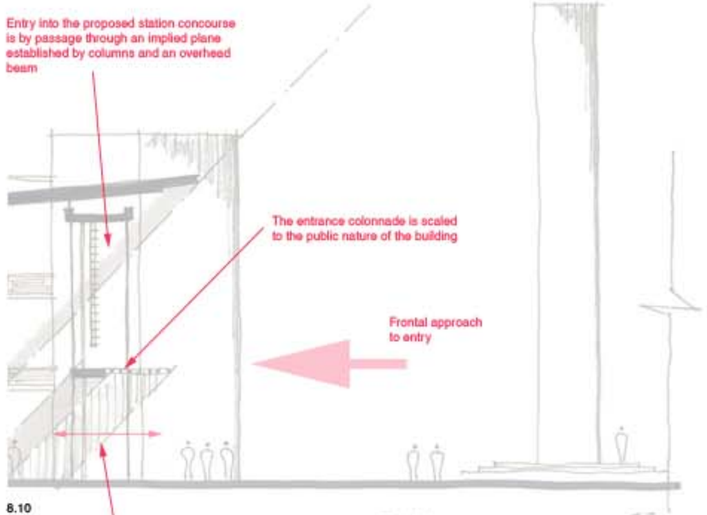


8.08

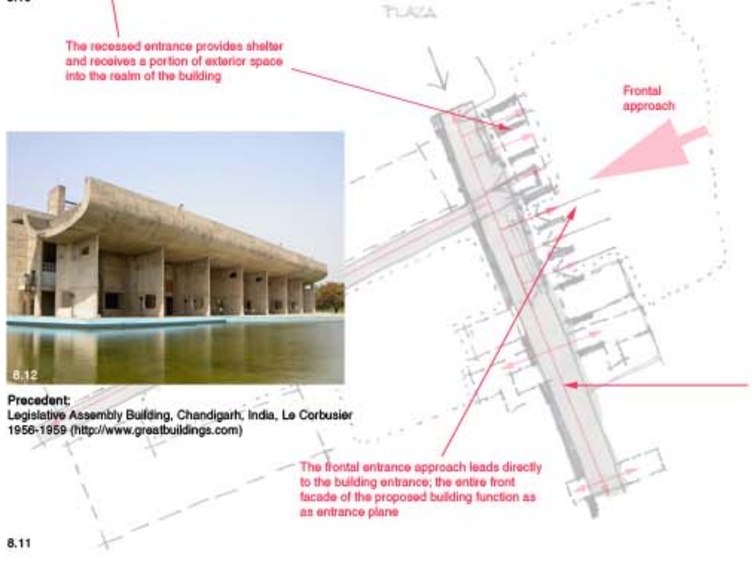


8.09

8.08 Sectional exploration of vertical elements defining space
8.09 Plan view of vertical elements defining space
8.10 Entrance and approach exploration on section
8.11 Entrance and approach exploration on plan
8.12 Legislative Assembly Building, Chandigarh, India, Le Corbusier, 1956-1959 (http://www.greatbuildings.com)



8.10



8.11

8.12

Precedent:
Legislative Assembly Building, Chandigarh, India, Le Corbusier
1956-1959 (http://www.greatbuildings.com)

• Circulation

This section deals with the proposed building's circulation system as elements that affect the perception of the forms and spaces of the building.

> Approach
The frontal approach to the proposed new station concourse results from a straight, axial path that leads directly to the entrance of the building. The visual goal that terminates the approach is clear as the entire front of eastern façade function as entrance within the plane.

> Entrance
Entry into the building is defined by a passage through an implied plane established by an entrance colonnade which is scaled to the public nature of the proposed station building. In order to achieve greater visual and spatial continuity between the plaza and new station concourse, a change in level helps to establish a threshold and mark the passage from one place to another.

The recessed entrances of the retail and office complex provide shelter and receive a portion of exterior space into the realm of the building.

> Configuration of the path
All paths in the proposed building have a linear configuration. Not only does this aid in enhancing legibility, but it also serve as the primary organising element for a series of spaces.

- Path-space relationships

In the proposed project, the paths are elated to the spaces they link in the following ways

> Pass by spaces
The integrity of each space is maintained;
The configuration of the path is flexible; and
Mediating spaces are used to link the path with the spaces.

> Pass through spaces
The path passes through a space axially, or along its edge.

> Terminate in a space
The location of the space establishes the path.

- Form of the circulation space

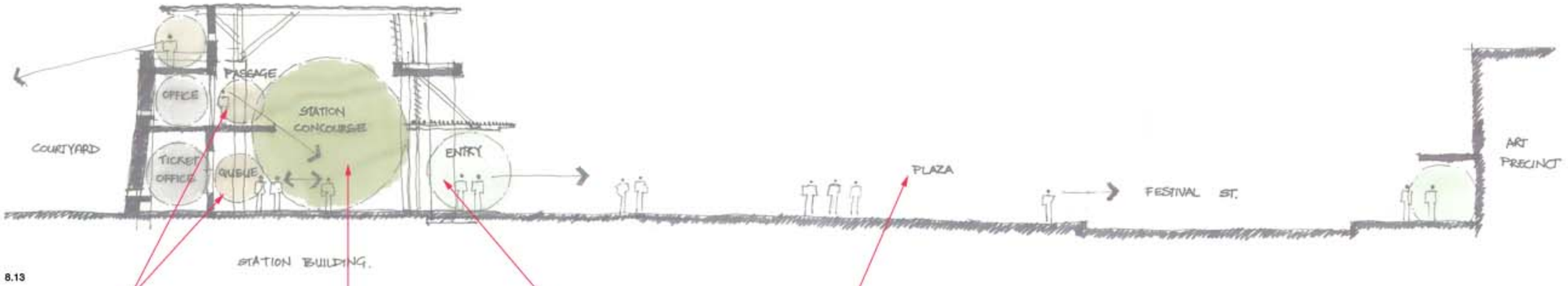
The form of the circulation differentiate between:

> Open on one side
Forming a balcony or gallery that provides visual and spatial continuity with the spaces it links.

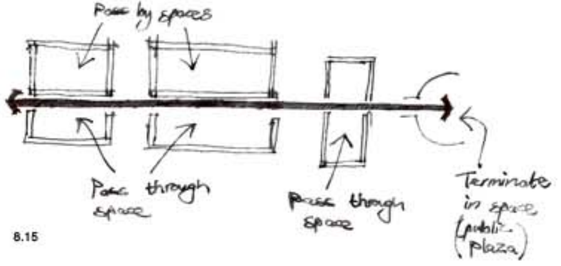
> Open on both sides
Forming a colonnaded passageway that becomes a physical extension of the space it passes through.

- Hierarchy

Hierarchy in the proposed building is achieved through size, shape and placement.



8.13



8.15

8.14

8.13 Section through station exploring path-space relations
8.14 Section through proposed office and retail complex exploring path-space relations
8.15 Diagramatic path-space relationship

Concept model one

This first model was built to a scale of 1:200. Its main objective was to explore an approach that responds to the surrounding buildings, where the scale matches that of The Diplomat office building, while raising that of the existing Rissik Station complex. The approach also tested an approach that remains very sensitive to the historic Rissik Station building complex, retaining most, if not all, of the existing structures. In addition, it responds to the proposed group framework that proposes a public plaza in front of the station building. The proposed building faces both Festival and Station Place Streets in an attempt to define the urban edge. Similarly, the building steps back from The Diplomat office building, not only to create an internal courtyard, but also to allow sunlight to enter this space as well as the existing structure.

The proposed building attempt to maximise northern light in order to benefit from seasonal changes.

Circulation through the station complex continues to function in its existing and historical two-tier approach. A new vertical circulation core is created between the station and the retail and office complex, with circulation in this latter complex being completely internal. This divided the building into north and south facing units. In keeping with the group framework, the objective was to accommodate pedestrian movement as freely as possible.

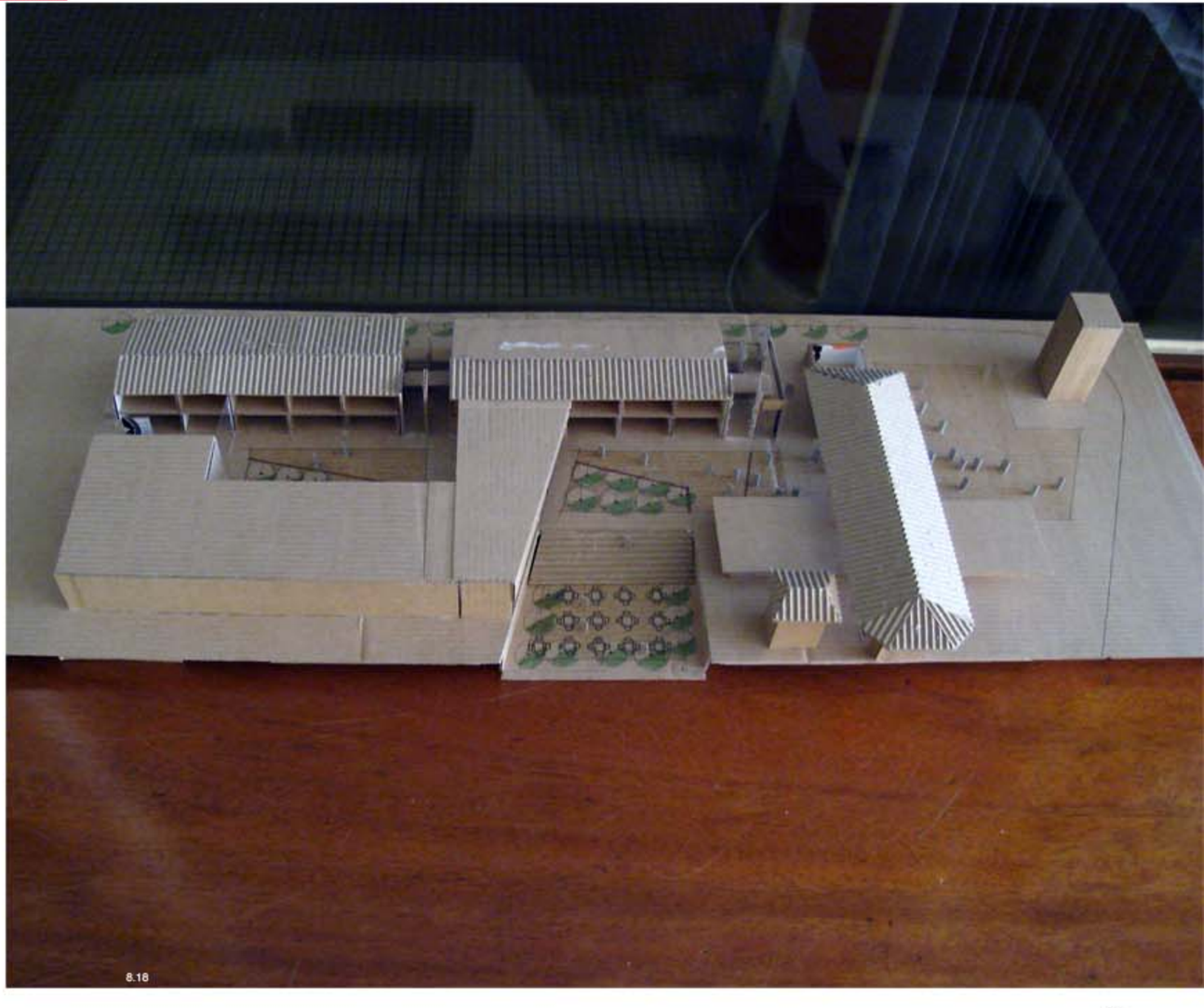

8.16


8.17

Criticism:

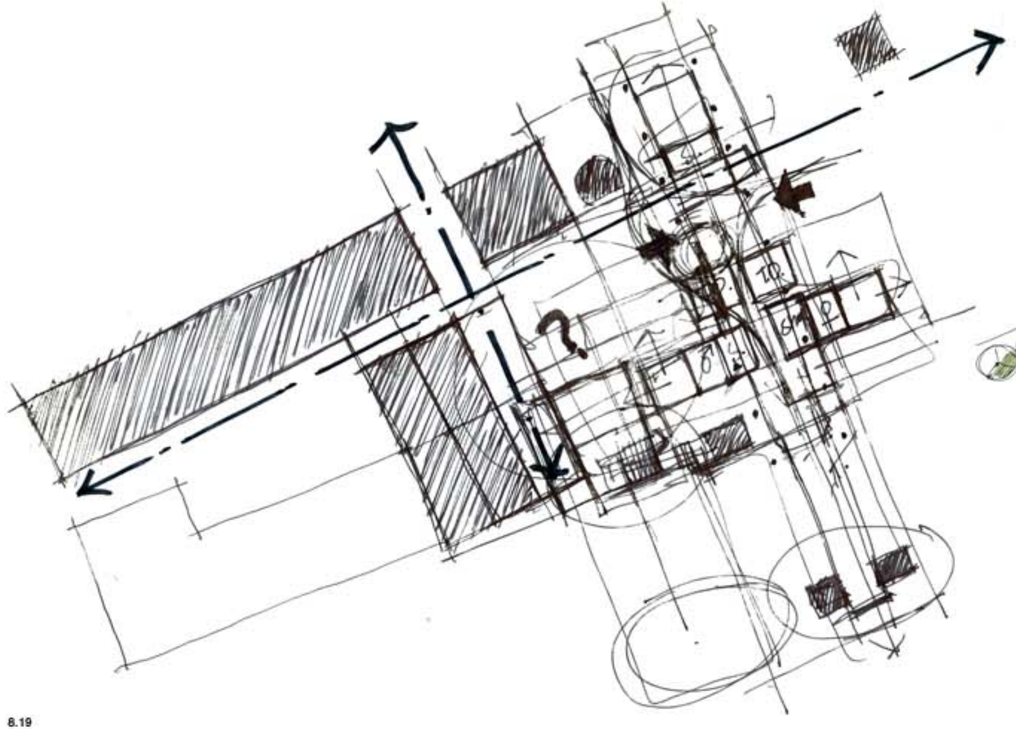
- The conceptual approach is vague;
- Response to the surrounding context is not strong enough;
- Circulation paths through the building is not celebrated
- The approach of "maintaining all" to the existing Rissik Station complex results in a more problems than solutions;
- The issue of scale is not effectively addressed;
- The new and old structures are not integrated enough to form an architectural dialogue with one another; and
- On the positive side, the spatial intention is strong and clear.

8.16 View from the south to the internal courtyard and depressed base plate
8.17 The main approach from the east
8.18 View from the top onto the proposed facilities


8.18

Sketches

8.19 Initial concept sketch
8.20 Initial plan drawing



8.19

8.20

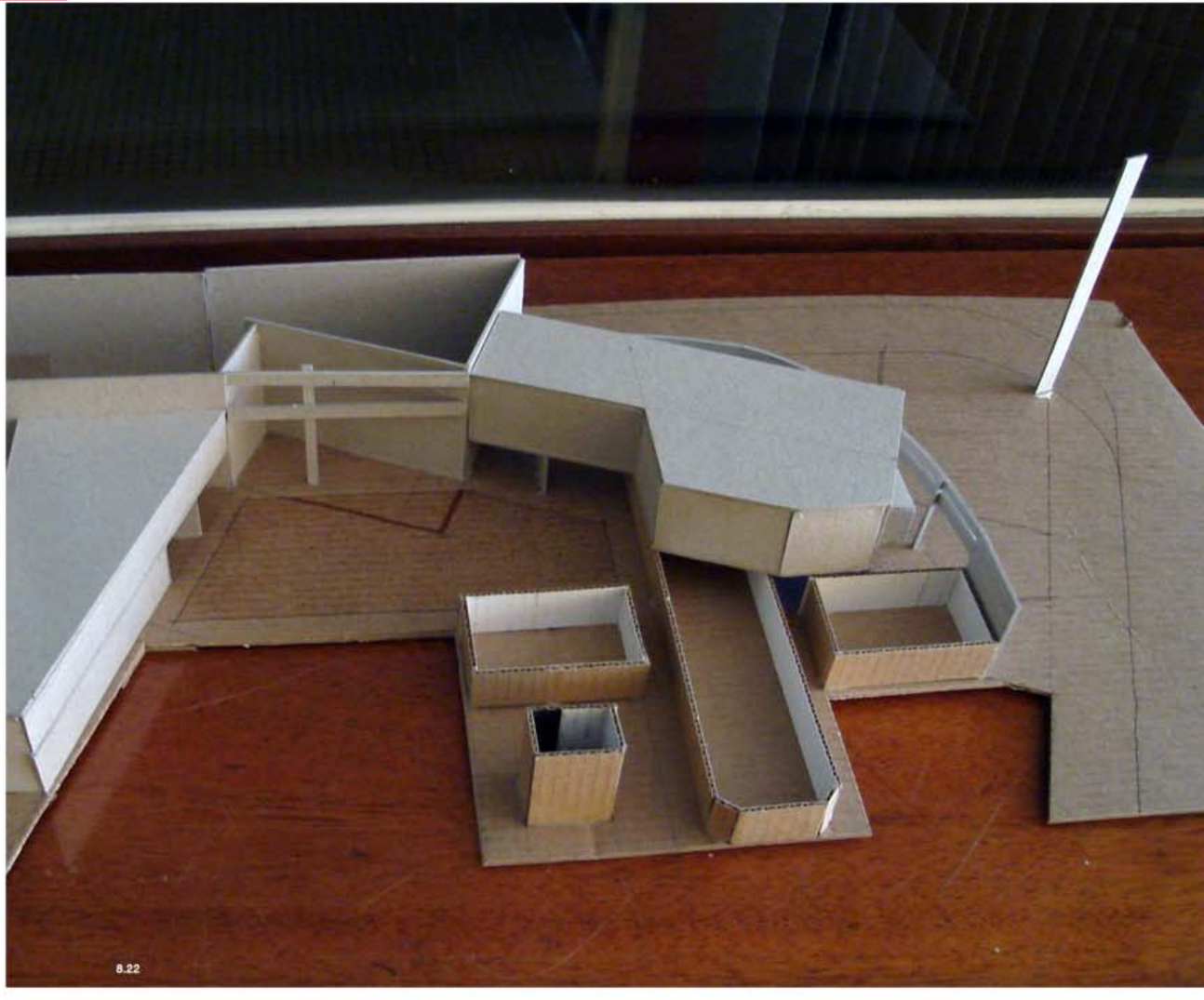
Concept model two

As with the first concept model, this second model too was built to a scale of 1:200. The main objective of this model was to investigate an approach where the new and old structures are more integrated with each other. It also attempted to address many of the criticism laid against the first concept model.

Criticism:

- Circulation routes through the spaces and building is still not strong enough as this is a central design concept;
- The internal courtyards are shaded throughout the day in mid-winter;
- The new structure pulling over the old structure completely dominates it and causes it to loose its integrity;
- Despite the new structure pulling over the old, the existing structure continues to be viewed as too precious; and
- The attempt to create a new entrance to the station is not successful as it does not respond to the plaza in front of it.


8.21


8.22

8.21 View from the north-east
8.22 Top view of model with focus on connection with Rissik Station

Concept model three

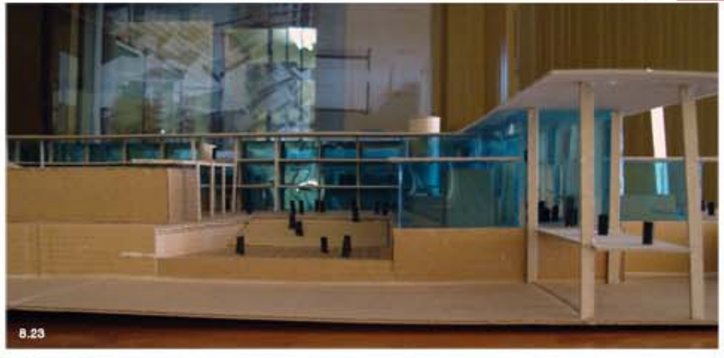
In an attempt to strengthen the concept, the circulation path was pulled out and loose from the proposed building. This external circulation path form the back spine of the building that link Rissik Station, the proposed retail and office complex, and The Diplomat office building with one another.

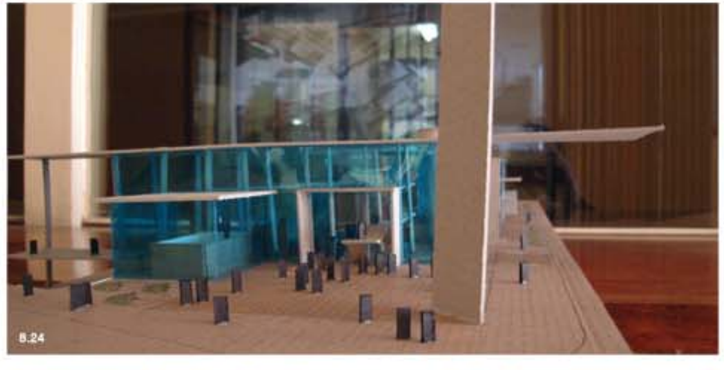
Vertical circulation is house on either ends of the circulation path, which allows for clear and unobstructed views of the internal courtyards. In so doing, the individual becomes part of these spaces. It also allows for an expression of the building's structural grid.

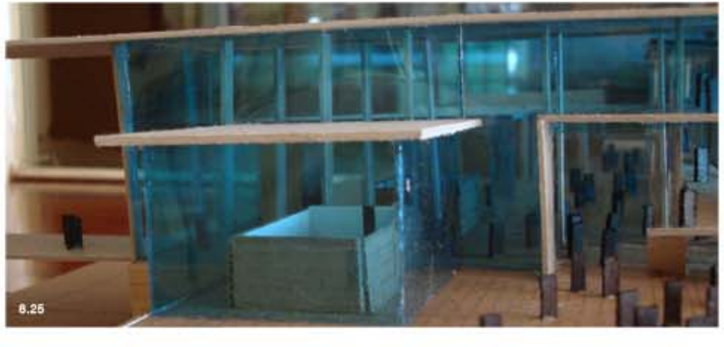
The meeting of old and new at Rissik Station is now expressed in a new manner, where the new envelope the old. This approach helps to address the scale of the proposed group framework, as well as the definition of the public nature of the building.

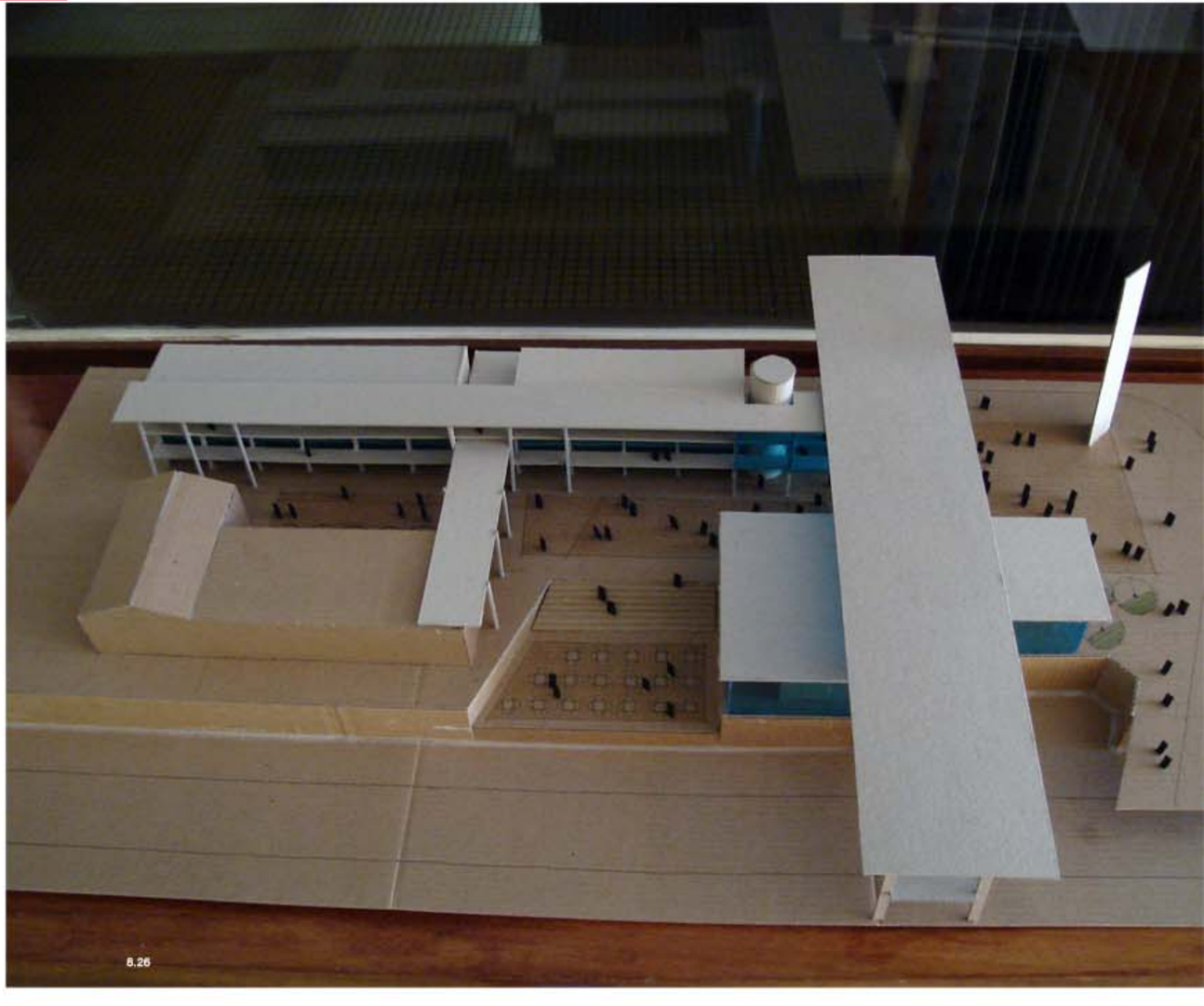
Criticism:

- The circulation path looses it human scale to the internal courtyards;
- An open circulation path is exposed to natural elements;
- The internal courtyards continues to be shaded throughout the day in mid-winter;
- Extensive use of glass can cause problems on the western façade;
- Public use of the internal courtyards can prove problematic;
- The depressed base plate of the eastern courtyard can become isolated and unused; and
- Connection between the proposed station concourse and the platform level is still unresolved;


8.23

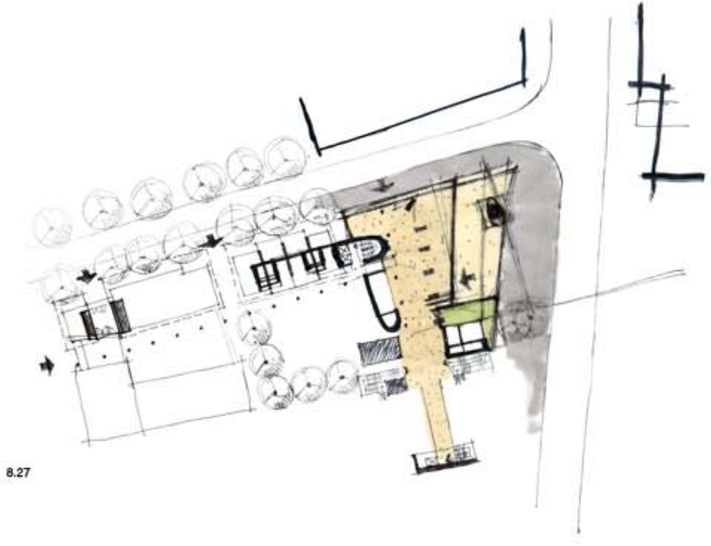

8.24


8.25

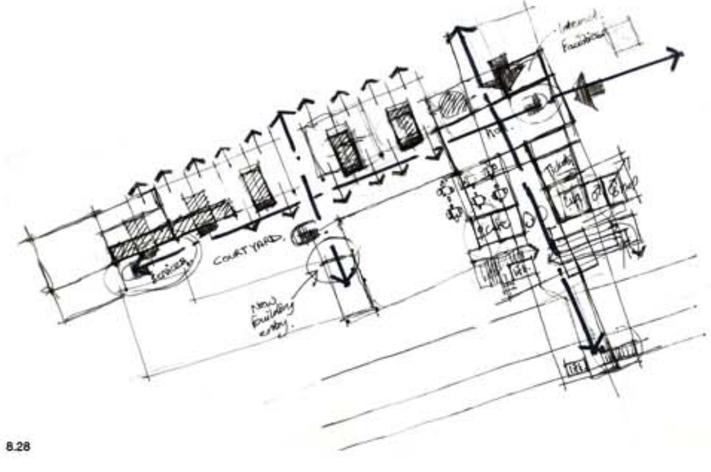

8.26

8.23 View from the south looking at the internal courtyard
8.24 View from the east overlooking the plaza and proposed new station concourse
8.25 The new envelope the old
8.26 Top view onto the proposed building

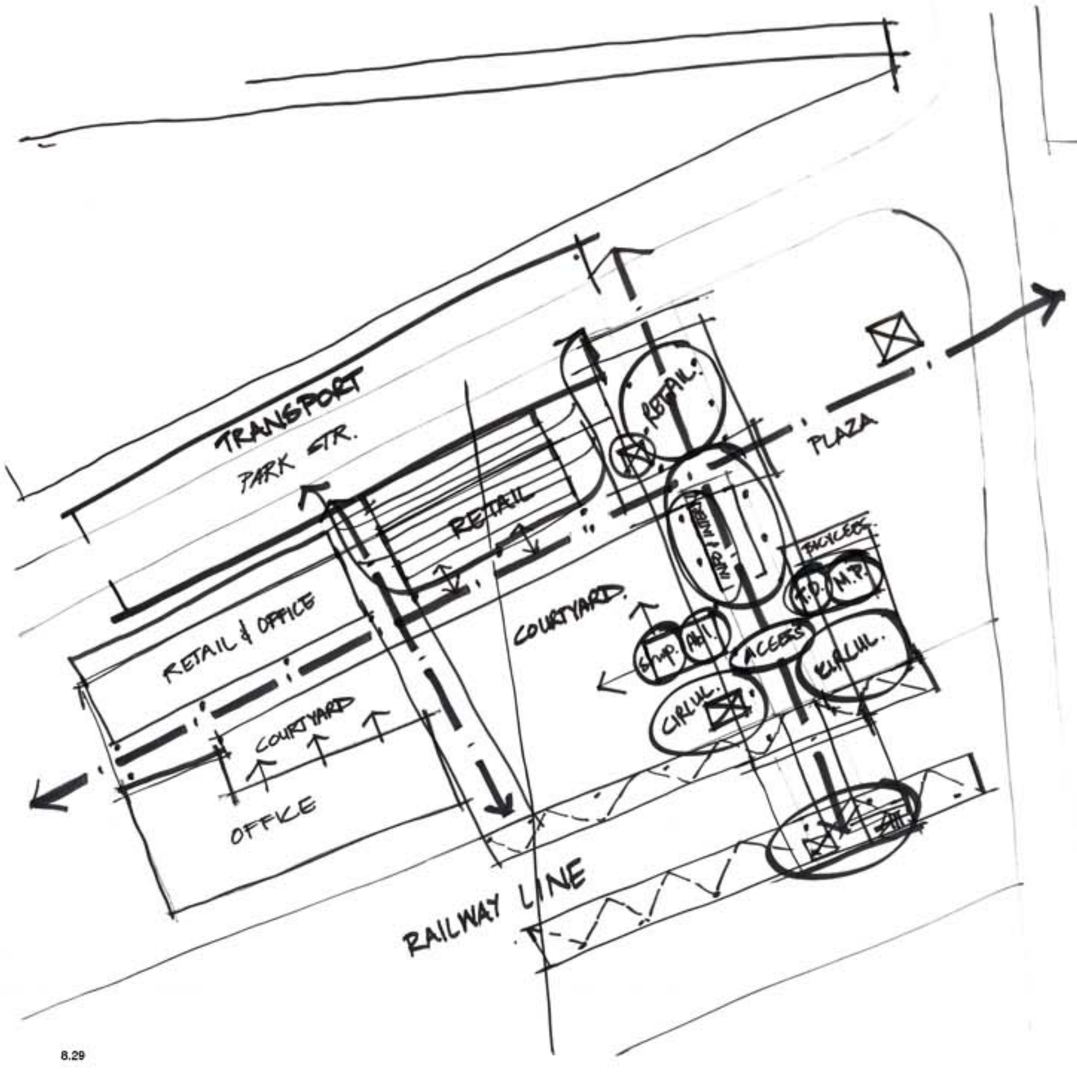
Sketches



8.27



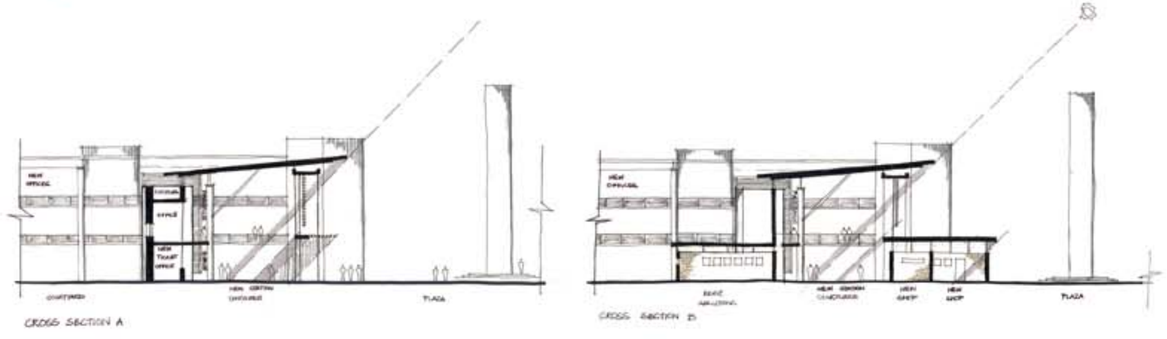
8.28



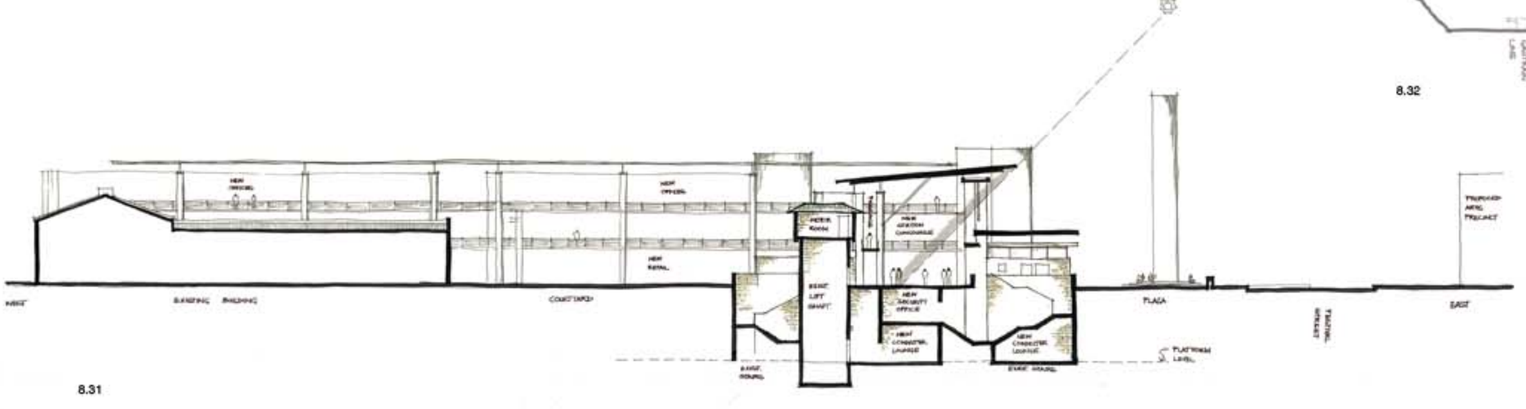
8.29

Sketches - concept sections

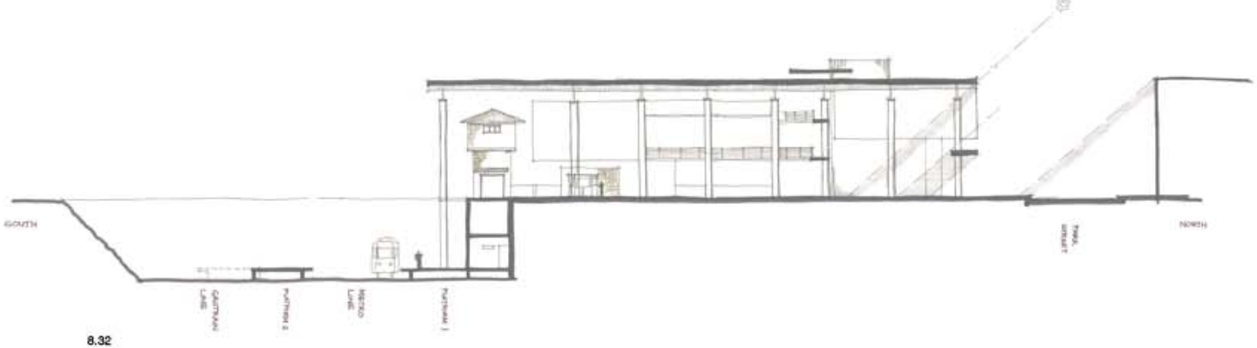
8.30 Cross section through proposed new structure
8.31 Cross section through existing structures
8.32 Longitudinal section



8.30



8.31



8.32

Chapter 9

Technical resolution

Introduction

The following section investigates the decisions and motives that drive the technical level of the proposed project. As such, this section should be read in conjunction with the accompanying set of drawings. The objective of the investigation is to establish an appropriate strategy to achieve effective technical resolution of the proposed building structure. With this in mind, aspects such as a historical study, in conjunction with a technical investigation, informed the design decisions.

With the growing environmental concerns, both locally and internationally, as well as the recent energy shortage in South Africa, the implementation of sustainable principles are elementary. It should however be kept in mind that sustainable design encompasses a myriad of aspects ranging from issues such as passive systems, material sourcing, and construction processes. For this reason, the proposed project selects to focus on solar shading and cooling. The object is to enable energy-independent occupant comfort as far as possible.

9.01 Early photo of Pretoria Station taken at an unknown date (Van der Waal Collection, University of Pretoria)
9.02 Interior of one of the sheds at Pretoria Station. The steel structure is noteworhty (Van der Waal Collection, University of Pretoria)

Historical study

This section of the technical investigation examines the materials used in South African railway architecture as can be found in the old Transvaal Province and as was constructed by the NZASM. According to De Jong, Van der Waal & Heydenrych (1988:83) these old NZASM station buildings are characterised by three distinctive features. Firstly, they draw inspiration from the railway architecture in Europe, and in particular that of the Netherlands. This influence is clearly observed in the use of red brick and white sandstone which reflects the ornamental language of the Dutch Renaissance. Attention is deliberately drawn to the central part of the façade. However, they lack the impression of height that their European counterparts achieve. Secondly, the station buildings reflect an adaptation to local circumstances. As such, many of the station buildings were constructed using locally available stone (sandstone, ironstone (dolerite) and hornstone ("blouklip"). Brick was used where it is either more readily available or cheaper. Corrugated iron was used as roofing material as opposed to the tiled roofs of their European counterparts. A third distinctive feature is the use of verandahs, and particularly so on smaller station buildings. The local weather conditions play a large part as it allows for the free movement of passengers (De Jong, Van der Waal & Heydenrych 1988:85).


9.01


9.02

Considerations

Building mass

The investigation on the building mass was conducted on two levels. Firstly, at a mass level, resulting from the identification of public open spaces located in front of the station building and the two internal courtyards on the southern side of the proposed building. The latter two spaces are identified as problem areas due to these spaces being shaded throughout the day in mid-winter. Secondly, each individual unit level was investigated in terms of its indoor light quality, both on the northern façade of the retail and office complex and the eastern façade of the station concourse.

On a mass level, the investigation informs bulk massing, the position of voids, and the height of roofs in order to improve the thermal and natural light quality, as well as to address the street façade in the broader urban scheme.

Orientation

The proposed building's orientation is a direct result of its response to its urban context. As such, the building is aligned to the two streets in front of it, and is thus orientated 5-degrees west off True North. This configuration results in the retail and office complex's main façade predominantly facing northwards, while the main façade of the station concourse primarily faces east. While the northern and eastern orientation is advantageous for natural light and dominant north-eastern summer wind for ventilation purposes, the southern side of the building, which opens onto internal courtyards, is exposed to the direction of prevailing wind and rain.

Form

The shallow depth of the proposed building, being informed by its urban context, allows for good natural cross ventilation and natural light penetration into the interior spaces. As such, it is suited for office and other uses. The south-facing courtyards are open and allows for ventilation of the building interior spaces. The primary circulation bridge to the south of the building is exposed to the direction of prevailing winds and rain, and will need to provide protection from these.

Scale

The 3-storey large structure of the proposed building requires that elements be introduced to have to the building respond to the human scale. This is achieved with the introduction of horizontal elements. On the northern façade, this translates into a large overhang that provides both shelter from natural elements, shading from the sun, and defines the circulation space.

Technical investigation

Natural ventilation

The proposed building is designed to make use of natural ventilation. This is achieved through windows and doors on the northern façade. The station concourse is an open structure and therefore allows for ample natural ventilation.

Storm water

Storm water is drained off the roofs and connects with the storm water drainage system that currently exists in the site. Currently, this system drains to the railway line.

Fire protection

Fire protection of the proposed building is achieved through the installation of two fire hoses on each of the floor levels, along with four fire extinguishers. This is done in compliance with Table 2 of Part T of the SABS 0400, which requires one fire hose per 500m² and one fire extinguisher per 200m². These are accommodated in a vertical shaft on the southern façade.

In addition, the Multiservice Chilled Beam System (MSBC) that is discussed later in this chapter, has to capasity to house sprinkler systems in their design.

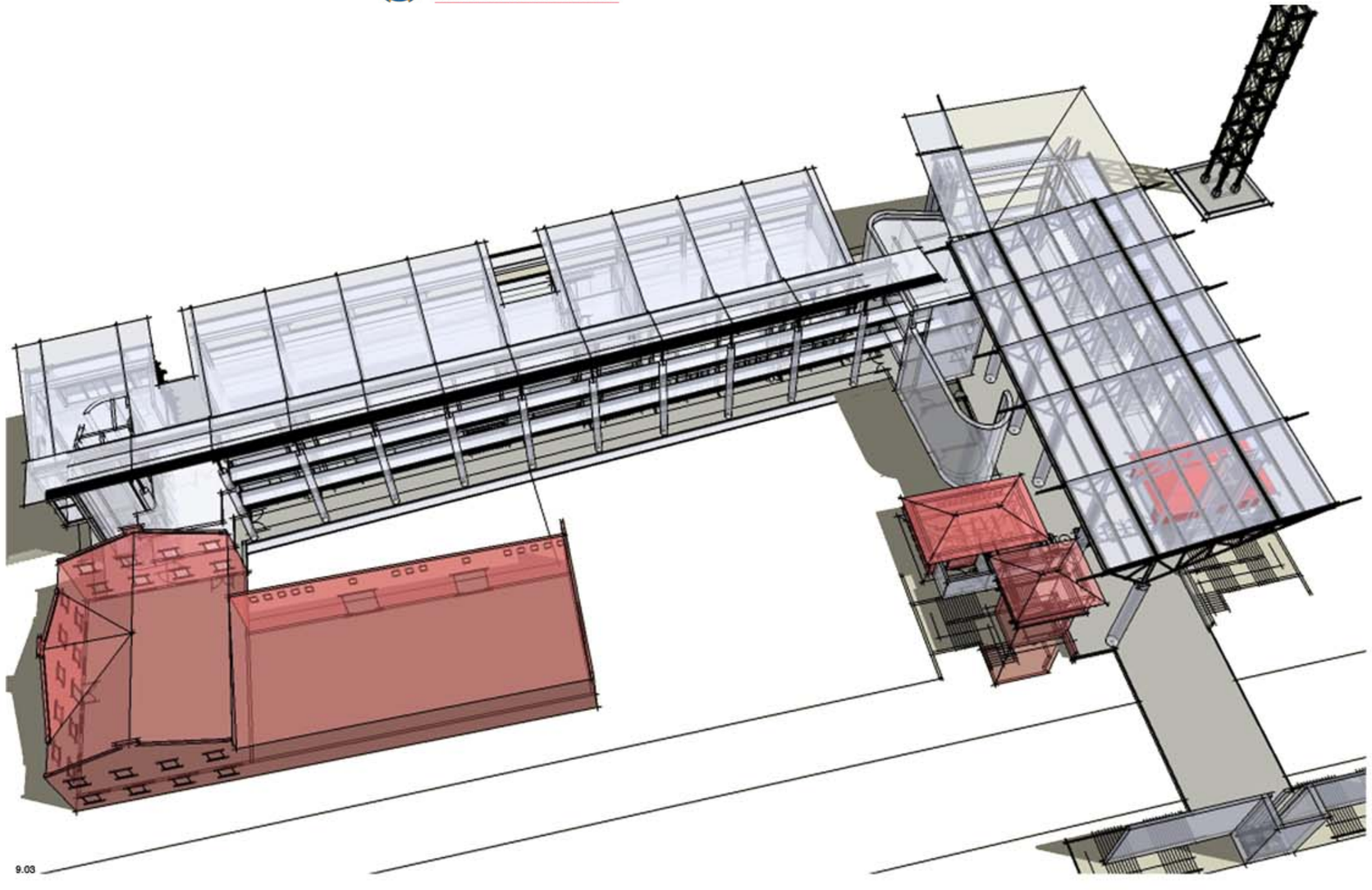
Facilities for the disabled

Facilities for the disabled are provided by the provision of elevators that allow for easy access to both the platforms at the railway line. Elevators are also provided to gain access to the offices on the first and second floor levels. All ablution facilities also provide facilities for the disabled.

Artificial light

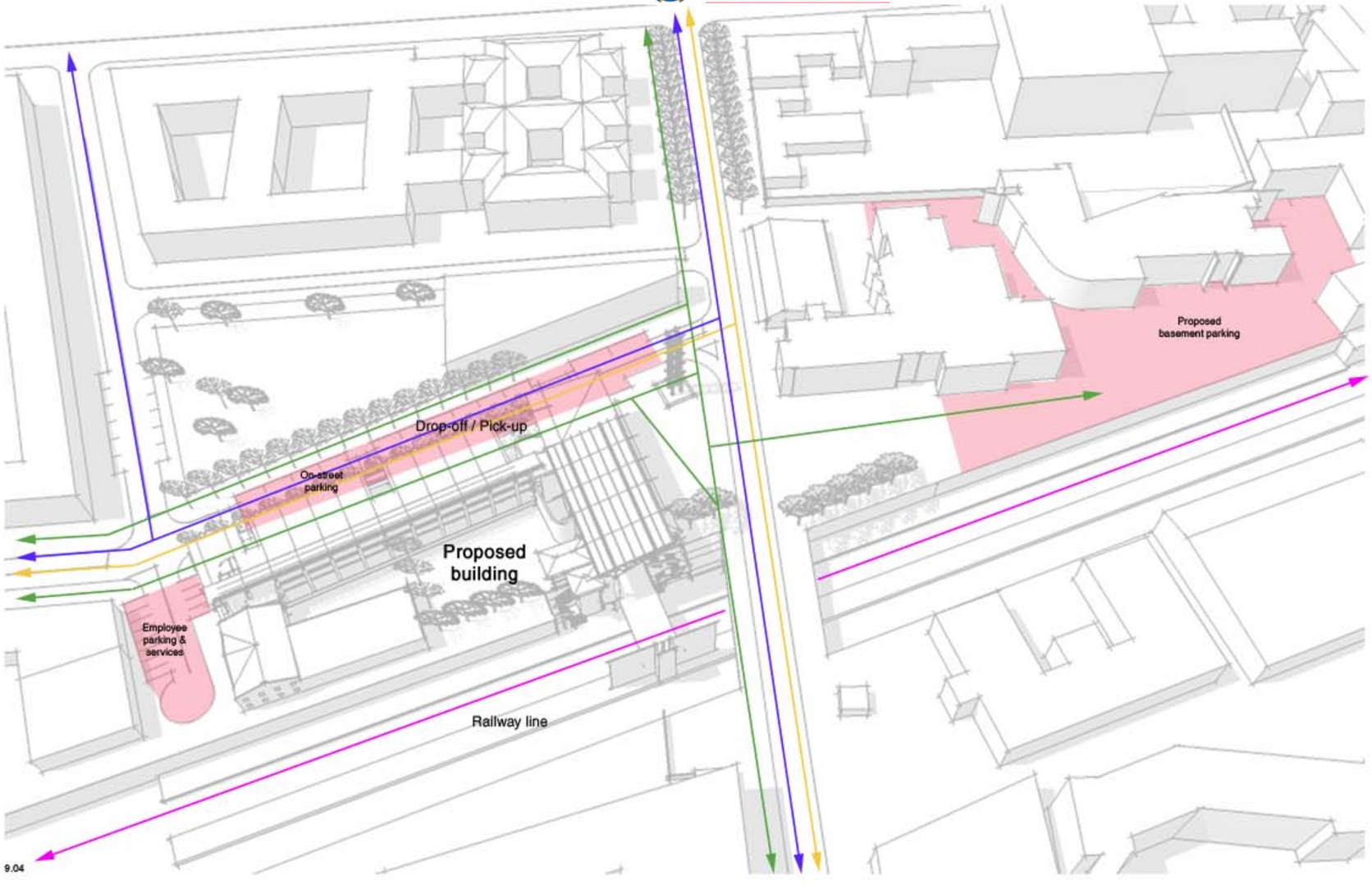
Artificial light is to be introduced to ensure consistent lighting levels with increasing room depth. It is suggested that an automatic lighting and sensor system be installed.

Existing & new structures



9.03

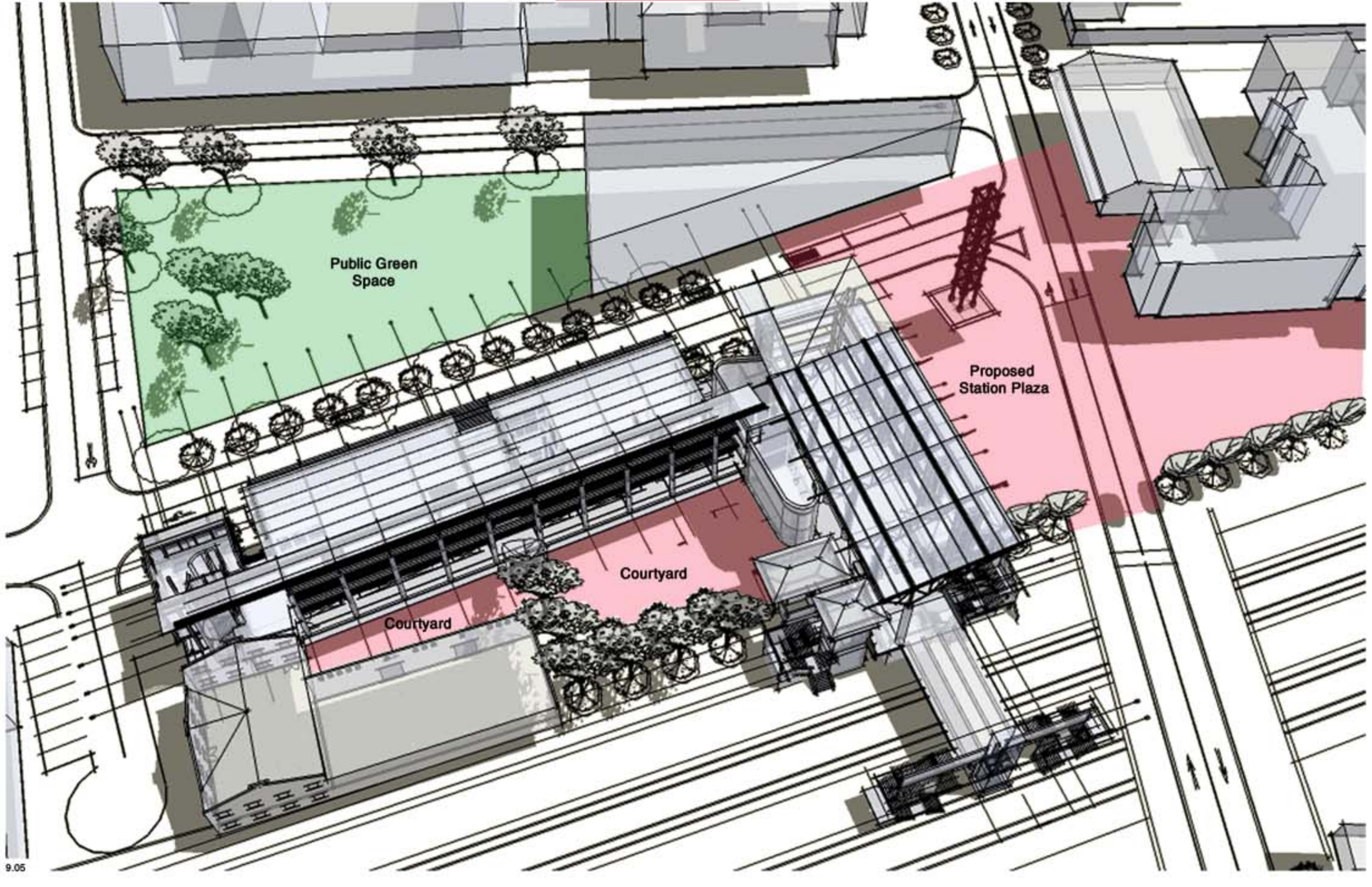
9.03 Existing structures are in red



Site access & parking

- Bus
- Pedestrian
- Vehicular
- Metro train
- Parking

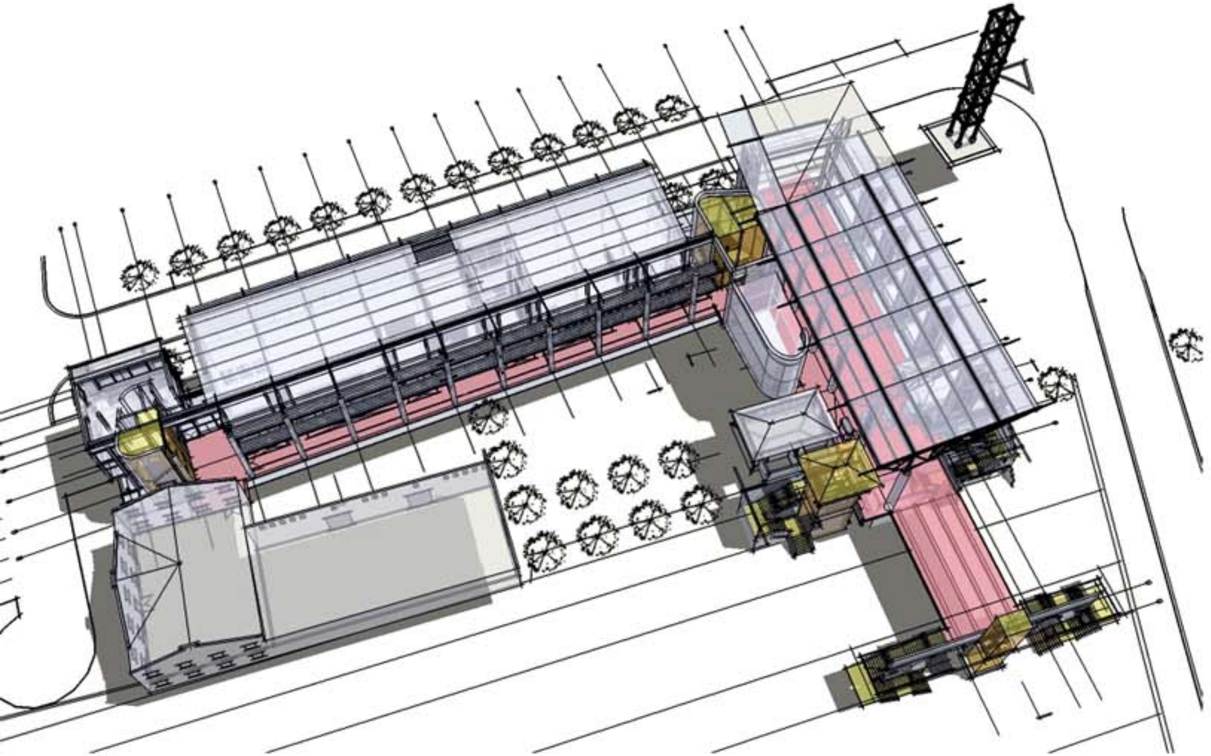
9.04 Site access and parking



9.05 Proposed public space at Rissik Station

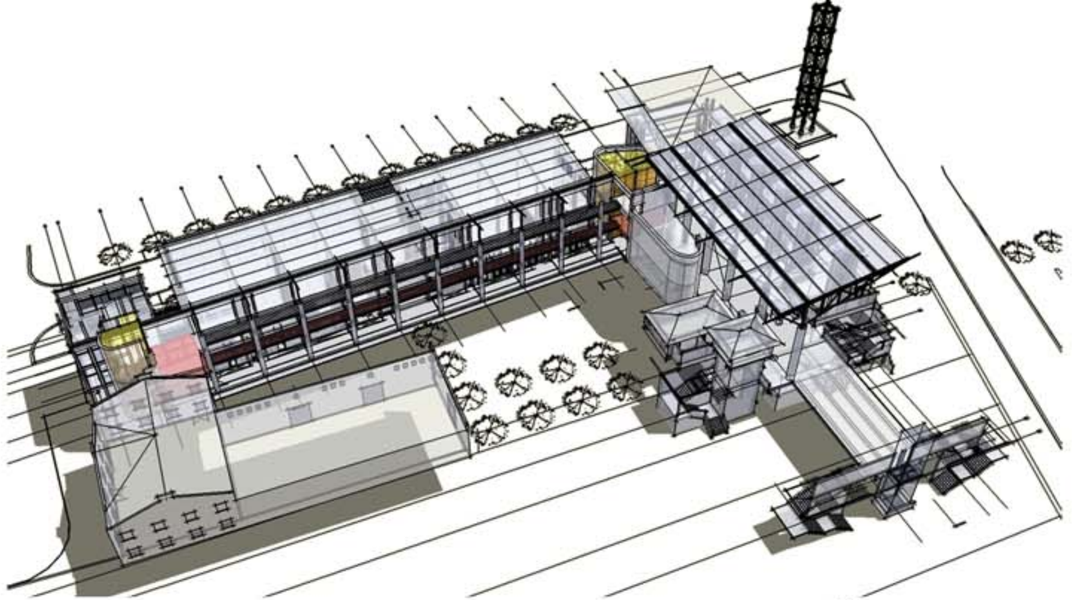
Circulation

horisontal circulation
vertical circulation

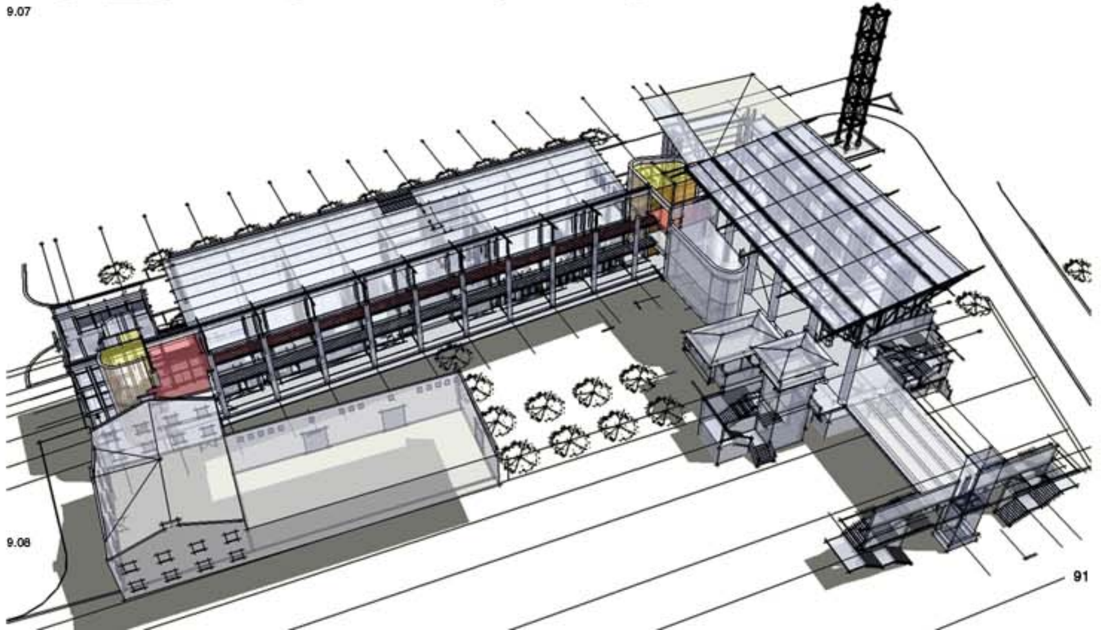


9.06

9.06 Ground floor circulation
9.07 First floor circulation
9.08 Second floor circulation

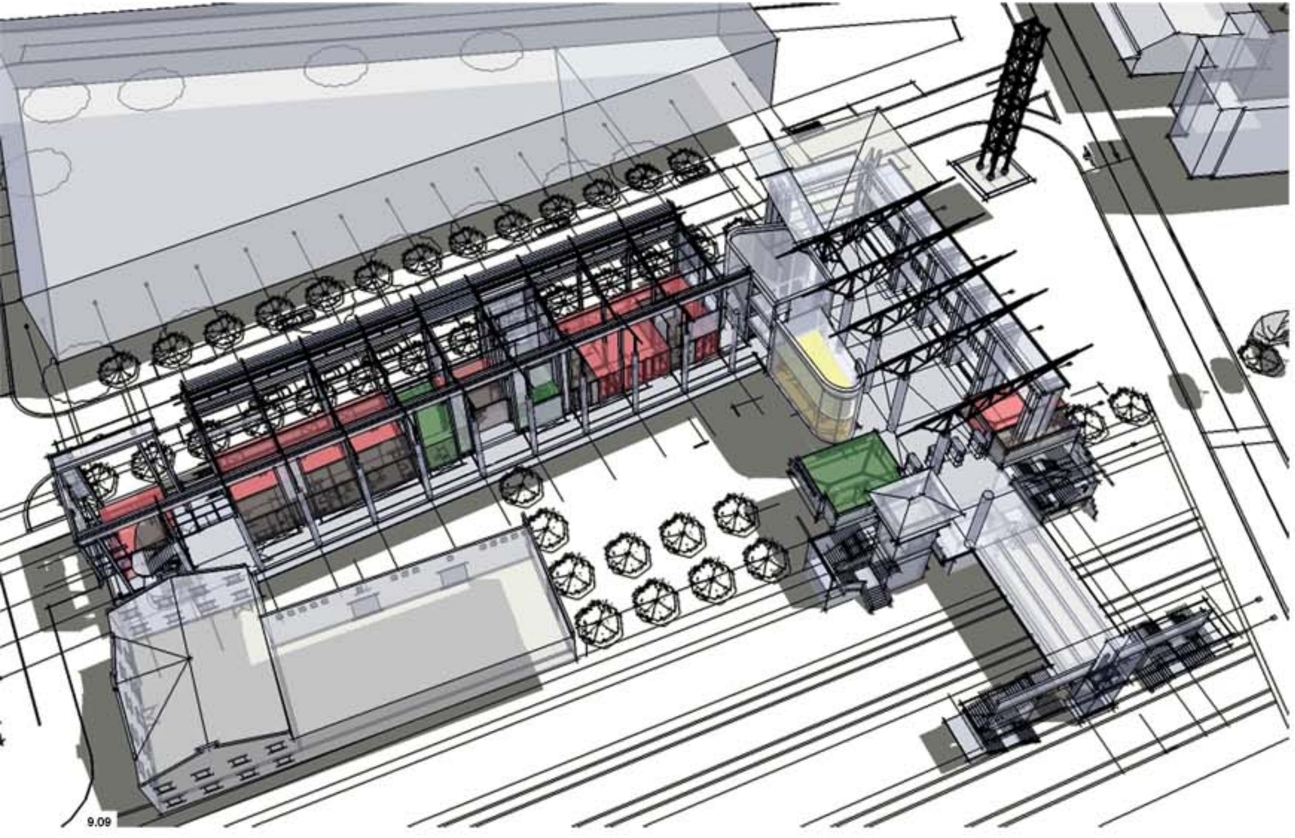


9.07



9.08

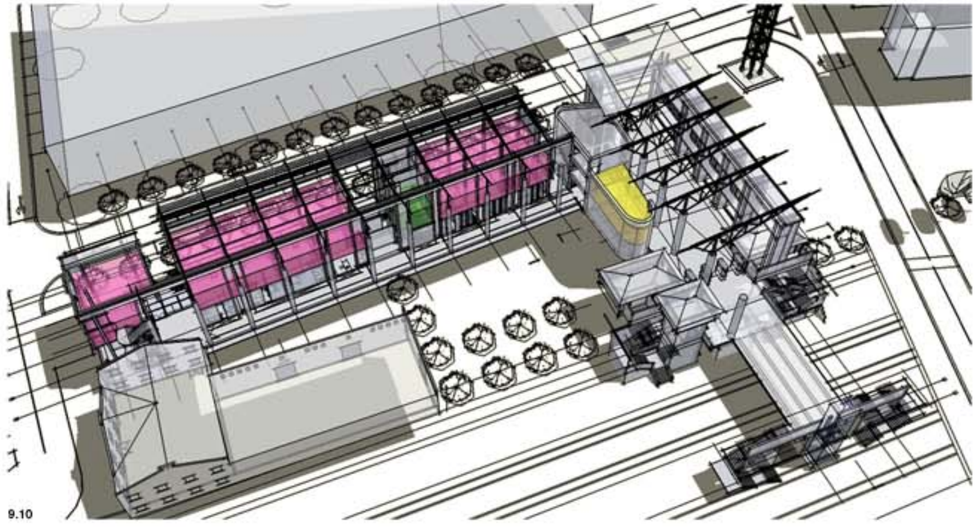
Building programme



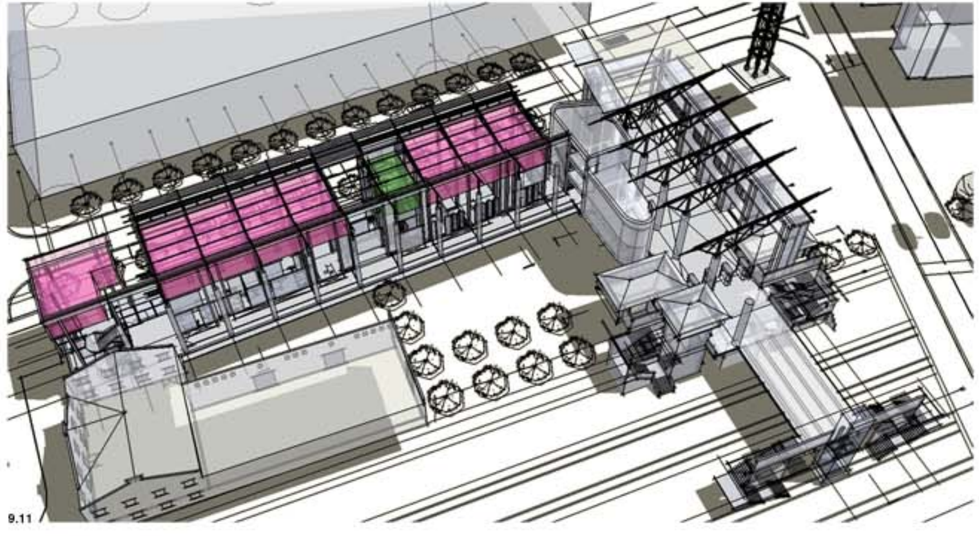
9.09

Retail
Back-of-house (Retail)
Station administration
Office
Ablutions

9.09 Ground floor programme
9.10 First floor programme
9.11 Second floor programme



9.10



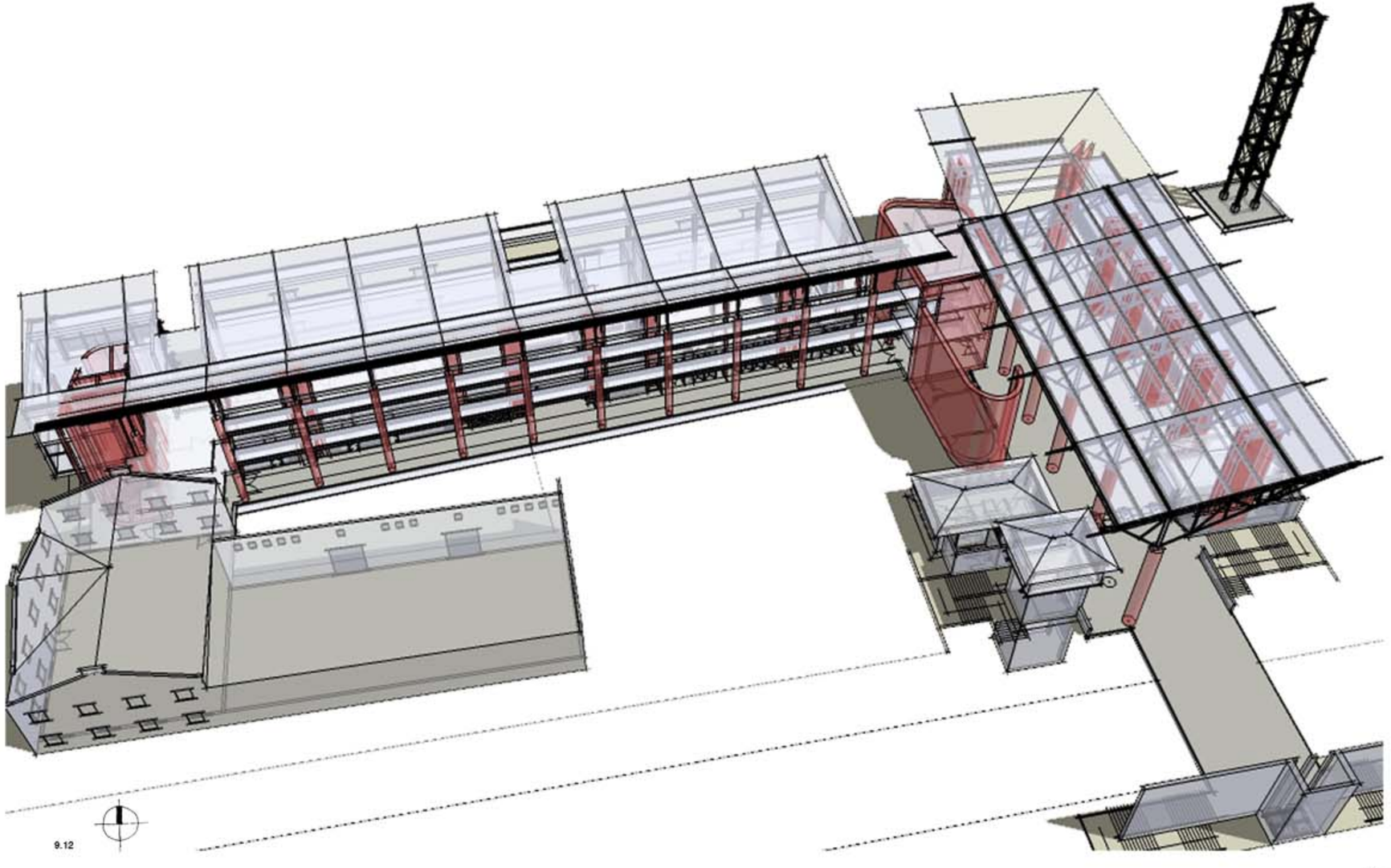
9.11

Structural system

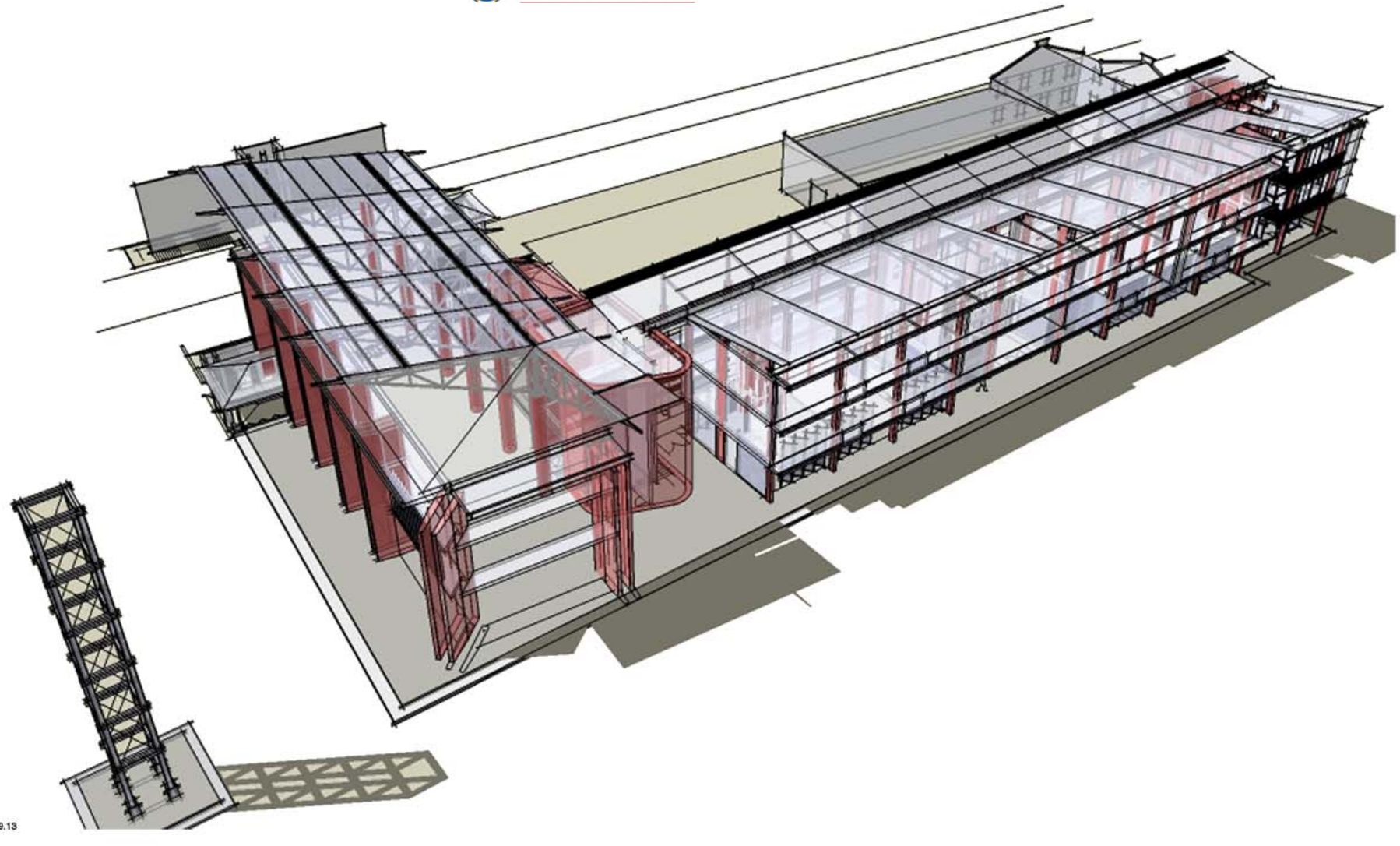
The primary reinforced concrete structure of the proposed building is based on a 6m x 6m grid. It consists of columns and beams, with lateral stability provided for by the service shafts and concrete floor slabs. This skeletal structure is informed by Le Corbusier's "Domino Structure", and allows for flexibility within the building. As such, it accommodates future changes to the building programme.

Due to the adaptable nature of the proposed building and its variable functions, the building is designed to achieve flexibility. This is achieved by the bulk of interior walls consisting of dry-walling that can be easily moved to achieve any required spaces. This results in a reduction of the overall weight of the building and enables easy adaptation. In addition, dry-walling achieves the required acoustic levels and is reusable.

Similarly, services are provided for by means of vertical shafts. Floor to ceiling heights are 3.6m at ground floor level and 3.3m on the upper levels and allows for the accommodation of suspended ceilings should it be required for the effectiv distribution of services, or for reasons relating to accoustics.



9.12 3D model of the proposed building with the structural system highlighted in red

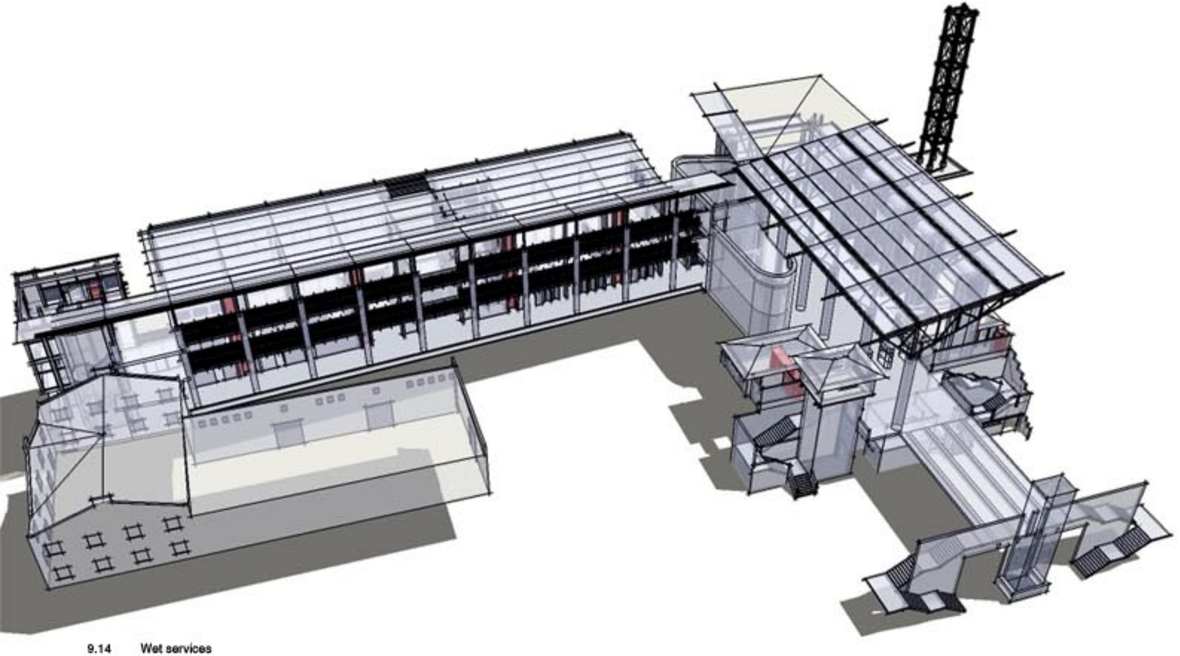


9.13 Structure viewed from the north

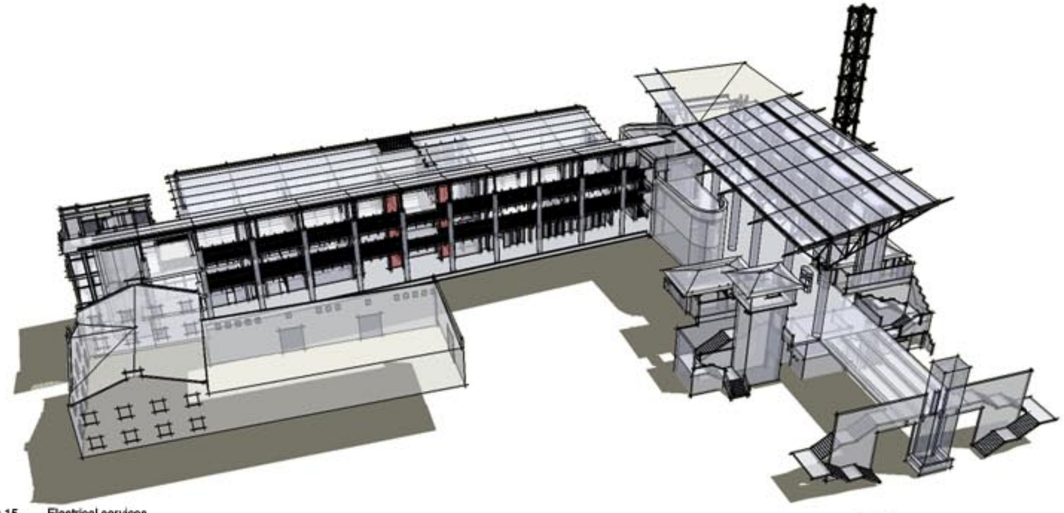
9.13

Vertical service ducts

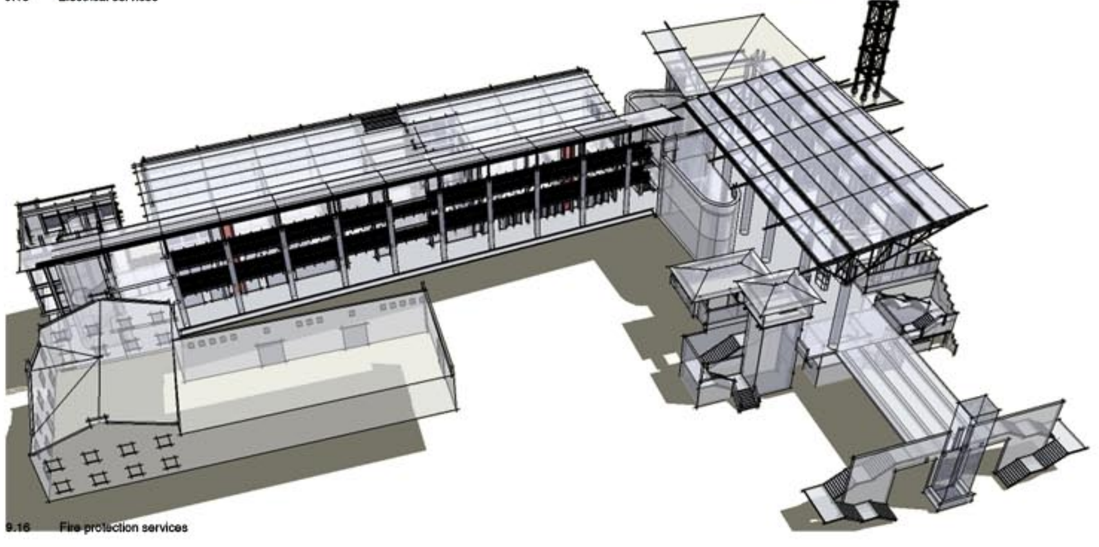
Various services are housed in separate vertical ducts located on the southern façade. These include wet services, fire protection services, and electrical services.



9.14 Wet services



9.15 Electrical services



9.16 Fire protection services

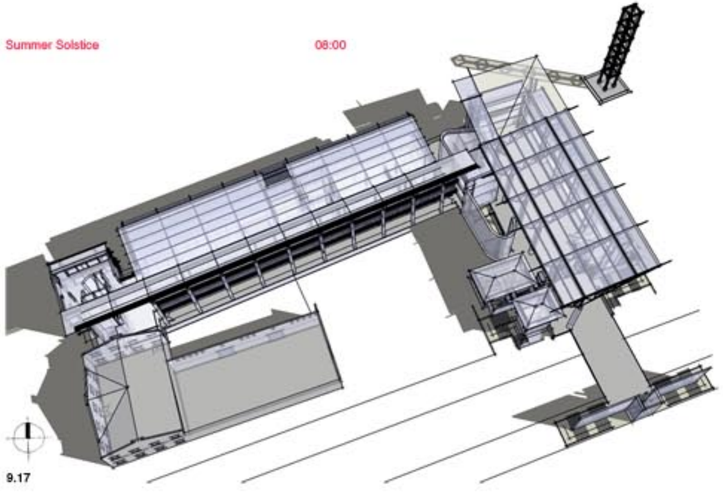
Sun study

A SketchUp massing model of the proposed building was composed to examine the day lighting scenario. Natural lighting scenarios were examined for both the summer and winter solstices at 08:00, 12:00 and 16:00. From this investigation it becames clear that the summer scenario differs greatly from the winter. In summer, the internal courtyards are exposed to sunlight for the bulk of the day, with minimal shade in the morning and afternoon. This is not the case during the winter solstice when the internal courtyards are primarily shaded for the entire day.

This sun study determines that large indigenous trees can be used to strategically provide shade during the summer months.

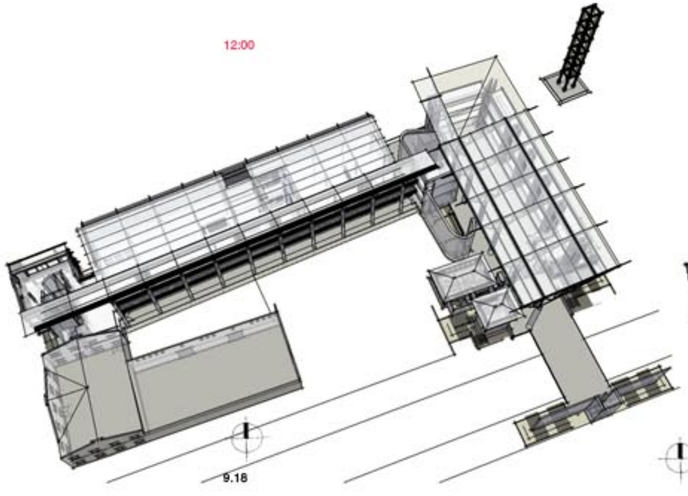
Summer Solstice

08:00



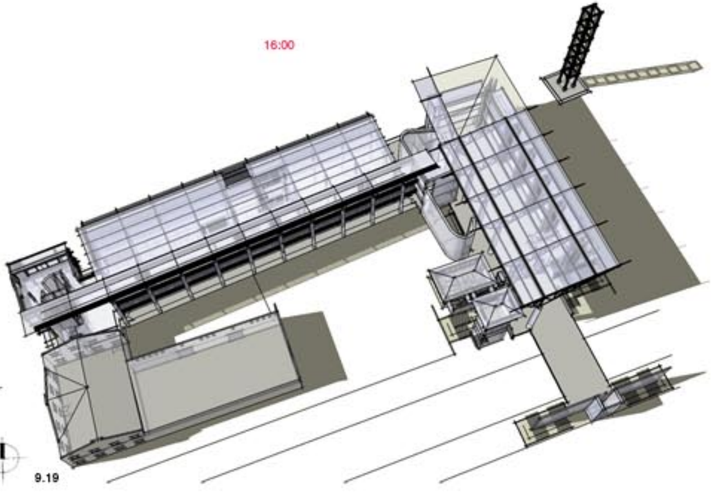
9.17

12:00



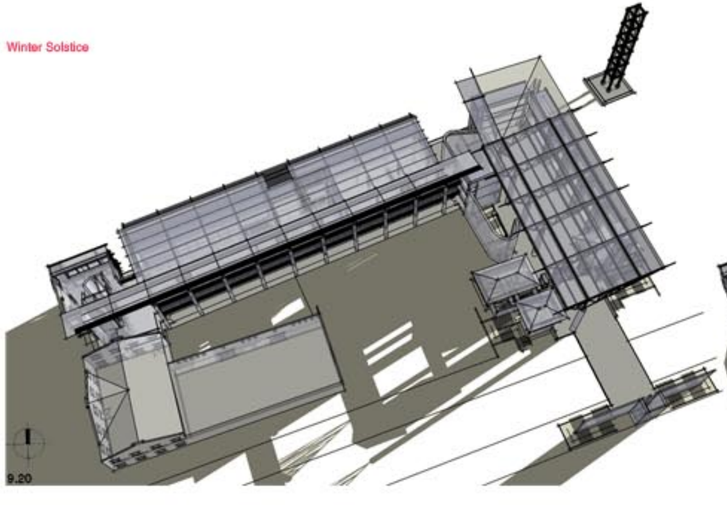
9.18

16:00

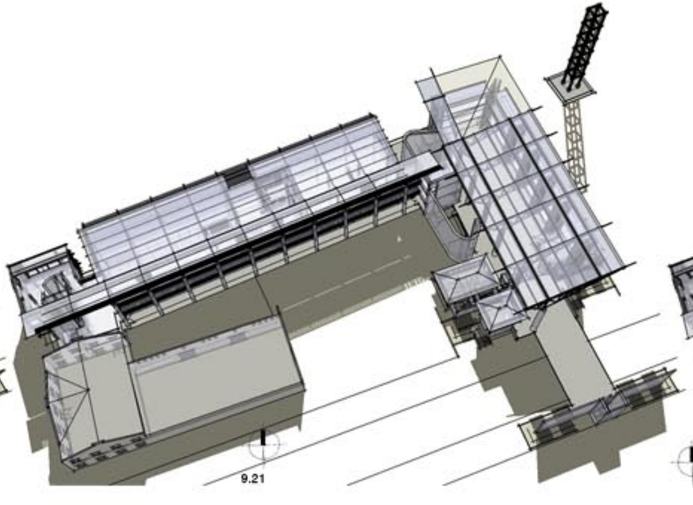


9.19

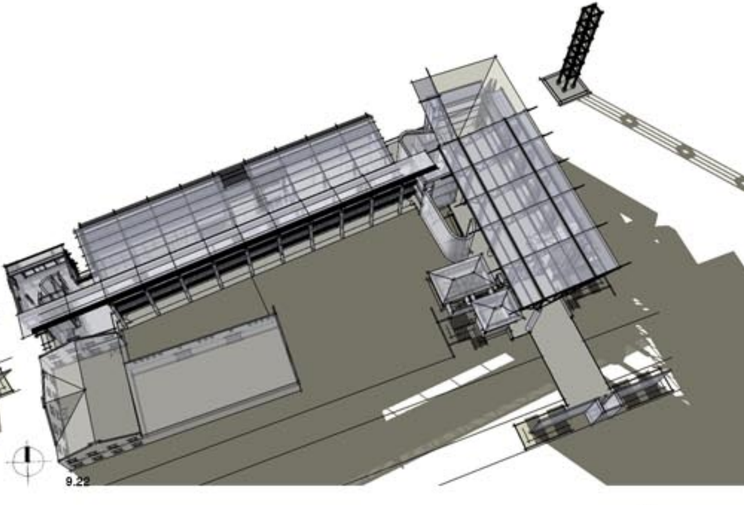
Winter Solstice



9.20



9.21



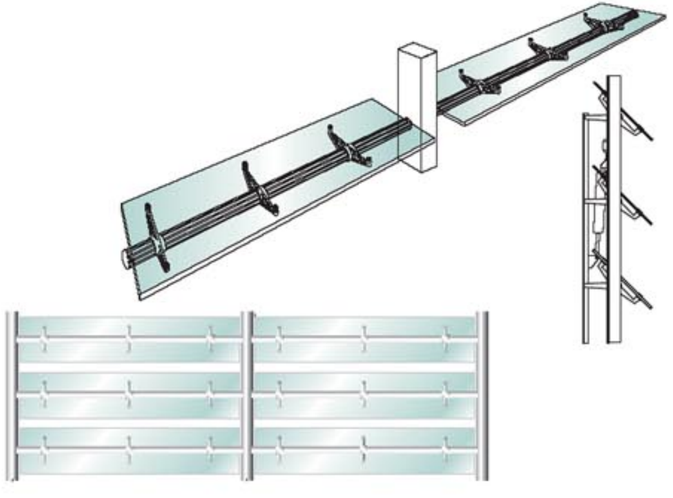
9.22

9.17 08:00 Summer Solstice
9.18 12:00 Summer Solstice
9.19 16:00 Summer Solstice
9.20 08:00 Winter Solstice
9.21 12:00 Winter Solstice
9.22 16:00 Winter Solstice

Solar control

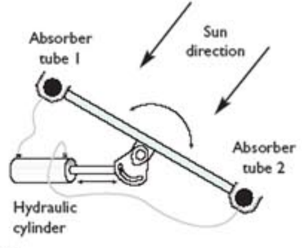
Vertical solar shading on the eastern and western façades of the station concourse is achieved with the use of Colt Shadowglass Glass Solar Shading System. This system provides a "solution to low energy building demands by maximising natural daylight whilst controlling solar heat gain and glare. Shadoglass also affords a view outside, ensuring that occupants remain connected to the external environment" (Colt International 2008:1). Solar control is achieved through the use of a THA-Thermo-Hydraulic control system, which is self-powered by the sun using the heat generated to expand or contract fluid within a tube. This system requires no external power, as absorber tubes that are enclosed by mirrors detect the position of the sun and force a hydraulic cylinder to open or close the louvers. "When absorber tube 1 gets hotter than tube 2, gasses in the centre tube expand which hydraulically control the cylinder rod, the louver will rotate until both tubes are in equal alignment with the sun" (Colt International 2008:15).

9.23

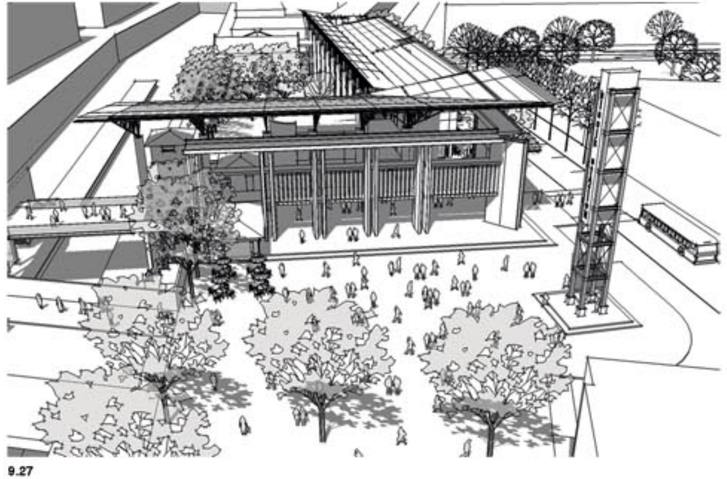


9.24

9.25



9.26



9.27

9.23 Office interior with Colt Shadow Glass louvres (*Source*: Colt International 2006)
9.24 Colt louvre system (*Source*: Colt International 2006)
9.25 Louvres on building exterior (*Source*: Colt International 2006)
9.26 Solar control mechanics (*Source*: Colt International 2006)
9.27 Louvre system on easter facade

Cooling system

Passive Chilled Beams

Chilled Beams are a cooling system that offers an alternative to conventional mechanical ventilation systems. It was first introduced in 1962 and has been extensively use in both the UK and Australia over the past 15 years (Frenger Systems 2008).

Passive Chilled Beams use potable water as a heat transfer medium. The water is circulated through copper cooling pipes bonded in aluminium heat transfer fins, which enables the cooling of a large area through both natural convection and radiation (Frenger Systems 2008). As warm air rise, it is drawn to the chilled beam and cooled before returning downwards. This results in the system being quiet and draft free. The system can be fully integrated with a normal suspended ceiling, but will require perforated ceiling tiles immediately surrounding it to work effectively.

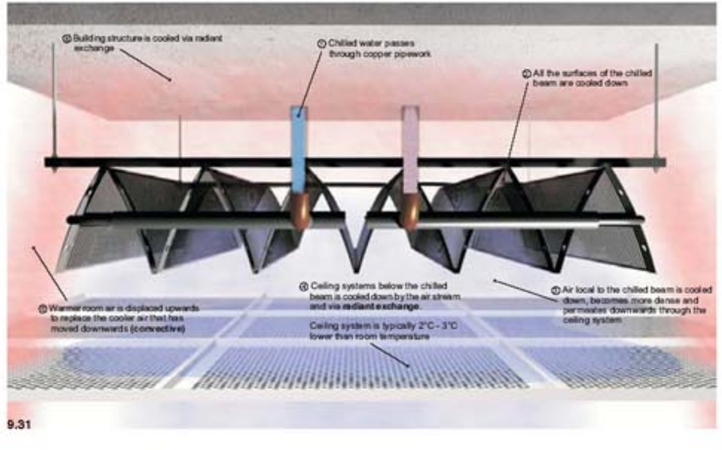
Multiservice Chilled Beam Systems (MSCB) offer the opportunity for even further incorporation of services such as cooling, uplighting and downlighting, condensation sensors and integrated control valves, fire alarms and sprinkler systems, as well as pipework, ducting and power or compartmental trunking. Passive Chilled Beams provide up to 400 W/m (up to 150 W/m2) of cooling (Frenger Systems 2008).

The system requires low maintenance as it has no moving parts. The use of copper and aluminium means that the system is both durable and recyclable. In addition, the system has a life cycle guarantee of up to 25 years (Frenger Systems 2008).

9.28

9.29

9.30



9.31

9.32

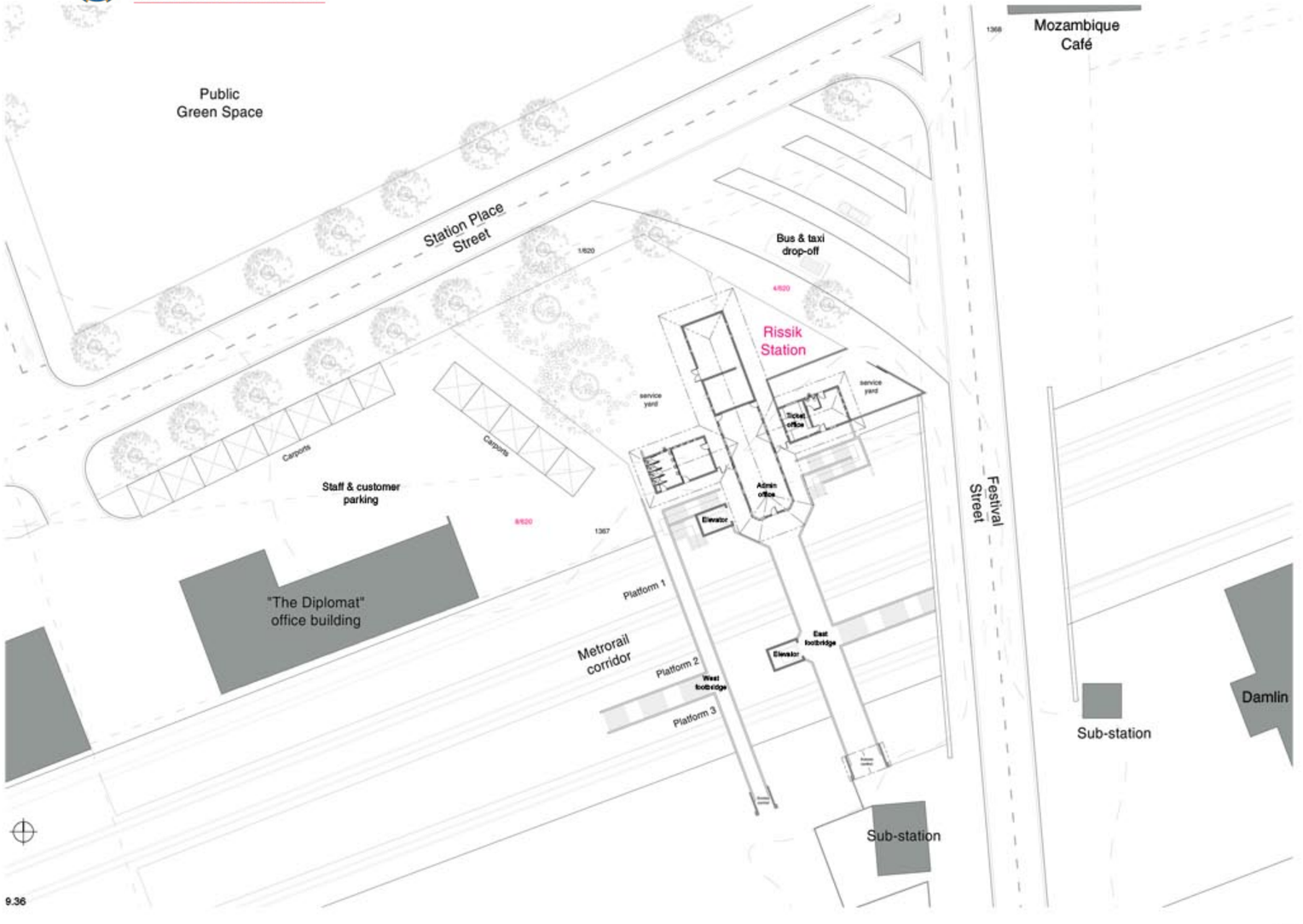
9.33

9.34

9.35

9.28 Frenger's Carat chilled beam (Frenger Systems 2006)
9.29 Hanging Carat with adjustable suspension wire (Frenger Systems 2006)
9.30 Multiservice Chilled Beam Systems (MSCB) (Frenger Systems 2006)
9.31 Cooling principle (Frenger Systems 2006)
9.32 Water point connection and flow control mechanism (Frenger Systems 2006)
9.33 Chilled beam orientation (Frenger Systems 2006)
9.34 MSCB in office setting (Frenger Systems 2006)
9.35 Installation (Frenger Systems 2006)

Drawings
Existing site plan

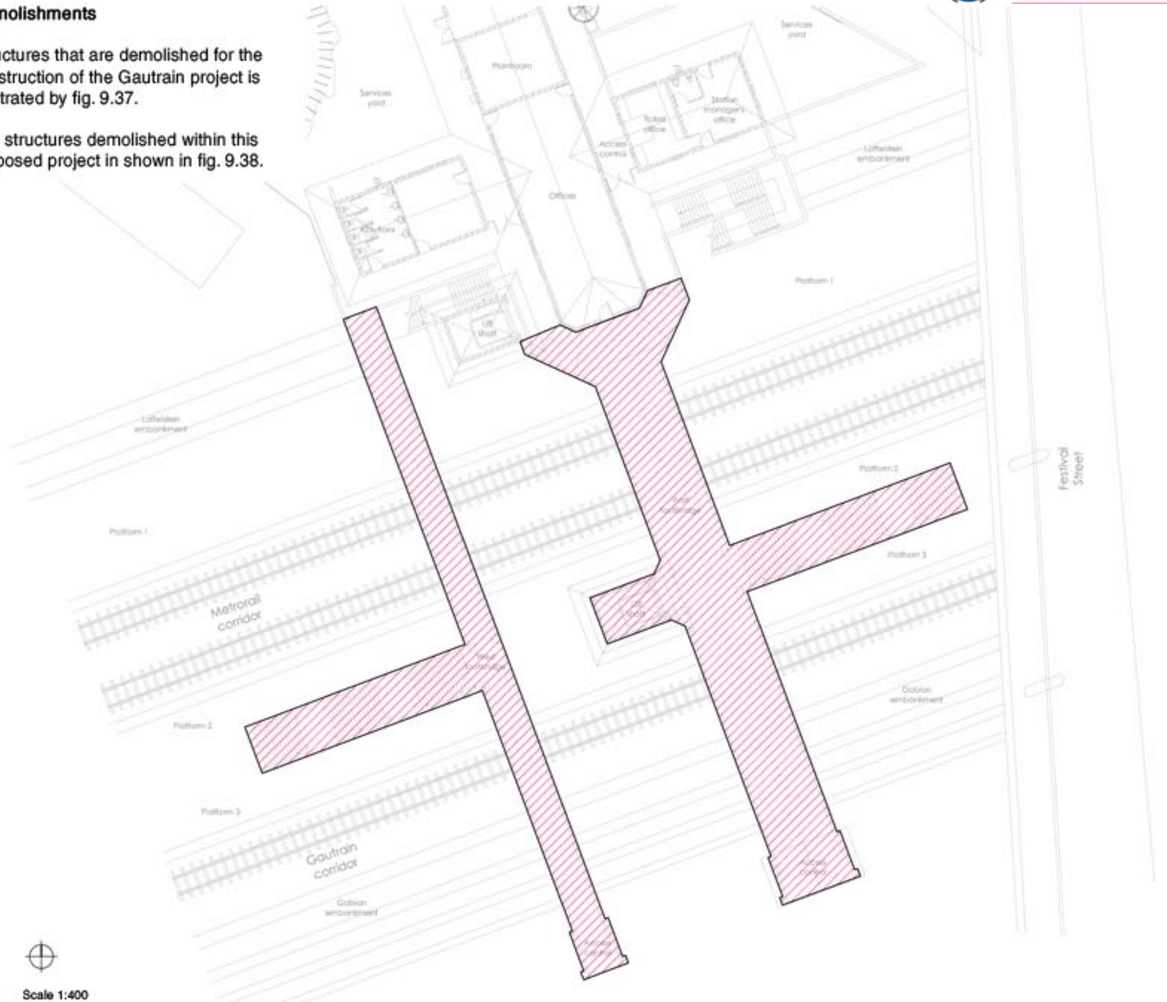


9.36 Existing site plan

Demolishments

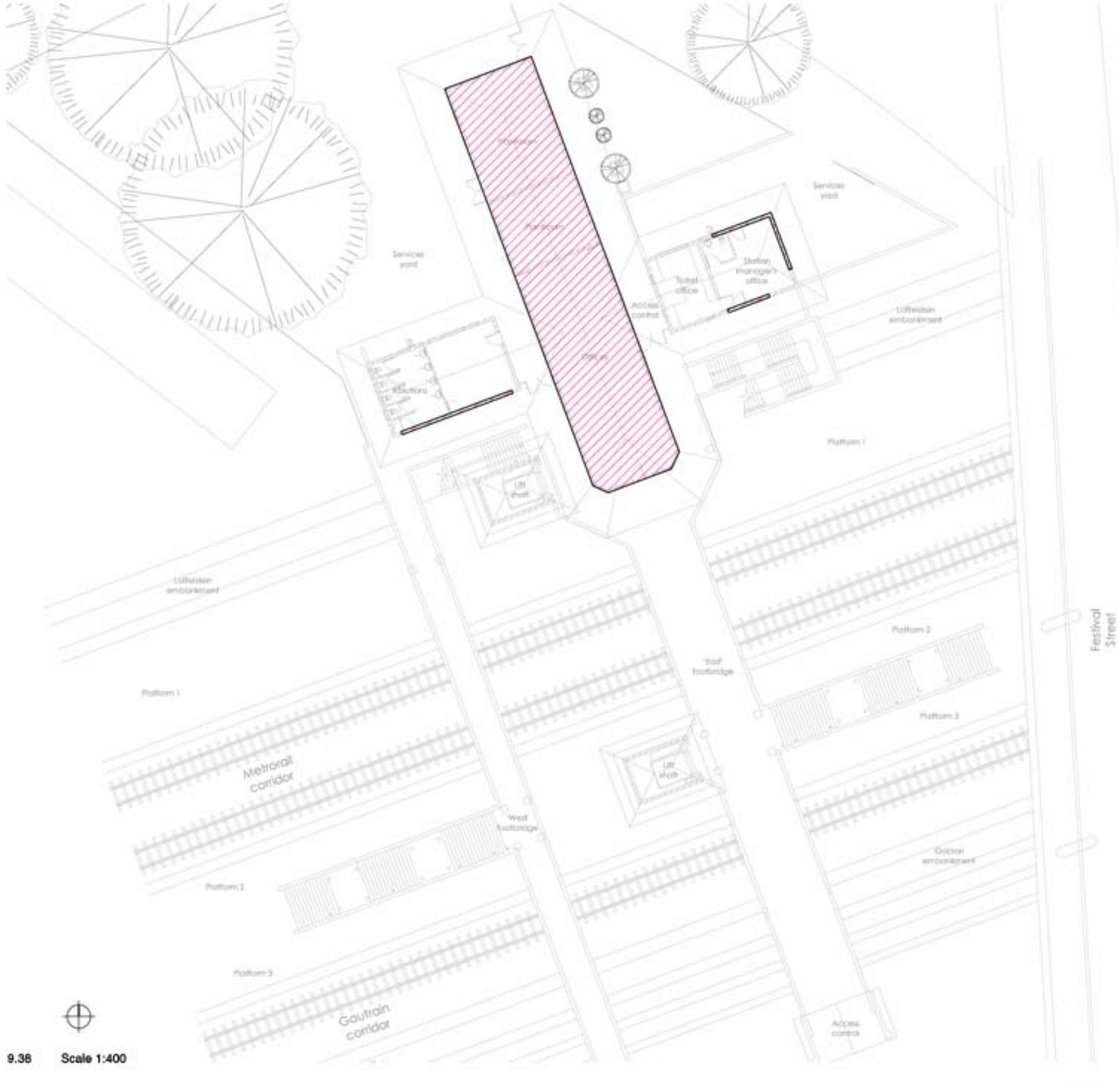
Structures that are demolished for the construction of the Gautrain project is illustrated by fig. 9.37.

The structures demolished within this proposed project in shown in fig. 9.38.



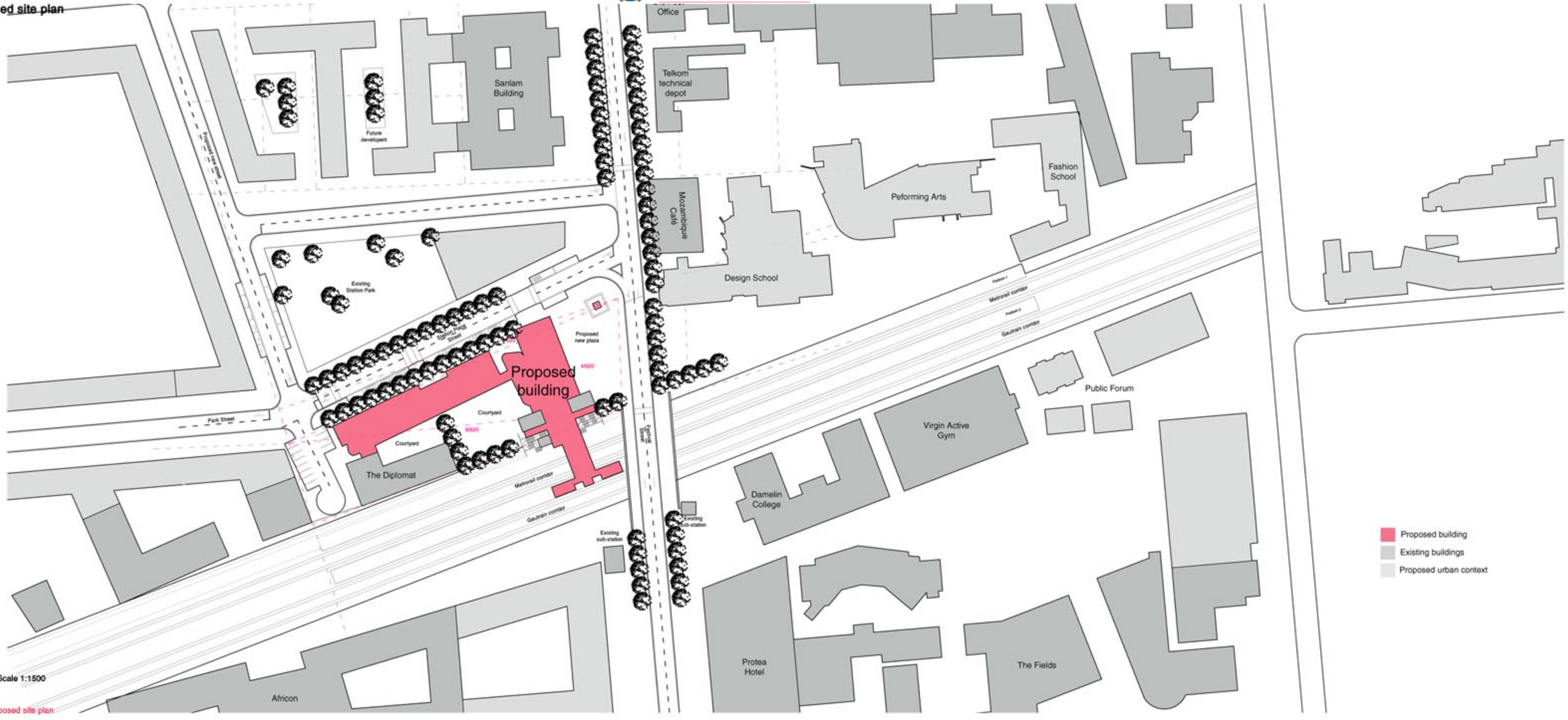
9.37 Scale 1:400

9.37 Structures demolished by the Gautrain project
9.38 Demolishment by this proposed project



9.38 Scale 1:400

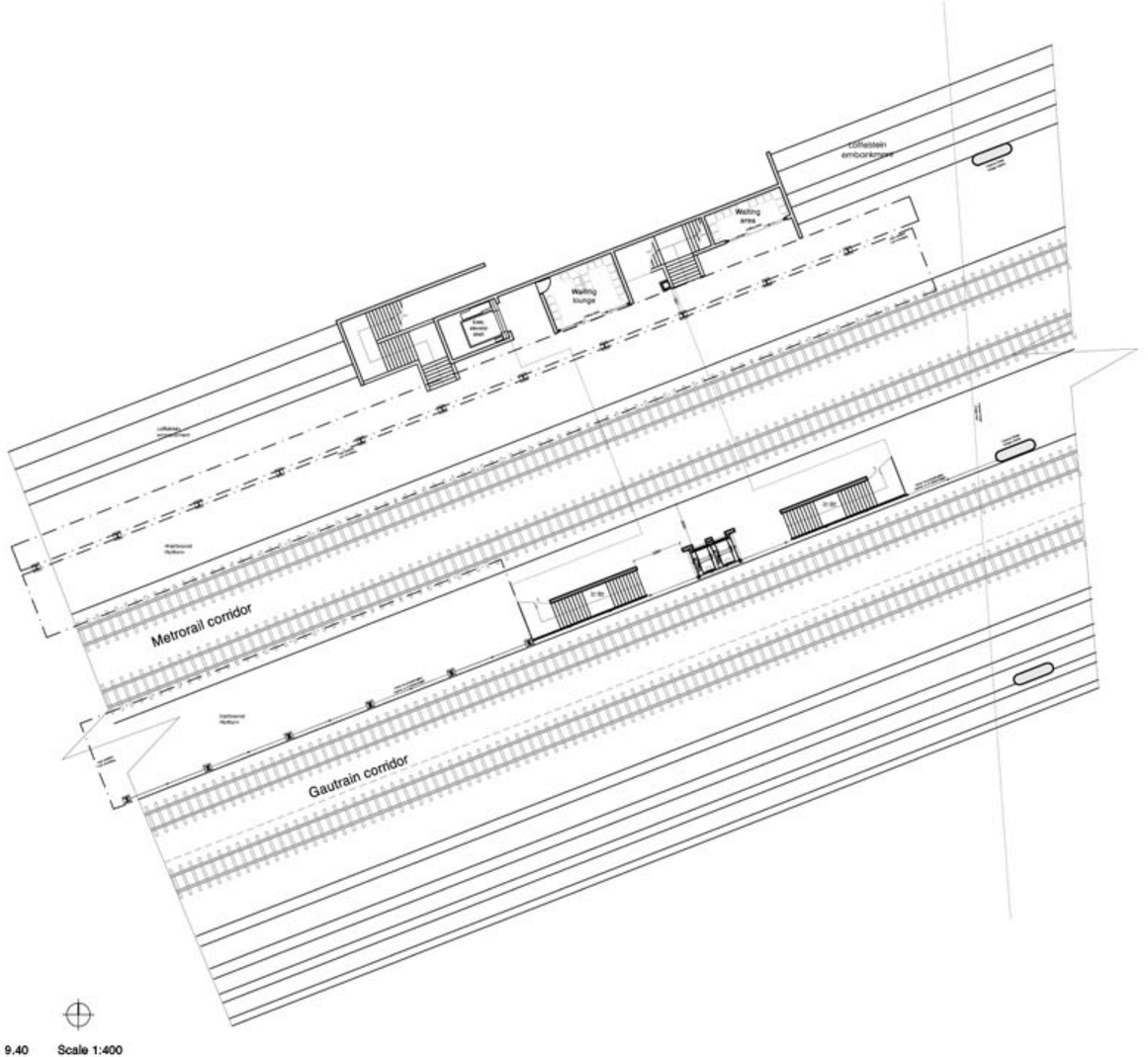
Proposed site plan



9.39 Scale 1:1500

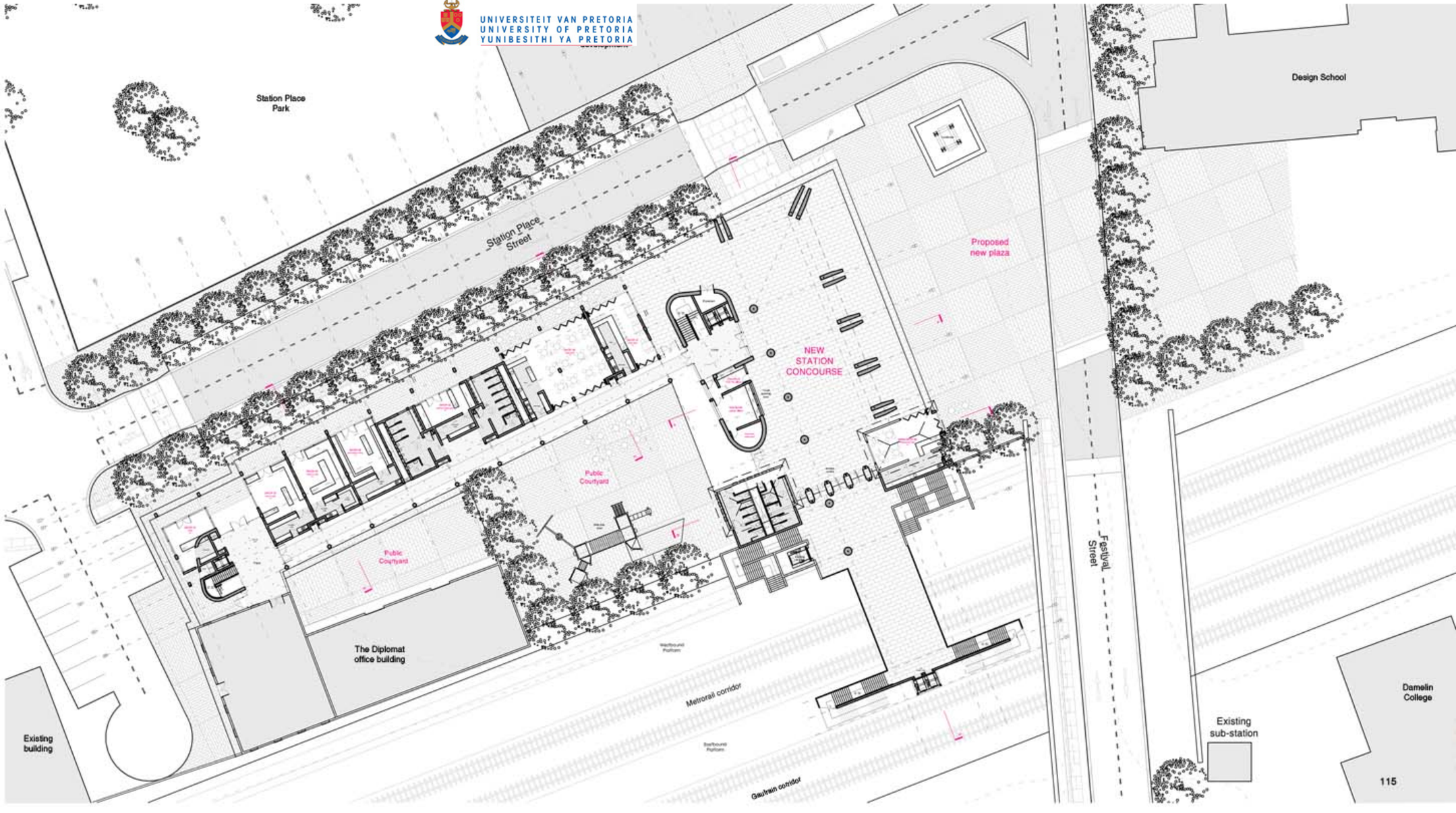
9.39 Proposed site plan

Platform level plan



9.40 Scale 1:400

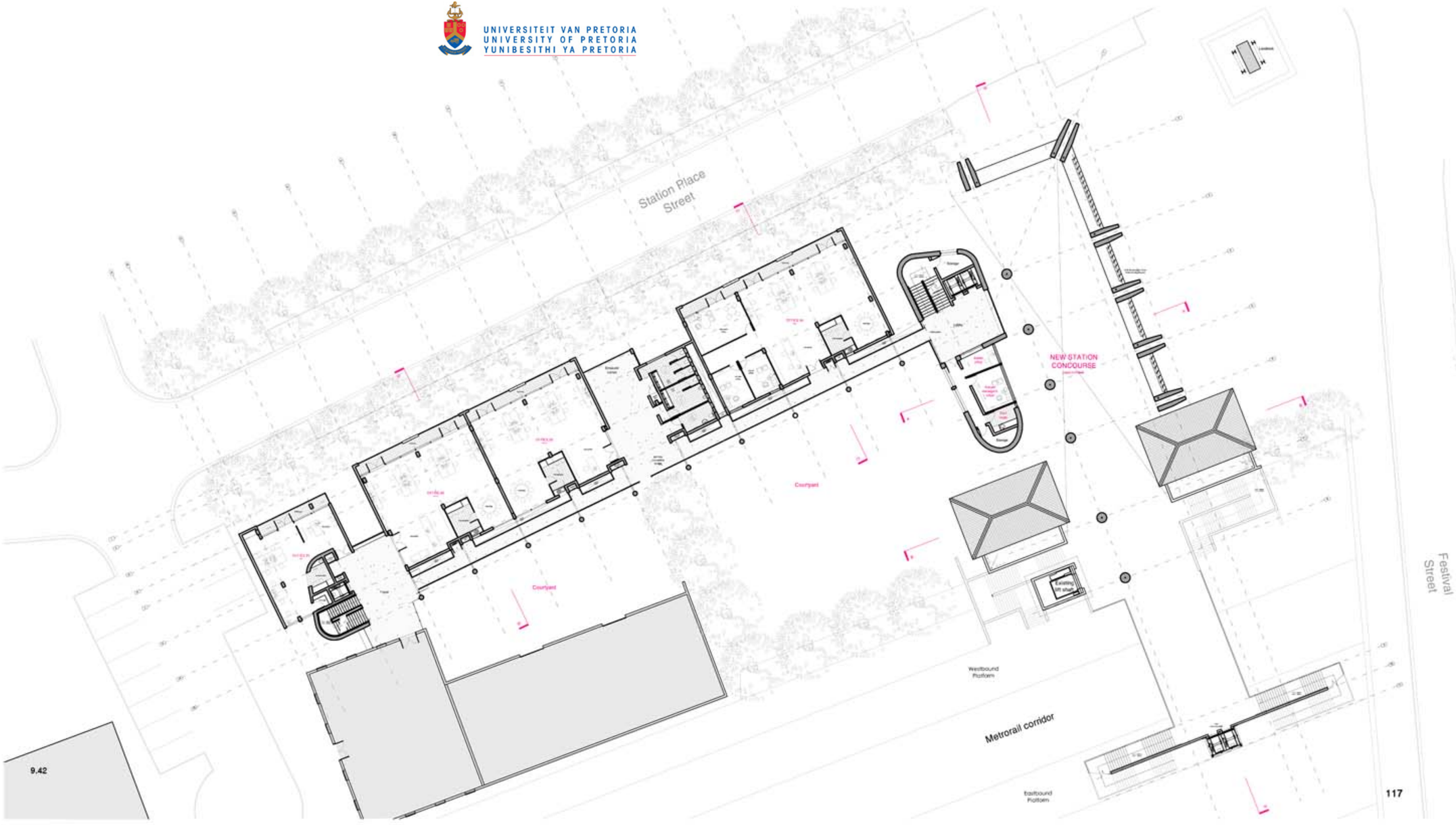
Ground floor plan



9.41 Scale 1:500

9.41 Ground floor plan

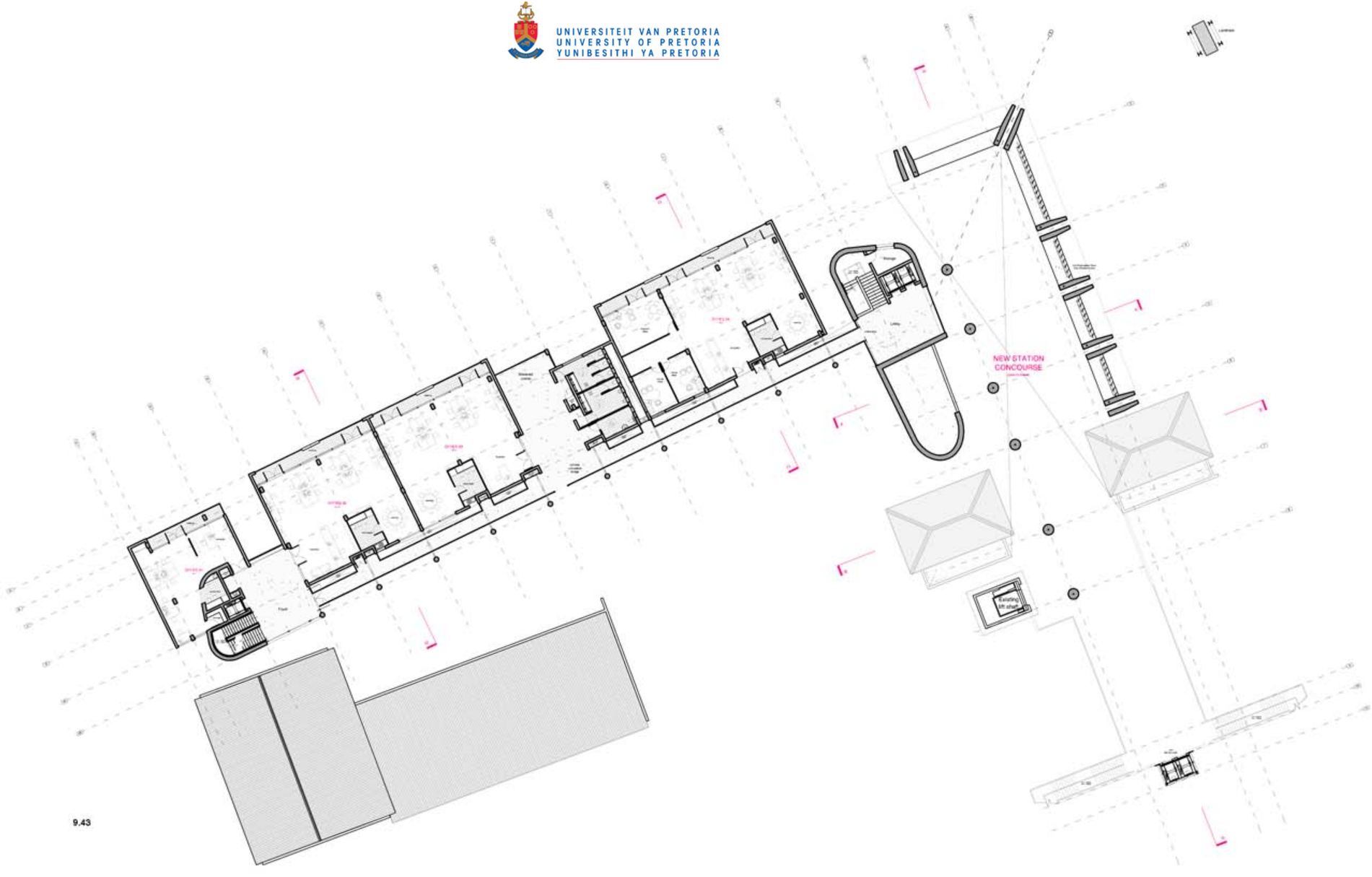
First floor plan



Scale 1:400

9.42 First floor plan

Second floor plan

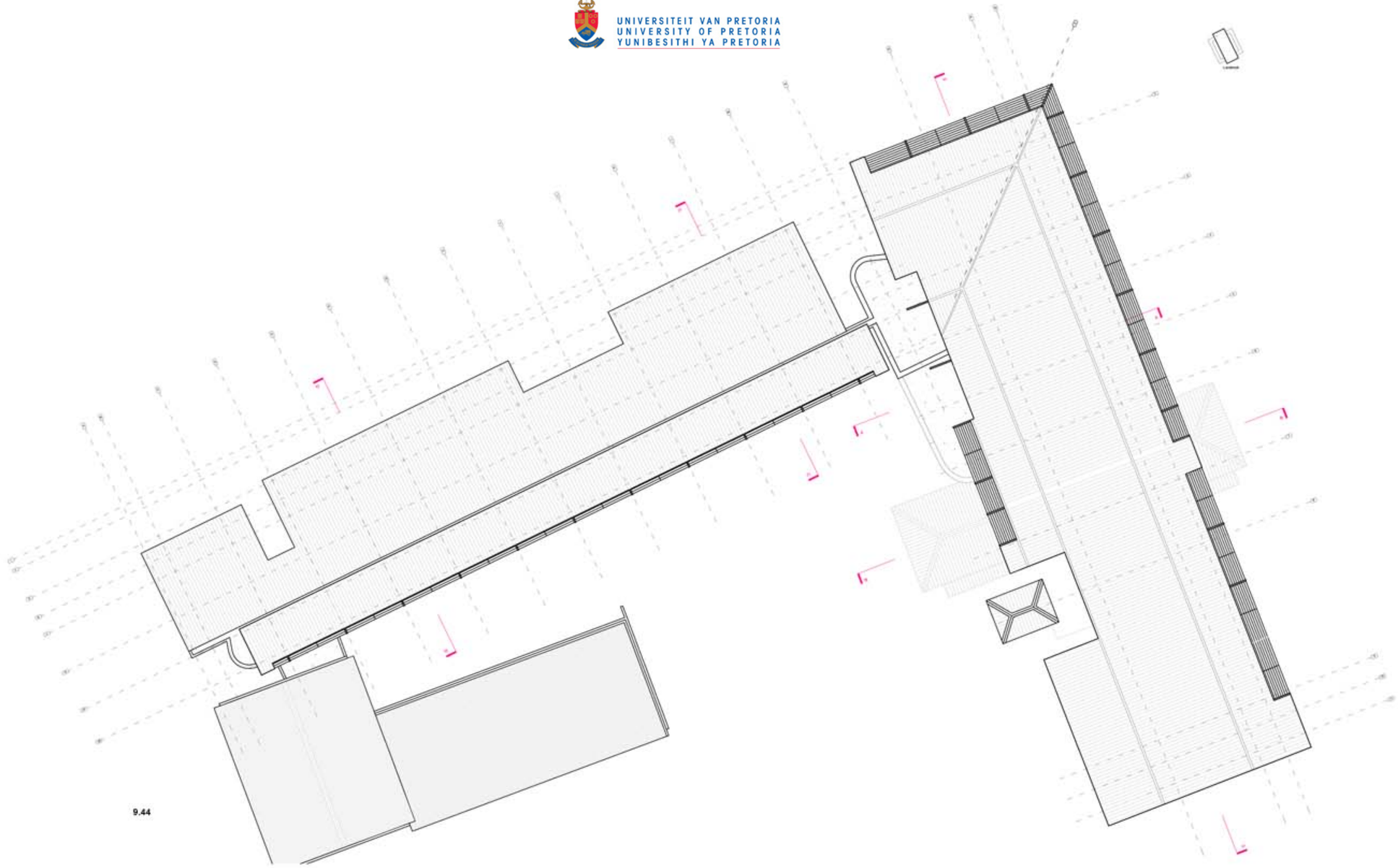


Scale 1:400

9.43 First floor plan

9.43

Roof plan

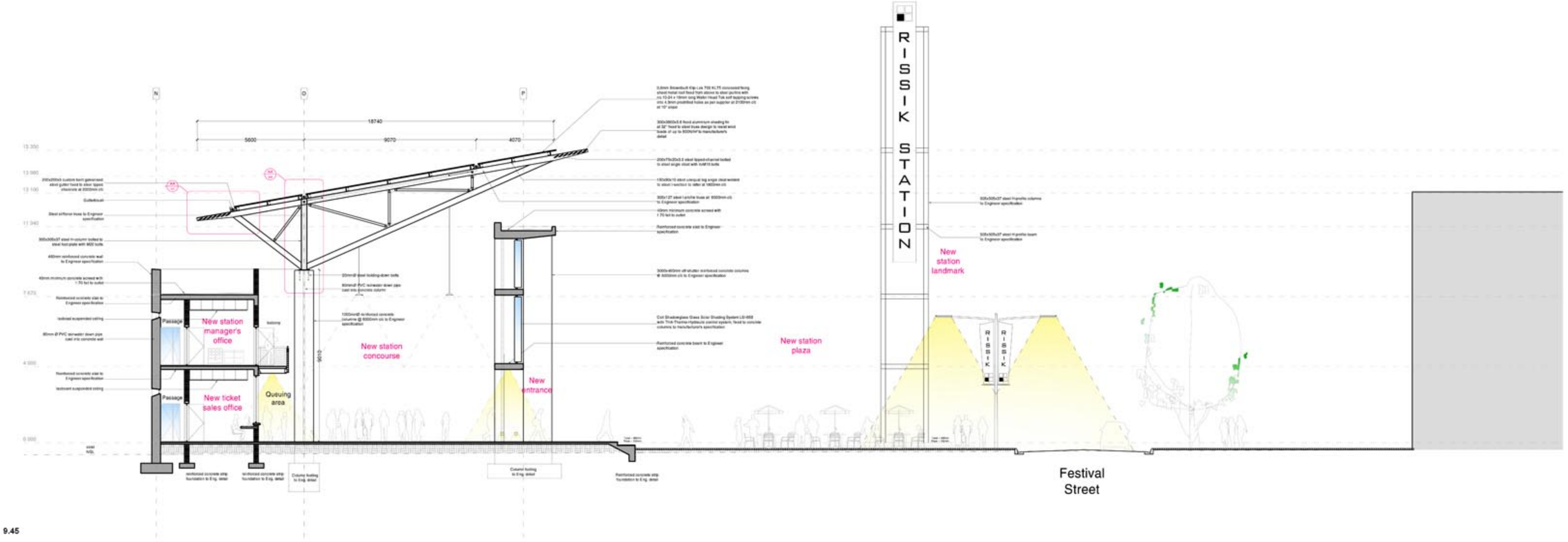


Scale 1:400

9.44 Roof plan

Section AA

Scale 1:200

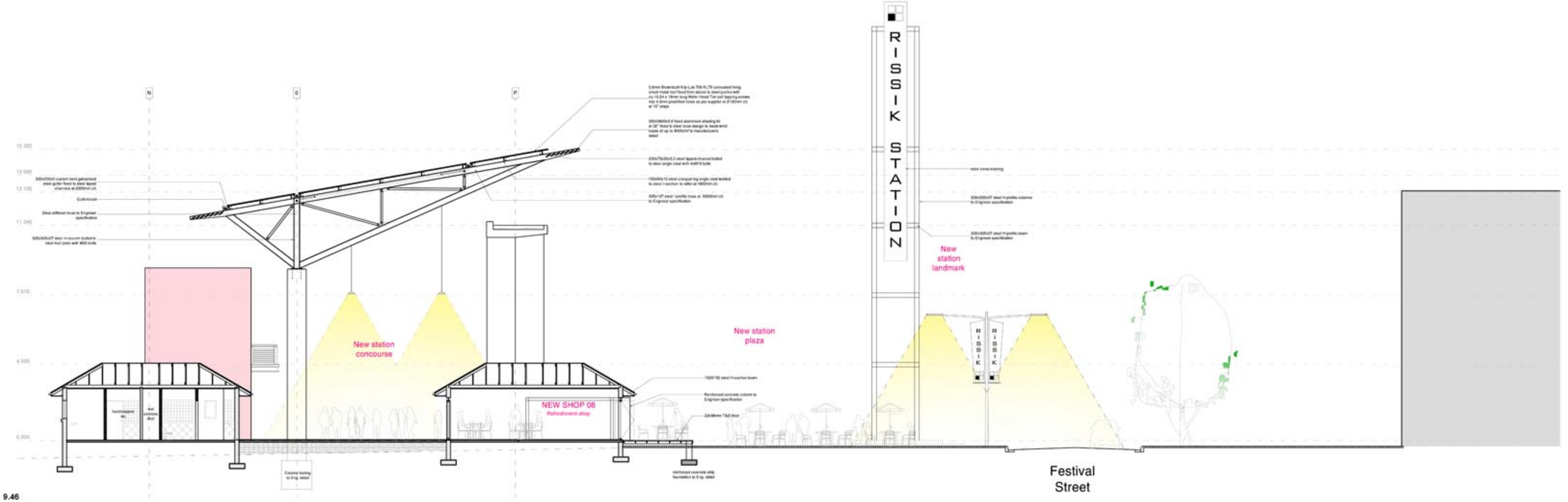


9.45

9.45 Section AA

Section BB

Scale 1:200

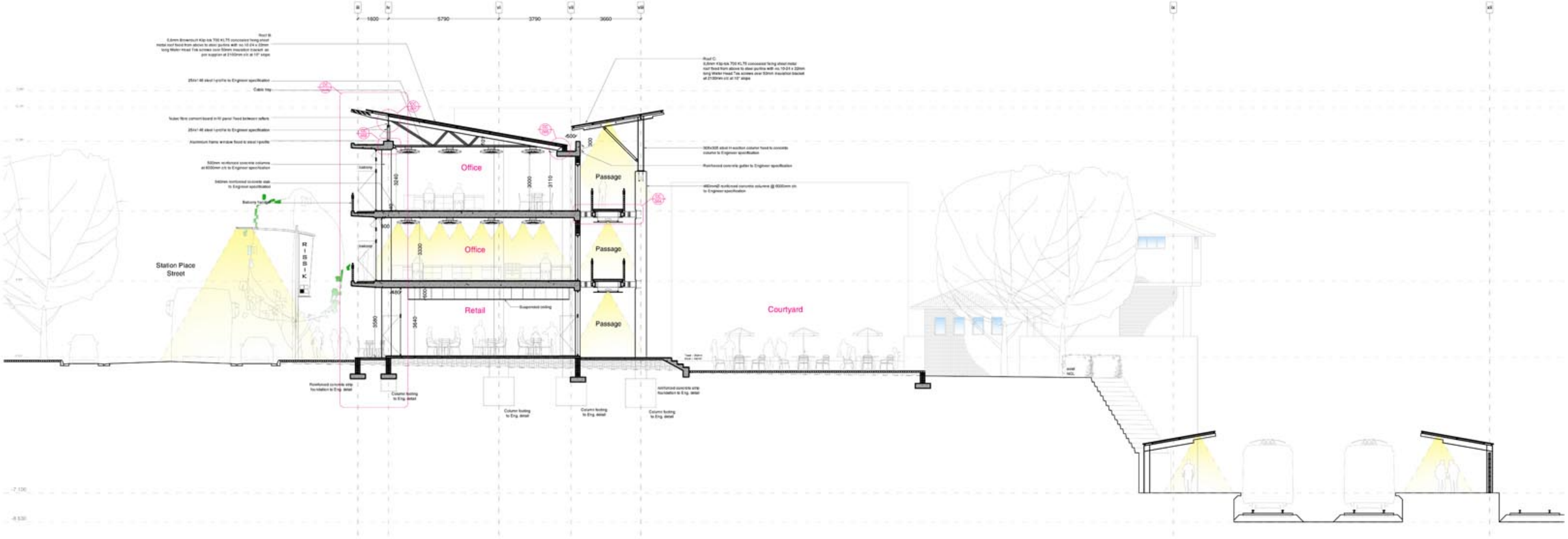


9.46

9.46 Section BB

Section CC

Scale 1:200

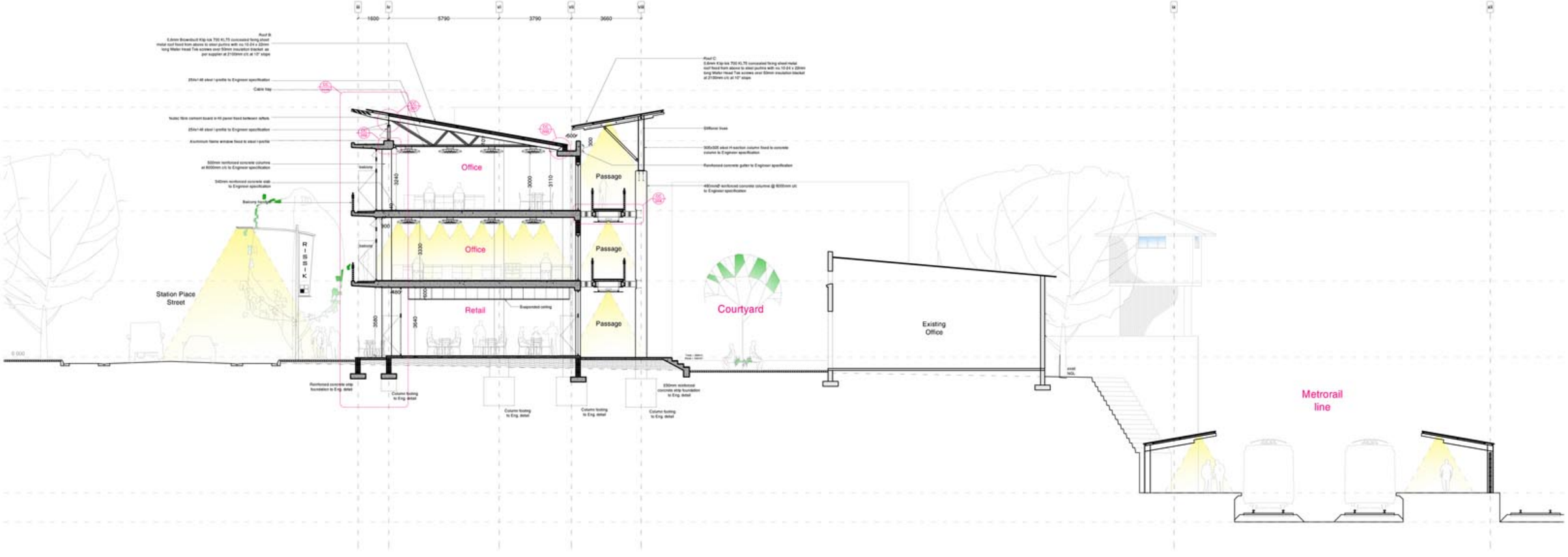


9.47

9.47 Section CC

Section DD

Scale 1:200



9.48

9.48 Section DD

Section EE

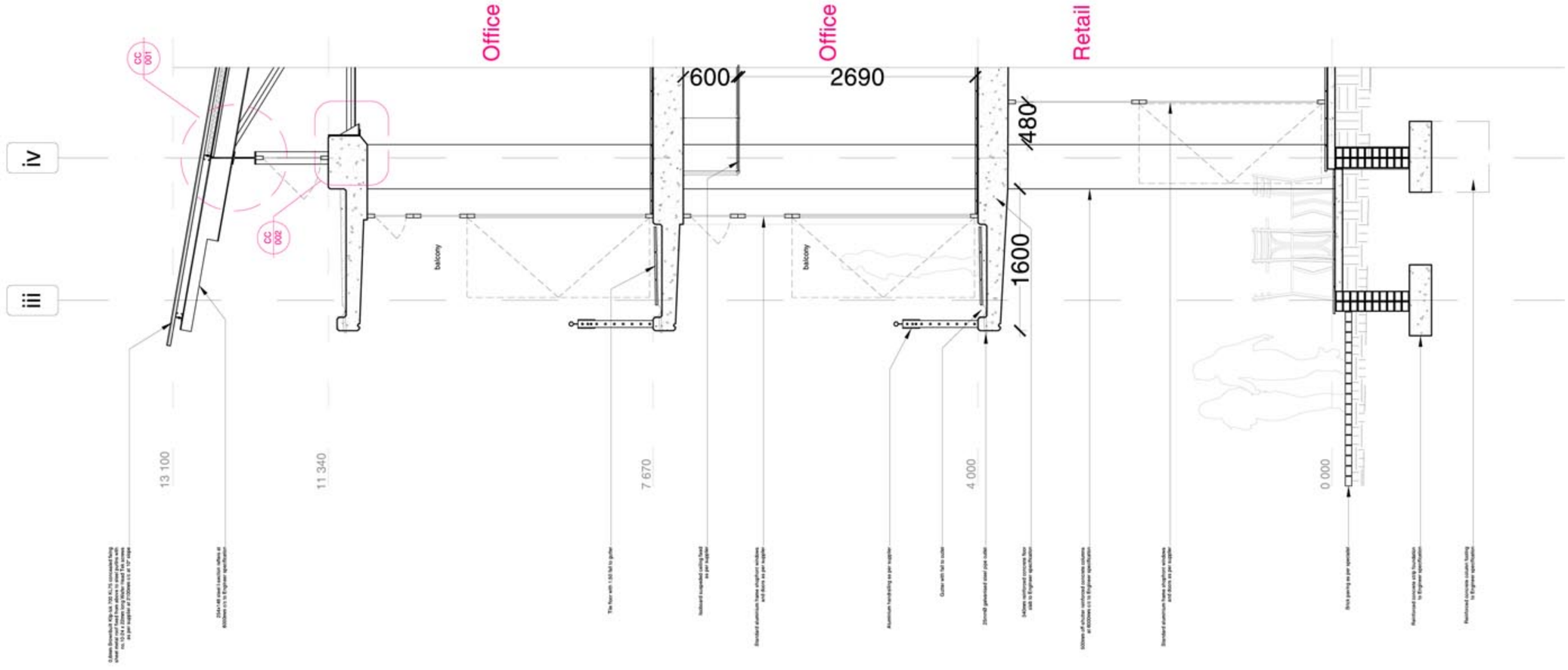
Scale 1:300

9.49

9.49 Section EE

Northern facade detail

Scale 1:50

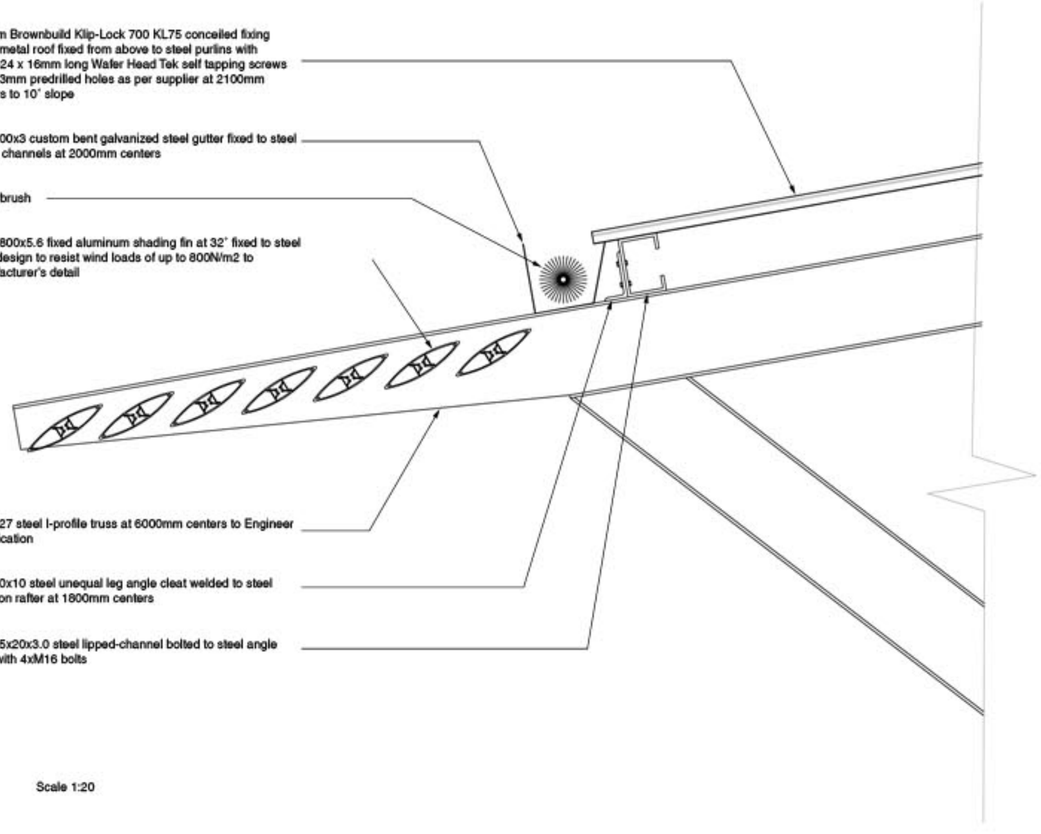


9.50

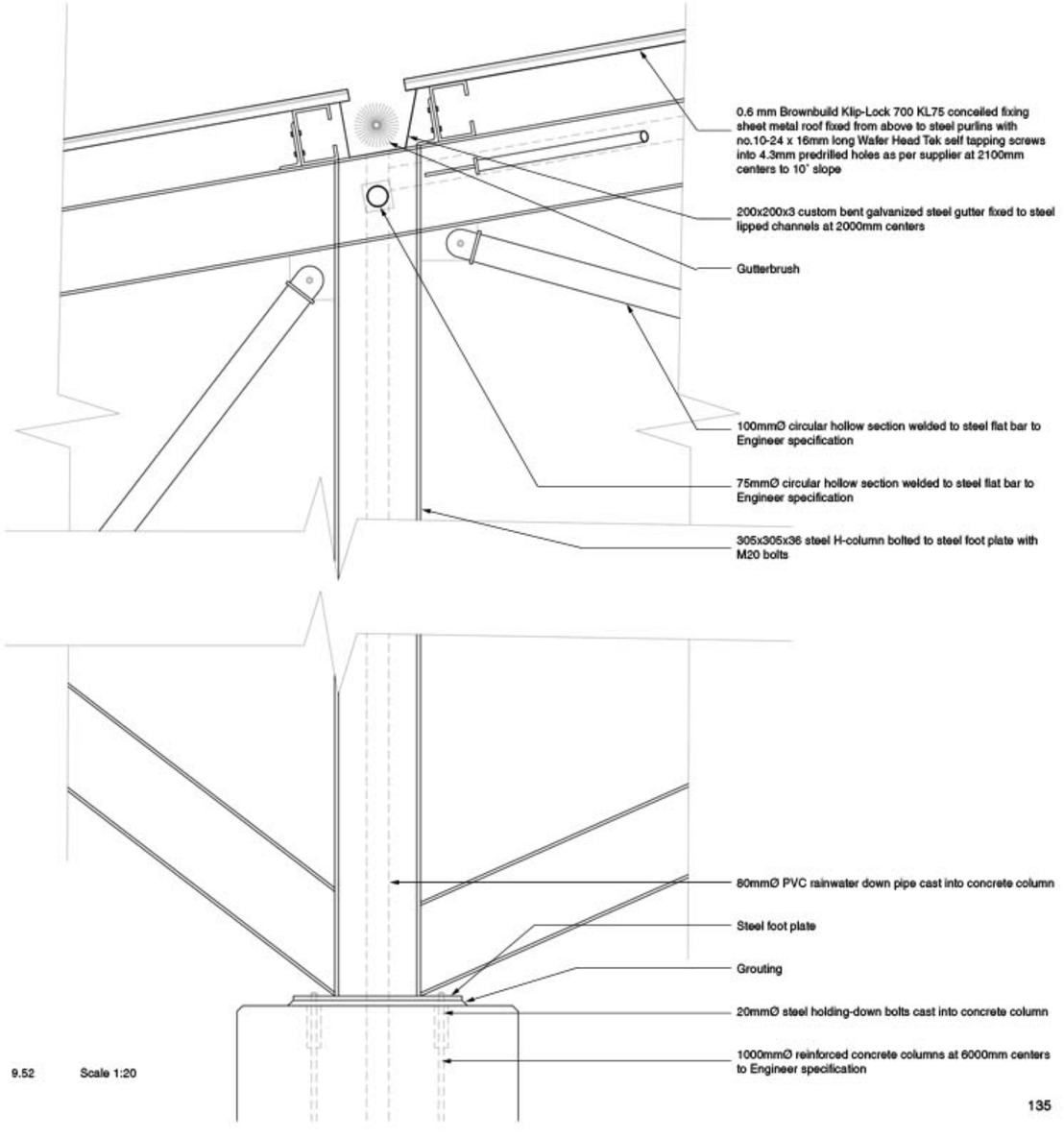
9.50 Northern facade detail

Details

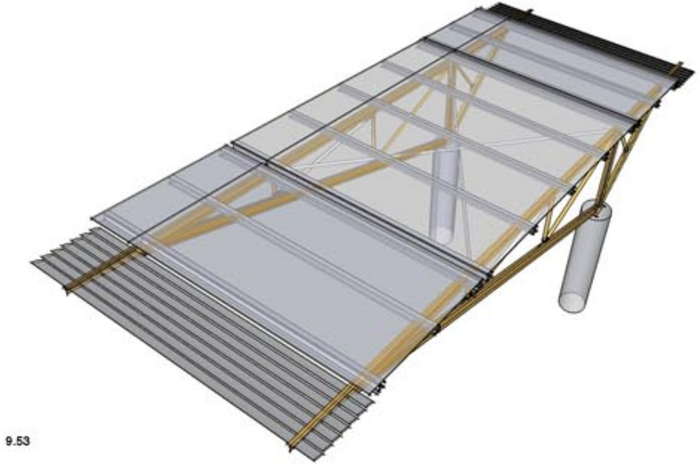
Station concourse roof



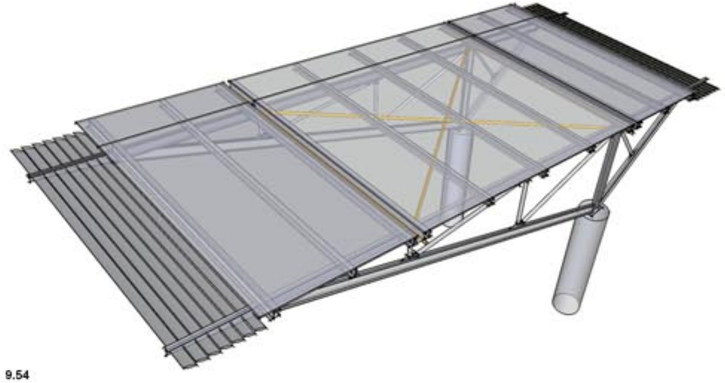
9.51 Scale 1:20



9.52 Scale 1:20



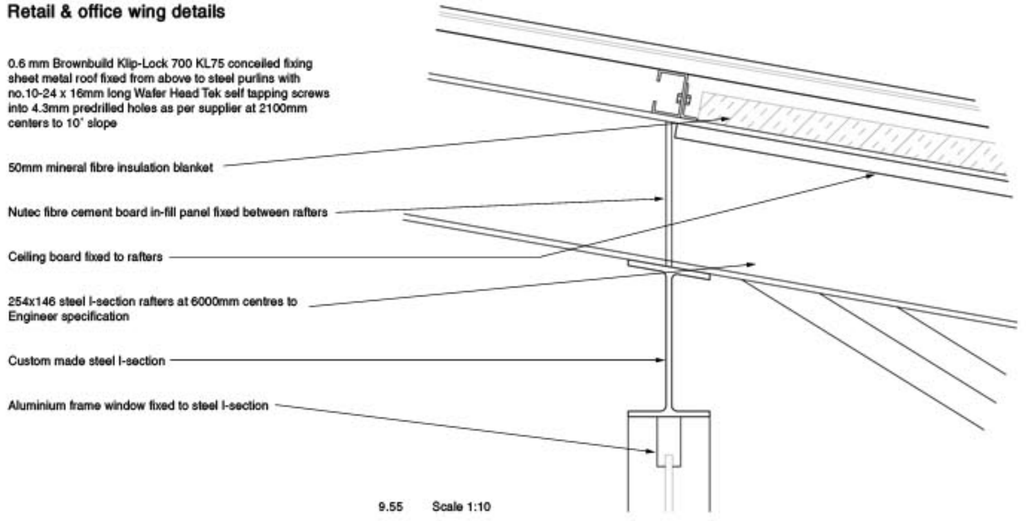
9.53



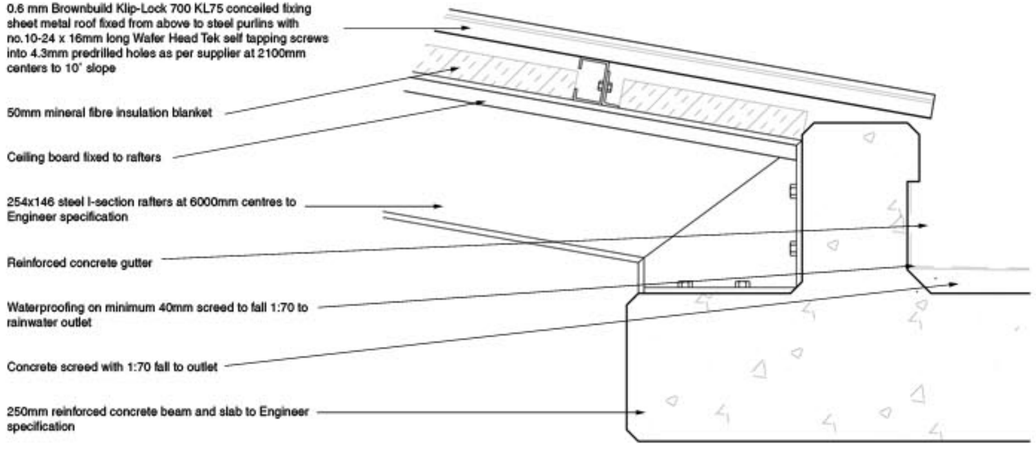
9.54

9.53 Station roof main truss
9.54 Station roof stiffeners
9.55 Roof detail on north façade
9.56 Roof fixing on south façade

Retail & office wing details

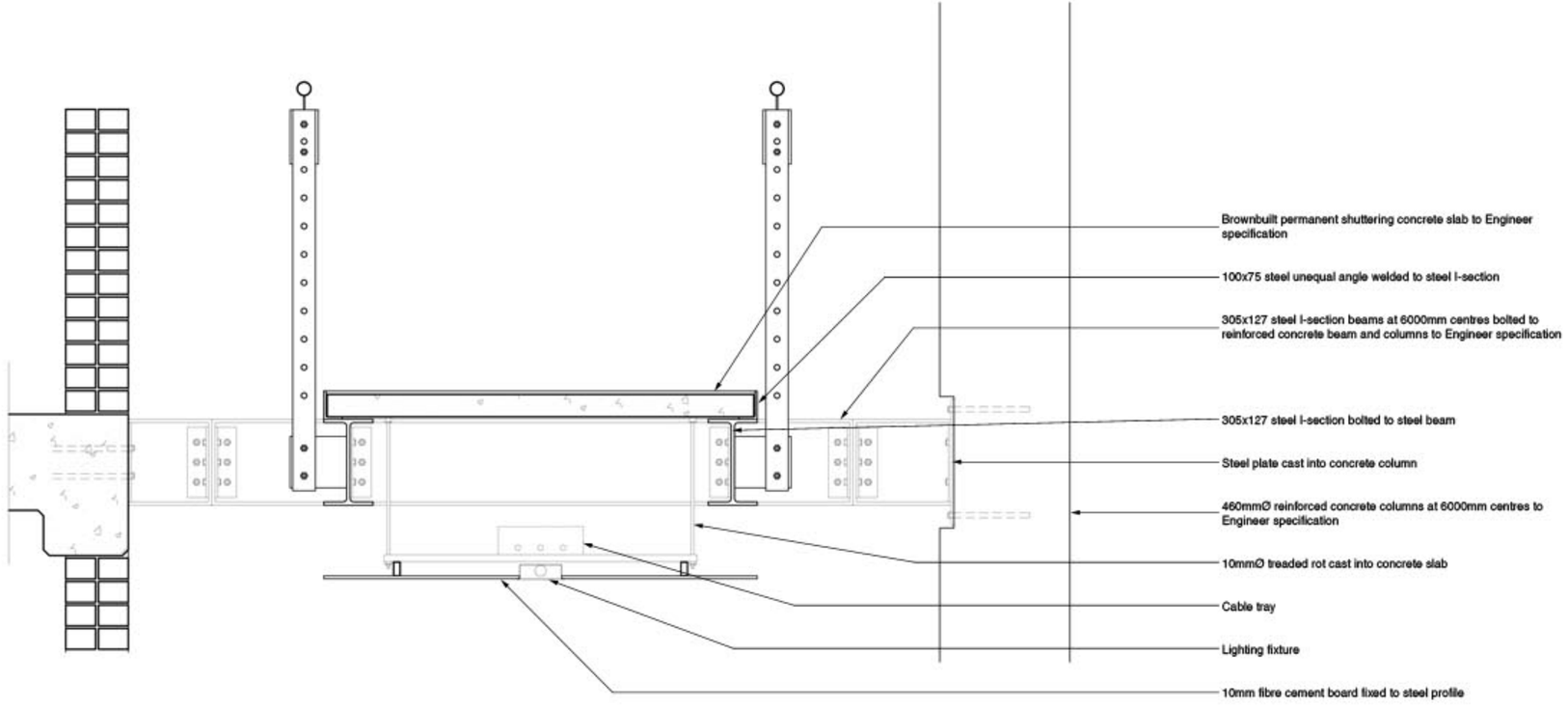


9.55 Scale 1:10

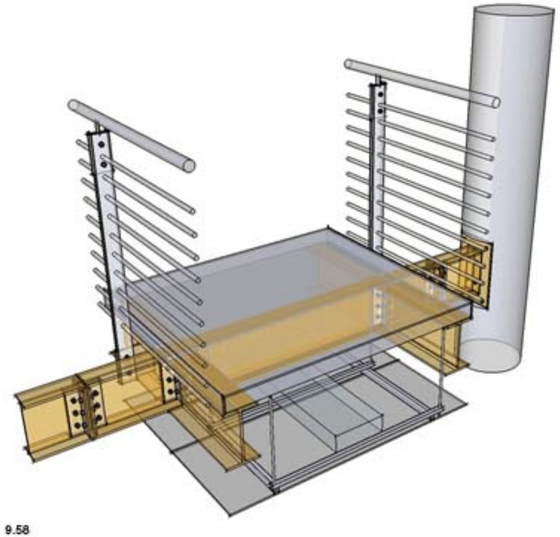


9.56 Scale 1:10

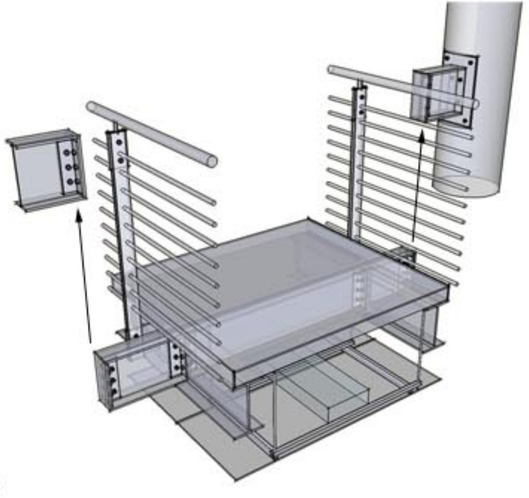
Circulation bridge detail



9.57 Scale 1:20

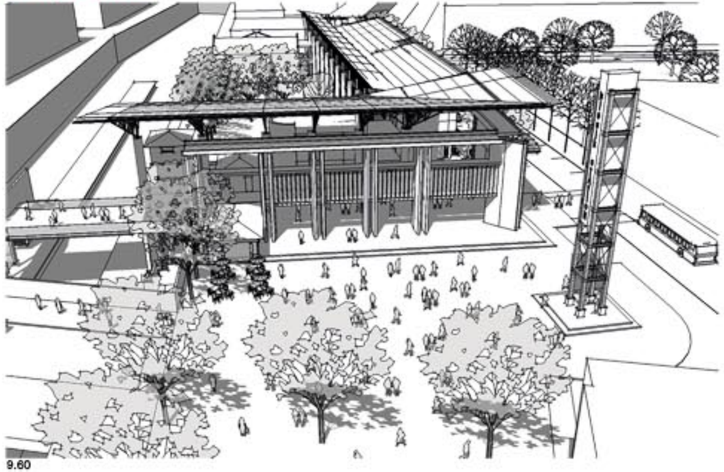


9.58



9.59

Perspectives

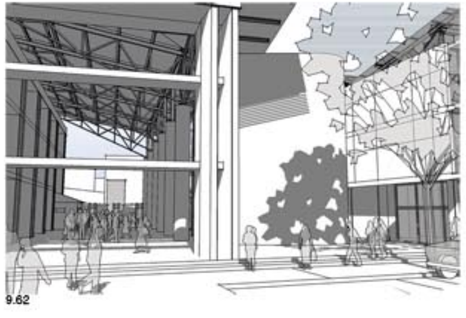


9.60

9.60 View from the proposed plaza
9.61 View of plaza & station
9.62 Station concourse
9.63 Looking east from Park Street
9.64 View along Station Place Street
9.65 Internal courtyard

9.63

9.61



9.62

9.64

9.65

Concluding comments

The proposed building is the consequence of a process that, from the beginning, had no clear image of the outcome. It is a process that was driven by rational, cumulative decisions taken within the bigger picture of development frameworks and historical references. This process was concerned with creating a place rather than an object or a preconceived outcome. Its aim was to re-generate a culture of "publicness", of collective public ownership and responsibility for public space. Past and future is interwoven by retaining selective parts of the existing Rissik Station building, and incorporating these into the proposed complex.

References

ALLEN, J. 1999. Worlds within cities. In D. Massey, J. Allen, J. & S. Pile, (eds), 1999. *City worlds*. London: Routledge.

AMAR, G. 1996. Complexes d'échanges urbains, du concept au project. *Les Annales de la Recherche Urbaine*, 71:93-100.

ANDREWS, T. & PLOEGER, J. 1989. *Street and place names of old Pretoria*. Pretoria: J.L. van Schaik.

AUSTIN, R.L. 1988. *Adaptive reuse: issues and case studies in building preservation*. New York: Van Nostrand Reinhold.

BANISTER, D. & HALL, P. 1993. The second railway age. *Built Environment*, 17(2):157-162.

BATISSE, F. 1994. World trends in railway traffic. *Rail International*, January, pp.13-20.

BENTLEY, I. 1985. *Responsive environments: a manual for designers*. London: Architectural Press.

BERTOLINI, L. & SPIT, T. 1998. *Cities on rails: the redevelopment of railway station areas*. London: E&FN Spon.

CANTACUZINO, S. *Re/architecture: old buildings / new uses*. London: Thames & Hudson.

CASTELLS, M. 1996. *The information age: economy, society and culture, Volume 1: The rise of the network society*. Oxford: Basil Blackwell.

CHING, F.D.K. 1996. *Architecture: form, space, and order*. New York: John Wiley & Sons.

CITY OF TSHWANE. 2008a. 'City of Tshwane', accessed 4 March 2008. <http://www.tshwane.gov.za/Bus_TshwBusNodes_Histr.cfm>.

COLT INTERNATIONAL. 2008. Shadoglass glass solar shading system, accessed 8 September 2008. <http://www.coltgroup.com/solarshading.html >.

CORNET, J. 1993. From a government institution to a publicly or private run transport enterprise: the challenges facing the railways. *Rail International*, August/September, pp.41-44.

CUNNINGTON, P. 1988. *Change of use*. London: Alpha books.

CURRAN, R.J. 1983. *Architecture and the urban experience*. New York: Van Nostrand Reinhold Company.

DARROL, L. 2003. Constitution Hill & the constitutional court: a landmark for the new South Africa, *Urban Green File*, November/December:18-27.

DAVEY, P. 2006. Pax Romana: Richard Meier triumphs in Rome, creating a new shelter and museum for Ara Pacis, *Architectural Review*, vol. 220(1316):56-61.

DE JONG, R.C. 2006. *Addendum to Pretoria section Gautrain HIA Report, July 2006*. Pretoria: Cultmatrix CC.

DE JONG, R.C., VAN DER WAAL, G-M. & HEYDENRYCH, D.H. 1988. *NZASM 100: the buildings, steam engines and structures of the Netherlands South African Railway Company*. Pretoria: Chris van Rensburg for HSRC.

DEWAR, D. 2000. The relevance of the compact city approach: the management of urban growth in South African cities. In M. Jenks & R. Burgess, *Compact cities: sustainable urban forms for developing countries*, London: Spon Press.

ENGELENBERG, F.V. 1987. *De Delagoabaai spoorweg: een terugblik*. Pretoria: Volksstem Drukkerij.

FEILDEN, B.M. 1994. *Conservation of historic buildings*. Oxford: Butterworth-Heinemann.

FISHER, R.C. 1998. The third vernacular: Pretoria regionalism – aspects of an emergence. In R.C. Fisher, S. le Roux & E. Maré (eds), *Architecture of the Transvaal*. Pretoria: University of South Africa.

FRENGER SYSTEMS. 2008. *Carat passive chilled beams*. Derby: Frenger Systems.

GREYLING, P.J. 2000. *Pretoria and the Anglo-Boer War: a guide*. Pretoria: Protea Book House.

GRÜBLER, A. 1990. *The rise and fall of infrastructures: dynamics of evolution and technological change in transport*. Heidelberg: Physica Verlag.

GRÜBLER, A. & NACKICENOVIC, N. 1991. *Evolution of transport systems: past and future*. Laxenburg, Austria: International Institute for Applied Systems Analysis.

HOLM, D. 1998. Kerkplaats and capitalists: the first architects in context. In R.C. Fisher, S. le Roux & E. Maré (eds), *Architecture of the Transvaal*. Pretoria: University of South Africa.

JACOBS, J. 1972. *The death and life of great American cities*. London: Penguin Books.

KÜSSEL, U.S. & MILLER, S. 2007. *Rissik Street Station, Hatfield, Tshwane*. Pretoria: African Heritage Consultants CC.

LAUBSCHER, H.P. 1992. *Die verhaal van Hatfield / Hillcrest*. Pretoria: Pretoria Historica Publishers.

LEFEBVRE, H. 1991. *The production of space*. Oxford: Blackwell.

LEFEBVRE, H. 1996. *Writings on cities*. Oxford: Blackwell.

LEFEVRE, L. 2004. Mill City Museum Minneapolis. *Architectural Record*, vol. 192(10):122-126.

LE ROUX, S. & BOTES, N. 2005. The Faculty of Law building: University of Pretoria, *Architecture SA*, September/October, 36-39.

MASSEY, D. 1999. On space and the city. In D. Massey, J. Allen, J. & S. Pile, (eds), 1999. *City worlds*. London: Routledge.

MEIRING, H. 1980. *Pretoria 125*. Pretoria: Human & Rousseau.

METRORAIL. 2008. 'Tshwane time tables', accessed 7 March 2008. <http://www.metrorial.co.za/regional-tshwane/tshwane_time_table.html>.

MINNESOTA HISTORICAL SOCIETY. 'Mill City Museum', accessed 4 March 2008. <http://www.millcitymuseum.org/index.html>.

MUMFORD, L. 1937. What is a city? In R.T. LeGates, & F. Stoute, (eds), 1996. *The city reader*, London: Routledge.

PETERS, W. 2004. Building the new South Africa: Constitutional Court, *KZ-NIA Journal*, vol. 1:2-5.

PILE, S. 1999. What is a city? In D. Massey, J. Allen, J. & S. Pile, (eds), 1999. *City worlds*. London: Routledge.

PROJECTPRO. 2008. 'Bombela lands Gautrain contract', accessed 4 March 2008. <http://www.projectpro.co.za/e-Zine/Gautrain/inde.html>.

REPUBLIC OF SOUTH AFRICA. 1996. *Census of the population of South Africa*. Pretoria: Government Printer.

REYNOLDS, J. 1982. *Historic properties: preservation and the valuation process*. Chicago: REALTORS.

RICHARD MEIER & PARTNERS ARCHITECTS. 2008. 'Ara Pacis Museum', accessed 30 July 2008. <http://www.richardmeier.com/PROJETCS/AraPacis.html >.

SENNETT, R. 1994. *Flesh and stone: the body and the city in Western civilization*. London: Faber and Faber.

SERAGELDIN, M.I. 1997. A decent life. *Harvard Design Magazine*, Winter/Spring, pp.40-41.

SIMMEL, G. 1908. The stranger. In Wolff, K.H. (ed.), 1950. *The sociology of George Simmel.* New York: The Free Press.

SLESSOR, C. 2003a. Aix station, *Architectural Review*, vol. 213(1274):50-51.

SLESSOR, C. 2003b. Valence station, *Architectural Review*, vol. 213(1274):46-47.

STRIKE, J. 1994. *Architecture in conservation: managing development at historic sites.* New York: Routledge.

TAUTE, J. 2008. Personal interview with the acting Metrorail area manager, Pretoria Station. Pretoria.

VAN DER WAAL. 1990. *Opname van die karakter en voorkoms van geboue: argitektonies / kultuur histories.* Pretoria: University of Pretoria.

VAN WINTER, P.J. 1937. *Onder Krugers Hollanders: geschiedenis van de Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij.* Eerste deel. Amsterdam: NV drukkerij.

WEBBER, BM. 1978a. *Recycling historic railroad stations: a citizen's manual.* Washington DC: US Department of Transportation.

WEBBER, BM. 1978b. *Recycling historic railroad stations: a technical supplement to the citizen's manual.* Washington DC: US Department of Transportation.

WIRTH, L. 1938. Urbanism as a way of life. *American Journal of Sociology*, vol.44, pp.1-24.