

A MIXED USE DEVELOPMENT FOR NEWTOWN

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

By:

**Mr. Preshane Munthre
Student Number: 22355228
Department of Architecture
University of Pretoria
November 2003**

Mentor:

Mr. Graham Young

Study leader:

Mrs Amira Osman

TABLE OF CONTENTS

Page NO:

SCHEDULES AND APPENDICES	1
1. ANALYSIS FROM THE CBD PERSPECTIVE	3
1.1. BRIEF HISTORICAL BACKGROUND	3
1.2. THE CURRENT STATUS OF THE CBD	3
1.3. THE RIGHT TIME TO REVITALISE THE CBD	3
1.4. THE EFFECT OF THE BRAAMFONTEIN CORRIDOR	4
2. ANALYSIS OF THE NEWTOWN PRECINCT	5
2.1. BRIEF HISTORICAL BACKGROUND	5
2.2. FEATURES OF NEWTOWN	6
3. SITE AND IMMEDIATE CONTEXT	9
3.1. BACKGROUND	9
3.2. SITE SPECIFICS AND CONSIDERATIONS	10
4. TECHNICAL	11
4.1. CLIMATE	11
4.2. GEOLOGY	11
4.3. CADASSTRAL MAP	12
5. CLIENT	13
6. SITE DEVELOPMENT GUIDELINES	14
6.1. VISION	15
6.2. MOVEMENT	17
6.3. LAND USE ACTIVITY	18
6.4. URBAN SPACE AND LANDSCAPE	19
6.5. BUILT FORM DIRECTIVES	20
6.6. ARCHITECTURAL GUIDELINES AND PRECEDENT	21
7. DESIGN BRIEF	24
7.1. FUNCTION MOTIVATION	24
7.2. PROPOSED FACILITIES	26
8. TARGET SETTING CRITERIA	27
8.1. HOUSING TARGET SETTING	27
8.2. OFFICE TARGET SETTING	28
8.3. RETAIL AND RESTAURANT TARGET SETTING	28
8.4. COMMUNITY CENTRE TARGET SETTING	28
9. BUILDING SPACE REQUIREMENTS	29
10. THEORETICAL MOTIVATION FOR BUILDING TYPOLOGY	31
10.1. CATALYTIC ACTIONS	31
10.2. DEVELOPMENT STRATEGY: The Capital Web	33
10.3. BACKGROUND TO THE SOUTH AFRICAN CONTEXT	34
10.4. NEEDS OF URBAN DWELLERS IN SOUTH AFRICA	35
10.5. DESIRED QUALITIES OF A CITY IN SOUTH AFRICA	36
11. BASIC CONCEPT DEVELOPMENT	38
12. TESTING AND GUIDING SUSTAINABILITY	41
12.1. SOCIAL ISSUES	41
12.1.1. Lighting	41
12.1.2. Ventilation	44
12.1.3. Noise	45
12.1.4. Views	46
12.1.5. Access to green outside space	47
12.1.6. Circulation	47
12.1.7. Inclusive environments	48
12.1.8. Access to facilities	48
12.1.9. Participation and control	49
12.1.10. Education and safety	50
12.2. ECONOMIC ISSUES	51
12.2.1. Local economy	51
12.2.2. Efficiency of use	51
12.2.3. Adaptability and flexibility	51
12.2.4. Ongoing costs	51
12.2.5. Insurance water, energy and sewerage	52
12.2.6. Capital costs	52
12.3. ENVIRONMENTAL ISSUES	53
12.3.1. Water	53
12.3.2. Energy	53
12.3.3. Recycling and reuse	54
12.3.4. Site	54
12.3.5. Materials and components	54
13. DESIGN RESOLUTION	55
14. DESIGN DRAWINGS	58
15. SOURCES	76
16. APPENDIX	77

SCHEDULES AND APPENDICES

Figure 1. Decentralisation of Johannesburg	GJMC (date unknown: slide11)
Figure 2. Inner City Initiatives	GJMC (date unknown: slide 35)
Figure 3. Newtown Precinct	Gapp Architects (2003)
Figure 4. Key Newtown Development Projects	JDA (2003)
Figure 5. M1 / Carr Street on ramp	Author (2003)
Figure 6. Nelson Mandela Bridge	Author (2003)
Figure 7. Sculptures in Metro Mall	Author (2003)
Figure 8. Metro Mall	Author (2003)
Figure 9. Metro Mall eateries	Author (2003)
Figure 10. Mary Fitzgerald Square	Author (2003)
Figure 11. Mary Fitzgerald Square ariel	JDA (2003)
Figure 12. MuseumAfrica	JDA (2003)
Figure 13. Market Theatre	JDA (2003)
Figure 14. Electric Workshop	JDA (2003)
Figure 15. Brickfields development	GAPP Architects (2003)
Figure 16. South view from site	Author (2003)
Figure 17. West view from site	Author (2003)
Figure 18. East view from site	Author (2003)
Figure 19. North view from site	Author (2003)
Figure 20. Derelict buildings in the vicinity	Author (2003)
Figure 21. Old Parktown Station	Author (2003)
Figure 22. Site plan	Author (2003)
Figure 23. Cadastral map	Local government
Figure 24. JDA logo	JDA (2003)
Figure 25. Newtown Precincts	GAPP Architects (2003)
Figure 26. Newtown Vision	GAPP Architects (2003)
Figure 27. Newtown movement pattern	GAPP Architects (2003)
Figure 28. (A) Major pedestrian movement	Author (2003)
Figure 29. (B) Major pedestrian movement	Author (2003)
Figure 30. Proposed land uses	GAPP Architects (2003)
Figure 31. Urban space and landscape	GAPP Architects (2003)
Figure 32. Built form directives	GAPP Architects (2003)
Figure 33. (A) Built structure	Author (2003)
Figure 34. (B) Built structure	Author (2003)
Figure 35. Layering of facades	Author (2003)
Figure 36. Ground level interaction	Author (2003)
Figure 37. Character in Newtown	Author (2003)
Figure 38. Relationship to street	Author (2003)
Figure 39. Use of materials in Newtown	Author (2003)
Figure 40. Interaction with street	GAPP Architects (2003)
Figure 41. Internal courtyard	GAPP Architects (2003)
Figure 42. Relationship to surrounding	Author (2003)
Figure 43. Vertical mix use	GAPP Architects (2003)
Figure 44. Entrance to Metro Mall	Author (2003)
Figure 45. Discreet signage	Author (2003)
Figure 46. (A) Use of landscape in Newtown	Author (2003)
Figure 47. (B) Use of landscape in Newtown	Author (2003)
Figure 48. Goals and Objectives	Author (2003)
Figure 49. Land use zoning	Author (2003)
Figure 50. Proposed facilities	Author (2003)
Figure 51. (A) Envisaged built form	Author (2003)
Figure 52. (B) Envisaged built form	Author (2003)
Figure 53. (C) Envisaged built form	Author (2003)
Figure 54. (D) Envisaged built form	Author (2003)
Figure 55. (E) Envisaged built form	Author (2003)
Figure 56. Estimated residential floor area	Author (2003)
Figure 57. European theory	Attoe and Logan (1989)
Figure 58. Catalytic actions	Attoe and Logan (1989)
Figure 59. Necklace actions	Attoe and Logan (1989)
Figure 60. Appropriate design	Attoe and Logan (1989)
Figure 61. Structuring elements	Attoe and Logan (1989)
Figure 62. Downtown Milwaukee	Attoe and Logan (1989)
Figure 63. Structuring elements in Newtown	Author (2003)
Figure 64. South west ariel	Author (2003)
Figure 65. North west ariel	Author (2003)
Figure 66. North east ariel	Author (2003)
Figure 67. South east ariel	Author (2003)
Figure 68. West street ariel	Author (2003)
Figure 69. South west corner	Author (2003)
Figure 70. Landscape	Source unknown

Figure 71. Plants	Microsoft clipart (date unknown)
Figure 72. Solar movement pattern 21 June 2003	Author (2003)
Figure 73. Solar movement pattern 21 December 2003	Author (2003)
Figure 74. 8 am sun on 21 June 2003	Author (2003)
Figure 75. 10 am sun on 21 June 2003	Author (2003)
Figure 76. 12am sun on 21 June 2003	Author (2003)
Figure 77. 2 pm sun on 21 June 2003	Author (2003)
Figure 78. 4 pm sun on 21 June 2003	Author (2003)
Figure 79. (A) Sections through west facade	Author (2003)
Figure 80. (A) Section through courtyard	Author (2003)
Figure 81. 8 am sun on 21 December 2003	Author (2003)
Figure 82. 10am sun on 21 December 2003	Author (2003)
Figure 83. 12 am sun on 21 December 2003	Author (2003)
Figure 84. 2 pm sun on 21 December 2003	Author (2003)
Figure 85. 4 pm sun on 21 December 2003	Author (2003)
Figure 86. (B) Sections through west facade	Author (2003)
Figure 87. (B) Section through courtyard	Author (2003)
Figure 88. Cross ventilation through rooms	Duerk, DP (1993)
Figure 89. Minimum obstruction to ventilation.	Author (2003)
Figure 90. Individual ventilation control	Duerk, DP (1993)
Figure 91. Cross ventilation	Author (2003)
Figure 92. Cross ventilation through offices	Author (2003)
Figure 93. Double glazing	Duerk, DP (1993)
Figure 94. Sound absorbing material	Duerk, DP (1993)
Figure 95. Plating used as sound barrier	Author (2003)
Figure 96. Noise buffer	Author (2003)
Figure 97. View of the proposed transport museum	Author (2003)
Figure 98. South view from the proposed site	Author (2003)
Figure 99. View of Nelson Mandela Bridge	Author (2003)
Figure 100. Views from proposed site	Author (2003)
Figure 101. Proposed landscaping	Author (2003)
Figure 102. Views from circulation areas	Duerk, DP (1993)
Figure 103. Identifiable paths	Duerk, DP (1993)
Figure 104. Covered walkways	Duerk, DP (1993)
Figure 105. Various circulation modes	Duerk, DP (1993)
Figure 106. Circulation through spaces	Duerk, DP (1993)
Figure 107. Building circulation	Author (2003)
Figure 108. Contrasting colour	Author (2003)
Figure 109. Disabled transport facilities	Source unknown
Figure 110. Disabled modes of transport	Source unknown
Figure 111. Ramps	Duerk, DP (1993)
Figures 112 to 119	Sources unknown
Figure 120. Information	Duerk, DP (1993)
Figure 121. Passive surveillance	Duerk, DP (1993)
Figure 122. Lighting on corners	Duerk, DP (1993)
Figure 123. Lighting of nooks and corners	Duerk, DP (1993)
Figure 124. Proposed water reticulation	Author (2003)
Figure 125. Energy	Microsoft clipart (date unknown)
Figure 126. Refuse	Microsoft clipart (date unknown)
Figures 127 to 141.	Author (2003)
Design drawings in section 14.	Author (2003)

1. ANALYSIS FROM THE CBD PERSPECTIVE

1.1. BRIEF HISTORICAL BACKGROUND

The last three decades saw the desertification of the Johannesburg central business district (CBD) as many businesses moved to the northern suburbs. Multiple, decentralised nodes (indicated in red), offering employment, recreation and retail opportunities, often in the form of shopping centres, sprang up in the northern suburbs. Johannesburg followed the growth pattern of American cities by the decentralisation of its CBD. The nodes serve residents in the suburbs to the extent that they rarely need to go into the CBD itself. The CBD character and function of Johannesburg has subsequently changed.

Johannesburg was founded essentially as a mining town and this, together with the apartheid political structure, were the two most significant factors to shape the structure of the city. The mining belt separated the north and the south of the city. In addition, the city was divided along both racial and economic lines. The present challenge is to overcome this inherited imbalance and get the city functioning efficiently. (Thorn and Gibson, 1994)

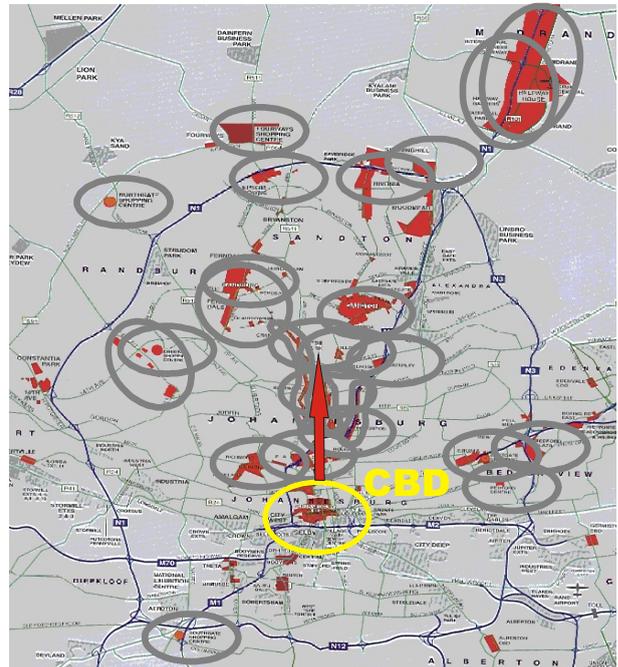


Figure 1. Decentralisation of Johannesburg

The inner city has lost its status, linked to accessibility, as well as safety and security issues, resulting in decline in investment. To resolve this, the City Council, together with the Johannesburg Development agency (JDA), is implementing a plan for the gentrification of the Inner City. This programme has been incorporated into the Local Integrated Development Plans. (GJMC, date unknown)

Some of the major tasks to be tackled include:

- Perceptions of safety and security
- Poor public transportation within the Inner City
- The cost of converting buildings from industrial/ commercial uses to residential
- The lack of open spaces

1.2. THE CURRENT STATUS OF THE CBD

Despite the migration trend to the North and the risks associated with the CBD, it still remains the heart of the metro region. The opportunity costs of CBD abandonment is too high when taking the following economic and social characteristics into consideration:

- There is seven million square metres of floor space in the CBD
- 800 000 people come into the CBD every day
- 160 000 people are employed in the CBD
- It is the most accessible part of the metro area (road, rail, taxi, bus)
- Rents are relatively low
- There is little congestion and parking is easy
- Properties are to be re-evaluated for reduced rates
- Business improvement districts are successful in conquering crime and grime
- The CBD has become multinational and cosmopolitan

1.3. THE RIGHT TIME TO REVITALISE THE CITY CENTRE

All aspects that started decentralisation in the 1970's are being reversed. Given the economic status of our country it is an unignorable fact that suburban type culture will not be able to sustain our increasing population. Numerous positive factors are evident to stimulate inner city revitalisation, the main factors being:

- Political will
- Economic stability and projected growth

- New market forces (emerging middle class society)
- Significant assets that require preserving
- Many initiatives underway
- Property prices low
- No congestion/ plenty of parking
- Properties are to be re-evaluated for reduced rates

Various inner city initiatives are currently being implemented guided by the abovementioned factors. Some of the precinct initiatives each with its own characteristics are indicated below.

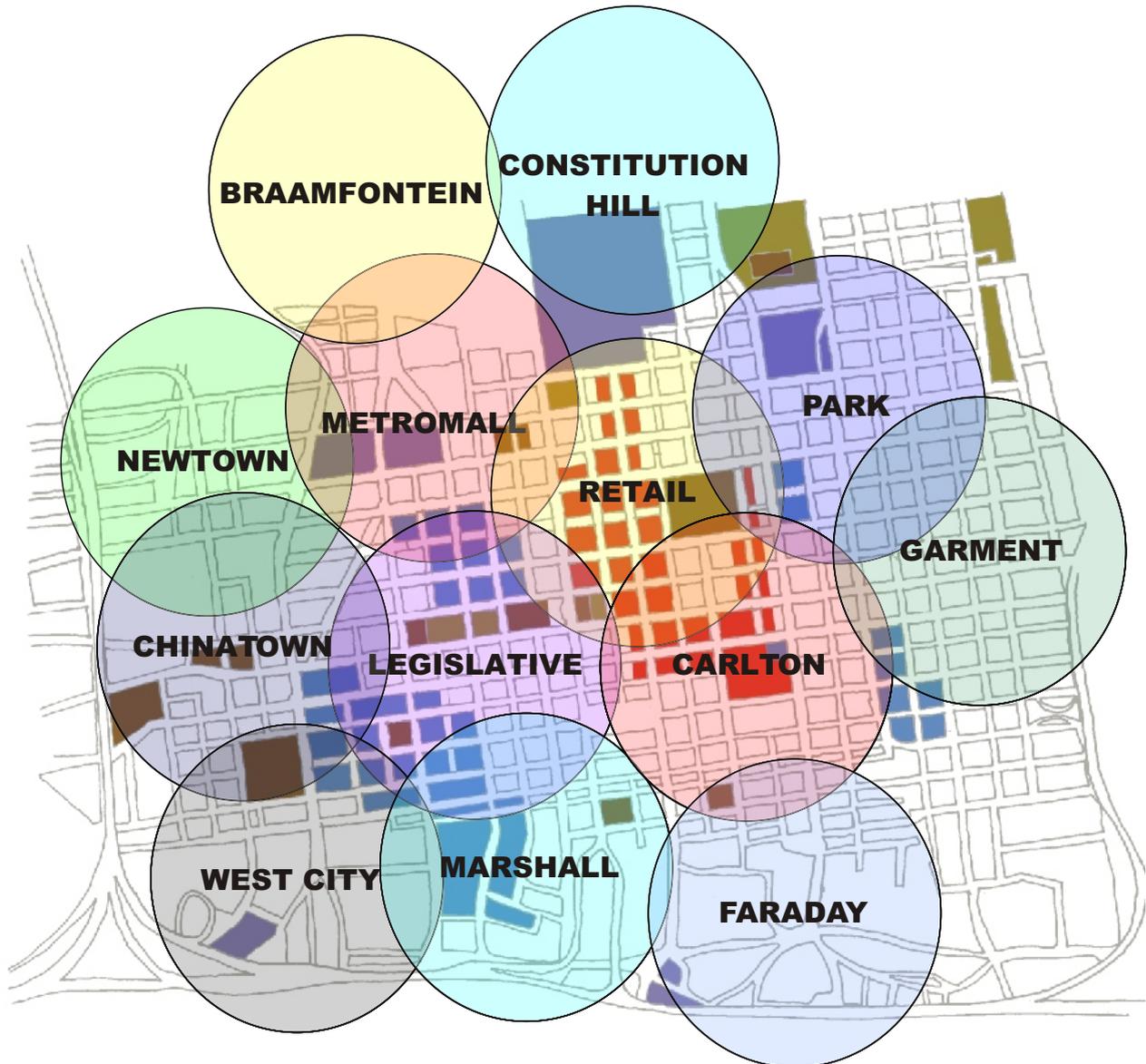


Figure 2. Inner City Initiatives

1.4. THE EFFECT OF THE BRAAMFONTEIN CORRIDOR

The development of Braamfontein will dramatically influence the traffic to and revival of the Newtown Precinct which is the focus of this project. Within the CBD, Braamfontein is the economic node of the Johannesburg city centre. Key landmarks like the University of Witwatersrand, four of South Africa's major corporates, the Civic Theatre (home of the Nelson Mandela Theatre) and Johannesburg's local government are found in Braamfontein. It is the fourth largest node for office space in Johannesburg, offering 428 000 sq metres of A and B grade commercial space. Braamfontein forms the major corridor link (known as the Cultural Arc) between the Newtown and Constitution Hill developments. Braamfontein is planned to be established as an area that is relatively safe and secure, vibrant, and physically attractive with a growing evening economy. (JDA,2003)

2. ANALYSIS OF THE NEWTOWN PRECINCT

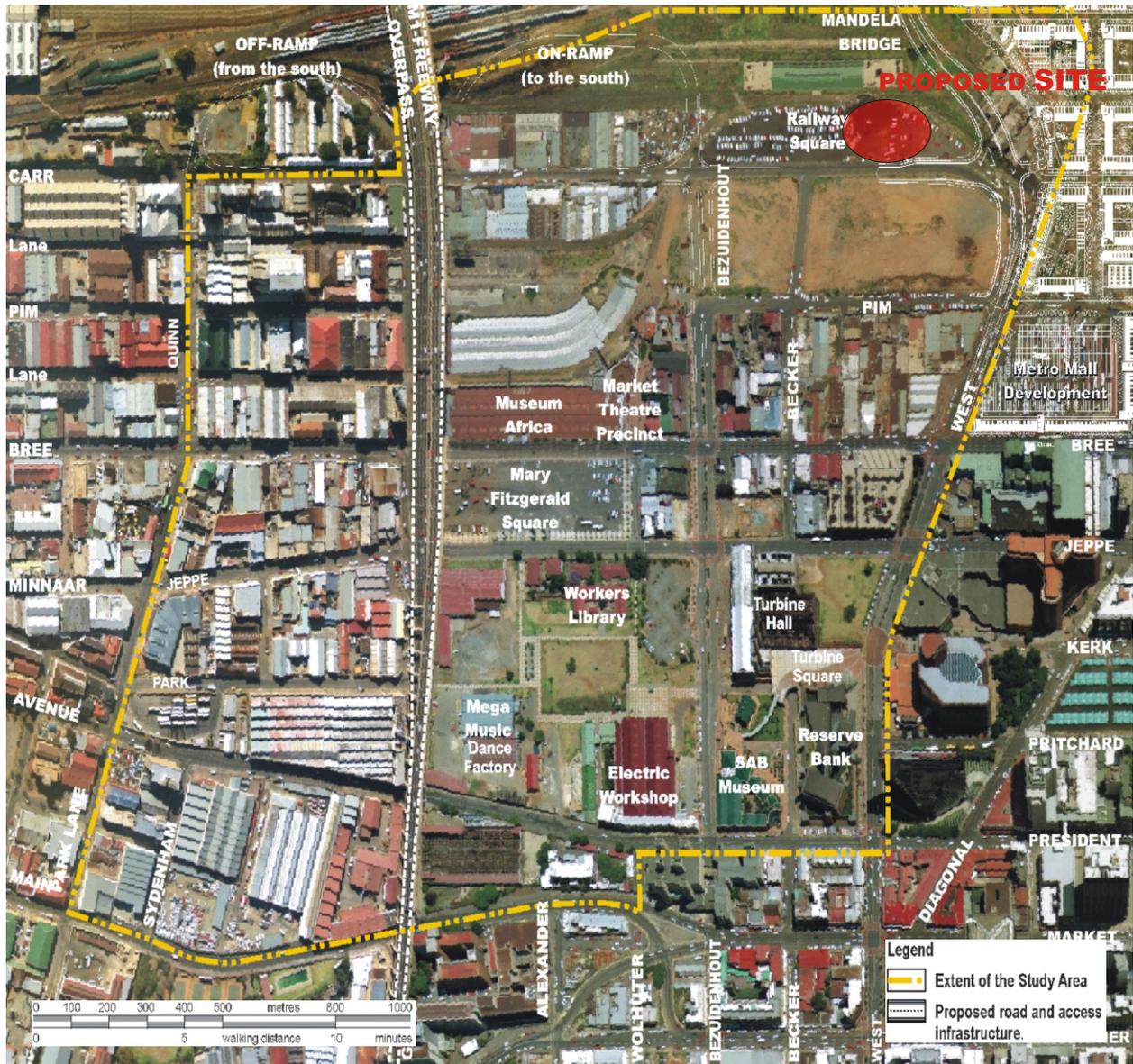


Figure 3. Newtown Precinct

Newtown is located in the western sector of the Johannesburg city centre, covering an area that stretches from the marshalling yards and railway lines to the north, the M2 motorway in the south, West Street in the east and Quinn Street in the west.

2.1. BRIEF HISTORICAL BACKGROUND

At the turn of the 20th century, the area now called Newtown Precinct was known as the Brickfields. It was naturally rich in clay and brick-making became a popular form of generating income for Johannesburgers at the time. Some individuals even had their own clay mixers for making bricks. By 1896, about 7000 people of all races lived in the Brickfields area. The land was later named Burghersdorp.

As this land was close to the centre of Johannesburg and the railway line, many businesses and overseas immigrants bought stands in Burghersdorp. Alongside brick companies, the area saw the sprouting of trading companies, banks, a brewery, and fisheries. Many Indians set up shops and eateries along Locatie (now known as Carr Street), which led to the station.

In April 1904, as a measure to combat the bubonic plague that had broken out, the fire brigade set the area alight destroying everything in the inferno. The area was surveyed and re-planned in unbecoming haste and renamed Newtown six months later. A commercial area where vast fortunes in milling, production of sugar and food merchandising would come to existence. Newtown has now become the cornerstone of South African heritage and culture, particularly Johannesburg. Hence it is widely accepted as the city's cultural centre. (JDA,2003).

2.2. FEATURES OF NEWTOWN

Capitalising on Newtown' history as the hub of exchange and the original cultural centre of Johannesburg, the redevelopment of Newtown is a key focus area with the potential to attract major investment, particularly in creative industries, culture and tourism. Newtown is being developed into a vibrant, mixed use area with a unique character based on existing cultural facilities.

This destination will be made easier to reach with the construction of the Nelson Mandela Bridge and associated N1 / Carr Street interchange. The Nelson Mandela Bridge opened in July 2003 and is the new gateway from the north capable of carrying up to 3000 cars per hour. The project was co-funded by Blue IQ, the City of Johannesburg, National Roads Agency and the National Department of Transport. This pedestrian and vehicle link improves access for local national and international tourists. The new bridge forges a link between Newtown and Braamfontein. The redevelopment of the area is planned under the concept of the Cultural Arc that links Newtown and Constitution Hill.to the north west of the site. (JDA, 2003).

1. New Carr Street Interchange
2. Mandela Bridge
3. Old Railway Station
4. Metro Market
5. New Residential Development
6. Africa Cultural Centre & Children's Museum
7. Market Theatre Precinct
8. Museum Africa
9. Mary Fitzgerald Square
10. Dance Centre
11. Worker's Library & Museum
12. Multimedia Centre
13. Turbine Hall & Boiler House
14. Mega Music
15. Dance Factory
16. Electric Workshop
17. SAB Museum
18. Reserve Bank
19. Bus Factory



Figure 4. Key Newtown Precinct Development Projects

M1 / CARR STREET INTERCHANGE

The M1/Carr Street on/off ramps greatly improve access to Newtown from the south, east and west of Johannesburg. Previously, one would have had to off -ramp at Smit Street to gain access to Newtown. With the new interchange, northbound traffic can gain easier access and exit into Newtown. This improves the link to other important tourist destinations in Soweto, Gold Reef City and the west of the city.



Figure 5. M1/Carr street on-ramp

NELSON MANDELA BRIDGE

The 295 metre long Nelson Mandela Bridge is a landmark gateway into Newtown and the city centre . The cable stayed bridge can accommodate over 3000 vehicles per hour. (JDA,2003). The bridge also features pedestrian walkways and once lit, provides a spectacular new element to the Johannesburg skyline.

The Nelson Mandela bridge forms a major part of the new link joining Braamfontein in the north and Newtown in the south.

Both the M1/Carr Street interchange and the Nelson Mandela bridge have been new developments that vastly improves accessibility to the Newtown Precinct over and above existing access routes.



Figure 6. The Nelson Mandela Bridge

METRO MALL

The multimillion rand Metro Mall opened at the beginning of this year. This shopping complex and transport hub features some of Johannesburg's top public art displays. The artwork is a tribute to the numerous artists working in the Newtown Precinct and throughout the city. Designed to enhance the shopping experience, the art includes life-size sculptures, murals, mosaic and installations.

The mall includes a wholesaler on site to cater for the growing demands of the commuters as well as the growing number of residents in Newtown. On its second level, the mall has a food hall that offers traditional local cuisine prepared under the watchful eye of the environmental health ministry, not that it is necessary, but provides a piece of mind for the numerous visitors to Newtown. Metro Mall is situated between Simmonds, Sauer, West and Pimm Streets and incorporates the Bree Street taxi rank.



Figure 7. Sculptures at the Metro Mall



Figure 8. Metro Mall

MARY FITZGERALD SQUARE

Launched three years ago by the State President, Mr Thabo Mbeki, this square has become a popular venue for public performances and gatherings. Originally known as Aaron's Ground and later renamed Mary Fitzgerald Square, this former wagon site was used for the many strikers' meetings at the turn of the 20th century. This square lies at the heart of Newtown. It was renamed Mary Fitzgerald Square in 1939, in honour of the first woman trade unionist who played a key role in the miners strikes of 1910. (JDA, 2003)

With a capacity for over 50 000 people, the square provides an outdoor space for a wide array of activities, including outdoor film festivals, concerts, markets, carnivals and exhibitions. A key feature of the square is also the biggest outdoor LED screen on the continent, measuring 55 square metres. In addition, two sky disks are major elements on the square. The first depicts the stellar constellation as at the birth of Mary Fitzgerald, the second depicts the constellation as at the first democratic election of 27th April 1994. There is a third, which can be found at the entrance to the MuseuMAfricA depicting the constellation as at the official launch of the square on 16th December 2001- Reconciliation Day. The disks use unique optic fibre lights that glow in the dark.

The lighting for the square was designed by renowned French lighting engineer, Patrick Rimoux who was also commissioned to design the lighting for the surrounding public open spaces. The unique lighting provides essential street lighting whilst giving the area an appropriate festive ambience. (JDA. 2003)



Figure 9. Metro Mall eateries



Figure 10. Mary Fitzgerald Square

BLUE IQ

The headquarters are next to the Electric workshop and incorporate a media centre, which showcases the major projects they fund. Some of the ground breaking work funded through this multi billion rand initiative include: Newtown Development, Kliptown, Constitution Hill Innovation Hub, Johannesburg International Airport IDZ, Gautrain Rapid Rail Link. City Deep Container Depot, Gauteng Automotive Cluster and Wadville Alrode Industrial Corridor.



Figure 11. Mary Fitzgerald Square aerial

MUSEUMAFRICA

MuseumAfrica is Johannesburg's premier history museum and is appropriately located in the centre of the Newtown Precinct. It is housed in what was once Johannesburg's first fruit and vegetable market. As such its construction was designed for this purpose in 1913. (JDA, 2003). For its time it is a good example of the advances made in industrial building techniques. In the early 1990's, the market building was renovated for MuseumAfrica. The new museum was launched in 1994, the year of South Africa's first non-racial democratic elections. The museum is home to permanent displays on the history of the city in the 20th century.



Figure 12. MuseumAfrica



Figure 13. Market Theatre

AFRICAN BANK MARKET THEATRE

This is an internationally acclaimed theatre that became known as the first integrated theatre. It was a centre point of debate and challenging ideas in the new South Africa. It houses three theatres, a bar, an art gallery and the second of the famous Moyo's restaurants.

The Market Theatre complex is also home to the popular Kippies International Jazz Club, which is modeled in an old Victorian toilet and named after the legendary saxophonist, Kippie Morolong Moeketsi. (JDA, 2003). Gramadoelas restaurant, that specialises in South African cuisine boasts patrons that vary from heads of state, including Queen Elizabeth II, and culture vultures who frequent this complex.

The Market Theatre complex has had a consistent ambience and spirit of a marketplace while bringing in nightlife into the CBD.

ELECTRIC WORKSHOP

The Electric Workshop is a large and spacious building that follows the city's industrial architecture. It was built in the 1920's as part of the electricity site in Newtown, which had been established in 1904. The electric workshop has been used as a venue for a myriad of uses, from jazz and kwaito concerts as well as a rave and corporate launch venue. This was the site for Johannesburg's Biennale in the mid 90's.

The Gauteng Department of Education Trust (including numerous philanthropic organisations) have earmarked this building for use as a science and technology centre, to teach learners about the value of science and mathematics in a fun manner. (JDA, 2003)



Figure 14. Electric Workshop

3. SITE AND IMMEDIATE CONTEXT

3.1. BACKGROUND

GAPP Architects and Urban Designers were appointed by the Johannesburg Housing Company (JHC) to prepare an Urban Design Plan for Brickfields residential neighbourhood which is south of the proposed site. An array of architects are to be commissioned to prepare detailed designs for different areas within the framework. The aim of the urban design plan is to achieve an architectural integrity over the whole site whilst at the same time developing specific areas with their own identity and character. The urban design framework for the Brickfields developments also forms a basis for the adjoining areas. The project is a key component of the Newtown Urban Design Framework and part of the Inner City Regeneration Plan for Johannesburg.

The site is located on the northern portion of Ptn 1 of Erf 557 Newtown on an undeveloped site between Carr, Pim, West and Bezuidenhout Streets, on the edge of the CBD in Newtown. The project is a key component of the Newtown Urban Design Framework and part of the Inner City Regeneration Plan for Johannesburg.



Figure 15. Brickfields Development

3.2. SITE SPECIFICS & CONSIDERATIONS

There is much development taking place in close proximity to the project site. This includes enhanced access to the areas through the erection of the new Nelson Mandela Bridge which links Braamfontein and the north to the eastern side of the CBD, as well as the new off ramps from the M1 which lead onto Carr Street. Infrastructural developments also include the new Metro Mall development on the south-eastern boundary of the site, and the revamped Mary Fitzgerald Square which is in the general vicinity of the project. Brickfields residential development takes place within a context of R400 million investment in projects under current construction or recently completed in Newtown (indicated in previous section).

The proposed site is located along a planned activity street to the south. The local integrated development plan defines an activity street as a local street where access to the activity along the street is of paramount importance. (GAPP Architects, 2003). Mobility is compromised in favour of activity. The preferred land use should encompass residential, business and retail. All uses should be of a local and fine grain nature. Accommodation of pedestrian intensive uses is of utmost importance. A high level of access is desirable. Speed calming is essential on activity streets. Public transport facilities should be provided and activity should be preferably one block/ erf deep. The site is surrounded by proposed and existing high density housing of which there is a large and proven market demand. The Carr Gardens project of 140 units, the Tribunal Gardens project of 174 units and the Newtown Urban Village of 356 units have all been constructed within the general vicinity of the site. There has been an enormous demand for accommodation in this west side of the inner city with all these projects fully let before completion. All these projects run at 100 percent occupancy. The Johannesburg Housing Company is confident that the demand for accommodation at the proposed site will be similarly overwhelming. (GAPP Architects, 2003).

The area is characterised by numerous derelict buildings that are in need of upgrading. With the planned residential development, this should be addressed while also achieving improved overall confidence in the CBD.

This project will later propose a transport museum at the unused Parktown Station to the north of the site. This will significantly induce pedestrian and tourist activity towards the site from the core cultural area as well as other areas. This will form a strong pedestrian link with the core cultural centre. The historical significance of the Parktown station facade will be retained and design considerations with regard to this building will have to be taken into consideration.

The Nelson Mandela Bridge also creates a strong visual impact to the north east of the site. This is also expected to stimulate vehicular movement as well as pedestrian movement.



Figure 16. South View from site



Figure 17. West View from site



Figure 18. East View from site



Figure 19. North East View from site



Figure 21. Old Parktown Station



Figure 20. Derelict buildings in the vicinity

4. TECHNICAL

4.1. CLIMATE

Average climate statistics for Johannesburg are:

Position: 28 08' South, 28 14' East
 Height: 1694m
 Period: 1961 to 1990

TEMPERATURE

As indicated in the appendix A the average daily maximum temperature for each month varies from 16 degree's Celsius to 26 degrees Celsius while the average daily minimum ranges from 4 degrees Celsius to 15 degrees Celsius. Buildings should be designed to accommodate this large temperature variation. This should be used as a general design guideline for the building however consideration must be given to temperatures as high as 35 degrees Celsius and as low as -8 degrees Celsius as these temperatures are on the rare occasion reachable.

PRECIPITATION

As indicated in the appendix the average monthly rain varies from 125mm to 4mm. The average annual rainfall is 713mm.

4.2. GEOLOGY

Subsurface conditions consist of a complex system of igneous and metamorphic rocks (diabase, dolerite, quartzite, and shale) weathered to depths up to about 30,5m and overlain by a thin vaneer of transported soil. The boundary between transported and residual soils can be distinguished by a "pebble layer" that is an unvarying indicator in that vicinity.

FOUNDATION PROBLEMS RELATED TO MINING

Johannesburg owes it's existence to extensive gold mining. Environment disturbance on such a scale is bound to cause many problems. Fairly large areas are undermined, some at very shallow depth. Appreciable surface movements occur in these areas. Earth tremors related to rock falls cause minor disturbances such as plaster cracking. Ground water is present in the weathered rock and pumping is essential for foundations.

4.3. SITE PLAN

The site forms a portion of the proposed subdivision of portion 1 Erf 557 Newtown in accordance with GAPP Architects site development proposal. The subdivision as of this date is not yet approved and the land is currently zoned for industrial use. Development guidelines are therefore used as a formal guiding procedure as it is envisaged that these would be implemented in the rezoning.

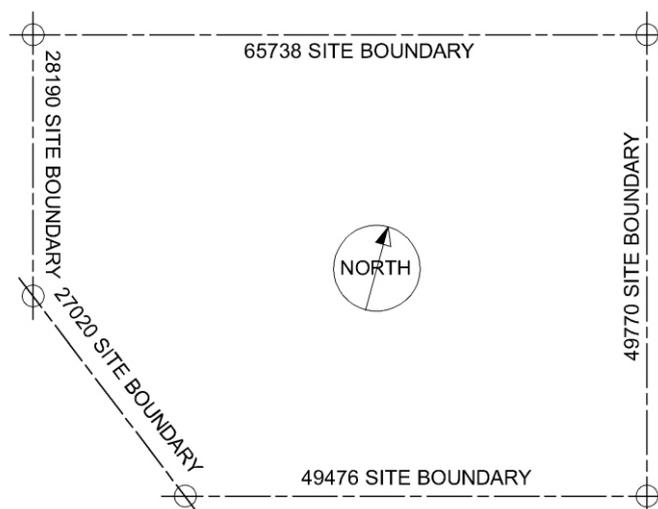


Figure 22. Site Plan

4.4. CADASSTRAL MAP

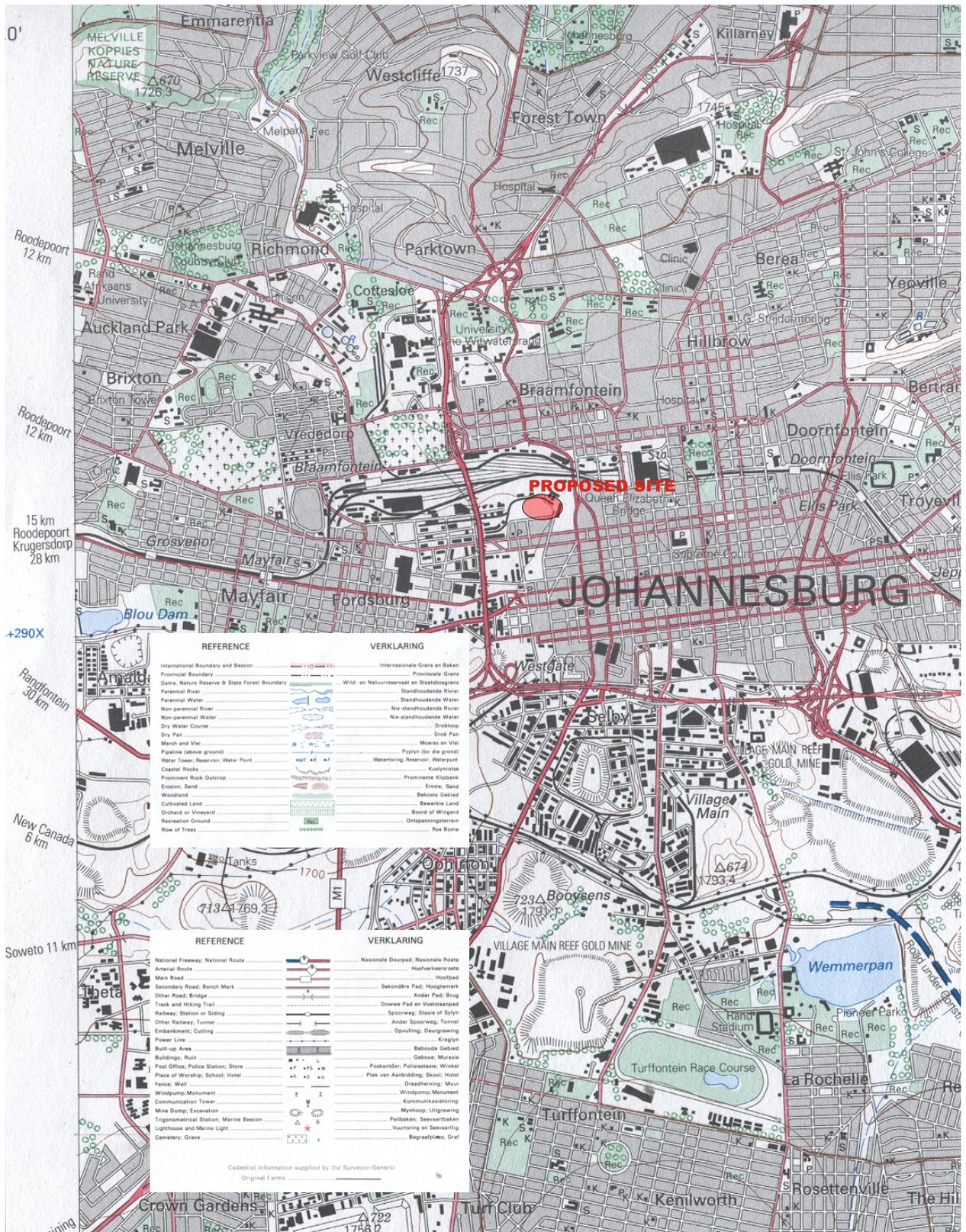


Figure 23. Cadastral map

5. CLIENT

The client, the Johannesburg Development Agency (JDA), was established by the City of Johannesburg in April 2001. It is an economic development agency that plays a pivotal role in the City's developmental strategy, Joburg 2030. (Thorn and Gibson, 1994). As a management body it is tasked to facilitate development within the CBD. Part of its mandate is to be the implementing agent for three Blue IQ projects. Blue IQ is the Gauteng Provincial Government's economic development initiative to create a "smart" province.



Figure 24. JDA

As its vision the JDA will “drive developments that contribute towards achieving Johannesburg’s potential as the African World Class City – a city of prosperity, excellent quality of life and a wealth of cultural and economic opportunity”. (JDA, 2003). Its mission is “to initiate, promote and implement activities that lead to increased economic development for the City of Johannesburg”. (JDA, 2003).

The objectives of the JDA are:

- To create jobs, development and housing opportunities
- To increase the rates base by stabilising decline, attracting investment into new developments, facilitating and securing improvements to infrastructure and promoting mechanisms to improve management of the public environment
- To boost Johannesburg's image as a place for living, investment, and visiting. To respond to and realise the aspirations of the whole population of Johannesburg by improving quality of life and economic opportunities for all

(JDA, 2003)

Within the scope of this project the client's key objective is the revitalisation of the inner city and achieving economic stability. The client views inner city regeneration possible only by means of public and private sector partnership. Its key objective therefore is to facilitate this partnership. The Newtown Cultural Precinct Plan has enabled City Council, and the JDA, to undertake the “capital web” approach, which realises publicly primed actions. . Two principles underlie the approach:

- Public investment is to stimulate private development responses, guided by the precinct plan.
- Those public investments that do not generate direct returns must be understood in terms of their on-going indirect returns and the strategic objective that is being achieved, i.e. The establishment of a primary cultural node within the Johannesburg City Centre.

(JDA, 2003)

6. SITE DEVELOPMENT GUIDELINES

This section follows the GAPP Architects compiled site development guidelines for the Newtown Precinct. While it explains the interpretation and analysis of it, it also quotes verbatim in certain sections.

INTRODUCTION

The Newtown Urban Design Framework provided a general overview of the Greater Johannesburg Metropolitan Council's intentions regarding the development and regeneration of the Western Sector of the Inner City. A substantial portion of this framework is the Council's intentions for the Newtown Cultural Precinct. The Newtown Urban Design Framework outlines the overall physical development of the area and splits it threefold as follows: Northern precinct, Central precinct (including the Newtown Cultural Precinct) and Southern precinct.

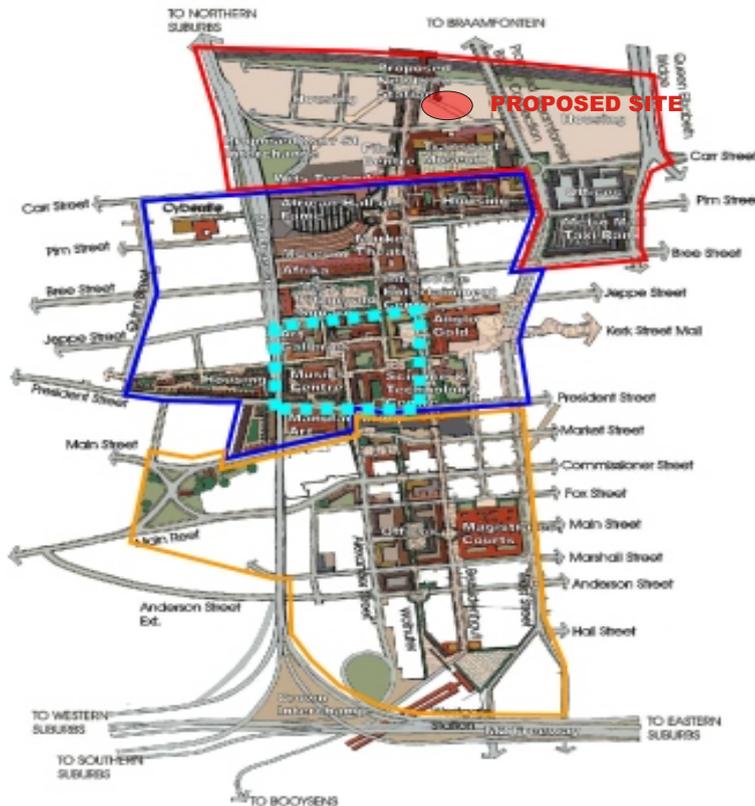


Figure 25. Newtown Precincts

Its spatial structure concept is founded on an interlinked public environmental system. It begins with the integration of existing key activities but goes onto creating further linkages to adjoining areas being concurrently developed as well as activity clusters. There are predominantly three public places; Mary Fitzgerald Square, Newtown Piazza and Turbine Square, that are connected by a series of pedestrian-dominant routes and lanes. These routes are further developed out of this central activity hub into neighbouring areas like the Johannesburg CBD and Church Street (east), to the Oriental Plaza (west), to the proposed Craft Centre and the West City initiative (south), to the Transnet Railway Land and Braamfontein (north), and north-east to the Metro Mall development.

This public environment structure forms the physical network with Newtown's cultural core at its nexus. The planned connections in the form of pedestrian (and other) routes into neighbouring precincts also include plans through the proposed Brickfields residential development site, in the northern precinct.

An overall series of goals have been established through the Newtown Urban Design Framework. The goals include:

- Creating a safe and secure environment.
- Improving accessibility.
- Creating a critical mass and a 24 hour city.
- Establishing a coherent development framework for the area.
- Establishing a focussed special purpose vehicle to drive the development and land release process.

6.1. VISION

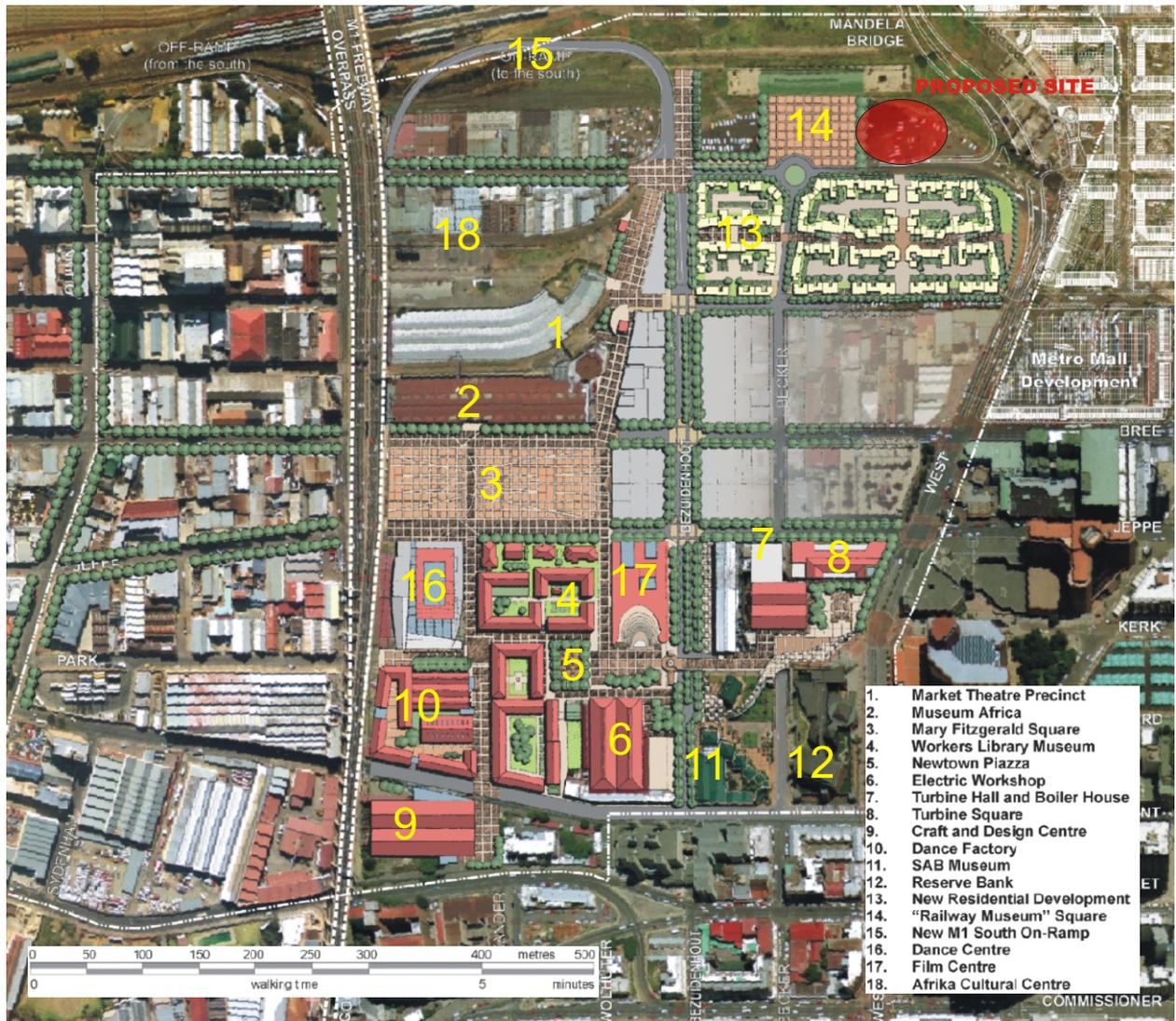


Figure 26. Newtown Vision

The development vision focuses on creating a human-scaled, active, vibrant and amiable public environment, within a milieu of art and cultural activities (in the broadest sense of the definition), with supporting retail, commercial, business, office and residential uses.

The principles underpinning the vision include:

- The fundamental principle is to “accommodate pedestrians first” and emphasising a human scale of development, in order to establish the public environment as the core structure of the Newtown Cultural Precinct.
- The establishment of a continuous public environment network, which forms the guiding spatial structure to which development responds.
- An easy, safe, convenient and pleasant pedestrian environment and movement, co-ordinated with ease of vehicular movement and access to well located and safe parking areas.
- The utilisation of extensive tree-scaping and landscaping in ameliorating climatic conditions and promoting a comfortable public environment.
- Focussing on the need of pedestrians first, and ensuring that vehicular movement supports the diverse human activities that are envisaged.
- Building on the distinct hierarchical road structure.
- The promotion of a mix of land use activities to promote a complex range of opportunities and activities.

DEVELOPMENT OBJECTIVES

The development objectives are guided by the outlined goal to turn the Newtown Precinct into a special cultural place for the City of Johannesburg. The objectives include:

- Creating pedestrian orientated environments where people can walk, sit, relax and shop.
- Designing a series of quality public spaces, both soft and hard, of different character to accommodate a variety of uses.
- Revitalising the existing urban fabric and historic buildings.
- Extending the city road grid and creating streets for people for good local access.
- Developing a strong residential component of urban housing for a variety of income groups.
- Planning improved access by car and public transport.
- Designing a mixed-use environment driven by Art and Cultural activities utilising both old and new Buildings.

DEVELOPMENT GUIDELINES AND OBJECTIVES

The Newtown Cultural Precinct Plan sets out a series of development proposals, which establish detailed urban design principles and development controls. The potential SDP's should be directed by these principles. They comprise the following components:

- Movement:** The proposed road networks, the development of new road infrastructure, public transportation routes and stops, the pedestrian dominant routes and the public environment.
- Land Use Activities:** The envisaged land uses and activities for the area, as well as the mandatory and desirable location for specific users, such as activity edges (active ground floor uses, e.g. retail and other), public plazas and piazzas.
- Urban Space and Landscape:** Design Principles outlining the spatial structure of the public environment and pedestrian routes, urban soft and hard spaces (piazzas, squares and parks), the location of trees and development of boulevards, and colonnades and covered walkways.
- Built Form Directives:** Outlining physical development parameters regarding mandatory and desirable build-to lines, mandatory and desirable colonnades / covered walkways, desirable and expanded building development zones, buildings and / or building facades of historic value, landmark sites, points of architectural accentuation, building heights and extent of the public environment and pedestrian routes.
- Architectural Guidelines:** Outlining a design ethic that achieves an architectural precinct of distinction. The guidelines are parameters, which allow for a range of design opportunities that integrate individual buildings into an overall environment of architectural pedigree.

6.2. MOVEMENT

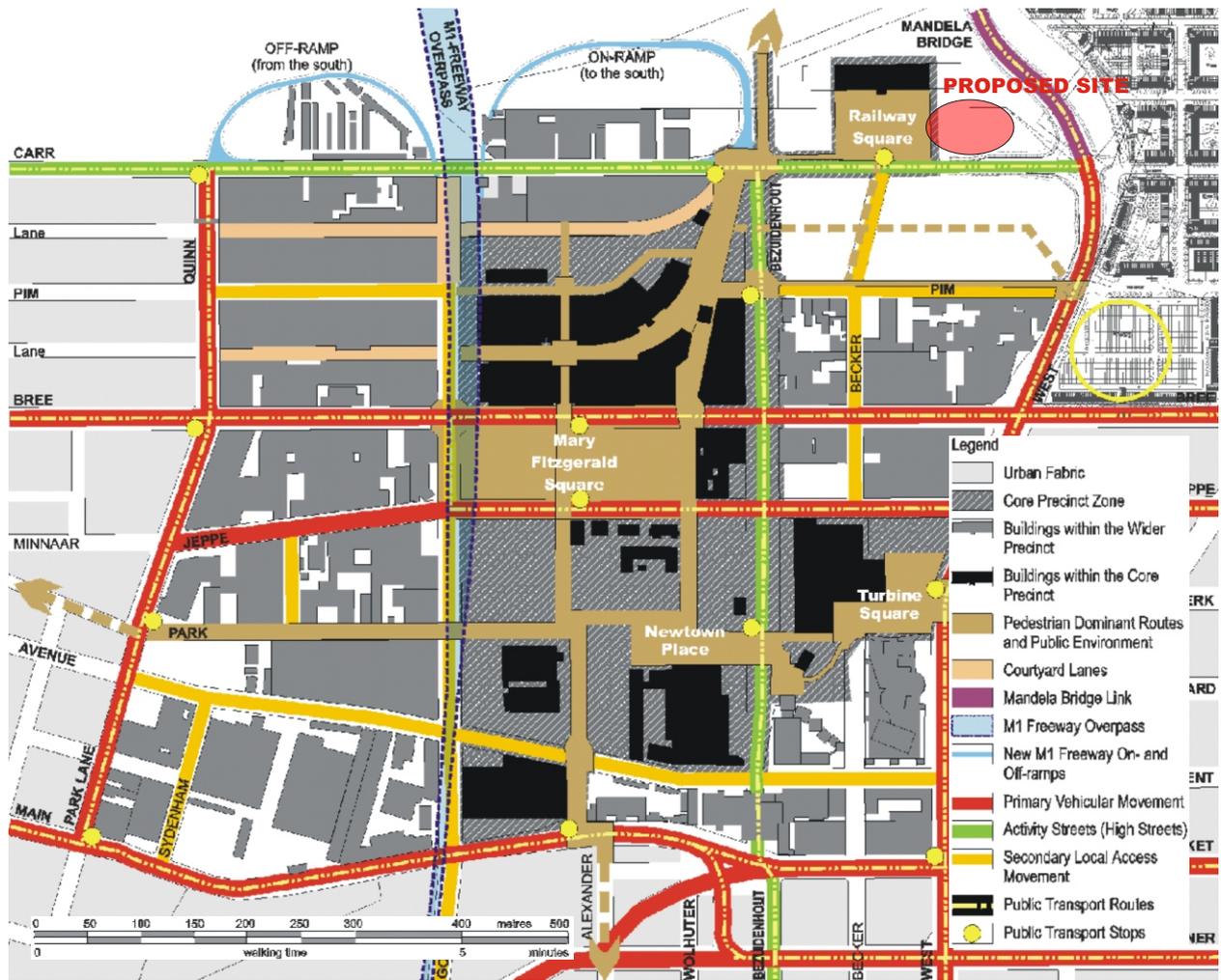


Figure 27. Newtown Movement Pattern

Two activity Streets, or “High Streets”, have been proposed namely Carr and Bezuidenhout Streets. These are envisaged to have more intensive retail and other activities fronting on to them, with significant on-street parking, wider pedestrian pavements, catering for entertainment, restaurants, daily needs and convenience shopping.

The remainder of the road network forms vehicular and local secondary access roads, which provide circulation throughout the Cultural Precinct, with on-street parking.

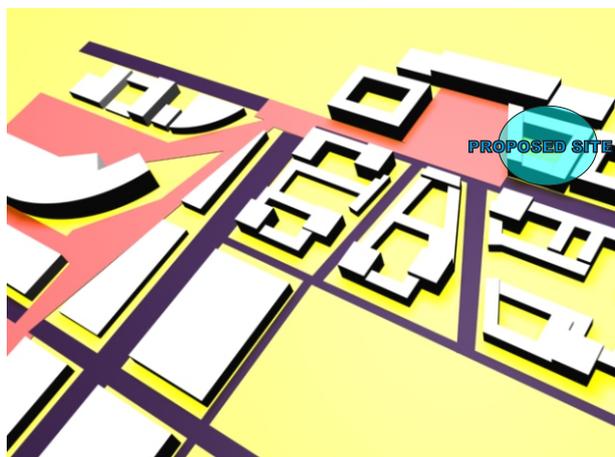


Figure 28. (A) Major pedestrian movement towards site (Movement indicated in red from core area)

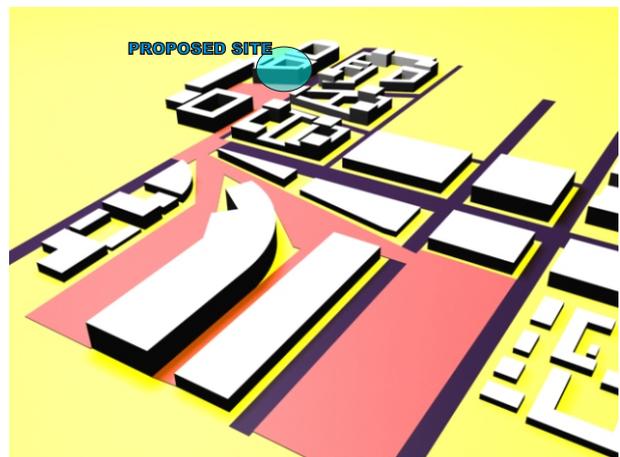


Figure 29. (B) Major pedestrian movement towards site (Movement indicated in red from core area)

6.3. LAND USE ACTIVITY

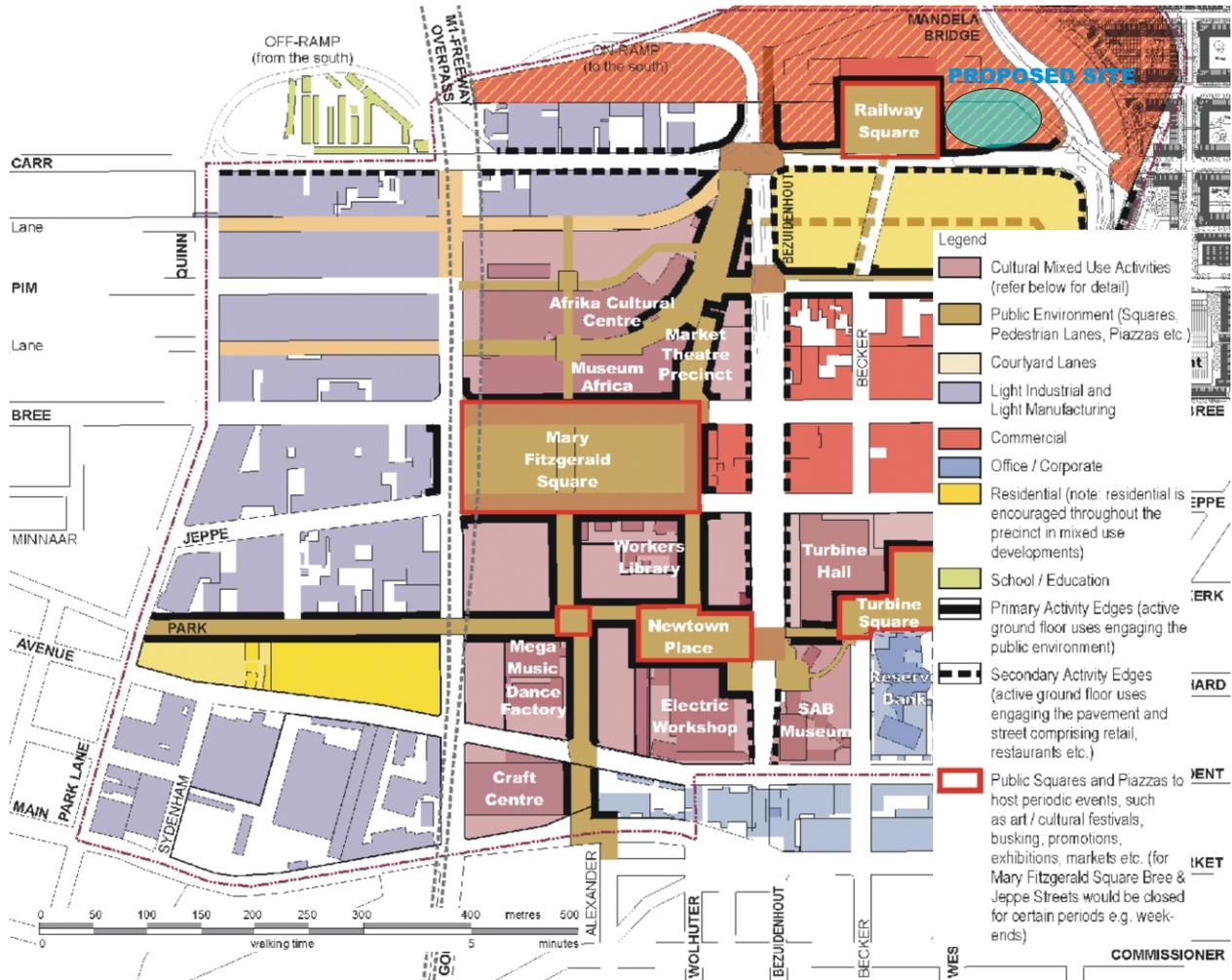


Figure 30. Proposed Land uses

According to the Council's development strategy as well as the guidelines in the Newtown Cultural Precinct Plan, emphasis is placed on mixed-use developments within a cultural and art theme. Developers are encouraged to integrate a complexity of cultural, art, entertainment, retail, commercial, office and residential activities.

The activities and uses within buildings at ground floor level are also critical to maintaining this sense of continuity and a vibrant, urban life. Developers are therefore encouraged to use the ground floor, as far as possible, for retailing, entertainment, restaurants and uses that can flow out onto the sidewalk space adjacent to the building.

Above ground floor, the design of the building and the uses on the upper floors are to encourage view vantage points onto the key public spaces. In this regard the facing out of office and residential uses from upper floors, together with balconies, is encouraged.

6.4. URBAN SPACE AND LANDSCAPE

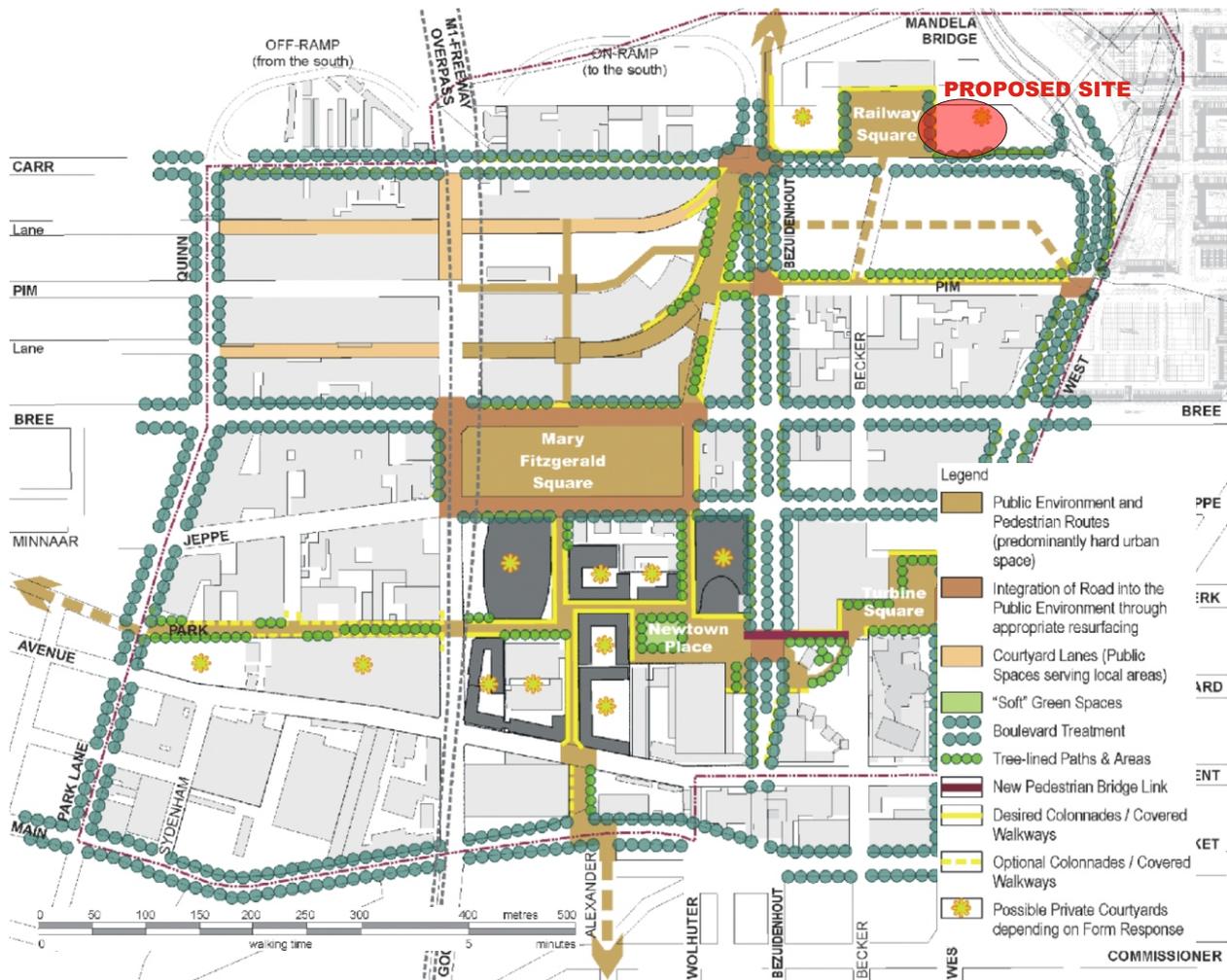


Figure 31. Urban Space and Landscape

The urban space environment of the Newtown Cultural Precinct is characterised by a public environment network comprising pedestrian walkways and routes, piazzas and public squares. More semi-public courtyard lanes have also been identified, for the use by adjoining businesses for courtyard parking, landscaping and places of relaxation.

The proposed landscaping is structured such that it adds to the aesthetics, legibility, sense of place, linkage and physical comfort of the environment. Elements used are:

- Formal planting of street trees along the primary routes to form boulevards.
- A second order of street tree planting used to define important areas of the public environment, pedestrian routes and secondary streets.
- The extensive utilisation of formal planters and landscaping features throughout the public environment.
- The inclusion of soft green spaces such as local parks.

In addition colonnades and / or covered walkways have been proposed to enhance overall physical comfort and protection from the elements.

More private courtyards have been considered throughout the design, which should include significant landscaping and green space, contributing to the overall landscaping of the precinct.

6.5. BUILT FORM DIRECTIVES

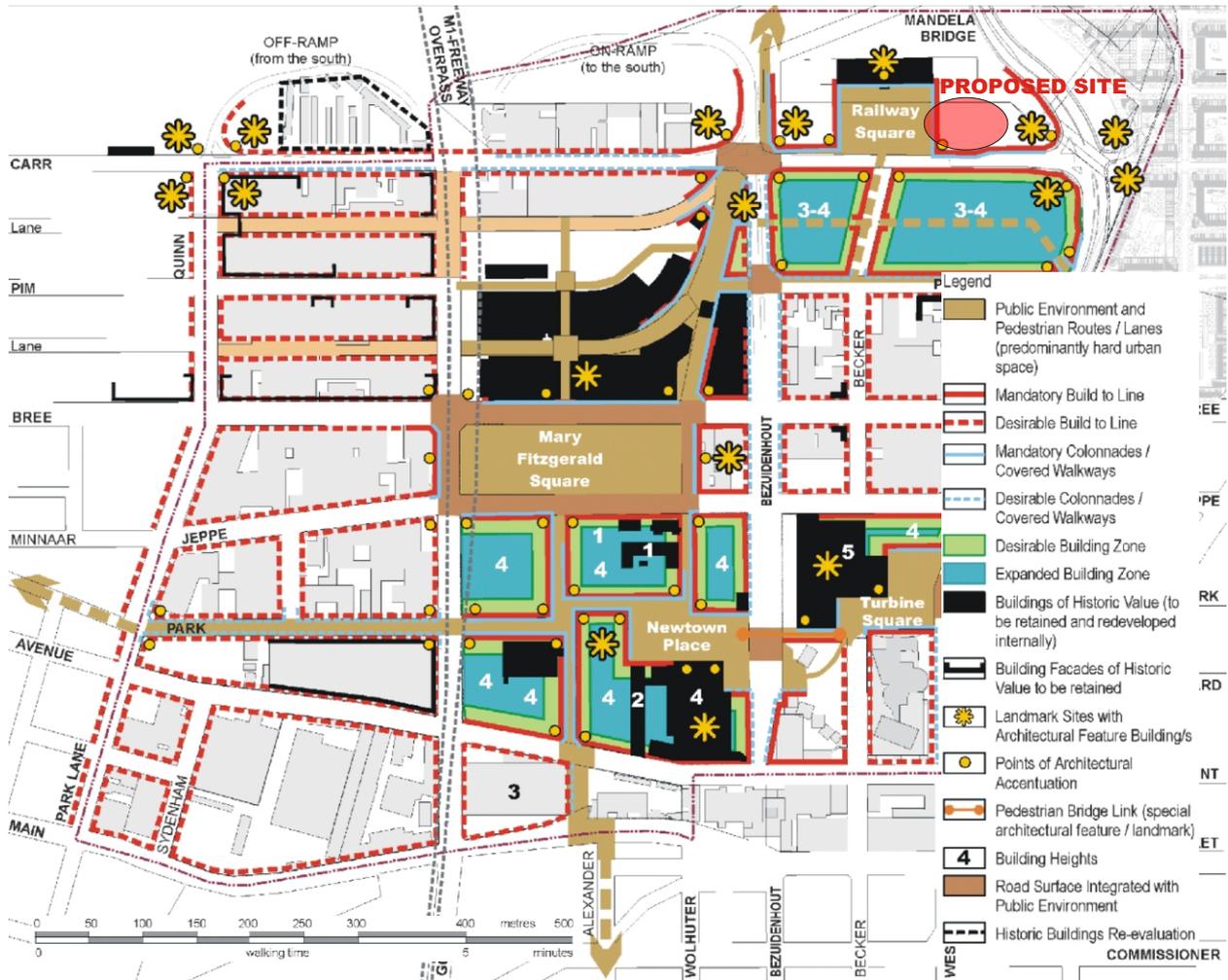


Figure 32. Built Form Directives

The built form directives envisaged are:

- Individual developers are required to use their buildings to define space: buildings are to be used in grouped form to define the edges of the public environment.
- Consequently the buildings are encouraged to be designed to stand on their boundary lines and collectively form a human scale to achieve a feeling of containment and natural surveillance, giving the public environment a sense of (and promoting) human scale, safety and security. This is underpinned by active ground floor uses facing on to the public environment.
- The mechanisms used to promote the built form include mandatory and desirable build to lines, building zones, and the definition of either colonnaded or covered walkways.
- Buildings and building facades of historical value have been identified and set aside for conservation. Historic buildings are to be retained and recycled and historic building facades retained and integrated with the redevelopment of the site, should this occur.
- Height of buildings is a critical ingredient of the spatial qualities being sought. The development of buildings is thus encouraged to be two to four storeys, in keeping with the existing scale of the urban environment, and achieving a human scale of enclosure.
- The development of landmark buildings of distinct character is also promoted, as well as the architectural accentuation of buildings at important locations along the public environment. This is to promote legibility.



Figure 33. (A) Built Structure



Figure 34. (B) Built Structure

6.6. ARCHITECTURAL GUIDELINES AND PRECEDENT

A number of images have been selected to depict the type of environment that is being sought, both from an architectural point of view, as well as the nature of the public environment.

There is an emphasis on the quality of the public environment and the importance of high quality streetscapes, piazzas, pedestrian lanes and public squares. A well maintained, clean, attractive and, above all, secure public environment is a critical component to the successful development of the Newtown Cultural Precinct. A car-dominated environment is de-emphasised, including the visual intrusion of unattractive parking areas, particularly on surface parking.

Excellence in the quality of private developments is encouraged, specifically in terms of their appeal to the market, their architectural expression, the use of high quality materials, attention to design detail and, above all, the creation of a vibrant, people-friendly public environment. The architectural approach that is sought is that of an urban character displaying “good public manners” meaning that, as important as the building may be, it recognises its context, is respectful of its neighbours, responds to and enriches the public, semi-public and private environments it defines, and contributes to an overall group form. Consequently buildings are used to define space rather than for buildings to simply appear as objects in space having little or no relationship to another. The slavish copying of historical style (that is, creating a *pastiche*) is strongly discouraged.

Where historical reference is to be made in the design, particularly important in the context of the de+velopmental history of Newtown, the building should display a clear analysis of that style, the principles on which it was based and demonstrates how these are re-interpreted into a contemporary idiom.

The following design codes are derived from the objectives and goals set out in the Newtown development framework.

ARCHITECTURAL CHARACTER

- The architecture must have contextual and historical significance to the Johannesburg CBD in general, and Newtown in particular.
- The urban design controls will, to an extent, control the form and size of buildings and their relationship to one another and to the hierarchy of open spaces proposed. This will ensure a consistent integrity of urban form.
- The design code proposed for Newtown is required to prevent design deviations in the wrong direction, but this also permits the occasional flight of fancy that does enrich towns. The juxtaposition of more formal spaces, places, routes, landmarks, vistas, topography and interesting buildings conceived that makes memorable precincts, such as Newtown.



Figure 35. Layering of Facades



Figure 36. Ground level interaction

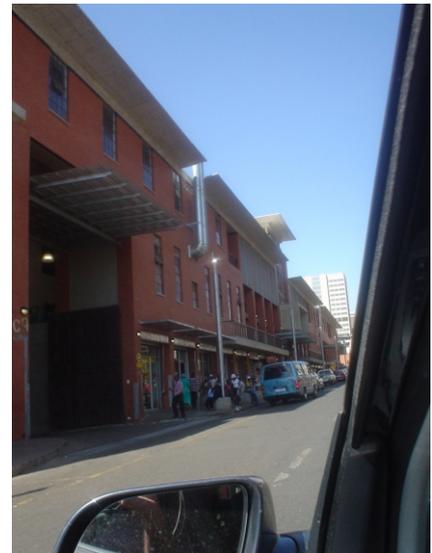


Figure 37. Character in Newtown



Figure 38. Relationship to street

DESIGN ETHIC

Buildings must define space, rather than be objects within it. The built fabric should be defined by:

- High Floor Area Ratios
- Minimum heights that achieve an acceptable degree of enclosure of the public environment
- Definition of build-to-lines ensuring strong edges
- Minimum design criteria that accentuate the building's relationship to the public environment, its point of entry, parking, vehicular circulation, security, massing of built form, elevational and roof treatment, facade modulation, vertical composition and relationship to adjacent developments, in particular active ground floor activities.

MATERIALS AND QUALITY

- High quality materials should be used, which can also be cost effectively maintained.
- The area is characterised by red brick and earthy colours. Materials of this colouring are encouraged.
- Materials and elevations should reflect a consciousness in respect of energy and water conservation.
- Roofs must be dealt with as a conscious element of facade treatment. Roofs should not dominate their buildings.

RELATIONSHIP TO SURROUNDING

- The overriding group form sought is that of a street-related wall architecture, as is characteristic of the Johannesburg CBD. In other words, urban spaces must be lined by a continuous façade of buildings. While heights, build-to lines, and architectural styles may vary slightly, the net result should be a complex facade facing onto the public environment.
- Continuity of building is encouraged, with gaps between them being discouraged.
- Buildings must relate to each other, to the interior and exterior.
- The interior of each block should be considered with importance, as a place within its own right. It should form an important ingredient of the semi-private domain of the Newtown Precinct. The development of each site / erf should recognise it as an equally important frontage and respond to it accordingly.

MIXED USE DEVELOPMENT

- Quality of life, ambience and activity in the area is dependent on the extent to which mixed-use developments are achieved. There is therefore a high priority on encouraging developers to respond in this regard.
- Continuity of a vibrant ground level is encouraged, for example, retail, restaurant and entertainment activities. Cultural activities are equally important here, such as theatres, galleries, and workshops.
- Sidewalk space becomes an important element in the architecture of a building. Colonnaded, canopied or protected sidewalk space becomes an important determinant of the adopted architectural approach. Enclosure of the sidewalk should be of a human scale.
- Ground level facades must interact with street if they are not to be used for active spaces. This will allow for surveillance and thus security.



Figure 39. Use of Materials in Newtown



Figure 40. Interaction with street



Figure 41. Internal courtyard



Figure 42. Relationship to surrounding



Figure 43. Vertical mix use

- The ideal mixed-use configuration is that of retail-related active uses at ground floor; with offices and studios two or three storeys above this, and one or two more levels of residential apartment above this. Densities must be maximised where possible.

CELEBRATE ENTRANCES

- Pedestrian entrances and circulation should be clear and emphasised, both from the street and the inner core of the block. Thus the building becomes a double frontage development.
- A hierarchy of spaces ranging from public to private must be encouraged.
- The area must be as user-friendly and as accessible as possible to all people, regardless of disabilities. Thus ramped access to buildings should be an integral part of the building's sense of arrival. Specialised facilities for mothers and their children, the elderly and the disabled would be welcomed.
- Vehicular access across sidewalks must be limited if possible.
- Corner buildings must be given particular attention, in terms of stature, by way of accentuating height and details.

SIGNAGE

- Designated zones are needed for signage that is visible to public, semi-public or neighbouring property.
- Discreet and restrained signs are encouraged, in other words, no flashing or moving signage should be allowed.
- Approval must be obtained for the display of external signs.
- No signage may appear on the facade above ground, other than the name of the building.
- Signs should be manufactured of high quality, durable and colourfast materials. Fixed elements of the sign should be concealed.
- Signs and support structures are to be ground related and integral to the building.

LANDSCAPING

- Landscaping is used to enhance the architecture of the building and to create a greening of the city fabric and to emphasise the relationship between built and natural elements.
- Landscaping must complement that of adjoining sites to create a unified landscape running across boundaries rather than defining them.
- The utilisation of indigenous planting is encouraged and is to be designed with a conscious attention to routine maintenance.
- 20% of the site's area (hard and soft landscaping) must be professionally planned and detailed.
- Planting must be properly maintained and irrigated. All hard surfaces must be designed to accommodate proper storm water drainage.



Figure 44. Entrance to Metro Mall



Figure 45. Discreet signage



Figure 46.(A) Use of landscape in Newtown



Figure 47.(B) Use of landscape in Newtown

7. DESIGN BRIEF

The design brief was drafted in collaboration with the client. This was developed from the strategic imperatives outlined by the client as well as a pre-analysis of the site.

The Brickfields Residential Development project forms a basis for an urban design structure for the development area. The proposed project is primarily guided by the client's mandate to develop sites to assist in Newtown's revitalisation. The client's intentions to create jobs, development and housing opportunities which are underpinned by the Newtown Urban Design Framework, are therefore critical considerations in the design development. As such it moves beyond a limiting design by building function to include the strategic developmental objectives for the precinct itself. In line with the City's development strategy, these are intended to stimulate a positive urban environment and to elicit private development responses. This is key to the sustained urban regeneration within the Johannesburg CBD from which the Newtown Urban Design Framework takes its cue.

An overall set of project goals and their aligned design objectives have been derived from the theory base as well as the Newtown Urban Design Framework. These are outlined below.

PROJECT GOALS	ALIGNED DESIGN OBJECTIVES
Promote a critical mass and a 24 hour city	Encourage mixed use activity
Reduce crime levels	Effective security enhancing design
Market the identified character of the site	Maximise the utilisation of opportunities set out in the framework
Help meet inner city housing demand	Create affordable cost effective housing
Create and maintain public open spaces	Interface with public spaces to enhance/ complement space
Provide effective service delivery	Provide facilities to accommodate functions
Develop financial mechanisms to attract and retain investment	Provide opportunity for a range of economic activity

Figure 48. Goals and Objectives

7.1.FUNCTION MOTIVATION

Function is determined by meeting the above-mentioned goals and objectives and at the same time utilising the development framework of the site's context. This ensures that appropriate land uses are assigned to the context.

The overriding group form sought is that of a street-related wall architecture, as is characteristic of the Johannesburg CBD. It also reinforces the street pattern and brings life and security back to the city. This in turn would provide a secure internal courtyard for tenant usage. The four facades created should capitalise on opportunities set out by the Brickfields framework and simultaneously meet the objectives set out above.

The magnitude of the functions is to be determined by target setting criteria. The height limit suggested by the urban design framework of four or five floors is used as a guideline in conjunction with estimated solar movement at this stage for concept development.

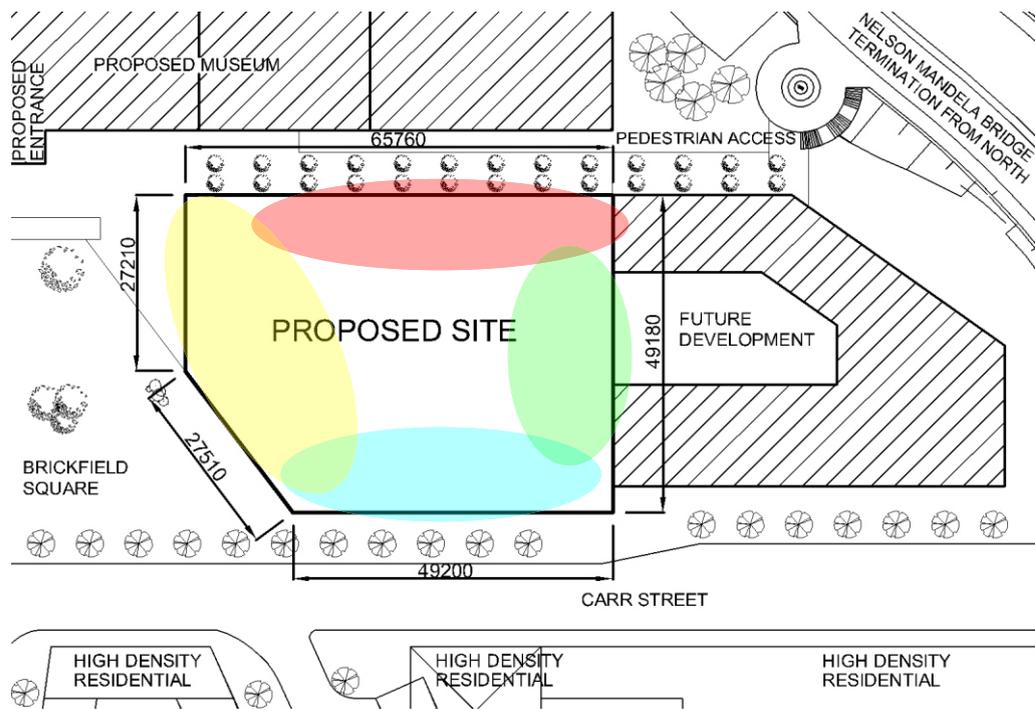


Figure 49. Land Use Zoning

SOUTH WING:

Guided by the structure of the Newtown Urban Development Framework it is anticipated that the south wing would experience the highest levels of pedestrian activity as it is situated in the planned “High Street”, Carr Street. Pedestrian traffic will also be increased with the proposed transport museum at Parktown Station. It is therefore suggested that tourist orientated stalls be located here due to the high dependency on pedestrian movement, allowing tenants to capitalise on this. These stalls should form a permeable edge to the Brickfield Square. A mixture of small-scale home based retail and formalised retail is also proposed on the south wing of the development at ground floor as to maximise utilisation of this pedestrian movement. This is in line with the Framework’s call for ground floor public engagement.. Added residential density on the floors above will reinforce safety on the street.

WEST WING:

Due to its position, the west wing should provide an appropriate interface with the Brickfield Square. This interface should serve to enhance this public open space and should integrate pedestrian friendly covered walkways into the design. Due to the nature of pedestrian activity associated with the public open space and proposed transport museum it is suggested that restaurants and eating facilities be located here at ground level. This would enhance safety and security as well as stimulate late night activity. These facilities should be allowed to spill out onto the square. This design consideration further supports the Framework’s call for ground floor public engagement..The ground floor should also provide an identifiable entrance to the upper floors. This with the proposed transport museum would serve as an anchor for the Brickfield Square. The building is surrounded by high density residential buildings and should accommodate services for the community engagement. Due to the public nature of the square it is appropriate that these functions be accommodated on the first floor of this wing. The upper floors here should incorporate office activity so as to provide opportunity for much needed small business development as well as enhanced activity for the square adding to the desired critical mass. These upper floors must be designed to meet the Framework’s guidelines to create viewpoints onto public spaces like Brickfield Square in this instance.

NORTH WING:

This wing is characterised with minimum pedestrian activity. This interface should have a minimal negative impact on the proposed transport museum. This facade should provide residential accommodation helping to meet the high demand for housing and reinforcing security on the street. Design of the residential section will factor in the Framework’s call for viewpoints - in this instance overlooking the Nelson Mandela Bridge.

EAST WING:

Careful consideration should be taken as this facade forms an interface with the proposed adjoining building. A cohesive integrated design approach is sought for the interface between the two buildings. The possibility of housing should be considered here or an integrated residential courtyard with the neighbouring building.

7.2. PROPOSED FACILITIES

PROPOSED FACILITIES										
Proposed land use	Small scale retail	Work live units	Formalised retail	Restaurant-eating	Office space	Community space	Residential units	Basement Parking	Street Parking	
South Wing 50m frontage										
Basement								X	X	
Ground floor	X		X							
First floor							X			
Second floor							X			
Third floor							X			
Fourth floor										
West Wing 55m frontage										
Basement								X		
Ground floor	X		X	X						
First floor						X				
Second floor					X					
Third floor					X					
Fourth floor					X					
North Wing 65m frontage										
Basement								X		
Ground floor		X					X			
First floor							X			
Second floor							X			
Third floor										
Fourth floor										
East Wing 50m frontage										
Basement								X		
Ground floor	Design dependent									
First floor										
Second floor										
Third floor										
Fourth floor										

Figure 50. Proposed facilities



Figure 51.(A) Envisaged built form

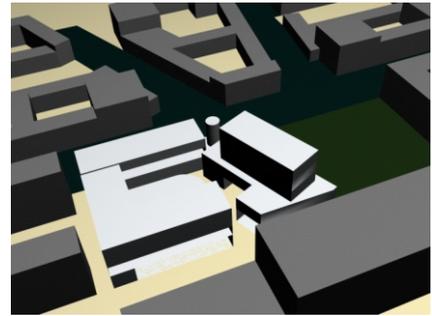


Figure 52.(B) Envisaged built form



Figure 53. (C) Envisaged built form C

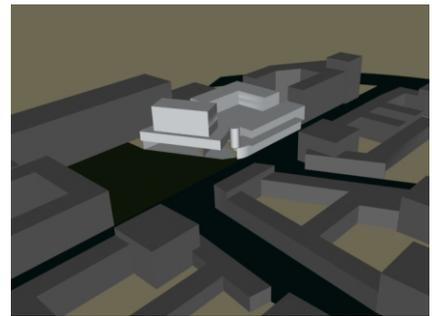


Figure 54. (D) Envisaged built form C



Figure 55. (E) Envisaged built form C

8. TARGET SETTING CRITERIA

8.1. HOUSING TARGET SETTING

Population densities in the west of Bertrams and virtually the whole of Soweto are estimated at fewer than 200 people per hectare. This density has proven insufficient to support commercial activity and the economic viability of service infrastructure. Consequently at Hillbrow the density is estimated above 450 per hectare. This over densification has placed excessive strain on the social and economic infrastructure resulting in various symptoms of social breakdown. In order to sustain the proposed infrastructure in Newtown and create a buzz of activity, Newtown should aim for a higher order density of between 300 and 400 people per hectare. A higher order residential land use activity of about 70% is proposed for Newtown. This will ensure effective utilisation of the proposed infrastructure.

It is essential that residential developments aim to achieve this density at the proposed land use to render the area feasible for inner city development and to ensure sustainable development. Although a variation in housing developments adds a interesting variation to city scapes,, achieving the suggested density is desirable.

The approach adopted will use the recommended residential density of 300 to 400 people per hectare as a guideline to determine the magnitude of desirable residential density in the proposed facility. This estimation will help to maintain the overall precinct population density goals without placing additional stress on other sites.

A mix of residential typologies is desired for the project at 40% 3 bedroom units, 40% 2 bedroom units and 20% 1 bedroom units. This allows for the cross-section of family structures and elicits social interaction amongst a variation of residents.

Figure 55. illustrates that the estimated block area (including estimated centre to street dimensions) is 4761 square metres for the residential area. The estimated residential floor area is 3000 square metres. Residential densities for areas between 10 metres per person and 25 metres per person are calculated in appendix B for the project. It is assumed that 40% of the floor area would be allocated to other uses in the facility. Therefore 40% density is added to the projected residential density. This total figure assumes 100% residential use for the city block. The city block is then converted to one hectare at various floor areas per person. Various residential densities are then calculated for various land use percentages per hectare.

Appendix B illustrates that in targeting residential land use of 70%, and residential density of between 300 and 400, the optimum number of units would range between 30 and 36 units at 40% 3 Bedrooms, 40% 2 bedrooms and 20% 1 bedroom units for the proposed site. Although the projected space per person is relatively high this would be reduced by about 20% in an attempt to create cost effective housing.

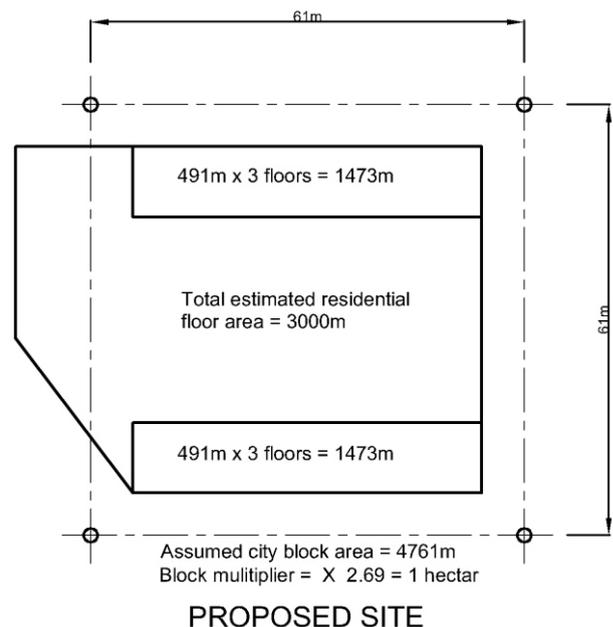


Figure 56. Estimated residential floor area

8.2. OFFICE TARGET SETTING

The Department of Trade and Industry (DTI) maintains that, “The small business sector plays a crucial role in people’s efforts to meet basic needs and help marginalised groups (like female heads of households, disabled and previously disadvantaged people) to survive during the current phases of structural changes where the formal economy is unable to absorb the increasing labour supply, and social support systems are grossly inadequate” (SARB, 2003).

The DTI also maintains that, “there is ample evidence that labour absorptive capacity of the small business sector is high, the average cost per job created is usually lower than in big business and its role in technical and other innovation is vital for many of the challenges facing South Africa’s economy.” (SARB, 2003).

Various skills and development programmes are being implemented by the DTI. It is envisaged that these programmes would lead to the establishment of various new small businesses. The proposed site is strategically located within the central CBD which is targeted for the establishment of small businesses. Furthermore the existing and proposed high density housing schemes within close proximity to the site warrant the establishment of business premises. The DTI recognises five forms of small business:

- Survivalist enterprise (income on poverty line)
- Micro enterprise (1 to 5 employees)
- Very small enterprise (less than 10 employees)
- Small enterprise (less than 50 employees)
- Medium enterprise (less than 100 employees) (SARB, 2003)

Medium enterprises account for only 1,4% of all small business recognised by the DTI and are usually more structured in terms of management principles and staff numbers are high. Furthermore these businesses are more established than emerging business and provision for these will therefore be excluded in this project. It will instead focus on emerging businesses.

Targeted emerging businesses will include micro to small enterprises which, according to the DTI, generate moderate income levels. Facilities for survivalist enterprises, which generate income just above the poverty line, will only be factored in the street activity section and not in the building per se. There is no paid staff and it’s asset value is minimal. Economic activity of survivalist enterprises is directed at providing a means to keep their families fed and has little opportunity for expansion. (SARB, 2003).

Each floor of the proposed facility should therefore be able to accommodate 50 people (small enterprise at maximum capacity according to the DTI). These floors should however be sub-divisible to accommodate offices of 5 people (micro enterprise) and 10 people (very small enterprise) to cater for the ever-changing needs of business.

8.3. RETAIL AND RESTAURANT TARGET SETTING

The retail and restaurant component of the facility should maximise utilisation of street frontage on the southern and western facade of the building. A supermarket should be utilised as an anchor retail store in support to smaller retail stores. provided for basic necessities to the immediate community and building users. Small scale retail stores should utilise the predominant pedestrian movement pattern. The sizes to a large degree would be governed by the sizes of facilities above. At least one formalised restaurant should be provided in conjunction with fast food outlets. These facilities should be orientated towards the transport museum.

8.4. COMMUNITY CENTRE TARGET SETTING

The decision to implement a HIV/Aids centre is motivated in the theoretical motivation section that follows. It is evident in existing HIV/ AIDS training centres within an urban context that the most successful centres usually incorporate other community functions (appendix C). Although the existing facilities are characterised with relatively low use the projected use of these facilities can be assumed to drastically increase given the projected impact of the disease as discussed in the theory section. The function of the spaces within the existing facilities are utilised as a basis to derive functions of spaces within the new facility. As existing facilities are underutilised it is difficult to project the average number of future users. However given Johannesburg’s high projected residential density it is safe to assume that the maximum utilisation capacity of other similar urban HIV centres can be used as a guideline to derive sizes of spaces (appendix C).

Other community functions of the facility are not limited to specific uses as the desired utilisation of this space is better left to the social demands of the immediate community. The size of an average South African government school classroom of 50 students is used as a guideline to derive the size of this multi-functional space. In this way the effective transfer of knowledge can be assured.

9. BUILDING SPACE REQUIREMENTS							
Proposed land use	Number required	No. of persons per unit	Total no. of persons	Average space per person	Average space per unit	Total required space	Reference source
HOUSING							
3 Bedroom units	12	5 or 6	66	16m	96m	1152m	As per criteria
2 Bedroom units	12	3 or 4	42	16m	64m	768m	As per criteria
1 Bedroom units	6	1 or 2	9	16m	32m	132m	As per criteria
OFFICES - estimated 50 staff per floor x 3 floors in subdivisable space as per criteria							
Each floor office space	3	50	150	7m	350m	1050m	New Metric Handbook
Access to work places (10%)	3	50	150	0,7m	35m	105m	New Metric Handbook
Within office facility (meetings etc.)	0	-	-	-	-	-	New Metric Handbook
Inter office circulation (10%)	3	50	150	0,7m	35m	105m	New Metric Handbook
Support facilities (filing etc.)	3	50	150	2,75m	52,5m	157,5m	New Metric Handbook
Areas for special facilities	0	-	-	-	-	-	New Metric Handbook
Projected toilet facilities	Men: 2 toilets, 1 wash hand basin, 1 urinal Women: 2 toilets 2 wash hand basins					25m (est.)	New Metric Handbook
HIV/ COMMUNITY CENTRE							
Reception	1	2	2	5,5m	11m	11m	New Metric Handbook
Administration	1	2	2	7,5m	15m	15m	New Metric Handbook
Record storage	1	1,4m per 100 patients- estimated with existing centres				25m	New Metric Handbook
Waiting: 6 pers. per consult room.	1	24	24	2m	48m	48m	New Metric Handbook
Consulting rooms	4	3	3	3m	9m	36m	New Metric Handbook
Treatment rooms	3	2 to 3	Average size used		17m	51m	New Metric Handbook
Multifunctional community space	1	50	50	1,5m	75m	75m	New Metric Handbook
Projected toilet facilities	Facility linked with public toilets on ground floor- basic office module used here					25m (est.)	New Metric Handbook
RETAIL/ RESTAURANT COMPONENT							
Restaurant	1	Sizes dependant on upper floors. Maximum utilisation of street facade must be made.					As per criteria
Fast food	1/2						
Supermarket	1	Minimum size 200m maximum size 250m - dependant on upper floors				225m	New Metric Handbook
Retail	Number and sizes dependant on upper floors. Maximum utilisation of street facade with minimum 6,5m frontage.						New Metric Handbook
Projected toilet facilities	Men: 7 toilets, 5 wash hand basin, 5 urinal Women: 10 toilets 7 wash hand basins					75m (est.)	Based on existing models and ratios

PARKING SPACE REQUIREMENTS		
CRITERIA	Total no. of parking spaces	Reference source
HOUSING		
1 Parking space per unit	36	
Visitor: 1 parking space for every 4 units	9	New Metric Handbook
OFFICE		
1 parking space per manager and 1 parking for every 4 staff in SMME. Assumed 4 managers per 10 staff	40	New Metric Handbook
Visitor: 10% of staff parking	4	New Metric Handbook
RETAIL/ RESTAURANT		
One space per shop owner/ manager and one space for every 200m floor space assumed (1000m)	13	New Metric Handbook
Maximise street parking opportunity Parking basement planned in vicinity for public use.	0	
HIV/ COMMUNITY CENTRE		
50% of estimated 15 staff	8	
One space per consulting room (predominant form of transport is public transport)	4	
TOTAL PARKING SPACES REQUIRED	114	

10. THEORETICAL MOTIVATION FOR BUILDING TOPOLOGY

10.1. CATALYTIC ACTIONS

In the twentieth century, there was a heavy emphasis on theory-based urban form. The existing theories ignore some factors that are relevant and appropriate in other theories. As a case in point, a humanist scheme neglects economic issues; functionalist schemes ignore the importance of cultural traditions; systemic schemes are overbearing and too optimistic about technology and formalist schemes assume that Europe had resolved urban design by the nineteenth century. (Attoe and Logan, 1989).

European urban design theory may be described as being narrow and argumentative as each new approach seems to have developed to oppose and replace others, instead of building upon each other. Because all approaches are divergent theories tend not to encompass other theories. European urban design theory may share some common concerns and values but continued to move in different directions in the accompanying diagram.

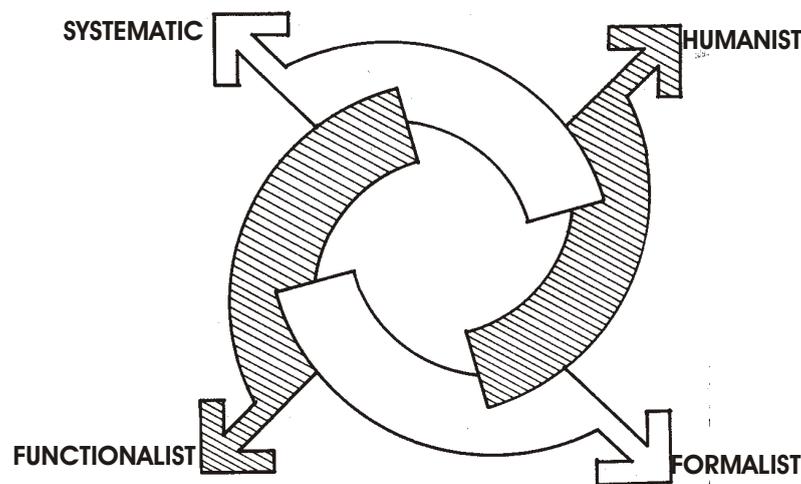


Figure 57. European theory

European theory is derived from social objectives whereas American practice often grows from assumed economic opportunities. South African design theory could be regarded as somewhere in-between as both dominant design approaches do not provide an easy fit for our context. Because of these differences, a unique South African approach to urban design theory is needed if we are to promote positive environments in our cities. We need an urban design theory that is appropriate to South African circumstances and allows architects, urban designers, and planners to develop a consensus about our values.

It is the values not the forms associated with theories, that are commended. The following values derived from European cities and urban design theories constitute the givens of good urbanism, not only in Europe but also in other cities:

- Mixed activities are basis to cities.
- Buildings (and the spaces they form) are the natural increments of urban growth.
- New urban growth must recognise the context provided by past construction.
- A major goal of urban design is the shaping of public open spaces, including meaningful street space.
- Streets must accommodate various forms of transit and enhance pedestrian activity and movement.
- Transportation systems should be rational.
- Urban places should be varied to enhance the activities associated with them: housing, neighbourhood shopping, major retail, civic, and so forth.
- Citizens should have a role in shaping urban setting.

(Attoe and Logan, 1989)

According to Attoe and Logan (1989), a sequence of limited, achievable visions is defined as urban catalysts. Visions for the new urban centre should be modest and incremental, but its impact should be substantial, in contrast to the large visions that have been in rule, with their minimal or catastrophic impact.

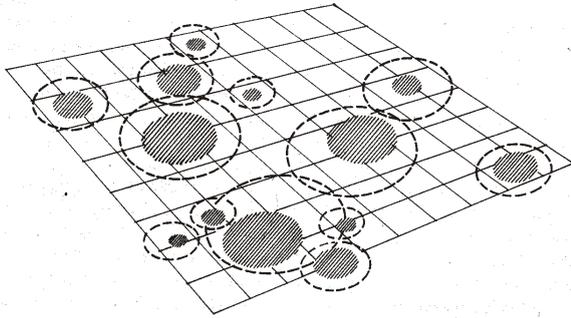


Figure 58. Catalytic actions

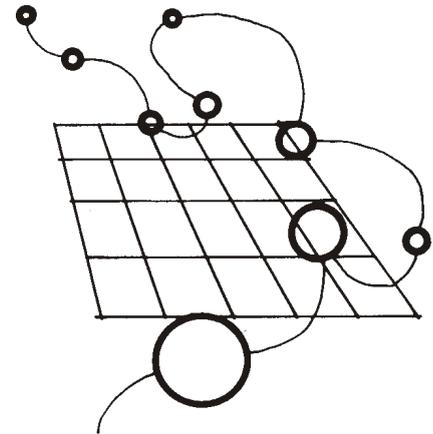


Figure 59. Necklace actions

An urban element that is shaped by the city and then, in turn, shapes its context could be defined as a catalyst. Its function could therefore be described as a continual “regeneration of urban fabric” (Attoe and Logan, 1989). An urban catalyst is not an end in itself, it instead stimulates further development. Urban catalysts are capable of moulding a city in many ways with a variation of possible visions. Urban catalysts are better thought of as smaller elements such a building. Although renewal and revitalisation schemes for cities are often referred to as catalysts, many of these schemes have little impact. Buildings themselves can be catalysts if designed thoughtfully, ensuring the high quality of urban redevelopment.

Catalysis involves the introduction of one ingredient to modify others. In the process, the catalyst sometimes remains intact and is sometimes itself modified. Adapted to describe the urban design process, catalysts may be characterised as follows:

- The introduction of a new element (the catalyst) causes a reaction that modifies existing elements in an area. Although most often thought of as economic investment catalysts can also be social, legal, political, or architectural. The potential of a building to influence other buildings, to lead urban design, is enormous.
- Existing urban elements of value are enhanced or transformed in positive ways. The new need not obliterate or devalue the old but can redeem it.
- The catalytic reaction is contained; it does not damage its context. To unleash a force is not enough. Its impact must be channelled.
- To ensure a positive, desired, predictable catalytic reaction, the ingredients must be considered, understood and accepted. Cities differ; urban design cannot assume uniformity.
- The chemistry of all catalytic reactions is not predetermined; no single formula can be specified for all circumstances.
- Catalytic design is strategic. Change occurs not from simple interventions but through careful calculation to influence future urban form step by step.
- A product better than the sum of the ingredients is the goal of each catalytic reaction. Instead of a city of isolated pieces, imagine a city of wholes.
- The catalyst need not be consumed in the process but can remain identifiable. Its identity need not be sacrificed when it becomes part of a larger whole. The persistence of individual identities many owners, occupants, and architects enriches the city.

(Attoe and Logan, 1989)

A catalytic theory of urban design is based on existing theories, leveraging what they have to offer. However, unlike existing theories they describe how to get from project goals to aligned design objectives and implementation. The concepts of action-and-reaction or cause-and-effect are integral to catalytic theory. This theory provides various mechanisms of implementation, final form, or visual character for urban areas, instead of a single solution. It uniquely prescribes an essential feature which is the power to trigger other action in urban developments. The resultant designs therefore encourage the interaction of new and existing elements and their impact on future urban form, not the approximation of a single physical design option.

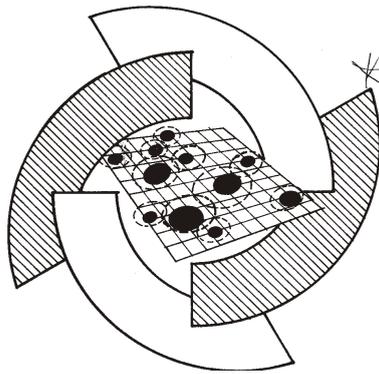


Figure 60. Appropriate design

It is often the case that buildings collectively form the overall design aesthetic of a city. However, individually, few buildings in cities are architecturally exceptional. If due consideration is taken by developers, each new development improves and enhances the profitability and design of a city. This is because each is related to others in a meaningful way. Buildings do set precedence and these matter.

Urban catalysis is a collective result of all stakeholders in the development process working together towards common goals. When the architect, planner, developer banker and politician support a well-conceived and well-designed project it can cause positive subsequent enhancements. Today, further relationships include public/private sector developments where common understanding of project goals and implementation is sought.

South African cities are different from cities elsewhere in the world, and our theory of urban design must reflect the differences. They still wrestle with the design influences of the apartheid regime where economic divides impaired interlinked development.

10.2. DEVELOPMENT STRATEGY THE CAPITAL WEB

A development strategy based on the “capital web” approach utilises the physical establishment of the public service infrastructure (roads, public environment, public amenities and services) and its facilities as the structure to the development area.

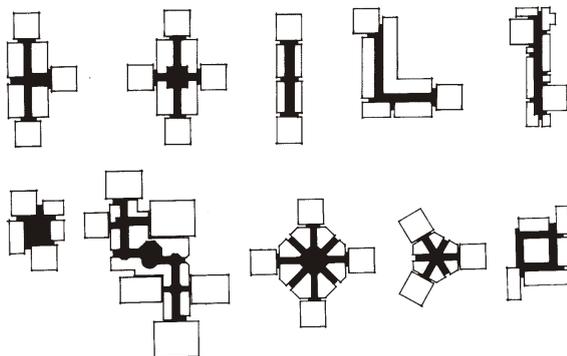


Figure 61. Structuring elements

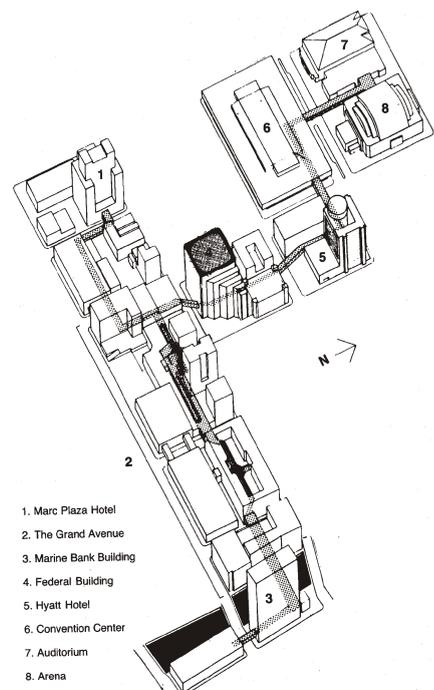


Figure 62. Downtown Milwaukee



Figure 63. Structuring elements in Newtown

The “capital web” of the Newtown Cultural precinct comprises the following components:

- The Public Environment, encompassing Mary Fitzgerald Square, Newtown Piazza and Turbine Hall square; and the connections between these.
- The proposed road infrastructure, including the “Mandela Bridge” (currently in construction stage) and the freeway on- and off-ramps.
- The strengthening of the Market Theatre Precinct node and its regeneration.
- The interlinking public environment.

It is anticipated that linkages between these key developments would influence and provide incentive for the upgrading of the derelict buildings between these linkages.

10.3. BACKGROUND TO THE SOUTH AFRICAN CONTEXT

South Africa is currently experiencing one of the most rapid population growths. The population increased from 37 737 200 in 1991 to 46 009 300 in 1991. In 1999 it was estimated by Statistics South Africa that about 60% of South Africa's population lives in urban areas compared to 47% in 1980 which is a clear indication of the rate of urbanization.

According to Statistics South Africa over the last ten years the gross domestic product grew by an average of 2% annually however the population increase caused the real gross domestic product to fall by an average of 1% annually. Clearly South African cities are unable to sustain economic activity for it's growing population. It is estimated that over 30% of South Africa's economically active population is currently unemployed. Plans by the department of trade and industry are currently being implemented for job creation however the impact is minimal. According to Statistics South Africa the unemployment rate has grown from 16% in 1995 to 30% in 2001. There is clearly need for intervention in this regard.

It is estimated that over seven million people in South Africa are currently living in informal housing. The Johannesburg housing company has been established by the Johannesburg Council for the delivery of housing stock. There is evidently a tremendous demand for housing within the inner city as all projects undertaken by the Johannesburg housing company within the inner city are fully let before completion. Given the estimated population in informal housing, the rate of urbanization and projected population increase there is a constant demand for cost effective housing within the inner city.

South Africa is currently faced with much publicized HIV/AIDS epidemic. It is estimated that 4,7 million people in South Africa are currently effected with HIV. The University of Cape Town actuarial science indicates that this figure could rise to as many as 6,5 to 7 million over the next ten years where the number of deaths by other means would on average equal that of HIV. According to the United Nations South Africa has an average of 1800 new HIV infections per day. It is estimated that 24,5% of South African citizens are HIV positive. The effect of HIV on South Africans is tremendous; in 1998 250 000 people died of aids, in 1998 there were 100 000 aids related orphans and it is currently estimated at 420 00, by 2015 Aids would have decimated 4,47 million South Africans. The projected impact of HIV/AIDS on the economic status of South Africa is also tremendous:

-HIV/AIDS related sickness would directly affect productivity in the workplace and the competitiveness of South Africa's economy. This will also have a great effect on South African families and communities.

-As the disease depletes the labour force, especially when the skilled labour force is affected, the potential for economic growth is reduced potentially by up to 2% annually.

-By 2005 4 million families with incomes between R2500 and R8000 will face a 20% reduction in discretionary spending as a result of higher taxation to the fund state medical spending and increasing medical costs.

-Individual poverty grows as government resources are increasingly re-directed to address the impact of HIV/AIDS with proportionally less finance available for other social expenditure including education.

(DEPARTMENT OF HEALTH, 1998)

10.4. NEEDS OF URBAN DWELLERS IN SOUTH AFRICA **ECONOMIC ACTIVITY**

Of particular importance in South Africa, where rates of urban growth are extremely rapid and there are high levels of poverty and unemployment is the need to generate opportunities for small scale, self generated economic activity. The generation of small businesses and establishing places for the fulfilment of this economic activity is vital to the survival chances of these people.

ACCESS

It is essential that all citizens be given access to opportunities created. The full potential cannot be released if access to opportunities is isolated to a select few. The most feasible option in monetary and sustainability terms exists where people can gain access to daily activities on foot. Movement on foot should therefore form the primary form of transportation and urban design should be orientated around this. Urban design does however set some preconditions for higher orders of opportunities, activities and facilities. If the urban poor are to gain access to this the an efficient viable and co-ordinated public transport system is a prerequisite.

PROMOTION OF COLLECTIVE ACTIVITIES AND CONTACT

Within urban environments innovation and diversification is essential for further development. These are dependant on exposure, social interaction and communication. The places offering the greatest opportunity within cities are generally the places with the most interaction. The underlying principal is that cities need to be intensive rather than extensive.

INDIVIDUAL NEEDS

Individual needs of city dwellers need to be met in order for citizens to engage fruitfully in urban dwelling. Some of the physical needs that need to be addressed are health, safety shelter, employment etc: One of the most recent need that has to be addressed is the need for HIV/AIDS counselling and treatment. The projected impact HIV/AIDS clearly indicates the catastrophic effect if HIV/AIDS is not addressed.

The conclusion that could be drawn from addressing problems in South Africa is that designers need to create qualities of the city rather than suburbia. Suburban type dwellings are heavily dependent on private means and the use of expensive, resource wasteful technology. South Africa cannot assume to address its problems with the creation of a suburban type society. Designers must seek solutions within our cities as this is outstandingly the most viable option.

10.5. DESIRED QUALITIES OF A CITY IN SOUTH AFRICA

In order for urban design to satisfy needs urban qualities that contribute to the satisfaction of those needs have to be established. It is important that these qualities be identified for application within the urban context.

The overarching guide to quality in urban design is BALANCE. Balance may be interpreted in various orders, as will be explained later. Cities are dynamic systems that are subjected to continual growth, expansion and change. This constant changing of our cities is inherently positive as it adds to their diversity and enriches form-molding processes of our cities. Through this process fundamentally important relationships are formed and if a balance is not achieved these relationships may be destroyed by the dynamics of growth.

Dewar and Uitenbogaard in the book "A Manifesto for Change" identified three orders that are centrally relevant to urban design. The first and highest order identified is a balance between "society and the cosmos". More broadly, the phrase reflects a concern with holistic design approaches. All environments of quality are expressive of wholeness. Integral to this quality is a sense of place that recognises and celebrates the natural, cultural and historical uniqueness of different generations and times. It is this uniqueness that provides cognitive landmarks to users of the environment.

The second order identified is that between "society and nature". Urban contexts are a continuum of rural and urban landscapes. Retaining contact with the natural context within which the urban development occurs is of vital importance. The importance of this concept allows people to be part of the totality of the place in which they live.

The third order is the balance in the relationship between people, as expressed through urban activities. This order relates directly to levels of urban performance that should be achieved. Urban performance refers to the way in which urban structure accommodates, promotes and enhances the activities and events that define urban life. The provision of equal opportunities of access to all city dwellers forms part of this concern. The main criteria that is central to positive urban environments are:

FREEDOM

Urban settlements are enriched when they promote the maximum positive freedom for people to engage in activity. The structure should be designed to release the energies and talents of many people so as to enrich the quality of urban environments. In this way truly stimulating, diverse and complex environments emerge. The complexity of the environment in turn reflects and contributes to the richness of human experience.

EQUITY

Positive urban environments provide equal opportunities for all its inhabitants. Through their structure and form they enhance and promote urban activities and processes of urban life, and they allow all people easy access to the opportunities they generate.

INTENSITY, DIVERSITY and COMPLEXITY

Positive urban environments are characterized with intensity and diversity of activity. Intense interaction and high levels of population support create the most fruitful ground for the generation of urban opportunities. The need for access similarly demands the existence of diverse activities over relatively small distances. This is also dependant on the existence of high levels of support over relatively small areas. Therefore, successfully performing environments are necessarily complex and they contain a variety of overlapping conditions and activities. The preconditions set the stage for the positive spontaneous and unexpected to occur.

A variation of intensity and exposure, from very intense and exposed to quiet and private are possible and desirable. The positive quality of urban dwelling is offered to urban dwellers when they can choose to reside in high intensity environments without totally sacrificing access to privacy, quiet and nature.

INTEGRATION

Integration between different elements of the city is evident in positively performing urban environments. The essence of urbanity is that individuals, groups and communities can benefit from greater opportunities and facilities than can be generated by their operating in isolation. The more intensive activities and events must be accessible to as many local areas as possible. In positively performing urban areas it is therefore possible for poorer inhabitants to gain easy access to the opportunities and facilities created in more intensive areas.

COMMUNITY

The concept of community relates to creating a sense of absorption into urban life. The urban dweller in this way becomes part of many communities and many social alignments in the course of their lives. Social interaction is given as an essential for human development. The physical environment affects processes of urban socialization, sense of identity and richness of urban experience. When urban environments are positively made and celebrated they provide places and alternatives to the limitations of home life. They provide experiences and opportunities which cannot be obtained in isolation operate like release valves to the pressures and intimacies of the dwelling unit.

Human interaction cannot be forced therefore the intensity of communal interaction will vary with varying conditions. The creation of opportunities for such interaction to occur is of utmost importance. Cities represent a mixture of complex forms of social organizations and institutions. In this regard social order directs spatial order and complex social and cultural fabric of cities should find expression in the built environment.

“Only when a city achieves this celebration of life is it possible to talk of urban efficiency. The search for ways of celebrating life therefore must be the central issue informing thinking about urban structure and design. The capture of these qualities requires a creative act: it defies standardization and the predetermination of form. It is impossible to determine the future, but it is possible to recognise the lasting quality of what is done today.” (Dewar & Uitenbogaard, 1991)

11. BASIC CONCEPT DEVELOPMENT

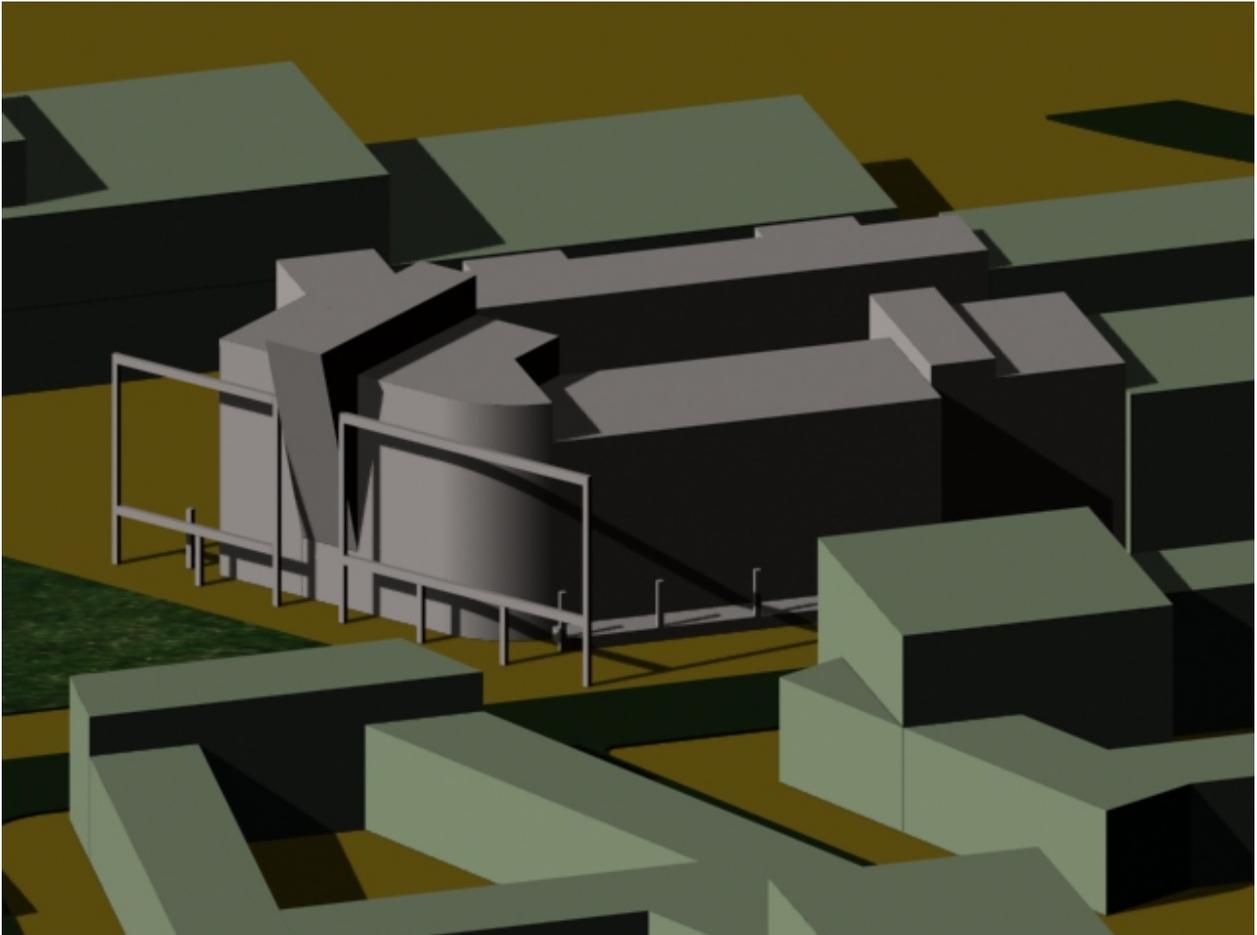


Figure 64. South West Aerial

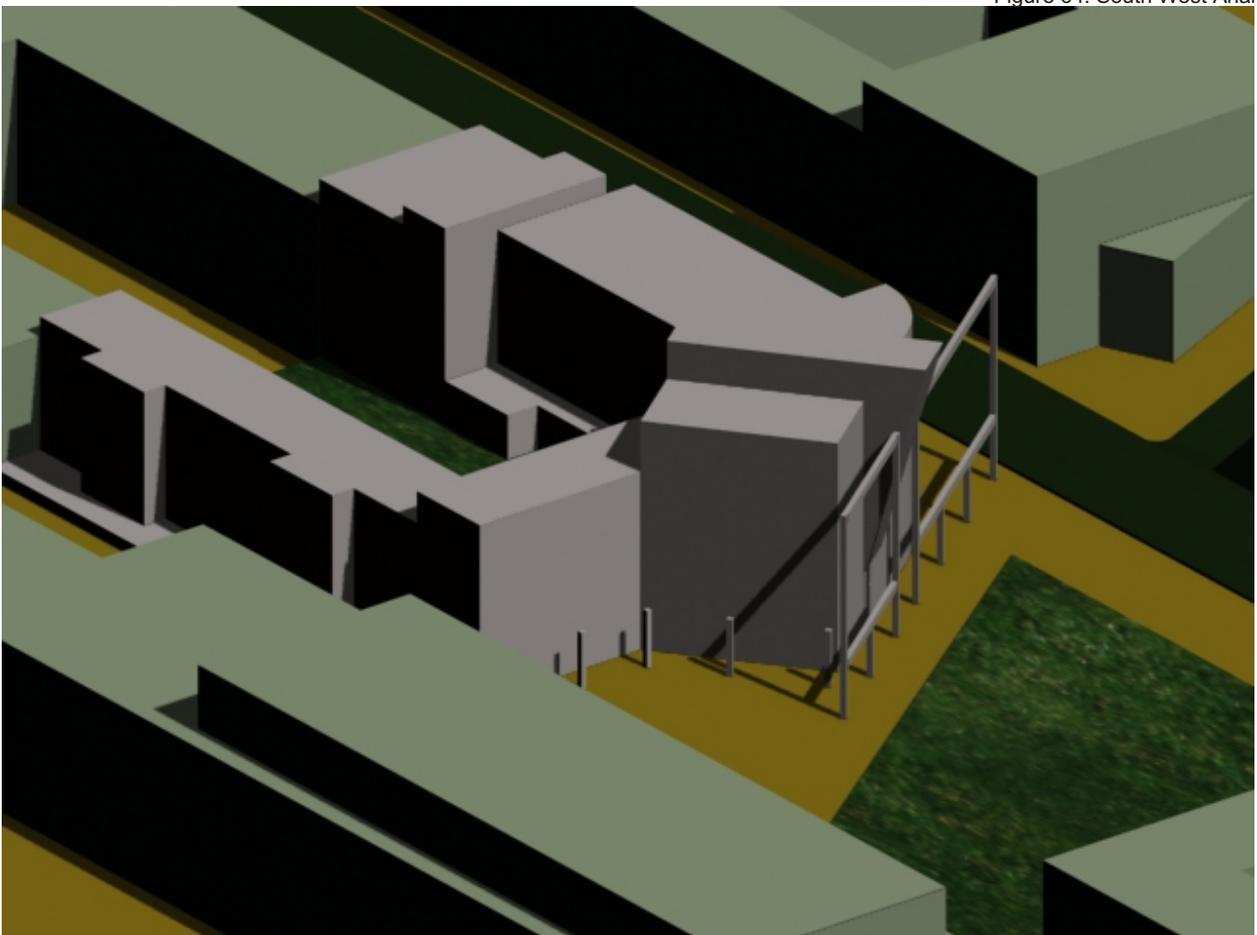


Figure 65. North West Aerial

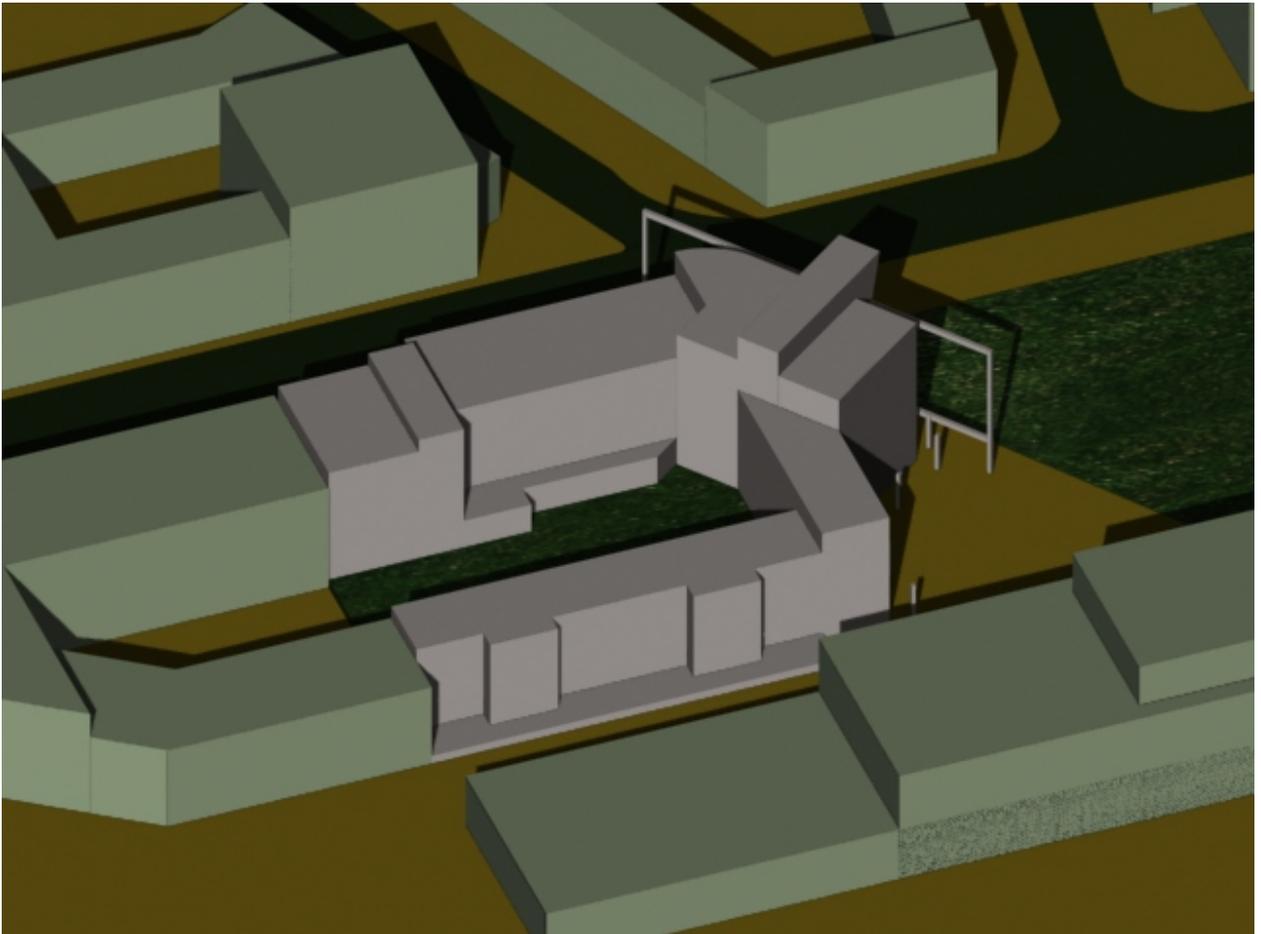


Figure 66. North East Aerial

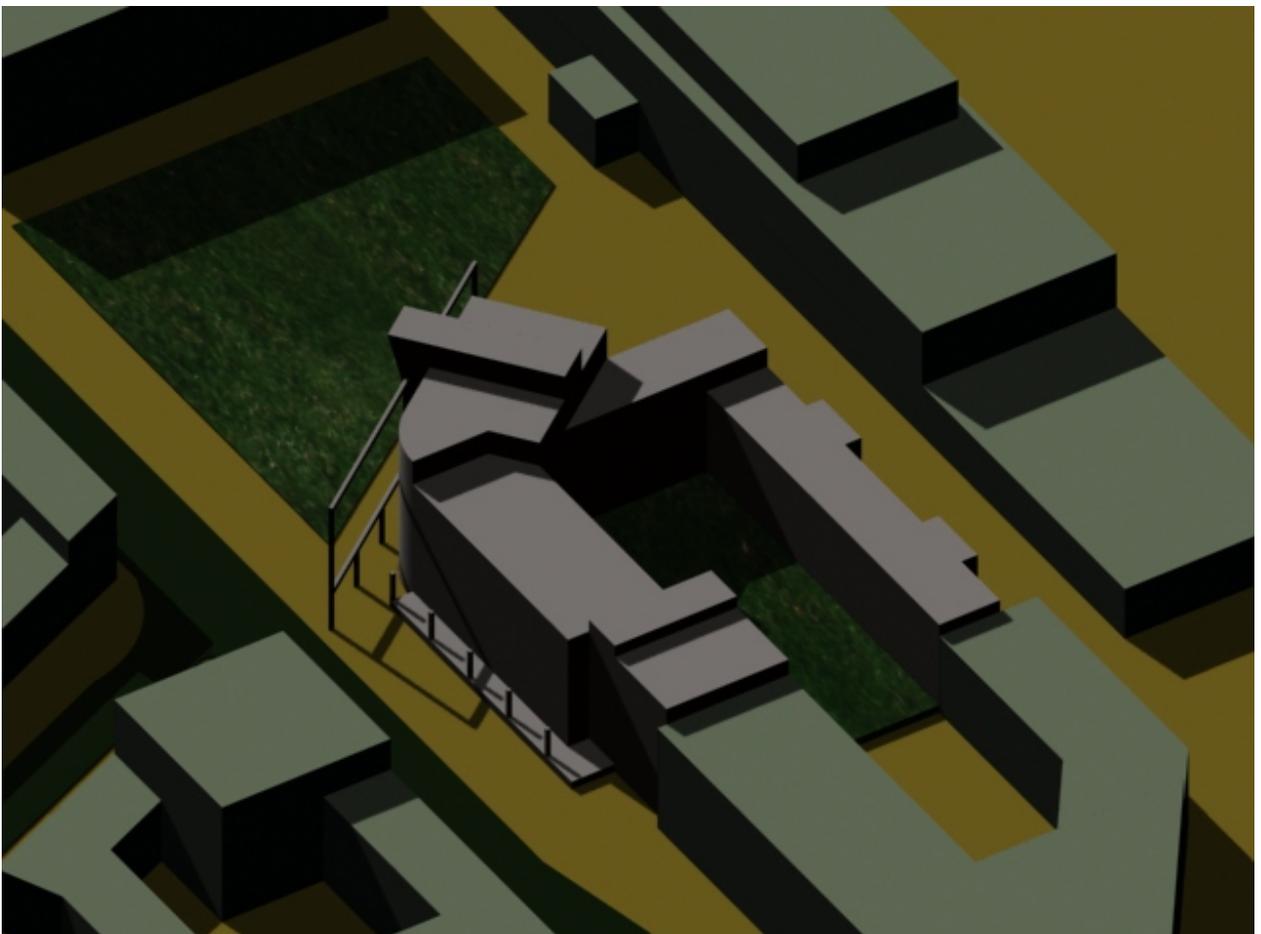


Figure 67. South East Aerial

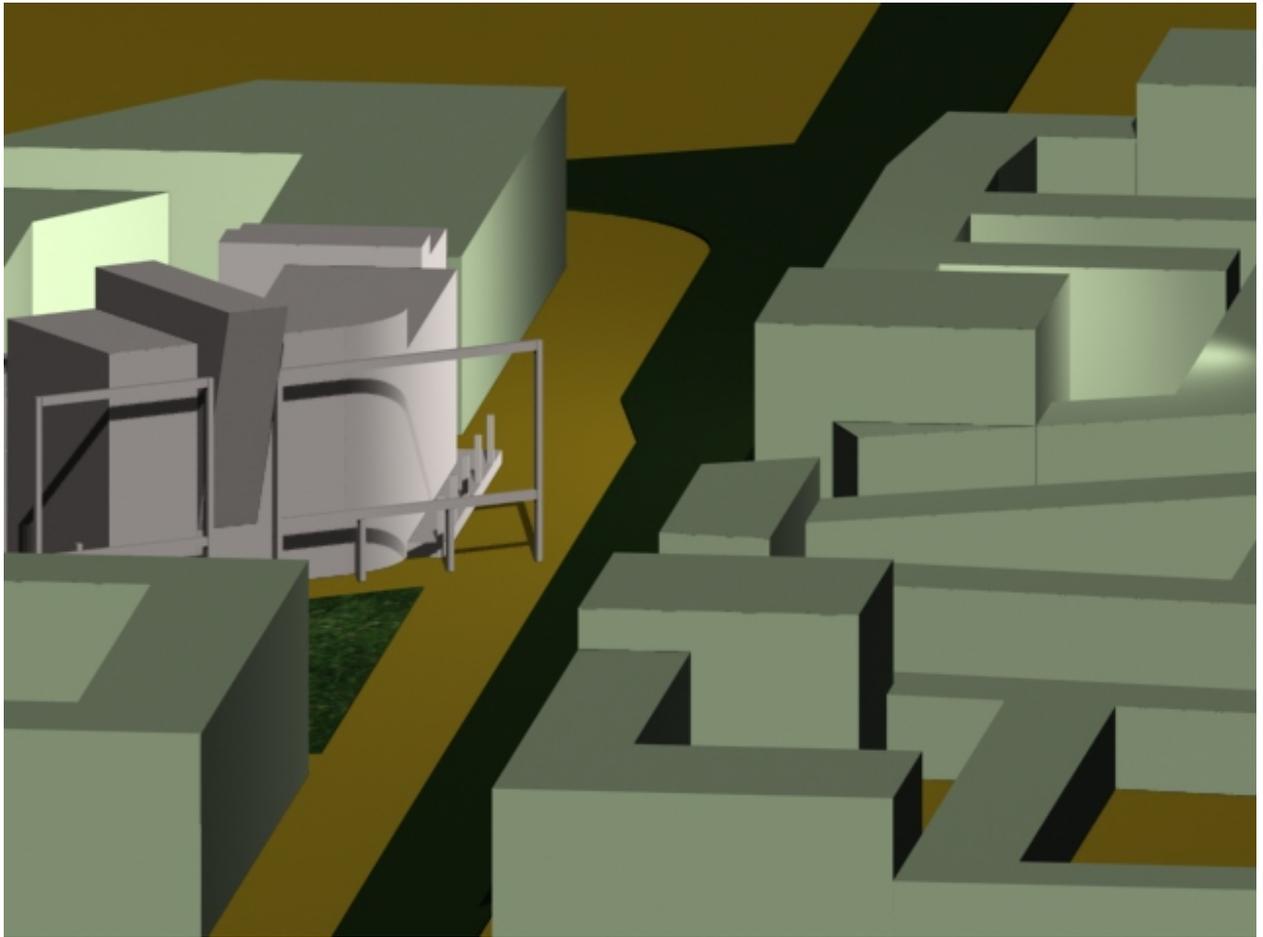


Figure 68. West street Arial

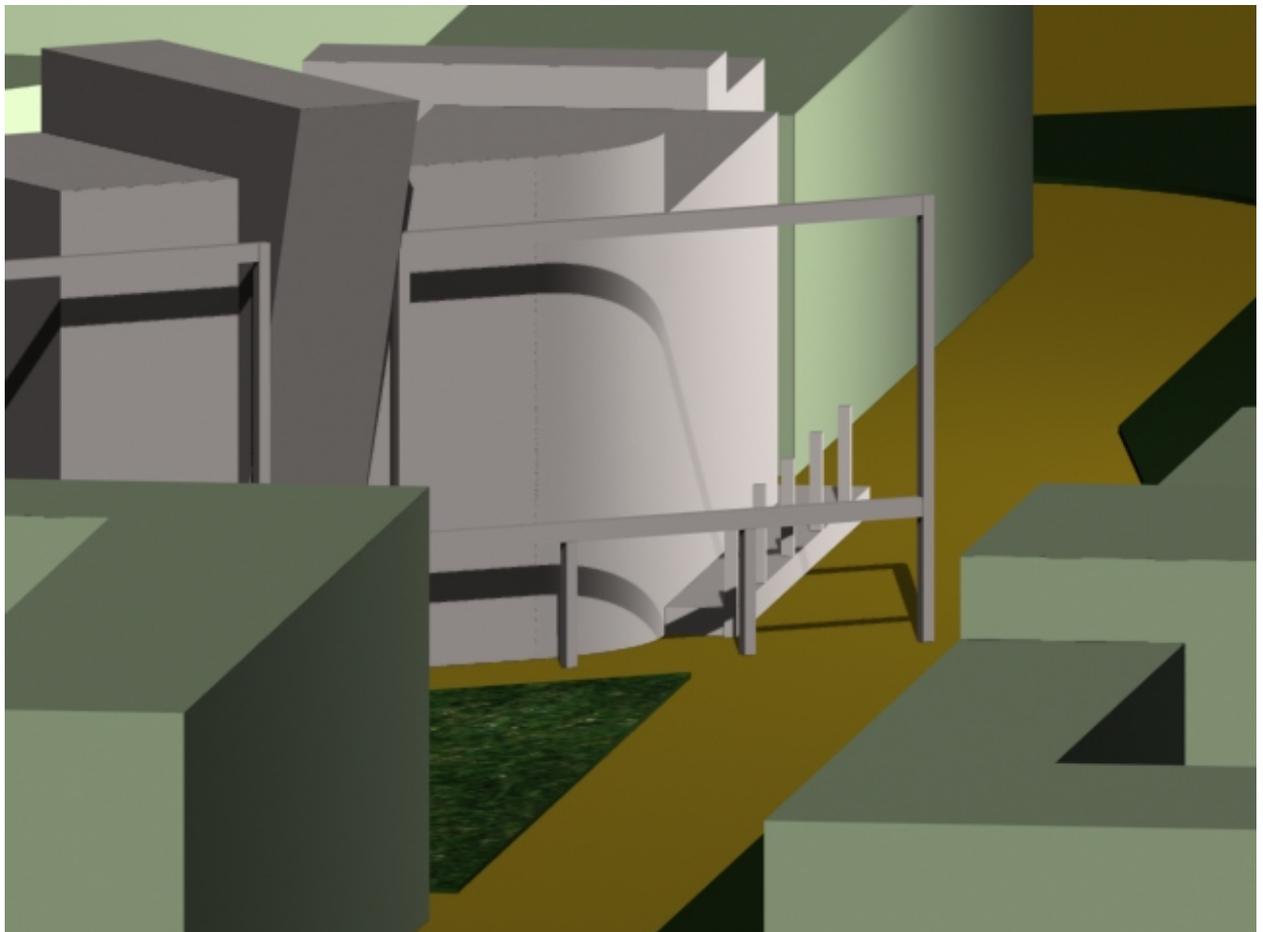


Figure 69. South West corner

12. TESTING AND GUIDING SUSTAINABILITY

This section follows class notes compiled from a lecture series presented by Mr Jeremy Gibbert of the CSIR. While it explains the interpretation and analysis of it, it also quotes verbatim in certain sections.

INTRODUCTION

As a result of increased environmental damage from human activities and the depletion of natural resources it is increasingly important that this matter be addressed. It becomes essential that sustainability becomes a key issue in our everyday activity.

It is possible for buildings to play an important role in supporting sustainability. This can be achieved through careful planning in which design decisions and specifications can be carefully evaluated for its impact on social, environmental and economic aspects of society and the natural environment. Individually and collectively the impact of these decisions in the design of buildings is significant.



Figure 70. Landscape



Figure 71. Plants

12.1. SOCIAL ISSUES

12.1.1. Lighting

The building should maximise usage of the sun's predominant movement pattern to minimise dependency on daytime electrical lighting. All work and living environments should be well day lit. No spaces within the building should require constant electrical lighting. Day lighting control should be possible for users to suit individual demand; glare should be minimised. Day lighting control should be made especially possible on the west wing to cope with extreme winter and summer conditions. Accessibility of usable space to solar movement should be given preference over non usable space such as toilet facilities.

The average day lighting requirements for various spaces within the facility shown in appendix D falls well within the municipal bylaws. The SABS code of practice specifies that a minimum of 10 % day lighting should be applied to all spaces. All living spaces within the building should therefore have a minimum of 10% day lighting. Careful analysis of the solar movement pattern is necessary for the facility to cope with Johannesburg's extreme summer and winter conditions shown in appendix A. Analysis of the predominant solar movement is shown in the accompanying diagrams.

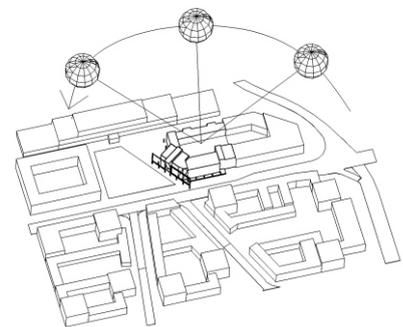


Figure 72.
Solar movement pattern 21 June 2003

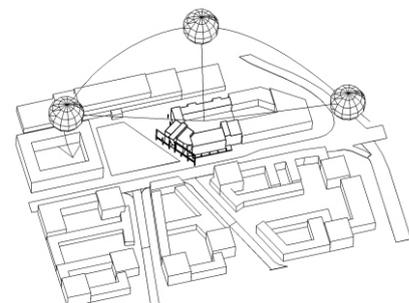


Figure 73.
Solar movement pattern 21 December 2003

WINTER SOLAR ANALYSIS

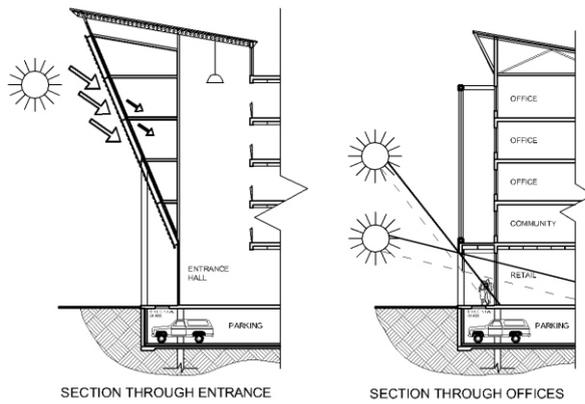


Figure 79. Section through west facade

The above diagram illustrates solar positions on the west wing at 1 pm and 4 pm respectively on the 21 June 2003. At 1 pm the retractable sun shading device in closed position cuts out solar penetration from the restaurants and shops however in open position the device allows solar penetration into the building from 1 pm. This creates a comfortable environment for pedestrians and outdoor eating. At 4 pm the building would receive deep solar penetration. This significantly warms interior environments and if desired, this solar penetration could be limited by use of the retractable shading device (shown in dotted). Day lighting control in the upper floors should be individualised by means of blinds in conjunction with the proposed shading device. Morning sun penetration from the east should be maximised where possible.

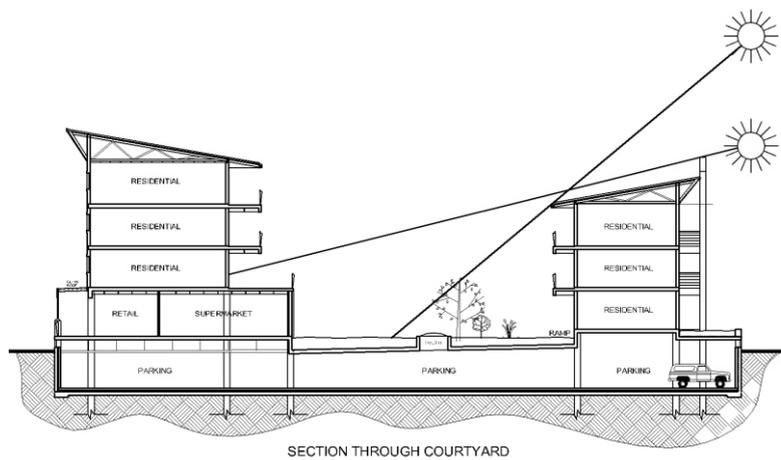


Figure 80. Section through courtyard

The above diagram illustrates solar positions through the proposed courtyard at 8 am and 12 am respectively on the 21 June 2003. Although the courtyard day lighting is low in winter, all living and working spaces are given access to morning sunlight. The north facing windows should allow adequate solar penetration and living/working spaces should be positioned here where possible. The parking facility below should utilise roof lighting to eliminate the need for electrical lighting. The possibility of light scoops should be considered for basement lighting between 7am and 8am.

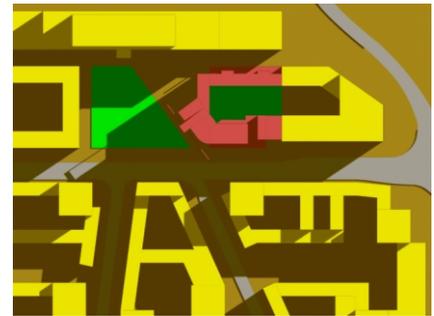


Figure 74. 8 am sun on 21 June 2003



Figure 75. 10 am sun on 21 June 2003

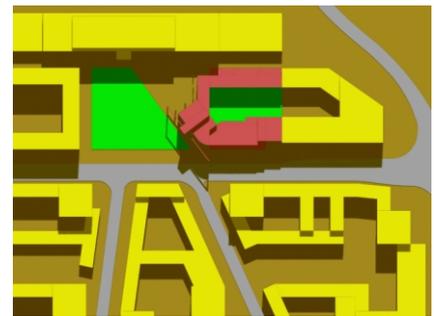


Figure 76. 12 am sun on 21 June 2003

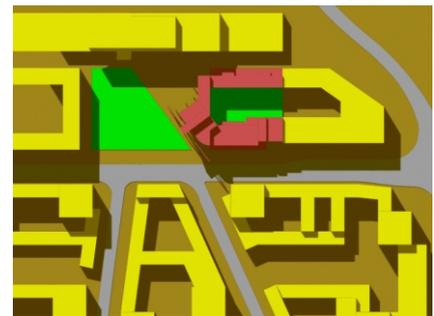


Figure 77. 2 pm sun on 21 June 2003

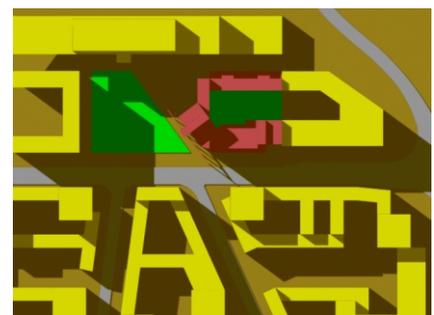


Figure 78. 4 pm sun on 21 June 2003

SUMMER SOLAR ANALYSIS

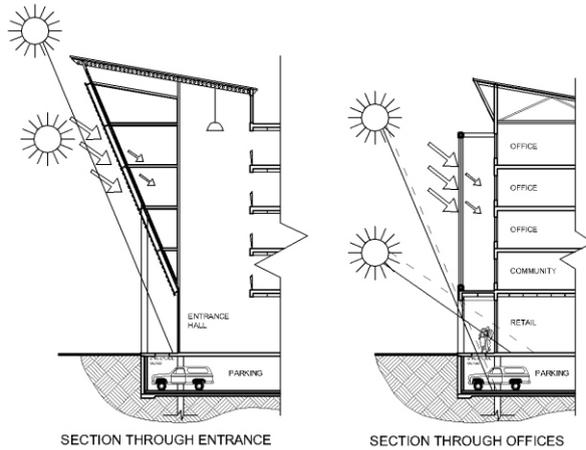


Figure 86. Sections through west facade

The above diagram illustrates solar positions on the west wing at 1 pm and 4 pm respectively on the 21 December 2003. At 1 pm the sun shading device in closed position cuts out summer sun creating a comfortable outdoor eating and pedestrian environment. This could be adjusted as desired by means of the adjustable shading device. After 1 pm sunlight access into the restaurant/retail space is possible if desired by means of the adjustable device. Day lighting control on the upper floor western side of the building should be possible by means of adjustable blinds in conjunction with the proposed sun shading device for individual desired comfort levels. Although, not as critical as the west elevation, the eastern side of the building should incorporate some form of daylight control for individual users to control morning sun.

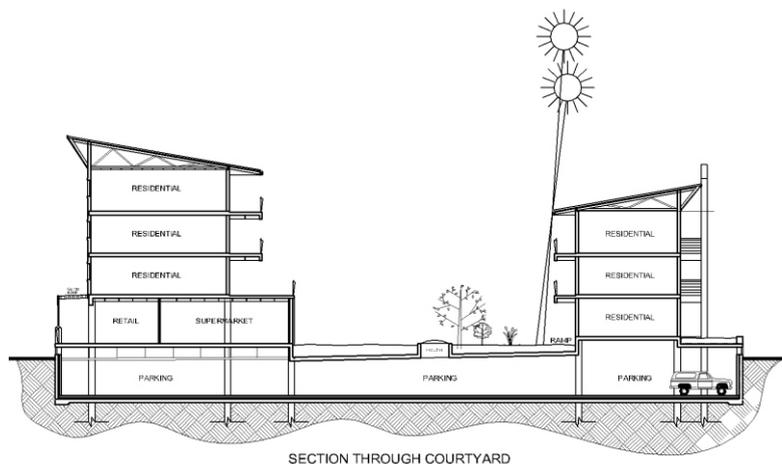


Fig. 87. Section through courtyard

The diagram above illustrates solar positions through the courtyard at 8 am and 12 am respectively on the 21 December 2003. The courtyard receives good summer day lighting all day to support various forms of activity as shown in the accompanying diagrams. It is envisaged that the courtyard would be characterised with high usage in summer due to good sunlight access. North facing rooms should also incorporate some form of solar control for summer. The Use of landscaping in the courtyard would generated desired shade.



Figure 81. 8 am sun on 21 December



Figure 82. 10 am sun on 21 December



Figure 83. 12 am sun 21 December 2003



Figure 84. 2 pm sun 21 December 2003



Figure 85. 4 pm sun 21 December 2003

12.1.2. Ventilation

Required ventilation should be provided by natural means. No mechanical ventilation should be used in the facility other than in the toilets and kitchens if necessary.

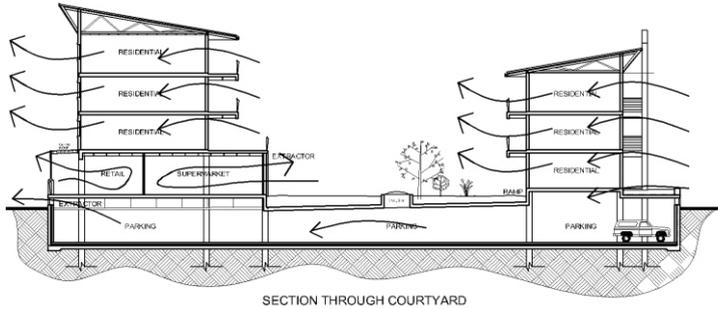


Figure. 91. Cross ventilation

Appendix E stipulates the SABS air requirements within the facility that should be achieved. Window opening sections should allow for the required ventilation to all components of the proposed facility, utilising the prevailing wind direction. Roof ventilation openings on the southern side of the parking facility are necessary to facilitate cross ventilation.

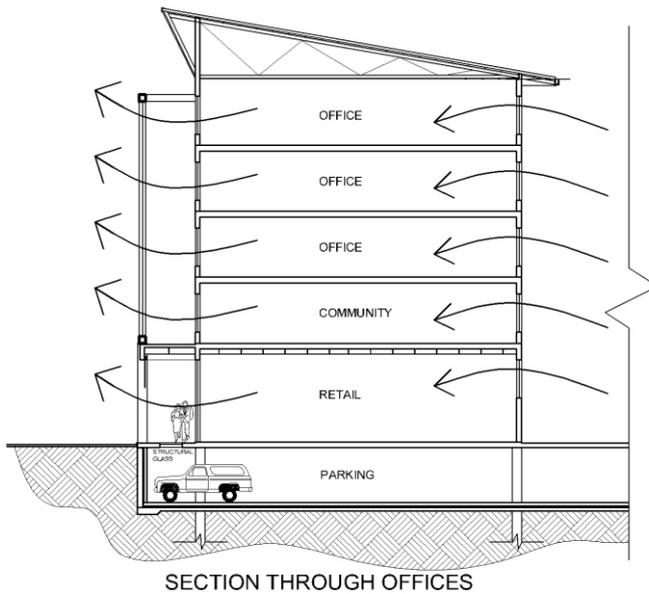


Figure. 92. Cross ventilation through offices

The proposed passive ventilation system for the west wing of the building utilises the predominant wind pattern. It is envisaged from climatic responses that extensive usage of this system would proceed in summer. This system is simply implemented by adjustable window openings. The distance between window openings should be minimised with minimum obstruction.

Preference on ventilation control should be given to individuals rather than group control allowing individuals to personalise living and working environments. This is implemented by the installation of individual window openings.

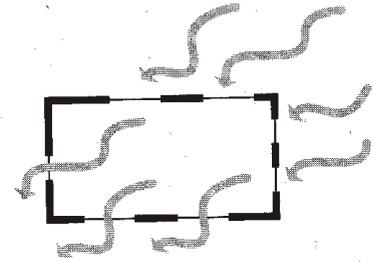


Figure. 88. Cross ventilation through rooms

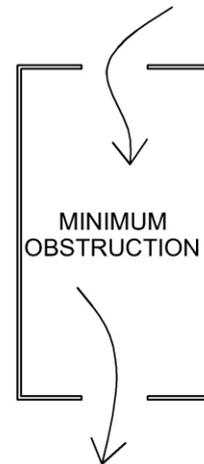


Fig 89. Minimum obstruction to ventilation

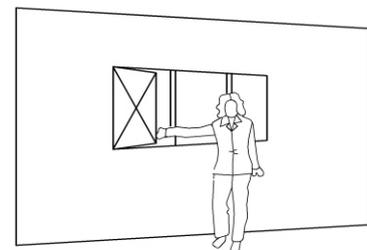


Fig. 90. Individual ventilation control.

12.1.3. Noise

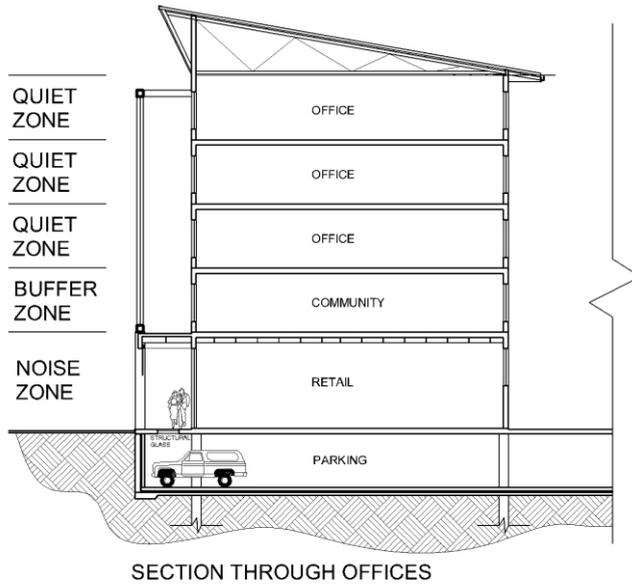


Figure. 96. Noise buffer

Noise levels should be limited in work and living environments to acceptable levels. The SABS desired noise levels for spaces are to be utilised in achieving optimum noise levels. The choice of appropriate building material as well as design layout should be utilised in order to achieve these levels.

Appropriate intermediate buffer zones should be allocated in order to help achieve the desired noise levels. Desired quieter zones should be separated from high noise zones. In areas where this is not possible, material with high sound adsorption levels should be used; as well as the provision of double glazing to window opening sections.

Where possible landscaping should be utilised to buffer noise from the outside public environment to the inside.

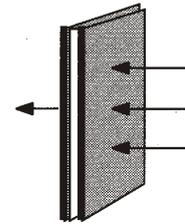


Figure 93. Double glazing

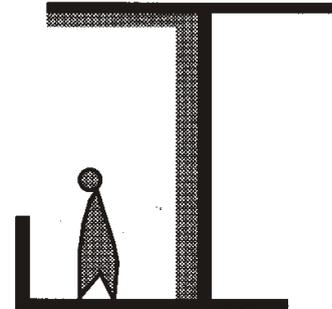


Figure 94. Sound absorbing material

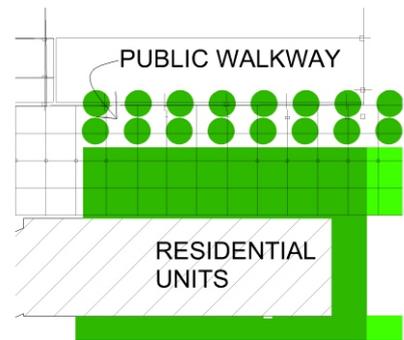


Figure. 95. Planting used as sound barrier

12.1.4. Views

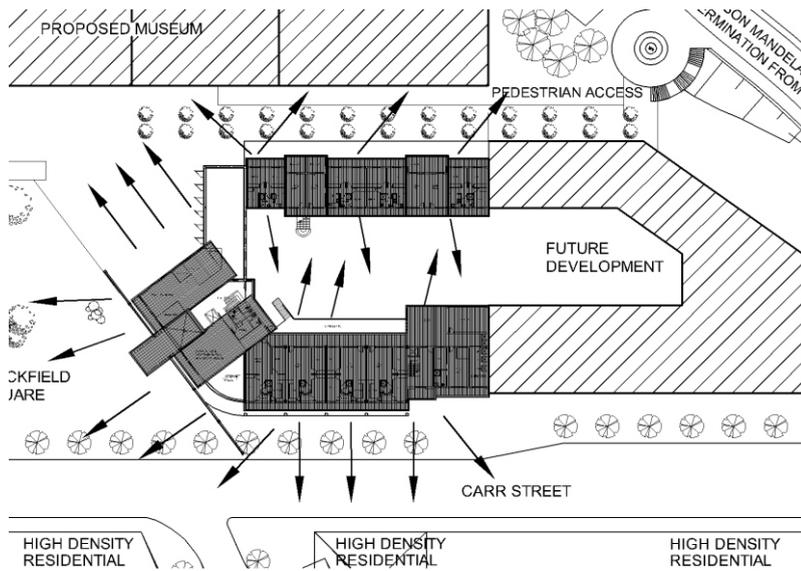


Figure. 100. Views from proposed site

All living and work areas should be given access to outside views. A series of potentially aesthetically pleasing views have been identified in the site analysis phase. The building should maximise the use of these views by way of layout orientation. Care should be taken as views should take thermal comfort by solar movement pattern into design consideration. All users of the building should be situated six metres or less from a window and given access to outside views.

Privacy to living and working environments should not be compromised in favour of views.



Figure. 97. View of the proposed museum



Figure. 98. South view from proposed site



Figure. 99. View of Nelson Mandela Bridge

12.1.5. Access to green outside spaces

Access to green outside spaces should be provided for all users. Controlled access to internal green areas should be provided for office and public users to allow for privacy within the residential component. The proposed extensive landscaping to Brickfield square should be utilised for public access.

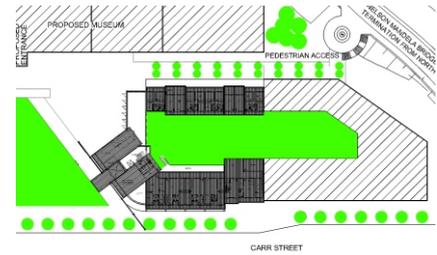


Figure. 101. Proposed Landscaping

12.1.6. Circulation

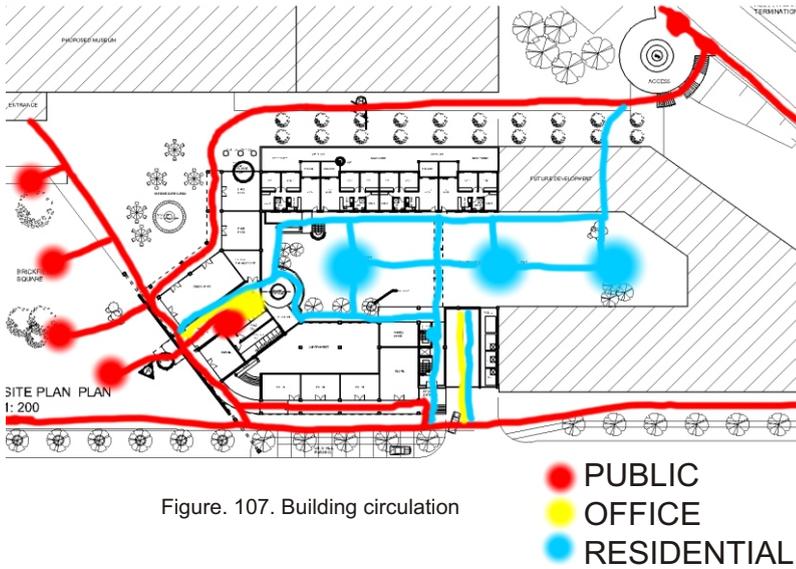


Figure. 107. Building circulation

The circulation system should be self explanatory for first time visitors and should provide for its users a clear sense of orientation. The circulation paths should be as direct as possible to destinations. The facility should provide some form of shelter for the public environment circulation. Various appropriate circulation aids such as ramps and stairs are to be utilised to aid for ease of circulation. Circulation paths should evoke a sense of excitement to the user, they should run directly through different spaces of the building.

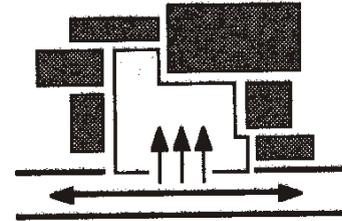


Figure. 102. Views from circulation areas

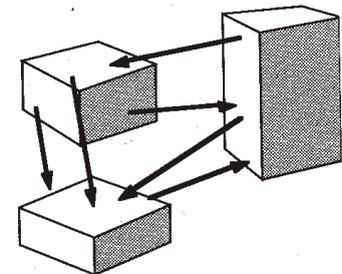


Figure. 103. Identifiable paths

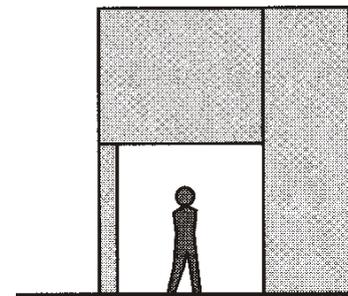


Figure. 104. Covered walkways



Figure. 105. Various circulation modes

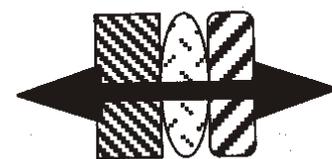


Figure. 106. Circulation through spaces

12.1.7. Inclusive environments

The proposed facility should be designed to accommodate people with all forms of disability. The public environment, access to offices and the community centre should allow 100% access to disabled persons to ensure that the building is inclusive and supports sustainability.

Facilities should be provided for disabled persons drop off, parking and access to the main circulation spine. In accordance with the SABS standards at least two undercover parking bays should be reserved for the use of disabled persons. All routes between and within the buildings should be a smooth and of an even surface (ie easily navigable by wheelchair). Routes should accommodate all forms of disabled transport. All changes in level within the building should have appropriate ramps of 1:12 fall, or lifts to allow disabled access. Edges between walls, floors and stair nosings should be clearly distinguished through the use of contrasting colour for visually impaired persons.

At least two disabled toilets for male and female use must be provided to the public sector in accordance with SABS standards. Changes in texture should be provided with choice of building materials to appropriate areas for the blind. Clear signage should be used to identify facilities for disabled use.

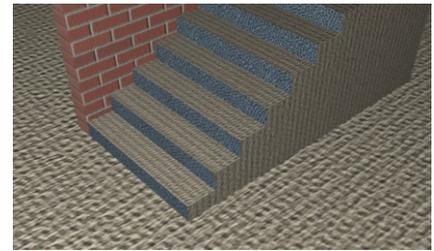


Figure 108. Contrasting colour

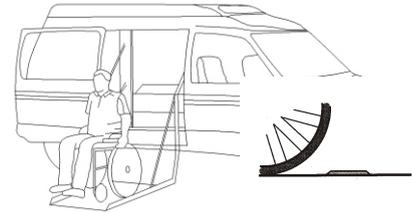


Figure 109. Disabled transport facilities.

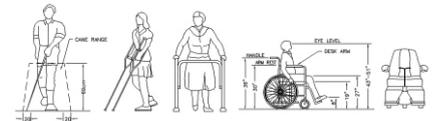


Figure 110. Disabled modes of transport.

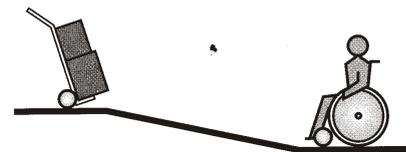


Figure 111. Ramps.

12.1.8. Access to facilities

Conventional living and working patterns requires regular access to a range of services. Ensuring that these services can be accessed easily and in environmentally friendly ways supports sustainability by increasing efficiency and reducing environmental impact.

Temporary childcare should be provided within the community facility. This facility should cater for short term users of the building. It is envisaged that long term childcare would be catered for, within the immediate proposed residential community. There will be no provision for an ATM as the building is located close to public amenities.

Grocery items required on a day to day basis should be accommodated within the ground floor uses. This should be easily accessible to the immediate community as well as visitors. Provisions should be made on the western public facade of the building for the installation of public telephones. Computer and e-mail facilities should be made available for community use within the community centre.



Figure 112. ATM machine.



Figure 113. Computer Access.



Figure 114. Information assistance.

12.1.9. Participation and control

Ensuring that users participate in decisions about their environment helps ensure that they care for, and manage this properly. Control over aspects of their local environment enables personal satisfaction and comfort. Both of these support sustainability by promoting proper management of the building and increasing productivity.

As mentioned earlier users of the building should have reasonable control over their environmental conditions, this should include opening windows and adjustable blinds. This allows for some degree of personalisation of space.

Furniture and fittings ie tables, chairs, internal partitions designed or specified should allow for arrangement and rearrangement by the users. Provision must be made for personalisation of spaces if desired. This includes choice of colours, places for plants and personal storage.

Design of spaces must accommodate informal and formal social interaction. This includes comfortable seating along regularly used routes. Spaces shared between occupants and users must be large enough to allow for comfortable social interaction.

Access to amenities including refreshments is to be made available on ground floor to all building users as well as the immediate community and visitors.

The community centre should be made available to the local community and should strive to evoke a sense of belonging. Apart from health care facilities the community centre should provide access to computers, teaching, learning, and leisure facilities stimulating community upliftment.

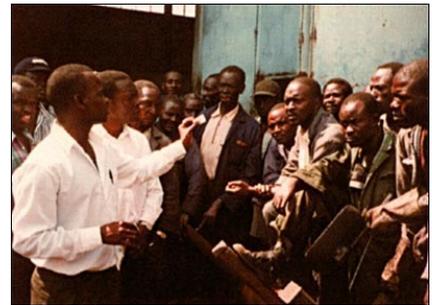


Figure 115. Community involvement.



Figure 116. Furniture arrangement.



Figure 117. Health care assistance.



Figure 118. Technology access.

12.1.10. Education health and safety

The building must cater for the well being, development and safety of the people that use them. Awareness and environments that promote health must be promoted. Safe environments should be created limiting the incidence of accidents. Learning and access to information is a necessity in today's population and must be catered for.

Access to support for learning must be provided within the community centre. This can be in the form of Internet access, structured courses, or the provision of learning material such as books, journals and newspapers. Awareness on health issues, especially aids must be provided within the community centre. Information must be readily available on health, education, and career development issues. This could include a well serviced notice board located in a central position.

Measures should be taken to ensure that areas of the buildings and routes to and from the building create a safe environment. Measures taken could include well lit routes, routes and spaces overlooked by occupied areas and clear visual links to the public environment.

In the event of injury, appropriate signage should direct all injury casualties to the health care facility for treatment. A secondary first aid kit must be provided with security for after hour usage in the event of an emergency. Security personnel must be trained to use the first aid kit effectively. The building must comply with all health and safety regulation prescribed by the SABS code of practice.

In accordance with legislation no smoking should be allowed within the building. The office users should be provided with designated smoking areas on each floor to promote efficiency.

All of these factors contribute to sustainability by helping ensure that people remain healthy and economically active, thus reducing the 'costs' (to society, the environment and the economy) of unemployment and ill health.

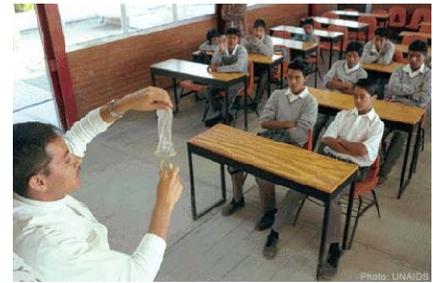


Figure 119. Learning spaces.



Figure 120. Information.

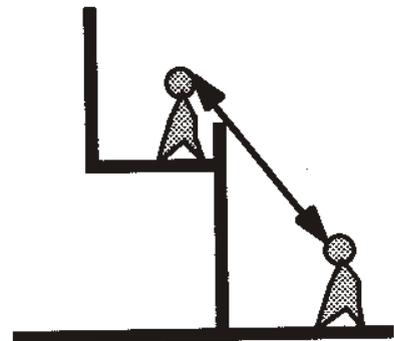


Figure 121. Passive surveillance.

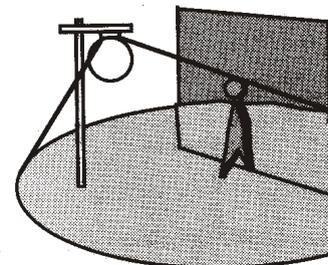


Figure 122. Lighting on corners.

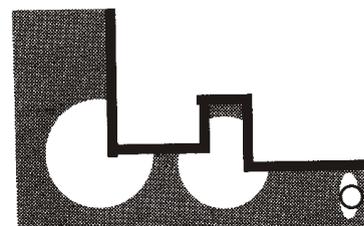


Figure 123. Lighting of nooks and corners.

12.2. ECONOMIC ISSUES

12.2.1. Local economy

The construction and management of the building will have a major impact on the economy of the area. The economy of an area can be stimulated and sustained by utilising local resources and developing local skills.

At least 80% of the construction must be carried out by contractors based within 40km of the building site. This adds a significant contribution to the local economy. Choice of at least 80% of construction materials and components used must be produced within 200km of site. This minimises environmental damage by transportation and furthermore stimulates market demand for products stimulating the local economy.

Small emerging businesses should be given preference for utilisation of opportunities created within the facility. This includes outsourcing catering, cleaning services and security as well as making space and equipment available for businesses to use for retail, education and offices. Support facilities for small emerging businesses must be catered for within the facility. Repairs and maintenance required by the building including servicing of mechanical plants must be carried out by contractors within 200km of site. Preference should be given to emerging contractors where possible creating opportunities for developing businesses.

12.2.2. Efficiency of use

The investment in the facility must make effective use of resources. Effective and efficient use of the building supports, sustainability by reducing waste and the need for additional buildings.

Non useable space such as plant, toilets and circulation must be minimised. This should not exceed 20% of the entire facility. Maximum utilisation of spaces must be made. This includes the provision necessary for multipurpose usage. All spaces within the facility should be occupied for an average equivalent minimum of 30 hours per week. In order to ensure the effective management of space on an ongoing basis, utilisation of space should be reported to management for constant revision. Where possible the shared use of space must be allowed.

12.2.3. Adaptability and flexibility

It is likely that within the lifespan of the building the use of the building will change, or that the feasibility of this will be investigated. The buildings should accommodate change easily supporting sustainability by reducing the requirement for change (energy, costs etc) and the need for new buildings.

The structural dimension (Floor to underside of roof, or slab of the floor above) of the retail, community centre and office uses must be a minimum of 3m. This dimension supports change to a variation of uses. Ensuring that the internal partitions between these spaces are non-load bearing (ie non-load bearing brick / block or plasterboard partitions) supports the rearrangement of internal spaces. Given the projected population increase in the CBD it is foreseen that factoring in adaptability into the residential component is not necessary. Some allowance for rearrangement of space must however be made here.

Easy access must be provided to electrical, communication and (HVAC, where appropriate) services in each useable space. Provision must be made for enabling easy modification of the proposed system (ie addition and subtraction of outlets)

12.2.4. Ongoing costs

Preference should be given to specification and material with low maintenance and or low cost maintenance. All plant and fabric must have a maintenance cycle of at least 2 years. Low or no maintenance components (i.e. windows, doors, plant, ironmongery etc) should be selected. Maintenance must be carried out cost effectively. All light bulb positions should be easily reached.

Measures must be taken to limit the requirement for cleaning. Hard wearing solid flooring with limited or no carpeting should be specified. Windows must be easily accessible for cleaning.

Measures must be taken to limit the requirement and costs of security. This should include spaces overlooked by occupied neighbouring buildings. Two access control points are specified. The western access point should be manned by one personnel while the southern access point should utilise electronic access control with intercoms to residential units.

12.2.5. Insurance, water, energy and sewerage

Costs of insurance, water, energy and sewerage must be reported to management and monitored. Policies to reduce energy consumption should be formulated and implemented. This includes switching off lights on leaving building spaces and the awareness on water conservation. Services including electrical, communication, HVAC and plant must be located at the core where they can be easily accessed with minimum disruption to occupants of the building. Access to this should be from circulation areas rather than work areas. Easily accessible lift off panels at regular intervals to vertical and horizontal ducting should be used.

12.2.6. Capital costs

Buildings are generally one of the most valuable assets that people, and often organisations and governments own. Money spent on buildings is not available for other uses such as health and education. Often, the high cost of buildings results in the services (ie. health and education) and the accommodation (for work and living) being beyond the reach of people with the lowest incomes. The proposed building must be cost effective to support sustainability by helping provide access to accommodation and services for low income groups and enabling money to be spent on other areas that support sustainability.

Incentives should be provided to consultants to reduce capital cost and ongoing costs of the facility rather than fees based on total costs of the building. This encourages the design of a cost effective building. The facility should be designed to be easily and cheaply built. Building form should be simple and the replication of elements and components should be used. Arrangements should be made for the sharing of parking and residential space with the proposed neighbouring facility. Access control points of the neighbouring building must strategically positioned to work in conjunction with the proposed facility. Costs of maintenance of the square should be shared with neighbouring buildings.

12.3. ENVIRONMENTAL ISSUES

12.3.1. WATER

Water is required for many activities. However, the large-scale provision of conventional water supply has many environmental implications. Water needs to be stored taking up large areas of valuable land and disturbing natural drainage patterns with associated problems from erosion, it also needs to be pumped through a large network of pipes that need to be maintained and repaired. Having delivered the water, parallel efforts is then required to dispose of this after it is used, i.e. sewerage systems. Reducing water consumption supports sustainability by reducing the environmental impact required to deliver water, and dispose of this after use in a conventional system.

It is estimated that about 24 million litres of water annually would be consumed using conventional water systems for the proposed facility as shown in appendix F. This enormous consumption rate could be dropped to about 10 million litres annually by employing water efficient devices as shown in appendix F. Further reductions can be achieved by utilising rainwater harvesting. The proposed roof area projects a rainwater harvesting capability of 1128000 litres annually as shown in appendix G. The use of rainwater and recycling of water to appropriate uses further reduces water consumption from the municipality to about 7 million litres annually. This system significantly reduces an enormous demand from the municipality and supports sustainability. Furthermore excess irrigation water could be utilised for irrigation of landscaping on the square.

Run off must be reduced by using pervious or adsorbent surfaces. Hard landscaping should be minimised to reduce run off. Extensive use of indigenous planting should be applied due to a low water requirement.

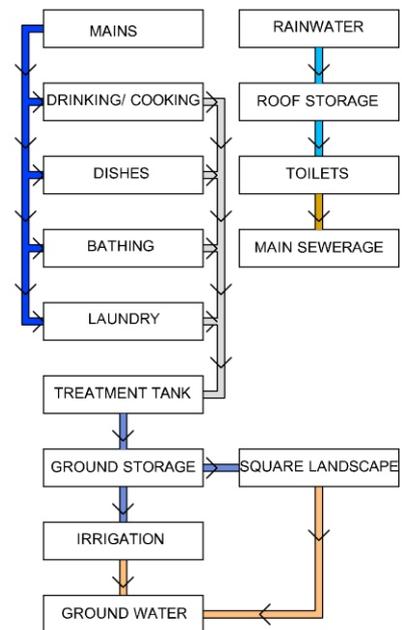
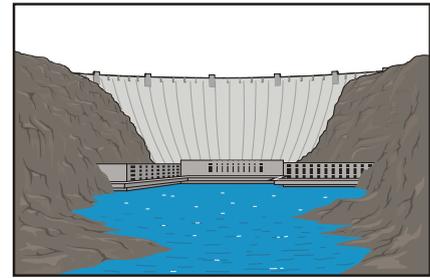


Fig. 124. Proposed water reticulation

12.3.2. Energy

Buildings consume about 50% of all energy produced. Conventional energy production is responsible for making a large contribution to environmental damage and non-renewable resource depletion. Using less energy or using renewable energy in buildings therefore can make a substantial contribution to sustainability.

The building is located along an activity street and public square. Provision should be made for public transport drop off and pick up. This reduces the necessity for private vehicle ownership supporting sustainability.

As mentioned earlier the building utilises a passive system for ventilation, cooling and heating. This significantly reduces resource consumption. Energy efficient fittings and devices must be specified. Light fittings with low energy consumption should be specified where possible. The use of electricity generated from renewable sources such as wind and sun should be maximised.

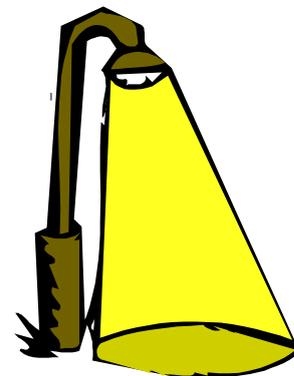


Figure 125. Energy.

12.3.3. Recycling and reuse

Raw materials and new components used in buildings consume resources and energy in their manufacture and processes. Buildings accommodate activities that consume large amounts of resources and products and produce large amounts of waste. Reducing the use of new materials and components in buildings and reducing waste by recycling and reuse supports sustainability by reducing the energy consumption and resource consumption.

Arrangements must be made for the safe disposal of medical waste generated in the community centre. Separate waste bins are to be provided for paper, glass, steel and conventional waste. This eliminates the need for sorting at an added expense. Storage and pick up of recyclable waste should be provided according to municipal regulations. Contribution to the main sewerage should be minimised through reuse of grey water for irrigation purposes.



Figure 126. Refuse

Construction waste must be minimised through design and careful management of construction practices. Designing to comply with modular dimensions of materials used in the construction process limits wastage.

12.3.4. Site

The building should not have harmful affect on neighbouring buildings ie. over shading; where access to sunlight is important.

Provision must be made on the northern side for residents to grow vegetation. Opportunities in car parking areas, and in and around buildings must be utilised for vegetation. Care should be taken that the landscape does not require heavy artificial input ie. fertilizer, insecticide and pesticide.

12.3.5. Materials and components

The construction of buildings usually requires large quantities of materials and components. These may require large amounts of energy to produce. Their development may also require processes that are harmful to the environment and consume non-renewable resources.

80% of the building materials and components must be made from materials and components with low embodied energy. Low embodied energy materials include: locally (within country) made and sourced timber, concrete, concrete block timber windows and doors. 90% of materials and resources should be from renewable resources.

Material choice preference should be given to materials with limited environmental damage during product component development ie: no green house gases released, no pollution caused. 10% of building materials and components should be specified from renewable sources. Building and construction process must be designed to minimally impact on the environment.

13. DESIGN RESOLUTION

As per the development objectives, street wall related architecture is the overall form sought in the design process. There is maximum use of the street boundaries to reinforce the street pattern of the development area while at the same time creating a private internal courtyard for resident usage. Within the urban context this internal courtyard establishes a sense of retreat for urban dwellers from the workings of an urban environment.

The projected vehicular accommodation for the proposed facility was relatively high at an estimated 114 cars. In accordance with the site development guidelines accommodating so many vehicles at a visible position is aesthetically obtrusive. Considering this and maximizing potential economic space, the most feasible solution is the creation of basement parking. However this has associated lighting and ventilation problems. The solution allows for these on the north and south wing by a level change of one metre from the finished natural ground level. This does not totally sacrifice interaction between the ground floor functions and the public environment.

On the west wing however it is essential to maintain immediate ground floor interaction with the public environment as it is linked to the public square and any change in level would distort that interaction. Some lighting through the public walkway on this wing is provided to compensate for no level change. The future proposal with regards to the parking basement is to link it with a basement proposal for the neighbouring site to the east. This 'super basement' will form the basis for a unification of the two sites with a future combined internal private courtyard above. The integration of the proposed site will require the establishment of combined access controlled policies.

The proposed development is based on the assumption that the neighbouring development would eventually be integrated into the urban design structure. A time frame for this integration cannot be stipulated and this poses an aesthetic issue with regard to the treatment of the eastern facade. Due to the positioning of this facade to the Nelson Mandela Bridge high levels of public exposure can be assumed. It is proposed that for the interim period this facade be used as one of the inner city mural projects. This option is the most cost effective as it eliminates the need for expensive facade treatment.

Stemming from the micro analysis of the site the facades of the building could be regarded as fronting a variation in contextual situations. It is essential that the design response is appropriate both in terms of functionality and targeted aesthetic appeal yet at the same time achieving a sense of a cohesive architecture that is characteristic of urban environments. The proposed structural system is based in a concrete beam and slab construction with brick in-fill panels. The decision was based on the notion of the modular building system being effective in terms of financial feasibility, construction technique and responses to sustainability. The general increments of 7200mm between centre to centre of columns depicted on the facades are based on the parking grid layout and seek to add a sense of a cohesive architecture projected in the facade treatment.

The choice of external finished material is predominantly red brick, plaster and paint and off shutter concrete, with minor sections utilizing steel and glass construction. This is characteristic of other new developments in the vicinity of the site. Red brick also has historical significance to the Newtown Cultural Precinct as



Figure. 127. Internal courtyard

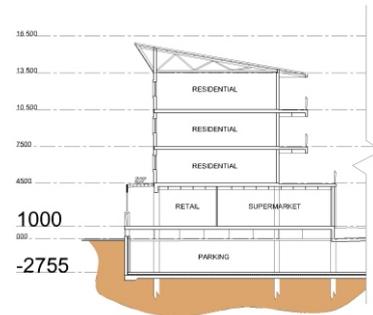


Figure. 128. South wing level change

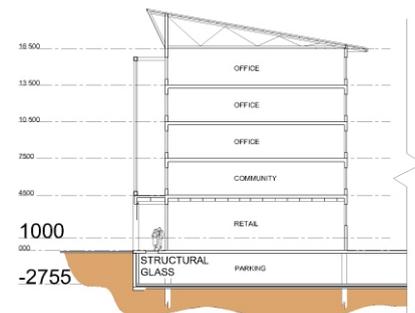


Figure. 129. West wing level change

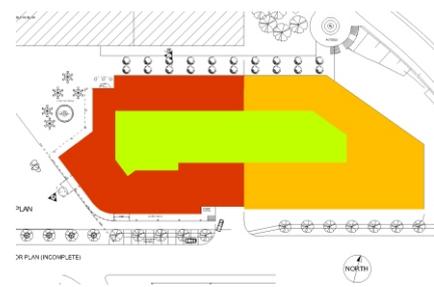


Figure. 130. Link with neighbouring building

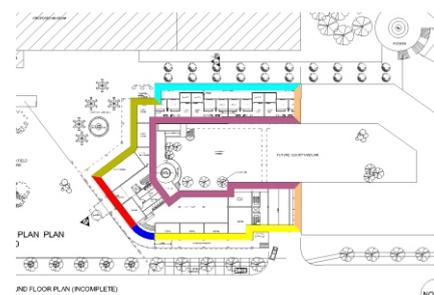


Figure. 131. Various facade treatments

described in the historical background analysis. While the design has considered this rich heritage influences, it also introduces new contemporary aesthetics. These are consistent with the aesthetic approach adopted in the other new developments in the area such as the Metro Mall development. The proposed new facility remains true to its nature in that it reflects qualities evident in today's construction techniques and typology. In addition the proposed design sits comfortably with the historically based facade of the adjacent Parktown Station (proposed here as a transport museum). This 'contrast' as described in the theory component projects qualities that enrich the experience of urban spaces.

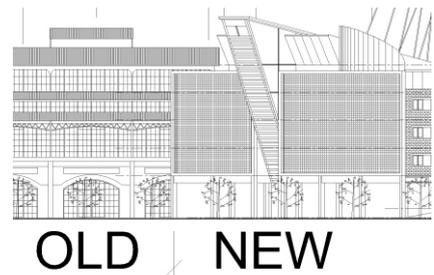


Figure. 132. Old and New facades

SOUTH WING

This facade of the building fronts directly on Carr Street. It is positioned opposite the high density residential development of four stories and it is characterized with high levels of pedestrian and vehicular movement. It was therefore imperative that this facade not overpower these elements in terms of scale, which relates directly to solar movement pattern. In this regard the height of the proposed design was also restricted to four stories. The façade treatment sought was one of an urban nature which responds to the urban context and acts as a 'skin' to the residential component on the upper floors.



Figure. 133. 10 am sun on 21 June 2003
Five floors South wing

The association with the street and residential density above warranted the positioning of the main residential access point here. The residential unit's living spaces are orientated to maximize utilization of north lighting. In addition some form of interaction with the street is desirable. This is accommodated with the introduction of small resident balconies that remain consistent with the aesthetics of this urban façade. The small scale retail facility fronting the street is designed with built in adaptability in the form of dry wall partitioning. This allows for a variation in retail options and addresses the ever changing needs of the retail segment. Furthermore this façade is the only feasible vehicular access point to the facility and therefore encompasses vehicular access for all users to the facility. In this regard it is also proposed that the waste pick up point be discretely located here.

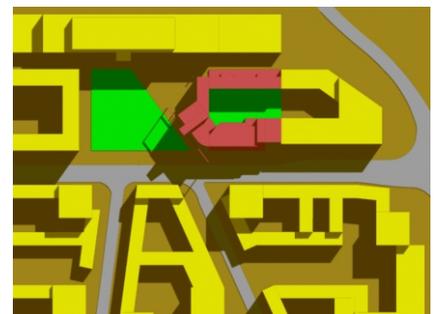


Figure. 134. 10 am sun on 21 June 2003
Four floors South wing

WEST WING

The proposed design accentuates this facade as it fronts the public environment. It therefore incorporates the highest number of floor levels in the facility of five floors, distinguishing it from the rest of the building. The scale of this is however overpowering from a pedestrian point of view and in response is downplayed to a more human scale by the introduction of the wire meshing layering which is primarily utilized as a sun shading device for the west wing.

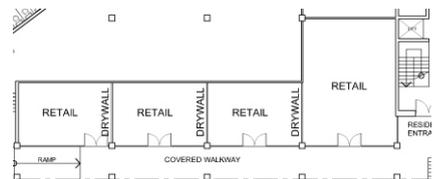


Figure. 135. Flexible Retail

Because of the envisaged high levels of pedestrian activity it is proposed that the main entrance to the facility be located here. The entrance to the facility is easily recognizable and provides for easy orientation from the adjacent square. It is an appropriate access point for all functions of the facility due to its central location. Security personnel here will ensure that the hierarchy of access to spaces is not breached. Linking with the public environment, a public toilet facility is located here on ground level. Beyond this point access control as discussed would be enforced.



Figure. 136. West facade

The HIV and community centre located here on the first floor is linked to the public environment of the square which in turn is linked to proposed public transportation modes. The public nature of this facility requires that this be isolated from access to other functions within the facility. The office function of this facade adds to the critical mass desired by the square and maintains visual

links with the square through the sun shading device. This strategic location maximizes the utilization of the public transport infrastructure linked to the square for businesses located within the office component. Staff for the community centre and the office component utilizing private vehicles would gain access directly from the basement. Visitors of these functions with private vehicles would gain access to the basement parking by electronic access control. Pedestrians would utilize the main entrance on the square. The restaurant and takeaway cluster are positioned on ground floor on the northern portion of this wing. This encourages interaction between users of the proposed museum and the eating facility although this function is not limited to them. The decision of not utilizing the extent of the site boundary for the eating facility was stimulated by predominant solar movement patterns. This layout allows desired sunlight access into the envisaged outdoor eating spaces at peak utilization times. It is envisaged that the restaurant function would further stimulate desired late night activity on Brickfield Square.

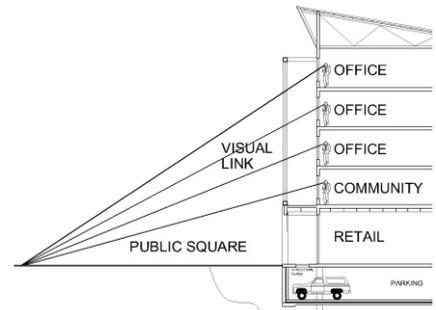


Figure. 137. Office Views



Figure. 138. 2 pm sun on 21 June 2003
Site boundary utilised



Figure. 139. 2 pm sun on 21 June 2003
Building recessed

NORTH WING

The facade is characterized with minimum pedestrian activity and semi private spaces. The nature of the semi private domain on this facade warrants the semi personalization of space. The proposed facade responds in this manner, encouraging personalisation.

Limiting the height of the north wing to three floors (lowest floor level in facility) was stimulated by the predominant solar movement patterns. The design allows for maximum solar penetration into the internal courtyard and functions located on the south wing of the facility.

This decision further stimulates a sense of human scale to this semi private space. This wing encompasses the clustering of three bedroom family orientated units which are considered longer term residential users of the facility. Residents here are given controlled access to the street and this enhances a feeling of security to this semi private domain. Ground floor units are provided with private gardens on the northern side so as to encourage guided personalization of spaces and the units above are given private north facing balconies for the same reason. In terms of functionality of spaces the residents are given the option of converting bedrooms into street-orientated spaces for home based economic activity at ground floor level.



Figure. 140. 10 am sun on 21 June 2003
Four floors on north wing

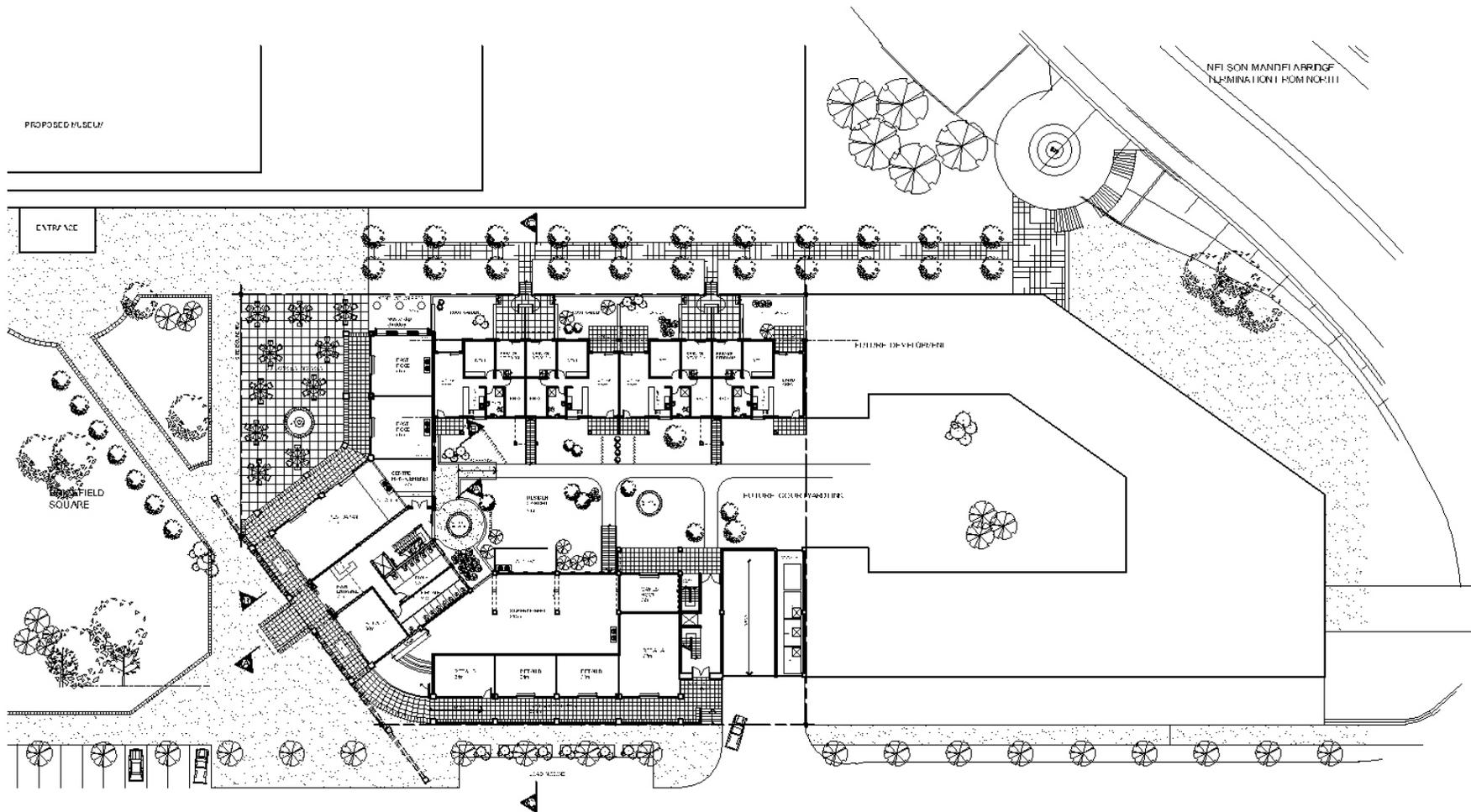


Figure. 141. 10 am sun on 21 June 2003
Three floors on north wing

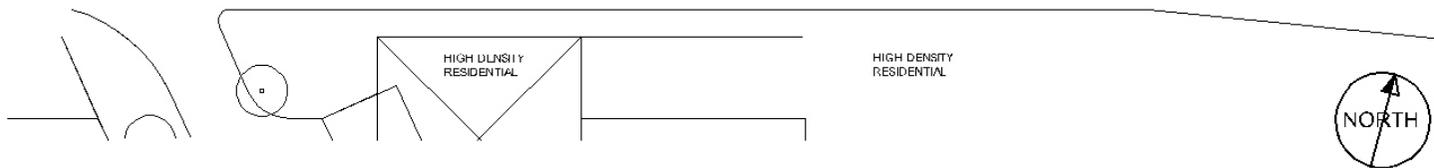
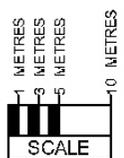
[Click here for chapter 14. Design Drawings](#)

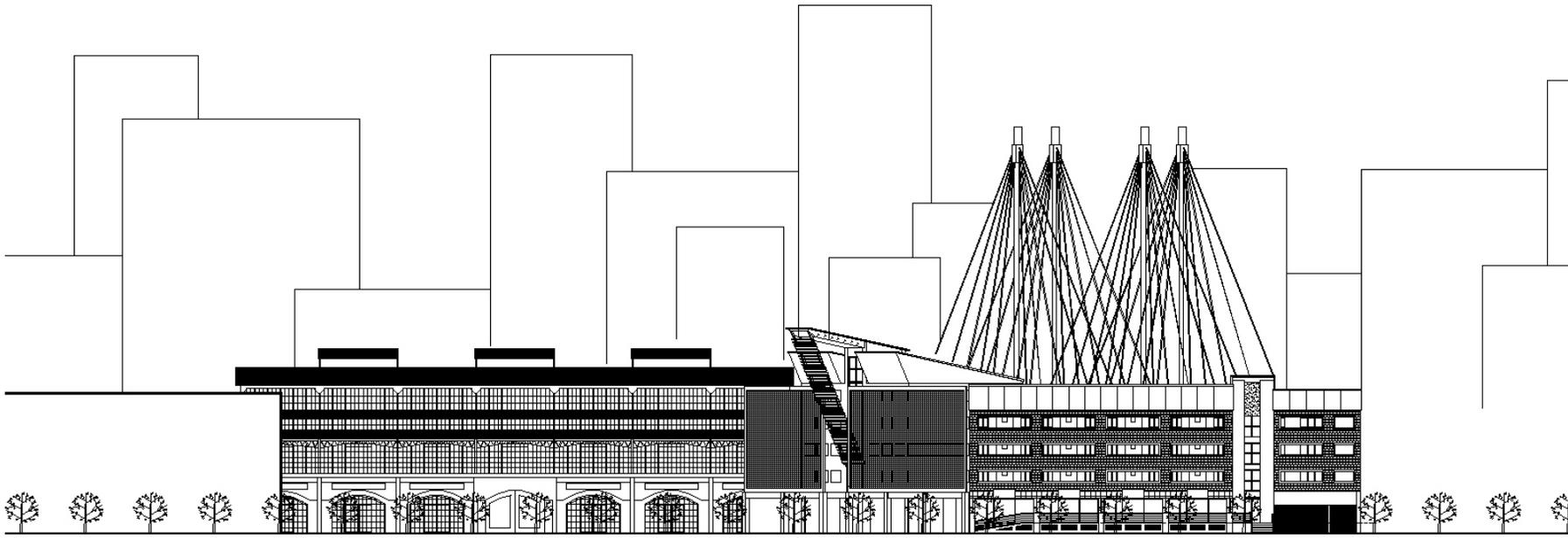
15. SOURCES

- ATTOE, W & LOGAN, D. 1989. *American Urban Architecture*. California: University of California Press.
- CALTHORP, P & S Van der RYN. 1986. *Sustainable Communities*. San Francisco: Siera Club Books.
- GAPP ARCHITECTS & URBAN DESIGNERS. 2003. *Newtown Cultural Precinct Urban Design Plan*. (unpublished as of this date.)
- THORN, S & GIBSON, GL. 1994. *Johannesburg Inner City Strategic Framework*. South Africa: (publisher unknown)
- South Africa. Greater Johannesburg Metropolitan Council. (date unknown). *City Centre Development Framework*. (powerpoint presentation).
- DUERK, DP. 1993. *Architectural Programming*. New York: Van Nostrand Reinhold Publishing.
- SOUTH AFRICAN WEATHER SERVICES. *Average Climate Statistics for Johannesburg*. [Http://www.weather.co.za](http://www.weather.co.za). (5 June 2003).
- EGAN, DE. 1988. *Architectural Accoustics*. United States of America: McGraw-Hill Book Company.
- Reference was made to *South African Bureau of Standards Code of Practice for The Application of the National Building Regulations on numerous occasions*.
- Department of Health. 1966. *Restructuring the National Health System for Universal Primary Health Care*. Department of Health: Pretoria.
- Department of Health. 1998. *South African Demographic Health Survey Preliminary Report*. Department of Health: Pretoria.
- Department of Health. 1999-2004. *Health Sector Strategic Framework*. Department of Health: Pretoria.
- Health Systems Trust. 1996. *South African Health Review*. Kwik Kopy Printing: Durban.
- Statistics South Africa. 2001. *Statistical Release P0302 of 2/7-2001*. Statistics South Africa: Pretoria.
- The Centre for Health Policy. 1998. *STD Management in the Private Sector*. WITS: Johannesburg.
- JOHANNESBURG DEVELOPMENT AGENCY. *Inner City Development*. [Http://www.johannesburgdevelopmentagency.co.za](http://www.johannesburgdevelopmentagency.co.za). (21 June 2003).
- SARB. *Quarterly Economic Review*. [Http://www.resbank.co.za](http://www.resbank.co.za). (September2003).
- STATISTICS SOUTH AFRICA. *Labour force survey 2000*. [Http://www.statssa.org.za](http://www.statssa.org.za). (September 2003)

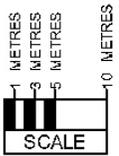


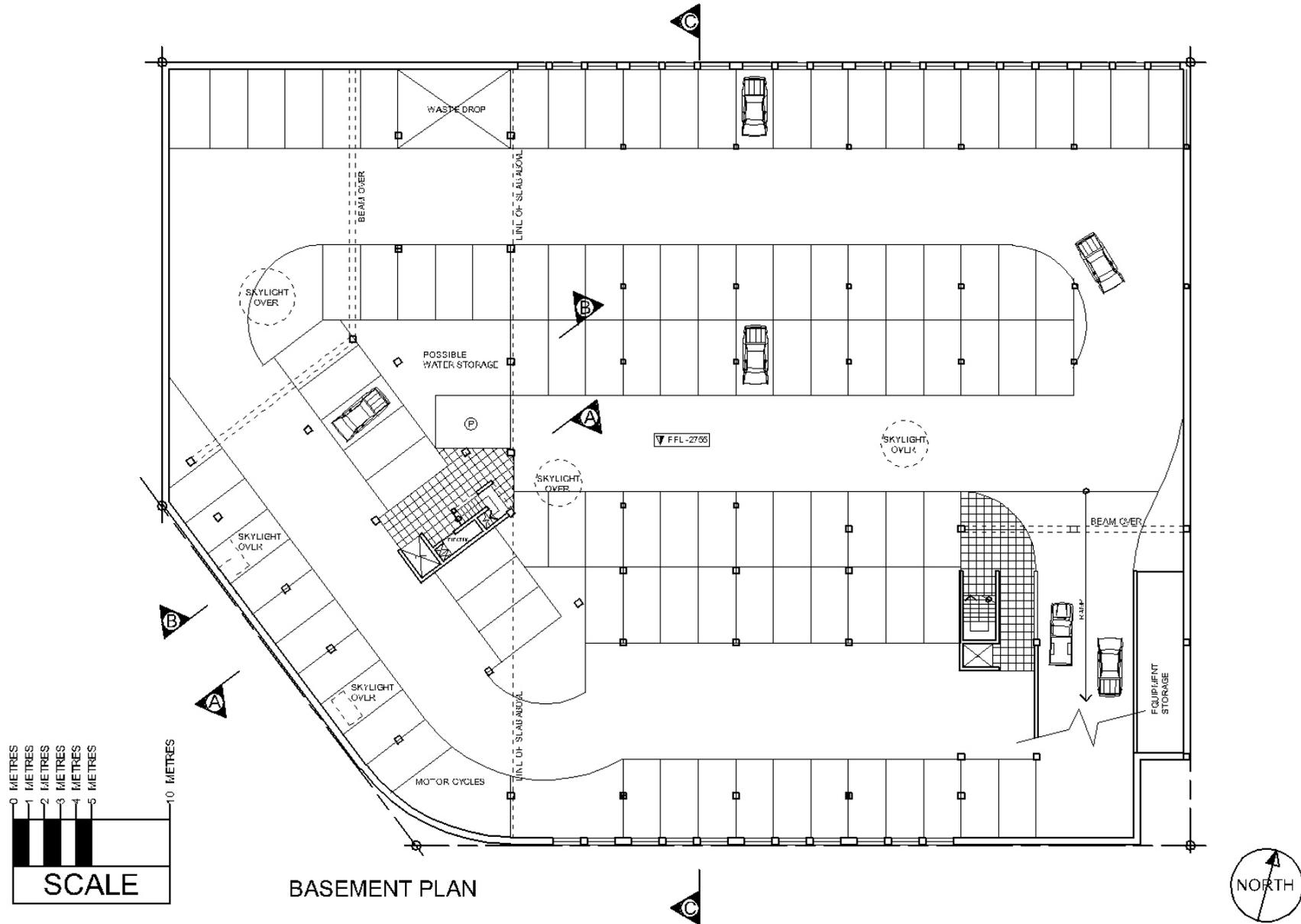
SITE PLAN

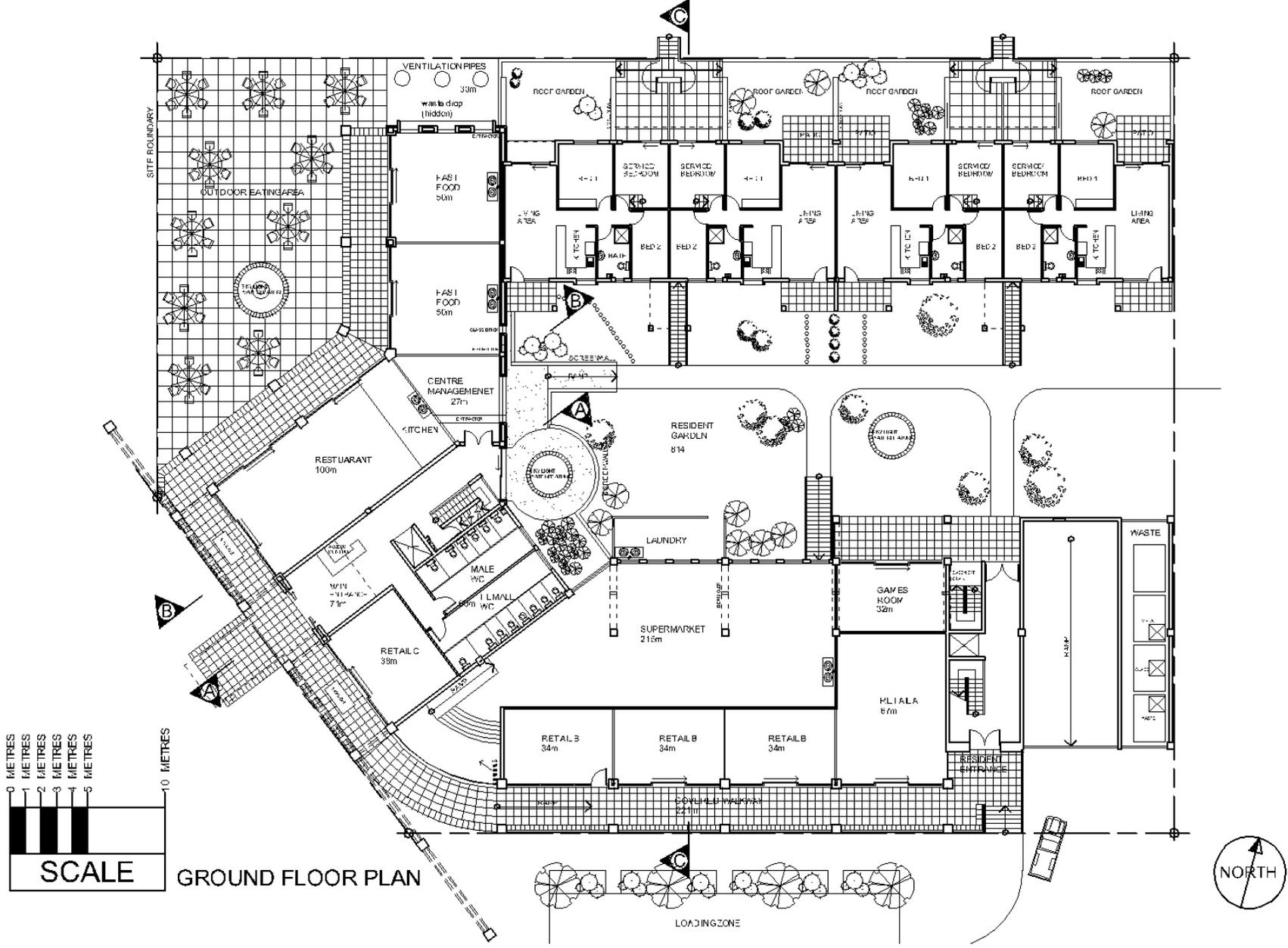


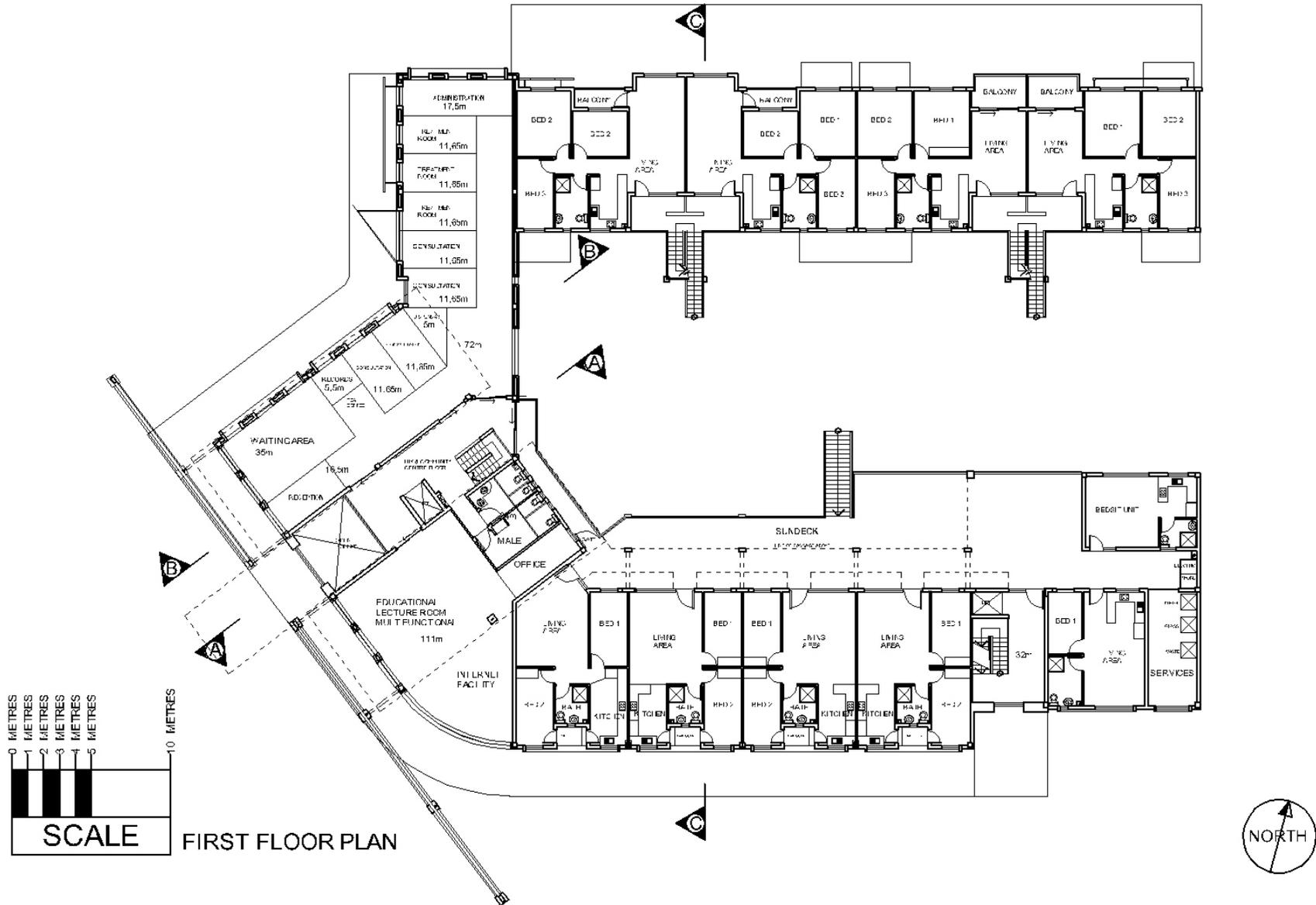


STREET ELEVATION

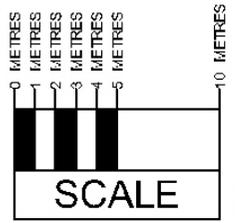
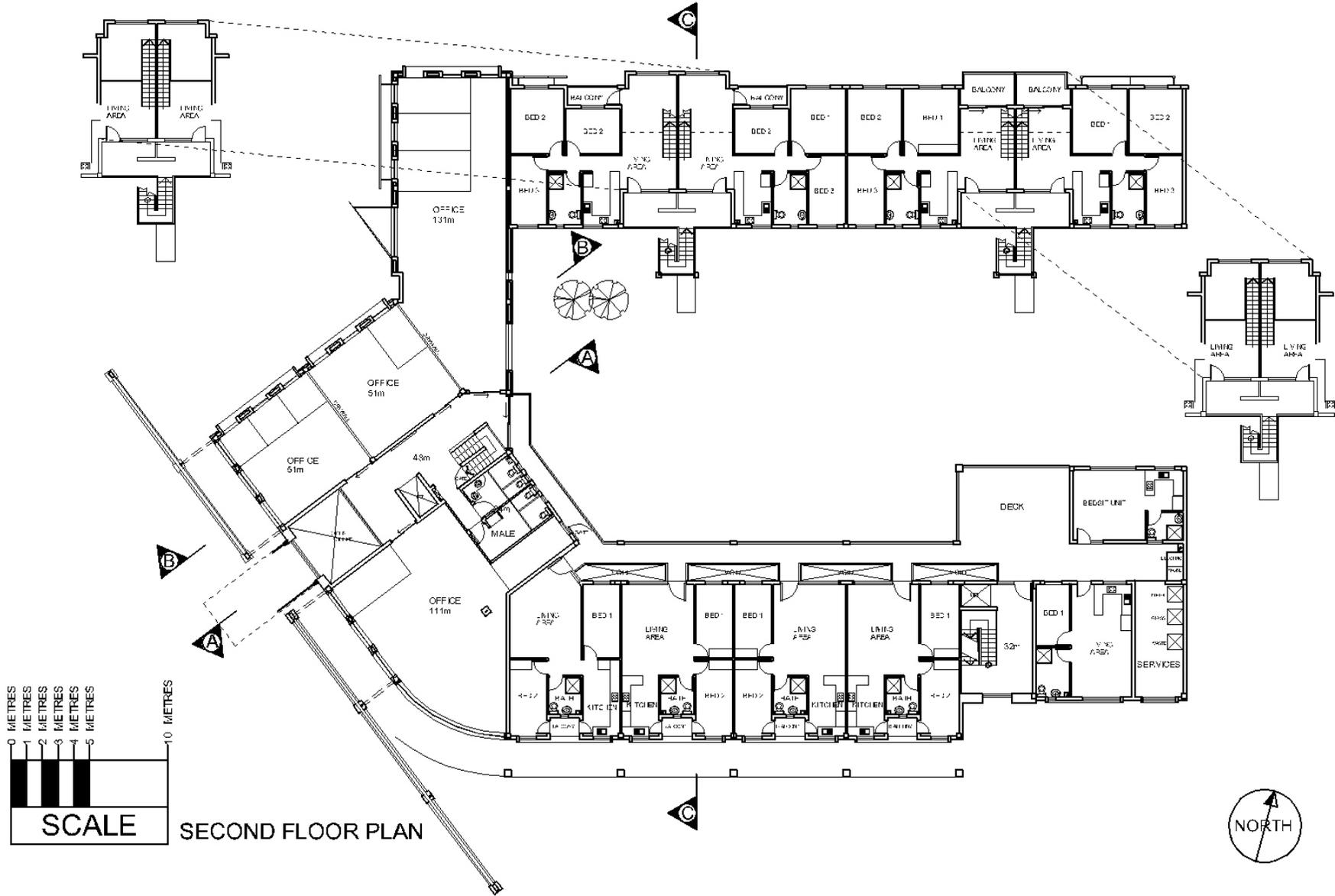






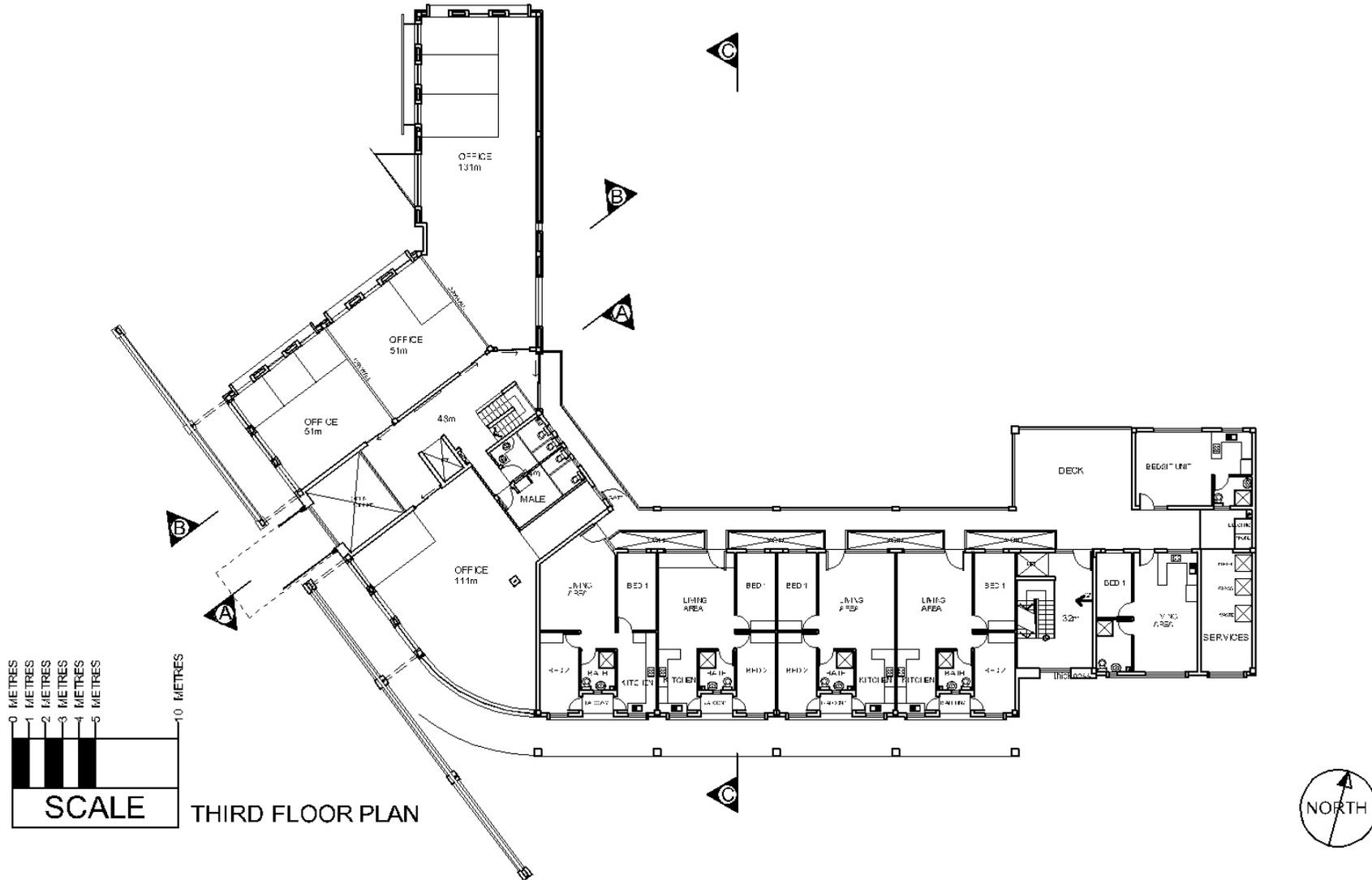


FIRST FLOOR PLAN

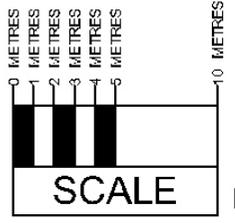
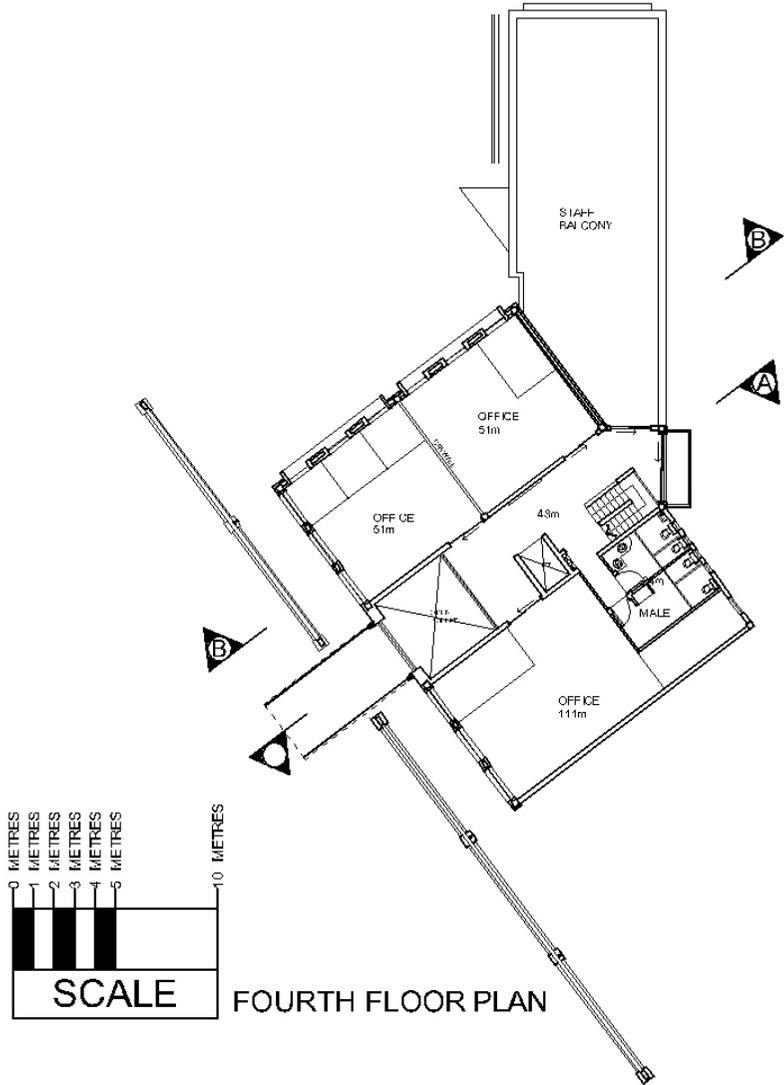


SECOND FLOOR PLAN



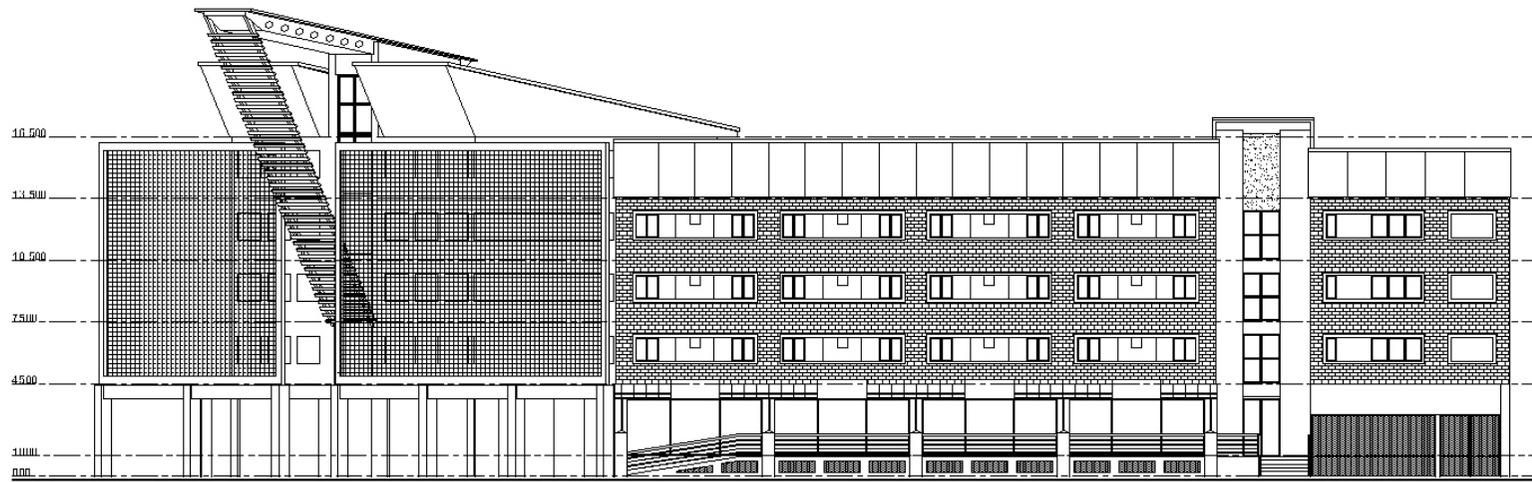


THIRD FLOOR PLAN

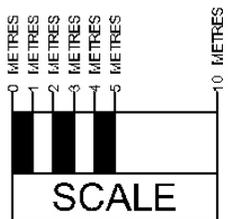


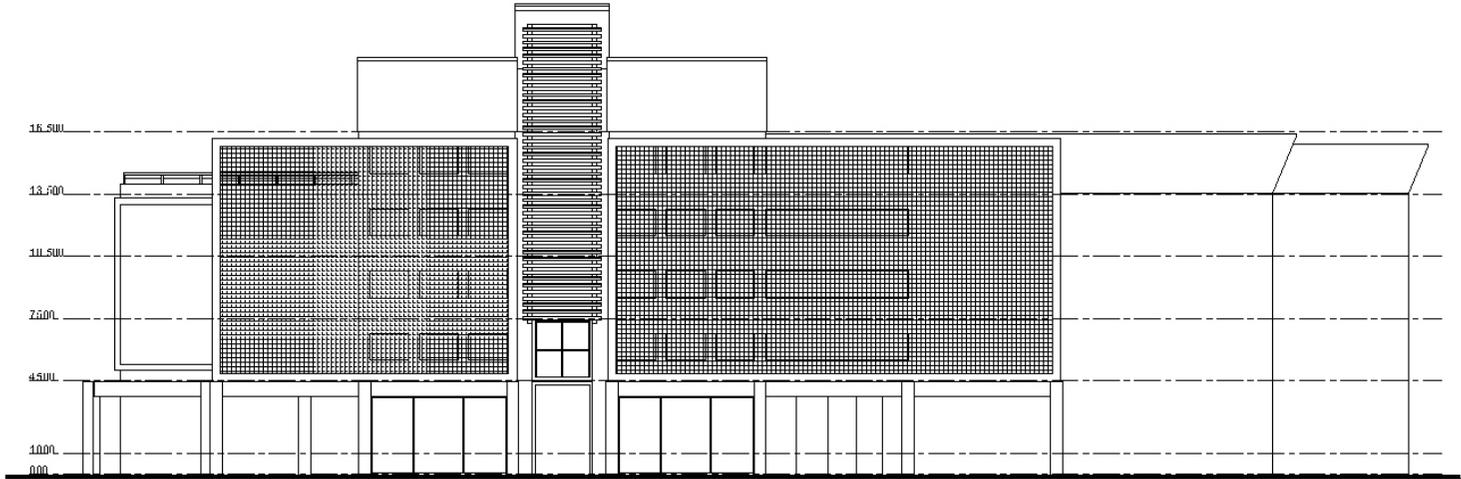
FOURTH FLOOR PLAN





SOUTH ELEVATION

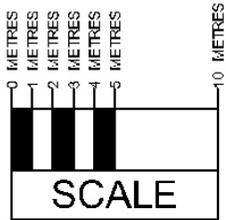




SOUTH WEST ELEVATION

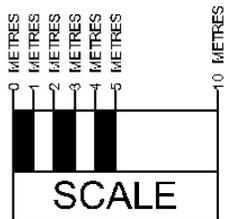


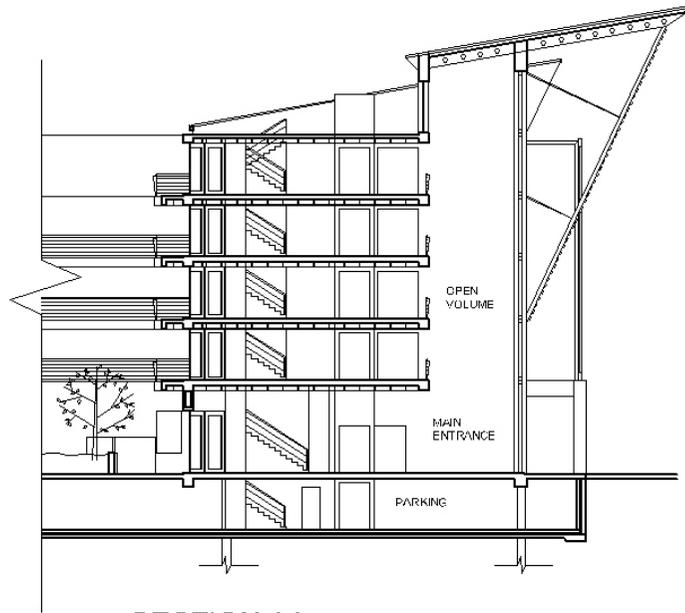
SOUTH COURTYARD ELEVATION



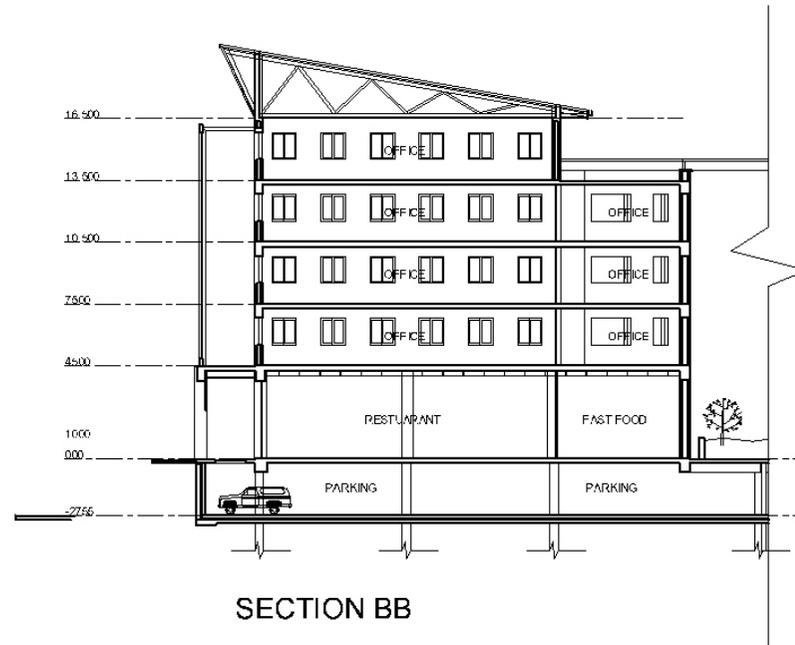


NORTH ELEVATION

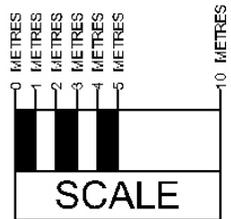


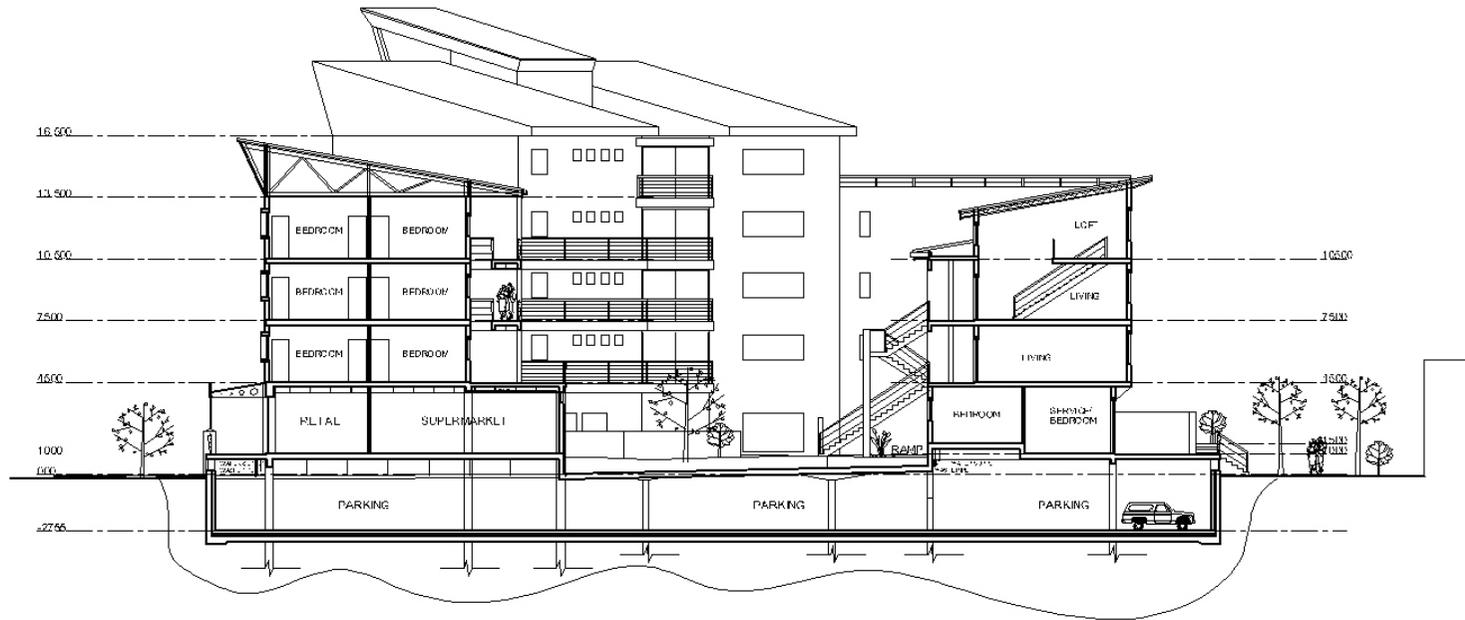


SECTION AA

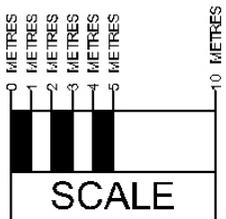


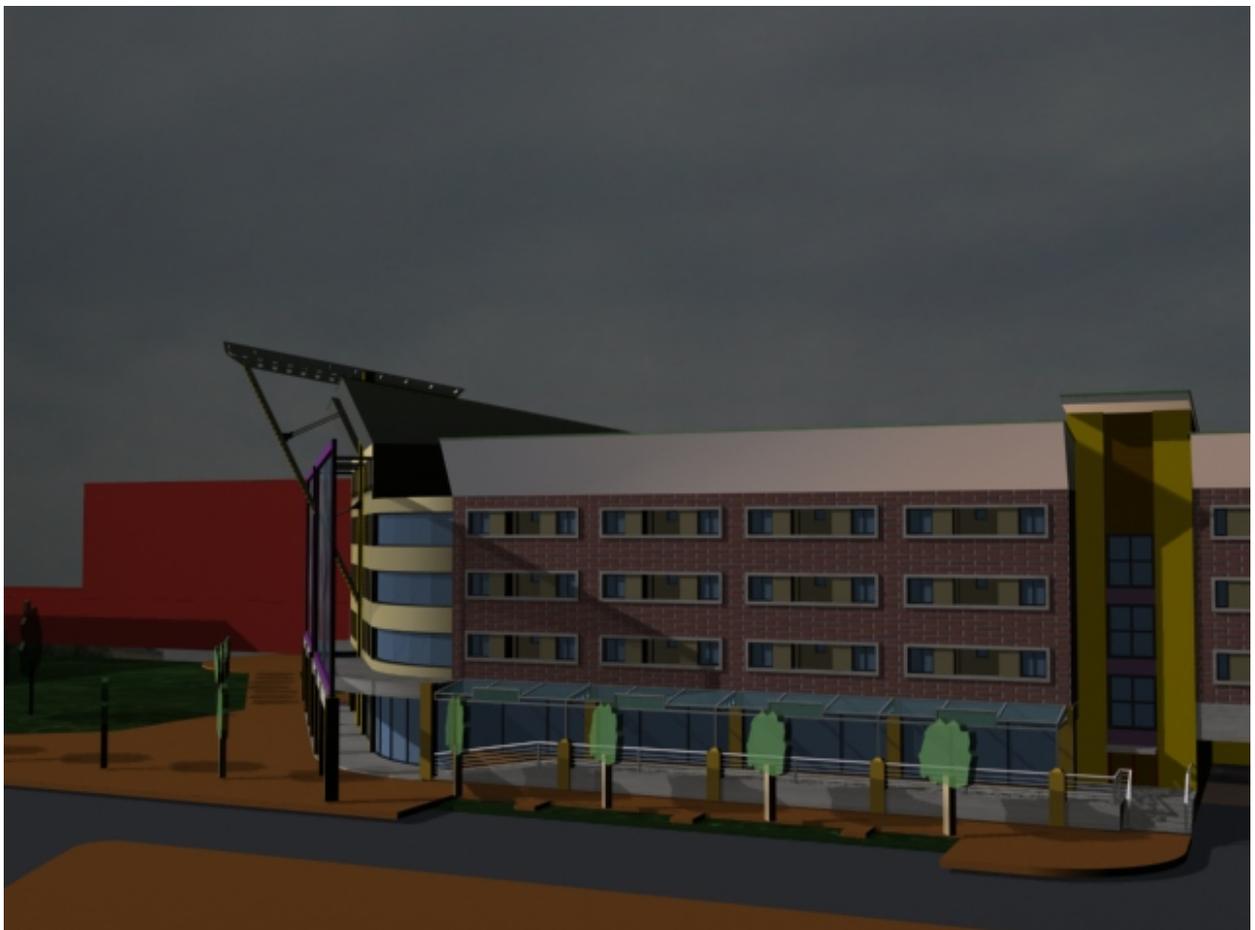
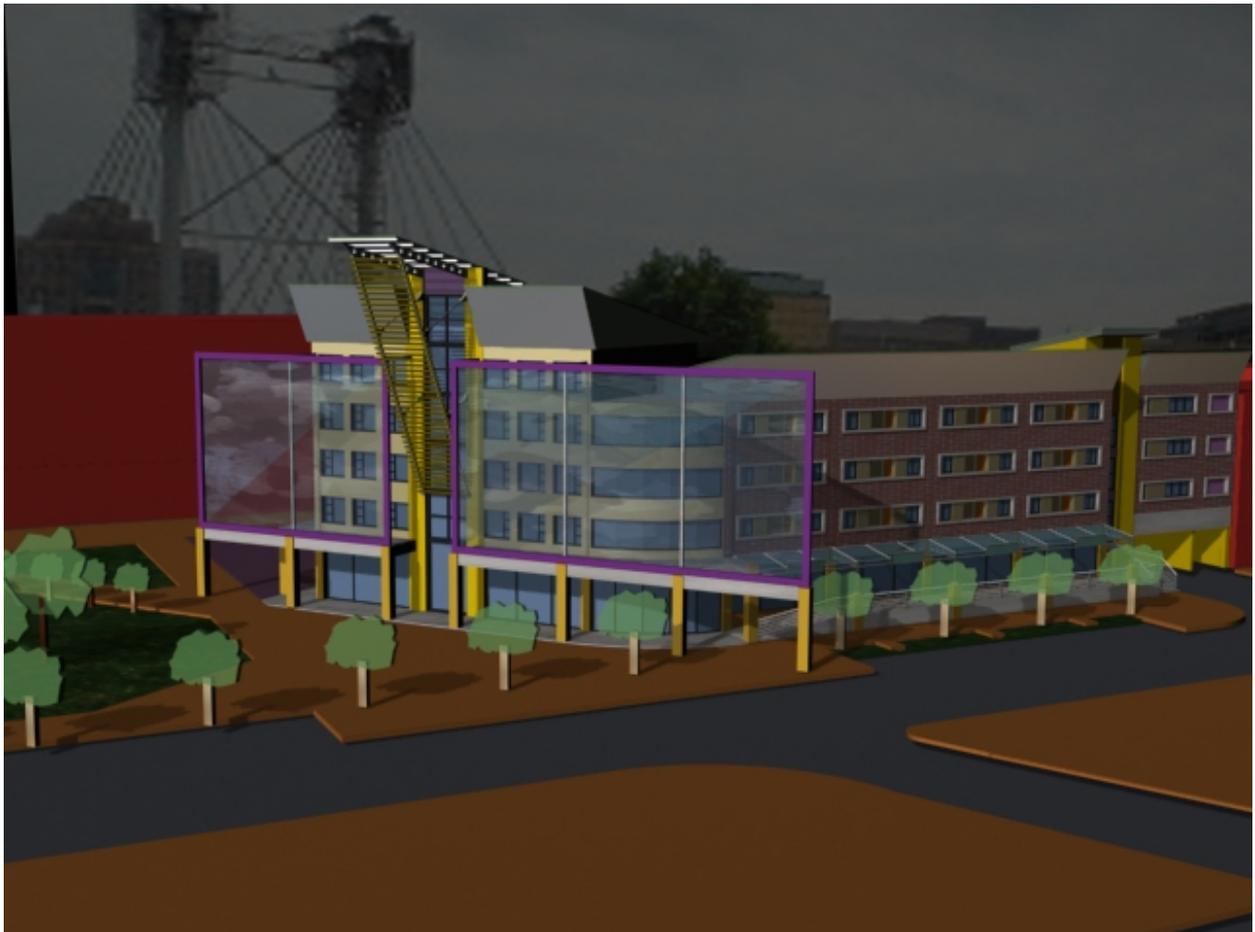
SECTION BB

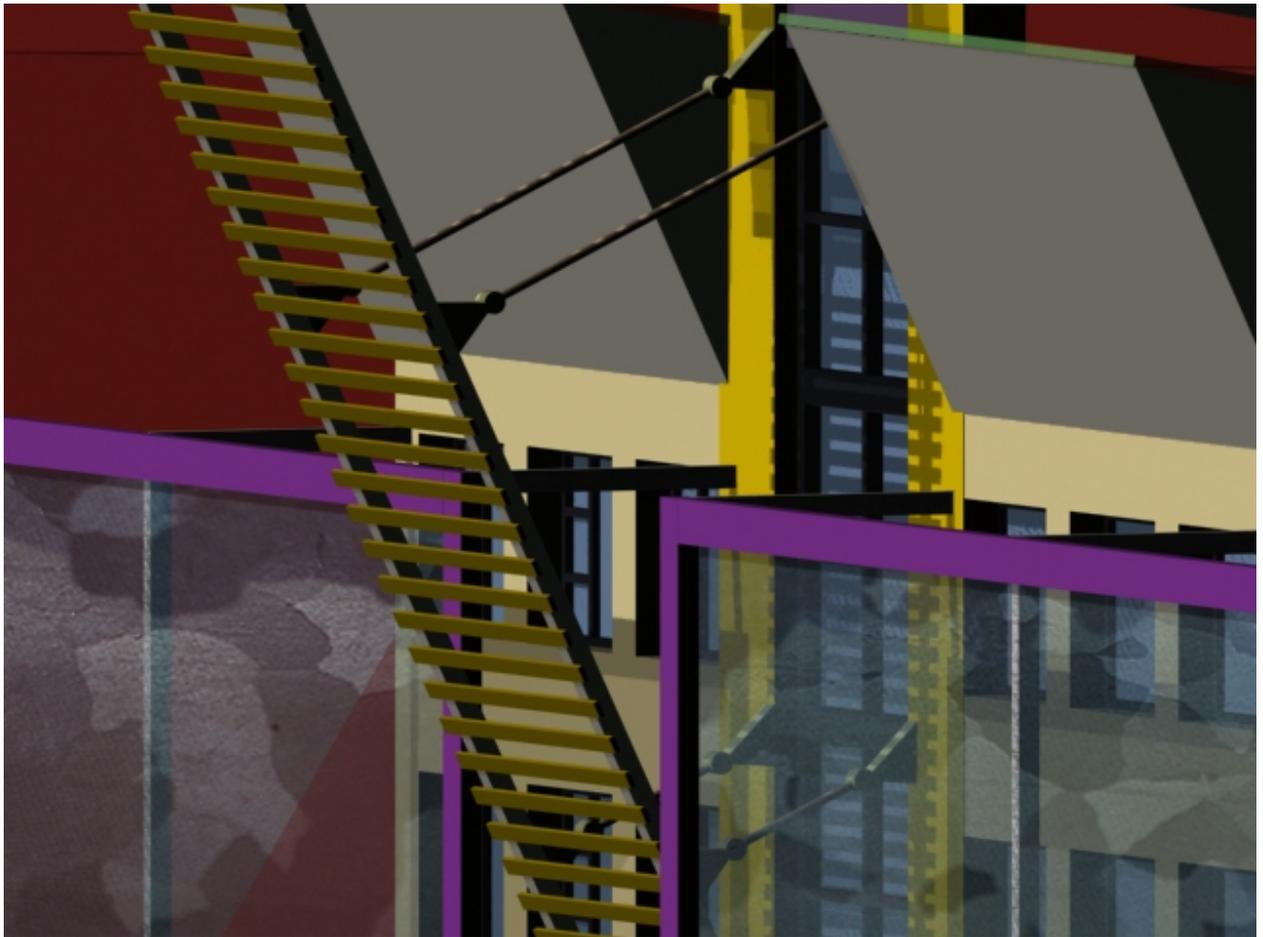




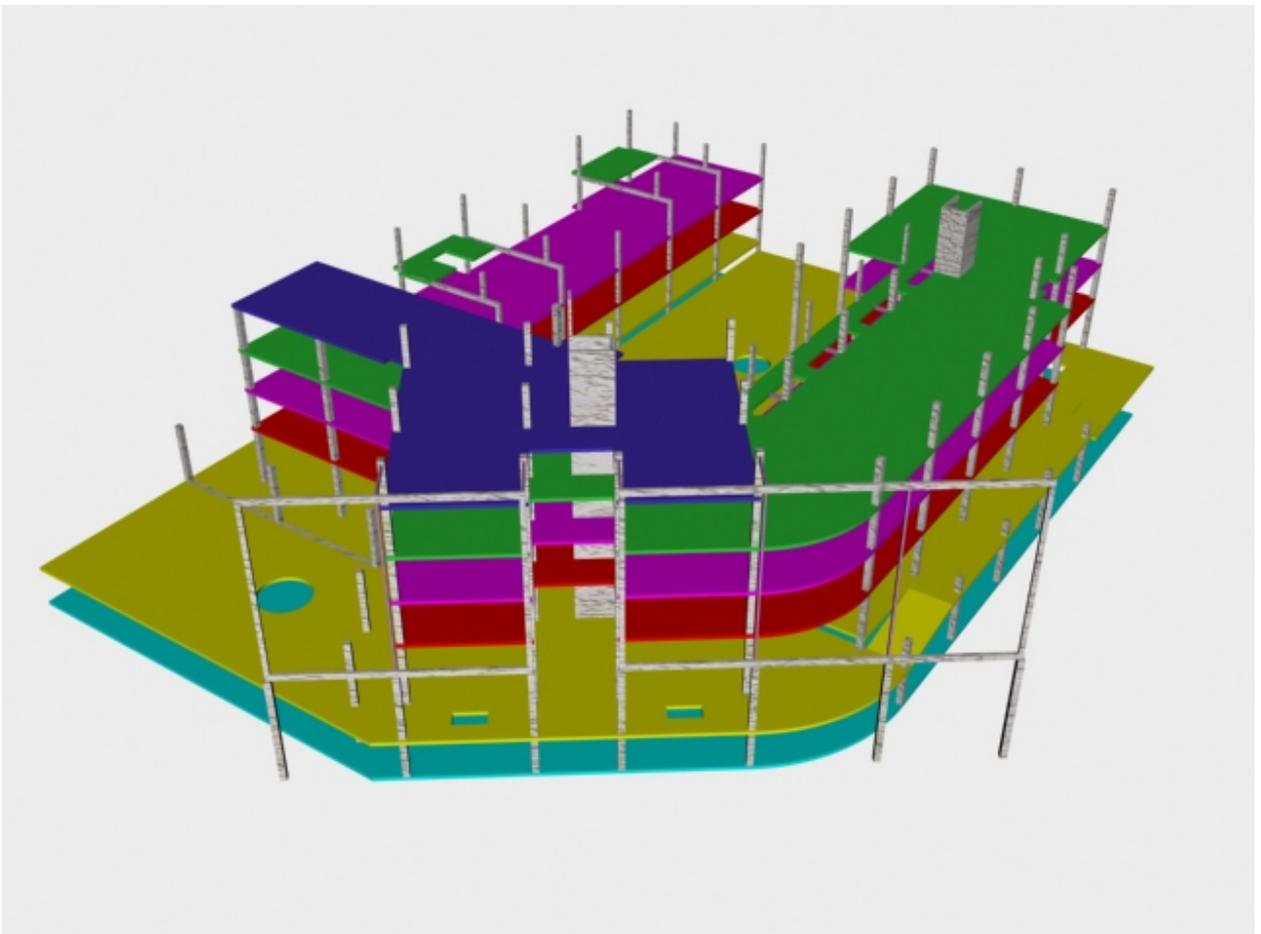
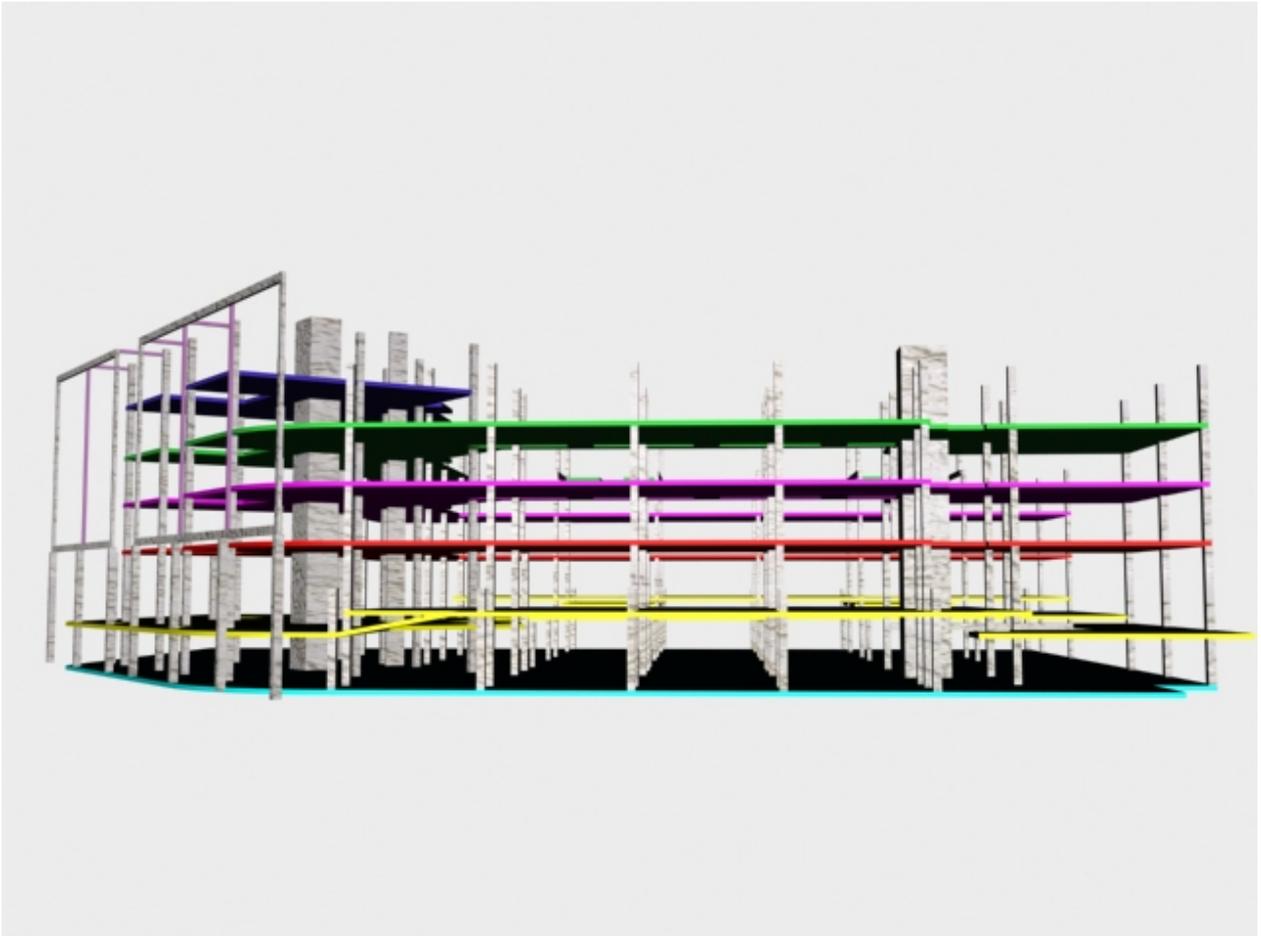
SECTION CC

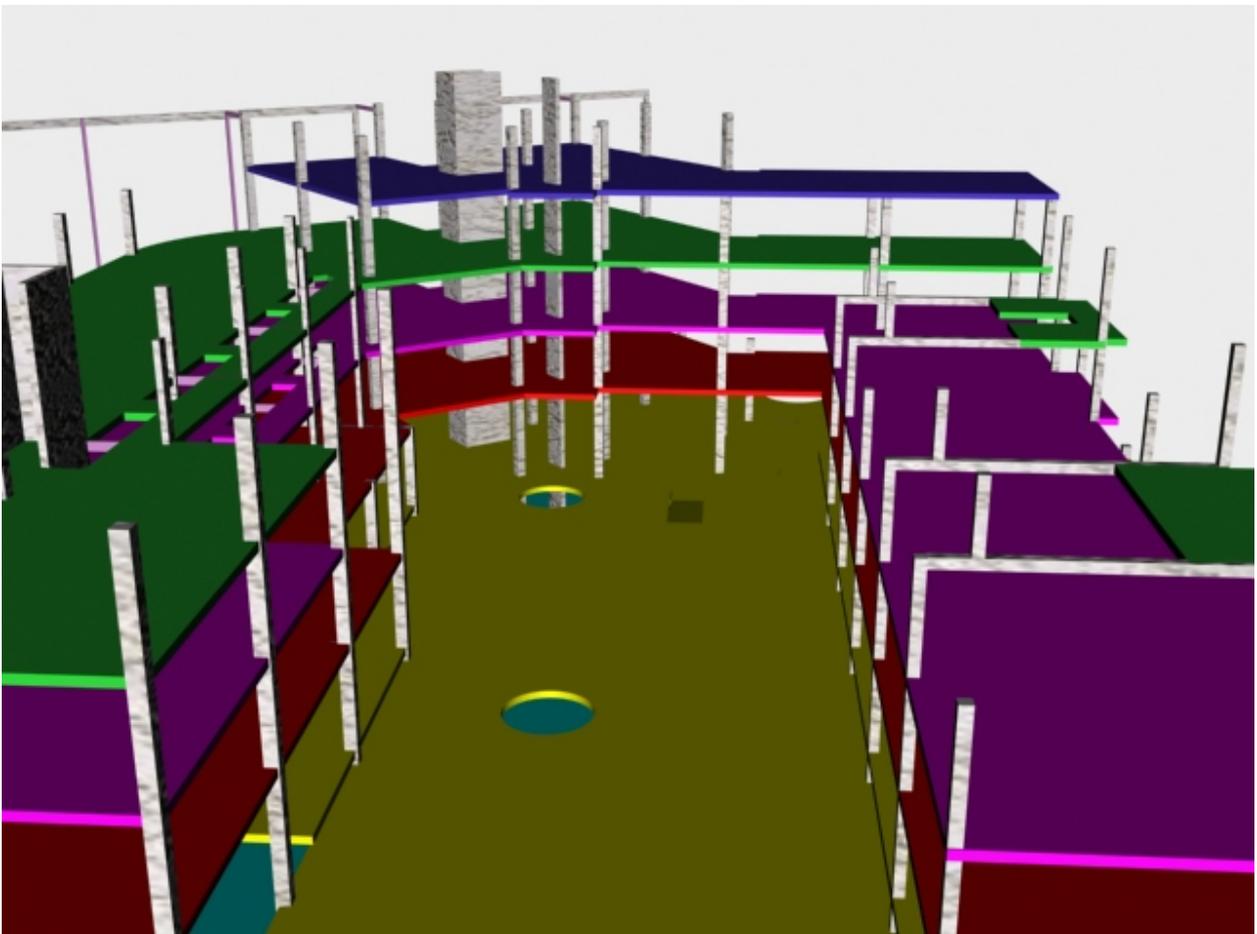
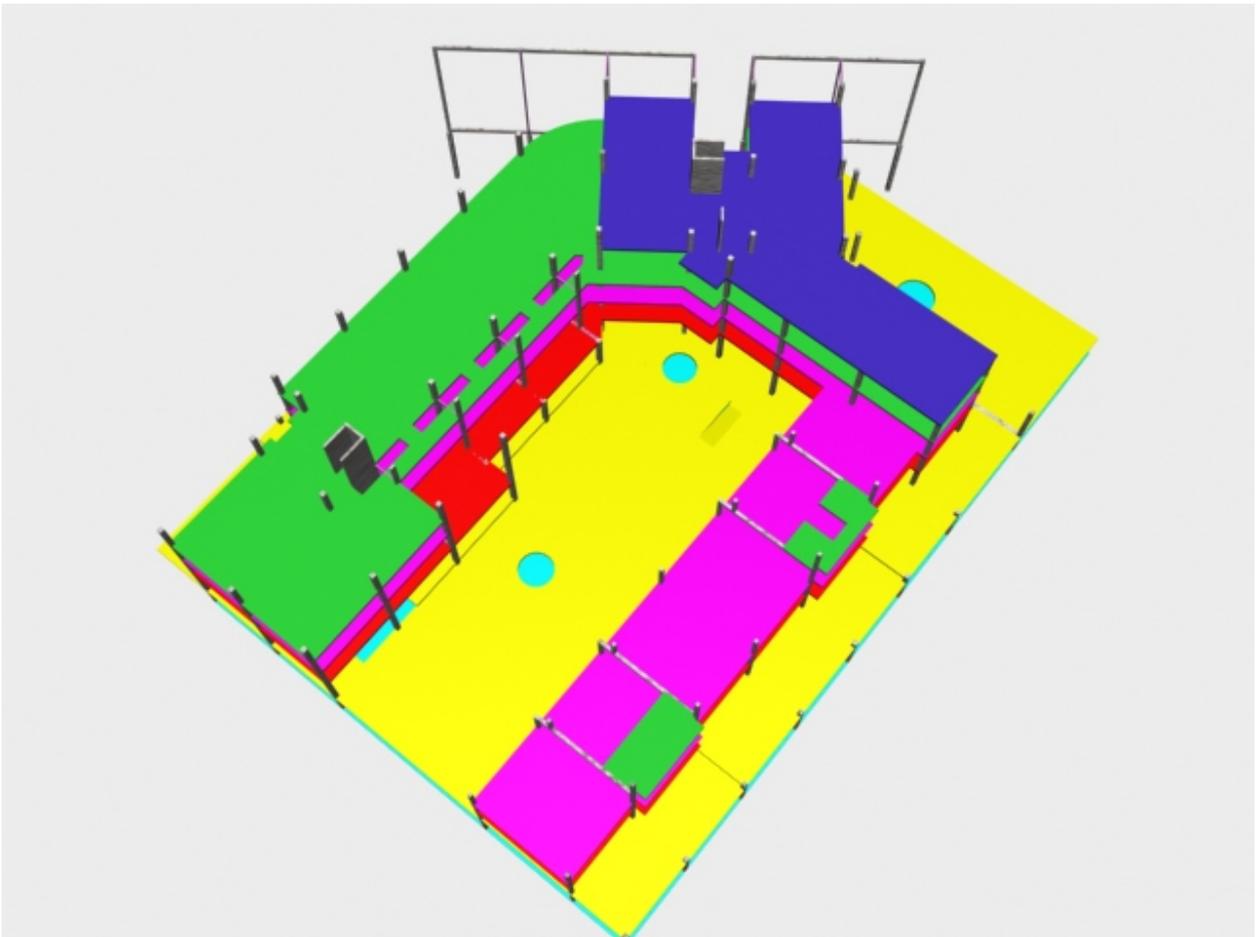












APPENDIX A

Average Johannesburg Climatic Conditions

Month	Temperature				Precipitation		
	Highest Recorded	Average Daily Maximum	Average Daily Minimum	Lowest recorded	Average Monthly (mm)	Average Number of days with ≥ 1 mm	Highest 24 Hour Rainfall (mm)
January	35	26	15	7	125	16	188
February	34	25	14	6	90	11	56
March	32	24	13	2	91	12	92
April	29	21	10	1	54	9	50
May	26	19	7	-3	13	3	70
June	23	16	4	-8	9	2	31
July	24	17	4	-5	4	1	17
August	32	19	6	-5	6	2	21
September	31	23	9	-3	27	4	62
October	32	24	11	0	72	10	110
November	33	24	13	2	117	15	65
December	32	25	14	4	105	15	102
Year	35	22	10	-9	713	99	188

Source: SOUTH AFRICAN WEATHER SERVICES

APPENDIX B

HOUSING TARGET SETTING

Analysis of population density per hectare by comparing housing space standards against household size demand and block floor area potential. The figures are based on the 69m x 69m city block (residential to assumed centre of street dims.) using typical housing typologies. The target net residential floor area is 3000m.

Number of units in the proposed city block in proportion of household distribution in social survey and by floor area per person																	
Space per person (m2)	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Total Nr. Of units	80	72	66	60	56	52	50	46	44	42	40	36	34	34	32	30	
Household distribution																	
3bed @ 6 pers.	20%	16	14.5	13.5	12	11.5	10.5	10	9.5	9	8.5	8	7.5	7	7	6.5	6
3bed @ 5 pers.	20%	16	14.5	13.5	12	11.5	10.5	10	9.5	9	8.5	8	7.5	7	7	6.5	6
2bed @ 4 pers.	20%	16	14.5	13.5	12	11.5	10.5	10	9.5	9	8.5	8	7.5	7	7	6.5	6
2bed @ 3 pers.	20%	16	14.5	13.5	12	11.5	10.5	10	9.5	9	8.5	8	7.5	7	7	6.5	6
1bed @ 2 pers.	10%	8	7	6	6	5	5	5	4	4	4	4	3	3	3	3	3
1bed @ 1 pers.	10%	8	7	6	6	5	5	5	4	4	4	4	3	3	3	3	3
Total m2		3120	3102	3132	3042	3108	3060	3120	3111	3123	3135	3120	3024	2970	3105	3024	2925

Total Nr. Of units + 40%																	
For other uses	112	101	92	84	78	73	70	64	62	59	56	50	48	48	45	42	

Figures per hectare																	
Calculated by converting figures per block (above) into per hectare																	
Block multiplier = 2,69																	
Units per hectare	301	272	247	226	210	196	188	172	167	159	151	135	129	129	121	113	

At a residential (land use) density x% the following population densities would accrue (people per hectare)																	
20%	235	213	196	176	167	153	147	138	131	124	118	108	102	102	95	88	
30%	352	319	294	265	251	230	221	207	197	187	176	163	152	152	143	132	
40%	470	425	392	353	334	307	294	276	262	249	235	217	203	203	190	176	
50%	587	532	491	441	418	384	368	345	328	311	294	271	254	254	238	220	
60%	704	638	587	529	502	460	441	414	393	373	353	325	305	305	285	264	
70%	822	744	687	617	585	537	515	483	459	435	412	379	356	356	332	308	
80%	939	850	785	706	669	614	588	552	524	498	470	436	406	406	380	352	
100%	1174	1063	981	882	836	767	735	690	655	622	588	542	508	508	475	440	

KEY:

 Density too low to support commercial activity

 Residential land use % too low for Newtown.

 Excessive strain on economic and social infrastructure

 Residential land use % too high for inner city

 Target residential density at land use

APPENDIX C

1. Aids Training Information and Counseling centre

City: Pietermaritzburg Province: KwaZulu- Natal

Users per week: 45

Uses:

Information office	Policy making
Counseling referrals	Advice office
Resource centre	Health services
Capacity building	Library
Training and education	HIV testing and counseling
Meetings	

2. Western Cape Aids Training and Counseling centre

City: Capetown Province: Western Cape

Users per week: 100

Uses:

Information office	Meetings
Counseling referrals	Copying documents
Resource centre	Library
Capacity building	HIV testing
Training and education	

Source: MPCC record details (2003)

APPENDIX D

Building Lighting Requirements:

	Standard service illuminance	Position of measurement	Limiting glare index	Colour appearance of lamp	Average daylight factor	Minimum daylight factor	Position of Measurement	Limiting daylight glare index
Housing requirements:								
Living/ Dinning rooms	50	Working plane	-	Intermediate or warm	-	-	-	-
Kitchen	300	Working surface	-	Intermediate or warm	-	-	-	-
Bedrooms	50	Floor	-	Intermediate or warm	-	-	-	-
Bathroom	100	Floor	-	Intermediate or warm	-	-	-	-
Office requirements:								
Offices	500	Desk	19	Intermediate or warm	5	2	Desks	23
Inter office circulation- 15%	100	1,2 m above floor	22	Intermediate or warm	2	0,6	Floor	24
Multipurpose centre:								
Reception	150	1,2m above floor	-	Intermediate or warm	2	0,6	Working plane	24
Administration	500	Desk	19	Intermediate or warm	5	2	Desks	23
Record storage	150	Vertical at floor	19	Intermediate or warm	-	-	-	-
Waiting area- 6 pers/consult	150	1,2m above floor	-	Intermediate or warm	2	0,6	Working plane	24
Consulting rooms	500	Desk or bed	-	Intermediate or warm	5	2,5	Working plane	21
Treatment rooms	500	Desk or bed	-	Intermediate or warm	5	2,5	Working plane	21
Lecture rooms	300	Desk	6 to 19	Intermediate or warm	5	2	Desks	21
Library/ info. centre	300	Table	19	Intermediate or warm				
Circulation areas:								
Corridors and passageways	100	1,2 m above floor	22	Intermediate or warm	2	0,6	Floor	24
Stairs	150	Treads	-	Intermediate or warm	2	0,6	Treads	-

Source: Tutt, P & Adler, D. 1998. *New Metric Handbook*. Great Britain: MPG Books Ltd.

APPENDIX E**Minimum Air Requirements Per Person**

Minimum Air Requirements	
Housing requirements:	
Living/ Dinning rooms	5,0
Kitchen	50,0
Bedrooms	
Bathroom	25,0
Office requirements:	
Offices	5,0
Inter office circulation- 15%	
Multipurpose centre:	
Reception	5,0
Administration	5,0
Record storage	5,0
Waiting area	5,0
Consulting rooms	
Treatment rooms	
Lecture rooms	7,5
Library/ info. centre	6,5
Circulation areas:	
Corridors and passageways	5,0
Stairs	5,0

Source: Tutt, P & Adler, D. 1998. New Metric Handbook. Great Britain: MPG Books Ltd.

APPENDIX F

Projected Water Consumption:

Residential component: 131 Persons 33 units

Residents:	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
Flush toilets	10 l	1310 l	478150 l	6 l	786 l	286890 l
Showers	0,4 l/s - 0,7 l/s	43230 l - 10min	15778950 l	0,2 l/s	15720 l - 10min	5737800 l
Taps	0,25 l/s - 0,3 l/s	6484,5 l - 3min	2366842 l	0,03 l/s -0,17 l/s	2358 l - 3min	860670 l
Dishwashing	45 - 68 l/wash	1864,5 l	680543 l	12 l/wash	396 l	144540 l
Laundry	28 l pers./ week	524 l	191260 l	15 l pers./ week	281 l	102565 l
			19495745 l		19541 l	7132465 l

Visitors	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
Each unit 1 visitor per week						
Flush toilets	10 l	47,15 l	17209,5 l	6 l	28 l	10311 l
Taps	0,25 l/s - 0,3 l/s	38,9 l - 30 sec	14198,5 l	0,03 l/s -0,17 l/s	14 l	5146,5 l
			31408 l			1545,5 l

Office component: 120 Persons

120 Staff:	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
Flush toilets	10 l	1200 l	294000 l - 245 day	6 l	720	176400 l- 245 day
Taps	0,25 l/s - 0,3 l/s	990 l - 30 sec	242550 l - 245 day	0,03 l/s -0,17 l/s	360 l - 30 sec	88200 l- 245 day
			536550 l		1080 l	264600 l

Visitors	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
5% visitors per hour- 50% usage						
Flush toilets	10 l	240 l	58800 l	6 l	144 l	35280 l
Taps	0,25 l/s - 0,3 l/s	198 l	48510 l	0,03 l/s -0,17 l/s	72 l	17640 l
			107310			52920 l

Community centre component:

15 Staff:	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
Flush toilets	10 l	150 l	45000 l -300 day	6 l	60 l	18000 l- 300 day
Taps	0,25 l/s - 0,3 l/s	1237,5 l - 5 min	371250 l -300 day	0,03 l/s -0,17 l/s	450 l	135000 l- 300 day
			416250 l			153000 l

Visitors	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
100 day (est) 50% usage						
Flush toilets	10 l	500 l	150000 l	6 l	300 l	90000 l
Taps	0,25 l/s - 0,3 l/s	412,5 l - 30 sec	123750 l	0,03 l/s -0,17 l/s	150 l	45000 l
			273750 l			135000 l

Retail component:

30 Staff (est.)	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
Flush toilets	10 l	300 l	90000 l - 300 day	6 l	180 l	54000 l- 300 day
Taps	0,25 l/s - 0,3 l/s	247,5 - 30 sec	74250 -300 day	0,03 l/s -0,17 l/s	90 l	27000 l- 300 day
			164250 l			81 000 l-300 day

Visitors	Conventional	Day usage	Annual use	Efficient	Day usage	Annual use
150 users per day (estimated)						
Flush toilets	10 l	1500 l	450000 l - 300 day	6 l	900 l	270000 l-300 day
Taps	0,25 l/s - 0,3 l/s	1237,5 l - 30 sec	371250 l - 300 day	0,03 l/s -0,17 l/s	450 l	135000 l-300 day
			821250 l			405000 l

Irrigation

Estimated			2000000			2000000
-----------	--	--	----------------	--	--	----------------

Total consumption annually

23846513 litres**10225530 litres**

APPENDIX G

PROJECTED RAINWATER HARVESTING POSSIBILITY

Estimated area under roof (excluding roof gardens):

Office block 585m + South wing 500m + West wing 497m = **1582m**

Average annual rainfall = **713mm**

$1582 \times 0,713 = 1128$ cubic metres of rain falls onto roofed surface annually

$1128 \times 1000 = \mathbf{1128000}$ litres of water falls onto roofed surface annually