



**A mixed-use development with the focus on dance activities
with supporting educational and trading facilities,
Newtown.**

by

Helia Potgieter

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

November 2003

**“Take me to the places on earth that teach you how to dance,
the places where you can risk letting the world break your heart,
and I will take you to the places where the earth and the stars
make my heart whole again and again.”**

(Lund, 2002:65)

Summary:

This dissertation contains the design for a mixed-use development with the focus on dance activities with supporting educational and trading facilities. The vision of this design proposal is to create a new urban citizenship to establish a development that will contribute to the process of urban regeneration in the inner city of Johannesburg.

"it is an endless repetition of urban disorder- deterioration, pollution, filth, decay, waste, illegal immigrants, violence and crime, anarchism- is a coded way of talking about the arrival and presence of non-whites in the inner city, and particularly groups considered to be marginal, the street vendors, the parking attendants, the homeless." (Sandercock, 2000)

The face of Johannesburg's inner city has undergone rapid change in its socio-economic make-up in the past few years. This change is clearly visible in the urban explosion, social fracture, environmental degradation, escalating crime, violence and grinding poverty. This urban reality is part of an ongoing set of evolutionary processes that began since the genesis of Johannesburg. If we seek to provide any form of urban regeneration in the inner city we need to understand the underlying issues of what really exist on the inner city streets.

"Official urban discourses (those produced by local councils and planning departments) tend to legitimize and privilege the fears of the bourgeoisie, their fears of those "others" who might invade or disrupt their homely spaces, their habitus. We rarely hear from those folks whom official discourse classifies as "others" about their fears: the fear for example of being hungry, homeless, jobless, of having no future in the city, of being unable to provide for one's children, the fear of not being accepted in a strange environment, the fear of police or citizen violence against them." (Sandercock, 2000)

The process of regeneration must begin at community citizen level, the citizens who live and work in Johannesburg, who suffer the most from crime, poverty and declining land values because of the flight of businesses from the CBD. Being a citizen of a city involves having certain rights and obligations. These are based on the ideas of justice, equality and community. (Crest, 2000:16) The cultures and sub-cultures that exist in Johannesburg are immense. The city has truly become a multi-cultural city with a wide spectrum of citizens seeking hope for a better future.

"Post-modernism emphasizes the benefits of diversity, it welcomes the growth of localized protest as a means of promoting democracy, and it opens up the planning process in a way which is typically denied by an emphasis on technical rationality"(Goodchild, 1999)

Post-modernism is concerned with the end of homogeneity. This concept of

multiplicity concerns itself with the setting of precedence for an inclusive, pluralistic society. South Africans need to celebrate the diversity and plurality of our rich culture. This new way of thinking needs to be seen in the Johannesburg context. A city has the responsibility to provide its inhabitants with the necessary opportunities for social and economic development. This multi-cultural dynamic force has the potential to shape the city. Dance, in all its multi-cultural manifestations, is used as the universal tool for urban regeneration.

Current urban regeneration schemes in the inner city had a direct influence on the design. The development vision is based on creating a human-scaled, active and vibrant public environment within a milieu of art and cultural activities, with supporting retail, business, and educational and residential uses as stated in the Newtown Cultural Precinct Urban Design Plan.

The development is situated in the Newtown cultural precinct and forms an important part of the interlinked public environmental system by establishing the dominant east-west redevelopment corridor running past the Turbine Hall.

The broad aims of the project are:

- Establish a mix of compatible uses within the precinct and a multi-functional city center.
- Ensure that street space is a public amenity by creating
 - active ground floor uses
 - attractive environments
 - variety of activities and multiple uses of streets
 - externalizing activities in buildings
 - enable pedestrian orientated activities
- Provision of a wide range of social and cultural amenities
- Establish a strategy for historic vacant buildings, like the Turbine Hall.

Hierarchy of space division was essential as a result of multiple uses in the building. Public and more private zones are identified. This ensures informal areas for social interaction of the public and security for the students.

Visual form dynamics and the principles of rhythm in human movement served as inspiration for the development of the concept and details for the design. Dance and architecture are related forms of art which involve related basic principles of rhythm. Both of them use a combination of energy, space and dynamics to create a harmonious totality.

Johannesburg has been since its history a dynamic city in transition. The city is a diverse mosaic of urban life. A new urban citizenship, Multi-culturalism and social equity can provide Johannesburg with the extraordinary opportunity of reinventing itself to a united city of hope.

Opsomming:

University of Pretoria etd - Potgieter, H (2003)

Die skripsie behels die ontwerp van 'n gemengde gebruik ontwikkeling met die fokus op dans aktiwiteite met ondersteunende opleidings- en handelsfasiliteite. Die visie van die ontwerpvoorstelling is die skepping van 'n nuwe stedelike burgerskap om sodoende 'n ontwikkeling daar te stel wat sal bydra tot die proses van stedelike regenerasie in die middestad van Johannesburg.

"it is an endless repetition of urban disorder- deterioration, pollution, filth, decay, waste, illegal immigrants, violence and crime, anarchism- is a coded way of talking about the arrival and presence of non-whites in the inner city, and particularly groups considered to be marginal, the street vendors, the parking attendants, the homeless." (Sandercock, 2000)

Die voorkoms van die middestad van Johannesburg het 'n snelle metamorfose ondergaan ten opsigte van die sosio-ekonomiese samestelling gedurende die afgelope jare. Die verandering is duidelik sigbaar in die stedelike uitbreiding, sosiale verval, omgewings-agteruitgang, toenemende misdaad, geweld en drukkende armoede. Hierdie stedelike realiteit vorm 'n integrale deel van 'n reeks van voortdurende evolusionere prosesse wat begin het sedert die ontstaan van Johannesburg. As ons enige vorm van stedelike heropbou nastreef is dit noodsaaklik dat ons in die onderliggende aspekte, van wat werklik bestaan in die middestad, verstaan.

"Official urban discourses (those produced by local councils and planning departments) tend to legitimize and privilege the fears of the bourgeoisie, their fears of those "others" who might invade or disrupt their homely spaces, their habitus. We rarely hear from those folks whom official discourse classifies as "others" about their fears: the fear for example of being hungry, homeless, jobless, of having no future in the city, of being unable to provide for one's children, the fear of not being accepted in a strange environment, the fear of police or citizen violence against them." (Sandercock, 2000)

Die proses van stedelike regenerasie moet begin by die burgerlike gemeenskapsvlak, by die inwoners van die stad wat in Johannesburg leef en werk, die wat die meeste blootgestel word aan misdaad, armoede en die afnemende waarde van eiendom as gevolg van die uittog van besighede vanuit die sentrale besigheidsdistrik. Daar is 'n wye verskeidenheid van kulture en sub-kulture in Johannesburg. Die stad het waarlik ontwikkel in 'n multi-kulturele samelewing met 'n wye spektrum van inwoners wat streef na 'n hoopvolle toekoms.

"Post-modernism emphasizes the benefits of diversity, it welcomes the growth of localized protest as a means of promoting democracy, and it opens up the planning process in a way which is typically denied by an emphasis on

technical rationality"(Goodchild, 1999)

University of Pretoria etd - Potgieter, H (2003)

Die konsep van post-modernisme vereis die einde van homogeniteit. Hierdie teorie berus op die daarstelling van 'n presedent van 'n insluitende pluralistiese samelewing. Suid-Afrikaners moet die diversiteit en pluraliteit van ons ryke kultuur herdenk. Hierdie nuwe denkwyse moet gesien word in die konteks van Johannesburg. Dit is die verantwoordelikheid van 'n stad om sy inwoners van die nodige geleenthede te voorsien vir sosiale en ekonomiese ontwikkeling. Die multi-kulturele dryfkrag het die potensiaal om die stad gestalte te gee. Dans, in al sy multi-kulturele fasette, word aangewend as 'n universele werktuig van stedelike regenerasie.

Huidige stedelike hernuwings-voorstelling in die middestad het 'n direkte invloed op die ontwerp gehad. Die doel van die ontwikkeling is gebaseer op die daarstelling van 'n bedrywige en aktiewe publieke omgewing wat op 'n menslike skaal gefokus is. Hierdie ontwikkeling vind plaas in 'n kulturele milieu met ondersteunende kleinhandel-, besigheids-, opleidings- en residensiele gebruike soos uiteengesit in die Newtown Cultural Precinct Urban Design Plan.

Die projek is gelee in die Newtown kulturele distrik en vorm 'n integrale deel van die noue samestelling van die publieke omgewing. Die ontwerp vorm deel van die dominante oos-wes herontwikkelingstrook wat voor die Turbine Hall verbyloop.

Die breek doelstellings van die projek is as volg:

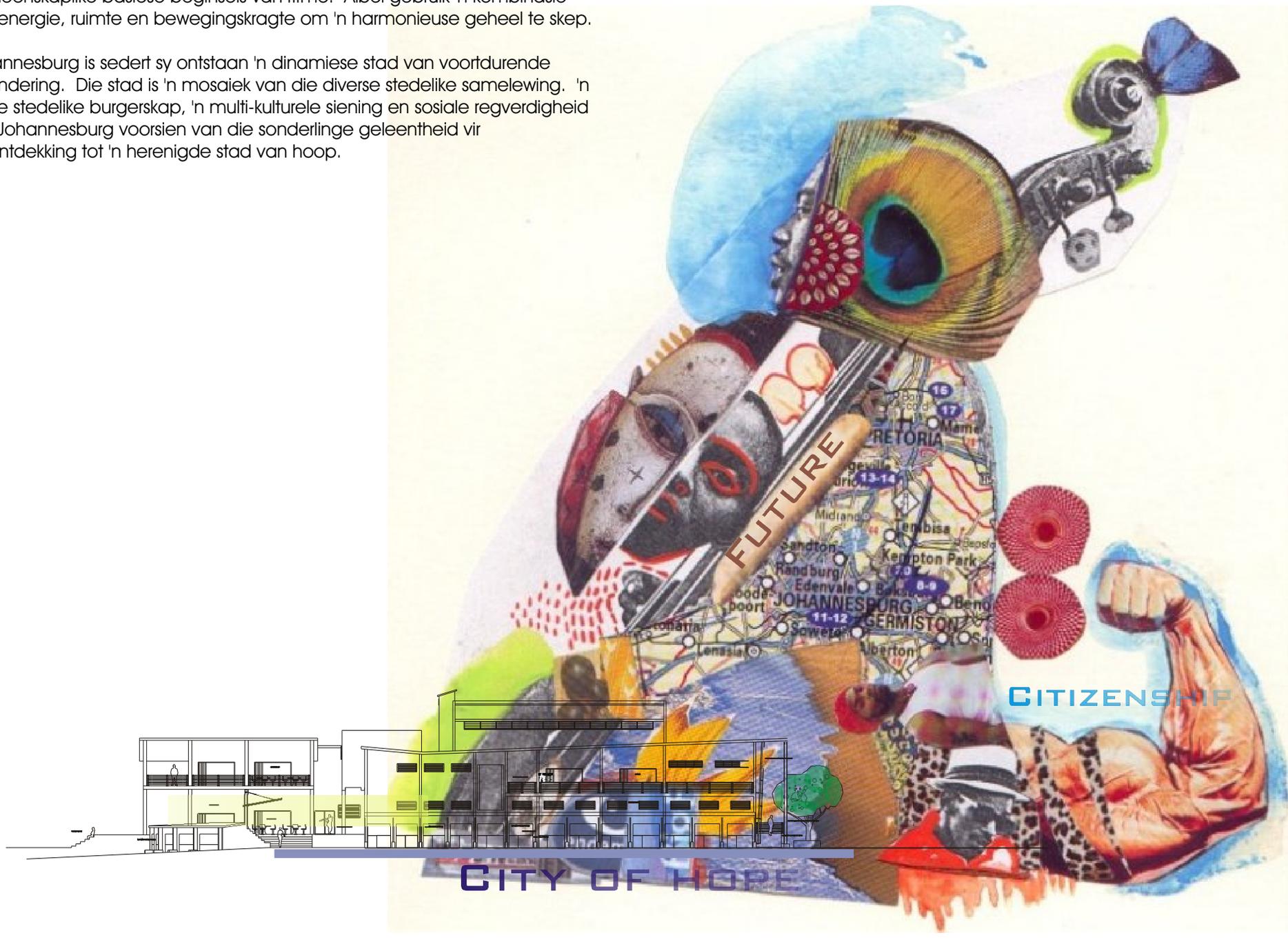
- Die daarstelling van 'n mengsel van aanpasbare gebruike binne die Newtown distrik en die multi-funksionele stadskern.
- Om te verseker dat straatruimtes 'n publieke kommoditeit word deur:
 - aktiewe grondvloer gebruik;
 - aangename publieke omgewingstoestande
 - verskeidenheid van aktiwiteite en veelvuldige gebruik van straatruimtes
 - om aktiwiteite binne die gebou na buite te bring
 - verseker voetganger-georiënteerde aktiwiteite
- Verskaffing van 'n verskeidenheid sosiale en kulturele fasiliteite.
- Die skepping van handel- en werkverskaffingsgeleenthede.
- Die daarstelling van 'n gebruikstrategie van onbesette historiese geboue soos die Turbine Hall.

Hierargie van ruimteverdeling was belangrik as gevolg van die veelvuldige aktiwiteite binne die gebou. Publieke en meer private sones was geïdentifiseer. Informele ruimtes vir sosiale interaksie vir die publiek en sekuriteit vir die studente word hierdeur verseker.

Die studie van dinamiese visuele vorm en die beginsel van ritme in menslike beweging het gedien as inspirasie vir die ontwikkeling van die konsep en details van die ontwerp. Dans en argitektuur is verwante kunsvorme met gemeenskaplike basiese beginsels van ritme. Albei gebruik 'n kombinasie van energie, ruimte en bewegingskragte om 'n harmonieuse geheel te skep.

Johannesburg is sedert sy ontstaan 'n dinamiese stad van voortdurende verandering. Die stad is 'n mosaiek van die diverse stedelike samelewing. 'n Nuwe stedelike burgerskap, 'n multi-kulturele siening en sosiale regverdigheid kan Johannesburg voorsien van die sonderlinge geleentheid vir herontdekking tot 'n herenigde stad van hoop.

University of Pretoria etd - Potgieter, H (2003)



| | | |
|--|-----|--|
| Creating a new urban citizenship | 002 | |
| The Client: Gauteng Provincial Government and the Blue IQ initiative | 003 | |
| Other interested parties: The Johannesburg Development Agency | 003 | Fig 1. The Blue IQ Initiative (JHB Development Agency, 2002) |
| Blue IQ Means Business Week and Business and Arts South Africa | 004 | |
| European Union | 005 | |
| The users | 005 | |
| Dance | 006 | Fig 2. FNB Dance Umbrella, 2003 (Thomson, 2003) Fig 3. FNB Dance Umbrella, 2003 (Thomson, 2003) Fig 4. FNB Dance Umbrella, 2003 (Thomson, 2003) |
| Dance in Johannesburg | 007 | Fig 5. Dancer from the <i>Rhythm Blues</i> production at the FNB Dance Umbrella, 2003 (Hogg, 2003) Fig 6. Dancers from the <i>Tales of the Mud Wall</i> production at the FNB Dance Umbrella, 2003 (Hogg, 2003) Fig 7. Siyanda Duma from The Siwela Sonke Dance Theatre in <i>Cityscapes</i> (Krouse,2002) |
| | 008 | Fig 8. Dancers from <i>Moving Cities</i> at FNB Dance Umbrella, 2003 (Hogg, 2003) Fig 9. Dancers from <i>Black Man White Balls</i> at FNB Dance Umbrella, 2003 (Hogg, 2003) Fig 10. Dancers from <i>Black Man White Balls</i> at FNB Dance Umbrella, 2003 (Hogg, 2003) Fig 11. Dancers from <i>Moving Cities</i> at FNB Dance Umbrella, 2003 (Hogg, 2003) |
| Influences on the design: visual form dynamics | 009 | Fig 12. A line is a linked series of spots. Fig 13. Elements of visual dynamics. |
| Rhythm | 010 | Fig 14. Performers in <i>Southern Comfort</i> at FNB Dance Umbrella, 2003 (Hogg, 2003) |
| Rhythm and movement as a visual presentation | 011 | Fig 15. Feuillet's decorative notation system (Goodridge, 1999:90) Fig 16. Drawing by choreographer Dana Reitz (Goodridge, 1999:90) Fig 17. Notation system with musical notation (Goodridge, 1999:93) Fig. 18. Work by Zaha Hadid (Papadakis, 1992:57) Fig 19. Labanotation (Goodridge, 1999:96) Fig 20. Rudolf Laban (Maletic, 1987:1) Fig 21. Different weight characteristics in architectural form (Papadakis, 1992:75) |
| The work of Rudolf Laban: time and rhythm in human movement | 012 | Fig 22. Flow: a degree of continuity. Fig 23. Restricted space (Papadakis, 1992:74) Fig 24. Wide, open space (Papadakis, 1992:89) Fig 25. Motion factors: space and flow. Fig 26. Jackson Pollock's flowing movements (Zelanski and Fisher, 1984:48) |
| | 014 | Fig 27. Movement in space. Fig 28. Accents created by pauses, change in direction and entrance. Fig 29. Placements of accents. |
| Performance environment | 015 | |
| Physical, social and cultural context: a macro-analysis | 016 | |
| Johannesburg as a global mega-city | 017 | |
| Johannesburg: the past | 018 | Fig 30. The city of Johannesburg (Region 8, 2000) |
| Land use trends | 019 | Fig 31. The Johannesburg Metropolitan (Region 8, 2000) |
| Environmental trends | 020 | Fig 32. Land use trends (Bambanani Consortium, 2001) Fig 33. Environmental trends (Bambanani Consortium, 2001) Fig 34. Open space analysis (An analysis of open space in Johannesburg,2000) |
| Pollution | 021 | Fig 35. Analysis of total pollution (An analysis of total pollution in Johannesburg,2000) Fig.36. Analysis of waste water (An analysis of waste water in Johannesburg,2000) |

| | | |
|---|-----|--|
| | | Fig 37. Waste on the streets of Johannesburg. |
| | | Fig 38. Waste strewn around the site. |
| | 022 | Fig 39. Analysis of solid waste (An analysis of waste water in Johannesburg, 2000) |
| Noise | 023 | Fig 40. Noise impact (SABS 0130) (van Zyl, 1999:2-5) |
| Conservation | 024 | Fig 41. Environmental conservation (An analysis of environmental conservation in Johannesburg, 2000) |
| | | Fig 42. Built environment conservation (An analysis of environment conservation in Johannesburg, 2000) |
| Social services | 025 | Fig 43. Social services (Bambanani Consortium, 2001) |
| Engineering infrastructure, roads, water | 026 | Fig 44. Water provision (Bambanani Consortium, 2001) |
| Sanitation, electricity, waste management | 027 | Fig 45. Electricity supply (Bambanani Consortium, 2001) |
| Transport, bus services | 028 | Fig 46. Bus services (Bambanani Consortium, 2001) |
| Minibus-taxi services | 029 | Fig 47. Minibus-taxi services (Bambanani Consortium, 2001) |
| Conclusion from macro-analysis | 030 | |
| Existing frameworks | | |
| Newtown Urban Design Framework | 031 | Fig 48. The Newtown Urban Design Framework (GAPP Architects and Urban Designers, 2001) |
| The Newtown Cultural Precinct Urban Design Plan | 032 | Fig 49. The Newtown Urban Design framework: site location (GAPP Architects and Urban Designers, 2001) Fig 50. The Newtown Cultural Precinct Plan: study area (GAPP Architects and Urban Designers, 2001) |
| | | Fig 51. Sub-zones of the study area (GAPP Architects and Urban Designers, 2001) |
| The Precinct Plan concept | 033 | Fig 52. The Precinct Plan concept (GAPP Architects and Urban Designers, 2001) Fig 53. The model showing the urban design guidelines of The Precinct Plan concept. |
| The Precinct Plan vision | 035 | Fig 54. The Precinct Plan vision (GAPP Architects and Urban Designers, 2001) |
| Land use activity | 036 | Fig 55. Land use activity (GAPP Architects and Urban Designers, 2001) |
| Built form directives | 037 | Fig 56. Built form directives (GAPP Architects and Urban Designers, 2001) |
| Movement | 038 | Fig 57. Movement (GAPP Architects and Urban Designers, 2001) |
| Urban space and landscape | 039 | Fig 58. Urban space and landscape (GAPP Architects and Urban Designers, 2001) |
| Parking | 040 | Fig 59. Short term parking (GAPP Architects and Urban Designers, 2001) Fig 60. Long term parking (GAPP Architects and Urban Designers, 2001) |
| Development Design Guidelines | 042 | |
| Site analysis | | |
| Site location | 043 | Fig 61. View to CBD towards the east. Fig 62. View to CBD towards the east. Fig 63. View to CBD towards the west. Fig 64. Site location (Graham, 1996:107) |
| Neighbouring features | 044 | Fig 65. Neighbouring features. Fig 66. Neighbouring features. |
| Turbine Hall | 046 | Fig 67. The Turbine Hall. Fig 68. Renovated interior of the Turbine Hall. Fig 69. View to Turbine Hall from the pedestrian bridge. Fig 70. Music festival held at the Turbine Hall (Garson, 2002) Fig 71. View to Turbine Hall from West Street. |
| Horror Café, South African Breweries Museum, Electric Workshop, the Dance Factory | 048 | Fig. 72. The Horror Café. Fig 73. South African Breweries Museum. Fig 74. The Electric Workshop (Preparations for the exhibition at the Electric Workshop, 1997) |
| Mary Fitzgerald Square, Newtown Music Centre | 049 | Fig 75. The Dance Factory. Fig 76. Mary Fitzgerald Square |

| | | |
|--|-----|--|
| Museum Africa, Market Theatre | 050 | Fig 78. The Market Theatre Precinct Fig 79. The Market Theatre (Market Theatre,, 2002) |
| Nelson Mandela Bridge | 051 | Fig 80. Unveiling of the model of the Nelson Mandela Bridge (Nelson Mandela Bridge, 2002) Fig 81. A news article in Rapport on the Nelson Mandela Bridge (Eybers, 2003:) Fig 82. The M1-Carr Street interchange. |
| Metro Mall, new housing development | 052 | Fig 83. The Metro Mall during construction (Thale, 2002) Fig 84. Colourful murials at the Metro Mall (Majavu, 2002) Fig 85. The new housing development (Housing Development, 2002) |
| Views | 053 | Fig 86. View towards the east. Fig 87. Location of viewpoints. Fig 88. View up into Kerk Street. Fig 89. View towards the south-west. Fig 90. Location of viewpoints. Fig 91. View south into West Street. Fig 92. View to east across plaza. Fig 93. Location of viewpoints. Fig 94. View to north-east up in West Street. Fig 95. View to west across plaza. Fig 96. Location of viewpoints. |
| Topography | 057 | Fig 97. Square metre area of the site. Fig 98. Site falls with slope of 1.8 towards the west. Fig 99. Site sections. |
| Macro-climate | 058 | Fig 100. Statistics on temperatures and rainfall in Johannesburg, 2002 (South African Weather Services: average climate statistics for Johannesburg, 2002) |
| Micro-climate | 059 | Fig 101. Site climate. |
| Sun angles and shading | 060 | Fig 102. Shade on 21 December, 08:00. Fig 103. Shade on 21 December, 12:00 Fig 104. Shade on 21 December, 16:00. Fig 105. Solar times, azimuth and altitudes of Johannesburg (Napier, 2000:4.10) Fig 106. Shade on 21 June, 08:00. Fig 107. Shade on 21 June, 12:00 Fig 108. Shade on 21 June, 16:00. Fig 109. Solar times, azimuth and altitudes of Johannesburg (Napier, 2000:4.10) |
| Urban design guidelines | 062 | Fig 110. Urban design guidelines |
| Movement | 063 | Fig 111. Pedestrian barrier. Fig 112. Movement |
| Precedent studies: Cato Manor Development Project, Durban, 1994. | 064 | Fig 113. The Cato Manor development (Cato Manor Development Project, 2002) Fig 114. Participants in a course for emerging entrepreneurs (CMDA Status Report 2000, 2002) Fig 115. Cato Manor (CMDA Status Report 2000, 2002) Fig 116. The Cato Manor development (Cato Manor Development Project, 2002) Fig 117. Plan of the multi-functional centre (Kaplan, 2000:5) Fig 118. Section through the multi-functional centre (Kaplan, 2000:5) Fig 119. Public buildings: the Wiggins-Umkhumbane multi-purpose centre (Kaplan, 2000:5) Fig 120. The Bellair Market and Urban Park (Kaplan, 2000:7) Fig 121. The Bellair Market (Kaplan, 2000:7) Fig 122. Public buildings: the Bellair Centre (Kaplan, 2000:7) Fig 123. The school has outside teaching spaces provided with seating and a |

| | | |
|--|-----|---|
| | | chalk board wall (Kaplan, 2000:5) |
| | | Fig 124. Section through the tavern and courtyard (Kaplan, 2000:6) |
| | | Fig 125. The small to medium sized trading units (Kaplan, 2000:6) |
| | | Fig 126. Ground floor plan of the Bellair Centre (Kaplan, 2000:7) |
| | | Fig 126. Plan of the housing units (Kaplan, 2000:10) |
| | | Fig 128. Section of the housing units (Kaplan, 2000:11) |
| | | Fig 129. Social housing in Shayamaya Road (Kaplan, 2000:11) |
| The Dance Factory, Newtown. | 069 | Fig 130. The Dance Factory. Fig 131. Informal seating. Fig 132. Colourful entrance to the building. Fig 133. Dressing rooms. Fig 134. The stage area. Fig 135. Renovation of the old warehouse. Fig 136. The spacious dance studios. Fig 137. The brick wall functions as part of the scenery. Fig 138. The backstage area. Fig 139. The lighting bridges for stage lighting. |
| African Craft Market, Rosebank. | 071 | Fig 140. Stairs leading to shops on first floor and balustrade with flowing pattern. Fig 141. Exposed air conditioning services. Fig 142. Visual rhythm of wall and glass. Fig 143. Access to shops on first floor. Fig 144. Internal pedestrian arcade. |
| The Kuppersmuhle, Duisburg, Germany. | 072 | Fig 145. The Kuppersmuhle in the Duisburg harbour (Richters, 1999:66) Fig 146. Interior of the new stair case (Richters, 1999:69) Fig 147. The imposing bulk of the Kuppersmuhle (Richters, 1999:66) Fig 148. The new stair case from outside (Richters, 1999:66) |
| The Markant Theatre, Uden, Netherlands | 073 | Fig 149. The entrance of the Markant Theatre with its signpost (Ryan, 1999:55) Fig 150. Light pours into the foyer through the huge sloping glass wall (Ryan, 1999:57) Fig 151. Entrance to the Markant Theatre (Ryan, 1999:55) |
| Norwich on Main, Cape Town. | 074 | Fig 152. West elevation (Grundling, 1999:14) Fig 153. The corner is celebrated by the clip-on steel and timber balcony and stairs leading to a lower courtyard (Grundling, 1999:13) Fig 154. Articulation of the facade (Grundling, 1999:16) Fig 155. Night shot of the building (Grundling, 1999:12) Fig 156. Norwich: ground floor plan (Grundling, 1999:15) Fig 157. Norwich: first floor plan (Grundling, 1999:15) Fig 158. Perspective sketches of the building (Grundling, 1999:14) Fig 159. Stairs leading from Main Road to courtyard (Grundling, 1999:14) Fig 160. The piazza (Grundling, 1999:17) Fig 161. Detail of balcony overlooking the piazza (Grundling, 1999:17) Fig 162. East elevation (Grundling, 1999:14) |
| A social precedent: the Dance for All Programme. | 76 | Fig 163. Dancers from Dance for All. (Lund, 2002:66) Fig 164. Dance change young lives in townships (Lund, 2002:67) Fig 165. Dance is a ticket out of abject poverty (Lund, 2002:65) Fig 166. Philip Boyd and his fellow instructors (Lund, 2002:64) |
| Design development First concept, hierarchy of space | 78 | Fig 167. Definition of the facade into zones. Fig 168. Concept development with the use of axes and spatial rhythms. Fig 169. The public and private zones divided by the main axis. Fig 170. First concept: the northern facade. Fig 171. Relation between different functions in the building. Fig 172. Perspective showing the first concept of the building. |

| | | |
|---|-----|--|
| | | Fig. 173. First concept: sketch plan development. Fig. 174. Corner of Jeppe and West Street. Fig. 175. The ramp giving access to the building from the square and the amphitheatre. |
| The second concept, development of the site | 082 | Fig 176. Site development. Fig 177. The second concept: activities in the building and their relationships. Fig 178. Ground floor plan. Fig 179. First floor plan. Fig 180. Second and third floor plans. Fig 181. The second concept model. Fig 182. Informal trading spaces along West Street. Fig 183. Structure of the second concept of the building. Fig 184. Northern facade. Fig 185. Amphitheatre and outside stage. Fig 186. Two entrances and the central foyer. Fig 187. Southern facade. |
| The final concept, accessibility | 086 | Fig 188. New north-south orientation of the performance space. Fig 189. The outside stage creates a different performance environment. Fig 190. Final concept: sketch plan development. |
| Development of the section | 087 | Fig 191. Development of the section. Fig 192. Development of the eastern elevation. Fig 193. Development of the section. Fig 194. Development of the section. Fig 195. Three-dimensional development of the final concept. |
| Development of details | 091 | Fig 196. Concept drawing of the panels. Fig 197. Location of the panels. Fig 198. Rotating system with wheels. Fig 199. Movable acoustic panel. Fig 200. Concept sketches of the roof light. |
| Reflecting context in the details, historical context | 093 | Fig 201. The broken windows of the Turbine Hall. Fig 202. The 1:1.5 ratio of the windows. Fig 203. Sound-absorptive screen. |
| Reflecting context in the detail, visual art for urban regeneration | 094 | Fig 204. The Turbine Hall dressed in canvas. (Ludman, 2003) Fig 205. Art works displayed on buildings in the city. (Ludman, 2003) Fig 206. Glass panels with images. Fig 207. Glass panels with images. Fig 208. Glass panels: details. Fig 209. Section through glass panel. Fig 210. Concept sketch of sound-absorptive screen. Fig 211. Sound-absorptive screen. Fig 212. Concept sketch of balustrade. Fig 213. Steel balustrade. Fig 214. Balustrade: details. |
| Baseline document & technical report | | |
| Introduction | 098 | Fig. 215. Section of the building showing natural ventilation through the stack effect. Fig 216. Structure of the section of a leave to show oxygen and carbon dioxide flow. A building should also regulate the internal environment across the building envelope. |
| SOCIAL ISSUES | | |
| Occupant comfort | 100 | Fig 217. With solar radiation during winter and adequate ventilation during summer comfortable temperatures can be achieved. Fig 218. Psychometric chart during summer. Fig 219. Psychometric chart during winter. |

| | | |
|-------------------------------------|-----|---|
| Natural lighting | 104 | Fig 220. Indirect sunlight must be avoided during summer to prevent heat gain. Fig 221. During winter direct sunlight must be admitted to interior spaces for direct heat gain. Fig 222. Natural lighting. Fig 223. Roof light. Fig 224. Light through roof light to circulation space for dressing room. Fig 225. The use of natural light in the building. |
| Artificial lighting | 108 | Fig 226. Fluorescent lights compared to incandescent bulbs. |
| Stage lighting | 109 | Fig 227. A lantern light which will be mounted on the lighting bridge grid. Fig 228. Lighting bridge grid. |
| Ventilation | 111 | Fig 229. Ventilation chimneys used for ventilation. Fig 230. Natural cross ventilation and stack ventilation with chimneys. Fig 231. Natural cross ventilation and stack ventilation with chimneys. Fig 232. Natural cross ventilation and stack ventilation with chimneys. |
| Noise | 117 | Fig 233. Linear noise sources. Fig 234. Sound absorptive materials. Fig 235. Noise absorptive screen. Fig 236. Performance space insulated against external noise. |
| Views | 122 | Fig 237. View out unto Jeppe Street from balconies. Fig 238. Amphitheatre space as transitional link between interior of building and public square. Fig 239. Views. Fig 240. View out unto Turbine Square from coffee shop. |
| Access to green outside | | |
| Inclusive environments | | |
| Public transport | | |
| Routes | 124 | |
| Changes in level | 124 | |
| Edges | 124 | |
| Toilets | 124 | Fig 241. Ramps, lifts and toilets. |
| Access to facilities | | |
| Banking | 125 | |
| Retail | 125 | |
| Communication | 125 | |
| Residential | 125 | Fig 242. Retail, informal trading and Internet café. |
| Participation and control | | |
| Environmental control | 126 | |
| User adaption | 126 | |
| Social spaces | 126 | |
| Community involvement | 126 | Fig 243. User adaption and communal facilities. |
| Education, health and safety | | |
| Health | 127 | |
| Education | 128 | Fig 244. Education programmes for a sustainable future. |
| Safety of the public environment | 129 | Fig 245. Life expectancy of citizens of Johannesburg: 1995 - 2010. |
| Safety of the building | 130 | |
| Fire protection | 130 | |
| Smoking | 130 | |
| ENVIRONMENTAL ISSUES | | |
| Energy | 131 | Fig 247. Function and energy consumption of a building. Fig 248. Relationship between energy consumption and number of storeys. |
| Heating and cooling systems | 133 | Fig 249. Design lowers th energy cost. |
| Ventilation system | 134 | Fig 250. We are running out of energy resources. |
| Location | 135 | Fig 251. We all have a responsibility to save energy. |
| Appliances and fittings | 135 | Fig 252. Waste management. |
| Recycle and reuse | 137 | Fig 253. Waste management. |

| | | |
|--|-----|---|
| Inorganic and organic waste | 136 | |
| Sewerage | 137 | |
| Construction waste | 137 | |
| Site | | |
| Brownfield site | 139 | Fig 254. The site does not serve any purpose at the moment. |
| Neighbouring buildings | 139 | |
| Vegetation | 139 | |
| Materials and components | | |
| Embodied energy | 140 | Fig 255. Embodied energy of materials. |
| Manufacturing processes | 140 | Fig 256. Embodied energy and recycling. |
| Recycled and reused materials and components | 141 | |
| Water | | |
| Rain water | 141 | Fig 257. Rain water harvesting. |
| ECONOMIC ISSUES | | |
| Economic profile of Johannesburg | 143 | Fig 258. Economic profile of Johannesburg. |
| The cost of a building | 145 | Fig 259. Poverty in Johannesburg. Fig 260. The living standards of Johannesburg's citizens must be improved. |
| Local economy | | |
| Local contractors | 146 | Fig 261. Local small businesses must be supported. |
| Local building material supply | 147 | Fig 262. Development of the local economy. |
| Local component manufacturers | 147 | |
| Repairs and maintenance | 147 | |
| Efficiency of use | | |
| Usable space | 148 | |
| Occupancy | 148 | |
| Adaptability and flexibility | | |
| Vertical dimension | 151 | Fig 263. Bleacher seating. |
| Internal partitions | 151 | Fig 264. Bleacher seating. |
| Services | 151 | Fig 265. Bleacher seating. |
| Ongoing costs | | |
| Maintenance | 151 | |
| Cleaning | 151 | |
| Security and care taking | 151 | |
| Insurance, water, energy and sewerage. | 151 | |
| Disruption and "down time" | 152 | |
| Capital costs | | |
| Consultant fees | 153 | |
| Build-ability | 153 | Fig 266. Capital costs and ongoing costs. |
| Construction | 154 | Fig 267. Stages in the life of a building. |
| Sharing arrangements | 154 | |
| Working drawings | | |
| List of referred works | | |