RESOURCES CONSULTED


Interview by author, 16 March 2010.


Sebastian, J. 2010. Hugon Kowalski Sudanese water tower  


Internet: http://www.sacities.net/cities/tshwane.htm Retrieved 10 March 2010


Wennett, R. 2010. 1111 Lincoln Road.  
CHAPTER 1

[Figure 1.1] Cover page: francis Dallegret, Active art appreciation.
Internet: flickr.com/photos/4368206@N00/1669121076/

[Figure 1.2] Sky scape, a vertical exursion of the street.
Digital image by Author, 5 October 2010. __ p.5

[Figure 1.3] Potential farm A photographic essay on the Karoo.
Internet: http://purl.org/dc/elements/1.1/
Retrieved: 5 July 2010 __ p.12

[Figure 1.4] Holding hands, interconnected cycles serving numerous central cores.
Digital image by Author, 29 April 2010. __ p.18

[Figure 1.5] The Infrastructure inspired by Plug in City by Archigram.
Sketch by Author, 8 March 2010. __ p.20

[Figure 1.6] Field of dreams the memory project 1921. Len Colp.
Retrieved: 8 March 2010. __ p.21

[Figure 1.7] Research process of thesis investigation.
Sketch by Author, 8 March 2010. __ p.22

CHAPTER 2

[Figure 2.1] The Infra-Landscape.
Sketch by Author, 12 February 2010. __ p.27

[Figure 2.2] Urban Digestion.
Sketch by Author, 12 February 2010. __ p.30

[Figure 2.3] The Anti-sprawl.
Digital image by Author, 29 April 2010. __ p.31

[Figure 2.4] The Infra-tower.
Sketch by Author, 5 February 2010. __ p.32

[Figure 2.5] Host Growth. Illustration of how the infratecture is imposed on all city blocks to create a self sustaining city.
Sketch by Author, 10 February 2010. __ p.34

[Figure 2.6] Infrastructures of the urban environment.
Text illustration by Author, 6 March 2010. __ p.37

[Figure 2.7] Serve City, Archigram, 1962.
Retrieved: 29 April 2010. __ p.38

[Figure 2.8] Tshwane service area.
Digital image by Author, 2 April 2010. __ p.39

[Figure 2.9] Tshwane Metro Municipality water supply map.
Digital image by Author, 29 April 2010. __ p.40

[Figure 2.10] Tshwane Metro Municipal Sewage service area.
Digital image by Author, 29 April 2010. __ p.42

[Figure 2.11] Tshwane Metro Municipal Electrical service area.
Digital image by Author, 29 April 2010. __ p.44

[Figure 2.12] Tshwane Metro Municipal Waste removal service area.
Digital image by Author, 29 April 2010. __ p.46

[Figure 2.13] Retro-fitting Pretoria towards sustainability.
Digital image by Author, 29 April 2010. __ p.48

[Figure 2.14] Deep Machine.
Digital image by Author, 29 April 2010. __ p.50

[Figure 2.15] System cycling and connecting.
Digital image by Author, 29 April 2010. __ p.51

[Figure 2.16] François Dallegret, Cosmic Opera Suite,1962. __ p.52

CHAPTER 3

[Figure 3.1] Global to local setting.
Digital image by Author, 29 April 2010. __ p.53

[Figure 3.2] Optimal intervention area - Heritage Field Academy __ p.60

[Figure 3.3] Densely built up fabric.
Digital image by Author, 29 April 2010. __ p.61

[Figure 3.4] Aged Contributing fabric.
Digital image by Author, 29 April 2010. __ p.62

[Figure 3.5] Data overlay.
Digital image by Author, 29 April 2010. __ p.63

[Figure 3.6] Highest concentration of data overlay.
Digital image by Author, 29 April 2010. __ p.64

[Figure 3.7] Chosen site .
Digital image by Author, 29 April 2010. __ p.65

[Figure 3.8] Aerial photo of chosen site.
Digital image edited from Google earth by Author, 14 March 2010. __ p.66

[Figure 3.9] 3D Views of site in city context.
Digital image by Author, 29 April 2010. __ p.67

[Figure 3.10] Aerial Photo of site.
Google Earth. __ p.68

[Figure 3.11] View of Queen street in the early afternoon.
Photograph by Author, 10 March 2010. __ p.71

[Figure 3.12] View of the Bank of the Netherlands, corner of Church- and Andries Street.
Photograph by Author, 10 March 2010. __ p.71

[Figure 3.13] View of Queen Street Mosque.
Photograph by Author, 10 March 2010. __ p.71

[Figure 3.14] Significant places key.
Digital image by Author, 3 April 2010. __ p.71

[Figure 3.15] View of Grossberg Traders.
Photograph by Author, 10 March 2010. __ p.71

[Figure 3.16] View of Wanjacheng.
Photograph by Author, 10 March 2010. __ p.71

[Figure 3.17] François Dallegret, Relation-public-omatic,1963. __ p.53

[Figure 2.17] Feats.
Digital image by Author, 29 April 2010. __ p.54

[Figure 2.18] General overview of the basic processes involved in the research and findings.
CHAPTER 4
[Figure 4.1] Membrane bio-reactor process diagram.
Sketch by Author, 22 March 2010. _ p.106
[Figure 4.2] Wock Oliver model VOK MBR 2.5m X 2m X 2.2m, will be suitable for on site needs.
[Figure 4.4] Recycle waste management system in basement.
Sketch by Author, 8 June 2010. _ p.107
[Figure 4.5] MBR under Queen street with excluded process.
Sketch by Author, 5 March 2010. _ p.107
[Figure 4.5] Vertical earthworm composting process.
Sketch by Author, 3 June 2010. _ p.108
[Figure 4.6] Route between buildings where digesters can be placed.
Sketch by Author, 3 June 2010. _ p.108
[Figure 4.8] Digester on different levels connected to each other.
Sketch by Author, 3 June 2010. _ p.109
[Figure 4.7] Section through the ‘Digester balustrade bin’.
Sketch by Author, 3 June 2010. _ p.109

CHAPTER 5
[Figure 5.1] Concept generator diagram.
Sketch by Author, 27 June 2010. _ p.137
[Figure 5.2] Abstract central host, placed in context model.
Digital edited photograph by Author, 27 June 2010. _ p.138
[Figure 5.3] Plan (n.t.s) of central host structure in context, connected to the existing fabric.
Sketch by Author, 27 June 2010. _ p.139
[Figure 5.4] Perspective of central host, connected to existing fabric.
Sketch by Author, 27 June 2010. _ p.139
[Figure 5.5] New skin placed over context model.
Digital edited photograph by Author, 27 June 2010. _ p.140
[Figure 5.7] Perspective of ‘New skin’ wrapped across, over and around context.
Sketch by Author, 27 June 2010. _ p.141
[Figure 5.6] Plan (n.t.s) of “New skin” wrapping over the context.
Sketch by Author, 27 June 2010. _ p.141
[Figure 5.8] The web, strung between context structures in model.
Digital edited photograph by Author, 27 June 2010. _ p.142
[Figure 5.10] Section (n.t.s) of spun structure connecting horizontal and vertical planes.
Sketch by Author, 27 June 2010. _ p.143
[Figure 5.9] Plan (n.t.s) of spun structure, nested in-between context.
Sketch by Author, 27 June 2010. _ p.143
[Figure 5.12] Section (n.t.s) of weaving programme systems making new horizontal and vertical connections.
Sketch by Author, 27 June 2010. _ p.145
[Figure 5.11] Plan (n.t.s) of the weave connecting core functions via programme, planes and circulation.
Sketch by Author, 27 June 2010. _ p.145
[Figure 5.13] Abstract representation of woven planes and systems weaving the context together as a whole.
Sketch by Author, 30 June 2010. _ p.147

CHAPTER 6
[Figure 6.1] Urban scale intervention, the experiential field sparked by ‘host’ interventions in block cores all over the city.
Sketch by Author, 11 July 2010. _ p.151
[Figure 6.2] Aerial photo of block, yellow highlighted block core as focus area.
Digital image retrieved from google earth, edited by Author, 11 July 2010. _ p.151
[Figure 6.3] Block plan depicting constraints and opportunities of existing structures.
Digital image retrieved from Google earth, edited by Author, 16 July 2010. _ p.152

references [11]
Aerial photo showing existing Mosque and proposed Mosque with connection axis. Sketch by Author, 13 July 2010.  p.158

Figure 6_4


Figure 6_5

Block aerial photo of intervention’s proposed circulation routes through site. Digital image retrieved from Google earth, edited by Author, 16 July 2010.  p.155

Figure 6_6

Block aerial photo illustrating new proposed public space. Digital image retrieved from Google earth, edited by Author, 16 July 2010.  p.156

Figure 6_7

Clear overhead vertical space over Queen street axis. Sketch by Author, 10 July 2010.  p.157

Figure 6_8

Proposed block framework from which intervention will sprout. Sketch by Author, 13 July 2010.  p.158

Figure 6_9


Figure 6_10

Water movement between user, nature and system. Sketch by Author, 16 July 2010.  p.161

Figure 6_11

Water tank structural brace system. Sketch by Author, 16 July 2010.  p.161

Figure 6_12

Water tank placement. Sketch by Author, 16 July 2010.  p.161

Figure 6_13

Diagram illustrating solar screen wrapping over intervention’s Northern face. Sketch by Author, 20 July 2010.  p.162

Figure 6_14

Solar screens divided into vertical strips. Sketch by Author, 20 July 2010.  p.163

Figure 6_15

Photo collage illustrating the presence of energy in different spaces and applications. Collage by Author, 20 July 2010.  p.163

Figure 6_16

Current conventional urban sewer services system. Sketch by Author, 20 July 2010.  p.164

Figure 6_17

Proposed MBR positioning and extraction of system components to frame Queen street. Sketch by Author, 20 July 2010.  p.164

Figure 6_18

Conventional urban waste removal system. Sketch by Author, 20 July 2010.  p.165

Figure 6_19

Organic digesters on circulation routes. Sketch by Author, 24 July 2010.  p.165

Figure 6_20

‘Framing’ ramp systems going around central area. Sketch by Author, 24 July 2010.  p.166

Figure 6_21


Figure 6_22


Figure 6_23

The sky street, a vertical extension of the horizontal landscape in-between the existing fabric. Digital image by Author, 27 July 2010.  p.167

Figure 6_24

Summarising diagram of the space making system elements in intervention. Sketch by Author, 29 July 2010.  p.169

Figure 6_25

Space making assembly, systems organised around a central space. Sketch by Author, 29 July 2010.  p.169

Figure 6_26


Figure 6_27

Connecting new and old planes via staggered ‘reaching and pulling’ levels. Photo of model by Author, 3 August 2010.  p.170

Figure 6_28

Frame structure (exoskeleton/shell) enveloping a central space. Photo of model by Author, 3 August 2010.  p.170

Figure 6_29


Figure 6_30

Existing de Bruijn Park ramp becomes part of the intervention. Sketch by Author, 17 August 2010.  p.173

Figure 6_31

Initial design sketch collage. Sketches by Author, 11 August 2010.  p.174

Figure 6_32

Initial design sketch collage. Sketches by Author, 11 August 2010.  p.176

Figure 6_33

Initial design model development collage. Sketches by Author, 11 August 2010.  p.178

Figure 6_34


Figure 6_35

Layering of programmes on different floors. Photos of models, digitally edited by Author, 11 August 2010.  p.182

Figure 6_36

Location of different systems within design. Photos of models, digitally edited by Author, 11 August 2010.  p.184

Figure 6_37

Initial design placed in context model. Photos of models, digitally edited by Author, 11 August 2010.  p.186

Figure 6_38

Section through design illustrating the water tank scale and animated ground floor area. Sketch by Author, 15 August 2010.  p.188

Figure 6_39

Proposed fruit & vegetable market space in front of Shoprite Foods with new ramp next to Regent Place. Sketch by Author, 17 August 2010.  p.190

Figure 6_40

Arcade through old Wanjacheng structure creating a buffer between the square and mosque. Sketch by Author, 17 August 2010.  p.190

Figure 6_41

Concrete ramp with steel bracing extending over arcade with proposed cyclist parking on ground floor. Sketch by Author, 17 August 2010.  p.190

Figure 6_42

Basement recycling, storage and loading area with industrial lifts for goods being transported to serviced buildings. The basement serves the site systems above with a vertical ‘feed’ system. Sketch by Author, 17 August 2010.  p.191

Figure 6_43

North elevation of intervention within context: Vertical screen/roof structures wrap over the facade. Sketch by Author, 17 August 2010.  p.191

CHAPTER 7

Figure 7_1

A Structural Expressionism photo collage. Collage by Author, 5 September 2010.  p.197

Figure 7_2

de Bruyn Park, emphasized service core & window cladding. Photos and sketches by Author, 12 September 2010.  p.200

Figure 7_3

Sanlam Forum, staggered floors and thin strip windows. Photos and sketches by Author, 12 September 2010.  p.200

Figure 7_4

Shoprite Foods, prominent service towers. Photos and sketches by Author, 12 September 2010.  p.201

Figure 7_5

Regent Place, glass and steel structure. Photos and sketches by Author, 12 September 2010.  p.201

Figure 7_6


Figure 7_7


Figure 7_8


Figure 7_9


references [11]
CHAPTER 8

[Figure 8_1] Render image of north-south view down Queen street.
Digital image by Author, 24 October 2010. __ p.215

[Figure 8_2] Render image showing the connection between de Bruyn Park and the intervention via the pedestrian bridge and arcade.
Digital image by Author, 24 October 2010. __ p.215

[Figure 8_3] Render image of the public space framed by commercial activity and the arcade.
Digital image by Author, 24 October 2010. __ p.217

[Figure 8_4] Basement Plan showing existing basement parking, new proposed parking and new loading and storage area with entrance and exit paths.
Digital Image by Author, 24 September 2010. __ p.218

[Figure 8_5] Ground Floor Plan, showing proposed arcade, fruit and vegetable market, new commercial areas, the Ladies mosque and the new central square.
Digital Image by Author, 24 September 2010. __ p.220

[Figure 8_6] First Floor Plan, showing the existing de Bruyn Park entrance ramp connected to the intervention, also showing new proposed East-ramp and Bicycle parkade above the Wanjacheng structure.
Digital Image by Author, 24 September 2010. __ p.222

[Figure 8_7] Second Floor Plan showing the new ramp extension climbing over the commercial zone and around the public space below.
Digital Image by Author, 24 September 2010. __ p.224

[Figure 8_8] Third Floor Plan showing the Joule car sales rooms, the merge point of the two ramps on the eastern side, the public change rooms and the walkway connection to the Fikilem Towers pocket park.
Digital Image by Author, 24 September 2010. __ p.226

[Figure 8_9] Fourth Floor Plan showing the first parking floor with 15 parking bays.
Connection bridge to de Bruyn Park pocket park.
Digital Image by Author, 24 September 2010. __ p.228

[Figure 8_10] Fifth Floor Plan showing the second parking floor with 60 parking bays.
Sanlam Forum and de Bruyn Park east wing pocket parks with connection bridges.
Digital Image by Author, 24 September 2010. __ p.230

[Figure 8_11] Sixth Floor Plan, showing the third parking floor with 43 parking bays. Bank Towers, Libri Building, Navy House and Fatima Centre pocket parks with connection bridges.

[Figure 8_12] Seventh Floor Plan, showing the fourth parking floor with 30 parking bays.
Regend Place pocket park and connection bridge.
Digital Image by Author, 24 September 2010. __ p.234

[Figure 8_13] Eighth floor Plan, showing the caretaker’s apartment and the overnight staff quarters.
Digital Image by Author, 24 September 2010. __ p.236

[Figure 8_14] Showing roof screens wrapping over the northern facade, the Regend Place and Sanlam Forum pocket parks with connection bridges, the caretaker’s apartment, the Joule Car sales rooms with commercial zone and public square below and the loading basement below the square.
Digital Image by Author, 24 September 2010. __ p.238

[Figure 8_15] Showing the arcade stretching from Andries- to van der wall street, the light weight sky bridges over Queen street, water tank T1, the commercial zone on ground and first floor and the loading basement.
Digital Image by Author, 24 September 2010. __ p.240

[Figure 8_16] North elevation showing the roof-screen design. Because the building is weaved in between the existing fabric, the building as a whole (as shown in this elevation) will never be experienced as one big elevation but rather in portions and places.
Digital Image by Author, 24 September 2010. __ p.242

[Figure 8_17] North west perspective of basic design structure, showing columns, slabs, tanks, ramps and bridges.
Digital Image by Author, 24 September 2010. __ p.244

[Figure 8_18] Central square space in front of main circulation area and the book shop.
Three storey void above square space.
Digital Image by Author, 24 September 2010. __ p.252

[Figure 8_19] View from Mosque garden towards intervention showing ramp over the arcade and looking into the public square space in front of the book shop.
Digital Image by Author, 24 September 2010. __ p.253

[Figure 8_20] View down the arcade in front of Shoptite Foods and the fruit and vegetable market.
Digital Image by Author, 24 September 2010. __ p.254

[Figure 8_21] View down the arcade when coming out of de Bruyn Park in front of the Bakery.
Digital Image by Author, 24 September 2010. __ p.255

CHAPTER 9

[Figure 9_1] Tectonic intent.
Sketch by Author, 5 October 2010. __ p.258

[Figure 9_2] Existing buildings’ service and circulation cores.
Digital image by Author, 5 October 2010. __ p.259

[Figure 9_3] Existing municipal infrastructure around and on site.
Digital image by Author, 5 October 2010. __ p.259

[Figure 9_4] Hierarchy of structural elements in intervention.
Digital image by Author, 5 October 2010. __ p.260

[Figure 9_5] Structure exploration collage.
Sketches by Author, 5 October 2010. __ p.261

[Figure 9_6] ‘Energy planes’, solar panels and pv-panels.
Digital image by Author, 5 October 2010. __ p.262

[Figure 9_7] Three 400Kt tanks connected to specific roofs for collection and distribution.
Digital image by Author, 5 October 2010. __ p.264

[Figure 9_8] Basic water tank design and circulation system.
Sketch by Author, 5 October 2010. __ p.265

[Figure 9_9] Digester routes with ‘green screen’ system.
Digital Image by Author, 5 October 2010. __ p.266

[Figure 9_10] Central solid waste collection node.
Digital image by Author, 5 October 2010. __ p.267

[Figure 9_11] Sub-surface central MBR system with gravity feed connections.
Digital image by Author, 5 October 2010. __ p.268

[Figure 9_12] Basement circulation systems.
Digital Image by Author, 5 October 2010. __ p.268

[Figure 9_13] The second system is the pedestrian movement through and between the intervention and the surrounds.
Digital Image by Author, 10 October 2010. __ p.269

[Figure 9_14] The third system is the vehicular movement system feeding the upper floors with cars as well as bicycles.
Digital Image by Author, 10 October 2010. __ p.269

[Figure 9_15] Vertical zoning, section A-A.
Digital image by Author, 13 October 2010. __ p.271

references [11]
CHAPTER 10

[Figure 10.1] Integrated Infrastructure. Digital image by Author, 25 October 2010. _ p.308

[Figure 10.2] Green infrastructure of the future, small scale green spaces, pocket parks and open public spaces which are closer to the user and creates links in-between the larger scale green networks. Digital image by Author, 15 October 2010. _ p.310

[Figure 10.3] The urban outdoors. Digital image by Author, 25 October 2010. _ p.311