APPENDIX A
CASE STUDIES & PRECEDENTS

ILLUS. A.1: Entrance to Bloed Street Mall & Taxi Rank.

The projects investigated are:

- Bloed Street Mall and Taxi Rank
- Metro Mall transport Facility and Traders Market
- Skinner Street Taxi Rank
- Phillipi Public Transport Interchange

The projects relating to the transportation industry are compared and contrasted. The aspects investigated are:

- Plan
- Circulation
- Facilities provided
- Threshold between taxis and pedestrians

BLOED STREET MALL AND TAXI RANK

Pretoria CBD. 2008.
Retail Architects International Gauteng.

The Bloed Street Mall and Taxi Rank forms part of the 'We are enhancing Tshwane' project and combines transportation infrastructure with a commercial mall. This approach not only attracts extra users, but renders the project profitable to private investors. The architect describes it as a new archetype, a synergy of first and third world facilities

Project Specifics

No. of daily commuters:	25 000
Size of site:	50 000 m²
No. of taxis:	460
No. of traders:	60
Other:	Fitment centre, wash bays, formal retail

ILLUS. A.2: Metro Mall Transport Facility.

METRO MALL TRANSPORT FACILITY AND TRADERS MARKET

Johannesburg CBD. 2000.

Urban Solutions Architects and Urban Designers

Part of an urban renewal program of the inner city of Johannesburg. The development serves as gateway to the city and is one of the first public buildings designed for use by the taxi industry. The support of public mobility and the reinforcement and activation of street edges are important to the project.

150 000
26 000 m²
2 000
800
25 bus stops, formal retail

ILLUS. A.3: Philippi Public Transport Interchange.

PHILIPPI PUBLIC TRANSPORT INTERCHANGE

Philippi, Cape Town. 2001.

Du Toit and Perrin in association

The project called for the reinforcement of the public space around Philippi North Station instead of a completely new development. The community were included in the design process which resulted in two public squares. These squares form areas of opportunity for social interaction and remains adaptable for other uses.

30 000
14 000 m²
30
50
Shebeen

ILLUS. A.4: Skinner Street Taxi Rank.

SKINNER STREET TAXI RANK

Pretoria CBD. circa 2000.

Unknown

The Skinner Street Taxi Rank is located on the island of the very busy Skinner Street. This location enables quick and easy access to the site. Ficus trees create an intimate atmosphere and provides shade and shelter. Users of the space have appropriated the raised curbs between taxis lanes and use it for playing games, eating and socialising.

30 000
8 500 m²
120
20
Games

BLOED STREET MALL AND TAXI RANK

Pretoria CBD. 2008.

Retail Architects International Gauteng.

KEY

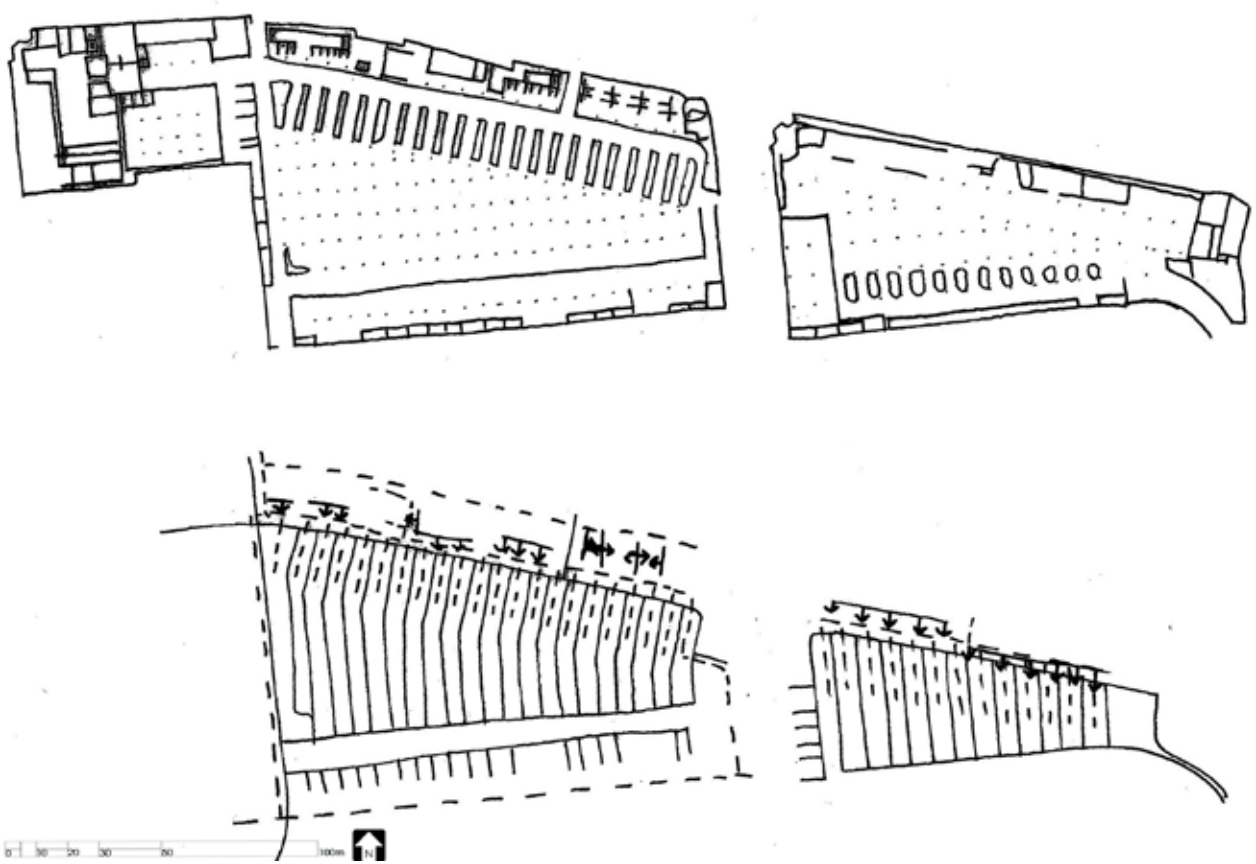
Informal trading

Pedestrian

Taxi

Key similarities of the various projects and trends observed will now be discussed.

ILLUS. A.5: Bloed Street Mall and Taxi Rank lower ground floor sketch plan and circulation plan.



A.1 PLAN

The plan refers to the functional layout of the site.

- Taxi ranking areas are placed in the centre of the site.
- As the project places stronger emphasis on a less formal functionality, the layout of the taxi rank is more responsive to vehicular flow and less dictated by the structure of the housing facility.

A.2 CIRCULATION

Circulation describes the movement of vehicles and pedestrians within the site.

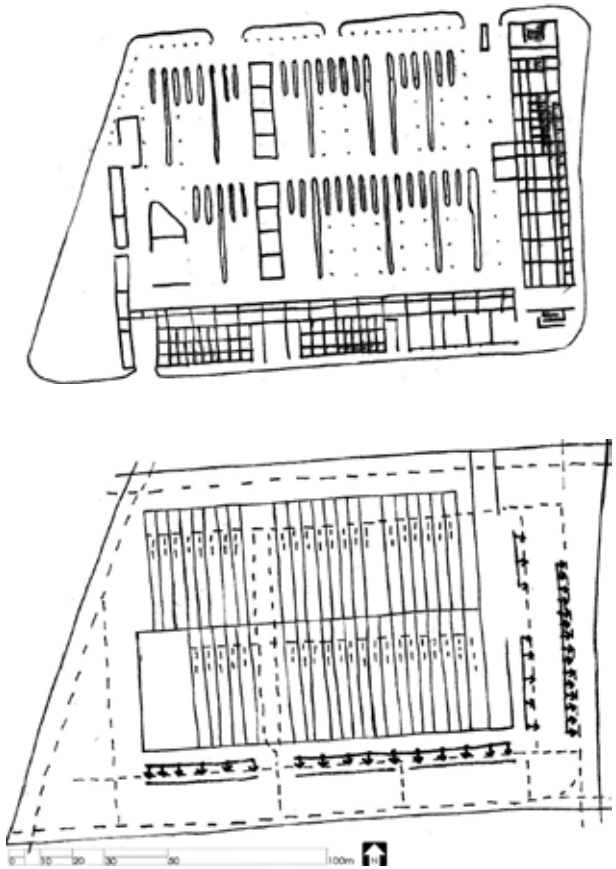
- Conflict arises where the circulation paths of taxis and pedestrians cross.
- Informal trading does not necessarily take place where intended by the designer, but rather coincides with areas of high pedestrian movement.

METRO MALL TRANSPORT FACILITY AND TRADERS MARKET

Johannesburg CBD. 2000.

Urban Solutions Architects and Urban Designers

ILLUS. A.6: Metro Mall Transport Facility and Traders Market ground floor sketch plan and circulation plan.

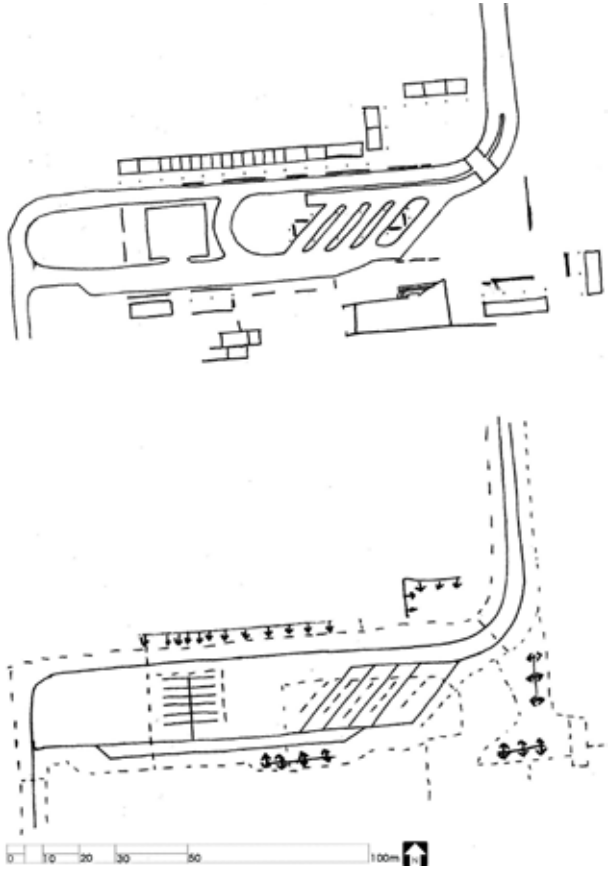


PHILIPPI PUBLIC TRANSPORT INTERCHANGE

Philippi, Cape Town. 2001.

Du Toit and Perrin in association

ILLUS. A.7: Philippi Public Transport Interchange site sketch plan and circulation plan.

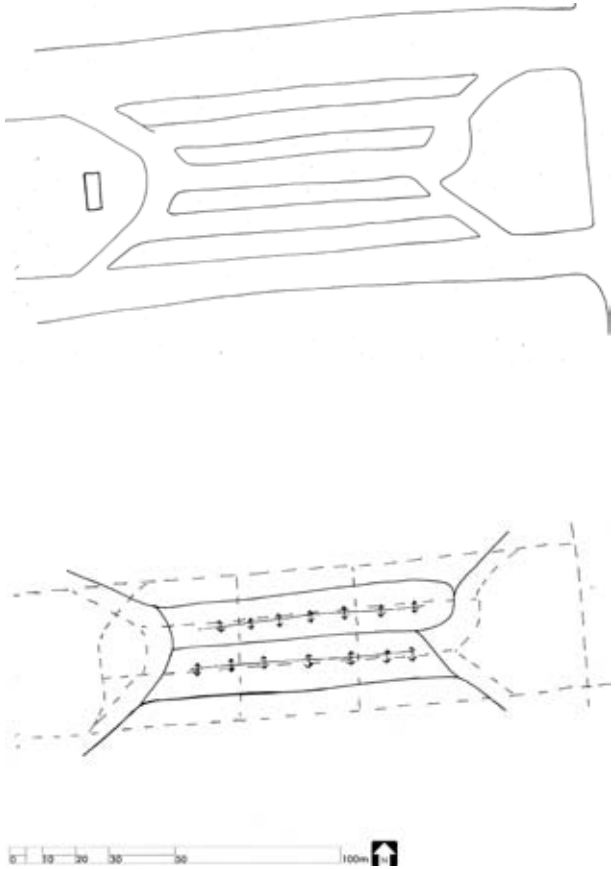


SKINNER STREET TAXI RANK

Pretoria CBD. circa 2000.

Unknown

ILLUS. A.8: Skinner Street Taxi Rank site sketch plan and circulation plan.

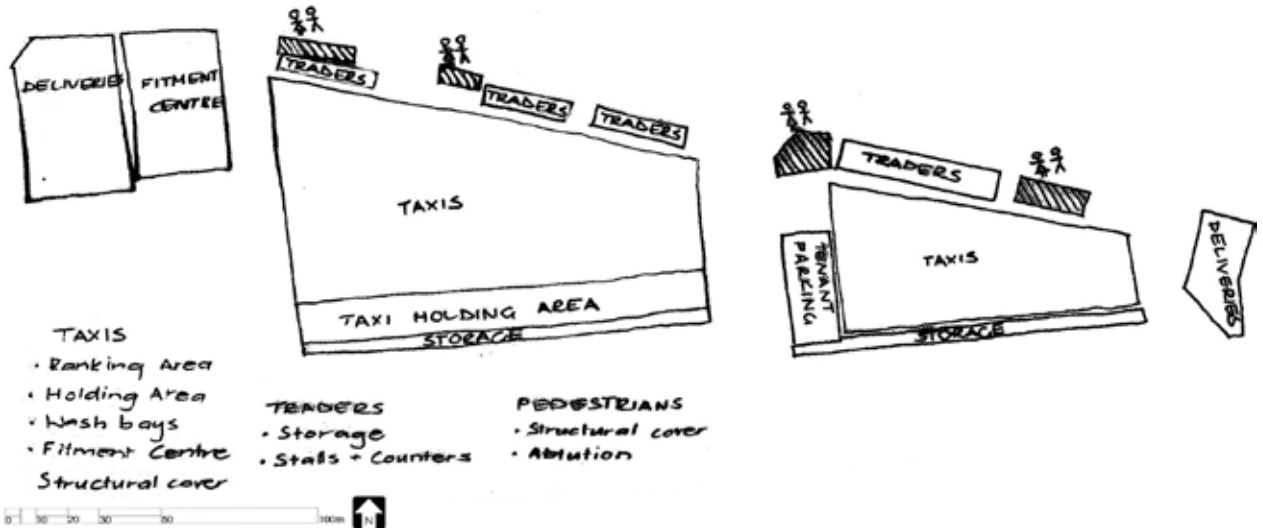


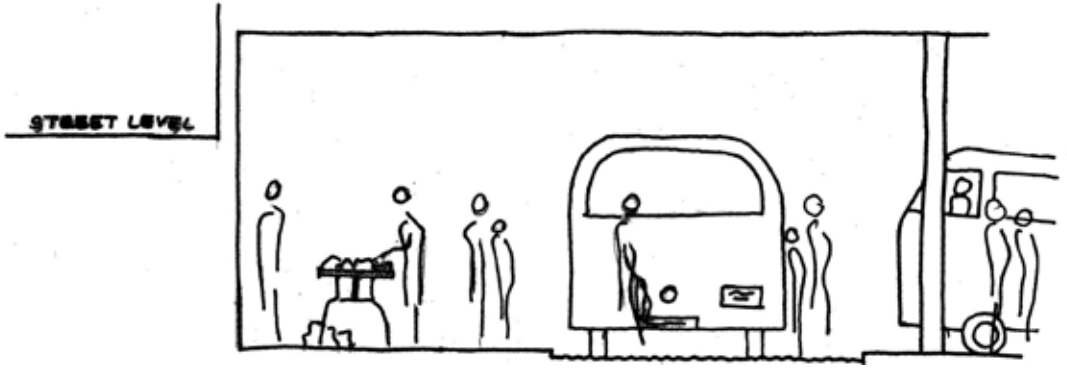
BLOED STREET MALL AND TAXI RANK

Pretoria CBD. 2008.

Retail Architects International Gauteng.

ILLUS. A.9: Facilities and section of interface at Bloed Street Mall and Taxi Rank.





A.3FACILITIES PROVIDED

This list covers the set of essential facilities and services.

- Taxi ranking areas
- Shelter (structural and trees)
- Wash bays
- Storage
- Surfaces for selling, seating, eating
- Ablution
- Food

A.4INTERFACE BETWEEN TAXIS AND PEDESTRIANS

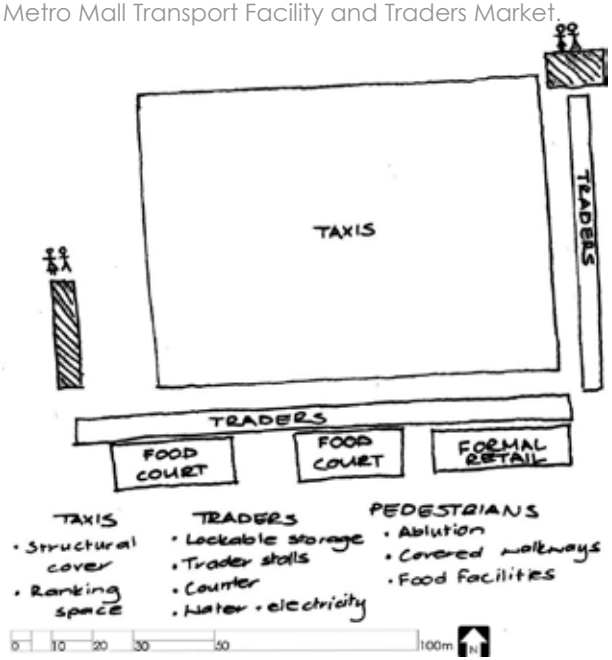
- Traders are present at the pedestrian/ vehicular interface.
- Safety of pedestrians should be taken into account
- Outdoor: Trees provide a pleasant environment for interaction and shelter.
- A high floor-to-ceiling- height is preferable.

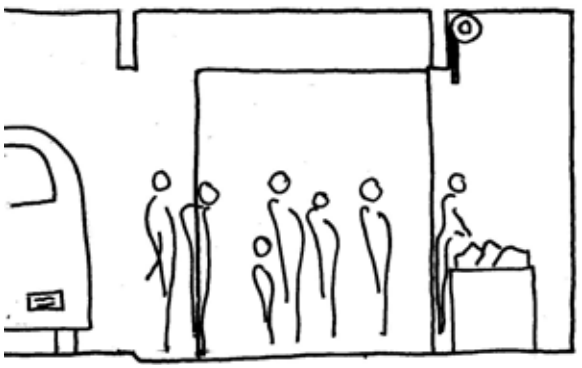
METRO MALL TRANSPORT FACILITY AND TRADERS MARKET

Johannesburg CBD. 2000.

Urban Solutions Architects and Urban Designers

ILLUS. A.10: Facilities and section of interface at Metro Mall Transport Facility and Traders Market.



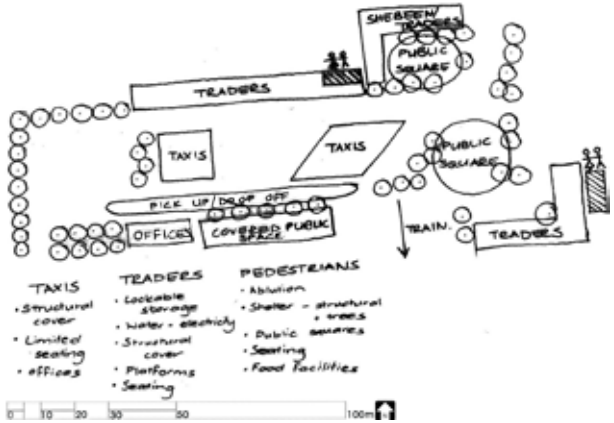


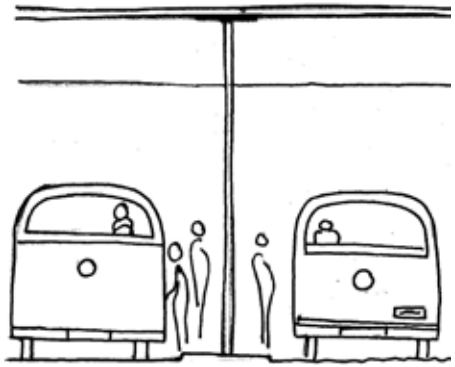
PHILIPPI PUBLIC TRANSPORT INTERCHANGE

Philippi, Cape Town. 2001.

Du Toit and Perrin in association

ILLUS. A.11: Facilities and section of interface at Philippi Public Transport Interchange.



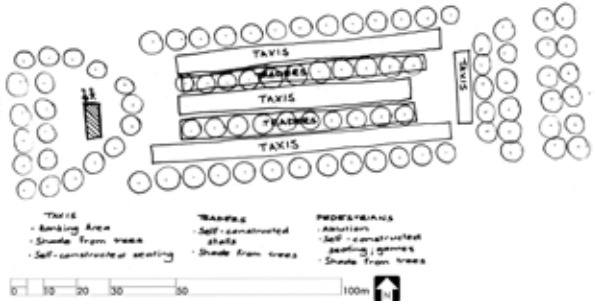


SKINNER STREET TAXI RANK

Pretoria CBD. circa 2000.

Unknown

ILLUS. A.12: Facilities and section of interface at Skinner Street Taxi Rank.



APPENDIX B
CALCULATIONS

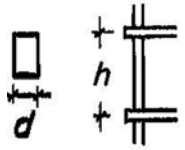
B.1 STRUCTURAL CALCULATIONS

according to Orton (1987: 30 - 54)

B.1.1 CONCRETE COLUMN

Cast-in-situ multistorey column
Height (h) = 4 - 9m
Depth (d) = 750mm
Typical h/d = 6 - 15

L/d = 9 000/750
= 12

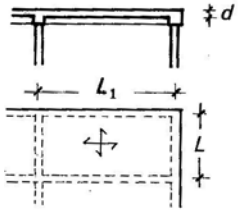


ILLUS. B.1: Illustration of structural column.

B.1.2 CONCRETE FLOOR

Reinforced two-way slab
Span (L) = 5 - 7.5m
Depth (d) = 255mm
Typical L/d = 28 - 35

L/d = 7 500/255
= 29



ILLUS. B.2: Illustration of reinforced two-way slab.

B.1.3 CONCRETE ROOF

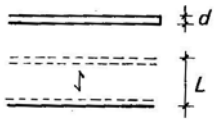
Reinforced one-way solid slab
Span (L) = 5 - 7.5m
Depth (d) = 315mm
Typical L/d = 20 - 30

L/d = 7 500/315
= 23

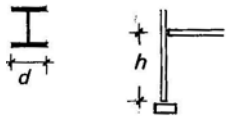
B.1.4 STEEL COLUMN

Single storey rolled steel of open section
Height (h) = 0.6 - 1m
Depth (d) = 165mm
Typical h/d = 20 - 25

L/d =1 000/165
= 6 - oversized
Element is oversized to adequately support other roof elements and adhere to design



ILLUS. B.3: Illustration of reinforced one-way solid slab.



ILLUS. B.4: Illustration of steel column.

principles.

B.1.5 STEEL ROOF

Wide flange rolled steel section

Span (L) = 9.25m; 15m; 1.5m

Depth (d) = 305mm; 600mm; 200mm

Typical h/d = 20 - 30

L/d = 9 250/305

= 30

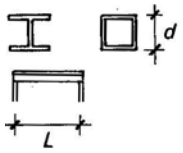
L/d = 15 000/600

= 25

L/d = 1540/200

= 7.7 - oversized

Element is oversized to adequately support other roof elements and adhere to design principles.



ILLUS. B.5: Illustration of steel roof.

B.2 WATER RUN-OFF AND SANITARY REQUIREMENT CALCULATIONS

B.2.1 Sanitary requirements

according to NBR SANS 0400

TABLE B.1: Sanitary requirements.

	Male			Female	
	WC	**U**	**WHB**	**WC**	**WHB**
PUBLIC AREAS - Table 7					
Population - 3 000	7	20	8	30	12
OFFICES – Table 6					
Population - 60	2	3	3	5	3

B.2.2 Rainwater budget

population 3000

wc = 3000 x 3ℓ (per flush)

= 9000ℓ per day

B.2.3 Water storage tank calculations

9000ℓ per day population 3000

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE MONTHLY RAIN (mm)	136	75	82	51	13	7	3	6	22	71	98	110
RUN-OFF (ℓ)	114 704	62 488	68 480	41 944	9 416	4 280	856	3 424	17 120	59 064	82 176	92 448
Vt (ℓ)	-164 296	-189 512	-210 520	-188 056	-269 584	-265 720	-278 144	-275 576	-252 880	-219 936	-187 824	186 552
DEMAND (ℓ)	279 000	252 000	279 000	270 000	279 000	270 000	279 000	279 000	270 000	279 000	270 000	279 000
OVERFLOW (ℓ)	0	0	0	0	0	0	0	0	0	0	0	0

TABLE B.2: Water storage tank calculations.

Maximum average rainfall per day = 114 704/31
= 3700ℓ

8 x 2500ℓ Jojo rainwater storage tanks
= 20 000ℓ
= 5 days max. av. rainfall per day
= 2 day water supply

ILLUS. B.6: 2 500ℓ Horizontal Jojo water storage tank.

APPENDIX C
VEGETATION

ILLUS. C.1: Erythrina Lysistemon.

ILLUS. C.2: Harpephyllum Caffrum.

TREE SPECIES		
NAME:	Erythrina Lysistemon (Coral tree)	Harpephyllum Caffrum (Wild plum)
HEIGHT:	8m	12m
DIAMETER:	8m	11m
SHAPE:	Round, open shape	Rectangular, dense shape
DECIDUOUS/EVERGREEN:	Deciduous	Evergreen
USE:	Medicinal	Lemonade, jam
OTHER:	Half hardy, full sun, aggressive root system	Wind hardy, half hardy, full sun to semi shade

ILLUS. C.3: Syzygium Cordatum.

ILLUS. C.4: Euclea Crispa subsp.

ILLUS. C.5: Heteropyxis Natalensis.

Syzygium Cordatum (Waterberry)
11m
8m
Round, dense shape
Evergreen
Jelly, liquor
Half hardy, full sun, aggressive root system

Euclea Crispa Subsp (Blue Guarri)
6m
5m
Round, dense shape with long trunk
Evergreen
Medicinal, edible fruit
Hardy, full sun

Heteropyxis Natalensis (Lavender Tree)
10m
8m
Round, dense shape
Deciduous
Medicinal
Half hardy

APPENDIX D
OTHER

D.1 NEWSPAPER ARTICLE

VERVOER IN SA IS NIE TOEGANKLIK GENOEG NIE (Pienaar, A. 2011).

Minstens 40% van Suid-Afrikaners sukkel om toegang te kry tot openbare vervoer omdat hulle fisiek gestrem is of in 'n lewenstadium is waar iets soos swangerskap hul beweeglikheid inperk.

Mnr. Jeremy Cronin, adjunkminister van vervoer, het gister by 'n kongres vir gestremdes in Sandton gesê sowat 2,4 miljoen passasiers op die land se openbare vervoerstelsel is gestrem, maar nog sowat 20 miljoen is beperk omdat hulle bejaard of swanger is of sukkel met stootwaentjies en kinders wat saam op busse en treine moet reis.

Cronin het gesê die Suid-Afrikaanse openbare vervoerstelsel is selfs vir nie-gestremdes duur en ontoeganklik.

Net sowat 31% van huishoudings het toegang tot 'n motor. Minstens 30% van huishoudings bestee 11% of meer van hul huishoudelike inkomste aan openbare vervoer en 18% bestee meer as 20%.

Cronin het voorts gesê 40% van die 14 000 mense wat jaarliks op die paaie sterf, is voetgangers.

Hy meen die manier hoe stede beplan is, is een van die oorsake vir die swak toegang wat veral gestremdes het tot openbare vervoer.

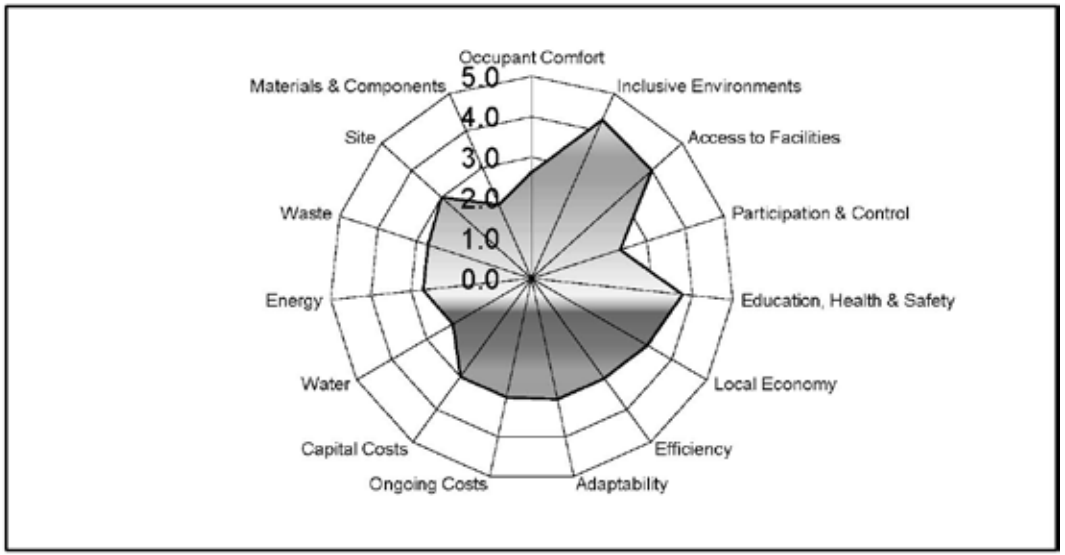
Volgens Cronin het die wit middelklas ver uit stede gestrek na veiligheidsdorpe en is afhanklik van motors en leef in winkelsentrums.

Ontwikkelaars het die uitbreiding gedryf pleks dat die regering dit met behoorlike stadsbeplanning bepaal het. Hy het gesê die gemiddelde reis op openbare vervoer in die Tshwane-streek is 25,4km lank. In Londen is dit 8.6km en in Moskou 7.7km,

D.2 SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT)

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Platform Building at Menlyn	Date:	Oct-11
Location:	Menlyn	Undertaken by:	Jané Pretorius
Building type:	Public	Company / organisation:	University of Pretoria
Internal area (m2):	10 000	Telephone:	Fax:
Number of users:	20 000 per day	Email:	



Social	3.4	Economic	3.1	Environmental	2.5
Overall	3.0	Classification	Good		

ILLUS. D.1: Results of SBAT applied to Platform Building.

D.3 MODEL

ILLUS. D.2: View from North East corner.

ILLUS. D.3: Southern side of model.

ILLUS. D.4: Approach from South.

ILLUS. D.5: Aerial view of model.