Figure 8.12 Light beacon (Author, 2016)

Figure 8.13 Outside Collaboration Spaces (Author, 2016)
Figure 8.17 Ground floor infrastructure skeleton  (Author, 2016)
Klip-Tite profile roll-formed in continuous lengths from Chromadek Z200 Dark-Dolphin 0.58mm ISQ 550 fixed to steel purlins using KL700 clips and class 3 fastener.

145mm thick Isotherm thermal insulation made from recycled PET bottles.

3mm mild steel gutter.

250x65x20x3mm cold formed steel lipped c channel purlin fixed to parallel chord A-frame at 1000mm centres.

2mm mild steel flashing.

14mm thick oriented strand board ceiling fixed to purlins.

40x15x3mm galvanized mild steel Mentis grating welded to 45x45x5mm galvanized mild steel angle.

40x15x3mm 100x75x20x3mm galvanized mild steel lipped channel bolted to reinforced concrete service trench wall with M8x42mm hex head galvanized mild steel bolts to engineer’s specification.

Galvanized mild steel Mentis grating welded to 45x45x5mm galvanized mild steel angle.

1mm purpose made galvanised mild steel service tray hung from mentis grill with approved cables and ties.

Services spine trench, all different services to comply with individual regulations and requirements.

30mm concrete screed laid to fall to sump pit.

Services to run in HDPE pipes.

3mm mild steel gutter to be inserted into Ondafire 3005T panel before bolting panel to purlin.

Ondafire 3005T mineral wool sandwich roof panel to be slotted into top purlin first then lowered into bottom purlin.

225x75x3,5mm steel cold formed lipped c channel fixed to parallel chord frame.

2mm mild steel flashing only to be fixed after Ondafire 3005T panel has been bolted into place.

Glass louvre clerestory window fixed to mild steel angle.

4mm opaque acrylic sheet LED strip light.

50x50x3mm mild steel angle welded to lipped c channel.

Ondafire 3005T mineral wool sandwich roof panel to be slotted into top purlin first then lowered into bottom purlin.

100x75x2mm steel cold formed unequal lipped c channel fixed to purlin.
Conclusion

This dissertation explored the potential of a decentralised TVET college as a catalytic architectural intervention. The proposed programme succeeds in strengthening the existing network of skills and trades by allowing for collaboration and skills development. The broader set of architectural skills was used to generate design solutions which did not always manifest as physical built forms. The virtual intervention did however lay the foundation for the 2 phases that were to follow. A fractal design approach proved to be more in tune with the ever-changing conditions of informal settlements.

By focussing the educational component around collaboration, building components and tactics are by-products of education that have an added positive impact on the community. This improves both the issues of daily pendulum migration and placelessness.

A more thorough investigation could have been done on the long term negative effects of vocational workspaces. The adaptation of an industrial school typology into a more public market space has promising opportunities but special attention has to be given to the safety of children. Many patterns of Alexander et al. (1977) are already existing within the community and can further be strengthened to improve the quality of life of residents. These patterns prove to still be relevant.

The building’s adaptability further strengthens its role as a catalyst in an environment of flux. This adaptability that is needed has shifted the focus from a final building design, to designing a system of building, catalytic spaces and positive edge conditions.
Chapter 1 - Introduction

1.1 Map of Mamelodi - in relation to Pretoria CBD (Author, 2016).

1.2 9:45 pm on the Maboneng/Waterfall bus: 45 minutes to the terminal. (Goldblatt, 1989).

1.3 Trout fishing on the Klusdorpes-tributary route (Kritzinger, 2007).

1.4 Boarding the first bus at Muthiyoli: It should reach the terminal at 5:15 am (Goldblatt, 1989).  

1.5 Current daily exodus in Mamelodi (Author, 2016).

1.6 The Sq in Mamelodi - Time Lapse HD (2016).

1.7 Karakia market, Duvha Salani, Tembisa (2016).

1.8 Acrus market (Sandu, 2015).

1.9 Bus stop at Madeso in Katlehong CBD (Ngcobo, 2016).

1.10 1:30 UCD illustration data (DHET 2013, adapted by Author, 2016).

1.11 Proposed three stream schooling system (Author, 2016).

1.12 Gradual harvesting of daily pendulum migration (Author, 2016).

1.13 Adaptation and translation of boundary map done by Mamelodi-Studie (Fomk, et al., 1987).


1.15 Solidworks exports (Author, 2016).

1.16 Solidworks working conditions (Author, 2016).

1.17 Solidworks as "welding booth" (Author, 2016).

1.18 11.00 am on the Marabastad-Waterval bus. 45 minutes to the terminal. (Goldblatt, 1989).

1.19 Marabastad, in Pretoria, two and a half hours later, at 5:15 am (Goldblatt, 1989).

1.20 Potential linkages with other networks (Author, 2016).

1.21 Daily exodus, missing catalyst and resilience through self-reliance (Author, 2016).

1.22 Disunited cores of the proposed TVET College (Author, 2016).

Chapter 2 - Context

2.1 School children protesting against the Group Areas Act, 1955 (South African History Archive, 1995).

2.2 Mamelodi-West as a node of Pretoria (Author, 2016).

2.3 Mamelodi location map (Author, 2016).

2.4 Cut in crossing Tshwane Avenue (Author, 2016).

2.5 Mamelodi timeline (Author, 2016).

2.6 Adaptation and translation of boundary map done by Mamelodi-Studie (Fomk, et al., 1987).

2.7 Legal electricity connections in Mamelodi-East (Mamelodi Mappers, 2015, adapted by Author, 2016).

2.8 Shoemaking class (Historical Papers Research Archive, n.d.).

2.9 Apprentices training as tailors (Historical Papers Research Archive, n.d.).

2.10 Cattle crossing Tsamaya Avenue (Author, 2016).

2.11 Mamelodi-East (Author, 2016).

2.12 School children protesting against the Group Areas Act, 1955 (South African History Archive, 1995).

2.13 Proposed three stream schooling diagram (Author, 2016).

Chapter 3 - Urban Vision


3.2 Mamelodi Diagram (Mamelodi Urban Vision, 2016).

3.3 Tools used in analysing the Mamelodi urban fabric (Pictura et al., 2012).

3.4 Mamelodi Location Map (Mamelodi Urban Vision, 2016).


3.6 Current Situation (Mamelodi Urban Vision, 2016).

3.7 Existing and proposed urban cores (Mamelodi Urban Vision, 2016).

3.8 Primary nodes (Mamelodi Urban Vision, 2016).

3.9 Secondary nodes (Mamelodi Urban Vision, 2016).


3.11 Proposed nodal development and activity spine activation (Mamelodi Urban Vision, 2016).


Chapter 4 - Theory

4.1 Fractal design approach (Author, 2016).

4.2 Fractal intention (Author, 2016).

4.3 Transition intention (Author, 2016).

4.4 Ecological intention (Author, 2016).

4.5 Transport intention (Author, 2016).

4.6 Programmatic intention (Author, 2016).

Chapter 5 - Programme

5.1 Proposal summary (Bophelo Precinct Proposal, 2016).

5.2 Proposed networks (Bophelo Precinct Proposal, 2016).

5.3 Proposed nodes and activity spines (Bophelo Precinct Proposal, 2016).

5.4 Proposed green route (Bophelo Precinct Proposal, 2016).

5.5 Existing zones (Bophelo Precinct Proposal, 2016).

5.6 Potential linkages with other networks (Author, 2016).

5.7 Potential overlap (Author, 2016).

5.8 Daily pendulum migration (Author, 2016).

5.9 Proposed three stream schooling system (Author, 2016).

5.10 Proposed networking (Author, 2016).

5.11 Proposed guilds (Author, 2016).

5.12 Proposed three stream schooling diagram (Author, 2016).


5.14 Mamelodi location map (Author, 2016).


5.16 Proposed green route (Bophelo Precinct Proposal, 2016).

5.17 Mamelodi East (Bophelo Precinct Proposal, 2016).

5.18 Mamelodi Mahube Precinct Proposal (Bophelo Precinct Proposal, 2016).
Bibliography


