In this chapter, the author will specify the theoretical concept for the proposed intervention. The concept will be illustrated as a sequence (from the initial stage) that influenced the final design product. The development process will be grouped into two chronological parts:

- Residential / living environment concept
- Production Facility / working environment concept

Finally, a summary and conclusion are drawn to illustrate the shortcomings and possible solutions for the final proposition.
Fig. 82: Dumping containers adjacent to site (east)
As mentioned in Chapter 4, the focal programme for the proposed intervention is the production facility: where recyclable waste are gathered and reassembled to produce new useful products.

The concept for the proposed design should noticeably reflect the programme (only on a much larger scale). Thus, identifying recyclable materials in the surrounding context that would be used as primary design elements / materials.
01 Dumping / Garbage Containers

*Quantity:* 328

02 Rhodesian Teak Rail Sleepers

*Quantity:* > 1600

03 Rail Tracks

*Quantity:* > 4200 m

04 Corrugated Steel Sheeting

*(existing warehouses)*

*Quantity:* 5 x 903 m²

= 4515 m²

05 Ductile Iron Water Pipes

*(currently stored in warehouses)*

*Quantity:* > 1300 m
Residential / Living Environment

Concept_01

fig. 90 Concept sketch based on theoretical principles (southern elevation)

fig. 89 “The erection sequence of a ‘Terrapin’ structure” (Terrapin bungalo of 1948), Archigram no. 3, August 1963.
The following design principles relate to the theoretical discourse that influenced the conceptual product. Thus, the proposal should be considered as a theoretical, rather than a formalistic solution. However, the final design proposition should be regarded as a sequential procedure, from an idealistic to a pragmatic approach.

**Design Principles**

- Minimum impact on natural environment (touch ground over minimum area)
- Capable of various forms/arrangements determined by the user
- Allow for disassembly and structural expansion
- Constructed from recycled materials
- Site independent (non-site specific)
- Considering the building’s users being capable of constructing the building, structural complexity should be avoided to a large extend.

*Fig. 91 Concept model illustrating intervention constructed over existing warehouses’ footprint (cantilever steel structure touching ground over minimum area)*
Housing Module

Attempting to display the concept of recyclability, three dumping containers are dismantled and strategically re-assembled to construct a hexagonal housing unit. Considering the principle of a ‘bee-hive structure’, the modules allow for multiple spatial arrangements and even spatial expansion of a unit when modules are grouped together (see fig 102).
Concept Development

fig. 94 concept model illustrating proposed living environment cantilevering over existing warehouse (working environment)

- high tensile steel cables
- exposed (red) service pipes
- steel beams
- load bearing concrete columns
- steel bracing
- hexagonal housing modules
- existing warehouse (proposed production facility)
Elevation - North

fig. 95 northern elevation illustrating working environment at ground level, and residential environment at upper levels
Section A-A

fig. 96 section A-A (housing concept)
Structure Assembly Process

In order to apprehend the building, it is necessary to understand the construction cycle capable of achieving various different forms and configurations. The construction process of *the halfway house* should follow a prototypical blueprint assembly procedure. This will allow users to extend or disassemble the building according to ever evolving social needs.
phase 4

- floors
  - north - social & farming
  - south - service facilities

phase 5

- natural vegetative growth &
- structure capable of various social arrangements

fig. 102 representing the ideology of a 'bee-hive-structure', multiple floor layouts are achievable by arranging modules according to social preferences.
fig. 103  perspective view between existing warehouses (looking East)
Areas for Improvement

As mentioned previously, the concept proposal should be considered as an idealistic approach, however practical implementation should guide the design process to a large extend.

After scrutiny, numerous shortcomings were identified:

- Feasibility
- Structural complexity
  - Cantilever distance
  - Hexagonal housing module
- Flexible internal spaces (between modules)
- Repetitiveness lacking uniqueness (considering the need for variety in residential living)
- Scale (need for ‘Mega-structure’?)
- Communication and access between the working & living environment?
- Practical execution
- Too theoretical driven? (disregarding context)

Conclusion

Considering the mentioned shortcomings, it can be concluded that the proposed design should relate to the architectural language of the existing environment, and cannot be observed as a ‘site-independent’ structure.

Even though the hexagonal housing modules allow for various spatial arrangements, and represents the concept of recyclability to a large extend; construction feasibility and structural complexity required to support these modules (weight of module) prevent practical execution.

The ‘flexible’ approvable spaces between the housing modules are too dependent on the configuration of the modules. Thus, tensions between private and social spaces are inevitable.

The structure supporting the housing modules should function as a separate entity from the ‘flexible’ space. In turn, these ‘flexible’ spaces will not be affected by any module configuration/displacement.
Production Facility / Working Environment

Concept _02

‘the halfway house’ = Production Facility = Recycling Process

Question: How can a structure represent a certain phase of a recycling process?
5 phases of recycling

5 existing warehouses

each warehouse represents a specific phase

fig. 109 each warehouse (existing five) representing a sequential phase in the recycling process.
fig. 110  concept model illustrating perspective view from new pedestrian walk route (looking East)
fig. 111  concept model illustrating perspective view of southern facade (principal facade)
Areas for Improvement

Warehouse representing a specific phase

- Disorientated process (A - B)
- Pedestrians / railway users wouldn’t be able to grasp the architectural concept (doesn’t read as a linear process)

Facade representing a sequential process

- Linear chronological process (A - B)
- Concept of representing a phase in a recycling process will be evident from Rebecca station

fig. 112 disorientated meandering process

fig. 113 orientated linear process

fig. 114 southern elevation (view from Rebecca station) reading as a linear process from East to West
Concept Development Process

Summary

As illustrated throughout the chapter, the concept development process were separated (working environment & residential environment) due to theoretical principles related to each. This disconnection led to a clearer understanding and concept development of each entity. However, this separation invokes tension between the architectural languages of these two environments. Thus, as a final design proposition, these two environments should be integrated in an attempt to display a single architectural language that relate to the existing industrial context of Pretoria West.

fig. 115 summary of concept development process

fig. 116 Most influential concept sketch illustrating the integration of the working and living environment. Angles and dimensions are subjected to measurements of the existing warehouses on site.