DESIGN DEVELOPMENT

DESIGN EXPLORATION 1 004-1
DESIGN EXPLORATION 2 004-2
CONCEPT DEVELOPMENT 004-3
Fig 004.1: Aerial photograph indicating the various sites with existing buildings that were investigated for further development.
Site 1: Malema College

Street: Bosman Street
No. Storeys: Ground plus two
Current Occupation: College

General Characteristics: Concrete frame structure with facebrick infill. Tree lined street frontage with basement parking. Sidewalk with palisade fencing blocking public access. Advantage of having a space for expansion because building is small and placed towards the front of the site.

Opportunities the Site Presented:
- it is located opposite a green space
- the school provides possible users

Reasons for not choosing the Site:
- not enough existing fabric
- harsh surrounding site conditions
- site is too small

Fig 004.2: Aerial photographs illustrating the context of the site
Fig 004.3: Site 1 from the south west corner
Fig 004.4: Existing elevation and section of Malema College
Fig 004.5: Series of sections through the site illustrating possible configurations of new versus old construction
Fig 004.6: Possible configuration of street elevation
Fig 004.7: Elevation of Industrial Design Centre
Fig 004.8: Ground floor plan of proposed Industrial Design Centre
Fig 004.9: Floor plans of first to sixth floors of proposal on Site 1
004.1.3 THREE DIMENSIONAL EXPLORATION

Fig 004.10: Street level view of the site model from Bosman Street looking towards the north-east

Fig 004.11: A similar view as in the previous image, this time revealing the extent of the intervention

Fig 004.12: A bird's eye view of the proposed site which demonstrates the relationship between adjacent buildings.

Fig 004.13: A view towards the east depicting the abrupt break of the Department of Transport building to the left.

Fig 004.14: The massing relates to that of the surrounding buildings.

Fig 004.15: The new intervention is not imposing to passers-by on street level as it merges with the existing architectural fabric.

Fig 004.16: To a large extent the Department of Transport in the foreground blocks the view of the proposed intervention.

Fig 004.17: A bird's eye view of the concept model looking towards the south.
Site 6: General H.G. de Witt Building

Street: Corner Skinner and Bosman Streets
No. Storeys: Ground plus 13
Current Occupation: Vacant

General Characteristics: Double storey protrusion on northern side of block. Concrete frame building with brick infill and steel window frames. Possibility to expand out of structure.
004.23  CONCEPT Development

Fig 004.24: West elevation with new “clip-on” units indicated in green

Fig 004.25: West elevation with roof garden and balconies with planting

Fig 004.26: New “clip-on” units wrap over the top of the existing structure

Fig 004.27: Protruding balconies provide additional living spaces

Fig 004.28: Northern elevation demonstrating the dynamic of components which could be achieved

Fig 004.29: Roof plan showing the new box structures clipped to the northern and southern façade

Fig 004.30: West elevation illustrating “clip-on” units and balconies

Fig 004.31: Northern elevation expressing the new “clip-on” units indicated in green
004-2.4 THREE Dimensional Exploration

Concept Model One

Fig 004.32: Series of images rotating clockwise around the concept model, starting with the western side of the model.

Fig 004.33: The north-west corner of the General H.G. de Witt building. Additions to the existing building are indicated in green.

Fig 004.34: New interventions are indicated in green.

Fig 004.35: A photograph of the concept model from an elevated position reveals the extent of possible interventions.

Fig 004.36: New interventions range in single blocks, blocks grouped together and external balconies which provide additional space.

Fig 004.37: The north-east corner of the concept model.

Fig 004.38: The roof of the existing building is altered in order to achieve additional space for future programming.

Concept Model Two

Fig 004.39: Series of images rotating clockwise around the concept model, starting with the western side of the model.

Fig 004.40: This concept model explores the possibilities of larger, more “solid” boxes protruding from the façade.

Fig 005.40: This concept model explores the possibilities of larger, more “solid” boxes protruding from the façade.
Fig 004.41: Skinner Street runs past the northern façade of the building

Fig 004.42: Protruding balconies with greenery are suspended from the northern façade

Fig 004.43: The north-east corner of the concept model demonstrates additions to the northern façade, southern façade and roof

Fig 004.44: Additional service cores and spaces are added onto the southern façade

Fig 004.45: A new structure rises from the existing base and frames the southern façade

Fig 004.46: New service cores rise up the sides of the existing structure to accommodate additional programming

Fig 004.47: The new addition on the roof protrudes over the edges of the existing building. The additions to the southern side can also be seen

Fig 004.48: An image of the roof illustrating the relation of the new additions to one another

Opportunities the Site Presented:
- the site is centrally located to city landmarks
- located on a strong axis, with Skinner and Bosman Streets

Reasons for not choosing the Site:
- not connected to an existing urban framework
- building is very large and is unlikely to form a cohesive programme scenario
- not enough room for expansion as building extends the limits of the site
Site 14: Woltemade building

Street: 118 Paul Kruger Street  
No. Storeys: Ground plus 7  
Current Occupation: Commercial on ground floor with residential above

General Characteristics: A flat-roof double-storey western wing/block on the street edge with commercial functions housed inside. Parking available on site on ground floor under the linear residential block above. Accents of mosaic tiles can be found on the sides of the building and on the “balconies”, which are in fact shelves to the residential units within.

Architectural Intention: Adaptive [re]use  
Concept Statement: Existing structure as facilitator, with process as a means of learning  
Architectural Concept Statement: Live and Learn  
Architectural Concept Intentions: To demonstrate how an existing building can be [re]used and adapted to changes in programme and circumstances over time.
There are numerous ways in which to approach the incorporation of balcony extensions. Each method has its own set of advantages and restrictions. The intention is for the balconies to provide additional space to the individual units within, especially for the residential component.

The simplest way a balcony can be created is by fixing a balustrade or pre-fabricated steel component to the underside or edge of the existing floor slab, as shown in figures 3.5 and 3.6 below.

An alternative approach would be to increase the amount of available space by extending the steel components past the floor slab, as illustrated in figures 3.7 and figure 3.8. Figure 3.9 demonstrates the visual expansion of space as opposed to the physical addition of space.

Enclosed space can also be achieved by making use of pre-fabricated components at both of the exposed slab ends. These spaces can then be used for a multitude of functions, for example as dining rooms, living rooms or meeting spaces.
Possible adaptations that could take place on different floors on the northern façade
Methods of addressing the existing [re]cess of the circulation tower on the northern façade

Possible adaptations that could take place on different floors on the southern façade

Fig 004.3.21: The northern façade as it currently appears

Fig 004.3.22: The first option is to insert a structure that [re]sults in a flush façade

Fig 004.3.23: The north western corner of the concept model displaying the flush finish

Fig 004.3.24: The second option inserts a structure that protrudes past the façade and extends past the height of the existing building

Fig 004.3.25: The new tower is emphasised by its height over the existing structure

Fig 004.3.26: Possible interventions are indicated in green

Fig 004.3.27: A new room is added on the left and the open roof space gains a new programme

Fig 004.3.28: The length of the passage [re]ceives additional space

Fig 004.3.29: A hanging floor is added to a residential unit
The effects of cutting away the existing structure

Fig 004.3.30: The internal configuration of the existing residential units are changed

Fig 004.3.31: A different angle of the image before showing the removal of an internal wall

Fig 004.3.32: Three altered floors are placed on top of another

Fig 004.3.33: The façade as it would appear with the altered floors

Fig 004.3.34: Another floor has a portion of the existing structure cut-out

Fig 004.3.35: Two floors with cut-outs are stacked on one another

Fig 004.3.36: The northern façade as it would appear with cut-ots and the flush circulation tower

Fig 004.3.37: The façade as it would appear with cut-ots and the protruding tower
004.3.5 ALTERNATIVE INVESTIGATION THE WOLTEMADE AS A THEATRE

An investigation into the conversion of the Woltemade building as a theatre. The strategy for this concept was to remove a portion of the existing column and slab structure so as to provide an uninterrupted view of the stage.

To compensate for the change in load, three new columns are inserted to direct the structural load back to the ground. These columns additionally serve as means of getting patrons to the new theatre level, provide much needed storage and a scene dock.

Conclusion: The theatre concept was dismissed as too much demolition would have to take place and this would jeopardise the sustainability and adaptability of the new building.
Fig 004.3.42: The position of the various interventions are illustrated in different colours with the existing building located in the middle.
Various programme scenarios were investigated throughout the concept development phase of the design process including; an industrial design school, a theatre and finally a Design Depot.

The term “Design Depot” refers to any programme relating to the design realm. This may include design firms, concept stores, boutiques and exhibition spaces. A Design Depot allows for a great deal of diversity and a mix of programmes that are not traditionally placed together. This is true where live/work units are placed adjacent to a retail store.

Fig 004.1: A perspective of the west, which borders Paul Kruger Street. The glass addition to the right is served for product displays and exhibitions.

Fig 004.2: A perspective illustrating the new exhibition space (in the previous image) and the glass wrapping structure.

Fig 004.3: The street perspective looking south towards Church Square. The exhibition space to the rear allows the building to showcase its contents.

Fig 004.4: The south-east corner of the new intervention.

Fig 004.5: The new stairs form part of the new link between the German Club and 215 on Proes Street.

The first revision includes a new public platform on the first floor aimed at drawing people in from the street and from the new link created to the north between the German Club and 215 on Proes Street.
**Conclusion:** This [re]vision of the Design Depot presented many valuable ideas that can be carried forward in further concept development. The first of one of these ideas is the inclusion of the new platform. Not only does it provide additional space to the entire building, but it also provides a public area which is not disrupted by the services and parking located on ground floor. In addition the platform [re]sults in no floor spaces being taken away from the existing parking area therefore furthering the notion of flexibility.

The glass gallery box is another element that is explored in further development. The position of the Glass gallery box determines the starting point for Intervention B (the wrapping structure). These two points (glass gallery box and Intervention B ) connect the building on a horizontal and vertical level.
004.4.2 THREE DIMENSIONAL EXPLORATION

Concept Model One: Southern Façade

The southern intervention on the Woltemade building, otherwise called Intervention B, is one of the larger interventions of this thesis project. The aim of this block is to provide additional space on the southern façade where activities are able to spill out from the variety of programmed units within.

This concept models investigates how the glass gallery box on the northern façade can be acknowledged on the new southern intervention. The design concept explored possible configurations of panels of framed glass. The inclusion of coloured glass is made on the façade only where the glass gallery box occurs while the remainder of the intervention is completed with clear, opaque and translucent glass.

Fig 004.4.12: Series of images demonstrating possible glass panel configurations

Fig 004.4.13: These images experiment with the [re]-
relationships between coloured and open panels

Fig 004.4.14: This coloured section of the façade is used to indicate the location of the glass gallery box on the north

Fig 004.4.15: Colours used in the glass panels are the same in colour to the “balconies” on the northern façade

Fig 004.4.16: Sections are left open to take advantage of the views to the south

Fig 004.4.17: The southern façade of the Woltemade building indicating where [re]cesses occur behind the truss structure

Fig 004.4.18: This image shows where the coloured panels occur on the façade in conjunction with spaces that are more enclosed
Conclusion: concept model one, utilises steel trusses which wrap around the southern façade while still revealing the bottom edge of the host building. The northern façade is acknowledged on the southern façade by using white panes of glass to represent the balconies and coloured glass to indicate the position of the gallery box on the north.

Furthermore balconies are constructed using alternate sizes and panes of translucent and opaque glass.
Concept Model Two: Southern Façade

This concept model investigates how changing the shape of the steel trusses that wrap around the façade affect the space of the internal walkways.

The southern façade explores the use of different materials while at the same time responding to the surrounding environment.

Additionally this block controls the internal environment through the incorporation of solid, semi-solid and open screening elements. Internal activities and programmes are expressed on the exterior while at the same time responding to the surrounding context. This is achieved through the acknowledgement of the links to adjacent sites. Furthermore the new access point to the site is accentuated by dropping the panels past the base of the remaining wrapping trusses.

**Fig 004.4.26:** Corrugated panels run down the left hand side of the model, indicating more private areas such as meeting rooms. Large white panels mimic the positions of balconies on the opposite façade.

**Fig 004.4.27:** The translucent area reflects the position of the glass box on the northern façade. Screening panels are extended past the rest of the structure to indicate the entrance to the site below.

**Fig 004.4.28:** A section through the building. The wrapping structure has been placed with a castellated beam. Even though there is enough head room the structure looks too bulky.

**Fig 004.4.29:** Residential units can be found between the trusses that wrap themselves around the building.

**Fig 004.4.30:** Trusses are regular in nature however the screening elements are not thereby allowing for different experiences throughout the space.

**Fig 004.4.31:** Portions of the screening elements are fixed while others openable.

**Conclusion:** Concept model two, explores a different method of enclosing Intervention B. Portions of the buildings that are enclosed house private programmes like meeting or projection rooms. The translucent material indicates the position of the glass gallery box on the northern façade.

The most important realisation of this exploration is that a steel truss system is not appropriate for this application as too much steel is used in relation to the amount of space gained.
Conclusion: The section to the left demonstrates the use of a much lighter system that requires less material to achieve the same goal. Hanging floors suspended with cables is therefore deemed the most appropriate system to implement for Intervention B as the most amount of flexibility is achieved with minimal material.

Enclosing materials respond to the internal programmes, context and climate. Solid elements are placed in front of private areas and screens are placed in front of the circulation route, providing protection from the elements while still allowing views so the south.
Fig 004.4.36: A sectional model through the northern façade of the building. Various screening materials are used to address the programmatic needs of the internal spaces. These screens aid in a more comfortable environment.

Residential units to receive hanging balconies suspended from cables. Each balcony is intended to be unique in character reflecting the personality of the occupant within.

Residential units to receive hanging balconies suspended from cables. Each balcony is intended to be unique in character reflecting the personality of the occupant within.

Office spaces require light which is conducive to a productive workspace. Perforated screens will help filter light on a sunny day.

Projection room require the most amount of controlled light. The room needs to be dark during daylight hours in order to view presentations, movies or hold conferences.

Retail spaces necessitates the need to provide a comfortable environment for visiting patrons. Merchandise needs to be displayed properly without glare in order to increase sales.

Meeting rooms call for less light than office spaces, however they still need to be sufficient lighting to be a productive space.

Workshops and other craft areas need to have sufficient light for tasks to take place therefore direct sunlight needs to be omitted.