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# Praxis

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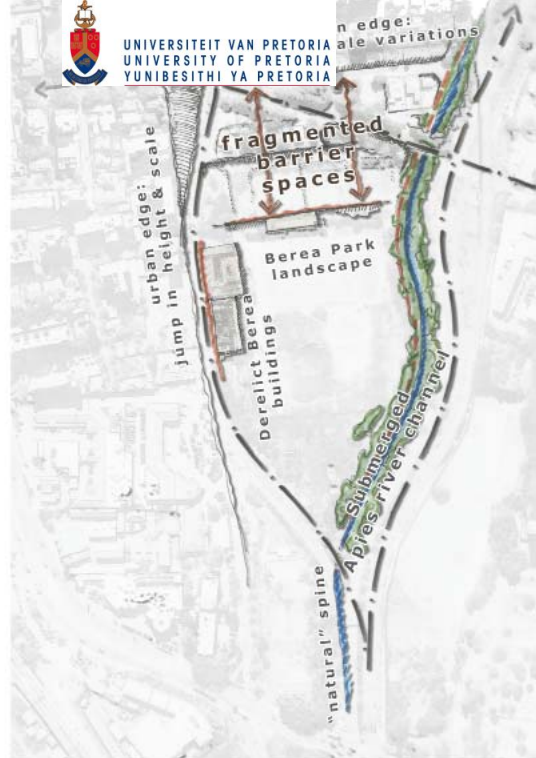
N<sup>o</sup> 9

# Design Development

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Detached river channel & landscape  
Figure 9.2 ~ Site diagramme a.jpg



Barrier spaces & sunken concrete river channel



**Urban link:** building to act as connector between the urban and "natural" orders

Figure 9.1 ~ Site diagrammes b.jpg



**Hybrid,** building to create new interfaces between the urban & the landscape and river.

Series of diagram's indicating conceptual intentions from which the design is generated. Emphases is placed on establishing connections between the city, Berea Park and the new water interface. Source: Author

## 9.1 Introduction

The design development is a presentation of a collection of design iterations that provide insight into the development of the design process. It refers to significant design responses and decisions that guided development and generated the design. A series of diagrammatic explorations, maquettes, scaled models, sketches, plans and other drawings are introduced in conjunction with short descriptions or discussions to outline the design development. The series of explorations illustrate spatial development, architectural and tectonic responses and intended objectives.

## 9.2 Design Development Iterations

### 9.2.1 Iteration A

The first significant iteration, Iteration A, was developed from linking a proposed pedestrian circulation network that responds to the existing patterns of movement and site fragmentation (refer back to Fig 4.28 in Chapter 4.6) with two building masses located north and south of Justice Mahomed Street. Both the proposed North and South Block buildings connect to a new waterfront along the eastern site border.

In establishing a new waterfront and water interface, the first response considered altering the river channel itself, with alterations to the channel limited to the extent of the macro site. The iteration firstly aimed to create a new and accessible edge that would reinstate a natural character,

reminiscent of the river prior to its channelisation. As such it was envisioned that terraced reeds and water plants along the revised channel bank could potentially treat the channel water. As a consequence this approach however resulted in altered flood lines that will have knock on effects on the entire channel and furthermore present challenges related to the preservation of the existing trees along the channel bank. The trees would have had to be removed and then replanted after completion of the channel alterations or replaced by new trees.

For the aforementioned reason, the design in Iteration A was reconsidered and instead pursued the idea of creating an off-channel and completely new water edge that would neither alter the vertical nor the horizontal alignment of the existing

channel or disturb any trees. A wetland with water sourced and abstracted from the existing river channel forms the new eastern site boundary.

From this new eastern edge buildings on the North and South Blocks ascend, gradually increasing in height, towards the western and urban edges of their respective sites. The buildings in the North Block are situated around a central public square that also acts as a primary circulation spine that allows for appropriation for events such as markets and social gatherings. Access points around the square respond to existing pedestrian movement, roads and context.

The focus area, the southern block and the building facilities located along the northern edge of Berea Park, establish a new edge and threshold along the prominent arterial of Justice Mahomed Street. The approach along the northern edge was to activate the edge by means of the building's internal activities and programme, as the existing pre-cast walls along the boundary create a negative edge that is void of activity and interaction. Refer back to the context photographs and sketches presented in Chapter 4.

The southern edge of the building accommodates the main entrance, as pedestrians from the city are envisioned to utilise the bridge crossing to enter and gain access to the building and adjoining landscape. A secondary entrance along the northern facade is also provided. The

southern edge consists of a stepped platform below in which secondary building programmes are contained. The drop in elevation along the edge serves as a threshold response to the landscape, as opposed to the urban street edge along the northern edge.

The site topography inspired the gradual roof slope, creating a secondary ground plane that responds to the existing slope of the site. The gradual slope aids easy roof access in order to utilise the space as a circulatory and event park. The roof provides views across the Berea Park landscape, the tree lined river edge and towards the city. The idea of "nature" in the space is strengthened by the introduction of the new water edge, locating the restaurant space along the water and by planting rooftop vegetation. This also provides a visual feature to the surrounding high rise buildings.

The subterranean nature of the building entertains the idea and potential of a merged interface between the building and the landscape, while the sloping roof, water edge with terraced wetland and sculpted berms reflect a reciprocal response. The architectural and spatial considerations influenced and directed changes that continues into the surrounding landscape. The vertical circulation is articulated to juxtapose and contrast the constructed building landscape, creating objects in its own landscape to enhance legibility.



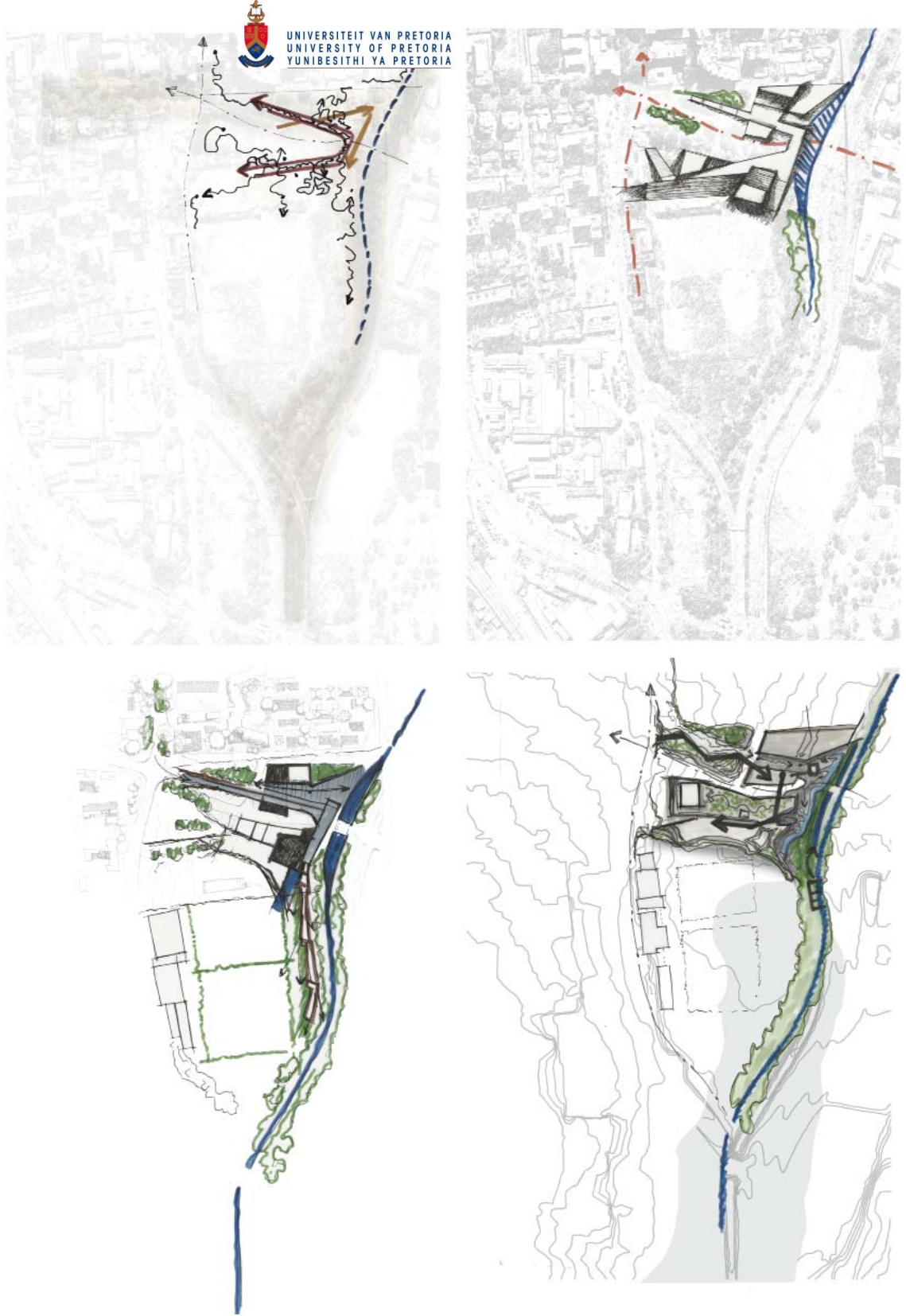


Figure 9.3 ~ Iteration A - diagrammes.jpg

Site diagram's exploring the idea of an experiential route and bridge connection that is integral in architectural expression. Northern and Southern block programmes would be linked via an elevated bridge crossing over Justice Mahomed Street and at a lower ground level both programmes connect to the water spine that runs along the eastern edge of the site. Source: Author



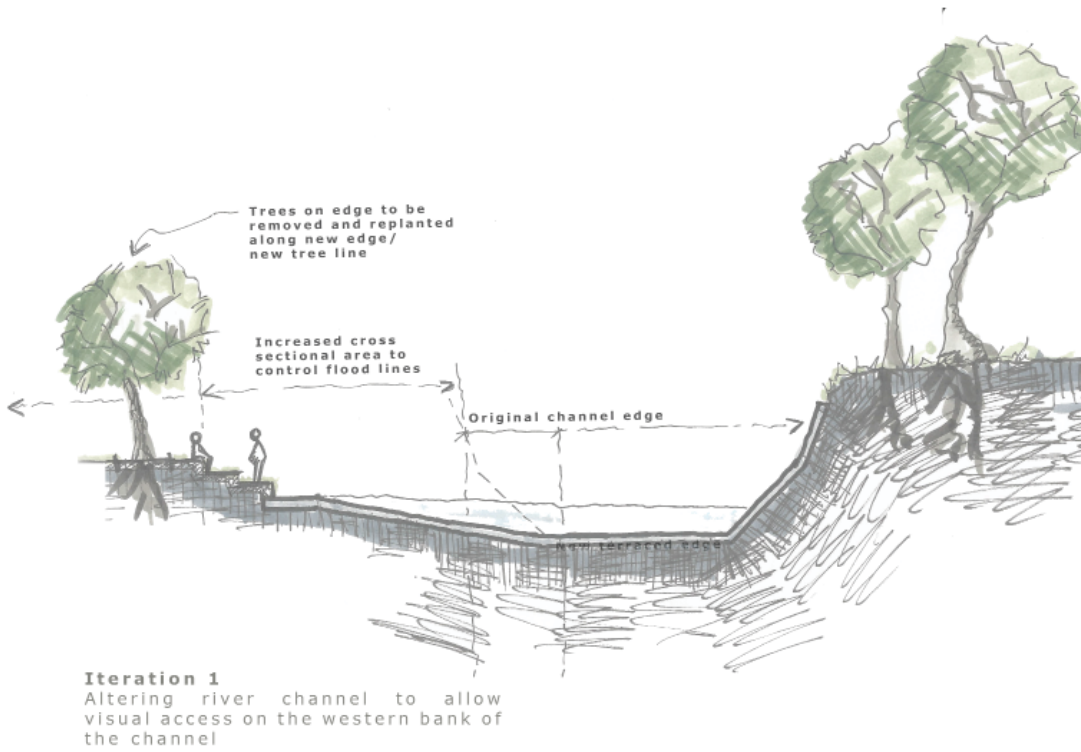


Figure 9.4 ~ River channel edge.jpg

Altering the Apies river channel edge to make the water space more accessible

Source: Author

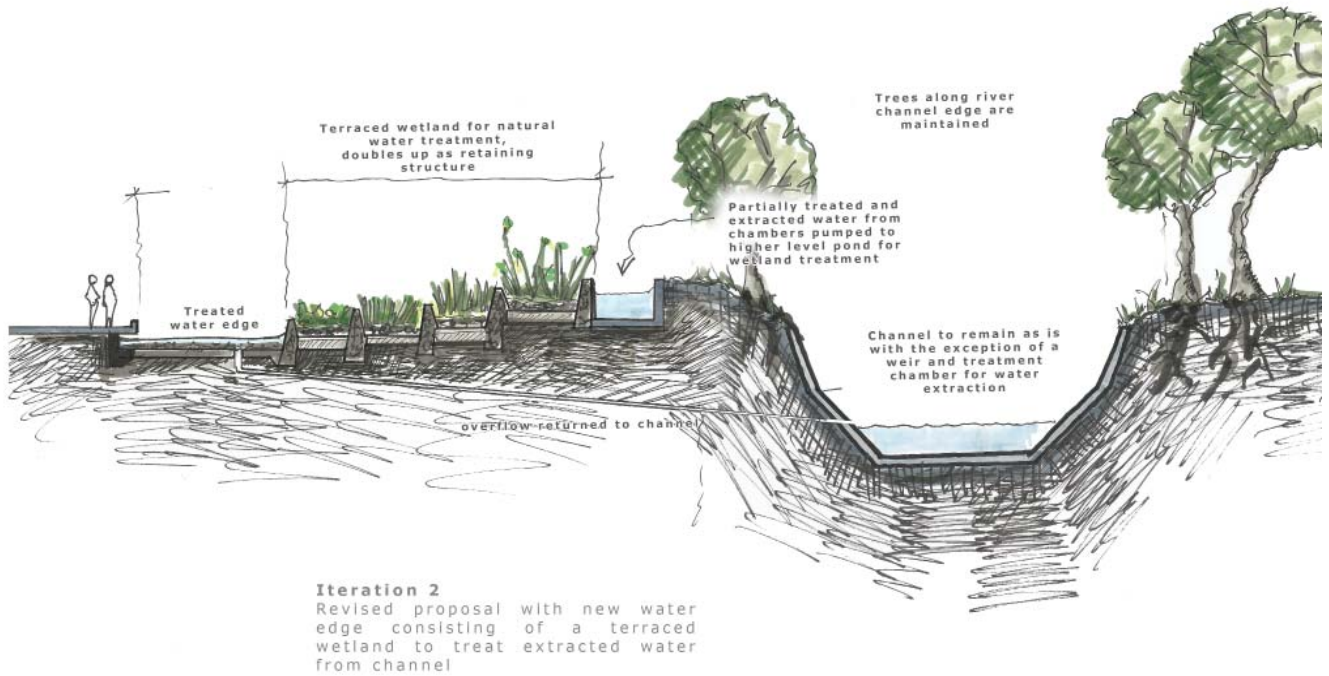


Figure 9.5 ~ Revised approach to water edge.jpg  
Revised Approach to water edge and creating a new waterfront  
Source: Author

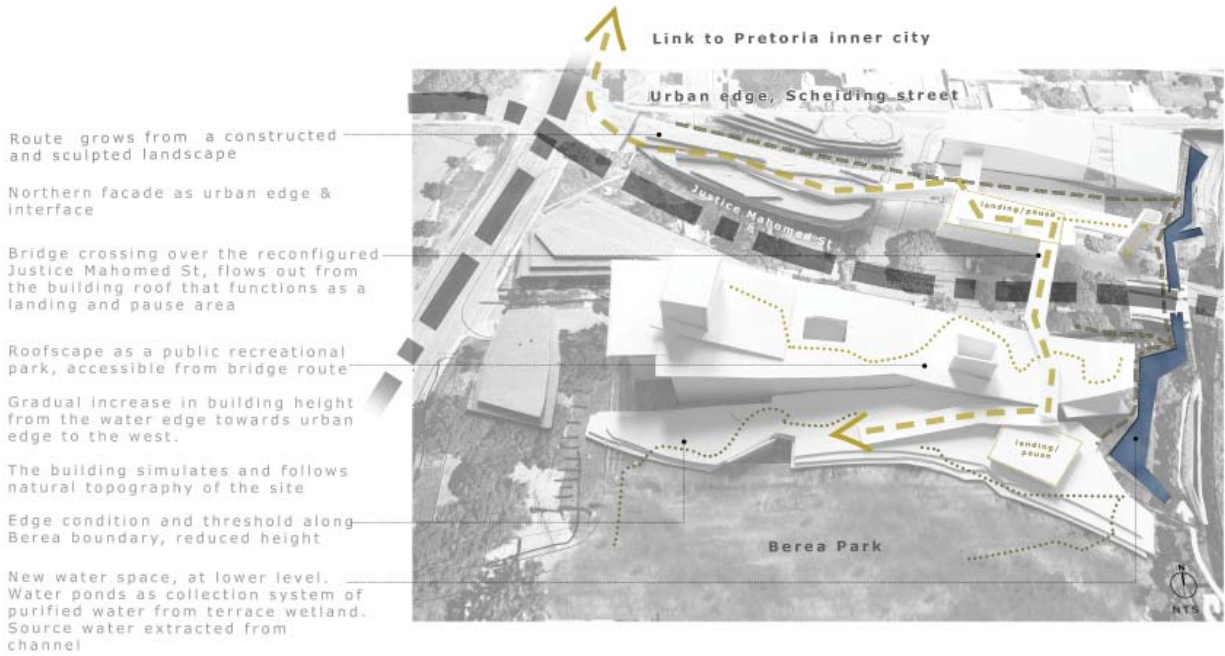


Figure 9.6 ~ Iteration A - maquette.jpg

Maquette, exploring and refining the diagrammatic intentions of iteration in a scaled and physical response that conveys the tectonic expression, massing and edge conditions. Source: Author

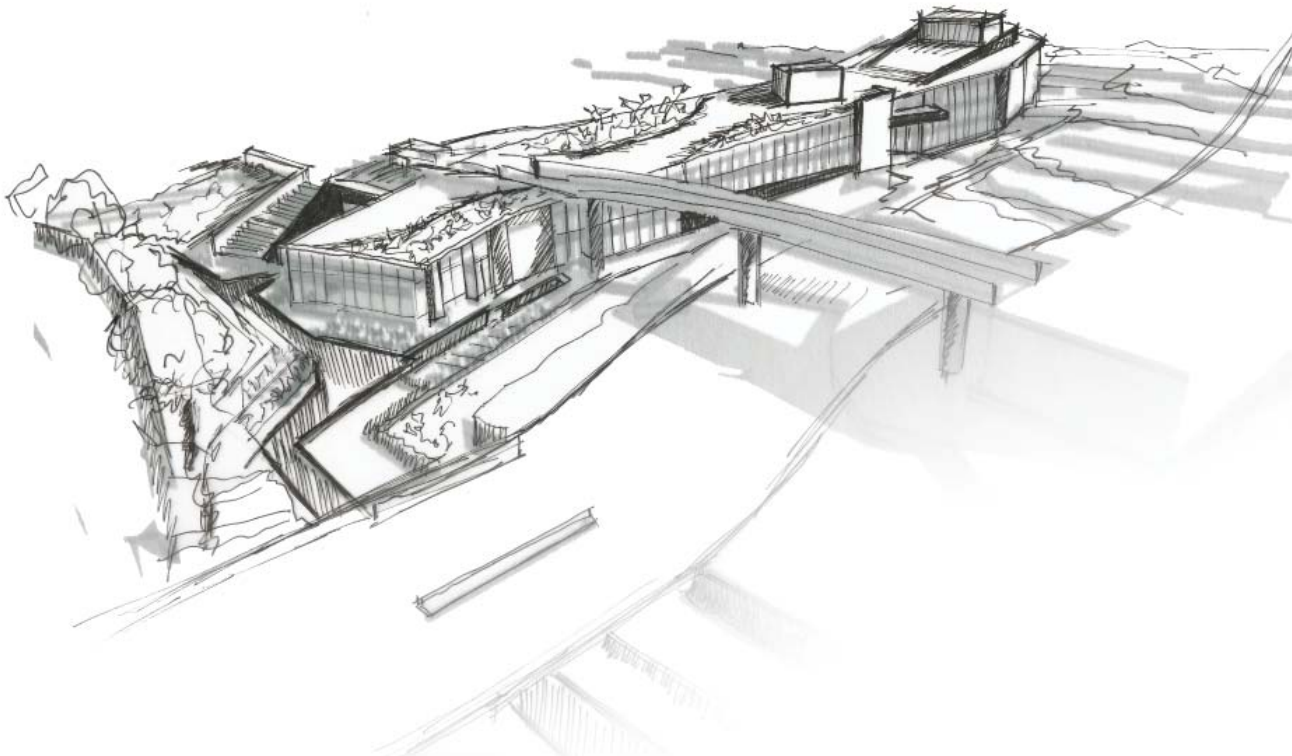


Figure 9.7 ~ Perspective sketch.jpg



## Macro site development

1. Community Library
2. Waterside restaurant north block
3. Connection to South block below ground
4. Waterside restaurant & bar South block
5. Terraced roof above exhibition hall
6. Main entrance
7. Urban roof park
8. Auditorium below
9. Bridge connection
10. Landing & express coffee
11. Elevator



**MACRO & SITE PLAN**  
**NTS**



Figure 9.8 ~ Macro site plan.jpg

Macro site plan development with programmatic configuration  
Source: Author

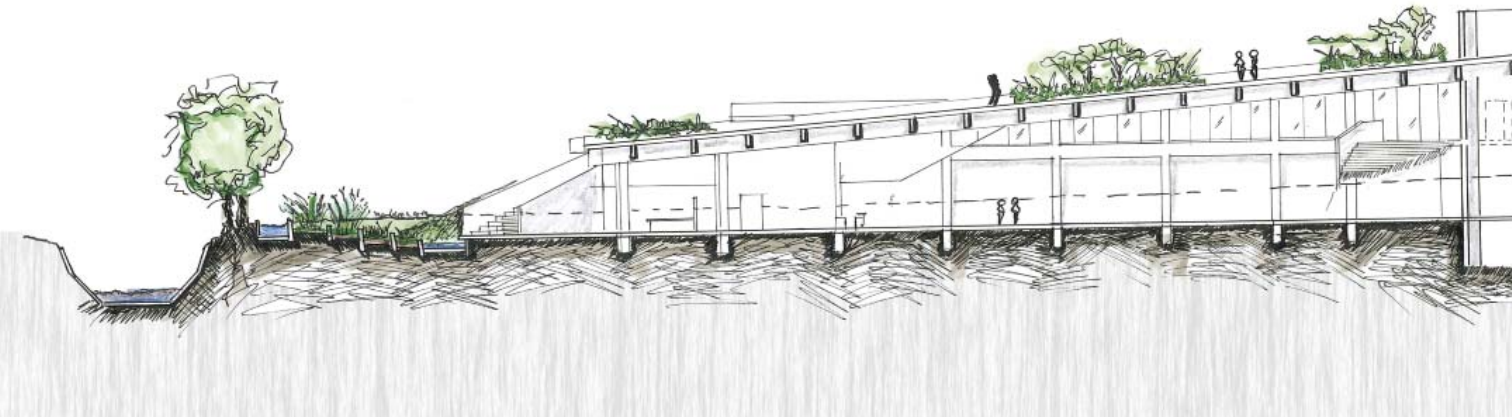


Figure 9.9 ~ Iteration A - lower ground level floor plan.jpg

Floor plans. Initial layouts reflecting spatial configurations and a programmatic distribution in a haphazard and irregular fashion. Ramps ease and continue the notion of pedestrian and universal movement. Source: Author

First long section, exploration of the stepped nature of the building, cutting into the landscape to locate the bulk of the spaces below ground level. The tiered levels runs in a sequence that spills out to the new water edge on the lower ground plane, below ground level. Source: Author.

Figure 9.10 ~ Iteration A - long section.jpg



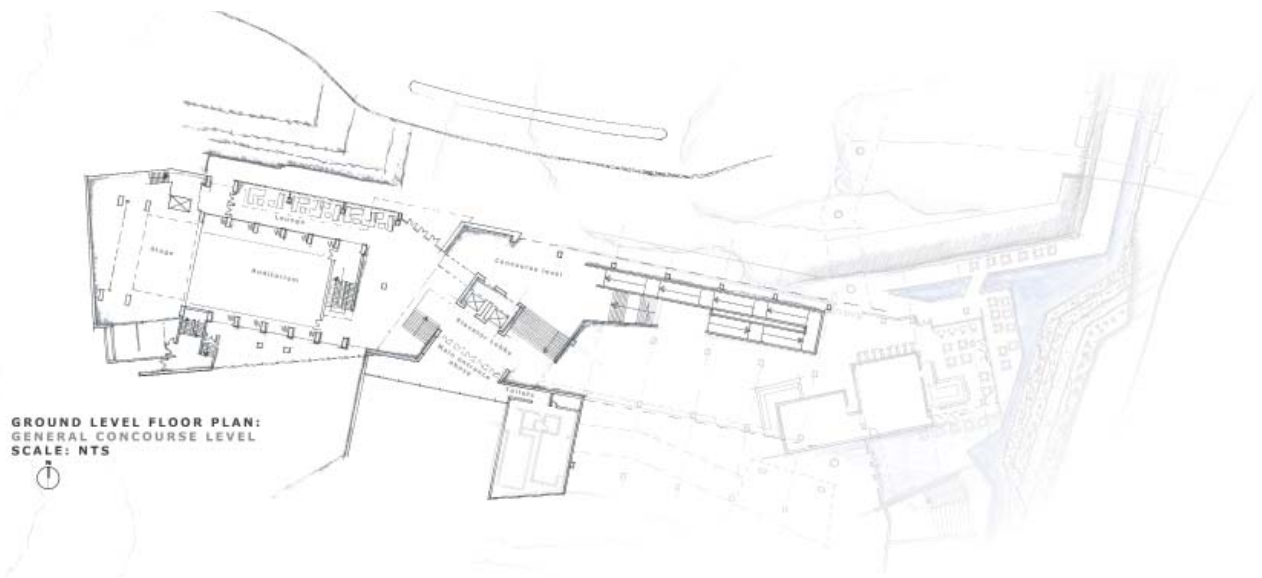


Figure 9.11 ~ Iteration A - ground level floor plan.jpg

Floor plans. Initial layouts reflecting spatial configurations and a programmatic distribution in a haphazard and irregular fashion. Ramps ease and continue the notion of pedestrian and universal movement. Source: Author

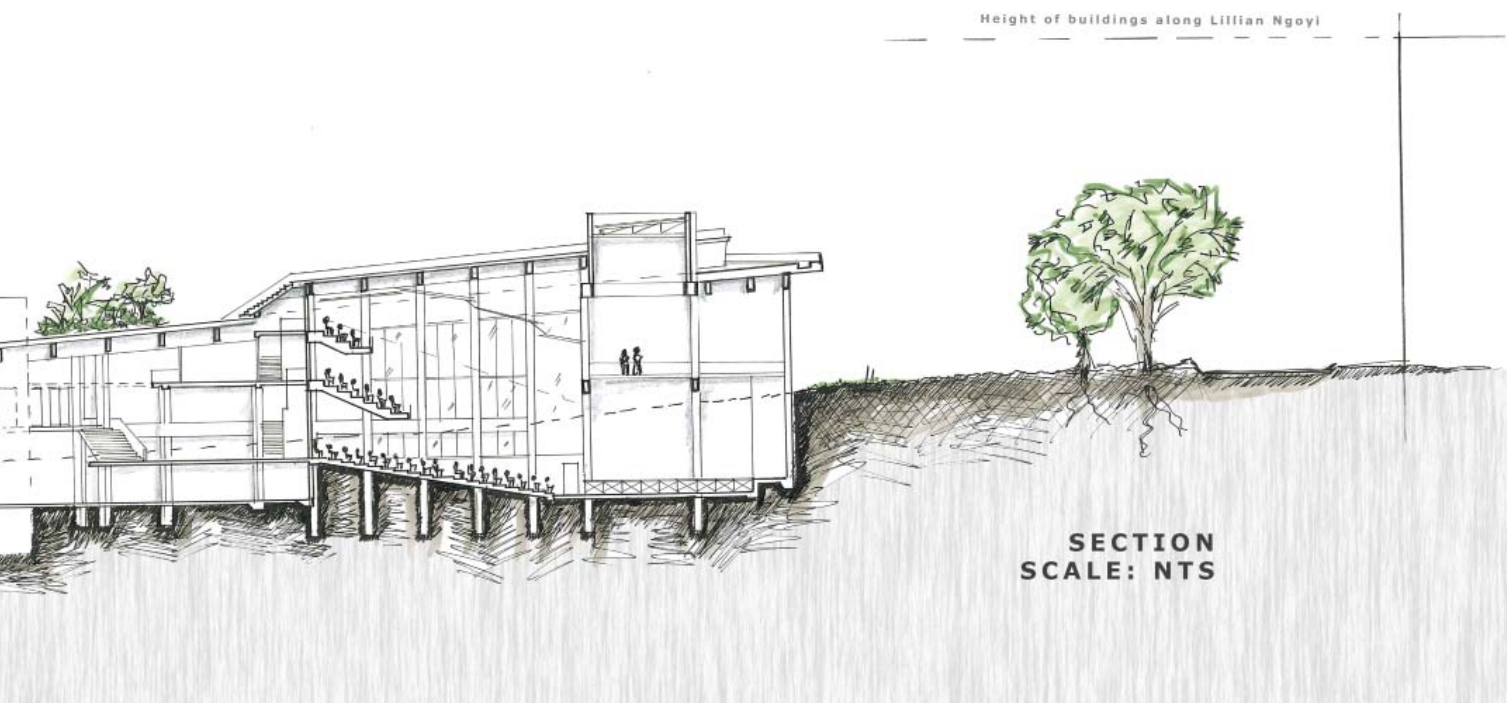
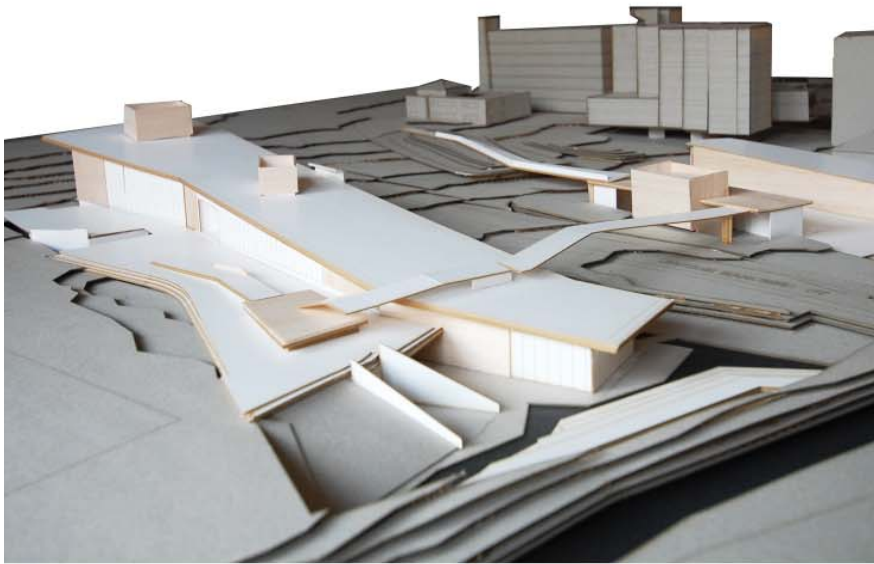






Figure 9.12 ~ June model photo collage a.jpg





June model photo collage a & b.  
Collection of photo's of the developed  
1:200 scale model of Iteration A in its  
surrounding context in June. Source:  
Author



Figure 9.13 ~ June model photo collage b.jpg

## 9.2.2 Iteration B

Iteration A established the broader design framework and was primarily considered at the scale of the macro site with particular attention given to establishing physical linkages between the two blocks. The focus building on the southern block, however, remained an object in the landscape and integration with the landscape required improvement. The scale, mass and solidity of Iteration A potentially creates an additional barrier to the park landscape. Iteration B therefore focused on the refinement of building form and improved spatial distribution in order to align the conceptual intention and the architectural argument and product.

Iteration B attempts to improve the integration of the building, circulation ramps, roof plane and landscape to construct a continuous and fluid spatial product. Further attention is given to make the building more permeable, with two access spines cutting through the building mass along the north-south axis, defining the spatial boundaries between the building's three primary programmes.

This improves legibility and enhances visual and physical accessibility.

Spatial definition and qualities also required refinement and these are explored through the development of the short section (north-south section) that deals with considerations related to the northern and southern edge conditions. The vertical scale of the building is reduced by increasing underground spaces. Attention is given to the internal circulation, movement between public to semi-public spaces, transitions between programmes and across the three building levels. Refer to the revised floor plans of the upper ground, ground and lower ground levels in figure 9.21.

The relationship between the building spaces and new waterfront was also reconsidered and changes made to increase the areas where visual connections and interaction with the water edge would be possible.

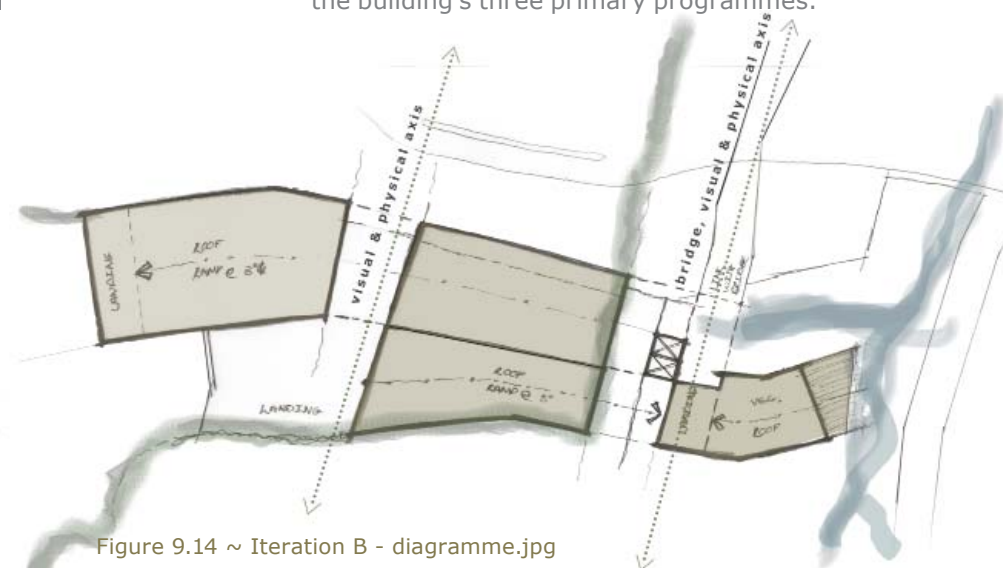


Figure 9.14 ~ Iteration B - diagramme.jpg

Indicating the intention to create insertions through the building to make it more permeable, using the roof as primary circulation platform from the bridge instead of utilising separate ramps. Continuing the landscape into the sloped roof and vice versa along the western edge. Source: Author



Figure 9.15 ~ Token sketch a.jpg



Figure 9.16 ~ Token sketch b.jpg



Figure 9.17 ~ Token sketch c.jpg

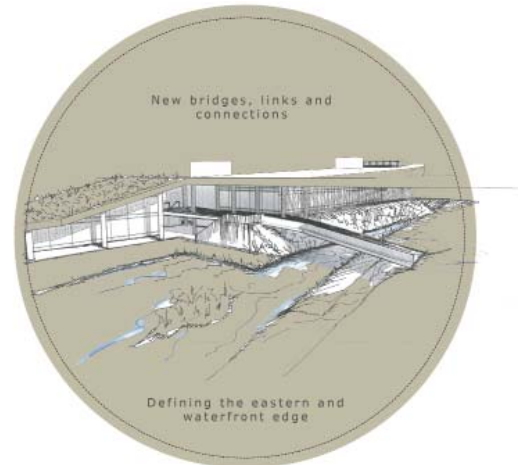


Figure 9.18 ~ Token sketch d.jpg

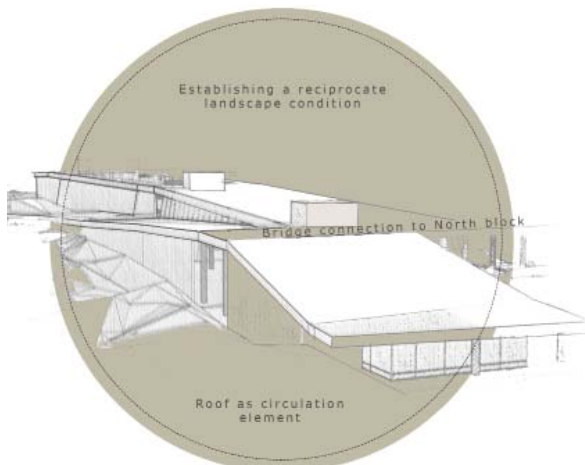


Figure 9.19 ~ Token sketch e.jpg

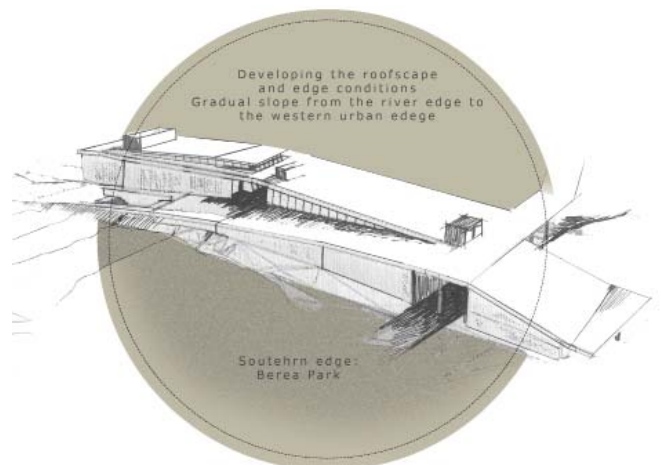


Figure 9.20 ~ Token sketch f.jpg

Series of conceptual three dimensional sketches. Source: Author



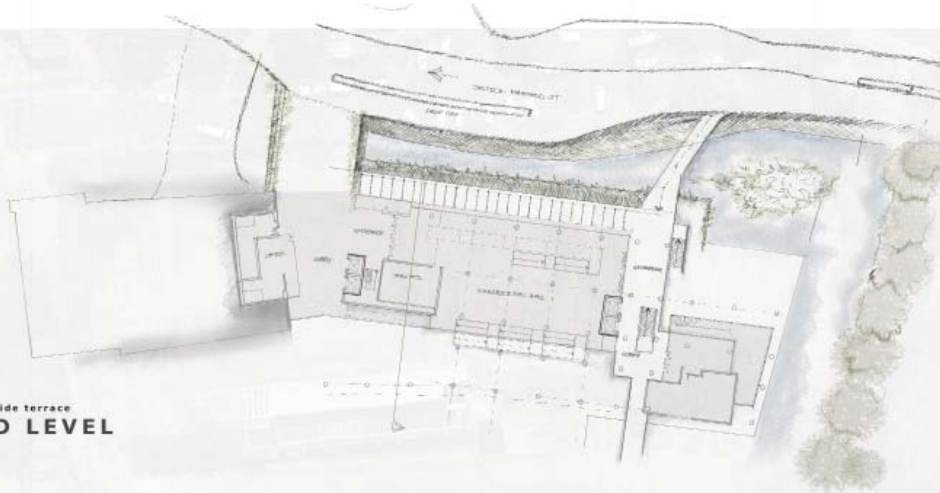
Permeability:  
openings and insertions introduced  
programme and spaces arranged around two main axis and openings



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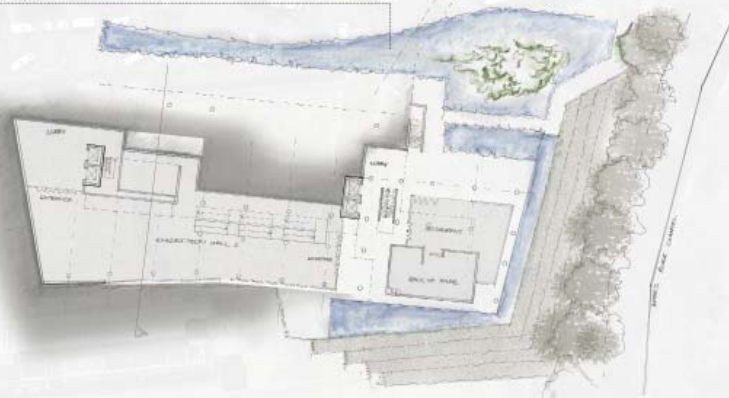


Auditorium, circulation to main hall  
**UPPER GROUND LEVEL**  
NTS



Main hall, waterside terrace  
**GROUND LEVEL**  
NTS

Water as spatial element:  
Water element to stitch building spaces and landscape

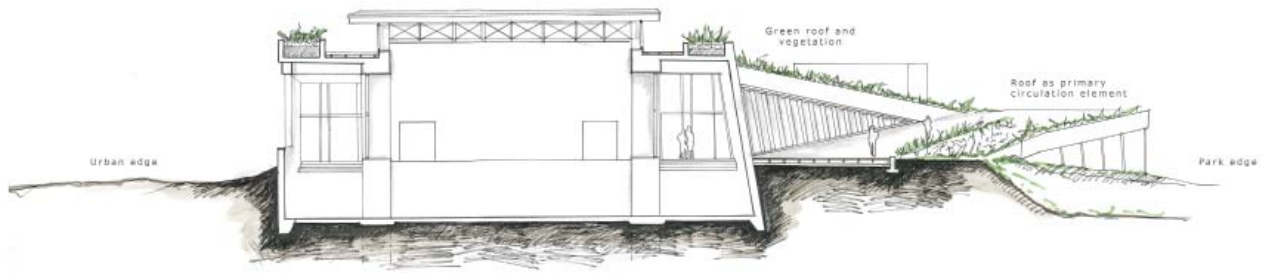


Restaurant, exhibition hall and utilities  
**LOWER GROUND LEVEL**  
NTS



Figure 9.21 ~ Iteration B - Floor plans.jpg

Floor plans. The programme is also distributed across three floor levels which respond to the site topography and slope from west to east. Source: Author



**AUDITORIUM  
NTS**



**LOBBY & EXHIBITION**

Figure 9.22 ~ Iteration B - cross section.jpg

Sectional exploration, short sections through the two main building areas. Source: Author

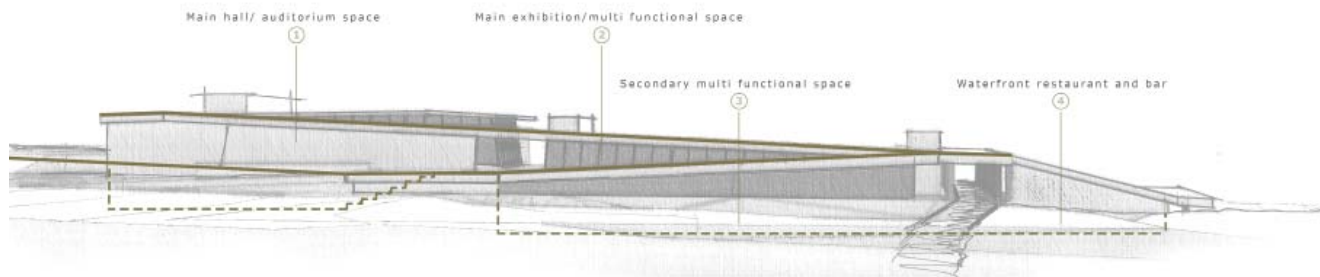


Figure 9.23 ~ Iteration B - south elevation.jpg

A diagrammatic elevation of the southern facade showing the changes in building mass, from and the gradual sloping roof scope as the secondary ground plane. The building is further suppressed and spaces are created below ground level in order to dilute the bulk of the building and better integrate it as a part of the landscape. Source: Author

### 9.2.3 Iteration C

**B**uilding on the changes implemented in Iteration B, Iteration C is considered to be a refinement of the principal architectural approach employed in the preceding iteration with a few new changes being introduced. The first change is the development of a continuous ramp system located externally between two counter directional sloped roofs. This allows for continuous pedestrian flow from the bridge all the way down to the lower ground level and restaurant space. It also provides views from external circulation spaces into internal building spaces to entice visitors to participate in hosted events.

A structural grid was developed to create open and free spaces in order to maximise the flexibility of the internal spaces. The structural grid, combined with considerations related to providing an intensive green roof system, informs the monolithic structural language and architectural aesthetic. This is evident in the exploration of the short section (north-south), which also illustrates the approach to define the roof edges as slim, sculpted and floating secondary ground planes.

Programmatic changes involve the placement of building utilities, administration offices and the

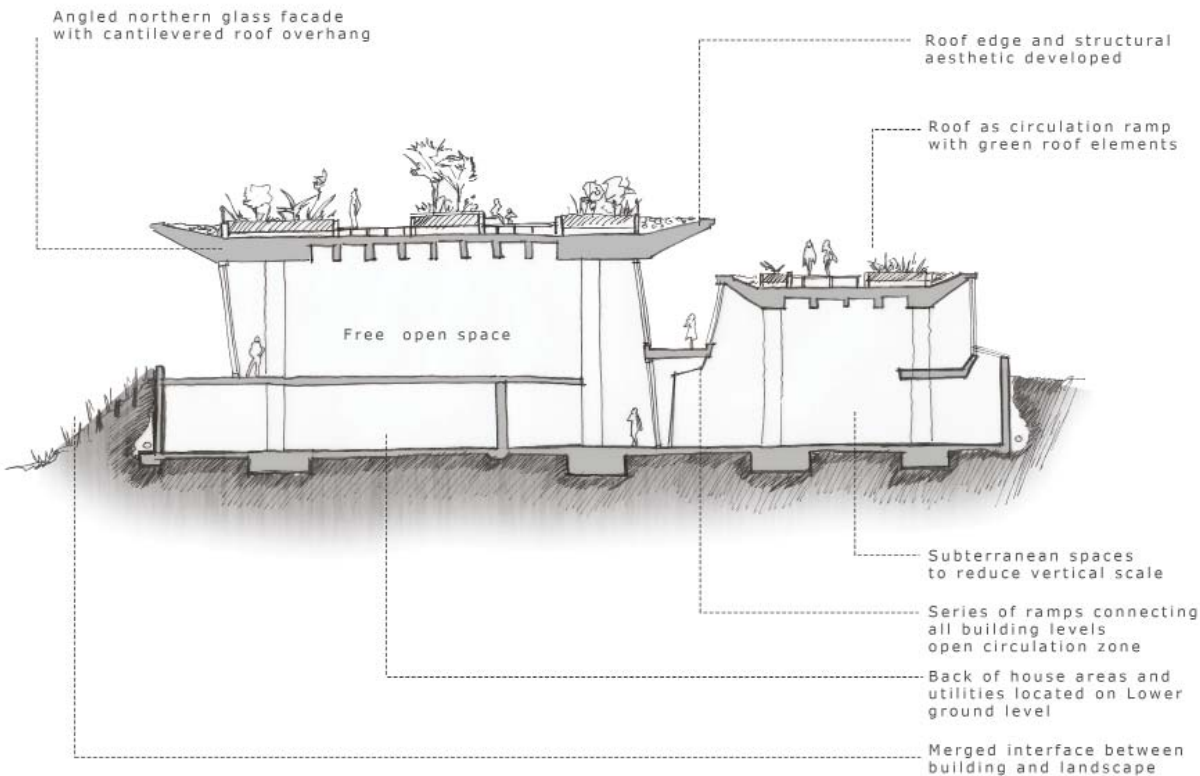


Figure 9.24 ~ Iteration C - cross sections.jpg  
Conceptual Short Section, exploration Iteration C. Source: Author

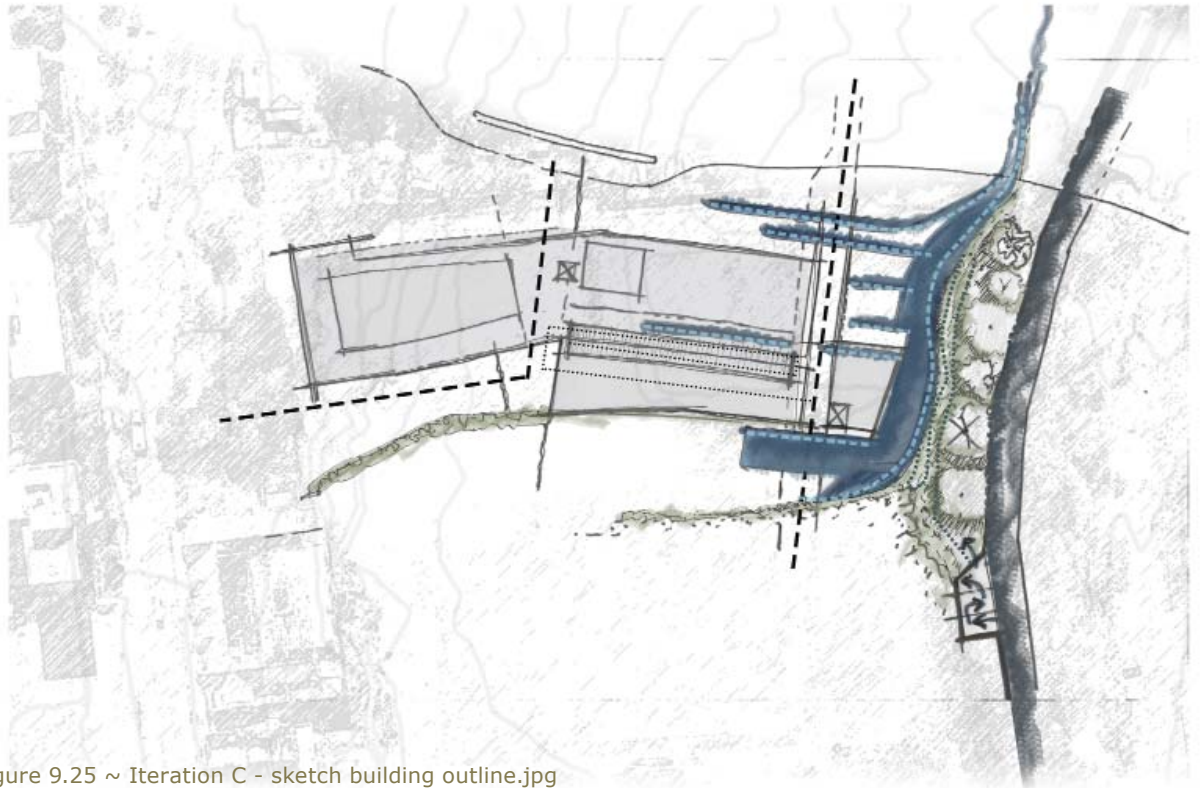


Figure 9.25 ~ Iteration C - sketch building outline.jpg  
 Sketch, building outline. Source: Author

restaurant areas on the lower ground floor level, which in this iteration is primarily below the natural ground level. The separation of the restaurant seating and back of house areas allow maximisation of views across the surface flow wetland. The placement of ablutions, ducts and vertical circulation elements are also refined. The open terrace on the ground floor above the restaurant, is covered with a lightweight pergola that slopes down from the bridge. This expresses a gradual change as the building opens up towards the waterfront.

In Iteration C the building establishes an improved integration with the landscape and the potential of the architecture to function as the interface between the

city, landscape and water becomes more apparent. The main roof, gradually sloping at three degrees (1:20 gradient) towards the western site boundary, responds to the site topography and serves as a public park with views across Berea Park and the surrounding city context. The southern roof, also sloping at three degrees (1:20 gradient), becomes integral in the building's circulation network and links the respective building levels as it connects to a set of ramps that flow out to the waterfront. Alternative vertical access is provided by means of two vertical circulation spines consisting of an elevator and staircase located at each of the two main building thoroughfares.



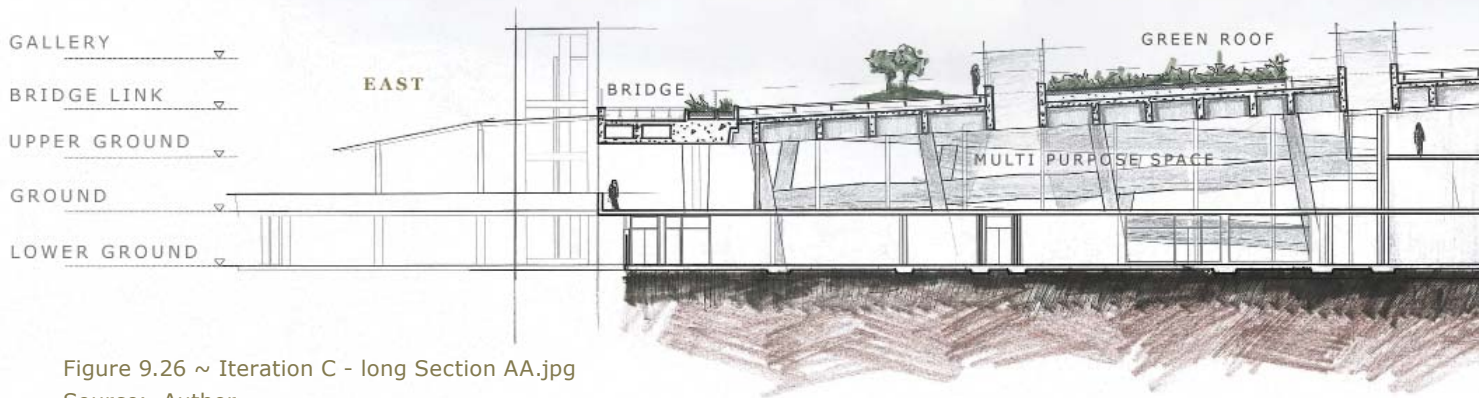


Figure 9.26 ~ Iteration C - long Section AA.jpg  
Source: Author

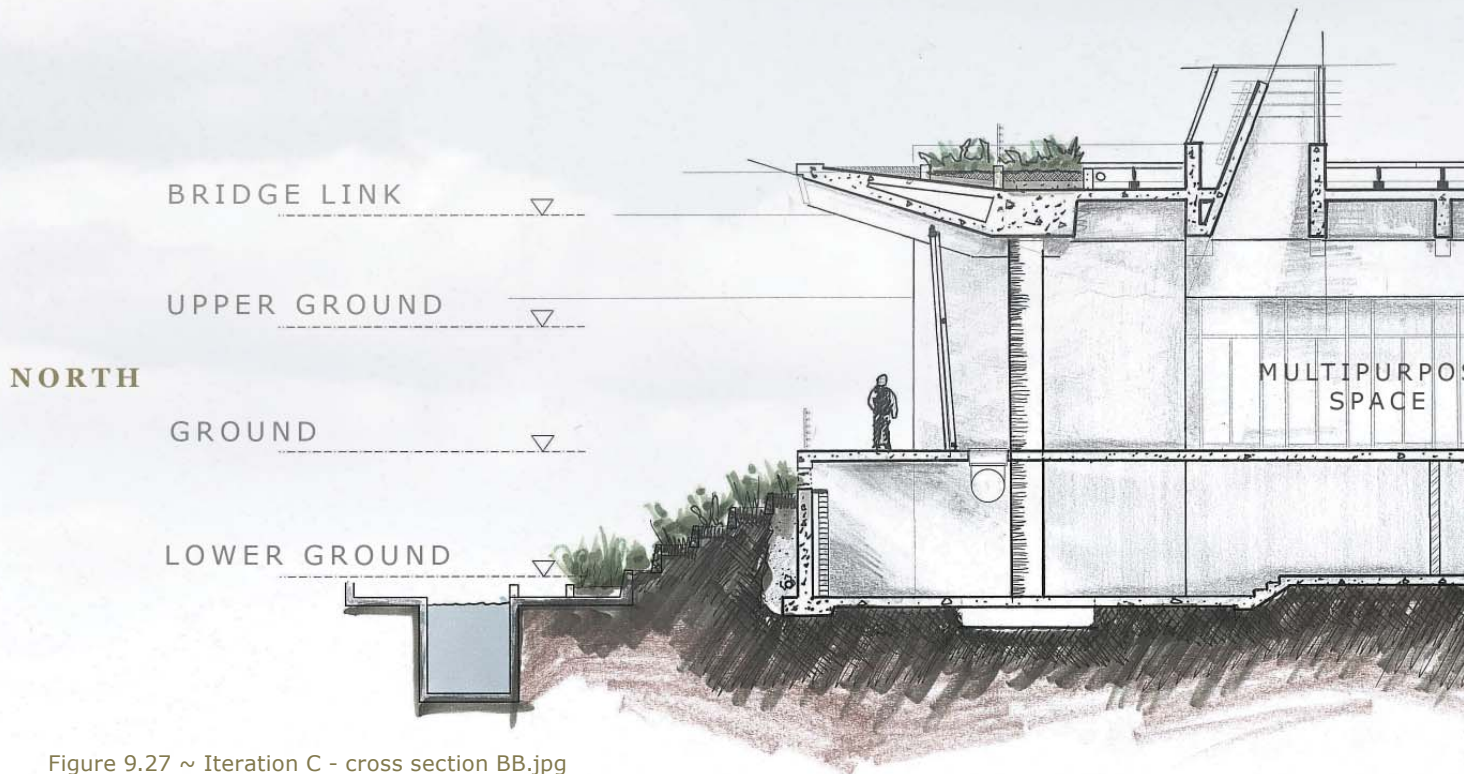
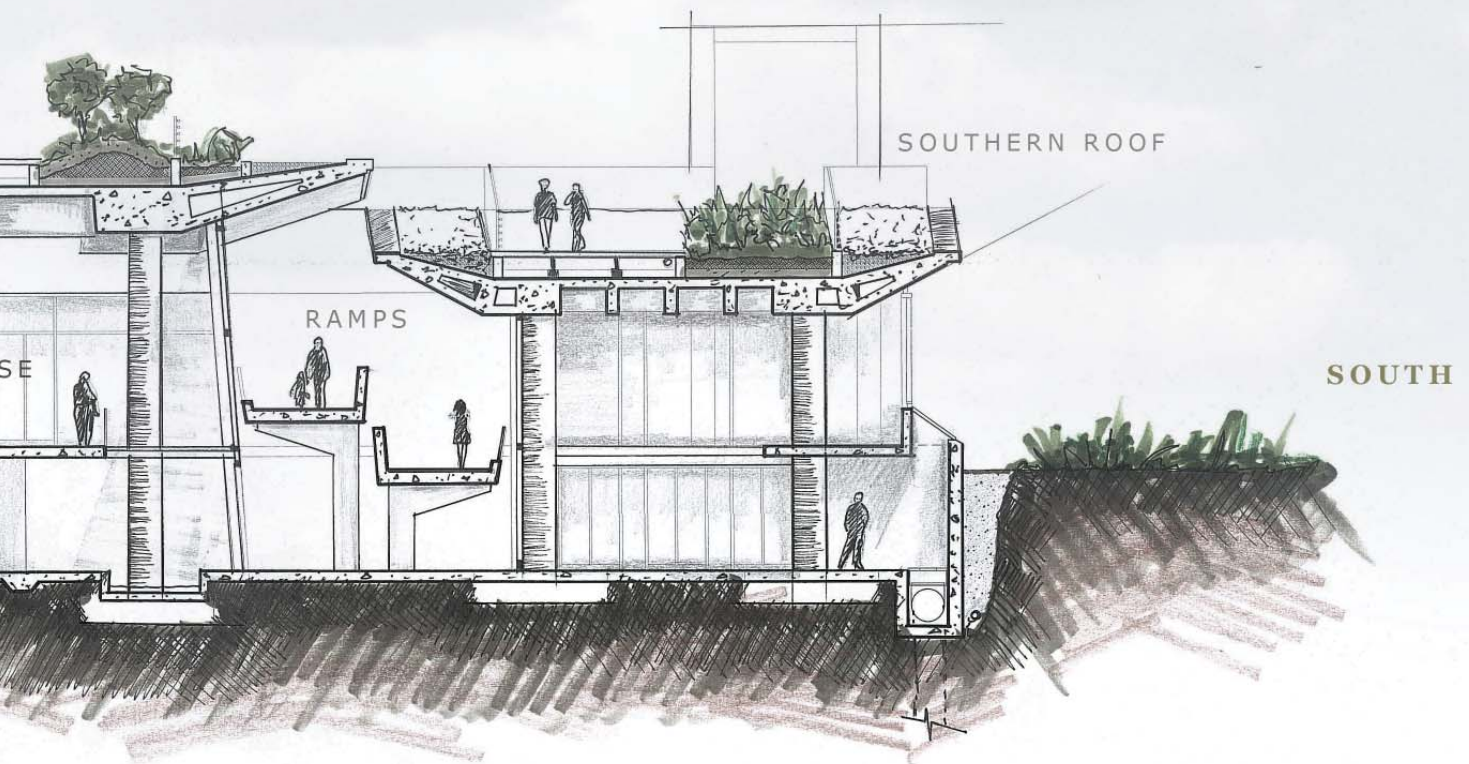
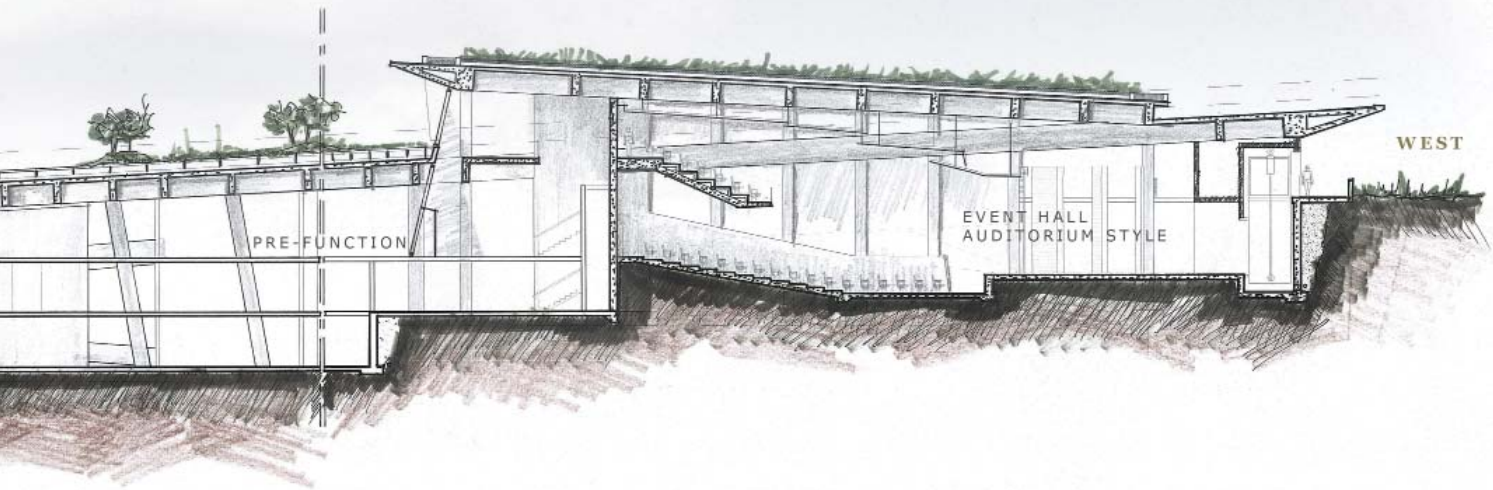
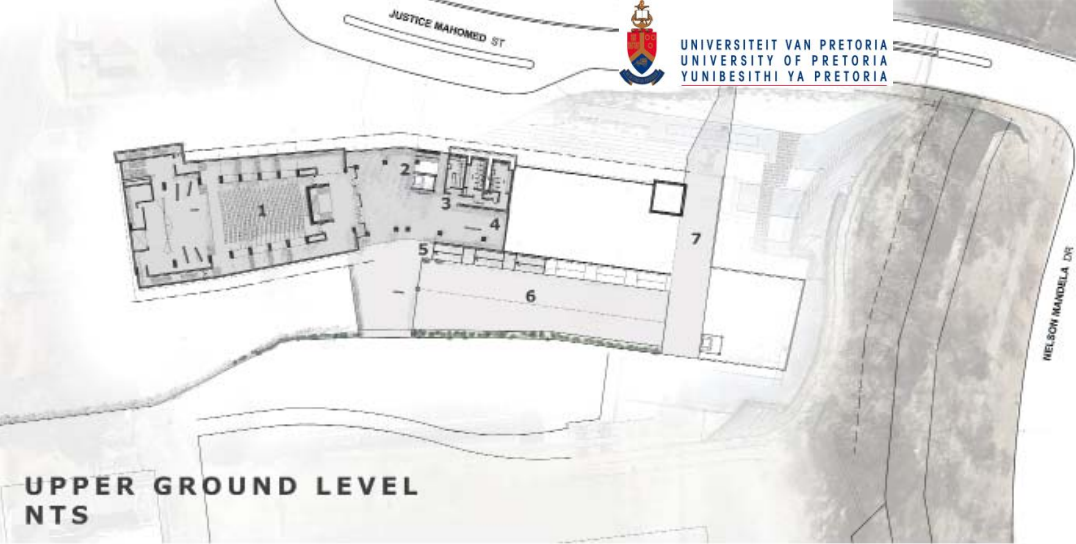


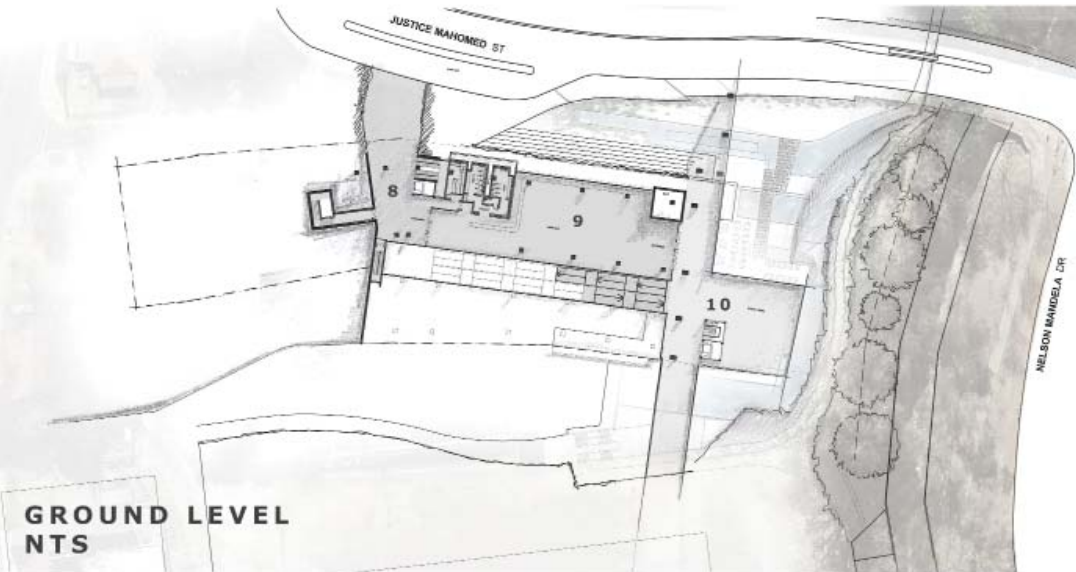
Figure 9.27 ~ Iteration C - cross section BB.jpg  
Source: Author



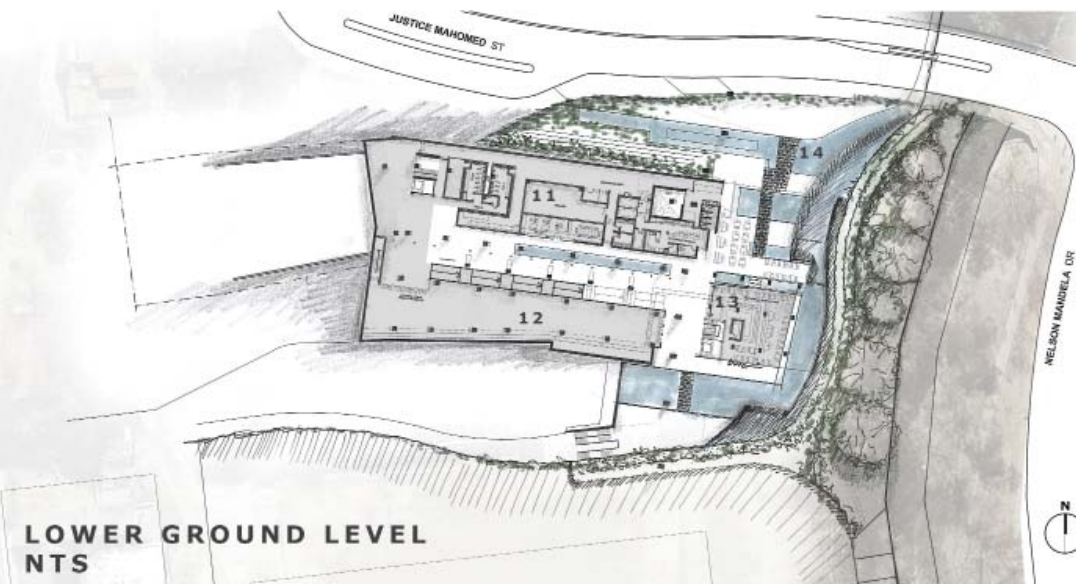




**UPPER GROUND LEVEL  
NTS**



**GROUND LEVEL  
NTS**



**LOWER GROUND LEVEL  
NTS**

Floor Plans iteration C

1. Main event hall, auditorium style
2. Foyer with vertical circulation point
3. Service core: Toilets and satellite kitchen
4. Pre-function
5. Ramp connecting all floor levels
6. Sloped roof to Bridge connection
7. Bridge from North Block
8. Main entrance from street level
9. Multipurpose hall
10. External plaza and vertical circulation point
11. Back of house areas: storage, office, staff and kitchen
12. Multipurpose/exhibition space
13. Restaurant and bar
14. Waterfront and wetland

Figure 9.28 ~ Iteration C - floor plans.jpg

Source: Author

## 9.2.4 Iteration D

This iteration focussed on conveying the essence of the dissertation, that of creating a hybrid typology of building and landscape to serve as an interface between the city of Pretoria and Berea Park. For this reason, and as evident in the revised drawings, Iteration D comprises a simplified building with the majority of the programme contained under a single sloping roof plane. The programme is distributed across three levels: a lower and upper ground floor level and the accessible roof.

The roof plane becomes an expression of the site topography and is seen as an elevated ground plane that is manipulated to create connections to the landscape on either side of Justice

Mahomed Street. With the repositioning of the bridge connection (across Justice Mahomed Street), the single main roof forms a primary circulation route, lined with vegetation and linked to a continuous ramp that leads to the southern building entrance and Berea Park. A primary vertical circulation point establishes a hierarchy that defines the building's main entrance and also acts as a hinge between the western and eastern flanks. A central open foyer is accessible from the northern and southern facades. From here the building orientation shifts and the building mass and form tapers to the eastern edge to express the shifting condition from the western (urban) towards the eastern ("nature") edge.

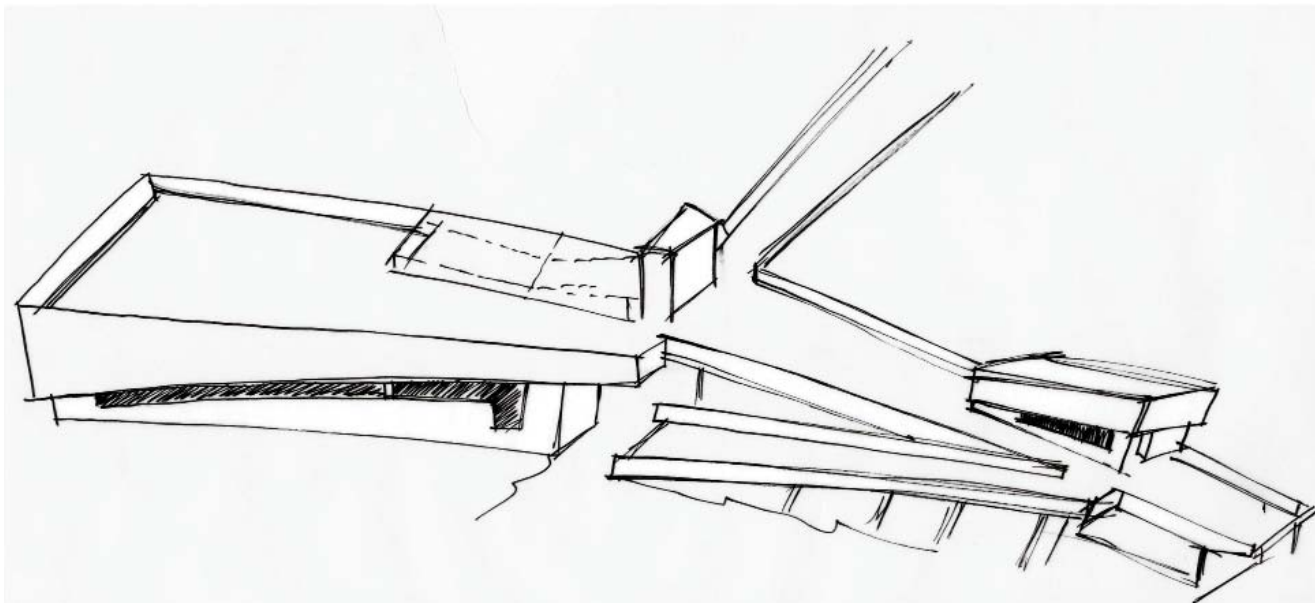


Figure 9.29 ~ Iteration D - conceptual design sketch.jpg

Source: Author

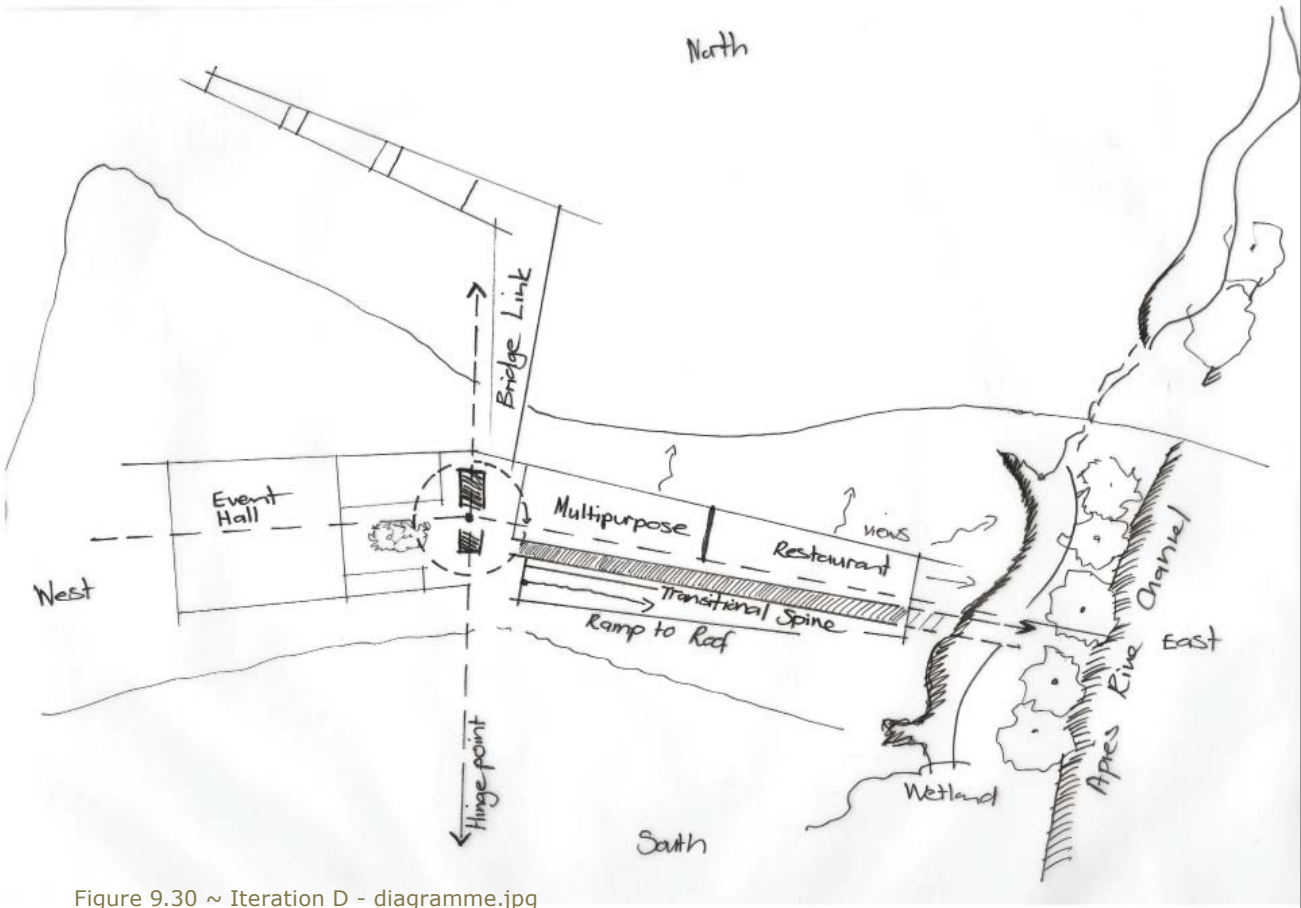


Figure 9.30 ~ Iteration D - diagramme.jpg  
Diagramme of design reconfiguration. Source: Author



A covered external walkway that stretches from the open central entrance in an easterly direction along the southern/landscape edge functions as a connecting spine through the eastern flank of the building. The spine links the upper and lower ground floor levels and ultimately spills out to an external terrace overlooking the wetland. It acts as a transitional zone and threshold layer between internal and external spaces highlighting the link between building and landscape.

Changes to the structure, roof and elevations generate a single monolithic mass expressed as a constructed landscape (responding to the site and building topography), rather than individual building components with an isolated floating roof plane as depicted in Iteration C.

Spaces associated with specific programmes were also simplified to enhance flexibility. The removal of the fixed raked seating in the main events hall permits a variety of uses and creates a less formal space. The volume of the space remains unaltered to ensure temporary raked seating

would still fit should it be required to use the space in such a manner. To activate the roof space, a dedicated social event space projects through the roof plane above the restaurant area with seating areas provided at the eastern edge overlooking the wetland and tree canopy along the river channel, as well as the Berea Park sports fields.

All the aforementioned changes in Iteration D provide both improved physical and visual connections between the internal building spaces and roofscape and their surrounding context.

In Iteration D the relationship between building and landscape is primarily a reciprocal relationship, as the building (in the form of a new constructed topography), the directly surrounding landscape and wetland are all connected spatially. The introduction of an internal garden in the events hall lobby/foyer further highlights the notion of the connection between internal and external environments, especially in deep spaces where typical visual connections by means of fenestrations are not possible. “Nature” is unexpectedly celebrated as a focal point with natural light filtering into the space through an opening in the roof.



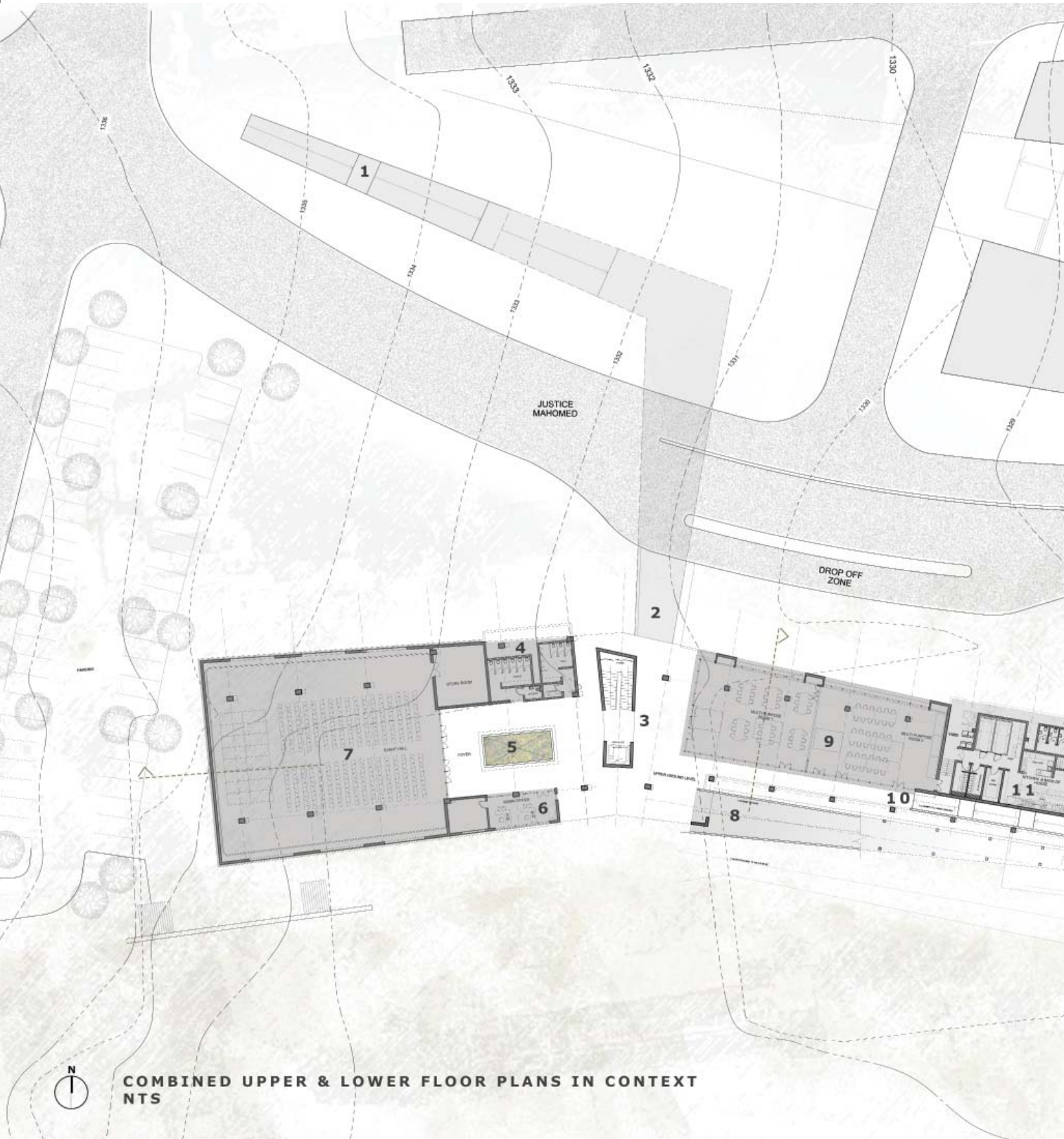


Figure 9.31 ~ Iteration D - combined floor plans in context.jpg



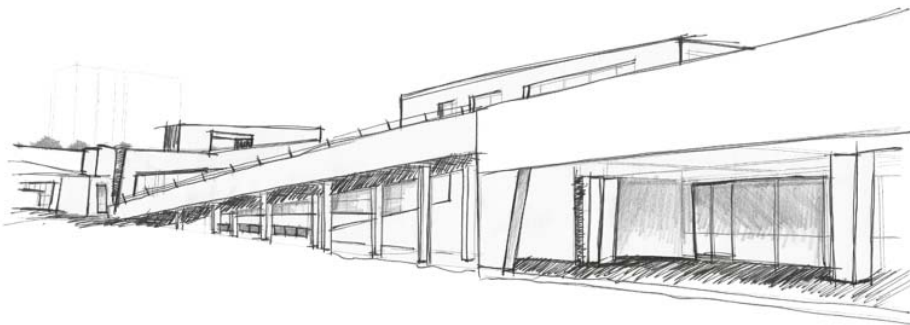


Iteration D, Combined Floor plan in context

1. Bridge ramps
2. Bridge connection to building roof at higher level
3. Entrance Foyer with vertical circulation point
4. Toilets
5. Internal garden
6. Administration office
7. Event Hall
8. Ramp to Roof
9. Multipurpose venues
10. Ramps to Lower Ground Level
11. Restaurant kitchen and back of house areas
12. Bar and internal restaurant seating areas
13. External seating terrace
14. Waterfront with wetland
15. Apies River channel

Source: Author

View of north-eastern edge  
where restaurant spills out  
on to terrace



South eastern edge  
indicating ramp connecting  
to roof, as well as the event  
space projecting the main  
roof

Figure 9.32 ~ Iteration D - sketches.jpg

Source: Author

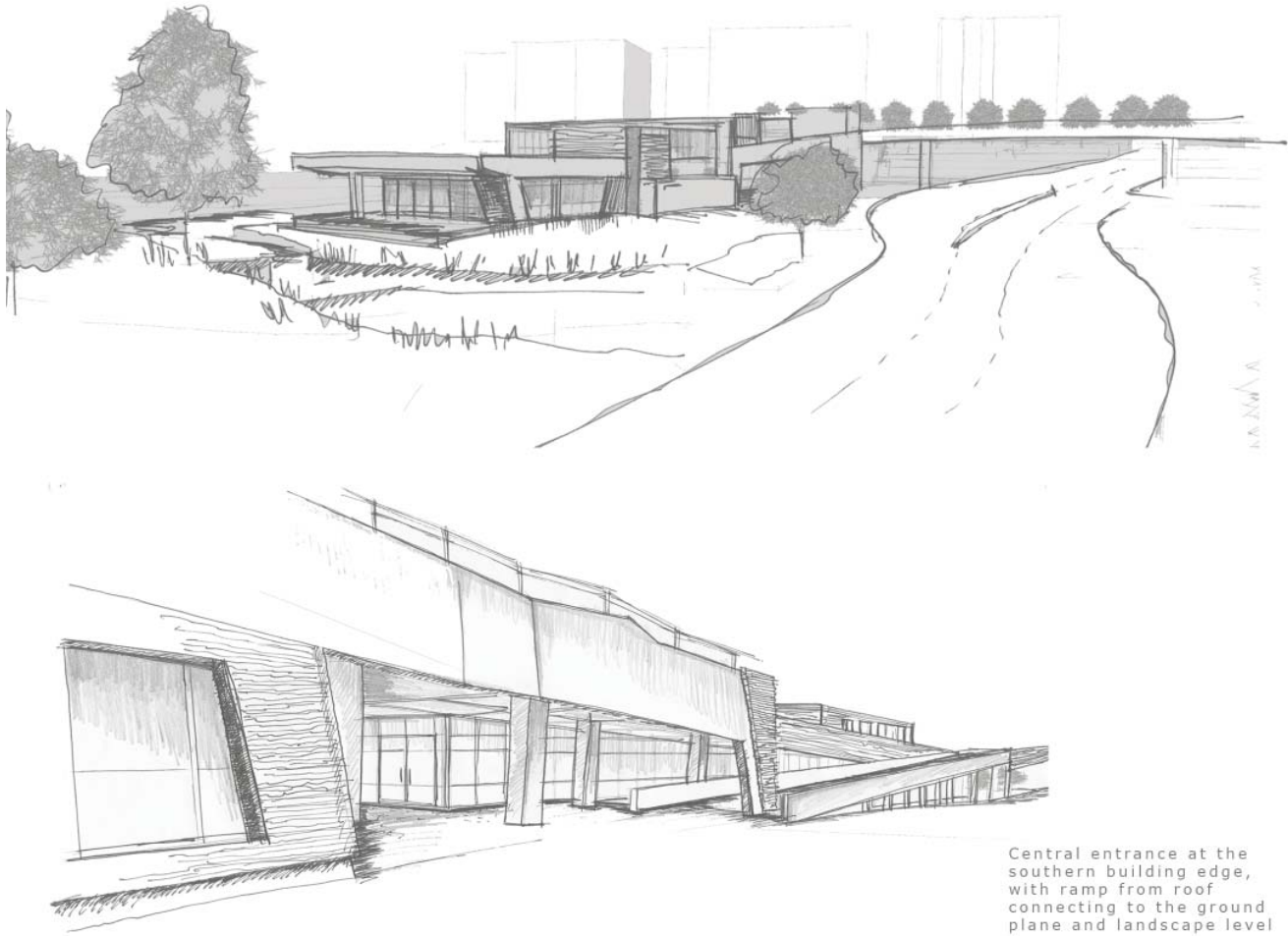
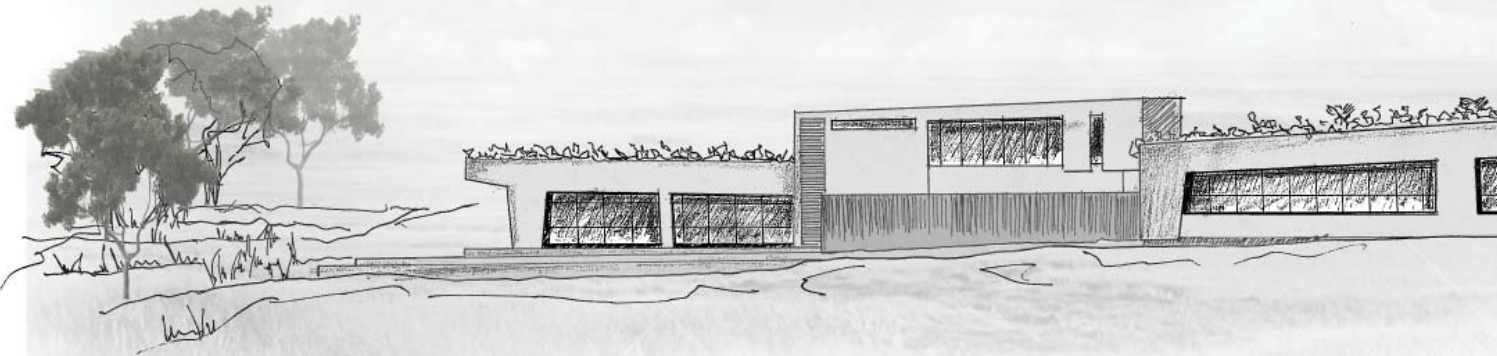


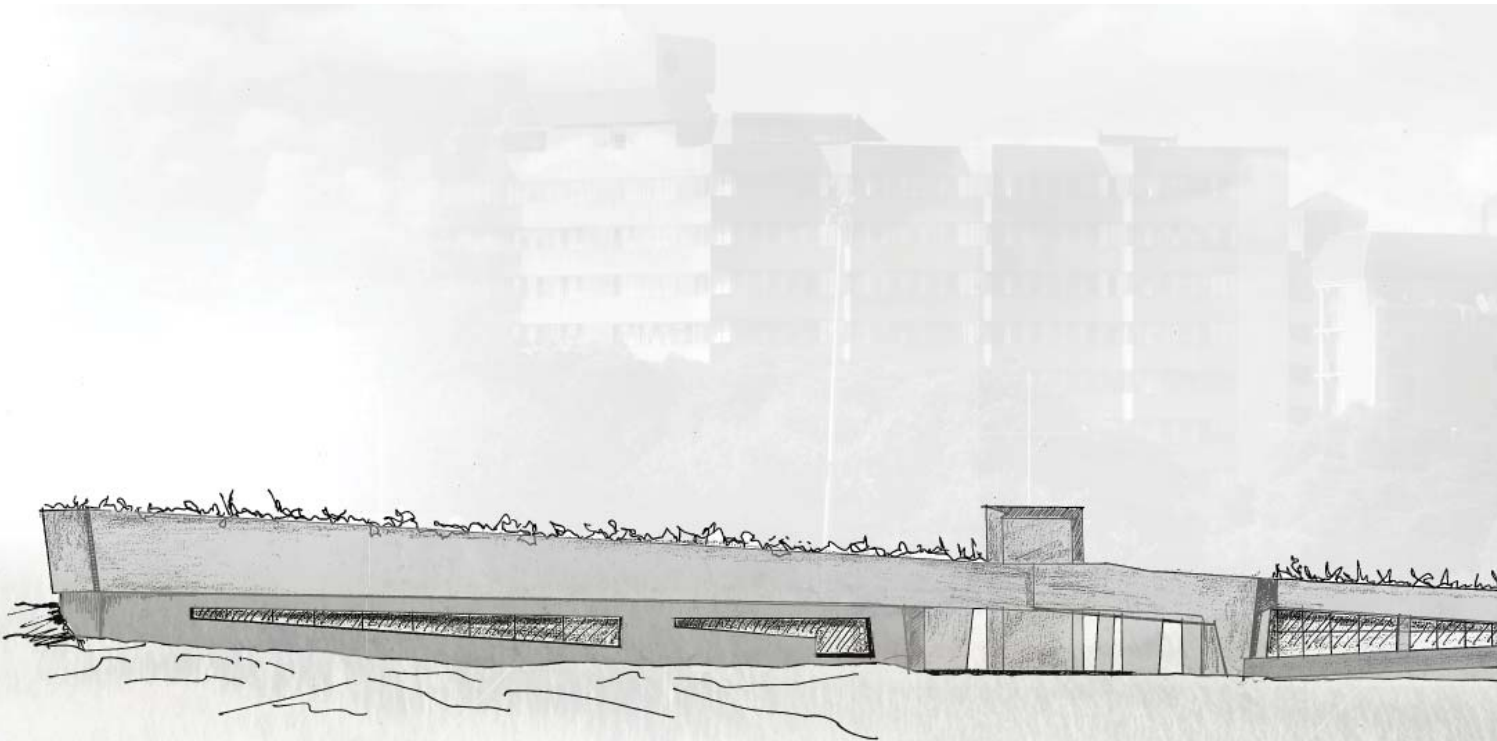
Figure 9.33 ~ Iteration D - sketches.jpg

Source: Author



**NORTH ELEVATION  
NTS**

Figure 9.34 ~ Iteration D - north elevation.jpg  
Source: Author



**SOUTH ELEVATION  
NTS**

Figure 9.35 ~ Iteration D - south elevation.jpg  
Source: Author



