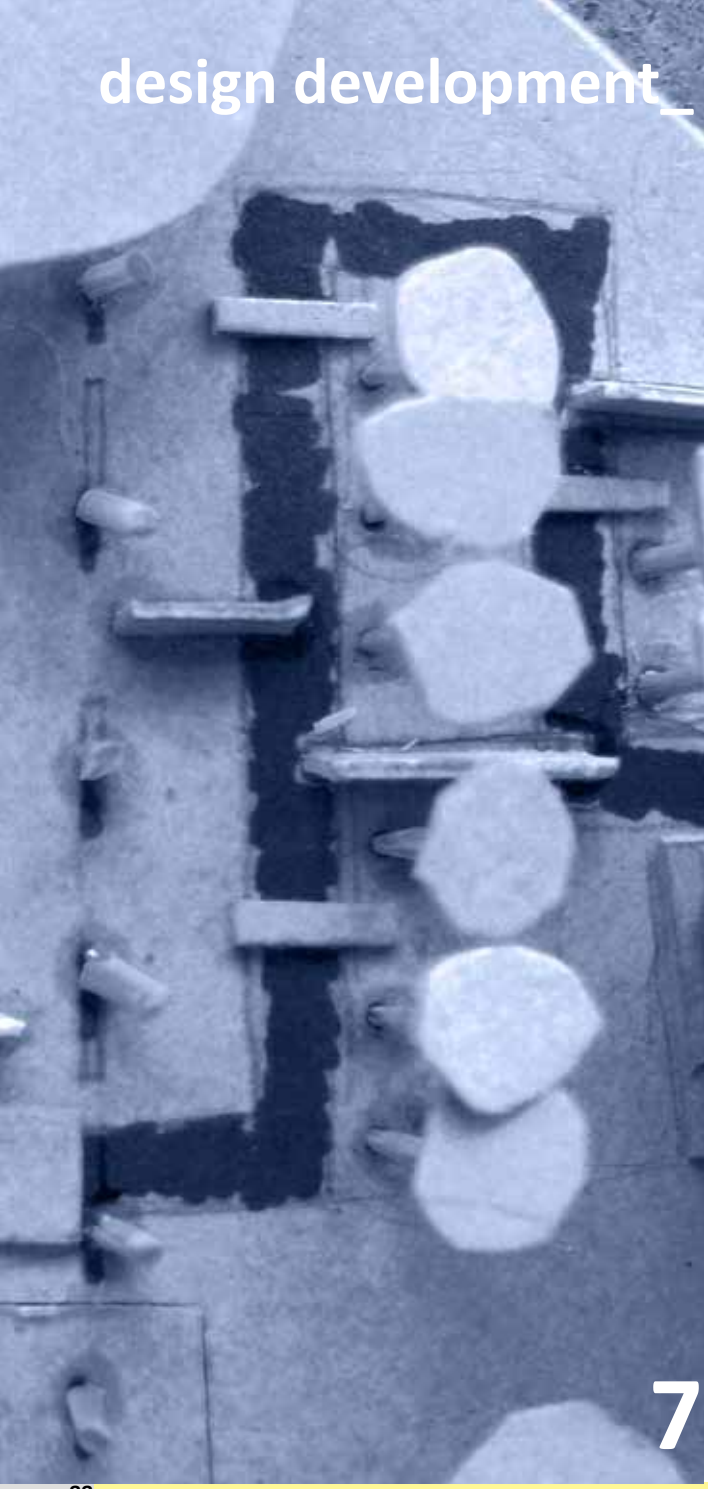


design development_

7

Clues and cues

The first cue towards site selection was the large piece of open ground in the city, and the presence of the Apies River channel on site. The width and depth of the concrete channel cuts the site in two unevenly sized parcels. This site longs for unification and use; it brims with potential and the promise of a so-called river.

The presence of the river led to a design focusing on meaningful encounters with water in urban environments. The harsh state of the river and the lack of connection between the river and the city dweller pushed for an intervention that would try to reconnect people to the Apies River, to what it was, what it is and what it could be. The openness of the site creates a place of repose in city, the large volume of open space needs to be protected, celebrated and enhanced.

Design generators

There are three main form givers to the design

- The physical shape of the concrete channel
- The metaphysical line where the river used to run
- The collision of the city grid with the grid of the concrete channel

From observing the study area and interviews with schools in the area it became clear that open space for playing and relaxation in the surrounding area was limited and insufficient. The residential area to the north of the site is dominated by high rise residential units and lacks safe green public open space.

From here the design development flows...

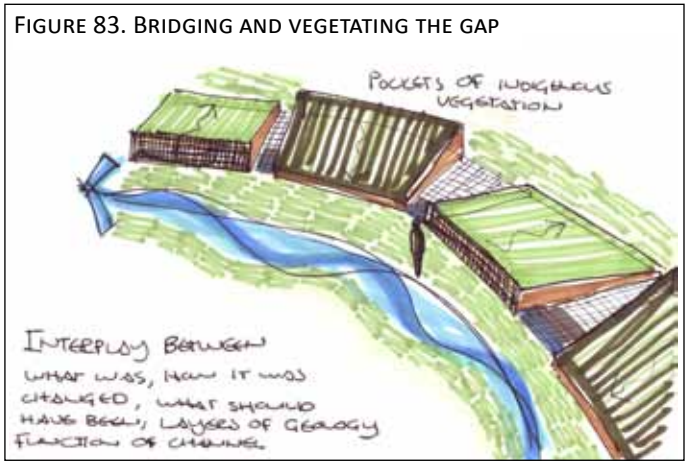
Concept site plan

The concept plan (figure 82) covered the channel with habitable space. The aim was to bidge the gap and unify the site. The base flow would be on the surface while the channel below would accommodate the flash floods. The green wedges (figure 83 and 84) would act as seating and vegetated pockets. Crossing the site diagonally was an important form giver.

Covering the channel so extensively is not financially feasible and peak runoff that push against a covered top would create disastrous floods as the dynamic of a covered channel varies greatly from the current state.

Figure 82. Concept plan 1 (March 09)

Figure 83. Bridging and vegetating the gap



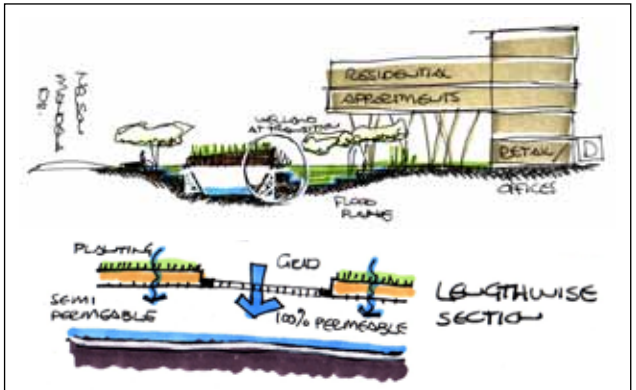


Figure 84. Exploring concept 1 (March 09)

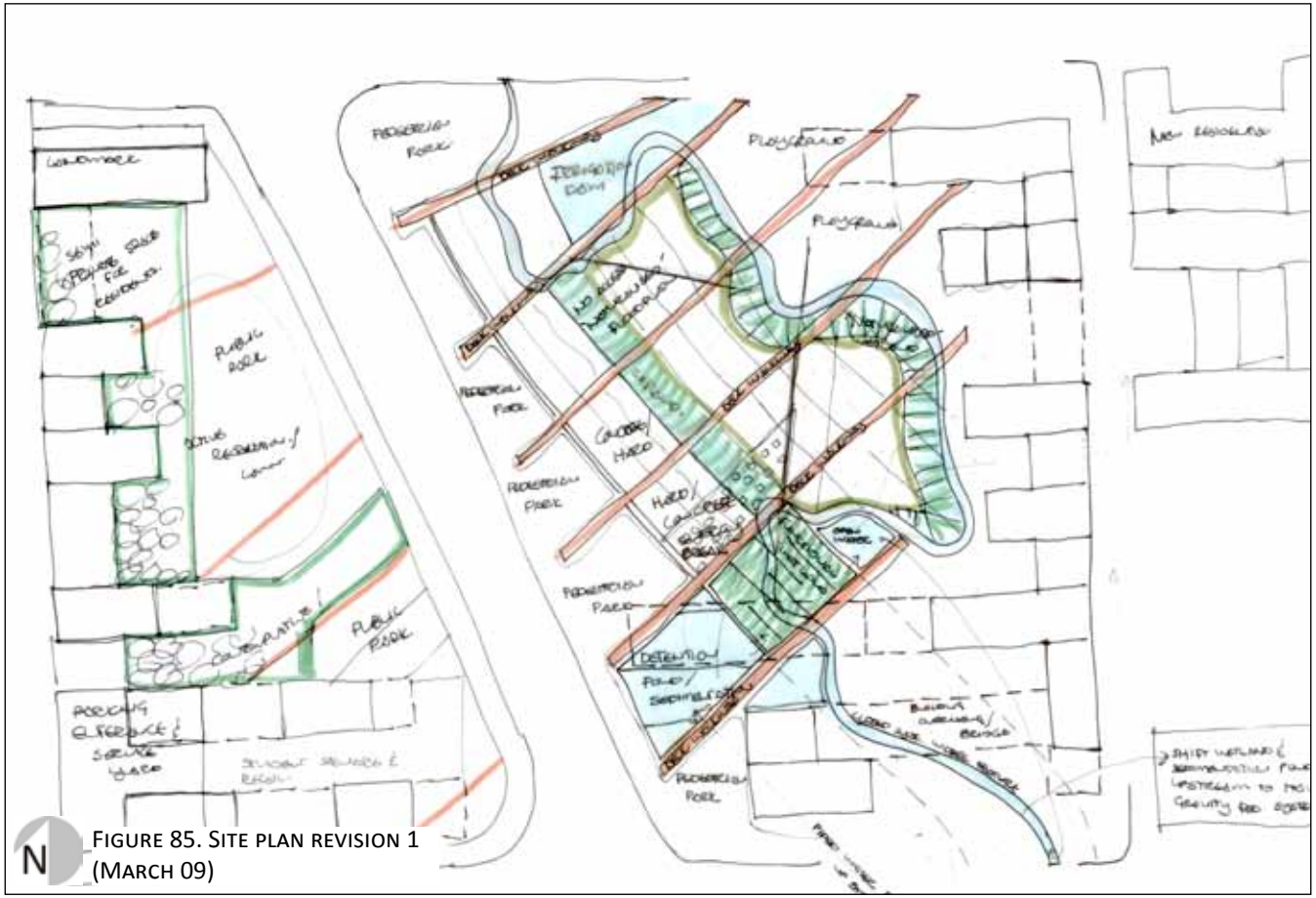


FIGURE 85. SITE PLAN REVISION 1 (MARCH 09)

FIGURE 86. SITE PLAN REVISION 2 (MARCH 09)

SITE PLAN REVISION 1

Revision 1 of the site plan (figure 85) started to address the master plan area. The site west of the project site forms part of the master plan area and addresses the need for more green open space. The site on the western side of Nelson Mandela Drive becomes a spill-out park that would be quiet and contemplative while the project site would be a hub of activity and excitement.

Ecological aspects such as flood plane restoration and wetland construction became important at this stage as well.

SITE PLAN REVISION 2

Revision 2 (figure 86) programmed both sides of Nelson Mandela Drive. Relevant supporting buildings was suggested. The channel crossing is placed strategically. The base flow of the Apies River follows a naturalistic stream on ground level outside the channel. The concept of inflatable dam walls gives opportunity of have a full channel.

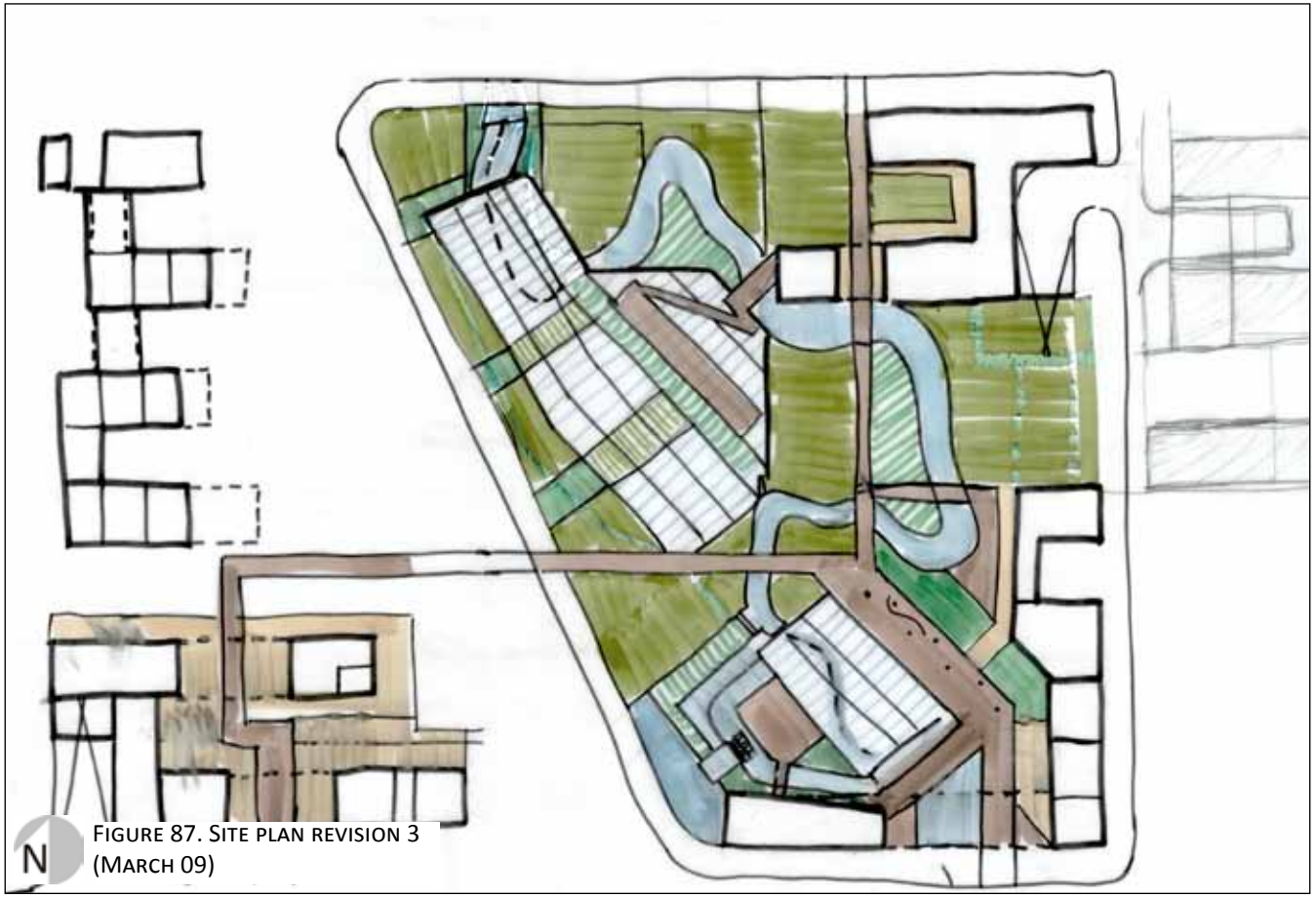


Figure 87. Site plan revision 3 (March 09)

Site plan revision 3

Revision 3 (figure 87) refines the design from revision 2. The base flow crosses the channel on grade and the 'deemed idealistic' idea of inflatable dam fade to the background. A amphitheatre (figure 88) is cut in the side if the channel to be connect with the river and the anticipated volume of water.

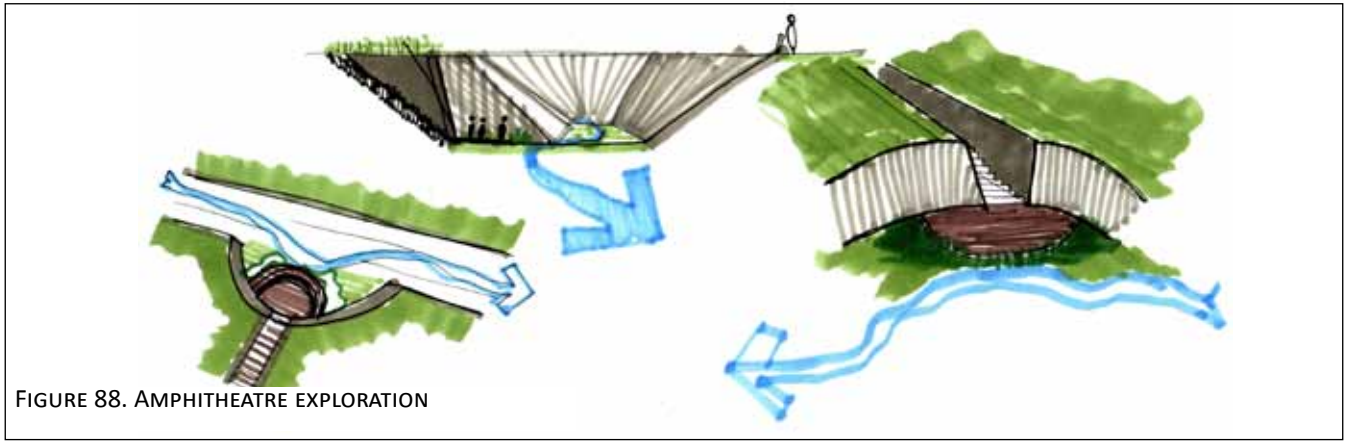


Figure 88. Amphitheatre exploration

Figure 89. Site plan revision 4

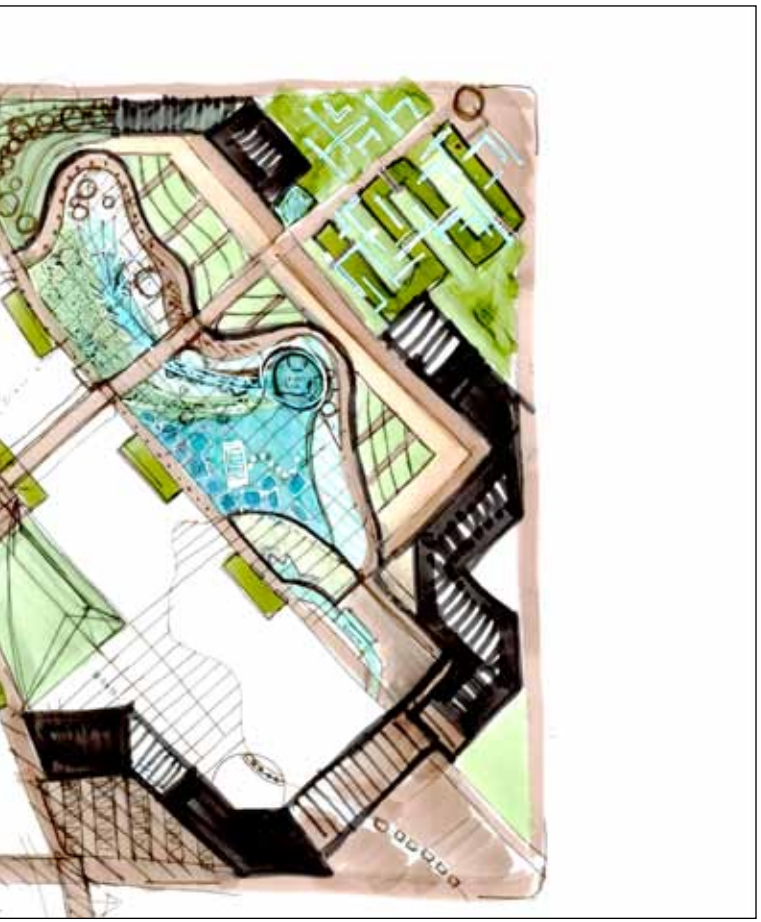
Site plan revision 4

Revision 4 (figure 89) discards the amphitheatre concept due to control and flooding issues. A water wheel is introduced to the project to lift the base flow from the channel.

Figure 90. Site plan revision 5

Site plan revisions 5 & 6

A major breakthrough (figure 90 & 92) was reached through changing the grid of the proposed buildings. The open centre of the site was now enveloped by buildings that responds to the angle of the channel. The search for a soft connection between people and the river continued through the exploration of cantilever grass planes. Concepts that explores the energy of the floods and the memory of the old river was introduced (see figures 91 and 93).



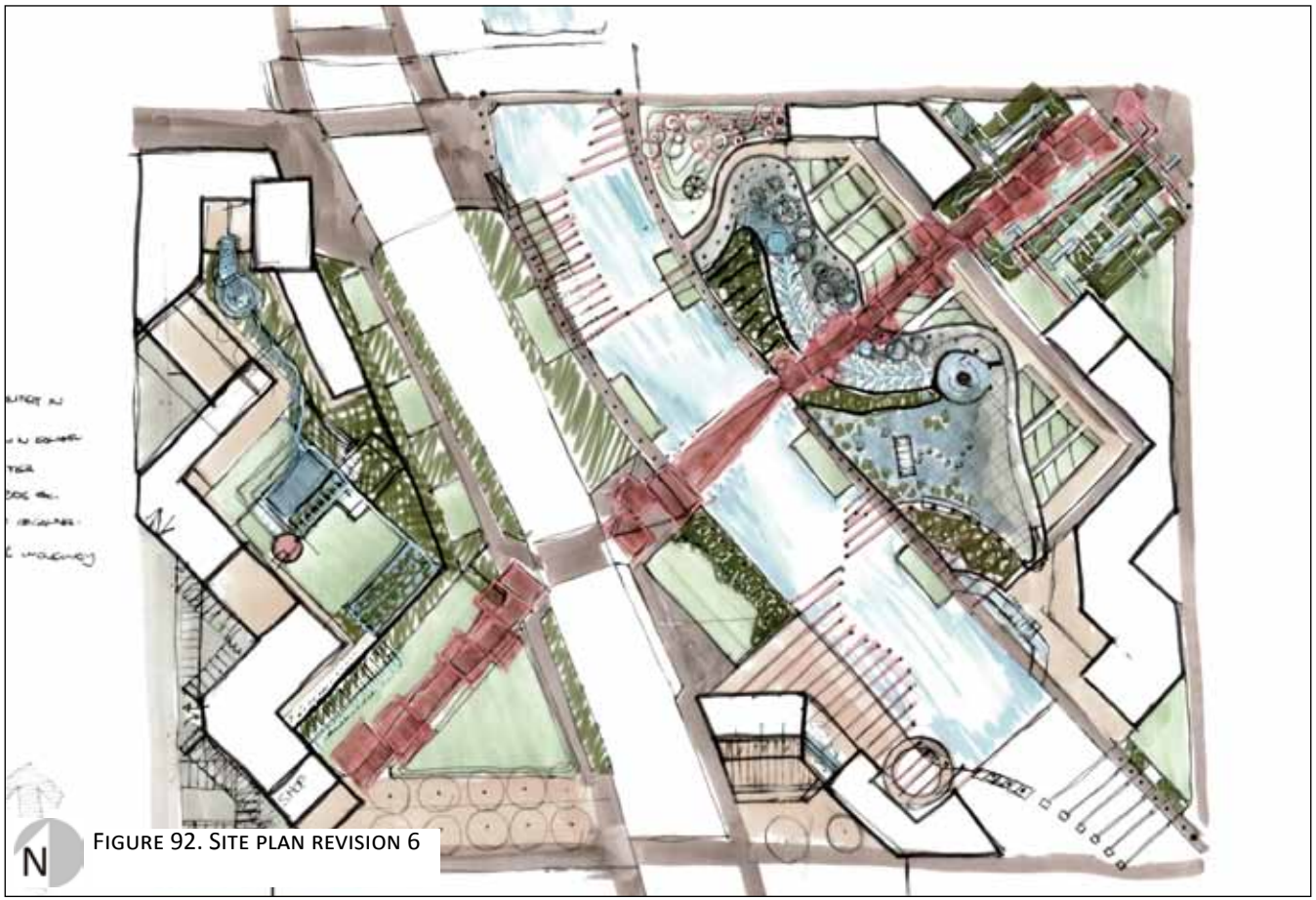
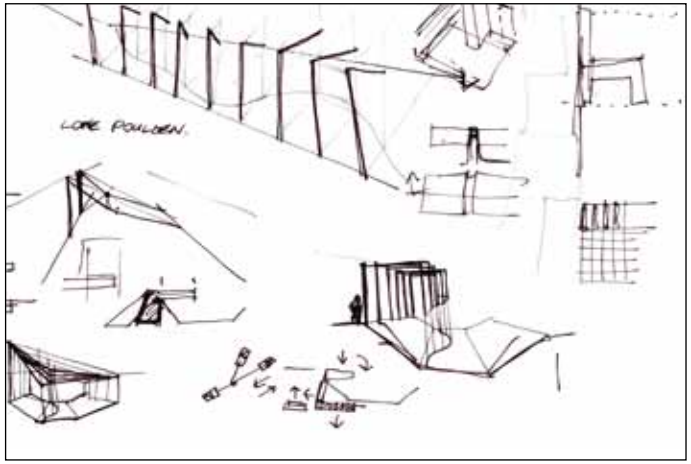
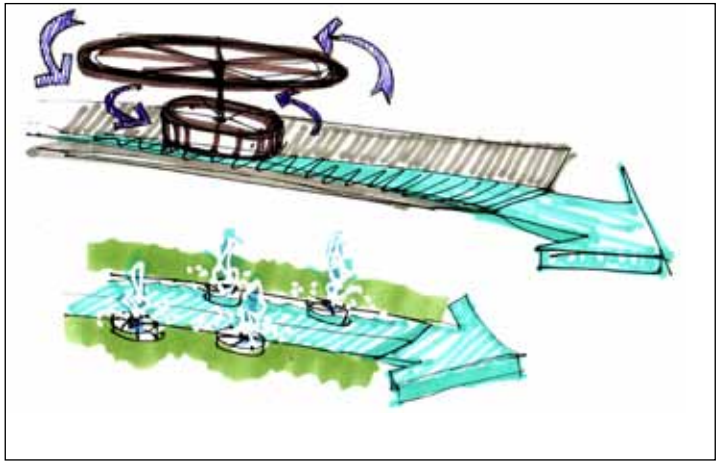


FIGURE 92. SITE PLAN REVISION 6





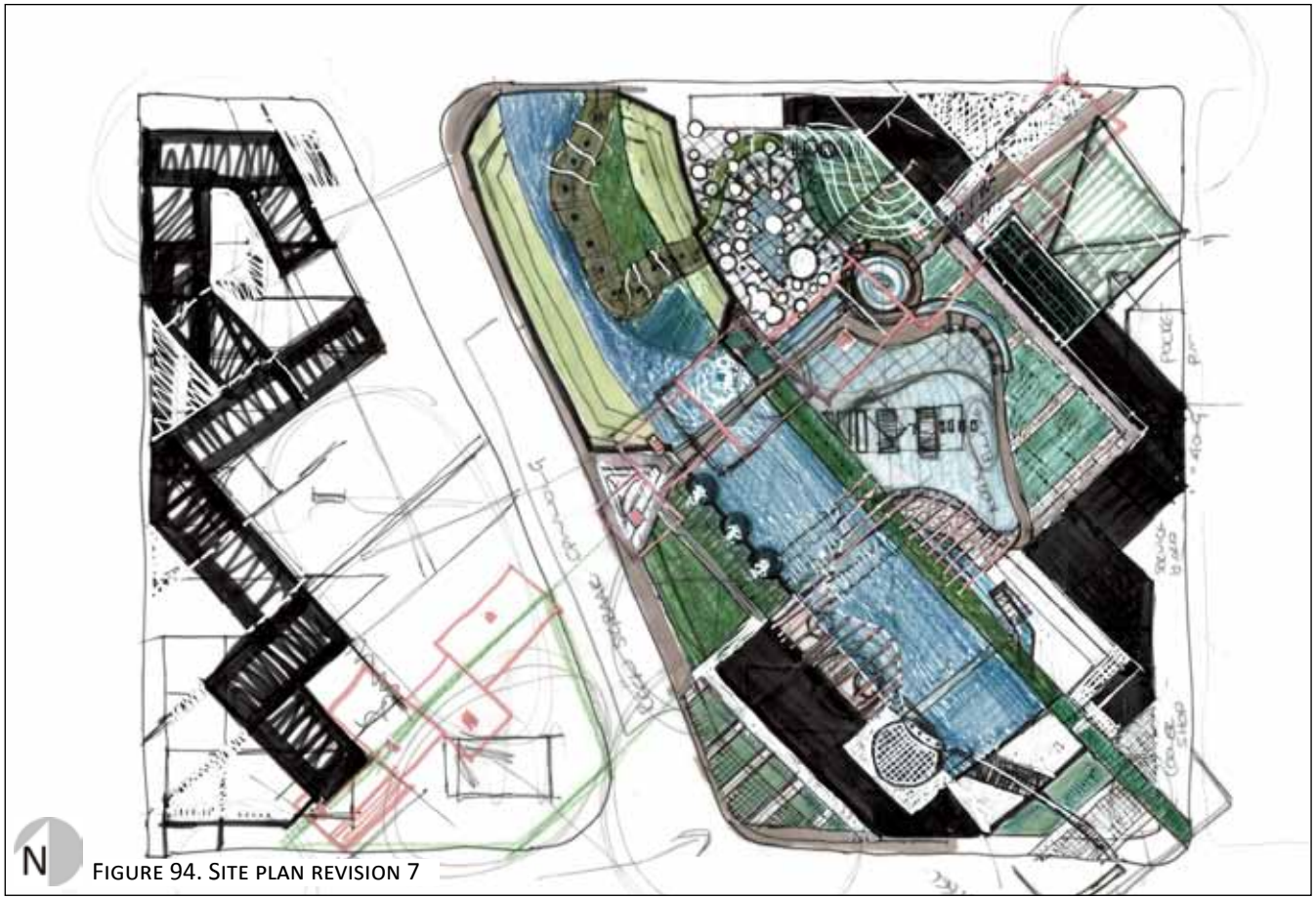


Figure 94. Site plan revision 7

Site plan revisions 7, 8 & 9

Revision 7, 8 & 9 introduces vertical elements on the pedestrian bridge, treats the line of the old river as element rather a physical stream and fragments and abstracts the line. The vortex pool becomes the centre of the site. The the idea of recycling concrete from the river channel was adopted.

A myriad of interactive play concepts littered the site and fragmented the design.

Revision 9 (figure 96) started the process of simplification.

Forrest of dead invader trees

Figure 95. Site plan revision 8

Figure 95. Site plan revision 9

Abstraction and *parti* diagram

From these explorations the interplay of the old line where the river used to run needed to be abstracted, as awkward curves complicated the spatial arrangement on site. The line became a representation, not a physical path (figure 97).

At this stage a *parti* diagram was drawn to solidify the design approach (figure 97).

The *parti*

Parti can be described as an expression of the core concept of a design in a diagram (Frederick, 2007, p. 15).

The line of the concrete channel becomes something solid, rigid and stereotomic, suggesting the physical. The representational line of where the river used to run becomes something intangible and metaphysical, relating to the memory of the river and tectonics.

The intersection of the physical and metaphysical, the concrete and the memory change both the elements, the concrete channel becomes more liquid and the line of where the river used to run becomes more solid.

A new site grid is established perpendicular to the concrete channel (figure 97). This comments on the change of grid between Sunnyside and the city centre, thus acknowledging the impact of the river on the city. The new grid is accentuated by a single crossing of the Apies River channel via a bridge, addressing the important pedestrian link across the site.

The *parti* is applied to every level of design in a simplified form where a solid mass is intersected by a light, curving element.

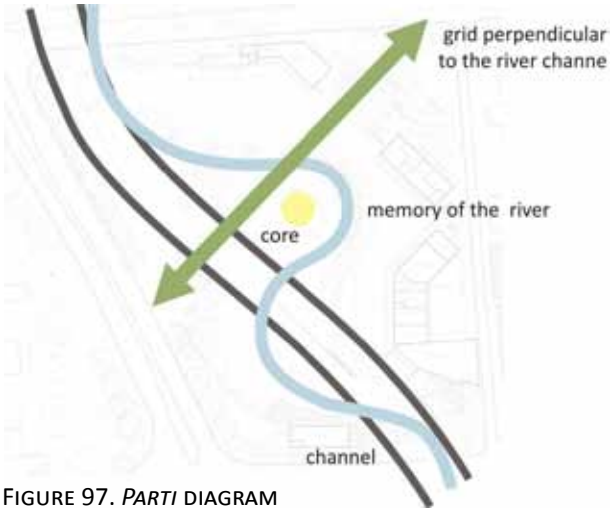


Figure 97. *Parti* diagram

Designing for on site water

The on site water systems (see chapter 8) are all integrated and works towards

- expressing the types of on site water and creating awareness around natural and artificial water systems
- celebrating water in the urban environment through a variety of experiences and creating opportunities for interaction
- eliminating the use of potable water for irrigation and reducing the need for potable water use in sanitary appliances
- establishing region appropriate biomass on site

Integrating theory with on site water systems

Figures 98 and 99 are the conceptual function diagrams that explain the integration of the on site water systems through the use of General Systems Theory.

The systems directly address the water related goals that were identified from the ecosystem service analysis diagrams, and address the appropriate regional biomass aims indirectly via the connectedness discussed in chapter 3.

Site plan revisions 10, 11 & 12

Revisions 10 through 12 (figure 100 - 102) focuses on abstracting the line further and finding the form for a pedestrian bridge and constructed wetland by the water wheel.

Figure 102 simplifies the play area and introduces a much needed kick about lawn.

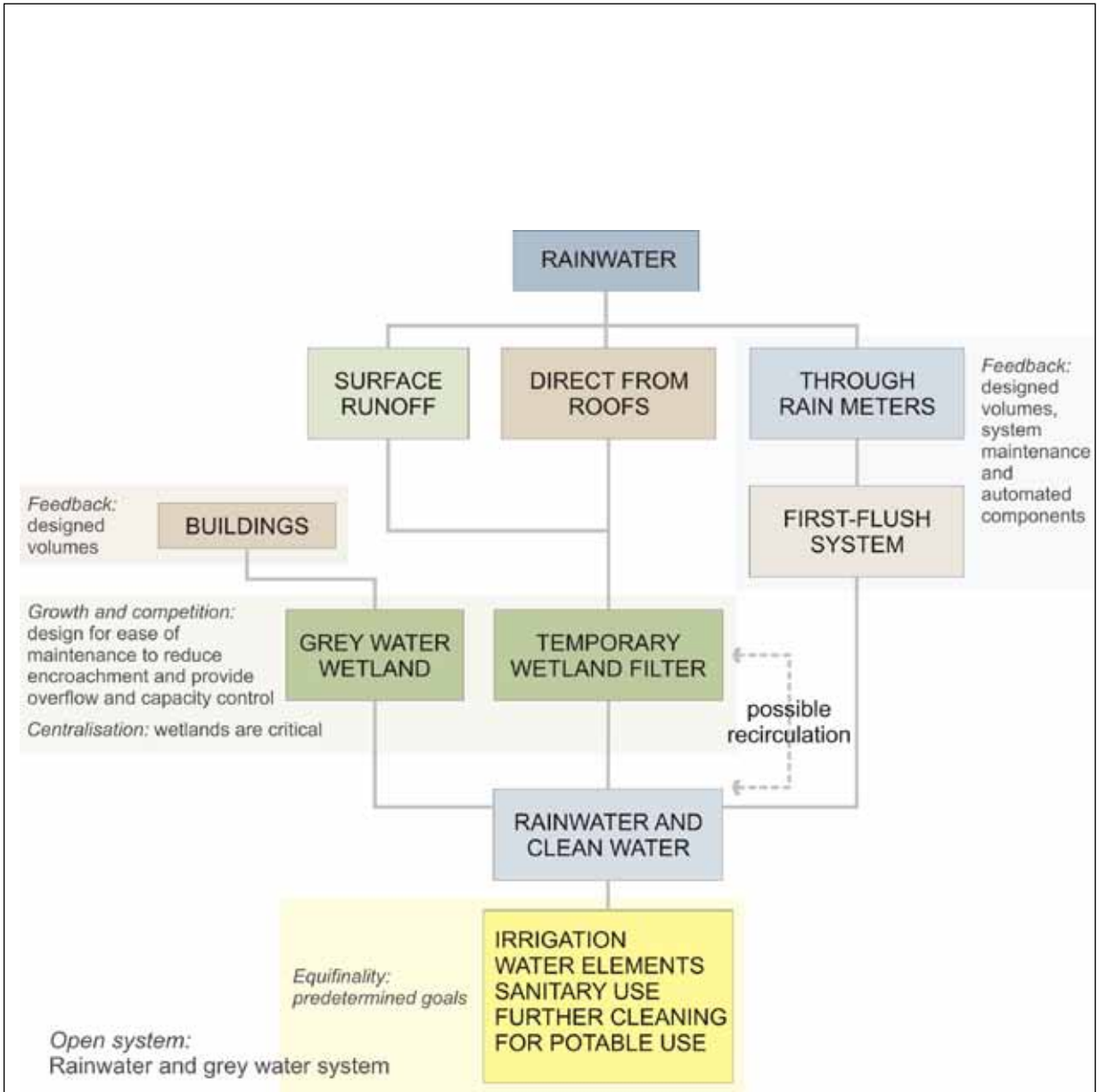
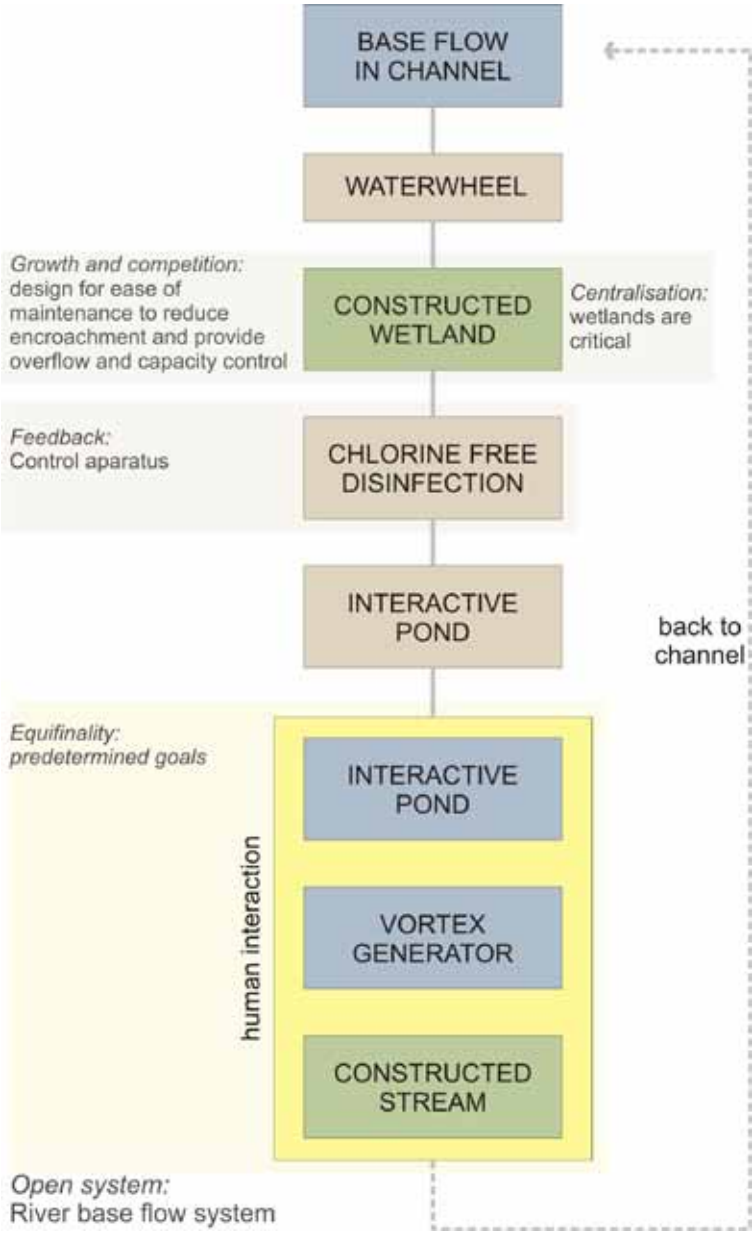


FIGURE 98. RAIN AND GREY WATER SYSTEM RELATED TO GENERAL SYSTEMS THEORY

FIGURE 99. RIVER BASE FLOW SYSTEM RELATED TO GENERAL SYSTEMS THEORY



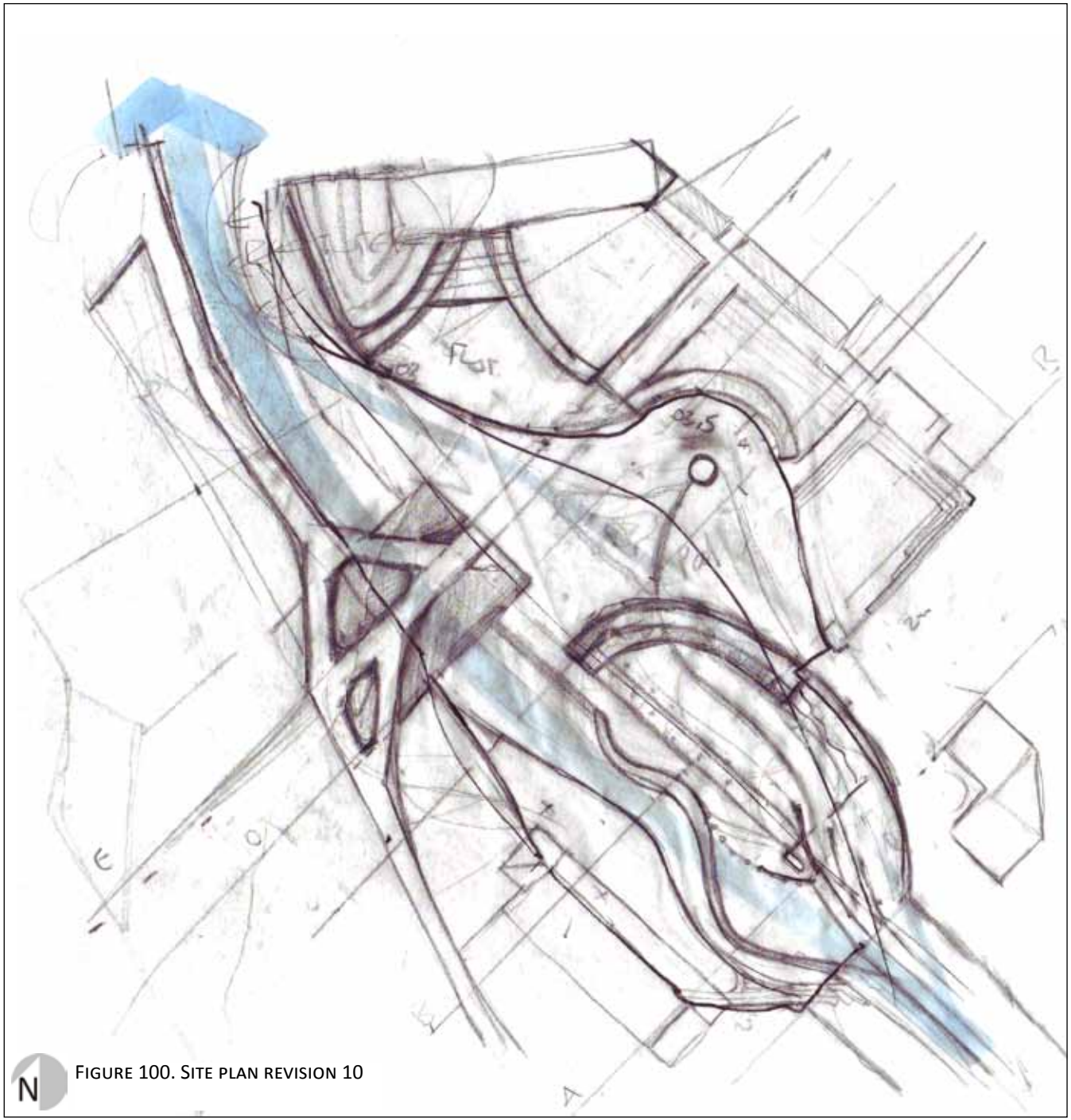


FIGURE 100. SITE PLAN REVISION 10

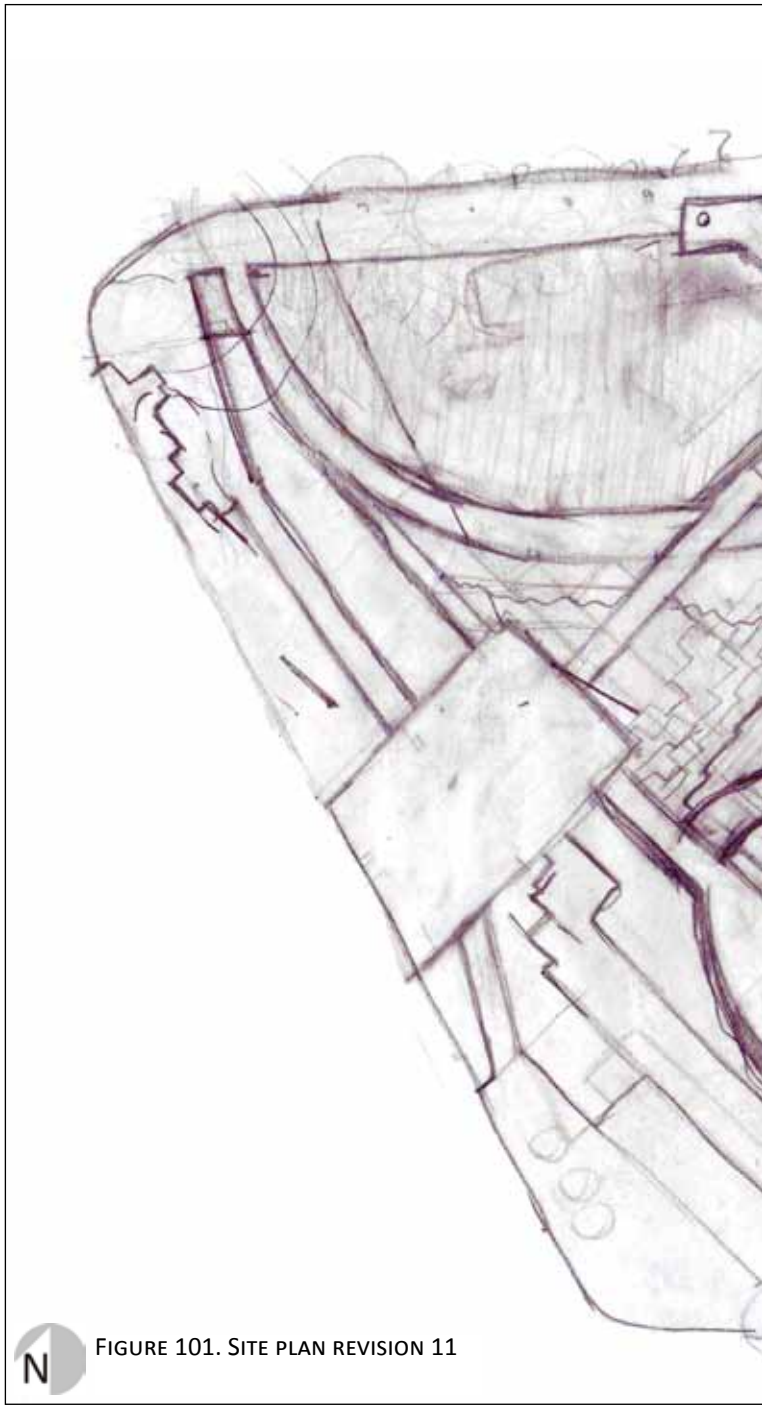


FIGURE 101. SITE PLAN REVISION 11

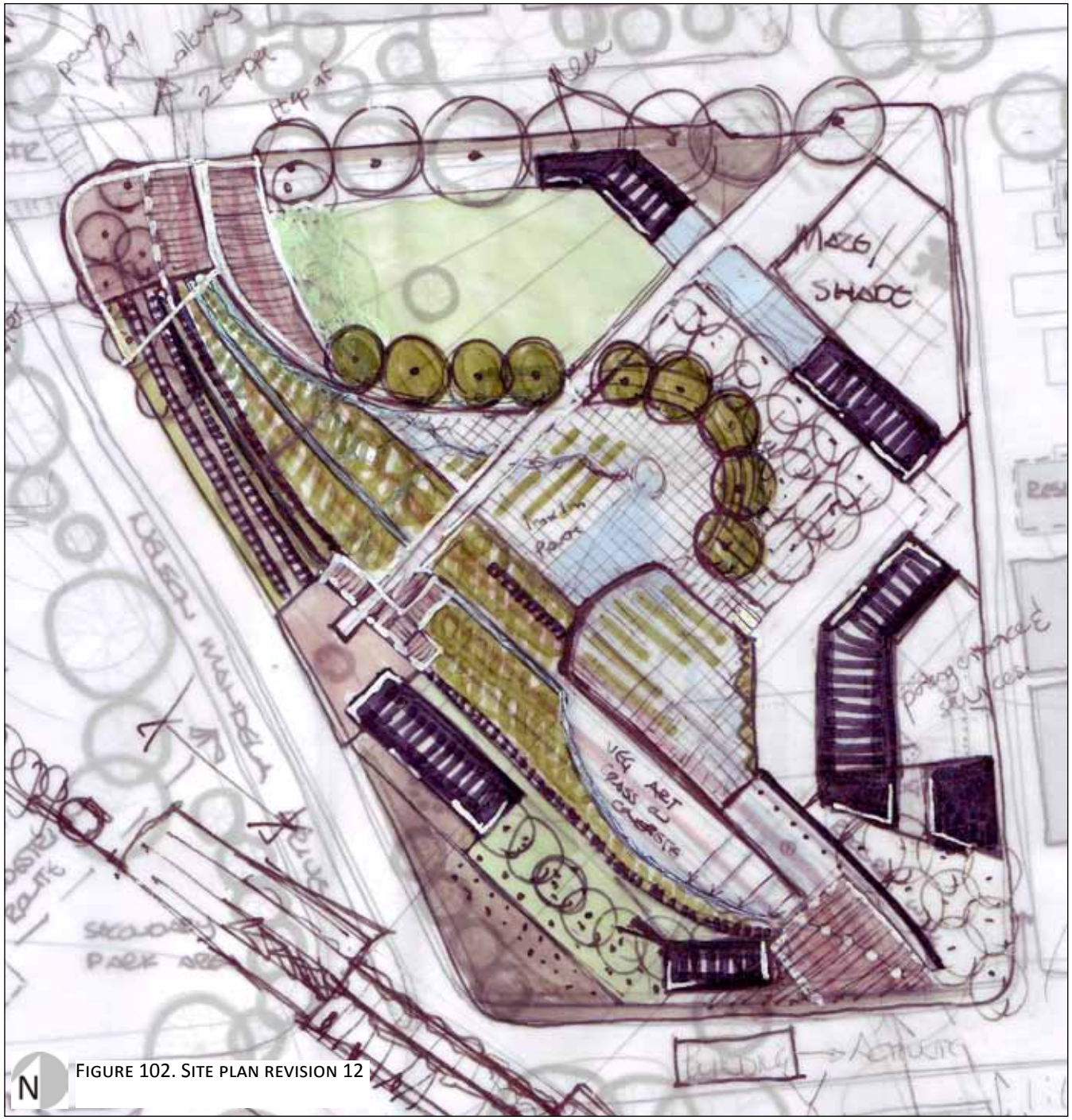


FIGURE 102. SITE PLAN REVISION 12

Site plan revision 13 & 14

Revision 13 and 14 (figure 103 and 105) sees the grey water wetland integrated into the water system and the pavilion introduced. The pavilion encourages passive surveillance and gives school children and resident a sense of ownership. The raindrop plaza subtly echoes a splash of water while wave like decks communicate the volume and energy of water. The rain meter maze creates opportunity for residents, people on their own and small groups to sit relax in more intimate spaces.

The amende channel mimics the habit of wild grass that establishes itself in joints and cracks in the current river channel by providing recesses and soil media. The lines created by these joint suggests the waving action of grass in the wind. This refers back to the grassland habitat that was lost with the settlement of Pretoria and the channelization of the Apies River (figure 104).

Figure 103. Site plan revision 13

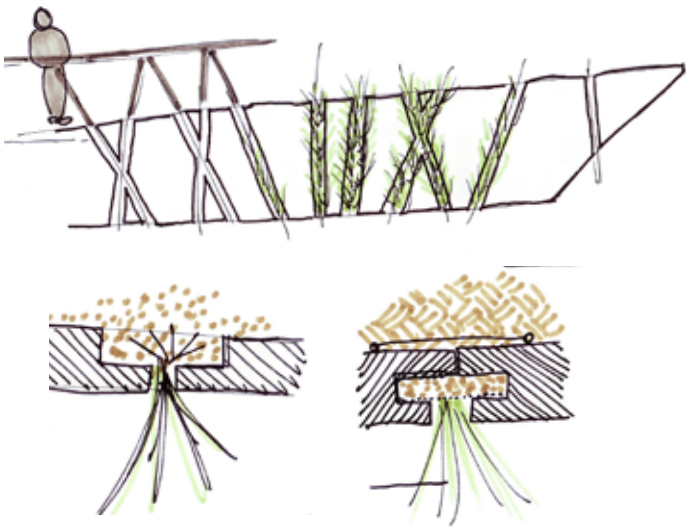


Figure 104. Precast retaining wall panels

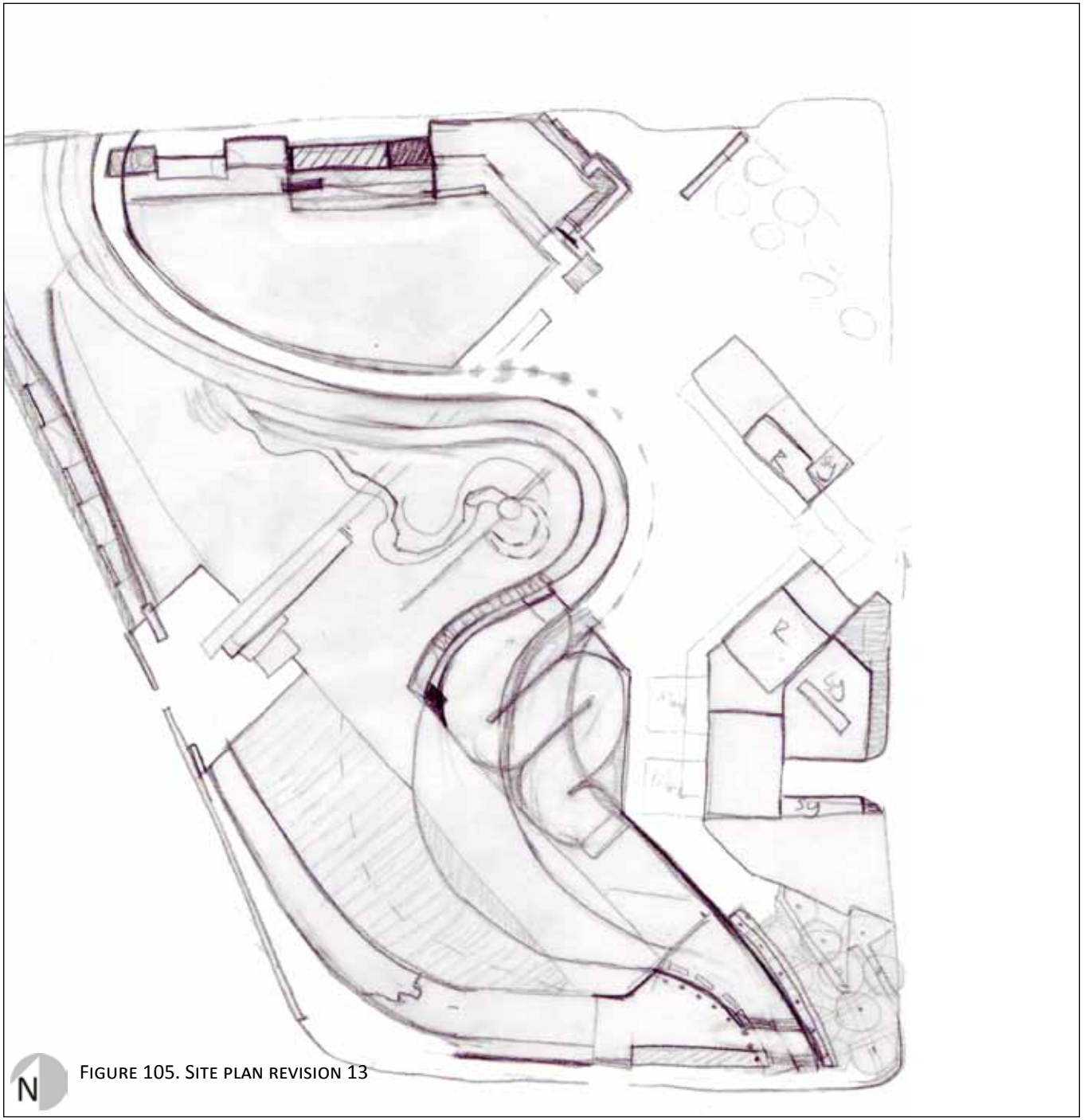


FIGURE 105. SITE PLAN REVISION 13

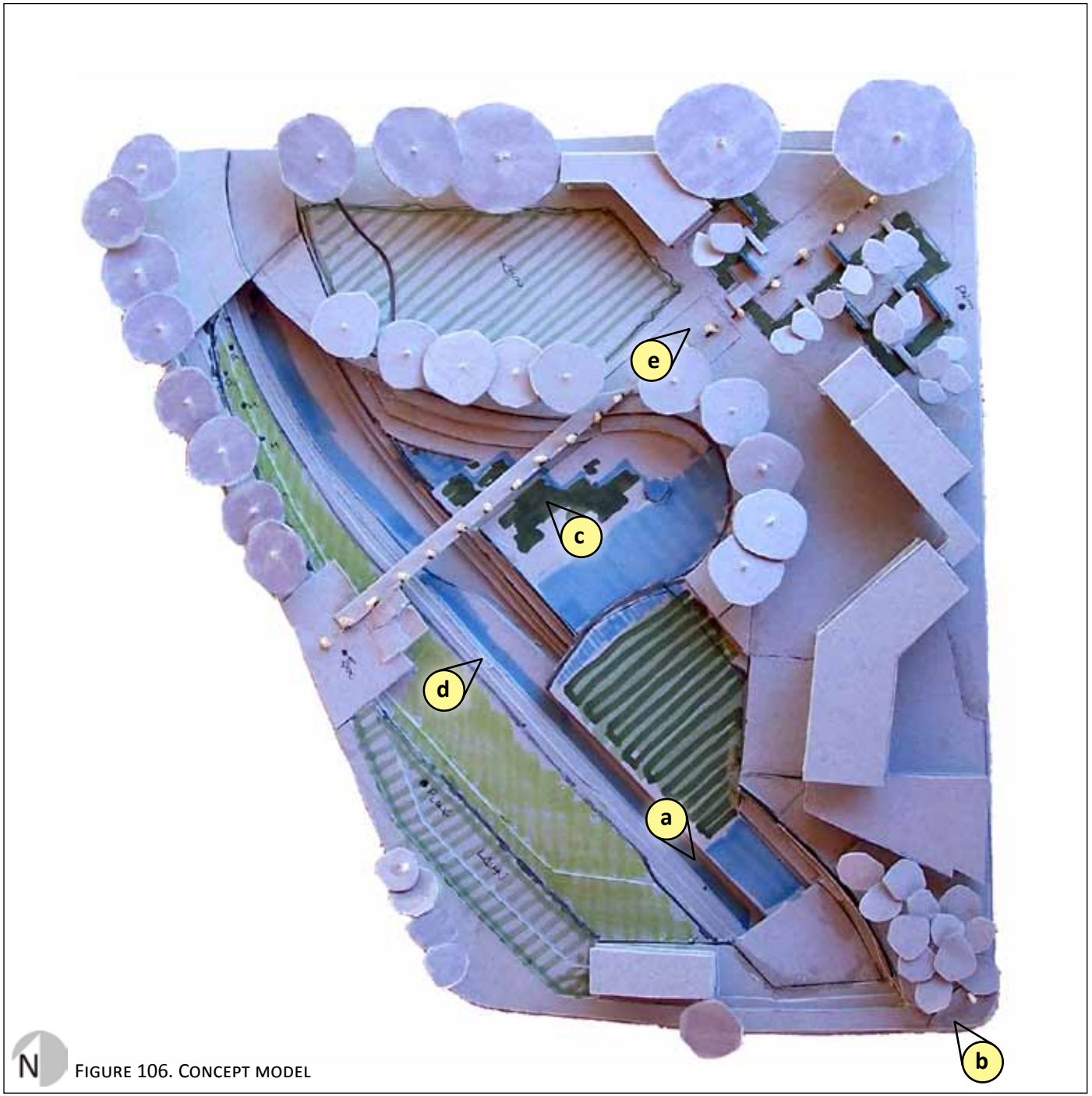


FIGURE 106. CONCEPT MODEL

Exploration through model building

The design called for an intervention in the river channel, this was done through lowering and widening the channel. This led to steep edges around the channel that needed to be solved. The model building exercise helped solve these steep edges around the channel (figure 106).

The tangible model allows the designer to sculpt lines, but more importantly spaces.

The following areas were specifically addressed

- The historical rock wall introduced a level difference that needed to be acknowledged, this was done though a series of steps that separates the pedestrians and the cafe (figure 107 and 108).
- Figure 109 explores the clearance height below the bridge and the series of steps where a retaining wall was originally envisaged.
- The level difference at d (figure 110) between the level that the water wheel can lift water to and the need for a minimum slope led to the investigation of a series of ramps.
- The spatial qualities of the rain meter maze and the verticality of the rain meters led the author to discard the other vertical elements. the spaces in between the rain meters relate to a human scale and proportion that is sometimes missing in public open space (figure 111 and 112).

Figure 107. View towards cafe deck

Figure 108. Vermeulen street entrance towards BMW

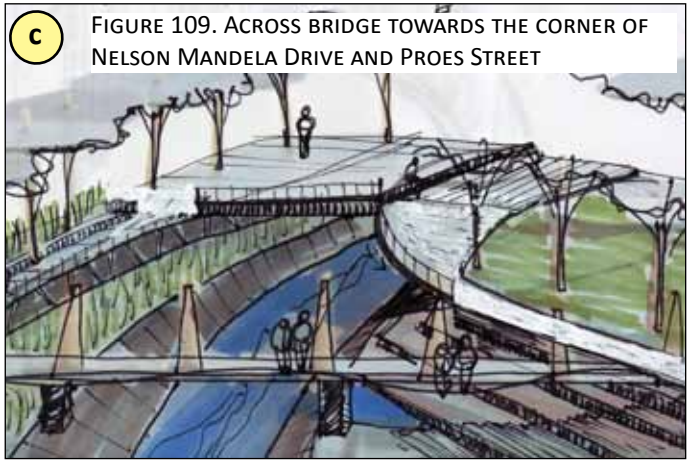


Figure 109. Across bridge towards the corner of Nelson Mandela Drive and Proes Street

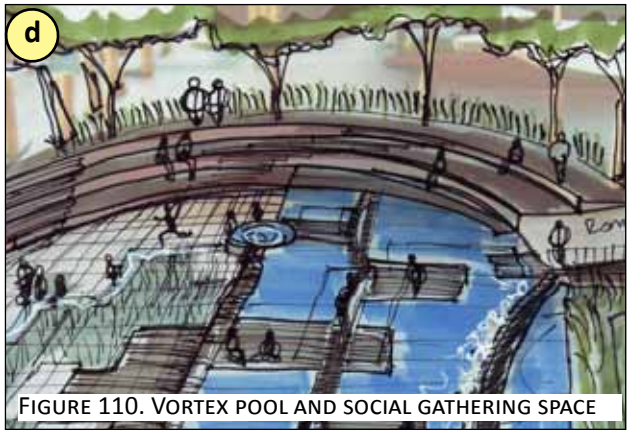


Figure 110. Vortex pool and social gathering space

Figure 111. Rain meter maze towards cnr. Proes and Ockerse street

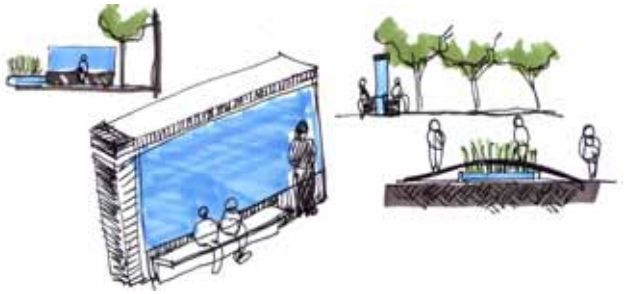


Figure 112. Rain water maze 'rooms'