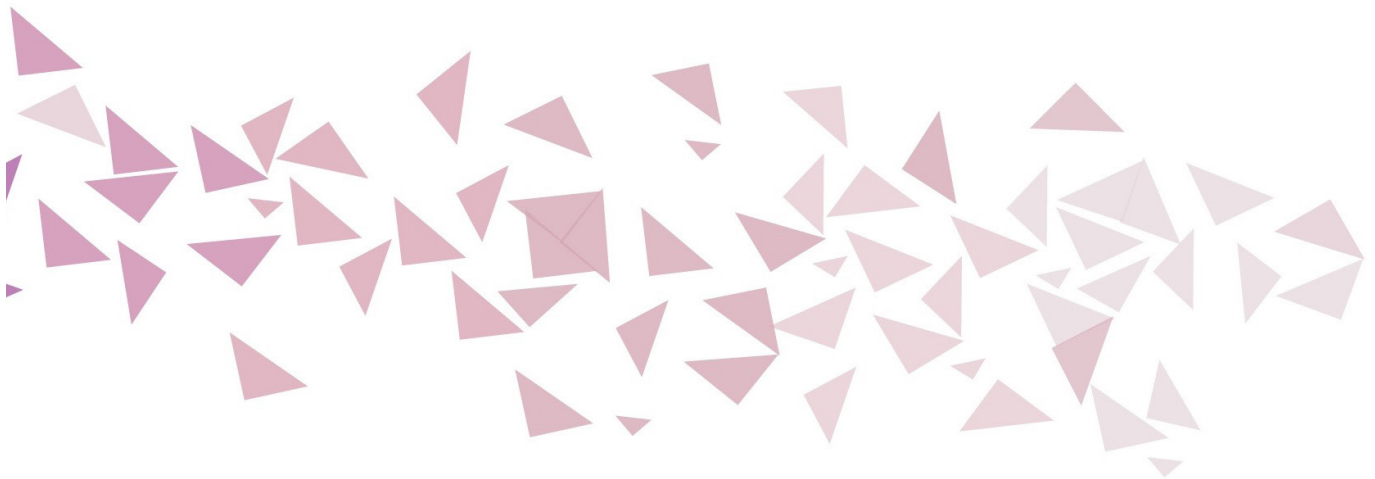


# PART 3

## CHAPTER 8

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### DESIGN DEVELOPMENT



*"In cities you are always told what to do", Søren Enevoldsen*



## 08.01 INTRODUCTION

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This chapter will firstly explain the concept of the design that relates to the theory and investigations in the previous chapters. Secondly, the masterplan with the investigations done of the masterplan as well as an iterative process, leading up to a final design will be explained and shown. This chapter will continue as follows:

08.02 Conclusion from previous chapters

08.03 Patterns in Landscape

08.04 Concept

08.05 Masterplan Development

08.06 Final Masterplan

08.07 Sketch Plan Development

08.08 Conclusion

The design will be the answer of the thesis statement and prove the hypothesis.

Figure 08.01: Photo of the northern part of the site (Photo taken by Author, 2015)



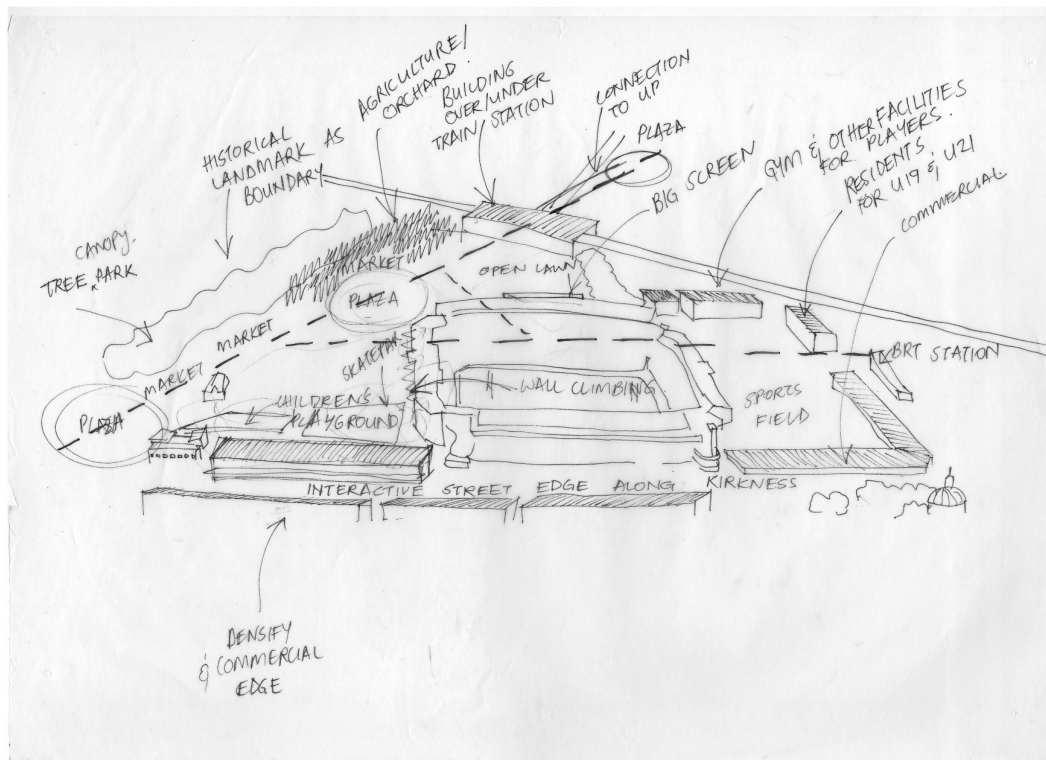


Figure 08.02: Diagram of comparison of (Author, 2015)



## 08.02 CONCLUSION OF PREVIOUS CHAPTERS

The diagram (figure 08.02) summarises Chapter 1 to 6. A comparison of carnival, sport, nature and urbanisation is shown in the diagram and it summarises that carnival, sport and nature have the same characteristics as opposed to urbanisation. From this investigation it is seen that urbanisation restricts the user to express themselves freely, whereas in nature or during a carnival or sporting event, people have much more freedom to express themselves.

The urban environment in Tshwane currently does not optimally promote human well-being and therefore finding a concept that can drive this idea is essential.

As introduced in Chapter 2, carnivalesque brings forth the idea of freedom of expression in public space and therefore carnival, together with sport, multifunctionality and ecological landscape design was investigated to create *place*. Carnavalesque promotes interaction between people, equity and expression which enhance psychological well-being. Sport enhances physical activity and physical health which also results in psychological well-being.

Ecological design can provide us with the necessary ecosystem services that enhance human well-being as well as ensure a resilient future.

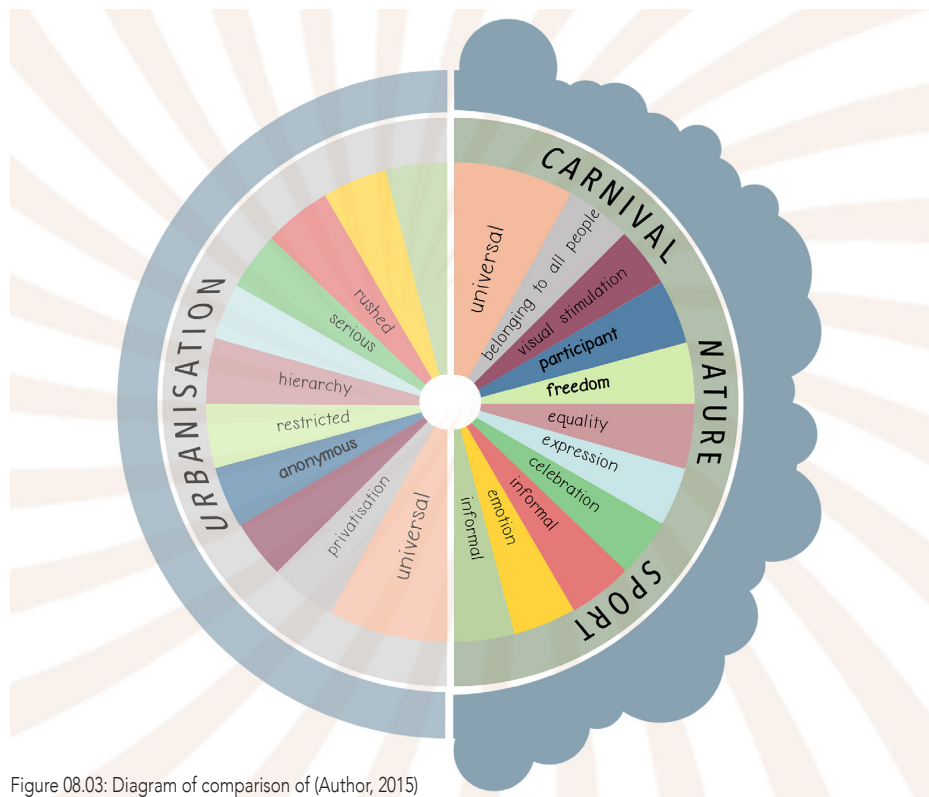


Figure 08.03: Diagram of comparison of (Author, 2015)

## 08.03 PATTERN IN LANDSCAPE

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Problem-solving make way for conversation in our profession, and a concern for how these environmental concerns can be just as significant in terms of experience and expression. According to M'Closkey (2013:16) patterns can conceptually and perceptually be configured and become bridging mechanisms between a functional and aesthetic landscape.

Visible patterns can be found in nature, however pattern in landscape is the structure of nature without it looking like nature. Humans have a natural ability to identify patterns and to look for them if they are not immediately visible (M'Closkey 2013:17).

Patterns offer a framework of which layered 'information'. Patterns are indicators of processes which created them, whether designed or naturally occurring, which, according to M'Closkey (2013:19) makes the use of patterns a particularly relevant strategy for problem-solving within degraded sites. Patterns can be a means of articulating surface and structure.

Michel Desvigne, a landscape architect and theorist's work is characterized by "field-like organizations" (M'Closkeys 2013:). In many of his projects, he planted a grid of trees on large areas, comprising of different



Figure 08.04: Michel Desvigne grid of trees (E-Architect, 2015)

species and spacing as well as its maintenance requirements in order to characterise certain zones. The dominant structures are made of patches within large grids that he borrowed from agricultural [landscapes] fields. He uses pattern as a technique of repetition and M'Closkey (2013:20) describes it as "nature 'reproduced' rather than nature distilled". The firm OMA drew inspiration from fields of organization and proposed a concept for Parc de la Villette where a field of uniformly ordered bands

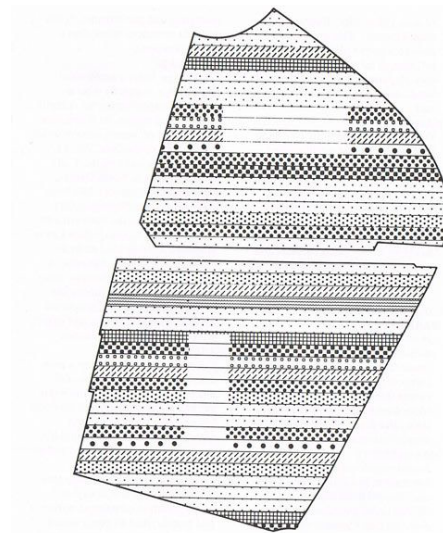


Figure 08.05: OMA Parc de la Villette concept diagram

were intended to be materially and programmatically differentiated. A consistent theme of landscape would be addressed in one band and the north-south crossing of the park would allow one to experience the diverse bands (M'Closkey, 2013:21). These fields were responsive 'forces' that were identified within the mapping and was non-uniform and locally inflected.

West 8's work is usually driven by programme, organisation and textured surface, however they are also interested in iconography and ornament (M'Closkey, 2013:22), for example in their Madrid Rio project in Spain, a plaza was covered with flowery patterns.



Figure 08.06: West 8's flower patterns in Madrid Rio, Spain (West 8 Official Website, 2015)

According to M'Closkey (2013:26), as diagram of process, patterns have the ability to bind together oppositional categories in landscape architecture such as: system versus composition, representation versus performance, matter versus symbol, vision (distance) versus immersion (multi-sensory).

Patterns shown in these projects give indications and guide flow, energy and growth.

## 08.03 CONCEPT

As a concept, "disrupting the order" which derives from the idea of carnivalesque, can become a vehicle to combine and integrate social and ecological health and finally create a multifunctional landscape that fosters resilience.

The concept of carnivalesque signifies the disruption of every day life. The monotony and mundaneness of every day life, that which is seen as order (routine), is disrupted. The unprogrammed surface [disruption] becomes the disruption which is the space between the [order] programmed surfaces. Where disruption occurs, people will be able to express themselves and services that nature provide will allow for interaction visually or physically.

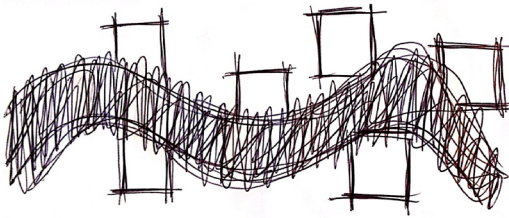


Figure 08.07: Concept diagram - unprogrammed disrupting the programmed (Author, 2015)



Figure 08.08: Concept diagram - order being disrupted through manipulation of surface (Author, 2015)

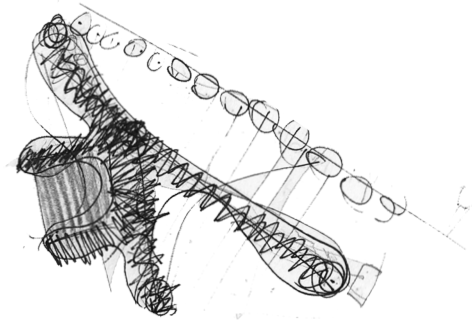


Figure 08.09: Concept diagram - the main movement becoming a zone of disruption (Author, 2015)

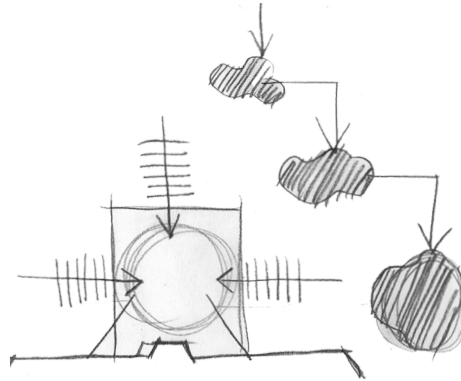


Figure 08.10: Concept diagram - flow of movement being interrupted by disruption (Author, 2015)



## 08.04. MASTERPLAN DEVELOPMENT

From the investigations done in Chapter 3, three important layers inform the design of the masterplan

Heritage - the row of trees, brick as material  
Surface - bringing scale down and creating multifunctionality  
Pattern - highveld landscape, Battiss painting, grid

Another intuitive layer was added to the design with various model building exercises.

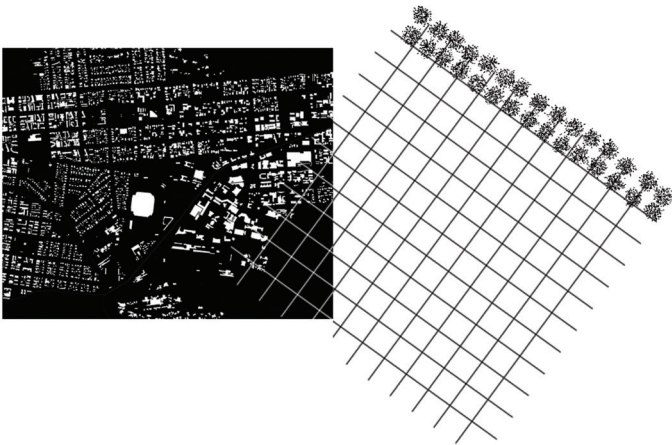


Figure 08.11: Drawings of the highveld landscape (Author, 2015)



Figure 08.12: First iteration (Author, 2015)

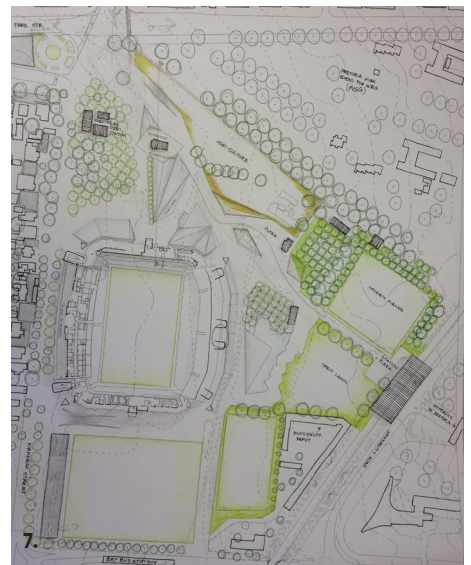
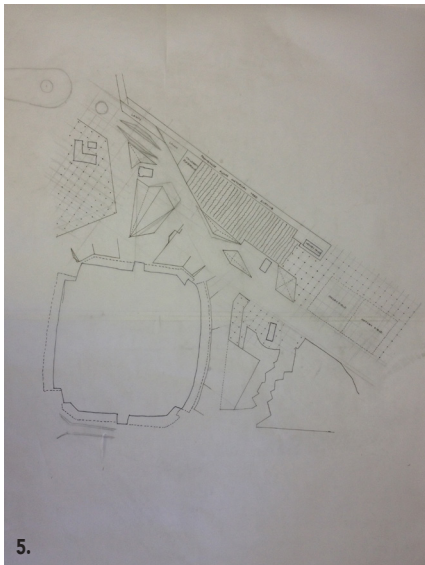
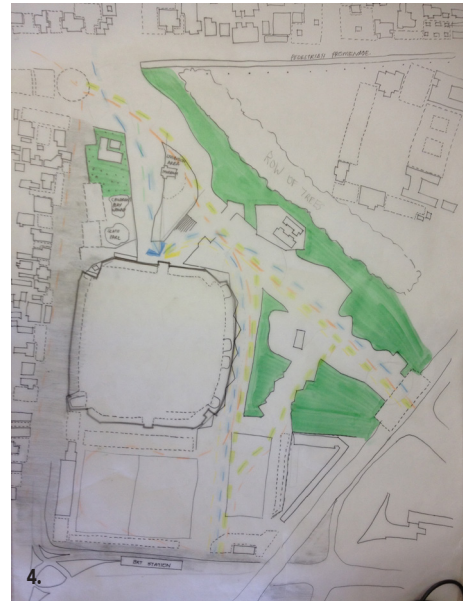
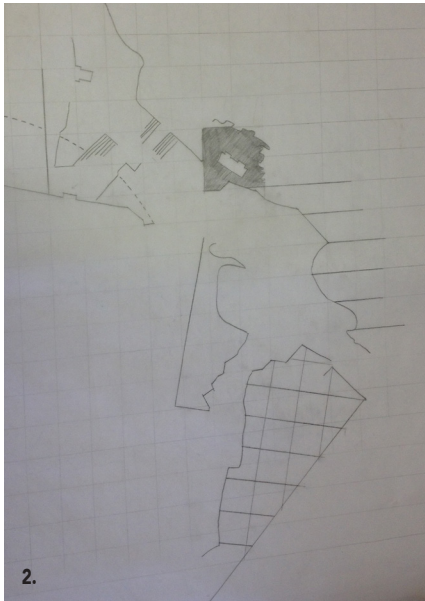


Figure 08.13: First iterations of the masterplan (Author, 2015)



## DESCRIPTION OF PLANS

1. An intuitive exercise was done and a drawing of the highveld landscape was superimposed onto the landscape.
2. A grid that continues the city grid of the CBD and Arcadia was overlayed and superimposed on top of the landscape drawing.
3. After the two layers were superimposed, some lines were eliminated. An edge condition on Kirkness street was investigated.
4. On this plan, the result of the previous chapters started to consider what is existing on the site and starts to create spaces by considering the main movement areas.
5. Considering the programme and a start towards manipulating.
6. Various model exercises were done with surface manipulation and superimposed onto the plan.
7. The final masterplan at the end of June. The agriculture especially, extended to the edge of the park and might not work in terms of control. The idea of surface can be investigated further.

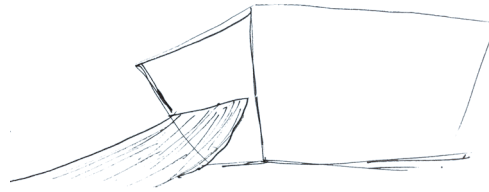


Figure 08.14: Conceptual drawing of surface manipulation (Author, 2015)

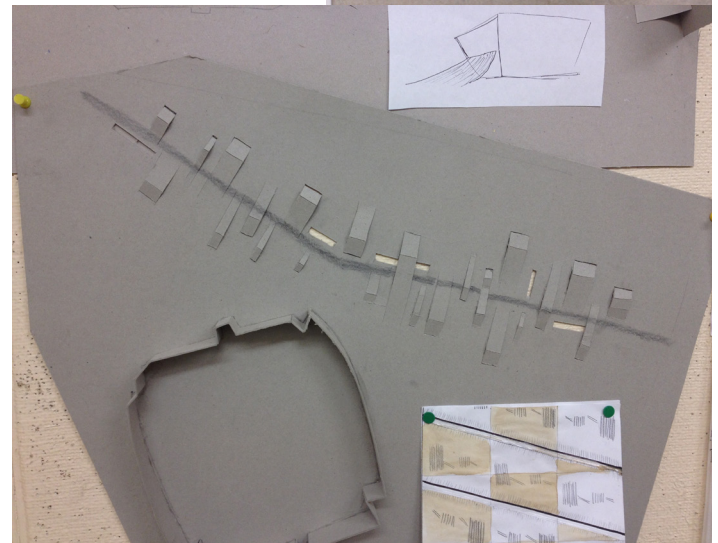
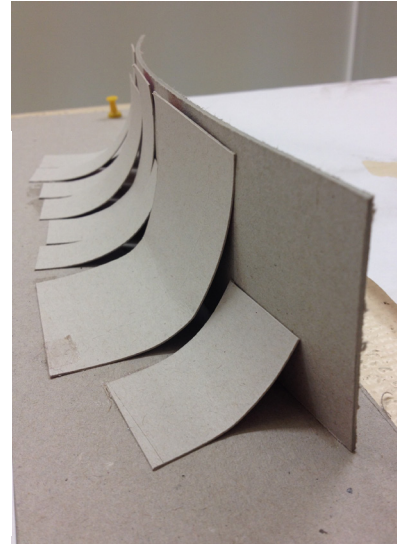
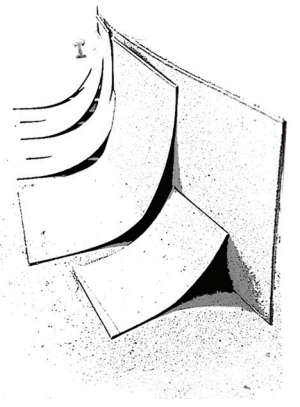


Figure 08.15: Surface manipulation investigations and model building (Author, 2015)

A CASE STUDY: City of Culture of Galicia, Spain

Architectural firm: Peter Eisenman Architects

Location: On Monte Gaiás overlooking Santiago de Compostela, Spain

Client: Fundacion Cidade da Cultura de Galicia

Date completed: 1999-ongoing

The metaphysical character of the site is considered, local materials are used and people are made aware of their natural environment by experiencing the precinct. "I wanted to create something that would seem like nature, but under closer inspection one would realize that it is not nature. I call it unnatural nature", Peter Eisenman (<http://www.mascontext.com/tag/city-of-culture-of-galicia/>)

conceptual design of the City of Culture of Galicia in Spain. Eisenman superimposed various patterns onto each other:

- Historical town grid
- Typography of the hill
- Abstract Cartesian grid
- Shell (symbolic sign of the city of Santiago)

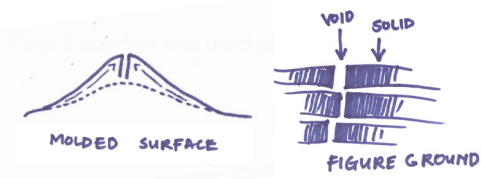


Figure 08.16: Analytical drawing of the project (Author, 2015)

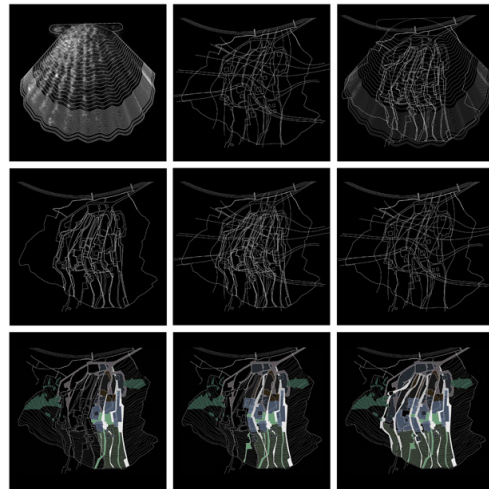


Figure 08.18: Superimposition of different patterns (by Eisenman Architects)



Figure 08.17: Peter Eisenman Architects - City of Culture of Galicia in Spain



## A CASE STUDY: Incheon Stadium, China

Architectural Firm: Populous and Heerim Architects and Planners

Location: Incheon, South Korea

Client: Incheon Metropolitan City

Date completed: Masterplan 2014

Symbolism is important to Korean culture, dance and music part of everyday life. The traditional Buddhist ritual dance, the Seung Moo Monk dance, provided the image that reflected perfectly the architectural drama of Incheon stadium – flowing form and space around dynamic movement.

The key to the stadium's success will be reducing it down and linking it into the surrounding parklands, to make it an open accessible building, for its people. This

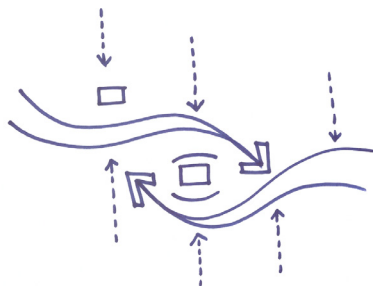


Figure 08.19: Incheon stadium analytical drawing (Author, 2015)

way it can achieve a connection with the community that is vital to securing its long term sustainability and a true legacy for the people of Incheon (Populous, 2014).



Figure 08.21: Incheon stadium (by Populous)

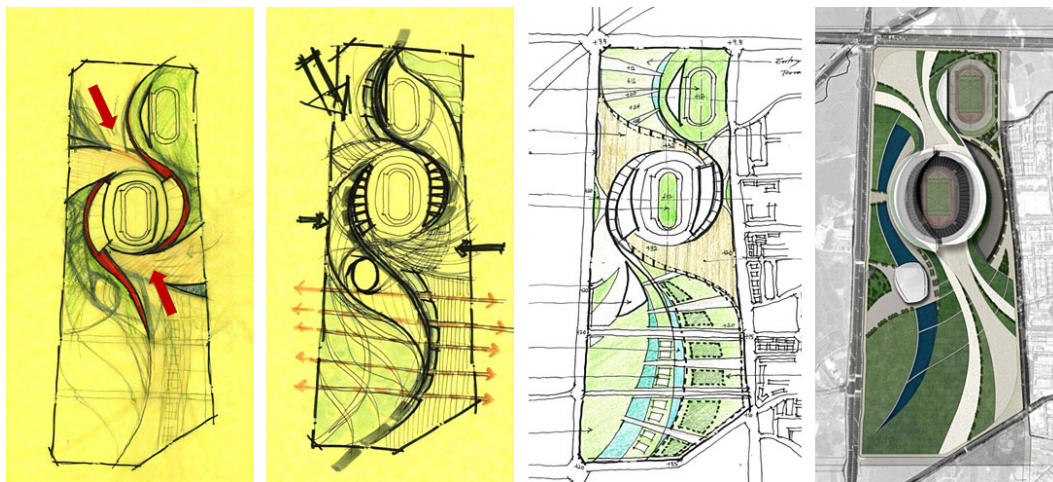


Figure 08.20: Incheon stadium conceptual drawings (by Populous)

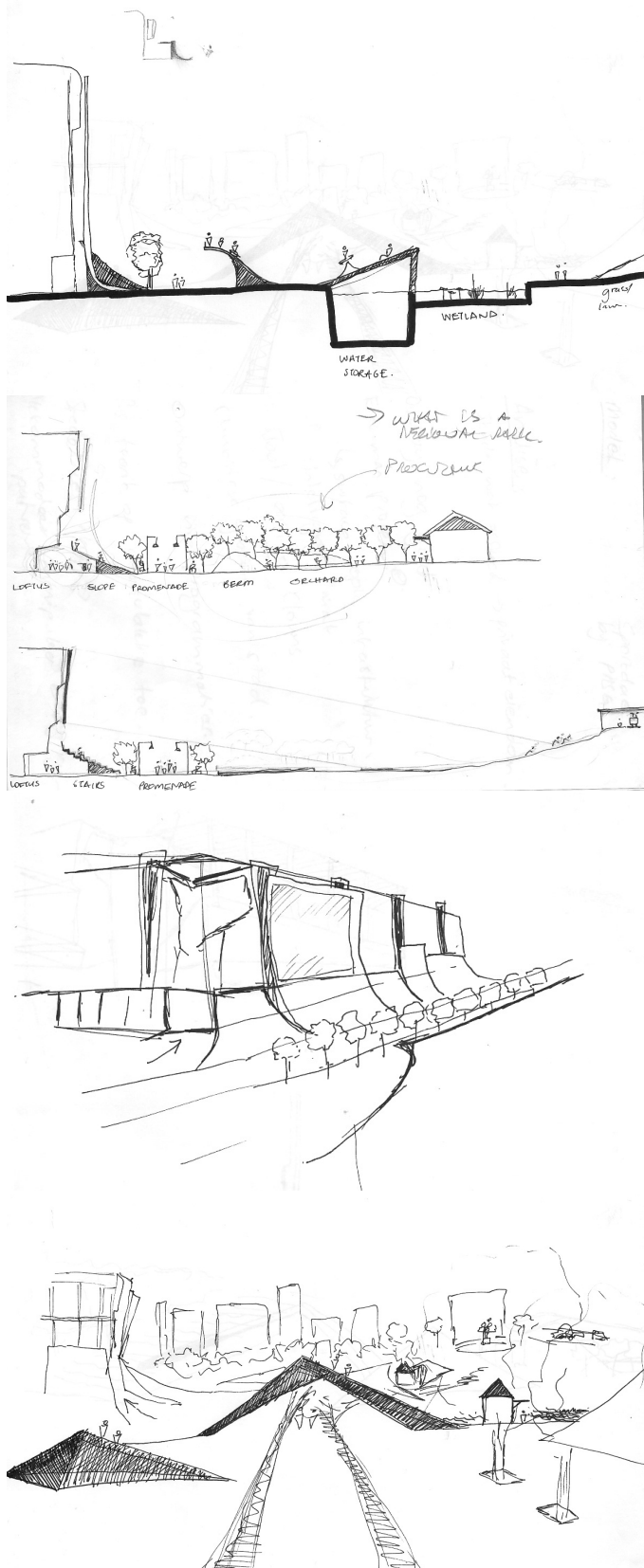


Figure 08.22: Investigating how the surface can become multifunctional (Author, 2015)



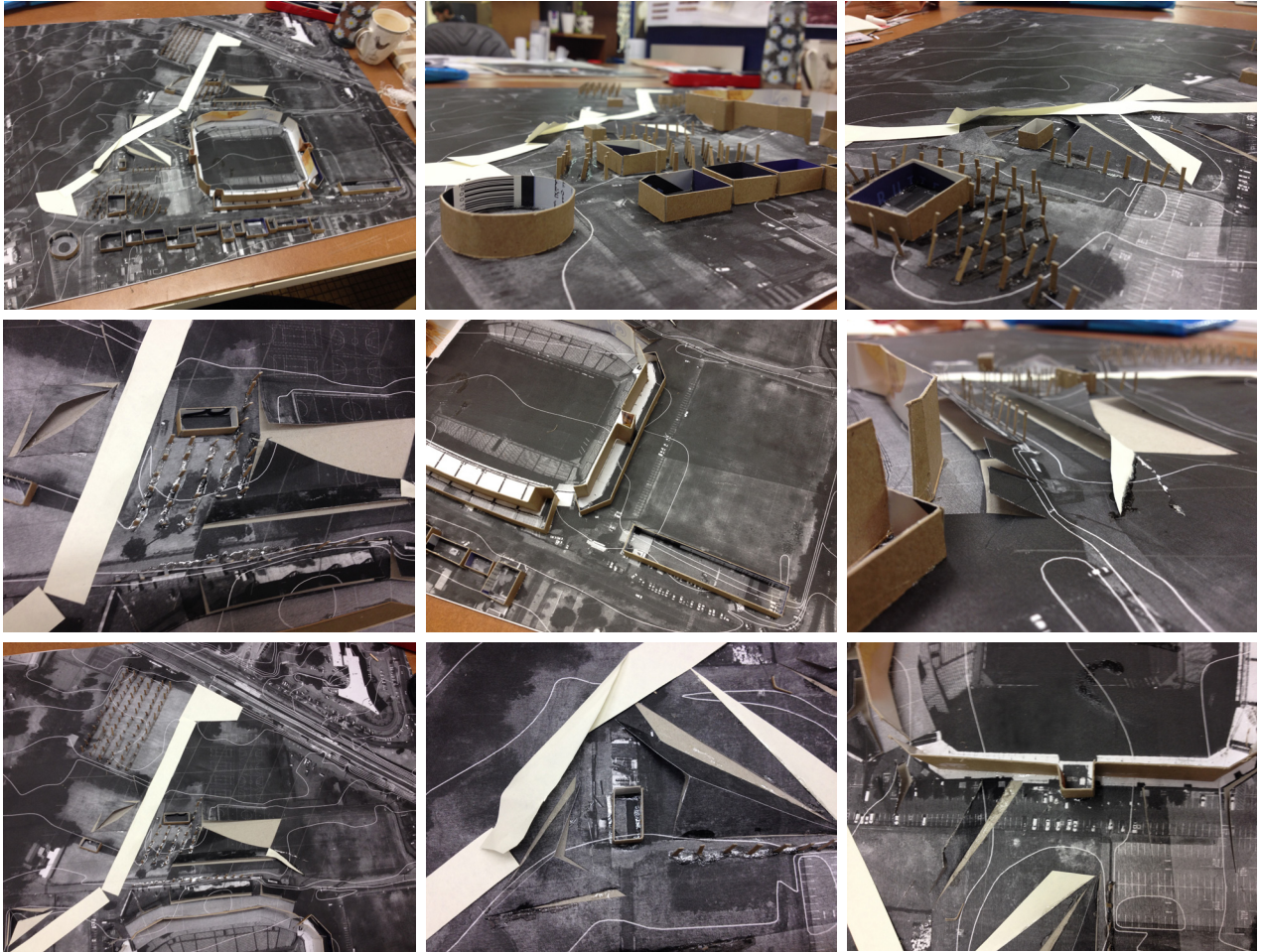


Figure 08.23: Model to investigate surface and other design options such as the densification of Kirkness street and the use of fruit bearing trees within orchards (Author, 2015)

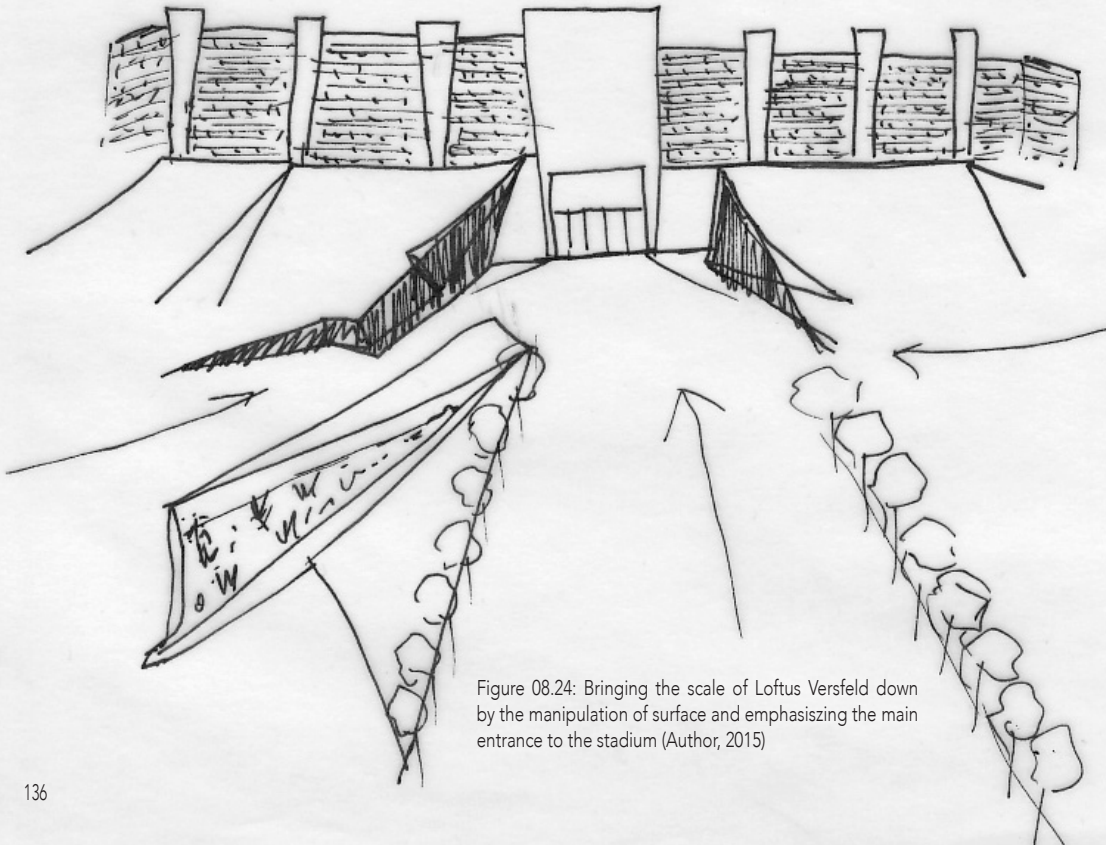
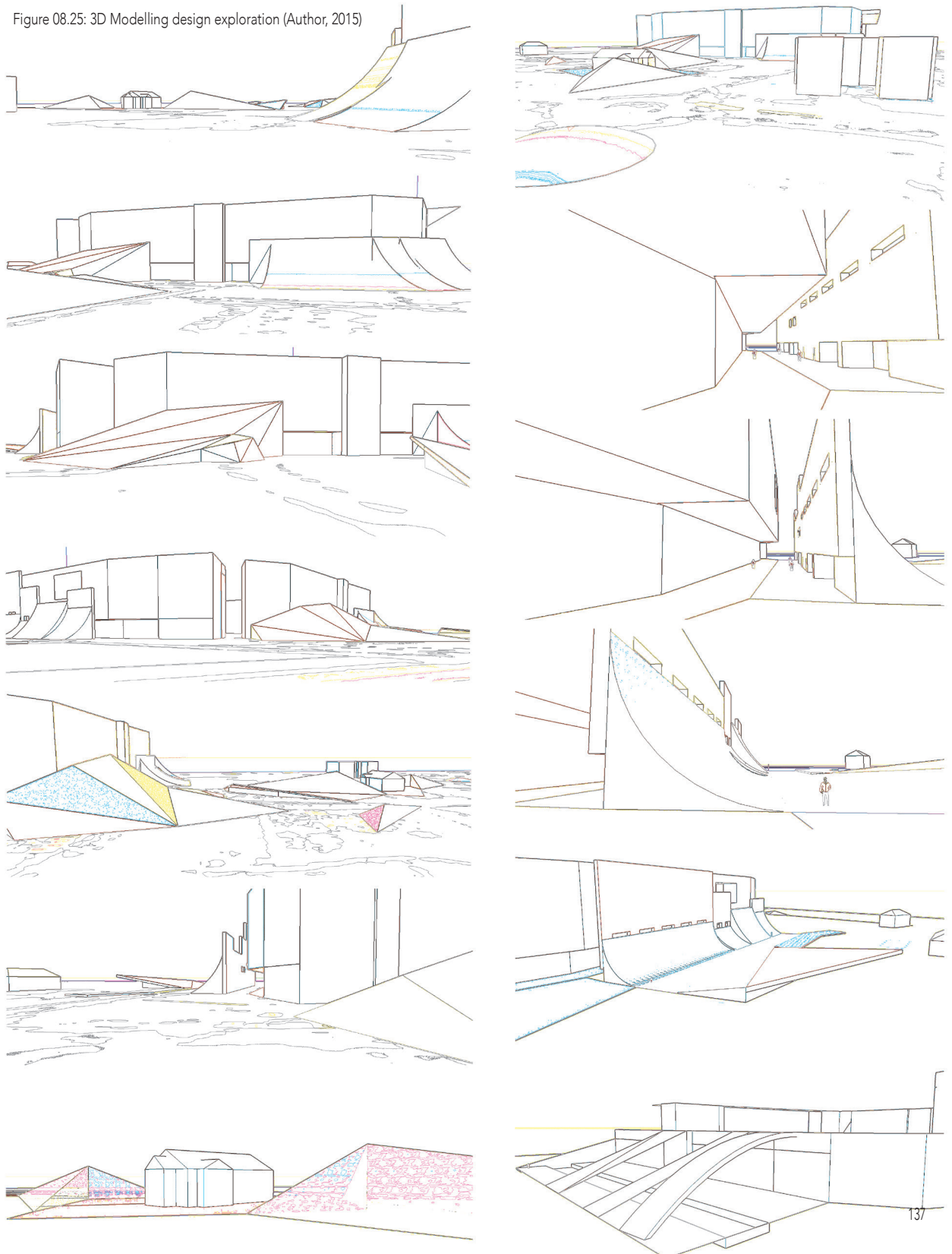


Figure 08.24: Bringing the scale of Loftus Versfeld down by the manipulation of surface and emphasizing the main entrance to the stadium (Author, 2015)



Figure 08.25: 3D Modelling design exploration (Author, 2015)



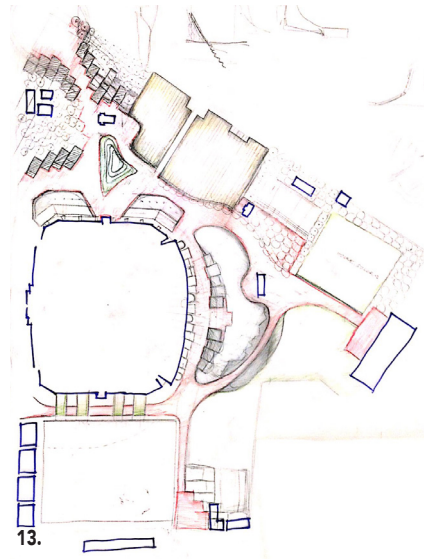
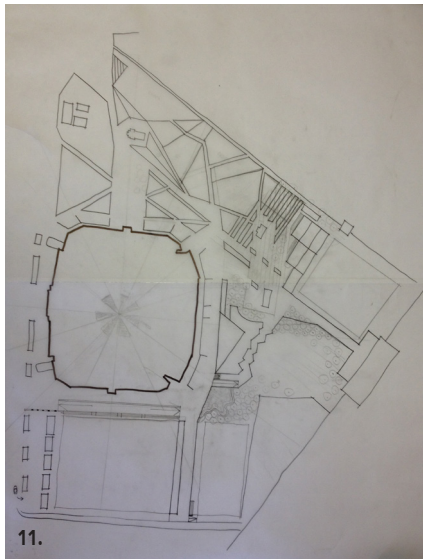
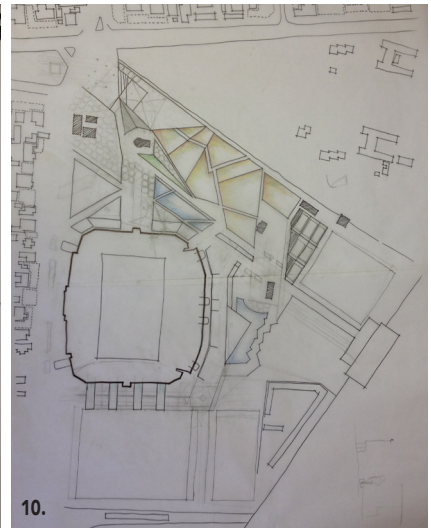
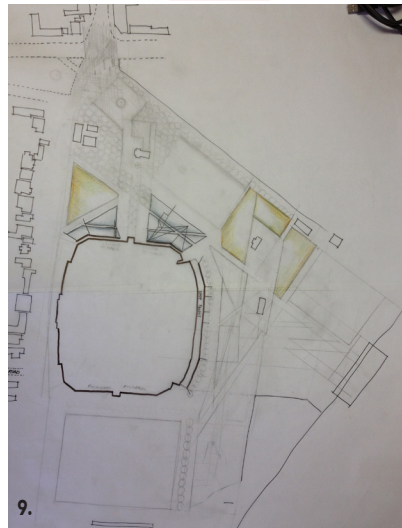
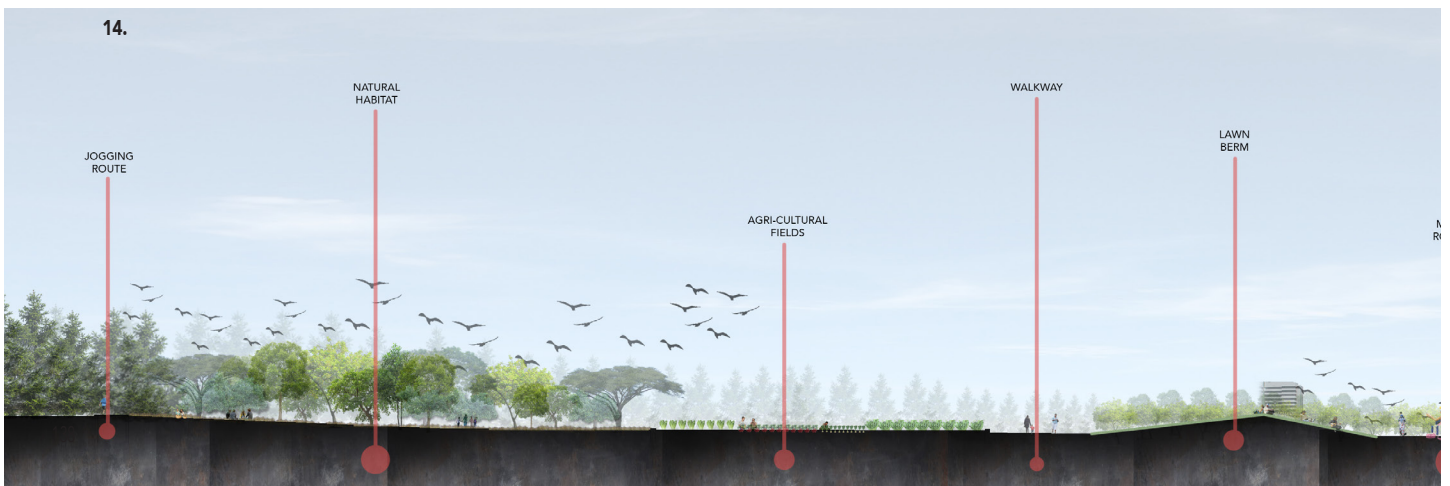


Figure 08.26: Second set of iterations of the masterplan (Author, 2015)



## DESCRIPTION OF PLANS

8. Form of the various programmes were investigated as well as an investigation of reshuffling the placement of the programme. The scale of the building was brought down on the southern side by cutting away part of the stand, adding lawn in amphitheatre style (like in the cricket stadiums) and creating ramps from the outside of the stadium to allow for crowds to move into the stadium onto the lawn.

9. Investigation of an axis towards the main entrance (on the northern side of the stadium) as well as an offset "grid" of the road (Kirkness).

10. Different investigations of placement of tennis courts and the form of agriculture.

11. The integration of agriculture into the public space by making planters that go into the plaza area.

12. Plan handed in in August - the main plazas are

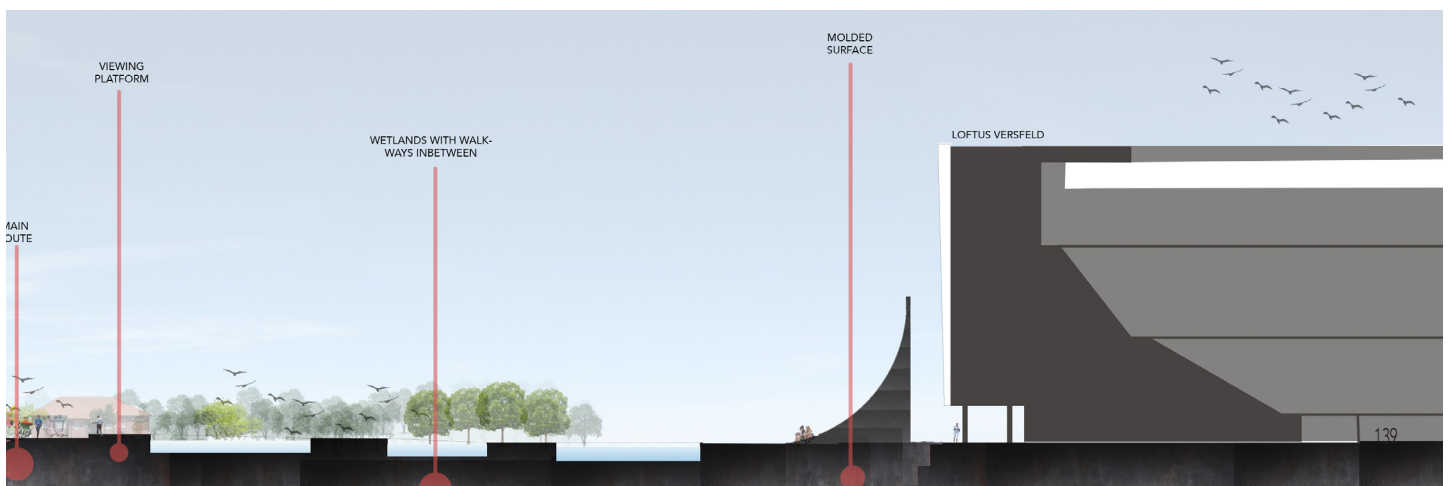
emphasised in red and the wetlands are situated north of the stadium, in order to reflect the building. The middle plaza was also aimed at markets and the selling of crops produced on site.

Critique given: the form of the agricultural fields does not seem to be practical, also that of the wetlands - large open space is needed in front of the entrance. The concept does not come through clearly - "disrupting the order". Also a lack of commercial development exist - within such a large urban space, commercial development is essential.

13. Adding buildings to respond to the future growth of the area and enhancing the urban environment. Also investigating the size of the dam in terms of the amount of water harvested and shaping the agriculture to be more practical.

14. Section presented with plan 12 in August. Section, north-south, on northern part of the stadium viewing east.

Figure 08.27: Section north-south of proposed plan (12)





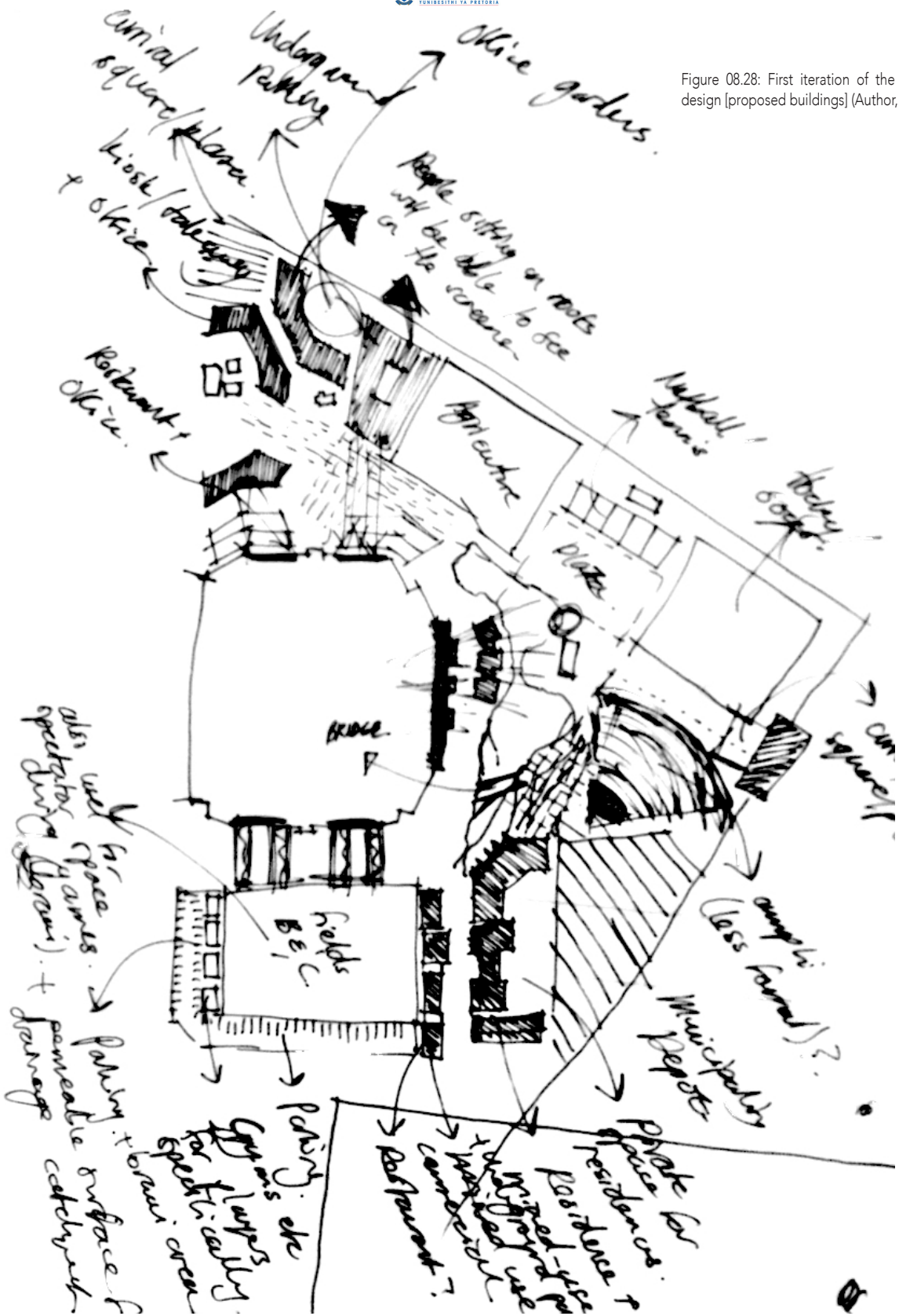
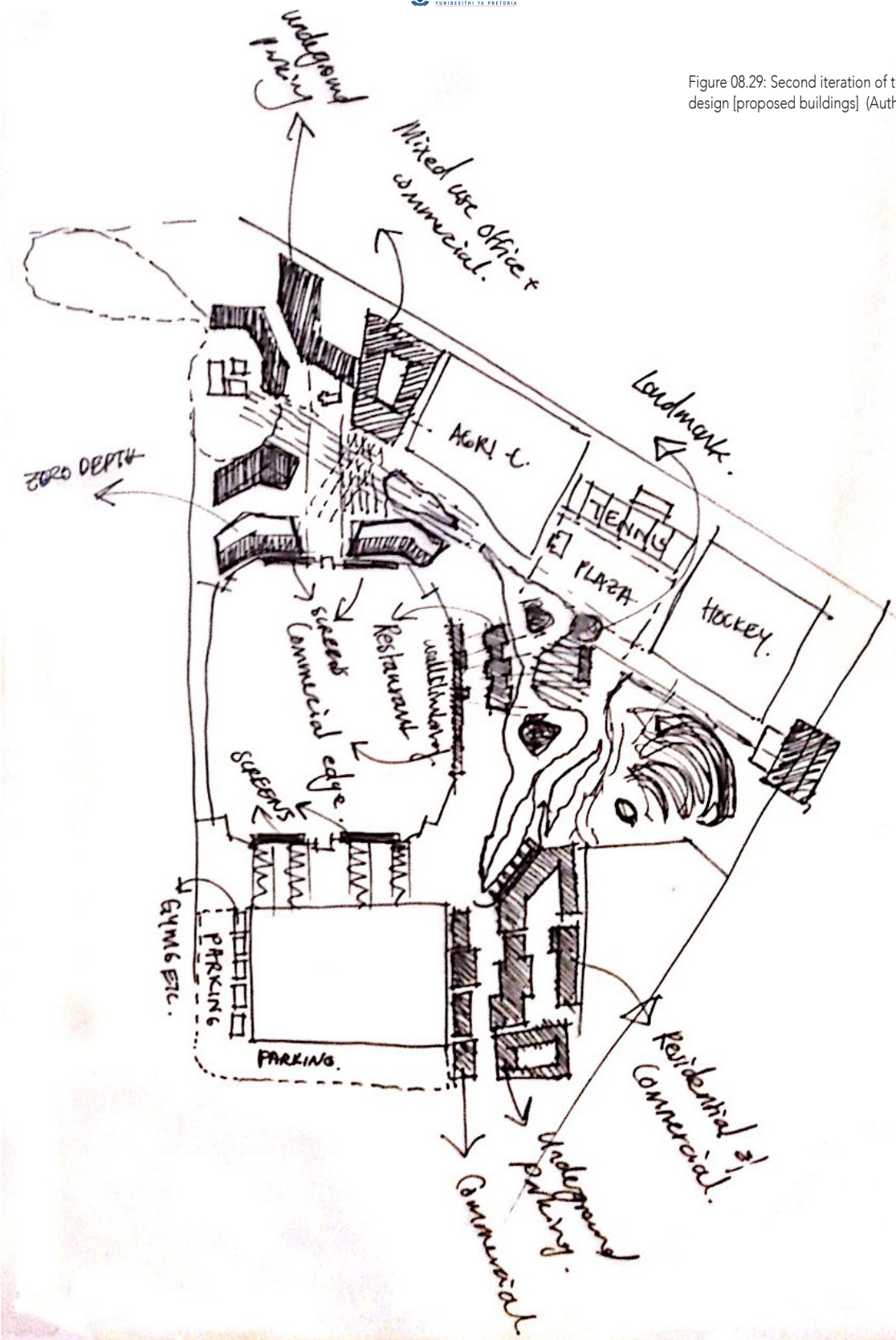


Figure 08.28: First iteration of the urban design [proposed buildings] (Author, 2015)



Figure 08.29: Second iteration of the urban design [proposed buildings] (Author, 2015)



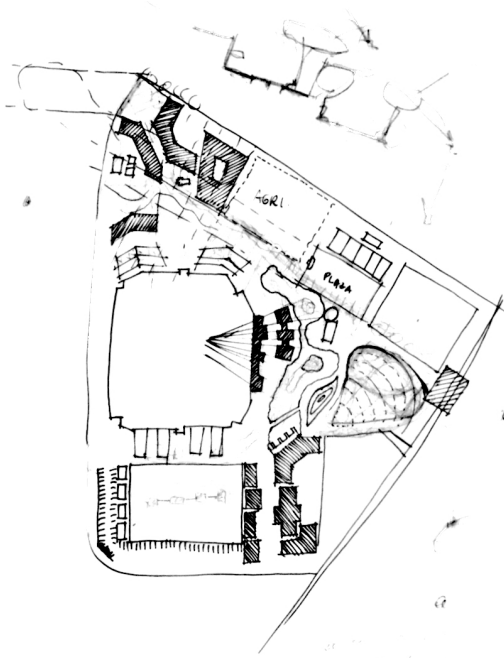


Figure 08.30: Third iteration of the urban design [proposed buildings] (Author, 2015)



Figure 08.32: Masterplan presented at the final crit (Author, 2015)

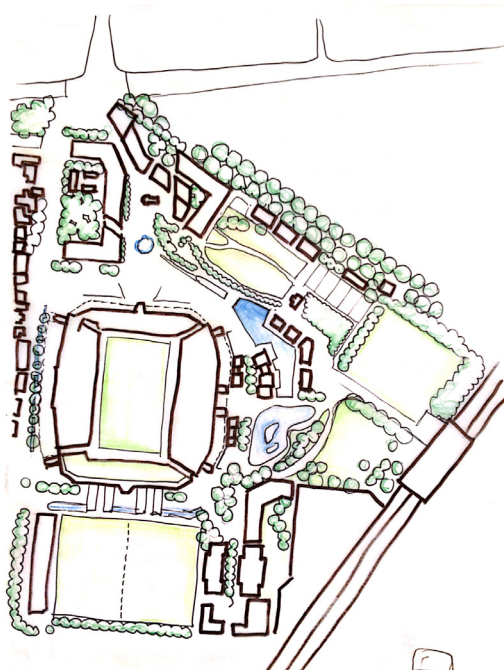


Figure 08.31: Masterplan showing some of the main elements and re-iteration of the buildings (Author, 2015)

The masterplan that was presented at the final crit was critiqued in terms of the placement of buildings on the southern part of the site, that does not provide a plaza at the entrance of the commercial “street”. The agriculture seems like it has only been ‘zoned’ and does not seem to be accessible by the public. There was also a concern of the dams as both having hard edges and that one of them might become empty during months of little or no rainfall.

## 08.05 FINAL MASTERPLAN

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The final masterplan allows for a large open plaza at the main entrance of the stadium where large crowds can gather. Other previous concerns were also addressed, such as: the agricultural fields were brought into the site by inserting sheds behind it and raised footpaths were also introduced across the agricultural land; the northern dam became a hard edged dam with restaurants surrounding the water and allowing people to use it for recreational canoeing (thus being full throughout the year), and the lower dam becomes a more natural-looking retention dam that fluctuates in water level; an arrival plaza was considered on the southern part of the site.





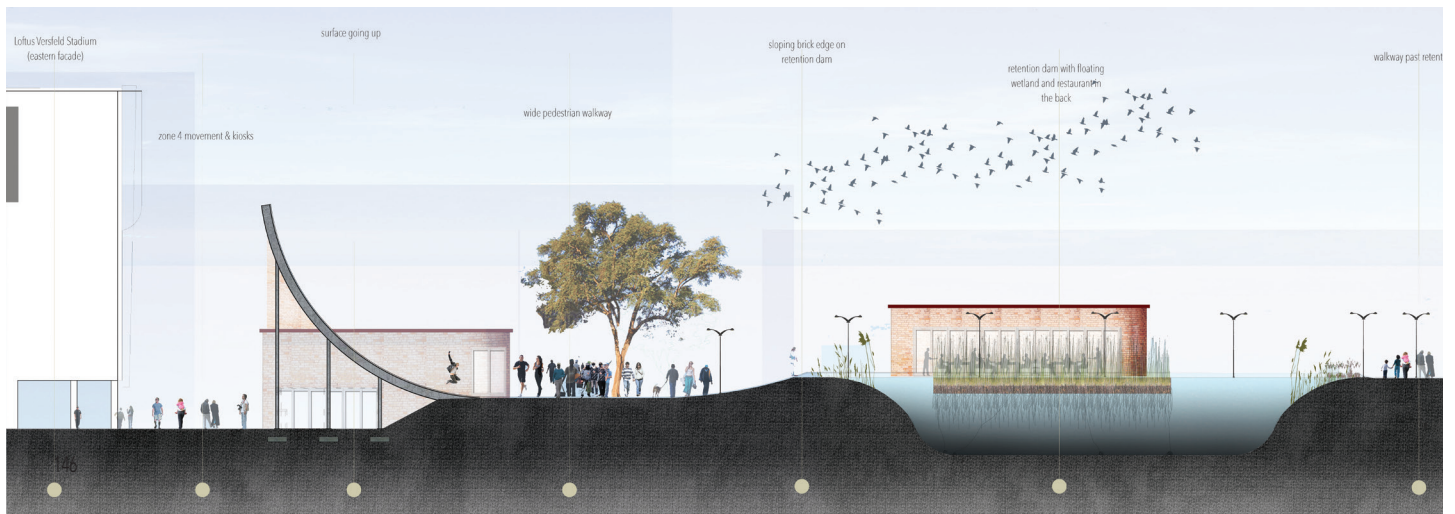


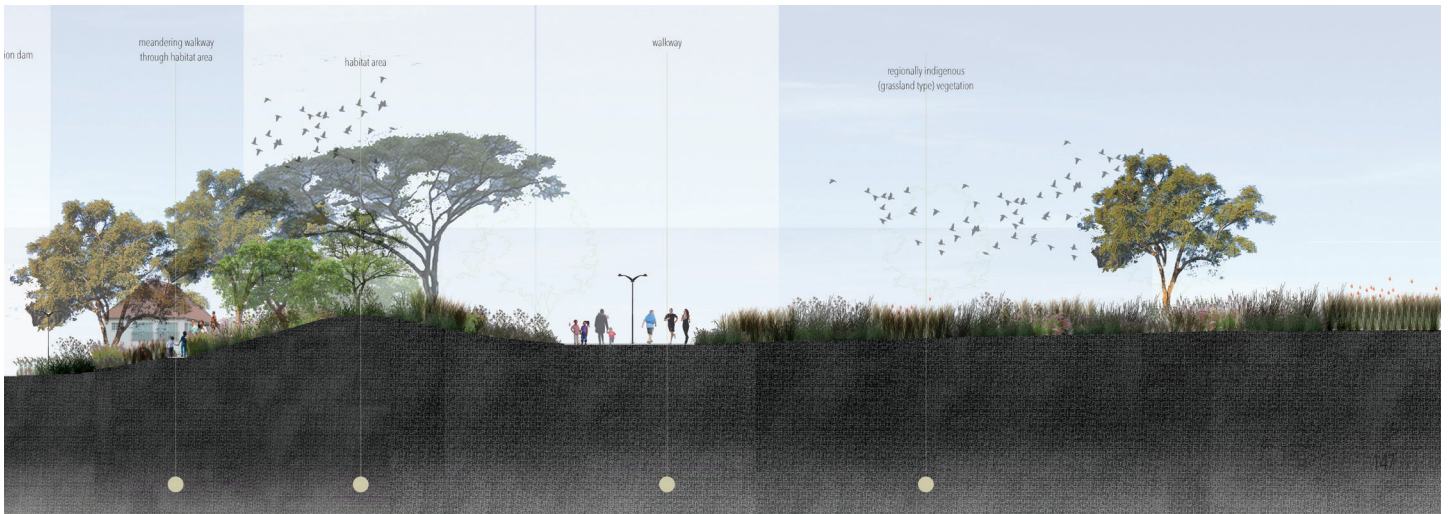


Figure 08.33: Final Masterplan (Author, 2015)



Figure 08.34: Section A - west to east viewing north (Author, 2015)









## 08.06 STORMWATER MANAGEMENT

The stormwater management strategy aims to recycle as much as possible water on site. Water from the roofs and surfaces will be harvested and will go into three systems that are in essence connected to each other. The water will be pumped into the dam or retention dam from where irrigation water can be pumped from.

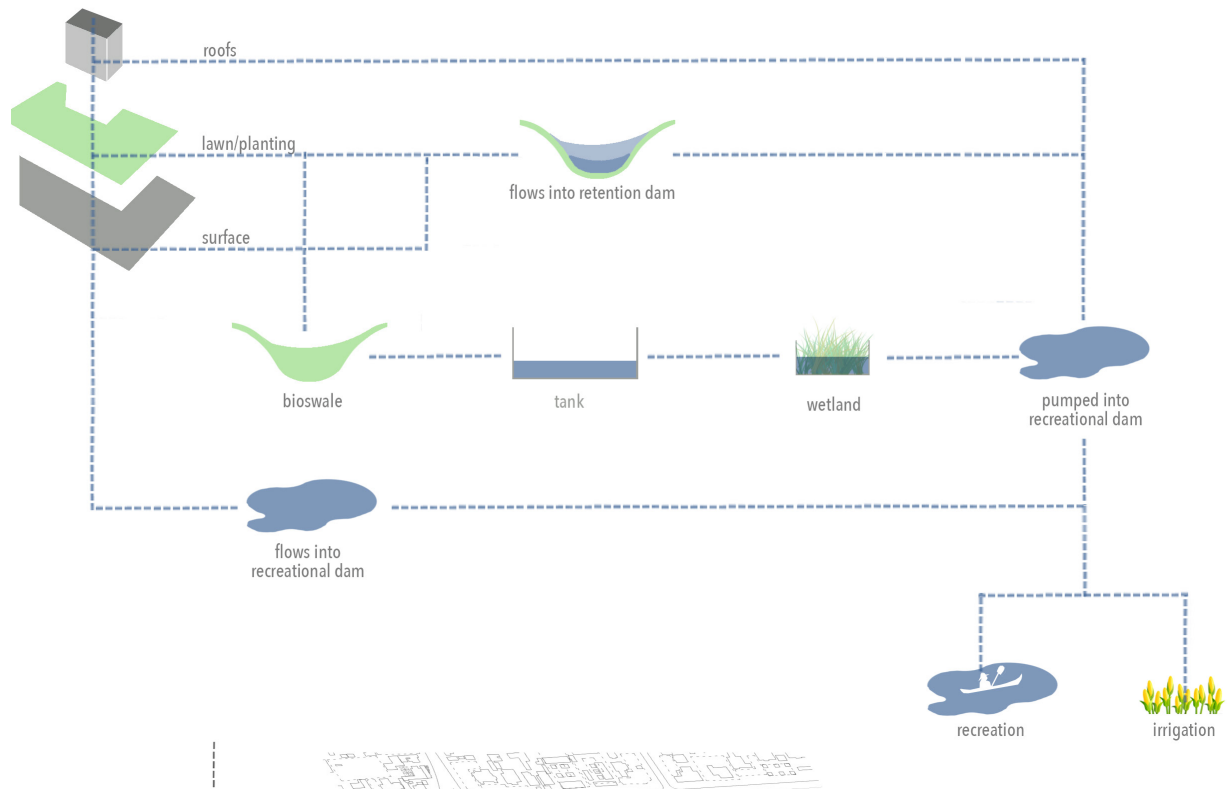


Figure 08.35: Water management strategy (Author, 2015)

Three catchments and areas of demand were identified. The harvested water will go into various storage tanks - the dam will always be full and will therefore overflow into the retention dam during rainy seasons. From the retention dam (during storms), the excess water will

be able to drain into the existing stormwater system. A subsurface drain, the Atlantis Sportsfield Drainage System, will allow the excess water from the fields to be harvested and cleansed from fertilizers through the wetland and to be reused again.

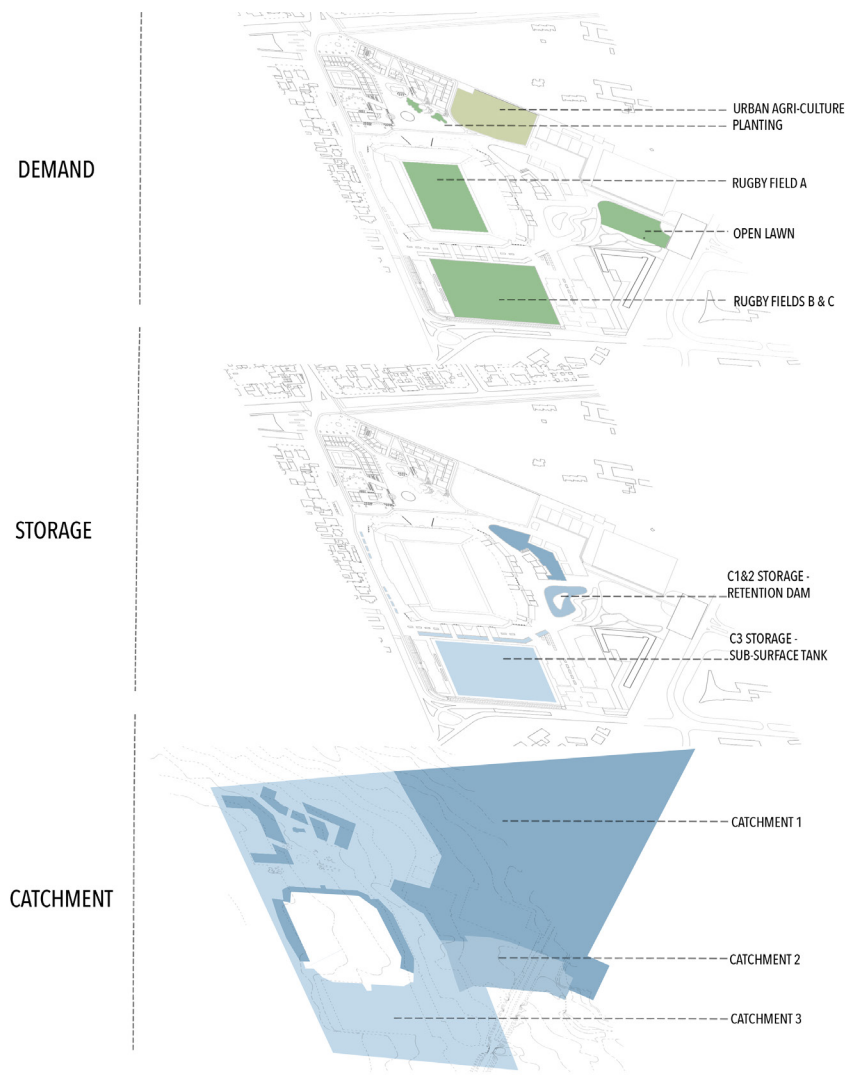
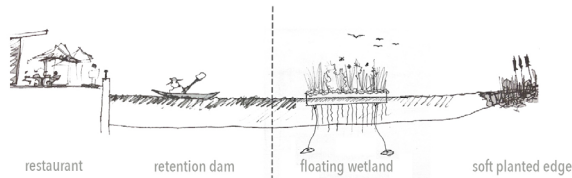
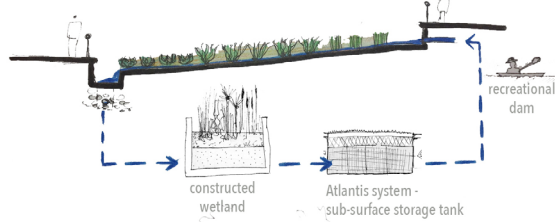


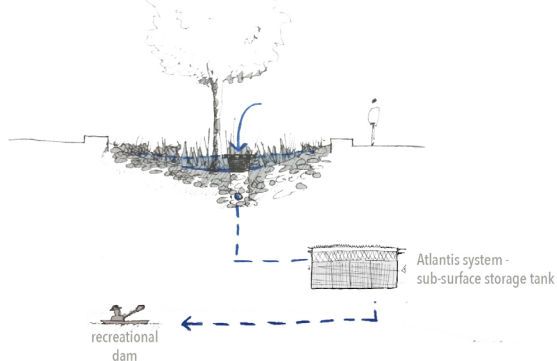
Figure 08.36: Demand, storage and catchments (Author, 2015)



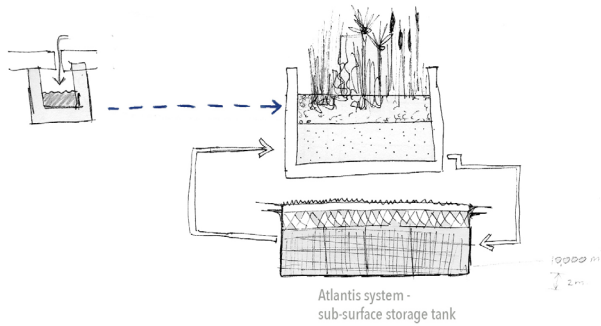
RETENTION DAM



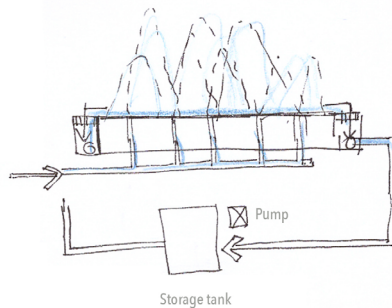
AGRICULTURE



BIOSWALE



CONSTRUCTED WETLAND  
& SPORTS FIELD



ZERO-DEPTH WATER FEATURE  
(closed system)

Figure 08.37: Diagrams showing the various systems proposed around the site (Author, 2015)



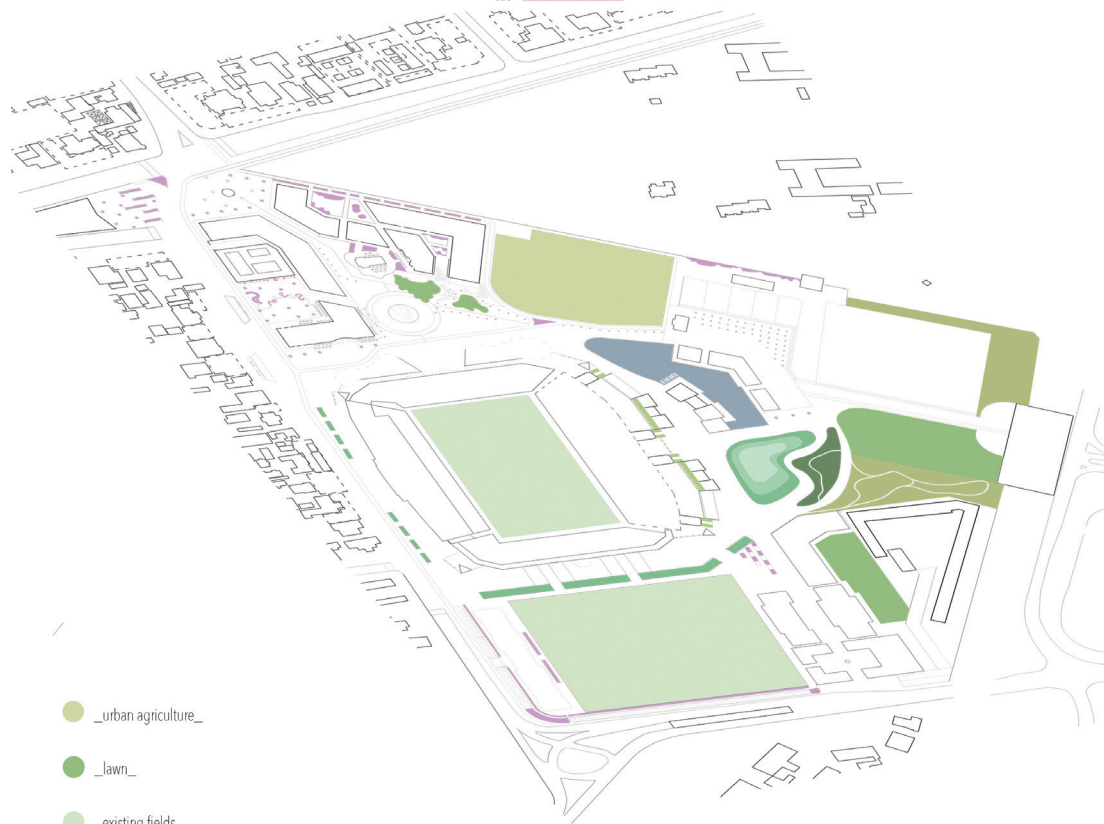


## 08.07 PLANTING STRATEGY

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The planting strategy aims to address as much as possible of the ecosystem services as well as to provide an environment that brings forth the sense of carnivalesque, using flowery plants with bright colours in the more urban zones.

Urban agriculture, fruit orchards and fruit-bearing edible trees, a habitat area for nesting and reintroducing regionally indigenous planting in order to enhance the ecological diversity as well as wetland planting within the retention dam as well as the constructed wetlands north of Fields B&C that cleanses the fertilised water.



● \_urban agriculture\_

● \_lawn\_

● \_existing fields\_

● \_habitat area\_

Plants were chosen that attracts wildlife such as birds, bees, butterflies and bush babies.



● \_regional vegetation\_

Grassland-type planting was chosen for this area since the highveld represents the grassland biome



● \_ornamental & flowery\_

Mostly plants flowery, edible, fragrant and hardy/ waterwise plants were chosen for the ornamental planting



● \_wetland planting\_

Different zones within the retention dam as well as wetlands exist where the water is at different levels, thus a range of species were used



Figure 08.38: The planting strategy - showing the important zones that were considered (Author, 2015)





Figure 08.39: Diagrams showing tree species used in specific areas in terms of their fruit, their smell, their colour, their size and how much they would “mess” on the surface (Author, 2015)



## oranjezicht city farm

The Oranjezicht City Farm is situated in Cape Town, South Africa. Volunteers work on the farm and sponsors contribute to the maintenance of the farm.

The project is a great success - it revitalises the city and educates while growing successful organic food. Schools are also able to take outings to the farm. Every weekend a market is held where the crop is sold to the public.

The community can be involved in various ways: volunteering, donating or taking part in the Bakashi Brigade process which works as follows:

- Anaerobically ferment organic waste
- Micro-organisms are applied using an impregnation carrier, either wheat bran or sawdust or both
- Fermentation process - odour-free
- Breaks down heavier items like meat, fish and cheese
- Very fast process - usually less than 2 weeks
- Finished product - sweet, pickled odour
- After fermented - fed to the earthworms or buried directly in the ground
- Takes up to a month to integrate into the soil
- Process will speed up once the microbial count increases in the soil
- Safe, convenient, and quick way to compost food

Since the process is done in a sealed system concerns about insects and smells are eliminated, making it ideal for an urban setting.

Figure 08.40: Oranjezicht City Farm and events around it (OZCF Official Website)



# Loftus Organic CITY FARM

The Loftus farm will work similarly to the OZCF. Loftus Organic City Farm will be used by different members in the community, students and learners will be drawn towards growing healthier food.

A market will be held every Saturday in order to sell - this will be open to public and other vendors of organic food will be welcome to also sell their food or beverage.

Educational programs will be available especially for schools and elderly groups of people.

Sponsors and volunteers will be needed to help sustain the urban agriculture.

The heritage buildings will be used for educational purposes and an organic restaurant respectively.



Figure 08.41: Collage of what the organic farm can become (compiled by Author, 2015)

Botanical Name	Common Name	Vegetable	Medicinal	Herbs	January	February	March	April	May	June	July	August	September	October	November	December
<i>Allium cepa</i>	Onions	Orange														
<i>Beta vulgaris</i>	Beetroots	Orange														
<i>Brassica oleracea</i>	Broccoli	Orange														
<i>Brassica oleracea</i>	Cabbage	Orange														
<i>Brassica oleracea</i>	Cauliflower	Orange														
<i>Capsicum annum</i>	Green Pepper	Orange														
<i>Daucus carota</i>	Carrots	Orange														
<i>Eriocephalus africanus</i>	Wild rosemary		Red	Yellow			Green	Green	Green			Green	Green	Green		
<i>Eucomis autumnalis</i>	Pineapple flower		Red									Green	Green	Green		
<i>Hypoxis hemerocallidea</i>	African potato		Red									Green	Green			
<i>Lactuca spp</i>	Lettuces	Orange														
<i>Lycopersicon esculentum</i>	Tomatoes	Orange														
<i>Phaseolus spp</i>	Green Beans	Orange														
<i>Siphonochilus aethiopicus</i>	Ginger		Red	Yellow	Green	Green	Green						Green	Green	Green	Green
<i>Solanum melongena</i>	Brinjals	Orange														
<i>Solanum tuberosum</i>	Potatoes	Orange														
<i>Spinacia oleracea</i>	Spinach	Orange														
<i>Tulbaghia violacea</i>	Wild garlic		Red									Green	Green	Green		

Figure 08.42: Planting list for the urban agriculture, showing what time of the year each species can be plant (compiled by Author, 2015)







## 08.07.SKETCH PLAN DEVELOPMENT

The Sketch plan area was selected on the northern side of the stadium. Most intervention occurs in this area and this is the main area where

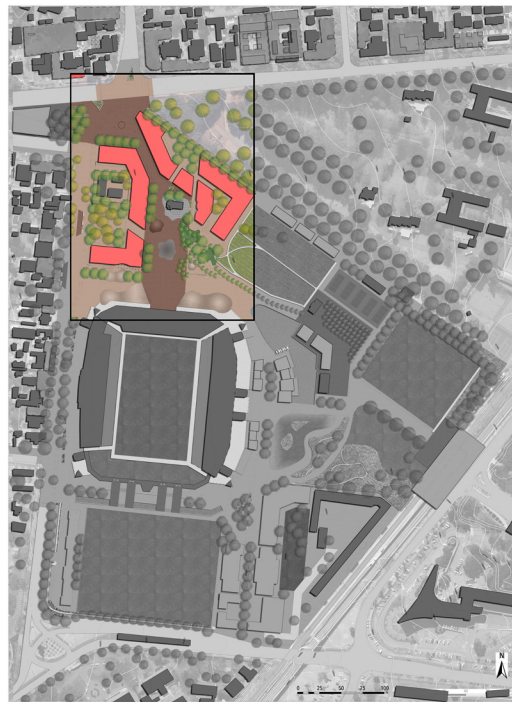
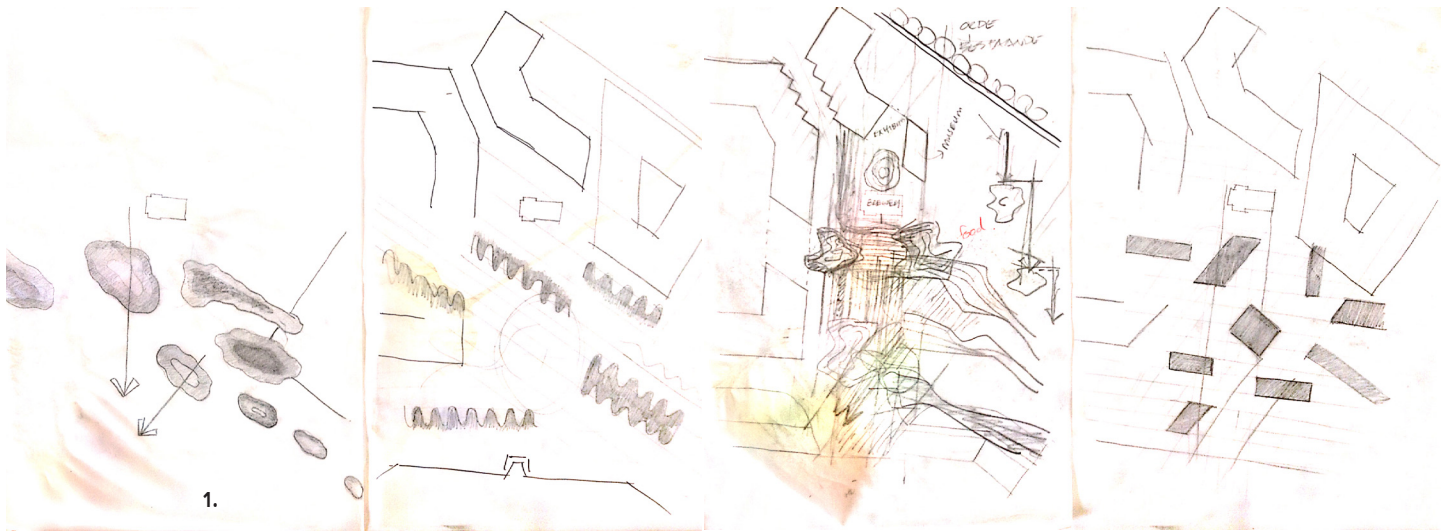


Figure 08.44: Sketchplan area (Author, 2015)

Figure 08.43: Walter Battiss painting (unknown source)

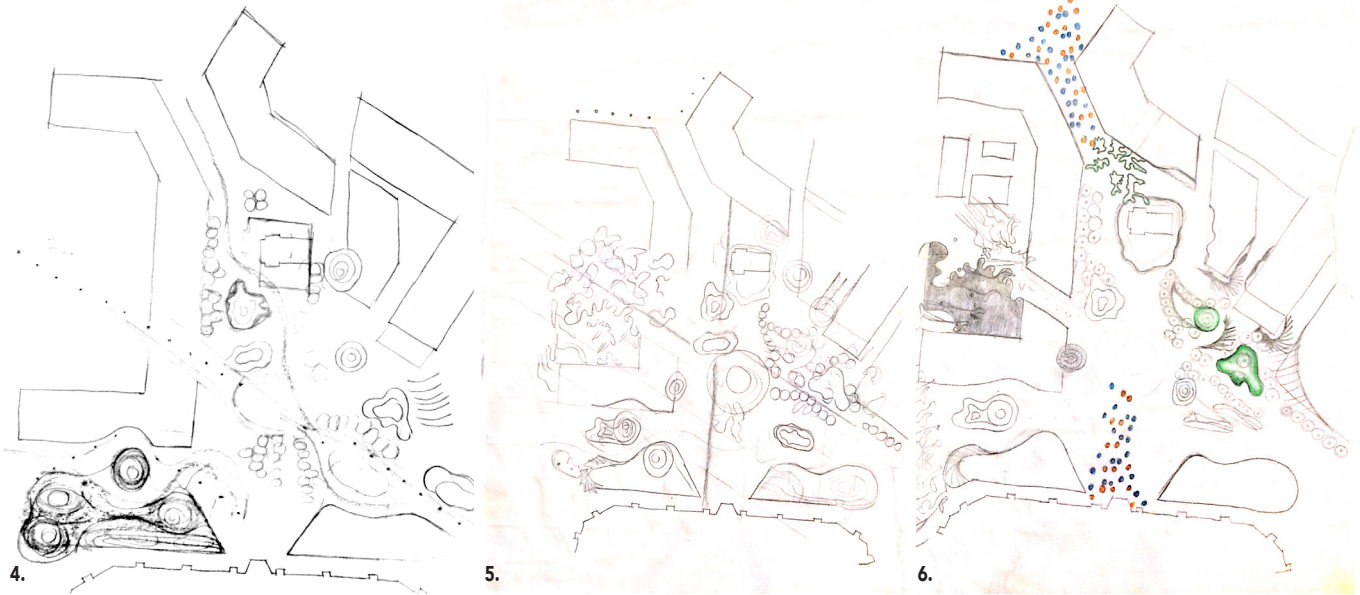


1.

2.

3.

Figure 08.45: Iterations of Sketch plan



#### DESCRIPTION OF PLANS

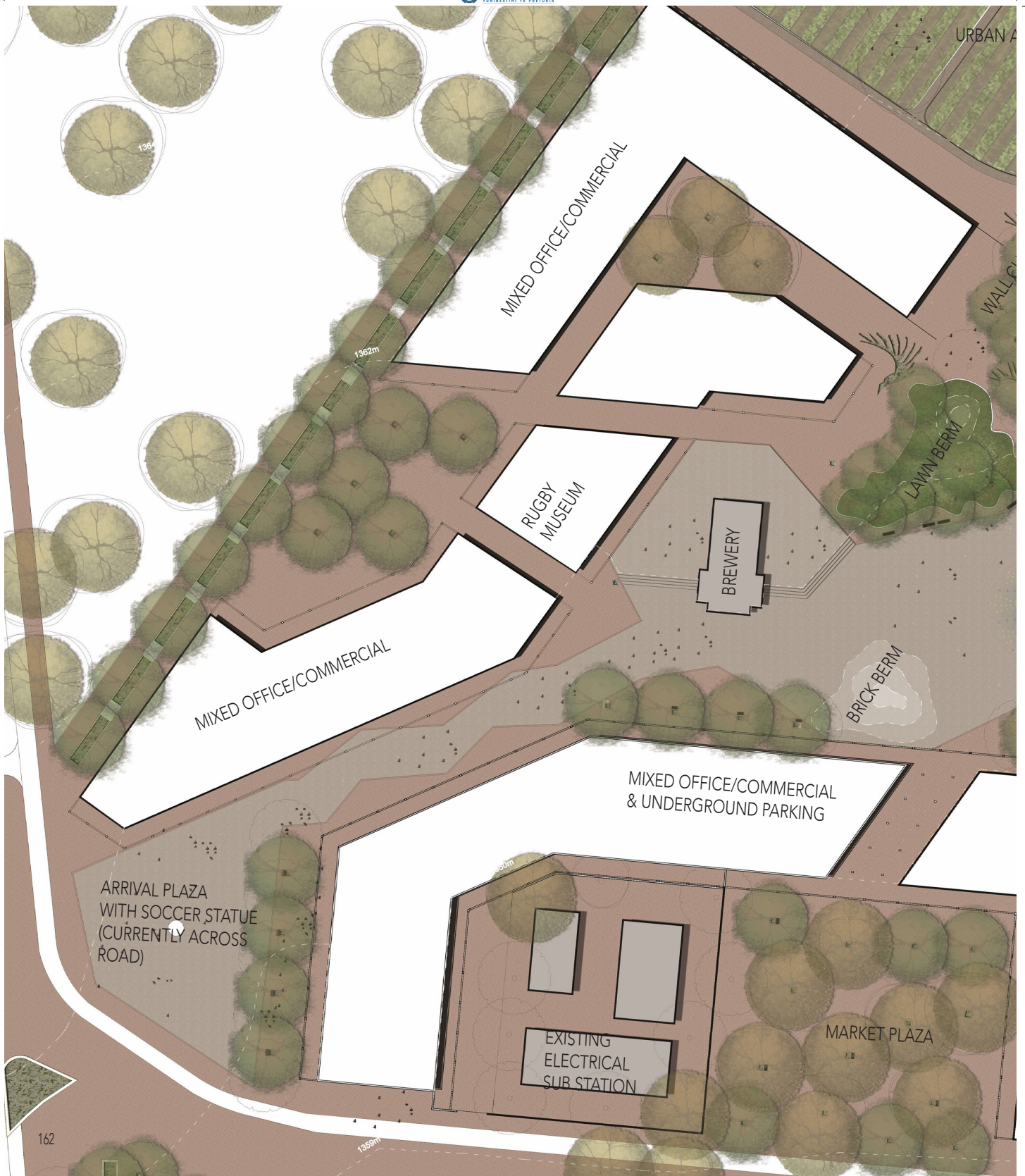
1. A range of drawings were done to investigate the concept of "disrupting" the order.
2. The painting of Walter Battiss was superimposed onto the sketchplan area to help with form generation and to bring the spirit of the painting into the landscape, which (in the Author's eyes) signifies large crowds moving through space and also the spirit of 'carnavalesque'.
3. Another superimposition of the painting were done in a different way than the previous - the whole painting was superimposed onto the plan instead of only a piece of it.
4. The plan was manipulated according to what would be functionally appropriate and manipulated also according to the first investigations that were done. The surface manipulation was also further investigated.
5. In order to reduce the large open spaces and the heat that it creates, ways of bringing greenery and trees into the areas was investigated.
6. Lighting was investigated.

#### 08.08. FINAL SKETCH PLAN

The sketchplan area becomes the heart of the project - where the park connects to the rest of the urban context and where mostly large crowds will gather before and after matches and also where people can buy food and drinks. Taller trees were proposed in order to bring down the scale of the building as well as to provide sufficient shade for such large spaces. Fruit trees were introduced as part of the resilience strategy and planted between regionally indigenous species. People can enjoy the taste of the fruit, the smell thereof or the shade that the taller trees, especially, provide. A zero-depth water feature was introduced to provide activity for the younger generation on hot days. The Brewery (old Sin Bin building) is emphasised by a staircase surrounding the western end of the building.

Some of the only figures that came out as exactly that of the painting of Battiss, are the bird figures that one will only be able to notice from a higher point such as the climbing wall, from within the buildings, or the stadium.







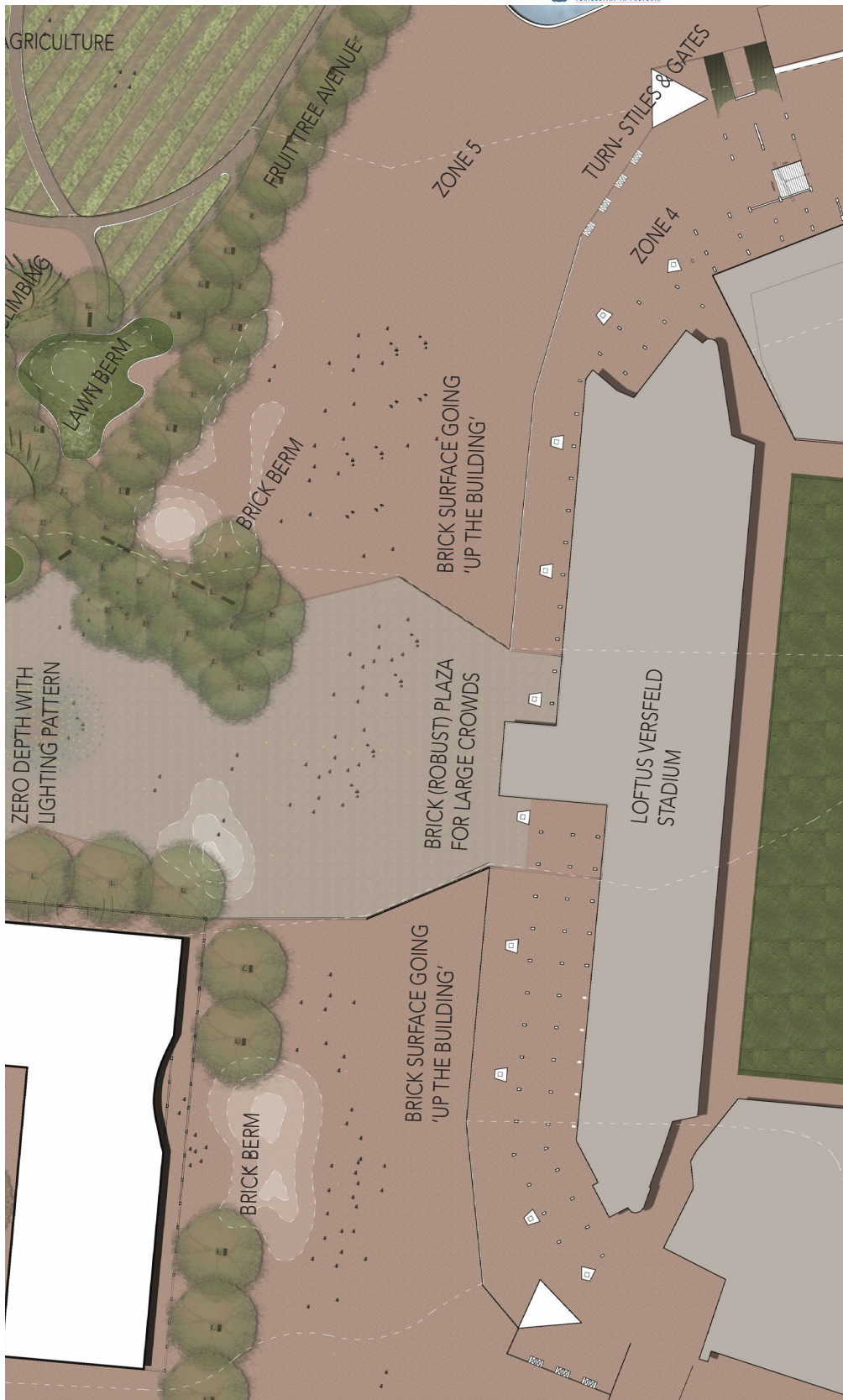


Figure 08.46: Final Sketch Plan (not to scale)

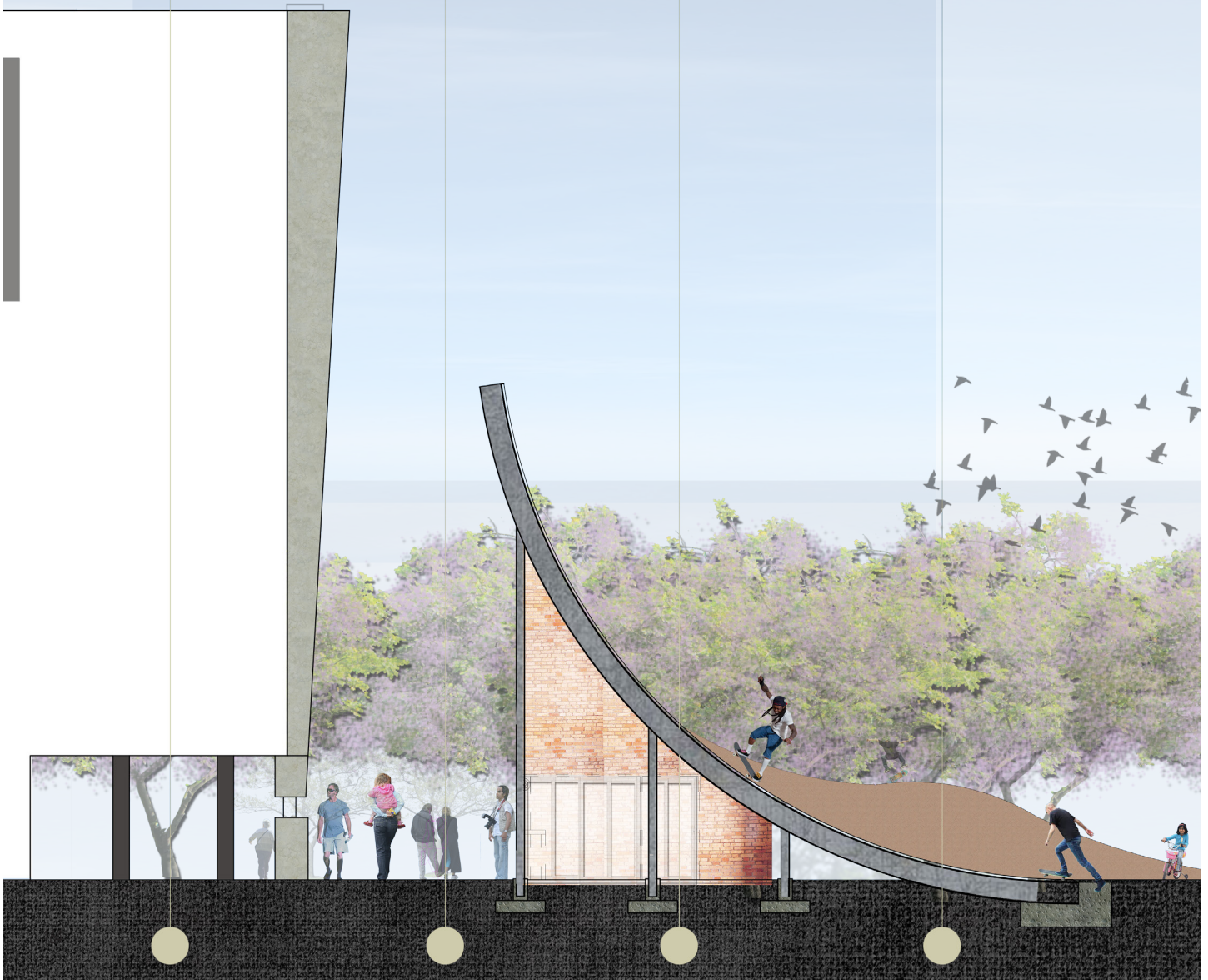
Loftus Versfeld Stadium

movement in zone 4

zone 4 kiosks

brick surface

Figure 08.47: Section B - south to north viewing west (Author, 2015)





restaurant spilling out from  
the building

planters with seating

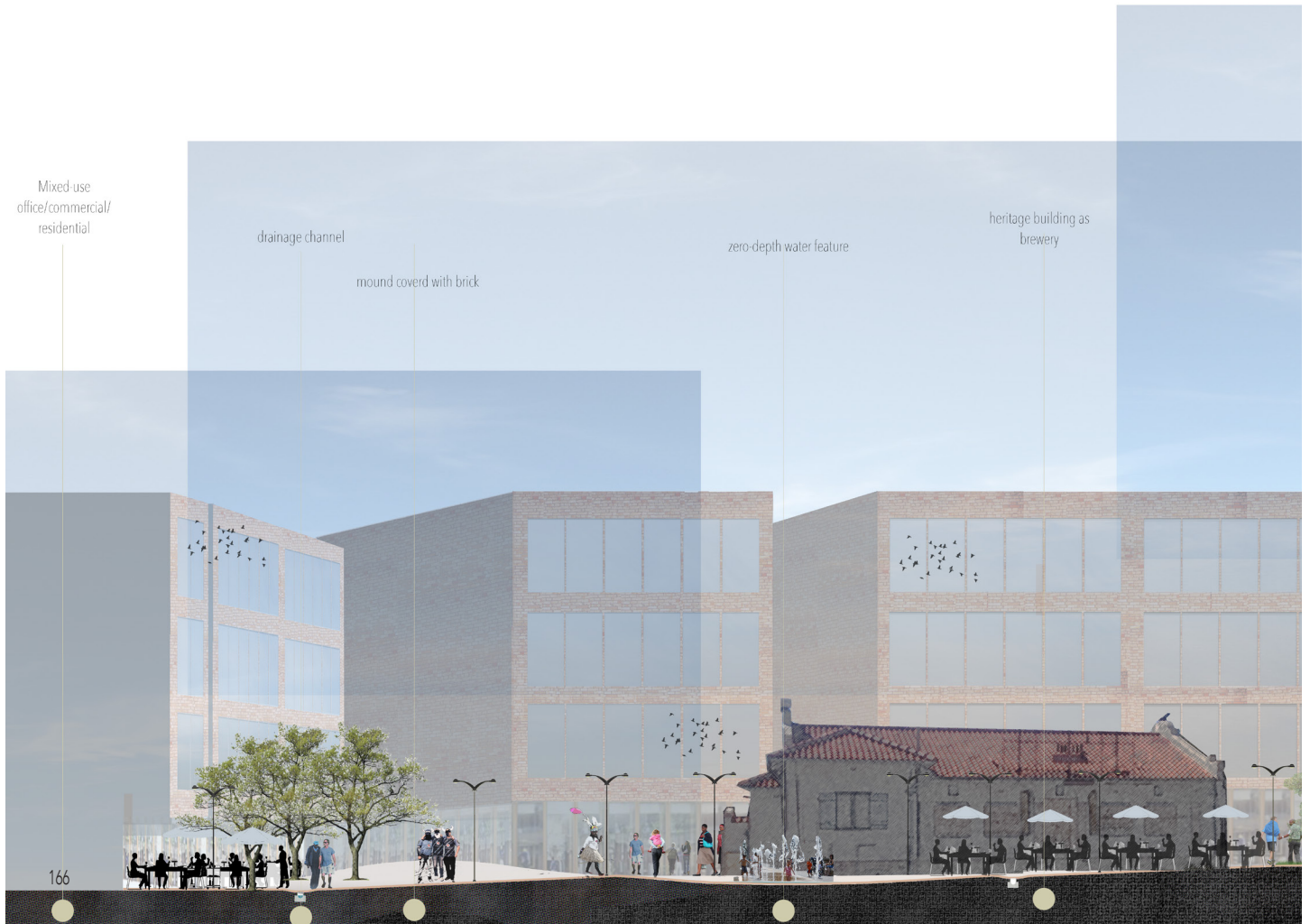
restaurant spilling out from  
the building

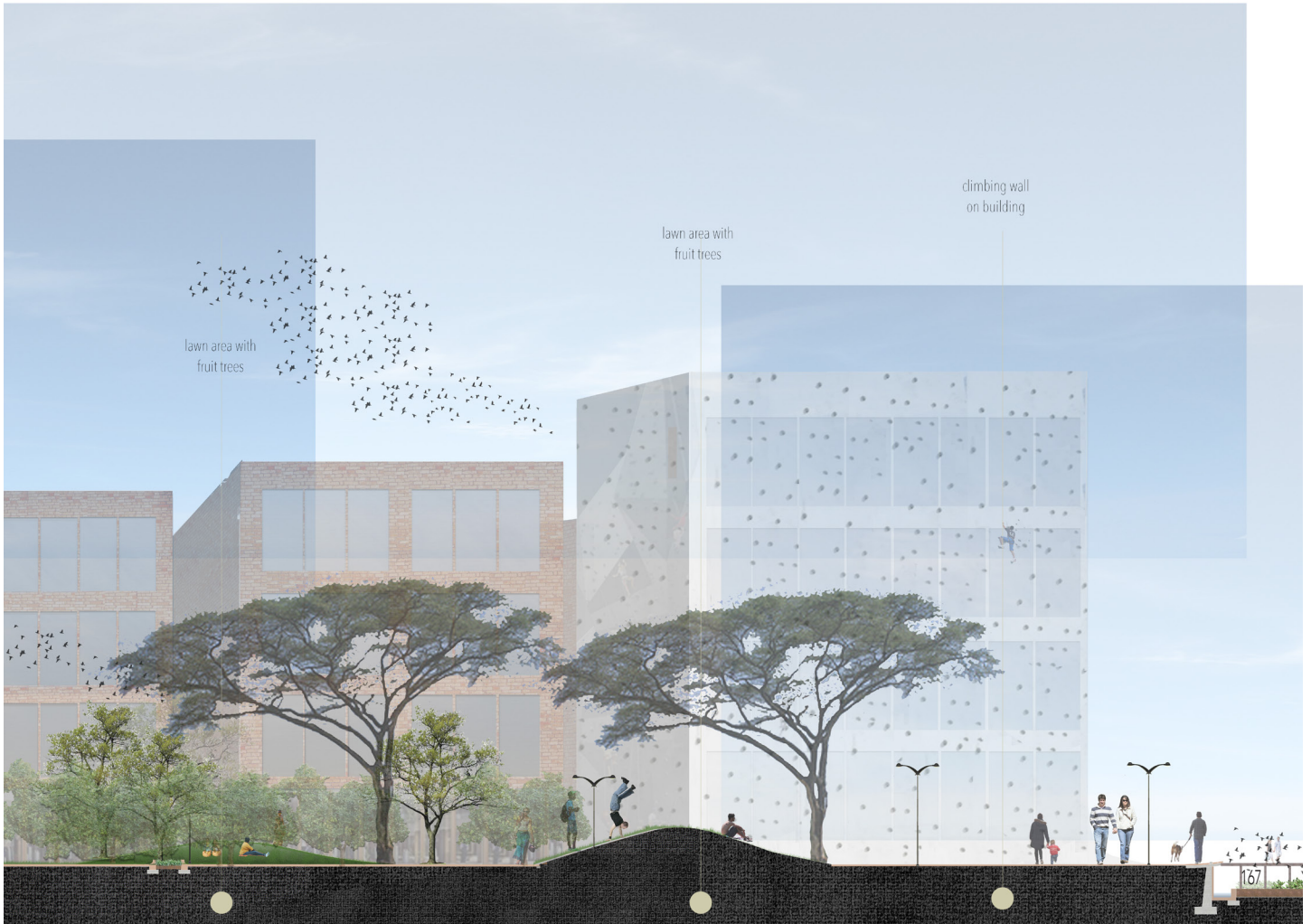
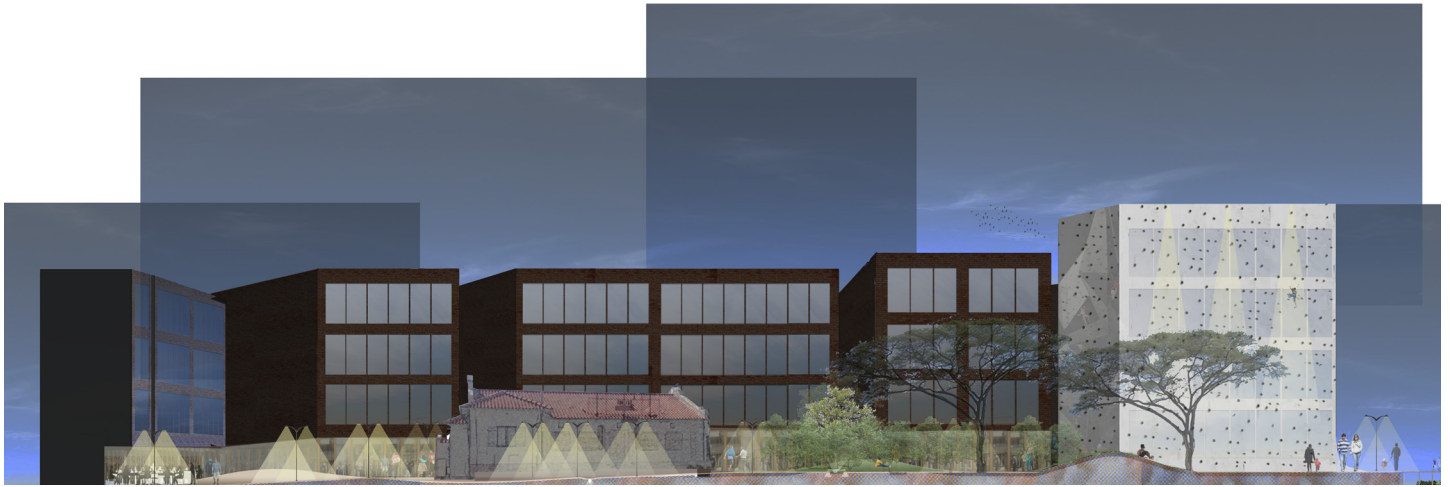
Mixed-use  
office/commercial  
residential



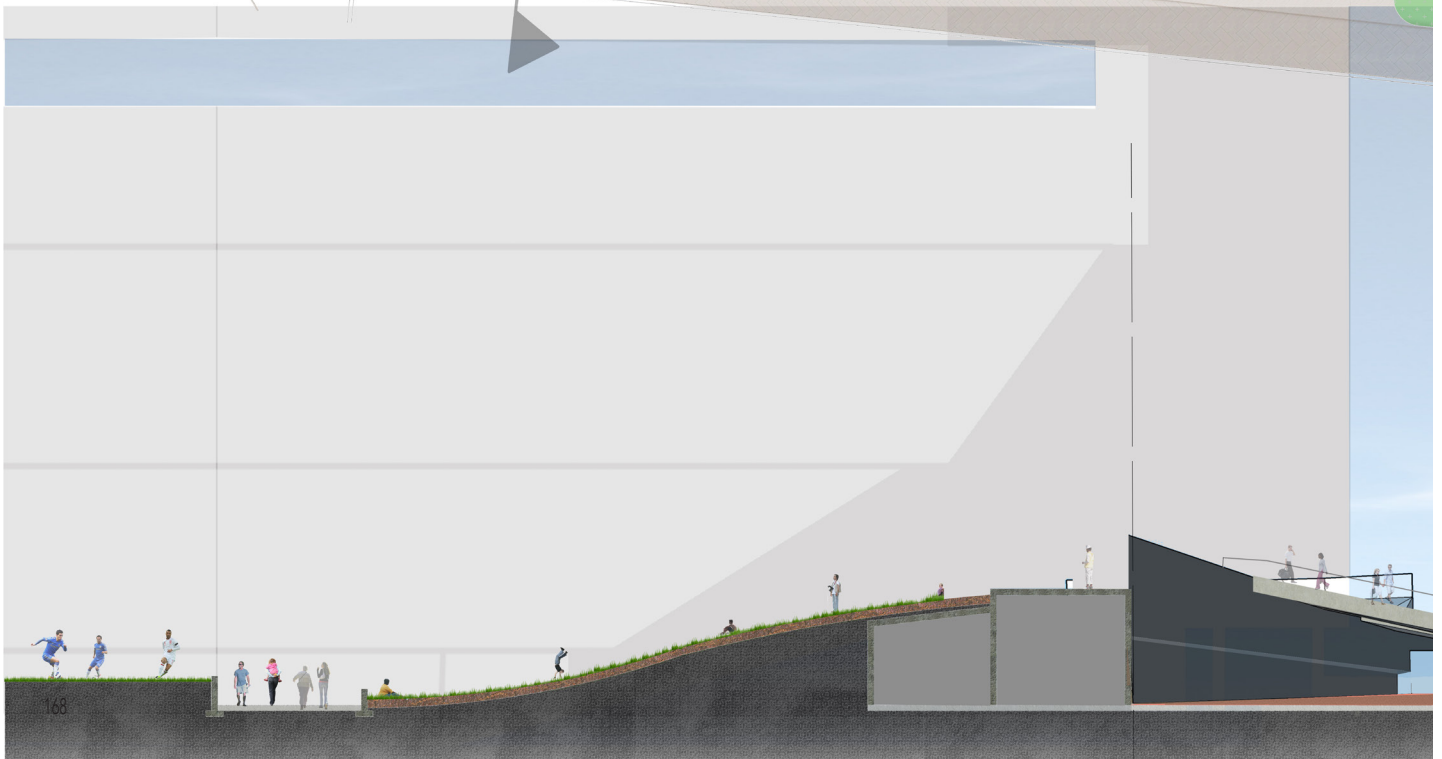


Figure 08.48: Section C - west to east viewing north (Author, 2015)















## 08.09 CONCLUSION

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The final design meets the requirements of a functional stadium landscape and becomes a public multifunctional stadium landscape that is resilient (see Appendix I for SITES rating). The necessary programme is addressed and accommodated and the rest of the landscape is liberated from constructive programming which encourages freedom of expression.



