



Fig 6.1 Rendering of seating area and walkway in front of a classroom (Author, October 2018)

## CHAPTER

# 06

*concepts +  
design development*

### 06.1 PROJECT INTENTION

The intention of this dissertation is to create a model to deal with stigmas associated with a post-industrial site through the creation of architecture, with a specific focus on rehabilitating the environmental degradation, preserving the heritage and mediating the segregation of communities. The aim of the program and architecture proposed for the site is to make a contribution to the local context, making the intervention contextually driven.

As the Mozambican architect, Jose Forjaz, has suggested, architects have a responsibility to design public buildings that create social spaces, are environmentally sustainable and that contribute to the social integrity of the city (Ribeiro, 2011: 12).

This dissertation intends to adhere to the principles set out by Forjaz, which are very similar to the approaches discussed in the theory section of this document (see chapter 3). Expanding on Forjaz's principles of design, it is evident that he has an affinity towards contextual architecture that responds to the social and economic needs of the community. He particularly highlights the importance of agricultural production within the confines of the city, as international examples are not necessarily relevant to the African context (Ribeiro, 2011: 41-42). Forjaz highlights that we need to create an architecture that creates equal opportunities for all who use it, the time for careless architect is over. (Ribeiro, 2011:52).

The intervention will consist of four separate buildings each with a similar design language, yet each will have a unique response to solar angles, climate and program. The fundamental starting point of the concept was re-using the old footprints and leftover fabric of the now demolished factory.

### 06.2 CONTEXTUAL INTENTIONS

To contextualise the project in its post-industrial setting it is important to remember the value of the existing heritage fabric and the responsibility to reinterpret the fabric to give it value once again. This dissertation deems it important to continue the industrial nature of the site in a new and responsible manner. The landscape presents itself as an opportunity, the natural resources available on site include rivers, large open spaces with fertile soil and existing fauna growing on site. Because the landscape was so scarred by the quarry this dissertation intends to work with the current owners (Labucon) to use the imported soil in a productive manner. Purposefully manipulating and "fixing" the landscape through the imported daily loads of soil, in this way the new farmland and urban park can be created.

### 06.3 PROGRAMMATIC INTENTIONS

The program facilitates an architecture that engages with the community, that paves the way for economic regeneration and an architecture that will give the site a new significance. The agricultural school will create a source of valuable knowledge and economic regeneration where pupils and users from the surrounding communities can learn together.

The utilisation of the existing programmatic opportunities on site is vital to strengthen a new intervention, such as the value of the existing stadium complex, next to the Era brick factory. The value something has, can be quantified by the possibilities it creates. Thus the new sports and management facility will strengthen both the stadium complex and the new proposed agricultural school.

By having an established public space in the context of the site, adds to latent potential of the new intervention. Sport has the power to bring communities together, and can form new bonds between people. This can then foster new career paths and other economic opportunities

### 06.4 FORMAL INTENTIONS

The intervention sought to understand the industrial buildings of the sites past and the stadium complex and using the most important aspects of this typology in the new interpretation of a sustainable industrial building. The proposed programs

could run their course in time and as such the building is intended to be easy to dismantle and re-use the materials. The school building has large enough spaces that they can in future be re-purposed, the only parts that would be unlikely to be reprogrammed are the brick service core spaces as they are built in smaller and rigid structures.

The following section will expand on the process and development of the final architectural concept.

### 06.5 INITIAL CONCEPT: MARCH

As seen in figures 6.2-6.5 on pages 55 and 56, the first inclination was to frame certain parts of the site, particularly the footprints of the old factory, located south of the leftover concrete and brick structures where bricks were dried.

Interaction between the existing stadium complex and the new building was paramount in this iteration. With axes being highlighted coming from the stadium, main entrance into the site, into the new recreational park and between the new proposed buildings. An over reliance on framing important areas, covering and surrounding the leftover fabric was unfortunately limiting.

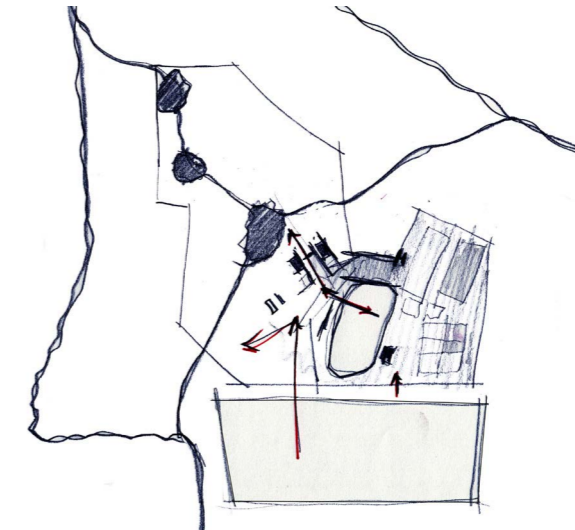


Fig 6.2 Initial Concept Sketch, Exploring site possibilities (Author, March 2018)

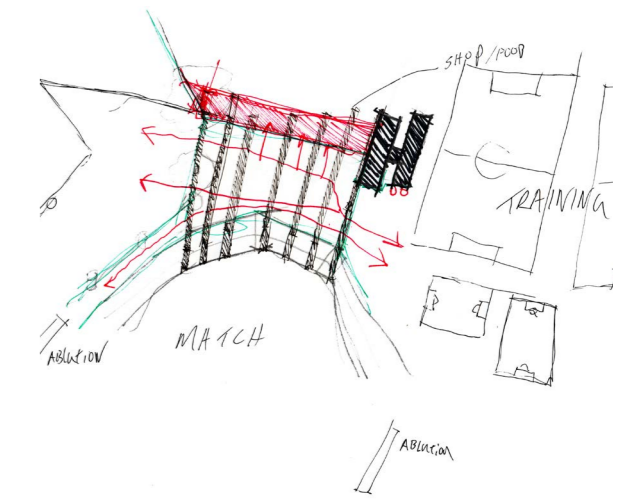


Fig 6.4 Initial Concept Sketch, Exploring site possibilities between the stadium and factory site (Author, March 2018)

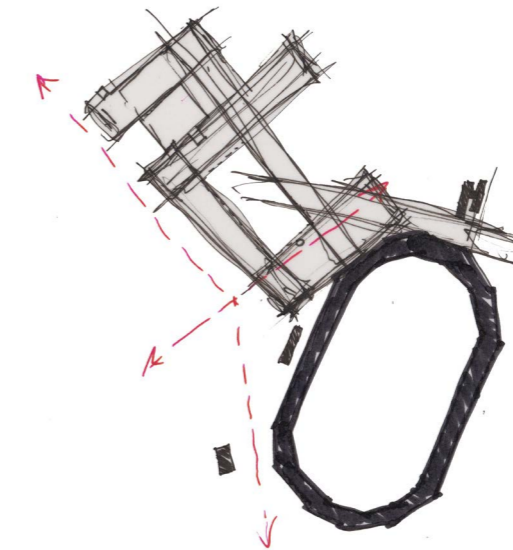


Fig 6.3 Initial Concept Sketch, Exploring site possibilities, more related to the stadium (Author, March 2018)

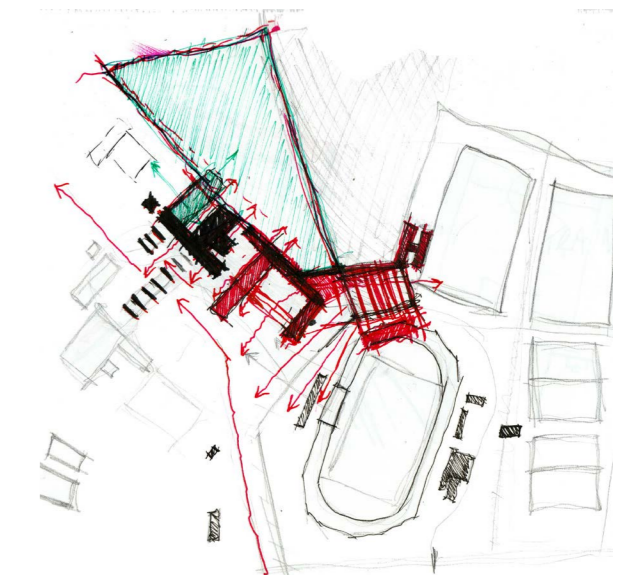


Fig 6.5 Initial Concept Sketch, Exploring site possibilities between the stadium and factory site (Author, March 2018)



**06.8 FINDING AN ARCHITECTURAL LANGUAGE MAY-JUNE**

Figures 6.20-36 show the various explorations of form, with an initial departure point being the use of the existing form and language of the old factory. References to the left-over concrete ruins and pitched roofs were tested, which evolved to courtyards and framing of various points of interest on the site.

However this approach was dislocated from the context that needed to be a main informant for the new building.

Figures 6.27 and 6.36 show the first iterations to make the building part of the landscape though the use of pergola structures, that serve both as protection from the elements and the distribution of water to the crops, north-east of the building.

The language created by industrial and factory buildings was explored and transformed to 'fit' into the new language of the proposed building. This is particularly visible in figures 6.29-6.35. The above mentioned approach was vital to the contextual grounding of the design.



Fig 6.17 Second Re-development (Author, 2018)

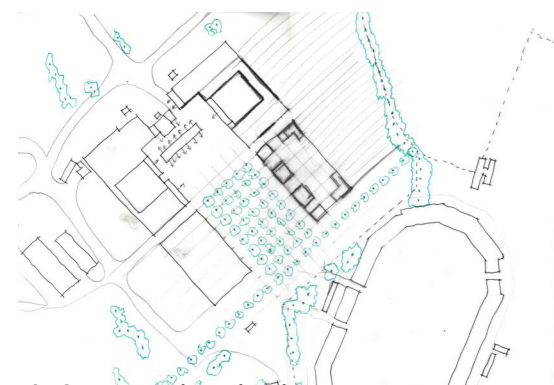


Fig 6.18 Second Re-development (Author, 2018)

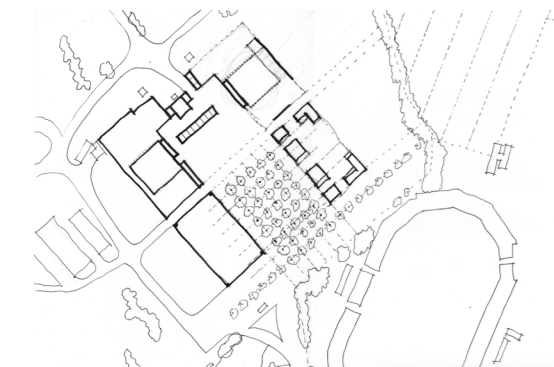


Fig 6.19 Second Re-development (Author, 2018)

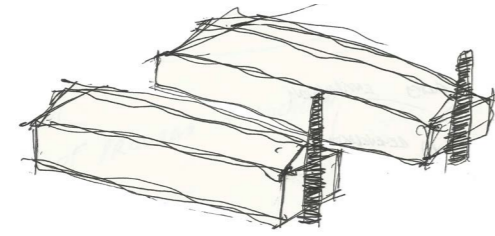


Fig 6.20 Exploration of Form (Author, 2018)

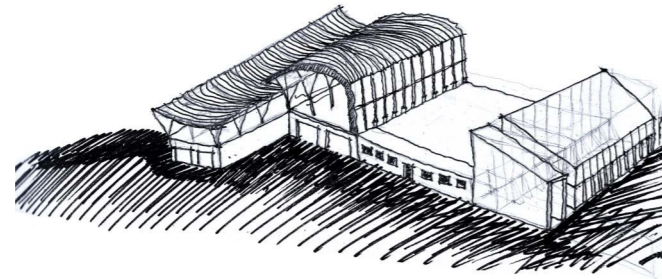


Fig 6.21 Exploration of Form (Author, 2018)

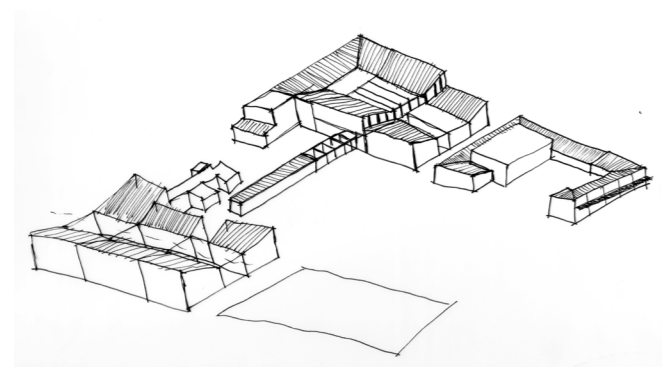


Fig 6.22 Exploration of Form Author, 2018)

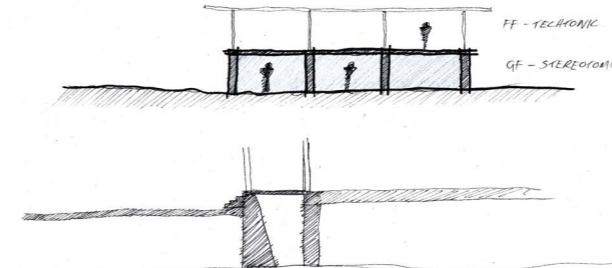


Fig 6.23 Exploration of Form Sketch (Author, 2018)

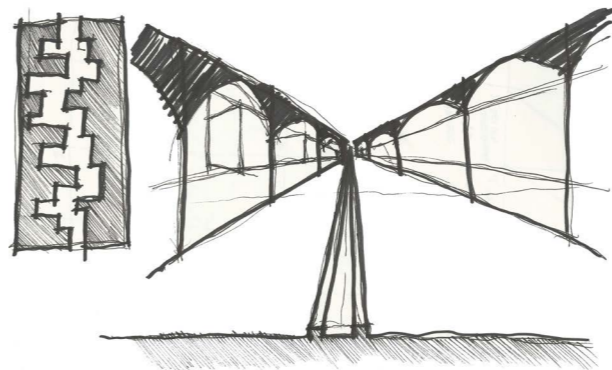


Fig 6.24 Exploration of Form Sketch (Author, 2018)

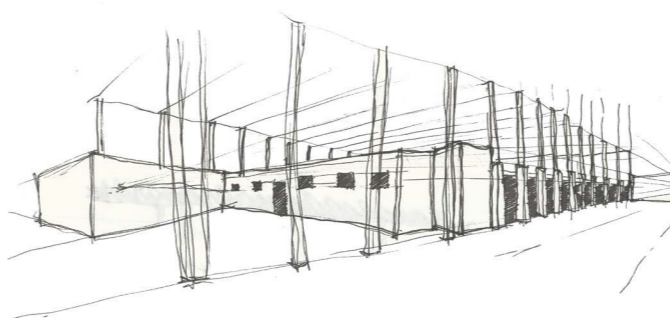


Fig 6.25 Exploration of Form Sketch (Author, 2018)

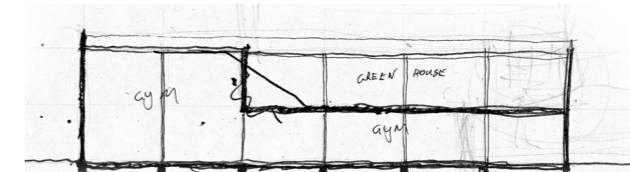


Fig 6.26 Exploration of Form Sketch (Author, 2018)

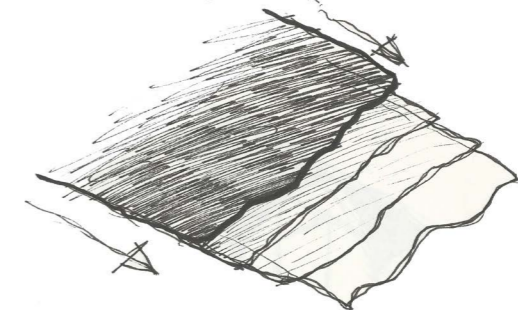


Fig 6.27 Exploration of Form Sketch (Author, 2018)

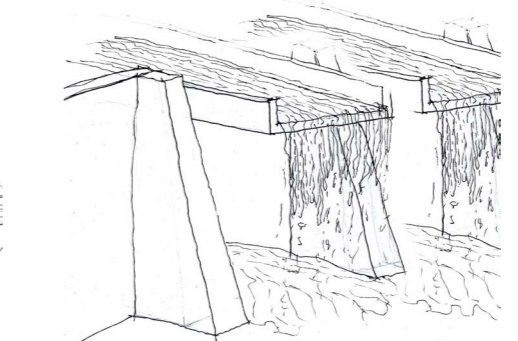


Fig 6.28 Exploration of Form Sketch (Author, 2018)

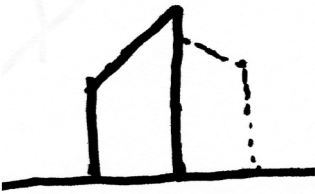


Fig 6.29 Exploration of Form Sketch (Author, 2018)

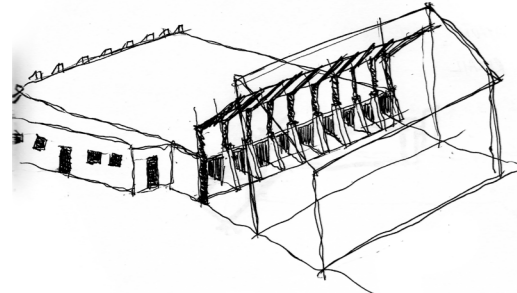


Fig 6.30 Exploration of Form Sketch (Author, 2018)

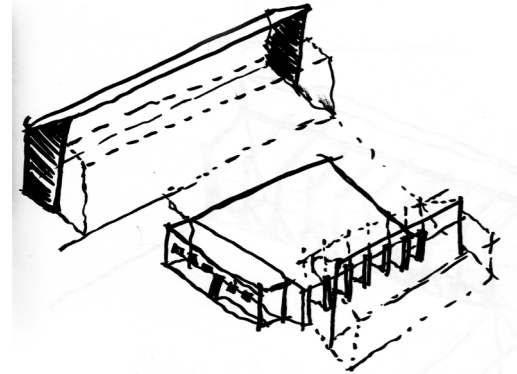


Fig 6.31 Exploration of Form Sketch (Author, 2018)

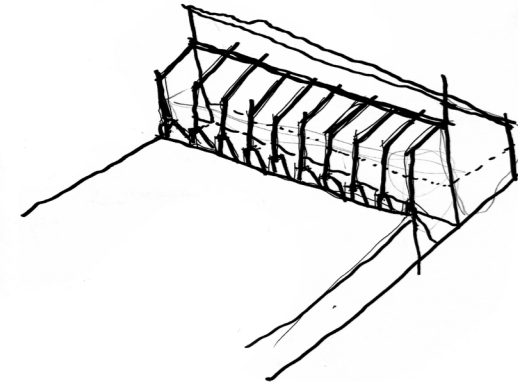


Fig 6.32 Exploration of Form Sketch (Author, 2018)

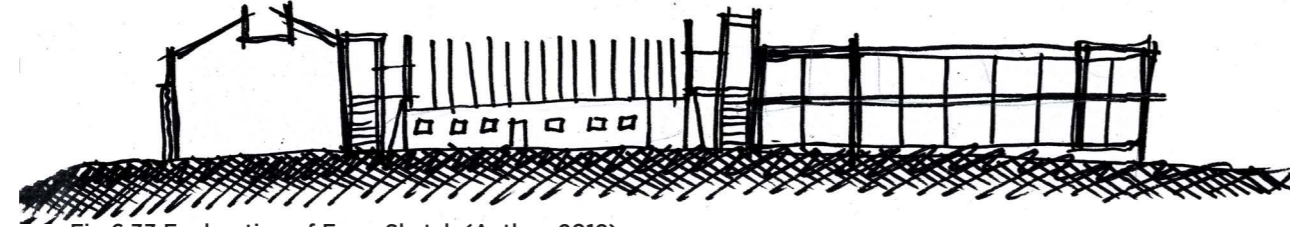


Fig 6.33 Exploration of Form Sketch (Author, 2018)

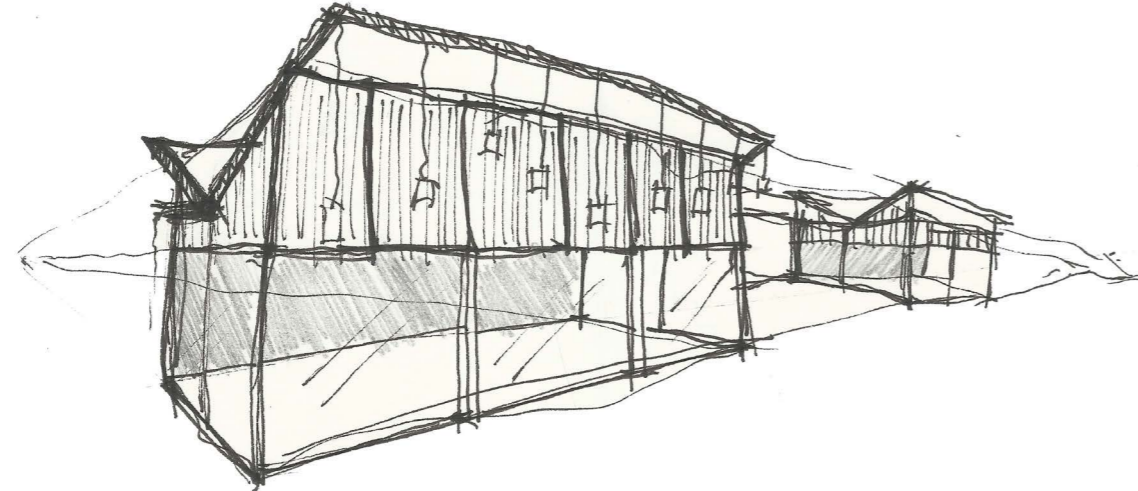


Fig 6.34 Exploration of Form Sketch (Author, 2018)

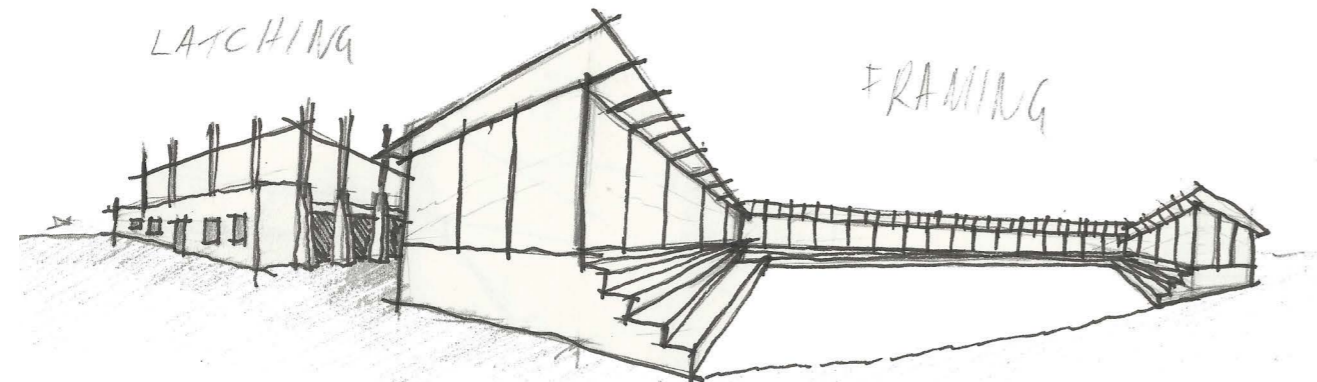


Fig 6.35 Exploration of Form Sketch (Author, 2018)

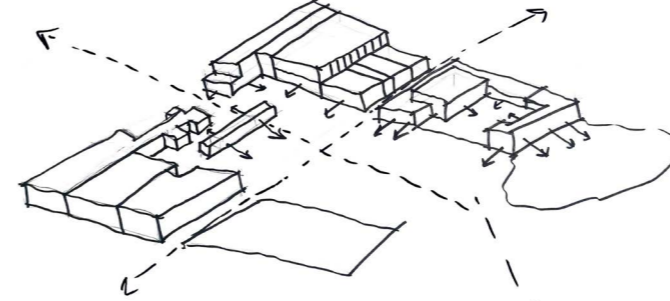
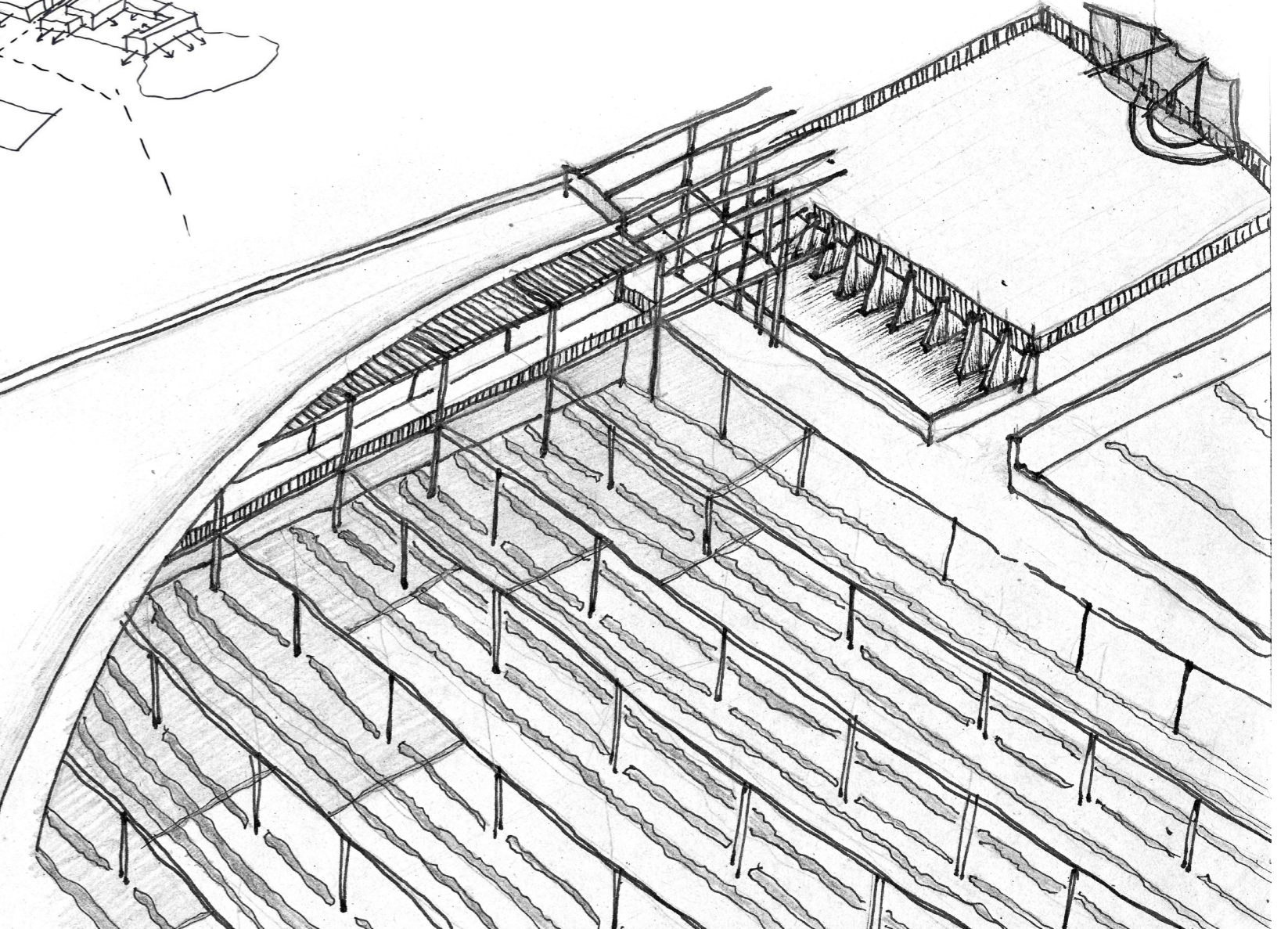


Fig 6.36 Exploration of Form Sketch (Author, 2018)



**06.9 ALLOCATION OF SPACE & EXPLORATION OF FORM**

The last major departure from the final design language, forged in future iterations, is evident in figures 6.36-6.39. An organically shaped building with various foci was used. It was an exploration outside of the author's usual design language, to test the feasibility of a design. These were explorations of form rather than suitable contextual architecture. At this stage the focus was very much on the landscape and outside spaces.

In sketches illustrated in figures 6.40-6.47 the program had been finalised, with the various sub-programs being allocated on the site. The programs began to influence the language of the building.

The agricultural school became the main focus of the building. The class rooms shifted from the ground floor to the first floor, while the sports management facility was split into two parts, namely the gym and green house forming one unit attached to the school building and the offices, while the medical suite and food stalls formed the second building.

Three class rooms initially formed the three boxes visible in the initial layout of the building. In later iterations leading up to the June exams the three boxes were relegated to service boxes housing water tanks, plumbing and electrical ducts.

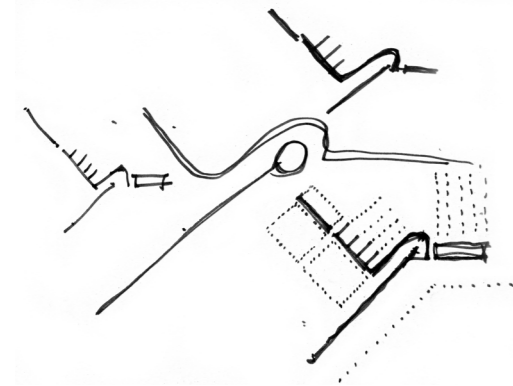


Fig 6.37 Exploration of Form Sketch (Author, 2018)

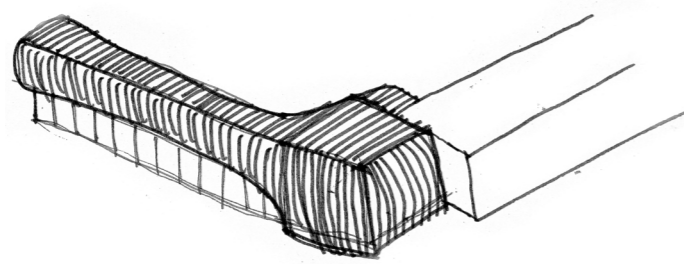


Fig 6.39 Exploration of Form Sketch (Author, 2018)

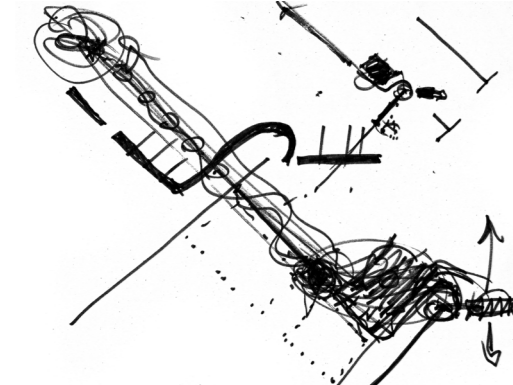


Fig 6.38 Exploration of Form Sketch (Author, 2018)

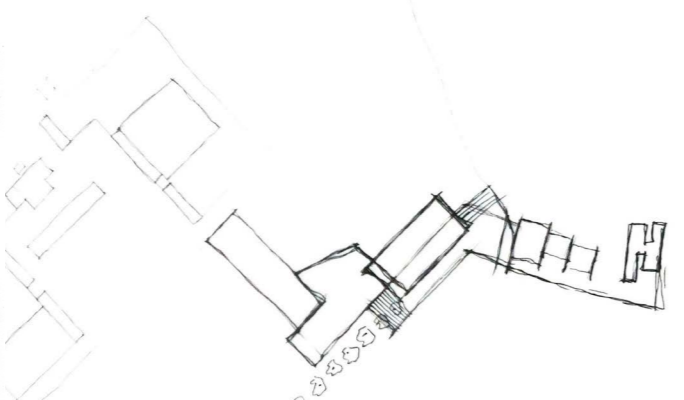


Fig 6.40 Allocation of Spaces Sketch (Author, 2018)

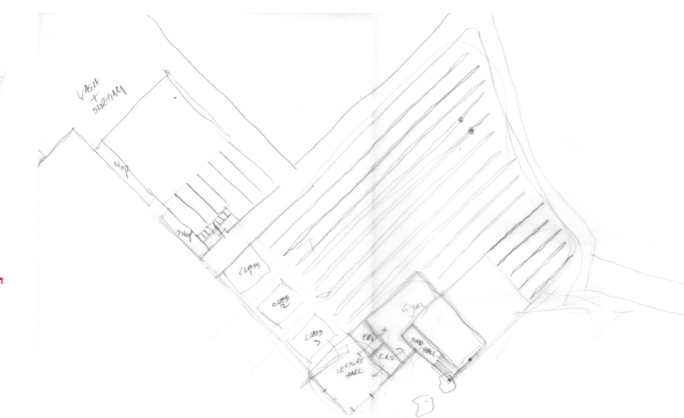


Fig 6.41 Allocation of Spaces Sketch (Author, 2018)

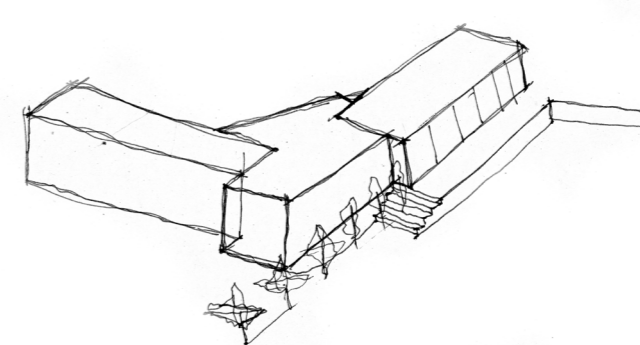


Fig 6.42 Exploration of Form Sketch (Author, 2018)

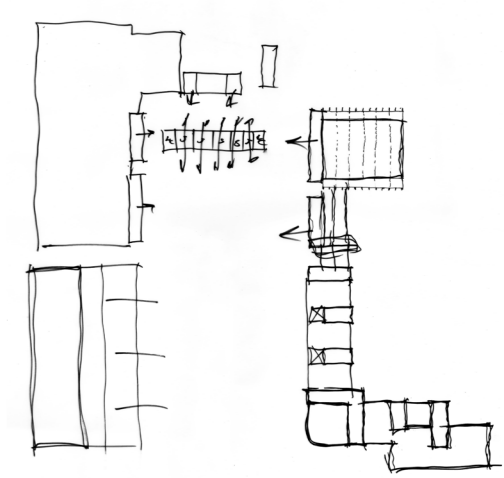


Fig 6.45 Exploration of Form Sketch (Author, 2018)

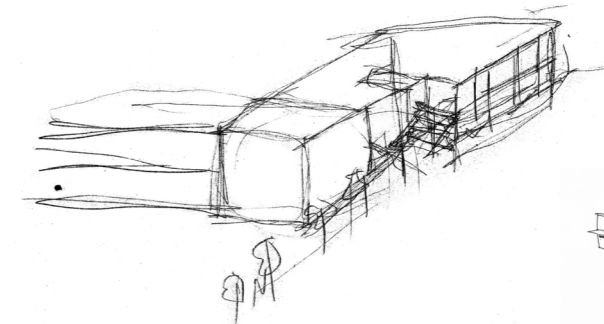


Fig 6.43 Exploration of Form Sketch (Author, 2018)

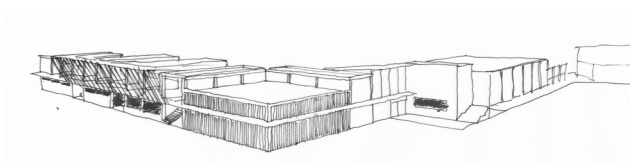


Fig 6.46 Exploration of Form Sketch (Author, 2018)

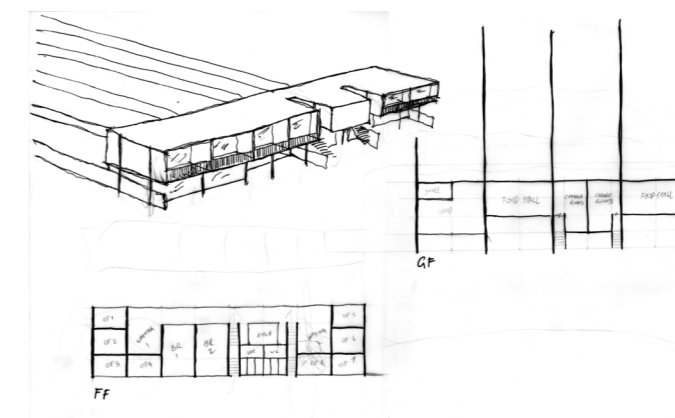


Fig 6.44 Exploration of Form Sketch (Author, 2018)

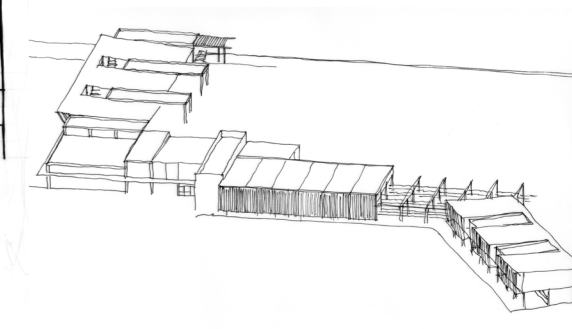


Fig 6.47 Exploration of Form Sketch (Author, 2018)

The multi-use hall appeared in the same iteration. The hall serves both as a means to tie and separate the two distinct functions of the main building, but also to lead and guide users around the important public edge coming from the main road and the stadium.

The greenhouse/gym was the point where sport-programmes met nutritional functions, where the most prominent connection of building and landscape would be. The greenhouse would dematerialise into the landscape tying it to the management building to the east.

**06.10 QUARTER 2 CRIT:  
JUNE**

The most prevalent features of the building as seen in figure 6.48 are the slanted roofs meeting the flat roofed boxes and connecting to the landscape through the functional pergola structures.

The multi-use hall and greenhouse used the same language. Unfortunately the existing ruins, (visible to the top of figure 6.48), were not sufficiently addressed. Materiality and further landscape design was still lacking at this point.

Figure 6.49 attempts to convey the landscape to building connection, but the pergola structures overwhelmed the site and did not serve enough uses for the building.

The elevations (figure 6.51) were unarticulated and lacked depth because of homogeneous use of materials and inadequate thresholds.

The layout of spaces reflected a lack of sensitivity to the site, inadequate treatment of practical services and environmental conditions.

The 'restaurant' on the ground floor was vastly over sized and irrelevant. The last problem facing this iteration was the lack of functional spaces for the agricultural school to utilise on the ground floor.

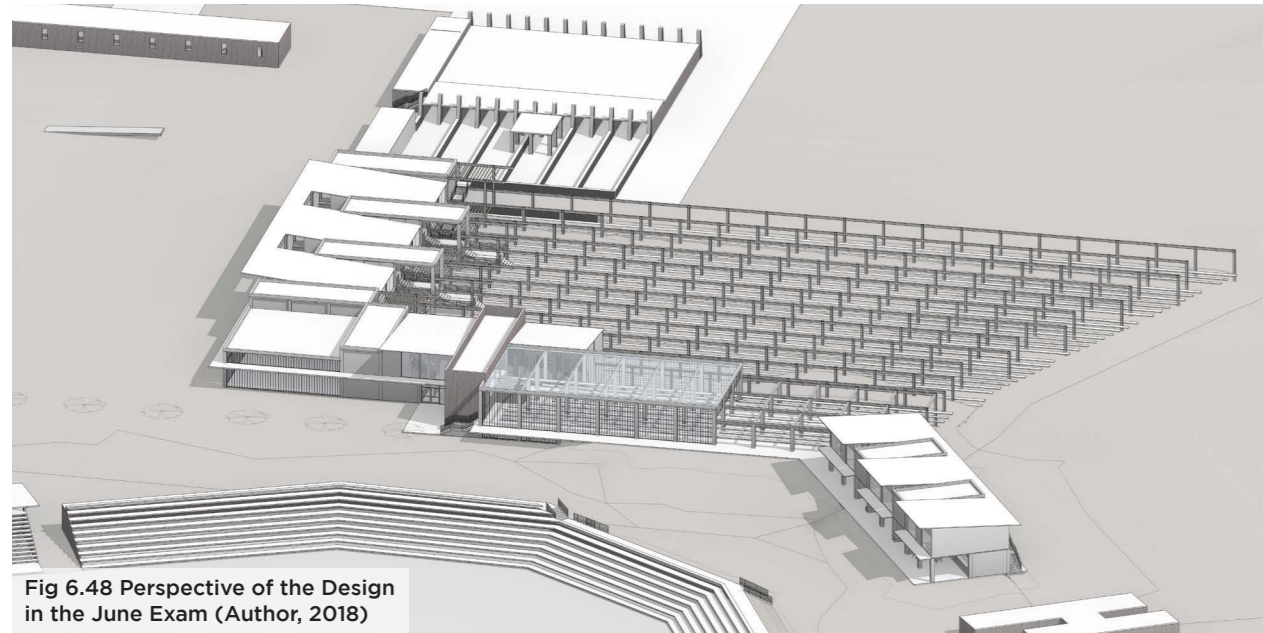


Fig 6.48 Perspective of the Design in the June Exam (Author, 2018)

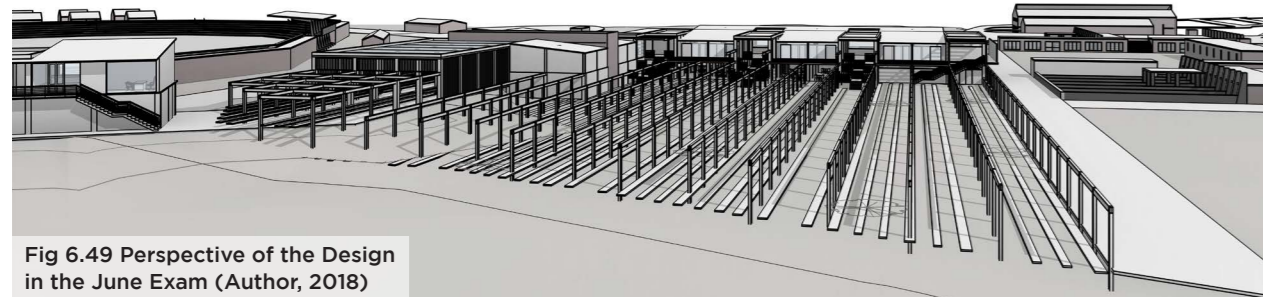


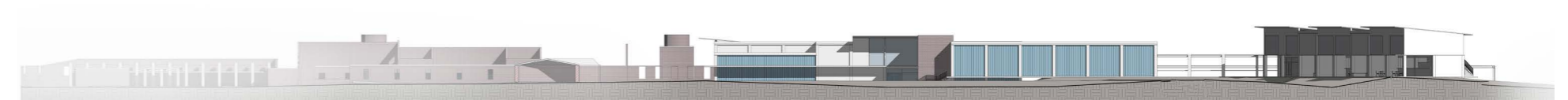
Fig 6.49 Perspective of the Design in the June Exam (Author, 2018)



Fig 6.50 Perspective of the Design in the June Exam (Author, 2018)



SOUTH WEST



SOUTH EAST



NORTH EAST



NORTH WEST

Fig 6.51 Elevations of the Design in the June Exam (Author, 2018)



Fig 6.52 Site Plan of the Design in the June Exam (Author, 2018)

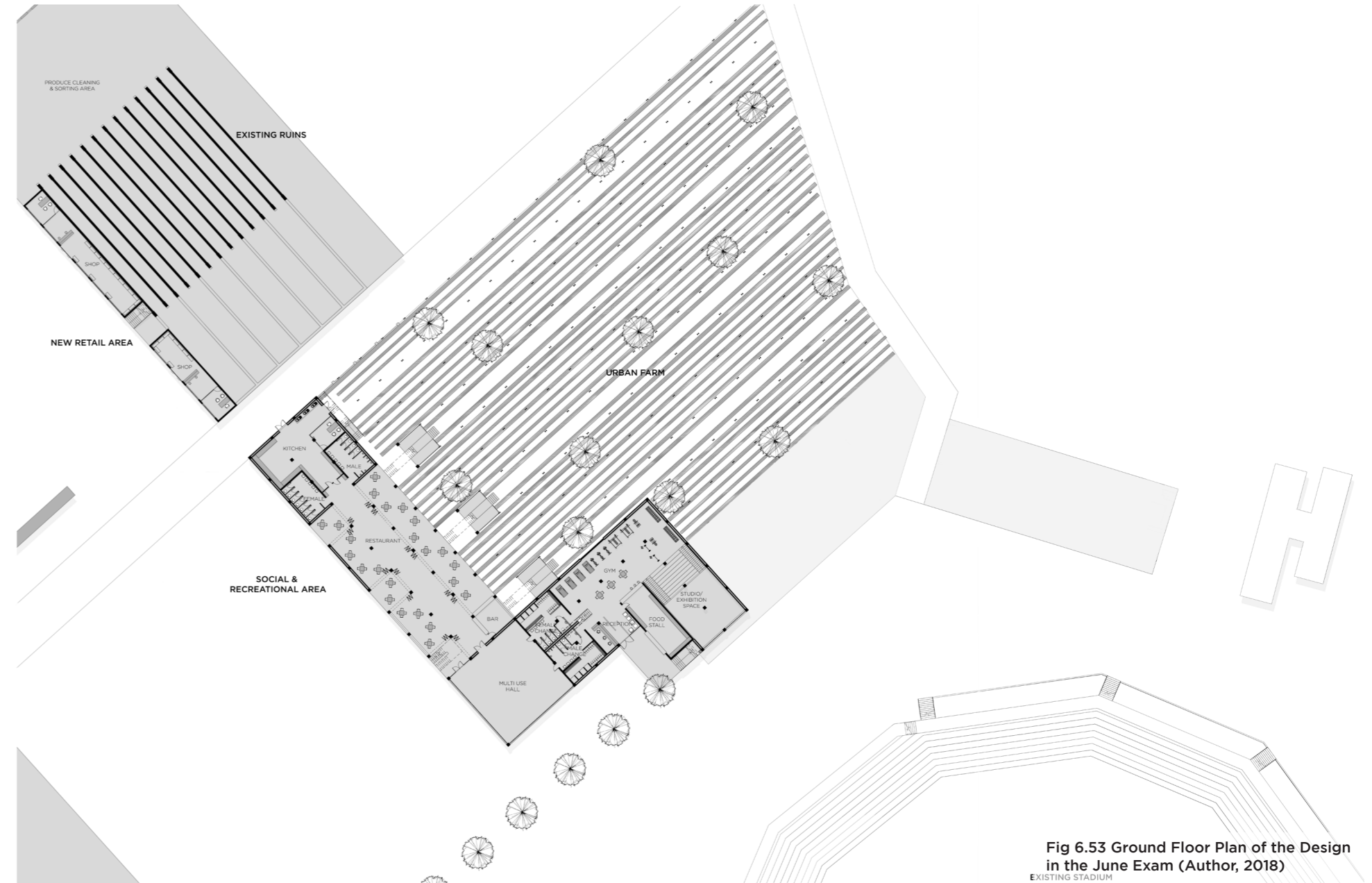


Fig 6.53 Ground Floor Plan of the Design in the June Exam (Author, 2018)



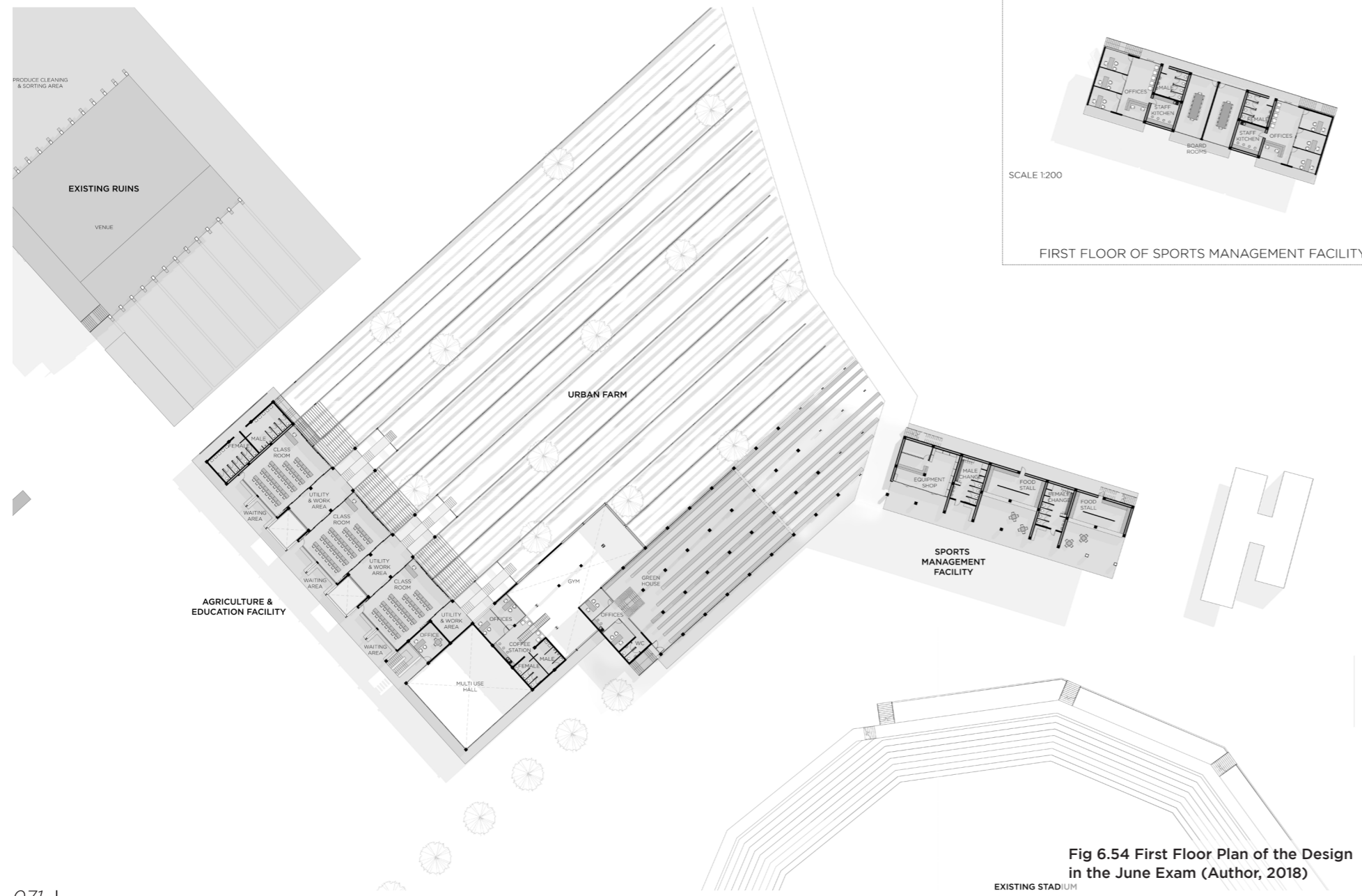


Fig 6.54 First Floor Plan of the Design in the June Exam (Author, 2018)

**06.11 POST-CRIT RE-DEVELOPMENT:  
JUNE-SEPTEMBER**

After the June exam the problems that were not, or inadequately addressed, were made apparent. Some of the lessons learned in chapter 5 of this dissertation were applied. New theories to guide the making of the building and its various spaces were investigated and lastly the context was put in front once again to generate design.

Several of the new theories introduced came from a journal article by Edward Casey titled: *Edges and the in-between*, (Casey, 2008:2). It served as the stating point to guide the dissertation in its new direction. The article expands on the use of thresholds, Casey makes it clear that one must create edges that serves to frame a building, to create possibility inside it and not to end or limit it.

The possibility that is created by the new edge, Casey calls the *in-between*, which is essentially where activity/program can take place. One must not think of the edge as the absolute limit. This dissertation interprets it as the edge (building) becoming landscape, that becomes the site boundary, that becomes the road around the site. Casey uses the analogy of a successively framed painting. (Casey, 2008:9)

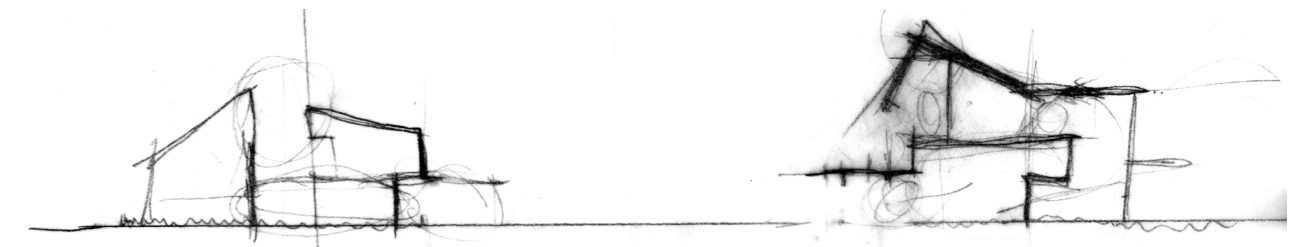


Fig 6.55 Post-Crit Re-development Exploration (Author, 2018)



Fig 6.56 Post-Crit Re-development Exploration (Author, 2018)

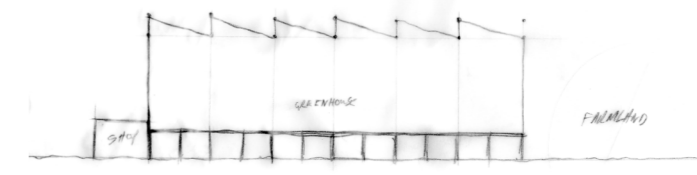


Fig 6.57 Post-Crit Re-development Exploration (Author, 2018)

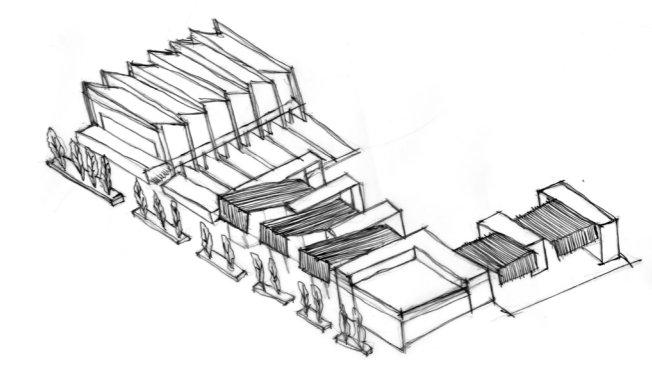


Fig 6.58 Post-Crit Re-development Exploration (Author, 2018)

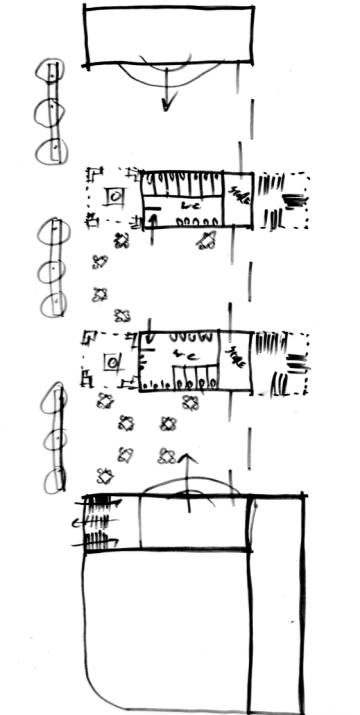


Fig 6.59 Post-Crit Re-development Exploration (Author, 2018)



Fig 6.60 Post-Crit Renderings  
(Author, 2018)



Fig 6.63 Post-Crit Renderings  
(Author, 2018)

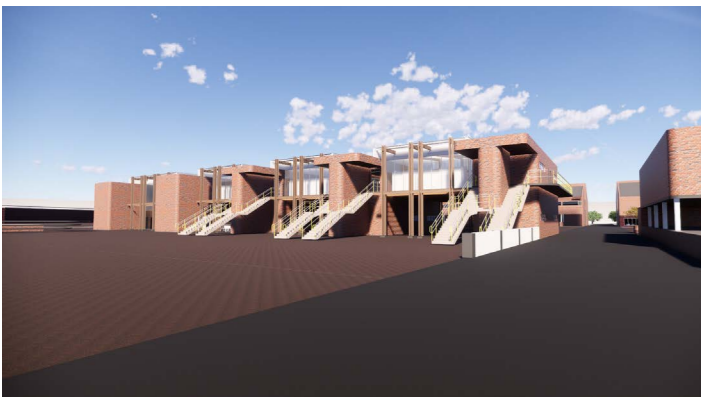


Fig 6.61 Post-Crit Renderings  
(Author, 2018)

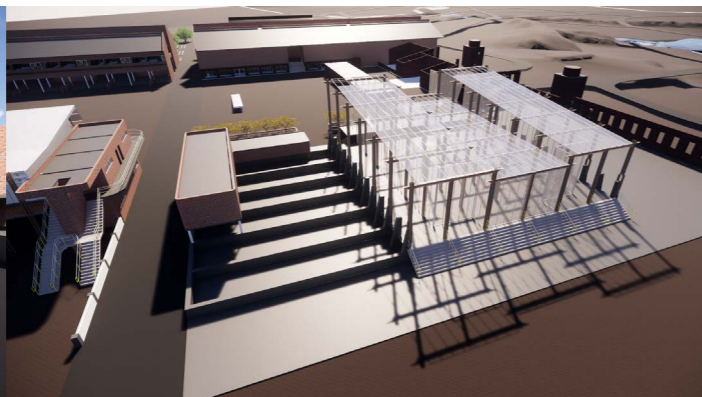


Fig 6.64 Post-Crit Renderings  
(Author, 2018)



Fig 6.62 Post-Crit Renderings  
(Author, 2018)



Fig 6.65 Post-Crit Renderings  
(Author, 2018)

The *in-between* is a much looser concept, as it can be immeasurable or abstract as the *artist* wills it to be. One can interpret it as the volume contained in the building, but this dissertation would argue that this parameter can fluctuate according to the influx of light, atmosphere, activity, public vs. private etc. (Casey, 2008:10)

One of the fundamentals missing in all previous iterations was the interpretation and use of light in the building. Once the building was investigated in section it became apparent the challenge that light imposed on the design. The buildings are not orientated according to the sun angles, rather to the footprints of the old factory buildings and to interact with the stadium.

Light is of course important from an environmental and a phenomenological point of view. According to architect Jose Forjaz, in the right hands light and darkness can become *tangible matter* in itself, especially when used with the correct materials (Ribeiro, 2011: 41).

Forjaz highlights light's importance through the following quote: "*Architecture is a fabrication of the spirit; it rises from the interiorized vision of space imprisoned by matter and it is triggered only when the dematerialisation process has come to an end and the idea, bright and poetic, transforms materials into means that arouse sensation.*" (Ribeiro, 2011: 41)

As seen in figures 6.55-6.67 this iteration is a far departure from its previous incarnations, light/solar control played a major roll in the shapes of the façades and roofs.

Bricks found on site were reused in the brick boxes that now serve a more prominent roll in the façades, housing all the services of the building including: bathrooms, kitchens, plumbing, rain water harvest and storage, electrical wiring, cool air supply from geothermal pipes and fire staircases. Rejected bricks were used as paving all round the old factory buildings, these bricks were harvested along with demolished structures that were not deemed necessary to reuse or restore on site.

The concrete ruins that were neglected in previous iterations now house the greenhouse, that is fully independent from the rest of the building. Light weight materials were applied and conservatively connected to the heritage fabric.

The Klip-Lock roofs pay homage to the industrial past of the site, while being a contemporary interpretation. The roofs are shaped according to the environmental response to solar control.



Fig 6.66 Post-Crit Renderings (Author, 2018)

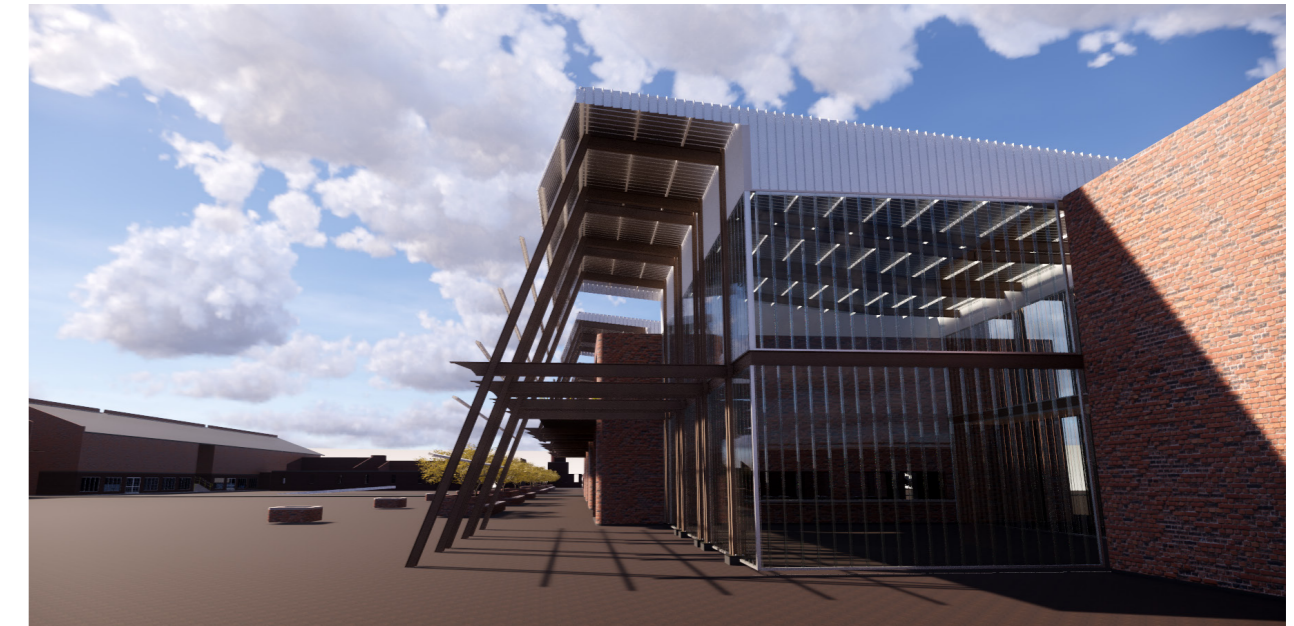


Fig 6.67 Post-Crit Renderings (Author, 2018)

### 06.12 QUARTER 3 CRIT: SEPTEMBER

The focus of the September crit was to technify the building, focusing on structure, construction details, materials, connections and systems. These will be discussed in chapter 7.

The main success of this iteration is that it became much more practical, the spaces function better, services improved, materials and their connections became more realistic. The necessary rooms and functions were added to make the building more functional. Functions were added to make the hall and public cafeteria more useful and adaptable spaces.

The four buildings were iterated according to their functions and climatic response. They are all distinct enough to be legible yet share a common architectural and language and material pallet. The brick-box structures would repeat in each building with the tectonic parts of the buildings being unique in each instance (compare figures 6.75 to 6.81 to 6.82). Spaces and structures (pergolas, planters seating etc.) were added to connect the four buildings.

The façades were much more dynamic, with the strong tectonic inclination on the south-western facade and a more stereotomic dominance on the north east facade. This was due to solar/climatic considerations and to give the façades different qualities.

Practicalities such as parking, zoning of over night accommodation and the proposed vocational school on the footprint of the other factory building were implemented in this iteration.

Importantly new edges were defined by the architecture to let spaces reveal their potential for further uses. The edges prove to be useful to create new private waiting areas in the school building.

By shutting entrances to the main public stairs with *brise soleil* brick walls, orientating fire escapes and the other stairs toward the farmland fields that are framed by the buildings and the site's boundaries, more privacy was created for students and workers in this manner.

The greenhouse, located far from potential threats at the stadium, is elevated from the ground as it is built on top of the concrete ruins. The edge of the greenhouse then dematerialises, while the floor slopes into the landscape and ultimately extends into the landscape.

Underneath the classrooms are the main public spaces that have the deepest connection to the landscape. The first of these spaces is on the western end of the building, and houses a workshop area where students can replant seedlings and learn other practical farming techniques.

The middle space is the foyer area for male and female change rooms with plenty of locker storage space. The third and final space is the cafeteria and tea area (that serves the hall as well).

On the corner to the east is the multi-use hall that looks on to the landscape and a amphitheatre. This hall can be used for meetings, concerts, religious activities and as a formal function venue. The amphitheatre creates another edge to visually connect people from the stadium to the productive landscape to the north, yet restraining access via narrow paths.

Further to the east is the gym and it's various functions and programs. The gym building has similar brick boxes housing its services. Where it differs drastically from the school is its orientation and subsequent solar control through pergolas, a steeper and lower roof and less exposure to glazing.

The facade facing the stadium is much more open and glazed, to let in constant daylight throughout the day. The gym opens up toward the farm land with outside running paths and exterior exercise areas. The gym houses a food stall, admin block and medical suites.

Further east where the gym and the management buildings meet is a large planter with seating and two large trees to create a pleasant space full of shade to stitch the two buildings.



Fig 6.68 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.69 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.70 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.71 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.72 Quarter 3 Crit Renderings (Author, 2018)

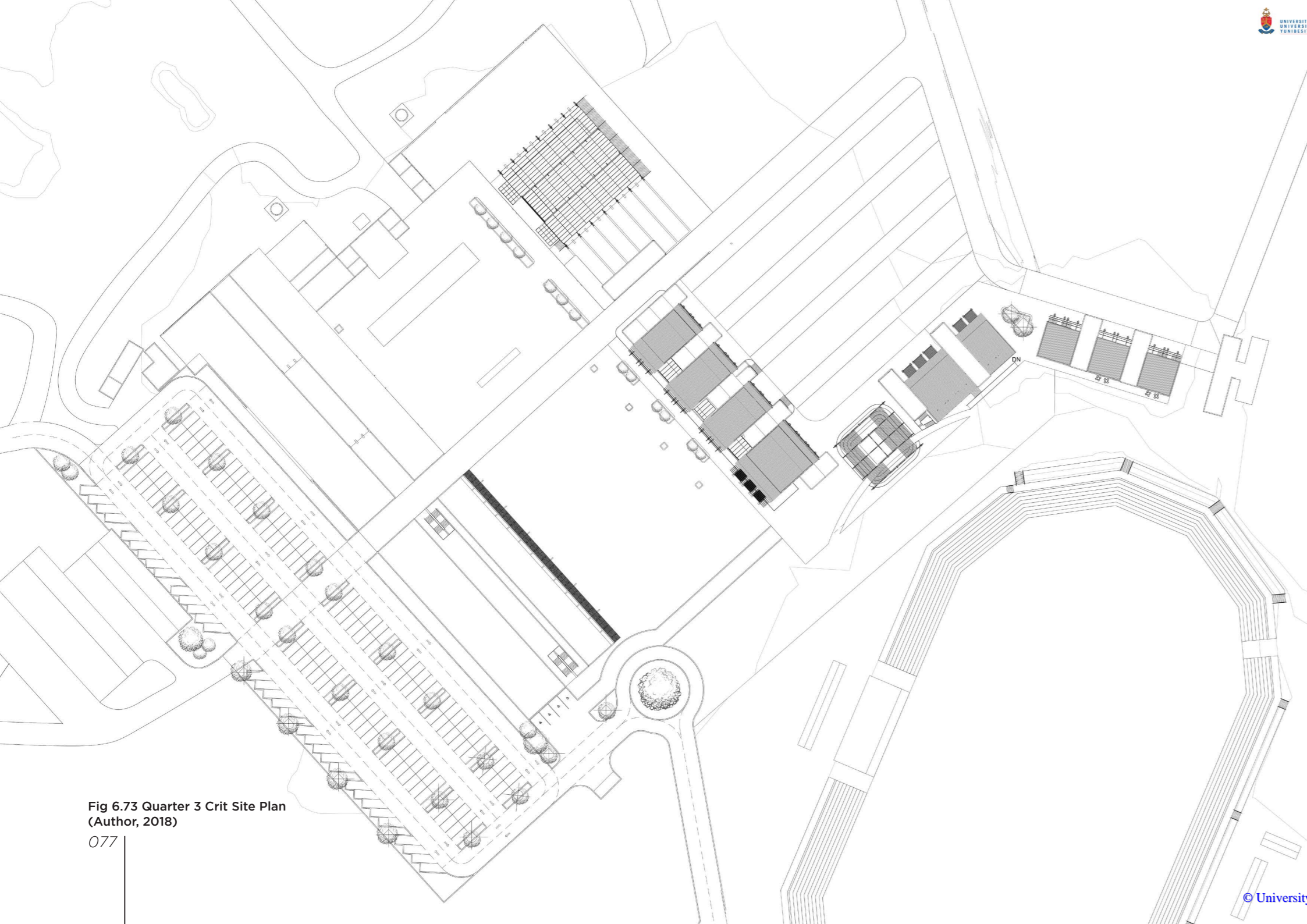


Fig 6.73 Quarter 3 Crit Site Plan  
(Author, 2018)

The management building is the simplest of the four with the least harsh solar control imposed on the façades. This building acts as the gateway into the stadium complex. It houses the team and site managers offices, board rooms, locker rooms, equipment shop and two food stalls.

The pergolas did not relate to the landscape and only the building, the site design (roads, green spaces and defining leftover space) is to be finalised and the greenhouse was under developed at this stage.

Electricity generation was also underutilised, the intention is to integrate photovoltaic panels into small structure in the large open courtyard to populate the large open space with structure that can provide shade for users and other useful amenities like comfortable seating, drinking fountain and a place to charge a cellphone.

Although a stronger connection is made with the stadium complex and the proposed sport management facility further interactions and thresholds are necessary.

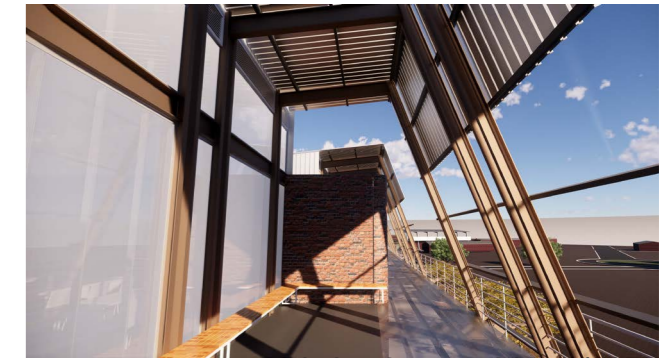


Fig 6.74 Quarter 3 Crit Renderings  
(Author, 2018)



Fig 6.75 Quarter 3 Crit Renderings  
(Author, 2018)

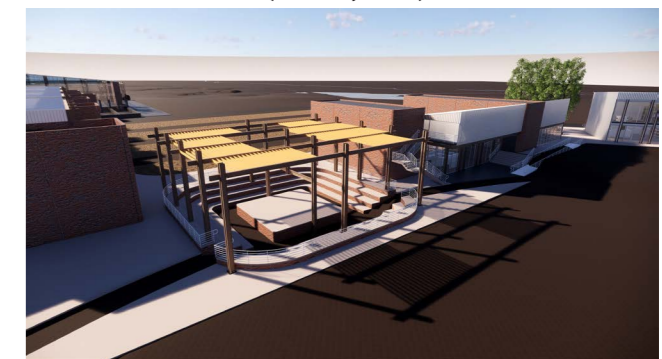


Fig 6.76 Quarter 3 Crit Renderings  
(Author, 2018)

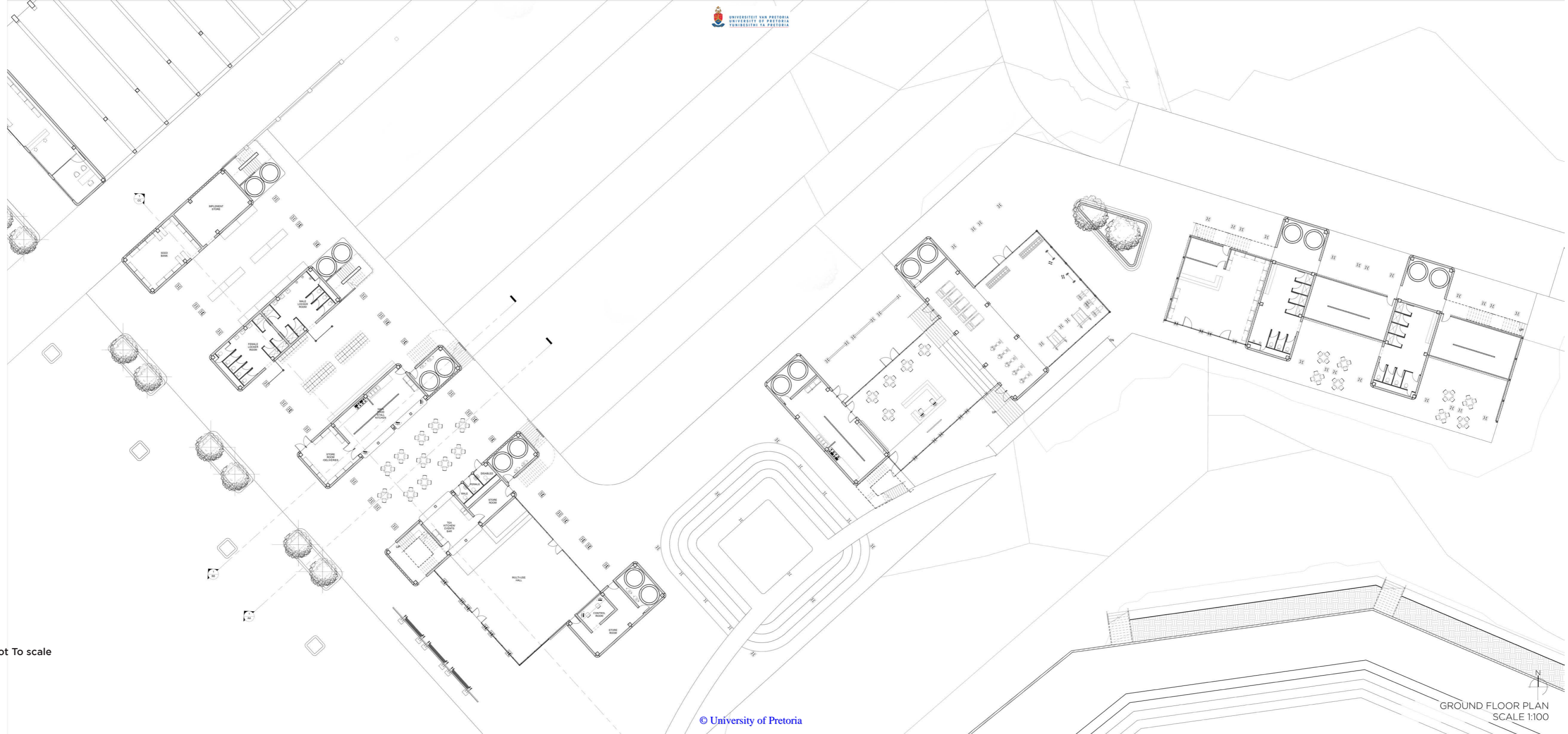


Fig 6.77 Quarter 3 Crit Ground Floor Plan - Not To scale  
(Author, 2018)  
079

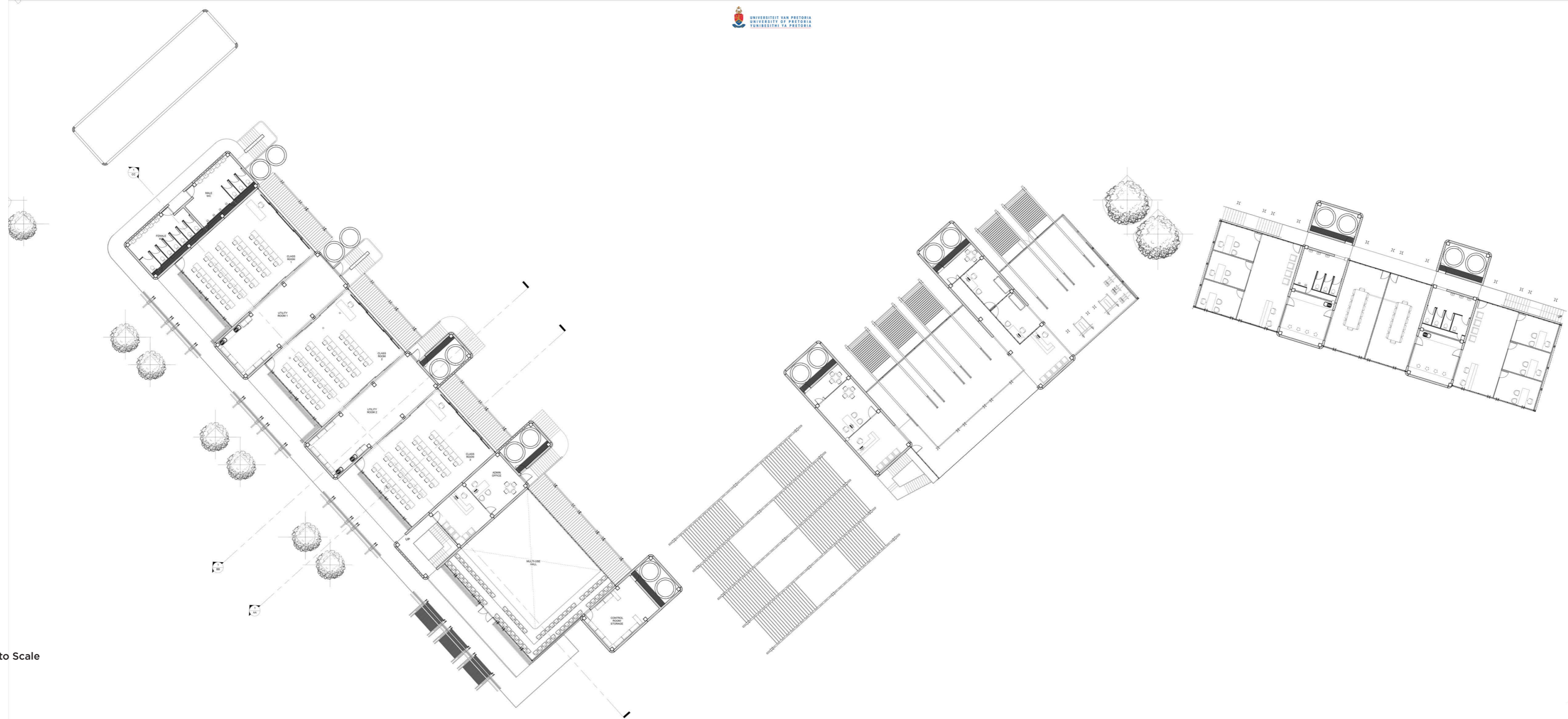


Fig 6.78 Quarter 3 Crit First Floor Plan - Not to Scale  
(Author, 2018)

### 06.13 DESIGN AS A RESPONSE TO ISSUES

The most important issue this dissertation sought to address was the stigmas associated with the post industrial site of the Era brick factory. The major issues were a lack of activity, a scarred landscape, under utilisation of the stadium and the fact that we have very few preserved pieces of post-industrial heritage in Pretoria.

The site formed a barrier between two suburbs; *Eersterust* and *Jan Niemand Park*. Reinforced by the natural barriers of the two rivers flowing on either side of the site, the mountain to the north and the man-made barriers of *Stormvoël road*, and industrial areas like *Silvertondale*.

The site has lost its significance since its abandonment. Lastly the intervention needs to be an architecture that is more valuable than a housing development currently being proposed by developers.

This dissertation addressed the above mentioned issues through adopting strategies to alleviate stigmas in general and connecting them to architectural theories to make the solutions spatial in nature (see chapter 3)

The three identified solutions were addressed on different scales, as follows:

#### 1) Engaging with the community: Urban vision scale

#### 2) Economic regeneration: Site vision & programmatic scale

#### 3) Give site new significance: Architectural scale

1) The community can engage with one another through the urban scale programs. The old quarry being converted into rentable farmland, affording equal opportunities to the segregated communities. Interaction on a social level through informal sports and recreation (hiking, mountain-biking, fishing and pick-nics etc.) Lastly the new proposed roads connect the communities directly.

2) Economic opportunities were created through the programs proposed on site. The main program of an agricultural school created opportunities for locals to learn how to farm and become subsistence farmers, promoting nutrition.

The proposed vocational school can help further practical skills and knowledge. The gym and sports management facility enables children and athletes in the community to expand their skills in various sporting disciplines while promoting their health and well-being.



Fig 6.79 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.80 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.81 Quarter 3 Crit Renderings (Author, 2018)



Fig 6.82 Quarter 3 Crit Renderings (Author, 2018)

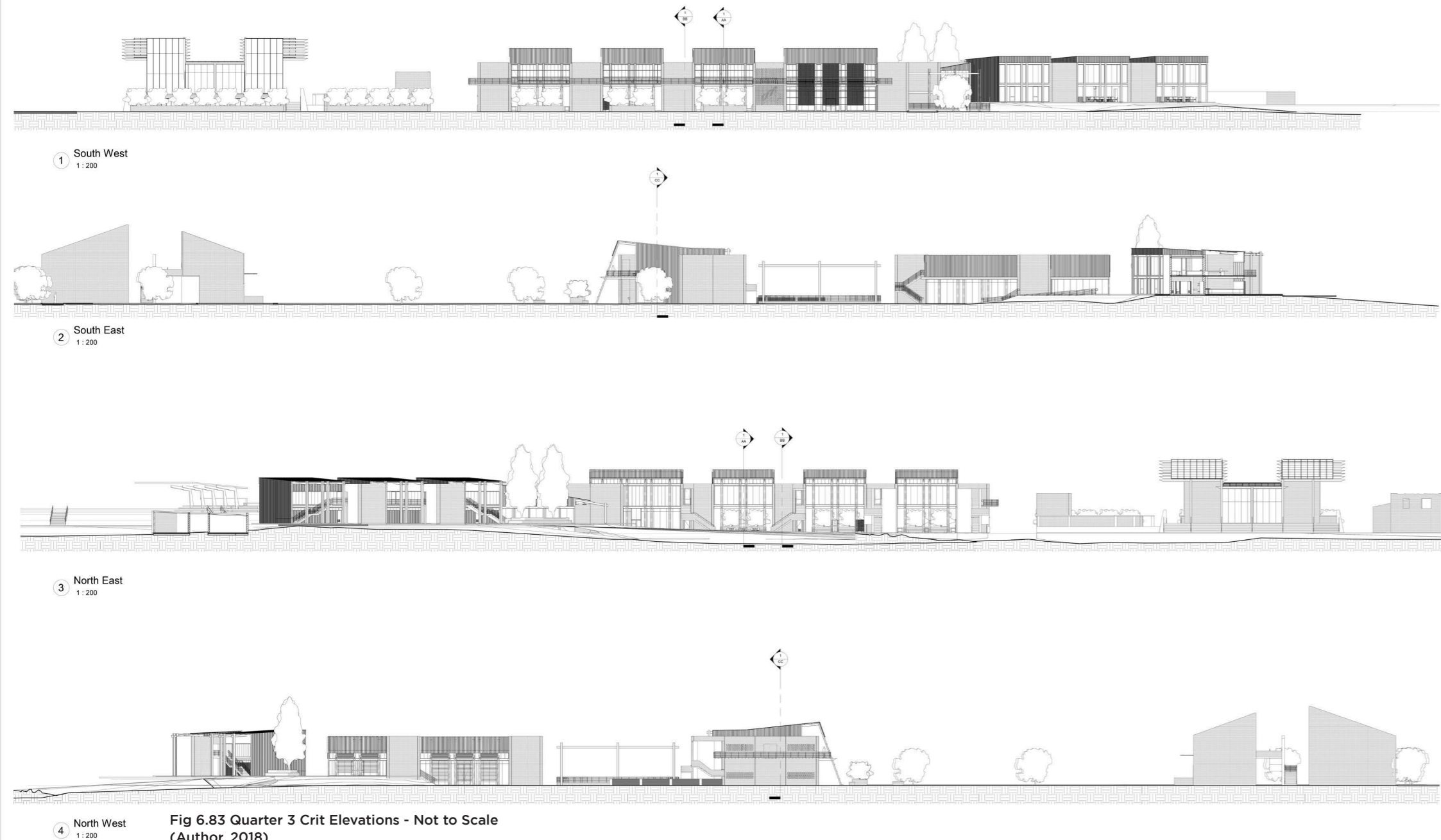


Fig 6.83 Quarter 3 Crit Elevations - Not to Scale  
(Author, 2018)

The formal and informal markets on site provide the community a platform to capitalise on their newly acquired skills.

3) The architecture has gained significance through the various programs that were mentioned above. Yet it can be expanded to include the reuse of heritage fabric, frugal use of new materials, responsible climatic and environmental design, creating comfortable spaces for users (thermal & fresh air), harvesting natural resources instead of relying on municipal sources (water and electricity).

To summarise the building, its materials and its programs can add value to a community, it can break preconceived notions, it can be more valuable than another housing development

**It can break its associated stigma.**