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DESIGN DEVELOPMENT

"My passion and great enjoyment for architecture, and the reason the older I get the more I enjoy it, is because I believe we - architects - can effect the quality of life of the people."

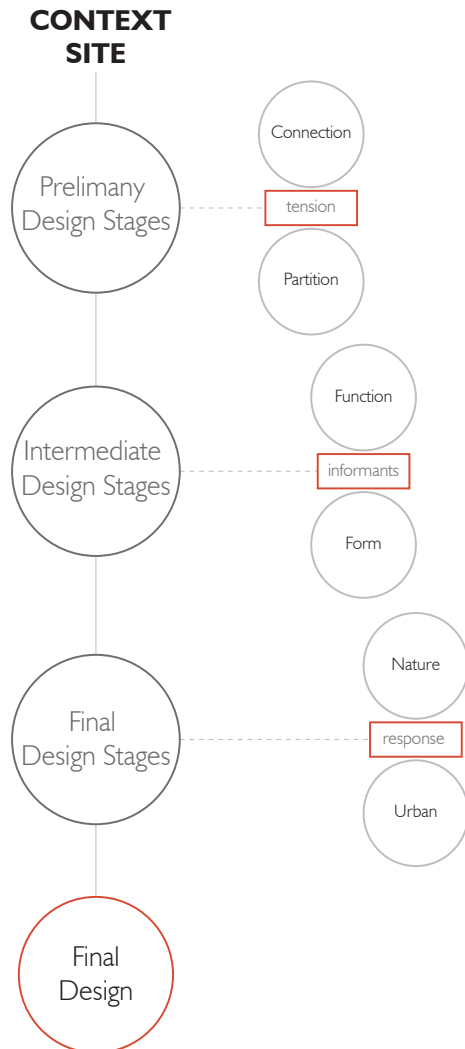
Richard Rogers

04 | Background

The design development chapter describes the design process in terms of iterations. The preliminary iterations (iteration 1 - 3) relate to how the conceptual scenario was utilized to start the design process. These iterations were tested only against the ability to achieve the objective of connectedness between nature and urban within the partition and responding to this tension.

The chapter further shows how the design developed from preliminary to intermediate stages. Further iterations (iteration 4 and 5) considered the design's ability to respond to function and form as added layers of the existing tension between partition and connectedness.

The final iterations (iteration 6 and 7) develop the design further into a facility that responds to the natural and urban realm, address the tensions between connectedness and partition while achieving the integration of form and function. The final design showcases the response to all the informants, the argument and the concept to present an architecture, in the in-between that conserves the WNR and defines its landscape.



Fig_91 (Right): The design development stages and the investigations per stage (Author 2017).

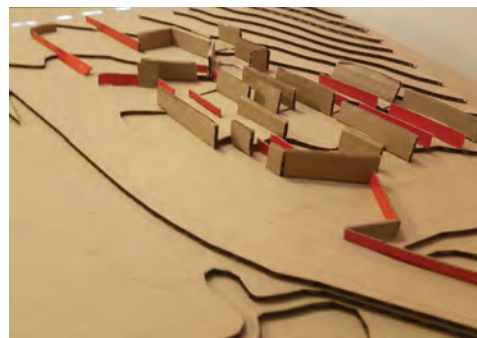
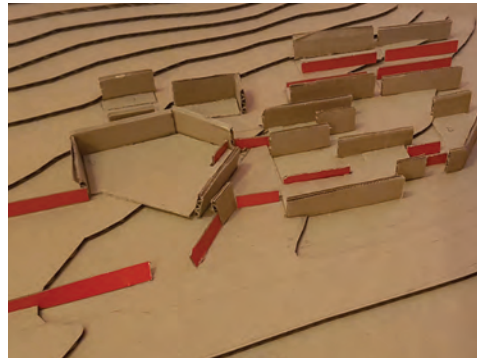
04_2 Design Iteration I

The first design exploration takes the idea of the wall as an element to partition the in-between space of urban and nature to create an architecture that conserves.

The notion that the wall as an element of partition is investigated and a series of walls are plotted onto the site. These walls directly respond to the east-west axis of Lavender Road that runs parallel to the site's northern boundary. This response emphasizes the protective objective of the architecture by keeping the urban connection closed and opening the east and west ends up to the vulnerable natural vegetation of the Magaliesberg mountain.

With the placement of these walls, the in-between space is divided into smaller spaces. These smaller spaces are more defined than the existing in-between and create a clear boundary between nature and urban without cutting the two realms completely off from one another.

The functional considerations of the program are overlaid and connections between the smaller spaces are plotted and displayed as circulation routes. This action presented an initial design plan that was segregated with many small spaces and many circulation routes. Due to the requirements and nature of the program, this plan was discarded and a more consolidated, centralized plan was investigated.



Fig_92 (Top): Plan view of model with walls (Author 2017).

Fig_93 (Center): View from Lavender Street showing the walls and connection to east west axis (Author 2017).

Fig_94 (Bottom): View from West showing the open ends of the walled spaces (Author 2017).

04_3 Design Iteration 2

With the considerations of the first stage, the second stage reorganizes the spaces and place them onto a central circulation axis that keeps the response of the east-west axis of Lavender Road.

This approach focused on the circulation and how the spaces relate to one another. With the consideration of central circulation, the design changed from a segregated plan to a multi-storey facility that was situated on the urban edge. The design also investigated the connection to the existing retail centre and how pedestrians will be able to connect to the facility's market retail space.

The design was discarded due to the lack of connection it had with the natural realm. Although it read as a partition between urban and nature, it completely cut the urban realm off from the natural with no visual or other connection. The idea of the visual east west connection to the Magaliesberg mountain was also lost due to the consolidation of spaces. The design language of a central circulation based design also did not relate to the argument of form and didn't relate to any historical images of the site.



04_4 Design Iteration 3

Design iteration 3 called for a complete rework of the previous two iterations and searched for the middle way between iteration 1 and 2. The idea that the wall can be divided into segments to create a connection between the two realms without disturbing the protective element was investigated. From stage one, the scattered plan, this iteration condenses the scattered "walls" into three main axial orientated partitions. The first partition, the most exposed with a connection to the urban realm. The second, the synergy partition in-between, where the two realms meet and the third, dug into the mountain side, the natural realm partition.

Fig_95 (Top): Plan view of model - Design iteration 2 (Author 2017).

Fig_96 (Center): View from Lavender street - Design iteration 2 (Author 2017).

Fig_97 (Bottom): View from Wonderboom Nature - Design iteration 2 Reserve (Author 2017).

This design iteration related best to the conceptual scenario of a prolific partition structured in the in-between. It succeeds in the objective of connectedness and partition and showcases the tension. With the successful implementation of the preliminary design process, formal and functional considerations were added to the three partitions.

The first partition with its connection to the urban reacted to the main urban functions of the program. The office spaces and restaurant were placed onto the street edge to connect to the existing retail centre restaurants and the new office development proposed for the Wonderboom Junction. The second partition was programmed with the spaces that related to the two-realm connection. Here the retail market that sells the produce was placed with the in-between of partition one and two becoming an open public place for user interaction. The entrance to the facility was also planned for this central partition. The third partition that related to the natural realm was programmed with the production spaces. The in-between of the second and third partition was planned to become the planting and growing areas.

With the discussion on this design iteration, questions of connectedness and formal control were brought up. The architecture didn't seem to showcase the conceptual idea behind the thinking and there was proposed to investigate the roof as element to bind the three partitions into one architectural response.



Fig_98 (Top): Design iteration 3 first conception model view (Author 2017).

Fig_99 (Center): Plan view of model - Design iteration 3 (Author 2017).

Fig_100 (Bottom): View from northern edge - Design iteration 3 (Author 2017).

04_5 Design Iteration 4 & 5

From the comments on design iteration 3, design iteration 4 (fig 101-103) responded to alter the roof structure for a more formal connection between the three partitions. The central roof structure of the retail and entrance spaces was altered to create a more coherent formal response to the rest of the partitions and the argument.

Design iteration 5 added the wall structure and material considerations that were derived from the historical layers of the site. A 1:200 plan (fig 107, not to scale) was developed to showcase the internal functioning and layout of the response to the argument. Design elevations and sections were also investigated to portray the argument of the museum of images as derived from the historical layers of the site and explained in chapter 3.

After discussions and deliberations, the following comments were made on this design:

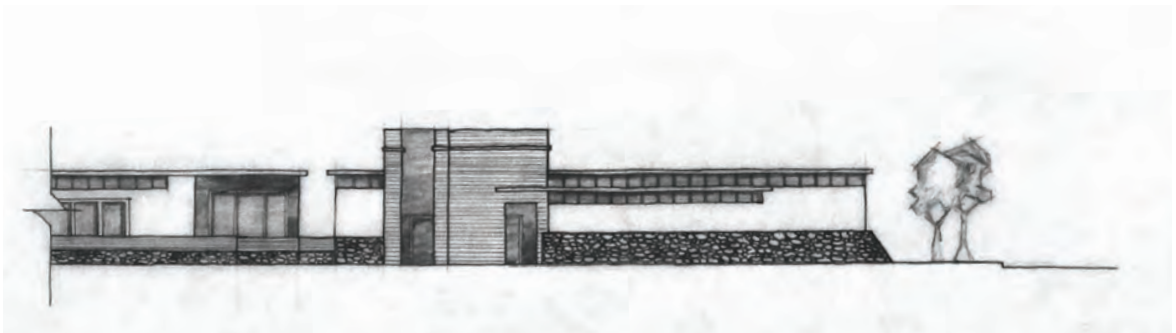
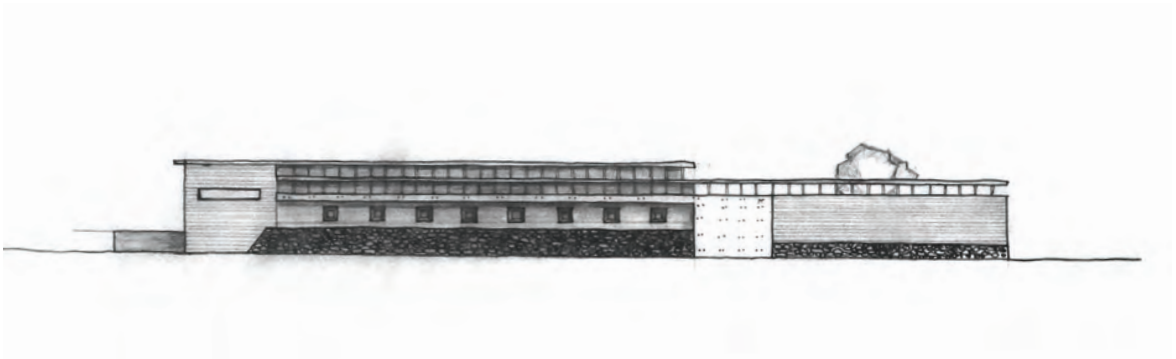
- The design does not read as a connection between the urban and natural, more attention should be given to the showcasing of connection within the partition in relation to form.
- Attention should be given to the incorporation to the rest of the Magaliesberg mountain as this consideration was lost in the design process from design stage 1 to stage 4. Integration of the stone age cave and Wonderboom tree can be considered as two points.
- The response to the argument feels very closed-off from the natural and urban realms and attention should be given to the construction of the walls.
- Roofs should be reworked and the placing of the restaurant on the street edge must be reconsidered.



Fig_101 (Top): Model plan view - Design iteration 4 & 5 (Author 2017).

Fig_102 (Center): View from northern edge - Design iteration 4 & 5 (Author 2017).

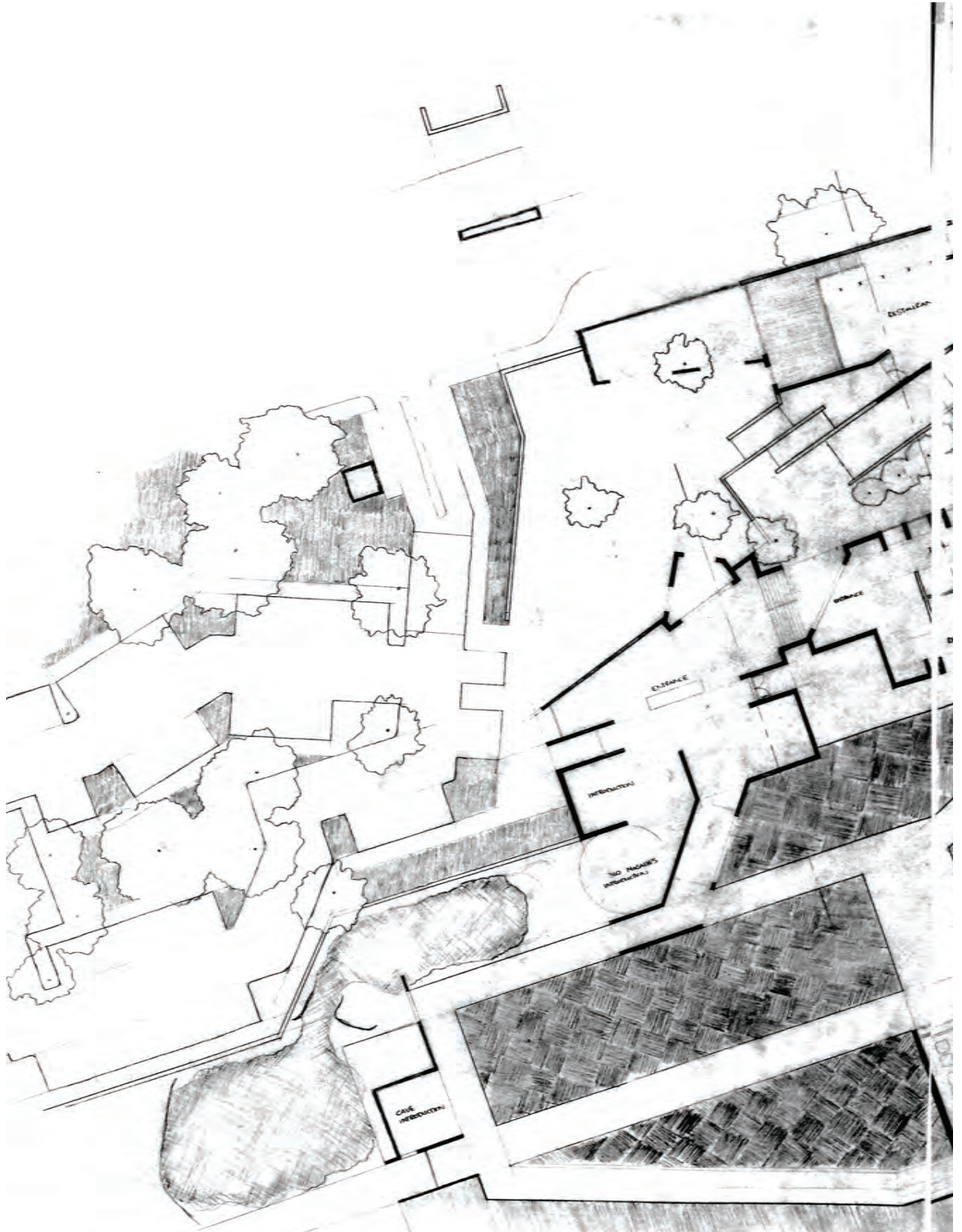
Fig_103 (Bottom): Model view - Design iteration 4 & 5 (Author 2017).

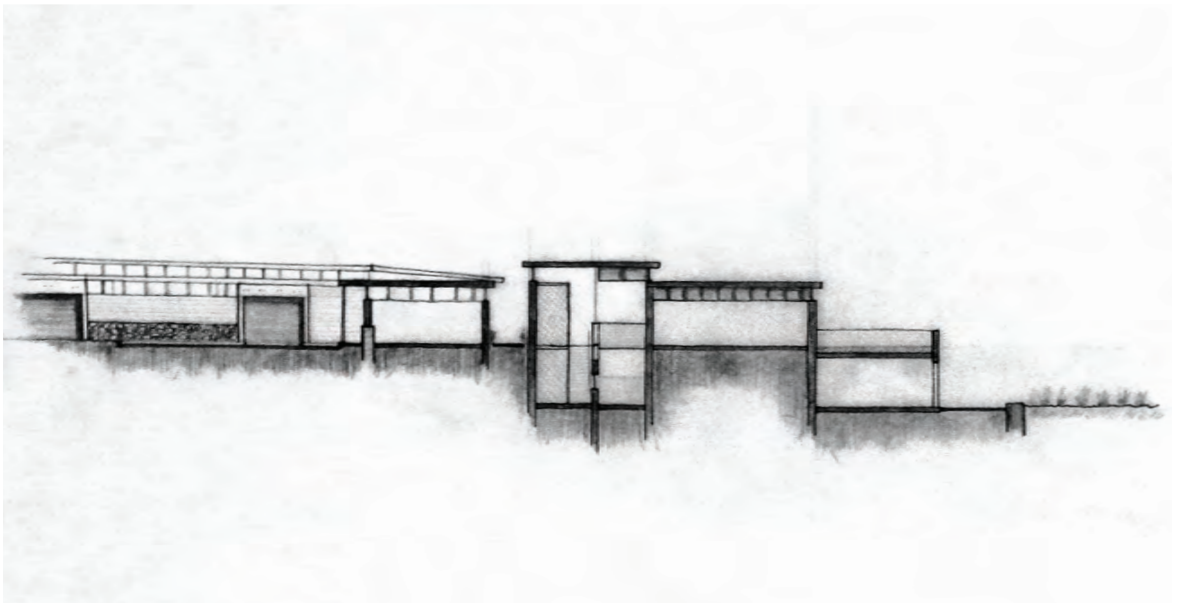
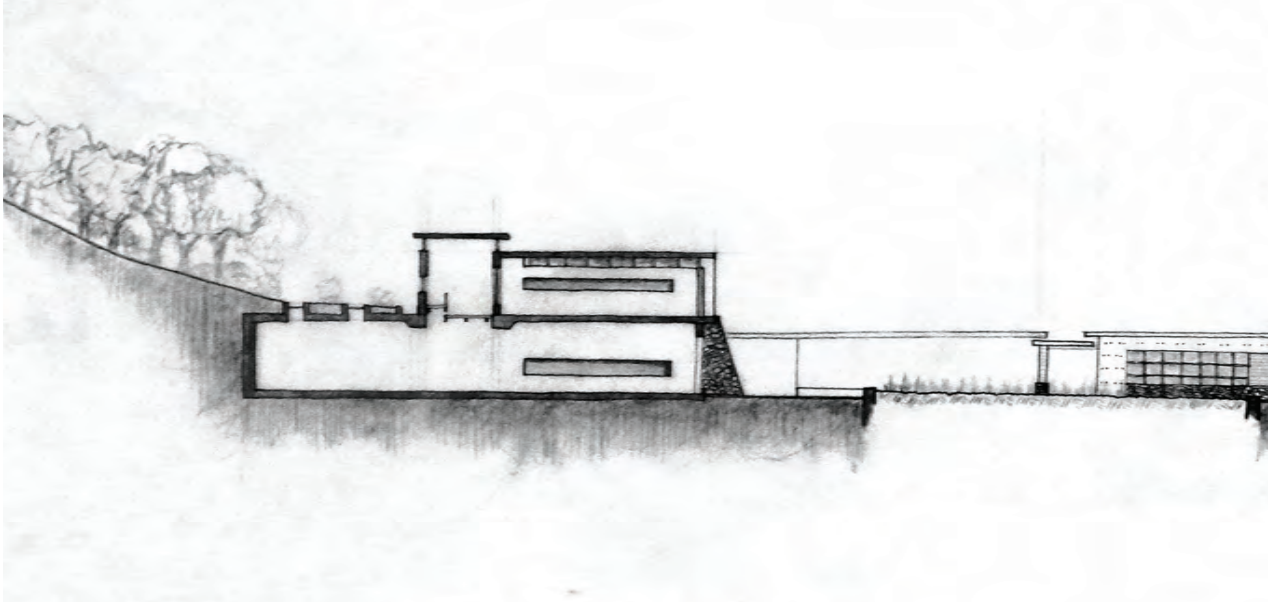


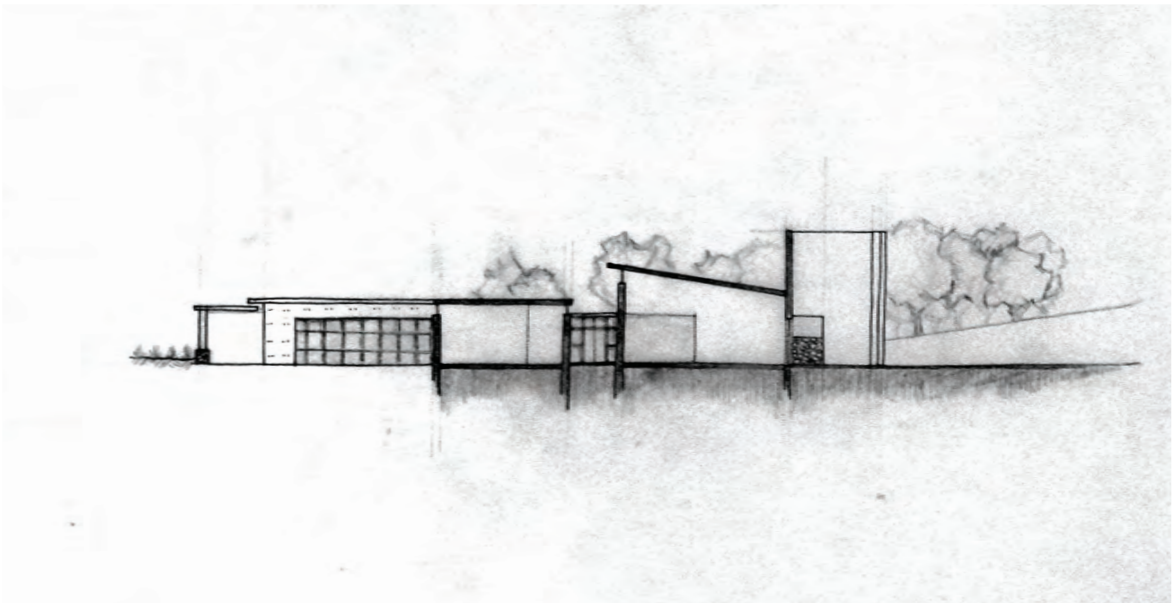
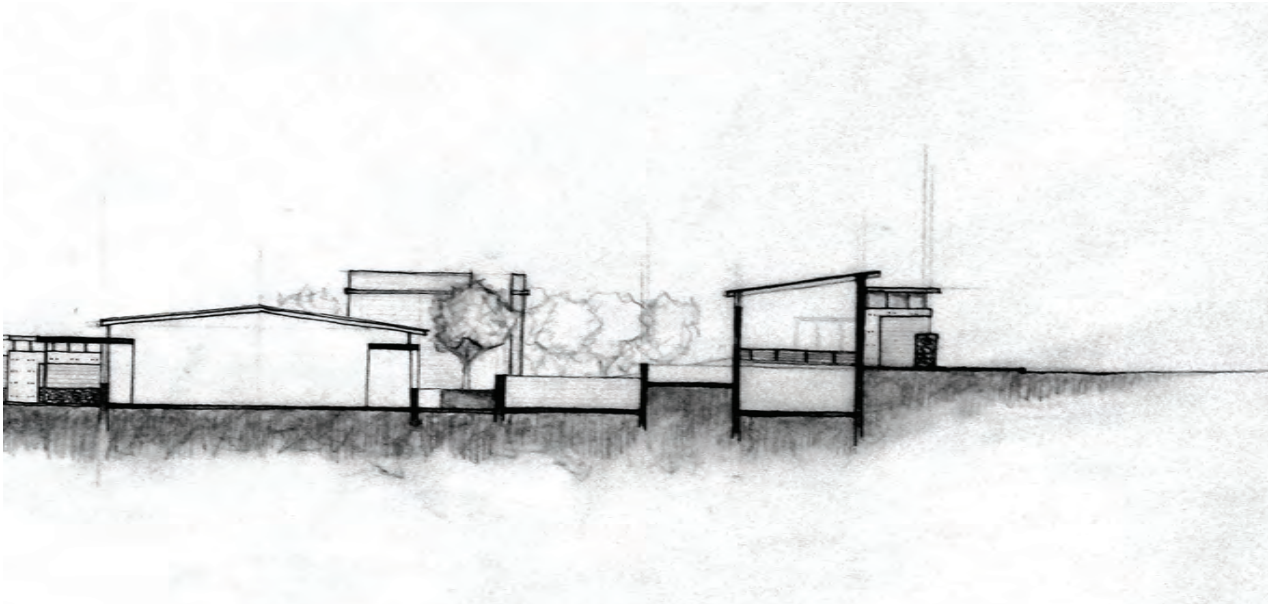
Fig_104 (Top): Office space elevation - Design iteration 4 & 5 (Author 2017).

Fig_105 (Center): Restaurant at street edge elevation - Design iteration 4 & 5 (Author 2017).

Fig_106 (Bottom): Entrance elevation - Design iteration 4 & 5 (Author 2017).







Fig_108 (Spread Top): Section 1 - Design iteration 4 & 5 (Author 2017).

Fig_109 (Left Bottom): Section 2 - Design iteration 4 & 5 (Author 2017).

Fig_110 (Right Bottom): Section 3 - Design iteration 4 & 5 (Author 2017).

04_6 Design Iteration 6

After consideration of the comments made on the design development of iteration 5, a rework of the site layout was investigated. This rework set out to address the issues raised in the discussions and present an updated design layout that responded better to the argument and the conceptual scenario. With these considerations, attention was given to the moving of the urban partition (restaurant and office space) to the central partition and recessing the whole design with a natural buffer zone between the urban and the in-between. This is the representation of the notion that nature as element can become a partition.

Further development investigated the natural partition (production chambers) and the positioning in relation to the central partition. It was argued that the partition can be completely central due to the argument stating that the architecture is structured in-between and the division between these two partitions can be made stronger. To do so, the natural partition was redeveloped and moved. The positioning of this partition was then investigated and finally placed along the axis of the central partition, combining the three partitions into one long linear response. This response displayed the partition of urban and nature better without disrupting the connection.

An additional layer was added to the formal consideration as the architecture did not read as a strong enough element in the landscape as was set out in the objectives of the urban strategic vision. This layer was developed with the additional conceptual influence process and displayed in form of the roof. The existing Magaliesberg mountain silhouette essence was developed into an additional roof structure that made the response more dominant in the landscape and integrated the functional spaces with both realms. With this addition, the flow from the WNR to the urban environment by means of the in-between was showcased better. The addition of

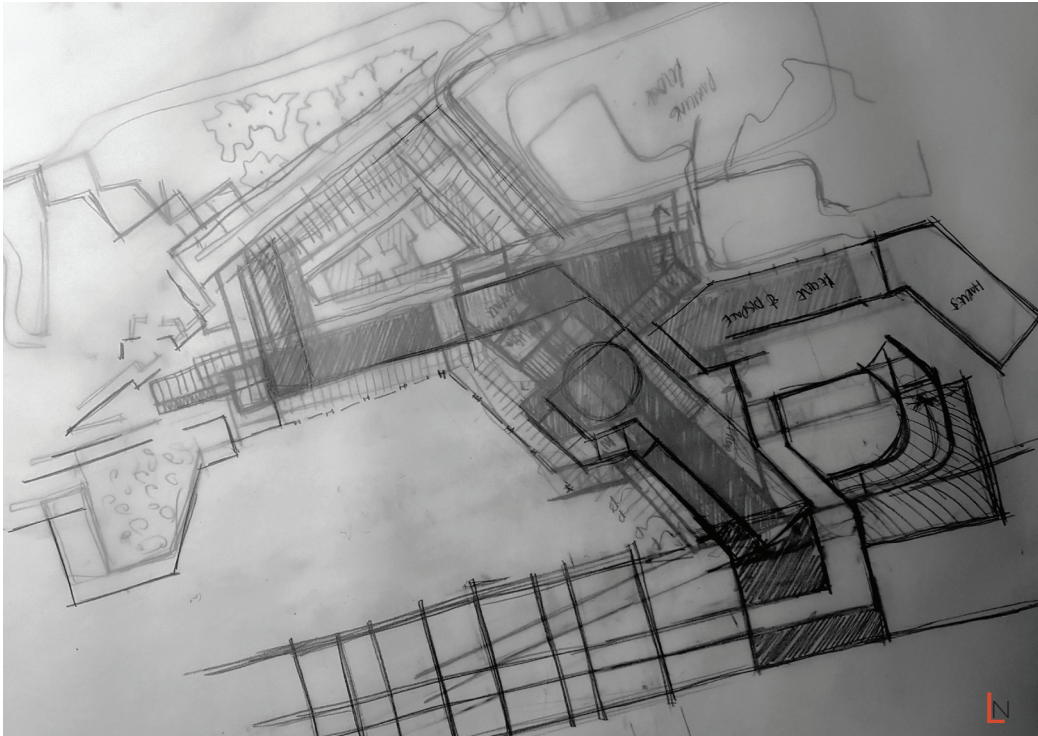
the secondary roof structure also made it possible for ventilation systems to be investigated and created accessible service space.

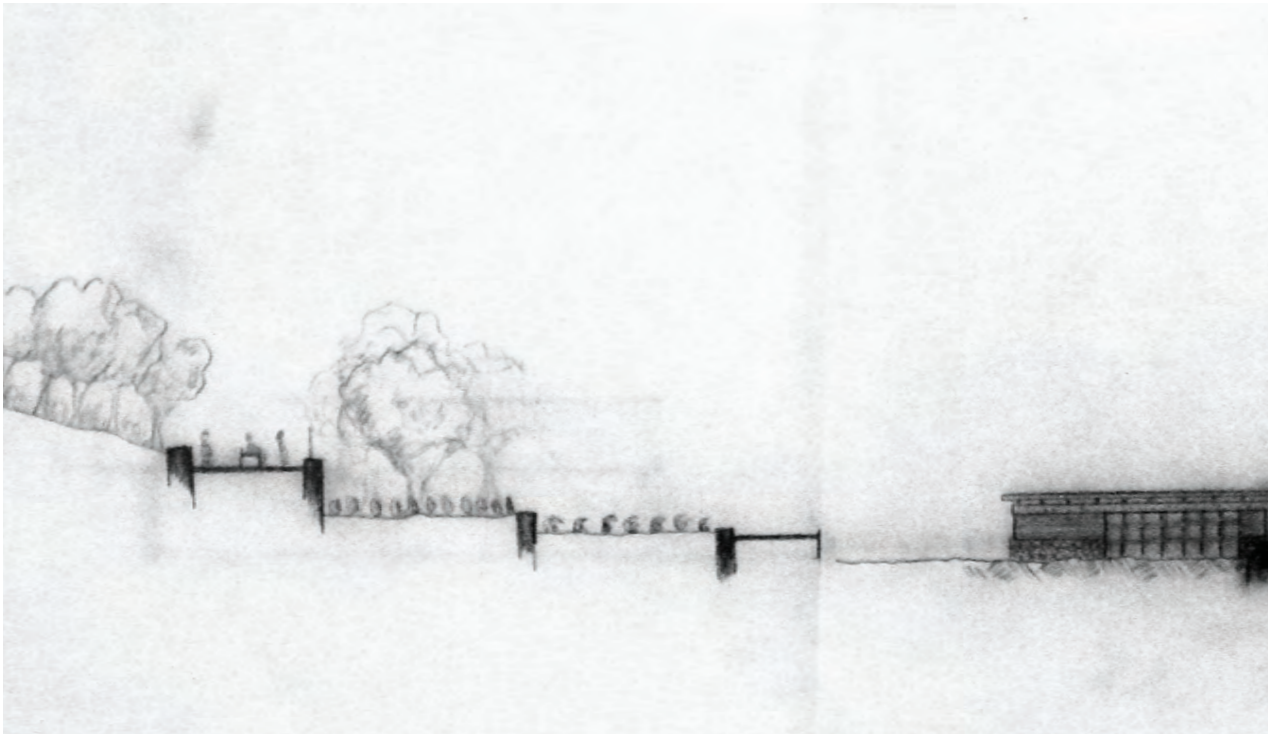
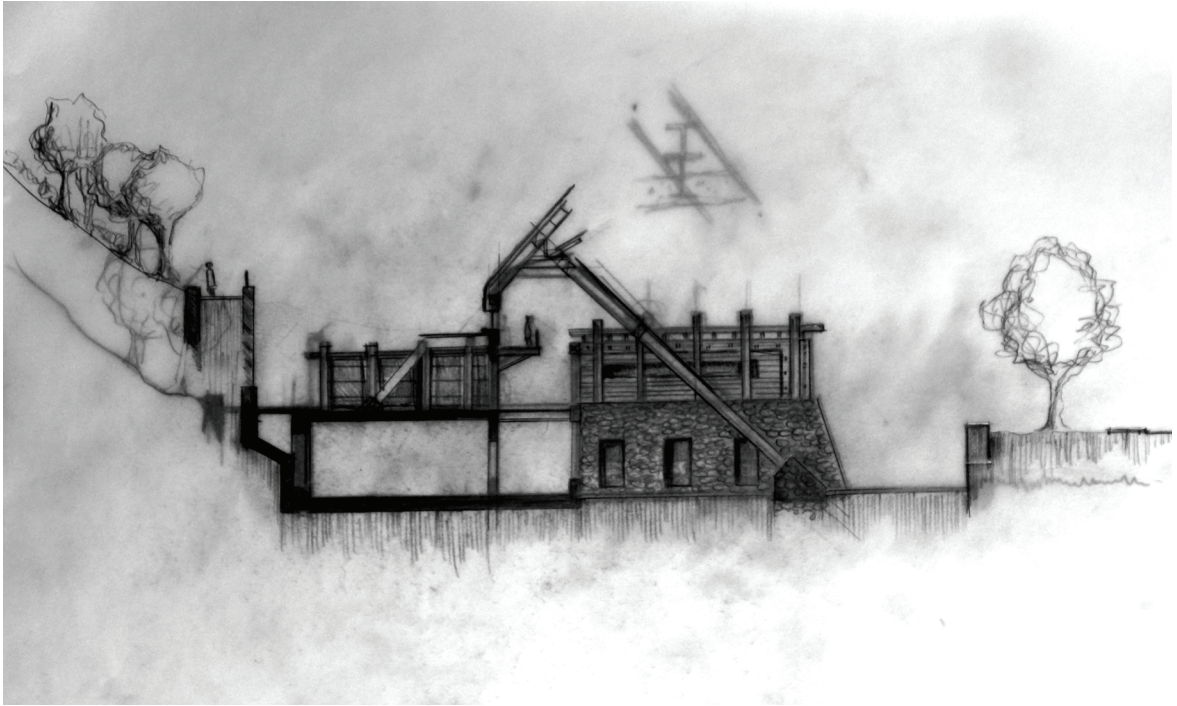
The formal consideration in terms of wall structure and materials was developed further and the material consideration of the response was finalized.

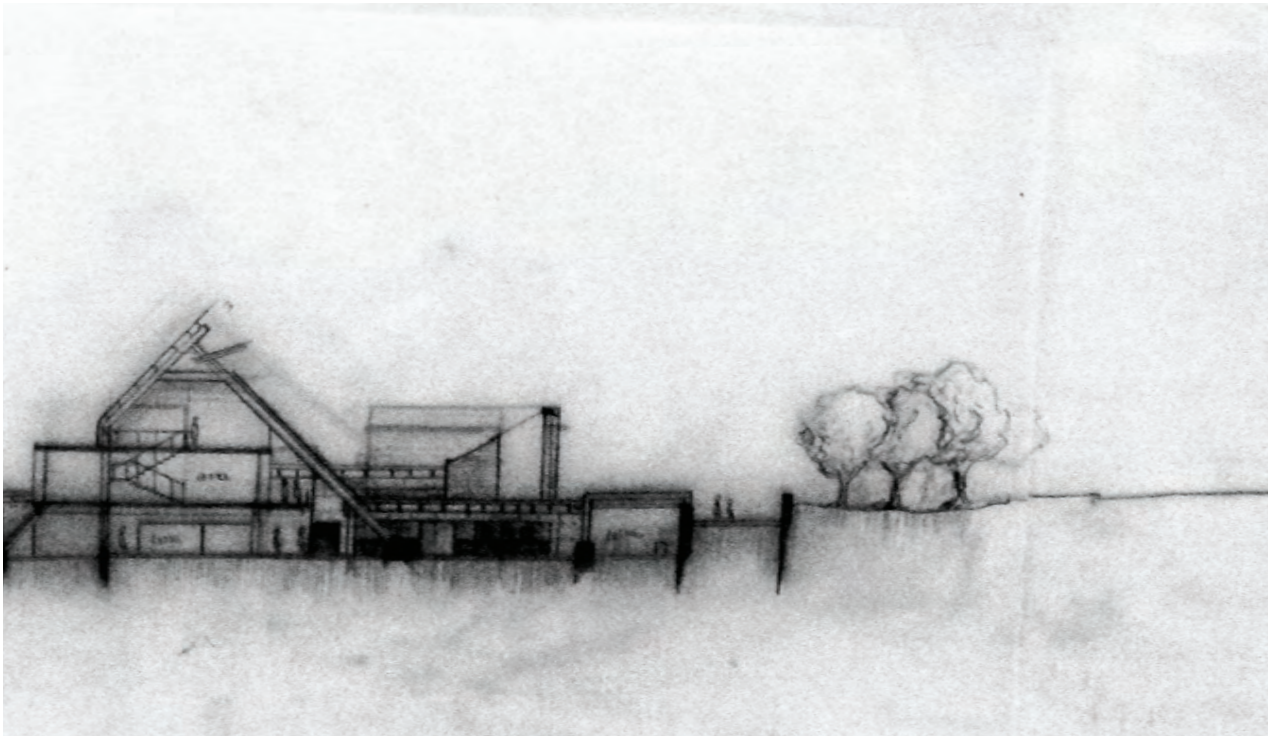
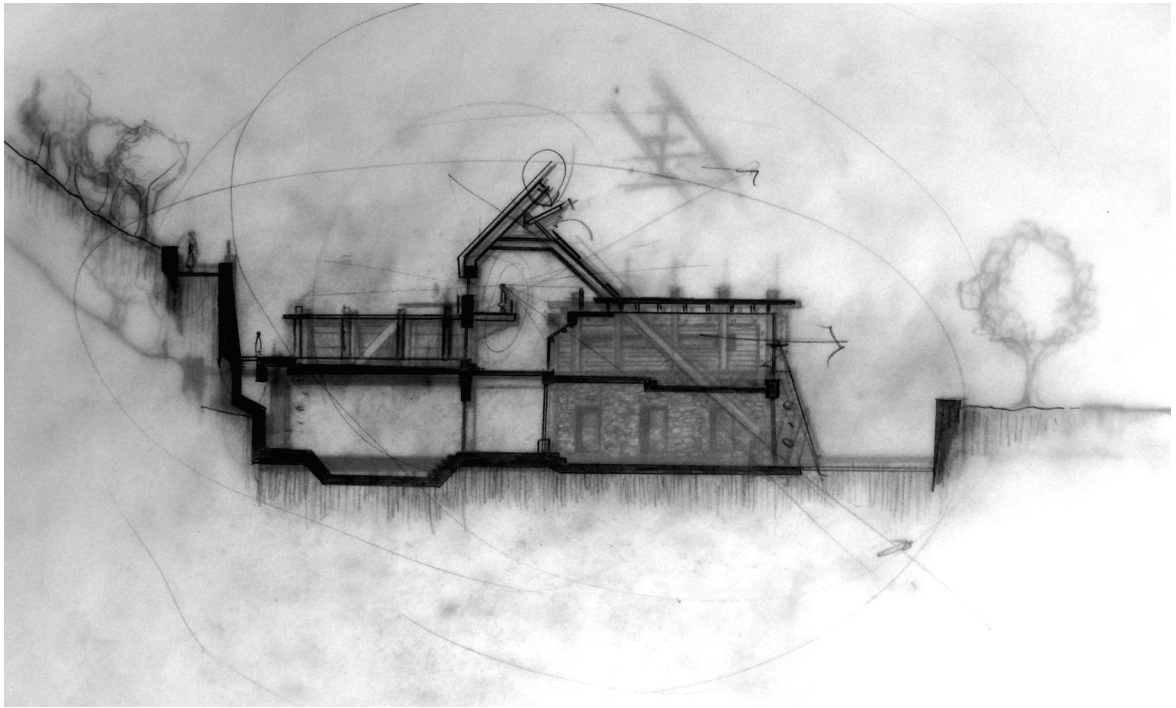
After the amended plans were discussed a few comments were made in terms of the complexity of the complete layout and the consideration to amend all the small corners and turn into a more, simplified plan. It was recommended to investigate a linear circulation route and cut out some of the bends and turns.

Fig_111 (Right Top): Design iteration 4 & 5 rework 1 - Design iteration 6 (Author 2017).

Fig_112 (Right Bottom): Design iteration 4 & 5 rework 2 - Design iteration 6 (Author 2017).





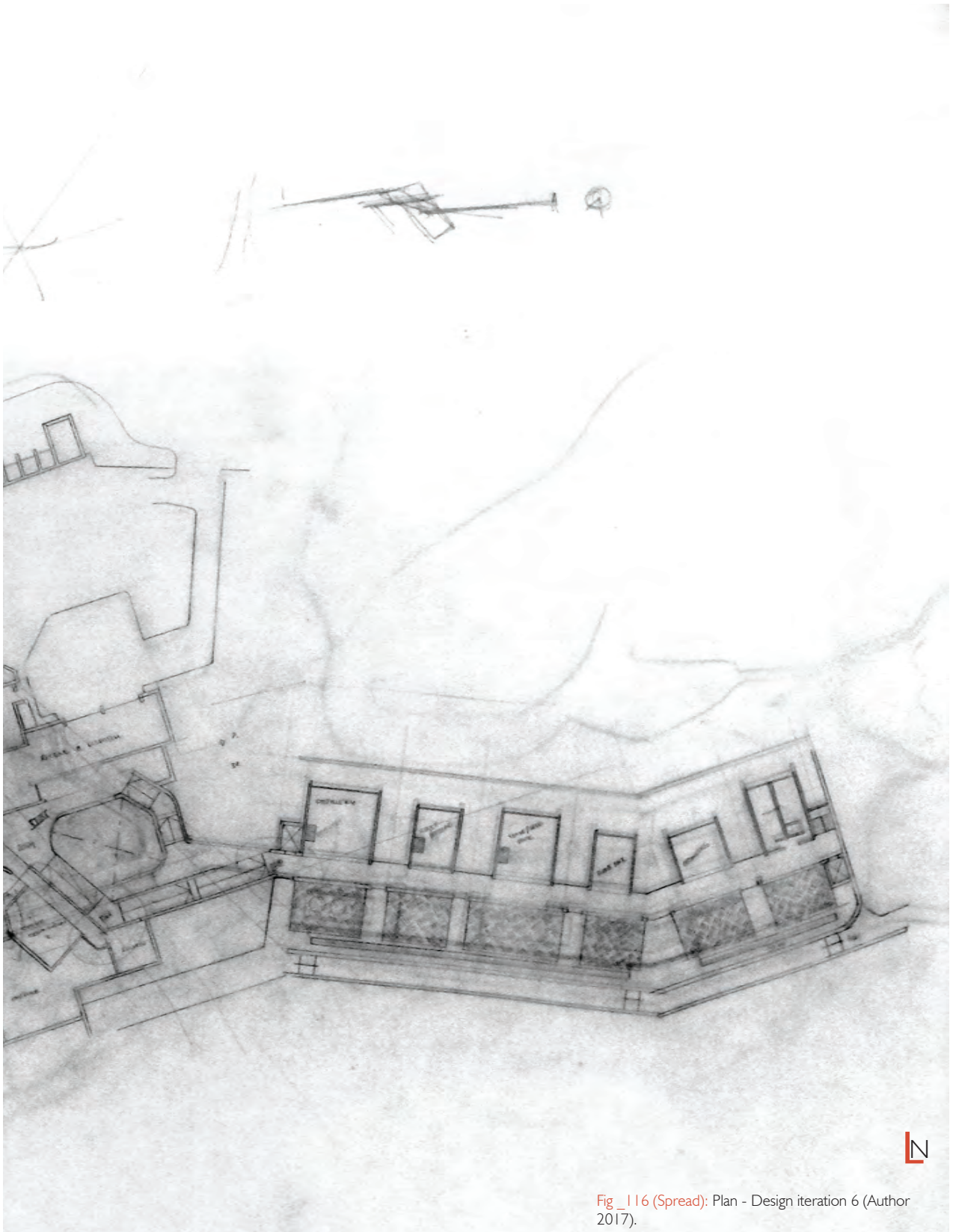


Fig_113 (Left Top): Section 4 - Design iteration 6 (Author 2017).

Fig_114 (Right Top): Section 4 rework - Design iteration 6 (Author 2017).

Fig_115 (Spread Bottom): Section I rework - Design iteration 6 (Author 2017).





Fig_116 (Spread): Plan - Design iteration 6 (Author 2017).

04_7 Design Iteration 7

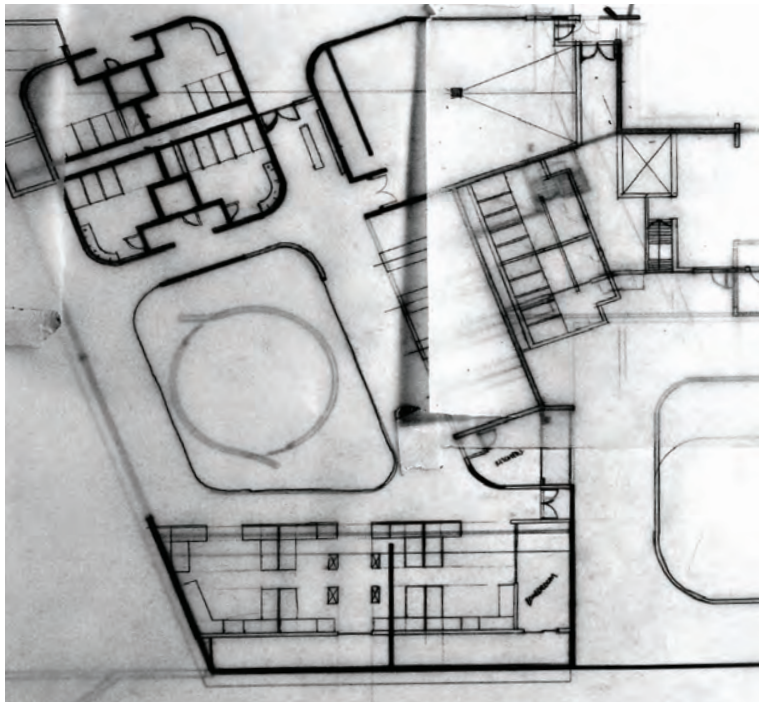
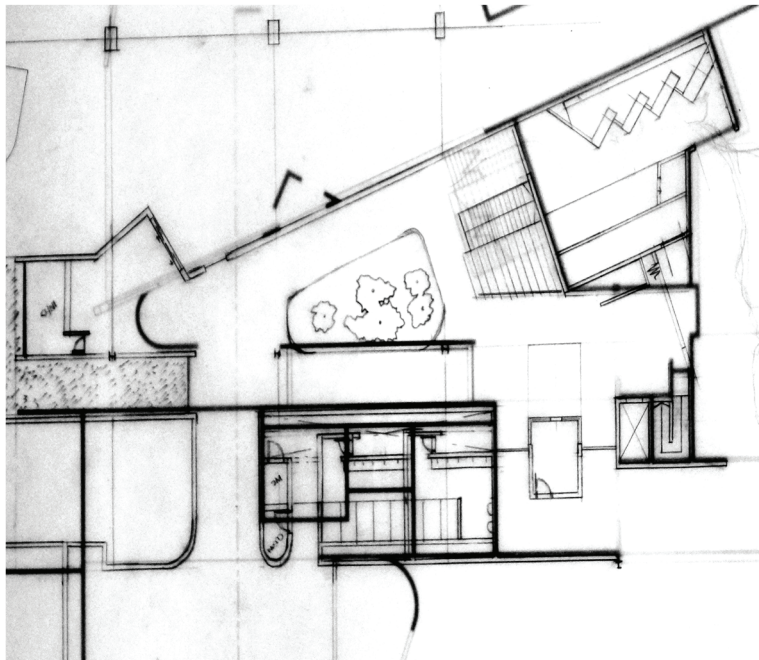
Design iteration 7 focused on the refinement of the plan and the detail layout of the interior space. The development addressed the relationship between the form and the functional requirements of the interior spaces. Each space was designed with the requirements of the program and how these requirements could be placed without disrupting the formal considerations.

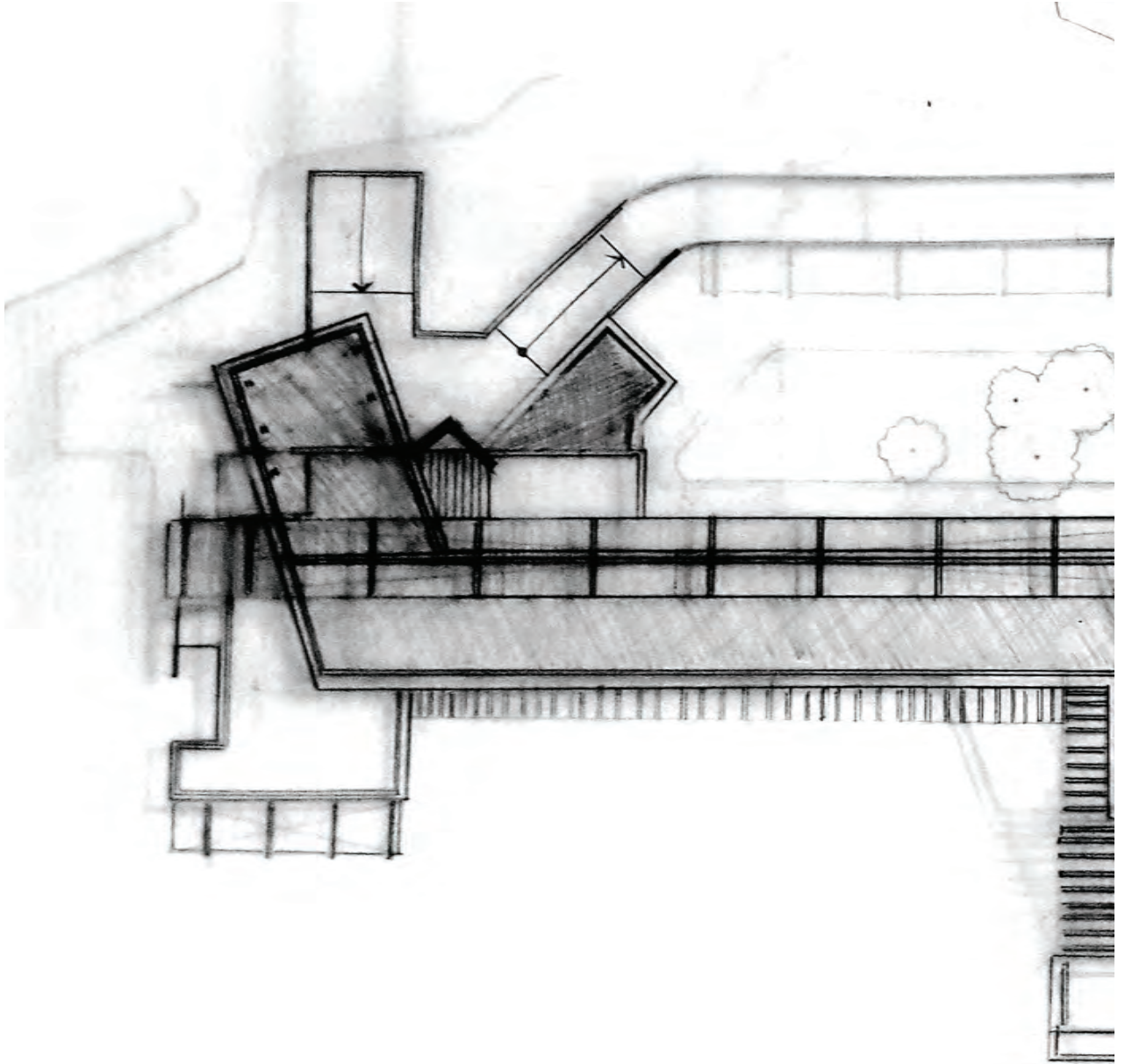
The layout was also developed further and all the offset corners were removed to simplify the plan. Ease of access in terms of level changes was investigated and resulted in a change of the production chamber's position on the site. As few as possible level changes were implemented to assure ease of access for all users.

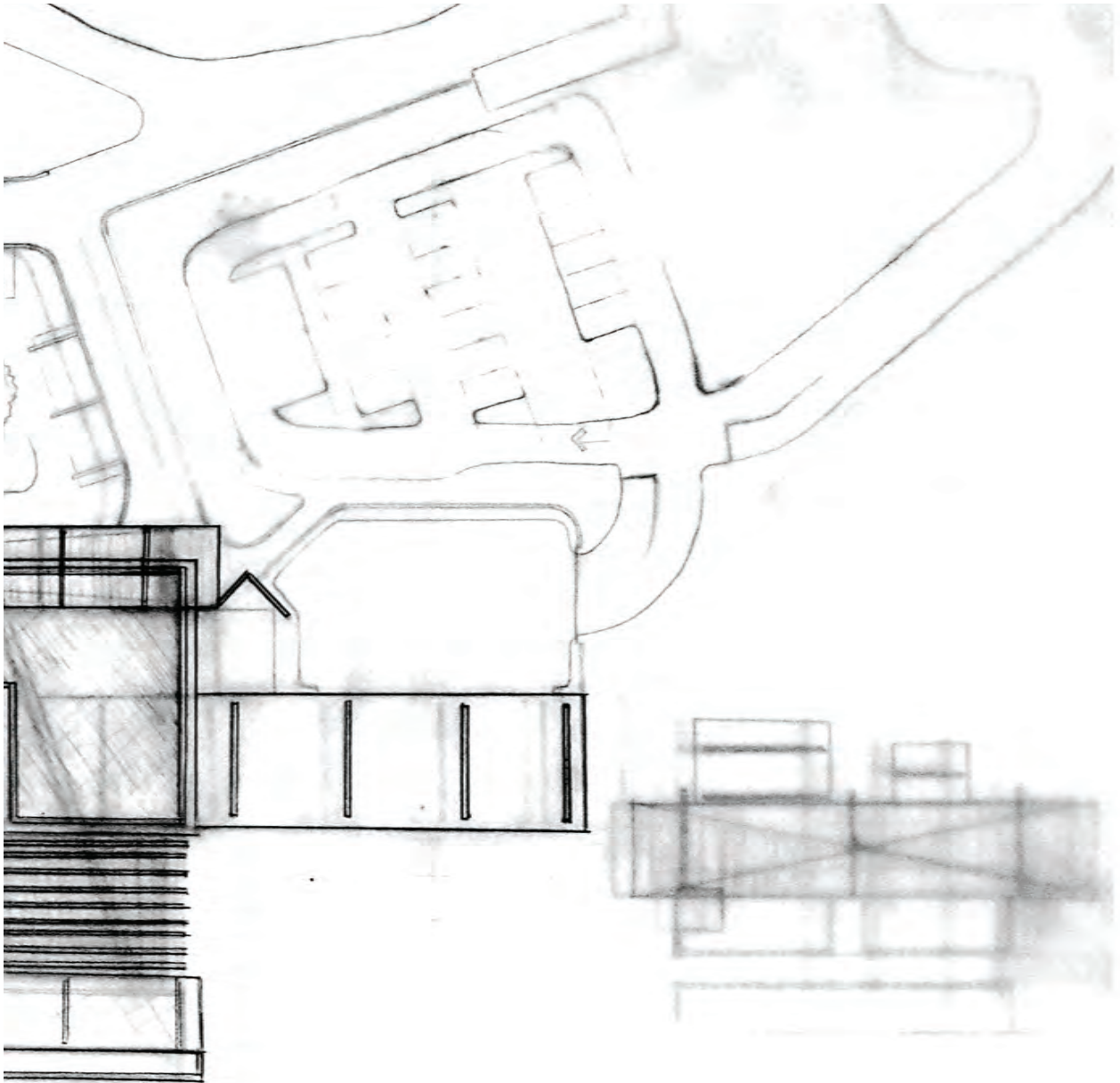
With the plan finalized a detailed model was constructed to illustrate the response to the argument within the context. The construction of the model presented its own challenges and adjustments to the retail market length were made. The model showcased the architecture as a whole and a complete understanding of the response to argument could be gathered. Slight changes in terms of retaining structures were made and the plan design was finalized. The technical investigation could commence.

Fig_117 (Right Top): Detail plan of restaurant and kitchen - Design iteration 7 (Author 2017).

Fig_118 (Right Bottom): Detail Plan of conservation offices - Design iteration 7 (Author 2017).







Fig_119 (Spread): Plan - Design iteration 7 (Author 2017).



Fig_120 (Above): Model process 1 (Author 2017).



Fig_121 (Above): Model process 2 (Author 2017).



Fig_122 (Above): Model process 3 (Author 2017).



Fig_126 (Above): Model process 7 (Author 2017).



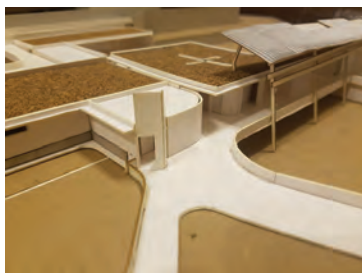
Fig_127 (Above): Model process 8 (Author 2017).



Fig_128 (Above): Model process 9 (Author 2017).



Fig_132 (Above): Model process 13 (Author 2017).



Fig_133 (Above): Model process 14 (Author 2017).



Fig_134 (Above): Model process 15 (Author 2017).



Fig_123 (Above): Model process 4 (Author 2017).



Fig_124 (Above): Model process 5 (Author 2017).



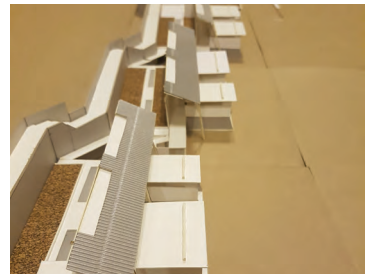
Fig_125 (Above): Model process 6 (Author 2017).



Fig_129 (Above): Model process 10 (Author 2017).



Fig_130 (Above): Model process 11 (Author 2017).



Fig_131 (Above): Model process 12 (Author 2017).



Fig_135 (Above): Model process 16 (Author 2017).



Fig_136 (Above): Model process 17 (Author 2017).



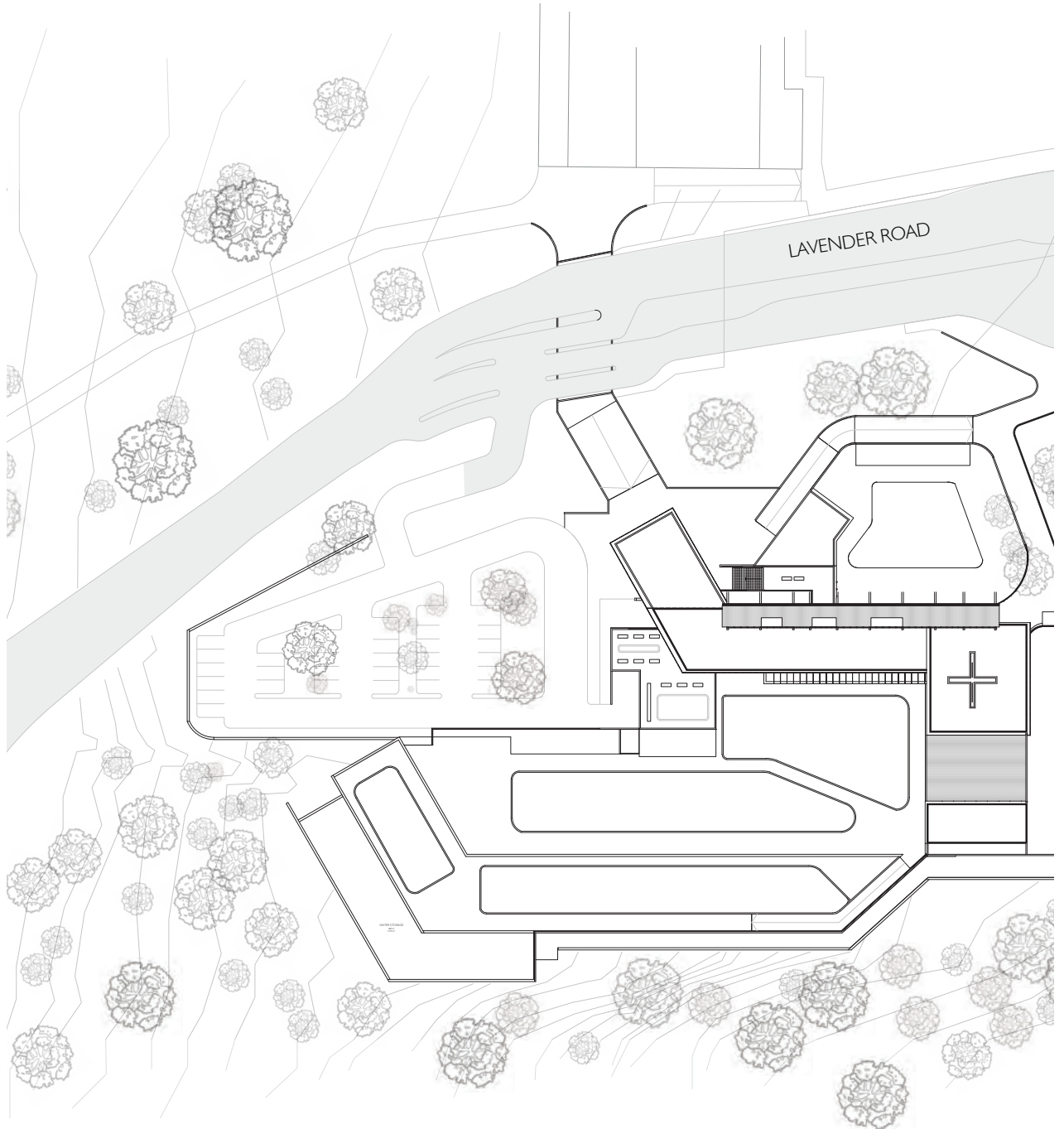
Fig_137 (Above): Model process 18 (Author 2017).

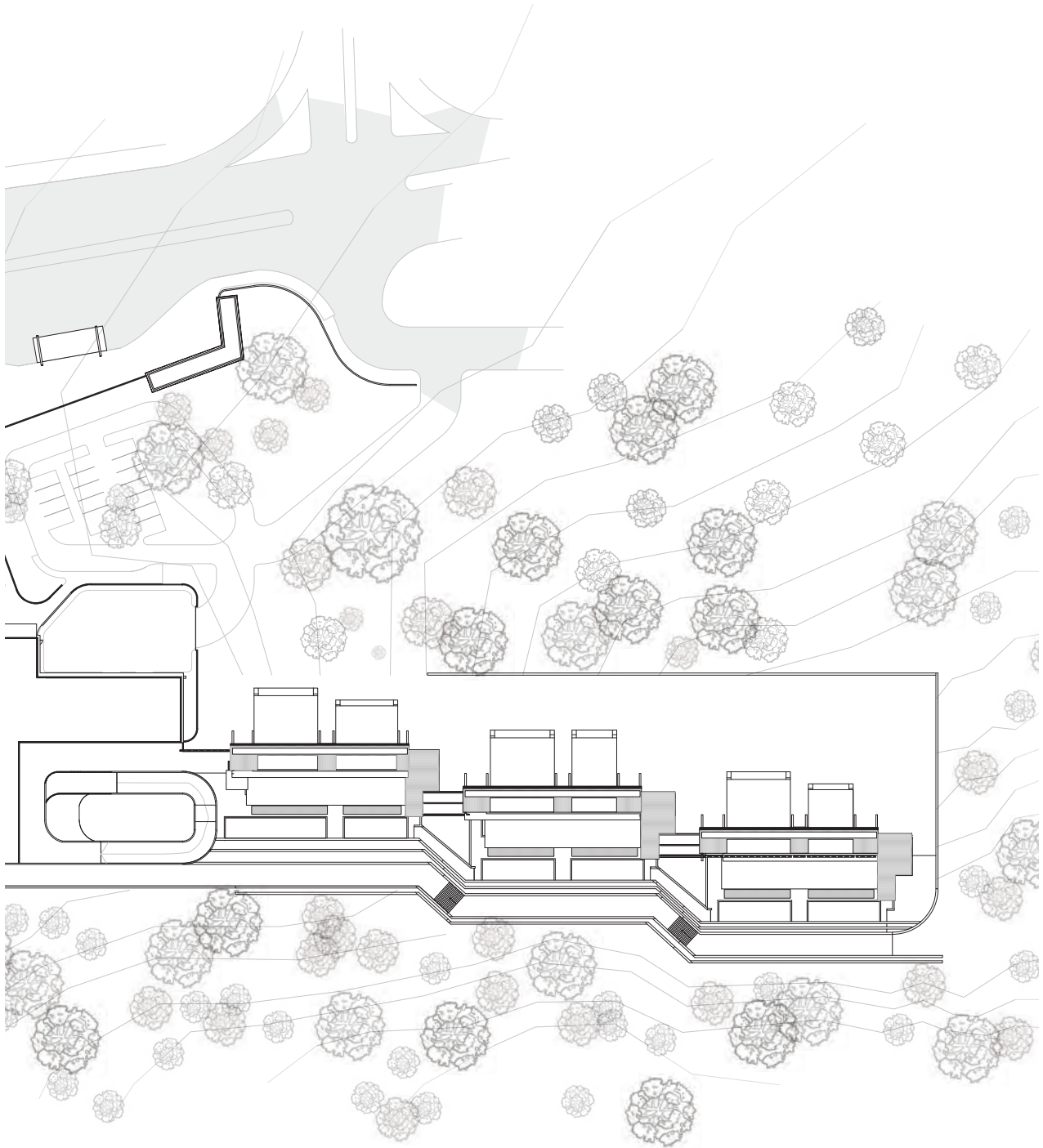


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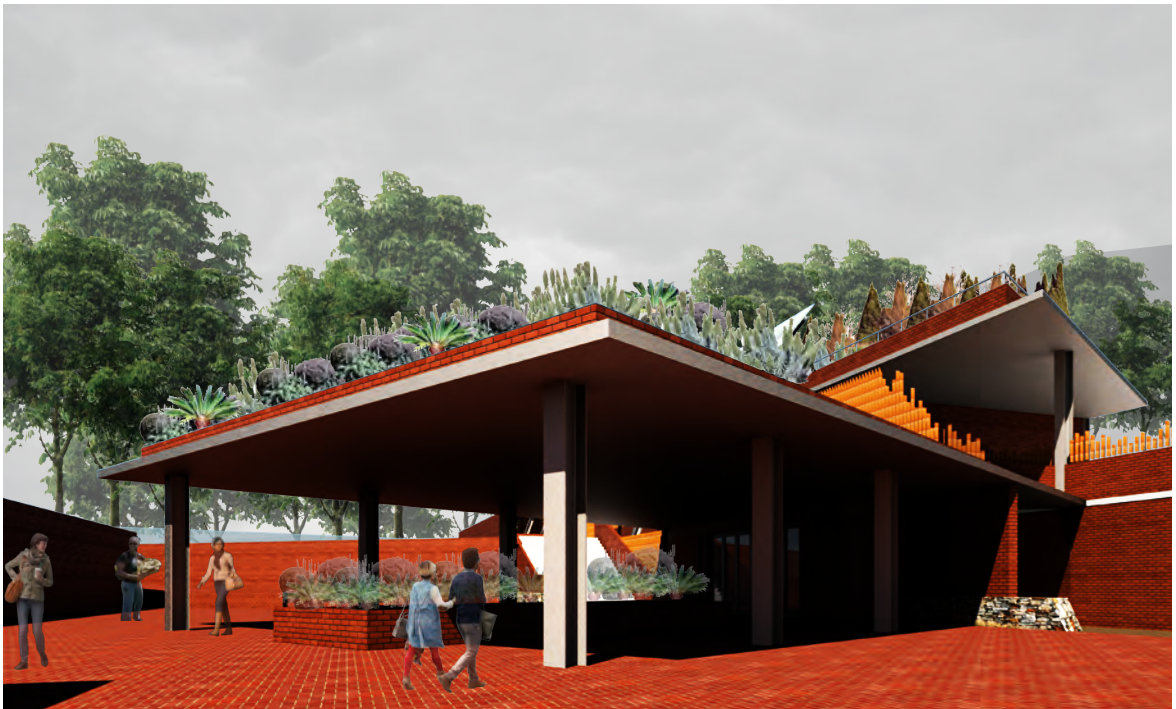
DESIGN RESOLUTION

"Of course you condition perception through a building but you must be careful not to overdo it, otherwise you asphyxiate the user. It is necessary to find the right balance between the control of the experience of space, and freedom which allows things to happen."
Álvaro Siza





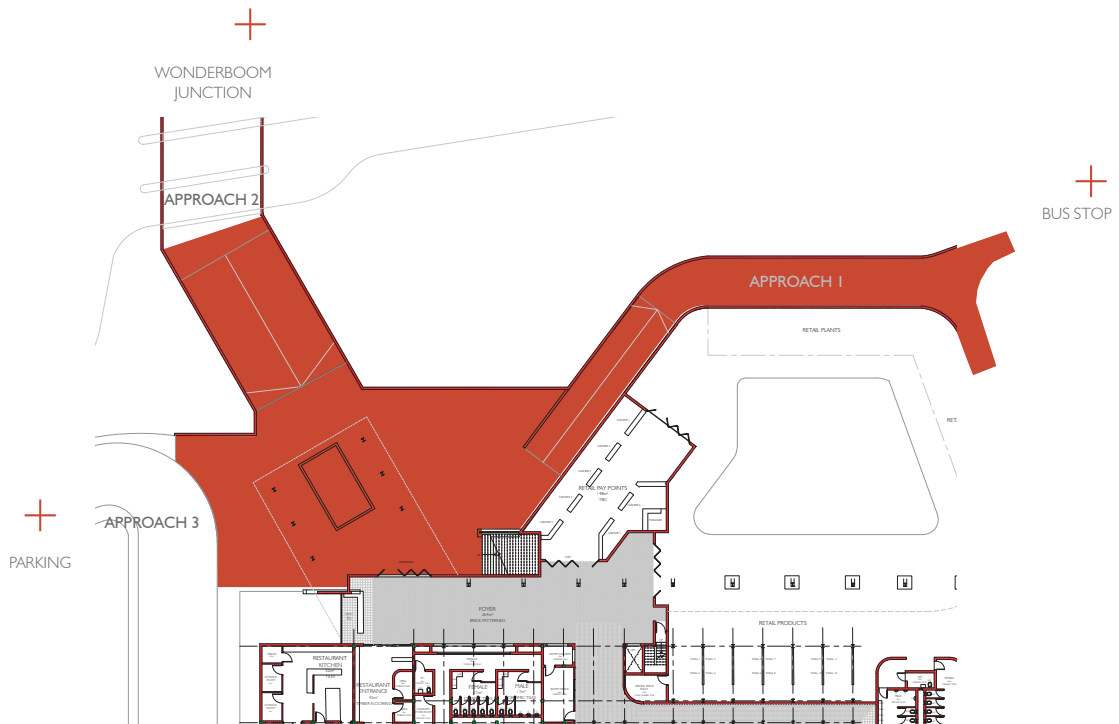
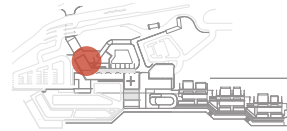
Fig_ I39 (Spread): Site Plan - Resolution (Author 2017).



Fig_ I40 (Above): Approach Render (Author 2017).

05 | Approach - Entrance

The conservation facility's visitor enters the site from three different points of approach (fig 104). The first approach from the bus stop on Lavender Road. The visitor has the option of taking two routes to gain access to the facilities public reception courtyard, one down the pedestrian entrance ramp and the other past the rentable office spaces on the first-floor level. The second approach from Wonderboom Junction retail centre allows visitors to safely cross Lavender Road. This approach starts at the retail centre and descends to a crossing corridor that passes underneath Lavender Road. This approach meets up with the bus stop and vehicular entrance approaches. The third, from the visitors parking, approaches from the west and takes the user directly to the public reception courtyard from where they enter the facility's foyer.



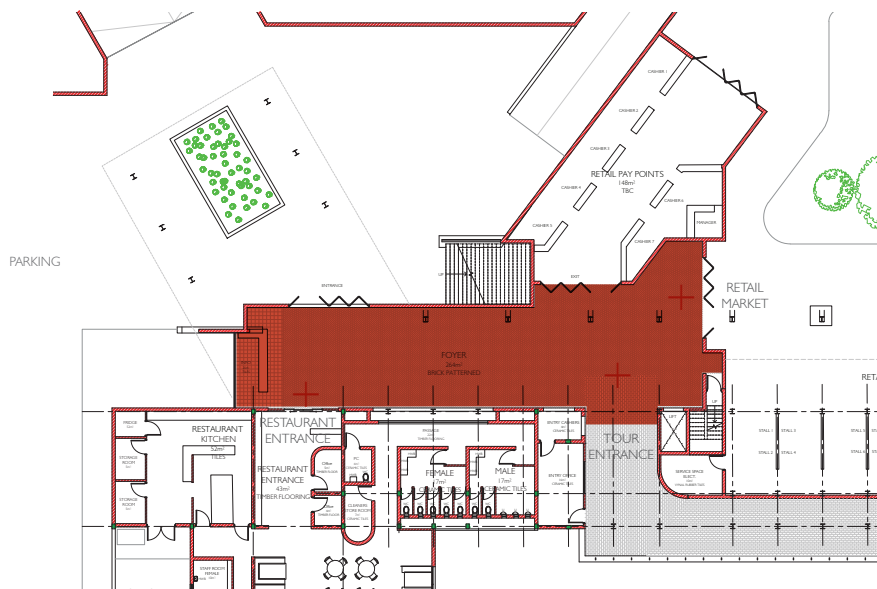
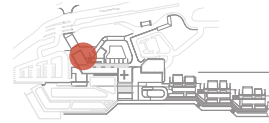
Fig_141 (Above): Call out of approaches and entrance (Author 2017).



Fig_142 (Above): Entrance Foyer Render (Author 2017).

05_2 Facility Foyer

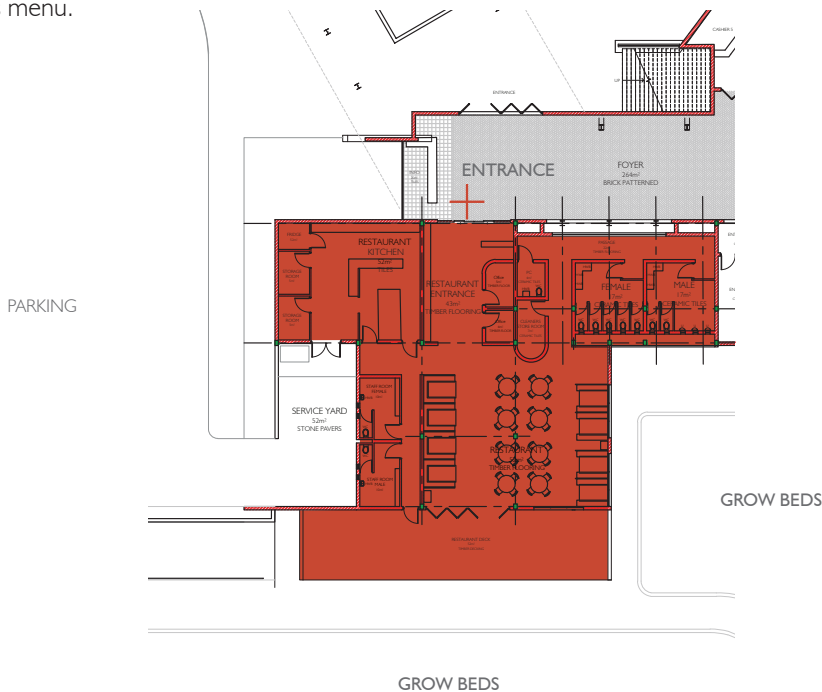
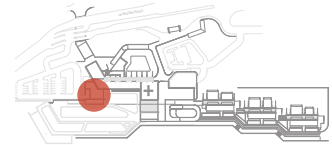
From the public reception courtyard, the visitor enters the facility's foyer (fig 141). This space is partially closed-off to the public and is used as the decision space for the visitor. From the reception foyer, the visitor has an option of three destinations to visit. The first is the facilities restaurant that is situated as separate entity and intends to serve the visitor, the worker, and the passer-by. The second is the tour entry point to the facility where the visitor is asked an admission fee if they wish to visit the conservation facility and experience the process and workings of the facility. This visitor's experience can be viewed as a wanderer or with a guided tour. The third choice is the retail market space. This area can be entered from the foyer or as the end of the facility's tour.



Fig_143 (Above): Call out of facility foyer (Author 2017).

05_3 Restaurant

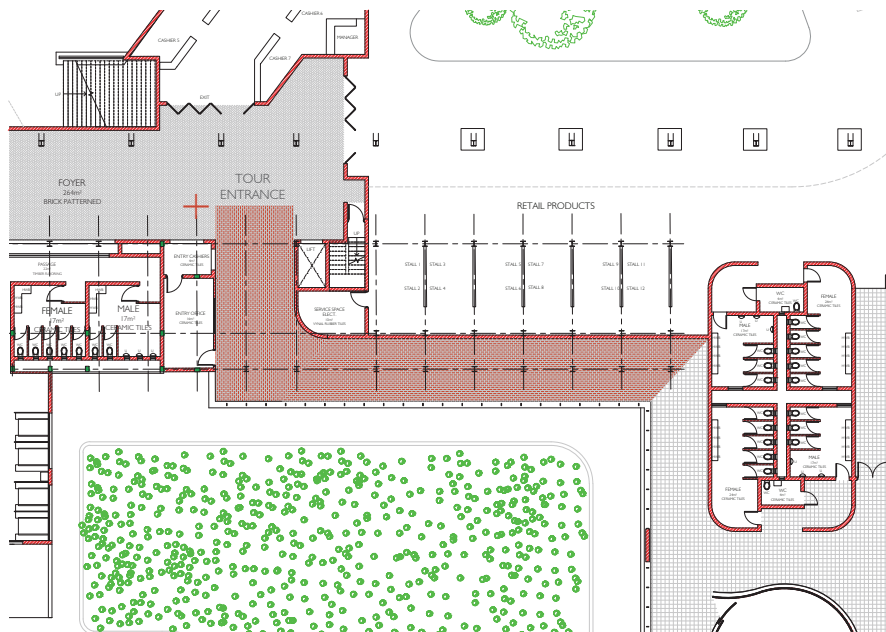
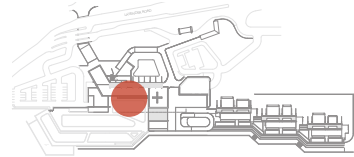
The restaurant (fig 142) as separate entity to the conservation facility is used to bridge the gap between the retail centre restaurants situated on the southern end of Wonderboom Junction and the conservation facility to the South. The facility's restaurant has the same programmatic intentions as the eateries at Wonderboom Junction but starts to introduce the visitor to the conservation facility in terms of the setting and the relationship between the meals served and the landscape. The restaurants' intention is to focus the visitor's attention on the natural product produced in the surrounding landscape rather than the conventional products that is normally brought in by truck. This idea is presented by means of opening the views up to the facility's grow beds and keeping the visitor always conscious of the natural landscape and where the produce (meals) come from, i.e. nature. This idea is strengthened by using predominately products from the facility on the restaurant's menu and by creating an extension of the natural landscape to the restaurant's menu.



Fig_144 (Above): Call out of Restaurant (Author 2017).

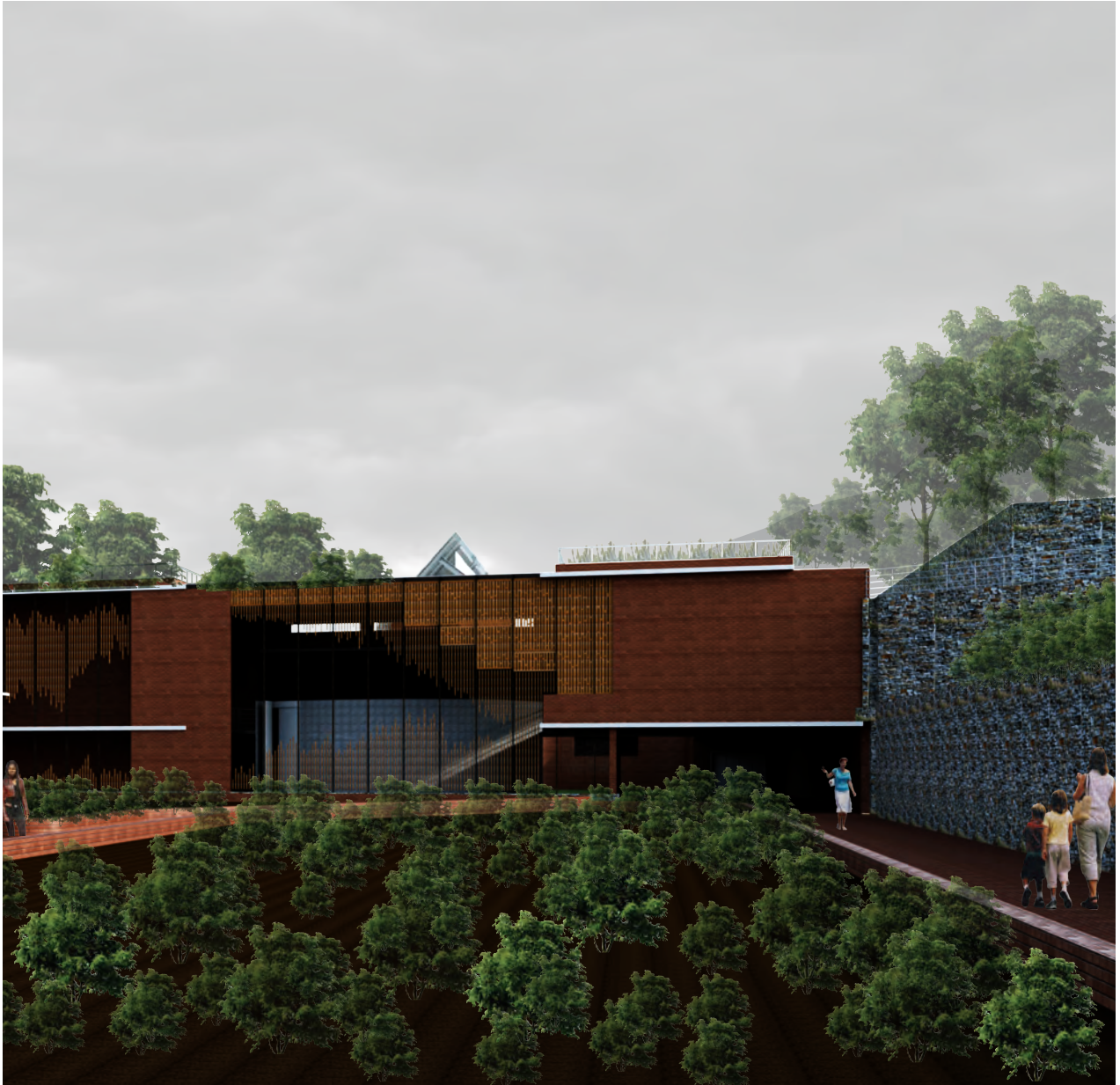
05_4 Facility Tour Entrance

The facility's visitors tour entrance consists of admission fee counters and an access control point to allow visitors who has paid to view the facility to enter. At the entry point, the visitor is immediately introduced to the natural landscape and continues the path into the orientation chamber. The visual connection between the natural landscape and the visitor is only broken when the visitor entry the 360-degree virtual chamber.



Fig_145 (Above): Facility Tour Entrance (Author 2017).





Fig_146 (Spread): Grow Area Courtyard (Author 2017).

05_5 Retail Market

The retail market can be entered from two different approaches. The first from the reception foyer. This entry point makes it possible for the retail market to cater for the public that visits the facility only to buy products from the facility. The second entry is the last part of the conservation facility's tour route and all visitors are directed through the retail market as the exit point. This concludes their tour with the possibility to purchase the products that they saw being produced. The retail market space caters for two different types of products. The first is the conventional bottled and packed type of products and the second is the plants themselves. The integration of these two product type spaces forms the basis for the ordering of the retail space layout. The central green courtyard can be transformed into hosting events when the facility wants to host a night or specific celebrative market.

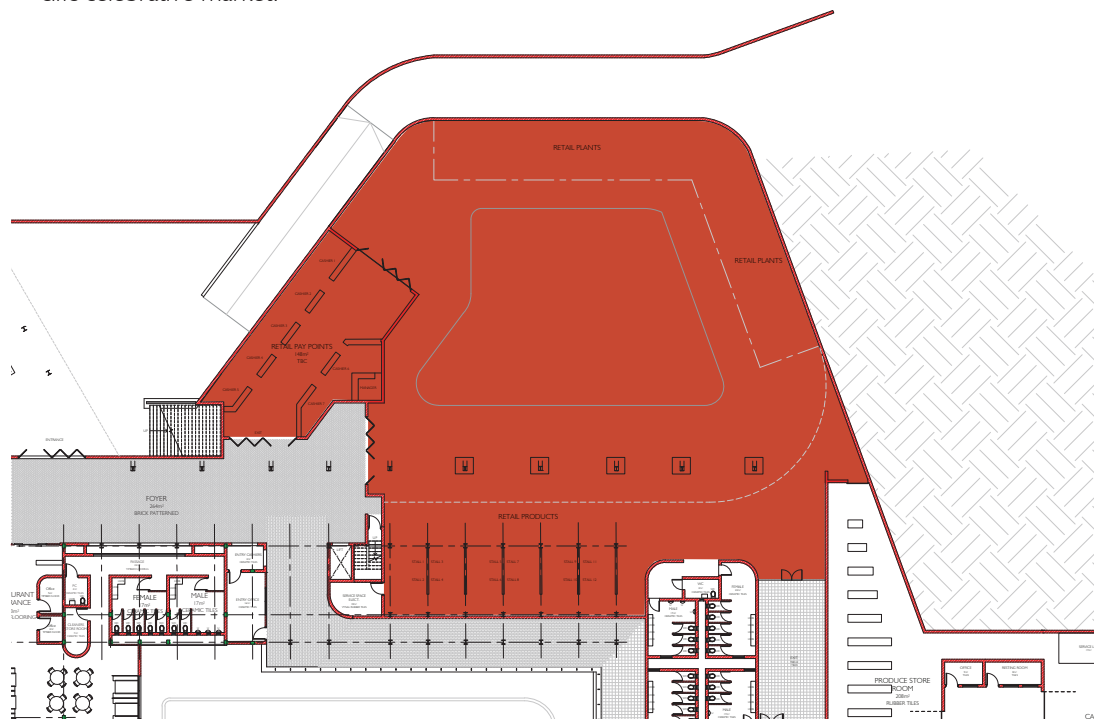
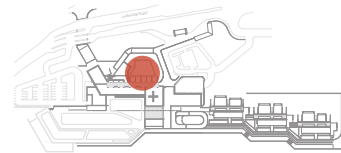
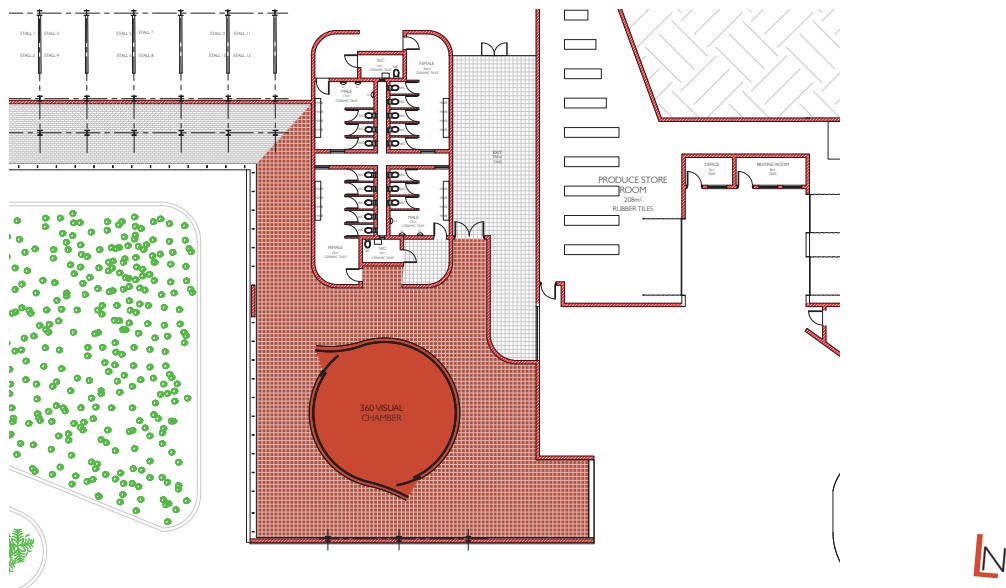
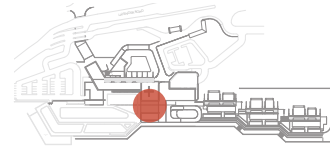


Fig _ 147 (Above): Call out of Retail Market (Author 2017).

05_6 Facility's Orientation Chamber

The facility's orientation chamber orientates the visitor as the start to the experience of the conservation facility. The idea is to inform the visitor of the surrounding context, how the Magaliesberg mountain formed and how the facility uses the mountain and reserve resources to aid in conservation. This introduction is done by means of a 360-virtual chamber experience in the centre of the space and secondary maps, images and displays surrounding the chamber. The visitor will be able to move freely through the space and experience the information displays at their own pace. After which they can walk through the facility and navigate around by means of maps and signs to understand what the facility is about. All areas of the facility are open to the public visitor to view and experience except the first floors in the production chambers. For these areas an additional view floor was incorporated making the whole facility visually accessible to the visitor.



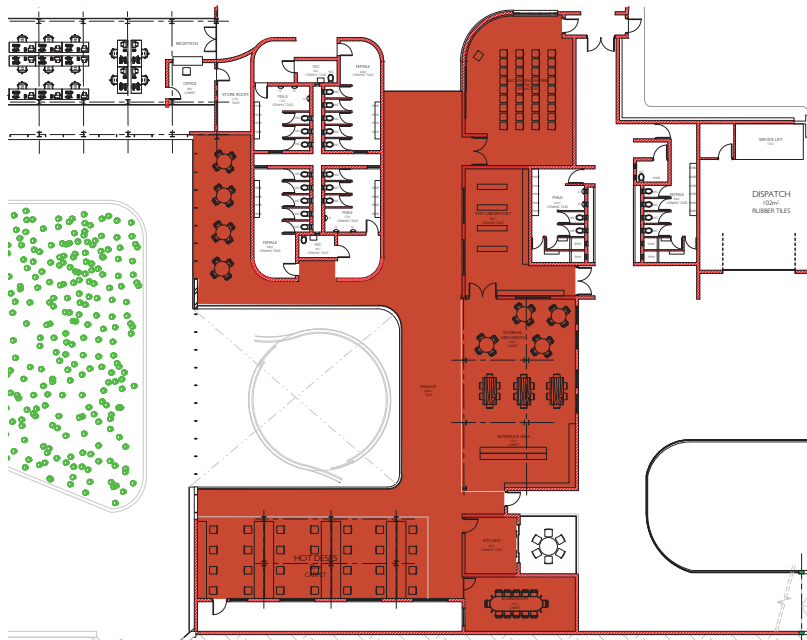
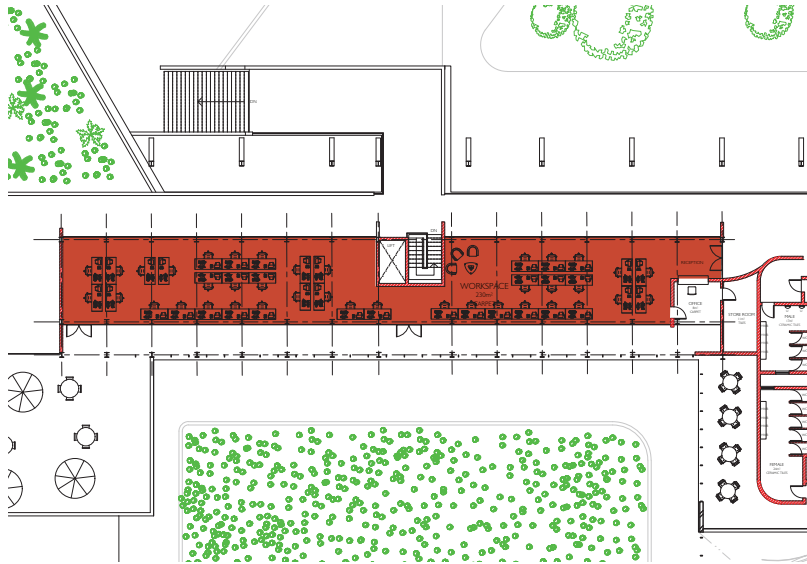
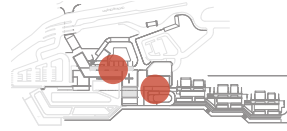
Fig_148 (Above): Call out of Facilities Introduction Chamber (Author 2017).

05_7 Office Spaces

The conservation facility houses two different office typologies. The first of which is the rentable office workstations. This space makes it possible for entrepreneurs and small business owners to rent a desk space rather than a conventional office. This follows the trend of a shared economy structure. The integration of this typology office structure into the facility allows for new entrepreneurs or small business owners to tap into the infrastructure of the facility and develop innovative ideas for markets. The office workspace is part of the facility's objective in developing the surrounding urban realm into a thriving economy. The second office typology is the research commons that consists of hot desk workstations, a reference corner, a fully fitted test laboratory and meeting spaces. These spaces are to aid conservation researchers and organization to continue and enhance the work they are doing to conserve these nature areas. Funds generated by the facility are invested in these organizations by means of supplying them the infrastructure to aid conservation. The research office space also consists of a public meeting area where the surrounding urban dwellers can interact with the organizations in finding current ways to conserve or develop the natural areas within urban environments.

Fig_149 (Right Top): Call out of Rentable Office Spaces (Author 2017).

Fig_150 (Right Bottom): Call out of Research Office Space (Author 2017).





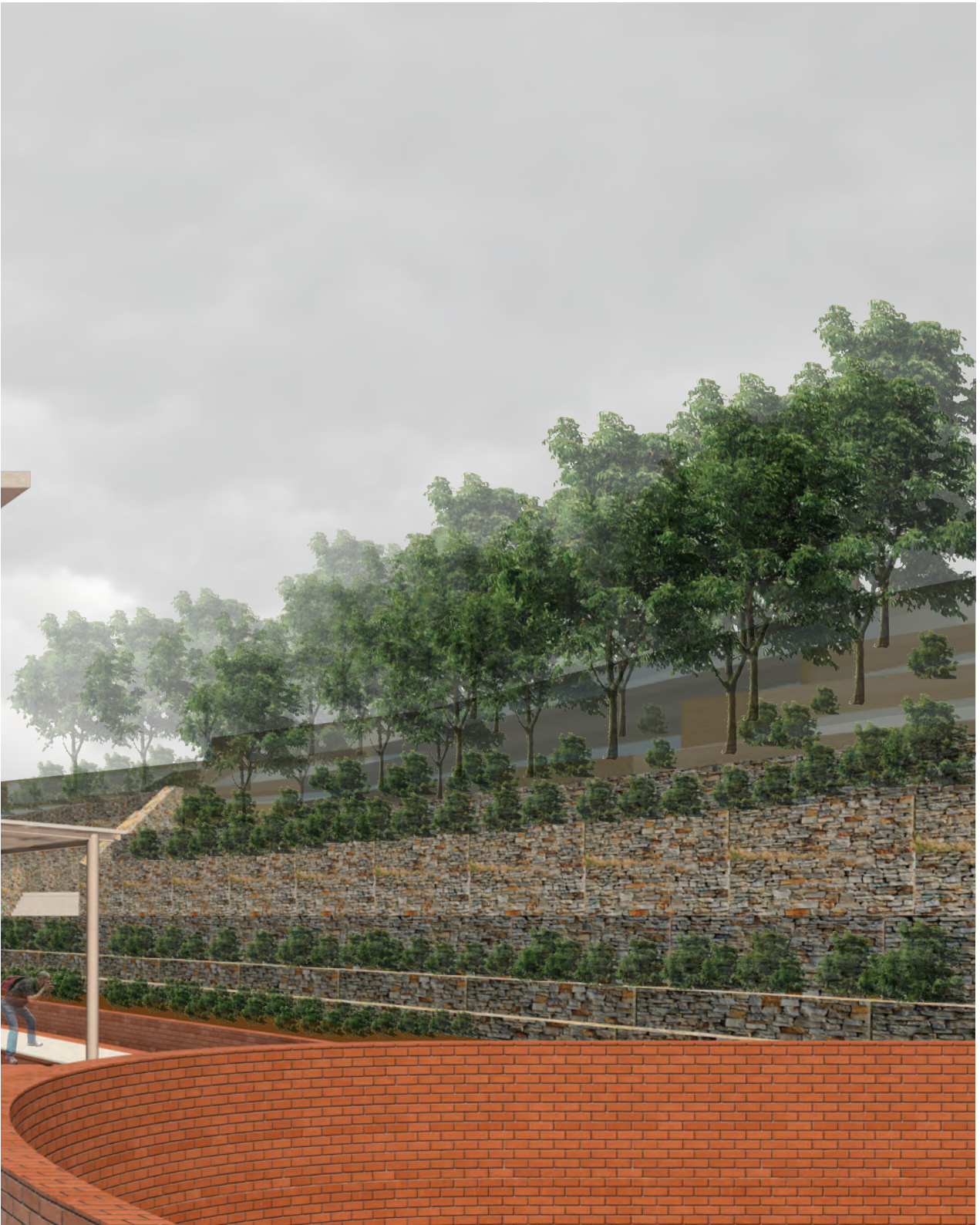


Fig. 151 (Spread): Chamber One Entrance (Author 2017).

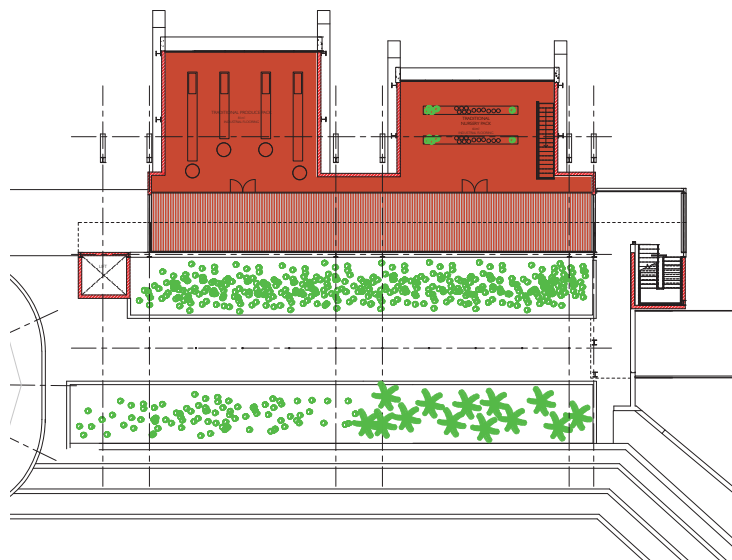
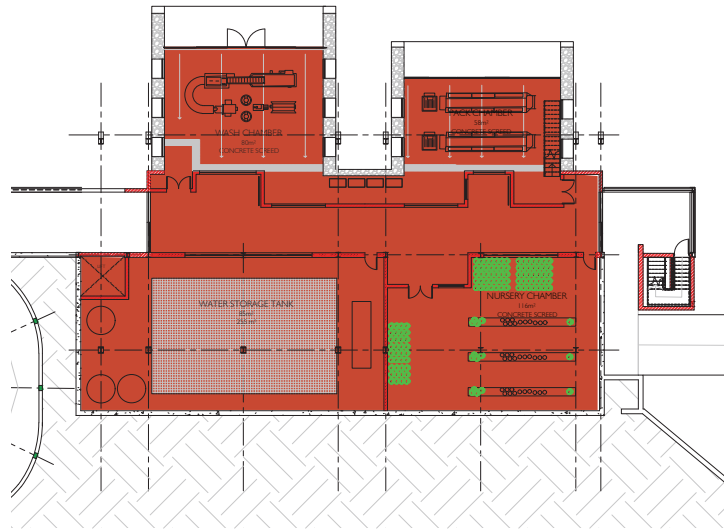
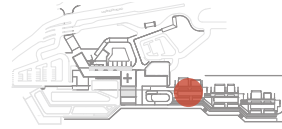
05_8 Production Chambers

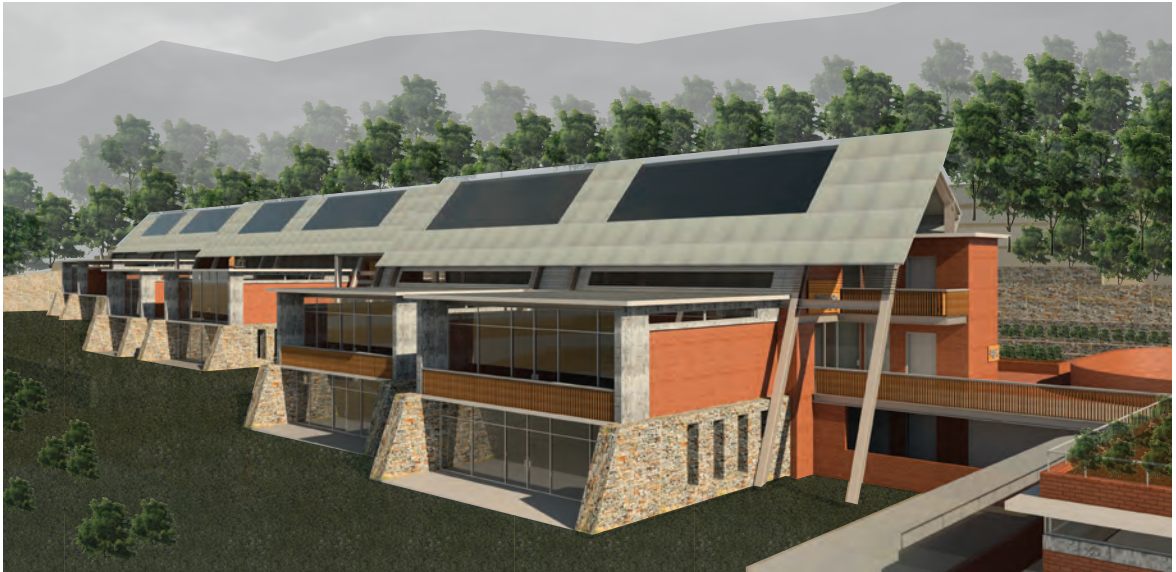
The production chambers are where all the active functions of the conservation facility occur. Within the chambers, areas are dedicated for the washing and packing of produce; the germination and storage of indigenous seeds; transformation of the harvests into edible products and test laboratories to optimize the growth and harvesting processes. The chambers form the engine that keeps the conservation facility functioning.

The chamber spaces were designed to be altered as the needs arise within the facility. For example, when the facility no longer can produce edible products, the distillery can be refitted with new equipment to enable different processes. These spaces are designed as far possible to be resilient for the conservation facilities existence. Additions and/or expansion can easily be implemented if the need arises. The separation and placement of these spaces on the site make this possible. If the facility can no longer function as was intended, these spaces can also be transformed into other typological public interactive spaces.

Fig_152 (Right Top): Call out of Chamber Ground Floor Level (Author 2017).

Fig_153 (Right Bottom): Call out of Chamber First Floor Level (Author 2017).





Fig_154 (Above): Chamber Overview (Author 2017).



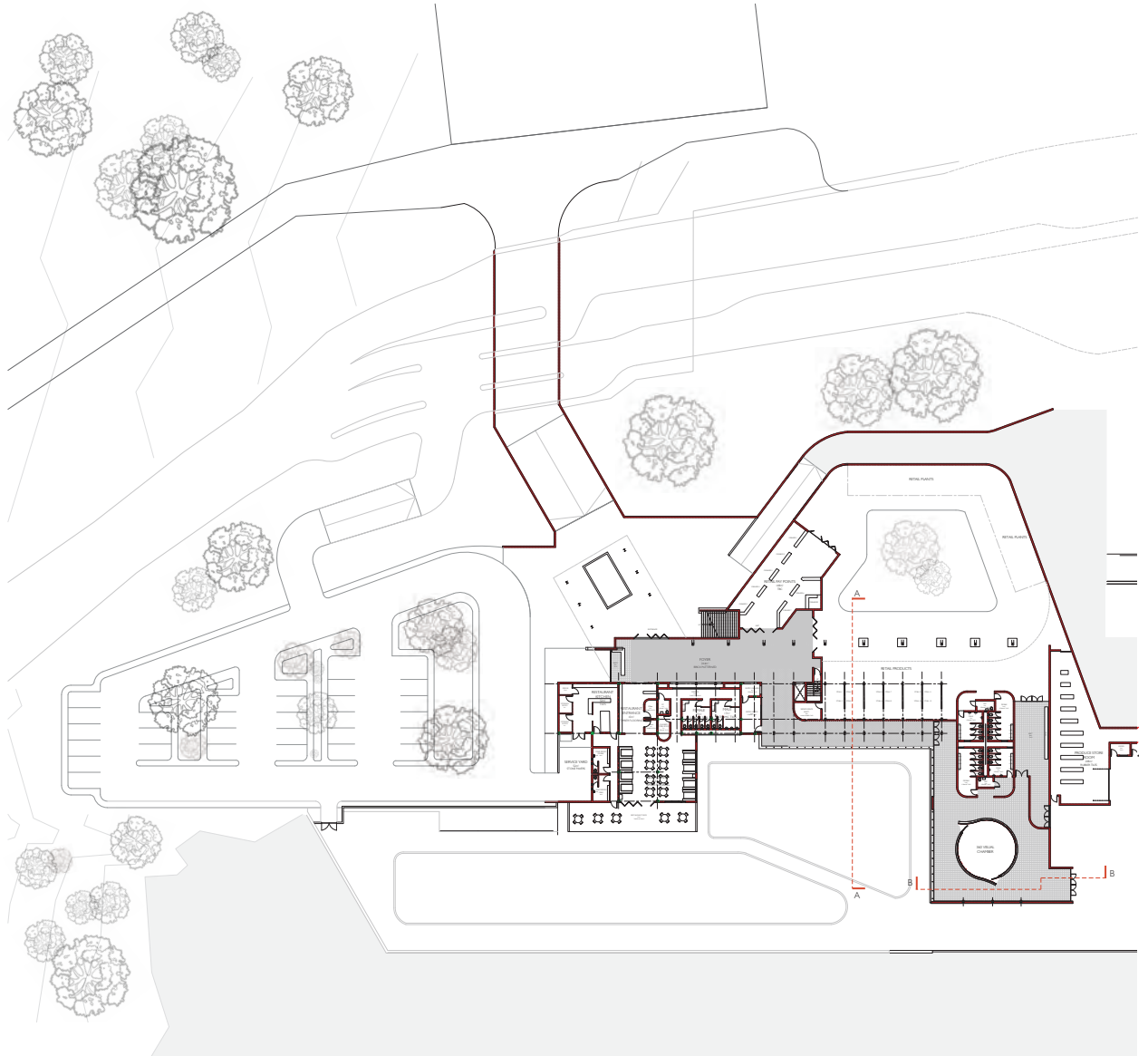
Fig_155 (Above): Section Elevation of Chambers (Author 2017).

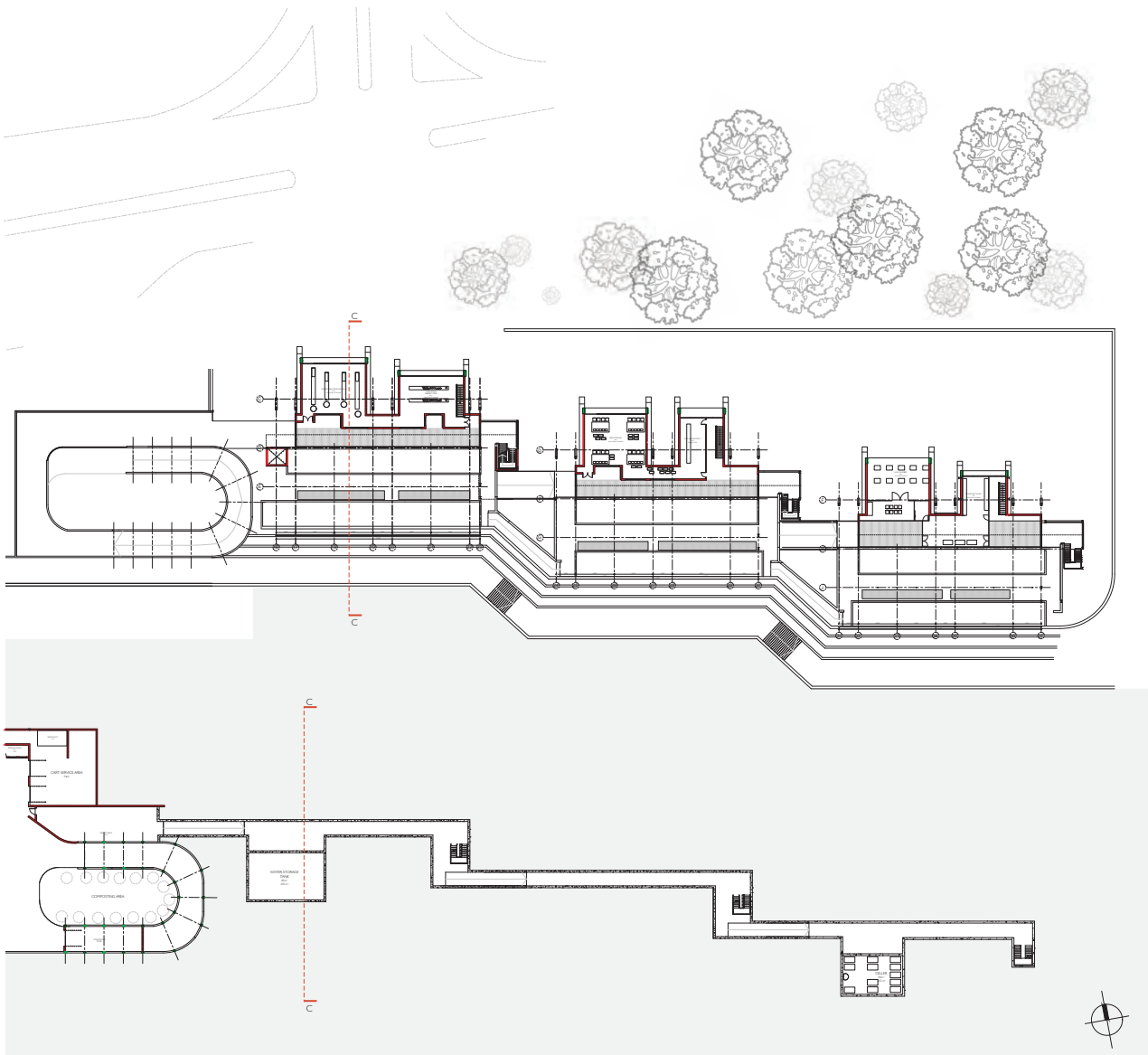


Fig_156 (Above): Chambers Front View (Author 2017).



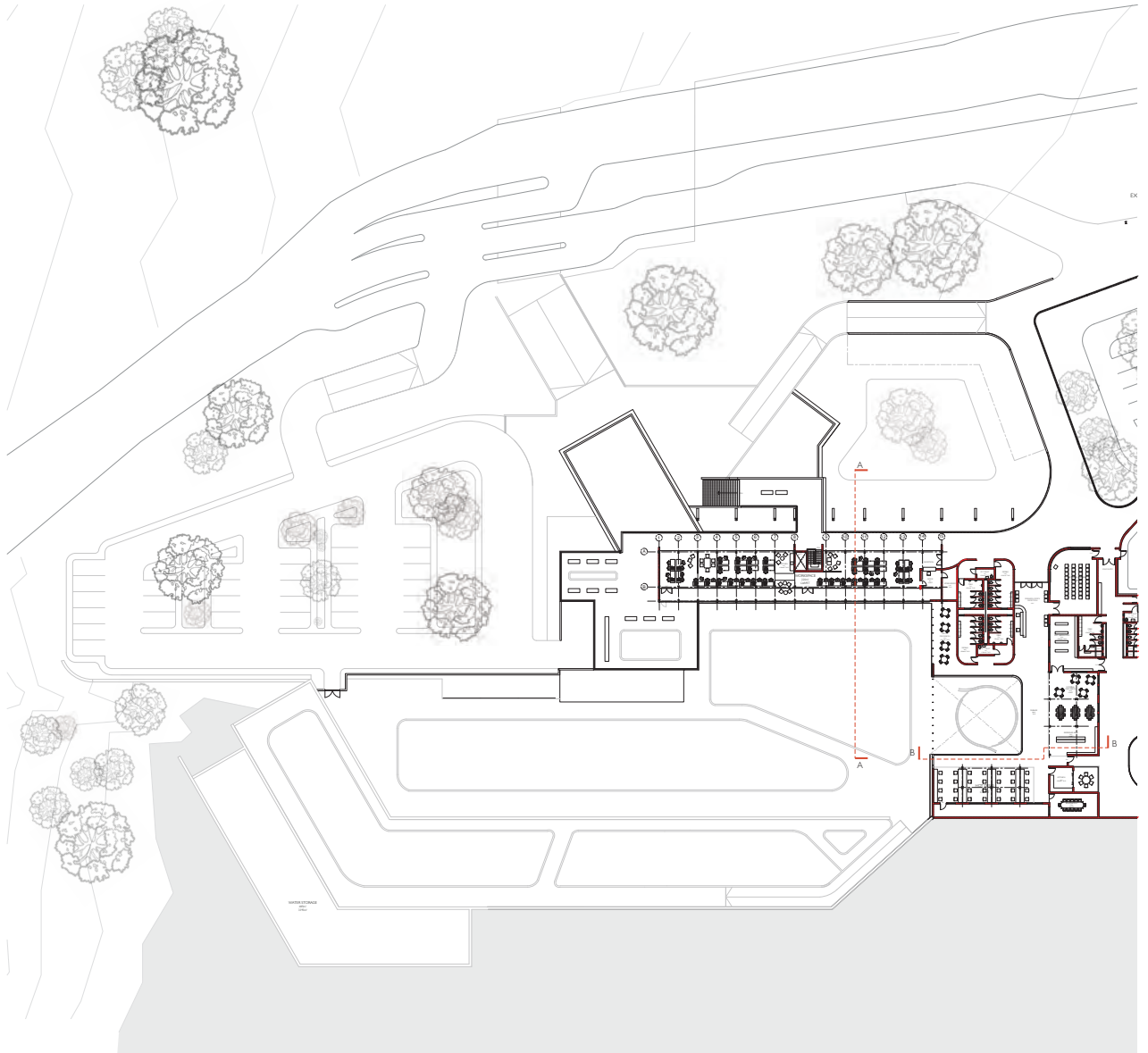
Fig_157 (Above): Chamber Interior (Author 2017).

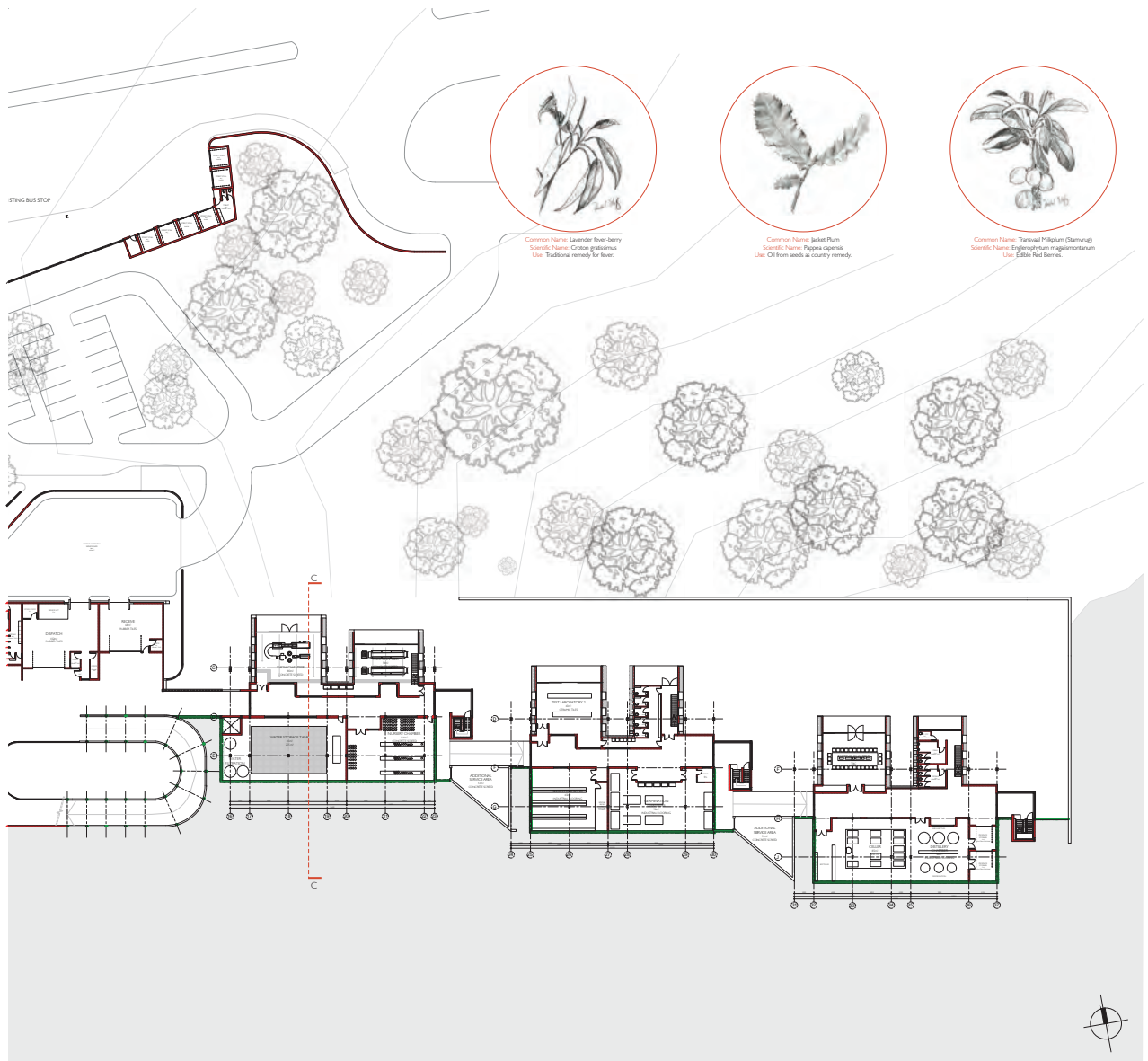




Fig_158 (Top Right): 1238 Floor Plan (Author 2017).

Fig_159 (Spread): 1232 Floor Plan (Author 2017).





Fig_160 (Spread): I235 Floor Plan (Author 2017).





Fig_161 (Spread Top): North Elevation (Author 2017).
Fig_162 (Spread Bottom): West Elevation (Author 2017).