



BLIND BY SIGHT  
ARCHITECTURE AS A COMMUNICATION DEVICE THROUGH SENSORY EXPERIENCE

To Caitlin,

Thank you for your unending love and support, and  
deciphering my thoughts into words.

To Arthur,

Thank you for educating me, without teaching me.

This dissertation forms part of a broader study on phenomenological experiential architecture within the South African context. It aims to further an understanding of human perception of the spaces we occupy.

It deals with an approach towards social infrastructure within an industrial landscape.

Please find the audiobook attached to listen to this dissertation

B L I N D   B Y   S I G H T

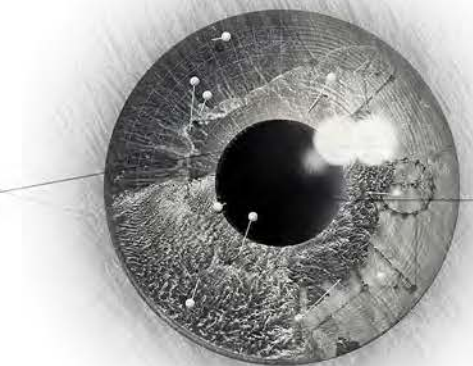
By Gerard Bosma

Submitted in fulfilment of part of the requirements for the degree of Masters in Architecture (Professional)

Department of Architecture,  
Faculty of Engineering, Built Environment and Information Technology,  
University of Pretoria  
November 2016

Course Coordinator  
Dr. Arthur Barker

Study Leader  
Dr. Arthur Barker



Programme: A resource centre for the visually impaired

Site Description: Neglected landscape of mixed use facilities starting from residential typologies through to industrial reuse and adaptation.

Site Location: Corner of Jasmyn ave, and Fakkel road. Silverton, Pretoria

Coordinates: -25.731379, 28.296522

Research Field: Human Settlement + Heritage and cultural landscapes

Client: The School for the visually impaired – South Africa.  
Blind Solution studio.  
Dream house – Workshop for the Blind.

Keywords: Experience, Phenomenological, Industrial, Haptic, Sensory, Regenerative, Visual Bias

Architectural Theoretical Premise:

Visual bias in architecture is leading to the degradation of the role of architecture within the continuum. Sensory experience exploration provides a means of establishing architecture as a device for communication.

Architectural Approach:

The exploration of sensory experience in architecture as a communication tool to re-establish the link between human sensory understandings to the surrounding environment.



Figure 0.1 - Blind Mechanic

# ABSTRACT

"There are two types of people in the world, the disabled, and those who haven't quite found their disability yet"

= Chris Downey Architect (Downey.TED. 2013) [1]

Argitektuur kan beskryf word as 'n medium van kommunikasie; dit is 'n tasbare, buigbare medium wat gemanipuleer, verstel en aangewend kan word om betekenis of idees oor te dra. Fredrich Kittler beskryf kommunikasie as die oordrag van 'n digitale sein (in die brein) na 'n analoë sender (die mond). Die analoë sein beweeg deur ruimte en word deur 'n analoë ontvanger (ore) ontvang en omskep en versend as 'n digitale sein na die begrip of gedagte van die ander persoon.

Hierdie verhandeling is daarop gemik om, gebaseer op aanvaarde teorieë van kommunikasie, die belewenis en begrip van argitektuur deur menslike waarneming te benadruk. Die besondere aanwending word gemik op 'n skool vir blindes in Silverton, Pretoria. Aanvullend tot die beskikbaarstelling van fasiliteite vir die opvoeding, ontwikkeling en onafhanklikheid van blinde persone in Pretoria, beoog dit ook om die siende gemeenskap te betrek.

Die projek beoog 'n transformasie in die wyse waarop waarneming begryp en interpreteer word. Konvensioneel is ruimtelike ervaring bevooroordeelde ten gunste van die visuele, sonder om byvoorbeeld akoestiese faktore of die probleme van navigasie deur die gesig-gestremde te verstaan of in berekening te bring. Argitektuur en ontwerp, beter as enige ander beroep, behoort die konsepte waaraan hierdie studie aandag sal gee, te begryp.

Desnieteenstaande neig die huidige paradigma meer en meer na die visueel aantloklike en strelende 'n Dieper begrip van die ruimte waarin 'n liggaam hom bevind, word deur die Duitse term "umwelt" daargestel; 'n begrip wat verwys na die biologiese omgewing wat die organisme omring. Uit 'n evolusionere oogpunt is die organisme die produk van hierdie omgewing, maar hy op sy beurt beïnvloed weer die omgewing waarin hy leef. Elke organisme bevind homself dus in 'n waarneembare omgewing as gevolg van vermoëns en evolusionere aanpassings wat deur hom ontwikkel is om sinvol in die besondere omgewing te bestaan.

Architecture can be described as a medium of communication; it is a physical, malleable fabric that can be manipulated and adjusted to convey meaning or an idea. According to theories by Fredrich Kittler, communication is the transferal of a digital signal (in our minds) to an analogue transmitter (our mouths). This analogue signal propagates through our environment and is received by an analogue receptor (our ears) which is then transferred back into a digital signal (or thought) within the other party's mind. (Kittler,1996,p722) [2]

Using the theories of communication to explicate architecture through human experience will form the basis of this dissertation. This particular application will take place at a school for the blind located in Silverton, Pretoria. The programme will include the necessary facilities required to educate and develop the blind people of Pretoria in a manner where they can become independent, as well as engaging members of society.

Design and architecture should understand the following concepts more than that of any other profession; yet the current paradigm of architecture is geared towards the consumption of seductive images. This is possibly one of the greatest threats facing architecture in the continuum of the discourse. This project proposes a transformation in perception of interpretation. The way we experience potential spaces is biased towards visual elements; without ever fully understanding or realising acoustic properties or navigation devoid of sight.

This deeper understanding of a body in space is best described by a German term 'umwelt'. The word derives from a biological field of examining an organism's immediate environment. Through evolutionary understanding the organism is a product of the context around it, and it in turn influences the surrounds. Each organism in question has its own perceptible world through the tools it evolved to make sense of its surrounds. Umwelt is a noun and in ethological terms refers to the world as experienced by a particular organism. (Kull,2010,p348) [3]

[1] Chris Downey. (2013). Design with the blind in mind. [Online Video]. November 2013. Available from: [https://www.ted.com/talks/chris\\_downey\\_design\\_with\\_the\\_blind\\_in\\_mind/transcript?language=en](https://www.ted.com/talks/chris_downey_design_with_the_blind_in_mind/transcript?language=en). [Accessed: 24 April 2016].

[2] Kittler, F. 1996. The city is a medium. Literature, Media, and the Law. Vol. 27, No. 4, 717-729.

[3] Kull, Kalevi. (2010). 'Umwelt'. In Copley, Paul. The Routledge Companion to Semiotics. London: Routledge. pp. 348-349.

# LIST OF FIGURES

## List of Figures

Figure 0.1 - Blind Mechanic

- Figure 1.1.2 - To touch the corner
- Figure 1.1.3 - What defines boundary.
- Figure 1.1.4 - The road edge.
- Figure 1.2.1 - Perceptable layers.
- Figure 1.2.2 - Defining Boundaries.
- Figure 1.2.3 - Defining Barriers
- Figure 1.2.4 - Defining Perceptions.
- Figure 1.3.1 - Location of project.
- Figure 1.3.2 - Silverton borders.
- Figure 1.3.3 - Distance from Pretoria.
- Figure 1.3.4 - Silverton noli map.
- Figure 1.3.5 - Suburb mapping of key points
- Figure 1.3.6 - Precinct Neighbouring sites.
- Figure 1.3.5 - SG Diagram of Silverton.
- Figure 1.3.6 - Typical ERF.
- Figure 1.3.7 - Street view of Silverton 1.
- Figure 1.3.8 - Street view of Silverton 2.
- Figure 1.3.9 - Street view of Silverton 3.
- Figure 1.4.1 - Our illusion of disability.
- Figure 1.4.2 - Conceptual diagram of passage through Silverton.
- Figure 1.4.3 - Our illusion of disability.
- Figure 1.4.1 - Urban vision nodal map.
- Figure 1.5.1 - Urban passage conceptual diagram
- Figure 1.5.2 - Urban passage haptic route.
- Figure 1.6.2 - Perspective, (Jan Vredeman de Vries 1604)
- Figure 1.6.3 - New principles of linear perspective (B. Taylor 1713)
- Figure 1.9.1 - Research Methodology.

- Figure 2.2.1 - Blurred Intentions
- Figure 2.1.1 - Textured to disadvantage.

- Figure 3.1.1 - Phenomenology simplified
- Figure 3.1.2 - Light to enhance experience
- Figure 3.2.1 - Vetruvian Man - Da Vinci
- Figure 3.2.2 - Module - Le Corbusier
- Figure 3.2.3 - Ergonomics of disabled toilet
- Figure 3.3.1 - Ghandi Centre - Charles Correa
- Figure 3.3.2 - Schalechet (Fallen Leaves)

- Figure 4.1.2 - Juhani Palaasmaa
- Figure 4.1.3 - To sense the wall - Palassmaa
- Figure 4.2.1 - Friedrich Kittler
- Figure 4.3.1 - To feel a sketch Raimund Abraham
- Figure 4.4.1 - Sound in Architecture
- Figure 4.4.2 - Julian Treasure
- Figure 4.5..1 - The Architects Eye

- Figure 5.1.1 - Approach to centre
- Figure 5.1.2 - Conceptual sketch
- Figure 5.1.3 - Interior materiality
- Figure 5.1.4 - Linden Centre project model
- Figure 5.2.1 - Experience in Detail section
- Figure 5.2.2 - Void sensory space
- Figure 5.2.3 - The Centre for the Blind and Visually Impaired - courtyard space
- Figure 5.4.1 - Site Plan
- Figure 5.4.2 - Blind user experiencing model
- Figure 5.4.3 - Braille as a screening device
- Figure 5.4.4 - Section
- Figure 5.4.5 - Plan
- Figure 5.4.6 - Institute for the Blind
- Figure 5.5.1 - Treatment of the ceiling plane
- Figure 5.5.2 - Conceptual model
- Figure 5.5.3 - Initial sketches of Society for the Blind
- Figure 5.5.4 - Completed Project courtyard
- Figure 5.6.3 - Park Facilities highten experience 1
- Figure 5.6.1 - Touch the narative
- Figure 5.6.2 - Free to roam
- Figure 5.6.3 - Park Facilities highten experience 2
- Figure 5.7.2 - Dyslexia Typeface
- Figure 5.7.1 - Dyslexia - 3D presentation
- Figure 5.7.3 - Read in Dyslexia
- Figure 5.8.1 - Another Memory
- Figure 5.8.2 - Far away
- Figure 5.8.3 - Empty Kingdom
- Figure 5.8.4 - Dream Theory
- Figure 5.9.1 - Willem Boshoff
- Figure 5.9.4 - Willem Boshoff - Textured wall
- Figure 5.9.3 - The Blind Alphabet

Figure 6.1.1 - Silhouette of the scene.

- Figure 8.1.1 - Precinct exchanges sketch.
- Figure 8.1.2 - Sensory transactions sketch.
- Figure 8.1.3 - Site developments sketch.
- Figure 8.2.1 - Sensory ordering within precinct.
- Figure 8.3.1 - Architecture language.
- Figure 8.8.1 - Approach Silverton by train.
- Figure 8.8.2 - Sketch analysis.
- Figure 8.8.3 - Extrusion of negative form.
- Figure 8.8.4 - Passage through Dykor bridge.
- Figure 8.8.5 - Quick sketch imagined public building.
- Figure 8.8.6 - Sketching layers of public building.
- Figure 8.8.7 - Mass model iteration 1.
- Figure 8.8.8 - Mass model iteration 2.
- Figure 8.8.9 - Mass model iteration 3.
- Figure 8.8.10 - Mass model iteration 4.
- Figure 8.8.11 - Mass model iteration 5.
- Figure 8.8.12 - Mass model iteration 6.

- Figure 8.8.13 - Initial plan and grid structure.
- Figure 8.8.14 - Service placement in grid.
- Figure 8.8.15- An idea of screen.
- Figure 8.8.16 - To whom do we design.
- Figure 8.8.17 - Second building Proposal.
- Figure 8.8.18 - An interaction with the road.
- Figure 8.8.19 - The sea through building.

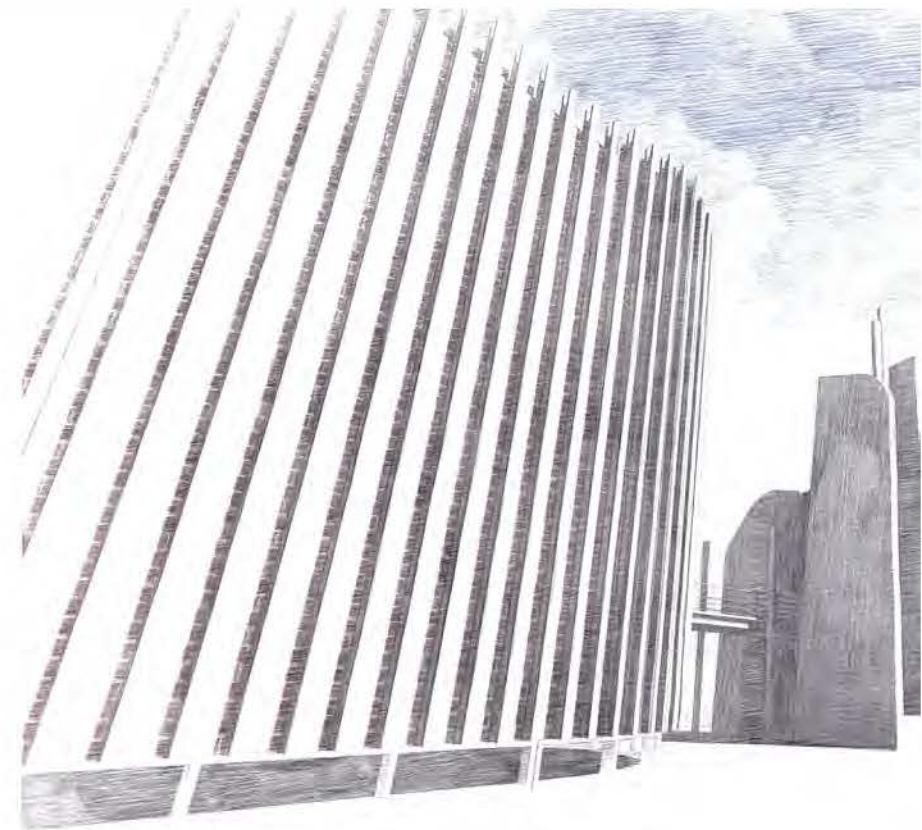
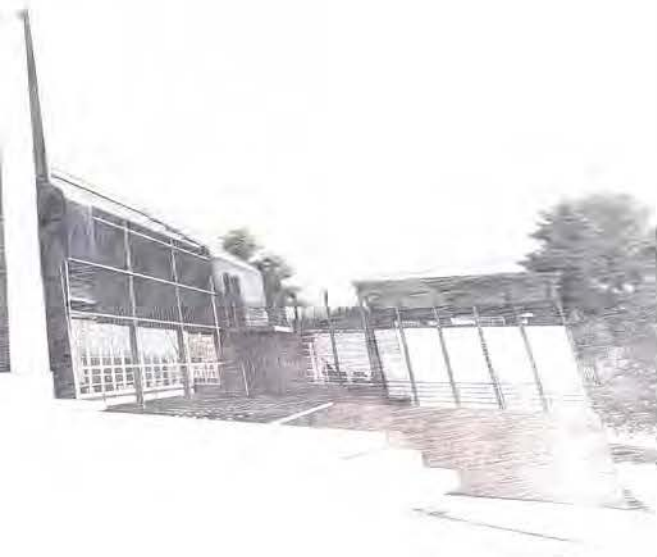


Figure 8.8.20 - Second proposal elevation.  
Figure 8.8.20 - Third proposal logo.  
Figure 8.8.22- Exajeration of experience through form.  
Figure 8.8.22 - An interation with the urban passage.  
Figure 8.8.23 - Third proposal plan.  
Figure 8.8.23 - An urban response.  
Figure 8.8.24 - Iteration of exajerated form 1.  
Figure 8.8.25 - Iteration of exajerated form 2.  
Figure 8.8.26 - The approach towards experience.  
Figure 8.8.27 - Larger urban ordering device.  
Figure 8.8.28 - Existing anchor points.  
Figure 8.8.29 - Project ordering device  
Figure 8.8.30 - Urban anchor points  
Figure 8.8.31 - Building Ordering experience  
Figure 8.8.32- Overlayed form  
Figure 8.8.33 - Project Plan west  
Figure 8.8.34 - Project plan east  
Figure 8.8.35 - Conceptual Section  
Figure 8.8.36 - Building approach  
Figure 8.8.38 - Birds eye view  
Figure 8.8.37 - View from haptic pathway  
Figure 8.8.39 - Staff entrance  
Figure 8.8.40 - Meditation space view

Figure 9.1.1 - 3D Section  
Figure 9.1.2 - Alvaro Alto Resolution  
Figure 9.2.1 - Conceptual Technification  
Figure 9.2.2 - Concept Sketch  
Figure 9.3.2 - I-beam junction sketch  
Figure 9.3.1 - Light weight flooring detail  
Figure 9.3.3 - QC flooring stucture  
Figure 9.3.4 - The Portal Structure 3D  
Figure 9.3.5 - Brick infill between Steel  
Figure 9.4.1 - Kliplok Roof sheeting  
Figure 9.4.2 - Clear Ceiling space  
Figure 9.4.5 - Directional floor texture  
Figure 9.5.1 - Touching copper  
Figure 9.5.2 - Antimicrobial copper logo  
Figure 9.5.3 - A copper handrail  
Figure 9.5.4 - Copper plated touched surfaces  
Figure 9.5.5 - Copper plated handrails and tactile surfaces  
Figure 9.6.1 - Bathroom layout and service coordinatioon  
Figure 9.7.1 - SBAT building project tool  
Figure 9.7.2 - SBAT building project tool  
Figure 9.7.3 - Passive ventilation systems  
Figure 9.7.4 - Exploded Isometric view  
Figure 9.9.1 - Precinct plan  
Figure 9.9.2 - Ground floor plan  
Figure 9.9.3 - Ground Floor plan West  
Figure 9.9.4 - Ground Floor Plan East  
Figure 9.9.5 - First Floor pLan

Figure 9.9.6 - Roof Plan  
Figure 9.9.7 - Ablution layout and devices  
Figure 9.9.8 - Consultation room safe spaces  
Figure 9.9.9 - Elevation North - IN PROCESS  
Figure 9.9.10 - Elevation North Completed  
Figure 9.9.11- Section AA  
Figure 9.10.2 - Bullnose roof detail  
Figure 9.10.4 - Foundation detail  
Figure 9.10.3 - Roof Apex detail  
Figure 9.10.5 - Gutter Garden detail  
Figure 9.10.6 - Perimeter Section  
Figure 9.10.7 - Staircase detail  
Figure 9.10.8 - Final Ground Floor Plan  
Figure 9.10.9 - Final First Floor Plan.  
Figure 9.10.10 - Final Roof Plan.  
Figure 9.10.11 - Final North Elevation.  
Figure 9.10.12 - Final Section A-A  
Figure 9.10.13 - Exploded axometric diagram  
Figure 9.10.14 - Detail 3D section  
Figure 9.10.15 - Passive ventilation system  
Figure 9.10.16 - Model under construction 1  
Figure 9.10.17 - Model under construction 2  
Figure 9.10.18 - Model under construction 3  
Figure 9.10.19 - Model under construction 4  
Figure 9.10.20 - Model under construction 5  
Figure 9.10.21 - Model under construction 6  
Figure 9.10.22 - Final Model

Figure 10.1 - High Contrast Finishes  
Figure 10.2.1 - Rendering 1  
Figure 10.2.2 - Rendering 2  
Figure 10.2.3 - Rendering 3  
Figure 10.2.4 - Rendering 4  
Figure 10.2.5 - Rendering 5  
Figure 10.2.6 - Rendering 6  
Figure 10.2.7 - Rendering 7  
Figure 10.2.8 - Rendering 8  
Figure 10.2.9 - Rendering 9





<b>00</b>	<b>PREFACE</b>	
	TITLE PAGE.....	i
	STATEMENT.....	ii
	PROJECT SUMMARY.....	iv
	ABSTRACT.....	v
	DEDICATION.....	vi
	CONTENTS.....	vii
	LIST OF FIGURES.....	x

## CHAPTER ONE – OUT OF SITE

<b>01</b>	<b>INTRODUCTION</b>	1
	1.1 PREAMBLE.....	3
	1.2 BOUNDARIES, BARRIERS AND PERCEPTIONS.....	5
	1.3 SETTING THE SCENE.....	7
	1.3.1 URBAN ISSUE.....	8
	1.3.2 ARCHITECTURE ISSUE.....	11
	1.4 UMWELT CONDITION.....	13
	1.4.1 GENERAL ISSUE.....	13
	1.5 ARCHITECTURE CONTINUUM.....	14
	1.6 DIRATOWN / [AG]TOWN.....	15
	1.7 URBAN PASSAGE.....	16
	1.8 VISUAL BIAS.....	18
	1.9 RESEARCH METHODOLOGY.....	19
	1.10 DESIGN INTEGRITY.....	20
	1.11 DELIMITATIONS.....	22
	1.12 RESEARCH QUESTION.....	22
	1.13 DISSERTATION QUESTION.....	22

## CHAPTER TWO – INSIGHT

<b>02</b>	<b>FOCAL POINT</b>	23
	2.1 PROBLEM STATEMENT.....	25
	2.2 INTENTIONS.....	25

## CHAPTER THREE – OVERSIGHT

<b>03</b>	<b>POINT OF DEPARTURE</b>	27
	3.1 PHENOMENOLOGY.....	29
	3.2 SUBJECTIVE ERGONOMICS.....	31
	3.3 EXPERIENCE THROUGH THE SOLES OF YOUR FEET.....	32

## CHAPTER FOUR – FORESIGHT

<b>04</b>	<b>THEORETICAL APPROACH</b>	33
	4.1 JUHANI PALAASMAA.....	35
	4.2 FRIEDRICH KITTLER.....	35
	4.3 RAIMUND ABRAHAM.....	36
	4.4 JULIAN TREASURE.....	36
	4.5 TOM PORTER.....	36

## CHAPTER FIVE – SEEN

<b>05</b>	<b>PRECEDENT STUDY</b>	37
	–INTERNATIONAL ARCHITECTURE	
	5.1 LINBURN CENTRE – SCOTTISH WAR BLIND.....	39
	5.2 CENTRE FOR THE BLIND AND VISUALLY IMPAIRED.....	41
	5.3 BATHYÁNY LÁSZLO INSTITUTE FOR THE BLIND.....	43
	–LOCAL ARCHITECTURE	
	5.4 CAPE TOWN SOCIETY FOR BLIND – JAKUPA ARCHITECTS.....	45
	5.5 BLIND FRIENDLY PARK – CITY OF CAPE TOWN.....	47
	–ART	
	5.6 DYSLEXIA – DANIEL BRITTON.....	48
	5.7 ARCHAN NAIR.....	49
	5.8 ALPHABET FOR THE BLIND.....	50

## CHAPTER SIX – OUT OF SIGHT

<b>06</b>	<b>PROGRAMME</b>	51
	6.1 PROGRAMME DEVELOPMENT.....	53
	6.2 PROGRAMME SCHEDULE.....	55
	6.3 PROGRAMME CONTEXTUAL CONTRIBUTION.....	58

## CHAPTER SEVEN – UNSEEN

<b>07</b>	<b>CONCEPT</b>	59
	7.1 CONCEPT DEVELOPMENT.....	61

## CHAPTER EIGHT – UNSIGHTED

<b>08</b>	<b>DESIGN DEVELOPMENT</b> .....	<b>63</b>
	8.1 URBAN DESIGN.....	65
	8.2 EXPERIENCE ORDERING.....	66
	8.3 DESIGN SOLUTION.....	67
	8.4 DESIGN CHARACTERISTICS.....	67
	8.5 CONCEPTUAL SYSTEMS.....	68
	8.6 NAVIGATION AND ORIENTATION.....	68
	8.7 DESIGN OBJECTIVES.....	69
	8.8 ITERATION OF FORM.....	71
	8.8.1 DO YOU DREAM IN COLOUR?.....	71
	8.8.2 THE SCENE SEEN.....	73
	8.8.3 UNDEFINED CORNER.....	75
	8.8.4 ILLUSION OF FORM.....	77
	8.8.5 BREAKING DOWN BARRIERS.....	79
	8.8.6 THE REALISATION OF CONTRADICTION.....	83

## CHAPTER NINE – RECITED

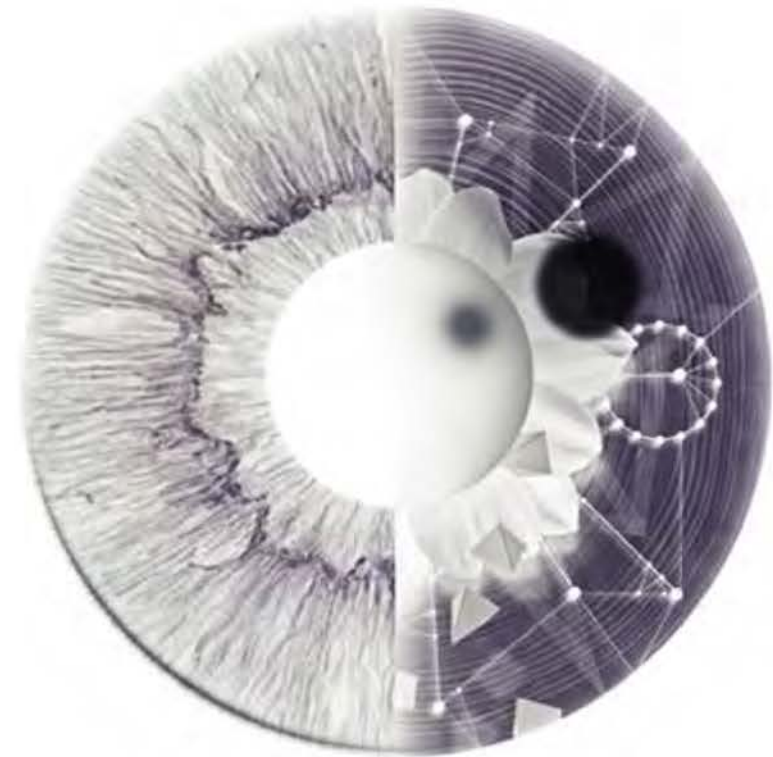
<b>09</b>	<b>CONSTRUCTION AND TECHNIFICATION</b> .....	<b>97</b>
	9.1 TECHNICAL INTRODUCTION.....	101
	9.2 CONCEPTUAL APPROACH.....	102
	9.3 STRUCTURE.....	103
	9.4 MATERIALIALITY.....	105
	9.5 ANTIMICROBIAL COPPER.....	107
	9.6 SERVICES.....	109
	9.6.1 EMERGENCY ESCAPE.....	109
	9.6.2 BATHROOMS.....	109
	9.7 SYSTEMS.....	110
	9.8 FINAL DESIGN.....	113
	9.9.1 DRAWINGS.....	113
	9.9.2 DETAILS.....	125

## CHAPTER TEN – HINDSIGHT

<b>10</b>	<b>CONCLUSION</b> .....	<b>147</b>
	10.1 CONCLUSION.....	149
	10.2 RENDERING EXPERIENCE.....	156

## CHAPTER ELEVEN – CITED

<b>11</b>	<b>REFERENCES AND APPENDICIES</b> .....	<b>159</b>
	11.1 REFERENCES.....	161
	11.2 DECLARATION.....	164





## 01 INTRODUCTION

- 1.1 PREAMBLE
- 1.2 BOUNDARIES, BARRIERS AND PERCEPTIONS
- 1.3 SETTING THE SCENE
  - 1.3.1 URBAN ISSUE
  - 1.3.2 ARCHITECTURE ISSUE
- 1.4 UMWELT CONDITION
  - 1.4.1 GENERAL ISSUE
- 1.5 ARCHITECTURE CONTINUUM
- 1.6 DIRATOWN / [AG]TOWN
- 1.7 URBAN PASSAGE
- 1.8 VISUAL BIAS
- 1.9 RESEARCH METHODOLOGY
- 1.10 DESIGN INTEGRITY
- 1.11 DELIMITATIONS
- 1.12 RESEARCH QUESTION
- 1.13 DISSERTATION QUESTION

CHAPTER

01

OUT OF SITE  
out of site

## 1.1| PREAMBLE

How does one visualise the idea of a 'street edge' or 'building corner' without vision? If one can touch a corner or draw a corner; where does one find that corner to touch?

Such concepts will differ for each individual especially those with the various types of visual impairments. For the afflicted, the term 'visual' has lost its significance and a critical point to consider is how these people orientate themselves in the space that they occupy. The loss of sight demands dependence on the remaining available senses, namely smell, hearing, touch and taste.

For the purpose of this dissertation an additional sense will be incorporated, the sense of feeling. Although touch and feeling share similar properties, the two senses can be interpreted differently. Where touch refers to the experience of handling a texture similarly to reading braille, feel relates to a sensation, for instance, the sensation of the sun on one's face or a heat source perceived to be warm or cold. The afflicted rely on their perceptions to understand their position and occupancy of the surrounding context.

The combination of textures, colours, light, and patterns in the built and natural environment creates 'ambience'; thus, the three spatial-defining planes such as walls, ceilings, and floors make a space feel 'bound' or 'unbound'. (Ching, 2007) [1]

These deliberations influence the perceptible nature and degree of insecurity people may feel within it.

While architecture is experienced through all the senses, the visual bias is unmatched and receives the majority of devotion from designers. Each of the five human senses influences our 'Umwelt' (our perceivable world) as we use an array of sensory clues for exploring and mapping our surrounding environment(s).

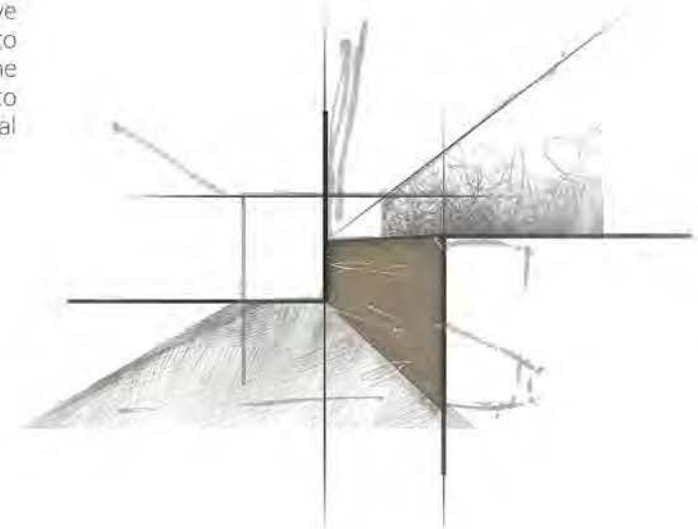
This project focuses on the role of sensory perception in architecture; i.e. the sense of touch, smell, sound, and most importantly, orientation. It aims to critically reflect on the built environment and development of sensual design parameters that support architects in their attention to designs, decisions and the haptic implications. The vestibular sense, or movement and balance sense, gives us information about where our head and body are in space. It allows us to stay up right while we sit, stand, and walk.

Proprioception, or body awareness sense, tells us where our body parts are relative to each other. It also gives us information about how much force to use in certain activities, allowing us to crack open an egg without crushing it in our hands.

The advantages of haptic design, and the constraints in the current design debate, should be identified in the collective engagement of people who are congenitally blind (from birth) since they are more attentive to non-visual senses. (W.H.Q, 2011)

If architects design spaces by paying more attention to non-visual cues, the professionals will be contributing towards a universal architecture and more inclusive environments. The intention of this dissertation is to inform and guide building professionals towards the concept of space(s) being accessible and satisfying to a larger audience; in line with the objective of universal inclusive design.

Figure 1.1.1 - The unseen barrier.



[1] Francis D. K. Ching, 2007. Architecture: Form, Space, and Order. 3rd Edition. John Wiley & Sons

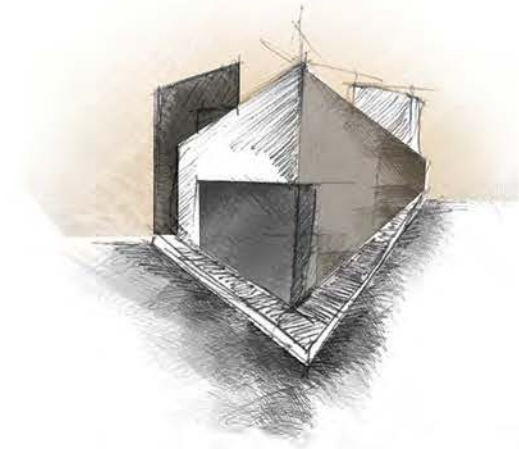


Figure 1.1.2 - To touch the corner.

One of the initial ideas that started this dissertation was the thought of describing the sensation of touching the corner of a building in a visual medium. And how important corner definition is with regards to navigation and pathfinding.

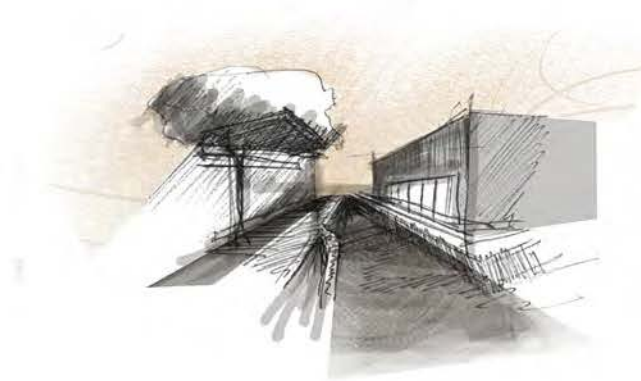


Figure 1.1.3 - What defines boundary.

The experience within a building is often limited for many reasons, what is a boundary for public is the entry point for a staff member. Boundaries are subjective to the user.



Figure 1.1.4 - The road edge.

We often draw conceptual sections through road interfaces to highlight scale in architecture. But what appears drawn does not actually communicate the experience of the road edge.

## 1.2 | BOUNDARIES, BARRIERS AND PERCEPTIONS

Ocularcentrism is defined as a perceptual and epistemological bias ranking vision over other senses (Martin Jay, 1988: p. 308). [1]

Our evaluation of architecture is too often based on an assessment or an interpretation of the visual representation. The result is that spatial experience is largely designed with a visual bias, and the other sensory experiences are mitigated through the use of specialised products.

With the advances of technology aiding the communication of architecture, Architects have partly lost the ability to communicate the experience of space. Increasingly, architecture is designed with and for our eyes.

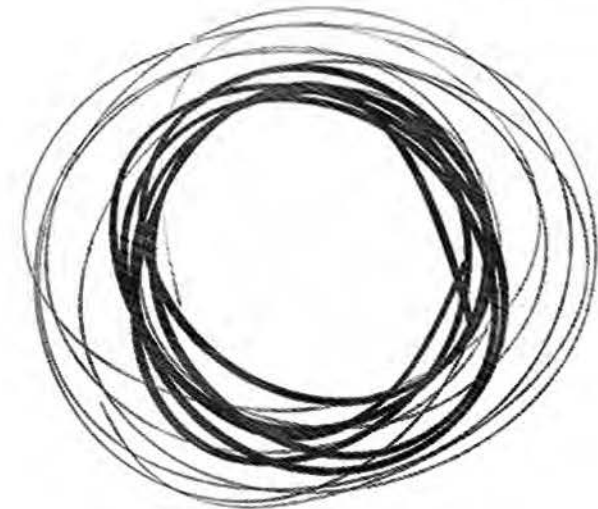
In an initial interpretation, spaces that appear clean and stylishly simple are too often a cacophony of reverberations and deflections to the ear. This sensory duality is having a tremendous effect on our health and productivity according to Julian Treasure, during a TED talk on why architects need to design for our ears. This will be covered in-depth in the theoretical chapter of this dissertation.

The idea of boundaries, barriers and perceptions was established early on in the project. It was an exploration into the vicarious experiences of blind navigation through the precinct. From a visual point of view, boundaries and barriers can be negated and perception is the first impression we experience of space. One of the first aspects identified within Silverton was the absoluteness of the current structures. Hard defined borders with roads and road edges being experienced as very limiting boundaries.

As a normative response to the clear hard defined elements, the idea of scale was brought in as a conceptual driver in form making. This concept was expressed and a continuum; with the defined edges being the two extremes on either end. To break the absoluteness of the current Silverton condition, the notion regarding a type of 50 shades of boundary was used.

This dissertation is an exploration of sensory architecture vicariously through the experiences of a blind user.

Figure 1.2.1 - Perceptable layers.



[1] Jay, M. 1988. Poetics Today: The Rise of Hermeneutics and the Crisis of Ocularcentrism, Vol. 9, No. 2, The Rhetoric of Interpretation and the Interpretation of Rhetoric, 307-326.

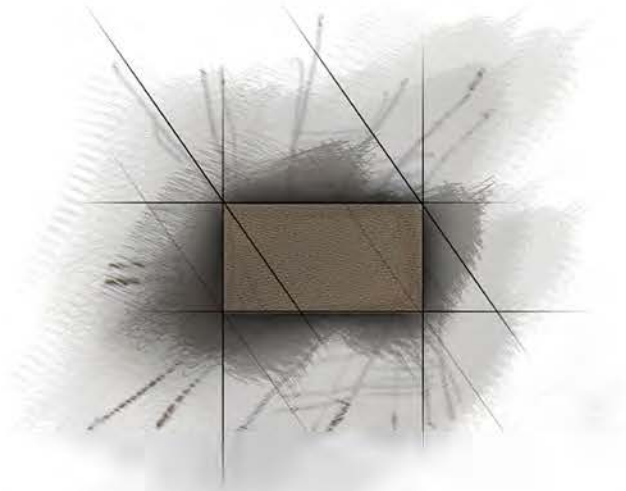


Figure 1.2.2 - Defining Boundaries.

Defining Boundaries:

Boundaries can be expressed as the edge of a particular site or building, it is the limitations that the site enforces onto architecture. This idea is a critical response to the current limitations placed onto typical properties within Silverton.

The disabled facilities in the precinct as mapped by the Silverton group posed a new set of limitations that supported the idea of boundaries. The response can be viewed as a commentary on the condition of the areas of concern, more specifically that of isolation, separation, and the absolute structures that force an end to space in the specific context.

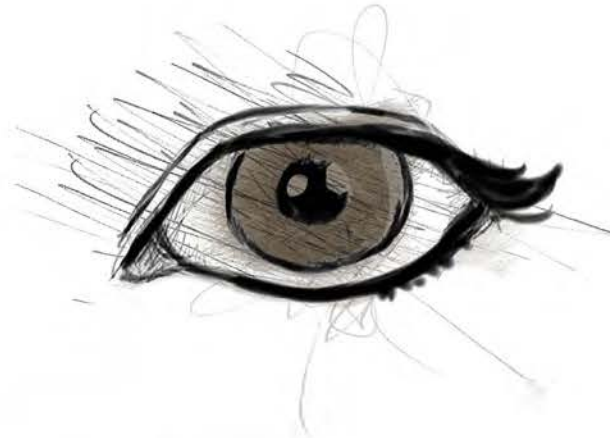


Figure 1.2.3 - Defining Barriers.

Defining Barriers:

Barriers of the limitations we unknowingly put on ourselves as we experience the world around. We unquestionably have a predilection towards visual stimulus, that we unknowingly and unwillingly forget how we experience our surroundings through our other senses.

It is only when a smell is particularly good or bad that we are cognisant of smells. It is the eye as a barrier that is the major focus of this dissertation - this is to say that space and architecture can be defined by so much more than aesthetic approach

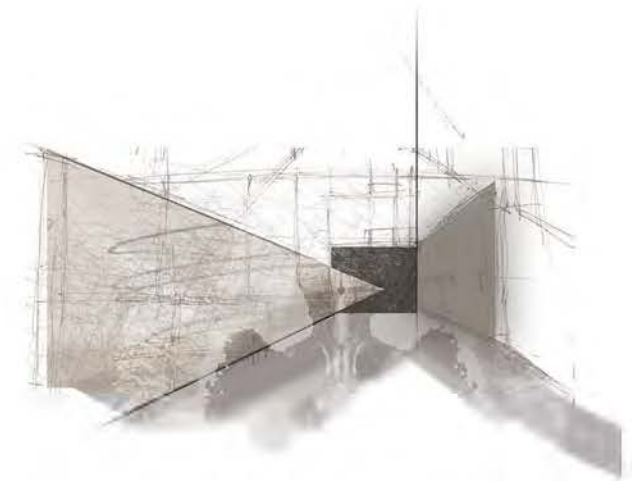


Figure 1.2.4 - Defining Perceptions.

Defining Perception:

Perception through the lens of this dissertation is the idea of a preconception of a particular characteristic of the project. Perception is the bias that influences our interpretations, Silverton and the identity of place is not infallible to this preconception.

On the surface value and through a quick study and initial visit to walk around the site, the true characteristics of the suburb started to become more evident. As a mortised experience travelling through Silverton, the beauty and intricacies tied into the site are lost in a blur of seeming chaos. The true nature of Silverton is revealed to you as a pedestrian slowly passing by each property and experiencing the sounds, smells, and tastes that are on offer.



## 1.3 SETTING THE SCENE



Figure 1.3.1 - Location of project.



Figure 1.3.2 - Silverton borders.

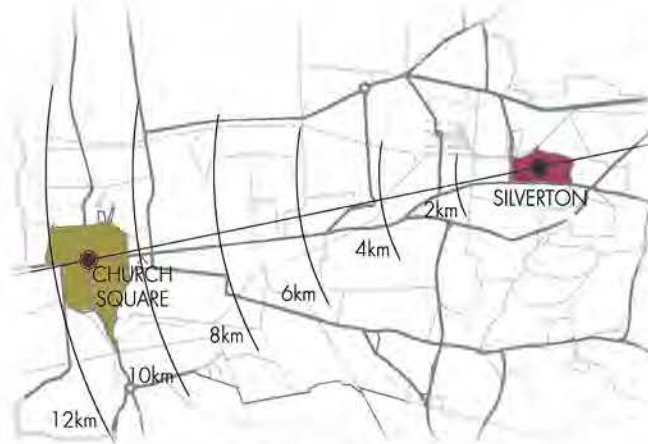


Figure 1.3.3 - Distance from Pretoria.

### 1.3.1 URBAN ISSUE

Located to the north-east of Pretoria, Silverton lies triangulated between a ridge, a river, a rail road and highway. These boundaries are the N1 highway, Moreleta spruit, the Colbyn valley ridge and the eastern metro rail line. The town developed from humble farming and mining beginnings and was consolidated into the larger Pretoria context in the early 1960's. (Heenan, 1996, p592) [1]

The suburb has two major road axes that run east to west and north south. The larger being east-west Pretoria road (R104). This road connects the further reaches of Pretoria east through to the city centre. Starting past the Cullinan off-ramp along the N4 Highway, Pretoria road was the direct axis to and from Sammy marks house. The total distance of the road stretches 54.2km and connects Mamelodi, Nelmapius, and Cullinan to Pretoria CBD. (Mendelsohn, 1991) [2]

The second axis within Silverton is Dykor road (M15), as with most North-South roads within Gauteng, the mountain ranges have dictated the limitations of movement along these cardinal routes.

Dykor road begins at a T-junction with Pretoria road and passes underneath the rail line serving as a funnel point through the old apartheid buffer zones (intentional placement of Industrial areas and rail networks in line with a natural river to separate two classifications of people). (F. Franco, 2000: 3). [3]

Silverton as a residential area was "protected" by this buffer zone to the north and to the South lay another natural buffer the ridge. The industrial belt that separated the two suburbs has over time and due to lack of proper city planning restrictions, spread and engulfed the suburb into a palimpsest of layered building typologies. (F. Franco, 2000: 3). [4]

Silverton is a suburb that has somehow managed to reshape and rezone itself to be self-sufficient regardless of the socioeconomic conditions. This is partly due to the shared infrastructure that supports the local businesses – it was noticed in the beginning, during the mapping process of the project, that adjacent factories

often share a resource type. For example, one particular factory has built a frame for a hoist on the road reserve near its front gate; while another factory, across the road, owns a forklift should any of the neighbouring premises require the delivery of heavy materials. Both these entities - two separate businesses - work together to assist their neighbour. This brought about the idea of shared resources and the programmatic development into a resource centre for the disabled within the urban condition.

The evolution of the typical Silverton property began with the deep, but narrow site division lines that allowed for the subsistence farming to augment the living conditions of the original dwellings. The detailed evolution of the site is shown the urban passage chapter, as this became a critical element to address in the projects response to the contextual informants. (SG diagram, from Tshwane municipality website)



Figure 1.3.4 - Silverton nolli

[2] Richard Mendelsohn, 1991. Sammy Marks: 'The Uncrowned King of the Transvaal'. Edition. Ohio Univ Pr.  
[3] [4] Frescura, Franco , 2000. IDENTIFICATION OF THE APARTHEID CITY. DECONSTRUCTING THE APARTHEID CITY, [Online]. Part d. Industrial Belts as Buffer Zones., 2. Available at: <http://www.sahistory.org.za/franco/urban-issues-apartheid-city.html> [Accessed 24 October 2016].

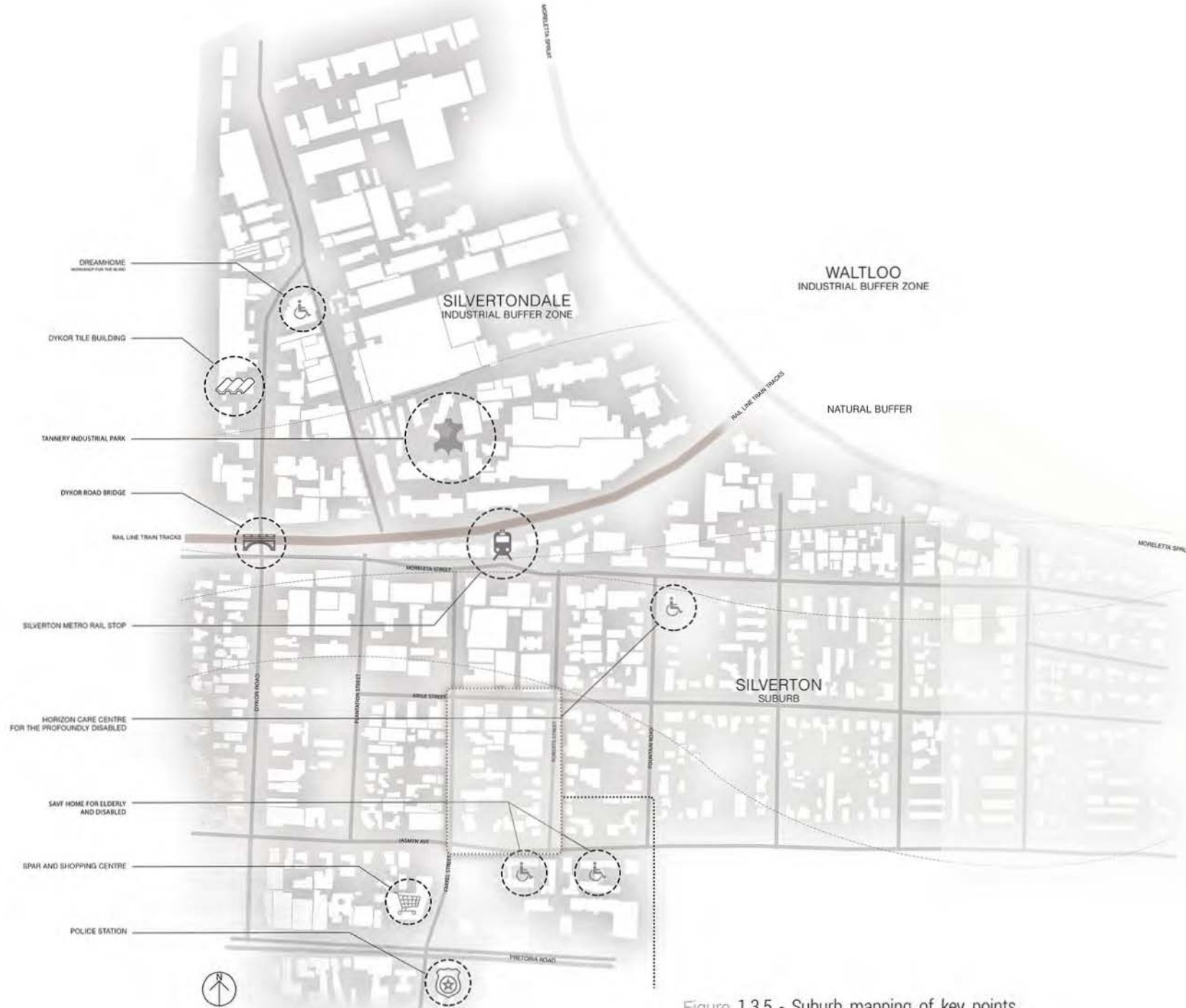


Figure 1.3.5 - Suburb mapping of key points

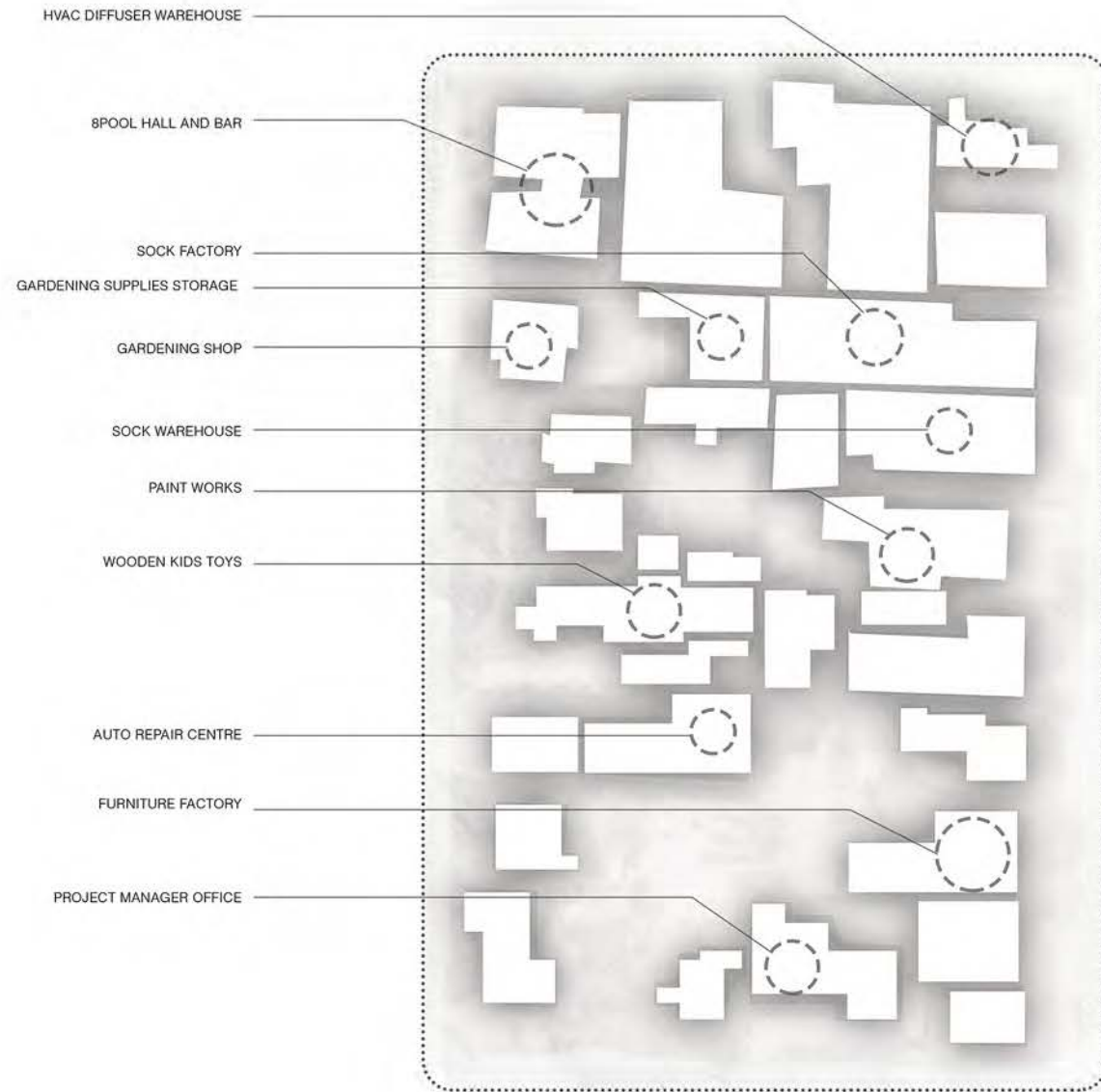


Figure 1.3.6 - Precinct Neighbouring sites.

The points of entry into Silverton highlight the transient nature of the suburb today. The eastern and western entry points appear to flow freely into and through the greater precinct. Whilst the southern entry point is a busy single lane road that funnels into the grid structured urban planning. The northern vehicular entry point serves predominantly as a service entrance and slower passage towards more industrial areas and access onto the Stormvoel onramp connection to the N1 Highway. The pedestrian movement through the site is largely supplied by the Silverton metro rail stop. As well as taxi stops along the Pretoria road axis.

### 1.3.2 ARCHITECTURAL ISSUE

The factory aesthetic is a clear and formal response to the current condition of Silverton. Contextually, the portal structure is most widely used since it was the most efficient solution for addressing the requirements of a property owner. This typology is most associated with a robust and industrial architecture; the issue becomes apparent when the sensitive programme along with a delicate user group is placed within this typology. As a result, the factory aesthetic needs to be challenged and potentially redefined.

The shape of the properties holds the key in efficient architectural design principles. With long narrow site lines, the properties are considerably large for the street edge. When looking at the most efficient form of building and feasibility studies, the following interesting observations were made: The perimeter running length of buildings facades is ideal when a building is a square or rectangle. As the running length of the facades is usually the most expensive portion of a building, this is ideal when kept as low as possible. The running length is measured against the usable floor area and this deems a building more financially feasible is a building has high floor area for low running meter length. The erven shape support this efficient and cost effective way of thinking. (Kordjamshidi, 2010) [1]

The identity of the "new" Silverton is that of industrial and juxtaposed mixed typologies. This collage of building is both liberating and limiting at the same time, as there is almost no appropriate response to context. The intention of this dissertation in addressing the architectural issue is to establish an appropriate response towards this mix of architectural typologies.



Figure 1.3.5- SG Diagram of Silverton.

### AVERAGE ERF DIVISIONS

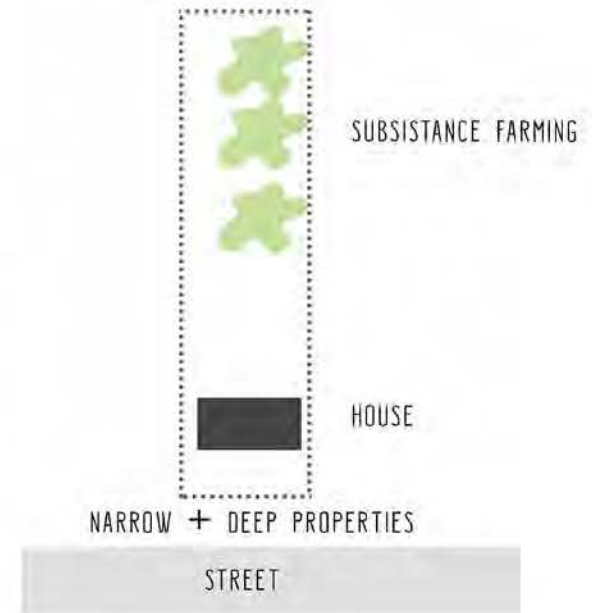


Figure 1.3.6 - Typical ERF.

[1] Momo Kordjamshidi, 2010. Massing Rating Schemes: From Energy Use Control, Massing Control, Energy and Technology. 2011. London: Springer.



Figure 1.3.7 - Street view of Silverton 1.



Figure 1.3.8 - Street view of Silverton 2.



Figure 1.3.9 - Street view of Silverton 3.

## 1.4 UMWELT CONDITION

### 1.4.1 GENERAL ISSUE

Architecture for the disabled, within the South African context, appears to have been an afterthought. Reason being, the National Building Regulations provides a minimum requirement for the "inclusion" of users with disabilities. The most direct path from A to B is considered for an able-bodied user; where an alternative supplementary path is considered for wheelchair and/or disabled users.

Realising that the South African population of disabled persons is less than 4.3%, it is important to note that this statistic is temporary. Fortunately, South Africa is not in a situation of war which causes maimed bodies. The precedent study will examine an example of architecture for blind war veterans. (Signgenius, 2011) [1]

This dissertation will encourage and propose towards designing for the minority – the relatively small percentage of visually impaired; with the hope that the inclusion of a marginalised group of people will influence the interpretation of space for the majority.

The actions of and reactions towards the Apartheid city plans have been well documented within Pretoria; and the repercussions of this seclusion and isolation remain evident today (F, Franco, 2000: 3) [2]. Similarly, to the rest of South Africa, the "town" of Silverton did not manage to escape this regimented approach.

Up until the 1970's, Silverton functioned as a separate, small mining town from Pretoria. As the city started expanding to the east, Silverton merged with the outskirts of Pretoria and is now considered a suburb within Tshwane. (Mendelsohn, 1991) [3]

The marginalisation of people, in the context of Pretoria, meant that the "unwanted" people were moved and displaced into the outskirts of the city. This group included the poor, disabled and racially classified as non-white. Through the exploration and investigation of Silverton it became evident that there are several facilities allocated to manage the sub-categorised groups of marginalised people. These facilities are documented in the Silverton urban group vision and range from the Home for the Elderly and Profoundly Disabled to the furniture workshop for the blind.



Figure 1.7.1 - Our illusion of disability.

[1] Signgenius, 2011. Disability statistics. [ONLINE] Available at: <http://www.signgenius.com/info-statistics.shtml> [Accessed 4 October 2016].

[2] Frescura, Franco, 2000. IDENTIFICATION OF THE APARTHEID CITY. DECONSTRUCTING THE APARTHEID CITY, [Online]. Part d. Industrial Belts as Buffer Zones, 2. Available at: <http://www.sahistory.org.za/franco/urban-issues-apartheid-city.html> [Accessed 24 October 2016].

[3] Richard Mendelsohn, 1991. Sammy Marks: The Uncrowned King of the Transvaal. Edition, Ohio Univ Pr.

## 1.5 ARCHITECTURE CONTINUUM

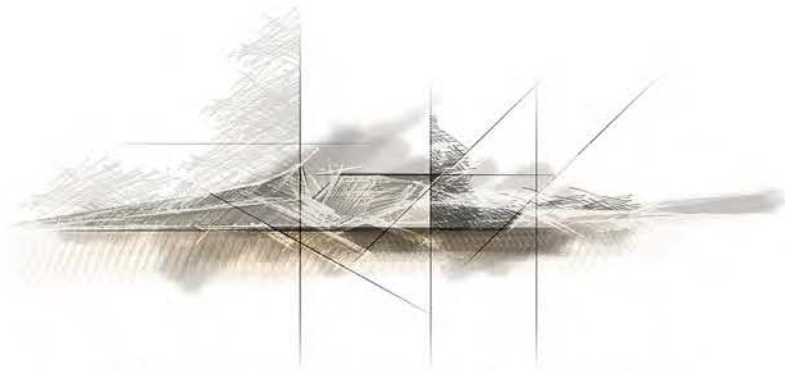


Figure 1.7.1 - Conceptual diagram of passage through Silverton.

One cannot deny the current position of the Architectural profession; where the terms 'modern' and 'contemporary' are merely adjectives used to supplement Architects' egos and predilections. As a result, the profession is in great risk of losing credibility and becoming a type of pop-architecture that is badly replicated and loses integrity each time a 'copy and paste' occurs. This new era of post post-modernism has been the recurring pandemic that led to the Tuscan and Bali plagues that gentrified the privatised and secluded suburban living in Pretoria.

Corporate architecture is no stranger to this mass identity dilution within the current paradigm. This is a major problem with global architecture and essentially it is the forced placement of an identity of a different time and place onto the South African context. To make matters worse, these buildings have been designed to compete for attention; each development ultimately attempting to claim the top spot in a magazine without considering implications with regards to the social surroundings and/or the integrity of the Architectural profession.

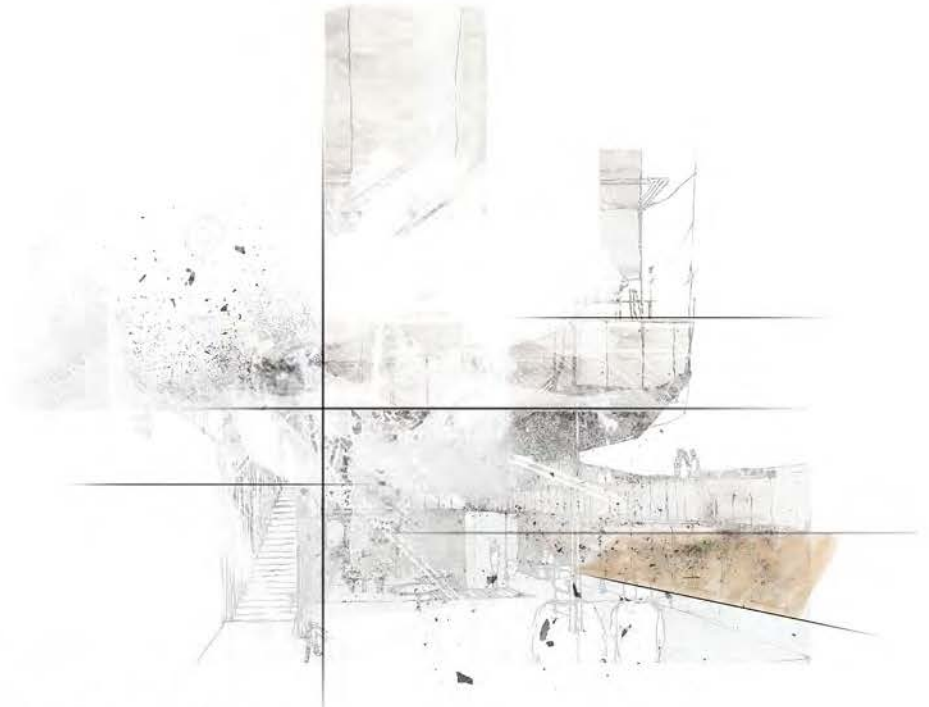


Figure 1.7.2 - Our illusion of disability.

The Architectural discourse in South Africa is a concern. However, the solution does not lie in the finger-pointing or blaming of magazines and sell out professionals. The visual bias found naturally within the human race plays the greatest role in the affliction we currently face. Another possible contributing factor is the education and knowledge provided to architecture students. From First Year, through to Masters', aesthetic value and seductive imagery often manages to shroud the lack of consideration for deeper phenomenological aspects which define space. Keeping in mind, architecture is essentially the careful design of how humans perceive the spaces in which they occupy.



## 1.6 DIRATOWN / [AG]TOWN

As a group framework we began looking at Silverton for its core characteristics. These elements defined the spirit of Silverton and was conceptually represented through the imagery of (figure). Silverton is place of manufacturing and creating. It is a place of mass production and at the same time bespoke services create unique elements. It was summarised casually as a drive through builder's warehouse that supplies a full range of housing items from various steel profiles down to customised lampshades.

The spirit of Silverton lies in the transformation of the standard items, handmade into the bespoke item you had in mind. It is a place of working with tools, welding, screwing and grinding to create front driveway gates and furniture for someplace else. Essentially it is the beauty in the process of creation that best encapsulates the spirit of Silverton best.

Our group vision was aimed at best expressing the core values of Silverton, we decided to name it Diratown at first. 'Dira' is the Sesotho word for 'to make' as this was historically a town separate from Pretoria we wanted to celebrate the identity of place. (Oxford dictionary online.2016)

We began with a mapping process of Silverton, where we highlighted different nodal points within the suburb. These nodal points happened to lie on the two axis of main passage through the larger precinct (figure). The mapping process revealed many of the issues as previously discussed in the urban condition chapter and highlighted the ideas of the absolute structure predominately placed on its site. A second result from this mapping process was the concept of transaction spaces. Transactions in this sense of the word is not necessarily a monetary transaction. It is the idea of exchange and bartering whereby anything engages with something else and both elements leave having benefitted from the exchange. As stated earlier, the amount of facilities dedicated to the disabled people of Pretoria was a critical revelation, and opened up a key avenue for investigation.

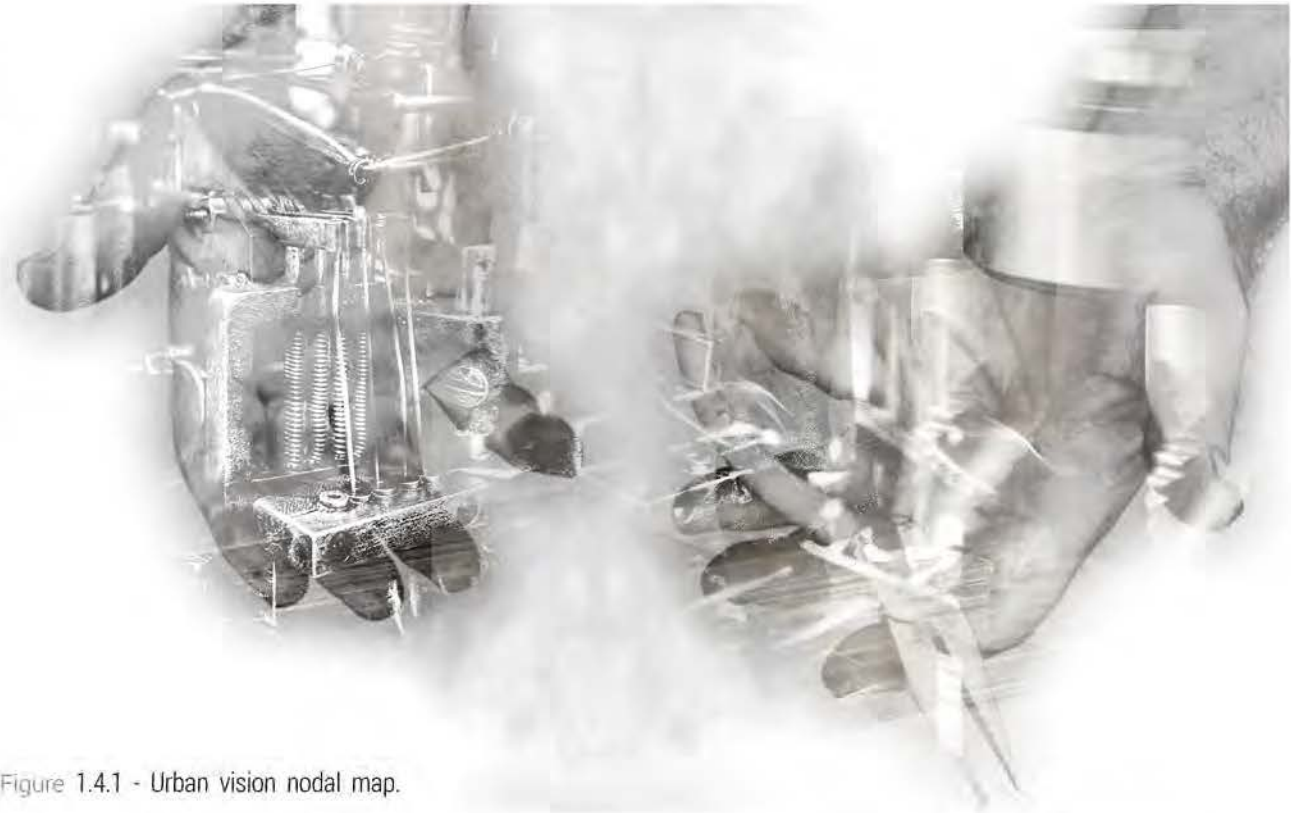


Figure 1.4.1 - Urban vision nodal map.

Our group framework proposed a pathway that celebrated the spirit of Silverton and connected the identified nodal points and responded to the lack of pedestrian infrastructure. This route would supposedly pierce into existing factories and reveal the processes hidden from the public behind the absolute and imposing facades. Our response was a commentary on the mapped conditions and we received a lot of feedback regarding key notions such as security of the facilities. The key concern was that the pathway would end up becoming just another back alley to these factories as they isolate and cut themselves off to engaging with the pathway.

One of the intentions of this pathway was for it to provide a place of safe passage for the disabled people of Silverton. This was developed further and became a route of pedestrian trade at each factory on the path. Each facility was looked at and developed into a store that either sold a by-product of the factory process or a new item that would draw people into engaging with the spaces. For example the factory that produced socks only sold bulk and wholesale and it was not possible to purchase socks directly from the factory. We proposed that a factory shop be established and sell socks on the site.

## 1.7 URBAN PASSAGE

With further investigation, the idea of a haptic pathway was introduced. It allowed for the "selling" of an experience rather than a product. The same sock factory dealing with textiles would use the materials to create an engaging environment for disabled people such as the mentally disabled or blind. Coffee vendors positioned on the pathway would intentionally roast beans to create a smell within a particular point on the path. Sounds of drills, hammers and industrial machinery would provide an audio landmark that identified a person's position on the path. These sensory devices and the experiences that accompany them were mapped and detailed further in the concept chapter of the dissertation.

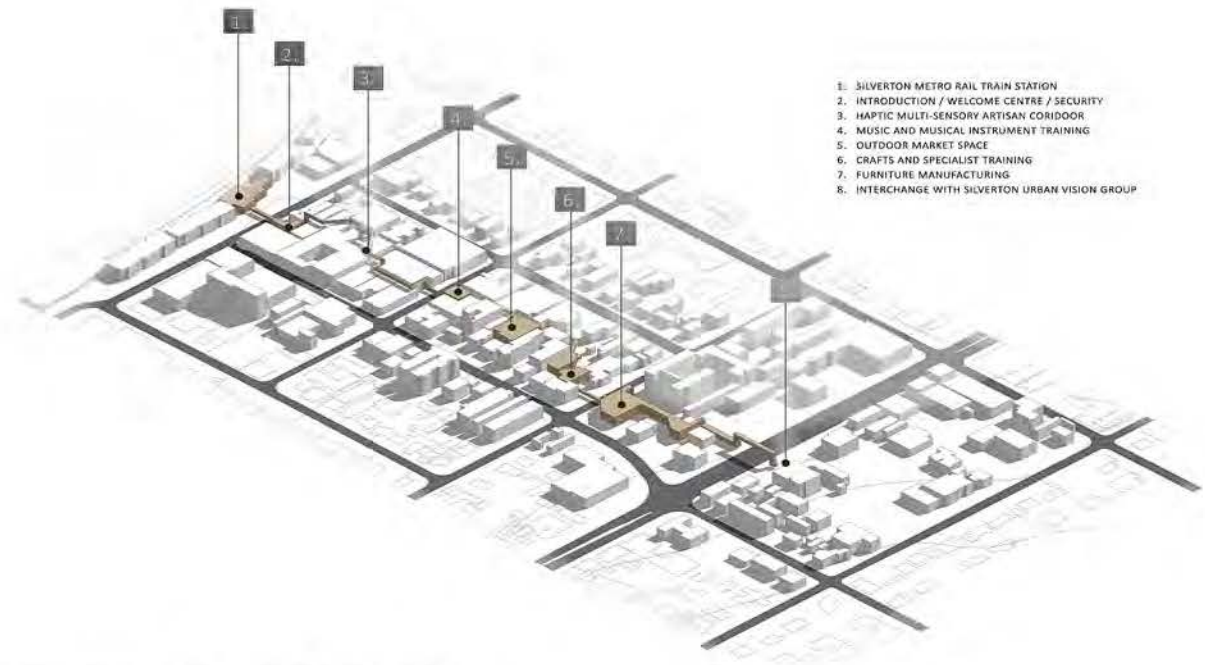


Figure 1.5.1 - Urban passage conceptual diagram

At an urban scale, the project placement was positioned along the artisan corridor of the Silverton group framework. The site choice and location was considered and selected by noting the relative position between the transport node and the civic nodes of Silverton. It is important to add that a visible scale of natural elements is clearly defined on an aerial photograph. This prompted the staging of the haptic pathway, with the gradual increase of trees and plants, within the urban industrial precinct. The response on an urban scale was to direct the sensory experience from that of an artificial or a manmade experience through to an experience more influenced by nature.

Figure 1.5.2 - Urban passage haptic route.

Currently, the precinct has the following programmed facilities:

1. Pool hall and bar – entertainment
2. Air diffuser assembly – secondary industrial
3. Sock factory – primary industrial
4. Gardening supplies – tertiary wholesale
5. Car servicing – primary service
6. Engineering office – consultant service
7. Truck trailer assembly – secondary industrial
8. Furniture manufacture – primary industrial
9. SAVF Retirement home – healthcare service

These programmes are incredibly diverse and this is only on the focal precinct, on a greater scale Silverton is home to even more dynamic programmatic functions. These ranging occupations within the suburb allow for it to be considered a resilient and robust node of interaction.

The urban passage identified the fabric of this industrial micro-city Silverton as a resilient and robust focal precinct. The trade along Pretoria road served as a service backbone to the attached smaller roads; industrial complexes consisting of converted houses are the typology of the area. The spirit of Silverton can be described as a manufacturing hub for Pretoria; occupied by furniture shops producing customised lamps and tables, as well as automobile trade and servicing stations.

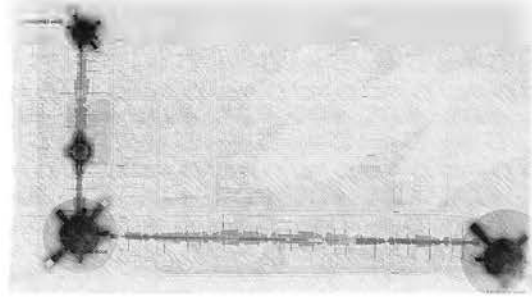
automobile trade and servicing stations.

Silverton was previously designated as a suburb for the supposed lower-class white workers on the Spoornet train and rail systems in Koedoespoort. These workers were offered the opportunity to purchase property from the rail line with low interest rates as a means to eventually gain title ownership. The urban planning and allocation of properties dictated that longer, narrower site boundaries be used; as it allowed for the subsistence farming of vegetables for each household. Upon further observation, this idea of subsistence is still present within the enduring community still living in Silverton. (Burton, 1984.) [1]

As a result, the typology of Silverton has evolved from low-income housing to industrial. Reason being, the houses that would be of heritage value today were placed near the road side of the property. By not facing north, these dwellings were set out to be parallel with the street and positioned to allow vehicle passage through a side entrance. It was ensured these entrances were wide enough to service the subsistence farming taking place in the large backyards.

As the area evolved and less people continued working on the rail networks, the residents started utilising their larger backyards for a secondary source of income. It was at this stage that driveways began to extend deeper into the erven; and secondary dwellings were built and put up for rent. The next phase of re-appropriation for Silverton was the start of the informal car service industry. With longer driveways, mechanics were presented with the opportunity and ability to work from their homes. Silvertondale, north of the rail line, was always considered an industrial buffer between the supposed white and black areas due to Apartheid planning. However, with the evolution of properties in Silverton moving towards a more service-orientated demographic, the industrial buffer was allowed to spread south over the train lines and Silverton grew more industrial.

Many of the original houses were then connected to the second dwellings and converted into offices; with the manufacturing space situated at the back of the properties. The access of the old driveways, servicing the deep back gardens, became ideal for the safe delivery of valuable, industrial materials. As for the houses that did not conform to the rapid shift in industrialisation, they were left with no choice but to comply as the area became increasingly unsafe at night. These dwellings were difficult to sell, and often reached a sad point of dilapidation. The most efficient and cost effective approach to utilising such houses, was to convert them into junkyards.



Regarding the urban position, the initial site investigation was located near the Silverton metro rail stop. The intention was for the project to be more in line with a transport hub than the current programme of a resource centre. During the research phase of the project, the ideas of the transport hub against the general urban and architectural issues were critically assessed; however, the results came back unsuccessful.

The framework proposal had suggested the placement of key programmes along the artisan corridor; where the most appropriate position on this pathway was considered between the civic and transportation nodes. The urban ordering device determined that the site location should be in a programmatic-appropriate position. As the programme developed into the resource centre for the visually impaired it became evident that the most appropriate location was closer to the civic node. However, while inaccessible from the main Pretoria

road, remaining a key point on the artisan corridor.

This gave rise to the haptic pathway that becomes an urban introduction to a fully immersive sensory experience. Smaller programmes were considered along this pathway to reinforce the idea of a sensory experience. Ideas involving a coffee shop and textile outlet facing the pedestrian edge responded to the frameworks proposal of transactions as identified with the zeitgeist of Silverton.

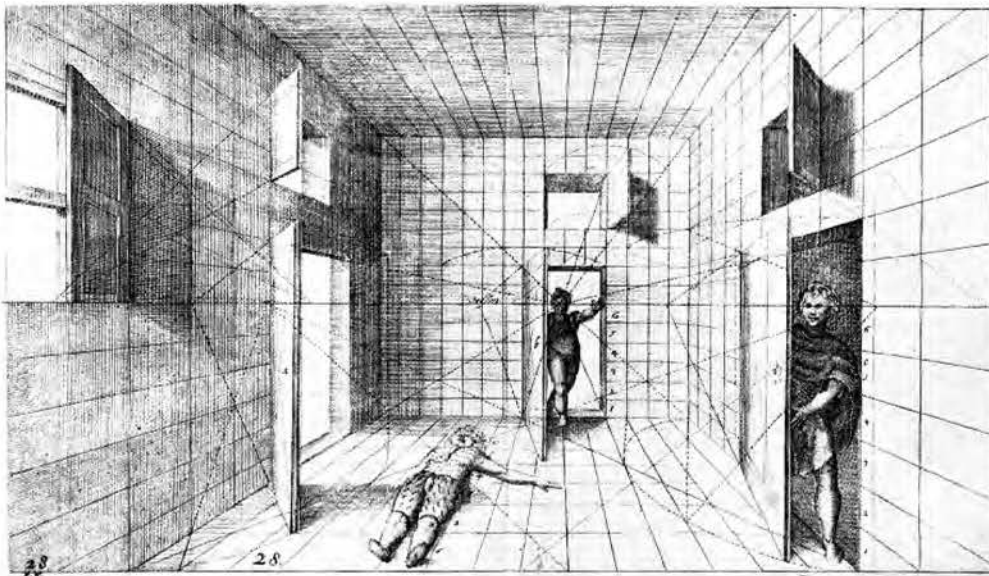
The intention of this urban landscape project comprised similar goals to the main architectural issue stated; the definition of space and the human phenomenological responses through non-visual stimuli.

The mundane Silverton experience informed the ordering of the urban elements by means of sensory escalation. The functions were positioned in an attempt to lure a pedestrian into the pathway via smell; hence the coffee shops and bakeries as the introduction. The functions start morphing into a more tactile experience as the backend of the sock factory serves as an introduction to the sense of touch. The organisation of the urban sensory experience became increasingly evident through a detailed site investigation where the experience transformed from a manmade experience to an alternative, natural experience.

The initial position for the facility was on the main north-south axis of Silverton called Dykor Street. This position was reassessed against the urban vision proposal; the site choice was not appropriate for the group intentions and the site choice needed to be reconsidered.

The direct line between transport and civic nodes provided a base to start from, this anchor point was the start of the investigation into a contextually appropriate. The idea of shared resources of Silverton became a key informant in the site selection process. The current buildings and functions along the haptic pathway were documented and assessed for the potential to share equipment and resources. This was identified as one of the critical factors that has led to Silverton being considered a resilient suburb.

[1] Burton, 1984. Early railways in the Vaal. In: SOUTH AFRICAN HISTORICAL ARCHIVES (ed.) *Industrial Archaeology in the Central Region of the African Union*. Grahamstown: Grahamstown.



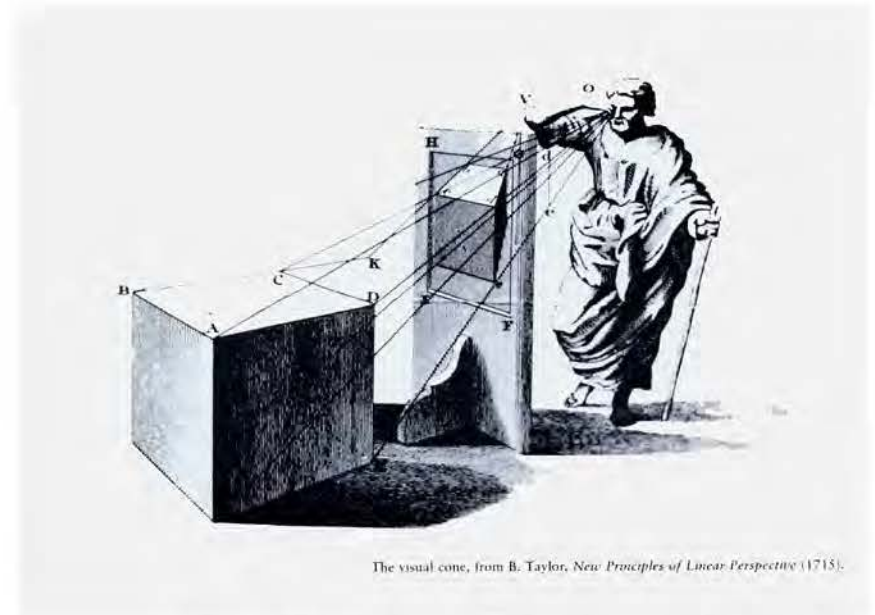
JAN VREDEMAN DE VRIES, *Perspective* (Leiden, 1604–5), plate 28. Courtesy, the Bancroft Library, Berkeley, California.

Figure 1.6.2 - Perspective, (Jan Vredeman de Vries 1604)

A perceptual and epistemological bias ranking vision over other senses in Western cultures. An example would be a preference for the written word rather than the spoken word; in which case, it would be the opposite of phonocentrism.

Both Plato and Aristotle gave supremacy to sight and associated it with reason. Hence, the sayings 'seeing is believing'; 'see for yourself', and 'I'll believe it when I see it with my own eyes'. When one understands, they often say, 'I see'. 'Seeing eye to eye' is used when two or more people agree; and people imagine situations 'in the mind's eye'. 'See what I mean?' Commentators such as McLuhan argue that literacy and the printed word have played a key part in visual bias as a way of knowing. (oxfordreference.2011)

[1] Keller GB, et al (2012). Dependence of Attentional Signals on Primary Visual Cortex of the Behaving Mouse.



The visual cone, from B. Taylor, *New Principles of Linear Perspective* (1715).

Figure 1.6.3 - New principles of linear perspective (B. Taylor 1713)

The evolution of the eye is a fascinating topic; and the detailed scientific studies conducted to uncover the complexities involved in sight development are seemingly endless. The latent effects of this phenomenal biological example are yet to be fully explored. It can, however, be expressed that, according to Paul King (Computational Neuroscientist), we use roughly 60% of brain function to perform vision-based tasks. King goes on to explain that about 20% is dedicated to vision-only tasks, while the remaining 40% is split between vision-motor, vision-attention and vision-spatial interpretation. These scientific estimates highlight the predisposition that the human species is a naturally visually-biased mammal. (Keller GB, et al .2012) [1]

We, as Homo sapiens, are very easily seduced by imagery; and Architects are not immune to this. Our spatial understanding often plays the supporting role to the 'more important' factors of view-framing or aesthetic appreciation. An interesting, conceptual thought experiment would be to examine and define spatial properties through a non-visual approach; while highlighting the visual-bias of the current approach within architecture.

# 1.9 RESEARCH METHODOLOGY

Context analysis, secondary data analysis, content analysis and historical studies were utilised to formulate an in-depth Eco systemic and contextually thorough investigation. Several discussions with visually impaired people gave a better understanding of the inept current condition that blind people experience daily.

The initial approach for this project was to address my own visual bias, to try and better understand the sensory world around me. As part of the investigation I blind folded myself to get an introduction into the unsighted world. This introduction was the basis point of just how difficult it is to navigate and experience space.

Precedent and case studies of built and unbuilt projects of a similar nature gave a point of departure for theoretical investigation into sensory architecture. Interdisciplinary investigation led to critical thinking about the world of sensory experience, examining art forms such as intended for blind people formed part of the understanding and importance of touch as a means of interpretation.

Theoretical reviews on sensory architecture such as "the eyes of the skin" – by Juhani Palassmaa were critical in translating an awareness of non-visual elements into the built fabric of architectural design.

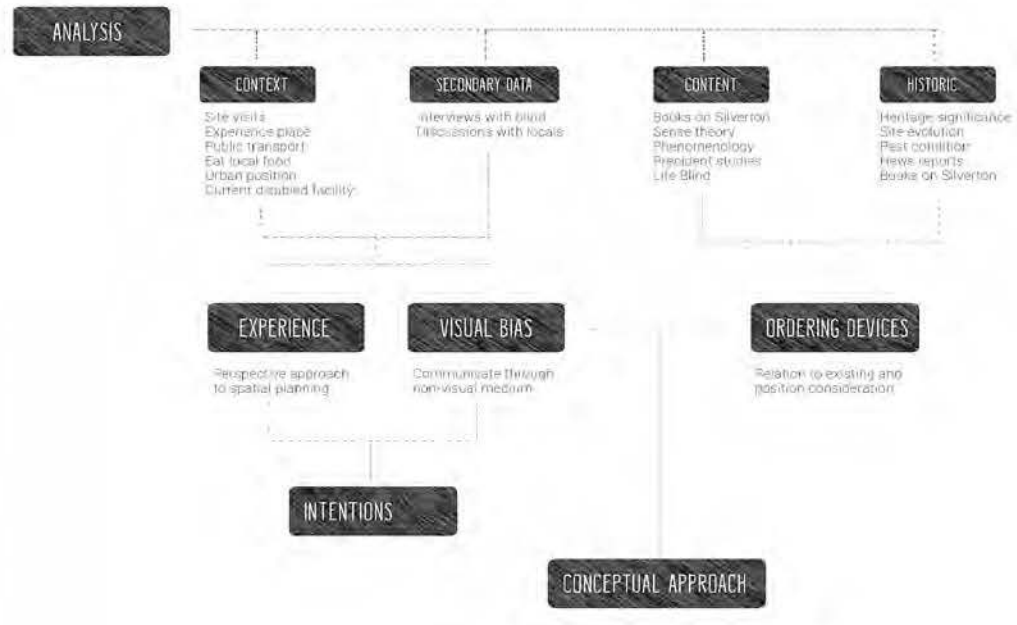


Figure 1.9.1 - Research Methodology.

## 1.10 DESIGN INTEGRITY

Design integrity is an approach where the design of information and the product is assessed. It involves critical reflection regarding the design presentation, as well as the development of the most appropriate response to the concept. Initially, the use of braille was considered as a pattern for architectural identity. This pattern was to be used as a screening device in the architecture; and a method of expressing the intentions through the presentation.

The identity design of the document was a focal part of the analysis; reviewing the presentation of the ideas discussed in the dissertation in a manner accessible for the intended users of the project. To illustrate the significance of this factor; the broader understanding of communication theory needs to be understood.

If the ideas and concepts within this project were to be presented using the standard methods of design communication, the issues highlighted would have most likely been left unaddressed. The lack of alignment displayed between the conceptual thinking and practical execution of the ideas would best be described as disingenuous.

The entirety of this document and the project is blatantly aware of, and intentionally avoiding the trap of seductive imagery to present the ideas and views expressed. However the presentation of the project was considered for how a visually impaired user would understand the drawings presented. This led to the following design investigation. The presentation would require a touch sensitive approach to best illustrate the non-visual consideration. The same idea was developed for the introductory part of this project as a form of mixed media presentation. In the investigation into audiobooks for the blind, Andre Terreblanche who reads and records Afrikaans books for the blind was approached to read the dissertation and commission a short audio book of the Blind by sight project.

Addressing the visual bias in architecture meant that the project required a presentation and document and model that communicates the same message as the "Blind by sight" project intentions.

Presentation:

The presentation board was considered as the default means of communication for an architectural project. The idea of pinning up a series of sheets that graphically represents architectural intentions was challenged and critically assessed. The question of how to transmit a message of tactile expression of architecture in a non-visual medium was addressed and designed. The solution was expressed to address the visual and non-visual audience, through means of cross-medium presentation as opposed the current manner of providing a description in braille for a blind person to imagine the visual.

By using the multi-medium presentation approach, the following was a consideration for the design presentation for the project. Design a presentation that addresses the visual bias that is innate in human phenomenology. The design of this presentation technique should however not be limited to the non-visual senses and should be interpretable by means of sight.

The ability to interpret a presentation through the means of un-sighted communication was examined through the vicarious imagining of each of the sensory devices.

Smell: This sensory device would be possibly the hardest to communicate through as smells are difficult to artificially manufacture for the purposes of this dissertation

Sound: Addressing the presentation of the project through the medium of sound is possible, it would require either a musical mind to interpret the visual elements into setting a mood through a song. This becomes a means of communicating very basic elements but also allows for a lot of misinterpretation.

Taste: As with smells, taste is an impractical and implausible solution for the brief.

Touch: The experience of touch is the most appropriate avenue for investigation into the brief requirements. Touch offers an attainable means of dual sensory communication as textures can be felt and interpreted by the eye.

An idea of 3D dual medium presentation was explored by means of creating embossed and protruding elements that could be felt by an unsighted audience. This became a heavy means of pinning up a project presentation, the technique was then iterated to rather be an indented presentation that was held up by designed supporting mechanisms as detailed bellow.

The written document:

With the same challenges as the presentation, a written document is a visual means of transferring information. Initially the document was to utilise texture as the secondary sensory device, this however was not possible as the document had to conform to the standard set of limitations as a printed book and journal. The storage and placement of a document for public review would mean small elements for tactile expression would be damaged or impractical to file.

Part of the programmatic requirements for the building was the facility for audiobook recording. This became an interesting investigation into the structure of a document that is to be read and recorded in a logical and linear flow for audible and easy listening. Please see the attached storage device for the audio recording of the dissertation.

The chapter titles for this document were intended as a commentary on ocularcentrism and the manner in which many expressions still use the visual as a means of explication. Some titles are homophones that are a play on words to convey the intentions or revelations of that chapter.

**Chapter One - Out of Site |** Out of site refers to idea of the concept and programmatic intentions being a product of the site. This dissertation and research field was generated out of the conditions of Silverton. It was only by mapping Silverton and discovering the disabled facilities that this project was developed.

**Chapter Two - Insight |** Insight is the key knowledge in understanding the intentions of this dissertation as a response to the problem statement. Insight also refers to the shortened summary of information that adds a perceptual lens into the potential outcomes of this document.

**Chapter Three - Oversight |** Oversight expressed here is both dictionary definitions of the word. 1. The unintentional failure to notice or do something. Referring to how these principles are not used as architectural fundamentals. 2. The action of overseeing something. Referring to the principles that govern the architectural investigation.

**Chapter Four - Foresight |** Foresight celebrates the valuable theoretical contributions that have been made to architectural, communication, and phenomenological fields of study by looking at the most influential people in the making of the thinking behind this dissertation.

**Chapter Five - Seen |** Chapter Fives title describes the action of looking at precedent studies to influence the design. It is also a past tense action, meaning that by understanding past projects key elements to a project can be uncovered.

**Chapter Six - Out of Sight |** Chapter Six begins where chapter one ended. It refers to the historic approach to dealing with the "issues" of past urban design. Out of sight, out of mind. This chapter highlights the programmatic responses in dealing with the unsighted.

**Chapter Seven - Unseen |** Unseen, refers to the conceptual approach of designing the unseen elements for the unseeing. It is the conceptual driver that defines everything but the seen elements in architecture.

**Chapter Eight - Unsighted |** The design development chapter of this project had a critical contribution to make towards architecture and the process in which form is generated. Unsighted refers to these core objectives to reveal a development of non-visual systems in form making.

**Chapter Nine - Recited |** The construction and technification chapter has been labelled the recited chapter as this explains the purpose of technical development within architecture. Recited is the redoing and practicing of each element that enhances the conceptual driver within architecture.

**Chapter Ten - Hindsight |** The conclusion of this project is titled hindsight as this reveals the project shortfalls and outcomes and potential avenues for further study.

**Chapter Eleven - Cited |** To finish of the project structure the referencing term, to cite a document of academic journal was used as the chapter title.

#### The Model

The model is inherently a tactile expression of architectural intentions. However, it would need to be mindful of touch and the requirements of being durable. The ideas of Willem Boshof alphabet for the blind were investigated for model presentation. However, this avenue of exploration was not applied and the conventional presentation of a built model was used. (Sophie:2004) [1]

[1] Pieter, Sophie (ed.) 10 years: 100 Artists – Art in a Democratic South Africa Bill Roberts-Cape Town 2001.  
Alara, Pamela, Martin, Mbuli: COEXISTENCE (Contemporary Cultural Production in South Africa) Rose Art Museum, Brown University 2009.

## 1.11 DELIMITATIONS

This dissertation does not propose a general solution for the treatment of disabled. On the outset the ideas expressed, attempt to reverse the general rules as proposed by SANS building regulations. (SANS10400:2011)

The "Blind by Sight" project deals with a specific context that was established through a specific evolution of the site with its own particular conditions. More specifically, the rapid change of a low-income residential suburban area, to an industrial and manufacturing specific precinct.

The investigation seeks to integrate the sensitive nature of dealing with the disabled within the rough and industrial environment. Programming the spaces to empower the blind person to become an integral member of society who is self-sufficient. Through the architectural investigation the key outcome of this dissertation would be for other students and lecturers to recognise the responsibilities of architecture professionals.

It goes without saying that the difficulties relating to this subject and the presentation of the information to follow through with the concept is near impossible. The communication of architectural standards to express a non-visual projection of both the conceptual development as well as the technical resolution of such an idea is challenging to say the least.

This point was stated as a potential avenue of investigation into multi-media design. As the author is not an expert in the field, some presentation elements will be expressed in a visual format. However, attempts will be made to communicate sensory experience non-visually.

## 1.12 RESEARCH QUESTION

What conceptual approaches can be developed to vicariously experience hypothetical space? Is it possible for architecture to communicate a message of thought provocation, such as – is my experience limited by the use of my eyes?

Current regulations provide a basic requirement for dealing with spaces for the disabled, is this a good enough approach to dealing with designing for disabilities? Can architecture be better used as a device for social cohesion and inclusive environments for all types of users?

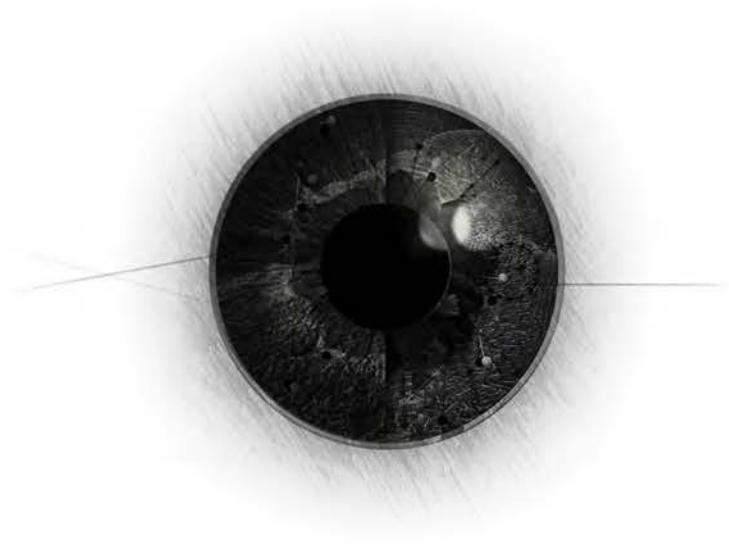
Can architecture form be an interface between human and environment, acting as the haptic response tool to inform a disabled user about the world around them?

## 1.13 DISSERTATION QUESTION

Can experiential architecture provide an interface for the idea of sensory transactions between human and environment?

Can a hypothetical facility provide an intangible and unquantifiable value to context if it cannot be measured through typical evaluation tools?





02 FOCAL POINT

- 2.1 PROBLEM STATEMENT
- 2.2 INTENTIONS



CHAPTER

02

INSIGHT

## 2.1 PROBLEM STATEMENT

The mere thought of going blind is possibly one of the most unnerving and frightening challenges anyone can imagine. In the IFL-Science documentary on blindness, the researchers attempt to uncover how blind people dream and what their dreams entail.

An intriguing and profound conclusion, which involved those who had the ability to see and since lost it, revealed that they often experience nightmares due to the lack of control they feel they have over the spaces

they occupy. This incredibly sensitive topic is one that is receiving very little consideration in terms of architectural design. How can architecture become a device that proposes space that benefits the disadvantaged?

The forced placement of a sensitive programme within an unforgiving context demands consideration towards designing in such a way that it is both sensitive and contextually appropriate. An example of this is the facility for the visually impaired within Silverton. With

the project's goal directed towards an architecture that is not visually biased; the question is to what level of integrity does the concept drive a form that becomes a perfect example of a background building?

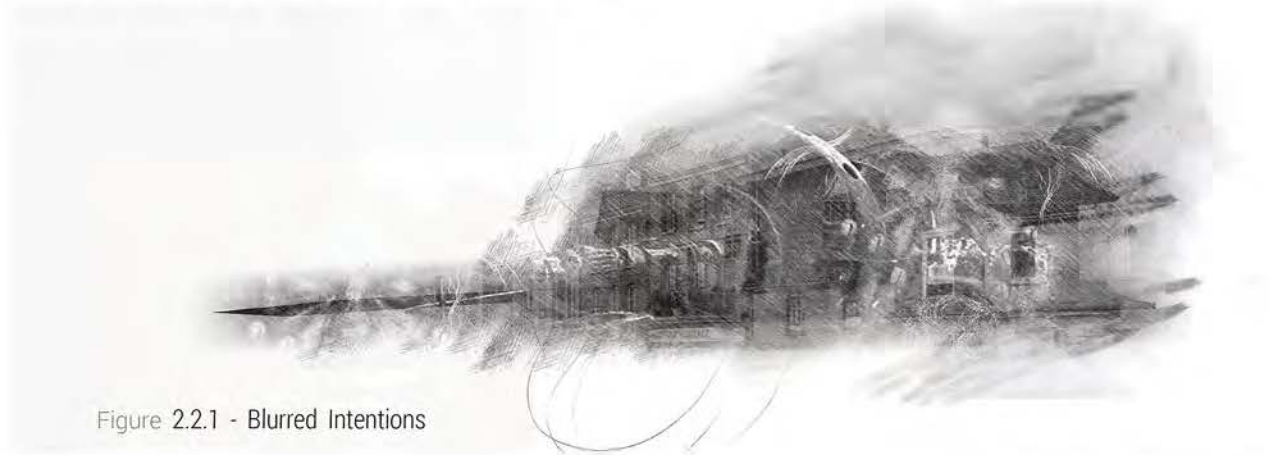


Figure 2.2.1 - Blurred Intentions

## 2.2 INTENTIONS

The intention of the project is to highlight the visual bias within the Architectural profession and industry. This would be expressed through means of way finding exploration. In a typical public space within the South African context, navigation is achieved via signage and/or information boards. This is an ocular-exclusive means of direction and navigation.

The intention for the 'Blind by Sight' building is to create a means of navigation that utilises other senses such as texture and sunlight. Therefore, should a sighted user attempt to navigate the immediate context, his visual navigation should be disadvantaged. This will be achieved by screening off areas that appear inaccessible; however, through following a textured floor path, the user may experience the designed space.

The initial intention of the project was to design only for 100% blind people. This was under the impression that the solutions would cater for all types and levels of blindness. Upon critical reflection, this idea was challenged and revised. As a sensory device, the architecture is to be an immersive experience aimed at fully blind people.

Given that some people gradually lose their sight, or that visual impairments often render people without the ability to focus or view in detail; a different investigatory approach was required.

To a visually impaired user that has the ability to identify shapes and colours, contrast becomes vital in their navigation through space.

This became a key driver for the interior architecture of the facility for the visually impaired. It was also established that the centre had the goal of becoming a safe environment for the blind; however, it still had to enable the users to be prepared for the greater context.

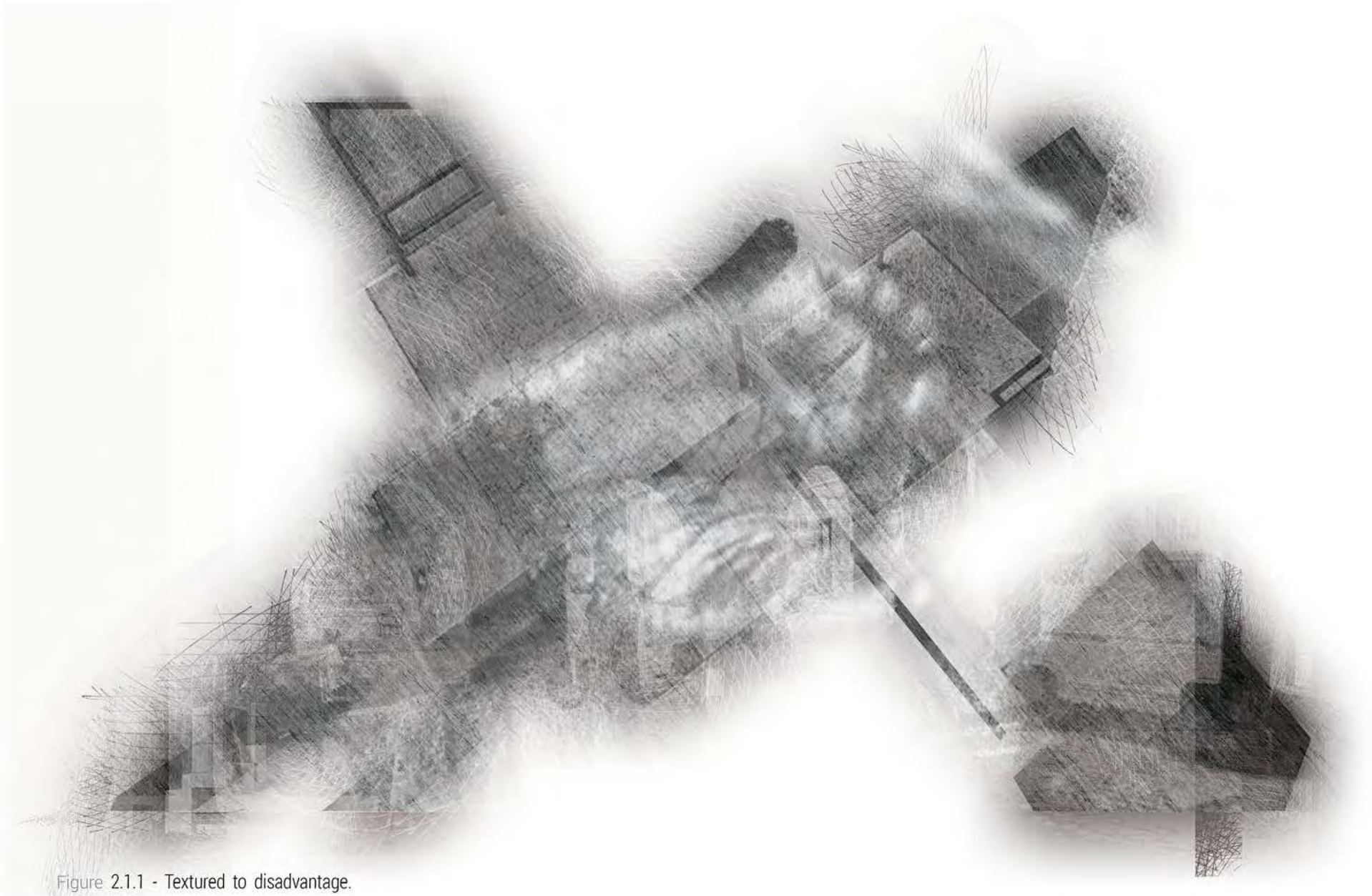


Figure 2.1.1 - Textured to disadvantage.



## 03 INVESTIGATION

- 3.1 PHENOMENOLOGY
- 3.2 SUBJECTIVE ERGONOMICS
- 3.3 EXPERIENCE THROUGH THE SOLES OF YOUR FEET



CHAPTER

03

OVERSIGHT

## 3.1 PHENOMENOLOGY

Phenomenology in architecture and space, is the philosophical understanding of human experience within the *umwelt* they exist in. The architectural phenomenology movement began in the 1950s, reaching its peak point of interest between 1978 and 1985 and is still present in many examples of architectural precedent today. In contrast to post-war modern architecture, phenomenology emphasised human experience and gave legitimacy to the ideas of historical buildings containing valuable experiential lessons for contemporary architects. (Jorge, 2010.p100-145).[1]

Charles W. Moore is considered as the first architect to write an academic explanation of phenomenological human responses to space in his PhD dissertation, titled *Water and Architecture* (1958). (p102. Jorge.2010) His theories and philosophical approach to the subject was greatly influenced by the French philosopher Gaston Bachelard. Moore became an architectural lecturer and assisted Louis Kahn at Princeton University in the United States of America. (Jorge.2010.p100–145). [2]

The history and development of phenomenology is a fascinating subject that could be a potential new research field on its own. How these ideas influenced this dissertation can best be understood by looking at what phenomenology has become today. In the process of researching this topic, you do not have to search for long before you find the works of Juhani Pallasmaa – Pallasmaa is arguably the leading theoretical and practicing architect in the field of sensory and sensual design. Pallasmaa will be discussed at greater length in the theory chapters of this dissertation, but it is important to highlight the following written by Pallasmaa in his book *The Embodied Image*.

“In our time, architecture is threatened by two opposite processes: instrumentalisation and aestheticisation. On the one hand, our secular, materialist and quasi-rational culture is turning buildings into mere instrumental structures. Devoid of mental meaning, for the purposes of utility and economy. On the other hand, in order to draw attention and facilitate instant seduction, architecture is increasingly turning into the fabrication of seductively aestheticised images without roots in our existential experience and devoid of authentic desire of life. Instead of being a lived and embodied existential metaphor, today's architecture tends to project purely retinal images, architectural pictures as it were, for the seduction of the eye.” (Pallasmaa.2011 p119).[3]

It would seem logical that we experience architecture with all our senses, and that this experience is ongoing, dynamic and dependent on ones *umwelt*. The ability to design spaces by reverse engineering experiences or vicariously experiencing the conceptualised ideas of space are the core intentions of phenomenology in architecture. To highlight the importance of *umwelt* in this dissertation one can look at the Japanese author Jun'ichirō Tanizaki, an example of how different cultural backgrounds greatly effect experiences of architectural space, is his book *In Praise of Shadows*.(Tanizaki.1977) [4] There are many literary works that have successfully defined the personal experiences of space and context, yet is it possible to know if an architect truly has the ability to reverse the process and design contextually appropriate experiences for people of different *umwelten*, or are they merely the transferred projection of his own self-interest? (Sebeok.1976) [5]

Another influential theorist on phenomenology was the Norwegian architect, Christian Norberg-Schulz. Schulz wrote the book *Genius Loci: Towards a Phenomenology of Architecture* (1979). Although grounded predominantly in the fields of psychology, the book argues that all space in architecture has a particular *genius loci*. Schulz's intended for his work to initiate the ways that the *genius loci* of place and context can be effected and be influenced by the understanding of the final building within its own *umwelt*, with the intention of making the readers cognisant of the subconscious feelings that may not be explicitly revealed upon initial investigation. (Schulz.1977) [6]

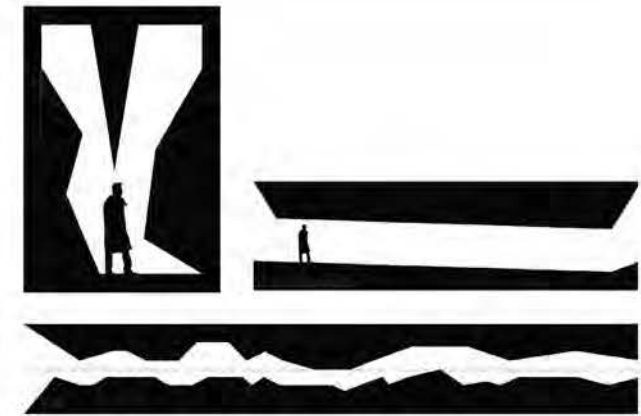


Figure 3.1.1 - Phenomenology simplified

[1] [2] Otero-Palcos, Jorge (2010). *Architecture's Historical Turn: Phenomenology and the Rise of the Postmodern*. University of Minnesota Press.  
[3] Pallasmaa, Juhani. *The Embodied Image: Imagination and Imagery in Architecture*. Chichester: John Wiley & Sons, 2011. p. 119.  
[4] Jun'ichirō Tanizaki, 1977, *In Praise of Shadows*, First Edition Edition, Leete'S Island Books.  
[5] Thomas Albert Sebeok, 1976. *Contributions to the doctrine of signs (Studies in semiotics)*. Edition Indiana University.



Figure 3.1.2 - Light to enhance experience



## 3.2 SUBJECTIVE ERGONOMICS

"Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance." - International Ergonomics Association (anon.2014) [1]

The study of ergonomics and the influence ergonomics has on usable space is nothing new to anyone in architecture. We have numerous books that describe ideal table and countertop heights, and most standards in construction have been derived from understanding

the average human form. One of the most well-known examples of this idea is the "Modulor" by the Swiss-born French architect Le Corbusier. It is an anthropometric scale of proportions as a tool for design. (Le Corbusier, 2000) [2]

Le Corbusier developed the Modulor in the long tradition of Vitruvius, Leonardo da Vinci's Vitruvian Man. It was an attempt to discover the mathematical proportions in the human body and to use the information to improve both the appearance and function of architecture. This principle is great for understanding the body in space, however, it is subjective to the user being able-bodied. Our understanding of ergonomics is essentially

limited to the user. To some extent disabled ergonomics has been considered, however this is mainly investigated in the layouts of paraplegic bathrooms. The human in a wheelchair has been researched as a modular system for ergonomic design, but there appears to be very little to be shown on the ergonomic sphere of that of a blind person. The cane or walking stick is an appendage of the blind user and it is a key bionic sensory device, how does this addition influence the modular? A blind user and guide dog is another point of ergonomic investigation as the addition of the animal effects the overall shape of the body in space.

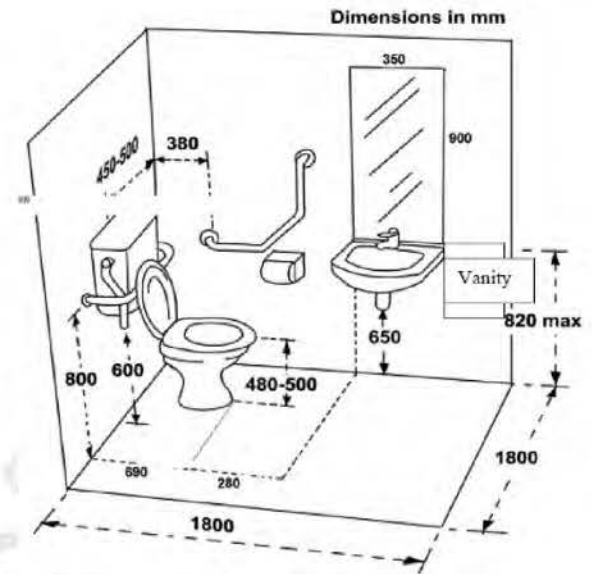
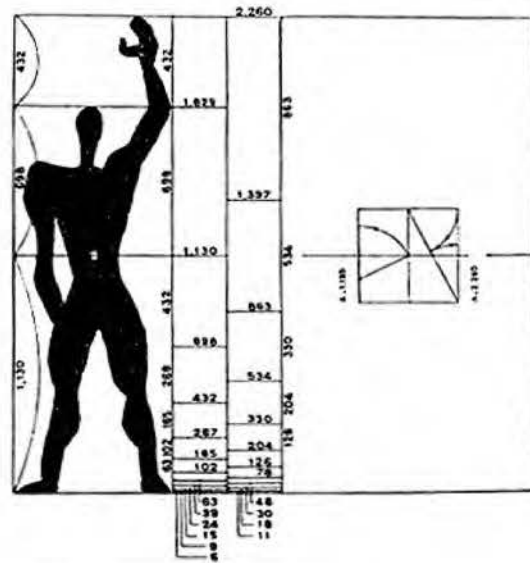
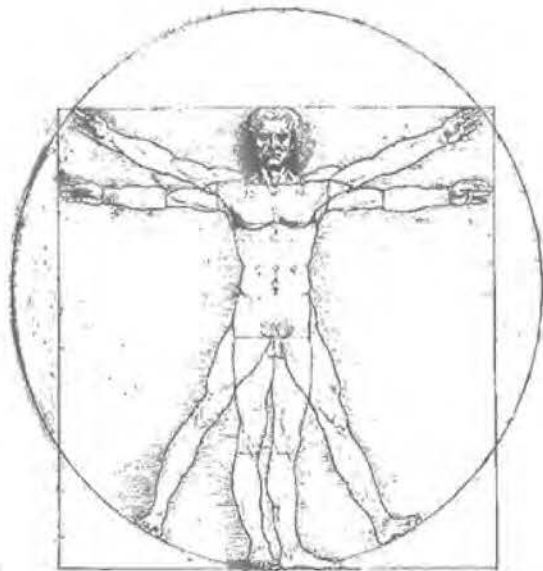


Figure 3.2.1 - Vitruvian Man - Da Vinci

Figure 3.2.2 - Modulor - Le Corbusier

Figure 3.2.3 - Ergonomics of disabled toilet

[1] International Ergonomics Association. What is Ergonomics? Website. Retrieved 17 April 2014.  
[2] Le Corbusier. 2000. Le Modulor and Modulor 2 (ENGLISH EDITION). 1 Edition. Birkhäuser Architecture.

### 3.3 EXPERIENCE THROUGH THE SOLES OF YOUR FEET

The buildings designed by the Indian architect, Charles Correa (b.1930) are said to be experienced through the 'soles of the feet' he also stated that architecture is not just visual, it is multisensory, and the parts we touch are particularly important. One of the key points that initiated this investigation into multisensory architecture was the statement "The eye confirms what the hand already knows" - Charles Correa. (anon.1993) [1]

Experience on the horizontal floor plane was taken to a new level of intangible meaning by Menashe Kadishman. The Holocaust Museum in Berlin designed by Daniel Libeskind, had an intended programmed space

called the "Memory Void" within the building. It was in this space where Kadishman setup the installation Schalechet (Fallen Leaves). The floor of the void is covered by more than ten thousand faces with open mouths, cut from heavy round iron plates.

The faces represent the victims killed during the holocaust, the artist asked that people walk on the art and treat the surface as an ordinary floor plane. The intentional manipulation of this surface invokes an upsetting emotional response, as the user symbolically crushes and steps on the lives of the Jewish concentration camp victims. (Libeskind.2011) [2]

The message and emotional response was not achieved through a visual medium in either of these examples. It is the feeling of heavy steel disks grinding under your feet that best explicates the artist's intentions. And the tranquil calming meditative spaces of Charles Correa are experience through the barefoot circulation through his architecture. The investigation into both Charles Correa and Menashe Kadishman, highlighted the ability for architecture to convey a meaning through experience. That experience is best communicated through the element of the human body that is most in contact with architecture – our feet.



Figure 3.3.1 - Gandhi Centre - Charles Correa



Figure 3.3.2 - Schalechet (Fallen Leaves)

[1] . 1993. The Ritualistic Pathway 5 Projects By Charles Correa, A Portfolio of Architecture, Edition, Rahul Mehrotra  
[2] . 2011. Daniel Libeskind: Jewish Museum Berlin: Museum Building Guides, Edition, Ediciones Poligrafa.



04 THEORETICAL APPROACH

- 4.1 JUHANI PALLASMAA
- 4.2 FRIEDRICH KITTLER
- 4.3 RAIMUND ABRAHAM
- 4.4 JULIAN TREASURE
- 4.5 TOM PORTER



CHAPTER

04

FORESIGHT

## 4.1 JUHANI PALAASMAA

"I see the task of architecture as the defence of the authenticity of human experience" (Juhani Pallasmaa, Encounters)

The theoretical approach to the project was largely based on the ideas and philosophies of Juhani Pallasmaa. His sensual and sensory approach towards architecture and phenomenological human responses to space were vital in the methodology behind the Blind by Sight project. Multi-sensory architecture is an avenue of Architectural development that leads to a fresh way of thinking about design. In response to the visual bias that has restricted the growth of Architectural thinking; the theories of Pallasmaa hold the key to a deeper understanding of form and spatial definition.



Figure 4.1.2 - Juhani Palaasmaa

Juhani Pallasmaa is one of Finland's most distinguished architects and architectural thinkers. Born Juhani Uolevi Pallasmaa (b. 1936, Finland) the architect was once a professor of architecture and dean at the Helsinki University of Technology. Although Pallasmaa has written many essays on architecture, the key theoretical work was his book titled – "The eyes of the skin - Architecture and the Senses". (Pallasmaa.2005.p115).[1]

Published in 1996, *The Eyes of the Skin* has become a harsh critic of commercial architecture and a fundamental source of phenomenological architectural theory. It poses the critically introspective questions such as why, when there are five senses, has one single sense – sight – become so predominant in architectural culture and design. With the rapid technological developments and the ascendancy of the digital medium, the visual and seduction through imagery is at its height. This seduction is diminishing the role of architects within our paradigm and architecture is losing the ability to define the spatial experience of a building.

*The eyes of the skin* induces that the solution for architecture, lies in the acknowledgement of the dominance of the visual realm in modern-day technological and consumer driven culture. The topic that has become an integral part in education of architecture, but has been seemingly forgotten within architectural practice. Our experience of our perceivable world or *umwelt* is formulated by the augmentation of five senses. Within our continuum of architecture, buildings are produced under the consideration of only one sensory device – the ability to see. The suppression or lack of consideration for the other sensory realms has detrimentally led to an impoverishment of our designed environments, having the adverse result of the feelings of detachment, segregation and alienation. (Pallasmaa.2005.p116).[2]



Figure 4.1.3 - To sense the wall - Palassmaa

## 4.2 FRIEDRICH KITTLER

Friedrich Adolf Kittler was born in 1943 in Rochlitz in Saxony. In 1993, Kittler was awarded the "Siemens Media Arts Prize" by ZKM Karlsruhe for his research in the field of media theory. The eclectic German philosopher and media theorist once said "We are the subjects of gadgets and instruments of mechanical data processing". (Kittler,1996,p725) [3]

Kittler's philosophical approach towards media is described at a shallow level of understanding to best translate the intended message. His work on "The city is a medium" best explicates how architecture and built fabric can be used as a medium for transferring a message or idea. (Kittler,1996,p722) [4]



Figure 4.2.1 - Friedrich Kittler

[1] [2] [9] Juhani Pallasmaa, 2005. *The Eyes of the Skin: Architecture and the Senses*, 2 Edition, Academy Press.

[3] [4] Kittler, F.A., 1996. *The City is a Medium*. *New Literary History*, [Online], Vol. 27, No. 4, Literature, Media, and the Law.

## 4.3 RAIMUND ABRAHAM

Abraham is known for creating visionary architectural hand-drawings. Throughout his career, he asserted the autonomous, fundamental value of a drawing as a manifestation of architecture. Abraham stated, "The drawing is one of the tools we have available for the realization of an architectural idea." To Abraham, drawing was as much the work of the architect as building. Critics describe Abraham's drawings as architectural poetry on paper. Many of his visionary drawings have been exhibited as art. (Groihofer.2011) [5]

Abrahams works are prescient meditations on architectural scale, not only based upon the scale of the human body, but also inclusive of multi-sensory perception, media, and imagination

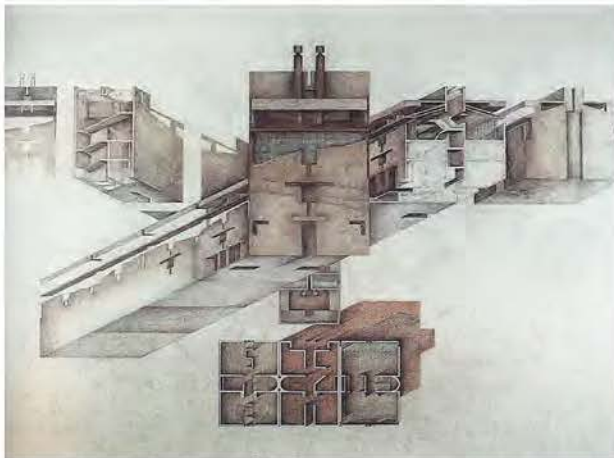


Figure 4.3.1 - To feel a sketch Raimund Abraham

## 4.4 JULIAN TREASURE



Figure 4.4.1 - Sound in Architecture

Another source of theoretical approach came from a TED Talk that all Architects and Architectural students should watch. Design for your Ears by Julian Treasure; here, Julian Treasure explains the benefits of architecturally designed spaces that take a sensitive approach to the sense of hearing. The professional product of architectural design is currently a visual experience that can be reprinted in magazines. To the eye, spaces are simple and modern; however, to the other senses, spaces are either too chaotic (hearing) or too dull (texture). (Treasure, TED, 2012) [6]



Figure 4.4.2 - Julian Treasure

## 4.5 TOM PORTER

Tom Porter's book – "The architect's eye", explores the important relationship between the way we see and the way we draw architectural ideas. The text deals with sensory experience of space, the spatial cues represented in architectural drawing and the relationship between drawing type and design intent. It also addresses new forms of drawing provided by new technological aids such as animated computer graphics and virtual reality. It provides a comprehensive text for students of architecture, interior design and landscape architecture. (Porter, 2014) [7]

Porter looks at the conceptual tools architects need to develop in order to create new designs, and the visual means, through drawing, model-making and computing that are available to the architect to express those designs. Central to the conceptual process is the understanding of space, both in physical and psychological terms, and the associated concepts of light and colour. With a range of examples from Greek temples to flight simulators, the author explains and evaluates the right approach to conceiving space in human terms. (Porter, 2014) [8]

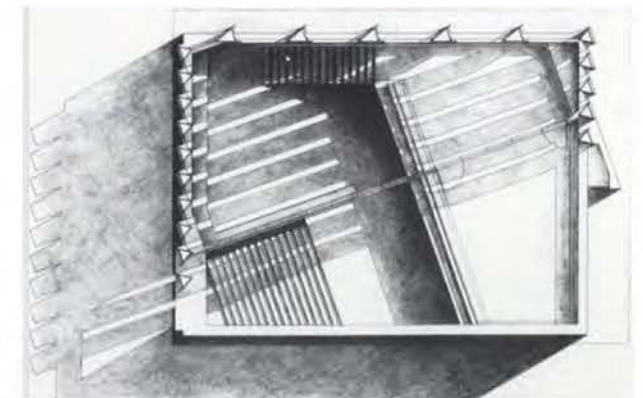
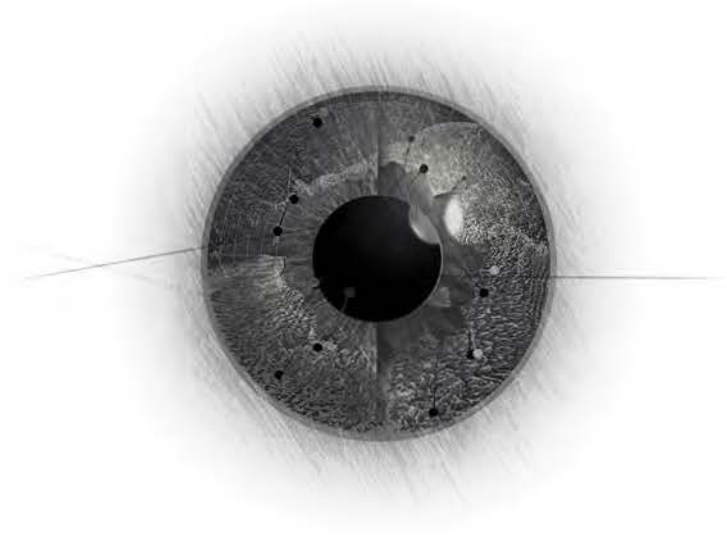


Figure 4.5.1 - The Architects Eye

[5] [10] Groihofer, B. 2011, Raimund Abraham [UN]BUILT, 2nd revised and enlarged edition, Edition, Springer Vienna Architecture

[7] [8] [12] Tom Porter, 2014, The Architect's Eye, 1 Edition, Taylor & Francis

[6] TED - Ideas worth spreading. 2012. Why architects need to use their ears. [ONLINE] Available at: [https://www.ted.com/talks/julian\\_treasure\\_why\\_architects\\_need\\_to\\_use\\_their\\_ears/transcript?language=en](https://www.ted.com/talks/julian_treasure_why_architects_need_to_use_their_ears/transcript?language=en). [Accessed 17 February 2016].



## 05 PRECEDENT STUDY

- 5.1 LINDEN CENTRE - SCOTTISH WAR BLIND
- 5.2 CENTRE FOR THE BLIND AND VISUALLY IMPAIRED
- 5.3 BATTYANY LASZLO INSTITUTE FOR THE BLIND
- 5.4 CAPE TOWN INSTITUTE FOR THE BLIND
- 5.5 BLIND FRIENDLY PARK
- 5.6 DYSLEXIA
- 5.7 ARCHAN NAIR
- 5.8 ALPHABET FOR THE BLIND

CHAPTER

05

SEEN



## 5.1 LINBURN CENTRE – SCOTTISH WAR BLIND [1]

Scottish architects, Page\Park have designed and established a centre specifically for visually-impaired sailors, soldiers and airmen in Wilkieston, Scotland. The single-storey centre takes inspiration from a hand-carved Chinese celestial dragon memorial sculpture which was previously housed in the display room of the former facility. This inspiration manifests itself in the sweeping and twisting geometry of the building's undulating zinc roof. The new 750m<sup>2</sup> facility is located on an inspiring site in Linburn, West Lothian, and replaces the charity's 1950's facility which occupied an adjacent site.



Figure 5.1.1 - Approach to centre

The Linburn centre for blind war veterans is a facility aimed at the enablement and skills training of ex-soldiers who lost their sight during military service. The facility focuses on craft, wood work and the making of objects by hand. The initiative plays an important role in the lives of the disabled, as well as the family support systems behind those disabled war veterans.



Figure 5.1.2 - Conceptual sketch

The form of the building follows an S-shape in landscape orientation; with the intention of capitalising on the southern exposure of the sun (Northern hemisphere). This orientation provides the user with a sense of architecturally designed spaces with specifically intended natural experiences throughout the building.

The building operates as a day-care centre and offers a comfortable and convivial environment; whilst also providing rehabilitation and life skills assistance for visually impaired ex-servicemen and women. Facilities include a workshop; art space; training area(s); gym; therapy and administration spaces, as well as a remembrance room. A terrace and landscaped sensory garden is situated to the south of the building for recreational purposes in addition to education. The shifting demographic of users that the organisation now supports has influenced this broad assortment of activities.

Inside the building, the primary circulation route is of generous width and includes a continuous handrail down the one side to provide support where required; in addition to acting as a guide for the visually impaired. Where access to rooms occur off this corridor, bold gestures have been made at these locations both in the layout and colours used on the walls.

The precedent was considered for its navigational considerations towards designing spaces for the blind. However, on critical reflection on the centre it was difficult to prove that the unsighted would be comforted by the soft curvature in the vertical plane. It would also form a dependence of the blind user on the "undefined" edges of designed space. The experience of flowing from one space to another with a subtle threshold is too blurred as a sensory device. The use of the sun as a tool for navigation was identified as a major potential driver for architectural form.



Figure 5.1.3 - Interior materiality



Figure 5.1.4 - Linden Centre project model

## 5.2 CENTRE FOR THE BLIND AND VISUALLY -IMPAIRED-MAURICIO ROCHA [2]

The Centre for the Blind and Visually Impaired was created as part of a programme by the Mexico City government to provide services to one of the most disadvantaged and highly-populated areas of the city; Iztapalapa is the district with the largest visually impaired population in the Mexican capital. The 14,000m<sup>2</sup> complex is on corner plot bordered by two avenues. A blind wall encircles the complex on its four sides and acts as an acoustic barrier, as well as a retaining wall/blank to hold the earth moved from neighbouring wasteland areas. In contrast to the abstract exterior, the internal facade of the boundary wall creates banks that change shape, height and orientation; thus creating various courtyards.

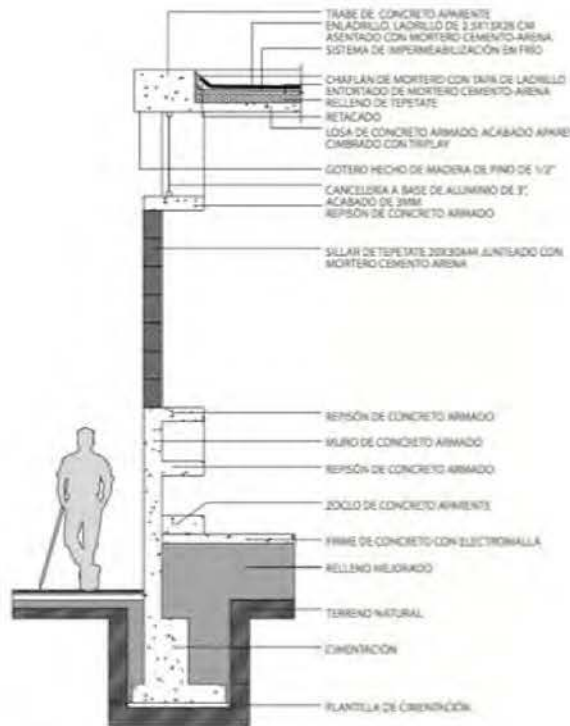


Figure 5.2.1 - Experience in Detail section

Meanwhile, the floor plan can be read as a series of filters which stretch out from the entrance in parallel strips. The first filter is the building that houses the administrative offices, cafeteria and utility area. The second comprises two parallel lines of buildings organised symmetrically along a central plaza. These buildings include a store referred to as the "tifloteca-sonoteca" (a sound and touch gallery), as well as five arts and craft workshops. The third filter accommodates the classrooms which face the gardens and the most private courtyards. Perpendicular to the entrance, a series of double-height volumes house the library, gymnasium auditorium and swimming pool.

The buildings are rectangular prisms based on concrete frames and flat roofs. Each group explores different spatial and structural relationships; making each space identifiable for the user, as well as varying size, light intensity and weight of materials such as concrete, bricks, steel and glass. The Centre aims to enhance spatial perception; activating the five senses as experience and source of information. A water channel runs through the centre of the plaza to ensure the sound of the water guides users along their way. Horizontal and vertical lines in the concrete placed at hand height offer tactile clues to identify each building. Six types of fragrant plants and flowers in the perimeter gardens act as constant sensors to help orientate users within the complex.

As a precedent study the 'Centre for the blind and visually impaired' was considered a well-rounded and appropriate project for dealing with the sensitive nature of the disabled. The use of water as device for navigation was identified as an example of how natural elements can be used to guide the unsighted experience. The critical reflection on the project revealed that that the facility has isolated itself in its own blind Garden of Eden. With minimal interaction with the surrounds, it has forced the isolation of the blind user.



Figure 5.2.2 - Void sensory space

[2] Luis Gordoa. 2011. Archdaily. [ONLINE] Available at: <http://www.archdaily.com/755301/center-for-the-blind-and-visually-impaired-fa-lende-arquia-tura-mauricio-rocha/>. [Accessed 8 June 2016].



Figure 5.2.3 - The Centre for the Blind and Visually Impaired - courtyard space

## 5.3 BATTYÁNY LÁSZLÓ INSTITUTE FOR THE BLIND - A4 STUDIO [3]

Founded in 1898, this institute is located in Budapest where majority of the children living in the area suffer from multiple disabilities. These include visually impaired; disabled; mentally challenged and/or handicapped. Sadly, most of the children are also without families and due to the state only supporting until the tender age of 18 years, the children are often left destitute and with nowhere to go.

The programme and design brief was to create a housing facility for children over the age of 18; where the new building would be connected to the existing building via a bridge. The first two floors to the five-storey building comprise the common spaces; activity rooms and dining room; while the upper levels include the accommodation facilities.



Figure 5.4.2 - Blind user experiencing model

The intention was to establish a simple, safe and user-friendly building which would cater to the well-being of the children. Most of the corridors receive natural light which assists with the orientation of the visually impaired. The strong light transmission is reduced by the perforated metal sheets which are placed in front of the large glass surfaces. The perforation creates the translation of the written words 'trust', 'home', 'shelter' and 'love' to braille text. The positioning and sizes of the windows vary in every bedroom which further assists the children with orientation.

The project intentions were noble, and the efforts by A4 Studio were essentially well received. The architecture does not necessarily compete for attention with its context, but it does establish a dominance in the landscape. The critical reflection on this design was that it was still designed with a visual message behind it, the use of punctured steel plates in a braille pattern is a visual device that explicitly states to a sighted observer that this building is for the blind. It is a message that should be relayed as subtly as possible, like the blind user is still an ordinary human, this building too could have been ordinary without the bold statement.



Figure 5.4.3 -Braille as a screening device



Figure 5.4.1 - Site Plan

[3] Geza Mendel. 2015. Archdaily. [ONLINE]. Available at: [http://www.archdaily.com/773020/oradillyany-laszlo-institute-for-the-blind-a4-studio\\_11665620\\_27](http://www.archdaily.com/773020/oradillyany-laszlo-institute-for-the-blind-a4-studio_11665620_27) (May 2016).

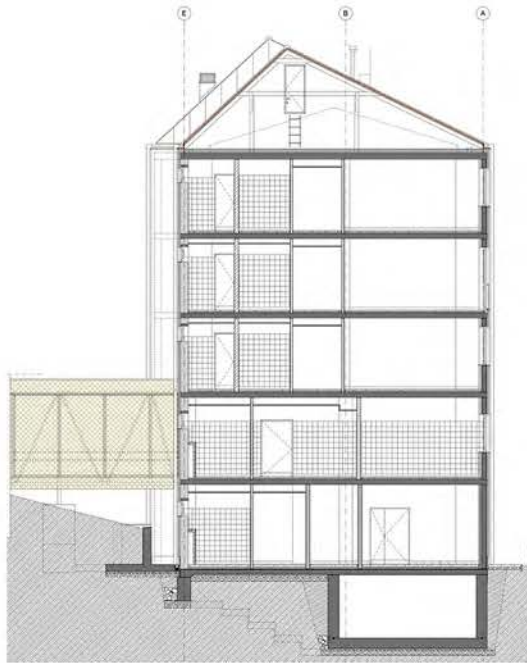


Figure 5.4.4 - Section

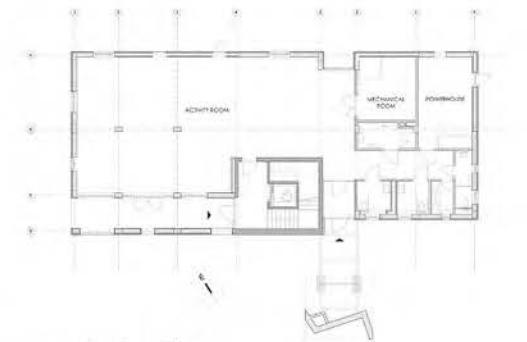


Figure 5.4.5 - Plan



Figure 5.4.6 - Institute for the Blind

## 5.4 CAPE TOWN SOCIETY FOR THE BLIND – JAKUPA ARCHITECTS [4]



Figure 5.5.1 - Treatment of the ceiling plane

The new building is part of a long term re-development plan envisaged by the Cape Town Society for the Blind (CTSB). The aim was to expand the existing skills training facilities for the visually impaired and promote a public image which would be more accessible to visitors and further facilitate interaction between the crafters and public. Alterations, additions and selective demolition were integral to the brief.

The new building is located within the existing premises of the Society; occupying a central courtyard which was previously populated by a group of single-storey buildings and was constructed at a 45 degree orientation to the perimeter Administration and Training wings. The old central structures proved to have been complex and challenging with regards to navigation for the visually impaired users and offered limited user capacity.

The courtyard was subsequently cleared to give way to a new building; a water feature (for cane soaking) and a staff parking area. To further facilitate and ease navigation within the building, a clear spatial order was crucial. A straightforward and continuous circulation path is distinguished from working areas through surface treatments and allows for quick access to and from the surrounding existing buildings.

The double-volume, shed-like structure is reminiscent of the industrial fabric of Salt River and its acoustic quality indicates a place of production and trade; a reference to the traditional enclosed market place. Individual workshop spaces are structured in a clear and regular grid and allow for individual creative space. The space is flexible as it adapts to the seasons with two sides opening up to the courtyards and providing access to the cane-soaking water trough.



Figure 5.5.2 - Conceptual model

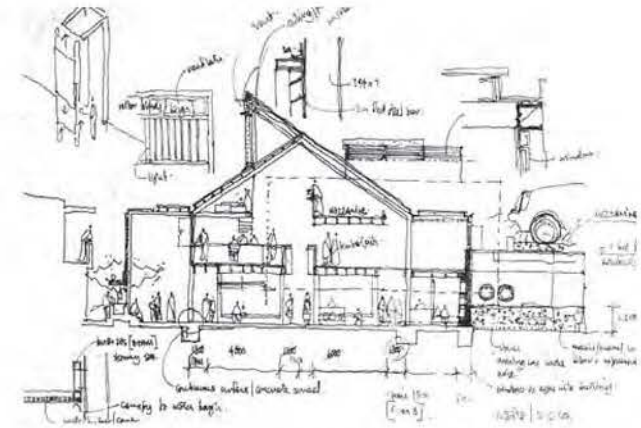


Figure 5.5.3 - Initial sketches of Society for the Blind

Portions of the remaining, existing buildings were adapted to accommodate, amongst others, the improved vehicular access onto the site; additional ablutions required due to the increased user population and the rationalisation of under-used office space to provide adequate and larger storage space for finished goods.

The CTSB as a precedent study was of great significance to the project. Although only discovered three-quarters of the way through this dissertation, it showed the most prowess in addressing the requirements of the unsighted user. The subtlety and softness in the approach to context was the most influential on the project direction. As explained in the design development chapter it is clear to see when the approach of the CTSB was first researched. The section named 'the realisation of contradiction' is when the project began responding to its context in much the same way as the CTSB does.



Figure 5.5.4 - Completed Project courtyard



## 5.5 BLIND FRIENDLY PARK - CITY OF CAPE TOWN [5]



Figure 5.6.1 - Touch the narrative

Located in Bellville (between Berol and Beroma Crescent), and within walking distance of Athlone School for the Blind, the play area was a work in progress for the last five months and recently opened to community members on Tuesday, 23 August 2016.

In essence, the TCT's non-motorised transport programme is aimed at improving pedestrian facilities throughout the city. As a result, the new park has been specifically fitted with universal access along both roads; where dropped curbs provide easy access to the area and tactile paving offers simple navigation and safety. This further allows for easier entering and exiting by members with limited eyesight.



Figure 5.6.3 - Park Facilities heighten experience 1

The park was divided into smaller, closed-off play areas where low-seating walls, which cut across the grounds, have been included to assist with acoustic path-finding. The sounds of feet walking reverberate off the walls and the echoes enable one to determine their location through hearing. Along the seating walls, an extensive relief mural was installed.



Figure 5.6.2 - Free to roam



Figure 5.6.3 - Park Facilities heighten experience 2

The park gave rise to the influence on landscape elements when designing for a user group such as the blind. It was the driving idea to support the approach to the facility via the haptic pathway. The ability for landscape architecture to tell a story was highlighted in this precedent study.

[5] Kryssa GaWeda. 2016. City of Cape town magazine. [ONLINE] Available at: <http://www.cape-town-magazine.com/cape-town-blind-friendly-park>. [Accessed 27 October 2016].

## 5.6 DYSLEXIA - DANIEL BRITTON [6]



Figure 5.7.2 - Dyslexia Typeface



Figure 5.7.1 - Dyslexia - 3D presentation

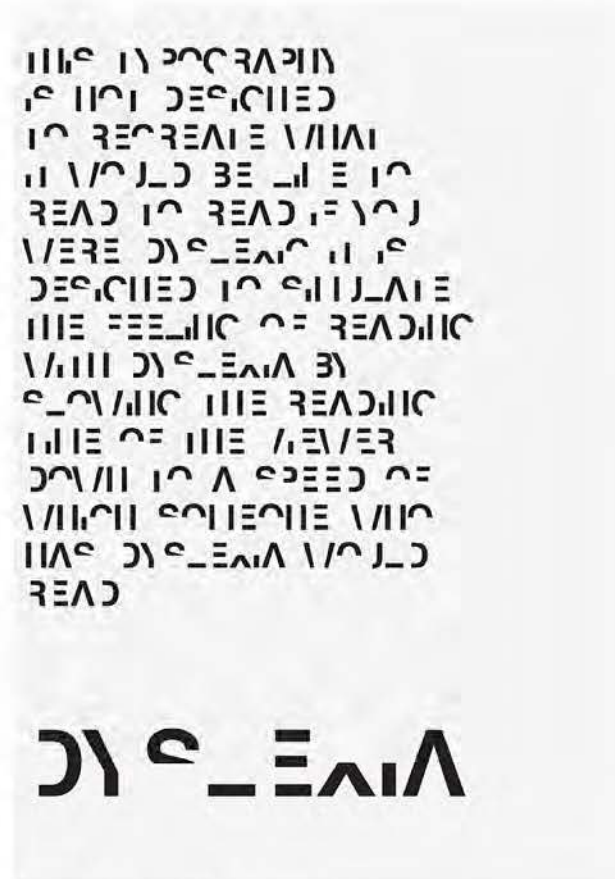


Figure 5.7.3 - Read in Dyslexia

A secondary influence with regards to this train of thought was the graphic designer, Daniel Britton. To bring attention to his own disability of Dyslexia, he designed a font that emulates the frustrations of a typical dyslexic person's experience when it comes to reading. His intention was, however, not to design a font that is accessible to people with Dyslexia. The typeface uses the most easily recognisable font referred to as Helvetica and subtracts the distinguishing elements of each letter; just enough that a viewer can almost barely correctly assume the word. He highlights a disability by disabling a bias and forces an observer to engage and understand an affliction.

Diagnosed with dyslexia during his final year at university, Britton struggled with professors and peers who couldn't understand his learning disability and assumed he wasn't paying attention or merely lazy. As a result, he decided to design a font that would mimic the feeling of reading with dyslexia by slowing down the time it took for readers to decipher sentences.

Dyslexia and the way to communicate a powerful idea through the disabling of an observer was an influential theoretical precedent. The work of Britton, is closely linked to the theories of Kittler when considering how we convey thoughts and intentions across to force interaction.

[6] Wyatt Massey, 2015. CNN. [ONLINE] Available at: <http://edition.cnn.com/2015/06/17/living/dyslexia-graphic-design-typeface-daniel-britton/index.html>. [Accessed 27 October 2016].

## 5.7 DIGITAL ART - ARCHAN NAIR [7]

The idea of transferal sensory expressionism was influenced by the artist Archan Nair. Although his art is a visual interpretation; he attempts to capture and express the sensory experience through the medium of digital artwork. His work attempts to describe the emotions of pain and happiness through shapes and colour. In some works, he also describes music and sounds in a visual and graphic medium. This approach of transferred sensory representation became vital in the manifestation of this dissertation; where presenting a type of architectural argument is universally accessible.



Figure 5.8.1 - Another Memory



Figure 5.8.2 - Far away



Figure 5.8.3 - Empty Kingdom



Figure 5.8.4 - Dream Theory

[7] Web Designer Depot Staff. 2009. Web Designer Depot. [ONLINE] Available at: <http://www.webdesignerdepot.com/2009/10/the-dazzling-digital-art-of-archan-nair/>. [Accessed 27 October 2016].

## 5.8 ALPHABET FOR THE BLIND – WILLEM BOSHOFF [8]



Figure 5.9.1 - Willem Boshoff

Since architectural representation is a graphic and visual experience, it was a challenging task examining, understanding and redefining the modes of communication (plans, sections and elevations) in a manner accessible to the blind. Furthermore, because this is an avenue of research for a different field of study such as multimedia design, it was limited to the purpose of creating awareness towards our visual bias. The artist, Willem Boshoff, has created sculptures that explore this type of representational sensory experience called the alphabet for the blind. In his works he purposely disables the visual senses and allows for the user to practice tactile sensory stimulus to feel the different shapes and textures.



Figure 5.9.4 - Willem Boshoff - Textured wall

In Boshoff's Blind Alphabet installations, he tries to get blind people to help sighted visitors discover certain philosophical aspects of their vision/'visionlessness'. Most frequenters of art galleries are artists, art critics and art students who are 'visually aware/literate' because they have received special training in visual appreciation. However, blind people require constant guidance and attention to cope with aspects that come easily to the sighted. The average art gallery is not considered 'blind-friendly'. This work focuses on that state of affairs and enables English-speaking blind people to reverse the pattern and guide the sighted in the privileged environment of the art gallery.

Boshoff wanted to extend his language game to other activities, including the art making process. Carrying on the theme of reversing expectations, he decided to make an art installation that would enable blind people to function as gifted experts instructing disenfranchised sighted people. It was through this that his crazy word-lists became the mother-lode for Blind Alphabet. He realised that many of the words he'd collected had to do with form and texture; the basic constituents of sculpture. Therefore, he would use these obscure terms to prepare a morphological dictionary; illustrated by sculptures of the complex forms they described.



Figure 5.9.3 - The Blind Alphabet

To put sighted people at a disadvantage, Boshoff needed to impose upon them a sense of the disappointment blind people suffer when they are restricted. The way he disadvantaged 'blind' sighted visitors to the artwork is by hiding the sculptures in small boxes under wire mesh. The art gallery signs reading 'Don't Touch' prevent them from opening the boxes, so that they are overcome by frustration. Furthermore, the lid on every box is inscribed with a text in Braille which is foreign to most sighted people.

Then, to cap everything, there are hundreds of these sculptures in row upon row, in close proximity. The sighted visitor feels denied; lost in a labyrinth that might lead nowhere. As one blind guest said: '... You had it all – now it's our turn to have it all – this is ours'.

The Blind Alphabet does not intend to patronise the blind. It is a challenge to their sense of social responsibility, requesting them to rise to the occasion and use their special gift for reading Braille; to do something significant for the sighted in the art galleries of South Africa.

[8] Willem Boshoff. 2012. Willem Boshoff Artist. [ONLINE] Available at: [http://www.willemboshoff.com/documents/artworks/blind\\_alphabet.htm](http://www.willemboshoff.com/documents/artworks/blind_alphabet.htm). [Accessed 27 October 2016]



06 PROGRAMME

- 6.1 PROGRAMME DEVELOPMENT
- 6.2 PROGRAMME SCHEDULE
- 6.3 PROGRAMME CONTEXTUAL CONTRIBUTION

CHAPTER

06

OUT OF SIGHT



## 6.1 PROGRAMME DEVELOPMENT

Blind by Sight is a resource centre for the visually impaired.

The original programmatic developments of the project initiated from a point of spatial definition. This was advantageous for blind people and purposefully set out to disable users who use sight for navigation. From there, the project developed into a series of designed programmatic functional spaces that focus on three major aspects involving the lives of people who have lost the ability to see.

### 1. The re-enabling of a blind person

- There are essentially two types of blind people; the congenitally blind (blind from birth) and those who lose the ability to see through accidental damage on either the eye or the major optical nerve to the brain. The purpose of the 'Blind by Sight' building is to function as a place where solutions in the form of a prosthetic device can be designed for the blind person. These devices enable the blind person to be more independent, as well as integrate back into society. For example, if an I.T programmer was involved in an accident and lost the ability to see, the institute would design a custom keyboard with braille which would enable and assist the programmer to continue his work.

Another example is the Architect, Chris Downey, who lost his sight after undergoing a seemingly routine brain operation. He is still in practice today with the help of a special plotter that indents his plans and sections; allowing him to feel the spatial qualities of drawings.

### 2. The education of a blind person

- Without the medical technology required to synthesise the human eye, a blind person is faced with having to learn how to interpret the new sensory spaces they occupy. This includes learning braille, as well as various floor texture devices specifically implemented for public safety. Such devices include, but are not limited to, floor tiles near the edges of train platforms and bumps near road intersections. The programme also includes institutional spaces offering blind people the opportunity to learn trades or skills of their choosing.

The attitude at the current facility is very restricted in that blind people can either learn how to tune pianos or make furniture. This opened up the programmatic investigation into what resources would be required for learning purposes; one such resource being textbooks and written journals. However, after critical evaluation it was concluded this would require too much space, as well as paper for a sustainable, ethical and practical solution. The second resource was Audiobooks for the blind; because it is a digital solution, it allows for large quantities of written material to be stored and listened to at leisure.

### 3. Escape for the blind person

- The following programmatic investigation intended to build and develop the notion of audiobooks for the blind. Reading fiction can be a form of escapism for many people; it allows them to experience a different time and place where their imagination can take over. This programmatic response was positioned to create a scene of sensory experience through non-visual elements. Such an example would be an herb garden which is stimulated to grow by picking the leaves of different plants. It also included the social aspects of blind living and training the owner to use a guide dog to navigate the urban environment. This space intentionally focusses on everyday life of the blind person and the successful reintroduction and preparation for the world around them.

### Specific programmatic requirements

The building as a whole would be classified as a place of instruction, as the facility would educate and prepare recently blinded people for living in the current world. It would act as a bridging facility between the comfortable and the unsettling Silverton condition.

The following internal programmes were required to design for:

- Reception and welcoming entrance to the building (also acts as a means of security)
- Trauma counselling room
- Braille education teaching rooms
- Staff rooms
- Multimedia presentation rooms
- Facility manager office
- Male, female and paraplegic bathrooms
- Service core
- HVAC and services plant room
- Audiobook library
- Audiobook recording facilities
- Consultation rooms
- Designer studio spaces
- Prototyping workshop
- Multimedia studio space
- Exhibition area
- Sensory heightening and deprivation space
- Circulation space
- Restaurant as a sensory experience

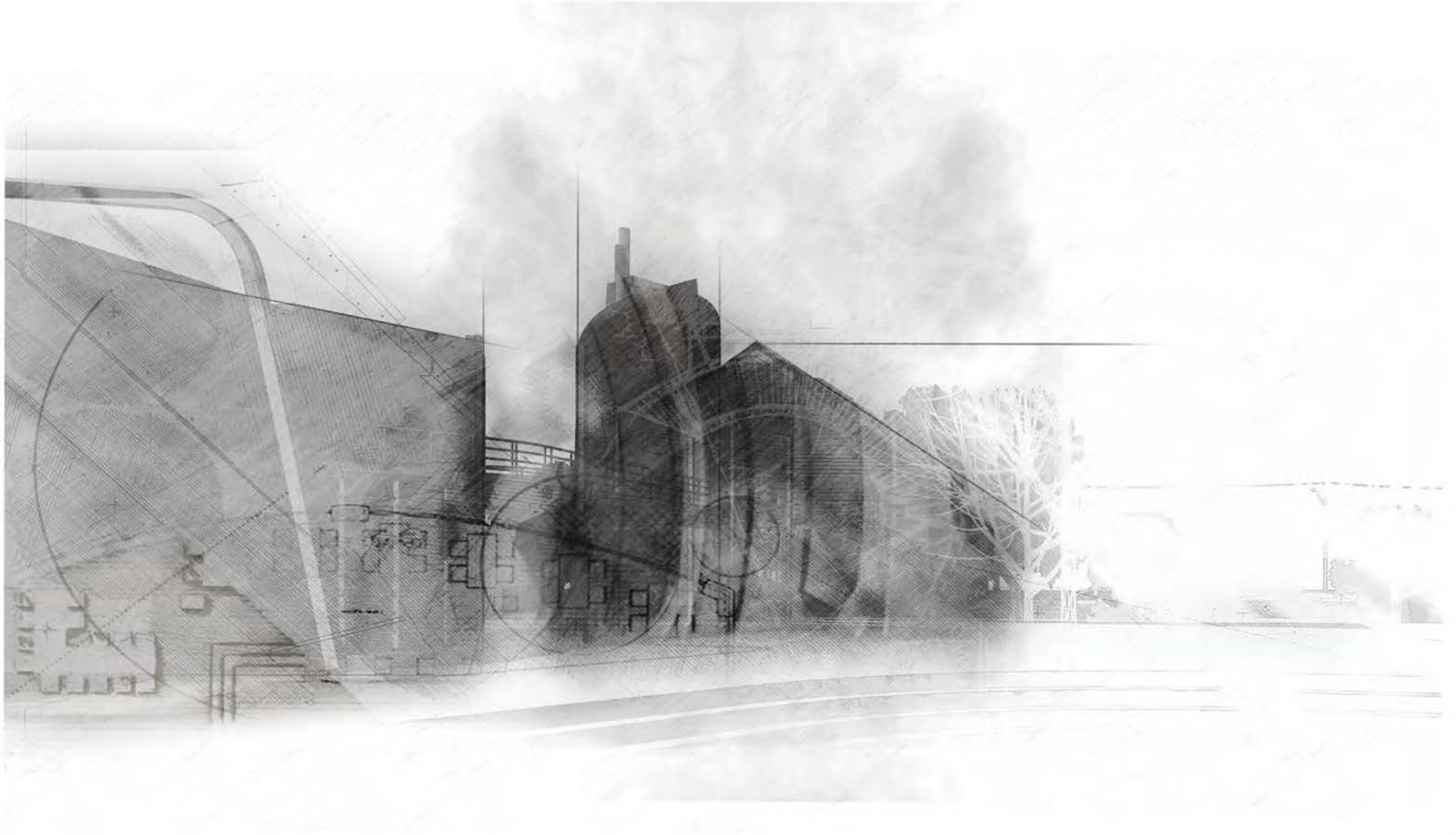


Figure 6.1.1 - Silhouette of the scene.



## 6.2 PROGRAMME SCHEDULE

<u>NUMBER</u>	<u>ROOM NAME</u>	<u>DESCRIPTION</u>	<u>EXPERIENCE</u>	<u>LIGHT QUALITY</u>
01	institution reception	The primary entrance point for the users of the facility. The line of security with help and information desk. Reception and welcome point.	Safety and reassurance for recently blind persons. Introduction to spatial experience	Medium lux levels with clear signage for visually impaired. highlight contrasts
02	consultation room	Communications specialist, as well as trauma counselling and career advise rooms.	Safety and reassurance for recently blind persons.	Medium lux levels with clear signage for visually impaired. highlight contrasts
03	audiobook lounge	The primary space for the relaxation and sitting back to listen to an audiobook. The main area of the library for the blind	Comfort and control over the surroundings.	Medium lux levels with clear signage for visually impaired. highlight contrasts
04	Pathway deciphering	Essentially exhibition space with the key to understanding the sensory devices used throughout the haptic pathway	New and exciting textured experience.	Medium lux levels with clear signage for visually impaired. highlight contrasts
05	ablutions	Bathroom facilities for the staff and blind users. Male, Female as well as disabled require devices for usage cues.	Instructive and assisting sensory queues	High lux levels with clear signage for visually impaired. highlight contrasts
06	staff room	The designers and educators at the facility require a room for discussion and a room where they can eat lunch on a break.	Sound isolation from the facility	Medium lux levels with clear signage for visually impaired. highlight contrasts
07	staff kitchen	The staff kitchen is a small programme linked to the staff room. for the preparation and heating of meals.	Clean simple utilitarian	Medium to high lux levels with clear signage for visually impaired. highlight contrasts
08	plant room	The service space for the HVAC system and waste management systems	Ease of access for equipment and services	High lux levels with clear signage for safety of maintenance staff
09	audiobook prep room	The preparation room for readers for the blind where they can plan and discuss the book and its content.	Sound isolation from the facility	High lux levels for precision reading.
10	recording studio	Recording facility with sound insulation and full equipment for precision recording of voices	Sound isolation from the facility	High lux levels for precision reading.
11	sound garden	Reflection landscape project where users are in a safe environment to listen to the surrounding facilities.	Sound engagement with the facility	Outdoor space
12	bionics lab reception	Blind design solution studio welcoming point	Safety and reassurance for recently blind persons.	Medium lux levels with clear signage for visually impaired. highlight contrasts

## FLOOR PLANE

Non-slip surface, clean texture as the starting point for navigation.

Non-slip surface, clean texture as navigation device

Carpet surface, clean texture as navigation device

Non-slip surface, clean texture as navigation device

Non-slip surface, clean texture as navigation device

Non-slip surface, clean texture as navigation device

Non-slip surface, clean texture as navigation device

Non-slip surface, clean texture as navigation device

carpet surface, clean texture as navigation device

carpet surface, clean texture as navigation device

Natural elements - grass leaves..

Non-slip surface, clean texture as the starting point for navigation.

## VERTICAL SURFACE

Brick braille texture for the experience of reading the building through touch.

Brick braille texture for navigation

Brick braille texture for navigation

Brick braille texture for navigation

Brick braille texture for navigation

Brick braille texture for navigation

Brick braille texture for navigation

-

Brick braille texture for navigation

Brick braille texture for navigation

-

Brick braille texture for navigation

## SOUND

Open plan challenges sound. Isolate above reception to heighten safety feeling

Insulated. Private

Public. audiobook through earphones

Open plan

Insulated. Private

Insulated. Private

Insulated. Private

-

Insulated. Private

Very Insulated. Private

-

Open plan challenges sound. Isolate above reception to heighten safety feeling

## EQUIPMENT

Reception desks, computers, telephones, printers.

Desks, chairs, telephones, printers.

coffee tables, chairs

Exhibition tools

WC, Basins, urinals

Desks, chairs, TV for presentations

Basic food prep equipment

Air handling Units

Desk, chairs

Recording equipment

-

Reception desks, computers, telephones, printers.

## USER

Primarily staff, with short usage of new blind users to the facility.

Primarily staff, with short usage of new blind users to the facility.

Primarily blind users of the facility.

Primarily blind users of the facility.

All

Staff

Staff

Maintenance staff

Staff, public readers

Staff, public readers

All

Primarily staff, with short usage of new blind users to the facility.

## 6.1 PROGRAMME SCHEDULE (CONTINUED)

<u>NUMBER</u>	<u>ROOM NAME</u>	<u>DESCRIPTION</u>	<u>EXPERIENCE</u>	<u>LIGHT QUALITY</u>
13	exhibition space	Exhibition space for the prototypes designed at the facility	To feel and experience the solutions	High lux levels with clear signage for visually impaired. highlight contrasts
14	consultation room	Client briefing room, were the designer translates the problem from the client into a brief.	Safety and reassurance for blind persons.	Medium lux levels with clear signage for visually impaired. highlight contrasts
15	cafeteria + kitchen	Eatery for the staff and learners of the facility, where the restuarant highlights smells and tastes	Taste smell and hear surroundings	Medium lux levels with clear signage for visually impaired. highlight contrasts
16	designer spaces	Office and studio space for the designer to be creative in the task of designing the solution for the blind client	Private space with slight connections to surrounds	High lux levels for precision working
17	prototyping room	Tool and workshop space for the fabrication of the designed solution.	Removed from facility to dampen noise	High lux levels for precision working
18	dining experience	A nightttime programme for the eatery to become a darkened eating experience, essentially a restuarant operating in complete darkness.	Taste and smell in forced blind state	NONE

<u>FLOOR PLANE</u>	<u>VERTICAL SURFACE</u>	<u>SOUND</u>	<u>EQUIPMENT</u>	<u>USER</u>
Non-slip surface, clean texture as navigation device	Brick braille texture for navigation	Open plan	Exhibition tools	Primarily blind users of the facility.
Carpet surface, clean texture as navigation device	Brick braille texture for navigation	Insulated. Private	Desks, chairs, telephones, printers.	Primarily staff, with short usage of new blind users to the facility.
Non-slip surface, clean texture as navigation device	Brick braille texture for navigation	Open plan	Full culinary equipment	All
Non-slip surface, clean texture	Brick braille texture for navigation	Insulated. Private	Desks drawing boards, PC	Staff
Non-slip surface, clean texture	Brick braille texture for navigation	Insulated.	3D printers, milling machines lathe	Staff
Non-slip surface, clean texture as navigation device	Brick braille texture for navigation	Open plan	Full culinary equipment	All and Public

## 6.3 PROGRAMME CONTEXTUAL CONTRIBUTION

One of the initial ideas at the beginning of the project, was for the programme to be developed from the site and the contextual conditions around it. The facility in Silverton called Dreamhouse is a furniture manufacturing factory that employs the blind people from the local community. As an initiative, I have great respect and admiration for the people that started the company. However, this dissertation is proposing that the local blind community should have access to alternative career opportunities.

The programme development was aimed at presenting the local blind community with the resources required to allow them to pursue a career path of their own choosing. The project placement and linking to the framework and conditions set out by the Silverton group – [AG]

Town, stipulated a transactional relationship between the individual project and the surrounding context. In the development of the programme the project had received all of its cues from the surrounding environment, but had yet to propose how it would benefit the precinct or tie into the urban haptic passage.

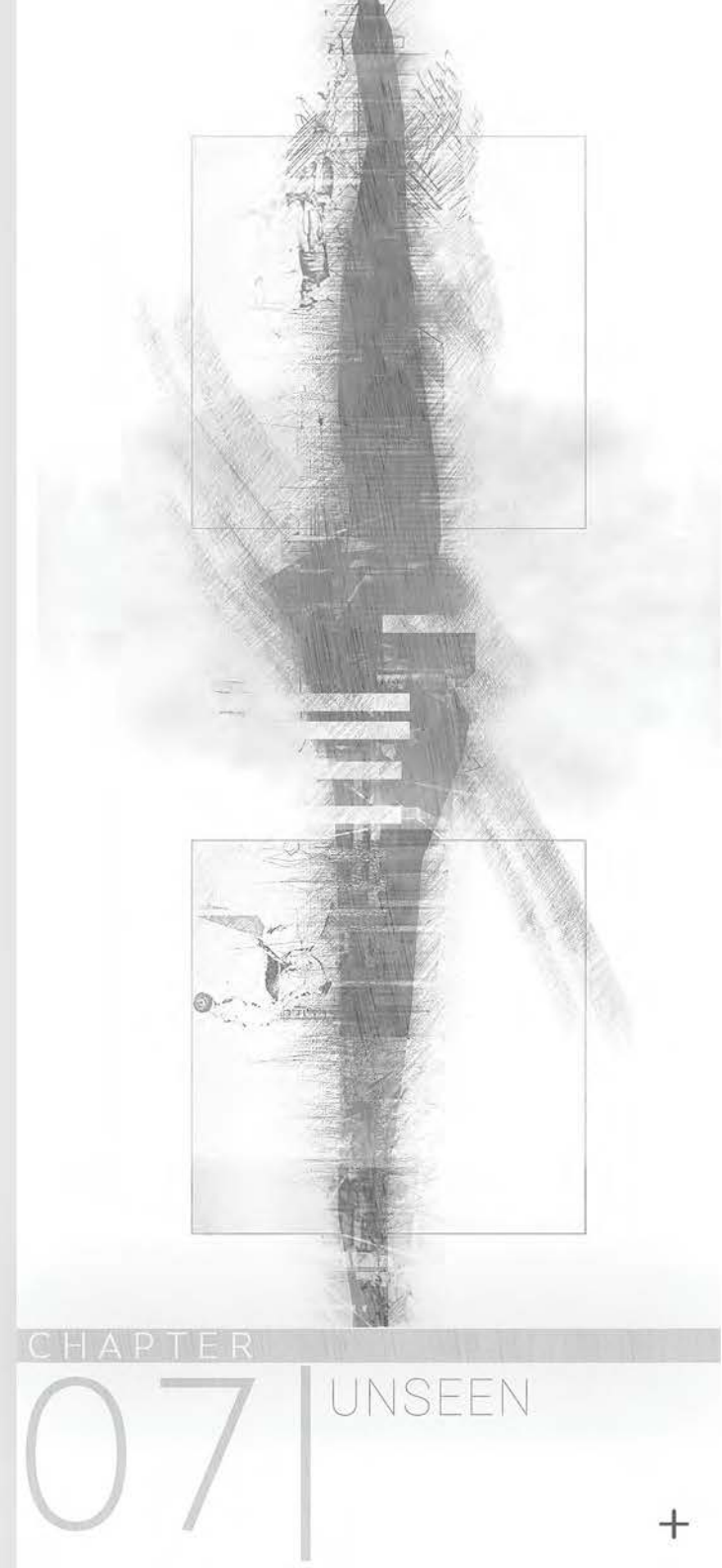
This called for the resource centre to bring something to the context as a reciprocal relationship between building and context should. The haptic pathway connecting the transport node to the civil node is positioned across a number facilities who require small scale 3D printing for various projects, to the south of the site is an appliance repair facility that is in urgent need of a 3D printer but cannot afford to purchase its own. Tying into the idea of a shared

resource network, this gave rise to the "maker space" of the prototyping facility giving back to the community and serving as a public service to create small 3D prints for the neighbouring businesses. Another consideration was the availability of food in Silverton, the primary axis route on Pretoria road has many eatery options. However, these are typically fast food and generically available dining options. One has to be off the main road to find the culinary options that best add to the character of Silverton. One such experience is the pancake stall at the Uitkyk butchery, offering traditional pancakes that have that little something extra to make them a step above the rest. Formally housing dining experiences for the community is a second manner in which to give back to the context.

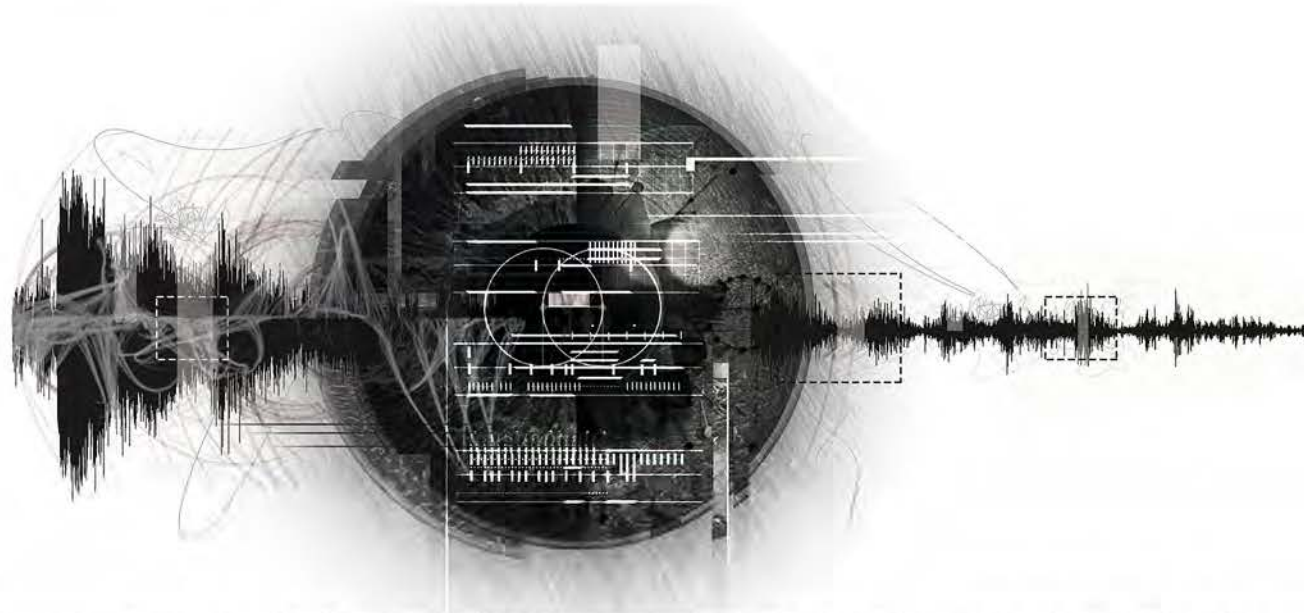


07 CONCEPT

7.1 CONCEPT DEVELOPMENT



## 7.1 CONCEPT DEVELOPMENT



The conceptual intention of this dissertation began as a commentary to the way in which humans perceive space around them. The elements that define space go much deeper than the aesthetic appeal or configuration of visual devices. The use of colour is most commonly applied to defining the mood of spaces; in which the pallet is associated to particular types of emotion.

As architects, we seem to focus mainly on the visual elements that define and create spaces. Minimal consideration is prescribed to the sense of smell and sound; these are usually only contemplated in the planning of bathrooms. Texture occasionally plays a role, but is the most susceptible to budget constraints and is otherwise deemed to comply with non-slip regulations. As architects who should be designing human experience through space, and have become blind to the sensory world that surrounds us, we tend to be too focused on the visual elements that end up contradicting the signals our other senses receive.

Blind by Sight intentionally challenges this current paradigm by proposing the roles get reversed when considering spatial planning for public buildings. The concept of transferred bias is the central driver in the urban, architectural and interior design. This implies that the making of space and place is to be considered with the visual elements not featuring in hierarchy of spatial informants. The conceptual translation is to purposefully obscure views, and disable the navigation and path finding through visual aids.

The awareness of thresholds becomes the architectural language which defines and controls spatial experience. Music is an art form using a non-visual sense and can assist in explaining the key conceptual driver. Musical procession through time allows for a mood or emotion to be built up, and then at its peak, drops. This is referred to as a crescendo. Another musical structuring device is for the sudden halt of certain instruments to allow for others to take centre stage; referred to as a bridge. The sensory experience of a user through this space is intended to follow these two musical designs. Space is to be controlled and manipulated as a means to heighten the sensory experience, but then to also

release the stimulation of the other senses at the correct points.

The buildings threshold or the thresholds of programmatic spaces within the building are an expression of the bridge in music. At threshold spaces, the design intentionally limits the sensory experience to a singular sense; essentially texture. Floor texture or the ground surface plane is the device for controlling navigation through the project. The key to understanding the ground plane would be in the education of the user at the facility. This opened up a programmatic investigation on deciphering the sensory experience that was placed within the resource centre. The vertical plane was used as the experience manipulator; sounds, smells and texture would be organised on this plane to control the experiences through space.

The idea of frequency became the early warning system for the unsighted user. Devices for shade or screening to more private spaces used shorter spacing between to create a rhythm of elements that grew more intense as the user approached his intended destination.

An additional significant concept for this dissertation is emphasising the transfer of music into a fully immersive sensory experience of space. This idea was used predominantly as the ordering device on the urban scale; to promote the movement of people in certain directions. The sensory experience should intensify as a user approaches the focal building; the gradual increase of sensory experience is expressed as a crescendo in musical terminology.

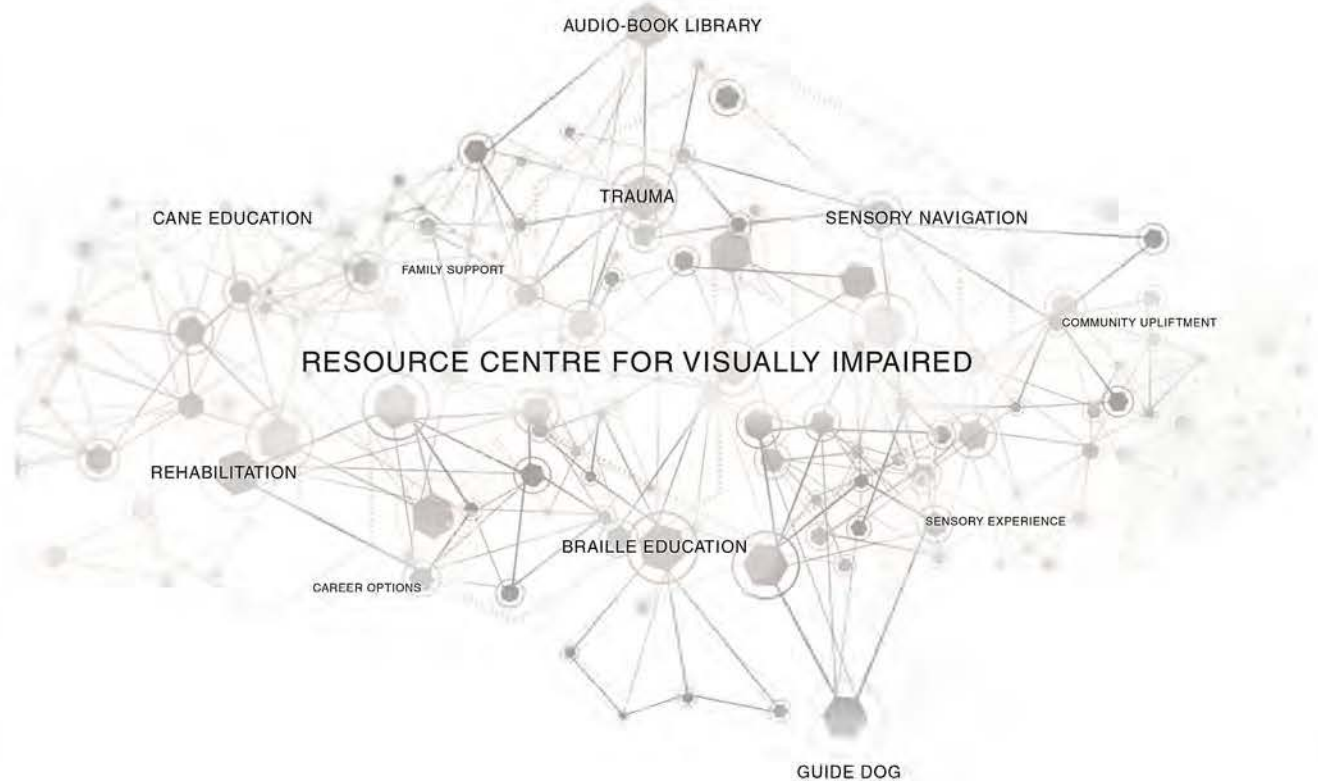
This idea was critically analysed, with the result of the experience being too overwhelming to successfully navigate. Excessive sensory stimuli could be problematic in creating mass confusion, rather than a sense of security for unsighted users. As a result, a secondary musical device was introduced to assist with the architectural experience.

A Bridge in music is defined as a break in the musical procession; it essentially robs your ears of a musical experience that was in the process of building up to a point. The bridge in music is often used in contrast, and prepares the audience for the return of the verse and the chorus. As a sensory experience through architecture, a person might not be fully aware of the devices strategically placed to create the intended experience. The 'bridge' in architectural terms is a device that is essentially a sensory negative point designed to reduce the stimulus at a critical node. It is intended to reintroduce the sensory experience of Silverton and make the user, passing through the space, aware of the sounds, smells and textures that define the spaces to come.

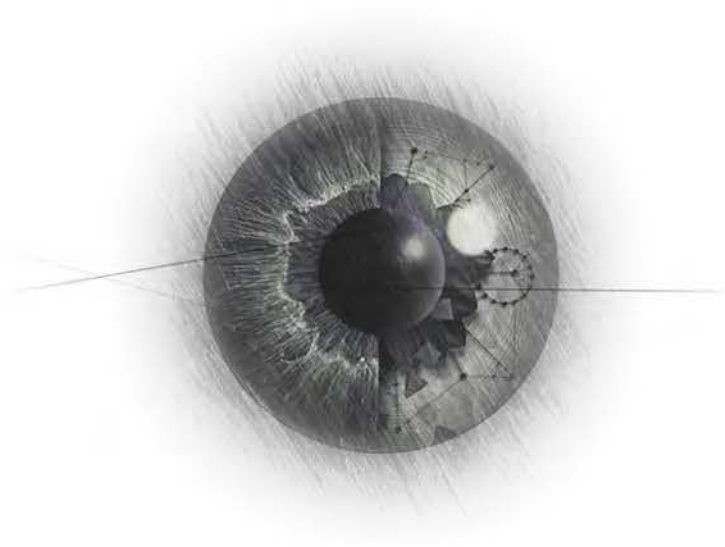
A notable conceptual driver is the sensation of the sun being felt on skin. It was this additional informant that led to the orientation and internal planning of activities within the facility. Starting on the southern side of the building, programmatic spaces were positioned to allow for more private activities in the building. These activities included consultation rooms and bathrooms. The northern half of the building was primarily intended for public and social gathering spaces, as well as

vertical circulation.

From a contextual point of view, the form of the building was to remain as inconspicuous as possible; blending in with the prevalent Silverton typology. To the sighted passer-by in a vehicle, the facility should not seduce them; to an architectural admirer the building should not be visually appealing; and to the person reading this dissertation, beautiful renderings should not be the introduction. The nature of this project requires that only after understanding the effects of having a visual bias, is it possible to analyse, assess, and hopefully appreciate the architecture.







08 DESIGN DEVELOPMENT

- 8.1 URBAN DESIGN
- 8.2 EXPERIENCE ORDERING
- 8.3 DESIGN SOLUTION
- 8.4 DESIGN CHARACTERISTICS
- 8.5 CONCEPTUAL SYSTEMS
- 8.6 NAVIGATION AND ORIENTATION
- 8.7 DESIGN OBJECTIVES
- 8.8 ITERATIONS OF FORM



CHAPTER

08

UNSIGHTED

## 8.1 URBAN DESIGN

The building and its position on site was first considered to become an edge of the haptic pathway. Predominately facing east and west with its longer facades, the environmental implications that would arise due to the building's orientation was a concern. The longer facades on the East West axis was also not contextually appropriate since the vast majority of the surrounding buildings faced north.

During the iteration of the process, the building developed into a structure that responded to two different road edge conditions. This allowed for a larger northern facade, while further encapsulating the spaces of both the road and pathway which were developing into a type of market space. For the initial development phases of the project, the contextual orientation was a key consideration; as the idea of the sun being felt on a user's face became a driver for path-direction and navigation through space. The idea of a pergola with louvers spacing increasing at exponential increments became an introduction device to the building's facade. The experience of shade frequency offered non-tactile, non-verbal and non-visual communication to an unsighted user that was close-approaching the building.

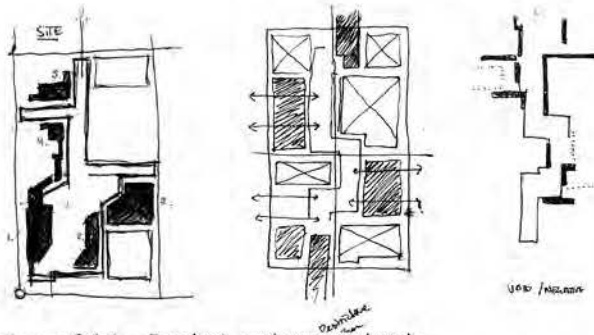


Figure 8.1.1 - Precinct exchanges sketch.

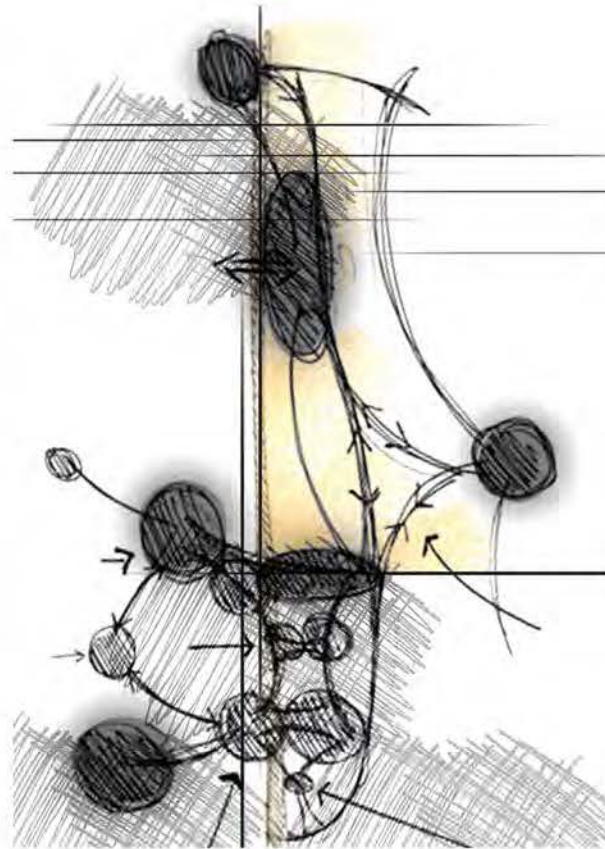


Figure 8.1.2 - Sensory transactions sketch.

Designing for the blind was the initial parameter or delimitation as this would mean that all other forms of visual impairment would be considered. The initial thought was that by designing for the worst situation, all other forms of disability would be catered for. This idea was challenged before being concluded as false.

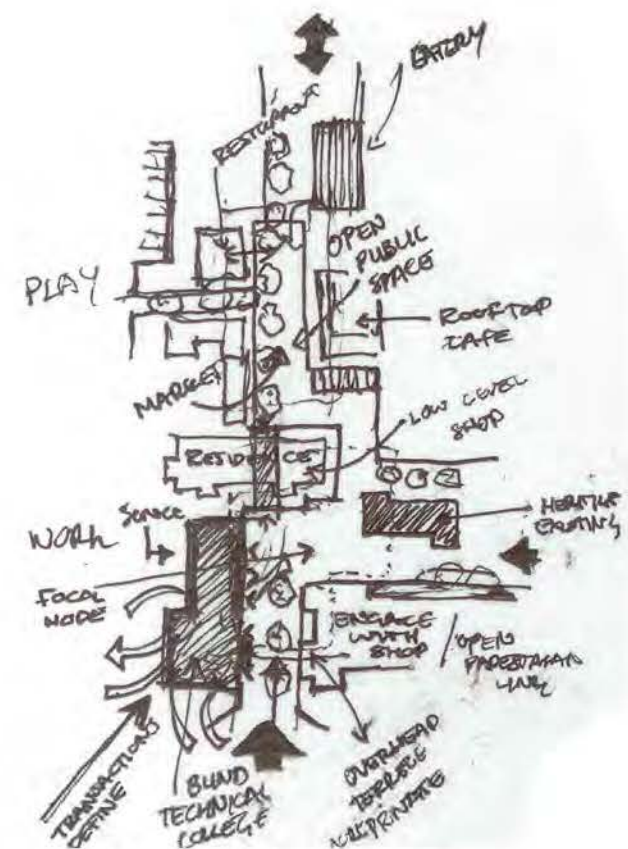


Figure 8.1.3 - Site developments sketch.

If one were to design for a visually impaired user, who is not yet fully blind, this would most likely be the best archetype to consider designing for. To elaborate, the following needs to be understood; to a fully blind user, colour does not matter. Yet to a partially sighted user, bright colours and contrasts between objects are the key to navigation because they still rely on the use of visual aids. As this project deals with commentary on the lack of inclusive design in architecture, the exclusion of a user with insufficiently severe visual impairment did not seem an appropriate response.

## 8.2 EXPERIENCE ORDERING

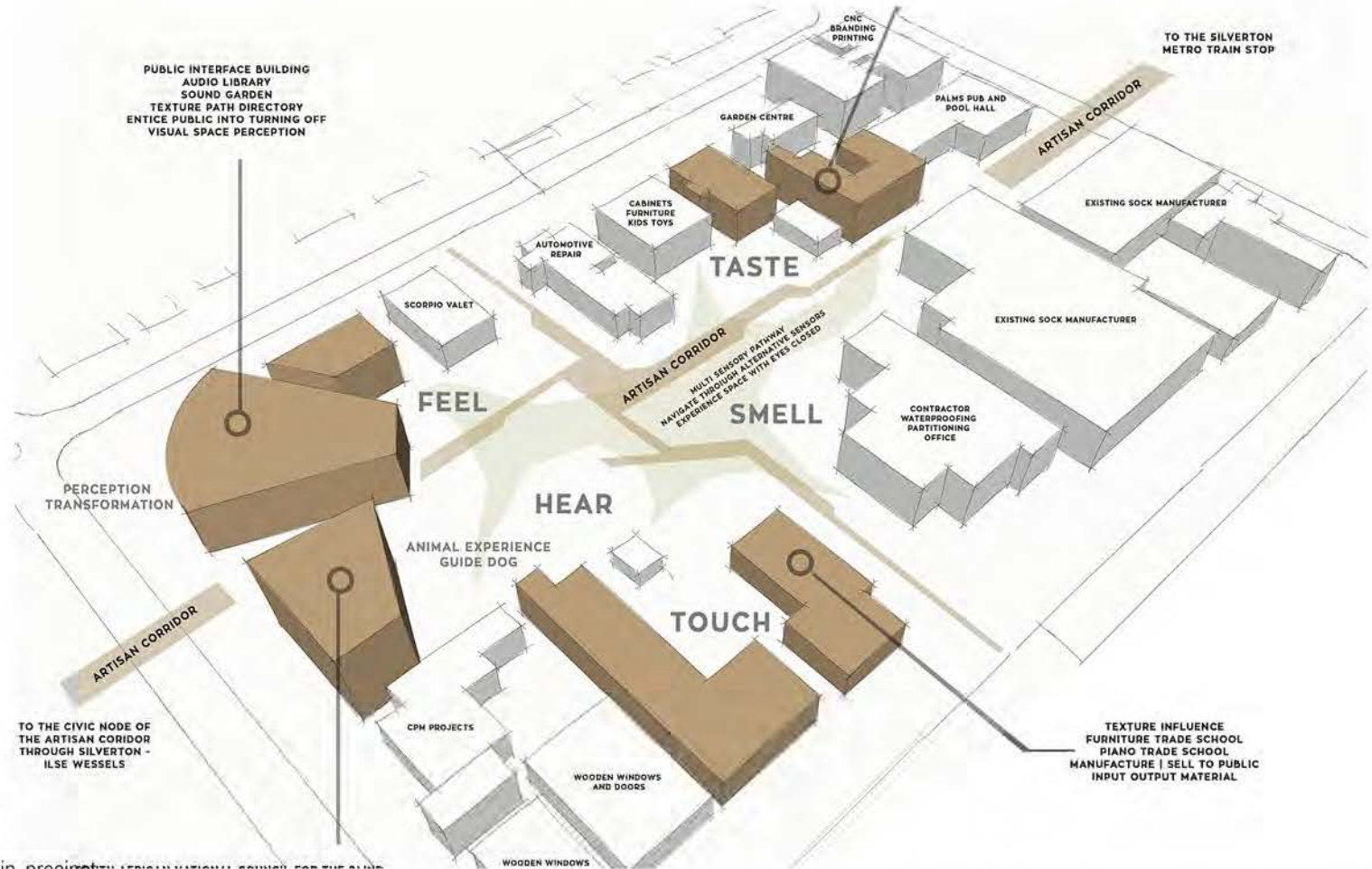


Figure 8.2.1 - Sensory ordering within precinct.

Ordering sensory cues along the haptic pathway was considered at great length. On one side, the existing fabric provided the basis for ordering the experience on an urban scale. The opposing idea was the placement and structuring most used in convenience shops. That idea is to place the most bought items as far apart from each other to force a user past a space and hope that an impulsive purchase is made. (Green 2011)[1]

The most appropriate solution was to utilise both ideas in supportive roles of each other and to the most beneficial order to enhance the sensory experience. The ranking of sensory stimulus in relation to the existing mapped sounds; smells and textures in the precinct allowed for slight freedom to control ones journey through Silverton. These devices were graded from man-made to more natural and likewise from industrial to vegetation.

This sensory space programming gave rise to the placement of coffee and pancake vendors along the pathway; serving as devices to attract users into the route. On a framework consideration, it was identified that the major pedestrian passage was along this axis in its current condition. The pathway is the hypothetical formalisation of this naturally occurring foot traffic study; where the sensory devices act as supporting devices.

[1] Willem van der Merwe, STORE DESIGN: A Complete Guide to Inspiring Successful Retailers, J. Eddon, Ziggy Books

## 8.3 DESIGN SOLUTION

The facility does not intend to become an environment that does either of the following:

1. The exclusion of any person interacting with the built fabric. Initially an investigation into creating a facility that exclusively deals with fully blind people had a negative attitude towards the current condition. The term used to explain this concept was an eye for an eye will leave everyone blind.
2. An environment that sugar-coats the user. As a place of instruction, the facility is required to prepare the visually impaired user for the harsh world around them. It is to serve as an introduction that works in both directions – one being the introduction and facilitation of a newly blind person; and the creation of awareness for able bodied users about the non-visual elements that define spatial experience.

The architecture and the building function should be designed to support an idea of drawing attention to our visual bias as architects. It should also be a space where a user in the spaces passing through the building should be made aware of elements of sensory fabric that define our perceptible world. The 'musical bridge' concept is the conceptual device to best bring this idea to fruition. Initially, this conceptual device was described through a different sense and was termed the 'palate cleanser'. The solution was critically reviewed; with the result that the space should be ordered and the ordering should define the architectural form.

The architectural language was to be as attentive of the broader context as it was on the micro scale of intervention. This reinforced the language to be subtle and respectful of the buildings around it. Blending in had more impact than creating forms that competed for attention.



Figure 8.3.1 – Architecture language.

## 8.4 DESIGN CHARACTERISTICS

The contextual parameters meant that the factory aesthetic was the most appropriate architectural language to investigate and explore. The portal structure and steel framing were envisioned to relate the new architecture to the context.

These investigations into the design character and language revealed the works of the local South African architect, Jo Noero. The works of Noero are instrumental in understanding the factory and industrial aesthetic.

The industrial typology has the capacity to become a beautifully designed architectural space without forcing a window dressed and pretentious "New York industrial" experience onto space. The industrial architectural language of Noero is true to its structure and materiality; the design characteristics of the 'Blind by sight' building should use a similar approach towards the form and interior spaces.

## 8.5 CONCEPTUAL SYSTEMS

The most critical idea behind the Blind by Sight building is the development of spatial experience through non-visual elements. From a systems approach to the design development, the building had to be environmentally aware of the micro and macro contextual parameters. Typically, architecture tends to be the embellishment of a primal sheltering device. The essence of this is explained through the 6 S's of architecture or the shearing layers of change. Shearing layers is a concept coined by architect Frank Duffy, which was later elaborated by Stewart Brand in his book *How Buildings Learn: What Happens After They're Built* (Brand, 1995) [1] and refers to buildings as composed of several layers of change. This, however, tends to separate the human indoor experience from the natural outdoor experience. This blurring of lines has the potential to become a useful device for orientation and circulation through designed space.

Conceptually, the most appropriate means of achieving the gradient between the two climatic conditions would be through passive ventilation systems, correct orientation and natural elements that soften spatial definition. If the objective is to define space through means other than visual, then heat in considered spaces is a useful device to apply to the sensory perception of space. The conceptual system for achieving this interior climatic condition was the Trombe tower stack. Using the principles of a trombe wall (Mazria, 1979)[2] a service stacked vertical element was considered. This device would ventilate the spaces within the facility by drawing out warm air; the second part to this system being successful was the supply of cool air into the space.

Thermodynamic principles of hot air rising and cool air sinking (Pauken, 2011)[3] determined the type of ventilated spaces that could be achieved. These spaces were analysed and the most effective solution is shown in figure 8.5.3. These systems were detailed and explored further in the technical chapter. An additional system for consideration was the sensory dictated spaces. The separation of spaces and thresholds that isolate them was a critical design process system that informed the design on a smaller and more intimate scale.

## 8.6 NAVIGATION AND ORIENTATION

The initial investigation into navigation was based on the use of maritime and aviation lighting. It was a rough sensory translation of the identification of port and starboard sides of a user in space. These ideas were identified in the precedent study on The Centre for the Blind and Visually Impaired in Mexico. By utilising the sounds of moving water to orientate one's self, it opened an avenue of design investigation. For example; hearing the sound of water from the left would indicate that the user is moving in a northerly direction towards the building.

This would have the design implication that the pathway would be required to be unsymmetrical about the navigation device. If a pathway were to have this device in the centre of the axis, like in the precedent study, it would not serve its function as the user could be on

either side of the path in opposing directions, and hear water from the left.

The next major consideration for the design was the sensation of feeling the sunlight on one's face. This factor is obviously weather dependant; however, it served as an influential factor in the design of the approach to threshold entrances of the building. For this factor, the orientation of the building was shifted to aim the larger facade surface areas towards the northern direction.

During the investigation into this sensation, the idea of staging the sunlight was examined. Using light as a communication device is not a new phenomenon; Morse code has been used extensively in communication through light. The difference is the in the physical

make up of solar energy versus light. Solar energy and Ultraviolet light is what is perceptible as a sensation on the skin. Translating this into a Morse code would mean the intentional cutting off of this source, or the intentional shading of areas in a method that is perceptible to an unsighted user. The pergola was identified as the ideal device to communicate a message of proximity to an intended space. The pergola purlin spaces would be staged to increase in a type of Fibonacci sequence. This concept was called the frequency of shade, and it was developed further into the device to communicate the approach to entrances of points of interest. The same frequency used in the pergola spacing influenced the pneumatic devices at the entrances of ablution facilities and counselling rooms.

[1] Stewart Brand, 1995. *How Buildings Learn: What Happens After They're Built*. Bantam Books.  
[2] Edward Mazria, 1979. *The Passive Solar Energy Book: A Complete Guide to Passive Solar Home, Greenhouse and Heating Design*. Rod Ehren, Editor. Rodale Inc.  
[3] Mike Pauken, 2011. *Thermodynamics For Dummies*. 1 edition. For Dummies.

## 8.7 DESIGN OBJECTIVES

The project was not driven by a single defining concept. It was derived from an in-depth understanding of both context and condition. Conceptually the exploration into sensory understanding provided a baseline from which to start the design development. Spatial manipulation to stimulate a sensory response was a key driving factor in the thinking about architecture as a device for communicating experience.

The challenge lay not in the design of the stimulation mechanisms, but rather in the understanding of a non-visual sensory interpretation. As expressed in the concept chapter, the idea of a sensory zero space is near impossible. However, the sensory negative space is an attainable design element that becomes critical in the sequence of the centre for the visually impaired. This space as a threshold in architectural terms is a means of focussing a single sense and highlighting it to communicate a clear message of navigation into different programmed spaces.

The programmatic intention was to be ordered using the surrounding buildings and the current programmes. This allowed for a blending approach.

The conceptual approach towards the design of the facility was initially to create an environment that purposefully highlights a phenomenological response. This idea, as far as design development goes, posed many challenges as it was a very small scale to consider the approach at. Placing emphasis on such small elements could potentially lead to a mix match of smaller designed elements. The largest scale and the smallest detail had an urban ordering device and conceptual approach; however, the intermediate level was lacking.

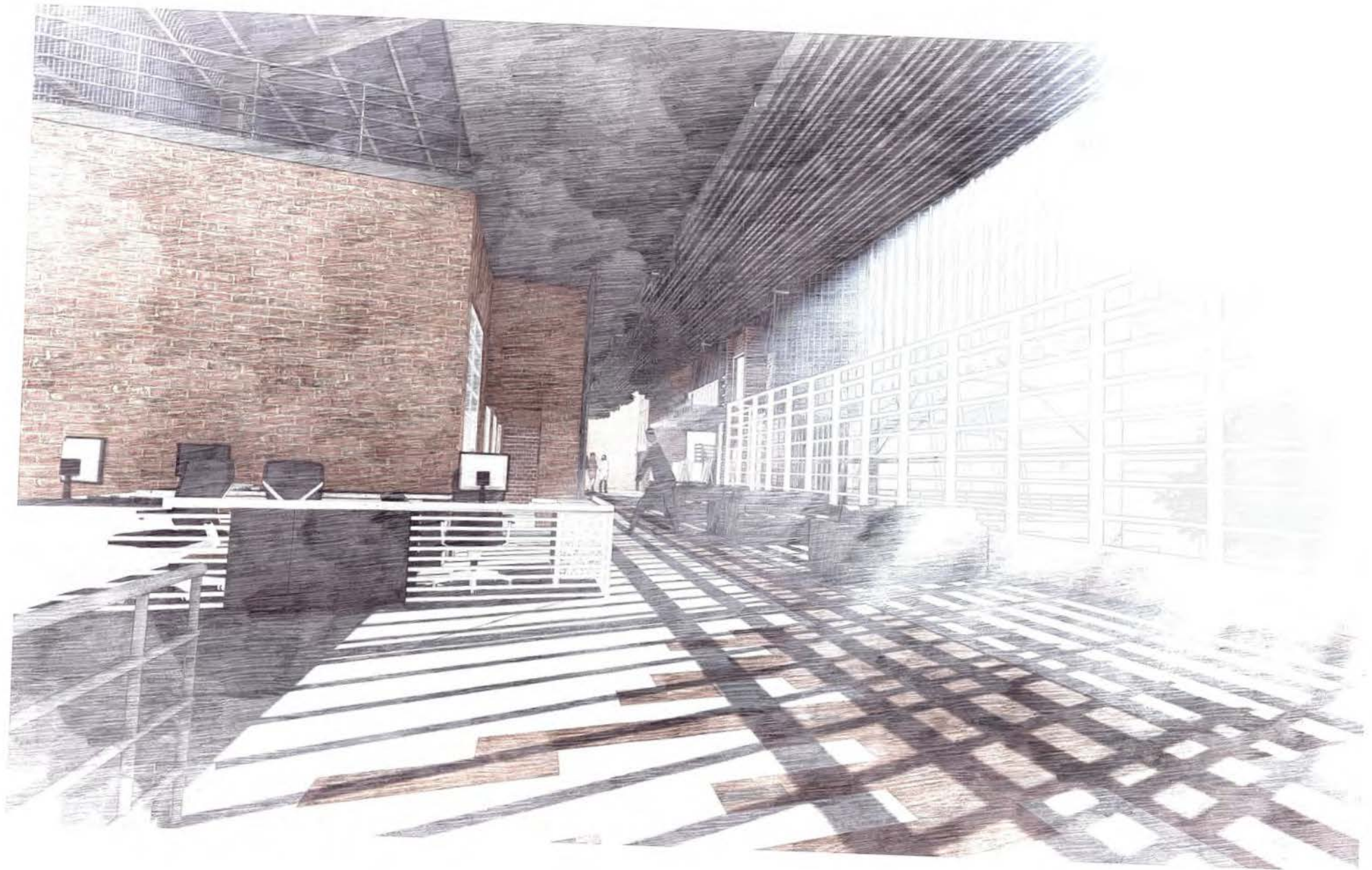
On an intermediate scale the following ideas informed the design of the facility.

In discussion with a blind person one of the key devices for self-orientation was the sensation of the sun's warmth on their face. This ordered a programmatic placement point by considering the experience that would be utilised to assist or amplify the idea of orientation.

A second conceptual driver was the idea of a building

becoming invisible within its context. This was primarily a contextual informant and an urban condition response. The intention was to hide the building in plain sight from the perspective of a passer-by who is not concerned with the internal functions. Therefore, creating background architecture that does not demand or visually compete for attention. This conceptual design approach meant that a deeper level of contextual investigation was required.

Another consideration was the understanding of the evolution of the typical Silverton typology. As explained in the evolution of site description, the programmed spaces were connected by means of a circulation passage. These pods of different functions were connected and a type of space station, architectural shape started developing. The internal form began breaking out of the standard portal structure that disguised the building within the site.





## 8.8 ITERATION OF FORM

### 8.8.1 DO YOU DREAM IN COLOUR?

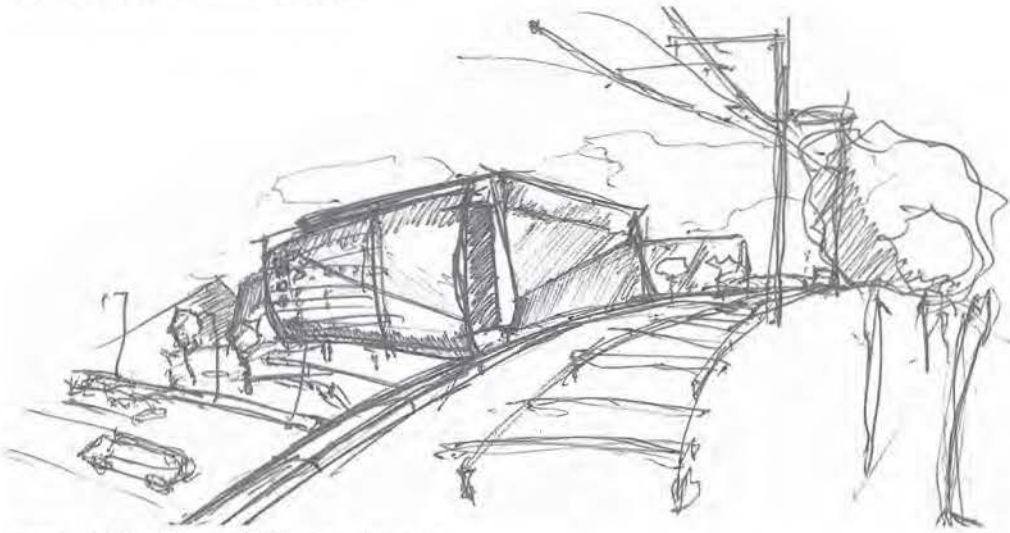


Figure 8.8.1 - Approach Silverton by train.

After watching a video on the interpretation of dreaming as an unsighted person (Hall, 2016), [1] the following brief sketches were drawn while investigating the site and the possibilities of a large public building within the precinct.

The ideas of scale and interface were loosely experimented with to establish a baseline to test initial philosophies on. These sketches indicated different spatial realms and the visual perception from the public rail line as one approaches the Silverton stop.

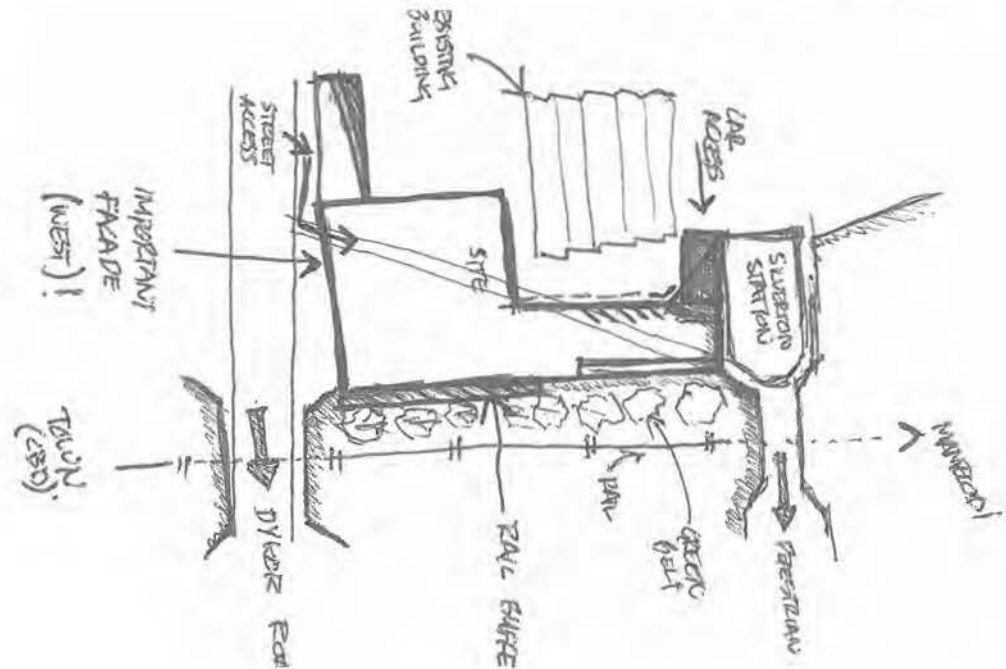


Figure 8.8.2 - Sketch analysis.

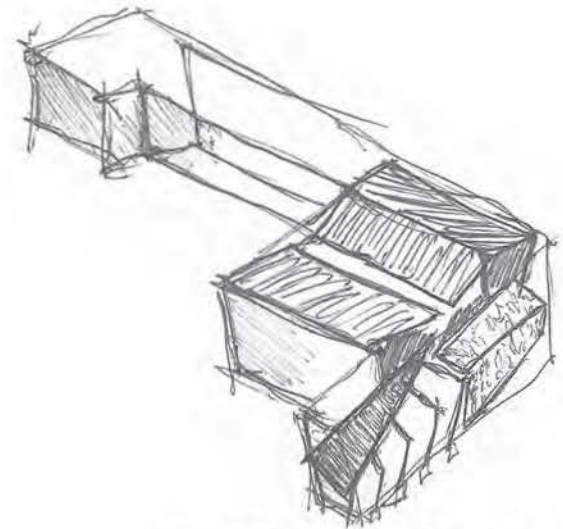


Figure 8.8.3 - Extrusion of negative form.



Figure 8.8.4 - Passage through Dykor bridge.

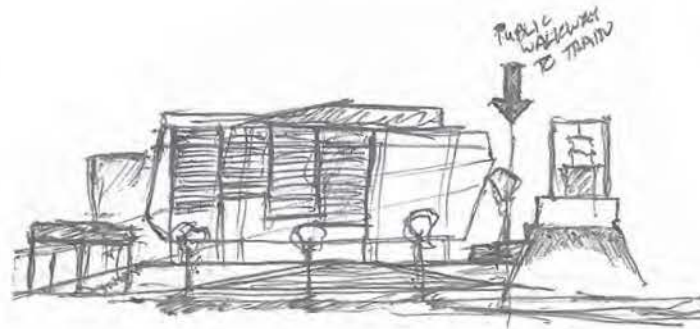


Figure 8.8.5 - Quick sketch imagined public building.

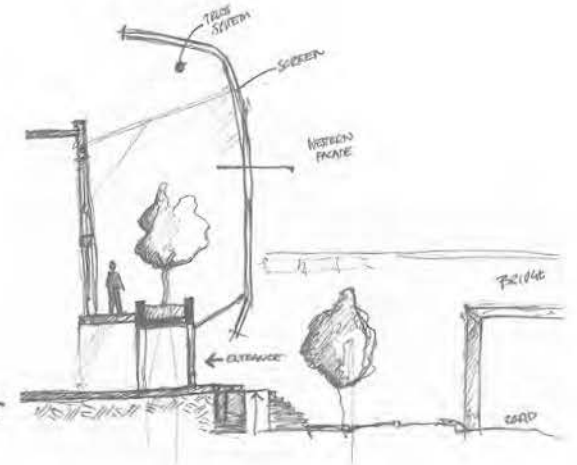


Figure 8.8.6 - Sketching layers of public building.

## 8.8.2 THE SCENE SEEN



Figure 8.8.7 - Mass model iteration 1.

Mass model iteration one – The initial proposal of a mass that engages predominantly with the larger road edge down Fakkel street. Fakkel Street runs in a north-south direction and is parallel to the major Dykor road. Due to the importance of this road, on the urban scale, the first iteration addressed the idea of establishing a presence along this road edge.



Figure 8.8.8 - Mass model iteration 2.

Mass model iteration two – The second proposal highlighted the importance of the building responding to both roads on the site; forcing a type of corner building that would be a focal point within the context. The placement of the pedestrian pathway was considered in this iteration and the potential demolition of some existing elements to allow for the dissection of Silverton.



Figure 8.8.9 - Mass model iteration 3.

Mass model iteration three – The third proposal was to show the building being segmented to allow for the urban passage to pierce through and connect to the larger urban vision. The positioning of the building started to orientate its larger facade more towards the north, to better respond to climatic conditions.



Figure 8.8.10 - Mass model iteration 4.

Mass model iteration four – The fourth iteration shows the context in greater detail, as well as how the treatment of the roof influenced the design decisions in establishing a base to work with. The industrial language of the surrounding buildings began impacting the scale of fragmented structures proposed.



Figure 8.8.11 - Mass model iteration 5.

Mass model iteration five – Iteration five began experimenting with the idea of pulling away from the street edge; to create a sensory negative zone to enhance experience further down the path. The pitch of the roof was also changed in order to see the relativity between the existing structures and the proposed new.



Figure 8.8.12 - Mass model iteration 6.

Mass model iteration five – The last mass model iteration aimed at tying the proposed structure into its context via the extrusion and subtraction of existing forms. Identifying base points or anchor points to start ordering different experiential programmes.

### 8.8.3 UNDEFINED CORNER

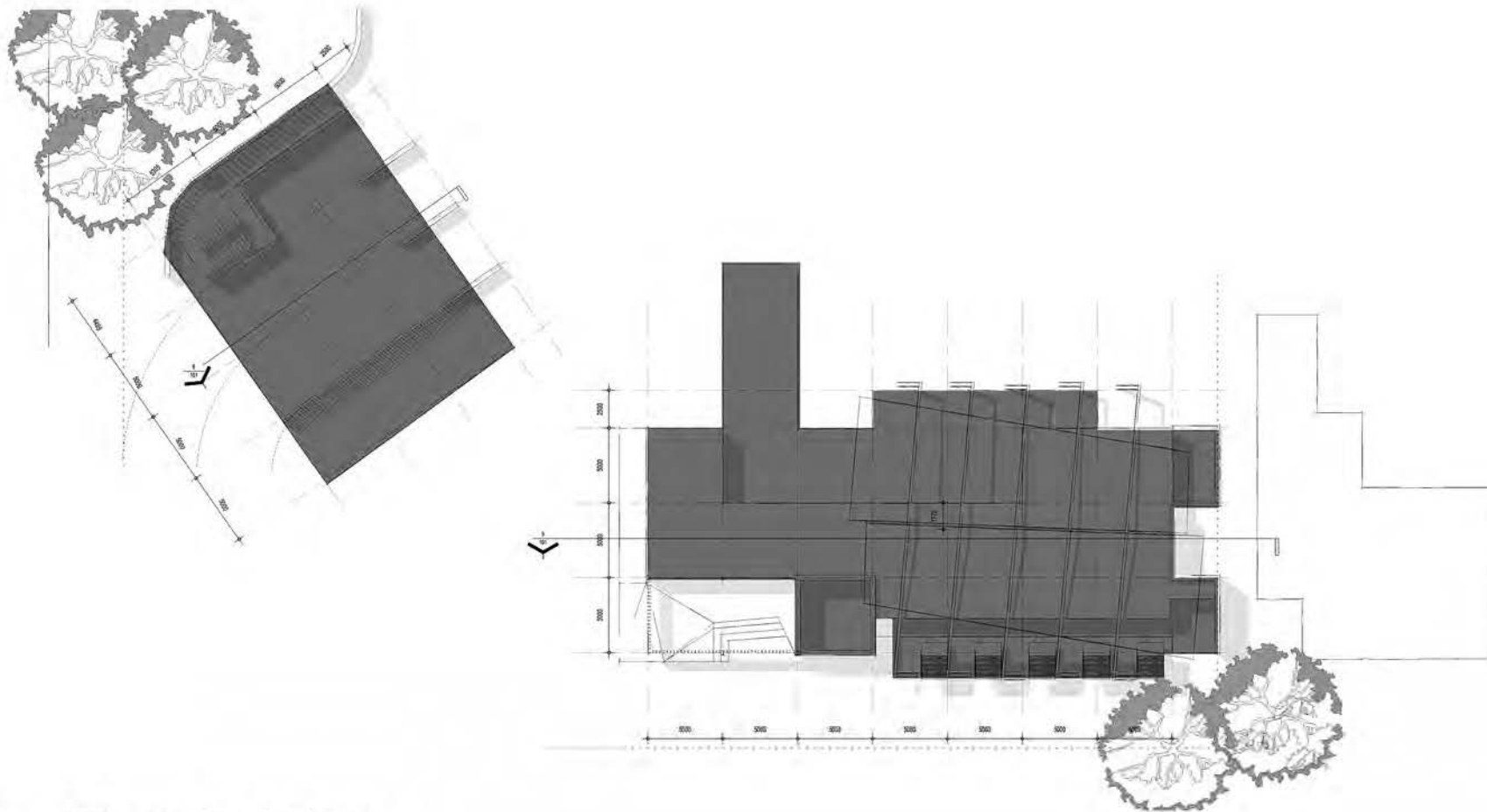


Figure 8.8.13 - Initial plan and grid structure.

The corner building proposal was the first to show the provision of empty space between the two structures. This would allow for the haptic pathway to continue further and connect the transport hub with the civic node.

As a starting point, a 5m grid was established and which began to form the baseline to start manipulating the form.

From the onset, the service points such as stairs and ablutions. The idea of vertical elements that create a screen started to be used as a means of defining internal vertical circulation.

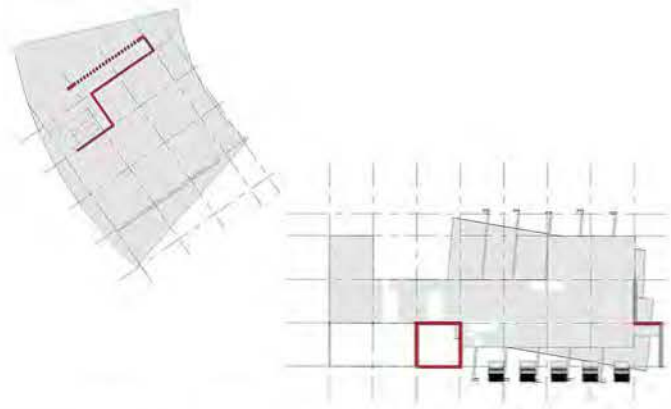


Figure 8.8.14 - Service placement in grid.

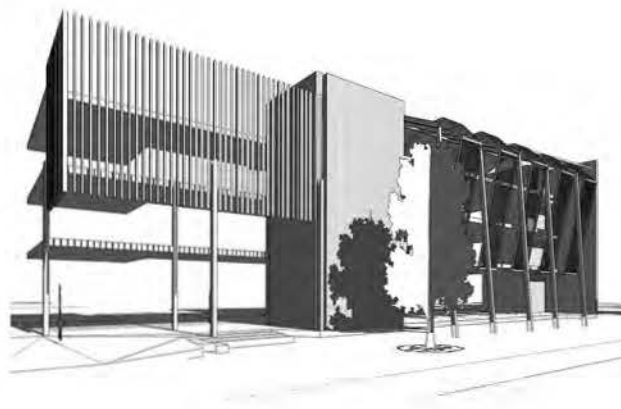


Figure 8.8.15- An idea of screen.

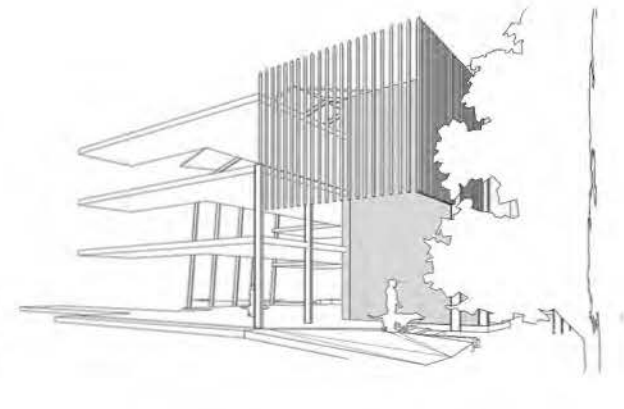


Figure 8.8.16 - To whom do we design.

## 8.8.4 ILLUSION OF FORM

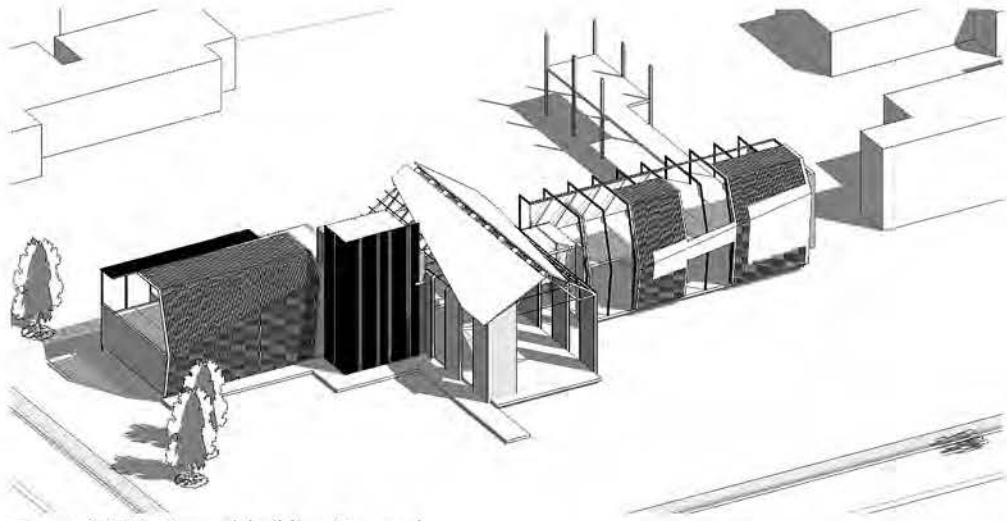


Figure 8.8.17- Second building Proposal.

This iteration began formalising the pathway and began with the idea of a urban threshold that would act as the "palate cleanser" or sensory negative space between the two buildings. The illusion of form started to be constructed out of screening devices that allowed for visual connections to spaces, but without the correct visual aids to navigate the user

into those spaces. The intention was to lead the way through textured paths and sounds that would direct the intended user into the designed space. These spaces included herb gardens and different sensory heightening and dampening rooms.

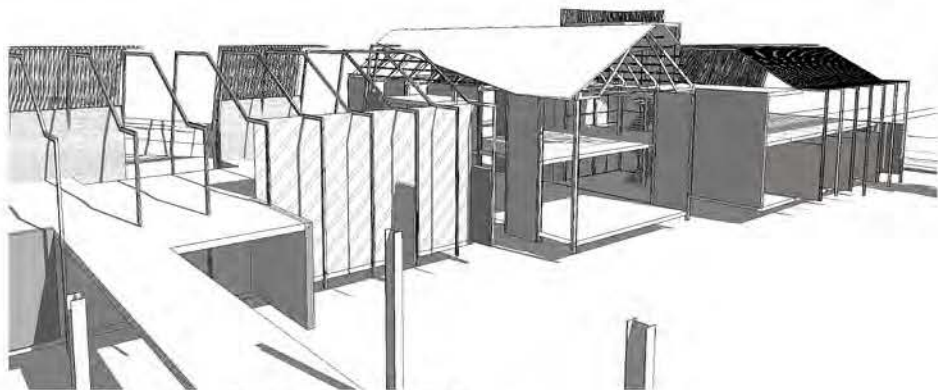


Figure 8.8.18 - An interaction with the road.

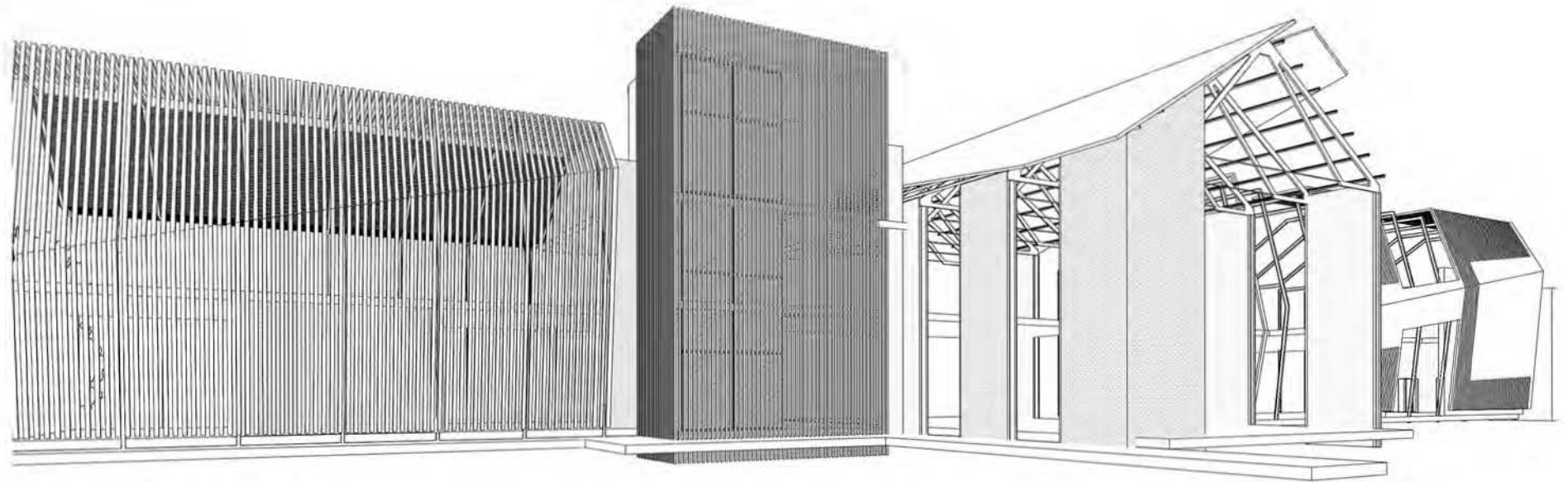


Figure 8.8.19 - The see through building.

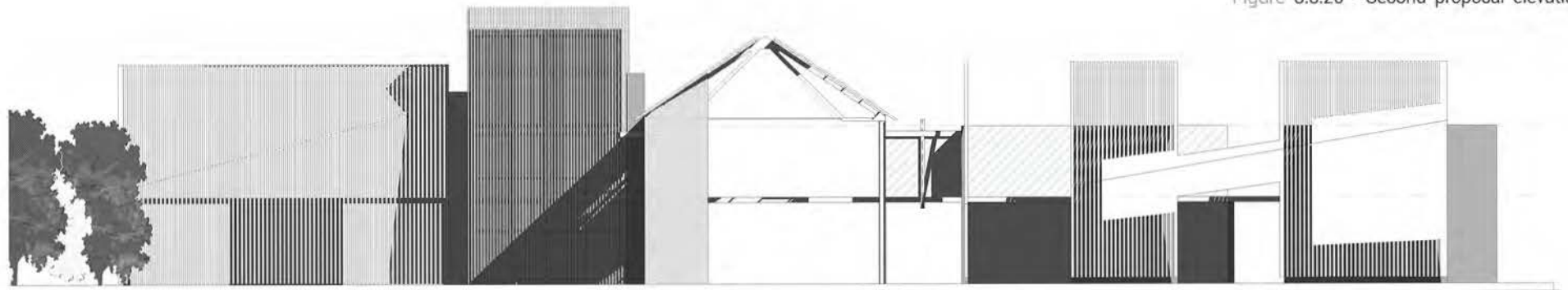


Figure 8.8.20 - Second proposal elevation.



## 8.8.5 BREAKING DOWN BARRIERS

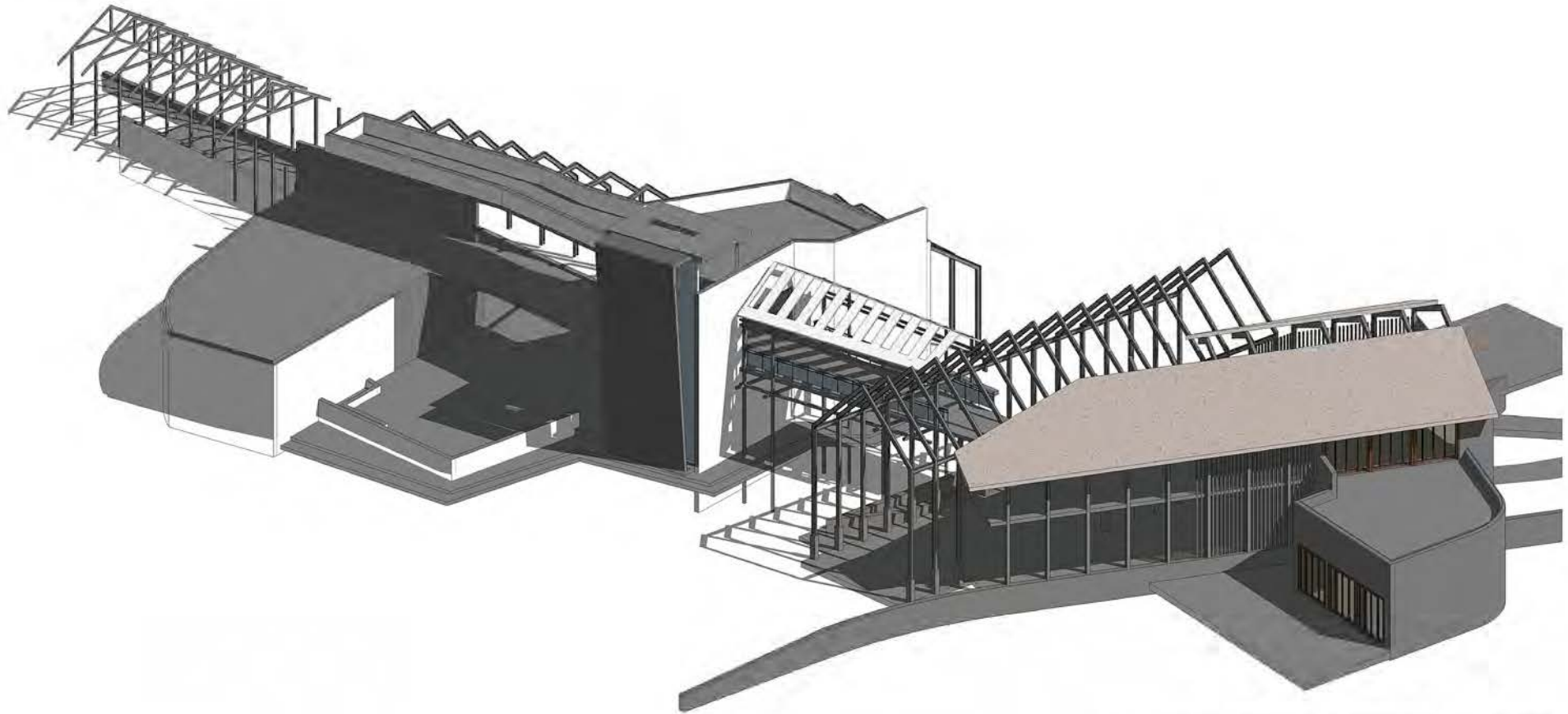
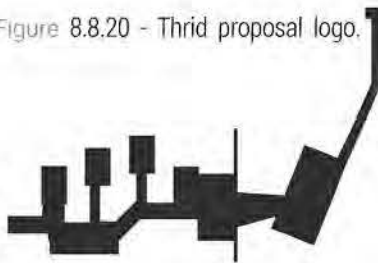


Figure 8.8.22- Exajeration of experience through form.

Figure 8.8.20 - Thrid proposal logo.



BLIND BY SIGHT

The programme development underwent major scrutiny at this iteration phase. What began as a place for sensory experimentation started developing into the starting point of a resource centre for the visually impaired. This iteration looked at the intention of breaking down barriers and using architecture to act as a mediator between the able bodied

and the disabled. The major driver in this iteration was the use of pergola structures and the exposed ribs of the building structure to create a pattern of shade that would be interpreted in experiencing the spaces.

As a response to the spread of industrialisation through Silverton, which was described as an industrial cancer, this iteration was a commentary on the death of the building and the skeletal structural remains becoming a new typology. The form boundaries were pushed to create a place of sensory extremism.

As a whole, this iteration was the exaggeration of form to break through personal boundaries and constraints. It was a very experimental and organic shape to force the design to break out of a regimented grid.

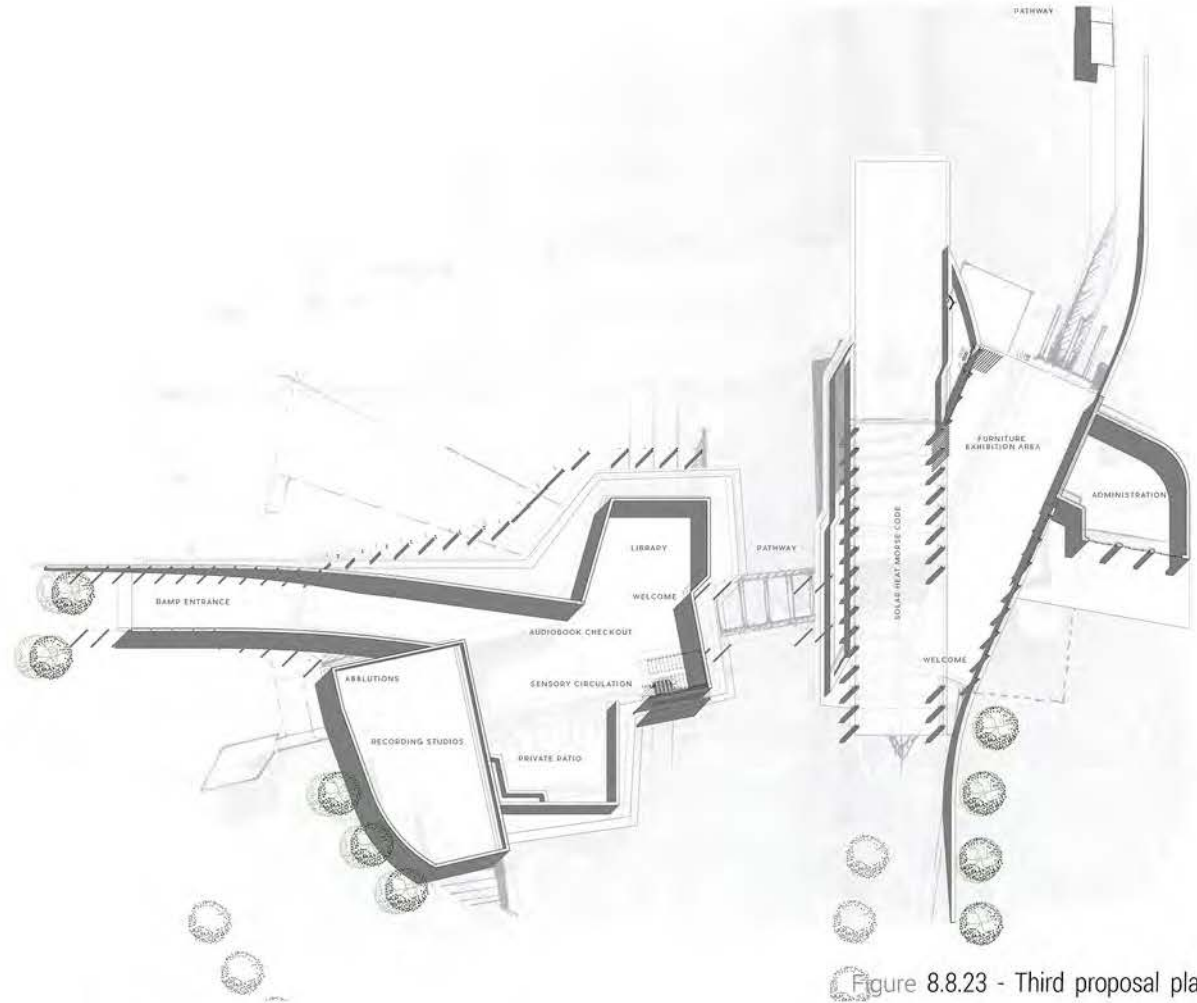


Figure 8.8.23 - Third proposal plan.

Figure 8.8.22 - An interaction with the urban passage.

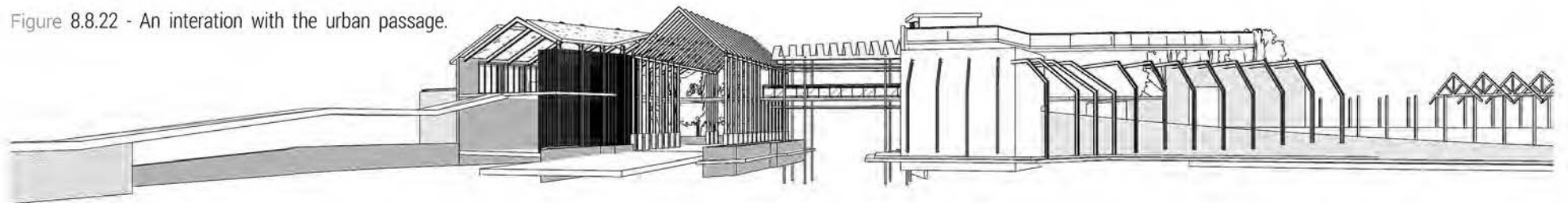




Figure 8.8.23 - An urban response.

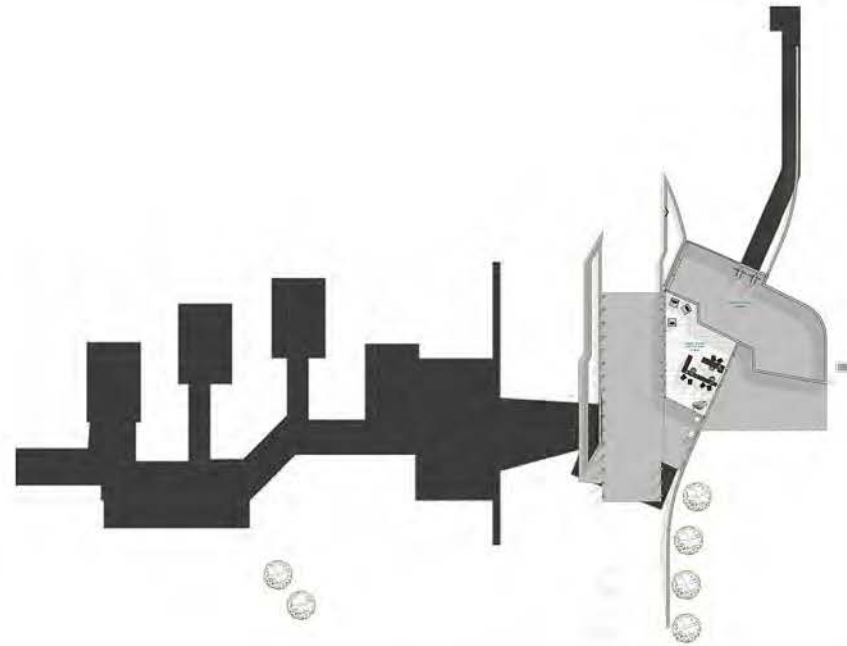


Figure 8.8.24 - Iteration of exajerated form 1.

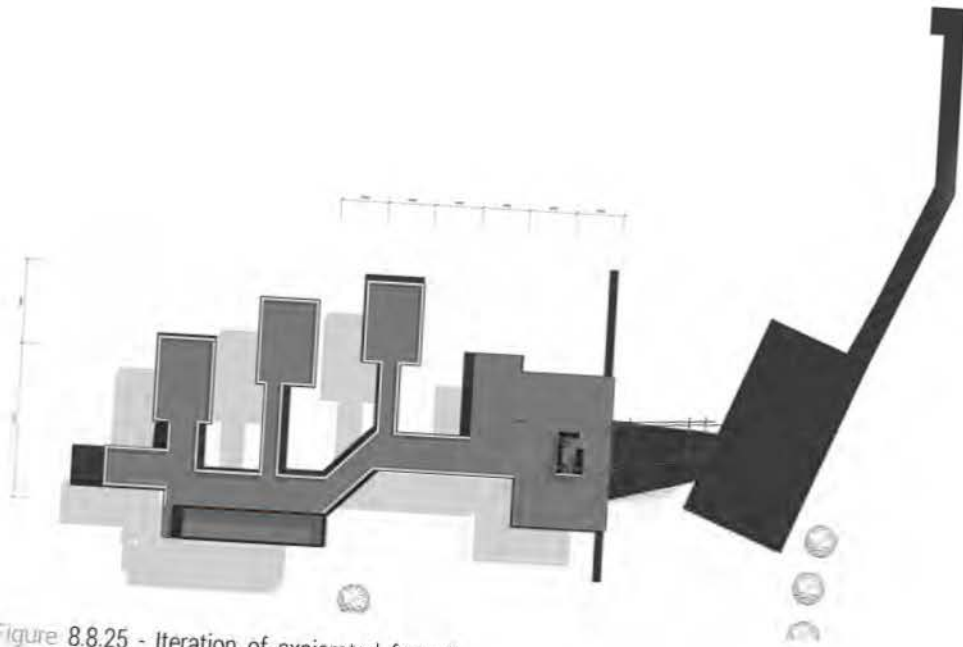


Figure 8.8.25 - Iteration of exajerated form 2.

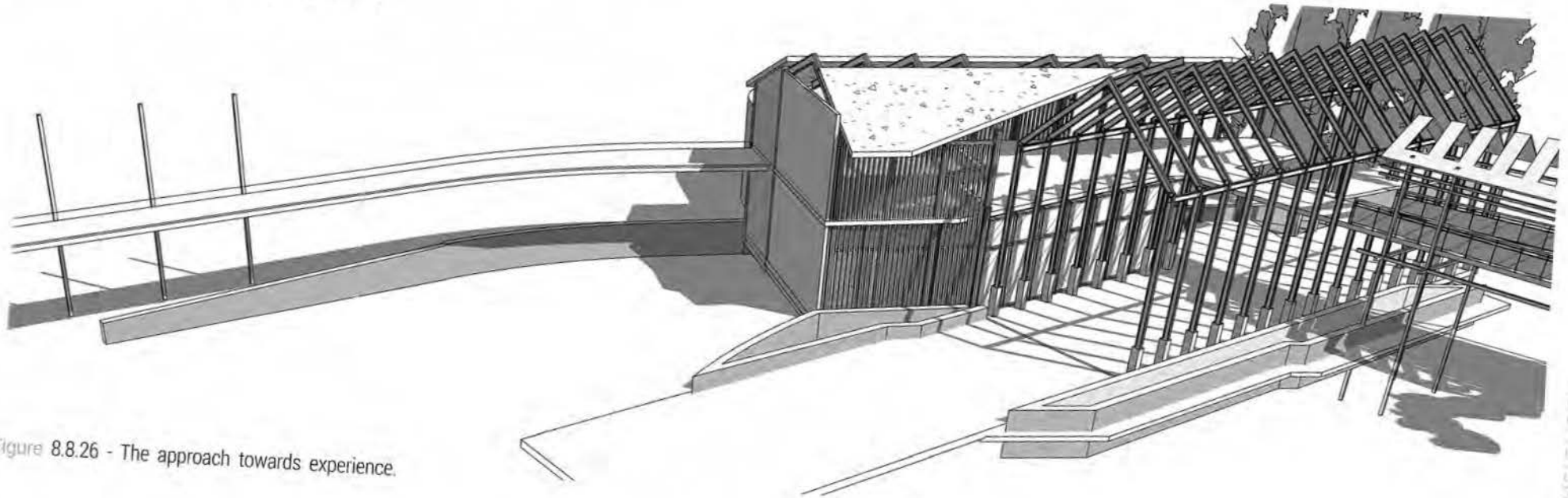


Figure 8.8.26 - The approach towards experience.

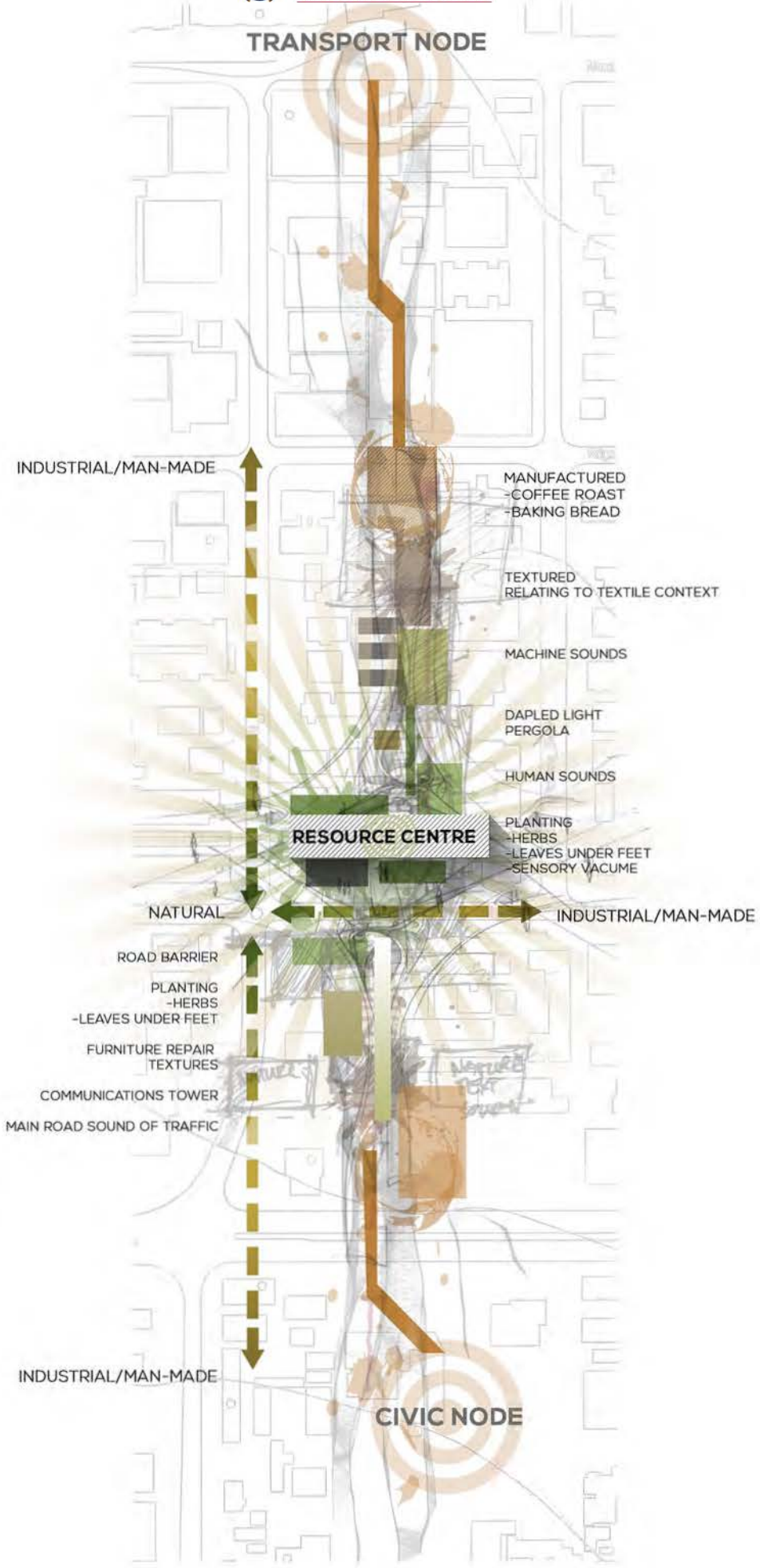


Figure 8.8.27 - Larger urban ordering device.



Figure 8.8.28 - Existing anchor points.

The realisation of contradiction iteration was the phase of reflection on the exaggerated form. Through critical feedback from numerous admirers of the form, it was deduced that the structure had become an object in empty space and was void of connection to its contextual surrounds. It too had fallen victim to the projects initial scathing review on the current architecture paradigm - the production of seductive form and imagery. As a non-visually orientated project,

it had become something that was counter to its own ideals.

The works of Jakupa Architects, with the Cape Town Society for the Blind, was the reassuring and supporting precedent. The CTSB highlighted that architecture does not need to be loud and compete for attention.

Understanding the context and the buildings around the site on a structural level gave rise to the new form shown in this iteration. Using the basic portal structure, that is predominantly used in Silverton due to the efficiency of building, the form began to take shape by looking at the most efficient ways to construct the basic sheltering device.

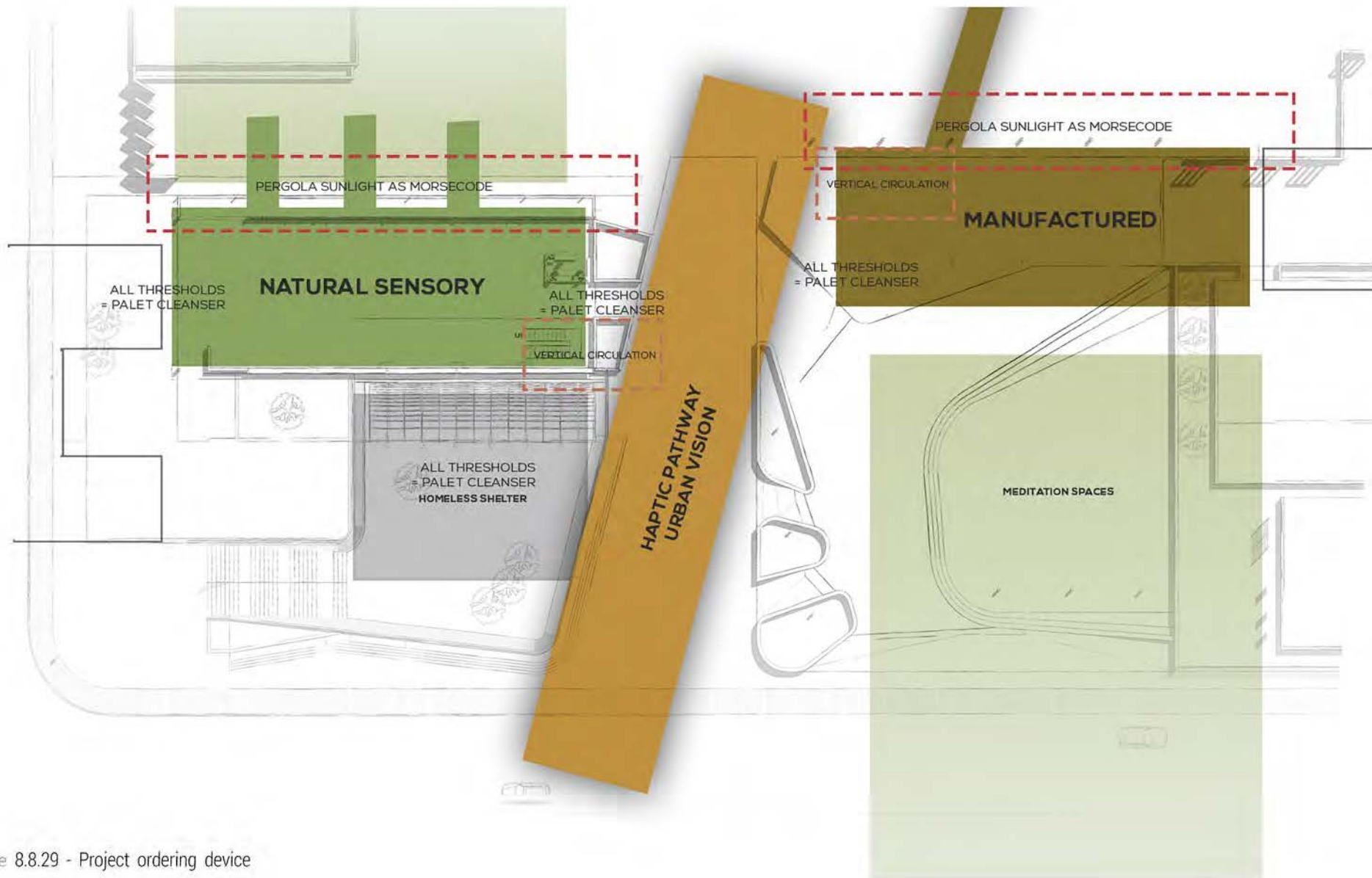


Figure 8.8.29 - Project ordering device



Figure 8.8.30 - Urban anchor points



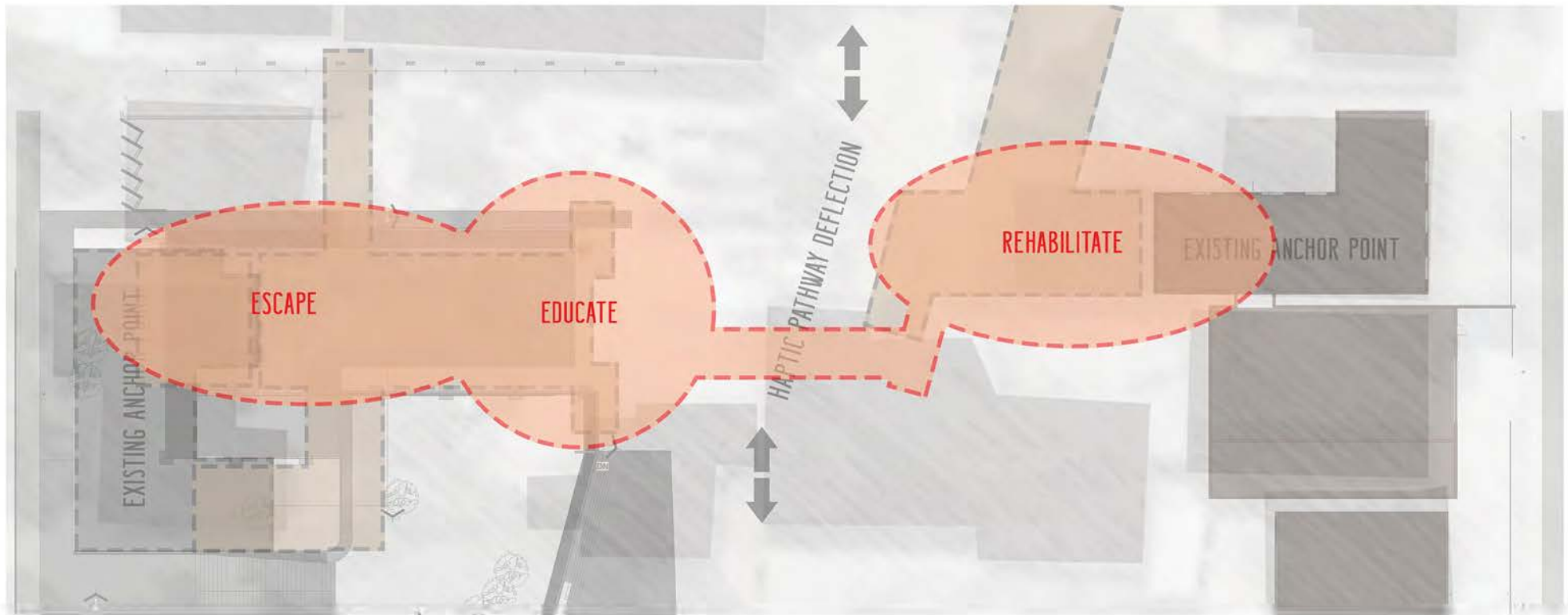


Figure 8.8.31 - Building Ordering experience

An ordering device for internal spaces was setup to range from the rehabilitation, education to escapism. The ordering was derived from contextual informants that dictated the placement by understanding what was currently available at the site.

Rehabilitation was linked to the ability to share resources with the furniture shop. These resources would be the tools and service space to the workshop. The bionics lab was placed here.

Education was linked to the bridge as the experience of the building acts as a learning building for visually impaired users to acquire the skills necessary for the world around them.

Escape was linked to the idea of reading being a way of relaxing and is seen as a form of escapism. The audiobook link programmes were to be placed here as this portion of the site had the most existing natural resources.

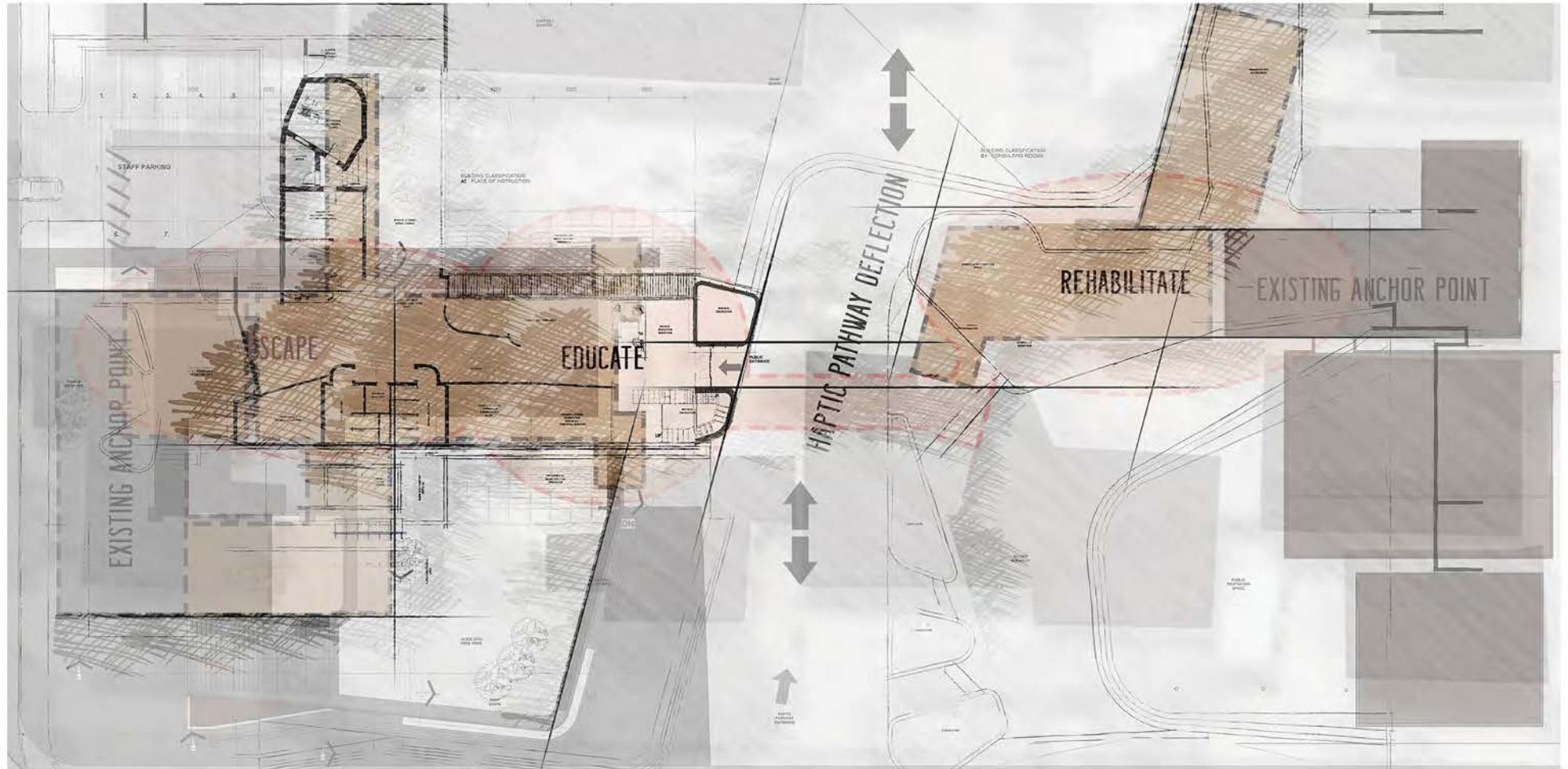


Figure 8.8.32- Overlaid form

With the overlaying of the previous two images, the spatial definition of the form began to take shape; as the ordering devices combined with the anchor points and extrusions of existing form. The haptic pathway informed the spatial qualities bordering the two different buildings.

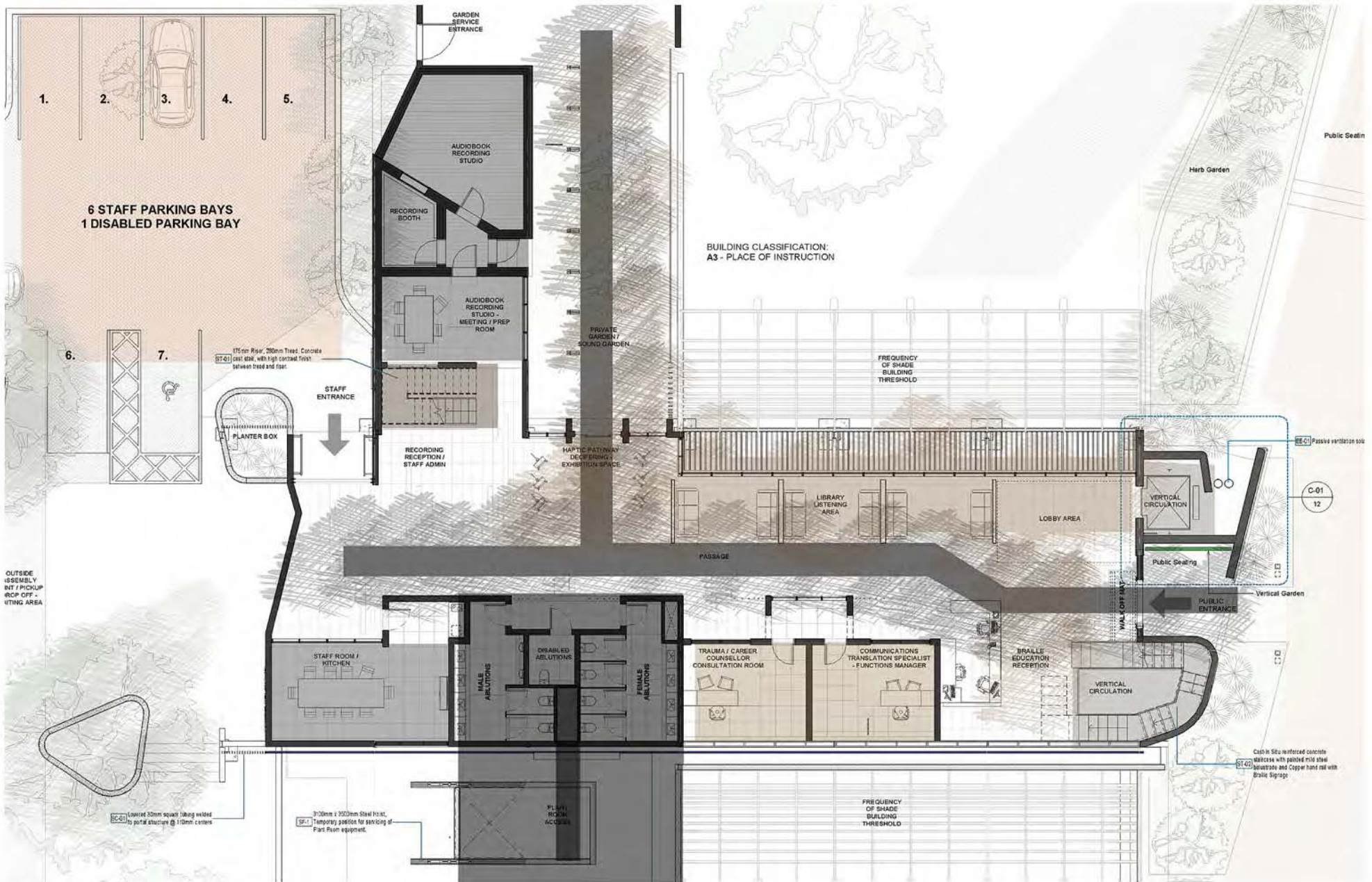
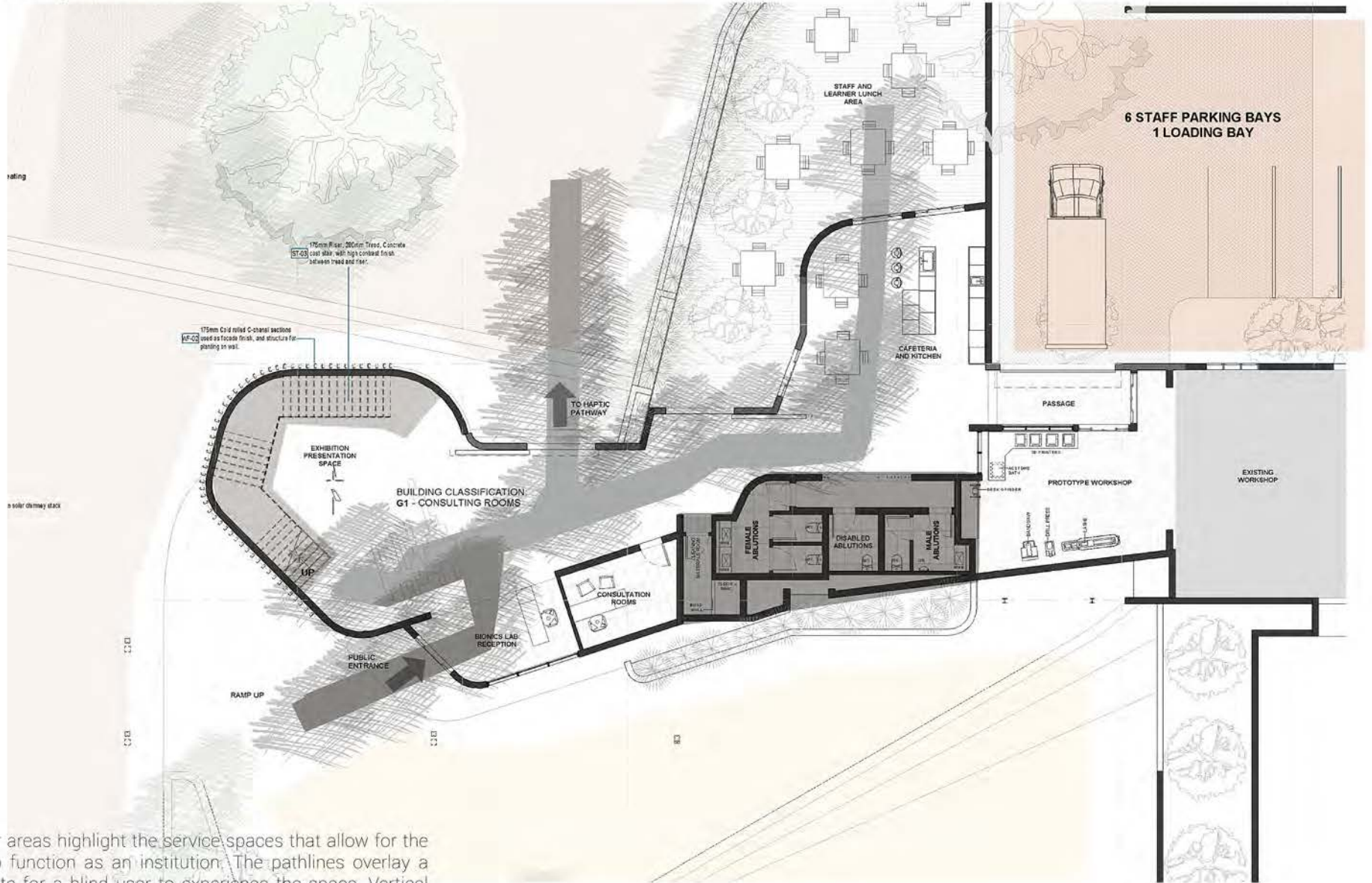


Figure 8.8.33 - Project Plan west

Figure 8.8.34 - Project plan east



The darker areas highlight the service spaces that allow for the building to function as an institution. The pathlines overlay a typical route for a blind user to experience the space. Vertical circulation is shown in a light grey colour.

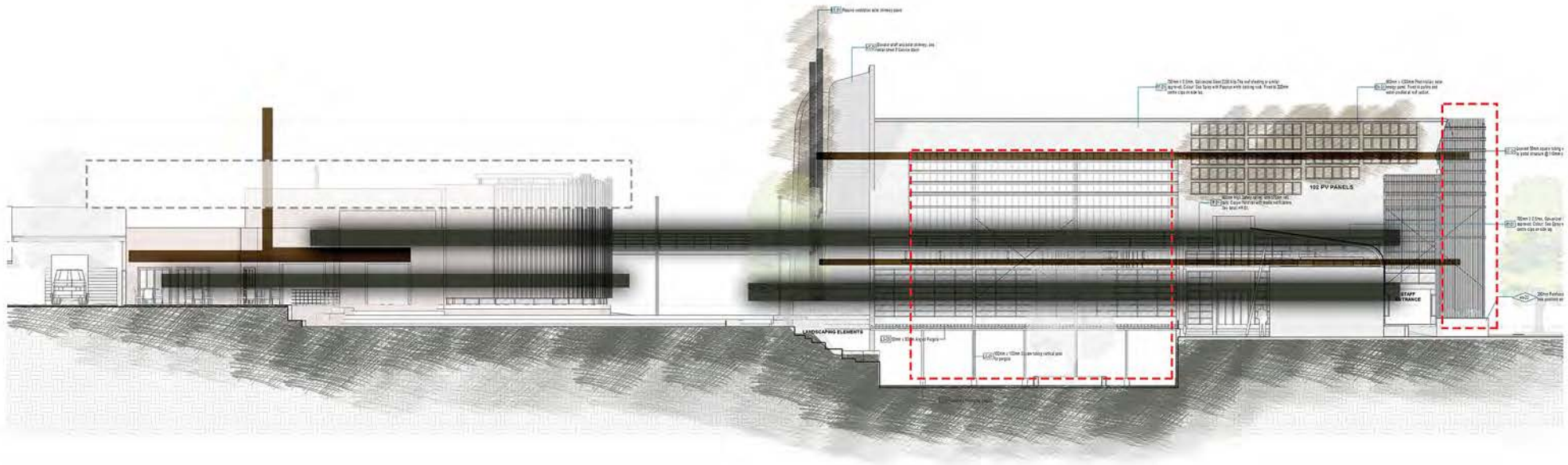


Figure 8.8.35 - Conceptual Section

The diagram shown above shows the overlaid conceptual separation between the user experience plane and the service plane. This diagram has been layered onto the final elevation to explicate the use of environmental systems to enhance the sensory spaces.

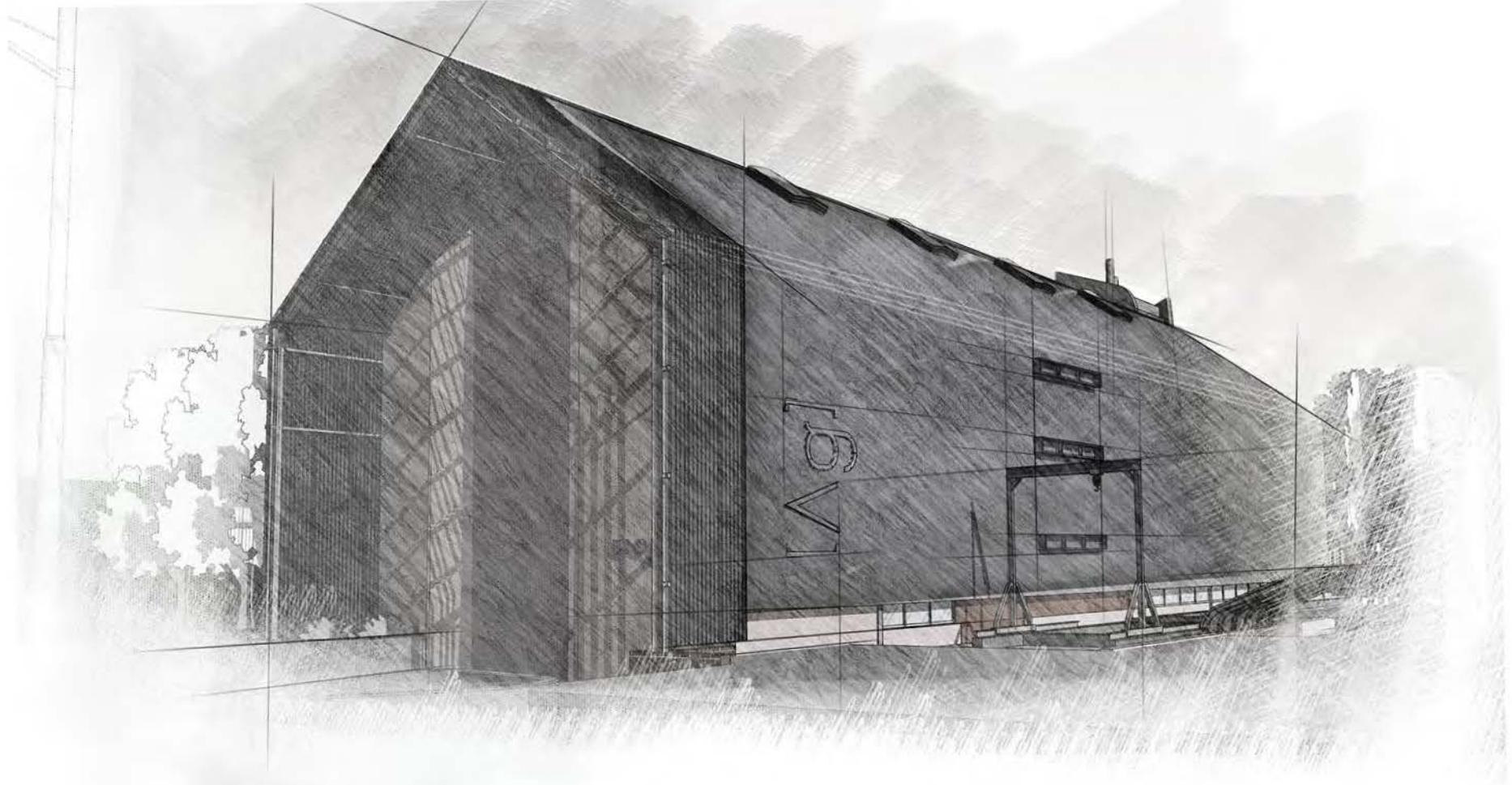


Figure 8.8.36 - Building approach



Figure 8.8.37 - View from haptic pathway

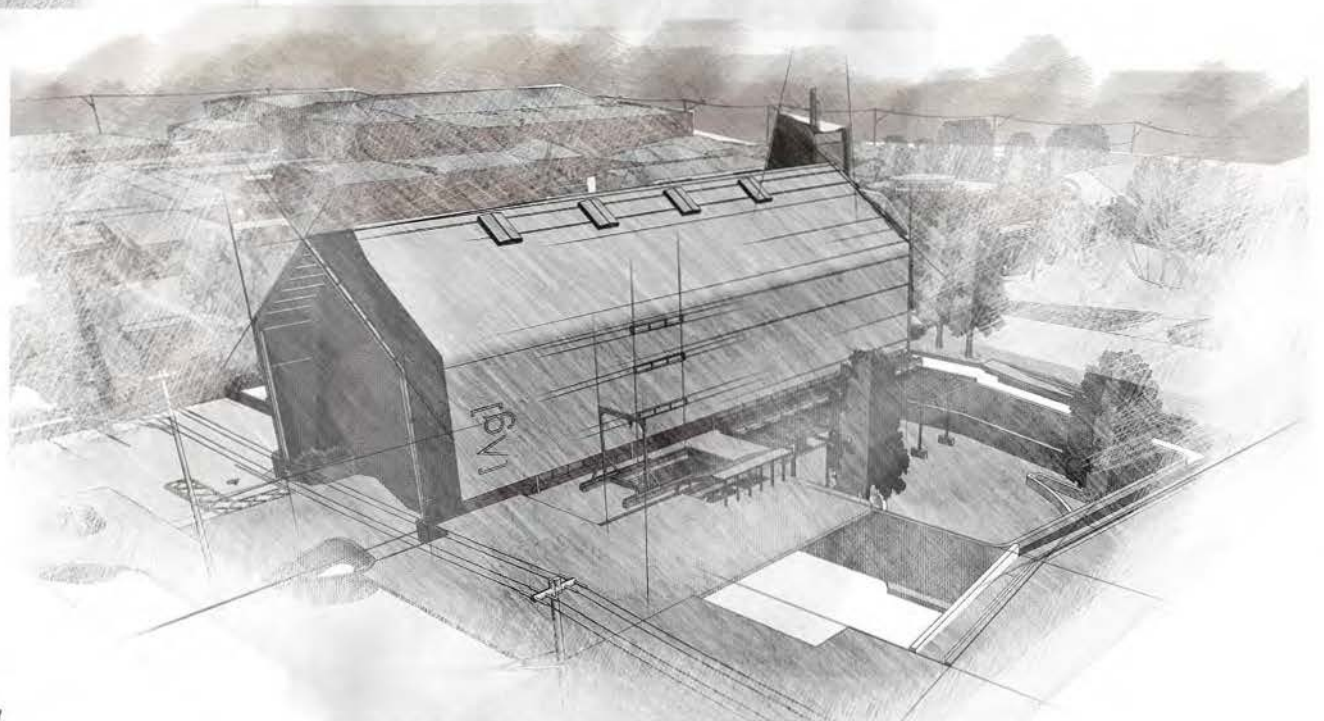


Figure 8.8.38 - Birds eye view



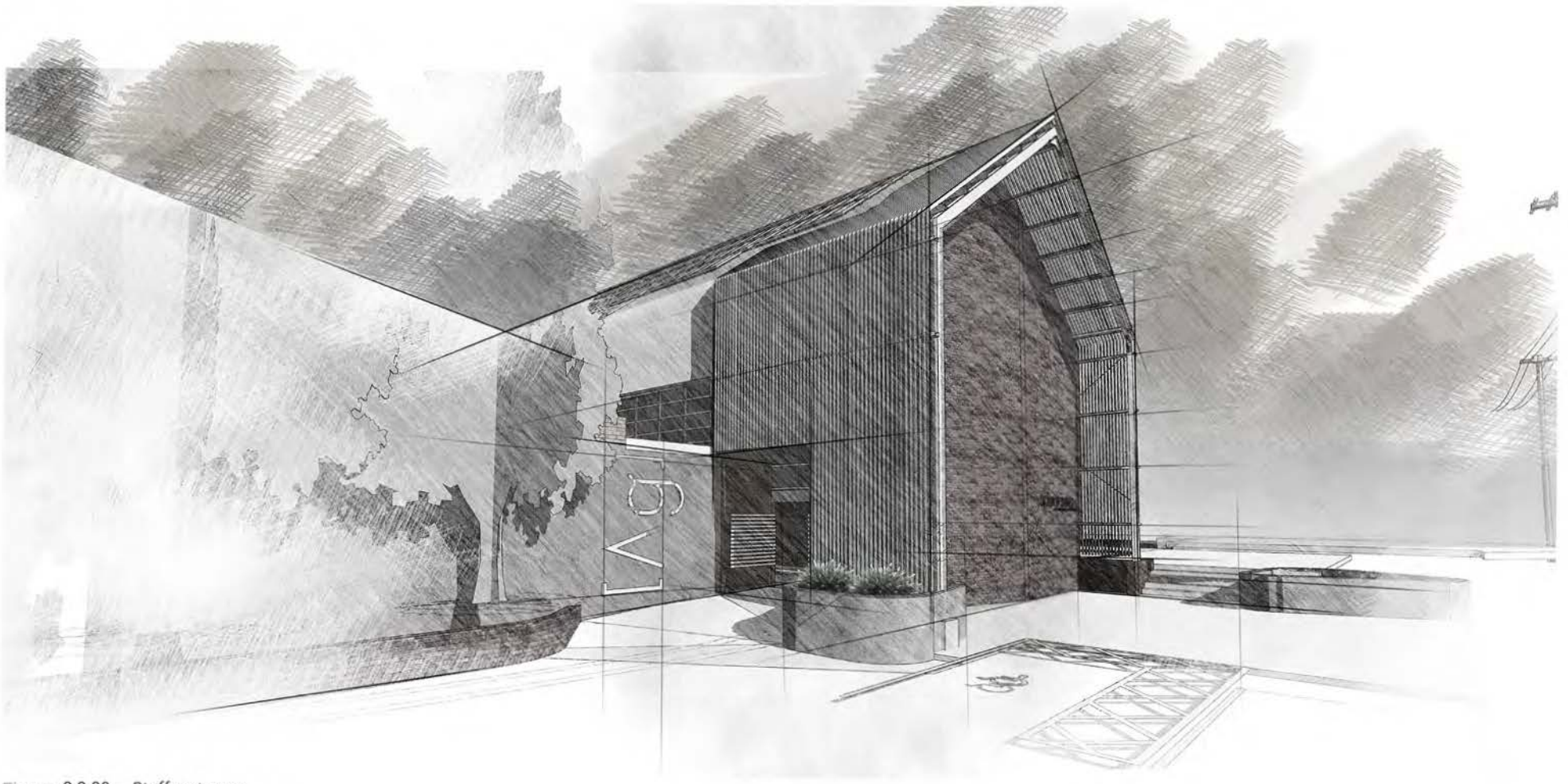
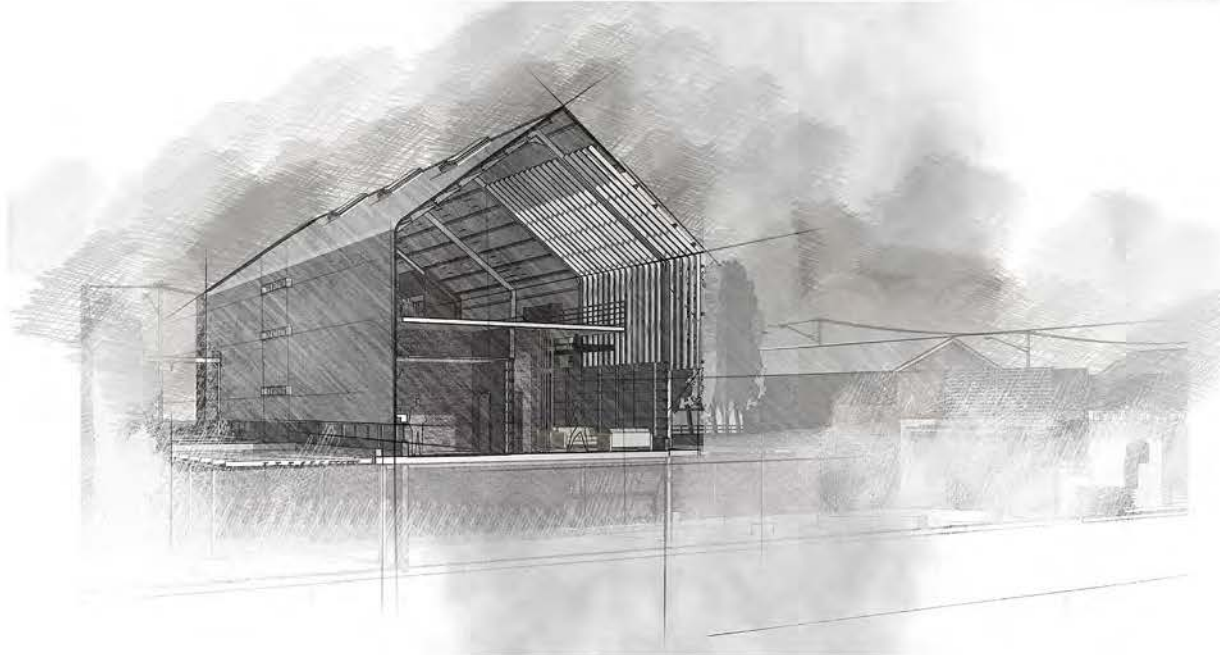
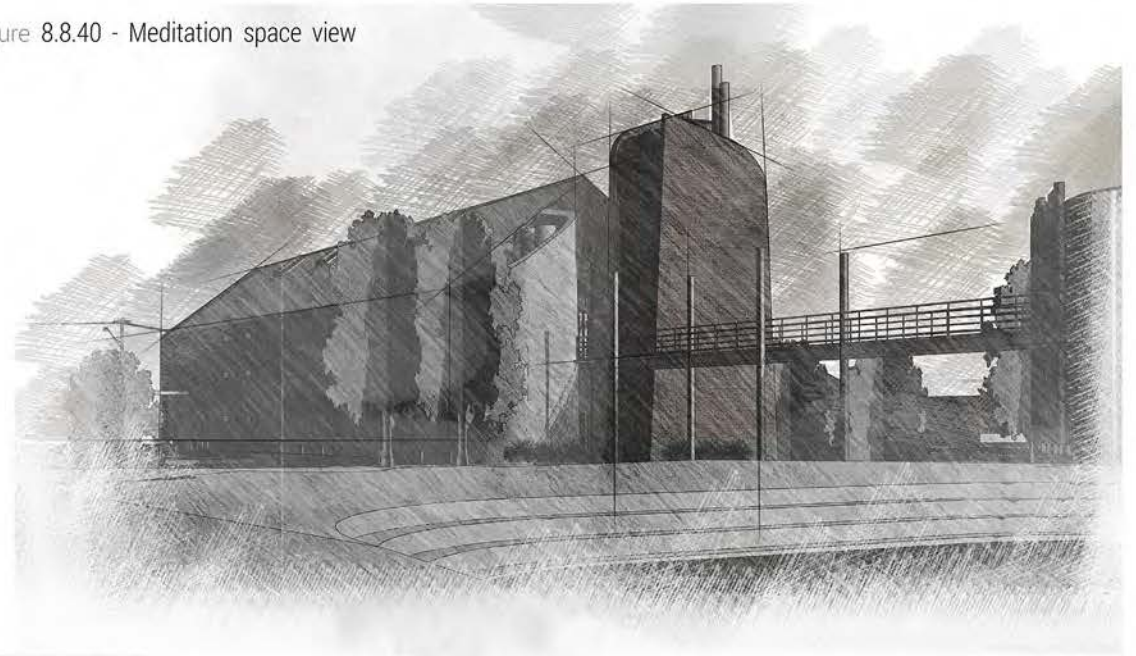
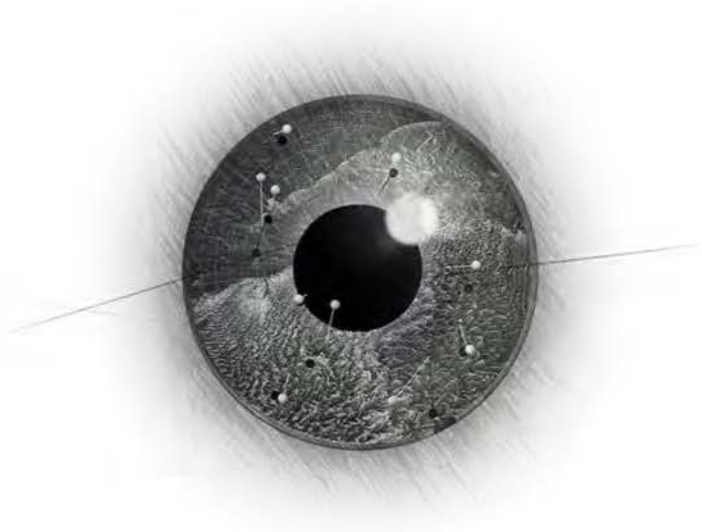


Figure 8.8.39 - Staff entrance

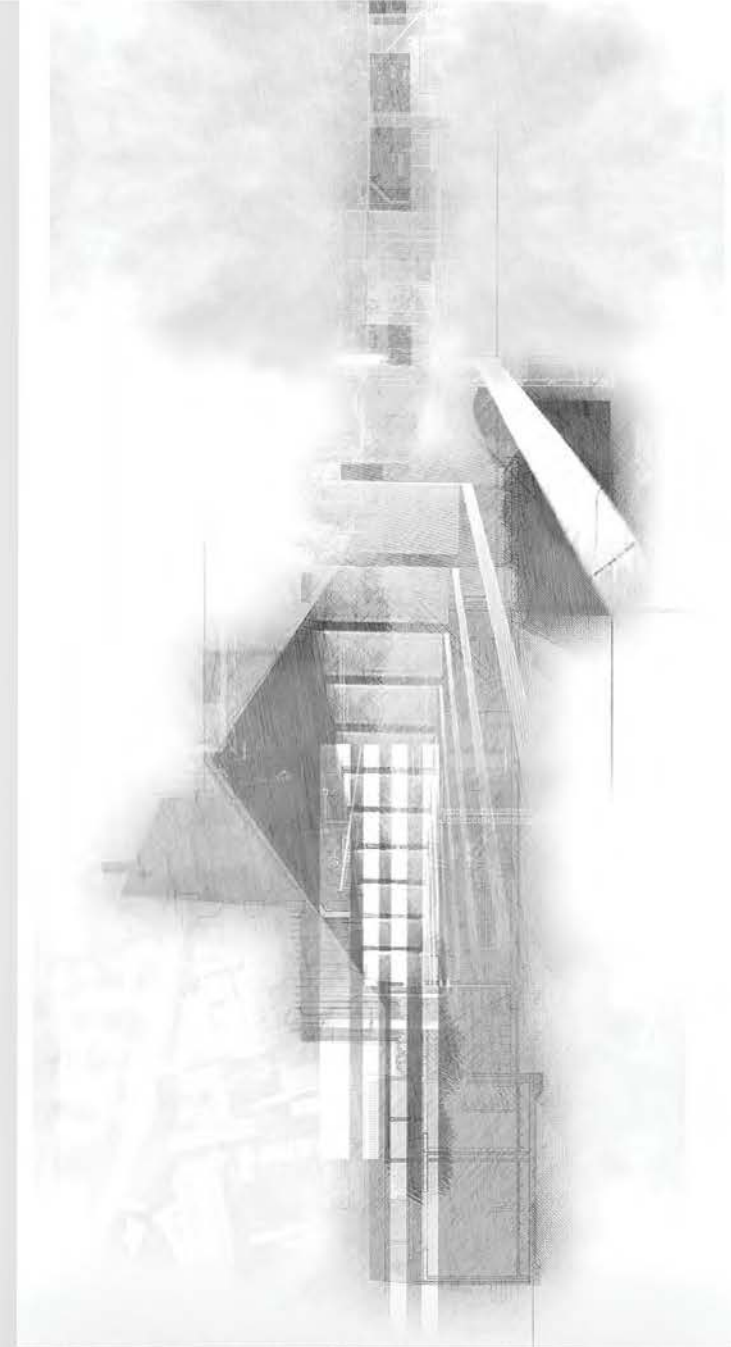
Figure 8.8.40 - Meditation space view





## 09 CONSTRUCTION

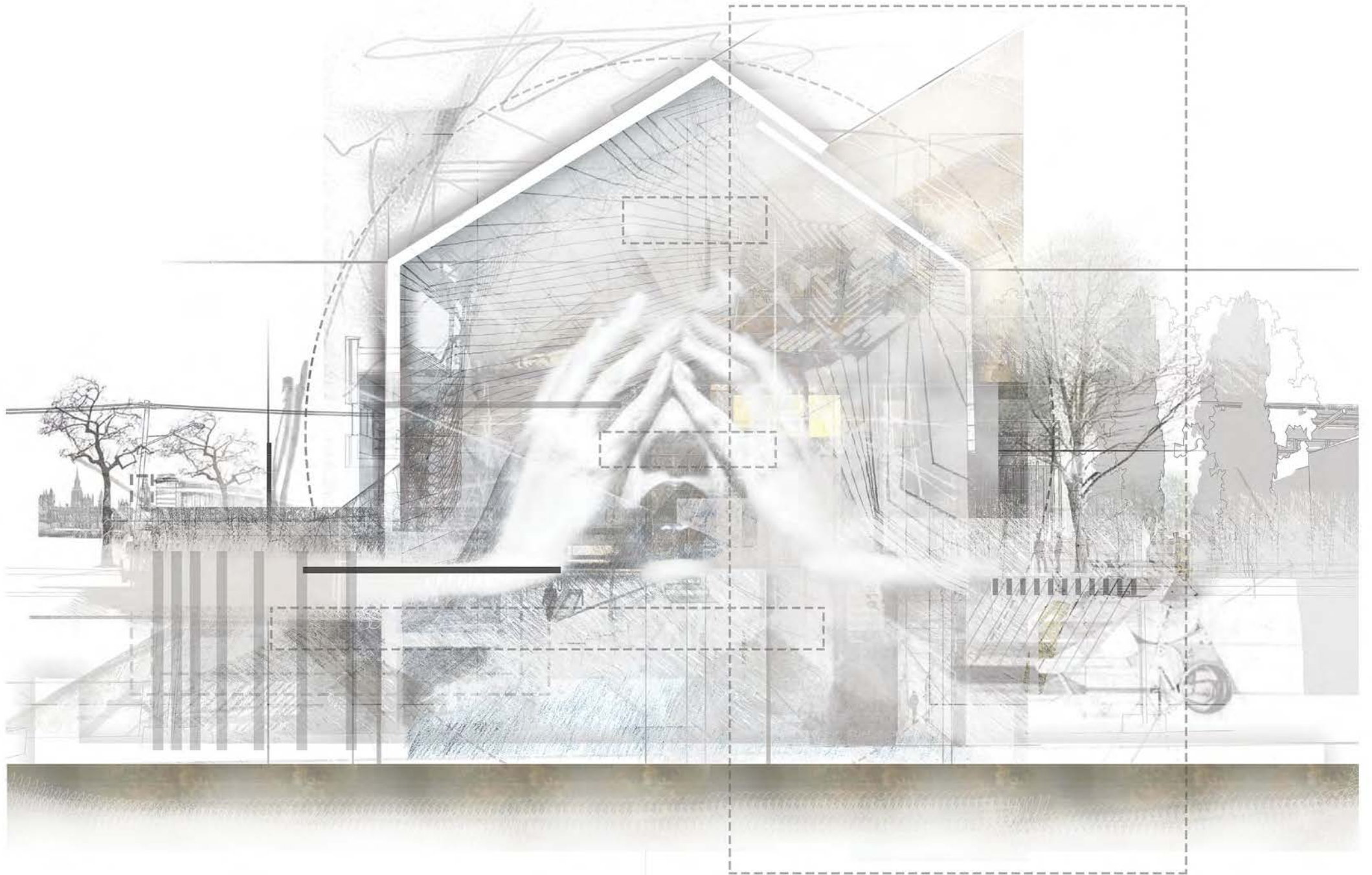
- 9.1 TECHNICAL INTRODUCTION
- 9.2 CONCEPTUAL APPROACH
- 9.3 STRUCTURE
- 9.4 MATERIALITY
- 9.5 ANTIMICROBIAL COPPER
- 9.6 TECHNOLOGY
- 9.7 SERVICES
- 9.8 SYSTEMS
- 9.9 FINAL DESIGN



CHAPTER

09

RECITED



“THE EYE CONFIRMS WHAT THE HAND ALREADY KNOWS”

– CHARLES CORREA

## 9.1 TECHNICAL RESOLUTION INTRODUCTION

From dealing with the navigation of a blind user through architectural space, the finishes and detailing became a crucial aspect for the success of the project. These ideas were present from the proposal of the project and have been considered at each phase of design development.

The most challenging issue facing unsighted navigation and exploration is the qualities that make up the floor surface. Exterior paths and walkways often tend to lift

at movement joints which become hazardous to people who pass over them. This is due to lack of proper compaction underneath the slab or due to the roots of trees extending and expanding under the floor. Another critical point of consideration was the transfer of germs due to the tactile nature of the users in the project.

Surfaces which deal with a tactile responsiveness are required to handle abrasive effects over time. This

coupled with the consideration of efficient maintenance and servicing of these elements became an intricate research and development investigation. The secondary user of these spaces is a person who has the ability to see; these people are the teachers and designers that assist the primary user. This means that finishes are still required to look good; however, need to perform better.

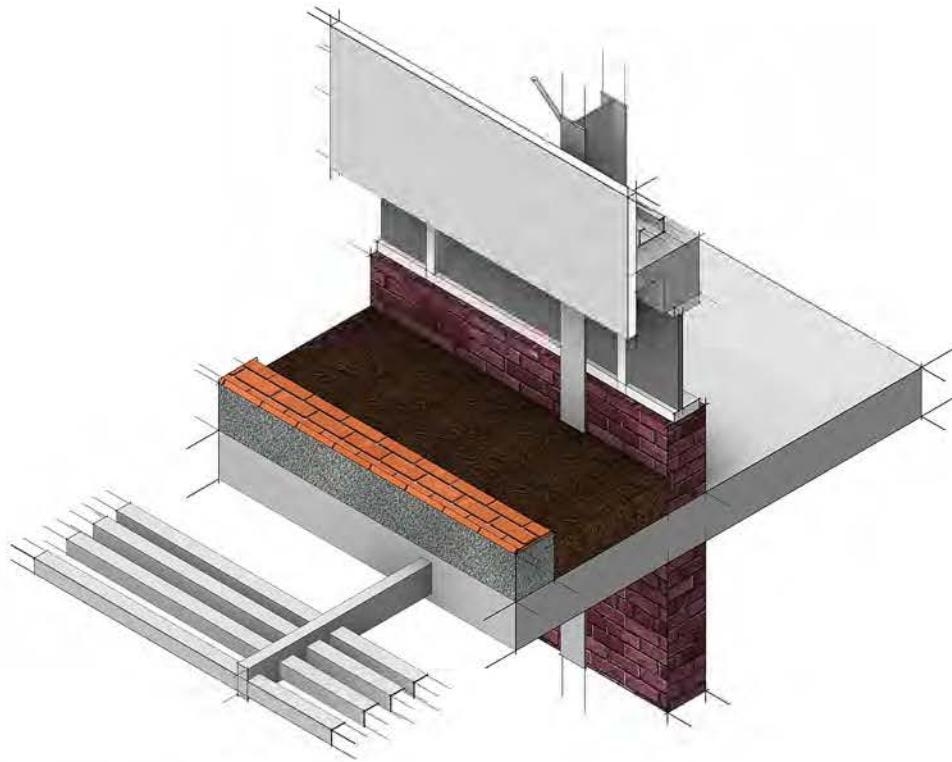


Figure 9.1.1 - 3D Section

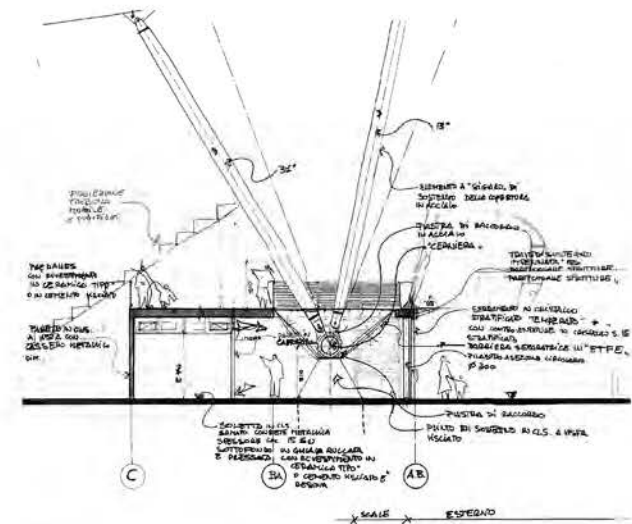


Figure 9.1.2 - Alvaro Alto Resolution

## 9.2 TECHNICAL CONCEPTUAL APPROACH

The conceptual approach towards the technification of the facility for the visually impaired was influenced by the phenomenological experience of space, by a user whose realm or perception of space is a significantly smaller bubble.

The technical concept was driven by contextual parameters within Silverton, and subtly blending into the surroundings. Portal structures are essentially the typical typology of the context. A gradient of softer elements on the ground plane - within hands reach of a person in space - going upwards towards the roof becoming more functional and efficient uses of materials



Figure 9.2.1 - Conceptual Technification

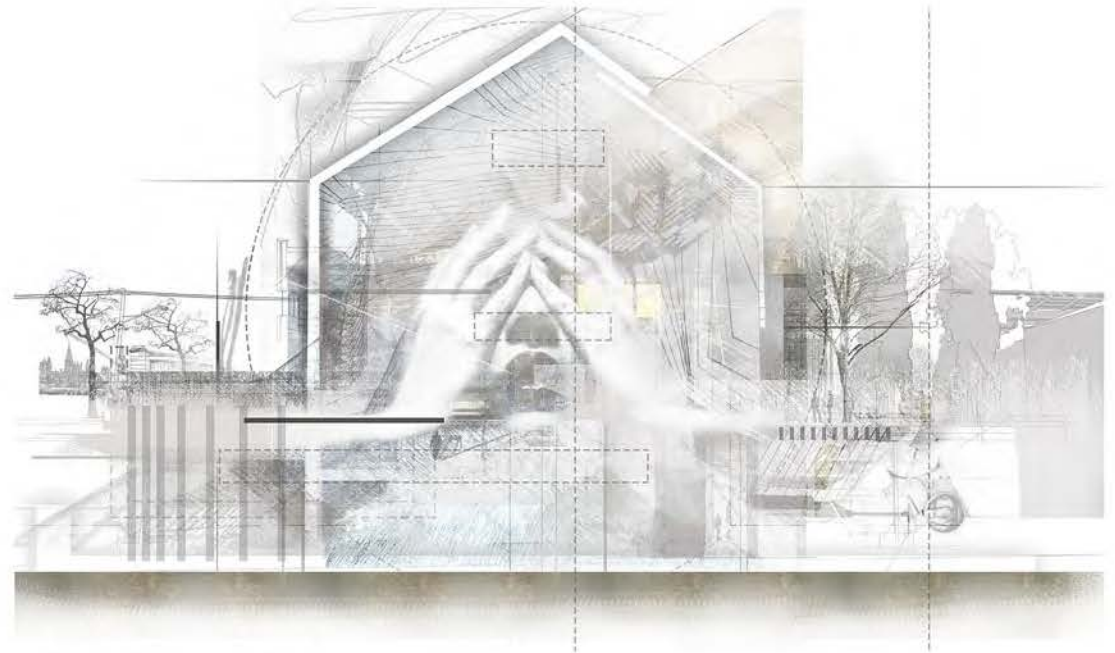


Figure 9.2.2 - Concept Sketch



## 9.3 STRUCTURE

The structure of the portal frame and the factory aesthetic was considered in a way to become part of Silverton. The 254mm X 146mm I-beam was considered as the ideal size in the structure as it allowed for the standard brick gauge to infill the main members. The column spacing along the grid allowed for a standard space of 6m to be spanned by 175mm C-channel purlins to connect the kliplok roof sheeting with the portal frame.

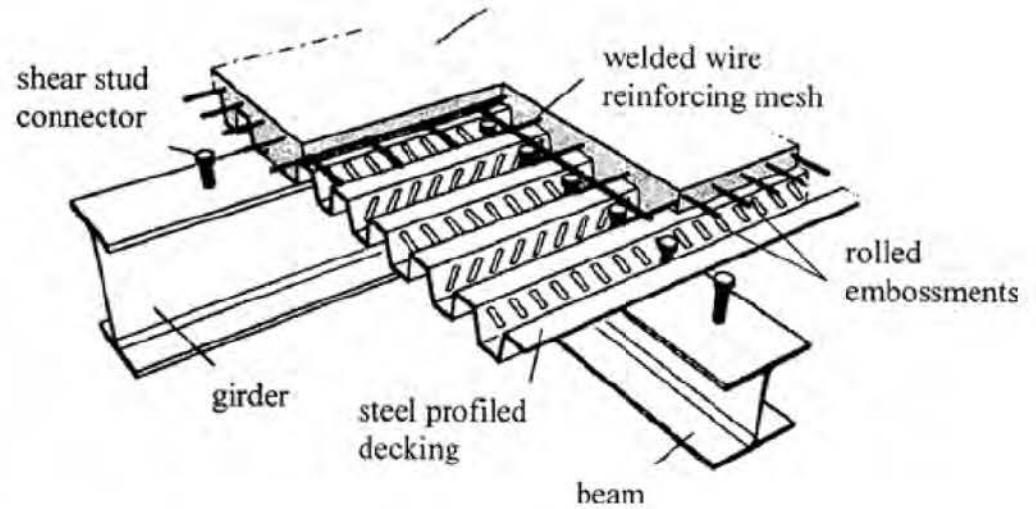


Figure 9.3.1 - Light weight flooring detail

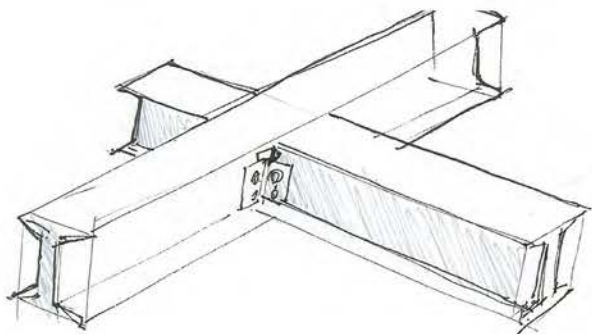


Figure 9.3.2 - I-beam junction sketch



Figure 9.3.3 - QC flooring structure

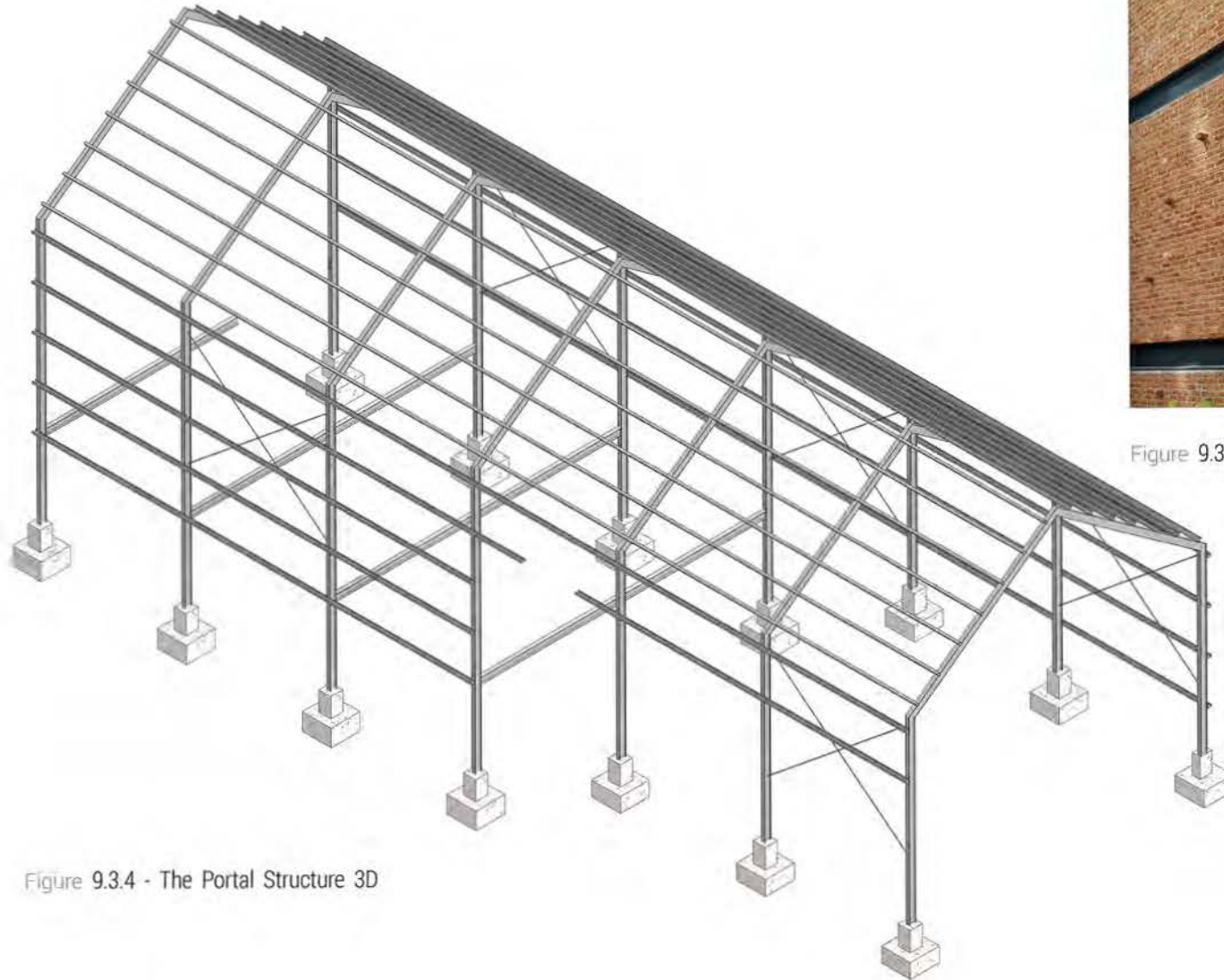


Figure 9.3.4 - The Portal Structure 3D



Figure 9.3.5 - Brick infill between Steel

## 9.4 MATERIALIALITY

### Touch

Due to the touch-sensitive nature of a project that utilises tactile elements for navigation and safety, the spread of germs was of critical importance.

The designs of Handrails, push plates, handles and flushing mechanisms were assessed for the ability to express a clear instruction, as well as being easy to clean.

Any surface that was in contact with human hands needed to be identified and considered with these properties in mind. Countertops and arm rests that use ergonomic principles were now also considered in terms of hygiene.



Figure 9.4.1 - Kliplok Roof sheeting



Figure 9.4.2 - Clear Ceiling space



Figure 9.4.5 - Directional floor texture

## 9.5 ANTIMICROBIAL COPPER



Figure 9.5.1 - Touching copper

The investigation into this topic revealed a very interesting recent discovery in the use of copper. The Copper Association is an internationally recognised organisation that promotes the use of antimicrobial copper for this specific application.

A precedent study of the use of copper in a public environment is the airport in Chile. Recognising that Chile is the world's largest producer of copper, it is easy to see the availability and feasibility in the use of antimicrobial copper within the context of South

America. The proposal of the Blind by Sight building recognises the dangers and negative aspects to the use of copper within South Africa.

A very interesting benefit in the use of copper as a finishing material is the anti-microbial properties that copper inherently has. Due to the tactile nature of the project, materials need to be considered for the prevention of germs. The material pallet also needs to consider the prevention of dirt and streaking on surfaces. As an external consideration, roof sheeting

Antimicrobial  
Copper



Figure 9.5.2 - Antimicrobial copper logo



Figure 9.5.3 - A copper handrail

should blend with its surrounding context and create a safe tactile experience for the blind.

Copper theft in South Africa poses a big problem for the use of this material as an hygienic surface. This challenge is avoidable as the metal is also effective when used in an alloy, such as brass.

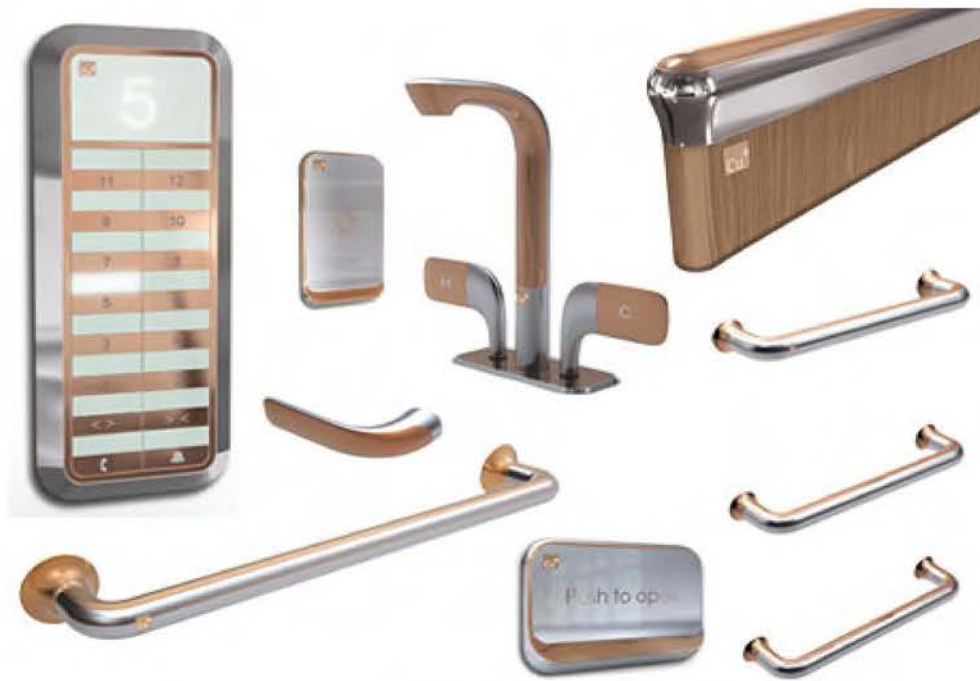


Figure 9.5.4 - Copper plated touched surfaces



Figure 9.5.5 - Copper plated handrails and tactile surfaces

## 9.6 SERVICES

The most critical point of service design in this project is the emergency evacuation of the blind. Emergency exit routes expressed through floor textures and braille, on handrails, combined with the use of audio devices need to be explored and detailed in order to express a deep understanding of designing for the visually impaired.

### 9.7.1 EMERGENCY ESCAPE

The use of the handrail to communicate a message of instruction to the blind user was investigated and iterated. Emergency escapes are required to reassure the user that he/she is on the right path and should proceed hastily and attentively. The idea of braille on handrails was designed to communicate the number of stairs left on that flight, as well as the floor of the nearest exit.

### 9.7.2 BATHROOMS

The bathroom and facilities layout used a method of device supplementation to assist the user with the use of urinals, water closets and hand wash basins. The floor texture at each of the utilities changes at the point for the user to stop and use the facility. This idea was further enhanced by the thinking of efficiencies. The optimum use of tile spacing and sizes was used as the 'neutral' areas; with the offset spaces using a different floor tile size to reveal the areas to stop and use the bathroom fixture.



Figure 9.6.1 - Bathroom layout and service coordination

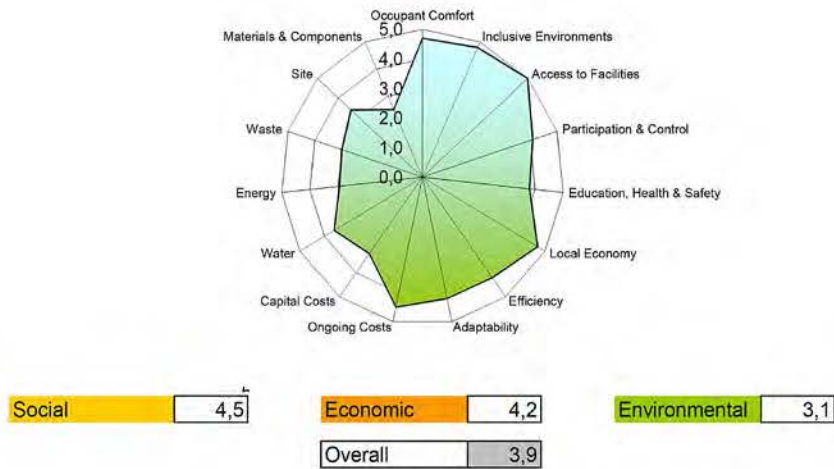


Figure 9.7.1 - SBAT building project tool

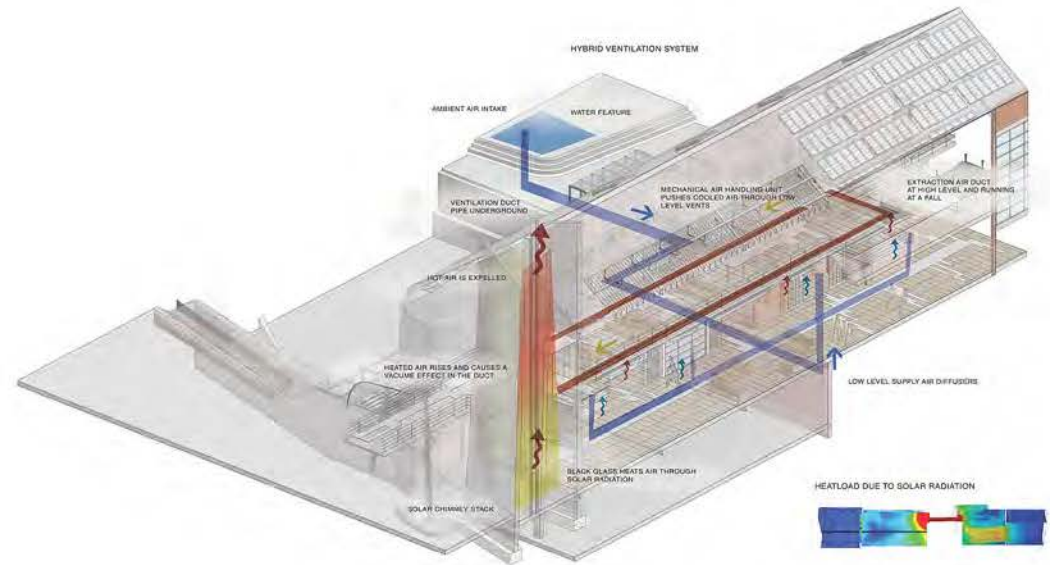


Figure 9.7.2 - SBAT building project tool

A passive ventilation system draws moving air through the building by harnessing the solar energy on a chimney stack to heat up air along a vertical plane.

This hot air creates a negative air pressure within the building and allows for the suction of air through an underground air duct. The air is taken from a point on the site that is most shaded on the southern boundary of the site. This system is closed in winter and the large windows allow for solar energy to warm up internal

spaces. Retractable overhangs allow for maximum flexibility to harnessing environmental potential.





Figure 9.7.3 - Passive ventilation systems

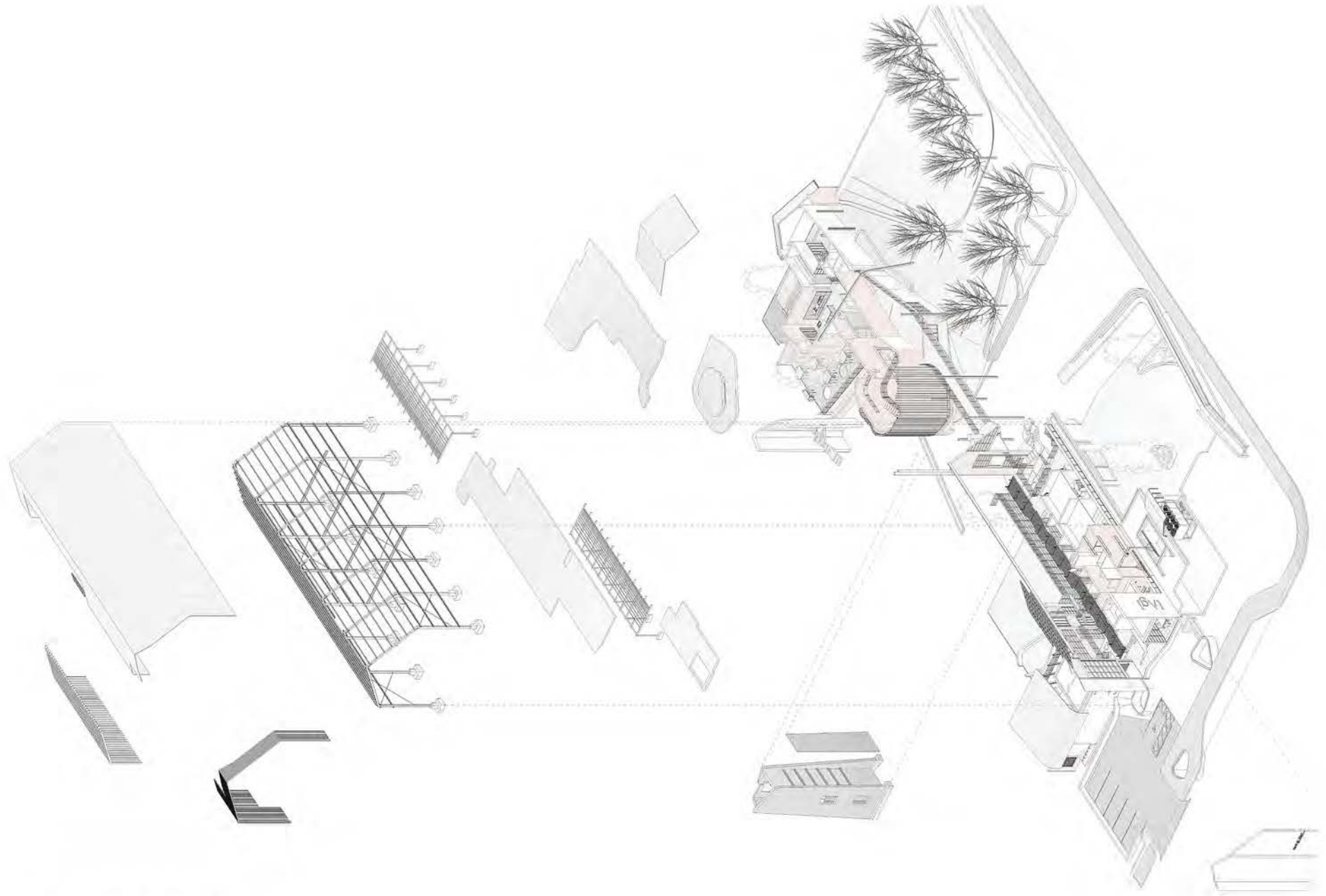


Figure 9.7.4 - Exploded Isometric view

# 9.9 FINAL DRAWINGS

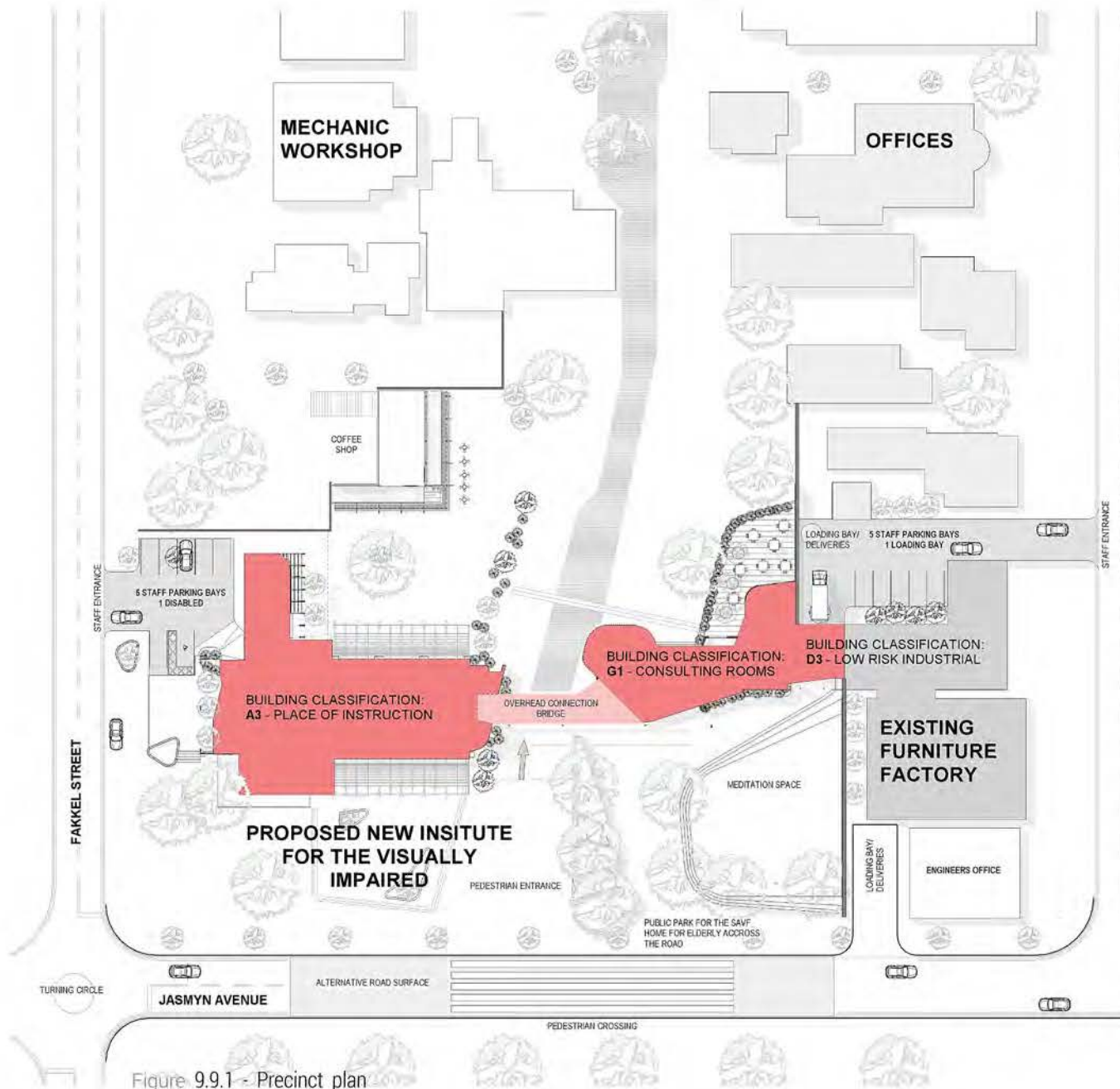


Figure 9.9.1 - Precinct plan

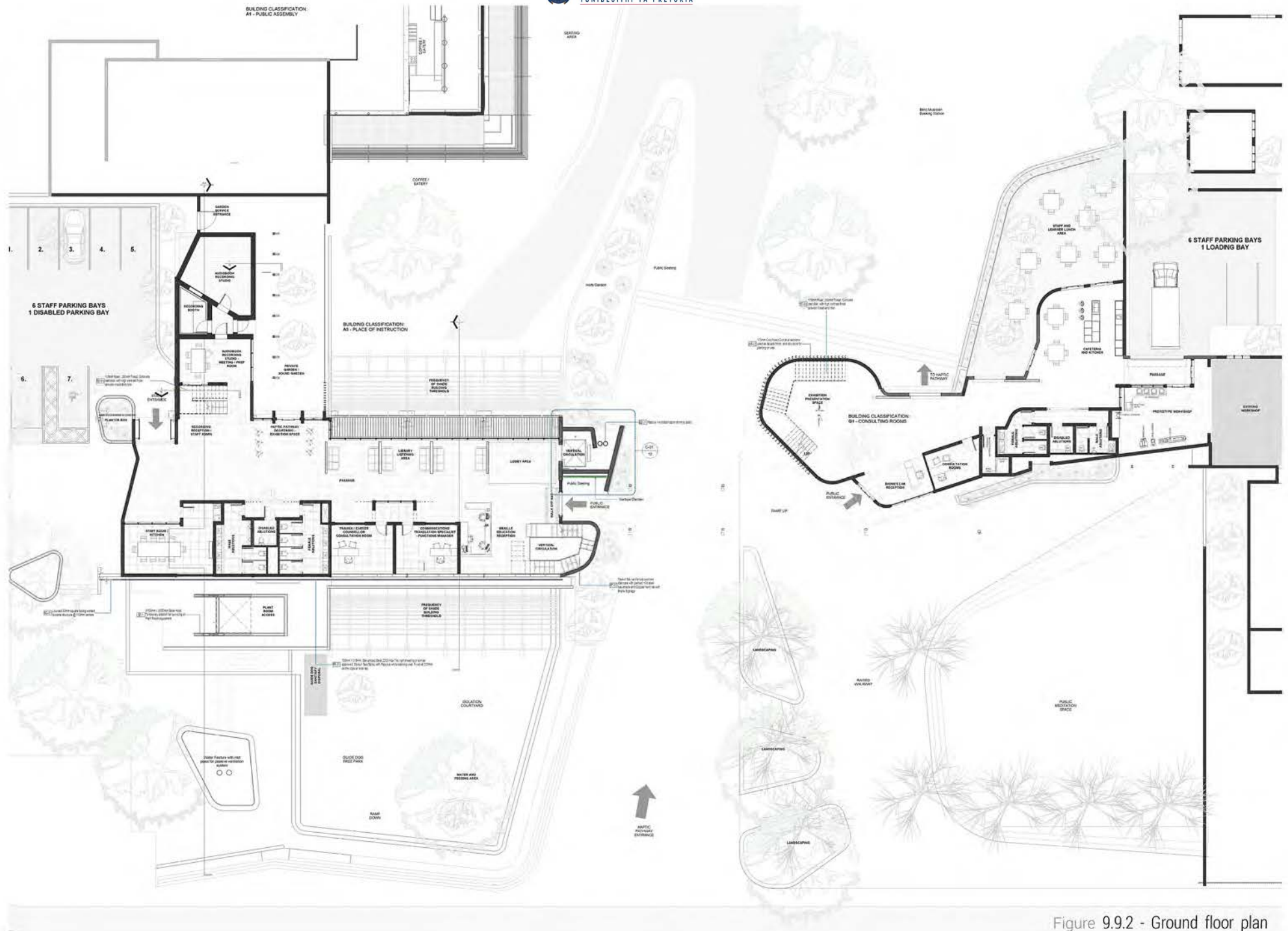


Figure 9.9.2 - Ground floor plan

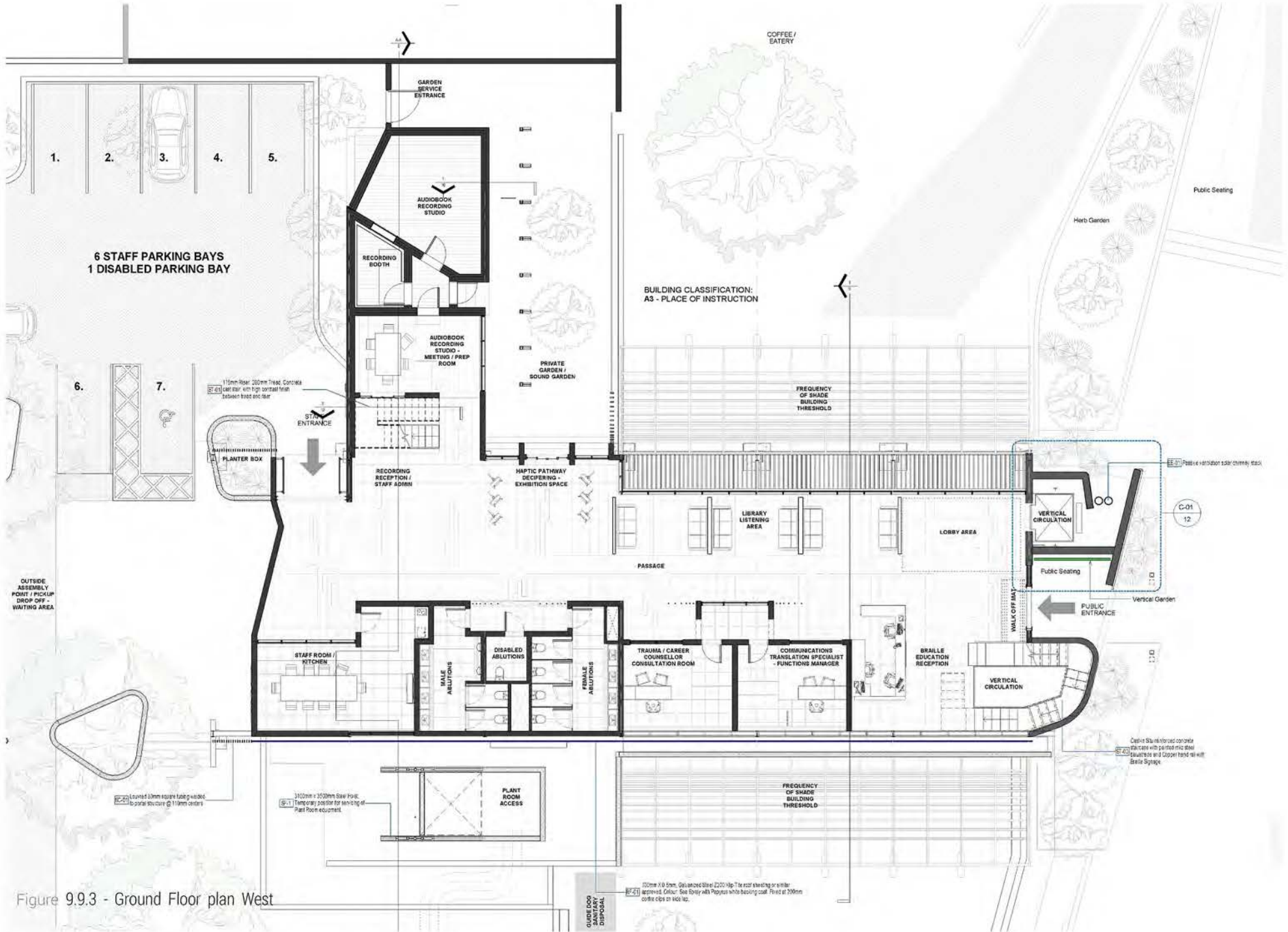


Figure 9.9.3 - Ground Floor plan West

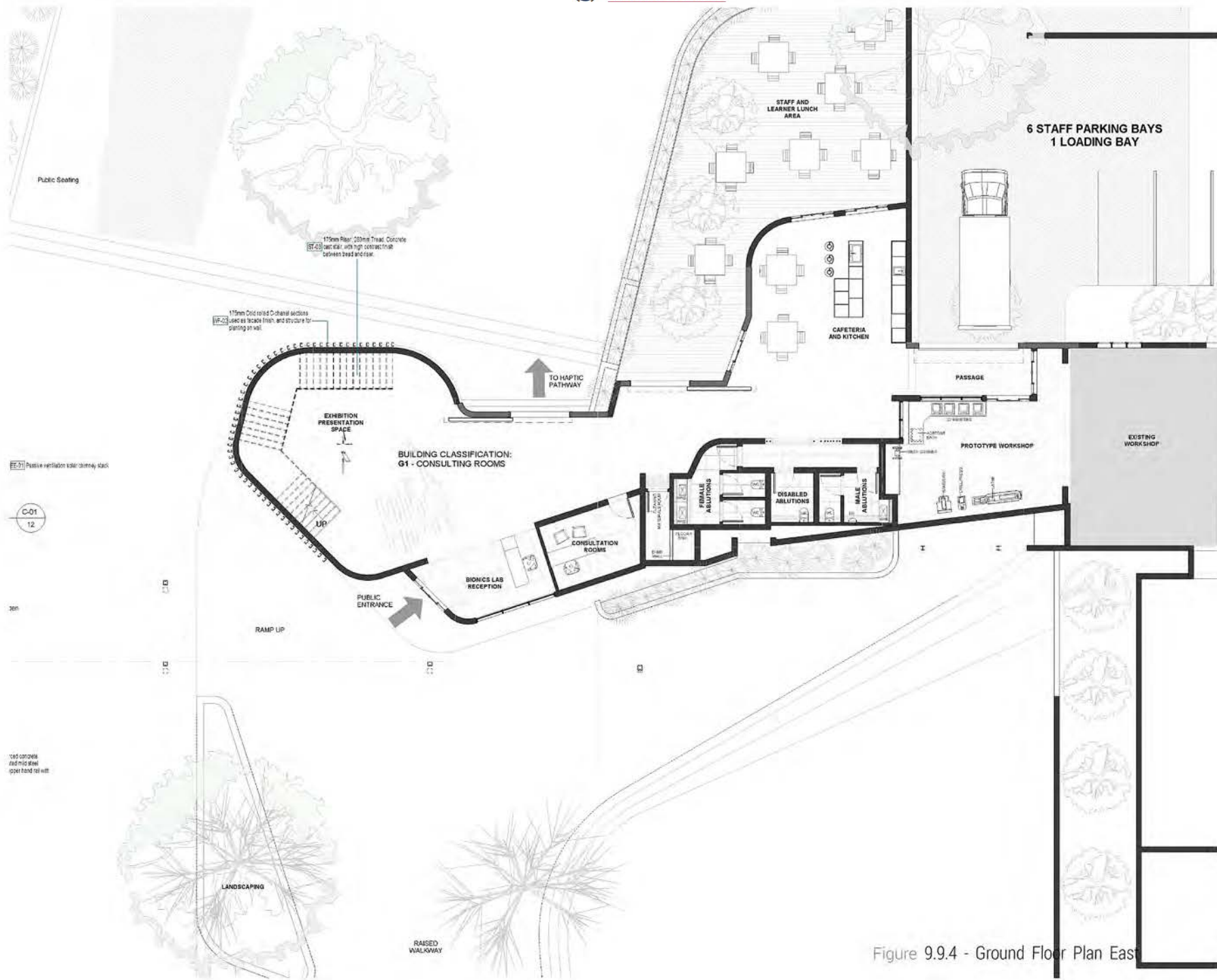


Figure 9.9.4 - Ground Floor Plan East

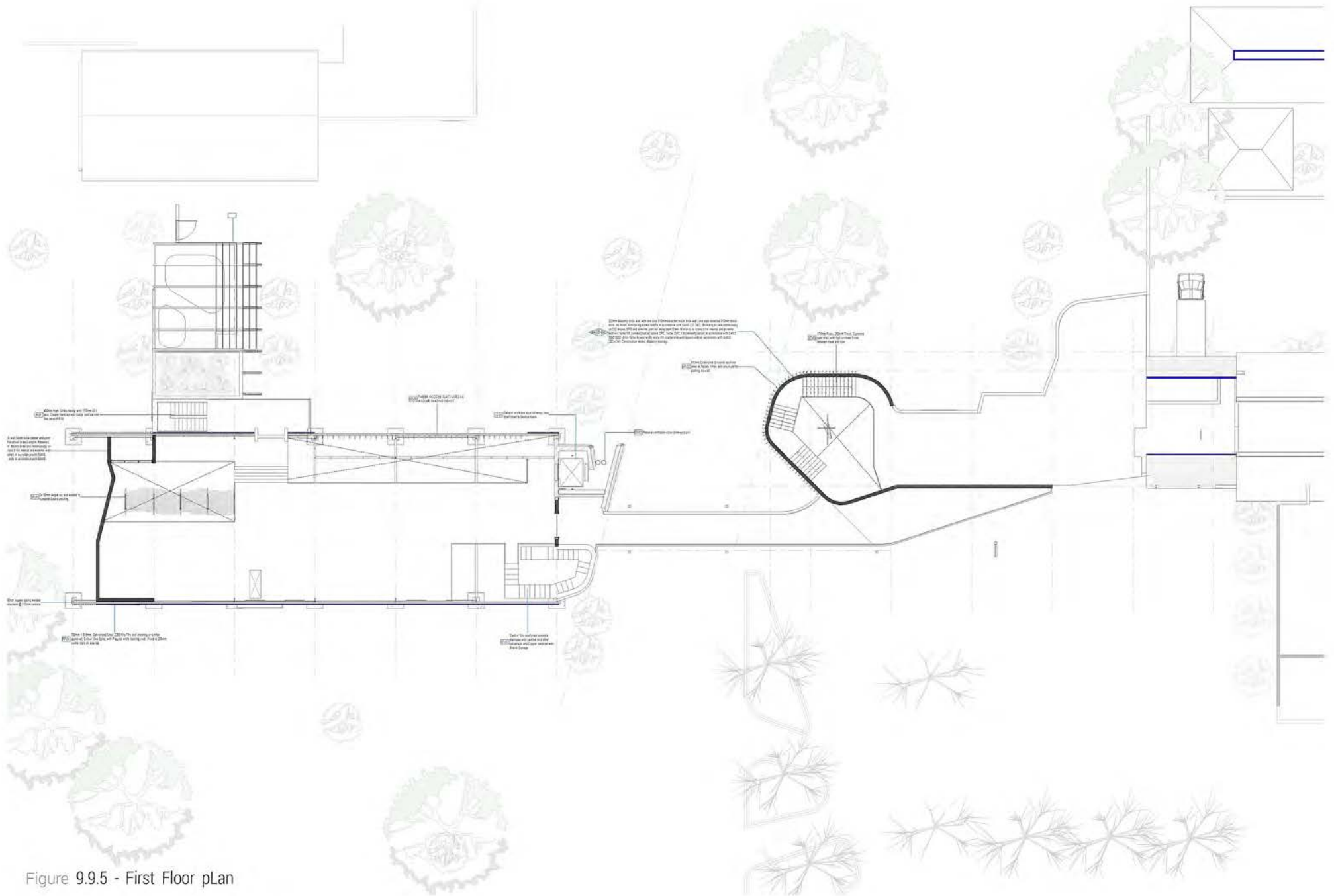


Figure 9.9.5 - First Floor pLan

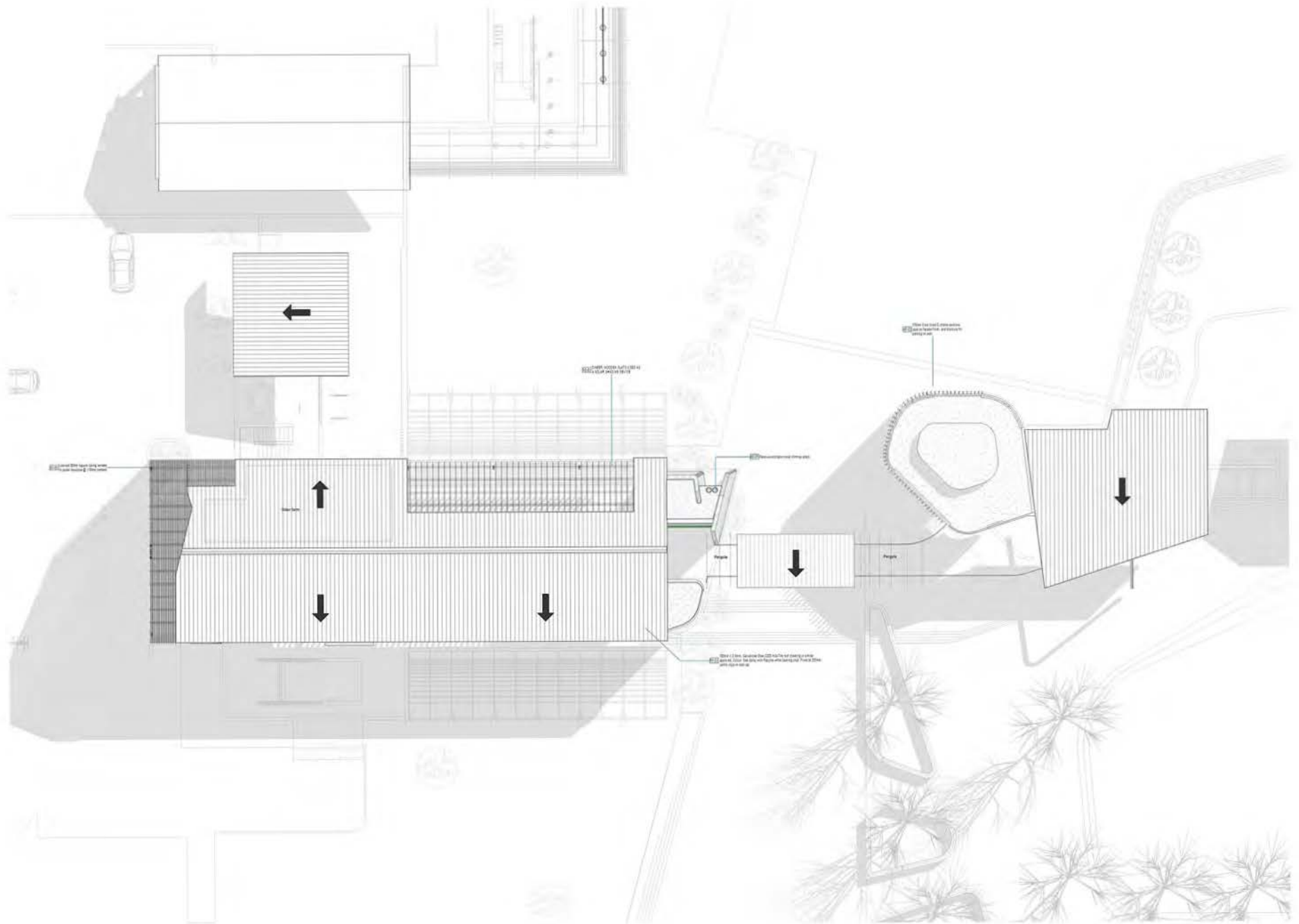


Figure 9.9.6 - Roof Plan



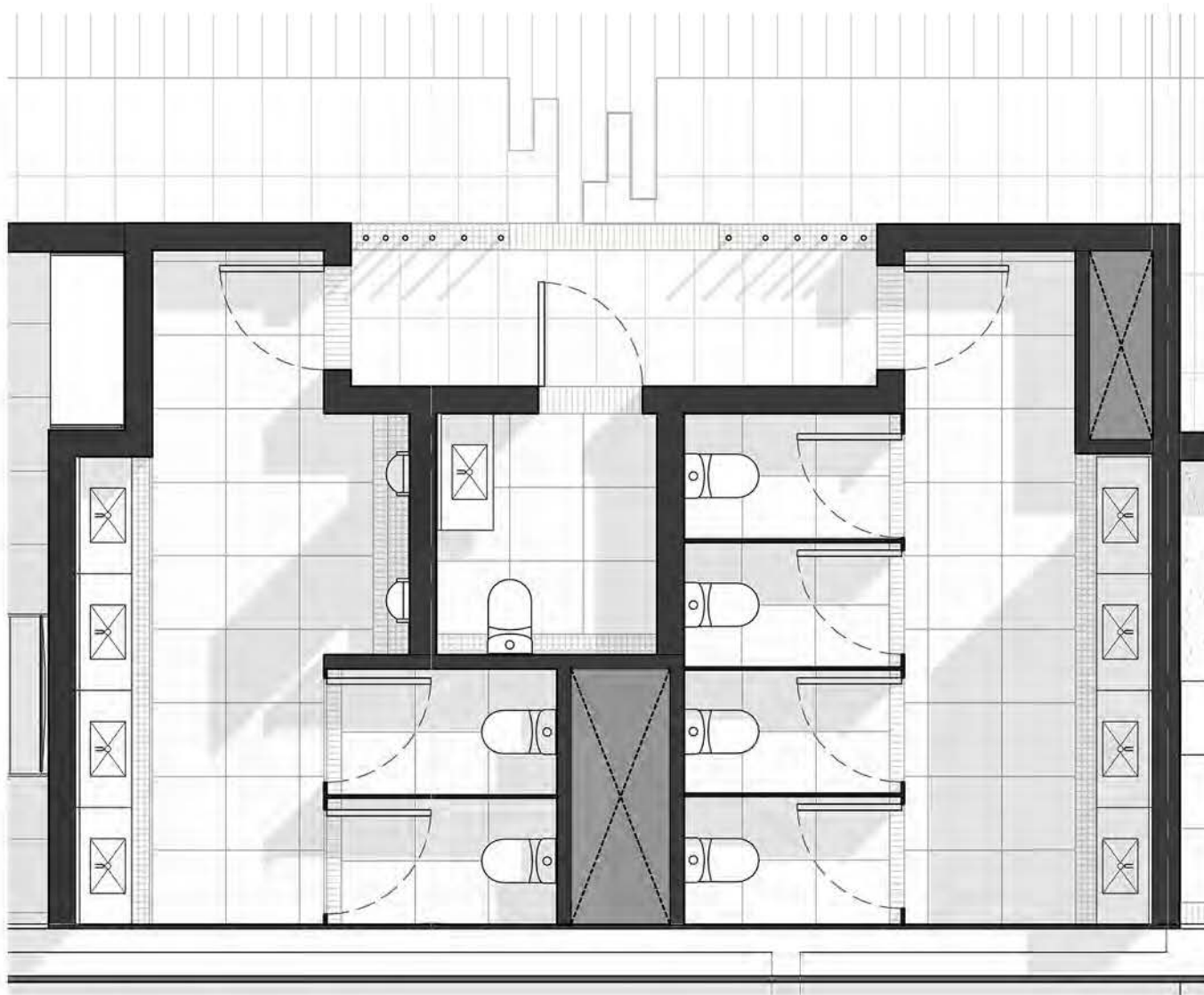


Figure 9.9.7 - Ablution layout and devices

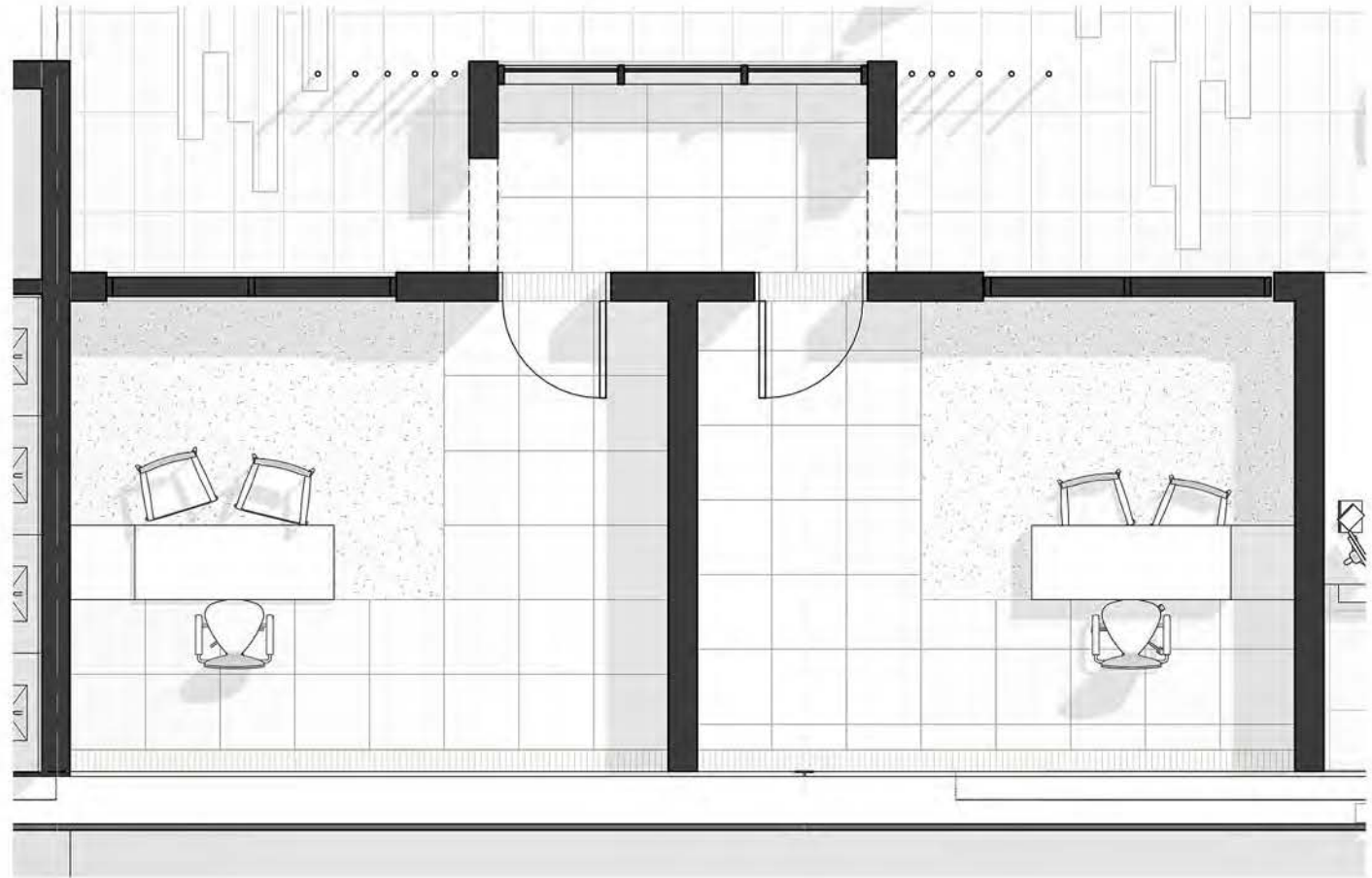


Figure 9.9.8 - Consultation room safe spaces

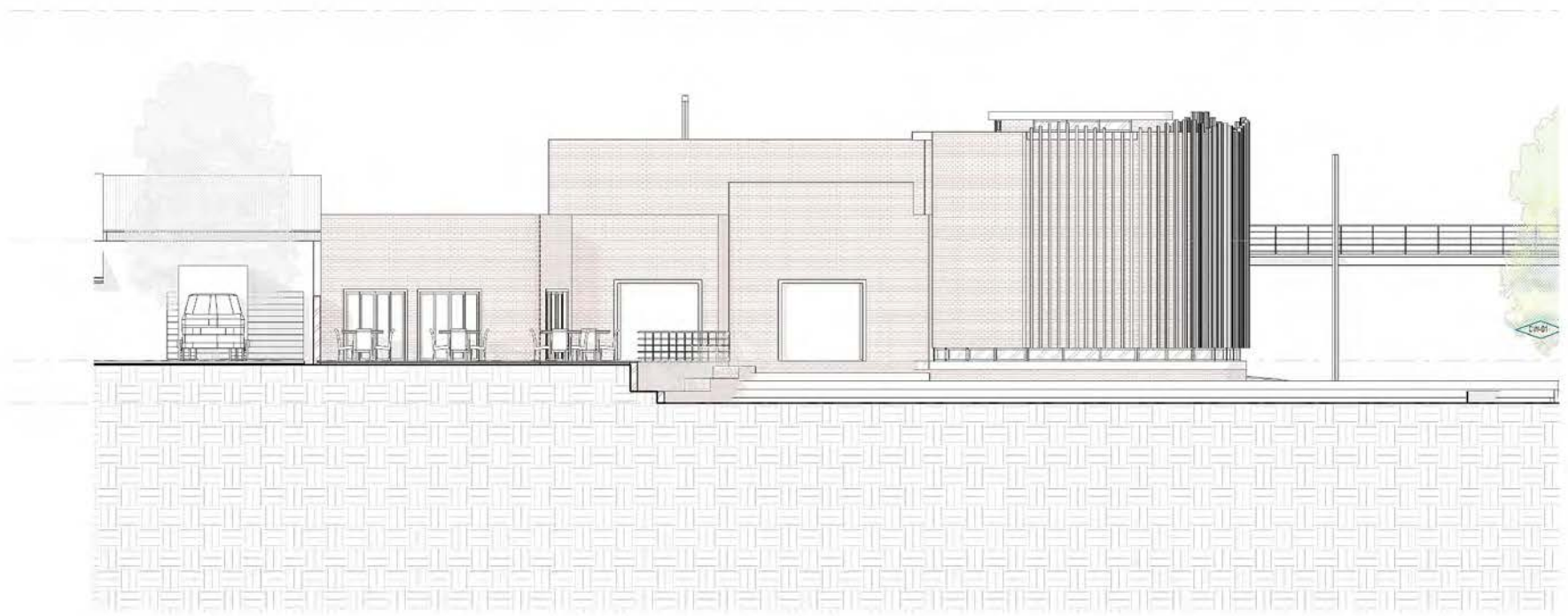


Figure 9.9.9 - Elevation North - IN PROCESS

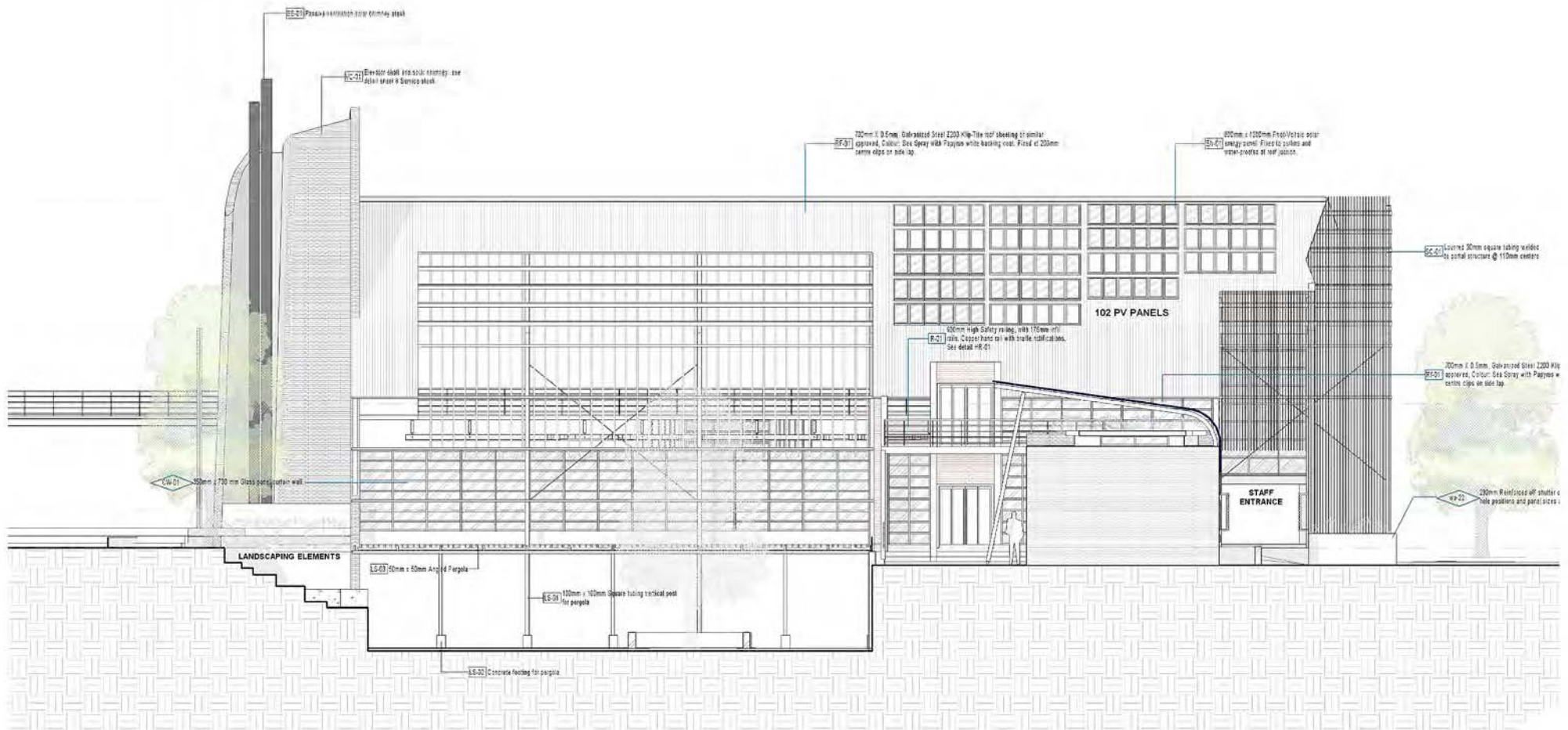
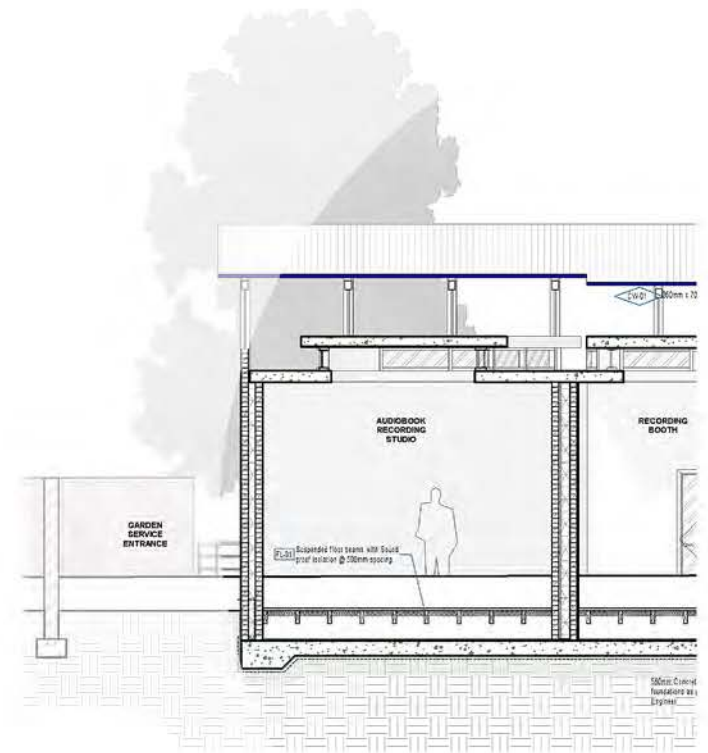


Figure 9.9.10 - Elevation North Completed



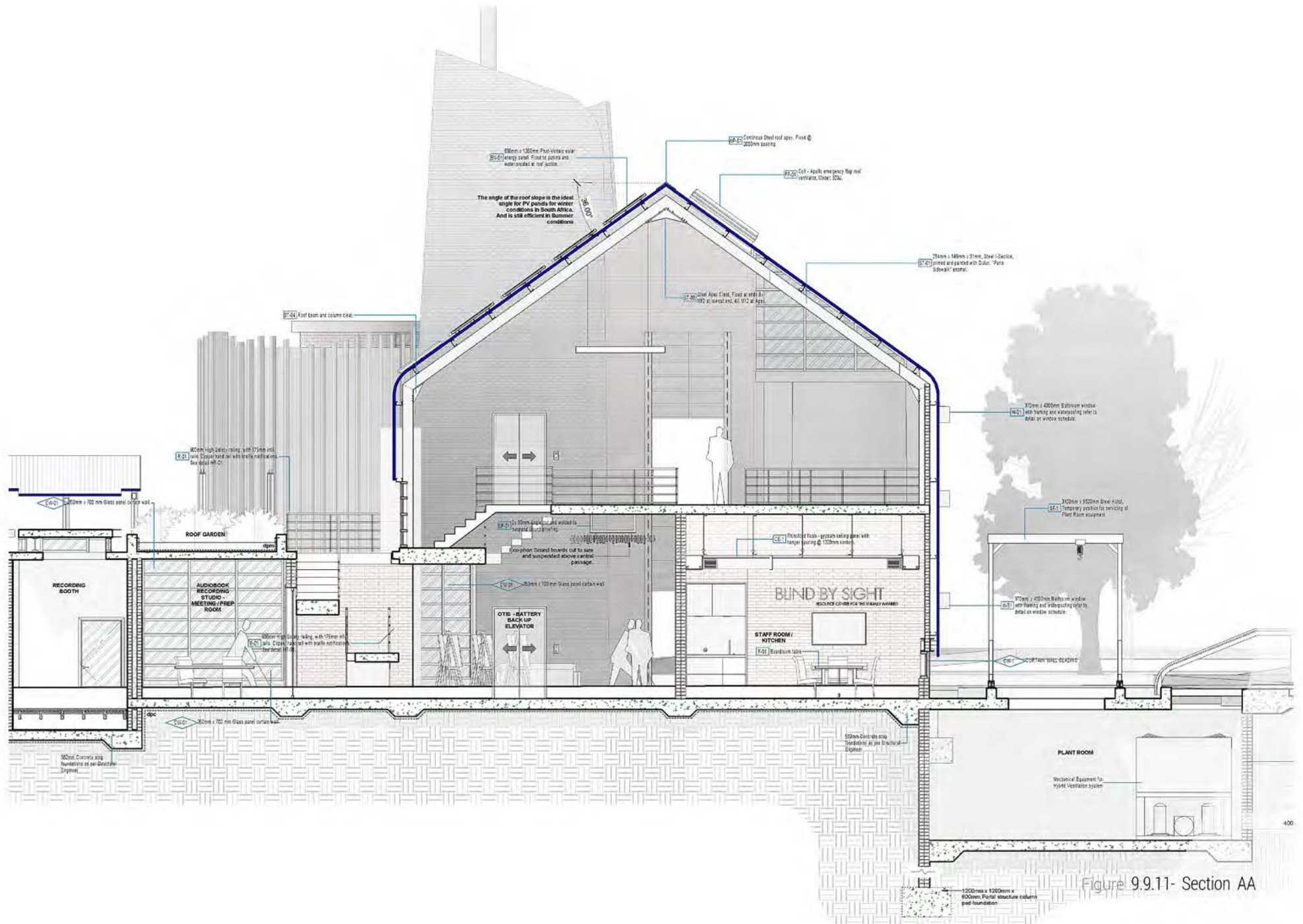
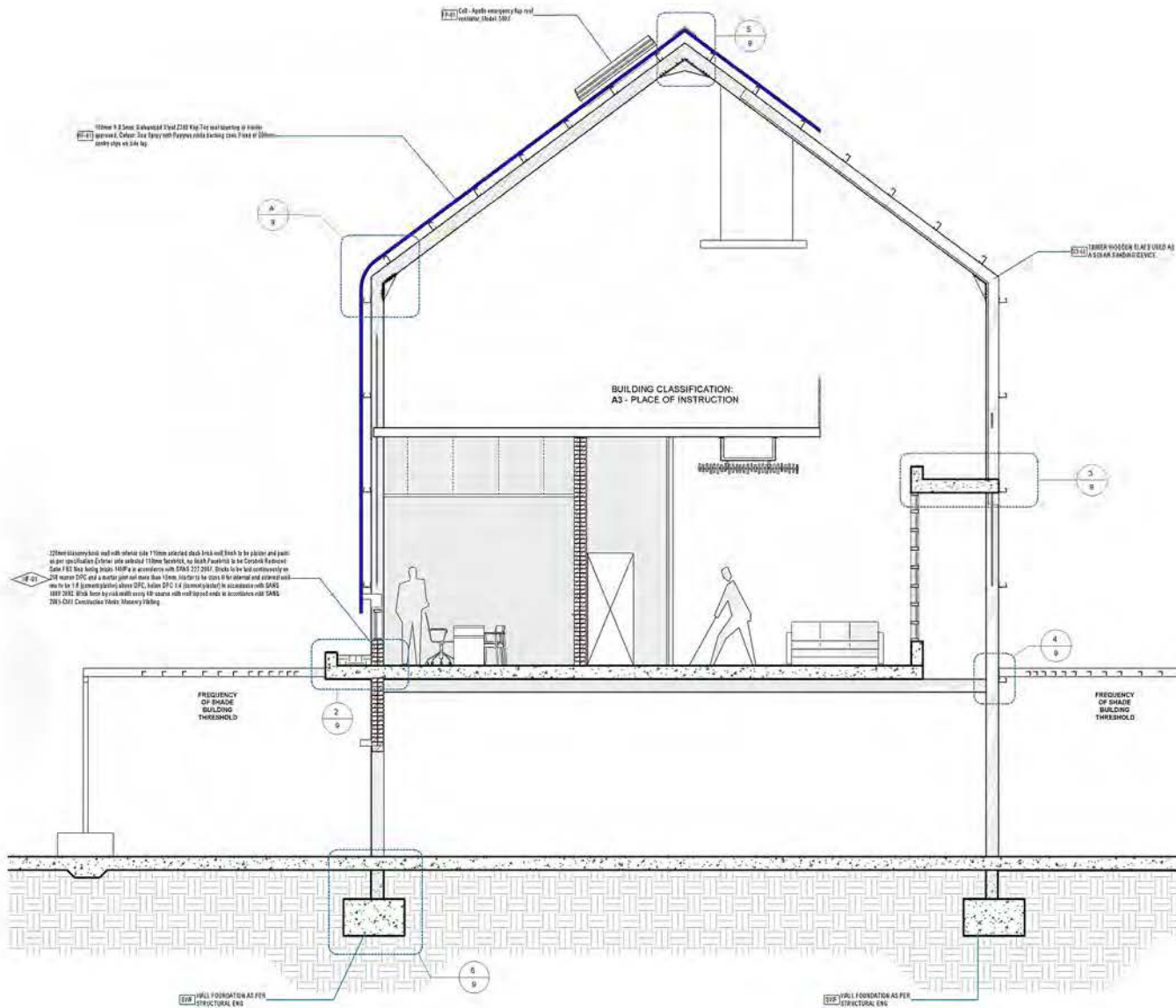


Figure 9.9.11- Section AA

DETAILS



RECITED

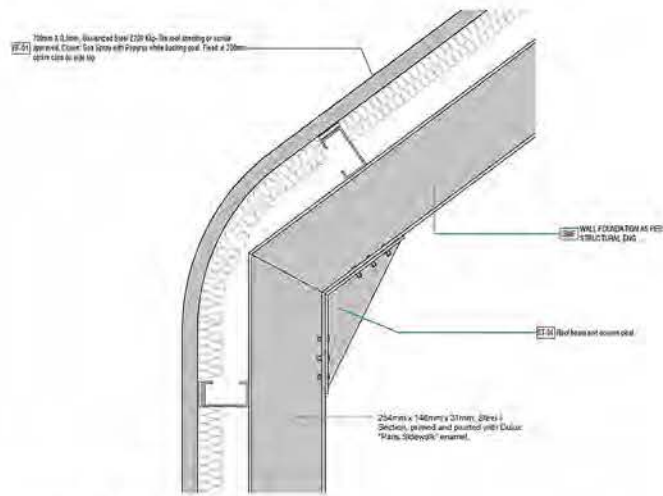


Figure 9.10.2 - Bullnose roof detail

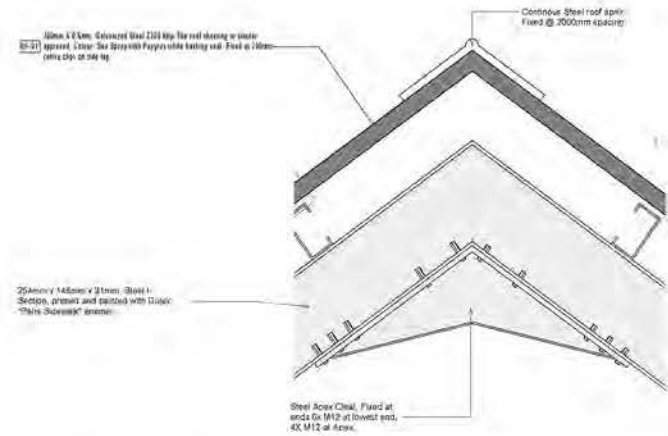


Figure 9.10.3 - Roof Apex detail

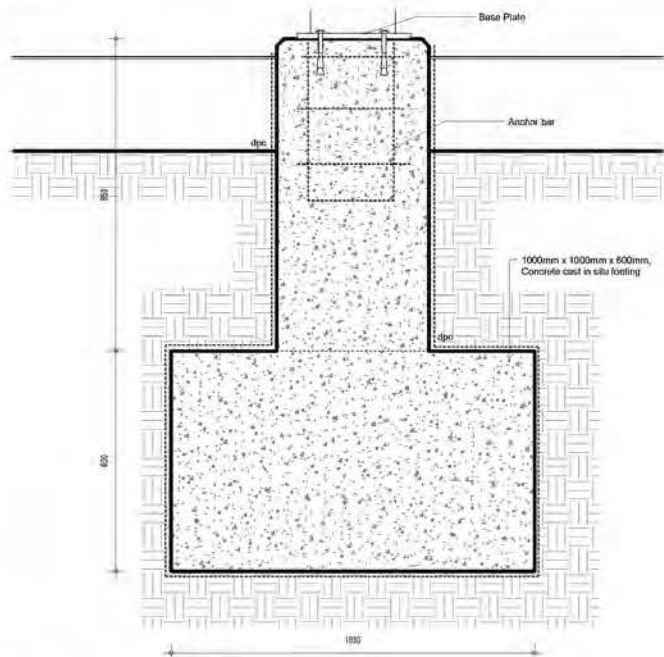


Figure 9.10.4 - Foundation detail

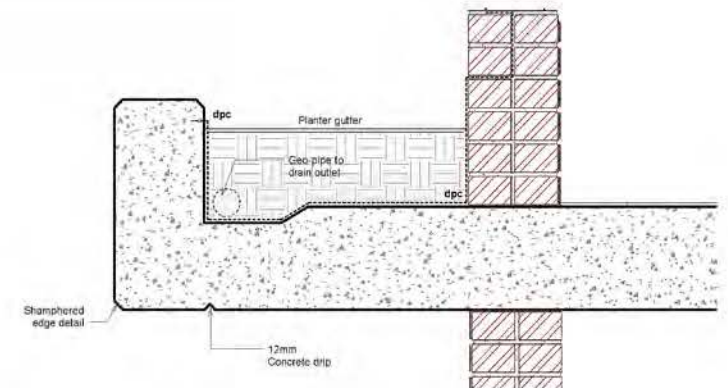


Figure 9.10.5 - Gutter Garden detail



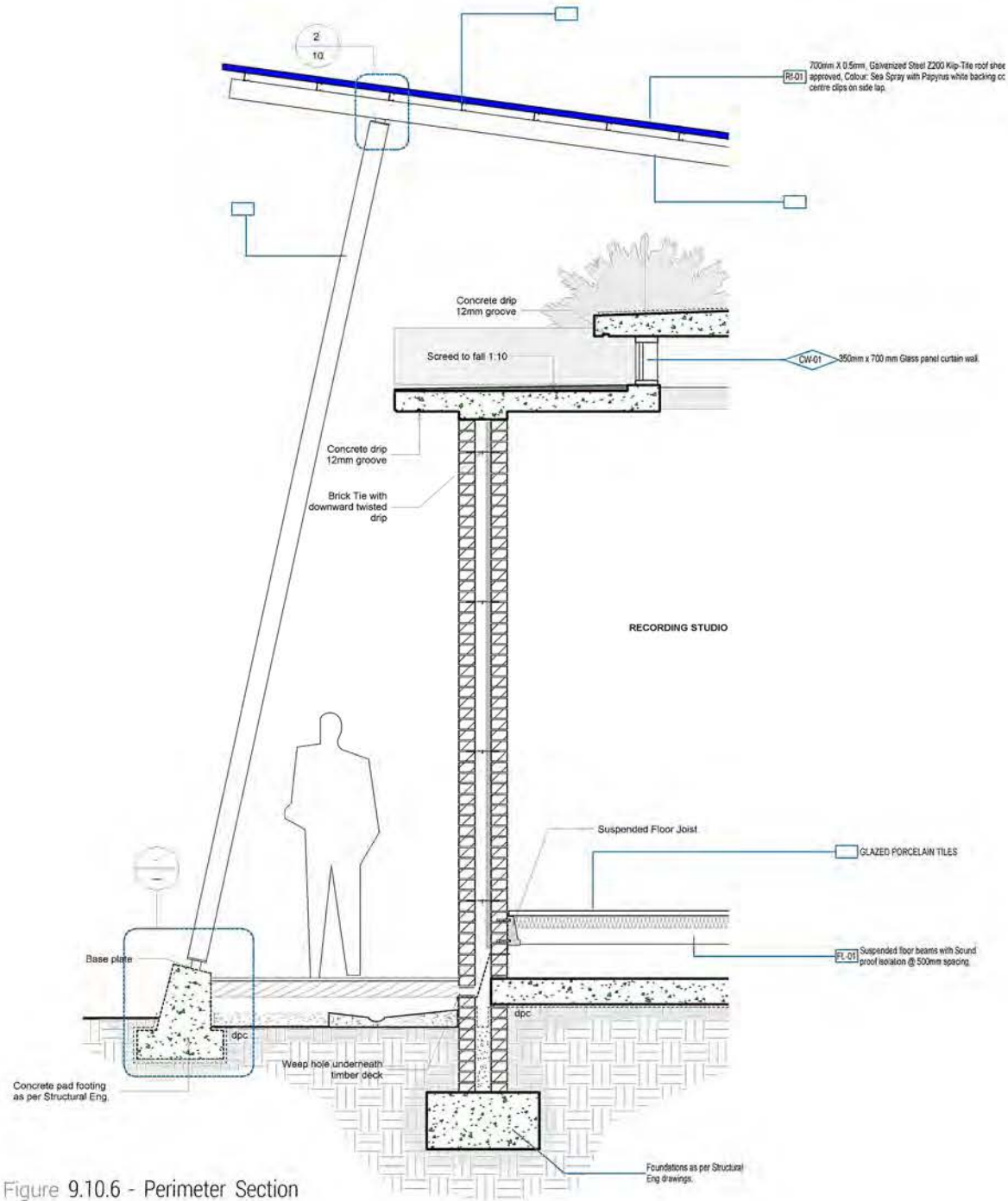


Figure 9.10.6 - Perimeter Section

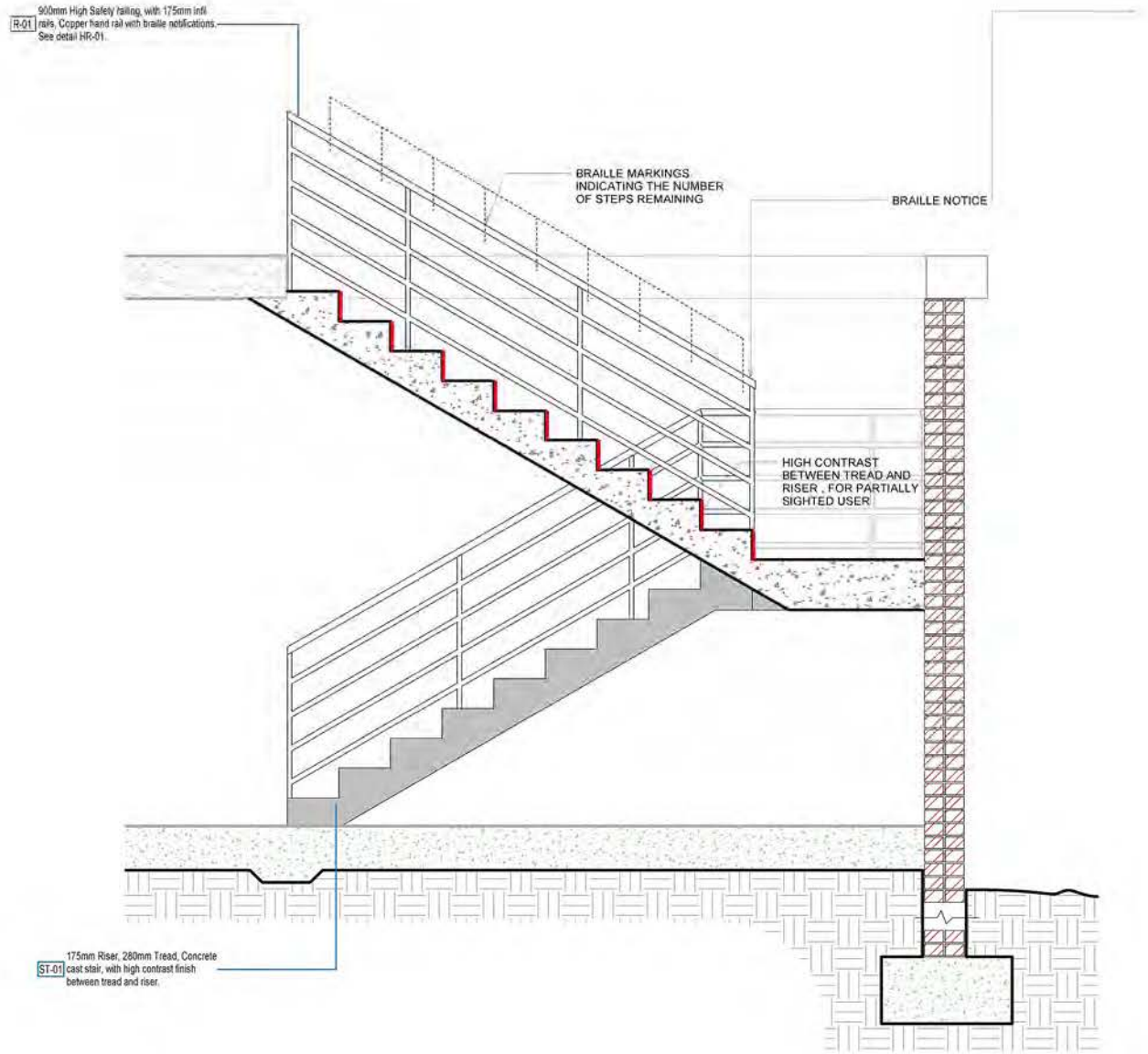
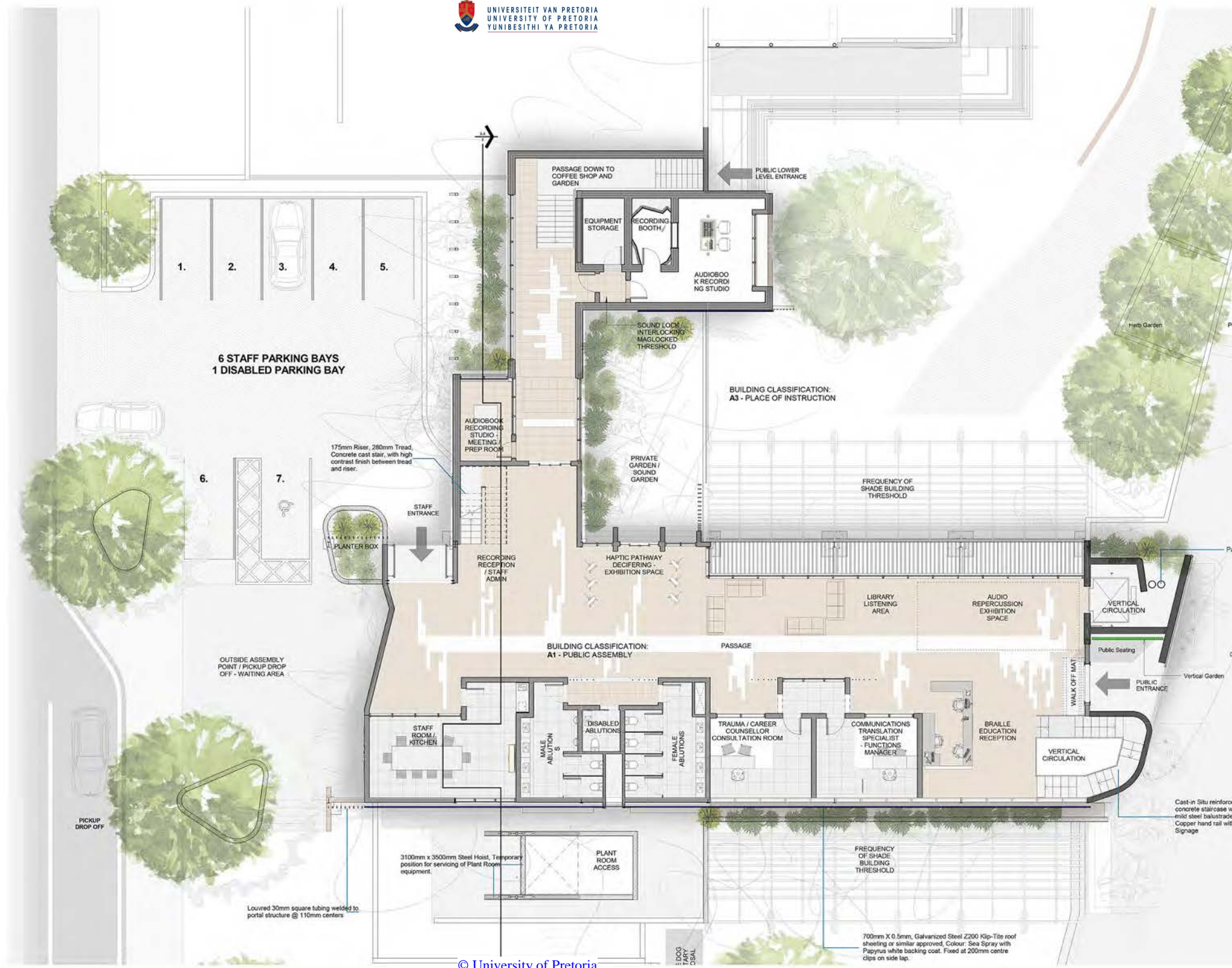
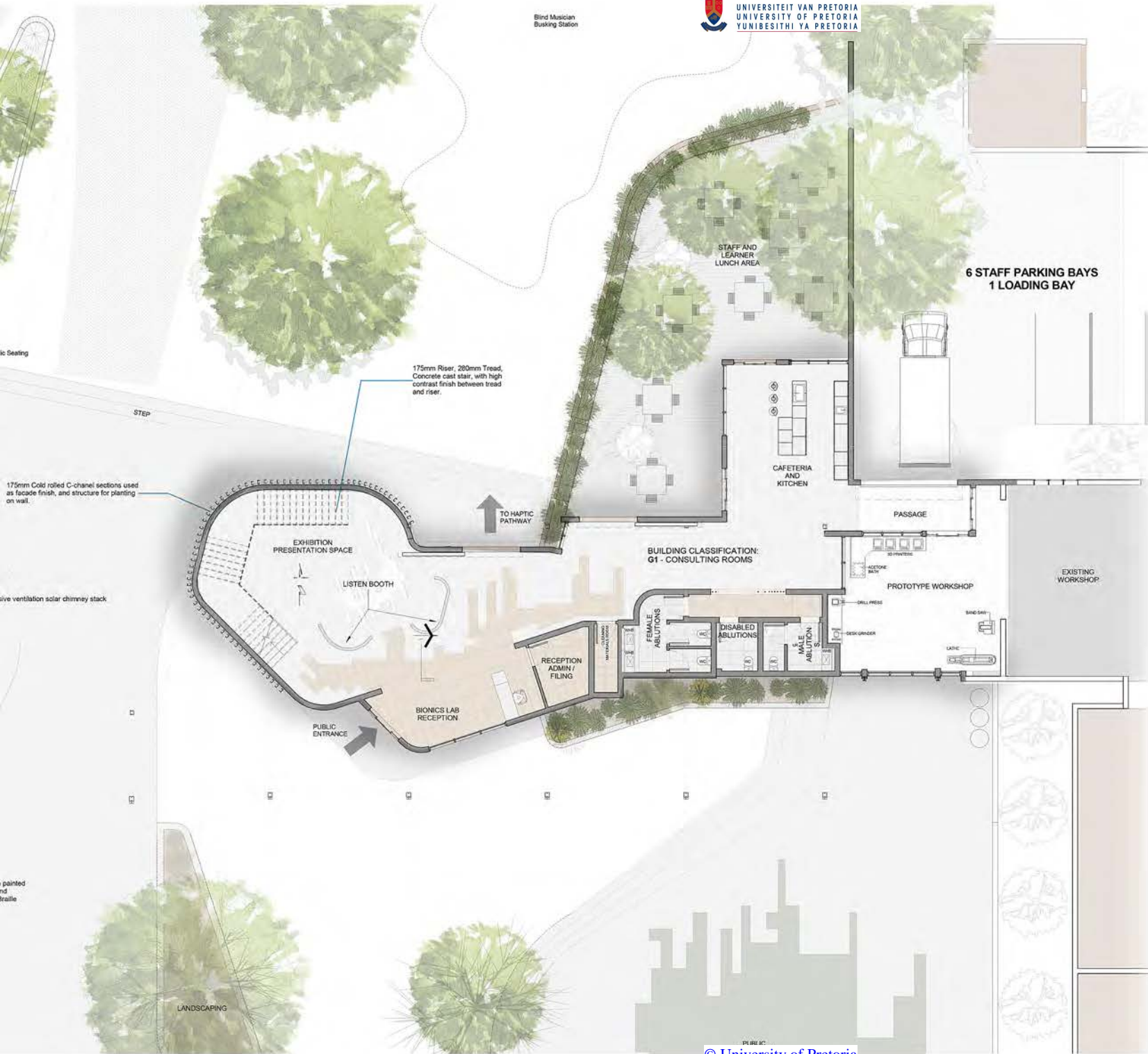


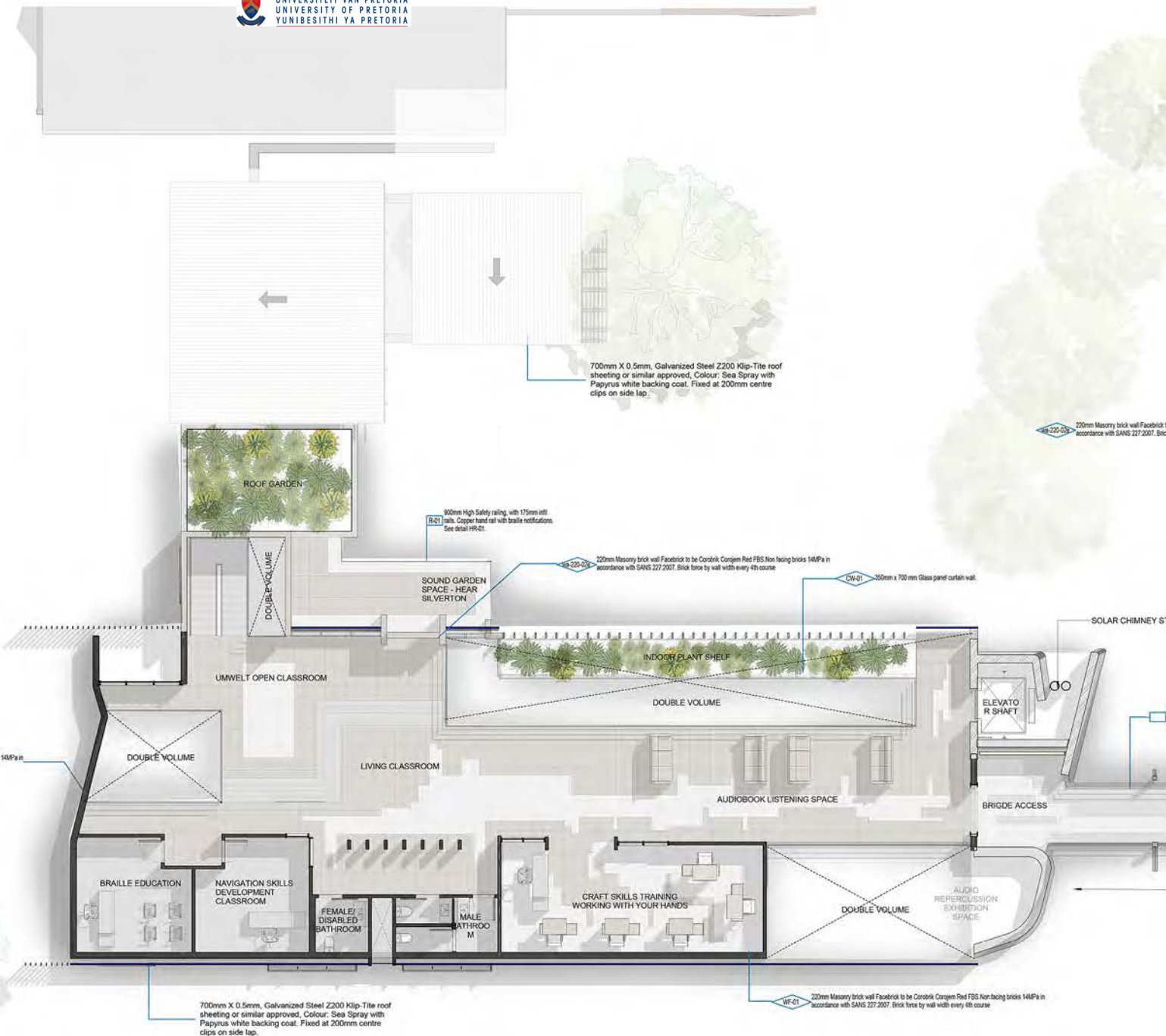
Figure 9.10.7 - Staircase detail



# FINAL GF PLAN

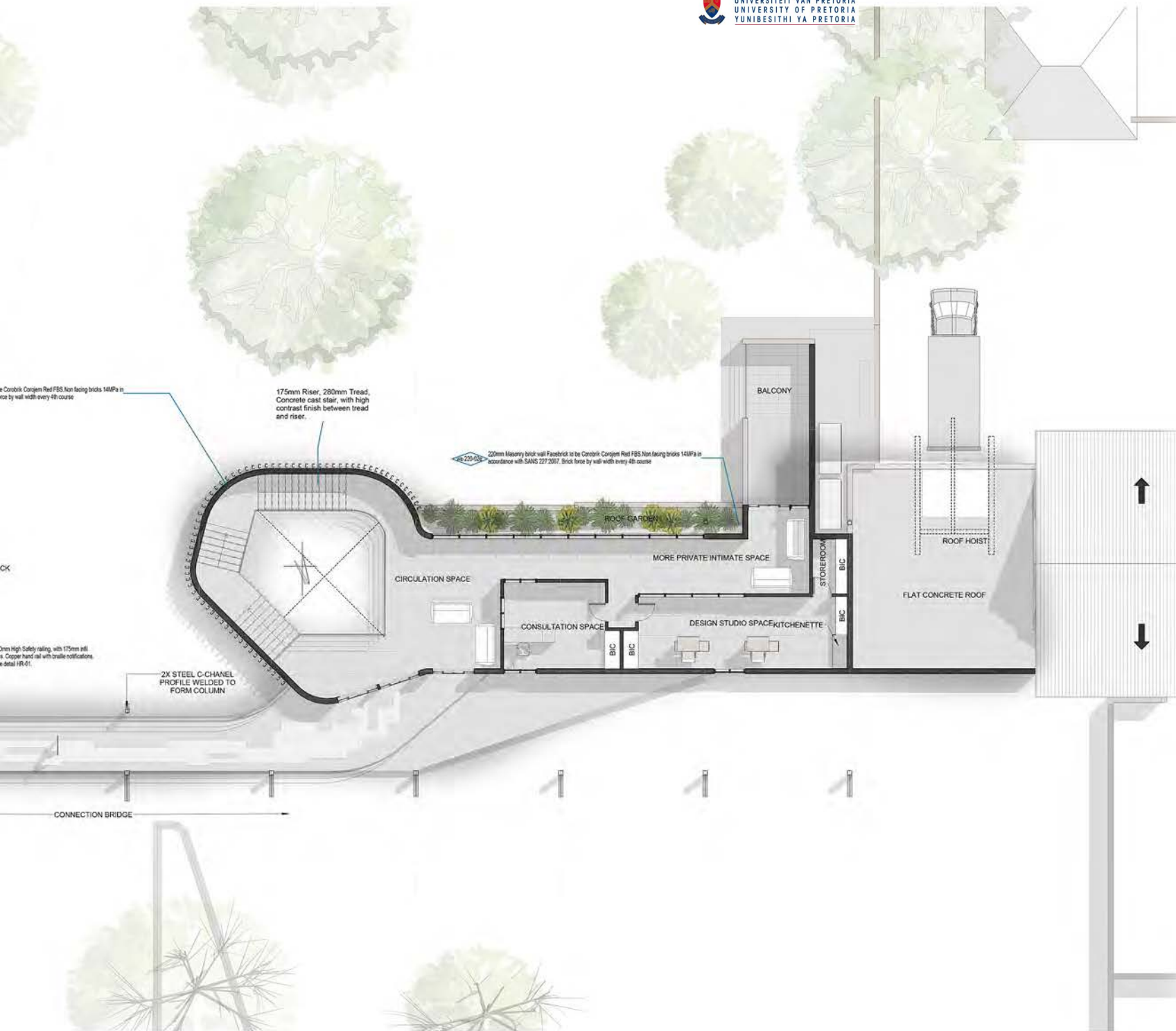
Figure 9.10.8 - Final Ground Floor Plan

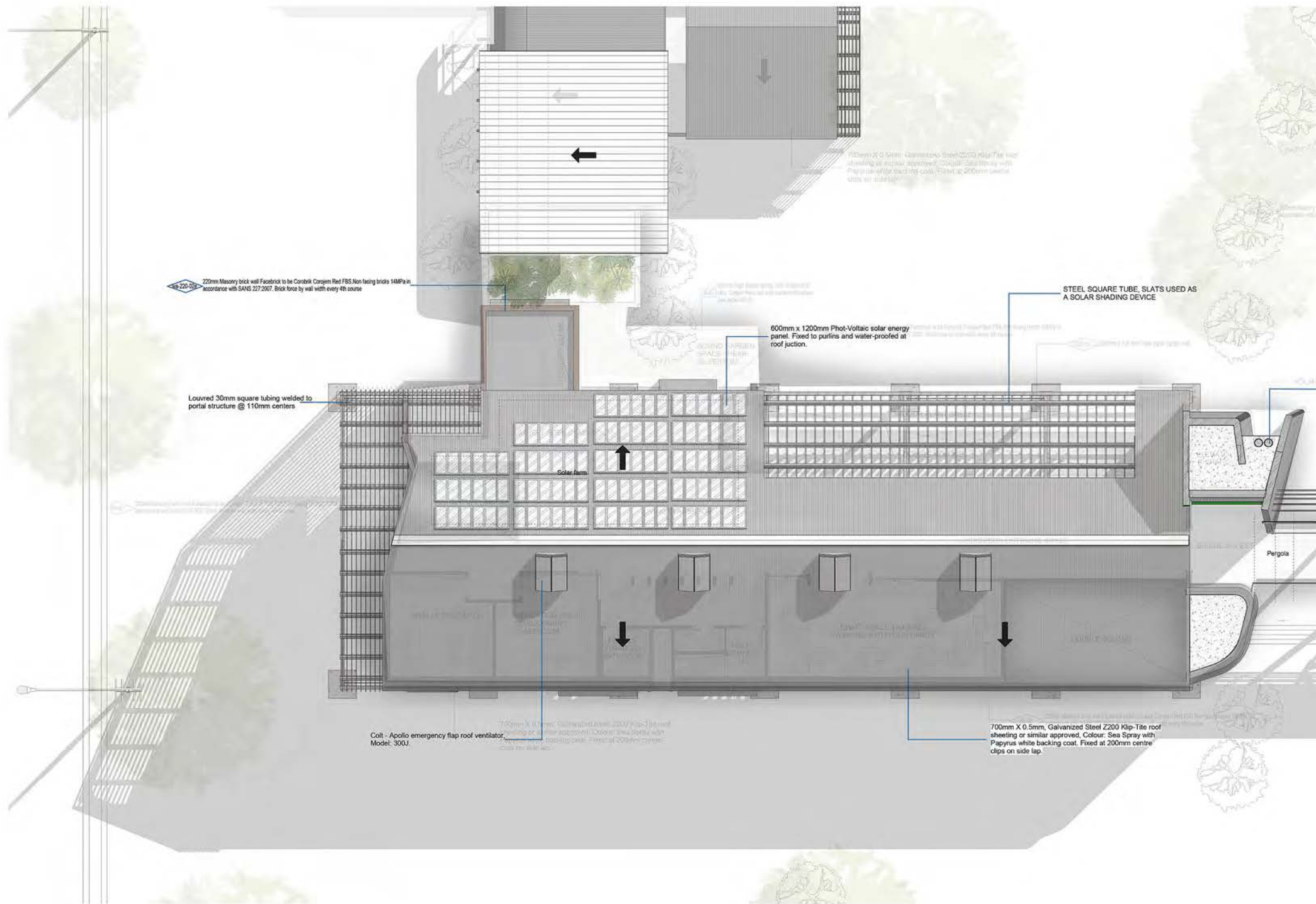




# FINAL FF PLAN

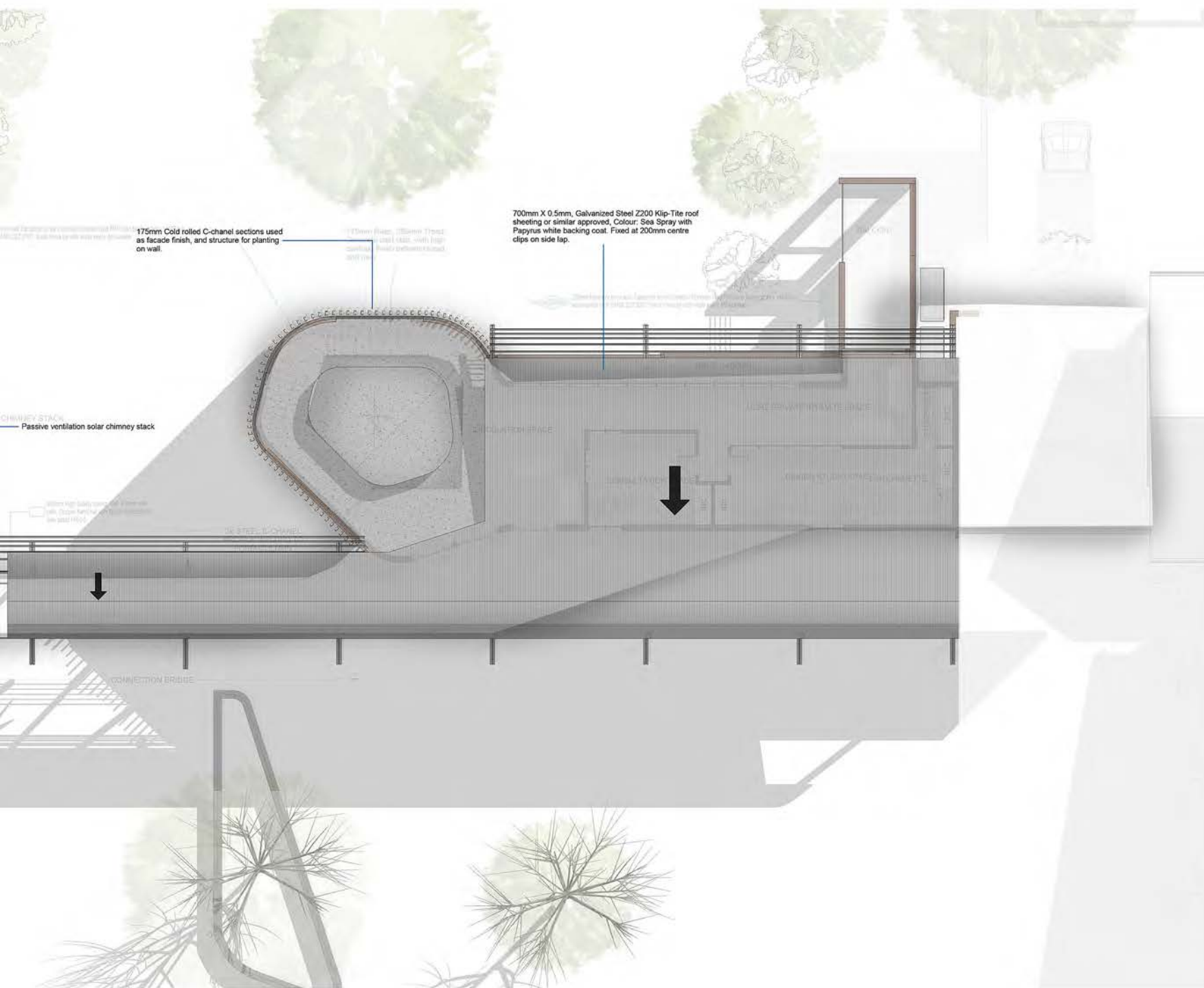
Figure 9.10.9 - Final First Floor Plan.





# FINAL ROOF PLAN

Figure 9.10.10 - Final Roof Plan.

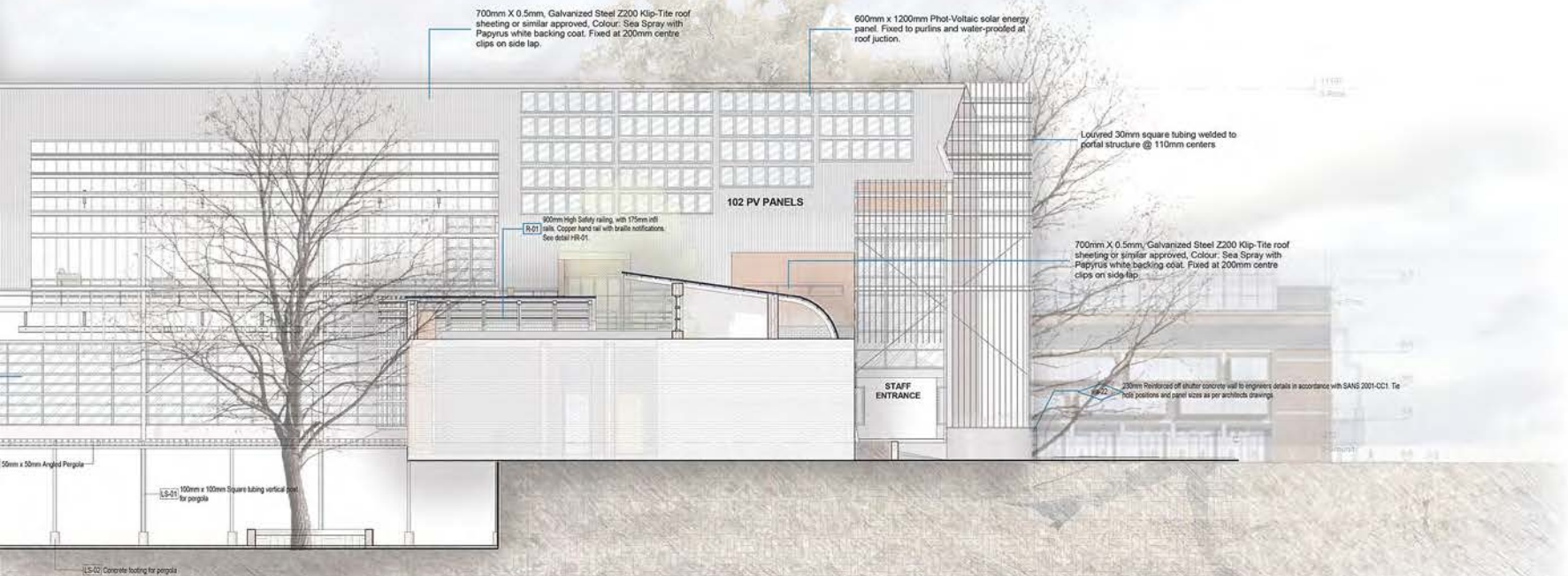






chimney stack

shaft and solar chimney, see detail  
Service stack

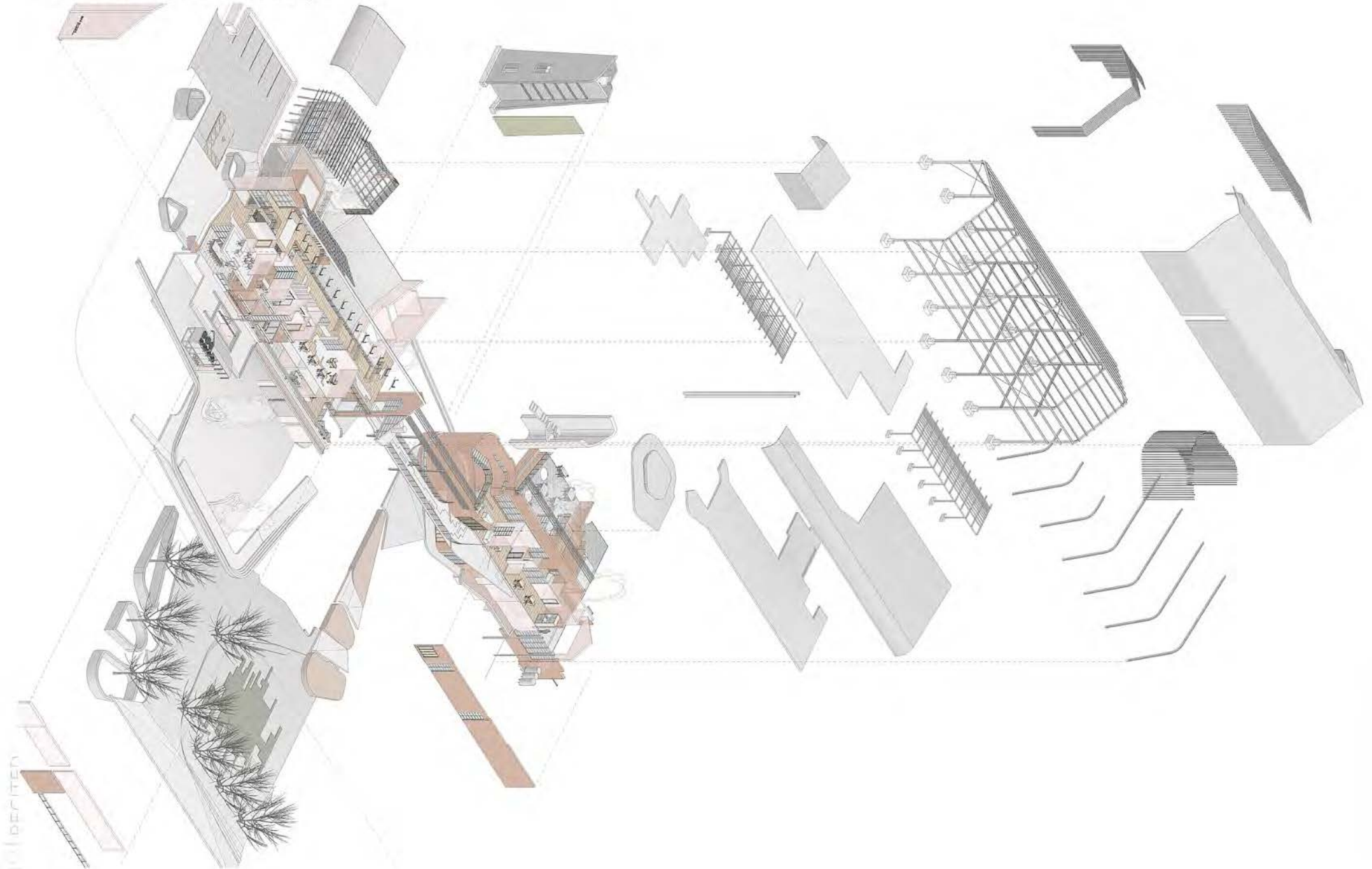






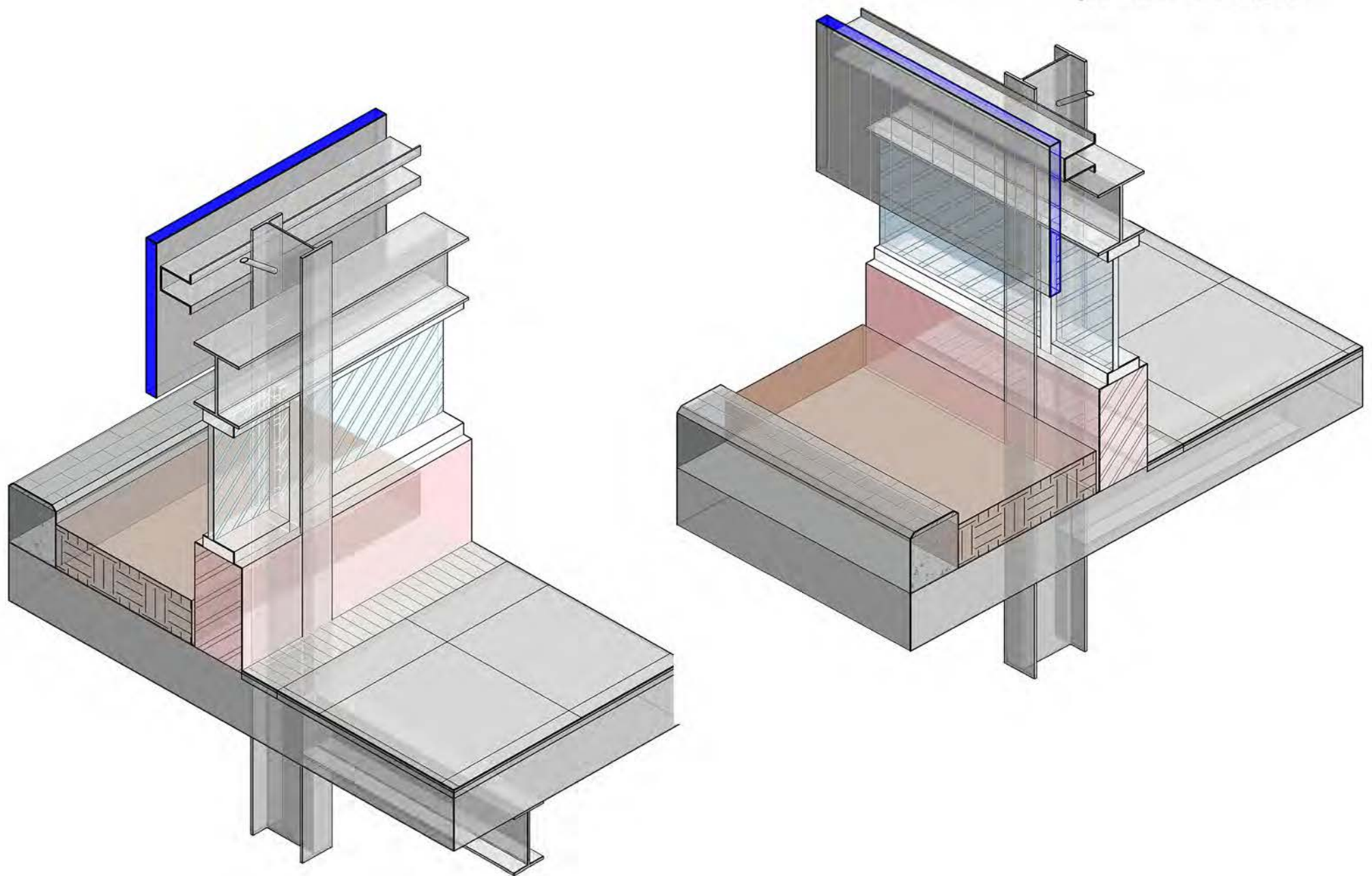
# FINAL EXPLODED AXOMETRIC

Figure 9.10.13 - Exploded axometric diagram



# LOW LEVEL WINDOW 3D SECTION

Figure 9.10.14 - Detail 3D section



# FINAL PASSIVE VENTILATION SYSTEM

Figure 9.10.15 - Passive ventilation system

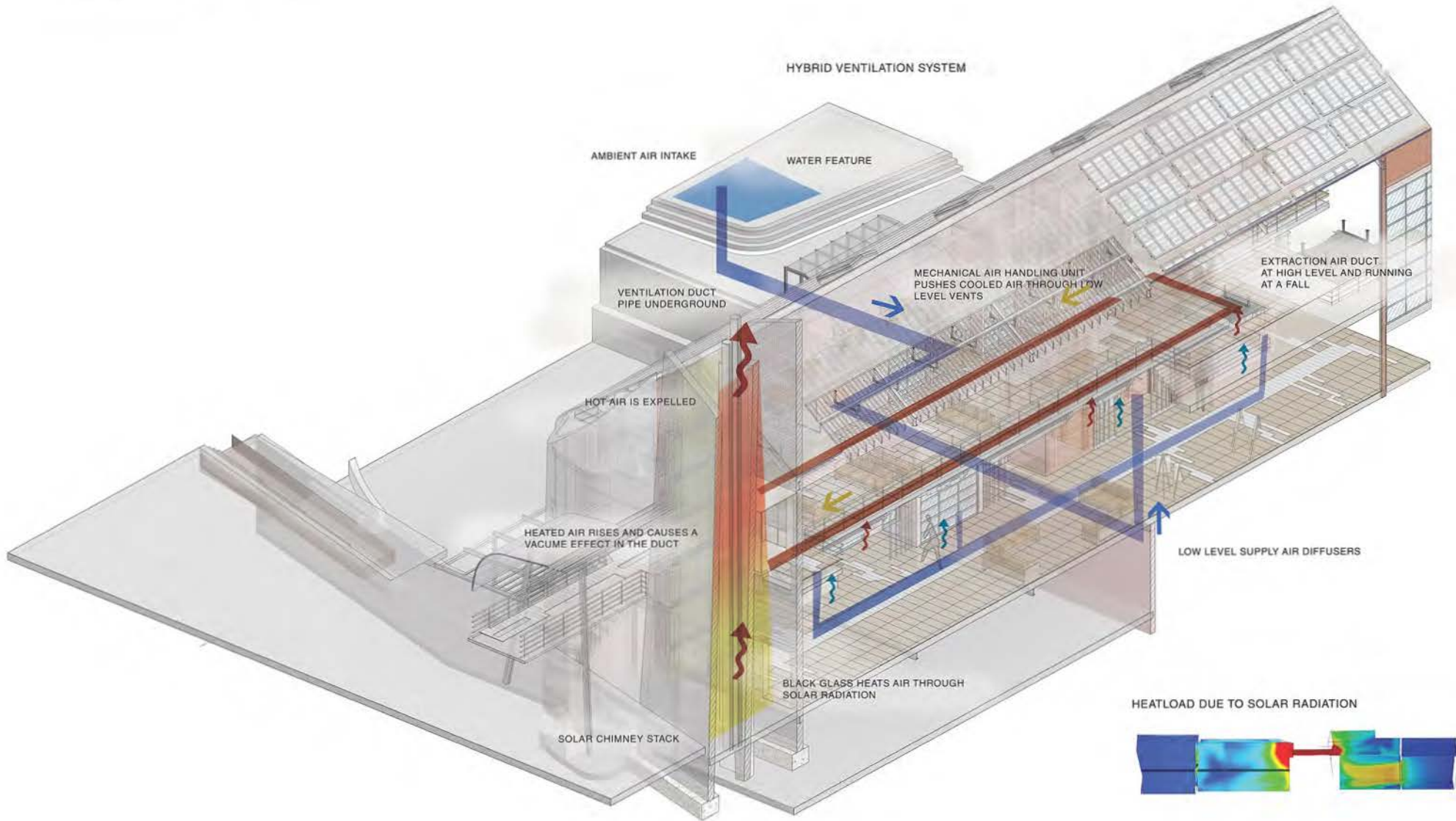








Figure 9.10.17 - Model under construction 2



Figure 9.10.16 - Model under construction 1



Figure 9.10.19 - Model under construction 4



Figure 9.10.18 - Model under construction 3



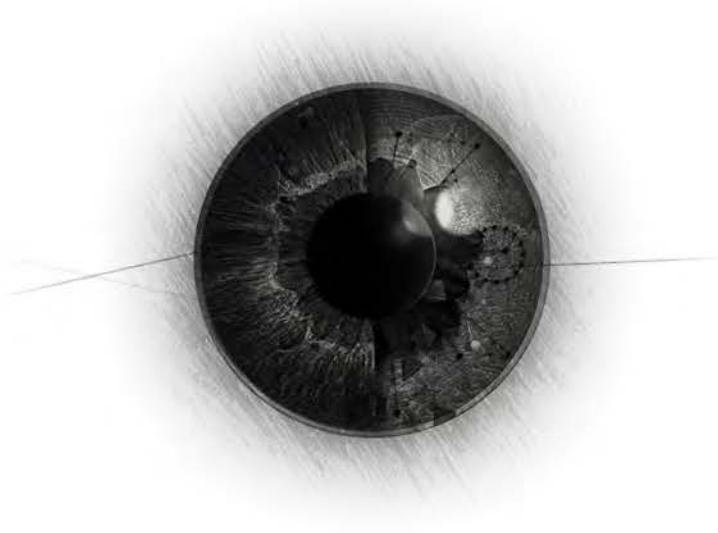
Figure 9.10.21 - Model under construction 6



Figure 9.10.20 - Model under construction 5

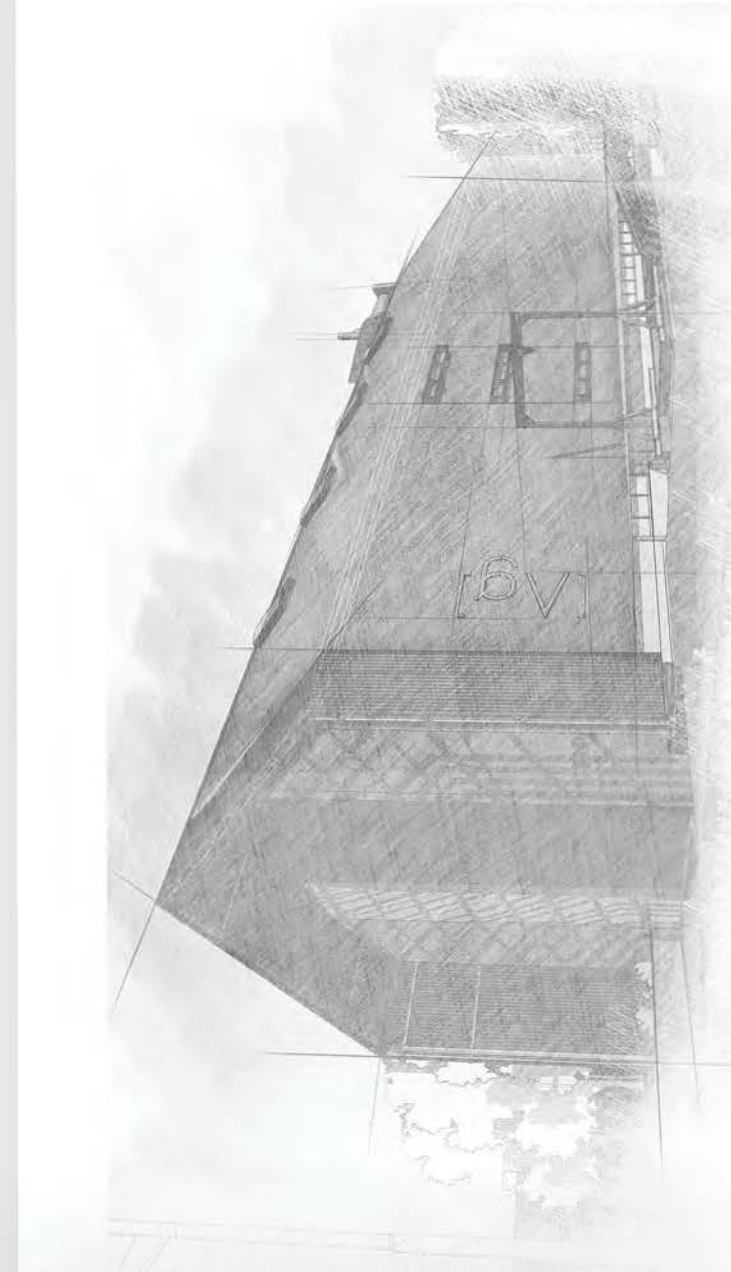


Figure 9.10.22 - Final Model



## 10 CONCLUSION

- 10.1 CONCLUSION
- 10.2 RENDERING EXPERIENCE



CHAPTER

10 | HINDSIGHT

## 10.1 CONCLUSION

The goals of this dissertation were to identify an approach to addressing the specific requirements within a specific context. The ability for architecture to act as a device for communication would only be measurable through the experiences of the final built spaces. However, the attempts to best simulate these conditions has been expressed through rendered experiences. This dissertation is not a solution for design communication, nor does it claim to be a better way to represent designed spaces. It highlights a bias and attempts to reveal one's own bias when designing future projects.

The contribution towards architecture is in the thinking behind experiential space, and the sensitive response to both context and intended user. It is subtle and seemingly authorless where the predilections of the author have not been forced on to the site. It is, in the spirit of Silverton, honest and unpretentious in its form. It is still place-making architecture that assists in shaping the identity of Silverton.

The architecture of exaggerated concepts that push the limits of form do have a place in sensory architecture.

However, the Eco-systemic normative position would contest that the place is not here in this specific context. Design that is true to its context and true to its function is timeless design and not revolutionary design. Initially, the project had argued that the idea of form following function had killed experience.

This project has developed into a new argument that places experience as part of function. Function and experience should be intertwined and form should follow.

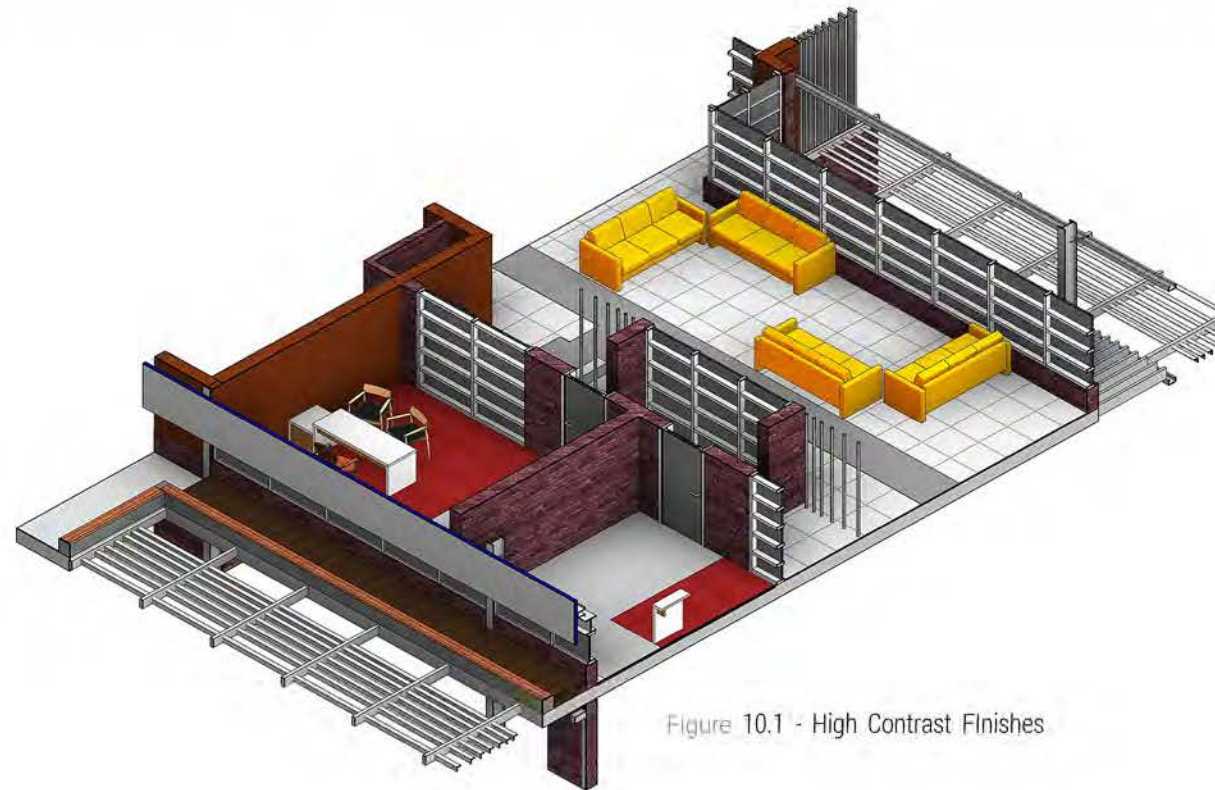


Figure 10.1 - High Contrast Finishes

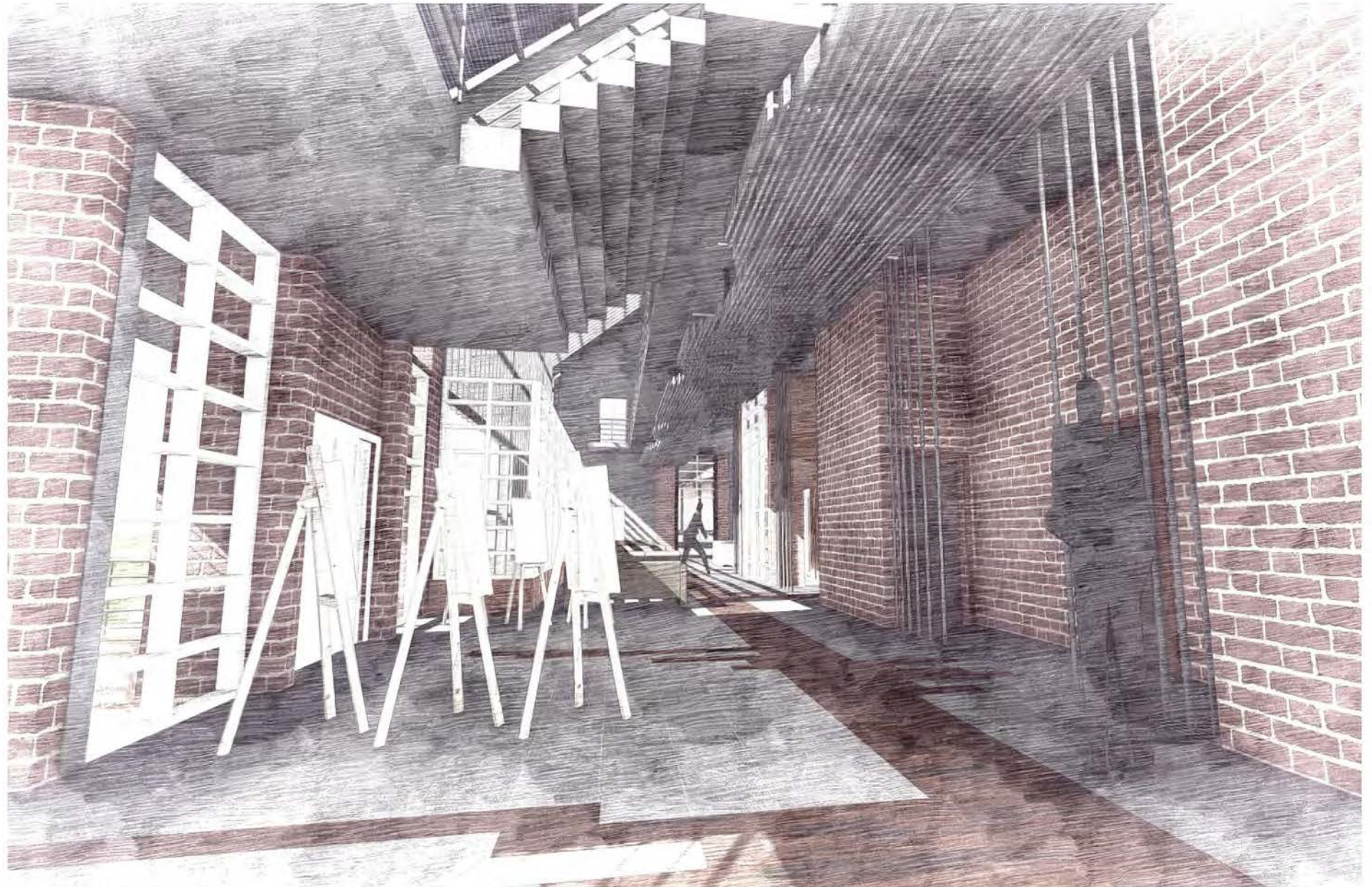


Figure 10.2.1 - Rendering 1



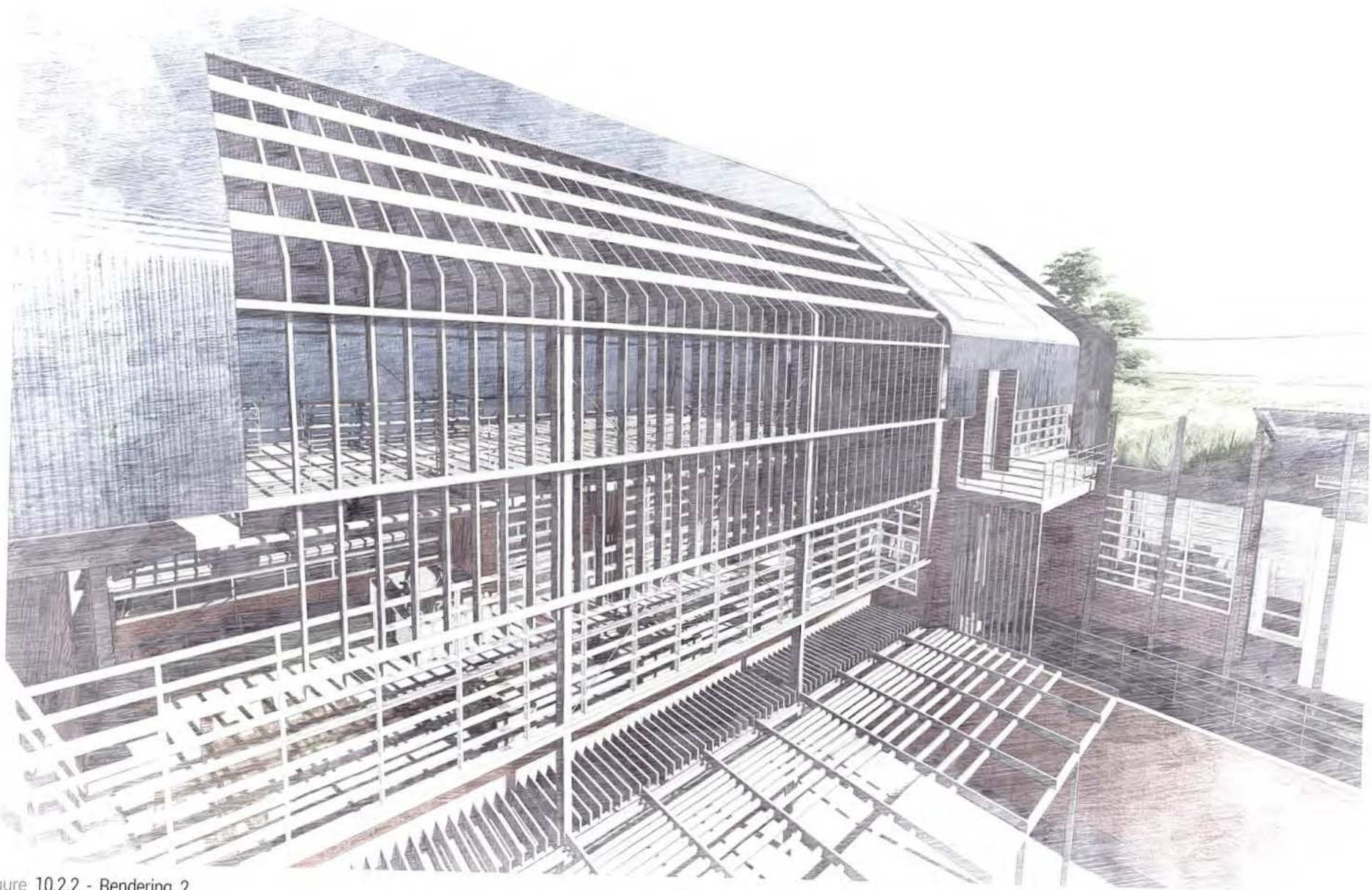


Figure 10.2.2 - Rendering 2

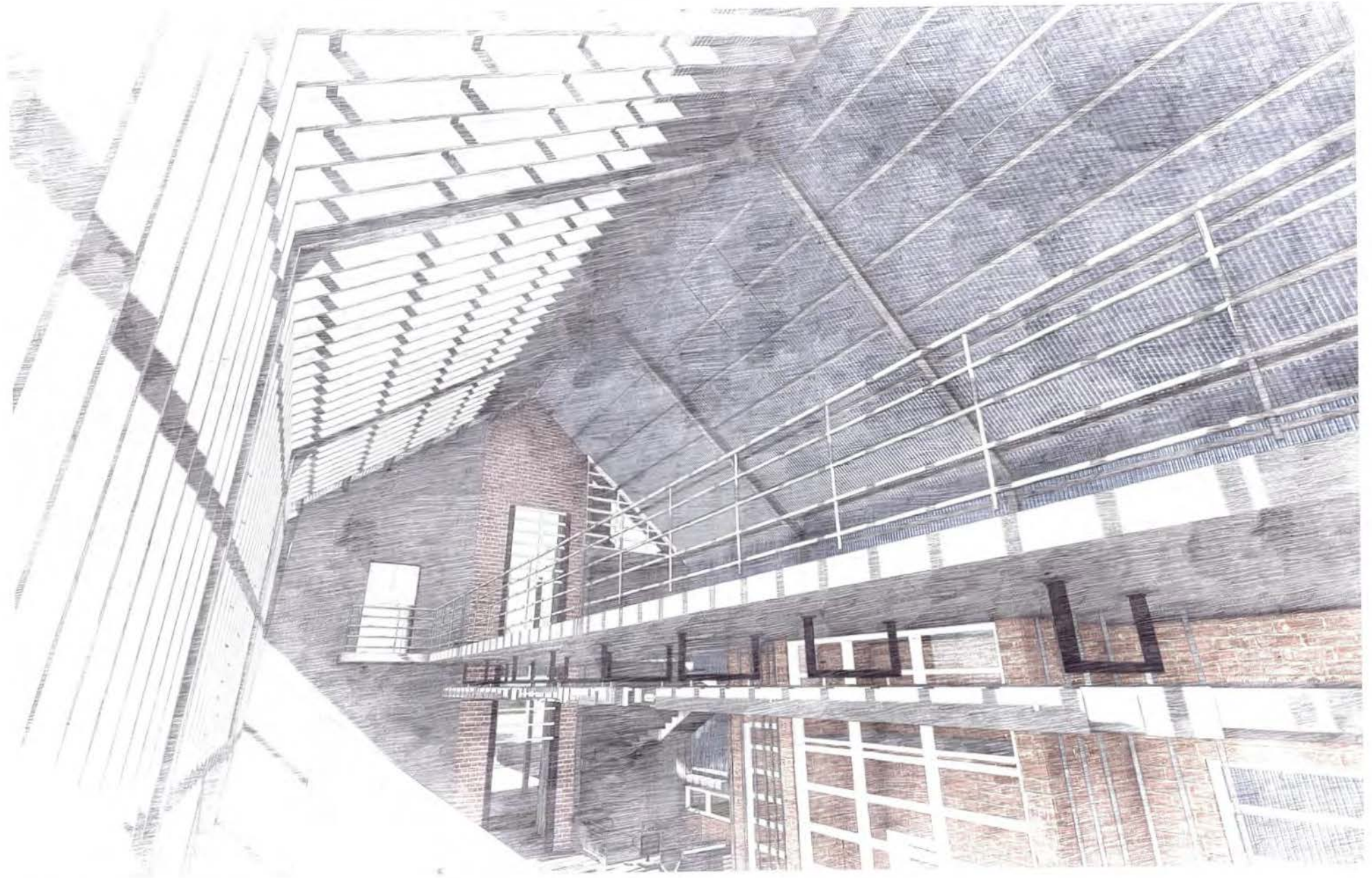


Figure 10.2.3 - Rendering 3

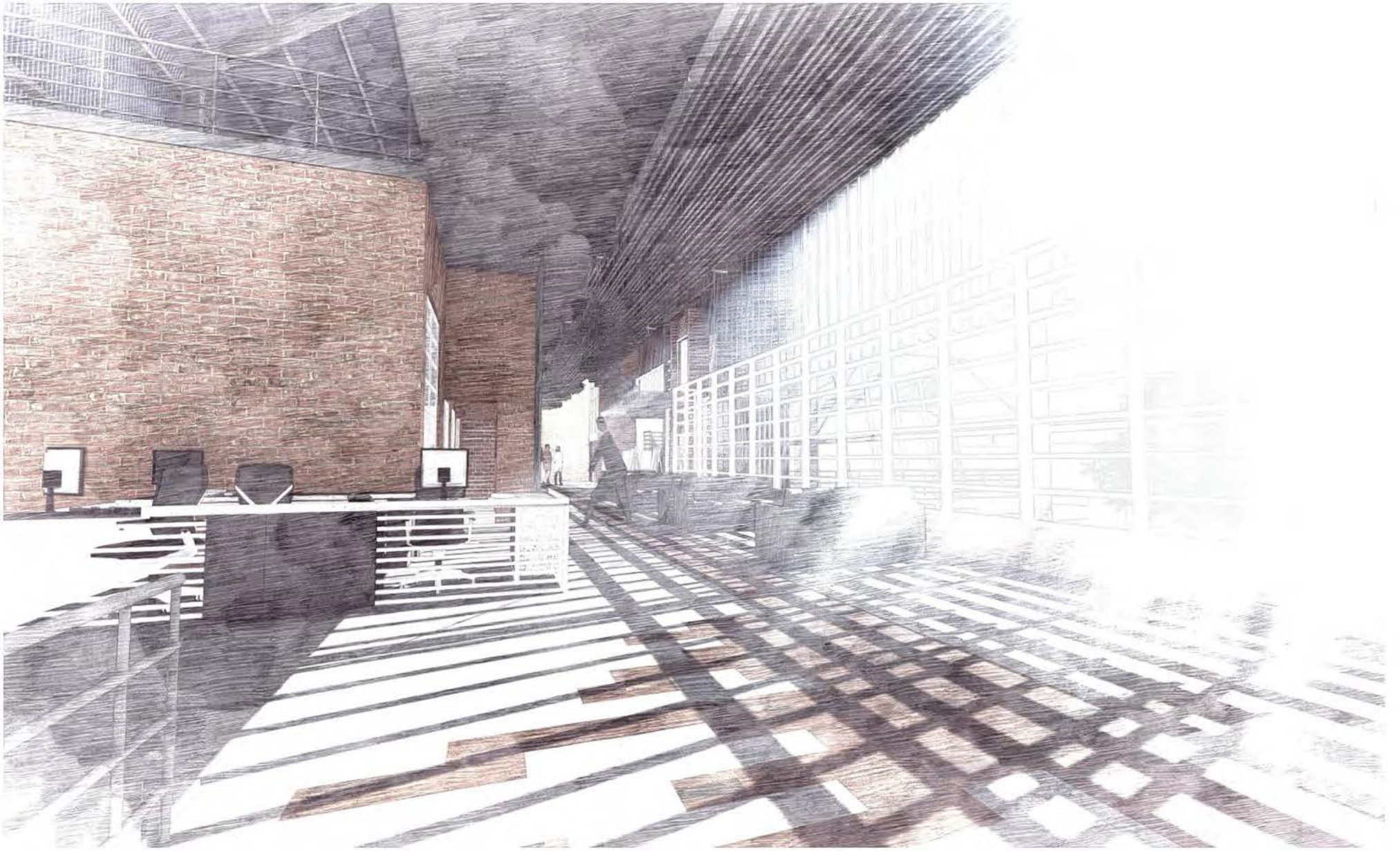


Figure 10.2.4 - Rendering 4



Figure 10.2.5 - Rendering 5

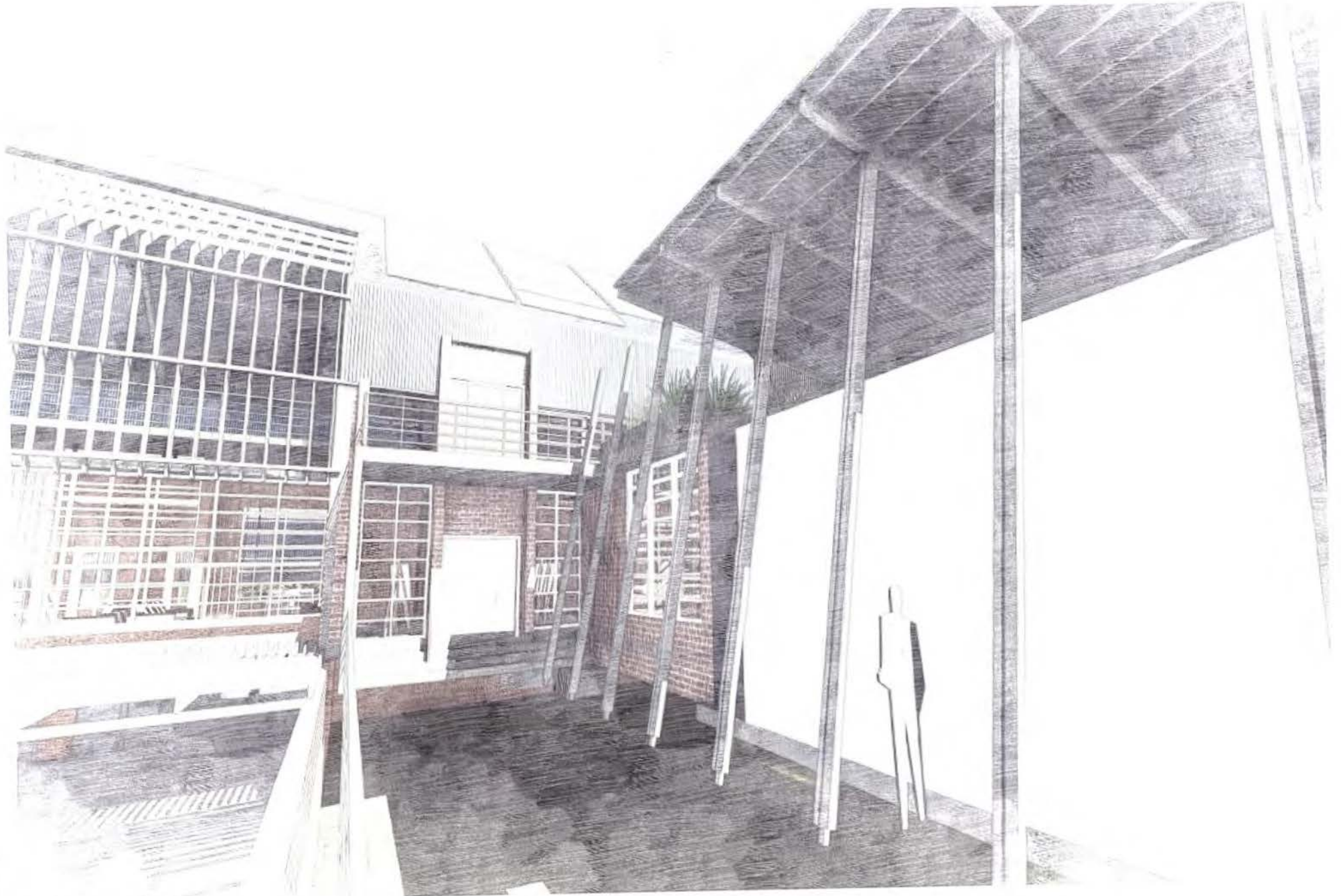


Figure 10.2.6 - Rendering 6

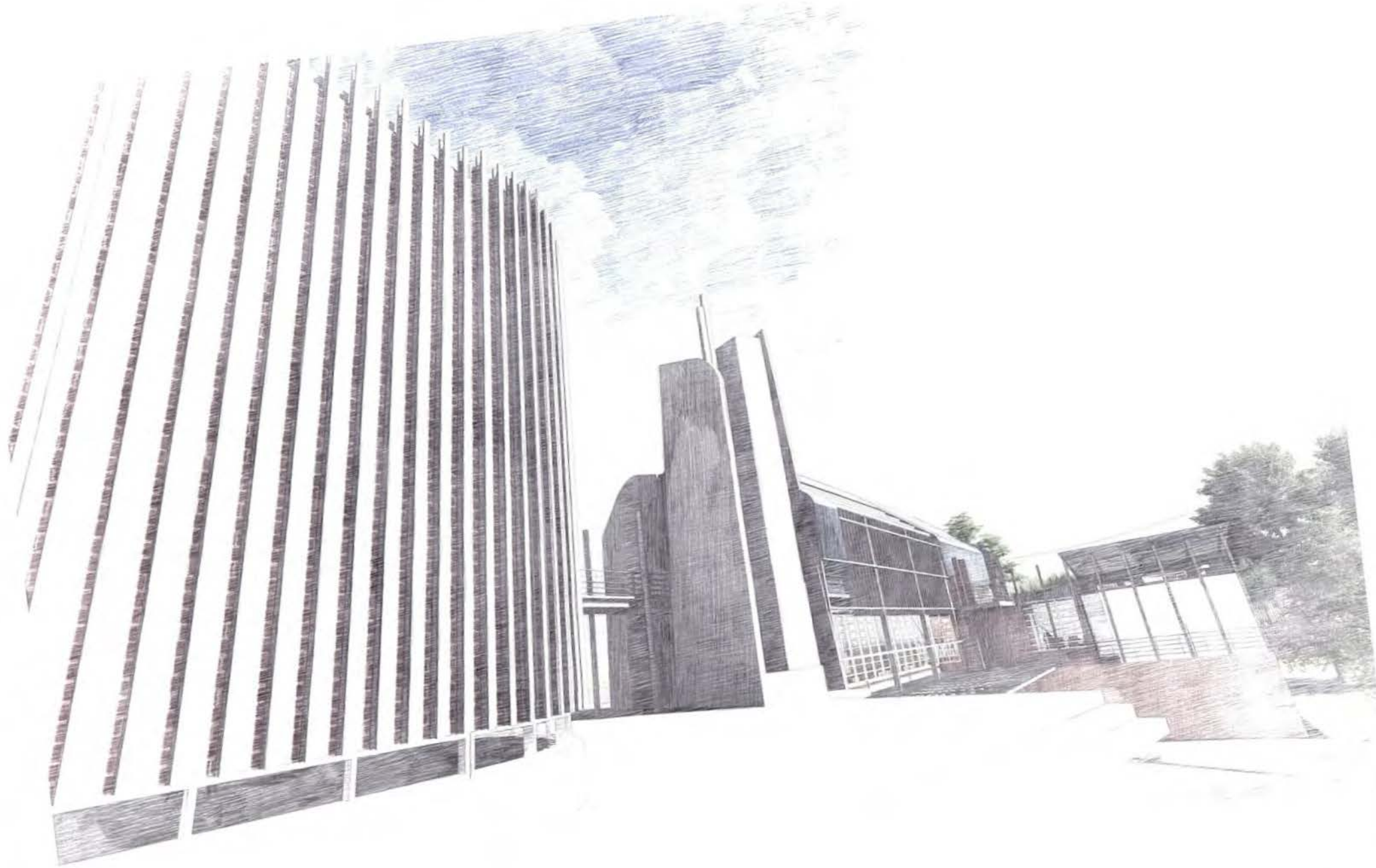


Figure 10.27 - Rendering 7

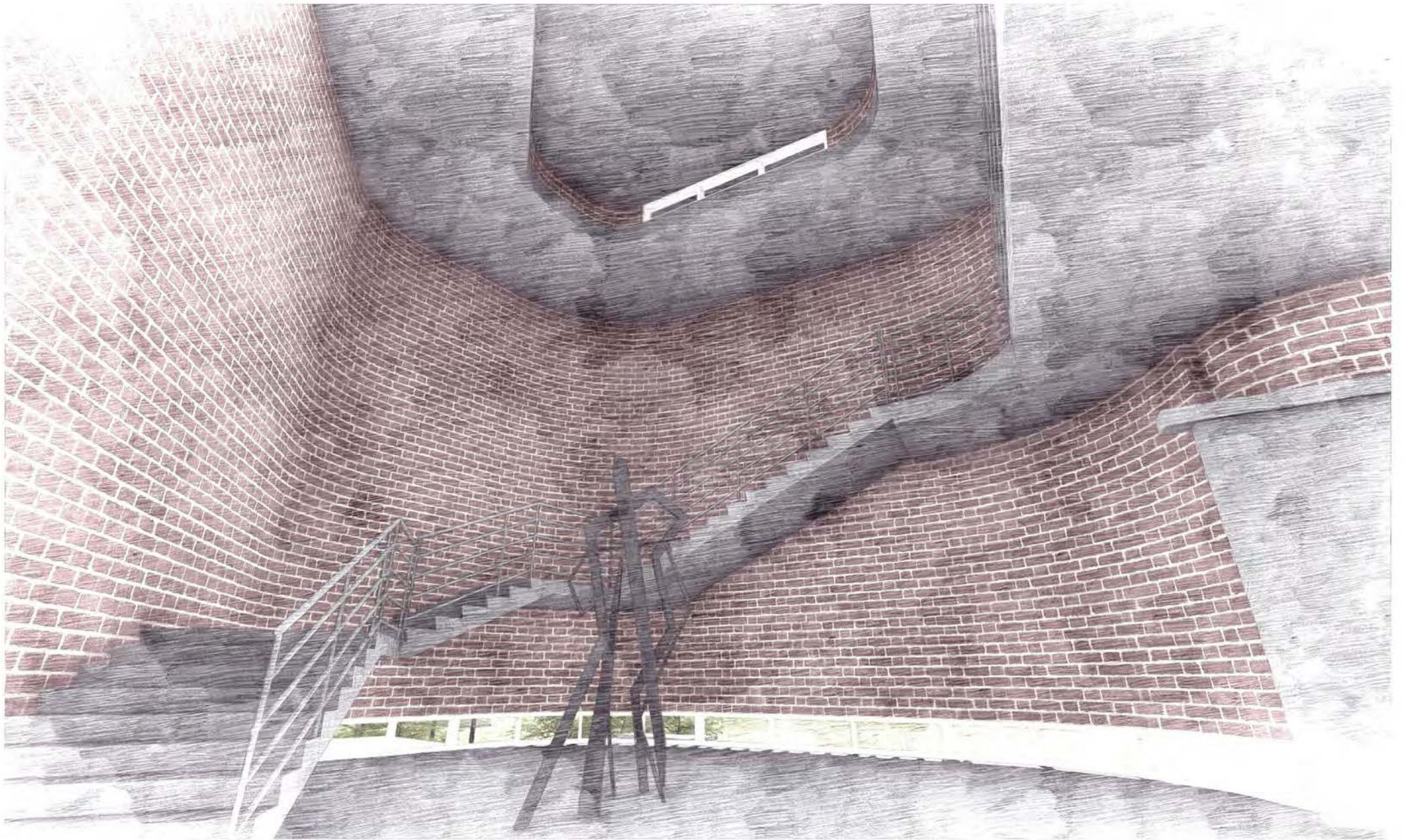


Figure 10.2.8 - Rendering 8

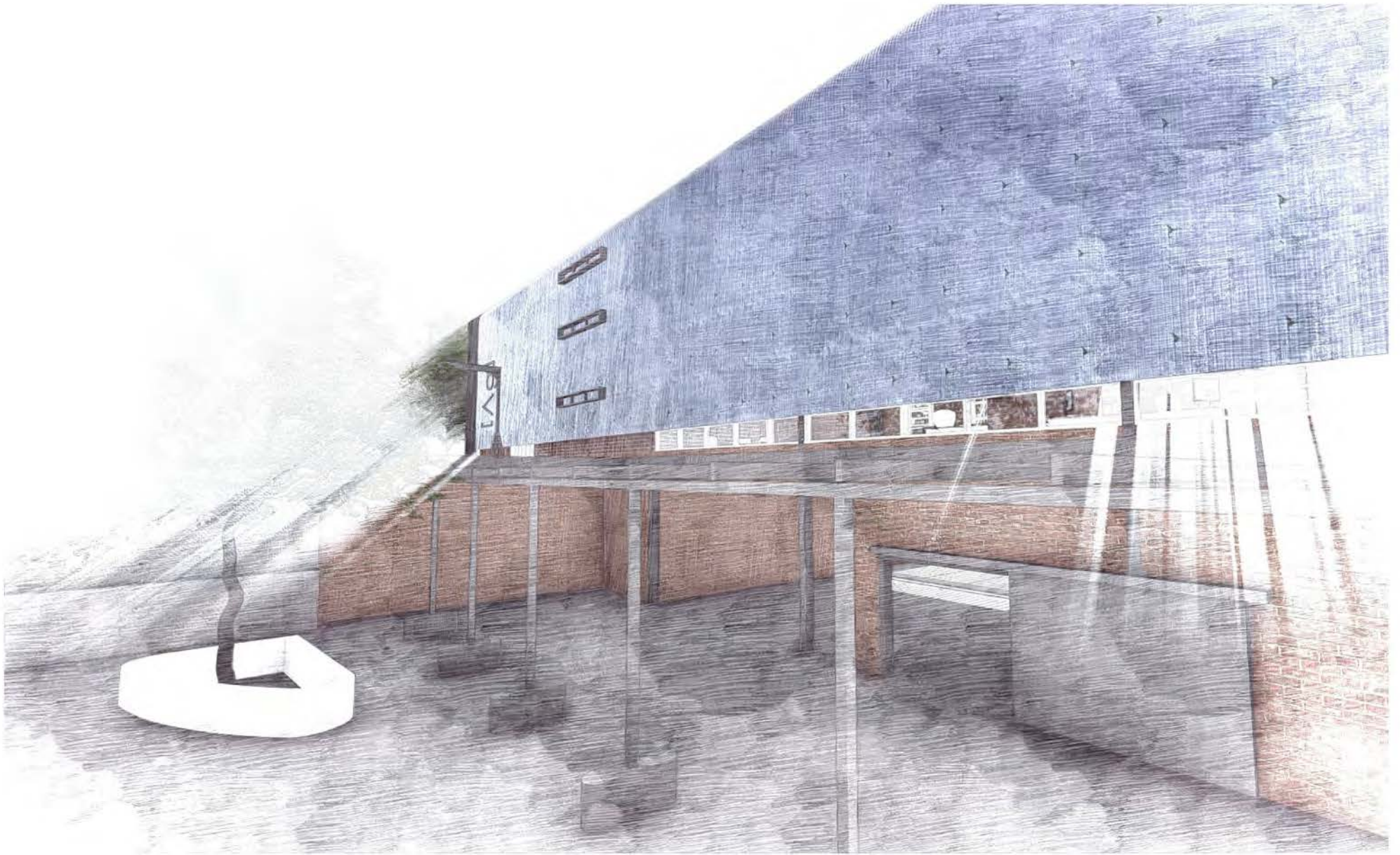
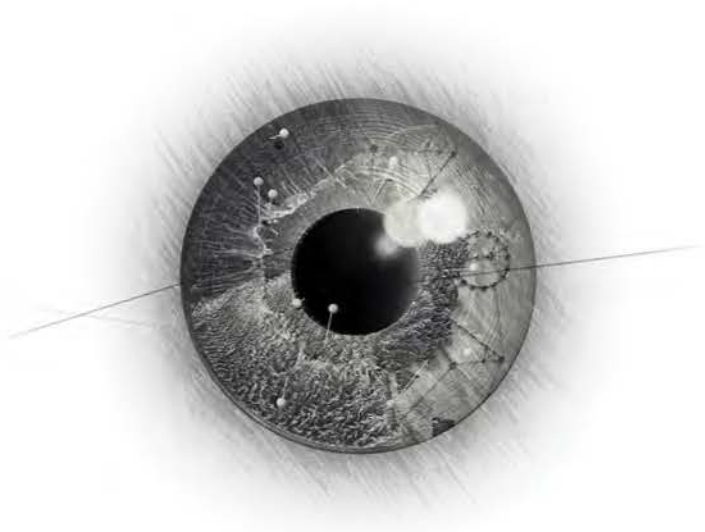


Figure 10.2.9 - Rendering 9





11 REFERENCES

11.1 CONCLUSION



CHAPTER

11

CITED

## 1.1.1 REFERENCES

Chris Downey. (2013). Design with the blind in mind. [Online Video]. November 2013--. Available from: [https://www.ted.com/talks/chris\\_downey\\_design\\_with\\_the\\_blind\\_in\\_mind/transcript?language=en](https://www.ted.com/talks/chris_downey_design_with_the_blind_in_mind/transcript?language=en). [Accessed: 24 April 2016].

Kull, Kalevi (2010). "Umwelt". In Cobley, Paul. The Routledge Companion to Semiotics. London: Routledge. pp. 348–349.

Francis D. K. Ching, 2007. Architecture: Form, Space, and Order. 3rd Edition. John Wiley & Sons

DAVID LEATHERBARROW - MOHSEN MOSTAFAVI, 2002. Surface Architecture. Advanced Reader's Copy Edition. MIT PRESS.

Jay, M, 1988. Poetics Today. The Rise of Hermeneutics and the Crisis of Ocularcentrism, Vol. 9, No. 2, The Rhetoric of Interpretation and the Interpretation of Rhetoric, 307-326.

Frescura, Franco , 2000. IDENTIFICATION OF THE APARTHEID CITY. DECONSTRUCTING THE APARTHEID CITY, [Online]. Part d. Industrial Belts as Buffer Zones., 2. Available at: <http://www.sahistory.org.za/franco/urban-issues-apartheid-city.html> [Accessed 24 October 2016].

Otero-Pailos, Jorge (2010). Architecture's Historical Turn: Phenomenology and the Rise of the Postmodern. University of Minnesota Press.

Pallasmaa, Juhani. The Embodied Image: Imagination and Imagery in Architecture. Chichester. John Wiley & Sons, 2011. p. 119.

Christian Norberg-Schulz, 1979. Genius Loci: Towards a Phenomenology of Architecture. Edition. Rizzoli.  
Add to My References

International Ergonomics Association. What is Ergonomics. Website. Retrieved 17 March 2014.

Le Corbusier, 2000. Le Modulor and Modulor 2 [ENGLISH EDITION]. 1 Edition. Birkhäuser Architecture.

Jewish Museum Berlin. "Daniel Libeskind, Jewish Museum Berlin". Retrieved 9 December 2014.

Juhani Pallasmaa, 2005. The Eyes of the Skin: Architecture and the Senses. 2 Edition. Academy Press.

Kittler, F.A. , 1996. The City Is a Medium. New Literary History, [Online]. Vol. 27, No. 4, Literature, Media, and the Law, 717-729. Available at: <http://www.jstor.org/stable/20057387> [Accessed 12 June 2016].

Petra Kaiser. 2016. Center for Art and Media Karlsruhe. [ONLINE] Available at: <http://on1.zkm.de/zkm/stories/storyReader%241107>. [Accessed 27 September 2016].

Keeney, Gavin (2011). Else-where\*: Essays in Art, Architecture, and Cultural Production 2002-2011. Newcatsle upon Tyne: Cambridge Scholars Publishing.

TED - Ideas worth spreading. 2012. Why architects need to use their ears. [ONLINE] Available at: [https://www.ted.com/talks/julian\\_treasure\\_why\\_architects\\_need\\_to\\_use\\_their\\_ears/transcript?language=en](https://www.ted.com/talks/julian_treasure_why_architects_need_to_use_their_ears/transcript?language=en). [Accessed 17 february 2016].

Tom Porter, 2014. The Architect's Eye. 1 Edition. Taylor & Francis.

<http://www.dezeen.com/2011/06/30/centre-for-scottish-war-blinded-by-pagepark/>

<http://www.archdaily.com/158301/center-for-the-blind-and-visually-impaired-taller-de-arquitectura-mauricio-rocha>

<http://www.archdaily.com/771020/batthyany-laszlo-institute-for-blinds-a4-studio>

<http://www.jakupa.co.za/completed-work/cape-town-society-for-the-blind/13-ctsb-p7230117.jpg/>

<http://www.capetownmagazine.com/cape-town-blind-friendly-park>

<http://edition.cnn.com/2015/06/17/living/dyslexia-graphic-design-typeface-daniel-britton/index.html>

[https://www.goodreads.com/author/show/3251724.Theodore\\_Jerome\\_Cohen/blog/tag/dyslexia](https://www.goodreads.com/author/show/3251724.Theodore_Jerome_Cohen/blog/tag/dyslexia)

<http://www.boredpanda.com/dyslexic-typeface-daniel-britton/>

OUT OF SITE

Chris Downey. (2013). Design with the blind in mind. [Online Video]. November 2013. Available from: [https://www.ted.com/talks/chris\\_downey\\_design\\_with\\_the\\_blind\\_in\\_mind/transcript?language=en](https://www.ted.com/talks/chris_downey_design_with_the_blind_in_mind/transcript?language=en). [Accessed: 24 April 2016].

Kull, Kalevi (2010). "Umwelt". In Cobley, Paul. *The Routledge Companion to Semiotics*. London: Routledge. pp. 348–349.

Francis D. K. Ching, 2007. *Architecture: Form, Space, and Order*. 3rd Edition. John Wiley & Sons

DAVID LEATHERBARROW - MOHSEN MOSTAFAVI, 2002. *Surface Architecture*. Advanced Reader's Copy Edition. MIT PRESS.

Jay, M, 1988. *Poetics Today*. The Rise of Hermeneutics and the Crisis of Ocularcentrism, Vol. 9, No. 2, The Rhetoric of Interpretation and the Interpretation of Rhetoric, 307-326.

Frescura, Franco , 2000. IDENTIFICATION OF THE APARTHEID CITY. DECONSTRUCTING THE APARTHEID CITY, [Online]. Part d. Industrial Belts as Buffer Zones., 2. Available at: <http://www.sahistory.org.za/franco/urban-issues-apartheid-city.html> [Accessed 24 October 2016].

Otero-Pailos, Jorge (2010). *Architecture's Historical Turn: Phenomenology and the Rise of the Postmodern*. University of Minnesota Press.

Pallasmaa, Juhani. *The Embodied Image: Imagination and Imagery in Architecture*. Chichester: John Wiley & Sons, 2011. p. 119.

Christian Norberg-Schulz, 1979. *Genius Loci: Towards a Phenomenology of Architecture*. Edition. Rizzoli.  
Add to My References

International Ergonomics Association. *What is Ergonomics*. Website. Retrieved 17 March 2014.

Le Corbusier, 2000. *Le Modulor and Modulor 2 [ENGLISH EDITION]*. 1 Edition. Birkhäuser Architecture.

Jewish Museum Berlin. "Daniel Libeskind, Jewish Museum Berlin". Retrieved 9 December 2014.

Juhani Pallasmaa, 2005. *The Eyes of the Skin: Architecture and the Senses*. 2 Edition. Academy Press.

Kittler, F.A. , 1996. *The City Is a Medium*. *New Literary History*, [Online]. Vol. 27, No. 4, Literature, Media, and the Law, 717-729. Available at: <http://www.jstor.org/stable/20057387> [Accessed 12 June 2016].

Petra Kaiser. 2016. *Center for Art and Media Karlsruhe*. [ONLINE] Available at: <http://on1.zkm.de/zkm/stories/storyReader%241107>. [Accessed 27 September 2016].

Keeney, Gavin (2011). *Else-where\*: Essays in Art, Architecture, and Cultural Production 2002-2011*. Newcatsle upon Tyne: Cambridge Scholars Publishing.

TED - Ideas worth spreading. 2012. *Why architects need to use their ears*. [ONLINE] Available at: [https://www.ted.com/talks/julian\\_treasure\\_why\\_architects\\_need\\_to\\_use\\_their\\_ears/transcript?language=en](https://www.ted.com/talks/julian_treasure_why_architects_need_to_use_their_ears/transcript?language=en). [Accessed 17 february 2016].

Tom Porter, 2014. *The Architect's Eye*. 1 Edition. Taylor & Francis.

<http://www.dezeen.com/2011/06/30/centre-for-scottish-war-blinded-by-pagepark/>

<http://www.archdaily.com/158301/center-for-the-blind-and-visually-impaired-taller-de-arquitectura-mauricio-rocha>

<http://www.archdaily.com/771020/batthyany-laszlo-institute-for-blinds-a4-studio>

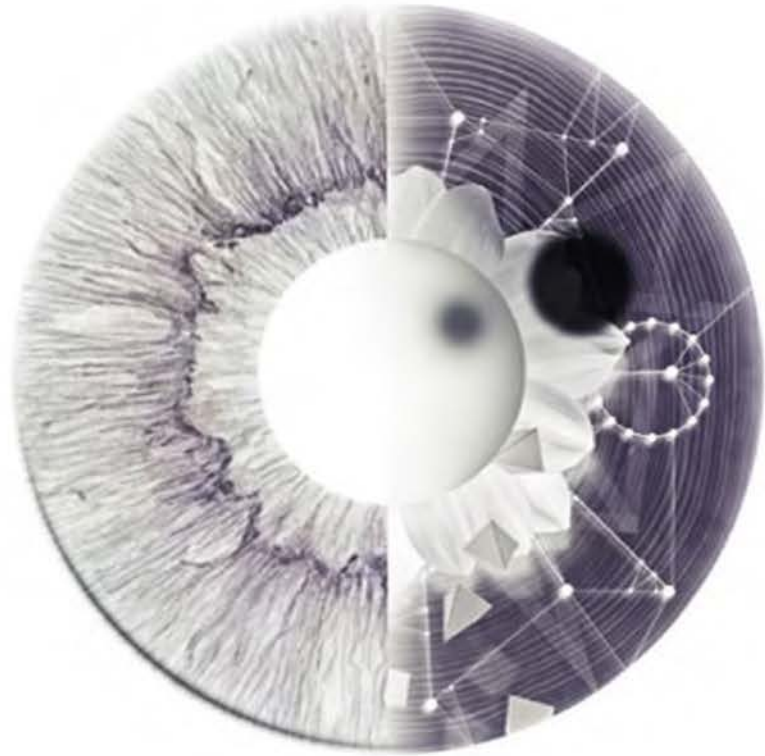
<http://www.jakupa.co.za/completed-work/cape-town-society-for-the-blind/13-ctsb-p7230117.jpg/>

<http://www.capetownmagazine.com/cape-town-blind-friendly-park>

<http://edition.cnn.com/2015/06/17/living/dyslexia-graphic-design-typeface-daniel-britton/index.html>

[https://www.goodreads.com/author/show/3251724.Theodore\\_Jerome\\_Cohen/blog/tag/dyslexia](https://www.goodreads.com/author/show/3251724.Theodore_Jerome_Cohen/blog/tag/dyslexia)

<http://www.boredpanda.com/dyslexic-typrface-daniel-britton/>



## DECLARATION

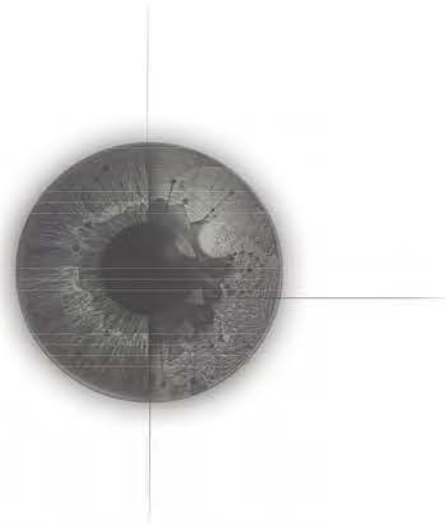
In accordance with Regulation 4(e) of the General regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree of Master of Architecture (Professional), is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

---

Gerard Bosma  
December 2016



# B L I N D B Y S I G H T

A RESOURCE CENTRE FOR THE VISUALLY IMPAIRED  
ARCHITECTURE AS A COMMUNICATION DEVICE THROUGH SENSORY EXPERIENCE

SILVERTON - PRETORIA