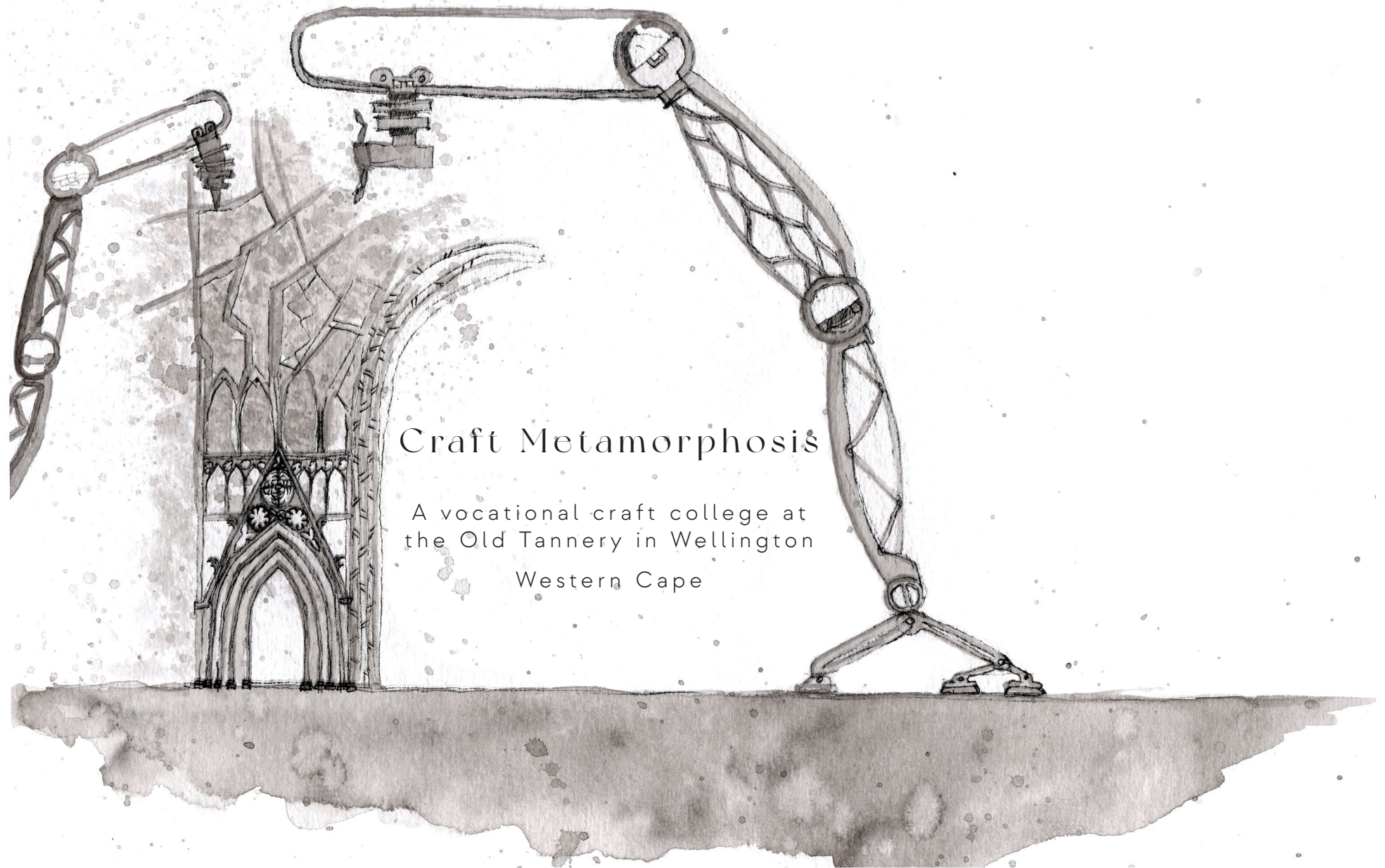




Craft Metamorphosis

A vocational craft college at
the Old Tannery in Wellington
Western Cape

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The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature:



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Figure 1: Photograph of existing buildings and furnace at the Old tannery (Author, 2021)

Abstract

This dissertation seeks to introduce digital fabricated crafts in South-Africa through the development of a craft college at The Old Tannery in Wellington Western Cape. With the investigation of a postphenomenological approach to this historical site.

The Old tannery provides the perfect opportunity for a new vocational craft college to become a synergy proposed as a way to render an ensemble. A lively educational-commercial space that will attract and serve both locals and tourists.

As such, the semi-industrial nature of the site will not interfere with the commercial interests on the rest of the site. Ultimately, the craft college will contribute to the new ensemble by providing many students who could use the other facilities if they wish to do so to start their own businesses.

The project aims to have a positive impact within a neglected context by promoting new ways of crafting. This ultimately aims to uplift the local community and allow people from the community to become involved and perhaps start their own trade businesses.



Figure 2: Map of Western Cape showcasing location of Wellington (Google Earth, 2021: Adapted by author)

Introduction

The Old Tannery in Wellington is situated in a central position near the coastal regions of the Western Cape. This historical site built in 1871 (Barry, 2015: online) presents an ideal opportunity to be developed into a Craft hub for the built-environment, manufacturing, interiors, and lifestyle. I thought it well to design in this specific location as it makes it easy to serve surrounding towns including the city of Cape Town and the West coast such as Paternoster and St. Helena bay. Most of these coastal towns and the Cape Winelands are developing at a rapid pace.

This design dissertation intends to introduce a vocational craft college that focuses on skills development (and the extrapolation of new creative opportunities) in four different craft types, specifically in terms of how these from the traditional craft methods can be augmented in new digitally fabricated methods. As the need for sustainable design becomes more pressing, these methods and skills can allow for new kinds of place making opportunities with less material usage due to smart, digitally-enable designs. This historic site was home to the traditional craft of leather tanning and product manufacturing which informed the building typology of the new design to fit the brief of the client.

The existing buildings are currently being developed into lettable spaces for small businesses in the retail, commercial, and light industrial sectors. Some of the businesses already housed in the existing buildings are mostly lifestyle orientated such as Grand room designs, upholstery, a furniture manufacturer, Beer brewery, Gin distillery, and wedding venue etc. As the existing building complex is in a developmental state the western side of the site is quite an ill-defined no-man's land.

Therefore, the decision was made to activate this underutilized area, while also keeping the craft studios on one side of the site for noise purposes.

There is a close dialogue between traditional and digital craft. Crafts have been practiced since ancient times and in each specific craft typology specific tools were used in order to exercise skill. As times have changed these tools developed over centuries and brings us to the fourth industrial revolution the technological revolution, that we find our times evolving into.

Understanding the role of technology in society is that technology does not define the world around us but connects us to that world. It organizes how we perceive and experience things and how we behave. Therefore, it is not appropriate to see technology between humans and the world. Essentially it shapes how we see the world and who we are, this is known as Postphenomenology (Verbeek, 2017). This philosophy was developed by the American Philosopher in science and technology Don Ihde.

How can a post-phenomenological approach aid the metamorphosis of traditional to digital craft within an existing crafted architectural fabric?

The Colam property group became the owners of the Old Tannery in 2015 (Barry, 2015: online) and are actively and personally involved in the renovation of this historical ensemble. Colam's specialty is to invest in under performing properties, or properties with a rich history, and transform or restore them into vibrant public spaces (Barry, 2015: online). The client seeks the development of a vocational education institution that will benefit the local community and enliven this historical site.

This proposed design will consist out of a cafeteria for student and public use, services such as a commercial kitchen, ablution, and a student lounge. A gallery space is also required by the developers where students can exhibit models and prototypes of their designed products.

Four studios will be added, one for each craft typology with cutting-edge equipment and machinery. Lastly innovation studios and computer aided laboratory's will assist the students in their design process. The main building will house a reception, admin offices, and a space where students can store personal belongings in a locker room. Along with the locker rooms will be ablution and showers for student use. The square in the center of the complex will act as a worker's square; a lively place of peer learning where students can interact creatively while practicing their crafts.

The research tools that will be used includes an in-depth site analysis, a touchstone, conceptual models, structural concept model, a desktop study covering theoretical aspects and graphic explorations which includes case studies and precedent studies.



Figure 3: Photograph of existing buildings at the Old tannery (Barry, 2019)

Chapter Layout

1

Situating
Investigation

This chapter will outline the layout of this document in order to orientate the reader.

2

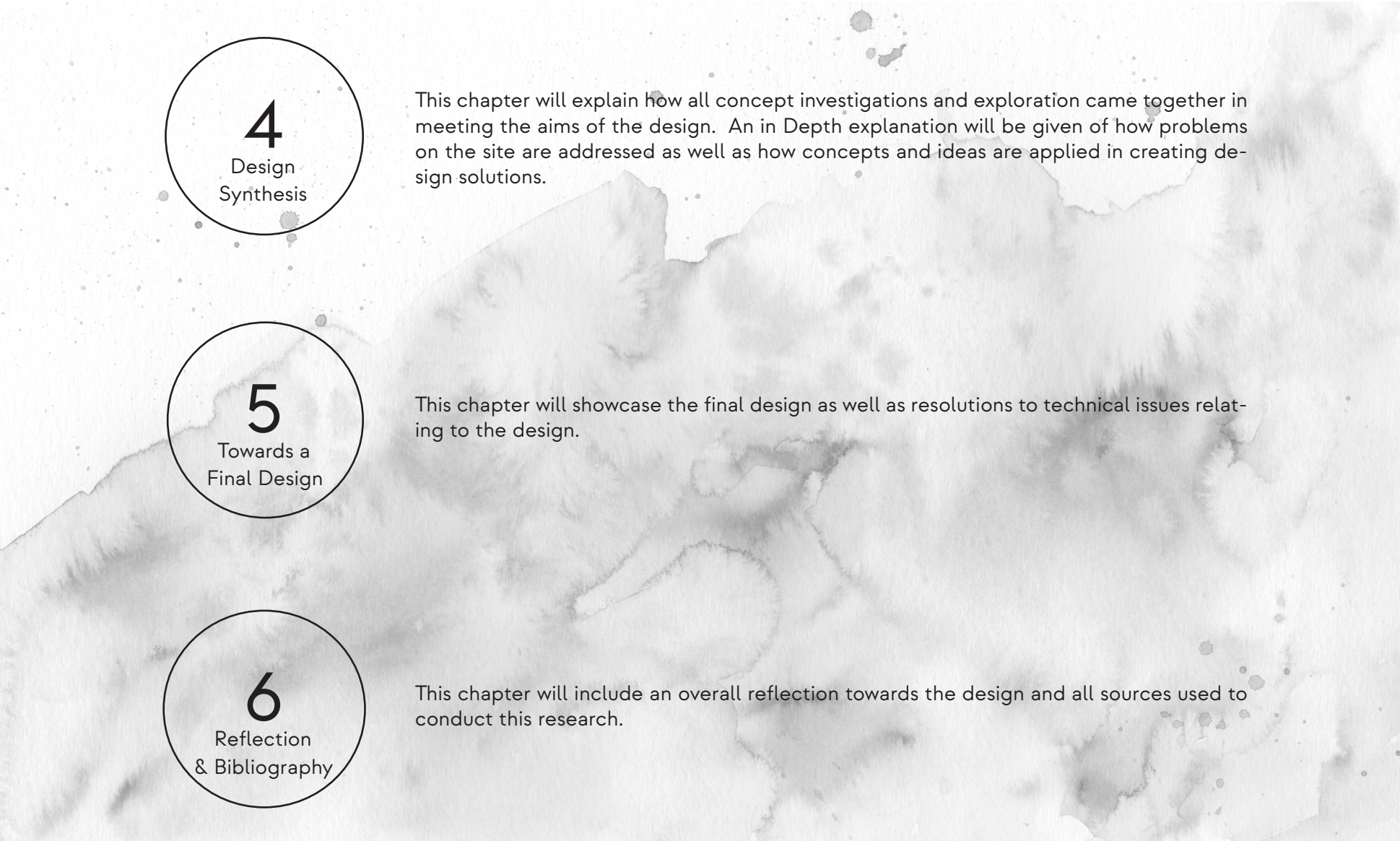
Grounding

This chapter introduces the theoretical theme of the dissertation and state problems and challenges encountered in the project. It will discuss the aims the design hopes to achieve and a possible research question that could result in achieving these aims.

3

Exploration

This chapter will present an in depth analysis of all design tools that have been employed in the design process. It will explain the design methodology used to obtain information such as an in-depth site analysis, an overview of the history of the chosen site, case studies, precedent studies and the theoretical and conceptual framework.



4

Design Synthesis

This chapter will explain how all concept investigations and exploration came together in meeting the aims of the design. An in Depth explanation will be given of how problems on the site are addressed as well as how concepts and ideas are applied in creating design solutions.

5

Towards a Final Design

This chapter will showcase the final design as well as resolutions to technical issues relating to the design.

6

Reflection & Bibliography

This chapter will include an overall reflection towards the design and all sources used to conduct this research.

2 Grounding

2.1 Theme

2.2 Problem statement &
Aims

2.3 Client



Figure 4: Watercolour of existing buildings and furnace at the Old tannery (Author, 2021)



Figure 5: Watercolour of old Tannery site showcasing new proposed site (Author, 2021)

Theme

This dissertation seeks to introduce digital fabricated crafts in South-Africa through the development of a craft college at The Old Tannery in Wellington Western Cape. With the investigation of a postphenomenological approach to this historical site.

Problem Statement

The Old tannery is a registered historical site. Therefore, the design reaction to the site and the existing buildings should be considered with great care and sensitivity in order to achieve set aims of the Project. The decision was made to work on the Western side of the site as this part of the site presents a lot of opportunities to be activated and used for leisure purposes along the river etc.

This site was left in a dilapidated state since 2006 when many of the buildings had to be restored. Most of the roof sheeting on this site is currently being replaced with special care as it consists mostly out of asbestos sheeting that was installed during the 1900's. The new proposed design will house craft studios such as carpentry, masonry, glass blowing, and steel works. Therefore, a decision should be made to place them on the western side of the site for noise purposes, away from the already established craft and leisure businesses located in the existing historic buildings.

Most of the Western Cape's design hub's are situated in the city of Cape Town presenting a need for one of these spaces more inland to serve a wider area from west-coast to south-coast. In South Africa more and more of these hubs are needed for contemporary design where client's can have their custom interior and architectural needs designed and made.

Aims

This dissertation proposes a craft college for a diversity of students, that focuses on a strategy of total-immersion workshop education. This allows close interaction with others and promotes the exchange of information and ideas between individuals and disciplines. This school augments to teach skills, ideas and the value of handmade not only to applicants, but it intends to install upliftment craft programs in the local community as well.

This dissertation hopes to create a sensitive new design development that will be in dialogue with the existing. The four chosen craft typologies should be showcased throughout the project using traditional craft methods as well as digital fabricated methods in order for the design to become a manifestation for these skilled methodologies. The vision for the workers square is to become a communal space where students can practice design and skills and for it to become a dynamic exhibition for all to experience the processes of traditional and digital crafts. Lastly the in-between spaces on the site will be designed with landscaping for the public community and students to use as recreational spaces.

Client

Colam's specialty is to invest in underperforming properties, or properties with a rich history, and transform or restore them into vibrant public spaces. They develop space for business that will benefit the community and local infrastructure (Barry, 2015: online).

Prior to Colam purchasing the property, the Old Tannery was a derelict property that had been systematically stripped of its valuable timber, copper piping and cables and illegally occupied by squatters. Colam looks to inject new life into the Old Tannery by upgrading the available areas (Barry, 2015: online).

Colam believes that once the Old Tannery is fully developed, the property group will have saved a historic treasure from ruin and built a destination that will attract visitors to Wellington for years to come (Barry, 2015: online).

3

Exploration

3.1 Site Analysis

3.2 Conceptual exploration

3.3 Visual explorations

3.4 Precedent Studies

3.5 Theoretical Underpinning



Figure 6: Watercolour of existing buildings and furnace at the Old tannery (Author, 2021)

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Site Analysis

Site Analysis

Macro Context

Location

The site is situated next to the R44 in Wellington, Western Cape. The reason for choosing this site is because it sits on the outskirts of Wellington town like a quintessential industrial site. The Krom river which forms the southern boundary of the Old Tannery site sits on the division between farmland and town.

Climate

Sun & wind direction

The length of the day in the Western Cape varies significantly over the course of the year. In 2021, the shortest day is June 21, with 9 hours, 54 minutes of daylight; the longest day is December 21, with 14 hours, 25 minutes of daylight. The predominant average hourly wind direction in the Western Cape varies throughout the year. The wind is most often from the north for 2.9 months, from May 13 to August 10, with a peak percentage of 35% on June 27. The wind is most often from the west for 2.6 weeks, from August 10 to August 28, with a peak percentage of 31% on August 27. The wind is most often from the south for 8.5 months, from August 28 to May 13, with a peak percentage of 65% on January 1.



Figure 7: Diagram of Sun and wind direction(Author, 2021)

Temperature, Humidity & Rainfall

The Western Cape province of South Africa has a Mediterranean climate. Which means it experiences quite hot summers and mild and rainy winters. In the summer months from December to March it is warm, sunny and dry in this area. During the months of October, November, December, April and May mostly good weather is experienced with pleasant average temperatures between 20°-25° degrees celcius. The following graphs shows the average temperatures, humidity and rainfall of Wellington.

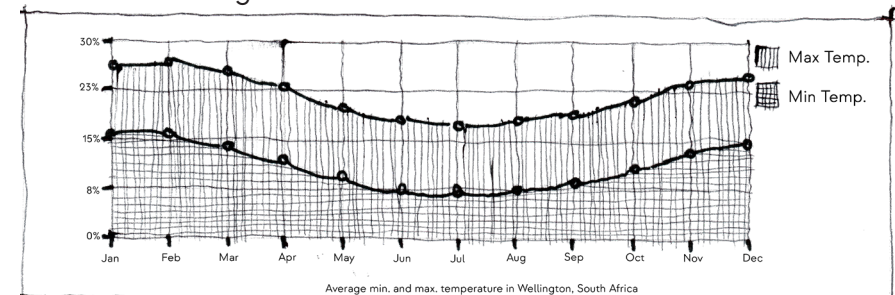


Figure 8: Min and Max. temperatures in area (Weather and Climate, 2021: online. adapted by author)

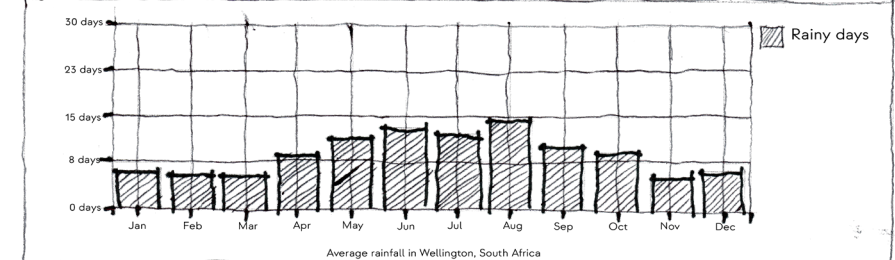


Figure 9: Graph of rainy days in area (Weather and Climate, 2021: online. adapted by author)

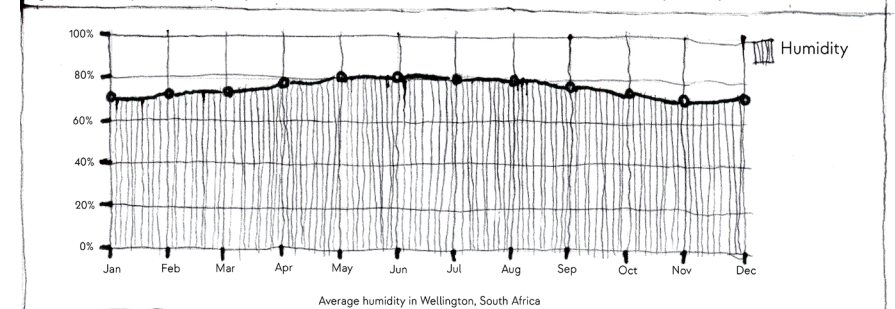


Figure 10: Graph showing humidity in area (Weather and Climate, 2021: online. adapted by author)

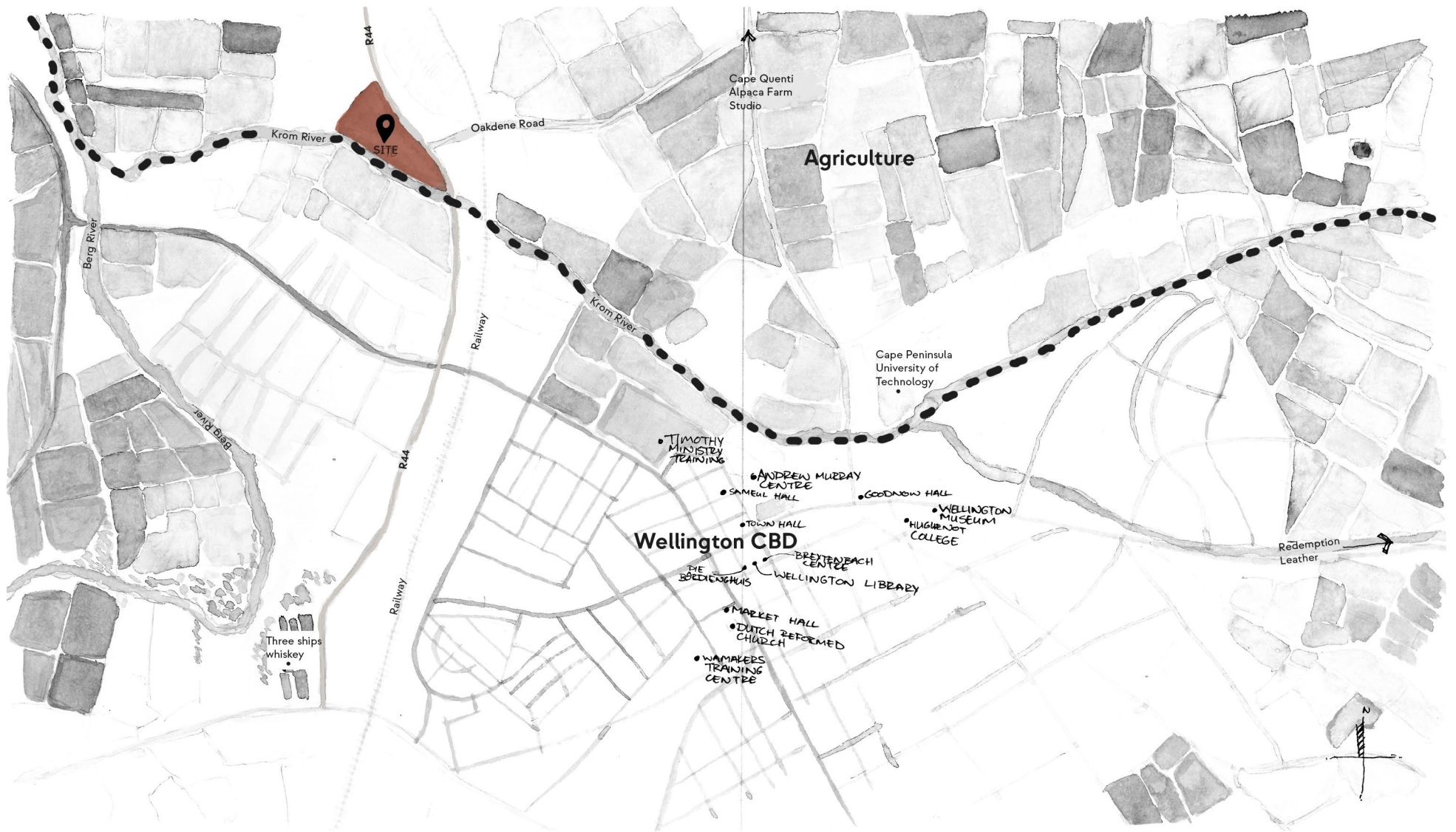


Figure 11: Map showcasing site location and Wellington CBD (Author, 2021)

Site Analysis

List of Existing Educational institutions in Wellington

Market Hall

The Market Hall which houses the Information & Tourism Office, was erected in 1847. The clock tower was built first and then the building. The market square was the centre of town where everything revolved around. On market day people came from far and wide to buy and/or sell goods.

Wellington Library

Wellington's Public Library was established in 1879.

Wellington Town Hall

The town hall was formerly the Wellington Boy's High School. When a new school was built the building was converted to the town hall

Missionary institute

This building is currently used by Huguenot college students for lectures.

Seminary buildings

This is a series of buildings that were previously used for the towns formalities. Today most of these buildings are used by the Huguenot College for lectures and housing.



Figure 12: Map showcasing existing educational building locations (Author, 2021)

Site Analysis

List of other craft businesses in and around Wellington:

Cape Quenti Alpacas Farm Studio

With a growing range of exquisite yarns, throws, blankets, rugs and knitwear, Cape Alpaca aims to develop long term relationships with a growing local and international customer base.

Redemption Leather

Redemption fine handcrafted leather had its origins in the late 1970's. The factory and the factory shop are situated outside Wellington en-route to Bainskloof pass.

Breytenbach Centre

The Breytenbach Center is a multidisciplinary cultural center for training in, and dealing with, the visual arts, music, drama and writing.

Breytenbach Gallery

The Breytenbach Gallery offers an unique exhibition experience. Exhibits of excellent South African artists as well as international artists takes place throughout the year.

Die Bordienghuis

The Bórdienghuis is an intimate venue at the Breytenbach Sentrum. Regular shows of cabaret, drama and music gets showcased here. The venue is also ideal for small, intimate celebrations, conferences and book-and product launches.

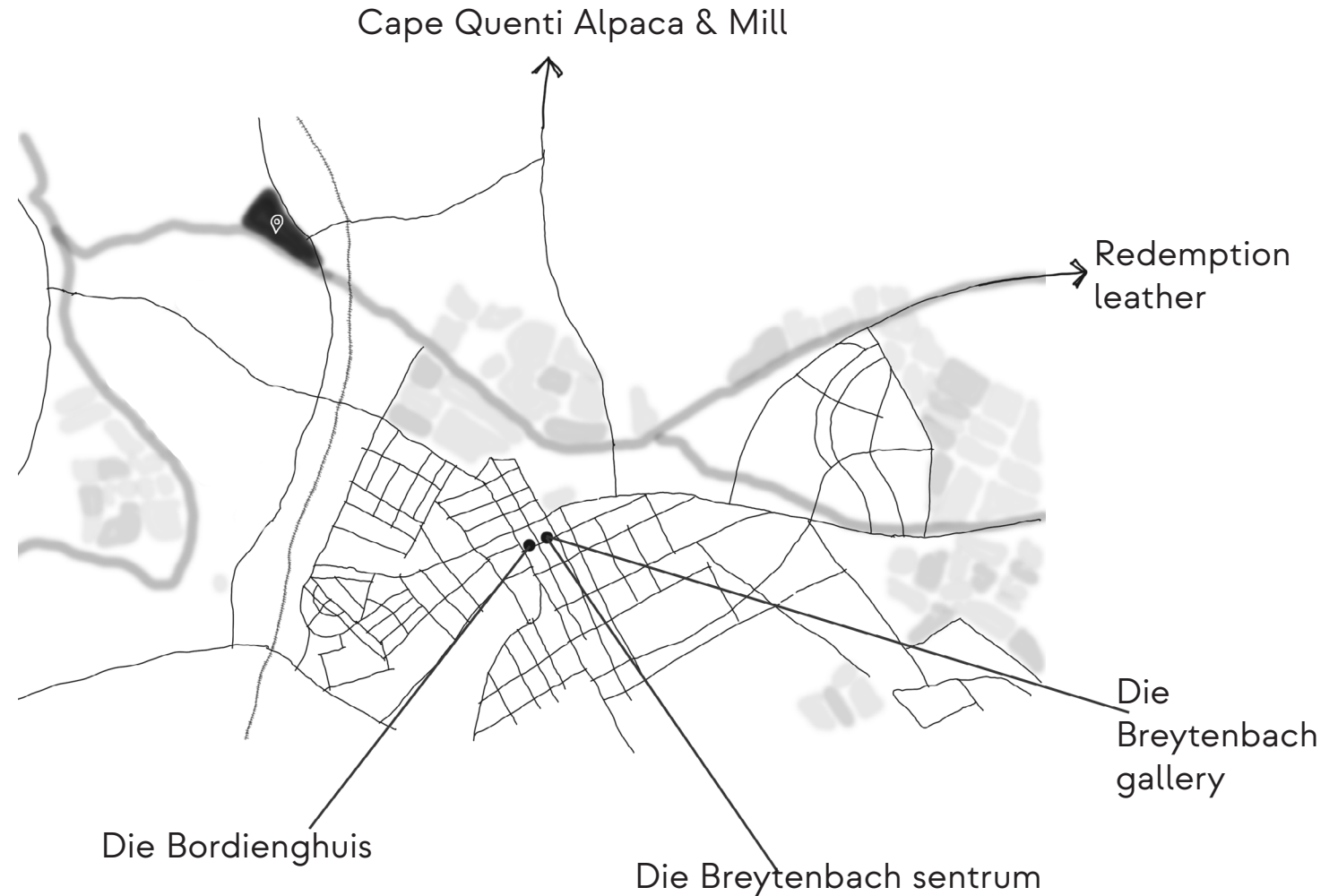


Figure 13: Map showcasing existitng craft business locations(Author, 2021)

Site Analysis

Meso Context

Immediate surroundings of the site

As previously mentioned the Old Tannery sits next to the R44 road that runs from Stellenbosch through Wellington and connects to the N1 at Touws Rivier. The R44 creates the north-eastern boundary of the site and the Krom river forms the southern boundary of the site. From the R44, at the entrance of site, is Oakdene road running north-east. The wellington railway runs from north-west to the south about 230 meters from the main entrance of the Old Tannery. The Krom river Runs in a east-to-west direction and and forms the southern boundary of the Tannery site.

This site sits on the boundary between urban and countryside most of the property surrounding is farmland. Across the secondary entrance to the site on the northern side of the R44 is a Cape Dutch residential structure (see figure 14) which is significant to this site as all the maintenance managers of the Old tannery lived in that house and still does today.



Figure 14: Photograph of Cape Dutch structure (Author, 2021)

Fynbos



Vineyards



Aloe Vera



Figure 15: Photographs of existng vegetation and cultivation (Author, 2021)

River, roads and railway

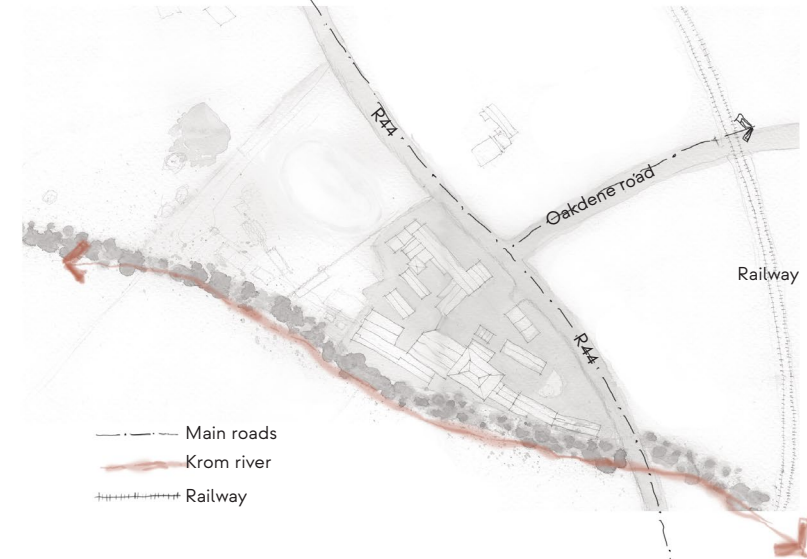


Figure 16: Diagram showcasing main roads, river, and railway (Author, 2021)

Surrounding Context

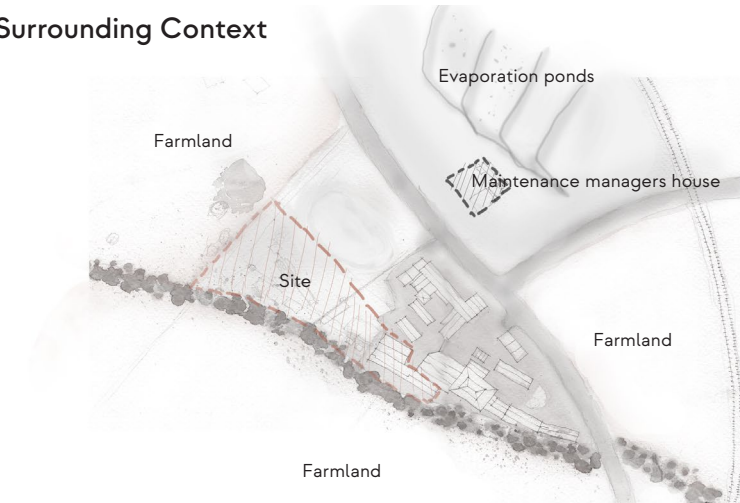


Figure 17: Diagram showcasing surrounding context (Author, 2021)



Figure 18: Map showcasing surrounding context, wind and sun direction, and existing businesses (Author, 2021)

Site Analysis

Micro Context

History & Context

Since 1871 the ownership of the facility shifted between multiple owners of the factory through many generations until the year 2006, a mere 15 years ago. The business adapted through circumstances throughout the years such as the great depression and new machinery as technology developed. In 2006 the factory was sold to a company who moved to a smaller location nearby leaving the old tannery unoccupied. This resulted in the decaying and weathering of the buildings (Barry, 2015: online). The current owners of the tannery is the 'Colam Property Group', an investor group planning to breathe new life into this historical site. They are planning to accommodate retail, commercial and light industrial craft spaces (Barry, 2015: online). Wellington is home to many significant heritage structures that housed educational institutions, most of the historical institutions closed down or adapted into other businesses as times changed. Therefore, the intention is to draw on the educational heritage of the town, in an effort to rekindle this sector within a more rural setting. Craft businesses of many different types reside in Wellington today. The new proposed craft college can be a great element to promote and expose the local community to other crafts as well as teaching them different skills that will benefit the community and local infrastructure.

The existing buildings of the Old Tannery are mostly large, imposing and bulky (10 000mm high). A variety of small businesses have already settled in the new development such as, an upholstery shop, a Willys mechanic workshop, a coffee shop, an antique shop, a wedding venue, grand-room designs, a spice shop, a leather craftsman, florists, beer brewery, gin distillery and a logistics company.

The site contains vegetation such as Swartland alluvium fynbos and Western mountain karoo veld types (see figure 22 and 23). The top layer of soil contains 15% clay 750mm deep, but mostly consists out of sand and coarser gravel. In this specific area the lower ground consists of 50-100cm deep consolidated bedrock. The slope of the site is quite flat, it slopes between 0%-5% from north-east to south-west



Figure 19: Photograph of existing coffee shop, buildings and square (Author, 2021)



Figure 20: Photograph of historic buildings and furnace (Author, 2021)

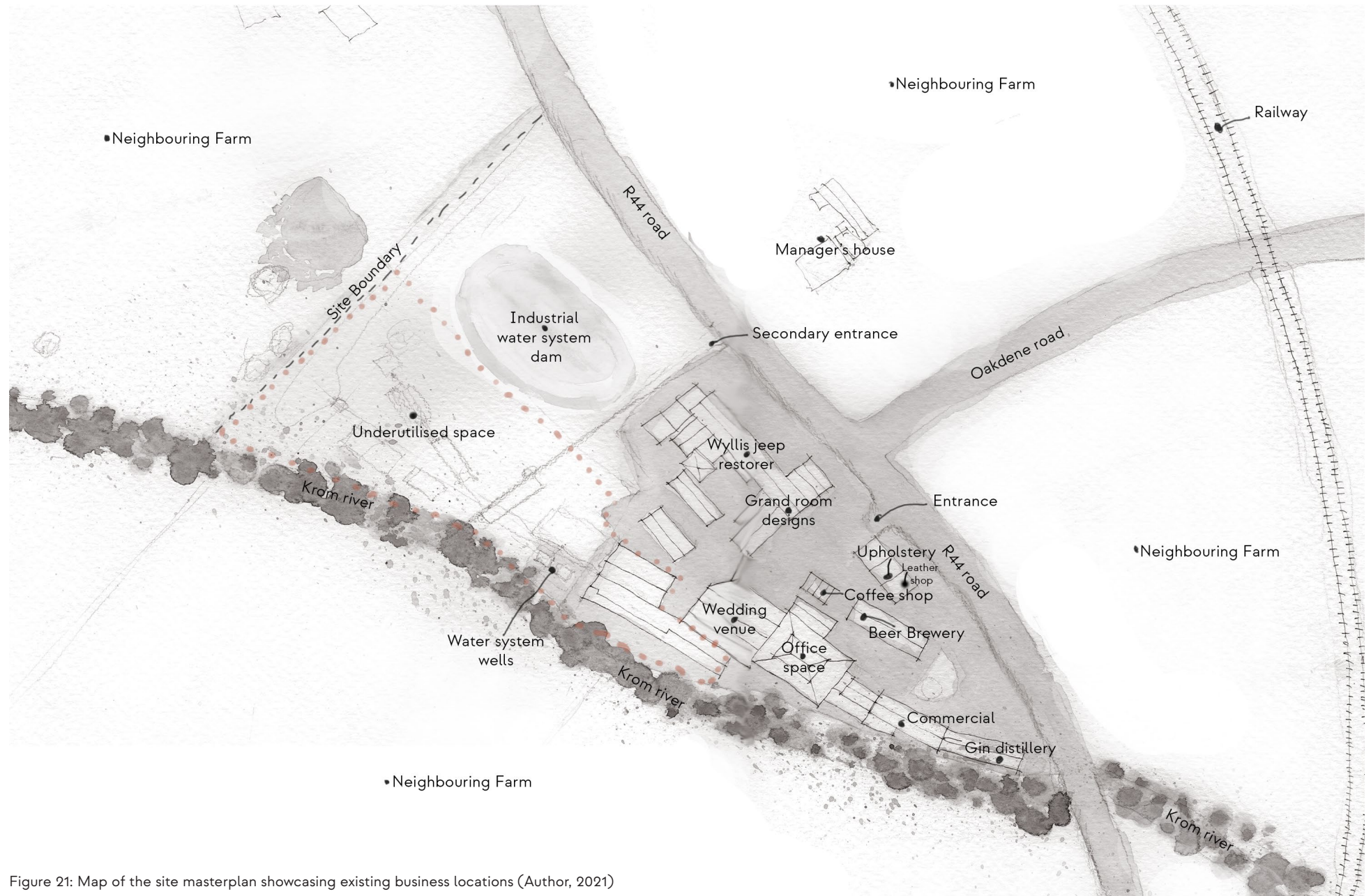


Figure 21: Map of the site masterplan showcasing existing business locations (Author, 2021)

Site Analysis

Macro Context

Vegetation Map

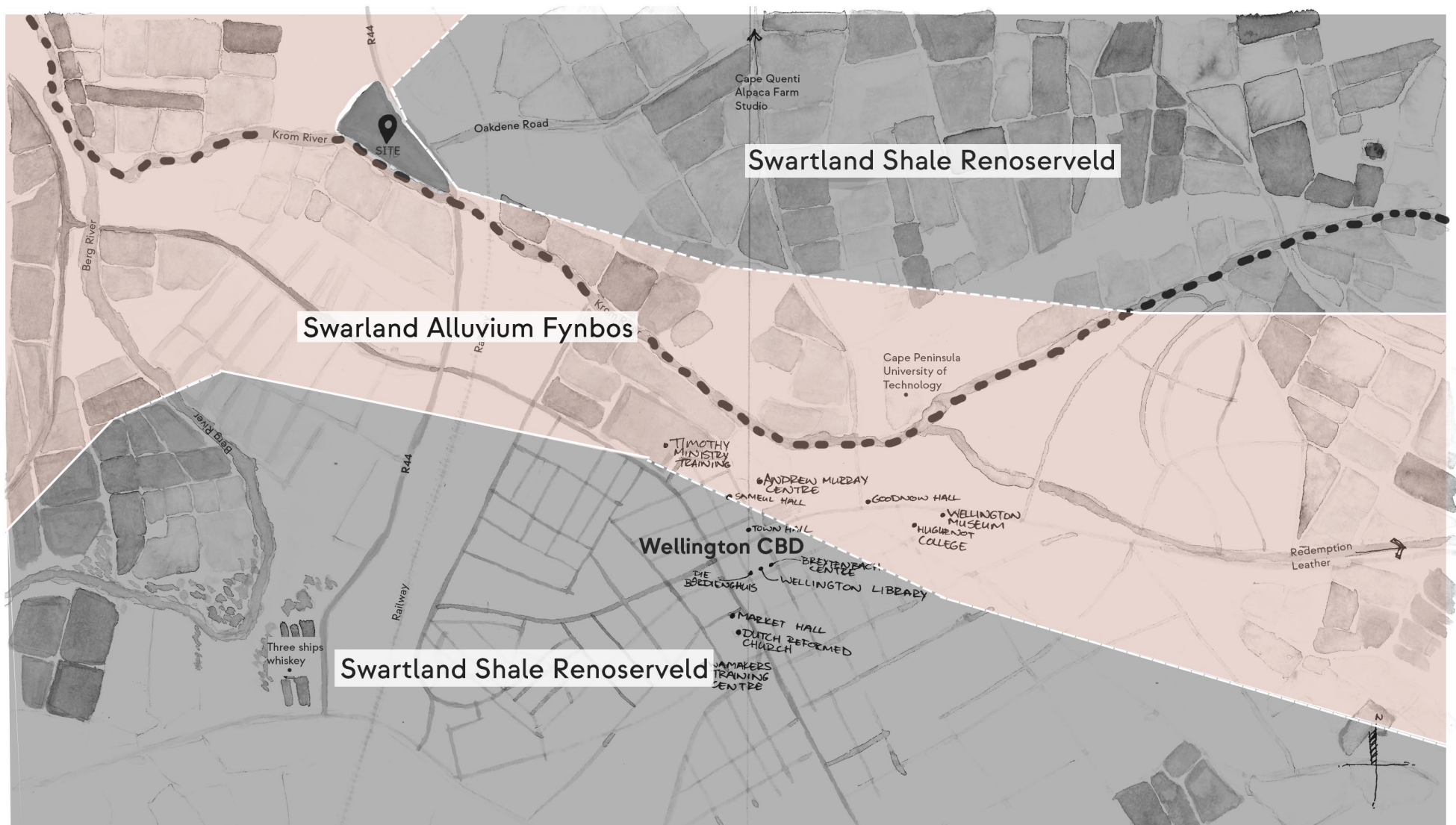


Figure 22: Map showcasing vegetation zones at and around chosen site (CFM 2.6.6, 2018: online. Adapted by author)

Veld Type



Figure 23: Map showcasing veld types at and surrounding chosen site(CFM 2.6.6, 2018: online. Adapted by author)

Site Analysis

Site Entrances

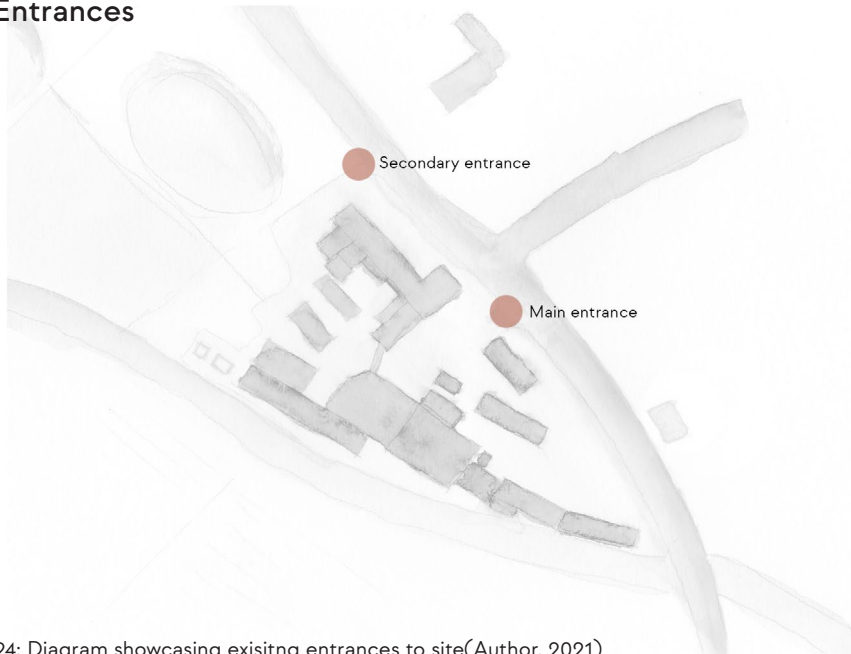


Figure 24: Diagram showcasing existing entrances to site(Author, 2021)

Vehicular circulation and parking

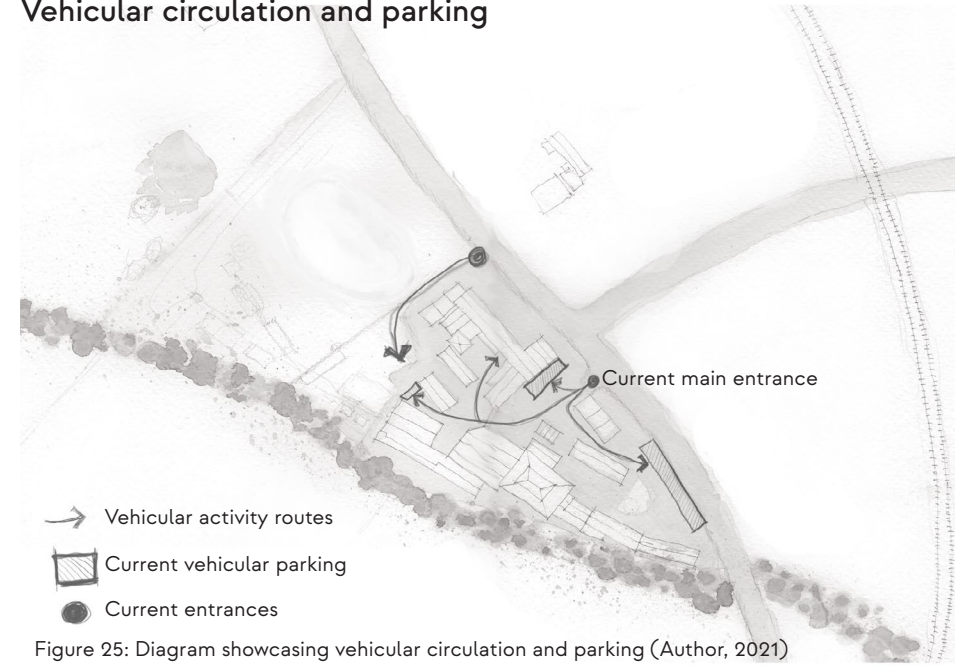


Figure 25: Diagram showcasing vehicular circulation and parking (Author, 2021)

Pedestrian activity and circulation

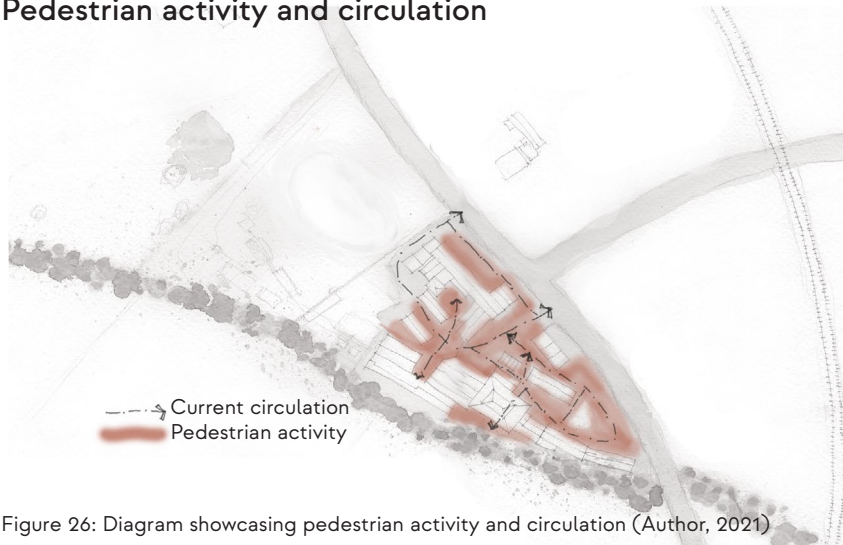


Figure 26: Diagram showcasing pedestrian activity and circulation (Author, 2021)

Points of orientation

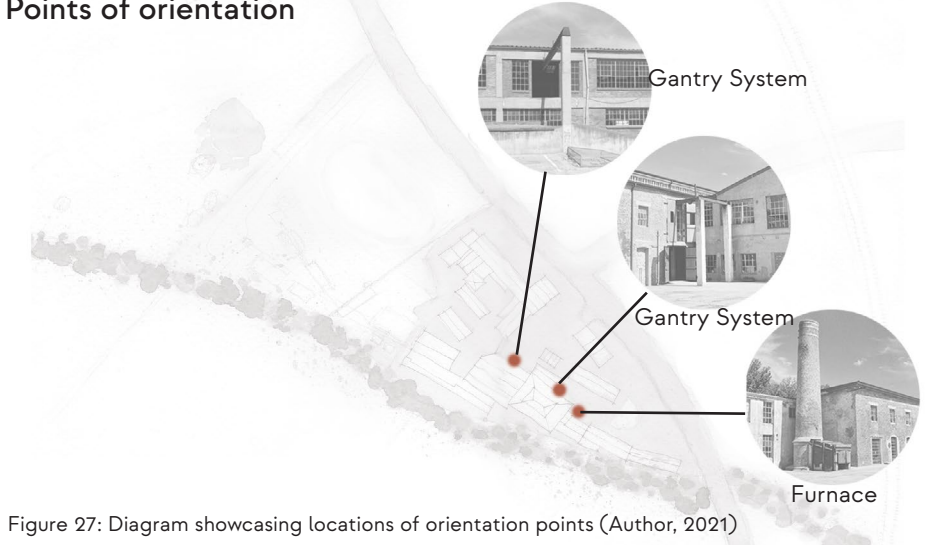


Figure 27: Diagram showcasing locations of orientation points (Author, 2021)

Existing building footprints vs. square

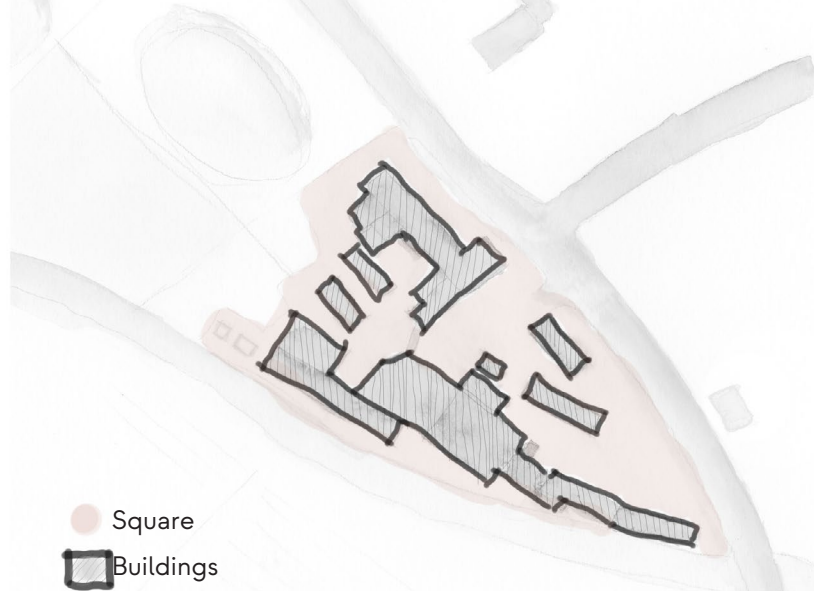


Figure 28: Diagram showcasing existing building footprints and open spaces inbetween (Author, 2021)

Existing grid on site

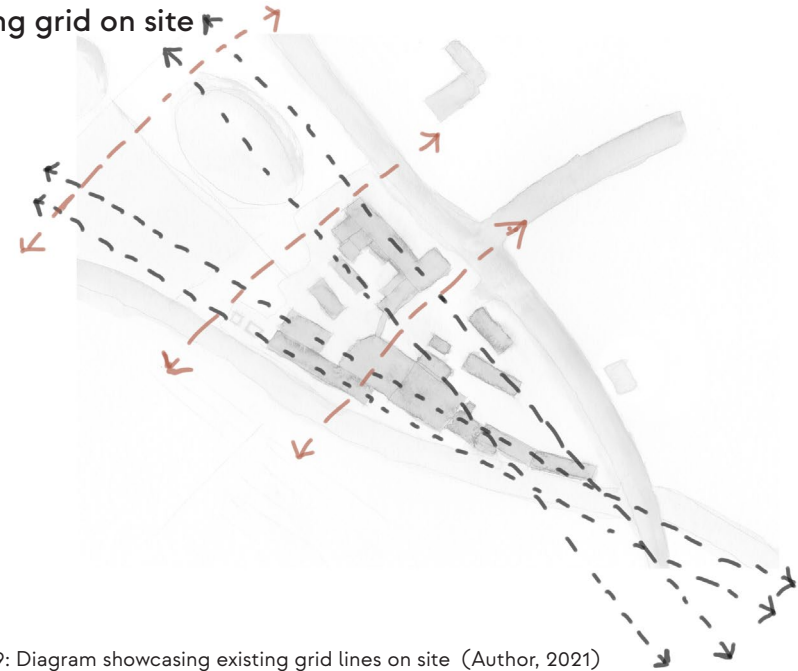


Figure 29: Diagram showcasing existing grid lines on site (Author, 2021)

Organic lines around the site

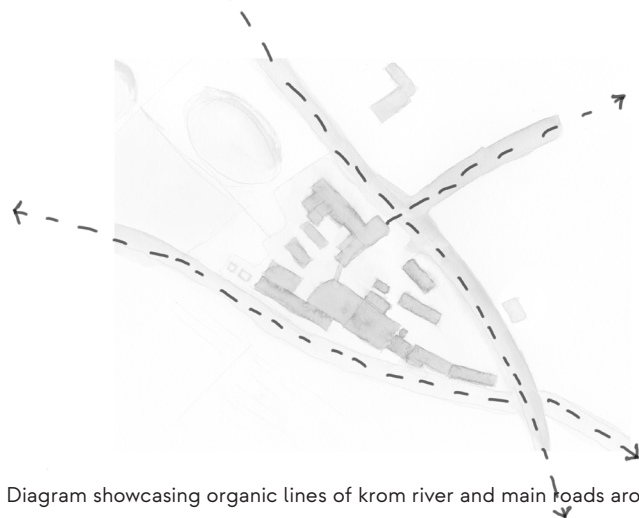


Figure 30: Diagram showcasing organic lines of Krom river and main roads around site (Author, 2021)

Nature vs. chosen site vs. existing

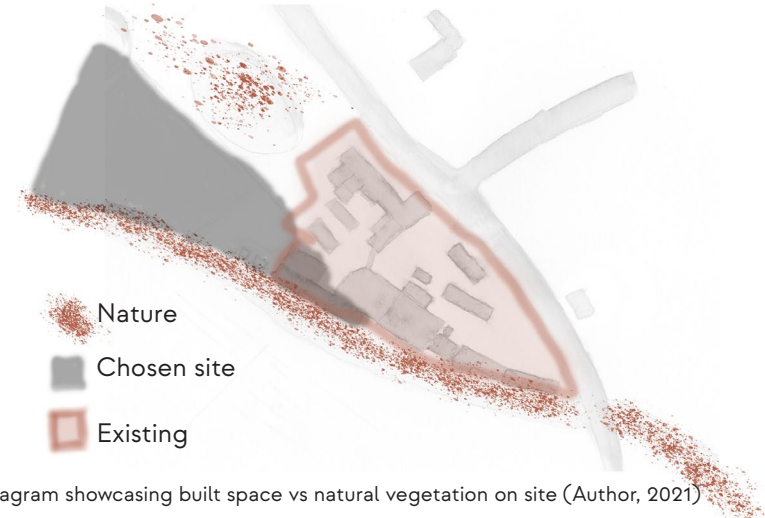


Figure 31: Diagram showcasing built space vs natural vegetation on site (Author, 2021)

Site Analysis

Water

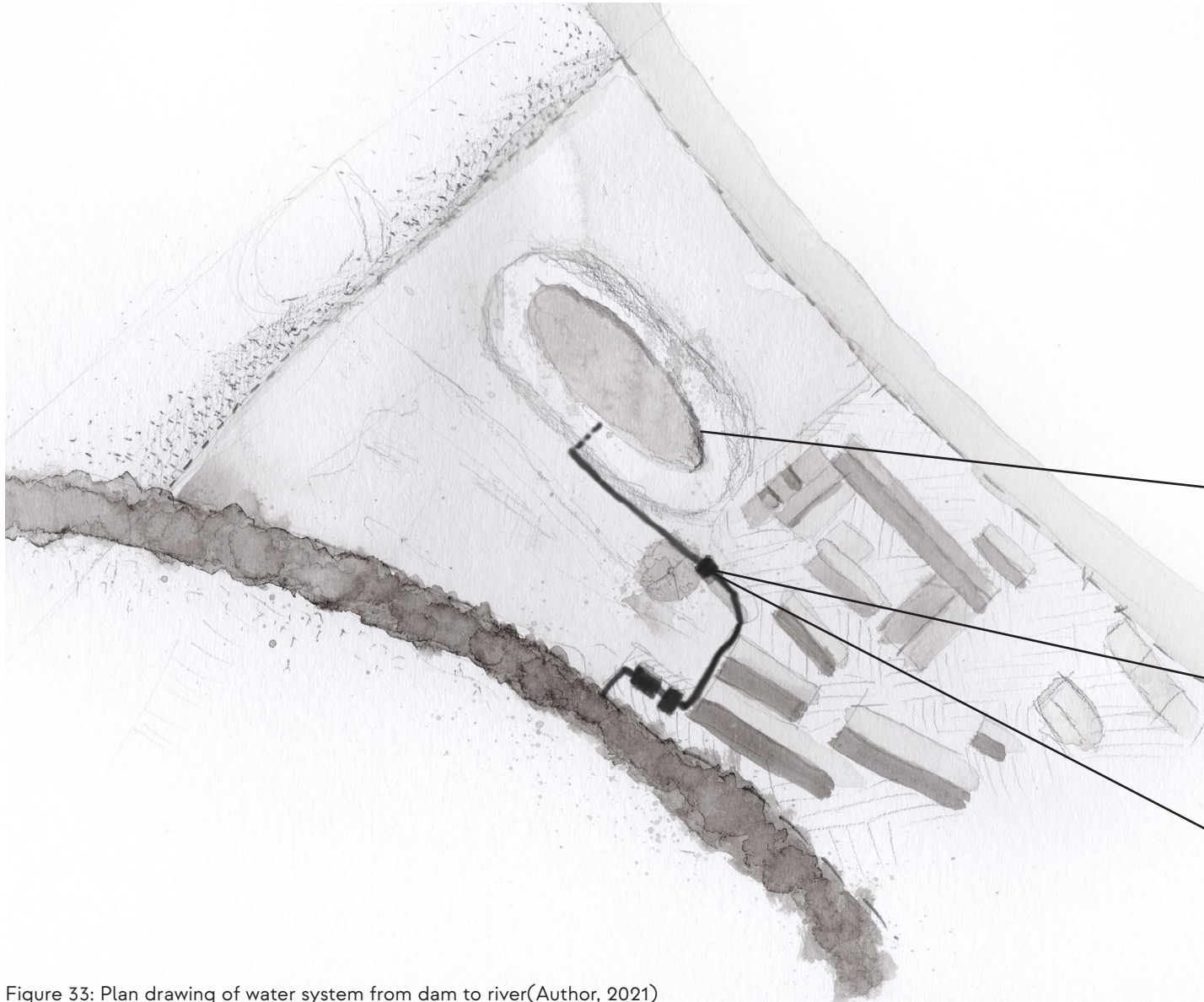


The site contains various water sources. Some are natural such as the Krom river and some are man made such as the water wells used to pump water through the leather tanning plant. The dam on the site is also man made and was used to store the waste water coming from the plant.



Figure 32: Plan drawing of water well locations (Author, 2021)

Industrial water system



The illustration (figure 33) shows the existing water well system that is located on the site. All of the pipe systems, connected to these wells, that went through the existing buildings have been removed or stolen when the site was abandoned. The water systems was used through the tanning plant in order to soak and wash the hides. Water was pumped from the Krom river through the plant and the waste water into the man-made dam on site.

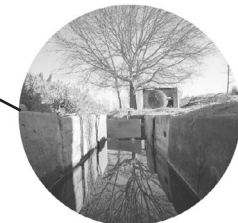


Figure 33: Plan drawing of water system from dam to river(Author, 2021)

Site Analysis

Existing building analysis



Figure34 : Existing building photographs (Author, 2021)

34



Figure 35: Existing building elements watercolour (Author, 2021)

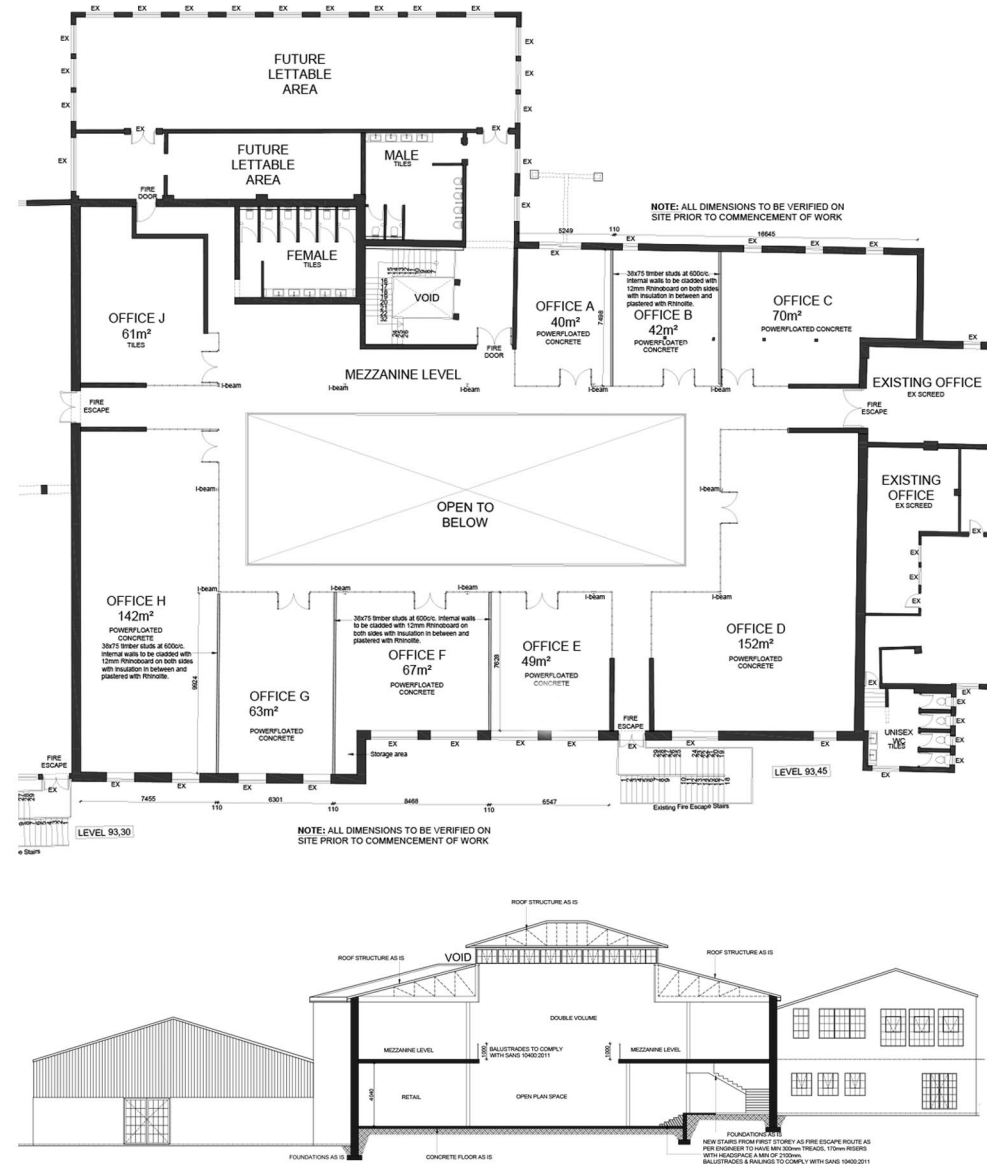


Figure 36: Existing building documentation drawings (Pellisier & Bruwer, 2019: Architectural plans)

Site Analysis

Existing buildings used in new proposed design

The two existing sheds used to connect the existing site with the new proposed design is unutilised shed structures built with 300x300mm H-beam portal frames. The infill is brick walls, painted white, 3050mm in height and corrugated roof sheeting and cladding for the rest of the walls.

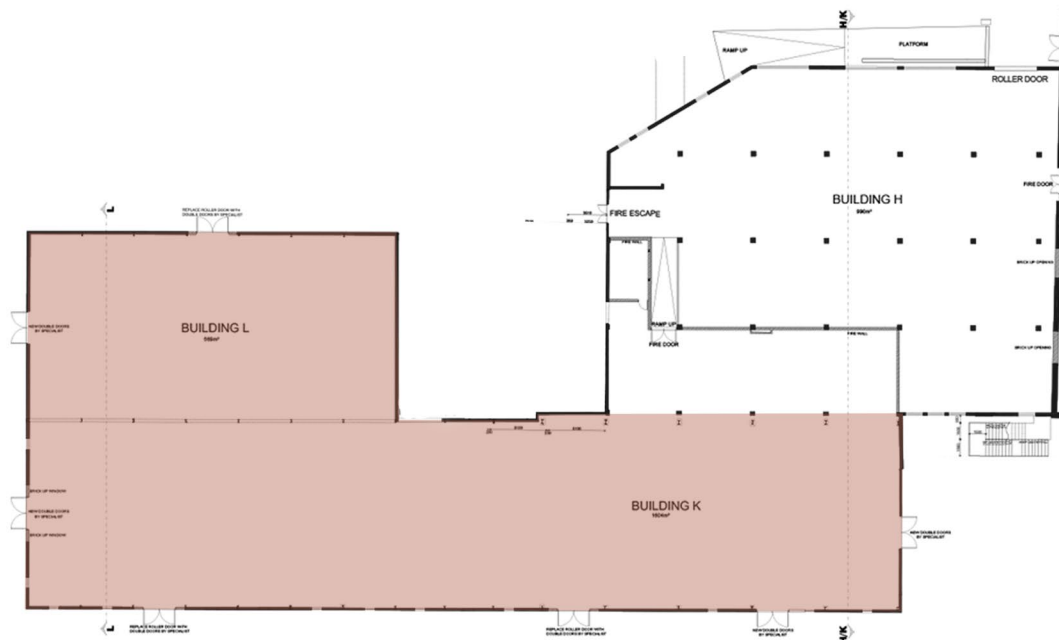


Figure 37: Existing sheds floor plan (Pellisier & Bruwer, 2019: Architectural plans)

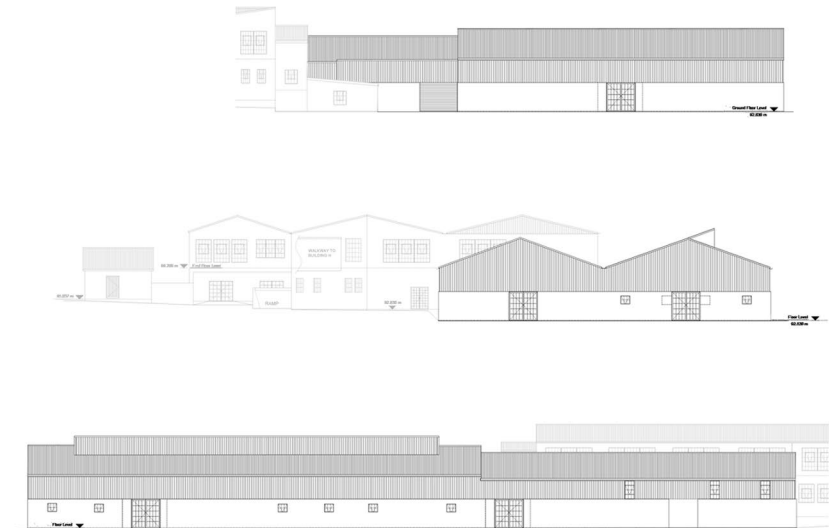
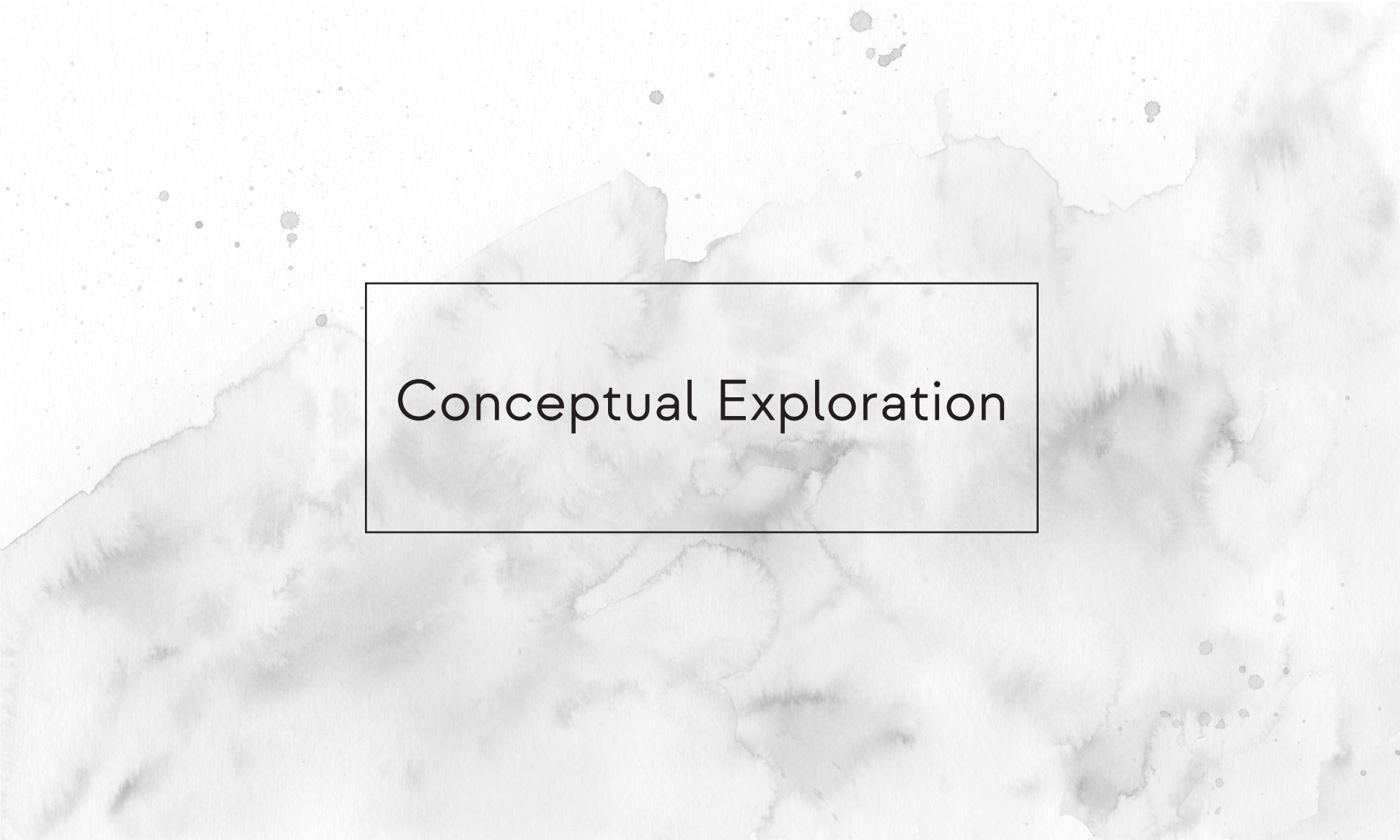


Figure 38: Existing sheds elevations (Pellisier & Bruwer, 2019: Architectural plans)



Figure 39: Existing sheds strip photos (Author, 2021)

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Conceptual Exploration

Touchstone

The metamorphosis of traditional and digital craft

The touchstone informs the metamorphosis from traditional to digital craft. It shows the development of craft tools as used an extension of the craftspersons body. As the crafter interacts with the traditional pencil on paper it can be perfectly mimicked through digital craft with the necessary knowledge and skill. Once the craftsperson draws on the paper with the traditional pencil, it activates the pantograph mechanical tool and gives an output through the digital drawing pen. Therefore, symbolizing the use of new digital technology while still drawing on the beauty and knowledge of the traditional.

The pantograph mechanism symbolises new developed craft methods. It is built and attached on top of the solid chiseled rock base signifying traditional craft methods. During the process of interaction it allows the crafter to indirectly draw with the digital craft with the mastery knowledge from traditional craft.

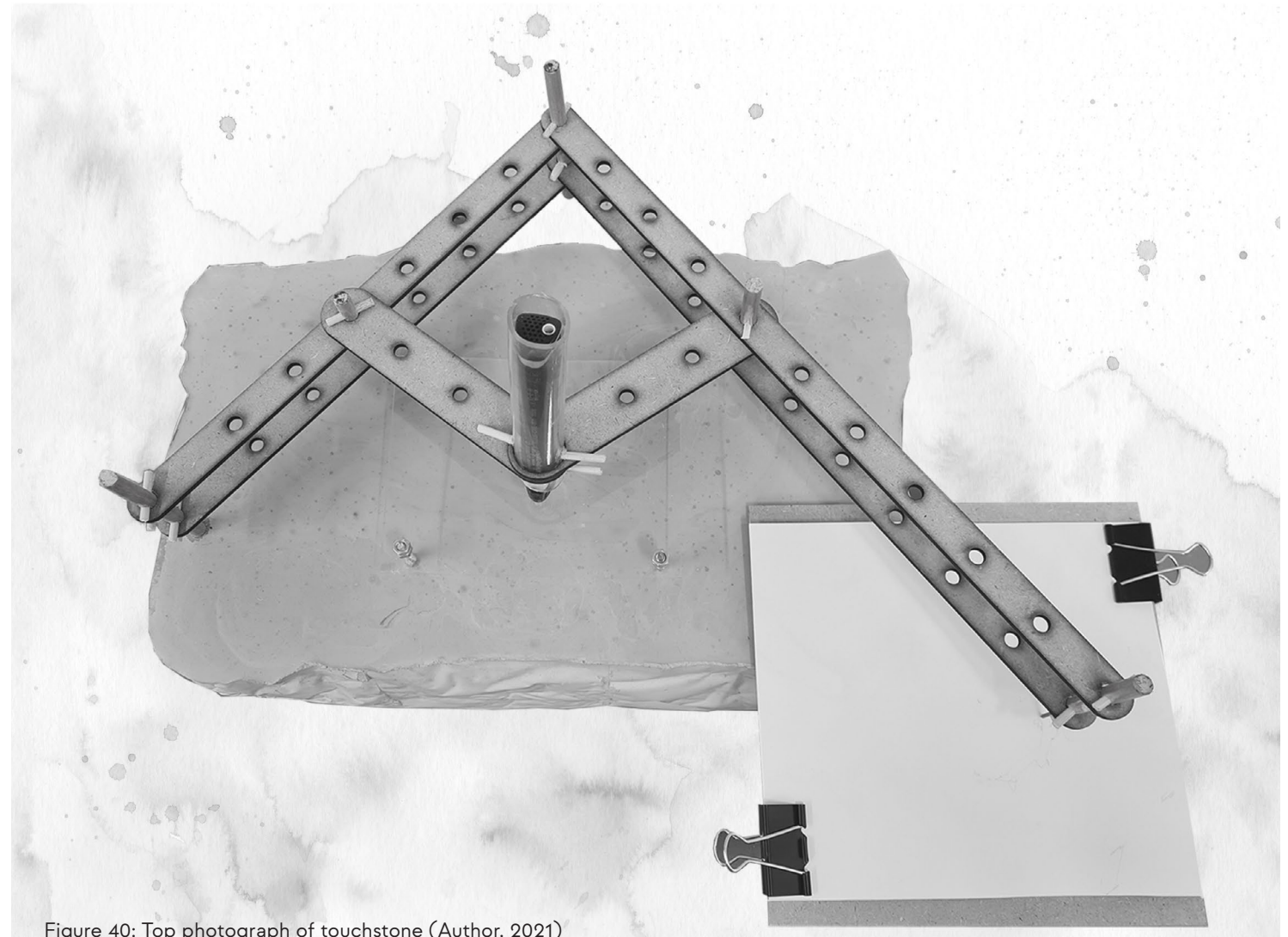


Figure 40: Top photograph of touchstone (Author, 2021)

Process:

It is inescapable that when the mechanical technology driving the digital tooling moves it is able to mimic an uninterrupted Cartesian movement path. The standard of control and consistency becomes reliable. Mechanical reliability allows the user to focus on what the tool is doing, instead of how it's doing it. Inevitably this two-fold relationship between conception and execution will never cease to exist.

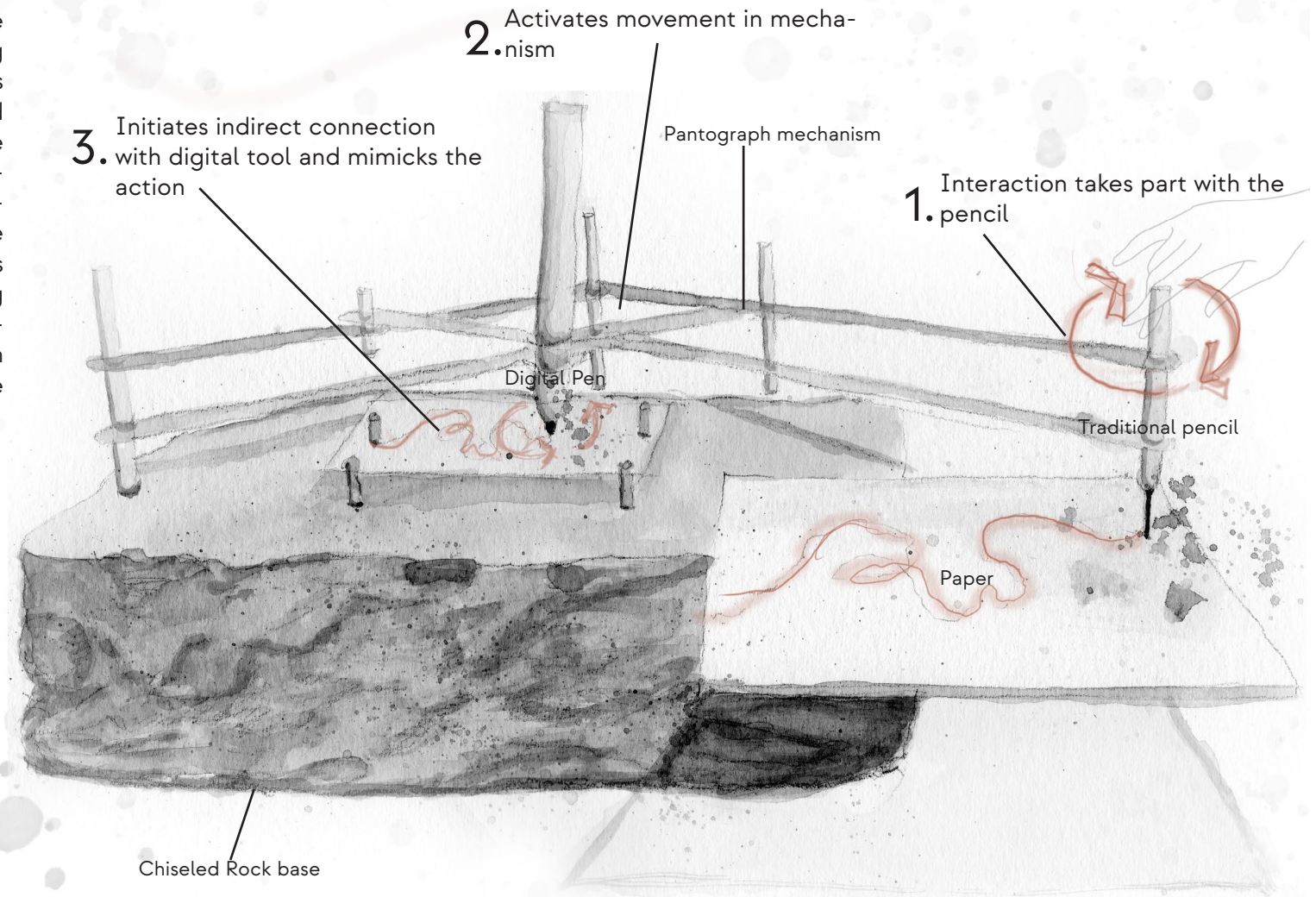


Figure 41: Watercolour diagram showcasing the process of the touchstone (Author, 2021)

Concept 1

Poiesis of Joinery

The first concept is the Poiesis of material Joinery. The creation of a dialogue between the existing and new with the intention of the structure to become a manifestation of crafts through the details of material joinery. Through the process of understanding how traditional handmade joinery could be created using digital fabrication, we need to come to a deeper understanding of these manufacturing processes. The more something is explored, the more we learn how those particular processes succeeded or failed. We need to find the greatness and faults in particular systems and devote time to experiment with ways to make them better.

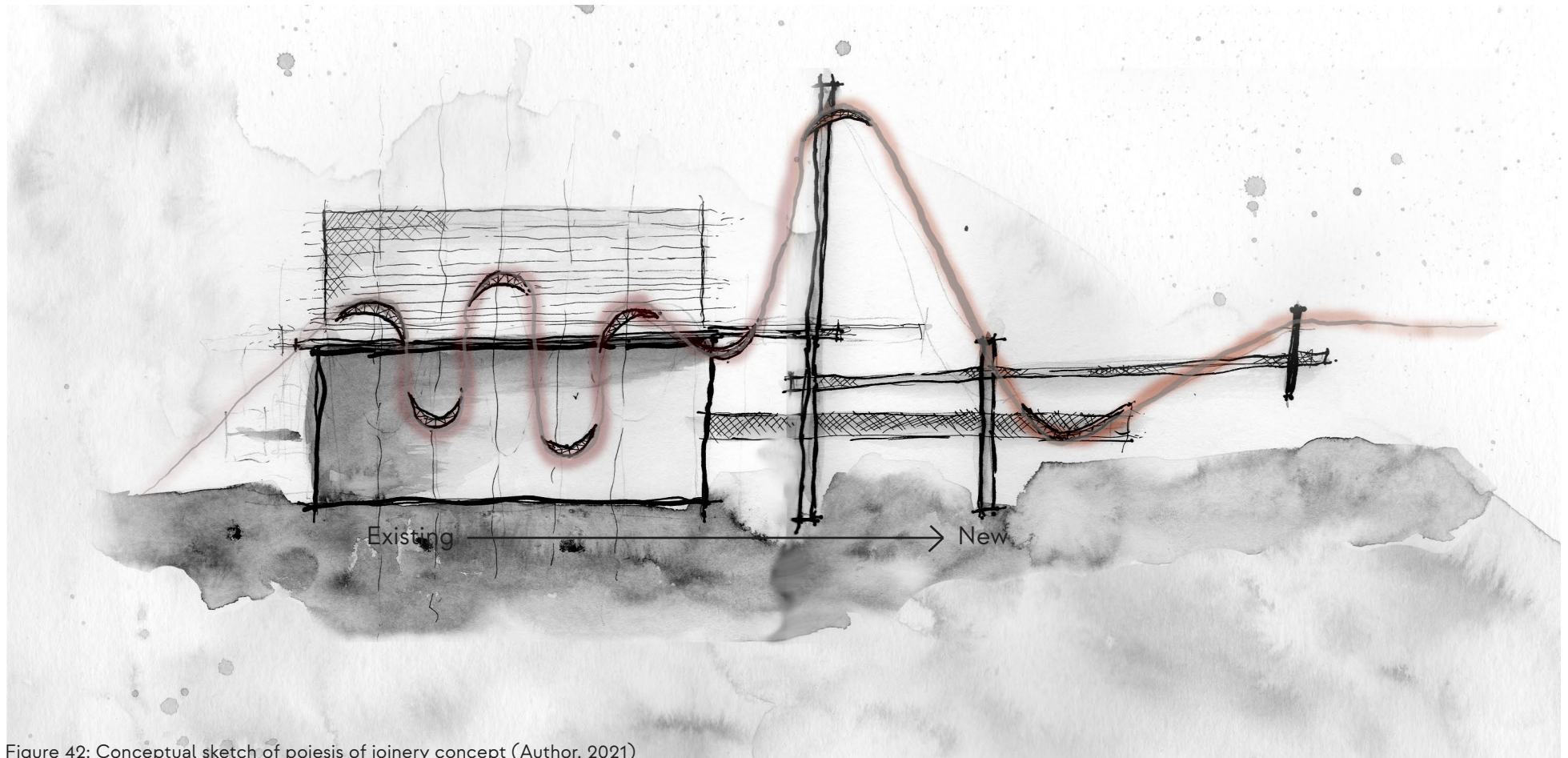


Figure 42: Conceptual sketch of poiesis of joinery concept (Author, 2021)

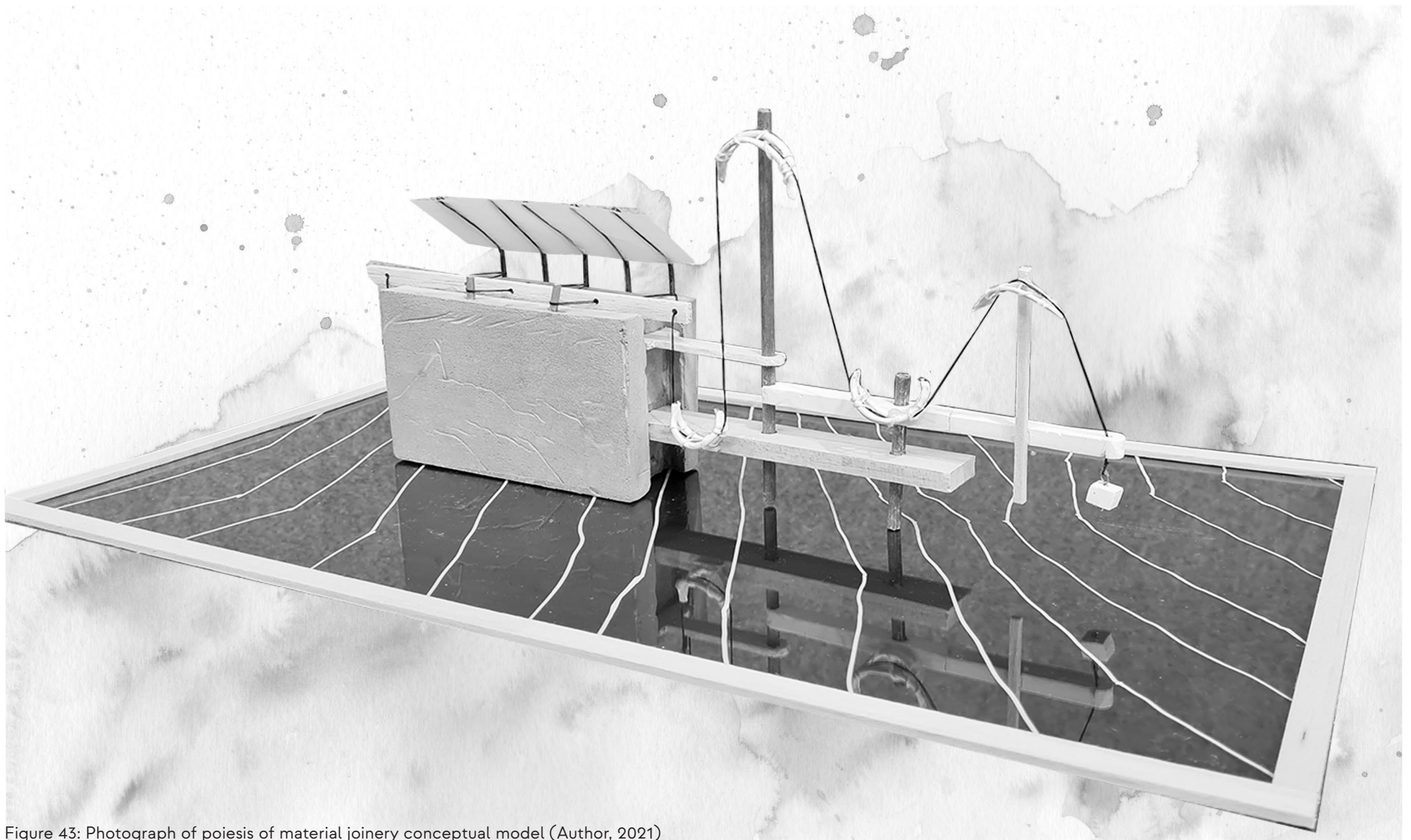


Figure 43: Photograph of poiesis of material joinery conceptual model (Author, 2021)

Concept 2

Place-making through Phenomenological Craftsmanship

The second concept investigates place-making through phenomenological craftsmanship, how the user experiences crafts in place and how the specific place forms and influences the experience of making of crafts for the user. Anchoring the building on the site through the influence of close typological relationships with the existing. In this case the connection between new proposed building and existing tannery buildings as well as the connection between new proposed site and the river.

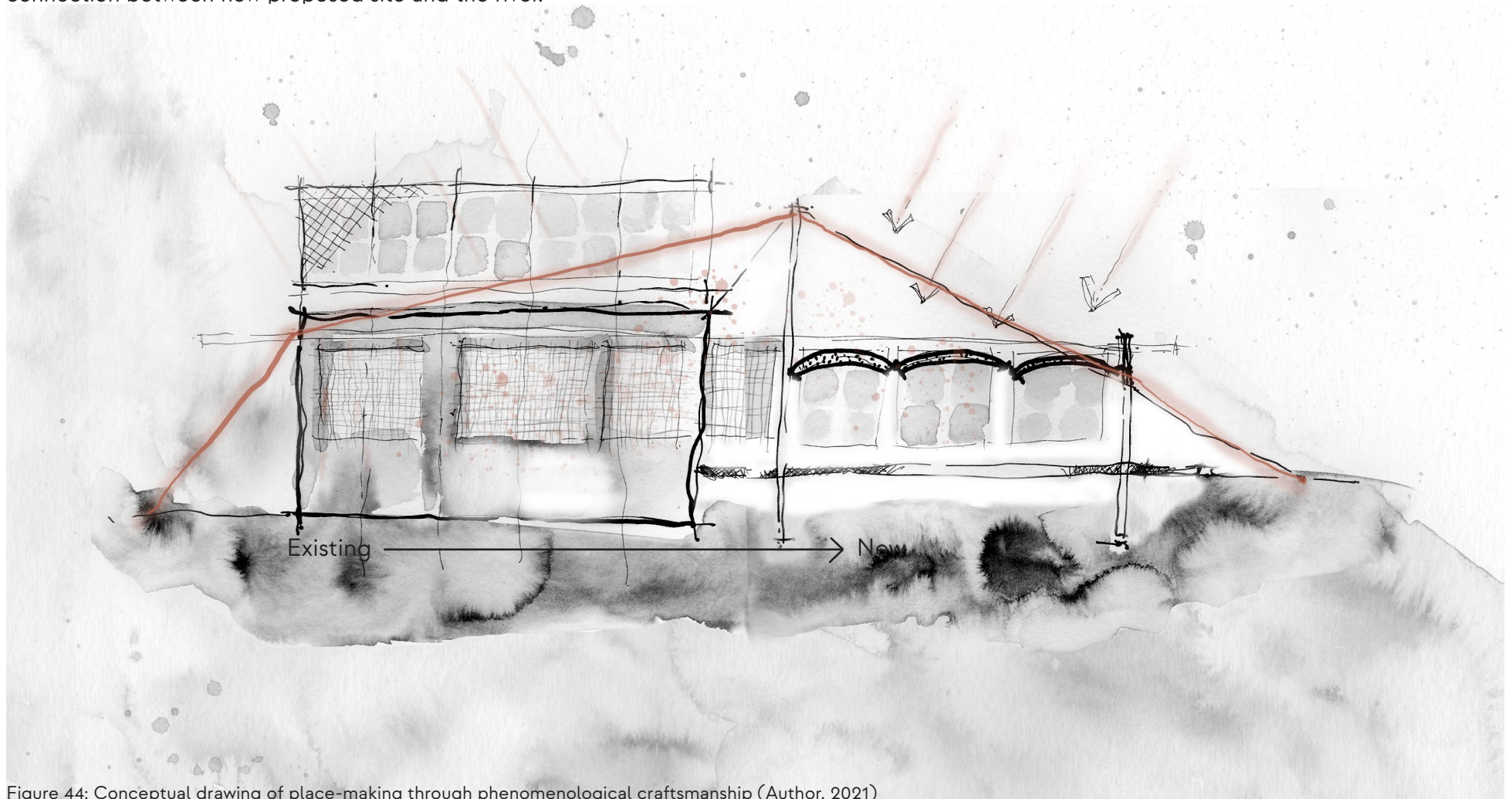


Figure 44: Conceptual drawing of place-making through phenomenological craftsmanship (Author, 2021)

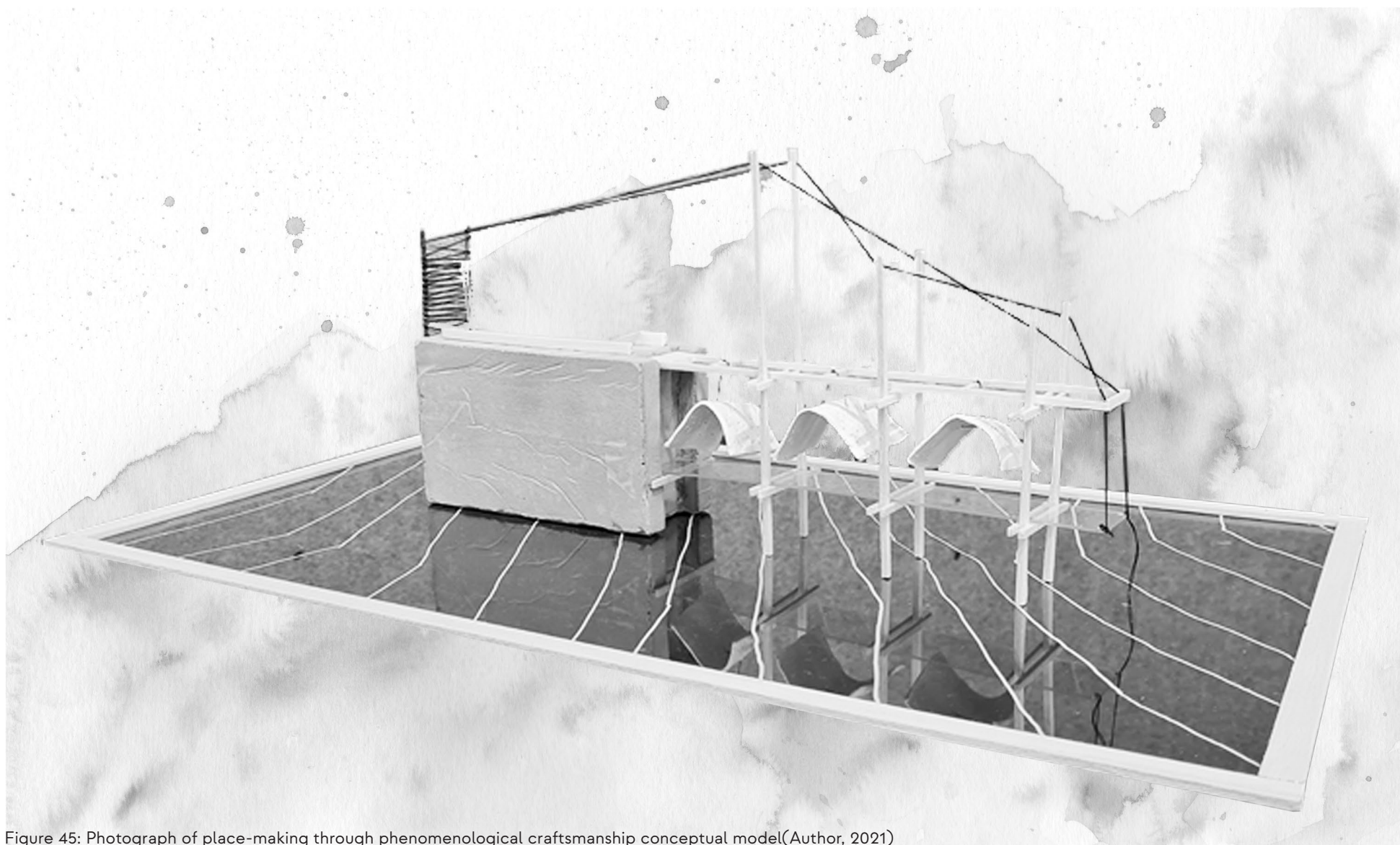


Figure 45: Photograph of place-making through phenomenological craftsmanship conceptual model(Author, 2021)

Concept 3

Technological Junction

The Third concept technological junction is the interpretation of digital technology in craftsmanship. This is seen today as an extension of the craftsman's hand by combining traditional manufacturing methods with digitally produced materials. Both manual and digital processes require experimentation and are perfected through experience, knowledge and skills. In the past, sweaters were knitted, or patterns were transferred onto paper, shoemakers made shoes, potters rolled vases and plates. Today, robots use an algorithm to incorporate complex structures of copper wire, and 3D printers construct products and structural elements from recycled materials.

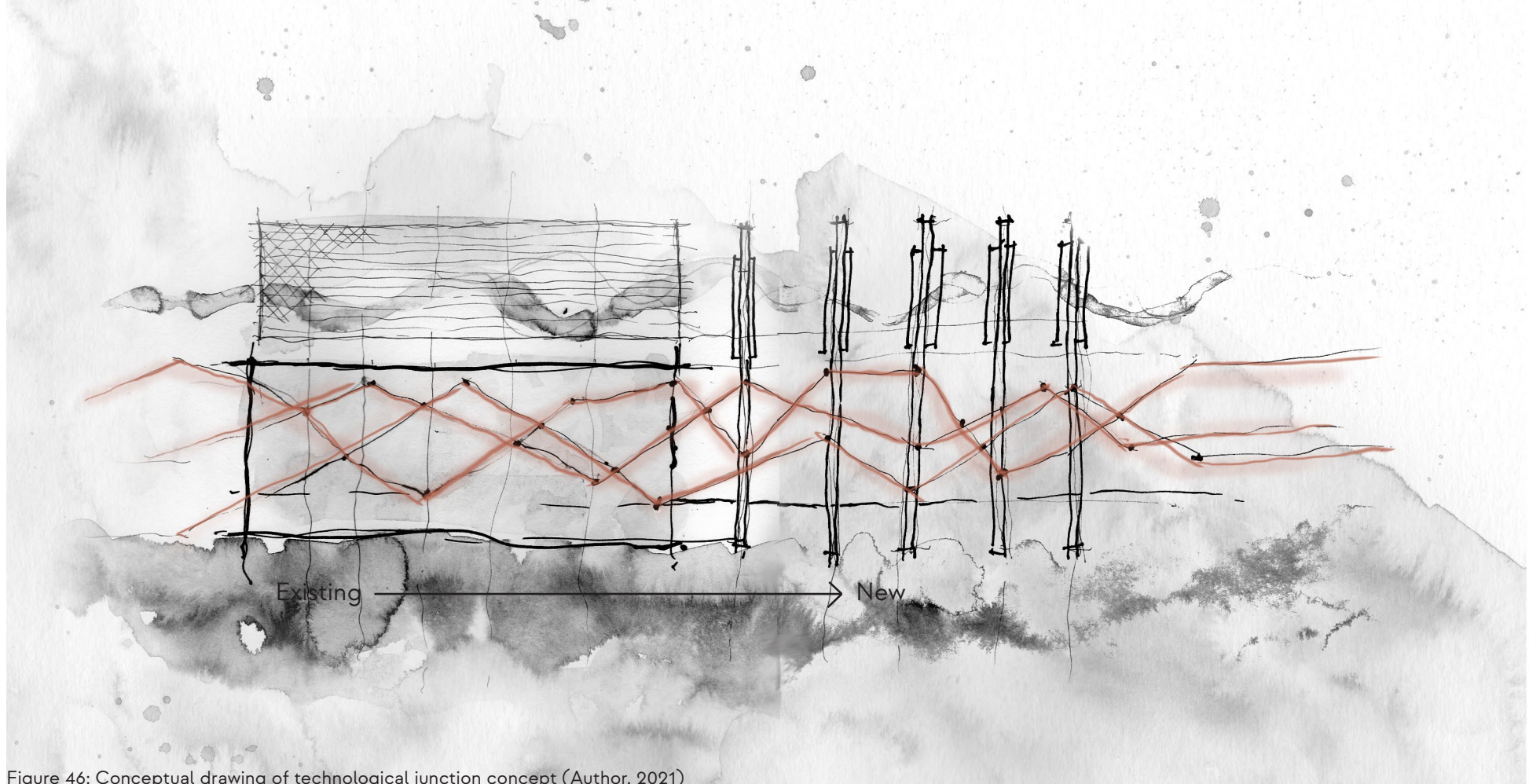


Figure 46: Conceptual drawing of technological junction concept (Author, 2021)

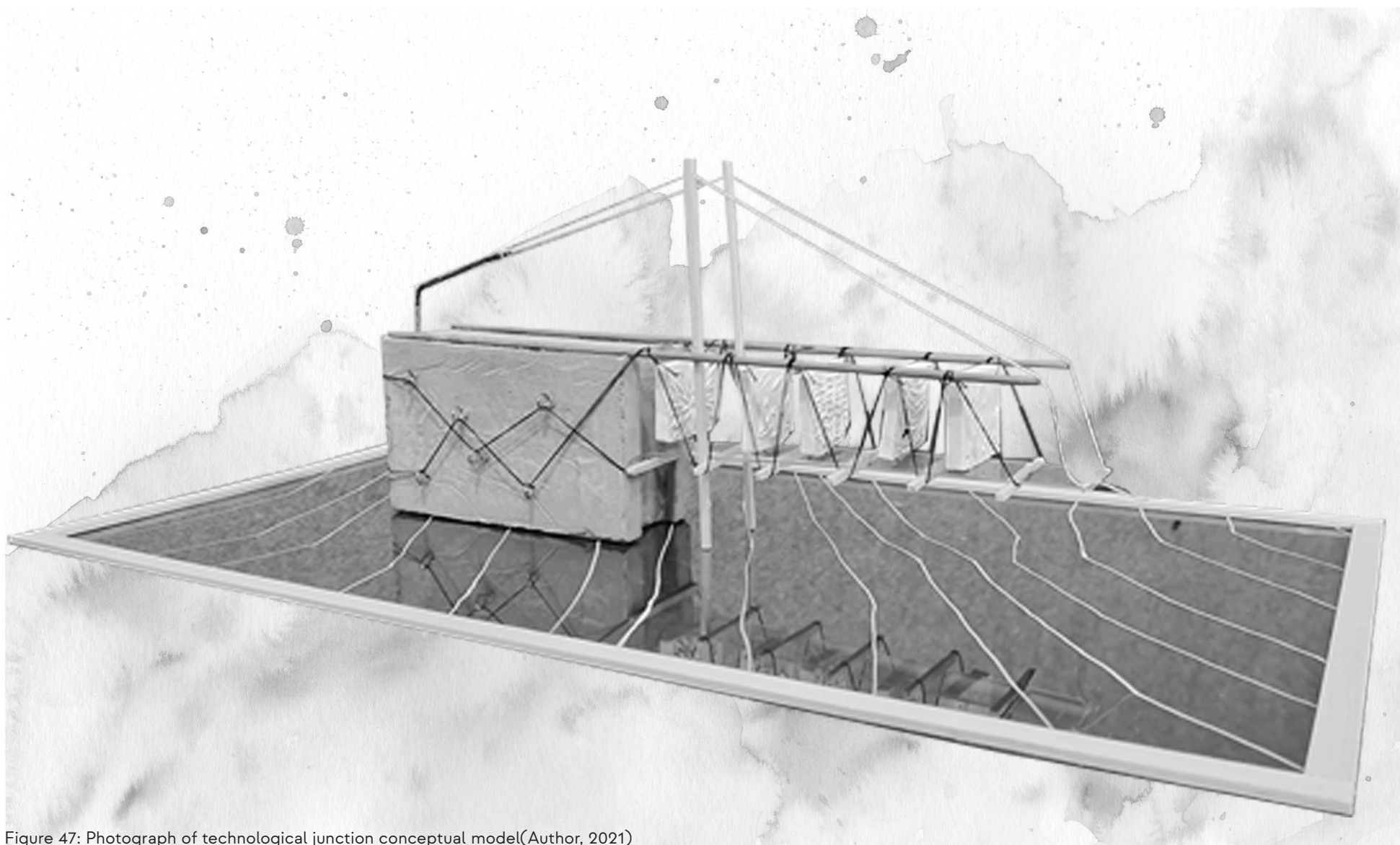


Figure 47: Photograph of technological junction conceptual model(Author, 2021)

Structural Concept

Materiality inspiration from traditional crafts of leather tanning

The structural concept is an investigation of interpreting Craft as phenomenological placemaking by looking at the leather tanning process and relating it to phenomenological elements of placemaking to the process of leather craft. This investigation informed the interpretation of phenomenological placemaking in the four historical crafts of carpentry, masonry, blacksmith and glassblowing.

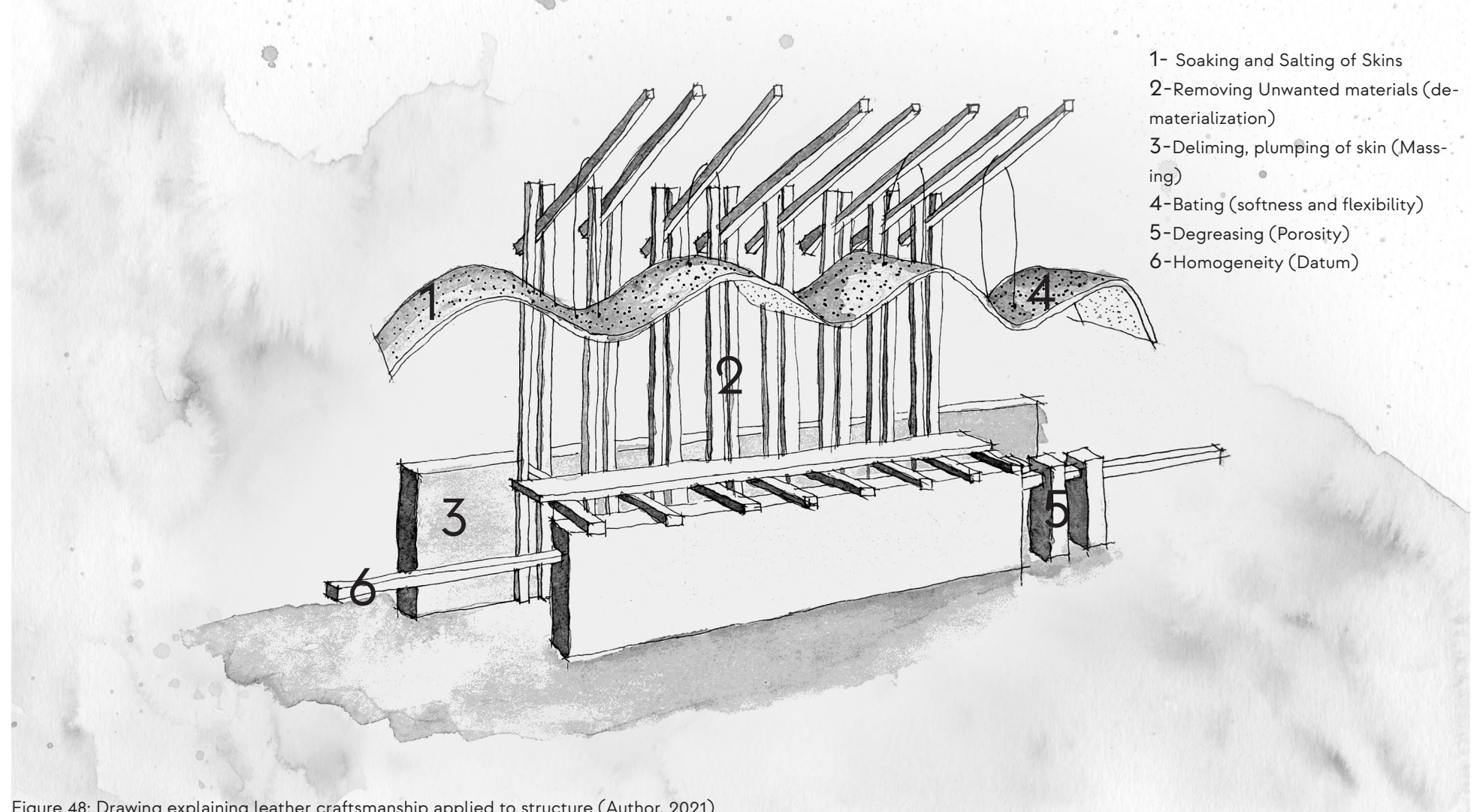


Figure 48: Drawing explaining leather craftsmanship applied to structure (Author, 2021)

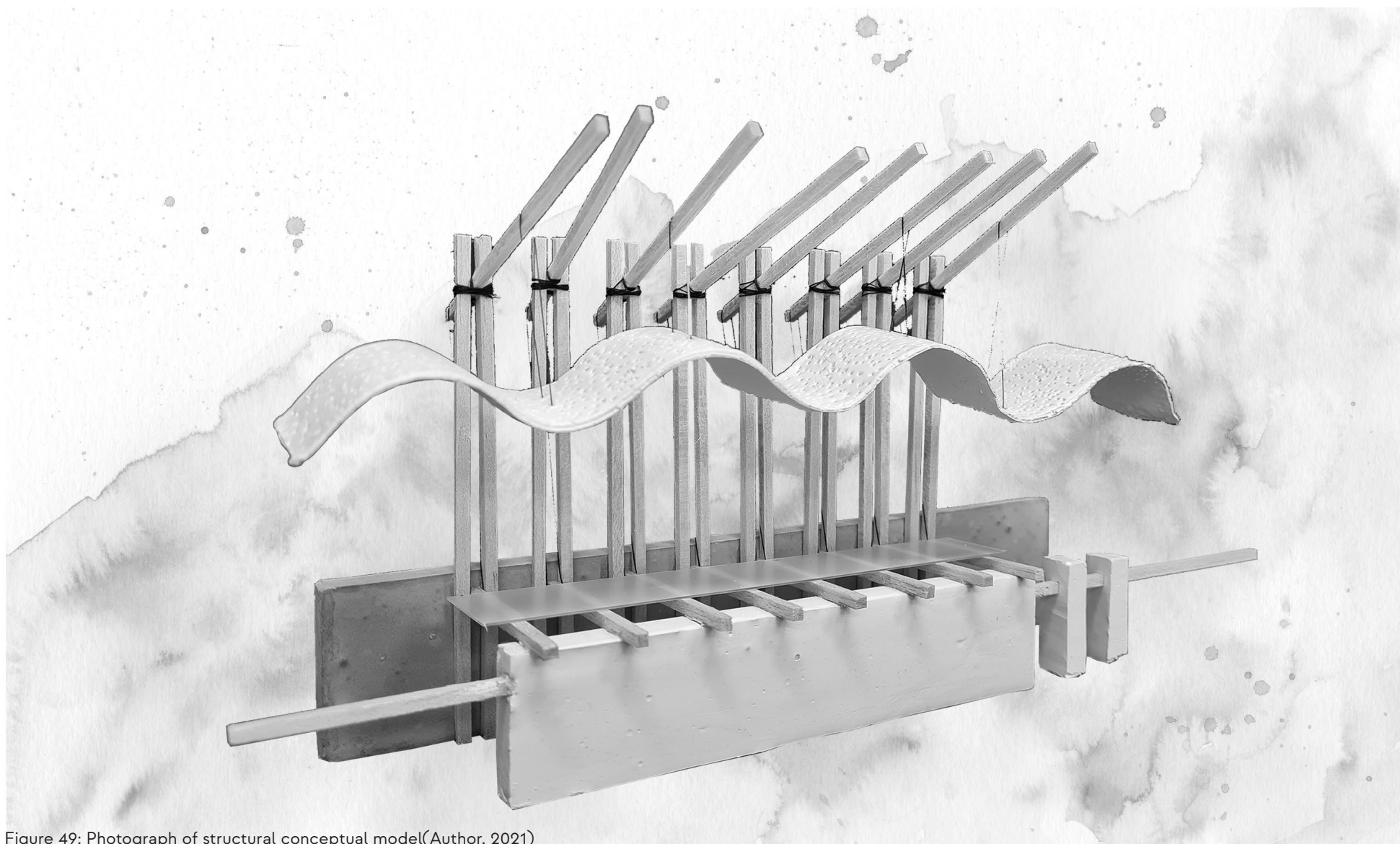
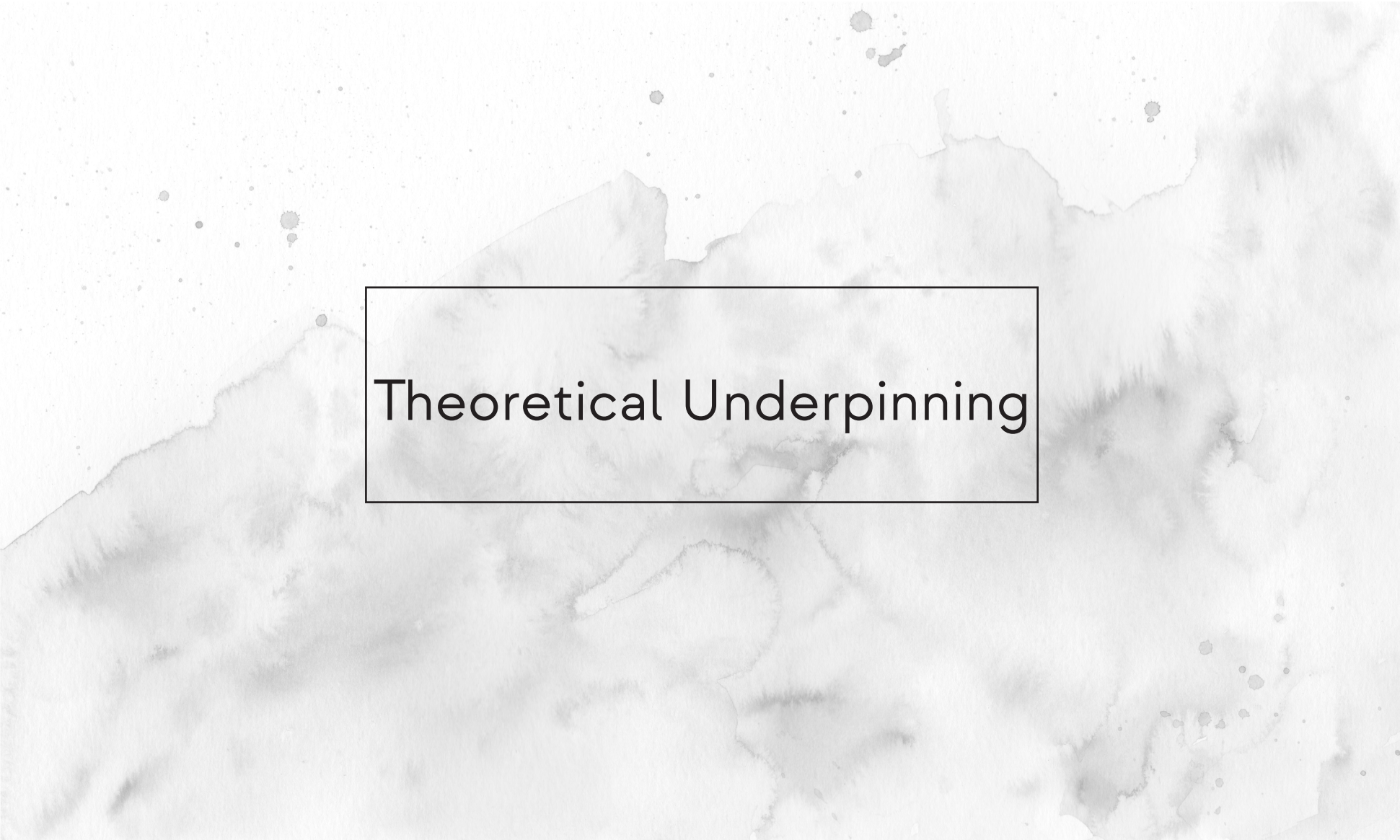


Figure 49: Photograph of structural conceptual model(Author, 2021)

The background of the slide is a light gray watercolor wash with various shades of gray and small dark specks, creating a textured, artistic effect. A thin black rectangular border is centered on the slide, enclosing the title text.

Theoretical Underpinning

Theoretical Grounding

Defining the mastery of Craft in Architecture

The Ancient Greek philosopher, Aristotle first posited the notion that craftsmanship demands the fusion of skill and theoretical insight. Neither craft nor theory can be set apart from the art of making. Theory refers to reflection, and originate from wisdom, whereas making correlates to two different concepts namely: “poesis and praxis” (Balik & Allmer, 2017:38). According to Aristotle, a craftsman needs to be equipped in three aspects namely: theoretical knowledge in their specific craft direction, be skillful in manufacturing, and have past experience. After Aristotle, the well-known architect Vitruvius wrote in his influential work, *Ten Books on Architecture*, that knowledge involves both concept and implementation. The master builder should be endowed both theoretically and practically in order to apply and explain the meaning behind the design (Balik & Allmer, 2017:38-39).

In ancient times, the conventional craftsmen had outright control over his tools. Over time crafters adapted and developed these tools to suite their time. Yet this connection changed with the advent of the industrial revolution as more and more aspects of making were entrusted to machines, thereby severing the intimate bond between maker and tool. The strict linear process of industrial factories was greatly criticized by figures associated with the arts and crafts movement such as John Ruskin and William Morris.

In contrast, the twentieth-century architects such as Le Corbusier, Walter Gropius and Adolf Loos disvalued the character of craftwork and criticized the individuality thereof. This caused a separation in the realm of art from that of architecture. The act of craft was replaced by manufacturing and the “craftsman” replaced by the “worker”. The craftsmen had technique and skill bestowed within them, whereas the “worker” became severely de-skilled as they had to carry out the same tasks over and over again by keeping track of a set of instructions on punch cards inserted in numerical control machines (Balik & Allmer, 2017:39).

“If There is one thing we can learn from John Ruskin, it is that each age must find its own beauty.”(Spuybroek, 2011:12).

The Dutch architect, artist and author Lars Spuybroek asserted in his book *The sympathy of Things*, that we should overrule the values and beliefs of modernist architects in the twentieth century. This era turned the exalted art of craftsmanship into a technical applied reality. This lead Spuybroek to the aesthetical insights of the art critic John Ruskin for whom the solution to the destructive industrial society, that lead laboring classes into deeper poverty and depression, lay in the art of the middle ages. By this Ruskin meant products that were made in guilds in small scale where artists and designers such as stonemasons, blacksmiths, and carpenters, etc. could take pride in their work.

He believed that this intimate engagement between maker and making develops both intellectual and physical skill. Spuybroek submerges himself in the complications of how things are designed, causing him to identify a new ontology that he calls “Gothic”. By choosing this term he indicates that this is anything but new, situating this ontology in the past. He is eager to release the Gothic from its historical limits, even defining a nascent term ‘digital gothic’ for present times. This statement makes it abundantly clear that Gothic is largely appropriate to periods other than its own time.

Spuybroek may apply this ontology to all conceivable design things, but being an architect, Gothic cathedrals is a great pillar in architectural history and the various expositions thereof. He imagines a prospective future with more sympathetic and ecological designs for contemporary buildings in the twenty-first century. In the first chapter called ‘The digital nature of Gothic’ he conducts instructions to the ‘gothic’. Spuybroek feeds off Ruskin’s passionate advocacy of the Gothic, he elaborates on the attributes of gothic using terms such as ‘savageness’ and ‘changefulness’ (Spuybroek, 2011:6-15).

The 'savageness' of Gothic is that it leaves the decision to the craftsman, the stonemason, of what to do, unavoidably this presents mistakes in the process. The 'changefulness' is mostly inhabited in the design process and the variety of designs one element can be, such as how the window tracery should be done or the meshing of the ribbed vaults. If the savagery of the craftsman is uneven and incremental, and the design of the architect is even and intricate, they nevertheless amalgamate such that "work is in design, and design is in work" (Spuybroek, 2011:6-15). He subsequently highlights Ruskin's understanding of the significant integration of force and form in Gothic architecture – he calls it "configurational variation" (Spuybroek, 2011:8). Gothic architecture has many design motifs, but they are not fixed as there are many different variations. These variations can be correlated to each other through "proliferation techniques" (Spuybroek, 2011:10). He argues that the Gothic topology is fundamentally relational, causing it to be entirely and foundationally digital in character. This claim might seem appalling, but the limitless possibilities for configurational variation is confidently a fundamental strength of computer-aided-design. Therefore, digital fabrication can be manifested entirely in agreement with this ontology (Spuybroek, 2011:9).

Technological mediation used as tools by the twenty-first century crafter.

Some people tend to see technological objects and human subjects as two separate things. Humans are subjective because they have purpose and they try to understand the world around them while things like technological objects are unspeaking, passive, and obedient things that are used. Peter-Paul Verbeek writes in his article *Materializing Morality: Design, Ethics and Technological mediation* that his rudimentary definition of phenomenology is the theoretical analysis of how the relations between humans and their life-world is structured (Verbeek, 2006:363). Technological mediation then concerns the role of technology in human action (devised as the ways in which human beings are present in their world) and human experience (devised as

the ways in which their world is present to them) (Verbeek, 2006:363). The central hermeneutic question Verbeek asked for a philosophy of mediation is how artifacts mediate human experiences and interpretations of reality. He then looked at the American philosopher in science and technology Don Ihde's philosophy which is a good starting point for answering this question because of its focus on the technological mediation of discernment. Ihde elaborated on German philosopher Martin Heidegger's tool analysis into an analysis of the relationships between humans and technological artifacts (Verbeek, 2006:364-365).

This philosophy is known as post-phenomenology, Ihde contributed greatly to this philosophy. He elucidates his theory under four sub-categories of which the first is "embodiment relations" describing technology that is embodied and used to enhance things in and around the world to human beings such as glasses or Virtual reality devices etc. (Verbeek, 2006:365). The second category is "hermeneutic relations" which is technologies that are programmed and designed to gather information and apprise humans such as a thermometer, an MRI scanner, or a metal detector. This allows humans to read how technologies represent the world (Verbeek, 2006:365). Thirdly is "alterity relations", these are interactive technologies with the world in the background such as robotic manipulation, ATM's and operating machines etc. (Verbeek, 2006:365). Lastly is "background relations" this is technologies that are in the background and makes up the context for human experience such as lights, the sound of an air conditioner, warm air of heating systems etc. The reason these are described as being in the background is because they are usually only noticed when interrupted (Verbeek, 2006:365).

The development of new digital possibilities during the twentieth century generated revolutionary possibilities in terms of craftsmanship. This enabled the subcontracting of a design to state-of-the-art industrial methods straight from the computer of the maker (Dover, 2017:10). The invention of 3D printers, CNC (computer numerical control) machines, and robotic manipulation presents a whole new world in the art of

making. In recent years artists, crafters and makers embraced these technologies and started incorporating it in their making processes.

Looking at the theory of postphenomenology we can argue that digital fabrication machines becomes an extension of the maker using it as a tool to 'make'. These machines still need the input of the crafter in order to fabricate. Therefore, the crafter needs to be equipped with the theoretical knowledge, be skillful in manufacturing and gain experience with this new technology to produce propitious designs. Despite the fear that fabrication machines would eliminate, individuality, and eloquent work, traditional crafts have not faded in the digital age. Conversely architects are transforming traditional crafts and ornament into digital media, reimagining motifs, and effects of certain crafts. This allows the incorporation of history in newly designed buildings in a contemporary way implemented by digital crafters with fabrication machines as their tools (Balik & Allmer, 2017:42). Therefore, the craftsmen still acts as mediator in the digital age by manufacturing these motifs and craft effects as subcontractors to a project.

This dissertation, therefore, introduces a vocational craft college to develop skills in four craft typologies while focussing on new creative opportunities presented by augmenting traditional crafts through digitally fabricated methods. The ideal outcome intends to create a complete synthesis between the dweller, craft, and technology: a digitally fabricated place in the digital world. This also allows for a more sustainable approach to place-making through less material use due to smart, digitally-enabled designs. It can however be argued that a country such as South Africa is still unseasoned in the realm of digitally crafted architecture, only recently becoming prominent in large urban areas, much less in the small towns of the Cape Winelands.

How can a post-phenomenological approach aid the metamorphosis of traditional to digital craft within an existing crafted architectural fabric?

Orientation

The Tannery is a quintessential industrial site, separated from the town by the Krom River on the southern boundary. Once the home to the traditional craft of leather tanning and product manufacturing. It was also registered as a historical site in 2020. As the existing building complex is already in a developmental state, the ill-defined no-man's land on the western side is chosen as a site to activate this underutilized area, while also keeping the craft studios separate for noise purposes.

Anchoring the building on the site through the influence of close typological relationships with the existing context is an extremely important investigation that should be performed in order to challenge or sensitively interact with the site and surroundings. In this case the connection between new proposed building and existing tannery buildings as well as the connection between new proposed site and the river.



Figure 50: Watercolour of old Tannery site showcasing new proposed site & heritage buildings (Author, 2021)

The layout of the new buildings intends to react to the existing grid lines on site as well as the river next to the site.

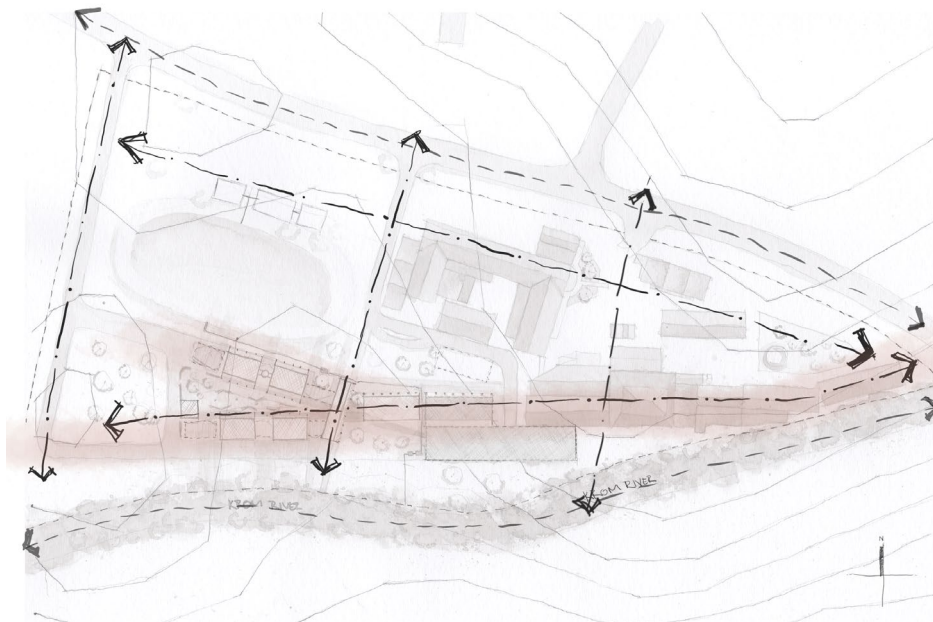


Figure 51: Watercolour diagram of grids on site (Author, 2021)

The existing crafted buildings of the Tannery introduces a relationship between the architecture and the river where the buildings run parallel to the flow of the river. A sensitive reaction to this promenade will be to place the new buildings on the same axis in order to honour the historical site.

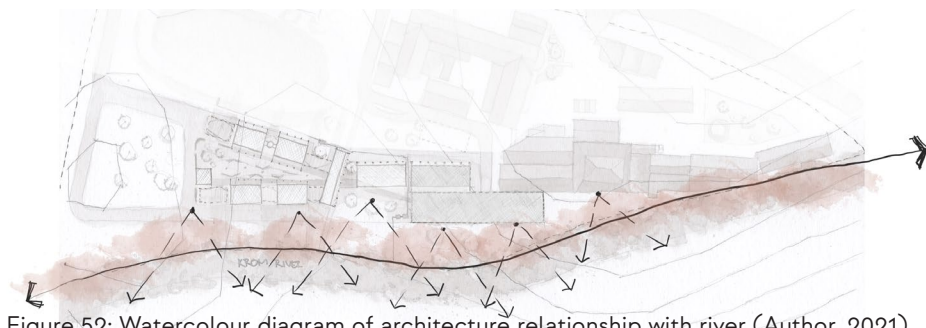


Figure 52: Watercolour diagram of architecture relationship with river (Author, 2021)

From old to new

With the transition from existing to new this precedent study *Covent saint Francois* by Amelia Tavelli architects was investigated. This partially ruined building from 1480, a historical monument had been abandoned for a very long time. Amelia tavelli architects has chosen to keep the ruins and replace the torn part in copper work. This transformation from old to new aligns with the original massing that was there once before and therefore, honours the nature of the existing. Working with ruin embraces the past and the modernity where one becomes the other and no one is erased. And therefore, honours the nature of the existing (Pintos, 2021: online).

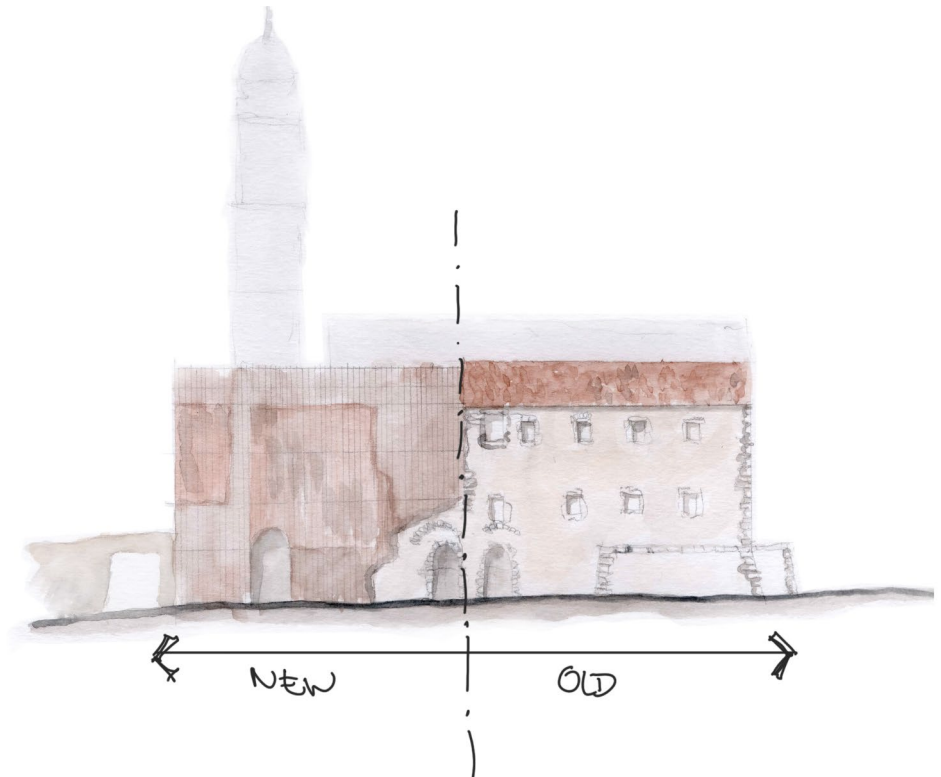


Figure 53: Watercolour diagram of Covent Saint Francois by Amelia Tavelli architects (Dini, 2021:online. Redrawn by Author)

A sensitive way to honour the existing but still identify the new from the old is to use a cladding material for the new buildings that is reminiscent of the existing as seen in its profile and aged appearance. An existing material adapted with new technology to reminisce the state of ruin of the existing and intends to create a cloak of tradition for new digital crafts within.

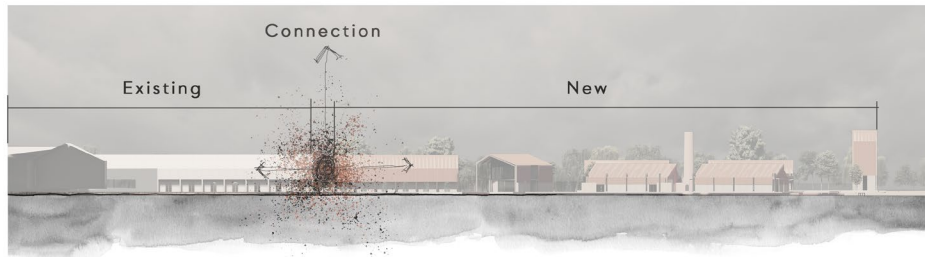


Figure 54: Render diagram of the transformation from existing to new (Author, 2021)

Exploring historical crafts and their fabricated alternatives

In the exploration of historical crafts, the decision was made to choose four craft types to incorporate in the design through digital fabrication. The development of skill and tools in these building crafts is very evident over the years. The four chosen crafts is carpentry, stone-masonry, blacksmith, and glass blowing.

Carpentry

The craft of carpentry which performs the work of cutting and shaping timber exists since ancient times. The tools used for this specific craft adapted over times as it still does today. In today's day and age of entering the fourth industrial revolution digital fabrication has become a more sought after method of crafting as it is quicker and more precise. However digital fabrication has its own limitations such as the bed size of a CNC router etc.



Figure 55: CNC timber door frame (Krynauw, 2017:online. Adapted by author)

CNC cutting and carving opens up a whole new realm of woodworking. It allows larger cut and carved pieces of timber in quicker time than it could be done by hand. The possibilities of curved and rounded edges are achieved more precisely also in quicker time than it could be done by hand.

Masonry

Stone masonry is the craft of chiseling and shaping of stone. This craft is one of the crafts that mostly faded out as times progressed because of how time consuming and hard labour it takes to cut and chisel custom shapes and sizes of stone by hand.



Figure 56: CNC cut stone column footing (Griffiths, 2021: online. Adapted by author)

CNC stone cutting and carving machines opens up a world of possibilities for stone-masonry elements to be incorporated in contemporary architectural designs.

Blacksmith

Blacksmith is the craft of hot and cold forging and shaping of steel and or wrought iron. This craft greatly developed throughout the industrial revolution. Many different methods of steelwork has developd over time to create art and architecture of many different shapes and sizes.



Forging steel can be done in many different ways but principally over time it stayed the same in terms of melting steel and casting it in moulds. Today CNC plasma cutting machines can cut through for dematerialisation.

Figure 57: Forged steel beams (Mitsui,2016: online. Adapted by author)

Glassblowing

Glassblowing is the craft of inflating and shaping molten glass with the aid of a blowpipe.



Different methods and techniques have developed over time in the making and shaping of glass in art and architecture. A newly discovered method of glass shaping has recently surfaced, 3D printed glass. This can be applied structurally or as an infill element.

Figure 58: 3D printed glass sculpture (Mitsui,2016: online. Adapted by author)

Computer generated architecture

The pioneering construction method of the Smart Slab uses 3D-printed formwork for casting and spraying concrete in geometrically complex shapes. 3D printing overcomes the geometric limitations of traditional formwork fabrication methods. Furthermore, it enables the construction of integrative concrete elements with elaborate, free-form and highly detailed surfaces and smart construction details. 3D printing has the added benefit that geometric complexity and differentiation come at no additional production cost (Jipa,2020:online).

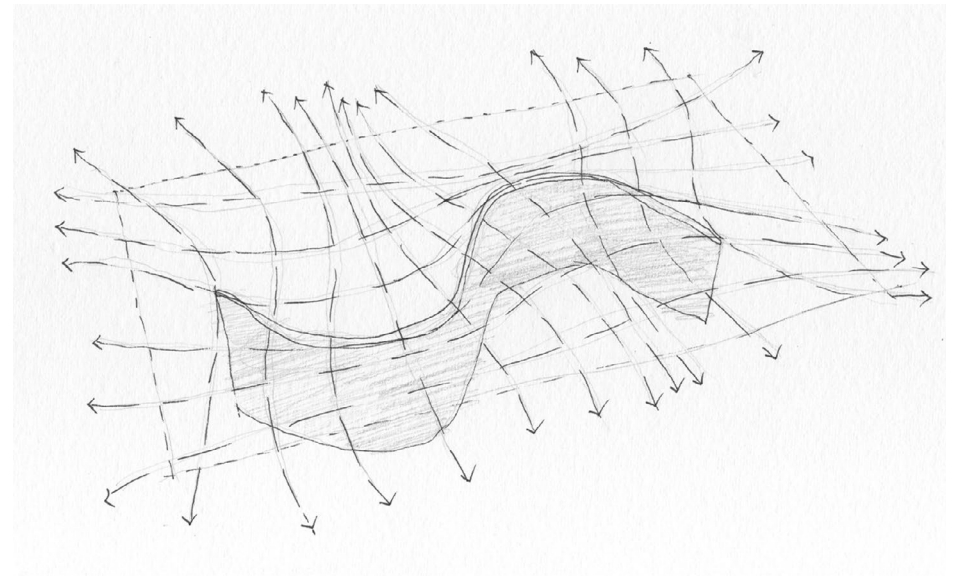


Figure 59: Diagram of computer generated two way smart slab (Author, 2021)

4

Design Synthesis

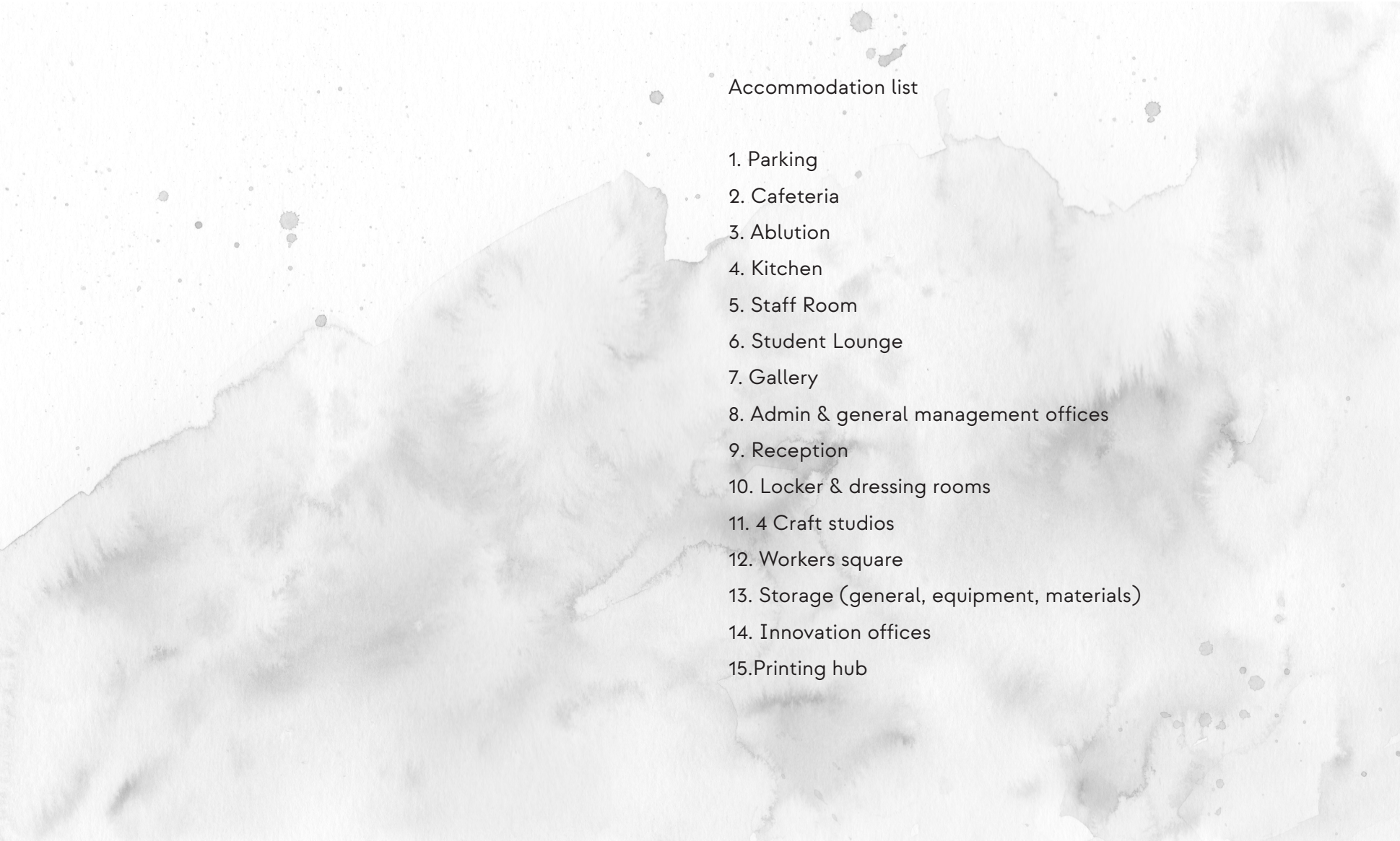
4.1 Design development



Figure 60: Watercolour of existing buildings and furnace at the Old tannery (Author, 2021)

The background of the slide is a light gray watercolor wash with various shades of gray and small dark specks scattered throughout. A thin black rectangular border is centered on the page, enclosing the text.

Design development



Accommodation list

1. Parking
2. Cafeteria
3. Ablution
4. Kitchen
5. Staff Room
6. Student Lounge
7. Gallery
8. Admin & general management offices
9. Reception
10. Locker & dressing rooms
11. 4 Craft studios
12. Workers square
13. Storage (general, equipment, materials)
14. Innovation offices
15. Printing hub

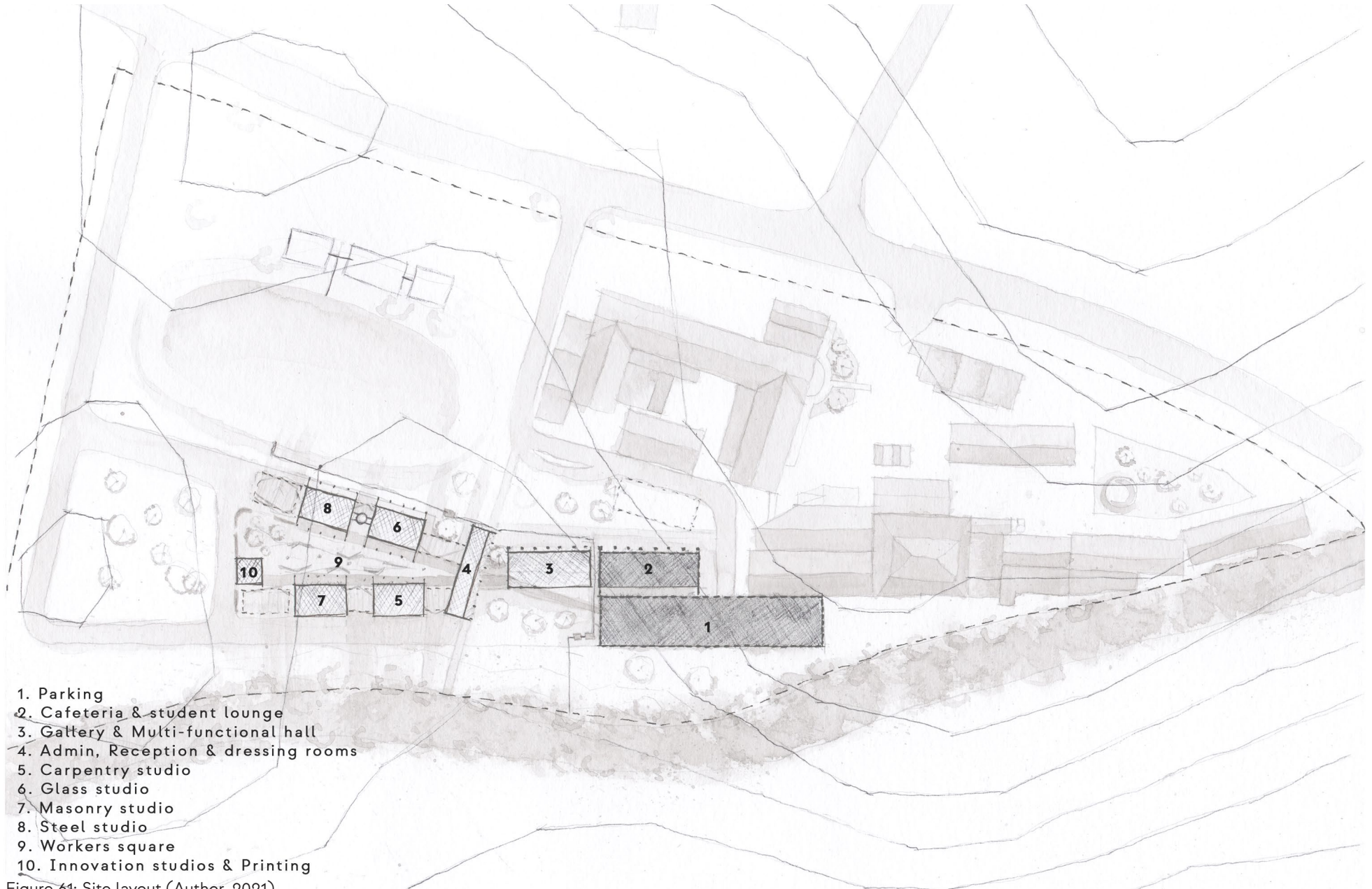


Figure 61: Site layout (Author, 2021)

Design development

The first reaction to the site was the decision to work with the architectural promenade which is created by the existing buildings running parallel along the flow of the river.

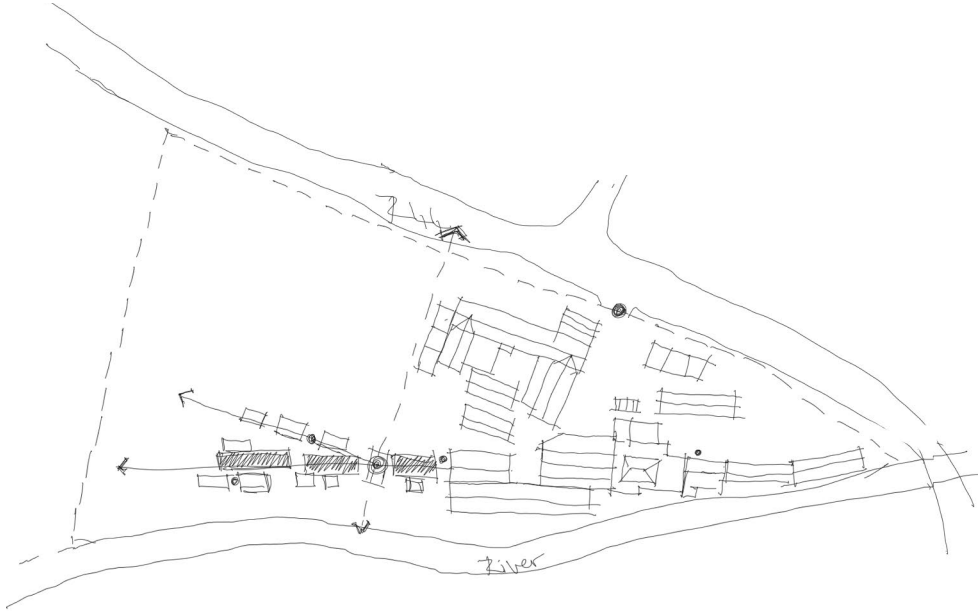


Figure 62: First reaction diagram to site (Author, 2021)

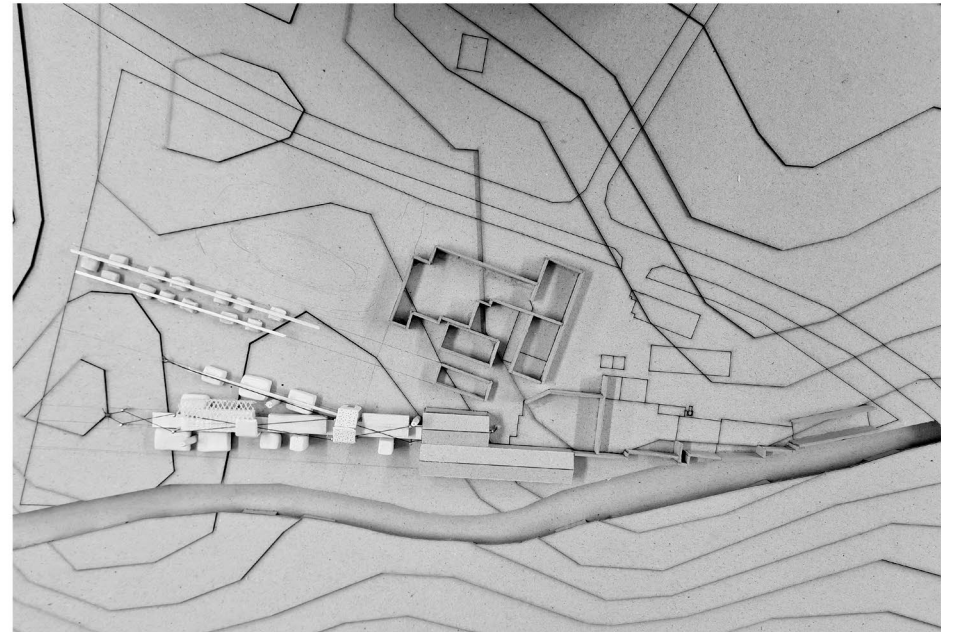


Figure 63: First reaction model to site (Author, 2021)

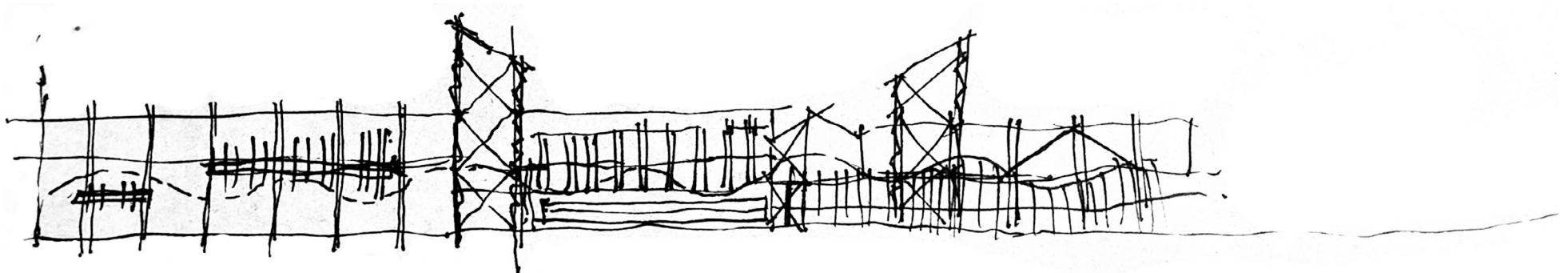


Figure 64: First reaction spatial development (Author, 2021)

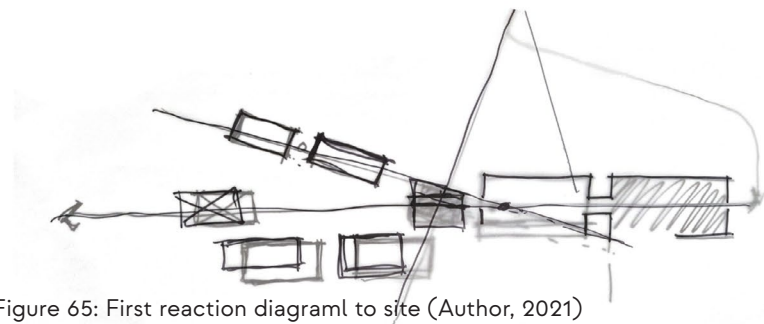


Figure 65: First reaction diagram to site (Author, 2021)

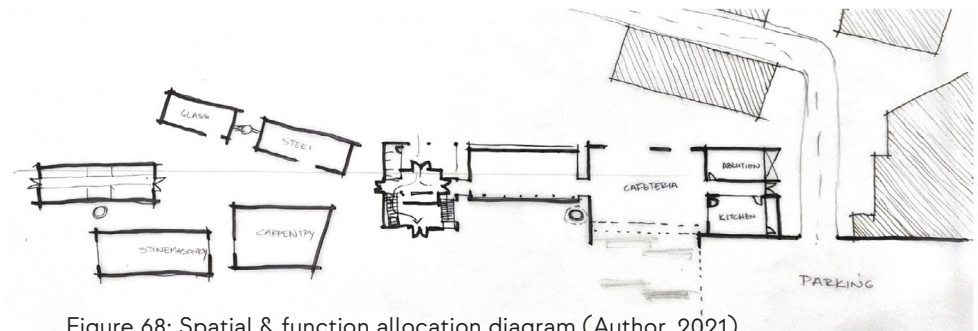


Figure 68: Spatial & function allocation diagram (Author, 2021)

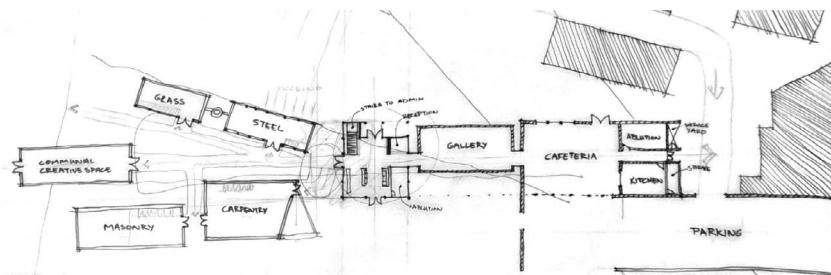


Figure 66: Spatial & function allocation development (Author, 2021)

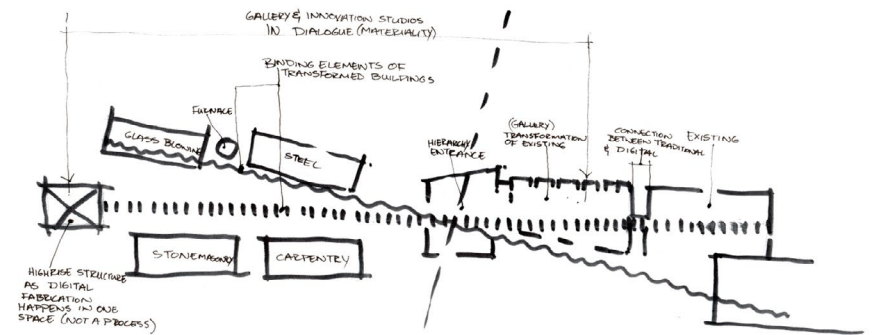


Figure 69: Theoretical narrative development according to spatial allocation (Author, 2021)

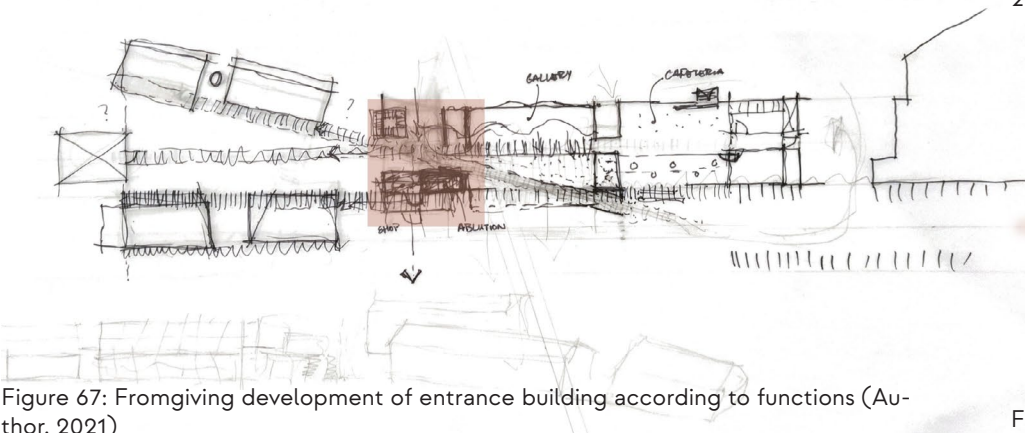


Figure 67: From giving development of entrance building according to functions (Author, 2021)

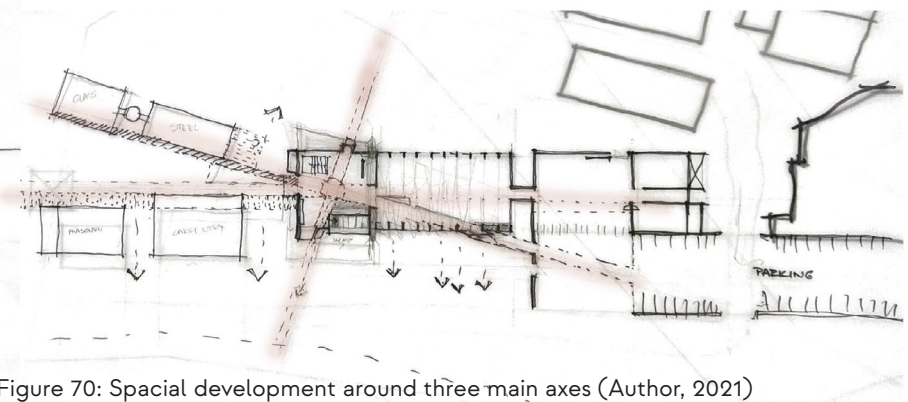


Figure 70: Spatial development around three main axes (Author, 2021)

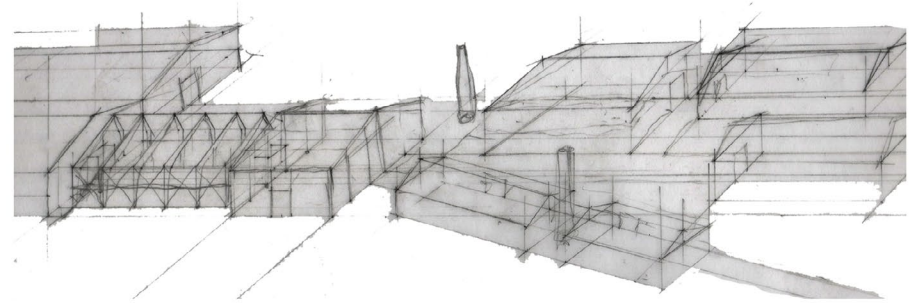


Figure 71: First 3D development and structure exploration of scaled spaces (Author, 2021)

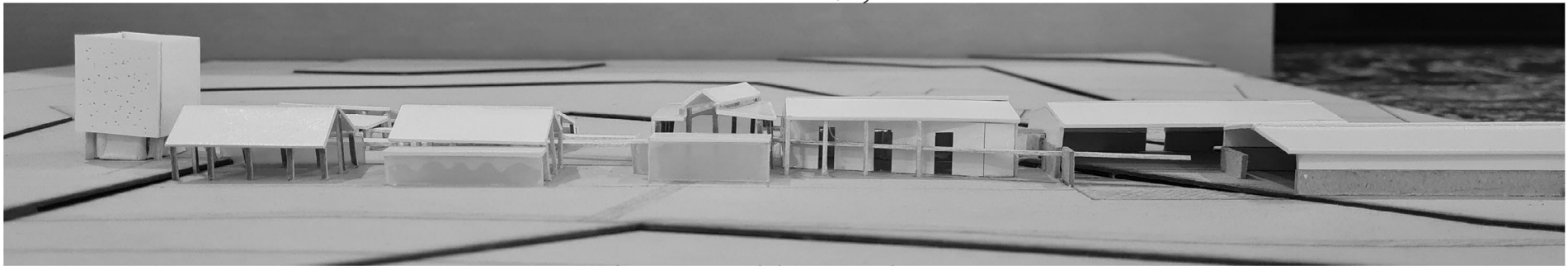


Figure 72: First 3D development model exploration of scaled spaces (view from south) (Author, 2021)

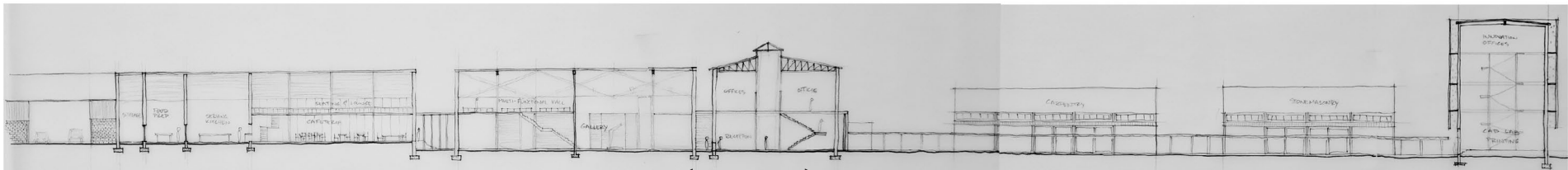


Figure 73: Sectional development and structure exploration of scaled spaces (Author, 2021)

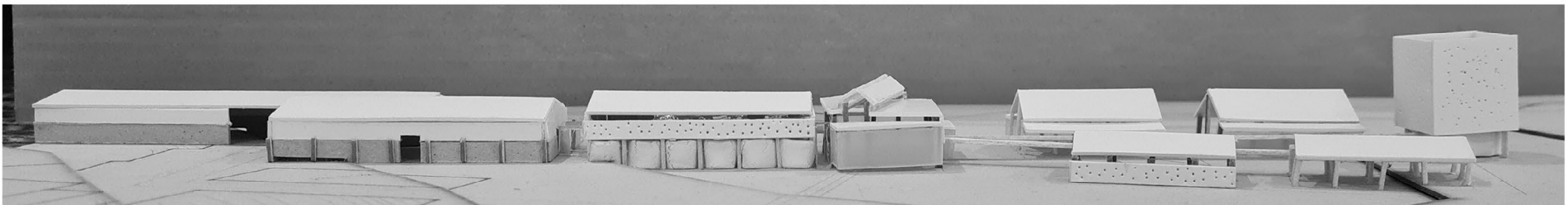


Figure 74: First 3D development and structure exploration of scaled spaces (view from north) (Author, 2021)

Design development

Interior space development of craft studios as well as gallery space and cafeteria. At this stage the decision was made to cut away from the gallery space as the axis runs past on the southern side in order to accomodate a walkway towards the allocated covered parking space

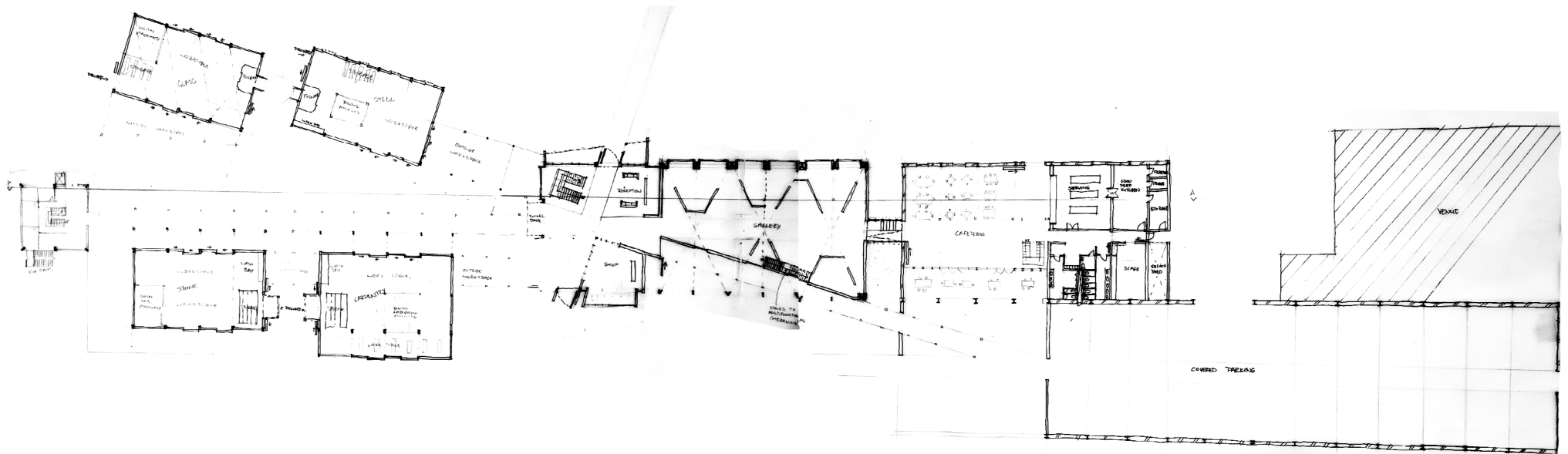


Figure 75: Interior space development (Author, 2021)

Design development

Further interior development in terms of digital fabrication methods and material application, as well as new formgiving development of main entrance building on north-south axis

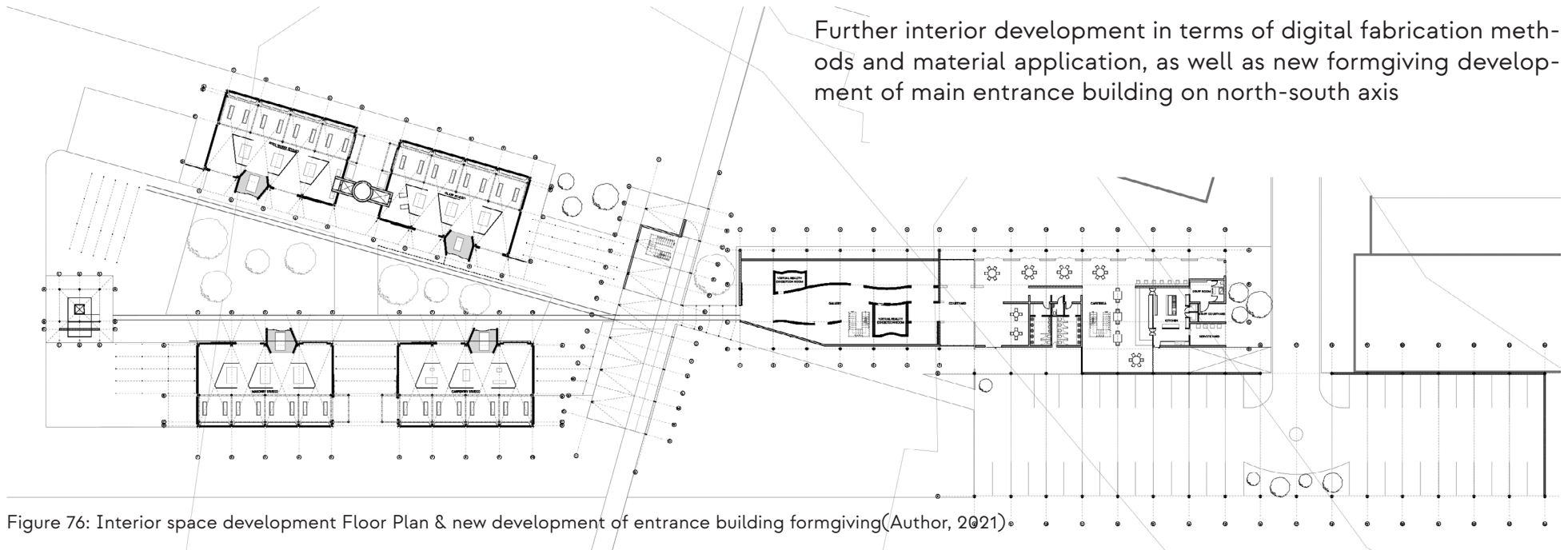


Figure 76: Interior space development Floor Plan & new development of entrance building formgiving(Author, 2021)*

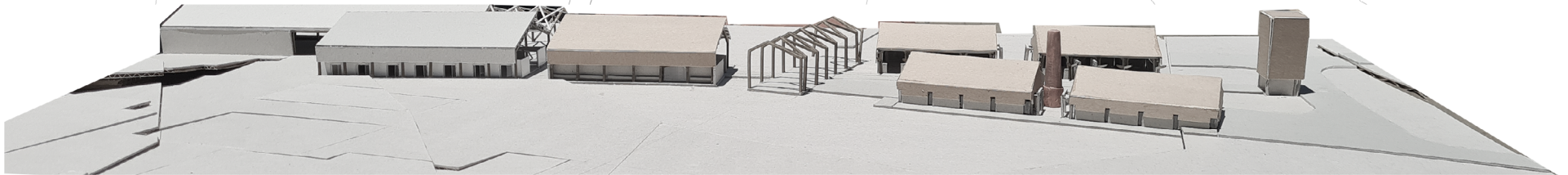


Figure 77: 3D Model Development & new development of entrance building formgiving(view from north) (Author, 2021)

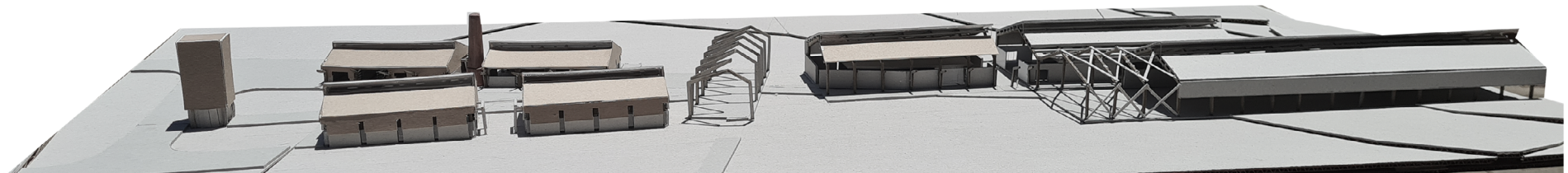


Figure 78: 3D Model Development & new development of entrance building formgiving(view from south) (Author, 2021)

Design development

At this stage most of the interior developments were almost finalised. The complexity of the inbetween spaces were starting to develop in terms of outside storage spaces for equipment and materials. Outside work space with equipment is being developed. Outside relaxation space for students in development.



Figure 79: New form giving in context with existing model (Author, 2021)

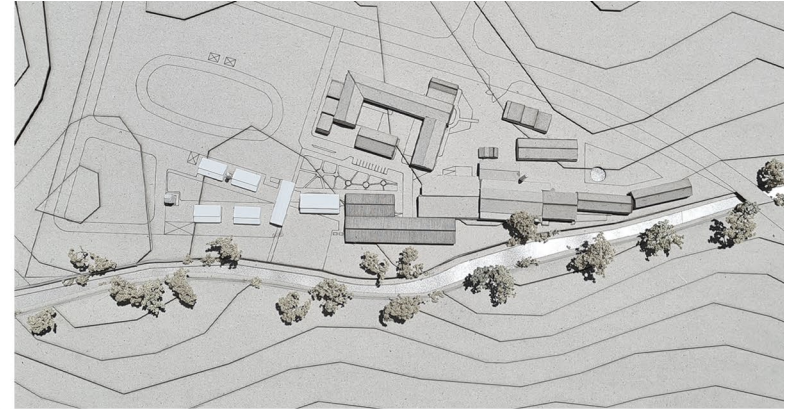


Figure 80: New form giving in context with existing model top view (Author, 2021)

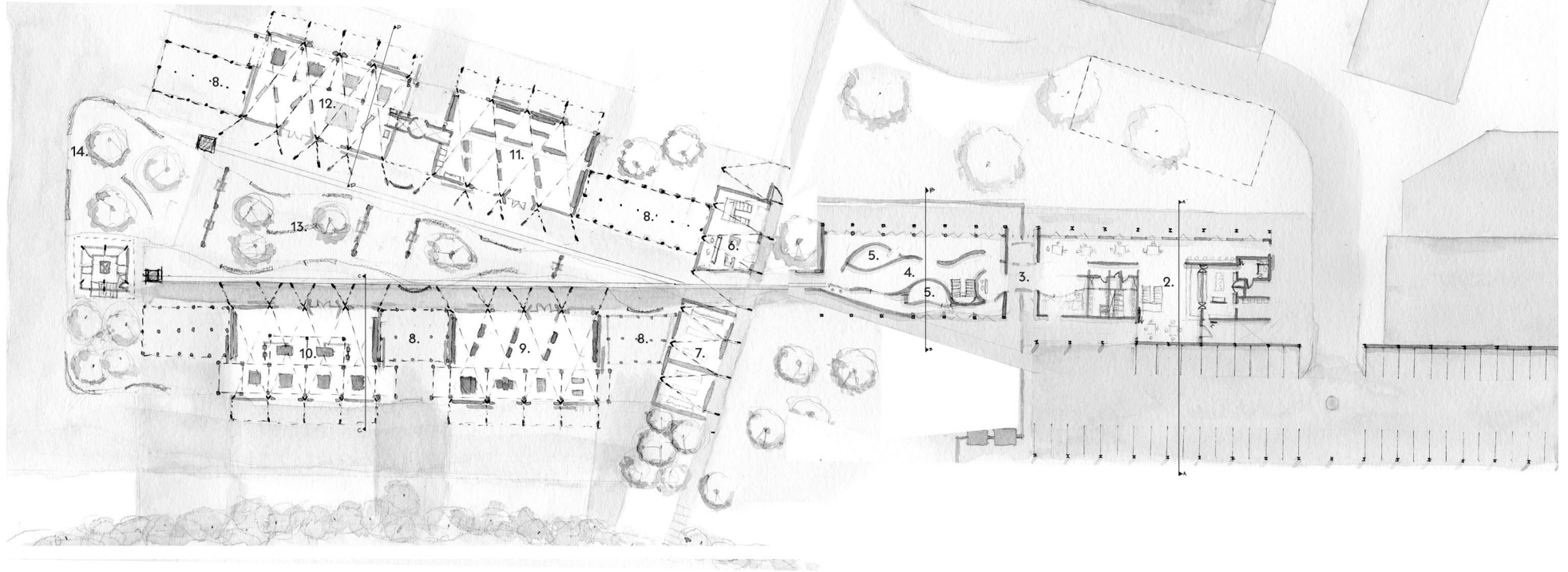


Figure 81: Interior development floor plan & outside space development (workers square, connection with river) (Author, 2021)



Figure 82: 3D Model Development (view from East) (Author, 2021)



Figure 83: 3D Model Development (view from West) (Author, 2021)



Figure 84: 3D Model Development (view from North) (Author, 2021)



Figure 85: 3D Model Development (Entrance building) (Author, 2021)



Figure 86: 3D Model Development (Material usage) (Author, 2021)



Figure 87: 3D Model Development (Material usage) (Author, 2021)



Figure 88: 3D Model Development (Material usage) (Author, 2021)

5

Towards a Final Design

5.1 Towards a final design

5.2 Technical synthesis



Figure 89: Watercolour of existing buildings and furnace at the Old tannery (Author, 2021)

The background of the slide is a light gray watercolor wash with various shades of gray and small dark specks, creating a textured, artistic effect. A thin black rectangular border is centered on the page, enclosing the text.

Towards a final design



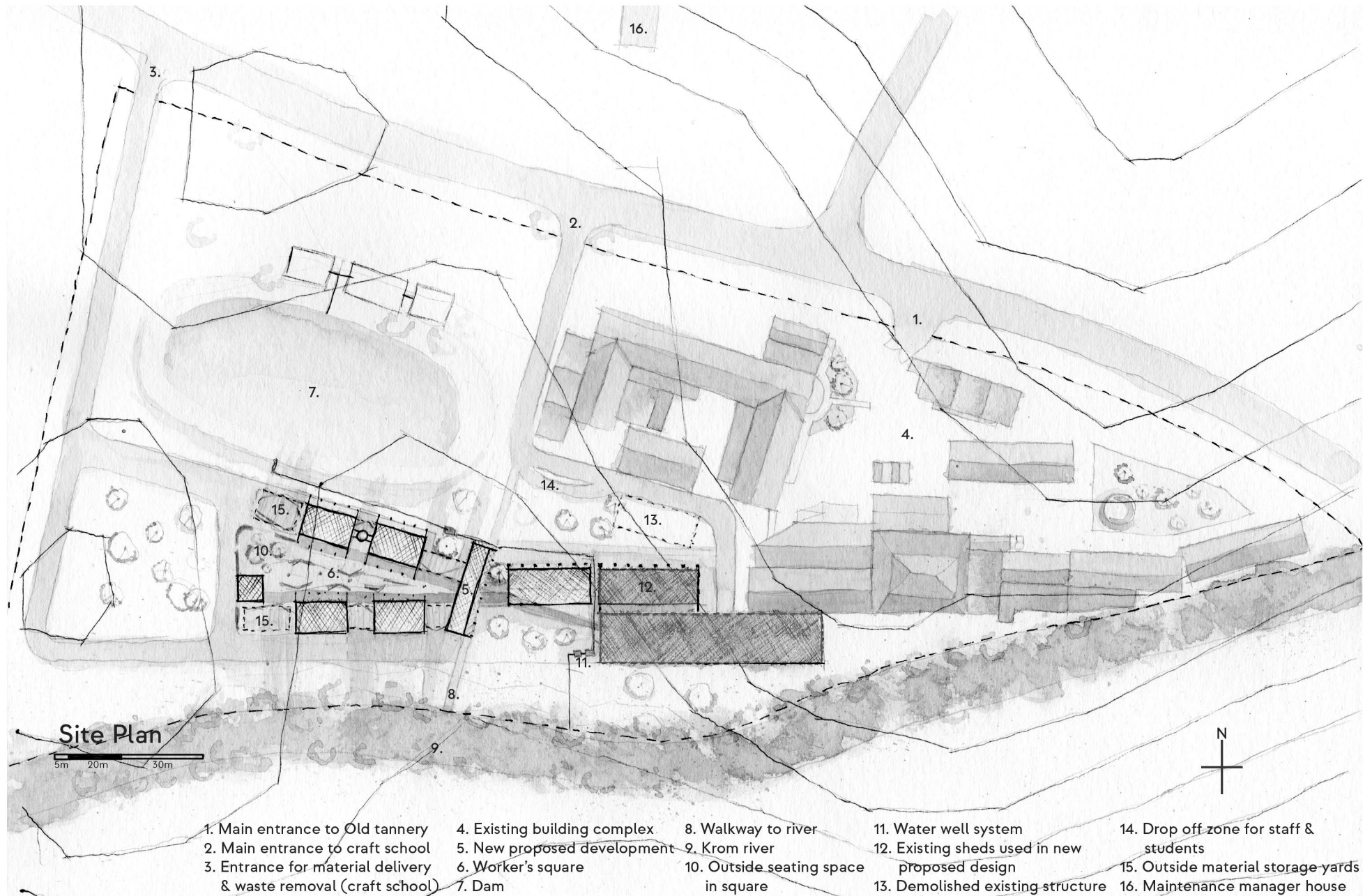
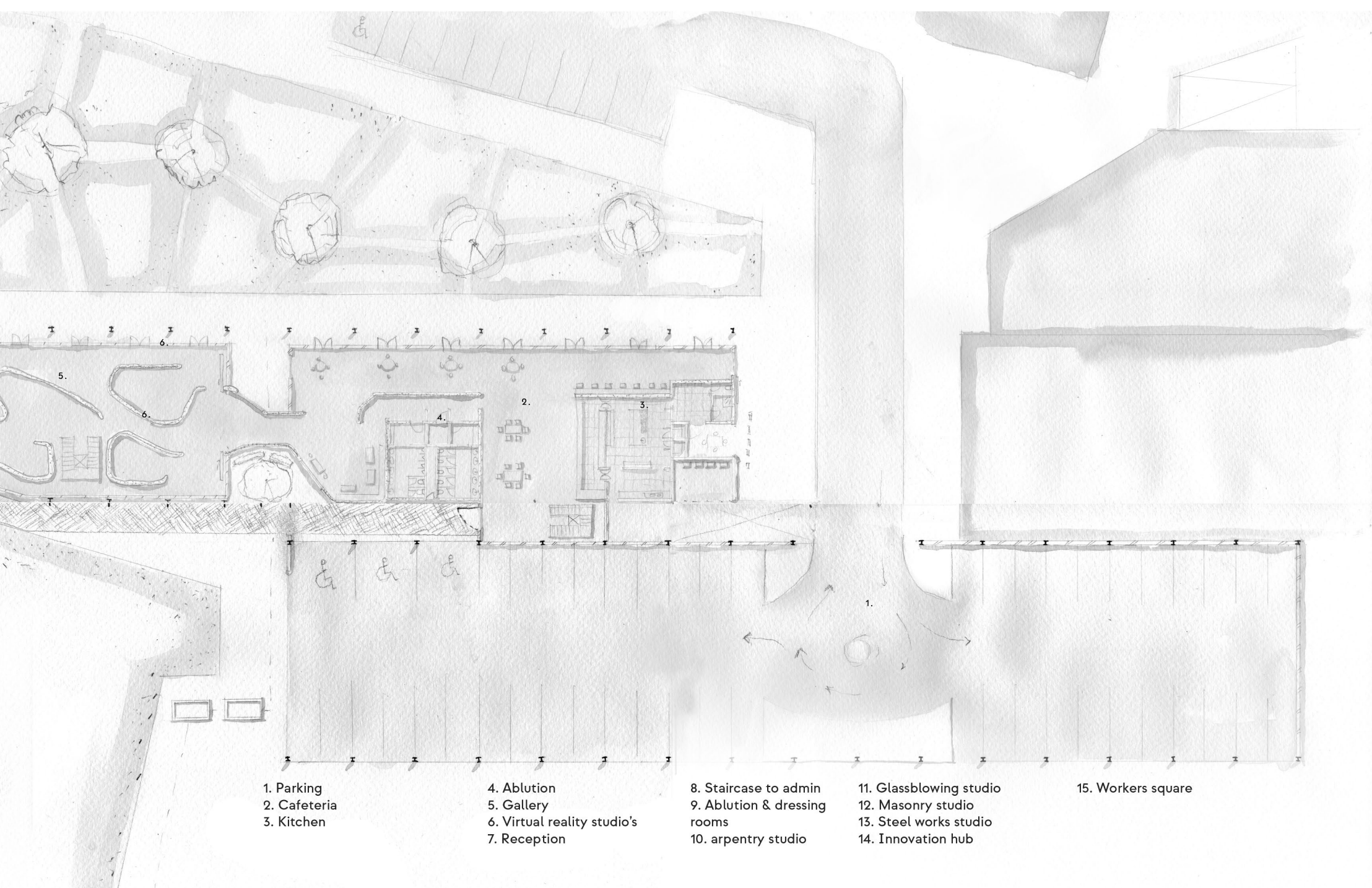


Figure 90: Final Site Plan (Author, 2021)



Figure 91: Final Floor Plan (Author, 2021)



1. Parking
2. Cafeteria
3. Kitchen

4. Ablution
5. Gallery
6. Virtual reality studio's
7. Reception

8. Staircase to admin
9. Ablution & dressing
rooms
10. arpentury studio

11. Glassblowing studio
12. Masonry studio
13. Steel works studio
14. Innovation hub

15. Workers square

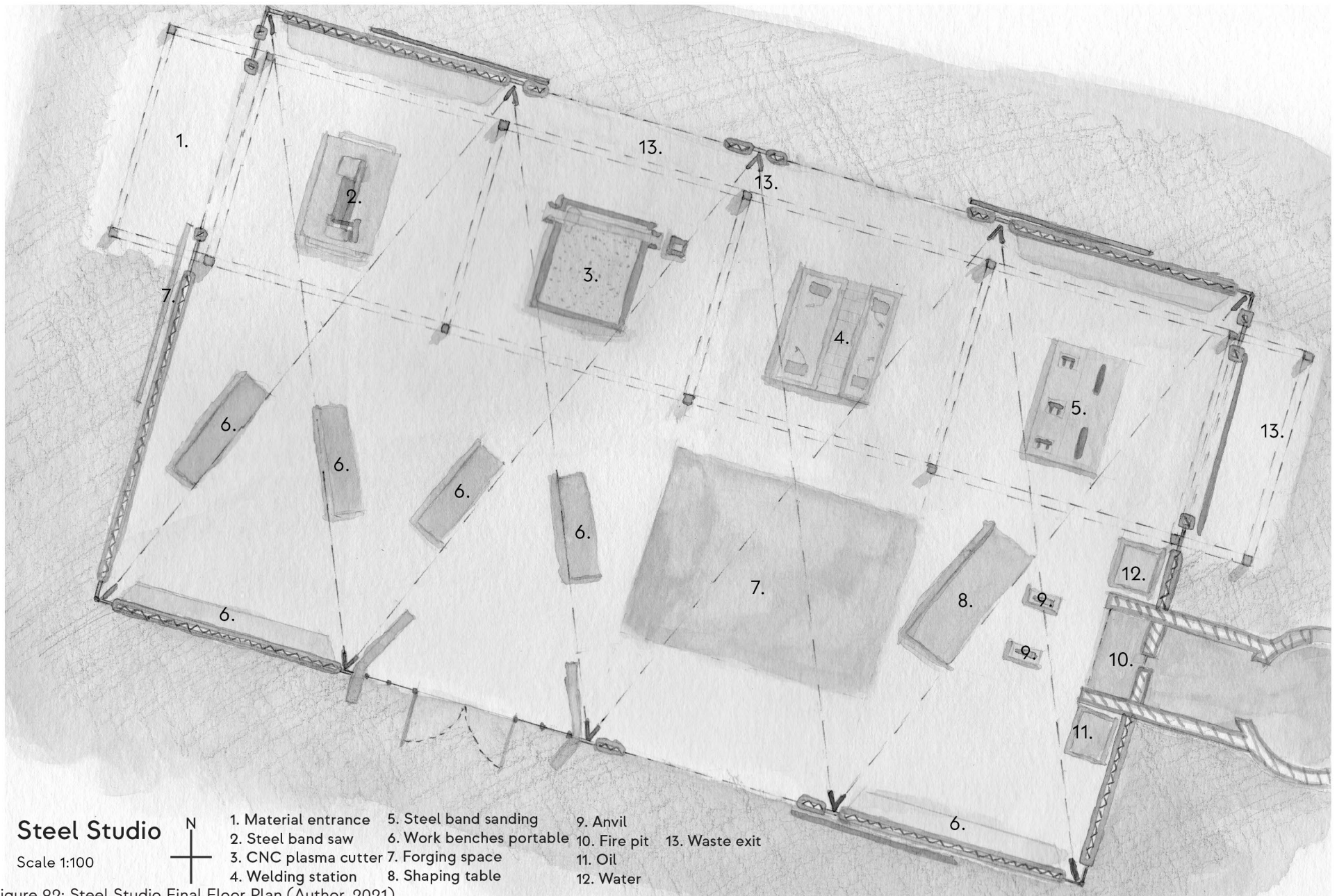


Figure 92: Steel Studio Final Floor Plan (Author, 2021)

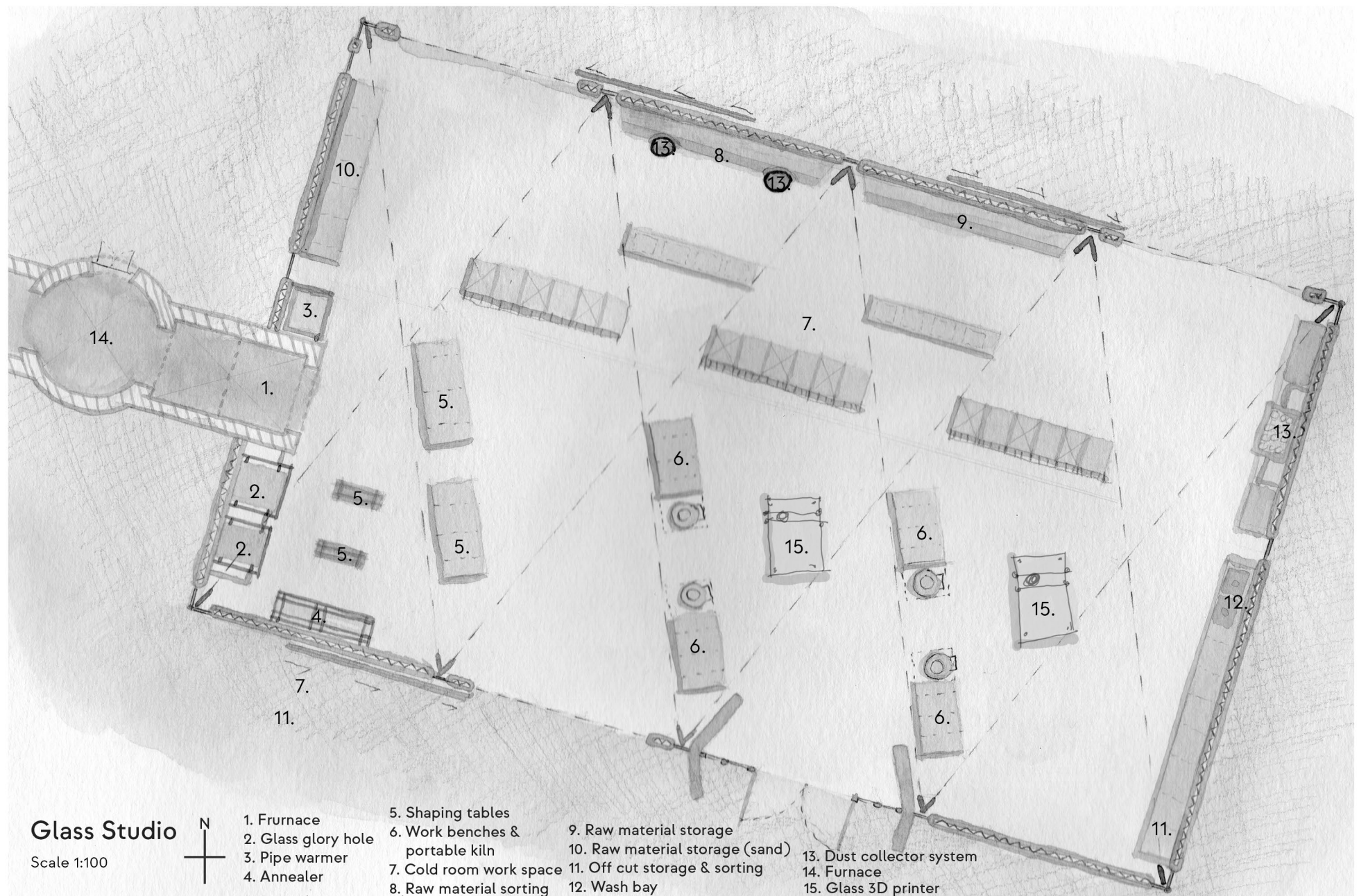
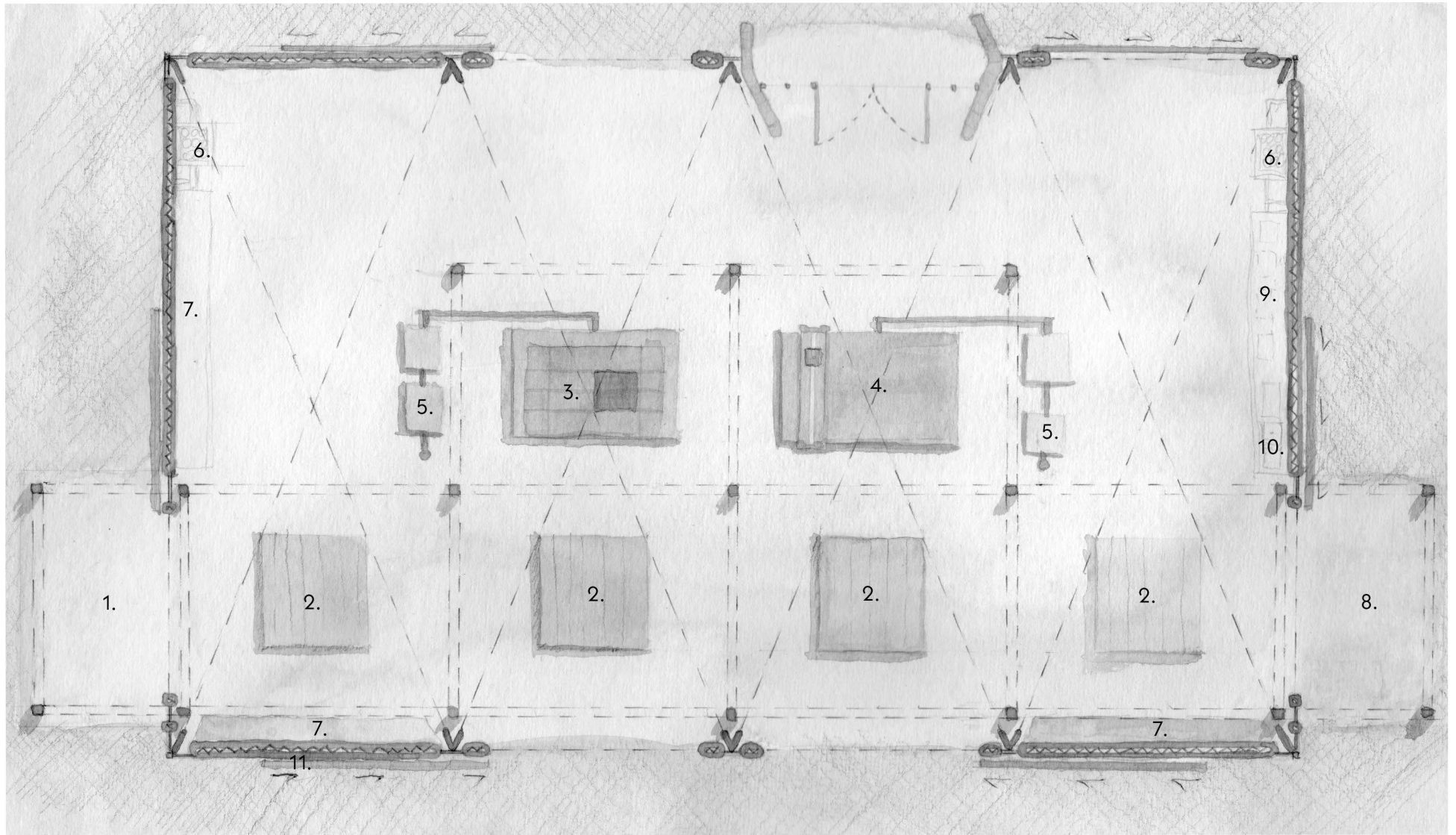


Figure 93: Glass Studio Final Floor Plan (Author, 2021)

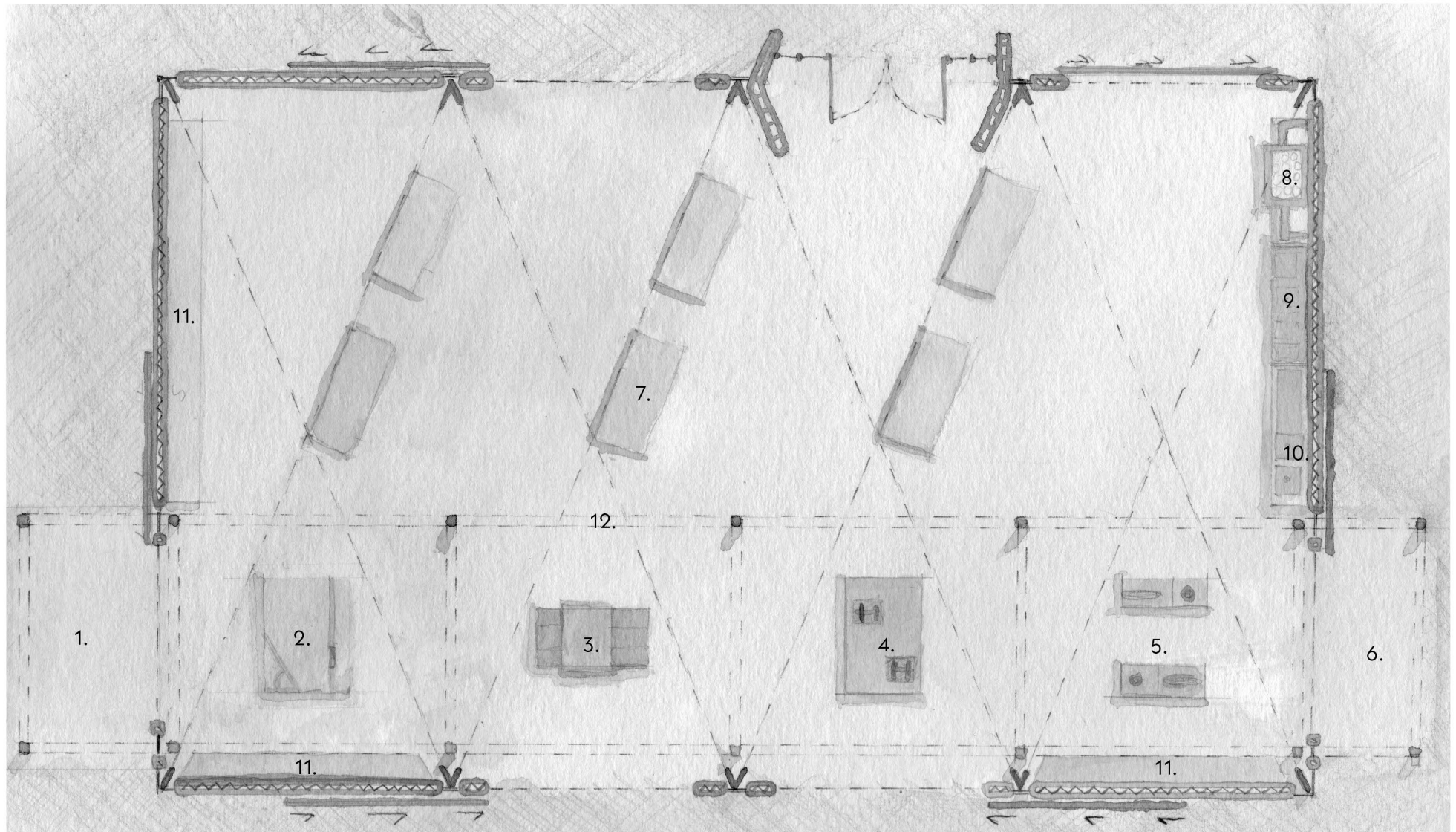


Carpentry Studio 

Scale 1:100

- | | | |
|----------------------------|--------------------------|-------------------------------|
| 1. Material delivery entry | 5. Water cooling systems | 9. Portable storage & vacuums |
| 2. Work benches | 6. Dust collector system | 10. Wash bay |
| 3. Stone cutting machine | 7. Storage | 11. Gantry system |
| 4. CNC carving machine | 8. Waste exit | |

Figure 94: Carpentry Studio Final Floor Plan (Author, 2021)



Carpentry Studio

Scale 1:100



1. Material delivery entry

2. Table saw

3. Jointer/planer

4. Mitre saw station

5. Band sander station

6. Waste exit

7. Movable work benches with storage

8. Walkway to river

8. Dust collection system

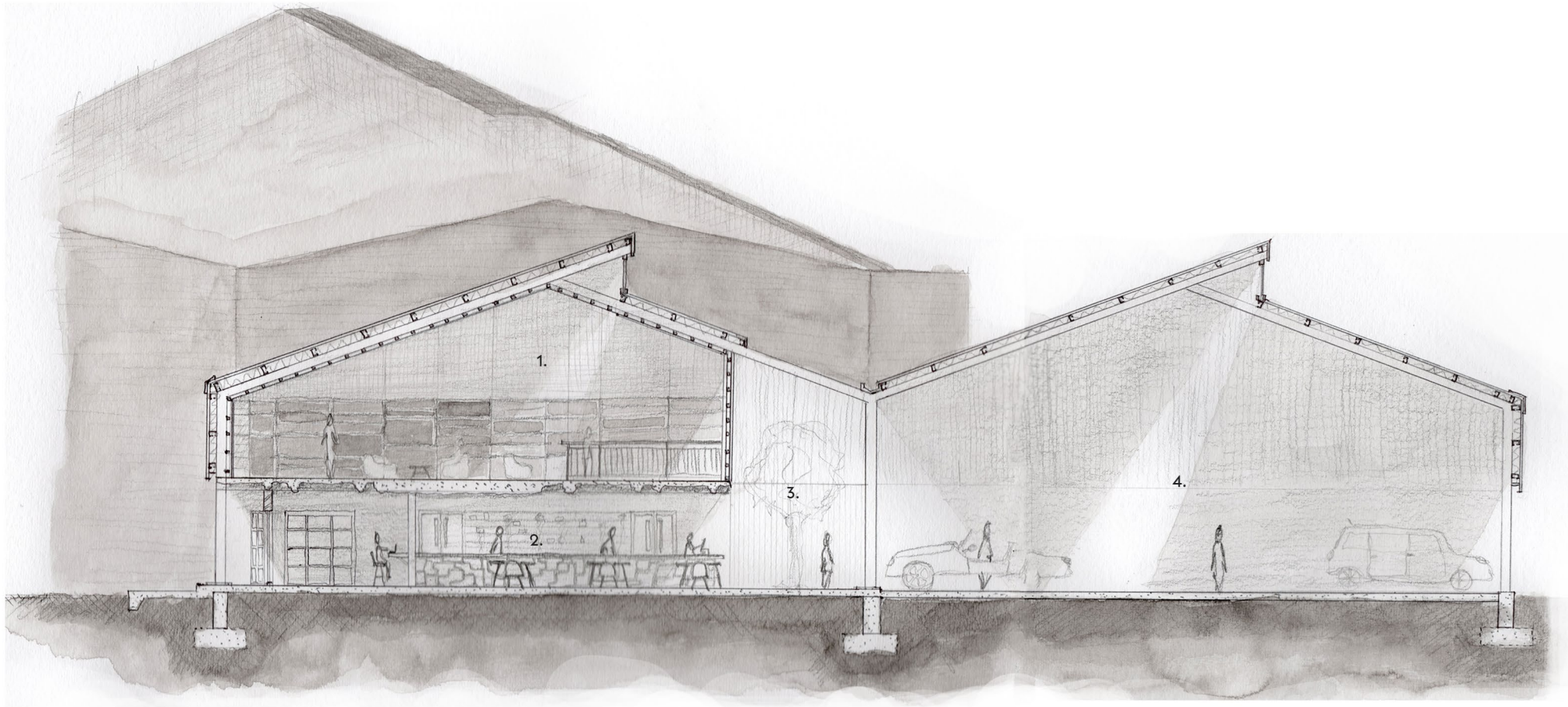
9. Portable dust vacuums & storage

10. Wash bay

11. Storage

12. Gantry system

Figure 95: Carpentry Studio Final Floor Plan (Author, 2021)

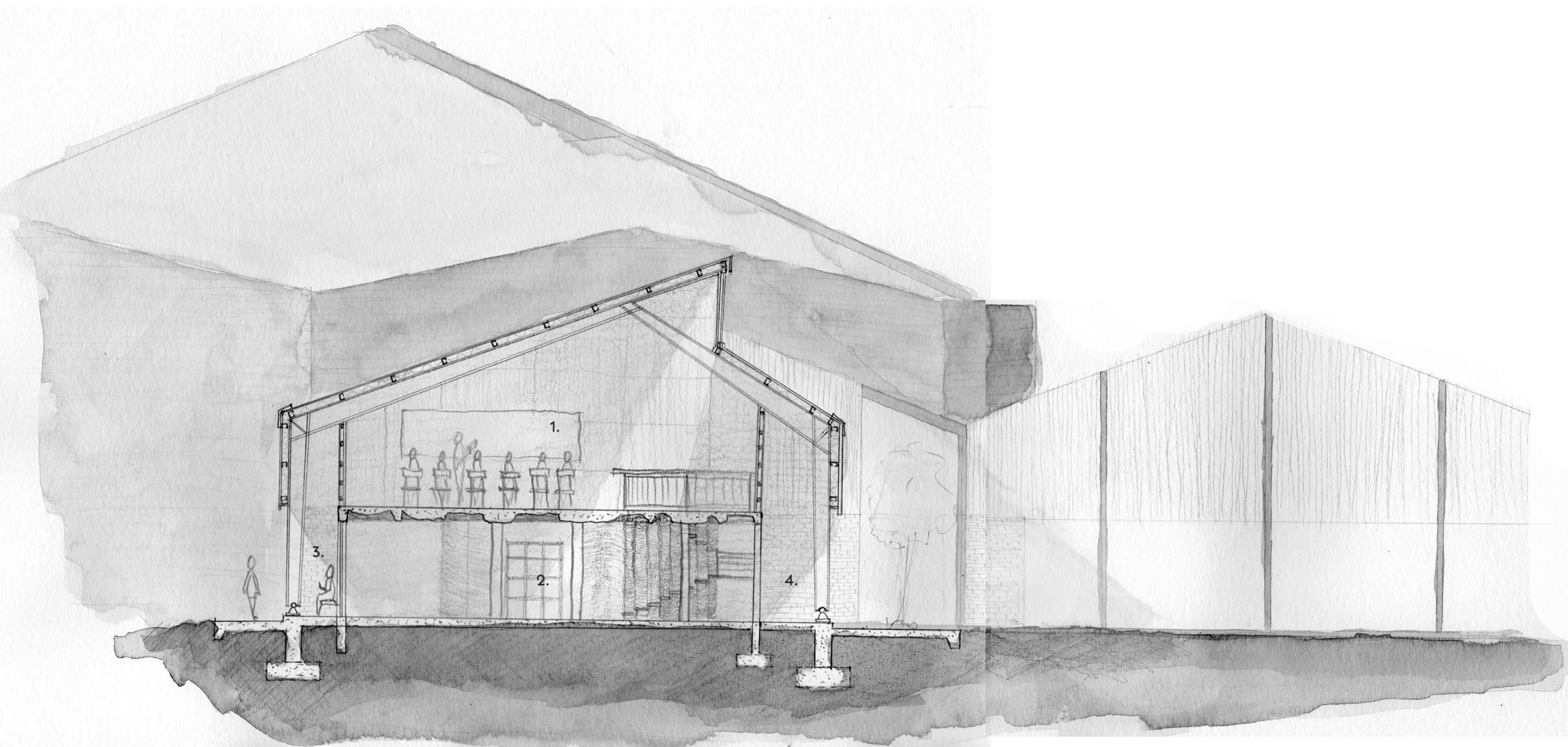


Section A-A

1.5m .5m 3m

Figure 95: Section A-A (Author, 2021)

1. Student Lounge
2. Cafeteria
3. Entrance to cafeteria
4. Parking

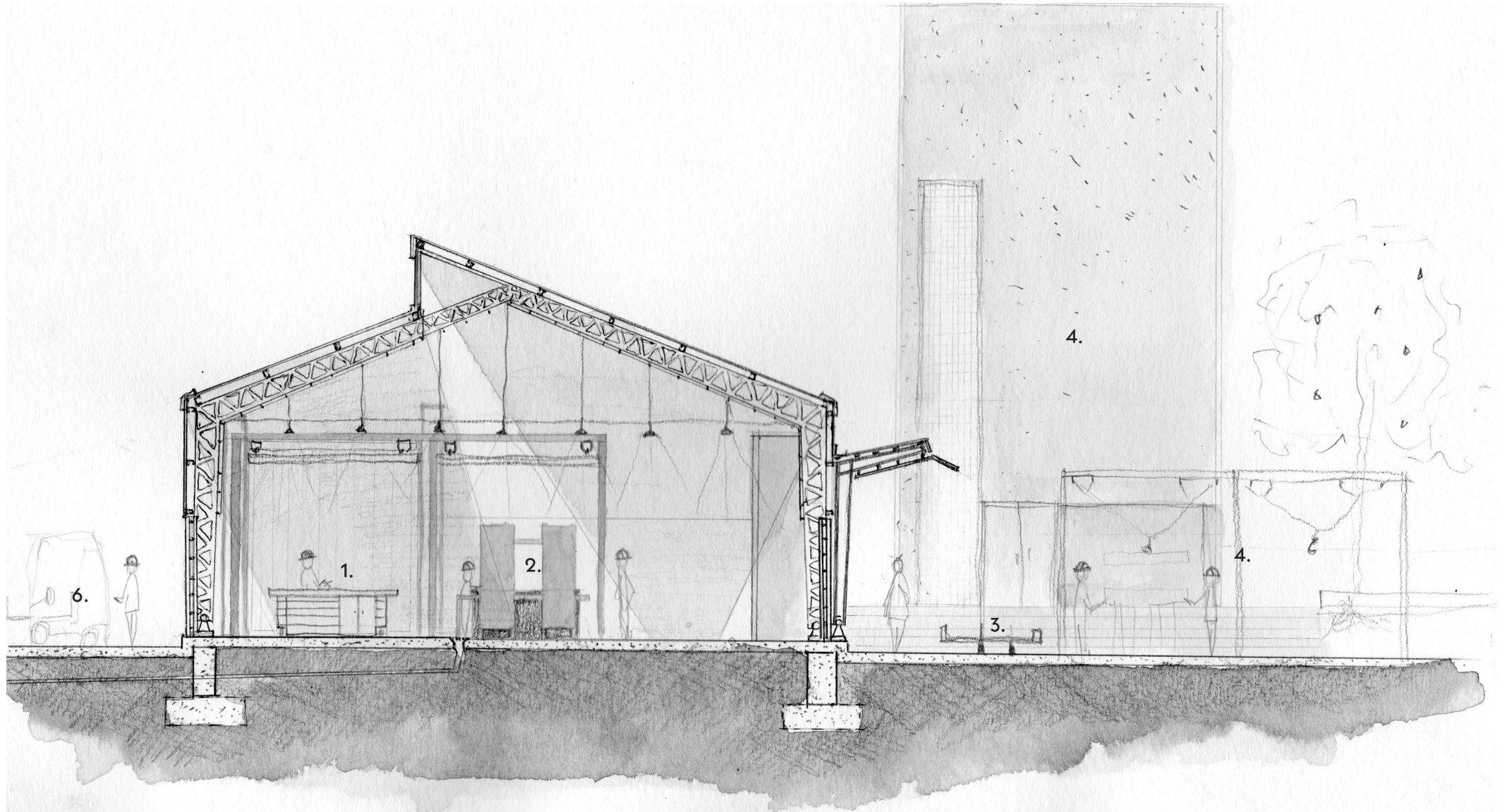


Section B-B

1.5m .5m 3m

Figure 96: Section B-B (Author, 2021)

- 1. Multi-functional hall
- 2. Gallery
- 3. Outside seating
- 4. Covered walkway

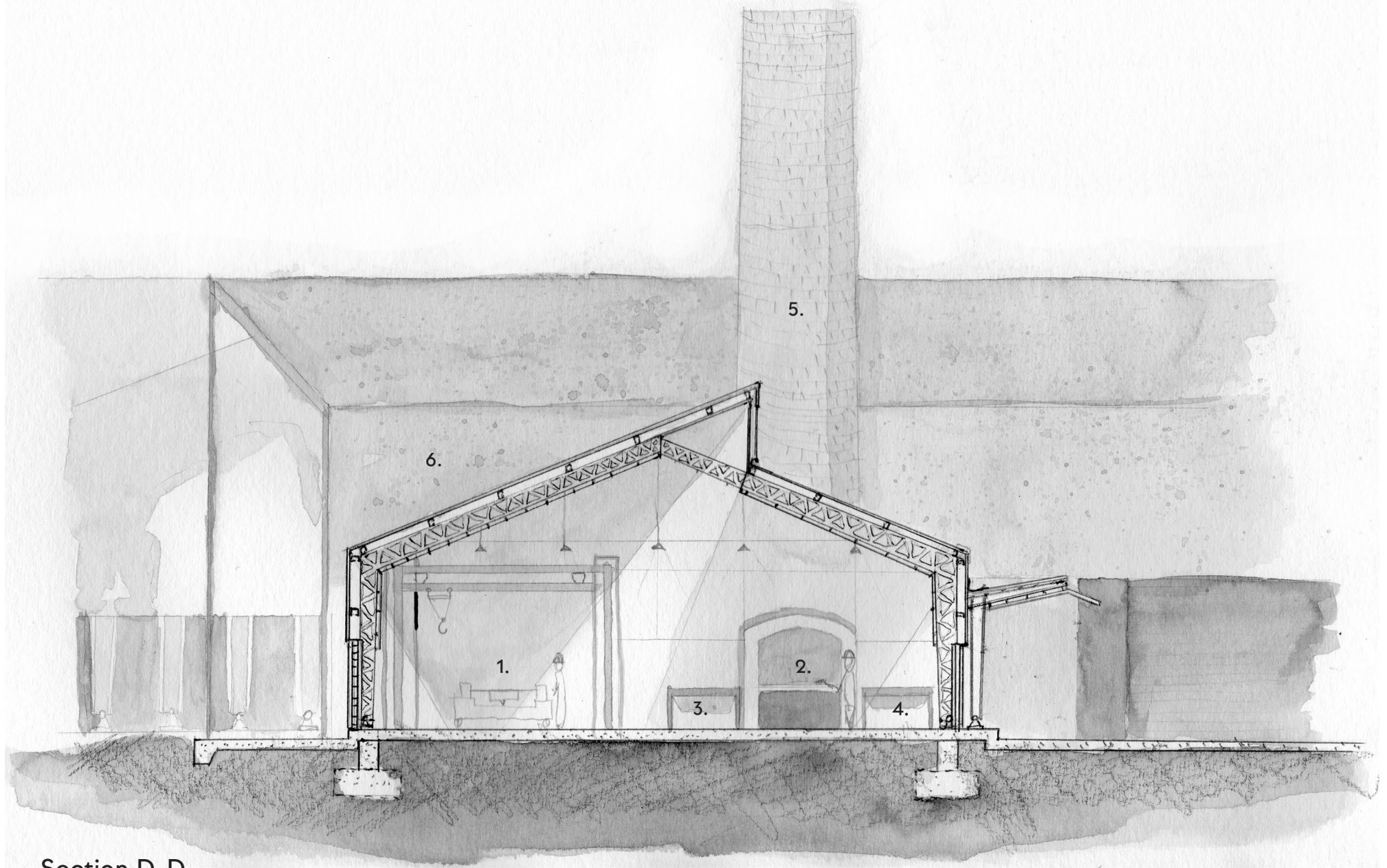


Section C-C

1.5m .5m 3m

Figure 97: Section C-C (Author, 2021)

- 1. Masonry studio work bench
- 2. Stone Carving CNC
- 3. Material/ Model track cart
- 4. Pulley systems in workers square

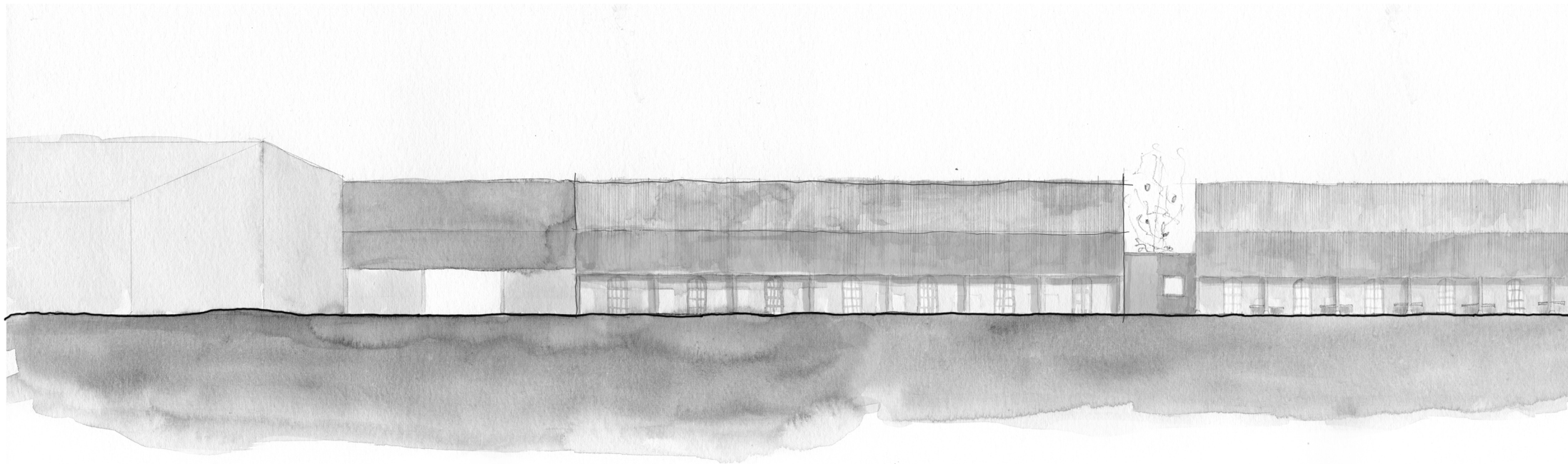


Section D-D

1.5m .5m 3m

- | | |
|----------------------|----------------------|
| 1. CNC Plasma cutter | 4. Oil |
| 2. Fire pit | 5. Furnace |
| 3. Water | 6. Entrance building |

Figure 98: Section D-D (Author, 2021)



North Elevation



Figure 99: North Elevation (Author, 2021)

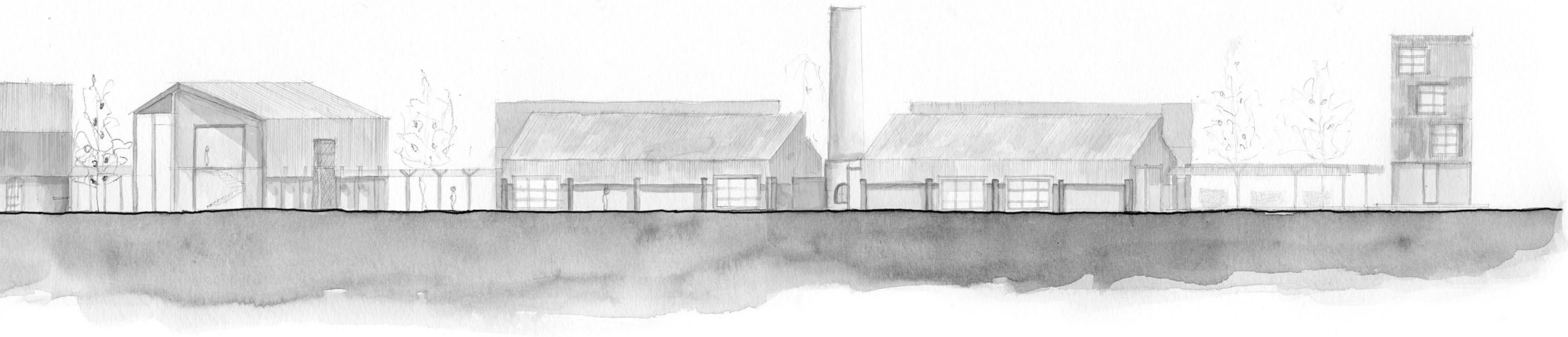




Figure 100: 3D Render (Author, 2021)



Figure 10-1. 3D Render (Author, 2024)



Figure 102: 3D Render (Author, 2021)



Figure 103: 3D Render (Author, 2021).



Figure 104: 3D Render (Author, 2021)



Figure 105: 3D Render (Author, 2021)



Figure 106: 3D Render (Author, 2021)



Figure 107: 3D Render (Author, 2021)



Figure 108: 3D Render (Author, 2021)



Figure 109: 3D Render (Author, 2021)



Figure 110: 3D Render (Author, 2021)



Figure 111: 3D Render (Author, 2021)



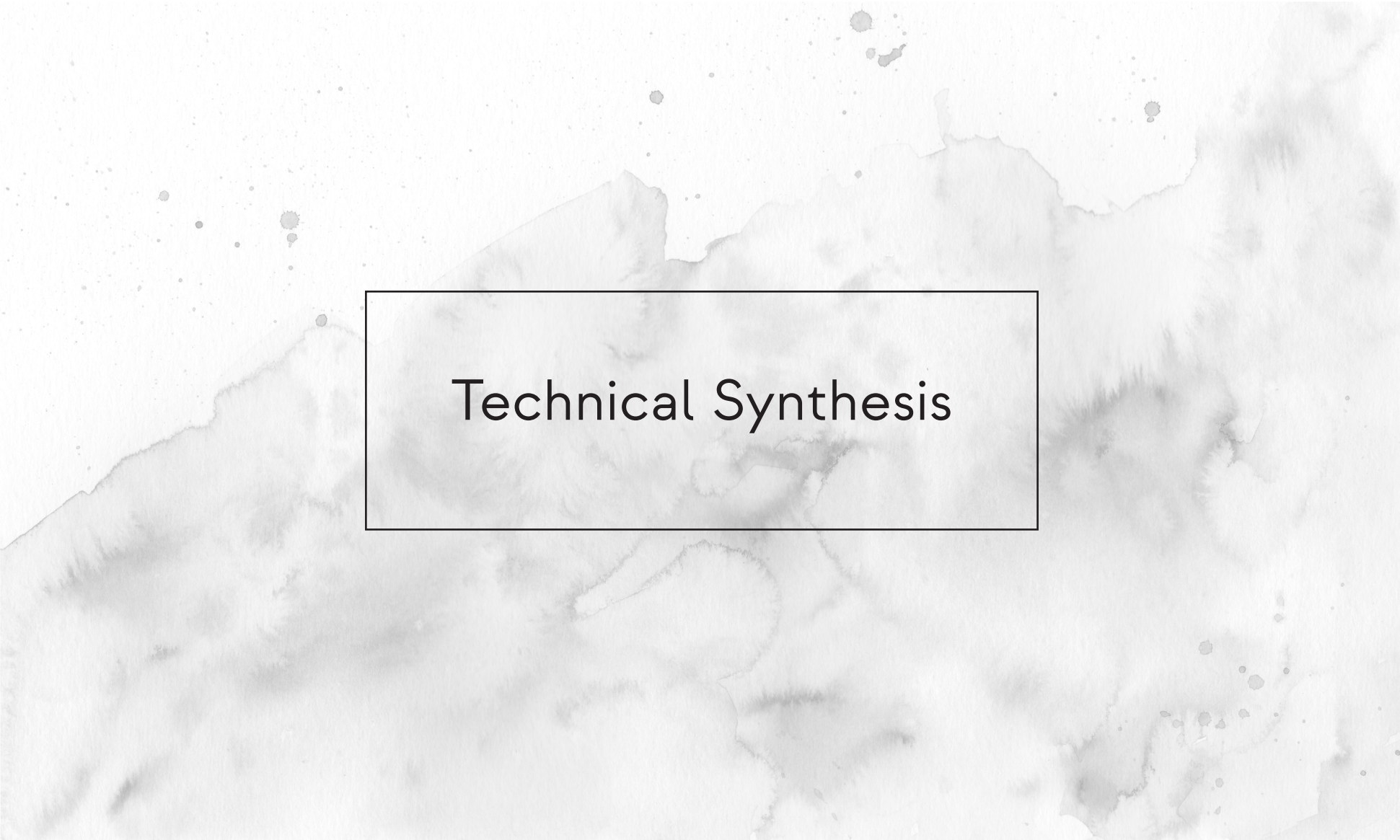
Figure 112: 3D Render (Author, 2021)



Figure 113: 3D Render (Author, 2021)



Figure 114: 3D Render (Author, 2021)

The background of the slide is a light gray watercolor wash with various shades of gray and small dark specks, giving it a textured, artistic appearance. A thin black rectangular border is centered on the page, enclosing the title text.

Technical Synthesis

Technical Report

The technical synthesis is a brief report explaining the basic structural system the craft college consists of. It will be divided into sections starting with the site conditions, secondly the conditions of the existing structures, thirdly the floor wall and roof systems and lastly materiality and sustainability.

Site conditions

The site contains vegetation such as Swartland alluvium fynbos and Western mountain karoo veld types (see figure 22 and 23). The top layer of soil contains 15% clay 750mm deep, but mostly consists out of sand and coarser gravel. In this specific area the lower ground consists of 50-100cm deep consolidated bedrock. The slope of the site is quite flat, it slopes between 0%-5% from north-east to south-west. This affects the type of foundation-chosen for the new structures. The chosen foundation structure is Pad foundations 1000mm deep.

Climatic conditions

Sun & wind direction

The length of the day in the Western Cape varies significantly over the course of the year. In 2021, the shortest day is June 21, with 9 hours, 54 minutes of daylight; the longest day is December 21, with 14 hours, 25 minutes of daylight. The predominant average hourly wind direction in the Western Cape varies throughout the year. The wind is most often from the north for 2.9 months, from May 13 to August 10, with a peak percentage of 35% on June 27. The wind is most often from the west for 2.6 weeks, from August 10 to August 28, with a peak percentage of 31% on August 27. The wind is most often from the south for 8.5 months, from August 28 to May 13, with a peak percentage of 65% on January 1. This affects the orientation of the buildings on site in terms of ventilation as well as Northern sun. Preferably the studios should not get direct sunlight.

Temperature, humidity & rainfall

The Western Cape province of South Africa has a Mediterranean climate. Which means it experiences quite hot summers and mild and rainy winters. In the summer months from December to March it is warm, sunny and dry in this area. During the months of October, November, December, April and May mostly good weather is experienced with pleasant average temperatures between 20°-25° degrees celcius. The following graphs shows the average temperatures, humidity and rainfall of Wellington. The building is placed about 50m to the North from the river as their is a 20m floodline.

Conditions of existing buildings

The structural conditions of the existing buildings is in emmaculate condition except for the roof sheeting that is still asbestos sheeting but will be replaced with the new corroded zincalume sheeting.

Floor structure

The floor structure should be able to bare quite heavy loads as this is an industrial site, therefore 220mm reinforced concrete surface bed's are cast in-situ and finished with a polyurethane epoxy finish.

Wall structure

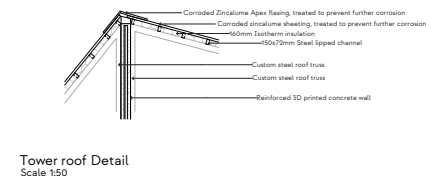
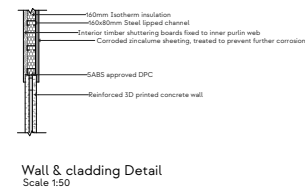
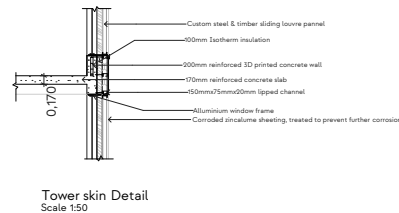
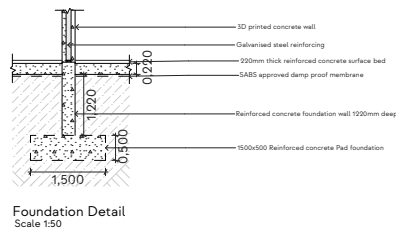
The wall structures are mostly infill walls inbetween the portal frame structures. These infill walls are 3D printed reinforced concrete supported by a raft beam foundation.

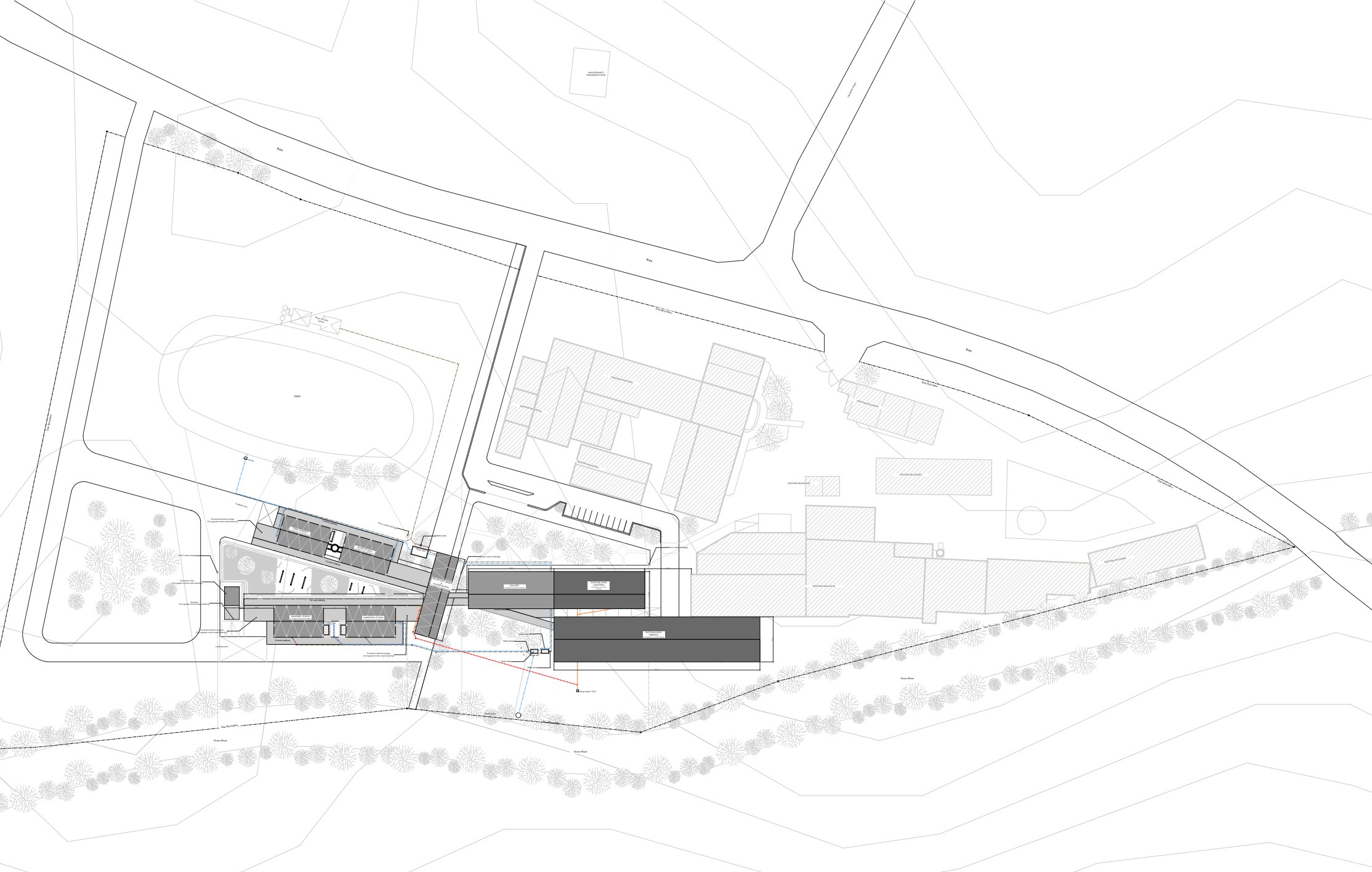
Main structural system

The main structural systems is custom plasma cut steel portal frames with cut stone column footings.

Roof structure

The roof structure is corroded zincalume fixed to 150x75mm steel purlin lipped channels with 100mm isotherm insulation.





Annerica Venter



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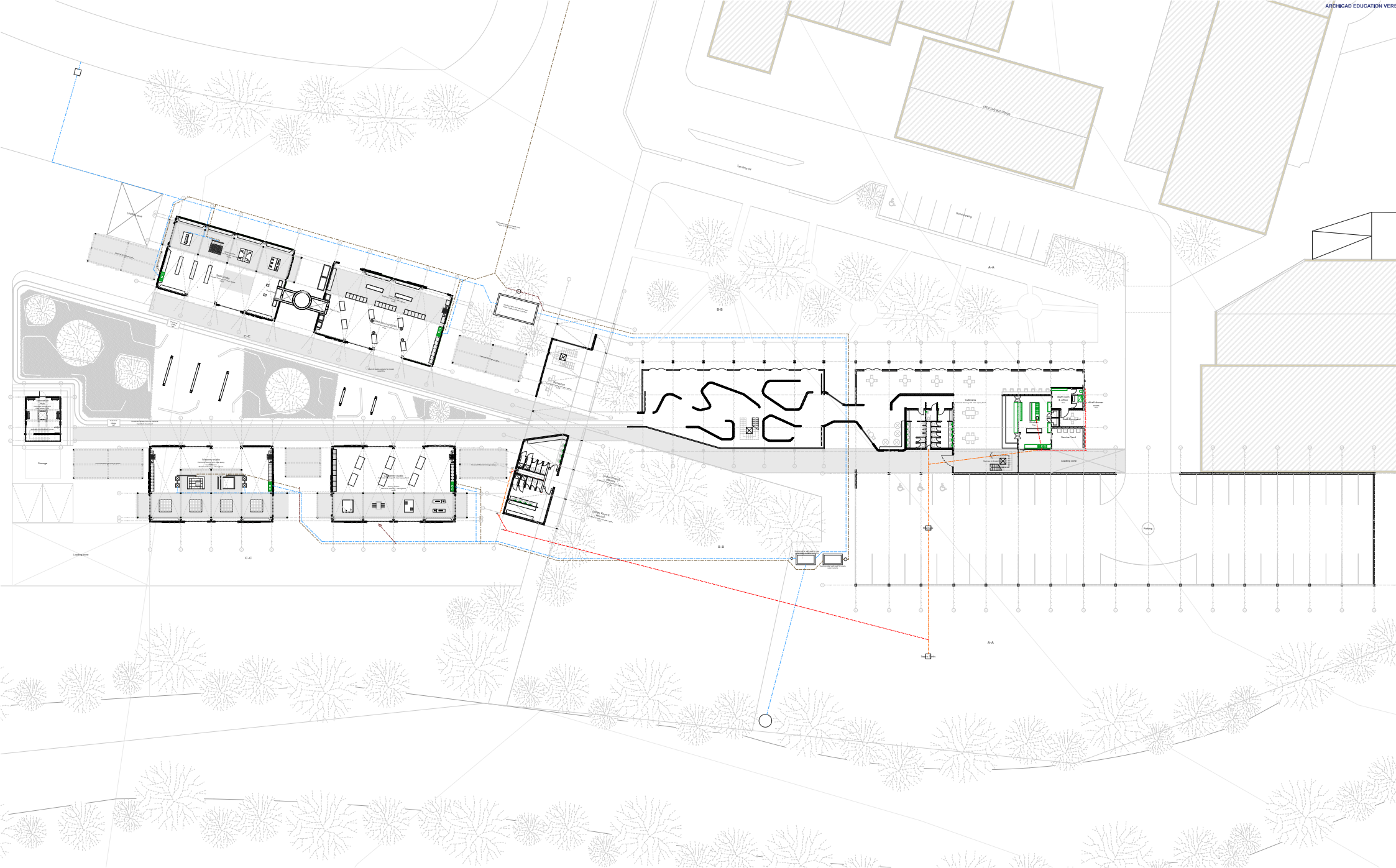
29/11/2021

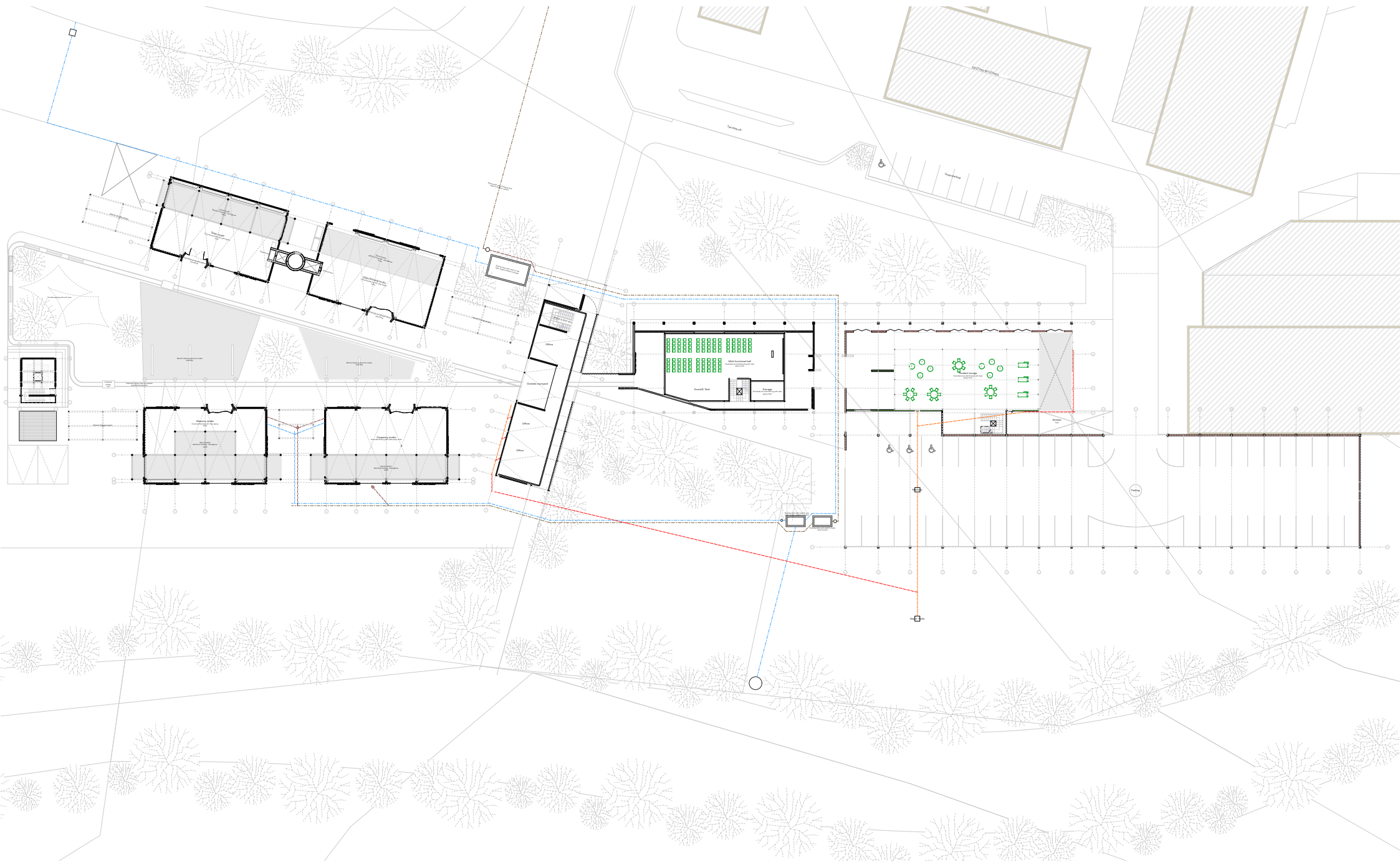
Craft College Wellington
Western Cape

Site Plan

Scale 1:500

General notes:

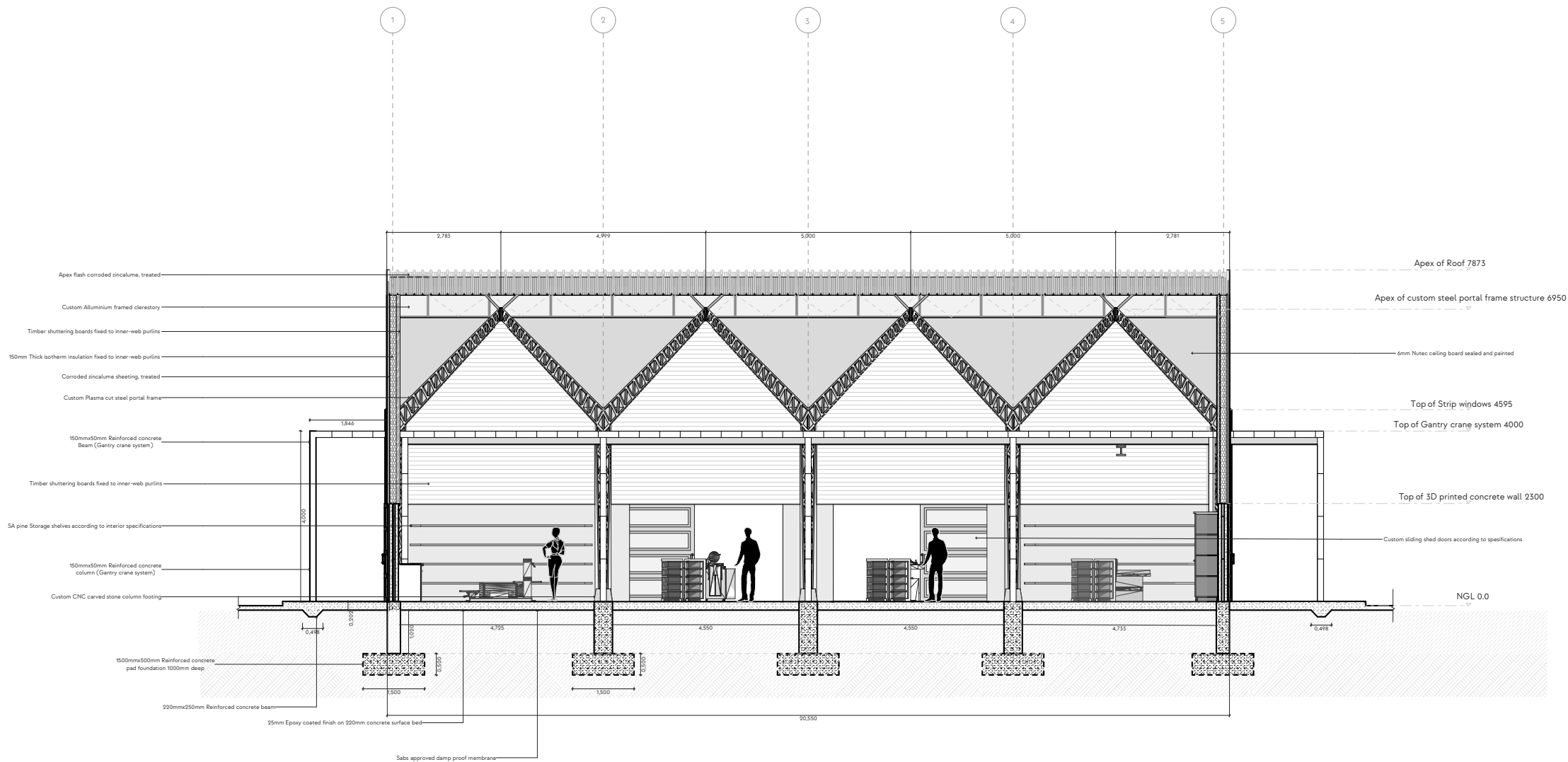


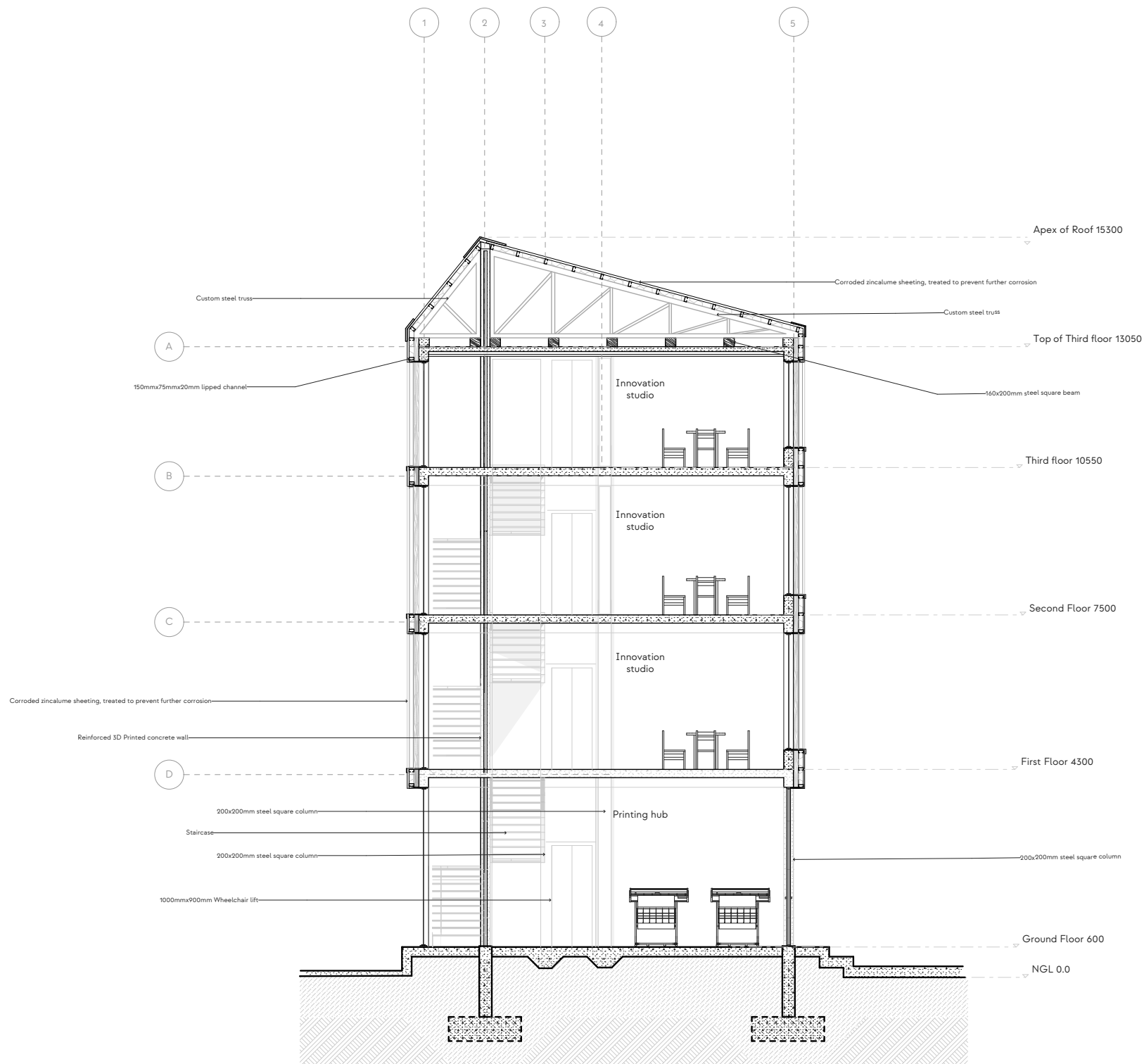


Annerica Venter 	29/11/2021	Craft College Wellington Western Cape First Floor Plan Scale 1:200	General notes:
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General notes:







Dissertation book

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Conclusion

An in-depth analysis of the site in section 2 helped to gain a better understanding of the existing buildings and site in order to react to it sensitively and appropriately. As the Tannery is a registered heritage site it was clear from the start that the reaction of the new proposed design towards the existing should be handled with great care and sensitivity. Therefore, the new development should build on the principles and clues of the old with a postphenomenological twist. The conceptual investigations in section 3 helped to inform the theoretical discourse of postphenomenology in the four craft topologies and how it can be applied to the structure and details of the new proposed design. The concept to form section especially part 2 is still in a developmental phase but will be completed in due time as it is mostly focusses on detail of structure. Concept to form part 1 explains the existing elements on the site seen as important to incorporate in the design. The layout of the scheme was reached quite quickly at the start with small changes during the year. The establishment of details in the concept to form part two gave quite some problems therefore still in process. However the design synthesis in section 5 one can see the reaction to the conceptual framework part one towards the existing site.

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