

THE LADE

PLAY CREATE GENERATE



A former Jute Mill re-designed into a sustainable family community centre to help tackle the issue of child poverty

n  **mimaci**



The Lade

A child-centred community hub which promotes the natural development of youngsters and aims to combat the rise of child poverty in the city. Set in a former Dundee Jute Mill, the large space encompasses a creative arts area, a co-working space and a community café whilst retaining many of the original features of the historic, industrial building. It features a large indoor play area, including different zones for infants, providing a sensory-rich environment that encourages free play.

A water channel running through the site, previously used to power jute production, is now an attractive focal point and gives the centre its name. The building is powered by a water wheel which sits upon this 'lade' and photovoltaic solar times on the centre's feature copper roof making it cost effective to run. The south facing derelict ground has been converted into a community orchard encouraging patrons to grow and tend their own food thus encouraging healthier lifestyles for families in the city.

The centre provides support, learning opportunities and social areas for both children and their carers allowing access to affordable childcare, work areas and networking with other families. As well as having a strong focus on nature and sustainability; the design aims to simulate a village community atmosphere which is often lost in our modern, urban landscape. As the saying goes; it takes a village to raise a child.

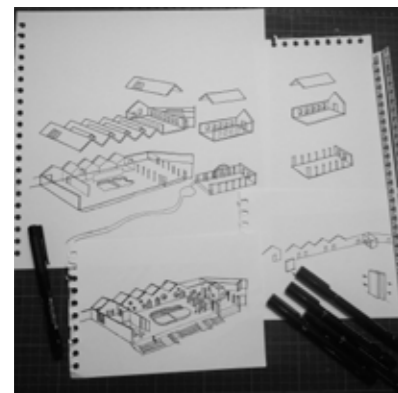
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Meet the Designer

Hello, I am Naomi McIntosh, but I promote myself under the name 'Nomimaci' for my design work. I have thoroughly enjoyed my time studying at Duncan of Jordanstone College of Art & Design, but I am now looking onto the next phase where I hope to be able to utilise all the skills I have learned and combine them with my own creative flair. I consider myself to be a very innovative and enthusiastic person. I love a good challenge being an effective problem solver who takes the initiative. I am diligent with a great eye for detail and bring energy and passion into all my design work.



I spent some time travelling and working before commencing my degree which has gained me skills in adaptability and experience working overseas as an ESL teacher. I am very family oriented and during my time studying I have been employed as a part time support worker. I feel this has given me a persuasion in designing for those often overlooked in society. As I am very environmentally conscious, I try to bring this into my design work using sustainable technologies where possible without sacrificing on aesthetics. I have a great passion for photography and have recently had some recognition for my photographic work. I try to incorporate this into my work where possible as I find it helps my design process. Overall, I would describe my design work as heartfelt, quirky and extraordinary, please view my website to find out more.



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Project Brief

The idea for doing this project derived from when I was doing my dissertation the previous semester. I was researching Dundee's child poverty crisis and how creative partnerships may provide resolutions to this worrying trend. My investigation included interviews with frontline workers in the third sector organisations who were doing their best to tackle the problem; to focus groups in local community centres where I spoke with parents whom these issues affected directly. A few themes had begun to arise during my study; extortionate childcare rates locking parents out of employment, children growing up without valuable life skills and access to outdoor play, and families living in isolation who did not have a support network. I decided for my thesis project I was going to design a family centre that would help address some of these issues or at least provide a reprieve for those facing these disadvantages.

DUNDEE'S CHILD POVERTY CRISIS AND THE SERVICES FIGHTING TO COMBAT THE PROBLEM



"We had a problem finding a place to store our stock. There is no support for people who start up charities, no signposting between services and a general lack of funding and resources"

- Jordan Butler
Founder of Togs for Tots clothing and equipment bank



"Dundee has a high level of poverty which is why there is such high demand for us but we need a venue in which to provide our services."

- David Dorward
Founder of Dundee Bairns Fun & Food Programme

Community Centre Focus Group
November 2019

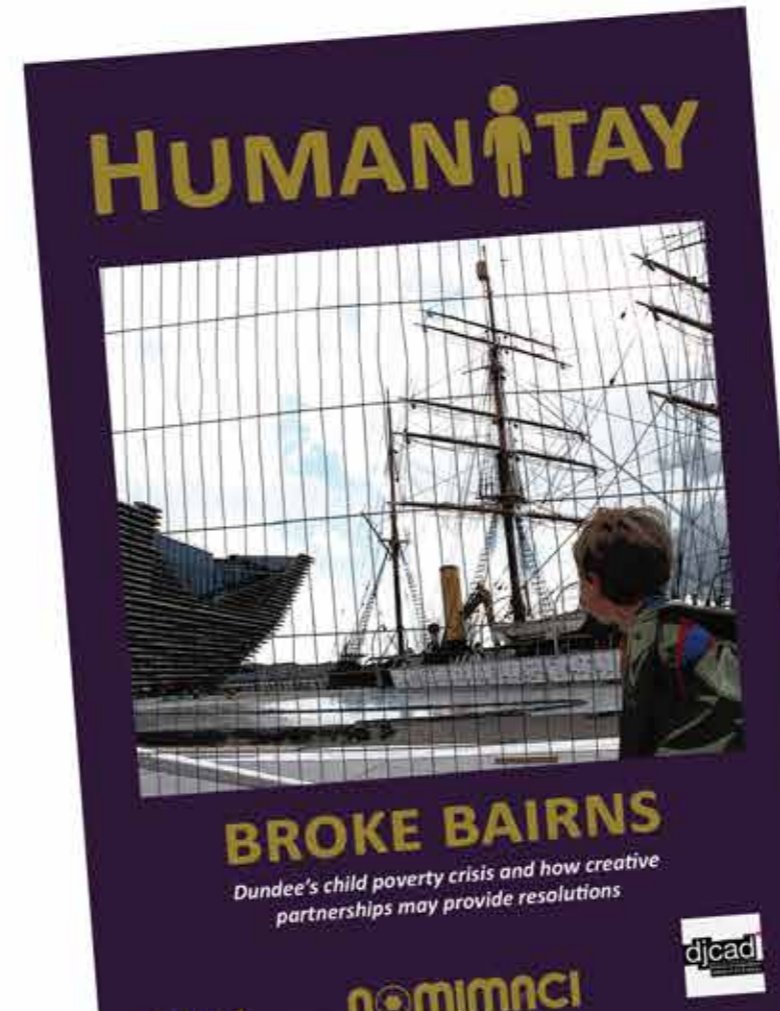
"I would like to get company with other adults and not just be stuck at home with the kids all the time."

"It would be great if there was a big central family centre in Dundee with lots of activities on"



"Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged and approved in the societies in which they belong."

-John Dickie, Sociologist and founder of Child



CHILD DEVELOPMENT & PSYCHOLOGY

For the first part of my research I explored child development and psychology. Early childhood experiences can have a lasting impact on their development; I discovered that significant stresses in the caregiving environment can have lifetime consequences. These can include learning capacity as well as poor physical and mental health. Child development is an interactive process and despite hardships children can thrive with positive influences, opportunities and supportive relationships.

My research led me on to the pioneering work of Maria Montessori, an Italian physician and anthropologist who devoted her life to understanding how children develop socially, intellectually, physically, and spiritually. Her methods include allowing children to make creative choices in their own learning; working in groups and individually to develop their maximum potential.

I also looked into the work of Loris Malaguzzi, who was an Italian educator and philosopher. He developed the Reggio Emilia approach, a child-centred early educational philosophy that states; 'children are powerful and capable individuals, with the ability and desire to construct their own knowledge.' Although a similar approach to the Montessori method, the Reggio Emilia approach is different in that it places more emphasis on play, the creative arts and modern day technologies.

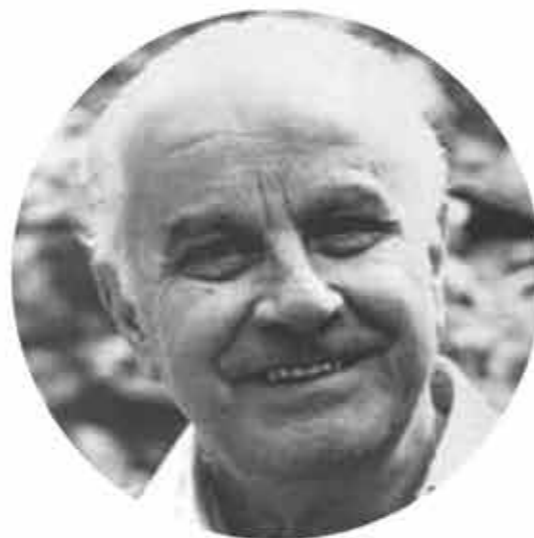


“Children are human beings to whom respect is due, superior to us by reason of their innocence and of the greater possibilities of their future... Let us treat them with all the kindness which we would wish to help to develop in them.”

- Maria Montessori

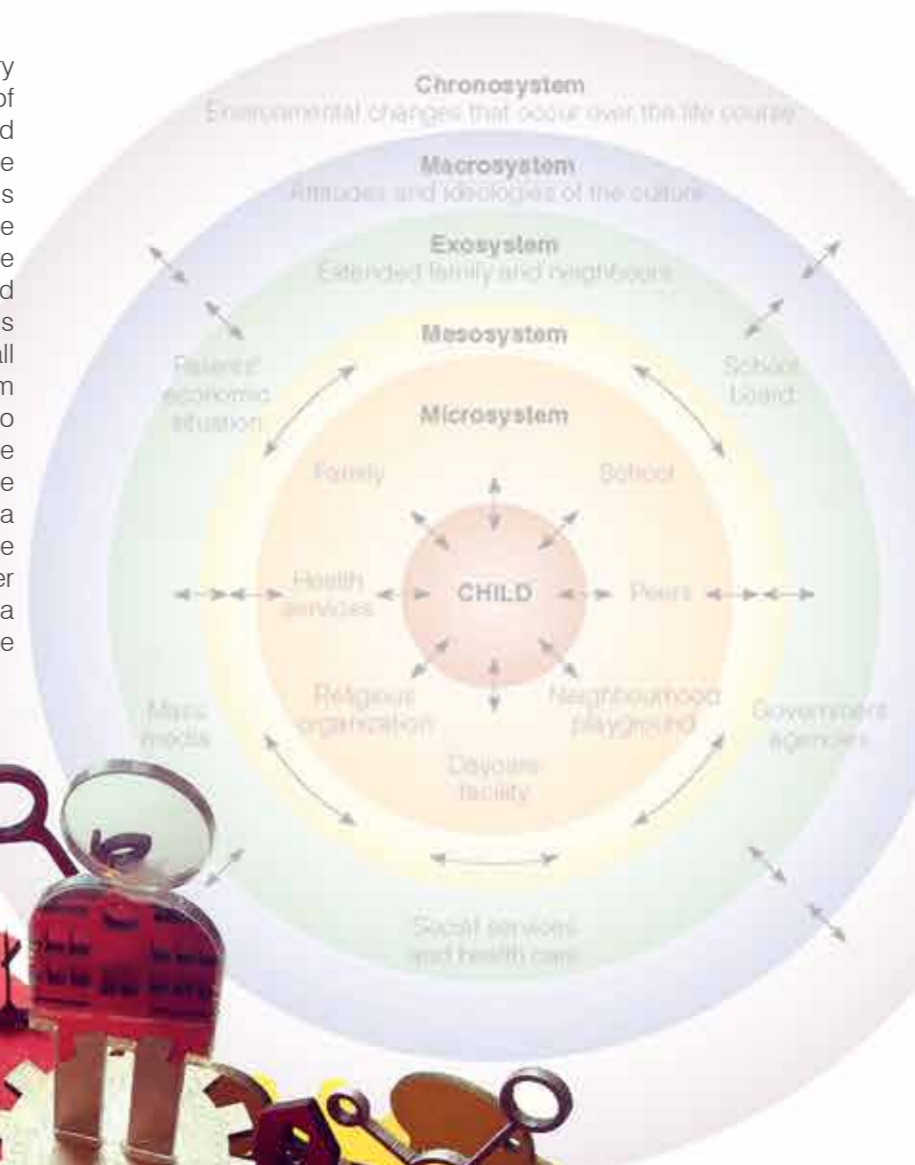
“Creativity becomes more visible when adults try to be more attentive to the cognitive processes of children than to the results they achieve in various fields of doing and understanding.”

- Loris Malaguzzi



BRONFENBRENNER'S ECOLOGICAL SYSTEMS THEORY

Bronfenbrenner's Ecological Systems Theory explains how the fundamental qualities of children and their environments interact and influence how they develop. According to the theory, children are enmeshed in various ecosystems, from the most intimate home ecological microsystem to the more expansive macrosystem which includes society and culture. Each of these ecological systems interact with and influence each other in all aspects of the children's lives. I used this system to base my emotive model on but equating it to different cogs and gears turning in a machine and in turn influencing each other. All of these different factors that can contribute to how a child thrives in the environment in which they are in. While little can be done about the greater macrosystem, small changes giving a child a step up near the centre of the machine can make a huge difference to their overall lives.



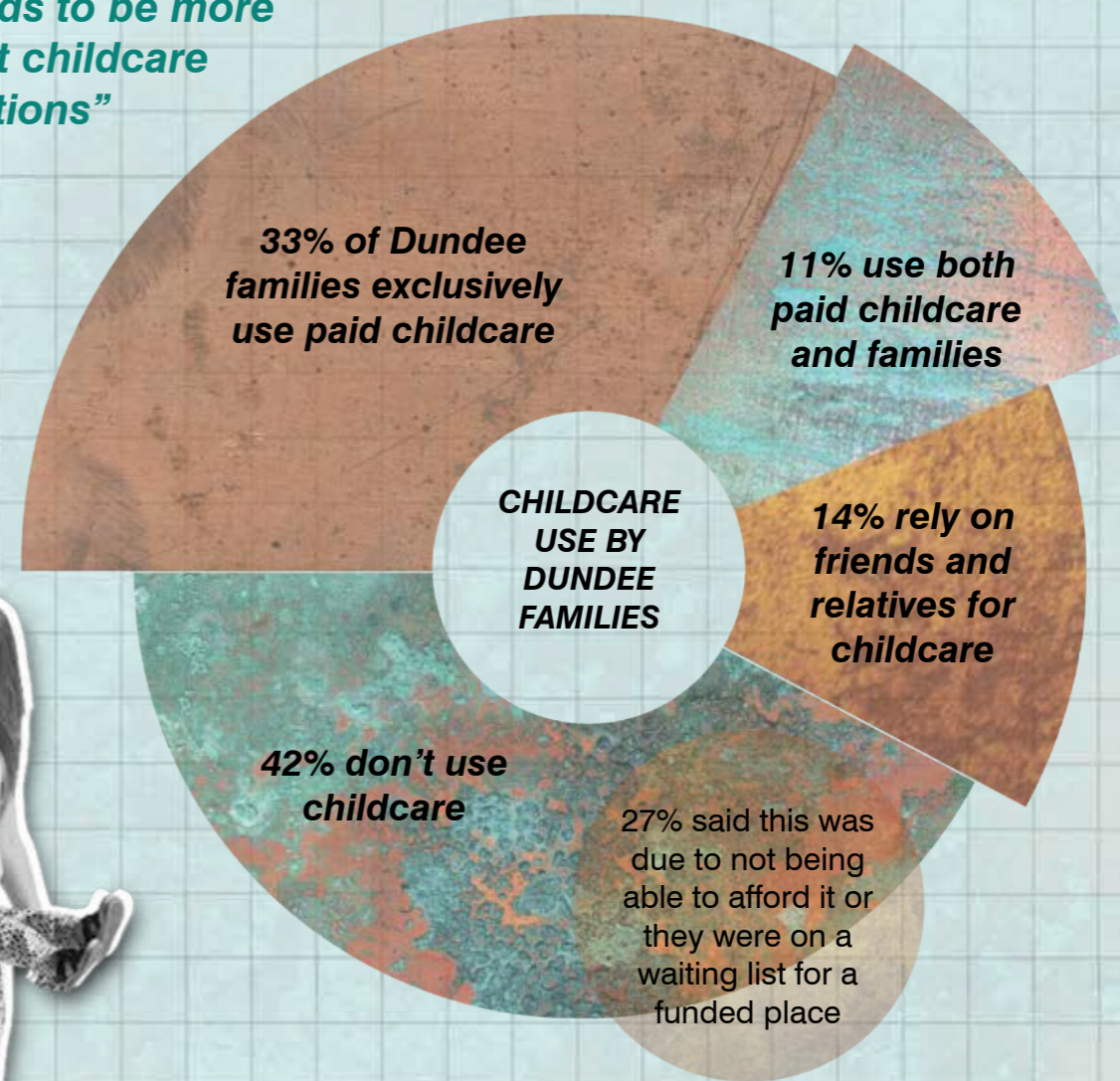
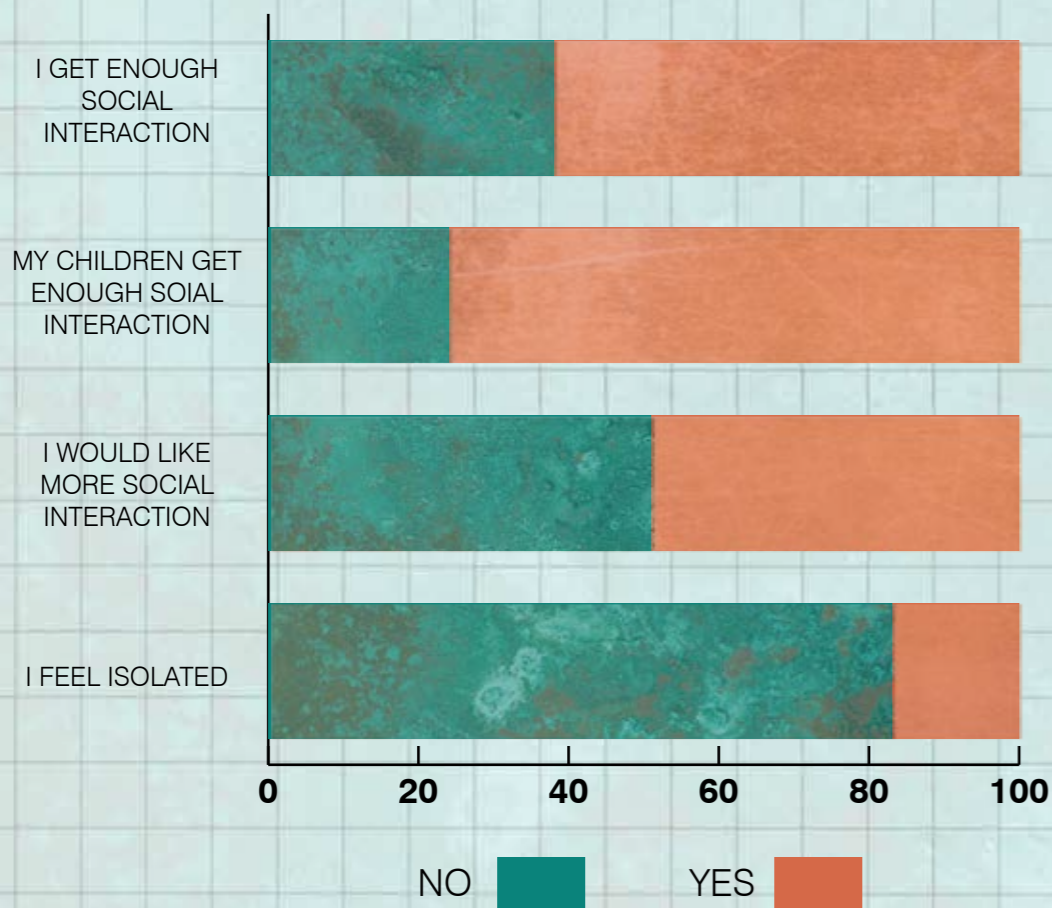
Dundee Families Survey

I carried out a questionnaire for families with young children living in Dundee asking them various closed and open-ended questions about some of the themes which had arisen in my research so far. The survey was carried out online and in person and there were 50 respondents from a range of socio-economic backgrounds from different areas across the city. These are some of the reactions I felt were most relevant to my project and the results of the main themes including social interaction, childcare, family health and environment.

53% of respondents would like their family to be more healthy

“There needs to be more low cost childcare options”

SOCIAL INTERACTION



“We don't use childcare as it's too expensive, my husband and I have to work alternating shifts”

28% don't feel safe in their neighbourhoods

33% are unable to access all the facilities and services they require

16% have no access to a garden or outdoor space

26% of families live in unsuitable housing



“A lot of the baby groups are difficult to reach if you don't have a car.”

TOP FAMILY ATTRACTIONS

For the first few months of the project I had been compiling a list of some of our best family days out in order to establish what makes a family attraction good and why. These involved visiting many places of interest across Scotland. I made up an initial shortlist based on what places had the best facilities for all the family including pram access, baby changing, rest areas and what places were free entry or good value for money. Most importantly we wanted to find out what attractions were most effective at keeping children of different ages occupied for most of the day and which places were definitely worth visiting again. The overall final choices were then picked by my young judges based on their favourites.

THE JUDGES



ZANDER AGE 2
Very active; likes being outdoors, nature and sensory play

CAELAN AGE 8
Easily bored; likes arts & crafts, science and technology

1 **GLASGOW SCIENCE CENTRE**
Lots of interactive displays and play zones suitable for all ages
BEST: Making lego water dams
WORST: Entry fee



3 **FALKIRK WHEEL**
Good for something different to do with the kids. Interesting attraction, nice boat ride, playpark area
BEST: The boat ride
WORST: Expensive family day out



5 **SCOTTISH DEER CENTRE**
Based in Cupar this wildlife park has nature and play areas.
BEST: Feeding the animals, tree top walk, the sand pit
WORST: Only suitable in good weather



2 **GLASGOW RIVERSIDE MUSEUM**
Free entry, impressive architectural forms from Zaha Hadid and a great day out for transport enthusiasts!
BEST: Roleplay street
WORST: Very busy



4 **THE V & A MUSEUM, DUNDEE**
The new design museum is on our doorstep so great for a rainy day!
BEST: Art & crafts workshops, free entry, interesting architecture
WORST: Not much to see inside



6 **SCOTTISH NATIONAL MUSEUM**
Best free attraction in Edinburgh, great for a rainy day and lots of things to see and learn about.
BEST: Interactive exhibitions
WORST: Not so much to do for younger children



Most of the family attractions we visited included large, airy interior spaces with any smaller areas partitioned off. The Glasgow Science Centre and the Riverside Museum also had large glass facades allowing plenty of light in as well as good views across the River Clyde. Zaha Hadid's angular zig-zagging roof forms create another level of interest at the Riverside museum that were loved by the children as well. Another noteworthy highlight was the exhibition tunnel which we used to go through on the way to these attractions, creating a big sense of excitement for both of the children. The big open atriums of both the V & A Museum and the National Museum of Scotland also create an exciting spatial visitor experience when entering the building.

CHILDREN'S CO-DESIGN WORKSHOPS

The MAXwell Centre



The Maxwell Centre is a community hub based in Dundee's Coldside area which aims to improve the quality of life of local residents through support and empowerment. I co-ordinated two children's arts & crafts workshops with the help of the community centre's youth workers to discover what the children felt was important to include when designing a family-based community centre. These workshops were run at the Maxwell Centre after-school clubs on the 22nd and 23rd of January 2020 and included groups of children aged 5-10 years.

The workshops commenced with refreshments while I introduced myself and what I was doing. For the ice breaker exercise I got the children to create paper doll characters of people who might use the community centre. Once we had made these we brainstormed and discussed the needs and wants of these characters and what facilities could be in place for them. The children then worked in groups and individually to design what a new family community centre might look like using a range of craft materials and dolls house furniture. I had a stack of inspirational images and prompts for the children to select which ones they liked best. We then put all our ideas up on the window and reviewed what things they felt were most important and what things they liked best about attending the Maxwell Centre.

The children's favourite thing about the Maxwell Centre was the large community garden and allotments. This was very important to them as they could participate in gardening, learn about nature and have a space to play outdoors. The kitchen was a relevant topic as the centre was due to get a new one, the children liked the idea of having a lowered worktop so they could be more involved in cooking. Access to computers was crucial to them; there needed to be a place for families to access the internet and for getting help with their homework. Another popular topic was having dens or treehouses to play in, the children surprisingly preferred this to a soft play area. The children did not show a particular preference for colourful installations but a sensory room or corridor was a popular suggestion, especially among the younger children. Having an arts & crafts area or space to pursue hobbies was a popular theme. Board games were also favoured and a large life size board game for the garden area was another favourite idea.



TOP RATED IMAGES

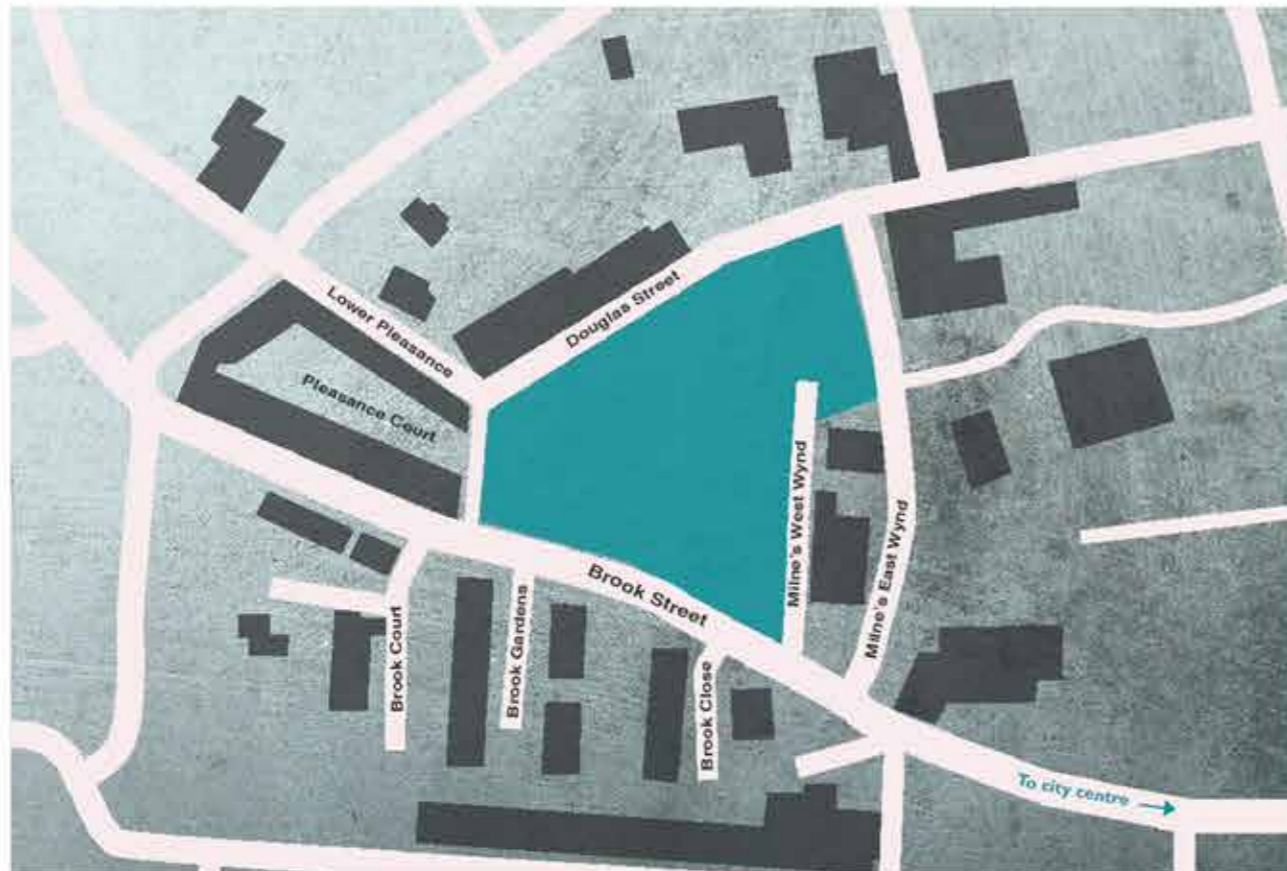


SITE ANALYSIS

I chose to use the old Queen Victoria Works site for my family centre design. It is a derelict former jute mill which sits on Brook Street in Dundee's West End and makes up part of the Blackness Conservation zone. It is in an ideal location being only a 10 minute walk from the city centre and Dundee University. There are no family orientated community centres in this part of the city and a few major bus routes close by so easily accessible for families in the area and across the city.

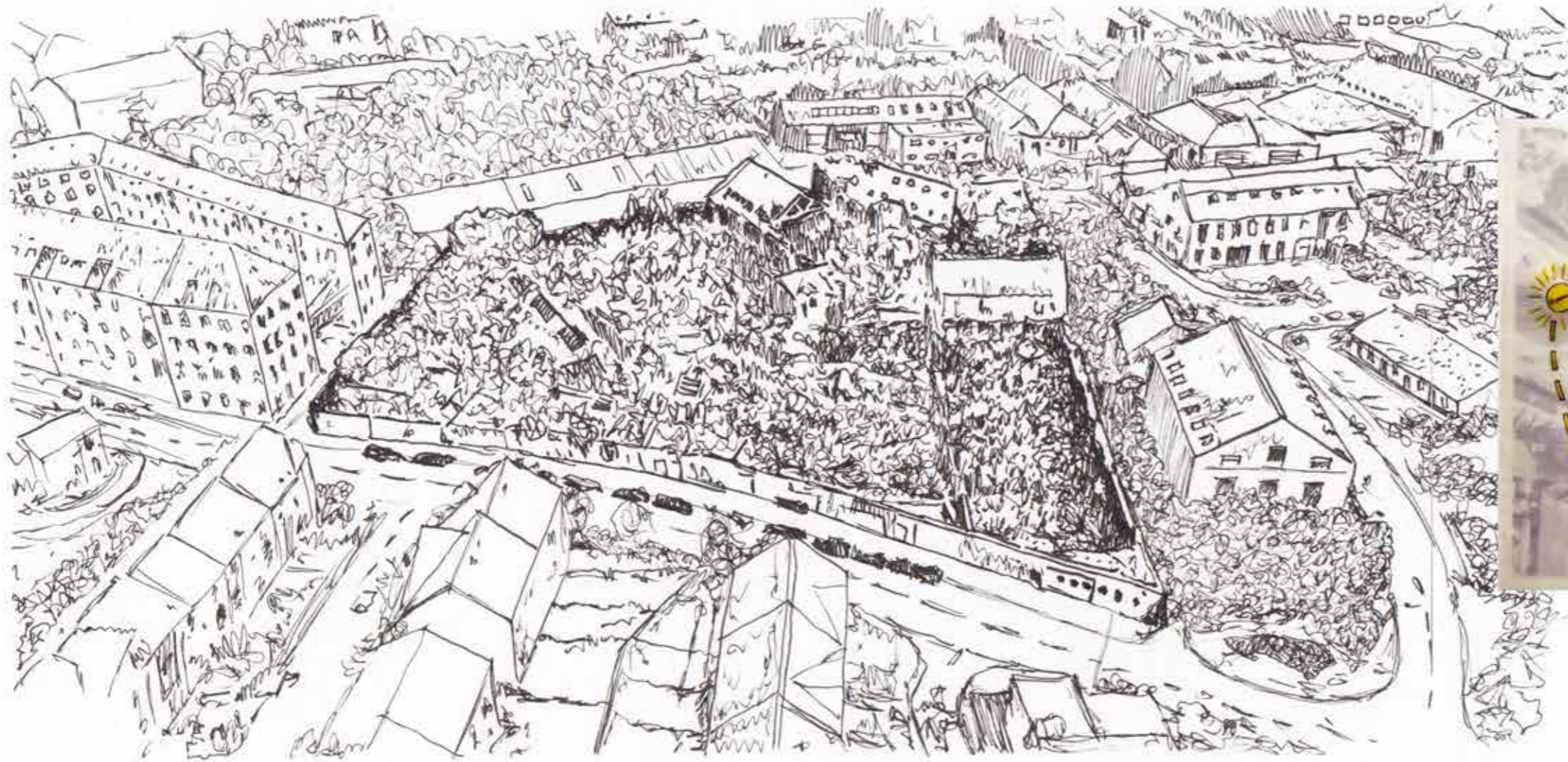
The site is large and has lain derelict for a few decades now. Once a part of a thriving industrial zone most of the surrounding jute mills have now been converted into residential and commercial uses. Many of the buildings on site are now completely dilapidated apart from two of the listed old mill buildings and the exterior perimeter wall. The high mill to the north of the site remains, it is 2 storeys with an attic and a 9 window wall carried on stout ground floor cast-iron columns down the east and west elevations. The floors and most of the roof have now collapsed. The old foundry building to the east side of the site also remains, this is 2 storeys high with 5 windows and cast iron columns down either elevation.

The site has a rich history, at one point being the oldest operating jute mill in the world until it closed its doors for the last time in the 1990s. Many of the older industrial elements remain including the iron columns in both remaining mill buildings, the angular gable ends and the roof trusses, and I considered how I could incorporate these into my new design.



SITE SKETCHES

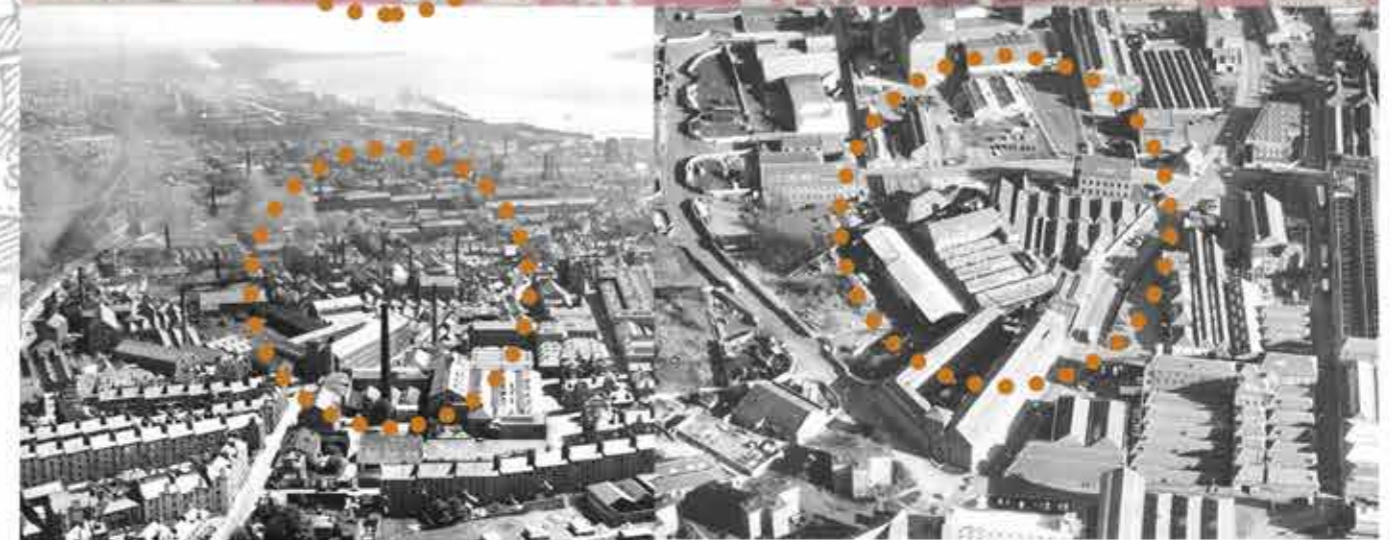
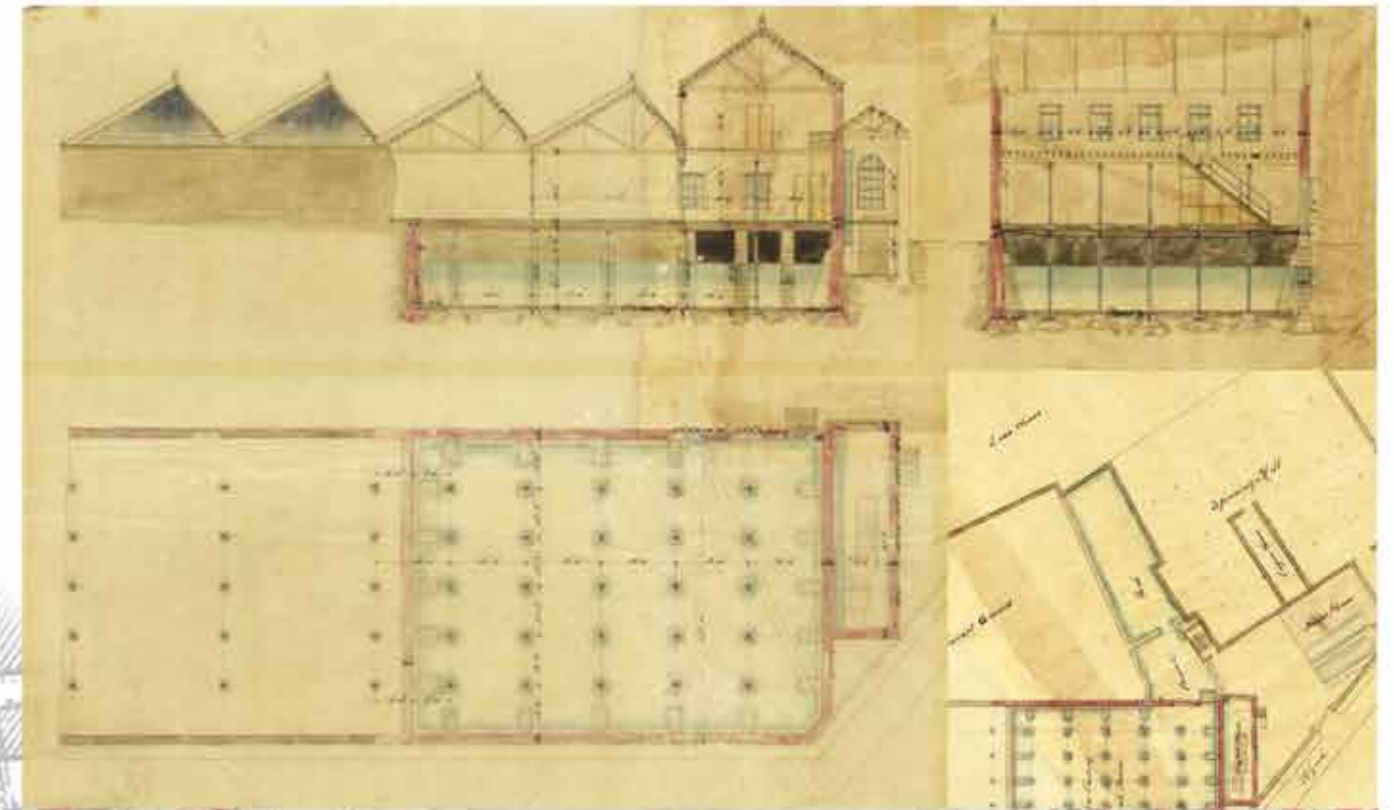
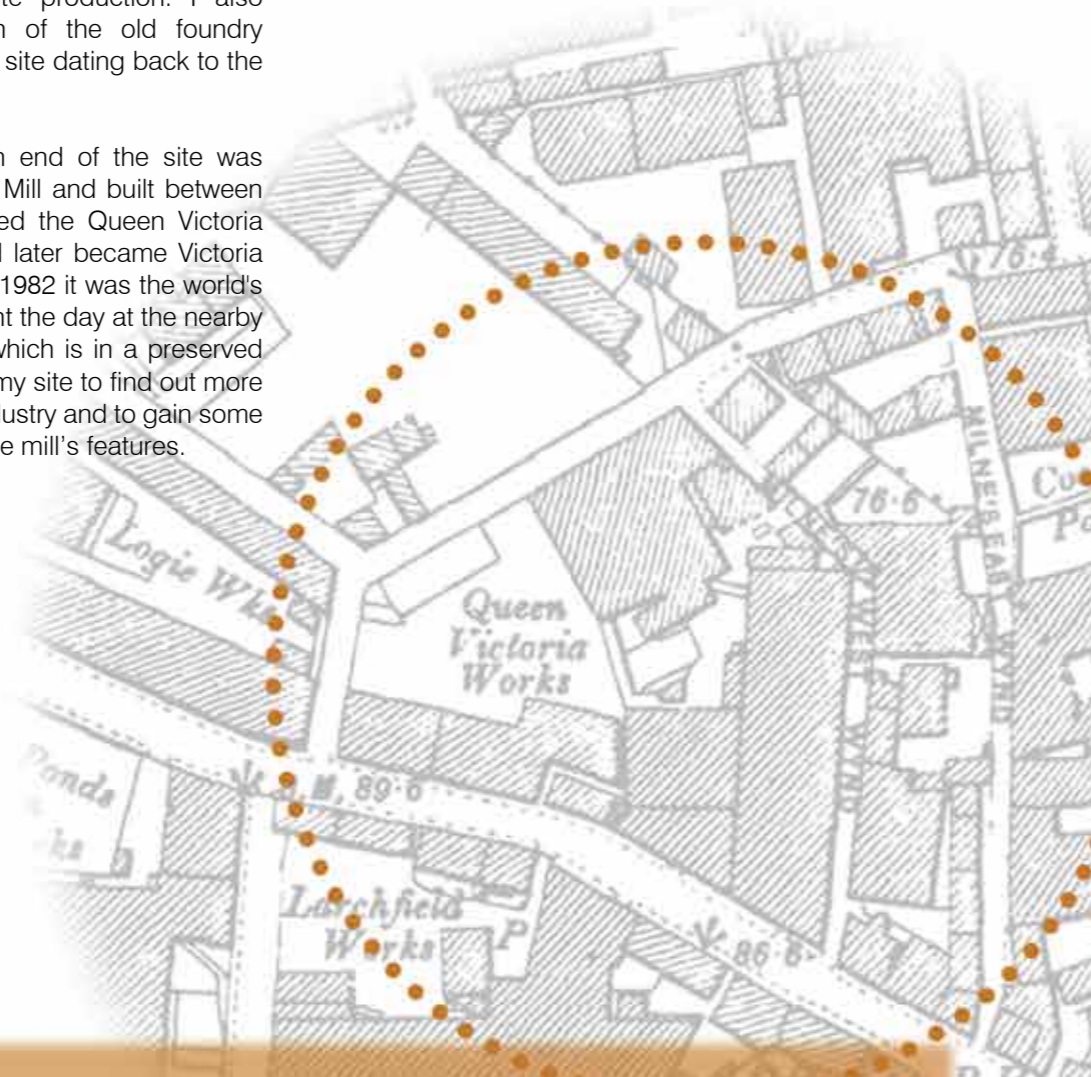
I took the time to do plenty of site visits, making sure to photograph, sketch and measure out each area. Later this would help me to work out what parts of the buildings I could preserve and what areas needed completely redeveloped. As the site was so big, I found breaking it down into different sections helped me a lot at this stage.



HISTORIC SITE ANALYSIS

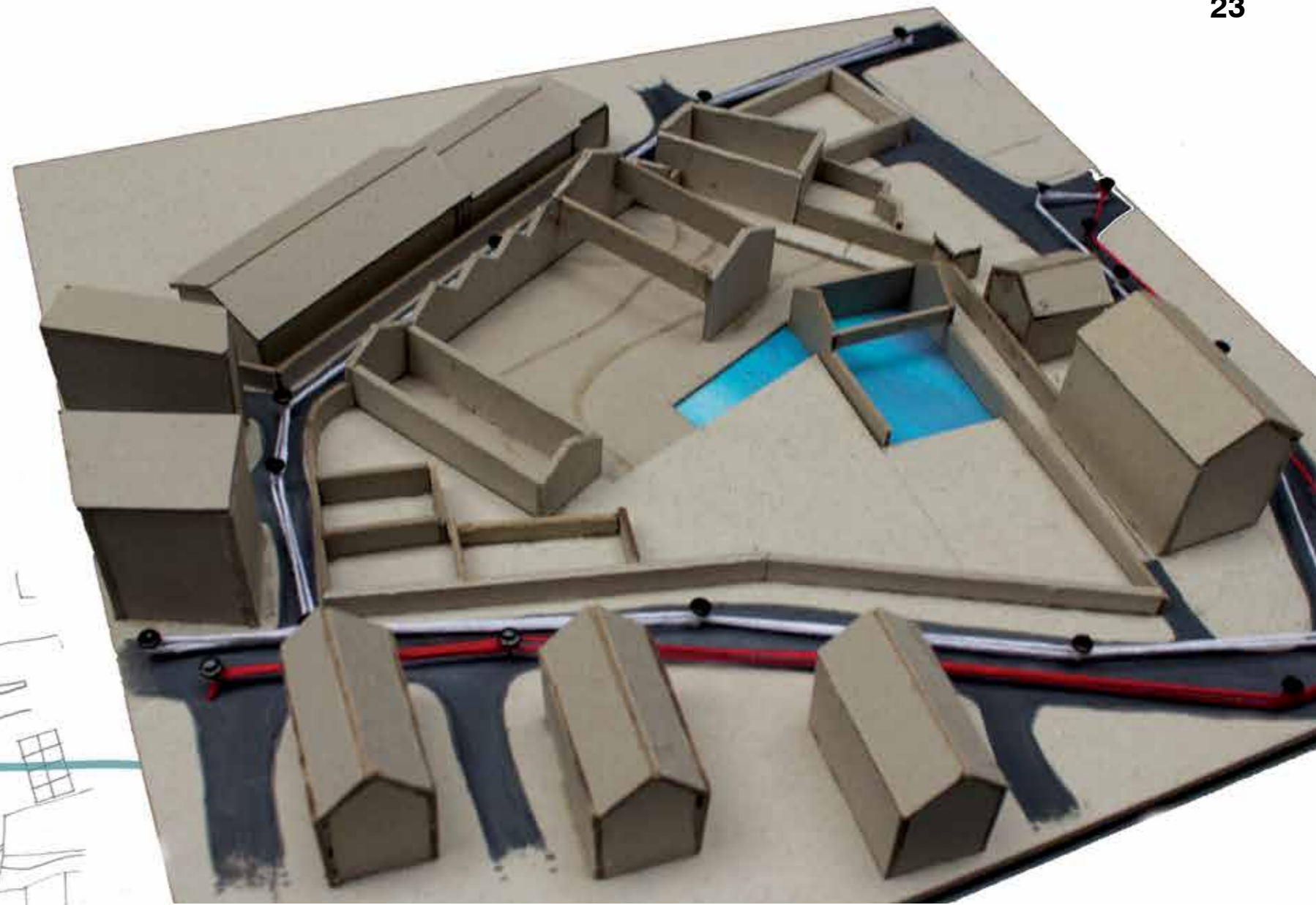
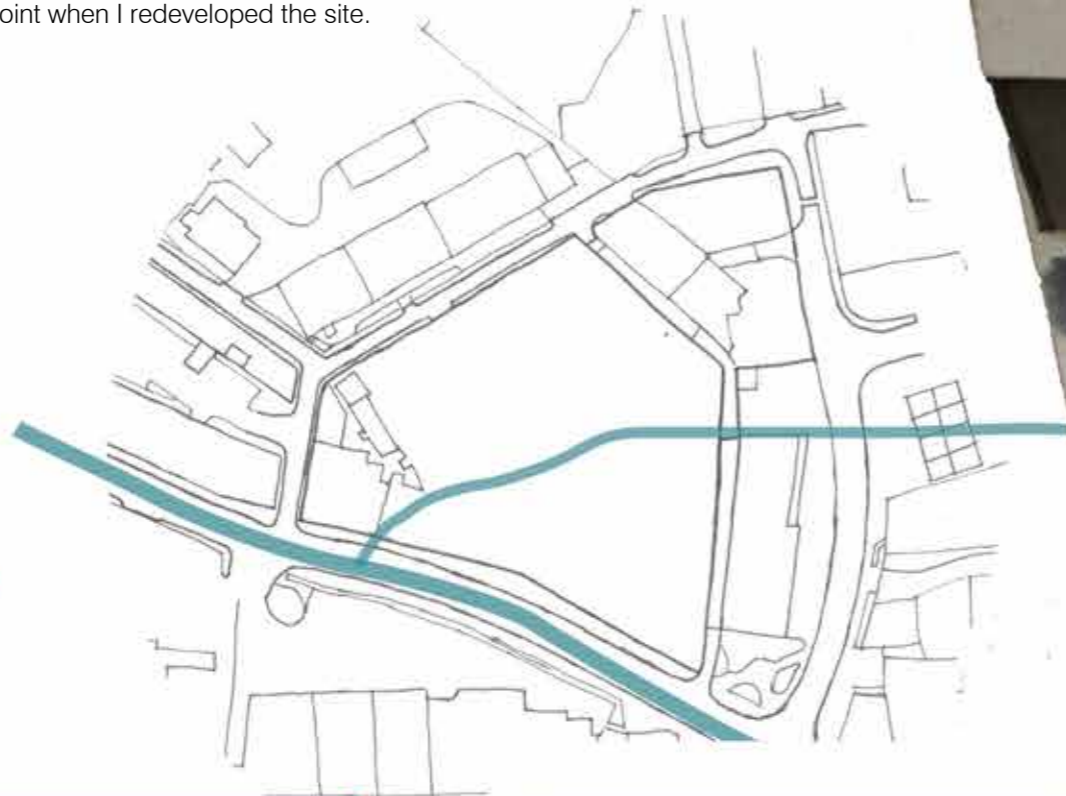
Due to the old jute mill's rich history I spent some time doing an in-depth historic site analysis. I gathered old maps of the site and the surrounding area. I also sourced old photographs including some aerial views from the 1940s and some older interior views of the spinning mill showing the jute production. I also obtained plans and elevation of the old foundry building on the east side of the site dating back to the 1860s.

The old high mill at the north end of the site was originally known as Pleasance Mill and built between 1828 and 1834. It was renamed the Queen Victoria Works in the 1887 Jubilee and later became Victoria Spinning Ltd, at which point in 1982 it was the world's oldest operating jute mill. I spent the day at the nearby Verdant Works Jute museum which is in a preserved mill just two streets away from my site to find out more about Dundee's thriving jute industry and to gain some inspiration for preserving the jute mill's features.

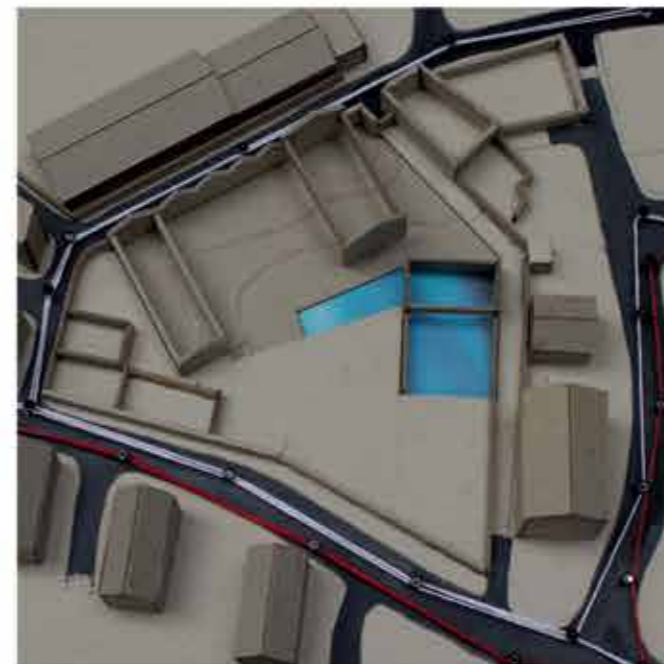
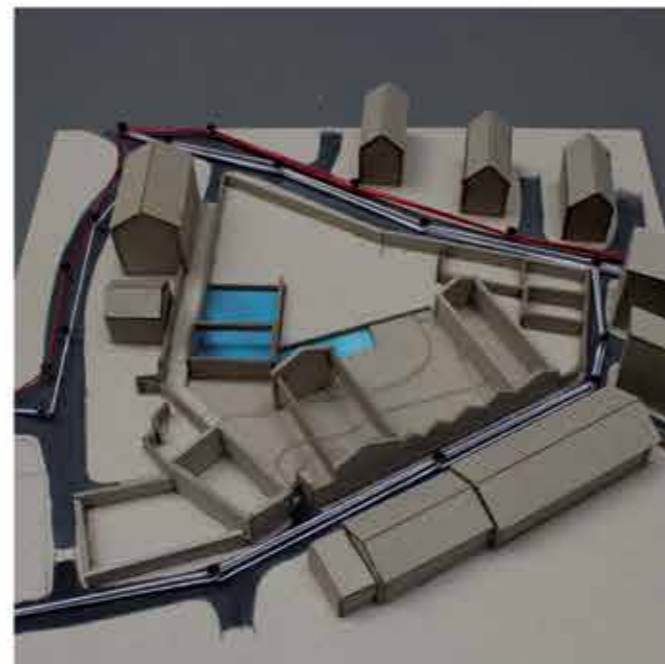
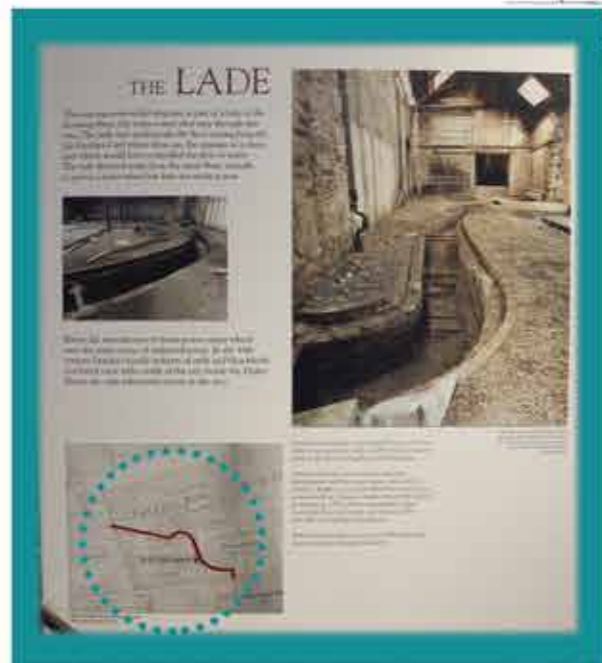


DISCOVERING THE LADE

Further examination of the old site maps and a visit to Verdant Works turned up a new feature of the site. There was a water channel running underneath the site called The Lade which was originally used to power jute production. It came in from Brook Street which was formally known as the 'Scourin' Burn' at the south west corner of the site and ran through the centre and went out underneath the foundry at the east side. When I eventually traced the site owner, she confirmed this and said they used to have a boat to move equipment around the site. This was an exciting development and I thought of how I could make this into a focal point when I redeveloped the site.

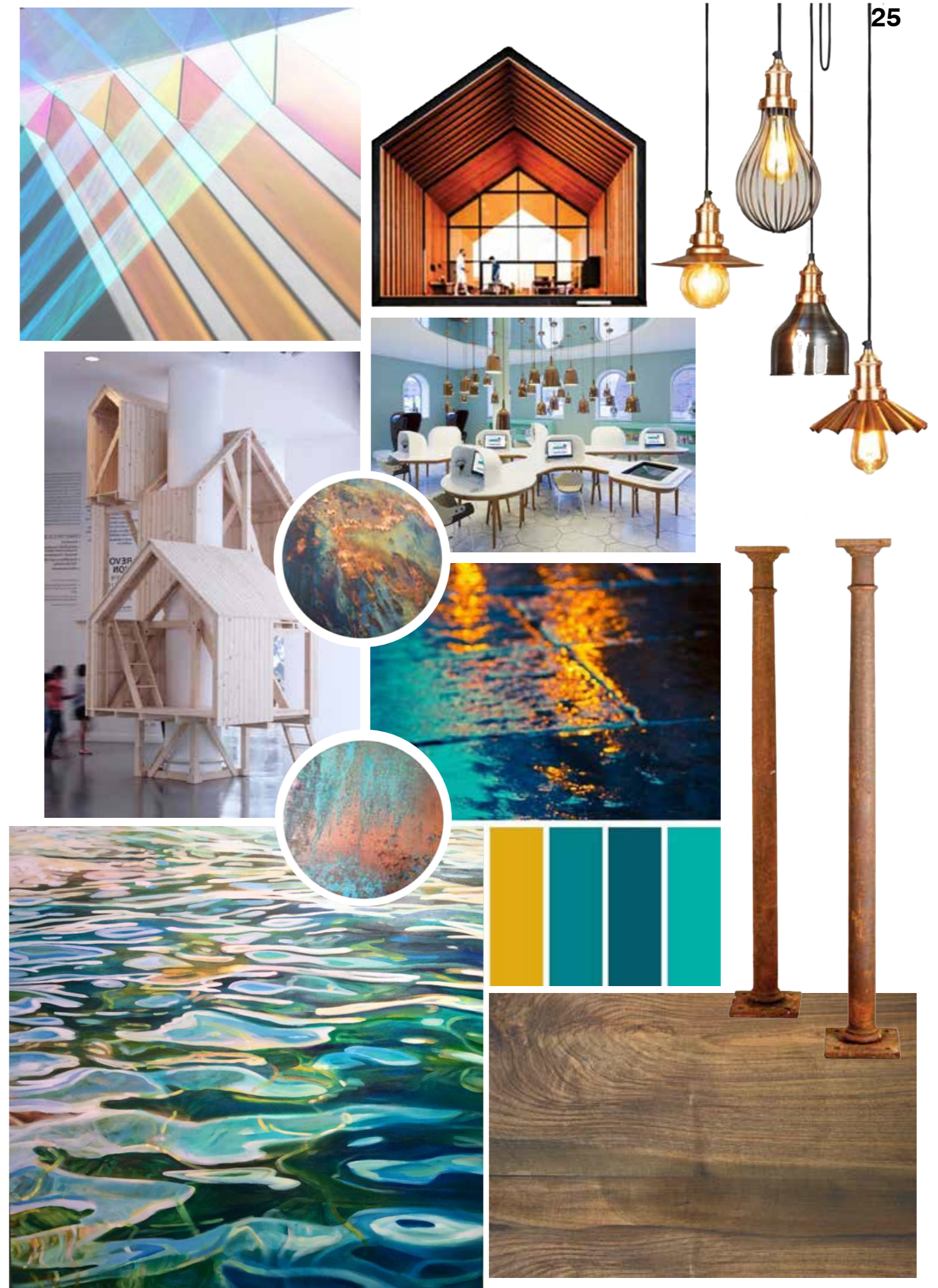


Using all the knowledge and analysis I had gathered of the site I put together a 3D model at 1:500 scale to help me visualise the next part of the process.



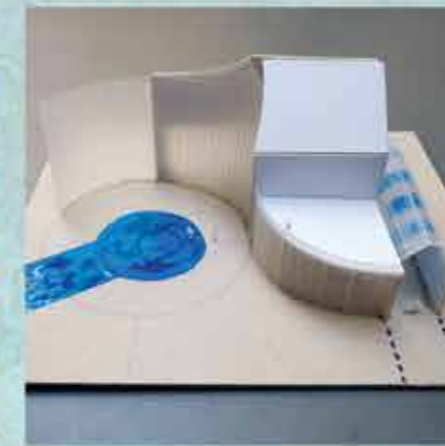
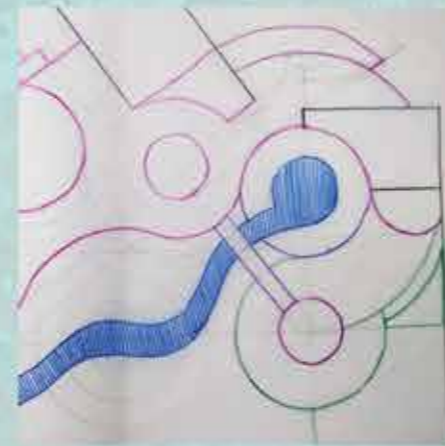
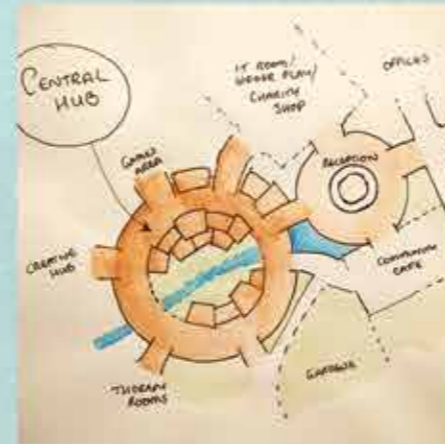
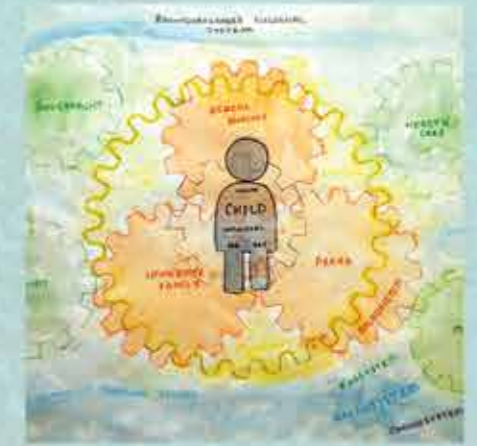
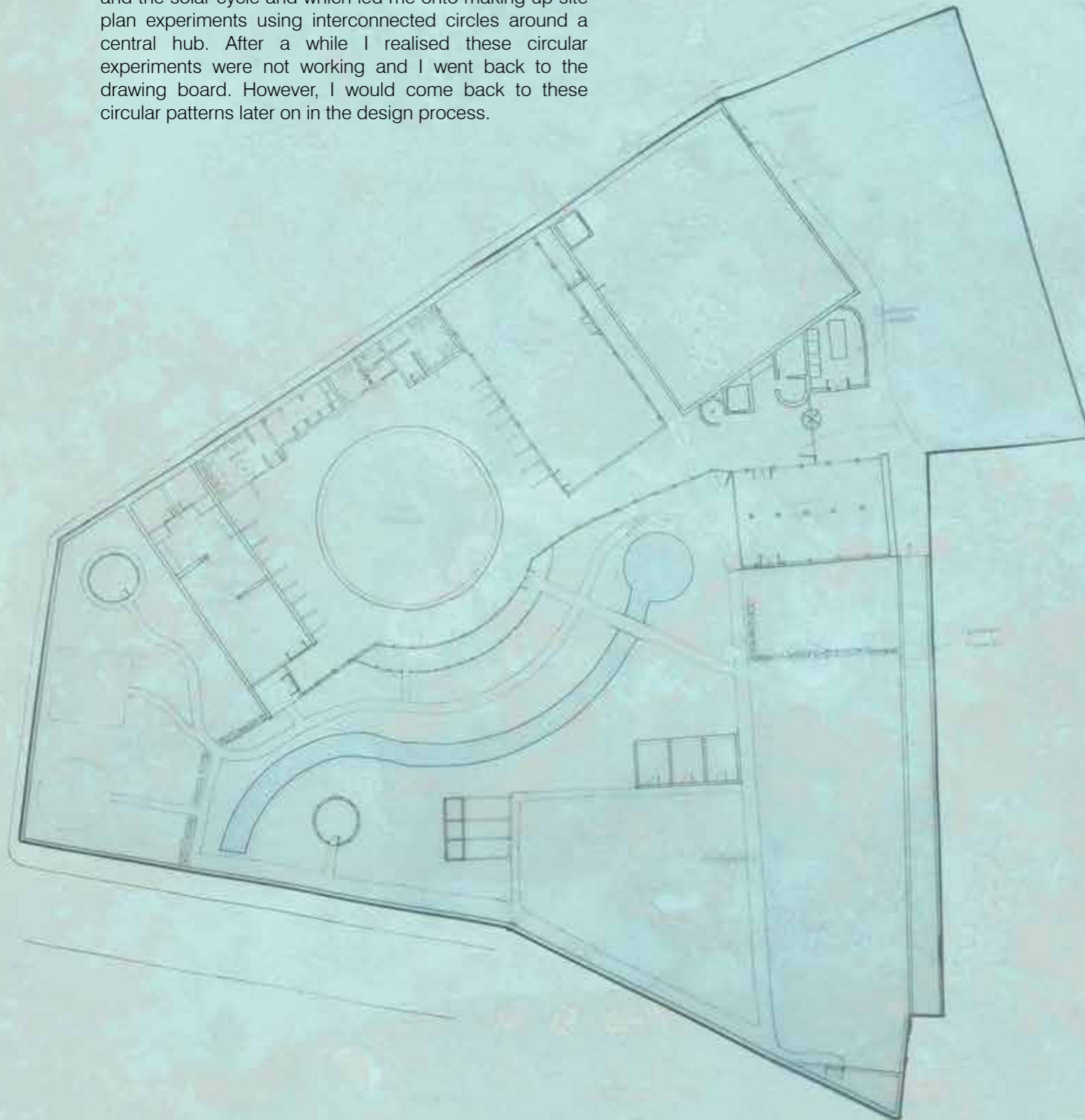
INSPIRED BY NATURE

I was inspired by how the old mill buildings had succumbed to nature which was now thriving on the derelict site. I wanted my site to have a strong focus on nature and sustainability but also to include some of the historic industrial aspects of the former jute mill. The rusty cast iron columns led me onto doing experiments with copper scraps from the DJCAD jewellery workshop where I experimented with creating my own patina effects. This would eventually become my colour scheme as I felt it represented the return to nature and the elements of air and water. I put all my research and inspirations together to make up a mood board which would help me on the next phase of my design development.



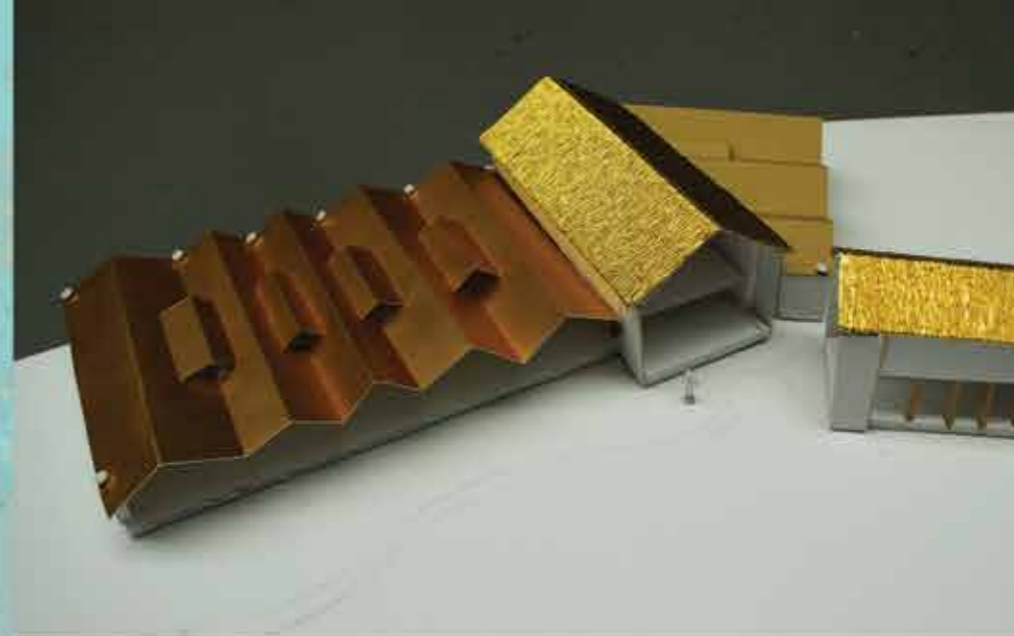
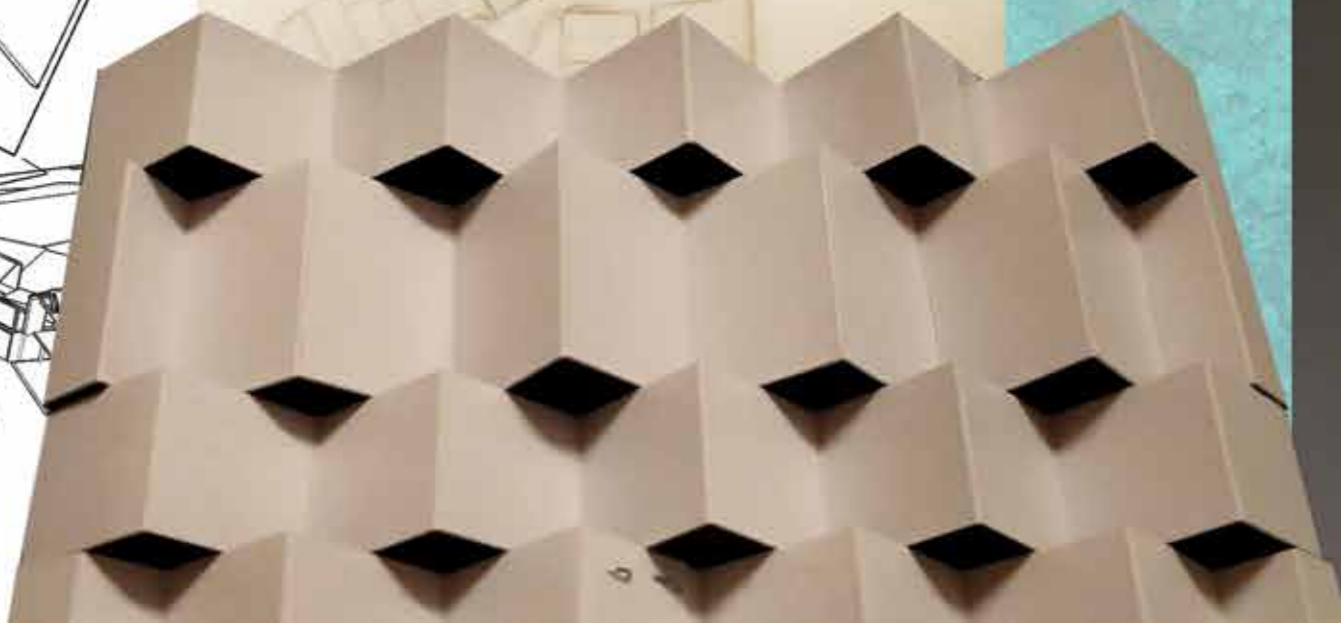
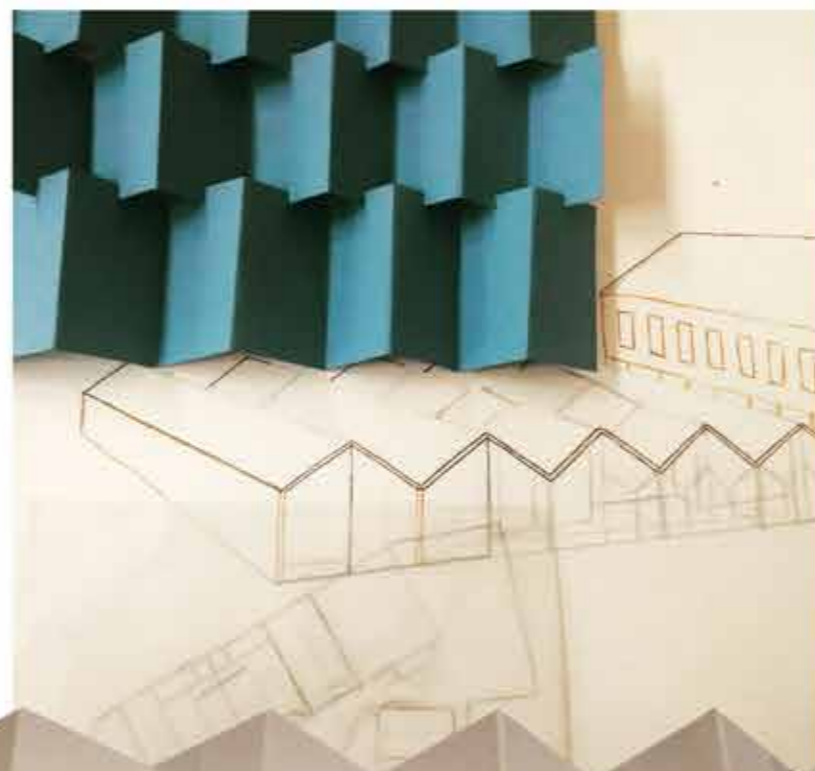
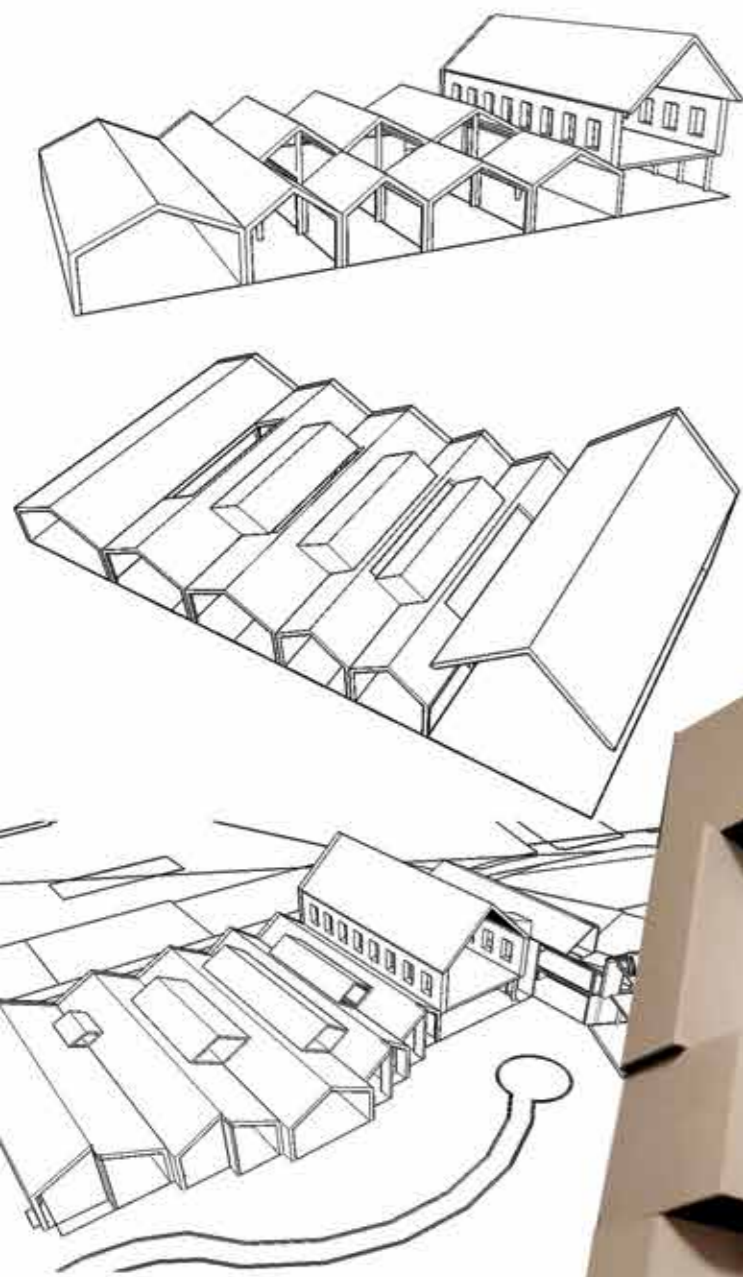
DEVELOPMENT

My development process took me on a journey which began in the University studio and finished up at a substitute workspace in the corner of my living room at home due to the Covid-19 lockdown. Due to this I had to change and rethink a lot of my planned outcomes. Nevertheless, I considered all of the influences I had looked at so far including my cogs and gears of the industrial machinery, Bronfenbrenner's ecological systems theory and the solar cycle and which led me onto making up site plan experiments using interconnected circles around a central hub. After a while I realised these circular experiments were not working and I went back to the drawing board. However, I would come back to these circular patterns later on in the design process.



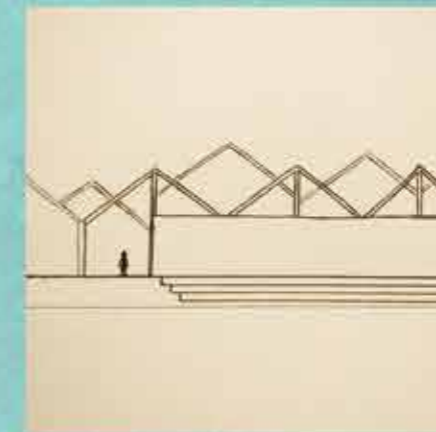
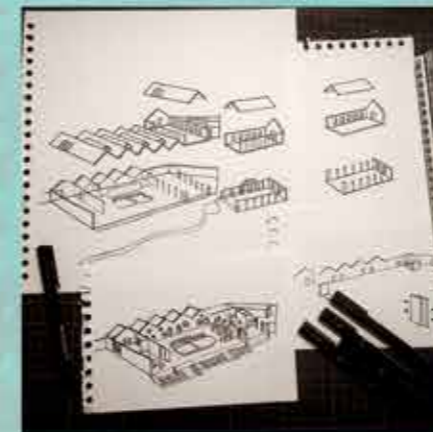
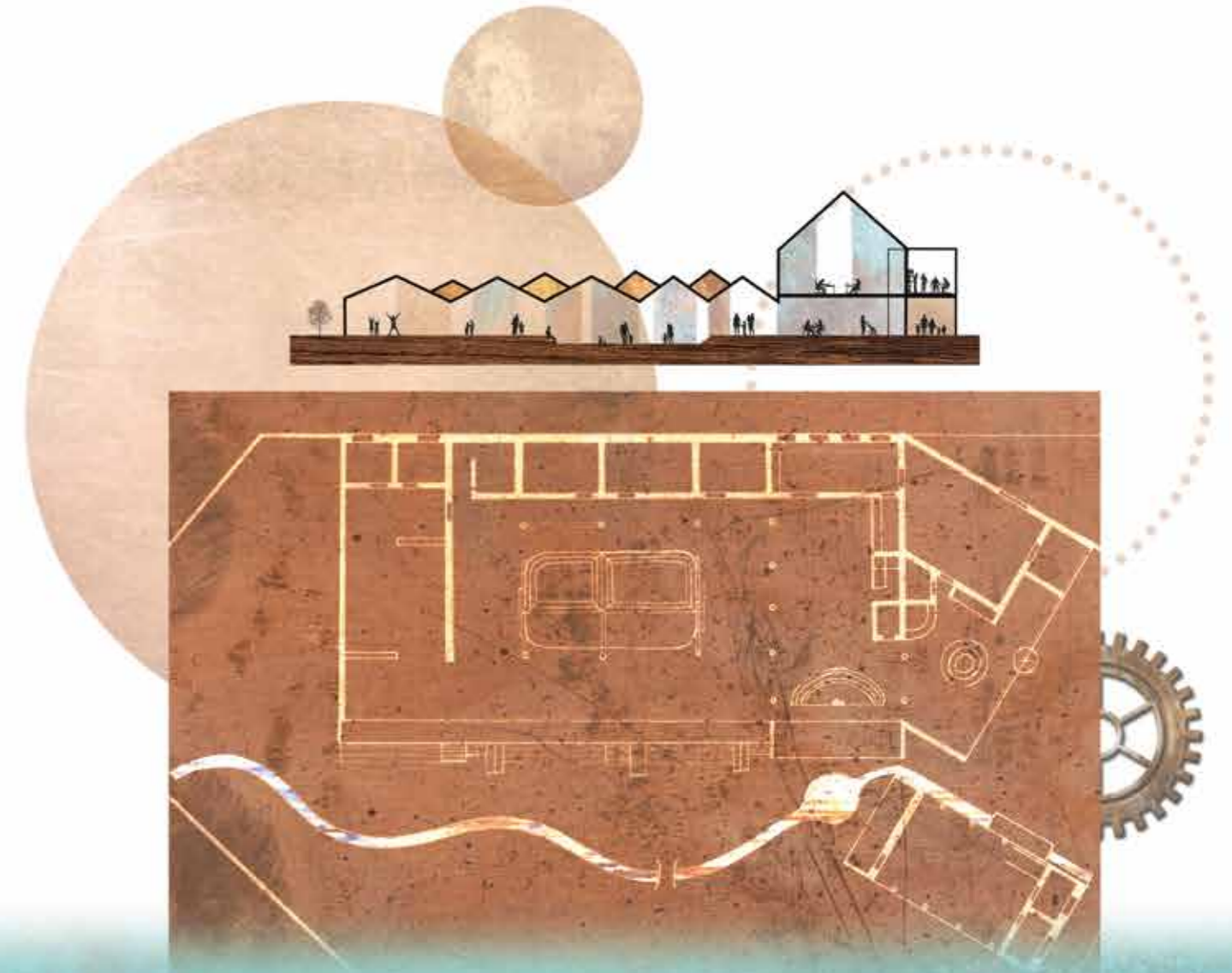
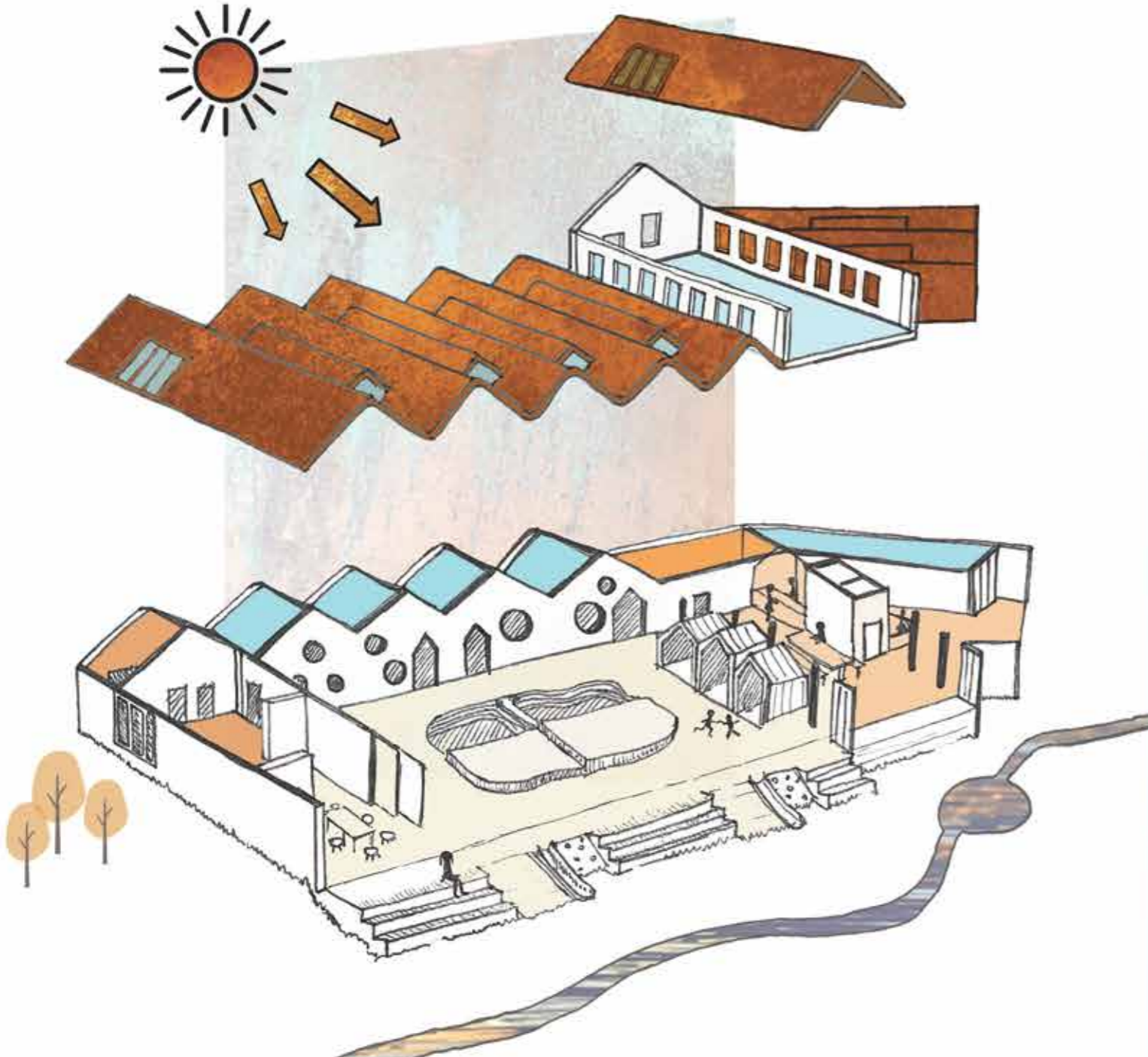
DESIGNING THE ROOF

I tried out some origami experimentation which tied in with the gable ends of the old spinning factory at the northern perimeter wall of the site. After several different experiments I then went on to try these out using sketch modelling with card and CAD modelling. I found these zig-zagging patterns also represented the waves of the Lade especially when I experimented with the metallic card. This led me onto to the final roof design that tied in with the original shape of the high mill building but gave it a much more contemporary edge. I considered how I could tie this in with my earlier experimentation with the copper patina effects.



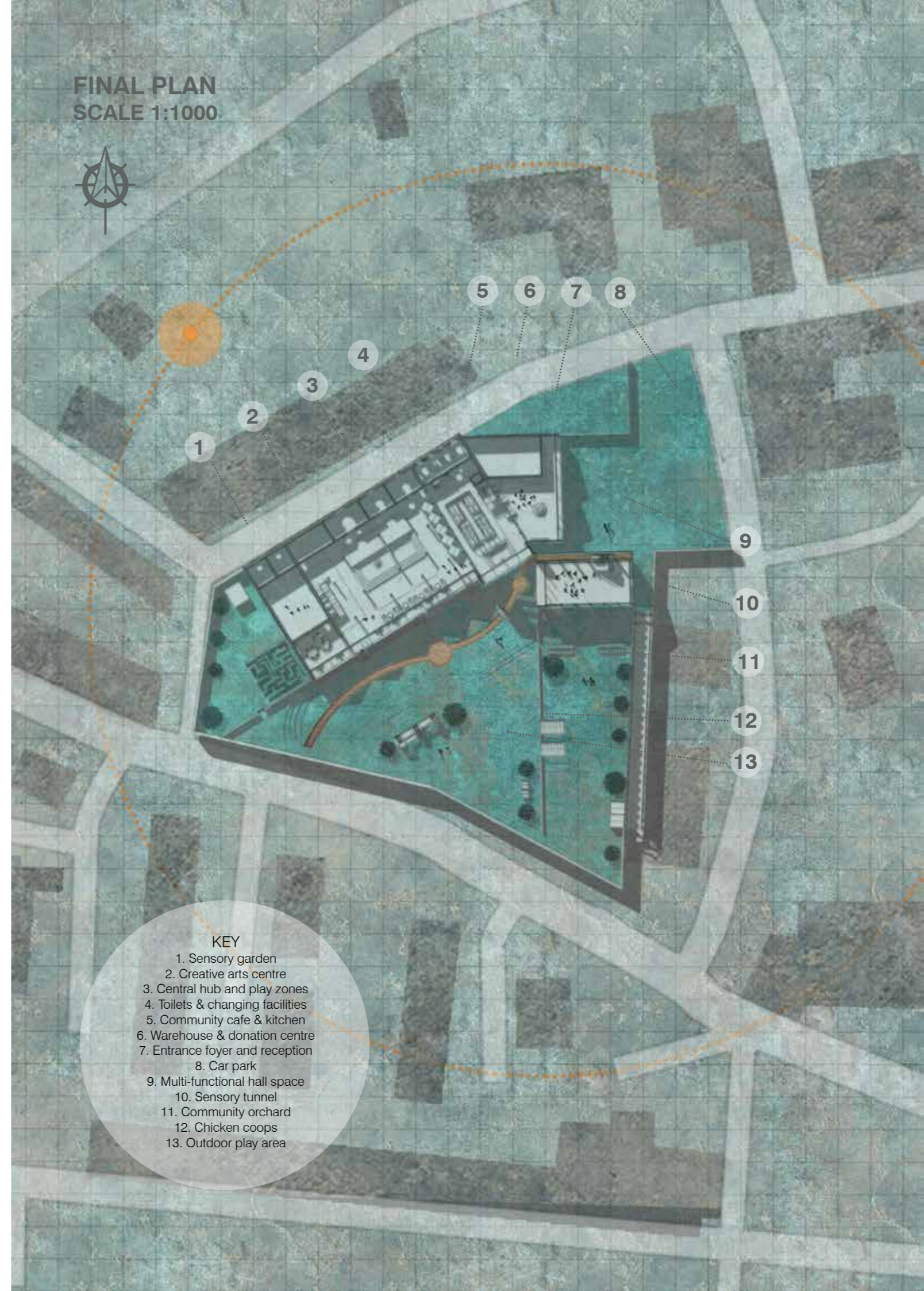
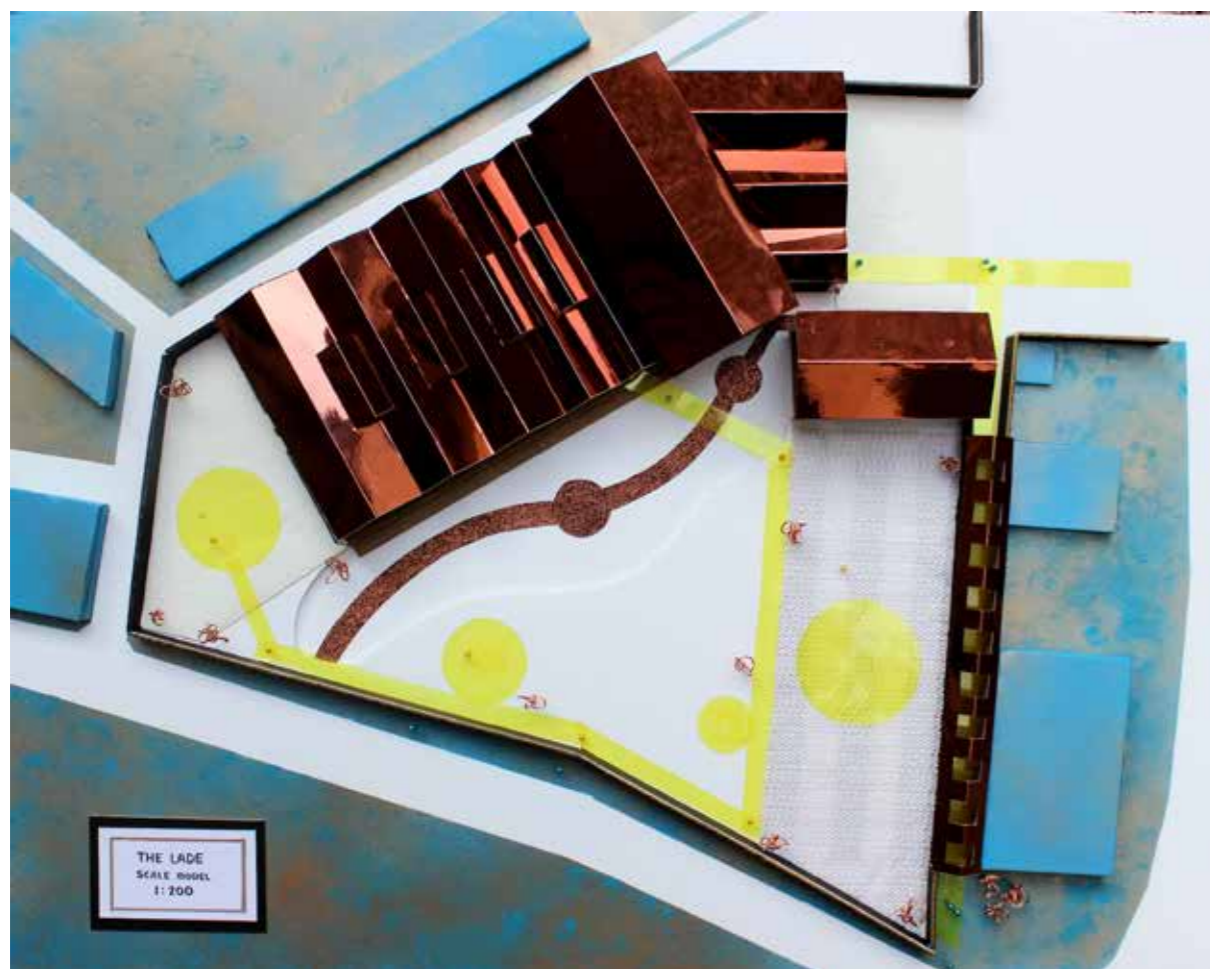
FINALISING THE DESIGN

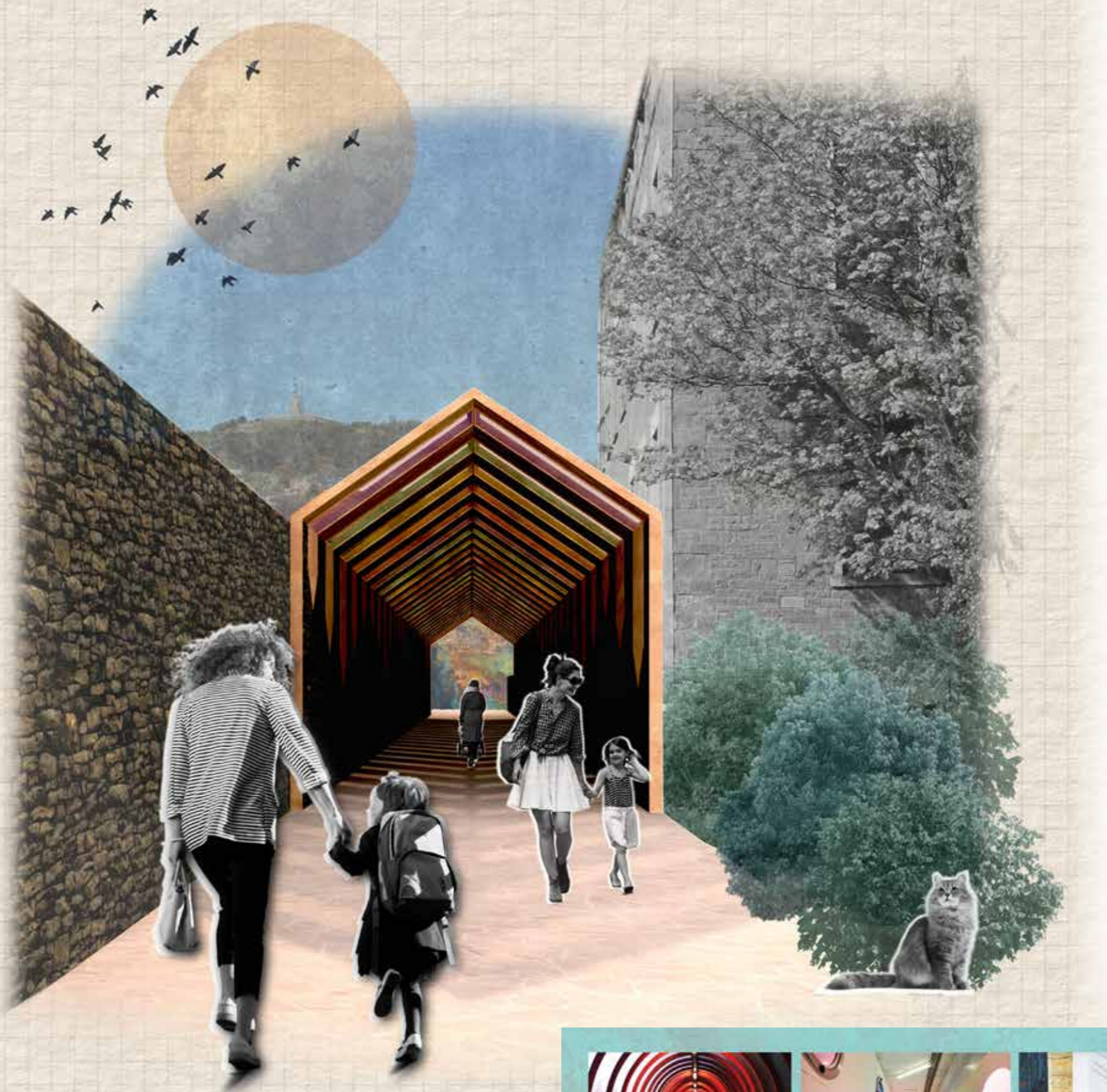
Consolidating my final design, I made use of the fact that the site was 1.5 metre below street height by adding different levels into the main area as toddler and baby play pits. In the community café area I created a sunken dining area and a fire pit, these different levels adding some interest and zoning off the large area. The long glazed window facade looks out onto the Lade which is an attractive focal point as well as the large expansive gardens. I had some trouble designing an entranceway on the east side of the site which tied in both the buildings as they sat at odd angles to each other. However, after some sketching, model making and experimentation on CAD I eventually came up with a final design solution.



THE FINAL DESIGN

The Lade centre provides a large outdoor play area and a sensory garden which families are free to use. The south facing derelict ground has been converted into a community orchard allowing families to grow and tend their own food. There is a large indoor play area with different areas for younger children and a creative arts centre. Children and their families have the freedom to learn valuable life skills in gardening, cooking in the communal kitchen or learning digital technologies in the computer suite. As well as the large stimulating environment there is also quiet reading nooks and relaxing areas as well as a co-working space. Having children can be very rewarding but if you have no support network, struggle to pay extortionate childcare fees or are isolated, it can be a lonely, stressful time. The Lade community centre would provide solutions to these issues experienced by many families in Dundee.

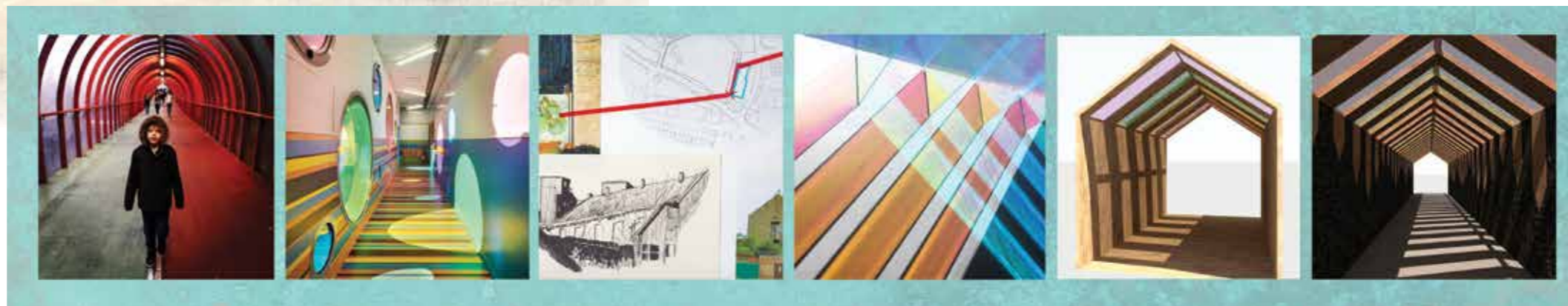




THE SENSORY TUNNEL

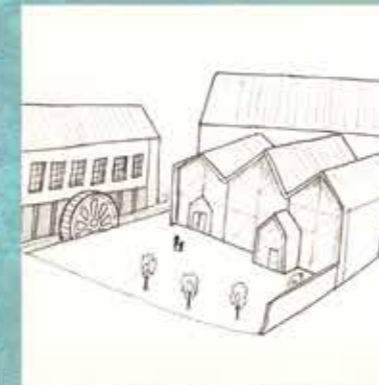
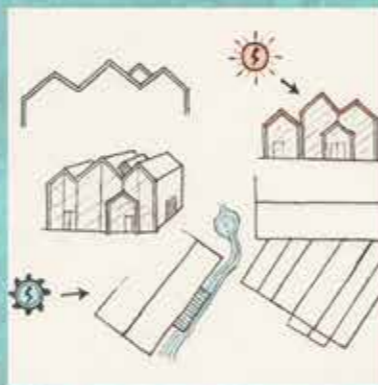
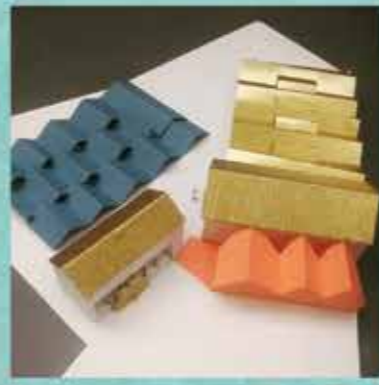
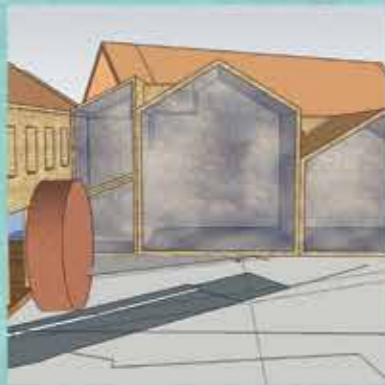
The Lade Centre is accessed from Brook Street by way of a sensory tunnel which casts different coloured light patterns throughout the day depending on the sun's position. A sensory tunnel was something that came up multiple times during my research. The children were very keen on a sensory room or corridor during the workshops and the 'smartie tube' tunnel at the Exhibition Centre in Glasgow was a big hit with my own children, so much so that we had to go through it multiple times on our way to visit other venues as research for this project!

I decided to put the sensory tunnel as an access to the site as it would provoke excitement upon arriving at The Lade for the children and also when leaving as the light patterns cast would be different again. West Milne's Wynd which sits directly to the right of the site has been closed off for decades along with the rest of the site so it seemed like the best solution would be to redesign this as this new access way. The tunnel was designed using CAD experimentation with light and materiality until I came up with the final design solution.

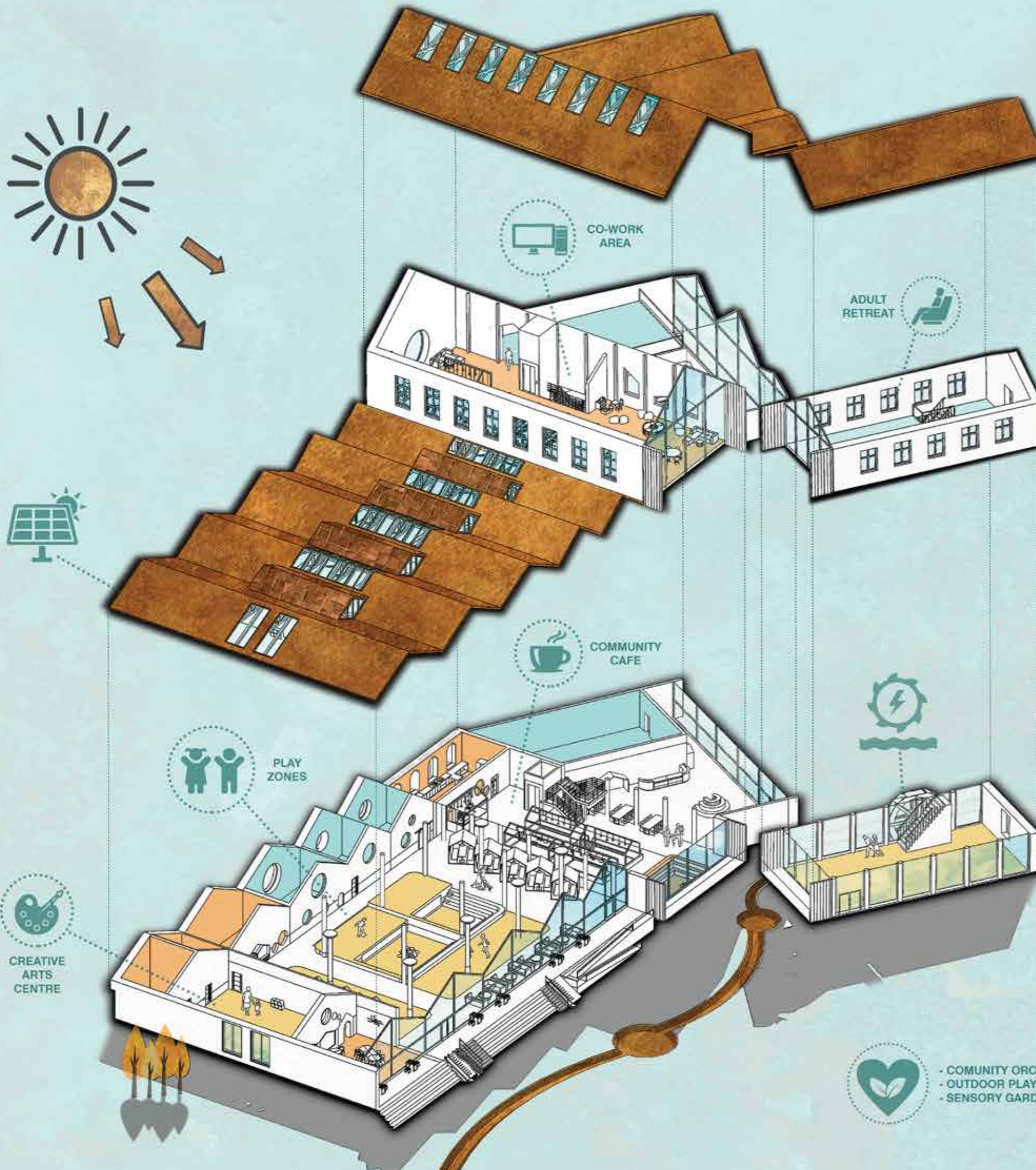


MAIN ENTRANCE

This view from the centre car park on East Milne's Wynd will be the first sight visitors see as they arrive at the main building. This part of the building proved a challenge to design as I wanted to tie both the buildings in together which sat at odd angles to each other. Some inspiration from our visit to the Riverside Museum in Glasgow and sketching, model making and experimentation using CAD helped me to eventually gain a suitable design solution that also celebrated a good view of one of the centre's other main features, the water wheel.



THE LADE



James uses the Lade centre to catch up with work in the upstairs computer lab while his son plays attends a class in the creative arts centre after school.



Ailsa loves spending time at the Lade with her 8 month old baby as she can get a coffee with other mums while her son plays with the sensory toys and equipment.

Cameron and Hayley can't go out to play at home as their neighbourhood isn't safe but at the Lade they are always playing and making new friends.



Emma and her father don't have a garden at home but at The Lade they are able to use the community orchard to grow their own food to cook in the communal kitchen and share with other families.

Shannon was struggling financially but at The Lade she received much needed support and is now able to return to work while her daughter attends the after school clubs.




 • COMMUNITY ORCHARD
 • OUTDOOR PLAY AREA
 • SENSORY GARDEN

BUILDING INTERIOR

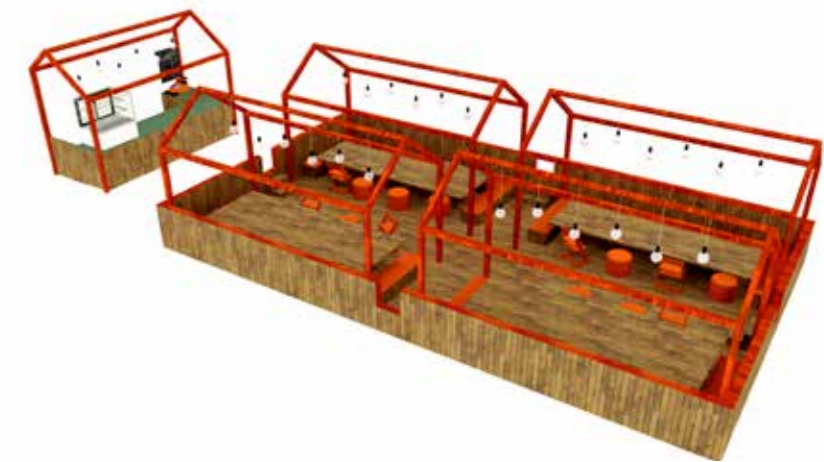
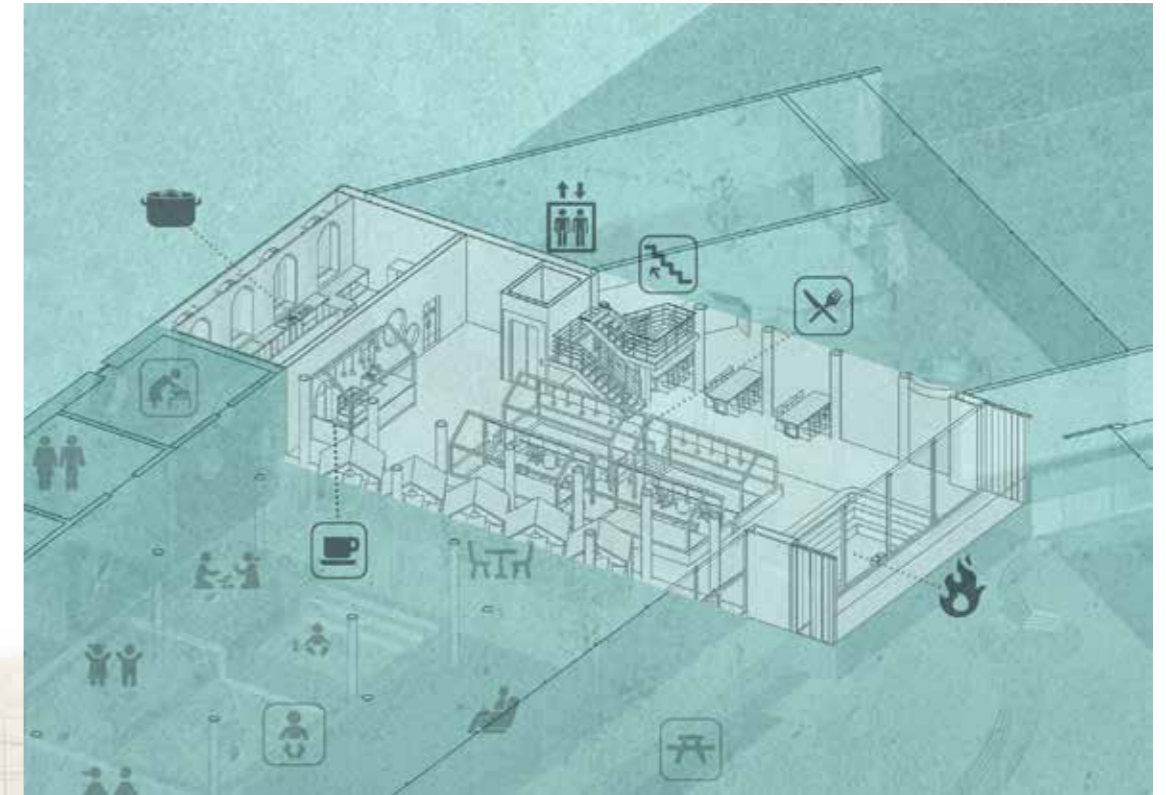
This is the view of the entrance foyer and reception area as you enter through the front entrance to the building. It is a large open space with a waiting area in the middle and display boards that exhibit the children's recent art work. The original cast iron columns have been decorated with a copper patina effect and industrial style chandeliers hang from the high ceiling giving a nod to the building's history. Behind the reception is a warehouse area which also serves as a clothing and equipment bank that families can donate their children's old belongings that they no longer need. The area to the right of the reception is a shop where some of these goods can be sold or swapped. The entrance foyer also includes a buggy storage hut and lockers which are useful for parents of young children often laden with many bags.



“I would like to see something in Dundee that makes the stigma a little less for families needing access to material help.”

THE COMMUNITY CAFE

After coming through the entrance foyer the next area is the community cafe. This has been designed into the lower level of the old high mill building. To the rear of this building is the communal kitchen and leading off this a coffee bar where refreshments and home cooking by the children and their families are served. To the right are stairs and lift access to the offices and co-working space on the upper level. Down the centre of the room is a sunken dining area with low benches and tables which has been designed for younger children to sit and eat together. To the front of the cafe is another sunken area with tiered seating surrounding an electric wood burner which looks out onto the gardens and the Lade. This was designed for people to come together at the end of the day, sit around the fire and share stories or play music. The rest of the space has a variety of different seating suited to older children and adults and there are plenty of adjustable Trip Trapp high chairs on hand. There is also booth seating looking onto the play area which provides a little more privacy for those who require it such as smaller groups, families that want to sit together and breastfeeding mothers.



COFFEE BAR AND SUNKEN DINING AREA



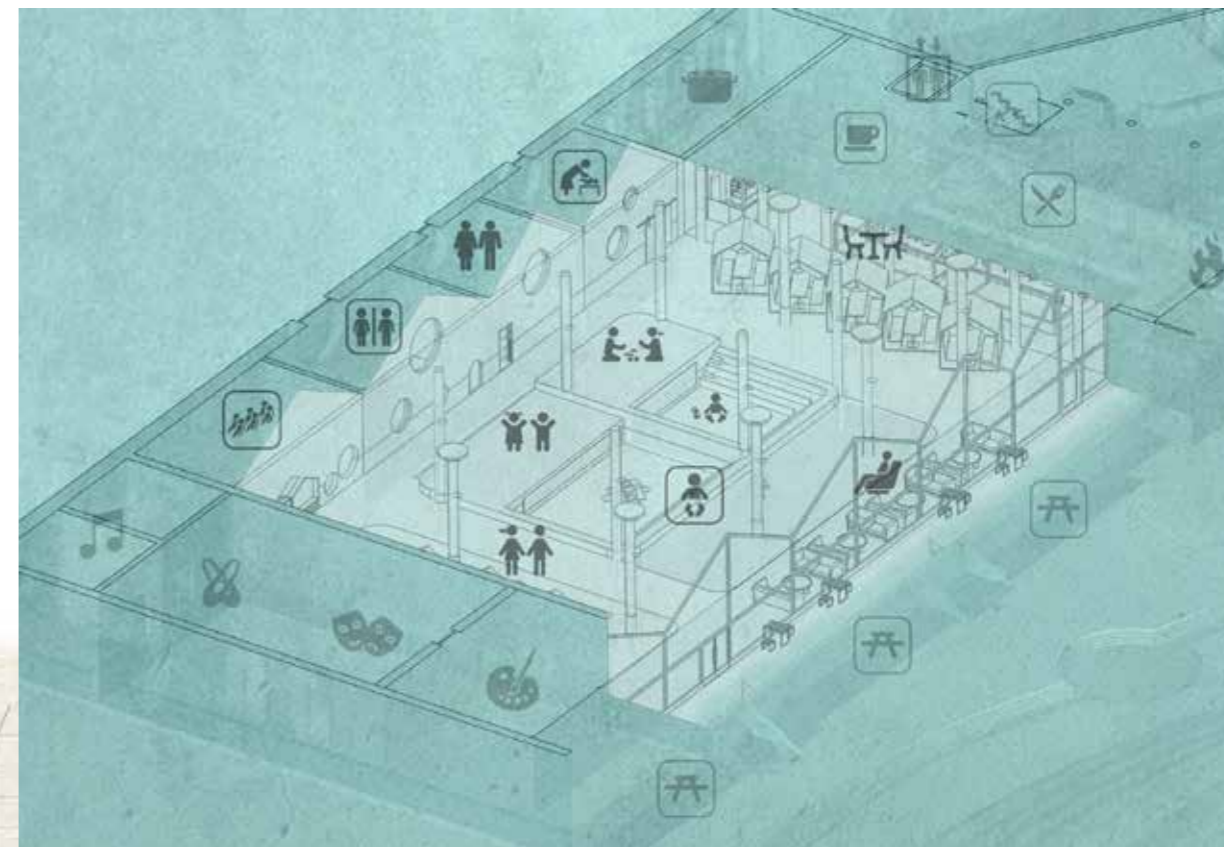
TRIP TRAPP ADJUSTABLE HIGH CHAIRS



THE BOOTHS

THE PLAY CENTRE

The play area is the central hub of the Lade centre and has been redesigned into the old spinning factory floor to the left of the high mill building. The large space encompasses a variety of play zones on varying levels. Two sunken areas make up the toddler and baby pits surrounded by tiered seating for adults to sit. Raised platforms create a multi-functional play space for older children or as a stage for performances and talks. To the rear of the play centre are unisex toilets for children, adult toilets and baby changing facilities. There is also a quiet mini-theatre room for those who need to escape the noise which is used to screen films and do storytime with the younger children. Play huts to the far left of the space provide imaginative play zones or 'dens' to hide in as was the preference of the children at the workshops. The play huts each have different themes to encourage role play. Sofas line the the interior of the glass facade overlooking the gardens and lade, and provide comfortable seating and good views for adults while the children play.

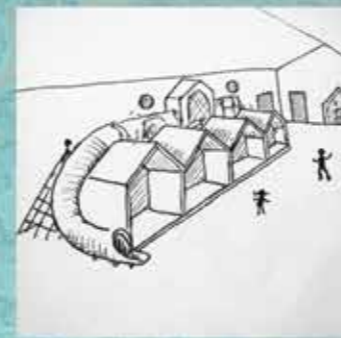
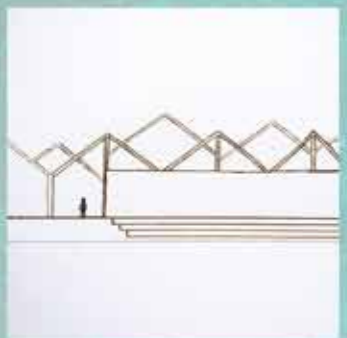


“Dundee needs a place where kids can play, chat, learn life skills and hang out in a safe environment.”

View from the rear of the play centre, by the door leading into the gardens, looking back down towards the community cafe and entrance foyer

A PERFORMANCE SPACE

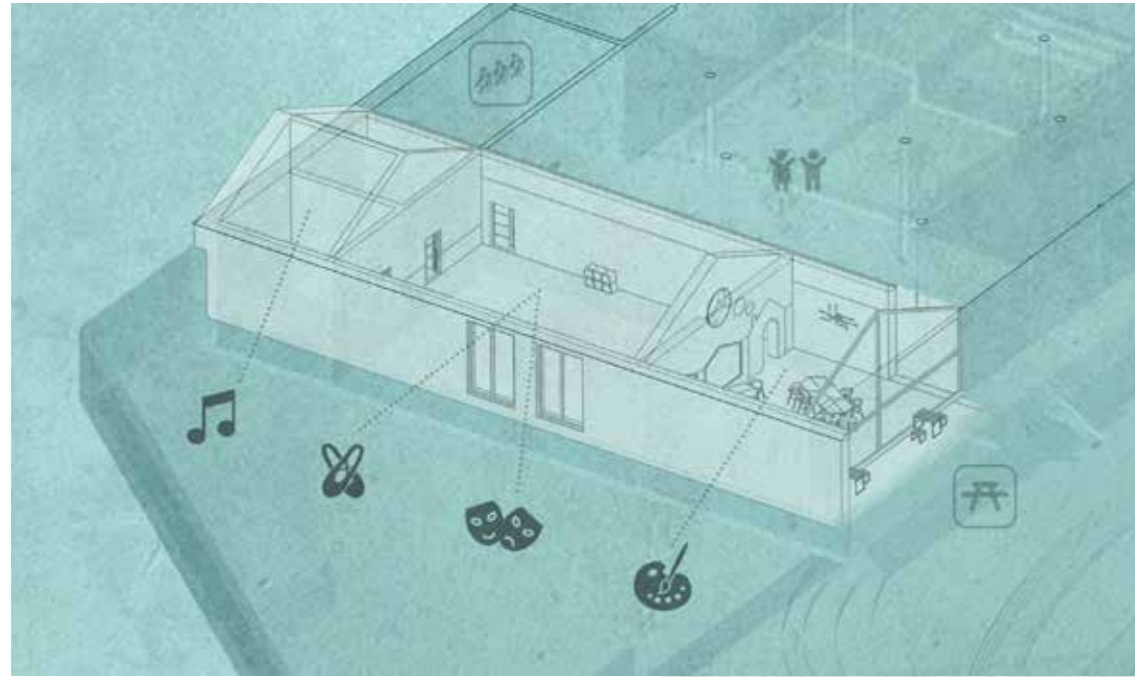
View looking into the play area from the glass facade. The raised platforms in the play area can be used as a performance space, the tiered seating around the infant play pits and sofas provide seating for audience members.



THE PLAY PITS

The play pits provide a safe space for younger children with tiered seating to allow adults to keep close supervision while conversing with each other. Sensory toys in this space were inspired by my research into the Montessori approach including the Grimm's wooden rainbow, Muro modular sensory board and the Magis Me Too play puppy.





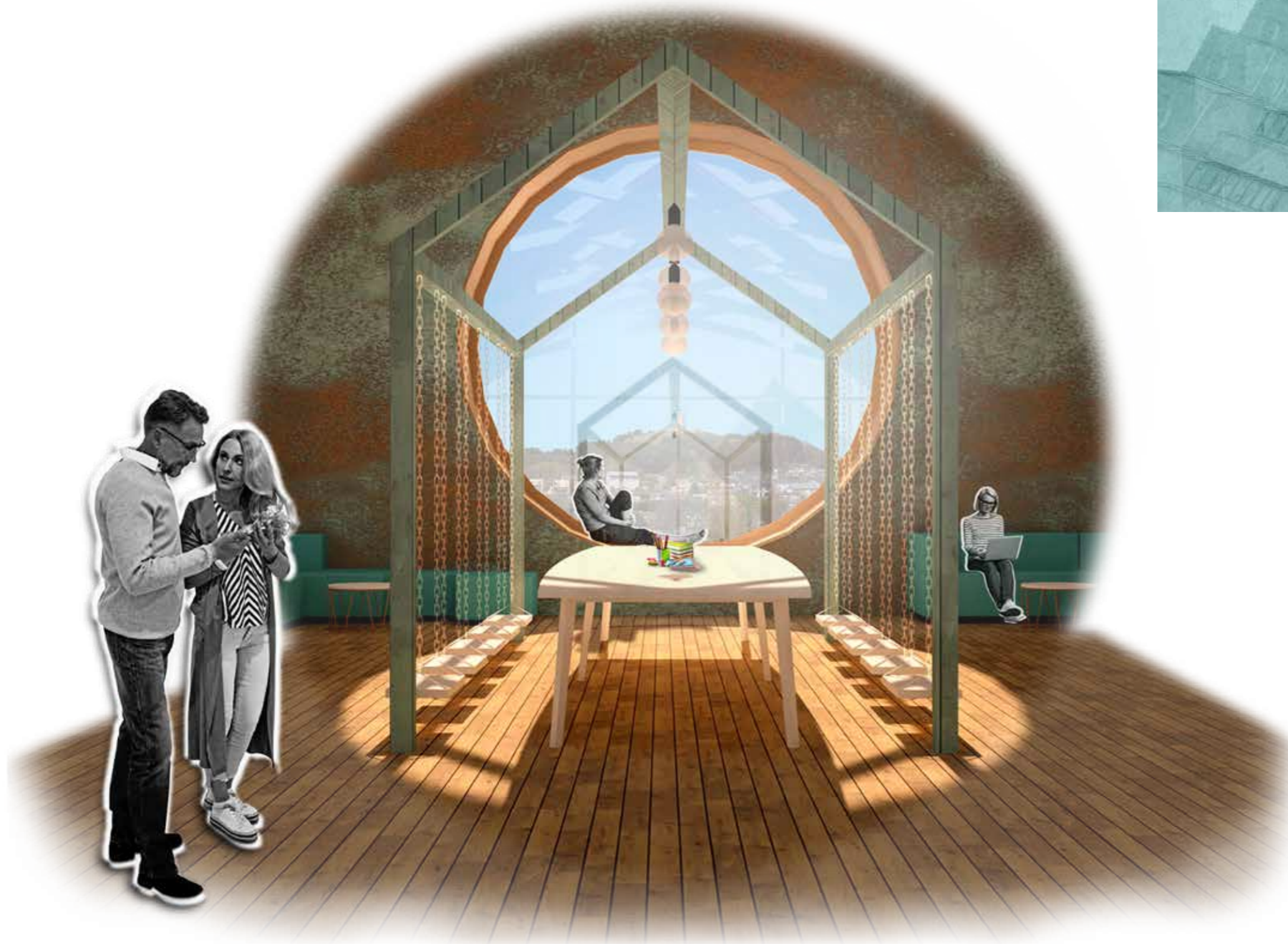
CREATIVE ARTS CENTRE

The arts area lies at the far west side of the building beyond the central play area. A dedicated arts and crafts room looks out onto the garden and Lade. Behind that a hall intended for dance and drama workshops. To the rear of the building are two sound proof music rooms which can be used for music tuition or hired out for band rehearsals.

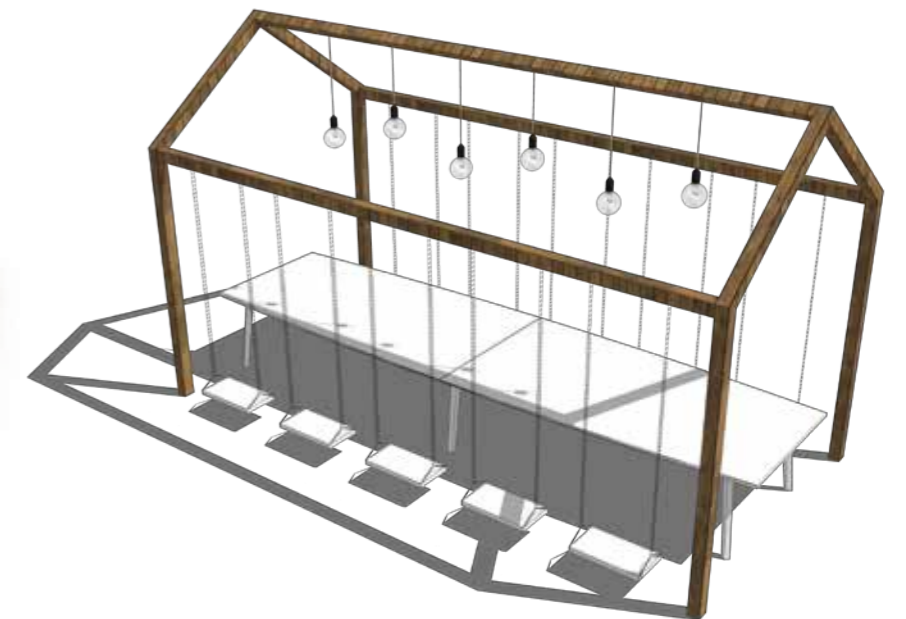
“I would like to see more art and craft workshops in Dundee, there isn’t a lot of things that families can do together”



CO-WORKING AREA



The upper level of the old high mill has been converted into a co-working space, the rear circular window looks out across the the Dundee Law and also provides a reflective seat from which to enjoy the view. A large co-working desk makes use of the gable end frame and has swings for seats so the adults can get a little fun too. The rest of the space includes a staff office area, computer stations, comfortable seating, plenty of desks and even a small childrens area for reading and homework.





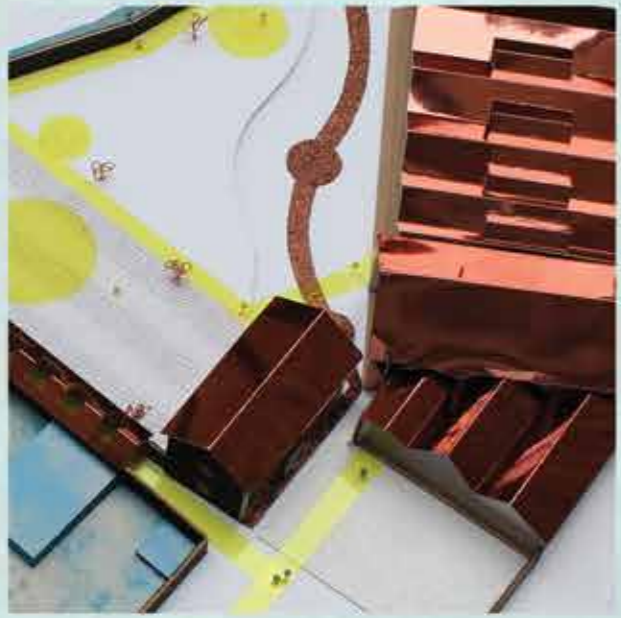
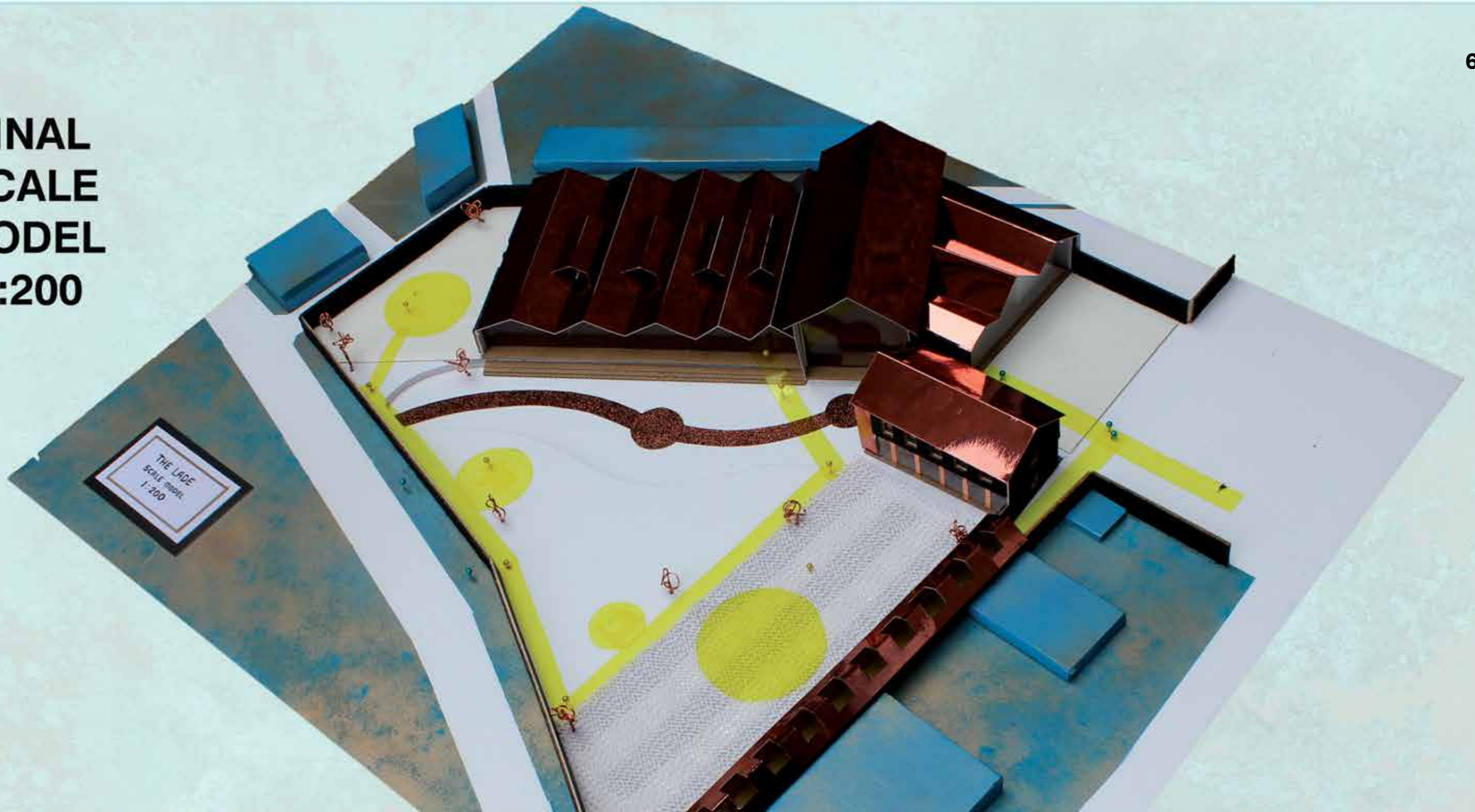
View looking down to the front of the co-working space showing the lift and stair access to the lower level, the rows of computer desks. beyond that there is a small children's study area and various comfortable seating and desks taking advantage of the view overlooking the gardens and Lade.

THE COMMUNITY ORCHARD

View looking up to the old foundry building from the community orchard. Families who use the centre will be encouraged to grow and tend their own crops and then to cook them in the communal kitchen or take them home with them. The children at the workshops felt that gardening was very important and it was one of the main reasons that they went to the community centre. Gardening is a good life skill to have and it allows children to be outdoors in nature too. The foundry building itself is now a function hall where classes are held and can also be hired out for children's Birthday parties.



**FINAL
SCALE
MODEL
1:200**



THE LADE



Special thanks to...

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*And to all the Dundee families who took the
time to speak to me about my project and fill
in my questionnaire*