The Neighbourhood Link

Stage 3 Document

PROJECT IDENTITY

CONTENTS

1 SITE & VISION

INTRODUCTION

Acting as a link to connect the neighbourhood to what is already in place in their community. Providing direction to other local businesses and aiding them to thrive.

Cearau & Ely are incredibly vibrant and tight communities, full of a multitude of assets. We believe that a community **link** to connect the existing assets is essential to the success of the community as a whole, rather than a doubling of existing services.

Client //

- Caerau and Ely Sports Trust
- Carl Meredith (Chair)
- Wayne Matthews
- Gerald Jones
- Spencer Clarke
- Cllr. Peter Bradbury -Councillor for Caerau and Cabinet member for Culture and Leisure

Summary of Brief //

The Caerau and Ely Sports Trust is a charity that seeks to improve the well-being of the neighbourhood providing opportunities for participation in sport. Their aim is to help build a sense of community within the younger generation through sport with the dual purpose of increasing the health of young people, whilst re-directing them away from any darker paths. All with the ultimate aim of reducing the strain on the NHS and other public services.

The trustees would also like an emphasis on the use of food as a service for children using the facilities; it will act as financial aid for some of the local families and teach parents who may require some direction in order to provide a healthy diet at home. Furthermore, the facilities should help generate awareness amongst local children of the importance of partaking in sport, as only 1,000 children of 26,000 households within the area are currently registered with a sports club. As many as 46% of the children in the area come from single parent households, so participation in a sports team can give them a chance to learn from a positive male role model. Which has been found to have a tremendous improvement in many young people's attitude.

The brief, therefore, is to create a community centre that can aid and facilitate these needs. A space where mental, social and economical well-being can be improved. Bringing together the local community to enable Ely and Caerau to flourish.

THE TEAM

Project Manager //
Faye Williams

Architect //
Diana Belomorska

Cost Manager //
Maddie Howell

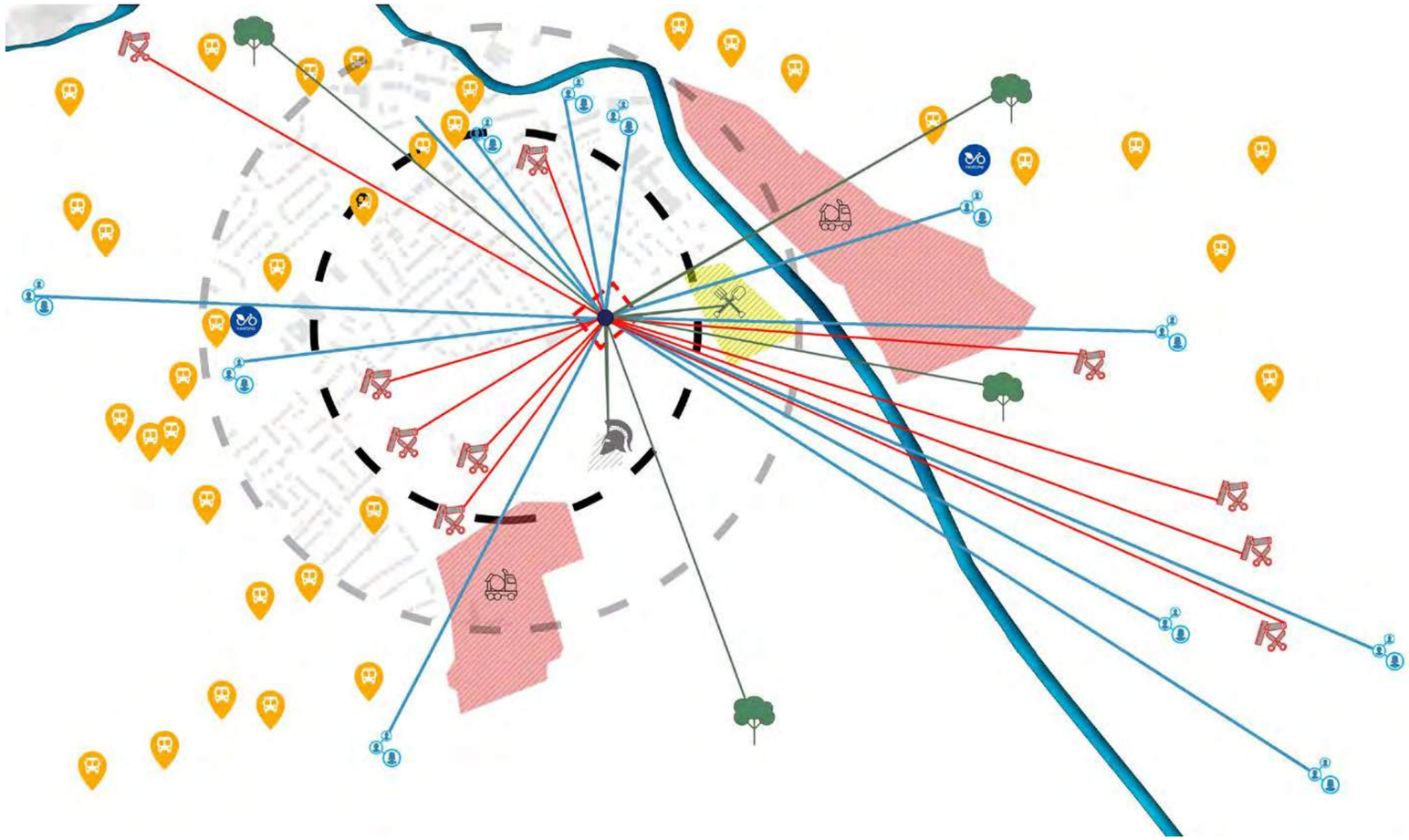
Environment & Services Consultant //
Josh Hyland

Structure, Operations Manager //
Akezhan Yegizov

Urban Designer //
Alex Davies

Landscape Design and Heritage Consultant //
Constantina Charalambous

PROJECT VISION



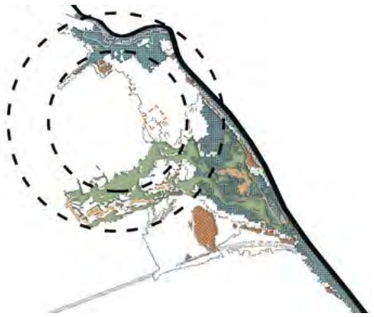
As evidenced above, the ‘Link’ is surrounded by community assets, which we aim to work collaboratively with to spark new connections. By engaging with all stakeholders we hope to create a nucleus for the neighbourhood & for the wider city. For those in need it can be intimidating to go to many different services trying to find the right one, we will be the place you can come to with no judgement, no preconceptions and no stigma.

The oversubscribed local nursery is key to the community, with children being turned away in their droves & 6% of those children being unable to gain a nursery place elsewhere. Having to stay at home until age 3 when they start school, meaning they are developmentally behind and will struggle more to adapt to school. The nursery is also key to the financial viability of this project and so we propose to provide them with modern enlarged facilities to expand access to this vital service.

Our initial draw will be parents dropping their children at nursery or going to the café when their children are playing a sport in the evenings and weekends. Everyone who visits our centre would be encouraged to leave with more information about what other services and centres are available in the local area, whether that is a mother finding out about the heritage centre and taking her toddler, or a father finding his daughter a dance school. We aim to be the place that the Caerau and Ely family come to when they want to discover something new! Our phase two plan is for the services we connect people with to start directing people back to us, thus accessing an audience we otherwise would not have reached.

WIDER SITE CONTEXT

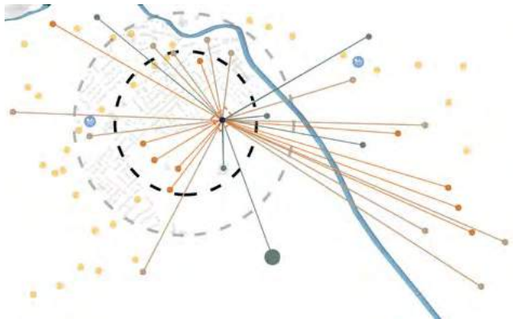
FLOOD ZONES 3, 2 and 1



Referencing Natural Resource Wales, overall, the site has minor to no risk of flooding. Though, as new connections and routes are developed throughout the South East, sustainable urban drainage systems (SUDs) maybe be required for public safety.

Blue – Flood Zone 3 / Red – Flood Zone 2 /
Yellow – Flood Zone 1

LINKS TO LOCAL FACILITIES



The site is currently surrounded by a library of both education and community facilities. All within walking distance, but divided and inaccessible due to the site being divided from its context. Can connectivity be developed between these facilities?

EXISTING ROADS, PATHS AND BIKE LANES

Disconnected to existing bus stops, cycle paths and railway stations, also the remaining context of Cardiff, it is therefore important to encourage sustainable connectivity throughout all divisions of the site, by means of nature trails, walking routes, cycle's paths, Next Bikes, specifically within the South East, whilst encouraging physical and mental well-being.

KEY

- Site Location
- Allotments
- Heritage Site
- Future Planning
- Education Facilities
- Community Facilities
- Next Bike
- Bus Stop
- Open Greenspace
- 5/10 Min Walking Distance
- Acoustics
- Main Roads
- River Ely
- Cycle Lanes
- Roads

SITE DESCRIPTION

SITE PHOTOS

EXISTING SITE

PLAYGROUND and 3G PITCH

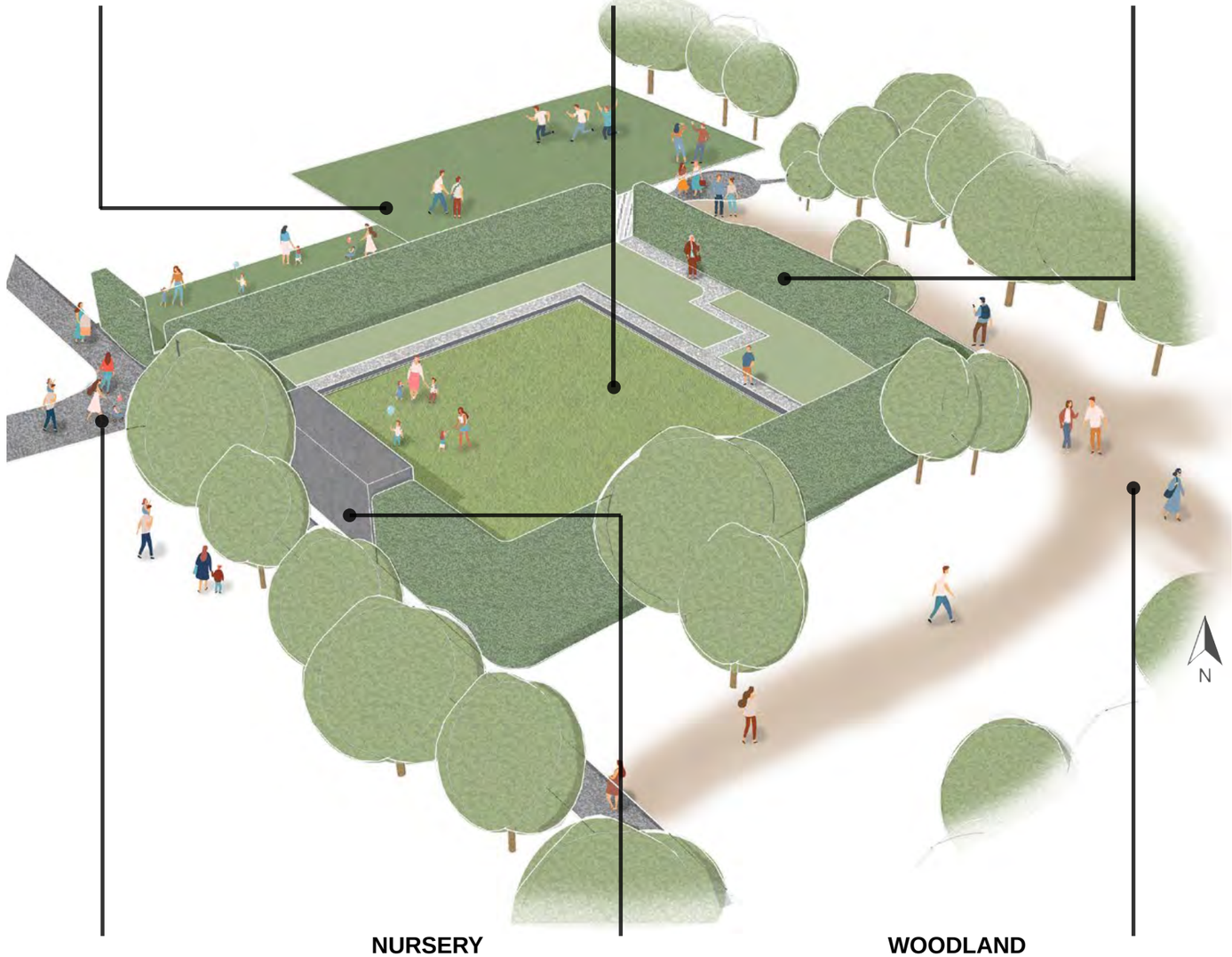
To the north of the site there is currently both a 3G sports pitch and playground. The 3G pitch has a tall fence surrounding it to prevent any balls from coming out of the sports court. The sports court is in use most days, in the summer until as late as 9pm. The playground however is run down and underutilised but supports the nursery as a space to bring the children outside when the weather permits it.

BOWLING GREEN

The central focal point of the site, the bowling green, provides a space where Ely (Cardiff) Bowling Club play bowls between the months of April - September. The community are keen to keep the sport alive and would like the bowling green to be relocated in the immediate vicinity if the site is to be built upon. There is also a small play-area, allotment and seating area on the site.

BUSHES

The site is currently surrounded by tall bushes. The bushes provide a soft barrier between the bowling green and the rest of the park to allow it to be closed off from members of the public when out of use. This allows the green to stay protected and maintained at the quality that is required to play the sport.



PATHWAYS

There are currently several pathways both in and around the site. The pathways that surround the site come to a point in the north-west corner which currently appears to be the central point of all access across the whole park. Due to the majority of the park being used by football and rugby pitches there is currently no paths that cross the centre of the park, meaning you either have to walk across the grass or around the edge to get to the entrance you need.

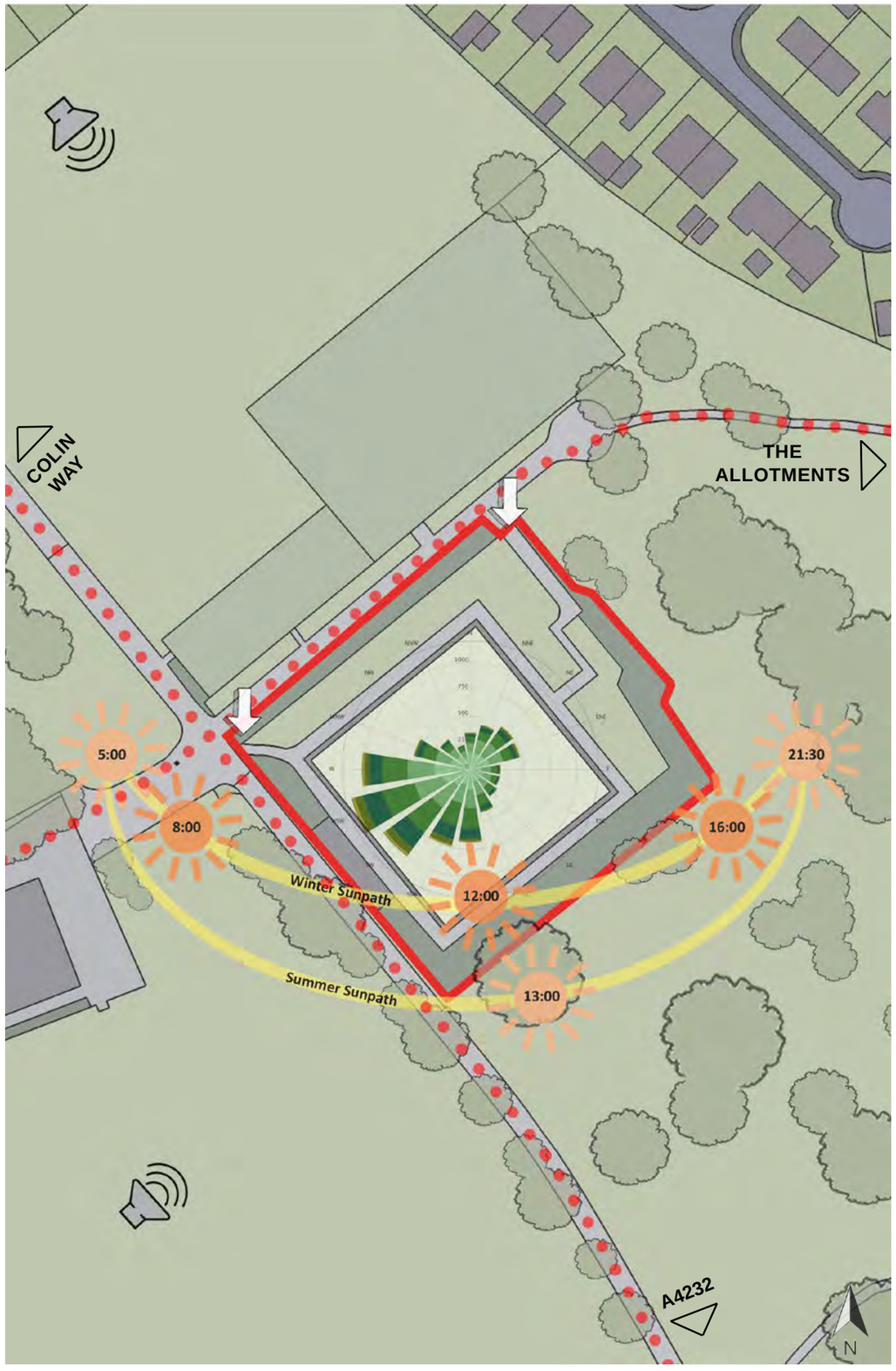
NURSERY

The nursery is currently housed in a metal clad shed to the west of the site. Providing a space where parents (as young as 14) can drop off their child for the day and know they are safe while they go to work. As well as providing 20 spaces to children the staff offer pastoral support to these young mums. This is something that should be catered for in the design of the new scheme. Creating spaces where everyone can learn.

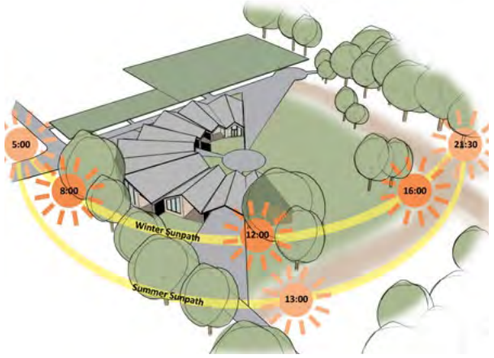
WOODLAND

To both the east and south of the site there is a dense woodlands. The woodlands provides a shelter for dog walkers in harsh weather, providing woodland trails that twist and turn. The woodland adds an interest to the landscaping across the park which with some additional signage and small interventions could become a space where children could play and explore.

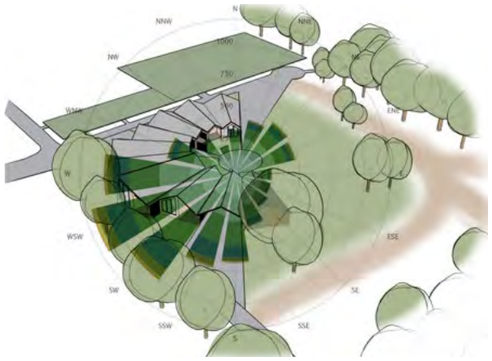
SITE ANALYSIS



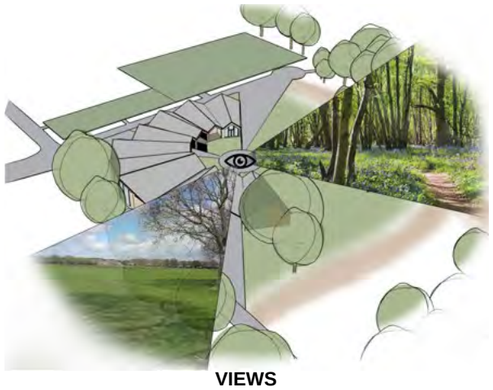
EXISTING SITE PLAN



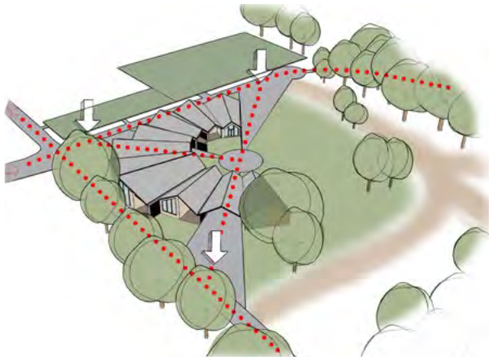
SUNPATH



WIND



VIEWS



ACCESS

DEMOGRAPHIC

"I would love a space where I could go after my dog walks. Somewhere to relax and enjoy the weather"

"I want somewhere I can get out of the bad weather when the boys are playing football"

"I'm looking for somewhere to learn, somewhere I can develop my basic skills to help both me and my children live a healthier lifestyle"

"A space where I can feel safe and interact with other children my own age"

We aim to create a space that can host a large demographic. A demographic that works to different timetables and lifestyles. With a focal point of the children, somewhere that they can be looked after, come after school and feel protected at all times. A safe space for all members of the community. We believe that a proportion of the locals needs can be met through a large events hall and a cafe space. Therefore, these will be the key open access areas within our scheme.

BUILDING PROGRAMME

While gaining a clear understanding of the client brief we realised that we needed to create a building that would engage the community while redefining the key links that could help the neighbourhood thrive.

To form our programme, we have broken the brief requirements into three key areas, nursery, community and shared. From this we were able to create joining spaces that would allow the building to work independently.

KEY

COMMUNITY SPACES

1. Reception
   10m²
2. Offices
   36m²
3. Cafe
   65m²
4. Quite Area
   36m²
5. Events Hall
   200m²

NURSERY SPACES

6. Crèche
   62m²
7. Nursery
   62m²
8. Classroom
   25m²

SHARED SPACES

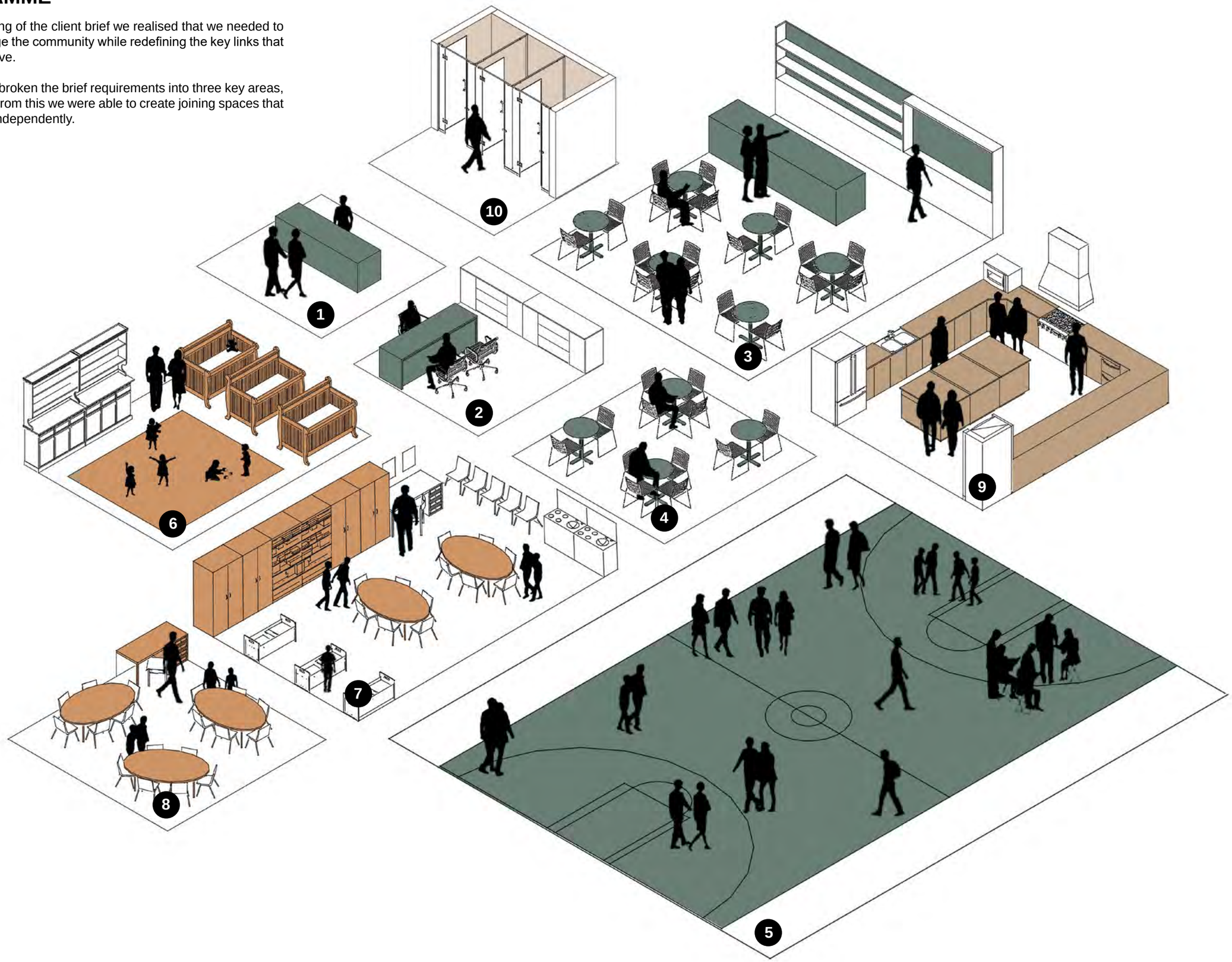
9. Training Kitchen
   45m²

SUPPORTING SPACES

10. Event Toilets
    35m²

    Nursery Lobby
    25m²

    Storage
    45m²



BUILDING FUNCTION

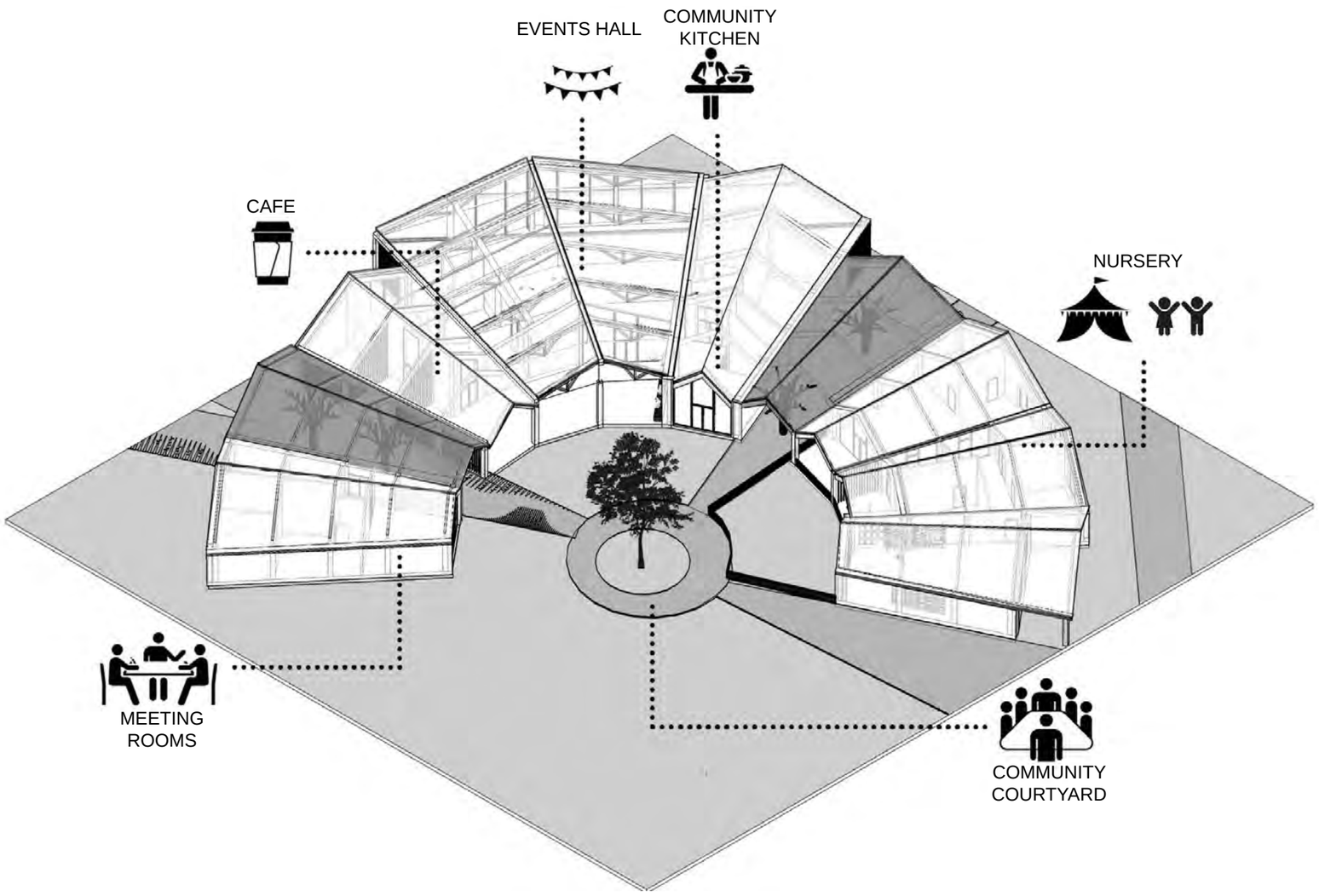
Within the level of activity diagram each space has been analysed for its predicted typical activity levels everyday day of the week, with dark green being highly likely that the space will be being used and light green being that there is a good chance that the room will be used. From this we are able to see how the centres focus might change throughout the day.

By understanding how the different areas of the building may work it becomes easier to pre-decide on things such as how to heat each space and at what times each space needs to be staffed. Alongside this, decisions can be made of when each area of the building could be locked for safety reasons. This helps define the access required into each area of the building directly from the outside.

Although the majority of the spaces will have quiet times through-out the day the courtyard is predicted to have activity across the entire day. Therefore, the courtyard should become the heart of the design. Somewhere that the entire community can come together and create links with others they may not otherwise be able to.

From studying the brief, building programme and function it has become clear that the building is a required facility in the community and that it will become a hive of activity that will attract a wide variety of community members to interact with one and another. That we can not only fill a hole in the neighbourhood but also provide vital life skills such as cooking to those less fortunate while also being able to provide necessary counselling where needed.

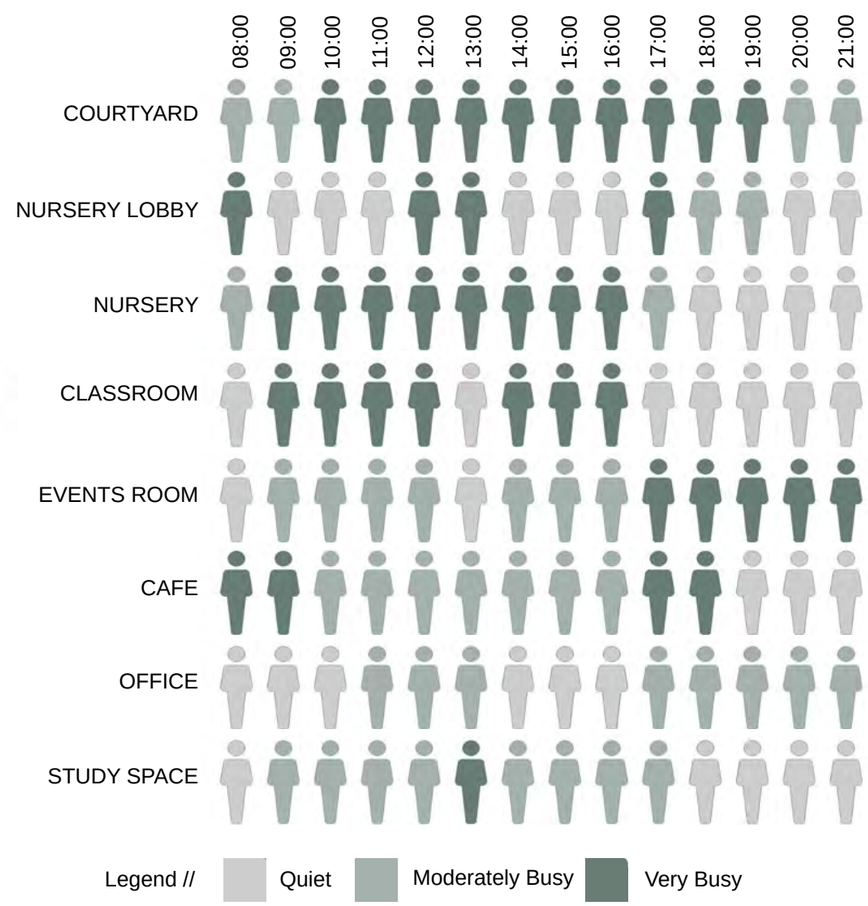
The development of the surrounding area will fall under the general landscaping plan which will respond to not only the existing park but the new building that we are proposing, to help link the community to its routes and bring connection to all the assets that the community already hosts.



ACTIVITY SCHEDULE

	Monday	Tuesday	**Friday**
COURTYARD	8:00 Drop off Kids	8:00 Drop off Kids	8:00 Drop off Kids
NURSERY LOBBY	8:30 Registration	8:30 Registration	8:30 Registration
NURSERY	9:00 - 10:00 Breakfast	10:00 - 11:00 Music Lesson	14:00 - 15:00 Art
CLASSROOM	10:00 1to1 Classes	10:00 Group Classes	10:00 1to1 Classes
EVENT SPACE	14:00 – 16:00 Cooking workshops 17:00 – 19:00 Youth Club	18:00 – 19:00 Book club 19:00 – 21:00 Open Discussion	18:00 – 20:00 Youth Club (Half) 18:00 - 19:00 Weight Watchers (Half)
CAFE	16:00 Parents grab coffee while waiting for the kids	19:00 – 21:00 Open Community Discussion	12:00 Knit & Natter
OFFICE	8:00 – 17:00 Counselling meetings & Operations	8:00 – 17:00 Counselling meetings & Operations	8:00 – 17:00 Counselling meetings & Operations
STUDY SPACE	11:00 Reading Group	17:00 Study Group	16:00 Homework Club

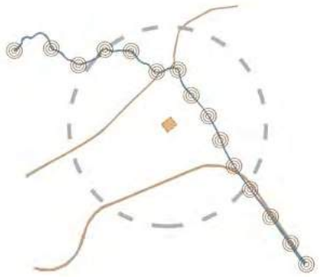
LEVELS OF ACTIVITY



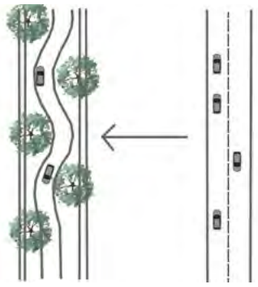
2 DESIGN RESOLUTION

PROPOSED MASTERPLAN

Utilising the building fabric, an urban grid system has been formalised in relationship to existing entrances, local facilities, landmarks and heritage site to generate a divisive network of connections that connect the building, landscape and urban context to one unified typology.



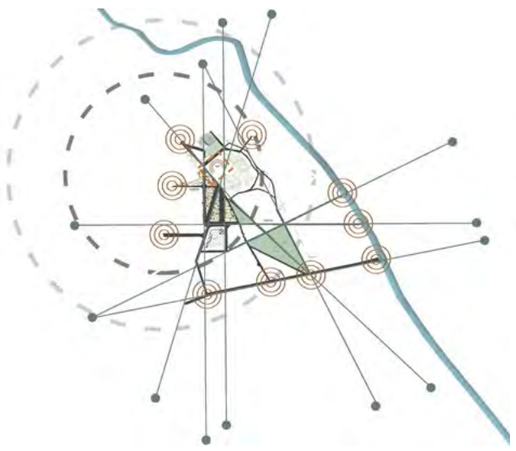
PROPOSED RIVER ACTIVITY



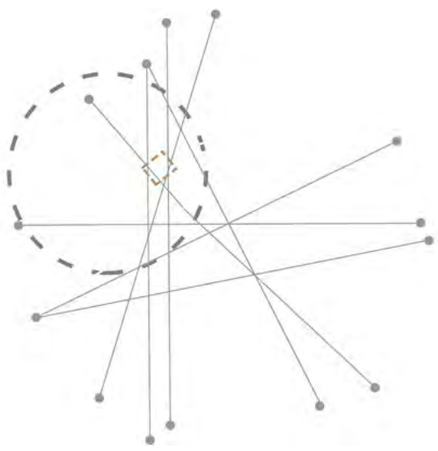
PROPOSED TRAFFIC CALMING

PROPOSED CYCLE AND TRAFFIC CALMING

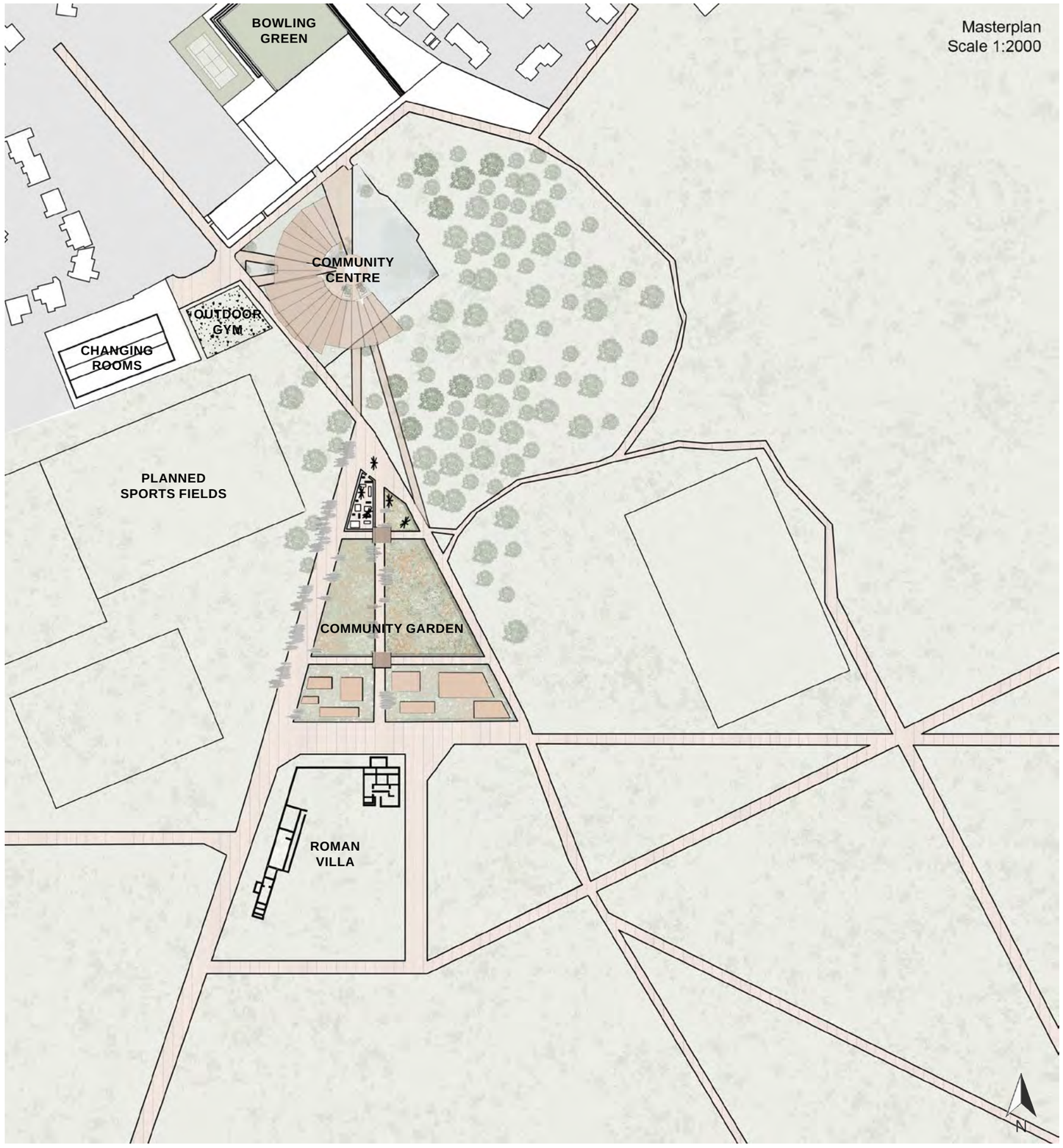
PROPOSED SECURITY AND STREET LIGHTING



PROPOSED GRID SYSTEM



PROPOSED CONNECTIONS

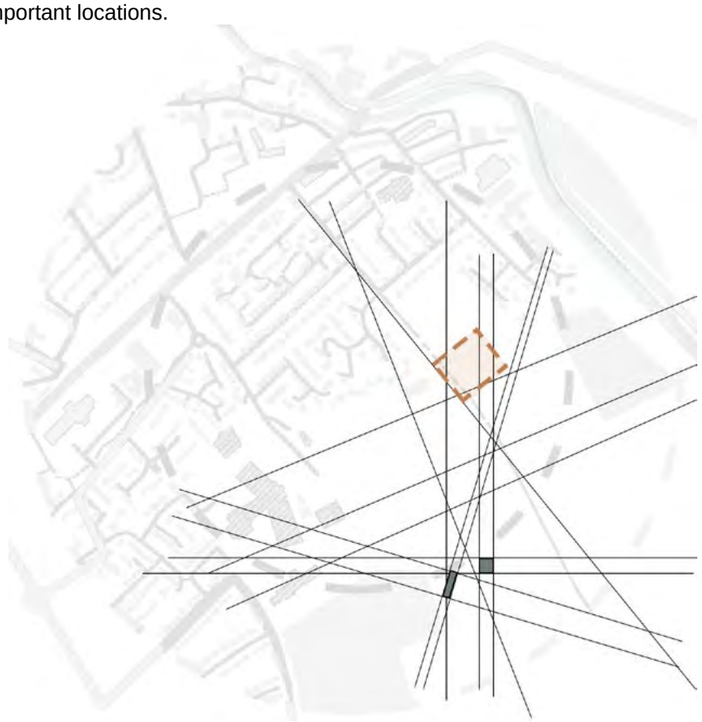


LANDSCAPE DEVELOPMENT

KEY - Paths Green Spaces Site Grid

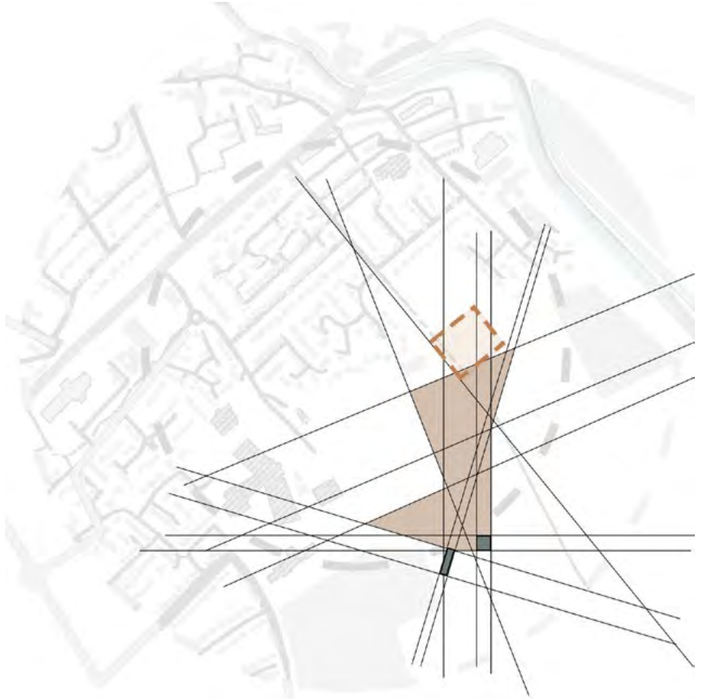
STAGE 1 -

Grid created by offsetting the main axis of the site, the Roman ruins and from important locations.



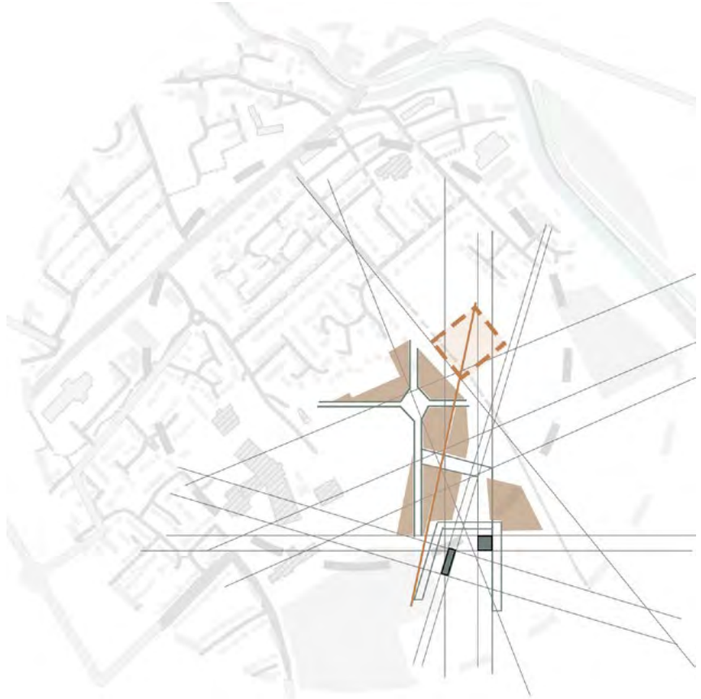
STAGE 2 -

Possible green spaces were identified.



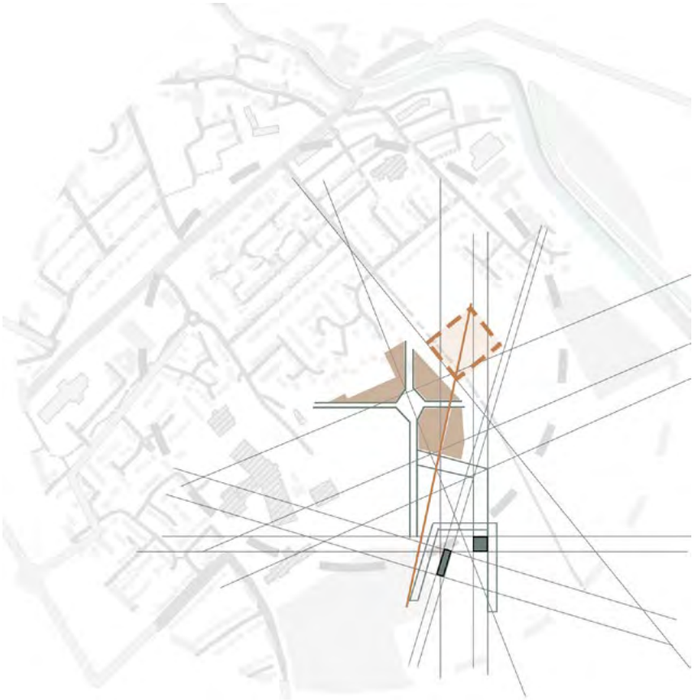
STAGE 3 -

Initial suggested paths were created by using the grid as a guideline to identify which points in the wider site should be connected.



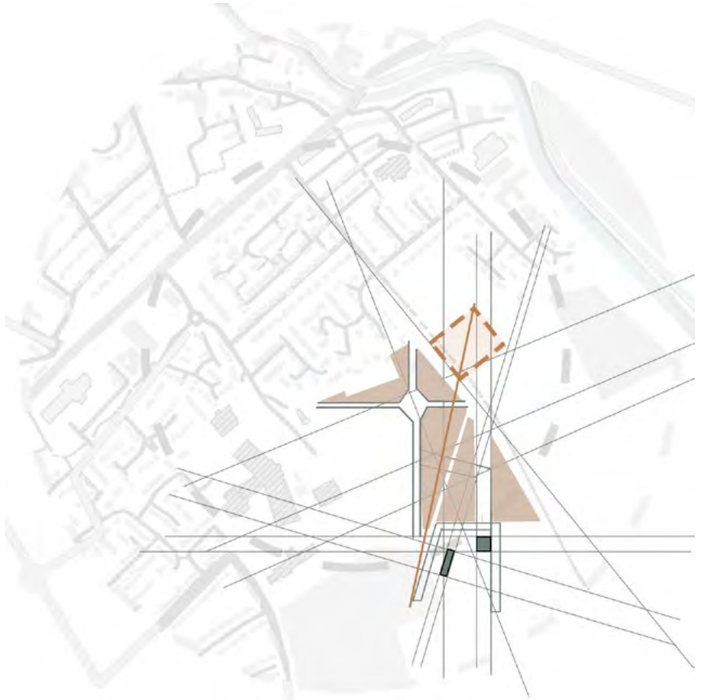
STAGE 4 -

Green spaces were therefore defined between the paths.



STAGE 5 -

Those green spaces were further simplified and defined based on cost of landscaping.



STAGE 6 -

The final arrangement of green spaces and paths was an outcome of the above processes as well as taking into consideration the current sports developments undergoing in the sports fields.

LANDSCAPE PROPOSAL

PHASE 2 WORKS

The paths created (from the derived grid system) have several checkpoints, marked by small pavilions, made from recycled timber. As you move from the community centre to the Roman Villa ruins you get to experience the concept of the “Lost-and-Found heritage trail”. We are aiming to recover the lost identity of the area by allowing people to experience the heritage history through small exhibitions hosted under the pavilions, making their way to the Roman Villa ruins site, linking the community to the history of the place.

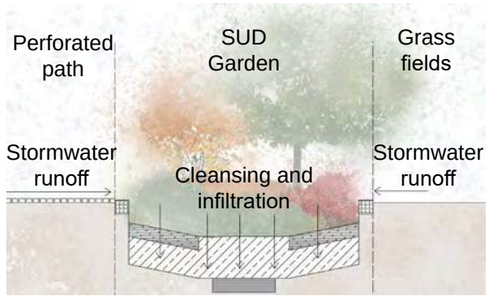
On the east side of the park, we have design simple Sustainable Urban Drainage gardens, as it is a flood risk area, being close to the river. The green spaces in the centre of the site are designed to include an outdoor gym next to the existing changing rooms, picnic areas surrounded by flower gardens and a river garden. The lines followed to create those features were inspired form the maze-like character of the ruins.

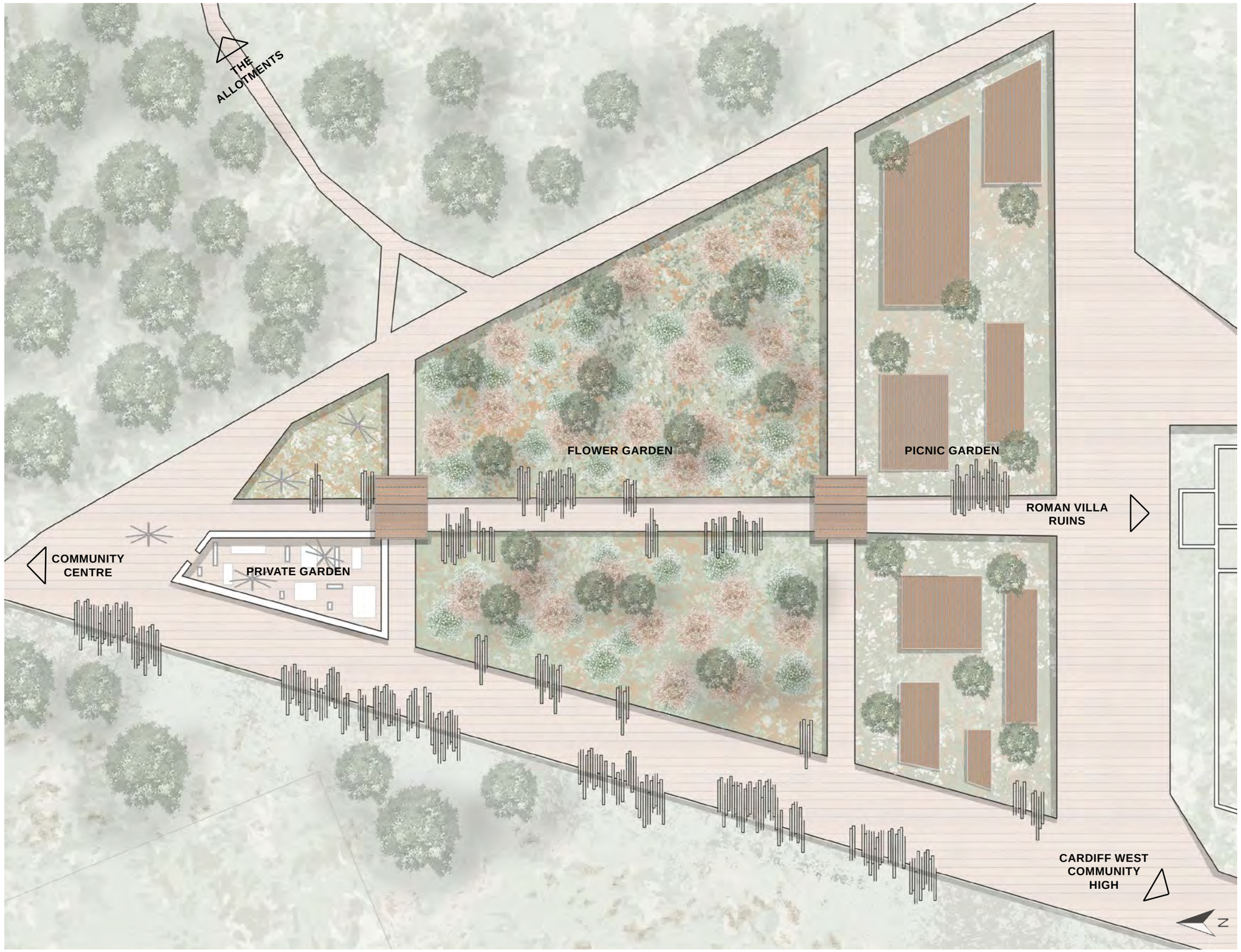
WALKWAY PAVILIONS

The pavilions, which can be found along the walk ways between Gardens, aim to provide shelter from both the sun and rain. An area where visitors to the park can pause and slow down.

The structural ‘trees’ conceptually blend the pavilion in with the surrounding landscape, while also connecting each pavilion to the building through the use of the structural design.

SUD SECTION - 1:250



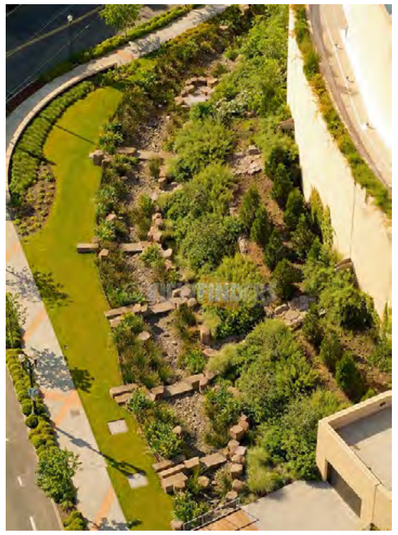


DRAINAGE & BIODIVERSITY

BIOSWALES

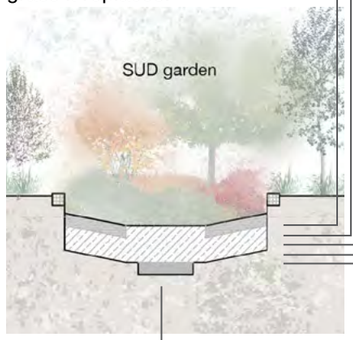
These are a key component of the site landscaping strategy. The basins mimic natural wetlands and slow the flow of surface water run-off throughout Trelai Park. A series of gabion walls delineate these swales and assert their significance to the site user. Stormwater collected from the building and surrounding site discharges into the swales and can slowly be absorbed into the watertable. The soils in these swales have been engineered and layered in a specific manner so as to promote peak infiltration while the native plantings add to the diversity of the site.

The planting present in the swales also helps to filter pollutants from the water and ensure we do no harm to the River Ely.



BENEFITS OF SUDS

Climate Resilience
The new planting introduced into the swales acts as a much more effective carbon sink than the grass it replaces.



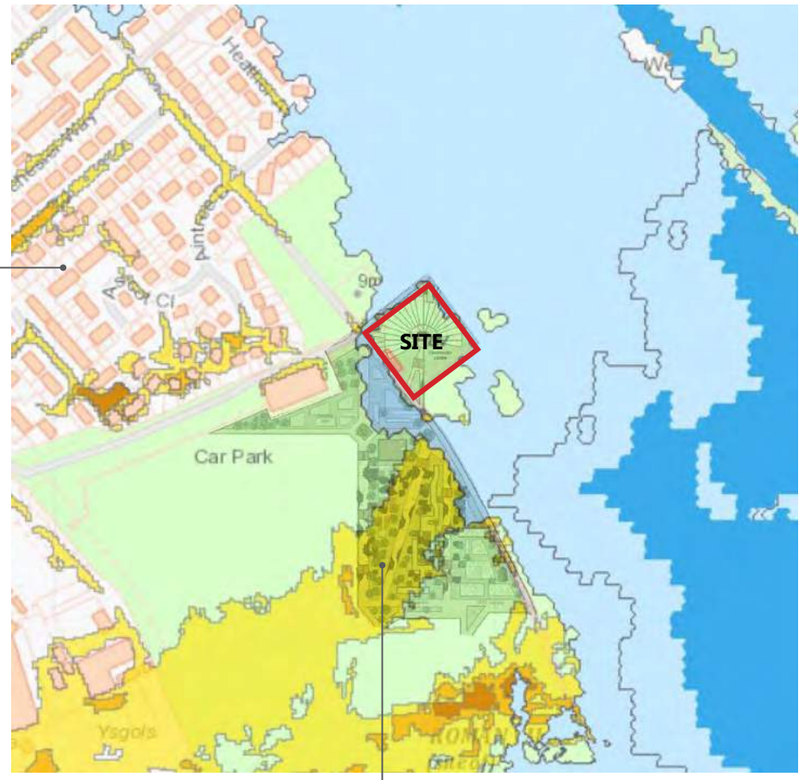
Recreation & Health
As this water will be drained directly from the sports pitches at Trelai Park we will increase the availability of the sports fields by reducing flooding.

Improved Water Quality
SUDs decrease water pollution as they reduce the amount of sediment and contaminants in surface water runoff by filtering it.

Flood Risk Management
SUDs mimic natural drainage and provide new areas in which to store water in the event of excess rain. This slows the flow of water and prevents flash flooding.

Economic Boost
Well landscaped parks can become a destination in their own right and become a driver of visitors to Caearu + Ely, Trelai Park & the Link.

WHY DO WE NEED SUDS?



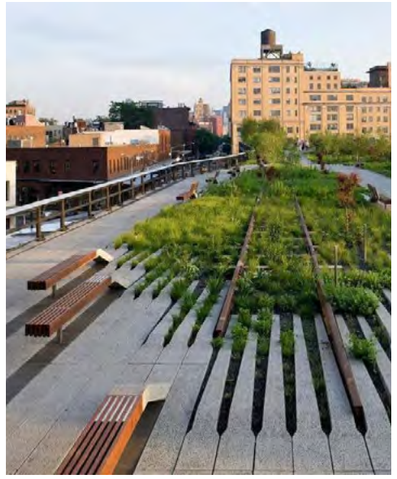
Surface Flooding

Flood Zone 2

Flood Zone 3

Our SUDs garden sits in the primary drainage area between surface runoff & the River Ely. This means we are best placed to filter pollutants out of the water before it enter the water course & ocean.

PERMEABILITY



The High Line is a successful example of merging soft and hard landscaping to create pathways. Merging the existing grass area into the timber paths avoids ponding water, allowing the water to start percolating deeper into the landscape faster. This creates a smooth transition, avoiding sharp thresholds between nature and hard landscaping.

BIODIVERSITY

Iris Pseudacorus

Dryopteris filix-mas

Bergenia sp.

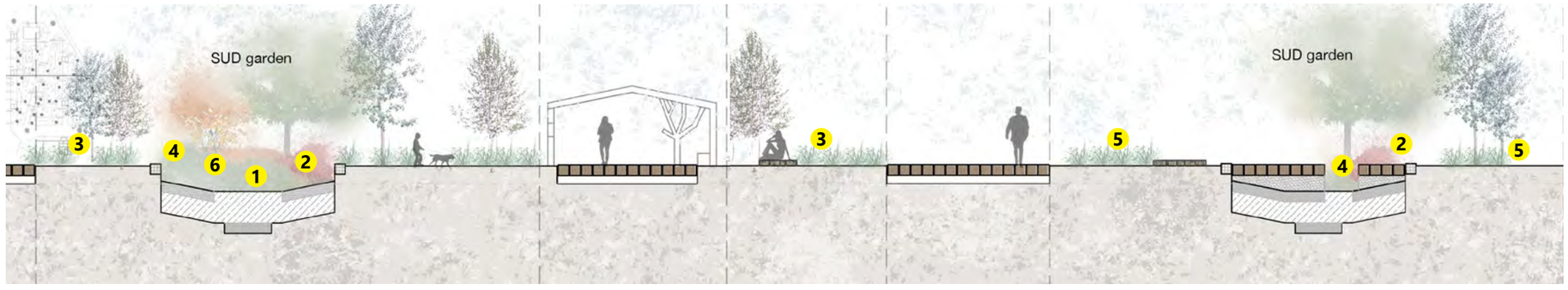
Miscanthis Sinensis

Veronicastrum virginicum

Juncus Effusus

Creating a new wetland habitat will drastically increase the flora and fauna present in the park, which is currently a monoculture of grass. The introduction of new biodiverse planting will encourage new animals such as dragonflies, bees and in turn birds to feed on them. These plants have the added benefit of filtering the surface water runoff before it enters the river.

The site does not sit in a flood zone, but is surrounded by Flood Zone 2. Whilst the wider park is open green space, it is subject to surface water flooding which prevents use of the field for organised sports in winter months. We can add value by increasing the drainage capacity on site.



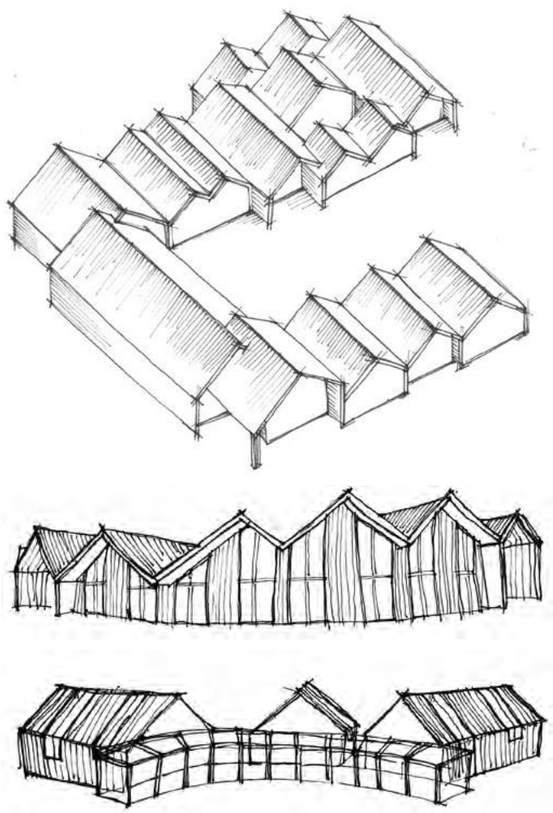
DESIGN DEVELOPMENT

STAGE 1 -
INITIAL SKETCHES

To start the design process off we looked at key precedent buildings that have the same typology as us, this included nursery's and community centres (see below for image reference). We then completed some initial sketches to gain an understanding of what each group member was expecting from the design of this project.

PRECEDENTS

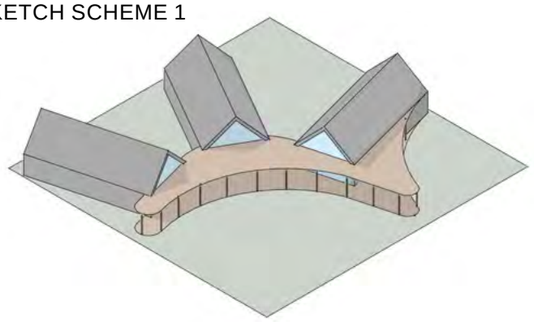
SKETCH IDEAS



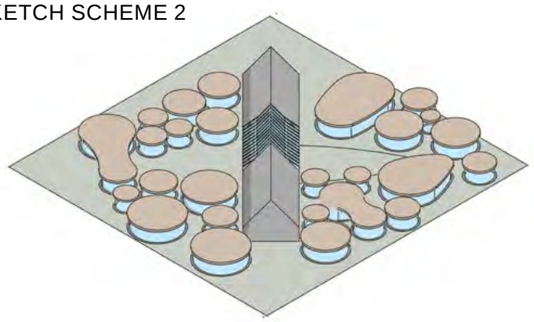
STAGE 2 -
CONCEPT DESIGN

To develop the design from our feasibility idea we developed a series of initial sketch models that took our core themes and incorporated them into the design. These themes include links, openness to the surrounding park, breaking down key spaces and creating a heart of the community. By looking at a range of designs we were able to get an understanding for the qualities of each that we liked but also what we did not like.

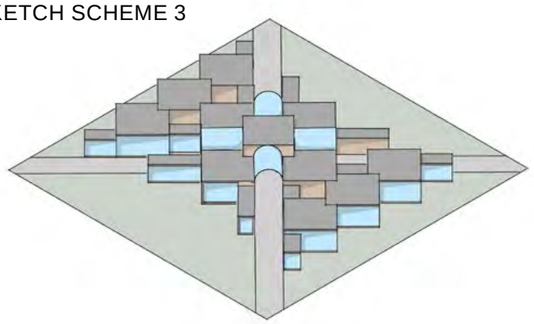
SKETCH SCHEME 1



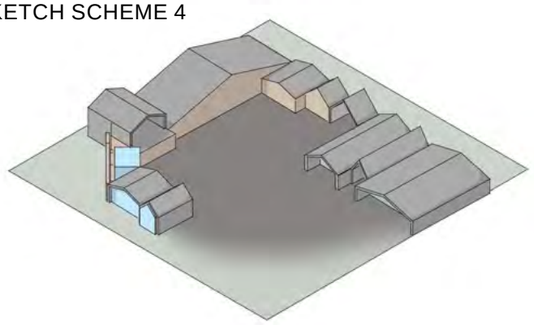
SKETCH SCHEME 2



SKETCH SCHEME 3

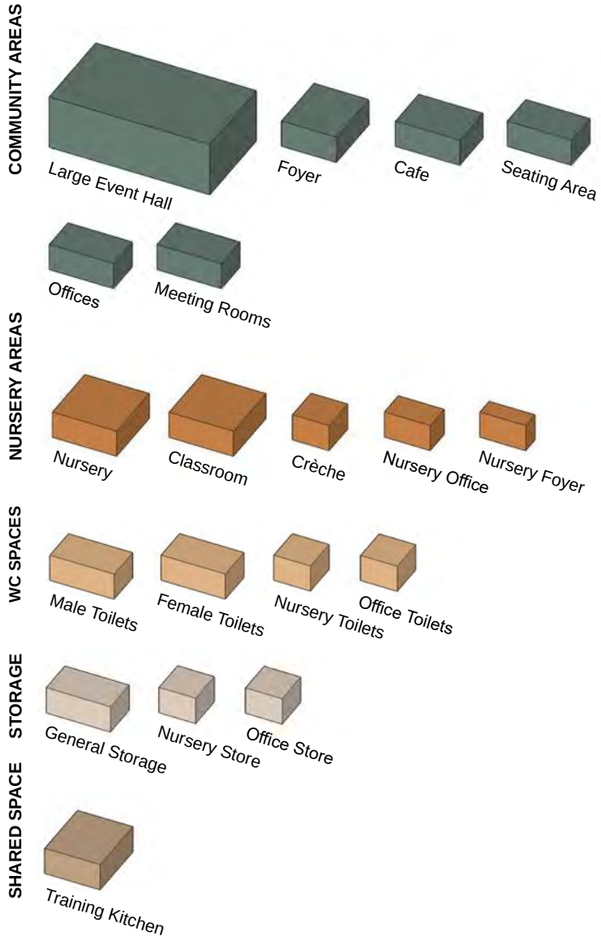


SKETCH SCHEME 4

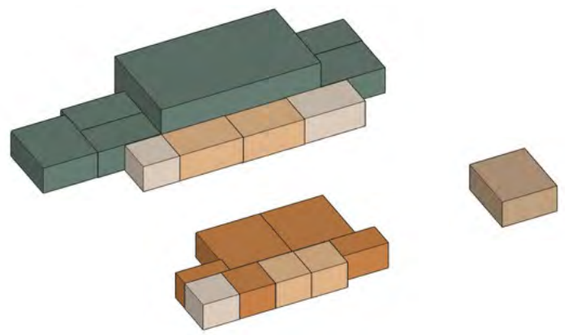


STAGE 3 -
INITIAL MASSING

After looking at our building programme we broke the spaces into 5 key areas; Community, Nursery, WCs, Storage and Shared Spaces. We worked the areas required for each space by using the British standard on how much room a person will need to do a specific activity, based on what we believe will take place in each room. From this we were able to categorise the spaces into

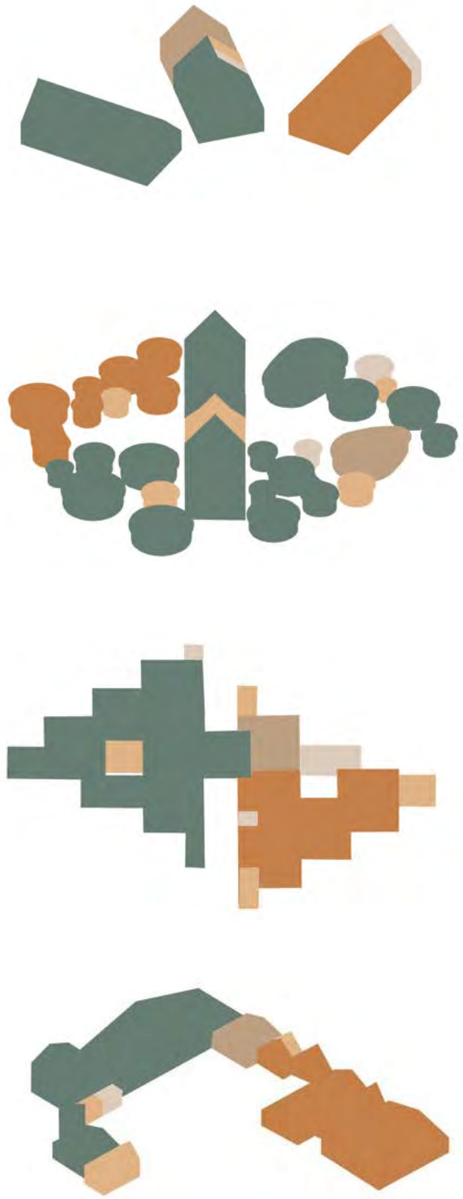


GROUPING THE MASSES



STAGE 4 -
INTEGRATING MASSING

The masses were then incorporated into our concept ideas to get an understanding of what spaces would be required to connect to each other. With each scheme responding differently to the brief but similar trends starting to appear such as the linking of the event space and cafe/foyer. The separation of the nursery from the event space by use of the community kitchen.



STAGE 5 -
CREATING A FORM

After exploring the groups initial design ideas we took the key components and combined them into one design. This included locating the Nursery to one end of the building and using the Community Kitchen as the linking space between the different functions. Creating a horse shoe form with a courtyard at the heart.

STAGE 6 -
SPLITTING THE PROGRAMME

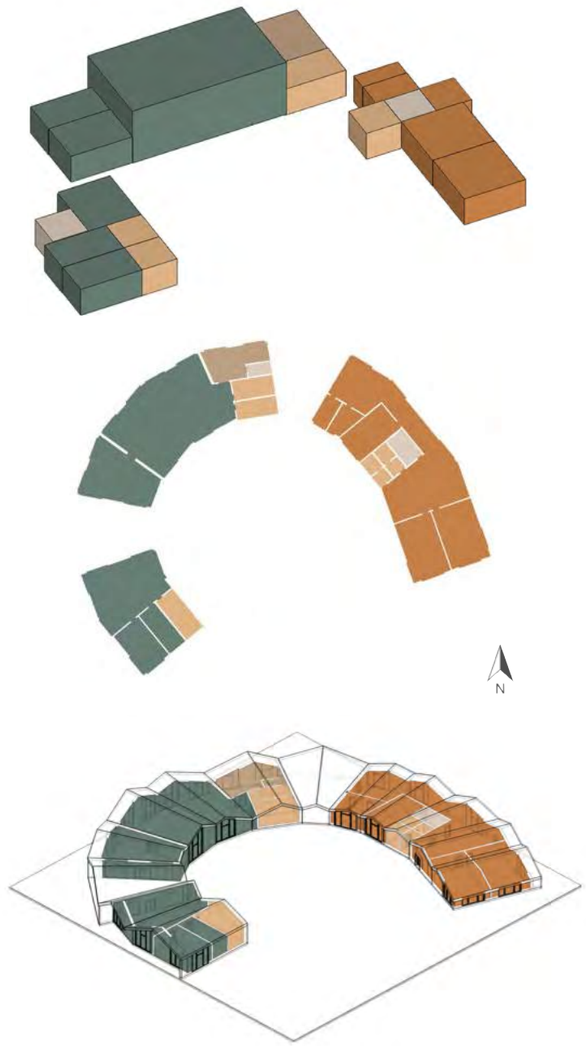
The edge of the building was then softened into a curve to allow the building to be more approachable from the surrounding park while also providing protection to the courtyard. The design was split into three separate buildings that would be linked by one continuous roof. This allowed for separate entrances into the nursery and events space, decreasing the security risk for the nursery.

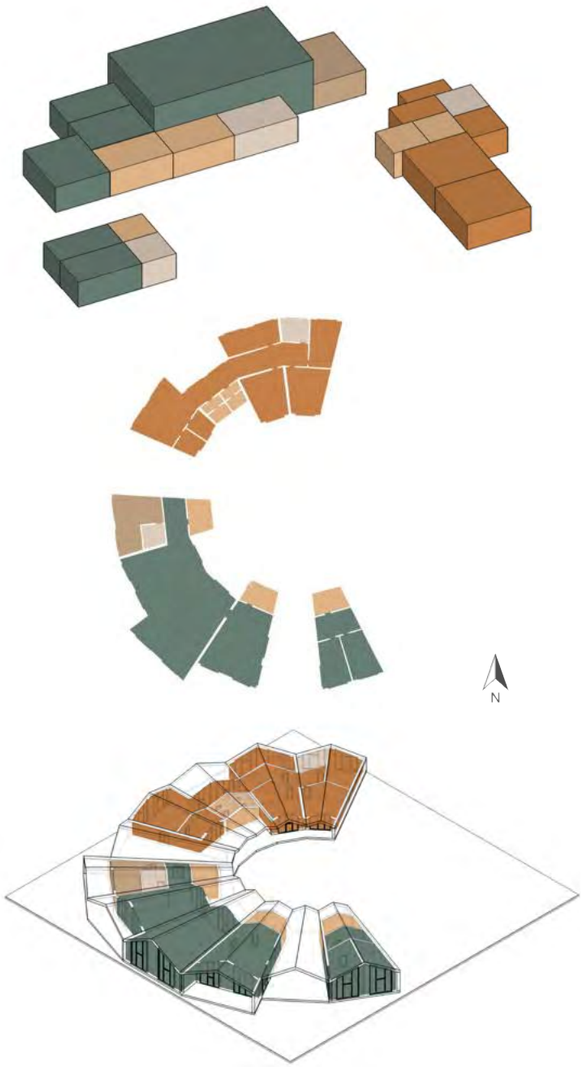
STAGE 7 -
REORIENTATING THE BUILDING

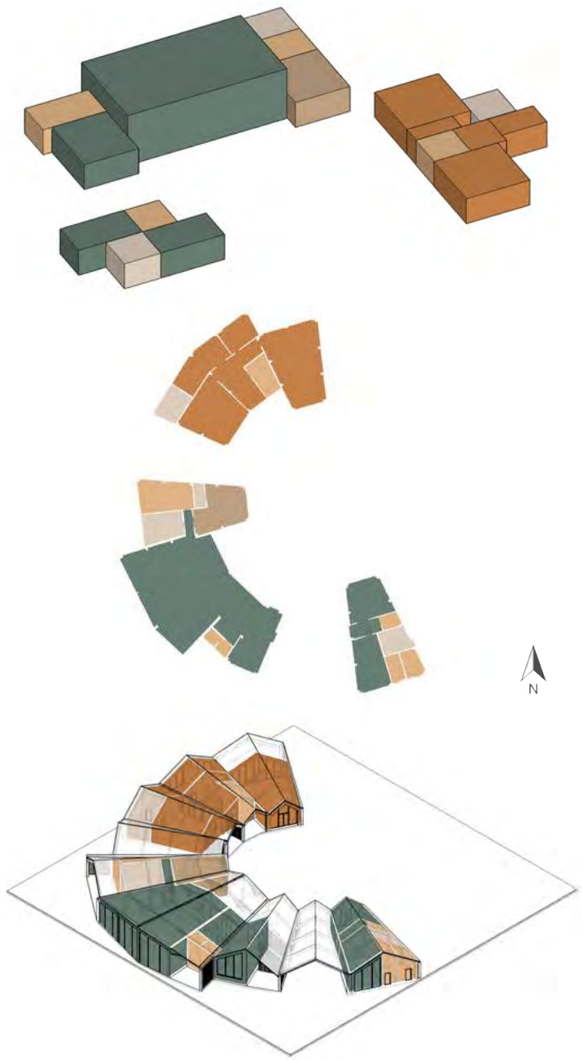
By reorientating the building we were able to protect the courtyard from the open park as previously the orientation would have meant that the courtyard became a wind trap with the strongest winds coming from the West. Additionally we pulled and pushed certain aspects of the building to create private and protected coves.

STAGE 8 -
REFINING THE AREAS

Finally we reassessed the sized of each space and reduced the areas of some of the rooms. This became necessary as we wanted to produce a design that was fit for purpose and would not be providing more than the community needed. The refined design brought rationalisation to the scheme while keeping all the initial design concepts.







COST DEVELOPMENT

Early evolution of the neighbourhood link shows building as a system of Clustered A-Frames. The budget here at it's lowest point.

- Timber laminated A-frame
- Block work external walls
- Squared system of interlocking blocks
- £1800 per sqm at ≈ 700sqm

£ ≈ 1,260,000

Development of the building shows the blocks begin to move in a more circular fashion – this opens the building to its existing links but most of the structure is kept largely similar.

- More incorporation with landscape included.
- System of larger blocks increases primary budget costs (larger frame structure requires thicker beams)
- £2100 per sqm at ≈ 900sqm

££ ≈ 1,890,000

Further development of the plan displays a complex roof structure. The A-frames have expanded outwards and are more in keeping with maintaining the clear axis with the wider landscape plan. Tunnels are introduced, held up by the existing frame system.

- More incorporation with landscape.
- Complex Roof structure with bespoke frame details.
- £3000 per sqm at ≈ 1100sqm

££££ ≈ 3,300,000

Final iterations called for intense condensing and clarity of building program. Approximately 300sqm of Internal space was cut in order to prioritise USP and inspiring selling point of roof and axis to reduce overall building cost.

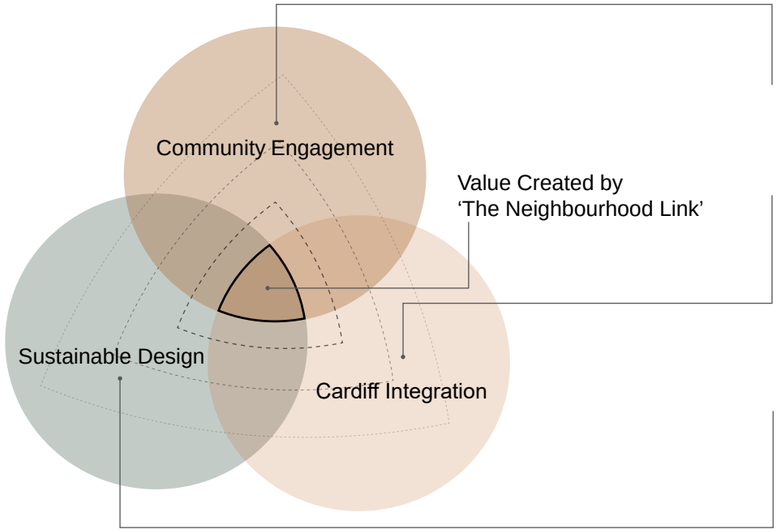
- GIA drastically reduced in favour of condensing the plan.
- Complex Roof structure with bespoke frame details maintained, but refined.
- £2400per sqm at 835sqm

£££ ≈ 2,045,750

A HOLISTIC SUSTAINABILITY STRATEGY

ATTITUDE TO SUSTAINABILITY

Our holistic approach ensures that the building not only makes economic & environmental sense for the Sports Trust, but also knits the community together. We will also ensure that the centre reaffirms Ely & Caerau's relationship with the wider City of Cardiff.



- **TAKE OWNERSHIP** - Locals are involved at each stage.
- **WORKSHOPS & TRAINING** - re-skill locals to be part of our build/ maintenance team.

- **PHYSICAL LINKS** - We want Trelai Park to become a primary bike route for commuters.
- **INVESTMENT** - Lobby for a 'NextBike' station at the Link.
- **CENTRE HIRE** - Get the University, Businesses and Parties down to the centre for outreach, conferences etc. Make people excited about coming to E&C!

- **RESTRAINT** - We propose only building what is necessary.
- **RECYCLE** - We will utilise by-products & recycled materials where possible.
- **REDUCE** - Heating, Ventilation & Access will be restricted to certain areas of the building during each activity, season & timetable.

DESIGNING FOR SOCIAL SUSTAINABILITY

We will adopt a mode of working that weaves it into dialogue and decision-making throughout the process. We will use 'social sustainability checkpoints' in the proposed programme so that the project's potential social value impacts can be regularly assessed. Our team also has a member who is responsible for championing and tracking the project's social sustainability goals.

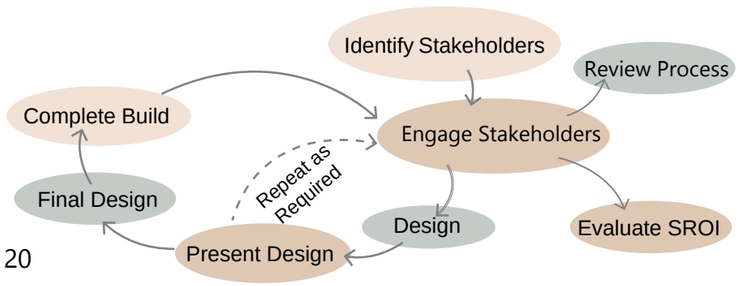
We have also studied schemes which have generated social returns and see how it was achieved in order for us to learn.

EVALUATING SOCIAL RETURN ON INVESTMENT

Social Return on Investment (SROI) is a systematic way of incorporating social, environmental, economic and other values into decision-making processes. By helping reveal the economic value of social and environmental outcomes it creates a holistic perspective on whether a project is beneficial.

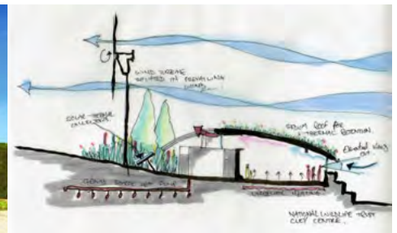
Stakeholder perspectives are essential in the SROI approach, as it is their perception of the value added which is assessed.

PROCESS OF MEANINGFUL ENGAGEMENT



SUCCESSFUL EXAMPLE

Cley Marshes Visitor Centre / Norfolk Wildlife Trust



Size -	220sqm
Cost -	£675,000 (~£990,000 with inflation)
Cost per sqm -	£3070 (~£4500 with inflation)
Timeline -	3 Yrs design to completion.
Client -	Norfolk Wildlife Trust (also a Charity)
Architect -	LSI Architects
Users -	110,000p/a

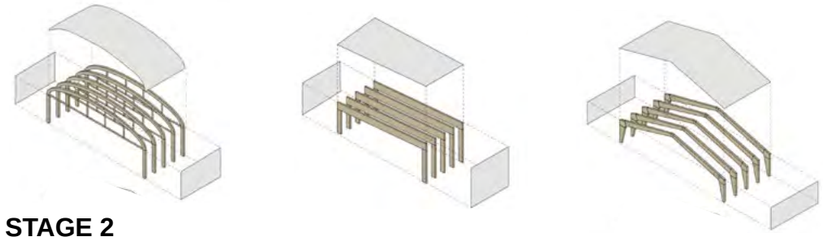
The facility provides Cley with a community resource which was lacking. It also offers the chance to learn about the local environment. The intention was to enhance the conservation and recreation potential of the area, whilst promoting sustainable tourism throughout the year.

This building has stimulated the parkland so much so that Phase 2 was brought forward and completed in 2015. This was due to the building itself becoming a destination and the business (cafe) far exceeding its business plan.

STRUCTURAL STRATEGY DEVELOPMENT

STAGE 1
STRUCTURAL CONCEPT

The initial phase of the feasibility study looked closely into various types of portal frame structures predominately made with timber. Multiple structures were assessed and compared according to their span distance, aesthetic appropriateness, possibility to cluster and create various planning layouts.

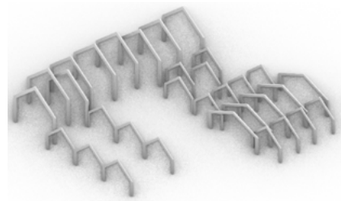


STAGE 2
STRUCTURAL STRATEGY

The second phase of research Was undertaken in regard to testing different clustering options that can be made with the portal frames to form various layouts of the building. The common typologies have been discovered within three main strategies:
1) grid layout 2) linear 3) circular

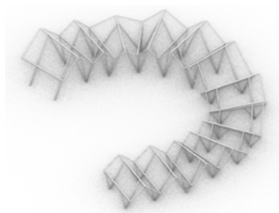
STAGE 3
INITIAL STRUCTURAL STRATEGY

The initial proposal understood that the building will be hosting a variety of mixed spaces that will intertwine with each other. This connection between spaces brought us to look closely into the idea of clustered frames which intersect into one another. Hence, through structure it is possible to link various spaces and activities.



STAGE 4
SECOND STRUCTURAL STRATEGY

As the design developed further the building took a circular shape with various heights of pitched roofs from previous proposal. This made the structural shift towards the circular layout. In comparison to the previous layout, it has its own advantages in terms of structural components. Aesthetically it also brings continuity and large open plans for different programmes with no columns in between spaces.



PLAN


KEY
1 Office
2 Study Space
3 Cafe
4 Events Hall
5 Training Kitchen
6 Storage
7 Nursery Reception
8 Staff Offices
9 Crèche
10 Classroom
11 Nursery
12 Nursery Storage
13 Kitchen Storage
14 General Storage
15 Nursery Kitchen
16 WC
17 Plant Room
A
B
1:250
N
0
5
10

SECTIONS

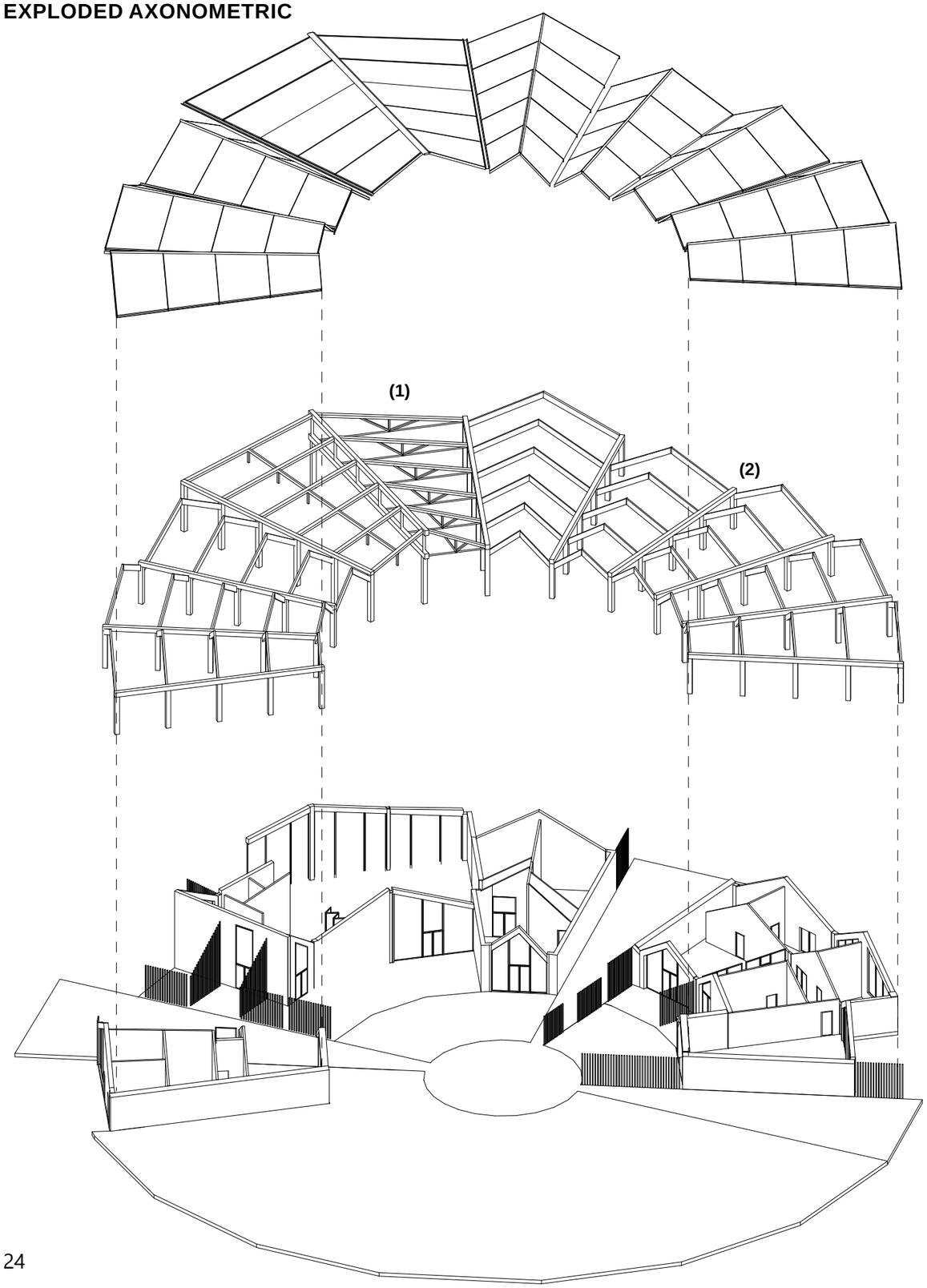
A-A

B-B

COURTYARD VISUAL

PROPOSED STRUCTURE

EXPLODED AXONOMETRIC



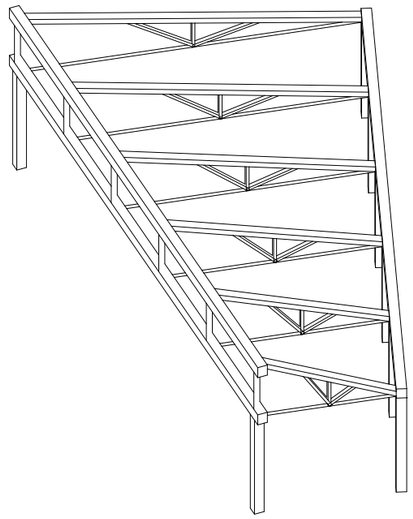
THE STRUCTURE

The structure primarily using timber portal frames with various pitch angles on a y axis. The portal frames are arranged in a circular formation to compliment the plan layout. (2) In order to achieve the structural clarity, the columns have to be bespoke cut to accommodate the beams.

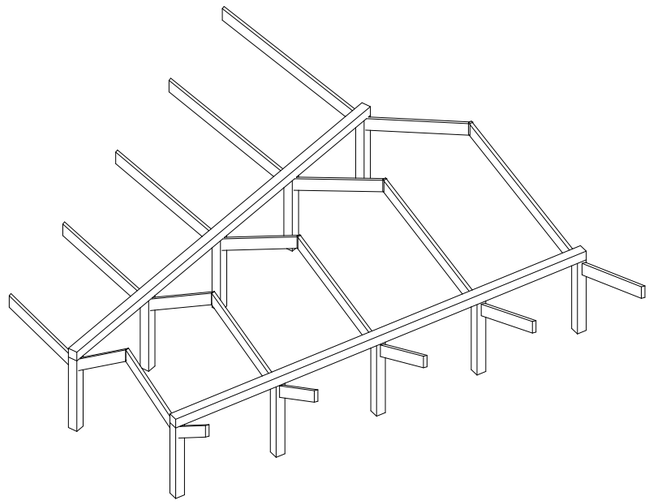
Furthermore, the roof structure above the main hall space aims to serve a free plan, without interruption caused by columns, (1) hence steel cable ties were employed to allow the beams to be able to span the required distance.

FRAME TYPES

(1) STEEL TIE TRUSS ROOF



(2) TIMBER PORTAL FRAME



STRUCTURAL DETAIL AND TECTONICS

BUILDING COMPONENTS

(1) Foundation/ Steel Joint

(2) Column//Beam Joint

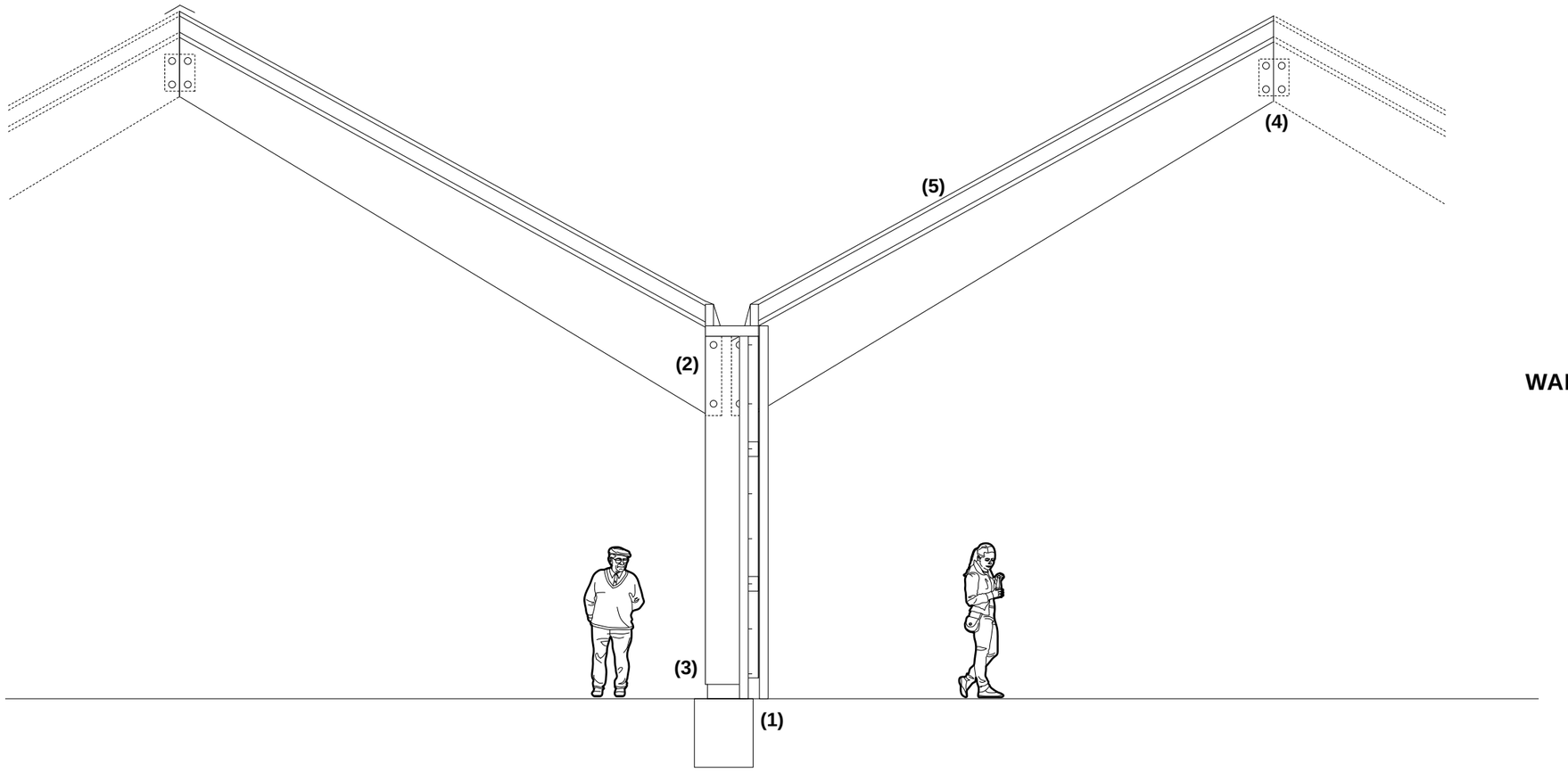
(3) Wall/Structure Relationship

(4) Beam Joint

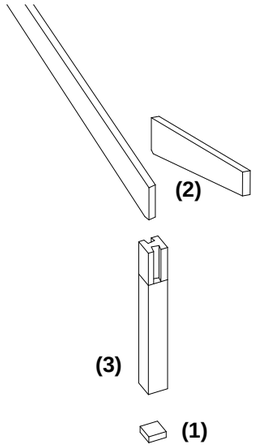
(5) Roof/Structure Relationship

There were some challenges that arose in regards to the way the wall would meet the main portal structure. There are several ways that this could happen, we wanted to emphasize the significance of the roof rather than the dominance of the walls. Hence, the walls were designed to appear lightweight, wrapping around the frame at on either side, this results in rooms having exposed columns/beams while others have not (3). The wall layering is simple, with insulation sandwiched between interior cladding and external cladding. At the low point of the roof where the two roof pitches meet gutters will be placed to aid drainage. (5) The foundations will be composed of concrete with a steel bracket to support the timber frame. The bespoke element of the columns takes place at the top where the beams sit. The beams are designed to sit at a 70 degree angle to one and another, therefore, the brackets that will be used to connect beam to column must also be design to this angle.

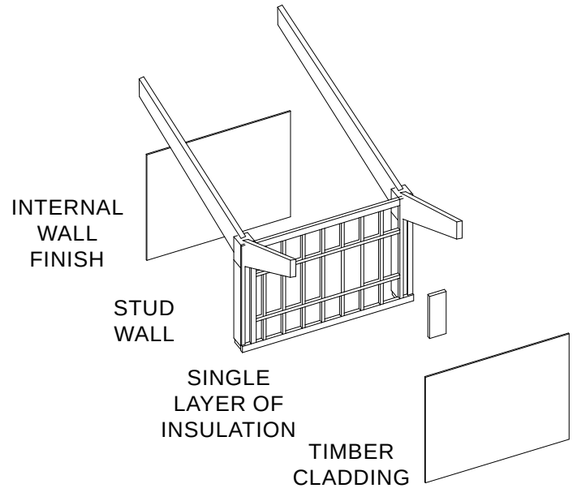
1:50 SECTION



BEAM TO COLUMN JOINT

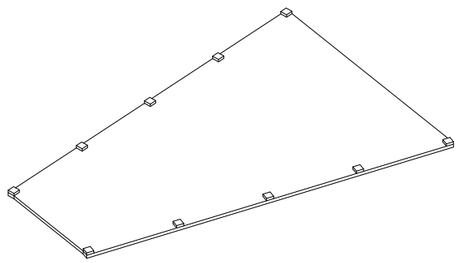


WALL BUILD-UP

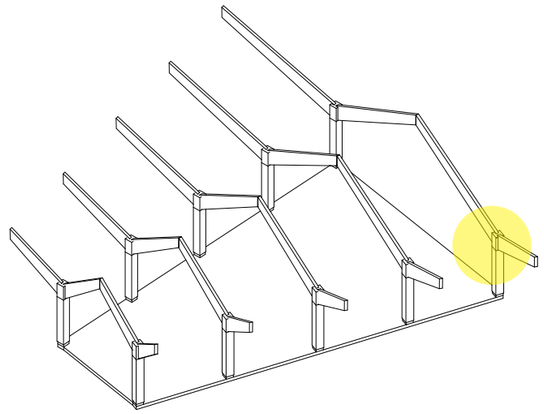


CONSTRUCTION AND CONCEPTUAL STRATEGY

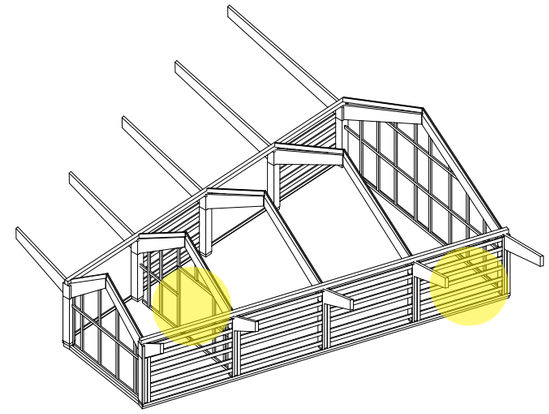
CONSTRUCTION STAGES



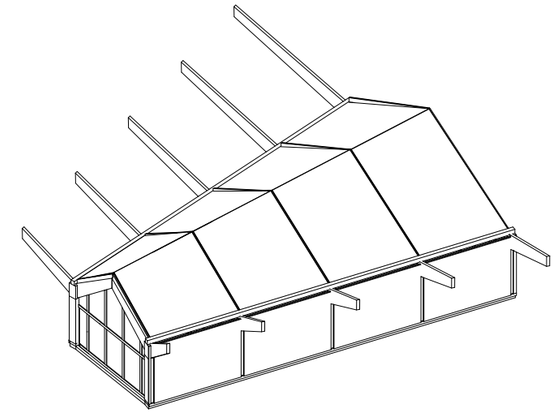
STAGE 1 -
FOUNDATIONS



STAGE 2 -
FRAME



STAGE 3 -
EXTERIOR & INTERIOR SUBFRAME

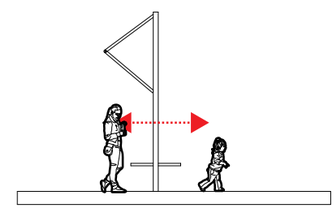


STAGE 4 -
CLADDING

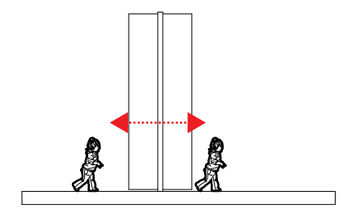
CONCEPTUAL CONSTRUCTION STRATEGY

To follow the original concept of a ‘link’, the construction process integrates a variety of options for certain partitions to allow them to be more engaged with the programme. The partitions have various alternative arrangements that are meant to be ‘self-built’ and have the potential to change over time by being adapted by the local community. Similar to an Ikea kit of parts that comes with a manual, this design allows three different options of playful interior walls to be built. This will connect (link) the local community with the building on a physical level.

WALL DESIGN OPTIONS - SECTIONS



WINDOW SEAT



ROTATING WALL

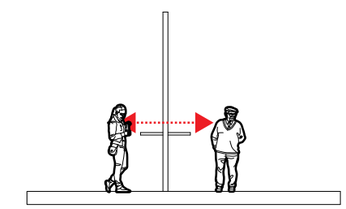
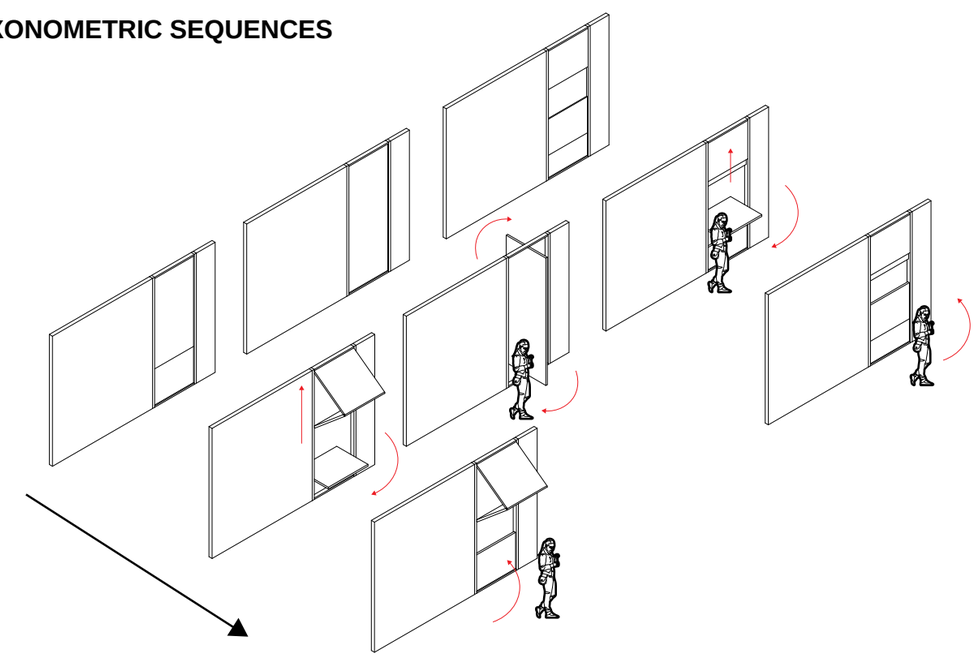
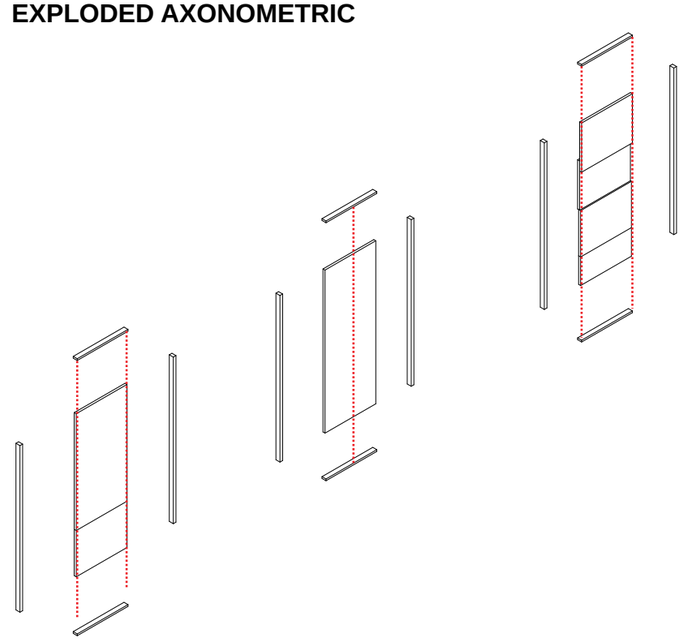


TABLE STAND

AXONOMETRIC SEQUENCES



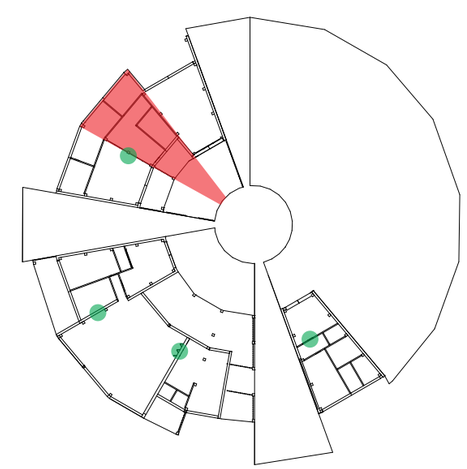
EXPLODED AXONOMETRIC



AREA FOR POTENTIAL PARTITIONS

INTEGRATED ‘SELF-BUILD’ PARTITIONS

AREA OF DISPLAYED CONSTRUCTION SEQUENCE



INTERNAL VISUAL

EVENT SPACE

NURSERY

INTERACTIVE EXPERIENCE

To further explore The Neighbourhood Link please follow the link below:
https://api2.enscape3d.com/v1/view/53de1aaf-cec4-4440-bc1e-92e07effa4b1

SUSTAINABILITY AT THE NEIGHBOURHOOD LINK

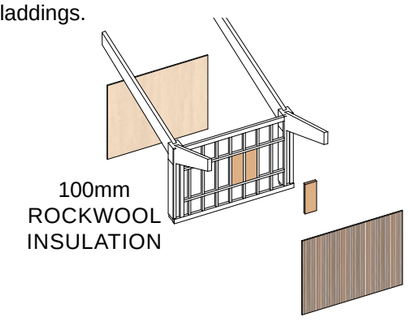
ATTITUDE TO SUSTAINABILITY

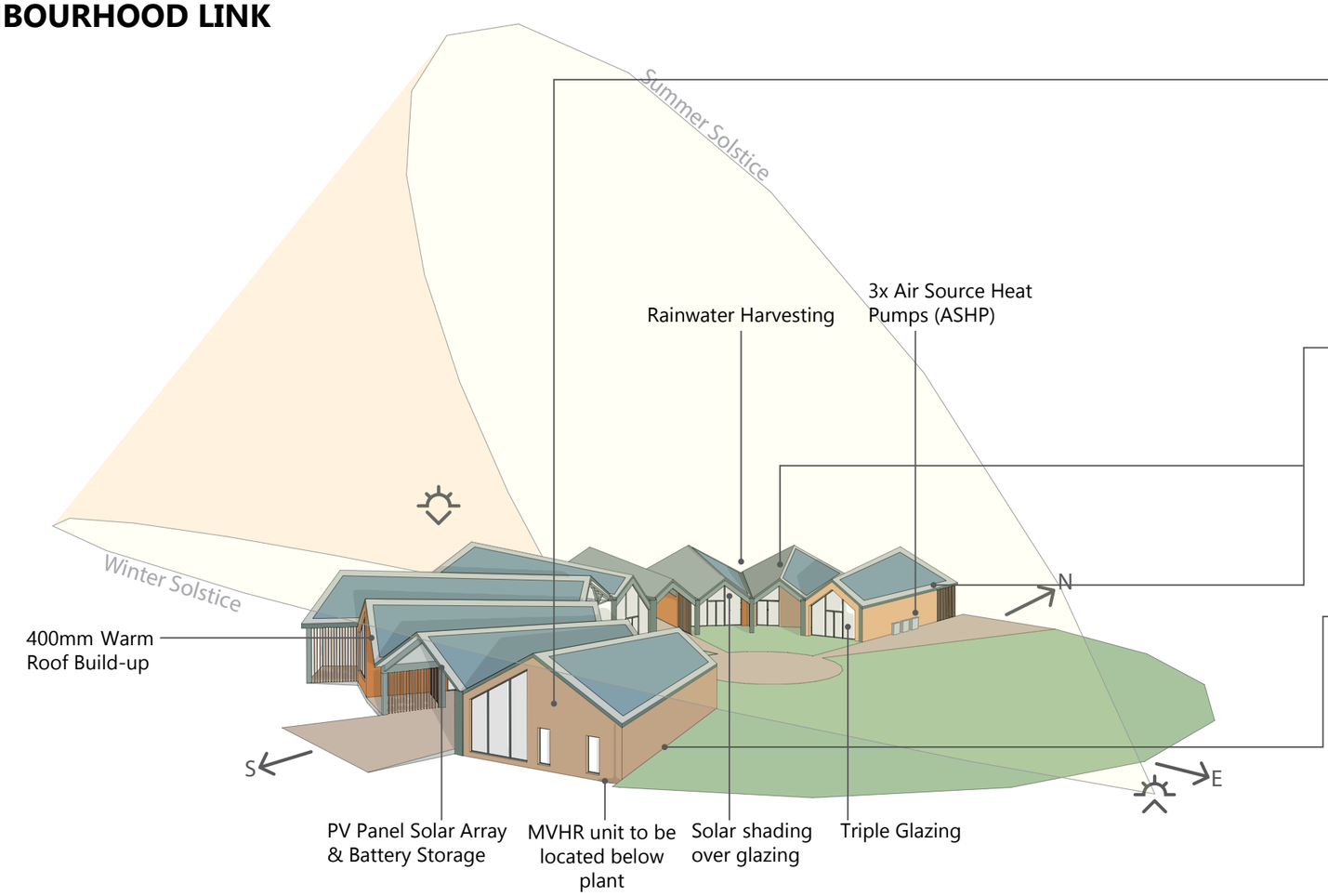
We can cannot plan for the next 99 years without considering the energy efficiency of the building. Reducing the impact of this proposal on the planet has the added benefit of reducing ongoing operation and maintenance costs contributing to the operating budget each year. We should aim for the highest specification building possible at this point to facilitate lower running costs.

We will achieve good practice in this regard as defined by CIBSE TM60 - this is a more realistic target as passivhaus construction is complex, exclusionary and expensive. Users need to feel comfortable in their building, not oppressed by the internal environment.

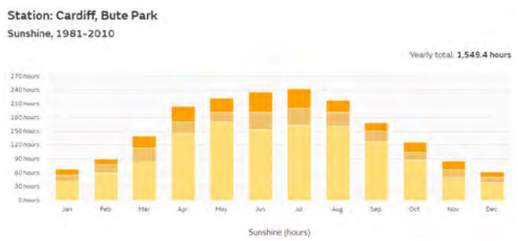
WALL BUILD-UP

To improve both the thermal and acoustic properties within the building we will be using a high density rockwool insulation between the internal and external claddings.



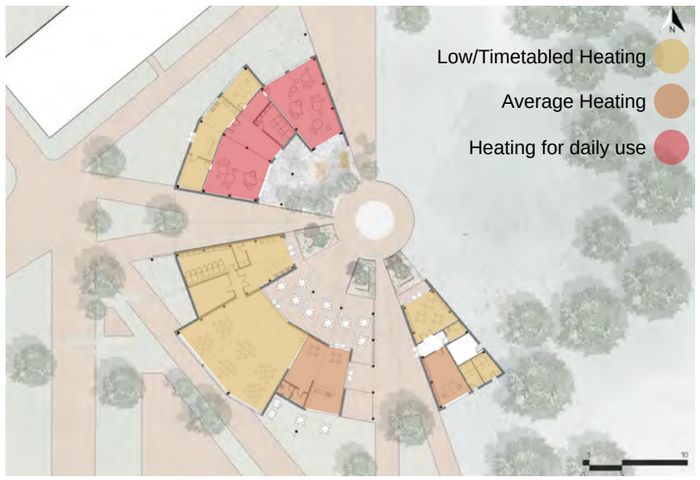


SOLAR POWER



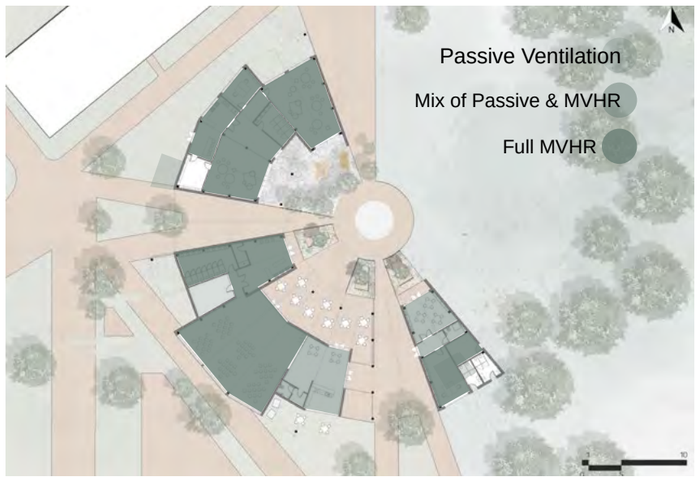
- An assumed 600sqm rooftop solar array would cost ~£41k +VAT and produce 53,000kWh p/a (equivalent to 14 average homes power for 1 year.) (Based on cost estimates from mypowerUK.) This should give first year savings of ~£5500 and 25 year lifespan savings minus initial capital of £244,358.
- The sunshine hours graph from 1981-2010 proves that Cardiff exceeds the minimum of 4 sunshine hours per day.
- **Over 25 years the Solar Panels alone can pay for 1/6th of the build cost.**

INDICATIVE HEATING STRATEGY



ASHPs cost +£10,000 per unit however the expected total annual energy consumption of ~27,000kWh means that they can be fully powered by the Solar Array. The South facing courtyard will also maximise solar gain deep into the plan..

INDICATIVE VENTILATION STRATEGY



MVHR units cost ~£20 per year to leave on 24/7. They capture 90% of the heat that would otherwise leave the building and heat the new air upon entry. So you get a fully ventilated space with only 10% loss of heat.

MATERIALITY

FCS Welsh Larch Cladding

Avonmouth Recycled Aluminium

50% Pulverised Fuel Ash in Concrete

Primary Structural Material

Welsh Sitka Spruce farmed sustainably from the Dyfi Forest.

Structurally there is little waste with small concrete pads supporting the Sitka Spruce frame, into which insulation is added and the internal face of ply is applied.

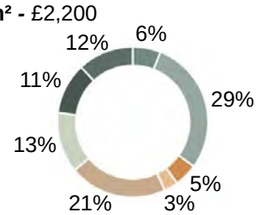
Services are surface mounted for ease of repair.

RELEVANT PRECEDENTS & COSTING ANALYSIS VIA STRATEGIC MEANS

PRECEDENT 1 -
EXNING PRIMARY SCHOOL

ARCHITECT - Concertus Properties
YEAR - 2017
BUDGET - £563,138
SIZE - 256m²

COST/m² - £2,200



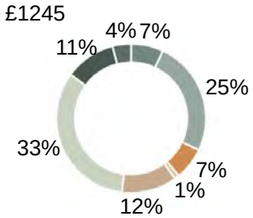
Most Expensive Elements
- 6D Minor Building works 20%
- Relocation/ internal adaptation to classroom.
- High-pitched roof (7.5m to ridge).

Values Added and Most Valuable attribute
- New extension and a new standalone block.
- A proposed area of new hard play and enlarged early Years play area
- Widening of the existing vehicle entrance to the site.

PRECEDENT 2 -
NURSERY AT SOUTHAMPTON SCIENCE PARK

ARCHITECT - TKL Architects
YEAR - 2010
BUDGET - £357,439
SIZE - 287m²

COST/m² - £1245



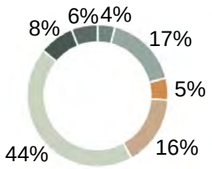
Most Expensive Elements
- Super Structure at 25%.
- Brick construction
- Detailed external works

Values Added and Most Valuable attribute
- Single storey nursery block
- Improved materiality including double glazed aluminium windows, white rock to walls; vinyl, carpet flooring and plasterboard suspended ceilings.

PRECEDENT 3 -
COMMUNITY & EARLY LEARNING CENTRE, STRATHCLYDE

ARCHITECT - West Dunbartonshire Council
YEAR - 2018
BUDGET - £1,216,509
SIZE - 535m²

COST/m² - £2,274



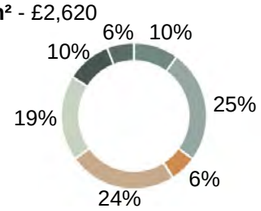
Most expensive element
- Super Structure at 29%.
- Steel framed single storey community centre.

Values Added/ Most Valuable attribute
- 3 Nursery rooms, main hall, meeting room and toilets
- Timber flat and pitched timber roof.
- Vinyl and sports timber floor finishes, Data, alarms, access control and CCTV.

PRECEDENT 4 -
HERNE COMMUNITY CENTRE

ARCHITECT - Judge Architects
YEAR - 2018
BUDGET - £1,142,309
SIZE - 436m²

COST/m² - £2,620



Most expensive element
- Super Structure at 25%.
- Laminated Timber framed building.

Values Added or Most Valuable attribute
- Demolition of existing community hall
- New build of a 2 storey community centre to BREEAM 'Very Good' rating.
- High Environmental elements: acoustic baffles, Complex Ventilations systems etc.

KEY: Substructure, Super Structure, Finishes, Fitting and Furnishings, Services, External Works, Prelims, Contingencies

Further Details of this research can be found in the appendix - Please refer to Fig 1.

PRECEDENT 5 -
NEW MOSQUE, CAMBRIDGE

ARCHITECT - Marks Barfeild
YEAR - 2018
BUDGET - £23,000,000
SIZE - 3561m²

COST/m² - £6,440

Strategy
This building strongly relates to our scheme and has been chosen as an appropriate precedent as it succinctly recognises the need for a beautiful multifunctional space which is where our building is placing its primary value.

The New Cambridge mosque is intended solely to serve a multi faceted community by including 'nursery-like' spaces in the form of the mother & child room to changing and washing rooms for prayers. Marks Barfeild's clever prioritising and recognition of where to place 'value vs cost' in a large contemporary building will be used as a direct influence to inspire from for the neighbourhood Link.

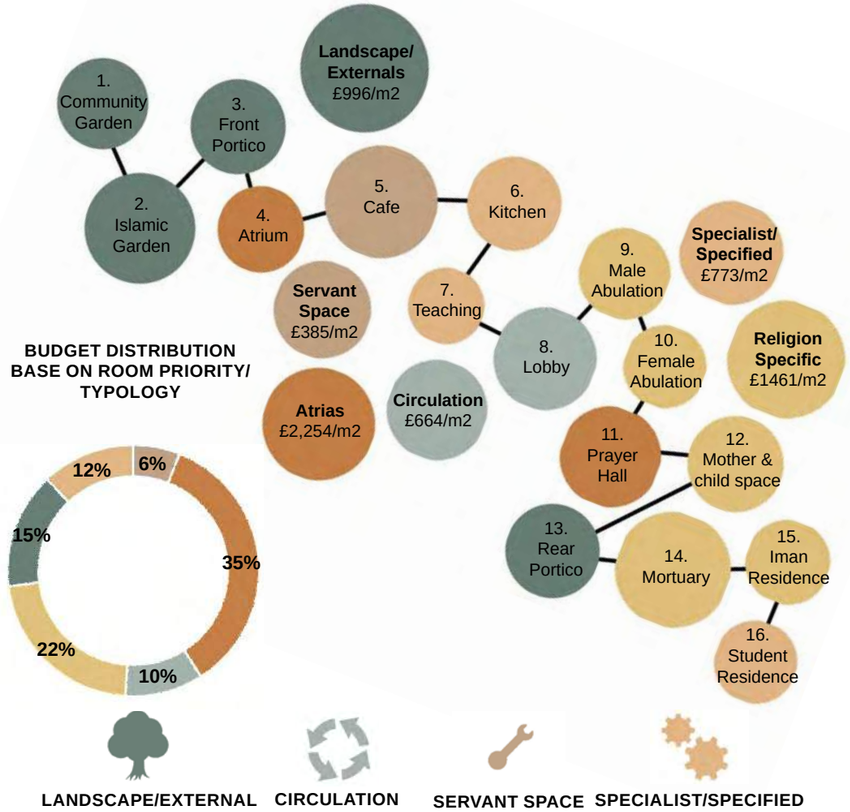
PRECEDENT 6 -
QUINTA MONROY, COMMUNITY HOUSING

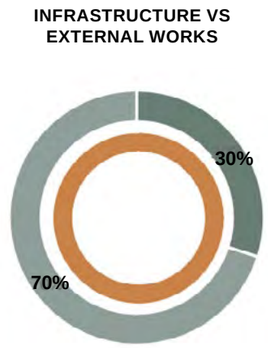
ARCHITECT - Alejandro Aravena
YEAR - 2004
BUDGET - £7161 per unit
SIZE - 72m² per unit

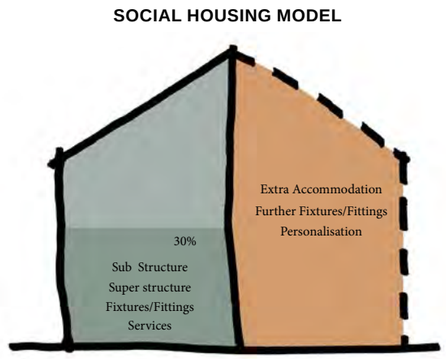
COST/m² - £102

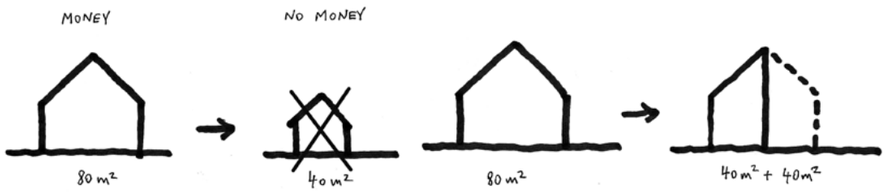
Strategy
This building has been chosen as a relevant precedent because it acutely demonstrates how a different costing strategy can be applied to maximise urbanisation and how despite a minimal possible budget architecture can manifest itself naturally into the urban scene.

The Quinta Monroy Development was social housing built with the strictest possible budget in mind. Where usually the inverse is the case. 30% of the budget was spent on infrastructure/ building and the other 70% was spent on the land and landscape. This was due to the nature of the design. The Architect essentially designed a 'half house' as If it were part of a middle-income home, with spacious rooms but limited facilities. As residents moved in, they could tailor the structure to their personal needs and customise the void space between each house at their own expense, labour and essential needs.



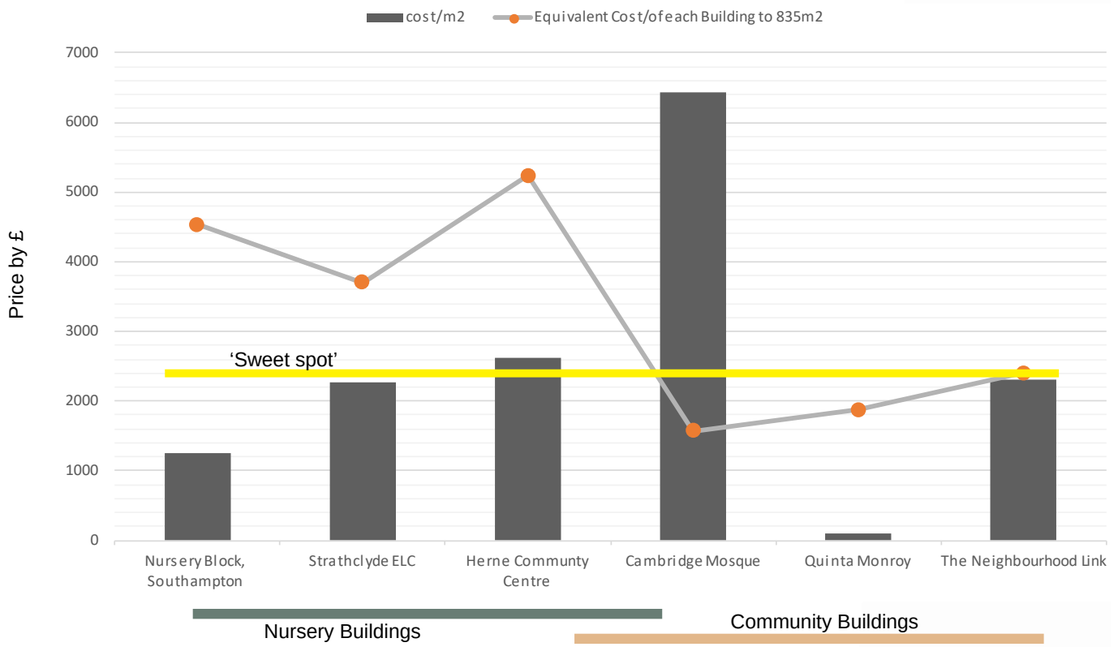






FINDING THE SWEET SPOT

DEMONSTRATING THE COST/SQM EQUIVALENCY TO THE NEIGHBOURHOOD LINK



COMPARING PRECEDENTS AND IMPLEMENTING OUR VALUES

By applying the relevant factors (scaling to the size of our building (825sqm), applying inflation rates over the years:2010 – 2018, and applying price index to the UK standard) We have used the precedents analysed to gauge an understanding of what price per sqm is an appropriate standpoint for our building.

The Intention is to maximise the social use of the building, the environmental factors, whilst minimising fixtures/ fittings.

The above graph represents the data demonstrated in Appendix A, Fig (2).

Although this could be considered a rudimentary system, we have made a raw attempt to scale the buildings analysed to an appropriate equivalent to our proposal. These precedents have been deemed an 'appropriate' range of buildings being of appropriate comparisons being that they all fall under community buildings, or nurseries. It is worth noting, that the Cambridge Mosque, and Quinta Monroy have been chosen, not just for their price/sqm but also because they demonstrate specific costing strategies, which are worthy of learning from when applying the budgetary constraints to the Neighbourhood Link.

SUMMARY

The above graph demonstrates that an appropriate cost per sqm of around £2200 to £2600 represents an appropriate and attainable figure. It is worth mentioning that both Quinta Monroy, & The Cambridge mosque were chosen specifically as more wild card examples, to gain a diverse insight into the value of community buildings.

FUNDING OPPORTUNITIES

By requesting the following funds from charitable organisations such as the national lottery fund, ACE and the Welsh Government, the neighbourhood link can acquire the necessary money needed to build for the future. The following request totals have been compared to real existing examples of their charitable work. Details of these instances, and the accompanying ££ totals are refereed to in Fig (3).

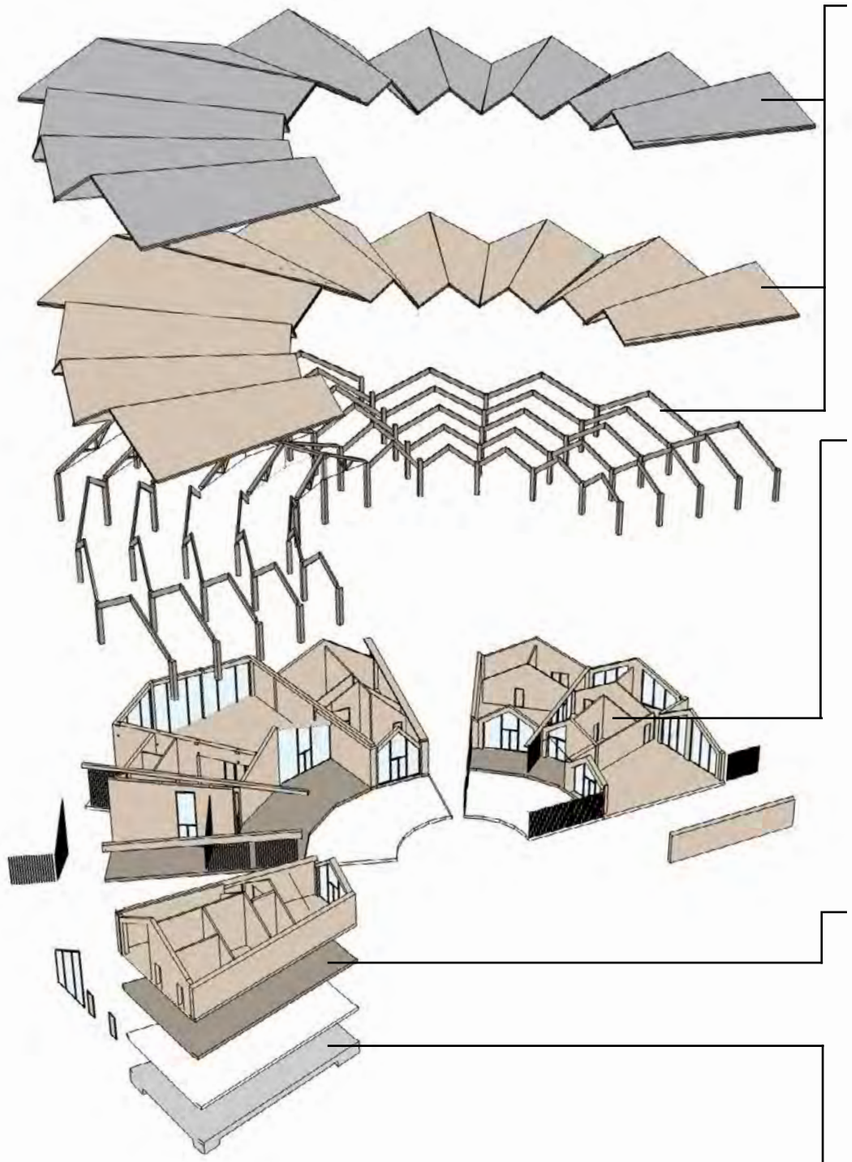
Cardiff Caerdydd — Request: £50,000

ace — Request: £150,000

heritage lottery fund, LOTTERY FUNDED — Request: £300,000

Llywodraeth Cymru Welsh Government — Request: £1.6M

PERCENTAGE BREAKDOWN



PERCENTAGE BREAKDOWN OF ELEMENTS

2 - SUPERSTRUCTURE 30%
- The Superstructure of the Neighbourhood Link (NL) utilises structural techniques acquired from various precedents.
- Laminated timber beams comprise the primary grid,a truss system makes up the roof. Steel cross bracing reinforces the structure.
- The pitch angles vary between 22° to 26°
- The design requires various pitched, the steel brackets will vary.
- Thermal insulation, adequate fire protection and triple glazed windows will be implemented.

3 - FINISHES 7%
- Finishes will be minimal and simple.
- Stud partitions will make up most walls, with a simple bolted plywood finish.
- Thicker walls to prevent the bleed of sound will be implemented in key places.
- Polished screed flooring across the building. With matting provided in the nursery.

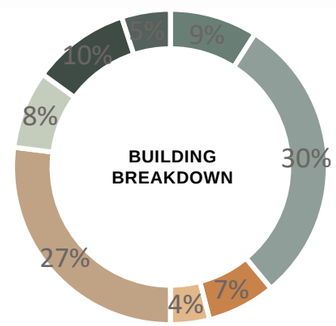
4 - FITTINGS & FURNISHINGS 4%
- Costs can be cut to prioritise other crucial functions
- Elements left for personalisation for the community, recycled materials, thrifted, or furniture provided from local tradesmen.

5 - SERVICES 27%
- Analysis of precedent studies showed large variation in terms of the prioritisation of services.
- The NL has placed a high level of importance on the thermal and insulative comfort.
- Solar array, the MVHR, the Kooltherm K100 Insulation and the UFH are crucial to the efficiency, the function, and the sustainability of the building.
- Second Highest Priority.
- Extras: CCTV security system
- Decent lighting/rig for functions space.

1 - SUBSTRUCTURE 8%
- Concrete Pad foundations bolted by steel brackets.
- Deep trenches, decent underlay and connections to existing foul drainage systems

7 - PRELIMINARIES 8%
- Scaffolding & Installation of site services.
- Site temp. works
- Heavy equipment hire

KEY:
- Substructure
- Super Structure
- Finishes
- Fitting and Furnishings
- Services
- External Works
- Prelims
- Contingencies



For The full extended breakdown please refer to the table in Fig 4.

FINAL BUILDING COST AND BUILDING RUNNING COST

Total Value = £2400 per SQM x 835sqm = £2,045,750

AVERAGE RUNNING COSTS Refer to appendix B for data researched and used in these calculations – These are predictions and approximations based of the data researched.

Total annual building running costs (£11,679/100m²) = 11,679 x 8.35 = £ 97,515 for 835sqm

Cleaning costs per sqm = £23.10/m² = £19,288.5

Maintenance Costs = £23.90/m² = £19,956.5

TOTAL VALUE = £ 136,760 annually to run The Neighbourhood Link

FINDING AN EQUILIBRIUM OF COSTS

RETURN INVESTMENTS IN THE NEIGHBOURHOOD LINK

VENUE HIRE
20hrs per week, £70 per hour
£1400 x 45 weeks= £63,000

COOKING CLASSES - £5000
8 monetised classes per week, £7 per class with an average of 8 attendees per week
x 48 weeks = £21,504
pays for running costs of classes + Ingredients/ utilities needed. Any left over funds are paid back into the NL - assumed leftover of **£5000 contributes to the running costs of the building**.

SOLAR ARRAY - £9000
Governt Renewable energy buyback incentive buys back excess energy produced by the neighbourhood link - this will provide a steady equilibrium cost which will reduce utility costs for the building.

44,000kWh Per year equivalent to 12 average homes power 1 year (estimates from mypowerUK.)
Average homes usage of £750 energy bills
Total: £9000

A-A

CAFE INCOME - £50,000
Average yearly turnover for a large Cafe UK approximately £200,000.
This will pay for the running of the cafe the salaries of the employees and will contribute to the running cost for the building.
£50,000 profit made yearly.

NURSERY FUNDING INCENTIVE - £218,800
(Based off Gov.uk)
570 free hours per child- assumed minimum wage of £8per hour of funding for each child (40)
£182,400
+ 20% for disadvantaged children
£36,480
Total: £218,880
All nursery profits go back into the funding of the workers and the nursery maintenance.

THE URBAN PLAN
The Quinta Monroy strategy of leaving space for the community will be implemented primarily through the urban space. The bones of a structure (pathways/ layouts/ materials) will be provide as part of the final budget, but the built pavilions, finished landscaping and associated gardens will be left as a community project. This will not only save costs on the final landscape plan, but will give the community a commemorative project to complete together.

UFH
Thermally efficient method of heating the building. Saves money on costs and contributes to ventilation systems.

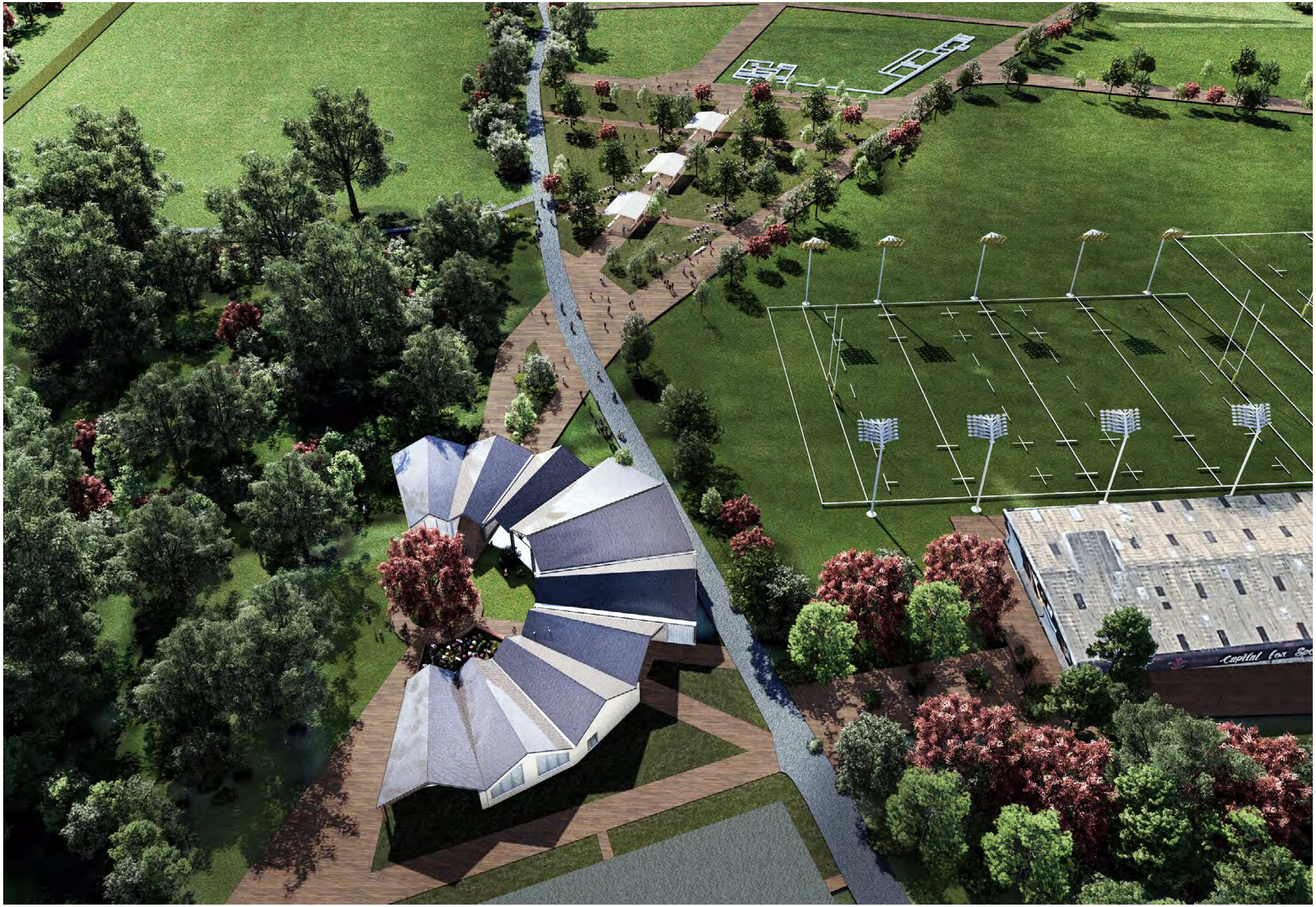
MVHR
Estimated savings of approx 25% to 30% on annual energy bills.

Running Cost : £ 136,760

Apply 25% savings produced by MVHR = £102,570

£9000 Solar array buyback + £50,000 cafe profit + £63,000
= £122,000

This has been calculated as a potential worst case scenario. Further profit could be made - The nursery funding incentives and the current costs of the nursery will be kept as they are - meaning the nursery will be self sufficient - The same can be said for the cafe - money made will return costs back in order for it to be self sufficient. Money left over pays for the running of the cooking classes and a site manager.


Capital for

APPENDIX A. PLEASE USE AS REFERENCE TO THE FULL DOCUMENT

Fig 1: RCIS Data - Precedent Studies.

Early Learning Centre Strathclyde | Nursday Science Park Southampton | Herne Community Centre | Exning Primary School

In-text: (Rics.org, 2020)

Rics.org. (2020). [online] Available at: https://www.rics.org/uk/ [Accessed 1st Jan - 20 Feb. 2020]

Quinta Monroy:
In-text: (Architectmagazine.com, 2020)
Architectmagazine.com. (2020). [online] Available at: https://www.architectmagazine.com/project-gallery/quinta-monroy-housing_o [Accessed 20 Feb. 2020].

Aravena, A., Montero, A., Cortese, T., de la Cerda, E. and Iacobelli, A. (2004). Quinta Monroy. ARQ (Santiago), (57).

Cambridge Mosque:
Cambridge Independent. (2020). Cambridge's first purpose-built mosque set to open later this year. [online] Available at: https://www.cambridgeindependent.co.uk/news/cambridges-first-purpose-built-mosque-set-to-open-later-this-year-9059527/ [Accessed 20 Feb. 2020].

Cambridge Central Mosque. (2020). Cambridge Central Mosque – Home. [online] Available at: https://cambridgecentralmosque.org/ [Accessed 20 Feb. 2020].

Fig 2:Comparitive Analysis Of Chosen Precedent studies.

Building	cost/m2	Year Built	Cummulative Inflation up to 2019	m2 of Building	cost of 1m	Equivalent Cost/of each Building to 835m2
Nursery Block, Southampton	1245	2010	1556.541832	287	5.423490704	4528.614738
Strathclyde ELC	2274	2018	2372.575353	535	4.434720286	3702.991439
Herne Community Centre	2620	2018	2733.574066	436	6.269665288	5235.170516
Cambridge Mosque	6440	2018	6719.166787	3571	1.881592492	1571.12973
Quinta Monroy	102	2004	168.5049319	75	2.246732425	1876.021575
The Neighbourhood Link	2300	2020	2300	835	2.754491018	2300

Fig 3:Real examples of grants from the following charities

Real Example: Hidden now heard:
- Project led by the Mencap society
- Project in Cardiff working with the national history museum to record, exhibit and preserve the hidden heritage of people with learning disabilities.

GRANT of £320,700

Real Example: Valleys Regional Park
- Museum to receive funding for specialist treatment and delicate repair of the head-frames at Cefn Coed

development of family accessible bike trails at Dare Valley Country Park, and a new visitor centre at Parc Penallta

GRANT of £1.8M

Real example: Caerau hidden hillfort project
- Collaborative project between community development organisation ACE - Action in Caerau and Ely,
- The project will involve local communities in curating, conserving and presenting Caerau hillfort.

GRANT of £200,000 over 4 years.

Real Example: Welsh womens aid
- Project which supports survivors of all forms of violence against women, and their children, to build resilience to allow vulnerable women to be lead to independence.

GRANT of £60,000

Element	Cost per m2	Total Cost	%	Specification
1 Substructure	216	180360	9	Concrete Pad Foundations
2 Super-Structure	720	601200	30	
2A Frame	240	200400	10	Glue laminated Timber
2B Upper Floors	0	0	0	
2C Roof	168	140280	7	Recyclable UV protected, pre-lacquered aluminium
2D Stairs	0	0	0	
2E External Walls	168	140280	7	Multicellular Clay Blocks
2F External Windows & Doors	96	80160	4	Aluminium Windows/Doors
2G Internal Walls & Partitions	24	20040	1	Timber Stud with Infill Insulation
2H Internal Doors	24	20040	1	Timber
3 Finishes	168	140280	7	
3A Wall finishes	48	40080	2	Fire-proteted Ply
3B Floor Finishes	96	80160	4	Polished Screed
3C Ceiling Finishes	24	20040	1	Exposed Timber w/ Fire-Protected Ply
4 Fittings and Furnishings	96	80160	4	Reclcyled/ Upcycled/ Made by Locals etc, Kitchen Fittings/ Appliances/ Nursary Fit out etc
	0	0		
5 Services	648	541080	27	
5A Sanitary Appliances	144	120240	6	Sanitary Ware Inc. Provisions for Part M Requiremnts
5B Services Equiptment	72	60120	3	Provisional Sum for Servcing Equiptment
5C Disposal Installations (Inc. in 5A)	0	0	0	
5D Water Installations	48	40080	2	Cold/Hot Water Installations, Rainwater collection to flush toilets enc. Irrigation systems
5E Heat Source	48	40080	2	UFH throughout with Electrical Boiler
5F Space Heating & Air Condition (inc. in 5G)	48	40080	2	
5G Ventilating Systems	72	60120	3	MVHR system
5H Electrical Installations	72	60120	3	Electrical lighting/appliances
5I Fuel Installations	0	0	0	
5J Lift & Conveyor Installations	0	0	0	
5K Fire & Lighting Protection	48	40080	2	Sufficient Fire protections, Extinguishers etc
5L Communications & Security Installations	72	60120	3	CCTV, Security installation, alarms etc
5M Special Installations	24	20040	1	Lighting/ Performance Rig/ Rainwater harvesting system
5N Builders Work in Connection	0	0	0	
5O Management of the Commissioning of Se	0	0	0	
	0	0		
Building Sub Total	1848	1543080	77	
	0	0		
6 External Works	240	200400	10	
6A Site Works	48	40080	2	Paving landscape, planters, zoning, benches, landscape works, materials provide for pavillions
6B Drainage	48	40080	2	Connections to Existing Foul water systems, site lighting, below ground drainage works
6C External Services	24	20040	1	
6D Minor Building Works	0	0	0	
6E Demolition & Work Outside the Site	120	100200	5	Demolish Existing nursary and relevant spaces
	0	0		
7 Preliminaries	192	160320	8	
	0	0		
8 Contingencies	120	100200	5	
	0	0		
Total (less Design Fees)	2400	2004000	100	
	0	0	0	
9 Design Fees	0	0		
	0	0		
Total Contract Sum	2400	2004000	100	