



CULTIVATE

CAERAU AND ELY SPORTS TRUST
COMMUNITY CENTRE

STAGE 3 SUBMISSION

FEBRUARY 2020

THE TEAM



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‘FOOD AS A CATALYST’

The project aims to explore the relationship between the existing communities that revolve around Trelai Park and growth of natural produce. Food will be the catalyst and we aim to ingrain it in the development and design of the scheme. Through the use of allotments and polytunnels, fruit and vegetables can be grown year round; these can be harvested and used to make meals in the proposed cafe for the many different community groups. Sowing the ideas of healthy eating at the heart of the project will help to cultivate and nourish the community. This will make for a happier and healthier future for Trelai Park, Caerau and Ely and the communities this project works to serve.



The UN Sustainability Goals (SDGs) have been set out as a blueprint to achieve a better and more sustainable future for everyone across the world. We believe that they should be considered for every building project, and therefore for this community project.

Throughout the project we will be referencing where we have considered each of the SDGs.

For this community project we have highlighted 3 specific goals that have helped to inform our Ethos and design. They are:

- Zero Hunger (2)
- Good Health and Well-Being (3)
- Quality Education (4)

UNDERSTANDING THE COMMUNITY

Sports Clubs



There is already a thriving sports community in Trelai Park and through our proposal we hope to provide for these sports teams by providing facilities they don't currently have such as female changing rooms.

Crown Green Bowlers



The Bowling Green on site sees regular use by a community of local residents; because of this we proposed to leave the bowling green as unspoiled as possible so they can continue to use it.

Families



Parks are a place for families and friends. Due to this the cafe facility will be open for public use. This will help provide a reliable revenue stream for the project and gives people somewhere to stop and sit.

Support Network



In the local area there has been an increase in the number of mental health cases in the past few years. We hope that in our scheme we can provide support to these people, teaming up with local initiatives like 4 Winds.

Nursery



Across Caerau and Ely currently there is not enough free childcare for nursery aged children to meet the demands. By facilitating them in our proposal we hope to offset the deficit of children not receiving this.

Local Colleges



Through our USP of using 'Food as a Catalyst' we hope to reach out to local colleges and get the students in to prepare the food. This offers them invaluable experience and helps with staffing costs.

Local Business



We hope to reach out to local business and trade to engage with the project along the process. By using local trade it helps to develop a sense of identity for the community and gets people involved.

Community



Hopefully, through our scheme we can bring all of these user groups together into one park community that can all benefit from the new facilities.

COMMUNITY ENGAGEMENT AND LOCAL INITIATIVES

Flying Start

Uncovered

Postcodes of the areas not covered.



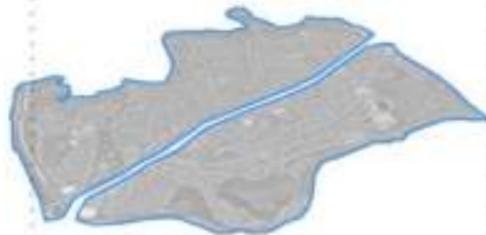
Covered

Postcodes of the areas covered by the Flying Start Scheme.



District

The Districts of Ely & Caerau.



Area

West Cardiff.



What is Flying Start?

Flying Start is Welsh Government funded program providing money for childcare within targeted areas, supporting all families to give 0-4 year old's the Flying Start in life. As it stands the scheme does not cover the entire of the Caerau and Ely area and places are allocated based off postcodes. We hope to tackle this issue in our scheme by providing facilities and funding for child care where it is needed most.

Grow Cardiff



What is Grow Cardiff?



Grow Cardiff is a charitable organisation supporting adults living with mental or physical disabilities in the Canton and Caerau and Ely districts of Cardiff. As a part of the support they offer they engage in planting and growing, focusing on health and well being of the local community. They outreach to local schools and initiatives. The picture above shows raised planters that Grow Cardiff constructed on the site of the project.

ACE



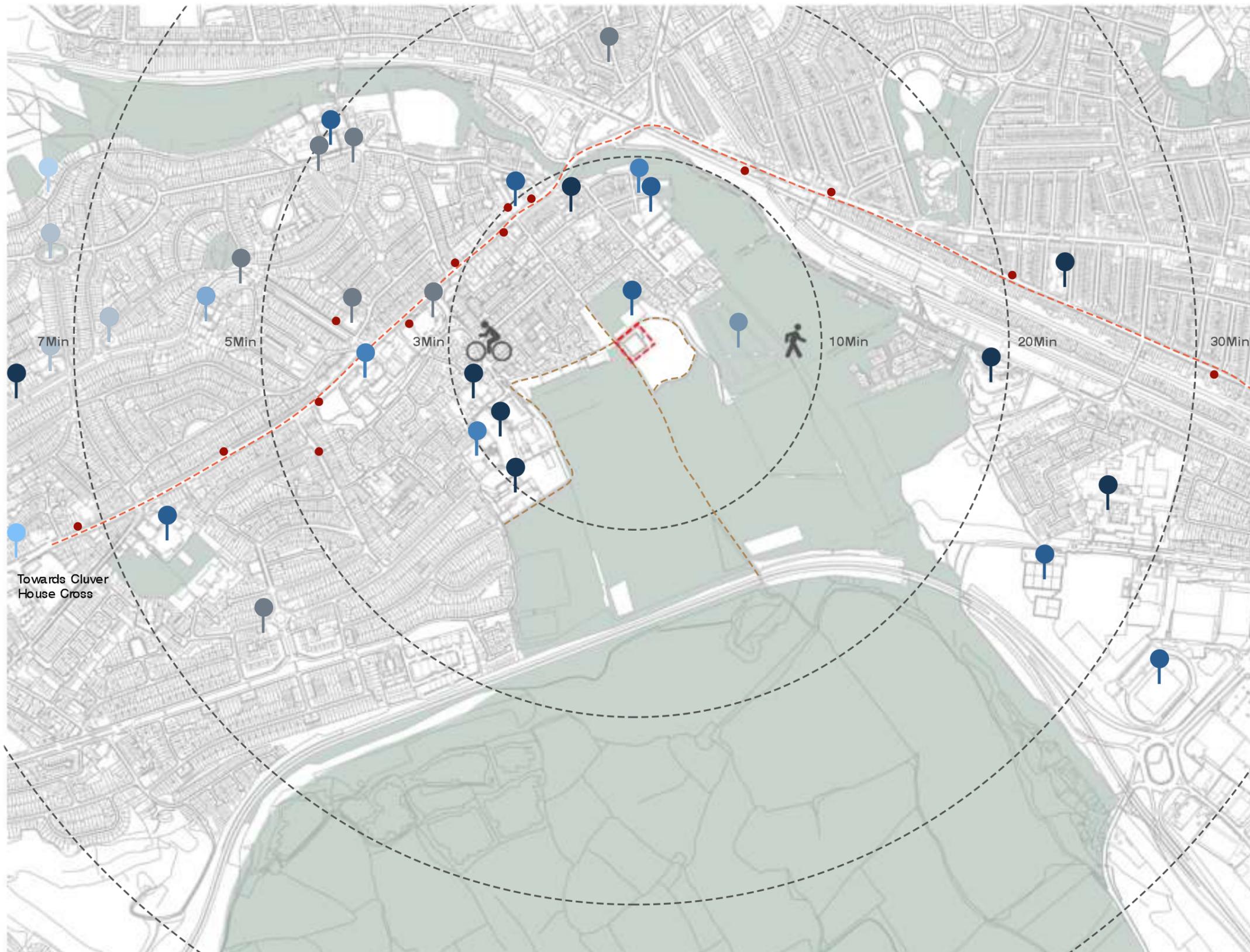
What is ACE?



ACE stands for 'Action in Caerau and Ely' and is a community action and charity that operates from the Dusty Forge in Caerau and Ely. They offer many essential services to the local community including support for those experiencing poverty, training and classes for the unemployed, arts and heritage activities and community led health and well-being activities.

RELATIONSHIP TO THE CITY

KEY



- Footpath and cycle routes
- Main route
- Bus stops
- Educational Facility
- Local allotments
- Leisure Centre/Sports Facility
- Local shop
- Dusty Forge: Community Organization
- Family Centre
- Church
- North Ely Youth Group

Towards Cluver House Cross

LOCALITY AND POSITION OF SITE

KEY



- 0. Site
- 1. Trelai Park Basketball Court
- 2. Trelai Park Childrens Playground
- 3. Changing Rooms
- 4. Car Park (~140 Parking Spaces)
- 5. Ely Skatepark
- 6. Riverbank School (~40 Parking Spaces)
- 7. Ty Gwyn School (~190 Parking Spaces)
- 8. Woodlands High School
- 9. Trelai Youth Centre (~32 Parking Spaces)
- 10. Nextbike Western High School - Station 8722
- 11. Trelai Primary School (~47 Parking Spaces)
- 12. Glyn Derw High School (~80 Parking Spaces)
- 13. Roman Villa Ruins
- 14. Football Pitches
- 15. Tunnel
- 16. A4232 Motorway
- 17. Servicing Bridge
- 18. River Ely
- 19. Woods
- 20. Ely Great Farm Allotments
- 21. The Woods
- Cycling / Pedestrian Paths
- (~530 Parking Spaces)

SITE ANALYSIS



3G Pitch



Bowling Green



Football and Rugby pitches

Strengths

The site already has strong elements and we propose to cultivate what already exists within our scheme. Existing elements include:

- A bowling green regularly used by locals.
- Sports courts and 3G pitch north of the site.
- An intersecting path that joins to the boxing club and car park.
- The site existing as a hub for many local communities and club.

Weaknesses

Some of the potential weaknesses and constraints that we will have to work with or alter are:

- The fence surrounding the site closes off the space to the rest of the site.
- The current position of the bowling green on site restricts the usable space.
- There are two access points to site; one is locked.
- The existing Bowling Club are reluctant to change.

Opportunities

- Linking the site to the local heritage sites such as the Hillfort and the Roman Villa.
- Enhancing surrounding footpaths and cycle routes connecting to the proposed scheme by Cardiff City Council.
- Take advantage of the intersection of the paths to the west of site to form an open meeting point and entrance.
- Linking our scheme and the community allotments through the wooded area to the East of site .

Threats

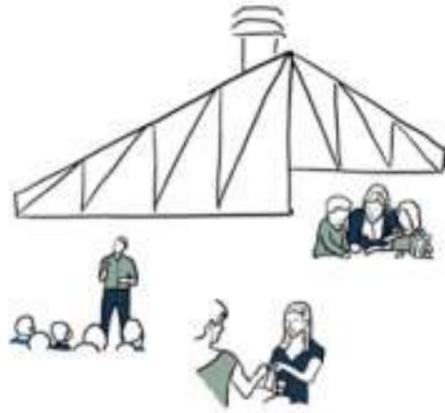
- The security of the site is currently poor and the community have expressed concerns about vandalism.
- The existing Bowling community are opposed to sharing their space and have refused to engage with the project.

KEY

Key

-  Existing footpath
-  Man-made paths
-  Existing fence outlining the site boundary
-  Important surrounding features impacting the site
 - 3G Pitch
 - Allotment plots
 - Trelai park and playing fields

DESIGN PRINCIPLES



Many Communities, 1 Roof



Local Material, Local Trade



Feeding the Community

LANDSCAPE PRINCIPLES



Allotments



Woodland trail



Robust Planting

URBAN PRINCIPLES



Recreation



Transport



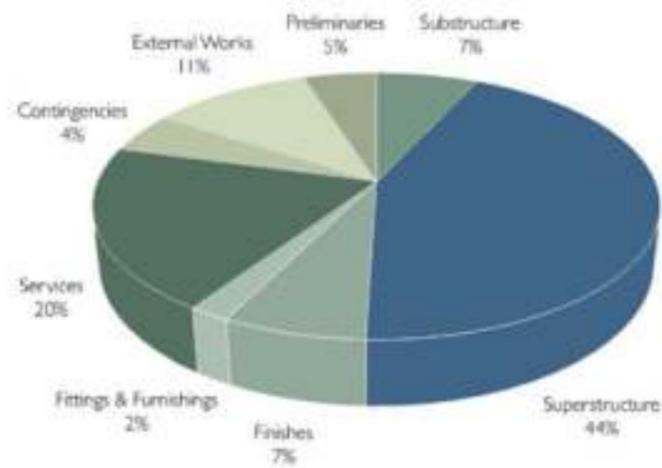
Security

DESIGN AND COST PRECEDENT

Barmulloch Community Hall



Building function-	Community centre
Floor area-	585m2
Storeys-	2
Location-	Barmulloch, Strathclyde, Glasgow
Date-	30-Oct-2014
Building cost-	£1,275,611
Cost/m2-	£2,181
Main construction-	Timber framed



This cost precedent coincides with the timber construction of our scheme. The superstructure only accounts for 44% of the total cost of the contract sum. This is significantly above the available budget for the Ely and Caerau project. The total cost per sq.m is 2,609 GBP which is 67% above the budget.

Dolphin Community Centre



Building function-	Community centre
Floor area-	710m2
Storeys-	2
Location-	Tetbury, Gloucestershire
Date-	2015
Building cost-	£1,800,000
Cost/m2-	£2,535
Main construction-	Timber framed & Stone wall

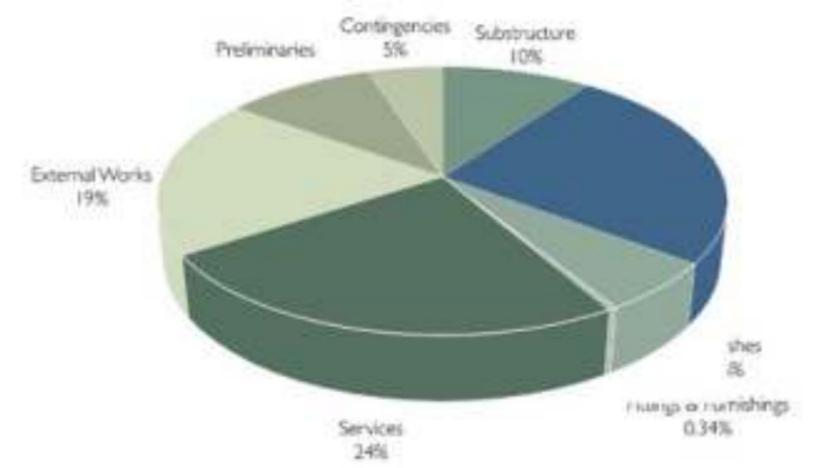
This Project uses the same construction of timber frame and stone walls as our scheme. The floor area of this project is a slightly larger, but has a similar price per sq.m. When adjusting this to our building area we get a total of £1,267,500, which is within the budget we have to work with.

All of the projects shown have a cost per sq.m of 2000-2600 which is within the budget we have been given.

Herne Community Centre



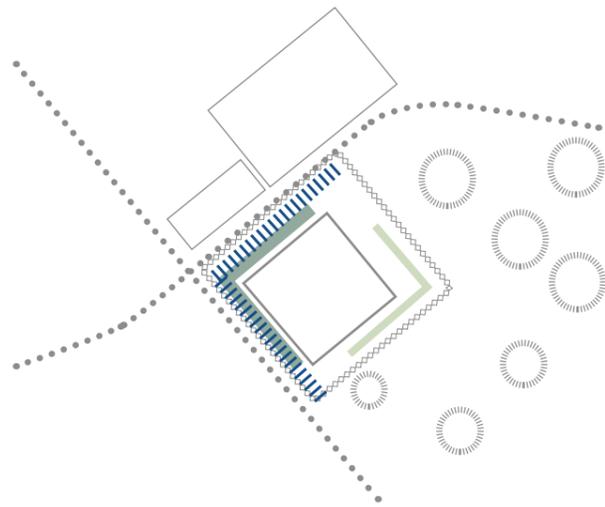
Building function-	Community centre
Floor area-	436m2
Storeys-	2
Location-	Herne, Kent
Date-	16 Dec 2016
Building cost-	£1,142,309
Cost/m2-	£2,620
Main construction-	Timber framed



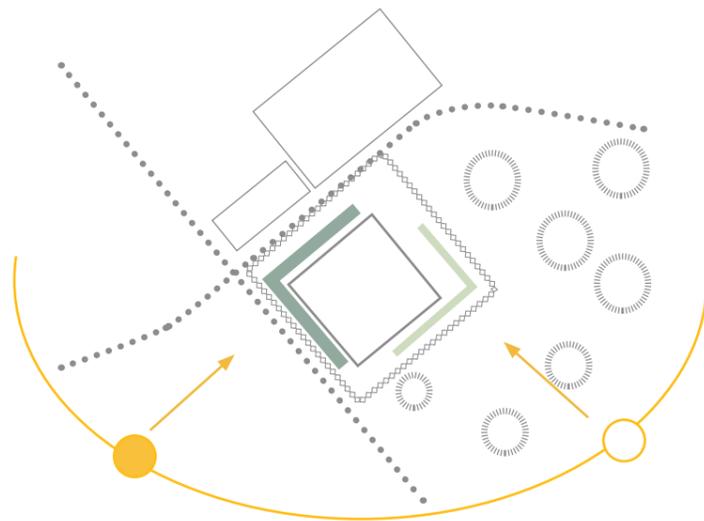
Herne Community Centre uses a timber frame and has a fair cost for superstructure of 386,273 GBP, or 25% of the sum. The external works sum is lower as the proposal replaces an existing building. This is similar to our scheme where we propose to demolish the bowling hut to build our building.

SITE USAGE AND MASSING

Position on the site

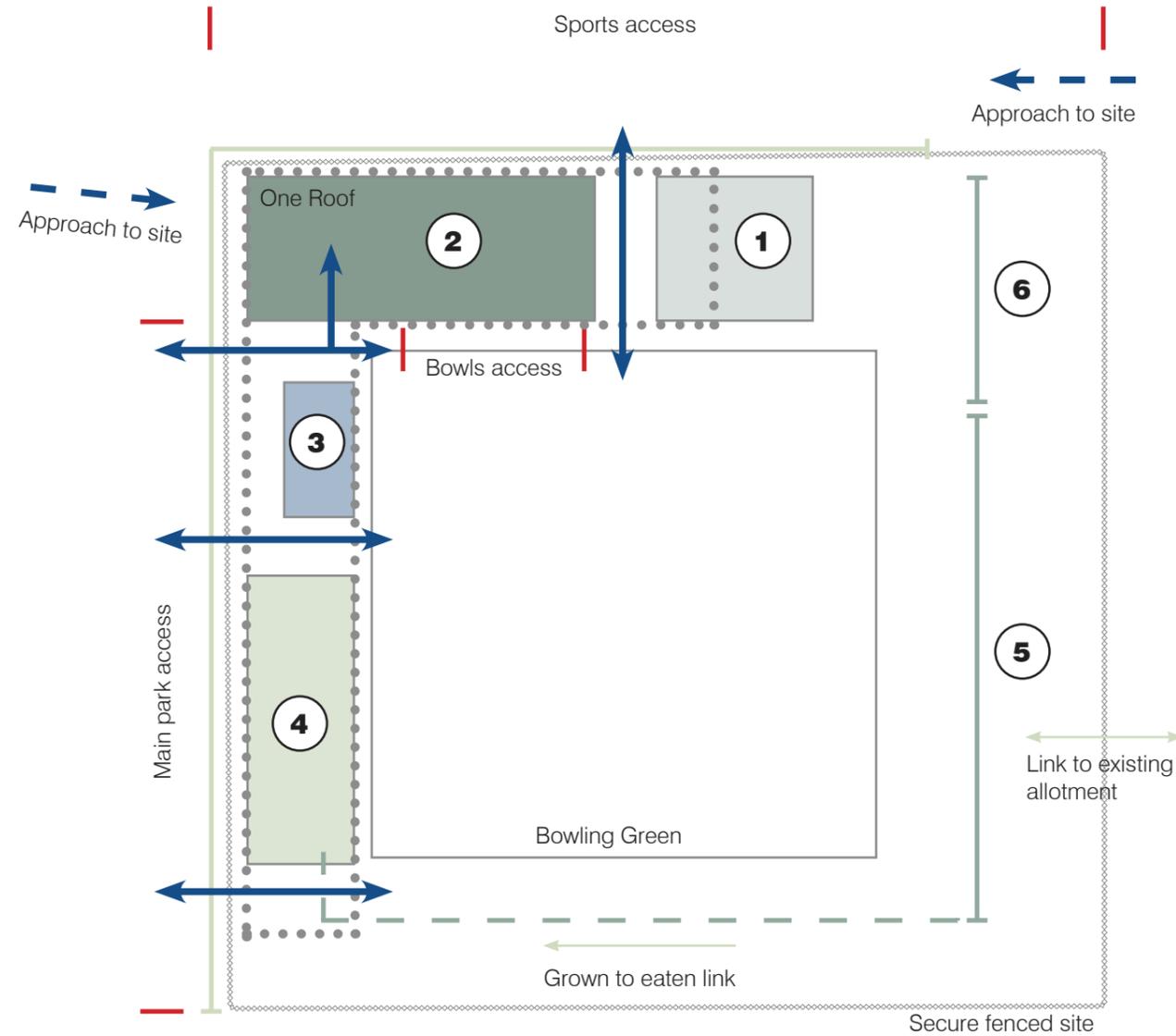


Hard boarder - A hard boarder facing the park paths to help secure the site from unwanted activity during closed hours. This brings the focus to the inside of the site.



Sunlight - The position of the building on the site is to maximize morning sunlight (free heating) into the building, and minimize the hotter afternoon sun by facing the harder boarder with minimal glazing towards the South West. The planters are positioned to receive maximum sunlight to induce growing.

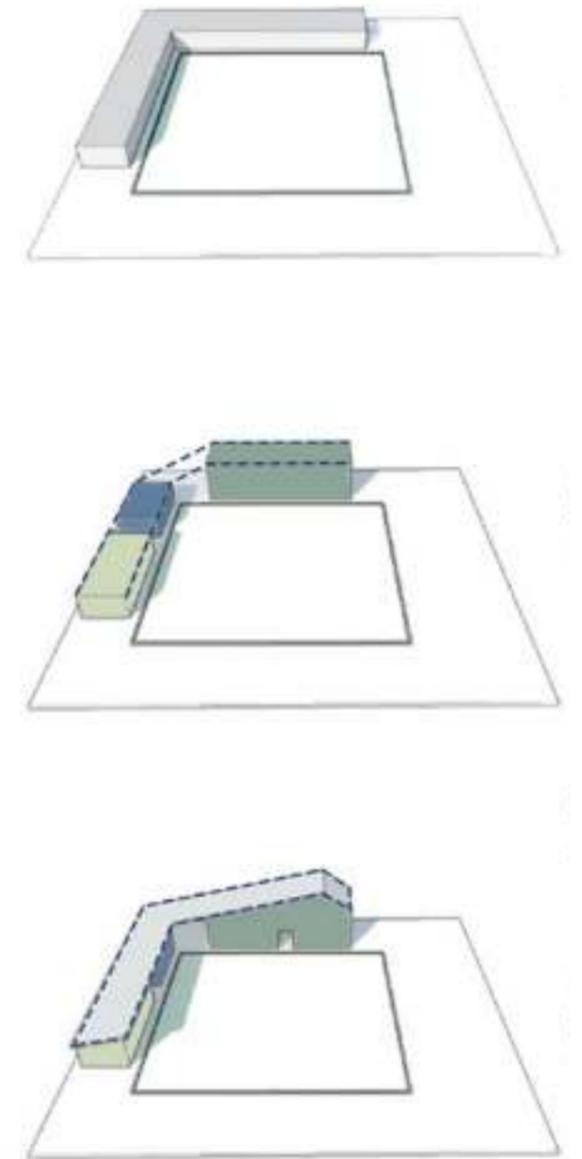
Building block positions



- | | |
|---------------------|---------------------|
| 1 - Nursery Area | 4 - Food Area |
| 2 - Community Area | 5 - Allotments Area |
| 3 - Management Area | 6 - Play Area |

The 6 different areas surround the bowling green. The 4 areas within the building are brought under one roof to signify the bringing together the different parts of the community into one scheme. Encouraging and enriching interaction that may not have previously happened.

Massing

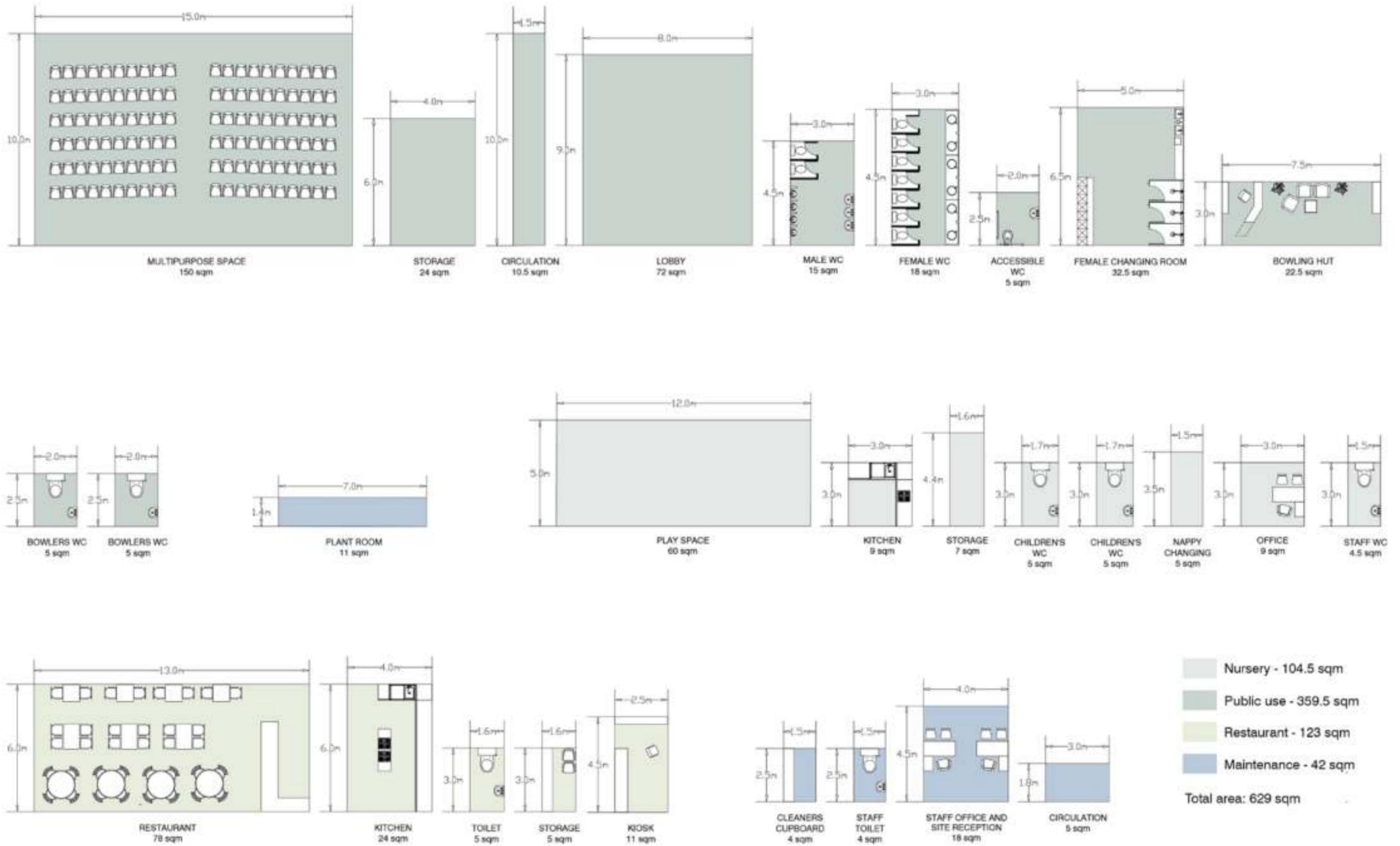


Covering the different use blocks with one roof that slopes towards the park, creating the main multipurpose room on the first floor.

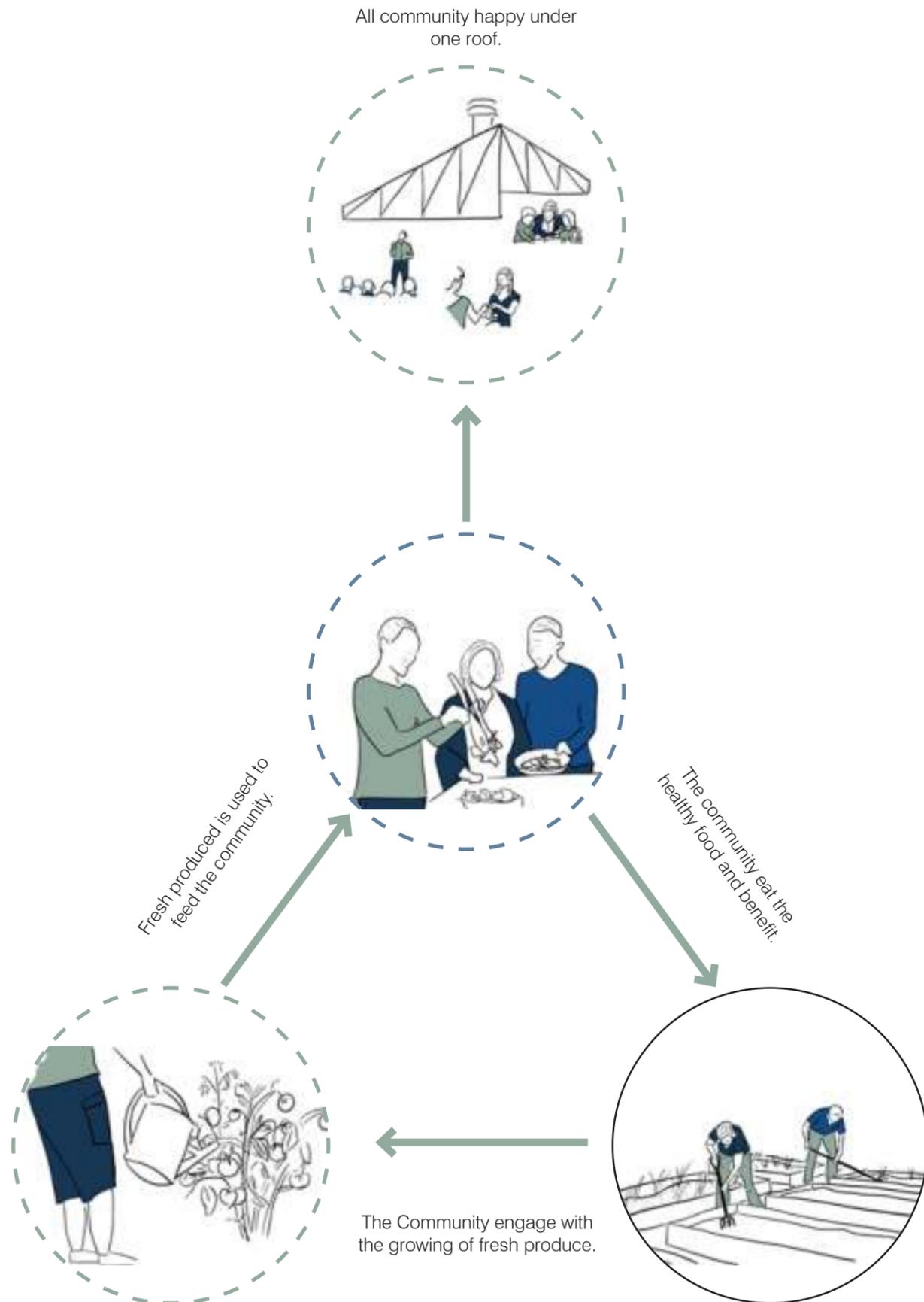
PRODUCTION AND MOVEMENT PLAN

- Secure site boundary
- Movement of people
- Movement of food
- - - Movement of food from local suppliers
- Collection of water
- - - Supply of water

SCHEDULE OF ACCOMMODATION



THE FOOD CYCLE

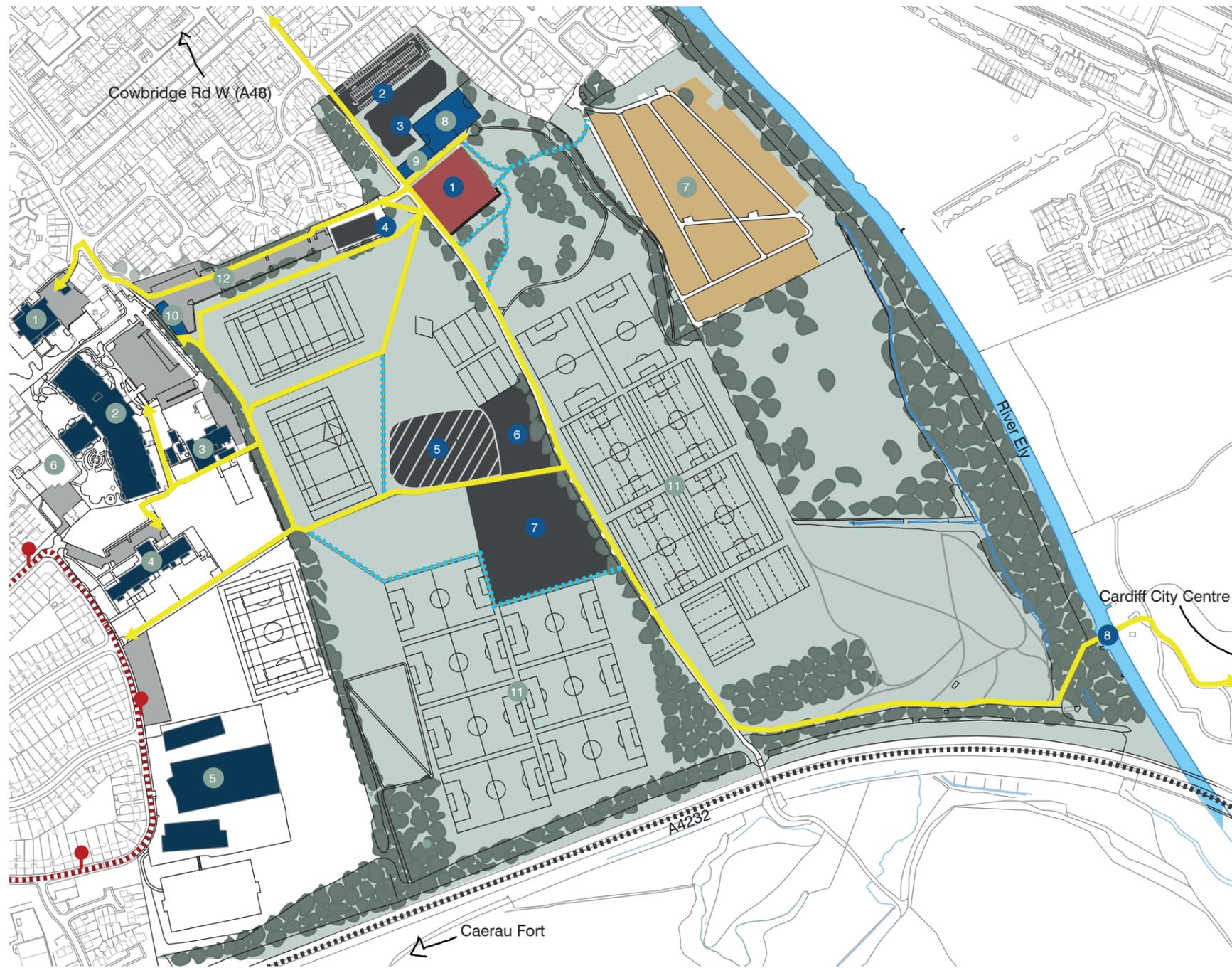


SEEDING CALENDAR

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
BROCCOLI												
BRUSSEL SPROUTS												
CABBAGE												
CARROT												
CAULIFLOWER												
GARLIC												
KALE												
LETTUCE												
MUSTARD												
CHARD												
ONION												
PARSNIP												
POTATO												
PUMPKIN												
RADISH												
SHALLOT												
SWEDE												
TURNIP												
SPRING ONION												
ASPARAGUS												
PEAS												
BEATROOT												
COURGETTE												
CHIILIS												
CUCUMBER												
PEPPERS												

As growing fresh fruit and vegetables is so important to the scheme we have researched the growing periods of many different fruits and vegetables for the entire year. Above is the proposed seeding calendar for the allotments on site.

TRELAI PARK DESIGN



- | Existing | Proposed |
|-----------------------------|------------------------------|
| 1 Riverbank School | 1 Community Centre |
| 2 Ty Gwyn School | 2 Public Car Park + Nextbike |
| 3 Woodlands High School | 3 Buffer |
| 4 Trelai Primary School | 4 Bicycle Parking |
| 5 Glyn Derw High School | 5 Open Roman Villa Ruins |
| 6 Trelai Youth Centre | 6 Food Stalls Area |
| 7 Ely Great Farm Allotments | 7 Picnic Area |
| 8 Secure Football Pitches | 8 Re-purposed Bridge |
| 9 Playground | — Cycling & Pedestrian Path |
| 10 Skate Park | — Pedestrian Path |
| 11 Open Football Pitches | |
| 12 Public Car Park | |
| 📍 Bus Stops | |

This project is a big opportunity for the locals to work together with Cardiff City Council to improve the area. To get more funding a Community Infrastructure Levy (CIL) application can be submitted suggesting a few improvements to the park which will benefit Ely but also Cardiff as a whole.

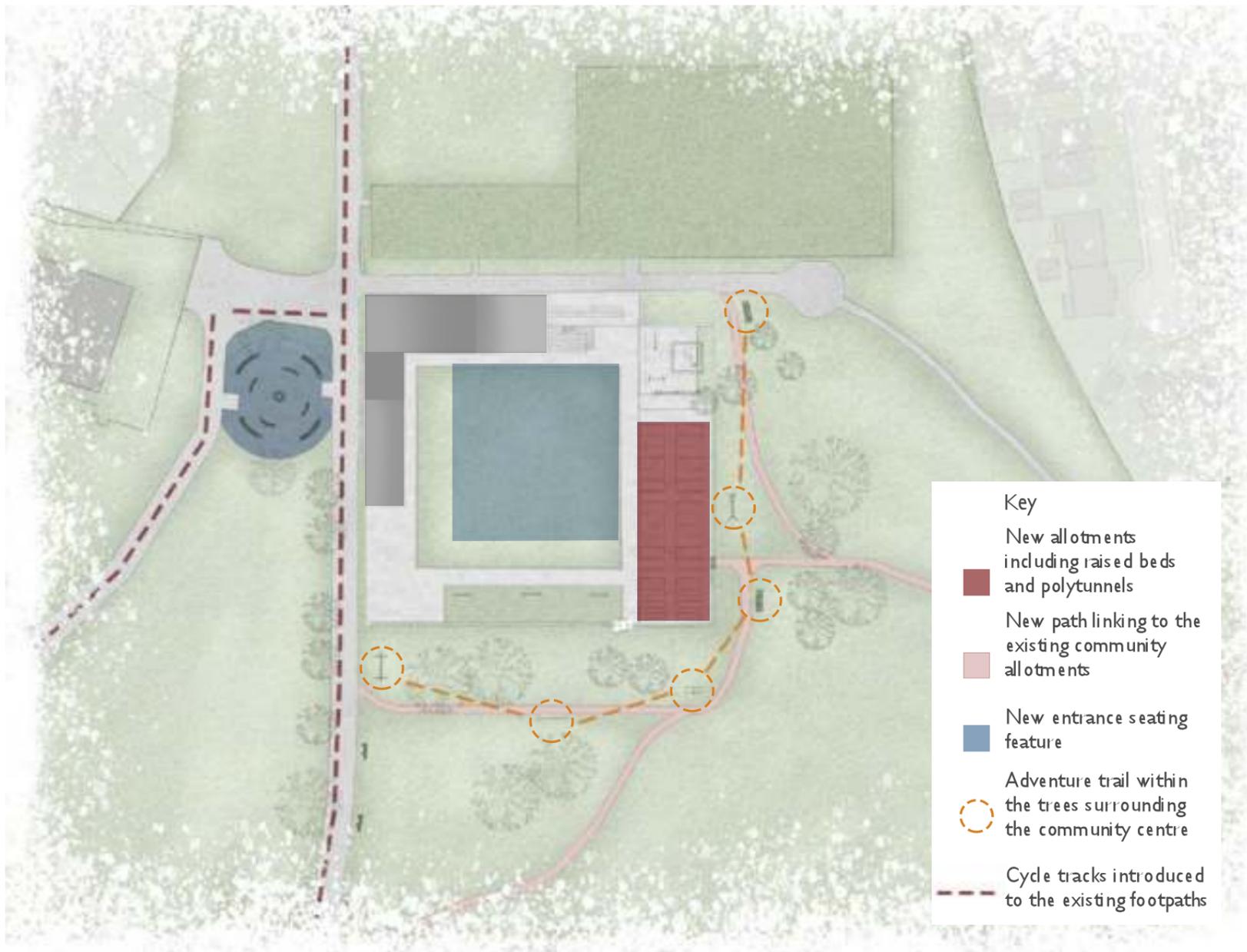
At the moment it is difficult for visitors to get around Trelai park and its surroundings due to the lack of walking paths and signs. There are a lot of fences around the area due to the proximity of many local schools.

An easy way to start regenerating the area is repainting existing structures such as signs, fences and bikes barriers. We hope this can be done through community engagement and get the people of Trelai Park involved.



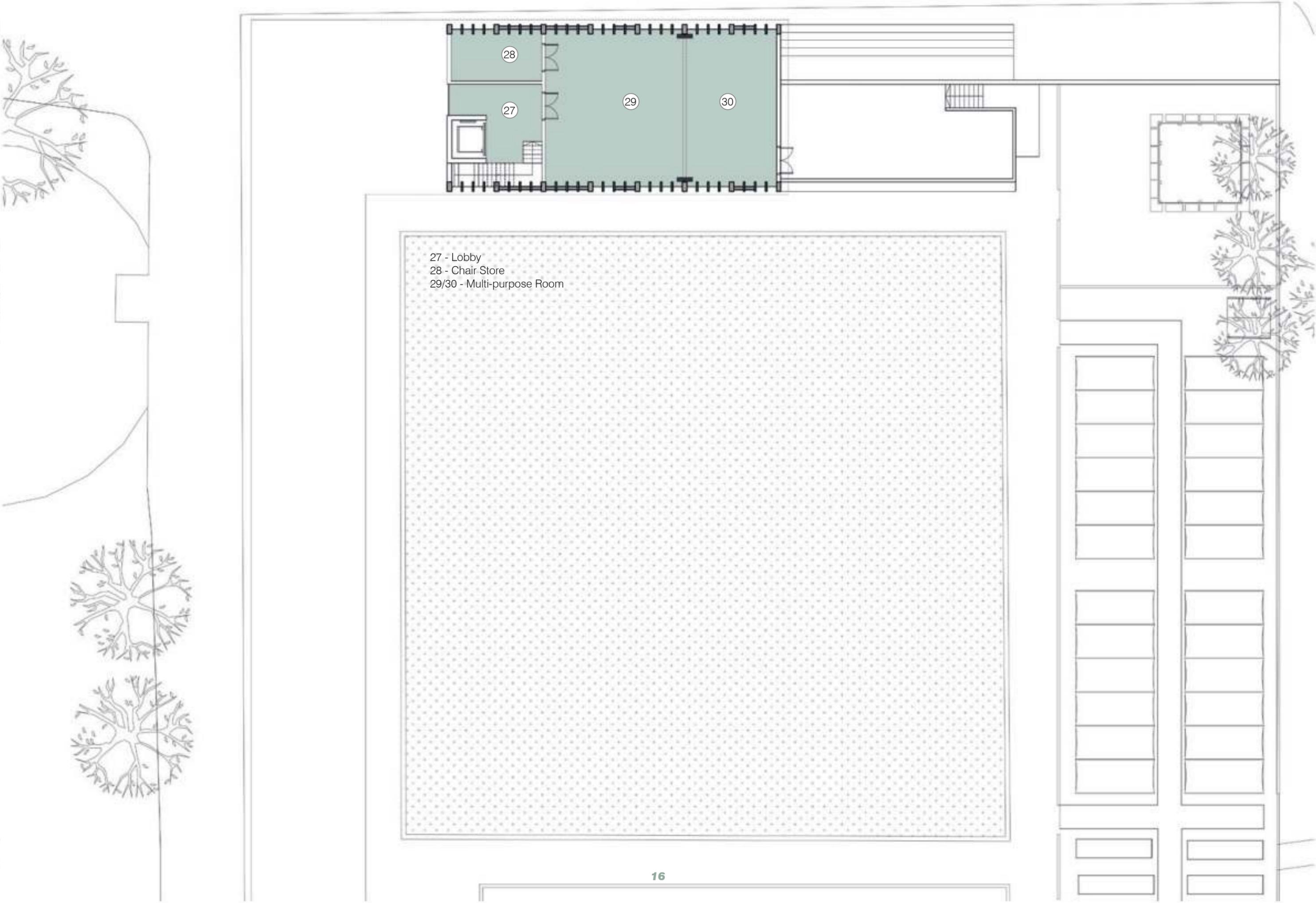
Looking to the south-east of the park, there is a servicing bridge that can be re-purposed to create a more efficient, safer and enjoyable walking and cycling route to the city centre. This route will connect Cardiff City, Cardiff International Sports Campus, Gol Centres Ltd, and many more places with Trelai Park Football Pitches, Roman Villa Ruin, and our proposal.

At the moment there are 140 public parking spaces available within the park which is not enough during a match-day; 144 parking spaces, nextbike stations and bicycle parking can be proposed at the north of the site.



LANDSCAPE DESIGN



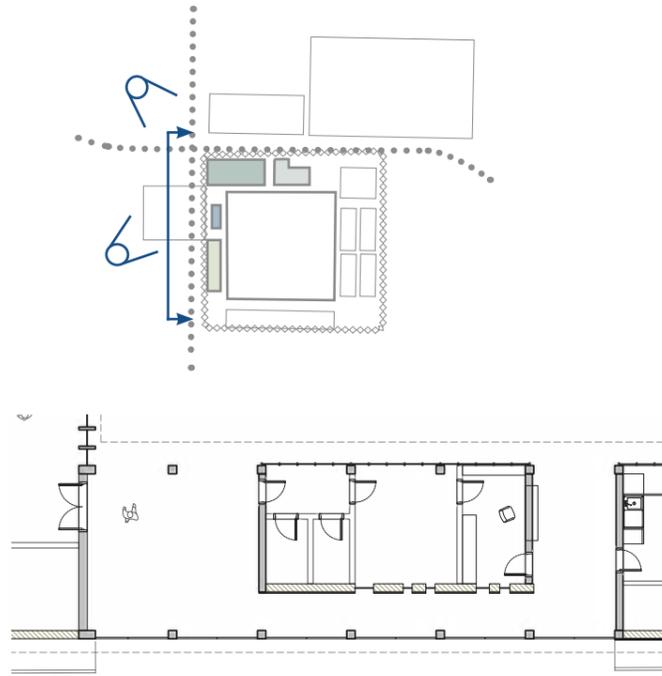


27 - Lobby
28 - Chair Store
29/30 - Multi-purpose Room

THE CULTIVATE COMMUNITY CENTRE



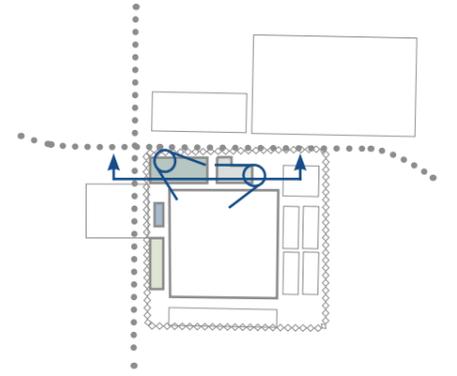
ENTRANCE ELEVATION AND EXTERNAL VIEWS



In keeping with the necessity to provide a secure site boundary for when the building is in closed hours, the entrances are fitted with folding/sliding doors that can be closed and locked. These doors still allow for a permeable and inviting entrance when the building is open, as you can see from the views and section below.



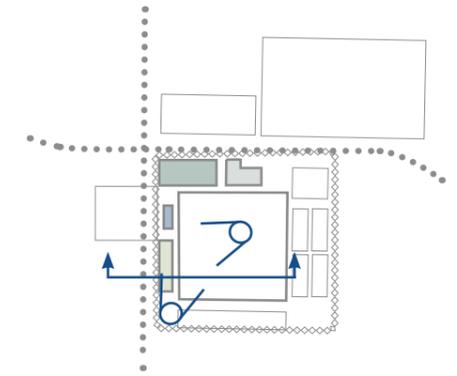
COMMUNITY SECTION AND INTERNAL VIEWS



The multi-purpose room can be divided into two separate spaces using a set of folding/sliding panels much like the entrance doors. This will provide an acoustic barrier between the spaces and allow the community to be flexible with how they use the space.



COMMUNITY KITCHEN AND SUSTAINABILITY



A - Overhangs that act as shelter from the elements and solar shading to reduce heat gain.

B - Minimal windows on the South facing facade to minimize solar gain

C - High performance building fabric to keep the heat in during the winter months.

The Community kitchen can operate as a cafe which can provide food and refreshments during training, match-day or even just to passers-by and dog walkers. The food used in the kitchen can be sourced from the allotments and is also grown by the community. The cafe space can be arranged to hold cooking classes which will focus on physical well-being and healthy eating as a part of an initiative to get more of the community eating healthily.



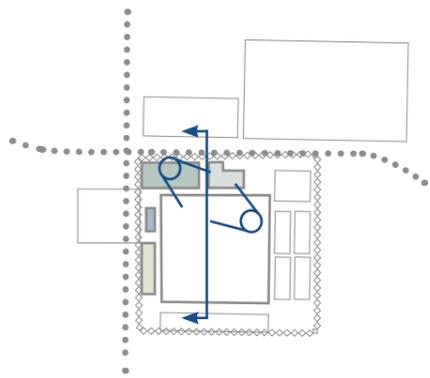
Environmentally Sustainable Goals

The scheme's sustainability goals are set out using the UN's SDG's, which cover social, economic and environmental factors. The following two pages cover how the environmental goals will be achieved using the 3 tiered strategy of Passive Strategies first, followed by Energy efficiencies and finally Renewables.

The building will be aiming for a BREEAM rating of Excellent, and we believe this is fully achievable. Throughout the project we will continue to consider the challenges that BREEAM aims to address through each different category.



MULTIPURPOSE ROOM AND ENVIRONMENTAL DESIGN



D - Using the natural environment to shade the facade.

E - Large windows to allow natural light to flood the spaces - reducing lighting energy consumption

F - Natural Ventilated spaces utilizing the buoyancy and cross ventilation affects



Environmental design - Passive strategies

Designing an energy efficient building must start with the application of passive measures to reduce consumption. The sketch above shows the design measures we are implementing into the project from the start in order to achieve the desired sustainable building.

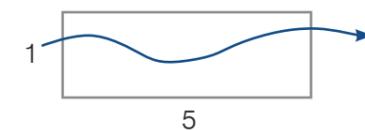
Moving through the stages of design, the environmental engineer will ensure that these features are preserved as the building develops. This will require careful coordination with the architects and structural engineers.



Natural Ventilation Rules of Thumb



Single Sided Ventilation



Cross Ventilation

Building U-Values

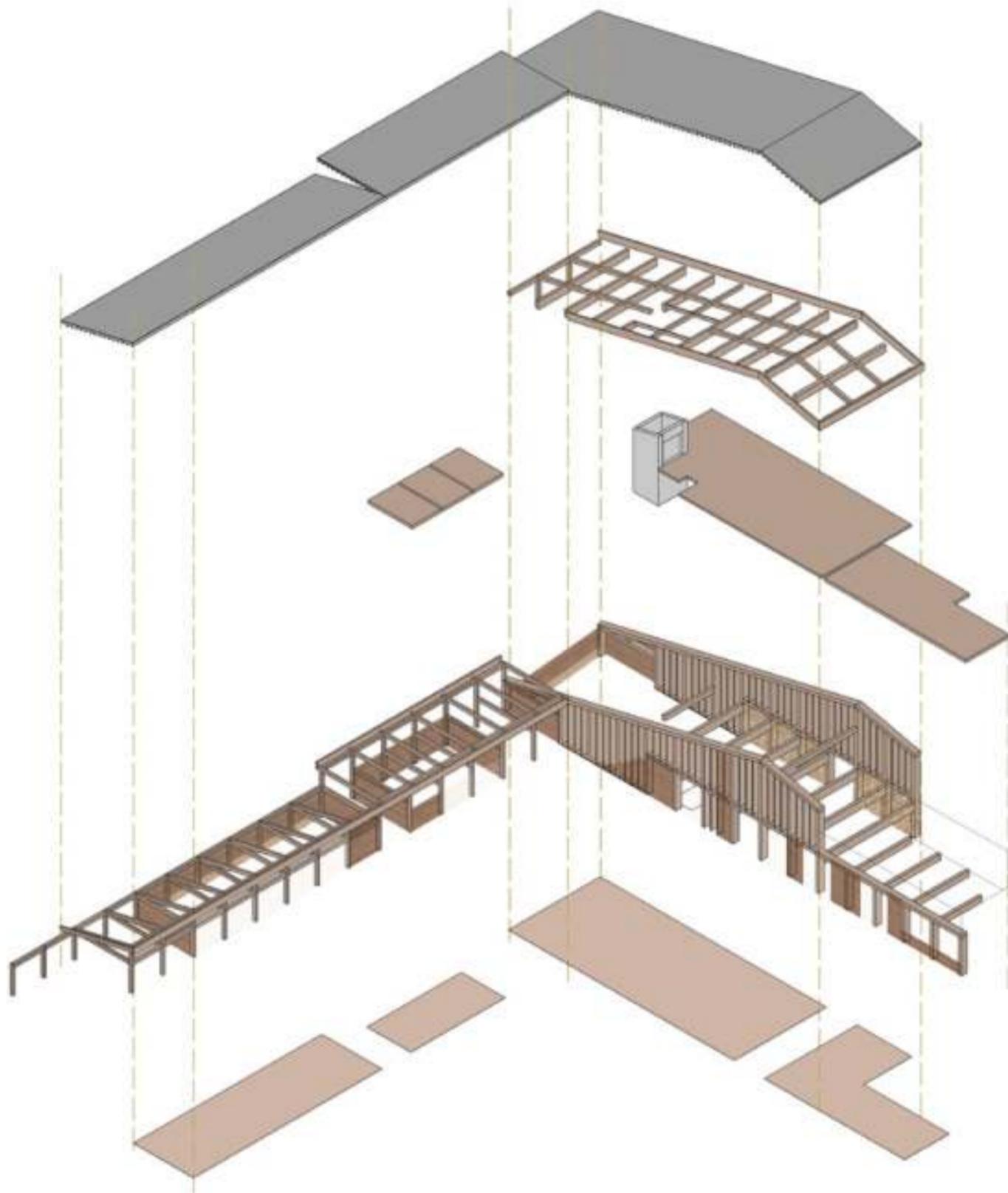
Walls: 0.2 W/m²K

Floors: 0.1 W/m²K

Roof: 0.15 W/m²K

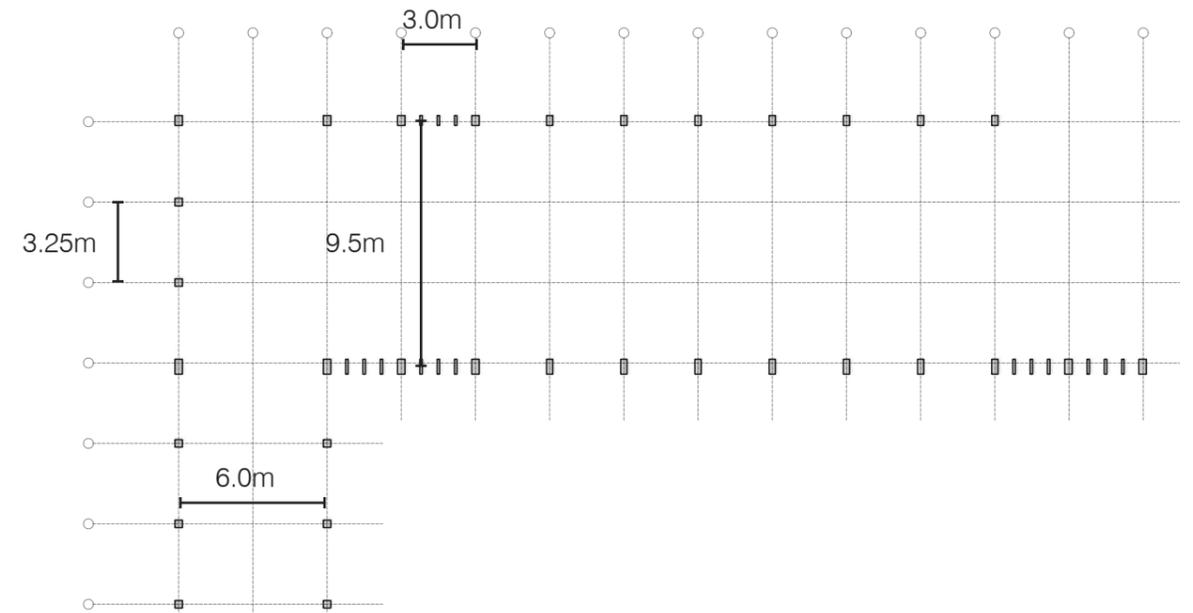
Window: 1.6 W/m²K

CONSTRUCTION & MATERIALS



Structural Grid & Column Layout

The Glulam structure has been laid out on a 3 x 3.25 grid. The cafe and management blocks have maximum spans of 6m, using 0.3m deep beams, in a mono pitch portal frame with a cross brace. The community block has maximum spans of 9.5m with 0.7m deep beams.



Materials

The material choices come from an inherent desire to keep the buildings embodied carbon as low as possible, using natural or quarried materials such as timber and stone. They have been locally sourced from inside the borders of Wales where possible and are simple and easy to construct.



Glulam frame - The structural frame will be constructed from glued laminated timber. This is an engineered wood product, manufactured by bonding together individual laminates with high-strength adhesive to form a single structural unit. This aligns with the environmentally sustainable aspirations of the project by reducing the embodied carbon within the building.



Welsh Larch cladding - locally sourced and naturally durable Welsh Larch used for the exterior slatted cladding. This aligns with the environmentally sustainable aspirations of the project, reduces procurement time and gives ensures the money spent is going back into Wales.



CLT slabs - Cross-laminated timber will be used for the first-floor slabs. This is another sustainable, low embodied carbon material. There should be minimal use of this due to the minimal first-floor area of the scheme. Although procurement can be an issue for CLT as it is normally sourced from Central Europe, the small area required for this project should reduce the risk.



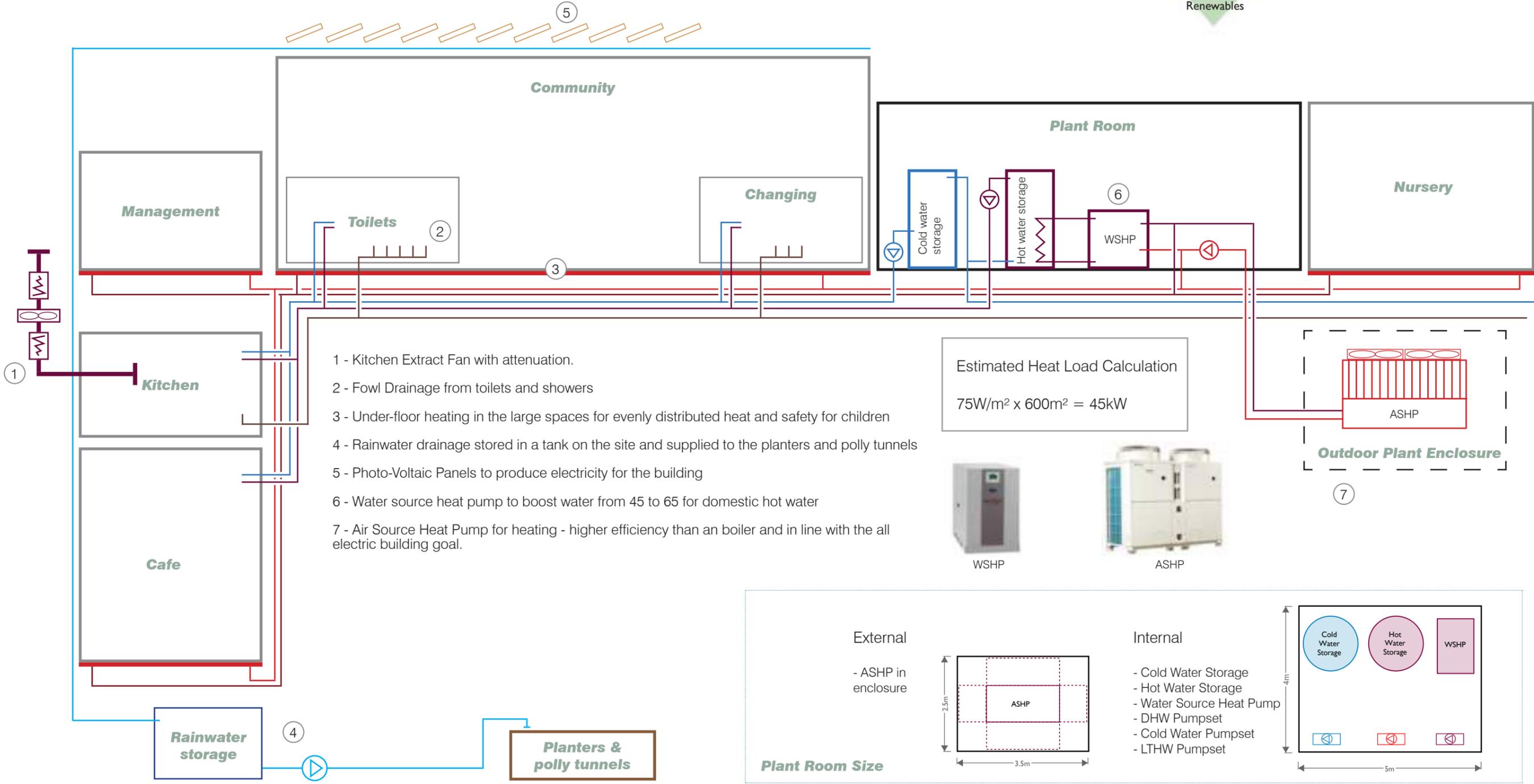
Pennant Sandstone - This sandstone will provide the 'heavier' base to the wall buildup in certain areas where the thermal mass night cooling strategy is being used. This is another locally sourced material that is quarried from the Black Mountains in the heart of Wales.

MEP AND SYSTEMS

A comprehensive schematic of the main MEP services for the building. In keeping with the strategy for an all electric building, the Mechanical plant is using electric heat pumps and the kitchen will use electric hobs and ovens.

A portion of clean energy will be produced on site by the Photovoltaic panels on the roof. The rest will be taken from the local grid.

Pipework will be housed in trenches when passing between the different buildings. This pipework is to be insulated or trace heated to mitigate freezing of the water.



SPONS - PRICE PER SQUARE METER

We have looked at the average cost per square meter for buildings of a similar use to ours. According to SPON's First Stage Estimating Handbook:

Leisure Facilities-	1100-1300 £/sq.m
Community Centres-	1100-1300 £/sq.m
Youth Club-	1000-1300 £/sq.m
Social Club-	1200-1600 £/sq.m
Nursery-	1200-1500 £/sq.m
Average-	1270 £/sq.m

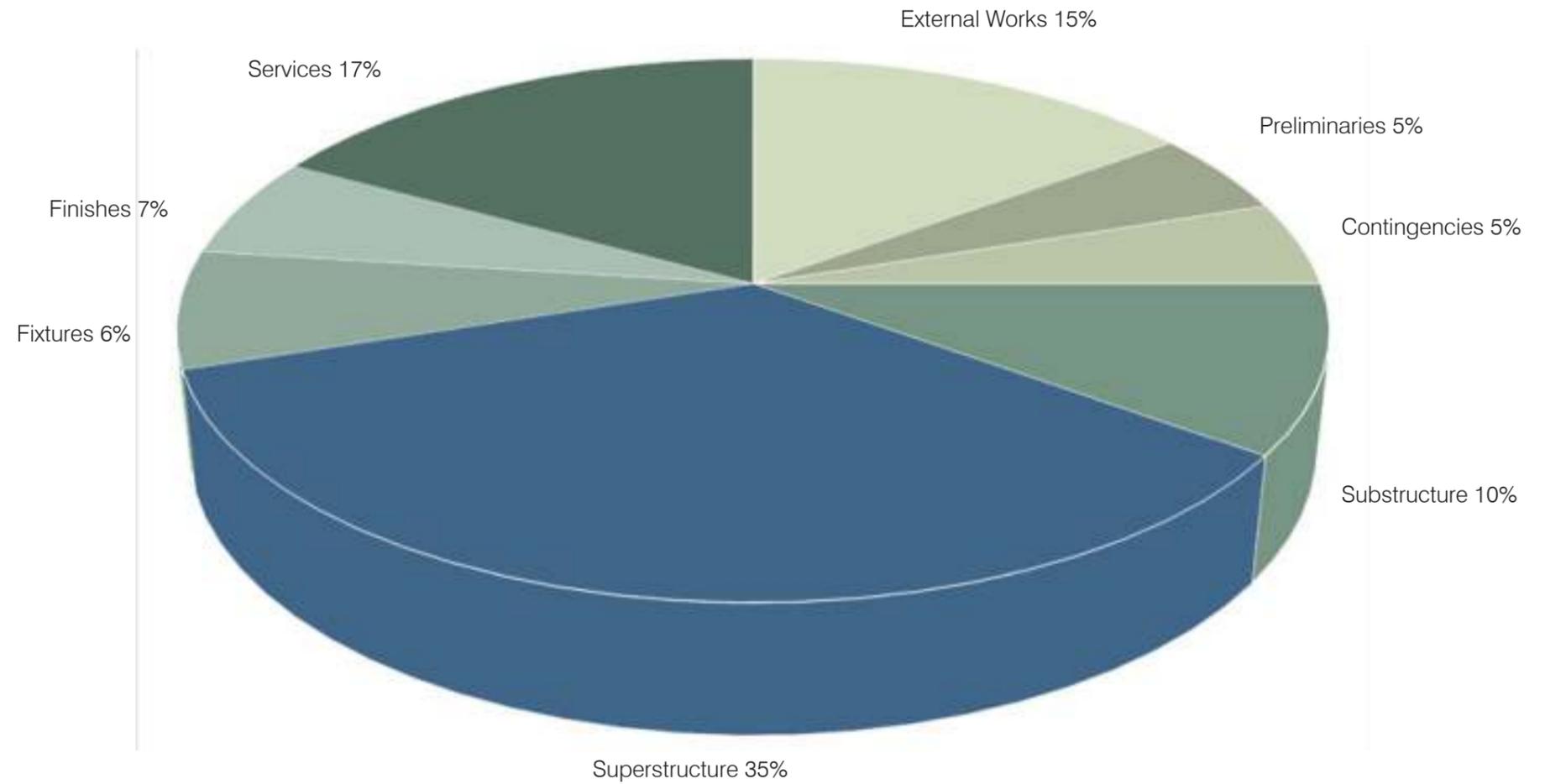
Using a briefs guide of 500 sq.m for the entire building this comes out to an estimate based off SPONs of £635,000. (This figure is for the building only)

FUNDING AND GRANTS



The above are some organisations that have given out funding to similar projects in the past and present an opportunity for this project

BUILDING COST ESTIMATE



RISK CONSIDERATION

Some risk factors that we have identified that may impact the cost of the project are:

The use of sustainable construction methods and materials which have a higher upfront cost in return for lower running costs.

During the construction of the new facility the existing nursery and bowlers will need to be relocated to somewhere else which will incur costs.

The area is a hotspot for archaeology and heritage which may result in extra precautions and surveys to be undertaken.

BREAKDOWN

The scheme has a significant superstructure, external works and is aiming to be highly sustainable. This has driven the building to be 12% over the initial budget of £1.25million. This is due to the aspirations to provide a building that the community is proud of. We believe there is an opportunity to gain further funding through other grant schemes.

£2,225.76/m2

This figure is indicative of producing a high quality and sustainable building that will last the community as long as they need it with potential to adapt and change as their needs do.

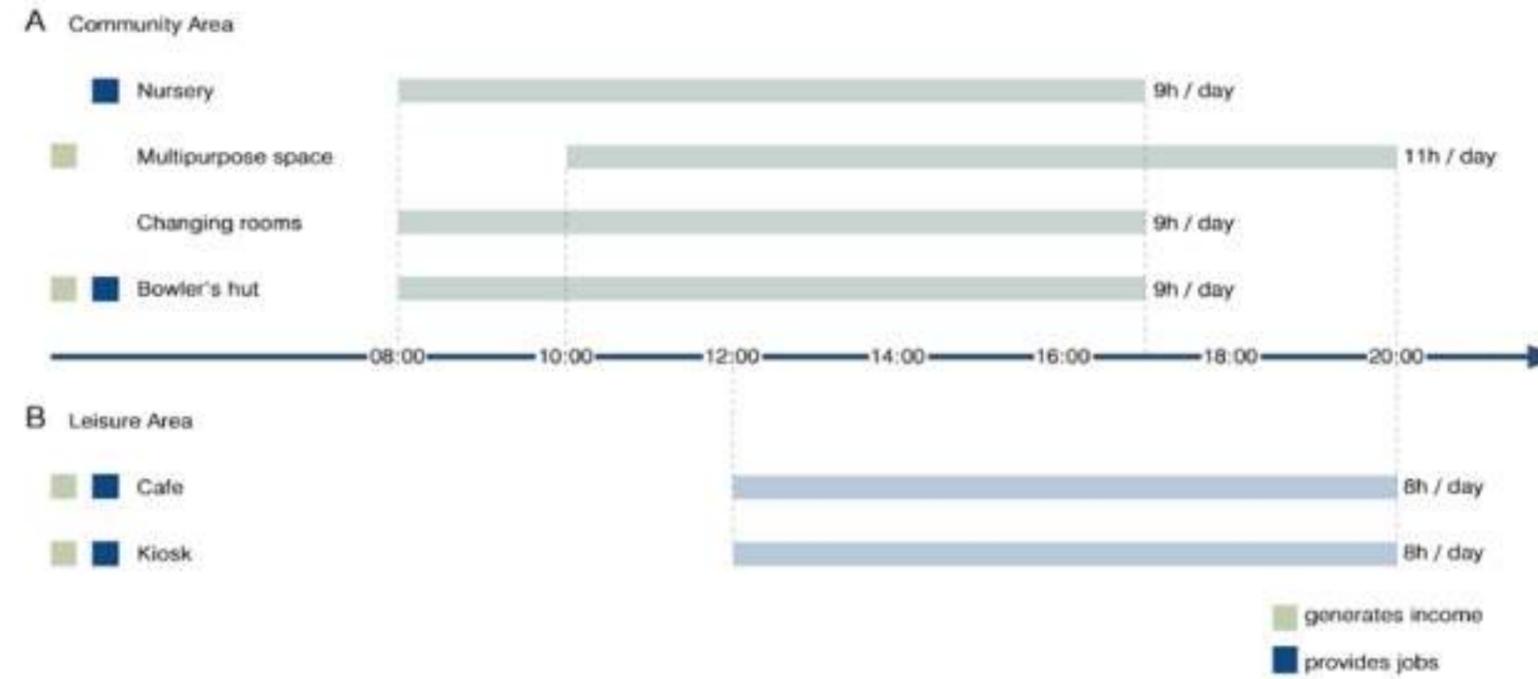
BREAKDOWN

	Percentage	SUM
External Works	15	£210,000
Preliminaries	5	£70,000
Contingencies	5	£70,000
Substructure	10	£140,000
Superstructure	35	£490,000
Finishes	7	£98,000
Fixtures & fittings	6	£84,000
Services	17	£238,000
TOTAL		£1,400,000

STRATEGY

ECONOMIC POTENTIAL AND USE

Usage Timetable



Cafe Income

Item	Item Cost	Sales per month	Total
Coffee	£1.00	1000	£1,000.00
Tea	£1.00	1000	£1,000.00
Bacon/ Sausage Roll	£1.50	400	£600.00
Full Breakfast	£4.00	150	£600.00
TOTAL			£3,200.00

There can be 200-300 people on the park on match days. Speaking to the community it was acknowledged that they would love a place to sit and have tea/coffee or a hot snack.

Annual Costs

	Monthly	Yearly	Notes
Cleaning	£2,190.00	£26,280.00	£12 per hour, 6 cleaning hours per day
Utilities	£500.00	£6,000.00	Estimation of Gas and electricity for a 600m2 building
Maintenance	£416.67	£5,000.00	Replacing broken or lost items
Management Staff	£3,333.33	£40,000.00	2 full time staff on payroll (£20,000 per year)
Café Staff	£3,893.33	£46,720.00	Average two members of staff for 8 hours per day (£8 per hour)
Kitchen Staff	£2,433.33	£29,200.00	Average one member of staff for 8 hours per day (10 per hour)
TOTAL	£12,766.67	£153,200.00	

Annual Income

	Monthly	Yearly	Notes
Nursery	£1,000.00	£12,000.00	Flat fee paid by nursery for use of the space
Multipurpose Room	£7,604.17	£91,250.00	5 hours of hire per day, £50 an hour hire cost
Café	£3,200.00	£38,400.00	See Café income table
Bowling	£912.50	£10,950.00	£10 per game, average of 3 games a day
TOTAL	£12,716.67	£152,600.00	

Annual Profit

Annual Costs	£153,200.00
Annual Income	£198,225.00
Profit per Year	£45,025.00

The community centre is predicted to make a healthy yearly profit of £45,000 per year to use towards further developments of the park or for other community projects.