

BEACON

REHOUSING THE BRISTOL FLYERS

PROPOSAL FOR A NEW
MULTI-USE STADIUM IN
THE HEART OF BRISTOL

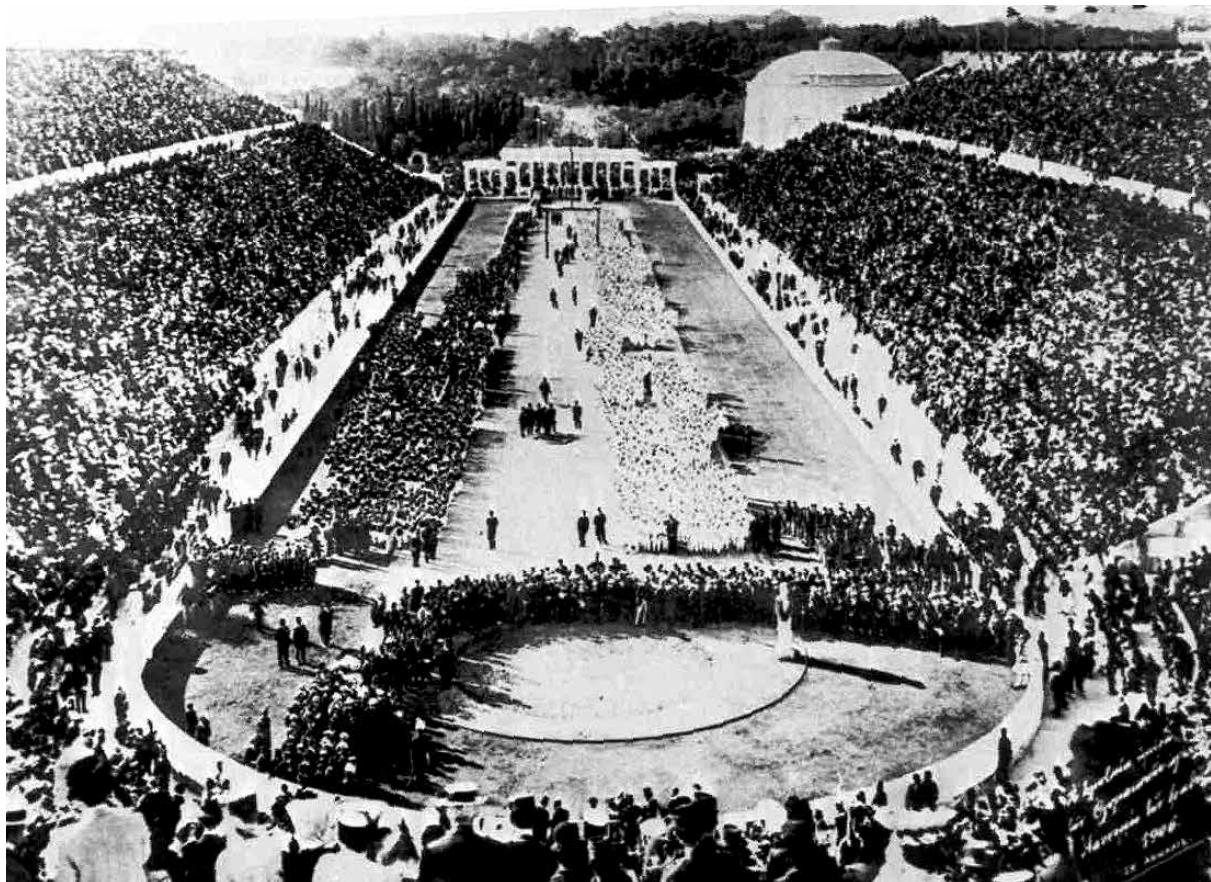
VIHAAN KRISHNA MOORTHY
AR30021 : DESIGN STUDIO 4.2
UNDERGRADUATE THESIS
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At times, sport has served the objectives of religious authorities and has been imbued with a morality and philosophy derived from religious doctrine. The relationship of man with sport has enabled its continuity and development over Centuries, and the establishment of professional sport was a result of years of codification. Today due to mainstream media, for better or worse, we are surrounded by acts of physical excellence. Research suggests that this plays an central role in betterment of society. This project aims to highlight the importance of Sport in its modern form though the relationship of society with consuming and practicing sport through the physical manifestation.....

A stadium.



"Sport has attained an undeniable position as the new global culture, and recent phenomenon may simply be due to sport's inherent capacity to reinvent and re-stage itself. Every sporting event, one trusts, is unpredictable and unscripted."

-Rod Sheard

INTRODUCTION



FIRST GENERATION

The history of the first generation of modern stadia dates back to the codification of sport in the 19th century. The first generation placed an emphasis on accommodating large numbers of spectators, with minimal concern for the quality of the facilities or the comfort of the spectators.



SECOND GENERATION

THE INFLUENCE OF TELEVISION

Television began broadcasting sports events in the late 1950s. Almost immediately there was a sharp decline in the numbers attending live sports. The 2nd generation was the response; it placed greater emphasis on the comfort of the spectator.



THIRD GENERATION

THE FAMILY STADIUM

The 3rd generation emerged in the late 1990's developing more user-friendly facilities to lure the entire family. Sport was the focus but not the entire attraction. The principle source of revenue shifted from match tickets to merchandising and television. There was a new standard for spectator facilities and an emphasis on retail.



FOURTH GENERATION

CORPORATE SPONSORSHIP, MEDIA

It became clear that stadia could make money if the design, funding and management were integrated. They were no longer regarded a drain on the city's finances but as a blueprint for the city of the future. They had grown into buildings that could be used as catalysts for strategic growth. They were a powerful symbol of culture and aspirations.



FIFTH GENERATION

URBAN REGENERATION

At the beginning of the 21st Century, a new potential emerged; the ability of stadia to shape new cities and to regenerate decaying areas of old cities. The 5th generation is less tangible than the previous 4, it is identified by its global presence and by its regional regenerative potential.

COLLECTIVE IDENTITY

Sport in its modern form, provides what is arguably one of the most major focus for collective identification in Britain and much of the world. An American Sociologist James Coleman noted that most people and places 'have few common goals. They fight no wars, seldom engage in community rallies, and rarely face crisis such as flood that engender communal spirit'. Sport is an example of a civic ritual which is made attractive than the rest by its serialised and periodic nature. It has been theorised that such periodic and regular events provide 'a sense of stability to an urban space, including a sense of place'. "This is a religion; it's your tribe that you fight for, your team is what you believe in, your fellow fans are your brothers and the stadium is the venue where you go to feel part of something larger". As Maslow's pyramid depicts, a sense of belonging is a primary human need. Sport - in its modern form - establishes a venue for exploration and expression as it diverts class consciences towards place consciousness.

BEACON

The concept of 'beacon architecture' is coined from the relationship of certain architecture to concepts such as vision, roadmaps, and any such concepts that have an impact on the public sector.

As Rod Sheard says, "A stadium, more than any other building type in history has the ability to shape a town or city. A stadium is able to put a community on the map, establishing an identity and providing a focal point in the landscape." Stadia are the most viewed buildings in history and possess the power to change people's lives. They can be seen as a symbol for the nation's aspirations. While being expensive to build they are capable of generating copious amounts of money. The power and fiscal weight of sport is ever increasing and in the 21st century has been established as an internationally recognised social currency. Consequently, the stadium is one of the most important buildings a community can own, and if it can be used wisely, possess the ability to be the most useful urban planning tool.

EXPERIENCE

The experience is equally meaningful whether you are in the 'real stadium' or the 'virtual stadium'. Stadium architecture of the 21st century cannot be perceived as traditional architecture; physical realities are influenced as much by the needs of the invisible audience as they are by the crowd at the venue itself. The stadium is a backdrop for television coverage, and it is imperative that the sense of occasion is established for the virtual audience by placing them at the event. This can only be achieved by providing a facility that satisfies local demands; no degree of television awareness can overcome a vista of empty seats. "The best stadia, to coin a phrase, just get it right. As a result of the ascendancy of sport, the best stadia are the true monuments of time".

COMMUNITY

Teams are inspired by their local communities, and along with their general philosophy on the court/ pitch, their identity is created. Communities which contributed to the club's rise are then shaped by the organisation they helped create. For example, Liverpool FC over the years have engaged in a concerted effort with local organisations to promote the wellbeing of their people. They use the potential of 40-50,000 fans coming into their community as a resource to tackle issues. It is not unique to Liverpool though; the legacy of each football team comes down to their supporters. The fans and the community are the ones that not only shape teams but are responsible for the continuity of the club.

ATMOSPHERE

The atmosphere is a direct manifestation the nature the stadium. In a nutshell, the basic challenge of architecture becomes, how to capture the magic. Especially when it comes to dealing with the Event: the game and the assembly are a form of theatre. An individual can celebrate the sense of expectation – at every turnstile, cloakroom, bar, television room, players tunnel, and even more so when these instances intertwine with the other. Put a body of people queuing and anticipating and rustling, you get something way more electric than a town of a similar size to the crowd.

ZEITGEIST

The landmarks and symbols of a city and their culture for better or worse have been built as monuments. Spiritual aspirations explain monumental construction since the first pyramid. Modern monuments, symbols of the secular age and with less spiritual concerns, appeared in the 19th Century -places such as Crystal Palace and the Albert Memorial. Architectural magazines would have us believe that recent 'icons' have been museums, art galleries, libraries and airports. Is a library or museum really symbolic of our time – the age of technology?

You could argue that they probably are not. The architecture certainly is - it is hard to argue the Zeitgeist of a swerving, titanium clad Gehry museum. Airports are certainly a symbol of our times, but whether they exist as prestige buildings outside of magazines is debatable. However, stadia transcend the irony of these 21st century 'icons'. The ascendency of sport as the new global culture means that the stadium possesses a central role in the city – not only hugely the financial, political and geographical centrality but by actually involving the individual in what is close to a spiritual experience and thus becoming memorable and social spaces . The greatest buildings, the 'icons' so to say, have always reflected the Zeitgeist. Right now, the Zeitgeist is sport.

BENEFITS

Research on this topic found that low-to-moderate physical exercise, has both short/long-term beneficial effects on psychological health.

Research also shows spectating, and taking part in sport, have a positive impact on the well-being and happiness of individuals.

£900,000,000

NHS providers in England spent more than £900m in 2009/10 in treating people with diseases that could be prevented if more people were physically active.

20

Physical activity, including sport, is linked to reduced risk of over 20 illnesses, including cardiovascular disease and some cancers.

£1750-6900

Taking part in regular sport can save between £1,750 and £6,900 in healthcare costs per person.

£20,300,000,000

Sport and sporting event contributed £2.3 billion to England's Economy. 1.9% of the total.

40,000

Sport and sport-related activity is estimated to support over 40,000 full-time equivalent jobs, 2.3% of all jobs in England.

8%

Published studies show the positive effects of sport on education include improved attainment, lower absenteeism and drop-out, and increased progression to higher education. For instance, young people's participation in sport improves their numeracy scores by 8 per cent on average above non-participants.

GROWING STATURE: OF BASKETBALL AS A SPORT IN THE UK

The following information was taken from the All Party Parliamentary Group on “the ability of basketball to make a difference to the social challenges affecting young people in the UK’s inner cities”

BENEFITS

Basketball is having an extraordinary impact in many of the UK’s most-deprived communities; not just, related to the development of sporting talent, or just increasing sports participation, but mainly in improving life outcomes by addressing some of the social challenges faced by disadvantaged young people in the UK.

8%

Basketball in the UK has helped increased the participation of economically deprived communities in sport by 8% since 2012.

216%

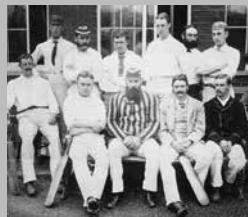
There has been a 216% increase in the number of people participating playing the sport since 2005. The Active People Survey data suggested that 231,000 people participated in basketball monthly in 2015, compared to 501,000 thousand in 2019.

55%

Basketball has risen significantly in stature due to the fact that the sport is appealing to both men and women. Reports show that 55% of people playing the sport are female. The sport is also appealing to those who are disabled.



Bristol Flyers’ basketball clinic offering the youth to get the chance to get involved in regular basketball.



1870

GLOUCESTERSHIRE C.C.C.

Gloucestershire County Cricket Club was established and is one of eighteen first-class county clubs within the domestic cricket structure of England and Wales.



1888

BRISTOL RUGBY CLUB

Bristol Bears (officially Bristol Rugby Club) was established as an English professional rugby union club. They play in Premiership Rugby, England's top division of rugby.



1894

BRISTOL CITY F.C.

The club was established in 1984. They currently play in the second tier of English football. The club's successes include a top flight league finish in 1906–07 among many other accolades.



2001

BRISTOL MARATHON

Bristol hosts an annual half marathon that started in 1982. In 2001 they hosted the IAAF World Half Marathon Championships staking their significance in the world of sports.



2004

BRISTOL FLYERS

Bristol Flyers were established, the first basketball team of the city. They compete in the nation's top-tier competition, the British Basketball League.

In a city renowned mostly for its arts, culture, and recently elevated green status, Bristol was announced to be the European City of Sport in 2017. The city was judged on its sporting facilities, residents' level of participation, the success of local teams and sporting events. This was an acknowledgment of Bristol's steeped history in sport. Home to some of the UK's longest standing professional clubs, the city actively promotes the development of grassroots and recreational sports.

Bristol performs well against national and other core city averages for sport participation. Most notably, 39.6% of adults took part in at least 30 minutes of sport per week in 2012 - this was 3.6% above the national average and the joint highest rate of the eight core cities in England.

The involvement and support from local communities has meant that all professional sports teams have had backing to remain successful over the years.

Mayor's One City Plan – a Plan for Bristol 2050 and its vision for Health and Well-being for 2050 which aspires to creating a Bristol where:

Citizens thrive in a city that supports their physical health and mental health equally.

25% of the population in England are inactive and, although levels of inactivity in Bristol compare favourably to national figures. The ones who face socio-economic deprivation are those least involved in physical activities.

Founded in 2004, Bristol Flyers are a professional basketball club competing in the nation's top-tier competition, the British Basketball League (BBL).

The Flyers are a part of the Bristol Sport stable of clubs, alongside Bristol City FC and Bristol Bears Rugby, with offices based at Ashton Gate Stadium. In addition to the BBL team, Flyers operate comprehensive academy, youth, women's and community programmes. The club is financed by Stephen Lansdown, owner of Bristol City Football Club and the 'Bristol Sport Ltd' group,

Bristol Flyers are partnered with SGS College and play their home games at the SGS College Arena, which regularly sells out it's 700+ capacity. Flyers produce extensive digital coverage and BBL games are all broadcast live

The sell-out crowds at SGS College have shown that there is a real appetite for basketball in Bristol therefore Bristol Sport aims to provide a brand new dedicated venue, which will support The Flyer's long-term ambitions for domestic and European success.

Bristol Sport aims to deliver a modern, multi-use stadium to make Bristol proud. The Stadium will be co-financed by Bristol Sport, who also managed the Ashton Gate stadium rebuild.

CLIENT OBJECTIVES

1. An arena for the Bristol Flyers to play their home games.
2. The arena must be flexible to allow for corporate functions/exhibitions/etc to take place. Any function that allows the amphitheatre to be used on non match days to generate revenue.
3. The main court must provide provisions for volleyball, futsal, table tennis, and other such indoor sport matches to take place.
4. The stadium must act as a beacon of exceptional architectural value promoting the success of sport in Bristol and for the city itself.
5. Must provide spaces for retail and leisure to generate further revenue.
6. Must act as a space for community integration and sporting development.



BRITISH BASKETBALL

BRISTOL SPORT

BRISTOL FLYERS

1:2000 SITE PLAN

TEMPLE MEADS STATION

FEEDER ROAD

CATTLE MARKET ROAD

RIVER AVON

TEMPLE GATE

BATH ROAD

RIVER AVON

VICTOR BRIDGE

TEMPLE ISLAND



THE SITE

Temple Island is located within Bristol City Centre as designated by the Bristol Core Strategy Development Plan Document (adopted 2011). The entire site is owned by Bristol City Council. Arena Island is located within the Temple Quarter neighbourhood of Bristol City Centre, which is a key regeneration area of the city, and now an Enterprise Zone. In recent times there has been the development of a significant amount of high quality commercial floor space in this area, which has resulted in the shift of the city's Central Business District from the geographical city centre to Temple Quarter. The site provides great opportunity to address the bustling environment of Bristol city centre.



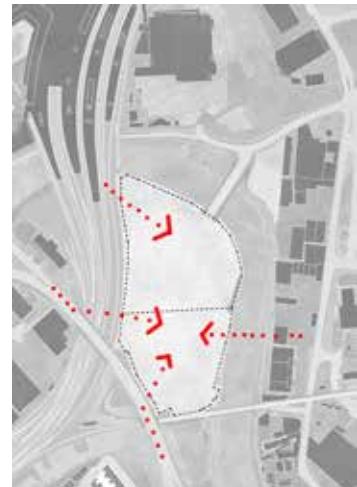
CONTEXT

The chosen site has historical and contextual significance, the ability to respond to Temple Meads and the River Avon provides a unique opportunity.



ACCESS

Due to proximity to Bristol's main train station and significant roads the site offers multiple access routes which is a great bonus for this project. Bus stations are a 20 min walk away and trains just 5 mins away



BEACON

Due to the location of Temple Island relative to Bristol, any development on the site becomes a significant view when approaching the site by train or road.

Potential road access:
Bristol Road

Existing pedestrian
access: Victor Bridge

Potential pedestrian
access: Temple Meads

Existing road access:
Cattle Market and
Feder Road



LOW FLOOD RISK

The site has a low flood risk despite its proximity to the river as it sits on an elevated platform. It is classified at lowest risk for flooding.



ART IN PUBLIC REALM

The Bristol Temple Quarter Enterprise Zone Public Art Strategy will be a model of good practice in strategically delivering public art.



SENSITIVITY TO HERITAGE

The plan for the zone calls for celebration and protection of historically significant built environment, preserving the sense of identity of the place.



IMPROVED PUBLIC TRANSPORT

Improved public transport in the region through better bus connectivity will mean there will a shorter walk time to the site and the need for personal transport methods is reduced.



PEDESTRIAN FRIENDLY

The outline for the plans for Temple Quarter include and emphasis on pedestrian friendly spaces.



PERMEABILITY

There will be increased permeability between Temple Meads station and the surrounding areas potentially allowing access directly into the site.



CITY/COMMUNITY

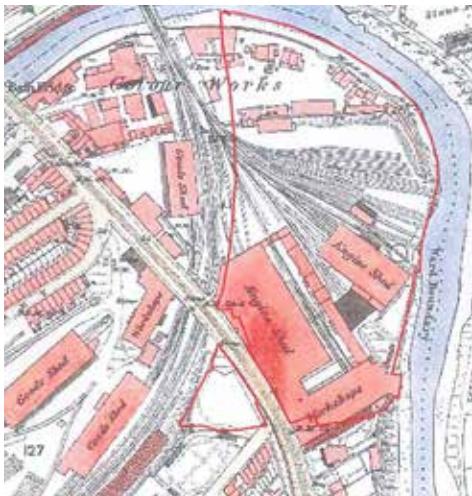
Due to the rise of the significance Enterprise zone, it is important to provide function and value to the surrounding community. Any development on the site should be symbol for the aspirations of the city



'EXCEPTIONAL SPACE'

The site falls under Temple Quarter's most distinctive and strategically important streets and spaces which include the 'show-piece' places which These are so valuable to the character and perception of the Quarter and the City that they will require tailored design approaches of the highest quality.

SITE HISTORY



EXTRACT FROM 1ST EDITION OS PLAN, 1883

Several locomotive works buildings are indicated, as well as a second smaller Engine Shed, extensive rail sidings, and a locomotive turntable. At the southern limit of Site 1a, the steeply cut cliff created by the deep terracing for the railway works construction on the north side of Pylle Hill is supported by a high revetment wall.



EXTRACT FROM 2ND EDITION OS PLAN, 1902

Construction of the east/west GWR 'avoiding line' resulted in the partial re-building of the Workshops and the re-alignment/rebuilding of the railway cutting/revetment wall south of the Site, along with the demolition of Bellevue House and the destruction of its formal grounds.



EXTRACT FROM 1966 EDITION OS PLAN, 1966

This map shows the railway facilities completely rebuilt, with a large new Engine Shed on the site of the former B&ER works/shed, although no longer directly abutting the Bath Road, and a replacement for the smaller shed to the east on a different alignment. New rail lines are shown crossing the west side of the former Works site, and there is a substantial terrace-edge fronting onto the River Avon both here and within the northern part of the Arena site.



PRESENT DAY

View from bridge parapet on Bath Road to the site.

IMPRESSIONS OF THE SITE

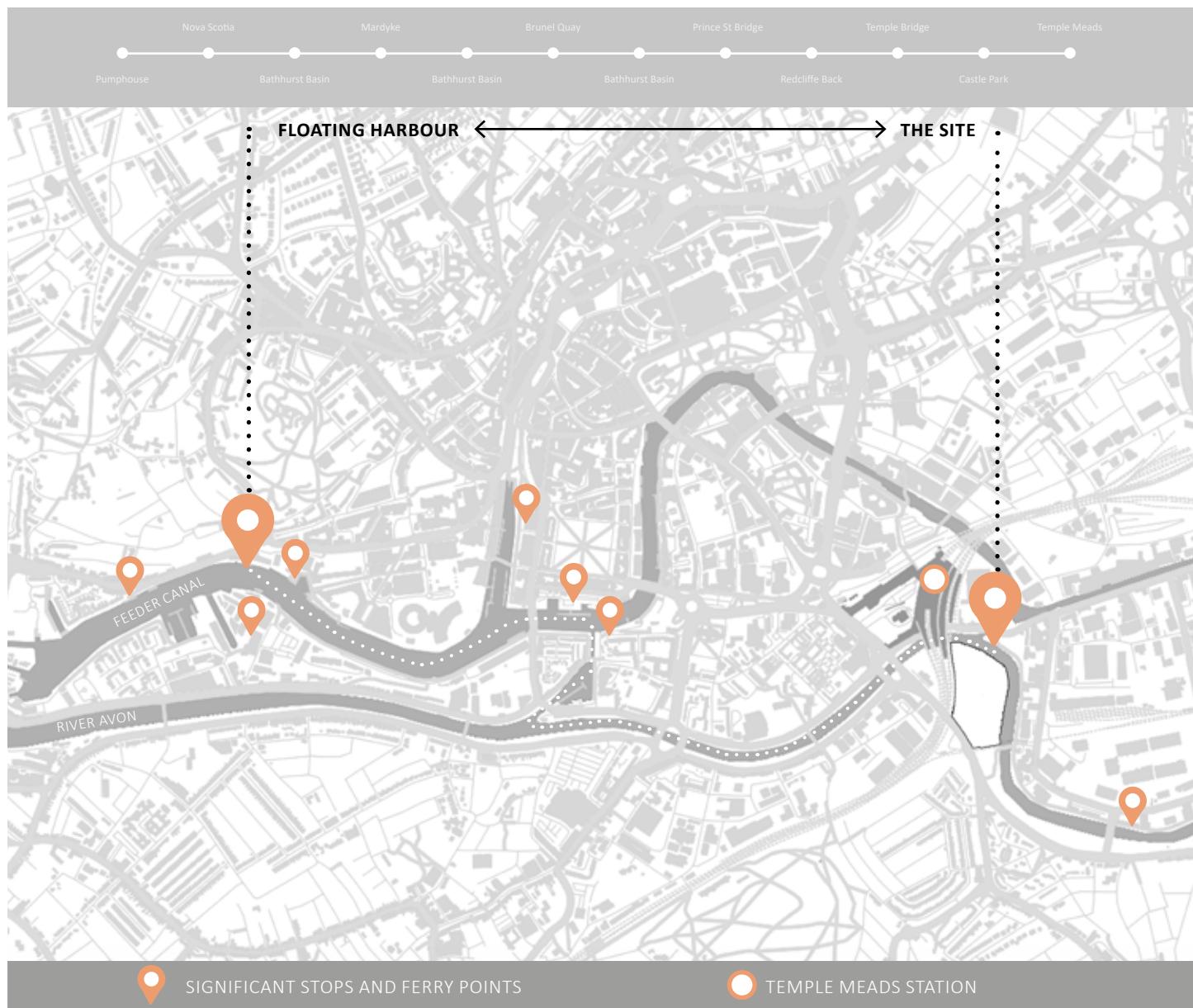


The site was originally a yard for Temple Meads Station and now lies empty. The site has potential to be the link between the four different areas that surround it by providing ample public facilities.

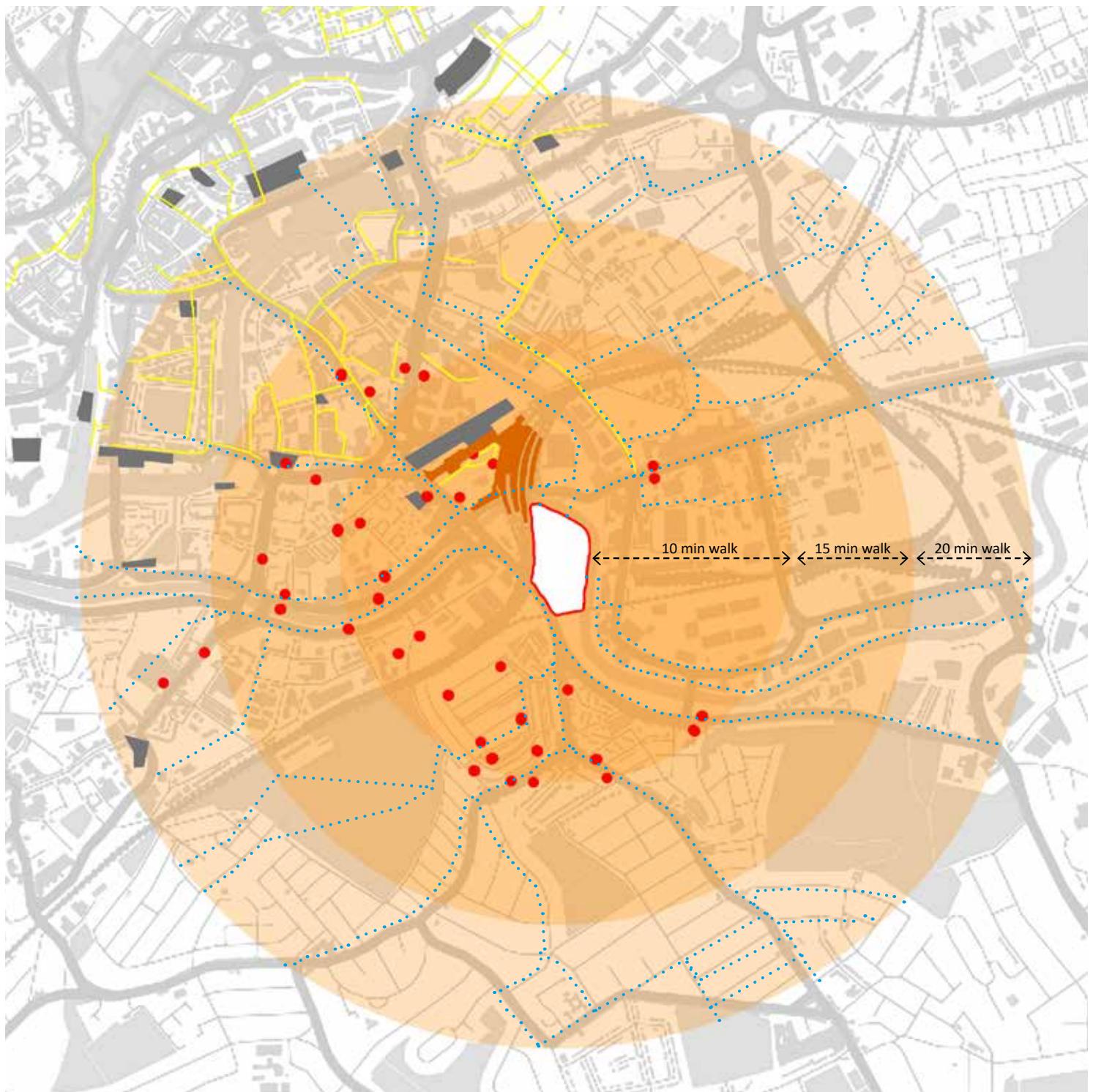


A NEW CONNECTION FOR TEMPLE MEADS / WATER ACCESS

Due to its ability access to the river Avon there is potential to create a new link between the harbour and Temple meads. A faster, more direct mode of transport via water. Invariably this will have a positive impact on the site as 'non-user' footfall will increase significantly. This allows the landscape to be more meaningful and provide service to a greater number of people.



EXISTING TRANSPORT TO SITE



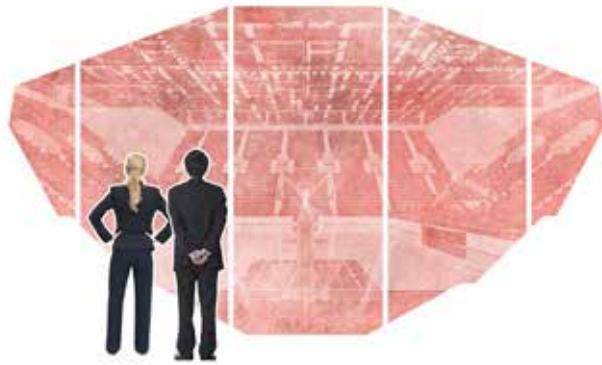
Bus stops

Pedestrian paths

Cycle paths

Off road car parking

CLASSIFICATION OF SPACES



ARENA

The Space that accommodates the spectacle and the spaces where the audience get to view the event taking place. Generally classified as the 'amphitheatre' within the stadium.



PERFORMANCE

In order to prepare for the event taking place, spaces for preparation are necessary. All these spaces are geared towards supporting the individuals who are participating in, organising or managing the spectacle.



COMMUNITY

A stadium is a significant building within the contextual community or team's supporting community. These spaces are geared towards providing value to the members of each of those communities or to individuals who are visiting.



BACK OF HOUSE

A complex building of a sizeable scale requires a lot of care to go into the work behind the scenes in order to facilitate the event. These spaces may also be referred to as Back of House spaces. However they vital to the everyday operation of the building.

Each set of users need to be able to use their correlated spaces independently of others. The scheme, for a heavily community focused stadium, serves different functions to different sets of individuals. These individuals may occupy the building at the same. A well organised circulation programme was necessary to prevent different users interfering with each other.

**PLAYERS/PERFORMERS & SUPPORT STAFF**

1. Easy and secure access to the event floor from outside the building.
2. Facilities for Changing and Rest.
3. Facilities for emergency services.
4. Access to food and drinks.
5. Optimal performance environment.

They occupy the building only during a performance/event. Usually in 3-5 hour scheduled appearances

**AUDIENCE/GUESTS**

1. Accessible, pedestrian friendly circulation throughout the building and landscaping.
2. Easy access to food and drinks
3. Optimal viewing experience of event.
4. Easy access to rest-rooms.

They occupy the building only during a performance/event. Usually in 2-3 hour periods.

**BACK OF HOUSE SUPPORT**

1. Good working conditions, well ventilated and possibly with daylight.
2. Access to places of rest.
3. Access to food and drinks.
4. Discrete entrance away from the public.

They occupy the building during the working hours of the building. Generally from 5am to 11pm in different shifts.

**COMMUNITY**

1. Well integrated landscape plan to enhance pedestrian access
2. Easily accessible sports facilities.
3. Facilities for changing and rest.
4. Access to food and drinks.
5. Community centre.

They occupy the building during the working hours of the building. Generally from 5am to 11pm.

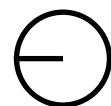
THE PROPOSAL

RIVER AVON

TEMPLE MEADS

SITE SECTION





1:1000 SITE PLAN



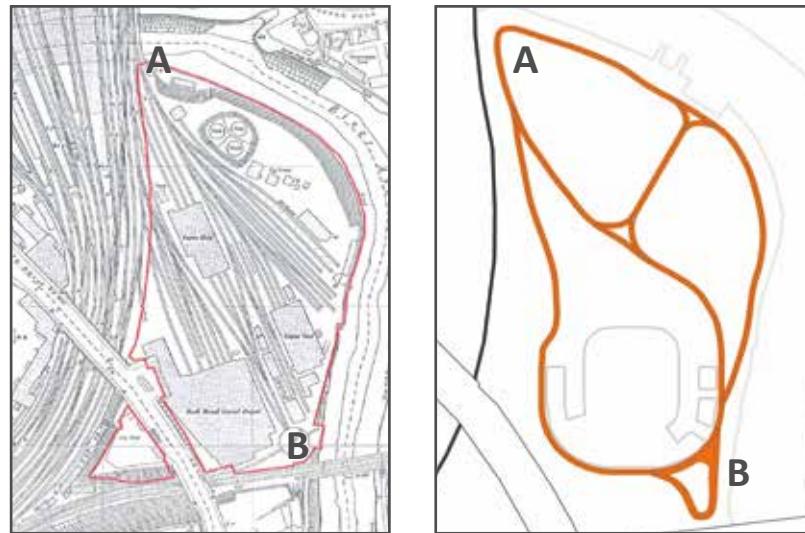
1. Arena
2. Flyer's Centre
3. Independent Kiosks
4. Outdoor Courts
5. Running Track
6. Public Changing Rooms
7. Skate Park
8. Children's Playground
9. Water Taxi Stand
10. Amphitheater
11. BOH Parking
12. Rest stands

RESPONSE TO CONTEXT

The question was, what really is the context for a stadium typology? Is it the area that it located in? Is it the immediate context? Is it the historical nature of the site? Or is it actually the ambition of the building of being a centrepiece in the subtext of the city? It became important to address all aspects of the ‘context’ of the building.

HISTORICAL REFERENCE

As the yard for Temple Meads, a train station, whose purpose was linking point A to B, the site derives flow patterns from its historical context. Movement through the site is guided by the running tracks.

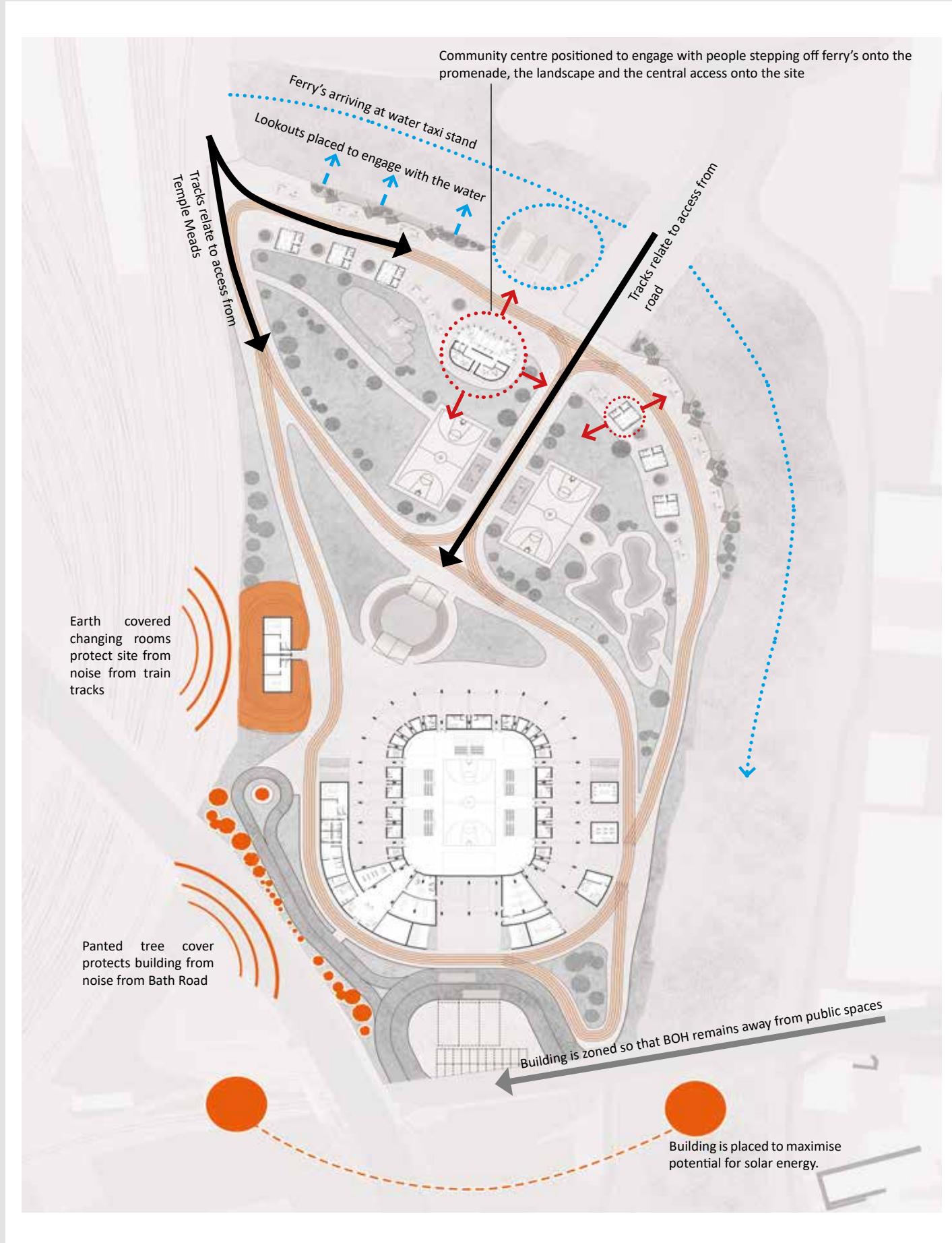


CONTEXT OF THE CITY

The context of the city was chosen to look at in social and economic terms. The proposal gives access to free sports facilities and reduced prices for tickets to enjoy sporting spectacles. The need for community involvement and support was recognised as it is the only organic way for a relatively new sports team to grow.

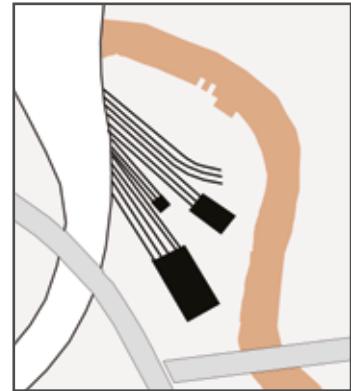
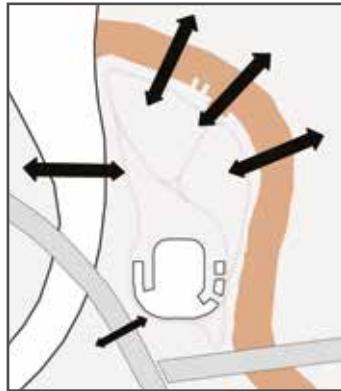


Significant buildings such as the Clifton Suspension bridge became the backbone for developing ideas such as structure.



SITE SECTION

The site is quite disconnected as it sits on a plinth 4m above river level and Bath road is at an elevation of 6 m above the site



ARENA ISLAND

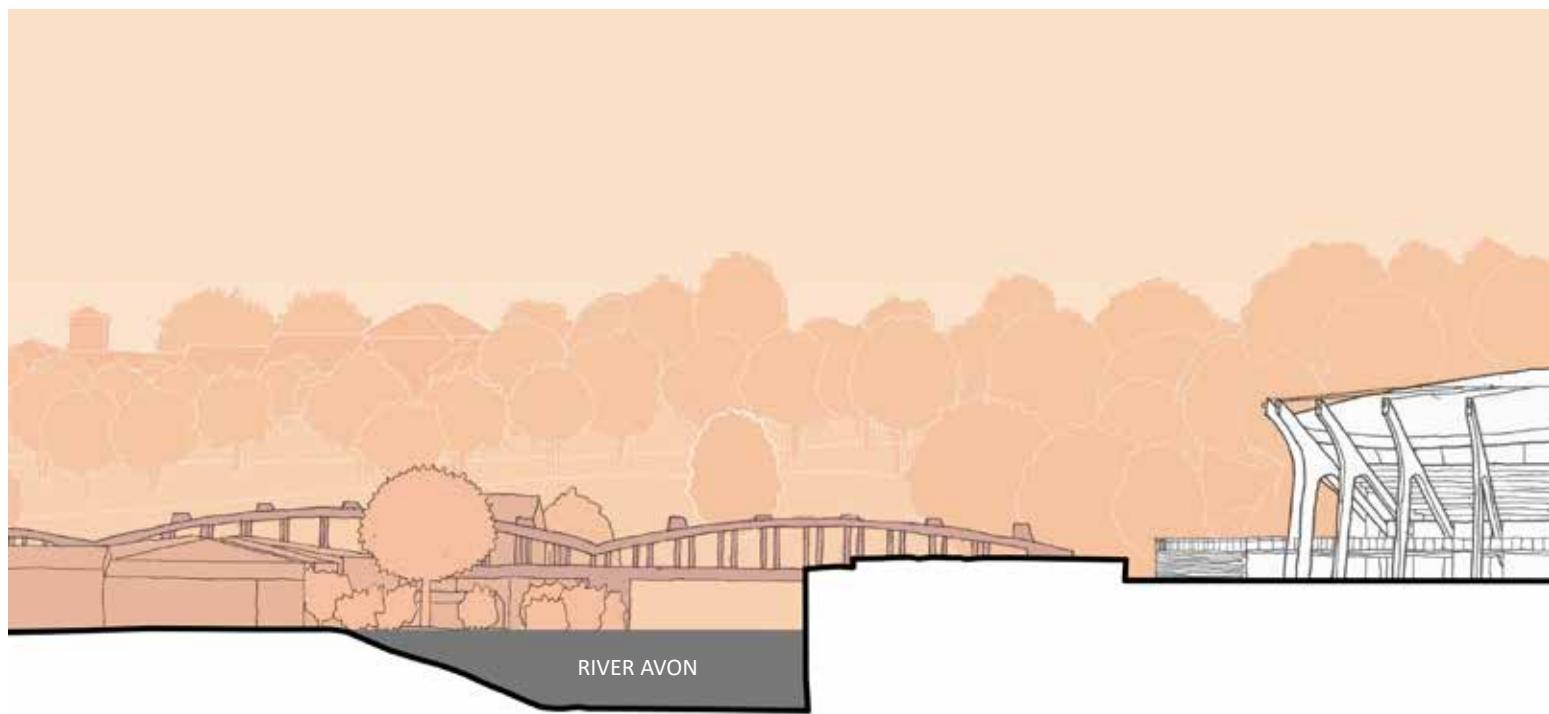
Bound by river, railway and road, the site is an island, with opportunities for multiple routes into the surrounding city districts.

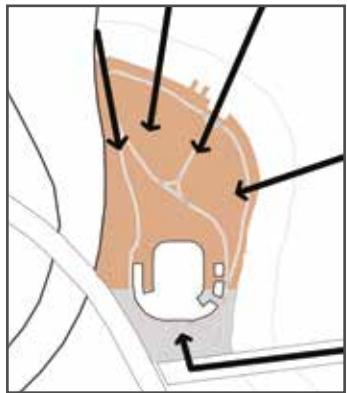
The River

Avon, curving around the north and east sides, links to the A4 south west road enables both road and greater city bicycle network connections, with pedestrian paths to all sides.

HISTORICAL REFERENCE

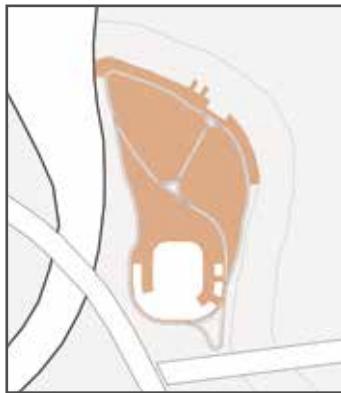
The rich industrial workings of the old stock yards, now lost forever, are drawn back to life into the scheme to bring memory and meaning to the island, and ensure this is written into the Avon River history trail. Abstractions of the markings and infrastructure of the old site are used to inform pedestrian paths through the site with the running track taking precedent.





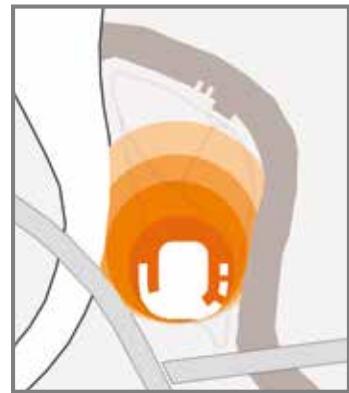
DIVISION OF SPACE

The island is a hub for sport, a respite within the busy part of the city. The bridges and island boulevards draw people into the heartbeat and life of the Arena promenade. To stratify experience the site is divide into two: The north which is for the community and the south which is BOH.



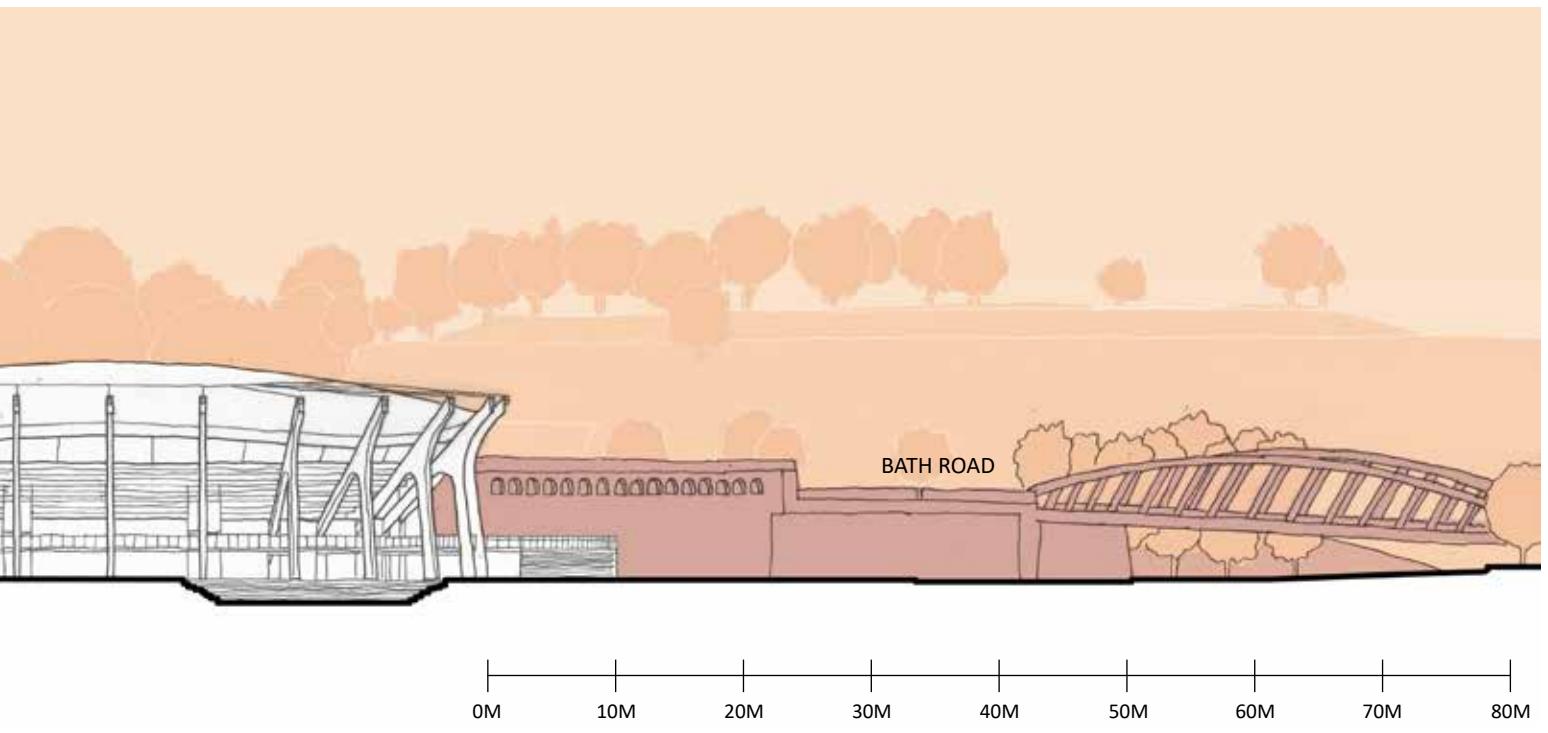
PLACE MAKING

Four distinct areas culminate to create to give character to the island development. They help create a rich and structured setting for the arena, and offer opportunity to develop further layers of activity, amenity and texture to a new community.

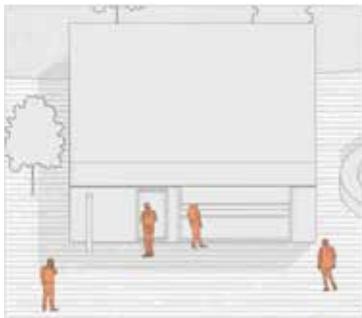


BEACON

The Arena Island offers a new landmark in the city fabric, a prominent, glowing entertainment destination and attractions for the people of Bristol and visitors to the city. A processional fanfare from the city centre to the Arena.



THE LANDSCAPE



INDEPENDENT KIOSKS

The creation of the promenade as a zone that aims to be used immensely allowed the creation of the independent kiosks. These can be rented out by Bristol based establishments for a certain time period.



SHADED RESPITE ZONES

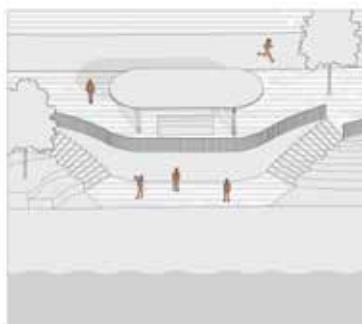
Due to the large site, it is necessary to provide users a place to get respite from the sun and rain. Benches will also be provided.

The site becomes the link between the areas that surround it. The running track guides users through the site connecting the various paths through the site. The lines in the path are a reference to the history of the site and a nod to the prominent context of temple meads as they are reminiscent of train track lines. The increased connectivity allows the site to be used more and engage more with the public. The amount of footfall by people accessing the site allowed for the creation of a promenade between the river and the landscaping. The site is dedicated to offering more sport and leisure activities for the public that will be structured, maintained and supervised by the Bristol Flyers. Independently operated kiosks are available for the public and help link the promenade and the landscaping.



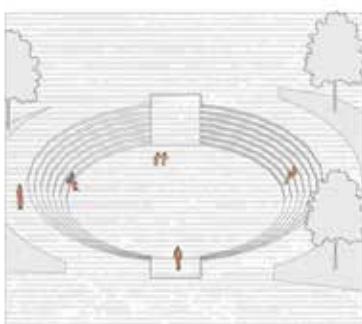
COURTS

The basketball courts are operated by the Flyers and where they whole all their community out reach activities. The courts can be used at time by the community.



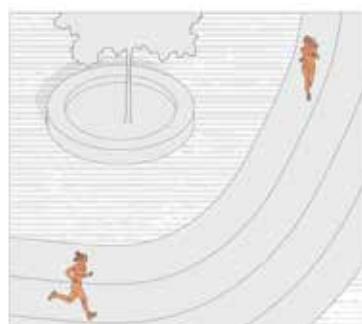
RIVER ENGAGEMENT

Since the site sits on a plinth above river level. In front of the kiosks where users require leisure space, the site drops down allowing more engagement with the water.



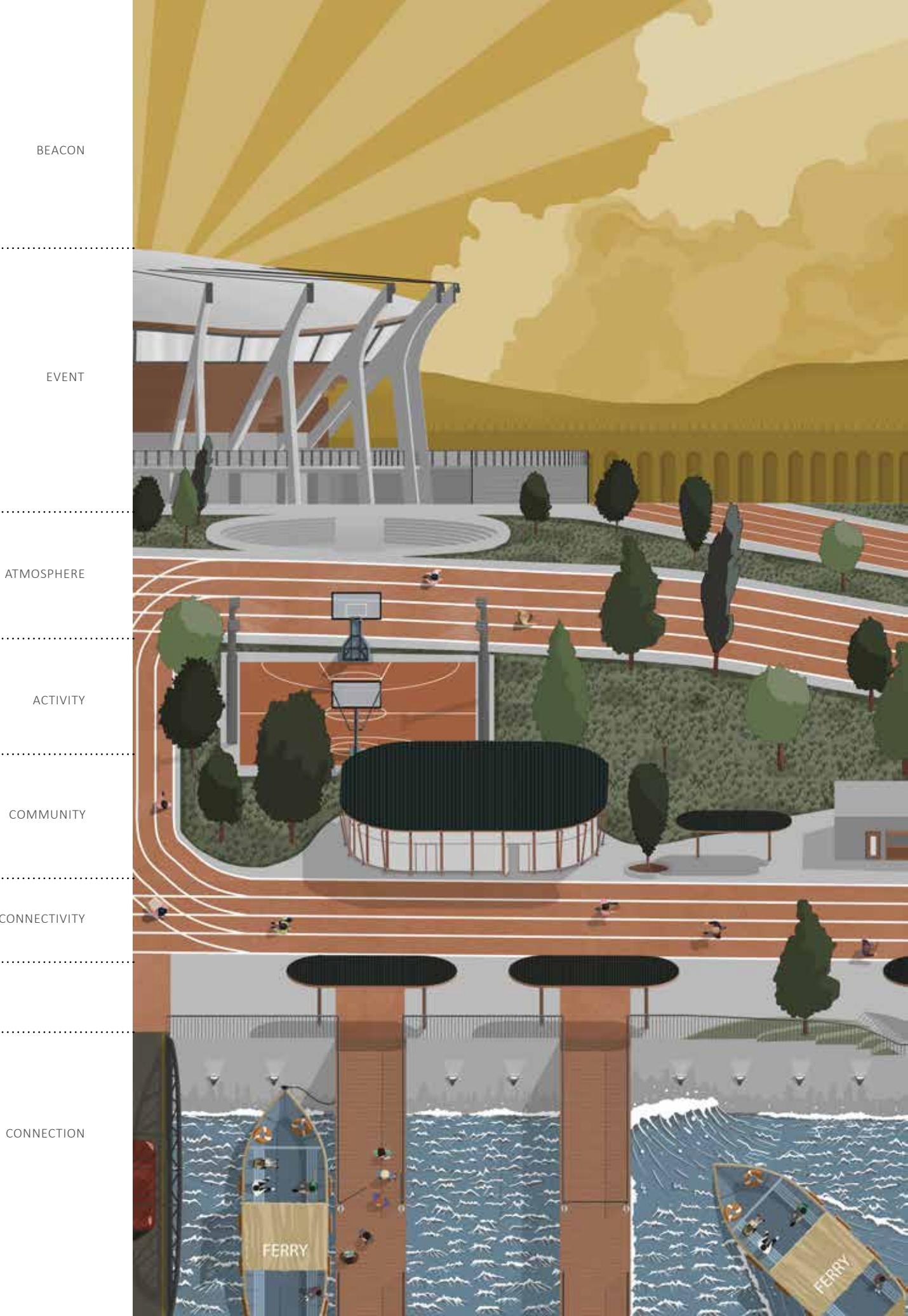
AMPHITHEATRE

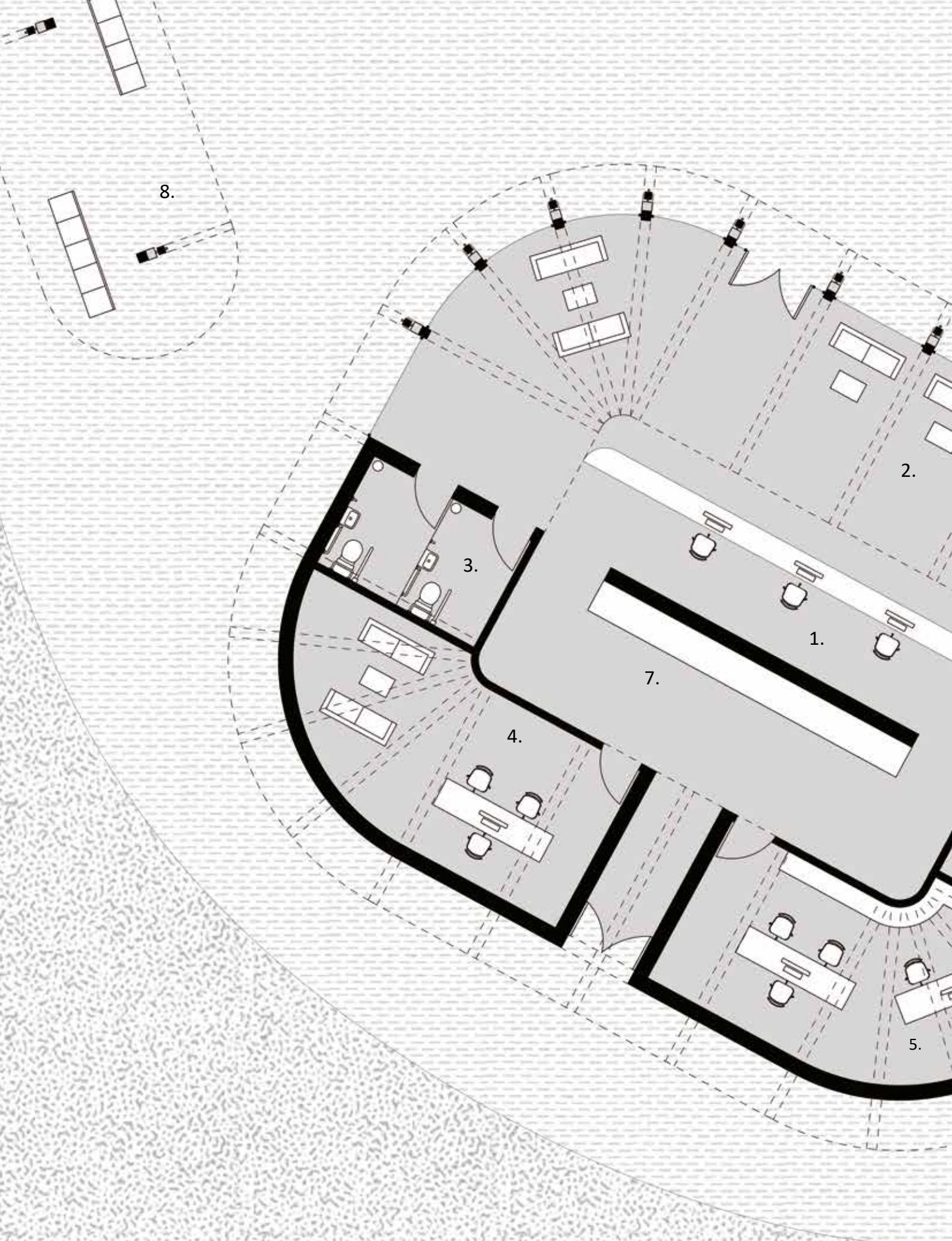
The atmosphere of a match starts before the game and continues after. The amphitheatre provides a space for those activities to thrive. For example open air live music.



RUNNING TRACK

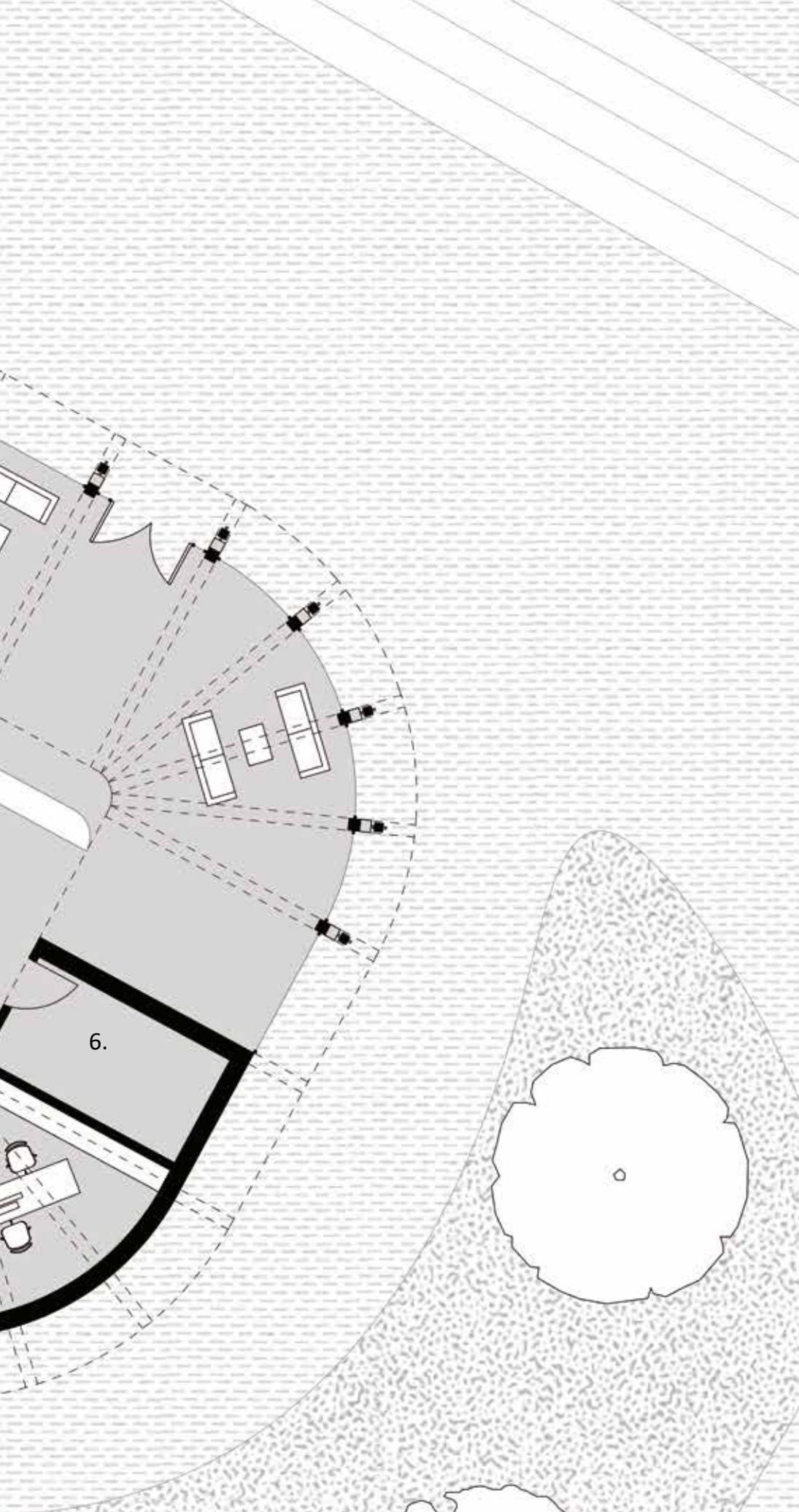
Looping around the site, the running track offers users a clear route to follow through the site and also provides dynamic paths for people wishing to use it for exercise.







1:100 FLYER'S CENTRE PLAN



The Flyer's centre pavilion is essential to the scheme as this is the point where a user first encounters the site. The management of the stadium, the community programmes and the outdoor facilities happen here.

It is the hub of the site bringing in activity. It is the space responsible for engaging with the community.

1. Reception
2. Waiting Space
3. Toilets
4. Stadium manager/
Flyer's Community
Programme Officer
Office
5. Workspaces
6. File Storage
7. Waiting Space
8. External Covered
Benches

The building is a reflection of the stadium using similar constructional and architectural principles. The base of the offices is made of concrete and the community side which addresses the river is a constructed using timber and glazing.



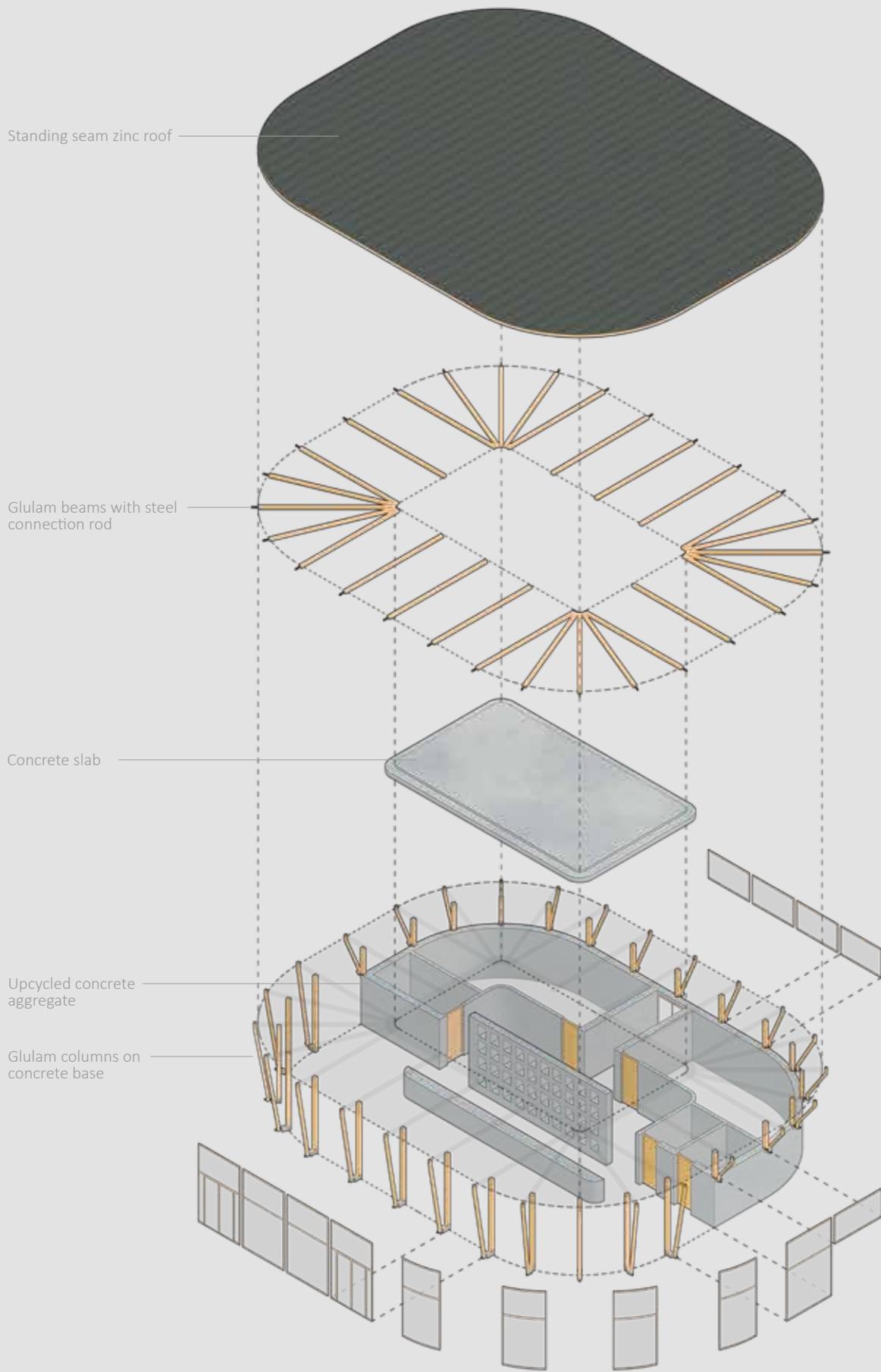
VIEW FROM TEMPLE MEADS ENTRANCE



ROOF BEAMS TO COLUMNS CONNECTION

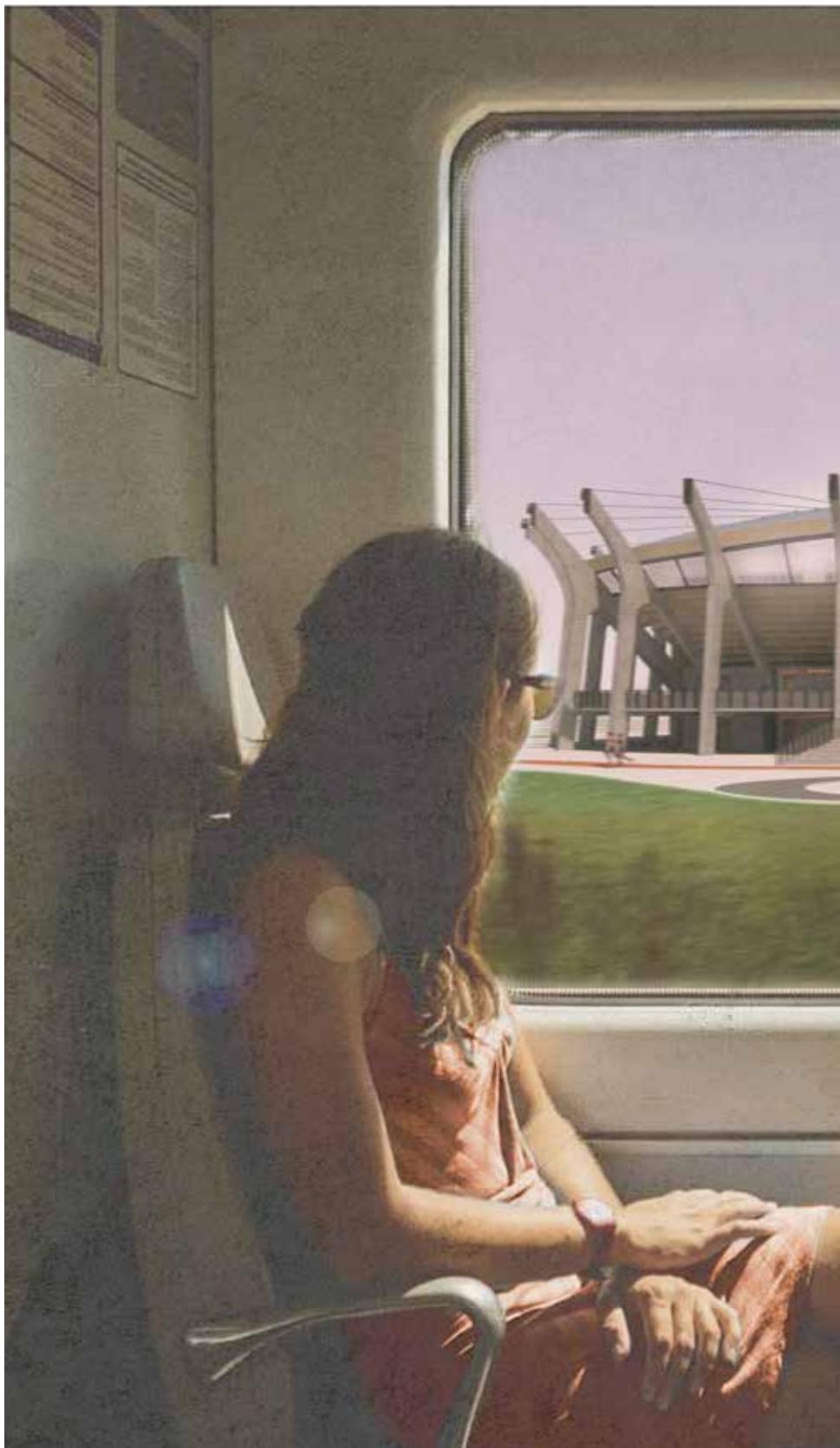


BASE TO COLUMNS CONNECTION

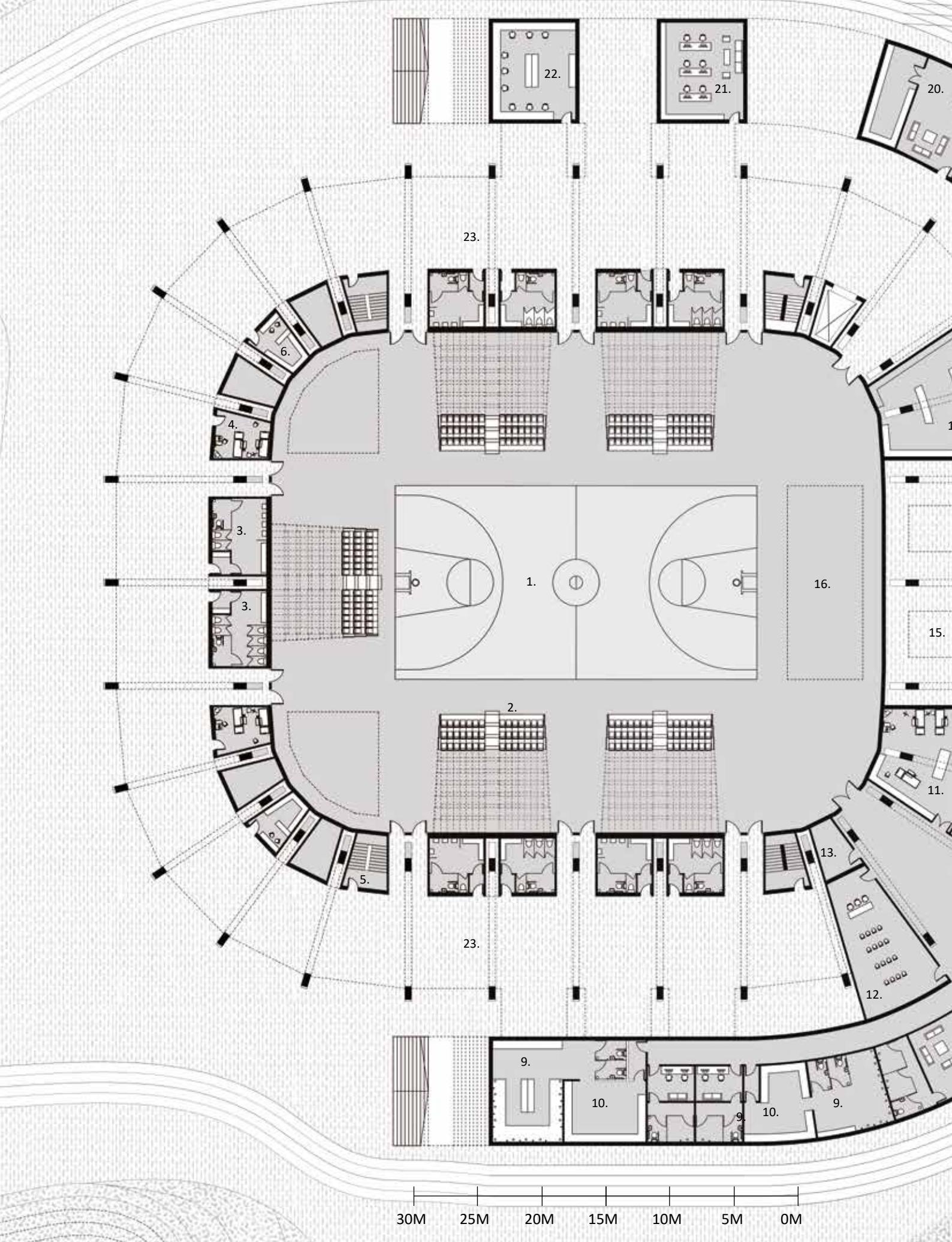


THE APPROACH

The experience of the stadium starts beyond the boundary of the site. The approach view helps stamps the authority of the building as one that may become iconic to Bristol. It is simple, easy to understand and portrays Bristol's ambitions to be city of minimal emissions well integrated public architecture. Conveniently located right next to Bristol's major transport hub the building should pique the interest of visitors and locals alike. The concrete columns breaking into the base layer and juxtaposed with the timber seating level give the building a real presence.









GF PLAN

19.

17.

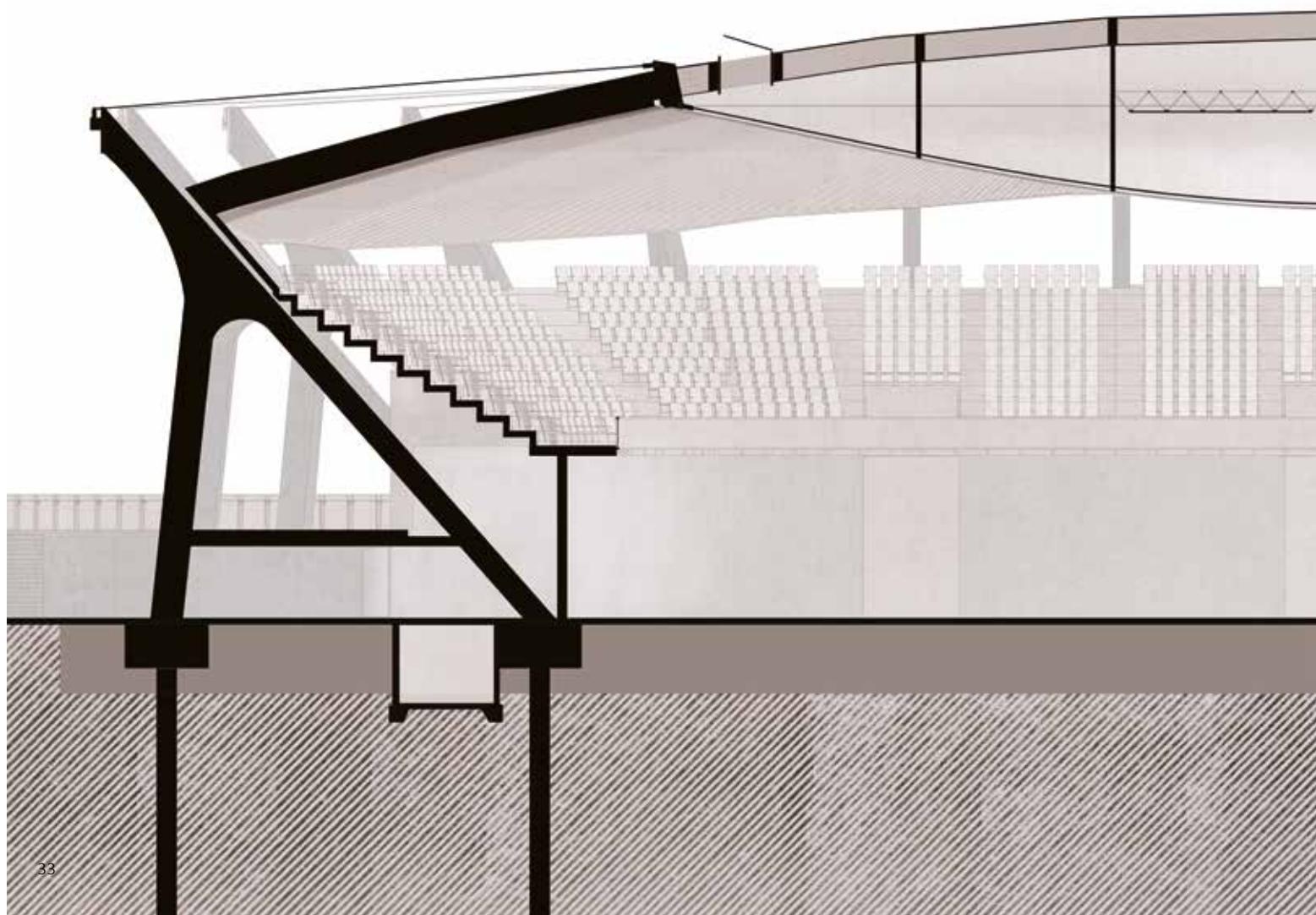
6.

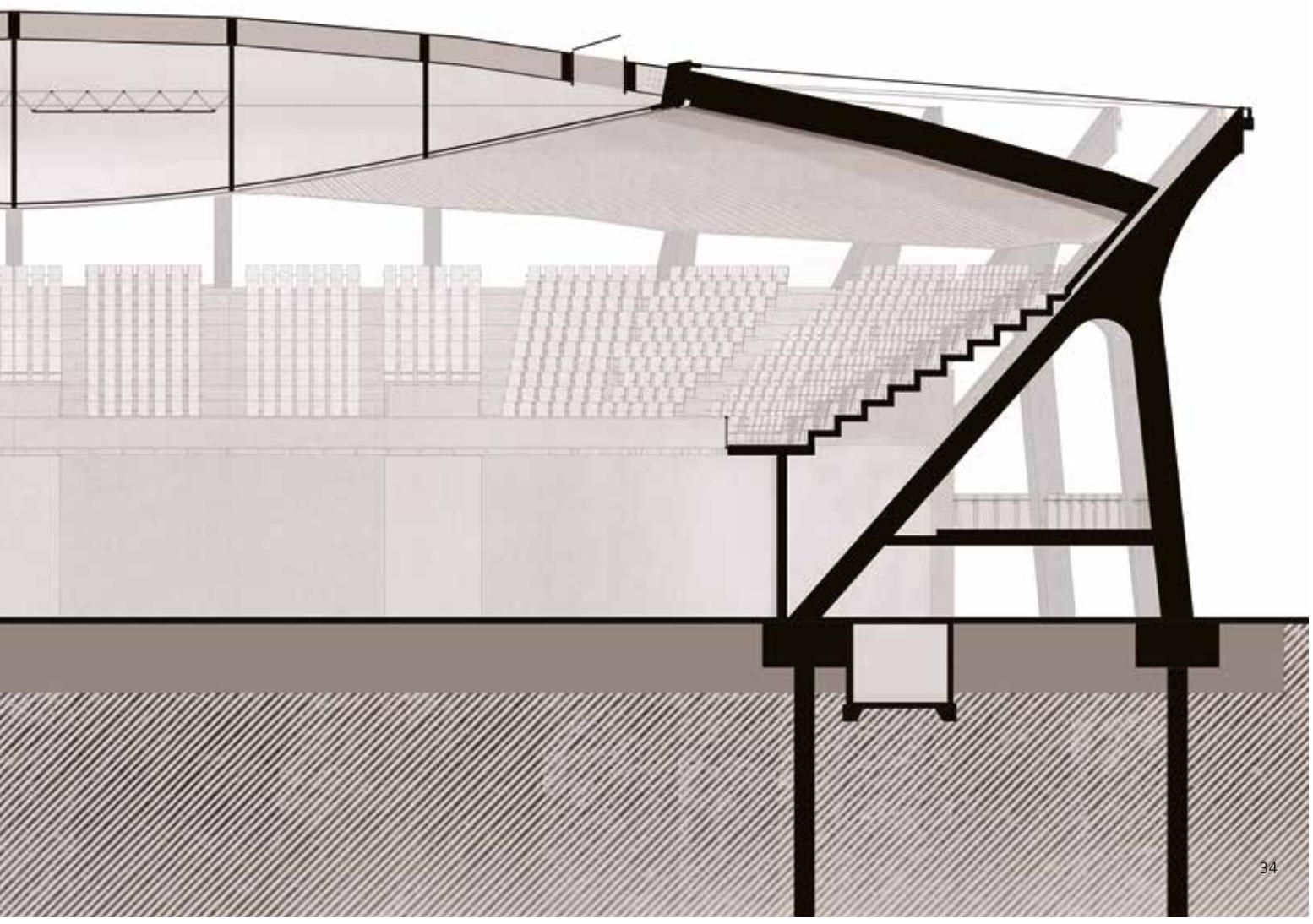
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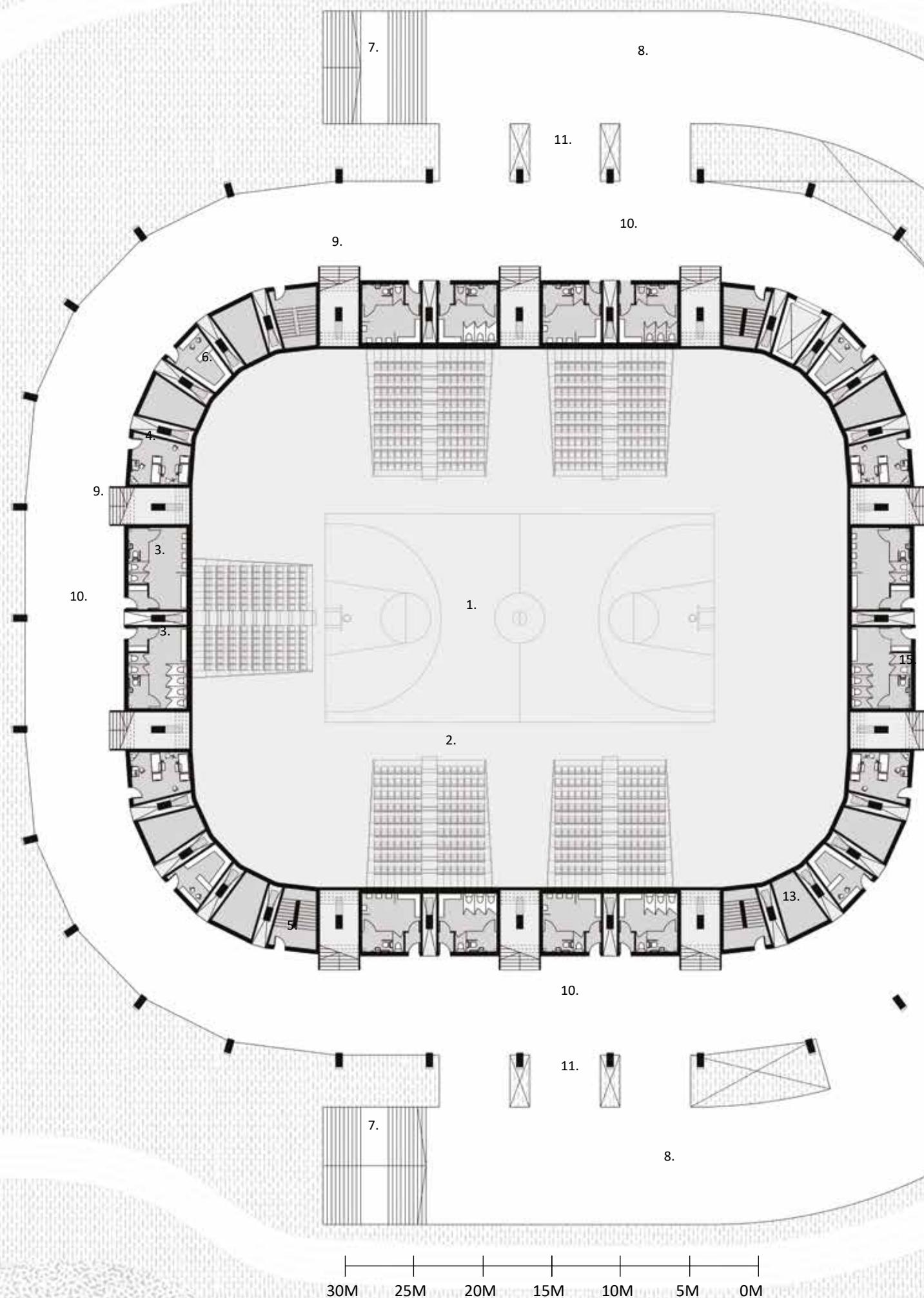
6.

1. Court
2. Bleacher Seating
3. Toilets
4. First Aid Room
5. Stair Core To Basement
6. Concession Stand
8. Performers Reception
9. Team Changing Room
9. Managers Room
10. Referee Room
11. Players 1st Aid
12. Media Room
13. Court Store
14. Courtside Staff Room
15. Ambulance Parking
16. Stage
17. Kitchen
18. Kitchen Store
19. Bin Store
20. Staff Room
21. Stadium Control Room
22. Security Room
23. Circulation

1:200 LONG SECTION









1F PLAN

9.



10.

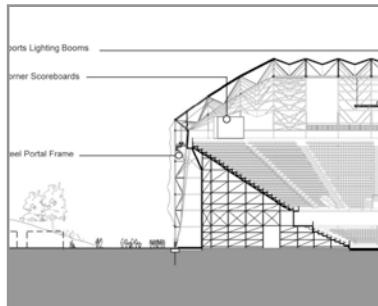


7.

1. Court
2. Bleacher Seating
3. Toilets
4. First Aid Room
5. Emergency Stair Core
6. Concession Stand
7. Stairs up to concourse level
8. Concourse
9. Stairs up to fixed seating
10. Stadium External circulation
11. Bridges from Concourse to External Circulation

1:200 EAST ELEVATION

HIERARCHY



London 2012 Basketball Arena

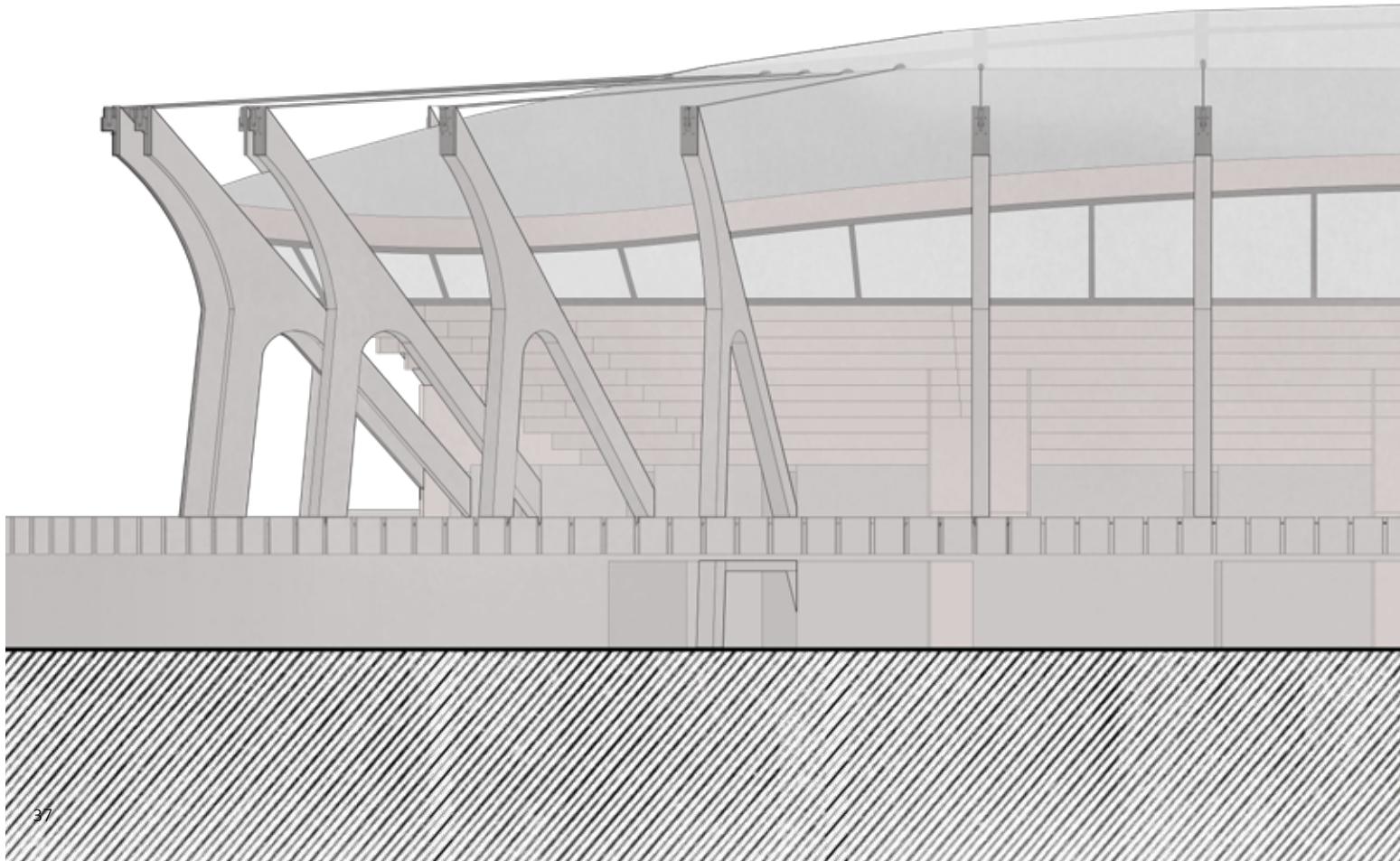
A certain hierarchy of spaces helps create a functional space. This arena encapsulates what stadium design is all about: The provision of an exemplary space to showcase an event with ancillary spaces to support the spectacle.

HONESTY



Brasilia Stadium

A simple and elegant structural solution can help create a building that is aesthetically pleasing. The elegant, thin columns of the Brasilia help give it an unmistakable presence and promote a lively atmosphere.



PERMEABILITY



Braga Stadium

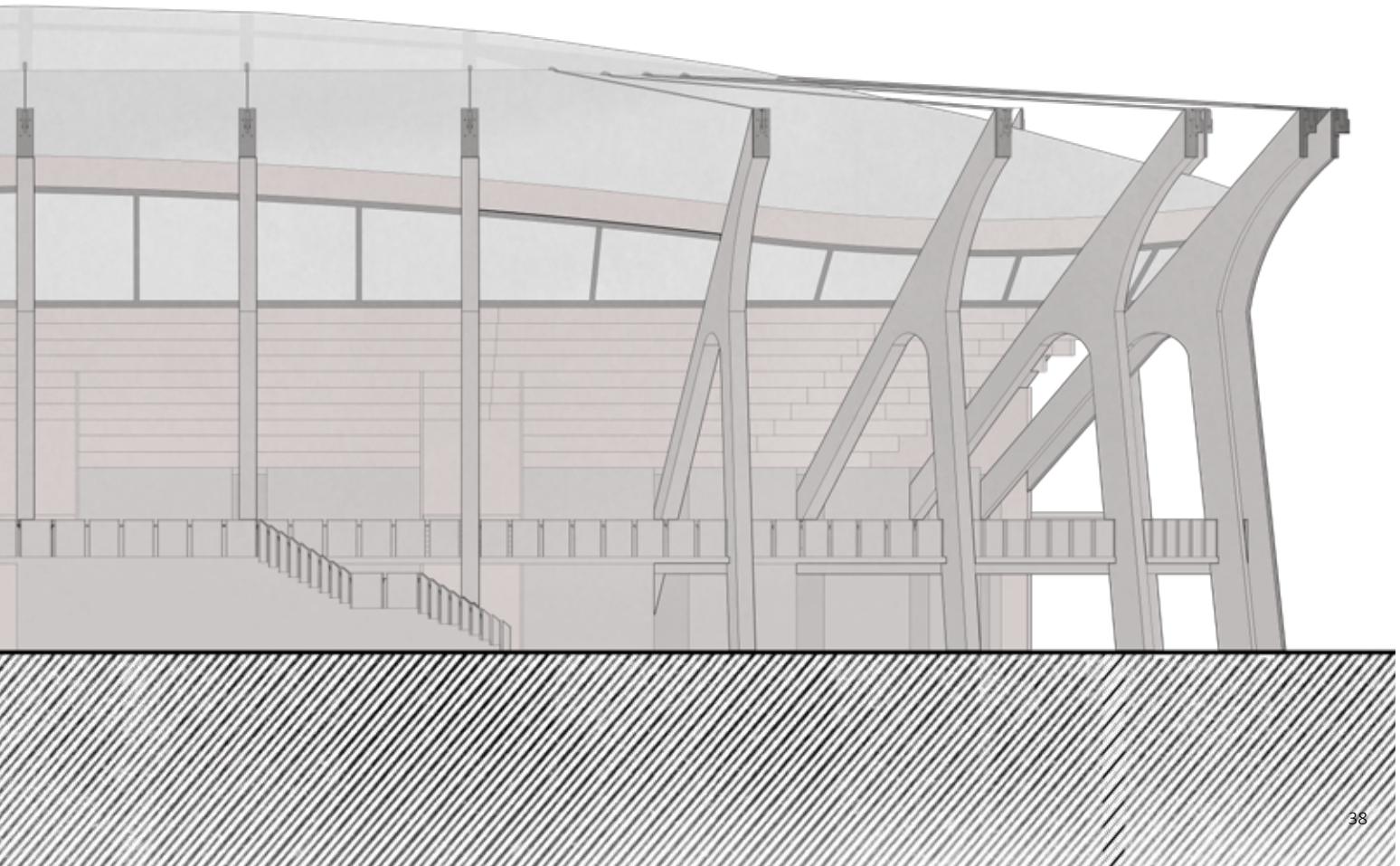
How can you serve a community if the vessel for that appears introverted? The Braga stadium attempts to deal with that. It is extremely well integrated into the surrounding landscape.

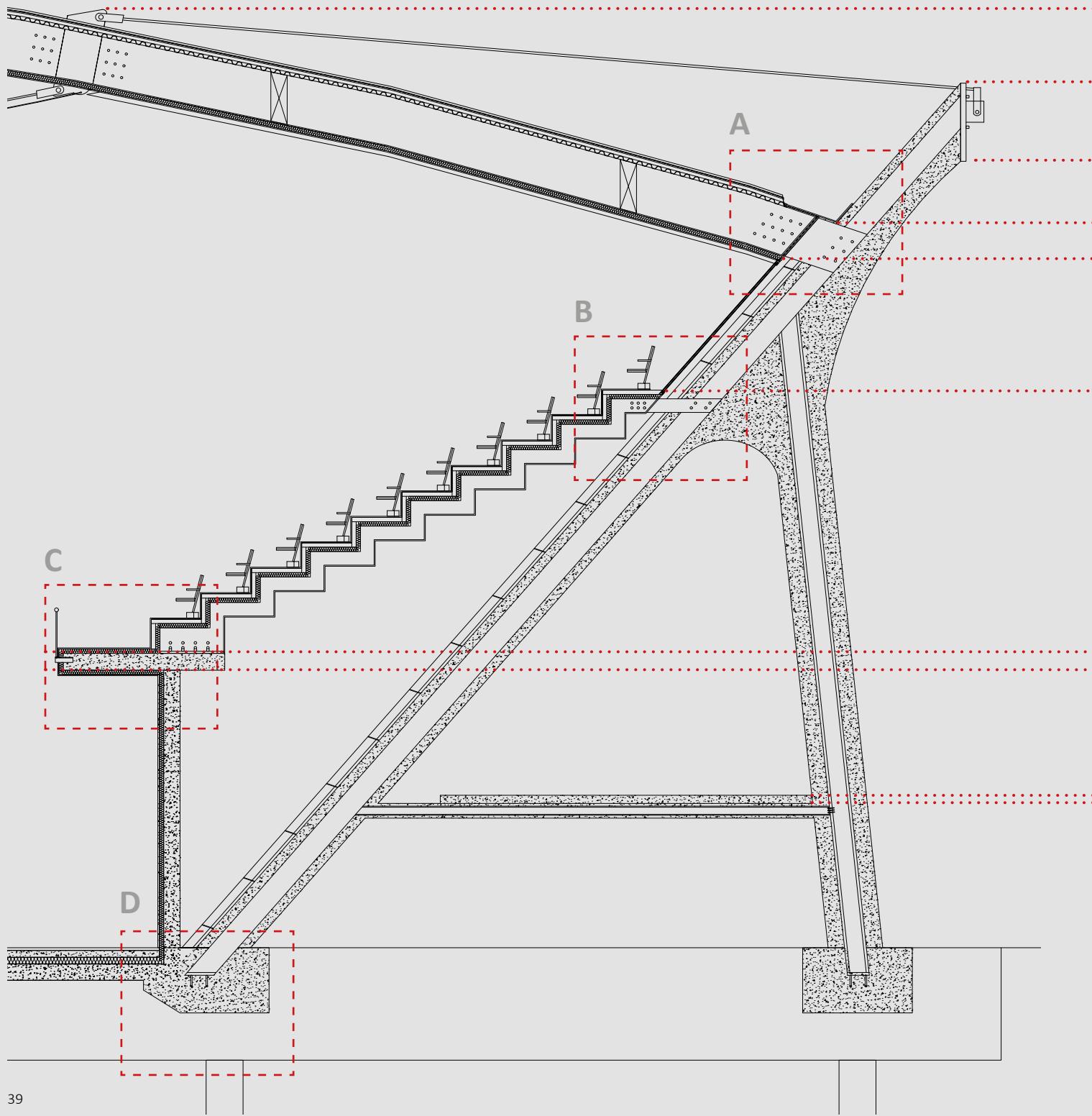
PRESENCE



Allianz Arena

A large public building should bring value to its surroundings. Not only in terms of importance, but also presence. The Allianz arena uses light to transform its facade into a mesmerising object.





ILLUMINATION: ETFE ROOFING

ENERGY: PV PANELS

CONNECTION: STEEL CONNECTION PLATE

COLLECTION: EXPOSED GUTTER

CONNECTION: ROOF TO COLUMN ARTICULATION

ILLUMINATION: OCULUX GLASS

THE BOWL: GLULAM BEAM AND CLT

BASE LEVEL 2: RECYCLED CONCRETE

BASE LEVEL 1: RECYCLED CONCRETE

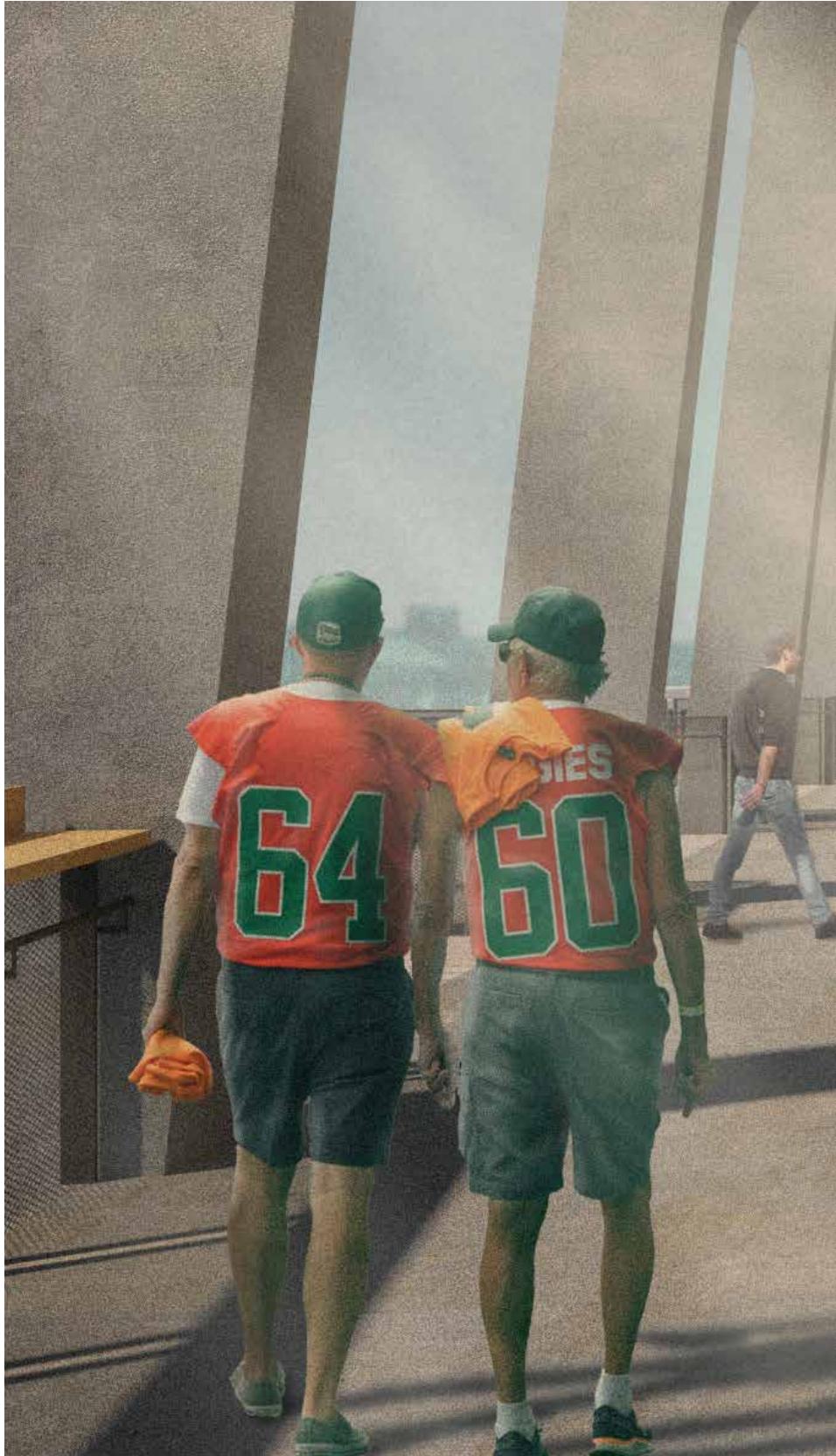
CONNECTION: COLUMN TO FOUNDATION

FOUNDATION



THE EXTERNAL CIRCULATION

The external circulation is about the connect the building from the landscape to the event space. It is the backbone of the design. Housing all the spectator services this layer of the building attempts to be a communal leisure space even during days of 'non-operation'. Equipped with seating and standing tables it provides panoramic views of the site and the surrounding context. Entrances and facilities are clearly marked and it is a zone that invites people to hang around in and translate the 'arena' environment to the outdoors. This is the space where the excitement of the





ACCESS TO ARENA

As a team The Flyer's engage heavily in community outreach programmes and as developing club they require and additional revenue they can get. Their aim is to have a stadium that can be used for a variety of different indoor sports and events so that the stadium may be used to generate income on non match days. Have a permeable and flexible performance space was key to the approach which is why the ground floor consists of only bleacher seating to allow more room for different events.

1. GROUND FLOOR ACCESS TO PERFORMANCE SPACE

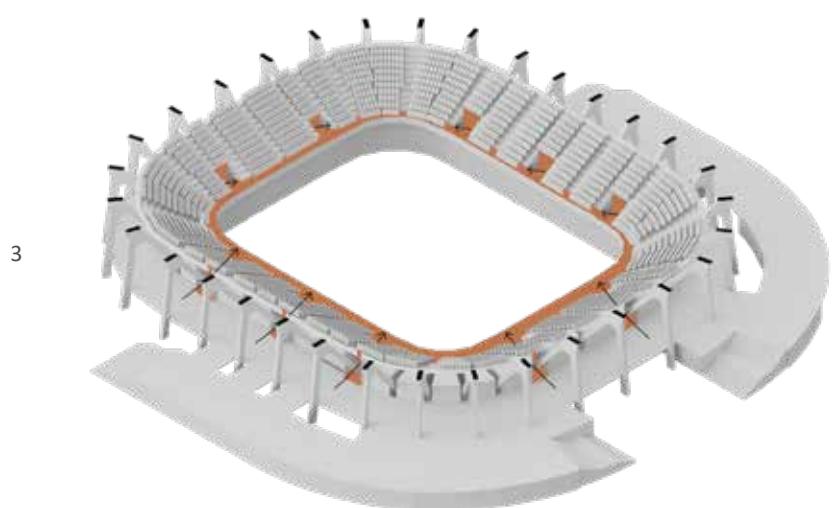
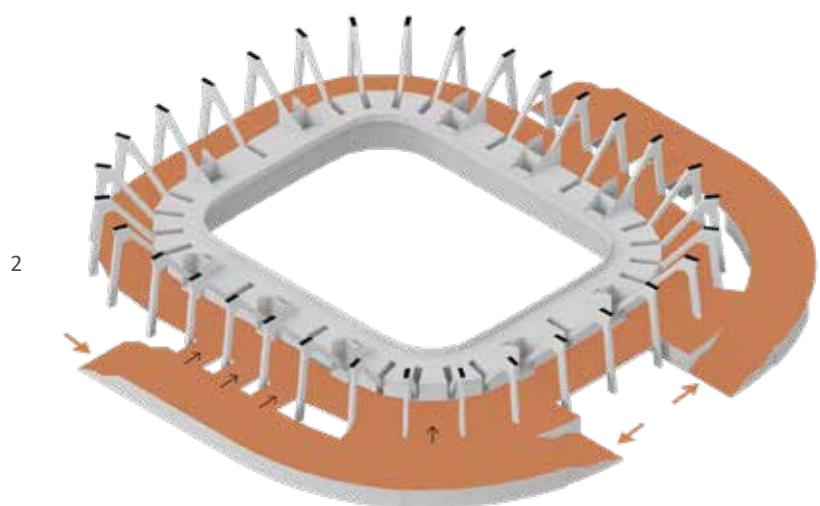
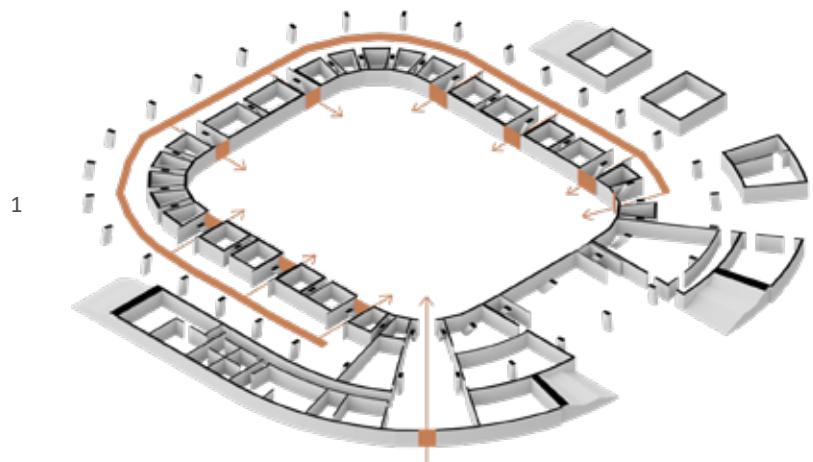
The arena is directly accessible from the site on the ground floor. Making it inclusive, uncomplicated and allow the building to be more integrated with the site than a 'typical stadium'.

2. PUBLIC ACCESS TO CONCOURSE LEVEL AND TO FIRST FLOOR CIRCULATION

The concourse level helps direct users to the balcony level seating. It helps lead people circulation of the first floor level where services and entrances into the arena are located. The concourse acts as a link between the surroundings and the centre of the arena.

3. AUDIENCE ACCESS TO BALCONY SEATING

From the first floor circulation staircases allow users to ascend to the balcony level seating. This increased height allows for a more flexible ground floor level and a greater vantage point to enjoy the performance.



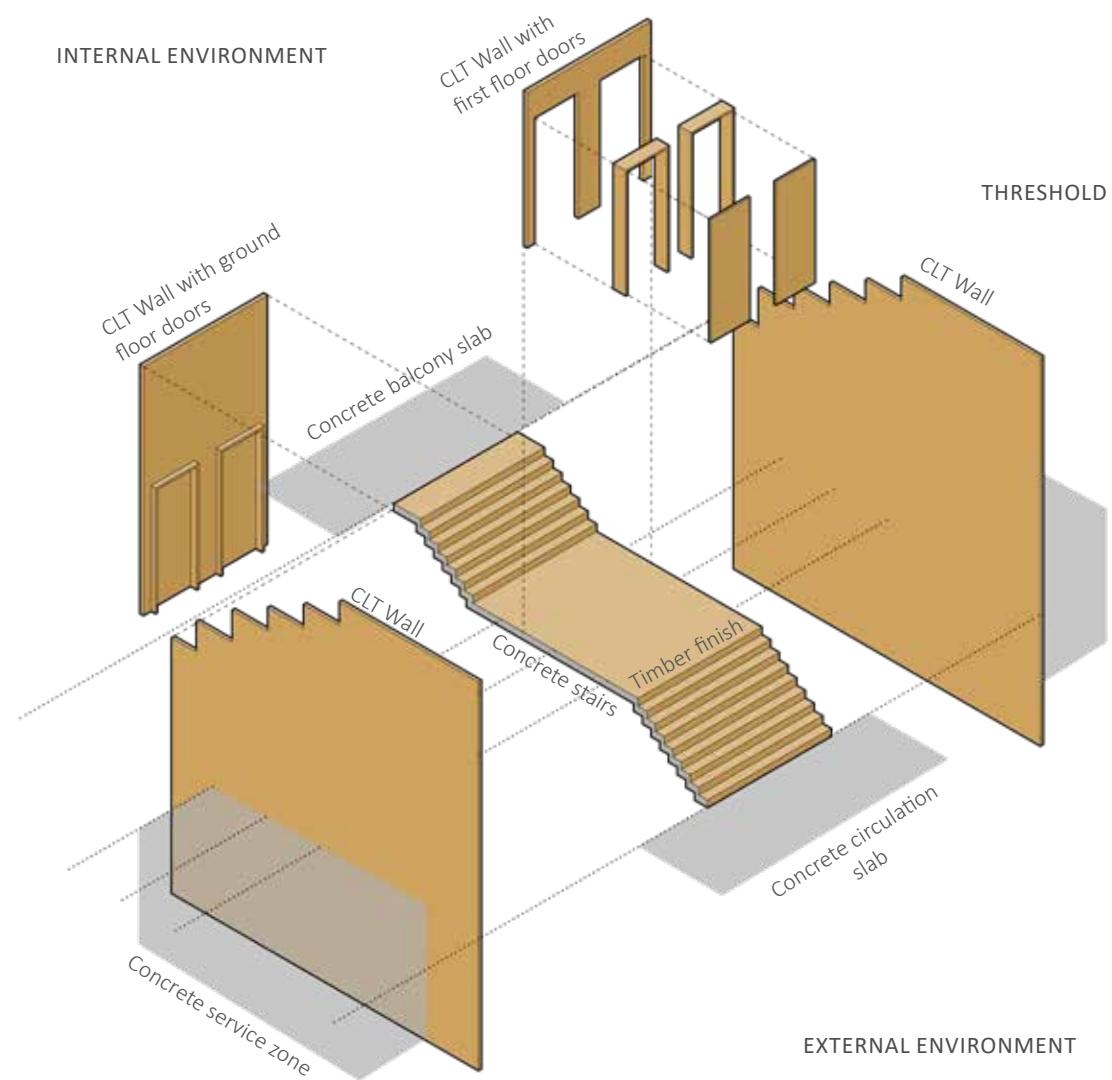
THRESHOLDS AND WAYFINDING

The building is fairly easy to understand. Seating is expressed in it's raw format through the cascading timber. The concrete base is broken up with protruding timber zones are clearly demarcate entrances and ingress points. To help support crowd management there are 4 entrances on to the concourse level. Once on the concourse level, seating blocks can be identified by the signage system located on the concrete service zones.



THE ENTRANCES

The timber entrances break through the concrete base layer to help make them easy to identify and are made of CLT. The staircase is concrete which is supported by the concrete balcony slab and concrete circulation at the ends and in the service zone in the middle.



PERFORMANCE SPACE

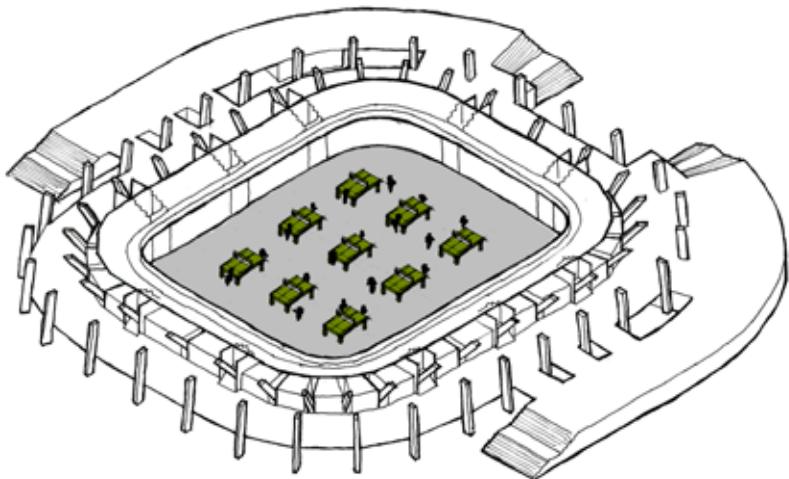
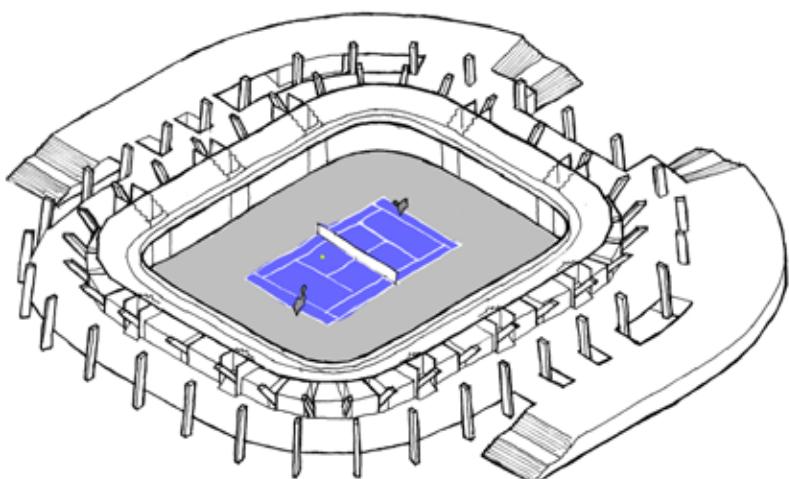
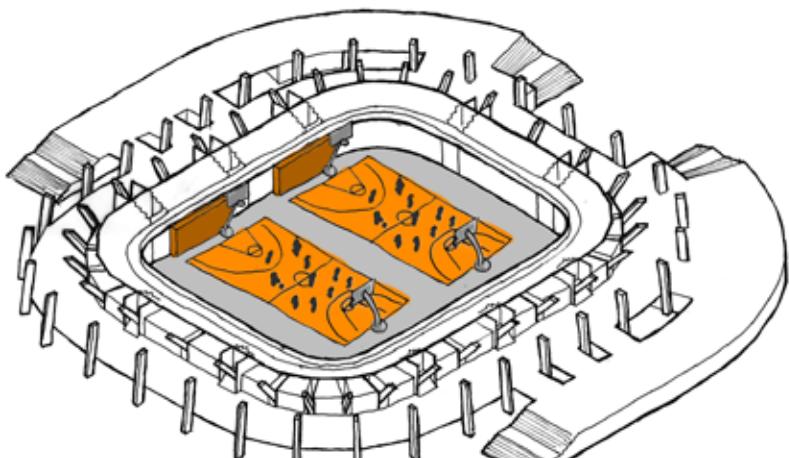
The performance space is a warm, inviting, light filled contrast to the exterior. By creating a split level it became possible to make the floor adaptable. This split level also helps bring audience closer to the event floor which in turn helps amplify the playing atmosphere of the space.





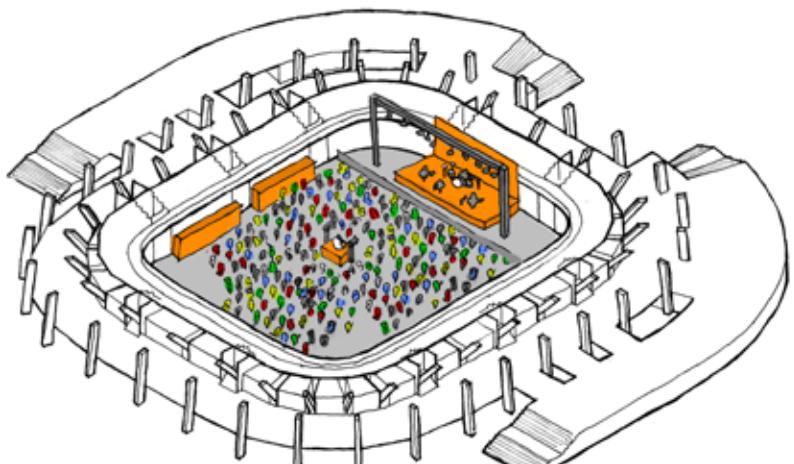
A MULTI-SPORT HALL

The event space was design according to MUGA guidelines of court sizes and buffer zones around the court. MUGA guidelines of multi-purpose sports hall were also incorporated as when the bleacher seating is retracted the floor arena doubles and can accommodate 32 indoor sporting activities.

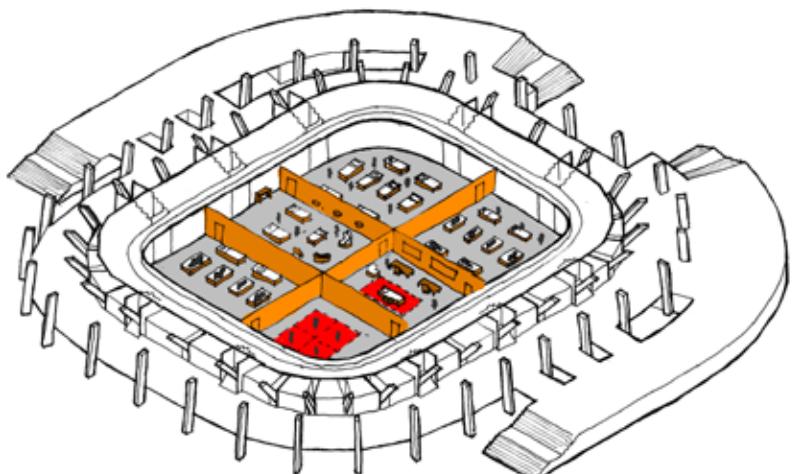


FLEXIBILITY

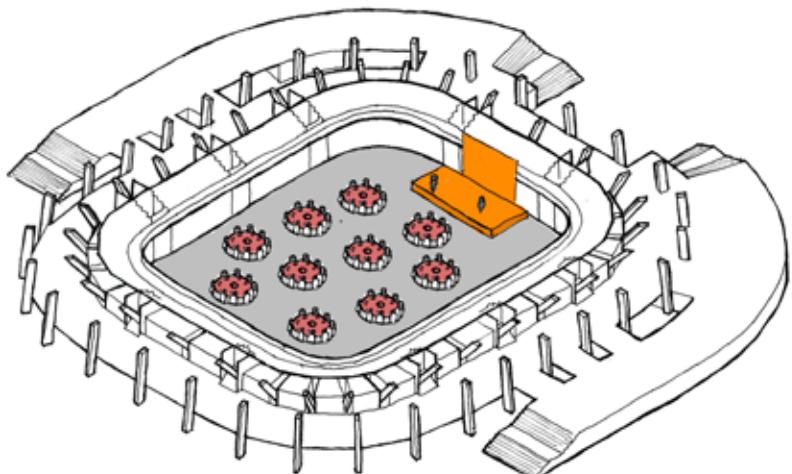
Due to 'match days' occurring every two weeks it was important to make the space adaptable so that the Flyers may gain revenue by hiring the space out for other uses. The uses are unlimited as far as indoor events go.



CONCERT SPACE



ISOLATION INPATIENT FACILITY / HOMELESS SHELTER



CORPORATE EVENT SPACE

BACK OF HOUSE

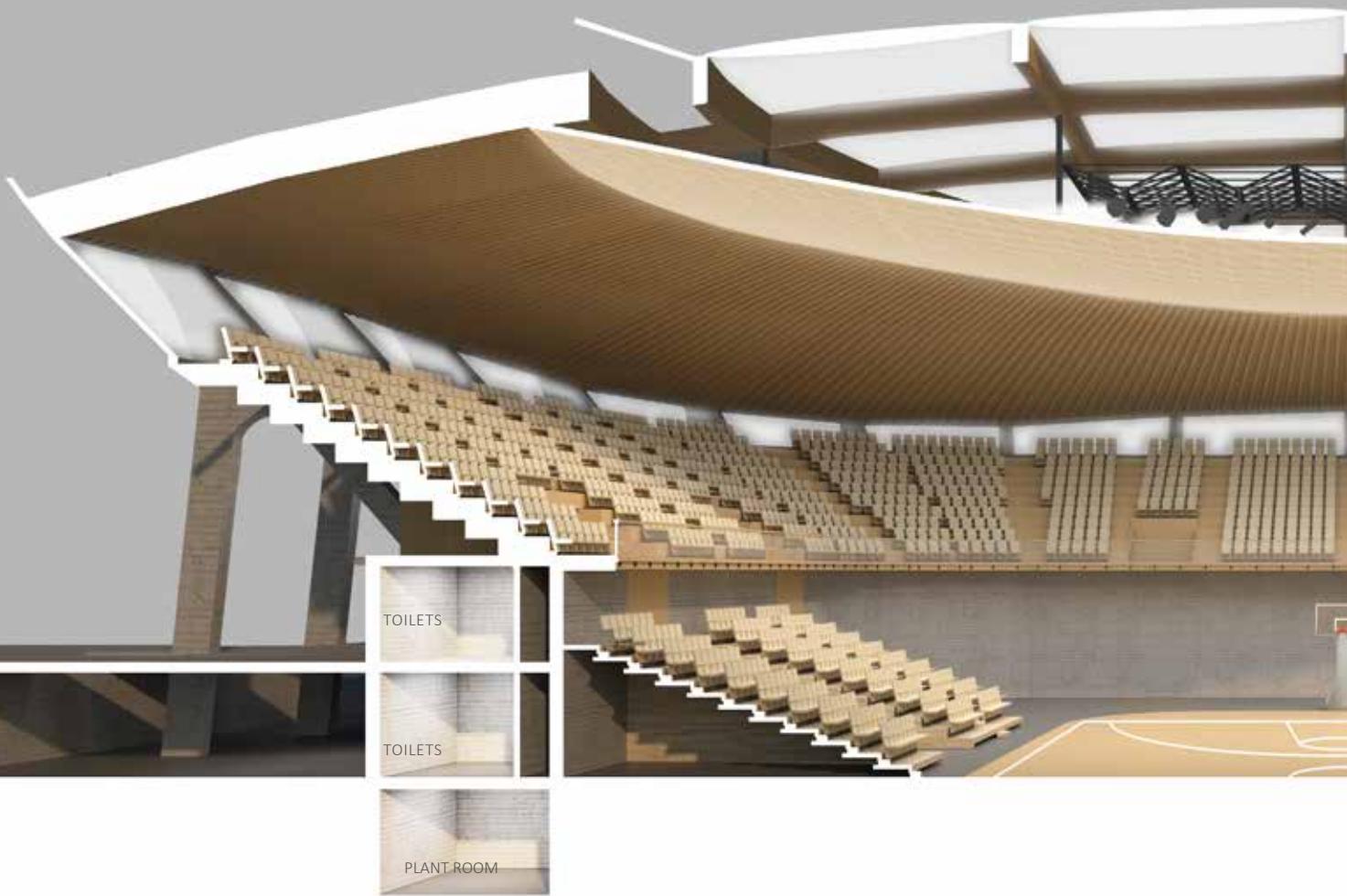
As opposed to the activity filled public areas of the building the back of house spaces are peaceful and introspective to allow for privacy. A similar method of articulation was used in these spaces to help it link better with the arena. They too have a concrete structure and a timber upper layer with entrances pronounced in timber.





PERSPECTIVE LONG SECTION

A stadium is only as good as the atmosphere it can create. Light has been used as an atmosphere generator for centuries. The space has a solid base, and a soft timber finish to the inside. Light is allowed to enter the building through the service void in the roof illuminating the court. It's a derivation of the Colosseum which uses purely natural light and Madison Square Garden which used a service void to artificially illuminate the arena.

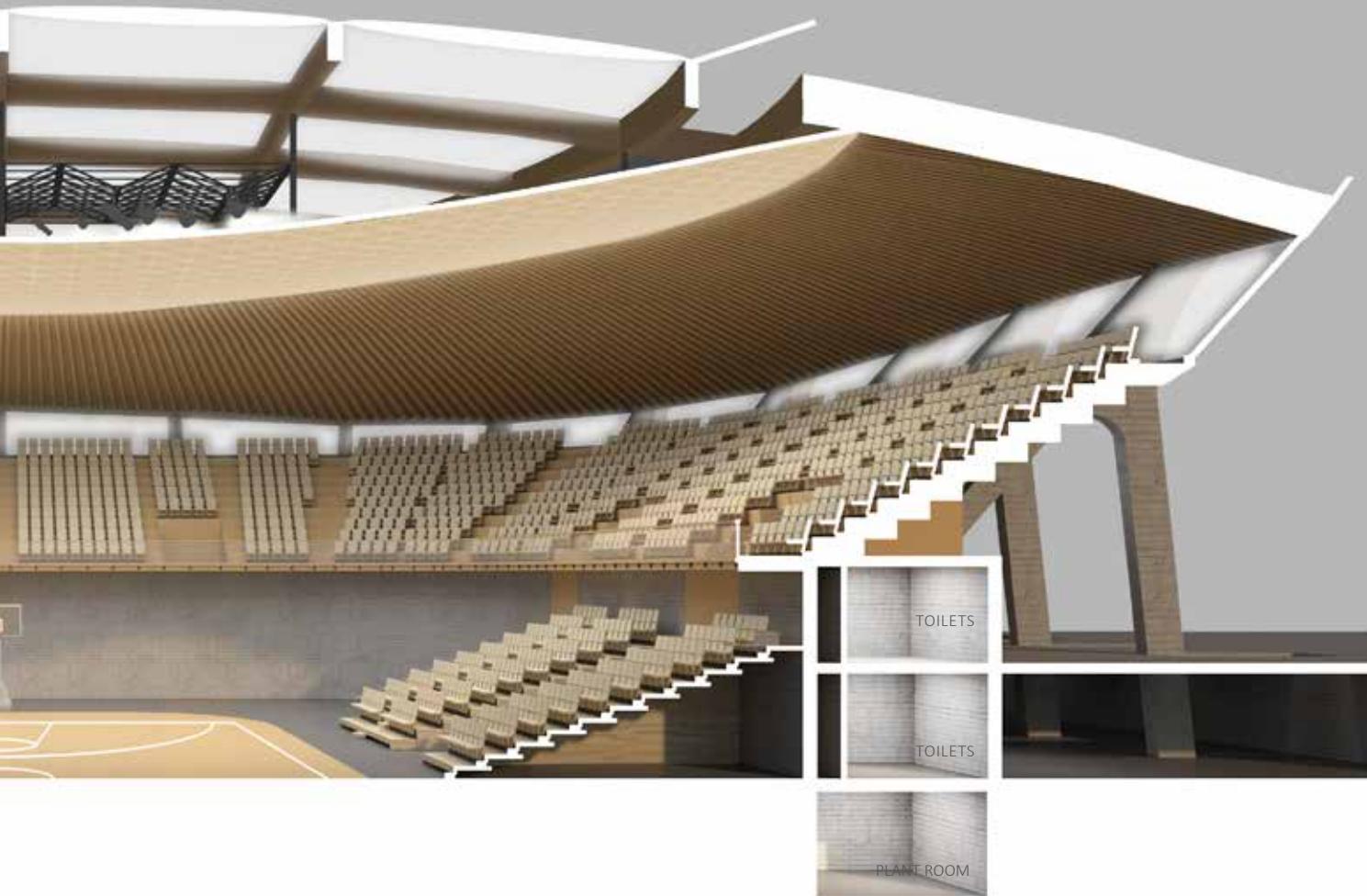




THE COLLOSEUM



MADISON SQUARE GARDEN



THE STRUCTURE

THE COLUMNS

The columns are a combination of steel I-sections and fibre reinforced concrete. Since they act in both tension and compression at the same time the two materials work together to hold up the roof.

THE BASE

An arena is a building that usually remains in place and is used until it is not safe to be used any longer. With a life span of 50-70 years it was important to design structures that can withstand the test of time and weathering. Concrete is one of the foremost materials to do just that. The base of the building is designed using upcycled concrete aggregate. This helps reduce the environmental impact of the building and also provides the solidity to support the rest of the structure.

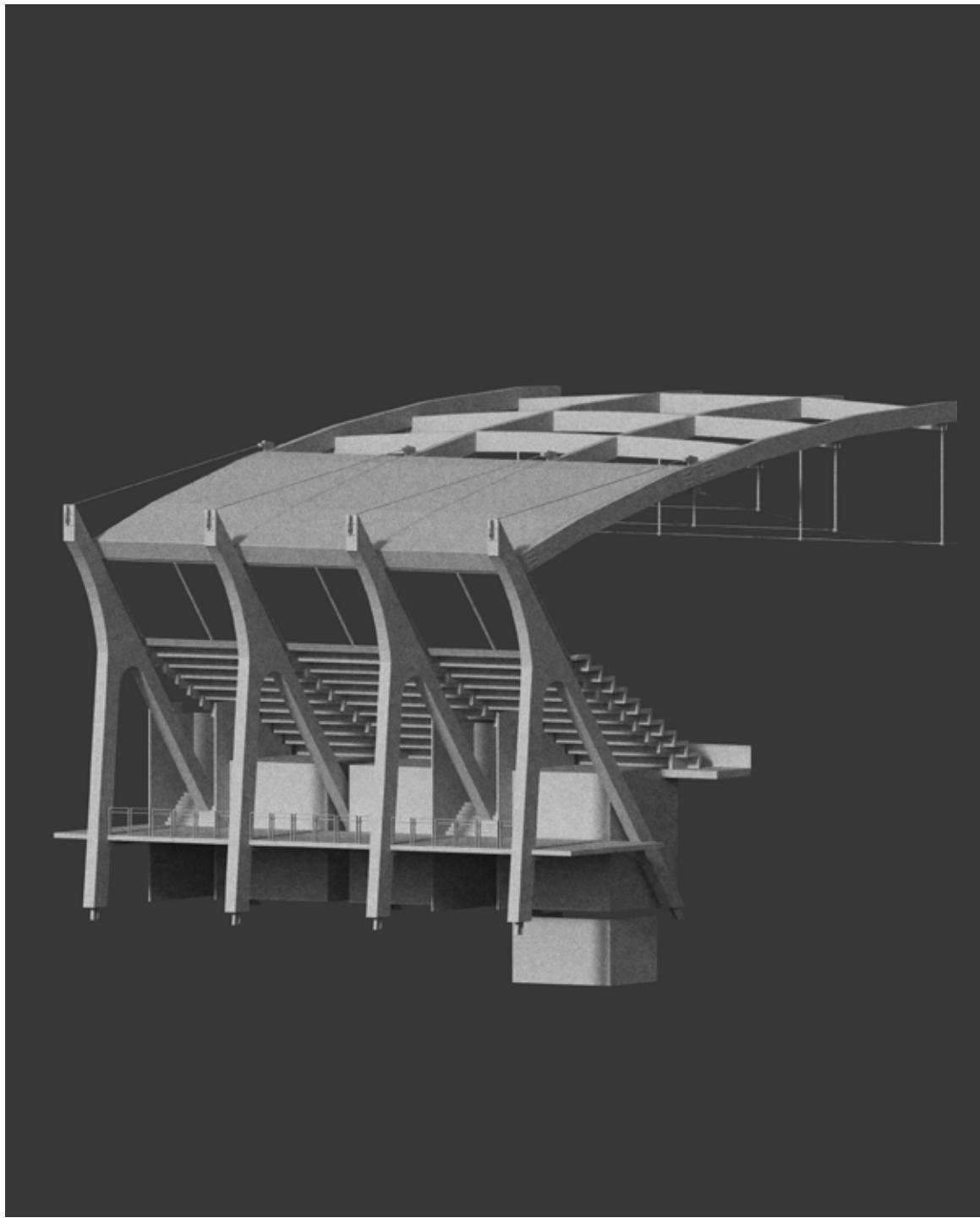
THE ROOF

The intention for the roof was to create a materially efficient, environmentally friendly way of covering a long span structure. Typically indoor stadiums come with complex roofing mechanisms which are needed to house lighting rigs, ventilation units and so forth. The challenge became to try and manipulate the outdoor elements and create a space that is devoid of excessive artificial interference. Various structural strategies have been tried and tested but this arena wanted the environmental benefit of natural light with the controlled aspect of artificial light. Hence, this roofing system was devised.

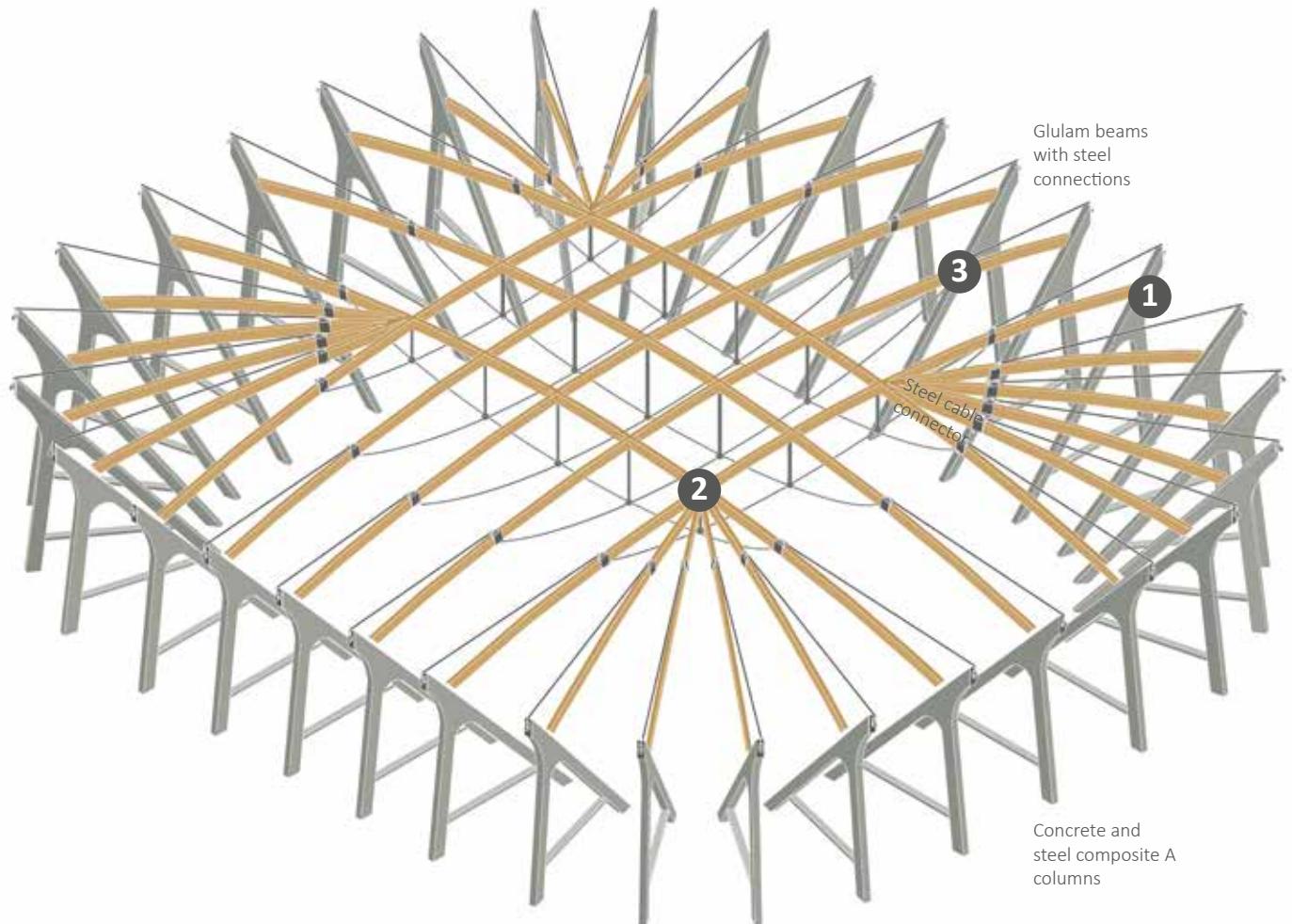
Derived from the structural methodology of a suspension bridge, Glulam beams are used in conjunction with steel cables to create a service zone in the roof capable of accommodating a wide variety of tasks.

THE JUNCTIONS

All connections from concrete to timber are made from steel. An emphasis was made to expose the connections allowing them to be visible. Parts of the building need to fit together, they must be functional and can also be aesthetically pleasing if done well.



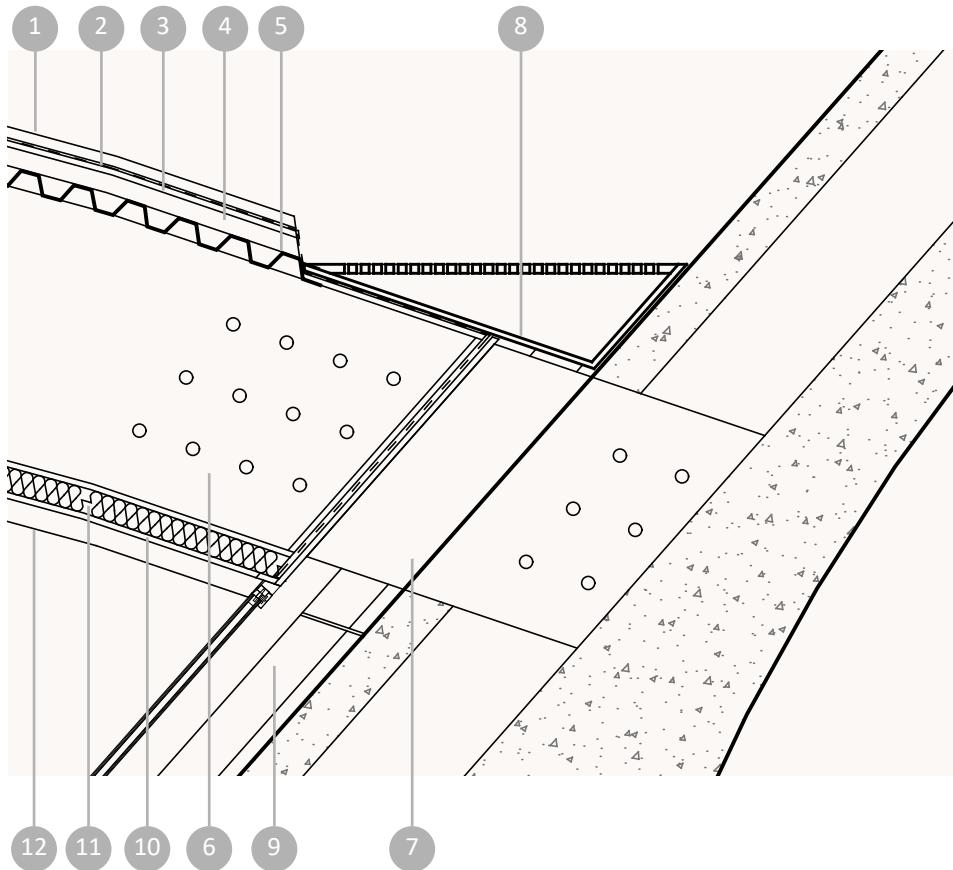
PRIMARY ROOF STRUCTURE



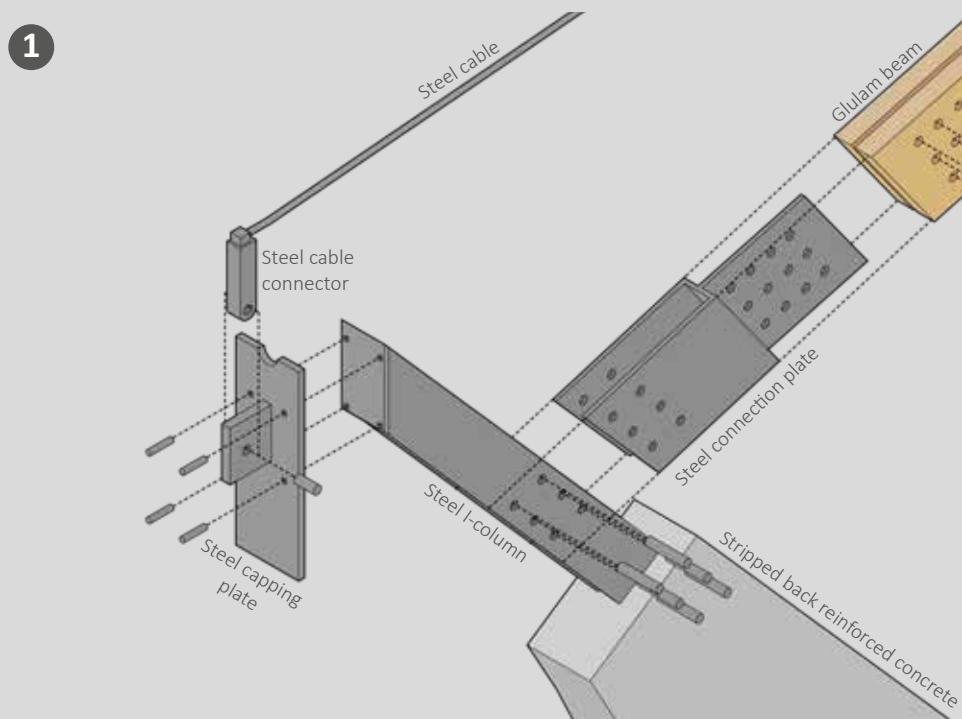
The beams are split by a steel connection plate where a hanging steel cable in tension takes the load of the remaining beam through vertical steel members to the segment of the beam that connects to the column. The glulam beams are additionally supported by the A-columns and steel tension cables help resist the gravity loading.

PRIMARY ROOF TO COLUMN CONNECTION AND BUILD UP

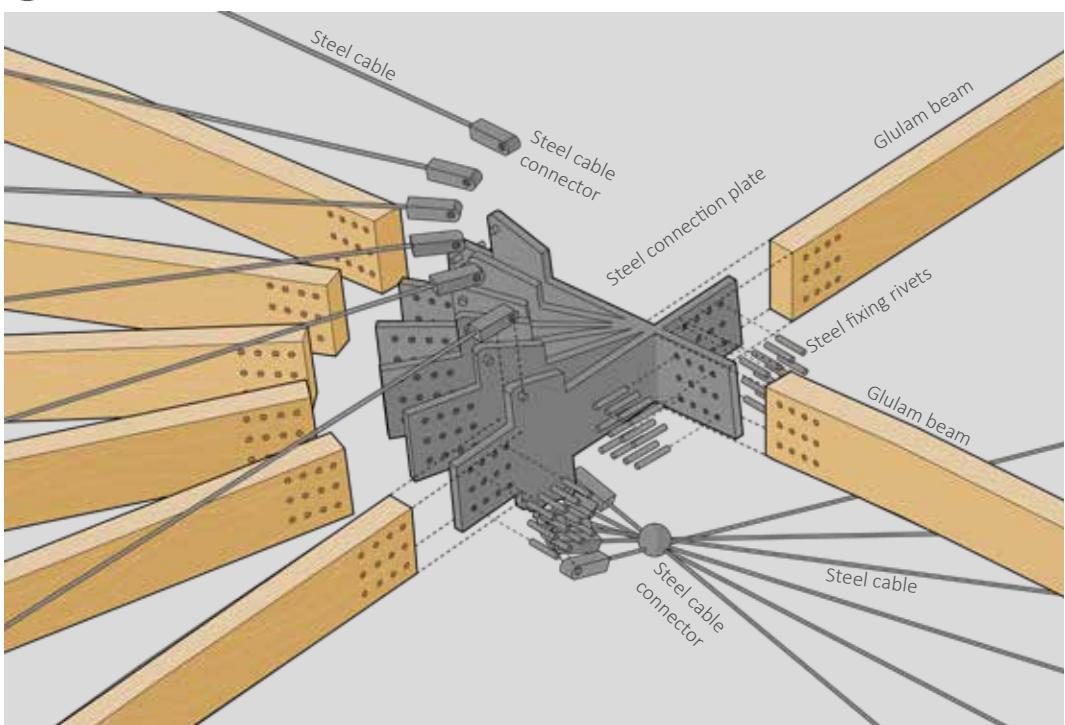
A 1:25 ROOF BEAM TO A COLUMN JUNCTION DETAIL



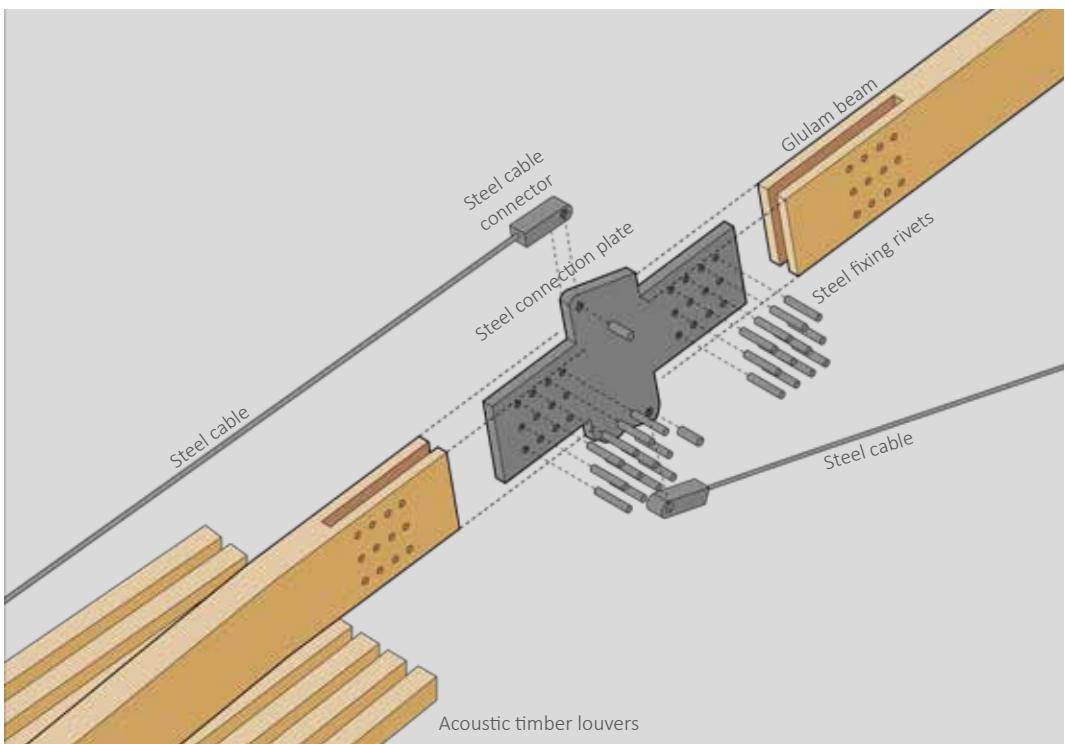
1. PV Panels
2. Waterproof Membrane
3. Structural Underlay
4. Support Decking
5. Steel Diaphragm System
6. Glulam Beam, 800mm x 300mm
7. Steel Connection Plate
8. Aluminium Gutter
9. Downpipe
10. OSB acoustically absorbent structural underlay for louver system
11. Rigid Insulation



2



3



CONSTRUCTION SEQUENCE

STEP 6

Assembling the roof build up, adding the glazing and adding finishing touches.



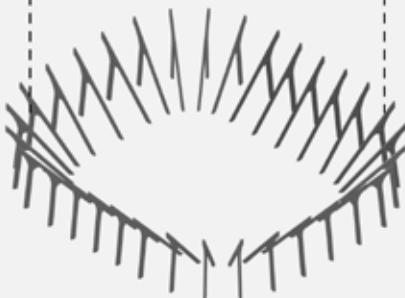
STEP 5

Piecing together the pre-fabricated CLT/glulam seating bowl and timber vertical circulation.



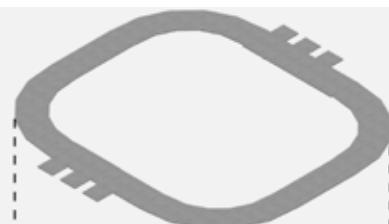
STEP 4

Erecting the pre-cast steel and fibre reinforced recycled concrete aggregate columns.



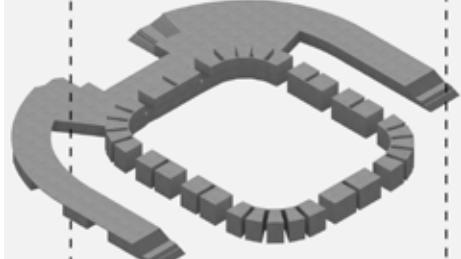
STEP 3

The circulation slab is cast in situ.



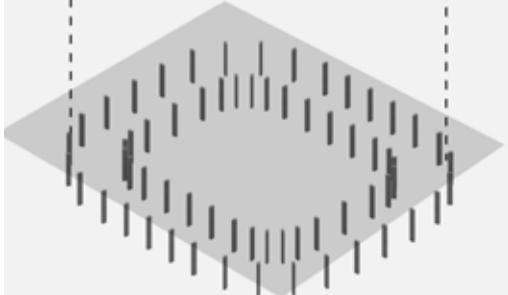
STEP 2

The recycled concrete aggregate base zone is cast insitu.

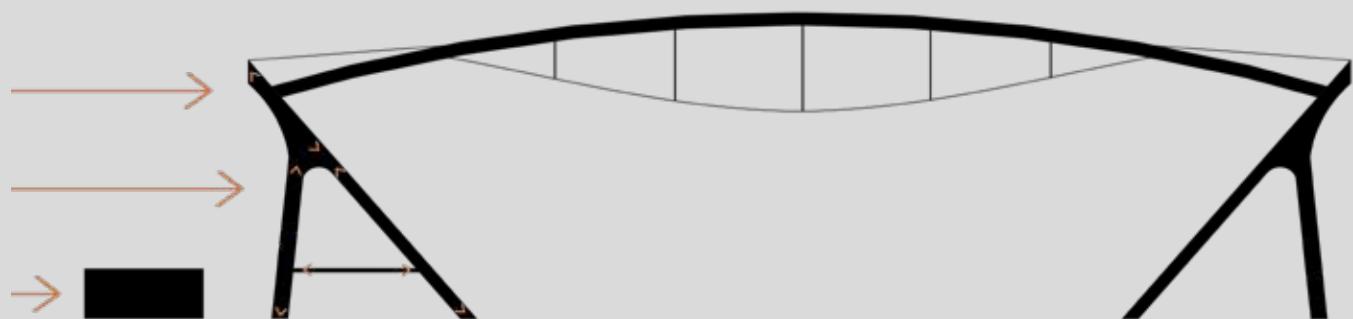
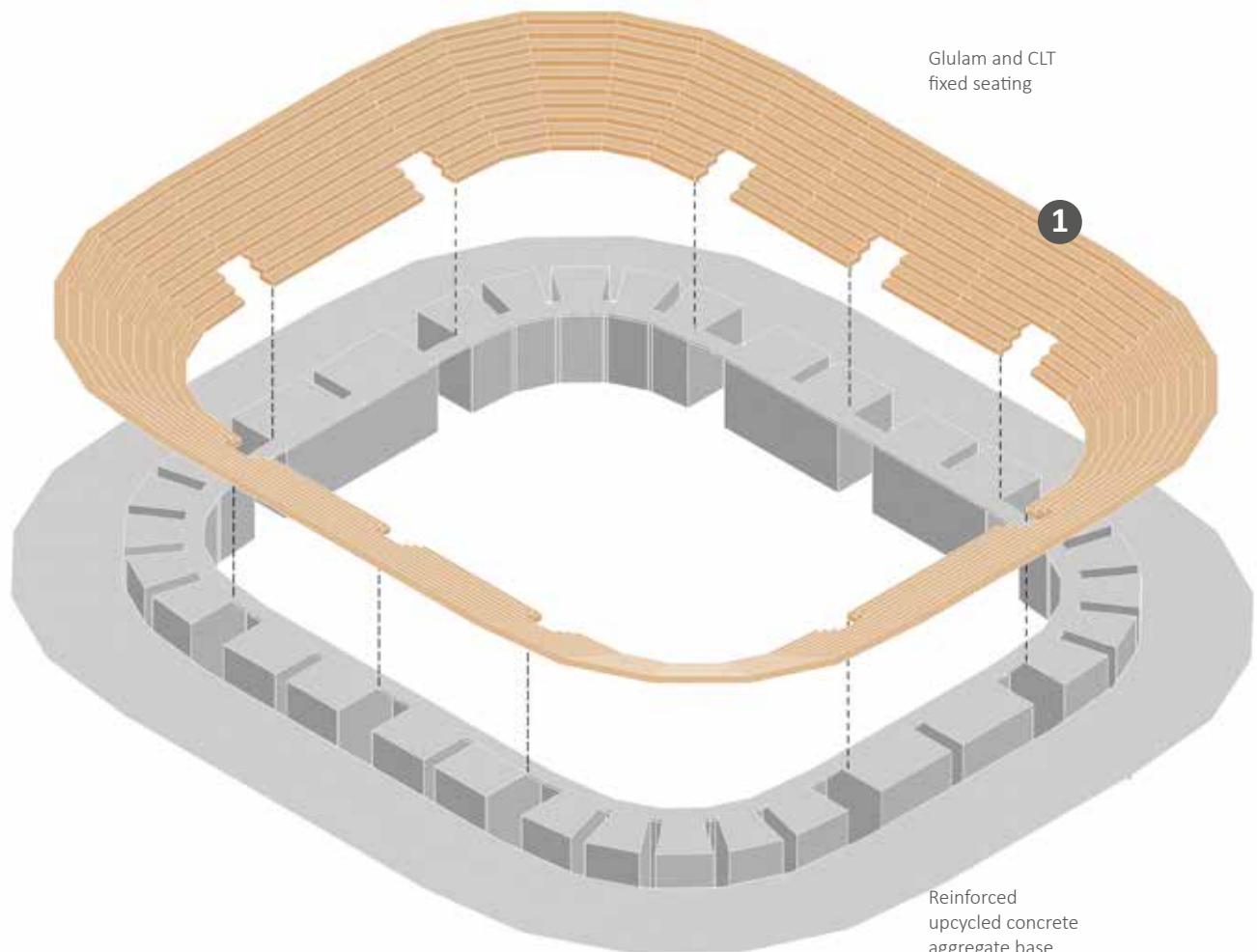


STEP 1

Column and base foundations. The foundation is a hybrid piled raft foundation. With pre-fabricated piles.



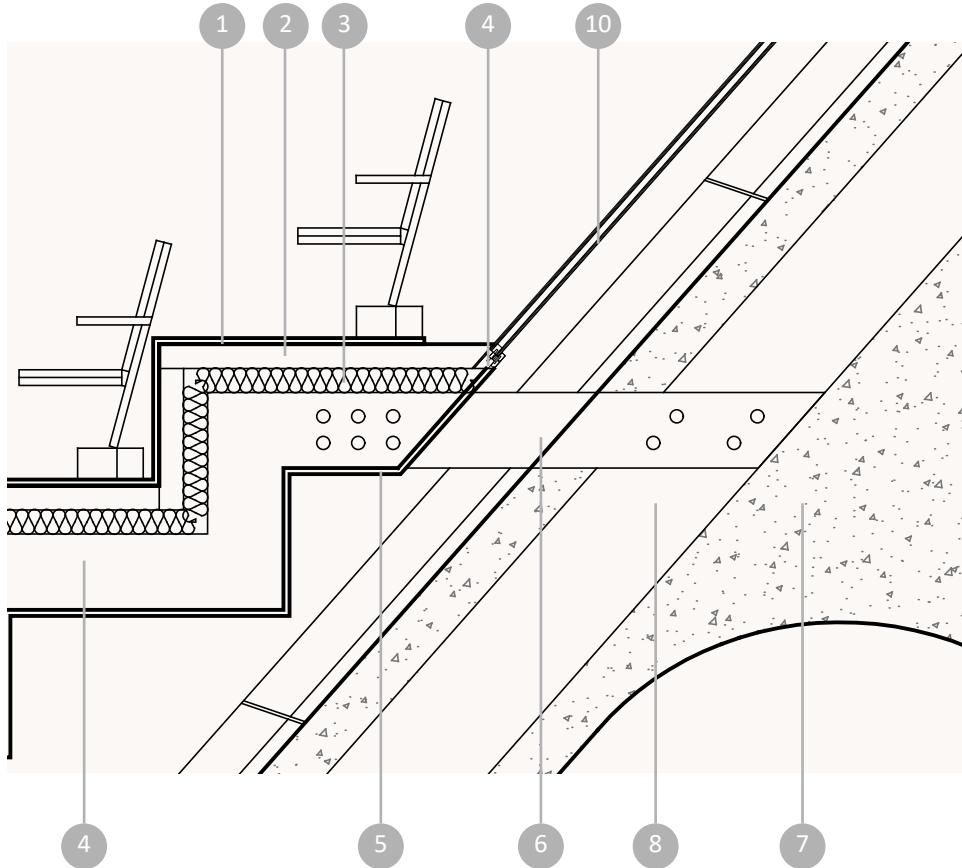
PRIMARY SEATING AND SERVICE ZONE STRUCTURE



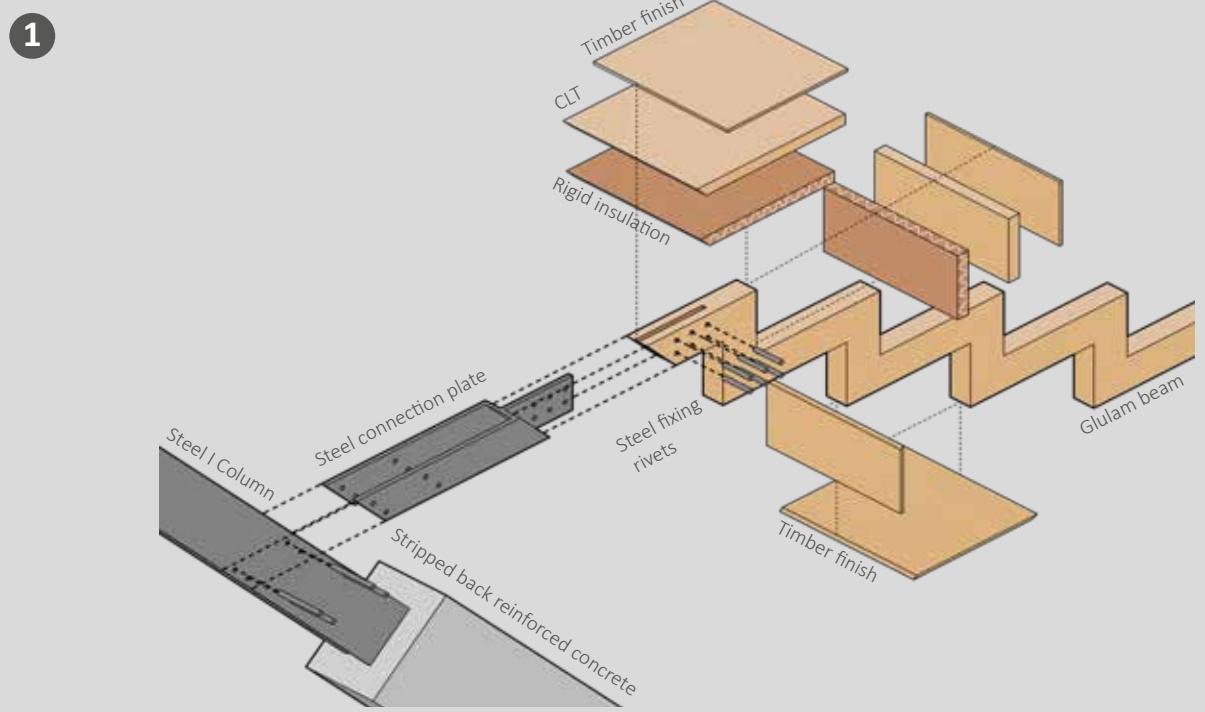
The Concrete slab of the circulation helps support the structure from wind loading.
The service zones are concrete cores that provide the base for the timber seating ring.

PRIMARY SEATING TO COLUMN CONNECTION AND BUILD UP

B 1:25 FIXED SEATING TO A COLUMN JUNCTION DETAIL

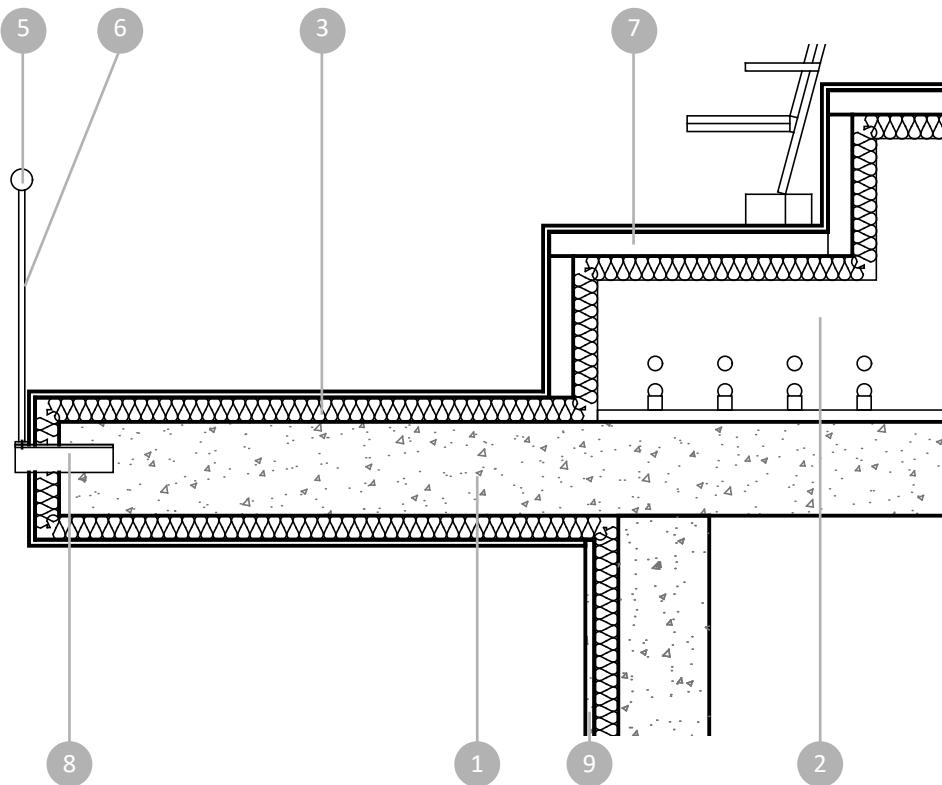


1. Timber Finish
2. CLT Planks
3. Rigid Insulation
4. Glulam Jointed Beam
5. Timber Finish
6. Steel Connection Plate
7. Fiber Reinforced Concrete.
8. Steel I-Column
9. Oculux Window Fitting
10. Oculux



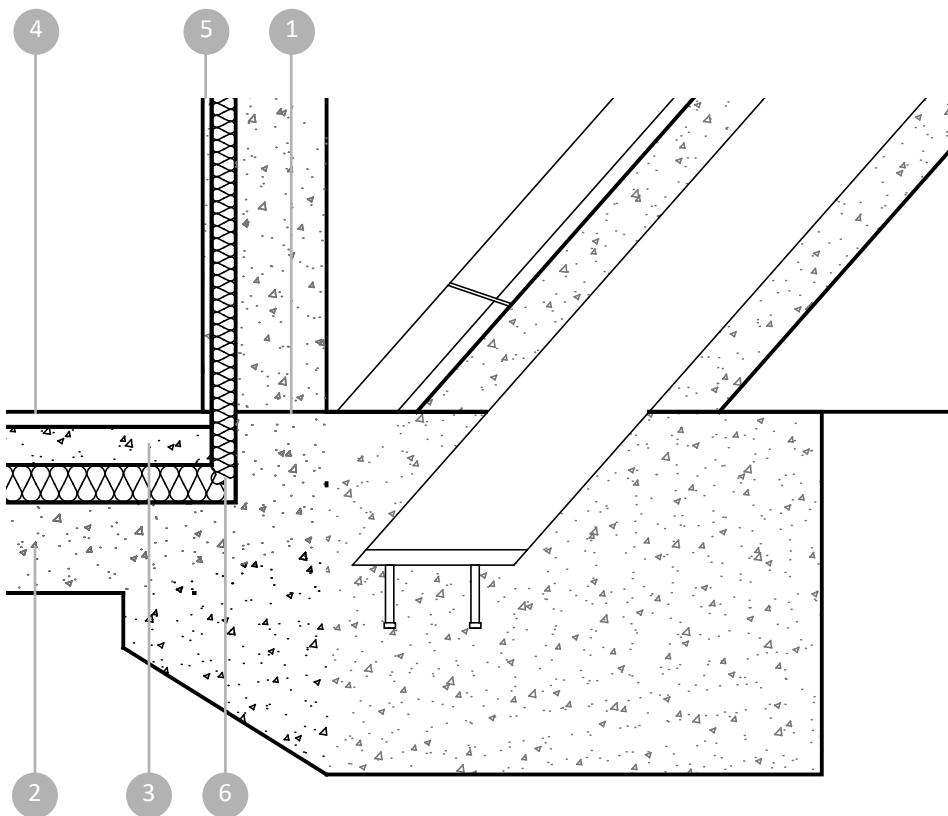
OTHER JUNCTION DETAILS

C 1:25 A COLUMN TO FOUNDATION JUNCTION DETAIL



1. Recycled concrete aggregate
2. Glulam composite beam
3. Rigid Insulation
4. CLT planks
5. Timber handrail
6. Glass
8. Steel connection plate
9. Concrete finish

D 1:25 A COLUMN TO FOUNDATION JUNCTION DETAIL



1. Waterproof membrane
2. Ground fill
3. Screed slab
4. Concrete floor finish
5. Concrete finish
6. Insulation

ENVIRONMENTAL PRINCIPLES AND APPROACH

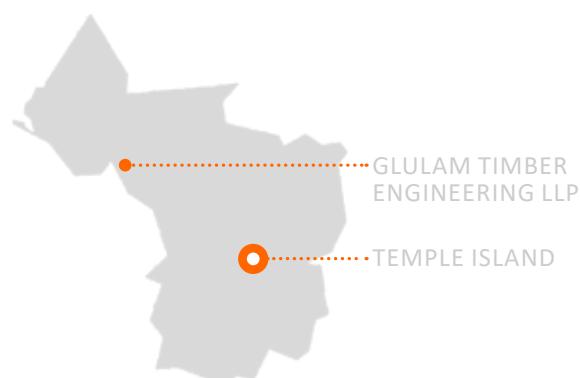
DEMAND REDUCTION, THEN SUPPLY

The goal for the over arching environmental approach was to try and reduce demand wherever possible. The aim was to provide a space that generates its own energy entirely and is able to provide for the community when needed. BREAM rating outstanding was the goal when trying to design this arena. By doing so the need for retrofitting systems to meet environmental needs was eliminated because aspects like lighting, ventilation, etc were considered from the start of the design. As a result the reduced demand for energy and supplemental production of energy rendered the building with a significantly low carbon footprint that what would be expected of a typical stadium. The insulation is robust, infiltration is low, humans are used as primary heat source. The choice of materials too stemmed from this process, trying to find and manipulate materials that would have the lowest impact on the environment while providing the longevity to last the life of the building.

When deciding to use either Glulam or steel the life of the building was considered, the embodied CO₂ beyond the construction period. To ensure that the building has as a long a life as possible the internal space or arena floor remains free of services and the ground floor was made flexible so that different activities could be incorporated. Most indoor stadia around the world are adopting the same principles. The size/capacity of these buildings make it ideal for a whole host of activities.



CONCRETE SOURCE TO SITE: > 1KM

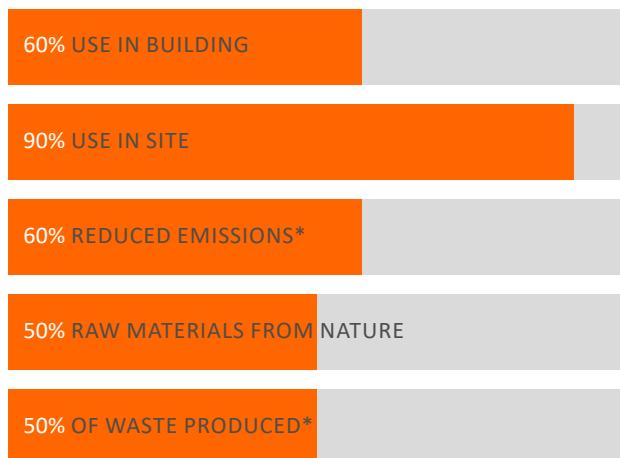


GLULAM SOURCE TO SITE: > 5KM

MATERIALITY

UPCYCLED CONCRETE AGGREGATE

Much building and the supporting cores will be constructed primarily from upcycled concrete. The material is available next to the site from the demolition of the Royal Mail sorting office next door. This will help reduce impact of transport emissions. The material has low embodied energy and a high thermal mass which is what is needed. It shall be reinforced from recycled steel from the demolition which will provide the structural integrity for supporting the rest of the building.



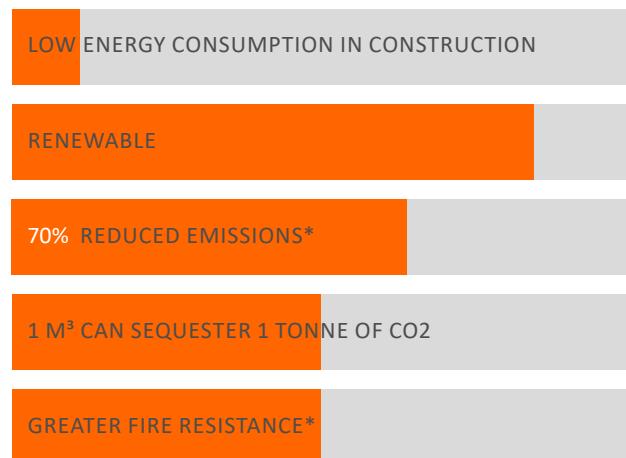
*compared to new concrete



Recycled concrete creates helps create poetic spaces in Upcycle Studios, designed by Lendager Group.

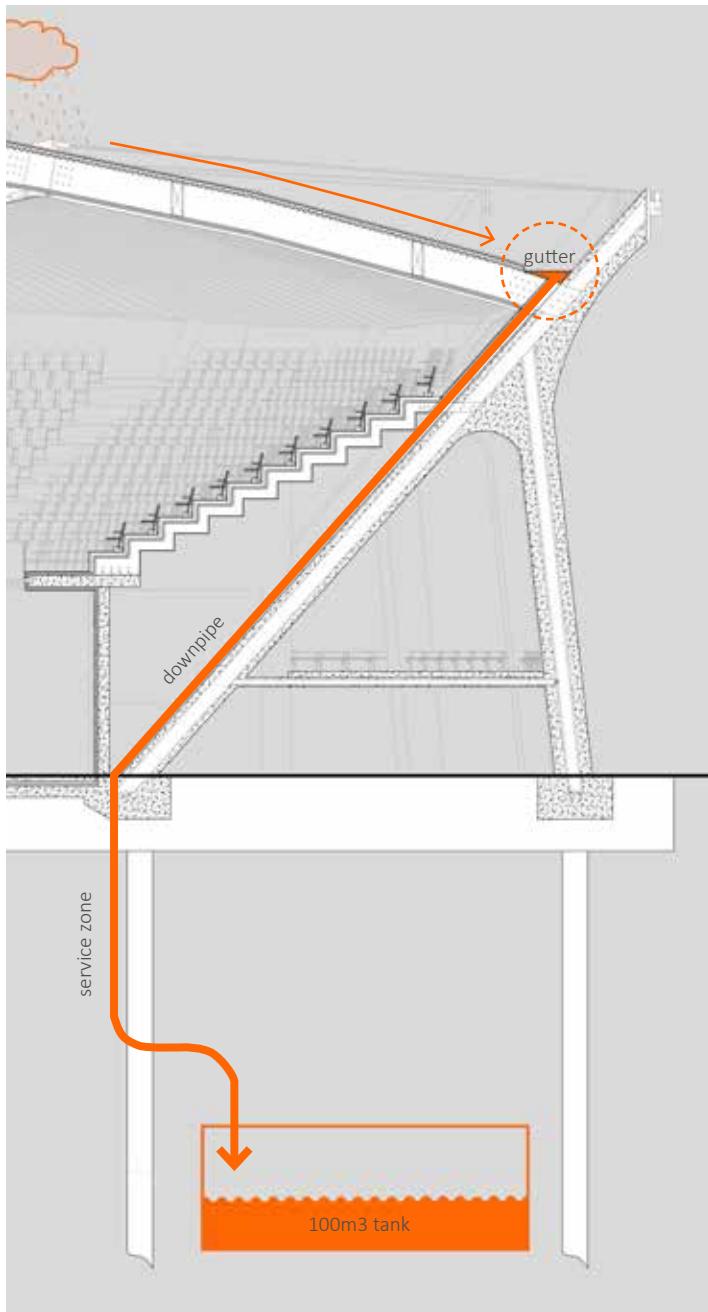
GLULAM

The entire roofing system will be constructed with glulam and steel connection plates. The glulam will be sourced from within the UK and transported to site via the river. Due to the life of the building transport emissions are made up for due to the considerably better Production impact compared to steel.



*compared to steel





RAINWATER STRATEGY

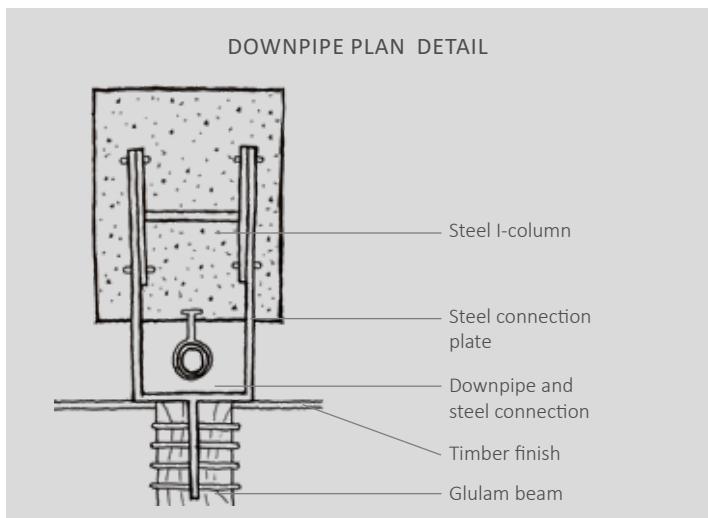
The vast roof area also allows for the collection of water. This water can be used for all services required within the site. Since the hours of use are limited and the potential to store water is great, large tanks are needed to store water and can be utilised by local communities.

Average rainfall in Bristol is around 819 mm and the catchment surface area is around 6800m². In an optimal scenario the building would be able to harvest around 5.4-5.5 million litres of water. Rainfall being relatively consistent throughout the year is a bonus so that tanks can be smaller but still adequately satisfy demand.

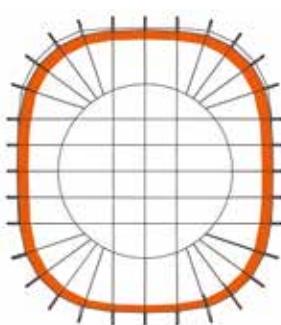
With a max capacity of 2500 people in the arena and a 15L/person/3 days (match day or event space use only every alternate day at most), the requirement of water is around 4.5 million litres annually. This means that 20% of the collected water is excess and can be used for landscape maintenance and in the other buildings on the site.

In order to reduce the number of "no water days" and to facilitate the usage of harvested water in the service zones there are 10 100m³ (5mx5mx4m) tanks located underneath the service zones that are capable of storing up to a million litres of water or roughly 3 months water demand.

The roof slope bring the water down to the gutter which runs around the entire arena and is brought down through exposed pipes that are fixed to the primary columns. The pipes enter the service zone and make their way down to the tanks. They are brought back up for use through the service zone to the arena's toilets.



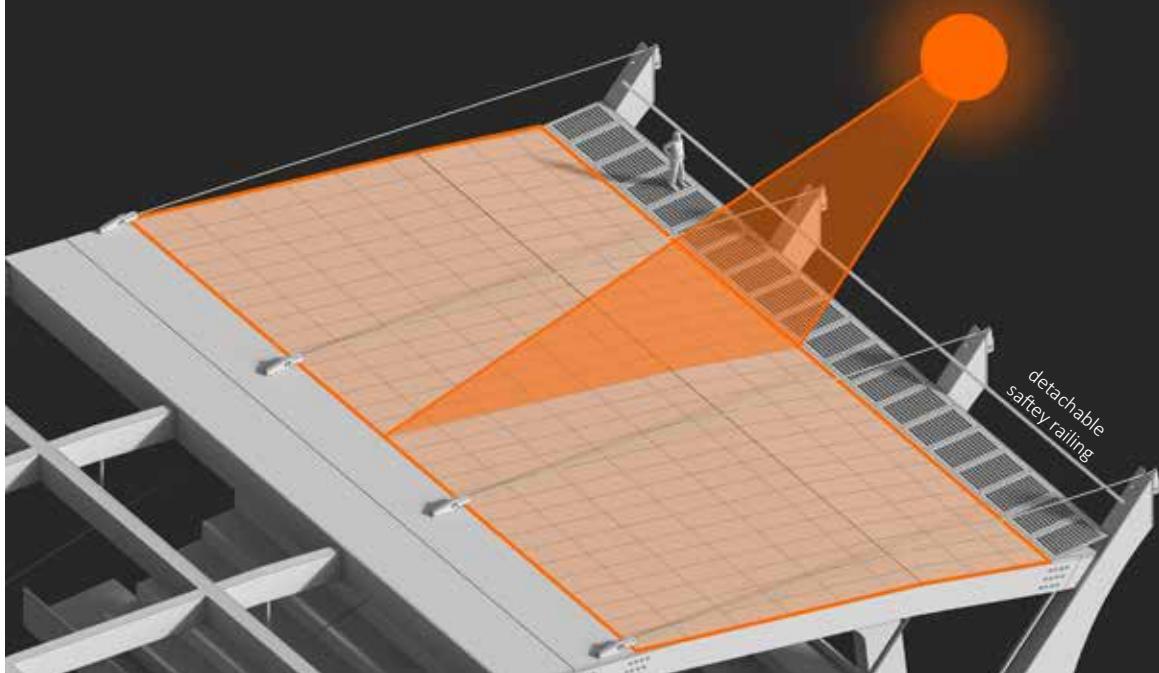
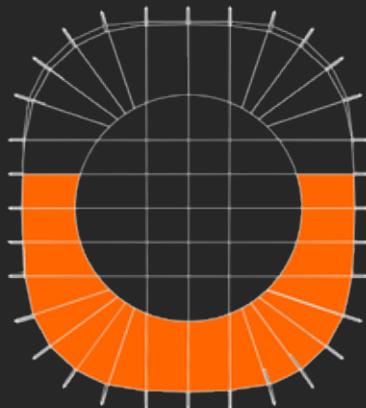
 WATER COLLECTION
POINTS IN PLAN



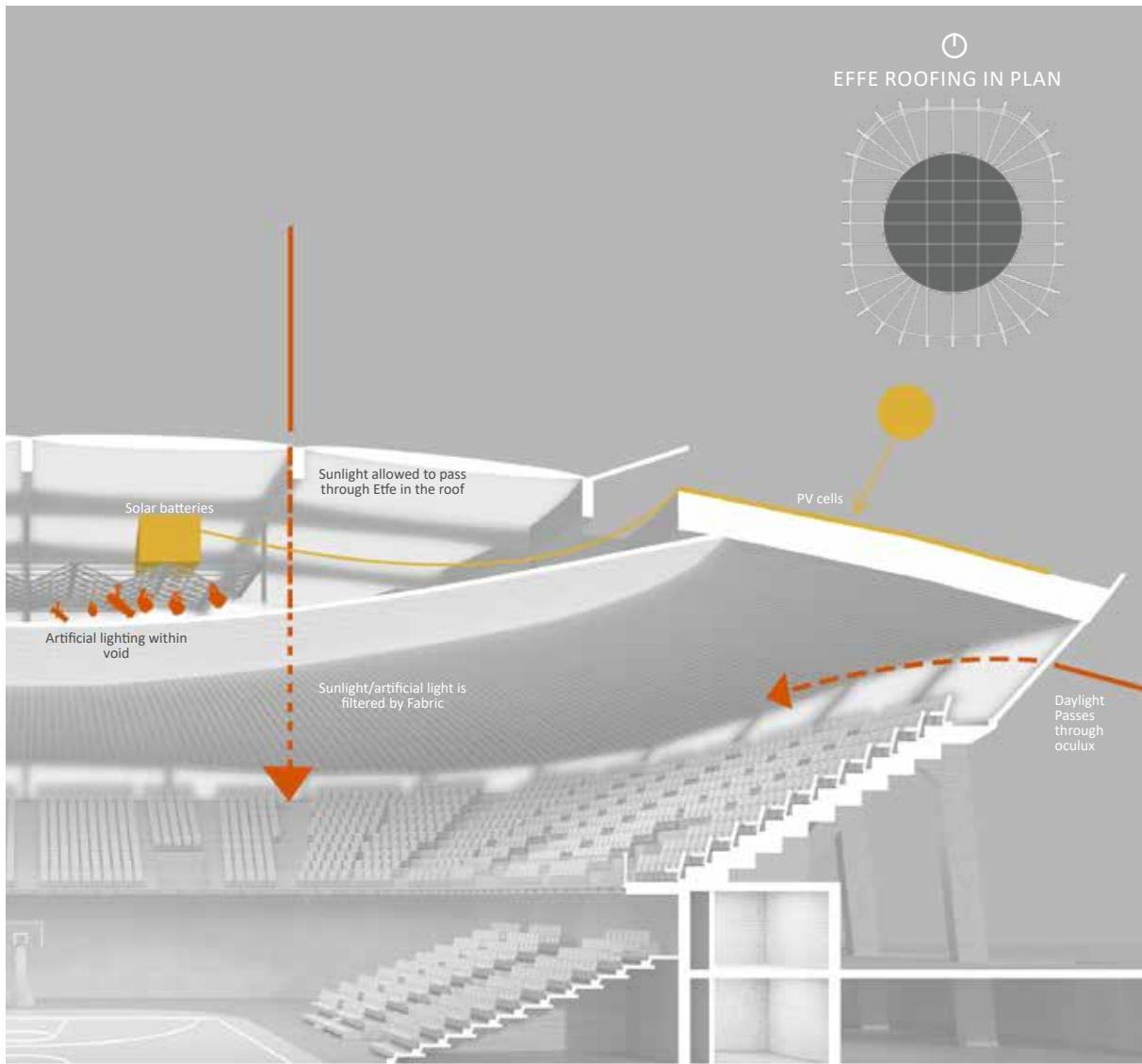
The roofing of the south of the stadium is equipped with photovoltaic panels. A roof sole of an average of 20 degrees gives an efficiency of about 95%. Since there are no obstructions to the path of the sun all 1200 panels combine to give an output of 360 MWh which is save around 86 ton of CO₂c/year.

The output of the PVs is roughly 3.2 times to demand for artificial lighting to additional energy will be used for electric water heating, air handling units during the winter and to power the rest of the site.

①
PV CELL PLACEMENT IN PLAN



The gutter is accessible for maintenance and a safety railing can be attached via the columns



LIGHTING

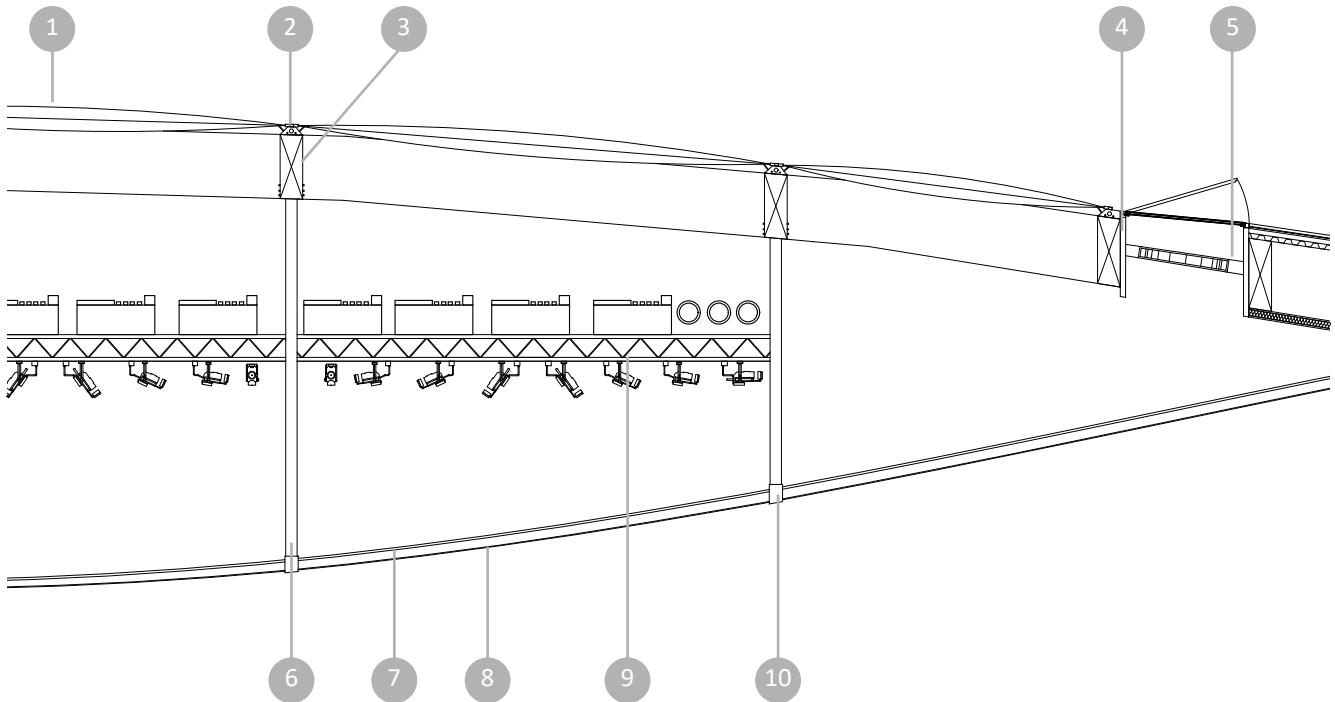
The stadium aims to be naturally lit whenever possible through the roof. A layer of ETFE allows light to enter and a membrane of translucent fabric disperses the light creating an even glow to help light the playing surface and seating and protects from glare. This system is assisted by the ring of translucent oculux along the perimeter of the upper deck of seating. A light requirement of 700 lux is needed for the playing surface and was met. The necessary daylight factor of 4% was achieved and additional extremely low maintenance LED's were placed in the service void to mimic the effect of daylight in events that take place after the sun has set.

ENERGY STORAGE

The vast roof area allows a great potential to utilise solar energy for artificial lighting and electric water heating of the entire site. The demand for energy within the arena is limited to a 8-10 hours a week which allows the building to store energy through solar batteries. Energy can be stored by a thermal energy device (TED) which can hold 1 MWh of power in a 1m² area. It is completely recyclable and has a life of up to 20 years.

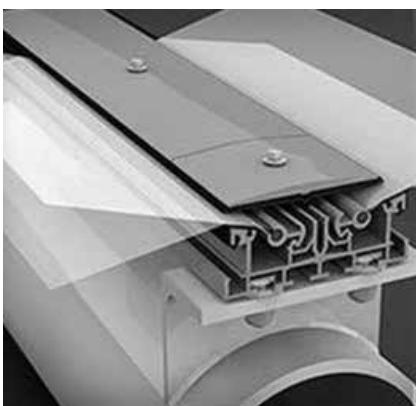
ROOF SERVICE VOID

1:100 ROOF DETAIL



1. Triple layered ETFE cushion
2. Aluminium ETFE fixing
3. Glulam beam 800mm x 300mm
4. Insulated panels
5. Extractor fan
6. Steel compression rod, 100mm x 100mm
7. Steel tension cable, 15mm diameter
8. Acoustic sheer fabric
9. Lighting rig truss
10. Tensile steel connection piece

ETFE CUSHION

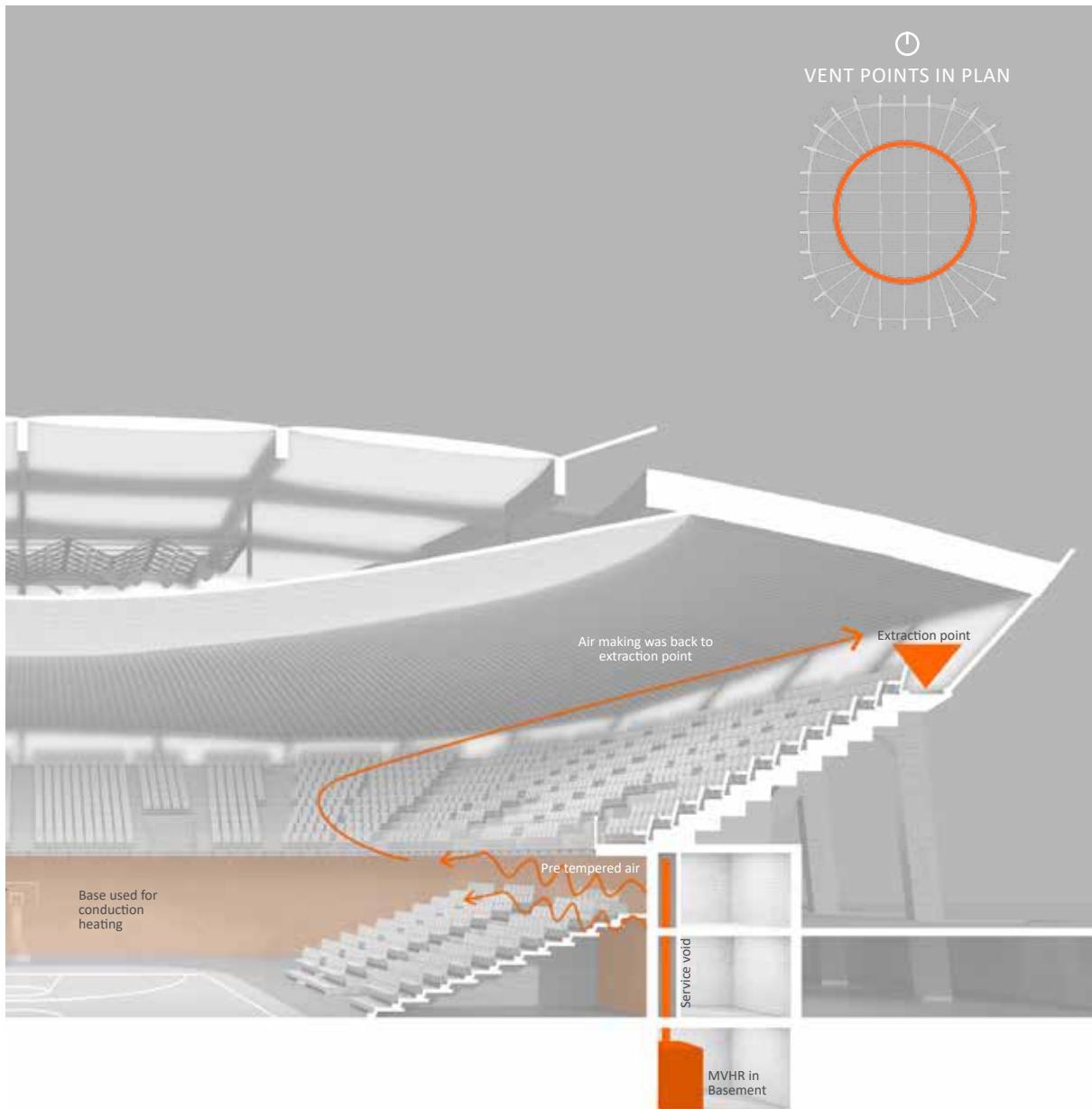


To achieve a similar transmittance as glass to allow plenty of light to enter the arena while eliminating much of the solar gains, ETFE was chosen. Triple layered ETFE has a light transmittance of approximately 90% while providing superior insulating properties of $1.9\text{W/m}^2\text{K}$. It can have a solar heat gain coefficient of as low as 0.35.



ACOUSTIC SHEER FABRIC

To help disperse the light providing an even glow for the performance space this was chosen. It's a translucent, flame retardant, woven fabric. Sound-absorbing curtains and panels primarily deal with the shortening of reverberation times, improving speech intelligibility and decreasing background noise, a necessity in a loud, boisterous environment.



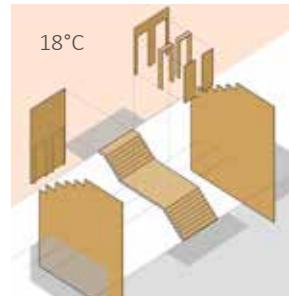
The nature of this space means that the primary demand for the building is cooling. Active spectators and players will be emitting heat causing increases in temperatures. Fluctuating heating/cooling demands need a quick system. Pre-tempering of the space before it is used can be done by conduction assisted by the thermal mass of the concrete walls. The serve zones in the base will help accommodate this task. Once the activity level rises temperate can be controlled by pre-tempering the air entering the building with the help of the MVHR located in the basement. This MVHR exists with a full extract system that assists air in being recycled and is located at the top of the fixed seating. During the summer when air is being extracted through the vents a bypass system stops the heat recovery. A robust thermal boundary and proper insulation will mean that infiltration can be kept to a minimum.

Given the nature of the space, the heating/ cooling system is highly targeted to minimise energy demands wherever possible. In the winter the building can be heated for a short period before the event. Once the building reaches a temperate of 18°C the heat emitted by the audience will be the main source of heat. At maximum capacity there is 2 m²/per person. Assuming that a person has an average metabolic rate of 100W, the building faces a large amount of exposure to the sun, the infiltration rates are low, there are negligible internal gains from lighting and insulation is designed so that a portion of heat loss can occur. The heating demand for the building will be only 50W/ m² and the cooling demand 110W/ m², significantly low for building of this nature and capacity. The stored energy is more than adequate to accommodate this as well as lighting needs for when the space is occupied. The ETFE works well as a thermal barrier, the thermal mass of the concrete helps the building retain heating in the winter and cooling in the summer providing a more even environment. The Oculux can be fitted with a wavelength turning filter to manage infrared rays.



OCULUX

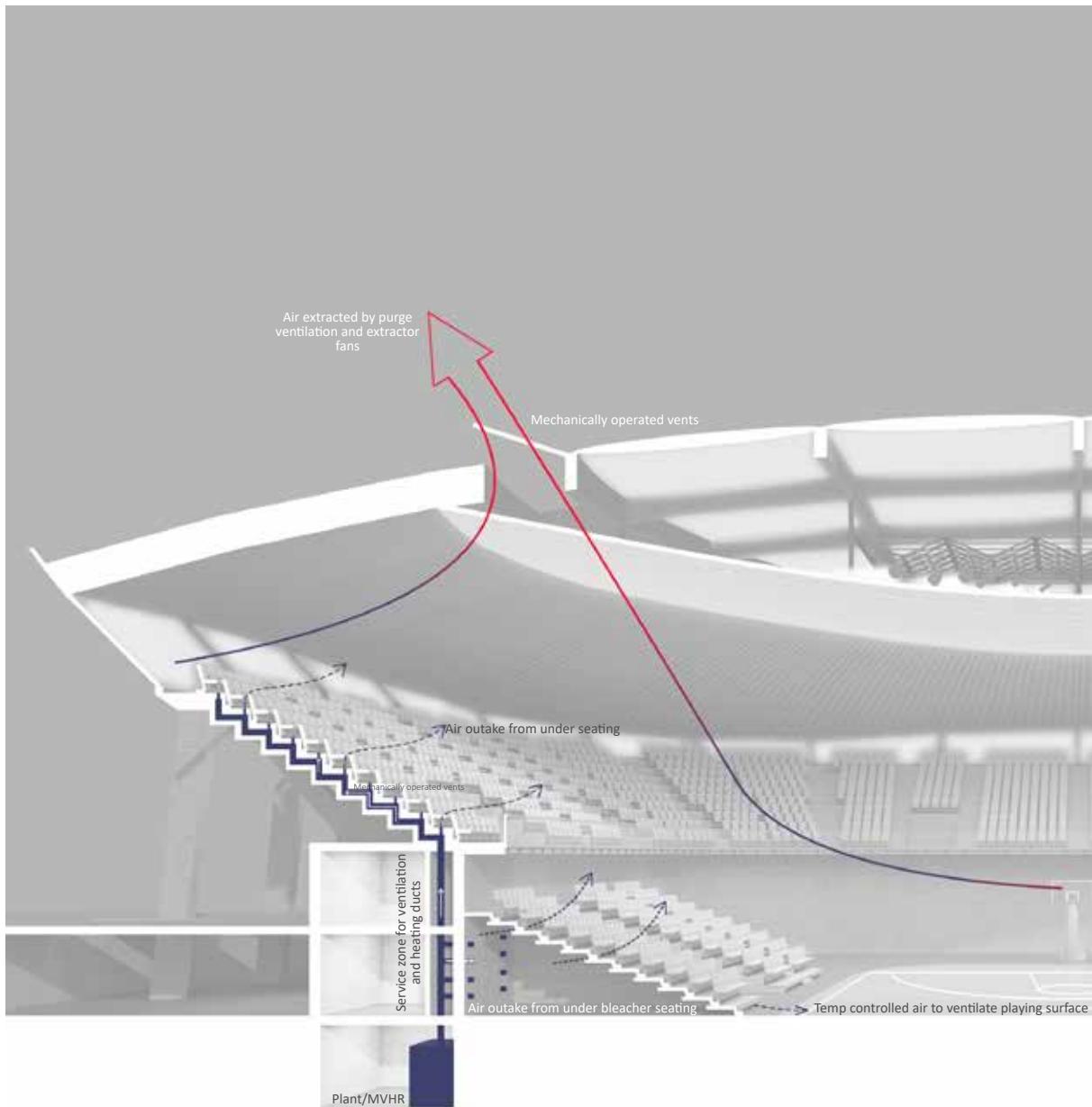
Oculux is an insulated glass product with capillary inserts which disperse daylight, reduce glare and aid with heat insulation. It is also completely recyclable.



BUILDING ENVELOPE

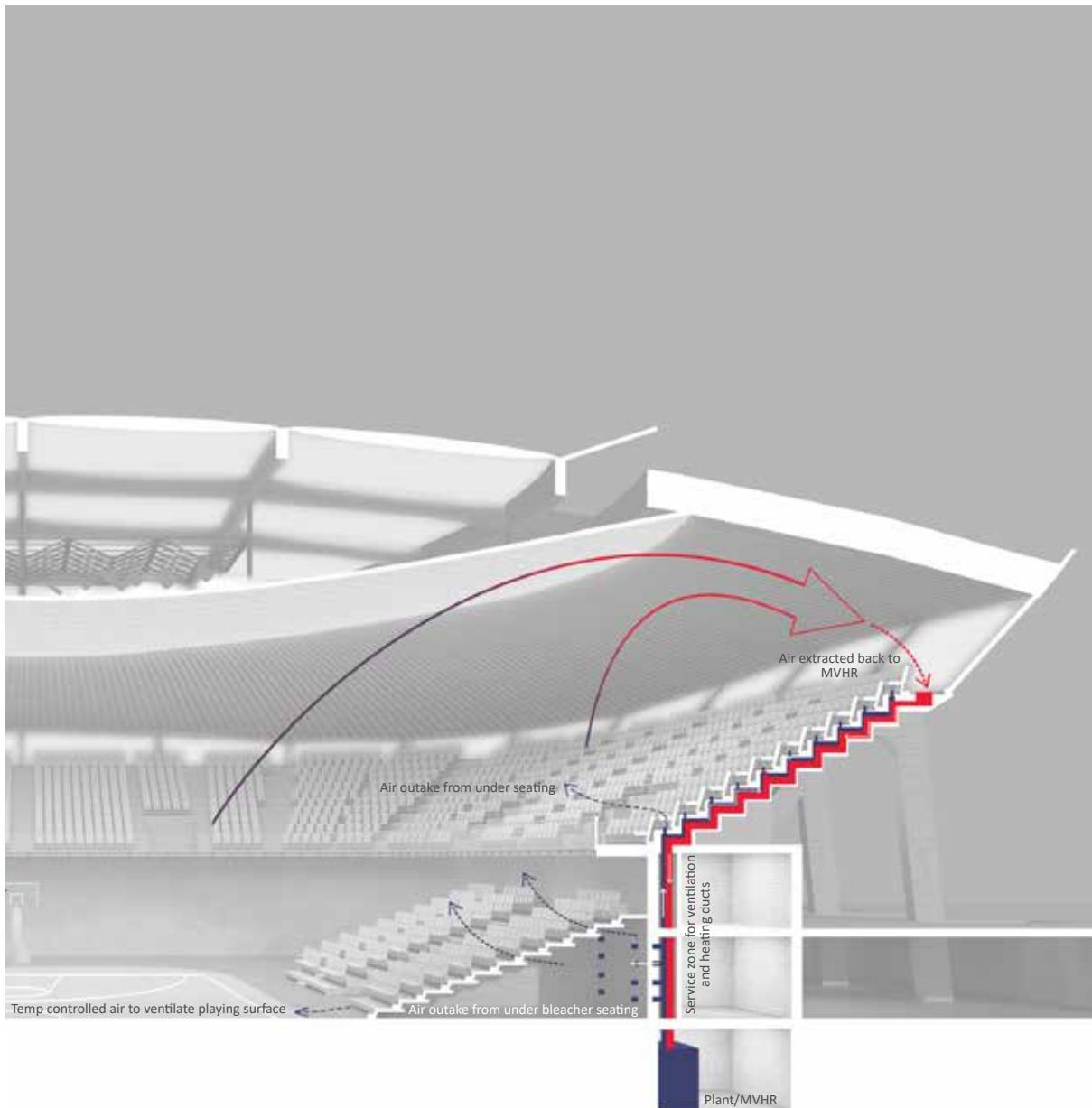
The volume is condition to 18°C which is ideal for environments of indoor sport.

SUMMER VENTILATION CYCLE

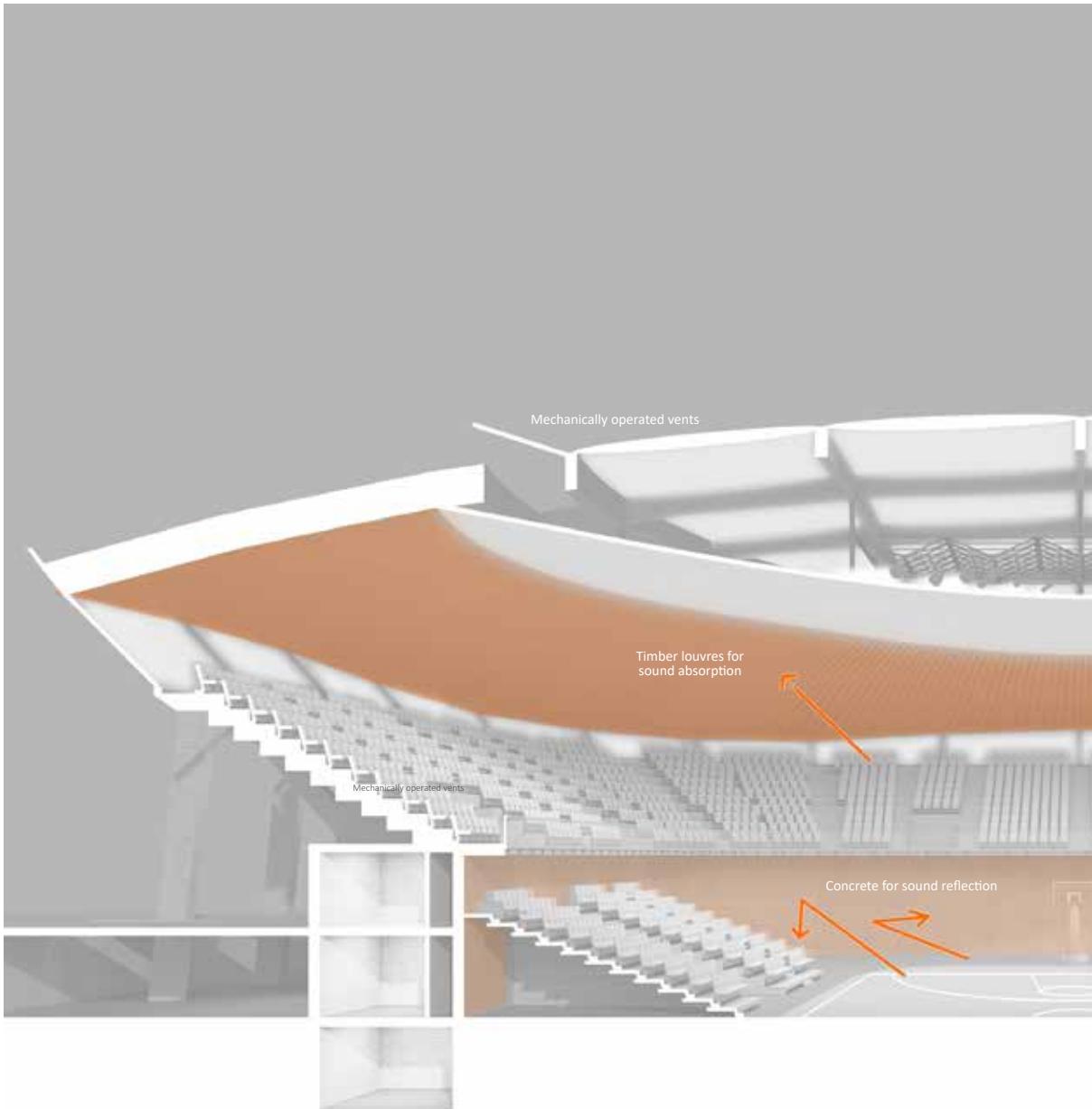


At full capacity $5 \text{ m}^3/\text{s}$ of fresh air is required and will require 0.2 m/s displacement velocity, Hence the ducts have been sized accordingly. The ventilation system is a marriage of purge and displacement ventilation. In the summer air is mechanically pumped into the space from the Plant in the basement the air then rises and is purge ventilated through the roof vents as and when required. To assist with extraction, fans are placed in the vents.

WINTER VENTILATION CYCLE



In the winter the system will be closed and an MVHR system powered by the stored energy will be used to ventilate the system. Pre tempered air will be pumped into the arena and the extracted from behind the top level of seating.

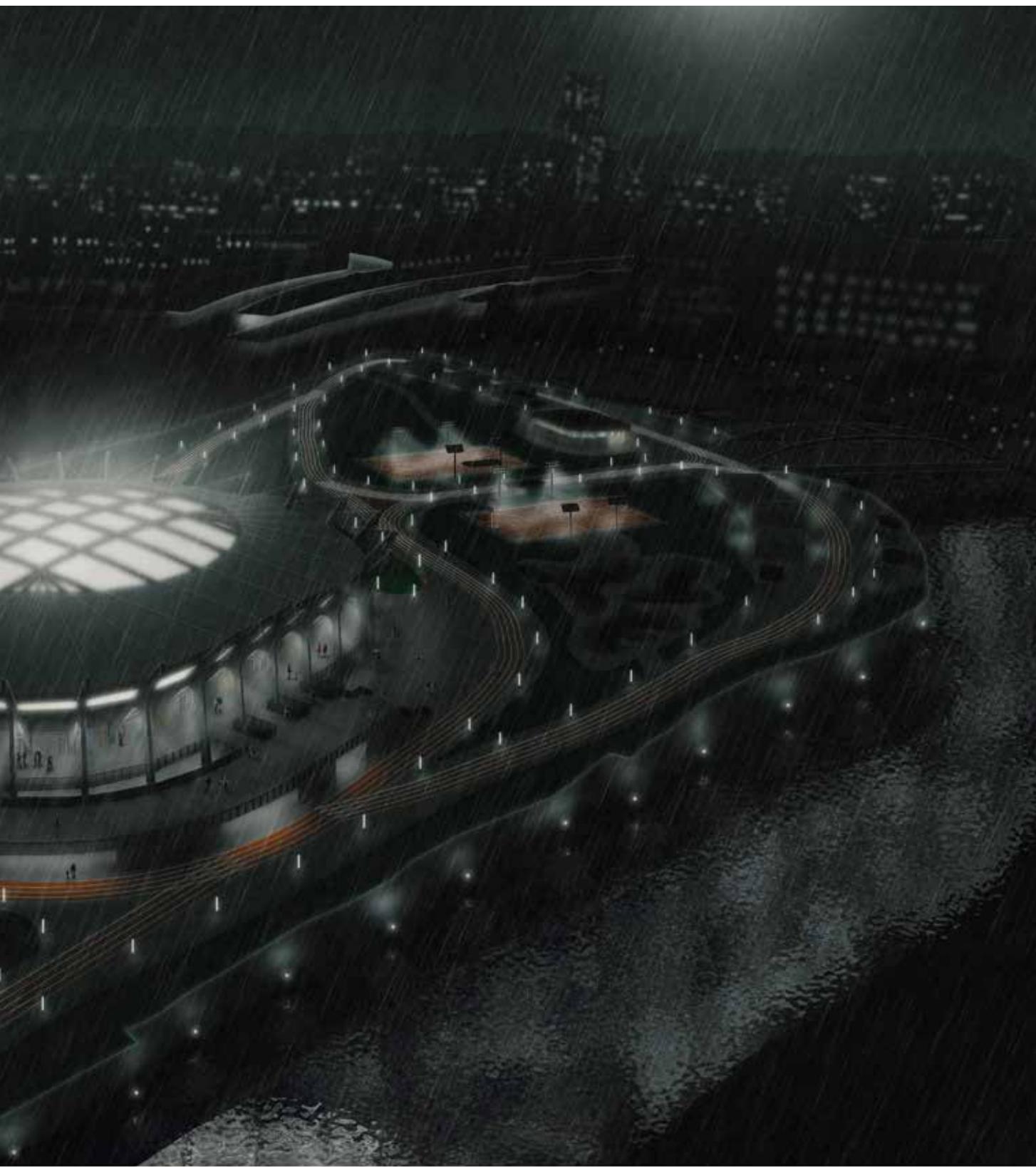


The concrete base layer is designed such that it will amplify the sounds coming from the court. To improve the acoustics of the overall arena, timber louvres with a sound insulation structural support decking are placed on the ceiling to help yield a reverberation time of 1.6 seconds. A heavy roof mass was unnecessary as events taking place inside the stadium wont be affected by the noise coming with outside.

GLOWING BEACON

At night the stadium and site transform into a glowing spectacle of life and activity. It becomes the newest addition to Bristol's skyline. A significant statement for the city. Paths along the site can be illuminated at night adding to visual stimulus. The building appears to exist not as an isolated object like stadiums usually are, but as an amalgamation of the rich context surrounding.





**REGULATORY
COMPLIANCE**

PART B: FIRE

MEANS OF ESCAPE

The Arena space and stadium service rooms on the ground floor are directly connected to the external spaces. On the first floor they directly connect to the concourse level which can be exited from two different points.

The capacity of the stadium is 2,200-2,500 can seating has been divided such that there may be a maximum of only 150 people per exit on the 1st floor and 100 people on the first floor. Compared to football stadiums which are usually around 200-250 people per exit, evacuation times will be more efficient. The maximum distance from an exit to the protected concourse level is 15m.

The ground floor which is the accessible floor has spaces provided for wheelchair refuge.

MATERIALITY

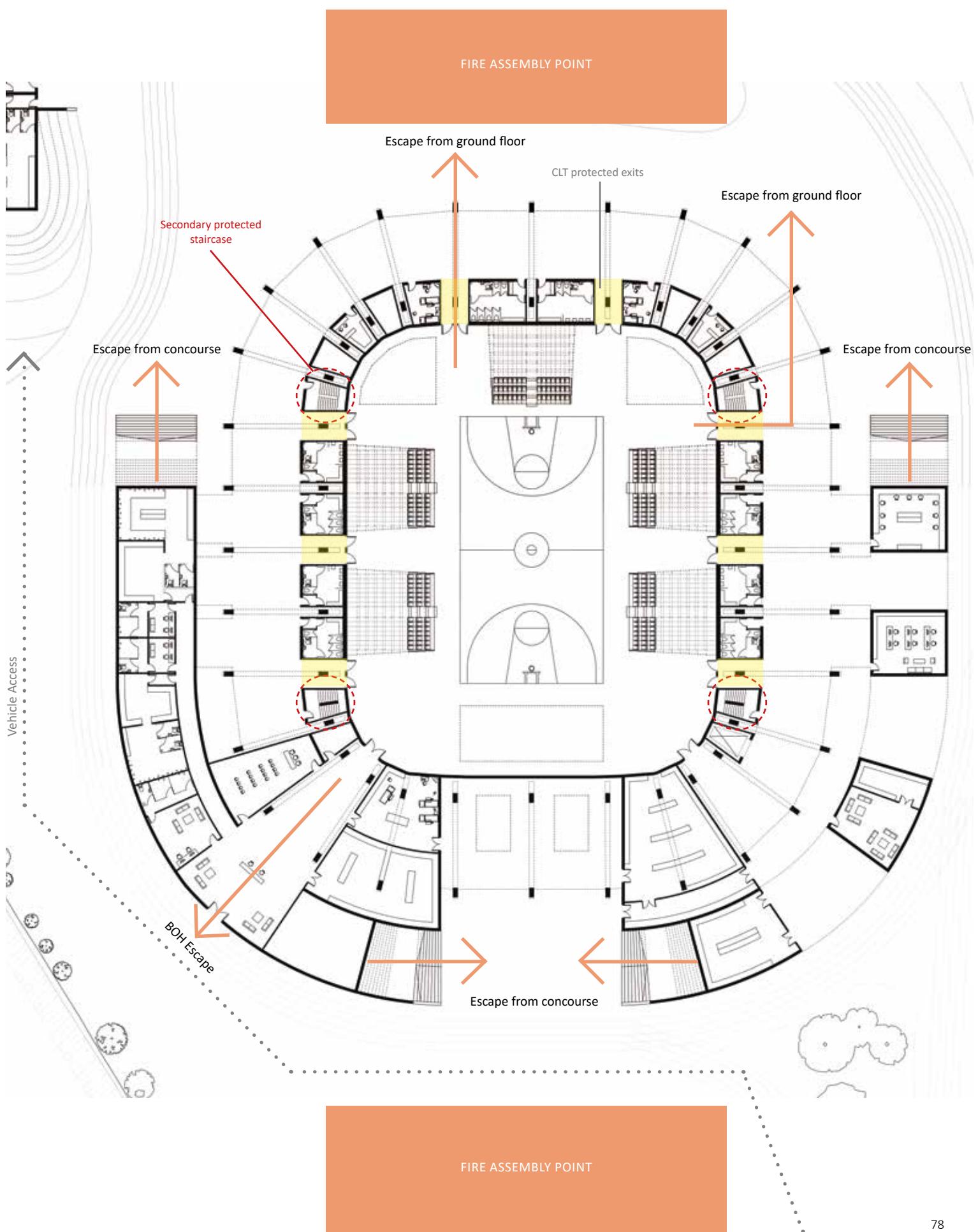
The primary steel structure of the columns is protected by the concrete aggregate and the roof beams which are made of Glulam. Glulam is significantly better than steel in this regard as Glulam only loses 25% of its structural integrity in 30 mins whereas steel would lose 90%.

Exits are clear through the material change and CLT breaks through the concrete base clearly demarcating egress points. The CLT too performs well and can withstand structural integrity for up 1 hour.

FIRE ASSEMBLY POINTS

The primary steel structure of the columns is protected by the concrete aggregate and the roof beams which are made of Glulam. Glulam is significantly better than steel in this regard as Glulam only loses 25% of its structural integrity in 30 mins whereas steel would lose 90%.

Exits are clear through the material change and CLT breaks through the concrete base clearly demarcating egress points. The CLT too performs well and can withstand structural integrity for up 1 hour.



CONSTRUCTION DESIGN MANAGEMENT

The construction of this design is part of a larger Temple Quarter Enterprise Plan. The construction and management will be undertaken by Bristol Sport. The site sits isolated from areas of concern as it is flanked by train tracks, Bath road and industrial development. Noise and construction will cause minimum nuisance to the surroundings.

Construction will take place in two phases: The stadium, the supporting buildings and rest of the site. Foundations will be laid in for the hard landscaping and supporting buildings in phase 1 and the rest will take place in phase 2.

ON SITE FACILITIES

Temporary cabins already exist on site, just south of Temple Meads, these can be re-purposed to provide toilets, kitchenettes and changing facilities for workers.

SITE MANAGEMENT

Though the site aims to be a circulation path for pedestrians at the moment it lies barricaded and fenced off. This would be useful to prevent unauthorised people from being able to access the site and to protect materials and construction work.

DELIVERIES TO SITE

Deliveries to site would be less than another building of this size because of the recycling of scrap concrete that is already present on site. Deliveries would need to be made for the Timber segments which can be delivered by boat. Land delivers will be made to the site from the North, off Cattle Market road. The size of the site allows for comfortable storage and putting together of materials.

POST CONSTRUCTION

Access to the roof for cleaning of drains and vents would be by crane. The Access road to the site of stadium and ambulance parking allows the crane the get right next to the building. Proper security equipment would be required.

The lights on the inside of the arena require maintenance every two years. At that point the fabric would have to be detached and cleaned as well. A ladder would provide the ability to access the ceiling for maintenance.

RISKS

While building a primary risk would be working on the build up of the roof. Since it is a double curve it might provide a fall risk and would need careful attention. The columns that protrude over the roof allow a temporary safety illustrate to be put up while construction is taking place.

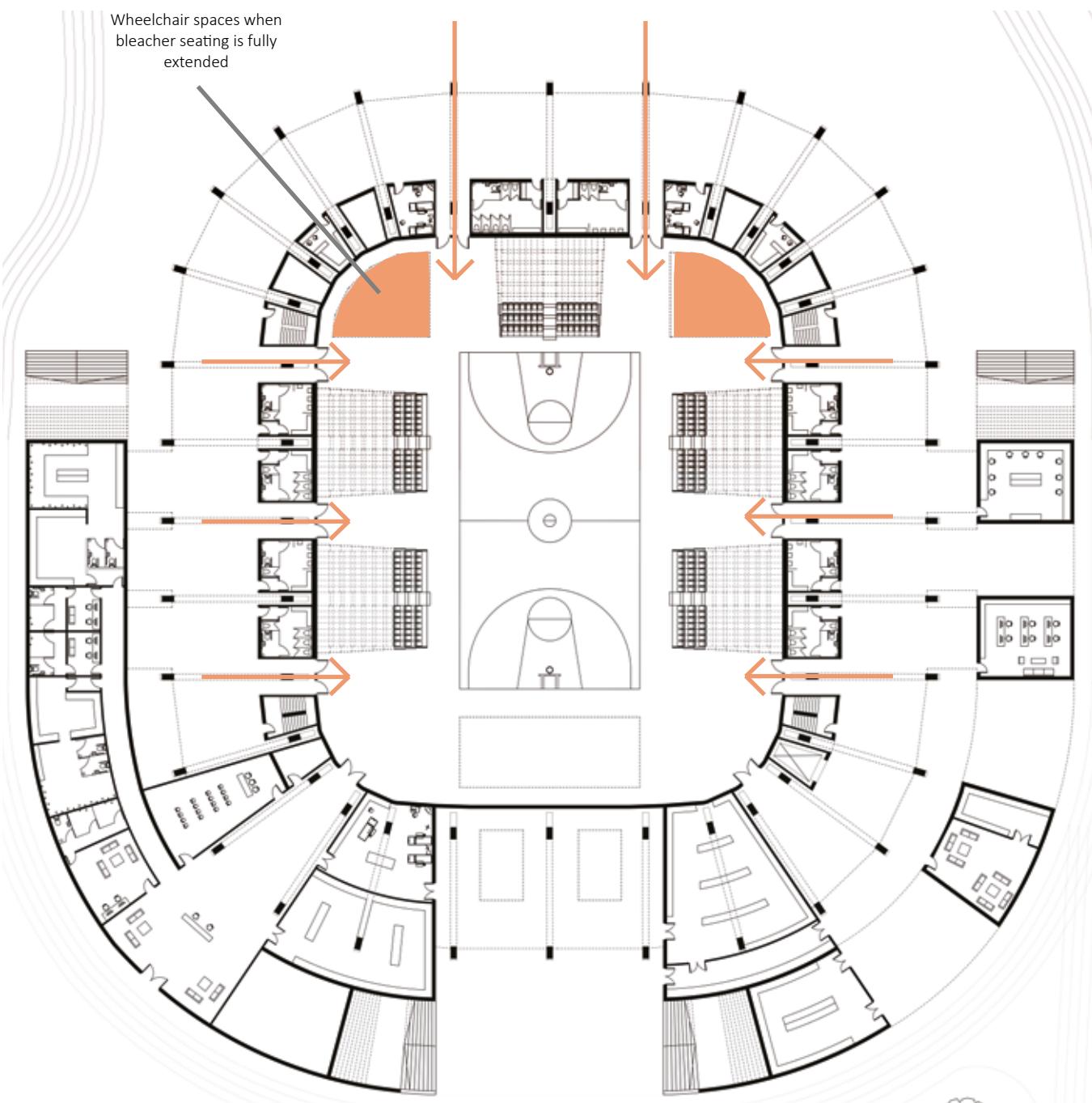
PART M: INCLUSIVE ACCESS

The site is almost completely flat apart from the parts that dip down towards the river along the promenade. All the supported buildings are a single storey and are designed around wheelchair access.

The ground floor of the arena has step free access. It provides all the same supporting facilities as the floor above. Sport England advises that 1 wheelchair space should be proved per 300 people . The stadium can accommodate anywhere between 20-400 wheelchair spaces for viewing due to the flexible nature of the ground floor.

Storage for wheelchairs is not required as they will be with the user for the duration of the event.

All the toilets are equipped with at least 1(2.2mx2.5m) accessible cubicle, which 1 per every 100 people.



OTHER

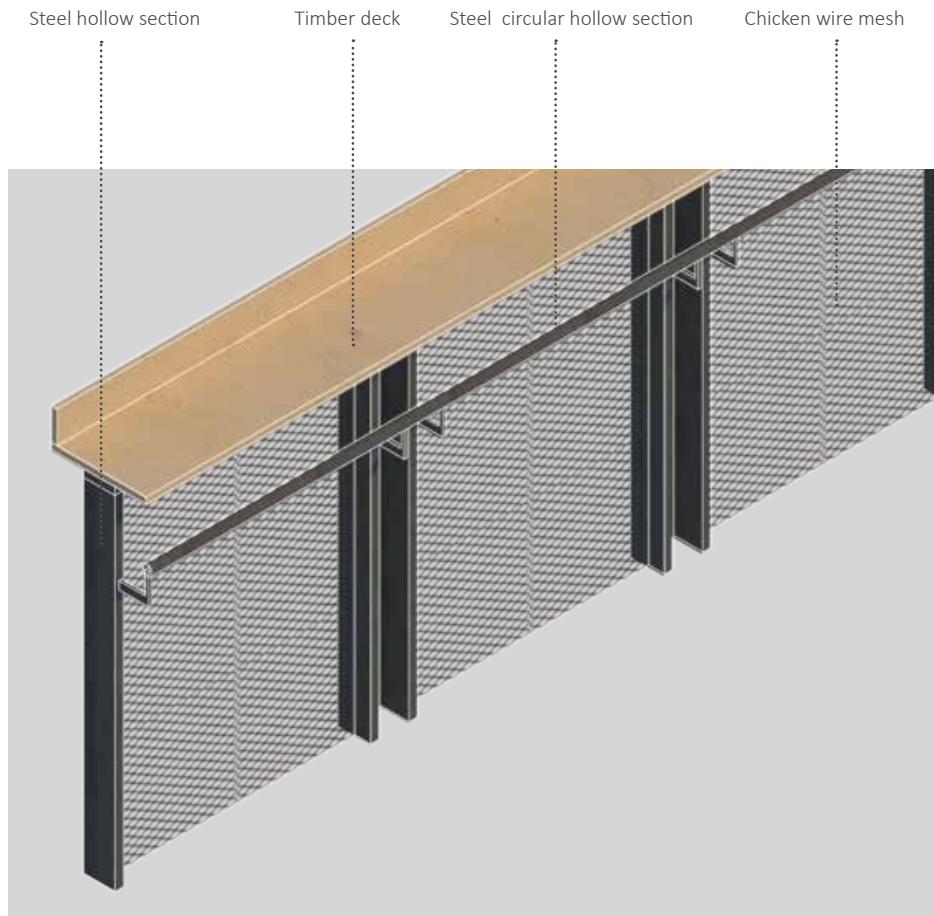
PROTECTION FROM FALLING COLLISION AND IMPACT

The risk of injury in a public crowded building is higher than average. There is a need for sturdy and regulation compliant balustrades.

To break away from the datum of concrete the balustrades are detailed in steel like all other elements in the scheme that connect directly to concrete.

Steel sections are filled with mesh to allow visual permeability.

A timber deck is supported by the balustrade, this deck serves as a table for audiences who may buy refreshments from the concession stands.

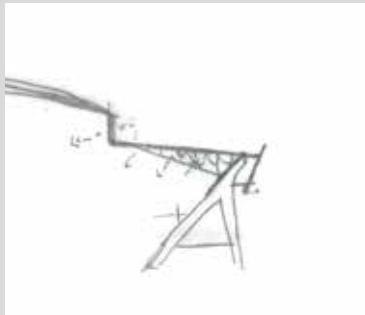


THE PROCESS

PERSONAL REFLECTIONS

I would like to preface this section by saying that the day after the university announced they would be shutting down due to Covid I rushed back home on the last flight out from Heathrow before India closed its borders. As a result much of my initial work and all my models lie in Bath. I was unable to scan all the drawings and did not get time to photograph majority of the models I had made. The few model photos that I do have were dug up from virtual conversations with family. I hope you can take that into account when judging the quality of this section.

PROJECT TIMELINE



WEEK 3 1ST INTERIM REVIEW

A developing plan and structural proposal.



WEEK 6 2ND INTERIM REVIEW

A more refined plan, an idea of materiality and a developing structural methodology.



WEEK 9 TECTONIC REVIEW

A finalised scheme with a nearly complete structural and environmental proposal. Developing detail design proposal.



WEEK 12 FINAL REVIEW

A finalised scheme with small changes to be made.

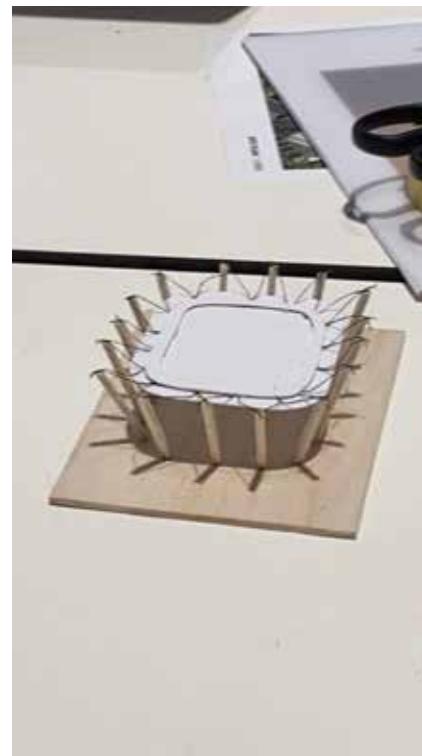
FIRST STEPS

I spent the first week combing through every resource I could find about stadium structures. I had already outlined the architectural principles I was going to try and achieve while writing my brief so I thought I'd dive into the aspect I felt least comfortable in. While deciding my project I has conveniently chosen to ignore the fact that this typology requires a comprehensive and complex marriage of structural and environmental principles. This was the week I questioned my sanity for undertaking this project alone. It didn't take long before it dawned on my why stadium schemes are assigned as group projects. Nevertheless I managed to flesh out some structural principles that carried me through the course of the project.

An early exploration into what bending moments of a roof light look like. It was inconclusive as I made the model terribly.



An early exploration into how I could use tension string to allow my structure to sit outside the thermal line.



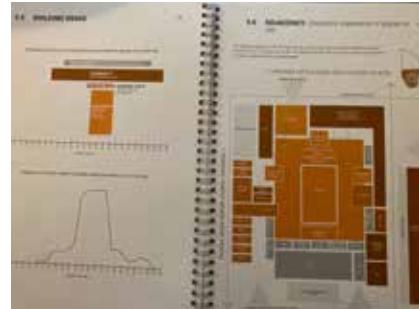
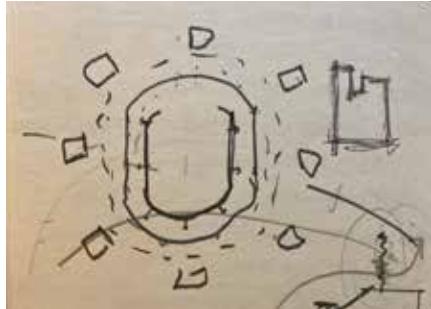
I apologise for the quality of model pictures or lack there of. On the positive side, I get to share one of my revelations during the project: coke is great for mental health, the cans make the perfect lightweight structure to hold up balsa and string tension models.

ADDRESSING THE BRIEF

While writing the brief I challenged myself to what most stadiums do not do, be specifically tailored for the exact context it is located in and be a thriving community centre. I spent considerable time thinking about how exactly I would satisfy these needs. As a particularly inward looking building it becomes difficult to open the building up. Spaces are concentrically organised around each other. I decided that my scheme would be about stripping down the layers of a conventional stadium to the absolute basics to reduce energy demands and to make it significantly more approachable.

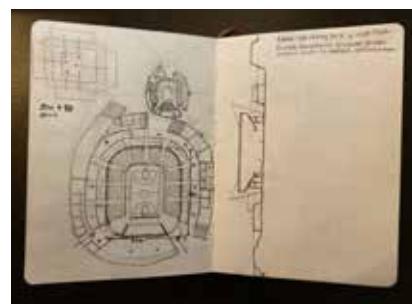
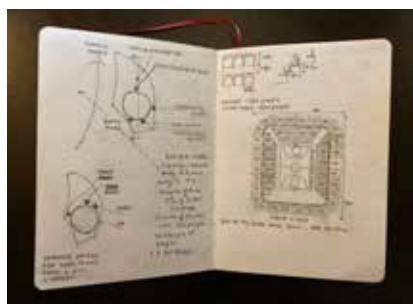
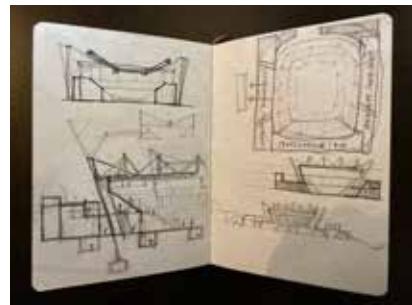
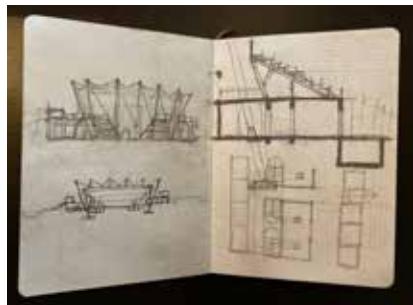
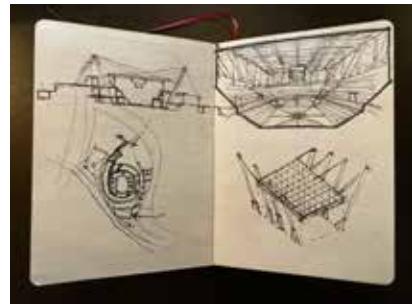
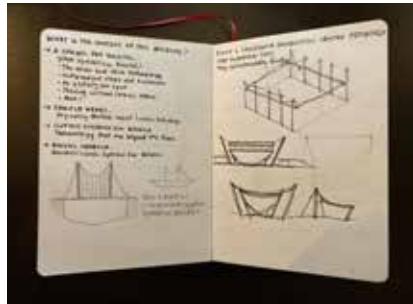
The earliest part diagram that shows how the main space allows users to circulate around it and ancillary spaces support the arena from beyond

A thorough and well research briefing document allowed me to start planning my spaces immediately as all the relationships were outlined along with how they should be concentrically organised on site.



EARLY ITERS

Of course design is an iterative process, the decision to start working out structural principles was so that I could start conceptualising how the building looks. At an early stage I went through various ideas to try and find something that resonated with all my ambitions.



I mainly envisioned the building in section rather than, I wanted to achieve a simple relationship between floors to facilitate easy access. Working in section also helped me think about the structure and stability.

INTERIM REVIEW 1

An open circulation pattern was explored and became the core intention behind the design. I tried to investigate how the context could impact the building



PRODUCED BY AN AUTODESK STUDENT VERSION

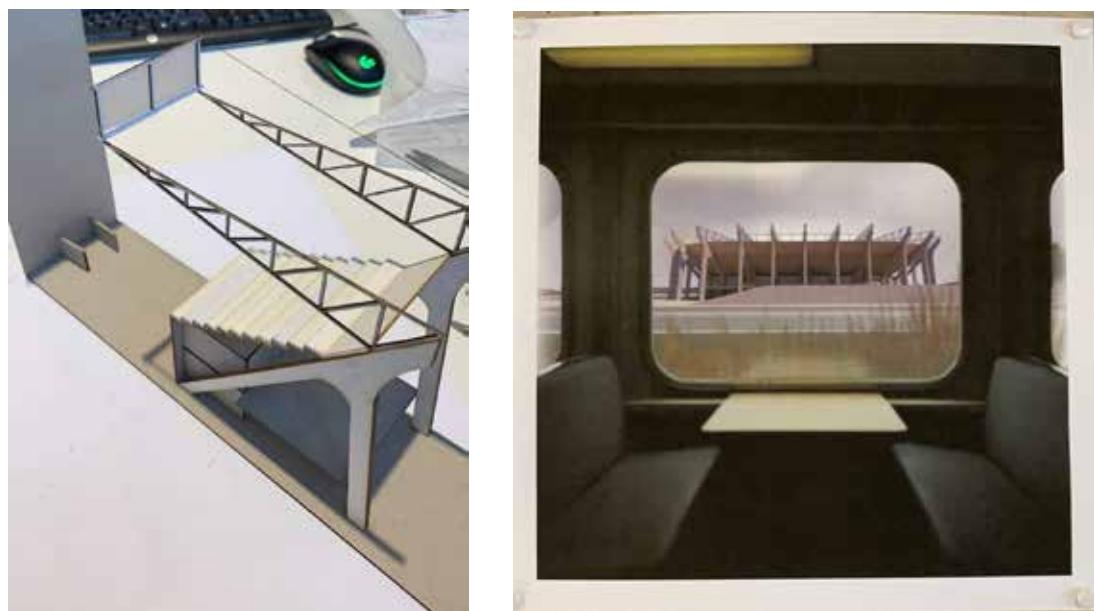


INTERIM REVIEW 2

By the time interim 2 arrived the design had really started to take form I had gone through various iterations of column types to achieve a permeable stadium circulation. After settling on the A column I started trying to refine my plan and the approach to landscaping the site. The plan stemmed from trying to create a building that interacts with its surroundings but there were still changes to be made. By this point I was clear about how I wanted my building to be an expression of the rhythmic structures that stadiums usually posses. Environmental principles were consolidated and everything was moving along apart from the roof structure. I was really struggling with designing a simple and effective strategy.



I needed to further investigate how I was approaching the design for the rest of the site. I needed the landscape to drive utility and value.

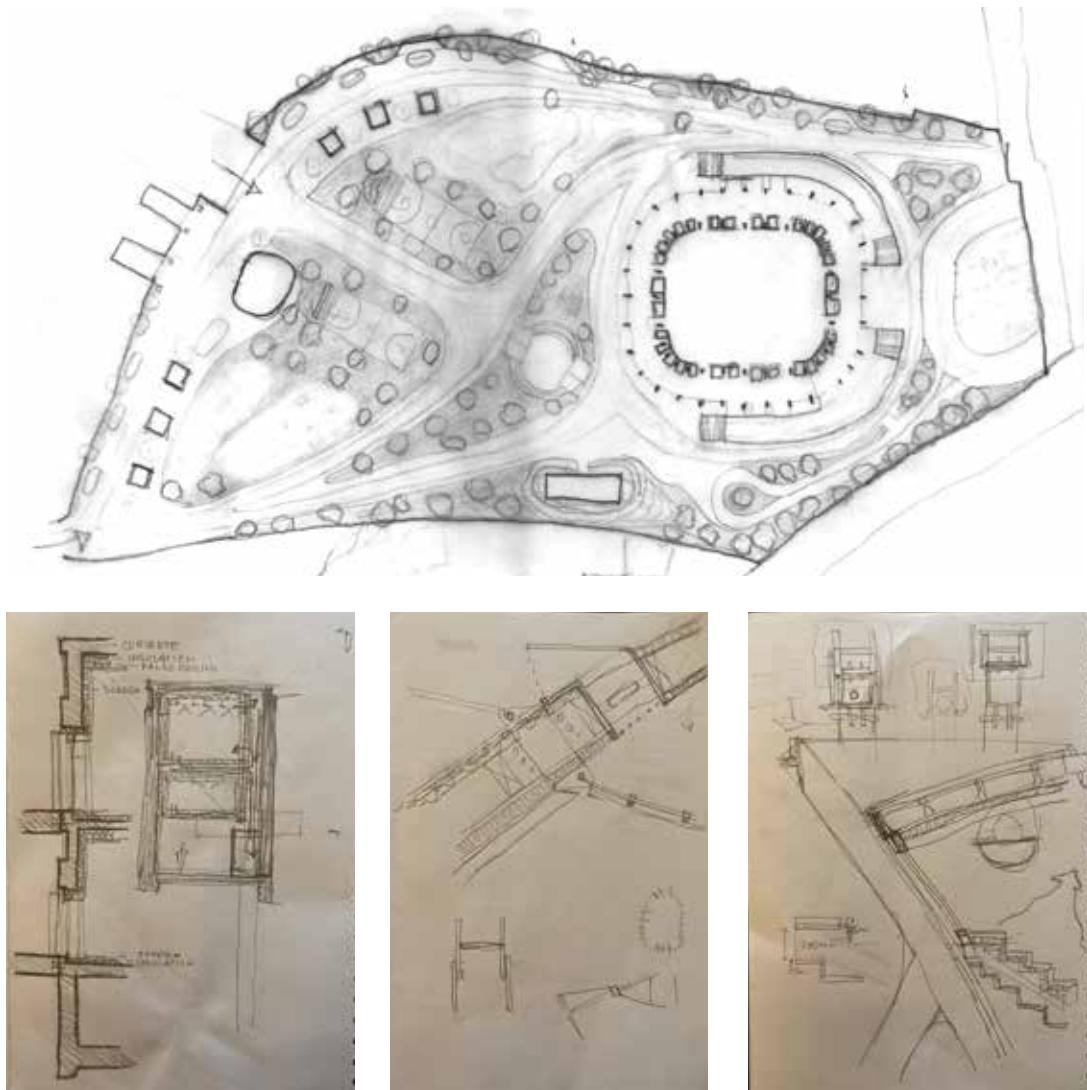


The steel trusses holding up the roofing system seemed inadequate, wasteful and very inelegant..... I needed to step away and relate my roofing system back to my initial ideas.

TECTONIC REVIEW

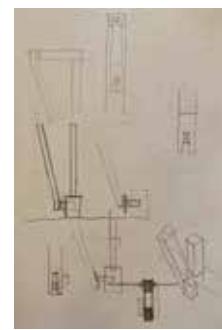
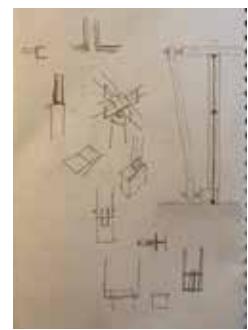
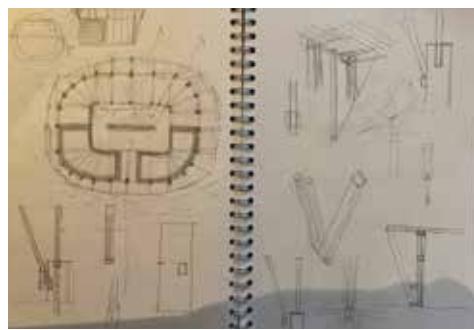
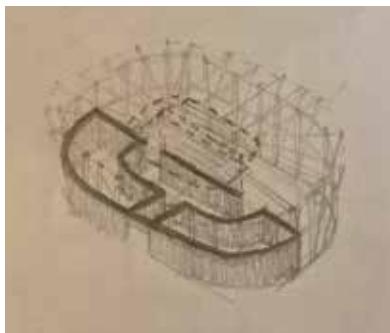
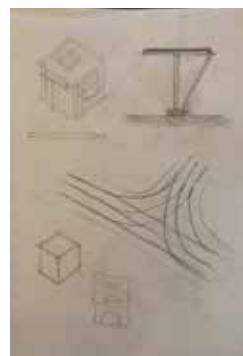
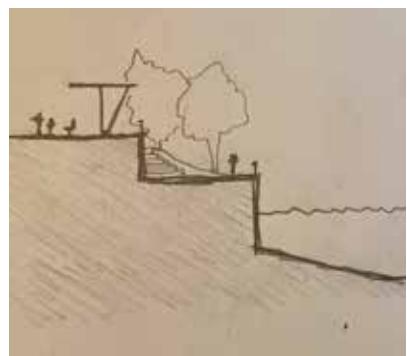
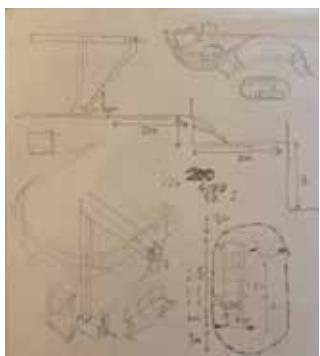
The 3 week period before the tectonic review was probably the most significant part of the project for me. The scene was developed from a nascent idea to a more developed proposal. I finally managed to settle on a structural strategy that I was happy with and the building was starting to come together and tie into the landscape. I would be lying if I said there weren't points in the project where I felt I had bitten off much more than I could chew. I owe it to Mark for keeping me enthused and hopeful.

I guess being stuck at home and having absolutely nothing to do turned out to be beneficial but the studio environment was missed. I was given very helpful feedback by the tutors that helped me question some decisions I had made so I could refine them further.



Thinking about how the building put together helped me relate my structural and environmental principles back to what the core idea of the project is: community.

DESIGNING THE LANDSCAPE



PERSONAL REFLECTION

The end of 6 months of work and 4 years of university is supposed to a time of celebration, it feels strange to be so detached from all of it without the chance to say final goodbye. The past few months have felt like a week and also a year at the same time. My workspace may have migrated some 6000 km east but thanks to Matthew and Mark I never felt a lack of guidance. Through the course of this project I think the most important thing I learnt was the value of a good, productive, fun and appropriate work environment.

Having chosen such a large building with complex design nuances I had my work cut for me right from the start, I always felt like I was two steps behind everyone else. But given the chance I would not do anything differently. By undertaking this design I learnt how to balance the core architectural principles of design, structure and environment in a cohesive sense that I hope will prove the base for the future that lies ahead.