# DAF
ESIGNING FOR ADAPTABLE FUTURES JUNE 1 2012

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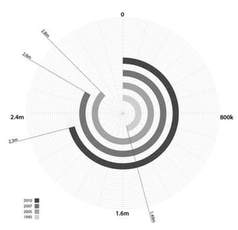
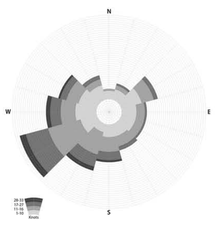
Glasgow has been chosen as the host city for the 2014 Commonwealth Games. This has resulted in significant investment in the city, both with regards to competition venues, and significant additional infrastructure such as athlete accommodation and transport. A major international sporting event such as this provides a significant economic boost to any host city, as well as raising the international profile of the host. Major investment has occurred in order to provide / refurbish sporting venues, suitable of hosting the variety of sports which form the Commonwealth Games.

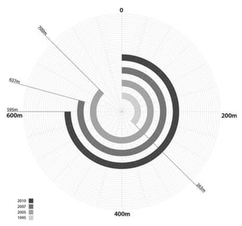
This projects looks at re-imagining the Commonwealth venues, with a focus on post industrial brownfield sites. The project pays close attention to the legacy the Venues will leave behind and its relationship with the surrounding areas through out time.



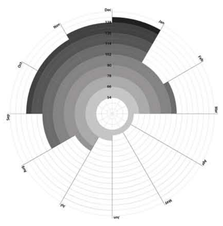
Tourist Visits to Glasgow City



Wind Direction & Typical Speed Frequency (1996-2005)

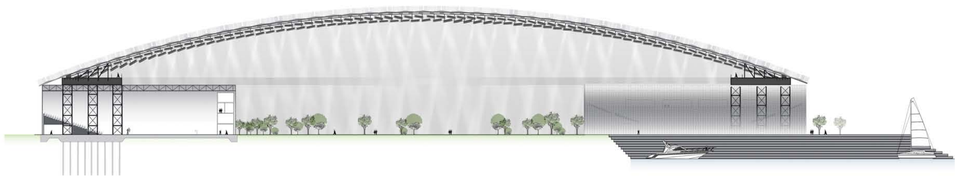


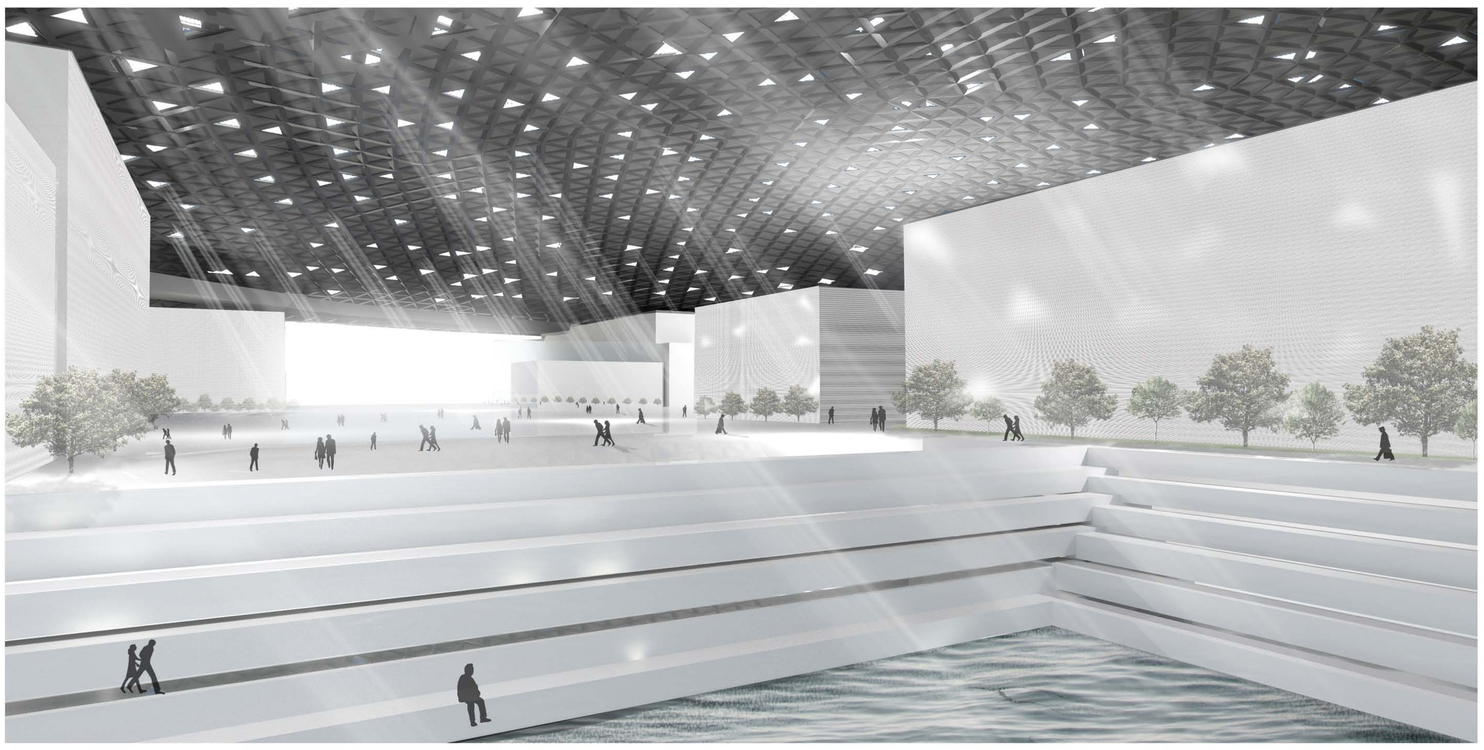
Tourism Revenue Glasgow City



Mean Monthly Rainfall (mm)

The design of the building started by analysing both weather fluctuations through out the year and pedestrian traffic flow to Glasgow from the rest of the world. The results showed a huge potential use for future tourism within the city. It would also boost tourism revenue to the west of the city centre and a potential re development of the harbour area located west of the site. The site is located on the edge of the river Clyde that will be open a number of elements such as wind rain and sun orientation. This too aided tot he development of the design.





The design concept of the project was to address the smaller venues in the commonwealth games, such as fencing and martial arts. Rather than creating a singular space that has to be shared, the project looks at hosing a number of smaller stadiums under a singular roof. This was to bring all the venues under one wing and give the commonwealth games a large internal home which could host public events display local arts and increase the awareness of the games in Glasgow. The gridshell roof structure spans a total of 285m. The gridshell system houses a series of panels on the roof that let light through programmed holes in the roof, this will allow light to enter the underside of the dome. The internal buildings are constructed with prefabricated panels and clad in an aluminium frame and white fibre glass membrane to allow easy deconstruction for future projects after the games.

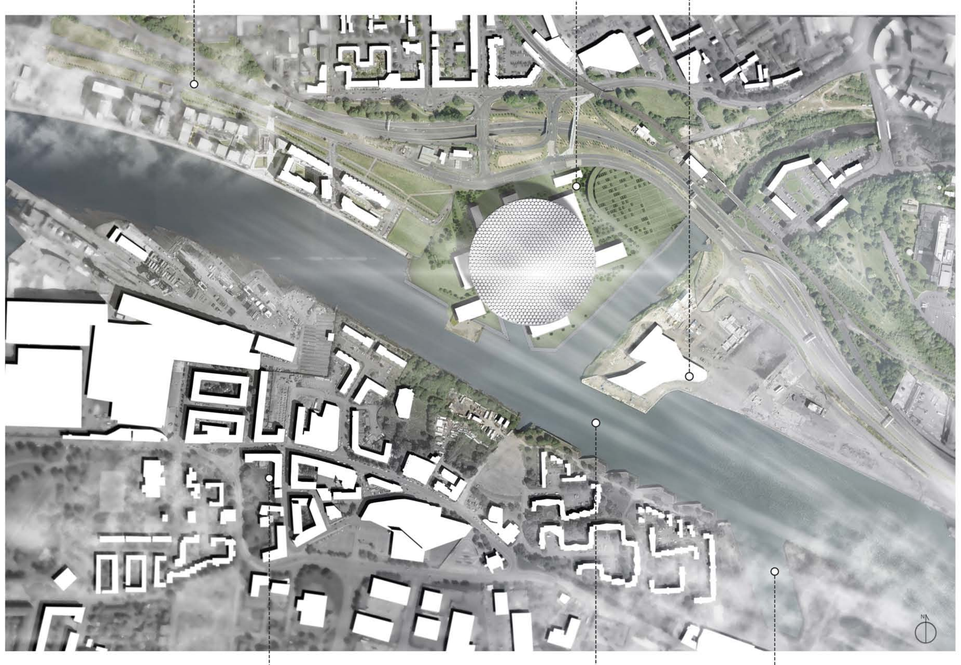
The building will look at harnessing the wind energy to provide the site with electricity. The internal space will provide shelter from the majority of the elements and allow use of the site even in bad weather conditions.

A series of features will be brought to the site including a new dock, car parking areas and increasing green space in the west end of Glasgow that will be accessible to the residents of Govan and Partick.

Partick and Glasgow Harbour, located to the north west of the site. These are areas that are under the interest of redevelopment in the future.

The surrounding areas have little access to green space, parks and communal areas. Opening up the area will encourage community engagement.

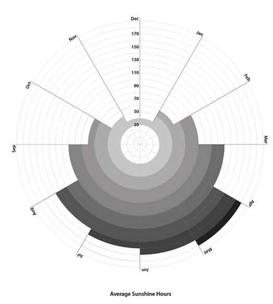
Access to and from the Transport Museum will attract people through out the city. Adding a future educational link to the site.



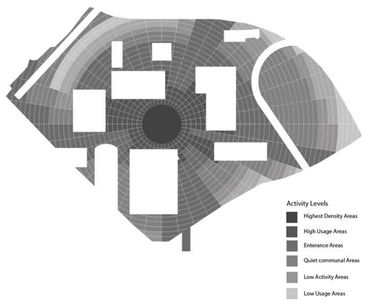
Govan Area situated to the South of the site. A ferry link all ready exists to allow transportation to and from the site. Future Plans would see a more permanent route across the river.

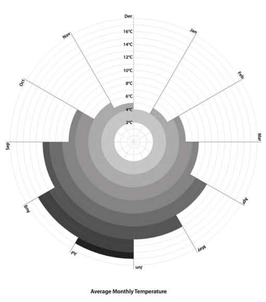
The river Clyde allows water Transportation through the city of Glasgow, this will be utilized to accommodate easy transport links from surrounding areas.

Glasgow's History is rich in Naval architecture, located to the south east are a series of dry docks that use to house ship construction.



Average Sunshine Hours



Average Monthly Temperature

External buildings are located in the north west of the site to accommodate service supplies to the site and area such as wood chip boilers.

External spaces and unfinished spaces around the edge of the site can be used for a magnitude of different things to accommodate the use of the site.

Main Entrance way leads directly from the underground station, this path will be wider to accommodate a larger flow of traffic in and out of the site.

A listed Building all ready occupies the entrance of the site. This building will be used for administration space to the site.

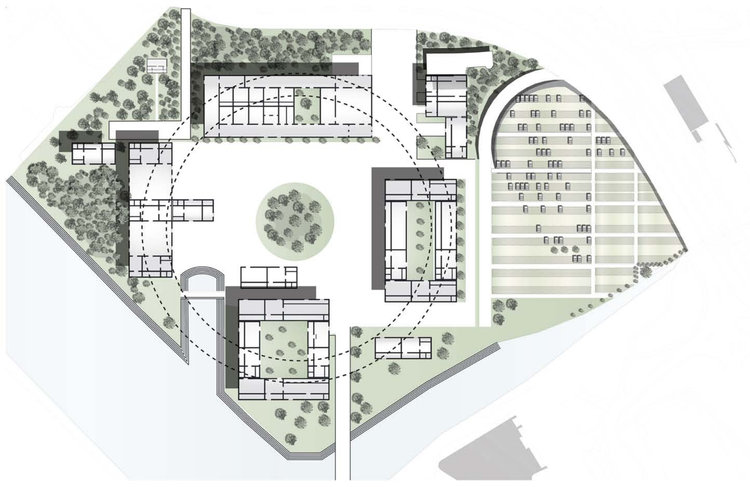
The site will be home to adaptable car parking areas that can be changed for demand; the road swings round away from the buildings into a secluded section by the river.

With accommodation to the games and to make use of the river Clyde. An additional platform has been added to allow for boat and water sports during the games.

An additional Dock has been brought into the site to accommodate water traffic for the games and future use for boat building after the games.

A large central court yard will house a spill out zone to the surrounding buildings and allow for a social area to house arts, performances and landscaping changes.

Access to the site from the Glasgow Transport Museum will span across the Kelvin to allow access to and from the site and build a relationship between the two buildings.

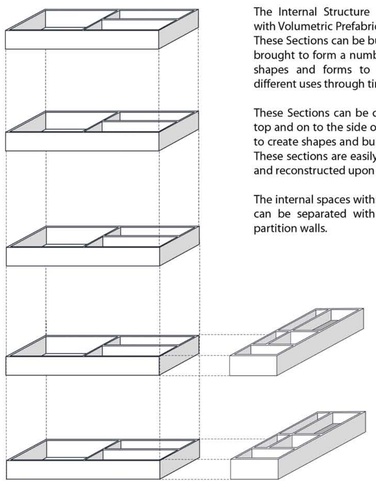


The sites legacy is open to any development that meets the requirements similar to the commonwealth games. The design statement was to house a number of venues under one roof.

In the example seen on the left the site has been developed for the merging of three of Glasgow's colleges. This development will transgress in the next couple of years and the city is currently trying to find a location to house the colleges. The size of the site would make very open campus for the college and the dock and transport museum would allow integration to a number of courses. Based on its location it would also be a huge push to develop the surrounding areas and bring people to the west of Glasgow.

The College would be built up out of a number of smaller buildings to house the three different colleges.

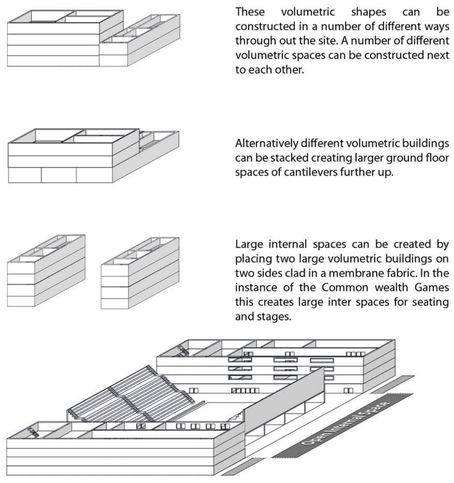
The site would still promote green space in the west of Glasgow.



The Internal Structure is constructed with Volumetric Prefabricated sections. These Sections can be built off site and brought to form a number of different shapes and forms to accommodate different uses through time.

These Sections can be constructed on top and on to the side of the buildings to create shapes and building features. These sections are easily demountable and reconstructed upon demand.

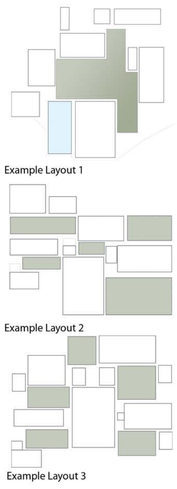
The internal spaces within the volumes can be separated with demountable partition walls.




These volumetric shapes can be constructed in a number of different ways through out the site. A number of different volumetric spaces can be constructed next to each other.

Alternatively different volumetric buildings can be stacked creating larger ground floor spaces of cantilevers further up.

Large internal spaces can be created by placing two large volumetric buildings on two sides clad in a membrane fabric. In the instance of the Common wealth Games this creates large inter spaces for seating and stages.

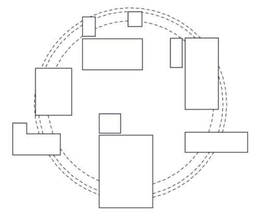

Example Layout 1

Example Layout 2

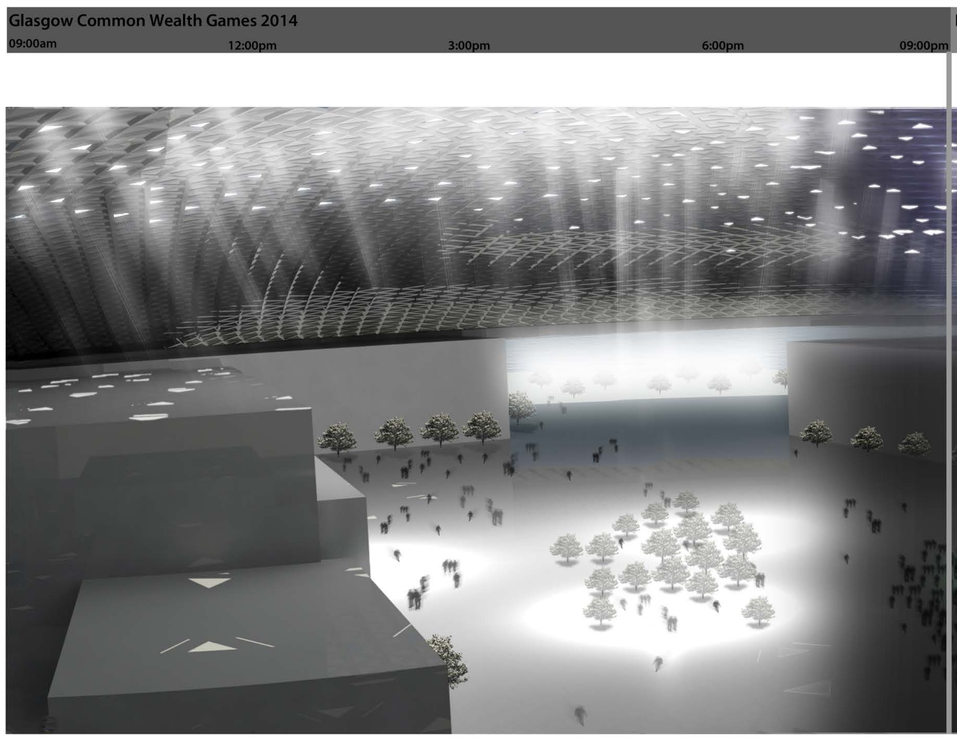
Example Layout 3

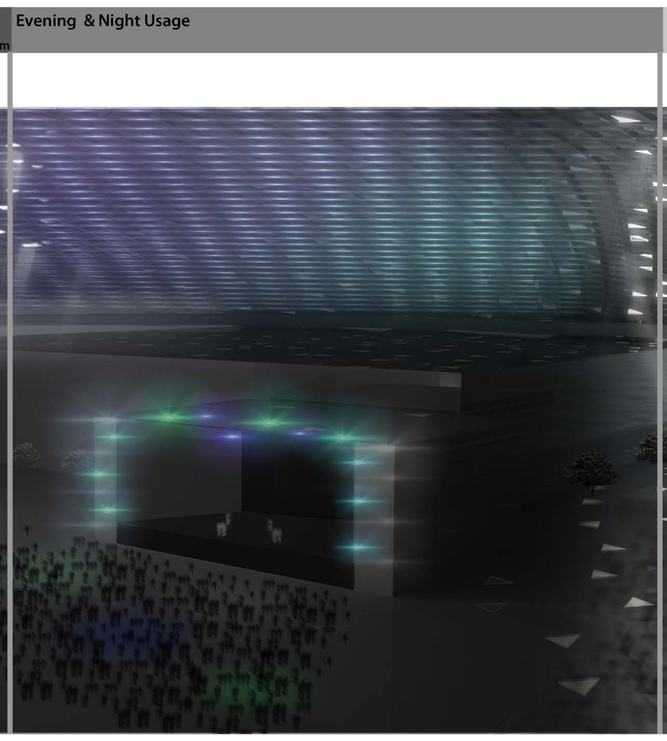
The relationship of the internal spaces has been configured to enhance the relationships of the internal buildings. In the example of the commonwealth layout the design concept was to unify the the smaller sports and provide a central communal space for all the stadiums to share. Once exiting an event the spectators will all exit to the central court yard to once again join the rest of the buildings.

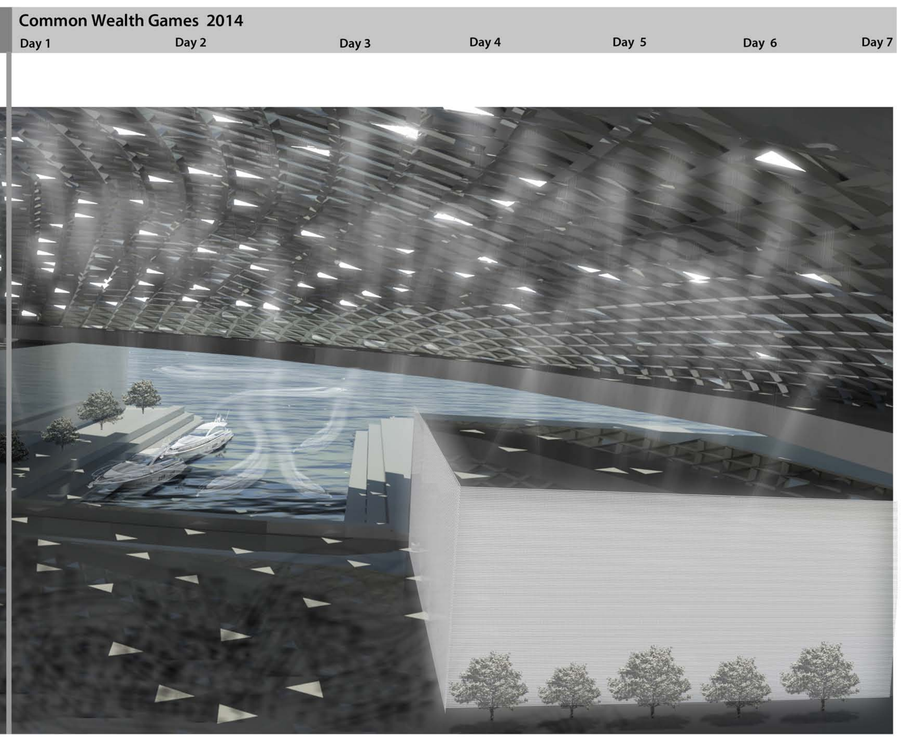
This design is complimented by the roof structure. The dome shape enhances space in the centre of the site by reaching its peak height. Bringing the roof down to shallower ends at the entrances and exits.



Based on the structural quality of the roof the only restrictions to the buildings is that they do not interfere with the buildings supports scattered across 7 different parts of the site.



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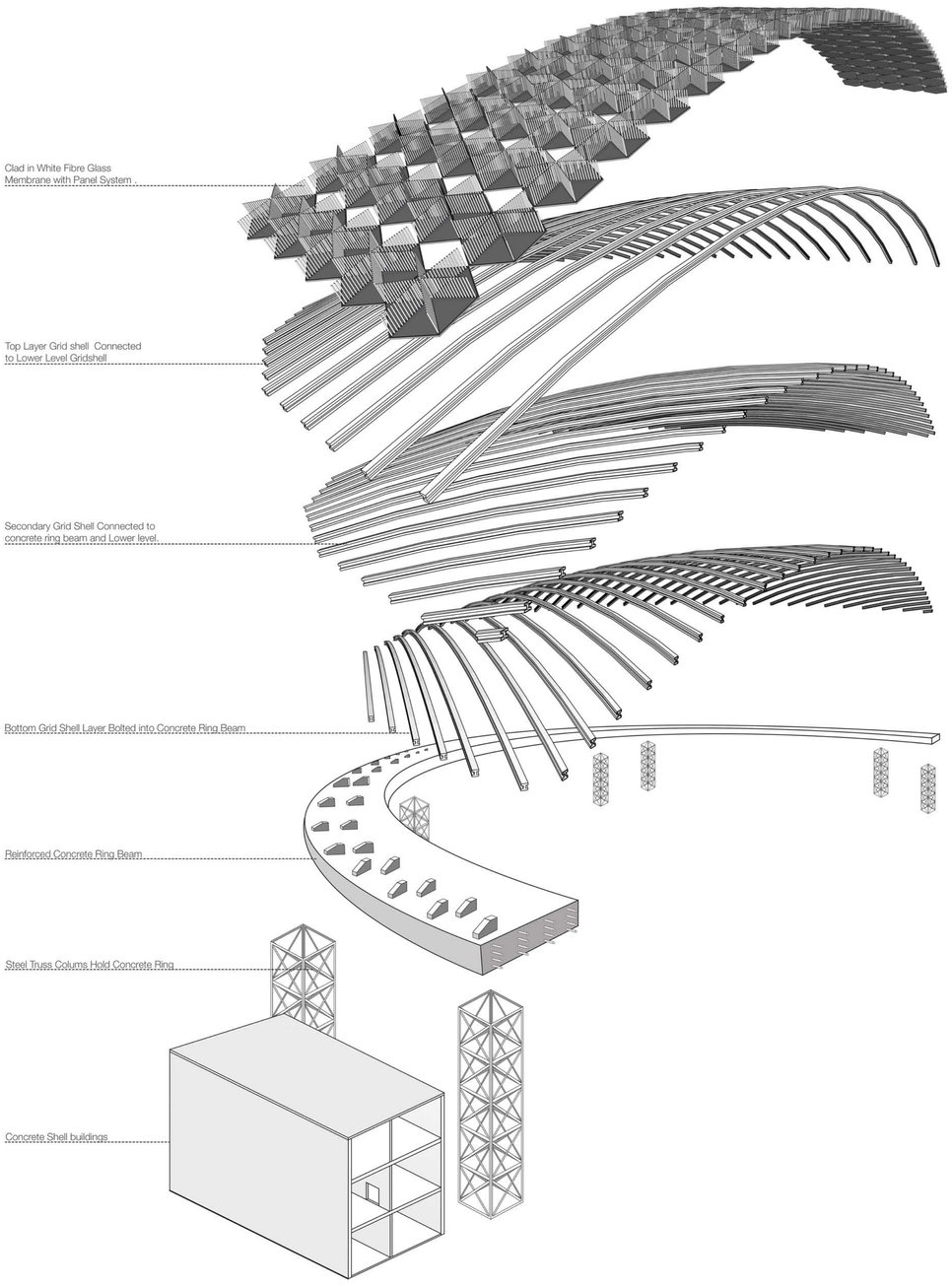
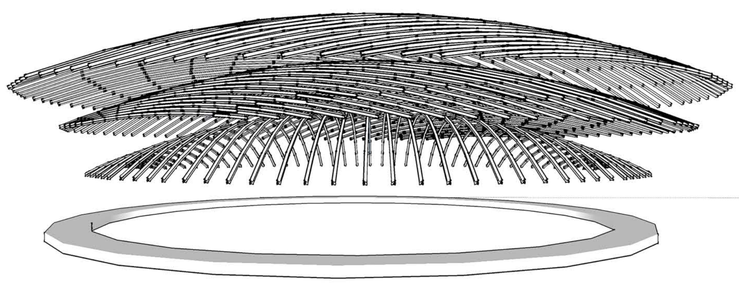
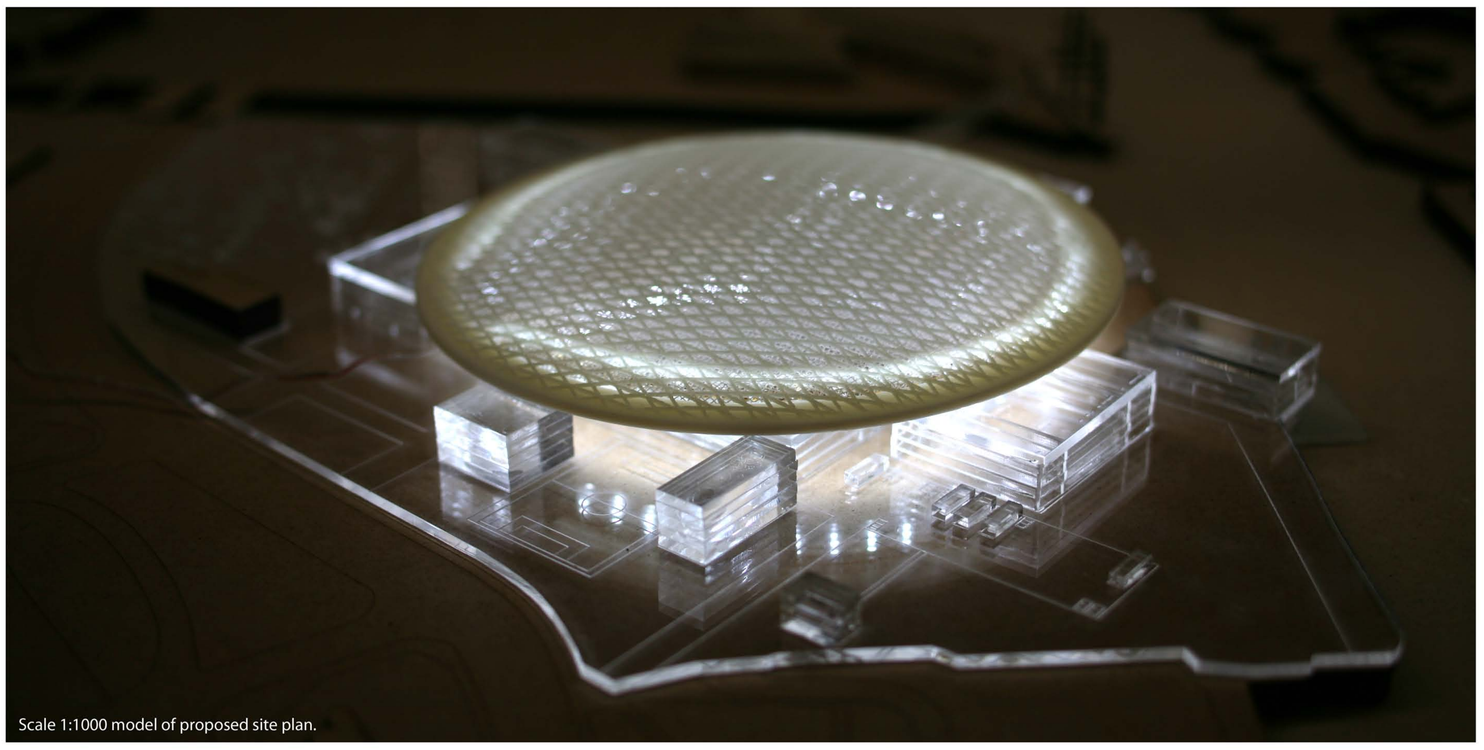
The entire site is covered in a three-layered Gris shell dome that will house the different buildings and events on the site. This Grid shell will sit on top of a large reinforced concrete ring beam that will be supported15m off the ground using a series of steel columns. The span and the weight of the dome at the centre point is distributed through steel connectors of the grid shell and diminish into the concrete shell.
This covering is a permanent feature of the site and will allow for many activities to inhabit the internal space underneath it. Its hugely open space under the dome will encourage the local community to walk freely around and under the super structure. The specific shape will set a landmark in Glasgow and create a sense of identity for not only the commonwealth games but also future events and occupancy in the decades to come.

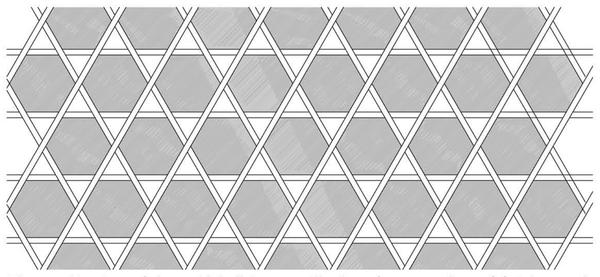
Below Illustrates an isometric break up of the primary structure:



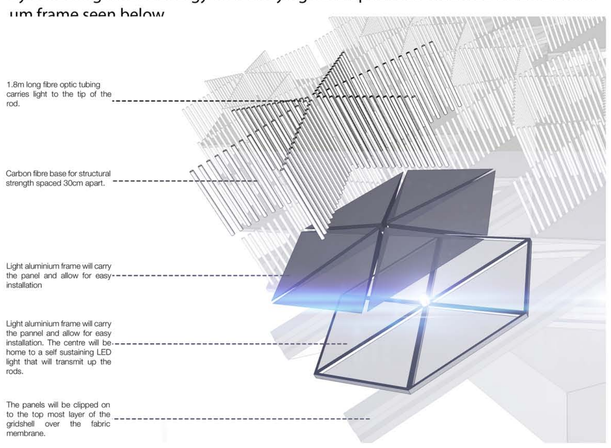

The raised roof will allow a constant ventilation under the dome with out opening it up to the elements Over time this dome will be a high attraction to the west end of Glasgow and allow local areas around the site a place to meet and socialise.

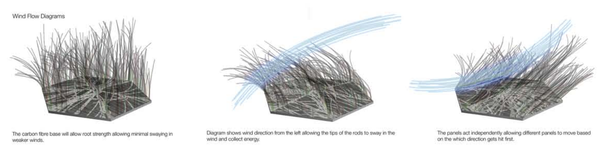


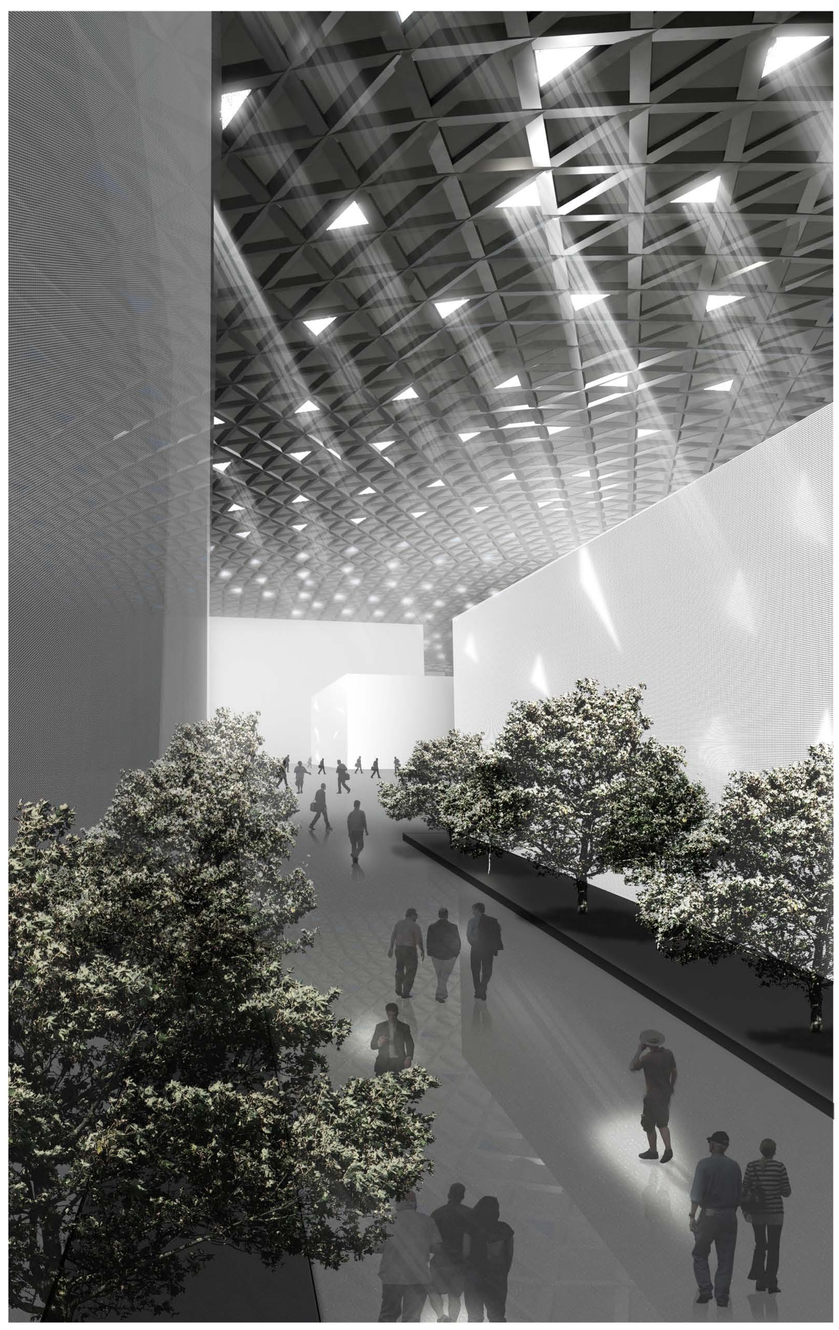

Scale 1:1000 model of proposed site plan.

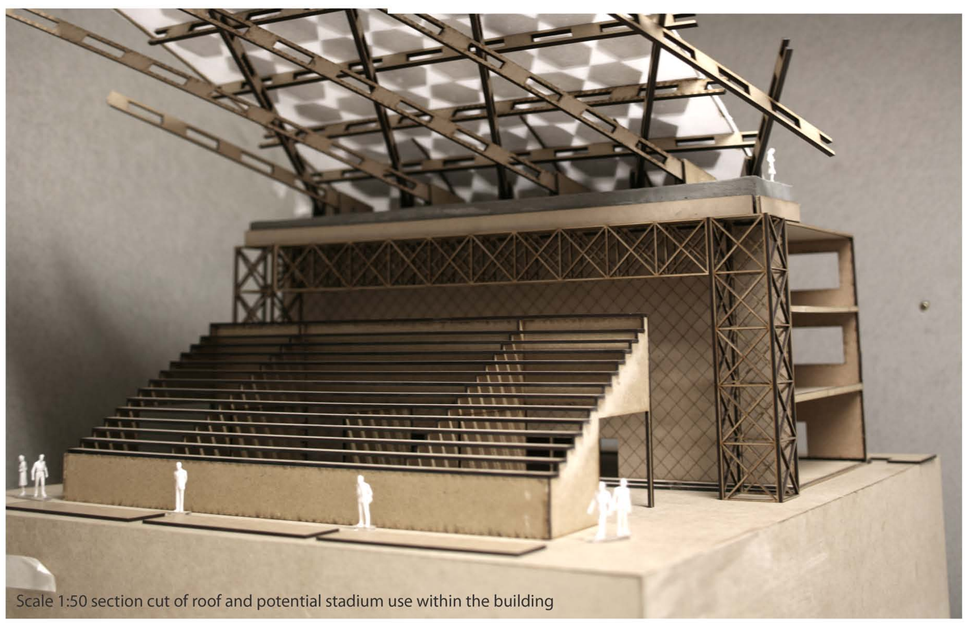


The positioning of the gridshell layers will allow for a number of finishes to be added to the roof. A white fibreglass membrane will protect the inside for weather effects like rain and snow but additional panels can be added atop of the roof to generate energy from the wind to power internal uses for the site. This will be done by collecting kinetic energy with swaying fibre optic rods mounted on an aluminium frame seen below.




Scale 1:50 section cut of roof and potential stadium use within the building


Roof build up with fibre optic roof panels mounted on the roof.

**Glasgow Common Wealth Games 2014** | **Glasgow College Merger 2024** | **Glasgow Harbour Park 2050**