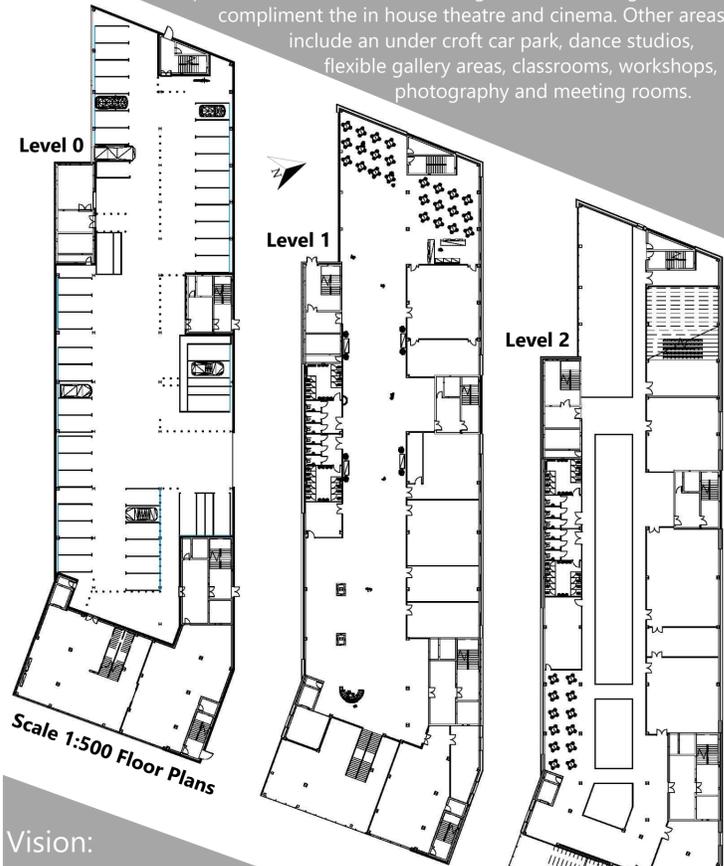


Cardiff Bay Arts Centre

By Joe Smithers

The proposed Arts Centre is on a prime un-occupied site at Cardiff Bay. Bounded by Roath Basin to the east and the bay to the west, the site is centrally located between the Senedd buildings, Assembly Square and Atradius building. The location boasts incredible transport links with a nearby train station, multiple bus stops, cycle links and pedestrian access.

The construction of this arts centre will create a variety of publicly accessible spaces. There will be available commercial space on the ground floor along with multiple food and drink outlets throughout the building to compliment the in house theatre and cinema. Other areas include an under croft car park, dance studios, flexible gallery areas, classrooms, workshops, photography and meeting rooms.



Vision:

The aim of this project is to construct a low environmental impact, multi-functional building for the performing arts sector. The main materials selected as part of construction were chosen to limit the environmental impact of the building. The biggest aspect in procurement of materials was recyclability. Materials that could not be used again at end of life were limited to necessity. The primary components of construction are 100% recyclable or reusable. The zinc cladding on the exterior is 100% recyclable, as is the steel frame and fixing systems for the zinc. Aluminium was another metal used in copings and windows due to its recyclability. Concrete can be recycled at end of life and brickwork can be reused. All timber products were sourced from FSC certified sustainable sources. The finishes chosen suit the surrounding context of the site and landscape. The reflective aspect of the crystal zinc mimics the reflectivity of the sea. The graphite zinc was chosen to provide a stark contrast to this, whilst keeping a sophisticated look. Zinc was chosen as the exterior material due to its natural protection in marine environments, making itself indispensable.

Balcony/ Southern Elevation



Atrium



Eastern Entrance

Materials:

Materials in this project were carefully chosen to minimise the environmental impact in the construction of this building

elZinc Crystal

elZinc Graphite

Butterley Blue Rustic Brick

Knauf RocksilK Insulation

Bauder Bio-Solar Green Roof

NORclad British Larch Cladding

PURe Aluminium Windows

Steel Frame, Decks and Fixings

Sika Comfortfloor



Map View



Eastern Entrance Interior



Northern Elevation





Aerial Site Plan



Scan Me

Site:

The site lies just outside the Cardiff Pierhead Conservation Area freeing it from additional restrictions.

The development on site has been in such a way as to limit the environmental impact. The hard landscaping is formed by Marshalls Driveline Piora permeable paving blocks. This allows rainwater to pass through the paving, reducing the risk of surface water and potential flooding.

The roof features a Bauder Bio-Solar green roof system. This enables site ecology to remain the same due to the introduction of local wildflower on the roof. The green roof fits with the project vision of preservation and sustainability. The roof helps with sound absorption meaning potential exhibitions will not be disturbed.

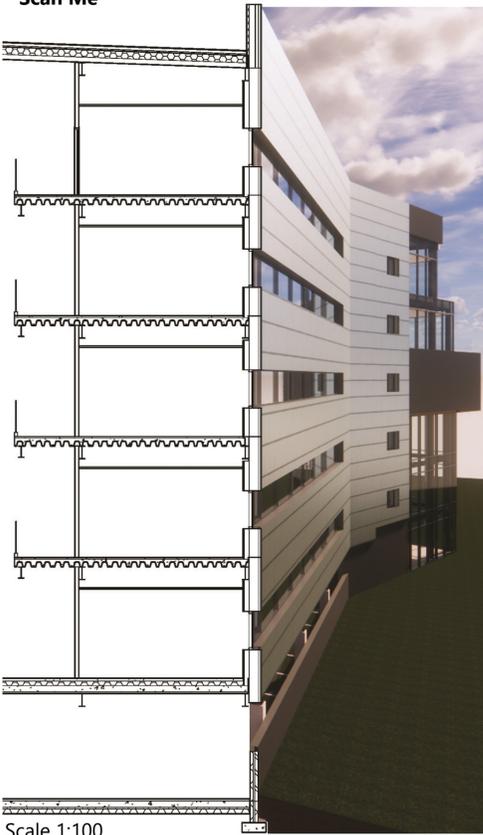
The site has access already constructed to at both east and west entrances. The east entrance will be the primary use for vehicles into the car park whereas the western entrance is for pedestrian access having been landscaped in this way. A central path will be the primary access, but a z-shaped ramp is provided allowing accessible access in line with BS 8300:2001.

The site features a rooftop PV array that could potentially generate 58,000KWh/year feeding its electricity into the building.

Rooftop windows allow light to flood into the atrium space providing the building with necessary natural light.



Landscaped Garden and Pavilion



Scale 1:100

Environmental Strategy

The environmental strategy of the performing arts centre consists of two elements: recyclability and renewability.

Recyclability:

All of the zinc cladding is 100% recyclable. All aluminium fixtures, copings, windows etc are also 100% recyclable, this is why it is preferential to uPVC. The primary steel frame is reusable and/or recyclable as steel retains all strength during its melting process. A light steel frame infill system was chosen due to its recyclability content.

Renewability:

The building uses various systems renewable systems.

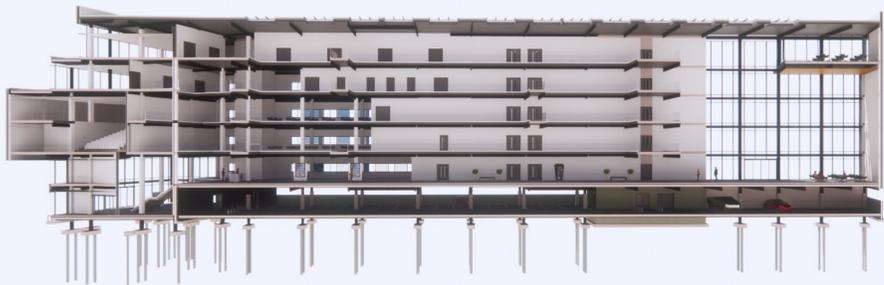
- Rooftop PV Array
- Battery Storage
- Combined Heat and Power Commercial Boiler
- Heating, Ventilation and Air Conditioning with Heat Recovery
- Waste Water Heat Recovery
- Intelligent Building Energy Management System (BEMS) to reduce energy consumption and maintain a healthy interior climate
- Highly insulated walls, floors and roofs, combined with air tightness results in less demand on heating and cooling



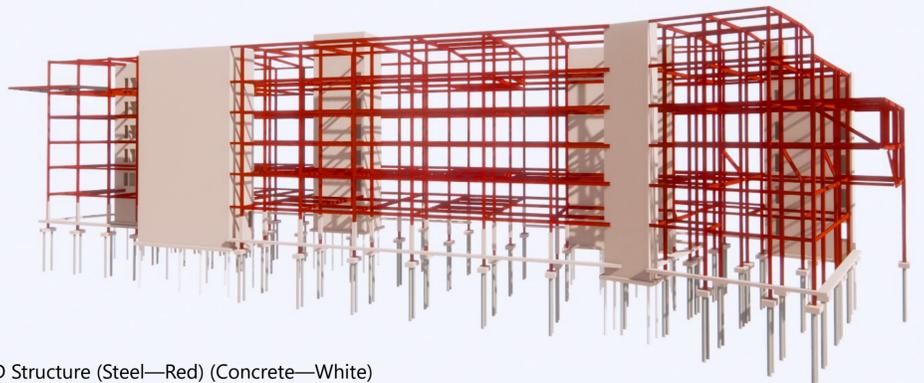
3D Wall Reveal

Primary Wall Build Up:

- eZinc Crystal Standing Seam SFS Wall (EXT1) Achieves 0.14 W/m²K
- eZinc Crystal - 0.8mm Thickness (Double Lock Standing Seam Horizontal 25mm profile)
- DuPont Tyvek Metal Underlay Membrane
- 38mm Euroclad 38/914 Reverse Trapezoidal Profiled Steel Fixing deck
- 50mm Air / Ventilation Cavity
- DuPont Tyvek FireCurb Breather Membrane
- 290mm Knauf Rocksilk RainScreen Slab (1x200mm+1x90mm lapped joints)
- 12.5mm - Siniat Weather Defence
- SFS Metal Stud 150mm (infill of 150mm Knauf OmniFit Roll 34)
- DuPont AirGuard Vapour Control Membrane
- 25mm Service cavity
- 15mm Gyproc DuraLine Plasterboard



3D Atrium Section



3D Structure (Steel—Red) (Concrete—White)



Garden Entrance (SW)



East Entrance Close-Up