

Cricklepit Mill, Exeter



Building Summary

Central to the project was the upgrading and refurbishing of the historic Grade II listed mill building – Cricklepit Mill. This is an existing industrial building on a brownfield site close to the centre of Exeter. A new extension building provides an excellent example of sustainable construction. Its central urban location is easy to reach by public transport, making it a very visible demonstration of sustainable construction techniques.

Devon Wildlife Trust propose to create an exemplar urban wildlife garden. This will encourage biodiversity and ecologically valuable habitats and will be used as an education resource for local schools as well as the public.

Client: Devon Wildlife Trust (DWT)

Funders: DWT, Exeter City Council, SW Regional Development Agency (RDA), Exeter Canal and Quay Trust, Exeter Historic Buildings Trust, plus multiple charitable trusts, private and corporate individuals

Architect: Gillespie Yunnie, Dartington

Structural engineers: Fenton Holloway, Bristol

Mechanical & Electrical Engineers: BJP, Bath

Quantity Surveyors: Gardiner Theobald

Contractor: Dean and Dyball Construction



Photos: Devon Wildlife Trust

Climate Change Adaptation measures

- *Sedum Roof* – This will reduce the amount of rain water run-off from the roof and contribute to local ecology and wildlife
- *Timber Superstructure and Cladding* - the majority of the extension building is constructed out of timber, ensuring that the embodied energy content of the materials are kept to a minimum. The exterior cladding is in cedar boarding and the main superstructure is formed out of columns of glulam – glued laminated timber which allows construction in shapes not possible with other materials
- *Natural Lighting* - The main façade to the extension is characterised by its large glazed picture-frame opening which provides glazing to the whole of the first floor's south facing elevation and to more than two thirds of the ground floor office
- *Solar Shading* - Day lighting levels to the new office areas will be controlled by external louvres which can be adjusted to multiple locations to ensure overheating from the sun is avoided whilst natural day lighting levels are maintained
- *Insulation* - The use of timber frame construction has allowed for additional insulation to be inserted within the overall thickness of the walls. The typical U value of the exterior walls to the extension are below 0.25 W/m²K - a 30% improvement on the building regulations under which the application was made. To the roof and the floor the construction U values also exceed the requirements of more than 10%
- *Internal Finishes* – Local materials are sourced where possible. The design incorporated Welsh Slate flooring; natural goats hair carpets; timber panelling to walls and low Volatile Organic Compound (VOC) paints
- *Water Usage* - All sanitary units specified use less water than an equivalent standard fitting. In addition a leat water harvesting system will provide untreated water to the toilets within the building and significantly reduce the usage of treated water within the building

Benefits of adapting

- Natural lighting and insulation increases energy efficiency
- Leat water harvesting reduces water use
- Solar shading protects from the heat of the sun, creating a better internal environment
- The Sedum roof helps to absorb rainwater reducing run-off and flood risk
- Provides an excellent example of sustainable building methods in a visible and publicly accessible building
- Reuse of an existing building reduces embodied energy

Overcoming barriers to implementation

- The site was complex to develop with archaeology and listed buildings to consider; contaminated and unstable ground with multiple water courses. Wildlife preservation was of course an important consideration.
- Site assembly comprised 4 different transfers of ownership and four party wall agreements.
- Construction costs exceeded end use value but the project was viewed as part of an urban regeneration programme – although ultimately not funded as such.
- Construction issues focussed around the tightness of the overall site, working conditions close to a water course, preserving as much as possible of the original structure and working with a Millwright during the construction period who was restoring the water wheels at the same time.
- Obtaining all the relevant consents and conditions was very time consuming.
- Building Research Establishment Environmental Assessment Method (BREEAM) process failed to recognise the environmental benefits of the project.



Additional Features

- *Water Wheels* - The project has also incorporated the restoration of two water wheels and associated milling machinery. These wheels will form a key part of the exhibition and interpretation provided by Devon Wildlife Trust - the plan is to insert an hydro-electric turbine adjacent to these wheels which will generate most of the buildings electricity.

Contact:

Charlie Taylor, Acting Deputy Director of Programmes, Devon Wildlife Trust
ctaylor@devonwildlifetrust.org

Relevant links: www.devonwildlifetrust.org