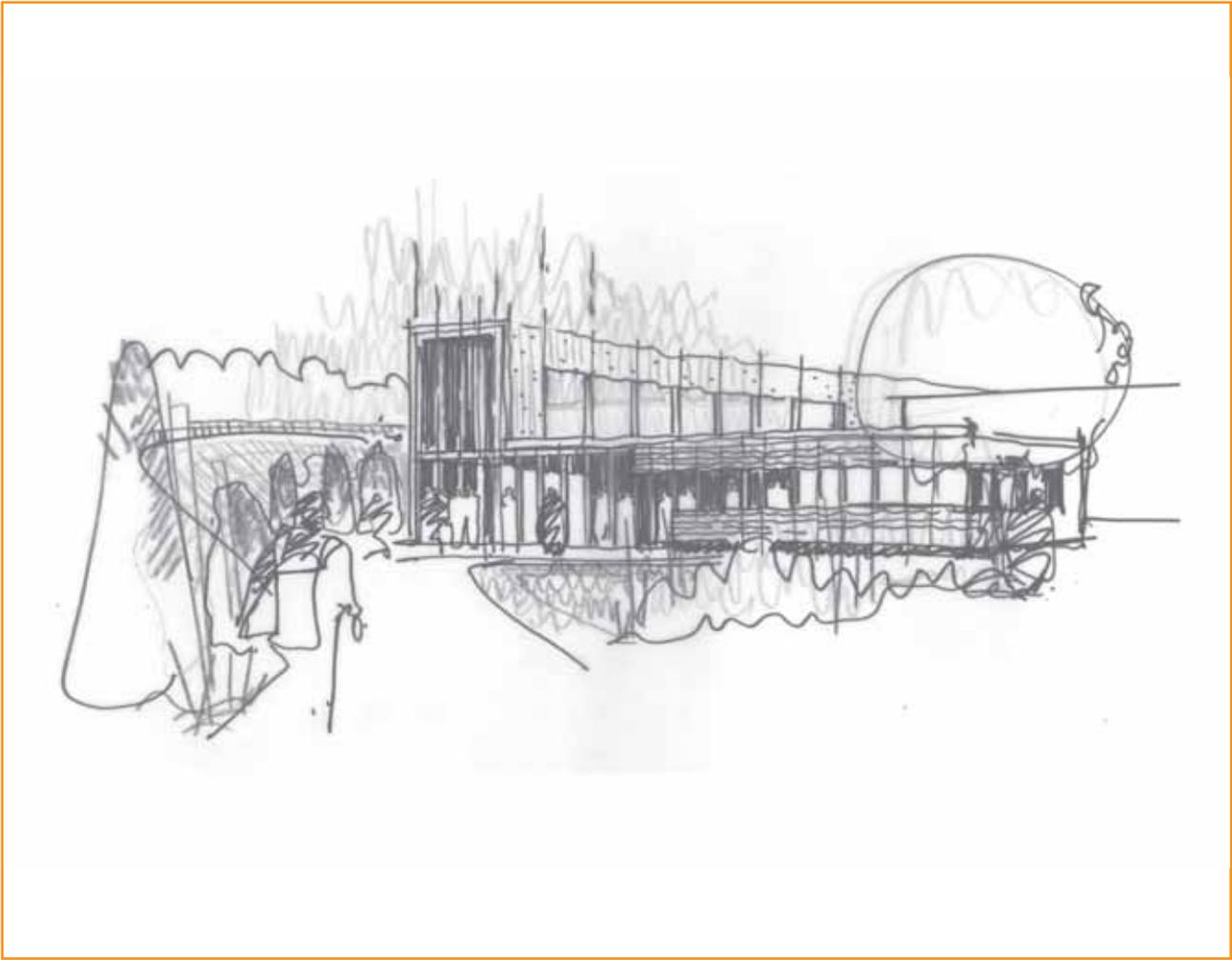


MATERIAL
CONSIDERATIONS
A NATURAL FACTORY

01

CASE STUDY
ECOSPACE







With thanks to RMJM for photography.

Timber Technologies

The timber frame is made from a combination of Green Douglas fir, glu-laminated Douglas fir beams, and steel connections and bracing.

While the brief outlined using as much locally sourced timber as possible, the result has shown the limits of availability of larger oak timbers in Scotland.

Although Douglas fir was used for the columns, the beams are made of glu-laminated sections, all exposed in each of the workshops. The dust-sucking ducts, which clear the air in the workshops of sawdust and other wood waste, are also partially exposed.

Given that all the timberwork is visible there was little or no room for error, with both timber and carpentry needing to be completely accurate. When the trusses were crane-lowered in, each beam slid in, inch for inch. In this instance, form quite definitely follows function.

Special timber-related features

Externally, Green oak cladding is used vertically in the centre, and horizontally to the side of the build. The oak had to be sourced from England, and even France, due to a shortfall of Scottish Green oak. The cladding will remain untreated apart from a non-toxic fire-retardant coat. Inside the building, OSB joins the walls to the columns. The architects describe the detailing as 'simple and honest', expressing the building at every turn. The beams, columns and walls are all clearly visible, so that the detailing is accessible to anyone visiting, and more immediately relevant to those working in the workshops.

CASE STUDY

ECOSPACE

Name of building

ECOSpace, Carnegie College

Date completed

2006

Building type

Education

Location

Dunfermline, Fife

Architect

RMJM

Client

Carnegie College

Main contractor / timber supplier

Muir Construction
Carpenter Oak & Woodland

Anticipated lifespan of building

50 years plus

Background to building

ECOSpace is a state-of-the-art sustainable development centre. It is based at Carnegie College which received 'Excellent' BREEAM ratings. The centre provides a functional, flexible and accessible learning environment where students can investigate and explore the sustainability features of the building and apply this to their own learning context.

ECOSpace has been built using sustainable materials, green processes and technologies, showcasing the best use of Scottish products. This is especially important as many of the users and students will be the timber technicians of the future. The building has a sedum roof, which demonstrates the cost-effectiveness of construction using natural resources, and their positive impact upon air quality.

Major components of the centre are made from renewable sources, such as the structural timber frame, timber wall cladding, breathing wall technology and the green roof system. The latter will reinstate displaced flora and fauna, as well as subtly blending the roof-scape with the adjacent landscape. Careful positioning of windows maximises natural light and ventilation.

These features have been tested using dynamic thermal modelling and daylight simulation to evaluate and optimise internal comfort conditions and energy performance. Renewable energy systems have been incorporated to reduce air pollution, making the building both sustainable and economical to run.

Material Considerations

A Natural Factory

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