MATERIAL CONSIDERATIONS
A NATURAL FACTORY

CASE STUDY
THE PASSIVE HOUSE
Timber technologies
The Passive House units utilise a locally manufactured PassiveWall™ timber frame closed panel system, ensuring a high standard of construction quality and accuracy, while providing extremely low U-values and high levels of air tightness. The panels are made from home grown Scottish timber with an insulated core of recycled glass wool made from 80% recycled glass bottles.

The external panels are pre-wrapped with a thermal foil membrane and internally with a pre-fitted thermal vapour barrier which provides the main air tight seal and an extremely high level of air tightness.

The external units are clad in locally sourced Scottish larch timber sourced within 60 miles of the site, broken by continuous vertical reveal boards and vertical square edged boards with cover battens to the rear elevation. The cladding is left untreated to weather naturally to a silver grey colour, thus embedding the buildings within the landscape.

Locally sourced FSC timber was also specified for the cladding battens externally, for battens to form service gaps to the inside of the external walls and other sundry works such as skirtings, cills, door posts and door facings.

Special timber-related features
The terrace has achieved an 80% reduction in energy by using a locally manufactured off-site prefabricated closed panel system and high performance windows to provide a super-insulated airtight building fabric.

Ventilation heat losses are massively reduced whilst ensuring excellent thermal comfort internally.

A balanced mechanical ventilation system also reduces heating bills and provides a cleaner, fresher quality of indoor air. Hot water is provided from an air source heat pump. Biodiversity is enhanced through careful landscape design and the use of local species, enhancing of wildlife habitats, composting and providing opportunities for food production.
CASE STUDY
THE PASSIVE HOUSE

Name of building
The Passive House

Date completed
2010

Building type
Residential

Location
Scotland's Housing Expo, Milton of Leys, Inverness

Architect
HLM Architects

Client
Highland Housing Alliance/O'Brien Homes

Main contractor / timber supplier
O'Brien Homes
Russwood for external cladding
RTC for timber structure

Awards
Glasgow Institute of Architects (GIA) Awards 2010,
Design Commendation

Material Considerations
A Natural Factory

Background to building
The overall aim of the project was to create an exemplar
of three terraced houses as a catalyst for the wider
building industry, and as an inspiration for future housing
design and development.

The houses use the rigorous German ‘PassivHaus’
standard for energy efficiency, resulting in ultra low-energy
houses which dispense with conventional heating
systems altogether. In fact, the heating load is so small
that a hairdryer could be used to heat the house.

The houses were designed to be quiet, modest,
sustainable, affordable and attractive to both volume
house builders and social housing providers alike.

They were erected in only nine days by site operatives
who were previously unfamiliar with this type of
prefabricated, modern method of construction.