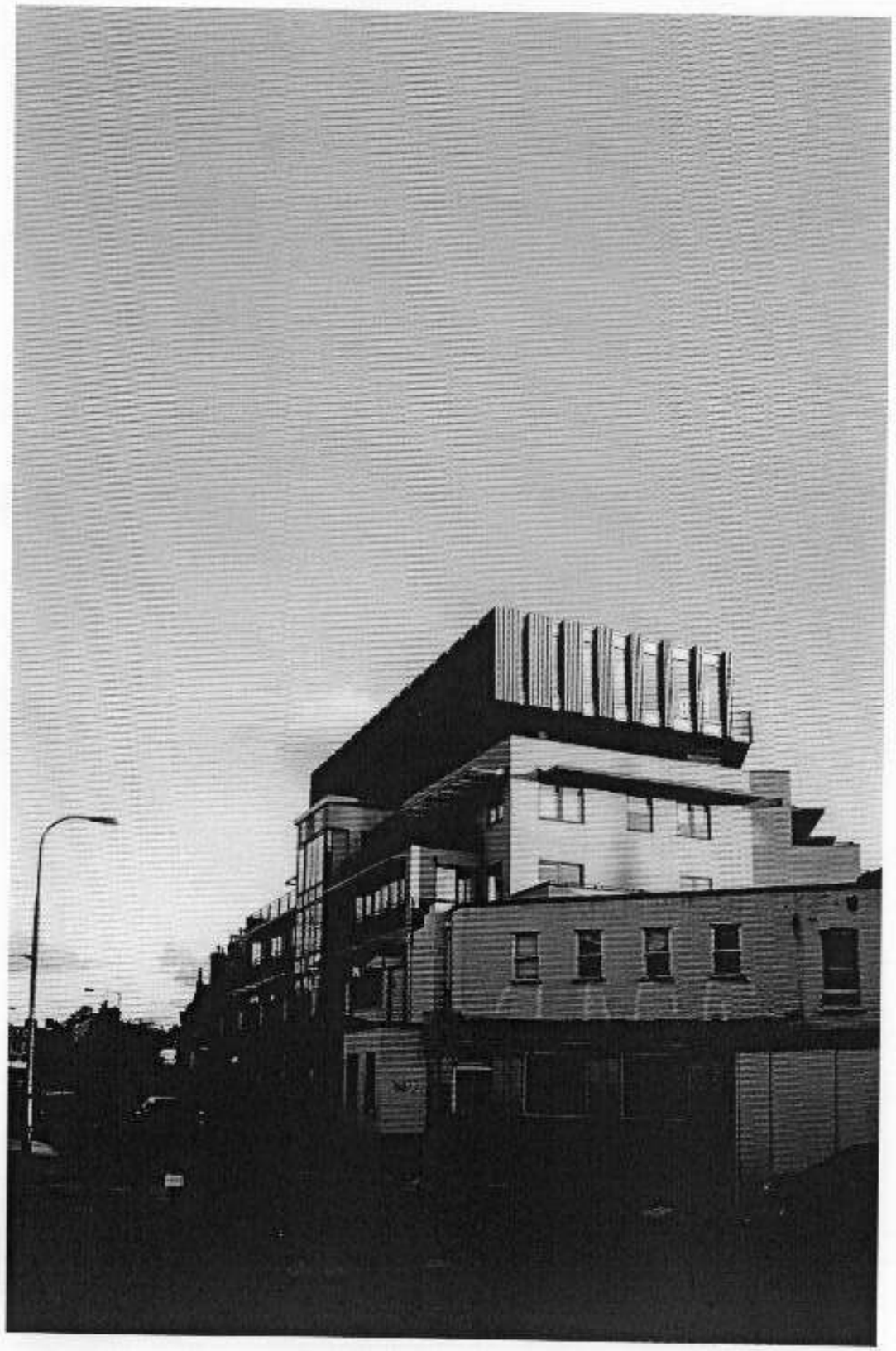
Breeam Eco-Homes Report

55 Holmes Road
Kentish Town
London
NW5 3AN



MRJ RUNDELL +
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Architecture & Design Services

Contents

Fig. 1 View of 55 Holmes Road from Holmes Road showing the existing plant room on the roof.

Fig. 2 View of 55 Holmes Road from Cathcart Street showing the existing plant room on the roof.

Introduction

1.1 Scope of the Report

This report concerns a proposed new development on top of an existing building at 55 Holmes Road in Kentish Town, London. The development proposes building 3 new Penthouse apartments.

The Breeam Eco-homes scheme has been used as a framework to assess the ecological impact of the design. A full Eco-homes assessment is not considered necessary at this early stage in the project but as the design develops it is intended that an official assessment will be carried out with the aim of achieving at the least a "Very Good" rating.

Chapter 2 of this report goes through the "credit scheme" used to produce the eco-homes rating, comments on how the design meets the aims of each credit and gives an estimate of the points scores achieved for each.

In the conclusion the points are added up and an overall analysis of the ecological impact of the building is discussed.

breeam:ecohomes

Ecohomes 2006 – The environmental rating for homes

Pre Assessment Estimator – 2006 / 1.2

April 2006

This pre-assessment estimator allows an evaluation of the likely rating to be achieved under a formal Ecohomes assessment.

NOTE: *The rating obtained by using this Pre Assessment Estimator is for guidance only. Predicted ratings may differ from those obtained through a formal assessment, which must be carried out by a licensed Ecohomes assessor. Individual credit scores are rounded to the nearest two decimal points. Full guidance on the credit requirements can be found at www.Ecohomes.org. Advice should be sought from a licensed assessor at an early stage in a project to ensure that the estimated rating will be obtained. A list of licensed assessors can be found at the Ecohomes website or by contacting the BREEAM office.*

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BRE
Garston
Watford WD25 9XX
Tel: 01923 664462
E-mail: Ecohomes@bre.co.uk
Web site: www.Ecohomes.org

Fig. 3 Front page of Pre Assessment Estimator - 2006/1.2

Introduction

1.2 The Site

The site is situated on the roof of an existing mixed use development at 55 Holmes Road. It lies just off Kentish Town High Street and is in close proximity to all the amenities associated with a town centre.

The area is currently going through a period of regeneration. A large student housing building to the north at 54 to 74 Holmes Road has recently been completed and a block of affordable housing units is currently under construction at 74a Holmes Road.

1.3 The Building

The existing building at 55 Holmes Road has Office spaces on the ground floor and residential units above. We propose to demolish the existing plantroom and construct three new penthouse flats using high quality sustainable materials and new energy saving technology.

Fig. 4 Aerial photograph showing the site location and surrounding area.

2 Breeam Credit Analysis

2.1 Energy

Ene 1	Dwelling emission rate
Ene 2	Building fabric
Ene 3	Drying space
Ene 4	Eco labelled goods
Ene 5	Internal Lighting
Ene 6	External Lighting

Ene 1 Dwelling Emission Rate

Aim:

To minimise emissions of carbon dioxide (CO_2) to the atmosphere arising from the operation of a home and its services.

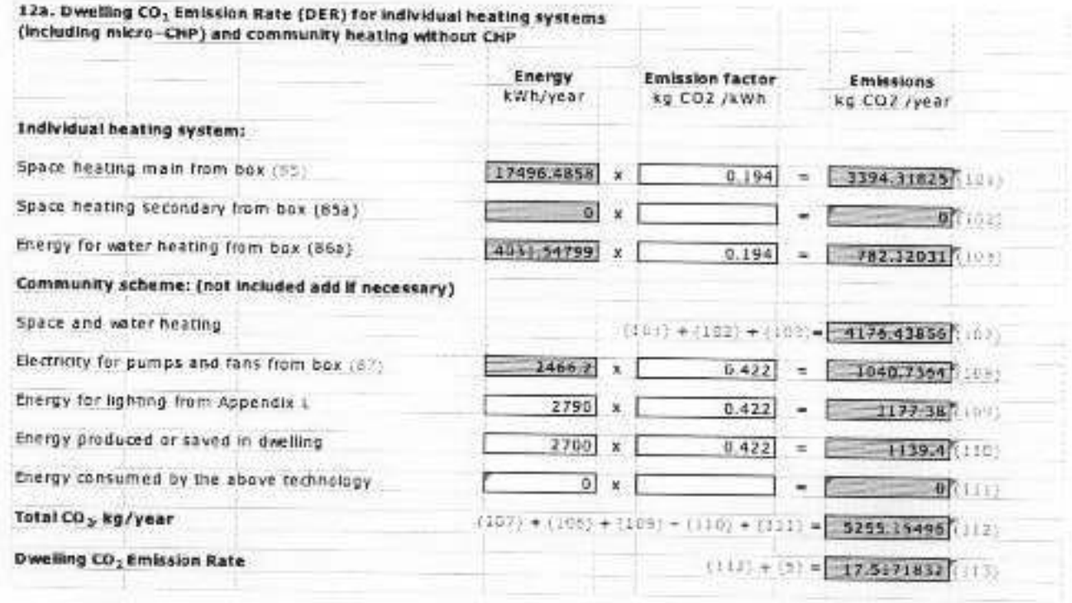
Implementation:

The building has been designed with energy conservation as a priority. Many energy saving measures have been employed in the design and the SAP 2005 calculation has been used to empirically assess the energy consumption.

The building achieves a Sap rating of 65 and a Dwelling Emissions Rate (DER) of 17.5.

Credits Awarded: 10/15

Houses with dwelling emission rates of between 15 and 18 receive 10 credits.



12a. Dwelling CO_2 Emission Rate (DER) for individual heating systems (including micro-CHP) and community heating without CHP

	Energy kWh/year		Emission factor kg CO2 /kWh		Emissions kg CO2 /year	
Individual heating system:						
Space heating main from box (65)	17496.4858	x	0.194	=	3394.31825	(101)
Space heating secondary from box (65a)	0	x		=	0	(102)
Energy for water heating from box (66a)	4031.54799	x	0.194	=	782.12031	(103)
Community scheme: (not included add if necessary)						
Space and water heating			(101) + (102) + (103)	=	4176.43856	(63)
Electricity for pumps and fans from box (67)	2466.2	x	0.422	=	1040.7364	(108)
Energy for lighting from Appendix L	2790	x	0.422	=	1177.38	(109)
Energy produced or saved in dwelling	2700	x	0.422	=	1139.4	(110)
Energy consumed by the above technology	0	x		=	0	(111)
Total CO_2, kg/year			(107) + (108) + (109) − (110) + (111)	=	5255.16496	(112)
Dwelling CO_2 Emission Rate				(112) ÷ (5) =	17.5171832	(113)

Fig. 5 Calculation page of SAP Rating (See appendix 1)

2 Breeam Credit Analysis

2.1 Energy

Ene 2 Building Fabric

Aim:
To future proof the efficiency of dwellings over their whole life, and to encourage refurbished dwellings to improve their insulation standards through good fabric performance.

Implementation:
The building achieves a heat loss parameter of 1.5 W/m2K

Credits Awarded: 0/2
This figure of 1.5 W/m2K is above the value required to score a point so no points will be awarded for this credit.

Ene 3 Drying Space

Aim:
To minimise the amount of energy used to dry clothes.

Implementation:
A wall fixed rotary line is provided on the terraces on the south façade. We propose using a Brabantia Wallfix or similar with a line length of 25m.

Credits Awarded: 1/1
This goes significantly beyond the 6 metres of line required and full credits are likely to be awarded

Thermal Performance
With an impressive thermal conductivity value (λ) of only 0.036 W/mK in walls and 0.035 W/mK in lofts, Warmcel's 'in use' performance is further enhanced by its ability to create a high level of air-tightness to help seal a building against air infiltration and prevent thermal convection currents.

The proven methods of application ensure the insulation provides a complete seal to prevent heat loss, eliminating gaps, cracks or other cold bridges.

Air-tightness tests undertaken on a scheme of local authority houses in Cardiff by the Centre for Research in the Built Environment (CRIBE), part of the Welsh School of Architecture (WSA) at Cardiff University, demonstrated the air-tightness of these Warmcel-insulated homes outperformed good practice requirements.

Fig. 6 Exceprt from Warmcel literature (See appendix 2)

2 Breeam Credit Analysis

2.1 Energy

Ene 4 EcoLabelled Goods

Aim:

To encourage the provision or purchase of energy efficient white goods, thus reducing the CO2 emissions from the dwelling.

Implementation:

Eco friendly appliances are to be installed in both units. The aim is to save on both energy and water consumption. Below is a list of likely appliances to be used.

Appliance	Make and model	Energy rating
Fridge Freezer	Miele KD 85825 ded	A+
Dish washer	Miele G 2530 SCi	A
Washing machine	Miele W3922 WPS	A+

Credits Awarded: 2/2

Full credits are likely to be awarded.

Ene 5 Internal Lighting

Aim:

To encourage the provision of energy efficient internal lighting, thus reducing the CO2 emissions from the dwelling.

Implementation:

It is intended that all fixed lighting in the flats will be dedicated energy efficient fittings.

Credits Awarded: 2/2

Full credits are awarded for 75% of fittings being dedicated energy efficient

KD 683 i-3 Fridge Freezer

Features | Specifications

Features

- Net Fridge Capacity: 219 l/7.7 cu.ft
- Net Freezer Capacity: 70 l/2.5 cu.ft
- Energy efficiency A+
- H x W x D: 177 x 55.9 x 53.9 cm
- No. of Fridge Shelves: 6
- No. of Door Shelves: 4
- Door hinge type Fixed

Special Features

Automatic Fridge Defrosting

Dairy compartment

Bottle rack

Downloads

Operating instructions (PDF)
Building-in (PDF)

Fig. 7 KD 683 1-3 Fridge Freezer taken from Miele website

2 Breeam Credit Analysis

2.1 Energy

Ene 6 External Lighting

Aim:
The purpose of this credit is to encourage the provision of energy efficient external lighting.

Implementation:
All exterior lighting requirements will be met with the use of compact fluorescent lamps. There will be no security lighting.

Credits Awarded: 2/2
Full credits should be awarded.

2 Breeam Credit Analysis

2.2 Transport

Tra 1 Public Transport
Tra 2 Cycle Storage
Tra 3 Local Amenities
Tra 4 Home Office

Tra 1 Public Transport

Aim:
To encourage developers to provide a choice of transport modes for residents with the aim of reducing the level of car use.

Implementation:
Kentish Town Tube station lies within 360m of the site.

There are 4 buses that stop on Kentish Town Road running in both directions. The stops on both sides of the road are within 300m of the site. No.s 134 and 214 are a 24 hour service; C2 is a daytime service and the N20 a night bus. All services run to Central London.

Credits Awarded: 2/2
Full credits will certainly be awarded for being within 500m of a Transport Node

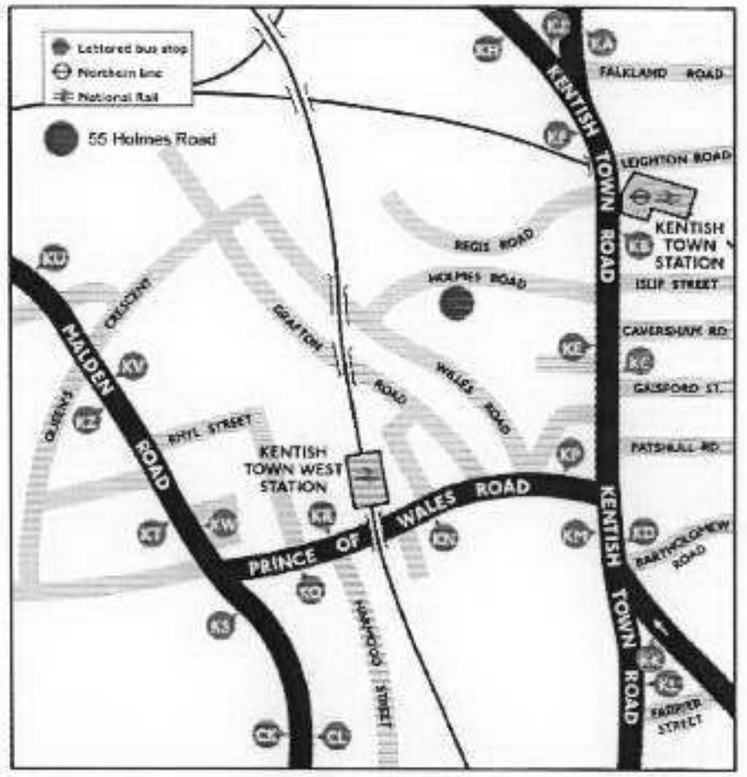


Fig.8 Map showing transport links (adapted from Transport for London Website)

2 Breeam Credit Analysis

2.2 Transport

Tra 2 Cycle Storage

Aim:
To encourage the wider use of bicycles as transport, and thus reduce the need short car journeys, by providing adequate and secure cycle storage facilities.

Implementation:
The development involves the creation of one 3 bedroom apartment and two 2 bedroom apartments. The Eco-Homes requirements are that the three bedroom property is provided with storage for 2 bicycles and the two bedroom properties are provided with storage for 1 bicycle each.

The building that the development sits on currently has a large basement garage. The garage has a secure automatic gate on the entrance. The proposal is to create cycle storage within this area.

Obviously it would be difficult to restrict the use of the storage to the top two flats only. There are currently 7 three bedroom flats and 7 two bedroom flats in the existing building. Including these would create the additional need for 14 cycle spaces making a total of 18 storage spaces. The racks would be of a standard "toast rack" style allowing the individual bikes to be locked to the frame as well as the wheel

Credits awarded: 2/2
Full credits will certainly be awarded. In providing storage for the rest of the entire block we go significantly beyond the requirements.

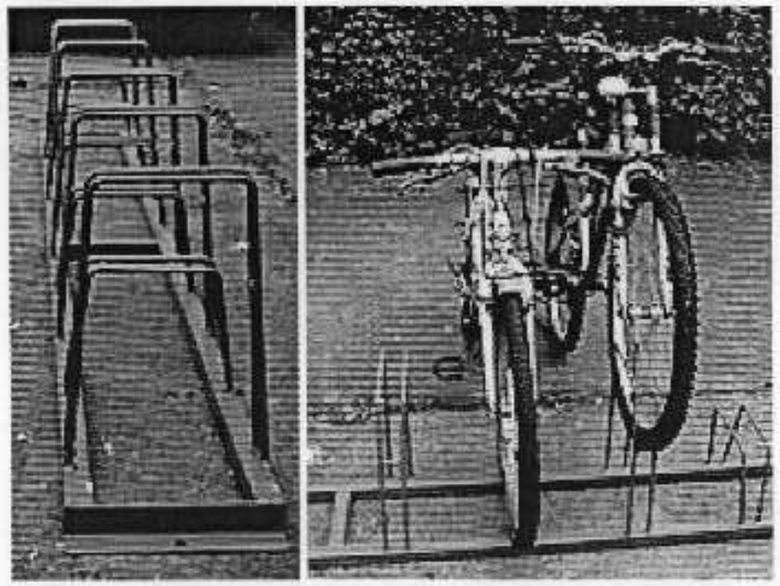


Fig.9 An example of bike racks from bikecare.co.uk

2 Breeam Credit Analysis

2.2 Transport

Tra 3 Local amenities

Aim:
To encourage developers to plan new housing developments that are close to, or include, local shops and amenities. This will help to reduce the reliance of local residents on their cars.

Implementation:
Being just 200m from the centre of Kentish Town Road, the development is very well serviced for local amenities.

Below is a list Amenities recognised by the eco-homes criteria and the corresponding distance from the site.

Amenity	Distance
Post office	300m
School – St. Patrick's Catholic Primary school	45m
School – Kentish town Primary school	410m
ABC Pharmacy	310m
The Bull and Gate Pub	330m
The Oxford	310m
O'Reilley's Bar	230m
Lloyds Bank	250m
Somerfield	450m
Talacre Community Sports Centre	450m
Kentish Town Congregational Church	670m
Kentish Town Community Centre	950m

Credits Awarded: 3/3
The development easily satisfies the highest requirement of being within 1000m safe walking distance of 5 of the given amenity types. Full credits will be awarded.

Fig.10 An aerial photo showing Holmes Road in relation to Kentish Town Road

2 Breeam Credit Analysis

2.2 Transport

Tra 4 Home office

Aim:
To reduce the need to commute to work by providing residents with the necessary space and services to be able to work from home.

Implementation:
Each flat will have a designated 'study suitable as a home office. They each have a wall length of over 1.8m onto which a desk, filing cabinet and shelves could be installed. 2 double sockets and two phone lines will also be installed in these rooms. The studies will have outstanding views and good natural ventilation.

Credits Awarded: 1/1
Full points should be awarded for this credit.

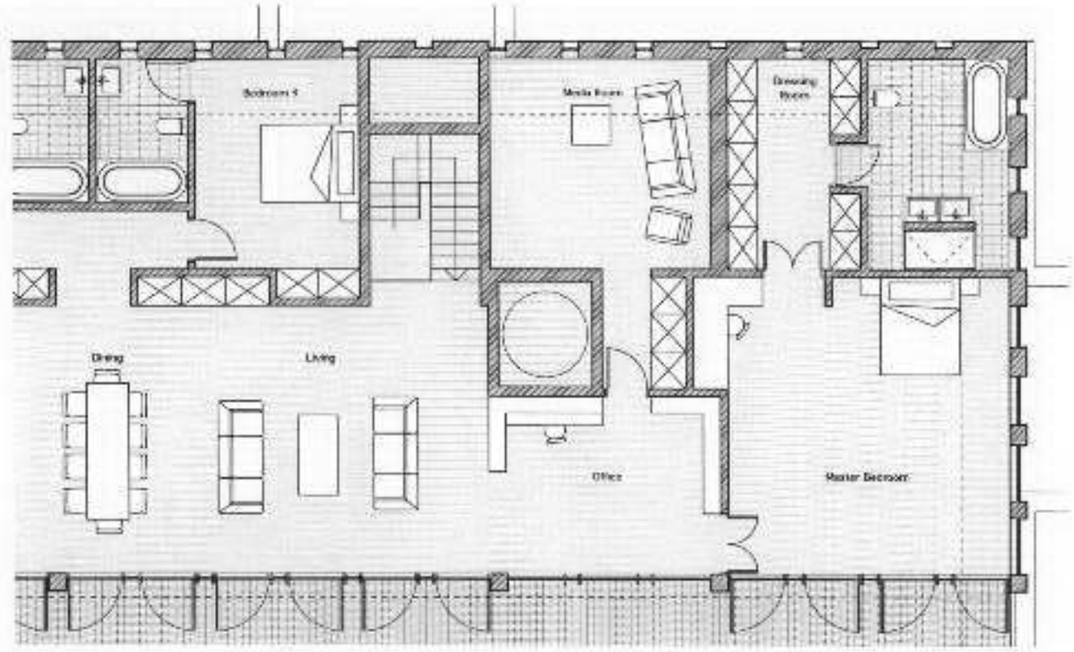


Fig.11 Plan of the 3 Bedroom Flat showing Home Office

2 Breeam Credit Analysis

2.1 Pollution

Pol 1 Insulant GWP
Pol 2 NOx Emissions
Pol 3 Reduction of surface run-off
Pol 4 Renewable and low emissions energy source
Pol 5 Flood Risk

Pol 1 Insulant GWP
Aim:
To reduce the potential global warming from substances used in the manufacture or composition of insulating materials.

Implementation:
It is intended to use a newspaper based insulation (warmcell) product to provide insulation. One of this type of insulants main benefits is its ecological performance.

Credits Awarded: 1/1
Full credits are likely to be awarded

Pol 2 NOx Emissions
Aim:
To reduce the nitrous oxides (NOx) emitted into the atmosphere.

Implementation:
The current proposals intend to use Worcester-Bosch Greenstar High Flow 440 Combi boilers. This has an NOx class rating of 5.

Credits Awarded: 2/3
2 out of the possible 3 credits would likely be achieved.

2 Breeam Credit Analysis

Pol 4 Renewable and Low Emission Energy Source

Aim:
To reduce atmospheric pollution by encouraging locally generated renewable and low emission energy to supply a significant proportion of the development's energy demand.

Implementation:

Photo Voltaic (PV) Solar Panels
We propose to put PV solar panels on the roof.

The estimated Electrical use of a 3 bedroom family home is	4000kWh per year
The estimated Space heating cost of an eco friendly home is	4000kWh per year
The estimated water heating cost of an eco friendly home is	4000kWh per year
Total energy consumption	12000kWh Per year
A generic figure for the energy output of a square metre of PV is	90kWh per year

It is proposed that each property will have 60sqm of PV installed on the roof. This will give an energy input of 5400kWh per year.

The total energy output is about (less for the 2 bed apartments)	12000kWh
Total energy Input	5400kWh
Percentage contribution from local renewable sources	45%

Credits Awarded: 3/3
45% of the energy for each apartment will be renewable energy. This meets and significantly exceeds the 15% required to gain full credits.

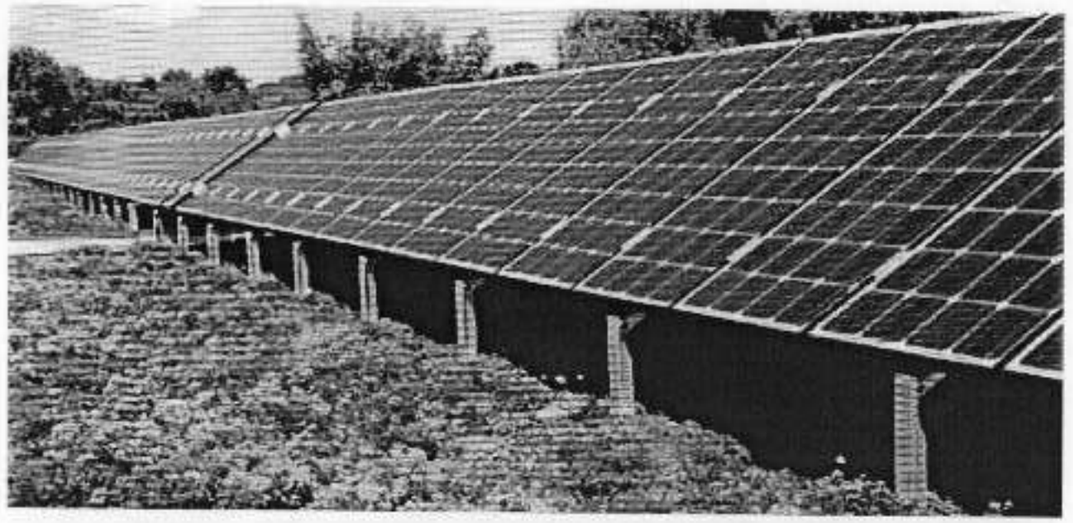


Fig. 12 Photograph of a hybrid solar panel, grass roof system in operation (See appendix 3).

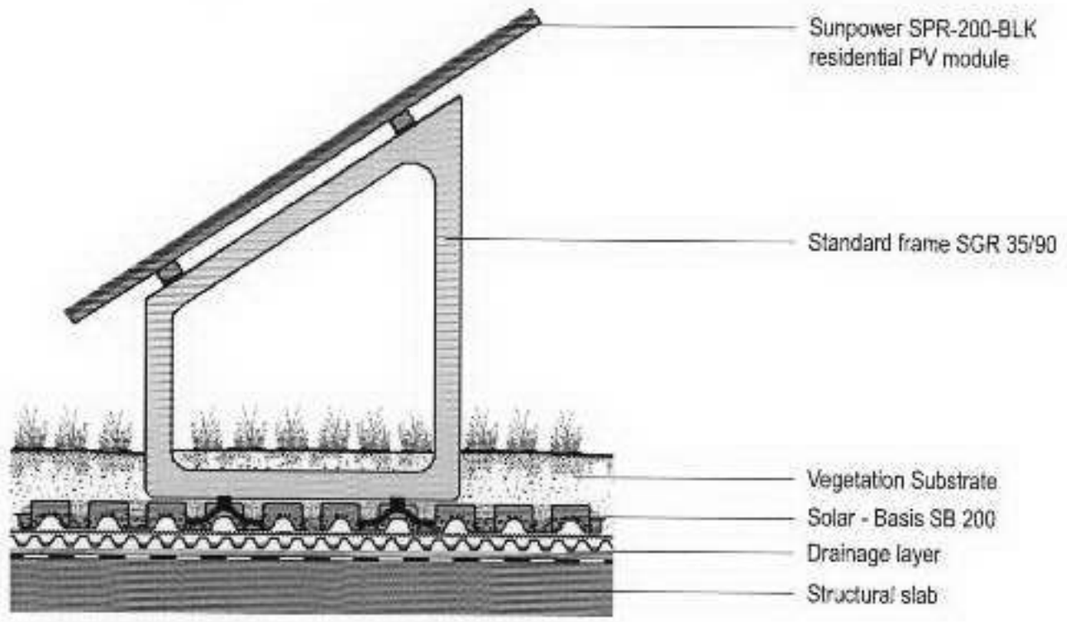


Fig. 13 Cross section through the hybrid roof system.

2 Breeam Credit Analysis

Pol 5 Flood Risk

Aim:
To encourage developments in areas with low risk of flooding or if developments are to be situated in areas with a medium risk of flooding, that appropriate measures are taken to reduce the impact in an eventual case of flooding.

Implementation:
The development sits on the top of another building and therefore there is zero risk of flooding.

Credits awarded: 2/2
Full credits will be awarded

2 Breeam Credit Analysis

2.4 Materials

Mat 1 Environmental Impact of materials
Mat 2 Responsible sourcing of materials: Basic Building Elements
Mat 3 Responsible sourcing of materials: Finishing Elements
Mat 4 Recycling facilities

Mat 1 Environmental Impact of materials

Aim:
To encourage the use of materials that have less impact on the environment, taking account of the full life-cycle.

Implementation:
The new penthouse building is designed to be built entirely out of pre-fabricated TRADIS EVT (Enhanced Vapour Transfer) wall panels, floor cassettes and roof plates. This construction system offers several major advantages over traditional building methods:

The panels are factory produced and made to order. This tightly controlled manufacturing process minimises waste and means that much smaller dimensional tollerances can be acheived. The offsite manufacture also dramatically reduces on site construction time as the building essentially arrives on site in kit form and it is then simply craned onto the roof and assembled. A short on site construction time is imperative in order to minimize any disturbance to existing residents.

The wall panels are filled with WARMCEL 500 insulation which is manufactured from 100% recycled newspaper. WARMCEL 500 has an extremely low embodied energy, requiring far less energy to produce than any other mainstream insulation material. It does not contain any added formaldehyde and is free from CFCs, volatile organic compounds (VOCs) or other toxic substances.

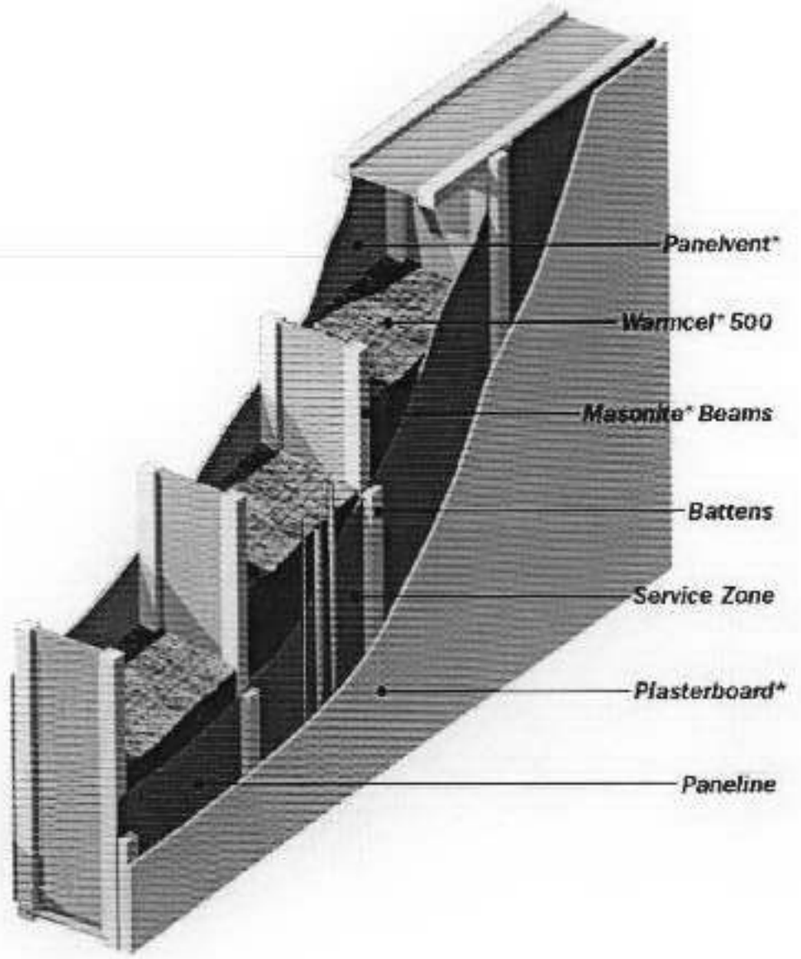


Fig. 14 Sectional drawing of Tradis panel taken from Tradis literature (See Appendix 2)

2 Breeam Credit Analysis

Mat 1 Environmental Impact of materials continued.

The WARMCEL insulation in conjunction with the TRADIS panel system delivers superior thermal performance and the improved tolerances afforded by the offsite manufacture mean that a complete seal can be acheived between panels, eliminating heat loss through gaps, cracks and other cold bridges. This massive reduction in heat loss reduces the heating demand within the building. By reducing heating demand, Warmcel also plays a major part in reducing household CO_2 emissions.

The panels combine this high thermal performance with the ability to ensure that any moisture that gets into the structure always migrates safely to the external atmosphere where it is harmlessly expelled. This works to prevent interstitial condensation and safeguards the integrity of the structure. Tradis Panels are a very ecologically sound product and would score an A rating in The Green Guide to Specification.

The roof will be a ZINCO hybrid planted roof with a Sarnafill type product providing the tanking.

The windows will be timber framed with argon filled K glass doubled glazed units.

Credits awarded: 14/16

It is difficult to provide a full specification at this early stage in the project. However, it is likely that points would be scored for most elements.

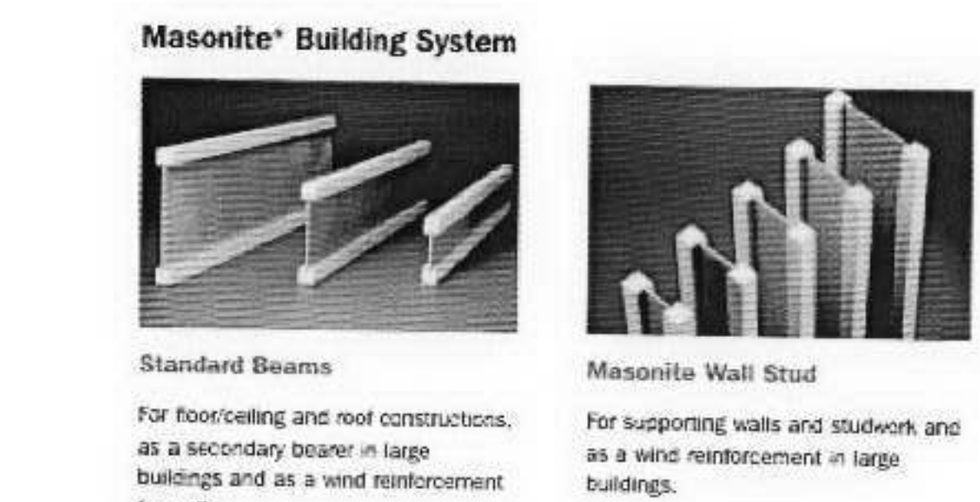


Fig. 15 Excerpt from Masonite literature (See Appendix 4)

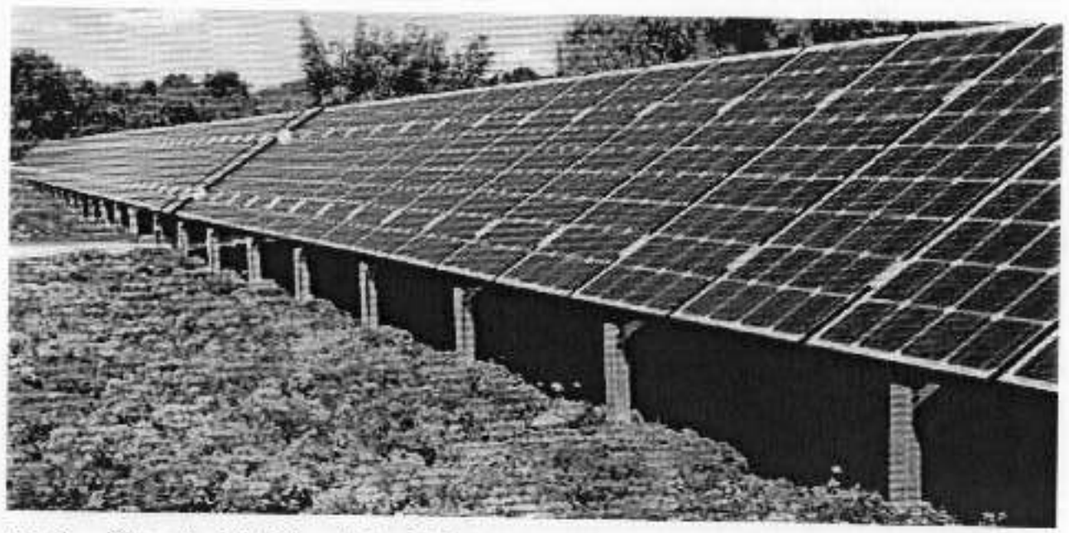


Fig. 16 Green Roof with PV panels from ZinCo literature (See Appendix 3)

2 Breeam Credit Analysis

Mat 2 Responsible sourcing of materials: Basic Building Elements

Aim:
To recognise and encourage the specification of responsibly sourced materials for key building elements.

Implementation:
This is a difficult credit to calculate at this early stage. Much of the buildings construction volume will be prefabricated timber frame. The Tradis panels that are likely to be used are fabricated through a company called Excel Fibres who make a newspaper based insulation. They have a high ecological agenda and can tailor the panels to your own specification. It is intended that all the timber used would be FSC Certified. It is intended that where practical all other elements would aim to be responsibly sourced.

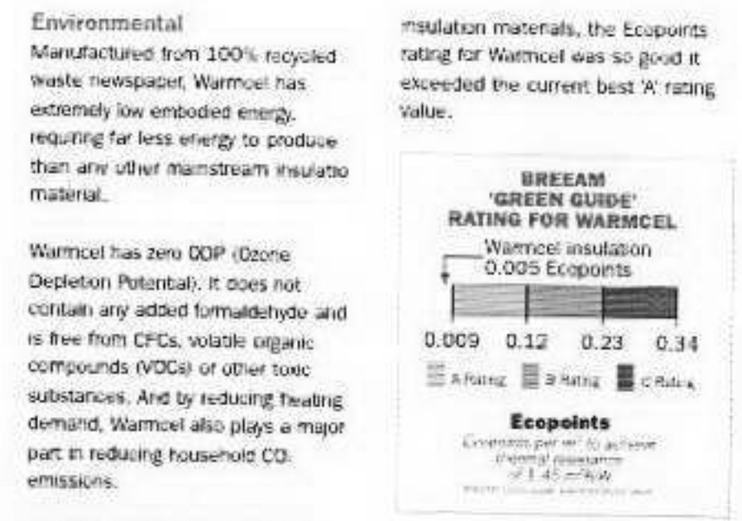
Credits awarded: 4/6
It is difficult at this early stage to calculate for this credit. It has been estimated that 4 out of the 6 credits would likely be awarded.

Mat 3 Responsible sourcing of materials: Finishing Elements

Aim:
To recognise and encourage the specification of responsibly sourced materials for secondary building and finishing elements.

Implementation:
This credit is difficult to calculate at this early stage as it involves the specification of doors, skirting boards, sofa's and kitchens. Every effort would be made in the responsible sourcing of these elements.

Credits awarded: 1/3
As no specification is currently available for these elements a very conservative score of 1 out of a possible 3 points has been estimated.



Environmental
Manufactured from 100% recycled waste newspaper, Warmcel has extremely low embodied energy, requiring far less energy to produce than any other mainstream insulatio material.

Warmcel has zero ODP (Ozone Depleton Potential). It does not contain any added formaldehyde and is free from CFCs, volatile organic compounds (VOCs) or other toxic substances. And by reducing heating demand, Warmcel also plays a major part in reducing household CO2 emissions.

Under the BRE's Environmental Assessment Method (BREEAM), Warmcel achieved Green Guide Ecopoint 'A' ratings in every application of the insulation in various wall and roof constructions. And in comparison with other insulation materials, the Ecopoints rating for Warmcel was so good it exceeded the current best 'A' rating value.

BREEAM
'GREEN GUIDE'
RATING FOR WARMCEL
Warmcel insulation
0.005 Ecopoints
0.009 0.12 0.23 0.34
A Rating B Rating C Rating
Ecopoints

When, eventually, Warmcel insulation is removed from a building, it can be recycled again at Excel's manufacturing facility or disposed of safely, without creating toxic waste or biodegradability problems.

Fig. 17 Excerpt from Warmcel literature (See Appendix 2)

2 Breeam Credit Analysis

Mat 4 Recycling facilities

Aim:
To encourage developers to provide homeowners with the opportunity and facilities to recycle household waste.

Implementation:
3 bins (additional to the normal waste) will be provided in each unit. There will be one 20 litre bin and two 10 litre bins.

Currently bin bags are dealt with through a rubbish chute located on each floor of the building. Obviously this makes recycling slightly difficult since all rubbish ends up in the same bin at the bottom of the chute in the basement. It is apparent that some of the residents of the existing building have begun to organize their own recycling bins in the basement of the flat, which they walk their rubbish down to.

Ideally any recycling system put in place for the penthouse would also cater for the rest of the flats. The informal system set up by some of the residents could be formalised with the provision of adequately sized recycling bins for the whole building in the basement. The reality of this is that many people would continue to use the chute due to the effort involved in having to walk their rubbish down to the basement.

Another proposal would be to put a system in place where the chute was used for different types of rubbish on different days of the week. The building has a caretaker who works daily between 12 and 5 O'clock. Signs at the top of the chute would explain what rubbish could be disposed of on what days and the caretaker would swap the bins around accordingly.

Credits awarded: 0/6
At this stage no credits are likely to be awarded due to the current lack of permanent infrastructure.

2 Breeam Credit Analysis

2.5 Water

Wat 1 Internal Potable Water Use
Wat 2 External Potable Water Use

Aim:
To reduce consumption of potable water in the home.

Implementation:
All toilets are to have 6 litre cisterns. Large baths will be placed in the master bedrooms as will high flow showers. However, medium baths and low flow rate showers will be placed in all other bathrooms.

There is a rainwater harvesting system, collecting rain from the roof, that will be used for toilet flushing and clothes washing. Washing machines and dishwashers have been chosen for their low water consumption.

Credits awarded: 3/5
3 of the possible 5 credits are likely to be awarded. See tables overleaf for calculations.

Wat 2 External Potable Water Use
Aim:
To encourage the recycling of rainwater, and reduce the amount of water taken from the mains, for use in landscape/garden watering.

Implementation:
An extensive rainwater harvesting system is proposed for the site. There will be water butts for each dwelling. The two lower dwellings will have a 100 litre butt each and the upper dwelling will have a 200litre butt to help provide water for its large roof garden. The watering system for the planted roof will be connected to the water butt

Credits awarded: 1/1
Full credits are likely to be awarded.

2 Breeam Credit Analysis

2.6 Land Use and Ecology

Eco 1 Ecological Value of Site
Eco 2 Ecological Enhancement
Eco 3 Protection of Ecological Features
Eco 4 Change of Ecological Value of Site
Eco 5 Building Footprint

Eco 1 Ecological value of site

Aim
To encourage development on land that already has a limited value to wildlife and discourage the development of ecologically valuable sites.

Implementation:
The building sits on top of an existing building and will not alter the existing site.

Credits awarded: 1/1
Full credits are likely to be awarded

Eco 2 Ecological enhancement

Aim:
To enhance the ecological value of a site.

Implementation:
A planted roof and the provision of planting boxes on terraces and balconies will actively enhance the ecological value of the site

Credits awarded: 1/1
Full credits are likely to be awarded

2 Breeam Credit Analysis

Eco 3 Protection of ecological features
Aim:
To protect existing ecological features from substantial damage during the clearing of the site and the completion of construction works.

Implementation:
There are few ecological features on the site. Neighbouring trees and shrubs will be adequately protected during construction.

Credits awarded:1/1
Full credits are likely to be awarded

Eco 4 Change of ecological value of Site
Aim:
The aim of this credit is to reward steps taken to minimise reductions in ecological value and to encourage an improvement.

Implementation:
The calculation of this credit is difficult at this early stage. The main change in ecological value of the site will be the planted roof.

Credits awarded: 2/4
A conservative estimate of 2 of the possible 4 credits has been assumed

Eco 5 Building footprint
Aim:
To promote the most efficient use of a building's footprint by ensuring that land and material use is optimised across the development.

Implementation:
The total combined floor are to footprint ratio is greater than 3.5:1

Credits awarded: 2/2
Full credits are likely to be awarded

2 Breeam Credit Analysis

2.7 Health and Wellbeing

Hea 1 Daylighting
Hea 2 Sound Insulation
Hea 3 Private Space

Hea 1 Daylighting

Aim:

To improve the quality of life in homes through good daylighting, and to reduce the need for energy to light a home.

Implementation:

The kitchens, living rooms and dining rooms all have average daylight factors well above the requirements. The requirements lie between 2% and 1.5% depending on the room. Our calculations show values closer to 5% These rooms also have good views of the sky

Credits awarded: 3/3

Full credits are likely to be awarded

Total glazed area of windows or rooflight	=	W	=	10
Total area of all the room surfaces(ceiling, floor, walls and windows	=	A	=	93
Area weighted average reflectance of the room surfaces	=	R	=	0.5 (Typical dwelling with light coloured walls)
a correction factor for cert	=	M	=	1 (Vertical glazing that can be cleaned easily)
glass transmission factor	=	T	=	0.6 (Double glazing with low emissivity coating)
angle of visible sky	=	θ	=	60

Average daylight factor DF = $\frac{WM\theta T}{A(1-R^2)}$ %

= 5.16129

Fig. 18 Daylight calculation

2 Breeam Credit Analysis

Hea 2 Sound insulation

Aim:
To ensure the provision of sound insulation and reduce the likelihood of noise complaints.

Implementation:
The building is planned to be built using a proprietary pre-fabricated timber panel construction system that includes provision for insulation against impact sounds in the floor panels.
The TRADIS Soundcel Floor System is a purpose-designed, acoustically-insulated floor construction offering high levels of sound reduction for both airborne and impact sound transmission. We aim to exceed building regulations part E requirements by at least 5dB.

Credits awarded: 3/4
A conservative estimate of 3 out of a possible 4 credits is likely to be achieved

Hea 3 Private Space

Aim:
To improve the occupiers' quality of life by providing an outdoor space for their use, which is at least partially private.

Implementation:
Partially private space is provided for all dwellings. The two lower flats each have extensive balconies and the upper flat has a large roof terrace.

Credits awarded:1/1
Full credits are likely to be awarded

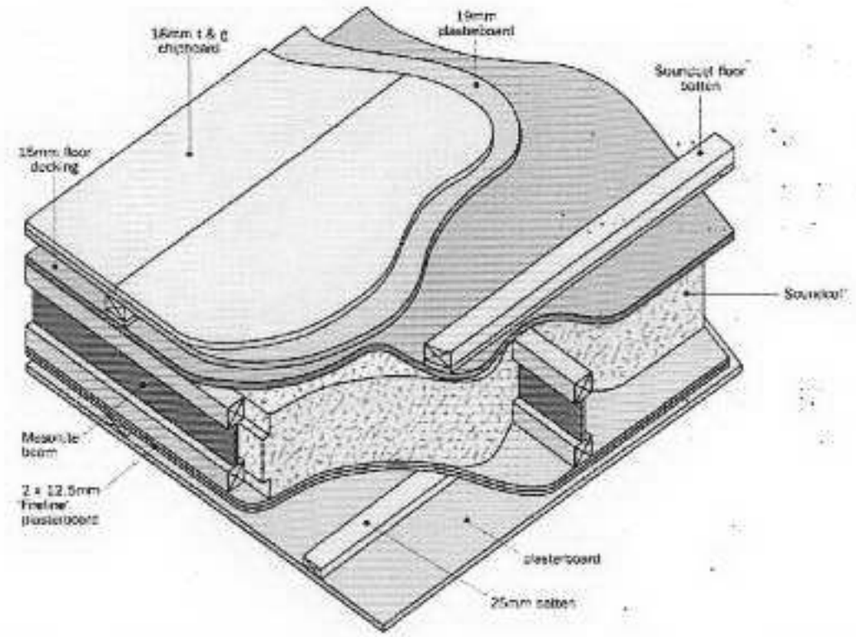


Fig. 19 Sectional drawing through Soundcel floor taken from Tradis website (See Appendix 5)

Independent Test Results for Soundcel® Insulated Floor

	Airborne Transmission (Weighted Sound Reduction Index (R_w)) higher value represents better performance	Impact Transmission (Weighted Normalised Sound Pressure Level ($L'nT,w$)) lower value represents better performance
Masonite Floors Soundcel Floor System, featuring Masonite Beam 'joists' at 600mm centres, with 250mm cavity completely filled with Soundcel acoustic insulation. (see graphs below)	**58 dB** (52 dB)	**63 dB** (65 dB)
Uninsulated floor, featuring Masonite Beam 'joists' at 600mm centres, with a 250mm cavity (see graphs below)	**41 dB** (52 dB)	**77 dB** (65 dB)
Timber Floors Soundcel Floor System, featuring timber joists at 400mm centres, with 200mm cavity completely filled with Soundcel acoustic insulation	**57 dB** (52 dB)	**65 dB** (65 dB)
Uninsulated floor, featuring timber joists at 400mm centres, with a 200mm cavity	**41 dB** (52 dB)	**77 dB** (65 dB)

(Building Regulations values shown in brackets)

Fig. 20 Exerpt from Soundcel literature (See appendix 5)

2 Breeam Credit Analysis

2.8 Management

Man 1 Home User Guide
Man 2 Considerate Construction
Man 3 Construction Site Impacts
Man 4 Security

Man 1 Home User Guide
Aim:
To recognise and encourage the provision of guidance to enable home owners / occupiers to understand and operate their home efficiently, in line with current good practice and in the manner envisaged by the developer, and to make best use of local facilities.

Implementation:
An operations manual will be produced for each unit. Part of this manual will include the environmental performance of the flat. The manual will also include a chapter on the wider site and it's surroundings to enable full use to be made of the local amenities.

Credits awarded: 3/3
Full credits are likely to be awarded

2 Breeam Credit Analysis

Man 2 Considerate construction

Aim:

To recognise and encourage construction sites managed in an environmentally and socially considerate and accountable manner.

Implementation:

As the development is located on the top of an existing building considerate construction will be of prime importance. A large part of the design concept of the building is that there is a high degree of prefabrication. The aim of this is to reduce construction time as well as to keep noisy and disturbing work to a minimum.

Credits awarded: 2/2

Full credits are likely to be awarded

Man 3 Construction Site Impacts

Aim:

To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption, waste management and pollution.

Implementation:

It is difficult to state exactly how this will be dealt with until a contractor is chosen. However, the Environmental management of the construction work will certainly form part of the brief at tender stage. The large amount of factory based prefabrication will help to minimise waste during construction.

Credits awarded: 2/3

2 out of a possible 3 credits are likely to be awarded.

2 Breeam Credit Analysis

Man 4 Security

Aim:
To encourage the design of developments where people feel safe and secure; where crime and disorder, or the fear of crime, does not undermine quality of life or community cohesion.

Implementation:
The building currently has good security systems in place. The well lit access routes and common areas produce a safe and secure environment. The location of the new penthouse at high level will also contribute considerably to the overall feeling of security.

Credits awarded: 1/2
A conservative estimate of 1 out of a possible 2 credits is likely to be achieved.

3 Results

Eco Homes Pre-Assessment Estimator

Ref:	Concern	Possible Points	Predicted score	% of total	% of total max	Certainty of scoring	To achieve
Ene1	Dwelling Emission rate	15	10	9.16	13.75	Uncertain	energy rating
Ene2	Building Fabric	2	0	0	1	Uncertain	Insulation standard
Ene3	Drying space	1	1	0.92	0.92	Certain	providing internal
Ene4	EcoLabelled goods	2	2	1.83	1.83	Certain	fridges, freezers etc..
Ene5	Internal lighting	2	2	1.83	1.83	Certain	Eco friendly
Ene6	External lighting	2	2	1.83	1.83	Certain	eco friendly
Tra1	Public transport	2	2	2	2	Certain	close to transport
Tra2	cycle Storage	2	2	2	2	Certain	providing cycle storage
Tra3	Local amenities	3	3	3	3	Certain	close to shops
Tra4	Home Office	1	1	1	1	Certain	Providing a room as office
Pol 1	Insulant GWP	1	1	0.91	0.91	Probable	Eco friendly insulation
Pol 2	No_x Emissions	3	2	1.82	2.73	Probable	Good boiler
Pol 3	Reduction of surface run off	2	1	0.91	1.82	Probable	collection from roof
Pol 4	Renewable and low emission energy source	3	3	2.73	2.73	Probable	15% of energy created by renewable
Pol 5	Flood risk	2	2	1.82	1.82	Probable	Low risk of flooding
Mat 1	Environmental impact of materials	16	14	6.32	7.23	Possible	
Mat 2	Responsible sourcing of materials	6	4	1.8	2.71	Possible	responsible spec
Mat 3	Responsible sourcing of finishings	3	1	0.45	1.35	Probable	
Mat 4	Recycling facilities	6	0	0	2.71	probable	Providing bins
Wat 1	Internal potable water use	5	3	5	8.33	Probable	
Wat 2	external Potable water use	1	1	1.67	1.67	Probable	
Eco 1	Ecological value of site	1	1	1.33	1.33	Certain	developing on low grade land
Eco 2	Ecological Enhancement	1	1	1.33	1.33	Certain	advice from suitably qualified ecologist
Eco 3	Protection of ecological features	1	1	1.33	1.33	Probable	
Eco 4	Change of ecological value of the site	4	2	2.665	5.33	Probable	more than 9 natural species
Eco 5	Building footprint	2	2	2.67	2.67	Certain	3.5:1 floor area to footprint
Hea 1	Daylighting	3	3	5.25	5.25	Probable	Light to all rooms
Hea 2	Sound Insulation	4	3	5.25	7	Probable	Good sound insulation
Hea 3	Private space	1	1	1.75	1.75	Certain	providing partial private space
Man 1	Home user guide	3	3	3	3	Probable	
Man 2	Considerate construction	2	2	2	2	Probable	beyond best practice
Man 3	Construction site impacts	3	2	2	3	Possible	resource and energy use
Man 4	Security	2	1	1	2	Probable	
	Totals	**107**	**79**	**76.575**	**99.16**		

4 Conclusion

The BRE Eco-homes 2006 Pre Assessment Estimator has been used as a framework to assess the ecological impact of the design. The results table shows that the predicted score for the new development is 79 out of a possible 107. This works out at 76% of the possible points. According to this assessment the development achieves an "Excellent" rating. As the design develops it is intended that a further assessment will be carried out with the aim of achieving this high standard for the final design.

By using the criteria in the BRE Eco Homes assessment to guide design choices for the development at 55 Holmes Road we believe that we are proposing a building that balances the need for a high quality of life with a safe and healthy internal environment.

Rating	Score (%)
Pass	36
Good	48
Very Good	58
Excellent	70

Fig. 21 Rating Guide taken from BRE Eo Homes 2006 Pre Assessment Estimator

5 Appendix

1. SAP Rating Calculation
2. Warmcel
3. ZinCo
4. Masonite
5. Soundcel

1. Overall Dwelling Dimensions

	Area(m^2)	Average Storey height (m)	Volume (m^3)
Ground Floor	150 (1a)	2.7	405 (1)
First Floor	150 (2a)	3	450 (2)
Second Floor	(3a)		0 (3)
Third and other Floors	(4a)		0 (4)
Total floor Area	300 (5)		

Dwelling Volume (1)+(2)+(3)+(4)= **855** (6)

2. Ventilation rate

	Area (m^2)		m^3 per hour	
Number of chimneys		x 40 =	0 (7)	
Number of open fliues	2	x 20 =	40 (8)	
Number of intermittent fans or passive vents	6	x 10 =	60 (9)	
Number of flueless gas fires		x 40 =	0 (9a)	
Infiltration due to chimneys, flues and fans			**100**	**Air changes per hour** 0.11695906 (10)

if a pressurisation test has been carried out proceed to box (19)

Number of storeys in the dwelling	2 (11)		
Additional infiltration		[(11) - 1] x 0.1	0.1 (12)
Structural infiltration: *0.25 for steel or timber frame or 0.35 for masonary construction*			0.25 (13)
If suspended wooden floor, *enter 0.2(unsealed) or 0.1(sealed), else 0*			0.1 (14)
If no draught lobby, enter 0.05, else enter 0			0 (15)
Percentage of windows and doors draught stripped *enter 100 in box (16) for new dwellings which are to comply with building regulations*	100 (16)		
Window infiltration		0.25-[0.2 x (16) /100]	0.05 (17)
Infiltration rate		(10)+(12)+(13)+(14)+(15)+(17)=	0.61695906 (18)
If based on air permeability value, then [q_{50} /20] + (10) in box (19), otherwise (19)=(18) *air permeability value applies if a pressurisation test has been done, or a design air permeability is being used*			0.61695906 (19)
Number of sides on which sheltered *(enter 2 in box (20) for new dwellings where location is not shown)*			1 (20)
Shelter factor		1-[0.075 x (20)]=	0.925 (21)
Adjusted infiltration rate		(19) x (21)=	0.57068713 (22)

Calculate effective air change rate for the applicable use

a) if balanced whole house mechanical ventilation with heat recovery	(22) + 0.17=	0.74068713 (23)
b) if balanced whole house mechanical ventilation without heat recovery	(22) + 0.5=	1.07068713 (23a)
c) if whole house extract ventilation or positive input ventilation from outside if (22) < 0.25, then (23b) = 0.5; otherwise (23b) = 0.25 + (22)		(23b)
a) if balanced whole house mechanical ventilation with heat recovery if (22) ≥ 1, then (24) = (22); otherwise (24) = 0.25 + [(22)^2 x 0.5]		(24)
Effective air change rate - enter (23) or (23a) or (23b) or (24) in box (25)		0.74068713 (25)

3. Heat loss and heat loss parameter

Element	Area (m^2)		U-Value		A x U (w/k)		U-value
Doors	4	x	3	=	12	(26)	
Windows (type 1)*	100	x	1.67910448	=	167.910448	(27)	1.8
Windows (type 2)*		x	#DIV/0!	=		(27a)	
Rooflights*		x	#DIV/0!	=		(27b)	
Ground floor	150	x	0.11	=	16.5	(28)	
Walls (type 1) *excluding windows and doors*	110	x	0.11	=	12.1	(29)	
Walls (type 2) *excluding windows and doors*		x		=	0	(29a)	
Roof (type 1) *excluding rooflights*	150	x	0.1	=	15	(30)	
Roof (type 2) *excluding rooflights*		x		=	0	(30a)	
Other		x		=	0	(31)	
Total area of elements ΣA, m²	514						

**For windows and rooflights, use effective window U-value calculated as given in paragraph 3.2*
enter U-values in box on far right U-value in main column will be adjusted for curatins

Fabric heat loss, W/K	(26)+(27)+(27a)+(27b)+(28)+(29)+(29a)+(30)+(30a)+(31)=	223.510448 (33)
Thermal bridges – Σ (l×Ψ) calculated using Appendix K *If details of thermal bridging are not known calculate y × (32) [see Appendix K] and enter in box (34)*		20 (34)
Total fabric Heat loss	(33)+(34)=	243.510448 (35)
Ventilation heat loss	(25) x 0.33 x (34)=	208.984875 (36)
Heat loss coefficient, W/K	(35)+(36)=	452.495323 (37)
Heat loss parameter (HLP), W/m²K	(37)/(5)=	1.50831774 (38)

4. Water heating energy requirements

		kWh/year
Energy content of hot water used from Table 1 column (b)		3901 (39)
Distribution loss from Table 1 column (c) *If instantaneous water heating at point of use, enter '0' in boxes (40) to (45)* *For community heating use Table 1 (c) whether or not hot water tank is present*		688 (40)
Water storage loss:		
a) If manufacturer's declared loss factor is known (kWh/day):		(41)
Temperature factor from Table 2b		(41a)
Energy lost from water storage, kWh/year	(41) × (41a) × 365 =	0 (42)
b) If manufacturer's declared cylinder loss factor is not known :		
Cylinder volume (litres) including any solar storage within same cylinder *If community heating and no tank in dwelling, enter 110 litres in box (43)* *Otherwise if no stored hot water (this includes instantaneous combi boilers) enter '0' in box (43)*		280 (43)
Hot water storage loss factor from Table 2 (kWh/litre/day) *If community heating and no tank in dwelling, use cylinder loss from Table 2 for 50 mm factory insulation in box (44)*		0.0094 (44)
Volume factor from Table 2a		0.754 (44a)
Temperature factor from Table 2b		0.6 (44b)
Energy lost from water storage, kWh/year	(43)×(44)×(44a)×(44b)×365 =	434.611632 (45)
Enter (42) or (45) in box (46)		(46) 434.611632
If cylinder contains dedicated solar storage, box (47) = (46)×[(43)–(H11)]/(43), else (47) = (46)		279.393192 (47)
Primary circuit loss from Table 3		360 (48)
Combi loss from Table 3a (enter '0' if not a combi boiler)		0 (49)
Solar DHW input calculated using Appendix H (enter '0' if no solar collector)		1600 (50)
Output from water heater, kWh/year	(39)+(40)+(47)+(48)+(49)-(50)=	3628.393192 (51)
Heat gains from water heating, kWh/year *Include (47) in calculation of (52) only if cylinder is in the dwelling or hot water is from community heating*	0.25 x [(39)+(49)]+0.8 x [(40)+(47)+(48)]=	2037.164554 (52)

#DIV/0!

5. Internal gains

		Watts	
Lights, appliances, cooking and metabolic (Table 5)		1359	(53)
Reduction of internal gains due to low energy lighting (calculated in Appendix L)		1000	(53a)
Additional gains from Table 5a		60	(53b)
Water heating	(52) ÷ 8.76 =	232.553031	(54)
Total internal gains	(53) + (53b) + (54) – (53a) =	651.553031	(55)

6. Solar gains

	Access factor Table 6d		Area m²		Flux Table 6a		g⊥ Table 6b		FF Table 6c		Gains (W)	
North	1	x	15	x	29	x 0.9 x	0.72	x	0.7	=	197.316	(56)
Northeast	1	x		x		x 0.9 x		x		=	0	(57)
East	1	x	25	x	48	x 0.9 x	0.72	x	0.7	=	544.32	(58)
Southeast	1	x		x		x 0.9 x		x		=	0	(59)
South	1	x	60	x	72	x 0.9 x	0.72	x	0.7	=	1959.552	(60)
Southwest	1	x		x		x 0.9 x		x		=	0	(61)
West	1	x		x		x 0.9 x		x		=	0	(62)
Northwest	1	x		x		x 0.9 x		x		=	0	(63)
Rooflights	1	x		x		x 0.9 x		x		=	0	(64)

Total solar gains: [(56)+...+(64)] = 2701.188 (65)

Note: for new dwellings where overshading is not known, the solar access factor is '0.77'

Total gains, W (55)+(65) = 3352.741 (66)

Gain/loss ratio (GLR) (66)÷(37) = 7.409449 (67)

Utilisation factor (Table 7, using GLR in box (67)) 0.92 (68)

Useful gains, W (66)x(68) = 3084.5217 (69)

7. Mean internal temperature

		°C	
Mean internal temperature of the living area (Table 8)		18.88 (70)	
Temperature adjustment from Table 4e, where appropriate		0.6 (71)	
Adjustment for gains *R is obtained from the 'responsiveness' column of Table 4a or Table 4d*	{[(69) ÷ (37)] − 4.0} × 0.2 × R =	0.56333862 (72)	R: 1
Adjusted living room temperature	(70) + (71) + (72) =	20.0433386 (73)	
Temperature difference between zones (Table 9)		0.6 (74)	
Living area fraction (0 to 1.0)	living room area ÷ (5) =	0.2 (75)	Livingroom area: 60
Rest-of-house fraction	1 − (75) =	0.8 (76)	
Mean internal temperature	(73) − [(74) × (76)] =	19.5633386 (77)	

8. Degree days

Temperature rise from gains	(69) ÷ (37) =	6.81669311 (78)
Base temperature	(77) − (78) =	12.7466455 (79)
Degree-days, use box (79) and Table 10		1450 (80)

9. Space heating requirement

Space heating requirement (useful), kWh/year — 0.024 × (80) × (37) = 15746.8372 (81)

For range cooker boilers where efficiency is obtained from the Boiler Efficiency Database or manufacturer's declared value, multiply the result in 81) by (1 – Φcase/Φwater) where Φcase is the heat emission from the case of the range cooker at full load (in kW); and Φwater is the heat transferred to water at full load (in kW). Φcase and Φwater are obtained from the database record for the range cooker boiler or manufacturer's declared value.

9a. Energy requirements – individual heating systems, including micro–CHP

Note: when space and water heating is provided by community heating use the alternative worksheet 9b

Space heating

Fraction of heat from secondary/supplementary system (use value from Table 11, Appendix F or Appendix N) — 0 (82)

Efficiency of main heating system, % — 90 (83)
(SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c)

Efficiency of secondary/supplementary heating system, % (use value from Table 4a or Appendix E) — 90 (84)

Space heating fuel (main) requirement, kWh/year — [1 – (82)] × (81) × 100 ÷ (83) = 17496.4858 (85)

Space heating fuel (secondary), kWh/year — (82) × (81) × 100 ÷ (84) = 0 (85a)

Water heating

Efficiency of water heater, % — 90 (86)
(SEDBUK or from Table 4a or 4b, adjusted where appropriate by the amount shown in the 'efficiency adjustment' column of Table 4c)

Energy required for water heating, kWh/year — (51) × 100 ÷ (86) = 4031.54799 (86a)

Electricity for pumps and fans

	kWh/year
each central heating pump, (Table 4f)	260 (87a)
each boiler with a fan–assisted flue (Table 4f)	45 (87b)
warm air heating system fans (Table 4f)	(87c)
mechanical ventilation – balanced, extract or positive input from outside (Table 4f)	2086.2 (87d)
maintaining keep–hot facility for gas combi boiler (Table 4f)	(87e)
pump for solar water heating (Table 4f)	75 (87f)
Total electricity for the above equipment, kWh/year (87a)+(87b)+(87c)+(87d)+(87e)+(87f) =	2466.2 (87)

10a. Fuel costs – individual heating systems

	Fuel required kWh/year		Fuel price Table 12)		Fuel cost £/year	
Space heating – main system		(85) ×	1.63	× 0.01 =	285.1927	(88)
Space heating – secondary		(85a) ×		× 0.01 =	0	(89)
Water heating						
Water heating cost (electric, off-peak tariff)						
On-peak fraction (Table 13, or Appendix F for electric CPSUs)						(90)
Off-peak fraction				1.0 - (90) =	1	(90a)
On-peak cost		(86a) × (90) ×		× 0.01 =	0	(91)
Off-peak cost		(86a) × (90a) ×		× 0.01 =	0	(91a)
Water heating cost (other fuel)		(86a) ×	1.63	× 0.01 =	65.71423	(91b)
Pump and fan energy cost		(87) ×	7.12	× 0.01 =	175.5934	(92)
Energy for lighting (calculated in Appendix L)	2790	×	7.12	× 0.01 =	198.648	(93)
Additional standing charges (Table 12)					34	(94)
Renewable and energy-saving technologies (Appendices M, N and Q)						
Energy produced or saved, kWh/year	2700	(95)				
Cost of energy produced or saved, £/year		(95) ×	7.12	× 0.01 =	192.24	(95a)
Energy consumed by the technology, kWh/year		(96)				
Cost of energy consumed, £/year		(96) ×		× 0.01 =	0	(96a)
Total energy cost	(88)+(89)+(91)+(91a)+(91b)+(92)+(93)+(94)-(95a)+(96a)=				951.3884	(97)

11a SAP rating - individual heating systems

Energy cost deflator (sap 2005)		0.91 (98)
Energy cost factor (ECF)	{[(97) × (98)] - 30.0} ÷ {(5) + 45.0} =	2.422503 (99)
SAP rating (Table 14)		65 (100)

12a. Dwelling CO_2 Emission Rate (DER) for individual heating systems (including micro-CHP) and community heating without CHP

	Energy kWh/year		Emission factor kg CO2 /kWh		Emissions kg CO2 /year	
Individual heating system:						
Space heating main from box (85)	17496.4858	x	0.194	=	3394.318248	(101)
Space heating secondary from box (85a)	0	x		=	0	(102)
Energy for water heating from box (86a)	4031.54799	x	0.194	=	782.1203103	(103)
Community scheme: (not included add if necessary)						
Space and water heating			(101) + (102) + (103)	=	4176.438558	(107)
Electricity for pumps and fans from box (87)	2466.2	x	0.422	=	1040.7364	(108)
Energy for lighting from Appendix L	2790	x	0.422	=	1177.38	(109)
Energy produced or saved in dwelling	2700	x	0.422	=	1139.4	(110)
Energy consumed by the above technology	0	x		=	0	(111)
Total CO_2, kg/year			(107) + (108) + (109) − (110) + (111)	=	5255.154958	(112)
Dwelling CO_2 Emission Rate			(112) ÷ (5)	=	17.51718319	(113)

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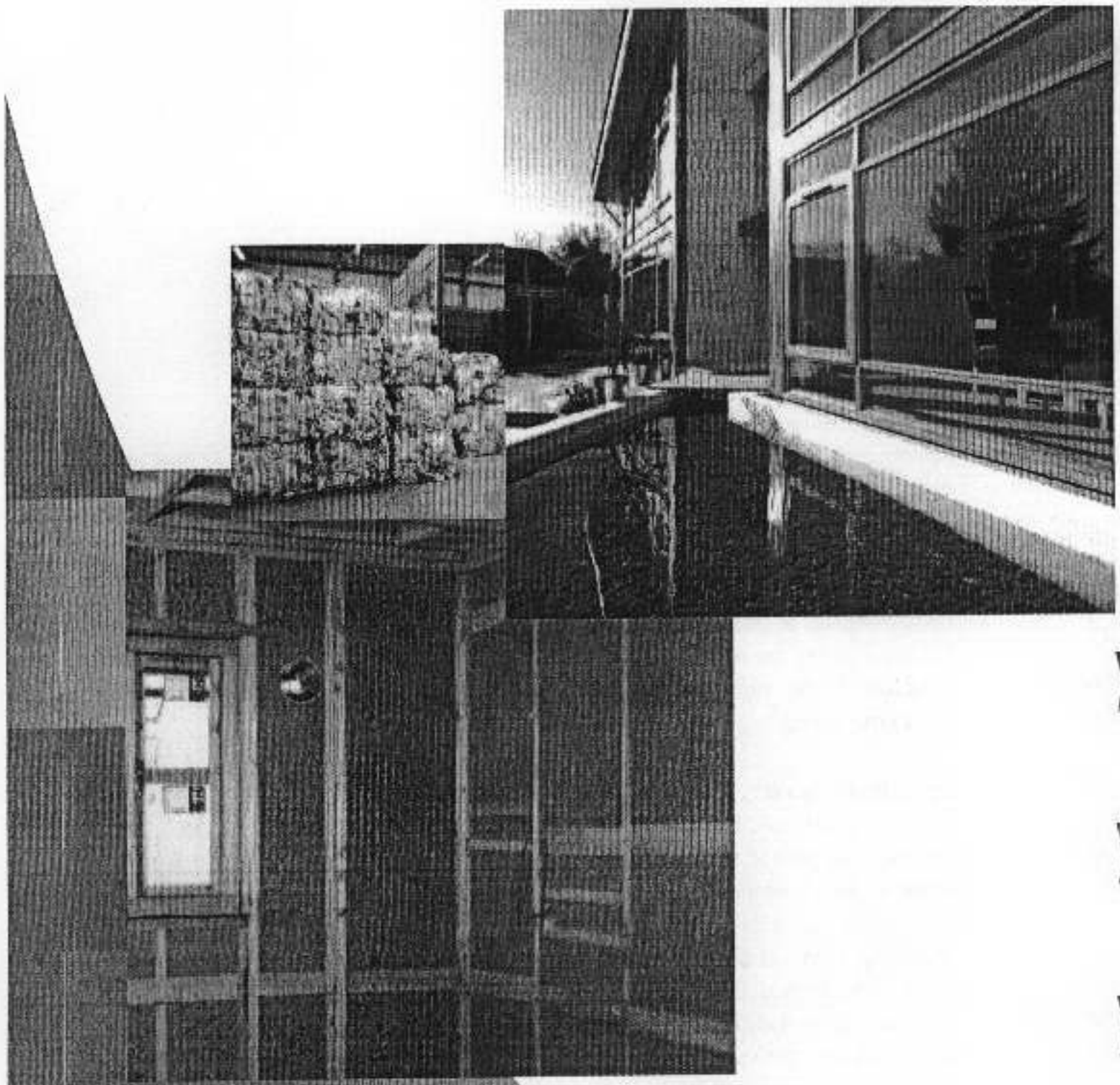
February 2006

WARMCEL®
Insulation Fibre



NBS Plus

LPCB
Certificate number 721a

EVT

WARMCEL 500
Breathing Insulation

WARMCEL 300
Loft Insulation

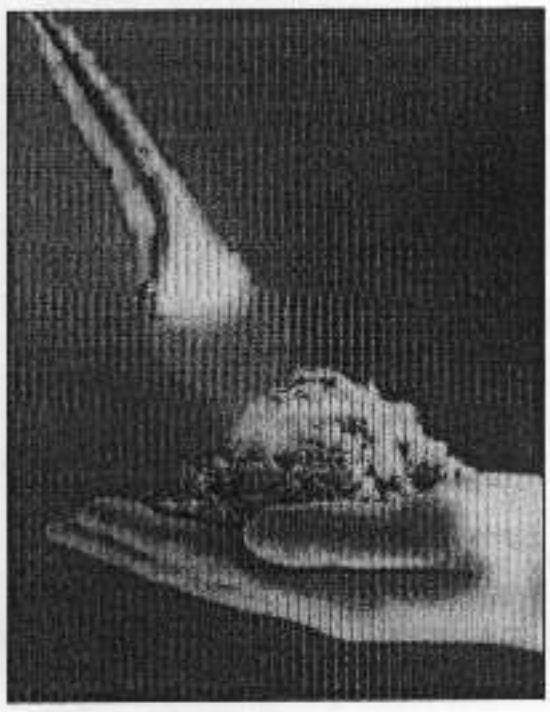
WARMCEL 100
DIY Home Insulation

Warmcel insulation - the ultimate solution for walls, floors and roofs

EXCEL
Fibre Technology

Fire Performance

As the photograph demonstrates, Warmcel is extremely resistant to fire. Its remarkable performance is achieved through the addition of simple inorganic salts, enabling it to comfortably meet the fire protection standards required for timber-frame construction and conventional lofts.



Warmcel is accredited by the Loss Prevention Certification Board (LPCB)* for use in composite timber frame wall and ceiling systems in relation to fire resistance. As such, Warmcel is listed in the LPCB 'Red Book', the board's official list of approved fire and security products and services. The Red Book is the authoritative guide to those companies whose operations, products and services achieve compliance with the quality assurance, product approval and certification schemes operated by the LPCB.

In a separate independent fire test, conducted by Chiltern International, on a loadbearing EVT wall panel, the fire resistance properties of Warmcel saw the panel exceed 70 minutes when exposed to temperatures of up to 1000°C.

Throughout the test the external face of the EVT wall panel remained at a cool 17°C.

Thermal Performance

With an impressive thermal conductivity value (k) of only 0.036 W/mK in walls and 0.035 W/mK in lofts, Warmcel's 'in use' performance is further enhanced by its ability to create a high level of air-tightness to help seal a building against air infiltration and prevent thermal convection currents.

The proven methods of application ensure the insulation provides a complete seal to prevent heat loss, eliminating gaps, cracks or other cold bridges.

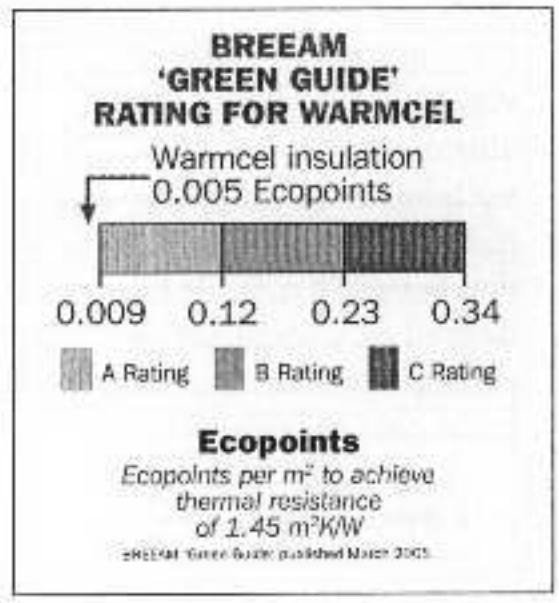
Air-tightness tests undertaken on a scheme of local authority houses in Cardiff by the Centre for Research in the Built Environment (CRiBE), part of the Welsh School of Architecture (WSA) at Cardiff University, demonstrated the air-tightness of these Warmcel-insulated homes outperformed good practice requirements.

Environmental

Manufactured from 100% recycled waste newspaper, Warmcel has extremely low embodied energy, requiring far less energy to produce than any other mainstream insulation material.

Warmcel has zero ODP (Ozone Depletion Potential). It does not contain any added formaldehyde and is free from CFCs, volatile organic compounds (VOCs) or other toxic substances. And by reducing heating demand, Warmcel also plays a major part in reducing household CO_2 emissions.

Under the BRE's Environmental Assessment Method (BREEAM), Warmcel achieved Green Guide Ecopoint 'A' ratings in every application of the insulation in various wall and roof constructions. And in comparison with other insulation materials, the Ecopoints rating for Warmcel was so good it exceeded the current best 'A' rating value.



When, eventually, Warmcel insulation is removed from a building, it can be recycled again at Excel's manufacturing facility or disposed of safely, without creating toxic waste or biodegradability problems.

Sound Insulation

The sound absorption properties of Warmcel provide an effective solution to noise pollution, particularly important in applications where airborne sound can cause a problem for people living or working in adjacent rooms.

Durability

Warmcel is formulated to protect it against any potential hazards that may be encountered in use. It is resistant to biological and fungal attack, treated against insects and is unattractive to vermin. Warmcel is also harmless to other common building components such as copper pipes, electric cabling and metal nail-plate fasteners.

Warmcel® is the only insulation material with BBA approval for use in timber framed structures that is able to demonstrate a 25 year record of successful installations.

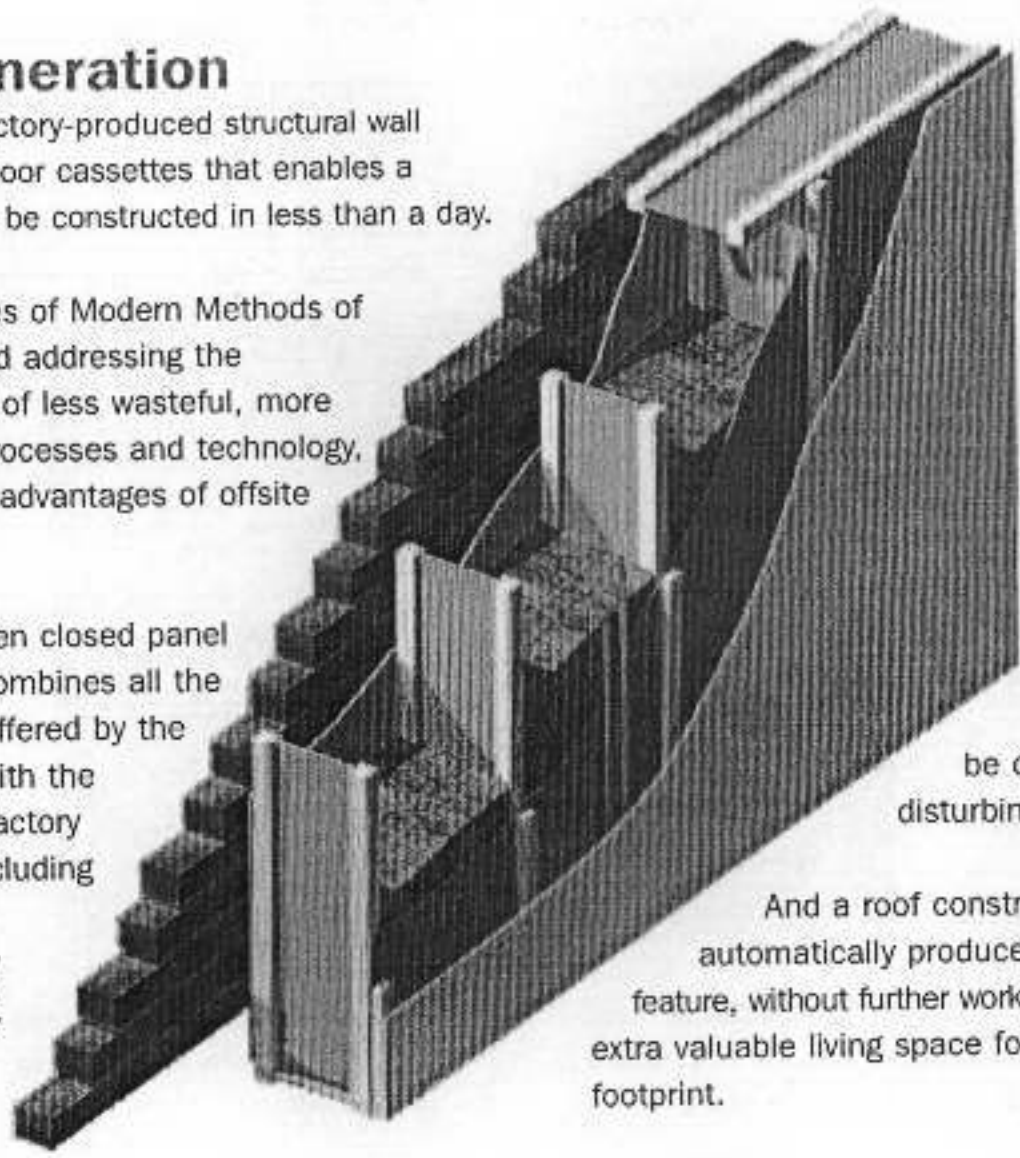
*Part of BRE Certification, the LPCB is an internationally recognised certification body responsible for the independent accreditation of fire and security products and services to the standards laid down by the certification authority.

TRADIS® – The Next Generation

TRADIS is a range of factory-produced structural wall panels, roof plates and floor cassettes that enables a complete house shell to be constructed in less than a day.

Embodying the principles of Modern Methods of Construction (MMC) and addressing the Government's objective of less wasteful, more energy efficient build processes and technology, TRADIS epitomises the advantages of offsite manufacture.

Based on the well-proven closed panel EVT solution, TRADIS combines all the performance benefits offered by the closed panel system, with the erection benefits of a factory engineered product, including dimensional accuracy, consistency and quality controlled compatibility.



Design features of TRADIS also offer on-site advantages. For example, wall panels can be supplied with doorframes and fully glazed windows already in place, so that once erected, the building interior is immediately weather protected.

An in-built service zone on the interior side of each panel facilitates the rapid installation of following services, allowing finishing times to be dramatically reduced without disturbing the integrity of the panel.

And a roof constructed from TRADIS automatically produces a 'Room-in-the-Roof' feature, without further work or adaptation, producing extra valuable living space for the same size house footprint.

Components that meet the EVT Standard

Warmcel® 500

Warmcel 500 is the heart of the EVT Solution. In addition to outstanding thermal performance, its excellent hygroscopic properties promote the migration of water vapour through the wall, floor or roof to the outside. Furthermore, this capability enables it to absorb surplus water vapour at times of high internal humidity and release it when conditions allow.

Composite 'I' Beams

EVT walls, floors and roofs can be manufactured from standard timber, but, for maximum performance, it is recommended that composite 'I' beams are used. They enable the Warmcel 500 to interlock with the wall studs, floor or roof joists, thereby maximising the integrity of the insulated section. Composite 'I' beams are themselves designed for minimal cold bridging, featuring only a thin section web between flanges of sustainable timber.

Panelvent®

For EVT walls, only Panelvent external sheathing offers the correct vapour compatibility for guaranteed performance. The only external sheathing product to have been extensively tested for EVT applications, Panelvent provides high racking strength and exhibits excellent weather resistance.

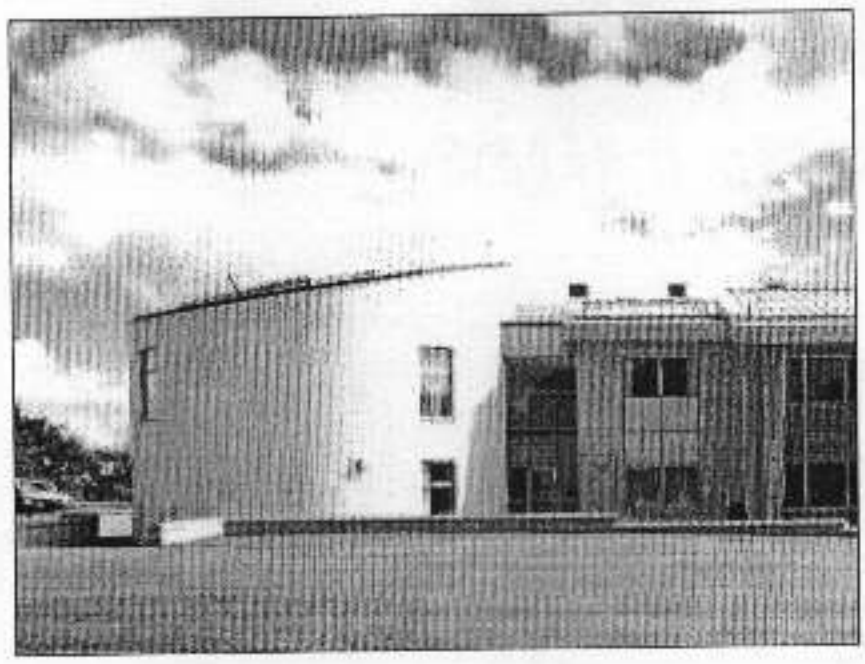
Paneline

Paneline sheathing board is recommended as the internal sheathing on TRADIS panels to ensure the correct balance of vapour resistivity and permeability is achieved.

All of these components have been selected to create a healthy living environment and do not produce any harmful emissions.

Building Fabric Meets Sustainability Requirements

The sustainability, insulation performance and structural integrity of Warmcel-insulated TRADIS wall panels were the principal reasons for them being specified by Falkirk Council for the construction of a new primary school extension in Bo'ness, Falkirk. The extension to Deanburn Primary School was designed to accommodate 440 pupils in a structure featuring high levels of sustainability and energy efficiency.



Used as infill sections in the steel frame superstructure of the 2,400 m² school building, the TRADIS panels needed to be self-supporting up to 5m high, enabling them to be used for both the single and two storey wall sections. Using 200mm deep wall panels, Deanburn Primary School was able to achieve an impressive U value for the building walls of 0.15 W/m²K.

The light weight of the structure also minimises the foundation requirement for the school, again reducing impact on the environment.

Externally, the school extension was clad in a combination of architectural masonry, render, Trespa panels and red cedar cladding. The roof coverings comprise green sedum roofs, PVC single ply membrane and Speedeck Speedzip systems.

Quality Approvals

Warmcel has demonstrated its performance and environmental credentials to independent testing bodies throughout Europe. As such, it has received endorsements and accreditations from the most industry-respected authorities across the continent.

BBA BRITISH BOARD OF AGREMENT

HAPM Housing Association Property Mutual Limited

SP PROVNING FÖRSÖK

CSTB le futur en construction

eaga

KVALITETS KONTROLLUTVALGET NORSKE KONTROLLERT VIF

ZURICH

SITAC Swedish Institute for Technical Approval in Construction Svenskt Byggodkännande AB

SKH

BOVERKET National Board of Housing Building and Planning

BSI REGISTERED FM 00372

TRADA

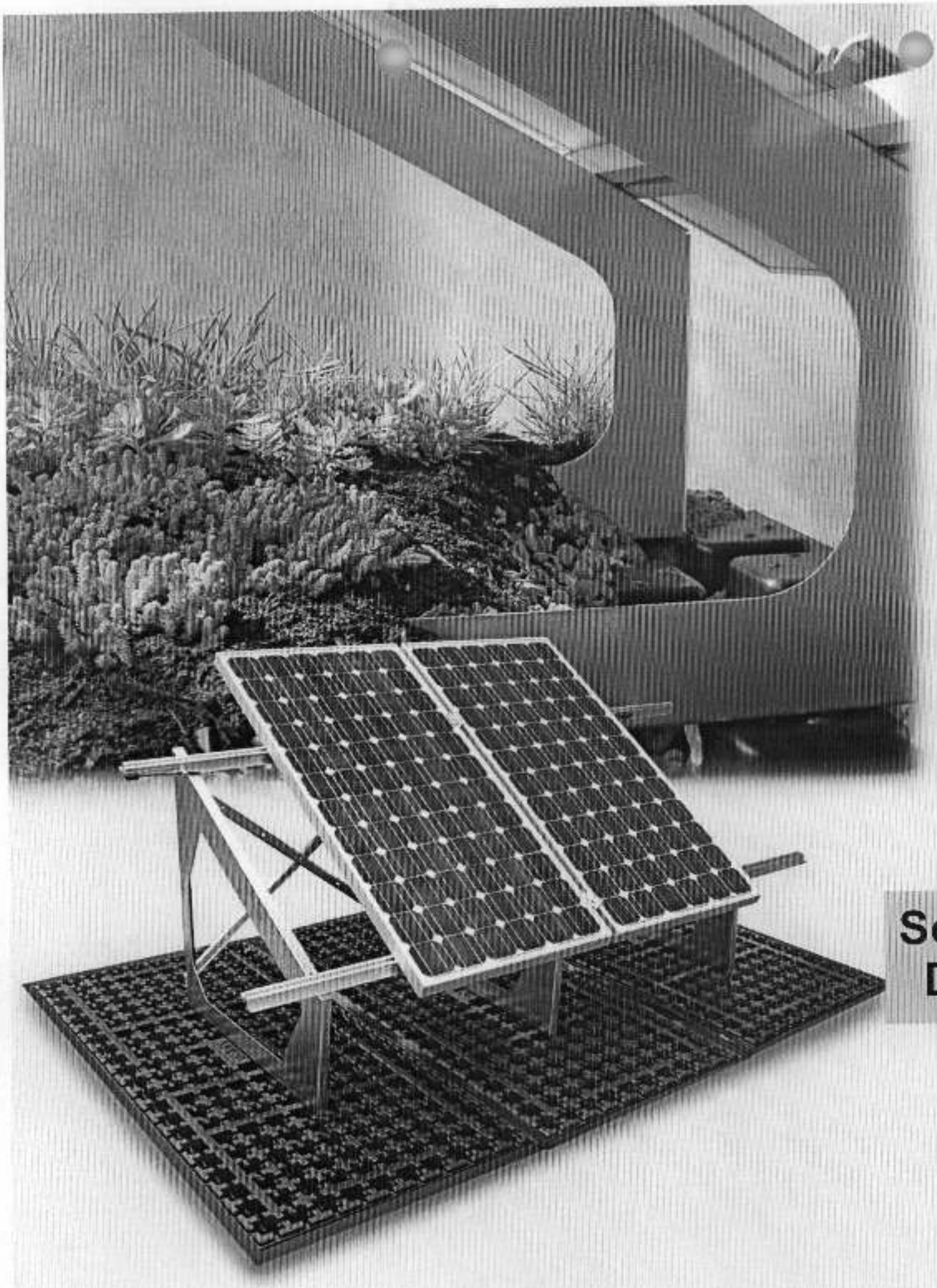
WALES

NHBC

LPCB LOSS PREVENTION CERTIFICATION BOARD Certificate number 721a

Housing Executive Northern Ireland Housing Executive

BUY RECYCLED BUY IT, RECYCLE IT, BUY RECYCLED



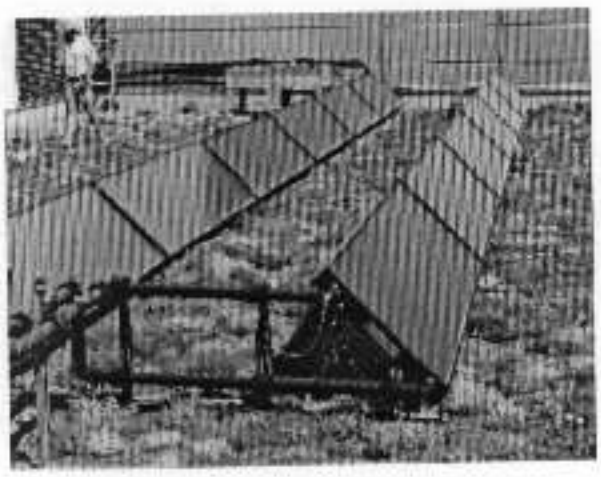
Solarbasis

Solarenergie und Dachbegrünung

Ingenieurwerkstatt + Gründachsysteme

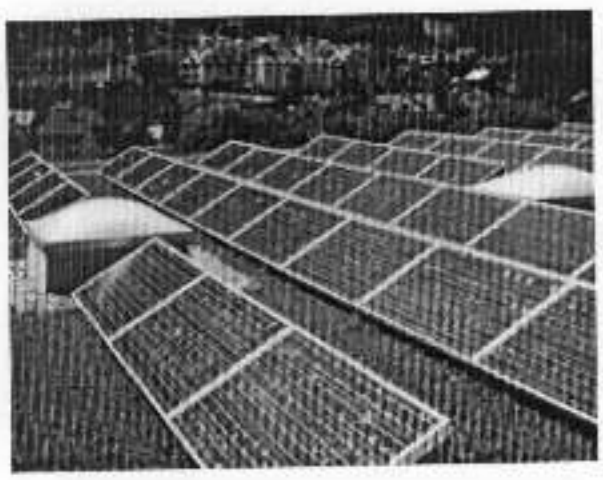
Green Roofs and Solar Energy from ZinCo

Hot Water Generation using Solar Thermal Collectors



The thermal use of solar energy combined with a green roof is the ideal solution for flat roofs, for ecological as well as for economic reasons.

Generating Electricity using Photovoltaic Modules



The effectiveness of the photovoltaic plant is improved by the combination with a green roof. The cooling caused by the evaporation of the plant level ensures a favourably lower ambient air temperature.

Traditional Fixing Methods

Solid concrete foundations, close-butted or linear

Screwing to steel supports

Loading of the supports by concrete slabs or gravel

Konsequent ökologisch! Der Solar-Grundrahmen aus Robinienholz.

Zugegeben: Aluminium ist ein sehr energieaufwendig herzustellender Werkstoff. Deshalb produziert eine Photovoltaik-Anlage für eine gewisse Zeit erst einmal die Menge an Energie, die vorher als so genannte „graue Energie" zu ihrer Herstellung aufgewendet wurde.
Die ökologisch sinnvolle Alternative ist eine Unterkonstruktion aus einem nachwachsendem Rohstoff, also Holz. Für die Anwendung im feuchten Bereich und für die Lebensdauer der Solaranlage ist es aber ungemein wichtig, ein Holz zu verwenden, welches nicht verrottet.
Wir verwenden hier die Robinie, ein in Europa kultiviertes Holz mit hervorragenden Eigenschaften, Dauerhaftigkeit gemäß EN 350-2 in Klasse 1 ... 2 (sehr dauerhaft/dauerhaft), aber ohne die Probleme von Tropenholz.

Diese Broschüre soll Ihnen einen generellen Überblick zum Thema Solarnutzung und Dachbegrünung geben. Für die diesbezügliche **objektspezifische Ausarbeitung** Ihrer konkreten Bauvorhaben steht Ihnen selbstverständlich die **ZinCo-Ingenieurwerkstatt** wie auch unsere **technischen Fachberater** zur Seite: von der Planungsphase bis zur Ausführung.

Fordern Sie uns!
Hot-Line ZinCo-Ingenieurwerkstatt
Tel. 07022/6003-516
e-mail: technik@zinco.de

Fax-Anforderung / Objektanfrage 0 70 22 / 60 03-511

Unser Objekt: .....

Größe der Dachfläche ca. ..... m² Dachneigung ..... Grad oder ..... %

❑ **Neubau/Sanierung** es ist geplant: ❑ Dachbegrünung ❑ Kies

❑ **Anlage auf bestehendem Dach erstellen:**
es ist vorhanden: ❑ Dachbegrünung, Schichthöhe .....cm
❑ Kies, Schütthöhe .....cm
❑ nacktes Dach

❑ **Photovoltaik** geplante Generatorleistung .....kWp
geplante PH-Module/Type .....
Montage ❑ senkrecht ❑ waagerecht

❑ **Solarthermie** geplante Kollektoren/Type .....
geplante Anzahl ..... Stück
Montage ❑ senkrecht ❑ waagerecht

Wurde die Statik bereits geprüft? ❑ ja ❑ nein

❑ sonstige Anwendung: .....

❑ Wir bitten um ein Beratungsgespräch ❑ Unterlagen

Unsere Anschrift:

Firma: .....
Ansprechpartner: .....
Straße: .....
PLZ / Ort: .....
Tel. : .....
Fax: .....
E-mail: .....

Anmerkungen: .....

5/05

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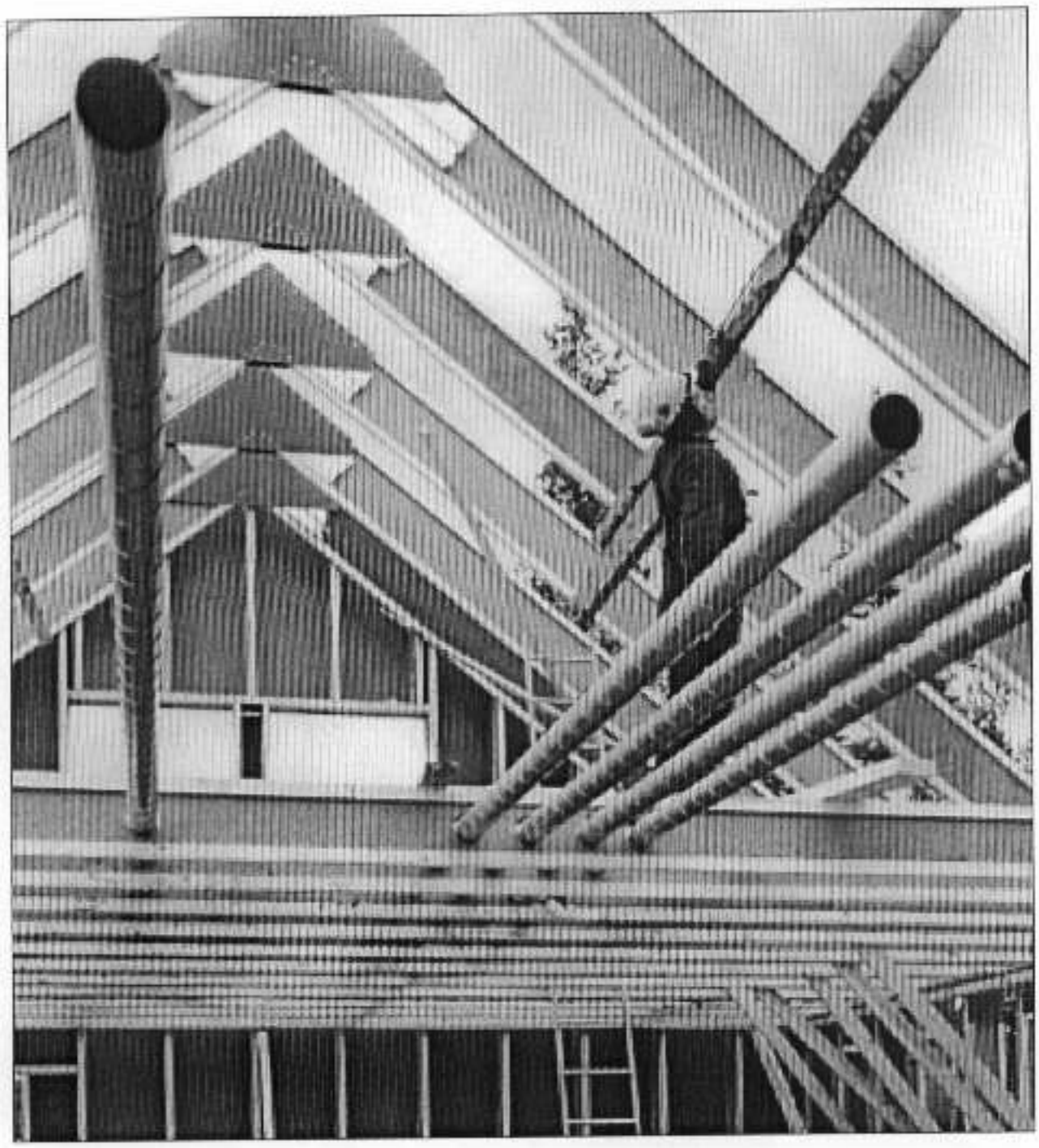
Im Internet finden Sie uns unter http://www.zinco.de • e-mail: contact@zinco.de

MASONITE®

Building System



- Light, straight and strong
- Dimensionally accurate and stable
- Excellent thermal performance
- Minimal environmental impact
- No harmful emissions
- BBA approved

The engineered solution –
for buildings with the ultimate integrity

The Masonite Building System

The Masonite Building System comprises a range of engineered Masonite Beams, incorporating wall studs, floor/ceiling joists and roof rafters, and Masonite K40 Structural board – the strongest building board in the world.

Design Freedom, On-site Practicality

Utilising standardised components with dimensions suited to workable design and ease of use, the Masonite range offers more options and greater creative freedom, matching architects' aspirations to on-site practicality.

The Masonite Building System is suited to all types of construction, including 'brick and block', steel portal and timber frame. The benefits offered by the Masonite range are equally applicable for 'stick built' projects, partial pre-fabrication or the latest, fast track installations, featuring Masonite-based, fully factory-manufactured and insulated TRADIS® wall panels, floor cassettes and roof plates.

Longer Spans

Providing outstanding strength and rigidity, whilst being lighter and therefore easier to handle than solid timber, Masonite Beams are supplied in many standard lengths up to 12m. This offers the opportunity to create complete building envelopes, featuring long, uninterrupted spans.

This means that internal walls do not need to be loadbearing and can, therefore, be easily repositioned at any time during the building's life, without major structural modifications - an important consideration for 'lifetime homes'.

Faster Build, Higher Quality

Because the Beams are so light, longer sections can be used (either pre-fabricated or assembled on site), as they can be comfortably lifted and manoeuvred into position. This leads to faster installation and shorter erection times. Simple detailing, accurate dimensioning, and minimal waste, without the need for specialist labour, further benefit the installation programme and return a high level of build quality.

Extra Living Space

In addition, roofs constructed from Masonite Beams offer the opportunity to utilise additional roof space as a 'Room-in-the-Roof' feature.
This provides more valuable living accommodation for the same size house footprint and without the need to build additional storeys.
The Masonite Beams allow a high degree of insulation to be incorporated within the roof structure, creating a warm roof.

Masonite® Beams

The Masonite Beam range includes wall studs from 150mm to 300mm deep and beams for floor/ceiling joists and roof rafters ranging from 150mm to 500mm. All Beams are available in a range of standard lengths up to 12m and custom beams are available.

Masonite® K40™ Structural Board

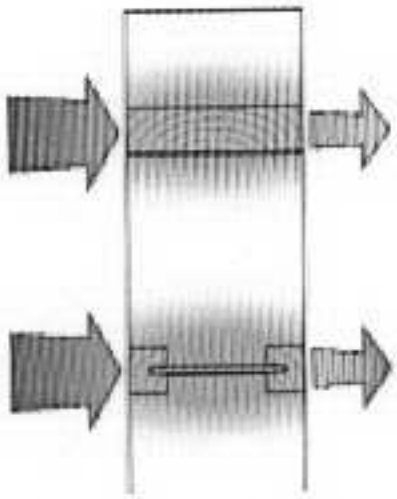
The strongest board in the world for shear performance, Masonite K40 structural board provides the web for Masonite Beams, providing maximum strength for minimal weight. Masonite K40 is also used to link together structures made from Masonite beams, such as pre-fabricated frames and roof trusses.

Roofs constructed from Masonite Beams offer the immediate benefit of extra roof space. This example shows the rafters at 1200mm centres – in contrast to the normal 600mm spacing in conventional fink truss roofs.

A typical fink truss roof construction, featuring a mass of cross ties and struts taking up valuable space that a Masonite roof would transform into an additional 'Room in the Roof'.

Enhanced Thermal Performance

Utilising a web only 8mm thick to join the Beam's two timber flanges ensures that cold bridging is reduced to a minimum, thereby enhancing the thermal performance of walls, floors and roofs constructed from Masonite Beams. The thermal conductivity, or 'K' value, of Masonite structures is around 15% better than in conventional timber frame structures and can produce U values as low as 0.18 W/m^2K in a 170mm deep wall.



Masonite Beams minimise cold bridging

Energy Efficient

This thermal performance, when used in combination with effective insulation, also has a favourable impact on the energy efficiency of a building, producing a significant reduction in heating costs.

For example, in the cost-conscious area of social housing, Masonite Beams, used as part of TRADIS factory-manufactured wall panels, roof plates and floor cassettes, have been used to build homes with typical U values of 0.18 W/m^2K down to 0.10 W/m^2K (depending on the depth of the Beam) – well ahead of building regulations requirements.

Environmentally Responsible

Masonite Beams use 40% - 65% less raw material than conventional timber building methods. Since only the flange elements of the beams are manufactured from solid timber, the trees from which they are cut can be less mature and therefore more quickly replaced than is the case for equivalent sized solid timber beams.

Masonite K40 structural board is manufactured from sawmill waste. Proper detailing can also significantly reduce the number of studs required in wall construction, reducing raw material usage.

Healthy Living

None of the products in the Masonite range utilise preservatives and all are free from CFCs or other toxic substances. Both Masonite Beams and Masonite K40 produce less formaldhyde than their solid timber equivalents.

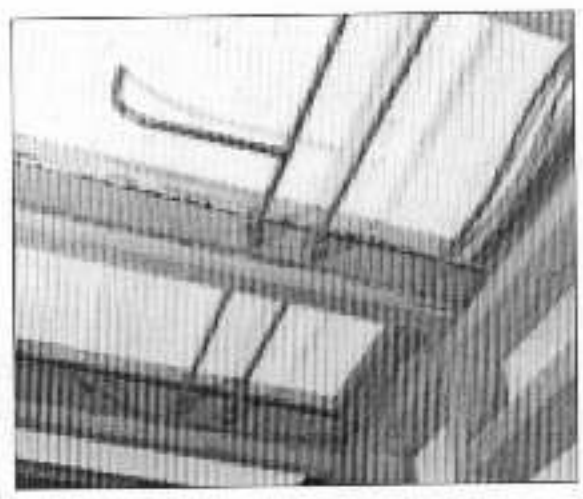
Masonite Beams have been assessed by Trada Technology and the BBA as being suitable for Class 1 and 2 environments as defined in BS 5268: Part 2 1996, without the need for preservative treatment.

Fire Protection

In an official fire test conducted by Chiltern International on a loadbearing panel constructed from Masonite Beams, Warmcel 500 Breathing Insulation, Panelvent external sheathing and with plasterboard providing the internal face, the panel withstood over 70 minutes of sustained exposure to temperatures of up to 1000°C, exceeding the standard building regulations requirement by over 40 minutes. Throughout the test the external face of the panel remained at a cool 17°C.

Accommodating Services

Electrical wiring, gas and water pipes and other services, including larger size pipework for air conditioning and ventilation control, can all be simply run through the web of the Beams (see separate technical information for the positioning and sizing of holes). This removes the need for complicated and costly service runs or the individual adaptation of structural elements to accommodate pipes and fittings.



Internationally Endorsed

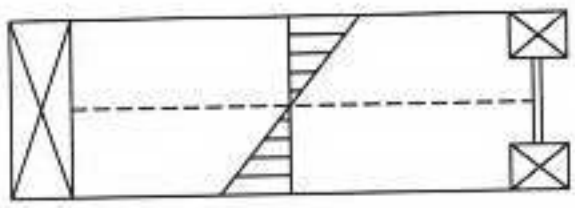
Masonite Beams have full BBA approval and also full type approvals in most other major European countries.

BBA BRITISH BOARD OF AGRÉMENT
ASSESSMENT OF PRODUCTS FOR CONSTRUCTION

Masonite® Beams

Strong

The strength of Masonite Beams lies at the very point where the load is greatest – on the top and bottom edges.



This strength is derived from the balanced combination of the carefully selected, machine stress graded, slow grown whitewood used for the flanges of the Beams and the ultra strong Masonite K40 web that joins the flanges together.

It equips Masonite Beams for virtually any structural application, including load bearing walls, suspended ground floors, intermediate floors, as rafters in sloping roofs and in flat roofs for domestic, industrial and commercial buildings.

In many roof designs, Beams can be spaced at 1200mm centres, compared with the more usual 600mm requirement for traditional timber, and in almost all situations, they eliminate the need for collar beams or struts.

By removing the need for traditional roof trusses, a true 'Room-in-the-Roof' feature can be created, without adding significantly to the build cost of a property.

Straight

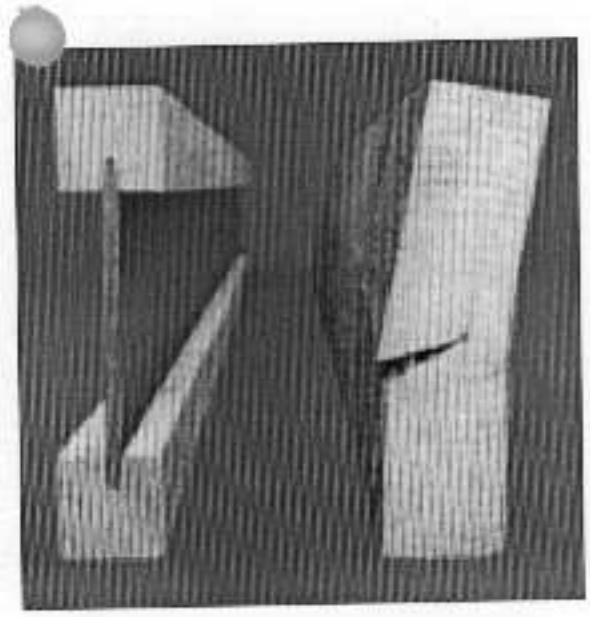
Masonite Beams do not warp or twist, even when exposed to moisture, and are dimensionally stable. The maximum shrinkage of a Masonite Beam is less than 1%, compared with the 3% to 4% shrinkage suffered by an ordinary timber beam as it dries out. Knotty and cross-grained timber can exacerbate this effect, resulting in creaking floors, cracking, 'nail popping' and other defects, all of which leads to increased maintenance and callbacks. Masonite suffers no such problems.

Light

Masonite Beams weigh only half the weight of solid timber – a standard, 200mm deep, 12m long Beam weighs less than 35 kg.

Comparing this with a typical brick and block construction, typical weight savings of 600 kg per m^2 can be realised by using Masonite Beams in a Breathing Wall application.

This light weight eliminates the need for a crane for building stick built structures, while pre-fabricated panels and cassettes, which do require crane installation, can be produced in longer lengths for faster construction, thereby minimising crane time on site.



Long

Manufactured in standard lengths up to 12m, Masonite Beams enable long, clear spans to be achieved, offering maximum design flexibility, such as freedom in specifying internal layouts, without having to allow for loadbearing internal partitions or supporting pillars. The long lengths available also enables them to be used in conjunction with Glulam LVL or steel to provide the most economical building solution. Masonite Beams also make excellent secondary bearers in industrial buildings.

Masonite® K40™ Structural Board

Extreme Strength

Masonite K40 structural board was designed to be the strongest building board in the world. Offering extreme strength and toughness, it has been developed for use as a loadbearing component in structures such as beams, studwork, sandwich elements and linking components, for example, as the connection plate in roof constructions. K40 can be used in constructions to replace timber, plywood or OSB.

Extreme Toughness

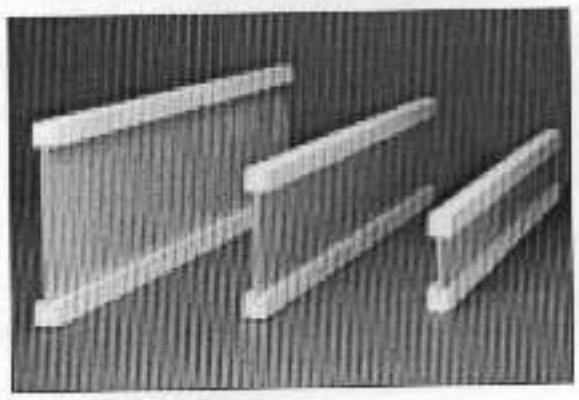
In comparative tests, Masonite K40 board has demonstrated shear strength almost four times that of plywood and, because of the homogenous nature of the product, this shear strength is apparent throughout the thickness of the board. Furthermore, since the fibres used to manufacture the board are oriented randomly, producing multi-directional bonding, K40 is strong in both axes.

Extreme Durability

Masonite K40 is highly resistant to damp and rot, producing minimal movement due to damp and significantly less movement than that associated with timber and wood chip products. Boards can be worked with machine or hand tools and withstand rough handling without damage to corners or edges. K40 can be fixed with adhesive, nails, screws or a combination of these fixing methods.

Masonite K40 structural board is produced using the patented Mason method, whereby steam is used to explode wood chips into long fibres. These fibres are shaped into sheets and pressed and heat treated to achieve the finished board. The long fibres of Masonite K40 give the product greater bending strength, better tensile strength and excellent dimensional stability compared to boards with shorter fibres or glued laminations.

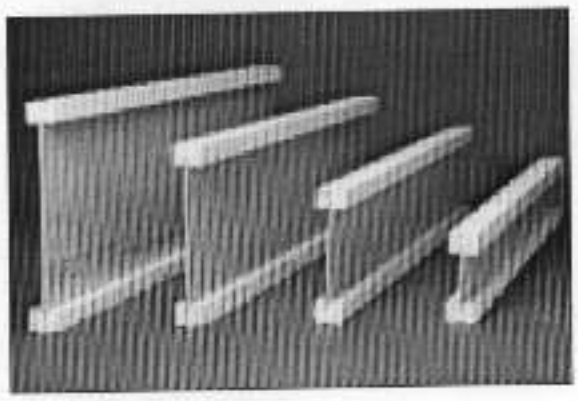
Masonite® Building System



Standard Beams

For floor/ceiling and roof constructions, as a secondary bearer in large buildings and as a wind reinforcement for walls.

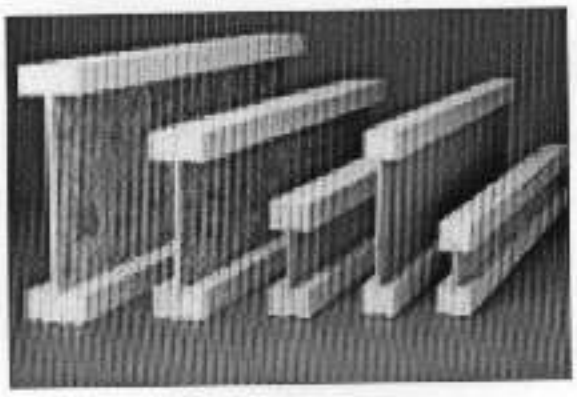
Depth: 150 – 400mm
Flange: 47 x 47mm whitewood of special stress grade quality.
Web: 8mm K40



Industrial Beams

For floor/ceiling and roof constructions in large buildings and as a secondary bearer used in conjunction with primary bearers made of other materials such as steel.

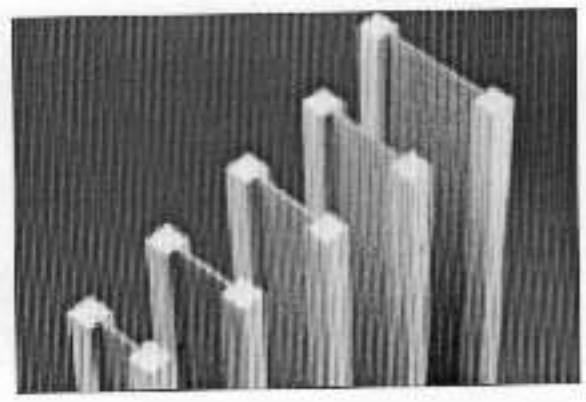
Depth: 150 – 500mm
Flange: 47 x 70mm whitewood of special stress graded quality.
Web: 8mm K40



Heavy Duty Beams

Primary and secondary bearer for floor/ceiling and roof constructions.

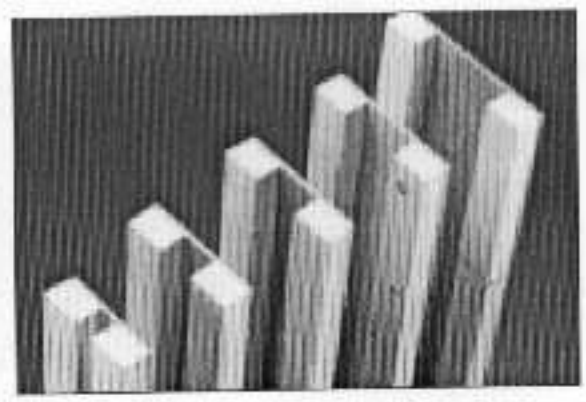
Depth: 150 – 500mm
Flange: 60 x 90mm whitewood of special stress grade quality.
Web: 15mm structural board



Masonite Wall Stud

For supporting walls and studwork and as a wind reinforcement in large buildings.

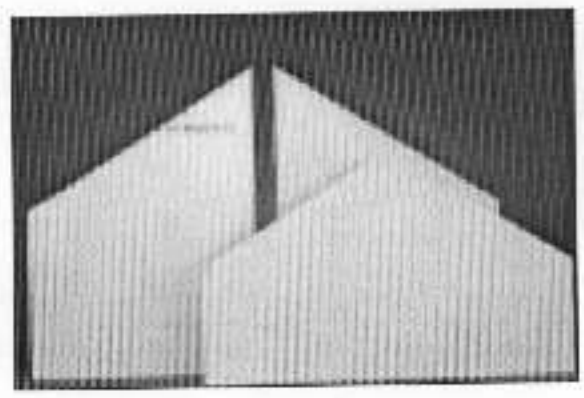
Depth: 150 – 300mm
Flange: 47 x 47mm whitewood of special stress grade quality
Web: 8mm K40



Masonite Sill, Head and Sole Plate

For the transfer of loads between a roof truss and a wall and between a wall and foundation.

Depth: 170 – 300mm
Flange: 45 x 70mm whitewood
Web: 8mm K40



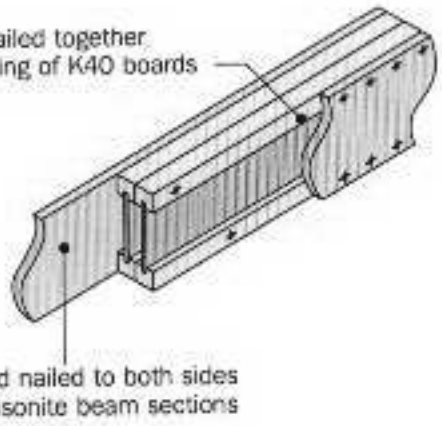
Masonite K40™ Structural Board

For connecting structures made of Masonite beams and studs, for instance, in frame and roof trusses as gussets.

Thickness: 8mm
Size: 1250 x 2400mm or cut to suit

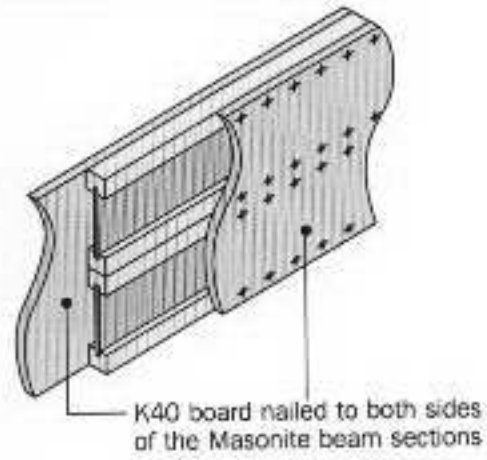
Detail Illustrations

Note: Nailing recommendations to be confirmed by Structural Engineer



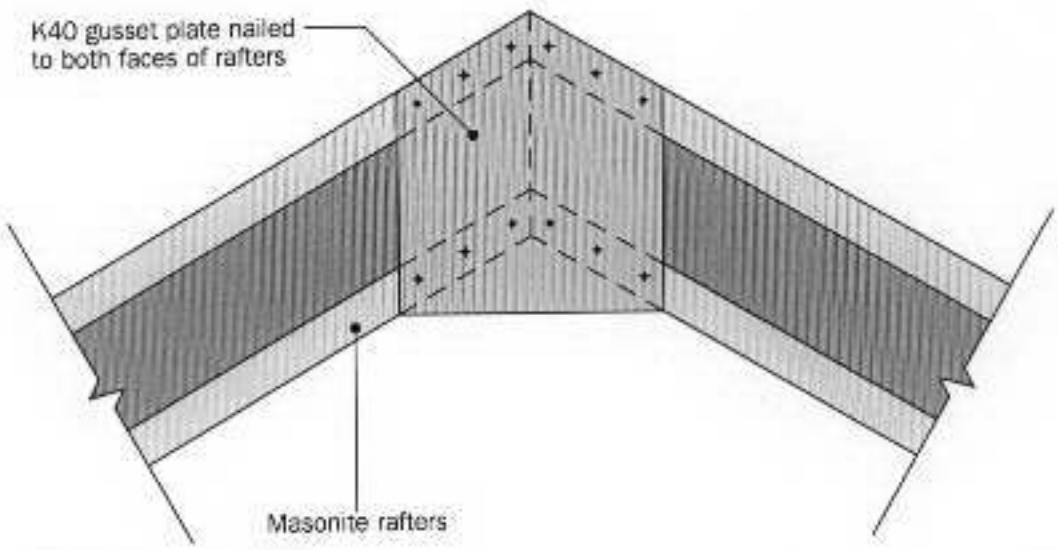
Purlin/Ridge Beam Detail 1

Note: Nailing recommendations to be confirmed by Structural Engineer

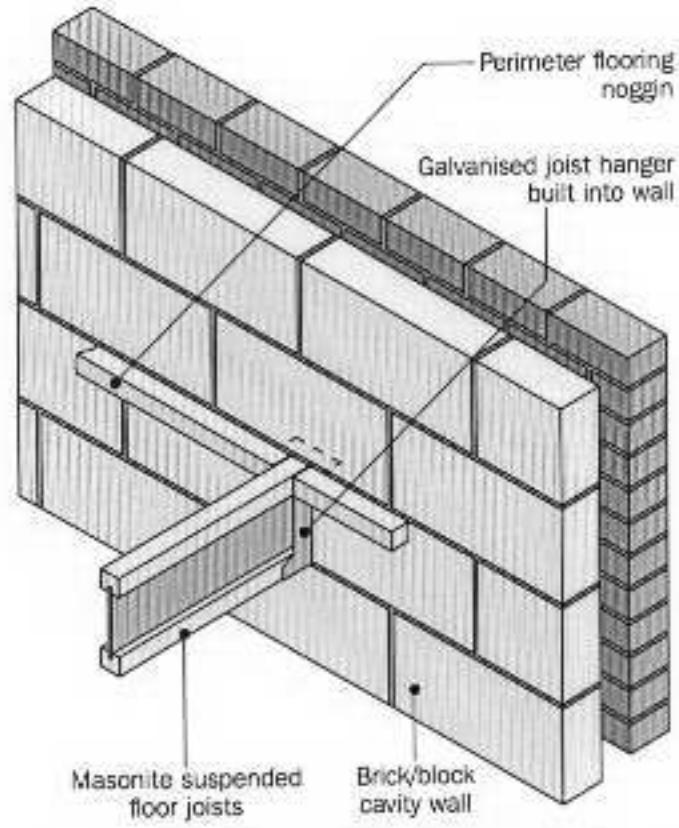


Purlin/Ridge Beam Detail 2

Note: Nailing recommendations to be confirmed by Structural Engineer

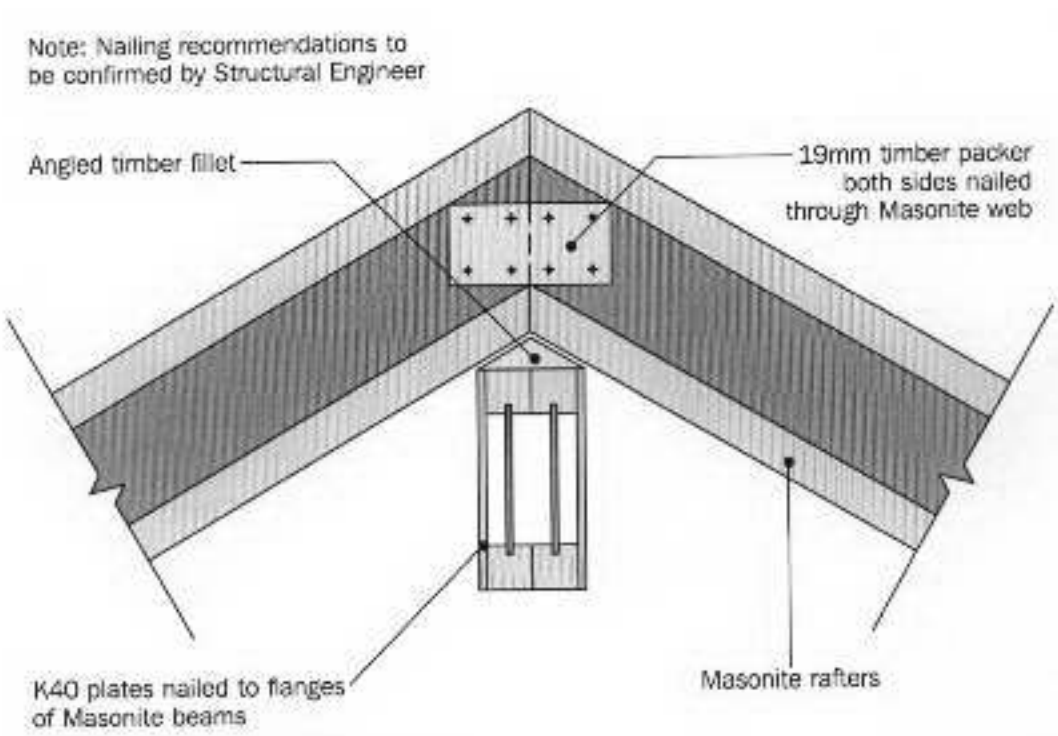


Ridge Connection Detail 1



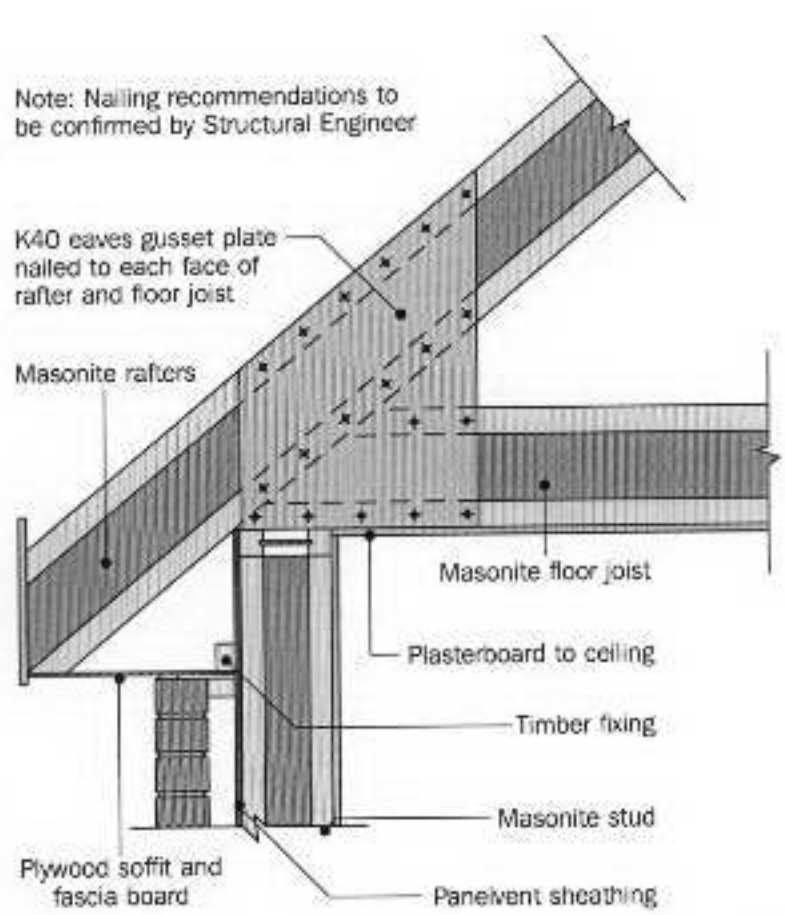
Floor Support Detail at Masonry Wall

Note: Nailing recommendations to be confirmed by Structural Engineer

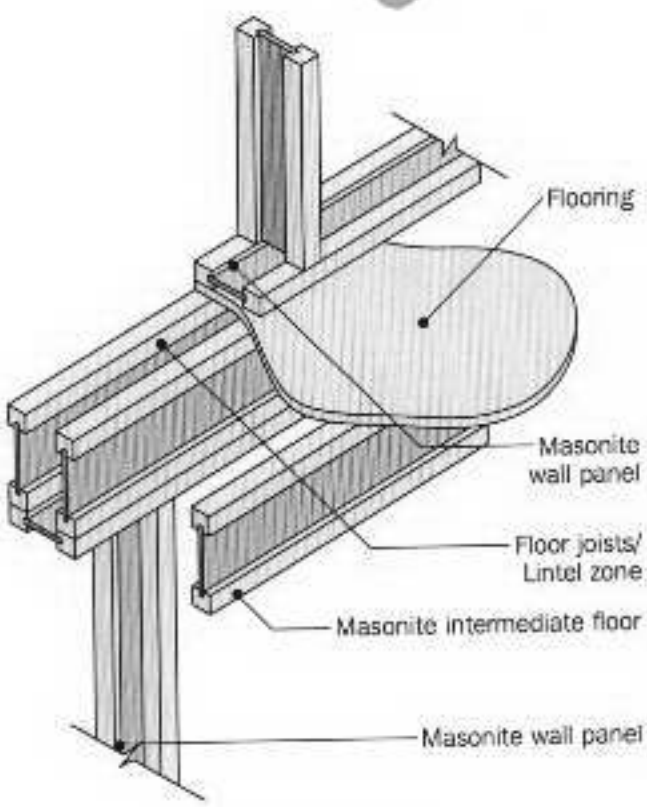


Ridge Connection Detail 2

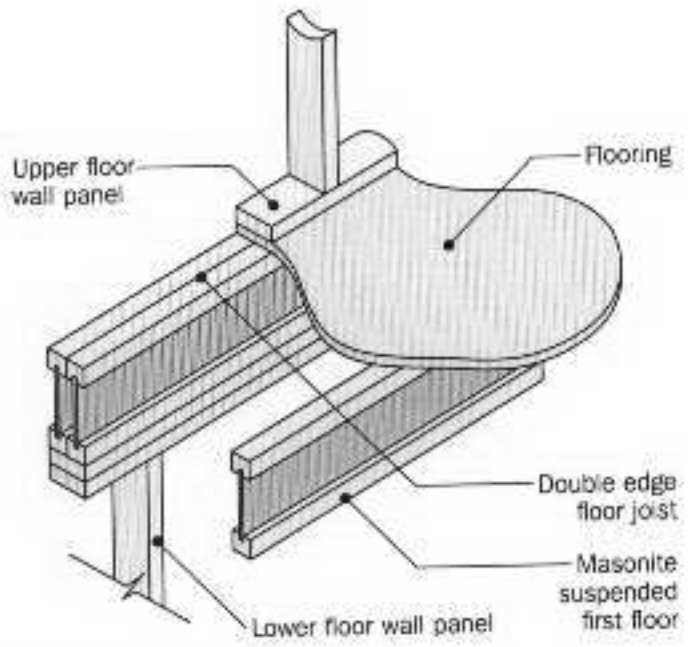
Note: Nailing recommendations to be confirmed by Structural Engineer



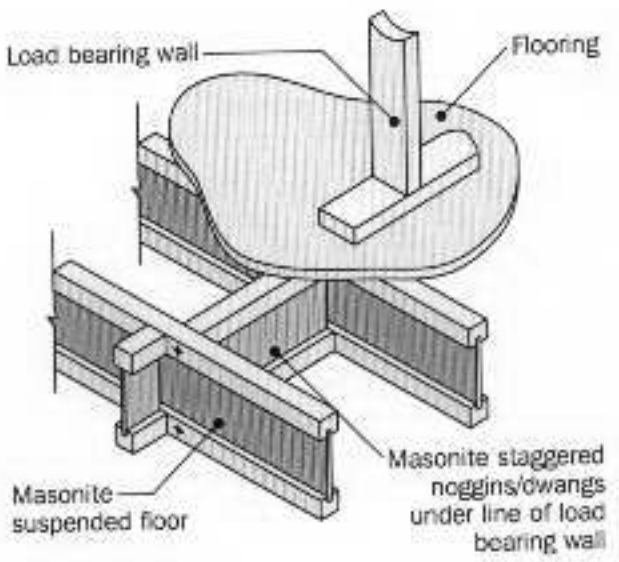
Eaves Connection Detail



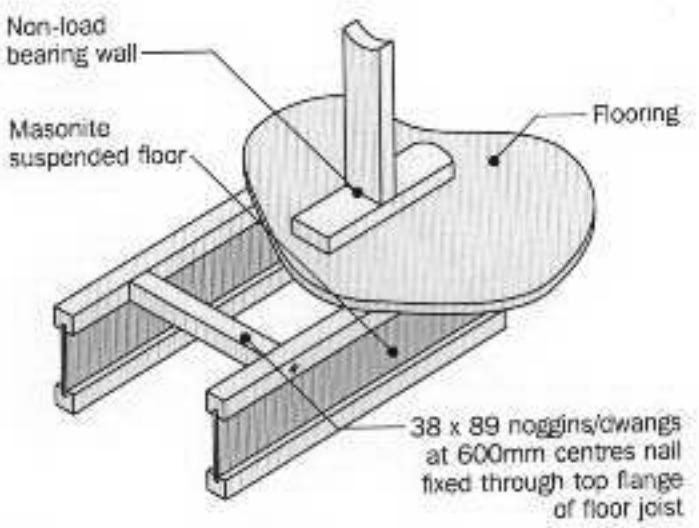
Edge Detail Joists Parallel (Masonite wall panels)



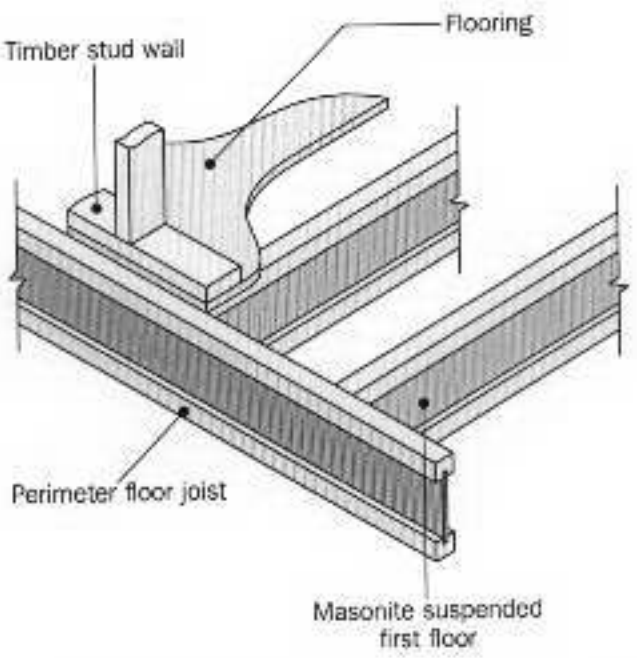
Edge Detail Joists Parallel (Timber stud wall panels)



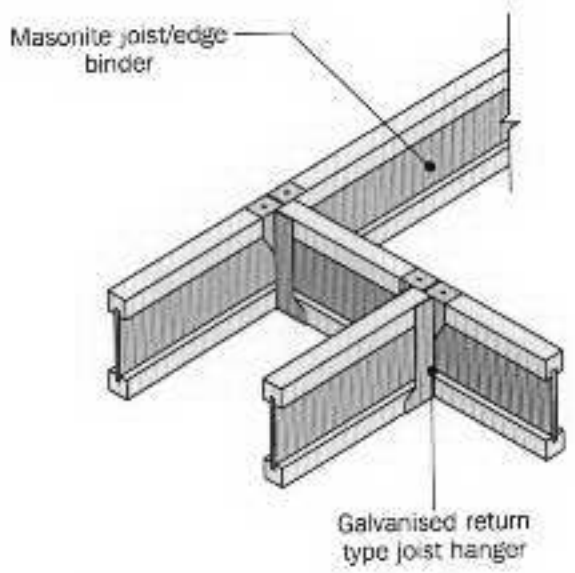
Floor Support Detail For Load Bearing Partitions



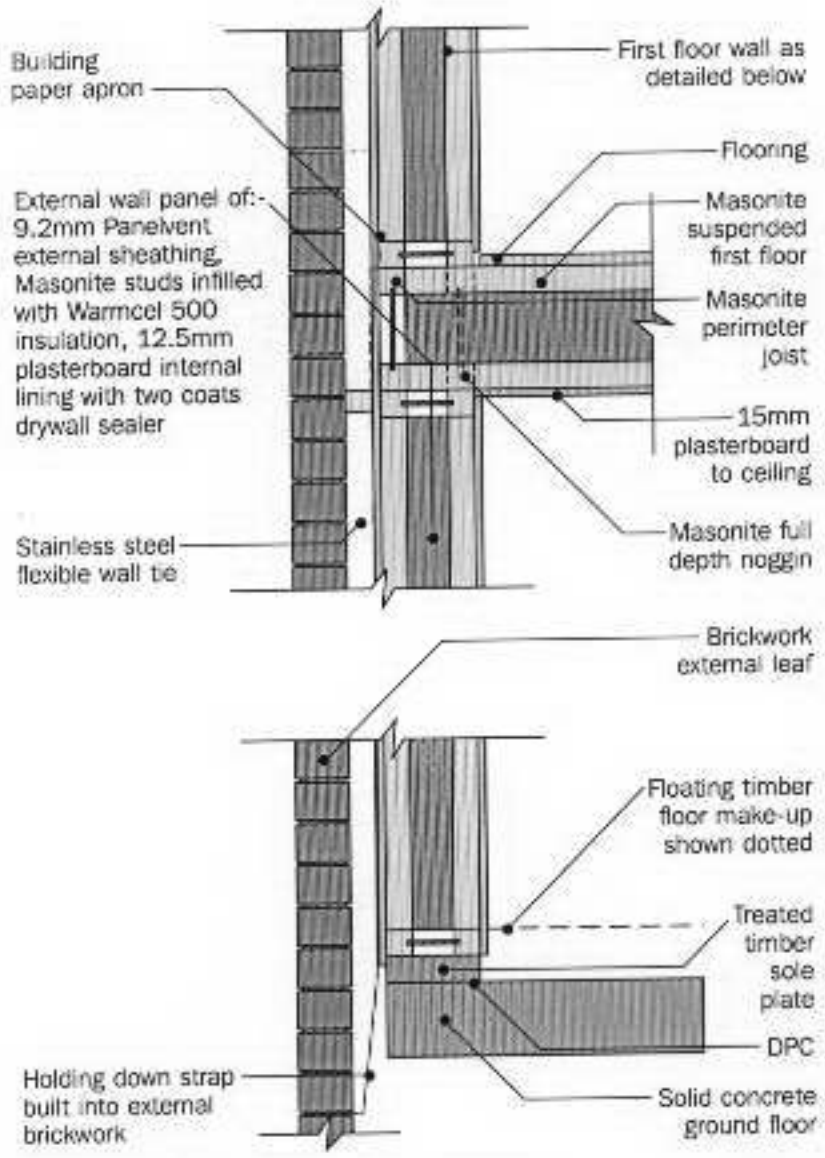
Floor Support Detail For Non-Load Bearing Partitions



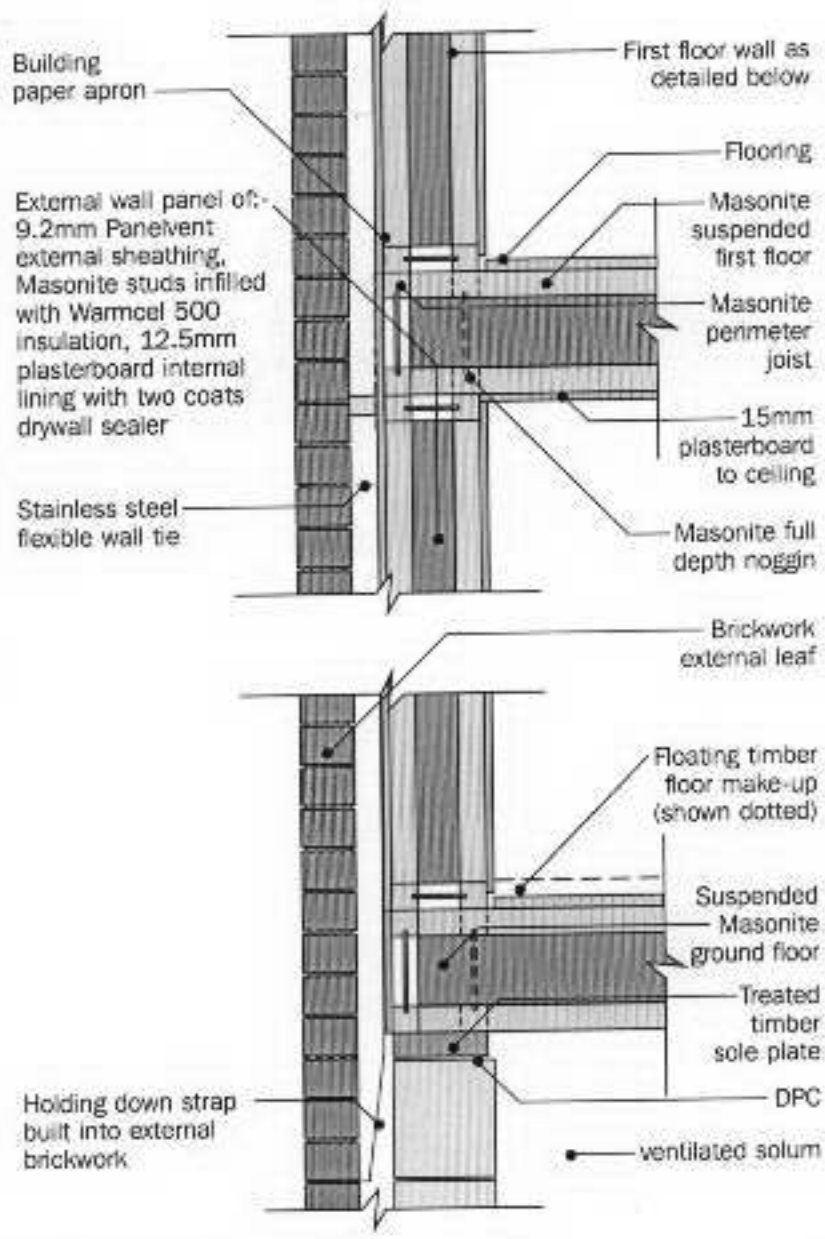
Edge Detail Joists Perpendicular



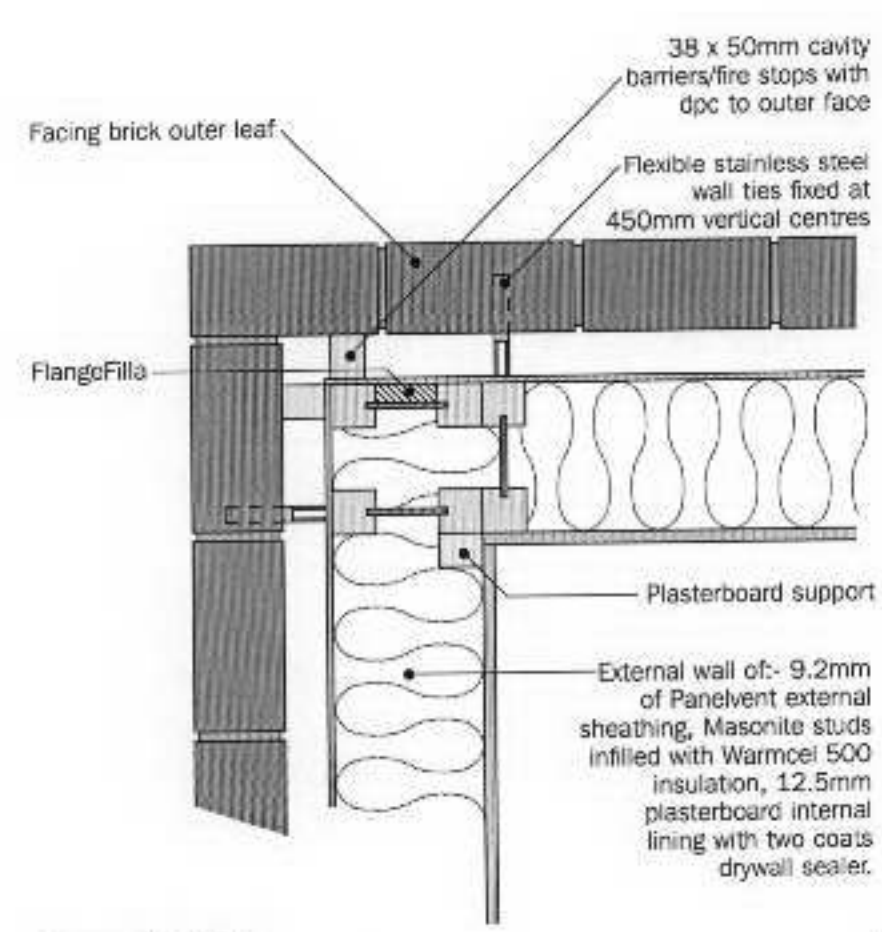
Floor Trimming Detail



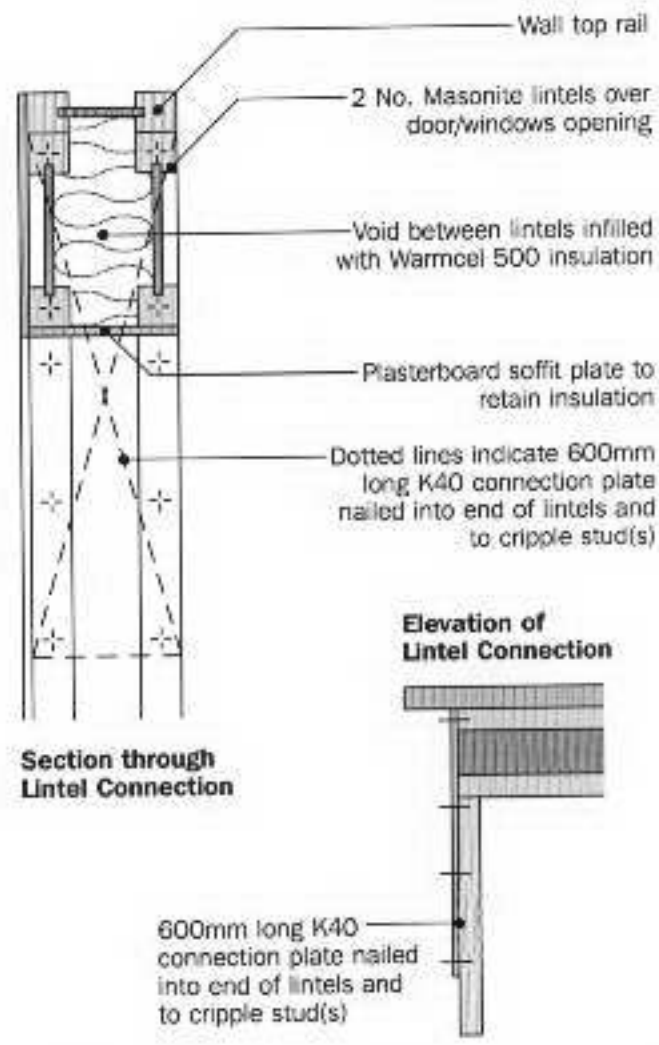
Ground/First Floor Junction Detail



Ground/First Floor Junction Detail



Corner Detail



Lintel Connection Detail

Quality Approvals

Masonite has demonstrated its performance and environmental credentials to independent testing bodies throughout Europe. As such, it has received endorsements and accreditations from the most industry-respected authorities across the continent.

BBA BRITISH BOARD OF AGRÉMENT

FMPA

BOVERKET
National Board of Housing Building and Planning

SITAC
Swedish Institute for Technical Approval in Construction

NHBC

SP PROVNING · FORSKNING

Nr. 2169

SWEDAC ACKREDITERING

HAPM
Housing Association Property Mutual Limited

ZURICH

TRADA

Masonite® Building System

for buildings with the ultimate integrity

Strength, speed, structural integrity and minimal environmental impact.

The Masonite Building System delivers.

Whether you're building a 'two-up two-down', a row of terraces or a dream home in a tranquil idyll, Masonite is the choice.

Extending the architect's freedom for innovative design.

Simplifying the task of the structural engineer.

Eradicating problems for the project engineer.

Providing the opportunity to create cost-effective lifetime homes.

From enhanced on-site safety during construction to a healthier living environment for the building's inhabitants.

Masonite delivers.

And all this from a system that is manufactured entirely from sustainable materials.

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Telephone: +44 (0) 1685 845200
Facsimile: +44 (0) 1685 844106
Email: sales@excelfibre.com

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Maple House, 5 Over Minnis,
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Telephone: +44 (0) 1474 872578
Facsimile: +44 (0) 1474 872426
Email: sales@panelagency.com
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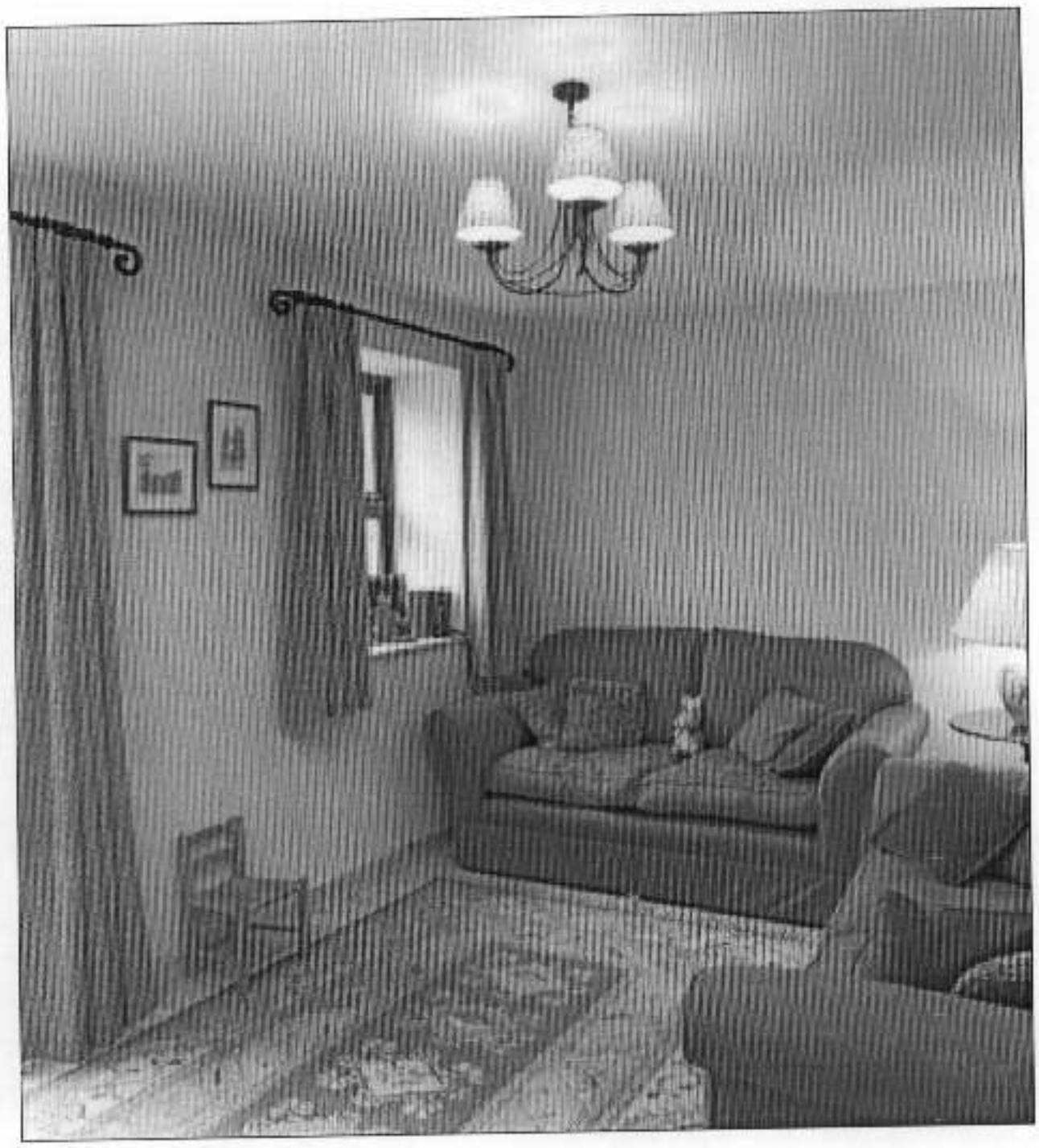
SOUNDCEL®

Acoustic Insulation



- Outstanding noise reduction
- Environmentally preferred
- Healthy
- Independently tested and endorsed
- System solutions

The sound solution for intermediate floors, internal and party walls

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EXCEL

Building Solutions

Hear The Quiet

When you're in a building insulated with Soundcel, you can actually hear the quiet.

Its ability to cut out airborne sounds offers a simple and cost effective barrier to the unwelcome strains of a neighbour's music, overloud conversations or the whirring of machinery.

Residential apartments, offices or any building, whose occupants are separated by intermediate floors or shared party walls, will benefit from the protection against noise pollution that Soundcel provides.

Optimised Sound Absorption

Optimised sound absorption is achieved by engineering the fibre used in Soundcel and determining its degree of 'openness'. Properties, such as fibre length, density and the capacity for interweaving, all contribute in determining the final insulation performance of the material.

Only after rigorous and repeated testing, first by the development engineers and then the main production team, to prove the consistency of the manufacturing operation was Soundcel given the official stamp of approval.

Even then, independent tests on built up floor systems were commissioned to confirm the company's own results.

Healthy and Environmentally Preferred

Free from CFCs, volatile organic compounds (VOCs) or other toxic substances, Soundcel does not contain any added formaldehyde and has zero ODP (Ozone Depletion Potential).

Manufactured from 100% recycled waste newspaper, it has extremely low embodied energy. And, when it is eventually removed from a building, Soundcel acoustic insulation can be recycled again or disposed of safely, without creating toxic waste or biodegradability problems.

Fully Compatible

Fully compatible with the materials used in floor and wall constructions, Soundcel will not affect common building components such as copper pipes, electric cabling and metal nail-plate fasteners.

Being non-toxic and non-irritant, Soundcel is completely safe to handle.

Fire Protection

Soundcel also offers effective protection against fire, enabling it to comfortably meet the fire protection standards required for timber-frame construction. Official fire tests have demonstrated that a wall panel insulated with Soundcel is able to withstand temperatures of up to 1000°C for 71 minutes, well beyond the building regulations' 30 and 60 minute requirements. Throughout the tests, the non-exposed face of the panel remained at a cool 17°C.

To achieve this impressive protection against fire, only simple inorganic salts are used in the formulation, with similar additives used to provide protection against other potential hazards, including biological and fungal attack, insects and vermin.

Independent Testing

Soundcel's acoustic performance has been independently tested* and verified at Herriot-Watt University and Sound Research Laboratories Limited and it has undergone extensive field trials to ensure the product's 'in use' performance is consistent with its design criteria.

Soundcel® Floor System

The Soundcel Floor System is a proven floor construction, developed to offer a tried and tested, optimised sound insulation solution for intermediate floors.

Built around ultra strong and lightweight Masonite Beams, the Soundcel Floor System features Soundcel acoustic insulation, enclosed by a double layer of plasterboard on the underside and 15mm floor decking on the upper face.

Insulated Battens

Insulated battens installed on top of the floor decking provide the dual benefits of additional impact sound insulation and the convenience of a built in service zone for carrying cabling, pipework and other services.

A similar service zone is provided on the underside of the floor to carry cables for ceiling-mounted lights, alarm sensors and other electrical devices in the room below.

Additional Sound Damping

The floor system is completed with the addition of a 19mm plasterboard 'plank', offering additional sound damping, and 18mm tongue and groove chipboard, which provides the 'walked on' floor finish.

The entire floor is sealed following installation with perimeter sound insulation to isolate it from the walls of the property.

*Copies of all independent reports can be obtained from **Excel**.*

Fast and Simple Installation

Undertaken by registered, specialist Soundcel installers, Soundcel is installed using one of the following methods:

- TurboFill
- AutoFill

TurboFill

TurboFill dry injection is used for walls and floors, where the void to be filled has already been fully enclosed by the plasterboard, sheathing or floor finish. This includes stick built constructions or interiors erected using factory-manufactured TRADIS-MT wall panels and floor cassettes.

The injection system features a nozzle akin to those used in refuelling systems seen in Grand Prix Formula 1 pit lanes. The nozzle is docked with the wall or floor by means of pre-drilled access holes, through which the Soundcel is injected. An ingenious pressure sensing system ensures the wall or floor void is completely filled to the correct density for optimum performance.

Wall sections can normally be filled from either side and, likewise, floors can be insulated from above or below. On completion of the installation process, the filling nozzle is simply withdrawn and the access holes plugged.

AutoFill

The AutoFill installation of Soundcel is employed for installation in Fillcrete's TRADIS-AF wall panels and floor cassettes, which are manufactured entirely in the factory. The AutoFill process ensures the optimum density of Soundcel is achieved throughout the panel, guaranteeing consistency and repeatability of performance.

TRADIS®

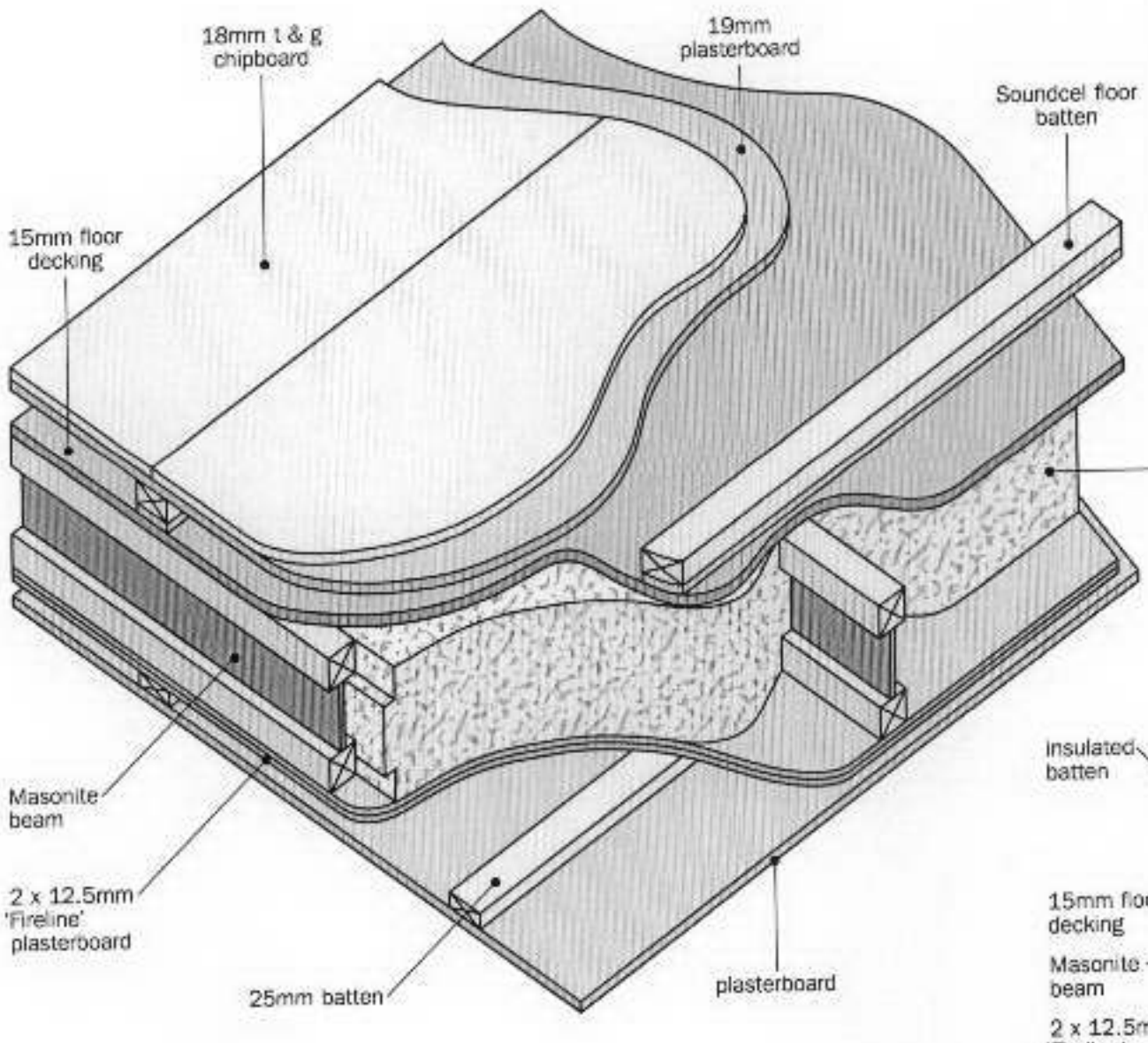
Factory-manufactured wall panels and floor cassettes

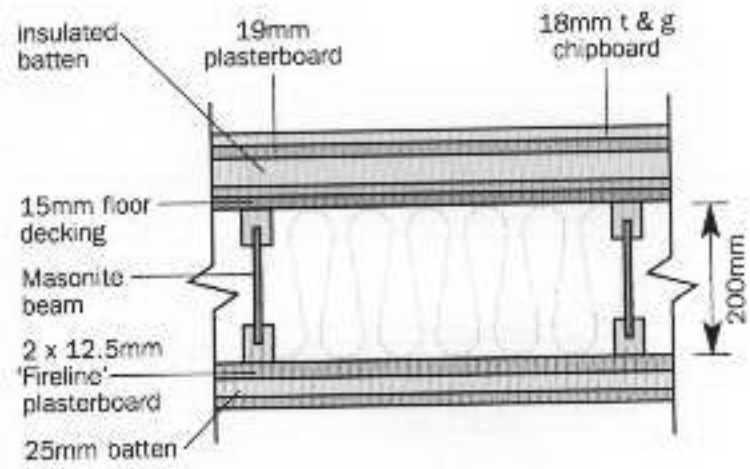
The TRADIS range of factory-produced structural wall panels, floor cassettes and roof plates enables a complete house shell to be constructed in less than a day. Because the panels are factory-manufactured, they benefit from accurate dimensions, consistency and quality controlled compatibility. This minimises on-site installation times, while delivering greater structural integrity and guaranteed repeatable performance.

Soundcel® Option

External walls, floors and roof sections are installed with Warmcel 500 thermal insulation, with internal floor cassette and wall panel options also being available with Soundcel acoustic insulation.

With self-supporting spans available in lengths of up to 12m and widths of 3.1m, large clear runs can be constructed, offering maximum flexibility for room layouts and facilitating future alterations, without major structural work being required.





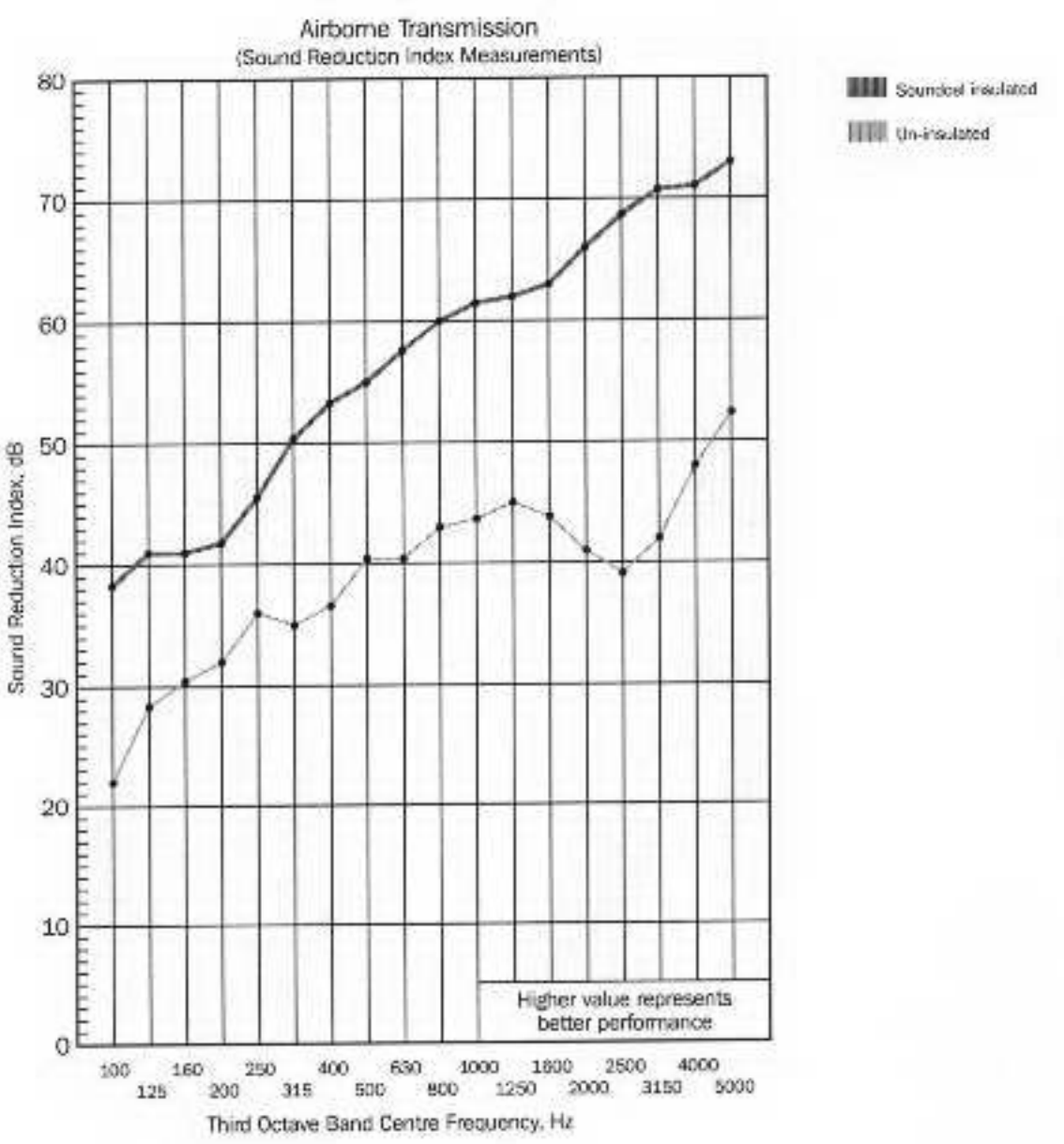
Soundcel® Floor System

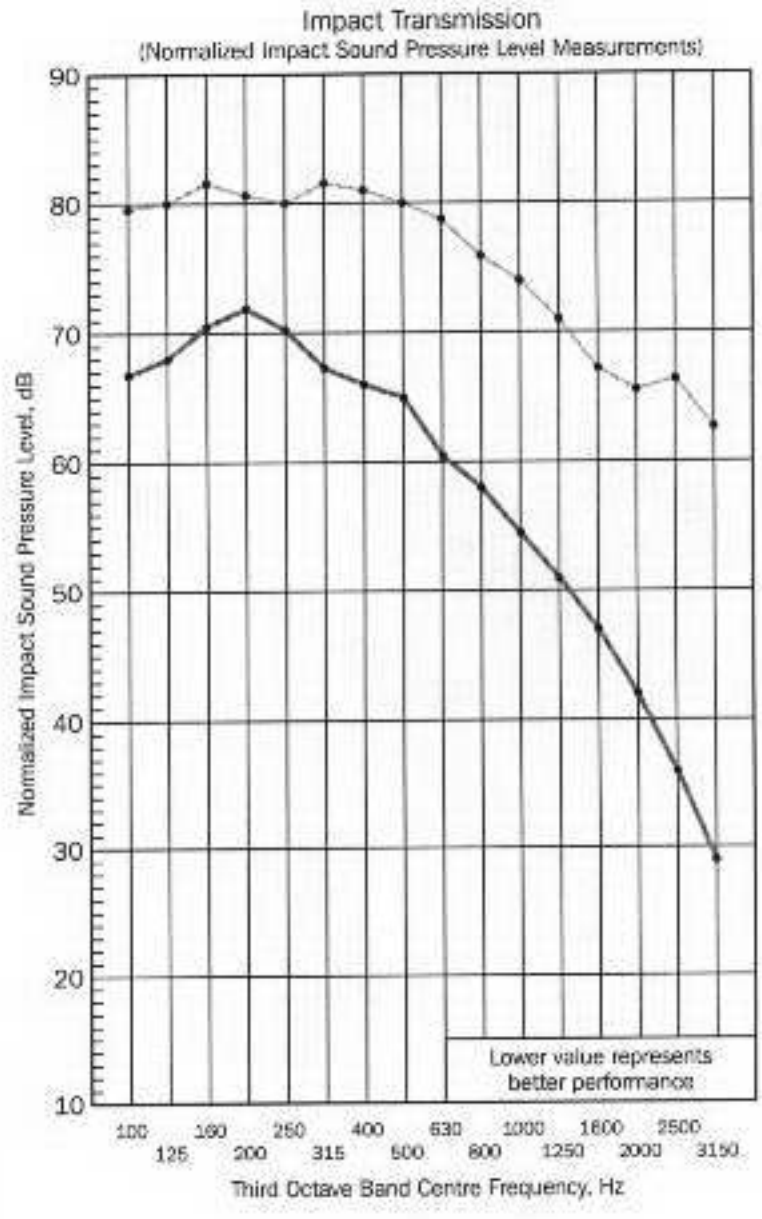
Independent Test Results for Soundcel® Insulated Floor

	Airborne Transmission (Weighted Sound Reduction Index (Rw)) **higher** *value represents better performance*	*Impact Transmission (Weighted Normalised Sound Pressure Level (LnT,w))* **lower** *value represents better performance*
Masonite Floors Soundcel Floor System, featuring Masonite Beam 'joists' at 600mm centres, with 250mm cavity completely filled with Soundcel acoustic insulation. *(see graphs below).*	**58 dB** (52 dB)	**63 dB** (65 dB)
Uninsulated floor, featuring Masonite Beam 'joists' at 600mm centres, with a 250mm cavity *(see graphs below).*	**41 dB** (52 dB)	**77 dB** (65 dB)
Timber Floors Soundcel Floor System, featuring timber joists at 400mm centres, with 200mm cavity completely filled with Soundcel acoustic insulation.	**57 dB** (52 dB)	**65 dB** (65 dB)
Uninsulated floor, featuring timber joists at 400mm centres, with a 200mm cavity.	**41 dB** (52 dB)	**77 dB** (65 dB)

(Building Regulations values shown in brackets)

Test Result Graphs for Masonite Floors





Tests undertaken by Sound Research Laboratories Limited, consultants in noise and vibration.

EXCEL

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