

SCOPE OF AGRÉMENT

This Agrément relates to the Jablite Inverted Roof Insulation system (hereinafter the 'System') formed from expanded polystyrene (hereinafter 'EPS') insulation boards in conjunction with a water flow reducing layer (hereinafter the 'WFRL'). For use on flat roofs (with a pitch not greater than 10° to the horizontal) and zero fall roofs (with a slope which lies between 0 and a minimum fall of 1:80) including brown roofs, extensive green roofs and balconies. Such areas must be subject to pedestrian access only. A protective finish must be applied to the System. The System is only to be used on roof decks when these areas have been pre-waterproofed with a membrane based watertight roof covering. Use of the System in designs for blue roofs, intensive green roofs, parking decks, walkways and installation areas is not permitted.

SYSTEM DESCRIPTION

The System comprises flat or tapered EPS insulation boards, available in three product grades (EPS 200, EPS 200 Premium and EPS 300). A WFRL with lapped joints is laid over the EPS insulation boards to prevent the potential for water ingress into the System from direct precipitation. A protective finish of gravel or concrete paving slabs will serve as ballast to resist wind-uplift and as protection against pedestrian traffic.

SYSTEM ILLUSTRATION



THIRD-PARTY ACCEPTANCE

NHBC - For detailed information see section 3.3 (Third-Party acceptance).

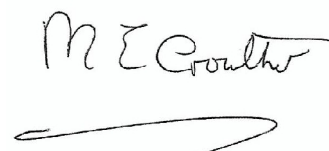
STATEMENT

It is the opinion of Kiwa Ltd., that the System is fit for its intended use, provided it is specified, installed and used in accordance with this Agrément.

Chris Vurley, CEng
Technical Manager, Building
Products



Mark Crowther, M.A. (Oxon)
Kiwa Ltd. Technical Director



SUMMARY OF AGRÉMENT

This document provides independent information to specifiers, building control personnel, contractors, installers and other construction industry professionals considering the fitness for the intended use of the System. This Agrément covers the following:

- Conditions of use;
- Factory Production Control, Quality Management System and the Annual Verification procedure;
- Points of attention for the Specifier and examples of details;
- Installation;
- Independently assessed System characteristics and other information;
- Compliance with national Building Regulations, other regulatory requirements and Third-Party acceptance, as appropriate;
- Sources, including codes of practice, test and calculation reports.

MAJOR POINTS OF ASSESSMENT

Moisture control - the WFRL will prevent the potential for water ingress into the System from direct precipitation. See sections 2.1.10 of this Agrément.

Thermal performance - the System can meet all required levels and provisions regarding U-values or thermal resistance. See section 2.1.11 of this Agrément.

Fire performance - the System provides adequate resistance to the spread of fire over a roof, and from one building to another, when covered with loose laid gravel or concrete paving slabs. See sections 2.1.12 of this Agrément.

Durability - given the material characteristics of the EPS insulation boards and the WFRL, the components of the System are deemed durable and will have a service life equivalent to that of the structure into which they are incorporated.

CE marking - the product manufacturers have taken responsibility for CE marking of the products used in the System in accordance with all relevant harmonised European Product Standards. An asterisk (*) appearing in this Agrément indicates that data shown is included in the relevant product manufacturer's Declaration of Performance (DoP).

CONTENTS

Chapter 1 - General considerations

- 1.1 - Conditions of use
- 1.2 - Factory Production Control (FPC) and Quality Management System (QMS)
- 1.3 - Annual verification procedure - continuous surveillance

Chapter 2 - Technical assessment

- 2.1 - Points of attention to the Specifier
- 2.2 - Examples of details
- 2.3 - Installation
- 2.4 - Independently assessed System characteristics
- 2.5 - System components and ancillary items

Chapter 3 - CDM, national Building Regulations and Third-Party acceptance

- 3.1 - The Construction (Design and Management) Regulations 2015 and The Construction (Design and Management) Regulations (Northern Ireland) 2016
- 3.2 - National Building Regulations
- 3.3 - Third-Party acceptance

Chapter 4 - Sources

Chapter 5 - Amendment history

CHAPTER 1 - GENERAL CONSIDERATIONS

1.1 - CONDITIONS OF USE

1.1.1 Design considerations

See section 2.1.

1.1.2 Application

The assessment of the System relates to its use in accordance with this Agrément and the Agrément holder's requirements.

1.1.3 Assessment

Kiwa Ltd. has assessed the System in combination with its relevant DoPs, test reports, technical literature and factory and site visits. Factory Production Control has been assessed.

1.1.4 Installation supervision

The quality of installation and workmanship must be controlled by a competent person who must be an employee of the installation company.

The System must be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

1.1.5 Geographical scope

The validity of this document is limited to England, Wales, Scotland and Northern Ireland, with due regard to chapter 3 of this Agrément (CDM, national Building Regulations and Third-Party Acceptance).

1.1.6 Validity

The purpose of this BDA Agrément® is to provide for well-founded confidence to apply the System within the Scope described. The validity of this Agrément is three years after the issue date, and as published on www.kiwa.co.uk/bda.

1.2 - FACTORY PRODUCTION CONTROL (FPC) AND QUALITY MANAGEMENT SYSTEM (QMS)

Kiwa Ltd. has determined that the Agrément holder fulfils all obligations in relation to this Agrément, in respect of the System.

The initial FPC audit demonstrated that the Agrément holder has a satisfactory Quality Management System (QMS) and is committed to continuously improving their FPC operations.

Document control and record keeping procedures were deemed satisfactory.

A detailed Production Quality Specification (PQS) has been compiled to ensure traceability and compliance under the terms of this Agrément.

1.3 - ANNUAL VERIFICATION PROCEDURE - CONTINUOUS SURVEILLANCE

To demonstrate that the FPC is in conformity with the requirements of the technical specification described in this Agrément, the continuous surveillance, assessment and approval of the FPC will be done at a frequency of not less than once per year by Kiwa Ltd.

This Agrément does not constitute a design guide for the System. It is intended as an assessment of fitness for purpose only.

2.1 - POINTS OF ATTENTION TO THE SPECIFIER

The System consists of square, homogeneous EPS insulation boards and a WFRL. The flat or tapered EPS insulation boards are available in three product grades (EPS 200, EPS 200 Premium and EPS 300), have maximum dimensions of 1200 mm x 1200 mm (see Diagram 3), are 50 mm to 240 mm thick (in increments of 5 mm) and are supplied with a 15 mm shiplap rebated edge profile.

2.1.1 Design responsibility

A Specifier may undertake a project specific design in which case it is recommended that the Specifier co-operates closely with the Agrément holder. The Specifier or installing contractor is responsible for the final as-built design.

2.1.2 Applied building physics (heat, air, moisture)

The physical behaviour of the building incorporating the System shall be verified as suitable by a competent specialist, who can be either a qualified employee of the Agrément holder or a qualified consultant. The Specialist will check the physical behaviour of the building design and if necessary, can offer advice in respect of improvements to achieve the final specification. It is recommended that the Specialist co-operates closely with the Agrément holder.

2.1.3 General design considerations

Roofs incorporating the System should be designed in accordance with BS 6229, which gives recommendations in respect of the design and application for flat roofs (with a pitch not greater than 10° to the horizontal) with continuously supported roof coverings, to ensure a minimum finished fall of 1:80 is achieved. Falls for roof design should be steeper than the minimum finished fall required to allow for deflections of the structural members and decking under dead and imposed loads and construction tolerances.

To ensure a finished surface with a zero fall, a design fall of 1:80 should be used and a detailed structural analysis should account for construction tolerances, settlement and for deflection under load.

The use of tapered EPS insulation boards in the System can assist designers to comply with BS 6229.

Roof drainage must be specified by others accordingly.

Prior to installation of the System, the roof deck must be covered with a membrane based watertight roof covering, with a resistivity to water vapour transmission greater than that of the EPS insulation boards.

The GRO Green Roof code contains aspects to consider when designing and specifying the waterproofing system of a brown roof or an extensive green roof.

Loads imposed during construction should be considered, along with the end use application and dead weight of the finish layer. Mechanical plant and machinery must not be used for the distribution and laying of concrete paving slabs, gravel, soil or other elements.

Wind actions should be calculated in accordance with BS EN 1991-1-4; due consideration should be given to higher pressure coefficients applicable to corners of the building; do not specify EPS insulation boards less than 300 mm x 300 mm in corner zones (F) or in edge zones (G) of a roof.

The System shall be finished by gravel or concrete paving slabs to resist wind-uplift, flotation of the EPS insulation boards, the spread of fire and to protect the WFRL and EPS insulation boards against pedestrian traffic.

A project specific design shall address the wind-uplift resistance of gravel and/or concrete paving slabs.

Gravel must be at least 50 mm thick or have a mass $\geq 80 \text{ kg/m}^2$ (minimum aggregate size 4 mm, maximum 32 mm).

Concrete paving slabs shall be at least 40 mm thick.

Concrete paving slabs must be installed supported by proprietary bearing spacers as per the manufacturer's instructions, to maintain a nominal air gap to assist the removal of water and help to reduce rocking.

When using concrete paving slabs as a finish, a 150 mm wide edge strip filled with gravel (clean, rounded, nominal diameter 20 mm - 40 mm) should be provided against parapets and upstands and around rooflights.

Examples of typical details of e.g. outlets, penetrations and upstands can be obtained from the Agrément holder. The project specific roof design must take into consideration all elements required in the finished roof.

2.1.4 Project specific design considerations

No pre-installation survey is required for the installation of the System - see section 2.3.3.

2.1.5 Permitted applications

Only applications designed according to the specifications as given in this Agrément are allowed under this Agrément, in each case the Approved Installer will have to co-operate closely with the Agrément holder.

Application of the System is only allowed on continuous self-supporting decks, the material and shape of a deck shall support all relevant loads and transmit these to the deck supports.

2.1.6 Installer competence level

The System must be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

Installation can be undertaken by competent persons experienced in this sort of work; the Agrément holder requires these to be employed by an organisation that holds ISO 9001 certification.

2.1.7 Delivery, storage and site handling

The System is delivered to site in suitable packaging, that bears the System name, the Agrément holder's name and the BDA Agrément® logo incorporating the number of this Agrément.

Store the System in accordance with the Agrément holder's requirements. Care must be taken to:

- avoid exposure to direct sunlight and high or low temperatures for long periods of time;
- store away from possible ignition sources.

Packs of EPS insulation boards should not be unwrapped until needed for use.

2.1.8 Durability

The System will have a service life durability equivalent to that of the structure into which it is incorporated.

2.1.9 Maintenance and repair

Once installed, the System itself does not require regular maintenance. For advice in respect of repair, consult the Agrément holder.

However, in accordance with BS 6229 flat roofs incorporating the System must be inspected at least twice yearly:

- in autumn to ensure that rainwater outlets are not blocked, and the roof is free draining;
- in spring to discover and rectify any damage due to weather actions.

It is good practice to adopt this programme for zero fall roofs, brown roofs or extensive green roofs and balconies in respect of the installation of the System.

Performance factors in relation to the Major Points of Assessment

2.1.10 Moisture Control

The WFRL will prevent the potential for water ingress into the System from direct precipitation. A limited amount of condensation may accumulate due to ambient temperature fluctuations; this will naturally drain away. Any water ingress will not materially affect the performance of the System.

2.1.11 Thermal Performance

The System can meet all required levels and provisions regarding U-values or thermal resistance.

The drainage factor (f) of the System is 0.

Therefore, the correction ΔU_r for the calculated thermal transmittance of an inverted roof element (according to annex F.4 in BS EN ISO 6946) and the factor F_m (to calculate the design thermal conductivity because of moisture are):

- $\Delta U_r = 0$ (no water flowing between the insulation and the waterproofing membrane in an inverted roof);
- $F_m = 1$ for inverted roofs and balconies;
- $F_m = 1.04$ for the parts of a green inverted roof with a substrate or with vegetation. This is based on the moisture conversion coefficient according to standard BS EN ISO 10456 and the long-term water absorption by diffusion only according to standard BS EN 12088.

2.1.12 Fire Performance

The EPS insulation boards have European classification E* for reaction to fire in accordance with BS EN 13501.

To comply with the national Building Regulations:

- a flat roof or zero fall roof is not required to have any specific fire performance, except when it forms part of a means of escape or when it performs the function of a floor or where part of it is near a boundary;
- provisions for fire resistance apply where a roof is intended for use as a means of escape or as a floor;
- provisions for the fire resistance of a flat roof or zero fall roof apply where a roof is intended for use as a means of escape or as a floor; in that case exposure to a fire at the underside of a roof is relevant;
- adequate protection to the spread of fire is required near a boundary, as defined in the national Building Regulations; in that case the WFRL must be covered by concrete paving slabs, or loose laid gravel with a thickness of at least 50 mm or a mass $\geq 80 \text{ kg/m}^2$ (minimum aggregate size 4 mm - maximum aggregate size 32 mm).

2.2 - EXAMPLES OF DETAILS

Diagram 1 Typical detail with gravel/paving ballast

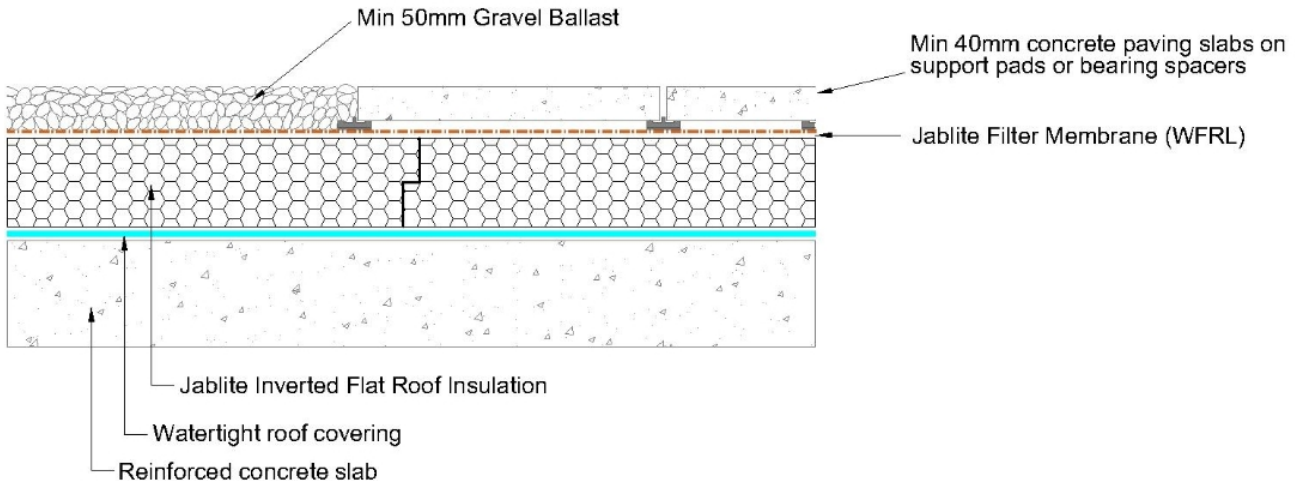
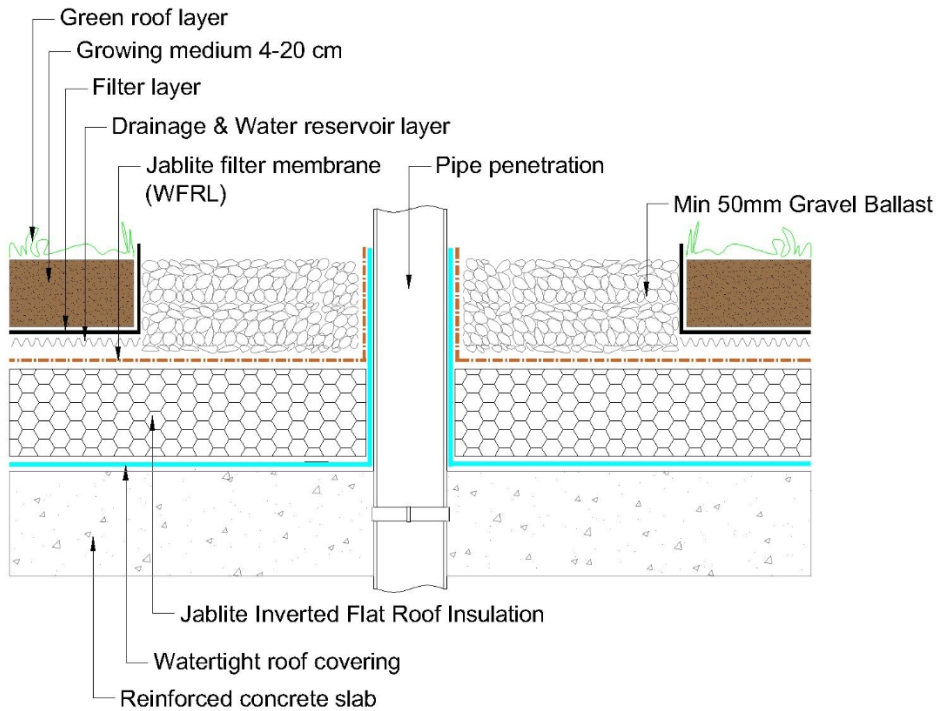


Diagram 2 Typical detail of pipe penetration/extensive green roof



Note: Diagrams are not exhaustive, and every project requires bespoke details and solutions in the form of a project specific design.

2.3 - INSTALLATION

The System must be installed strictly in accordance with the instructions of the Agrément holder and the requirements of this Agrément.

2.3.1 Installer competence level

See section 2.1.6.

2.3.2 Delivery, storage and site handling

See section 2.1.7.

2.3.3 Project specific installation considerations

No pre-installation survey is required for the installation of the System.

2.3.4 Preparation

The following considerations apply prior to commencement of work:

- read the Roof Technical Data Sheet carefully prior to installing the System;

- check that materials delivered correspond to the project specific design details;
- check that openings/skylights in roofs are suitably protected;
- the existing roof covering shall be dry, free from dirt and debris and not damaged before installation of the System; all side and end laps and penetrations (e.g. for outlets, pipes and supports) shall be sealed properly before installation of the System;
- at all abutments, door openings and parapets the waterproof layer should be turned up to a level not less than 150 mm above the upper surface of the gravel, concrete paving slabs or any roof growing medium;
- check the project specific design drawings to ensure the detailing of outlets, movement joints, penetrations and supports etc. is clearly indicated; drawings shall clearly show how the roof covering connects to the details (to avoid rain penetration) and how thermal bridging is minimised;
- when a PVC single ply membrane is used as the watertight roof covering, check that a suitable isolation layer (e.g. a fibreglass sheet with a mass $\geq 120 \text{ g/m}^2$) is specified below the EPS insulation boards; the isolation layer stops plasticiser migration from the PVC.

2.3.5 Outline installation procedure

The key sequence for installation is:

- before installation of the System clean the existing watertight roof covering to remove dirt and debris;
- ensure there is no damage to the existing watertight roof covering prior to application of the System;
- ensure that at all abutments, door openings and parapets the waterproof layer is turned up to a level not less than 150 mm above the upper surface of the gravel, concrete paving slabs or any roof growing medium.

Installation can then proceed according to the following sequence:

- lay the EPS insulation boards in a staggered, brick bond pattern ensuring they are tightly interlocked via the shiplap edges to prevent air gaps;
- cut the EPS insulation boards around service penetrations and seal with expanding foam;
- the WFRL must be immediately loose laid over the top of the EPS insulation boards;
- lay the first row of WFRL horizontally across the fall of the roof with unsealed lap joints;
- where more than roll of WFRL material is required in a single row the rolls must be overlapped by a minimum of 300 mm to complete the run;
- subsequent rows of the WFRL must be laid ascending the flat roof slope and overlapping the row laid prior by 300 mm.

2.3.6 Finishing

The following finishing is required upon completion of the installation:

- cover the WFRL as soon as possible with a finish of gravel or concrete paving slabs according to the project specific design.

2.4 - INDEPENDENTLY ASSESSED SYSTEM CHARACTERISTICS

Table 1 EPS insulation boards EPS 200, EPS 200 Premium & 300

Parameter		Value	Unit
System weight	EPS	8.7	kg/m ²
Thickness (minimum: increment: maximum)		50(5)240*	mm
Thermal conductivity, λ_D		0.033*	W/(mK)
Thermal conductivity (EPS 200 Premium), λ_D		0.031*	W/(mK)
Reaction to fire, class		E*	(-)
Compressive strength, class	EPS 200	CS(10)200	(-)
	EPS 300	CS(10)300	(-)
Bending strength, class	EPS 200:	BS325	(-)
	EPS 200 Premium:	BS280	(-)
	EPS 300:	BS305	(-)
Water absorption	Long-term W_{dv} (diffusion for 28 days), class	WD(V)3*	% (V/V)
	Long-term W_{it} (total immersion for 28 days), class	WL(T)2*	% (V/V)
Water vapour transmission	Vapour resistance factor, μ (tabulated)	40 - 100*	(-)
	Resistivity (calculated)	200 - 500	MN-s/g-m

Diagram 3 Maximum dimensions of flat roof EPS insulation boards with shiplap edges

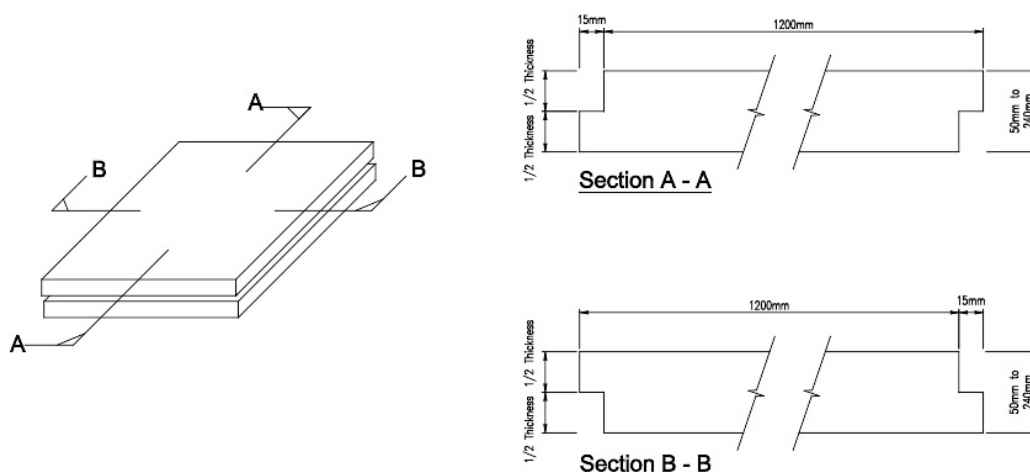


Table 2 Water Flow Reduction Layer (WFRL)

Parameter		Value	Unit
Density		100*	g/m ²
Thickness		0.45	mm
Reaction to fire		NPD*	(-)
Tensile strength, initial/aged values (CMD)^		200/180*	N/50 mm
Elongation, initial/aged values (CMD)^		80/40*	%
Tear resistance (MD^^/CMD)		130/130*	N
Water penetration (resistance), initial/aged, class (water column = 200 mm)		W2/W2*	(-)
Water vapour transmission	Diffusion-equivalent air layer thickness, S _d	≤ 0.003*	(m)
	Resistance	≤ 0.02*	MN-s/g

^ CMD = Cross Machine Direction (transverse direction)

^^MD = Machine Direction

Note: The WFRL is a non-woven spunbonded polypropylene sheet supplied in rolls of 100 m in length and widths of 0.54 m, 1.35 m, 2.7 m, and 3.0 m.

2.5 - ANCILLARY ITEMS

Note: Ancillary items (e.g. tape, foam, outlets, etc.) are not a part of the System and fall outside the scope of this Agrément.

CHAPTER 3 - CDM, NATIONAL BUILDING REGULATIONS AND THIRD-PARTY ACCEPTANCE

3.1 - THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015 AND THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS (NORTHERN IRELAND) 2016

Information in this Agrément may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

3.2 - NATIONAL BUILDING REGULATIONS

In the opinion of Kiwa Ltd., the System, if installed and used in accordance with Chapter 2 of this Agrément, can satisfy or contribute to satisfying the relevant requirements of the following national Building Regulations.

3.2.1 - ENGLAND THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- A1(2) Loading - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the finish.
- B4(2) external fire spread roof - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014).
- C2(b) Resistance to precipitation - the System limits the passage of moisture to the inside but is not watertight; a watertight roof covering and WFRL must be used.
- C2(c) Resistance to condensation - the System can contribute to limiting the risk of interstitial and surface condensation; a roof covering with adequate water vapour resistance must be used.
- L1(a)(i) Conservation of fuel and power - the System will contribute to satisfying this Requirement.
- Regulation 7 Materials and workmanship - the System is manufactured from suitably safe and durable materials for its application and can be installed to give a satisfactory performance.
- Regulation 26 - CO₂ emission rates for new buildings - the System can contribute to satisfying this Requirement.
- Regulation 26A - Fabric energy efficiency rates - the System can contribute to satisfying this Requirement.

3.2.2 - WALES THE BUILDING REGULATIONS 2010 AND SUBSEQUENT AMENDMENTS

- A1(2) Loading - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the finish.
- B4(2) external fire spread roof - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014).
- C2(b) Resistance to precipitation - the System limits the passage of moisture to the inside but is not watertight; a watertight roof covering and WFRL must be used.
- C2(c) Resistance to condensation - the System can contribute to limiting the risk of interstitial and surface condensation; a roof covering with adequate water vapour resistance must be used.
- L1(a)(i) Conservation of fuel and power - the System will contribute to satisfying this Requirement.
- Regulation 7 Materials and workmanship - the System is manufactured from suitably safe and durable materials for its' application and can be installed to give a satisfactory performance.
- Regulation 26 - CO₂ emission rates for new buildings - the System can contribute to satisfying this Requirement.
- Regulation 26A - Primary energy consumption rates for new buildings - the System can contribute to satisfying this Regulation.
- Regulation 26B - Fabric performance values for new dwellings - the System can contribute to satisfying this Requirement.

3.2.3 - SCOTLAND THE BUILDING (SCOTLAND) REGULATIONS 2004 AND SUBSEQUENT AMENDMENTS

3.2.3.1 Regulations 8 (1)(2): Fitness and durability of materials and workmanship

- The System is manufactured from acceptable materials and is adequately resistant to deterioration and wear under normal service conditions, provided it is installed in accordance with the requirements of this Agrément.
- Maintenance or repair work will not be necessary unless (a part of) the roof is damaged or is affected by structural modifications.

3.2.3.2 Regulation 9: Building Standards - Construction

- 1.1 (a) Structure - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the finish.
- 2.8 Spread from neighbouring buildings - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014).
- 3.10 Precipitation - the System limits the passage of moisture to the inside but is not watertight; a watertight roof covering and WFRL must be used.
- 3.15 Condensation - the System can contribute to limiting the risk of interstitial and surface condensation; a roof covering with adequate water vapour resistance must be used.
- 6.2 Building insulation envelope - the System will contribute to this requirement.
- 7.1(a)(b) Statement of sustainability - the System can contribute to achieve an adequate level of sustainability.

3.2.3.3 Regulation 12: Building Standards - Conversions

All comments given for the System under Regulation 9 also apply to this Regulation, with reference to clause 0.12 and Schedule 6 of this Standard.

3.2.4 - NORTHERN IRELAND THE BUILDING REGULATIONS (NORTHERN IRELAND) 2012 AND SUBSEQUENT AMENDMENTS

- 23(a)(i)(iii)(b) Fitness of materials and workmanship - the System is manufactured from materials which are suitably safe and acceptable for use as thermal insulation as described in this Agrément.
- 28(b) Resistance to moisture and weather - the System contributes to prevent any harmful effect on the building or the health of the occupants caused by the passage of moisture to any part of the building from (b) the weather. A watertight roof covering and WFRL must be used.
- 29 Condensation - the System will contribute to limiting the risk of interstitial condensation; a roof covering with adequate water vapour resistance must be used.
- 30(a)(b) Stability - the System shall be installed on top of a continuous, self-supporting roof deck which shall sustain all dead weights and imposed loads during construction and when in use; resistance to wind loads must be achieved by the roof finish.
- 36(b) External fire spread - the System meets all provisions when ballasted with suitable loose laid gravel, concrete paving slabs, a brown roof or an extensive green roof with a suitable substrate and designed to incorporate gravel fire breaks at perimeters and penetrations in accordance with the GRO Green Roof Code 2014).
- 39(a)(i) Conservation of fuel and power - the System will contribute to this requirement.
- 40(2) Target carbon dioxide emission rate - to be calculated for the erection of residential and non-residential buildings; to be calculated also for the extension of buildings when the extension has a total useful floor area that is both (i) greater than 100 m² and (ii) greater than 25% of the total useful floor area of the existing building; no calculation is required when extending a dwelling or a building with a low energy demand.

3.3 - THIRD-PARTY ACCEPTANCE

NHBC - In the opinion of Kiwa Ltd., the System, if installed, used and maintained in accordance with this Agrément, can satisfy or contribute to satisfying the relevant requirements in relation to NHBC Standards, Technical Requirement R3 and Chapter 7.1 Flat roofs and balconies.

CHAPTER 4 - SOURCES

- BS EN ISO 6946:2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods.
- BS EN 1603:2013 Thermal insulating products for building applications. Determination of dimensional stability under constant normal laboratory conditions (23°C/50% relative humidity)
- BS EN 1991-1-4:2005+A1:2010 Eurocode 1. Actions on structures. General actions. Wind actions.
- NA to BS EN 1991-1-4:2005+A1:2010 UK National Annex to Eurocode 1. Actions on structures. General actions. Wind actions.
- BS EN 12430:2013 Thermal insulating products for building applications. Determination of behaviour under point load.
- BS EN 13501-1:2018 Fire classification of construction products and building elements. Classification using data from reaction to fire tests.
- BS 6229:2018 Flat roofs with continuously supported coverings. Code of practice.
- EOTA, ETAG 031-1, Inverted Roof Insulation Kits, Part 1: General, issued November 2010.
- GRO, Best Practice for the UK 2014, issued 25.09.2014.
- NHBC, NHBC Standards 2019.

Remark: apart from these sources, technical information and confidential reports have been assessed; any relevant documents are in the possession of Kiwa Ltd. and kept in the Technical Assessment File of this Agrément. The Installation Manual for the System may be subject to change, the Agrément holder should be contacted for clarification of revision.

CHAPTER 5 - AMENDMENT HISTORY

Revision	Amendment Description	Amended By	Approved By	Date
-	First Issue	C Vurley	C Forshaw	February 2020