

## Lagan Building Solutions Ltd

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### Agrément Certificate

21/5967

Product Sheet 2

## LBS CLADDING PANELS

### STONE VENEER

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Stone Veneer, natural stone pieces used as a decorative cladding, which are suitable for external use on new or existing buildings when attached to a linear concrete block substrate wall using Lagan Building Solutions<sup>(2)</sup> (LBS) adhesive.

(1) Hereinafter referred to as 'Certificate'.

(2) Lagan Building Solutions is a registered trademark.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



#### KEY FACTORS ASSESSED

**Strength and stability** — the product can have sufficient strength to resist the pressures imposed by the design wind loads likely to be experienced in the UK, and has adequate impact resistance (see section 6).

**Behaviour in relation to fire** — the Certificate holder has not declared a reaction to fire classification to BS EN 13501-1 : 2018 for the product and its use is restricted in some cases (see section 7).

**Air and water penetration** — the product is not watertight but will restrict the ingress of rainwater to the supporting structure (see section 8).

**Durability** — the product has a service life in excess of 30 years (see section 10).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 5 November 2021

A handwritten signature in black ink, appearing to read 'Hardy Giesler'.

Hardy Giesler  
Chief Executive Officer

*The BBA is a UKAS accredited certification body – Number 113.*

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)*

*Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

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## Regulations

In the opinion of the BBA, Stone Veneer, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



### The Building Regulations 2010 (England and Wales) (as amended)

<b>Requirement:</b> Comment:	<b>A1</b>	<b>Loading</b> The product is acceptable for use as set out in section 6 of this Certificate.
<b>Requirement:</b> Comment:	<b>B4(1)</b>	<b>External fire spread</b> The product is restricted by this Requirement. See sections 7.1 and 7.2 of this Certificate.
<b>Requirement:</b> Comment:	<b>C2(b)</b>	<b>Resistance to moisture</b> The product will not be completely watertight but will provide a degree of protection against rain ingress. See section 8.1 of this Certificate.
<b>Regulation:</b> Comment:	<b>7(1)</b>	<b>Materials and workmanship</b> The product is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> Comment:	<b>7(2)</b>	<b>Materials and workmanship</b> The product is restricted by this Regulation. See sections 7.1 and 7.2 of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b> Comment:	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b> The use of the product satisfies the requirements of this Regulation. See sections 9 and 10 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> Standard: Comment:	<b>9</b> 1.1(a)(b)	<b>Building standards applicable to construction</b> Structure The product is acceptable, with reference to clause 1.1.1 <sup>(1)(2)</sup> . See section 6 of this Certificate.
Standard: Comment:	2.6	Spread to neighbouring buildings The product is restricted by this Standard, with reference to clauses 2.6.4 <sup>(1)(2)</sup> , 2.6.5 <sup>(1)</sup> and 2.6.6 <sup>(2)</sup> . See sections 7.1 and 7.3 of this Certificate.
Standard: Comment:	2.7	Spread on external walls The product is restricted by this Standard, with reference to clause 2.7.1 <sup>(1)(2)</sup> . See sections 7.1 and 7.3 of this Certificate.
Standard: Comment:	3.10	Precipitation The product will not be completely watertight but will restrict the ingress of rainwater to the supporting structure. See section 8.1 of this Certificate.
Standard: Comment:	7.1(a)	Statement of sustainability The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.

<b>Regulation:</b>	<b>12</b>	<b>Building standards applicable to conversions</b>
<b>Comment:</b>		Comments in relation to the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .
		(1) Technical Handbook (Domestic) (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012 (as amended)

<b>Regulation:</b>	<b>23(a)(i)</b>	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	<b>(iii)</b>	The product is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
<b>Comment:</b>		The product provides a degree of protection against rain ingress and contribute to satisfying this Regulation. See section 8.1 of this Certificate.
<b>Regulation:</b>	<b>30</b>	<b>Stability</b>
<b>Comment:</b>		The product is acceptable for use when installed in accordance with this Certificate. See section 6 of this Certificate.
<b>Regulation:</b>	<b>36(a)</b>	<b>External fire spread</b>
<b>Comment:</b>		The product is restricted by this Regulation. See sections 7.1 and 7.2 of this Certificate.

## Construction (Design and Management) Regulations 2015

## Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3 and 3.5) of this Certificate.

### Additional Information

#### NHBC Standards 2021

In the opinion of the BBA, Stone Veneer, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Part 6 Superstructure (excluding roofs), Chapter 6.9 *Curtain walling and cladding*.

### Technical Specification

#### 1 Description

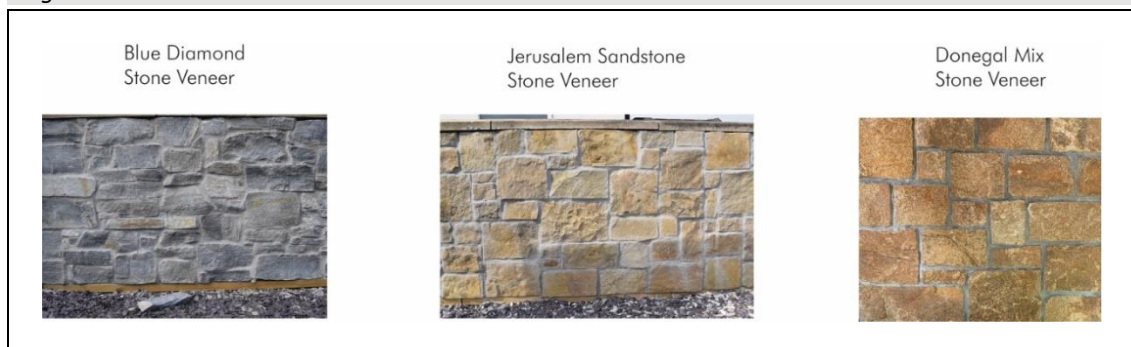
1.1 Stone Veneer comprises of loose pieces of natural stone, fixed directly to the concrete block substrate wall on-site using Lagan Building Solutions (LBS) adhesive. Stone Veneer can be installed at any height subject to the limitation in sections 6.4 and 7 without need of mechanical fixings.

1.2 The product has the nominal dimensions given in Table 1 and are available in a range of stone finishes (see Figure 1).

Table 1 Stone Veneer dimensions

Characteristic (unit)	Stone Veneer
Overall thickness (mm)	30
Stone piece size (mm)	mix of rectangular/square pieces varying between 100 and 450 long, 30 and 300 wide
Corner stone piece size (mm x mm)	varies from piece to piece
Approx. stone piece weight (kg/m <sup>2</sup> )	65 to 70 depending on the stone type

Figure 1 Stone Veneer



1.3 Ancillary items or components specified for use with the product, but outside the scope of this Certificate, include:

- Lagan Building Solutions (LBS) adhesive — a polymer-fortified adhesive (formulated with Kevlar fibre and hydrophobic polymer) to BS EN 12004-1: 2017, used to attach the product to the concrete block substrate wall on-site. The LBS adhesive is classified as type C2T (cementitious adhesive with reduced slip), in accordance with BS EN 12004-1 : 2017
- Gun pointing mortar (GPM) or grout with a sand cement/lime – to fill the gap between the stones
- SBR primer — to seal the porous masonry surfaces
- waterproofing liquid added or Hydro Ban waterproofing — to prepare waterproof wall surface
- expanding tape — to seal any gaps between the window frame and the finished edge of the cladding and provide a weatherproof finish
- plaster scratch coat – to apply to uneven/rough surface
- special width steel support lintel, or alternatively slate reveal unit or rubbed-up plaster — used to achieve a finish on the underside of window or door heads.
- concrete block substrate wall.

## 2 Manufacture

2.1 The product is made of natural stone.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

2.3 The product is manufactured in China and are marketed and distributed in the UK by the Certificate holder.

### 3 Delivery and site handling

3.1 The product is delivered to the sites on two different pallets, rectangular/square pieces on one pallet, corner pieces on the other, secured with steel strap banding.

3.2 The product is delivered to the sites in pallets with steel strap bending. Each pallet carries a laminated label (fixed to the pallets - usually via steel staples) which record the product name, size and quantity, LBS logo, date of manufacture and installation instructions.

3.3 The product should be handled with care to avoid damage or breakage. Care is required when installing product, particularly at height, to avoid injuries.

3.4 The product should be stored flat and level, clear of the ground to prevent distortion. When stored on site, the product must be protected from accidental damage and kept dry. In storage, a maximum of 3 pallets can be stacked on top of each other.

3.5 The use of personal protective equipment (PPE) is strongly recommended whenever practicable, to minimise the risks associated with falling objects and sharp edges. Care should be exercised when handling the product to avoid injury from sharp edges.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Stone Veneer.

### Design Considerations

#### 4 General

4.1 Stone Veneer is satisfactory for use externally as a decorative cladding over linear concrete block walls, excluding curved or radial walls, of new or existing buildings using LBS adhesive to BS EN 12004-1 : 2017 above the damp-proof course (dpc) level.

4.2 Stone Veneer can be installed at any height. Height restrictions may apply (see sections 6.4 and 7 of this Certificate).

4.3 It is important that designers, planners, contractors and/or installers ensure the installation of the product is in accordance with the Certificate holder's instructions and the information given in this Certificate. All design aspects should be checked by a suitably qualified and experienced individual in accordance with the requirements of the relevant national Building Regulations and Standards.

4.4 The wall to which the product is to be fixed must be structurally sound and constructed in accordance with the requirements of the relevant Building Regulations and national Standards. The contribution of the product to the stability of the substrate wall is assumed to be negligible.

4.5 The substrate wall, without the Stone Veneer, must be able to take the full wind actions normally experienced in the UK, and the general actions, and must be capable of sustaining the weight of the cladding. The adequacy of the substrate is outside the scope of this Certificate and must be verified by a suitably qualified and experienced individual.

4.6 Movement joints in the substrate should coincide with a panel joint.

4.7 The product will improve the weather resistance of a wall and provide a decorative finish. However, it may be installed only where other potential sources of moisture penetration have been dealt with separately and where there are no signs of dampness on the inner surface of the wall.

4.8 The fixing of rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items is outside the scope of this Certificate.

## 5 Practicability of installation

The product should only be installed by installers who have been trained and approved by the Certificate holder.

## 6 Strength and stability



6.1 The design wind actions on the wall must be calculated in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. Consideration should be given to higher pressure coefficients applicable to corners of buildings as recommended in this Standard. In accordance with BS EN 1990 : 2002, it is recommended that a partial load factor of 1.5 is used to determine the design wind load to be resisted by the system.

6.2 The product should be installed on the wall with LBS adhesive as described in section 1.4 of this Certificate.

6.3 The product, when attached to a concrete block wall built to BS EN 1996-1-1 : 2005 and its UK National Annexes, using LBS adhesive as described in section 1.3 and the bond strength determined as described in section 6.4 of this Certificate, would normally provide adequate resistance to the design wind actions likely to occur in the UK.

6.4 The bond strength between the LBS adhesive and the wall should be determined on site as described in section 11., to confirm it is in accordance with BS EN 12004-1 : 2017 (that is, a minimum tensile adhesion strength  $\geq 1.0 \text{ N} \cdot \text{mm}^{-2}$  after 28 days) as specified in section 1.4 of this Certificate . The design bond strength should be taken as the lowest of the five results divided by a safety factor of 9. The designer should ensure that the design wind actions calculated as described in section 6.1 do not exceed the design bond strength between the wall and adhesive.

### Impact

6.5 When tested for hard body impact, the product achieved adequate resistance to impact and therefore may be considered suitable for use in Categories I to IV (Blue Diamond ), Categories II to IV (Jerusalem Sandstone and Donegal mix) as defined in Table 2 below.

Table 2 Impact Use Categories (reproduced from EAD 090062-00-0404 : 2018, Table G.2)

Category	Use
I	A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use, eg façade bases in buildings sited in public locations, such as squares, schoolyards or parks. Cleaning gondolas may be used on the façade
II	A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the kit will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care, eg façade bases in buildings not sited in public locations (such as squares, schoolyards or parks) or upper façade levels in buildings sited in public locations that occasionally can be hit by a thrown object (eg ball, stone, etc). Cleaning gondolas may be used on the façade
III	A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects, eg upper façade levels in buildings (not including base) not sited in public locations, that occasionally can be hit by a thrown object (eg ball, stone, etc). Cleaning gondolas should not be used on the façade
IV	A zone out of reach from ground level, eg high façade levels that cannot be hit by a thrown object. Cleaning gondolas should not be used on the façade

## 7 Behaviour in relation to fire



7.1 The Certificate holder has not declared a reaction to fire classification to BS EN 13501-1 : 2018 for the product its specified adhesive and pointing mortars and their use is restricted in some cases.



7.2 In England, Wales and Northern Ireland, the product may be used on buildings with no storey 18 m or more above the ground and 1 metre or more from a boundary, but restrictions apply on Assembly and Recreation buildings. With minor exceptions, the product should be included in calculations of unprotected area.



7.3 In Scotland, the product does not achieve the minimum Class E reaction to fire classification to BS EN 13501-1: 2018 required by Technical Handbook clauses 2.6.4 and 2.7.1 so designers should seek guidance on the proposed use of the product/system from the relevant building control body.

7.4 Designers should refer to the relevant national Building Regulations and guidance for alternative approaches and detailed conditions of use, particularly in respect of requirements for substrate fire performance, and combustibility limitations for other materials and components used in the overall wall construction (for example, mortar adhesive and pointing).

## 8 Air and water penetration



8.1 The product is for decorative purposes only and provide neither airtightness nor watertightness.

8.2 Care must be taken to ensure that the wall supporting the cladding is adequately weathertight in accordance with PD 6697:2019 prior to the application of the system. The system must only be installed where there are no signs of dampness on the inner surface of the wall.

8.3 The mortar adhesive should be applied evenly to the supporting wall and the back of the product to minimise the formation of air pockets which might collect water from wind-driven rain.

## 9 Maintenance and repair



9.1 The product generally does not require regular cleaning but, where necessary, may be cleaned using a wet sponge, without additional detergents, solvents or brushes. For the removal of efflorescence, graffiti and other persistent stains, the Certificate holder's advice should be sought.

9.2 The product requires minimal maintenance; damaged stone pieces should be replaced as soon as is practicable, following the Certificate holder's instructions and observing all necessary health and safety precautions.

## 10 Durability



10.1 The durability and service life of the product will depend upon the stone veneer type chosen, building location and height, façade aspect, intended use of the building, and immediate environment conditions to which it is exposed.

10.2 Provided that the product is used in accordance with this Certificate and the Certificate holder's instructions, and regular maintenance is carried out as described in section 9 and in accordance with the Certificate holder's instructions, the product will have a service life in excess of 30 years.

## Installation

### 11 General

11.1 The product must be installed in accordance with the Certificate holder's recommendations, the requirements of this Certificate and the specifications laid down by a suitably qualified individual.

11.2 At the design stage and at the commencement of the installation, technical advice must be sought from the Certificate holder.

11.3 Wall surface should be clean and prepared/treated as required.

11.4 The tensile adhesion strength between the LBS adhesive and the wall must be determined using trial tests. A minimum of five specimens are bonded on the wall and allowed to cure for 28 days. The specimens are then pulled off the wall using suitable calibrated equipment to determine the tensile adhesion strength. See sections 1.3 and 6.4 of this Certificate.

## **12 Procedure**

12.1 The product will not require a foundation, as it is a self-supporting unit. The wall to which the product is fixed must be capable of sustaining the weight of the product and constructed in accordance with the requirements of the relevant Building Regulations and national Standards. All new build concrete block substrates containing mortar must be constructed a minimum of 7 weeks prior to fitting the Stone Veneer cladding.

12.2 To estimate how much of the product will be required, the area should be measured in square metres by multiplying width by the height (and adding 10% for wastage) and subtracting the areas for windows and door openings; the required quantity of corner pieces, is calculated by measuring the vertical external corners.

12.3 The product must not be fitted when temperatures are forecast to be 5°C or less or more than 35°C for the next 48 hours.

12.4 Prior to installation of Stone Veneer, new or existing block surfaces must be clean and free from any debris and dust. If the blockwork is uneven, it must be levelled with a suitable plaster scratch coat (not covered by this Certificate) before installing the product. At the commencement of the installation, technical advice must be sought from the Certificate holder.

12.5 Pieces of Stone Veneer should be arranged so that they fit complementary, avoiding fitting similar size pieces together in the one area. Work should be started from the corners towards the centre of the wall, alternating the long and short returns on corner pieces.

12.6 The wall area that can be covered within 30 minutes should be coated with a 5 mm layer (approximately) of LBS adhesive using a notched trowel; then slightly dampen the back of the stone veneer piece (to remove any dirt and prevent moisture loss from adhesive). A coat of LBS adhesive (approximately 10 mm in thickness) is applied to the entire back of the flat and corner pieces of stone veneer.

12.7 The stone should be pressed onto the wall and rotated slightly to force some of the adhesive to squeeze out. Any adhesive forced out should be removed before the adhesive is allowed to set. Adhesive joints should be narrow and consistent; any large gaps between the stones should be filled with small stones, using spacers where necessary to maintain the joint (see Figure 2).



Figure 2 Filling of gaps between the stones with small stones and spacers



12.8 Gaps between the stones should be filled with Gun Pointing Mortar (GPM) or, alternatively, grout with a sand cement/lime (not covered by this Certificate). The grout will tighten and seal up the area around the stone. The GPM/grout should be left to dry until it is firm. A striking stick is used to scrape along the joints, to achieve the desired clean and finished look (see Figure 3).

Figure 3 GPM/grout – using striking stick



12.9 The product may not be returned on the underside of window or door heads. To achieve a finish, a special width steel support lintel, or alternatively a slate reveal unit or rubbed-up plaster detail, should be used. Expansion tape is used to close of any remaining gaps and provide a weatherproof finish.

## Technical Investigations

### 13 Tests

Tests were carried out on the product and the results assessed to determine:

- bond strength
- freeze-thaw resistance-scaling
- hard body impact-
- water absorption.

## 14 Investigations

14.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

14.2 Installations in progress were inspected to evaluate the practicability of installation.

### Bibliography

BS EN 13501-1 : 2018 *Fire classification of construction products and building elements — Classification using test data from reaction to fire test*

BS EN 1990 : 2002 + A1 : 2005 Eurocode — Basis of structural design

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 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 : Design of masonry structures — General rules for reinforced and unreinforced masonry structures*  
NA to BS EN 1996-1-1 : 2005 + A1 : 2012 UK National Annex to *Eurocode 6 structures — General rules for reinforced and unreinforced masonry structures*

BS EN 12004-1 : 2017 *Adhesives for ceramic tiles — Requirements, assessment and verification of constancy of performance, classification and marking*

EAD 090062-00-0404 : 2018 *Kits for external wall claddings mechanically fixed*

### 15 Conditions

#### 15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.