



BUILDING
DEFECTS
INSURANCE



BLP Latent Defects Insurance Technical Assurance Methodology

Paul Wornell FCIOB, MMS
Technical Consultant
paul.wornell@blpinsurance.com
www.blpinsurance.com



Every BOPAS approved building system will...

- ...have a BLP Durability & Maintenance Assessment that confirms a minimum of 60 year service life with no disproportionate maintenance
- ...have been confirmed as acceptable by BLP for provision of housing warranty insurance / defects insurance: **BLPSECURE** and **BLPSECUREPLUS** (includes component cover) - subject to scheme specific checks
- ...have been accredited by Lloyds Register for process & control

Confidence in the system

So surveyors, valuers, lenders and purchasers can be confident about the long term durability of the system and safe in the knowledge that at least one warranty provider will provide cover (will not preclude other providers)



BUILDING
DEFECTS
INSURANCE

Built off-site in 1942/3

70+ years





BUILDING
DEFECTS
INSURANCE

SIPP's panel systems





BUILDING
DEFECTS
INSURANCE

Insulated concrete formwork systems





BUILDING
DEFECTS
INSURANCE

Timber frame ++

Even 'traditional' timber frame is into a period of change as designers respond to the sustainability agenda





BUILDING
DEFECTS
INSURANCE

Modular construction





BUILDING
DEFECTS
INSURANCE

Every major component made in Germany and shipped to UK





BUILDING
DEFECTS
INSURANCE

Modern green oak frame prefabricated in a factory





BUILDING
DEFECTS
INSURANCE

Guess the “modern method”...





BUILDING
DEFECTS
INSURANCE

All the bits...

Endothermic tile plank & clips

Ridge tile & Verge trims

Sprayed foam insulation

Flexible hoses & clips

Expansion vessel

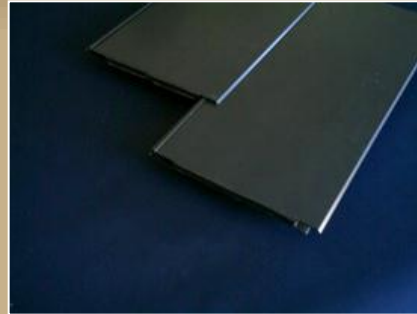
Solar energy processor

Buried Thermal store (hot) & Thermal store (cold)

Heat transfer fluid (antifreeze)

Remote control panel

+ HWC and all the usual heating and
hot water systems



The methodology

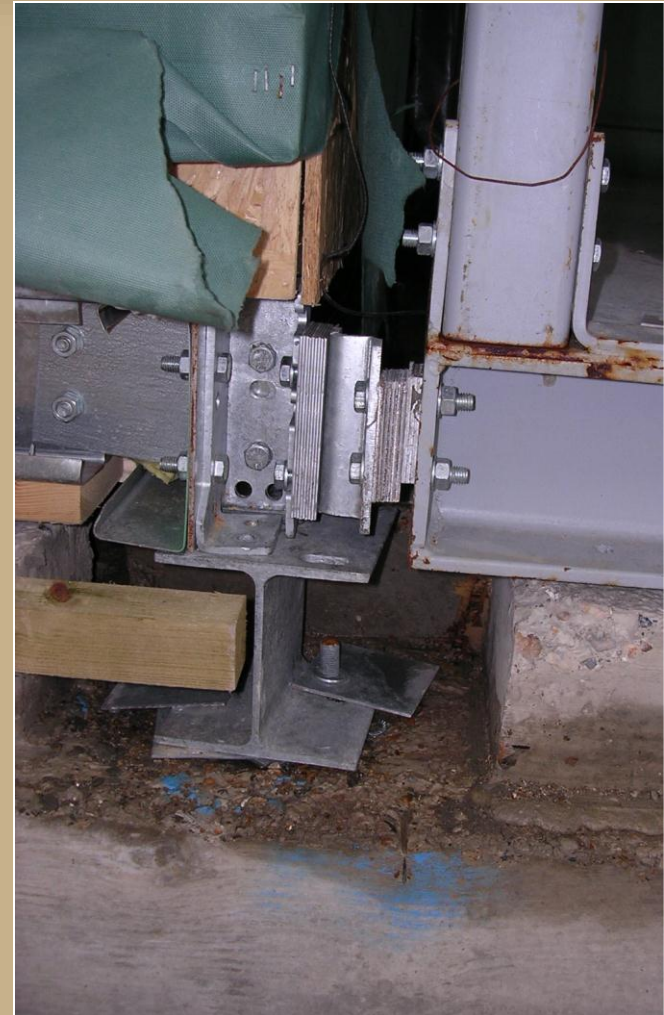
BLP does not publish its own standards; it draws on the profusion of existing industry standards embraced in:

- Approved Documents
- British Standard's & Codes of Practice
- BRE Reports and Papers
- Trade Association Best Practice Guidance
- 3rd Party Certifications etc.

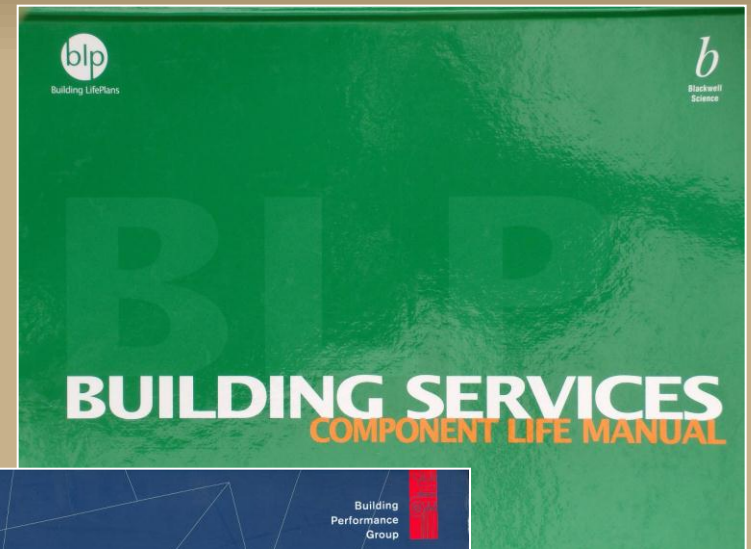
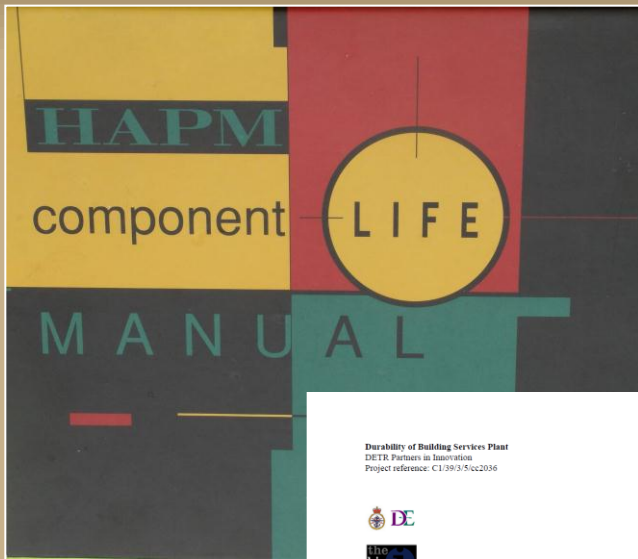
We have to maintain a technical risk management system designed to handle whatever comes along.

Maintenance

Need to distinguish
between what can be
maintained and what is
beyond normal
maintenance
("disproportionate")



20 years of research





BUILDING
DEFECTS
INSURANCE

Durability & Maintenance Schedule example

Heat pump systems - Ground source heat pumps - Component life 10 years

Maintenance requirements and frequency:

Inspection and servicing 1 yearly

Replace component parts as necessary 3 yearly

Ground collector system - plastics pipework - Component life 50 years

Maintenance requirements and frequency:

Nil

Underfloor Heating Pipework - Plastics and metal composite - Component life 30 years

Multi-layer composite pipe comprising inner and outer layers of high density cross-linked polyethylene (X-PE or PEX) to BS 7291-1 & -3, bonded to a central welded aluminum pipe.

Maintenance requirements and frequency:

Nil

Solar Water Heating Panels Panel systems - Component life 25 years

Glass evacuated tube solar collector. Corrosion resistant collector components: stainless steel, aluminum or copper alloys. System to BS EN 12976

Maintenance requirements and frequency:

Annual inspection, servicing and maintenance 1 yearly

Allowance for minor repairs 5 yearly

ELEMENTS

Foundations
Basements
Ground Floors
Structural Frames
External Walls – Loadbearing Masonry
External Wall Claddings
Curtain Walling and Rainscreens
Windows and External Doors
Pitched Roofs
Heat Sources
Lifts, Stairlifts and Hoists
Fire Protection
Controls

COMPONENT TYPE

Slate and Tile Coverings

Fully Supported Coverings
Flashings
Valley Linings
Ceiling Joists
Purlins
Trussed Rafters

COMPONENT SUBTYPE

Clay Tiles

Concrete Tiles
Metal Multi Tiles
Resin Based Slates

COMPONENT CLASS

A1 - Hand made plain tiles to BS 402
B1 - Hand or machine made clay tiles, not to BS 402, with BBA Certificate

PRODUCT

Eternit Clay Tiles - Canterbury Collection Ashurst - WT113

ACTIVITY REVIEW (REHAB ONLY)

Activity



New

Replace

Retain; lift and relay

Retain; secure slipped tiles/slates

Retain; local replacement

Retain; improve water shedding at eaves

Retain; add perimeter/edge fixing

Retain: without repairs

Remove

COMPONENT IDENTIFICATION AND LIFING

Element

Component type
Component subtype
Component class
Product

Reference Service Life
Green Rating
Energy Costs

Adjustment Factors

Marine Environment	-5 years
Industrial Environment	-5 years
Polluted Environment	-5 years

Condition (Rehab only)

As New
Part worn
Replacement Required
Assumed

Lifing Rules

Insurance Life



Maintenance Requirements

Repaint every 5 years
Restain every 3 years

DESIGN AND WORKMANSHIP CHECKS

Design

Subject

'Suitability of covering to exposure'

Statement

'The proposed headlap and roof pitch are (not) suited to the exposure of the site'

Auditor's Notes

'The statement above refers to...'

Workmanship

Category

'Tiling or slating'

Subject

'Hogging at separating wall'

Statement

'Tiles or slates are (not) hogging at separating wall, where fire breaks provided'

Auditor's Notes

'The statement above refers to...'

Functionality

Health and Safety

CACTUS STRUCTURE



[illegible]



BUILDING
DEFECTS
INSURANCE

Template Technical Audit – ‘A’ statement result

33428 - SINGLE-SCREEN Design & Workmanship

Location: Element: Subject: Criteria: Quality

All FW All All [Reset Filter](#) 145 of 1,176

Subjects (F2)

Location	Element	Subject	Quality	Site	Site Hist	Note	Criteria	Seq
BoS Appraisal	FW	Fixing schedules	X			Yes	General de...	0010
BoS Appraisal	FW	Sliding and overturning	X			Yes	General de...	0011
BoS Appraisal	FW	Vapour control layer	A			Yes	General de...	0012
BoS Appraisal	FW	Assessment of wind loading	X			Yes	General de...	0013
BoS Appraisal	FW	Structural calculations for timber wall studs	X			Yes	General de...	0014
BoS Appraisal	FW	Load transfer to timber studs	I			Yes	General de...	0015
BoS Appraisal	FW	Structural calculations for timber lintels	X			Yes	General de...	0016
BoS Appraisal	FW	Racking resistance - need for specific testing					General de...	0017
BoS Appraisal	FW	Racking resistance - structural calculations	X			Yes	General de...	0018
BoS Appraisal	FW	Racking resistance - contribution of masonry veneer	P			Yes	General de...	0019
BoS Appraisal	FW	Racking resistance - contribution of plasterboard	P			Yes	General de...	0020
BoS Appraisal	FW	Racking resistance - material suitability	Q			Yes	General de...	0021
BoS Appraisal	FW	Fixings for sheathing Materials	X			Yes	General de...	0022

Statements (F3) VAPOUR CONTROL LAYER

Quality	QuikSel	Statement
<input checked="" type="checkbox"/> A	0	No formal vapour control layer is proposed. However, it has been demonstrated that interstitial condensation can be avoided. This is by virtue that the combined vapour resistance of the layers on the warm side of the insulation is at least 5 times greater than that of the layers on the cold side.
<input type="checkbox"/> X	1	It is not clear what type of vapour control layer, if any, is to be used, i.e. it is not known if a separate membrane or vapour control plasterboard is to be provided.
<input type="checkbox"/> Q	2	No separate vapour barrier, e.g. 500 gauge (125 micron) polythene sheeting or vapour control plasterboard has been specified.
<input type="checkbox"/> Q	3	Polythene sheeting less than 500 gauge (125 micron) has been specified which does not accord with BRE specification.
<input type="checkbox"/> Q	4	No formal vapour control layer has been included and reliance is placed on the breathing qualities of the construction. However, this will prove unreliable, as the combined vapour resistance of the layers on the warm side of the insulation is not at least 5 times greater than that of the layers on the cold side.
<input type="checkbox"/> A	5	Polythene sheeting not less than 500 gauge (125 microns) has been specified to the inner face of the external wall panels.
<input type="checkbox"/> A	6	Vapour control plasterboard, e.g. Gyproc Duplex, is specified to the external wall panels.

[Help](#) [De-Select](#)

Auditor note (F4) - Current

The Hemcrete wall is designed as a fully breathing construction. Two BuildDesk calculations to BS EN ISO 13788 provided, one with normal external RH values and another assuming 90% RH for every month of the year and in both instances calculation predicts "NO CONDENSATION IS PREDICTED AT ANY INTERFACE IN ANY MONTH". Both calculations assume external air temperatures are depressed by 7 degC on normal modelling. Both calculations include the XS LT sheathing board but not the 3mm wet plaster. Inclusion of the plaster should have a neutral impact or improve results.

BBA state "moisture changes will vary within the overall Tradical Hemcrete matrix due to the external and internal environment and the building's geographical location. Should dynamic modelling suggest that moisture levels in service within the matrix are likely to exceed 18% (as defined in BS 5268-2:2002, Table 1) then all timbers must be preservative treated in accordance with BS 1282:1999. Lime Technology have stated that timbers will be treated in all cases (see component life schedule).

Audit notes (F5) - Previous

[Metrics](#) [Components](#) [Photos](#) [Early Warning](#) [Sch. Note](#) [Audit Notes](#) [Ok](#) [Cancel](#) [Apply](#)

Start | Microsoft Excel - M... | BLP Photos | Mail - Inbox - IBM L... | Cactus - Paul Wor... | 33428 BOPAS He... | 33428 - SINGLE... | 09:43



BUILDING
DEFECTS
INSURANCE

Template Technical Audit – ‘X’ statement result

33544 - SINGLE-SCREEN Design & Workmanship

Location: All Element: FW Criteria: All Quality: All [Reset Filter](#) 139 of 1,354

Subjects (F2)

Location	Element	Subject	Quality	Site	Site Hist	Note	Criteria	Seq	Photo
BOPAS STANDARD	FW	Provision of additional wall ties ~	I		-		General desi...	0016	
BOPAS STANDARD	FW	Assessment of wind loading	X		-	Yes	General desi...	0017	
BOPAS STANDARD	FW	Structural calculations for timber wall studs	X		-	Yes	General desi...	0018	
BOPAS STANDARD	FW	Load transfer to timber studs	I		-	Yes	General desi...	0019	
BOPAS STANDARD	FW	Structural calculations for timber lintels	X		-	Yes	General desi...	0020	
BOPAS STANDARD	FW	Racking resistance - need for specific testing	A		-	Yes	General desi...	0021	
BOPAS STANDARD	FW	Racking resistance - structural calculations	X		-	Yes	General desi...	0022	
BOPAS STANDARD	FW	Racking resistance - contribution of masonry veneer	X		-	Yes	General desi...	0023	
BOPAS STANDARD	FW	Racking resistance - contribution of plasterboard	P		-	Yes	General desi...	0024	
BOPAS STANDARD	FW	System boundaries	I		-	Yes	General desi...	0025	
BOPAS STANDARD	FW	Structural calculations for sips panels	P		-	Yes	General desi...	0026	
BOPAS STANDARD	FW	Axial loading - design values	A		-	Yes	General desi...	0027	
BOPAS STANDARD	FW	Horizontal loading - design values	A		-	Yes	General desi...	0028	

Statements (F3) Racking resistance - structural calculations

Quality	QuickSel	Statement
<input checked="" type="checkbox"/> X	0	In the absence of calculations it is not clear whether the quantity of board material, to impart the necessary racking resistance to the timber framework, has been established by reference to standard tables or has been calculated in accordance with Section 4.7 of BS 5268: Part 6 Section 6.1: 1996.
<input type="checkbox"/> P	1	The timber frame is to be designed and supplied by a member of the BM TRADA Q-Mark Scheme (formerly the UKTFA Q-Mark Scheme).
<input type="checkbox"/> Q	2	Calculations for racking resistance do not adhere to the methodology stated in BS 5268, i.e. resistance of a wall = basic racking resistance (from Table 2) x wall length x material modification factors (K101, K102, K103) x wall modification factors (K104, K105, K106, K107, K108).
<input type="checkbox"/> Q	3	Calculations for the provision of racking resistance have been determined by reference to a recognised set of standard tables, i.e. produced by the building system manufacturer. However, the selection may be inappropriate.
<input type="checkbox"/> A	4	Calculations for racking resistance adhere to the methodology stated in BS 5268.
<input type="checkbox"/> A	5	Calculations for racking resistance have been established by reference to standard tables, i.e. those produced by the building system manufacturer and recognised factors.

Auditor note (F4) - Current

Auditor notes (F5) - Previous

AUDIT 1 - AUDITOR NOTE
Site specific calculations required for each site using the values derived from testing of the C stud; Fv,RK = 4.36 kN/m (Eurocode 5) and Rb = 3.29 kN/m (BS5268-6.1:2007).

Matrix Components Photos Early Warning Sch. Note Audit Notes Ok Cancel Apply



BUILDING
DEFECTS
INSURANCE

Each component 'lived' in the template technical audit

33428 - SINGLE SCREEN Components

Location: Element: 8 selected of 142 compiled

Components (F2) Status:

Location	Elem...	Component Type	Status	Note	Condition	Selection	Seq
BoS Appraisal	FW	Cast In-situ Walling	Selected		New	Hemp-lime walling : Hemp(15-20mm):hydrated or hydraulic lime to BS EN 459;water -10:2:1:2.5-3 ...	0001
BoS Appraisal	FW	Lintels	Selected	Yes	New	Softwood : Permeable species vac-vac to V1 or V2; non permeable to V3.	0002
BoS Appraisal	FW	Timber Frames	Selected	Yes	New	Softwood : Softwood timber framing to structural engineer's calculations. Treatment for 60 years ...	0003
BoS Appraisal	FW	Base Plates and Channels	Selected	Yes	New	Softwood : Permeable species vac-vac to V1 or V2; non permeable to V3.	0004
BoS Appraisal	FW	Sheathing	Selected		New	Magnesium Silicate Board : Magnesium silicate board tested to BS EN 594 : Multi-Pro XS	0005
BoS Appraisal	FW	Insulation	Compiled				0006
BoS Appraisal	FW	Joint Sealants	Compiled				0007

Component Summary

Activities (F3)

Status	Activity	Statements	Note
--------	----------	------------	------

Selection:

Site Selection:

Notes: (F4)



BUILDING
DEFECTS
INSURANCE

Unique workmanship checks for Hemp-lime Walling

Audit Definition Maintenance

Audit Structure: Include: ☒ All

- Blockwork above damp-proof course
- Stonework above damp-proof course
- Glass blockwork
- Cast in-situ walling
- Hemp-lime walling
 - [Activities]
 - New
 - Submission
 - General design considerations
 - Detailed design considerations
 - Workmanship considerations
 - Hemcrete walling
 - Timber frame - by approved supplier
 - Timber frame - verticality
 - Timber frame - level
 - Timber frame - DPC
 - Multi-pro XS sheathing - perimeter fixing
 - Multi-pro XS - intermediate fixing
 - 0 - Fixings not 42mm stainless steel screws at 300mm c/s to intermediate studs (for racking)**
 - Shuttering - accuracy
 - Shuttering - tying
 - Shuttering - design thickness
 - Shuttering - lining to sides of openings
 - Shuttering - to heads of openings
 - Shuttering - conduit fixings
 - Shuttering - electrical boxes
 - Shuttering - water & gas installation
 - Hemcrete mix & place - operatives
 - Hemcrete mix & place - retaining battens
 - Hemcrete mix & place - working temperature
 - Hemcrete mix & place - type of mixer
 - Hemcrete mix & place - mix proportions
 - Hemcrete mix & place - mixing dry
 - Hemcrete mix & place - guaging water

Details | Costs | Security | Other Instances

☐ This statement is obsolete

Filters: 4 regions selected

Description: 3 audit data sets selected

Fixings not 42mm stainless steel screws at 300mm c/s to intermediate studs (for racking)

☐ Meets building regulations British Standard:

Quality: 0 - Observation

Shorter friendlier audit reports

☒ Print statement and all notes

☐ Print ALL notes, but NO statement ☐ Print LAST note only, and NO statement

☐ Print only in the cycle in which it was selected ☐ Block comments column

☐ Automatically incorporate last Auditor Note in Executive Summary

Comments:

☐ Update wherever this item appears in the Audit Structure

☐ The currently selected instance of this statement is obsolete

Help New child Edit History OK Cancel Apply



BUILDING
DEFECTS
INSURANCE

Why we need “the template”

Typical profile for
a cladding specific
system



Typical profile for
a basic panel
system



Typical profile for a
profile volumetric
system – fully fitted
in factory



To ensure...

- Consistency
- Repeatability
- Transportability between staff spread across the country
- Audit trail
- Right first time + zero defects



BUILDING
DEFECTS
INSURANCE

Any questions?

BLP Latent Defects Insurance Technical Assurance Methodology

Paul Wornell FCIOB, MMS

Technical Consultant

paul.wornell@blpinsurance.com

www.blpinsurance.com