



NHBC Accepts

Prefabricated Building Units

Technical document

Issue: 26 August 2022 | Version 1.4

Building confidence in innovative construction



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1.0 Scope

NHBC Accepts provides acceptance, in writing, that a construction system can meet NHBC Standards. NHBC Services Limited carries out a review of the system and, if deemed satisfactory, will provide a Certificate to the System Owner, allowing use of the NHBC Accepts logo and publish the acceptance on a website.

Building systems, typically volumetric units or panelised assemblies which are used to form part of the structure or building envelope, are reviewed in line with NHBC Accepts Technical Document for Prefabricated Building Units.

This document describes the requirements and scope of review for Prefabricated Building Units (Units).

The Units may form a building individually or in conjunction with other Units or construction components. For example, a Unit may comprise a three-dimensional volumetric module, connected to other modules that may be structurally stable or rely on a site-erected structural core for stability. Or a Unit may comprise a closed-panel wall connected to a site-erected structural frame.

The structural components of the Unit are prefabricated and assembled in a factory, usually from metal, timber or concrete or a combination of these materials.

Units may be supplied with varying degrees of completion. Some components are standard to all Units, some are non-standard (i.e. those that vary for individual projects) but are assembled in the factory and some ancillary components are constructed on site to form the completed building. The interface between the Standard Components and Non-standard Components or Ancillary Components shall be subject to assessment.

The System Owner will provide a System Manual that describes the system, setting out the scope and limitations for its use, the declared performance of the system and evidence to support the declared performance as set out in this document. The format and typical contents (where applicable) of the System Manual are detailed in **Appendix A**.

This Service requires that the System Owner and the Unit comply with the criteria set by NHBC Services Limited as detailed within this document. The Service is intended solely to provide confidence that a Unit meets NHBC Standards and is not intended as evidence of performance for any other purpose.

Appraisal of the Units against building regulations is not carried out as part of this Service. The NHBC-registered builder or developer is responsible for ensuring that the homes they build meet NHBC Standards and building regulations. Where a standard building type is proposed, for example in the standard design of houses constructed from volumetric Units, NHBC may require that a separate building control Type Approval is carried out.

2.0 Definitions & Abbreviations

The following definitions and abbreviations are used throughout the document in addition to those shown in the relevant standards.

Ancillary Components

Components installed on site that are necessary to form the completed home. These may include foundations, podium decks, structural cores, external envelope and building services.

Certificate

Certificate issued by NHBC Services Ltd stating that relying on the information provided by the System Owner, the Unit is expected to meet the requirements of NHBC Standards.

NHBC Standards

The NHBC standards (as amended from time to time) that incorporate the Technical Requirements. The latest copy can be found on the NHBC website www.nhbc.co.uk.

Non-standard components

Components that are assembled as part of the Unit but vary for individual projects. These may be windows, doors or services that may be built into the Units.

Service

The NHBC Accepts Service, being an appraisal of Prefabricated Building Units against the requirements as set out in this document.

Standard components

Components that are common to all Units.

System Manual

Detailed technical information on the Unit compiled by the System Owner. The System Manual comprises all the information against which the Service is carried out. It is a comprehensive document that describes the system, the declared performance of the system and evidence to support the declared performance.

System Owner

The party responsible for the design and assembly of the Unit.

Technical Requirements

The technical requirements for the design and construction of homes acceptable to National House-Building Council that must be met by the builder as described in the NHBC Standards.

Unit

A Prefabricated Building Unit, manufactured offsite as a structural assembly, transportable to site in three-dimensional or flat pack format and rapidly providing a weatherproof envelope, possibly subject to final weathering, jointing between Units, connection between Units and any foundation connections or connections to Ancillary Components.

3.0 Requirements

The Unit shall comply with the Technical Requirements of NHBC Standards and national building regulations. They should also consider the following requirements (as applicable):

1. Strength and stability
2. Behaviour in relation to fire
3. Resistance to moisture
4. Safety in use
5. Resistance to the passage of sound
6. Energy efficiency
7. Aspects of durability, site installation, identification and temporary weather protection
8. Coordination of internal services
9. Quality of finish

3.1 Strength and stability

3.1.1 Reaction to loading

The properties of the Units shall be such that when a building is constructed from them, in accordance with the agreed assembly instructions and design rules, the loadings that are liable to act on it during construction and use will not lead to any of the following:

- collapse of the whole or part of the works
- major deformations to an inadmissible degree
- damage to other parts of the works or to fittings or installed equipment as a result of major deformation of the load-bearing construction
- damage by an event to an extent disproportionate to the original cause

3.1.2 Serviceability

Load bearing elements shall have sufficient stiffness to avoid unacceptable deflections and dynamic effects from normal use. Units shall have adequate resistance to loads imposed during manufacture, transportation and installation.

3.2 Behaviour in relation to fire

3.2.1 Reaction to fire

The reaction to fire performance of the individual components of the Units shall be in accordance with national building regulations applicable to the product in its intended end use application.

3.2.2 Resistance to fire

The resistance to fire performance of the Units shall be in accordance with national building regulations applicable to the system in its intended end use application.

3.2.3 Fire compartmentation

The fire compartmentation of an assembled building shall be in accordance with national building regulations applicable to works where the building is to be constructed.

3.2.4 Means of escape

Where the means of escape can be defined, for example where in standard house types or common configurations of a building, the means of escape shall be in accordance with national building regulations.

3.3 Resistance to moisture

3.3.1 Vapour permeability and moisture resistance

The properties of the Units shall be such that there will be no threat to the occupants or neighbours due to the presence of damp in the works or on surfaces within the works formed from the Units.

3.3.2 Water-tightness

The external envelope including joints between Units shall prevent leakage of water from rain and melting snow into the Units for the defined exposure condition for the Unit.

3.4 Safety in use

3.4.1 Falling due to changes in level or sudden drops

Prefabricated Building Units or buildings formed from the Units shall be so designed that the risk to occupants by falling due to changes in level or sudden drops is minimised as set out in NHBC Standards Chapters 6.6 and 7.1 and applicable national building regulations. This can be achieved by minimising the hazard itself or ensuring that protective measures are used.

3.4.2 Resistance to eccentric loads including impact resistance

The Units shall have sufficient mechanical resistance and stability to ensure that the safety of the occupants is not endangered. This means that they shall have sufficient mechanical resistance and stability to withstand accidentally large static or dynamic loads, such as can arise from the action of persons or objects, without full or partial collapse. Equally, such loads shall not lead to the production of dangerous (sharp or cutting) fragments, give rise to a risk of falling through, particularly at a change of level, nor endanger the safety of other people in or around the building.

3.5 Resistance to the passage of sound

3.5.1 Airborne sound insulation

Walls and floors shall provide the necessary airborne sound insulation applicable to the intended use of the building.

3.5.2 Impact sound insulation

Floors shall provide the necessary impact sound insulation applicable to the intended use of the building.

3.6 Energy efficiency

3.6.1 Thermal resistance

The external envelope shall provide the necessary thermal insulation applicable to the intended use of the building. Thermal bridges, which may cause uncomfortably low temperatures or water vapour condensation affecting hygiene, health and environment shall be avoided.

3.6.2 Air permeability

The external envelope shall provide adequate airtightness to limit unnecessary energy loss and to prevent cold draughts.

3.7 Durability, site installation, identification and temporary weather protection

3.7.1 Durability

The design of the Prefabricated Building Unit shall ensure that deterioration of materials and components during the assumed intended working life does not significantly affect the performance of the system in relation to fulfilling the Technical Requirements.

The structure of the home shall, unless specifically agreed otherwise in writing with NHBC, have a life of at least 60 years. Individual components and assemblies not integral to the structure may have a lesser durability, typically no less than 20 years.

3.7.2 Site installation

General instructions for the installation of the Prefabricated Building Units in the works shall be provided by the System Owner. A copy of the System Owner's installation manual shall be available on all construction sites where the system is being used.

The method of transport, installation and erection of the Units shall fulfil the Technical Requirements. Clear instructions on how the Prefabricated Building Units are used or installed must be included in the System Manual and be available on all construction sites where they are to be adopted. Appropriate training to site management and operatives should also be given, as deemed necessary.

3.7.3 Identification

The materials used in Prefabricated Building Units shall be identifiable in relation to those properties that affect the ability of the system to fulfil the Technical Requirements.

3.7.4 Temporary weather protection

A robust design and method for temporary weather protection of the Prefabricated Building Units shall be provided by the System Owner. This shall ensure that deterioration of materials and components during the storage, transport and installation phase does not adversely affect the performance of the System in relation to fulfilling the Technical Requirements of the NHBC Standards and Performance standards as set out in Chapter 9 of the NHBC Standards.

3.8 Coordination of services

The design of the Prefabricated Building Unit shall ensure that standard utilities industry regulations and guidance is followed in the arrangement, specification and commissioning of services. All the various services systems shall be integrated into the Units without compromising their structural integrity, fire, moisture or sound resistance qualities and be suitable for the intended use of the building.

Services shall comply with NHBC Performance Requirements as set out in Chapter 8 of the NHBC Standards.

3.9 Quality of finishes

In situations where the manufacture of the Prefabricated Building Unit includes the provision of surface layers, or coatings applied to these surfaces, such finishes within factory-assembled Units shall comply with NHBC Performance Requirements as set out in Chapter 9 of the NHBC Standards.

4.0 Demonstration of performance

The proposed performance of the Unit is set out by the System Owner in the System Manual, explaining the proposed scope of the system and limitations on its use.

The information supplied by the System Owner will depend on the type, function and form of construction of the Units. Where Units are assembled with Non-standard Components or are reliant on Ancillary Components to form the completed building, this will limit the assessment that can be made. Two options are available:

1. The System Owner may specify typical details/materials for the assessment. It shall be made clear on the Certificate which components are an assumed specification and that any performance given for the Units depends on the use of the specified additional materials or components.
2. A partial assessment may be made, and the Certificate will state such data as can be determined for the Unit, making it clear what additional performance is to be determined, on a case by case basis for the works.

As a minimum, the Units shall be fully specified in relation to their structural integrity individually and, where relevant, when joined together. Standard details showing how the Units are assembled to become buildings shall be provided.

Assessment of individual materials and components that are part of the Units and their assembly into Units shall, in general, be carried out on the basis of the relevant product standards or as assessed by an independent technical approvals authority (such approvals authority accepted by NHBC in its absolute discretion) in line with NHBC Standards, Requirement R3. (Refer to NHBC Technical Guidance 2.1/20 "Independent Technical Approvals Authorities/ Bodies Acceptable to NHBC").

Where Non-standard Components or Ancillary Components are incorporated into the Units, the System Manual shall define when the design of these components should be submitted to NHBC and the building control body prior to the manufacture of the Units.

4.1 Strength and stability

4.1.1 Reaction to loading

The loadbearing capacities of pre-designed structural parts of the Unit shall be in conformity with EN 1990:2002 and other product-specific Eurocodes or British Standards as appropriate. Evaluation will normally be undertaken by structural calculations, supplemented if necessary, by testing.

Since the verification of mechanical resistance and stability of individual buildings will necessitate structural calculations on a case-by-case basis, the System Owner will supply a structural design philosophy with supporting calculations.

Sample calculations shall be performed and shall include checks to establish the resistance to the Ultimate Limit State (collapse) and the Serviceability Limit State (deflection). Such calculations shall be performed on the maximum Unit size.

Where evaluation by testing is required, the testing and evaluation shall be carried out by a body accredited by UKAS for the scope of work.

4.1.2 Serviceability

Loadbearing elements shall have sufficient stiffness to avoid unacceptable deflections and dynamic effects from normal use. Maximum deflections at serviceability limits states should not be exceeded during transportation or installation.

4.2 Behaviour in relation to fire

4.2.1 Reaction to fire

Where subject to regulatory requirements, the reaction to fire of the Unit shall be declared as the reaction to fire class, in accordance with BS EN 13501-1 and BS EN 13501-5. The classification of the Unit shall be based on the reaction to fire performance of the constituent components/materials of the Units as given in the product/material standards. A schedule of the fire performance characteristics should be included in the System Manual.

The individual components shall either:

- a. be in accordance with a specification or design that has been shown by a specific test to be capable of meeting that performance classification.
- b. have been designed by using relevant design standards in order to meet that performance classification.
- c. have been assessed by applying relevant test evidence, in lieu of carrying out a specific test, as being capable of meeting that performance classification. Any assessment carried out to justify the fire resistance of a product or construction should be carried out by a body which is suitably qualified and experienced to do so.

4.2.2 Resistance to fire

The complete Unit or, where relevant, its components in an assembly representing end use conditions, shall be tested, using the test method relevant for the corresponding fire resistance class, in order to be classified according to the appropriate Part of BS EN 13501. Determination of the loadbearing capacity of the Units, when exposed to fire, may also be undertaken by calculation according to, or tabulated values in, relevant Eurocodes. The individual components shall either:

- a. be in accordance with a specification or design that has been shown by a specific test to be capable of meeting that performance classification.
- b. have been designed by using relevant design standards in order to meet that performance classification.
- c. have been assessed by applying relevant test evidence, in lieu of carrying out a specific test, as being capable of meeting that performance classification.

A schedule of the fire performance characteristics should be included in the System Manual.

4.2.3 Fire compartmentation

Fire compartmentation is a function of its application and the relevant national building regulations. It is for the designer of the completed building to determine the suitability and position of individual components for particular buildings.

Where compartmentation is reliant upon components in the Prefabricated Building Unit (for example cavity barriers or fire stopping installed in the Unit), assessment will be made on the basis of the standard construction details for the Unit.

4.2.4 Means of escape

Where the means of escape can be defined, a means of escape design philosophy shall be submitted that demonstrates the design principles for safely evacuating the building in case of fire.

4.3 Resistance to moisture

4.3.1 Vapour permeability and moisture resistance

When designing for the risk of moisture in the external envelope, consideration should be given to a whole-building assessment taking into account the ventilation and heating design, critical junctions of elements, weathering strategy and detailing, the materials and form of the external fabric, positioning of vapour control and airtightness layers and the likely in service external and internal climatic conditions depending on geographical location and occupancy type.

Assessment shall be undertaken in accordance with the guidance contained within BS 5250:2021.

Moisture risk in building elements may be assessed by: prescriptive guidance where there is certainty of experience and sufficient data and empirical testing to provide guidelines for practice and design to prevent moisture risk, and, modelling where appropriate in accordance with standards such as BS EN ISO 13788 or BS EN 15026. The following boundary conditions should be used for the purposes of calculation: >60% internal relative humidity, internal temperature of 21°C and external temperature of -2°C.

If an assessment indicates condensation is likely to occur, then the designer should assess the likelihood of it causing damage to the materials used and, if necessary, modify the design.

Water vapour resistance of the relevant layers should be based upon:

- Design values given in EN 12524 or European technical specifications, or
- Tests according to EN ISO 12572 or European technical specifications

4.3.2 Water-tightness

Resistance of the building envelope to water leakage, including driving rain on facades and possibly snow penetration, shall primarily be assessed on the basis of the standard construction details for the Unit, and by using the available technical knowledge and experience from similar well-known technical solutions. The assessment shall include the full external envelope, including joints within Units, joints between the Units and joints between the Unit and the substructure, where the latter are intended to provide weather-tightness.

Dependent upon the design of the Unit, it may be necessary to consider the water-tightness of the envelope before the final outer layer e.g. a brick skin, is added. Temporary measures may be incorporated at the factory or through recommendations for on-site provisions.

Where required by NHBC Standards, Chapter 6.9, curtain walling and cladding systems shall have certification confirming satisfactory assessment, undertaken by an independent technical authority. Where applicable, certification should be in accordance with the CWCT Standard for systemised building envelopes (or a suitable alternative acceptable to NHBC).

Resistance to moisture from the ground must be considered, including the use of suitable damp-proof membranes, damp proof courses and other separation of the structure and internal environment from ground moisture. Construction details should consider sloping sites, steps and staggers in building elevation and plan.

4.4 Safety in use

4.4.1 Falling due to sudden changes in level or sudden drops

The design shall be assessed for any unprotected changes in floor level, including any discontinuities that might arise from coupling Units together. Stairs, balustrades and balconies shall follow the guidance in NHBC Standards Chapters 6.6 and 7.1 and applicable national building regulations.

4.4.2 Resistance to eccentric loads, including impact resistance

Mechanical resistance against dynamic loads shall primarily be assessed on the basis of existing knowledge related to the intended use. Walls with well-known internal lining materials, such as standard gypsum boards, wood-based panel products and solid timber boards with studs, should generally be accepted to have a satisfactory impact resistance for normal use.

Consideration shall be given to the protection of impact with glazing with which people are likely to come into contact while moving around the building.

4.5 Resistance to the passage of sound

The System Owner shall state how the sound insulation performance of the completed building is to be demonstrated. The sound insulation performance of the Units or assembly of the Units may be evaluated by either:

- a. Field testing of a completed building
- b. Field testing of a representative sample supported by suitable assessment from a suitably qualified expert
- c. Design to robust standard details
- d. Assessment by a suitably qualified expert.

Where the sound insulation performance is evaluated by either (b) field testing of a representative sample or (d) assessment by a suitably qualified expert, the anticipated sound insulation performance of building elements shall be declared in the System Manual as estimated values for airborne sound insulation and impact noise level to be expected in completed buildings. The performance shall be specified with designations according to BS EN ISO 717.

The estimated values shall be verified by assessment from a suitably qualified Acoustic Specialist and may use references to data for common construction designs given in national standards, textbooks or authoritative guides, provided that such data are based upon tests and classification in accordance with the EN ISO standards mentioned above.

Sound insulation shall be provided to soil pipes passing through homes as described in NHBC Standards Chapter 8.1.6.

Note that appropriate sound insulation testing of the completed home will be required to satisfy building regulations.

4.6 Energy efficiency

4.6.1 Thermal resistance

U-values shall be calculated using the methods and conventions set out in BR 443 Conventions for U-value calculations, and should be based on the whole element or unit (e.g. in the case of a window, the combined performance of the glazing and the frame).

In the case of windows, the U-value can be taken as that for:

- a. The smaller of the two standard windows defined in BS EN 14352-1; or
- b. The standard configuration set out in BR 443; or
- c. The specific size and configuration of the actual window.

The U value of the door can be calculated for:

- a. The standard size as laid out in BS EN 14351-1; or
- b. The specific size and configuration of the actual door.

The building fabric shall be constructed so that there are no reasonably avoidable thermal bridges in the insulation layers caused by gaps within the various elements, at the joints between elements, and at the edges of elements, such as those around window and door openings.

Reasonable provision would be to:

- a. Adopt accepted design details as set out in formally recognised 'Accredited Construction Details' for the system; or
- b. Use construction joint details that have been calculated by a person with suitable expertise and experience following the guidance set out in BRE Report BR 497 Conventions for calculating linear thermal transmittance and temperature factors.

4.6.2 Air permeability

Where applicable, a ventilation design philosophy statement shall be submitted in the System Manual to demonstrate that the method of ventilation of the home is suitable for its intended use.

Assessment of the air permeability of the external envelope is normally undertaken by judgement of the construction details on the basis of the knowledge and experience from traditional technical solutions. The assessment shall include joints between components in a Unit and, if relevant, joints between one Unit and another.

Examination of the performance of the completed building is not included in the Service and will be determined by site testing in accordance with national building regulations.

4.7 Durability, site installation, identification and temporary weather protection

4.7.1 Durability

The durability of the system shall be appropriate for the intended use. It is necessary to consider the specification of the Prefabricated Building Unit in relation to its individual components and materials as well as its behaviour as an assembly (compatibility of components/materials).

The suitability of a material for use for a specific purpose can be demonstrated by

- i. performance in accordance with standards set by NHBC; or
- ii. where no NHBC standard is set, compliance with the relevant British Standard or equivalent European Technical Specification approved by a Committee for Standardisation, provided they are used in accordance with the relevant Code of Practice; or
- iii. compliance with standards not lower than those defined in a relevant British Standard specification or equivalent, provided their use is accepted by NHBC; or
- iv. satisfactory assessment by an appropriate independent technical approvals' authority accepted by NHBC; or
- v. use of materials and products in accordance with well-established satisfactory custom and practice, provided that such custom and practice is acceptable to NHBC.

Normal maintenance and repair will be required to maintain the performance of the Units over their intended life. The System Owner shall provide guidance on the type and frequency of such maintenance.

4.7.2 Site installation

The System Manual shall incorporate an installation manual that should address:

- Erection techniques and necessary equipment.
- Method for connecting to foundations, including interface with ground gas protection where required.
- Temporary bracing.
- Completion of joints between Units.
- Ancillary Components.
- Permitted tolerance.
- Remedial actions for damaged Units.
- Requirement for correct connection of services such that fire protection and damp-proofing are not compromised.

In addition, under the NHBC Rules for Builders and Developers registered with NHBC, it may be necessary for access to be provided to inspect critical features or materials, including those that might be concealed. The System Owner should therefore provide RAMS to cover opening up, repair and reinstatement work to the units.

4.7.3 Identification

All components of the Unit shall be identified. This shall include dimensions, significant properties (mechanical, physical, chemical etc.), tolerances and the product standard or certification against which they have been assessed.

4.7.4 Temporary weather protection

The System Manual shall incorporate a Risk Assessment and Method Statement to outline the design, methods, and requirements for protecting the Units from weather exposure and mechanical damage during storage, transportation and installation. The Method Statement should address:

A clear statement on the maximum duration which the temporary measures can be applied. The exposure time limits shall be controlled for both the maximum duration for external storage and maximum duration of exposure following installation until permanent claddings are installed.

The System Owner shall assess the exposure limitations of temporary weather protection materials e.g., unit wrappings, breather membranes, roof membranes.

Details of any temporary openings that may be required in the protection layers - e.g., for lifting installation/connection of units. The Method Statement shall outline the process for ensuring the continuity of temporary weathering post installation and quality assurance checks. The method for sealing between units and sealing around lifting points shall be considered. The choice of materials shall be suitable for use in cold or wet conditions.

Reference to quality controls and checks to ensure closing-up of temporary weatherproofing post installation

The design of temporary weather protection shall avoid the risk of standing water on tops of volumetric units.

Consideration of prevention of build-up of condensation and humidity during storage. The System Owner should consider suitable means of ventilation and intermittent quality checks.

Temporary protection materials must be specified to ensure they are fit for purpose and achieve compliance with NHBC Technical Requirement R4 c) iii) proper protection during storage and v) protection against weather during construction (including excessive heat, cold, wetting or drying).

4.8 Coordination of services

The specification of services is normally determined on a project-specific basis.

The method of commissioning services installed offsite shall be detailed in the System Manual. Pressure testing of pipework should be carried out offsite where practicable.

Suitable access shall be provided for site connections, inspection and commissioning of services.

The System Manual should only include specific information on aspects of the key services that are standard across the system.

4.9 Quality of finishes

The quality of finish shall be set out in the System Manual. Temporary protection should be incorporated on surfaces and fittings to prevent damage during manufacture, transportation and erection.

5.0 Evaluation of conformity

Prefabricated Building Units may be manufactured using a wide variety of materials and design approaches. It is therefore not possible to prescribe exactly the actions to be undertaken by the System Owner of Prefabricated Building Units for Factory Production Controls (FPC) in the evaluation of conformity.

Units or components that are covered by a harmonised European Standard must be manufactured in accordance with the relevant standard.

The System Owner shall create a control plan (such example control plan set out in **Appendix C**) to ensure, by direct or indirect methods, that the product specification remains unchanged from that described in the System Manual, allowing for normal tolerances on material properties and manufacturing processes and that the performance of the Unit is consistent with the System Manual.

The System Owner's Quality Management System (QMS) will be certified by a UKAS-accredited, independent certification body against the requirement of ISO 9001:2015.

The System Owner will demonstrate that the certified QMS includes:

- The control plan for FPC, including hold points & evidence of inspection, testing & commissioning.
- Clarity on the controls between design and fabrication to verify that the Unit produced meets the design specification.
- Traceability of all components used in the system.
- Identification of proposed site and plot for each Unit under production.
- A procedure for identifying non-conformities, their cause, and implementing actions to prevent recurrence.
- A procedure for dealing with non-conforming Units which prevent them from being delivered.

Where it is appropriate, NHBC may require a full-scale prototype of the system to be assembled. This could include the construction of a pilot scheme of a limited number of dwellings.

6.0 Certificate issue and publication and removal of certificate

The scope of compliance achieved for each Unit shall be indicated on the Certificate awarded to the System Owner, as well as their entry on the NHBC Accepts web pages.

The standard form of the Certificate is reproduced in **Appendix B** of this document.

The terms of use of the Certificate and NHBC Accepts logo are set out in the terms and conditions that accompany the engagement letter with the System Owner.

Appendix A: Typical format and contents of a System Manual

Cover page(s)	<ul style="list-style-type: none"> ■ System Owner name ■ System name ■ Document reference/ revision number ■ Issue date ■ Document owner ■ Document status
Revision history	Issue reference/ issue date/ recipient if applicable/ any notes
Contents	<ul style="list-style-type: none"> ■ Reference codes e.g. numbers/ letters or combination ■ Section headings and subsections ■ Page numbers
Scope and limitations	<ol style="list-style-type: none"> a. Description of the system and the scope of offsite manufactured elements b. Intended use and any limits of application or exclusions (geographic/ environmental, storey height, dimensions, building type and shape etc.) c. Confirmation of the parties (preferably named individuals), who have responsibility for design and coordination of the System, certification of the system quality assurance and who has overall responsibility for the delivery of the homes
Standard detail drawings	Include a schedule of the drawings provided in the standard details pack. The details should convey weathertightness, buildability, structural load path, thermal efficiency and performance in the event of fire
Material specifications	<p>Specifications and third-party certificates, for all key materials that are critical to the performance of the System such as:</p> <ul style="list-style-type: none"> ■ Structural material ■ Protection for durability ■ Sheathing boards ■ Insulation ■ VCL/ DPM/ DPC and breather membrane ■ Cavity barriers and fire stopping ■ Windows and external doors ■ Internal fire linings <p>Third party certificates shall either be UKCA/UKNI/CE Marked or certified by an independent certification body belonging to the European cooperation for Accreditation (EA)</p>
Evidence of performance where relevant to the System	<ol style="list-style-type: none"> a. Process for obtaining third party structural certification b. Structural design philosophy stating how loads are sustained and transmitted to the ground and in transit/ lifting c. Sample structural calculations for typical design d. Condensation risk analysis as set out in NHBC Standards e. Fire test reports demonstrating compliance with national building regulations f. Design philosophy for Means of Escape where applicable g. Clarification on how sound resistance is to be achieved and demonstrated h. Certification or calculation that demonstrates the thermal performance of the system including thermal transmittance (psi-values) for typical junctions i. UKCA/UKNI/CE Mark certificates (including schedules) for all materials

Appendix A: Typical format and contents of a System Manual

Evidence of performance where relevant to the System	<ul style="list-style-type: none">j. Factory Production Control Manual to include<ul style="list-style-type: none">■ ISO 9001:2015 certificate■ Inspection and test plan, setting out the scope and frequency of inspection and testing/witnessing of critical components■ Explanation of the controls between design and manufacture to demonstrate that the accepted design is being produced■ Process flow chart of activities, including change control mechanism■ Process for identifying and acting on non-conformities - both remediation and measures to prevent recurrence■ Hold points and evidence of inspection■ Traceability of all components used in the System■ Identification of the proposed site for all panels/ modules in productionk. Site installation manual to include<ul style="list-style-type: none">■ Delivery, transportation and storage requirements■ Foundation checks and preparation■ Tolerances and remediation of disparities■ Lifting and installation/connection process■ Securing and sealing of modules■ Contractor competency requirements and responsibilities■ Temporary protection materials & specifications
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Prefabricated Building Units Acceptance Certificate

Issue date: _____

Reference Number: _____

Issue: _____

System Owner: _____

System name: _____

Generic form: _____

NHBC Services Ltd has reviewed the following information (the System Manual) related to the Prefabricated Building Units, supplied by the System Owner:

- System Manual ref no. and title.

Relying on the information provided by the System Owner, NHBC Services Ltd considers that the Prefabricated Building Units can meet NHBC Standards.

Additional requirements must be met in order for a new home to qualify for Buildmark cover. Buildmark cover for new homes will only be issued to Builders or Developers in accordance with the latest version of the NHBC Rules (a copy of which can be found at www.nhbc.co.uk).

This acceptance certificate is valid until such time as it is no longer published or authorised by NHBC. Readers are advised to check the validity and latest issue number of this Certificate by either referring to our website at www.nhbc.co.uk/accepts or contacting NHBC directly.

Issued by:

Innovation Manager
NHBC Services Ltd

Description, Scope and intended use

NHBC Services Limited is a private company registered in England and Wales. Registered number 03067703. Registered office: NHBC House, Davy Avenue, Knowlhill, Milton Keynes, Buckinghamshire MK5 8FP. Tel: 0344 633 1000 www.nhbc.co.uk



Prefabricated Building Units Acceptance Certificate

Extent of review for NHBC Warranty on NHBC Registered Sites

NHBC Services Ltd has undertaken a technical review of the System Manual as set out in line with the NHBC Accepts Technical Document for Prefabricated Building Units.

The NHBC Accepts Service is intended solely to provide confidence that the Prefabricated Building Unit meets NHBC Standards and is not intended as evidence of performance for any other purpose. Appraisal of the Units against building regulations is not carried out as part of this Service.

Exclusions and Limitations

This Acceptance Certificate is made out solely to the System Owner. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the System Owner arising out of, or in connection with, this Acceptance Certificate.

Exclusions and limitations are set out in the System Manual. Additional considerations in the use of the Prefabricated Building Units include the following:

- XXX
- XXXX
- XXXX

Appendix C: Example control plan

Example control plan for the manufacture of Prefabricated Building Units

Subject/type of control	Test or control methods	Criteria, if any	Minimum number of samples	Minimum frequency of control
Properties of structural components				
Structural profiles, framework etc	See prEN 1090 -			
Structural connections	Documented in-house method	As defined in national specifications	1	As defined in national specifications
Properties of core/insulation material				
Formulation	-	Supplier's declaration	-	Every delivery
Density (in situ foams only)	Documented in-house method	-	3	1 every shift
Properties of face materials				
Material specification		Supplier's declaration	-	Every delivery
Thickness	Suitably calibrated instruments	Conformity with ETA specification	3	Every delivery
Tensile strength	Documented in-house method			
Properties of adhesives/adhesive joints (where relevant)				
Coverage (spread)	Documented in-house method	Manufacturer's declaration	-	Continuously
Density or viscosity	EN 542 or EN 12092	Manufacturer's declaration	-	1 every shift
Workshop conditions e.g. temperature	Suitably calibrated instruments	In accordance with adhesive supplier's recommendations	-	Continuously
Tensile strength of bonded joint (after curing)	Documented in-house method	Manufacturer's declaration	-	1 every shift
Properties of panels				
Dimensions - thickness, height, width, squareness and flatness as relevant	Suitably calibrated instruments	Conformity with System Manual and approved project-specific design	1	1 every Unit
Compressive and tensile strength	Documented in-house method		3	1 every shift or change of Unit
Shear strength	Documented in-house method		3	1 every shift or change of Unit
Properties of assembled Unit				
Sealing of joints	Documented in-house method	Visual check	3	Every Unit
Correct operation of doors and windows	Documented in-house method	Visual check	1	Every Unit
Installation of cavity barriers and fire stops	Documented in-house method	Visual check	1	Every component
Lapping of membranes (VCL and breather membrane)	Documented in-house method	Visual check	1	Every Unit
Pressure testing of plumbing and services	Documented in-house method	Visual check	1	Every Unit
Quality of finishes	Documented in-house method	Visual check	1	Every Unit
Temporary protection materials and specifications	Documented in-house method	Visual check	1	Every Unit