SCI / NHBC Stage 1 System Certification

Meckahno Homes

7th November 2022 - Certificate number 20251107

1. Introduction

The Steel Construction Institute has assessed the structural aspects of this system for Stage 1 – System Certification and confirms that it is suitable for use in the construction of dwellings in accordance with NHBC Standards Chapter 6.10 “Light steel framing”.

This certificate is valid until 07/11/2025 unless it is withdrawn or updated before that date. To confirm validity please visit the SCI Assessed website (www.sci-assessed.com) or contact SCI (Tel: 01344 636525).

For contact details of the technical department of *Meckahno Homes* please refer to the *Meckahno Homes System Manual*.

Scope summary

Performance issues considered in the scope of this certification:

- Durability: Yes
- Strength and stability: Yes
- Additional details for volumetric construction: Not applicable
- Behaviour in relation to fire: No
- Acoustic performance: No
- Moisture control, thermal performance, condensation risk and water ingress: No
- Wall construction: No
- Balconies, terraces and parapets: No

2. Description of the system

This certificate relates to the *Meckahno Homes* light steel frame system for panelised walls and floors of residential dwellings up to three storeys high. As its basic components, the *Meckahno Homes* system uses cold rolled galvanized C-sections for wall studs and to fabricate lattice joists.

The wall studs are produced to BS EN 10346: 2015, steel type S350GD +Z275 and are typically 75 mm to 100 mm deep and 1.0 to 2.0 mm gauge. Floors are formed from lattice trusses fabricated from sections produced to BS EN 10346: 2015, steel type S350GD+Z275. The lattice trusses are typically 225 to 500 mm deep and are formed from sections typically 1.2 or 2.5 mm gauge.

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Component sizes are determined on a project basis.

For more severe environmental conditions where steel framing is less than 150 mm above external ground level, galvanizing to Z450 or Z600 may be specified, as required by NHBC Standards Chapter 6.10.

The system of construction is based on the 'warm frame' principle, where the primary insulation is placed outside the structural frame. In this way, the risk of condensation is minimised. Secondary insulation may be used in the stud zone to achieve enhanced U-values. Appropriate acoustic performance is achieved by using multiple layers of board and quilt.

Meckahno Homes domestic floors comprise timber board, joists and plasterboard ceiling. Separating floors have additional layers to provide acoustic and fire resistance to meet Building Regulation requirements.

3. Scope of this certificate

The scope of this Stage 1 certificate is limited to the structural and durability aspects of the structural steel frame. System specific solutions for fire resistance, sound insulation, resistance to moisture and thermal performance must be assessed on a project specific basis. When presented with proposed use of the system, such solutions will be considered by NHBC in accordance with their internal processes and procedures for assessing and managing Buildmark Warranty and/or Building Regulation Approval applications. The submission of additional information demonstrating further compliance with NHBC Standards and/or the Building Regulations, as applicable, will be required.

Although it may be possible to use the *Meckahno Homes Offsite Manufactured Panelised Housing System* for applications beyond these limits, the scope of this certificate is restricted to the following:

(i) Residential single occupancy domestic structures.

(ii) A maximum of three storeys.

(iii) Full calculations to be provided for every project based on the design philosophies presented in the *Meckahno Homes System Manual*.

(iv) Lightweight finishes may be supported by the stud walls.

(v) Masonry and other heavy claddings should be laterally restrained by the stud walls, but the vertical loads from such claddings must not be carried by the stud walls.

(vi) A maximum uplift force at each bolt down location will be determined for each project. A suitable holding down detail is designed with supporting structural calculations for each project.

(vii) Walls around voids, such as occur at staircases, may sit directly one above the other with no intermediate floor to offer lateral restraint. The head / base of walls in such positions must be laterally restrained by a structural member and calculations are to be provided for such members.

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4. Information for designers and project certifiers

Designers and light steel frame project certifiers must obtain a copy of the *Meckahno Homes System Manual*, which contains design data.

Additionally, for all projects particular attention should be paid to the following:

a. Ensure the project falls within the scope of this certificate, or ensure acceptable solutions are provided for items outside the scope of this certificate.

b. Confirm the grade of steel. Design data in the *Meckahno Homes System Manual* is based on sections which are S350.

c. Ensure that a full set of calculations for the structure is available, following the philosophies agreed in the *Meckahno Homes System Manual*.

d. Ensure that the ground floor slab or podium structure is suitably constructed to provide adequate anchorage and support for the loads from the light steel system. If the ground floor slab is to be provided by *Meckahno Homes Ltd*, structural calculations and construction details must be provided.

Signed …… Dated …07/11/2022

SCI Chief Executive

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Appendix A: Summary of the *Meckahno Homes System Manual*

A1 Contents

The contents of the *Meckahno Homes System Manual Version A* (dated July 2022) covered by the Stage 1 certificate are:

A2 Design philosophy

The design philosophy follows either:

- BS EN 1993-1-3 in terms of section properties and member capacities using loading to BS EN 1991-1, or
- BS 5950-5 in terms of section properties and member capacities using loading to BS 6399 -1, -2 and -3.

Section properties take into account the influence of local and distortional buckling and the reduced thickness of the section to take account of the zinc coating.

Calculations are produced on a project basis using wind calculations that are specific to the site.

Meckahno Homes structures are very simple in concept. Connections are pin jointed and structures are braced for overall stability. The bracing comprises conventional plan bracing of the roof truss system, diaphragm action of the floor plates in the horizontal plane and integral 'W' or 'K' bracing

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in the vertical plane. A wind girder may be used to stabilise the joint between the gable wall and the gable infill at eaves level.

A3 Structural Integrity

Robustness or structural integrity complies with BS EN 1991-1-7 and the UK National Annex, or BS 5950-5 (whichever is applicable to the overall design approach) and is achieved by multiple inter-connections between the light steel members. Structural calculations to determine the number of fixings between components are provided for each project.

A4 Resistance to overturning

To meet the serviceability deflection limit of height / 500 for racking loads, the shear resistance per braced bay is limited to 4.5 kN.

To ensure that racking loads can be resisted the wall panels are anchored to the foundations at the ends of braced bays. Holding down is in the form of anchors located through bolt-down brackets at bracing positions.

A5 Holes through members

The *Meckahno Homes* system features holes through the webs of light steel joints and studs for the incorporation of service cables and pipes. Holes will feature a swaged edge or a protective rubber / plastic grommet to protect cables and pipes from damage.

Generally, for members primarily subjected to bending, circular holes not exceeding 60% of the depth of the member and positioned on the member centreline generally have a negligible influence on structural performance. The position of these holes relative to the end of the member and any significant point load should not be less than 1.5 times the depth of the section.

A6 Wall ties

Not applicable. Wall ties are not used in the *Meckahno Homes* system.

A7 Tolerances

The *Meckahno Homes* system is highly accurate. The as-built tolerance of each frame is +/- 2 mm on panel length up to 5m. The installed tolerance allows for inaccuracies in position and foundation levels, but a maximum positional tolerance of +/- 5 mm can be achieved on site with good site control.

Wall panels are packed up from foundation level using galvanized steel shims under each stud position to a maximum of 10 mm. If the gap between the bottom rail of the wall and the substructure is less than 10mm, then packing to is to be carried out using galvanised steel shims. For gaps of 10 to 20 mm shims are required under each stud, and grout is required under the whole of the base rail. For gaps of more than 20 mm, remedial works to the substructure will be required.

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Appendix B: Certification Procedure

There are two stages to the NHBC certification process for light steel framing.

B1 Stage 1 - System Certification

The issue of this certificate confirms completion of Stage 1 for the *Meckahno Homes* system.

The scope of this Stage 1 Certificate and the procedures for assessing project specific solutions are described in Section 3.

B2 Stage 2 - Project Certification

The NHBC requires the builder to appoint a steel frame project certifier to check the specific design of the steel framing on each specific site.

The steel frame project certifier will ensure that the building design is in accordance with:

- The manufacturer's system certificate issued by SCI, and
- NHBC Standards Chapter 6.10 'Light steel framed walls and floors'.

In order to provide confirmation that both documents have been satisfied for a specific project, the steel frame project certifier will need to check supporting details and calculations.

If satisfied that the specific project details are satisfactory, the steel frame project certifier will issue a 'project certificate' to the builder.

Project certificates can only be issued by steel frame certifiers who have been approved by NHBC. The project certificate should be made available on site for inspection by NHBC.

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SCI/NHBC Certification

Meckahno Homes Ltd

Light Steel Framing

SCI / NHBC Stage 1 System Certification

The Steel Construction Institute has assessed the structural aspects of the Meckahno Homes Ltd Light Steel Framing System for Stage 1 – System Certification and confirms that it is suitable for use in the construction of dwellings in accordance with NHBC Standards Chapter 6.10 "Light steel framing".

The system has been assessed for residential buildings up to 3 storeys high. The system uses light framing manufactured from cold-rolled steel wall, ceiling and floor panels constructed offsite.

To confirm validity, please visit the SCI Certification and Assessment website at www.sci-assessed.com.

SCI | NHBC
STAGE 1 SYSTEM CERTIFICATION

NHBC
Raising Standards. Protecting Homeowners

Product ID: 20251107
End Date: 7th November 2025

Dr Graham Couchman, Chief Executive
The Steel Construction Institute