

# Green Oak framed buildings

(April 2022) (first issue)



## Question

Are green oak framed buildings acceptable to NHBC?

## Considerations

- Green oak typically refers to European oak used before it has seasoned or air dried and will have moisture content of over 30%. Other timber that may be referred to as 'green oak' include sweet chestnut and Douglas fir.
- This guidance applies not only to 'green' oak but also to seasoned oak with moisture contents of up to 30% and certified kiln dried oak with moisture contents of 12% or less.
- For the purposes of NHBC warranty, any form of through timber construction in which structural timber members are built into the external envelope are unacceptable.
- The information in the following table provides guidance on where 'oak' could be used on projects which requires our warranty. The 'Yes' or 'No' description indicate where 'oak' is considered acceptable or not for the purposes of our warranty.
- To aid the understanding of the proposed guidance, the following risk analysis is used to establish what is or is not acceptable to NHBC:

Green oak scenario	Risk	Acceptable to NHBC?
External Green oak framed dwellings frame exposed to external elements	<b>High:</b> Risk of water ingress due to shrinkage or movement	No
Internal Green oak frame or elements forming part of an inner leaf	<b>Medium:</b> The outer leaf must be able to remain stable and watertight, connections between the oak frame and outer leaf must allow for movement.	Yes
Green oak in and around windows and doors openings including frames	<b>High:</b> The shrinkage of the green oak may impede the effective operation of windows and doors. Water ingress risk would be considered high	No
Green oak embedded in external walls	<b>High:</b> Shrinkage can cause gaps to occur thus reducing the durability of the waterproof envelope and could have an impact on the structural stability	No
Beams, Posts and Trusses	<b>Medium/Low:</b> There is a risk of shrinkage to beams and trusses that could cause some movement to the structure, however this is lower risk	Yes
Open porches, canopies	<b>Medium:</b> Provided they are structurally independent from the main dwelling with no timber element built into the external wall and are open or without inserts to form an enclosure. The roof over such porch or canopy must not link with the roof over the main property	Yes <sup>†</sup>
Garage, car barns/ports	<b>High:</b> The risks are considered too large where they are exposed and form part on a weatherproof enclosure	No

Key: † - Acceptable ONLY as air and kiln dried oaks

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## Answer

Air or kiln dried oak timber boards or panels can be used for external or rainscreen cladding of dwellings, provided they are used in accordance with NHBC Standards Chapter 6.9 and are separate from the structure.

Green oak framing within an enclosed or internal environment of a dwelling is ONLY acceptable to NHBC, provided they are adequately designed and detailed in accordance with our Technical Requirement R5.

Within the above-mentioned framework, the following table outlines NHBC risk management procedure regarding who manages the risk and what information should be provided:

Green oak construction scenario	Consideration / Checks to be considered	Primary department
<b>1. Internal Green oak framing</b>		
<p>The Green oak framing is totally enclosed. The frame forms the internal structures and or walls; is separated from external elements with a cavity and separate outer elements including</p> <p>a. masonry leaf or</p> <p>b. any variety of outer leaf cladding systems</p> <p>with minimum drained and vented cavity widths as detailed in Table 2 of clause 6.2.10 of NHBC Standard.</p>	<p>No third-party assessments required. Each property will require Structural Engineers calculations, satisfactory building details and other design information to be submitted. Certification for checking to be provided.</p> <p>Building details will need to show the connection of the outer leaf to the frame including details across the cavity. Demonstration that designers have allowed for differential movement and accounted for weatherproofing details generally including in and around openings and interfaces.</p>	<b>Technical Operations and Inspection.</b>
<b>2. External Green Oak Frames</b>		
<p>Green Oak with any part of the frame exposed to the exterior.</p> <p>Use of rendered SIPs, glazed panels or windows units to infill between structural members.</p>	<b>NOT acceptable to NHBC</b>	To be identified on SNIN during registration by <b>Customer Services</b> , and enforced by <b>Technical Operations and Inspection</b> , if detected later after registration.
<b>3. Other</b>		
<p>Any other green oak construction that provides structural support within the definition of the home.</p> <p>This includes being installed as internal partition walls, roof framing system or trusses, floor beams, purlins and columns/posts.</p>	<p>No third-party assessments required. Each element will require Structural Engineers calculations, satisfactory building details and other design information to be submitted.</p>	<b>Technical Operations and Inspection.</b>

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**Notes:**

1. This guidance is applicable to green oak framed buildings of less than three storeys.
2. NHBC will not accept green oak being used below ground level.
3. It is expected that builders & designers will provide NHBC with HB2445 certification in compliance with Clause 6.2.3 of the NHBC Standards.
4. A green oak structure is not considered to be of 'novel' construction and does not require review as an MMC.