Building a **log home**

Ideal for rural settings, these charming homes are growing in popularity on UK shores. Jane Crittenden finds out why

Above: True North Log Homes has been importing Canadian products to the UK since 2004. It builds with the heartwood to ensure the timber is stable, resulting in less movement and shrinkage. Right: British Log Cabins produces handcrafted homes using the Scandinavian saddle notch, scribing each one together by hand. This project features a post and beam structural skeleton

Log home owners swear by the warmth, cosiness and feeling of being close to nature you get with this type of house – but this structural technique has practical advantages to tempt self builders, too.

Construction is quick, for instance: groundworks and foundations can be finished while the log house is being crafted and test-fitted in the workshop; and the shell is typically reassembled and made watertight within weeks of delivery on site. Handcrafted and milled timber is low-carbon and naturally thermally efficient, while the system's durability is evident in the log houses built hundreds of years ago in Finland, which are still occupied.

Although this technique is less common in the UK than methods such as conventional masonry and timber frame (see page 73), interest is on the rise – partly due to the growth of long-haul travel. "A lot of our self builders come to us after experiencing a holiday in a log house in North America or Scandinavia, where they have come to appreciate the benefits of the system," says Rob Sheridan from Finlog.

How it works

The principal technique hasn't changed in centuries: the wood is bark peeled, slick knifed (to dress it) and kept in its natural shape to form the house's structural shell. The logs are scribed (notched to allow them to fit together) in the yard and test-erected before being labelled, dismantled and delivered to site.

A more modern process is to build with milled logs, which are machined into uniformed profiles in a factory. These can either be used to form a structural skeleton, or the house can be constructed with a post and beam frame and clad in timber. Suppliers tend to offer a range of sizes and profiles, with laminated timber an option where excellent stability is required. This gives you a range of choices to suit your energy efficiency goals, your budget and how you want your finished log house to look.

Some companies are moving away from profiled joinery altogether because they feel that the method isn't as precise as hand scribing. "We pride ourselves on our high standards and believe to meet current regulations for energy efficiency on this type of building, the scribing needs to be faultless," says Dan Waring from British Log Cabins.

Sourcing timber

Logs for construction come from FSC-certified sustainable forests, mostly in Canada, Scandinavia, Latvia and here in Britain. Opinion is divided on the best timber for this type of project. For example, Pioneer Log Homes builds in Canadian Western Red cedar because of its weather resilience and natural oils, which protect it from infestations.

Another Canadian firm, True North Log Homes, uses both this species and Eastern White pine – known for its low sap content, which aids dimensional stability, warp resistance and minimises shrinkage. "As soon as the log is milled we heat-treat and flood-coat it with its first layer of water-based stain, anti-fungicide and UV inhibitor," says Darren Taylor at True North Log Homes.

Log Cabin UK opts for Northern European pine from Latvia, while Finlog uses Scots pine logs grown in Finland. Rob at Finlog says trees near the Arctic Circle grow slower, producing a tighter and stronger grain. "We couldn't build to the same standard by using home-grown products," he adds.

Dan at British Log Cabins, which builds with UK-grown Western Red cedar and Douglas fir, believes there's an undeserved stigma attached to British timber. "If you use the tree in its full form, you will get less twisting and warping compared to a milled product, regardless of where it's grown," he says.

Energy efficiency

A correctly detailed log home can easily beat Building Regulations requirements for energy efficiency. This is partly because the chunky timbers used are naturally insulating and offer more thermal mass (ability to absorb warmth and gradually redistribute it into the living environment) than other wood-based systems.

"Our logs have a mean average diameter of 450mm, so even on a cold day they can still soak up the sun's rays and radiate heat through to inside," says Marcus Munro from Pioneer Log Homes.

These inherent characteristics are more widely recognised overseas, where Building Regulations differ. For example, in Canada, True North Log Homes constructs its houses with either a 200mm x 300mm or a 300mm x 300mm profiled log, both of which can provide comfortable levels of insulation without extra materials, even when outside temperatures are -40°C. The firm also offers a 25-year 'zero air filtration warranty' against defects in its log walls, corners and joints – which reflects the fact that the structure is highly sealed and airtight. As with any system, the biggest potential weak points are at junctions with other elements – such as between the roof and walls. Good design and accurate construction can help overcome these issues.

UK Building Regs are more stringent, setting overall CO2 emissions thresholds and nominal targets for wall U-values (a measure of heat loss). As a result, our homes need more insulation. This can be done externally, but treating log walls this way compromises the aesthetic. Instead, an internal skin is often built creating a cavity that is filled with a breathable insulation like wood fibre, cellulose fibre or sheep's wool (see page 87 for more on these options). Interior wall surfaces can be plasterboarded or clad in timber.

Below: Cladding the interior of the house with timber boards helps to continue the rural aesthetic. Log Cabin UK imports its kits from Latvia, where the logs are glue laminated into thicknesses ranging from 120mm to 280mm for durability

Below: Log homes don't have to use a natural finish. This house on the west coast of Scotland was built by Finlog with white-painted, 134mm-thick timber

CLOSER LOOK: CHALET-STYLE HOME IN WALES


JAMES FRENCH

Tony and Sharon Rees built this 135m² chalet-style home, supplied and designed by British Log Cabins (BLC), in Powys using sustainably sourced UK-grown Western Red cedar. Their rustic property is as thoughtfully crafted inside as it is out, and comes complete with features such as a hand-built spiral staircase.

"I was sceptical about log houses at first but as soon as I saw one of BLC's in Shropshire, I wanted it," says Tony. "We love the feel and warmth of the wood and the fact that the design is bespoke, so there will never be another one like it."

The couple opted for the security of a turnkey solution. BLC managed the delivery of the foundations, handcrafted the log house and put it together in their yard to ensure everything fitted together properly. The saddle-notched timbers were numbered, dismantled and brought to the Rees' plot, where the shell was erected in 14 days before being fitted out. "Martin and Dan from BLC were good guys to work with and very flexible," says Tony.

Constructed in 2013, the house meets Level 3 of the Welsh Code for Sustainable Homes (a now-defunct standard for energy efficiency that's been integrated into Building Regulations). It's insulated with Xtratherm XR4000 in the ceiling, floors and behind stud walls, with sheep's wool insulation in the grooves between each log. The completed project cost £227,000 (£1,681 per m²).

Right: Pioneer Log Homes crafts its projects in Canada, where manufacture is completed in an outdoor yard year-round, whatever the weather. The company plants five trees for every one it harvests

As there is no approved research into the insulation values of log construction in the UK, British Log Cabins commissioned its own study to thermally model detailed drawings of its house designs. "The results have helped us bring thermal bridging down to a minimum," says Dan. "Depending on the design, we can now keep around 50% of the internal log walls exposed." Its homes can achieve A-ratings on the Standard Assessment Procedure (SAP) for energy efficiency.

Design & build services

Style-wise, the houses tend to suit rural locations. You're unlikely to get planning permission for one on a street of 1930s homes, but they can be ideal for woodland settings – provided the council will give consent for a new dwelling. The easiest route to approval can be to look at knock down and rebuild opportunities, where you would be replacing a tired existing building.

With the notable exception of the likes of British Log Cabins, most firms are based overseas – typically manufacturing their homes in the country they source their main supply of wood and then exporting the kits to the UK. The majority of them will work with your architect's drawings, but it's worth considering their in-house design service because, after all, they are the experts in the idiosyncrasies of log building. If you use an overseas firm you may need to source an engineer in the UK to finalise your plans for Building Regulations approval; although Finlog – which part-owns a factory in Finland – has a dedicated team that can do this for you.

When it comes to choosing the log home package, you have three main options: a kit for you to build DIY or use your own trades to erect (from around £70,000); a shell constructed to watertight stage ready for your team to fit out (from around £125,000); or a full turnkey service (from around £170,000). With the latter route, you pick and choose your design and finishes and leave the supplier to manage the entire project – moving in when it's complete.

Log kits are supplied with numbered instructions to help hands-on self builders, but it may be worth signing up for a course to learn the basics. British Log Cabins runs a two-week workshop every summer.

CONTACTS

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