

*Passive standard house under
construction in Clonakilty, Co. Cork*
Greenhus Ltd





Building Your **TIMBER FRAME**

Once you have decided on the type of frame that you would like, the next major decision is how to get it designed and built, known as 'procurement' by construction professionals. There are several options depending upon the combination of professionals, beginning with the person who designs the house, how that person is engaged and how the builder is employed to carry out the construction. No single route is necessarily better than any other. Which is best for you depends on your requirements and the level of involvement that you wish to have in the process.



Factory assembly of timber frame panels

Kingspan Ce

There are three main ways of getting a timber frame house designed:

1. 'Off the peg' from a kit supplier.
2. Bespoke created by the kit supplier.
3. Architect designed then put out to tender to get competitive prices from kit suppliers.
4. Use a contractor for 'design and build'.

Using a Kit Supplier

Usually, the main reason a kit supplier is approached is because one or more of their designs have caught the eye of the customer. At this point you need to ask some pertinent questions in order to compare prices and decide whether they are offering value for money, the level of service and support offered, as well as exactly what is included in the kit. Some suppliers will provide a minimal service beyond the supply of the timber itself. Most will want to assemble the kit on site because this is their area of expertise and it is a way of guaranteeing that it is done properly, safely and without damage to any of the timbers. Many of the larger companies will provide advice and information before and during the construction of the whole building, offering information on aspects of house building well beyond those related only to timber frame. For example, some will help to find a site, run seminars and training sessions, and provide extensive literature. A complete build or turnkey service may be available, where they will take on the construction of the whole house.

The content of a kit varies significantly between different suppliers. Some provide the frame for the walls, floors and roof



Passive performing house in Clonakilty under construction.

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and no more. Others offer everything that is part of the construction that is made of timber, including windows, doors, staircases and skirting boards. These extra items included in a kit package should be carefully scrutinised. Sometimes, in exchange for the convenience of not having to choose or source the items there may be a significant mark up compared to the cost of supply by a builders' merchant.

Some firms do not actually make the timber frame themselves. They 'add value' to the basic product, which consists of timber and boarding, by offering design and management services or the convenience and relative predictability of building a pre-designed house that has been refined and perfected over the many times that it has been made and built.



Timber frame with a very individual design

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Questions to ask when choosing a Timber Frame supplier

- What level of service do they provide?
- What materials and components do they supply?
- Do they make the frame or just act as 'middlemen'?
- What are the benefits of their construction system over the alternatives?
- Will they do bespoke designs?
- How keen is their price?
- Where can examples of previous projects be seen?
- Can former clients be offered as references?
- How close are they to the site?
- Do they use timber from sustainable sources?
- Will they provide a kit to suit drawings produced by an architect?
- Are they members of any trade associations?
- How much payment do they expect up front?
- Is comprehensive literature available to explain construction and maintenance?
- Can you visit their factory to see how organised they are?

Another important aspect of the kit is the particular building system that is employed. As explained in an earlier article there are many different types, each with their own relative benefits and constraints and most suppliers will be happy to explain all this in detail.

On first enquiry most kit suppliers will confirm that they will readily customise their designs to suit a client's requirements. However, for some of them, this may mean that they will move a few internal walls around but be reluctant to make any significant changes in the overall dimensions or appearance. Others, particularly at the higher end of the market, will happily design a unique house for an individual family.

Organising the Construction Work

Moving onto the actual build, there are also several different ways of doing this. The whole build, including developing the specification and detailed design can be left to a design and build contractor who may even build the timber frame as well, although it is more likely to be subcontracted to a kit supplier. Thus most of the control of the project and all of the quality control falls to the builder. Provided that there are no changes once the price has been agreed, you should be able to keep within the budget. The downside is that it is not very cost effective, because there is no way of ensuring that the price agreed at the outset is competitive for the building design and quality that is eventually produced.

Alternatively, the design and tender package can be prepared by an architect in conjunction with a chosen kit supplier, and prices invited from a number of contractors, which tends to be more cost effective. This requires you to have, from your kit supplier, sufficient information to create a tender package. If not, an architect will be needed to provide this. Mostly it will be for the 'above ground' section, few wish to be involved with the design ▶



Architect designed timber frame.



A closer view of the same house - note the corner window detail, turret and irregular window shapes
Advanced Timber Craft Ltd

of foundations and drainage. Ground works are particular to the site that is being built on and require site investigation and details prepared that are specific to the location, whereas the above ground details are generally the same regardless of the location of the building.

If you want to be in charge, you will need to employ a series of trades such as ground workers, bricklayers, carpenters, plumbers and electricians separately along with a kit company to supply the frame. This requires skills of personality, building knowledge and also time available during the working day to be present on site, occasionally at short notice.

The toughest option, not for the faint-hearted, is for a family to take on most of the construction work personally. The time and skills required to do this should not be underestimated, but it is probably the most rewarding route to take. (See *Mud 'n' Guts*) Most DIY self-builders use a kit company to supply the frame because this has the advantage of providing a warm, relatively secure shelter and storage area at an early stage and 'de-skills' the

To be ready on site for the frame to be delivered and erected:

Date, timing and content of deliveries agreed and confirmed in writing.

Substructure, walls and ground floor (if concrete) ready and built within the tolerances specified by the kit supplier.

Space available for temporary storage of the larger components.

Tarpaulins to protect loose timber items.

Secure, dry storage e.g. portacabin or container

Locations of any cranes worked out and agreed.

A clear, unobstructed route wide enough for the delivery lorry prepared.

Someone to be present who is responsible for co-ordinating with the kit supplier.

A full set of drawings, specifications and fixing schedules available.

Scaffolding must be ordered and co-ordinated with the kit supplier's build programme.

	Main Contractor Design& Build	Main Contractor Build Only	Managed Sub Contractors	DIY Self- Build
Time commitment	Minimal	Fairly high at design stage, otherwise moderate	High throughout the project, regular time off work required during the day	Very high, evenings at weekends alone inadequate so significant time off during week needed
Price	Fixed at planning stage	Fixed at tender stage	Updated as building proceeds	Updated as building proceeds
Value for money	Most expensive and least cost effective method	Good value provided tenders are obtained correctly	Very good value	Cheapest possible. Ext structural design costs self build the frame.
Quality	Completely under contractor's control	Strictly controlled by client usually through an architect	Controlled by project manager or client day to day	Controlled by client day to day
Drawings & Specification required	Drawings by builder, outline specifications only, no detailed drawings	Full working drawings and specifications, all worked out before tenders invited	Either building regulations drawings only, or full tender package	Usually planning and building regulations drawings only produced by an architect.
Site Management	Contractor	Contractor	Client or project manager	Self builder
Choice of Materials	Mostly chosen by contractor	Mostly chosen by client, usually with an architect advising	Client, helped by each subcontractor and kit supplier	Client
Insurances	Contractor	Contractor	Client	Client
Health & Safety Responsibility	Contractor	Contractor	Client or project manager	Client
Payment	At agreed stages	At agreed stages	At stages or end of each week	N/A
Certification	Provided by builder	By an architect employed by you, or project guarantee provider/ timber frame company	By architect, or project guarantee provider/ timber frame company	By architect employed by you, or project guarantee provider/ specialist timber frame certifier
Programme	Controlled by contractor	Controlled by contractor, usually monitored by an architect	Controlled by client or your project manager	Controlled by client

building process. This also ensures that the workmanship on the main structure is of a high standard and the building is erected in a relatively short time. In theory it is not essential to use a kit supplier and it is possible to build the frame from ordinary timber supplied from a timber merchant and this is the accepted way of building a timber framed house in many countries. However the requirements of modern regulations, need for good weather and the extra time and skill means that it is a route rarely followed.

Specifying

Every building project needs to be well planned with a full specification of materials and clear guidance on who will do what. Ideally the specification should form part of the contract between the client and builder, but at least it should be available before work starts. In the absence of this, decisions taken on site in the heat of the moment are not always the best, or even taken

not by you but by the foreman, or worse, the tradesman on the day. To be able to budget accurately, make sure you specify materials exactly when inviting quotations. The timber frame is just one element of the whole house, but it is usually at least one third. As noted earlier, you may be able to buy more of the elements from this one source eg. staircase, windows, doors, but this can be a more expensive route.

Programming The Project

The majority of the work constructing a timber frame is by specialist tradesmen with much of it being carried out in fact controlled conditions. In some cases such as with a green oak frame, the entire structure will have been already assembled in factory as a 'dummy run' to eliminate any problems that may otherwise occur unexpectedly on site. Erection of a kit for a very straightforward house may only take three days, a larger



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frame may take a couple of weeks. Generally a house built with a timber kit will be finished more quickly on site than an equivalent sized traditionally built masonry cavity wall structure, although there is usually a long lead-in time between ordering the kit and delivery to site, typically three months or more.

The crucial point in the programme is the arrival on site and erection of the kit. The necessary preliminary works must have been completed and the base must meet the tolerances and standard of construction specified by the suppliers – level, square and of the correct dimensions. This is crucial. If the base is not ready the erecting crew will return to the factory and extra costs will be incurred to cover the abortive visit and for the storage of the components.

Site Set up Materials and Delivery

Once a delivery date has been agreed with the frame supplier, the onus is then on the main contractor and client to get the substructure ready on site to receive the frame. For a larger project or if there is very limited space on the site for storage, delivery may be in two or three stages, but usually most of the kit will arrive on one day, with some other items such as roof trusses or chipboard following later. It is possible that some of the peripheral items bought from the kit supplier, such as plasterboard or insulation will come directly from the manufacturer and it may be necessary to arrange delivery separately with these companies. Everyone on the main contractor team must be aware of all the delivery dates and their importance, so that the necessary work is complete and ready when the erectors arrive on site. Always check early on that vehicle access to the site is adequate for the delivery lorries.

Erection of the Frame

Unless the general builder has extensive experience with the particular kit system being used and has the agreement of the supplier, a specialist team from the supplier should be used to ▶

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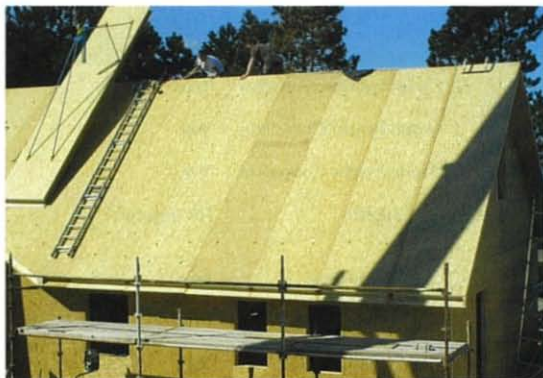
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Panels being craned into position

What is included in a timber frame package?

Basic Package (supplied and fitted):

- Sole plate
- Damp proof course
- Structural wall panels and waterproof membrane; are the studs 90mm or 140mm?
- Floor joists – ground floor not usually included, first floor including boarding
- Roof trusses/ structure
- Roofing felt
- Insulation
- Labour and management to erect the frame.

Sometimes included in the main package:

- Fixings e.g. wall ties
- Cavity barriers
- Stairs, architraves and skirtings
- Plasterboard or non-structural linings
- Windows and doors, including furniture

Usually Extras

- Foundations, drainage, solid ground floor slab up to dpc including concrete floor and screed
- Brickwork, external rendering, cladding etc.
- Roof covering
- Floor screed
- Dry lining and vapour check
- Glazing to windows and doors (may be supplied unglazed by the kit supplier)
- Chimneys and fireplaces
- Services such as plumbing, heating, ventilation, ducting and electrical fittings
- Second fix carpentry (may be supplied by kit supplier)
- Kitchen units
- Sanitary ware
- All other materials and labour associated with the construction e.g. decoration, tiling, floor coverings, external works, etc.
- Outbuildings and garage
- All labour not related to the structural frame
- Full management service to complete the construction



The completed house

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erect the frame. The skills required are over and above those of a typical carpenter on a building site, because the frame has been made to very fine tolerances and each system has its own idiosyncrasies that must be respected. If the frame is erected by the supplier, it also provides a single point of responsibility should any problems develop.

Accurate setting out of the position where the foundations are to be placed is essential as the kits are precision made with tight tolerances. 'Setting out', that is creating a precise template for the general builders to work to, usually indicated by pegs in the ground with string run between them, is a crucial job. The joints need to be very tight and secure for their structural integrity – the result is a very rigid box, to an exact size. The slab must be very level and absolutely square in plan, if not, the frame will settle once it is in place and not fit together properly.

Sometimes the plasterboard lining is designed as part of the bracing or racking to the walls, and if this is the case, the temporary support should remain in place until the lining of the internal face of the walls is complete. After the frame has been ►