SIPS @CLAYS

A Fresh Approach to Home Building

# SIPs Versus Traditional Methods of Construction

Ian Clay of SIPS@Clays offers a few points to consider when choosing the build method for your new home and why SIPs (Structural Insulated Panels) deliver the perfect self-build solution compared to traditional brick and block construction.

With so many decisions to be made when building your own home, the build method and construction material you choose will ultimately shape your self-build outcome both for the short and long-term.

As well as looking at the obvious elements of aesthetics, construction costs and energy efficiency, equal prominence should also be given to design flexibility, speed of build and space efficiency. So, when you're looking for a construction method to deliver all of the above, then you should look no further than SIPs.

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Superior airtight values, reduced heat loss and outstanding energy efficiency with minimal heating requirements.

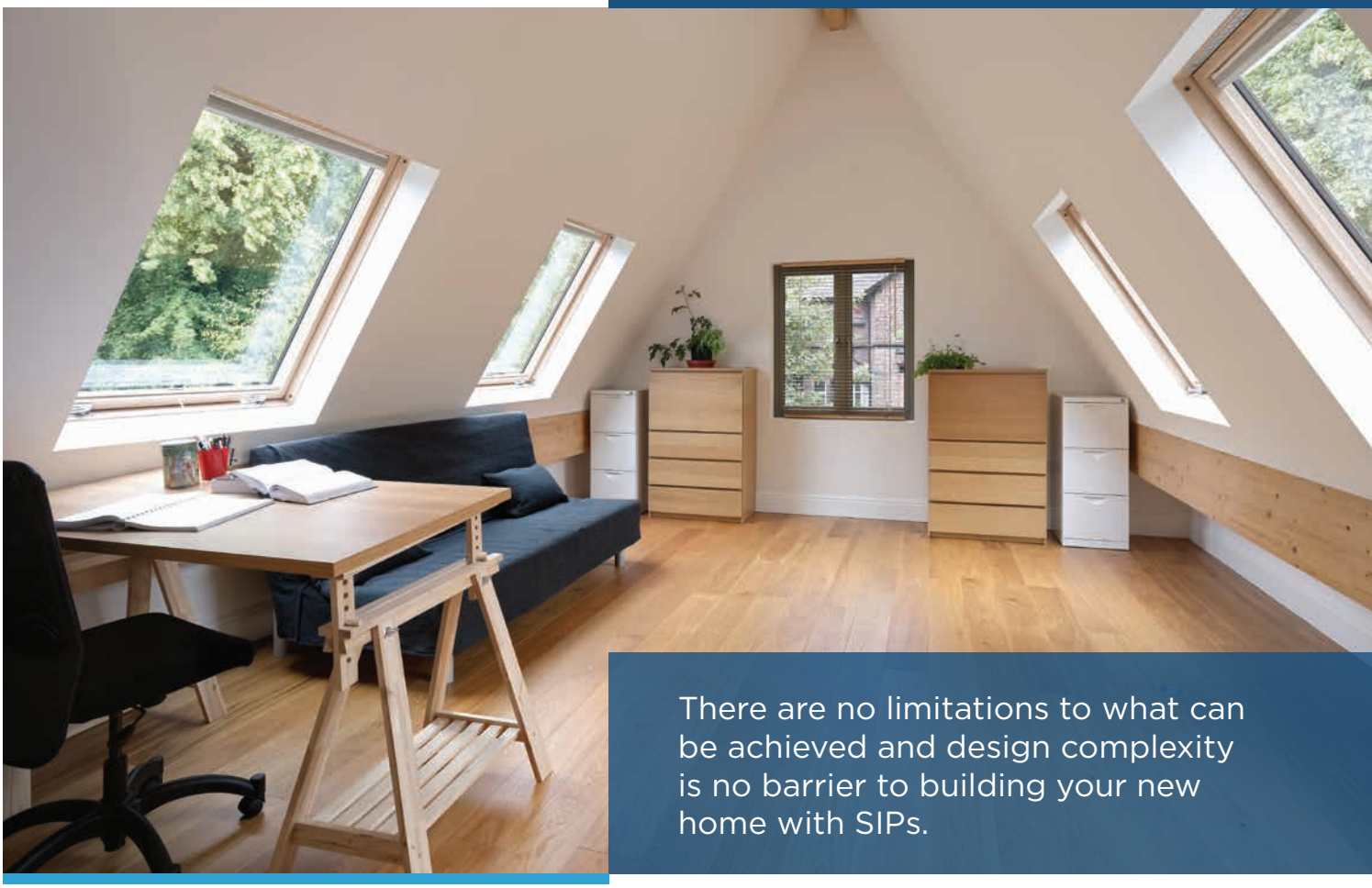
## Energy Efficiency

If you want to build a highly efficient, sustainable home with low U-values, superior airtight qualities and minimal thermal bridging, or even build to Passivhaus standards, then the inherent qualities of SIPs must be considered. Each structural insulated panel consists of two sheets of oriented strand board (OSB) sandwiched around a rigid insulation core. As such, the panels provide 'built-in' insulation from the outset to create a sustainable home that will provide low energy running costs for the life time of the property.

When compared to brick and block construction, which requires insulation to be fitted between cavities during the build process and requires more complex and costly solutions to achieve similar U-values to that of a SIPs build, the benefits of structural insulated panels far outweigh traditional construction methods. Just like brick and block, extra insulation can be added to a SIPs build to improve thermal performance but to much greater effect. For example, the Kingspan TEK™ Building System which is supplied in 142mm and 172mm panels gives superior U-values of 0.19W/m2.K and 0.16W/m2.K respectively. When additional internal insulation is added to either, the improved U-values far exceed what can be achieved with traditional methods of construction for similar wall thicknesses.

Whilst it is possible to increase the overall thermal performance of brick and block by adding extra insulation, the negative effects of thermal bridging in a traditionally built modern structure cannot be ignored. As a significant component of heat loss, the thermal bridging that occurs in traditional construction should be considered carefully when embarking on your build project.

The thermal conductivity of timber products is far lower than that of brick or block and structural insulated panels in particular, significantly reduce the effects of thermal bridging to give an energy efficient airtight envelope. This results in superior airtight values, reduced heat loss and outstanding energy efficiency with minimal heating requirements. All of these are major factors in building a high performance sustainable home and make a significant contribution to achieving Passivhaus Certification.



There are no limitations to what can be achieved and design complexity is no barrier to building your new home with SIPs.

## Speed of Build

Time is money and as such the build programme of your project is critical. Traditional methods of construction are reliant on a variety of external factors, for instance, availability of trades and materials, knock on delays and of course, bad weather. Traditional builds can become seriously delayed by prolonged spells of rain, snow and freezing temperatures with interruptions to the programme creating a ripple effect that inevitably wastes time and eats into your budget.

Building with SIPs is not subject to fine weather, the availability of skilled wet trades or any other on-site delay. In fact, as the SIPs panels are precision engineered off-site and delivered to site ready for immediate erection (which typically takes between two and three weeks, depending on size and complexity of the build) a predictable and accurate build programme can be created, ensuring both timescale and budget is adhered to.

## Design Capabilities

There is a common misconception that SIPs structures have to be boxy and boring, in fact it's quite the opposite. The flexibility in design and ease of construction means there are no limitations to what can be achieved, and design complexity is no barrier to building your new home with SIPs.

One of the many design benefits of using SIPs, and in particular the Kingspan TEK™ Building System, is that the system will always provide a larger floor area comparatively than can be achieved when using traditional build methods, due to the thinner construction components.

This is particularly evident within the roof space, where unlike brick and block builds that require roof trusses, SIPs roofs are usually supported by glulam beams. This not only provides additional living space, with a value adding 'room in the roof' option but can often make a fabulous design feature, especially when the roof space is left open to the eaves, doubling the room height.

The flexibility and simplicity of SIPs allows for practical amends to architects drawings prior to fabrication and a credible SIPs designer can 'design in or out' elements of the plans that will enhance or impede your project. It is at this stage where value engineering can be applied and cost saving efficiencies built in. Our in-house design team use a 3D CAD system to create geometrically complex structures and we provide interactive imagery that allows customers to see exactly what their new home will look like from every angle.

When compared to traditional construction where design amends can be costly, time consuming and will inevitably delay the build process if inaccuracies or design errors are identified, the superiority of SIPs really shines through.

## Small, Challenging Plots

For every house building project, whether it is a single self-build home or a multi home development project, the plot will always dictate what can and cannot be built. It defines size, shape and layout of a dwelling, its orientation, and it can even be the deciding factor on the most suitable method of construction to be used.

Traditional methods of construction may immediately exclude many smaller and difficult-to-access plots, deeming them unsuitable for building on, and if you think you've found the ideal site, in the perfect location, this can be disappointing news to bear.

Every millimetre of space counts on a small site so construction, storage and waste areas need to be utilised effectively to allow maximum dwelling space and efficiency on site. The off-site engineering of SIPs means that the superstructure of a building is prefabricated in a factory environment then delivered to site ready for immediate erection.

This not only speeds up the build process but reduces the amount of on-site labour and materials required, it minimises waste and importantly means there are far fewer deliveries required to site when compared to traditional builds, especially beneficial if access to your plot is restricted or you're building in a conservation area for instance.

## Cost

There are many factors to consider when comparing traditional construction with SIPs and whilst on the face of it, traditional materials may appear to be more cost effective than the market leading structural insulated panels; overall project costs cannot be accurately compared like for like.

For instance, shorter build programme, fewer labour requirements, lower equipment costs plus ongoing energy outlay will influence the bottom line. It is also important to compare the life time costs and the energy saving benefits of building your new home with SIPs, in particular the Kingspan TEK™ Building System. There are many factors that affect a direct cost comparison and a holistic and pragmatic approach should be taken.

SIPs provide so many benefits - flexibility of design, speed of build, energy efficiency and versatility, all of which are critical factors for today's self builders and when compared to traditional methods of construction, offer an ideal solution to building your perfect home.

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# Do you have plans you'd like to discuss?

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