

- Off-site structurally insulated panels
- Build cost equals hire for 3-year project
- Sustainably sourced
- Re-purpose in community for re-use
- Less running costs
- Excellent office environment for improved wellbeing

Case Study

A46 Site Compound Off-site SIPs for modular site office

PROJECT	A46 Binley Junction Improvement
CUSTOMER	National Highways
LOCATION	Binley
CONTRACT	Regional Delivery Partnership – Delivery Integration Partner
COMPLETION	2022





Need

National Highways are delivering major improvements to the A46 at Binley and Walsgrave junctions in Coventry. The scheme is being completed in two distinct phases with challenging delivery targets linked to the environment, safety and efficiencies which will in turn bring wider benefits for social value and sustainability

To meet these goals every aspect of the scheme is under scrutiny and one of the first areas has been the compound office and welfare facility. By taking the early decision to build only one facility servicing both phases there have been immediate benefits. Added to this, an innovative design approach has replaced standard modular units with Innovare's off-site manufactured panelised system, ordinarily used for housing and schools.

Solution

SIPs design

In developing this solution, we have committed to an industry first by using a structural insulated panel (SIP) system which is manufactured complete with windows and cladding. Produced within a controlled factory

environment the system increases the pre-manufactured value (PMV) for the scheme.

The sustainably sourced timber-based product incorporates insulation and reduces cold bridging, for a low thermal U-value achieving energy efficiency equal to a Passive House. To put it in context, normal site accommodation has u-values of 0.35 in the walls, 0.25 in roof/floor and 1.6 for the windows, but at the A46 Binley the values are much lower with 0.18 for the wall, 0.15 for the roof/floor and 1.4 for the windows.



Figure 1 - Fabricating SIP's panels

Better layout

The SIP system is configurable to allow flexible open plan spaces which fully comply with current building regulations – differing from a typical temporary portacabin solution – while

still having the advantages of rapid deployment and commissioning.

Rapid installation

Whilst not as quick as lifting in traditional cabins, the building was still installed in just a short three-week window.

Outcome

The innovative use of proven off-site SIP's technology has delivered tangible sustainability benefits to the project particularly through improved wellbeing, added social value, and carbon release.

Wellbeing

The high 'U' value of the SIP system has meant the offices are naturally warmer in the winter and cooler in the summer. That means our environment is free from noisy office generators creating a greater sense of wellbeing and in turn improving productivity.

On top of that the difference in cost between build and hire was negligible and in fact with the potential to re-use the buildings swung the cost balance towards a modular build with SIPs.

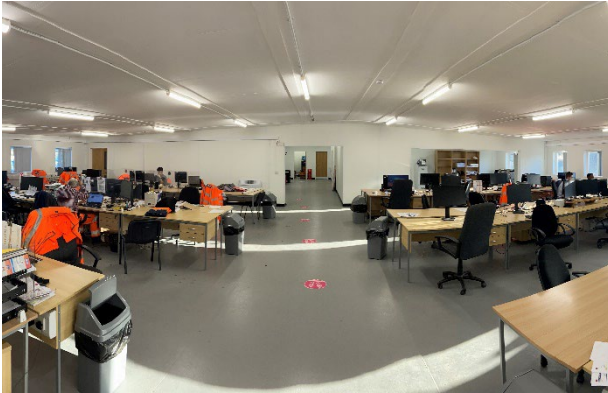


Figure 2 – Inside the open plan office

Carbon

Decisions taken at every step of the building's life have reduced the environmental impact.

Caroline Hutson, the environmental lead on the A46 scheme explains: "Using SIP's helps us meet the carbon aims of these schemes and we must practice what we preach by including how we manage our site.

Firstly, this building can maintain an air change rating of 0.6, which is commensurate with a Passive House. That means it is more energy efficient and very low cost to heat.

Secondly, as the timber used has a whole life of at least 60 years it locks in potential carbon until a time when there should be much lower levels of carbon gases in our environment.

The supplier, Innovare use timber from sustainable forestry, which ensures that the process of CO2 absorption and oxygen emission is maximised. Trees are sustainably harvested at the peak of their cycle, and replaced with younger, more carbon efficient trees, before their ability to absorb and emit declines.

Timber's environmentally friendly credentials also give it a significant advantage in circular economy terms over materials such as PVC-U, which does not harmlessly biodegrade."



Figure 3 – SIP's erection

Social Value

On completion, the ambition is to dismantle, relocate and repurpose the building for a school or youth centre at no capital cost to that organisation. Using the Thrive Social Value

calculation tool, this amounts to a £3m investment back into the local community.

Gareth Ellison, director at Innovare Systems, sees enormous potential. "This is an exciting project for us, as well as the diversification within our business, this unique site compound contains some further, latent benefits. It would be extremely satisfying if we could reuse this structure to benefit the local communities through education and social support."



Figure 4 - Simple transportation and re-use

Looking to the future, long duration projects will gain whole life benefits from selecting this off-site panelised housing system for high quality, sustainable site accommodation.