

BUILDING FOR THE FUTURE

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Future-proofing the built environment

New Zealand's construction sector is not delivering fast enough to meet the future needs of New Zealand. Strong leadership and a fundamental change to the way New Zealand views the built environment is needed.

Today's construction sector is increasingly faced with addressing challenges such as:

- Poor productivity and worker safety;
- A Christchurch Rebuild that is gaining momentum;
- A rapidly increasing demand for new housing in Auckland;
- Increasing demands for higher quality but affordable housing stock;
- Remediation work of over 42,000 homes faced with weather-tightness issues; and
- Ongoing housing shortages generally across the country.

Despite numerous reports offering solutions, the drive for change has not materialised and the question still remains – How can the New Zealand construction sector change to deliver an adaptable and responsive built environment?

One answer is an increased use of **prefabrication technology**.

Time to change the paradigm

A fundamental paradigm shift in the way buildings are delivered is needed if the industry is to respond to the impending wall-of-work. The use of more prefab construction offers a practical and achievable solution to address these challenges. A recent Auckland University of Technology study for the Productivity Partnership shows that prefab takes bad weather out of the building equation and offers increased productivity and affordability, without compromising quality.

Prefab delivers

Quality

Greater use of factory controlled conditions, computer numerically controlled (CNC) and computer aided drafting and manufacturing (CAD-CAM) technology provides for superior precision, less wastage and a higher quality end product, whilst still allowing individuality in design. A factory assembly line process reduces the need for highly skilled labour. In the future as integrated Building Information Modelling (BIM) technology is more widely utilised in the construction sector on-going enhancements to the overall building process will be realised.

Time

The fastest way to save money is to save time. Prefabrication is a faster construction process with parallel workstreams occurring – site-based foundations are built at the same time as offsite manufacturing of building parts.

Cost vs value

A 2011 study by BRANZ showed that a reduction in house construction time can mean a saving of between \$1,000-\$1,600 per week. It also can mean less rental time for home buyers. Currently, it is estimated that only one-quarter of construction projects in New Zealand are completed on time. Building offsite provides for greater certainty of time, and significantly reduces delays caused by weather, labour and rework.

A 1% increase in labour productivity could add approximately \$300m to the New Zealand economy.

PwC Report 2011

The building and construction sector is the fifth largest in NZ, employs over 175,000 workers and contributes approx. 4.3% to GDP—the same as dairy!

Research Strategy for Building and Construction Sector



University of Auckland Student Accommodation project—installation of modular pods.



Rakaia—The Cube at HIVE Christchurch

PrefabNZ Delivers

PrefabNZ has a proven track record in assisting the delivery of key prefab projects that educate, inform and catalyse the design and construction industry, including:

HIVE: Home Innovation Village Christchurch – in response to the Canterbury earthquakes, a temporary showcase housing village displaying up to ten different dwellings and multiple prefab technologies, in partnership with Christchurch City Council and industry – www.homeinnovation.co.nz

Kiwi Prefab: Cottage to Cutting Edge – a national exhibition and book developed by Victoria University of Wellington and Puke Ariki Museum New Plymouth, visited by over 40,000 people over four months summer 2012/13 – www.kiwiprefab.co.nz

HIVE Auckland – in response to Auckland's shortage of quality affordable medium-density housing, a permanent showcase housing project, in partnership with Auckland Council and industry stakeholders – currently in development.

Skills

Factory construction enables greater trade specialisation which provides for increased quality and less on-site labour, thereby reducing overall costs. More jobs for less skilled workers would be created in controlled environments. It also offers the opportunity for centralisation. As happens for pre-nailed timber framing, one prefabrication factory can serve a number of building firms and projects.

Health and safety

The construction sector has a worker fatality rate which is almost triple that of any other sector. Prefabrication processes facilitate enhanced health and safety benefits for workers, through an effectively managed and controlled working environment, where workers operate at lower heights and away from varying weather conditions. A recent report by BRANZ into prefabrication highlighted that 75% fewer fatalities occur in factory-based construction than using site-based processes. This provides significant opportunities for cost savings to the Government in ACC and other government subsidised medical services.

Sustainability

The construction industry contributes to 40% of landfill, so pressure is increasing to reduce the level of material waste in production. Prefab construction reduces waste at site and enables enhanced energy efficiencies through more accurate building methods. In addition, onsite disruption from noise, dust, increased labour, and material deliveries is reduced when using prefab construction resulting in fewer disturbances to neighbours during construction.

A global perspective on prefab

Prefab is widely utilized in many overseas markets where it is viewed as a high quality and innovative option which has often been used to address inefficiencies in building and construction industries.

Although the New Zealand market is distinct, much can be learnt from overseas experiences. For example, the United States of America has an established modular and factory-built home construction industry. Up to one-third of all new single-family homes are modular or manufactured. In Scandinavia, pre-cut timber standalone houses and precast multi-unit affordable housing is also common place. In Sweden prefab custom closed panels are the preferred construction technique and make up 90% of the housing.

For New Zealand to compete internationally and develop a sustainable prefabrication industry, a strong and proactive leadership approach is required, coupled with a focus on continuous improvement and interdisciplinary collaboration across the industry.

New Zealand has the potential to become a prefab timber export hub for the Pacific and wider timber industry strategies are acknowledging this.

Introducing PrefabNZ

PrefabNZ is the hub for pre-built construction in New Zealand. Established in 2010 following an industry-wide workshop – PrefabNZ is the front door to the building prefabrication industry, connecting designers, specifiers and producers, with clients and Government to opportunities and challenges facing the built environment.

PrefabNZ believes New Zealand can optimise the delivery of innovative, affordable and high-quality buildings through the use of prefabrication technology, delivering measurable and sustainable productivity outcomes to the New Zealand economy.

PrefabNZ's mission is to double the uptake of prefabrication and offsite construction to 40% in the New Zealand construction sector by 2020.

Let's talk

As the voice of the prefabrication industry in New Zealand, we are ready to discuss any of the areas outlined above or overseas use of prefab technology, and develop opportunities to establish a platform for further growth and enhanced productivity.

Contact us:

Pamela Bell

Chief Executive

pam@prefabnz.com

Mob: 021 972-635

Angela Eglinton

Communications

info@prefabnz.com

Mob: 027 252-8553