


## ABOUT

The Material Matrix is a guide to the different variations of prefabrication that are available in our industry. Acting as a beginning point for designers and interested parties to understand the different options available to them.

# THE MATERIAL MATRIX



## TO START

Addressing the number one question of

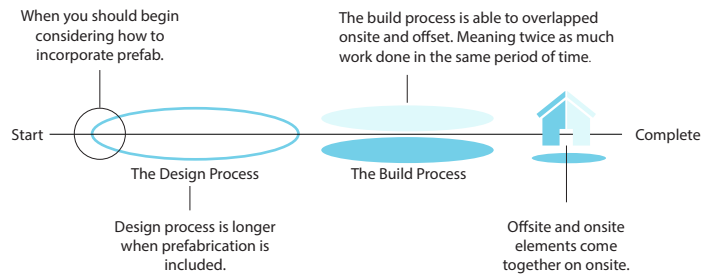
# COST

“Is it cheaper?”

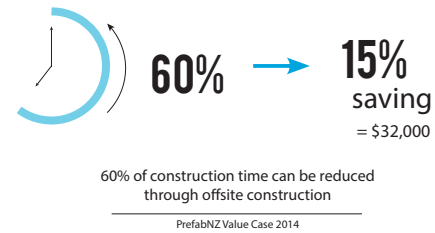
For more information see the **PrefabNZ Value Case for Prefab** at [prefabnz.com/resources](http://prefabnz.com/resources)

### 1. Time Savings

#### Simplified Design + Build Timeline



### 2. Save time = save money



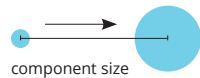
### 3. Cost Savings



Prefab delivery can mean a saving of about 15% in total construction cost - \$32,000 for a 157m2 house.

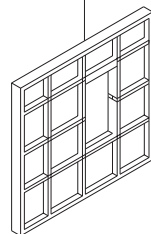
PrefabNZ Value Case 2014

## CATEGORIES



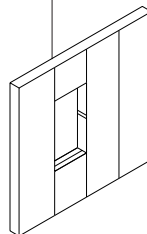
### 2D Component

#### Component



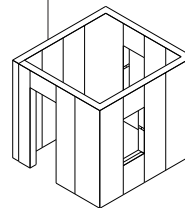
### Panels

#### Panels



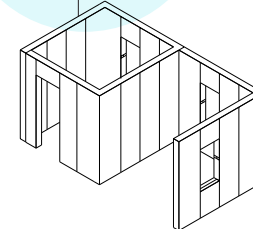
### 3D Volume

#### Volume



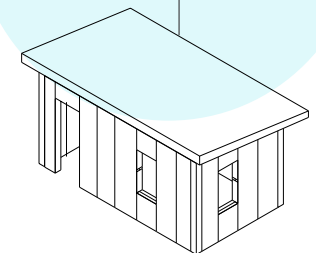
### Hybrid

#### Hybrid

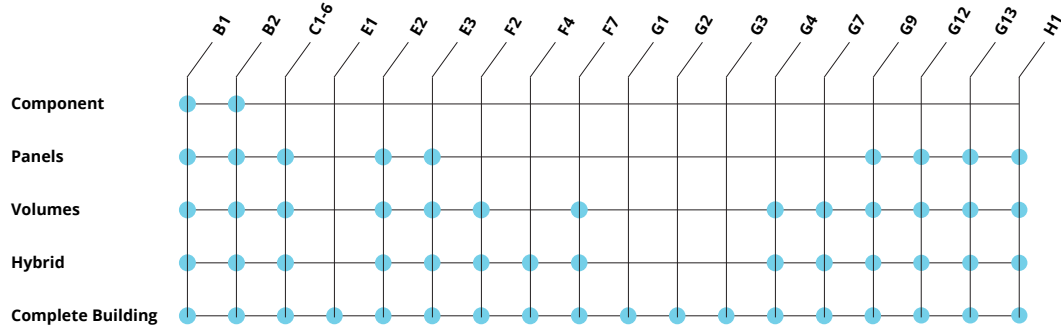


### Complete Building

#### Complete Building



## RELEVANT BUILDING CODE CLAUSES



## KEY

- A General Provisions**
  - B1 | Structure
  - B2 | Durability
- B Stability**
  - E1 | Surface Water
  - E2 | External Moisture
  - E3 | Internal Moisture
- C Protection from Fire**
- D Access**
  - F2 | Hazardous Building Materials
  - F4 | Safety from Falling
  - F7 | Warning Systems
- E Moisture**
- F Safety of Users**
  - G1 | Personal Hygiene
  - G2 | Laundering
  - G3 | Food Preparation
  - G4 | Ventilation
  - G7 | Natural Light
  - G9 | Electricity
  - G12 | Water Supplies
  - G13 | Foul Water
- G Services and Facilities**
- H Energy Efficiency**
  - H1 | Energy Efficiency

## CONSIDERATIONS

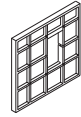
An overview of some of the key considerations when designing for offsite construction.

	Component	Panels	Volume	Hybrid	Complete Building
Structural connection to adjacent components	●	●	●	●	●
Durability of particular component	●	●	●	●	●
Bracing integrity of each panel		●	●	●	●
Lining selection		●	●	●	●
External weatherproofing / internal waterproofing		●	●	●	●
Pre-installation of services pipework & electrical cabling		●	●	●	●
Method of termination / reconnection		●	●	●	●
Transportation / lifting		●	●	●	●
Fire safety design / active and passive fire protection			●	●	●
Safety from falling			●	●	●
Finish level / specification @ internal junctions			●	●	●
Tolerances in design and with other components			●	●	●
Timing of joinery installation				●	●
Protection of other properties					●
Modification during construction					●

## KEYWORDS

**word**  
definition

See **glossary** for more prefabrication terms at [prefabnz.com/resources](http://prefabnz.com/resources)



### cartridge

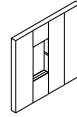
A cartridge is a closed panel containing services, ducts, electrical conduits etc.

### flat-pack

This is a collection of panels transported in one package to site. Refer to panelised prefabrication.

### open panel

An open panel is a panelised element that consists of framing without cladding or lining. See also closed panel.



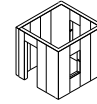
### closed panel

A closed panel is a panelised element that consists of framing with cladding or lining, or both. It may also include integrated services such as plumbing ducts and electrical conduits.

### SIPS or structurally insulated panels

SIPs are used as building panels for floors, walls and roofs in residential and commercial buildings. (Sylvester). SIPs are one type of panelised prefabrication.

*See glossary for extended definition*



### semi-volumetric prefabrication

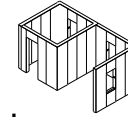
This is an interchangeable term with hybrid prefabrication. Refer to hybrid prefabrication.

### block

A block is another term for a module, pod or unit.

### chunk

A chunk is a grouping of pre-formed materials into a complex component or module, prior to assembly at the construction site.

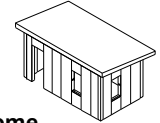


### hybrid-based or hybridised prefabrication

Hybrid-based prefabrication is also referred to as semi-volumetric prefabrication. It consists of a mixture of volumetric or modular units and non-volumetric or panelised units (module plus panel). It may also include component and site-built elements.

### kit, kit-of-parts, kitset

This is the set of components prepared away from the construction site which are then assembled on site.



### modular home

This is a house designed using pre-existing modular products or systems and built at the site using a combination of modular and standard materials (Sylvester). A modular home meets building codes and is permanently fixed to a foundation on site.

### panelised home

A building designed using pre-existing panelised products/systems and built on-site using panelised prefab components and "standard" materials (Sylvester).

## WHO

### Industry snapshot

A brief selection of prefabricated elements developers available throughout New Zealand.

## Areas of Measurement

### Type of Project



### Transport Size



#### Component

##### CHH WoodProducts

Prefabricated timber framing  
Glulam / LVL components



##### Pryda

Pre-nailed truss and frame assembly  
Floor cassettes



##### W+R Jack

Cross Laminated timber  
CLT and CNC Machinery



##### PlaceMakers

Prefabricated timber framing



##### NZ Steel

Prefabricated Steel framing



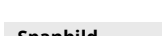
#### Panels

Plywood (Panels)



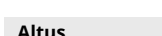
##### XLam

Cross laminated timber  
Can be used for floors, walls, ceilings, volumes, and complete buildings



##### Spanbild

Closed panel production at Concision factory - walls, floors and roof elements



##### Altus

Fast easy window systems installation



##### Apex

Apex wiring solutions  
And **Ke Kelit NZ** for plumbing



#### Volume

##### Stanley

Cross laminated / mass timber framed construction, custom panels and volumes



##### NZ SIPS

Timber structural insulated panels



##### UNIpod

Open source bathroom pod design



#### Hybrid

Working with Tall Wood



##### James Hardie

Facade systems



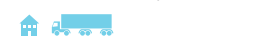
##### Metra Panel

Reconstituted timber panels, walls, ceiling and floors. Also used for bathroom pods.



##### PLB Construction

Transportable homes using Metra panels  
Also make bathroom pods



#### Complete Building

##### Laing Homes

Transportable homes using Metra panels



##### Haven Transportables

Transportable homes



##### Keith Hay Homes

Transportable homes



##### Genius Homes

Transportable prefabricated and kitset homes



##### Matrix Homes

Volumetric and transportable homes



for more a full list of PrefabNZ members visit  
<http://www.prefabnz.com/Directory>