

Unipod competition team 16 presents: the Rapaki bathroom pod

Concept

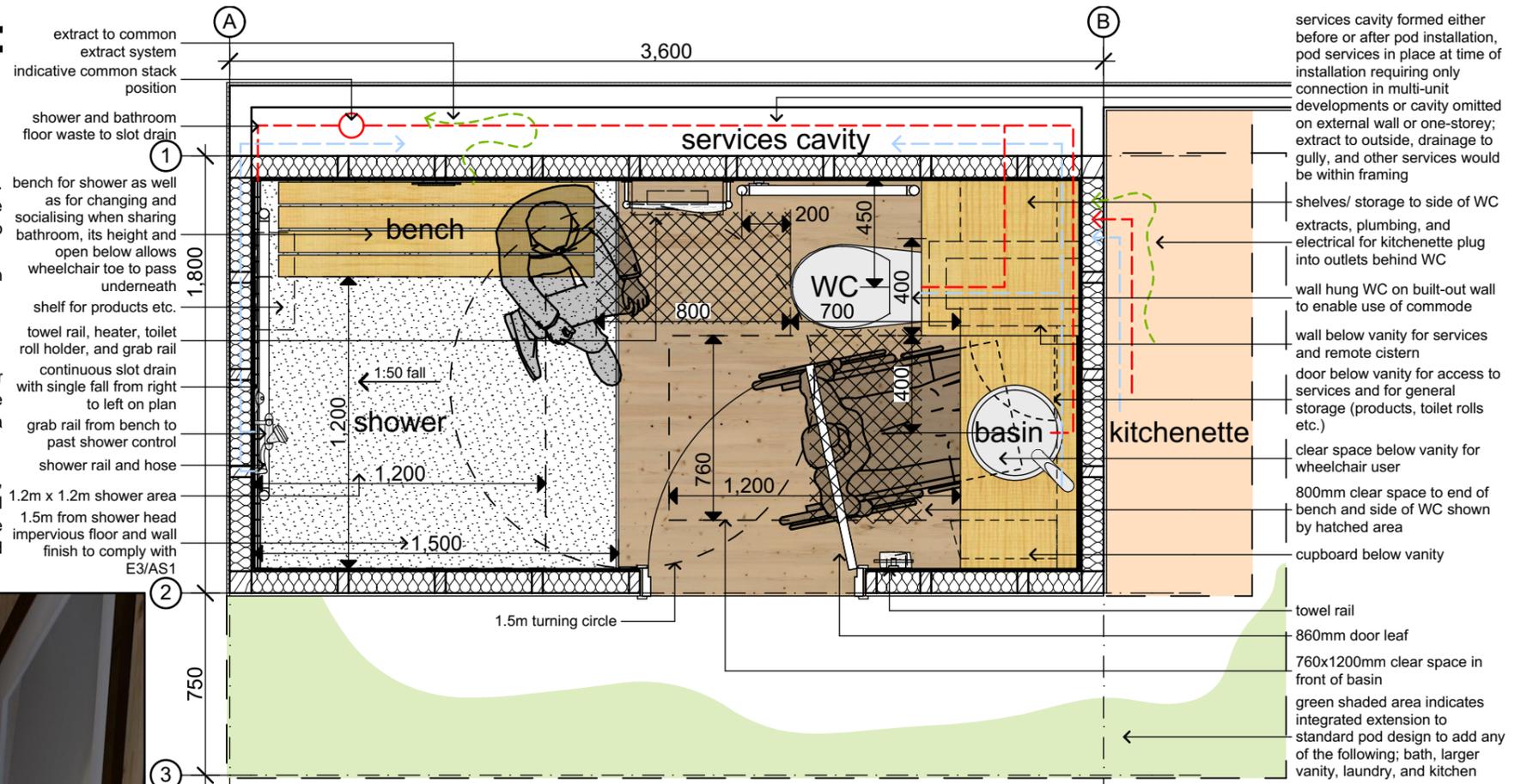
The drivers behind the formulation of this design have been:

- Simplicity in plan keeps the arrangement of WC, basin, and vanity on one side of the plan constant between versions. A large space on the other side of the plan allows flexibility for arrangements of shower, bath, and laundry or, if the end users desired, space for a sauna, small hot tub, or a different take on their shower and bath requirement to what's shown in this design.
- Sustainable materials have been selected as much as possible; timber structure and timber materials, all of which can be renewed and recycled.
- Standard plan of shower, WC, and basin that can be easily extended without affecting this core design.

Lifemark

The WC meets the Lifemark 5 requirements and has space to install a handrail on the wall with ample space around it for wheelchair manoeuvring, as well as projection out from the surrounding joinery to enable the use of a commode. The basin meets the requirements of having clear space below, to the side, and in front, and critical dimensions suit a wheelchair users reach.

The shower meets Lifemark 5 requirements being level threshold, 1.2m² without the intrusion of the bench, accommodates wheelchair manoeuvrability, as well as meeting the requirements for seating, space to install a handrail on the wall, control locations, and shelf for products. Vinyl is also specified as a non-slip surface offering subtle cushioning should a user fall and colour selections are contrasting against the shower wall fittings for visually impaired users.



Rapaki Bathroom Pod

1:25

standard version: view towards basin from shower

Homestar

Selected acoustic insulation, low-water use selections, overflows, dual flushes, tempered hot water, LED lighting, and heat pump hot water all signify the designs ambition to achieve a high Homestar rating.

Change out

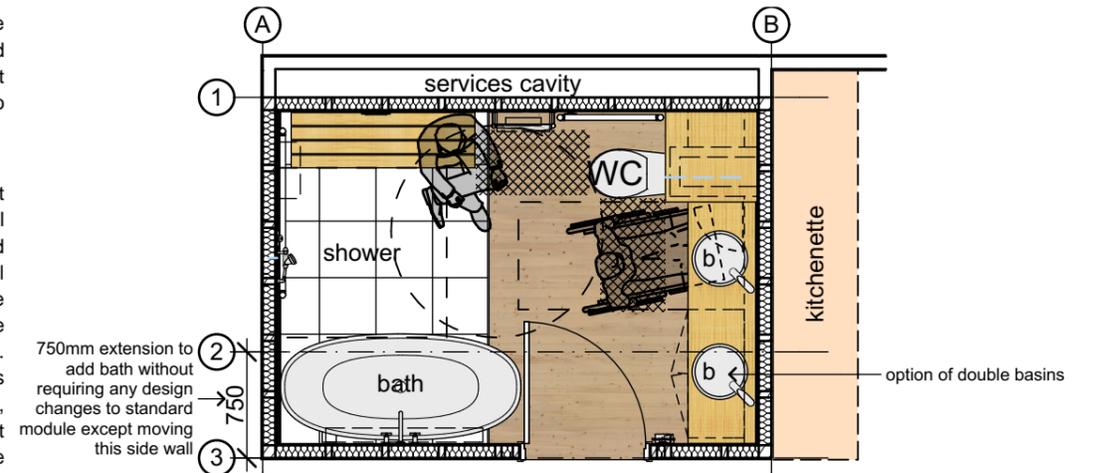
All fittings can be simply swapped out to suit end users preference, as well as the material selected for the vanity, benches, drawers, and shelves. The choice of shower floor and wall finishes are seen as selectable items by the end user on day one, however with a little effort these can be changed during its lifetime. The remaining wall, floor, and ceiling linings were seen as a constant in the design, however substitution for an alternative sheet lining on day one would be simple and both the wall and ceiling linings would not be difficult to be replaced over their lifetime.

Extension to standard design

It's a simple process to extend the design to include a bath or laundry within an extended prefabricated module, as well as add on a kitchenette within the module as seen in the images. This involves minor additions to the standard plan but the standard design remains a constant. The pod can also be objectified within an open plan living space to provide a self-contained bath, laundry, and kitchen.

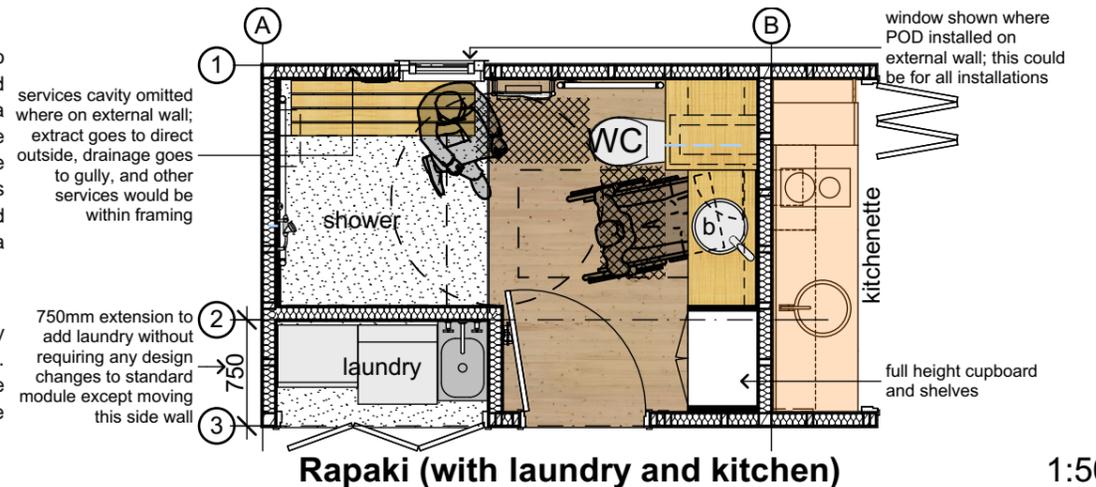
Kitchenette

Is shown on the plan and plugs in effortlessly to the services required for the WC and basin. No extra or unnecessary routing of the services is required to provide this flexible future connection.



Rapaki (with bath)

1:50



Rapaki (with laundry and kitchen)

1:50

bath extended version: view towards basin



laundry/ kitchen extended version: view towards basin

standard version: view towards shower



Structure
 Engineered laminated timber is specified as opposed to a steel structure as it offers both minimal thermal bridging and acoustic transmission (important for bathrooms). It performs well seismically, is flexible and adaptable which is important for future adaptation or modifications, is lightweight and transportable, and trades have the skills and are comfortable working with it. It is also renewable and has the potential for carbon zero construction. It is also NZ made.

Services
 Are collected on one side of the plan ready to be connected to common services. These would be contained within a service cavity in multi-unit developments. The cavity would be part of the main build. In single storey installations the cavity could remain or the wall is an external wall and drainage goes to a gully, extract is to direct air, and the remaining services are within the framing.

Installation
 The pod is simply lifted into place by crane using connection hooks at each corner and inserted into an aperture left in the floor plate. Walls for the surrounding rooms can then be erected, connected to the module framing, and then linings can simply be installed as they would be for a normal build.

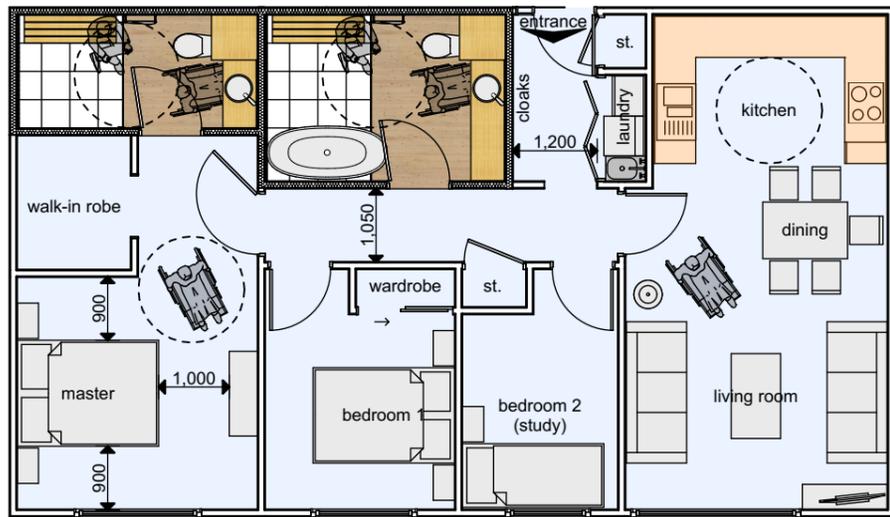
Costs
 Estimated costs per square meter excluding GST are \$1,595 for the standard plan. A 6.5m² footprint for the standard plan equates to an estimated cost from as little as \$10,400 plus GST complete.



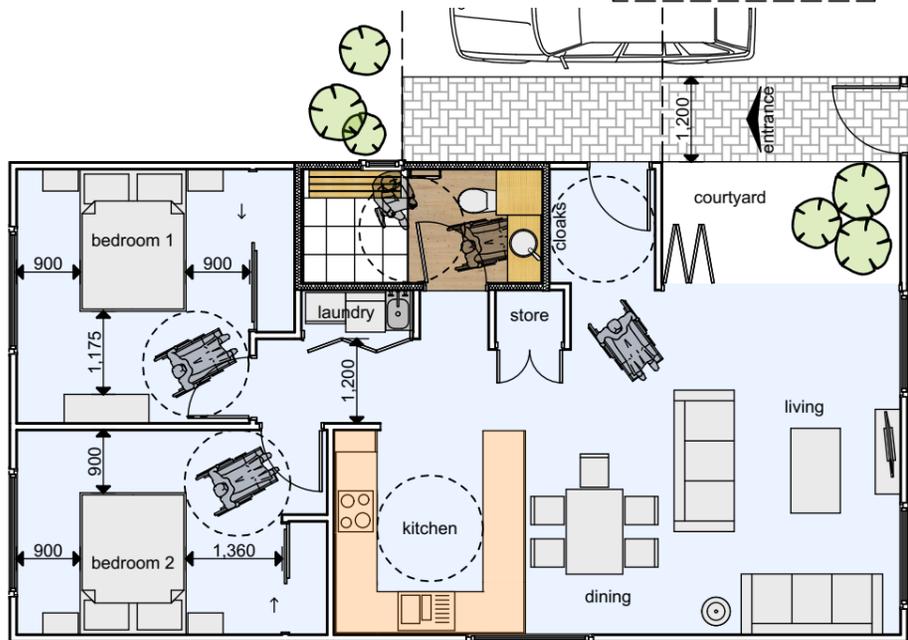
context: standalone pod



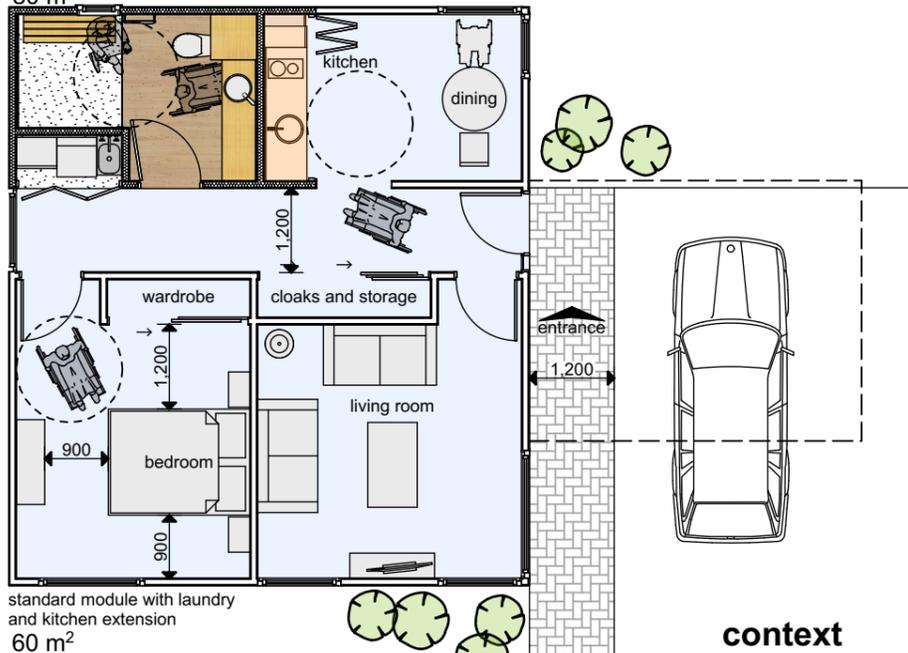
standard version: alternative materials



standard module as ensuite and extended module with bath
90 m²



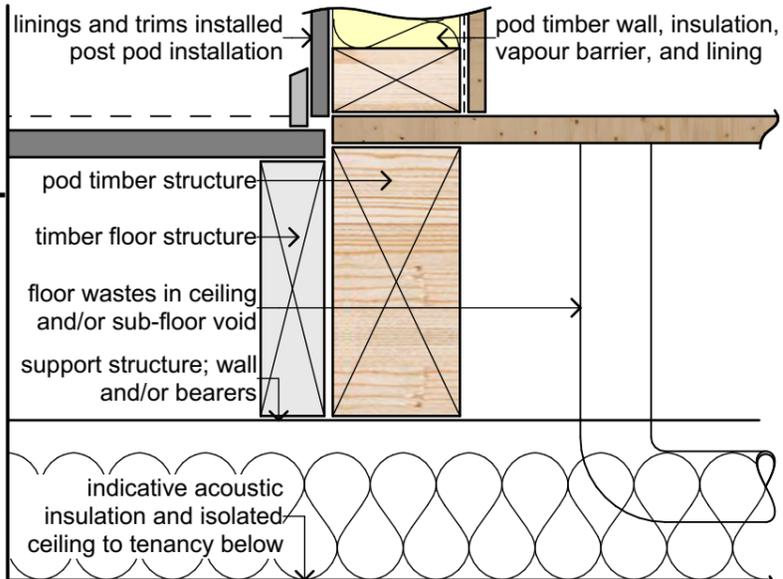
standard module (laundry shown separately but could be part of pod)
80 m²



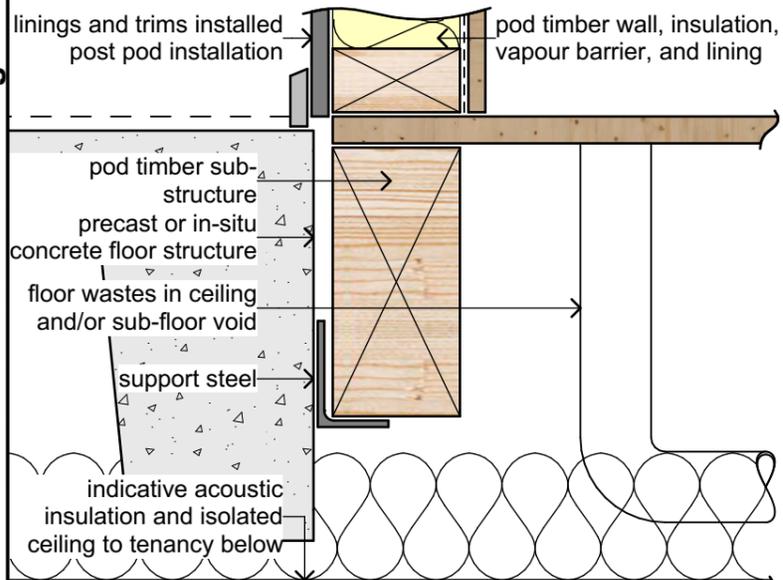
standard module with laundry and kitchen extension
60 m²

context

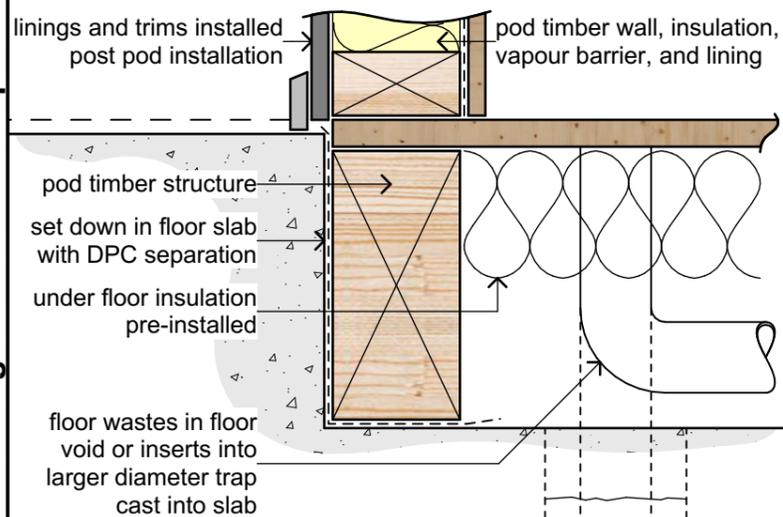
3 bedroom multi-unit apartment



timber floor: intermediate and/or ground floor



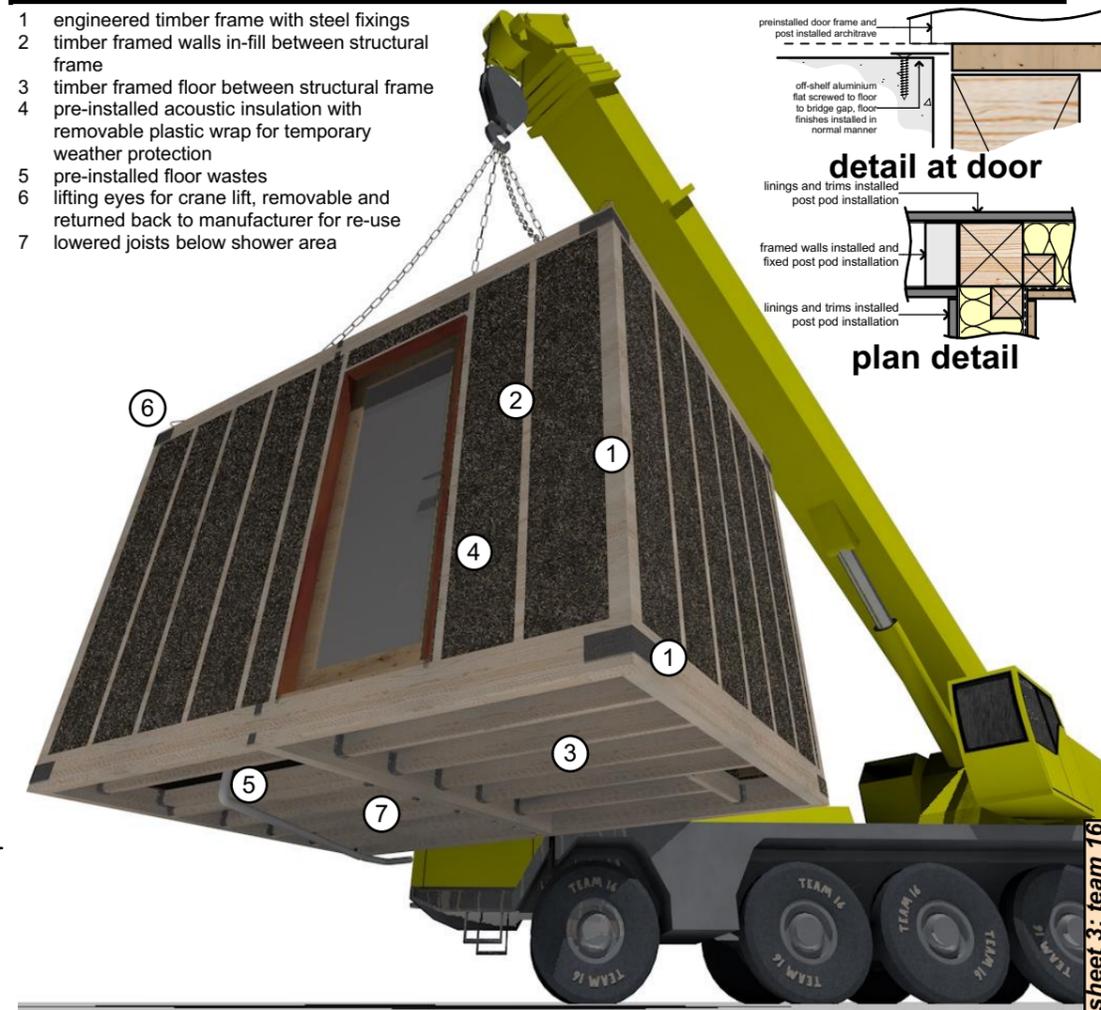
concrete floor: intermediate floor



concrete floor: ground floor

	changeable	high end specifications	mid range specifications	social housing specifications
WC & flush	yes	wall hung with low-water remote cistern and accessible dual flush plate		floor mounted with low-water remote cistern and accessible dual flush
basin	yes		selected bench mounted	
shower	yes		selected rail and hose with added drench shower	selected rail and hose
bath	yes		selected freestanding bath	
grab rails			stainless steel on brackets	
heated towel rail	yes	selected energy saver model	selected economic model	
toilet/towel hold	yes	selected high specification range	selected low specification range	
tapware	yes	selected high specification low-water range	selected mid specification low-water range	selected from economic range
mirror	yes	secret fix with electric demist pad and LED strip recessed side lights		surface mounted mirror
electrical	yes	selected face plates		
lighting	yes	selected LED recessed spots, vanity feature, and strip lights	selected LED recessed spots and vanity feature lights	selected compact fluorescent recessed spots
wall/ceiling lining		12mm H3.2 marine plywood with clear-coat finish and screw fixings for easy removal		
flooring		H3.2 marine plywood with clear-coat slip resistant finish		
shower walls	yes	selected ceramic tiles or vinyl over waterproof membrane		selected vinyl over waterproof membrane
shower floor	yes	selected ceramic tiles or vinyl over underlay over waterproof membrane laid to falls		
bench/ seat	yes	generally slats in selected material to match vanity		
vanity/ cupboard/ shelves	yes	selected material (timber or laminate)		selected laminate
shower shelf	yes	proprietary safety glass		
door	yes	selected clear finish solid timber with sand-blasted glass panel	selected clear finish veneer door	selected paint quality hollow core door
insulation	yes	acoustic insulation to internal walls		
structural frame		H1.2 engineered glulam posts and beams		
in-fill floor and wall framing		H1.2 framing		
blocking	yes	installed beside toilet and shower for handrails; plywood strength will offer additional flexibility for fixings		
heater	yes	selected high spec' model	selected economic model	
wastes		chrome basin exposed waste; basin and WC wastes above floor within room, shower and bath wastes below floor, continuous slot drain to shower		
ventilation		extract above shower connects to shared building ductwork or to outside air if external wall		
electrical		power, lighting, and switches are in identical positions for standard pod design irrespective of design to avoid changes between versions		
drainage		fixings are in identical positions for standard pod design irrespective of design to avoid changes between versions		
water supply		fixings are in identical positions for standard pod design irrespective of design to avoid changes between versions		
hot water		heat pump hot water or connection into common feed in multi-unit developments		

- 1 engineered timber frame with steel fixings
- 2 timber framed walls in-fill between structural frame
- 3 timber framed floor between structural frame
- 4 pre-installed acoustic insulation with removable plastic wrap for temporary weather protection
- 5 pre-installed floor wastes
- 6 lifting eyes for crane lift, removable and returned back to manufacturer for re-use
- 7 lowered joists below shower area



specification