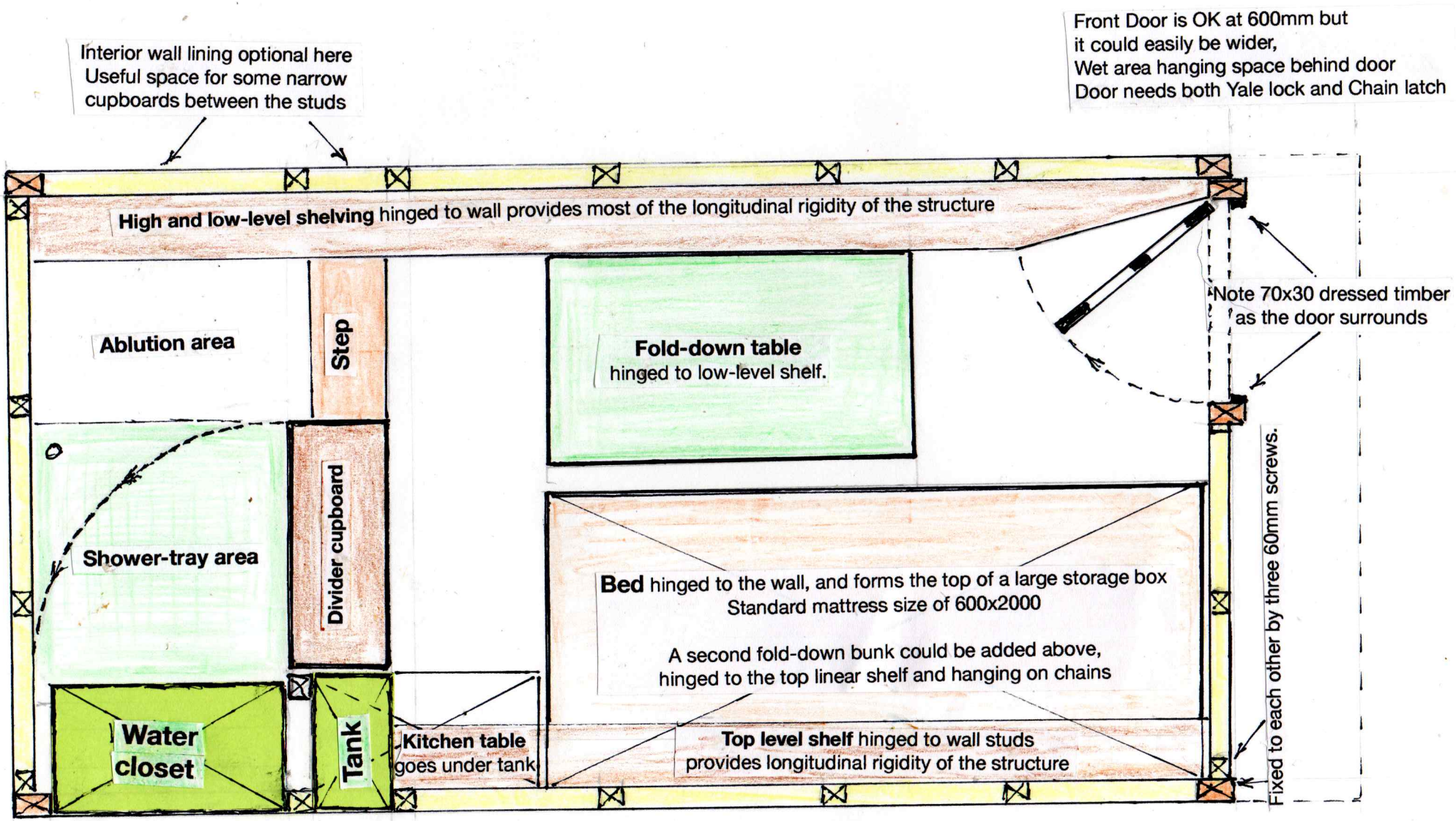
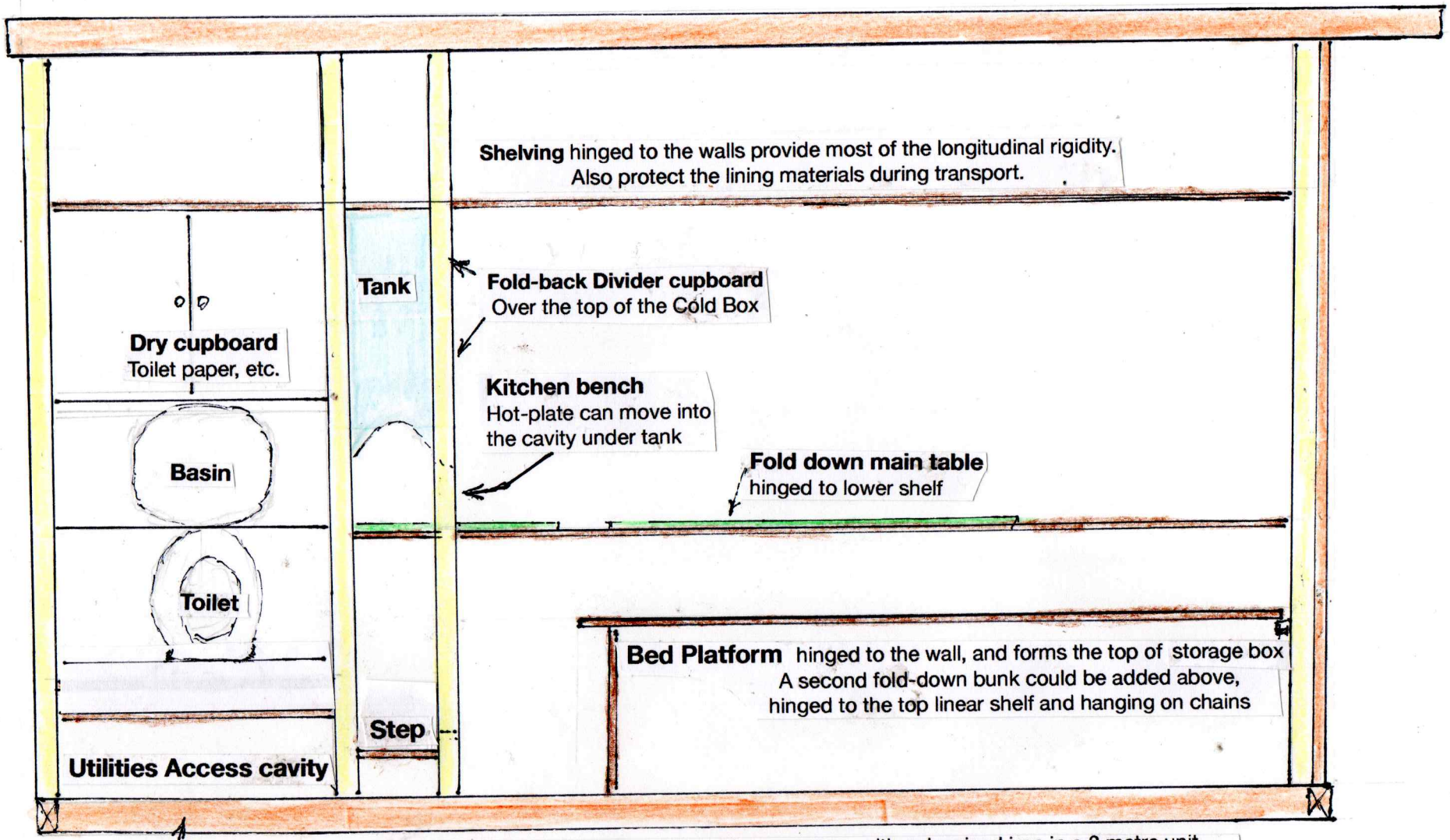
H4H Floor Plan

Front and Back panels fit inside the side panels

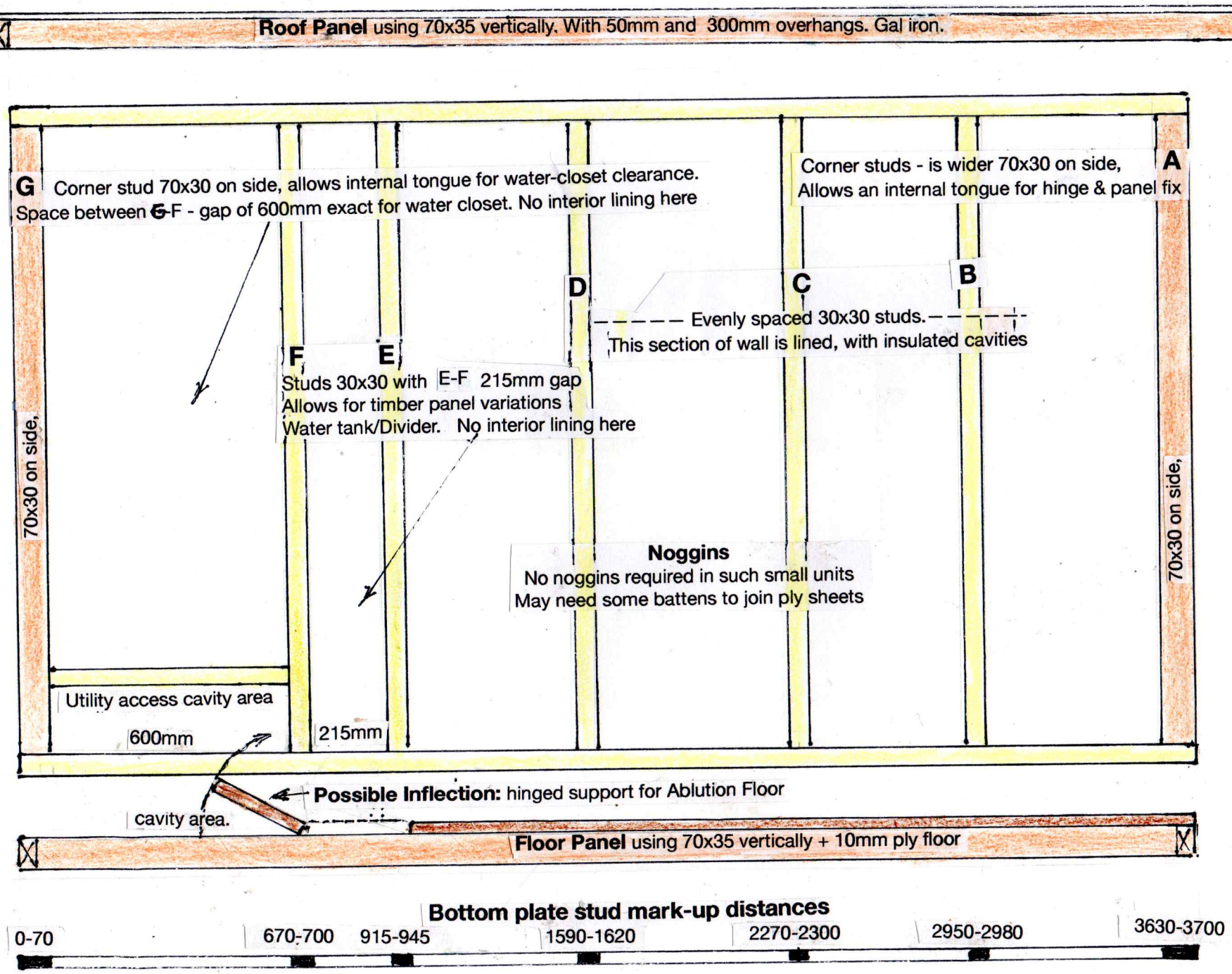




H4H Elevation (Main features)

H4H Side Panels

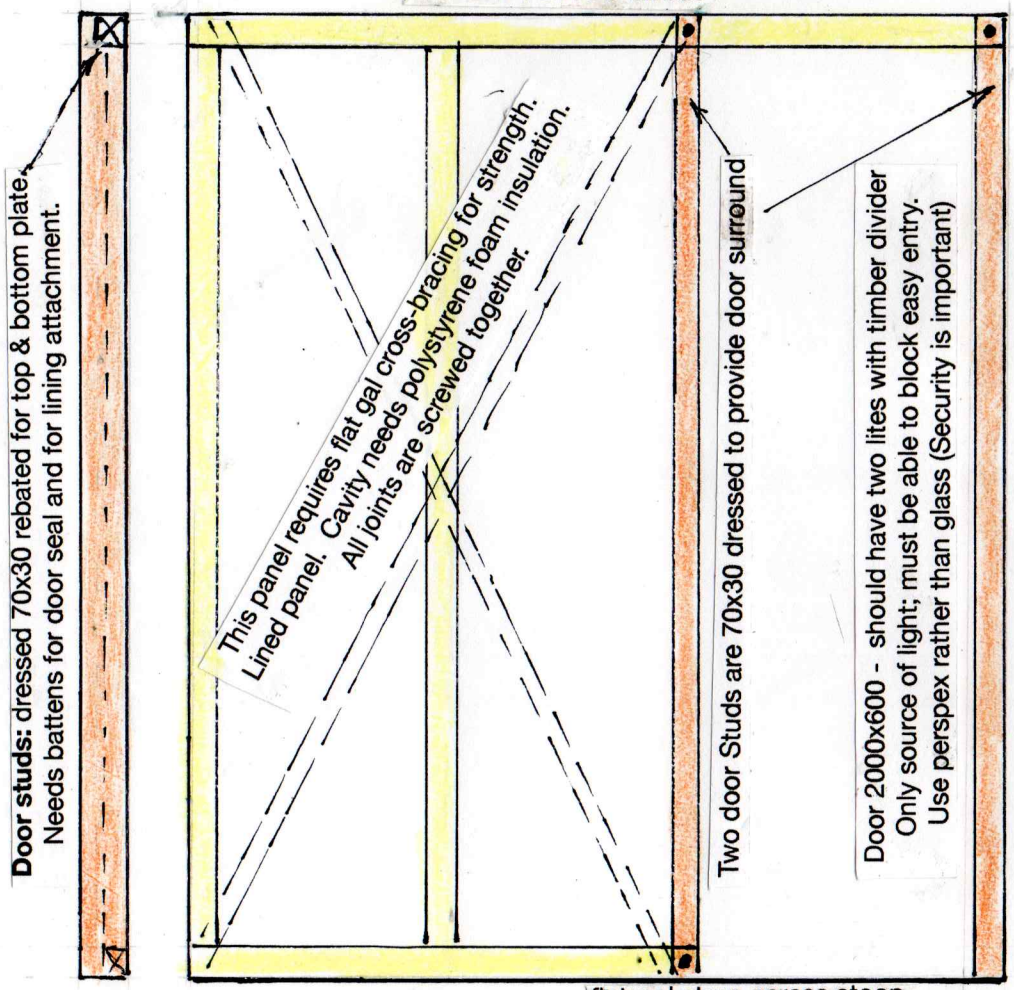
Both bed/table side frames identical
(Note dimensions precise to allow for timbers which aren't)
The strength of these panels comes from ply. All joints screwed.



Roll-over to make eaves
also roof tie-downs

Roof Panel. Gal iron.

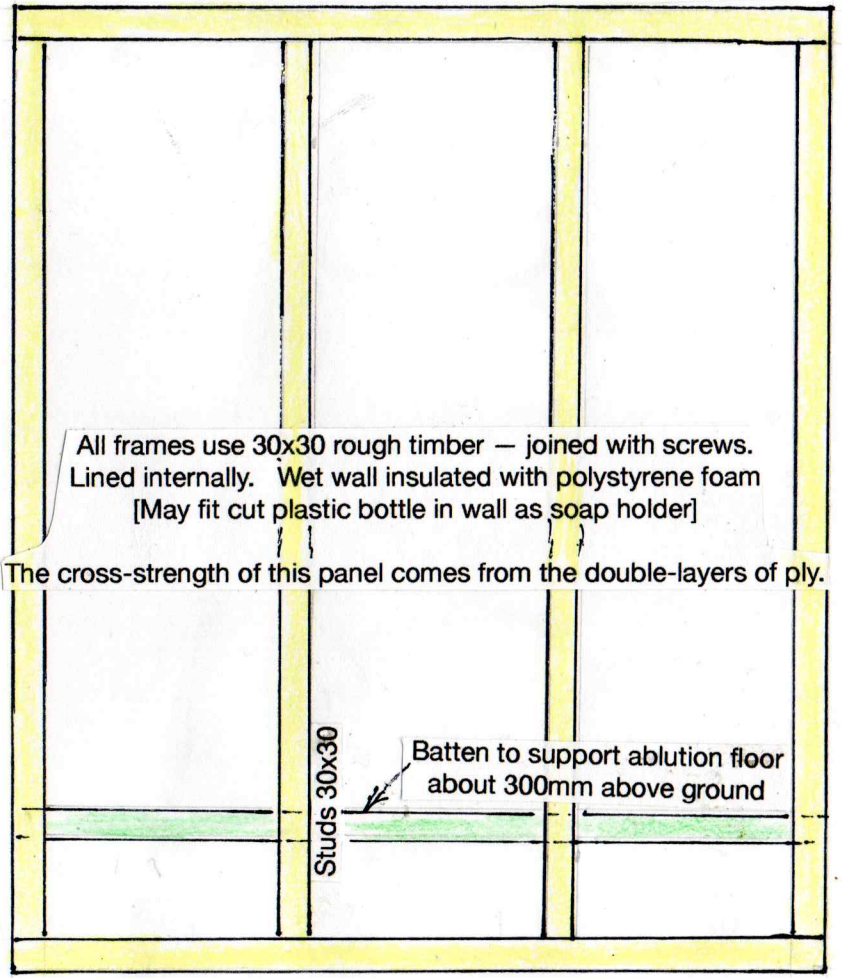
H4H Front Panel



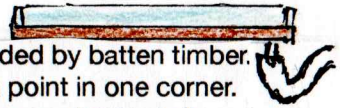
Floor Panel using 70x35 beams and ends.

H4H Back Panels

Fits between side panels (joined with three long screws)



Shower Tray

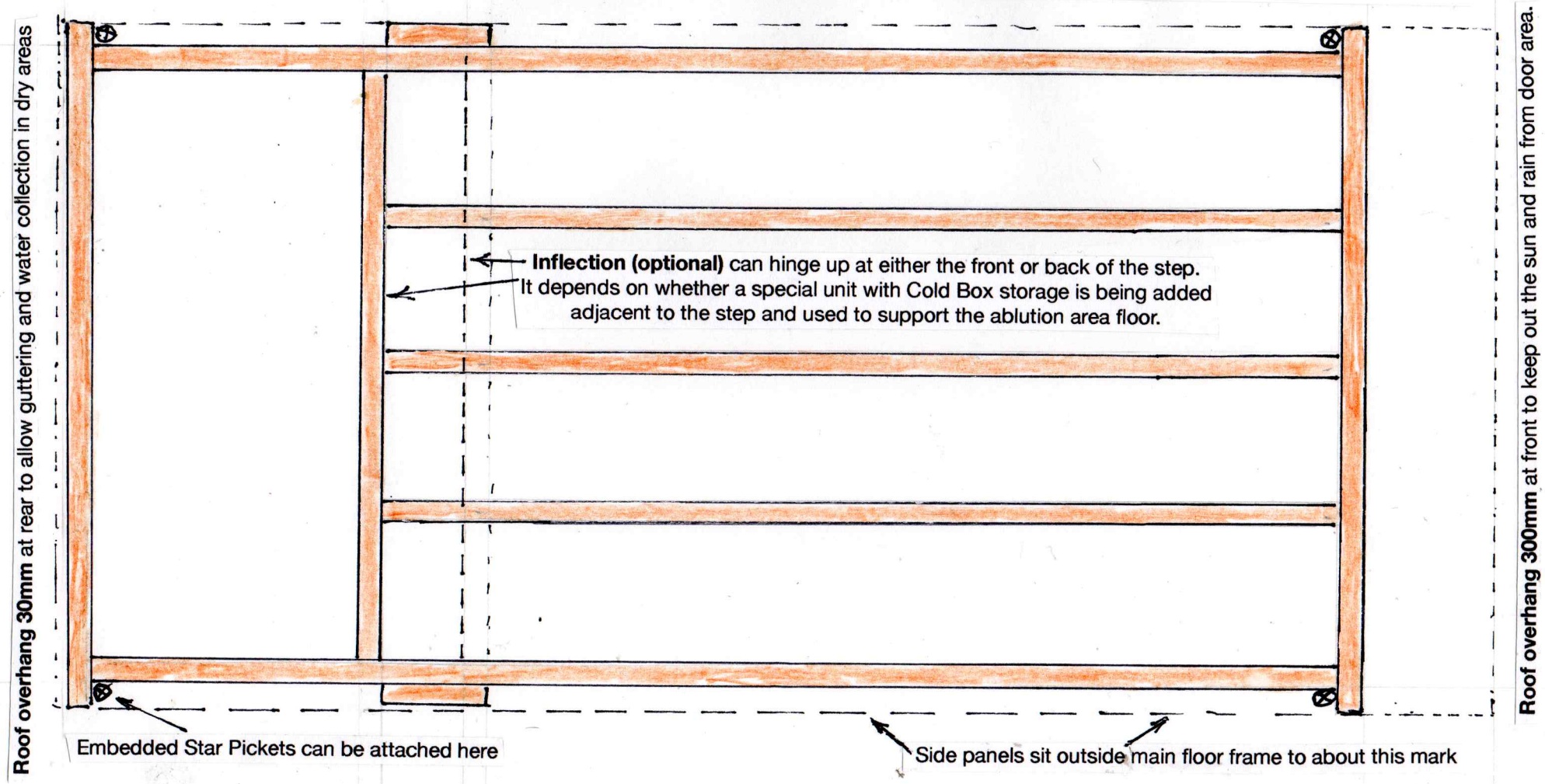


Our plan was to use waterproof ply base surrounded by batten timber.
It should be square (approx 610x610) with drain point in one corner.
(The tray can then be rotated to suit drainage requirements.)
U-bend comes from flexible disposal hose hanging in a loop.

H4H Floor Frames

Floor frames are all 70x30 rough timber used in the conventional way
Decking would need to be 10mm water-resistant ply.

Note the 30mm inset of the two outer-most floor beams
This allows the side panels to sit outside the floored area, and guarantees
both run-off of rain and provides edge support for flooringl



The Water Closet

The Water Closet unit requires more carpentry/joinery skills than any of the main unit panels. Essentially it would be constructed from 200x15 mm dressed pine, with 10mm form-work ply used for doors. Ideally it would have a form-ply backing.

The top half with the cupboard (against the siding) would need to be lined with ply mainly for diagonal strength. The whole unit should be 600mm wide (an ideal width for toilet and small shower), and it should reach from wet-floor support level (300mm above main floor base) to somewhere near the ceiling (probably leave a small air-gap).

The tip basin and toilet door should be hinged slightly outside the vertical of the main timber so as to provide a slight overhang. Shower drips should ideally stay on the outside of the WC unit, but we doubt that this is critical.

The value of this WC design is in the mass construction potential of a unit which can be easily functional, space-saving, and not fragile when transported.

WATER CLOSET UNIT AS A WHOLE
The WC units need to sit fairly tightly inside the side-frame between the studs, and be firmly screw-attached to each during assembly, probably at both top and bottom. The two drop-down doors (both toilet and washbasin), would hang on chains linked to solid screws through the sides of the WC unit.

The whole WC unit would sit in the unlined section of the ablution area with its back against the outside cladding, and we suggest that this section of the ablution area does not need a floor. It is probably best to retain air-circulation here, and any possible flush-splashes will drop through rather than be retained within the unit.

The lack of a base also gives easy access when links are being made to the sewerage outflow pipe system within the Utility Access cavity. Pipe directions should be totally flexible over an arc of about 270 degrees.

Collector: There are numerous plastic box units in any hardware store which can be used as the toilet flush collector. Gardening planter boxes are fairly obvious, and also wall-paper roller trays. Other possibilities are wide plastic guttering. Another suggestion is making one ... a lengthwise saw cut down most of the 600mm length of a 75-100mm plastic downpipe. Then heating and widening it to create a U.

The last two will have available an end fittings for the U-bend. The others will need to cut and fit a short down-pipe length. The collector obviously needs to sit on an angle and have a multi-directional U-bend at the end to handle all contingencies.

The sloping collector would either hang on a couple of cross-struts or be attached at both ends. This would depend on how it was made. The collector and its U-bend must be able to slope and discharge either to the left or the right. On different locations, the sewerage disposal direction will be unpredictable; so a standard multi-directional U-bend is essential, and it may need to hang down varying amounts.

Dry Cupboard: This cupboard would have two vertical ply panel doors (with magnetic latches). One door would have an inside 'peg' (150mm length of broom handle) on which to hold the toilet roll well away from the shower, but easily accessible.

TIP WASHBASIN FLUSH — We planned to use a standard cheap portable plastic basin, ideally clipped down in some way so it could be removed. Alternately it could just be screwed down to the tip door. The door might need to be hinged to a cross timber (60x15), and it may need batten timber (50x15mm) side strengtheners for heavy duty washing.

TIP TOILET — Seat Unit: This unit needs to be easily removed and installed because we don't know how long the liner will last. Also the homeless are notorious for using wads of toilet paper as cleaners and handkerchiefs, and so easy access to unplug the U-bend is probably important.

The seat itself would be a conventional plastic toilet seat without the lid, which would sit directly on a width of water-proof ply (or on a couple of flat solid timbers). It would probably hinge on a cross-timber (75x15), or

bolts would hinge it to the two side timbers. The timber seat's sloping base would be glue-screwed to the four triangular support ribs.

Flush control: We aren't sure whether the flush will keep the unit as clean as possible without some help. The plastic seat will probably fall open in the vertical position, and this might be enough.

However a flexible plastic back-wall deflector could be fitted to the back to direct flush water from the basin forward against the toilet tray. This then washes down into the collector and into the sewerage system.

Toilet liner: The seat liner is probably cut from a 0.6m roll of heavy-duty carpet protection material used by renovators as a carpet overlay when working inside a house. Alternately, there are slightly stiffer large place mats cheaply sold for breakfast tables. These would all clip to the sides of the seat unit, using standard heavy-duty paper clips (easily removed for cleaning).

Ideally, the liner would curve up 10-20mm at the front (to prevent urine splash) and be long enough to feed back into the 'collector' trough. An alternative approach for the toilet catchment lining might be to use a small white plastic office paper-bin, cut diagonally into a wedge-shape. This would probably be a more permanent installation.

Sewerage pipe system: Since disposal fluids don't sit stationary in sewerage pipes (other than the U-bend) we believe that pipe installation will consist of joints and junctions without plastic-glue, but wrapped in 50mm builder's tape, and held in place with a single self-tapper screw. This makes the system easy to assemble and dissemble, and most of the pipes would then be reusable if the unit is moved.

Unlike conventional sewerage networks, it is unlikely that there would be any physical damage to the pipes (not underground with tree roots) so the cheaper rain-water down pipes and fittings may be totally acceptable.

Shower tray: These are costly when using a manufactured component. Materials like plastic, fibre-glass or metal are probably unnecessary for these shower trays.

A suggested approach would be to surround a 600x600 wet-floor area (made from solid form-work ply) with edge timbers and a few coats of lacquer (the last, maybe with sand sprinkled on top.). The tray is then rotatable, and a down-pipe drain in one corner can feed out in any direction.

Shower water disposal: We run the shower tray output down through a separate linkage of flexible hoses, rather than inserting the output into the main sewerage pipe system. The pipe would hang in a loop to create a natural U-bend below the tray. A large garden hose pipe (larger than the input) should be adequate, and there are plenty of fittings and junctions available. There is always the risk of the toilet-flush re-emerging from any nearby down-pipe if there is a blockage, so it is best to keep these disposal systems seperate. Also, in dry country, the user may want to put the shower output onto a garden, etc.

Divider cupboard: This will be hinged to a vertical 30x30 timber adjacent to the water tank. Generally we would expect the cupboard to be fabricated from 200x15 dressed pine with shelving, and sit above the shower-tray which is itself on the raised ablution area floor.

Beneath the swung divider cupboard we suggest a foam-lined Cool Box, exposed with the Divider cupboard is back (so will need its own lid).

We suggest a strong curtain road extends from the Divider Cupboard onto a clip on the back wall for stability. When folded back, the Divider Cupboard creates a we/dry-hanging space over the end of the shower tray.

Step box: Use the step as a hinged lid on a Step Box. This could be a separate unit, or one end of the Cold Box. The Step Box may prove to be the ideal container during transport for the builder's electric reel with trip-switch, spare light-bulbs (use LEDs), and electrical accessories — also for spare screws, a screw driver, etc.

H4H - Water Closet unit

This is a single removable 0.6m wide unit made from hardwood dressed hardwood timber (c. 230x20mm) with a 10mm waterproof ply backing and drop-down doors for the toilet unit and the wash-basin, used also as a toilet flush. This closet unit fits between a stud and the back wall, and provides its own outer skin. It should not have a floor (thus allowing air-circulation) and it has direct access from the collector and U-bend to the underfloor utility cavity. [This may need vermin netting]

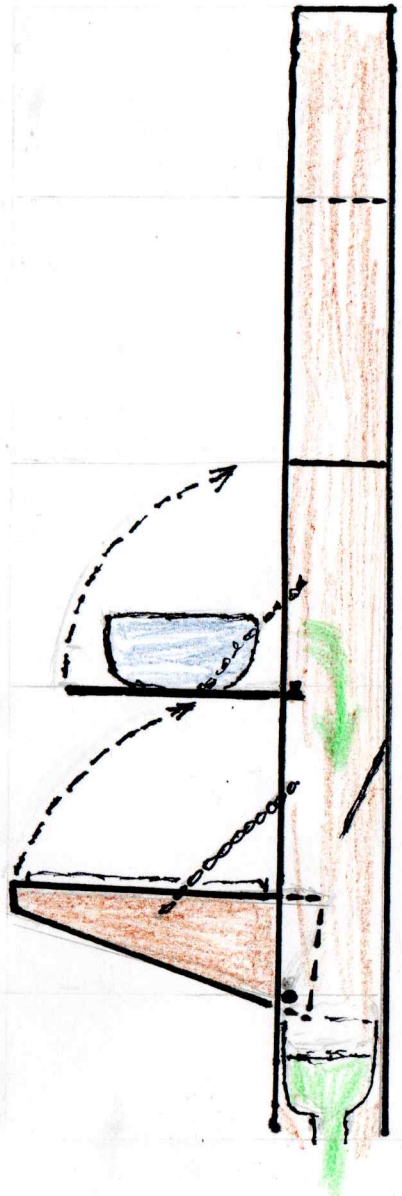
Note: 575-600mm is the ideal width. Nothing is gained by extra width.

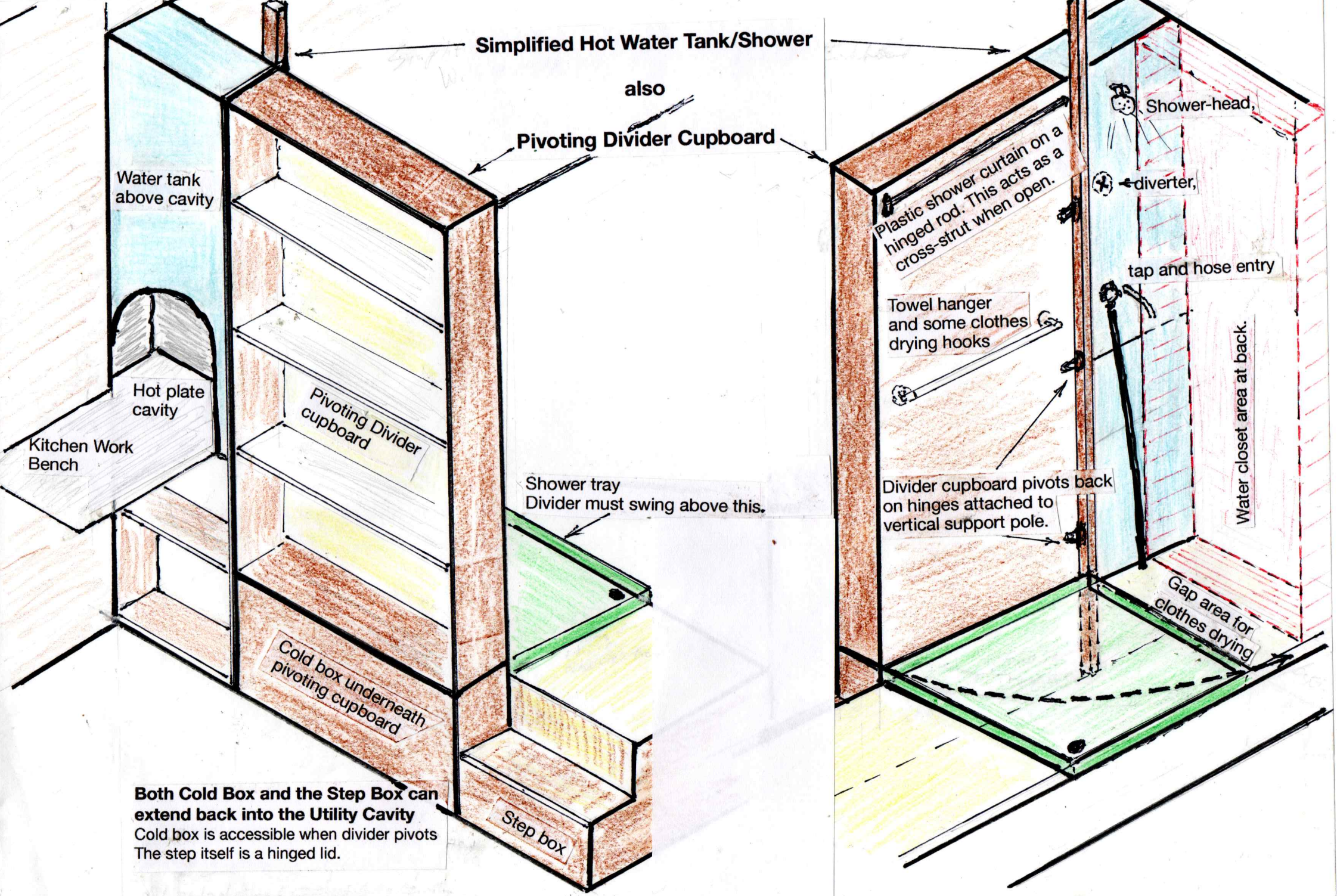
Wash-basin unit: Simply a fold-down door with a standard cheap plastic wash-bowl. The bowl can be simply screwed to the door with a couple of screws.

Toilet seat unit: uses four triangular shaped timber supports for a platform, on which a normal plastic lifting seat can be hinged. In use, the weight would be carried by stainless steel chains (dog chokes) on both sides. The faeces drops into a tray-liner made from a food-preparation plastic mat, held in position by heavy spring paper file clips each side.
This makes the tray easy to remove and clean, and it is flexible enough to have a trough-like curve, and extend into collector unit.

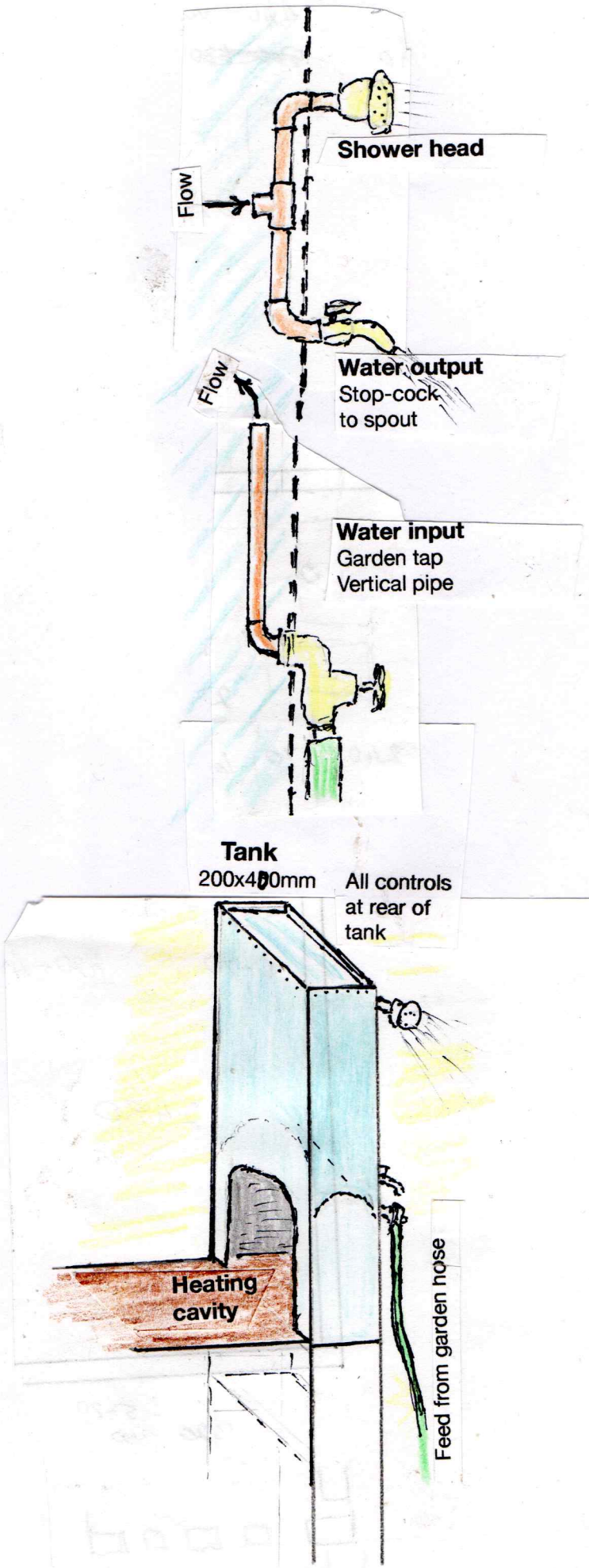
Collector unit: This would be made from either:

a) plastic box guttering with a down-pipe end.
b) Longitudinally-cut (heat widened) large plastic pipe with angle end-fitting





Both Cold Box and the Step Box can extend back into the Utility Cavity
Cold box is accessible when divider pivots
The step itself is a hinged lid.


Shower head
Flow
Water output
Stop-cock
to spout
Flow
Water input
Garden tap
Vertical pipe
Tank
200x400mm
All controls
at rear of
tank
Heating
cavity
Feed from garden hose