NatSol

FULL ACCESS COMPOSTER (FAC) INSTALLATION INSTRUCTIONS

JOB NAME:

Contract number:	
Min. height of finished floor level above ground:	
Excavation depth:	
Volume of concrete required (m^3):	
Position of urine soakaway:	

Additional information:

If the above fields are not filled in, then these instructions are only for estimating and should not be used for installation.

NatSol
Remote Toilet Specialists
01686 412653
info@natsol.co.uk
www.natsol.co.uk

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Welcome!

Thank you for choosing our Full Access Composter (FAC) toilet system. By following these detailed instructions and referring to the drawings provided, you can ensure a proper and effective installation of our product.

Some people prefer the challenge of assembling without reading instructions. While NatSol toilets are straightforward to install, not following these instructions could be very costly for you. We are committed to providing you with the highest quality and service. If you have any questions or need assistance, please don't hesitate to contact us.

We provide a **full guarantee** of the durability and proper function of our products when they are installed correctly according to our instructions. We advise clients to withhold contractor payment until we have received a full set of installation photos (see the *Photo Verification* section on p8).

Experienced installers of our toilets should still check through to see what's new.

To ensure high-quality installations, it is crucial to appoint a competent builder. Installation requires a 3.5 tonne machine (or larger) to off-load the vaults from the delivery lorry, carry out excavation, and lower the vaults into the ground. Assembly of the vaults and building requires general building skills and at least three persons on site, excluding any supervisory roles. NatSol typically does not install its products. We can offer installation supervision for an agreed fee if deemed essential, though we prefer to avoid this to minimize costs.

Choose a contractor familiar with relevant health and safety procedures, who will thoroughly read our installation instructions and risk assessment before the installation day. It is essential that the contractor arrives properly equipped on the scheduled day. Failure to do so will result in the delivery lorry returning to the depot with the vaults, incurring further delivery charges. These instructions detail the necessary tools, equipment, and materials that must be provided on the scheduled day.

It is important to understand that the installation contract is between you, the client, and the contractor. NatSol cannot accept any responsibility for improper installation unless it can be proven that components were missing or defective at the time of delivery.

We also offer the following assistance:

- In regions where we know contractors experienced in installing our products, we can provide their contact details upon request.
- We send full installation instructions to contractors in advance and are available to discuss these instructions prior to installation.
- We are typically available by phone on weekdays to address any installation questions. If you prefer guaranteed telephone support, we can arrange an appointment in advance.

Contents

Choosing a site

It is important to take time choosing a suitable site for installing a Full Access toilet. Proper siting ensures optimal management, operation, and accessibility of the toilet, including access for disabled individuals. Follow these points to select an appropriate location:

- The **ventilation cowl** on the top of the toilet building needs air flow to work and must not be close to obstructions, with at least 5m clearance. The cowl must always be free to align with wind direction. See *Site Layout* diagram on page 10.

- If the only option for a toilet install is on **sloping ground**, it may be worthwhile levelling the ground prior to starting work. Ensure this doesn't create a risk of land slippage against the toilet building after installation. If it is necessary, consider putting in retaining boards or walls on the uphill side of the toilet.

- On sloping sites, the **soakaway** must be positioned downhill from the toilet vault. As standard, NatSol FAC vaults have the urine exit on the right-hand side, but they can be supplied with a left-hand exit upon request (for example, when there is another building close by or if the ground rises on the right side).

- The best sites have free draining ground, but it is possible to install in wetter sites. The **Site Assessment Form (SAF)** helps us to understand your ground conditions.

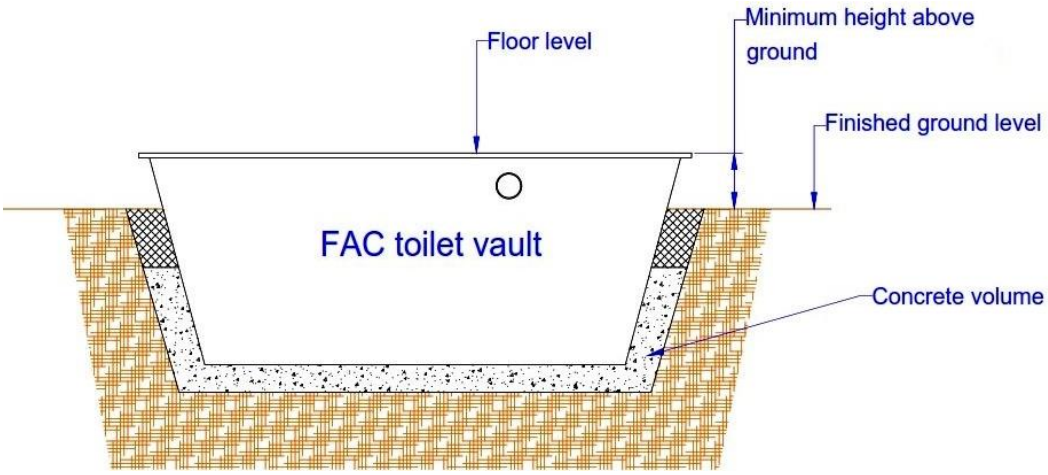
- A NatSol Full Access toilet should be installed where there is sufficient space and suitable ground conditions, considering slope and subsidence risks, to accommodate a disabled access ramp in compliance with Building Regulations. This is important even if such a ramp is not immediately needed. Please consult the appendix on **Ramped Access** (page 31), which provides some practical guidance for both contractors and clients on constructing compliant ramps.

Site-Specific Guidance

Based on the information provided, we have made some recommendations which are detailed on the cover of this guide (page 1):

1) **floor level** at a minimum distance above the finished ground level
2) an approximate **excavation depth**
3) and a recommended m³ **volume of concrete**.

On sloping sites, consult us if you are unsure about the floor height. It is your responsibility to ensure that groundwater does not enter through the urine soakaway and that the concrete volume is sufficient to prevent vault flotation. Assess surrounding ground conditions for features that may cause a high-water table at times. The diagram here shows our proposal as described above (vault seen from the right-hand side):



The vault and lid combined are around 920mm top to bottom, and the screed below the vault is 50mm thick. On sites with heavy clay or poor drainage, the excavation depth might be around 700mm with **cubicle floor between 150 and 250mm above ground**. We also often recommend this on very flat sites where a soakaway could not be moved to lower ground if a difficulty ever arose. We will not guarantee the toilet if installed too low in the ground.

Materials, Tools and Personnel

These are the required items for installation, not supplied by NatSol. Each section of the installation stages also includes a more detailed list of requirements. Items written here in **Black** concern the vaults. Items in **Blue** refer to the building erection and fitting out.

Materials required:

- ☐ 0.5 m^3 of concrete as bedding layer for vaults [*C20P* to *BS 5328* (1:2:4 mix)]
- ☐ 0.5 m^3 of concrete [as above] for haunching around base of vaults
- ☐ if heavy clay: additional 1m^3 (2 tonnes) of concrete for haunching around base
- ☐ additional soil pipe and fittings if required to reach desired soakaway site
- ☐ silicone grease for pipe jointing
- ☐ exterior finish for timber clad buildings

General building tools & equipment, including:

- ☐ safety clothing (PPE)
- ☐ tape measure
- ☐ marker spray
- ☐ digger to excavate
- ☐ machinery to unload **950kg** from lorry and lower into ground
- ☐ "D" Shackle
- ☐ spades, shovels
- ☐ concrete mixer [can be done by hand]
- ☐ wheelbarrow
- ☐ 50mm thick screed rails – 2 @ 2.5m long with pegs fixed at each end
- ☐ 2m long screeding bar
- ☐ long spirit level
- ☐ mastic gun
- ☐ hammer
- ☐ saw [for cutting plastic pipe]
- ☐ ladder to assist w/ building erection
- ☐ powerful cordless drill or generator+drill
- ☐ socket drives for cordless or spanners
- ☐ drill bits for piloting timber or metal and plastic
- ☐ small assortment of BZP woodscrews

Personnel & skills required for:

Vault installation [approx 4 hours*]	A machine operator, banksman and 1 or 2 others qualified in general building skills particularly wet work. The vaults need to be lifted using machinery and a "D" shackle (slings are supplied by NatSol but not the shackle)
Building erection [approx 4 hours*]	General qualified building skills: measuring, drilling, lifting and positioning, fitting bolts and cladding screws, 'masticking' - 4 people for erection of frames and roof, then 2 for finishing.
Fitting out [approx 2 hours*]	General DIY or plumbing skills, 1 person is OK, 2 is better. Qualified electrician needed to connect fan on toilets with fan driven (as opposed to passive) ventilation systems.

(*) Construction times are provided in good faith; they are to be used as guidelines only.

Risk Assessment

NatSol — The Remote Toilet Specialists

RISK ASSESSMENT FOR SITE INSTALLATION OF FULL ACCESS COMPOSTER

Original	Date: 01.10.07	Carried out by: NatSol Ltd	Signed:
Reviewed	Date: 12.11.20	Carried out by: AW NatSol Ltd	Signed:
Contractors additions	Date:	Carried out by:	Signed:

Potential severity [S]		**Likelihood of occurrence [L]**		**Risk [S x L]**	
Fatal/Major/Illness	**3**	Certain/More than likely	**3**	**9**	High
Injury/Lost time disability injury	**2**	Reasonably likely	**2**	**4 or 6**	Medium
Minor injury or illness	**1**	Seldom/Very unlikely	**1**	**1,2 or 3**	Low

The risk levels shown below are the residual risk if safety precautions included in our installation instructions and shown below are adhered to.

	Significant hazards	**Persons at risk** Name and location of person/place at risk	**Existing controls** As described in the installation instructions	**Residual level of risk**	**FURTHER ACTION REQ'D BY CONTRACTOR:** **Action:**	**By whom:**	**By date:**	**Done [tick]**
1	Manhandling building sections from lorry. Risk of dropping, cuts or pinching.	Clients, volunteers and contractors	High visibility safety clothing and gloves, hard hats and safety boots.	2 [S] x 1[L] = **2**				
2	Off-loading vaults from lorry using machinery. Vaults weigh approx 600kgs or 850kg if off-loaded complete with lid. Risk of dropping.	Contractors + bystanders	Rope off area. High visibility safety clothing and gloves, hard hats and safety boots. Use appropriate machine for load to be lifted. Correct use of D shackle [to be supplied by machinery operator] and slings supplied by NatSol **OR** use extended forks on machine.	3 [S] x 1[L] = **3**				
3	Use of machinery to excavate.	Contractors + bystanders	Rope off excavation area. Safety clothing as 2 above.	3 [S] x 1[L] = **3**				
4	Use of cement to make concrete - alkaline dust	Contractors + bystanders	Use dust masks and gloves. If windy use goggles. Keep bystanders clear.	1[S] x 2[L] = **2**		**PTO**		
5	Lowering vaults into ground. Risk of dropping.	Contractors + bystanders	Keep operating area roped off. Safety clothing as in 2 above. Use appropriate machine for load to be lifted. Correct use of D shackle [to be supplied by machinery operator] and slings supplied by NatSol.	3 [S] x 1[L] = **3**				
7	Fitting vault floor section.	Contractors + bystanders	As above + risk of finger pinching.	2 [S] x 1[L] = **2**				
6	Drilling of vault flanges. Dust and use of electrical equipment.	Contractors + bystanders	Use dust masks and eye protection. Use cordless drill **OR** corded drill with voltage and protection equipment [e.g. trips] to meet all required site standards.	1 [S] x 2[L] = **2**				
8	Sharp edges on metal building sections	Contractors	Use gloves and safety boots.	1 [S] x 2[L] = **2**				
9	Wind blowing building over during erection	Contractors + bystanders	Safety clothing as in 2 above. Sufficient operatives to support building sections manually. Use props as necessary. Do not erect building in strong winds.	2 [S] x 1[L] = **2**				
10	Wind blowing off roof before fixing down.	Contractors + bystanders	Hold roof down manually as soon as it is in place and fix immediately. Do not fit roof in strong winds.	3 [S] x 1[L] = **3**				
11	Use of ladder to lower vent pipe into building	Contractors + bystanders	Ladder to meet appropriate BS and rest on level, well compacted ground. Person supports ladder when in use. Not to be done under windy conditions. Keep bystanders clear.	3 [S] x 1[L] = **3**				
12	Fitting roof edge flashings.	Contractors	As above	1 [S] x 1[L] = **1**				
13	Painting - fumes and splashes to eyes or skin. Depends on type. Paint not supplied by NatSol	Contractors	Use gloves and other protective clothing as seems necessary.	1 [S] x 1[L] = **1**				

Natsol Guarantee Photo verification

Whether or not you use a contractor to complete your installation our product guarantee is subject to us receiving a set of specified photographs as a way of assessing the quality of the installation. This is a checklist of photos to be sent to us to obtain our NatSol Guarantee. We recommend that you send them to us before paying your contractor.

Please be aware that some of these photos need to be taken **during the installation process**.

1. The excavation and the concrete screed levelled off.

2: Showing concrete around the vaults.

3: The grey pre-assembled urine outlet in place

4: The soakaway in position before covering with membrane. Include the pipe connection from the vaults.

5a,5b,5c,5d: One of each elevation of the building from outside including the full height of vent pipe on at least one elevation. Corner and roof flashings should be in place.

6a, 6b: Looking inside the cubicle showing both side walls with fixtures and fittings, showing the quality and completion of fitting out.

7: Picture of the urinal pipework.

8: Picture looking down the pedestal [with flash on] showing the short urine separating plate and the soak in the bottom of the vault.

9a,9b: One into the active vault showing the rake in place and one showing the bottom of the stainless-steel urine separating plate over the urine collecting gutter.

10: Showing that the end of the urinal pipe just enters the urine gutter. It should not go so far in as to block the gutter.

Maximum individual file size 2MB. You may wish to send us additional photographs but please limit the total to 20 unless to illustrate a specific problem that arose from the installation.

The photographs you send us may be used for training or promotional purposes. If you prefer that we do not use your pictures in this manner, please let us know.

INSTALLATION:

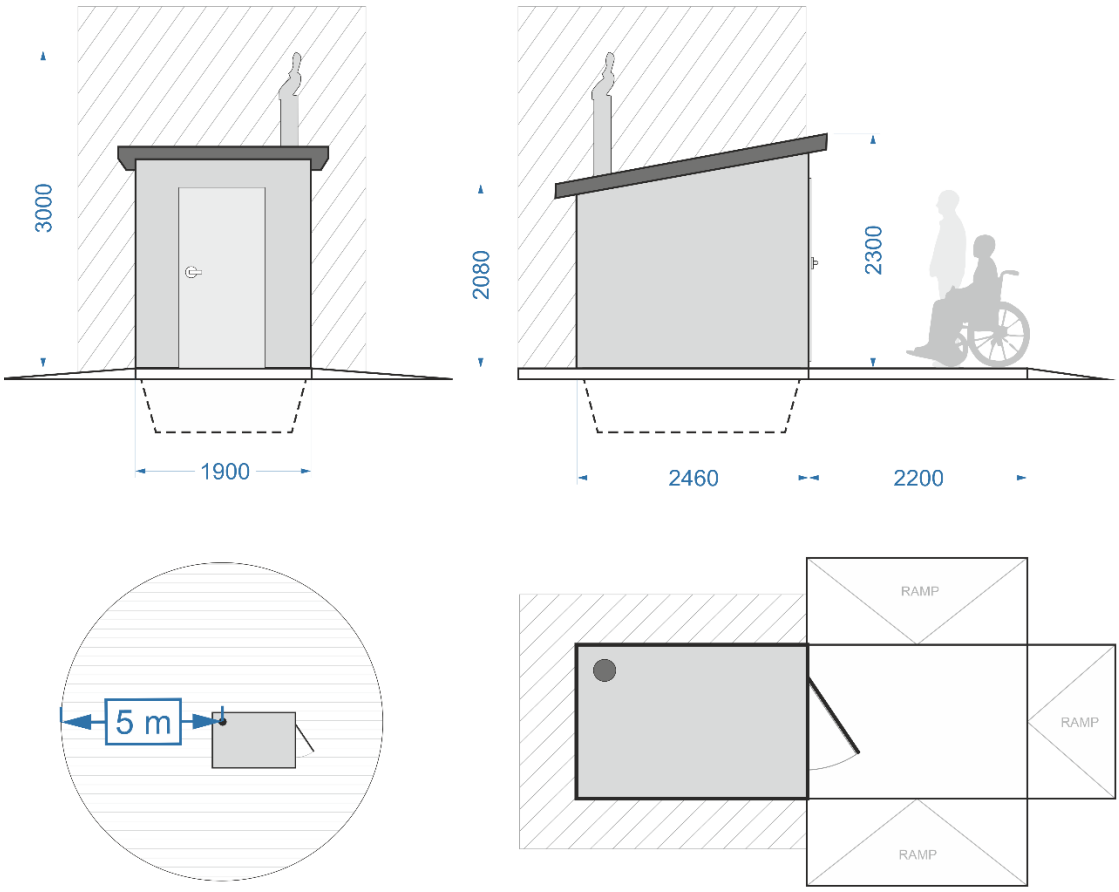
1. Site Layout

These instructions and drawings show the site dimensions layout, the required excavations for urine soakaways and information about flooding risks, sloping sites and water tables.

These notes illustrate typical arrangements to assist in planning an installation, they do not guarantee compliance or adequate performance for a specific site. We recommend consulting Building Control and the EA/SEPA/NRW[1] prior to installation.

It is essential that this toilet is not installed on sites which may **flood** at any time during the year. Remember that sites which are dry in summer may flood in winter. If the site is known to become **waterlogged** consult NatSol to discuss possible solutions.

[1] Environment Agency; Scottish Environmental Protection Agency; Natural Resources Wales



Urine Soakaway

We supply a *Glass Reinforced Concrete* (GRC) soakaway for urine. There will be one of these for each toilet, even if there are several toilets in a row.

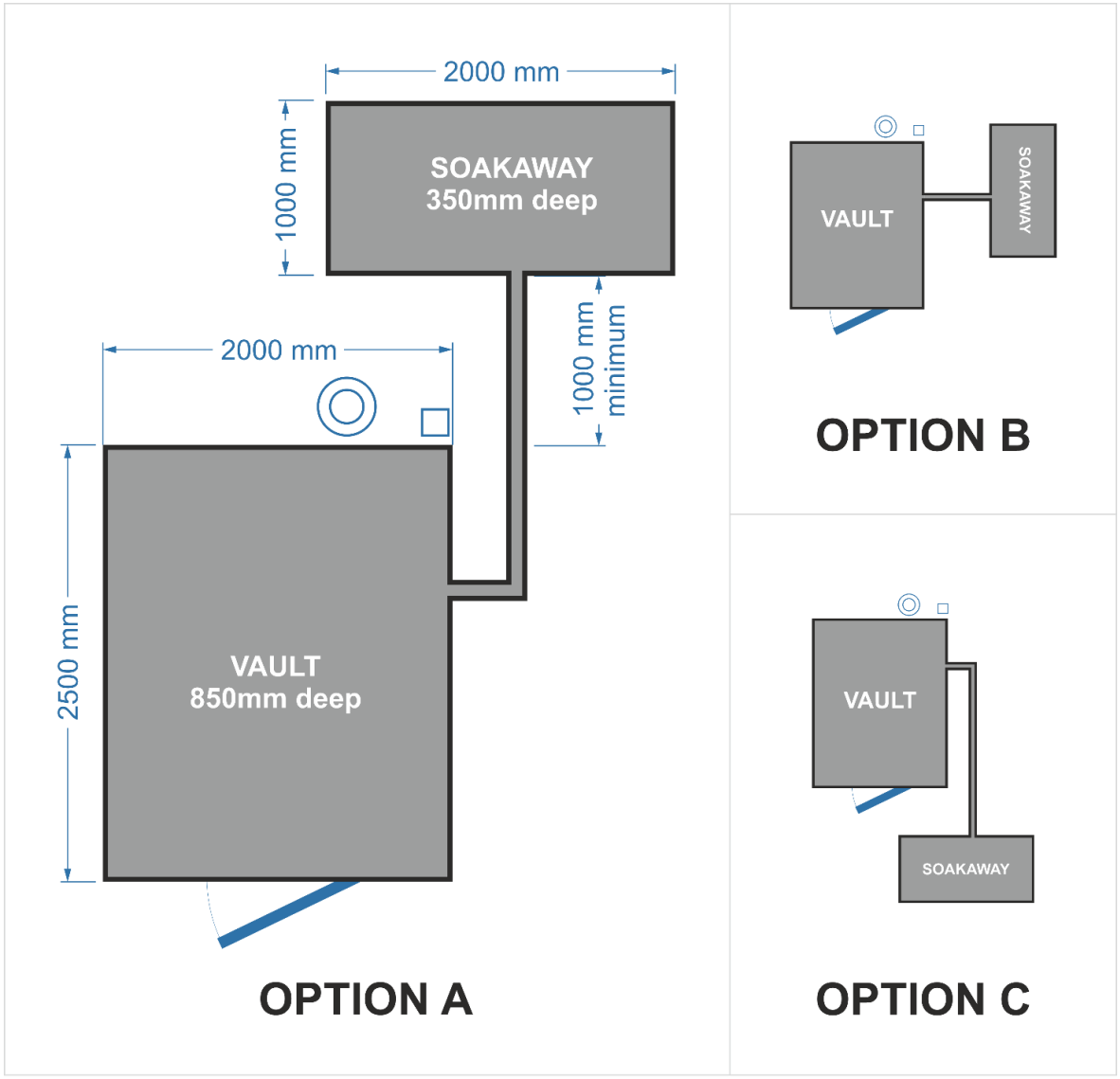
1 GRC Urine Soakaway with aluminium cover

The excavation for the urine soakaway is approximately 2m^2 (e.g. 1.5x1.5m or 2x1m) and 380mm deep. It should be no closer than **1m** from the side of the vaults and/or the rainwater soakaway and in a position that the urine exit can be connected easily to the soakaway unit.

If there is no room on the right-hand side, then the excavation can be made behind the toilet vaults. If a **left-hand** urine exit would be more appropriate, please discuss with us in advance.

Determine the precise excavation depth for the soakaway so that when the membrane is covered with soil the finished ground level is just beneath the aluminium cover on the

soakaway unit (Fig 1). The pipe from the vaults should fall at **not less than 1:60**. Consider options **A**, **B** and **C** below when placing the soakaway:



Excavations (soakaway always on lower ground than the vault)

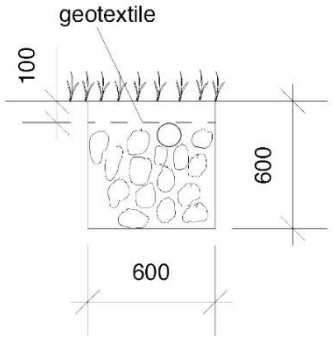
Water Butt (overflows to rainwater gully)

Rainwater Gully

1m min **Always 1m minimum between the Vault and Soakaway**

Roof water / rainwater soakaway

Rainwater must be directed away from the building foundations. It is recommended that the roof water is kept out of the urine soakaway and directed to a **separate** soakaway. A rain butt could be fitted but will almost certainly overflow in winter. The soakaway required for rain could be a pit 600mm square by about 600mm deep filled with broken bricks, or similar, to a depth of 500mm (Fig 2). This should suffice in free draining soil but may need to be considerably larger in **heavy soils**. A layer of geotextile excludes soil, and the pipe enters just beneath this.



2 Rainwater soakaway.

Site constructed urine soakaway

On some sites a urine soakaway constructed on site purely from hardcore may be more appropriate. This will have been agreed with NatSol before supply of goods and a drawing will have been provided.

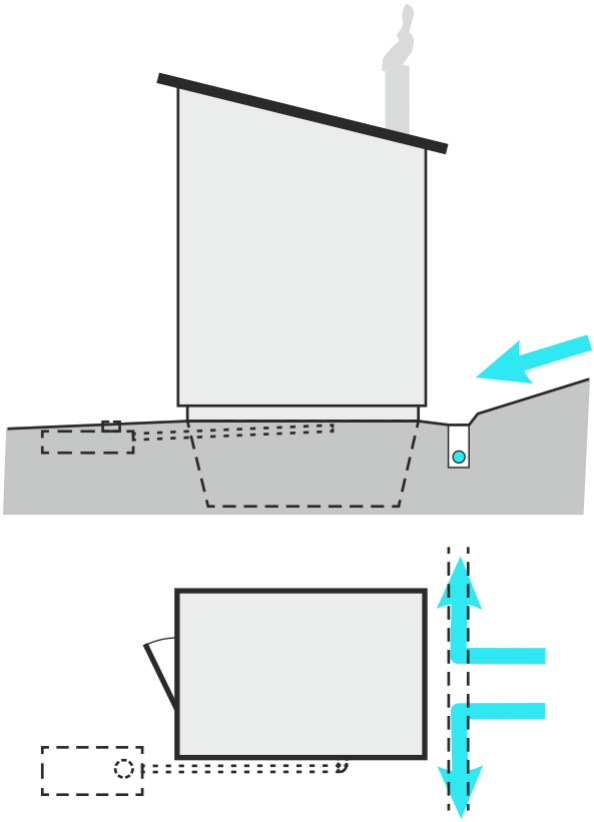
A site constructed soakaway should be shallow to allow dispersal and treatment in the biologically active topsoil. You will have been supplied with a back inlet gully for installation in the urine pipe. If you have more than one toilet the urine pipes could be connected - but only after passing through separate back inlet gullies - one for each toilet.

NEVER DO THIS ON MULTIPLE INSTALLATIONS!

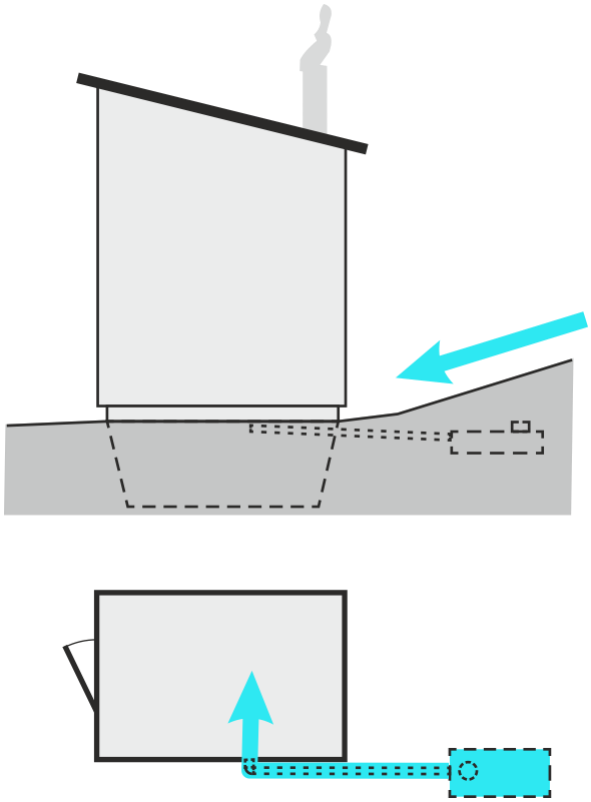
Do not connect like this. Each toilet must have its own back inlet gully to prevent odours.

Although volumes of urine or roof run-off are usually small, soakaways in heavy soil or where there is a high-water table may fail under conditions of sustained rainfall. Ground water may build up and flow into the compost chamber via the urine outlet. The following drawings illustrate some possible risks:

Siting of soakaway in relation to slopes:

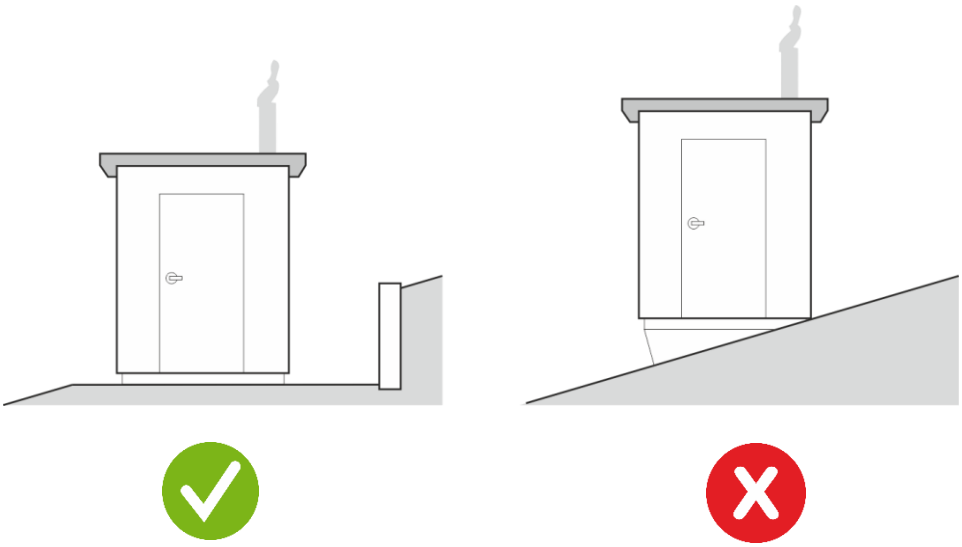


Install a land-drain to prevent flooding of soakaway area

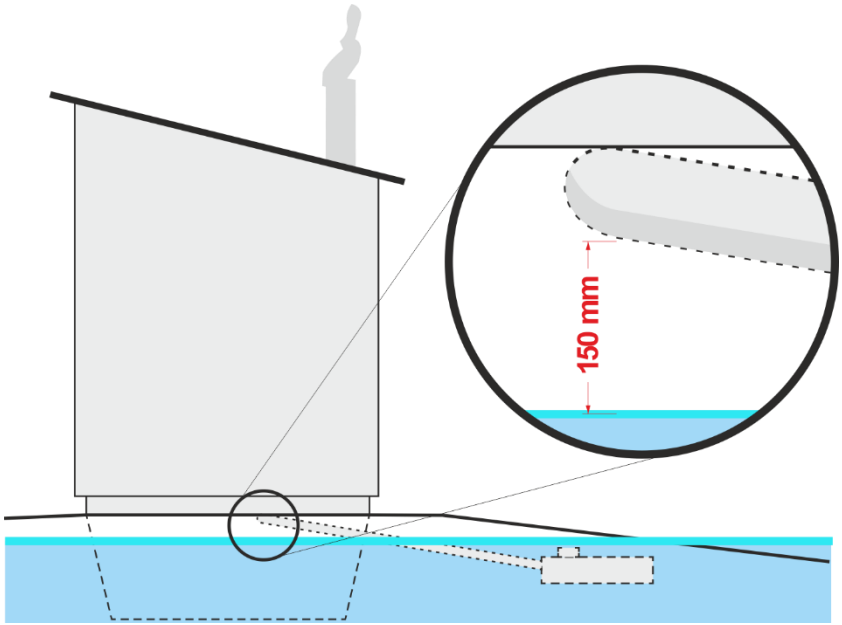


Ground water around soakaway could cause vaults to flood

Making the toilet accessible on sloping sites:



Preventing ground or flood water entering the vaults:



It is essential that the water level (ground or flood water) is **always no less than 150mm from urine outlet**. Remember that a site which is dry in summer may flood in winter.

2. Excavations

See also: **Site Specific Guidance** (page 5)

Components and tools supplied by NatSol for this stage:

- fully assembled vault with floor hatches
- GRC soakaway unit with back inlet gully OR gully without soakaway unit
- selection of 110mm connectors
- lifting slings – normally carried in driver's cab with SIKA

General building tools & equipment required, including:

- safety clothing (PPE)
- tape measure
- marker spray
- digger to excavate
- machinery to unload **950kg** from lorry and lower into ground
- "D" Shackle
- spades, shovels
- concrete mixer [can be done by hand]
- wheelbarrow
- 50mm thick screed rails – 2 @2.5m long with pegs fixed at each end
- 2m long screeding bar
- long spirit level
- mastic gun
- hammer
- saw [for cutting plastic pipe]

Personnel & skills required for this stage:

- machine operator, banksman and 1 or 2 others
- site marking out & excavation
- concrete preparation and levelling
- lifting using digger, shackle and slings
- checking levels
- plastic pipe connections

Method:

To avoid risk of hole filling with rainwater **do not** carry out excavation until vaults are on site. Vaults should be bedded onto unset concrete – **do not** prepare slab in advance. If there is likely to be heavy rain before the concrete has set around the vaults it may be wise to fill the vaults with water to prevent vault flotation and pump out later.

The vaults weigh around 950kg. Installation may be dangerous if our instructions are not followed or if unqualified personnel are employed. Keep onlookers and children clear of site by cordoning off the work area. All personnel should wear safety clothing (PPE). Put digger driver and banksman in charge.

Offloading

There are two methods by which vaults can be off-loaded from the delivery lorry. You can **use the lifting slings supplied** [ask delivery driver] and a "D" shackle (not supplied by NatSol) as shown here or alternatively **use the forks** on the digger or other machinery – providing they are suited to lift 950 kgs. If you use forks you will need to swing the vault around on the lorry so that the forks pass underneath from the side rather than from the end. Lift off and set aside on timber bearers.

Excavation

Carefully plan the site excavation including rainwater and urine soakaways. For the vaults, mark out an excavation area of 2m (side to side) by 2.5m (front to back). Refer to the *Site Specific Installation Guidance* (page 5) for the appropriate depth.

Excavate to achieve the required depth evenly over a 1.8m x 2m central area at the bottom of the hole, finishing excavation by hand if necessary. Carry out the excavations for the urine and rainwater soakaways. Check that subsoil is compact and firm. If it appears unstable seek professional advice as to how to proceed.

Make screed rails run front to back, 1.8m apart, and level them. Tops should be at a depth 50mm *less* than the proposed excavation depth. Fill area between them 50mm deep with fairly dry mix of approx 6:1 [aggregate: cement] and level off.

3. Vaults and Soakaways

Check again which way round the vaults go. One end is labelled ‘DOOR’. Most vaults have the urine exit pipe on the right-hand side of the building --as you look at the toilet door. Using slings beneath the end vault flanges lift the vaults using the digger or other machinery and lower into position.

Check to see that the vaults are not out of level by more than **6mm across the width** and **10mm along the length**.

Lift out and re-level base if necessary or tap down gently on high side using large rubber kerbing mallet.

Mix remaining concrete and fill around outside of base of unit to cover bottom retaining flange and to connect to concrete beneath. Earth may be backfilled at this stage but leave out sufficient to **enable access below the flange** to insert the bolts or screws which will hold the building in position.

IMPORTANT: In heavy clay soils or on waterlogged sites use 2m³ [4 tonnes] total concrete to **prevent flotation of vaults** (and building!) if ground becomes waterlogged.

Soakaway

Height should be such that the 110mm pipe from the vaults will have a minimum 1:60 fall. If you have not been supplied with a ready-made soakaway unit then the back inlet gully must be situated in firm ground and stabilised with some concrete around it. Whichever type of soakaway you are installing use the **grey 90 deg bend** with access cap to connect to the vaults and to get underground. Brown pipe should not be visible above ground.

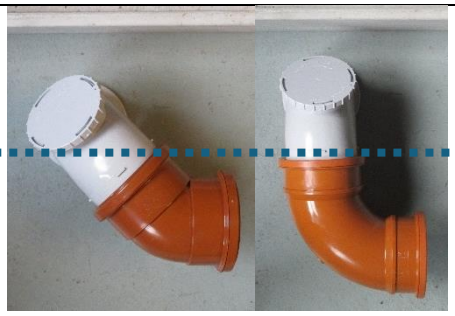
Fig3: Unit positioning

Position the unit in the centre of the hole so that a 110mm underground pipe from the vaults can connect to the brown 110mm pipe stub projecting through the near end of the unit shown in Fig 3. Place **clean hardcore or stone** (not sand) to each side where the slots occur (Fig 4). Cover the whole unit and the hardcore or stone with the geo-textile provided and cover with earth, as per figures 5 & 6.

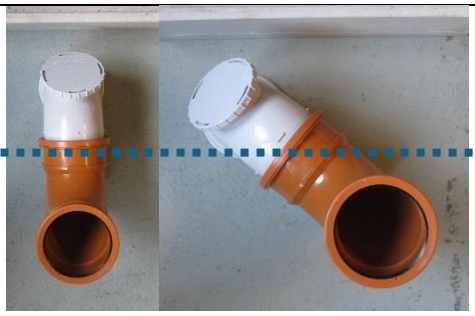
Fig 4: side filling, Fig 5: Geotextile and Fig 6: Earth covering

Refer to the *Site Layout Options* on page 11. With the GRC soakaway behind the toilet [Option A] use a 90 or 135 deg bend connected to the **grey access bend** as shown below. If the soakaway is alongside the toilet [Option B] then use a 90 deg bend and swivel the assembly to vary the depth. Fittings are in the fittings box. If you have a NatSol building, there is a 3m length of 110mm pipe inside the 160mm vent pipe. You may need to acquire other fittings.

Approx ground level



Options for urine take-off if soakaway is to rear of vault – Position A



Options for urine take-off if soakaway is to rear of vault – Position B

The type of **grey access bend** shown may vary depending on what is available to us. It could be *push-fit* or *solvent-weld*. If solvent-weld, check your layout and alignments thoroughly before welding.

The **rain gully** can be positioned at either rear corner of the vaults. Take the rainwater to a separate soakaway, distant from the urine soakaway.

If the building is being erected later cover up the vaults to prevent rainwater getting in.

Decide which vault (left or right) will be used first, as the client may have a preference. Open the floor hatch on that side and cut open the bale of wood shavings inside, pulling out the polythene wrapper. Spread the entire bale around the vault and rest the rake in there too. There will be a bale in the other vault too. Ask the client if they want it left in there un-opened or stored elsewhere.

Rainwater gully

Rake rested inside active vault.

A view from the front RH corner of the building. The ventilation socket is in the back RH corner.

4A. METAL Building Erection

Components and tools supplied by NatSol for this stage:

- building sections: 4 walls and roof
- cover flashings for corners and roof edges
- gutter, downpipe kit & gully
- pack of screws, bolts, nuts and washers of various sorts in pedestal box
- universal 10mm drill bit
- 3 m length of grey 160mm diameter pipe
- directional cowl
- vent pipe flashing collar
- SIKAFlex – supplied with vault

Components and tools required for this stage:

- tape
- ladder
- cordless drill or generator, trip and corded drill
- socket drives for cordless, or socket set and/or spanners
- small assortment of BZP woodscrews for pipe fixings etc
- mastic gun
- PH2 driving bit

Personnel & skills required for this stage:

- 4 people for erection of walls and roof, then 2 for finishing
- measuring & drilling
- lifting and positioning
- fitting bolts and cladding screws
- ‘masticking’ vent pipe

Before you start to erect the building make sure that all apertures in the floor have hatches or safety boards fitted. **Do not erect under windy conditions**. If using corded power tools remember to use correct voltages [and/or protective trips] for site work.

Method:

1. Do **NOT** cut up or destroy the timber packing system for the building. This will usually go back with the carrier, or by prior arrangement it may be collected later. You will have paid a deposit on it.
2. Remove all the **lower internal lining boards** from the building walls. They are held in place with black screws along the bottom edge and will slip out of the upper channel when these screws are removed. These screws will need a PH2 driving bit. Make a mental note of which board came from which wall section.
3. Remove **temporary blocks** screwed to the underside of the sole but avoid damage to cladding edge.

4. **Mark a line** with a pencil 50mm in from the vault edges to help you align the soles of the building.
5. **Stand rear wall** section in place centrally L to R and line up the inner edge of the sole with the pencil line. Support this wall section with props or otherwise hold securely.
6. **Stand a side wall** section in place. Use the connecting bolts to join rear and side walls together. Line the wall up with the line as above. **Repeat** with other side wall.
7. **Check** all three walls are on the lines. The gap left at the front between the metal frames of the side walls (into which the front wall will be fitted later) should be about 1765mm. Measure this low down!
8. **Fix down the rear and side walls** by drilling through the metal brackets, timber soles and GRC as shown using a drill and universal 10mm bit supplied. Angle the drill slightly so that the holes do not emerge too close to the vault wall below. **Do NOT** use a hammer setting. Steady the side walls whilst drilling the holes. If conditions are windy use props to hold the side walls securely whilst drilling.

9. **Fit 100mm bolts** with washers from beneath with washers and nuts on top and tighten.

Our buildings now have a skylight instead of a window and the internal linings are now dark grey *EkoPly*. These pictures are only for assembly illustration purposes.

10. **Slide the side wall linings** into position and screw the bottom edge to the sole. There are additional black screws in pack **BM4.** Fit two of these into each side wall where the timber stud is behind. The screw positions should have been marked with felt tip. Don't use an impact driver and don't drive them in too far.

11. **Fit the rear wall lining** by sliding the top up into the metal channel and screwing the bottom to the sole.
12. **Fit the front wall** and connect to side walls using bolts. Fix the two floor bolts for the front wall as above.
13. **Now fit the roof.** Slide it up from the back with 2 people inside and 2 outside. Find a way of holding it down whilst fixing - a roof blowing off is very dangerous! Use 4 of the self-tapping cladding screws supplied and insert these through the 4 side support brackets up into the roof member using a drill and socket drive. The brackets should have a 6mm clearance hole for the *tek* screw. Check with a 6mm bit first.

14. **Fit corner flashings.** the longer flashings are for the front. They wrap around a ridge in the cladding on the side wall. Hold them against the corner making them level with the corrugated at the bottom. Drive the self-tapping cladding screws through them into ridges on the side wall and into the steel frame of the building on front and rear walls. **Do not overtighten!** For neatness use the same heights for the screws on each face and each corner.
15. **Side roof flashings.** Align these with the rear edge of the roof. Fix them into the walls and roof with *tek* screws.
16. **Front roof flashing**. Fit this using 4 *tek* screws along the top and 4 on the front.
17. **Fit gutter and downpipe**. Work out which side it's best to have the downpipe and fit the galvanised brackets for this as shown. Then fit the gutter using self-tapping screws. Decide where the water is going – this depends on site conditions. We supply a rainwater gully but you may need additional pipe. Eventually you could also install a rain butt and diverter if we supplied this.

18. **The vent pipe:** Slide the plastic storm collar on to the pipe and position approx 800mm down from the top end.
19. **Assemble and attach directional cowl** to the top end of the pipe with self-tappers. Ensure there are no obstructions such as branches so the cowl can rotate freely at all times.
20. **Insert pipe** down through hole in roof, locating the bottom end of pipe in floor socket.
21. **Slide storm collar** down over roof collar. **Seal top edge** to vent pipe with SIKA.
22. **Seal pipe** into floor socket with SIKA. You won't get around the back of the pipe but it doesn't matter.

Use a properly supported ladder, sufficient personnel and do not attempt under windy conditions.

If the outside of the building appears to have tiny rust spots these will be small particles of metal from manufacture which have stuck to the surface and gone rusty. No damage will have occurred, and they should just wipe off.

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4B. TIMBER Building Erection

Components and tools supplied by NatSol for this stage:

- building sections; 6 wall sections and a roof. (The side walls are in 2 parts.)
- two joining plates and screws for the tops of the 2 part side walls.
- 3m x 160mm vent pipe
- 3m x 110mm soil pipe for soakaway inside vent pipe
- gutter and downpipe for building inside vent pipe
- vent pipe flashing collar
- vent cowl
- SIKAFlex
- gutter & downpipe kit and rainwater gully
- pack of coach screws & washers,
- universal 9mm drill bit
- urinal splashback

Components and tools required for this stage:

- tape
- ladder
- cordless drill or generator and corded drill
- socket drives for cordless or spanners
- drill bits for piloting timber, plastic & metal
- small assortment of ZP woodscrews for pipe fixings etc
- mastic gun
- breathable exterior ‘paint’ for door and frame e.g. OS Country Colour, Sadolin.

Personnel & skills required for this stage:

- 4 people for erection of frames and roof, then 2
- measuring & drilling
- lifting and positioning
- fitting coach screws
- masticking

Before you start to erect the building make sure that all apertures in the floor have hatches or safety boards fitted. **Do not erect under windy conditions**. If using corded power tools remember to use correct voltages [and/or protective trips] for site work.

Method:

1. **Drill through the vault flanges** where there are small circular depressions 30mm in from the edge, using the 9mm universal bit supplied. Do **NOT** use a hammer setting.
2. **Mark a line** with a pencil 60mm in from the edges of the vault lid.
3. **Stand the rear wall** section in place centrally L to R and line it up with the line you have just marked on. Support this wall section with props or otherwise hold securely.
4. **Stand a rear <u>side wall</u>** section in place. Position to the line on the floor and check also to see that the **vertical** pencil line on the surface of the lining board **inside** is just visible in the corner. Then insert 2 x 120mm turbo coach screws into the piloted holes covered by lead tabs on the outside of the side wall to join rear and side walls together.
5. **Repeat** with the other rear side wall.
6. Now fit the **front <u>side wall</u>** sections. There is a removable weatherboard on the side walls which enables you to fix screws inside the wall to join up the halves. You will need to make a small cut in the membrane. You must also **fit the joining plates** at the top.
7. **Adjust the positions of the side and rear walls** to make sure that the soles are all lined up with their respective markings on the floor. The gap for the front wall should be 1675mm but check this by measuring the front wall and measuring the gap between side walls low down.
8. Fit the **front wall** into position and fit the corner coach screws as before. Leave the **batten across the bottom** in place for the time being.
9. Using a drill and socket drivers or a ratchet **fit 100mm turbo coach screws with washers** from below to fix down the sole plates of all walls, as shown. Do not overtighten.
10. Now **remove the batten** across the bottom of the front wall.
11. **Raise the roof** into position. Slide it up from the back with 2 people inside and 2 outside. under windy conditions find a way of holding it down whilst fixing - a roof blowing off is very dangerous! Use 4 long wood screws [pack *BW4*] and insert these through the corner timber blocks on the top of the walls into the roof frame using a drill. See highlighted area on Fig 5. You may need to pilot these first.
12. **Fit gutter and downpipe**. Work out which side it's best to have the downpipe and fit the timber blocks for this as shown (Fig 6). Then fit the gutter using self-tapping screws. Decide where the water is going – this depends on site conditions. We supply a rainwater gully but you may need additional pipe. Eventually you could also install a rain butt and diverter if we supplied this.
13. **Seal vertical joins** between wall sections on the outside of the building (as necessary) and between floor and wall internally with frame sealant as supplied. We supply brown and grey sealants.

14. **The vent pipe:** Slide the plastic storm collar on to the pipe and position approx 800mm down from the top end.
15. Attach directional cowl to the top end of the pipe with self tappers. Ensure there are no obstructions such as branches so the cowl can rotate freely at all times.
16. Insert pipe down through hole in roof, and locate bottom end of pipe in floor socket.
17. Slide storm collar down over roof collar. **Seal to vent pipe** with SIKA.
18. Seal pipe into floor socket with SIKA. You won't get around the back of the pipe but it doesn't matter.
19. The exterior surface of the door and frame should be painted with a breathable exterior paint. The door timber is treated but this will not in itself prevent swelling.

4 Roof fixing screws

5 Downpipe support

Use a properly supported ladder, sufficient personnel and do not attempt under windy conditions.

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5. FITTING OUT.

These are the instructions for the fitting out stage for both **metal** and **timber** buildings. We have indicated where steps might differ from one another:

Components and tools supplied by NatSol for this stage:

- ☐ stainless steel toilet pedestal and short urine plate
- ☐ toilet seat
- ☐ 2 hand disinfectant dispensers and gel pack
- ☐ grab rail kit in white or dark blue
- ☐ 2 toilet roll holders
- ☐ splashback for urinal if you have OSB timber linings
- ☐ ceramic urinal, trap, mounting brackets and pre-assembled pipework – **all stored inside the soak box**.
- ☐ 40mm solvent weld pipe [long piece over spade handle],
- ☐ soak bin containing some wood shavings
- ☐ coat hook
- ☐ various screws
- ☐ metal rake
- ☐ emptying spade.

Components and tools required for this stage:

- ☐ saw for pipe cutting,
- ☐ cordless drill & bits
- ☐ flat bit screwdriver
- ☐ PAINT FOR INTERIOR (OPTIONAL)

Personnel & skills required for this stage:

- ☐ One person is sufficient, 2 is handy

Method:

Timber building: You may wish to paint the cubicle at this stage. Remember that grab rails need to be visible against the wall surface. Avoid painting it white if we have supplied white grab rails. We recommend fitting the grab rails and other equipment first, then removing them. The screw holes will indicate where to refit them after painting.

Fit **urinal brackets** to positions marked in RH corner with black felt tip. Hang urinal as shown. Fit waste and threaded adaptor below. It is preassembled.

Timber building: Fit **splashback** for urinal in front RH corner of cubicle. It should go right into the corner. Use self-tappers through perimeter holes to fix. Fit brackets to pre-drilled holes in centre and hang urinal as shown. Fit waste and threaded adaptor below. It is preassembled.

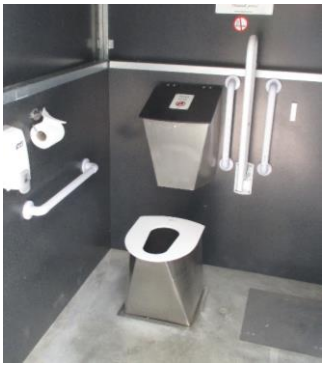
Connect the **pipe work** ensuring suitable fall on pipe, clip to wall. The pipe through the floor should be pushed into the hole up to the felt tip line. More than this and it may block the urine gutter.


Urinal fitting and grab rails.

Metal building interior: walls are lined with *EkoPly* recycled plastic board. They should have been marked with black felt tip to show the positions of fittings.

Fit the grab rails in the positions shown on the walls, use the **Grab Rail Layout Drawing** below**.** One grab rail is for the back of the door and on metal doors will need to be fitted using the self-tappers provided. One rail goes to the left of the urinal.

The wall mounted **soak box** is best fitted before fitting the pedestal. Fix the mounting brackets to the wall in both pedestal positions. The screw positions should be marked. If you can't see them then the top of the box should be 1100mm off the floor and you should leave a 25mm gap between the side of the box and the circular fixing plates of the rear vertical grab rails. Hang the box behind whichever pedestal position you intend to use first. If you don't want it to be easily removed put in a screw through the central hole in the back of the box.


Pedestal and soak box.

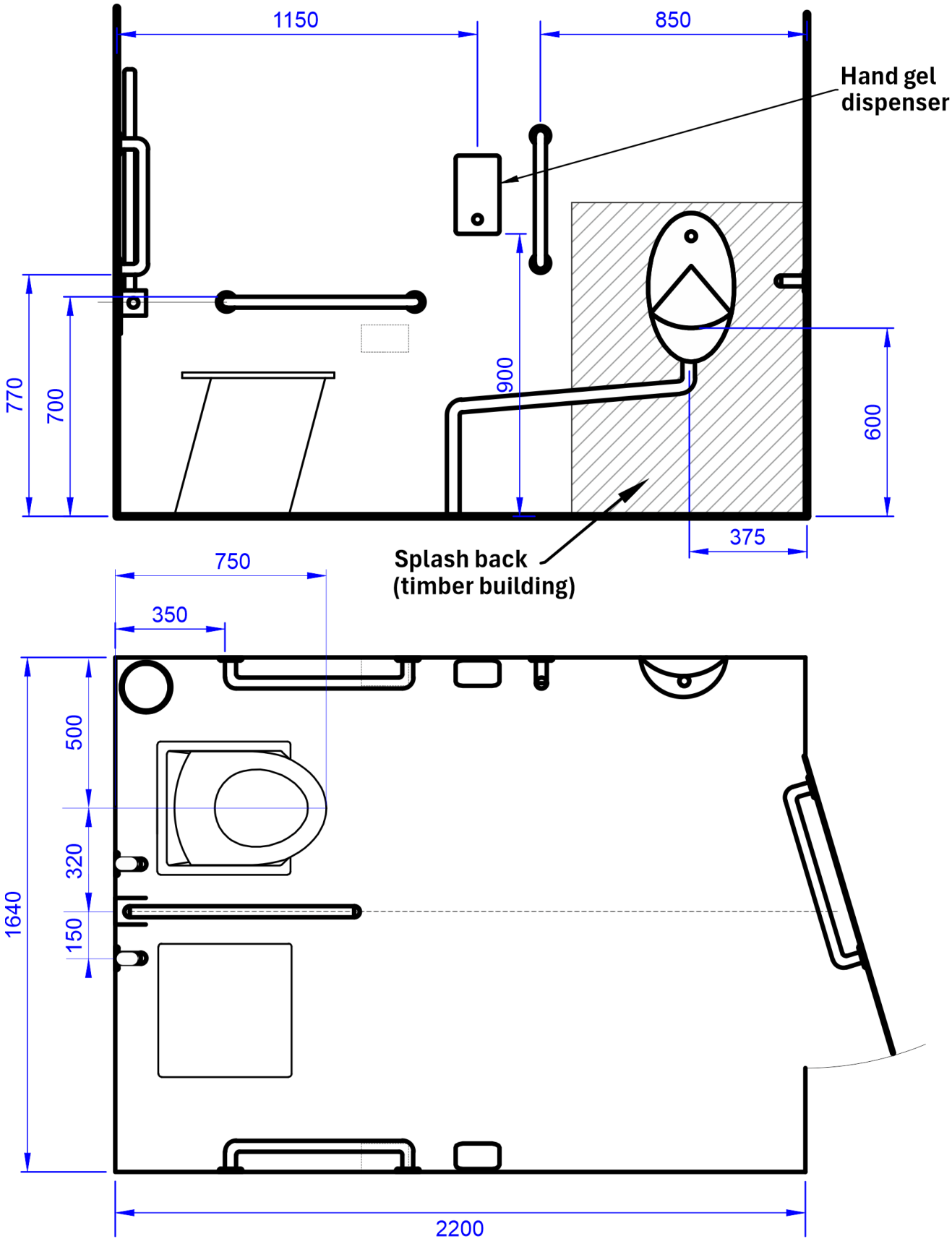
The **pedestal** will be fitted in front of the soak box. Make sure the stainless cover plate is fitted over the other aperture. The timber safety board can be discarded. The front of the pedestal should be inserted first so that the urine plate extends under the floor and reaches to the gutter. Use pack B4 to fix down the back of the pedestal. The small washer goes beneath the large SS one. Fit the **short urine plate** inside the front of the pedestal on the hooks below the front edge of the top of the pedestal. If you have a black or white **toilet seat** then fit the seat following its packaging instructions. If you have a white Corian top then there is no toilet seat.


Use pedestal fix down (B4) at rear. The floor was supplied waxed

Fit the **dispensers**. They open by pushing in two buttons, one each side at the top towards the rear.

Fit **toilet roll holders**, one each side, in position accessible from pedestal. Then, fit **coat hook** on back of door or opposite urinal.

If not done earlier empty one bale of **wood-shavings** into the vault to be used first.



Grab Rail Layout Drawing

Place the **rake** in the active vault so that handle is accessible from the emptying hatch in front of the pedestal – it stays in there until vault changeover and is then moved to the new active vault. The **spade** should be stored by the owners.

The **floor** was supplied ready waxed, but you may wish to apply an additional coat when clean and dry. We use *Liberon Stone Floor Sealer*.


Grab rail being attached to the door.

FINISHING OFF OUTSIDE

As it largely depends on each specific site, we don't supply anything for this stage. A **ramp** or **slope** and **landing area** should be constructed to comply with building regs. Maximum gradient for a **ramp** of 2m length is 1 in 12; width 1200mm. A **slope** of maximum gradient 1:21 is preferred for wheelchair access. The **landing area** in front of the door should be approx. 2200mm deep to provide 1200mm clear when the door is open. Make sure the landing area is slightly below the floor level so that rain doesn't run inside. The maximum permissible step here is 15mm. We strongly advise you to contact a Council Access Officer or private sector Access Consultant when designing your approach to the toilet. Please see the Ramped Access document in *Appendix A*.

We strongly advise you to fit a **post** preventing the door from opening further than 90 degrees. Our doors will be fitted with restrainers, but these could be damaged in high winds. The post should not obstruct disabled access.

We recommend fitting a **rain butt** to make use of rainwater and to reduce the amount of water going to the rain soakaway. The soakaway is necessary because the butt will undoubtedly overflow in winter. Rainwater is fine for floor cleaning, urinal rinsing, etc.

And that's all! The rest of the outside finishing is up to you. We welcome any pictures of the finished work!

APPENDIX A: Disabled Access

The NatSol Full Access toilet is designed to be disabled accessible as standard. NatSol does not supply ramps, as each installation depends on the specific site topography. This document advises Natsol clients and contractors on what to say about ramps in the quotation and on what to do if the client does not require one.

Advice for clients:
If you ask your contractor to quote for a ramp then you should specify whether you want it to be Doc M compliant (wheelchair accessible) in accordance with building regulations. When you receive your quote check the wording carefully in this regard.
If you do not envisage ever requiring compliant disabled access you must say so **in writing** to both the contractor and NatSol.

Advice for contractors:
If a NatSol client asks you to quote for a ramp for a Full Access toilet then by default the ramp should comply with Doc M standards in accordance with building regulations. Be sure that you are clear in your quotation **whether it will comply or not**. If your client doesn't want it to comply, or you don't intend your price to cover the cost of a Doc M compliant ramp, make this clear in the wording of the quote. Otherwise, the client will have a reasonable expectation that the ramp will comply and the matter could be legally contested.

Note for architects, designers and building control or building warrant officers:

> The current regulations (*Approved Document M, Volume 2*) for disabled access toilet provision in non-domestic buildings shows that the leading edge of the toilet pedestal can intrude into the 1500mm wheelchair turning square. This can be deduced from the fact that the minimum cubicle length is set at 2200mm and the pedestal front edge is shown at 750mm from the rear wall. If the edge of the pedestal were not to intrude into the 1500mm square, then the minimum cubicle length would need to be 2250mm (1500 + 750). We therefore conclude that a 50mm intrusion as shown on the Doc M drawing is considered acceptable.
>
> It is also clear from *Document M* that the basin is allowed to protrude into the 1500mm square. We imagine, though the regulations do not clarify with this issue, that a urinal protruding into the square might not be considered acceptable because it is at a lower level. It would therefore be necessary to omit the urinal from a NatSol cubicle to fully comply. Urinals are included because our toilet pedestals are urine separating and urine separation only works for seated users. In the UK men are not in the habit of sitting to urinate so we fit a urinal. In general wheelchair users would always sit so the urinal could be omitted. A difficulty arises when a NatSol cubicle is used by able bodied and disabled persons. As NatSol toilets are often the only toilet on a site this is a frequent occurrence. We leave the decision as to whether to fit the urinal to the customer but would strongly advise fitting it where most users are able bodied.

We also wish to reiterate that due to the lack of an electricity supply on most sites NatSol toilets do not have alarms with pull cords for use in emergency. Clients need to make their own arrangements if these are required.

RAMPED ACCESS EXTRACTS FROM PART M OF THE BUILDING REGULATIONS SECTION M1/M2 DOCUMENT ACCESS TO BUILDINGS OTHER THAN DWELLINGS (P27)

Design considerations:

1.19 *If site constraints necessitate an approach of 1:20 or steeper, an approach incorporating ramped access should be provided. Ramps are beneficial for wheelchair users and people pushing prams, pushchairs and bicycles.*

1.20 *Gradients should be as shallow as practical, as steep gradients create difficulties for some wheelchair users who lack the strength to propel themselves up a slope or having difficulty in slowing down or stopping when descending.*

Limits for ramp gradients (*):

Going of a flight	Maximum gradient	Maximum rise
10m	1:20	500mm
5m	1:15**(*)**	333mm
2m	1:12**(*)**	166mm

Note: For goings between 2 and 10m it is acceptable to interpolate between the maximum gradients.

Provisions:

1.26 A ramped access will satisfy Requirement M1 or M2 if:

c. no flight has a going greater than 10m, or a rise of more than 500mm;

e. it has a surface width between walls, upstands or kerbs of at least 1.5m;

h. there is a landing at the foot and head of the ramp at least 1.2m long and **clear of any door swings** and other obstructions; **(*)**

k. all landings are level, subject to a maximum gradient of 1:60 along their length and a maximum cross fall gradient of 1:40;

m. there is a kerb on the open side of any ramp or landing at least 100mm high, which contrasts visually with the ramp or landing in addition to any guarding required under Part K. **(*)**

<u>Note from NatSol:</u>

- You should view the full regulations which can be downloaded online.
- **(*)** sections above relate to those requirements which, in our experience, are often neglected in the installation of toilets on remote sites.
- Because of the outward opening door, the level area in front of the door needs to be 2200mm front to back: 1000mm for the door to open over and 1200mm for the wheelchair to reverse into when opening the door.

We emphasize that the above extracts are provided solely to assist you. However, we do not accept any liability for the work you carry out in creating access to the toilet we provide. If you are unsure, we recommend consulting a local Building Control Officer or an Access Consultant.

APPENDIX B: Self-constructed building

When constructing a building for a Full Access Composter, there are two main approaches depending on the building's design and purpose:

A. Simple Toilet Cubicle
This type of building is designed solely as a toilet cubicle without any additional facilities. It is similar in function to NatSol's own building structures. Please refer to the attached *Footprint for Self-Builders* for detailed guidance.

- **Building on the Vault Flange**: Typically, the cubicle will be constructed to stand directly on the toilet vault flange. However, this applies only if the building is not made of masonry.
- **Masonry Construction**: You will need to install **separate foundations** for the building. It is essential to create **timber stud walls** around the pedestal positions on the inside. These walls must align with the positions shown on the *Footprint for Self-Builders* diagram, ensuring the grab rails are properly positioned relative to the fixed pedestals. If you're unsure about the precise layout or positioning, please contact us for advice to ensure everything aligns as needed.
- **Vent Pipe Installation**: The ventilation pipe can either be supplied by us or sourced from a local builder's merchant if you know the required length. The standard vent pipe is a **160mm diameter grey plastic pipe** (black also available). This pipe must extend straight through the roof from the floor socket, located in the **right-hand side rear corner** of the cubicle. The type of **roof flashing** required will depend on the roof construction, and we can offer advice based on your specific design.

B. Larger Building with Additional Functions
In cases where the toilet is part of a larger building that serves additional functions, there are special considerations to take into account, particularly if the building is heated or airtight.

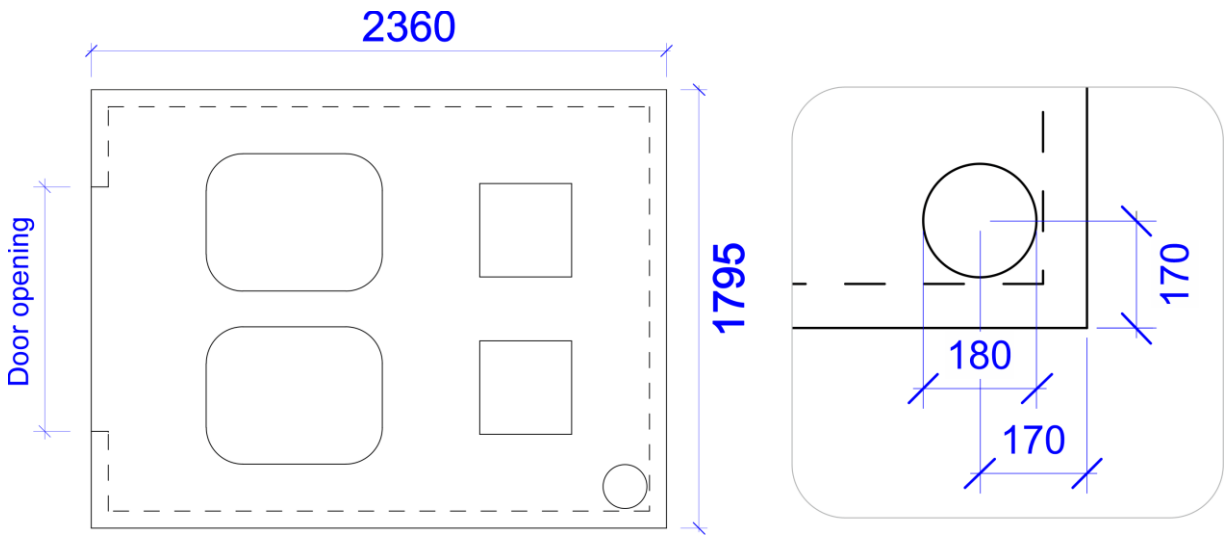
- **Heated or Airtight Buildings**: If your building is heated or airtight, it is essential to consult with us directly, as there are additional requirements and adjustments necessary to ensure proper ventilation and performance in such environments.
- **Unheated Buildings**: Much of the guidance from *Footprint for Self-Builders* drawing still applies. However, a key difference is that you **cannot rely on the vault flange to support the building's weight**. In this case, you will need to construct **timber stud walls** that extend over the vault flange for the same reasons mentioned in part A.
- **Cubicle Floor Considerations**: One important issue with larger buildings is that the **toilet cubicle floor** serves as the lid for the compost vaults, complete with access hatches. Since the cubicle floor is integral to the toilet system, it must be designed to meet seamlessly with the rest of the building's floors. Be mindful that the foundations for the vault and the rest of the building may shift or settle differently over time, especially if they are at different depths. This movement could cause misalignment between the cubicle floor and other parts of the building. You must also ensure there is clear **access to the cubicle** for removing compost when necessary.

Ventilation Requirements

Proper ventilation is essential for the NatSol Full Access Composter to function effectively. In unheated, non-airtight buildings, we use passive ventilation with a 160mm pipe that must run vertically from the floor socket through the roof, ending with the cowl we provide.

If this setup cannot be followed, you will need to install a **small fan unit**, which uses minimal power (a few watts). In such cases, the pipe can be reduced to 110mm in diameter and may follow a less direct route. We are happy to discuss this with you and provide the necessary fan unit and power supply if needed.

Footprint for Self-Builders - FAC:



Notes:

- Structural **door opening** 1m wide if wheelchair access required; outward opening.
- Building sole and internal lining boards together must extend between **60 and 75mm** over the edge of vault lid as shown. Less than this and the weight of the building may break off the flange. More than this, it results in the cubicle being too small.
- Max building weight **750kg** evenly distributed. Avoid pressure points. Use continuous sole on which posts rest.
- Drill vault flange using drill bit supplied – **Do not use hammer setting**. Drive turbo coach screws with washers (supplied) up through holes into building sole.
- Approach **path** and **landing area** outside must not cause rainwater to flow into the cubicle as this will enter through the vault floor hatches.
- The building should have a **ventilation slot**, as the toilet relies on passive ventilation. A good option is to place this at the top of a windowpane or around a skylight. Flies entering the building will naturally be drawn to light, and a gap of approximately 15mm between the top of the glazing and the window frame can serve as an escape route. Do not make the gap larger than 15mm to prevent small birds from entering the cubicle and nesting during the spring.

NatSol
Remote Toilet Specialists

Units 5 & 6 Maesllan Ent. Park
Llanidloes, Powys
SY18 6YU
(+44) 1686 412653
www.natsol.co.uk

VAT no 869927743
Company no: 5624596

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