



30th August 2024

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Desford
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LE9 9FN

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Drainage Strategy to Support an Application for Planning Permission for a Replacement Dwelling at Manor Lodge, 13 Station Road, Desford, LE9 9FN.

Encon Associates have been commissioned to undertake a Drainage Strategy to support an application for planning permission for a replacement dwelling (the “Development”) at Manor Lodge, 13 Station Road, Desford, LE9 9FN (the “Site”).

This letter report outlines the extent of previous planning consents on the Site, the existing Site conditions, the proposed Development and the strategy for the management of surface and foul water. Whilst the Development proposals differ from the previously approved scheme, it is the intention that the previously approved strategy for management of surface and foul water will be adopted for this Development proposal.

This Drainage Strategy concludes that the proposals for the management of foul and surface water are sustainable and not considered to create any further flood risk within the immediate areas and thus accord with Policies DM7 and DM10 of Hinckley & Bosworth Borough Council’s Site Allocations and Development Management Policies DPD (2016).

The Site is located within Flood Zone 1, an area with a low risk of flooding by rivers and the sea, with a footprint of approximately 0.6 hectares. There is no statutory requirement for the proposals to undergo a formal Flood Risk Assessment process.

Introduction and Previous Planning Approval

The site is located within Hinckley & Bosworth Borough Council Local Planning Authority’s (LPA) district. Full planning permission was granted on the site in December 2016 for *‘Demolition of existing dwelling and erection of 3 dwellings with a detached garage and*

associated access'. The planning application reference number for the approved development is 15/00472/FUL. Planning Condition 9 of the Decision Notice requires that;

Prior to the commencement of development, drainage details for the disposal of surface water and foul sewage shall be submitted to and approved in writing by the Local Planning Authority. The approved details shall be implemented in full before the development is first brought into use.

Details of a proposed drainage system were approved through the discharge of conditions process under reference 19/01161/DISCON; “*Application to discharge conditions 3 (Materials), 7 (Landscaping and Tree Protection) and 9 (Drainage) attached to planning permission 15/00472/FUL*”.

The fundamental elements of the approved drainage design information were that the development would utilise permeable or porous surfaces and construction for all external hardstanding, and that each of the associated dwellings would benefit from a rainwater harvesting system.

It is considered that the approved drainage principles are pertinent in consideration of both foul and surface water from this latest Development.

Existing Site

The Site is located to the north of Station Road and at the east of the settlement of Desford. An existing site plan and topographic survey are submitted as part of the planning application portfolio.

Access is gained from Station Road and Site levels gently fall away from the south towards the north. Site levels along the southern boundary range from 121.2mAOD to 118.5mAOD. Site levels along the northern boundary range from 119.8mAOD to 117.4mAOD.

The Site contains an existing dwelling, detached garage, several sheds/outbuildings, vehicular access track and hard and soft landscaping.

The existing dwelling and garage roofs appear to comprise positively drained impermeable area within the Site and together measure approximately 235m². External hardstanding areas immediately surrounding the buildings total 929m², these are relatively level, and benefit from a series of gullies/linear drains, in addition to assumed free-drainage on to garden curtilage. The cumulative impermeable area of buildings and immediately surrounding hardstanding is 1164m², these areas are denoted on the existing site plan extract below;



Figure 1: Existing Impermeable Catchment of Buildings and Associated Hardstanding.

Existing private drainage within the site is shown by survey (East Midlands Drainage Services October 2019) as a combined system (conveying both foul and surface water) with a positive connection to the Severn Trent Water controlled public sewer located within Station Road, to the southeast of the dwelling.



Figure 2: Existing Drainage Survey; East Midlands Drainage Services October 2019.

The sheds/outbuildings and remote hardstanding within the site curtilage are assumed to runoff directly on to surrounding ground, with flows managed via natural percolation and evapotranspiration.

There are no watercourses or waterbodies within or directly adjacent to the Site.

Development Proposals

The proposals seek to construct a replacement dwelling and associated hardstanding following the demolition of the existing structure and removal of existing hardstanding.

The footprint of the new dwelling would be 760m², with associated new areas of external hardstanding 396m². The cumulative footprint new buildings and hardstanding would be 1156m², these areas are annotated on the proposed site plan in figure 3 below;

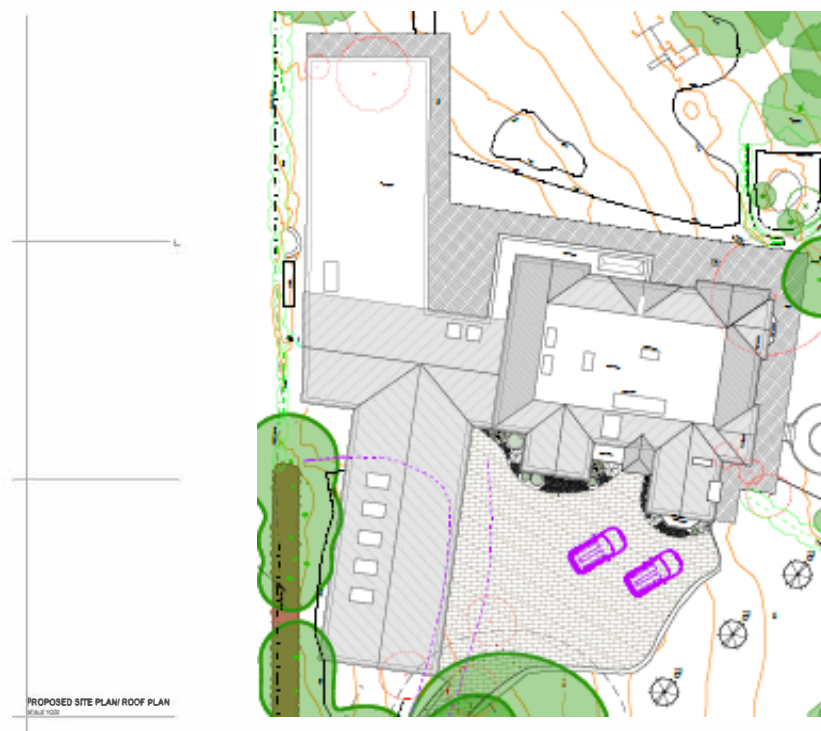


Figure 3: Proposed Impermeable Catchment of Buildings and Associated Hardstanding.

Drainage Strategy

In line with the approved drainage principles associated with planning application 15/00472/FUL and discharge of condition application 19/01161/DISCON, it is proposed that all surface water from the proposed dwelling shall pass in to a rainwater harvesting (RWH) system, with all external hardstanding areas constructed from permeable or porous materials.

The proposed drainage strategy will see reduction of the impermeable Site footprint from 1164m² (buildings and hardstanding), to 760m² (buildings only) and there will be an equivalent reduction in the rate and volume of surface water discharged from the Site.

External hardstanding areas are proposed to be surfaced in a permeable or porous material to enable collection of surface water runoff at source. The permeable surfacing is proposed to be underlaid with a permeable sub-base to enable percolation of collected runoff to the underlying soil. The permeable sub-base will also provide attenuation capacity for intense storms where the incoming rainfall runoff rate is higher than the outgoing soil percolation rate. This process mimics the natural greenfield conditions and provides a betterment by reducing runoff rate and volume during intense storm periods.

The use of RWH will provide further benefit in terms of the rate and volume of surface water discharged from the Site; however this benefit is not quantified due to usage variables associated with domestic water demand that will affect the fullness of the system.

The proposed RWH will include a 15,000 litre tank to store collected water in anticipation of domestic non-potable uses such as toilet flushing, external taps etc. The detailed design of the RWH will be undertaken following the planning consenting process, and may incorporate gravity or pump fed systems. The system will overflow to the private drainage network and subsequently the public sewer as is the status quo, and as per the approved developments above. Standard details of suitable RWH infrastructure are appended to this document below.

Foul water is proposed to be managed and disposed of to the existing combined drainage network within the Site, which connects to the Severn Trent Water public sewer network within Station Road.

Faithfully,

Matt Freeman (for and on behalf of Encon Associates)

Flood Risk Consultant

BEng (Hons) MPhil MCIWEM



Quotation for the supply of Rainwater Harvesting Equipment

Client :

**Matt Freeman
Encon Associates**

Site Reference :

Manor Lodge, 13 Station Road, Desford LE9 9FN

Prepared by:

Rob Cooper
rob@rainwaterharvesting.co.uk
01733 405103 / 07846 251632

Our reference : RNC242821

Date of proposal : 31/03/2023



Your Proposal

Thank you for your enquiry and as requested please find the following information regarding our proposed system for your project in LE9 9FN

Rainwater Harvesting Limited is a private family owned company, our strong service ethos has been built on many years of experience and this is reflected in our ability to offer both simple to install rainwater harvesting systems and mix and match components to provide bespoke solutions reflecting clients needs. At our 100,000sq ft warehouse in Peterborough we hold over 3000 stock items, we are the largest stockholder of the Shallow Dig Rewatec tanks in the UK and we regularly despatch to site complete rainwater harvesting systems within 5-7 days of order.

Generally a rainwater harvesting system is simple in concept however the differences in design and performance vary greatly from supplier to supplier, the fact that we manufacture as well as supply enables us to help you specify the right system for your project at an aggressive price, we also provide full technical support on all our products.

As discussed I have provided a quotation for the 15,000 Gravity Feed and Direct Feed Complete System with the more powerful submersible pump.

We would welcome the opportunity of supplying your rainwater harvesting system and I can easily be contacted either by phone or email as shown on the previous page

SHALLOW DIG F-LINE TANK

	7500
Weight Kg	310
Length	3340
Width	2310
Overall Height	1415 - 1815
Ground to Invert VS60 (635mm Shaft)	310 - 710
Invert to Outlet	162

EXCAVATION

Length	3740
Width	2710
Overall height VS60	1515 - 1915

Overall height allows for 100mm compacted aggregate

The overall height difference above is because up to 400 mm can be cut off of the 635 mm shaft on site so as to achieve your exact invert level.



Components and Prices – Supply Only

Option 1

Product Code : **RWH-15599FL-DUK2.**
15000 Litre Shallow Dig Direct Feed System



Components

Product Code	Description	Qty
RWFT7500	F-LINE 7500L TANK	2
RWDS0062	F-LINE TANK 635mm EXTENSION SHAFT - VS60	2
RWDS0066	F-LINE TANK WALK ON LID	2
RWH-RV01	RAINVANTAGE FILTER KIT INC SIPHON & OVERFLOW	1
DAB60114146	DIVERTRON 1200 X PUMP	1
RWH-HDPE25/25	25mm HDPE RAINWATER PIPE - 25m ROLL	1
RWH-BUB03	RAIN BACKUP IN A BOX / SD	1
RWH-PKFLINE-STD	FLINE INSTALLATION PACK STANDARD / INC LABELS & 90° ELBOW	1

Price : £5,550.00 (£6,660.00 Inc. VAT)

UK delivery is included in the price (Highlands and islands extra)



Components and Prices – Supply Only

Option 2

Product Code : **RWH-15599FL-DUK4.**
15000 Litre Shallow Dig Gravity Feed System



Components

Product Code	Description	Qty
RWFT7500	F-LINE 7500L TANK	2
RWDS0062	F-LINE TANK 635mm EXTENSION SHAFT - VS60	2
RWDS0066	F-LINE TANK WALK ON LID	2
RWH-RV01	RAINVANTAGE FILTER KIT INC SIPHON & OVERFLOW	1
DAB60114146	DIVERTRON 1200 X PUMP	1
RWH-RD01	RAIN DIRECTOR CONTROL UNIT	1
RWH-RDT-100	RAIN DIRECTOR HEADER TANK 100 LITRE	1
RWH-HDPE25/25	25mm HDPE RAINWATER PIPE - 25m ROLL	1
RWH-PKFLINE-PRO	FLINE INSTALLATION PACK PRO / INC LABELS & 90° ELBOW	1

Price : £6,010.00 (£7,212.00 Inc. VAT)

UK delivery is included in the price (Highlands and islands extra)



Mains backup and rainwater management

Direct feed with simple, 12v automatic float switch & solenoid valve for mains water backup

Most often used on a direct feed system, the automatic electrically-actuated solenoid valve (or tap) admits some mains water into the rainwater storage tank as a simple means of maintaining water flow to toilets and washing machine fed by a rainwater harvesting system. This method is sometimes referred to as a trickle-feed mains backup.

a) Filtered rainwater flows as normal to the tank

b) The home is plumbed with a separate pipe network for toilets and washing machine.

c) When there is rainwater in the tank the pump supplies rain water to the toilets and washing machine. The principle is the same whether the pump is indoors or submerged in the tank.

d) The pump is a pressure sensitive type or fitted with a pressure-sensitive switch which turns off when water is not being used in the house.



e) When the tank is nearly empty a float switch turns ON a mains-powered solenoid valve which allows some mains water to flow into the rainwater tank.

f) The provision of a "Air Gap" is a regulation requirement. This i) provides a visible warning of water flow if the valve sticks open and ii) prevents any possibility of rain water flowing into the mains (drinking) water. After a few moments the floating switch turns the solenoid valve OFF.

g) Although this simple mains backup can be criticised by some for admitting mains water back into the rainwater tank, it should be pointed out that the tank remains largely empty and can receive new rain water from a downpour at any time.

h) This is sometimes referred to as "trickle feed" because the tank does not get filled up with water; the level is simply lifted to the level (about 10 cms) where the inlet of the pump can draw water when next called upon.

i) There is no risk of rainwater being drawn into the mains water supply so there is no risk of breaching building regulations in this respect.

j) To ease the installation of a variety of components and rather complex wiring, RainWaterHarvesting.co.uk introduced in early 2009 the Rain Backup in a Box® which replaced the higgly piggly of components with a single wall mounted unit, one 12v electric plug to a wall socket, mains water input and a pipe to the underground storage tank. This is supplied as a default with "standard" DUK-2 kits.



Mains backup and rainwater management

Rain Director mains backup and computer-controlled rainwater management system with smart header-tank

The Rain Director® ensures a constant head of clear rainwater under gravity for washing machines, toilets, the garden and other uses. A header tank in the home is controlled by electronic level sensors, valves and a control panel (fitted on a wall on the ground floor). The advantages over rainwater pumping systems like the Rain Manager are:

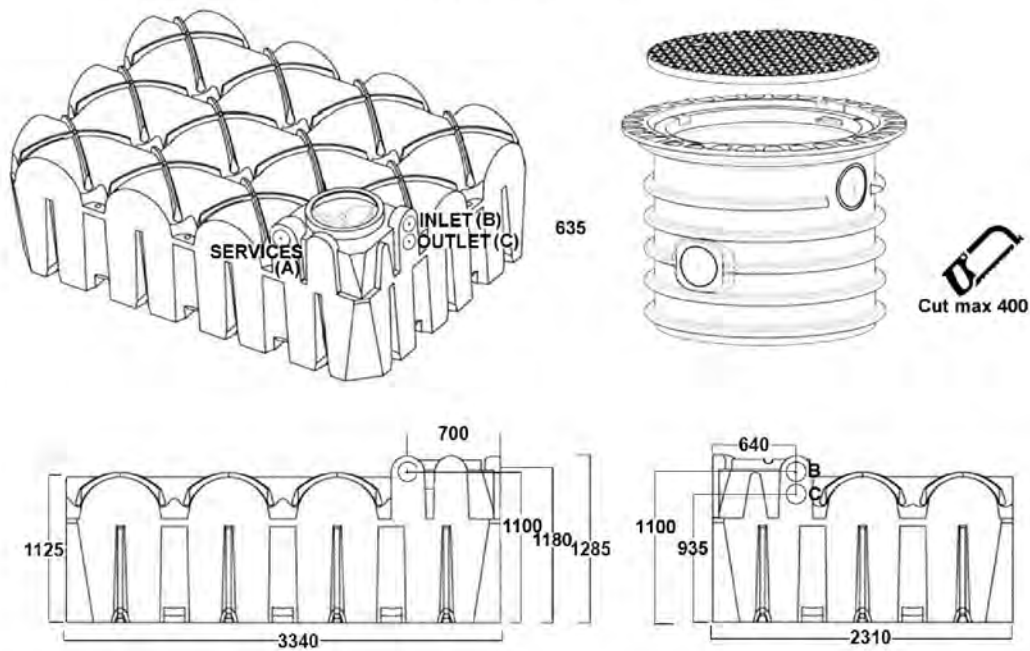


- a) The header tank only refills once it's completely empty so wear on the pump and electricity usage are both reduced (by a factor of 8).
- b) Provides a constant flow of rainwater under gravity at any time, including during power cuts.
- c) Mains water backup is automated by 12v electric level sensors.
- d) Rain Director®'s dashboard indicates present mode and allows special modes to be selected.
- e) Rain Director®'s auto-flush function detects when the occupant is away from home (for example, for holidays) and puts mains into the header instead of rainwater: no stained toilet bowls.
- f) Rain Director®'s set-up mode lets the control unit memorise the header tank size and flow rate of the mains and rain water inflow. This enables the time-out periods and operating water levels to be set.
- g) Rain Director® header tank has a built-in air gap as required by UK building regs.
- h) Price is similar to, or lower than, that of rain managers and other mini header-tank systems.
- i) Pump remains in the underground rain water tank so, there is no pump noise in the house.



All components have been designed to comply with WRAS (Water Regulations Advisory Scheme) and UK Building Regulations.

7500L F-Line





Recommended Rainwater Pipe

Rainwater Pipe in HDPE (High Density Polyethylene) for rainwater use as recommended by Water Authorities is available as an option for all tanks and systems. Black with 4 green stripes and available in both 25mm and 32mm diameter. High quality HDPE.

RainWater Harvesting Limited has worked with the UK Rainwater Harvesting Association and listened to WRAS and several of the water companies, to bring to the market the pipe marked with four green stripes. The identification helps maintenance staff and the end user, after installation, to know which pipes on site carry rainwater (which is non-potable in the UK Building Regs). We stock the following two sizes preferred by contractors fitting rainwater systems.



25mm diameter,
flexible, in 25 or 50m coils
Product ID: RWH-HDPE25/25

Ship weight of one 25m coil: 4.3 kg



32mm diameter,
flexible, in 25 or 50m coils
Product ID: RWH-HDPE32/25

Ship weight of one 25m coil: 5.5 kg

Other sizes available upon request





F-Line Flat Tank shallow dig underground tank



Why buy this tank?

- The F-Line is a high quality, rotationally moulded, one piece rainwater tank that can be installed without the need for concrete, thereby minimising installation costs and supported by our long term 25 year tank guarantee.
- Minimal installation depth
- Easy and quick to install
- Small excavation pit and little earth excavation preserves your garden
- Ideal for installation in new or existing properties
- Can be installed in ground water up to tank shoulder
- Easy to install

The F-line flat tank can be installed into much higher water tables than a standard round tank. If you don't know what your water table will be like in the winter, you're safer to install a flat tank. The F-Line tanks are flat and the installation depth is up to 60% less than other rainwater tanks. The excavation can be up to 70% less, meaning little earth excavation, easy handling and less cost for you! The small excavation pit is easily filled in and your garden will look just like it did before.

Installation Manual for the F-Line underground tank

1,500 litre

3,000 litre

5,000 litre

7,500 litre





Tank Dimensions and inverts

With the tank you will have received one of three different shafts dependent on your order. Please note which has been received and refer to the relevant shaft in the grid below :

- VS20 – 235mm shaft and pedestrian lid
- VS60 – 635mm shaft and pedestrian lid - The overall height difference below is because up to 400mm can be cut off the 635mm shaft on site so as to achieve your exact invert level
- Driveable shaft & lid – Steel lid and shaft for vehicle loading

	1500 L	3000 L	5000 L	7500 L
Weight KG	80	170	250	310
Length	2400	2400	2960	3340
Width	1200	2400	2220	2310
Overall Height (VS20 – 235mm shaft)	1015	1015	1350	1415
Overall Height (VS60 – 635mm shaft)	1015 – 1415	1015 – 1415	1350 – 1750	1415 – 1815
Overall Height (Driveable shaft and lid)	1415	1415	1750	1815
Ground to Invert (VS20 – 235mm shaft)	320	320	345	310
Ground to Invert (VS60 – 635mm shaft)	320 – 720	320 – 720	345 – 745	310 – 710
Ground to Invert (Driveable shaft & lid)	720	720	745	710
Invert to Outlet	162	162	162	162

Excavation

	1500 L	3000 L	5000 L	7500 L
Length	2800	2800	3360	3740
Width	1600	2800	2620	2710
*Overall Height VS20	1115	1115	1450	1515
*Overall Height VS60	1115 – 1515	1115 – 1515	1450 – 1850	1515 – 1915
*Overall Height Driveable shaft & lid	1515	1515	1850	1915

*The overall excavated height allows for a base of 100mm compacted aggregate

Rainwater Harvesting Limited, Unit A Harrier Park, Southgate Way, Orton Southgate, Peterborough, PE2 6YQ, UK

Phone +44 (0) 1733 405111 – Fax +44 (0) 1733 230996

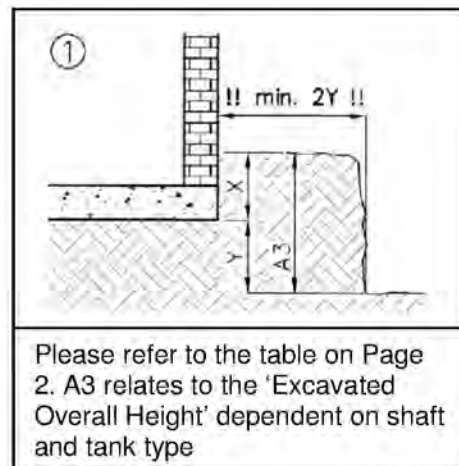
Email : info@rainwaterharvesting.co.uk – Website : www.rainwaterharvesting.co.uk

25th April 2019

1. Location

1.1 Position to the building

- The excavation must not be within the minimum distance to the building. See Image 1.
- The tank may not be built over by any loads greater than vehicle loads.



1.2 Traffic Conditions

- Loading Class A15 e.g pedestrian or cyclist – The standard pedestrian lid is suitable.
- Loading Class B e.g car, minibus, max axle load of 2.2 tonnes – Vehicle loading shaft and lid required. Minimum distance from top of tank body to earth surface must be 600mm

1.3 Ground conditions

- The tanks may lie in ground water and / or surface water up to the top of the body of the tank. Please refer to the table below to see the maximum depth dependent on your tank and shaft type.

	1500 L	3000 L	5000 L	7500 L
Max water table depth (VS20 – 235mm shaft)	365	365	430	290
Max water table depth (VS60 – 635mm shaft)	365 - 765	365 – 765	430 - 830	290 - 690
Max water table depth (Driveable shaft & lid)	765	765	830	690

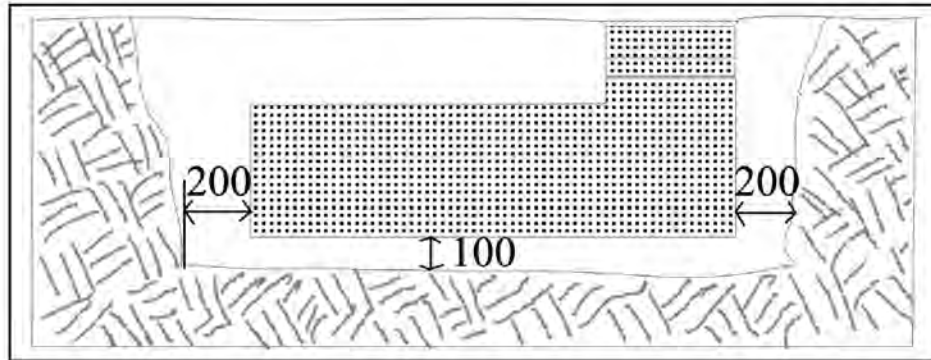
1.4 Hillside location

- The soil within the area where the tank is to be positioned must be checked for possible soil movement (DIN 1054 edition 1/2003, E DIN 4084 edition 11/2002) and if necessary will need to be secured with a supporting structure (eg retaining wall)
- Consultation with local authorities is recommended.

1.5 Installation details

1.51 In clay ground conditions:

- The excavated area should be wide enough to allow the compression of the filling material (200mm) See Image below.



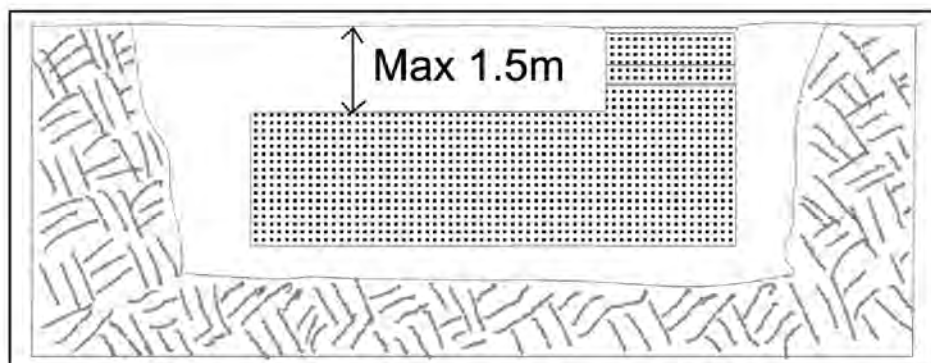
- With installations deeper than 1.75m (ground to base of tank) use 500mm width of the filling material.
- The tank should be covered with at least 300mm of filling material.

1.52 In loose ground conditions:

- Up to 1.75m depth of excavation use 200mm of filling material around the sides of the tank.
- With installations deeper than 1.75m use 500mm width of the filling material
- The tank should be covered with at least 300mm of filling material

1.6 Further criteria

- Existing pipelines, pipes, vegetation and other specifics must be considered so that damage or hazards will be avoided.
- The maximum soil coverage on top of the tank body is 1.5m
- If it is not guaranteed that the ground water level will remain below the permitted maximum level, a drainage system must be installed around the tank, which reliably drains the water. If a drainage system is not possible then contact your supplier about an alternative tank.





2. Installation

2.1 Backfill around and below the tank

- Backfill material around the tank has to be well compacted and permeable to water allowing close packing and no damage to the surface of the tank
- If the filling material contains sharp or sharp-edged components, the wall of the tank must be protected by a sandy coating.

2.1.1

- Gravel mixtures are the preferred filling material. The recommended sizes 8mm-16mm

2.1.2

- Concrete gravel with a particle size of up to 16mm is recommended for use in clay / loam soil conditions with ground water and high water table.
- When ground water and a high water table are present it is important to ensure good compaction when applying the filling material.

2.1.3

- Stone Chippings – crushed rock particles between 4mm and 16mm in size are suitable filling material. However due to the sharp edges the tank must be protected against damage, for example using a sand coating.

2.1.4

- Excavation – sand and gravel mixtures with mixed particle sizes is suitable as a filling material providing they meet the criteria listed under 2.1

2.1.5

- Top soil, clay, loam and other types of cohesive soils are not suitable as filling material.

2.2 Backfill on top of the tank

- Excavated soil or other material can be used if it is stable and permeable

2.3 Backfilling and compaction methods

- The backfilling and compaction methods to be used are described in Section 3 (Installation Instructions)

2.3.1

- Adding water to the filling material is not recommended as this will make the compacting unstable
- The base layer for driveable situations must use a grain size of 2/45

2.4 Pipes

2.4.1

- The feed pipe should be laid with a fall to the tank of greater than 1 degree
- Ensure that underground rainwater pipes come from sealed gullies (do not use open gullies)

2.4.2

- The overflow pipe / drain pipe should have a deeper fall away from the tank than the fall from the feed pipe to the tank

2.4.3

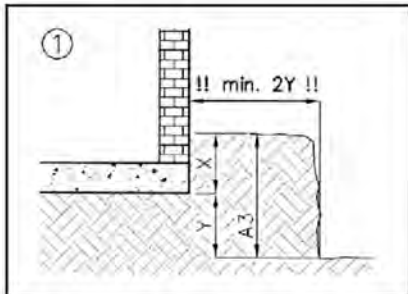
- The service pipe is to be installed using the provided seals to ensure a tight fixture to avoid contaminants entering the tank. All electrical and other cables are laid through this service pipe back to the property.

2.4.4

- The pipes must be laid in such a way to avoid frost damage.

3. Installation Instructions

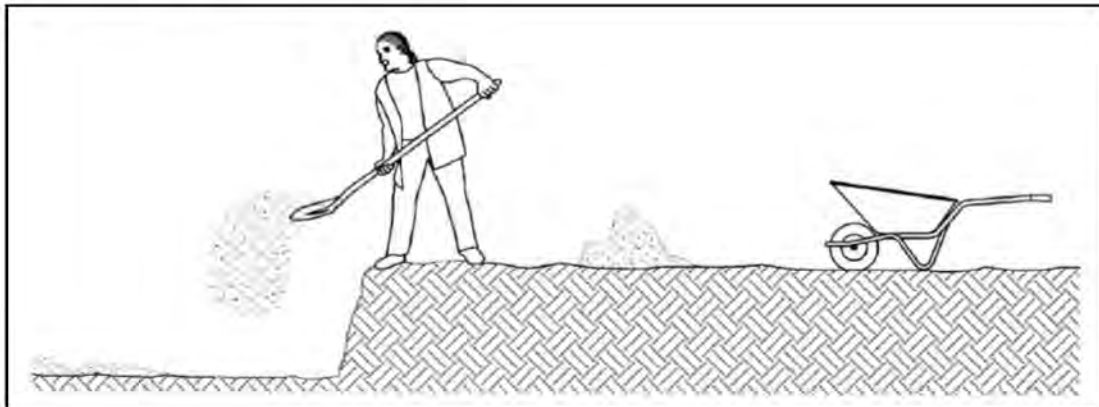
1. Establish distance from the property.



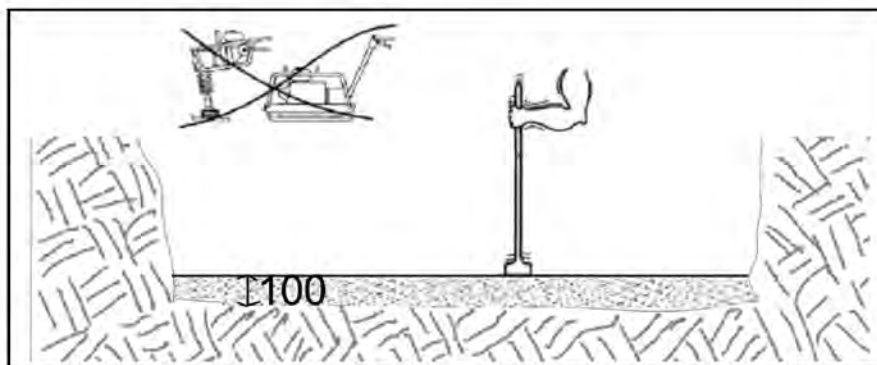
2. Dig hole



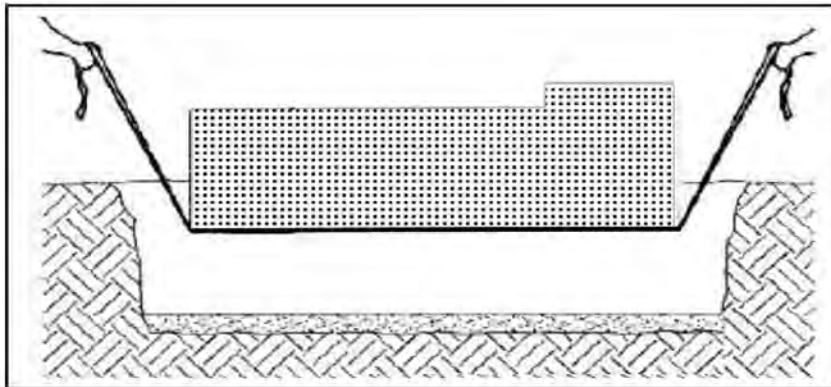
3. Lay 100mm base



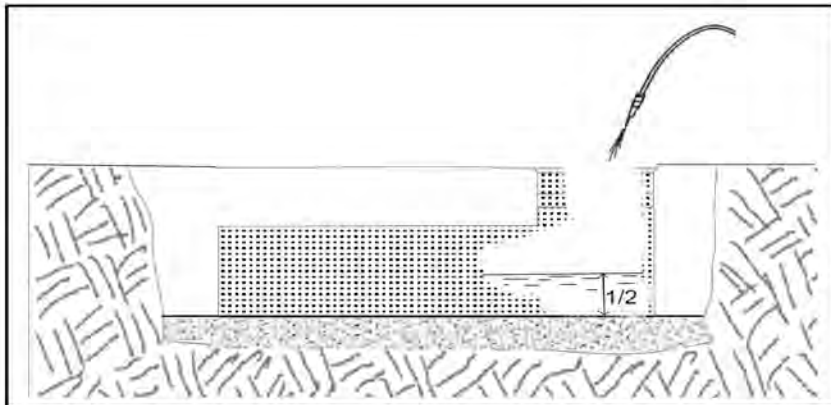
4. Compact the base by hand only. Ensure you have a level base.



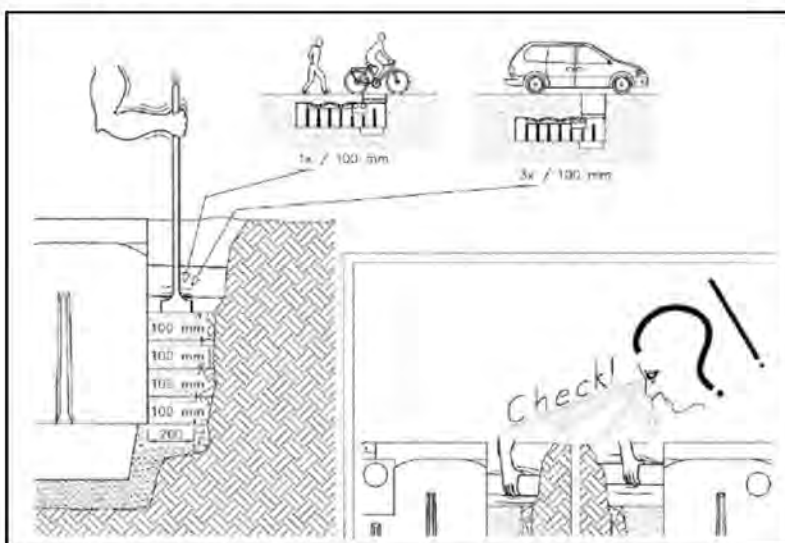
5. Lower the tank carefully into the hole ensuring that you are achieving the necessary widths around the tank for the filling material.



6. Fill the tank with water up to half way

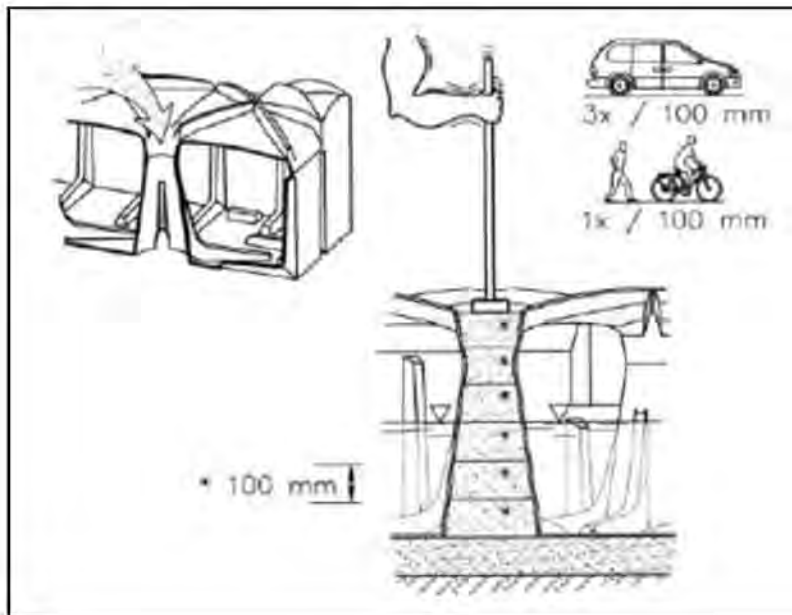


7. Apply filling material



- Do not use a mechanical whacker plate.
- Hand tap the material to compress it.
- Lay in 100mm layers for pedestrian install
- Lay in 300mm layers for driveable install
- Check to ensure the minimum width between the tank and excavation wall is correct (min 200mm)

8. Hand compress the filling material into the central columns



To link tanks together do the following:

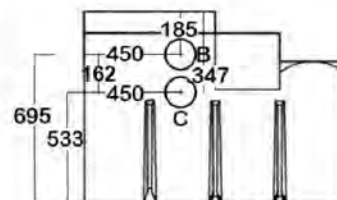
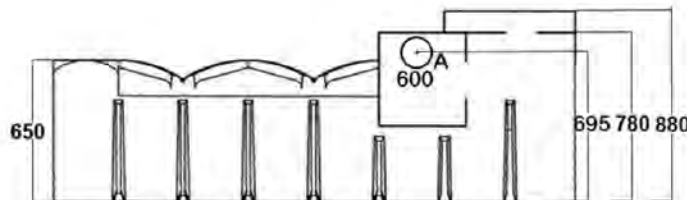
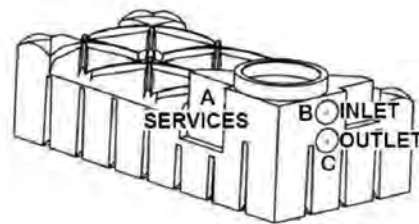
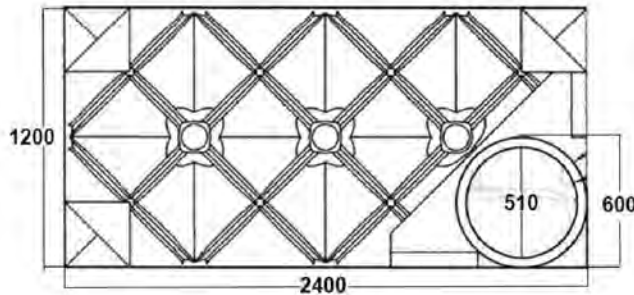
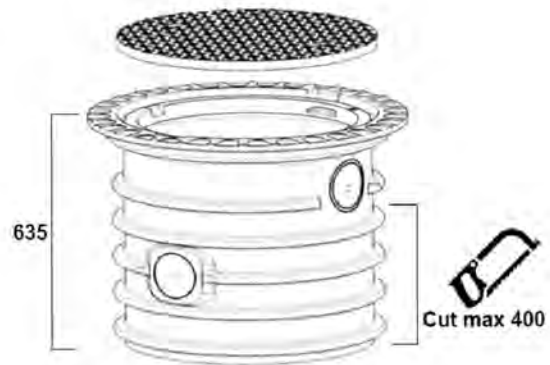
- Drill a hole using a 127mm drill bit into a flat part of the tank at low level.
- Insert the supplied grommets (seals) into the hole.
- Feed a 4" pipe into the hole allowing at least 500mm to be inside of the tank.
- Use washing up liquid if necessary to assist with pushing the pipe through the grommet.

NOTES :

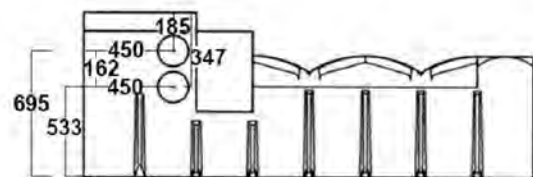
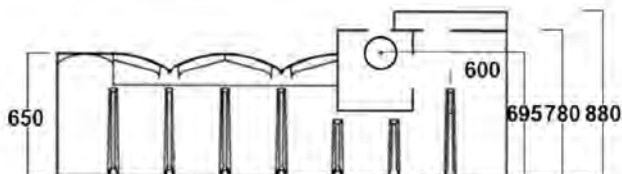
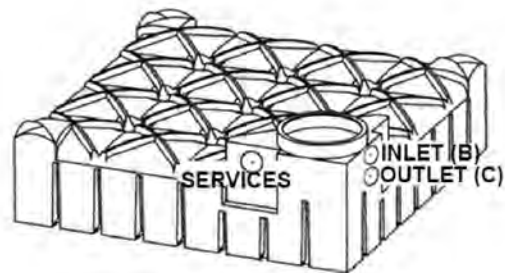
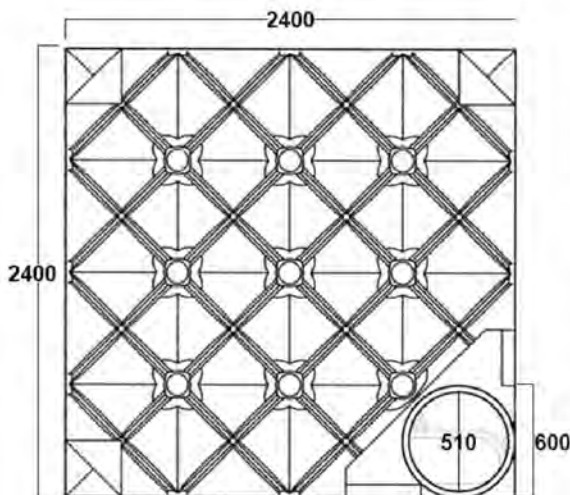
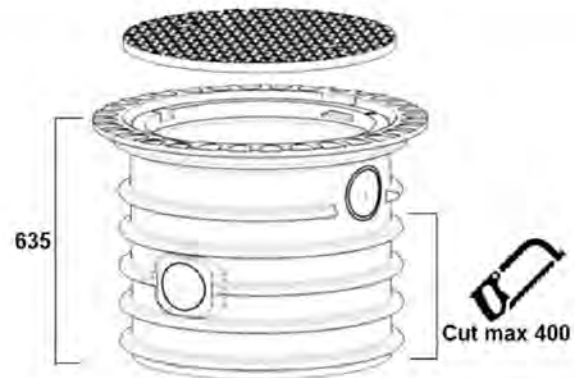
- Please refer to the individual installations documents for the shafts, extension sleeve and driveable shaft and lid.

Tank dimensions and hole positions

1500L F-Line

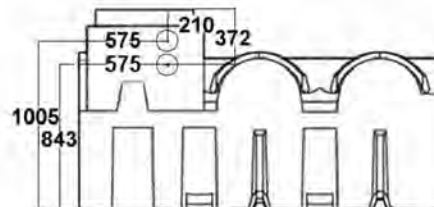
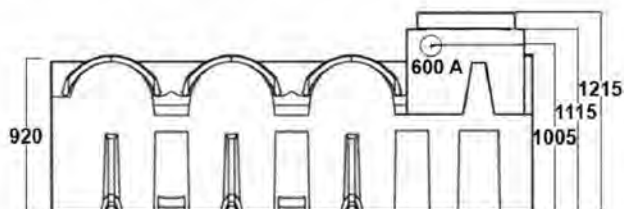
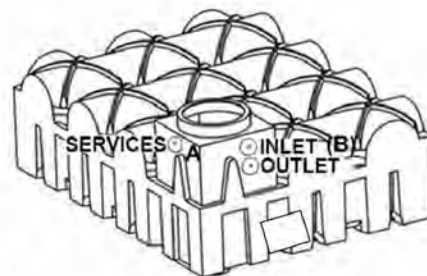
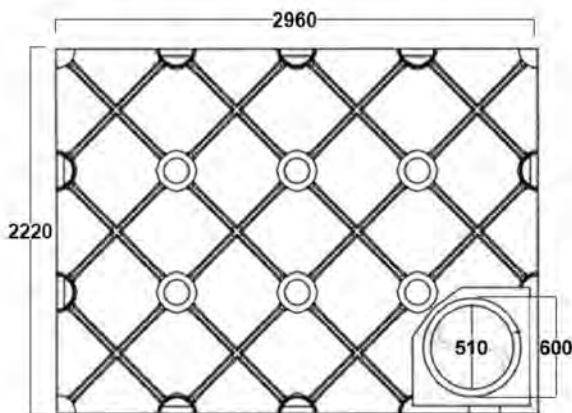


3000L F-Line

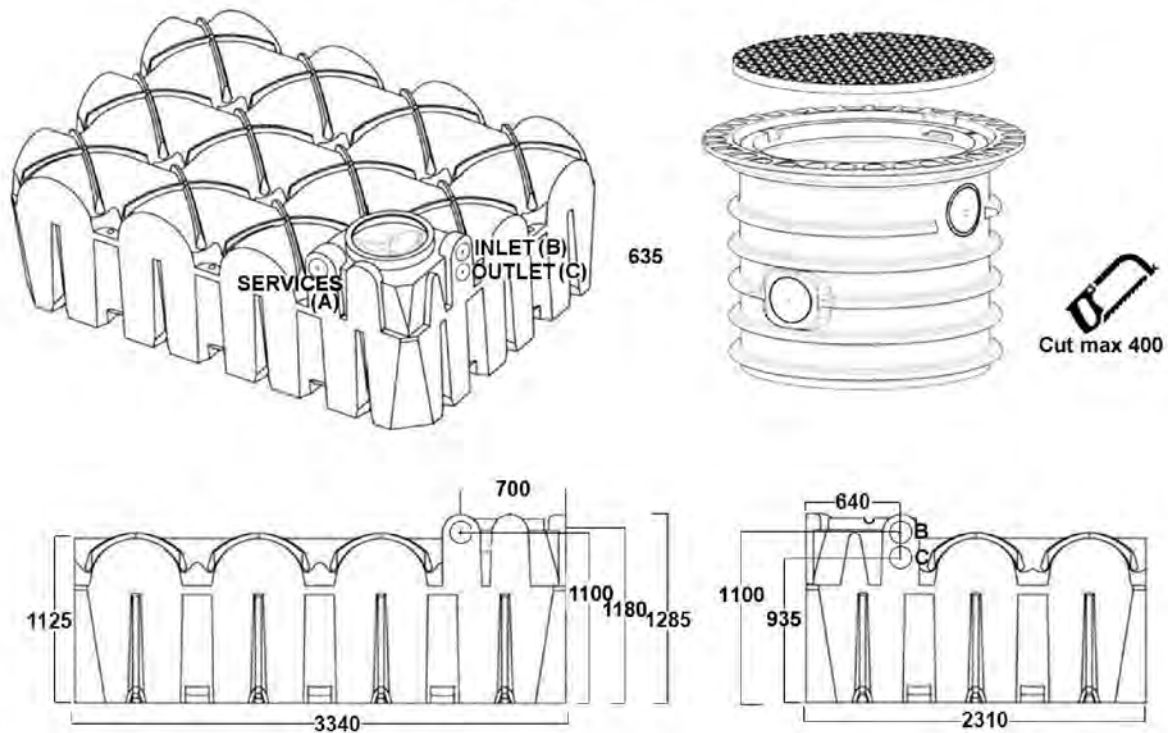


5000L F-Line

635



7500L F-Line



RainDirector® Quick Install

The Rain Director Gravity Feed System
For House & Garden With F-Line Tanks



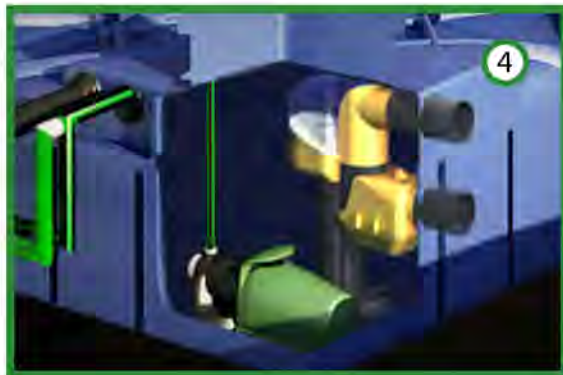
Uses For This System

- Toilets
- Washing Machines
- Garden Irrigation
- Vehicle Washing

1. **Tank:** F-Line single piece shallow dig tank.
2. **HydroForce Series 3 Pump:** Supplied with 25mm outlet connector, must be primed before use. *See comprehensive pump manual.*
3. **Rain Vantage Self-Cleaning Filter:** Pre-Fitted.
4. **Overflow Pipe:** Making sure that there is sufficient fall to encourage flow to the soakaway.
5. **Black & Green HDPE Pipe:** Running from the pump to the property using 4-inch service duct.
6. **Refresh pipe:** Plumbed from Control Unit to underground tank.
7. **Outside Tap:** Must be plumbed directly from the pump. *See plumbing schematic in the Rain Director installation manual.*
8. **Rain Director Control Unit:** When fitting the control unit, install the pipe allowing sufficient movement for the removal of the solenoids.
9. **Mains Water Supply:** Running from the control unit to the Smart Header Tank.
10. **Rainwater Supply:** Running from the control unit to the Smart Header Tank.
11. **Gravity Feed Pipework:** Running from the Smart Header Tank to appliances.
12. **Smart Header Tank:** Must be a minimum of 1.2m above the control unit and highest appliance.

System Components

- | | |
|---------------------------------|--|
| 1. Rain Director control unit | » Comprehensive user guide and installer manuals |
| 2. HydroForce pump | » Green & Black HDPE pipe |
| 3. Smart header tank | » Cat5 cable |
| 4. F-Line Tank with Filter | » Tank pipe |
| 5. F-Line Walk on Lid | |
| 6. F-Line 635mm Extension Shaft | |



Important Notes on Installation

Tank

- **Make sure your underground tank is kept clean and free of debris.**
- Do not use the pump supplied to empty a dirty underground tank.
- Do not use open gullies or P Traps.

Control Unit

- Mount the control unit to the wall in a dry, frost free area such as in a utility room or where mains water is available, at least 1.2 metres below the bottom of the header tank.
- When fitting the control unit install the pipe allowing sufficient movement for the removal of the solenoids.

Pipework

- Avoid sharp bends, inverted U's and any upward gradients in your pipework.
- For further plumbing schematics and installation of pipework please see installation manual, provided with the control unit.
- Flush through your pipework before connecting the control unit.
- Use 22mm pipework from header tank to appliances to aid flow.
- Internal pipework must be labelled to identify rainwater.

Smart Header Tank

- Select an accessible part of the roof space, as you might need access to the header tank.
- The header tank must be fitted at least 1.2 metres above the highest appliance. The higher the tank, the better the pressure.
- When installing keep the header tank clean & clear of debris.
- The cat 5 data cable must be installed as provided and not be cut.
- The 40mm overflow pipe **must** flow directly to the outside of the property.

Pump

- Pump priming: It is **essential** that the pump is primed before use. See pump installation manual supplied with the pump.
- Connect the outlet connection using rainwater marked pipe of diameter between 25mm or 32mm.
- The vertical rainwater pipe should be the right length so that a 90° elbow (supplied) in the turret is at the level of the 4 inch service pipe in which the rainwater pipe is fed to the building.
- It is recommended to place an electrical connection into the highest point of the turret for easy quick maintenance, IP66 rated or better connection box or socket must be used, not supplied.

For further instruction on priming and installation of the pump and how it functions please see the manual provided.

For more details installation instructions please see the install guides supplied.



RainBackup[®]
in a Box

Quick Install

The Rain Backup in a Box Direct Feed System For House & Garden With F-Line Tanks



RainWater Harvesting
.co.uk

Uses For This System

- Toilets
- Washing Machines
- Garden Irrigation
- Vehicle Washing

1. **Tank:** F-Line single piece shallow dig tank.
2. **Rain Vantage Self-Cleaning Filter:** Pre-Fitted.
3. **Overflow Pipe:** Making sure that there is sufficient fall to encourage flow to the soakaway.
4. **Level Sensor:** Connects back to the control unit.
5. **HydroForce Series 3 Pump:** Supplied with 25mm outlet connector, must be primed before use. *See comprehensive pump manual.*
6. **Black & Green HDPE Pipe:** Running from the pump to the property using 4-inch service duct.
7. **Mains Water Supply:** Running from the control unit to the underground tank.
8. **Outside Tap:** Must be plumbed directly from the pump. *See plumbing schematic in the Rain Backup in a Box installation manual.*
9. **Mains Water Supply:** Running into the control unit.
10. **Rain Backup in a Box Control Unit.**
11. **Rainwater to appliances.**

System Components

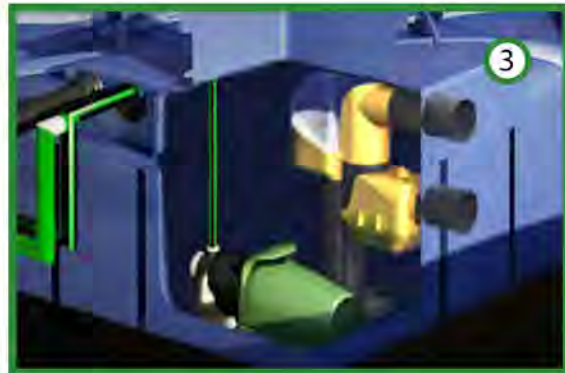
- | | |
|--------------------------------------|--|
| 1. Rain Backup in a Box control unit | » Comprehensive user guide and installer manuals |
| 2. HydroForce pump | |
| 3. F-Line Tank with Filter | » Green & Black HDPE pipe |
| 4. F-Line Walk on Lid | » Tank pipe |
| 5. F-Line 635mm Extension Shaft | |



1



2



3



4



5

Important Notes on Installation

Tank

- **Make sure your underground tank is kept clean and free of debris.**
- Do not use the pump supplied to empty a dirty underground tank.
- Do not use open gullies or P Traps.

Control Unit & Piping

- Mount the control unit to the wall in a dry, frost free area such as in a utility room or where mains water is available.
- The overflow pipe at the middle of the control unit should flow to the exterior of the property through a pipe which offers no constriction and discharged over the ground.
- Pipe the outlet of the weir using 32mm waste pipe from the bottom left of the unit to the rainwater storage tank. At least the first 300mm must be straight.
- Channel the float switch cable to the underground storage tank through a 4-inch service duct which also carries (i) the mains electricity supply to the submerged pump (if so fitted) and (ii) the return pipe carrying rainwater from the storage tank back to the appliances in the house.
- Attach the float switch bracket to the 4" calmed inlet down pipe as shown to the right.
- Make sure the bracket is not positioned too low so the float switch catches on the calmed inlet boot.
- The 7500L tank does not have a pump sump therefore the bracket must be positioned 5 to 10cm above the inlet of the pump.
- Internal pipe work must be labeled to identify rainwater.
- For further plumbing schematics and installation of pipe work please see installation manual, provided within the control unit box.
- Flush through your pipework before connecting the Rain Backup in a Box.



Pump

- **Pump priming:** It is **essential** that the pump is primed before use. See pump installation manual supplied with the pump.
- Connect the outlet connection using rainwater marked pipe of diameter between 25mm or 32mm.
- The vertical rainwater pipe should be the right length so that a 90° elbow (supplied) in the turret is at the level of the 4 inch service pipe in which the rainwater pipe is fed to the building.
- It is recommended to place an electrical connection into the highest point of the turret for easy quick maintenance, IP66 rated or better connection box or socket must be used, not supplied.

For further instruction on priming and installation of the pump and how it functions please see the manual provided.

For more details installation instructions please see the install guides supplied.