

Drainage Strategy Report

Maytum Barn – Vanity Lane, Linton, Maidstone, Kent. ME17 4BP

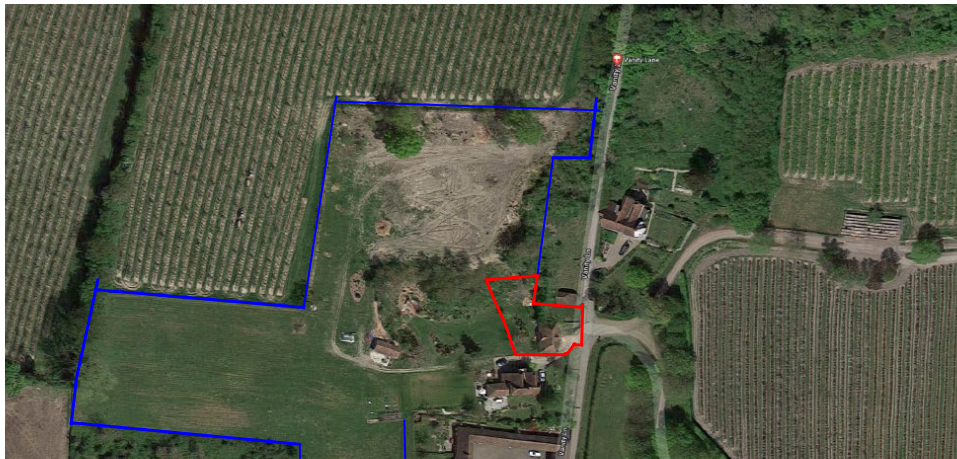
December 2022

1. Introduction

This report is presented for the release of condition 11 of the approval for the planning application ref no. 21/506664/FULL for: *"Demolition and rebuilding of the existing barn to provide a 3 bedroom dwelling including rear pavilions linked by glass link. Re-routing and alteration of existing road access to allow separate access to house and barn and associated landscaping."*

2. Site Description

The site containing the barn is located between Linton Village to the East and Coxheath to the North West. It is also situated within the residential curtilage of a Grade II Listed Building, namely Rosehill, and sits within an area designated as Landscape of Local Value, in the open countryside.



The topography survey, included with this report (Appendix A), indicates that the site slopes from the north West corner highest point at 83.32 towards the south east corner of the existing barn, at 79.61, a total of 3.7m in the immediate vicinity, the surrounding land belonging to Rosehill is varying in slopes and the access road immediately to the south of the barn and is rising towards the main building and has been recently upgraded with a low level drain before it reaches Vanity Lane.

3. Geology

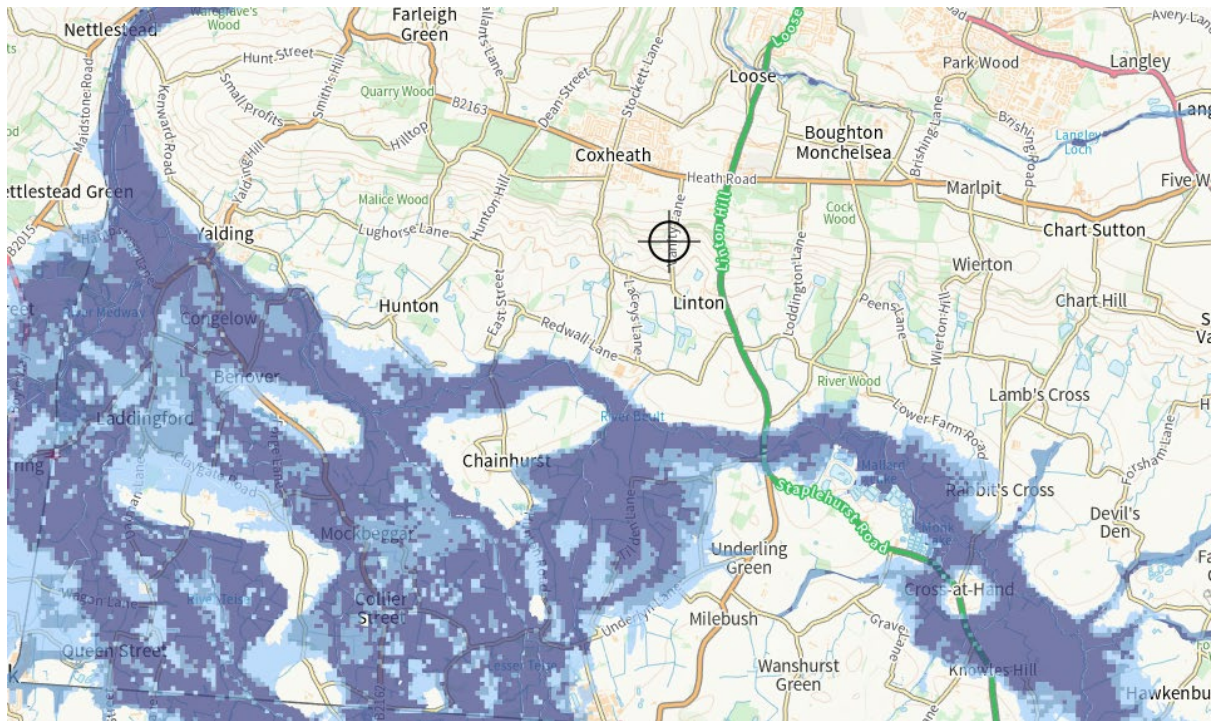
The British Geological Map survey indicates that the bedrock geology of this site is Hythe formation which comprises mainly fine- to medium-grained, sparsely glauconitic sands, sandstones and silts, locally pebbly, with calcareous or siliceous cement in beds or lenses in

some areas. In Kent the formation comprises, alternating sandy limestones ("Ragstone") and glauconitic sandy mudstones (Hassock).

4. Hydrology

The nearest watercourses River Loose (or stream) to the north and River Beult to the south, they both enter the Meadway near Yalding.

Maidstone Borough SFRA map of 1:1000 year Flood extent shows the site in a low risk flood zone.



Map of flood risk for Maytum Barn

5. Foul & Surface Water Drainage Strategy

Existing Surface Water Drainage

The topography dictates that surface water falls naturally. There is an existing culvert along Vanity Lane and Rose Hill access Road has a manhole and its rainwater drainage is connected to the culvert. It is understood that the existing barn building is undrained and surface water falls direct onto the surrounding ground.

Surface Water Drainage Strategy

The NPPF requires the surface water drainage strategy to follow a sustainable (SuDS) approach. The emphasis of SuDS is to first consider source control (i.e. disposal of runoff within the plot boundary, followed by site control (site wide disposal) and then regional control (appropriate for larger development with strategic drainage infrastructure). Where possible the drainage strategy should target a zero runoff from the immediate development area.

A hierarchical approach to the drainage strategy has been considered for this development in accordance with the table below. Each method is assessed to reach a conclusion appropriate to the development.

HIERARCHICAL SUDS ASSESSEMENT

	Comment	Issues to consider	Appropriate to development
Green Roofs	Can be used on suitably low rise buildings	- Safe maintenance access -In keeping with character/appearance of adjacent buildings	Unlikely to be appropriate due to the listed neighbouring building and 'traditional' house type design
Rainwater harvesting	Rainwater harvesting reduces the total runoff volume from the developed Site, particularly first 5mm of rainfall, and reduces treated water consumption	Economics for full rainwater harvesting systems	-Full rainwater harvesting unlikely to be economical for this Site - partial Rainwater harvesting for outside garden taps is suitable
Plot infiltration	Reduces total runoff volume from the developed Site	Type of soil suitable	Infiltration subject to test
Permeable paving and sub-base drainage	-Can be used to provide pavement runoff water quality enhancement (treatment train) and sub-base attenuation -Permeable paving proprietary sub-base storage reduces requirements and volumes of storage structures	-Shallow soils within the top 0.5m are likely to be suitable for infiltration drainage via permeable surfaces -Impact of saturation on pavement stability to be considered possibly requiring extensive use of impermeable membranes and under-drainage	appropriate
Swales	- Swales provide above ground flood conveyance routes -Water quality enhancement is provided by filtration through vegetation and stone media -Swales are reliant on ground porosity for infiltration	No space available for open basins in agreed site layout.	unsuitable

Infiltration basins	Infiltration basins can be located within landscaped areas to attenuate storm flows up to the 100 year plus climate change event	no space available for open basins in agreed site layout.	unsuitable
Detention ponds	Detention basins can be located within landscaped areas to attenuate storm flows up to the 100 year plus climate change event	Some space available for a small detention pond within landscaped area	adequate
Sub-surface storage (tanks and pipes)	-Suitable for use where there is insufficient space for an open basin -Suitable for use where other factors prevent the use of open basins	Below ground tanks or oversized pipes can be considered as part of a controlled discharge system	suitable

SuDS Assessment

Based on the assessment provided above and in accordance with the Surface Water Hierarchy the most appropriate method of surface water management and disposal is as set out below. The Surface Drainage Strategy Plan is provided in the appendices

- Rainwater harvesting using retention ponds/rainwater gardens for roof water run-off to reduce the total volume of water discharged. Rainwater harvesting tank for garden use
- Permeable paving of parking area and internal courtyard, paved paths .
- The property will have attenuation storage tank to accommodate up to the 100 year plus climate change storm event. Attenuation volumes will be based on the design impermeable area of each plot plus 10% allowance for development creep in accordance with CIRIA C753 –Discharge from tank will be controlled by a hydrobrake, or similar device, with the combined discharge equal to the natural greenfield (QBAR) run-off rate.

All proposed equipment specification is attached to this report in the appendices.

Foul Drainage Strategy

The incumbent sewerage provider for the area is Southern Water. The existing listed House is connected to an old cesspit located approx. 24 m from the proposed development and there is no proposal to connect to it.

Instead a treatment plan is proposed for the new-built and details and specification is attached in the appendices together with a detailed foul water runs and manholes.

Flood Risk Management Measures

Finished floor levels of the property will be set at least 150mm above the prevailing ground levels. All external hard standing areas will be designed to fall away from the properties.

In accordance with the NPPF, access and egress to the Site during all storm events should be considered with preference being over dry land. It is proposed the access route to and from the property is naturally above the 1 in 100 year plus climate change event.

All on-site foul and surface water drainage infrastructure will be constructed to current building Regulations 2021.

Residual Risks

Whilst the on-site drainage will be constructed to current building regulation standards, there always remains a small residual risk of flooding due to blockage or failure of on-site private drains. Such events can be avoided by regular maintenance.

There are also further residual risks related to the maintenance of off-site drainage assets by third parties, such as highway drainage, foul sewers and drainage ditches.

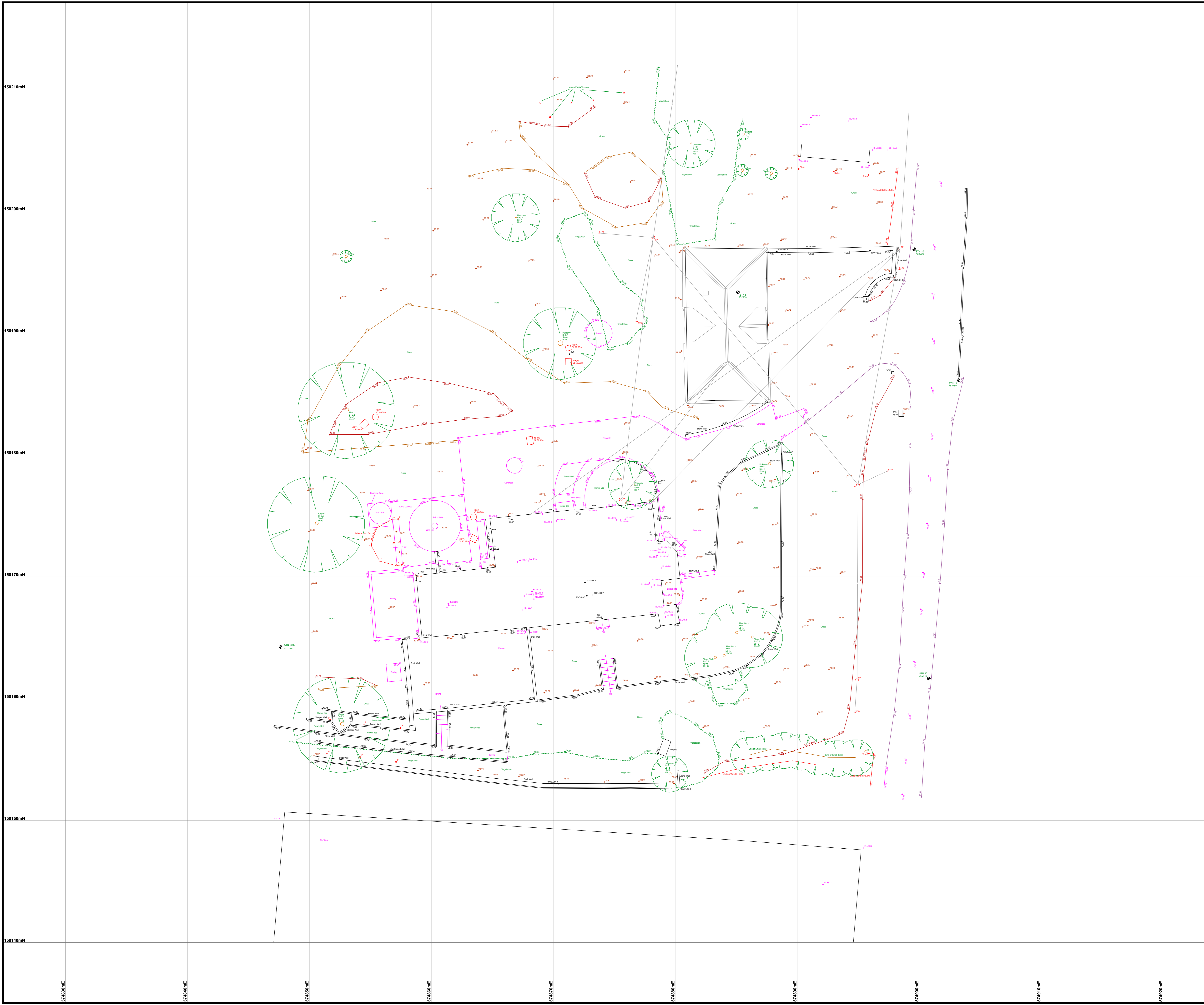
Appendices

Appendix 1 – Topographic Survey

Appendix 2 – Surface Water Drainage Plan

Appendix 3 – Foul Water Plan

Appendix 4 – Specification and Manuals



SETTING THE BENCHMARK IN GEOMATICS

- TOPOGRAPHICAL SURVEYS
- MEASURED BUILDING SURVEYS
- 3D LASER SCANNING
- BOUNDARY DEMARCATION & SUB-DIVISION
- BOUNDARY DISPUTES
- GPS SURVEYS
- VOLUMETRIC SURVEYS
- SETTING OUT
- BUILDING INFORMATION MODELLING

LEGEND

A	- ASPHALT	F	- FUEL WATER PIPE	RL	- ROOM LEVEL
AC	- AIR CONDITIONING	FN	- FINE HYDRANT	RZ	- RAMP UP
B	- BENCH MARK	G	- GATE	RS	- RAIN WATER PIPE
BL	- LETTER BOX	GB	- GATE JUNCTION BOX	SD	- STOP COOK
BU	- BURIED UTILITY	GL	- GATE POST	SDO	- SIDE ENTRY DULLY
BS	- BRICK MARK	GU	- GULLY	SDP	- SIDE DULLY
BP	- BRICK PILLAR	DV	- GAZ VALVE	SP	- SIGN POST
BR	- BRICK SETTING	DT	- GATE DRIVE	ST	- STREET LIGHT
BT	- TELEVISION TELEPHONE	DM	- DOWN MAIN	STP	- STEPS UP
CA	- CABLE TELEVISION	IC	- INSPECTION COVER	TJ	- TELECOM JUNCTION BOX
CATV	- CABLE TELEVISION	IO	- INSPECTION COVER	TC	- TANK
CP	- CABLE TELEVISION POINT	KB	- KITCHEN SINK	TL	- TELECOM TELEPHONE
CL	- COVER LEVEL	LB	- LETTER BOX	TP	- TELECOM TELEPHONE
CO	- COLUMN	L	- LAMP POST	TR	- TRAFFIC SIGNAL
COB	- CONCRETE	MB	- MANHOLE	UP	- UPSTAIRS
E	- ELECTRICITY	MP	- MANHOLE POST	VP	- VENT PIPE
EL	- ELEVATION	PO	- POST	WL	- WATER LEVEL
EP	- ELECTRICITY PILE	PP	- PILE	WM	- WATER METER
ER	- EARTHING ROD	RD	- ROAD	WU	- WALL OUT
		RE	- RAILING ROD	WV	- WATER VALVE

FEATURES

TREE	(Species, Ch-Dia Diameter, Sp-Spread, Ht = Height)	CHANNEL	
GATE - GATES		DROP KEYS	
FENCE		TOP OF BANK	
BUILDING		BOTTOM OF BANK	
OVERHEAD BUILDING LINE		TREE LINE	
FACE OF WALL		OVER HEAD WIRE	
RETAINING WALL		EDGE OF UNDERGROWTH	
CHANGE OF SURFACE			

SURVEY NOTES


- CONTROL**
 - All levels are related to METRES
 - All levels are related to ORDNANCE SURVEY DATUM USING THE ACTIVE SPISARD NETWORK
 - All coordinates are related to NATIONAL GRID USING THE ACTIVE SPISARD NETWORK
- WORK**
 - POINT MARKERS, LEVEL LEVELS & DRAINAGE TRENCHES HAVE ALL BEEN SIGNED FROM THE SURFACE, AS SUCH WE CANNOT GUARANTEE THE ACCURACY OF THE INFORMATION PROVIDED
 - NO RESPONSIBILITY CAN BE TAKEN FOR THE ACCURACY OF PLANS SAMPLED BY STATUTORY AUTHORITIES
 - UNLESS OTHERWISE STATED ALL UNDERGROUND SERVICES SHOWN ARE BASED ON DATA
- TRENCH**
 - UNLESS OTHERWISE STATED TRENCHES ARE SHOWN AS CHANNELS
- FEATURES**
 - UNLESS OTHERWISE INDICATED LEVELS TAKEN AT KEYS ARE CHANNEL LEVELS
- REMARKS**
 - THIS IS A DIGITAL FILE, THE INFORMATION HEREIN HAS ONLY BEEN SURVEYED TO AN ACCURACY CORRESPONDING TO THE STATED SCALE
 - IT IS SUGGESTED THAT ONLY A SURVEY ESTABLISHED CONTROL IS USED FOR ADJUST TO THE CONTROL NETWORK, SURVEY DETAILS SHOULD ONLY BE USED AS A CHECK ON THE ORIGINAL CONTROL
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SHEET 01 SHEET LAYOUT

ACCREDITATIONS



Revision - Initial Drawing Issue 05/02/2021

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 www.rlsurveys.co.uk

working on behalf of
 Mr. & Mrs. N. Connell

PROJECT TITLE: Rose Hill, Vanity Lane, Linton, Kent. ME17 4BP

DRAWING DESCRIPTION: Topographical Survey

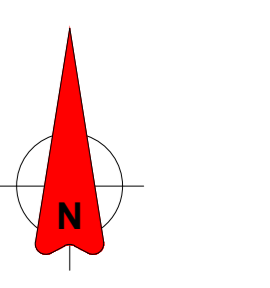
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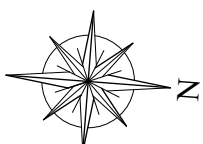
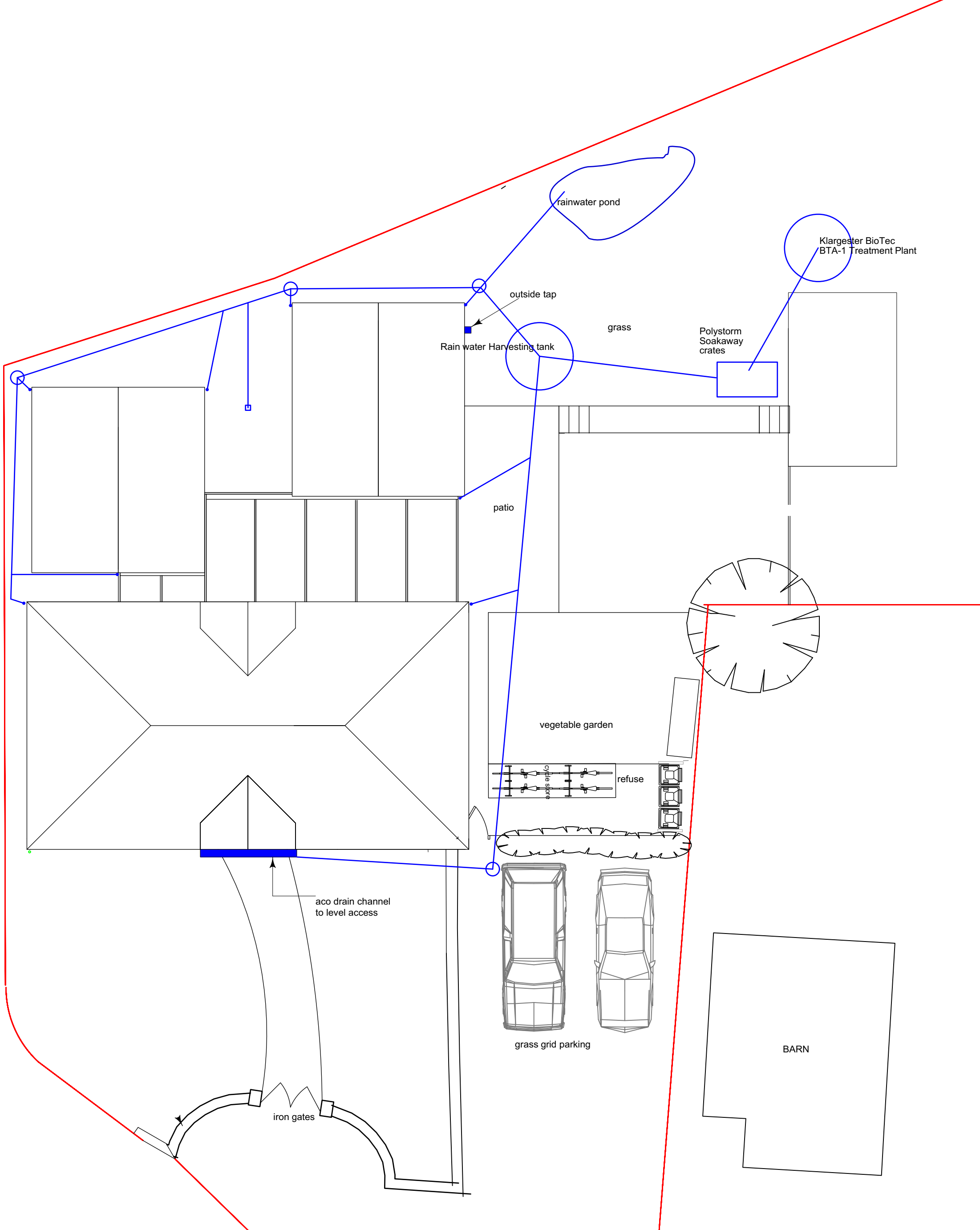
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DRAWING SCALE: 1:100

SURVEY DATE: 02/2021

SHEET: A0 **REVISION:** -

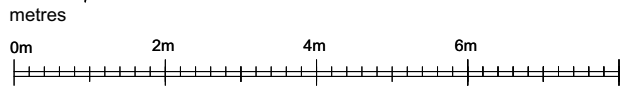
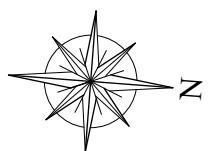
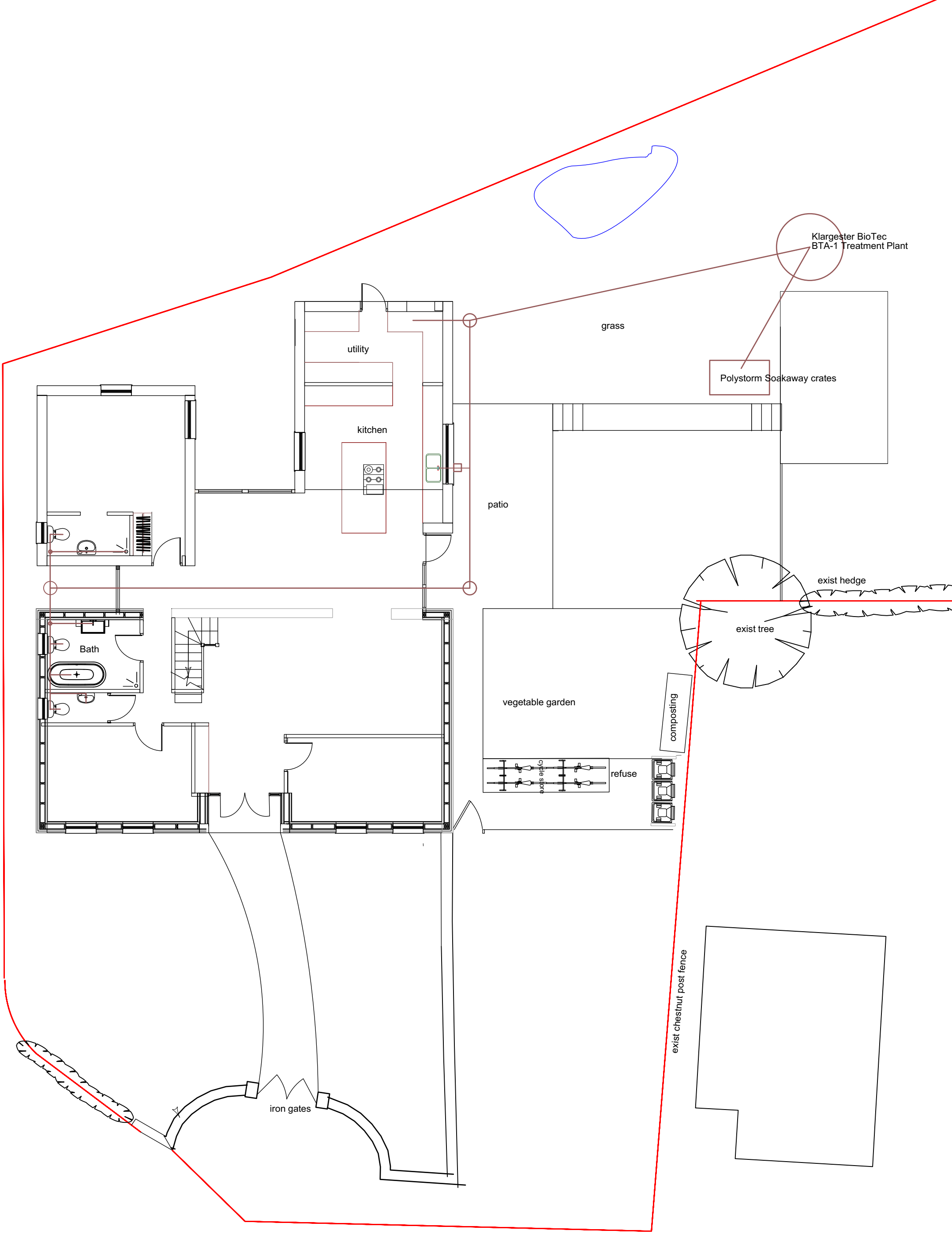




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Rose Hill, Vanity Lane, Linton ME17 4BP
 Demolition and re-building of existing barn
 to provide 1x3 bed dwelling including
 extensions
PROPOSED SURFACE WATER PLAN

Drawn by:	DA
Checked by:	DA
Scale:	1:100@A3
Date:	Dec 2022
Drawing No:	NC / RH/con11/01

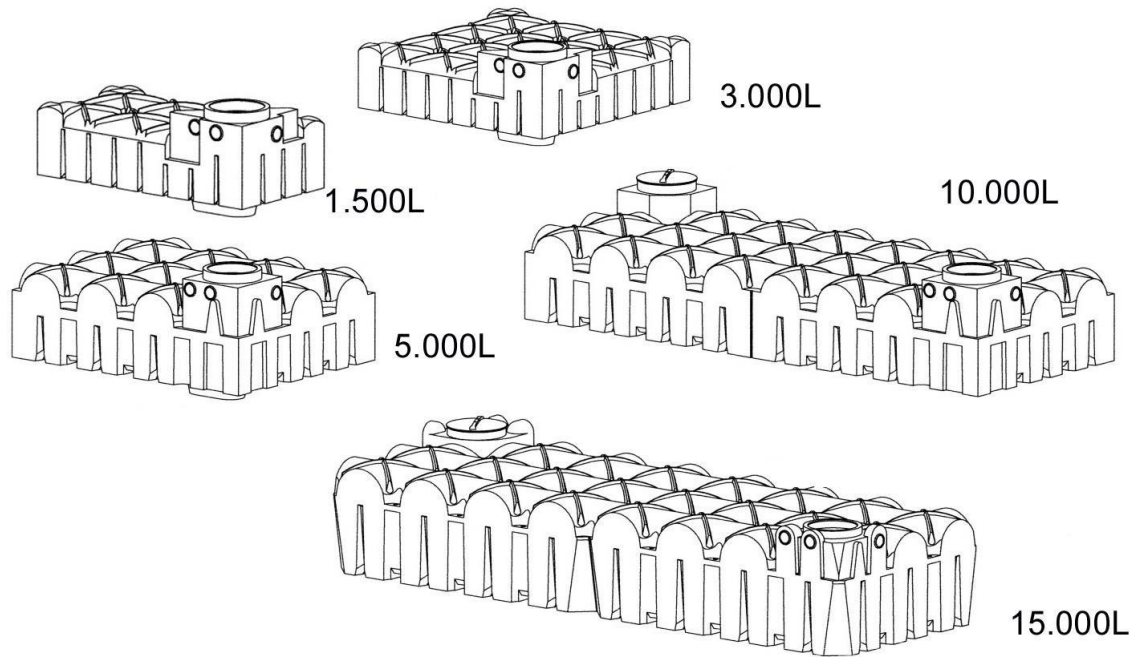


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Scale:	1:100@A3
Date:	Dec 2022
Drawing No:	NC / RH/con11/02

Technical Documentation
Underground Container F-Line
1.500L, 3.000L, 5.000L



1. Location

1.1 Position to buildings

The excavation space must not be within the minimum distance to buildings, see point 3 figure 1. The tank may only be built over if the appearing loads are not higher than the traffic loads.

1.2 Traffic conditions

Loading class A15 (e.g. pedestrian, cyclist): no special equipment necessary.

Loading class B (passenger car, minibus; max. axle loading 2,2 Tonne): Driveable complete set I and II. Minimum distance from tank top to the earth's surface: 600 mm

1.3 Ground conditions

The tanks may lie in ground water and/or surface water up to the tank top max. (shoulder height; see figures under point 4). The soil coverage must be at least half as high as the immersion depth in the ground / surface water (lifting protection). In non permeable ground the depth may not exceed 250 mm.

1.4 Hillside situation

The soil of the area has to be checked for possible soil movement (DIN 1054 edition 1/2003, E DIN 4084 edition 11/2002) and if necessary it will need to be secured with a supporting structure (e.g. a wall). Further information is available at the local public authorities and building enterprises

1.5 Installation details

In clay ground conditions: 1.75-m depth of the excavation (picture 2 and 13a under point 3) no angle of repose necessary. The excavated area should be wide to allow compression of the filling material. (200 mm in picture 2 under point 3). With installations deeper than 1.75 m an area of 500 mm is necessary; the tank should be covered with at least 300 mm thick of filling material (picture 13a under point 3).

In loose ground conditions (coarse sand, gravel) the above information is valid for 1.25-m excavation depth.

Also with excavated area widths of 500 mm, in the pictures from 3 to 12 as well as 13a, shown installation steps are valid.

1.6 Further criteria

Existing pipelines, pipes, vegetation as well as other specifics must be considered, so that damage or hazards will be avoided. The soil coverage from the tank shoulder (point 4) may be up to a maximum 1.5 m.

2. Installation

2. 1 Backfill material at the tank (backfill, bedding; point 3 figures 2, 3, 4, 13 and 13a)

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

2.1.1 Sand - gravel mixtures (SW and GW to German Institute for Standardization 18196 and ENV 1046) are the most favourable filling materials, because they have a grain line which consists of several grain sizes with only a low amount of fines (fines: under \emptyset 0,06mm). At the description of the mixtures the first number gives the mesh width (simplified \emptyset) of the smallest grain and the second one those of the biggest grain: e.g., 0/32; 2/16; 2/8; 2/32; 4/16. Which mixtures are available, strongly depends on the regional supplies.

2.1.2 Concrete gravel, or treated concrete rubble, with a particle size of 0/32 mm is particularly well suited for use in clay/loam soil conditions with ground water and a high water table. When ground water and a high water table are present, it is particularly important to ensure good compaction, especially at hard to reach places.

2.1.3 Stone Chippings - crushed rock particles between 2/32 mm in size and is primarily suited as a filling material; however due to its sharp edges, the tank must be protected against damage, for example using a sand coating.

2.1.4 Excavation, sand and gravel mixture with mixed particle sizes is suitable for use as a filling material when it meets the criteria listed under Item 2.1.

2.1.5 Top soil, clay, loam and other types of cohesive soils are not suitable filling materials.

2.2 Filling beyond the backfill

Excavated soil or other material can be used if this is stable and permeable.

2.2.1 Compression around the pump sump (1500L-5000L). The area around the pump sump must be very meticulously compressed. To compress the area behind the pump sump the material must be filled in gradually and pressed down with a suitable device, e.g., a roof batten.

2.3 Backfilling and compaction methods

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

2.3.2 Methods that are not to be used include in particular adding water. Adequate compaction is not achieved and the mixture of particle sizes combine in such a way that the compaction is unstable.

2.3.3 Base layer driveable version

A range of grain size 2/45 must be used

2.4 Pipes

2.4.1 The feed pipe should be laid with a fall to the tank (>1%).

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

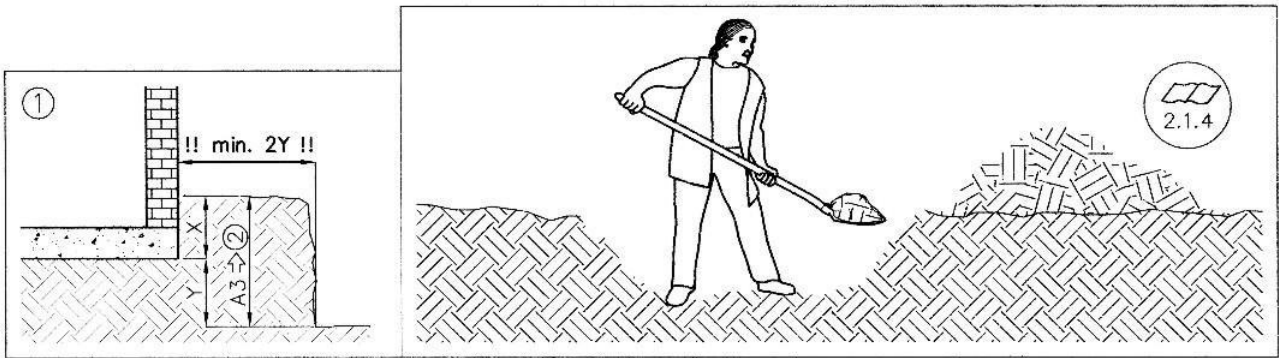
2.4.3 The service pipe is to be installed to prevent any flooding from the tank entering the service room (e.g., cellar) if the tank is full. This can be achieved, for example, by a high enough incline of the pipe from the house to the tank. Or by the installation of a seal in the ductwork for cables.

2.4.4 The pipes have to be installed in such a way that frost damage is avoided. This is to be arranged according to the local climatic circumstances, if necessary in co-ordination with the local authorities.

3. Installation guide



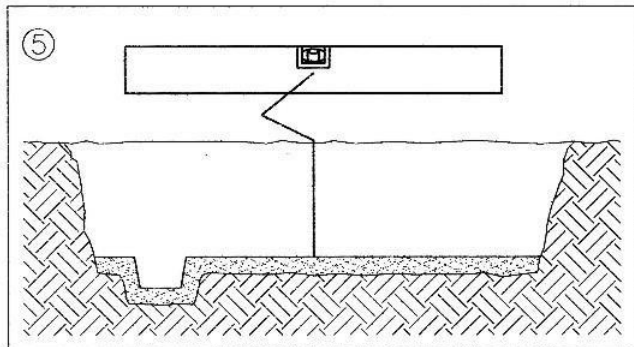
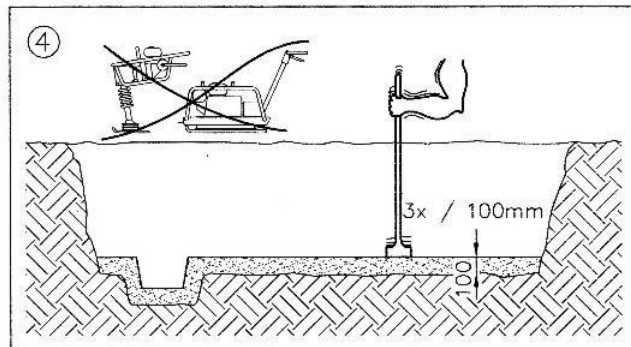
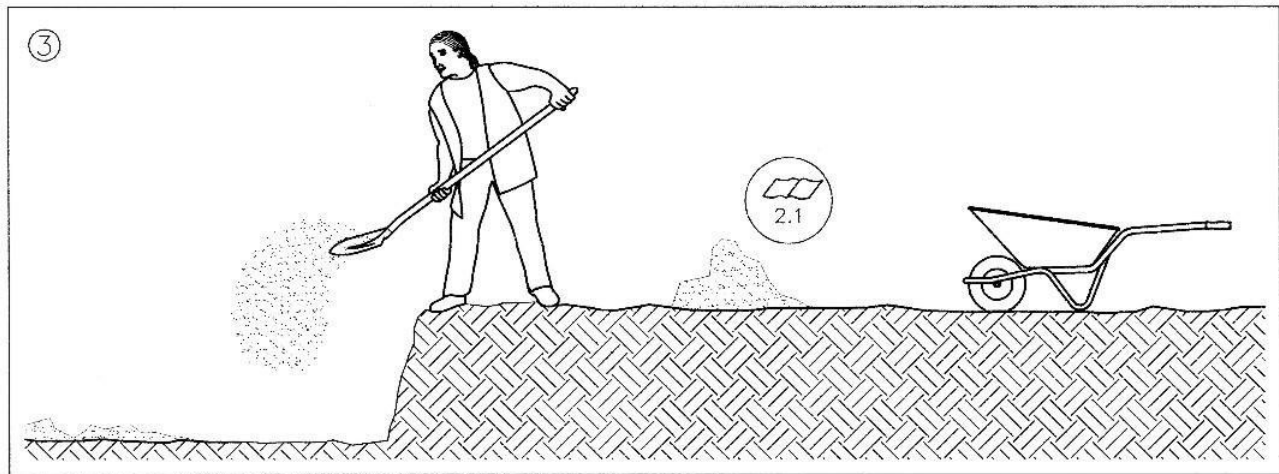
⇐ Notes for further information in chapter

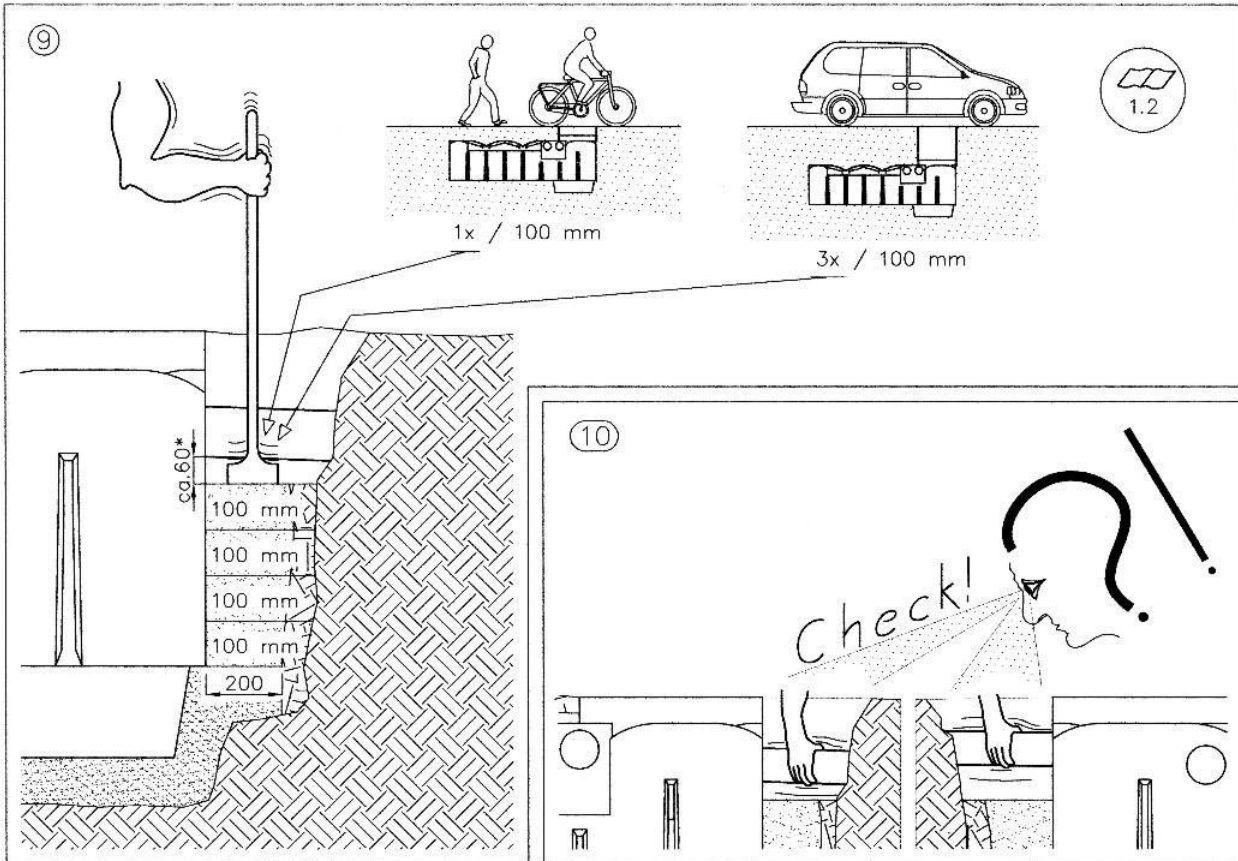
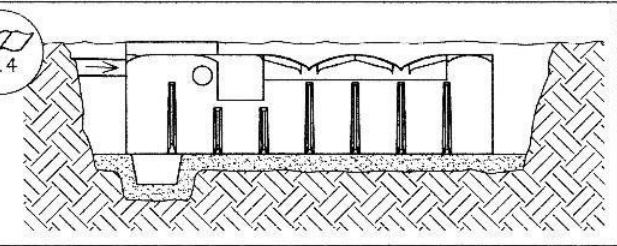
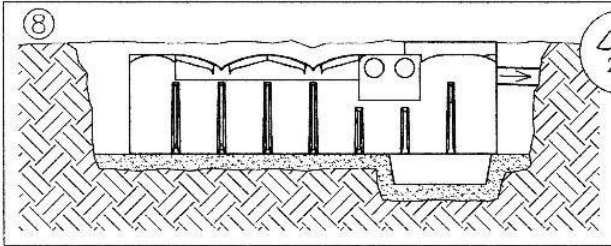
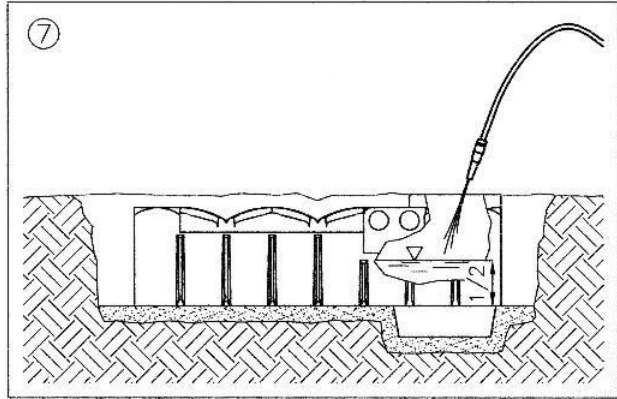
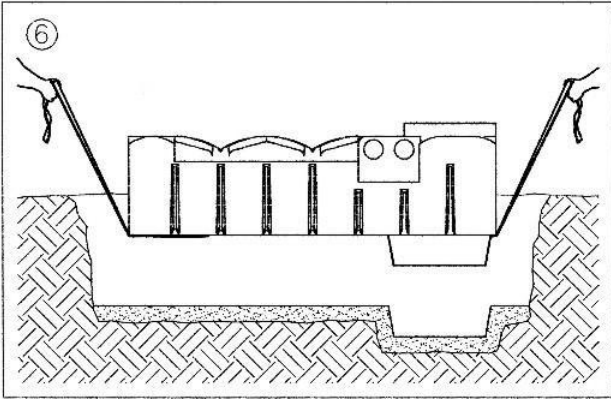


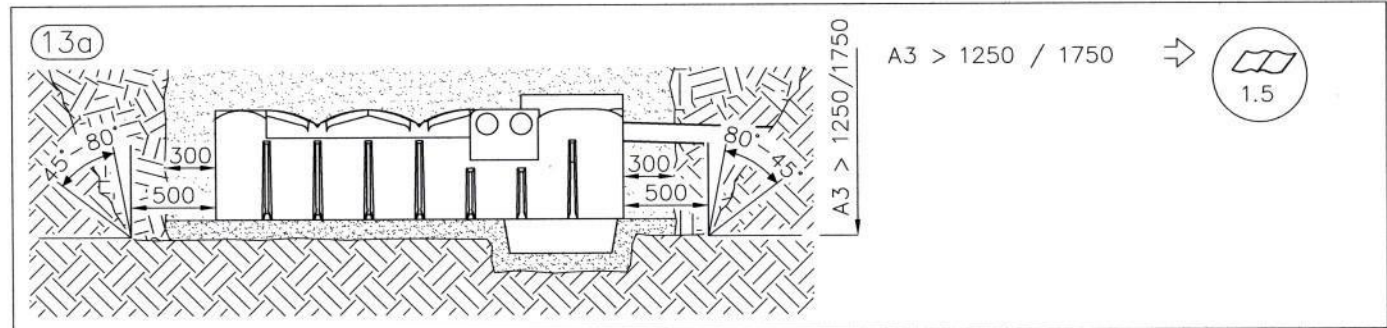
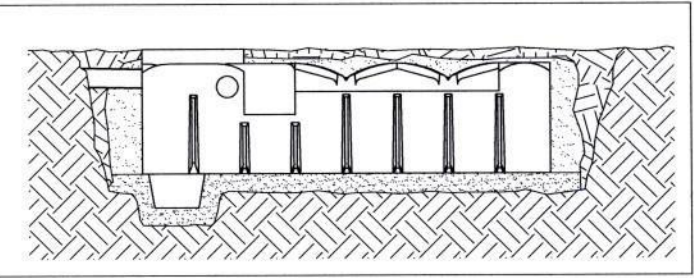
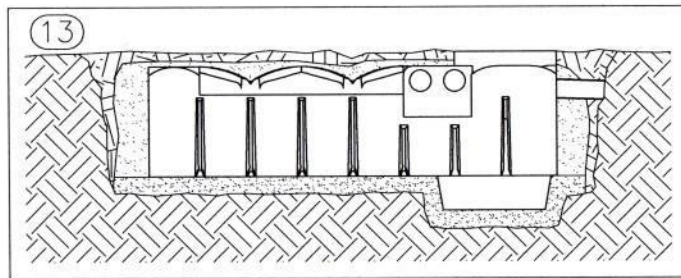
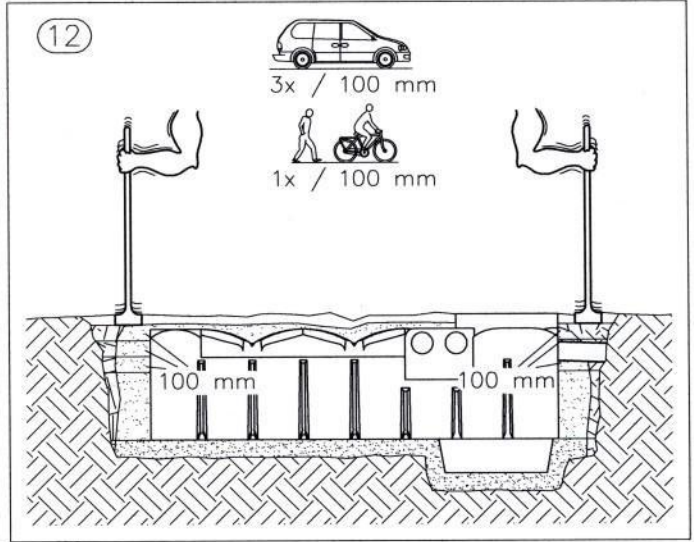
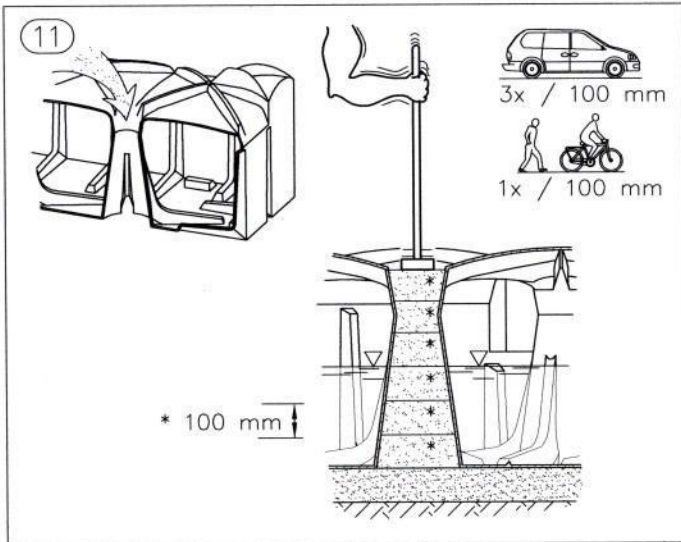
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F-Line	1500 L	3000 L	5000 L	10000 L	15000 L
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A2	1200	2400	2220	2220	2310
A3	835*	835*	1095*	1095*	1340*

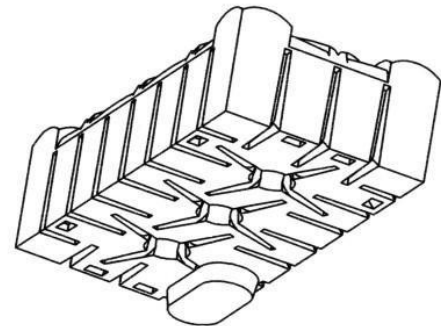
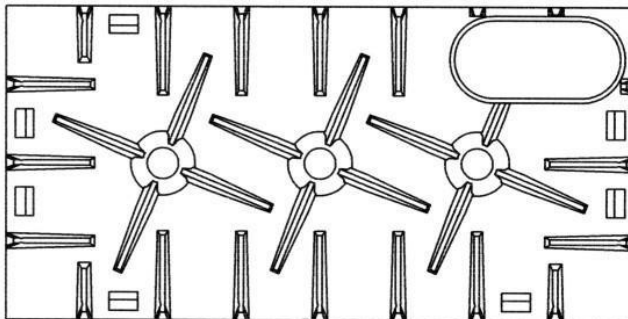
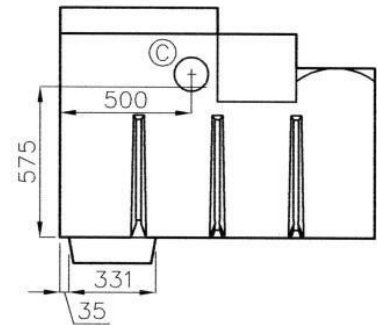
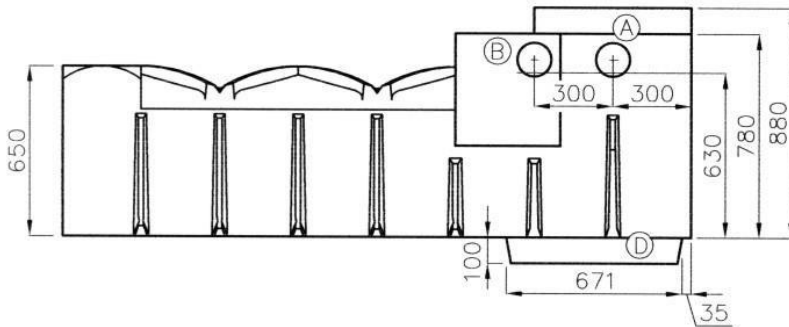
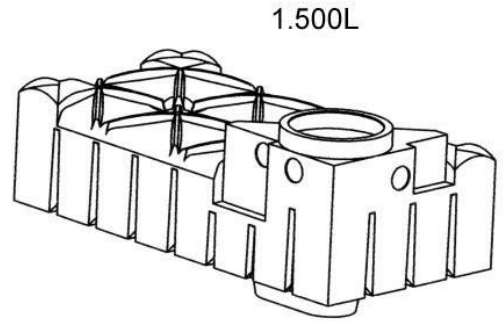
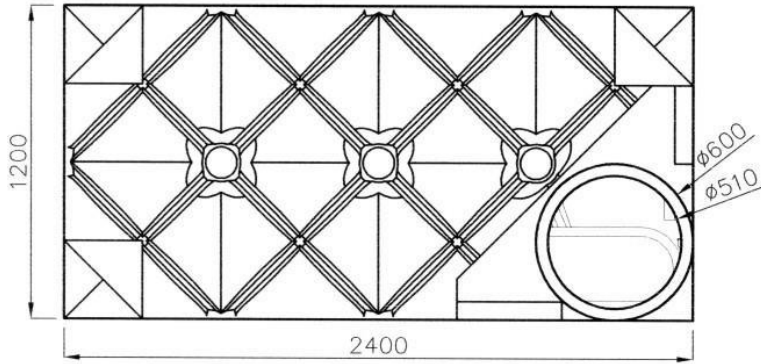
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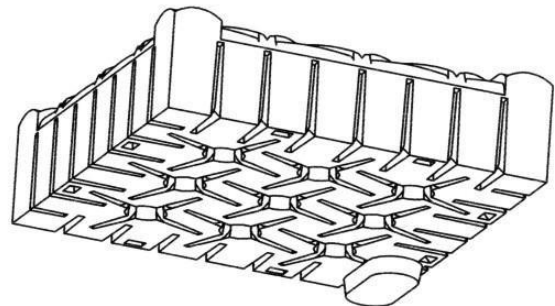
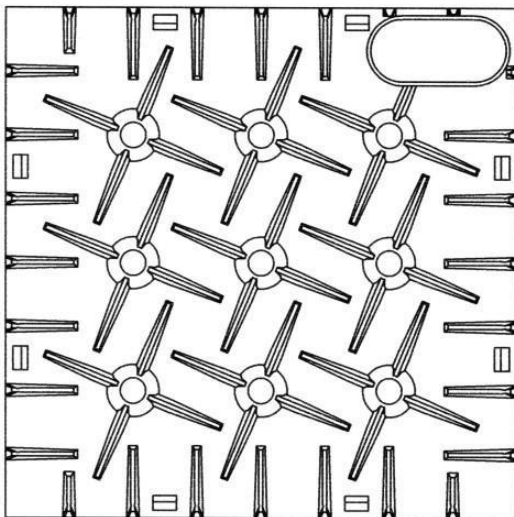
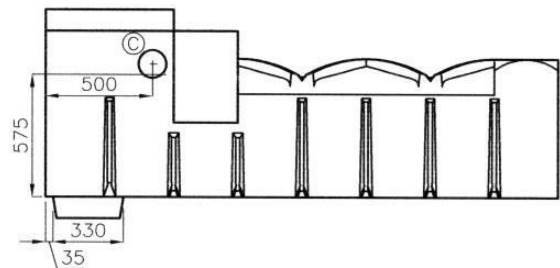
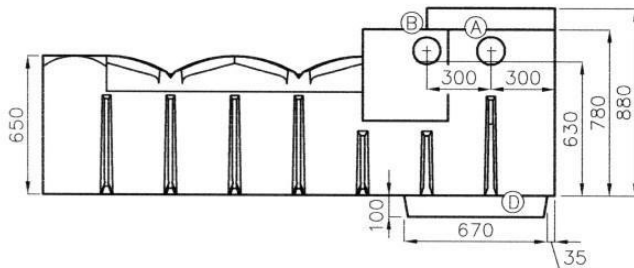
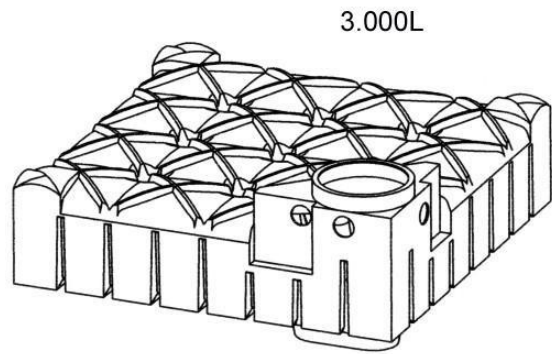
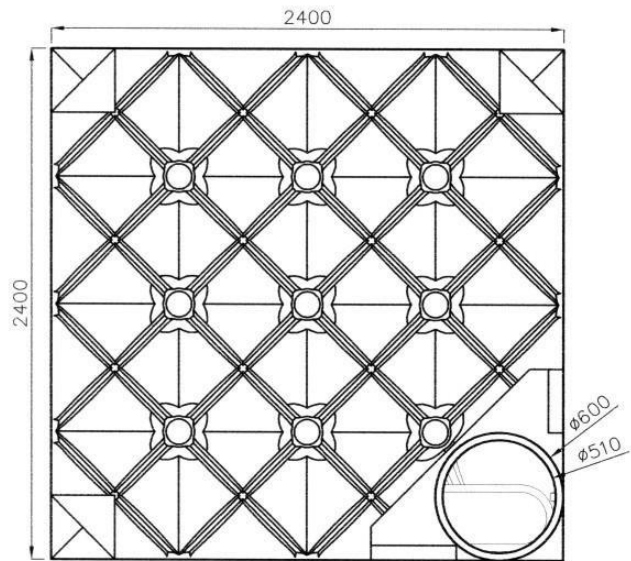




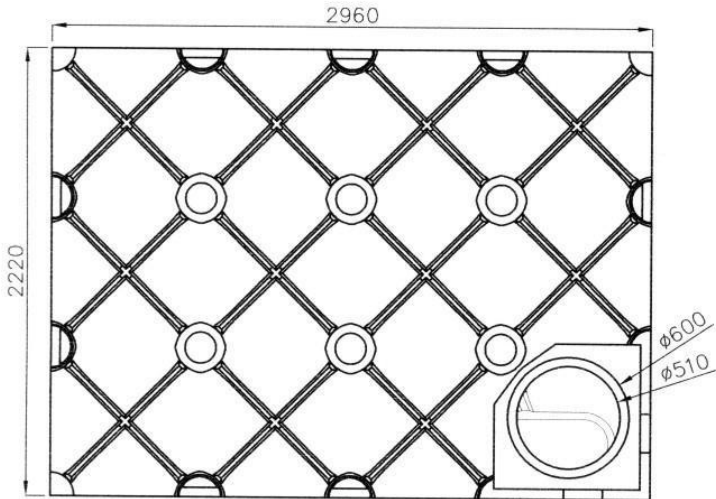
4. Main dimensions and positions of the standard connections



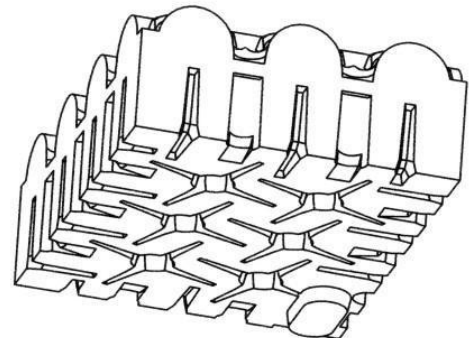
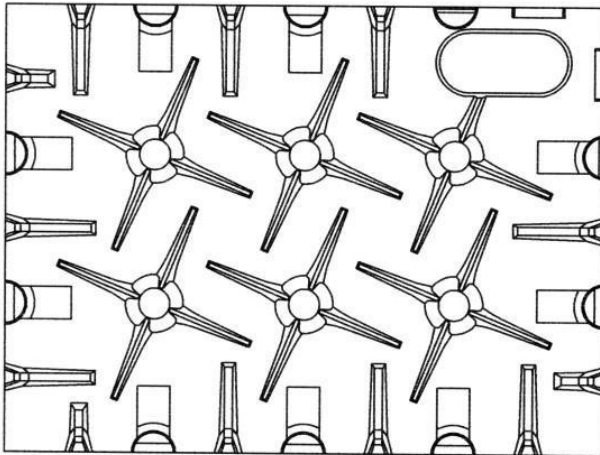
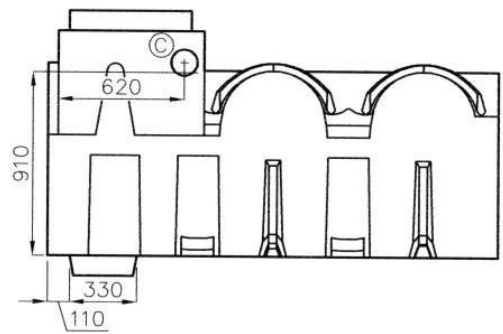
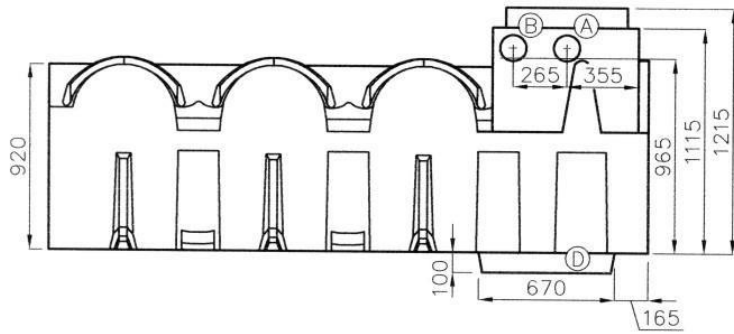
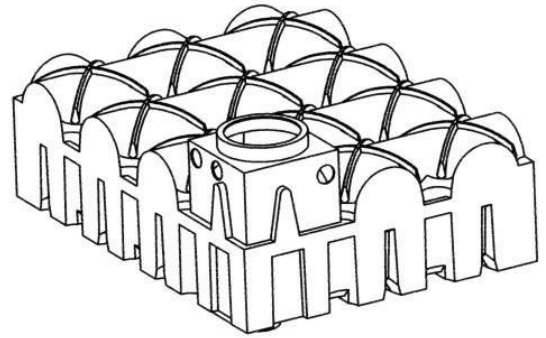
Rainwater utilisation: A/B Connection inflow/connection service pipe DN 100;
 connection overflow DN 100; D pump basin, see front page
 * height tank shoulder



Rainwater utilisation: A/B Connection inflow/connection service pipe DN 100;
 connection overflow DN 100; D pump basin, see front page
 * height tank shoulder



5.000L

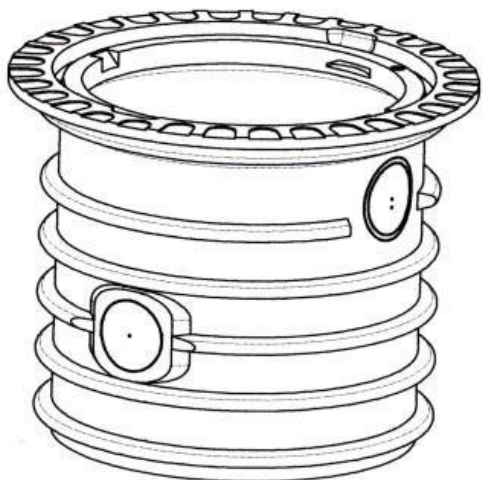


Rainwater utilisation: A/B Connection inflow/connection service pipe DN 100;
 connection overflow DN 100; D pump basin, see front page
 * height tank shoulder

Optional Accessories

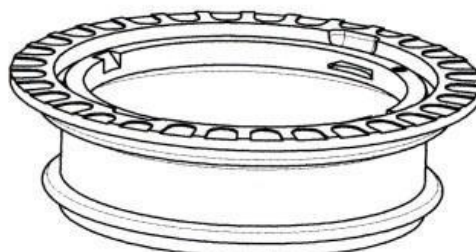
Extension shafts * VS 60 and VS 20

- can be shortened by cutting



VS 60

Lengthens up to max.600 mm



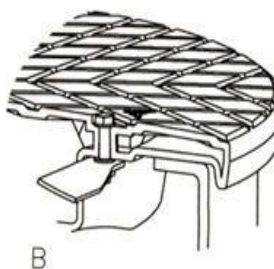
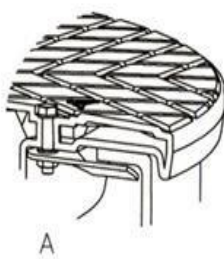
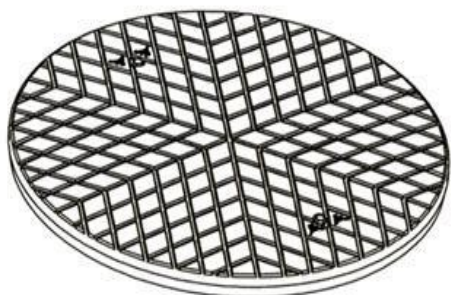
VS 20

Lengthens up to max. 200 mm

* Note: When purchasing this article please refer to the appropriate installation manual for the installation depth.

Shaft coverage TopCover according to DIN 1989

Walk-on Plastic Cover, for 600mm shaft-systems with safety latch according to EN 10891. External diameter 648 and profile according to DIN 19596.

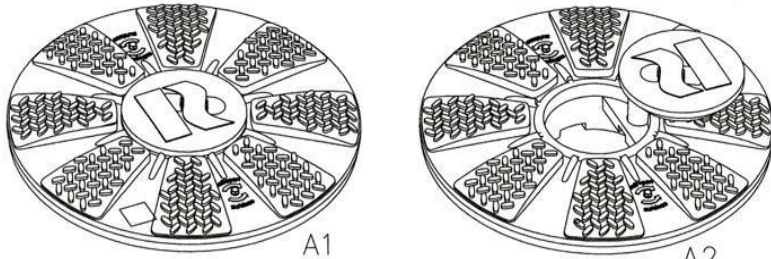


A safety latch closed
B safety latch opened

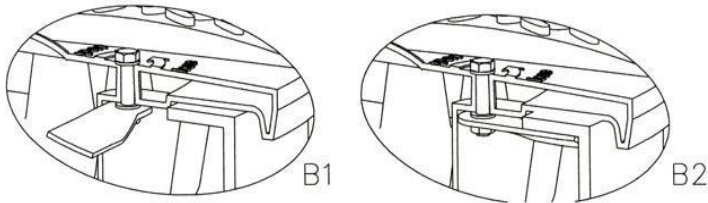
Shaft coverage TwinCover according to DIN 1989

Walk-on Plastic Cover, for 600mm shaft-systems with safety latch according to EN 10891 and integrated inspection opening, which is lockable.

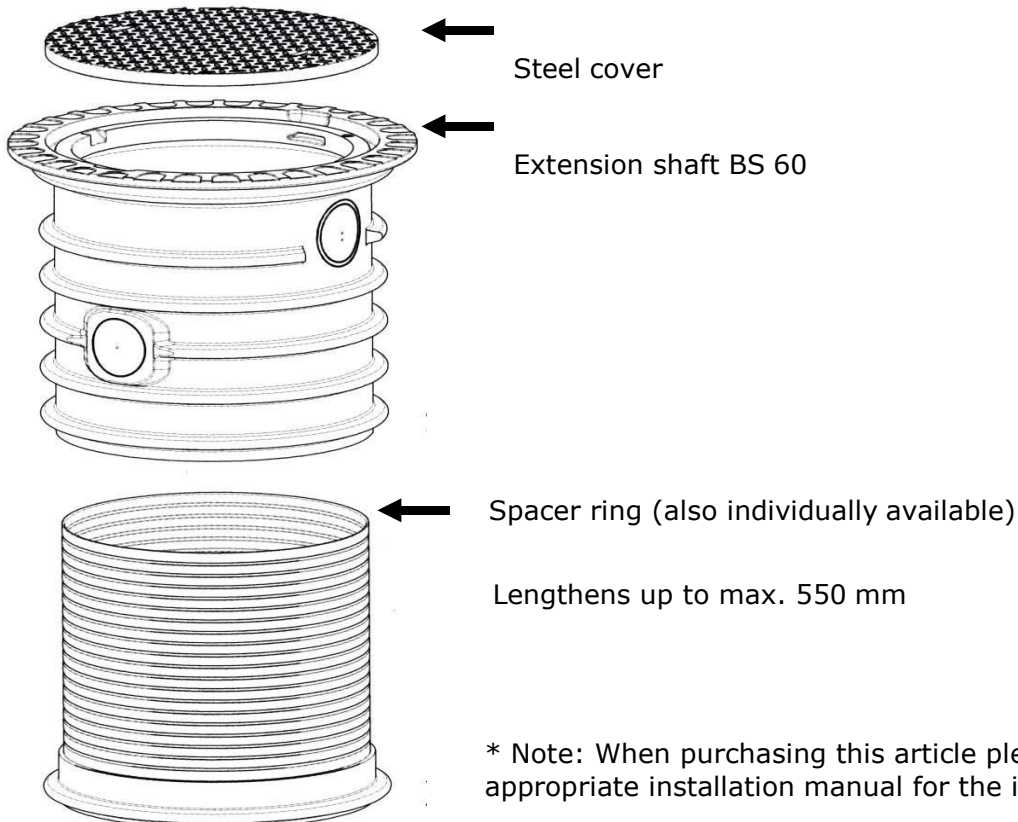
External diameter 648 mm and profile according to DIN 19596.



A1 inspection opening closed
A2 inspection opening open
B1 safety latch opened
B2 safety latch closed



Car set complete *



* Note: When purchasing this article please refer to the appropriate installation manual for the installation depth.

February 2013

Technical changes and rights reserved. No liability for misprints

The contents of the technical documentation are a component of the guarantee terms

Planning and installation regulations are to be followed, as well as the accident prevention regulations

Notes

Garden Angel Range

Residential Rainwater Harvesting System

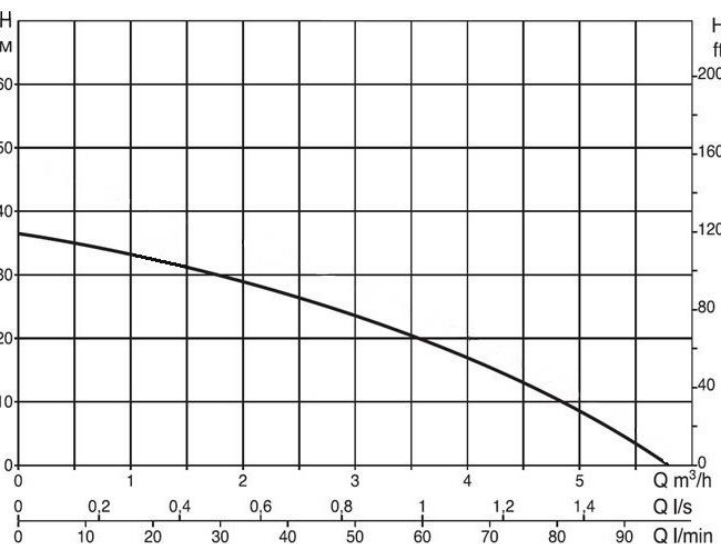
The Garden Angel range of rainwater Harvesters is a compact, simple and cost effective system designed to make it as easy as possible for the home owner to install. We have stripped away all complicated aspects of most systems currently available on the market.

Simply connect power and discharge pipeline, and the system will delivery pressurised, filtered harvested rainwater to outside tap(s).

Available in a range of different capacities, 1000L, 1400L 2200L, 2400L and 3300L.

Features

- Easy, trouble free installation.
- 110mm inlet & overflow.
- Integral self cleansing filter system.
- Calmed inlet to prevent sediment displacement.
- Super robust chamber design.
- Recessed access covers are available as an extra.
- (checker plate as standard)
- Reliable 230v submersible pump.
- 32mm discharge line.



Model Ref	Dia (mm)	Depth (mm)	Inlet depth (mm)	Outlet depth (mm)	Access Cover* (mm)
1000L	1000	1500	450	516	600 x 600
1400L	1200	1500			600 x 750
2200L	1200	2000			900 x 900
2400L	1500	1500			
3300L	1500	2000			

*Each cover is galvanised steel and has a supporting weight of 3.5T.

Additional Extras

Pipework & Fittings



Mains top up system



Extra tank for added storage



Battery Backups



Servicing & Commissioning





BioTec

BTA-1 to BTAU5 Treatment Plants Installation & Operation Guidelines

Enclosed Documents

DS1380K	BTA-1 Gravity Treatment Plant
DS1381K	BTA-1 IPS Treatment Plant
DS1384K	BTAU2 & BTAU3 Gravity Treatment Plant
DS1385K	BTAU2 & BTAU3 IPS Treatment Plant
DS1386K	BTAU4 Gravity Treatment Plant
DS1387K	BTAU4 IPS Treatment Plant
DS1401K	BTAU5 Gravity Treatment Plant
DS1402K	BTAU5 IPS Treatment Plant
DS1342K	Gravity & IPS System Isolator Wiring Diagram
1011027	DTP Control Panel Wiring Diagram

Part Code	1011359
Issue	03
Description	ECN 1624
Date	September 2022



HEALTH AND SAFETY

These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can become acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following the guidelines supplied with the equipment.

We recommend the use of relevant PPE when working with GRP components.

A qualified electrician should carry out electrical work.

Sewage and sewage effluent can carry micro-organisms harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Covers must be kept locked.

Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated.

The correct ongoing maintenance is essential for the proper operation of the equipment. Service contracts are available and recommended. Please contact our Sales department for details of your local service provider.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses.

Ensure that the working area is adequately lit.

The power supply to the equipment should be isolated at the main RCD before lifting the blower cover.

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.

Desludging must be carried out by a licensed waste disposal contractor holding the relevant permits to transport and dispose of sewage sludge. The contractor must refer to the desludge instructions contained in these guidelines.

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1 Introduction

1.1 Engineering & Process

Our Packaged Sewage Treatment Plants are designed to treat domestic sewage to an average final effluent of less than 20mg/l Biochemical Oxygen Demand (BOD), 30 mg/l Suspended Solids, and 20mg/l Ammonia when the incoming flow and biological loads are within the limits for the plant as specified by us.

These units are exclusively for the treatment of sewage from domestic properties. Contact our sales team for other non-domestic applications.

As a general guide the BTA1 is suitable for 6 PE, BTA2 is designed to treat 9 PE, BTA3 suitable for 12 PE, BTA4 is designed to treat 18 PE and BTA5 is designed to treat 25 PE.

The Treatment Plant is based on an improved form of trickling biological treatment, which continuously recycles the settled liquor by airlift. Process takes place in 3 distinct stages.

Primary Screening & Settlement

Sewage enters the primary section where the solids separate from the liquid forming a scum or a sludge.

The settled liquor is then passed on through a dividing baffle into the secondary settlement stage.

Biological Treatment

From this secondary settlement stage the liquor is lifted and distributed over the media bale by an airlift.

The biological filter bale consists of a composite plastic media of high specific surface area. This is where the biological process takes place with biomass forming on the surface of the media. The biomass consumes the major part of the incoming biological load.

The air lift is driven by a blower mounted within a weatherproof housing which should be located in a shaded position above possible flood levels. The supply of air from the blower provides adequate oxygen to the plant. Air from the plant can be vented by either the soil vent pipe or by a separate vent.

Final Settlement

The treated sewage passes through the biological filter bale to the final settlement stage where humus solids settle out and clarified liquor passes through the final zone. It is then discharged via the outlet, which is fitted with a v-notched weir or pump arrangement. This provides flow control and increases retention time throughout the wastewater system to a watercourse or soakaway.

1.2 Applications

	BTA1	BTA2	BTA3	BTA4	BTA5
Domestic Population Equivalent	Up to 6	Up to 9	Up to 12	Up to 18	Up to 25
Total BOD Loading	0.36kg/day	0.54 kg./day	0.72 kg./day	1.08 kg./day	1.50 kg./day
Maximum Flow	0.9m ³ /day	1.35m ³ /day	1.8m ³ /day	2.7m ³ /day	3.75m ³ /day
Peak Flow Rate	0.18 m ³ /hr	0.27 m ³ /hr	0.36 m ³ /hr	0.54 m ³ /hr	0.75 m ³ /hr

2 Installation Guidelines

2.1 Siting

It is essential that all surface water be segregated and excluded from entering the treatment plant.

We do not recommend a pumped feed to a Treatment plant without special reference to our Sales team.

Sink waste disposal units should **not** be used in conjunction with a Treatment plant. Please contact us for further guidance.

We do not recommend the use of air admittance valves with W.C systems connected to the plant. Tile vents should not be used as the sole drainage ventilation facility but if this cannot be avoided the Unit should be independently ventilated. All inspection points within the drain system should be sealed to enable ventilation at high level.

If the plant is remote from buildings, ventilation of the inlet drain will be required.

In hard water areas a softener may be required, where one is fitted, the spent regenerant must be routed to a separate small soakaway.

2.2 Population Equivalent

Refers to normal family residents, some of whom have daytime occupations or schooling away from the house and includes overnight guests who may stay for periods of more than one night. Contact us for advice regarding non-standard situations.

2.3 Flow Balancing

Our package plant can deal with influent surges. The plant holds a large volume of treated effluent, which provides a significant dilution of influent surges, thereby minimizing any shock to treatment. It also has a surge control outlet arrangement.

2.4 Installation

These guideline instructions apply to the BTA1 -BTA5 Range of plant and should be read in conjunction with the section on Electrical Guidelines.

Before beginning the installation, the whole of these instructions must be read and understood. It is essential that you comply with all the given instructions.

Adherence to good Working Practices and the Health & Safety at Work act on site should be observed. Prior to installation, check the tank for damage and always handle with care, avoiding heavy impact or contact with sharp objects.

On no account should the specified maximum drain invert depth be exceeded.

Never fill a freestanding tank with water or back fill an empty tank. Always fill the tank with water at the same time as the back fill material is placed. The water level inside the tank is to be maintained within 200mm of the concrete level during backfilling. This avoids the risk of flotation and minimizes the applied loads to the tank.

These instructions assume no more than pedestrian duty loadings will be applied to the final installation. Traffic or other heavy superimposed loads must not be transferred through the walls of the tank. Select the unit location in accordance with building regulations, required distances from buildings, water supplies and irrigation systems.

2.5 Site Planning

The following points should be considered before installation of the equipment:

The discharge from a treatment plant may require the permission of the relevant Environmental Regulator and the complete installation, including the specified irrigation system should have Planning and Building Control approval.

In many cases, the effluent discharge is to an irrigation system. A soil porosity test should be carried out, please refer to current guidelines in place at plant's location e.g. or Building Regulations pt. H2. EN12566 part 2, or EPA Single house manual (Ireland).

There must be at least 1 metre of clear, level ground all around the unit to allow for routine servicing.

Wherever practicable, the unit should be installed as far as possible from any habitable building. Many Local Authorities will insist on a minimum distance of 15 metres from any building (7 metres Eire) and 10 metres (same distance for Eire) from any watercourse. Further information can be obtained through your Local Authority and in the Building Regulations in the UK and though the EPA in Eire.

Care should be taken not to place the unit in close proximity to any openings from the building.

Adequate access must be provided for routine de-sludging and maintenance. Usually, the unit should be sited within 30 metres of a hard standing area suitable for a vacuum tanker. Vehicles should not be permitted within a distance equal to the depth of the unit unless suitable structural protection is provided to the installation.

Treatment units must be installed at a level, which will allow connection to the incoming drain and a free discharge at the system outlet (excepting units with an integral discharge pump). Effluent pumping stations are available to lift the discharge to a higher level and/or pump to remote discharge points. The location should not be subject to flooding.

If the unit has to be recessed, measures must be taken to ensure that it cannot be flooded by surface water run-off.

Where necessary the treatment unit should be fenced off or otherwise protected. Maintenance access must be maintained as above. Always keep the system locked. An open treatment plant must not be left alone

The drainage system connecting to the treatment unit must be adequately vented in accordance with the Building Regulations. The head of the drainage system should be connected to a stack pipe, open at high level, so as to draw foul air from the system and sited with consideration to prevailing wind direction. Tile vents & air admittance valves should not be used as the sole drainage ventilation facility, but if this cannot be avoided, the treatment unit should be independently ventilated. All inspection points within the drain system should be sealed so as to enable ventilation at high level.

Acceptable tolerance for installation of the Treatment Plant is +/- 20mm.

Our domestic treatment plants are structurally tested in accordance with EN 12566-3, which specifies structural stability testing for both wet and dry sites using granular backfill 3-8mm. However in GB it would be typical for our tanks to be installed in concrete due to rising water table, and it can generally be assumed that buoyancy prevention of concrete backfill is more advantageous than the granular backfill materials used in testing.

The Concrete Specification given below is not a site specific installation design.

GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 (BS 8500-1)		
TYPE OF MIX		(DC) DESIGN
PERMITTED TYPE OF CEMENT		BS 12 (OPC): BS 12 (RHPC): BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)	BS 882	
NOMINAL MAXIMUM SIZE OF AGGREGATE		20 mm
GRADES:	C25 /30 C25 /30 C16 /20	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 C20	270 - 280 Kg/M ³ 220 - 230 Kg/M ³
SLUMP CLASS		S1 (25mm)
RATE OF SAMPLING		READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER		

Having excavated, if the base is excessively wet or unstable, lay 200mm of hard-core and line with polythene, prior to laying the 200mm level base of concrete. If necessary, make a sump hole to one corner of the excavation to accommodate a suction hose from a site pump, thereby keeping the excavation as dry as possible.

Lower the tank on to the levelled concrete, ensuring the top of the tank is completely level and that all connections line up. With the tank in position commence filling with water and at the same time back fill with concrete to just below the inlet/outlet levels. The water level inside the tank is to be maintained within 200mm of the concrete level during backfilling. It is important that these two operations are carried out simultaneously to avoid the risk of flotation. When back filling with concrete it is essential that the underside of the tank is evenly supported without voids.

Concrete backfill must be manually compacted - we do not recommend the use of vibrating lances. Make the inlet/outlet and air duct connection. Continue back filling with concrete to 50mm below the cover flange, completing the installation to ground level with free flowing soil.

When concrete back filling, care should be taken not to concrete in cover fixings. A small amount of soil can be placed on the green curved top, but not on the access panel.

2.6 Options

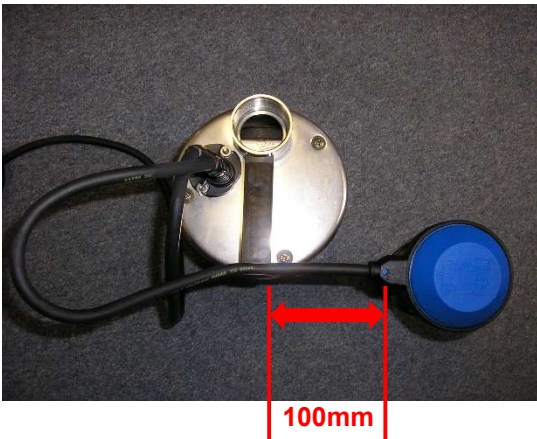
Where installations involve deep inverts on wet sites, concrete back fill in excess of that required for standard depth, should be applied in gentle pours with the tank fully ballasted. This operation should only be completed when the main backfill has set.

These treatment plants are available with a gravity outlet or integral pump set (IPS). The installation procedure for the gravity version is the same, but the pumped outlet is suitable for MDPE pipe work at a shallower invert.



Pump Position

Units with optional discharge pump: Check that the pump float and associated pipework are positioned as shown and that the float is free from obstruction and can move freely.



Float Setting

The float cable length is pre-set during assembly to a dimension of 100mm. Check that this dimension has not been altered. If for any reason the cable becomes disconnected from the retaining clip it should be replaced so that there is 100mm of cable between the clip and the float.

Note: Setting less free cable will cause the pump to operate more frequently and may shorten its working life.

Important: With the pump chamber empty of water the float must hang clear of the chamber floor. The correct float position and distance is essential. The float must not be able to either trap or tangle, as this will prevent its correct operation. The float must not jam.

2.7 Venting & Blower Housing

A 110mm diameter multipurpose air duct is located on the outlet side of the plant. A t-piece must be connected so the unit can be vented, and the air hose connected to the blower housing

Vent side of the T piece to be taken above ground and suitable vent mushroom fitted, cable and hose duct side of the T to be run back to the blower housing and sealed with expanding foam to avoid foul air recirculation into the plant

Installer must ensure adequate venting is provided for the treatment plant to work efficiently.

The ducting for the air hose must connect through an independent concrete base for blower housing location. The duct must be laid with long radius bends to enable the hose to be threaded through.

The blower housing base slab should be located 3 to 13 metres from the outlet end of the plant such that the 15 metres of air hose provided is sufficient. The concrete base should be 150mm thick and must be large enough to accommodate the blower enclosure.

Preferably the location for siting the blower should be shaded. Once the air hose is connected to the blower the duct through which it has entered should be sealed with spray foam.

Where pumped outlets are included, electric cable is provided with the pump. The cable may need to be extended using a junction box to reach the blower housing, via the airline duct (depending on the distance the blower housing is from the treatment plant).

Electrical installation from the supply should be made by a competent electrician in accordance with the appropriate regulations.

It is essential that this treatment plants installation & set up is inspected correctly. This may be completed by the installer; however, it is recommended that the Pre-service Agreement Inspection be completed by us or an approved Service Engineer. This may be undertaken for a modest fee.

2.8 Dimensions

Model No.	Diameter mm	Depth mm
BTA1	1850	2200*
BTA2	1850	2700*
BTA3	1850	2700*
BTA4	2650	2100**
BTA5	2650	2600**

* Depths shown are for standard 1 metre invert unit. Additional 500mm to be added for units with 1.5 metre inverts.

** Depths shown are for standard 0.875 metre invert unit. Additional 500mm to be added for units with 1.375 metre inverts.

2.9 Self Help

In order to minimize the need for dealing with emergency situations we recommend that Treatment Plants have a Pre-service Agreement Inspection, then is regularly serviced by us or an approved Service Engineer. Provided that your plant is installed, operated correctly and serviced, you should not need to get into much – if any – self-help.

However, some of the most likely question and answer situations are listed below. Firstly, any sewage treatment plant, if abused, can become a health hazard. If in any doubt, ask us or an approved Service Engineer.

Blower Stopped:

Check the unit is switched on, the incoming power supply circuit and fuse

Blower works but no water distribution inside the plant: Check hose connections.

Check distributor heads.

If the air lift pipes are suspected to be blocked, call for service.

Check regulating valve is not closed.

Plant Odour:

Check blower working.

If blower working, plant probably needs desludging.

Check vent circuit is clear

Check that the air duct entering the blower housing has been sealed with foam.

Plant Flooding.

Check for blocked outlet system.

If pumped outlet, check for pump operation, check floats and pump power supply.

2.10 Do's and Don'ts

Do take out a service agreement and let the experts look after your plant.

Do contact us for advice if you have any cause for concern.

Don't pump feed the plant without reference to us.

Don't use a waste disposal unit as you will be adding to the biological load, and your system may not be large enough to cope with the waste. If you are unsure, please refer to our sales team for guidance.

Don't throw any medicines down the toilet.

Don't empty large quantities of bleach or similar cleaning reagents into the system.

Don't empty cooking oil or similar down the sink.

Don't cover the plant with soil material or prevent access for service and desludging.

Don't apply a hose or jet wash to the biological filter unless specifically advised to.

Don't try to enter the plant. Make sure the plant is always locked

Don't put sanitary towels, incontinence pads, nappies, tampons, or other non-biodegradable items down the toilet.

Don't allow backwash from swimming pools or hot tubs to be discharged into the treatment plant.

2.11 Blocked air lifts

Occasionally airlifts block. Usually this is as a result of non-biodegradable products entering the unit, such as sanitary items, rags, J clothes, plastic bags, etc. These items should not be allowed to enter the unit, as they will adversely affect the liquid distribution, the build-up of biomass, overall performance, and effectiveness of the unit.

Sometimes blockages occur as a result of formation of calcium carbonate solids within the air lift pipe.

Calcium carbonate is a gritty white to brown solid. The solid that forms within the pipe varies in colour and consistency depending on the nature of the sewage.

This type of blockage usually occurs because there is too much calcium present within the unit, the solid forms when the water chemistry is altered by the air bubbled through the pipe. This is a very unusual occurrence.

To prevent reoccurrence, you should

Ensure that no ground or surface water is allowed to enter the unit.

Check that where a softener is connected to the water supply of the property, that the regenerate chemicals, (which are high in calcium and magnesium salts) are not being fed into the unit.

Consider a softener to reduce the background level of calcium in the main feed supply.

When these blockages occur, the calcium carbonate formed is insoluble, and heavy. Within the pipe it is also sticky with other sewage solids. When wet the solids are not easily cleared from the pipe.

Should you have a recurring problem, please contact us and we will provide a spare air lift pipe.

2.12 Pre-service Agreement Inspection

We recommend that our Engineers or approved service provider should inspect the equipment. However, in situations where expediency is required for owner/installer to inspect, the following basic instructions may prove useful.

Check blower housing has been securely positioned and has been correctly wired to a suitable electrical supply, protected by an earth leakage circuit breaker, ensuring the equipment is correctly earthed. (refer to Installation Instructions). The electrical equipment must be inspected by a qualified Electrician and installed to the local Electricity Authority regulations.

Ensure the air hose has been securely connected to the hose adapter in the blower housing and the other end is connected to the manifold within the plant, ensuring that there are no sharp bends or kinks causing airflow restrictions.

Make sure construction debris is removed from within the plant.

It is essential that the Tank is filled with clean water to the outlet level. Before switching on the unit, ensure the air filter is correctly fitted and that the air intake is completely free of any obstructions. Switch on the unit. The airflow will activate the air lift pumps distributing the water over the biological filter. Check the

centralisation of the distribution cones and adjust if necessary, to provide an even covering of the biological filters. Adjust the spray of distribution using the individual valves on airlines inside the unit.

Allow sewage to enter the plant as necessary and ensure that the blower is left running continuously. Biomass will build-up naturally over 4 -8 weeks and the plant should then treat sewage naturally.

To ensure the plant is functioning correctly and the final discharge is to the required standard, contact your service provider to arrange a Pre-service Agreement Inspection stating the original start-up date.

In order to get the best from your plant, we recommend that you contact us or one of our approved service providers to both carry out a Pre-service Agreement Inspection and service the plant. **This reduces the risk of non-compliance.** It also avoids unnecessary desludging and minimizes the cost of emergency call out visits.

Taken from 'Klargester's Terms & Conditions of Sale'

2.13 Warranty

The company will replace or, at its option, properly repair without charge any goods which are found to be defective and which cause failure in normal circumstances of use **within a period of twelve months from the date of delivery.**

This warranty is conditional upon:

- (a) the Buyer notifying the Company of any claim within Seven days of the failure becoming discernible.
- (b) the Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective.
- (c) the goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.

The Company's liability under this Clause is limited to the repair or replacement of the defective goods, and does not cover costs of transport, installation or associated site costs, if applicable.

The Company's liability to replace or repair the goods is in lieu of and excludes all other warranties and conditions, and in particular (but without limitation) the Company shall have no liability of any kind for consequential loss or damage.

For any further advice, please contact our Service & Warranty department.

A warranty form is included in this package, to register your unit for warranty. Please complete ALL sections of the form and return it at your earliest convenience.

Also within this manual is a **Notice**, describing the necessary maintenance for the plant. This should be fixed within the building.

3 Electrical Installation

3.1 General Electrical Installation Information

It is imperative that the electrical installation of this equipment is entrusted to a competent qualified electrician working to the latest IEE regulations

It is not possible to state a specific installation configuration that would suit all sites. The selection of current protection devices must remain the responsibility of the installer who should select a suitable cable and current overload protection, taking into account the distance from the power source to the unit and any other relevant factors. (In many cases steel wire armoured (SWA) cable, minimum 1.5 sq mm will be suitable).

When installing the electrical supply to the unit, the following points should be considered:

The electric power supply to the tank should be by means of a dedicated circuit with isolation and protection devices consistent with the requirements for fixed equipment and in accordance with the latest regulations of the Institute of Electrical Engineers. This power supply should be independent of all other household protection devices other than the supply authority's main fuse and that provided specifically for the power

supply. In particular, earth leakage devices provided for normal domestic protection must not form part of the supply circuit to the tank.

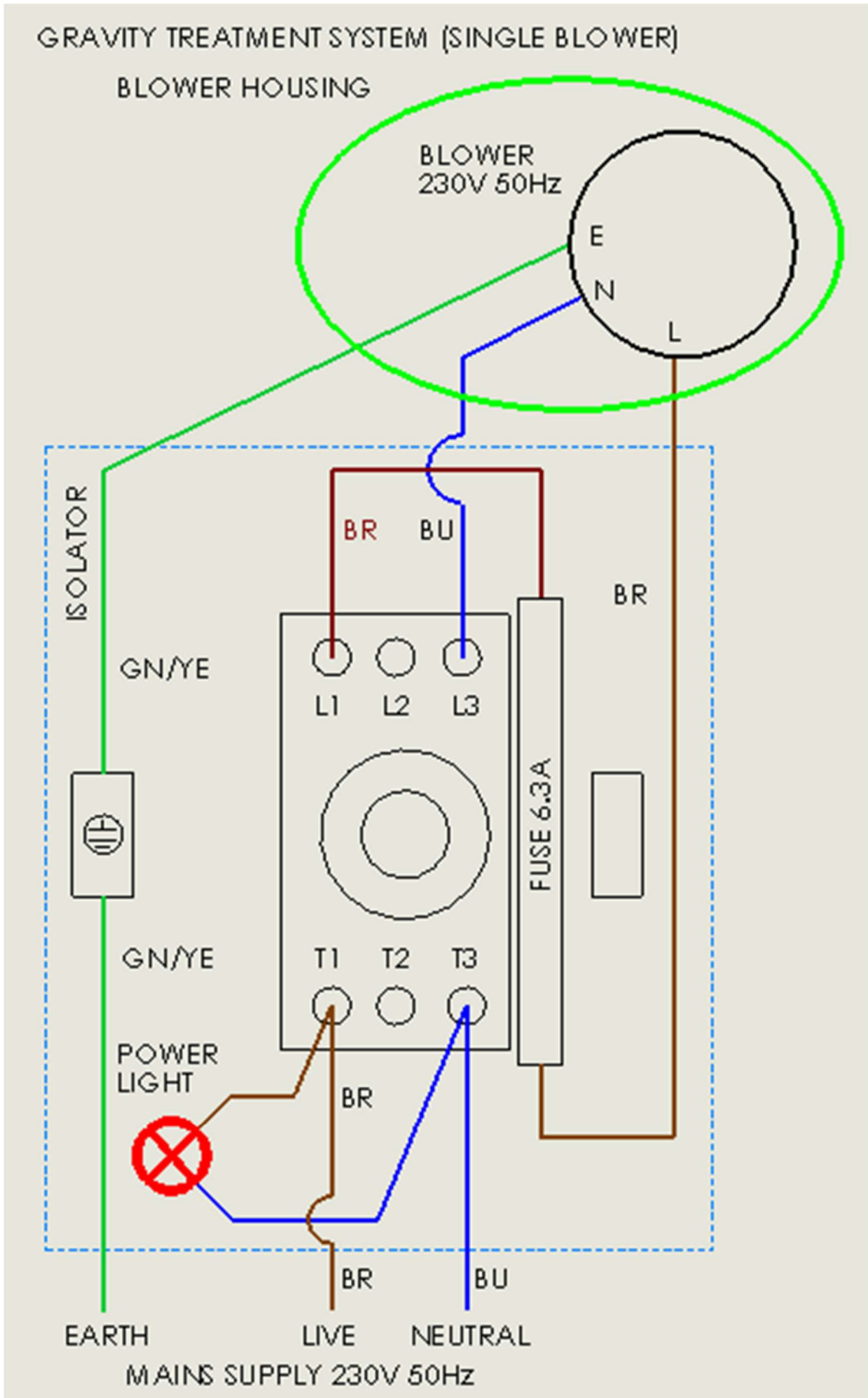
An earth leakage circuit breaker should be incorporated in the supply to the unit. A device with 30mA minimum trip current is recommended.

3.2 Isolator

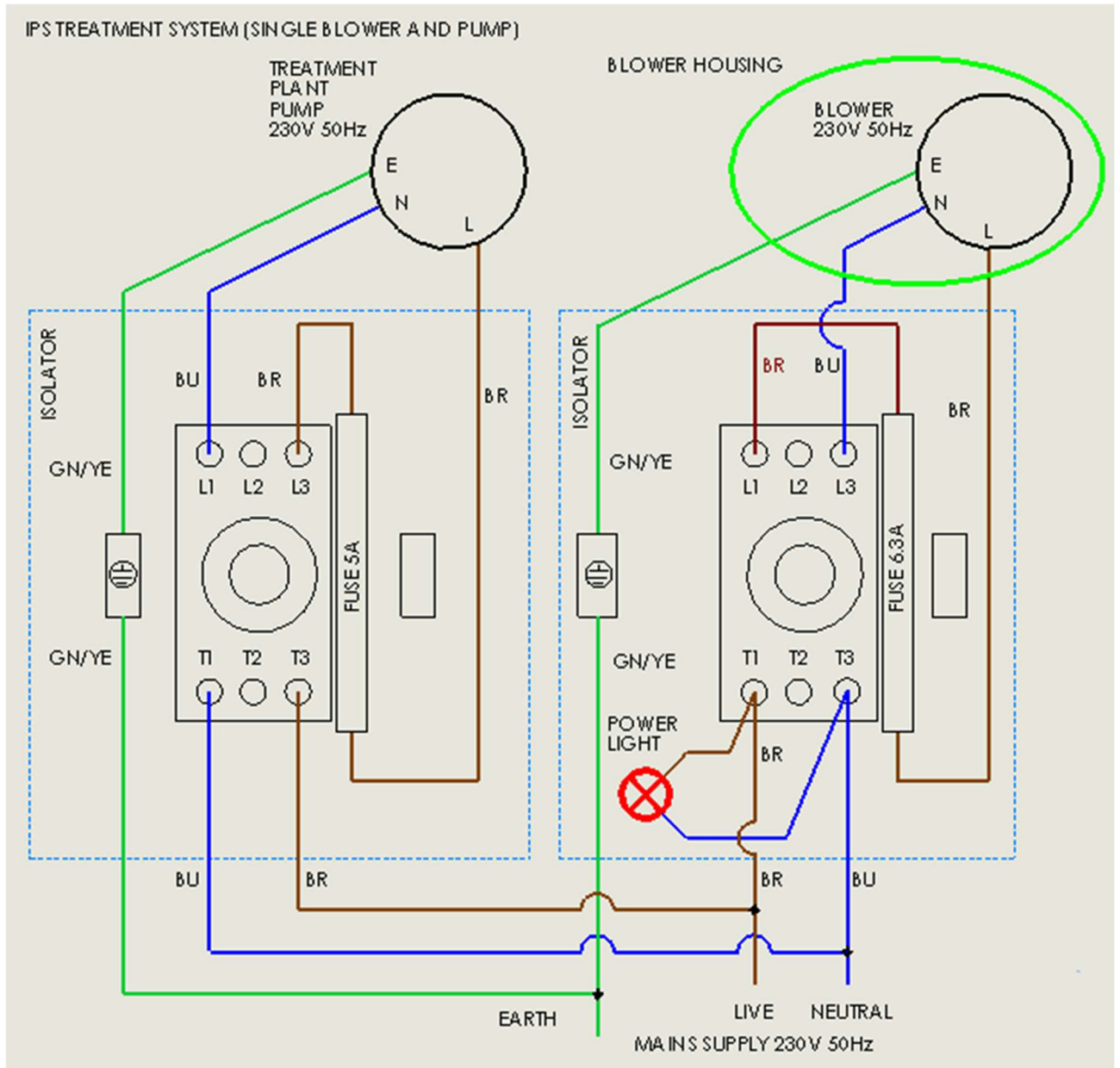
The Isolator with power failure light (in the blower box) can be mounted externally at a point where it is easily visible from the property.

The power supply cable should connect to the IP65 rated isolator socket mounted externally (see sales drawing). Any terminal shrouds removed during the connection of cable cores must be replaced afterwards. A separate duct or conduit should be provided by others.

Isolator Wiring Diagram - Gravity System:



Isolator Wiring Diagram - IPS System:



3.3 Control Panel

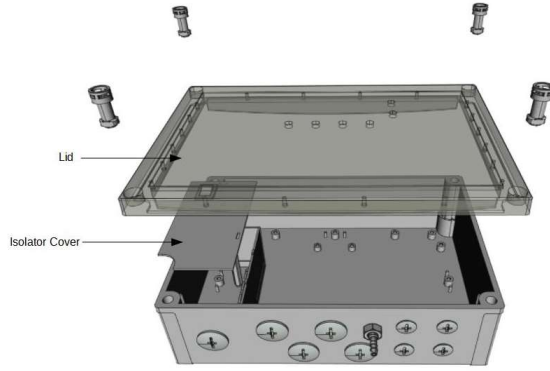


Figure 1: 1002510 Lid & Cover

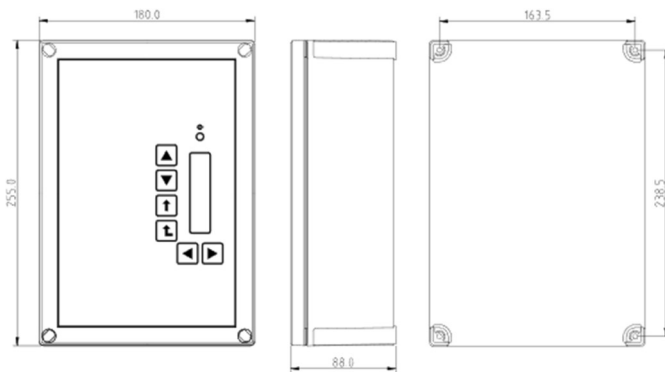


Figure 2: Enclosure & Mounting Dimensions

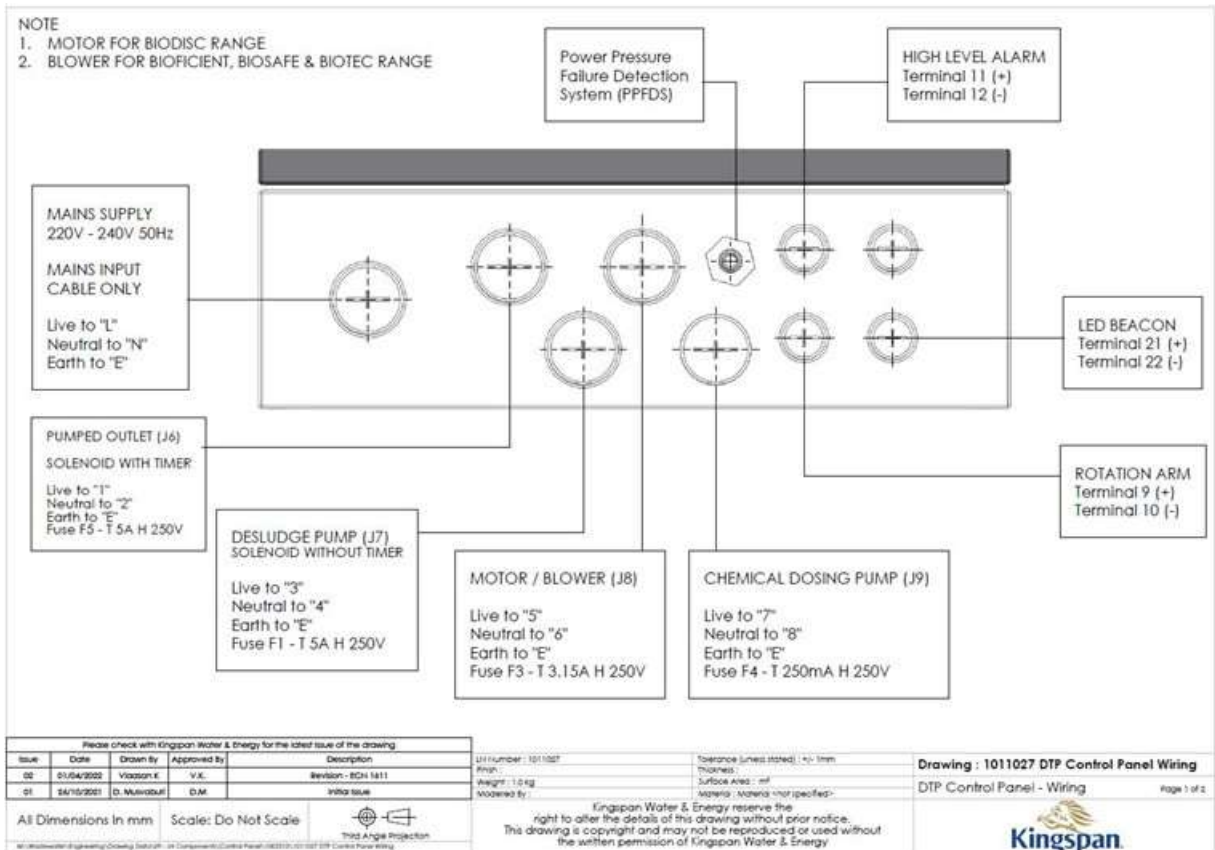


Figure 3: Control Panel Wiring (1)

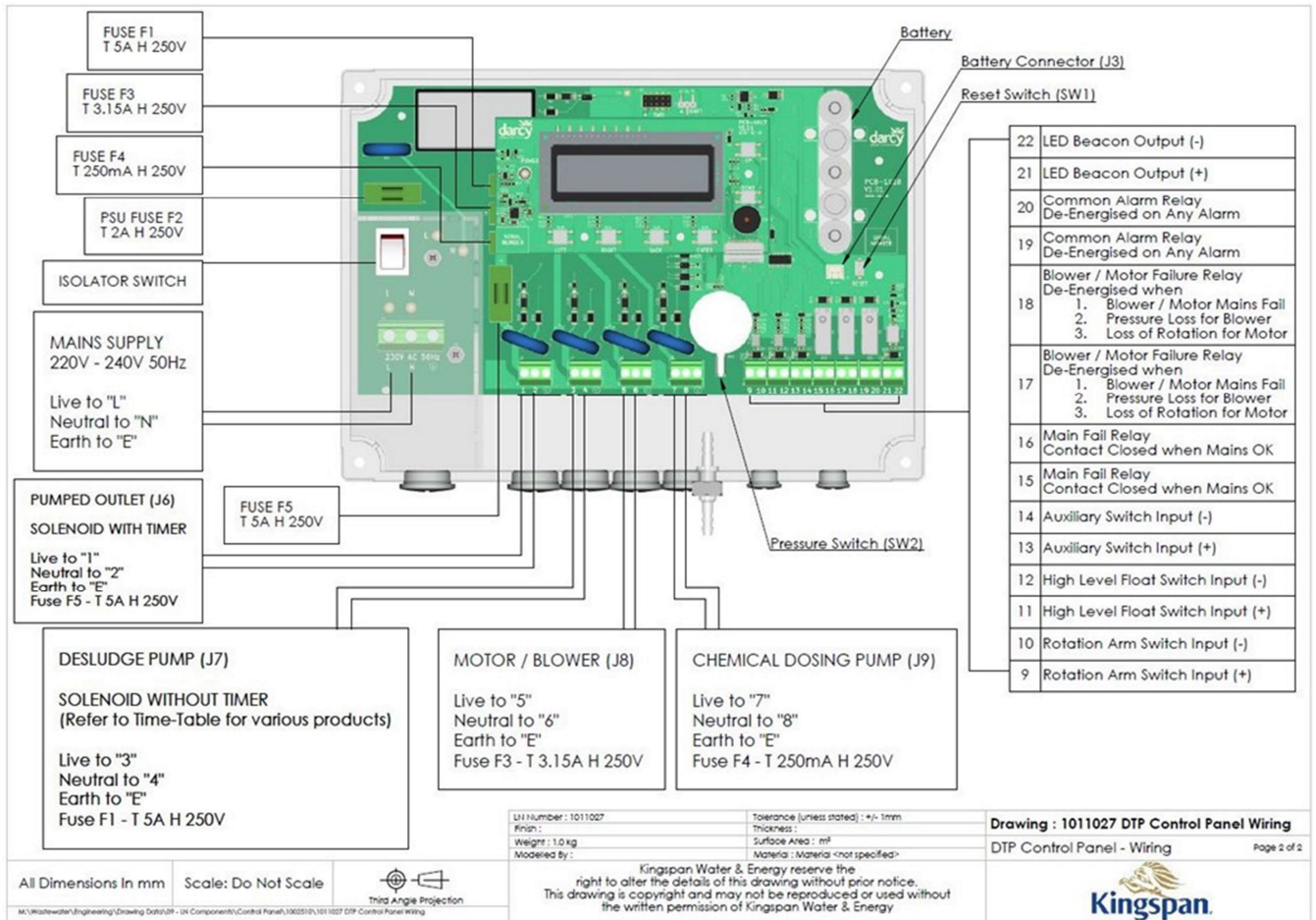


Figure 4: DTP Control Panel Wiring (2)

3.3.1 General Installation

The control panel must not be adjacent to the plant. It can be mounted in the blower housing (supplied with Biotec), wall mounted or fixed to the mounting frame (available separately). It should be positioned so it cannot be reached by someone standing in or on the unit. It would be advisable to situate the control panel and beacon in a frequently viewed position, so if a fault alarm appears it will be seen.

3.3.2 Mounting Frame Installation (where applicable)

Set the frame legs in a concrete base, minimum 250mm thick and prop the frame to prevent movement until the concrete has set.

Allow 350mm minimum clearance from finished ground level to the bottom of the panel.

3.3.3 Retrofit of Control Panel

This Panel can replace the Kingspan Panel (P.No.010086 - Green Panel). The existing beacon (P.No.010332) will have to be replaced with the New Beacon (P.No.1009254) which is provided with Control panel (P.No.1002510) as it is not compatible with the new control panel.

3.3.4 Installation of Integral Discharge Pump (where applicable)



Using a suitable M20 gland, feed the pump power cable through Gland Hole and terminate to connections 1 & 2 (J6) according to Figure 3 & Figure 4

3.3.5 Installation of High-Level Alarm – HLA (where applicable)



Fix the black plastic bracket to the side wall of the baffle (the exact position is on the drawing included with the HLA kit). Secure the float cable in the cable gland as shown on the drawing in the HLA kit. Pull the float cable through any installed ducting into the blower housing. Complete wiring according to Figure 3 & Figure 4

3.3.6 Beacon units - P.No.1009254 (where applicable)



The Beacons provides an external visual indication which is used to indicate Failure & Service Reminders and may be included in the Power and Pressure Failure Detection System (PPFDS). The beacon is provided with a 5m cable which can be extended to 30m. As supplied, the unit is protected against rain to IP65 and is supplied ready to mount on a suitable surface. Complete wiring according to Figure 3 & Figure 4

This unit is designed to be simple to install and safe in operation. Any modification may adversely affect its weather resistance in operation. If in any doubt, please consult us for advice. This is a sealed unit and not serviceable.

3.3.7 Power & Pressure Failure Detection System – PPFDS (where applicable)



The panel is designed to be used in conjunction with the Beacon unit to provide warning of either loss of power or air pressure failure.

For panels mounted outside the blower housing, additional tubing can be purchased, contact your local sales team for details. The panel can be mounted up to 30m away from the blower with no effect on the performance of the pressure failure detection system.

To prevent damage to the PPFDS hole is fitted with a nylon bolt and nut. If the PPFDS is to be used, replace the bolt with the air inlet bulkhead fitting supplied inside the control unit. A short length of 4mm silicone tubing and a cable tie is also supplied. Connect the tubing from the bulkhead fitting to the **Top Port** of the pressure switch, SW2, see Figure 5. Tie the cable tie on the pressure switch to prevent the tubing slipping off as it is not barbed.

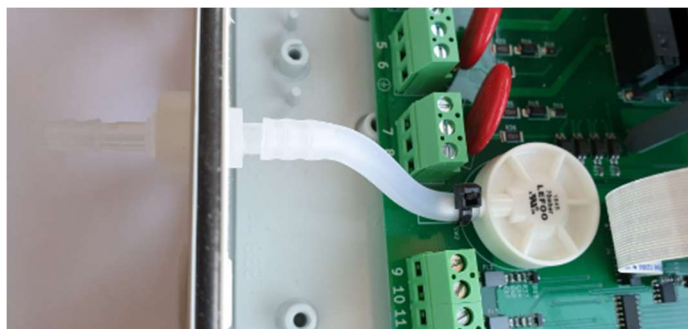


Figure 5: Pressure switch tubing

3.3.8 Completing the Installation

Complete all wiring according to Figure 4 DTP Control Panel Wiring (2)

Plug the lead from the battery into the small white socket below the battery on the PCB marked J3. After finishing wiring, replace the isolator cover and screw. Turn the mains supply on at the source. Turn on the panel using the isolation switch. It should now be illuminated **RED**. The display should now show text. Replace the top cover and screws carefully so as not to damage buttons, ensuring the lid is fixed correctly. Follow Guide in Section 3.3.11 Configuration Programming to enable programming.

3.3.9 Ancillary Equipment

Ancillary items should be installed in accordance with the Installation Guide supplied e.g. Sewage Pump Station/Effluent Pump Station/Effluent Sample Chamber.

3.3.10 Configuration Programming

Start Up

When the control unit is powered up for the first time, the display will prompt for the country to be selected.



Figure 6: Keys for Configuration

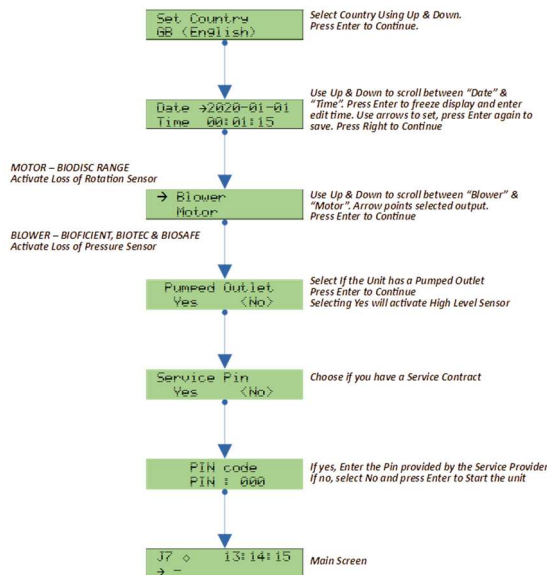


Figure 6: Initialisation

Detailed Operation

Once the initialisation is complete the operating screen will appear as follow. Page 1 to 6 can be navigated using ◀ & ▶ key.

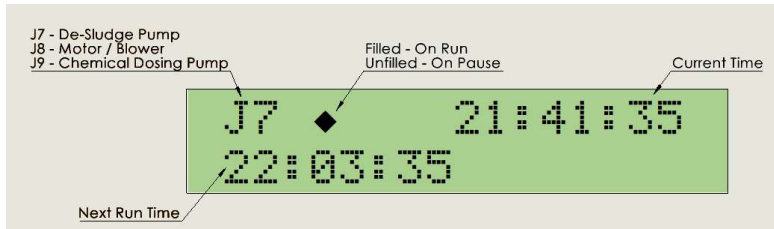


Figure 7: Main Screen Page 1

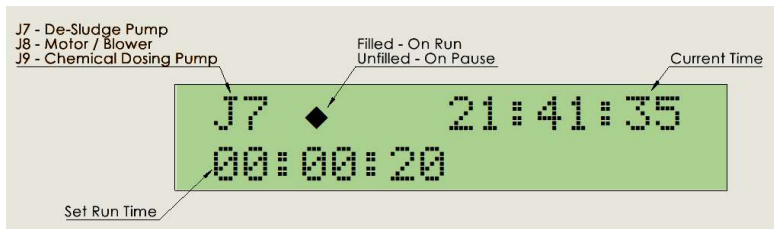


Figure 8: Main Screen Page 2

Page 3 to 6 are like the above, for Motor / Blower & Chemical Dosing Pump.

Press down key to show the date and time when the next service is due

If only the pin is used this will show an upcoming date. If not activated, this will show a 2021 date.

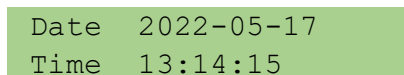


Figure 9: Next Service Due

Press down arrow again to return to the initial screen showing the now activation time.

Alarms

The conditions shown below cause an alarm message to appear on the display, the beeper sounds, the beacon flashes, and the common alarm telemetry relay is de-energised. Some alarm conditions are recorded in the event log, along with the date and time. The display will cycle through messages if multiple alarms exist at the same time. The alarm message(s) will disappear when the alarm condition(s) have been cleared.

- Mains failure
- Low battery
- Loss of rotation
- High level float probe
- Auxiliary input
- Blower pressure

- Pumped outlet fuse
- De-sludge pump fuse
- Motor/blower fuse
- Chemical dosing pump fuse
- Service due

The beeper can be muted by pressing the '←' button. The beeper will sound again after **SIX HOURS** if any alarm condition still exists.

Service

Service Due Date

The Service Due Date can be viewed on main screen by pressing '▼' until the date and time are shown.

Service alarm

If the service alarm is activated using PIN, service alarm is reported on the display every 360 days, by default. The beacon flashes and message "Contact Service Provider" pops every few seconds.

The beacon will stop flashing by pressing the '←' button. A service symbol appears on the screen until the next service is done & a contract renewed.

Telemetry Relays Outputs

There are three volt-free contacts available for alarm reporting to external systems. Follow Guide on Figure 4 for wiring.

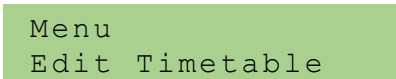
Menu

Menu allows timetable entries to be edited, event log to be viewed, date/time, settings, service, battery and setting factory defaults.

This menu is intended for use by installation & Service engineers only.

The menu is entered by simultaneously pressing then releasing the three buttons '◀', '▶' & '▲'.

On entry to the menu all outputs and telemetry relays are switched off.



The image shows a green rectangular box representing a screen. Inside the box, the word "Menu" is displayed on the top line, and "Edit Timetable" is displayed on the bottom line. Both lines of text are centered horizontally within the box.

Figure 10: Menu - Edit Timetable

The current option is shown on the bottom row and is selected by '▲' and '▼'. Press the '←' button to proceed with the current option.

Pressing '←' or '◀' will return to normal operation.

Edit Timetables

Use ‘◀’ and ‘▶’ to select between **Start**, **Stop**, **Run**, and **Pause** times for the current timetable entry.

Use the ‘↵’ button to edit the entry. A flashing cursor will appear over the first digit of the hour. Use ‘▲’ and ‘▼’ to increment and decrement the digit, respectively. Use ‘◀’ and ‘▶’ to move to the previous or next digit in the time, respectively. Once the entry has been edited, press the ‘↵’ button to save changes and exit edit mode, or press the ‘←’ button to cancel changes and exit edit mode.

Use ‘←’ or ‘◀’ to return to the menu.

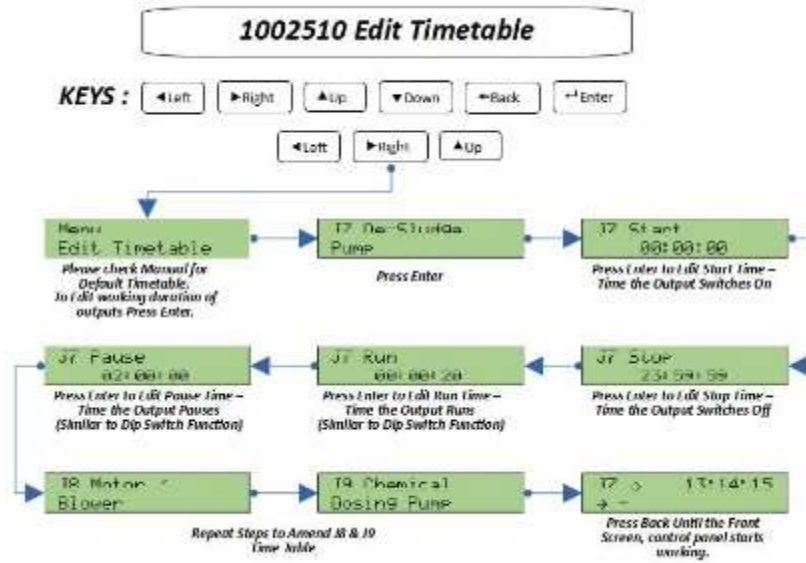


Figure 11: Editing Timetable

Event Log

This option shows the last ten alarm conditions that have occurred along with the date/time. An event is also recorded when the alarm clears. The message “Log is Empty” will appear if no alarms have been recorded yet. Use ‘▲’ and ‘▼’ to move through the events. Use ‘◀’ and ‘▶’ to alternate between the event message and the date/time the event occurred.

Use ‘←’ to return to the main menu.

Set Date & Time

This option allows the current date and time to be set in the 24-hour format. The display will show:

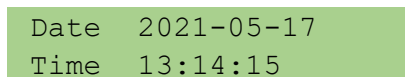


Figure 12: Date & Time

Use ‘▲’ and ‘▼’ to move between date and time. Pressing the ‘↵’ button will freeze display of the clock and enter edit mode to allow the date or time to be set. A flashing cursor will appear. Use ‘▲’ and ‘▼’ to increment and decrement the digit, respectively. Use ‘◀’ and ‘▶’ to move to the previous or next digit,

respectively. Once the desired date or time has been set, press the '←' button to save changes. Use '←' to return to the main menu.

Settings

Setting can be used to amend inputs such as Loss of Rotation or Loss of Pressure, High Level Alarm & Beeper. LOR or LOP & High-Level Alarm will be enabled / disabled during the initialisation

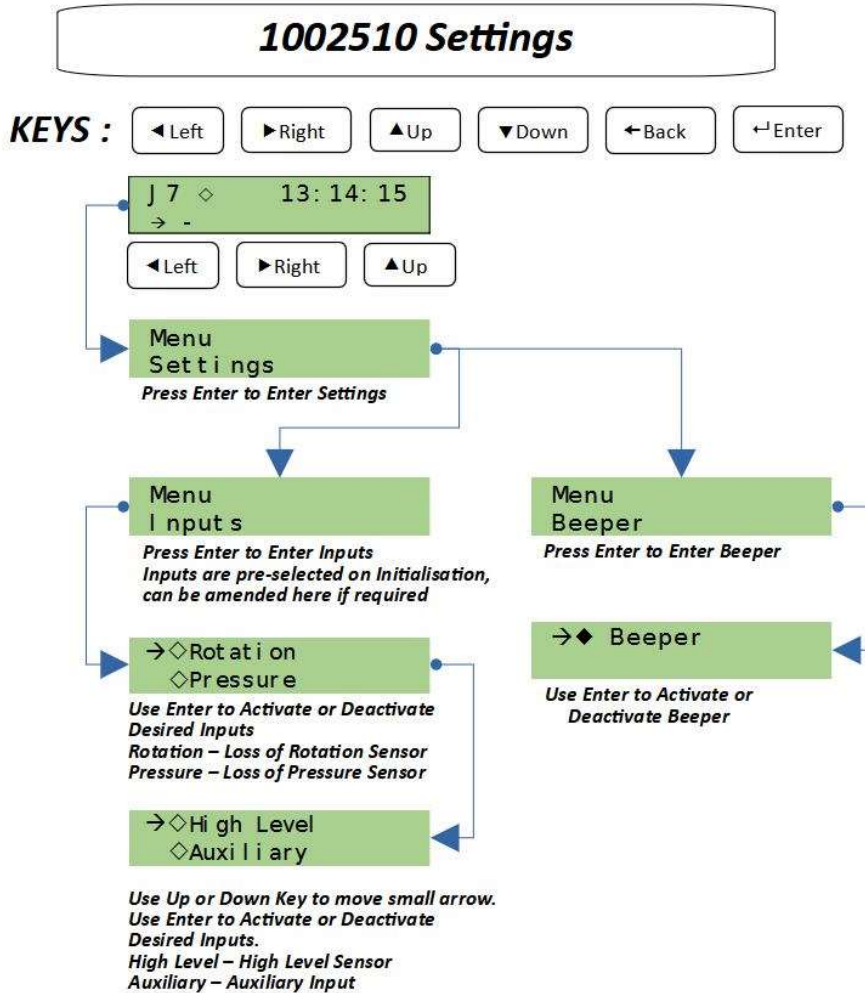


Figure 13: Settings

Service

This allows setting the interval between which service alarms occur. The default is 360 days.

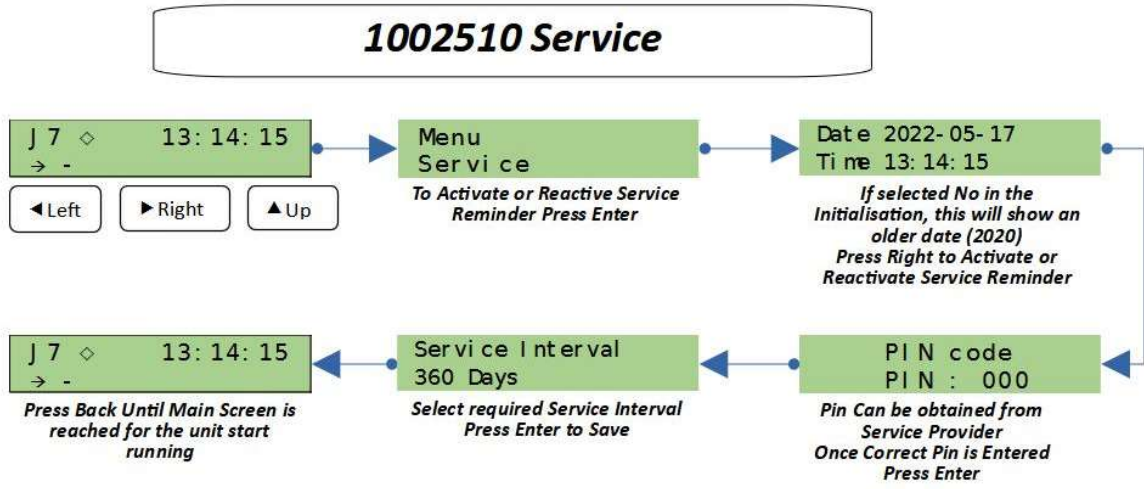


Figure 14: Service

Battery

This displays the battery charger status. The display shows “**Not Charging**” when mains power is absent. The charging countdown is paused.

“Standard charge” is displayed when the control unit first has power applied or the internal reset switch is pressed. This last for 16 hours and a countdown is shown on the display. “Intelligent Charge” is displayed when power is interrupted and shows the amount of time until the battery is fully charged. “Trickle Charge” indicates that the unit is fully charged and maintaining the battery.

Factory Defaults

This option allows the control unit to be set back to the defaults as they were when the unit left the factory. The following will be reset with defaults shown in brackets.

- Unit not activated
- Country (GB & IRE (Eng.))
- Timetables (see Defaults Timetable)
- Event log (empty log)
- Service interval (360 days)
- Inputs (disabled)
- Blower/motor (blower)



Figure 15: Factory Default

Initially the “**No**” option will be highlighted to prevent accidentally setting factory defaults if this was not intended.

Use the ‘◀’ button to move to the Yes option and press the ‘↵’ button to confirm. The display will show:

Restarting...

A few seconds later the unit will restart and prompt for the country to be selected. See section 3.3.10.1 Start Up

4 Operations

4.1 Standard Rate Treatment Plants

Model No.	Litres	Gallons
BTA1	2,220	500
BTA2	3,540	800
BTA3	3,540	800
BTA4	4,170	920
BTA5	5,870	1290

4.2 General Maintenance

Sewage Treatment installations will only perform as well as they are maintained. The best way to achieve this is to arrange a service agreement with us or an approved Service Engineer (see below). There will always be situations when a little self-help may be sufficient to avoid call out and we describe here some basic checks, which may prove useful.

Firstly, keep children and pets away from the plant and always wear rubber gloves when inspecting the unit. Never try to climb into the plant.

If in doubt, ask us or an approved Service Engineer for advice. One of the things that will come from routine maintenance is evaluation of the desludging interval.

Having confirmed that the sludge situation is under control, the following basic checks can be made. Check that the spray is covering the rectangular bale. This can be adjusted by the plastic valve attached to the air hose inside the plant.

Ensure that the airlift in the centre of the bale is not blocked, as this will also affect the spray pattern.

Where pumped outlets are included, check the pump operation, check floats and check pump power supply to the plant.

Emptying and Desludging

All biological treatment plants produce a surplus of sludge, which from time to time have to be removed in order to maintain process efficiency. Applications on purely domestic feed may only require desludging 6-12 months, whereas more heavily loaded installations may require desludging at least 6-9 months.

Desludging must be carried out by a reputable company who may be located by reference to Yellow Pages, your District Council or from your local Water Authority. We may be able to help you with suggesting an emptying contractor. When ordering a tanker for any desludging you will have to state the capacity of the unit to enable the correct size tanker to be scheduled (see 0).

Emptying and Desludging Procedure

Turn off the unit. First ensure that the hose is placed on the inlet side of the unit, always empty the tank ensuring equilibrium in water levels.

Reduce the water level by about 300mm then place the hose in the outlet side of the tank, also reducing the water level by 300mm. Continue with this process until the tank is completely empty.

Make sure that the hose and end fitting are, as far as practical, kept away from the baffles whilst raising and lowering.

The hose and end fitting must be positioned to draw from the very bottom to collect accumulated settled sledges. Make sure construction debris is removed from within the plant.

Take care not to blow back the wastewater into the treatment plant when lifting the hose from one compartment to another one or removing it from the plant.

Whilst pumping out, check the other compartments to make sure that the water level drops at the same rate. At no time should the difference in water level either side of the screen exceed 300mm. As far as is practical, remove traces of sludge accumulation on the walls and bottom of the chamber.

Check for the presence of any residual solids in the bottom of the final settlement zone, i.e. the last tank compartment, and if there are any present, remove them.

If a clean water hose is available, hose down any residual solids from the interior of the tank. Do not hose off the biomass from the media unless it is blocked.

The tank should be refilled as speedily as is practical using mains supply water. Refill the tank evenly from both sides of the screen, therefore establishing a constant equilibrium. It is advisable to leave the air blowers off until normal water level has been achieved.



BTA1 – BTA5

The foul drainage from this property discharges into a package treatment works

Maintenance is required, the frequency of which depends upon the model installed, its use and application. Please consult your Operation & Maintenance Manual.

- * When operating at the normal daily load, emptying should take place every 6-12 months, whereas more heavily loaded installations may require desludging at least 6-9 months.

Maintenance and Desludging should be carried out by the owner in accordance with the Manufactures instructions.

THE OWNER OF THE PROPERTY IS LEGALLY RESPONSIBLE FOR ENSURING THAT THE SYSTEM DOES NOT CAUSE POLLUTION, A HEALTH HAZARD OR A NUISANCE.

We recommend that a separate log is kept of all maintenance and service visits, the log should detail the date and any action taken, e.g. Regular maintenance service, breakdown visit, desludge volume removed, parts replaced.

This notice should be fixed by the owner within the building alerting current and future owners to the maintenance requirement.

(Building regulation H2 (1.57))

Please contact Sales on 0818 544 500 or Service Department Ireland on 0818 543 500 to arrange a maintenance service or to request replacement operating instructions. It would be helpful if you provide your equipment serial number.

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Mktg. Comp. Code (Covers only)

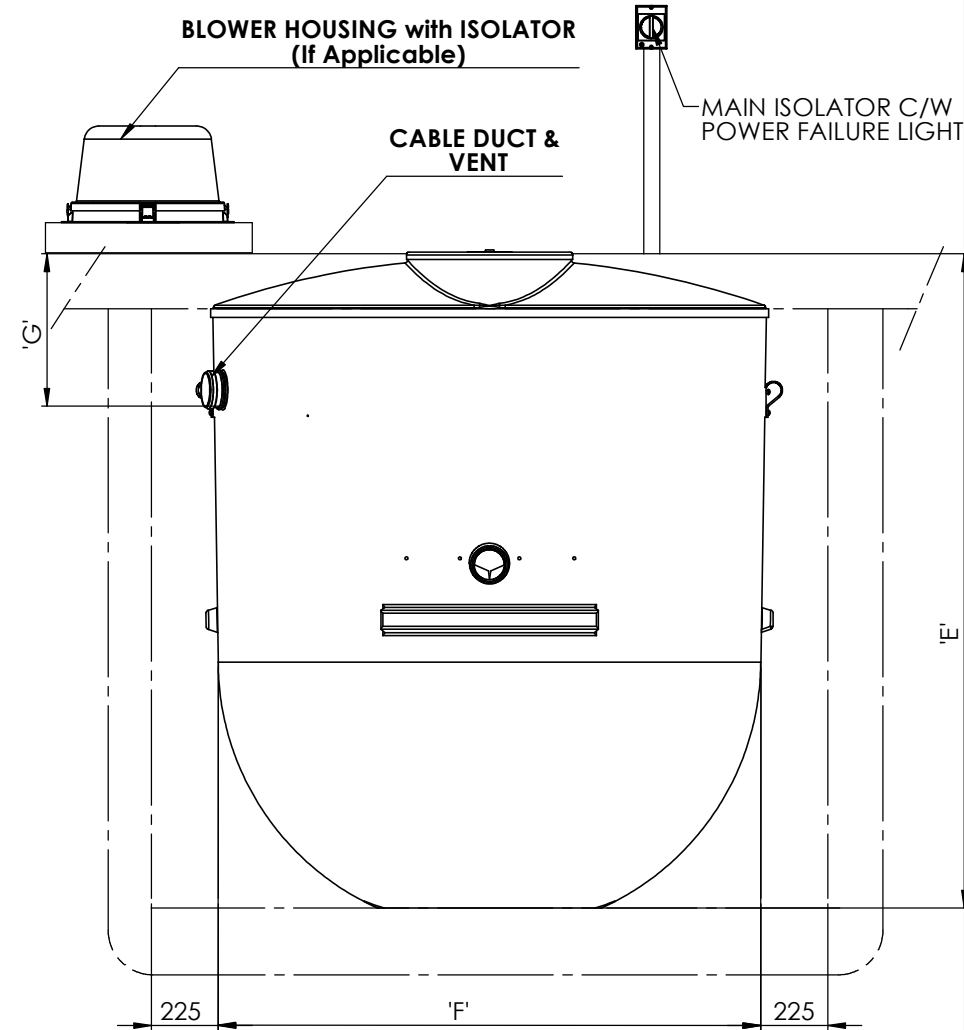
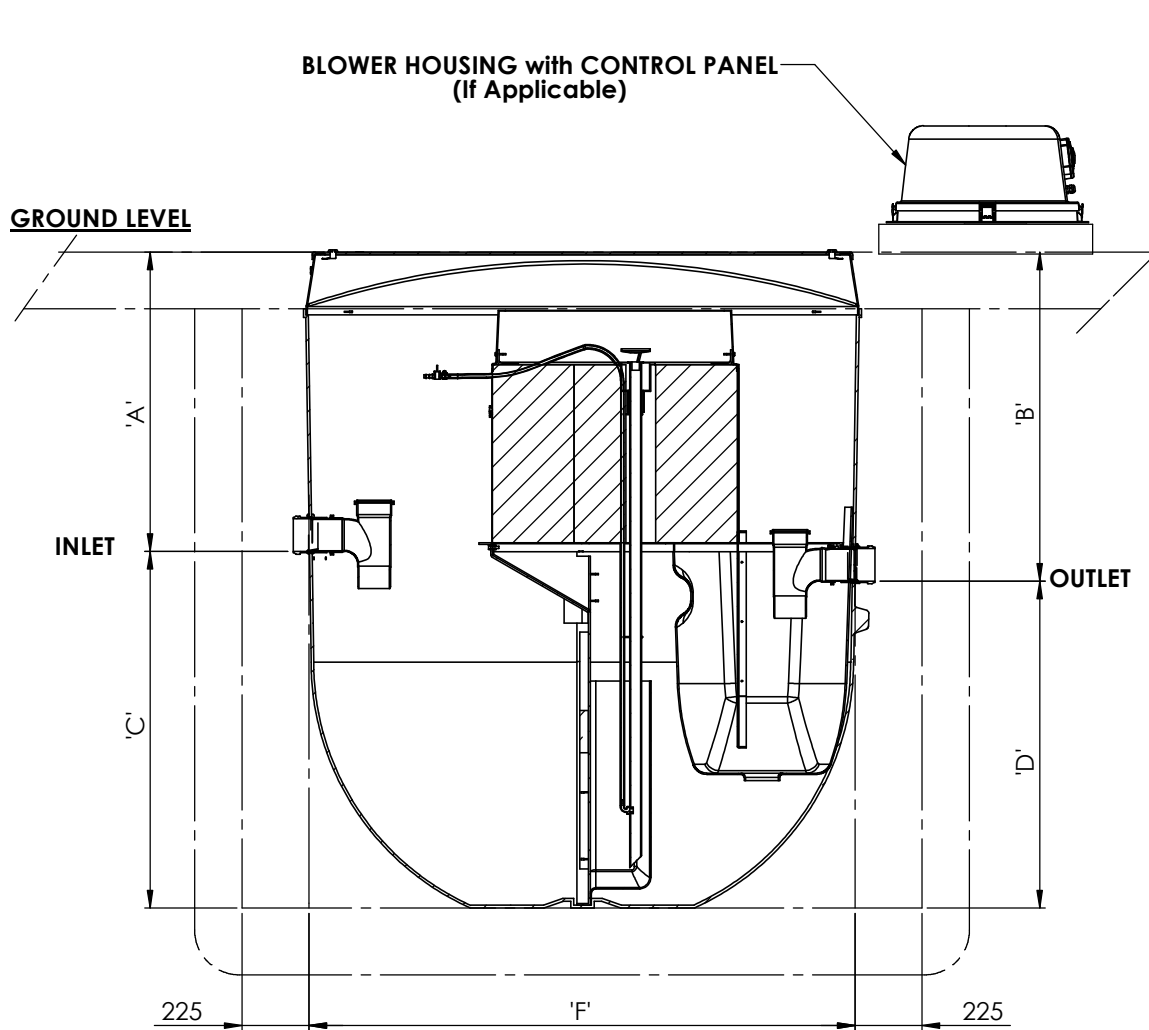
03/2022_v1_5628



Notes:

1. This drawing is for 'Dimensional Information Only'. It is essential that this drawing is read in conjunction with the 'Installation Guidelines' supplied with the unit. (Copies available from our sales department).
2. All Pipe connections are \varnothing 110.0mm PVCu.
3. All units require appropriate 'Cover' & 'Frame' to suit site loadings (standard cover supplied).
4. Blower assembly mounted externally, within 13m of treatment plant.
5. \varnothing 160mm Inlet Option - By External Adaptor Only.

Unit Dimension Chart								
Unit	Dim 'A' (mm)	Dim 'B' (mm)	Dim 'C' (mm)	Dim 'D' (mm)	Dim 'E' (mm)	Dim 'F' (mm)	Dim 'G' (mm)	Unit Weight (Kgs)
BTA-1G2AK	1000	1100	1200	1100	2200	1850	520	250
BTA-1G4AK	1500	1600	1200	1100	2700	1850	520	270



Please Check with Clearwater For The Latest Issue Of This Drawing				
Issue	Date	Drawn by	Approved by	Description
03	30/06/22	D. Musvaburi	D.M	ECN 1616
02	11/02/22	D. Musvaburi	D.M	ECN 1580 - Weights updated and cable duct position updated
01	25/04/22	D. Musvaburi	D.M	Initial Issue - ECN 1612

LN Number : 1010618
 Finish :
 Weight : 871.74 Kg
 Modelled By : Name

Tolerance (unless stated) :
 Thickness : n/a
 Surface Area : m²
 Material : Various

Drawing : DS1380 - BTA1 Gravity Page 1 of 1
 BTA-1 Treatment Plant (Gravity)

All Dimensions In mm Scale: Do Not Scale  Third Angle Projection

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T:\Drawing Data\02 - Sales Drawings\DS\DS - 13\DS1380 - BTA1 Gravity