



Filter Drain Operation & Maintenance Requirements					
Maintenance Schedule	Required Action	Frequency			
	1. Litter and Debris Removal	Monthly			
Regular Maintenance	 Inspect filter drain surface, inlet/ outlet pipework and control system for blockages, clogging, standing water and structural damage 	Monthly			
	 Inspect pre-treatment system, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies 	Half Yearly			
	4. Remove sediment from pre-treatment devices	Half Yearly (or as required)			
Occasional Maintenance Required	1. Remove or control tree roots where they are encroaching the sides of the filter drain, in accordance with the methods prescribed in BS3998:2010	As required			
	2. At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly (or as required)			
	3 Clear perforated pipework of blockages	As required			



225mm Ø Upvc Inspection well positioned equidistantly at 22m maximum centres c/w access cover

Inlet pipe from surface water drainage system

BS7533-13

Rainwater Soakaway Dimensions



3.5 Existing Drains

- Geotextile to BS Existing drains are not envisaged to be encountered on the site, however should they be encountered then the drain EN13252:2014 must remain active and be protected and maintained during works or alternatively re-routed. Any drains passing under
- (around top, sides & the building which are to remain live are essentially protected by the concrete floor slab.
- ends Not on the base) If any drains are encountered then all works, whether protecting or re-routing must be in accordance with the relevant codes of practice and in consultation with Campbell of Doune Ltd.

Suitable fill materials: 3.6 Surface water drainage

- UPVC gutter complete with 110mm Ø downpipes discharging to soakaway. All drainage to be to the satisfaction of Type B filter material
- Local Authority Department. Any drainage to vehicular areas to be laid with 900mm cover. All underground drainage to • 10mm pea gravel be 110mm Ø unless noted otherwise. • 4 - 40mm aggregate in
- All drainage runs to full roddable. All drainage to be set in full granular surround and bedded as per details. Drainage to accordance with have a min gradient of 1:100.
 - Drainage to the satisfaction of the local authority department. Drainage to be tested in Accordance with BS EN 1610: 1998. Non entry inspection chambers to comply with BS EN 752 Part 3. All gutters rainwater pipework is to comply with - BS EN 12056-3: 2000. All underground drainage to comply with BS EN 12056-1: 2000, BS EN 752; 2008, & BS EN 1610: 1998. All Surface Water discharge to be compliant with GBR's 10 & 11 of SEPA's Controlled Activities Regulations. All surface water drainage to discharge to a surface water soakaway. Soakaway design in accordance with CIRIA C753, 'The SuDS Manual'. Soakaway must be located a minimum of 5m from any building and or boundary. It is the clients responsibility to ensure that all necessary permits have been obtained in respect of connections and discharge where necessary and if required.

GENERAL BINDING RULES

GBR10:

- a) Discharge of surface water run-off from a surface water drainage system to the water environment from:
- i. up to 60 hectares of land used for residential premises;
- ii. land used for non-residential premises or yards, except where the buildings or yards are in an industrial estate;
- iii. land used as a motorised vehicle parking area with up to 1,000 parking spaces;
- iv. metalled roads other than motorways and A roads;
- v. waterbound roads; or
- b) Discharge of water run-off from a construction site to the water environment where the site, including any constructed access tracks does not:
- exceed 4 hectares;
- ii. contain a road or track length in excess of 5km; or
- iii. include any area of more than 1 hectare or any length of more than 500 metres on ground with a slope in excess of 25°.

Rules:

- All reasonable steps must be taken to ensure that the discharge does not result in pollution of the water a) environment:
- the discharge must not; b)
- contain any trade effluent or sewage; or
- ii. result in visible discolouration, iridescence, foaming or sewage fungus in the water environment;
- the discharge must not result in the destabilisation of the banks or bed of the receiving surface water; c)
- the discharge must not contain any water run-off from any built developments, the construction of which is d) completed on or after 1st April 2007, or from construction sites operated on or after 1st April 2007, unless;

- Land Ownership Boundary SITE DRAINAGE/LAYOUT PLAN Scale: 1:100 Meters
- ii. following construction those developments are drained by a SUD system equipped to avoid pollution of the water environment;
- iii. the run-off is from a development that is a single dwelling and its curtilage; or
- iv. the discharge is to coastal water;
- e) the discharge must not contain any water run-off from:
 - i. any fuel delivery areas constructed on or after 1st April 2007, or any areas where vehicles, plant and equipment are refuelled constructed on or after 1st April 2007;
 - ii. vehicle loading or unloading bays constructed on or after the 1st April 2007 where potentially polluting matter is handled; or
 - iii. oil and chemical storage handling and delivery areas constructed on or after 1st April 2007;
 - in relation only to activity 10(b), all parts of a construction site on which -
 - i. operations first commenced on or after 1st June 2018; and
- ii. any works are to be undertaken, or any vehicles are to be operated or parked, must be drained by a surface water drainage system with capacity to accommodate the maximum volume of run-off that would reasonably be expected to occur from that land during the period of construction;
- all facilities with which the surface water drainage system is equipped to avoid pollution, including oil g) interceptors silt traps and SUD system attenuation, settlement and treatment facilities, must be maintained in good order and repair; and
- h) all reasonable steps must be taken to ensure that any matter liable to block, obstruct, or otherwise impair the ability of the surface water drainage system to avoid pollution of the water environment is prevented from entering the drainage system.

GBR11: Discharge into a surface water drainage system.

- Rules:
 - Oil, paint thinners, pesticides, detergents, disinfectants or other pollutants must not be disposed of into a surface a) water drainage system or onto any surface that drains into a surface water drainage system;
 - any matter liable to block, obstruct or otherwise impair the ability of the surface water drainage system to avoid b) pollution of the water environment must not be disposed of into a surface water drainage system or onto a surface that drains into a surface water drainage system;
 - sewage or trade effluent must not be discharged into any surface water drainage system; and c)

REVISION:

on construction sites, any area of exposed soil from which the discharge of water runoff to the water d) environment is authorised under activity 10, and the period of time during which such soil is exposed, must be the minimum required to facilitate the construction works being undertaken at that site.









Trenches should not be open for extended periods in advance of pipe laying and should be backfilled as soon as possible. It is essential that the sides of the trench are adequately supported during pipe laying. Trench widths should be as narrow as is practicable but not less than the pipe diameter plus 300mm to allow adequate sidefill to be placed. Deeper excavations should ideally incorporate a sub-trench in accordance with the diagram above.

Surround Of PVCu Drains And Sewers	Nominal Pipe Size	Granular Material Size				
	100 / 110	10mm nominal single-size				
	1007110mm	14 to 5 mm course graded				
	450 / 400	10 or 14mm nominal single-sized				
	150 / 160mm	14 to 5 mm course graded				
	150/225mm (and over)	10, 14 or 20mm niminal single-sized				
		14 or 20 to 5mm course graded				
	Grading complying with the requirements of BS EN 1610. Granular material also includes aggregates for concrete to BS EN 12620.					

Where the as-dug material is suitable, the bottom of the trench may be trimmed to form the pipe bed and the as-dug soil used as sidefill and backfill in accordance with BS EN 1610 bedding construction type B. Where the as-dug material is unsuitable as bed and surround installation should be carried out in accordance with BS EN 1610 bedding construction type 1, as shown opposite. Trenches should be excavated to allow for the depth of bedding material. Before any pipework is installed the bedding material should be laid evenly along the bottom of the trench. The sidefill material must be the same as the bedding material and extended to the crown of the pipe and be thoroughly compacted. Where the backfill above the pipe contains stores larger than 40mm or where the pipework is deeper than 2m in poor ground, the granular material must extend at

least 100mm above the pipe crown. Alternatively, backfill material can be graded to eliminate stones exceeding 40mm and this selected material used for the first 300mm above the pipe. When the pipes are to be laid in rock, compacted sand or gravel, or in very soft or wet ground requiring mechanical means of trimming, the bedding should be a minimum of 100mm. Pipes laid at depths less than 600mm and which are not under a road should,

where necessary, be protected against damage by placing over them a layer of concrete, paving slabs or similar. A minimum 75mm cushioning layer of granular material must be laid between pipes and the slabs or concrete. Where drains are laid in fields, additional protection may be required from heavy vehicles and equipment. It is recommended that the installation is carried out with a concrete slab spanning the trench as shown for drains under private roads. Drains often have to be laid under buildings in order to connect sanitary pipework which has been positioned some distance from the outer walls. Where this occurs, deep hardcore within the foundation boundaries should be compacted first. The trench for the pipe should then be excavated and suitable material employed for the bedding and backfilling operation. If trenches are dug from original ground, pipes may be laid and surrounded as necessary before the top layer of hardcore is formed. Where a pipe passes through a wall or foundation of a building, a lintel or

- Sleeve should be built-in to provide clearance around the pipe. The flexible nature of PVCu pipes enables them to accommodate ground movement and other differential
- settlement that may occur under normal conditions. Therefore, the use of concrete bed and surround is not recommended and only under special circumstances, at very shallow cover depths
- or where it is necessary to safeguard foundations, should it be used. Where the use of concrete bed and surround is unavoidable, it is recommended that pipes are laid in 3 metre lengths and a compressible board is shaped to fit around each joint. Pipes should also be wrapped with polythene to prevent the ingress of cement
- slurry into ring seal joints. If the depth of cover under a road or driveway is less than 0.9m, a concrete slab spanning the trench width is required.

i.	during construction those developments are drained by a SUD system or equivalent systems equipped to avoid
	pollution of the water environment;



	To Access Fitting		To Junction or	To Inspection	To Manhole & Inspection
	Type 1	Type 2	Branch	shallow	Chamber - Deep
Start of External Drain	12	12		22	45
Rodding Eye	22	22	22	45	45
Access Fitting Type 1 Min 150mm x 100mm			12	22	22
Access Fitting Type 2 Min 225mm x 100mm			22	45	45
Inspection Chamber - Shallow	22	45	22	45	45
Manhole & Inspection Chamber - Deep				45	90 (up to 200 for drains & sewers intended for entry by personnel not exceeding DN1800)
	Start of External Drain Rodding Eye Access Fitting Type 1 din 150mm x 100mm Access Fitting Type 2 din 225mm x 100mm nspection Chamber - Shallow Manhole & Inspection Chamber - Deep	Access Fitting Type 1 Min 150mm x 100mm Access Fitting Type 2 Min 225mm x 100mm nspection Chamber - Shallow 22 Manhole & Inspection Chamber - Deep	Type 1 Type 2 Start of External Drain 12 Rodding Eye 22 Access Fitting Type 1 din 150mm x 100mm Access Fitting Type 2 win 225mm x 100mm nspection Chamber - Shallow 22 45	Type I Type I Start of External Drain 12 Rodding Eye 22 Access Fitting Type 1 12 Min 150mm x 100mm 12 Access Fitting Type 2 22 Name 22 Access Fitting Type 2 22 Min 225mm x 100mm 22 Association Chamber - Shallow 22 Adapted & Inspection Chamber - Deep 12	Type I Type I Type I Type I Outcome Start of External Drain 12 12 22 22 22 45 Rodding Eye 22 22 22 45 22 22 45 Access Fitting Type 1 11 12 22 45 22 45 Access Fitting Type 2 22 45 22 45 32 45 nspection Chamber - Shallow 22 45 22 45 45 Manhole & Inspection Chamber - Deep Image: Comparison of the state o

roduing Eyes, Access Fittings And inspection Chambers (No Personnel Entry)	Type of Access	Depth to invert from cover level m	Minimum nominal internal dimensions (a)		Clear Opening Size		
			Rectangular Length & Width mm	Circular Ø mm	Rectangular length and width mm	Circular Ø mm	Remarks
	Rodding Eye			Preferably same size as drain but not less than DN 100		Same size as pipework (b)	
	Access fitting (c)	< 0,6, except	150x100	150	Same size as	Same size as access fitting (b) The depth restriction is imposed limited access afforded and is t	The depth restriction is imposed because of the
	Access fitting (c)	chamber	225x100	225	access fitting (b)		limited access afforded and is based on the ability to manipulate a stopper at arms length from the surface.
	Inspection Chamber (d) - Shallow	≤ 0,6	225x100	190 for drains up to DN150		Min. 190	
		≤ 1,0	450x450	450	Min. 430x430	Min. 430	Restricted to inspection and remotely operated equipment - no personnel entry
	Inspection Chamber (d) - Deep	> 1,0	450x450 (e)	450 (e)	Max. 300x300	Max. 350 (f)	Restricted to inspection and remotely operated equipment — no personnel entry. Max. size imposed to prevent personnel entry.
	a) These sizes apply to straight-through pipes, larger sizes should be used at turning chambers or chambers with several side branches. a) The clear opening may be reduced by 20 mm in order to provide proper support for the cover and frame. c) The clear opening may be reduced by 20 mm in order to be pipe, either from surface level or from within a chamber a) Chamber with a removable cover constructed on a drain or sever that provides access from surface level or hy, but does not permit entry of a pers on a) It is not always possible to gain access to side branches. The top of the chamber may be reduced to a minimum of 300 mm × 300 mm or 350 diameter. 9 A larger clear opening cover may be used in conjunction with a restricted access.						





Consulting Civil and Structural Engineers Consulting Civil and Structural Engineers 78 King Street, Crieff, Perthshire, PH7 3HB Drawing Status PLANNING Proposed New Storage Building Overton Farm, Berefold, Ellon, AB41 8EL Drainage Layout Plans & Details DRAWING No. | PAPER SIZE SCALE DATE As Noted | 15.06.21 | 301 A1 BUILDING DESIGN CLASSIFICATION DESIGN CHECK LEVEL **X** DCL1 - Self Check BS5502 Class II Agricultural BS5950 Industrial DCL2 - Simple Check Domestic DCL3 - Intermediate Check **Other** DCL4 - Extended Check CONTACT WEB e-mail: info@campbellofdoune.co.uk | www.campbellofdoune.co.uk

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