

Drainage Maintenance Manual



The Civil Engineering Practice
11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA
01273 424424
reception@civil.co.uk
www.civil.co.uk

Project	Manor Nursery, Angmering, West Sussex
Project Number	22995

By Steve Burgess

Date 8 December 2020

1 Schedule of Maintenance

- 1.1 Once appointed the Contractor will prepare a site specific method statement for the control of silt and other pollutants during construction. CIRIA Report C532, Control of Water Pollution from Construction Sites, provides further guidance on this.
- 1.2 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site.
- 1.3 Upon completion of the development the management of the shared drainage facilities will be passed on to a Management Company who will be appointed by the developer on behalf of the new residents.
- 1.4 The regular and corrective maintenance of all shared elements of the drainage system beneath the road, including highway soakaways will be managed by the Management Company on behalf of the residents.
- 1.5 Regular maintenance of all private drainage, channels, gutters, rainwater pipes and connections will be the responsibility of the individual homeowner and should be undertaken every 3 months.
- 1.6 Provisions will be made to replace any infrastructure that has reached the end of its serviceable design life and will be replaced on a like for like basis as far as reasonably practicable.
- 1.7 The NSBP003 - NSBP004 Class 1 Bypass Separators will be maintained in accordance with Chapter 4 of the 'NSBP003 – NSBP006 Class 1 Bypass Separator Installation & Operation Guidelines', which is attached to the rear of this document.
- 1.8 Drawing 120 shows the drainage ownership responsibilities, which is attached to the rear of this document.



Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment and debris from silt trap chambers, gullies traps, channel drains and inlet chambers	3 monthly
	Litter and debris removal – catch pits	Monthly or as required
	Surface and foul water pipework – jetting / rodding	Every 2 years or as required
	Bypass Separators inspected. (A log should be maintained detailing the depth of oil found any oil volume removed, and any silt removal or cleaning carried out)	Six monthly
	Manage other vegetation and remove nuisance plants – aesthetics	As required
Corrective Maintenance	Repairs to access chambers / manhole covers	As required
	Remove debris / blockages to silt traps / channel drains	As required
	Surface remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipes, channel drains and gullies for blockages, standing water and clear	As required
	Alarm probes should be removed and cleaned with water	Whenever waste material is removed from the separator

Table 1: Schedule of Regular and Corrective Maintenance

- 1.9 Any parts, materials or products that require replacement or come to the end of the manufactures recommended design life will be replaced by the Management Company or individual homeowner as required.

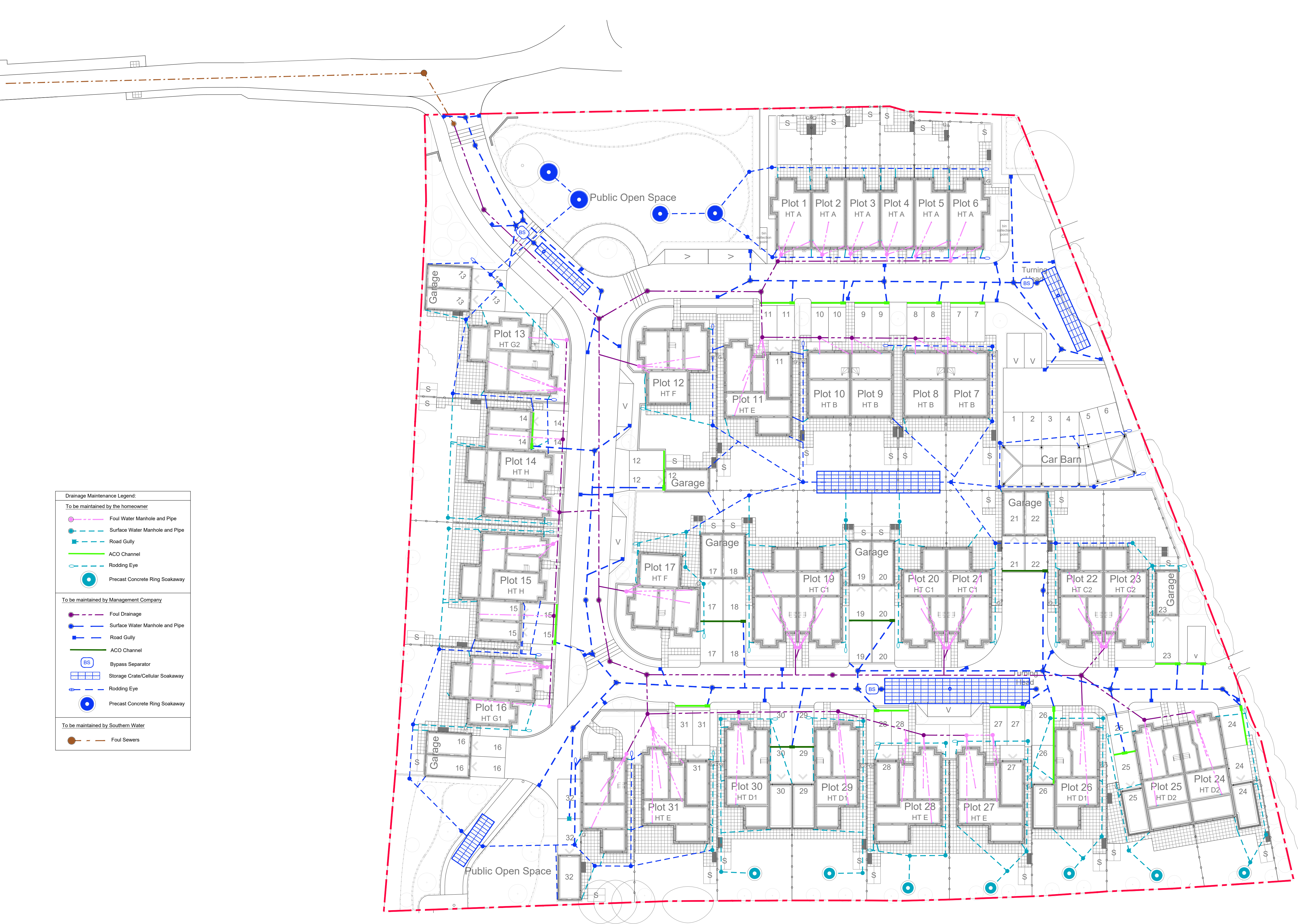
2 Financing

- 2.1 The regular maintenance of all private drainage, channels, gutters, rainwater pipes and connections will be the responsibility of the individual homeowner.
- 2.2 The regular and corrective maintenance of all shared elements of the drainage system will be managed and funded through the Management Company on behalf of the residents.
- 2.3 In the event that the estate's Management Company becomes unable to discharge its duties within 2 years of first appointment the developer will endeavour to appoint an alternative on behalf of the residents.

3 Maintenance Summary

Inspection / Action Required	Gullies, Channels and Gutters	Catchpits	Bypass Separators	Surface Water Pipework
1 Month		✓		
3 Months	✓	✓		
6 Months			✓	
1 Year				
After leaf fall in Autumn	✓	✓		
2 Years				✓
When alarm indicates			✓	
When waste material is removed from the separator			✓	

Table 2: Drainage System Maintenance Summary



- NOTES:
1. All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
 2. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.
 3. The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.
 4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.
 5. All pipes, bends and junctions shall be vitrified clay to BS EN 295-1, with flexible joints and kitemark certified. Alternatively all pipes and fittings can be UPVC conforming to BS EN 1401-1 and shall be laid in accordance with the manufacturers specification. If UPVC pipes are to be used then the manufacturer shall be approved by the Engineer prior to construction.
 6. All Adoptable sewers shall be in strict accordance with the current edition of Sewers For Adoption. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class Z bedding.
 7. All private building drainage shall be constructed in strict accordance with BS EN 752:1996. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.
 8. Where the service trench is near to the foundation of any building, refer to the guidance in Approved Document H, Building Regulations Part H1.
 9. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.
 10. In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
 11. All svps shall have rodding access plates fitted at their bases (ground floor level).
 12. Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.

Drainage Maintenance Legend:

To be maintained by the homeowner

- Foul Water Manhole and Pipe
- Surface Water Manhole and Pipe
- Road Gully
- ACO Channel
- Rodding Eye
- Precast Concrete Ring Soakaway

To be maintained by Management Company

- Foul Drainage
- Surface Water Manhole and Pipe
- Road Gully
- ACO Channel
- BS Bypass Separator
- Storage Crate/Cellular Soakaway
- Rodding Eye
- Precast Concrete Ring Soakaway

To be maintained by Southern Water

- Foul Sewers

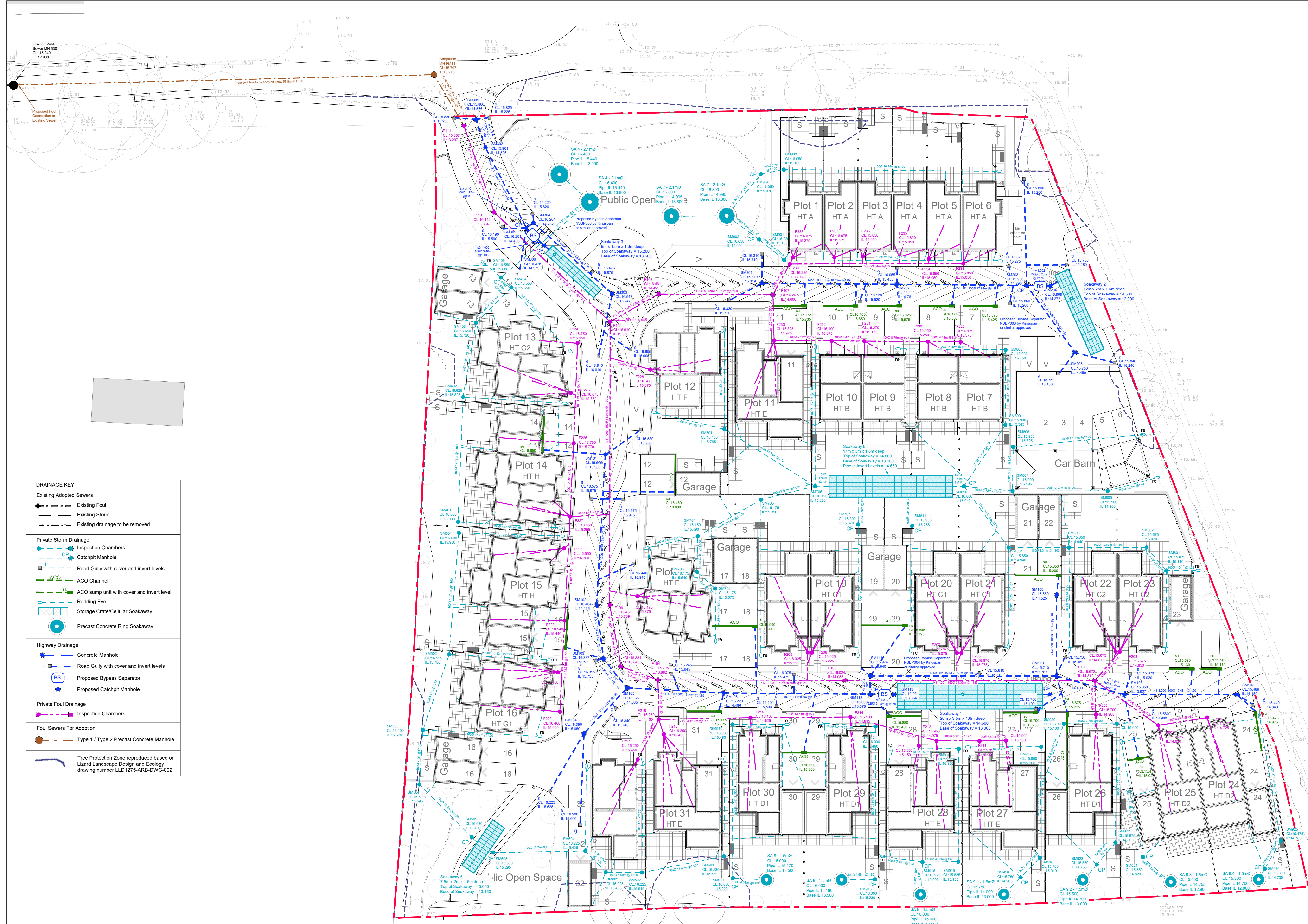
REV	DATE	INT	DESCRIPTION	CHK
-----	------	-----	-------------	-----

Issue Status PRELIMINARY

11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA
Tel: 01273 424424
Fax: 01273 424425
email: design@civil.co.uk

the
Civil
Engineering
practice

CLIENT	Roffey Homes Ltd		
PROJECT	Manor Nurseries Site Angmering		
TITLE	Proposed Maintenance Ownership Plan		
DRAWN	DATE	PROJECT NO.	
P Reynolds	Dec 2020	22995	
ENGINEER	CHECKED	DWG. NO.	REV.
S Burgess		120	
SCALE	1:250 @ A1		



DRAINAGE KEY:	
Existing Adopted Sewers	
	Existing Foul
	Existing Storm
	Existing drainage to be removed
Private Storm Drainage	
	Inspection Chambers
	Catchpit Manhole
	Road Gully with cover and invert levels
	ACO Channel
	ACO sump unit with cover and invert level
	Rodding Eye
	Storage Crate/Cellular Soakaway
	Precast Concrete Ring Soakaway
Highway Drainage	
	Concrete Manhole
	Road Gully with cover and invert levels
	Proposed Bypass Separator
	Proposed Catchpit Manhole
Private Foul Drainage	
	Inspection Chambers
Foul Sewers For Adoption	
	Type 1 / Type 2 Precast Concrete Manhole
Tree Protection Zone reproduced based on Lizard Landscape Design and Ecology drawing number LLD1275-ARB-DWG-002	

- NOTES:
- All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.
 - This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.
 - The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.
 - Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.
 - All pipes, bends and junctions shall be verified clay to BS EN 295-1, with flexible joints and kitemark certified. Alternatively all pipes and fittings can be UPVC conforming to BS EN 1401-1 and shall be laid in accordance with the manufacturers specification. If UPVC pipes are to be used then the manufacturer shall be approved by the Engineer prior to construction.
 - All Adoptable sewers shall be in strict accordance with the current edition of Sewers For Adoption. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class Z bedding.
 - All private building drainage shall be constructed in strict accordance with BS EN 752:1996. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.
 - Where the service trench is near to the foundation of any building, refer to the guidance in Approved Document H, Building Regulations Part H1.
 - Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
 - All svps shall have rodding access plates fitted at their bases (ground floor level).
 - Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.

D	30.09.20	PR	Soakaway sizes updated.	SB
C	18.05.20	PR	Drainage updated.	SB
B	01.07.19	PR	New Site Plan added. Soakaway design revised following soakage test results. Drainage updated to suit.	SB
A	15.03.18	TZ	Revised to suit new plan	SRM
REV	DATE	INT	DESCRIPTION	CHK

Issue Status PRELIMINARY

11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA
Tel: 01273 424424
Fax: 01273 424425
email: design@civil.co.uk

the
Civil
Engineering
practice

CLIENT	Roffey Homes Ltd		
PROJECT	Manor Nurseries Site Angmering		
TITLE	Proposed Drainage Strategy		
DRAWN	DATE	PROJECT NO.	
T Zajac	Mar 2018	22995	
ENGINEER	CHECKED	DWG. NO.	REV.
S Magowan		102	D
SCALE	1:250 @ A1		

001372

**NSBP003 – NSBP006 Class 1 Bypass Separator
Installation & Operation Guidelines**



Kingspan Environmental Service Contact Numbers:

GB: 0844 846 0500

NI: 028 3025 4077

IRL: 048 3025 4077

Enclosed Documents

DS0993P	NSBP003 – NSBP006 Class 1 Bypass Separator
DS1013P	NSBP003 - NSBP006 Installation Drawing
NSBPEXTzz	NSBP Neck Extension Assembly

Issue	Description	Date
05	CC1405 – Coalescer Extension Chains were Pipes	February 2018

CONTENTS

	Page
CONTENTS.....	2
1 Introduction.....	3
1.2 Handling & Storage	3
1.3 Site Planning	3
2 Installation	4
2.1 Installation - General	4
2.2 Separator Installation.....	5
2.3 Pipework Connections	6
2.4 Oil Level Alarm Neck Fitting.....	7
2.5 Alarm Installation.....	Error! Bookmark not defined.
3 Operation.....	8
4 Maintenance.....	8
4.1 Waste Removal and Servicing.....	8
4.2 Waste Removal Procedure – Oil & Silt.....	9
4.3 Checking the Coalescer Assembly.....	9
4.4 Removing the coalescer assembly.....	10
4.5 Cleaning the coalescer assembly/ Media Replacement.....	10
4.6 Replacing the coalescer assembly.....	10
5 Connection of Extension Neck	10
6 Emergencies.....	10
HEALTH & SAFETY	11

Appendices

Separator Maintenance Log

1 Introduction

- 1.1.1 These Guidelines represent Best Practice for the installation of the above Separator Units. Many years of specialist experience has led to the successful installation of thousands of separator units. It must be noted, however, that these Guidelines are necessarily of a general nature. It is the responsibility of others to verify that they are appropriate for the specific ground conditions and in-service loads of each installation. Similarly, any information or advice given by our employees or agents regarding the design of an installation must be verified by a qualified specialist (e.g. Civil engineering consultant).
- 1.1.2 For guidance of Separator selection and application, please refer to the most recent issue of Environment Agency Guidelines pollution prevention guidelines No. 3 (PPG3).and BS EN 858. Our units have been independently tested by BSI and are certified as meeting the standards.

1.2 Handling & Storage

- 1.2.1 Care must be taken to ensure that units are not damaged during delivery and handling on site. Please take care and place unit so that it cannot fall and become damaged
- 1.2.2 The design requirements of these products will frequently mean that the centre of gravity of the unit is “offset”. Care must therefore be taken to ensure that the unit is stable when lifting. Rainwater may also collect inside units, particularly if they have been stored on site prior to installation, adding weight and increasing instability. Check units before lifting and pump out any excess water.
- 1.2.3 When lifting units, use webbing slings of a suitable specification. Do not use chains.
- 1.2.4 A suitable spreader bar should be used to ensure that units are stable and that loads are evenly distributed during lifting. When lifting separators, a spreader bar should be used where the slings would otherwise be at an angle > 30 degrees to the vertical.
- 1.2.5 Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site.
- 1.2.6 We accept no responsibility for the selection of lifting equipment.
- 1.2.7 Whenever units are stored or moved on site, ensure that the storage location is free of rock, debris and any sharp objects, which may damage the unit. The units must be placed on ground, which is flat, and level and the unit orientated onto its side with even support. Do not roll separators.

1.3 Site Planning

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

- 1.3.1 The discharge must have the consent of the relevant Environmental Regulator.
- 1.3.2 The installation should have Planning and Building Control approval.
- 1.3.3 Consider installing flow cut-off valves to isolate the separator in an emergency or during site cleaning operations. See Environment Agency Guidelines PPG3.
- 1.3.4 We will fit a tube to receive the alarm probe. This tube provides protection and ensures that the probe is positioned at the correct level to sense the oil build up. The tube design and probe level setting assumes the use of our standard oil alarm system and may not be suitable for other alarm supplier's equipment. The probe tube is fitted within the neck of the unit. It should be extended to ground level when extension necks are required. Consult the alarm supplier's instructions for they're detailed fitting installation instructions.
- 1.3.5 Consider venting of the unit. Comply with local regulations. In the UK, comply with the following regulations. For Petrol Stations: Health and Safety Guidance Note 41 (HS(G)41). For other applications: BS8301: 1985 (obsolescent) BS EN 752 Building Drainage. Adequate ventilation should be provided to the separator. The ventilation pipe should be as short as is practicable and be terminated not less than 2.5m above paving nor less than 1m above the head of an openable window or other opening into a building within a horizontal distance of 3m. Each neck should be vented independently, we advise against joining these below ground prior to their rising as vent stacks.
- 1.3.6 Consider installation of a sampling point downstream of the separator. There is no suitable facility to effectively sample the wastewater from inside the unit.

- 1.3.7 Uncontaminated run off such as roof water should be excluded from separators. (EA Guidelines PPG3.)
- 1.3.8 Ground conditions and water table level should be assessed. If the water table will be above the base of the units at any time of the year, adequate concrete backfill must be provided to avoid flotation. In poorly draining ground, consideration should also be given to the likelihood of flotation due to surface water collecting in the backfill, and an appropriate installation method devised to avoid this.
- 1.3.9 If the discharge is to a soakaway, a porosity test should be carried out as part of the assessment of suitability for sub-soil drainage.
- 1.3.10 The separator must be installed at a level, which will allow connection to the incoming drain and a free discharge at the system outlet. The water table must be below the discharge outlet.
- 1.3.11 Do not install the unit deeper than necessary, ensure that you purchase extension shaft kits. The minimum invert depth of the unit is shown on the customer drawing.
- 1.3.12 Adequate access must be provided for routine maintenance. Vehicles should not be permitted within a distance equal to the depth of the unit, unless suitable structural protection is provided to the installation.
- 1.3.13 There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance.
- 1.3.14 It is essential that a mains water supply is accessible for routine cleansing and refilling after removal of waste material and liquid.
- 1.3.15 Provide electrical supply for alarm system.
- 1.3.16 Installation should only be carried out by suitably qualified and experienced contractors in accordance with current Health and Safety Regulations. Electrical work should be carried out by a qualified electrician, working to the latest edition of IEE wiring regulations.
- 1.3.17 This unit is designed to operate with gravity in and out flows. The unit is not designed to operate with a pumped influent.

2 Installation

2.1 Installation - General

- 2.1.1 When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipework should be designed to minimise the risk of damage from differential movement of the unit(s) and/or surrounding material.
- 2.1.2 For separators with burial depths greater than 1000mm from cover level to the top of the unit, specific site conditions should be taken into consideration and the backfill designed to bear any loads which may be applied during and after installation to prevent the tank being subjected to these loads.
- 2.1.3 The excavation must be deep enough to provide bedding and cover depth as determined by the type of surface pavement and loading. Asphalt and concrete pads should extend a minimum of 300mm horizontally beyond the unit in all directions.
- 2.1.4 In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the sidewalls of the excavation with suitable trench sheets and bracing systems to maintain a vertical wall from the bottom to the top of the excavation. DO NOT completely remove the shoring system until the backfilling is complete, but before the concrete fully hardens.
- 2.1.5 In areas where the water table is above the bottom of the excavation and/or the excavation is liable to flood, the excavation should be dewatered using suitable pumping equipment and this should continue until the installation is complete.
- 2.1.6 During installation care must be taken to ensure that the body of the unit is uniformly supported so that point loads through the unit are avoided.
- 2.1.7 The Concrete Specification 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	270 - 280 Kg/M ³
	C20	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		

- 2.1.8 Pea Shingle - 6 mm to 10 mm rounded pea shingle, offering low point loading characteristics is considered to be the most suitable material for back filling in dry ground installation. (PEASHINGLE ONLY TO BE USED IN DRY SITE CONDITIONS).

2.2 Separator Installation

2.2.1 DRY GROUND CONDITIONS

- 2.2.2 Excavate the site, allowing for a minimum clearance on all sides and base of the unit of 200mm and level the base.
- 2.2.3 Ensure that the hole is kept dry. Should any rain or surface water collect in the hole, this should be pumped out.
- 2.2.4 A base of at least 200mm of lean mix concrete should be provided.
- 2.2.5 Lower the tank in the hole using a rope sling through the lifting points provided on the tank. Under no circumstances should the sling be attached to the inlet pipe or the outlet pipe.
- 2.2.6 Position the inlet pipe in line with the incoming drain. Note that the inlet and the outlet pipes are clearly embossed on the tank. The unique profile of the base will help to level the tank, but make sure the tank is in the truly upright position in order to maintain the 100mm fall between the inlet and outlet pipes.
- 2.2.7 After any concrete in the base has taken up it's initial set (usually after one day), ballast the tank by putting approximately 0.5m depth of water into it.
- 2.2.8 Backfill the space around the tank with pea gravel or similar material (PEASHINGLE ONLY TO BE USED IN DRY SITE CONDITIONS). The backfill should be free from organic material, large stones, brick or sharp objects. Backfilling should be carried out in layers, making sure that voids are not left under and around the sides of the tank and that there are no localized stress concentrations. Its is most important that the installer progressively fills the tank with water to the level above the backfill in order to stabilize pressures on the tank.
- 2.2.9 Remove any temporary covers and connect up the tank inlet and outlet pipes to your own pipework.
- 2.2.10 Backfilling can now proceed up to ground level in 300mm stages ensuring tank is ballasted in all chambers as you go.

- 2.2.11 A galvanized lockable manhole cover (600x600mm) and frame is to be fitted to suit specific site loadings, THE TANK MUST NOT BE LOAD BEARING. The top of the manhole should not be set below the local ground level. If necessary a further neck extension should be added to the tank to bring the cover up to ground level (see section 6).
- 2.2.12 Venting can be provided through the cover or a Tee piece arrangement on the outlet/inlet.
- 2.2.13 **WET GROUND CONDITIONS**
- 2.2.14 Excavate a hole to appropriate depth allowing at least 300mm for lean mix concrete and hard-core base. Allow for tank width plus at least 400mm with additional allowance for any necessary shuttering.
- 2.2.15 De-water the excavation using suitable pumping equipment. Ensure that the pump discharge does not saturate the ground in the immediate vicinity. In wet ground conditions the installer should ensure that the base is adequate to support the weight of the tank and its contents. If the base of the excavation is unstable, i.e. running sand or similar, excavate an additional 250-300mm below concrete levels and fill up with compacted hard-core. Place a sheet of polythene over the hard-core and up the sides of the excavation before putting in the concrete cradle.
- 2.2.16 Lay a bed of concrete (minimum 150mm thick) on top of the polythene at the base of the excavation. De-watering is to continue until you are satisfied that the concrete has cured.
- 2.2.17 Lower the tank onto the concrete bed, ensuring that the inlet and outlet are in the correct position. Ensure the tank is upright and then ballast it with water to a maximum of 500mm deep.
- 2.2.18 Haunch up the concrete bed at least 450mm all round the base, ensuring that all voids in the concrete are eliminated and at least 150mm of concrete is left below the tank base.
- 2.2.19 Backfill to the invert depth with concrete. Ensure that the water level inside the tank is maintained no more than 250-300mm above concrete backfill level. It is most important that the installer progressively fills the tank with water to a level above the backfill in order to stabilise pressure on the tank.
- 2.2.20 Backfill evenly all round the tank, consolidating in layers. The backfilling should start before the base has hardened and be a single continuous operation so that the tank has a full concrete jacket without joins.
- 2.2.21 DO NOT use vibrating rammers to consolidate concrete. DO NOT discharge concrete directly on to the tank. Ensure that the concrete is not too wet and that it is tamped in around the tank.
- 2.2.22 Align and connect pipework.
- 2.2.23 Build up a shell of concrete around the neck of the tank to 150-200mm thickness before completing the backfill with a suitable material. Care must be taken to avoid distortion of the neck whilst concreting this area.
- 2.2.24 Fit cover and frame. Apply surface finish e.g. turf
- 2.2.25 Do not empty tank until the concrete backfill has cured. Tanks may be left filled with water.

2.3 Pipework Connections

- 2.3.1 In all cases, ensure that the outlet pipework level is maintained for correct operation. (Unless specified on the order, the fall across the unit will be as per the customer drawings).
- 2.3.2 These units are fitted with **PVCu spigots** to both the outlet and the inlet.
- 2.3.3 Connect using the same size PVCu socket or a suitable reducer.
- 2.3.4 Ensure that the connecting pipework seal is secure and watertight before backfilling the pipe.
- 2.3.5 Alternatively, proprietary **flex seal couplings** can be obtained to fit over the outside of the site pipework. When using this connection method, ensure that the seal is secure before backfilling the pipe. If purchasing a flexseal coupling for use with clay /concrete, we suggest that a size 110 mm larger than the ID is selected.

2.4 Oil Level Alarm & Neck Fitting

- 2.4.1 We will fit a tube to receive the oil alarm probe. This provides protection and ensures that the probe is positioned at the correct level to sense oil build up.
- 2.4.2 See alarm supplier information and ensure that the probe is placed within the tube and can be accessed from ground level.
- 2.4.3 Continue backfilling with concrete/pea shingle (dry site) over the tank body to the required level. Build up a shell of concrete, minimum 225mm thick, around the access shaft(s). When using pea shingle continue to back fill up to required level. Temporarily strut the access shaft to avoid distortion.
- 2.4.4 Where we supply an extension shaft to meet a deeper invert requirement, a coalescer extension chain will be required. When fitting, ensure that the chain is secured to just below the surface so that the coalescer can easily be removed. Remove the coalescer from the unit before adding the extension chain. When refitting, ensure that the coalescer is correctly inserted and fully pushed into the base fitting. This is important and you must ensure that the coalescer is correctly located before putting the unit in to operation.
- 2.4.5 It is advisable to seal the joints on the extension shafts (particularly on sites with high ground water) with proprietary sealant. Temporarily strut the extension neck(s) to avoid distortion during back filling. Where more than one neck section is required to suit a deep invert, consider back-filling section by section. The original fixing hole bolting the coalescer to the neck should be sealed.
- 2.4.6 The maximum recommended inlet invert is 2000mm (using 500mm long extension sections). If you are installing a unit deeper than this then you must make your own arrangements for removing and replacing the coalescer. Consideration must be given to the depth of lift involved.
- 2.4.7 Continue back-filling, ensuring minimum 225mm concrete thickness around the access shaft/ extension neck. When using pea shingle back fill as required.
- 2.4.8 Mains powered Alarm Systems. See alarm suppliers installation instructions. Lay 82mm diameter PVCu underground ducting between the alarm panel location and the alarm probe position. The ducting should be 500mm below ground level and fitted with a drawstring for later cable insertion. Any changes of direction should be by long radius bend. If necessary, drill a suitable hole in the access shaft adjacent to the alarm probe terminal box, to accept the ducting and seal.
- 2.4.9 In traffic areas a suitable top slab must be constructed. The top slab should bear on a suitable foundation to prevent superimposed loads being transmitted to the unit and access shafts. Loads applied to covers and frames must bear on the top slab, not the access shaft.
- 2.4.10 The unit should be filled with clean water up to the invert level of the outlet pipe. Ensure the unit identification is placed/ marked inside the neck for future information. The unit is now ready for use.

2.5 Alarm Installation

- 2.5.1 Install the alarm probe and control panel, as per the Suppliers Alarm Installation Guidelines. Ensure that the probe is positioned correctly for the required storage of oil. The table below indicates the maximum volume of oil to be stored and the depth of floating oil expected in the separation chamber.

Unit	Recommended Minimum Oil Storage volumes in litres	Actual Oil Storage volume in litres	Max. (100%)Depth of floating oil (Static)
NSBP003	45 litres	107	210mm
NSBP004	60 litres	107	210mm
NSBP006	90 litres	107	210mm

3 Operation

- 3.1.1 The unit is sized on treating a defined area and rainfall (6.5 mm/hour) EN.858 Part 1 and using the factor provided in the Environment agency guidelines PPG3. (0.0018 = 6.5mm/hr) The unit will treat the entire flow i.e. NSBP003 will treat a flow of 3 litres per second. If the flow is greater than this then the excess flow will bypass the main treatment chamber. A NSBP003 unit will work in bypass mode over 3 and up to 30 litres per second. Flows in excess of this will back up on to the site. During a storm, the rain falls and flushes any surface debris, silt or oil into the tank. This first flush, up to the maximum rated flow is fully treated. As the severity of the storm increases, so does the rate of flow increase. The liquid entering the separator after the first flush tends to be cleaner and so, in lower risk applications, is allowed to bypass the oil separation chamber for directly discharge.
- 3.1.2 The bypass unit has three chambers. The entire flow up to the units listed flow rating is fully treated and passes through all chambers. (E.g. NSBP003 treats 3 litres per second.)
- 3.1.3 Flows in excess of this rating will bypass the separation chamber and the liquid passes untreated to the outlet chamber.
- 3.1.4 The first chamber will accumulate silt and grit. The maximum volume that can be retained is the rating x 100 e.g. a NSBP003 is capable of holding 300 litres of silt.
- 3.1.5 The second / separating chamber is sized to separate oil at the rated flow rate and to accumulate the required oil storage volume. A NSBP003 maximum oil storage volume is 45 litres. An oil probe should be positioned to detect the accumulation of oil when there is no or low flow conditions. The probe should be positioned so that the alarm operates at 90% of the rated oil storage volume.
- 3.1.6 In bypass flow conditions, the flow moves directly from the inlet to the outlet chamber avoiding the separating chamber.
- 3.1.7 Bypass Class 1 Separators are fitted with a removable coalescer which also includes media to further improve the discharge quality. The coalescer media requires maintenance.
- 3.1.8 Bypass Class 1 Separators are not effective for the removal of soluble or emulsified pollutants such as oil/detergent mixes found in vehicle wash effluents. With permission such discharges should be drained to the foul sewer. Consult our technical department for Separation equipment to meet these applications.

4 Maintenance

4.1 Waste Removal and Servicing

- 4.1.1 Separated light liquid **must** be removed from separator when the oil capacity has been reached.
- 4.1.2 An oil level alarm system is available for purchase which gives warning when the separated light liquid/water interface level reaches 90% of the maximum recommended oil storage volume.
- 4.1.3 Separators should be inspected at least every six months or more frequently if experience dictates. A log should be maintained detailing the depth of oil found, any oil volume removed and any silt removal or cleaning carried out. A specimen maintenance log is included in the appendices.
- 4.1.4 Every site is different, in respect to the amount and type of silt generated by the drain design and installation. Frequently, the construction programme itself generates large and perhaps unusual quantities of silt and grit. We do recommend that following the initial installation, an inspection of the separator contents be made to check that building rubble has not entered the unit. Further inspections at 3 and 6 months should be made so as to be able to assess the volumes of silt and oil accumulated. The inspection and emptying programme can then be defined following the first 6 months site experience. We recommend leaving a maximum interval between inspections of 6 months.
- 4.1.5 Alarm probes should be removed and cleaned with water whenever waste material is removed from the separator. Please note the alarm may alert until the liquid level is replaced.
- 4.1.6 **Separator waste is a “special waste” under the terms of The Waste Management Code of Practice. The Code imposes a duty of care on the waste producer to ensure that the Cleansing contractor is registered with the Environment Agency and that the final disposal of the waste is to a licensed facility.**

- 4.1.7 You should consider the purchase of a maintenance service, which includes bi-annual inspections, removal of oil and silt, cleaning of the alarm probe and cleaning or replacement of the coalescer (where appropriate).

4.2 Waste Removal Procedure – Oil & Silt

- 4.2.1 **Oil can only be effectively removed when there is no flow entering the unit. Isolate the unit and prevent flow from entering. Always remove the oil before attempting to remove the coalescer. If this is not done, when the coalescer is withdrawn the oil can coat the media surface and when replaced the oil may be forced through the media, contaminating the effluent.**
- 4.2.2 Remove the access cover and lower the desludging hose in to the separation chamber. Draw off the surface oil.
- 4.2.3 If removing the silt, lower the desludge hose to the base of the tank and empty the contents of the chamber. Ensure that you access and clean both compartments.
- 4.2.4 Remove the alarm probe, if fitted, clean with water and replace.
- 4.2.5 Consider the period of time that the coalescer has been installed and consider removing and inspecting (cleaning or replacing) the coalescer media. If removed, ensure that it is correctly replaced and secured into position. Replace the access covers. It is best to lower the water level to aid re-fitting.
- 4.2.6 Re-fill the separator with clean water up to the outlet level.
- 4.2.7 If an alarm is fitted, it will display an alarm condition until the separator is re-filled. Check alarm operation when unit full.

4.3 Checking the Coalescer Assembly

- 4.3.1 Coalescers, where fitted, may be cleaned periodically to maintain efficiency. Coalescers should be checked following a major incident and media replaced if necessary. Please contact us if you wish to purchase the coalescer media.
- 4.3.2 Identify the type and size of separator (shown on labels inside the access neck).
- 4.3.3 Assemblies weighing less than 25 Kg may be removed by hand. Heavier assemblies should be lifted by mechanical means. Any lifting device employed must be capable of lifting:
- 4.3.3.a In excess of the maximum assembly weight.
 - 4.3.3.b The assembly completely out of the access shaft.
 - 4.3.3.c Giving a smooth and controlled lift.
 - 4.3.3.d Swinging the assembly to one side clear of the access shaft.

Unit	Dry Weight (Kg)	Wet Weight (Kg)	Silted Weight (Kg)	Replacement Media Part No.
NSBP003	5.7 kg	≈50 kg	≈60 kg	402715
NSBP004	5.7 kg	≈50 kg	≈60 kg	402715
NSBP006	5.7 kg	≈50 kg	≈60 kg	402715

- 4.3.4 Ensure that the area around the access shaft is clear and that there is space to place the assembly once removed. If space is not available it will be necessary to support the assembly over the access shaft. e.g. by scaffold poles and platform.
- 4.3.5 Only remove the access cover when necessary to remove the assembly. Do not leave the access shaft uncovered and unattended.

4.4 Removing the coalescer assembly.

- 4.4.1 Undo any fixings which secure the coalescer to the access shaft (if fitted).
- 4.4.2 Lift the assembly with a smooth and steady motion. Coalescers will become lighter as water drains from the exposed media. Allow the water to drain completely. Assemblies blocked with fine silt may be very heavy.
- 4.4.3 Fully extract the assembly and set it down adjacent to the access shaft.

4.5 Cleaning the coalescer assembly/ Media Replacement.

- 4.5.1 Hose down the assembly using clean water at normal pressure. If the media is heavily contaminated with oil and silt, it may not be possible to clean it effectively by hosing. Do not allow untreated cleaning water to pass out of the unit. Continue hosing until the water runs clear.
- 4.5.2 To replace the media, undo the banding. Slide media off the core tube and slide new media on. Ensure all the apertures on the core tube are covered by the media. Re-secure or replace banding. Consider replacing media and banding every two years.

4.6 Replacing the coalescer assembly.

- 4.6.1 Position it over the access shaft.
- 4.6.2 Lower the assembly steadily into the access shaft ensuring that the end locates within the sump at the bottom of the tank. Re-secure the fixings (if fitted).
- 4.6.3 Replace the access cover.

5 Connection of Extension Neck

(Option in 1800L Tanks only)

- 5.1.1 See the accompanying illustration.
- 5.1.2 Remove existing lid by unscrewing 8 screws and lifting off lid.
- 5.1.3 Apply mastic around flange of tank that joins to extension neck.
- 5.1.4 Place extension neck onto flange of the tank and screw down using 8 fixings.
- 5.1.5 Please refer to drawing NSBPEXTzz
- 5.1.6 Apply mastic to top face of extension piece that is joining to cover.
- 5.1.7 Place lid on top of extension neck and screw down using 8 fixings.
- 5.1.8 Backfill in 200mm stages with concrete (wet site) or peashingle (dry site), bracing neck during each stage until you reach the cover level.
- 5.1.9 For traffic area loading ensures you refer to tank installation section.

6 Emergencies

- 6.1.1 At sites where there is a high risk of spillage, spill kits containing drain seals, absorbent materials, disposal containers and other appropriate equipment should be held. In the event of a spillage on site, the material should be contained, (if a spill kit is not available, sand or soil may be used) and the Environment Agency notified immediately using the appropriate emergency hotline number listed in the Agency Guideline PPG3. Year 2012 - **0800 80 70 60**

HEALTH & 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 be acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following these guidelines.

We recommend the use of a dust mask and gloves when cutting GRP components.

Electrical work should be carried out by a qualified electrician.

Contaminated surface water can contain substances 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.

Access covers should be selected with reference to the location of the unit and traffic loads to be accommodated. These are not (normally) part of the Separator supply.

When covers are removed precautions must be taken against personnel falling into the unit.

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.

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.

OIL ALARM SYSTEMS

PPG3 requires that the oil level alarm be fitted, tested and commissioned by a competent Installer. This is to ensure that the excessive oil probe is calibrated correctly, raising an alarm when 90% of the recommended maximum oil storage volume is reached. Should the oil level alarm fail to provide an early warning, excessive oil could pass through the separator, thus polluting the environment. This could result in substantial cleanup costs and legal action being taken under the water resources act 1991.

MAINTENANCE

The correct ongoing maintenance is essential for the proper operation of the equipment. Operators who rely on oil level alarms to prompt them to service separators between maintenance intervals run the risk of polluting should the alarms not work, hence the ongoing functional assessment of the oil alarm systems is fundamental if pollution incidents are to be avoided.

The removal of sediment and retained oil/grease should be carried out by a contractor holding the relevant permits to transport and dispose of such waste. The contractor must refer to the guidelines in this document.

SEPARATOR MAINTENANCE LOG



Site address/location

Separator location

Type of separator

Nominal Flow

Total capacity

Inspection/ Maintenance Date	Comments	Waste Volumes Removed (if appropriate)