

» John Newton & Partners

jnp group

Consulting Engineers

Report on

SuDS MAINTENANCE PLAN

POLLARDS NURSERY, BARNHAM

For

REDROW HOMES LTD

Prepared by

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Approved by

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Principal Engineer

Date

16.12.2015

Ref:

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Brighouse

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Teesside

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Reference: RE002

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FOR AND ON BEHALF OF JNP GROUP

Date: December 15

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Document Issue Record

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1 INTRODUCTION

1.1 Terms of Reference

- 1.1.1 **jnp group** was commissioned by Redrow Homes to produce a drainage design and associated maintenance plan for the proposed development of the land at Pollards Nursery, Barnham.
- 1.1.2 This Sustainable Drainage Systems Maintenance Plan sets out how to maintain the full drainage system following construction with details of who is to be responsible for the long-term maintenance.

1.2 Surface Water Drainage

- 1.2.1 Sustainable Drainage Systems (SuDS) are an environmentally friendly approach to managing rainfall. SuDS techniques use landscape features to deal with surface water with the aim to:
- Control the flow, volume and frequency of water leaving a development.
 - Prevent pollution by intercepting silt and cleaning runoff from hard surfaces.
 - Provide attractive surroundings for the community.
- 1.2.2 At this outline stage, the surface water drainage strategy for the development utilises SuDS features in the form of attenuation ponds and oil separator. The following sections provide a brief description of these features and outline the maintenance programme to be adopted.
- 1.2.3 The SuDS features will be predominantly located in public open space. It is understood that these will be maintained by a private management company.

2 SUDS MANAGEMENT AND MAINTENANCE REGIME

2.1 General

- 2.1.1 The SuDS features used within the development are explained further in the following sections and identified on the plans contained within Appendix A.
- 2.1.2 Only trained maintenance personnel will be permitted to undertake maintenance on manholes, catch pits, oil separators or attenuation ponds and this work must be carried out in accordance with the Confined Space Regulations. To facilitate this maintenance, all SuDS are designed to be laid in public open space where possible or where they are reasonably accessible.
- 2.1.3 It is understood that the drainage system for the sites adopted road will be self-contained and adopted by the relevant body.
- 2.1.4 It is understood that the drainage system for the remainder of the site will be maintained by a private management company, appointed by the developer, following construction of the scheme. Management company services will be paid for by the occupants of the site.

2.2 Attenuation Ponds

- 2.2.1 Ponds are a commonly used and cost-effective SuDS technique. Where ponds are designed well and maintained regularly, they can offer important aesthetic, amenity and wildlife benefits to development sites.
- 2.2.2 Regular inspection and maintenance will be required to ensure the long term effectiveness of the pond as both a drainage feature and in terms of its other benefits such as aesthetic.
- 2.2.3 A maintenance buffer will be provided to all ponds from the road network. As the scheme develops, the maintenance and associated access requirements will be formalised.
- 2.2.4 "The SuDS Manual" - CIRIA C753 2015 states that access should be at least 3.5 metres wide, have a maximum cross fall of 1 in 7, and be sufficiently robust to withstand maintenance equipment and vehicles. However temporary access routes for infrequent operations could be considered where permanent routes are not appropriate. The access should extend to the forebay, safety and aquatic benches, inlet and outlet infrastructure. Consideration should be given as to whether maintenance vehicles will need to turn around.
- 2.2.5 The attenuation ponds will be placed in public open space with a suitable maintenance strip to make them easily accessible for maintenance purposes.

2.2.6 A checklist for the maintenance of ponds, to be used by the private management company (or adopting authority), is provided in accordance with "The SuDS Manual" - CIRIA C753 2015 below:

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage.	Monthly
	Inspect water body for signs of poor water quality	Monthly (May-October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices, eg penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay	Every 1-5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebay	Every 5 years, or as required
Occasional Maintenance	Remove sediment from the main body of ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25-50 years
Remedial Actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair / rehabilitate inlets, outlets and overflows	As required

2.3 Private Piped Network (areas not adopted by Southern Water)

2.3.1 Whilst the drainage system has been designed to operate with as little maintenance as possible, there are key operations that must regularly be undertaken to ensure that it remains in optimal condition. Most of the operations are routine and should be undertaken for any drainage system. The operations and their maintenance frequencies are summarised below:

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Checking of the drains for blockages and damage. Clean and repair if required.	Every three months.
Occasional Maintenance	Desilting of catchpits, gully sumps and channel drains.	First, third and fifth year after completion of works.
	Grating on gullies and channel drains to kept clear of debris	As required.
Remedial Actions	Jetting of pipework to clear blockages.	As required.
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Annually

2.3.2 Specific maintenance needs of the drainage network should be monitored and maintenance schedules adjusted to suit requirements as they arise.

2.4 Full Retention Oil Separator

- 2.4.1 Full Retention Oil Separators are used to treat the most frequent flows with rainfalls events up to 50mm/hour.
- 2.4.2 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 manufactures guidelines.
- 2.4.3 A log should be maintained detailing the depth of oil found, any oil volume removed and any silt removal or cleaning carried out.
- 2.4.4 A checklist for the maintenance of oil separators, to be used by the private company appointed by the owner, is provided in accordance with "The SuDS Manual" – CIRIA C753 2015 below:

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacture
	Remove sediment, oil, grease and floatables	As necessary – indicate by system inspections or immediately following significant spill
Remedial Actions	Replacing malfunctioning parts or structures	As required.
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months

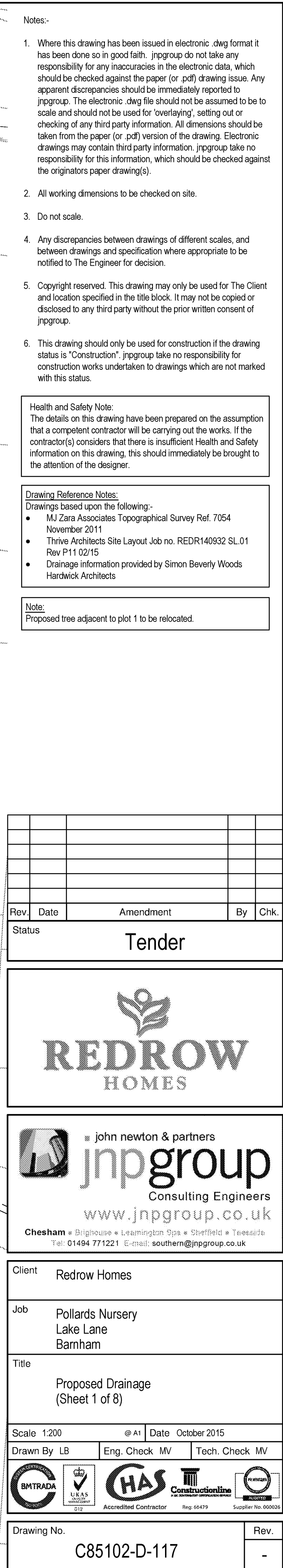
2.5 Contact

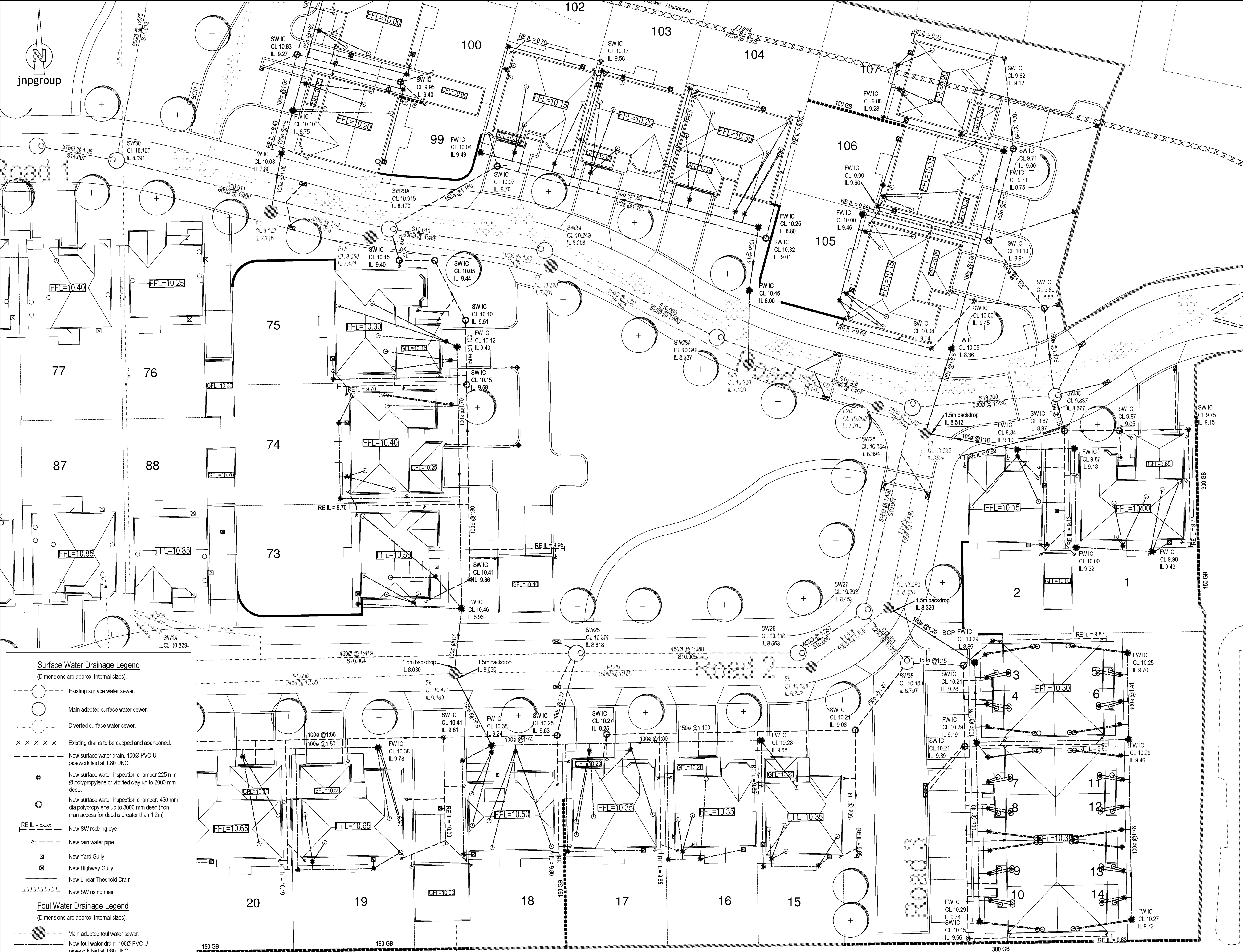
- 2.5.1 In the event of concern over any matter to do with the SuDS please contact:

.....

Appendix A: Surface Water Drainage Plans







Surface Water Drainage Legend
(Dimensions are approx. internal sizes).

--- Existing surface water sewer.

--- Main adopted surface water sewer.

--- Diverted surface water sewer.

× × × × Existing drains to be capped and abandoned.

--- New surface water drain, 1000 PVC-U pipework laid at 1:80 UNO.

○ New surface water inspection chamber 225 mm Ø polypropylene or vitrified clay up to 2000 mm deep.

○ New surface water inspection chamber, 450 mm dia polypropylene up to 3000 mm deep (non man access for depths greater than 1.2m)

RE IL = xx.xx New SW rodding eye

--- New rain water pipe

⊠ New Yard Gully

⊠ New Highway Gully

===== New Linear Threshold Drain

===== New SW rising main

Foul Water Drainage Legend
(Dimensions are approx. internal sizes).

--- Main adopted foul water sewer.

--- New foul water drain, 1000 PVC-U pipework laid at 1:80 UNO.

○ New foul inspection chamber 225 mm Ø polypropylene or vitrified clay up to 2000 mm deep

○ New foul inspection chamber 450 mm Ø polypropylene up to 3000 mm deep (non man access).

- Notes:-
- Where this drawing has been issued in electronic .dwg format it has been done so in good faith. jnp group do not take any responsibility for any inaccuracies in the electronic data, which should be checked against the paper (or .pdf) drawing issue. Any apparent discrepancies should be immediately reported to jnp group. The electronic .dwg file should not be assumed to be to scale and should not be used for 'overlying', setting out or checking of any third party information. All dimensions should be taken from the paper (or .pdf) version of the drawing. Electronic drawings may contain third party information, jnp group take no responsibility for this information, which should be checked against the originators paper drawing(s).
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 - Do not scale.
 - Any discrepancies between drawings of different scales, and between Drawings and specification where appropriate to be notified to The Engineer for decision.
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Health and Safety Note:
The details on this drawing have been prepared on the assumption that a competent contractor will be carrying out the works. If the contractor(s) considers that there is insufficient Health and Safety information on this drawing, this should immediately be brought to the attention of the designer.

Drawing Reference Notes:
Drawings based upon the following:-

- MJ Zara Associates Topographical Survey Ref. 7054 November 2011
- Thrive Architects Site Layout Job no. REDR140932 SL.01 Rev P11 02/15
- Drainage information provided by Simon Beverly Woods Hardwick Architects

Note:
Proposed trees adjacent to plots 1 & 102 to be relocated.

A	04.12.15	Drawing updated as per Redrow comments 30.11.15 & 02.12.15	EE	LB	
Rev.	Date	Amendment	By	Chk.	
Status					
Tender					

REDROW HOMES

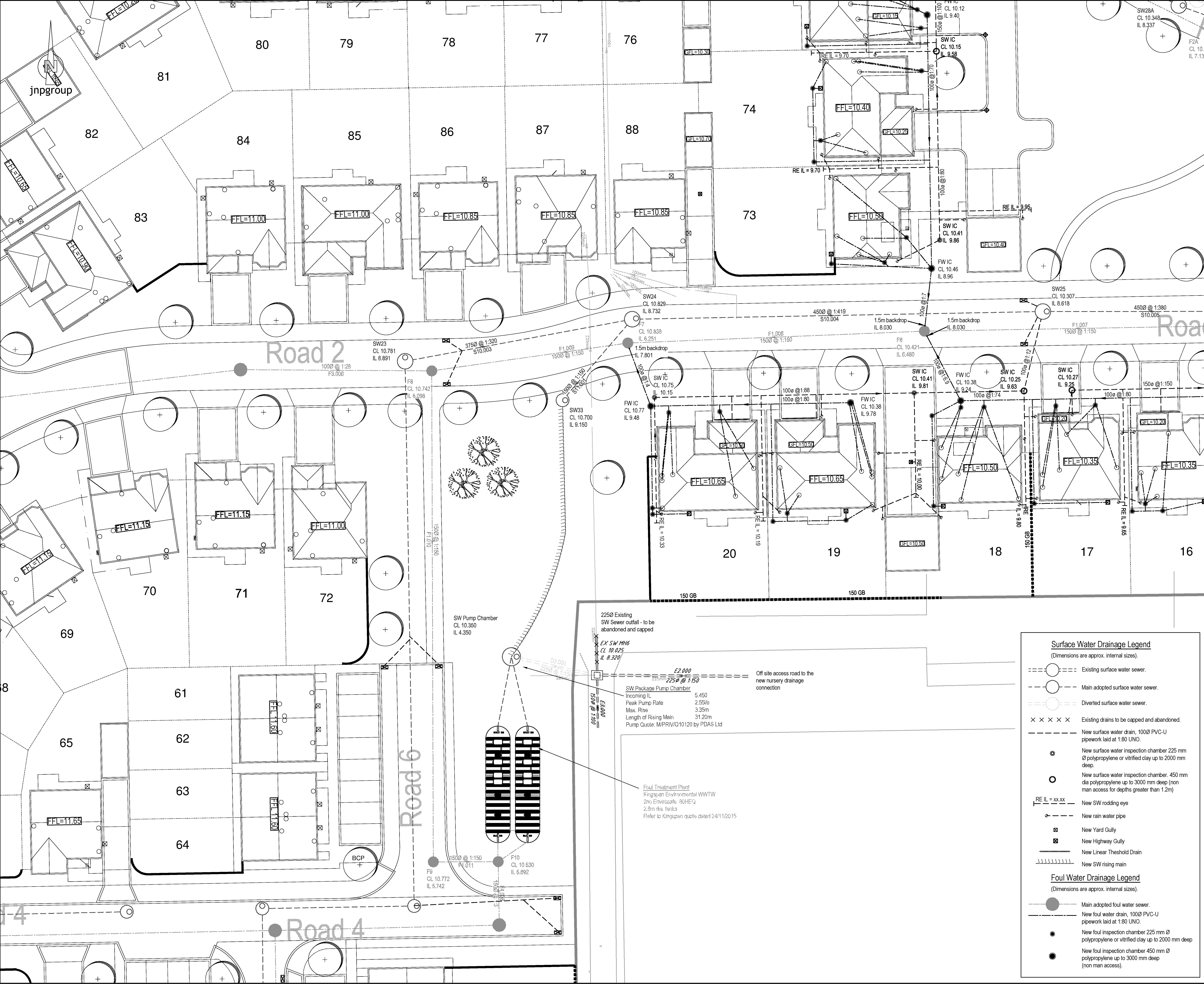
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Client	Redrow Homes
Job	Pollards Nursery Lake Lane Barnham
Title	Proposed Drainage (Sheet 2 of 8)
Scale	1:200
Drawn By	LB
Eng. Check	IV
Tech. Check	IV

Drawing No. C85102-D-118

Rev. A



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A		04.12.15	Drawing updated as per Redrow comments 30.11.15 & 02.12.15	EE	MV
Rev.	Date	Amendment		By	Chk.
Status		Tender			

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Client	Redrow Homes
Job	Pollards Nursery Lake Lane Barnham
Title	Proposed Drainage (Sheet 4 of 8)
Scale	1:200 @ A1 Date October 2015
Drawn By	LB Eng. Check MV Tech. Check MV
Drawing No.	C85102-D-120
Rev.	A

Surface Water Drainage Legend
(Dimensions are approx. internal sizes).

- Existing surface water sewer.
- Main adopted surface water sewer.
- Diverted surface water sewer.
- Existing drains to be capped and abandoned.
- New surface water drain, 100Ø PVC-U pipework laid at 1.80 UNO.
- New surface water inspection chamber 225 mm Ø polypropylene or vitrified clay up to 2000 mm deep.
- New surface water inspection chamber, 450 mm dia polypropylene up to 3000 mm deep (non man access for depths greater than 1.2m)
- New SW rodding eye
- New rain water pipe
- New Yard Gully
- New Highway Gully
- New Linear Threshold Drain
- New SW rising main

Foul Water Drainage Legend
(Dimensions are approx. internal sizes).

- Main adopted foul water sewer.
- New foul water drain, 100Ø PVC-U pipework laid at 1.80 UNO.
- New foul inspection chamber 225 mm Ø polypropylene or vitrified clay up to 2000 mm deep
- New foul inspection chamber 450 mm Ø polypropylene up to 3000 mm deep (non man access).

225Ø Existing SW Sewer outfall - to be abandoned and capped

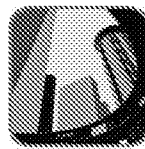
EX SW MH6 CL 10.025 IL 8.320

SW Package Pump Chamber
Incoming IL 5.450
Peak Pump Rate 2.550/s
Max. Rise 3.35m
Length of Rising Main 31.26m
Pump Quote: M/PRV/Q10/120 by PDAS Ltd

Foul Treatment Plant
Kingspan Environmental WWTP
2mØ Envecoflex 80HE2
2.0m dia. tanks
Refer to Kingspan quote dated 24/11/2015

Off site access road to the new nursery drainage connection

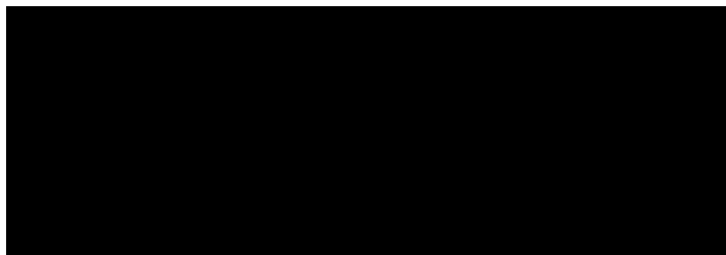
Appendix B: Kingspan Full Retention Separator – Installation & Maintenance Guidelines



015050 - GL0097P
NSFA080 – NSFA200 Full Retention Separators
Installation & Maintenance Guidelines



Contact Numbers:



Enclosed Documents

DS0896P	NSFA080 – NSFA200 Class 1 & 2 Full Retention Separators Sales Drawing
DS0859P	Neck & Coalescer Extension Details Class 1 & 2 NSFA Full Retention Separators

Issue	Description	Date
02	CC965	May 2011

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 recommends that the oil level alarm be fitted, tested and commissioned by a competent Installer. This is to ensure that the oil probe is calibrated correctly, raising an alarm when 90% of the 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.

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Appendices

Separator Maintenance Log



**Kingspan Environmental
College Road North
Aston Clinton
Aylesbury
Buckinghamshire
HP22 5EW**

10

EN 858 : Separator systems for light liquids

GRP Glass Reinforced Plastic Tank

Full Retention Separators NS003 - NS200

Class 1 & 2

Watertightness	Passed
Structural Testing	Passed
Hydraulic efficiency	Passed

1.0 Introduction

These Guidelines represent Best Practice for the installation of the above Full Retention 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, a qualified specialist (e.g. Civil engineering consultant) must verify any information or advice given by employees or agents of the company regarding the design of an installation.

For guidance of Separator selection and application, please refer to the most recent issue of Environment Agency Guidelines No.3 (PPG3) and BS EN 858. Our Units have been independently tested by BSI and are certified as meeting the standards.

2.0 Handling & Storage

- 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 can not fall and become damaged.
- 2.2. The design requirements of our 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.
- 2.3. When lifting units, use webbing slings of a suitable specification. Do not use chains.
- 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.
- 2.5. Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site.
- 2.6. We accept no responsibility for the selection of lifting equipment.
- 2.7. Whenever our 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 to evenly support the base of the unit. Do not roll separators.

3.0 Site Planning

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

- 3.1. The discharge must have the consent of the relevant Environmental Regulator.
- 3.2. The installation should have Planning and Building Control approval.
- 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.
- 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 may be fitted either within the neck or within the body of the unit. It should be extended to ground level when fitted in the body of the tank and you should make provision to extend the tube to the required height before backfilling. Consult the alarm supplier's instructions for their detailed fitting installation instructions.
- 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.
- 3.6. Uncontaminated run off such as roof water should be excluded from separators. (EA Guidelines PPG3.)

- 3.7. Consider installation of a sampling point downstream of the separator as there is no suitable facility to effectively sample the waste water from inside the unit. (Suggested in EN 858 Pt 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.
- 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.
- 3.10. The separator must be installed at a level that will allow connection to the incoming drain and a free discharge at the system outlet.
- 3.11. Do not install the unit deeper than necessary, if required, ensure that you purchase extension necks and coalescer extensions. The minimum invert depth of the unit is shown on the customer drawing.
- 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.
- 3.13. There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance.
- 3.14. It is essential that a mains water supply is accessible for routine cleansing and refilling after removal of waste material and liquid.
- 3.15. Provide electrical supply for alarm system.
- 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.
- 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.

4.0 Installation – General

- 4.1. 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.
- 4.2. 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.
- 4.3. 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.
- 4.4. In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the side walls 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.
- 4.5. 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.
- 4.6. During installation care must be taken to ensure that the body of any unit is uniformly supported so that point loads through the unit are avoided.
- 4.7. 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 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		

5.0 Separator Installation

- 5.1. Excavate a hole of sufficient length and width to accommodate the tank and a minimum 300mm concrete surround and to a depth that allows for the burial depth of the unit plus concrete base slab.
- 5.2. Construct a suitable concrete base slab appropriate to site conditions. Ensure that the slab is flat and level.
- 5.3. When the concrete base slab has set enough to support the installed load, add a concrete haunch so as to provide even support under the unit, and then lower the unit onto the haunch using suitable webbing slings and lifting equipment.
- 5.4. Locate the float valve in the coalescer unit(s). Lift float valve and secure in the open position before filling and release when full. If the valve is not lifted during filling, it may "seat". The valve is fitted with cord to aid lifting. Add cord if extending the invert and fasten end to a convenient point.
- 5.5. **Pour no more than 300mm depth of clean water into the unit, avoiding shock loads. For units with more than one chamber, add water to each chamber simultaneously. DO NOT OVERFILL, the unit is not designed to hold water whilst unsupported. FILL THROUGH OUTLET AS WELL AS INLET.**
- 5.6. **Place concrete backfill to approximately 300mm depth under and to the sides of the tank ensuring good compaction to remove voids. DO NOT use vibrating pokers. Continue adding concrete backfill, simultaneously keeping the internal water level no more than 200mm above the backfill level at all times, until the backfill is just below the underside of the outlet drain, giving sufficient room to connect the inlet and outlet pipework.**
- 5.7. Connect inlet and outlet drains and vent pipes when safe access to the backfill can be gained.

PIPEWORK CONNECTIONS

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). Small units are generally fitted with **PVCu spigots** to both the outlet and the inlet. Connect using the same size PVCu socket or a suitable reducer. Larger units are generally fitted with our own **GRP** manufactured sockets. The connecting pipework should be pushed into the socket and a joint made to fill in the gap using rope/hemp with a cement mortar or bonding mix. Ensure that the seal is secure and watertight before backfilling the pipe. Alternatively, proprietary **flex seal couplings** can be obtained to fit over the outside of the site pipework and the outside of the GRP socket. When using this connection method, please be aware that the outside GRP laminate is not perfectly regular and that you may need to use a sealant on the outside diameter of the GRP. Take care not to over tighten the coupling when connecting to the GRP and ensure that the seal is secure before backfilling the pipe. Drawing DS0185 provides the ID of our GRP sockets. The OD is variable, as the wall thickness can be up to 15-20 mm. If purchasing a flex seal coupling for use with clay/concrete, we suggest that a size 110 mm larger than the ID is selected.

5.8. Oil Level Alarm Neck fitting

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. See alarm supplier information and ensure that the probe is placed within the tube and can be accessed from ground level.

Continue backfilling with concrete over the tank body to the required level. Build up a shell of concrete, minimum 225mm thick, around the access shaft(s). Temporarily strut the access shaft to avoid distortion.

- 5.9. Where we supply an extension shaft to meet a deeper invert requirement, a coalescer extension is also provided when needed. If there is a coalescer, remove it from the unit before adding the extension shaft(s). It is advisable to seal the joints on the extension shafts (particularly on sites with high ground water) with proprietary sealant or by GRP lamination (if skilled operatives are available). 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. If the extension neck is too long, it can be trimmed using a fine-toothed saw. The original fixing hole bolting the coalescer to the neck should be sealed. Ensure that the vent socket if cut out, is replaced elsewhere. 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.
- 5.10. If extending the neck, remember to add a suitable length of cord to enable the float valve to be lifted when the unit is emptied. If the valve is not raised during filling then the float valve may stick at the base.
- 5.11. Coalescer. When refitting, ensure that the core tube is correctly seated onto the base fitting.
- 5.12. Continue back-filling, ensuring minimum 225mm concrete thickness around the access shaft/extension neck and alarm access tube (as applicable).
- 5.13. 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.
- 5.14. 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.
- 5.15. 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.

6.0 Alarm Installation

- 6.1 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 volume of oil stored and the depth of floating oil expected in the separation chamber.

Unit	Recommended Maximum Oil Storage volume	Max. Depth of floating oil (100 %) (Static)
NSFA080	800 litres	100mm
NSFA100	1000 litres	110mm
NSFA125	1250 litres	110mm
NSFA150	1500 litres	110mm
NSFA175	1750 litres	105mm
NSFA200	2000 litres	110mm

7.0 Operation

- 7.1 The unit is sized on treating a defined area and rainfall (50 mm/hour) EN 858 Part 1, and using the factor provided in the EA guidelines PPG 3. The entire flow up to the units listed flow rating is fully treated.
- 7.2 Class 1 units include a core tube with replaceable media. Separated Liquid enters the core tube after passing through the media, to the outlet. The coalescer media requires maintenance and replacement at intervals. See section 8.
- 7.3 Class 2 units do not include replaceable media
- 7.4 Both Class 1 and class 2 units are provided with a closure device, incorporating a float. As the level of oil builds up and forms a floating layer, so the float/closure device moves downward to prevent oily water being passed through the unit. The unit **MUST** be emptied after the closure device has operated. The coalescer media should be inspected and changed if fouled.
- 7.5 An oil probe should be positioned to detect the accumulation of oil when there is no or low flow conditions. It is a requirement to position the probe so that the alarm operates at 90% of the maximum recommended oil storage volume. **When the alarm operates, the oil should be removed. Accumulated silt should also be removed.**
- 7.6 These 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 may be drained to the foul sewer. See Environment Agency Guidelines PPG3. Or contact our Technical Sales Department for suitable alternative equipment.

8.0 Maintenance

Separated light liquid **must** be removed from the separator when the oil capacity has been reached.

- 8.1. An oil level alarm system is available which gives warning when the separated light liquid/water interface level reaches 90% of the maximum recommended oil storage volume.
- 8.2. 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 volume removed and any silt removal or cleaning carried out. A specimen maintenance log is included in the appendices.
- 8.3. Every site is different, in respect to the amount and type of silt generated by the drain design and installation. Frequently, the site construction programme itself generates large and perhaps unusual quantities of silt and grit. We 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. An inspection and emptying programme can then be defined following the first 6 months site experience. We recommend a maximum inspection interval of 6 months.
- 8.4. Coalescer media is a replaceable item and is available as a spare.
- 8.5. 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. Consult the alarm supplier's literature.
- 8.6. If the unit is emptied, the float/closure device should be raised and lowered only after the unit has been refilled. (Do not lower it into an empty unit as the closure device will self seat)
- 8.7. **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.**
- 8.8. You should consider the purchase of a maintenance service, from a competent installer, which includes bi-annual inspections, removal of oil and silt, cleaning of the alarm probe and cleaning or replacement of the coalescer media (where appropriate).

Waste Removal Procedure – Oil & Silt

Oil should only be 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, any excess oil may coat the media surface and when replaced could contaminate the effluent.

- 8.9. Remove the access cover and lower the desludging hose into the separation chamber. Draw off the surface oil.
- 8.10. When removing the silt, lower the desludging hose to the base of the tank and withdraw any grit or sludge that may be present. It is not necessary to remove all the liquid unless you need to ensure the unit has been fully emptied. Ensure that you access and clean all compartments.
- 8.11. Remove the alarm probe, clean with water and replace. Ensure that it is working correctly
- 8.12. 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. It is best to lower the liquid level when refitting. Replace the access covers.
- 8.13. Re-fill the separator with clean water up to the outlet level. The alarm may display an alarm condition until the separator is re-filled. Check alarm operation when unit full.
- 8.14. Check the float/closure device and raise, if it has self-seated.

Checking the Coalescer Assembly

- 8.15. Coalescers should be checked and cleaned regularly, also following a major incident replaced if necessary. It may be possible to squeeze/rinse out silt contamination from the media, but it is impossible to remove oil. Please contact the company if you wish to purchase replacement coalescer foam media. Identify the type and size of separator (shown on labels inside the access neck).
- 8.16. 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:
 - In excess of the maximum assembly weight.
 - The assembly completely out of the access shaft.
 - Giving a smooth and controlled lift.
 - Swinging the assembly to one side clear of the access shaft.

Unit	Dry Weight (Kg) Core tube & media	Wet Weight (Kg) Core tube & media	Silted Weight (Kg) Core tube & media	Replacement media part no.
NSFA080	32 kg	45 kg	≈ 55 kg	402733
NSFA100	32 kg	45 kg	≈ 55 kg	402733
NSFA125	32 kg	45 kg	≈ 55 kg	402733
NSFA150	32 kg	45 kg	≈ 55 kg	402733
NSFA175	32 kg	45 kg	≈ 55 kg	402733
NSFA200	32 kg	45 kg	≈ 55 kg	402733

- 8.17. Ensure that the area around the access shaft is clear and that there is space to place the coalescer core tube 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.
- 8.18. Only remove the access cover when necessary to remove the assembly. Do not leave the access shaft uncovered and unattended.
- 8.19. It is recommended that core tubes be lifted by mechanical means, especially if it is suspected that the coalescer media be silted.
- 8.20. Removing the coalescer assembly.**
- 8.21. A cut out is provided in the top of the coalescer tube to aid lifting. When the unit is installed the coalescer tube is bolted to the neck. Deeper invert units are provided with a coalescer tube extension of the appropriate length. The coalescer tube must be bolted in place during use.

- 8.22. Lift the assembly with a smooth and steady motion. Core tubes and media 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.
- 8.23. Fully extract the assembly and set it down adjacent to the access shaft. Consider cleaning or replacement of the media.
- 8.24. **Cleaning the coalescer assembly /Media Replacement.**
- 8.25. Hose down the assembly using clean water at normal pressure. (You may be able to return the cleaning water into the separator, if there is sufficient separator capacity.) Do not allow untreated cleaning water to pass out of the unit. Continue hosing media until the water runs clear. If the media is heavily contaminated with oil and silt it may not be possible to clean effectively by hosing and should be replaced.
- 8.26. When replacing 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 every two years.
- 8.27. **Replacing the coalescer assembly.**
- 8.28. Position coalescer assembly over the access shaft and remove any safety coverings.
- 8.29. Lower the assembly steadily into the access shaft, orientate core tube correctly and locate over sump cone. Bolt core tube into place, check the float/closure device is free to operate.

9.0 Emergencies

- 9.1. 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 2011 – 0800 80 70 60

SEPARATOR MAINTENANCE LOG

Site address/location

Separator location

Type of separator

Nominal Flow

Total capacity

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

