

Prepared on behalf of

Euro Garages Ltd

Development
Holt Road, Wrexham

Sustainable Urban Drainage Systems (SUDS): Phasing, Implementation, Maintenance and Management Plan

Acknowledgements:

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Report Ref:	10802/LM/001/04	February 2019	
Author:	Lee Mozley		
Checked & Approved:	Peter Maurice	Date:	14.02.19

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Drawing 10802/500/001C – Drainage Layout

1 Introduction

- 1.1 This report has been prepared on behalf of Euro Garages Ltd to accompany an application for a proposed Petrol Filling Station on vacant land to the north of the roundabout linking the A534 Holt Road and the A5156
- 1.2 This SuDS Phasing / Implementation, Maintenance and Management Plan has been developed to address the planning obligations and will also provide best practice guidance for how the scheme will be maintained and managed over the lifetime of the development, including any arrangements for adoption by any public body or Statutory Undertaker. Ultimately any maintenance of the SuDS drainage features listed below will be the responsibility of the private management company and relevant adopting authority.

2 Site Information

- 2.1 The total site area measures approximately 1.60ha and is presently undeveloped green field with no existing drainage outfalls.
- 2.2 The site topography falls from a contour level of 78.60m AOD along the northern boundary to a contour level of 73.50m AOD along the eastern boundary and a contour level of 76.20m AOD along the southern boundary.

3 Proposed Drainage Strategy

- 3.1 The underlying soils are considered suitable for disposal of surface water runoff to ground by infiltration with 2 No. soakaway tests establishing infiltration rates to vary from 3.7×10^{-05} m/s to 6.3×10^{-05} m/s.
- 3.2 The drainage network and attenuation volume has been designed using MicroDrainage software and has been modelled in accordance with the requirements of Sewers for Adoption and Welsh Water. Attenuation volumes have been provided so that no flooding occurs for up to a 1 in 100 year + 30% climate change storm events. The results of the simulation modelling confirm that surface water run-off is to be attenuated in a combination of filter trenches with perforated drains directing flows to online infiltration basins which will be located within accessible public open space.
- 3.3 Foul water from the development will discharge via a system of underground pipework to a new pumping station located in the south-east corner of the site. It is proposed for the development foul water network to discharge to a publically maintained 1300mm diameter combined water public sewer (Welsh Water manhole reference SJ35513450) in Holt Road to the west of the development via a rising main. It is the developer's intention for new foul water sewers to be offered for adoption to Welsh Water via a Section 104 Agreement of the Water Industry Act 1991.
- 3.4 It is the Developers intention for the new surface water underground pipework, filter trenches with associated perforated drains and infiltration basins to be maintained and managed by a private management company. Therefore, ownership and maintenance of the SuDS apparatus will be in accordance with the policies of the appointed private management company.

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- 3.5 As the development progresses towards completion it will be important to continually monitor the ongoing operation and functionality of the SuDS features, giving consideration to the regular day to day care, occasional tasks and ongoing remedial work.

4 Phasing and Implementation of the SuDS scheme

- 4.1 The proposed surface water underground pipework, filter trenches with associated perforated drains and infiltration basins will be constructed at an early stage of the development's programme as part of the site earthworks phase. This will assist in managing construction runoff and help with settlement of sediments generated by the construction works.
- 4.2 Topsoil and seeding of the infiltration basins should not take place until site works have been completed. During the construction period, the surface of the infiltration basins should be lined with a sacrificial geotextile filter fabric, which will help to trap silt and prevent soil contamination.
- 4.3 Due to the small nature of the site, the installation of the primary infrastructure will be undertaken in a contract lasting approximately 16-20 weeks. From that point onwards the newly installed drainage can be used as part of a Temporary Surface Water Strategy.
- 4.4 It is not always possible to ensure that new impermeable areas are immediately connected to the drainage system. Therefore, the following additional measures will be implemented to ensure construction runoff is appropriately managed;
- Straw barriers and silt fencing placed along the site boundary to prevent sediment from washing downstream
 - Protective coverings to prevent runoff stripping stockpiles
 - Plant and wheel washing facilities to be incorporated at designated locations. The area should be tanked and not allowed to discharge into the proposed surface water drainage system or infiltrate into the ground.

Effluent must be treated as contaminated waste and disposed off-site by a licenced waste management operator.

- Access roads and storage areas should be swept and vacuumed regularly during construction to prevent accumulation of dust and mud.
- Should groundwater be encountered in excavations such water would not be discharged to the drainage system until the amount of suspended solids has been reduced through the controlled use of skips or tanks, which will act as stilling basins

4.5 To prevent contamination associated with the use of oils and hydrocarbons during construction, the Contractor should ensure that the following measures are employed;

- Regular maintenance of machinery and plant
- Use of drip trays
- Regular checking of machinery and plant for oil leaks
- Use of correct storage facilities
- Regular checks for signs of wear and tear on tanks
- Specific procedures are followed when refuelling
- Use of a designated area for refuelling
- Emergency spill kit to be located near refuelling area
- Regular emptying of bunds

- Tanks will be located in secure areas to stop vandalism

4.6 Upon completion, all underground pipework will be jet cleaned and CCTV surveyed. Areas of porous surfacing will be swept and cleaned and silt / debris present in the filter trench and infiltration basin removed. The Contractor will be responsible for rectifying any significant defects identified at this stage. A further inspection will be carried out by the Contract Administrator and on completion of any outstanding remedial works, the drainage system will be handed over and maintained as per chapter 5.

5 SuDS components and maintenance / management of the proposed surface water system

5.1 The purpose of this document is to set out the basis of the development SuDS Maintenance Plan and to ensure that the adopting management company is entrusted with a robust inspection and maintenance programme, ensuring the optimum operation and maintenance of the surface water drainage network for the lifetime of the development and to prevent the increased risk of flooding both on and offsite in accordance with the National Planning Policy Framework (NPPF)

5.2 SuDS components and maintenance plans of the proposed surface water system:

Filter Drain and Trench (Responsibility of Private Management Company)

Linear excavations filled with stone to collect surface water run-off via a number of point inlets. Surface water is filtered as it passes through the stone prior to flowing to the next part of the management train, the infiltration basins.

Maintenance	Action	Frequency
Regular maintenance	Litter and debris removal from site	Monthly
	Grass cutting around the trench where appropriate at 75-100mm and not to exceed 150mm	Monthly
	Inspect and clear inlets, outlets and inspection points	Monthly
	Silt removal from pre-treatment features	As required

Occasional Tasks	Inspect and remove silt from chambers and pipes	As required
Remedial Work	Remove surface stone layer and set aside, replace clogged geotextile and reinstate	As required
	De-silt stone fill using proprietary machinery as trunk road maintenance	As required
	Remove and replace filter drain stone	As required

Infiltration Basin (Responsibility of Private Management Company)

Similar to detention basins except that they are designed to allow water to soak into the ground as well as provide storage.

Maintenance	Action	Frequency
Regular Maintenance	Litter and debris removal from site	Monthly
	Amenity grass cutting at 35-50mm	As required
	Grass cutting to access routes, overflows and basin where required at 75-100mm not to exceed 150mm	As required

	Meadow grass, where appropriate, cut at 50mm and remove to wildlife or compost piles	Annually
	Check and clear inlets and overflow structures	Monthly
Occasional Tasks	Remove leaf accumulation	As required
	Cut back overhanging branches to allow dense vegetation growth	As required
	Remove sediments from forebay, inlets and pre-treatment structures	As required
Remedial Work	Inspect and repair damage to inlets, outlets, banks and overflows	As required
	Hollow tine and scarifying of surface if infiltration reduces over time	As required

Below Ground Drainage System (Responsibility of Private Management Company)

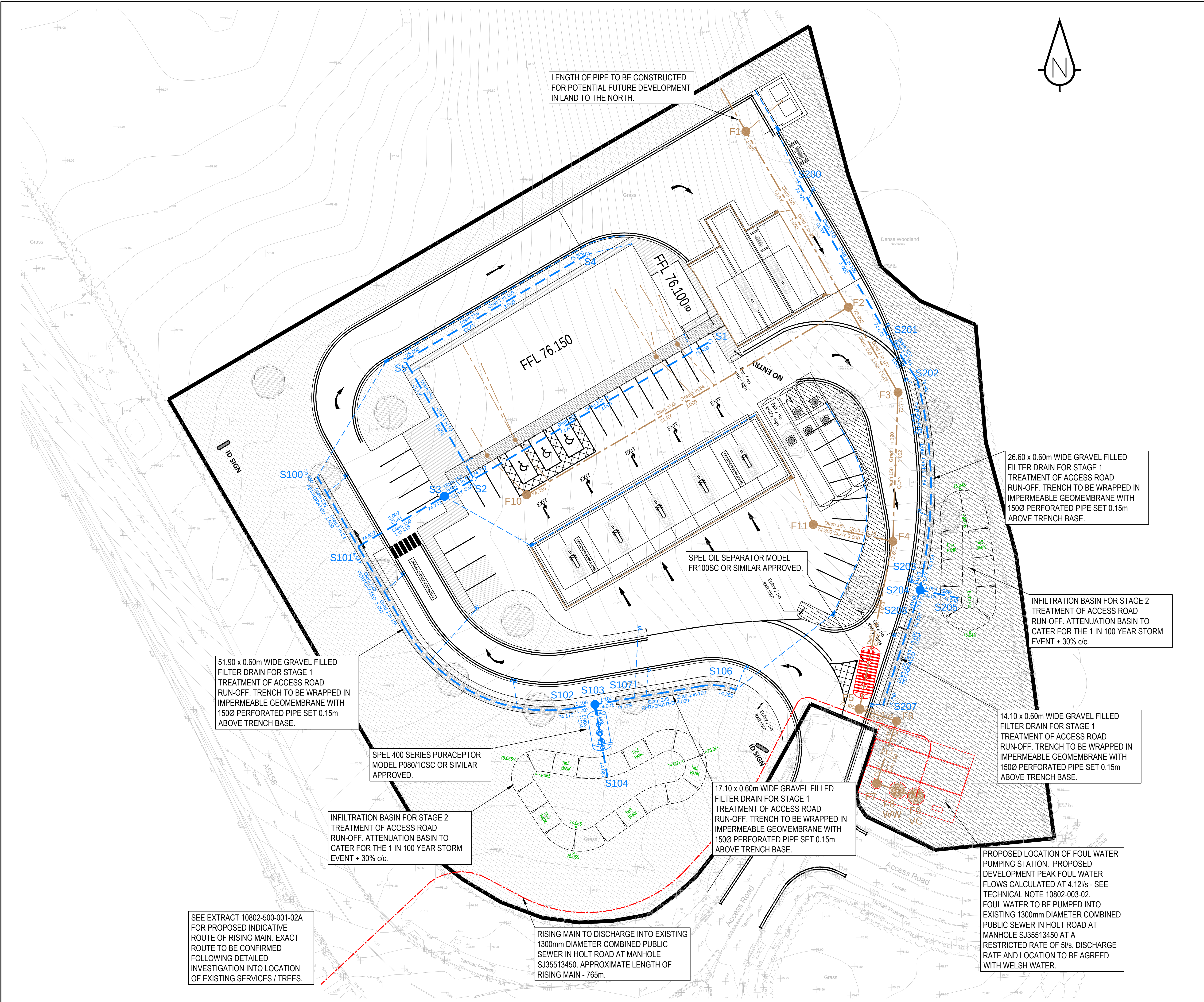
This includes all underground drainage pipework, manholes, inspection chambers and catch pits.

Maintenance	Action	Frequency
Regular Maintenance	Litter and debris removal from external hard landscaped areas and adjacent landscaping, which may pose a risk to the performance of the system	Monthly
	Remove build-up of sediment / silt in catch pits and dispose of oils / petrol residues using safe standard practices	Monthly
	Stabilise and mow adjacent landscaped areas and remove weeds	Monthly
Occasional Tasks	Check all inlets and outlets for blockages or evidence of physical damage	Every 6 monthly or after heavy rainfall
	Inspect all surfaces for ponding, or silt accumulation. Record areas where water is ponding for more than 48 hours and carry out any remedial work deemed necessary	After severe storms
Remedial Work	Repair inlets and outlets to ensure they are in good condition and operating as designed	As required

	Remediate any landscaping, which has raised to within 50mm of the level of adjacent hard landscaping	As required
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APPENDIX A

Drawing 10802/500/001C – Drainage Layout



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• Service connections are not shown but their presence should be anticipated.
• Reference to any third party equipment shown on this drawing was only relevant at the time the drawing was prepared.
• It is the client's responsibility to ensure that any equipment ordered meets the design.

Drainage Key

- Surface Water Drain
- Foul Water Drain
- Foul Water Rising Main
- Surface Water Linear Drainage Channel
- Foul Water Linear Drainage Channel
- Gully
- Surface Water PCC Manhole
- Surface Water Catchpit Manhole
- Surface Water PPIC (600Ø)
- Foul Water PCC Manhole
- Foul Water PPIC (600Ø)

NOTE:
DRAINAGE SCHEME TO BE DESIGNED IN ACCORDANCE WITH SEWERS FOR ADOPTION 7th EDITION AND BS EN 752.

C	Amended to suit revised site layout	LM	13.02.19	PJM
B	Amended to suit Welsh Water consultation response	LM	11.02.19	PJM
A	Amended to suit revised site layout 181161-PL-04d	LM	28.01.19	PJM
Rev	Amendment	Drawn	Date	Checked

PRELIMINARY
DRAWING

sanderson
associates
(consulting engineers) ltd
Highways | Traffic | Transportation | Water
T 01924 844080 mail@sandersonassociates.co.uk
F 01924 844081 www.sandersonassociates.co.uk

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Project Title	HOLT ROAD, WREXHAM			
Drawing Title	DRAINAGE LAYOUT			
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Drawing Size	A1	Checked By	PJM	
Date	17.12.18	Approved By	PJM	
	Drawing Number		Rev	
	10802/500/001		C	