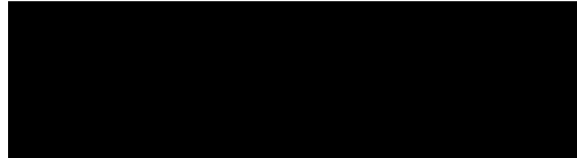


**STEPHEN WILSON
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Drainage Strategy

for

Hollyacre

Toddington Lane

Toddington

Littlehampton

E5589

April 2014 (Rev. 0)

**Hollyacre
Toddington Lane
Toddington
Littlehampton**

Drainage Strategy

April 2014

Prepared by	Reviewed by
George Marshall	Liam Foord

Client:

PMC Construction

Hollyacre, Toddington Lane – E5589

Introduction

Stephen Wilson Partnership Limited has been instructed by PMC Construction to prepare a drainage design for the proposed development at Hollyacre, Toddington, Littlehampton, West Sussex.

The purpose of this report is to demonstrate how the site will be drained in a sustainable way. Flood Risk is covered by a separate site specific Flood Risk Assessment.

This report will also consider Code for Sustainable Homes and how the mandatory part of SUR1 can be complied with.

The Site

The site is predominantly flat lying at approximately 101m AD (site specific) and is 12,700m² in size.

Prior to development the site is entirely agricultural.

A site location plan can be found on drawing number E5589/204 and the topographical survey is detailed on the Drainage and Levels General Arrangement drawing numbers 12044-02-T-E.

The Development

It is proposed to construct 52 dwellings (7 flats & 45 houses) together with associated parking, private gardens and open space.

Further development, being Phase B is situated to the east of Phase A. This is proposed for the future and is not covered by this report or submission. Adequate capacity for the foul drainage from Phase B has been taken account of in the sizing of the pumping station and pipe network. It has been assumed that the surface water drainage will be disposed of independently.

The General Arrangement drawing numbers E5589/201, 202 & 203 detail the site and drainage proposals.

Existing Drainage

A copy of the Public Sewer map has been obtained and is provided in Appendix A. It shows that there are no public sewers running through the site, and that the nearest foul water sewer is at Granary Way, approx 340m west of the site.

The surface runoff from the existing site infiltrates to the ground without any formal drainage system.

Proposed Surface Water Drainage

The Building Regulations approved document H provides a hierarchy of methods of disposal for

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surface water run off as follows:

- 1 Soakaway or Infiltration System
- 2 To a watercourse
- 3 To a sewer

An assessment of the above including a Soil Investigation and Soakage Testing follows:

1. The existing ground conditions will support an Infiltration System on site.
2. There are no watercourses close to the site
3. No Surface Water Sewers run near to the site.

Following the above hierarchy, it is proposed to infiltrate surface water sewer.

Surface Water from the access roads will be collected by means of road gullies and conveyed by a traditional pipe and manhole network to two cellular soakaways, both which will be situated under the public open space areas.

The pipe network is designed to accommodate the 1 in 30 year event and the Soakaways are designed for the 1 in 100 year event. A 30% increase for climate change has been taken account of, in accordance with NPPF.

Paving for the private parking spaces and hardstandings will be porous therefore allowing direct infiltration to the ground.

Runoff arising from private dwelling roofs and hardstandings will be piped to cellular soakaways which are to be situated in the back gardens and to the porous paving which will have an increased depth of sub base where required, allowing them to act as soakaways.

Dealing with the run-off at source in this way will ensure that the surface water drainage system is sustainable and the proposed buildings are adequately protected from flooding and that the risk of flooding elsewhere is not increased.

Proposed Foul Water Drainage

It is proposed to connect the foul drainage from the development to the existing foul sewer opposite Granary Way.

The foul water drainage system will be made up of a conventional pipe and manhole network that will run through the site to an adoptable pumping station in the northwest corner.

An 80mm diameter rising main from the pumping station runs west, under Toddington Lane and connects to an existing foul water public sewer manhole, located opposite Granary Way.

Foul water flows from the development to the public sewer are to be restricted by holding back the peak flows. The volume that is held back will be released into the public sewer system during non peak hours. This will be done by sizing the wet well to accommodate a 3 hour peak flow

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twice a day and configuring the pumps to operate accordingly for it to be released later.

A stub pipe at an appropriate depth will be provided to allow a connection from Phase B in the future.

The pumping station and associated rising main are to be offered for adoption under a Section 104 agreement with Southern Water. The system upstream of the pumping station will remain private.

The developer has a right to connect to the public sewer system under Section 106 of the Water Industry Act but Southern Water will require a formal application to be made.

Maintenance

The surface water drainage system is not being offered for adoption by the drainage authority therefore the maintenance of the surface water drainage system including the SUDS structures (porous paving and soakaways) will remain the responsibility of the end user.

Whilst the foul water drainage system has been designed in accordance with the adoptable standards, only the pumping station and rising main are being offered for adoption. Therefore the network upstream of the pumping station will remain the responsibility of Worthing Homes and the pumping station and rising main will be the responsibility of Southern Water. These will be subject to Southern Water's own maintenance regime and are not covered by this report.

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 which are general housekeeping tasks that should be undertaken for any drainage system, but with additional attention to the areas of porous paving. These operations are summarised below together with recommended frequencies:

- Periodic surface sweeping to reduce silt and debris accumulation. The porous surfaces should be swept at least every 8 – 12 weeks with additional sweeps in the autumn to clear fallen leaves.
- Periodic silt removal from porous surface as described by manufacturer. If any small areas are showing signs of ponding they shall be dealt with by fully raking out the joints and redressing. The entire surface shall be monitored and when there are signs of excessive siltation resulting in slow drainage over the whole area the blocks shall be uplifted and replacement of the bedding layer and geotextile shall take place.
- Redressing the joints on the block paved surface as required.
- Periodic desilting of catchpits, gully sumps and channel drains. These should be emptied at least as follows (but with an annual inspection and additional cleansing if required): On completion of drainage works, Year 1, Year 3, then every 5 years.
- Periodic jetting of pipework as required to clear blockages.
- Gratings on any gullies and channel drains to be kept clear of debris.

Code for Sustainable Homes

The proposed development is required to meet the Code for Sustainable Homes standard to the level of the mandatory section of SUR1.

In order to satisfy this section it must be demonstrated that there will be no increase in runoff flow rate or volume from the development. This is achieved because the surface water runoff from all of the impermeable areas will be infiltrated to the ground, either via soakaways or porous paving.

Additional optional credits are available under SUR1 and SUR2. 1 credit is available for ensuring that there is no discharge from the site from the first 5mm of rainfall which can be claimed. Also a credit is available for ensuring that the run-off receives a suitable level of treatment prior to being discharged which would be provided by the porous paving. An initial assessment of Flood Risk would suggest that credits under SUR2 should be available because the site is located in Zone 1.

A formal Flood Risk Assessment has been prepared which demonstrates that the additional credits are available under SUR2 of Code for Sustainable Homes.

Summary

- The surface water run-off will infiltrate to the ground via porous paving and soakaways.
- The proposed surface water drainage system will be sustainable and will be designed to cater for a 1 in 100 year design.
- Rainfall intensities will be increased by 30% to allow for climate change in accordance with NPPF.
- The site is located in Flood Zone 1 (low risk of flooding).
- The foul water drainage system will discharge to the public foul sewer located opposite Granary Way. This requires a pumping station and rising main from the site, which will be offered for adoption. Peak discharge flows from the development will be held back and released during non peak hours.
- The mandatory section of SUR1, Code for Sustainable Homes will be met as there is no increase in flows from the development. Additional credits are also available.

Appendix A

Public Sewer map



2003

2794

192601 Land at Hollyport, Todd

Drawn by: govt/mt

[illegible]

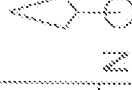
Date: 01/03/2012

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy.

The exact positions should be determined on site.

[illegible]

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