

Hayling Island Builders Ltd



DRAINAGE STRATEGY REPORT & FLOOD RISK ASSESSMENT

For Proposed Development at: Station Road / Furniss Way,
Hayling Island, Hampshire, PO11 0EL

For Hayling Island Builders Ltd

JUNE 2013

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Version No: 2.0



Stilwell Partnership
ISO 9001:2008
Certificate No: LRQ 4004624

Document Location

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S:\Clients\Hayling Island Builders Limited\Station Road, Furniss Way, Hayling Island - P2415\Reports\FRA and Drainage\Drainage Strategy Report and FRA V2.0.doc

Revision History

This document has the following history:

Version No.	Version Date	Summary of Changes	Changes marked
1.0	20/05/2013	N/A	N/A
2.0	11/06/2013	CMA Comments Added	No

Approvals

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1.0 INTRODUCTION

- 1.1** The Stilwell Partnership has been instructed by Hayling Island Builders Ltd. to undertake a Drainage Strategy Report and Flood Risk Statement to support an application for outline planning permission to create new employment space and up to 60 new homes on Station Road / Furniss Way, Hayling Island.
- 1.2** This report aims to assess the drainage strategy and flood risk issues at the site as follows:
- Design the proposed site with the sustainable drainage methods to prevent likelihood of flooding to the adjacent properties
 - Reduce surface water run-off from the site
 - Identify of all the potential sources of the flooding at the site
- 1.3** This report has been prepared in line with guidance from the National Planning Policy Framework (NPPF) 2012.

2.0 SITE LOCATION

- 2.1** The site is located at Station Road, Station Road links to the main 'A' road on the island (A3023), approximately 500m east of the proposed development site. The A3023 provides an excellent link to Havant and the main motorway network. The majority of the local roads in the area are quiet residential roads. A site location plan is included at **Appendix A**.
- 2.2** Station Road is surrounded by many properties with the majority of properties consisting of terraced houses and commercial properties. There is a small industrial estate in Furniss Way and a Builders Merchant adjacent to the proposed development site.
- 2.3** The Local Authority is Havant Borough Council.

3.0 EXISTING SITE DESCRIPTION

- 3.1** Currently the site is an area of unused agricultural land, accessed via a gated entrance at Station Road, adjacent to the buildings merchant. The existing access is very overgrown and is not currently in use. The site itself covers approximately 2.4 hectares of land. The site has relatively flat topography. The topographical site survey is included in **Appendix B**.

4.0 DEVELOPMENT PROPOSALS

- 4.1** The proposed development is to provide a mixed use development which will be accessed via two new vehicular access roads. The residential area will provide 60 dwellings each with a private rear garden and two parking spaces. Some of the dwellings will be allocated for affordable housing. The residential area will occupy approximately 1.89 hectares of the site, whilst the employment area will occupy an area of 0.41 hectares, and will consist of 7 small units for B1 (C) use which will be constructed within two buildings. A Proposed Site Layout is included at **Appendix C**.

The indicative proposed schedule is outlined below:

Residential

8 x 2 bedroom bungalows

27 x 2 bedroom houses

25 x 3 bedroom houses

60 Dwellings in total

Light Industrial

Unit 1: 4 x 1500sq. ft unit

Unit 2: 1 x 2500sq. ft unit and 2 x 2000sq. ft units

Total B1 (c) – 12,500sq ft.

- 4.2** The housing development will be accessed via a new access road from Station Road, which will provide vehicular access to every property. A new access road into the light industrial units B1 (C) will also be provided from Furniss Way and will provide access to the units and associated parking for staff and visitors.

5.0 DRAINAGE PROPOSALS

- 5.1** Currently the site is un-used agricultural land and therefore there is no area of hardstanding throughout the existing site. The proposed layout for the development will include an area of hardstanding which will be an area of approximately 8700m².
- 5.2** The NPFF recognises that increased run-off rate and volume of surface water can be managed by minimising changes in the volume and run-off rate from the development sites, and recommends that the priority is given to use of Sustainable Drainage Systems (SUDs) in new development, this being complementary to the control of the development within the floodplain.
- 5.3** The primary sustainable drainage technique is infiltration drainage. A detailed soil investigation has not been undertaken at this preliminary stage, however information of the geology and the ground water can be checked through the British Geological Survey (BGS) website. There are available borehole records in the proximity of the site. Borehole (ref: SZ79NW 42) shows that the soil is sandy clay and clayey sand with some gravel (BGS borehole detail is included in **Appendix D**), therefore it is likely to be suitable for infiltration. However if the ground water level is high and possibly 1.50m below the surface, shallow infiltration methods such as swales and ditches are most suitable for the site. All evidence that we can gather from our site visits and mapping from Southern Water is that water will infiltrate the ground. The sewer records show that a number of surface water sewers terminate in this area, either into the ditches on the site or soakaways.
- 5.4** Currently all surface water from the site either infiltrates into the ground or discharges into ditches to the east and west of the site. The greenfield runoff rates for the site is calculated for different return periods. The run-off rate calculations are included in **Appendix E**.

Return period plus CC	Greenfield Discharge Rate (l/s)
1 in 1 year	7.68
Qmean	8.09
1 in 30 year	16.99
1 in 100 year	25.80

- 5.5** With the new scheme we are promoting the use of swales and ditches in addition to the existing ones. All surface water will be gravitated into the swales and ditches and eventually all surface water will be discharged into the pond which is located to the northeast of the site. The surface water from the pond will be discharged into the ditches as shown on the Drainage Strategy Plan (TSP/GDL/P2415/01 B). Drainage Strategy Plan is included in **Appendix F**. The discharge rate from the pond will be limited by hydro-brake to **8.09 litres/sec** (Qmean).

- 5.6** The surface water drainage system has been designed for a 1 in 100 year plus 30% climate change flood event. A conventional gravity system has been designed and constructed in accordance with Sewers for Adoption and Building Regulations Part H.

6.0 FLOODING INFORMATION

- 6.1** The initial phase in identifying if the site is potentially at risk of flooding is to check the Environment Agency Flood Zone maps (web based). According to EA's website the site is within Flood Zone 1. Therefore there are no modelled flood level data available for the site. A Flood Map provided by the Environment Agency can be found at **Appendix G**.
- 6.2** The Strategic Flood Risk Assessment has been produced for the Partnership for Urban South Hampshire (PUSH). As strategic study covering a large geographical area, the project has required significant inputs from the different councils including the Havant Borough Council.
- 6.3** This report will use SFRA mapping outputs for the assessing flood sources under Flood Risk section.

7.0 FLOOD RISK

7.1 It can be seen from the PUSH SFRA Flood Maps (Flood Zone 2 and Flood Zone 3) that the site is in the flood zone 1. There are also flood defences that the proposed site is benefiting from, the PUSH SFRA map shows that the site is protected from Tidal 0.5% flooding as shown on the 'Indicative Areas Benefiting from Defences' map in **Appendix H**.

7.2 Flood zone 1 comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding. According to Table 3 of Technical Guidance to the National Planning Policy Framework, all land uses are permitted in this zone. Residential development is considered 'more vulnerable' and is permitted.

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	✗	✗	✗

Key: ✓ Development is appropriate.
 ✗ Development should not be permitted.

7.3 As part of the flood risk assessment report the potential flooding sources will be discussed and the detailed maps provided in the PUSH SFRA will be used for this basis.

Fluvial Risk

7.4 Based on the Environment Agency Flood Map, the site is not at risk of fluvial flooding since the site is in Flood Zone 1 (Flood Zone 2 & 3 maps of PUSH SFRA in **Appendix J**).

7.5 We have consulted SFRA and according to the historic flood map (included in **Appendix K**) there is no historic flooding in or around the proposed site.

Overland Flow

- 7.6** Periods of high intensity rainfall, over a short duration, could result in localised flooding. This occurs when water is unable to soak into the ground or enter drainage systems. There will be minimal risk of flooding from overland flow since the proposed scheme will promote the maintenance of both local drainage systems and the on-site SUDS systems.
- 7.7** Historic flood data is a good indicator for assessing the risk, therefore we looked at the historic flood map (included in **Appendix K**) of PUSH there is no flooding in or around the proposed site.

Groundwater Flooding

- 7.8** Groundwater flooding is caused by the emergence of water, originally from sub-surface permeable strata. A groundwater flood event results from a rise in groundwater levels, sufficient for the water table to intersect the ground surface and inundate low lying land. Groundwater floods may emerge from either a single point or diffuse locations.
- 7.9** PUSH SFRA Groundwater Flood Map (included in **Appendix L**) shows that there is no historical groundwater flooding and the bedrock deposition has lower permeability for this site.

Flooding from Sewers

- 7.10** The existing utility plans from Southern Water shows that there is foul and surface water sewer in Station Road and Furniss Way. Some of the surface water pipes are connected to the ditches to the west of site as shown on the sewer map (included in **Appendix M**). Due to the location size, gradient and capacity of existing systems it is considered that the risk of flooding to the site from the existing sewers is low. PUSH SFRA provides surface water sewer flooding map (Southern Water Observed Flooding map is included in **Appendix N**) and according to the map there is no indication of historic sewer flooding in or around the proposed site.

8.0 FLOODPLAIN COMPENSATION

- 8.1** As the site is in Flood Zone 1, there is no risk of flooding from rivers or sea and therefore no flood compensation is required.

9.0 SUMMARY AND CONCLUSIONS

- 9.1** Hayling Island Builders Ltd is in the process of submitting an application for outline planning permission to create new employment space and up to 60 new homes on Station Road / Furniss Way, Hayling Island.
- 9.2** The Stilwell Partnership has been instructed by Hayling Island Builders Ltd, to produce a Drainage Strategy Report and Flood Risk Assessment under NPFF to support the planning application.
- 9.3** The Environment Agency has confirmed that the site is in Flood Zone 1.
- 9.4** All surface water will be removed by the provision of porous paving, perforated pipes, ditches and pond.
- 9.5** This Flood Risk Assessment has confirmed that the proposed development is appropriate and sustainable.

APPENDIX A

Site Location Plan

APPENDIX B

Topographical Survey

APPENDIX C

Proposed Site Layout Plan

APPENDIX D

BGS Soil Extract

APPENDIX E

Greenfield Runoff Rates

APPENDIX F

Proposed Drainage Layout Plan

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Environment Agency Flood Map

APPENDIX H

PUSH SFRA Indicative Areas Benefiting from Defences

APPENDIX J

PUSH SFRA Flood Zone 2 & 3 Maps

APPENDIX K

PUSH SFRA Historic Flooding Map

APPENDIX L

PUSH SFRA Historic Groundwater Flooding Map

APPENDIX M

Southern Water Sewer Map

APPENDIX N

Southern Water Observed Flooding Map