

LITTLEHAMPTON ROAD WORTHING **FLOOD RISK ASSESSMENT**

COUNTRY FAYRE

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WATER | ENVIRONMENT

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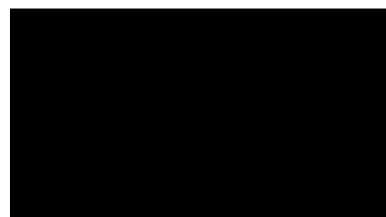
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This Flood Risk Assessment was commissioned by GD Partnership on behalf of Country Fayre in August 2011 to investigate the risks, and assess the consequences of flooding on the site in Worthing, West Sussex.

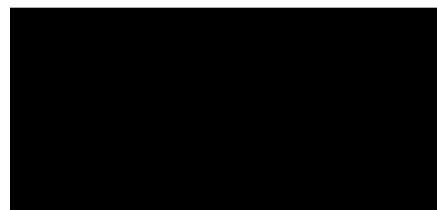
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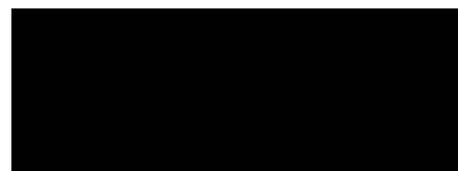
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GLOSSARY

AOD	Above Ordnance Datum
CEH	Centre for Ecology and Hydrology
CLG	Department for Communities and Local Government
DEFRA	Department for Environment Food and Rural Affairs
DTM	Digital Terrain Model
EA	Environment Agency
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment
FSR	Flood Studies Report
FZM's	Environment Agency Flood Zone Maps
GI	Ground Investigation
HEC-RAS	US Army Corps of Engineers Hydrologic Engineering Centers River Analysis System (1-D hydraulic model)
IDB	Internal Drainage Board
IFM's	Environment Agency Indicative Floodplain Maps
LDF	Local Development Framework
LiDAR	Light Detection And Ranging
LPA	Local Planning Authority
NERC	Natural Environment Research Council
ODPM	Office of the Deputy Prime Minister
PPG25	Planning Policy Guidance 25
PPS25	Planning Policy Statement 25
ReFH	Revitalised FSR/FEH Rainfall-Runoff method
SFRA	Strategic Flood Risk Assessment
SUDS	Sustainable Urban Drainage Systems
UDP	Unitary Development Plan
WINFAP-FEH	Statistical rainfall and runoff analysis software program

EXECUTIVE SUMMARY

The site occupies an area of approximately 4.28ha and is located on Littlehampton Road, Worthing in West Sussex. Formerly a garden centre, all buildings have now been demolished although hard-paved car parking and building floors remain, still to be broken out. Development proposals are to construct a replacement store with associated car parking.

Planning permission has been granted by Arun District Council on the condition that the details of the foul and surface water drainage are agreed with the Environment Agency and Building Control. This Flood Risk Assessment provides further detailed information on foul and surface water strategies for the development in order to meet this condition.

A topographic survey of the site was performed by Subscan Technology in August 2011 prior to demolition of the garden centre and was referenced to Ordnance datum. The survey covers the existing site where the proposed development is to be situated, and is referenced to Ordnance datum.

The Environment Agency flood zone maps indicate that the site is located in Flood Zone 1. The nearest watercourse is an unnamed ditch to the east of the site, which flows south-east until it meets the railway line and then due east alongside the railway line until it meets the Ferring Rife, where it discharges via a flapped outfall. The site area is greater than 1 hectare and therefore in compliance with the requirements of PPS25, this flood risk assessment, including a surface water drainage strategy prepared by GD Partnership, has been prepared to accompany a planning application for redevelopment.

The principles of the site drainage strategy have been discussed and agreed with the Environment Agency. Key components include:

- Controlled discharge to the adjacent ditch via a new outfall at equivalent Greenfield runoff rates over a range of return periods up to the 100-year event including an allowance for climate change.
- Hybrid car park construction comprising a conventional bitumen wearing course with slot drains into a permeable, graded-stone granular sub-base and crated system. This gives the benefits of a smooth wearing course to accommodate heavily-laden trolleys, as well as the sustainable drainage benefits of a permeable system to improve water quality and eliminate the need for oil interceptors, while at the same time allowing (but not relying on) direct infiltration into the ground for groundwater recharge.

Following redevelopment, flooding of the area via the mechanisms identified in consultation with the Environment Agency, will result in no significant social, economic or environmental consequences on site. The site will benefit from an improved and sustainable drainage system with a reduced rate, and improved water quality discharge into the tide-locked Ferring Rife. There will be no adverse flood-related impacts on neighbouring properties as a result of the proposed development.

1 INTRODUCTION

General Information

- 1.1 The site is located off Littlehampton Road, Worthing in West Sussex, BN12 6PN. Proposals are for the development of a replacement 11,300m² retail unit.
- 1.2 The site lies within Flood Zone 1, "Low Risk" as defined by PPS25, and has an annual probability of flooding from fluvial or tidal sources of less than 0.1%. However, since the site area is greater than 1 hectare, a Flood Risk Assessment is required to assess the impact that the site may have on flooding elsewhere. Particular emphasis is placed on the management of surface water run-off from the site, as well as to consider the risk from other flood sources.
- 1.3 Arun District Council has granted planning permission for construction of the new store subject to Condition Number 12 which states:

'The development shall not proceed until details of the proposed surface water and foul drainage and means of disposal have been submitted and approved by the Local Planning Authority. Surface water drainage shall be carried out in accordance with such details and in conjunction with associated building works. No building shall be occupied until the foul drainage works have been carried out in accordance with such details.'

Arun District Council has indicated that the proposed means of foul and surface water drainage as submitted to discharge Condition Number 12 is acceptable in principle, subject to consultation with Building Control and externally with the Environment Agency. This Flood Risk Assessment provides further detailed information on surface and foul water strategies for the development.

Scope of Study

- 1.4 The main objectives of this study are to:
 - Assess the risk and implications of flooding on the site from all possible flood sources.
 - Consider climate change over the lifetime of the proposed development.
 - Provide a flood risk assessment of the proposed development, compliant with the guidelines set out in Annex E of PPS25¹ and the Practice Guide Companion², to accompany any application for planning permission.
 - Provide advice on the site layout and design that will ensure safe operation of the site in an extreme flood or rainfall event.

¹ Communities and Local Government (March 2010) Planning and Policy Statement 25 – Development and flood risk

² Communities and Local Government (December 2009) Development and Flood Risk – A Practice Guide

2 SITE DESCRIPTION

Location

- 2.1 The site occupies an area of approximately 4.28ha and is located on Littlehampton Road, Worthing in West Sussex as shown in Figure 1. It lies on the outskirts of the village of Ferring, on the southern side of the A259. It is situated within close proximity of the Ferring Rife which runs approximately 300m east of the site at the closest point.

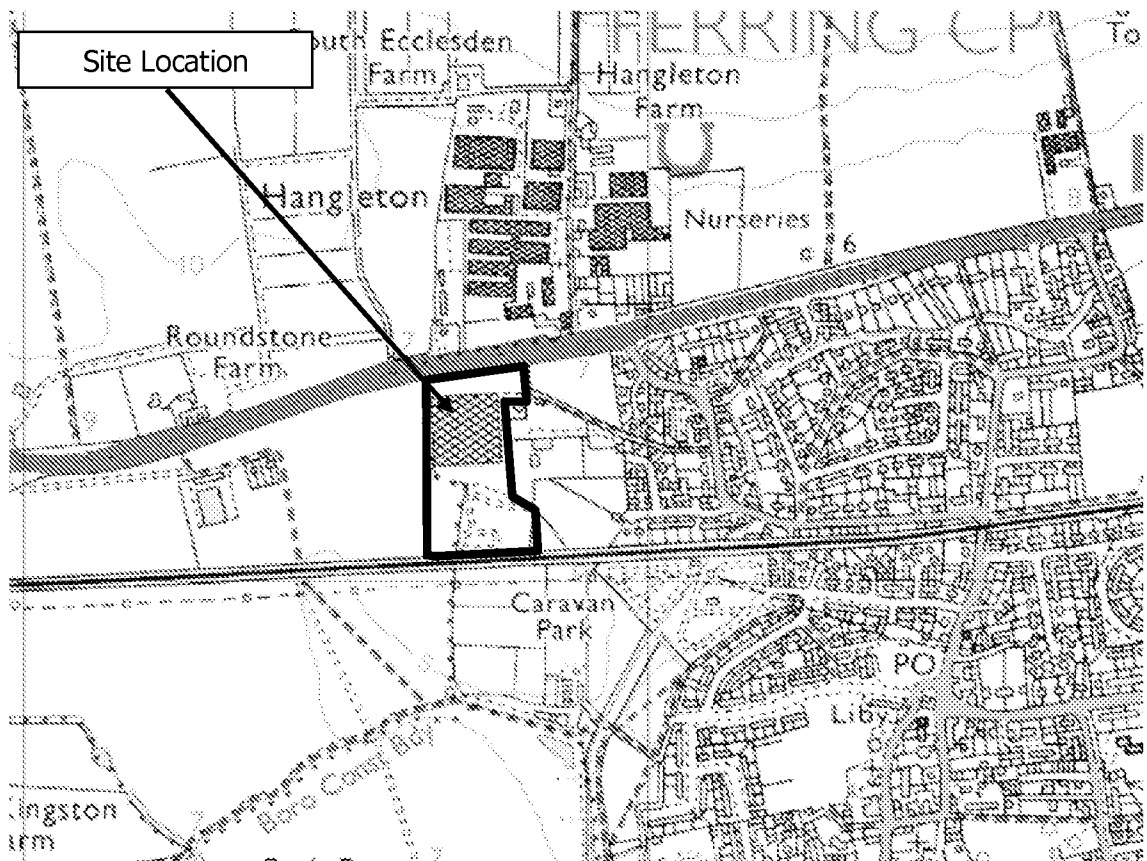


Figure 1 – Site Location Plan

Existing Site

- 2.2 The existing site is the Country Fayre garden centre (buildings now demolished), with hard-standing car parking to the front (adjacent to the A259) and predominantly Greenfield land to the rear (adjacent to the railway line). The existing site is shown in Drawing 1.
- 2.3 Land to the east of the site is occupied by urban areas of Ferring. Across the dual carriageway to the north lies Wyevale Garden Centre, and land to the west and south is occupied by rural farmland.

Topographic Survey

- 2.4 A topographic survey of the site was performed by Subscan Technology in August 2011 and was referenced to Ordnance datum. The survey covers the existing site where the proposed development is to be situated. The topographic survey is shown in Drawing 2.
- 2.5 The levels on site fall slightly from the northern (approximately 7.1m AOD) and southern boundaries (6.2m AOD) towards a land drain which runs west to east through the centre of the site (5.6m AOD), discharging into an open ditch on the eastern boundary (invert of 4.6m AOD).
- 2.6 There is a land drain along the entire western boundary of the site to intercept runoff from the adjacent agricultural fields. This system connects into the same land drain which runs through the centre of the site.

Proposed Development

- 2.7 The development proposal is to construct a large retail store to replace the one which has been demolished, with associated car parking. The proposed layout of the site is shown in Drawing 3.

Planning Policy

- 2.8 The site is a Brownfield site, allocated for business and retail use associated with the former Garden Centre. Development proposals represent an equivalent use. There are no known planning policies which have any influence on the assessment of flood risk for this site.

Sequential and Exception Tests

- 2.9 Given that the development proposals are within Flood Zone 1 and represent a replacement of an existing retail store for similar use, there is no change in flood risk vulnerability and therefore the Sequential and Exception Tests are automatically satisfied and need not be considered any further.

Strategic Flood Risk Assessment

- 2.10 The West Sussex Flood Risk Assessment³ (SFRA), produced by Capita Symonds in consultation with the Environment Agency in January 2010, has been consulted. The SFRA assesses in particular the flood risks associated with areas being considered for future development as part of the emerging Local Development Framework (LDF). Risks of flooding from various sources, as identified in the SFRA, will be addressed in chapter 3 of this report.

³ Strategic Flood Risk Assessment of West Sussex, Capita Symonds, January 2010

3 POTENTIAL FLOODING ON SITE

Historic Information

- 3.1 According to the site owner, the site has flooded once in recent history as a result of a blockage in the drainage ditch east of the site. This was apparently caused by earthworks on the adjacent site to the east and resulted in localised flooding to a depth of approximately 200mm behind the garden centre store, although it did not reach sufficient depth to enter the store. The incident was resolved through discussion with the adjacent land owner who cleared the ditch immediately and the site drainage route was restored.

Flood Sources

Flooding from Rivers and Sea

- 3.2 The closest watercourse to the site is the Ferring Rife, which flows in a southerly direction approximately 300m east of the site.
- 3.3 Figure 2 shows the Environment Agency flood map for the area near the site. The site is shown to lie within Flood Zone 1; that is "Low Probability", indicating that the likelihood of flooding from fluvial sources is less than 0.1% in any given year.

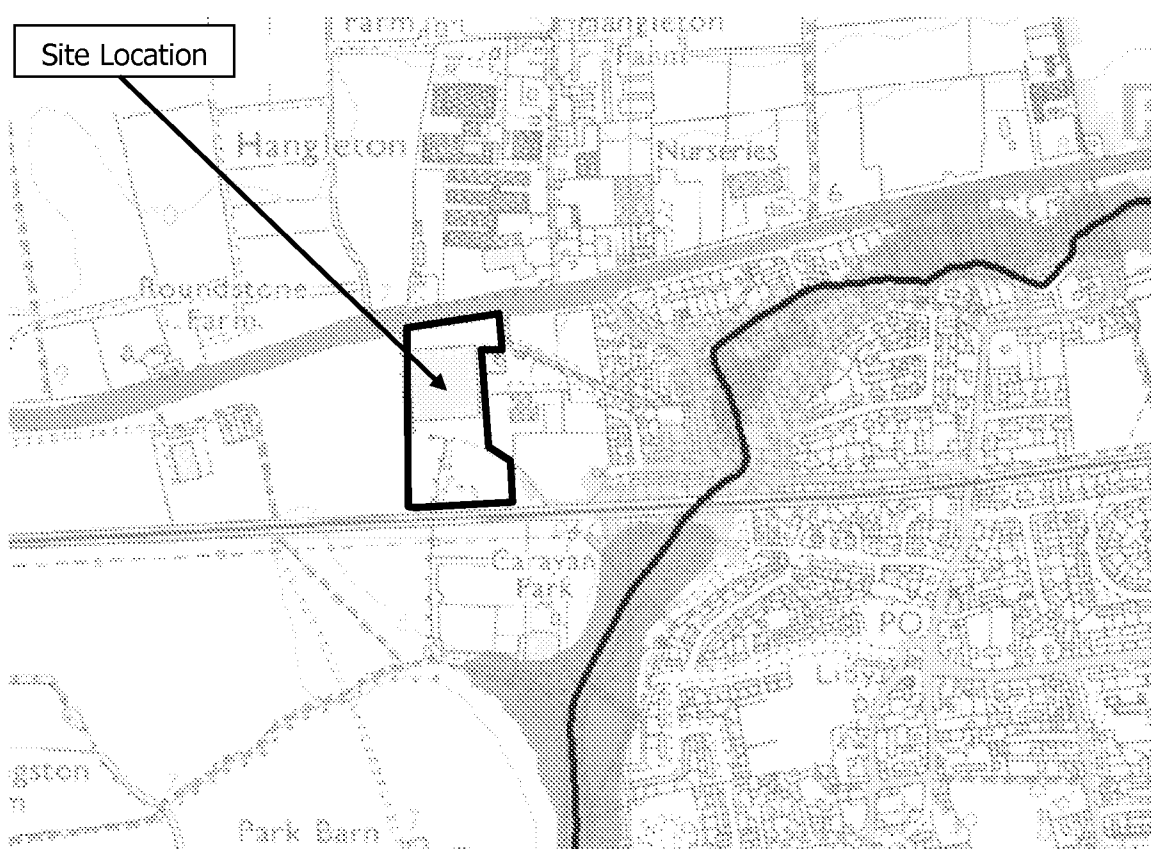


Figure 2 – Environment Agency Internet Floodplain Map

Flooding from the Land

- 3.4 The site is shown in the West Sussex SFRA to be within an area at “medium-to-high” risk of flooding from the land, although it is not clear how such a conclusion has been reached. Gradients of the site and surrounding properties are gentle to flat. There is no risk of rapid runoff from steep hillsides. Overland flow from the north is intercepted by the A259 (although this is unlikely to be significant as it is not particularly steep) and runoff from the road itself will be captured in highways gullies and drainage. There is no risk of overland flow entering from the south due to the railway embankment and the land to the east is also flat with a slight fall eastwards. In summary there is no perceived risk of flooding from the land, despite the illustrations in the SFRA.

Flooding from Groundwater

- 3.5 The site is shown in the West Sussex SFRA to be within a “groundwater emergence zone” with a “high potential” for groundwater flooding.
- 3.6 The Environment Agency’s latest online groundwater map shows that the site lies outside any groundwater source protection zone, but over a “Secondary A” superficial aquifer and a primary bedrock aquifer.
- 3.7 Site investigations reveal a soil profile of made ground to a depth of up to 2.0m BGL, over clay to a depth of approximately 3.0m BGL underlain by chalk. The ground water level in the region of 1.8m to 2.8m BGL. The presence of the (relatively impermeable) clay layer on top of the chalk means that groundwater flooding from the aquifer below is unlikely. This is consistent with observations of the site owner who could not recall any instances of groundwater flooding.

Flooding from Sewers

- 3.8 Instances of sewer flooding have been identified in the vicinity of the site; however none on the site itself as there are no sewers within the site boundary. Any sewer flooding would be within the highway. Since highway levels are in the order of 6.5m AOD, falling to the east along the highway and site levels along the adjacent northern boundary are in the order of 7.2m AOD, there is no realistic risk of flooding from sewers on the site.

Flooding from Artificial Water Bodies

- 3.9 There are no artificial water bodies in the area which would constitute a source of flooding; therefore the risk to the site is negligible.

Climate Change

- 3.10 The projected impact of climate change is to increase the likelihood of flooding from most flood sources. For the year 2056, the West Sussex SFRA shows that parts of the site could be within tidal Flood Zone 3 due to the effects of climate change, however given the proposed design of the site, the link to the Ferring Rife and the fact that the mouth of the Ferring Rife is defended, this is unlikely to have any impact on the site. Floor levels will be set at 6.5m AOD which is well above the tidal flood levels for this area. Furthermore, there is a second line of defence in the form of the raised railway

embankment to the south of the site and the only route for tidal floodwater to enter the site is backwards up the ditch to the east, however this is protected by a flapped outfall.

- 3.11 As to any increase in fluvial flows in the adjacent ditch, the only catchment for the ditch is the agricultural land to the west of the site and the site itself, and consequently flow in the ditch is entirely controlled by contributions from the land to the west via the existing 300mm UPVC pipe, and controlled flow from the site itself. Discharge from the site will be designed with a 30% increase in rainfall intensity to account for the effects of Climate Change and limited to equivalent Greenfield runoff rates over a range of return periods. The net result will be a substantial reduction in discharge to the ditch when compared to the existing rate. As such any increased risk from fluvial flows in the ditch will be offset by the fact that the flows in the ditch will be substantially reduced from their present-day rates.

Flood Defences

- 3.12 The site is shown in Flood Zone 1 of the undefended floodplain and is therefore not reliant on any flood defences for protection.

4 SURFACE WATER MANAGEMENT

Existing Site Drainage

- 4.1 Although the buildings on site have been demolished, the ground floor slab, the hard-standing car park and the site drainage infrastructure are all still intact.
- 4.2 In the previously-developed state all runoff, including that from the building roof and the hard-standing car park, was collected in a network of private drains and discharged, unattenuated, directly into the perforated 300mm pipe within the land drain which runs west-east through the centre of the site and outfalls into the ditch on the eastern boundary of the site. Any excess runoff from the southern Greenfield part of the site drains northwards to the same land drain and any excess from the adjacent agricultural field to the west of the site was intercepted by a land drain which exists along the entire western boundary of the site connecting into the same system.
- 4.3 Main features of the existing drainage are illustrated in Figure 3. Runoff from the agricultural land to the west is intercepted by a land drain and conveyed across the site to the open watercourse on the eastern boundary of the site. The ordinary watercourse into which the land drain connects on the eastern boundary of the site, taking all of the drainage from the existing site and from the agricultural land to the west, drains in a south-easterly direction for approximately 100m before reaching the railway line where it turns east and ultimately discharges via a flapped outfall into the Ferring Rife approximately 300m to the east.

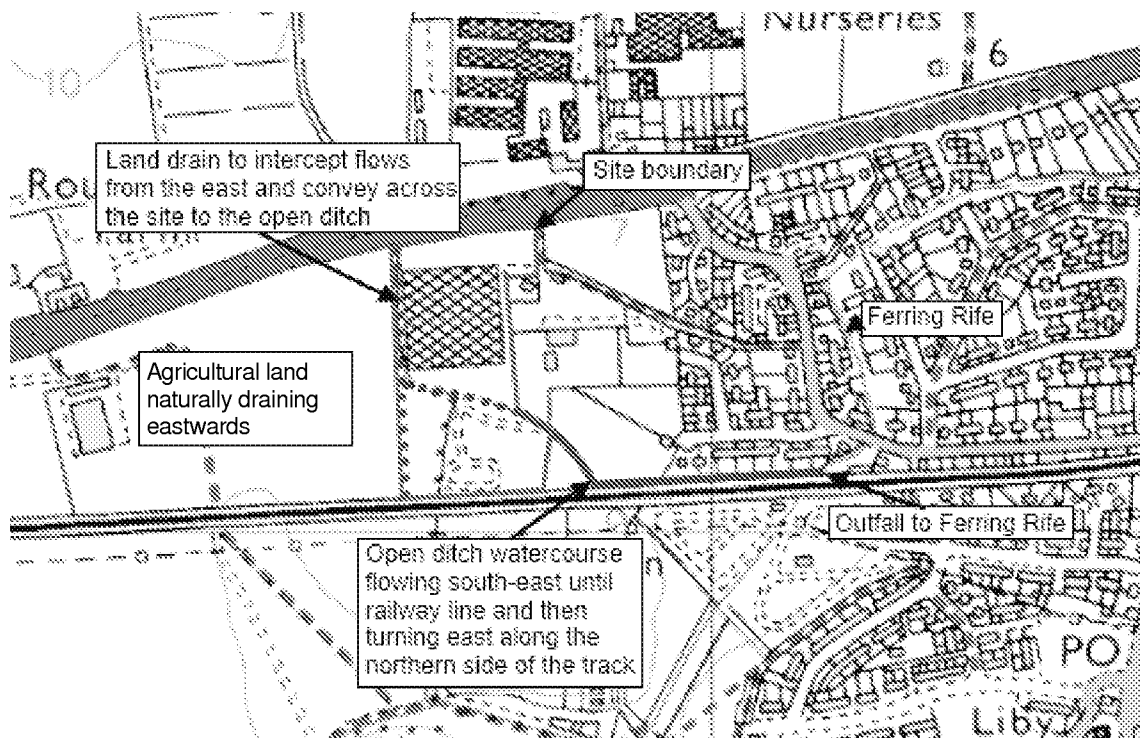


Figure 3 – Existing Drainage

- 4.4 The rate of discharge into the ditch has been estimated using the Wallingford Procedure and the Modified Rational Method over a range of return periods for the site in its existing state, and the undeveloped Greenfield state for comparison. The results are presented in Table 1 below.

Table 1 – Comparison of Greenfield and Existing Runoff Rates

Return Period of Rainfall Event	Greenfield Runoff Rate [l/s]	Existing Site Runoff Rate [l/s]
5	23	299
10	29	364
30	36	445
50	40	493
100	47	571
100+30% (CC)	61	742

Proposed Surface Water Drainage System

- 4.5 The proposed surface water drainage strategy will replicate the existing case in so far as:
- It will maintain the existing ability for the agricultural land to the west to drain through the site into the ordinary watercourse to the east of the site.
 - It will use the same point of discharge in the ordinary watercourse, albeit at a significantly reduced rate.
 - Half of the site will be impermeable and the other half will be allowed to percolate naturally into the underlying soil.
- 4.6 A drainage strategy presented in Drawing 4 has been produced by GD Partnership comprising the following key components:
- Controlled discharge to the adjacent ditch via a new outfall at equivalent Greenfield runoff rates (as presented in Table 1) over a range of return periods up to the 100-year event including an allowance for climate change.
 - Hybrid car park construction comprising a conventional bitumen wearing course with slot drains into a permeable, graded-stone granular sub-base and crated system, thus giving the benefits of a smooth wearing course to accommodate heavily-laden trolleys, as well as the sustainable drainage benefits of a permeable system to improve water quality and eliminate the need for oil interceptors, while at the same time allowing (but not relying on) direct infiltration into the ground for groundwater recharge.

- Independent outfall to convey flows from the land drain along the western boundary of the site directly to the ditch.
- 4.7 Shallow groundwater and the limited depth of the ditch outfall means that a shallow drainage system is required and this can be achieved through the use of the granular stone sub-base as proposed.
- 4.8 Restriction of runoff to equivalent existing Greenfield runoff rates will ensure that any development on the site will provide a significant improvement over the existing case, thereby contributing to alleviation of flood risk in the wider area.
- 4.9 The Wallingford procedure and the modified rational method have been used to calculate the maximum required storage volume (with a range of different storm durations) to ensure that the 100-year event, including a 30% allowance for climate change, is restricted to the equivalent Greenfield rate.
- 4.10 As shown in Drawing 4, the storage will be achieved through a combination of:
- Car parking area with 350mm granular stone sub-base (assuming typical 30% voids) and 697m³ of crated storage.
- The combined storage provision is in excess of the volume required to attenuate the 100-year event plus climate change to Greenfield rates.
- 4.11 HydroCAD was used to model how the system will perform under the proposed conditions and to calculate storage required.
- 4.12 The net result of this design is a 92% reduction in site runoff by returning the proposed site back to Greenfield runoff rates.

Sustainable Urban Drainage Systems

- 4.13 The aim of Sustainable Urban Drainage Systems (SUDS) is to emulate natural processes with the result that watercourses and storage areas receive the hydrological profiles under which they evolved, and that water quality in local ecosystems is protected or improved. Figure 4 illustrates the preferred hierarchy of sustainable drainage solutions. In this context:
- Living roofs are not economically feasible due to additional cost of roof structure.
 - The site layout does not allow for ponds and the shallow groundwater would mean that ponds are not a feasible means of storage provision
 - There is a filter strip along the western boundary of the site to intercept flows from the adjacent field and encourage groundwater recharge.
 - Soakaways not feasible due to shallow groundwater.
 - The granular sub-base to the car park permeable recognised within the SUDS hierarchy shown in Figure 4. It has been designed to allow runoff from the car parking area to infiltrate into the ground where possible.

<div> <div>Most Sustainable</div> <div> <div></div> <div></div> </div> <div>Least Sustainable</div> </div>	SUDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
	Living roofs	✓	✓	✓
	Basins and ponds <ul style="list-style-type: none"> - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds 	✓	✓	✓
	Filter strips and swales	✓	✓	✓
	Infiltration devices <ul style="list-style-type: none"> - soakaways - infiltration trenches and basins 	✓	✓	✓
	Permeable surfaces and filter drains <ul style="list-style-type: none"> - gravelled areas - solid paving blocks - porous paviers 	✓	✓	
	Tanked systems <ul style="list-style-type: none"> - over-sized pipes/tanks - storms cells 	✓		

Figure 4 – SUDS Hierarchy

Proposed Foul Drainage System

4.14 Foul water from the site currently drains to the ditch via a waste water treatment plant with an appropriate Consent to Discharge. Development proposals are to replace this with a new waste water treatment plant, with a new Consent to Discharge. The Environment Agency has been contacted in this regard and, subject to a detailed application, have no objection in principle to these proposals.

5 SUMMARY OF FLOOD RISK ASSESSMENT

5.1 Table 2 illustrates the points which should be addressed for all development sites greater than 1 hectare in size located within Flood Zone 1, as defined in FRA Guidance Note 1 (March 2007).

Table 2 – Summary of Flood Risk Assessment based on the guidelines set out by the Environment Agency in FRA Guidance Note 1 (Flood Risk Matrix)

Requirement	Assessment
1. Plans and Surveys	
1a. Location plan that includes geographical features, street names and identifies the catchment, watercourses or other bodies of water in the vicinity.	The site location is presented in Figure 1.
1b. A plan of the site showing: <ul style="list-style-type: none"> Existing site; Development proposals; and Identification of any structures, which may influence local flood flow overland or in any watercourses present on the site 	<p>The layout of the existing site is presented in Drawing 1.</p> <p>The development proposals are presented in Drawing 3.</p> <p>There are no structures which may influence flood flow on the site.</p>
1c. Site levels related to Ordnance Datum, both existing and proposed.	<p>The topographic survey is presented in Drawing 2 and presents site levels to Ordnance Datum. Constructed levels of the proposed store are shown in Drawing 3. The levels on site fall slightly from the northern (approximately 7.1m AOD) and southern boundaries (6.2m AOD) towards a land drain which runs west to east through the centre of the site (5.6m AOD), discharging into an open ditch on the eastern boundary (invert of 4.6m AOD).</p>
2. Assessments	
a. Information about the surface water disposal measures already in place and their state of maintenance.	<p>In the previously-developed state all runoff was collected in a network of private drains and discharged directly into the perforated 300mm pipe within the land drain which runs west-east through the centre of the site and outfalls into the ditch on the eastern boundary of the site.</p>

2. Assessments... cont	
2b. An assessment of the volume of surface water run-off likely to be generated from the proposed development	Storage is provided in the granular sub-base of the car parking area and crates, with the total in excess of the volume required to attenuate the 100-year event plus climate change to Greenfield rates.
2c. Proposals for surface water management according to sustainable drainage principles, with the aim of not increasing, and where practicable reducing the rate of run-off from the site as a result of the development	Run-off rates from the site will be significantly improved as a result of the proposed development. The permeable granular sub-base to the car park ensures this portion of the site acts as Greenfield and provides enough storage to attenuate runoff from the impermeable areas in combination with the crated system. This is recognised as a sustainable urban drainage system in accordance with the SUDS hierarchy.
2d. Allowance in design for how climate change will affect the probability and intensity of events in the future	The surface-water drainage system is designed to a standard including an allowance for projected climate change up to the year 2085.
2e. Information about any other potential sources of flooding that may affect the site – streams, surface water run-off, sewers, groundwater, reservoirs, canals and other artificial sources or any combination of these	The site is not considered to be at significant risk of flooding from any of the potential flood sources listed in PPS25. A flood risk assessment has been undertaken as the site is greater than 1ha.
2f. Information on how these sources of flooding will be managed safely within the development proposal	No measures are necessary to manage the risk of flooding from sources other than surface water run-off from the proposed development.
2g. Consideration of the proposal relative to any existing Strategic Flood Risk Assessment carried out by the local authority	Risks of flooding from various sources as identified in the SFRA, were addressed in chapter 3 of this report.
2h. Confirmation as to whether Environment Agency consent is needed for any aspect of the work, and whether this has been applied for	The ditch is classed as an Ordinary Watercourse so no consents are required for the discharge of surface water. Foul water will be discharged into the same ditch via an appropriate sewerage treatment plant. Consent to Discharge application will be applied for at the detailed design stage. The Environment Agency have been consulted and have no objection in principle to this strategy

6 CONCLUSIONS AND RECOMMENDATIONS

- 6.1 The proposed development includes a superstore and is considered 'Less Vulnerable' development. The site lies within Flood Zone 1 and there is low risk of flooding as a result of all sources outlined in PPS25 Annex C.
- 6.2 The allocation of the site for retail development (Less Vulnerable Development) classes within Flood Zone 1 satisfies the Sequential Test as outlined in Annex D of PPS25.
- 6.3 The site is 4.28ha in size, and therefore a full Flood Risk Assessment has been prepared to accompany a planning application for the development. Following development the majority of the site will be covered with roof or car parking area; however the sustainable drainage techniques will result in a great improvement to the runoff rates from the site in comparison to the existing scenario.
- 6.4 Planning permission has been granted by Arun District Council on the condition that details of the foul and surface water drainage are agreed with the Environment Agency and Building Control. This flood risk assessment provides further detailed information on surface and foul water strategies for the development in order to meet this condition.
- 6.5 A topographic survey of the site was performed by Subscan Technology in August 2011 and was referenced to Ordnance datum. The survey covers the existing site where the proposed development is to be situated.
- 6.6 Hybrid car park construction comprising a conventional bitumen wearing course with slot drains into a permeable, graded-stone granular sub-base. This gives the benefits of a smooth wearing course to accommodate heavily-laden trolleys, as well as the sustainable drainage benefits of a permeable system to improve water quality and eliminate the need for oil interceptors, while at the same time allowing (but not relying on) direct infiltration into the ground for groundwater recharge.
- 6.7 The granular sub-base and crates provide more than sufficient storage to attenuate runoff from the proposed site for the 100-year plus climate change events to Greenfield runoff rates and will help to ensure that the quality of the water is improved before discharging to the watercourse. This is a significant improvement on the existing site runoff.
- 6.8 The site will benefit from an improved and sustainable drainage system with a reduced rate, and improved water quality discharge into the tide-locked Ferring Rife. There will be no adverse flood-related impacts on neighbouring properties as a result of the proposed development.

APPENDIX A – PHOTOGRAPHS



Photograph 1 - Site car park from north-west corner of the site looking south-west



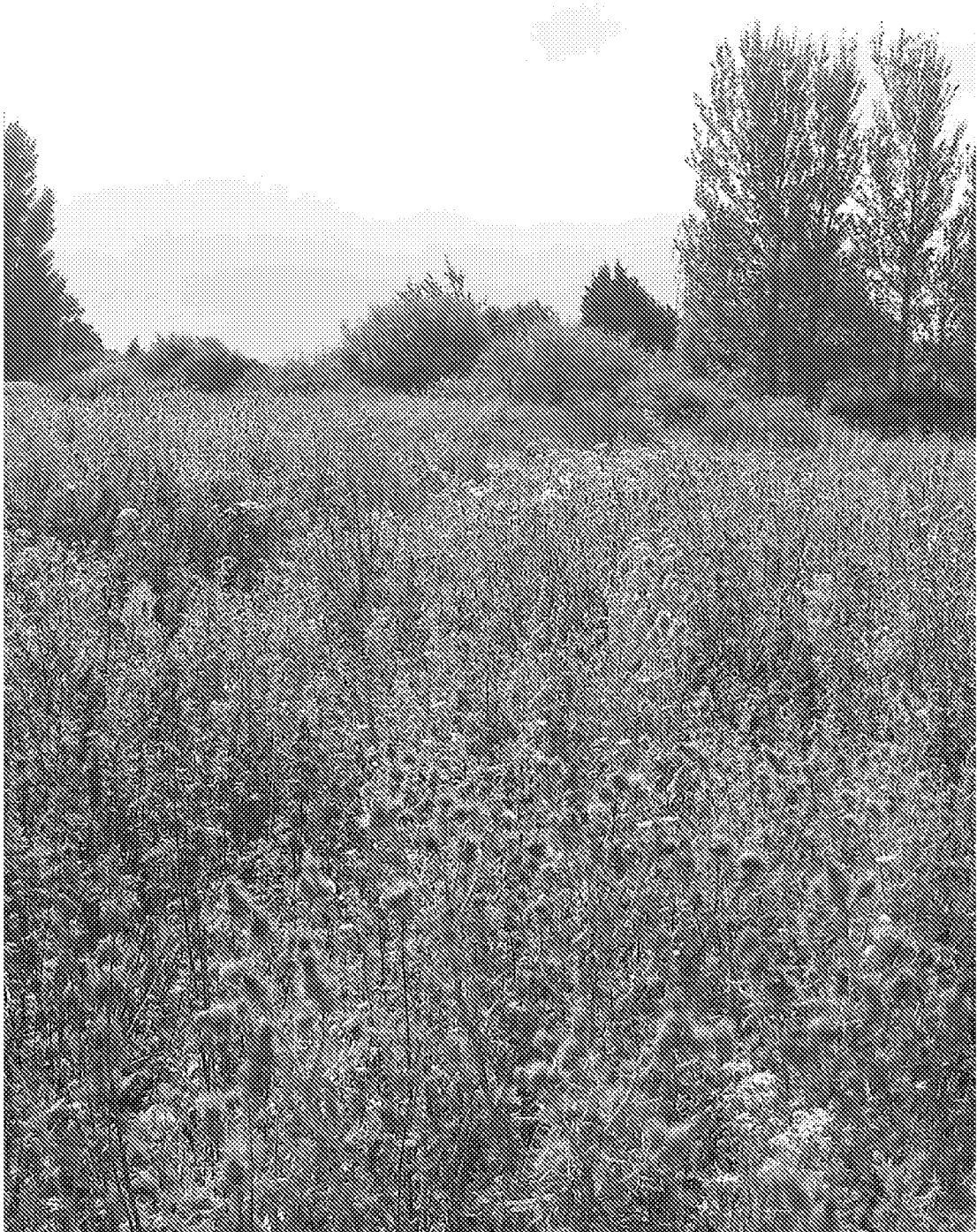
Photograph 2 – Showing floor of (demolished) garden centre building



Photograph 3 – Looking west from the centre of the site showing the existing French drain which bisects the site and flows eastwards to an outfall in the adjacent watercourse.



Photograph 4 – Looking south along the western boundary of the site showing the French drain which intersects any runoff from the agricultural land to the west



Photograph 5 – Looking south-east from the site boundary showing the watercourse which flows towards the railway line

APPENDIX B – DRAWINGS

Drawing 1 – Existing Site Layout

Drawing 2 – Site Survey

(Subscan Technology Drawing Number 20118T-01 to -04)

Series of drawings showing the existing site survey.

Drawing 3 – Proposed Site Plan

(GD Partnership Drawing/Job Number 11-046-C.01)

This drawing shows an overview of the proposed development.

Drawing 4 – Proposed Drainage Layout

(GD Partnership Drawing/Job Number 11-046-C.01)

This drawing shows the drainage proposals for the proposed development.