



DRAINAGE STRATEGY

FOR

**POMEROY CRESCENT,
HEDGE END, SO30 2LF**

ON BEHALF OF

**BRIGHT HORIZONS
FAMILY SOLUTIONS LLC**



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Drainage Strategy for Pomeroy Crescent, Hedge End, SO30 2LF**1532/39r1**

	Initial Issue 15th July 2025	Revision A	Revision B
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1.0 INTRODUCTION

- 1.1 Bright Horizons Family Solutions LLP are proposing to create a new garden building on an existing day nursery site. To support the planning application and assist with the appraisal of the site, a Surface Water Drainage Strategy is required to outline the proposed means of sustainably managing surface water runoff from the development. As the site is less than 1ha in area and located within flood zone 1, a Flood Risk Assessment is not required to support the planning application.
- 1.2 ARP Associates have been appointed to prepare a Drainage Strategy for the development, undertaking appropriate assessments, and preparing a report to satisfy the requirements of the Planning Authority.
- 1.3 The report has been initially prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Associates. For the avoidance of any doubt, where ARP Associates enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Associates consent.
- 1.4 Attention is drawn to the requirements of the Construction Design and Management Regulations 2015, and in particular, the duties and obligations of the Client.

2.0 SITE DESCRIPTION

General

- 2.1 The site, known as Bright Horizons Hedge End Day Nursery, is centred on approximate Ordnance Survey Grid Reference E448855, N114670. The site is located on Pomeroy Crescent, in Hedge End, to the northeast of Southampton. Access to the site is available Pomeroy Crescent.
- 2.2 The plot is relatively irregular in shape. The plot is located on relatively level ground with little variation in the ground levels.
- 2.3 A site plan is presented in Appendix A, which shows the application site to which this report refers.

Current Use

- 2.4 The wider property consists of the nursery day care building together with the access road and car park. The external areas are grassed or have tarmacadam finishes.

Topography

- 2.5 The plot is located on relatively level ground with little variation in the ground levels.

Boundaries

- 2.6 The site is bounded by a school to the north, residential properties to the east, a commercial property to the south, and Pomeroy Crescent to the east.

Development Proposals

- 2.7 The development proposals are to create a new garden building. The development proposals are shown in the site plan within Appendix A.

Hydrology

- 2.8 The nearest watercourse to the site is an unnamed watercourse which is located approximately 220m to the west of the site.

Ground Conditions

- 2.9 Based on the records obtained from the British Geological Survey the ground conditions on site are likely to consist of topsoil overlying clayey silty sand, overlying sandy clay.

Existing Drainage

- 2.10 Southern Water sewer records have been obtained and these reveal that there are surface water and foul water sewers located in Pomeroy Crescent, which would appear to serve the existing buildings on the site. Refer to Appendix B for details. There are further surface water and foul water sewers located to the south of the site in White's Way.

3.0 CONSULTATION AND DATA REVIEW

Environment Agency

- 3.1 Formal consultation with the Environment Agency has not been undertaken as the site is not located in an area shown to be at significant risk of flooding, and the Environment Agency do not provide advice on drainage matters. However, publicly available Environment Agency data has been reviewed for reference.
- 3.2 The Flood Map for Planning confirms that the site is located within Flood Zone 1, and therefore at a very low probability of fluvial and tidal flooding.
- 3.3 The Environment Agency Risk of Flooding from Surface Water map suggests that the site is at a 'very low' risk of flooding from surface water.
- 3.4 The Flood Risk from Reservoirs is unlikely in this area.

Climate Change

- 3.5 NPPF requires that the projected impacts of climate change are taken into account over the lifetime of a development. Studies have projected that the Global Sea level will continue to rise and there will be an increase in river flows and rainfall intensity across the country, with the degree of change depending on greenhouse gas emissions and the sensitivity of the climate system.
- 3.6 Recommended allowances for assessment are set out in Environment Agency publication 'Flood risk assessments: climate change allowances' (published February 2016; last updated May 2022). Within this guidance, a regionalised approach is adopted to climate change impacts based upon the river Management Catchment within which the proposed development site falls, and the intended design life of the development.

- 3.7 The site is situated within the East Hampshire Management Catchment. For non-residential establishments, climate change impacts over a design life of at least 100 years should be considered.
- 3.8 Impact on River Flooding - With respect to river flows, the applicable allowances are also influenced by the flood risk vulnerability of the proposed development and the present-day Flood Zone classification of the site. An applicable allowance for sites in Flood Zone 1 is not specifically given by the current guidance, but as a precautionary approach it is reasonable that the impacts of the 'central' climate change scenario (50th percentile of potential scenarios) should be considered. Within this Management Catchment, the 'central' climate change scenario is predicted to lead to an increase in peak river flows of up to 37% by 2080s (which is as far as the data extends) during the 1 in 100 year (1% annual exceedance probability) flood event.
- 3.9 Impact on Rainfall Intensity - In accordance with the current guidance, for a design life of at least 100 years the impacts of the "upper" climate change scenario (90th percentile of potential scenarios) should be considered with respect rainfall intensity. Within this Management Catchment, this is predicted to lead to an increase in rainfall intensity of up to 40% in the 1 in 30 year (3.3% annual exceedance probability) rainfall event, and up to 45% in the 1 in 100 year (1% annual exceedance probability) rainfall event.

4.0 SURFACE WATER DRAINAGE STRATEGY

- 4.1 This section sets out the proposed means of managing surface water discharge from the proposed development. This section should be read in conjunction with the ARP Drainage Strategy plan (drawing 1532/39/SK01) which has been prepared to illustrate the proposals and is shown within Appendix C.

Existing Surface Water Runoff

- 4.2 It is likely that the hard surfaced development area shall discharge to the existing below ground drainage system within the site. However, this existing scenario has not been confirmed by CCTV. Surface water runoff generated within the development area is assumed to partially infiltrate the ground or flow overland towards the lowest areas of topography.

Proposed Surface Water Runoff Destination

- 4.3 The proposed means of managing surface water runoff from the development has been considered with respect to the hierarchy set out in Building Regulations Part H (2010) as follows.
- 4.4 Consideration of the proposed means of surface water drainage should firstly be given to infiltration techniques (to ground). Based on the information obtained from the British Geological Survey the ground conditions on site are likely to consist of topsoil overlying clayey silty sand, overlying sandy clay. To confirm whether infiltration is appropriate the permeability on the site shall be investigated as part of the Phase 2 Site Investigations.
- 4.5 Opportunities for discharge to a surface watercourse has been considered. The nearest watercourse to the site is an unnamed watercourse which is located approximately 220m to the west of the site. The watercourse is located across 3rd party land, beyond the site boundary, and as such does not provide a viable option for surface water discharge.

- 4.6 If infiltration is confirmed to not be viable for the development area, then we would propose that surface water shall discharge to a surface water sewer. Southern Water sewer records have been obtained and these reveal that there is a surface water sewer located in Pomeroy Crescent. We propose that surface water flows from the development will discharge via existing connections to network, subject to agreement with Southern Water.

Proposed Surface Water Discharge Limit

- 4.7 In order to minimise the increase in flood volumes and flood risk elsewhere, it is proposed that the post development surface water discharge rate will be based on the greenfield runoff rate for the proposed development area.
- 4.8 The proposed development area is approximately 60m², with a Qbar of approximately 0.03 l/s. Refer to Appendix D for details. We propose a minimum practicable discharge rate from the development area of 3.5 l/s. The minimum practicable discharge rate is required to minimise the risk of blockage from debris and sediment.
- 4.9 It is therefore the intention to limit the discharge of surface water flows into the existing surface water network within the site using a flow control device fitted in the final manhole before connecting into the existing network, limited to a peak discharge of 3.5 l/s.

Proposed Surface Water Attenuation Storage

- 4.10 All new proposed surface water drainage systems shall be designed to accommodate a 1 in 30 year storm event without flooding and, to accord with the requirements of the Lead Local Flood Authority, will need to accommodate the 1 in 100 year plus 45% climate change allowance event without causing flooding of property or third-party land.
- 4.11 Attenuation storage will be provided on site for extreme rainfall events for the 1 in 100 year storm event with an allowance of 45% increase due to climate change.

- 4.12 The surface water drainage strategy is illustrated in the ARP Drainage Feasibility drawings 1532/39/SK01 which are included in Appendix C for reference. The strategy is subject to agreement with the LLFA, and subject to detailed design.

Surface Water Quality

- 4.13 Appropriate measures will be incorporated in the surface water drainage system to mitigate the risk of contaminated runoff from the site causing adverse impacts on surface water bodies downstream in accordance with local SuDS guidance.
- 4.14 As assessment of the pollution hazards posed by the site has been assessed using the CIRIA SuDS Manual C753 –Table 26.2 pollution hazard indices table. Table 1 summarises the likely applicable indices for the proposed development.

Table 1: Pollution Hazard Indices for Proposed Development

Proposed Land Use	Pollution Hazard Level	Pollution Hazard Index		
		Total Suspended Solids	Metals	Hydro-carbons
Non-residential roofs	Low	0.30	0.20	0.05

Based on Table 26.2 of The SuDS Manual.

- 4.15 Non-residential roofs are generally considered to be relatively ‘clean’ surface water run-off and would be expected to have a low level of potential contamination. On this basis no specific treatment for this run-off is proposed, except for suitable leaf debris traps and silt traps.
- 4.16 It is recommended that the requirements for surface water pollution prevention are reviewed at the detailed design stage, with additional SuDS treatment components provided, if necessary.
- 4.17 The final strategy for management of surface water quality will be confirmed at the detailed design stage and agreed with the LLFA.

Exceedance Flow Routes

- 4.18 For rainfall events in excess of the design standard (i.e. greater than 1 in 100 year plus climate change event) the capacity of the drainage system is likely to be exceeded. There also remains a residual risk of flows leaving the surface water drainage system in the event of a blockage.
- 4.19 So that exceedance flows do not adversely affect properties on or off site, site levels should be designed to direct flows from hard-paved areas away from building entrances where possible, so that any flooding remains in areas such as landscaped areas, car parks, or roads, where the consequences of surface water flooding would be less significant.
- 4.20 Exceedance flow routes will be reviewed as part of the detailed drainage and levels design.

Construction Stage Surface Water Management

- 4.21 During the construction stage, before the permanent drainage systems are installed, measures may need to be taken to mitigate potential environmental risks posed by runoff from the redevelopment site.
- 4.22 A more detailed assessment of the potential construction stage risks will be undertaken before formulating a site-specific Temporary Surface Water Management Plan to manage the risk. The plan will need to be approved by the LLFA prior to implementation.

5.0 MAINTENANCE

- 5.1 There is a residual risk of flooding from drainage systems in the event of siltation or a blockage occurring. It is therefore essential that drainage systems are subject to periodic inspection and maintenance, so that the design standard is not compromised, and to reduce the risk of blockage.
- 5.2 It is envisaged that the drainage systems will remain private, and the ongoing inspection and maintenance of the drainage systems is therefore expected to remain the responsibility of the site owner. An appropriate inspection and maintenance plan will be developed at the detailed design stage and implemented thereafter by the site/building owner, using suitably qualified professionals.

6.0 SUMMARY

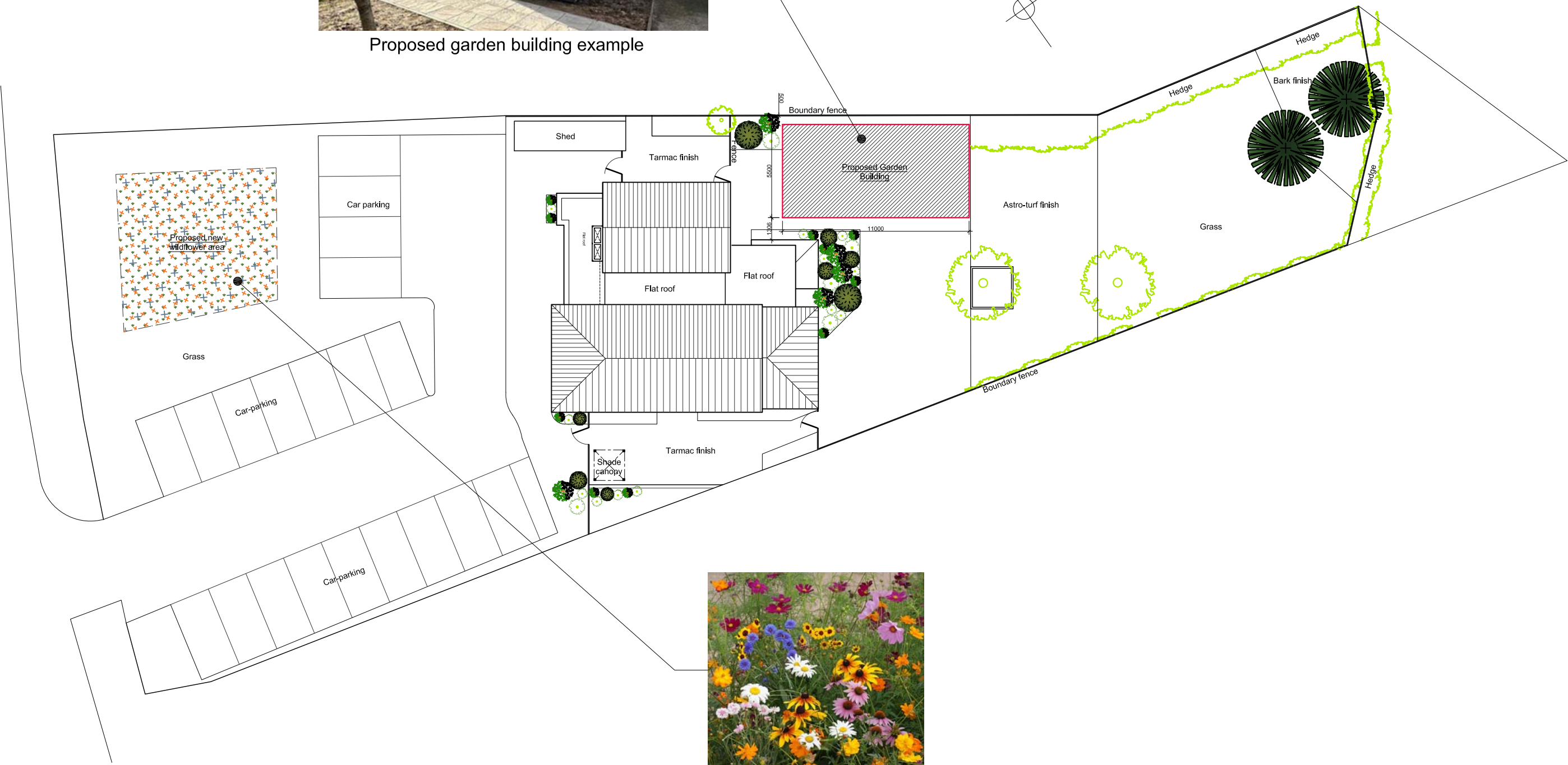
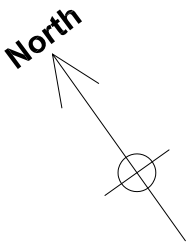
- 6.1 The principles of a sustainable surface water management strategy for the proposed development are set out within the report.
- 6.2 The proposed strategy is illustrated in the ARP Drainage Strategy drawing 1532/39/SK01.
- 6.3 The disposal of surface water runoff from the development site has been appraised following the hierarchy set out in The Building Regulations 2010 Part H Drainage and Waste Disposal 2015 Edition.
- 6.4 The preferred means of surface water discharge is via infiltration. To confirm whether infiltration is appropriate the permeability on the site shall be investigated as part of the Phase 2 Site Investigations.
- 6.5 If soakaways are not viable then it is proposed that surface water flows from the development area shall discharge via existing connections to the Southern Water surface water sewer in Pomeroy Crescent.
- 6.6 We would propose a minimum practicable discharge rate from the development area of 3.5 l/s.
- 6.7 Attenuation storage will be provided on site for extreme rainfall events for the 1 in 100 year storm event with an allowance of 45% increase due to climate change.
- 6.8 Exceedance flow routes shall be reviewed at the detailed design stage to mitigate any potential flood risk.
- 6.9 The findings of this report are subject to the approval of the Regulatory Authorities. The detailed maintenance plan, design and calculations shall be submitted to the Planning Authority for approval prior to construction on the development area.

A P P E N D I X A

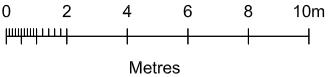
Bright Horizons drawing – Proposed Garden Plan



Proposed garden building example



Proposed Wildflower planting area
(Image for example)



109

Site	Hedge End - 4575							Address	Pomeroy Crescent, Hedge End	
Title	Proposed Garden Plan								Southampton	
Drawn	SM	Date	07.05.25	Rev	13	Status	PRO	Scale	1:250	SO30 2LF

A P P E N D I X B

Southern Water sewer records map



(c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122

Date: 11/07/25

Scale: 1:1250

Map Centre: 448857,114664

Data updated: 27/06/25

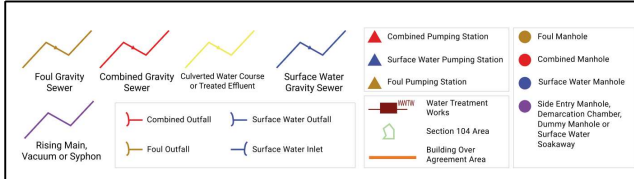
Our Ref: 1822871 - 1

Wastewater Plan A3
Powered by digdat

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 actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



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Bright Horizons



Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0601	F	33.90	28.99	
0602	F	33.96	28.98	
0603	F	33.21	28.85	
0604	F	32.67	28.75	
0605	F	35.53	32.56	
0606	F	35.49	32.34	
0607	F	35.22	31.92	
0608	F	34.58	31.49	
0609	F	34.25	29.80	
0610	F	35.51	33.30	
0701	F	32.21	28.10	
0702	F	31.88	28.02	
0703	F	31.71	27.95	
0704	F	31.61	28.50	
0705	F	30.33	27.47	
0706	F	30.00	27.42	
0707	F	30.07	27.32	
0708	F	29.96	27.52	
0709	F	31.93	28.17	
0710	F	31.42	0.00	
0711	F	31.51	30.60	
6601	F	27.43	24.67	
6602	F	28.09	24.81	
6701	F	27.45	24.13	
6702	F	27.55	24.33	
6703	F	27.38	24.51	
7501	F	30.83	28.40	
7502	F	30.70	26.52	
7505	F	29.83	26.67	
7506	F	30.48	26.39	
7507	F	30.41	26.33	
7601	F	30.48	25.88	
7602	F	30.20	26.15	
7701	F	28.77	26.87	
7702	F	29.41	26.61	
7703	F	31.87	29.50	
7704	F	29.81	26.50	
7705	F	29.91	26.45	
8501	F	33.31	31.03	
8502	F	33.41	30.80	
8503	F	36.29	32.50	
8504	F	36.38	0.00	
8505	F	36.14	33.86	
8601	F	34.08	31.99	
8602	F	31.85	30.20	
8603	F	33.84	30.50	
8701	F	34.46	31.82	
8702	F	34.66	31.50	
8703	F	34.15	31.21	
8704	F	33.48	30.86	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
8705	F	32.93	30.52	
8707	F	0.00	0.00	
8708	F	0.00	0.00	
8709	F	0.00	0.00	
9502	F	37.68	35.66	
9503	F	37.92	36.25	
9504	F	36.42	34.51	
9505	F	0.00	0.00	
9601	F	35.97	33.38	
9602	F	35.58	33.14	
9603	F	35.55	33.04	
9701	F	31.66	27.86	
9702	F	30.98	27.50	
9703	F	33.16	30.31	
0551	S	0.00	0.00	
0552	S	37.39	33.84	
0556	S	37.26	34.59	
0650	S	33.90	29.74	
0651	S	34.98	29.83	
0652	S	33.49	29.59	
0653	S	33.01	29.48	
0654	S	35.53	32.82	
0655	S	35.11	32.30	
0656	S	34.59	31.93	
0657	S	34.25	31.46	
0658	S	36.85	34.72	
0659	S	37.15	34.39	
0660	S	37.08	34.20	
0661	S	35.90	33.30	
0662	S	35.37	33.55	
0750	S	32.41	29.30	
0751	S	31.80	29.10	
0752	S	31.71	29.00	
0753	S	31.84	29.91	
0754	S	31.94	29.08	
0755	S	30.63	28.72	
0756	S	30.62	28.28	
0758	S	30.82	28.36	
0759	S	30.43	28.34	
7552	S	30.52	27.74	
7553	S	30.62	27.72	
7554	S	30.63	28.73	
7555	S	30.01	27.56	
7556	S	30.97	29.13	
7650	S	33.22	31.75	
7651	S	31.71	29.25	
7652	S	0.00	28.08	
7653	S	30.52	27.82	
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[illegible]

APPENDIX C

ARP drawing 1532-39-SK01

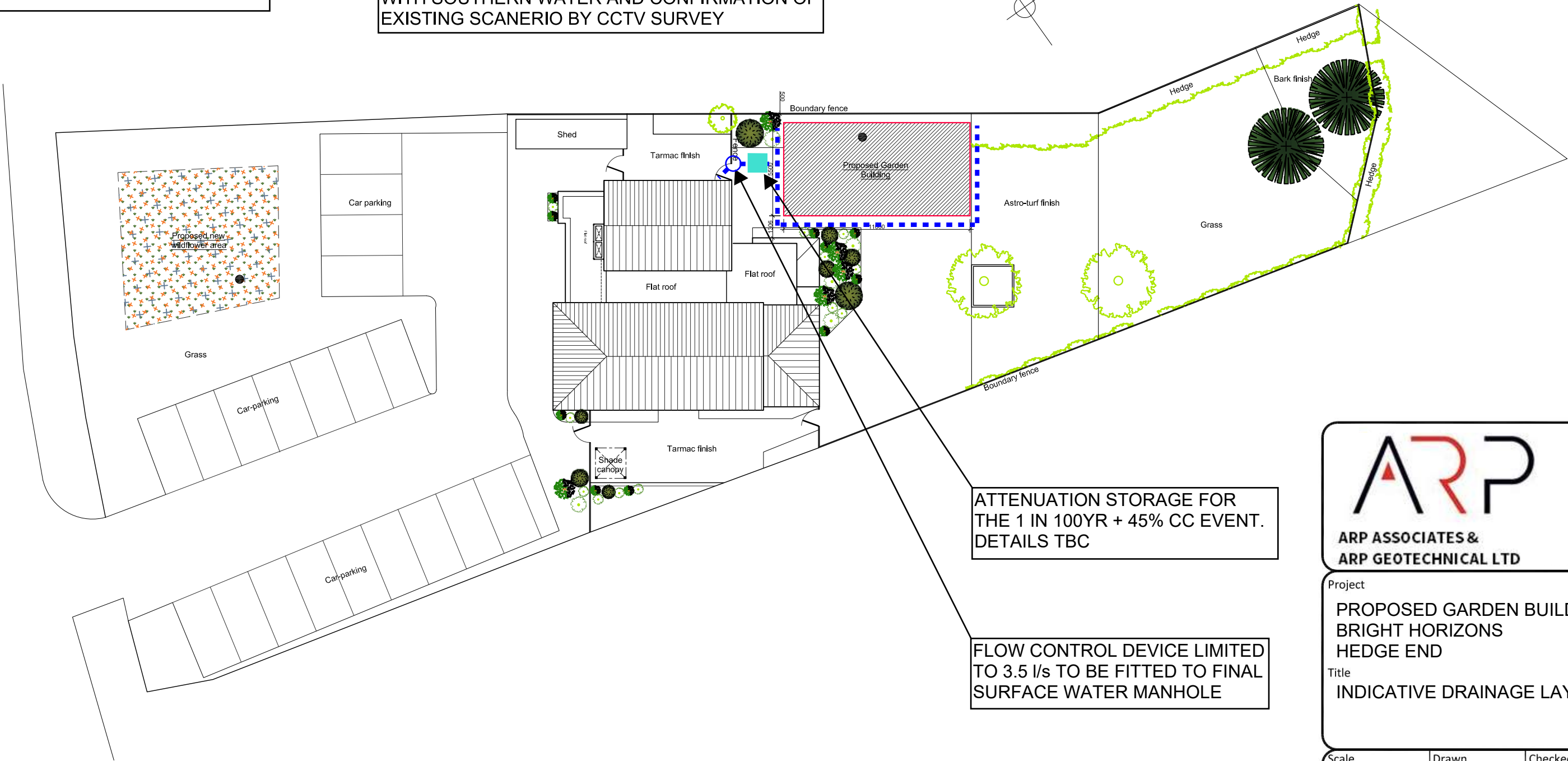
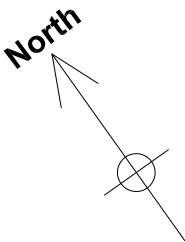
KEY

SURFACE WATER
MANHOLE

PROPOSED SURFACE
WATER SEWER

PROPOSED ATTENUATION
STORAGE

SOAKAWAY TESTING TO BRE365 TO BE UNDERTAKEN ON SITE TO DETERMINE IF INFILTRATION IS VIABLE FOR SURFACE WATER DISCHARGE FROM DEVELOPMENT AREA. IF INFILTRATION RATES NOT VIABLE THEN PROPOSED SURFACE WATER DISCHARGE VIA EXISTING NETWORK/CONNECTIONS TO SOUTHERN WATER SURFACE WATER SEWER IN POMEROY CRESCENT. SUBJECT TO AGREEMENT WITH SOUTHERN WATER AND CONFIRMATION OF EXISTING SCANERIO BY CCTV SURVEY



ARP

ARP ASSOCIATES &
ARP GEOTECHNICAL LTD

Project

PROPOSED GARDEN BUILDING
BRIGHT HORIZONS
HEDGE END

Title

INDICATIVE DRAINAGE LAYOUT

Scale	1:250	Drawn	JB	Checked	AH
Date	JULY '25	Status	INFORMATION		
Drg. No.	1532/39-SK01			Rev.	P1

A P P E N D I X D

HR Wallingford Greenfield Run-off calculations



Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (<https://www.uksuds.com/>)

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	11/07/2025
Calculated by	
Reference	
Model version	2.0.1

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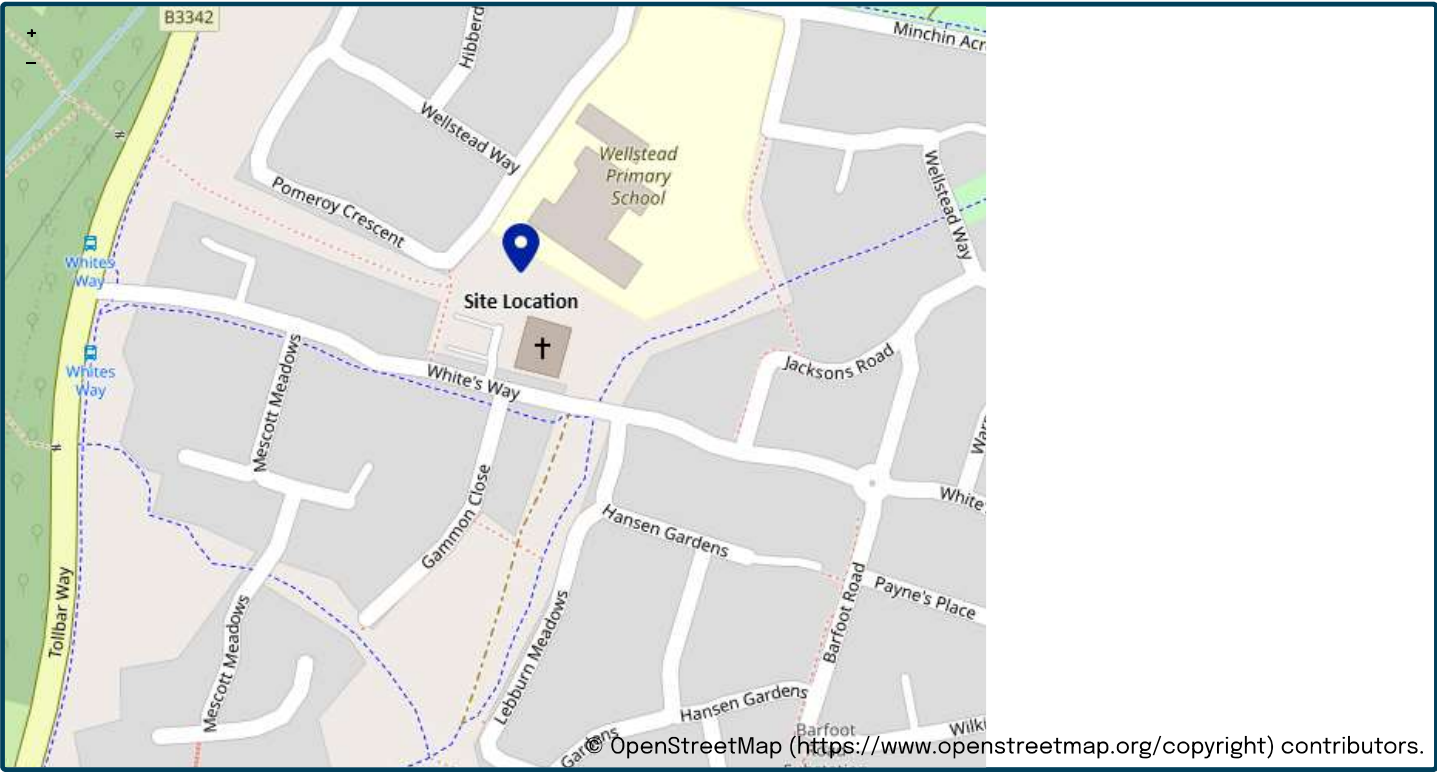
By clicking the Accept button, you agree to us doing so.

OK, I AGREE

MORE INFO

Location

Site name	Bright Horizons
Site location	Hedge End



Site easting	448852
Site northing	114660

Site details

Total site area (ha)	0.006	ha
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Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>	
SAAR (mm)	799	mm	☐	799
How should SPR be derived?	WRAP soil type			
WRAP soil type	4		☐	4
SPR	0.47			
QBar (IH124) (l/s)	0.034	l/s		

Growth curve factors

	<u>My value</u>		<u>Map value</u>	
Hydrological region	7		☐	7
1 year growth factor	0.85			
2 year growth factor	0.88			
10 year growth factor	1.62			
30 year growth factor	2.3			
100 year growth factor	3.19			
200 year growth factor	3.74			

Results

Method	IH124	
Flow rate 1 year (l/s)	0.029	l/s
Flow rate 2 year (l/s)	0.03	l/s
Flow rate 10 years (l/s)	0.055	l/s
Flow rate 30 years (l/s)	0.078	l/s
Flow rate 100 years (l/s)	0.11	l/s
Flow rate 200 years (l/s)	0.13	l/s

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.0.1) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

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