

LAND NORTH OF THE OLD BRICKWORKS, SHOREHAM ROAD, HENFIELD

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

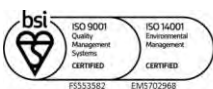
NOVEMBER 2024

Ref: 16711/01/HOP/RPT/01

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Prepared by	Checked by	Approved by	Revision
Andrew Keen	Ian Burman	Andrew Keen	P1 08.11.2024

1.0 INTRODUCTION

- 1.1 HOP Consulting (HOP) has been instructed by ARLO Holdings Ltd. (AHL) to undertake a Flood Risk Assessment and Drainage Strategy (FRADS) report for the proposed new development at land north of the Old Brickworks in Henfield, West Sussex.
- 1.2 The development proposal is for the construction of 12No. industrial units over four buildings with associated car parking, access and landscaping.
- 1.3 The flood risk element of this report has been prepared in accordance with the principles of the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG) for Development and Flood Risk. The purpose of this report is to demonstrate the risk of flooding from all sources, and foul and surface water discharge from the proposed development, can be managed effectively and in accordance with the statutory authorities' requirements.
- 1.4 The site is located within Horsham District and reference has been made to both the Horsham District Council (HDC) and West Sussex County Council (WSCC) Strategic Flood Risk Assessment (SFRA) reports, in addition to online data available from the Environment Agency (EA).
- 1.5 Details of the development proposals have been provided by AHL and their agents to show the extent of the development and confirm the existing site layout. Information in this report has been received from a number of external parties and HOP does not accept liability for the accuracy of this information. Should there be material change in the development proposals, this report will need to be revised accordingly.

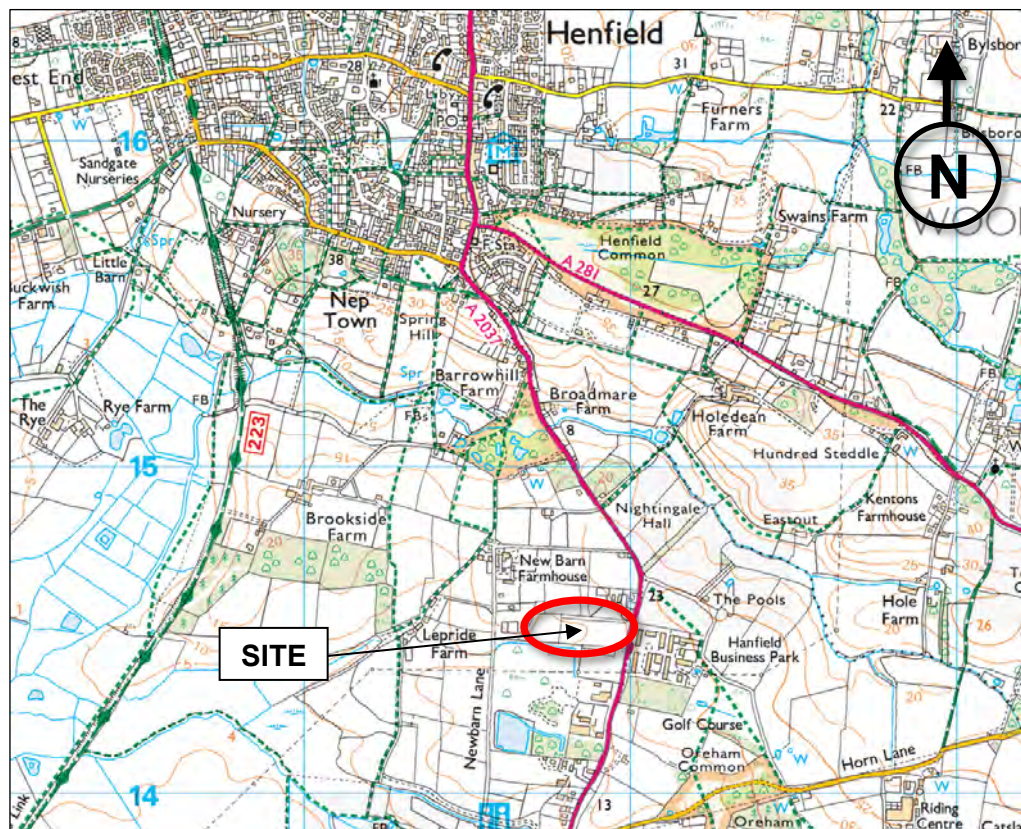


Figure 1.1 Site Location Plan

2.0 SITE DESCRIPTION AND LOCATION

- 2.1 The development site is located on land to the west of Shoreham Road (A2037) approximately 2.5km south of the town of Henfield in West Sussex.
- 2.2 The site postcode is BN5 9SE. The grid reference centred on the development location is: 521900E, 114493N.
- 2.3 As shown in Figure 1.1, and from topographical survey data included in Appendix A, the site is an irregular, broadly rectangular shape and comprises undeveloped open fields which are partly used for pasture. Vehicular access is gained via a farm gate in the southeast of the site, adjacent Shoreham Road. The surrounding area is a mix of small industrial units and yards arranged in estates, open fields and detached residential properties with substantial gardens.
- 2.4 The site slopes down towards the west at a gradient of approximately 1:40. Levels on the eastern boundary, at the back of footpath on Shoreham Road, are around 20.00m above Ordnance Datum (AOD). Levels on the western boundary, some 300m distant, are around 12.50mAOD.
- 2.5 A site walkover was conducted by HOP Engineers Andrew Keen and Ivan Ramirez on 18.06.2024 to visually verify the presence of watercourses and ditches across the site and to confirm existing greenfield conditions pertinent to surface water runoff and flood risk. The ditches serving the existing site discharge downstream to a wider network of watercourses that ultimately discharge to the River Adur approximately 3km to the west.
- 2.6 The British Geological Survey (BGS) online mapping shows the site to be underlain by bedrock of Weald Clay Formation (Mudstone) with no recorded overlying superficial deposits.
- 2.7 A site-specific ground investigation has not been undertaken to date. Online planning information submitted for the neighbouring site immediately to the south includes borehole logs that indicate clay subsoils are present.
- 2.8 Environment Agency (EA) online mapping accessed via the Magic Map application, shows the site is located outside of any designated groundwater Source Protection Zone (SPZ), which is a classification given to aquifers to protect the quality of water at potable water abstraction points. The site overlies a superficial Secondary A aquifer.
- 2.9 Given the impermeable nature of the underlying soils and the presence of drainage ditches in the existing field network, it is considered that infiltration of surface water runoff to ground is not likely to be feasible at the site and an alternative means of surface water disposal has been considered in Section 4 of this report.

3.0 DEVELOPMENT PROPOSALS

- 3.1 The development proposals are to construct 12No. light industrial units over an estate comprising four separate buildings. Vehicular and pedestrian access will be gained via a new private road extending off the existing commercial estate road to the south on the site. Parking and access through the new estate serves the units for staff and delivery operations.
- 3.2 As can be seen in the architectural Planning drawings in Appendix B and extract in Figure 3.1, the buildings are located in the eastern part of the site, with the existing fields to the west given over for the provision of landscaping and ecological enhancements.
- 3.3 This ecological area is situated downhill of the main construction zone and is served by existing drainage ditches flowing to the southeast of the site to discharge to the wider network of watercourses in the area,
- 3.4 Reference should be made to the full set of architectural information provided by PRC Architecture & Planning.



Figure 3.1 Proposed site layout (extract of PRC drawing PL_003)

- 3.5 The site is currently undeveloped greenfield land with a total area of 32,740m². The development proposals will introduce impermeable areas of roofs and paving totalling 9,509m². This is broken down as follows;
- Tarmac – 2,100,m²
- Concrete – 1,873m²
- Footprint areas (ground floor gross external area) - 5,536 m²

4.0 DRAINAGE STRATEGY

EXISTING

- 4.1 There are currently no foul water and surface water drains serving the development site. Southern Water sewer records do not show any public sewers serving this part of Henfield.

FOUL WATER

- 4.2 As per the arrangement for neighbouring sites along Shoreham Road in Henfield, foul water disposal is proposed to be managed through a package foul water treatment plant discharging treated effluent to the local watercourse network.
- 4.3 Drainage layout plans included in Appendix C show how the proposed foul water network is arranged. Foul water is generated by domestic waste from WCs and kitchen areas of the new industrial units. No allowance for trade effluent discharge has been included in the foul water drainage design.
- 4.4 A gravity connection is proposed with foul flows collected in a proprietary treatment plant located to the west of the main built area. An outfall from this unit is proposed to connect to the flowing stream in the ditch on the southern boundary of the site.
- 4.5 Initial assessment of the anticipated foul water load indicates that a Klargestor BD Biodisc unit (or equivalent) would be suitable to serve the foul water disposal requirements of the development. This is to be confirmed as part of the detailed design.

SURFACE WATER

- 4.6 As discussed in Section 2, ground conditions are not considered to be favourable to a Sustainable Drainage System (SuDS) based on infiltration techniques. Therefore, an attenuated SuDS scheme is proposed with a controlled discharge of surface water runoff to the adjacent watercourse network.
- 4.7 The use of attenuation SuDS to manage surface water runoff at source with a limiting discharge to the downstream watercourse complies with the SuDS hierarchy and Building Regulations Part H, where disposal via infiltration is the preferred method and, where this cannot be achieved, the next preferred solution is to discharge to a watercourse.
- 4.8 Calculations have been made using InfoDrainage software, for the existing mean annual flood flow rates (QBar) for the existing greenfield areas earmarked for development. Output from the calculation is included in Appendix D and shows that the QBar rate is 11.6 litres/second.
- 4.9 The proposal to attenuate the runoff to discharge at the existing greenfield Qbar runoff rate, for all storms, means that the post-development runoff rate from these areas is maintained at a rate providing an overall betterment in terms of flood risk to the downstream receiving watercourse.
- 4.10 A combination of tanked permeable sub-base and open water attenuation features are proposed, as can be seen on the drainage layout drawings included in Appendix C. Calculations using InfoDrainage software have been produced indicating the following parameters for attenuation SuDS design.

Roof runoff – Surface water is collected in rainwater downpipes, then conveyed via below ground pipework and silt trap/filter chambers to the retention pond.

Car parks and access – Surface water is collected in gullies and areas of permeable block paving, then conveyed via catch pit chambers and below ground pipework, through an oil separator, before entering the retention pond.

- 4.11 InfoDrainage output is included in Appendix D. The design storm for the above SuDS proposals has been taken as the 1 in 100 year rainfall event with an additional allowance of 25% to account for increased rainfall intensity due to global climate change (CC). A design life entering the 2070s epoch has been utilised which requires a 25% allowance for the Adur & Ouse Management Catchment area, as indicated for the Central Allowance on the Department for Environment, Food and Rural Affairs (DEFRA) data services platform.

Surface Water Runoff Quality

- 4.12 The preferred solution for managing surface water runoff is to utilise attenuation SuDS techniques, with a retention features as described above. Surface water will therefore be discharged to the surface water drainage network serving the existing field arrangement. Consideration must therefore be given to water quality treatment measures, to ensure the adequate measures are in place to protect the receiving environment.
- 4.13 The Shoreham Road development is considered to present a low risk of runoff contamination from roofs and non-trafficked areas, and a medium risk from the car park and vehicular access way. Therefore, the Simple Index Approach, as outlined in the SuDS Manual is proposed as the approach to quantify and mitigate contamination risk at the site. Table 26.1 of the SuDS Manual shows that for discharge to groundwater it is necessary to use Tables 26.2 and 26.4 to quantify risk and pollution control methods.

Extract of Table 26.1 from SuDS Manual

TABLE 26.1 Approaches to water quality risk management			
Design method	Hazard characterisation	Risk reduction	
		For surface water	For groundwater
Simple index approach	Simple pollution hazard indices based on land use (eg Table 26.2 or equivalent)	Simple SuDS hazard mitigation indices (eg Table 26.3 or equivalent)	Simple SuDS hazard mitigation indices (eg Table 26.4 or equivalent)
Risk screening ¹	Factors characterising traffic density and extent of infiltration likely to occur (eg Table 26.5	N/A	Factors characterising unsaturated soil depth and type, and predominant flow

- 4.14 Table 26.2 outlines the hazard indices for different surface uses. Based on the site's use as storage/industrial facility, the 'other roofs' classification are appropriate. For the roof runoff the Pollution Hazard Level is classified as 'Low'. Mitigation for this will be provided in the form of leaf filters and silt traps which will remove gross solids and, metals and hydrocarbons to an appropriate standard, before discharging to ground via a crated soakaway system.
- 4.15 For the trafficked hardstanding areas of the development, it will be necessary to provide treatment with indices greater than or equal to 0.7 for total suspended solids (TSS), 0.6 for metals and 0.7 for hydrocarbons, as indicated in Table 26.2.

Extract of Table 26.2 from the SuDS Manual.

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7

- 4.16 For discharges to surface water, Table 26.3 outlines the mitigation indices for each form of treatment. For the parking and access road runoff, where the pollution hazard level is considered to be of medium level, the proposed use of permeable paving and a pond is considered to provide the suitable level of mitigation.

Extract of Table 26.3 from SuDS Manual

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

SuDS Maintenance

- 4.17 Details of SuDS operation and maintenance activities are provided within Chapter 32 of the SuDS Manual. A summary of typical key SuDS components is given in Table 32.1.
- 4.18 As can be seen, all SuDS components require regular inspection and for the first year the guidance states that monthly inspections are carried out and documented to inform the ongoing maintenance regime of the site drainage. SuDS components at the site are not to be adopted and will be maintained for their lifetime by the managing company of the development.
- 4.19 The key maintenance procedure for SuDS is the management of sediment. The risk of sedimentation to these features can be mitigated using silt traps prior to gullies and downpipes discharging to the system and regular sediment removal.

Extract of Table 32.1 of the SuDS Manual.

TABLE 32.1 Typical key SuDS components operation and maintenance activities (for full specifications, see Chapters 11–23)

Operation and maintenance activity	SuDS component											
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter drain	Modular storage	Pervious pavement	Swale/bioretention/trees	Filter strip	Green roofs
Regular maintenance												
Inspection	■	■	■	■	■	■	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■	■	□	■	■	■	□
Grass cutting	■	■	■	■	□	■	■	□	□	■	■	■
Weed and invasive plant control	□	□	□	□	□	□	□	□	□	□	■	■
Shrub management (including pruning)	□	□	□	□	□	□	□	□	□	□	□	□
Shoreline vegetation management	■	■	□	□	□	□	□	□	□	□	□	□
Aquatic vegetation management	■	■	□	□	□	□	□	□	□	□	□	□
Occasional maintenance												
Sediment management ¹	■	■	■	■	■	■	■	■	■	■	■	■
Vegetation replacement	□	□	□	□	□	□	□	□	□	□	■	■
Vacuum sweeping and brushing	□	□	□	□	□	□	□	□	■	□	□	□
Remedial maintenance												
Structure rehabilitation /repair	□	□	□	□	□	□	□	□	□	□	□	□
Infiltration surface reconditioning	□	□	□	□	□	□	□	□	□	□	□	□

- 4.20 Further operational activities for the SuDS components described for the site include regular litter and debris removal to reduce the risk of the drainage systems becoming blocked.
- 4.21 Contractors should protect SuDS components from adverse sediment runoff during the construction phase and an initial pre-handover inspection as required to ensure that the drainage system has been constructed as designed.
- 4.22 A SuDS Maintenance and Management Schedule is provided in Appendix E.

5.0 FLOOD HAZARD AND PROBABILITY

- 5.1 Flood risk data has been obtained from the online EA Flood Map, an extract of which is shown in Figure 5.1. The mapping shows the site to be located entirely within Flood Zone 1. The PPG to the NPPF defines Flood Zone 1 as having less than 1:1000 annual probability of river or sea flooding (less than 0.1%).



Figure 5.1 Extract from EA Online Flood Map

Surface Water Flooding

- 5.2 The EA has produced surface water flood maps which shows the development site to be at a negligible or low risk of surface water flooding. An extract of the surface water flood risk map is shown in Figure 5.2 and indicates isolated low-risk flood areas within the developed part of the site. The western half of the site is to remain undeveloped and given over to ecological enhancements. Therefore, the extant surface water flood risk will remain in this area and is not adversely affected by the development proposals.



Figure 5.2 Extract from EA Surface Water Flood Map

5.3 Surface water flood risk across the developed part of the site will be mitigated by the inclusion of a new SuDS system, as described in Section 4.0, which will actively manage surface water at source ensuring there is no increase in risk to site users and neighbouring or downstream properties. Exceedance event conveyance routes will be engineered into the final levels scheme for the external surfacing areas, with runoff conveyed away from the main farm building towards the less vulnerable area of the landscaped area to the west.

5.4 Through the management of surface water run through positive below ground drainage, SuDS features and dedicated exceedance flow paths, it is considered that any residual surface water flood risk is mitigated to a reduced level over the existing arrangement for the developed part of the site.

Sewer Flooding

5.5 Within the SFRA, there are no historical records of known highway or sewer flooding affecting the site. Risk of sewer flooding affecting the site is considered to be low.

Reservoir Flooding

5.6 The online EA maps show the site to be outside any flood risk area associated with reservoir flooding, therefore the risk from this source is considered to be very low.

Groundwater Flooding

5.7 Groundwater flood risk is indicated in maps provided within the WSCC SFRA, an extract of which is shown in Figure 5.3. The mapping indicates that there is a medium risk of groundwater flooding in the wider area south of Henfield where the site is located. No incidences of groundwater flooding are recorded in the HDC SFRA. Given the impermeable nature of the underlying soils, it is considered that the risk of groundwater flooding at the site is low.

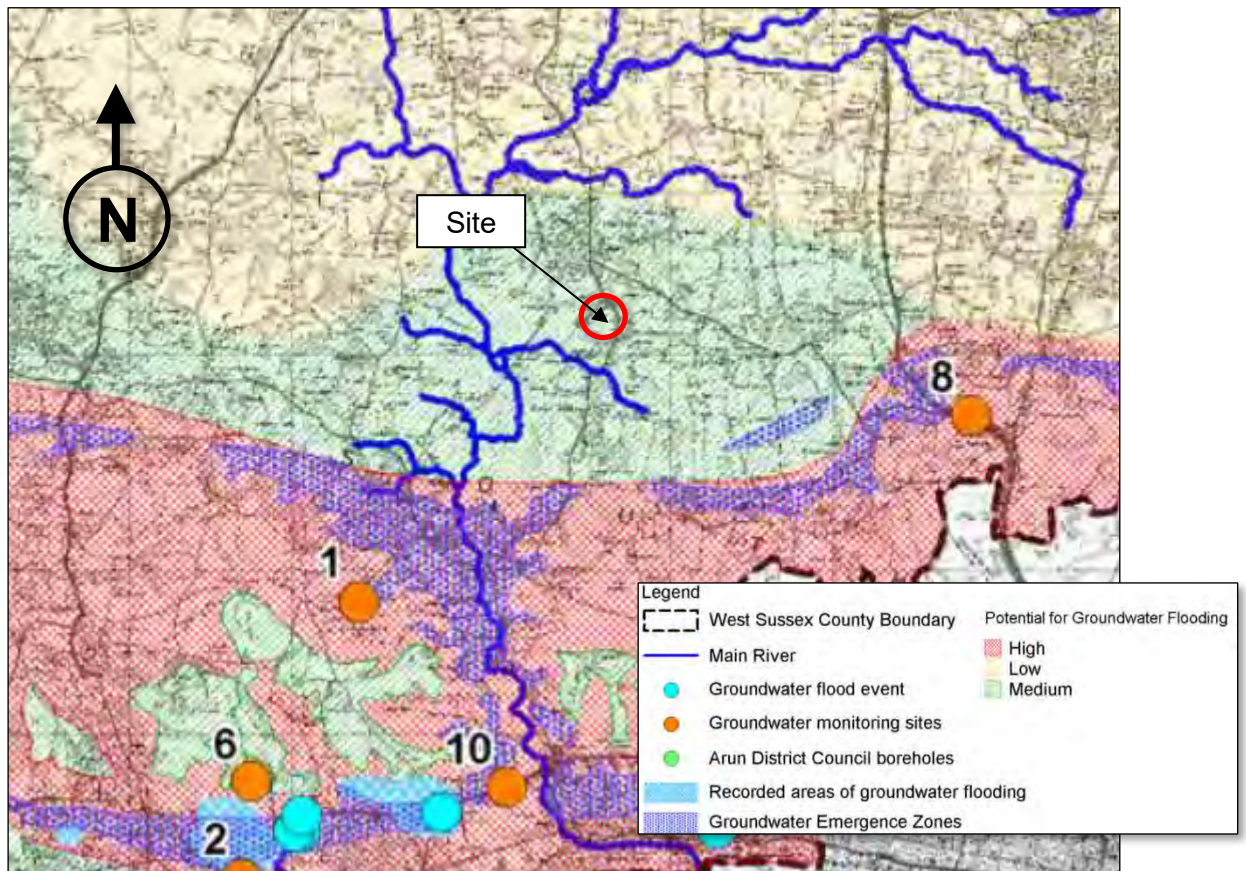


Figure 5.3 Extract of WSCC SFRA Groundwater Flood Risk map

Climate Change

- 5.8 Increased rainfall intensity, longer storm durations and rising sea levels are all attributed to global climate change. The PPG to the NPPF states that an allowance for an increase in rainfall intensity over the design life of the development should be taken into account when designing surface water drainage systems. Current guidance dictates this to be 25% considering the site's location and its anticipated design life.

Residual Risk

- 5.9 Residual risks are considered to be limited to exceedance events above the design criteria and/or a blockage failure of the drainage network. Should flooding occur due to excess rainfall or through infrastructure blockage or failure, the surcharged flows would flow to unpaved landscaped areas where runoff would naturally drain to ground and the watercourse network, away from buildings and vulnerable areas of the development.

Off Site Impacts

- 5.10 Surface water runoff is proposed to be managed at source within the site boundary. No overland flow routes are considered to be generated from the surface water residual flood risk. Off site impacts in regard to flood risk generated from the development are considered to be negligible.

Sequential & Exception Tests

- 5.11 Table 2 of the NPPF classifies all forms of development to be appropriate for Flood Zone 1 without the need for the Sequential Test or Exception Test to be applied.

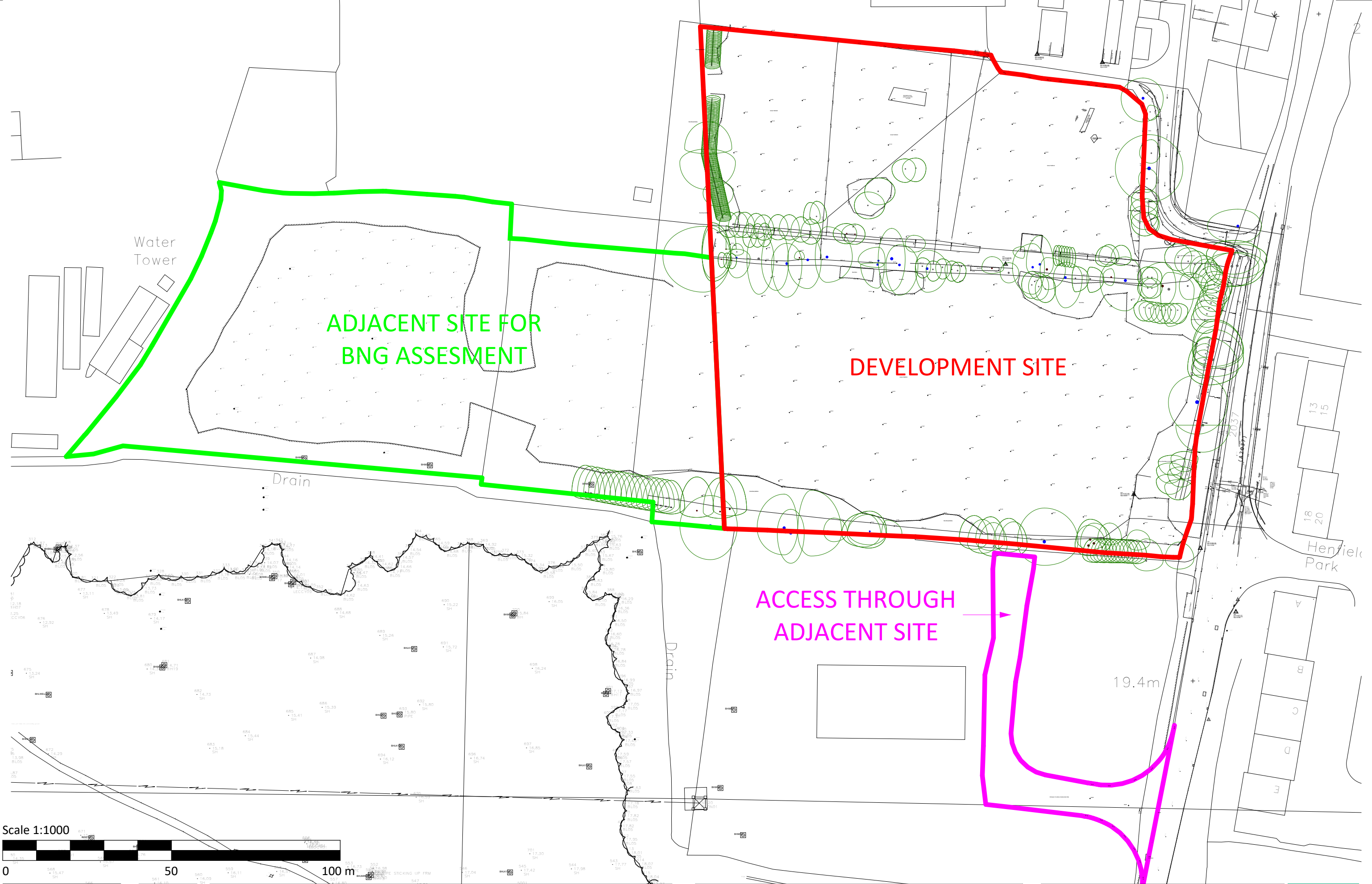
6.0 BREEAM POL 03 SURFACE WATER RUNOFF

- 6.1 The Building Research Establishment Environmental Assessment Method (BREEAM) offers a total of five credits in the POL 03 Surface Water Runoff category. It is considered that four out of the five available credits can be achieved for the Shoreham Road development, should they be sought.
- 6.2 Two credits are awarded where it is demonstrated that the site lies within Flood Zone 1. Section 5 of this report provides confirmation of this Flood Zone designation and therefore the criteria for achieving these credits is met.
- 6.3 Two credits are awarded if it can be demonstrated that the peak rate and volume of surface water runoff from the site is less than those calculated for the pre-development site. The drainage strategy detailed in this report shows that surface water is managed on site and discharged to the local watercourse network at a limited discharge rate matching the QBar rate for the existing site. Under the BREEAM guidance, where an increase in volume of runoff is anticipated, reducing the peak rate of runoff in this way meets with the criteria for compliance. The available credit is considered to be achieved.
- 6.4 A final credit in POL 03 is awarded under the heading of 'Minimising Watercourse Pollution'. This report shows how all runoff is managed at source on site and that appropriate treatment of runoff is in place to minimise the risk of watercourse pollution. However, to achieve the available credit, it must be demonstrated how the first 5mm of rainfall is prevented from leaving the site. With the attenuation SuDS scheme proposed, the first 5mm of runoff will be able to discharge to the local watercourse network. Therefore, it is considered that this final criterion cannot be met.
- 6.5 A pre-requisite of the BREEAM scoring criteria is that the assessment is undertaken by an appropriate consultant. This report has been checked and approved by Andrew Keen BEng (Hons) CEng MICE, a Chartered Civil Engineer with over 17 years' experience in SuDS design.

7.0 CONCLUSIONS

- 7.1 The proposed redevelopment of the Land North of The Old Brickworks site is deemed appropriate for Flood Zone 1 according to the principles set out in the NPPF. The site is considered to be at low or very low risk of flooding from all sources.
- 7.2 Foul water disposal is proposed via a package treatment plant, discharging treated effluent to the downstream watercourse network.
- 7.3 Infiltration potential at the site is concluded to be unfavourable to the use of infiltration SuDS. Attenuation SuDS with a discharge to the downstream watercourse network at a limited rate is proposed to manage surface water runoff at source. This accords with the preferred method of surface water disposal as defined by the SuDS hierarchy in the CIRIA SuDS Manual, and Building Regulations Part H.
- 7.4 As dictated by current guidance, the soakaway and permeable paving systems have been designed to accommodate surface water generated from storm with a 100-year return period, with an additional 25% increase in rainfall intensity due to climate change.
- 7.5 Exceedance flow routes have been assessed and are directed to the fields to the west of the developed part of the site to mitigate the residual risk to people and property.
- 7.6 This report has identified measures that reduce the level of residual risk to the site with the construction of new SuDS infrastructure utilising attenuation. It has been demonstrated that the proposals for the redevelopment of the Henfield site can be successfully implemented and managed and that there should be no increase in risk to users and neighbouring properties from flooding over the expected design life of the development.

APPENDIX A – TOPOGRAPHIC SURVEY



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Client: ARLO HOLDING LTD

Project: SHOREHAM ROAD

Drawing Title: SITE BOUNDARIES

Checked by: SC

Scale @ A3: 1 : 1000

Date: 11.03.2024

Job No: 11647

Stage_Drawing No: FE_007

Rev:

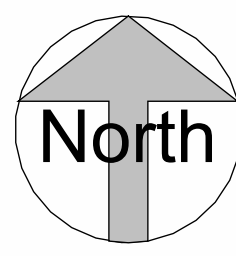
Construction ☐ Preliminary ☒ Information ☐

Approval ☐ Tender ☐

PRC Architecture & Planning



APPENDIX B – ARCHITECTURAL PROPOSALS



Figured dimensions only are to be used. All dimensions to be checked onsite. Differences between drawings and between drawings and specification on site of quantities to be reported to the PRC Group.

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Revisions: Drawn / Chd: Date: Issued for Planning MC/SC 04.11.2024



- KEY:
- PROPOSED BUILDING
 - LANDSCAPE - RETAINED MIXED SCRUB
 - LANDSCAPE - NEW NATIVE SHRUB
 - LANDSCAPE - ENHANCED EXISTING SCRUB
 - LANDSCAPE - NEW / ENHANCED WILDFLOWER GRASSLAND
 - LANDSCAPE - FLOWERING LAWN
 - LANDSCAPE - SPECIES RICH HEDGEROW
 - INDICATIVE PROPOSED TREES. SEE BNG REPORT FOR DETAILS
 - EXISTING TREES RETAINED. SEE ARBORICULTURAL REPORT FOR DETAILS
 - ASPHALT - ROAD
 - ASPHALT - FOOTPATH
 - PERMIABLE BLOCK PAVERS TO CAR PARKING BAYS. COLOUR CHARCOAL GREY
 - PERMIABLE BLOCK PAVERS TO FOOTPATH COLOUR NATURAL / BUFF
 - CONSOLIDATED GRAVEL TO MAINTENANCE FOOTPATH. COLOUR NATURAL / BUFF
 - CONCRETE TO SERVICE YARDS COLOUR GREY
 - NEW 2.4M CLOSE BOARDED TIMBER FENCE

Client: ARLO HOLDING LTD
Project: SHOREHAM ROAD HENFIELD
Drawing Title: PROPOSED SITE LAYOUT

Scale: 1:500
Job No: 11647
Issue Status: Construction Information Tender
Checked by: SC
Date: 17.09.2024
Stage / Drawing No: PL_003
Rev: 04/11/2024 16:05:12

Architecture: Planning Master Planning Urban Design Interiors
Offices: Working London Milton Keynes Warrick

Scale 1:500
0 25 50 m

APPENDIX C – HOP PROPOSED DRAINAGE LAYOUT

1. GENERAL

- (i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.
- (ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.
- (iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.
- (iv) The contractor is responsible for all temporary works and for the stability of the works in progress.

2. DRAINAGE GENERAL

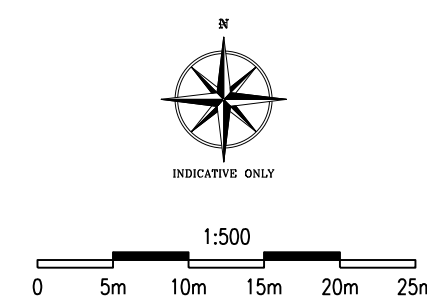
- (i) All foul and storm water drains which are not to be adopted as public sewers under a section 104 Agreement must be constructed in accordance with the Building Regulations, BS EN 752 and where appropriate the relevant agreement certificates.
- (ii) Manholes, gullies, gully connections, sewers and other sewerage structures intended to convey surface water are to be constructed in accordance with the Water Authorities Association Specification 'Sewers for Adoption' 7th Edition and relevant Council Design Guide.
- (iii) All concrete used in drainage works to comply with BRE Digest 363 for Class 2 sulphate conditions.

3. BELOW GROUND DRAINAGE

- (i) Pipework to be UPVC-U pipes to BS 4660 : 2000 and Inspection Chambers to BS 7158 : 2001.
- (ii) All adoptable drainage to be constructed in accordance with 'Sewers for Adoption' 7th Edition and the relevant Council Design Guide.
- (iii) All private surface water sewers to be laid at 1 in 80 unless otherwise stated on the drawing.
- (iv) All private foul water sewers to be laid at 1 in 40 at the head of pipe runs and 1 in 80 elsewhere unless otherwise stated.
- (v) All private foul sewer pipes to be 100mm diameter unless otherwise stated on the drawing. All private surface water sewer pipes to be 100mm diameter from downpipes and 150mm diameter elsewhere unless otherwise stated on the drawing.
- (vi) Allow for rodding access above ground where rainwater downpipes do not have a direct connection to an inspection chamber.
- (vii) Existing sewer pipe to be re-used to be surveyed and levelled prior to commencement of the drainage works and refurbished if necessary.
- (viii) Connections to an adopted sewer only to be made following approval from the relevant adopting Authority.
- (ix) All drains, sewer pipes and manholes to be cleaned and tested for water tightness on completion of construction.

4. MANHOLE COVERS & FRAMES

- (i) Manhole covers to be class D400 in highways, class B125 in footways and verges, class C250 in external maintenance vehicle access areas and verges, and class A15 in non-trafficked areas.
- (ii) Manhole covers and frames to be bedded and surrounded in 1:3 mortar.
- (iii) Manhole cover levels as proposed surface level. Shown indicatively.



SITE PLAN UPDATED	IMR	AK	08.11.24	P02
ISSUED FOR INFORMATION	IMR		31.10.24	P01
Description	By	Apprd.	Date	Rev.

PRELIMINARY DRAWING

NOT FOR CONSTRUCTION

Title
DRAINAGE LAYOUT
SHEET 1 OF 4

Project LAND NORTH OF THE OLD BRICKWORKS

Client
SABBG HOLDINGS LTD



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CONSULTING CIVIL AND
STRUCTURAL ENGINEERS

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Drawing No.	Status
16711-HOP-ZZ-XX-DR-C-9000	S2
	Rev. P02

All foul and storm water drains which are not to be adopted as public sewers under a section 104 Agreement must be constructed in accordance with the Building Regulations, BS EN 752 and where appropriate the relevant agreement certificates.

Manholes, gullies, gully connections, sewers and other sewerage structures intended to convey surface water are to be constructed in accordance with the Water Authorities Association Specification 'Sewers for Adoption' 7th Edition and relevant Council Design Guide.

All concrete used in drainage works to comply with BRE Digest 363 for Class 2 concrete foundations.

As perwork to be UPVC-U pipes to BS 4660 : 2000 and Inspection Chambers to BS 7158 : 2001.

All adoptable drainage to be constructed in accordance with 'Sewers for Adoption' 7th Edition and the relevant Council Design Guide.

All private surface water sewers to be laid at 1 in 80 unless otherwise stated on the drawing.

All private foul water sewers to be laid at 1 in 40 at the head of pipe runs and 1 in 80 elsewhere unless otherwise stated.

All private foul sewer pipes to be 100mm diameter unless otherwise stated on the drawing. All private surface water sewer pipes to be 100mm diameter from downpipes and 150mm diameter elsewhere unless otherwise stated on the drawing.

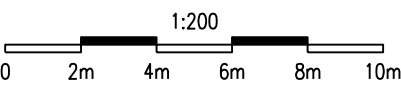
Allow for rodding access above ground where rainwater downpipes do not have a direct connection to an inspection chamber.

Existing sewer pipe to be re-used to be surveyed and levelled prior to commencement of the drainage works and refurbished if necessary.

1) Connections to an adopted sewer only to be made following approval from the relevant adopting Authority.

All drains, sewer pipes and manholes to be cleaned and tested for water tightness on completion of construction.

- Monhole covers to be class D400 in highways, class B125 in footways and verges, class C250 in external maintenance vehicle access areas and verges, and class A15 in non-trafficked areas.
- Monhole covers and frames to be bedded and surrounded in 1:3 mortar.
- Monhole cover levels as proposed surface level. Shown indicatively.



SITE PLAN UPDATED	IMR	AK	08.11.24	P02
ISSUED FOR INFORMATION	IMR		31.10.24	P01
Description	By	Aprvd.	Date	Rev.
PRELIMINARY DRAWING NOT FOR CONSTRUCTION				

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Drawing No. 16711-HOP-ZZ-XX-DR-C-9003 Status S2
Rev. P02

APPENDIX D – INFODRAINAGE CALCULATIONS & QBar FLOW RATES

Calculated by:	Beata Kozicka
Site name:	Land North of the Old Brickworks
Site location:	Henfield

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.

Site Details

Latitude:	50.91699° N
Longitude:	0.26644° W
Reference:	2499185414
Date:	May 30 2024 12:42

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	1.9739
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Methodology

Q _{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

Hydrological characteristics

	Default	Edited
SAAR (mm):	832	832
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

Default

Edited

Q_{BAR} (l/s):	11.66	11.66
1 in 1 year (l/s):	9.91	9.91
1 in 30 years (l/s):	26.83	26.83
1 in 100 year (l/s):	37.21	37.21
1 in 200 years (l/s):	43.62	43.62

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at 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 www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of 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, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
	Designed by: BK	Checked by: AK	Approved By: AK
Report Details: Type: Inflows Storm Phase: Phase	Company Address:		



1

Type : Catchment Area

Area (ha)	0.07
-----------	------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



2

Type : Catchment Area

Area (ha)	0.054
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



4.1

Type : Catchment Area

Area (ha)	0.128
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



4

Type : Catchment Area

Area (ha)	0.057
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

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P1.2

Type : Catchment Area

Area (ha)	0.049
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



P1.1

Type : Catchment Area

Area (ha)	0.051
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



1 2

Type : Catchment Area

Area (ha)	0.074
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



P2.1

Type : Catchment Area

Area (ha)	0.036
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

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P2.2

Type : Catchment Area

Area (ha)	0.036
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



2.2

Type : Catchment Area

Area (ha)	0.058
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



4 (1)

Type : Catchment Area

Area (ha)	0.057
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



P3.1

Type : Catchment Area

Area (ha)	0.042
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

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P4.1 (2)

Type : Catchment Area

Area (ha)	0.067
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Dynamic Sizing	
Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

4.1 (1)

Type : Catchment Area

Area (ha)	0.126
-----------	-------

Dynamic Sizing	
Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

P4.1

Type : Catchment Area

Area (ha)	0.057
-----------	-------

Dynamic Sizing	
Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

P4.1 (1)

Type : Catchment Area

Area (ha)	0.052
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Dynamic Sizing	
Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
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Report Details: Type: Inflows Storm Phase: Phase	Company Address:		



R1

Type : Catchment Area

Area (ha)	0.027
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



R2

Type : Catchment Area

Area (ha)	0.043
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



R3

Type : Catchment Area

Area (ha)	0.042
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



R5

Type : Catchment Area

Area (ha)	0.057
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
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R6

Type : Catchment Area

Area (ha)	0.035
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



R7

Type : Catchment Area

Area (ha)	0.038
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100



R8

Type : Catchment Area

Area (ha)	0.011
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

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Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



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Pond

Type : Pond

Dimensions

Exceedance Level (m)	14.900
Depth (m)	1.950
Base Level (m)	12.950
Freeboard (mm)	300
Initial Depth (m)	0.300
Porosity (%)	100
Average Slope (1:X)	4.865
Total Volume (m³)	1226.664

Depth (m)	Area (m²)	Volume (m³)
0.000	405.00	0.000
1.350	1009.00	923.964

Inlets

Inlet

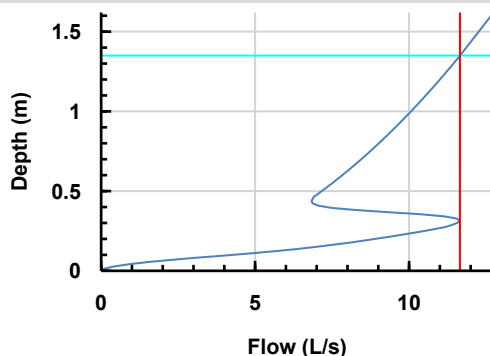
Inlet Type	Point Inflow
Incoming Item(s)	Pipe (7)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®
Invert Level (m)	13.250
Design Depth (m)	1.350
Design Flow (L/s)	11.66
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐

Unit Reference CHE-0142-1166-1350-1166



LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
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	Report Details: Type: Stormwater Controls Storm Phase: Phase		
Company Address:			

Advanced	
Perimeter	Circular
Length (m)	62.813
Friction Scheme	Manning's n
n	0.001

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Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



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P1.2

Type : Porous Paving

Dimensions	
Exceedance Level (m)	17.675
Depth (m)	0.620
Base Level (m)	17.055
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.127
Long. Slope (1:X)	80.00
Width (m)	59.319
Total Volume (m³)	53.511

Inlets	
Inlet	
Inlet Type	Lateral Inflow
Incoming Item(s)	P1.2
Bypass Destination	(None)
Capacity Type	No Restriction
Inlet (1)	
Inlet Type	Lateral Inflow
Incoming Item(s)	1 2
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets	
Outlet (1)	
Outgoing Connection	Pipe (1)
Outlet Type	Orifice
Diameter (m)	0.104
Coefficient of Discharge	0.600
Invert Level (m)	17.055

Advanced	
Conductivity (m/hr)	200.0

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
	Designed by: BK	Checked by: AK	Approved By: AK
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



P1.1

Type : Porous Paving

Dimensions

Exceedance Level (m)	17.887
Depth (m)	0.610
Base Level (m)	17.277
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.287
Long. Slope (1:X)	80.00
Width (m)	61.419
Total Volume (m³)	54.970

Inlets

Inlet (1)

Inlet Type	Lateral Inflow
Incoming Item(s)	P1.1
	1
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe
Outlet Type	Orifice
Diameter (m)	0.097
Coefficient of Discharge	0.600
Invert Level (m)	17.277

Advanced

Conductivity (m/hr)	200.0
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LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
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Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



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P2.1

Type : Porous Paving

Dimensions

Exceedance Level (m)	18.287
Depth (m)	0.610
Base Level (m)	17.677
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.287
Long. Slope (1:X)	80.00
Width (m)	43.607
Total Volume (m³)	39.028

Inlets

Inlet (2)

Inlet Type	Lateral Inflow
Incoming Item(s)	2.2 P2.1
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (3)
Outlet Type	Orifice
Diameter (m)	0.097
Coefficient of Discharge	0.600
Invert Level (m)	17.677

Advanced

Conductivity (m/hr)	200.0
---------------------	-------

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
	Designed by: BK	Checked by: AK	Approved By: AK
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



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P2.2

Type : Porous Paving

Dimensions

Exceedance Level (m)	18.075
Depth (m)	0.660
Base Level (m)	17.415
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.127
Long. Slope (1:X)	80.00
Width (m)	41.150
Total Volume (m³)	41.134

Inlets

Inlet (1)

Inlet Type	Lateral Inflow
Incoming Item(s)	2
	P2.2
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Orifice
Diameter (m)	0.087
Coefficient of Discharge	0.600
Invert Level (m)	17.415

Advanced

Conductivity (m/hr)	200.0
---------------------	-------

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
	Designed by: BK	Checked by: AK	Approved By: AK
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



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P3.1

Type : Porous Paving

Dimensions	
Exceedance Level (m)	18.188
Depth (m)	0.610
Base Level (m)	17.578
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.127
Long. Slope (1:X)	80.00
Width (m)	51.742
Total Volume (m³)	45.415

Inlets	
Inlet	
Inlet Type	Lateral Inflow
Incoming Item(s)	4
Bypass Destination	(None)
Capacity Type	No Restriction
Inlet (1)	
Inlet Type	Lateral Inflow
Incoming Item(s)	P3.1
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets	
Outlet	
Outgoing Connection	Pipe (9)
Outlet Type	Orifice
Diameter (m)	0.094
Coefficient of Discharge	0.600
Invert Level (m)	17.578

Advanced	
Conductivity (m/hr)	200.0

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
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P3.2

Type : Porous Paving

Dimensions	
Exceedance Level (m)	18.000
Depth (m)	0.610
Base Level (m)	17.390
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.127
Long. Slope (1:X)	80.00
Width (m)	64.379
Total Volume (m³)	56.506

Inlets	
Inlet (2)	
Inlet Type	Lateral Inflow
Incoming Item(s)	4 (1)
Bypass Destination	(None)
Capacity Type	No Restriction
Inlet	
Inlet Type	Lateral Inflow
Incoming Item(s)	P4.1 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets	
Outlet (1)	
Outgoing Connection	Pipe (8)
Outlet Type	Orifice
Diameter (m)	0.087
Coefficient of Discharge	0.600
Invert Level (m)	17.390

Advanced	
Conductivity (m/hr)	200.0

LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
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P4.2

Type : Porous Paving

Dimensions	
Exceedance Level (m)	16.575
Depth (m)	0.700
Base Level (m)	15.875
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.127
Long. Slope (1:X)	80.00
Width (m)	81.862
Total Volume (m³)	89.815

Inlets	
Inlet (2)	
Inlet Type	Lateral Inflow
Incoming Item(s)	4.1
Bypass Destination	(None)
Capacity Type	No Restriction
Inlet (3)	
Inlet Type	Lateral Inflow
Incoming Item(s)	P4.1 (2)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets	
Outlet	
Outgoing Connection	Pipe (10)
Outlet Type	Orifice
Diameter (m)	0.100
Coefficient of Discharge	0.600
Invert Level (m)	15.875

Advanced	
Conductivity (m/hr)	200.0

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P4.1

Type : Porous Paving

Dimensions

Exceedance Level (m)	16.780
Depth (m)	0.760
Base Level (m)	16.020
Paving Layer Depth (mm)	250
Membrane Percolation (m/hr)	1000.0
Porosity (%)	30
Length (m)	8.127
Long. Slope (1:X)	80.00
Width (m)	72.122
Total Volume (m³)	89.679

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	4.1 (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Lateral Inflow
Incoming Item(s)	P4.1
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet (1)

Outgoing Connection	Pipe (11)
Outlet Type	Orifice
Diameter (m)	0.102
Coefficient of Discharge	0.600
Invert Level (m)	16.020

Advanced

Conductivity (m/hr)	200.0
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LAND NORTH OF THE OLD BRICKWORKS:	Date: 30/05/2024		
	Designed by: BK	Checked by: AK	Approved By: AK
	Report Title: Rainfall Analysis Criteria		
Company Address:		 CONSULTING CIVIL AND STRUCTURAL ENGINEERS	

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall		Type: FEH
FEH		
Site Location	GB 521942 114478 TQ 21942 14478	
Rainfall Version	2022	
Summer	☒	
Winter	☒	

Return Period

Return Period (years)	Increase Rainfall (%)
30.0	25.000
100.0	25.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

APPENDIX E – SUDS MAINTENANCE AND MANAGEMENT SCHEDULE

LAND NORTH OF THE OLD BRICKWORKS, SHOREHAM RD, HENFIELD

PROPOSED MAINTENANCE & INSPECTION SCHEDULE FOR BELOW GROUND DRAINAGE

(FOUL WATER AND SURFACE WATER) INCLUDING SUSTAINABLE DRAINAGE SYSTEMS (SuDS)

Item	Required Maintenance/Monitoring	Suggested Frequency	Responsibility
Foul Water Drainage	Check inspection chambers and manholes for damage, condition and function.	Every six months	Facilities Management
	Undertake a CCTV drainage survey of the drainage network to establish condition.	Every ten years	Specialist
	Replace or repair malfunctioning parts or structures	As required	Specialist
Surface Water Drainage	Check inspection chambers and manholes for damage, condition and function.	Every six months	Facilities Management
	Undertake a CCTV drainage survey of the drainage network to establish condition.	Every ten years	Specialist
	Replace or repair malfunctioning parts or structures.	As required	Specialist
Gullies and Channel Drains	Check gullies and channel drains for damage, condition and function.	Every six months	Facilities Management
	Remove sediment, oil/grease, litter and debris.	As necessary	Facilities Management
	Replace or repair malfunctioning parts or structures.	As required	Specialist
Surface Water Catch Pits	Check silt traps and inspection chambers and note the rate of sediment accumulation. Remove sediment if present.	Every month for the first year and then annually, or as conditions require	Facilities Management
Surface Water Outfalls to Ponds, Swales and ditches	Check for outfall blockages.	Every six months	Facilities Management
	Check headwall erosion and condition.	Every six months and after periods of heavy rainfall	Facilities Management
	Repair damage, blockage or erosion.	As required	Specialist
Attenuation Ponds and Swales	Inspect for damage, blockages or erosion	Every six months and after periods of heavy rainfall	Facilities Management
	Litter and debris removal	As necessary	Facilities Management
	Shoreline/bank and aquatic vegetation management	Monthly during summer months, otherwise as required	Facilities Management
	Sediment management	Every month for the first year and then annually, or as conditions require	Facilities Management
Sub-base Attenuation	Sediment management	Every 5 years or as required.	Specialist
Petrol Interceptor and Treatment Plant units	Proprietary systems to be maintained in accordance with manufacturer's details.	Monthly monitoring.	Facilities Management
		Annual servicing and de-sludging or as usage dictates.	Specialist
General	Remove sediment, litter, debris and vegetation from the surface of pathways areas	As necessary and after heavy rainfall	Property owner
Flood Flow Routes	Ensure flood flow routes are not obstructed (i.e. lower lying portions of the land that will direct surface water runoff away from vulnerable assets in the event of drainage failure).	Every year and during periods of heavy rainfall	Facilities Management

NOTES

The site facilities management team will be responsible for the implementation of the maintenance schedule for below ground drainage, by appointing appropriate persons and/or sub-consultants that are qualified to undertake these operations.

Maintenance is to be carried out by the facilities management team or by a specialist contractor, as noted in Responsibility column above.

This maintenance schedule has been produced with reference to the guidelines outlined in 'The SuDS Manual' (CIRIA C753: 2015). The suggested frequency of maintenance is considered a guide, and should not replace the guidance from manufacturers of proprietary systems.

Refer to Engineering drawings for location and details of below ground drainage assets and SuDS features.