Applegarth Farm, Grayshott

Flood Risk Assessment and Drainage Strategy

For

Applegarth Farm

Document Control Sheet

Flood Risk Assessment and Drainage Strategy

Applegarth Farm, Grayshott

Applegarth Farm

This document has been issued and amended as follows:

Date	Issue	Prepared by	Approved by
25/02/21	Draft	VBH	NJ
25/02/21	Final	VBH	NJ

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Contents

Appendices

1.0 Introduction

1.1 Motion has been commissioned by Applegarth Farm to undertake a Flood Risk Assessment (FRA) and Drainage Strategy in support of a planning application for the proposed redevelopment of Applegarth Farm, Grayshott, GU26 6JL. The proposed site is approximately 1.7 hectare (ha) in size and currently comprises of a farm shop, restaurant, kitchen and a barn. The development proposals are for an extension of the existing farm shop, restaurant and kitchen with a new cooking school, greenhouse and growing school.

1.2 In 2014 Peter Brett undertook an FRA and drainage strategy for the site. The development proposals have been revised and therefore a new FRA and drainage strategy is required.

1.3 The aim of this FRA document is to satisfy the requirements of the Local Planning Authority, Lead Local Flood Authority (LLFA) and Environment Agency (EA) in relation to development and flood risk. Specific objectives of this FRA are to:

- Assess the proposed development against the requirements of the National Planning Policy Framework (NPPF).
- Assess whether the proposed development has taken appropriate consideration of the risk of flooding from all potential flood sources.
- Detail how the proposed development will be safe with respect to flooding during its lifetime and will not increase the risk of flooding to other sites.
- Produce a Drainage Strategy that will detail how the proposed development will not result in an increase in surface water that could cause flood risk to both the development and the neighbouring sites.

1.4 This report considers the requirements for carrying out an FRA as set out in the NPPF and has been prepared to comply with current EA and Flood Risk policy.

2.0 Site Description

2.1 The proposed site is located at Applegarth Farm, Grayshott, Hampshire. The nearest post code is GU26 6JL and the site co-ordinates are 485848, 135933.

2.2 The site is bounded to the west by the B3002 Headley Road and by a field to the northwest, northeast by residential development, southwest by an access road and southeast by Tennyson Way.

2.3 The application site is approximately 1.7 ha. The site currently comprises of a farm shop, restaurant, kitchen and a barn. An extract of the site layout can be found in full in **Appendix A**.

Topography

2.4 A topographical survey of the existing site was undertaken Lewis Brown Charted Land surveyors in January 2020 which is provided in **Appendix B** of this report. The site is relatively gently sloping from east to west with ground levels ranging from approximately 185.72 mAOD to 182.64 mAOD.

Geology

2.5 The British Geological Survey (BGS) online Geoindex Mapping indicates that the site is underlain by Hythe Formation made up of Sandstone. Sedimentary Bedrock with no superficial Head Deposits. Borehole records from the surrounding area have been obtained from the BGS online index, these can be found in **Appendix C**. These Borehole records support the findings of the BGS mapping

2.6 As part of the Applegarth Vale application which is the new residential development to the east of the site a Ground Contamination Assessment report was undertaken by PBA which indicated that the geology in the area is Hythe Formation overlying Atherfield Clay. The Hythe Beds area is known to have variable infiltration, so infiltration tests were undertaken to ascertain whether there is sufficient soakaway potential in the Hythe Formation. The infiltration results demonstrated that infiltration varies from 4.54 x $10m/s^{-5}$ to 9.53 x $10m/s^{-5}$. This means that infiltration techniques will be a viable means of managing surface runoff provided that infiltration systems are located in an appropriate location on site.

Existing Drainage Regime

2.7 The site is currently a combination of Greenfield and Brownfield development. Asset records obtained from Thames Water indicate there are no surface water sewers in close vicinity of the site. Therefore, it believed that the site currently drains via infiltration. Thames Water Records can be found in full in **Appendix D.**

2.8 The nearest watercourse to the site is the Whitmore vale stream (a tributary of the Wey) which flows in a northerly direction approximately 0.6km to the north of the site.

2.9 The total area of the site is 1.7 ha. UKSUDS was used to calculate the QBar Greenfield runoff rate for the entire site showing a result of 0.29 l/s or 0.22 l/s/ha. UKSUDS QBar outputs can be found in **Appendix E.**

3.0 Legislative and Policy Framework

Flood and Water Management Act

3.1 The Flood and Water Management Act 2010 (FWMA) received Royal Assent on 8th April 2010. The Act was introduced to enforce some of the key proposals set out within UK Government flood and water strategies along with UK Government's response to the Sir Michael Pitt's Review of the summer 2007 floods.

3.2 LLFA's including Hampshire County Council (HCC) have a responsibility under the FWMA to develop, maintain, apply and monitor the application of a strategy for local flood risk in their area. Local flood risk is defined as flood risk arising from surface run-off, groundwater and ordinary watercourses (i.e., non main rivers). The EA plays a role in managing the watercourses designated as 'main rivers'.

3.3 Relevant to the site, the FWMA will encourage the uptake of sustainable drainage systems (SuDS) by removing the automatic right to connect to sewers and providing for LLFA to adopt SuDS for new developments.

3.4 The development proposals will adhere to the Act through the provision of SuDS as a fundamental element of the surface water drainage system. Furthermore, the client is committed to work with the relevant stakeholders, such as the EA and HCC (the lead local flood authority), in implementing the requirements of the FWMA where necessary.

National Planning Policy Framework

3.5 The NPPF and the online 'planning practice guidance' set out the Government's planning policies for England and how these are expected to be applied. This includes ensuring that flood risk is taken into account at all stages of the planning process, avoiding inappropriate development in areas at risk of flooding and directing development away from those areas where risks are highest.

3.6 A site-specific FRA is required for proposals of 1ha or greater in Flood Zone 1, all proposals for development in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the EA). The FRA should identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account.

The Sequential and Exception Tests

3.7 The NPPF Sequential Test classifies proposed development into one of four Flood Zones, detailed in Table 3.1

Flood Zone	Annual Probability of Flooding (%)	Corresponding Annual Chance of Flooding (1 in x)
✓ Low Probability	Fluvial <0.1% Tidal <0.1%	>1,000 >1,000
✓ Medium Probability	Fluvial 0.1 – 1.0% Tidal 0.1 – 0.5%	1,000 – 100 1,000 – 200
✓ a) High Probability	Fluvial >1.0% Tidal >0.5%	<100 <200
✓ b) The Functional Floodplain	Fluvial >5.0%* Tidal >5.0%* *Starting point for consideration. LPAs should identify Functional Floodplain, which should not be defined solely by rigid probability parameters.	<20 <20

Table 3.1 Flood Zones

3.8 The NPPF specifies that the suitability of all new development in relation to flood risk should be assessed by applying the Sequential Test to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development proposed. The NPPF provides a summary of the different land use classifications, in the PPG table 2, and also provides guidance on the compatibility of each land use classification in relation to each of the Flood Zones as summarised in Table 3.2 below.

Flood Zone	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception test required	✓	✓
Zone 3a	Exception test required	✓	×	Exception test required	✓
Zone 3b	Exception test required	✓	×	×	×
Key: ✓ Development is appropriate × Development should not be permitted					

Table 3.2 Flood Risk Vulnerability Classification

East Hampshire Strategic Flood Risk Assessment

3.9 A Strategic Flood Risk Assessment (SFRA) was completed in 2018 for East Hampshire District Council. The primary objective of the SFRA is to help local authorities identify the areas that are at risk from all forms of flooding and to allocate development away from vulnerable flood risk areas. The SFRA recognises development on land outside Flood Zones 2 and 3 should be pursued first.

Lead Local Flood Authority

3.10 As of April 2015, the LLFA became a statutory consultee on all major planning applications. The LLFA is required to assess planning applications in respect of surface water drainage and sustainable drainage systems. HCC is the LLFA for Grayshott and wider Hampshire areas.

Environment Agency Flood Map

3.11 As part of this FRA a 'Flood Product 4' data request was submitted to the EA. The 'Flood Product 4' provided confirmation of the sites flood zone classification, a detailed flood map, information about historical flooding incidents and EA hydraulic model output data such as predicted fluvial/tidal flood water levels in the vicinity of the site. The response to this Flood Product data request is provided in **Appendix F**.

3.12 The EA Flood Map shows that the site is wholly located within Flood Zone 1 (less than 1 in 1000 annual probability of flooding from rivers or the sea).

3.13 In accordance with the NPPF, residential development is classed as a 'More Vulnerable' land use and as such the proposed development is appropriately located within in Flood Zone 1.

4.0 Flood Risk

4.1 In this section a number of potential sources of flooding have been considered and the probability of any likely impacts assessed.

Flooding from Rivers and the Sea

4.2 The EA Flood Map shows that the site is located wholly within Flood Zone 1 (less than 1 in 1000 annual probability of flooding from rivers or the sea).

4.3 The nearest watercourse to the site is the Whitmore vale stream (a tributary of the Wey) which flows in a northerly direction approximately 0.6km to the north of the site. **The site is therefore considered to be at very low risk of flooding from Rivers and Sea.**

Groundwater Flooding

4.4 Groundwater flooding occurs when water originating in aquifers reaches the surface, typically as a result of high groundwater levels caused by prolonged rainfall. It has been identified using public data provided by the BGS that the site is underlain by Hythe Formation made up of Sandstone. Sedimentary Bedrock with no superficial Head Deposits.

4.5 The SFRA has no records of the site being affected by groundwater flooding. **The site is therefore considered to be at very low risk of flooding from groundwater.**

Surface Water Flooding

4.6 Flooding from overland flow occurs when intense rainfall is unable to infiltrate into the ground or enter drainage systems resulting in localised flooding in low spots that provide no means of outfall.

4.7 The surface water flood map is illustrated in Figure 4.1 and found in full in **Appendix G**. The Surface Water flood map provides information concerning the risk of surface water flooding to the site. The Surface Water Flood Map shows the majority of the site is at 'Very Low' risk of surface water flooding (outside of the modelled 1 in 1000 rainfall event). However, there is an area of the site in the south eastern corner within 'Low' (between 1 in 1000 and 1 in 100 chance), 'Medium' (between 1 in 100 and 1 in 30 chance) and High (less than 1 in 30 chance) risk of surface water flooding. This area of flooding is located in the car park and the depth of flooding is less than 300mm. **The site is therefore considered to be at high to low risk of flooding from surface Water, but can be adequately managed without increasing risks to users of Applegarth Farm and neighbouring areas.**

Flooding from Infrastructure Failure

4.8 To control and convey surface water runoff from impermeable surfaces in urban areas, underground surface water sewers or combined sewers (foul and surface water) are often utilised in urban areas. Pipes, culverts etc. have a finite capacity and therefore pose a risk of flooding due to the risk of siltation, blockage, or collapse.

4.9 Asset records obtained from Thames Water indicate there are no surface water sewers in close vicinity of the site.

4.10 The SFRA has no records of the site being affected by flooding due to infrastructure failure. **The site is therefore considered to be at low risk of flooding from infrastructure failure.**

Flooding from Artificial sources

4.11 The EA provides a map showing the maximum potential flood extent, in the event that all reservoirs with a capacity of greater than 25,000 cubic metres were to fail and release the water they hold. The map shows that the site would not experience flooding in this scenario. There are no other significant artificial waterbodies in proximity of the site. **It is therefore concluded that the site is not at risk of flooding from artificial sources. The site is therefore considered to be at very low risk of flooding from artificial sources.**

5.0 SuDS Assessment

Sustainable Drainage Overview & Hierarchy

5.1 Current planning policy and EA guidance requires developments to employ SuDS (Sustainable Drainage Systems) techniques wherever feasible. Careful design of SuDS features can ensure that the site surface water drainage closely reflects the natural hydrology and hydrogeology of the site.

5.2 SuDS will attenuate and treat surface water run-off quantities at the source (source control) in line with National Planning Policy Framework and EA policies.

5.3 This use of SuDS is needed to replicate the pre-developed Greenfield conditions so as not to increase flood risk to the site or surrounding sites by managing excess run-off at the source.

5.4 Source control systems treat water close to the point of collection, in features such as soakaways, permeable paving and dry swales.

5.5 The key benefits of SuDS are as follows:

- Improving water quality over a conventional piped system by removing pollutants from diffuse pollutant sources (e.g., roads);
- Improving amenity through the provision of open green space and wildlife habitat; and
- Enabling a natural drainage regime which recharges groundwater (where possible).

5.6 SuDS provide a flexible approach to drainage, with a wide range of components from house soakaways to large-scale basins or ponds. The individual techniques should be used where possible in a management train which mimics the natural pre-development pattern of drainage. The Interim Code of Practice for SuDS set out the hierarchy of techniques. These are:

- Prevention – the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution;
- Source control – control of runoff at or very near its source (such as permeable paving or soakaways for individual houses);
- Site control – management of water from several sub-catchments (including routeing water from roofs and car parks to one large soakaway or infiltration basin for the whole site); and
- Regional control – management of runoff from several sites, typically in a detention pond or wetland.

Greenfield Runoff Rates

5.7 The total area of the site is 1.7 ha. UKSUDS was used to calculate the QBar Greenfield runoff rate for the entire site showing a result of 0.29 l/s or 0.22 l/s/ha. This output can be seen in **Appendix E.**

Proposed Sustainable Drainage Strategy

5.8 The proposed development will have an increase in the amount of hardstanding areas on site from the extension of the existing farm shop, restaurant and kitchen and construction of the new cooking school, greenhouse and growing school. A drainage strategy has been put in place so that the proposed development does not result in an increase in surface water that could cause potential flood risk to both the development and the neighbouring sites.

5.9 Asset records obtained from Thames Water indicate there are no surface water sewers in close vicinity of the site. Therefore, it has been assumed that the site currently drains via infiltration. Additionally, infiltration testing for recent developments adjacent to the site have demonstrated that infiltration is feasible. No further testing has been carried out at this stage because Applegarth Farm is still in use and it has therefore not been feasible to carry out testing on site. Further testing would be carried out to inform the detailed design following granting of planning permission.

5.10 MicroDrainage software was used to determine the size of the required attenuation for storm events up to the 1 in a 100-year storm (+ 40% increase for climate change). Based on MicroDrainage calculations 2,600m^2 of infiltration permeable paving which is 500mm deep with 30% void ratio will be required to drain the roads and parking areas. The main building and the area classed as natural stone paver will be drained by a 320m2 attenuation tank which is 1m deep with 95% void ratio. This is based on an infiltration rate of 0.02m/hr for the sides which is based on previous testing for the Applegarth Vale development and considered to be typical value for the area and an infiltration rate of 0.01m/hr for the best to represent any siltation. The model results can be found in full in **Appendix H**. The proposed surface water layout can be found in **Appendix I**. As shown in **Appendix I** there will be some impermeable surface areas on the roads. Here a drainage channel will collect and direct the water into the subbase, where it will infiltrate away. In addition, it is proposed to have water reuse tanks onsite which will increase to the surface water attenuation and also sustainable use of water.

5.11 An Exceedance Routing Plan for surface water is found in **Appendix J**. This details where surface water would flow to on site and where it would be stored in an extreme event.

5.12 SuDS features will contribute to improving water quality on site. The proposed SuDS features will include permeable paving. The SuDS Manual C753 provides guidance on pollution control and the site is classified as having a low pollution Hazard risk as illustrated in Table 5.1 which is an extract of the pollution Hazard Indices for different land use classifications. Using the simple index approach set out in C753, illustrated in Table 5.2, permeable paving on its own would achieve the required pollution control for a medium risk and therefore the development exceeds the required water quality for the type of land use.

Pollution Hazard Level	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	0.05
Individual property driveways, residential car parks, low traffic roads	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g hospitals, retail) all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g haulage, yards, lorry parks, highly frequented lorry parks to industrial estates, waste sites) sites where chemical and other fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways.	High	0.8	0.8	0.9

Table 5.1 Pollution hazard indices

Pollution Hazard Level	Total Suspended solids (TSS)	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7

Table 5.2 SuDS mitigation indices

6.0 SuDS Maintenance Regime

6.1 This section describes the proposed management and schedules for the maintenance to reduce the risk of the proposed network flooding due to poor maintenance.

Piped Network Maintenance

6.2 The piped network shall be maintained by either Thames Water, or an approved maintenance company in accordance with the Code for Adoption, Approved Document H and the manufactures guidance.

6.3 This maintenance schedule should include; clearing gullies, removing any large obstructions within the pipes and cleaning catchpits at regular intervals to ensure the correct operation of the sewer network.

Attenuation Storage Tanks and Permeable Paving

6.4 The proposed storage tanks, permeable paving and swale are to have a routine maintenance schedule that conforms to CIRIA SuDS Manual (C753) 2015 guidance. An approved maintenance company is to adhere to the maintenance schedule provided in Table 6.1 6.2 for attenuation storage tanks permeable paving and swales of the CIRIA guidance in order to ensure the correct operation of the drainage.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	Annually, or as required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table 6.1 Operation and maintenance requirements for attenuation storage tanks

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface).	Once a year, after autumn leaf fall, or reduced frequency as required, based on site specific observations of clogging or manufacturer's recommendations - pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas.	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying.	As required - once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised within 50mm of the level of the paving.	As requires
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to structural performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for 3 months after installation.
	inspect for evidence of poor operation and/or weed growth - if required, take remedial action.	Three-monthly, 48h after large storms in first 6 months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor inspection chambers	Annually

Table 6.2 Operation and maintenance requirements for pervious pavement

7.0 Summary

7.1 Motion has been commissioned by Applegarth Farm to undertake a Flood Risk Assessment (FRA) and Drainage Strategy in support of a planning application for the proposed redevelopment at Applegarth Farm, Grayshott, GU26 6JL. The proposed site is approximately 1.7 hectare (ha) in size and currently comprises of a farm shop, restaurant, kitchen and a barn. The development proposals are for an extension of the existing farm shop, restaurant and kitchen with a new cooking school, greenhouse and growing school.

7.2 In 2014 Peter Brett undertook an FRA and drainage strategy for the site. The development proposals have been revised and therefore a new FRA and drainage strategy is required.

7.3 The application site is approximately 1.7 ha. The site currently comprises of a farm shop, restaurant, kitchen and a barn and can currently be described as a combination of Brownfield and greenfield development.

7.4 The EA Flood Map shows that the site is located wholly within Flood Zone 1 (less than 1 in 1000 annual probability of flooding from rivers or the sea).

7.5 The British Geological Survey (BGS) online Geoindex Mapping indicates that the site is underlain by Hythe Formation made up of Sandstone. Sedimentary Bedrock with no superficial Head Deposits.

7.6 As part of the Applegarth Vale application which is the new residential development to the east of the site a Ground Contamination Assessment report was undertaken by PBA which indicated that the geology in the area is Hythe Formation overlying Atherfield Clay. The Hythe Beds area is known to have variable infiltration, so infiltration tests were undertaken to ascertain whether there is sufficient soakaway potential in the Hythe Formation. The infiltration results demonstrated that infiltration varies from 4.54 x 10^{-5} m/s to 9.53 x 10^{-5} m/s. This means that infiltration techniques will be a viable means of managing surface runoff provided that infiltration systems are located in an appropriate location on site.

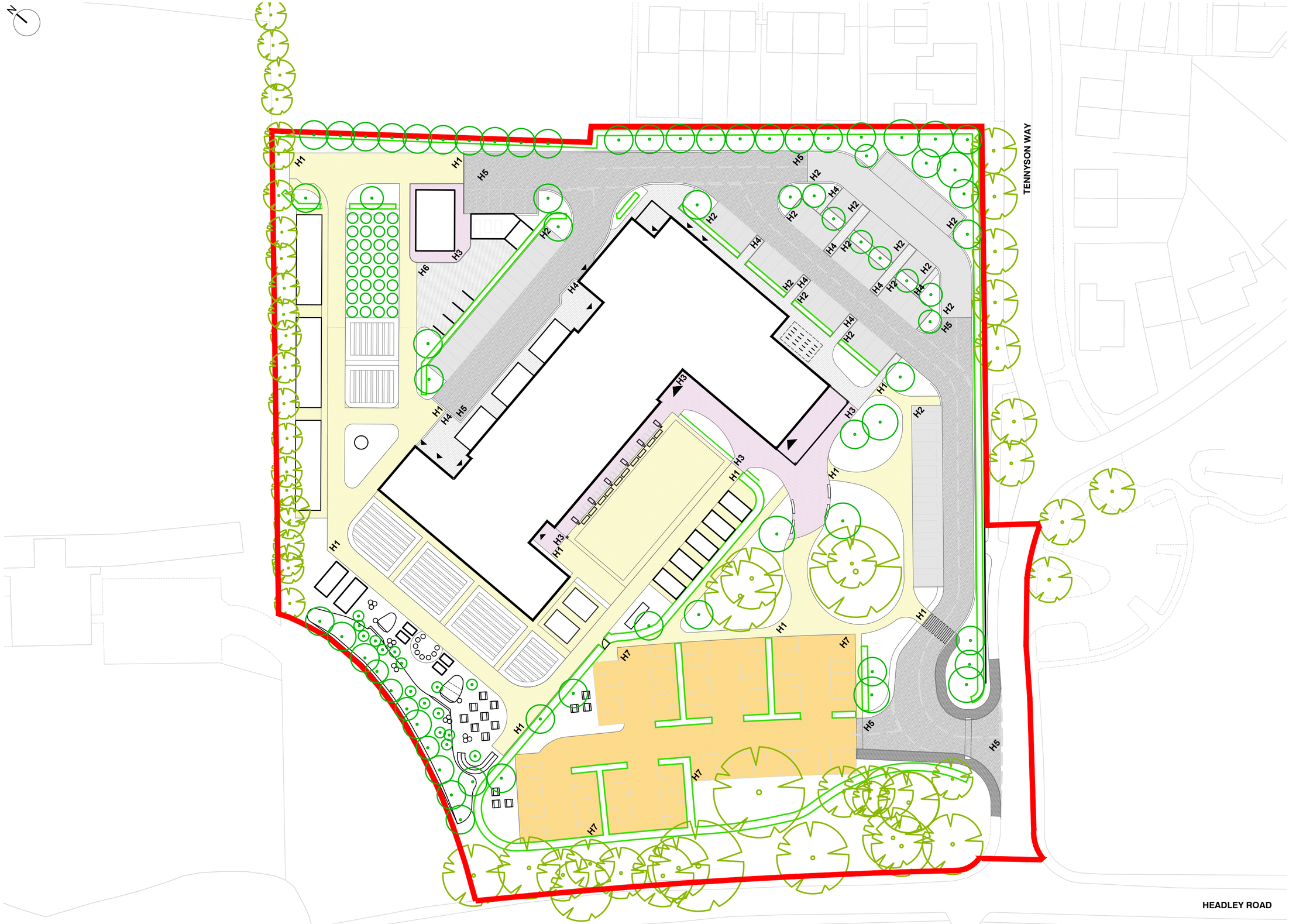
7.7 Based on MicroDrainage calculations 2600m^2 of infiltration permeable paving which is 500mm deep with 30% void ratio will be required to drain the roads and parking areas. The main building and area classed as natural stone paver will be drained by a 320m^2 attenuation tank which is 1m deep with 95% void ratio. This is based on an infiltration rate of 0.02m/hr for the sides which is believed to be typical value for the area and an infiltration rate of 0.01m/hr for the best to represent any siltation. As shown in drainage strategy there will be some impermeable surface areas on the roads. Here a drainage channel will collect and direct the water into the subbase, where it will infiltrate away. In addition, it is proposed to have water reuse tanks onsite which will increase to the surface water attenuation and also sustainable use of water.

7.8 SuDS features will contribute to improving water quality on site. The proposed SuDS features will include permeable paving. The SuDS Manual C753 provides guidance on pollution control and the site is classified as having a low pollution Hazard risk. Using the simple index approach, permeable paving on its own would achieve the required pollution control for a medium risk, therefore the development provides more than the required water quality on site.

7.9 This report demonstrates that the revised drainage scheme will not result in an increased risk of flooding on site or to neighbouring areas. Therefore, it can be concluded that the flood risk from the proposed development can be managed on site without increasing the risk to any neighbouring developments or downstream areas, and therefore fulfils the requirements of the existing planning permission and the PPG and NPPF.

Appendix A

Illustrative Master Plan



NOTES

All dimensions to be verified on site. Do not scale this drawing. All discrepancies to be clarified with project Landscape Architect.

1. *DRAWINGS FOR PLANNING PURPOSE ONLY.*
2. *Drawings based on digital information survey provided by Lewis Brown.*
3. *For Softworks see Drawing 291-UW-P-005.*
4. *For Planting Plan see Drawing 291-UW-P-007.*

KEY

Site Boundary

SURFACES

H1 - Self-Binding Aggregate with granite sett trim

H2 - Permeable block paving

H3 - Natural Stone Paver; Locally soured sandstone

H4 - Concrete paver to compliment buff/grey colours of H1, H2, H3

H5 - Asphalt surface to access road and north car park

H6 - Concrete surface to compound area

H7 - ABG, SUDSPave or similar with buff aggregate infill. Areas within RPA of retained trees using no dig construction

Chesnut Post and Rail Fencing

Building Entrance

rev	details	date
E	*Existing trees (retained) added*	18 Feb 21
D	*Red Line Boundary amended*	9 Feb 21
C	*Access off Tennyson Way amended*	29 Jan 21
B	*Redline boundary amended*	19 Jan 21
A	*H7 Added and green strip within north car park added*	15 Dec 20
-	*First Issue*	8 Dec 20

URBAN WILDERNESS

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client
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project
Applegarth Farm

drawing title
Hardworks - General Arrangement

drawing status
PLANNING

drawn by	checked by	date
SDJ	*TBR*	*8 Dec 20*

scale	paper size
1:500	*A2*

job/dwg no.	rev.
291-UW-P-004	*E*

Appendix B

Topographical Survey

LEVEL INFORMATION

Heights in Metres
Datum Derived From: GPS Derived - ST10

O.S.B.M. Location: N/A
Value: 185.785 A.O.D.

Active Station Locations: CHIO,POOL,SANO,SOTN,WARS
Conversions Used: OSTN02;_OSGM02

COORDINATE INFORMATION

Values in Metres
All Coordinates are: TRUE NATIONAL GRID
Scale Factor: 0.99965586683

SURVEY STATION SCHEDULE

STN	TYPE	EASTINGS	NORTHINGS	LEVEL
ST01	WP	485817.514	135733.891	182.914
ST02	WP	485748.258	135816.763	182.969
ST03	PKN	485859.800	135778.327	184.092
ST3A	HN	485849.384	135796.724	184.472
ST3B	WP	485893.045	135773.048	184.540
ST04	WP	485913.818	135623.683	183.208
ST05	WP	485966.555	135632.674	184.006
ST06	WP	485826.894	135816.269	183.997
ST07	WP	485880.213	135866.172	187.600
ST7A	WP	485868.936	135811.786	184.732
ST08	PKN	485914.402	135869.356	185.658
ST09	PKN	485966.447	135915.195	186.024
ST9A	WP	485920.188	135958.301	186.086
ST10	WP	485991.472	135946.513	185.785
ST11	WP	486089.586	135849.659	184.381
ST12	WP	486160.836	135708.872	185.359
ST13	WP	486052.863	135612.970	184.798
S13A	WP	486043.713	135552.427	184.302

ABBREVIATIONS

General

(A)	Approximate	IC	Inspection Cover
AIF	Angle Iron Fence	IL	Invert Level
(AR)	Assumed Route	IRF	Iron Rail Fence
Avg	Average	IWF	Inter Woven Fence
BD	Bollard	KO	Kerb Outlet
Bin	Litter Bin	Ldr	Ladder
Bld	Building	LP	Lamp Post
BLW	Block Wall	MH	Manhole
BS	Bush	MHR	Metal Hand Rail
BT	British Telecom Inspection Chamber	MK	Marker
BW	Brick Wall	MP	Metal Post
BWF	Barbed Wire Fence	MPRF	Metal Post & Rail Fence
Cab	Cabinet	o/h	Overhead
CB	Crash Barrier	o/l	Outline
CBF	Close Boarded Fence	OSBM	Ordnance Survey Bench Mark
CDC	Concrete Drainage Channel	PalF	Pallisade Fence
CE	Concrete Edging	Pav	Paviors
ChP	Chestnut Paling	PI	Pipe Into Ground
CI	Cable Into Ground	Plt	Pavement Light
CIF	Corrugated Iron Fence	(R)	Records
CL	Cover Level	RE	Rodding Eye
CLF	Chain Link Fence	RS	Road Sign
CM	Cable Marker	RSJ	Rolled Steel Joist
Col	Column	RW	Retaining Wall
Conc	Concrete	SD	Slot Drain
CP	Concrete Post	SE	Stone Edging
CPS	Concrete Paving Slabs	SecF	Security Fence
CT	Cable TV Inspection Chamber	Shb	Shrubs
CW	Concrete Wall	SL	Soffit Level
d	Depth	Slt	Spotlight
Dil	Dilapidated	SN	Sign
DK	Drop Kerb	SV	Stop Valve
DP	Rainwater Down Pipe	SVMK	Stop Valve Marker
DSW	Dry Stone Wall	SW	Stone Wall
Ea	Earth	SWIC	Storm Water Inspection Chamber
EIC	Electricity Inspection Chamber	SY	Stay
EM	Electricity Meter	Tar	Tarmac
EP	Electricity Pole	ThL	Threshold Level
ER	Earth Rod	TL	Traffic Light
ETL	Electricity Transmission Lines	TMIC	Traffic Management IC
F	Fence	TP	Telegraph Pole
FH	Fire Hydrant	TPS	Tactile Paving Slabs
FHMK	Fire Hydrant Marker	TTL	Telephone Transmission Line
FL	Floor Level	u/g	Underground
Flb	Flowerbed	UTL	Unable To Lift
Flt	Floodlight	Veg	Vegetation
FP	Footpath	VP	Vent Pipe
FWIC	Foul Water Inspection Chamber	VT	Vent
GM	Gas Meter	W	Wall
GMK	Gas Marker	WE	Wood Edging
GP	Gate Post	WL	Water Level
Gr	Grass	WM	Water Meter
GV	Gas Valve	WMF	Wire Mesh Fence
Gvl	Gravel	WMK	Water Meter Marker
GY	Gully	WO	Wash Out
h	Height	WP	Wooden Post
Hc	Hardcore	WPR	Wooden Post & Rail Fence
IB	Illuminated Bollard		

Station Abreviations

HN	Hilti Nail	PKN	Parker Kalon Nail
PGM	Permanent Ground Marker	WP	Wooden Peg

NOTES

SCALE
Information has been gathered for the quoted scale.
Any enlargement should be verified on site.

DRAINAGE
Pipe sizes and connections are determined from surface level inspection and service records where available.

UNDERGROUND SERVICES
Any underground services shown on this survey are from information on service enquiries and tracing with Electrolocation equipment.
Some underground services may be undetectable, e.g. non-conductive pipes or cables and therefore NOT SHOWN

CONTOURS
Any contours depicted on this drawing have been interpolated from surveyed points, levels and features.
The contour line positions have been generated by ground modelling software and are INDICATIVE only.

SHEET DIAGRAM

Rev.	Date	Amendments

THE SURVEY ASSOCIATION
LEWIS BROWN
Chartered Land Surveyors
RICS

Quattro House
Castle Road
Chelston Business Park
Wellington
TA21 9JQ

Tel. 01823 667200
Fax. 01823 663266

www.lewisbrown.co.uk
Email. survey@lewisbrown.co.uk

Lewis Brown Limited Registered in England No. 4193534

CLIENT:
URBAN WILDERNESS
7 SAW MILL YARD
WATER LANE
HOLBECK
LEEDS, LS11 5WH

TITLE:
APPLEGARTH FARM
GRAYSHOTT
HAMPSHIRE

TOPOGRAPHICAL SURVEY

Drawing Number:		Revision:
A19392_2D_SX		A
Scale:	Sheet:	Survey Date:
1:500	A0 1 of 1	January 2020
Drawn:	Checked:	Project Number:
MM/SB	RDJB	A19392

Appendix C

Borehole Data

SU 83/32A
SU83NE/12
855 359

SU 855 359

A

Bramshott.

Ordn. Map 301, new ser. Geol. Map, 8.

GRAYSHOTT DOWN. [? Ludshott Common of new map.] Shaft in which Fullers' earth was found.

Communicated by Mr. J. M. PEAKE, who got the section from the well-sinker in 1890. Well made some years before.

		Thickness. Feet.	Depth. Feet.
[Lower Greensand ? Hythe Beds.]	White sand	3	3
	Strong loam	15	18
	White sand-rock	40	58
	Veins of red sand	4	62
	Sand-rock	1¼	63¼
	Ragged rock	7	70¼
	Sharp rocky sand or sandstone	5	75¼
	Hard solid sand-rock	7	82¼
	Fullers' earth	2	84¼
	Green rock	20	104¼
	Green sand (to water)	6	110¼

H
EHE 1961

? Greyshott Hall
6" Survey 44NW.E O.D. about 590
? Hants 37SW/E
~ Surrey

Parish: Grayshott
~~Surrey 44 NW/E~~
Hants 37 NW/W
(S.B.)

gm Peake Oak Cottage Lip Book 19th Directory

Grayshott Hall was probably built about 1880 in 1870,
changing from ... and ... this map
S.E.H. 22.10.42.

Visited. Information from Mr Chadwick. ~~The well~~ sited on Survey 44 NW/E as ~~was the only~~ deep well on the estate. Now ~~blocked over~~ ~~transferred to~~ ~~exact~~ position lost. O.D. +570. Bulls Farm
9-7-58 OSK.

Hants 37SW/W

Visited.

Grayshott Hall now Grayshott House. Several old wells but no trace now. O.D. t.c. 590. As S.E.H. comments above this well probably was at Grayshott House as it was made at a similar time as the house was built.
VAT 21-9-65

Published in
'The Water Supply of Hampshire',
Page 70

SU 83 NE 12 855 389

301

SU83/32

79

Bramshott.

Ordn. Map 301, new ser. Geol. Map, 8.

GRAYSHOTT DOWN. [? Ludshott Common of new map.] Shaft in which Fullers' earth was found.

Communicated by Mr. J. M. PEAKE, who got the section from the well-sinker in 1890. Well made some years before.

		Thickness. Feet.	Depth. Feet.
[Lower Greensand ? Hythe Beds.]	White sand	3	3
	Strong loam	15	18
	White sand-rock	40	58
	Veins of red sand	4	62
	Sand-rock	1½	63½
	Ragged rock	7	70½
	Sharp rocky sand or sandstone	5	75½
	Hard solid sand-rock	7	82½
	Fullers' earth	2	84½
	Green rock	20	104½
	Green sand (to water)	6	110½

? Grayshott Hall

6" Surrey 44NWE O.D. about 590 (S.B.)

? Hants 37 SW/SE [illegible]

J M Peake Oak Cottage, Liphook 19" Taverley

Graysh[ott] Hall was probably built about 1880 or 1890, judging from 1 inch & 6 inch maps.

S.C.A.H. 22.10.42

Published in 'The Water Supply of Hampshire', Page 79

SU 83 NE 15 Surrey 67

1

WELL BORING at Thursley (Red Lodge) County ~~Sussex~~ Surrey

Geol. map 1 in. map New Series 301 6 in. map 301

Made by Duke + Ockenden, Ltd Date December 1913

Sunk 106 feet. Bored to 207 feet.

Communicated by Duke + Ockenden, Ltd

Height above Ordnance Datum 325 Rest level of water 92 ft

Yield

Quality (with copy of analysis on separate sheet) [illegible]

59

SU83/35

GEOLOGICAL FORMATION.	NATURE OF STRATA.	THICKNESS. Feet.	THICKNESS. Inches.	DEPTH. Feet.	DEPTH. Inches.
F.B. + S.B. 142	Sandstone (106 – 132)	26	–	132	-
	Sand	10	-	142	-
? Folkestone Beds	Rock.	1	-	143	-
? Bargate Stone	Sand.	18	-	161	-
Hythe Beds	Rock.	-	6	161	6
H.B. 65	Sandstone	8	6	170	-
	Sand (with clay).	24	-	194	-
	Sand.	13	-	207	-

JAR S.C.A.H. 20.10.42.

4. VI. 40

4½" tubes 84' – 187'
Sandscreen at bottom
16' of well filled in

Thursley, ½ in. NNE of [illegible]

6 in. Surrey 37 NE (E). O.D. + 325. The Red Lodge. Disused and covered over, supply having failed. Supply now from large rain collecting tanks.

Visited, S.C.A.H. 3.4.41.

Geological Survey and Museum,
Jermyn Street. London. S.W.

Appendix D

Thames Water Asset Mapping

Asset location search

Property Searches

motion
GUILDFORD
GU1 4AU

Search address supplied Applegarth Farm
Headley Road
Grayshott
Hindhead
GU26 6JL

Your reference Applegarth farm

Our reference ALS/ALS Standard/2020_4314073

Search date 1 December 2020

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

Asset location search

Property Searches

Search address supplied: Applegarth Farm, Headley Road, Grayshott, Hindhead, GU26 6JL

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

South East Water
Rocfort Road
Snodland

Asset location search

Property Searches

Kent
ME6 5AH

Tel: 0845 301 0845

www.southeastwater.co.uk.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4314073

The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 485846,135876

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
8601	183.2	179.03
8702	183.42	178.66
7801	182.66	178.34
6801	180.88	178.04

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve

Drop Pipe

Ancillary

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Outfall

Undefined End

Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plans are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole level indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0845 070 9148** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Appendix E

UKSuDS QBar Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	victoria berg-holdo
Site name:	applegarth
Site location:	applegarth

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:	51.11522° N
Longitude:	0.77455° W
Reference:	753198282
Date:	Nov 30 2020 13:03

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 1

Methodology

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

Soil characteristics

	Default	Edited
SOIL type:	1	1
HOST class:	N/A	N/A
SPR/SPRHOST:	0.1	0.1

Hydrological characteristics

	Default	Edited
SAAR (mm):	893	893
Hydrological region:	6	6
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

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.

(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.

(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):	0.22	0.22
1 in 1 year (l/s):	0.19	0.19
1 in 30 years (l/s):	0.51	0.51
1 in 100 year (l/s):	0.71	0.71
1 in 200 years (l/s):	0.84	0.84

Appendix F

EA Flood Map

Flood map for planning

Your reference	Location (easting/northing)	Created
Applegarth	**485850/135867**	**30 Nov 2020 12:56**

Your selected location is in flood zone 1, an area with a low probability of flooding.

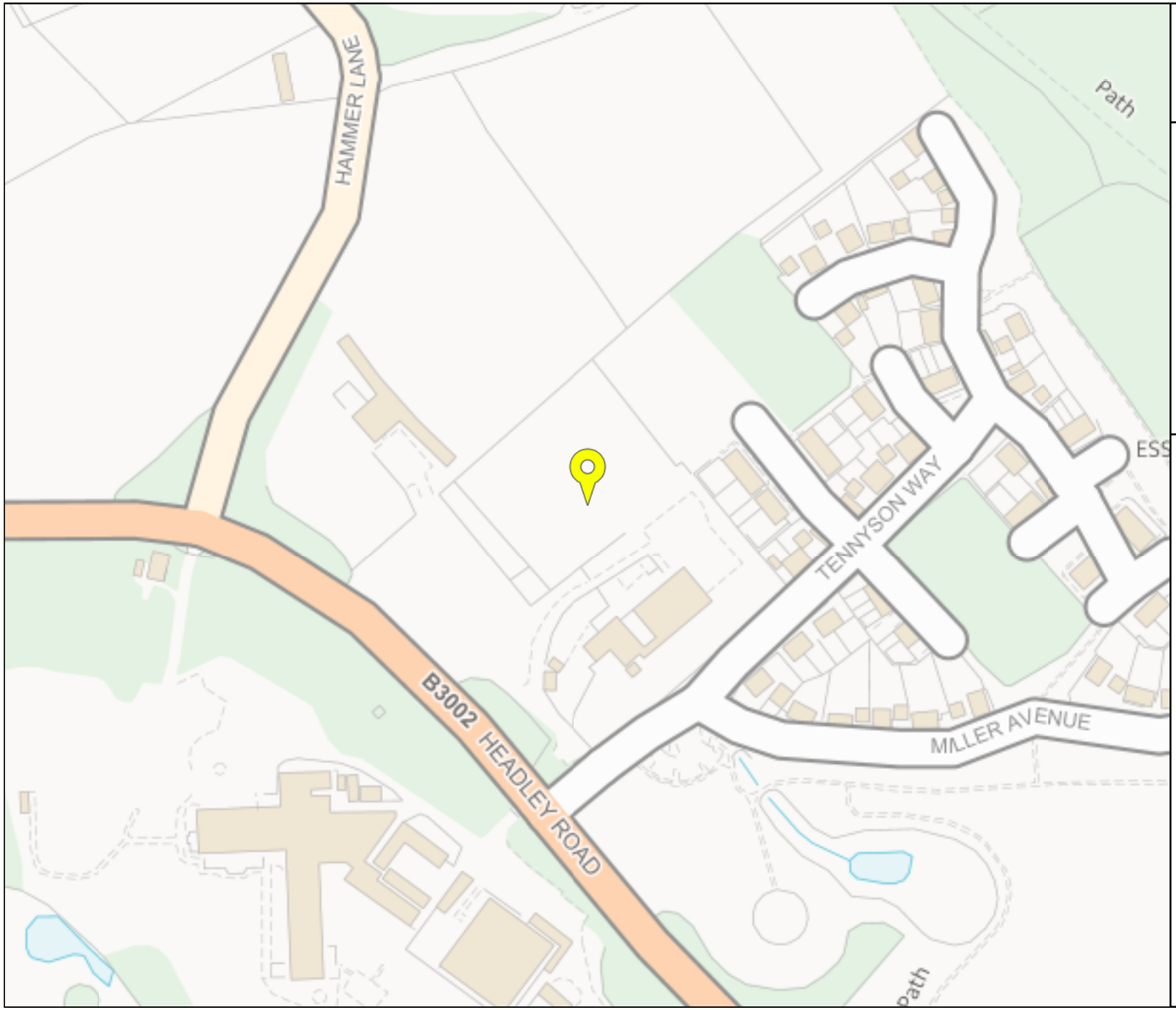
This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
Applegarth

Location (easting/northing)
485850/135867

Scale
1:2500

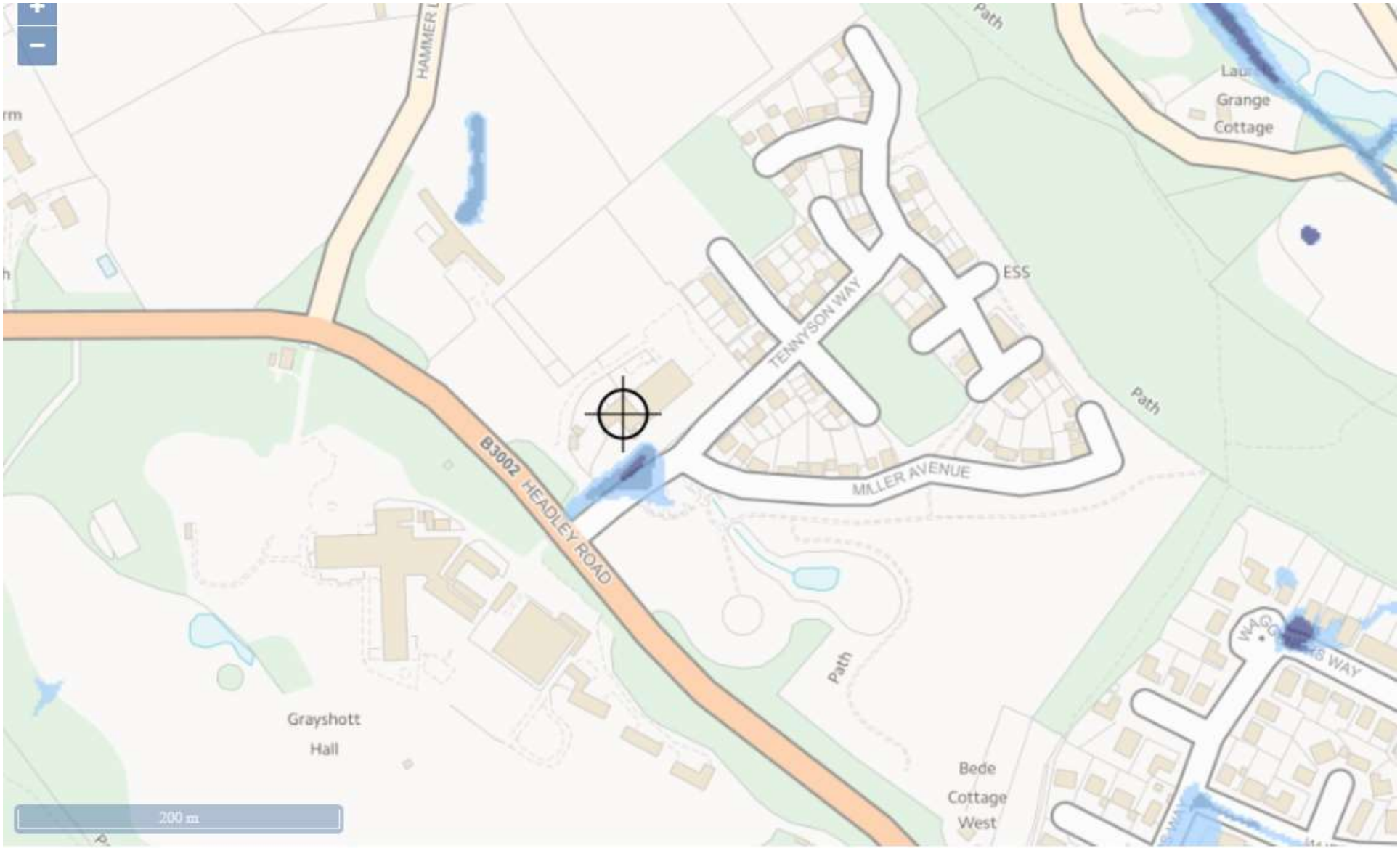
Created
30 Nov 2020 12:56

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

Appendix G

Surface Water Flood Map



Extent of flooding from surface water

High Medium Low Very low Location you selected

Appendix H

MicroDrainage Calculations

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 960 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	184.958	0.058	3.6	143.7	O K
30 min Summer	184.977	0.077	3.7	191.3	O K
60 min Summer	184.998	0.098	3.7	241.3	O K
120 min Summer	185.017	0.117	3.7	290.2	O K
180 min Summer	185.028	0.128	3.7	315.4	O K
240 min Summer	185.034	0.134	3.7	330.3	O K
360 min Summer	185.041	0.141	3.7	349.1	O K
480 min Summer	185.045	0.145	3.7	358.4	O K
600 min Summer	185.047	0.147	3.7	362.3	O K
720 min Summer	185.047	0.147	3.7	362.7	O K
960 min Summer	185.046	0.146	3.7	360.9	O K
1440 min Summer	185.043	0.143	3.7	352.9	O K
2160 min Summer	185.036	0.136	3.7	335.1	O K
2880 min Summer	185.027	0.127	3.7	314.4	O K
4320 min Summer	185.010	0.110	3.7	272.7	O K
5760 min Summer	184.995	0.095	3.7	234.6	O K
7200 min Summer	184.982	0.082	3.7	201.8	O K
8640 min Summer	184.971	0.071	3.7	174.6	O K
10080 min Summer	184.962	0.062	3.6	152.5	O K
15 min Winter	184.965	0.065	3.6	161.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	132.767	0.0	26
30 min Summer	88.880	0.0	41
60 min Summer	56.713	0.0	70
120 min Summer	34.891	0.0	128
180 min Summer	25.851	0.0	188
240 min Summer	20.752	0.0	246
360 min Summer	15.248	0.0	364
480 min Summer	12.232	0.0	482
600 min Summer	10.302	0.0	602
720 min Summer	8.948	0.0	704
960 min Summer	7.158	0.0	808
1440 min Summer	5.216	0.0	1054
2160 min Summer	3.793	0.0	1456
2880 min Summer	3.022	0.0	1856
4320 min Summer	2.190	0.0	2648
5760 min Summer	1.740	0.0	3416
7200 min Summer	1.456	0.0	4176
8640 min Summer	1.260	0.0	4848
10080 min Summer	1.114	0.0	5544
15 min Winter	132.767	0.0	26

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	184.987	0.087	3.7	214.8	O K
60 min Winter	185.010	0.110	3.7	271.2	O K
120 min Winter	185.032	0.132	3.7	326.8	O K
180 min Winter	185.044	0.144	3.7	356.0	O K
240 min Winter	185.051	0.151	3.7	373.6	O K
360 min Winter	185.060	0.160	3.7	396.4	O K
480 min Winter	185.065	0.165	3.7	408.7	O K
600 min Winter	185.068	0.168	3.7	415.1	O K
720 min Winter	185.069	0.169	3.7	417.7	O K
960 min Winter	185.068	0.168	3.7	415.6	O K
1440 min Winter	185.063	0.163	3.7	401.9	O K
2160 min Winter	185.052	0.152	3.7	375.8	O K
2880 min Winter	185.039	0.139	3.7	344.5	O K
4320 min Winter	185.014	0.114	3.7	281.0	O K
5760 min Winter	184.991	0.091	3.7	223.7	O K
7200 min Winter	184.971	0.071	3.7	176.3	O K
8640 min Winter	184.957	0.057	3.6	140.9	O K
10080 min Winter	184.949	0.049	3.5	120.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	88.880	0.0	40
60 min Winter	56.713	0.0	70
120 min Winter	34.891	0.0	126
180 min Winter	25.851	0.0	184
240 min Winter	20.752	0.0	242
360 min Winter	15.248	0.0	358
480 min Winter	12.232	0.0	472
600 min Winter	10.302	0.0	586
720 min Winter	8.948	0.0	696
960 min Winter	7.158	0.0	908
1440 min Winter	5.216	0.0	1132
2160 min Winter	3.793	0.0	1588
2880 min Winter	3.022	0.0	2028
4320 min Winter	2.190	0.0	2860
5760 min Winter	1.740	0.0	3632
7200 min Winter	1.456	0.0	4328
8640 min Winter	1.260	0.0	4936
10080 min Winter	1.114	0.0	5544

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.357	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.590

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.197	4	8	0.197	8	12	0.197

Model Details

Storage is Online Cover Level (m) 185.900

Cellular Storage Structure

Invert Level (m) 184.900 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.02000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	2600.0	2600.0	0.510	0.0	2703.0
0.500	2600.0	2702.0			

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 4159 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	184.852	0.252	0.5	76.6	O K
30 min Summer	184.937	0.337	0.5	102.4	O K
60 min Summer	185.028	0.428	0.5	130.1	O K
120 min Summer	185.123	0.523	0.5	158.9	O K
180 min Summer	185.177	0.577	0.6	175.3	O K
240 min Summer	185.213	0.613	0.6	186.2	O K
360 min Summer	185.266	0.666	0.6	202.5	O K
480 min Summer	185.303	0.703	0.6	213.8	O K
600 min Summer	185.331	0.731	0.6	222.2	O K
720 min Summer	185.353	0.753	0.6	228.8	O K
960 min Summer	185.384	0.784	0.6	238.3	O K
1440 min Summer	185.418	0.818	0.6	248.7	O K
2160 min Summer	185.434	0.834	0.6	253.6	O K
2880 min Summer	185.429	0.829	0.6	252.0	O K
4320 min Summer	185.402	0.802	0.6	243.7	O K
5760 min Summer	185.373	0.773	0.6	234.9	O K
7200 min Summer	185.345	0.745	0.6	226.6	O K
8640 min Summer	185.320	0.720	0.6	219.0	O K
10080 min Summer	185.297	0.697	0.6	211.8	O K
15 min Winter	184.882	0.282	0.5	85.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	132.767	0.0	27
30 min Summer	88.880	0.0	42
60 min Summer	56.713	0.0	72
120 min Summer	34.891	0.0	132
180 min Summer	25.851	0.0	190
240 min Summer	20.752	0.0	250
360 min Summer	15.248	0.0	370
480 min Summer	12.232	0.0	490
600 min Summer	10.302	0.0	608
720 min Summer	8.948	0.0	728
960 min Summer	7.158	0.0	968
1440 min Summer	5.216	0.0	1446
2160 min Summer	3.793	0.0	2164
2880 min Summer	3.022	0.0	2880
4320 min Summer	2.190	0.0	3588
5760 min Summer	1.740	0.0	4328
7200 min Summer	1.456	0.0	5112
8640 min Summer	1.260	0.0	5896
10080 min Summer	1.114	0.0	6760
15 min Winter	132.767	0.0	27

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	184.978	0.378	0.5	114.8	O K
60 min Winter	185.080	0.480	0.5	145.9	O K
120 min Winter	185.187	0.587	0.6	178.3	O K
180 min Winter	185.248	0.648	0.6	196.9	O K
240 min Winter	185.289	0.689	0.6	209.4	O K
360 min Winter	185.350	0.750	0.6	228.0	O K
480 min Winter	185.393	0.793	0.6	241.0	O K
600 min Winter	185.425	0.825	0.6	250.9	O K
720 min Winter	185.451	0.851	0.6	258.7	O K
960 min Winter	185.488	0.888	0.6	270.1	O K
1440 min Winter	185.532	0.932	0.6	283.3	O K
2160 min Winter	185.558	0.958	0.6	291.4	O K
2880 min Winter	185.561	0.961	0.6	292.3	O K
4320 min Winter	185.535	0.935	0.6	284.3	O K
5760 min Winter	185.498	0.898	0.6	273.1	O K
7200 min Winter	185.464	0.864	0.6	262.6	O K
8640 min Winter	185.430	0.830	0.6	252.3	O K
10080 min Winter	185.396	0.796	0.6	242.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	88.880	0.0	41
60 min Winter	56.713	0.0	70
120 min Winter	34.891	0.0	130
180 min Winter	25.851	0.0	188
240 min Winter	20.752	0.0	246
360 min Winter	15.248	0.0	364
480 min Winter	12.232	0.0	482
600 min Winter	10.302	0.0	600
720 min Winter	8.948	0.0	718
960 min Winter	7.158	0.0	952
1440 min Winter	5.216	0.0	1418
2160 min Winter	3.793	0.0	2104
2880 min Winter	3.022	0.0	2772
4320 min Winter	2.190	0.0	4028
5760 min Winter	1.740	0.0	4560
7200 min Winter	1.456	0.0	5480
8640 min Winter	1.260	0.0	6400
10080 min Winter	1.114	0.0	7360

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.357	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.310

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.103	4	8	0.103	8	12	0.103

Model Details

Storage is Online Cover Level (m) 185.900

Cellular Storage Structure

Invert Level (m) 184.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.02000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	320.0	320.0	1.010	0.0	391.9
1.000	320.0	391.6			

Summary of Results for 30 year Return Period

Half Drain Time : 525 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	184.932	0.032	2.3	79.1	O K
30 min Summer	184.942	0.042	3.0	103.6	O K
60 min Summer	184.952	0.052	3.6	128.4	O K
120 min Summer	184.962	0.062	3.6	152.1	O K
180 min Summer	184.966	0.066	3.6	163.6	O K
240 min Summer	184.969	0.069	3.7	169.8	O K
360 min Summer	184.971	0.071	3.7	175.6	O K
480 min Summer	184.972	0.072	3.7	178.3	O K
600 min Summer	184.973	0.073	3.7	179.7	O K
720 min Summer	184.973	0.073	3.7	180.1	O K
960 min Summer	184.973	0.073	3.7	179.2	O K
1440 min Summer	184.970	0.070	3.7	173.0	O K
2160 min Summer	184.965	0.065	3.6	159.9	O K
2880 min Summer	184.959	0.059	3.6	146.3	O K
4320 min Summer	184.950	0.050	3.6	124.0	O K
5760 min Summer	184.945	0.045	3.3	110.4	O K
7200 min Summer	184.940	0.040	2.9	99.8	O K
8640 min Summer	184.937	0.037	2.7	91.5	O K
10080 min Summer	184.934	0.034	2.5	84.5	O K
15 min Winter	184.936	0.036	2.6	88.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	73.170	0.0	26
30 min Summer	48.530	0.0	40
60 min Summer	30.811	0.0	68
120 min Summer	18.973	0.0	126
180 min Summer	14.120	0.0	184
240 min Summer	11.394	0.0	242
360 min Summer	8.424	0.0	342
480 min Summer	6.790	0.0	398
600 min Summer	5.740	0.0	460
720 min Summer	5.002	0.0	524
960 min Summer	4.023	0.0	662
1440 min Summer	2.956	0.0	932
2160 min Summer	2.169	0.0	1332
2880 min Summer	1.740	0.0	1712
4320 min Summer	1.273	0.0	2428
5760 min Summer	1.020	0.0	3176
7200 min Summer	0.858	0.0	3904
8640 min Summer	0.746	0.0	4664
10080 min Summer	0.662	0.0	5352
15 min Winter	73.170	0.0	26

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	184.947	0.047	3.4	116.2	O K
60 min Winter	184.959	0.059	3.6	144.5	O K
120 min Winter	184.970	0.070	3.7	171.9	O K
180 min Winter	184.975	0.075	3.7	185.7	O K
240 min Winter	184.978	0.078	3.7	193.4	O K
360 min Winter	184.982	0.082	3.7	201.5	O K
480 min Winter	184.983	0.083	3.7	203.9	O K
600 min Winter	184.983	0.083	3.7	203.8	O K
720 min Winter	184.982	0.082	3.7	203.6	O K
960 min Winter	184.981	0.081	3.7	200.6	O K
1440 min Winter	184.977	0.077	3.7	189.0	O K
2160 min Winter	184.968	0.068	3.6	167.2	O K
2880 min Winter	184.959	0.059	3.6	146.1	O K
4320 min Winter	184.947	0.047	3.4	117.2	O K
5760 min Winter	184.941	0.041	3.0	100.7	O K
7200 min Winter	184.936	0.036	2.6	88.6	O K
8640 min Winter	184.932	0.032	2.3	79.2	O K
10080 min Winter	184.929	0.029	2.1	71.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	48.530	0.0	40
60 min Winter	30.811	0.0	68
120 min Winter	18.973	0.0	124
180 min Winter	14.120	0.0	182
240 min Winter	11.394	0.0	238
360 min Winter	8.424	0.0	350
480 min Winter	6.790	0.0	454
600 min Winter	5.740	0.0	494
720 min Winter	5.002	0.0	566
960 min Winter	4.023	0.0	720
1440 min Winter	2.956	0.0	1018
2160 min Winter	2.169	0.0	1436
2880 min Winter	1.740	0.0	1820
4320 min Winter	1.273	0.0	2552
5760 min Winter	1.020	0.0	3288
7200 min Winter	0.858	0.0	4040
8640 min Winter	0.746	0.0	4760
10080 min Winter	0.662	0.0	5456

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.357	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.590

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.197	4	8	0.197	8	12	0.197

Model Details

Storage is Online Cover Level (m) 185.900

Cellular Storage Structure

Invert Level (m) 184.900 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.02000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	2600.0	2600.0	0.510	0.0	2703.0
0.500	2600.0	2702.0			

Summary of Results for 30 year Return Period

Half Drain Time : 2415 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	184.738	0.138	0.5	42.0	O K
30 min Summer	184.783	0.183	0.5	55.6	O K
60 min Summer	184.831	0.231	0.5	70.1	O K
120 min Summer	184.881	0.281	0.5	85.3	O K
180 min Summer	184.910	0.310	0.5	94.1	O K
240 min Summer	184.929	0.329	0.5	100.1	O K
360 min Summer	184.958	0.358	0.5	108.7	O K
480 min Summer	184.976	0.376	0.5	114.4	O K
600 min Summer	184.990	0.390	0.5	118.5	O K
720 min Summer	185.000	0.400	0.5	121.6	O K
960 min Summer	185.013	0.413	0.5	125.5	O K
1440 min Summer	185.023	0.423	0.5	128.6	O K
2160 min Summer	185.020	0.420	0.5	127.6	O K
2880 min Summer	185.013	0.413	0.5	125.5	O K
4320 min Summer	184.995	0.395	0.5	120.2	O K
5760 min Summer	184.977	0.377	0.5	114.5	O K
7200 min Summer	184.958	0.358	0.5	108.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	73.170	0.0	27
30 min Summer	48.530	0.0	41
60 min Summer	30.811	0.0	72
120 min Summer	18.973	0.0	130
180 min Summer	14.120	0.0	190
240 min Summer	11.394	0.0	250
360 min Summer	8.424	0.0	368
480 min Summer	6.790	0.0	488
600 min Summer	5.740	0.0	606
720 min Summer	5.002	0.0	726
960 min Summer	4.023	0.0	964
1440 min Summer	2.956	0.0	1442
2160 min Summer	2.169	0.0	1928
2880 min Summer	1.740	0.0	2284
4320 min Summer	1.273	0.0	3068
5760 min Summer	1.020	0.0	3872
7200 min Summer	0.858	0.0	4688

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
8640 min Summer	184.939	0.339	0.5	103.2	O K
10080 min Summer	184.921	0.321	0.5	97.7	O K
15 min Winter	184.755	0.155	0.5	47.1	O K
30 min Winter	184.805	0.205	0.5	62.4	O K
60 min Winter	184.859	0.259	0.5	78.7	O K
120 min Winter	184.915	0.315	0.5	95.9	O K
180 min Winter	184.948	0.348	0.5	105.9	O K
240 min Winter	184.971	0.371	0.5	112.8	O K
360 min Winter	185.004	0.404	0.5	122.7	O K
480 min Winter	185.026	0.426	0.5	129.5	O K
600 min Winter	185.042	0.442	0.5	134.4	O K
720 min Winter	185.055	0.455	0.5	138.2	O K
960 min Winter	185.071	0.471	0.5	143.3	O K
1440 min Winter	185.087	0.487	0.5	148.1	O K
2160 min Winter	185.089	0.489	0.5	148.7	O K
2880 min Winter	185.079	0.479	0.5	145.6	O K
4320 min Winter	185.056	0.456	0.5	138.7	O K
5760 min Winter	185.029	0.429	0.5	130.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
8640 min Summer	0.746	0.0	5536
10080 min Summer	0.662	0.0	6352
15 min Winter	73.170	0.0	27
30 min Winter	48.530	0.0	41
60 min Winter	30.811	0.0	70
120 min Winter	18.973	0.0	128
180 min Winter	14.120	0.0	186
240 min Winter	11.394	0.0	246
360 min Winter	8.424	0.0	362
480 min Winter	6.790	0.0	480
600 min Winter	5.740	0.0	596
720 min Winter	5.002	0.0	714
960 min Winter	4.023	0.0	944
1440 min Winter	2.956	0.0	1400
2160 min Winter	2.169	0.0	2056
2880 min Winter	1.740	0.0	2648
4320 min Winter	1.273	0.0	3292
5760 min Winter	1.020	0.0	4216

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
7200 min Winter	185.001	0.401	0.5	121.8	O K
8640 min Winter	184.972	0.372	0.5	113.2	O K
10080 min Winter	184.945	0.345	0.5	104.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
7200 min Winter	0.858	0.0	5120
8640 min Winter	0.746	0.0	5976
10080 min Winter	0.662	0.0	6864

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.357	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.310

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.103	4	8	0.103	8	12	0.103

Model Details

Storage is Online Cover Level (m) 185.900

Cellular Storage Structure

Invert Level (m) 184.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.02000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	320.0	320.0	1.010	0.0	391.9
1.000	320.0	391.6			

Appendix I

Proposed Drainage Strategy

Tri-Golf Practice Centre
(Golf Driving Range)

north

GROWING SCHOOL
6 GROWING SCHOOL
POLYTUNNEL 17.54m
POLYTUNNEL 17.54m
POLYTUNNEL 17.54m
ORCHARD 250m²
PLOT 55m²
PLOT 55m²
COMPOST AREA
TOOL STORE
SCULPTURE
STAFF PARKING 15
SERVICE ROAD
WATER TANKS
PRODUCE WASH DOWN
BINS
PLOT 90m²
PLOT 90m²
PLOT 55m²
NATURAL PLAY & ANIMALS
SEATING
WILLOW TUNNEL
AUTO. PLANTER
MULTI-USE AREA 30x12.5m
ARBOUR
5x ARTISAN MARKET
CYCLE PARKING
4
2
8
10
7
5
6
14
CHICKEN COOP 20m² for/Chicken
CHICKEN COOP 20m² for/Chicken
Grayshott Hall
El Sub Sta

20m 15 10 5 0 10 20m
SCALE IN METRES
1:500

Notes

1. All levels and dimensions are to be checked onsite before any work commences. All dimensions are in metres unless stated otherwise.
2. Any discrepancies shall be reported to the architect and/or Engineer immediately, so that clarification can be sought prior to the commencement of works.
3. This drawing shall be read in conjunction with all other relevant architect and engineering details, drawings and specification.
4. All private drainage is to be 100mmØ laid at a minimum gradient of 1 in 100 for surface water, unless otherwise stated. 350mm minimum cover to be provided for pipes laid beneath roads/driveways unless not practicable. This is based on a uPVC system for private surface water system.
5. All private drainage to be in accordance with the Building Regulations Approved Document 'H', 2015 Edition. It is the Contracters responsibility to ensure compliance with these regulations.
6. Shallow private drains may require protection using concrete surround or paving slabs bridging the trench subject to the NHBC Inspector's requirements. In areas where 450mm cover to private sewer is not achievable protective measures should be undertaken as above.
7. The Contractor is to keep a record of any variations made on site, including the relocation of sewers or drains, for their 'As Built' drawings to be prepared upon project completion.
8. All pipes shall be laid soffit to soffit with outgoing pipes unless otherwise stated.
9. The exact location of all private rainwater pipes are to be confirmed with the architect details prior to Commencement of Works.

Legend

- Permeable paving with 500mm deep Type 3 subbase with 30% void ratio and covers an area of 2600m². Infiltration rate 0.02m/hr
- 1m deep infiltration tank. 95% void ratio and covers an area of 320m². Infiltration rate 0.02m/hr
- Impermeable asphalt surface with 500mm deep Type 3 subbase with 30% void ratio and covers an area of 2000m². Infiltration rate 0.02m/hr
- Concrete surface to compound area, to drain into Type 3 subbase
- Impermeable natural stone pavers, to drain into infiltration tank
- Permeable self binding aggregate with granite sett trim
- Surface water network

A	First Issue	RW	VH	NJ	10-02-2021
Revision Notes:		Drn	Chk	App	Date

Drawing Status:
FOR PLANNING
NOT FOR CONSTRUCTION

motion
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Client:
APPLEGARTH
RESTAURANT • COOKERY SCHOOL • DELICATESSEN

Project:
Applegarth Farm, Grayshott

Title:
Proposed Drainage
Site Plan

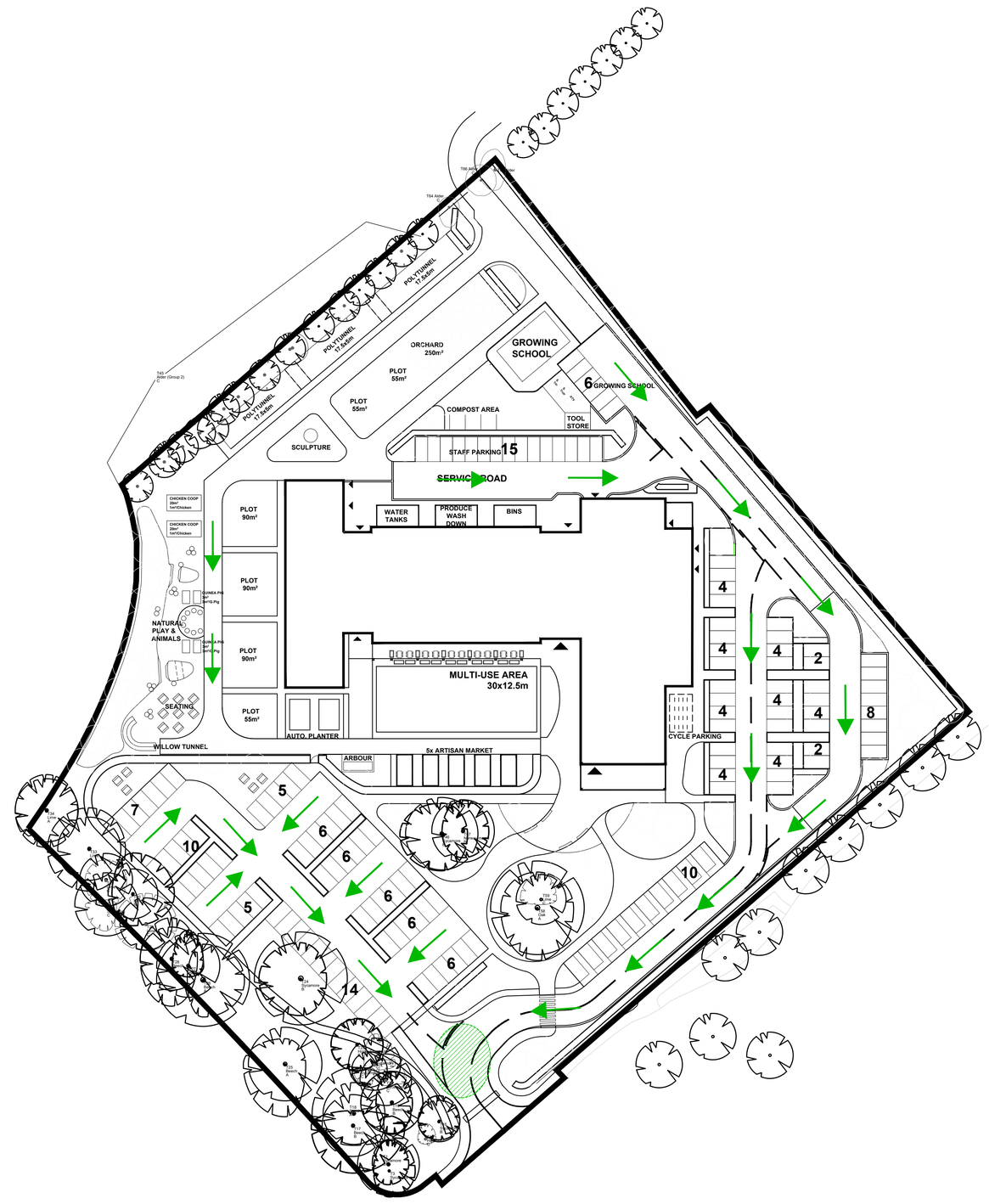
Scale: 1:500 | Size: A1 | Project No: 2011006

Drawing: 2011006-0500-01 | Revision: A

C:\Users\rwiseman\Motion\Staffsite - Ihigira 2011006\Drawings\2011006-0500-01 [Proposed Drainage].dwg

Appendix J

Exceedance Plan



20m 15 10 5 0 10 20m

SCALE IN METRES
1:500

Notes

1. All levels and dimensions are to be checked onsite before any work commences. All dimensions are in metres unless stated otherwise.
2. Any discrepancies shall be reported to the architect and/or Engineer immediately, so that clarification can be sought prior to the commencement of works.
3. This drawing shall be read in conjunction with all other relevant architect and engineering details, drawings and specification.

Legend

Exceedance Route - Direction of Flow

Exceedance Route - Storage Area

A	First Issue	RW	VH	NJ	11-02-2021
Revision Notes:		Drn	Chk	App	Date

Drawing Status:

FOR PLANNING
NOT FOR CONSTRUCTION

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Client:

APPLEGARTH
RESTAURANT • COOKERY SCHOOL • DELICATESSEN

Project:

Applegarth Farm, Grayshott

Title:

Exceedance Plan

Scale: 1:500	Size: A1	Project No: 2011006

Drawing:	Revision:
2011006-0503-01	A

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