## Bull Field, Takeley Flood Risk Assessment & SuDS Report by EAS

Prepared in support of the Section 62A Planning Application at Bull Field, Takeley.



Flood Risk Assessment & SuDS Report June 2023

# Bull Field, Warish Hall Farm, Takeley

Weston Homes

EAS



## **Document History**

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#### **1** Introduction

- 1.1 This Flood Risk Assessment and SuDS report has been prepared in support of an application by Weston Homes for a residential development at Bull Field, Warish Hall Farm, Takeley Essex. A location plan is included in **Appendix A**.
- 1.2 The site covers 19.8 hectares of currently undeveloped land. Proposals are for residential development, open space and associated works. The proposed development layout is enclosed in **Appendix B.**
- 1.3 The site is located in Flood Zone 1, at low risk of fluvial flooding and is shown to be at very low risk of surface water flooding however, as the site exceeds 1 hectare, a full flood risk assessment is required. This report will examine all sources of flood risk to the site and consider suitable mitigation measures and a sustainable drainage strategy.
- 1.4 A previous application for a much larger, 24ha area, which included the Bull Field site, was made in September 2021 (Ref. No. UTT/21/1987/FUL). The application, whilst supported by planning officers, was refused at planning committee (December 2021) and ultimately dismissed at appeal (Ref. No. APP/C1570/W/22/3291524) principally on the grounds of impact on heritage assets and landscape character. However, in regards to flood-related matters there was no technical objection to the proposals. Initial holding objections received from the Essex County Council in their role as the Lead Local Flood Authority (LLFA) were addressed within the consultation period and removed as part of the application. Flood Risk did not constitute a reason for refusal listed on the Decision Notice, and therefore it was not discussed during the Appeal. As part of this application, all principles agreed with the LLFA in the previous consultation period have been retained as part of this revised application and therefore it is anticipated will be accepted on the same grounds as previously agreed.
- 1.5 The contents of this FRA is based on the advice set out in the National Planning Policy Framework (NPPF) published in July 2021, Annex 3: Flood risk vulnerability classification, also from the NPPF and PPG 'Guidance for Flood Risk and Coastal Change', updated in August 2022.
- 1.6 This document includes the following sections:

Section 2 - describes relevant policy;

- Section 3 site description, including site levels, proximity to watercourses etc.;
- Section 4 provides a brief review of potential sources of flooding;

Section 5 - details of the proposed surface water management;

Section 6 - details of management and maintenance;

Section 7 – provides a summary and conclusions.

### 2 Policy Context

#### Introduction

2.1 This section sets out the policy context. This report is based on the requirements set out in the National Planning Policy Framework (NPPF) published in July 2021 and the Planning Practice Guidance (PPG) updated in August 2022.

#### **National Planning Policy Framework**

2.2 Paragraph 167 footnote 55 of the NPPF states:

"A site-specific flood risk assessment should be provided for all developments in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."

The flood zones are defined as:

- Flood Zone 1 Land assessed as having a less than 1 in 1,000 (<0.1%) annual probability of flooding from fluvial sources;
- Flood Zone 2 Land assessed as having between a 1 in a 100 and 1 in 1,000 (1% to 0.1%) annual probability of flooding from fluvial sources;
- Flood Zone 3a Land assessed as having a 1 in 100 or greater (>1%) annual probability of flooding from fluvial sources, or at least 0.5% annual probability of tidal flooding;
- Flood Zone 3b Land where water has to flow or be stored in times of flood.
- 2.3 Paragraph 159 discusses the suitability of development location, particularly with regards to future risks induced by climate change:

"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere".

2.4 Paragraph 160 of the National Planning Policy Framework (NPPF) sets out how:

"Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards".

2.5 The EA Flood Map for Planning enclosed in **Appendix C** shows the site to be located in Flood Zone 1, land assessed as having a less than 1 in 1,000 (<0.1%) annual probability of flooding.

#### The Sustainable Drainage Systems Design Guide for Essex (2020)

- 2.6 This guide was prepared by Essex County Council to aid developers, designers and consultants in the design of Sustainable Drainage Systems (SuDS) in Essex. The guidance is intended to advise on the planning, design and delivery of attractive and high-quality SuDS scheme to benefit both the environment and the community. The website contains all the information on the SuDS Design Guide for Essex and can be accessed here<sup>.</sup>
- 2.7 This guidance was considered and used to inform the development of the proposed SuDS strategy for the site.

#### **Uttlesford District Adopted Local Plan 2005**

- 2.8 The 'Uttlesford Local Plan 2019' draft was withdrawn in April 2020 and work on a replacement has been ongoing since this time and is unlikely to be adopted prior to December 2025.
- 2.9 Once complete the new Local Plan will guide future development in the district.
- 2.10 In the meantime, whilst significantly dated, the Uttlesford Adopted Local Plan 2005 is the relevant development plan document and the principle of Policy GEN3 remain broadly applicable and is reflected in more up to date guidance.
- 2.11 Policy GEN3: Flood Protection of the Adopted Local Plan 2005 states:

"Outside flood risk areas development must not increase the risk of flooding through surface water run-off. A flood risk assessment will be required to demonstrate this. Sustainable Drainage Systems should also be considered as an appropriate flood mitigation measure in the first instance.

For all areas where development will be exposed to or may lead to an increase in the risk of flooding applications will be accompanied by a full Flood Risk Assessment (FRA) which sets out the level of risk associated with the proposed development. The FRA will show that the proposed development can be provided with the appropriate minimum standard of protection throughout its lifetime and will demonstrate the effectiveness of flood mitigation measures proposed."

2.12 This report demonstrates that the proposed development will use SuDS methods to manage the volume and rate of surface water runoff and the proposals will not increase flood risk to the local area, outside the site.

#### Uttlesford District Council Strategic Flood Risk Assessment (May 2016)

2.13 The Uttlesford Strategic Flood Risk Assessment (SFRA) was published in May 2016, providing an update to the original report which was published in 2008 in response to several legislative changes including the Flood and Water Management Act of 2010 and SuDS guidance published in 2015.

- 2.14 Uttlesford is located within the headwaters of three major catchments including the Great Ouse, North Essex and Thames. Surface water flooding and flooding sourced from ordinary watercourses is noted as a significant issue across the district.
- 2.15 Map 5 of the SFRA shows there have been no recorded flood incidents at the site or within the vicinity of the site.
- 2.16 Map 6 confirms the site is located in Flood Zone 1.
- 2.17 Map 7 shows there is a culvert to the south of the site within the existing residential development.
- 2.18 Map 8 shows the extent of surface water flood across the district. The site is shown not be located within a surface water flood extent.
- 2.19 Map 9 of the SFRA shows the susceptibility of groundwater flooding across the district. The site is shown to be located in an area with < 25% susceptibility of groundwater flooding.
- 2.20 Map 10 shows the number of recorded sewer flooding incidents across the district categorised by postcode. The site is located within an area with 1-5 sewer flooding incidents have been recorded.
- 2.21 Each of the above maps have been included at **Appendix D**. Assessing the data within the SFRA, it is concluded that there are no significant flood risks at the site.

#### **3** Existing Site Assessment

#### **Site Description**

- 3.1 The red line boundary covers 19.8 ha and is located between Smiths Green and Parsonage Road and comprises rural farmland and Ancient semi-natural Woodland. Existing residential areas of Takeley lie to the south and west of this land parcel. To the north is further rural farmland, beyond which is the A120.
- 3.2 The site is approximately 2km southeast of London Stansted Airport.
- 3.3 The proposed development will comprises 96 two to five-bedroom dwellings along with garages, driveways, access roads, open space and associated works. The proposals also include two separate flatted blocks comprising one-bedroom and two-bedroom apartments. The proposed layout is included in **Appendix B**.

#### **Local Watercourses and Ditches**

- 3.4 The nearest EA 'Main River' is the Pincey Brook, which is located approximately 1.3km west of the site. A tributary of this watercourse flows through Takeley and is culverted for most of this reach.
- 3.5 A site walkover identified several perimeter ditches located with the site which fall to the north west but the disconnected nature of them and shallow gradients suggest that they appear to act as infiltration ditches rather than conveyance. In addition, the ditches do not seem to have an outfall to a watercourse, which further suggests the ditches promote infiltration instead of conveyance.

#### Site Levels

3.6 A topographical survey is enclosed in **Appendix E.** The site falls east to west. The higher levels near to Smiths Green Lane at the eastern boundary of the site are around 103.9m AOD, falling to around 101.3m AOD along the western border of the site.

#### **Sewer Records**

3.7 Sewer records obtained by Thames Water are enclosed in **Appendix F.** There are no adopted sewers within the site itself. However, there a number of both surface and foul water sewers within the residential areas to the east and south east of the site.

#### Geology

3.8 With reference to the British Geological Survey online mapping, the site is located within an area with a bedrock of London Clay Formation - clay, silt and sand with superficial deposits of Lowestoft Formation – diamicton.

3.9 This type of geology typically does not favour infiltration, but infiltration tests were carried out to confirm this and have been discussed below.

#### **Infiltration Tests**

- 3.10 Infiltration tests were carried out across the wider earlier development site on 28<sup>th</sup> April 2021. Tests were in six locations including three on application site.
- 3.11 The infiltration test report is included in **Appendix G**, which shows the test locations on a map and summarises the details. The strata was recorded as 'orange-brown-grey silty clay with occasional chalk fragments) and 'orange-brown-grey sandy clay with occasional chalk fragments'.
- 3.12 Deep and shallow testing across three trial pits (SA3, SA4 & SA5) was carried out to BRE 365 standard and demonstrated good infiltration rates. Some of the tests were not filled three times but also demonstrated a reasonable rate.
- 3.13 Where tests were not carried out to BRE 365 standard, the worst case rate can be used, with the anticipation that further testing could be required pursuant to any suggested planning condition which is usual practice for the LLFA in our experience.

Character Area	Test Pit	Depth	No. of Fills	Infiltration Rate
Bull Field (West)	SA3S	0.60m	2	5.9 x 10 <sup>-6</sup> m/s
Bull Field (West)	SA3D	1.50m	2	6.2 x 10 <sup>-6</sup> m/s
Bull Field (East)	SA4S	0.60m	2	5.5 x 10 <sup>-6</sup> m/s
Bull Field (East)	SA4D	1.50m	2	4.1 x 10 <sup>-6</sup> m/s
Bull Field (South)	SA5S	0.60m	3	1.6 x 10⁻⁵ m/s
Bull Field (South)	SA5D	1.50m	2	1.6 x 10 <sup>-5</sup> m/s

3.14 Table 3.1 summarises the rates for each of the trial pits within the site.

Table 3.1: Infiltration Rate Summary (Full test results in **Appendix G**)

#### 4 Potential Sources of Flooding

#### Fluvial

4.1 A copy of the Environment Agency's Flood Map is enclosed in **Appendix C.** The site is located entirely in Flood Zone 1, at low risk of fluvial flooding, Land in Flood Zone 1 is defined as land having less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.

#### **Surface Water**

- 4.2 Surface water flooding refers to flooding caused when the intensity of rainfall, particularly in urban areas, can create runoff which temporarily overwhelms the capacity of the local drainage systems including sewers, rivers and watercourses or does not infiltrate into the ground. The water ponds on the ground and flows towards low-lying land. This source of flood risk is also known as 'pluvial'.
- 4.3 The surface water mapping on the gov.uk website shows the site is at **'very low'** risk of surface water flooding. Surface water flooding is shown along the perimeter of the site however this is associated with the presence of ditches.
- 4.4 An effective and sustainable drainage system will prevent surface water flooding within the development. The EA's surface water flood risk map can be seen in **Appendix H**.

#### Groundwater

- 4.5 Map 9 of the SFRA shows the susceptibility of groundwater flooding across the district. The site is shown to be located in an area with < 25% susceptibility of groundwater flooding which is the lowest shown category included on the map.
- 4.6 The site is not located in a groundwater source protection zone. The MAGIC Map website (<u>https://magic.defra.gov.uk/MagicMap.aspx</u>) confirms this.
- 4.7 The site is located above a Secondary (undifferentiated) Aquifer based on the superficial deposits of diamicton. A Secondary (undifferentiated) aquifer is defined on the gov.uk website as: "...aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value."
- 4.8 It is therefore unlikely that the superficial deposits would yield significant quantities of groundwater.
- 4.9 Given the above, the risk of flooding from groundwater is considered to be low.

#### Artificial

4.10 The EA Flood Map for Planning shows the site is not at risk of flooding from reservoirs. Online OS mapping does not show any other large artificial sources nearby which would pose a significant risk to the site, so the risk of flooding from artificial sources is considered to be low.

#### **Sewer Flooding**

- 4.11 Sewer flooding generally results from localised short-term intense rainfall events overloading the capacity of the private and public drainage or due to failures within the public sewer.
- 4.12 As there are no adopted sewers located within the site the risk from sewer flooding is considered to be low.

#### Flood Risk Summary

4.13 Given the risk from flooding from all assessed sources is low, there are no specific mitigation measures required.

#### 5 Drainage Strategy

#### **Existing Drainage**

5.1 As the site is currently undeveloped, there is no existing formal drainage strategy in place. Surface water simply infiltrates to ground and once saturated, overland flow would flow into the surrounding ditches and infiltrate to ground. Excess surface water would pool and either slowly infiltrate or evaporate.

#### **Greenfield Runoff Rates**

- 5.2 Greenfield runoff rates were calculated using the ICP SuDS method on the WINDES Micro Drainage software. The site covers an area of 7.9 ha. The runoff rates for 1 hectare has been estimated and scaled to the site area for the 1 in 1 year, 1 in 30 year and 1 in 100-year events:
  - o QBAR 2.8 l/s/ha (22.1 l/s)
  - o 1 in 100 year- 9.1 l/s/ha (71.9 l/s)
  - o 1 in 30 year- 6.4 l/s/ha (50.6 l/s)
  - 1 in 1 year- 2.4 l/s/ha (19.0 l/s)
- 5.3 The MicroDrainage greenfield runoff rates are included at **Appendix I.**

#### **Relevant SuDS Policy**

- 5.4 SuDS mimic the natural drainage system and provide a method of surface water drainage which can decrease the quantity of water discharged, and hence reduce the risk of flooding. In addition to reducing flood risk, these features can improve water quality and provide biodiversity and amenity benefits.
- 5.5 The SuDS management train incorporates a hierarchy of techniques and considers all three SuDS criteria of flood reduction, pollution reduction, and landscape and wildlife benefit. In decreasing order of preference, the preferred means of disposal of surface water runoff is:
  - 1) Discharge to ground.
  - 2) Discharge to a surface water body.
  - 3) Discharge to a surface water sewer.
  - 4) Discharge to a combined sewer.
- 5.6 The philosophy of SuDS is to replicate as closely as possible the natural drainage from a site pre-development and to treat runoff to remove pollutants, resulting in a reduced impact on the receiving watercourses. The benefits of this approach are as follows:
  - Reducing runoff rates, thus reducing the flood risk downstream.

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- Reducing pollutant concentrations, thus protecting the quality of the receiving water body.
- Groundwater recharge.
- Contributing to the enhanced amenity and aesthetic value of development areas.
- Providing habitats for wildlife in developed areas, and opportunity for biodiversity enhancement.

#### Site-Specific SuDS

5.7 The various SuDS methods need to be considered in relation to site-specific constraints. Several SuDS options are available to reduce or temporarily hold back the discharge of surface water runoff. Table 5.1 outlines the constraints and opportunities to each of the SuDS devices in accordance with the hierarchical approach outlined in The SuDS Manual CIRIA C753. It also indicates what could and could not be incorporated within the development, based upon site-specific criteria.

Device	Description	Constraints / Comments	Appropriate
Living roofs (source control)	Provide soft landscaping at roof level which reduces surface water runoff.	Not suitable due to the pitch of the roofs.	No
Infiltration devices & Soakaways (source control)	Store runoff and allow water to percolate into the ground via natural infiltration.	A crate soakaway has been proposed as testing proved infiltration to be viable	Yes
Pervious surfaces (source control)	Storm water is allowed to infiltrate through the surface into a storage layer, from which it can either infiltrate and/or slowly release to sewers.	Infiltration testing confirms good rates across the site, therefore permeable surfaces are viable.	Yes
Rainwater harvesting (source control)	Reduces the annual average rate of runoff from the site by reusing water for non-potable uses e.g. toilet flushing, recycling processes.	Not proposed within the development	No
Swales (permeable conveyance)	Broad shallow channels that convey / store runoff, and allow infiltration (ground conditions permitting).	Not recommended due to risk of attracting birds close to airport	No
Filter drains & perforated pipes (permeable conveyance)	Trenches filled with granular materials (to take flows from adjacent impermeable areas) that convey runoff while allowing infiltration.	A filter drain has been proposed to improve water quality	Yes
Filter Strips (permeable conveyance)	Wide gently sloping areas of grass or dense vegetation that remove pollutants from run-off from adjacent areas.	Not required due to the provision of alternative SuDS devices	No

Infiltration basins (end of pipe treatment)	Depressions in the surface designed to store runoff and allow infiltration.	Infiltration basin proposed but only to be used for rainfall events greater than a 1 in 5 year storm	Yes
Wet ponds & constructed wetlands (end of pipe treatment)	Provide water quality treatment & temporary storage above the permanent water level.	Not recommended due to risk of attracting birds close to airport.	No
Attenuation Underground (end of pipe treatment)	Oversized pipes or geo-cellular tanks designed to store water below ground level.	Not required due to other SuDS features being used.	No

Table 5.1: Site Specific Sustainable Drainage

#### **SuDS Features and London Stansted Airport**

- 5.8 Given the proximity of the site to London Stansted Airport which is around 2km to the northwest, it is necessary to assess the application of the SuDS features against the risk of flocking birds. Guidance provided by the MAG Airports Safeguarding Officer highlighted the risk of having permanent water bodies so close to the airport which could attract birds, causing hazards to aircraft. As such, no ponds or other permanent waterbodies could be used in the proposed drainage strategy.
- 5.9 It was recommended that any swales or attenuation/infiltration basins being provided in the scheme should ensure that storm events greater than the 1 in 5 year event could achieve a drain down time of less than 72 hours. For the majority of the time, these areas should remain dry, as they would only be used in the more extreme events. This guidance has been considered and the modelling carried out to inform the drainage design ensures that the SuDS features included have a drain down time of significantly less than 72 hours.

#### **Proposed Drainage Strategy**

- 5.10 Infiltration testing across the site demonstrated that infiltration would be a viable means of draining the proposed development. The infiltration test report is included in **Appendix G** and the rates used are summarised in Table 3.1. In addition, the minimum sub-base depths discussed in the following section are at this stage indicative and will be reviewed and subject to further testing at detailed design stage to confirm precise depths.
- 5.11 The Infiltration rate used from the test pit in the eastern part of the site was to the worst-case result in order to ensure the design for the drainage for the site is robust. This was a rate of 4.1 x 10<sup>-6</sup>m/s. It is anticipated that infiltration tests can be conditioned and further testing can take place across the site to inform detailed design.
- 5.12 It is understood that the main roads within the site will be offered for adoption, so permeable paving cannot be used on these. As such, a number of different infiltration SuDS features have been included in the development to manage the runoff, which are described below.
- 5.13 Where possible, the roof areas and driveways will discharge to permeable paving on the private driveways within the site.

- 5.14 Several of the smaller roads and car parking areas will be permeably paved and drain themselves. If there are houses close to these which do not have private driveways, these properties will drain to the nearest section of permeable paving.
- 5.15 The main road will be constructed from tarmac and not be permeable. This will be served by a traditional piped drainage system which directs the runoff to a crate soakaway and infiltration basin located in the area of open space to the east. Runoff from the main road will pass through a perforated pipe in a filter drain upstream of the crate soakaway to filter the runoff before it reaches this point.
- 5.16 The proposed footpath/cycleway which crosses the site will utilise a semi-permeable, boundaggregate construction to allow some infiltration to occur. Where infiltration doesn't occur, it is expected that runoff will be to the surrounding grassed areas. There is the potential to utilise a French drain or similar alongside the paths where required. Therefore, the proposed footpath/cycleway has not been included in the permeable paving calculations.
- 5.17 WINDES MicroDrainage Source Control models were set up for each permeable paving catchment, to estimate the sub-base depth required to manage a 1 in 100 year (+40%CC) storm event, using the infiltration rate of 4.1 x 10<sup>-6</sup>m/s.
- 5.18 Due to the natural topography of the site, including the northwest section of the proposed access road within the drainage system was not viable. As such, surface water runoff from this section of the access road is to be directed towards the adjacent 7 Acres site. The runoff from this area was therefore accounted for within the drainage system proposed as part of the separate 7 Acres application.
- 5.19 The catchments which drained to permeable paving on the smaller roads were identified as PP1 to PP5. The catchments which drained to permeable paving on the car parks were identified as Car Parks A to D.
- 5.20 The catchments, impermeable areas and permeable paving details are shown on SK13 in **Appendix J** and the WINDES MicroDrainage results are included in **Appendix K**. The various catchments and details of permeable paving are summarised in Table 5.2.

Section	Catchment Area	Permeable Paving Area	Minimum Sub- Base Depth	Half Drain Time
1	170m <sup>2</sup>	170m <sup>2</sup>	146mm	174 mins
2	110m <sup>2</sup>	110m <sup>2</sup>	137mm	163 mins
3	140m <sup>2</sup>	140m <sup>2</sup>	145mm	174 mins
4	550m <sup>2</sup>	550m <sup>2</sup>	426mm	306 mins

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5	100m <sup>2</sup>	100m <sup>2</sup>	152mm	184 mins
Car Park A	990m²	510m <sup>2</sup>	333mm	397 mins
Car Park B	1350m <sup>2</sup>	630m <sup>2</sup>	372mm	449 mins
Car Park C	730m <sup>2</sup>	350m <sup>2</sup>	359mm	434 mins
Car Park D	740m <sup>2</sup>	360m <sup>2</sup>	355mm	429 mins
House Type 2B	160m <sup>2</sup>	50m <sup>2</sup>	595mm	736 mins
House Type 3A & 3B	120m <sup>2</sup>	50m <sup>2</sup>	433mm	531 mins
House Type 4B	140m²	50m <sup>2</sup>	523mm	651 mins
House Type 4C	170m <sup>2</sup>	50m <sup>2</sup>	218mm *95% Voids	842 mins
House Type 5B	230m <sup>2</sup>	50m²	314mm *95% Voids	1203 mins
House Type 5C	240m <sup>2</sup>	50m²	331mm *95% Voids	1271 mins

Table 5.2 – Proposed Permeable Paving Catchments and Details

- 5.21 Although some of the minimum sub-base depths required are thin, it is anticipated that the minimum sub-base depth required for structural requirements and water quality benefits will be at least 300mm, and therefore also provide for a greater level of attenuation.
- 5.22 Also, as stated within the CIRIA SuDS Manual, unlined pavements should only be used in locations when positioned close to building foundations, when a full assessment of the risks has been carried out by a suitably qualified geotechnical engineer. Given the proposed driveways throughout the development are proposed to utilise unlined permeable paving and is proposed to accommodate roof runoff, a geotechnical/structural engineer will need to undertake an assessment at the detailed design stage.
- 5.23 In the event an engineer determines some areas are not able to utilise unlined permeable paving due to structural concerns, these areas will become lined and will instead be drained to the proposed soakaway within the public open space to the east of the site, which can be resized accordingly.
- 5.24 Silt traps/catchpits will also be included upstream of permeable paving connections to collect silt and debris before runoff enters the permeable paving.
- 5.25 Some of the private driveways of the larger house types required particularly deep sub-base depths in order to provide adequate attenuation. Therefore, in order to reduce the required sub-base depths these driveways are proposed to utilise a *permavoid* sub-base replacement system with 95% voids.

- 5.26 The main road will be constructed from tarmac and not be permeable. A full pipe network was built to model the drainage system serving the road, which is included in **Appendix K**. The final section of the pipe network was too deep to discharge to the crate soakaway in the open space by gravity, therefore a pump will be necessary. The pumping station has been shown to be just downstream of the filter drain on the SuDS layout **Appendix J**. It is intended this would be a private pump located below ground within a manhole chamber. The pumping station will pump at a maximum rate of 30 l/s, which was the lowest pump rate that could be used while ensuring the upstream manholes do not flood.
- 5.27 The crate soakaway was sized to manage up to and including a 1 in 5 year storm. Any return period event greater than the 1 in 5 year will be accommodated in the infiltration basin above the soakaway. The infiltration basin was sized to manage up to and including a 1 in 100 year (+40%CC) event.
- 5.28 The system was modelled in WINDES MicroDrainage with an infiltration rate of 4.1 x 10<sup>-6</sup>m/s, and the model was run for the 1 in 100 year (+40%CC) storm event. This resulted in the filter drain with perforated pipe being 25m long, 1m wide with a 150mm perforated pipe in the base to filter the runoff. The outlet of the filter drain will be set 0.5m below the inlet to ensure the runoff passes through an adequate amount of granular material to ensure the water is well filtered before entering the pump and crate soakaway.
- 5.29 The model demonstrated that the pump should be set at a rate of 30 l/s. The crate soakaway was modelled with the dimensions 7m x 10m x 1.32m deep to provide attenuated for storms up to and including a 1 in 5 year event. Any storm events exceeding this will overflow into the infiltration basin located above it.
- 5.30 The infiltration basin was sized to manage up to a 1 in 100 year (+40%CC) event. It would be 0.5m deep with a surface area of 746m<sup>2</sup> and side slopes of 1:20.
- 5.31 The infiltration basin was modelled in WINDES Source Control to determine the half drain time and it was higher than 24 hours. Therefore, it was modelled to accommodate a 1 in 30 year (+40%CC) event followed by a 1 in 10 year event to ensure there would be enough volume. This test confirmed that the 1 in 100 year (+40%CC) event would require more volume, therefore the infiltration basin dimensions have been based on the storage required to manage this event. This meets the Essex County Council requirements for half drain time.
- 5.32 The suggested location and shape of the infiltration basin and filter drain is shown on the plan SK13 in **Appendix J** and is reflected in the detailed landscape design.
- 5.33 The drainage system has been designed to meet the water quality requirements set out by Table 26.2 of the CIRIA SuDS Manual C753 which sets out the specific pollution hazard indices for residential roofing and low traffic roads/individual driveways in Table 5.8 below.

Land Use	Hazard Level	Pollution Hazard Indices			
		Suspended Solids	Metals	Hydrocarbons	
Residential Roofing	Very Low	0.2	0.2	0.05	
Low Traffic Roads/Individual Driveways	Low	0.5	0.4	0.4	
Total Pollution Mitigation Required		0.5	0.4	0.4	

Table 5.8: Land Use Pollution Hazard Ratings. Extracted from the CIRIA SuDS Manual C753 Simple Index Approach Tool

5.34 It is clear from Table 5.9 and 5.10 that the required level of pollution mitigation is provided and exceeded for removing total suspended solids, metals and hydrocarbons from the surface water runoff, and no further treatment stages are necessary.

SuDS Component	Pollution Mitigation Indices				
	Suspended Solids	Metals	Hydrocarbons		
Permeable Paving	0.7	0.6	0.7		
Total Pollution Mitigation Provided	0.85	0.6	0.7		

Table 5.9: SuDS Component Pollution Mitigation for Permeable Paving Extracted and adapted from the CIRIA SuDS Manual C753 Simple Index Approach Tool

SuDS Component	Pollution Mitigation	Pollution Mitigation Indices				
	Suspended Solids	Metals	Hydrocarbons			
Catchpit/Silt Trap	0.5	0.0	0.0			
Filter Drain	0.2 (0.4/2)	0.4	0.4			
Total Pollution Mitigation Provided	0.7	0.4	0.4			



Table 5.10: SuDS Component Pollution Mitigation for Filter Drain Extracted and adapted from the CIRIA SuDS Manual C753 Simple Index Approach Tool

#### **Essex SuDS Proforma**

- 5.35 A completed SuDS proforma is enclosed in **Appendix L**. The site has split into a number of catchments managed by a number of permeable paving sections, and the SuDS strategy is entirely based on infiltration. Therefore, it is not possible to provide some of the information required by the proforma for some parts of the form relating to the storage volume for a 1 in 30 (+CC) event and the 50% storage drain down time for a 1 in 30 year event for example, since the proforma requires a single value. As the site is split into many catchments, with each catchment having a different value, this information cannot be provided in the form requested.
- 5.36 However, the drainage strategy has been designed to manage runoff from a 1 in 100 year (+40%CC) event, and all half drain times are less than 24 hours.

#### **Exceedance Flow Paths and Areas**

- 5.37 In a storm event greater than that modelled, the capacity of surface water drainage system could become overwhelmed. In this instance, surface water would pool in the shallower parts of the site and overflow to the boundary ditches, where it is likely to be captured and therefore remain within the site. An exceedance plan is included in **Appendix M**.
- 5.38 As all residential properties will have a freeboard a minimum of 150mm above the surrounding ground level, this should prevent internal surface water flooding in an exceedance event occur.

#### Maintenance of Development Drainage

5.39 A maintenance and management plan has been included at **Appendix N** and details the suggested maintenance tasks for the proposed drainage system.

#### 6 Summary and Conclusion

- 6.1 A previous application for a much larger site (Ref. No. UTT/21/1987/FUL) which included the Bull Field site, was made in September 2021. The application was ultimately dismissed at appeal however, in regards to flood-related matters there was no technical objection to the proposals. Initial holding objections received from the Essex County Council in their role as the Lead Local Flood Authority (LLFA) were addressed within the consultation period and removed as part of the application. As part of this application, all principles agreed with the LLFA in the previous consultation period have been retained as part of this revised application and therefore it is anticipated will be accepted on the same grounds as previously agreed.
- 6.2 The site is in Flood Zone 1 on the EA's Flood Map for Planning. All sources of flooding have been assessed and the risk considered to be low. Therefore, no specific mitigation measures are required for the proposed development.
- 6.3 The geology of London Clay with deposits of Diamicton suggests that infiltration would not be viable. However, a number of infiltration tests were carried out across the site which provided good results. As a result, an infiltration based strategy has been proposed throughout the development.
- 6.4 The drainage system was modelled for a 1 in 100 year (+40%CC) storm event using WINDES MicroDrainage. The site was divided into a number of different catchments and each was run with the worst recorded infiltration rate at the site. The WINDES models demonstrated that all surface water runoff from the new development could be managed effectively using infiltration methods.
- 6.5 Given the proximity of the site to London Stanstead Airport a MAG Airports Safeguarding Officer was consulted with regards the design of any above ground SuDS in order to ensure the proposed SuDS did not encourage flocking birds. The Safeguarding Officer confirmed the design of the infiltration basin was suitable.
- 6.6 The CIRIA guidance on pollution hazards was also considered and the selected drainage measures also provided sufficient water quality benefit to remove suspended solids, metals and hydrocarbons from the runoff before it infiltrated to ground.
- 6.7 All elements of the proposed drainage system will remain private and the responsibility for maintenance will remain with a maintenance company set up by the developer.

#### Conclusion

6.8 The site is at a low risk of flooding and the proposals do not increase flood risk onsite or elsewhere. The proposed SuDS strategy effectively manages the surface water runoff associated with the roof, roads and other impermeable areas, using infiltration which is at the top of the SuDS hierarchy.

6.9 In conclusion, the proposals have been shown to be policy compliant on flood risk and SuDS grounds.

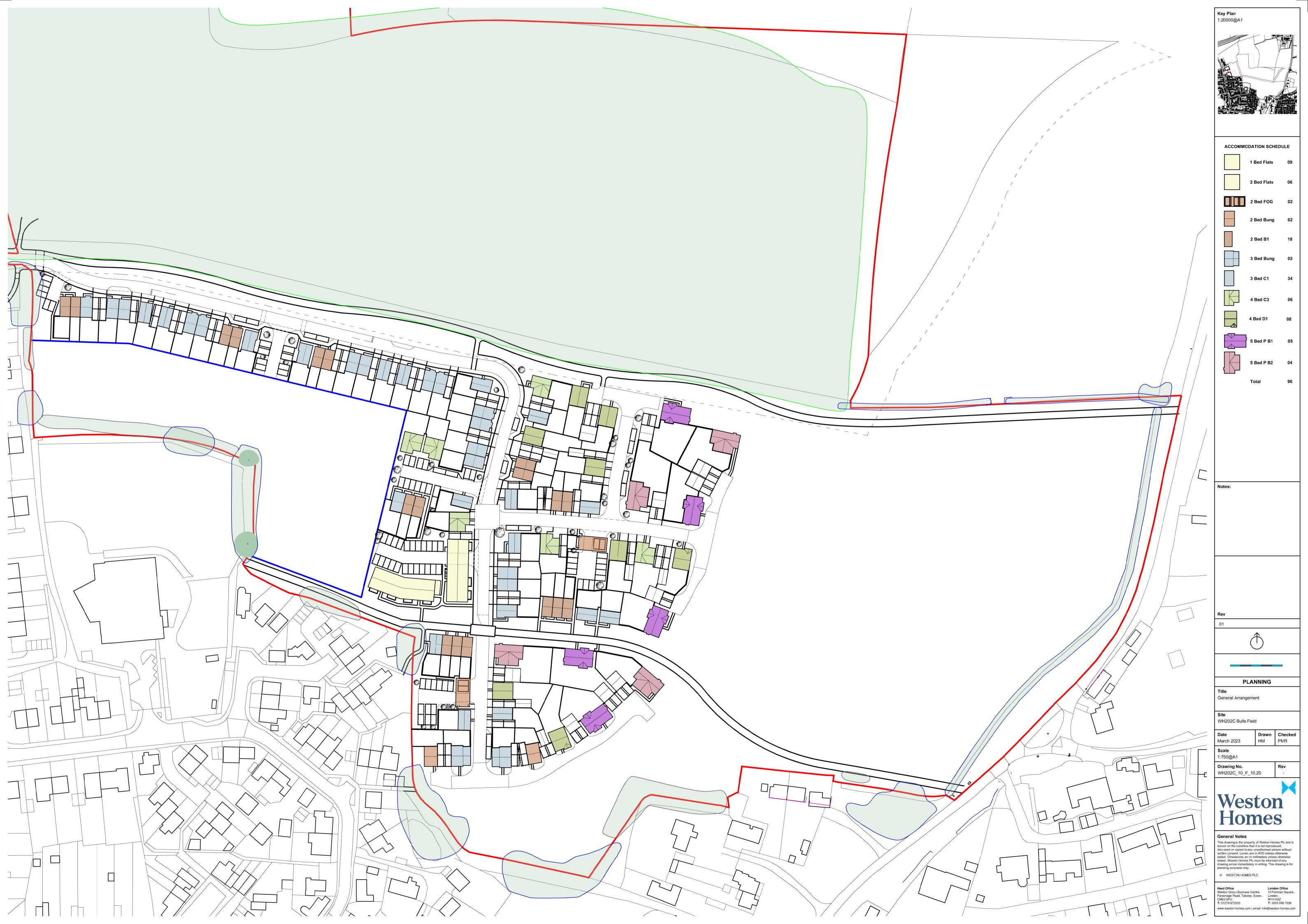
### 7 Appendices

Appendix: A – Location Plan 20	J
Appendix: B – Development Plans 21	1
Appendix: C – EA Flood Map for Planning 22	2
Appendix: D – Uttlesford SFRA Mapping 23	3
Appendix: E – Topographical Survey 24	4
Appendix: F - Thames Water Sewer Reccords 25	5
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Appendix: A – Location Plan



Appendix: B – Development Plans



Appendix: C – EA Flood Map for Planning



## Flood map for planning

Your reference <Unspecified>

Location (easting/northing) **556575/221532** 

Created **20 Apr 2023 15:27** 

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

### You will need to do a flood risk assessment if your site is any of the following:

- bigger that 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

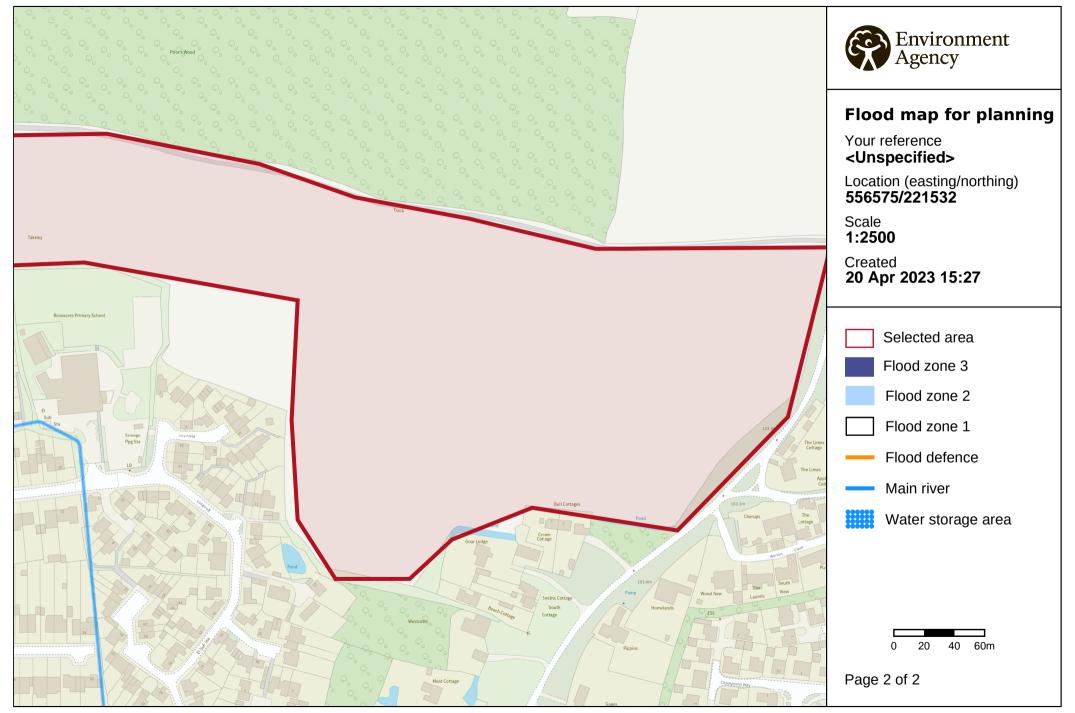
#### Notes

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.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. https://flood-map-for-planning.service.gov.uk/os-terms



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Appendix: D – Uttlesford SFRA Mapping



## LEGEND



## STRATEGIC FLOOD RISK ASSESSMENT

### MAP 5: HISTORIC FLOOD MAP



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Information regarding modelled and historical flood risk is constantly changing. Users should consult the Environment Agency for the latest flood risk information relating to specific planning applications.

### <u>Notes</u>

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Flood Zone 1: Comprised of land having a less than 1 in 1,000 annual probability of river or sea flooding in any year.

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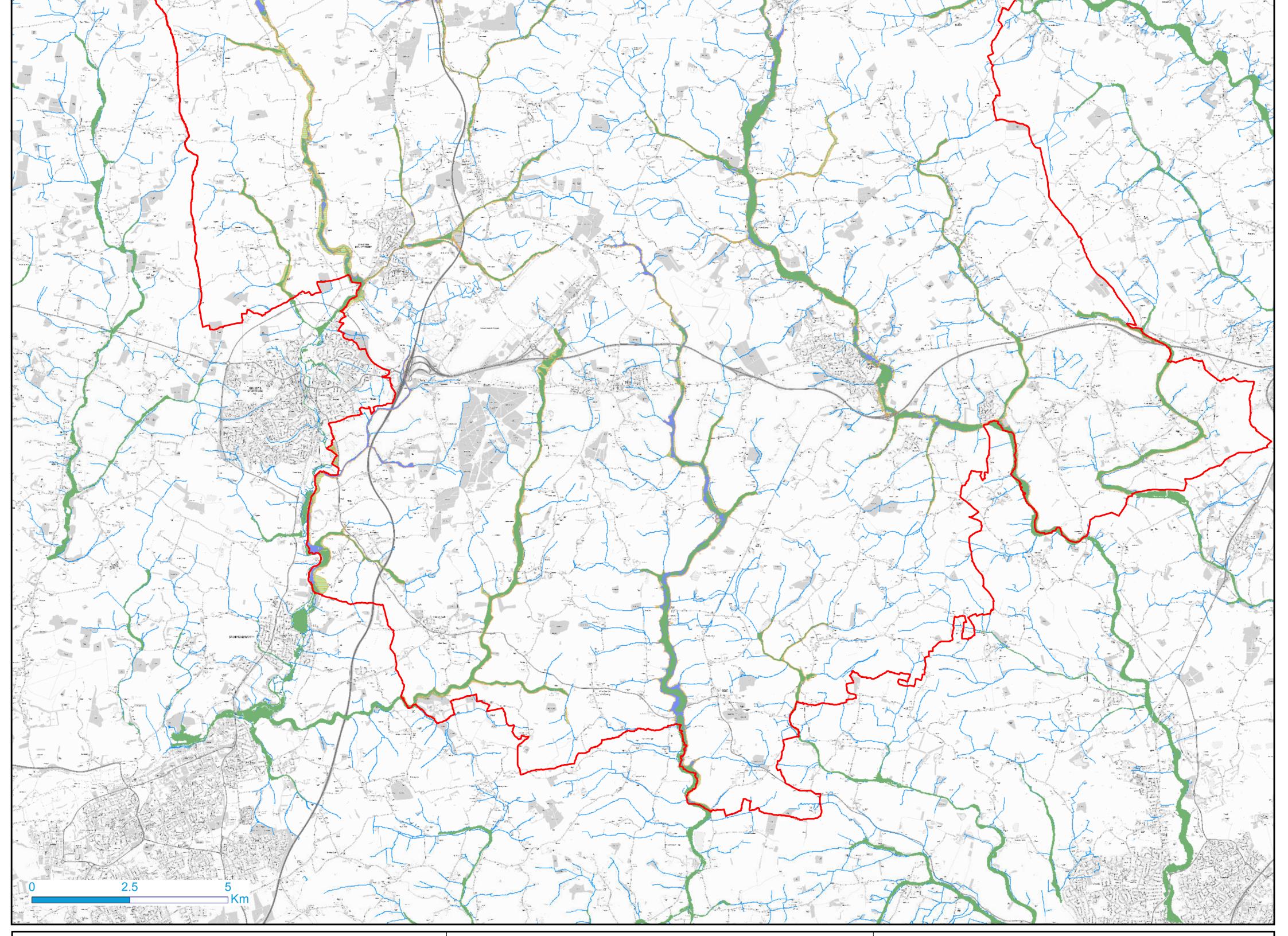
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Flood Zone 2: Comprised of land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding or 1 in 200 and 1 in 1,000 annual probability of sea flooding in any year.

Flood Zone 3a: This zone comprises land assessed as having a greater than 1in 100 annual probability of river flooding or a greater than 1 in 200 annual probability of flooding from sea in any year.

Flood Zone 3a plus climate change: An approximate representation of the impact of the 'upper end' climate change allowance on Flood Zone 3a.

Flood Zone 3b: This zone comprises land where water has to flow or be stored in times of flood (the functional floodplain). The SFRA identified this Flood Zone as land which would flood with an annual probability of 1 in 20 years or 1 in 25 years, where detailed modelling exists. Where no modelling exists, the extent of Flood Zone 3b is assumed to be equal to Flood Zone 3a.

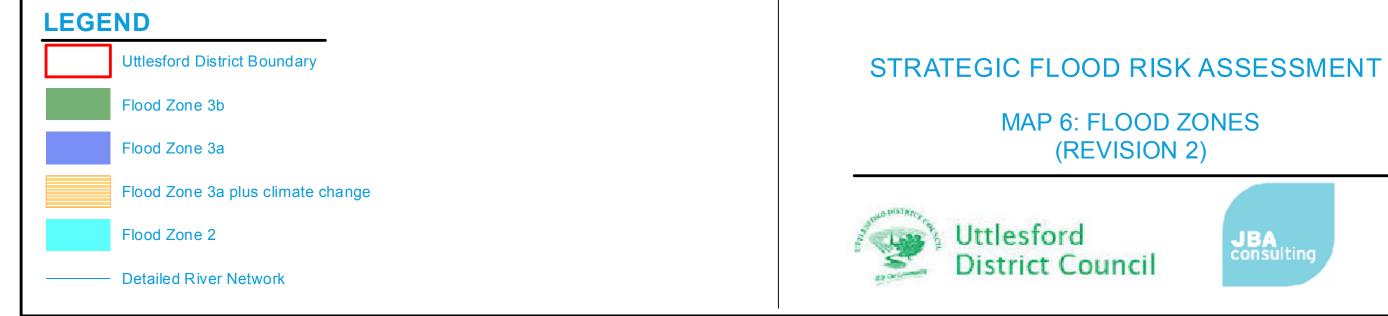


(REVISION 2)

JBA consulting

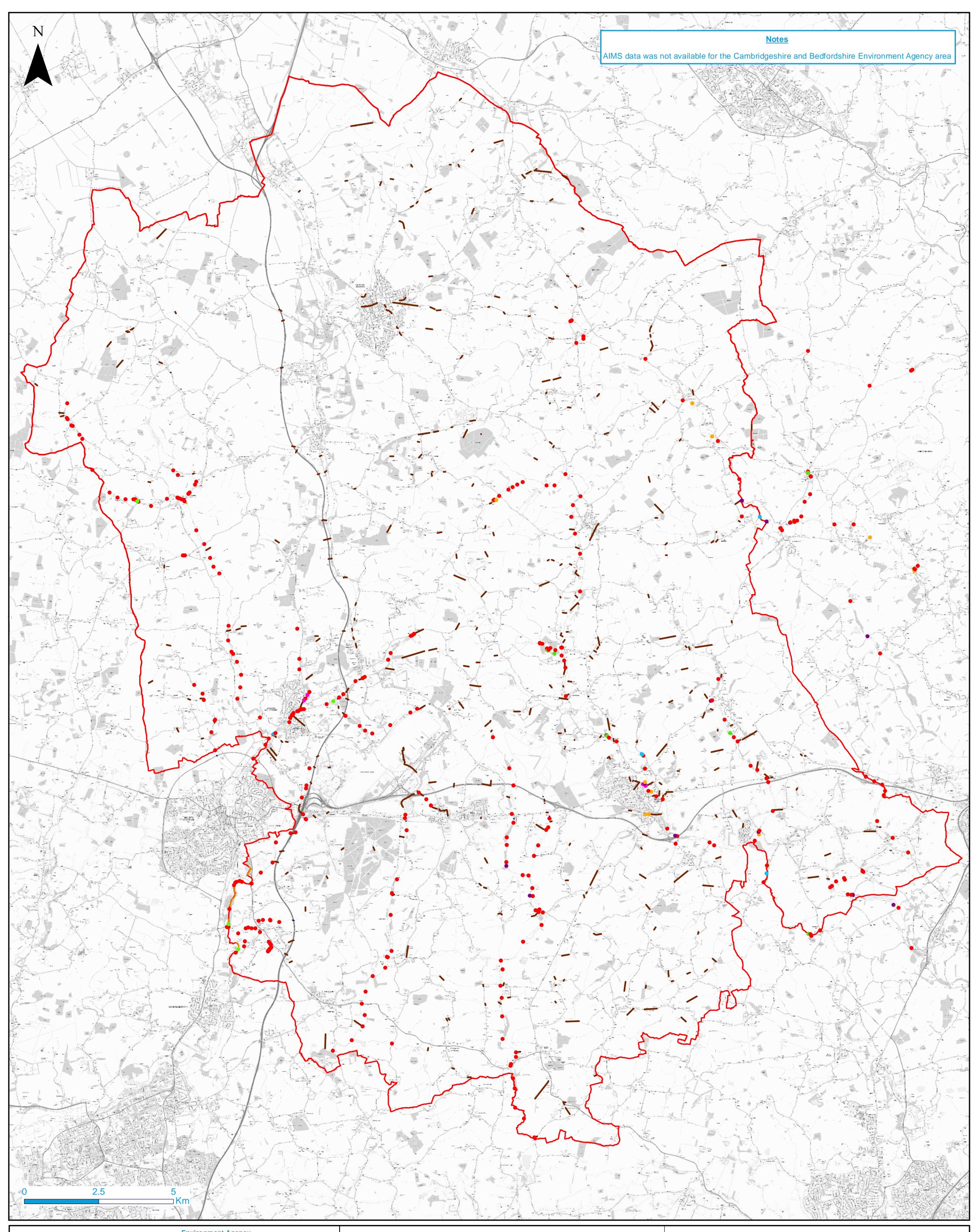
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Information regarding modelled and historical flood risk is constantly changing. Users should consult the Environment Agency for the latest flood risk information relating to specific planning applications.



### LEGEND

- Environment Agency National Flood Map
- ----- Defences
- Areas Benefiting from Flood Defences
- Detailed River Networks (DRN)
- Culverts
- Uttlesford District Boundary
- Environment Agency Asset Information Management System (AIMS)

  Active Monitoring Instrument
  Bridge

  S Control Gate

### Screen

- Outfall
- Weir
- Raised Defence (Embankments/Walls)

### ----- Culvert

## STRATEGIC FLOOD RISK ASSESSMENT

## MAP 7: FLOOD DEFENCES, ASSETS AND STRUCTURES



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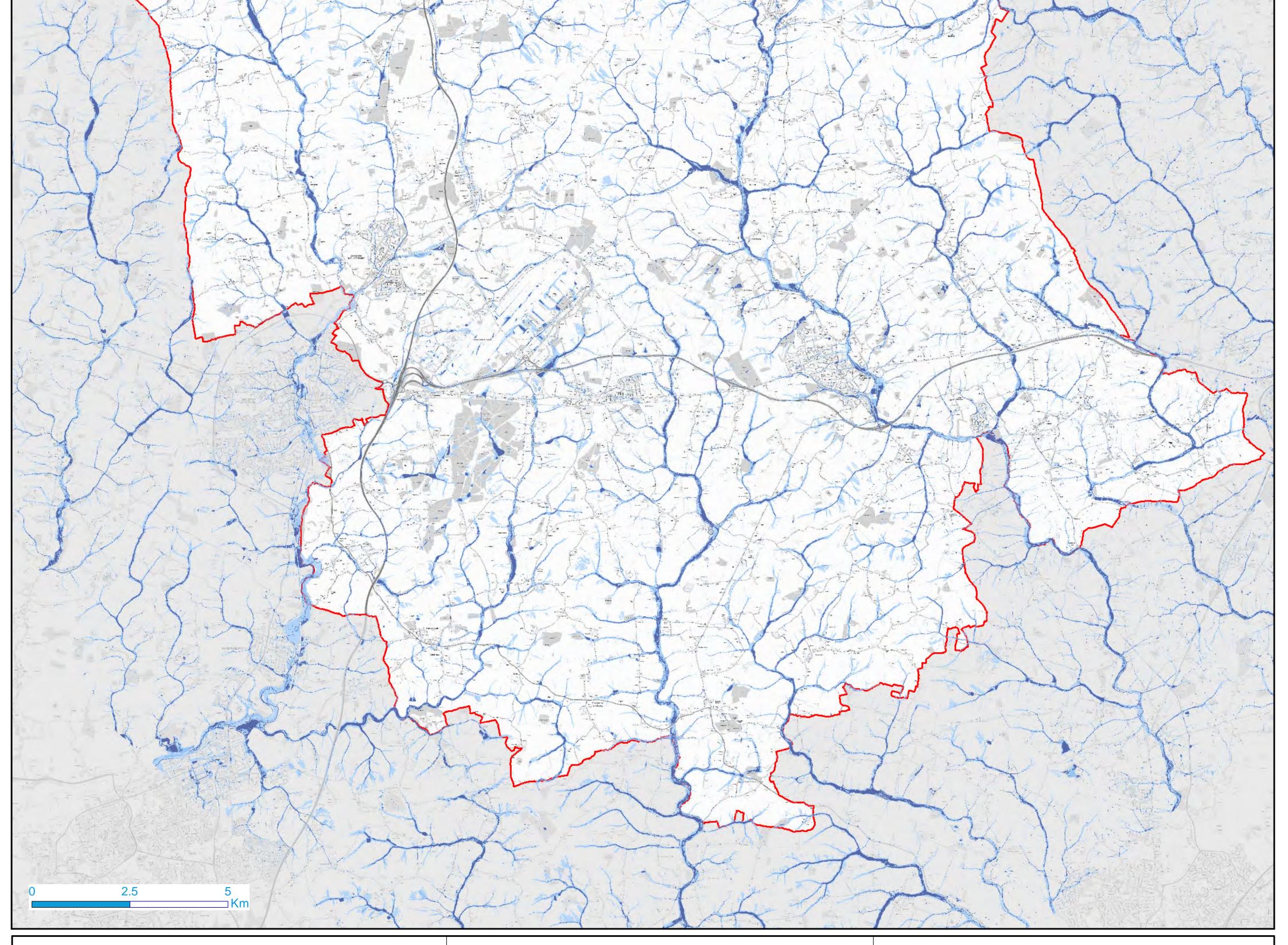
Information regarding modelled and historical flood risk is constantly changing. Users should consult the Environment Agency for the latest flood risk information relating to specific planning applications.

### <u>Notes</u>

The updated Flood Map for Surface Water (uFMfSW) shows the flooding that takes place from the 'surface runoff' generated by rainwater (including snow and other precipitation) which: (a) is on the surface of the ground (whether or not it is moving), and (b) has not yet entered a watercourse, drainage system or public sewer.

The uFMfSW will pick out natural drainage channels, rivers, low areas in the floodplain and flow paths between buildings but it will only indicate flooding caused by local rainfall.

Note: The uFMfSW shows predictions of flooded areas but does not show whether individual properties will be affected by surface water flooding or have been affected in the past. The uFMfSW should not be used to predict if individual properties will flood.



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## Environment Agency Updated Flood Map for Surface Water

1 in 30 flood extent

1 in 100 flood extent

1 in 1000 flood extent

Uttlesford District Boundary

## STRATEGIC FLOOD RISK ASSESSMENT

MAP 8: UPDATED FLOOD MAP FOR SURFACE WATER



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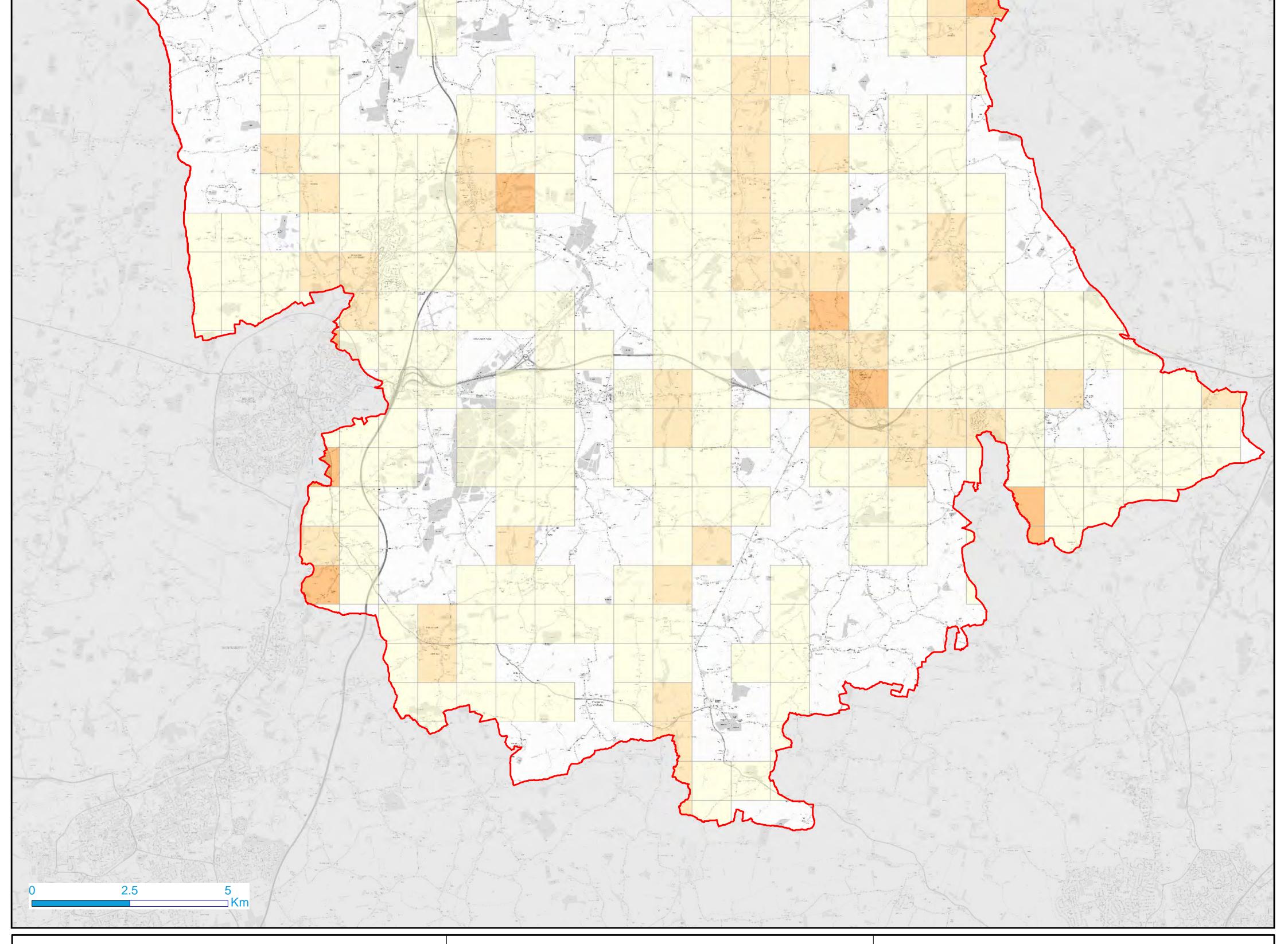
Information regarding modelled and historical flood risk is constantly changing. Users should consult the Environment Agency for the latest flood risk information relating to specific planning applications.

### <u>Notes</u>

The Areas Susceptible to Groundwater Flooding (AStGWF) is a strategic scale map showing groundwater flood areas on a 1km square grid. The data was produced to annotate indicative Flood Risk Areas for Preliminary Flood Risk Assessment (PFRA) studies and allow the Lead Local Flood Authorities (LLFAs) to determine whether there may be a risk of flooding from groundwater.

This data shows the proportion of each 1km grid square where geological and hydrogeological condition show that groundwater might emerge. It does not show the likelihood of groundwater flooding occurring. It does not take account of the chance of flooding from groundwater rebound. This dataset covers a large area of land, and only isolated locations within the overall susceptible area are actually likely to suffer the consequences of groundwater flooding.

The AStGWF data should be used only in combination with other information, for example local data or historic data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale. However, the data can help to identify areas for assessment at a local scale where finer resolution datasets exist.

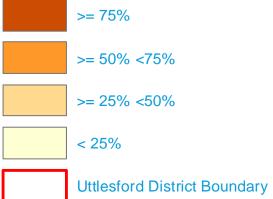


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**Environment Agency Areas Susceptible to Groundwater Flooding** 





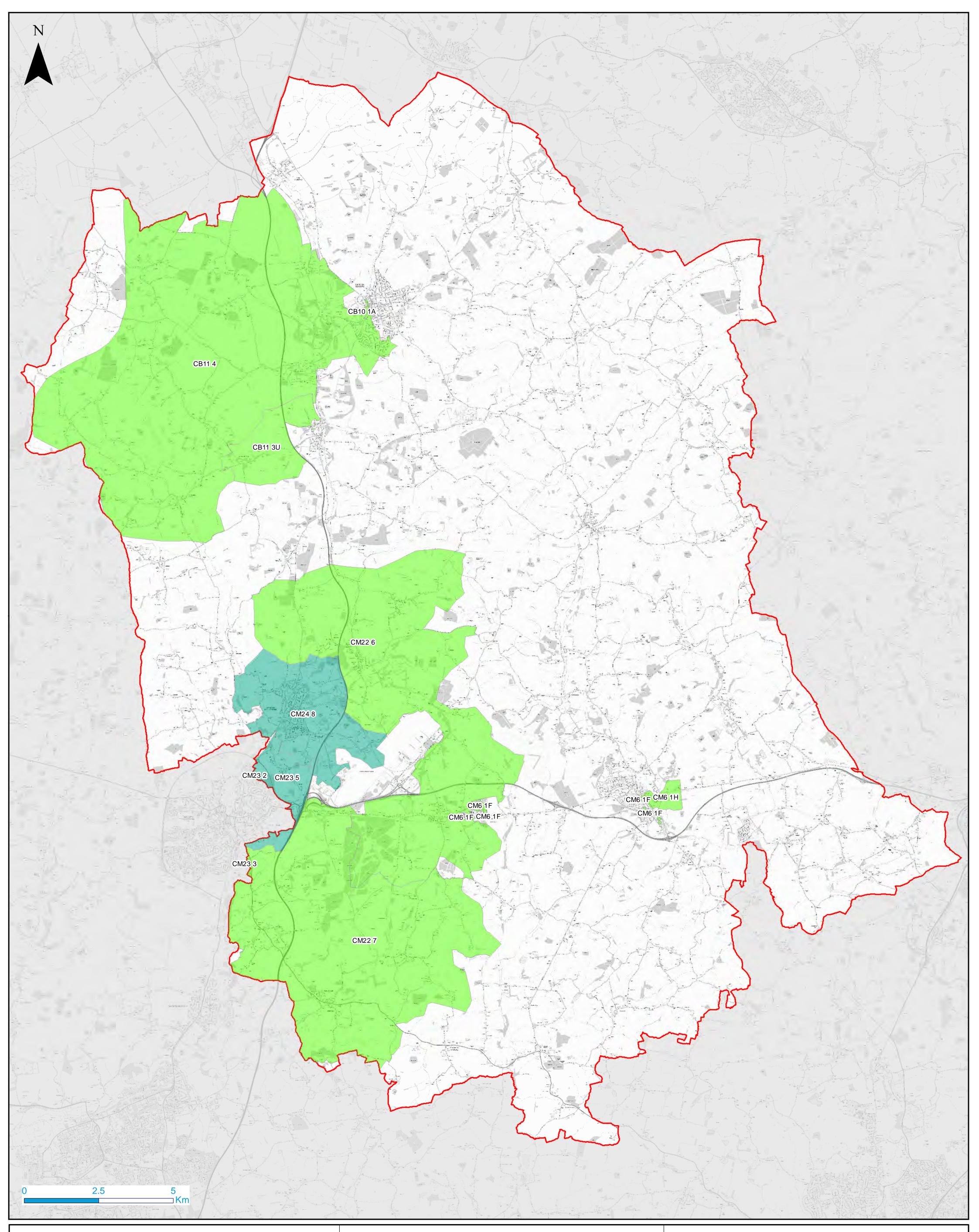
## STRATEGIC FLOOD RISK ASSESSMENT

MAP 9: AREAS SUSCEPTIBLE TO GROUNDWATER FLOODING



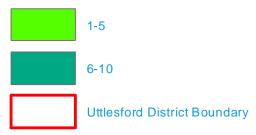
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Information regarding modelled and historical flood risk is constantly changing. Users should consult the Environment Agency for the latest flood risk information relating to specific planning applications.



# LEGEND

## Number of Properties on Register



# STRATEGIC FLOOD RISK ASSESSMENT

## MAP 10: SEWER FLOODING REGISTER



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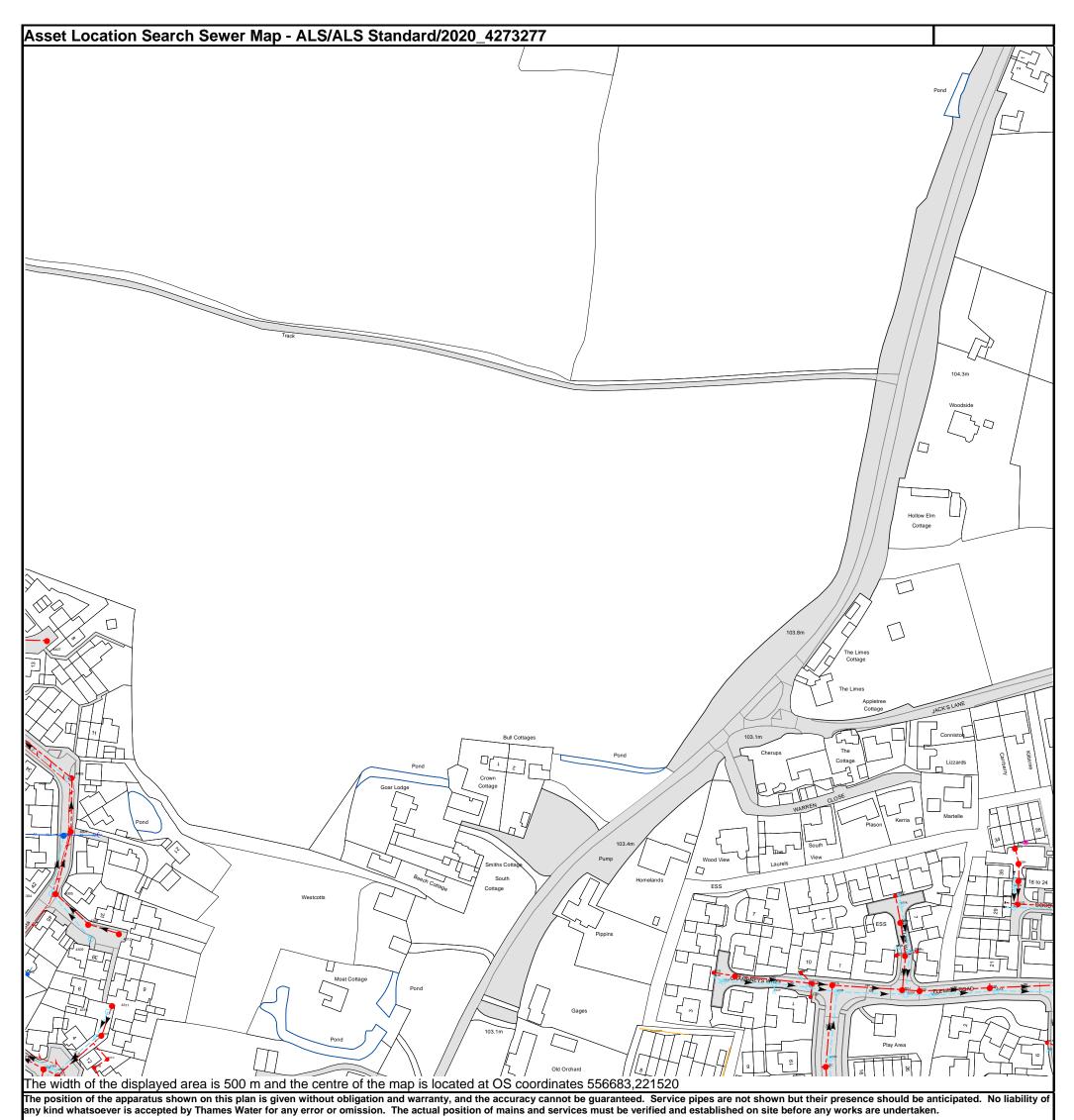
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Flood Risk Assessment & SuDS Report | Bull Field, Takeley



Appendix: F - Thames Water Sewer Reccords

Flood Risk Assessment & SuDS Report | Bull Field, Takeley



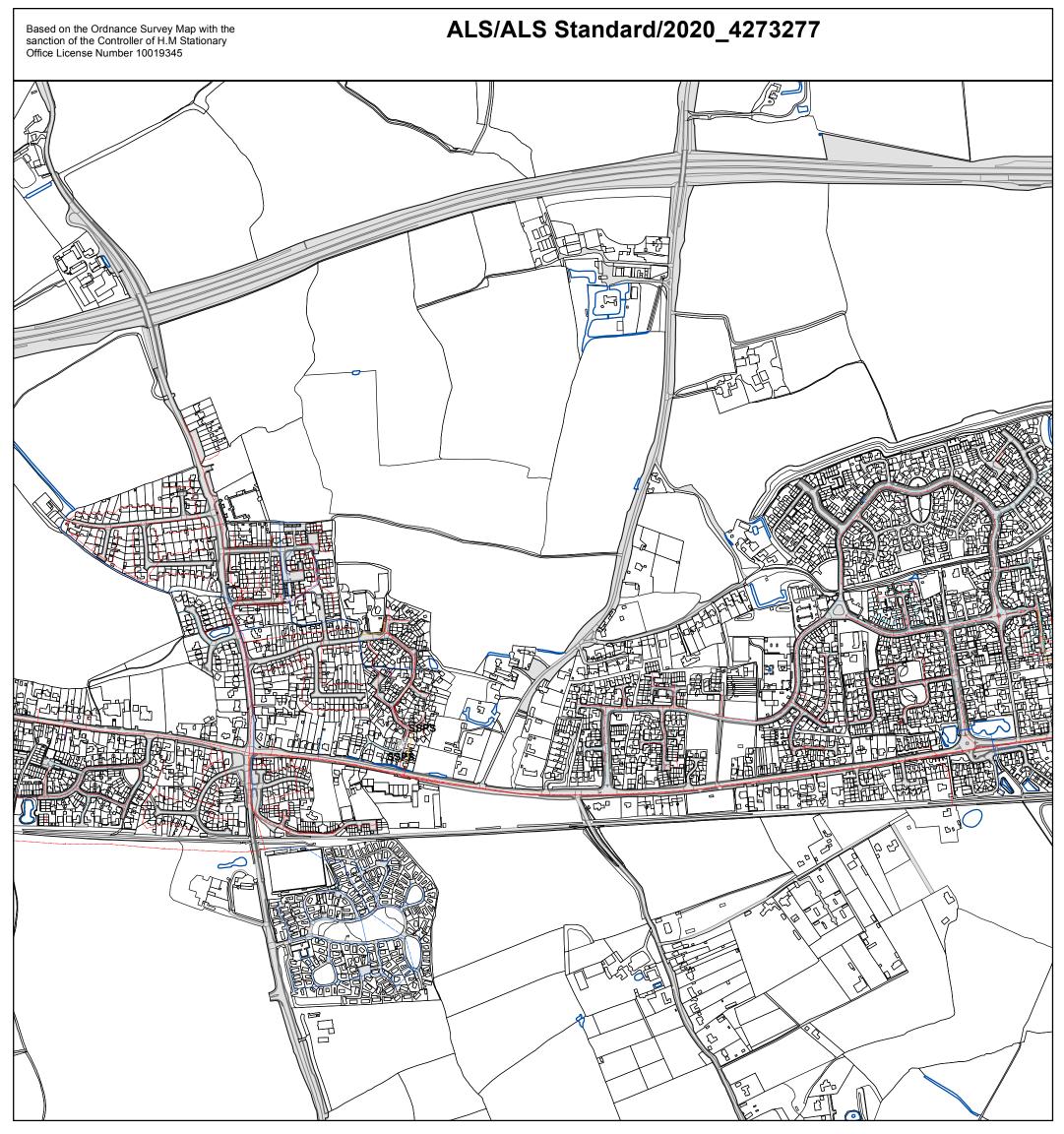
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information	tion is available
--	-------------------

Manhole Reference	Manhole Cover Level	Manhole Invert Level
931N	100.797	99.333
932G	n/a	n/a
931Q	100.765	98.74
931R	100.721	99.04
932H	n/a	n/a
921N	n/a	n/a
921X	n/a	n/a
931C	101.221	n/a
921D	99.827	97.461
921K	99.856	97.227
831B	101.832	n/a
831P	n/a	n/a
831R	n/a	n/a
8310	n/a	n/a
831T	n/a	n/a
831H	101.703	100
		100.485
831K	101.844	
831J	101.557	99.532
8311	101.443	99.69
831M	101.683	98.734
831L	101.438	100.075
831S	n/a	n/a
831V	n/a	n/a
831C	101.688	n/a
831D	101.71	n/a
831E	101.216	n/a
931A	101.086	n/a
931M	100.785	99.175
4310	102.08	101.03
4311	n/a	n/a
4312	n/a	n/a
731D	n/a	n/a
731E	n/a	n/a
731A	102.523	101.13
731C	102.547	100.6
731F	n/a	n/a
731B	102.276	97.709
831Q	n/a	n/a
831N	n/a	n/a
831F	102.063	98.722
831W	n/a	n/a
831G	102.06	97.957
821C	101.285	n/a
821D	101.205	n/a
831A	101.837	n/a
421D	n/a	n/a
421E	n/a	n/a
4204	n/a	n/a
421B	n/a	n/a
4203	102.03	100.25
421C	n/a	n/a
4205	102	100.75
4206	n/a	n/a
431A	n/a	n/a
4309	102.2	101.24
4308	n/a	n/a
4305	n/a	n/a
4304	101.78	101.06
4407	101.78	99.96
4306	101.79	100.77
4408	101.64	100.35
4307	101.82	100
4409	101.65	99.57
The position of the annaratus shown on	this plan is given without obligation and warranty and	d the accuracy cannot be guaranteed. Service pipes are not
		y Thames Water for any error or omission. The actual position
of mains and services must be verified and	d established on site before any works are undertaken.	
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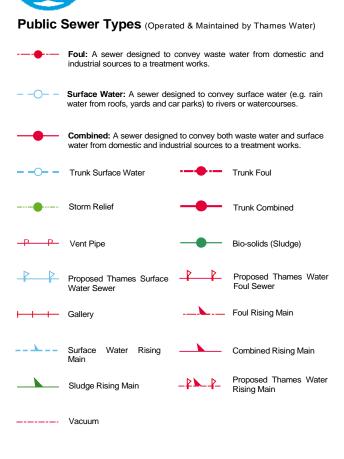




The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

Scale:	1:7158	Comments:
Width:	2000m	
Printed By:	G1KANAGA	
Print Date:	08/10/2020	
Map Centre:	556683,221519	
Grid Reference:	TL5621NE	

ALS Sewer Map Key



### **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

Π

0 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.

X Control Valve Ф Drop Pipe Ξ Ancillary Weir

Outfall

Inlet

Undefined End

### End Items

いし

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.

**Other Symbols** 

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

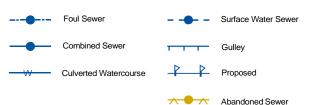
- **\**/ Public/Private Pumping Station
- \* Change of characteristic indicator (C.O.C.I.)
- Ø Invert Level
- < Summit

#### 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)



#### Notes:

hames

Water

- 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.

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Appendix: G – Site Investigations Report

Flood Risk Assessment & SuDS Report | Bull Field, Takeley

Our Ref: CON01-WARI-070 Your Ref: WH200

14 May 2021

David Poole Weston Homes Plc The Stansted Centre Parsonage Road Takeley Essex CM22 6PU



The Stansted Centre Parsonage Road, Takeley Essex CM22 6PU

T. 01279 873380 F. 01279 873381 E. enquiries@stansted-environmental.com W.

Dear Mr Poole ,

## Re: Trial Pit Infiltration Tests – Warish Hall Farm, Takeley

Stansted Environmental Services Ltd (SES) was commissioned by Weston Homes plc (the client) to undertake trial pit soakaway testing at the above site on 28<sup>th</sup> April 2021. Soakaway tests were undertaken at six locations (SA1 to SA6) in general accordance with the methodology specified in BRE Special Digest 365.

Two trial pits were excavated by hand at each location to depths ranging from approximately 0.60m to 1.50m below ground level (bgl) as specified by Weston Homes' consultant EAS.

Beneath a surface covering of topsoil, all the trial pits encountered an orange-grey silty clay with occasional fragments of chalk believed to represent the Lowestoft Formation in this area. Locally, the strata may be described as sandy to very sandy and at one location, SA2, a band of flints was noted between 0.70m bgl and 0.85m bgl. A location plan is included within Appendix A.

Calculated permeability characteristics of the soil over the depth of the test zones are presented in the table below:

Test	Strata Description	Test Depth	No of Tests	Indicative Infiltration Rate
SA1S	Orange-brown-grey silty clay with occasional chalk fragments	0.60m	1	7.7 x 10 <sup>6</sup> m/s
SA1D	Orange-brown-grey silty clay with occasional chalk fragments	1.50	2	1.5 x 10 <sup>-6</sup> m/s
SA2S	Orange-brown-grey silty clay with occasional chalk fragments. Band of flints noted at 0.70m	0.70m	3	7.0 x 10 <sup>-4</sup> m/s
SA2D	Orange-brown-grey silty clay with occasional chalk fragments. Band of flints noted at 0.70m	1.50m	3	1.6 x 10 <sup>-4</sup> m/s
SA3S	Orange-brown-grey sandy clay with occasional chalk fragments.	0.60m	2	5.9 x 10 <sup>-6</sup> m/s
SA3D	Orange-brown-grey sandy clay with occasional chalk fragments.	1.50m	2	6.2 x 10 <sup>-6</sup> m/s
SA4S	Orange-brown-grey sandy clay with occasional chalk fragments.	0.50m	2	5.5 x 10 <sup>-6</sup> m/s
SA4D	Orange-brown-grey sandy clay with occasional chalk fragments.	1.50m	2	4.1 x 10 <sup>-6</sup> m/s
SA5S	Orange-brown-grey sandy clay with occasional chalk fragments.	0.60m	3	1.6 x 10 <sup>-5</sup> m/s
SA5D	Orange-brown-grey sandy clay with occasional chalk fragments.	1.50m	2	1.6 x 10 <sup>-5</sup> m/s
SA6S	Orange-brown-grey sandy clay with occasional chalk fragments.	0.60m	3	2.9 x 10 <sup>-4</sup> m/s
SA6D	Orange-brown-grey sandy clay with occasional chalk fragments.	1.50m	2	1.1 x 10 <sup>-5</sup> m/s

### **TABLE 1: Summary of Test Results**



Soakaway test sheets are appended to this report in Appendix B.

Average infiltration rates for the soils ranged between  $5.9 \times 10^{-6}$  m/s and  $2.9 \times 10^{-4}$  m/s.

I hope the information presented above meets your requirements. Should you wish to discuss the findings of the report, please do not hesitate to contact me.

Yours sincerely

For and on behalf of Stansted Environmental Services Limited



Gavin Greenwood Associate Director (Geoenvironmental)

Encs: Appendix A - Infiltration Test Location Plan Appendix B - Infiltration Test Results APPENDIX A PLANS & FIGURES



LEGEND		Originator	GB	WARISH HALL CON01-WAR
8	Infiltration Test Location	Checked & Approved	WGG	INFILTRATION TEST LO

16/08/2017

## **OCATION PLAN**

## L FARM RI-070



Clever Cloggs Children's Day Nursery

R

e Rd

Heart and Soul Cakes

Sugar 1

A120

Luxury Taxis

APPENDIX B INFILTRATION TEST SHEETS

CEC	2	SOIL INFILTRATION RATE TEST									
STANSTED ENVIRONMENT SERVICES	Test No.	SA1S No 1	Date:	05/05/2021	Job No:	CON01-WARI-070					
lient:	Weston Homes	plc		Site Name:	Warish Hall Farn	n - Jacks					
	т	rial Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.10					
	L	ength	0.50		el at End - m bgl	0.13					
		4/1-1-1-	0.50		V <sub>p75</sub> V <sub>p25</sub>	0.09 0.03					
	V	Vidth	0.50	\	/ <sub>p75-25</sub>	0.06					
		Depth	0.60		a <sub>p50</sub>	0.75					
		above ground level pplicable)	N/A	Infiltratio	on Rate - m/s	7.72E-06					
		sed Time			ed on dip meter (m						
M	linutes 0		onds D		<b>bgl)</b> 0.10	(m 0.5	-				
	1		60		0.10	0.5					
	2		20		0.10	0.5					
	3 4		80 40		0.10	0.5					
	5		00		0.10	0.5					
	25		00		0.10	0.5					
	45 65		00		0.10	0.5					
	85		.00		0.10	0.5					
	105		00		0.10	0.5					
	125 145		00		0.10	0.5					
	165		00		0.10	0.5					
	185		100		0.11	0.4					
	205 225		300 500		0.11	0.4					
	245		700		0.11	0.4					
	265		900		0.11	0.4					
	285 305		100 300		0.11	0.4					
	325		500		0.11	0.4					
	345		700		0.12	0.4					
	365 1380		900 800		0.12 0.13	0.4					
				Time - s							
	0 1000	0 20000 3	4000 4000	00 50000	60000 70000	80000 90	<b>000</b>				
0.	02						-				
0.	04						-				
.0 gg Depth - m Depth	06						-				
	0.1						-				

0.12

0.14

SES		SOIL INFILTRATION RATE TEST									
STANSTED ENVIRONMENT SERVICES	Test No.	SA1D No 1	Date:	04/05/2021	Job No:	CON01-WARI-0	70				
ient:	Weston Home	s plc		Site Name:	Warish Hall Farr	n - Jacks					
	· · ·	Trial Pit Dimensions	(m)	Water Leve	el at Start - m bgl	0.11	٦				
		Length	0.50	WaterLeve	el at End - m bgl	0.13					
		0			V <sub>p75</sub> V <sub>p25</sub>	0.26	_				
		Width	0.50		V <sub>p75-25</sub>	0.17	-				
		Depth	1.50		a <sub>p50</sub>	1.64					
		above ground level pplicable)	N/A	Infiltrati	on Rate - m/s	1.48E-06					
	Elar	osed Time		Depth recorde	ed on dip meter (m	Head of Wa	iter above Base				
м	linutes	Sec	onds		bgl)		(m)				
	0		0		0.11	-	1.39				
	2		20		0.11		1.39 1.39				
	3	1	30		0.11		1.39				
	4 5		40 D0		0.11		1.39 1.39				
	25		00		0.11		1.39				
	45		00		0.11		1.39				
	65 85		00		0.11		1.39 1.39				
	105		00		0.11		1.39				
	125		00		0.11		1.39				
	145 165		00		0.11 0.12		1.39 1.39				
	185		100		0.12		1.39				
	205		300		0.12		1.38				
	225 245		500 700		0.12		1.38 1.38				
	265		<del>9</del> 00		0.12		1.38				
	285		100		0.12		1.38				
	305 325		300 500		0.12	-	1.38 1.38				
	345		700		0.12		1.38				
	365	21	900		0.12		1.38				
	1380	82	300		0.13		1.37				
				Time - s		-					
0.	.105	2000 2000	30000 400	000 50000	60000 70000	80000	90000				
(	0.11										
	.115	•					_				
n bgl											
Depth - m bgl	0.12						—				
	.125						—				

0.13

0.135

SE	<u>S</u>	SOIL INFILTRATION RATE TEST						
STANSTEI VIRONMEI SERVICES	D <sub>NTAL</sub> Test No.	SA1D No 2	Date:	05/05/2021	Job No:	CON01-WARI-07	0	
nt:	Weston Hon	nes plc		Site Name:	Warish Hall Farm	- Jacks		
		Trial Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.05	ו	
		Length	0.50		el at End - m bgl	0.07		
		Length	0.50		V <sub>p75</sub>	0.27	-	
		Width	0.50		V <sub>p25</sub> / <sub>p75-25</sub>	0.09	-	
		Depth	1.50		a <sub>p50</sub>	1.70	-	
		pe above ground level		_	on Rate - m/s	1.57E-06		
		f applicable)						
	E	lapsed Time Seco	ands		ed on dip meter (m bgl)		er above Base m)	
	0		)		0.05	-	.45	
	1		0		0.05		.45	
	2		20 30		0.05 0.05		.45	
	4	24	40		0.05	1	.45	
	5		00		0.05		.45	
	25 45		00		0.05 0.05		.45 .45	
	65		00		0.05		.45	
	85 105		00		0.05 0.05		.45 .45	
	105		00		0.05		.45	
	145		700		0.05		.45	
	165 185		00 100		0.05		.45 .45	
	205		300	0.05		1.45		
	225		500	0.05		1.45		
	245 265		700 900	0.06 0.06 0.06		<u>1.44</u> 1.44		
	285	17:	100			1.44		
	305		300 500	0.06		1.44		
	325 345		700		0.06	<u>1.44</u> 1.44		
	365		900		0.06		.44	
	1380	828	300		0.07	1	.43	
				Time - s				
	0 10	2000 3	4000 4000		60000 70000	80000 9	0000	
	0							
	0.01							
	0.02						_	
-00	0.03						_	
Ē	0.04							
Depth - m bgl								
ă	0.05						_	
	0.06						-	
	0.07						_	
	,					_		

CEC			SOIL IN	FILTRATION	RATE TEST		
STANSTED ENVIRONMENTA SERVICES	L Test No.	SA2S No 1	Date:	04/05/2021	Job No:	CON01-WARI-07	0
lient:	Weston Homes	plc		Site Name:	Warish Hall Farm	- Jacks	
		ial Dit Dimensions	(	Water Lava	lat Ctaut us hal	0.20	ר
		ial Pit Dimensions	(m)		l at Start - m bgl l at End - m bgl	0.20	
	Le	ength	0.50		V <sub>p75</sub>	0.09	-
		/idth	0.50		V <sub>p25</sub>	0.03	
	, vi	nath	0.50	\ \	/ <sub>p75-25</sub>	0.06	
		epth	0.70		a <sub>p50</sub>	0.75	
		bove ground level plicable)	N/A	Infiltratio	on Rate - m/s	1.19E-03	
		ed Time			ed on dip meter (m		er above Base
	nutes 0		onds 0		<b>bgl)</b> 0.20		<b>m)</b> .50
	1		50		0.67		.03
	2 s noted at 0.70m	1	20		0.70		.00
0		0 40	60	<b>Time - s</b> 80	100	120	140
0.3 10 10 10 10 10 10 10 10 10 10							
0.7			•				
0.8							

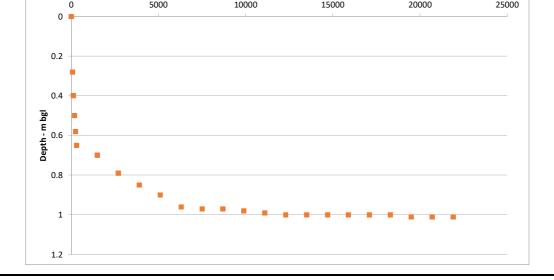
CE	ç	SOIL INFILTRATION RATE TEST									
STANSTE NVIRONME SERVICE	D NTAL S	SA2S No 2	Date:	04/05/2021	Job No:	CON01-WARI-07	0				
ient:	Weston Hom	nes plc		Site Name:	Warish Hall Farm	- Jacks					
	<b></b>	<b>T</b> : 10% 01 · ·	( )	·			٦				
		Trial Pit Dimensions	(m)		l at Start - m bgl el at End - m bgl	0.35	_				
		Length	0.50		V <sub>p75</sub>	0.07					
					V <sub>p25</sub>	0.02					
		Width	0.50		/ <sub>p75-25</sub>	0.04					
		Depth	0.70		a <sub>p50</sub>	0.60					
		e above ground level applicable)	N/A	Infiltrati	on Rate - m/s	5.21E-04					
	Fl	apsed Time		Depth recorde	ed on dip meter (m	Head of Wat	er above Base				
	Minutes		onds		bgl)	(	m)				
	0		0		0.35		.35				
	2		50 20		0.40		.30 .23				
	3		80		0.55		.15				
	4	2	40		0.62	0	.08				
	5 flints noted at 0.70		00		0.70	0	.00				
	0	50 100	150	<b>Time - s</b> 200	250	300	350				
	0.1										
	0.2						_				
	0.3										
bgl	5.5 •										
2	0.4										
Depth - m bgl											
	0.5						—				
	0.6			•							
						_					
	0.7										
	0.7										

CE	ç	SOIL INFILTRATION RATE TEST								
STANSTE SERVICE	D NTAL S	SA2S No 3	Date:	04/05/2021	Job No:	CON01-WARI-07	70			
ient:	Weston I	Homes plc		Site Name:	Warish Hall Farm	- Jacks				
		Trial Dit Dimonsions	(	Material ave	l at Start - m bgl	0.21	٦			
		Trial Pit Dimensions	(111)		el at End - m bgl	0.21	-			
		Length	0.50	-	V <sub>p75</sub>	0.09				
					V <sub>p25</sub>	0.03				
		Width	0.50		/ <sub>p75-25</sub>	0.06				
		Depth	0.70		a <sub>p50</sub>	0.74				
	Height of	f pipe above ground level (if applicable)	N/A	Infiltratio	on Rate - m/s	3.76E-04				
		Elapsed Time			ed on dip meter (m		ter above Base			
	Minutes		onds		<b>bgl)</b> 0.21		( <b>m)</b> ).49			
	0		0		0.21		).49 ).42			
	2	12	20		0.35		).35			
	3		30		0.42		).28			
	4 5		40 D0		0.49 0.57		).21 ).13			
	7		20		0.65		).13			
	10		00		0.70		0.00			
	0	100 200	300	<b>Time - s</b> 400	500	600	700			
		100 200	300		500	600	700			
	0	100 200	300		500	600	700			
	0	100 200	300		500	600	700			
- m bgl	0	•	300		500	600	700			
Depth - m bgl	0 0.1 0.2 0.3 0.4	•	300		500	600	700			
Depth - m bgl	0	•	300		500	600	700			
Depth - m bgl	0 0.1 0.2 0.3 0.4 0.5	•			500	600	700			
Depth - m bgl	0 0.1 0.2 0.3 0.4 0.5 0.6	•		400	500	600	700			

SFS		SOIL INFILTRATION RATE TEST									
STANSTED NVIRONMENT SERVICES	TAL Test No.	SA2D No 1	Date:	04/05/2021	Job No:	CON01-WARI-070					
ent:	Weston Homes pl	c		Site Name:	Warish Hall Farm	- Jacks					
	Tria	l Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.00					
					l at End - m bgl	0.85					
	Len	gth	0.50		V <sub>p75</sub>	0.28					
			0.50		V <sub>p25</sub>	0.09					
	Wid	ith	0.50		p75-25	0.19					
	Dep	oth	1.50		a <sub>p50</sub>	1.75					
	Height of pipe ab (if appl		N/A	Infiltratio	on Rate - m/s	4.20E-04					
	Elapse	d Time		Depth recorde	d on dip meter (m	Head of Water	above Base				
N	Ainutes	Seco	onds		bgl)	(m)					
	0	C			0.00	1.50					
	1	6			0.28	1.22					
	2 3	12			0.40 0.50	1.10					
	4	24			0.58	0.92					
	5	30			0.65	0.85					
	25	15			0.70	0.80					
	45	27	00		0.72	0.78	3				
	65	39			0.75	0.75	5				
	85	51			0.76	0.74					
	105 125	63			0.76 0.77	0.74					
	125	75 87			0.77	0.73					
	165	99			0.78	0.72					
	185	111			0.79	0.7					
	205	123	800		0.80	0.70	)				
	225	135			0.80	0.70					
	245	147			0.80	0.70					
	265 285	159 171			0.80	0.70					
	305	1/1			0.80 0.80	0.70					
	325	195			0.81	0.69					
	345	207			0.81	0.69					
	365	219	000		0.82	0.68	3				
	1380	828	300		0.85	0.65	5				
	0 10000	20000 30	4000	<b>Time - s</b> 0 50000	60000 <b>70000</b>	80000 900	00				
0	0.1										
0	0.2										



SES			SOIL IN	IFILTRATION	RATE TEST		
STANSTED NVIRONMENTA SERVICES	<sub>L</sub> Test No.	SA2D No 2	Date:	05/05/2021	Job No:	CON01-WARI-070	)
ent:	Weston Homes	plc		Site Name:	Site Name: Warish Hall Farm - Jacks		
	т	rial Pit Dimensions	(m)	Water Leve	Water Level at Start - m bgl		
	Le	ength	0.50	WaterLeve	WaterLevel at End - m bgl V <sub>p75</sub>		
	v	Vidth	0.50		V <sub>p25</sub> V <sub>p75-25</sub>	0.28 0.09 0.19	
	D	epth	1.50		a <sub>p50</sub>	1.75	
		above ground level plicable)	N/A	Infiltrati	on Rate - m/s	5.21E-05	
		sed Time		Depth recorde	ed on dip meter (m	Head of Wate	er above Base
Mi	nutes	Seco			bgl)	(n	
	0	0			0.00	1.	
	1 2	6			0.28	1	
	3         18           4         24           5         30           25         15           45         27           65         39				0.40 0.50 0.58		00
							92
			00	0.65		0.8	
			00		0.70		80
					0.79	0.71 0.65	
				0.85			
	85	51		0.90 0.96 0.97		0.0	
	105 125	63 75				0.54	
	145	87		0.97 0.98 0.99	0.		
	165	99			0.52 0.51		
1	185	111	.00			51	
	205	123			1.00	0.50	
	225	135			1.00	0.	
	245	147			1.00	0.	
	265 285	159			1.00	0.	
	305	183			1.00		50
	325	195			1.01	0.4	
	345	207			1.01	0.4	
3	365	219	900		1.01	0.4	49
0.2 0.4 199 0.6 0.6		5000	10000	Time - s 15000	2000	0 25	5000 



ANSTED CONMENTAL ERVICES	No. SA2D No 3	Date:	05/05/2021	Job No:	CON01-WARI-07	0
	on Homes plc	1	Site Name:	Warish Hall Farn	n - Jacks	
	Trial Pit Dimension	t Dimonsions (m)		el at Start - m bgl	0.25	
		1		el at End - m bgl	1.00	
	Length	0.50		V <sub>p75</sub>	0.23	
	Width	0.50		V <sub>p25</sub>	0.08	
				V <sub>p75-25</sub>	0.16	-
Depth Height of pipe above ground l		1.50	In filment	a <sub>p50</sub>	1.50	
-	(if applicable)	N/A	Infiltrati	on Rate - m/s	2.78E-05	
Minutes	Elapsed Time	conds	Depth recorde	ed on dip meter (m bgl)		er above l m)
0		0		<b>bgi)</b> 0.25		<b>m)</b> .25
1		60		0.31		.19
2		120 180		0.39		.11 .05
4		240		0.51	0	.99
5 25		300 1500		0.59		.91 .83
45		2700		0.75		.75
65		8900		0.81		.69
85 105		5100 5300		0.89		.61 .60
125	7	/500		0.97	0	.53
145 165		3700 9900		0.99		.51
185		1100		1.01		.49
205 225		2300		1.02		.48
225		3500 4700		1.02 1.03		.48 .47
265	1	5900		1.04		.46
285 305		7100 8300		1.04 1.05		.46 .45
0	2000 4000 600	00 8000	<b>Time - s</b> 10000 12000	14000 1600	00 18000 2	20000
0.2 0.4 E 0.6	•					_
0.8		• • •	••••		• •	

SES STANSTED	Test No. S	A3S No1	Date:	05/05/2021	Job No:	CON01-WARI-070	
VIRONMENTA Services							
nt:	Weston Homes plo			Site Name:	Warish Hall Farm	- Bulls Field	
	Trial	Pit Dimensions	(m)	Water Leve	Water Level at Start - m bgl		
	Leng	th	0.50	WaterLevel at End - m bgl		0.23	
			0.50		V <sub>p75</sub>		
	Wid	th	0.50		V <sub>p25</sub>	0.03	
					/ <sub>p75-25</sub>	0.06	
	Dep		0.60		a <sub>p50</sub>	0.69	
	Height of pipe above grou (if applicable)		N/A	Infiltratio	on Rate - m/s	4.74E-06	
	Elapsed	Time		Depth recorde	d on dip meter (m	Head of Water	above Base
Mi	nutes	Seco	onds		bgl)	(m)	
	0		0		0.16	0.44	
	2         1           3         1           4         2           5         3           25         1!           45         2!           65         3!           85         5!           105         66           125         7!		20		0.16	0.44	
			30		0.16	0.44	
			40 D0		0.16 0.16	0.44	
			00		0.17	0.43	8
			00	0.17 0.17 0.18		0.43	
			.00			0.43	
			00		0.18	0.42	
			00		0.18 0.18	0.42	
	145		00		0.19	0.42	
	185		100		0.19	0.41	
	205 225		300 500		0.19 0.19	0.41	
	245	14	700	0.20 0.20 0.20 0.20 0.21 0.21 0.21 0.21		0.40	
	265 285		900 100			0.40	
	305		300			0.40	
	325		500			0.39 0.39 0.39	
	345 365		700 900				
	.380		300			0.37	
	0 10000	20000 3	0000 4000	<b>Time - s</b> 00 50000	60000 70000	80000 900	00
0.0	0						
0 Depth - m bgl	.1						
<b>ق</b> 0.1	ă 0.15						
0	.2						

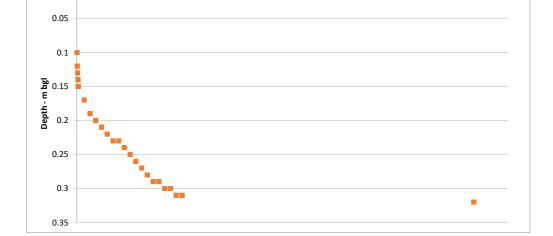
CEC			SOIL IN	FILTRATION	RATE TEST		
STANSTED ENVIRONMENTA SERVICES	L Test No.	SA3S No 2	Date:	06/05/2021	Job No:	CON01-WARI-070	
ient:	Weston Homes	eston Homes plc			Warish Hall Farm	- Bulls Field	
		rial Pit Dimensions	(m)	Water Love	el at Start - m bgl	0.05	
			(111)		el at End - m bgl	0.03	
	Le	ength	0.50		V <sub>p75</sub>	0.10	
					V <sub>p25</sub>	0.03	
	v	Vidth	0.50	,	V <sub>p75-25</sub>	0.07	
	D	Depth	0.60		a <sub>p50</sub>	0.80	
	Height of pipe a	above ground level	N/A	Infiltrati	on Rate - m/s	7.16E-06	
	Elapsed Time						
мі			onds	Depth recorde	ed on dip meter (m bgl)	Head of Water a (m)	adove Base
IVI	0	Sect			0.05	0.55	
	1	6	0		0.05	0.55	
	2	12			0.06	0.54	
	3	18			0.06	0.54	
	5	24			0.06	0.54	
	25	15		0.07		0.53 0.53	
	45	27	00				
	65	39			0.08	0.52	
	85 105	51			0.08 0.09 0.09		
	105	75					
	145	87			0.09	0.51 0.51	
	165	99			0.10	0.50	
	185	111		0.10 0.12		0.50	
	205 225	123			0.12	0.48	
	245	147			0.13	0.47	
	265	159			0.14	0.46	
	285	171			0.15	0.45	
	305 325	183			0.16 0.17	0.44 0.43	
	345	207			0.18	0.43	
3	365	219	900		0.18	0.42	
1	380	828	300		0.20	0.40	
0.0 bbt u D D D D D D D D D D D D D D D D D D		0 20000 3	0000 4000	<b>Time - s</b> 00 50000	60000 70000		00
0.	2						

0.25 -

CEC			SOIL INF	ILTRATION	RATE TEST		
STANSTED STANSTED ENVIRONMENTA SERVICES	L Test No.	SA3D No 1	Date:	05/05/2021	Job No:	CON01-WARI-07	0
ient:	Weston Homes p	lc		Site Name:	Warish Hall Farm	- Bulls Field	
	Tri	al Pit Dimensions (	m)	Water Level at Start - m bgl		0.22	
		ngth	0.50	WaterLeve	el at End - m bgl V <sub>p75</sub>	0.31	-
	Wi	dth	0.50	V <sub>p25</sub>	0.08		
	De	pth			/ <sub>p75-25</sub> a <sub>p50</sub>	0.16	
	Elapsed Time           Minutes         Seco           0         0           1         66           2         12           3         18           4         24           5         30           25         150           45         270		N/A	Infiltratio	on Rate - m/s	6.22E-06	-
						11	<b>_</b>
Mir			nds		ed on dip meter (m bgl)		er above Base m)
IVIII					0.22	-	.28
			0	0.23 0.23 0.23 0.23 0.23 0.23 0.23 0.24 0.24		1.28 1.27 1.27 1.27	
						1.27 1.27	
							.26
							.26
	65	390		0.25 0.25 0.26 0.26 0.26 0.26 0.27			.25
	85	510					.25
	.05 .25	630 750					.24
	.25 .45	870					.24
	.65	990					.23
1	.85	111	.00		0.27	1.23	.23
	205	123			0.28		.22
	25	135			0.28		.22
	245 265	147 159			0.28		.22
	.05	135			0.29		.22
	805	183			0.29		.21
	325	195			0.29		.21
	345	207			0.30		.20
	365         21           1380         82				0.30 0.31		.20 .19
	0 10000	20000 30	T 2000 40000	<b>ime - s</b> 50000	60000 70000	80000 9	90000
0.0	0.05						
0.	1						_
ຊື່ 0.1 E	5						_
Debth B D D D D D D D D D D D D D D D D D D	2						_

SEC			SOIL IN	FILTRATION	RATE TEST				
STANSTED VIRONMENTAL SERVICES	Test No.	SA3D No 2	Date:	06/05/2021	Job No:	CON01-WARI-070			
nt:	Weston Homes p	Weston Homes plc			Site Name: Warish Hall Farm - Bulls Field				
	Te	ial Pit Dimensions	(m)	Water Love	l at Start - m bgl	0.12			
			(11)		el at End - m bgl	0.12			
	Le	ngth	0.50		V <sub>p75</sub>	0.26			
		:	0.50		V <sub>p25</sub>	0.09			
	vv	idth	0.50	١	/ <sub>p75-25</sub>	0.17			
	Depth		1.50		a <sub>p50</sub>	1.63			
		bove ground level blicable)	N/A	Infiltratio	on Rate - m/s	6.30E-06			
Min	Elapso	ed Time Seco	onds		ed on dip meter (m bgl)	Head of Water ( (m)	above Base		
	0		)		0.12	1.38			
	1		0		0.12	1.38			
	23		20		0.13 0.13	1.37			
	3 18 4 24				0.14	1.36			
	5	30	00		0.14	1.36			
	5 .5		00	0.14           0.15           0.15           0.15           0.15           0.15           0.16           0.16		1.36			
	i5		00			1.35			
	5	51	.00			1.35			
	05		00			1.35			
	25 45		00			1.34			
	65		00			1.34			
	85		100		0.17	1.33			
	05 25		300 500	0.17 0.18 0.18	1.33				
	45		700			1.32			
	65		900		0.19	1.32 1.31 1.31 1.30 1.30			
	85		100		0.19				
	05 25		300 500		0.20 0.20				
	45		700		0.21	1.29			
	65		900		0.21	1.29			
13	80	828	300		0.22	1.28			
C	0 10000	20000 3	<b>.0000 4000</b>	<b>Time - s</b> 00 50000	60000 70000	80000 9000	00		
0.05									
0.1 9 9 9 9 9 9 0.15									
Depth 0.15									
0.2	!								

STANSTED NVIRONMENT SERVICES	Test No.	SA4S No 1	Date:	05/05/2021	Job No:	CON01-WARI-070	
ent:	Weston Homes pl	c		Site Name:	Warish Hall Farm	- Bulls Field	
	Tria	l Pit Dimensions (	m)	Water Leve	el at Start - m bgl	0.10	
			,		el at End - m bgl	0.32	
	Len	gth	0.50		V <sub>p75</sub>	0.09	
					V <sub>p25</sub>	0.03	
	Wic	ith	0.50		V <sub>p75-25</sub>	0.06	
					<b>P</b> p75-25	0.06	
	Dep	oth	0.60		a <sub>p50</sub>	0.75	
	Height of pipe ab (if appli		N/A	Infiltrati	on Rate - m/s	6.67E-06	
	Elapsed	d Time		Depth recorde	ed on dip meter (m	Head of Water abov	e Base
Minutes		Seco	nds	bgl)		(m)	
	0	0			0.10	0.50	
	1	60			0.12	0.48	
	2	12			0.13	0.47	
	3 4	18 24			0.14	0.46	
	5	30			0.14	0.40	
	25	150			0.17	0.43	
	45	270			0.19	0.41	
	65	390	00		0.20	0.40	
	85	510	00		0.21	0.39	
	105	630			0.22	0.38	
	125	750			0.23	0.37	
	145 165	870 990			0.23	0.37	
	185	111			0.24	0.36	
	205	123			0.26	0.34	
	225	135			0.27	0.33	
	245	147	00		0.28	0.32	
	265	159			0.29	0.31	
	285	171			0.29	0.31	
	305	183			0.30	0.30	
	325 345	195 207			0.30	0.30	
	365	207			0.31	0.29	
	1380	828			0.32	0.28	
	0 10000	20000 30	0000 4000	<b>Time - s</b> 00 50000	60000 70000	80000 90000	



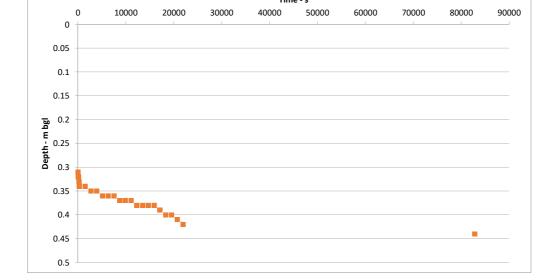
SEC			SOIL IN	FILTRATION	RATE TEST		
STANSTED NVIRONMENT/ SERVICES	Test No.	SA4S No 1	Date:	06/05/2021	Job No:	CON01-WARI-070	
ent:	Weston Homes	s plc		Site Name: Warish Hall Farm - Bulls Field			
	Г I	rial Pit Dimensions	m)	Water Leve	Water Level at Start - m bgl		
	L	ength	0.50	WaterLeve	WaterLevel at End - m bgl		
	· · · · ·	Width	0.50		V <sub>p25</sub>	0.07 0.02	
		Depth	0.60	<u>`</u>	V <sub>p75-25</sub> a <sub>p50</sub>	0.05	
	Height of pipe	above ground level	N/A	Infiltrati	on Rate - m/s	4.19E-06	
		oplicable) sed Time		Danéh record	ed on dip meter (m	Head of Water	ahovo Para
М	inutes	Seco	nds	Depth records	bgl)	(m	
	0	0			0.22	0.3	
	1	6			0.23	0.3	
	2         12           3         18           4         24           5         30           25         150           45         270           65         390           85         510				0.23	0.3	
					0.24	0.36	
					0.24		5
				0.26		0.34	
				_	0.27 0.28		
				0.28		0.32	
	105	63		0.28 0.29 0.29 0.30 0.30 0.31 0.31		0.32 0.31 0.31	
	125	75	00				
	145	87					
	165 185	99				0.30 0.30 0.29	
	205	123					
	225	135	600			0.29	
	245	147			0.32	0.2	
	265	159			0.32	0.2	
	285 305	171			0.32	0.2	
	325	195			0.33	0.2	
	345	207			0.34	0.2	
	365	219			0.35	0.2	
	1380	828	00		0.37	0.2	3
				Time - s			
	0 1000	00 20000 3	0000 4000	0 50000	60000 70000	80000 900	000
0.0	0.05						
0							
0.: ۲	15						
Depth - m bgl	0.2						
<b>de</b> 0.1	25						

STANSTED NVIRONMENT	Test No.	SA4D No 1	Date:	05/05/2021	Job No:	CON01-WARI-070	
services		Weston Homes plc			Warish Hall Farm	- Bulls Field	
	Т	rial Pit Dimensions	(m)		Water Level at Start - m bgl WaterLevel at End - m bgl V <sub>p75</sub>		
	L	ength	0.50				
					V <sub>p75</sub>	0.27 0.09	
	١	Width	0.50	\ \	/ <sub>p75-25</sub>	0.18	
		Depth	1.50		a <sub>p50</sub>	1.69	
		above ground level oplicable)	N/A	Infiltrati	on Rate - m/s	3.13E-05	
	Elapsed Time			Depth recorde	ed on dip meter (m	Head of Water	above Base
N	Minutes Seco				bgl)	(m)	
	0	6			0.06	1.44	
	2	12	20		0.09	1.41	
	3         18           4         24           5         30           25         15           45         27           65         39           85         51           105         63				0.10 0.10 0.10		)
			00				)
					0.16	1.34	
			00		0.20	1.30	)
			00 00		0.21	1.29	
	125	75	00		0.23	1.27	
	145 165	87		0.23 0.23		1.27 1.27	
	185	111	.00	0.23	1.27	,	
	205 225	123			0.23	1.2	
	245	147	/00		0.23	1.27	,
	265 285	159			0.23	1.27	
	305	183	800		0.24	1.26	j
	325 345	195 207			0.24 0.24	1.26	
	365	219			0.25	1.25	
	0	5000	10000	<b>Time - s</b> 15000	2000	0 2500	00
	0.1						
Depth - m bgl o	.15						

0.25

0.3

Test No.         SA4D No 2         Date:         06/05/2021         Job No:         COND1-WARI-070           int:         Weston Homes plc         Site Name:         Warish Hall Farm - Bulls Field           Image: train of the provided in the provided	SES	5			FILTRATION RATE TEST			
Trial Pt Dimensions (m)         Water Level at Start - m bgl         0.31           Length         0.50         Vprs         0.22           Width         0.50         Vprs         0.22           Width         0.50         Vprs         0.22           Width         0.50         Vprs         0.22           Width         0.50         Vprs         0.25           Depth         1.50 $p_{ps0}$ 1.44           Height of pipe abore ground level (if applicable)         N/A         Inflitration Rate - m/s         5.066-06           Elapsed Time         Depth recorded on dip meter (m)         Head of Water above Ba         (m)         (m)           1         60         0.32         1.18         1.19           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.36         1.14           105         6300         0.36         1.14           105         6300         0.37         1.13           105         9300	STANSTED IVIRONMENT SERVICES	TAL Test No.	SA4D No 2	Date:	06/05/2021	Job No:	CON01-WARI-070	
Length $0.50$ WaterLevel at End - m bgl $0.44$ Width $0.50$ $V_{pris}$ $0.22$ Width $0.50$ $V_{pris}$ $0.07$ Depth $1.50$ $a_{ps0}$ $1.44$ Height of pipe above ground level (if applicable)         N/A         Infiltration Rate - m/s         S.06E.06           Minutes         Seconds         bgl         (m)         (m)           0         0         0.31         1.19           1         60         0.32         1.18           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           45         2700         0.35         1.15           85         5100         0.36         1.14           105         6300         0.37         1.13           125         7500         0.36         1.14           125         7500         0.38         1.12           265         15900         0.37         1.13	ent:	Weston Homes p	lc		Site Name:	Warish Hall Farm	- Bulls Field	
Length $0.50$ WaterLevel at End - m bgl $0.44$ Width $0.50$ $V_{pris}$ $0.22$ Width $0.50$ $V_{pris}$ $0.07$ Depth $1.50$ $a_{ps0}$ $1.44$ Height of pipe above ground level (if applicable)         N/A         Infiltration Rate - m/s         S.06E.06           Minutes         Seconds         bgl         (m)         (m)           0         0         0.31         1.19           1         60         0.32         1.18           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           45         2700         0.35         1.15           85         5100         0.36         1.14           105         6300         0.37         1.13           125         7500         0.36         1.14           125         7500         0.38         1.12           265         15900         0.37         1.13		Tria	al Pit Dimensions (	(m)	Water Leve	el at Start - m bgl	0.31	
Width $0.50$ $V_{yrs}$ $0.07$ Depth $1.50$ $a_{gs0}$ $1.44$ Height of pipe above ground level (if applicable)         N/A         Infiltration Rate - m/s $5.06E.06$ Elapsed Time         Depth recorded on dip meter (m)         Head of Water above Ba           0         0         0.31         1.13           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.34         1.16           25         1500         0.34         1.16           25         1500         0.36         1.14           105         6300         0.36         1.14           105         6300         0.36         1.14           105         6300         0.37         1.13           105         6300         0.38         1.12           25         1500         0.38         1.14           105         6300         0.38         1.12           25					-			
With         0.30         V <sub>P5-35</sub> 0.15           Depth         1.50         apia         1.44           Height of pipe above ground level (if applicable)         N/A         Infiltration Rate - m/s         5.06E-06           Minutes         Seconds         Depth recorded on dip meter (m)         Head of Water above Ba         (m)           0         0         0.31         1.19           1         60         0.32         1.18           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.34         1.16           45         2700         0.35         1.14           105         6300         0.36         1.14           125         7500         0.36         1.14           125         7500         0.38         1.12           225         13300         0.38         1.12           245         14700         0.38         1.12           25         13300         0.40         1.11			<b>5</b>	0.00				
Depth         1.50 $a_{950}$ 1.44           Height of pipe above ground level ((f applicable)         N/A         Infiltration Rate - m/s         5.06E-06           Elapsed Time         Depth recorded on dip meter (m)         Head of Water above Ba         (m)           Minutes         Seconds         bgl)         (m)           1         60         0.32         1.18           2         120         0.33         1.17           4         240         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.36         1.14           105         650         3900         0.35         1.15           65         3900         0.36         1.14         1.16           125         7500         0.36         1.14         1.13           165         9900         0.37         1.13           185         11100         0.37         1.13           205         12300         0.38         1.12           225         13500         0.38         1.12      1265         15900         0.38		Wi	dth	0.50				
Height of pipe above ground level (if applicable)         N/A         Infiltration Rate - m/s         5.06E-06           Elapsed Time         Depth recorded on dip meter (m)         Head of Water above Ba         (m)           0         0         0.32         1.18           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.34         1.16           45         2700         0.35         1.15           65         3900         0.36         1.14           105         6300         0.36         1.14           115         7500         0.37         1.13           165         9900         0.37         1.13           165         9900         0.38         1.12           225         13500         0.38         1.12           245         14700         0.38         1.12           245         13500         0.38         1.12           245         13500         0.38         1.12           25		De	pth	1.50				
Minutes         Seconds         hgl         (m)           0         0         0.31         1.19           1         60         0.32         1.18           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.34         1.16           45         2700         0.35         1.15           65         3900         0.36         1.14           105         6300         0.36         1.14           105         6300         0.36         1.14           125         7500         0.37         1.13           165         9900         0.37         1.13           165         1100         0.37         1.13           205         12300         0.38         1.12           225         13500         0.38         1.12           265         15900         0.38         1.12           265         15900         0.40         1.10           325         19		(if applicable) Elapsed Time Minutes Seco 0 ( 1 6		N/A	Infiltrati		5.06E-06	
Minutes         Seconds         hgl         (m)           0         0         0.31         1.19           1         60         0.32         1.18           2         120         0.32         1.18           3         180         0.33         1.17           4         240         0.33         1.17           5         300         0.34         1.16           25         1500         0.34         1.16           45         2700         0.35         1.15           65         3900         0.36         1.14           105         6300         0.36         1.14           105         6300         0.36         1.14           125         7500         0.37         1.13           165         9900         0.37         1.13           165         1100         0.37         1.13           205         12300         0.38         1.12           225         13500         0.38         1.12           265         15900         0.38         1.12           265         15900         0.40         1.10           325         19					Depth records	ad on din meter (m	Head of Wate	or above Bas
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	N			onds	Depth recorde			
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$						0.31	1.:	19
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
4       240 $0.33$ $1.17$ 5       300 $0.34$ $1.16$ 25       1500 $0.34$ $1.16$ 45       2700 $0.35$ $1.15$ 65       3900 $0.35$ $1.15$ 85       5100 $0.36$ $1.14$ 105       6300 $0.36$ $1.14$ 125       7500 $0.36$ $1.14$ 145       8700 $0.37$ $1.13$ 165       9900 $0.37$ $1.13$ 165       9900 $0.37$ $1.13$ 205       12300 $0.38$ $1.12$ 225       13500 $0.38$ $1.12$ 245       14700 $0.38$ $1.12$ 265       15900 $0.40$ $1.10$ 305       18300 $0.40$ $1.10$ 345       20700 $0.41$ $1.09$ 365       21900 $0.41$ $1.06$ 305       18300 $0.44$ $1.06$ 365       21900 $0.44$ $1.06$						1.17 1.17 1.16 1.16		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					0.33 0.34 0.34			
45         2700 $0.35$ $1.15$ 65         3900 $0.35$ $1.15$ 85         5100 $0.36$ $1.14$ 105         6300 $0.36$ $1.14$ 125         7500 $0.36$ $1.14$ 145         8700 $0.37$ $1.13$ 165         9900 $0.37$ $1.13$ 205         12300 $0.38$ $1.12$ 225         13500 $0.38$ $1.12$ 245         14700 $0.38$ $1.12$ 265         15900 $0.38$ $1.12$ 285         17100 $0.39$ $1.11$ 305         18300 $0.40$ $1.10$ 345         20700 $0.41$ $1.09$ 365         21900 $0.42$ $1.08$ $0.05$ $0.1000$ $20000$ $30000$ $50000$ $70000$ $80000$ $90000$ $0.05$ $0.16$ $0.44$ $1.06$ $0.16$ $0.15$ $0.1$								
65 $3900$ $0.35$ $1.15$ $85$ $5100$ $0.36$ $1.14$ $105$ $6300$ $0.36$ $1.14$ $125$ $7500$ $0.36$ $1.14$ $145$ $8700$ $0.37$ $1.13$ $165$ $9900$ $0.37$ $1.13$ $125$ $1100$ $0.37$ $1.13$ $205$ $12300$ $0.38$ $1.12$ $225$ $13500$ $0.38$ $1.12$ $245$ $14700$ $0.38$ $1.12$ $265$ $15900$ $0.38$ $1.12$ $285$ $17100$ $0.39$ $1.11$ $305$ $18300$ $0.40$ $1.10$ $345$ $20700$ $0.41$ $1.09$ $365$ $21900$ $0.42$ $1.08$ $1380$ $82800$ $0.44$ $1.06$								
85         5100 $0.36$ $1.14$ 105         6300 $0.36$ $1.14$ 125         7500 $0.36$ $1.14$ 145         8700 $0.37$ $1.13$ 165         9900 $0.37$ $1.13$ 185         11100 $0.37$ $1.13$ 205         12300 $0.38$ $1.12$ 245         14700 $0.38$ $1.12$ 265         15900 $0.38$ $1.12$ 285         17100 $0.39$ $1.11$ 305         18300 $0.40$ $1.10$ 325         19500 $0.44$ $1.09$ 365         21900 $0.42$ $1.08$ $1380$ 82800 $0.44$ $1.06$ $0.05$ $0.16$ $0.40$ $1.02$ $0.05$ $0.16$ $0.44$ $1.06$								
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$								
145       8700       0.37       1.13         165       9900       0.37       1.13         185       11100       0.37       1.13         205       12300       0.38       1.12         225       13500       0.38       1.12         245       14700       0.38       1.12         265       15900       0.38       1.12         285       17100       0.39       1.11         305       18300       0.40       1.10         325       19500       0.40       1.10         345       20700       0.41       1.09         365       21900       0.42       1.08         1380       82800       0.44       1.06					0.36		1.:	14
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$								
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$					0.37	1.13		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$								
245       14700       0.38       1.12         265       15900       0.38       1.12         285       17100       0.39       1.11         305       18300       0.40       1.10         325       19500       0.40       1.10         345       20700       0.41       1.09         365       21900       0.42       1.08         1380       82800       0.44       1.06         Time - s         0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0.15       1       1 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.12</td> <td></td>							1.12	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $								
285         17100         0.39         1.11           305         18300         0.40         1.10           325         19500         0.40         1.10           345         20700         0.41         1.09           365         21900         0.42         1.08           1380         82800         0.44         1.06								
325       19500       0.40       1.10         345       20700       0.41       1.09         365       21900       0.42       1.08         1380       82800       0.44       1.06         Time - s         0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       0.05								
345     20700     0.41     1.09       365     21900     0.42     1.08       1380     82800     0.44     1.06								
365         21900         0.42         1.08           1380         82800         0.44         1.06             Time - s         Image: s         Ima								
1380     82800     0.44     1.06       Time - s       0     10000     20000     30000     40000     50000     60000     70000     80000     90000       0     0.05     -     -     -     -     -     -       0.15     -     -     -     -     -     -								
0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       - <td></td> <td colspan="2" rowspan="2"></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
0       10000       20000       30000       40000       50000       60000       70000       80000       90000         0       - <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
0		0 10000	20000 31			60000 70000	80000 90	0000
0.1		0						
0.15	0	0.05						-
		0.1						-
	o	.15						-
	-00	0.2						_
	р Б							
-								



CEC			SOIL IN	FILTRATION	RATE TEST		
STANSTED VIRONMENTAL SERVICES	Test No.	SA5S No 1	Date:	06/05/2021	Job No:	CON01-WARI-070	
ent:	Weston Homes p	lc		Site Name:	Warish Hall Farm	- Bulls Field	
	Triz	al Pit Dimensions	(m)	Water Level at Start - m bgl		0.00	
					el at End - m bgl	0.60	
	Ler	igth	0.50		V <sub>p75</sub>	0.11	
	Wi	dth	0.50		V <sub>p25</sub>	0.04	
	De	pth	0.60		V <sub>p75-25</sub>	0.08	
	Height of pipe ab	pove ground level licable)		Infiltrati	a <sub>p50</sub> on Rate - m/s	1.25E-05	
	Elapsed Time			Donth record	ed on dip meter (m	Head of Water	abovo Baco
Min	utes		onds		ed on dip meter (m bgl)	Head of water (m	
	0		0		0.00	0.6	
	1 2		50 20		0.08	0.5 0.5	
	3         18           4         24           5         30           25         150           45         270				0.11	0.5	
					0.12	0.4	
					0.13 0.22		.7 8
4			/00	0.29		0.3	1
	55		000	0.34		0.2	
	85 51 105 63		800		0.42	0.2	
	25		600		0.45	0.1	
	45 65		/00 /00		0.49	0.1	
	85		100		0.60	0.0	
0	0 2	000 4	000	<b>Time - s</b> 6000	8000 10	0000 120	000
0.1	<u>۱</u>						-
0.2	-						
0.3 Big - - - - - - - - - - - - - - - - - - -							
0.5							
0.6							-
1							

CEC			SOIL IN	FILTRATION	RATE TEST		
STANSTED ENVIRONMENT SERVICES	AL Test No.	SA5S No2	Date:	06/05/2021	Job No:	CON01-WARI-070	
lient:	Weston Hom	es plc		Site Name:	Site Name: Warish Hall Farm - Bulls Field		
		Trial Pit Dimensions	(m)	Water Leve	el at Start - m bgl	0.15	
				WaterLevel at End - m bgl		0.59	
		Length	0.50		V <sub>p75</sub>		
		Width	0.50		V <sub>p25</sub>	0.03	
				,	V <sub>p75-25</sub>	0.06	
		Depth	0.60		a <sub>p50</sub>	0.70	
		e above ground level applicable)	N/A	Infiltrati	on Rate - m/s	2.11E-05	
	Elapsed Time Minutes Seco			Depth record	ed on dip meter (m	Head of Water	r above Base
М			onds	Beptillecolu	bgl)	(m	
	0		)		0.15	0.4	5
	1 6 2 12		0 20		0.15	0.4	
	3		30		0.17 0.18		.3
	4		10				2
	5 25		00	0.19 0.19 0.20		0.4	
	45		00			0.4	
	65	39	00		0.22	0.3	8
	85		00		0.24	0.3	
	105 125		00		0.29	0.3	
	145		00		0.41	0.1	
	165		00		0.52	0.0	
	185 225		100 500		0.55	0.0	
	225	15.				0.0	-
	0 2		6000	Time - s	00 12000	14000 10	222
	0 20	000 4000	6000	8000 100	00 12000	14000 160	000
0.	1						-
0.	2	· · ·					-
			l				
ີສິດ. ເ	3						-
.0 <b>Depth - m bgl</b>				•			
de 0.	4						-
0.	5						-
0.						_	

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SE S	S			Deter	07/05/2024			
VIRONMEN SERVICES		est No.	SA5S No 3	Date:	07/05/2021	Job No:	CON01-WARI-070	
ent:	١	Veston Homes p	lc		Site Name:	Warish Hall Farm	- Bulls Field	
	Trial Pit Dimensions (m)				Water Level at Start - m bgl		0.05	
		Length		0.50	WaterLevel at End - m bgl		0.60	
			0.50		V <sub>p75</sub> V <sub>p25</sub>			
		Width		0.50	V <sub>p75-25</sub>		0.07	
	Depth Height of pipe above ground level (if applicable)		0.60		a <sub>p50</sub>		0.80	
			N/A	Infiltration Rate - m/s		1.48E-05		
		Elapsed Time			Depth recorded on dip meter (m		Head of Water above Base	
Minutes Secon					<b>bgl)</b> 0.05	(m		
	0			0		0.05	0.55 0.47	
	2		12		0.16		0.44	
				30 40	0.19 0.21		0.41	
	5		30	00	0.23		0.37	
	25 45			00 00	0.27 0.31		0.33	
	65		39	00	0.37		0.23	
	85 10			00	0.42		0.18 0.13	
125 75				00	0.50		0.10	
	14			00 00	0.52 0.60		0.08	
	0	2	000 4	000	<b>Time - s</b> 6000	8000 10	)000 12 1	<b>000</b>
	0.1						-	
						-		
						_		
th-	-							
Dept	0.4			•				-
0.5				· ·			-	
0.6							-	
	0.7							-

STANSTED IRONMENTAL SERVICES	Test No.	SA5D No 1	SA5D No 1 Date:		Job No:	Job No: CON01-WARI-070		
	Weston Homes plc			Site Name:	Warish Hall Farm	arish Hall Farm - Bulls Field		
]	Tr	ial Pit Dimensions (	m) Water Level at Start - m bgl		0.00			
	Le	ngth	0.50	WaterLeve	WaterLevel at End - m bgl		0.46	
ŀ				V <sub>p75</sub> V <sub>p25</sub>		0.28		
	Width  Depth		0.50	,	V <sub>p75-25</sub>		0.19	
				a <sub>pso</sub> Infiltration Rate - m/s		1.75 1.10E-05		
l		nt of pipe above ground level (if applicable)						
	Elapsed Time			Depth recorde	Depth recorded on dip meter (m		Head of Water above Base	
Minutes Sec			nds	<b>bgl)</b> 0.00		(m) 1.50		
1		6		0.08		1.42		
2			120		0.10		1.40	
3			180		0.12 0.13		<u>1.38</u> 1.37	
4 5			240 300		0.13		1.37	
25		1500			0.19		1.31	
45		2700			0.22		1.28 1.24	
65			<u> </u>		0.26 0.27		1.24	
10			6300		0.29		1.21	
12		75		0.31		1.19		
14		87		0.33		1.17		
16		99		0.35		1.15 1.13		
185 205			11100 12300		0.37		1.13	
225			13500		0.40		1.10	
245		147	14700		0.41		1.09	
265			15900		0.42		1.08	
285 305		171		0.42		1.08 1.07		
325		195		0.44		1.07		
345		207			0.44		1.06	
		219			0.45		5	
138	30	828	500		0.46	1.04	+	
0	0 10000	20000 30	0000 4000	<b>Time - s</b> 00 50000	60000 70000	80000 900	000	
0.05								
0.05	<b></b>							
	L.							
0.1								
	-							



SEG	SOIL INFILTRATION RATE TEST								
STANSTED IVIRONMENT SERVICES	AL Test No.	SA5D No 2	Date:	07/05/2021	Job No:	CON01-WARI-07	70		
ient:	Weston Homes plc			Site Name: Warish Hall Farm - Bulls Field					
	· · · ·	Trial Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.35	1		
		Length	0.50 0.50 1.50 el N/A	WaterLeve	WaterLevel at End - m bgl         Vp75         Vp25         Vp75-25         ap50         Infiltration Rate - m/s		1		
							-		
		Width		,			-		
		Depth					1		
		e above ground level pplicable)		Infiltrati			_		
	Elaj	osed Time		Depth recorde			ter above Base		
M	linutes 0		onds		<b>bgl)</b> 0.35	(m)			
	1		0 60		0.35		1.15 1.12		
	2		120		0.40		1.10		
	3 4		180 240		0.43		1.07 1.05		
	5		300		0.47		1.03		
	25 45		1500 2700		0.49 0.53		01 ).97		
	65		3900		0.54		0.96		
	85		5100		0.55		0.95		
	105 125		6300 7500		0.56 0.57		0.94 0.93		
	145	87	8700		0.58		0.92		
	165 185		9900 11100		0.59 0.60		).91 ).90		
	205		12300		0.61		).89		
	225		13500 14700		0.62		.88		
	245 265		700 900	0.63		0.87			
	285	17:	100	0.65		0.85			
	305		18300 19500		0.66 0.67		0.84		
	325 345		700		0.68		).83 ).82		
365			21900		0.69		0.81		
	0	5000	10000	<b>Time - s</b> 15000	200	000 2	25000		
	0						-		
0.	1						_		
0.	2								
0.	.5								
토 날 <sup>0.</sup>	.4								
Dept									
<b>0</b> .	5						—		
		10 A A A A A	1 A A						
0.	6								

0.7

0.8

CE	2	SOIL INF		IFILTRATION	ILTRATION RATE TEST				
STANSTED	Test No.	SA6S No 1	Date:	06/05/2021	Job No:	CON01-WARI-07	70		
nt:	Weston Homes	s plc	·	Site Name:	Warish Hall Farn	n - 7 Acres			
	т	rial Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.00	7		
					el at End - m bgl	0.60	1		
	L	ength	0.50		V <sub>p75</sub>	0.11			
		Width	0.50		V <sub>p25</sub>	0.04	4		
					/ <sub>p75-25</sub>	0.08	-		
		Depth	0.60		a <sub>p50</sub>	0.85	4		
		above ground level oplicable)	N/A	Infiltratio	on Rate - m/s	8.02E-04			
	Elap	sed Time		Depth recorde	ed on dip meter (m	Head of Wat	ter above Bas		
N	linutes	Sec	onds		bgl)		m)		
	0		0 50		0.00		).60 ).47		
	2		20		0.24		0.36		
	3		80 40		0.35 0.46		).25 ).14		
	5		40 00		0.46		).14 ).10		
	25	15	500		0.53	0	0.07		
	45 65		700 900		0.54		0.06 0.05		
	85		100		0.56	C	0.04		
	105 125		300 500		0.57 0.57		0.03 0.03		
	125		700		0.57		0.03 0.02		
	165	99	900		0.58		0.02		
	185	11	100		0.60		0.00		
	0	2000 4	1000	<b>Time - s</b> 6000	8000	10000	12000		
0	.1								
	.2								
	-								
an bg ∎	.3						_		
Depth - m bgl 0 0	.4						_		
0	.5						—		
0	.6				•		_		

SFS	SOIL		SOIL IN	IFILTRATION	RATE TEST		
STANSTED	AL Test No.	SA6S No 2	Date:	06/05/2021	Job No:	CON01-WARI-07	0
nt:	Weston Ho	mes plc		Site Name:	Warish Hall Farm	- 7 Acres	
	<b></b>	Trial Pit Dimensions	· (m)	Water Love	lat Start m hal	0.00	ו
		That Pit Dimensions			Water Level at Start - m bgl WaterLevel at End - m bgl		
		Length	0.50	V <sub>p75</sub> V <sub>p25</sub>		0.50	_
		Width	0.50			0.04	
		wiath	0.50	``	/ <sub>p75-25</sub>	0.08	
		Depth	0.60	.60 a <sub>p50</sub>		0.85	
		ipe above ground leve if applicable)	I N/A	Infiltrati	on Rate - m/s	1.51E-05	-
		Elapsed Time		Donth records	ed on dip meter (m	Head of Wat	or abovo Bac
м	inutes		onds		ed on dip meter (m bgl)		егароvе ваз m)
	0		0		0.00		.60
	1 2		60 .20		0.08		.52 .49
	3	1	.80		0.15	0	.45
	4		240		0.19		.41
	5 25		500 500		0.23		.37 .33
	45	2	700		0.30	0	.30
	65 85		900 100		0.33		.27 .24
	105		300		0.39		.24
	125		500		0.42	0.18 0.15	
	145 165		700 900		0.45		.15 .12
	185		.100		0.50		.10
	0	2000	4000	<b>Time - s</b> 6000	8000 1	0000 1	.2000
(	0	1	1	1	1	1	
0.:	1						—
	•						
0.2							_
bgl	-						
Depth - m bgl	3						_
Dept			·				
0.4	4		-				_
					10 A 10		
0.5	5					• • •	_
0	-					-	

SFS			SOIL IN	FILTRATION	FILTRATION RATE TEST				
STANSTED VIRONMENTAL SERVICES	Test No.	SA6S No 3	Date:	07/05/2021	Job No:	CON01-WARI-07	0		
nt:	Weston Homes	plc		Site Name:	Warish Hall Farn	n - 7 Acres			
	Т	ial Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.05	1		
					el at End - m bgl	0.58	1		
	Le	ength	0.50		V <sub>p75</sub>	0.10			
	w	/idth	0.50		V <sub>p25</sub>	0.03			
					/ <sub>p75-25</sub>	0.07	-		
		epth	0.60		a <sub>p50</sub>	0.80			
		bove ground level plicable)	N/A	Infiltratio	on Rate - m/s	6.61E-05			
	Elaps	ed Time		Depth recorde	ed on dip meter (m	Head of Wat	er above Bas		
	nutes	Sec	onds		bgl)	(1	m)		
	0 1		0 60		0.05		.55 .50		
	2	1	20		0.20	0.	.40		
	3 4		80 40		0.28		.32 .25		
	5		40 00		0.42		.18		
	25 45		600 700		0.46 0.50		.14 .10		
	+5 55		900		0.52		.10 .08		
	35		.00		0.53		.07		
	05 25		800 600		0.54		.06 .05		
1	45	87	/00		0.56	0.	.04		
	65 85		000 100		0.57		.03		
							-		
-									
0		2000 4	000	<b>Time - s</b> 6000	8000 1	10000 1	2000		
	+								
0.1	-								
0.2							_		
<b>B</b> 0.3	•						_		
E									
ם 0.3 קי ער ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר ספט גר גר ספט גר גר גר גר גר גר גר גר גר גר גר גר גר	-						_		
0.5	-						_		
1			-			_			
					-	•			
0.6					-		_		

FF			SOIL IN	FILTRATION	RATE TEST		
STANSTED STANSTED VIRONMENTAL SERVICES	Test No.	SA6D No 1	Date:	06/05/2021	Job No:	CON01-WARI-070	
it:	Weston Homes p	lc		Site Name:	Warish Hall Farm	- 7 Acres	
Г	Tri	al Pit Dimensions	(m)	Water Leve	l at Start - m bgl	0.00	
					el at End - m bgl	0.26	
	Ler	ngth	0.50		V <sub>p75</sub>	0.27	
	\ <b>M</b> /i	idth	0.50		V <sub>p25</sub>	0.09	
			0.50	\ \	/ <sub>p75-25</sub>	0.18	
	De	pth	1.45		a <sub>p50</sub>	1.70	
		oove ground level licable)	N/A	Infiltrati	on Rate - m/s	9.87E-06	
		ed Time			ed on dip meter (m	Head of Wate	
Minu			onds 0		<b>bgl)</b> 0.00	(m 1.4	
1	L	6	60		0.03	1.4	2
2			20 80		0.04	1.4	
4			80 40		0.06	1.3	19
5			00		0.07	1.3	
2:			00 700		0.10 0.13	1.3	
6	5	39	000		0.14	1.3	31
85			.00		0.15	1.3	
10			600		0.17	1.2	
14			/00		0.18	1.2	
16 18			900 100		0.19 0.20	1.2	
22	25	13	500		0.21	1.2	24
24			700 900	0.22 0.23 0.24		1.23 1.22	
28			100			1.21	
30			300		0.25	1.2	
32			500 700		0.25 0.25	1.2	
36	-		900		0.26	1.1	
138	80	82	800		0.26	1.1	.9
0	0 10000	20000 3	30000 4000	<b>Time - s</b> 00 50000	60000 70000	80000 90	000
0.05							_
0.1	•						-
Dig u y Debty D D D D D D D D D D D D D D D D D D D	$\mathbb{N}$						-
0.2	0.2						
0.05							
0.25						•	-

CEC		SOIL INFILTRATION RATE TEST								
STANSTED INVIRONMENT SERVICES	Test No.	SA6D No 2	Date:	07/05/2021	Job No:	CON01-WARI-070				
ient:	Weston Homes	Weston Homes plc Trial Pit Dimensions (m)			Warish Hall Farm	- 7 Acres				
	т				l at Start - m bgl	0.25				
		ength	0.50	WaterLevel at End - m bgl		0.44				
	-	engen	0.50		V <sub>p75</sub>	0.23				
	v	Vidth	0.50		V <sub>p25</sub> V <sub>p75-25</sub>	0.08				
		Depth	1.45		a <sub>p50</sub>	1.45				
	Height of pipe above ground level (if applicable)		N/A	Infiltrati	on Rate - m/s	1.21E-05				
	Elap	sed Time		Depth recorde	ed on dip meter (m	Head of Water	above Base			
М	inutes	Seco	onds		bgl)	(m				
	0	(			0.25	1.2				
	1 2	6	0 20		0.27	1.1				
	3		30		0.30	1.1				
	4		10		0.31	1.1				
	5		00		0.32	1.1				
	25 45		00		0.33	1.1				
	65		00		0.35	1.1				
	85	51			0.36	1.0				
	105 125	63	00		0.37	1.0 1.0				
	145	87			0.39	1.0				
	165	99			0.40	1.0				
	185 225	112	100		0.41	1.0 1.0				
	245	147			0.42	1.0				
	265		900		0.42	1.0				
	285 305	17:			0.43	1.0 1.0				
	325	183			0.43	1.0				
	345	207			0.44	1.0				
	0	5000	10000	<b>Time - s</b> 15000	2000	0 250	000			
0.	05									
C	0.1									
0.	15									
Depth - m bgl	0.2									
۳ <mark>-</mark> ۵.	25									
Dept	0.3									
	- P									
0.	35	· · · ·								



0.4

0.45 0.5 Appendix: H – Surface Water Flood Maps



Extent of flooding from surface water



Appendix: I – Greenfield Runoff Rates

EAS Transport Planning		Page 1
Unit 23, The Maltings		
Stanstead Abbotts		
Hertfordshire, SG12 8HG		Mirro
Date 28/01/2021 15:46	Designed by EAS	Drainage
File	Checked by	Diamage
Innovyze	Source Control 2019.1	
ICP SUI	OS Mean Annual Flood	
	Input	

Return Period (years)1Soil0.400Area (ha)1.000Urban0.000SAAR (mm)600RegionNumberRegion

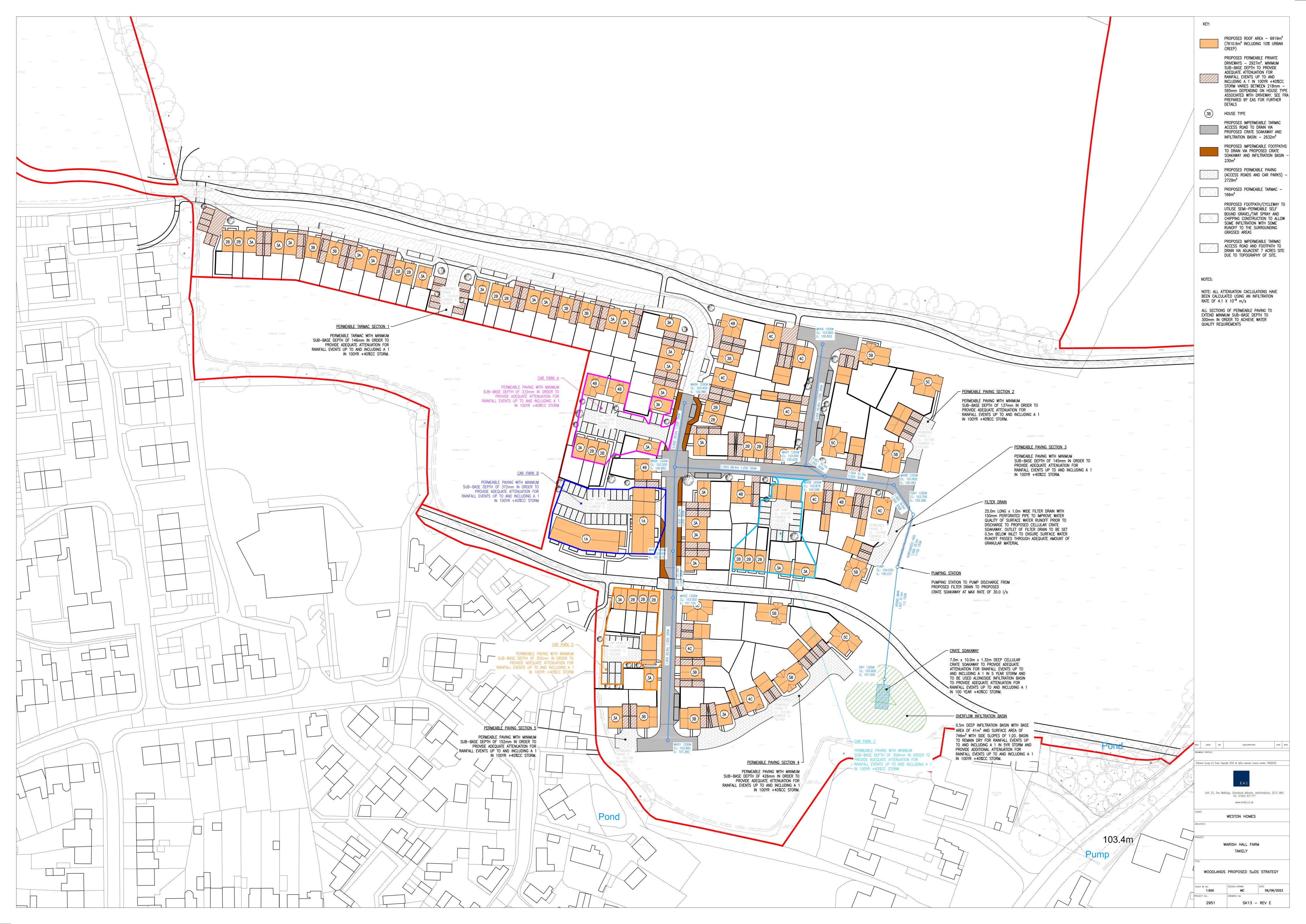
## Results 1/s

QBAR Rural 2.8 QBAR Urban 2.8 Q1 year 2.4

Q1 year 2.4 Q30 years 6.4 Q100 years 9.1

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Appendix: J – Proposed SuDS Layout



Appendix: K – WinDes SourceControl and MicroDrainage Output

EAS				Page 1	1
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG					
Date 19/04/2023 10:07	Designed	hu MTN	חדפ		natra a
	-	-	010		<u>Manual</u> (S)
File Car Park A.srcx	Checked				
Micro Drainage	Source C	ontrol	2013.1.1	1	
Summary of Re	esults for Half Drain				d (+40%)
Storm	Max	Max	Max	Max	Status
Event	Level			ion Volume	blacab
	(m)	(m)	(1/s)	(m <sup>3</sup> )	
		0.150			
	mer 102.752			1.0 21.5 1.0 28.4	O K
	mer 102.798 mer 102.840				O K O K
60 min Sum 120 min Sum				1.0 34.8 1.0 39.9	0 K
120 min Sum 180 min Sum				1.0 39.9 1.0 41.8	O K
240 min Sum				1.0 41.0 1.0 42.2	O K
360 min Sum				1.0 41.3	O K
480 min Sum				1.0 40.1	O K
600 min Sum				1.0 38.8	O K
720 min Sum				1.0 37.5	ОК
960 min Sum				1.0 34.9	O K
1440 min Sum	mer 102.808	0.208	-	1.0 29.9	0 K
2160 min Sum				1.0 23.3	0 K
2880 min Sum	mer 102.728	0.128	1	1.0 17.7	O K
4320 min Sum	mer 102.676	5 0.076	-	1.0 9.9	O K
5760 min Sum	mer 102.651	0.051	-	1.0 6.0	O K
7200 min Sum	mer 102.643	8 0.043	(	0.9 4.8	O K
8640 min Sum	mer 102.637	0.037	(	0.8 4.0	O K
10080 min Sum			(	0.7 3.3	O K
15 min Win	ter 102.772	0.172	-	1.0 24.4	O K
	ter 102.823			1.0 32.2	0 K
60 min Win	ter 102.872			1.0 39.5	O K
	Storm	Rain		Time-Peak	
	Event	(mm/nr)	Volume (m³)	(mins)	
	min Summer			25	
	min Summer	87.861		39	
	min Summer	54.368		68	
	min Summer	32.554		124	
	min Summer	23.829		182	
	min Summer	19.002		242	
	min Summer min Summer	13.711		326 384	
	min Summer	10.884 9.094	0.0	384 446	
	min Summer	9.094 7.849		440 510	
	min Summer	6.218		646	
	min Summer	4.472		914	
	min Summer	3.211		1300	
	min Summer	2.537		1672	
	min Summer	1.817		2340	
	min Summer	1.433		2992	
5760				3680	
		1.192	() - ()		
7200	min Summer	1.192			
7200 8640		1.192 1.024 0.901		4416 5144	
7200 8640 10080	min Summer min Summer	1.024 0.901	0.0	4416	
7200 8640 10080 15	min Summer min Summer min Summer	1.024 0.901	0.0 0.0 0.0	4416 5144	
7200 8640 10080 15 30	min Summer min Summer min Summer min Winter	1.024 0.901 135.270	0.0 0.0 0.0 0.0	4416 5144 25	

EAS					Page	2
Unit 108 The M	-					
Stanstead Abbot	ts					
Hertfordshire	SG12 8HG					
Date 19/04/2023	10:07	Designe	d by WIN	DES		Patrag
File Car Park A		Checked	-			<u>ne les</u> e
	. SICA		_	2013.1.1		
Micro Drainage		Source	CONCLOT	2013.1.1		
Sum	mary of Rea	sults fo	r 100 ve	ar Retur	n Peri	od (+40%)
	4		<u> </u>			
	Storm	Max	Max	Max	Max	Status
	Event		-	iltration		
		(m)	(m)	(1/s)	(m³)	
12	0 min Winter	102.912	0.312	1.0	45.6	Flood Risk
18	0 min Winter	102.928	0.328	1.0	48.0	Flood Risk
24	0 min Winter	: 102.933	0.333	1.0	48.9	Flood Risk
36	0 min Winter	102.929	0.329	1.0	48.3	Flood Risk
48	0 min Winter	102.919	0.319	1.0	46.7	Flood Risk
60	0 min Winter	102.907	0.307	1.0	45.0	Flood Risk
72	0 min Winter	102.896	0.296	1.0	43.3	O K
96	0 min Winter	102.872	0.272	1.0	39.6	O K
144	0 min Winter	102.823	0.223	1.0	32.2	0 K
216	0 min Winter	102.757	0.157	1.0	22.2	0 K
288	0 min Winter	102.704	0.104	1.0		
432	0 min Winter	102.649	0.049	1.0	5.7	O K
	0 min Winter			0.8		O K
	0 min Winter			0.7		
864	0 min Winter	102.628	0.028	0.6		ОК
1008	0 min Winter	102.624	0.024	0.5		O K
	5	Storm	Rain	Flooded 1	'ime-Pea	k
	E	Ivent	(mm/hr)	Volume	(mins)	
				(m³)		
	120	min Winte	r 32.554	0.0	12	4
			r 23.829		18	
			r 19.002		23	
			r 13.711		34	8
	480	min Winte	r 10.884	0.0	44	6
	600	min Winte	r 9.094	0.0	47	8
	720	min Winte	r 7.849	0.0	55	2
		min Winte			70	
		min Winte			99	
		min Winte			138	
		min Winte			173	
	4320	min Winte			225	
		min Winte			300	
		min Winte			368	
	7200					
			r 1.024	0.0	441	
	8640	min Winte min Winte		0.0	441 515	
	8640	min Winte				
	8640	min Winte				
	8640	min Winte				
	8640	min Winte				
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	8640	min Winte				
	8640	min Winte				
	8640	min Winte				

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		
Date 19/04/2023 10:07	Designed by WINDES	Pernece
File Car Park A.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
M5-60 (1	ars) 100 gion England and Wales (mm) 19.200 Shortest : .0 R 0.428 Longest :	inter Storms Yes Cv (Summer) 0.750 Cv (Winter) 0.840 Storm (mins) 15 Storm (mins) 10080 ate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.099	
	Area Time (mins) Area Time (ha) From: To: (ha) From:	
0 4	0.051 4 8 0.024 8	12 0.024
©1	1982-2013 Micro Drainage Lt	.d

EAS			Page 4
Unit 108 The Maltings			
Stanstead Abbotts			
Hertfordshire SG12 8HG			) i haro
Date 19/04/2023 10:07	Deed and a large	LITNDD C	
	Designed by	WINDES	LELECE
File Car Park A.srcx	Checked by	1 0010 1 1	
Micro Drainage	Source Contr	2013.1.1	
	Model	Details	
Stora	ge is Online Co	over Level (m) 10	03.200
	Porous Car P	ark Structure	
	101040 041 1	din berubeure	
Infiltration Coefficie		0.01476	Width (m) 22.5
Membrane Perco		1000	Length (m) 22.5
Max Per	colation (l/s) Safety Factor		Slope (1:X) 1000.0 ion Storage (mm) 5
	Porosity		pration (mm/day) 3
In	vert Level (m)		Volume Depth (m) 0.000

EAS				Page 1
Unit 108 The Maltings				
Stanstead Abbotts				
Hertfordshire SG12 8HG				L'URCERO C
Date 19/04/2023 10:05	Designe	d by WIN		
	-	-	IDE5	
File Car Park B.srcx	Checked	_		
Micro Drainage	Source	Control	2013.1.1	
Summary of Re	esults fo	or 100 ye	ear Return	n Period (+40%)
	Half Drai	ln Time :	449 minutes	
Storm	Max	Max	Max	Max Status
Event	Level	-	filtration	
	(m)	(m)	(1/s)	(m <sup>3</sup> )
15 min Summe	er 102.370	0.170	1.3	29.7 ОК
30 min Summe			1.3	39.1 ОК
60 min Summe	er 102.466	0.266	1.3	48.0 ОК
120 min Summe	er 102.505	0.305	1.3	55.2 Flood Risk
180 min Summe			1.3	58.0 Flood Risk
240 min Summe			1.3	58.9 Flood Risk
360 min Summe			1.3	57.9 Flood Risk
480 min Summe			1.3	
600 min Summe			1.3	54.7 Flood Risk
720 min Summe			1.3	53.0 O K
960 min Summe			1.3	49.6 O K
1440 min Summe			1.3	43.1 O K
2160 min Summe			1.3	34.4 O K
2880 min Summe			1.3	27.0 OK
4320 min Summe			1.3	15.7 OK
5760 min Summe			1.3	9.1 OK
7200 min Summe			1.3	6.6 O K
8640 min Summe			1.1	5.4 O K
10080 min Summe			0.9	4.5 O K
15 min Winte			1.3	33.8 OK
30 min Winte			1.3	44.4 O K
60 min Winte			1.3	54.5 Flood Risk
00 milli Wince	Storm	Rain	Flooded T	
	Event		Volume	(mins)
	Evenc	(	vorume	(mills)
			(m³)	
15	min Summe	or 135 270		26
	min Summe		0.0	26
30	min Summe	er 87.861	0.0	40
30 60	min Summe min Summe	er 87.861 er 54.368	0.0 0.0 0.0	4 0 6 8
30 60 120	min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554	0.0 0.0 0.0 0.0	40 68 126
30 60 120 180	min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829	0.0 0.0 0.0 0.0 0.0	40 68 126 184
30 60 120 180 240	min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002	0.0 0.0 0.0 0.0 0.0 0.0	40 68 126 184 242
30 60 120 180 240 360	min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711	0.0 0.0 0.0 0.0 0.0 0.0 0.0	40 68 126 184 242 350
30 60 120 180 240 360 480	min Summe min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	40 68 126 184 242 350 402
30 60 120 180 240 360 480 600	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	40 68 126 184 242 350 402 462
30 60 120 180 240 360 480 600 720	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	40 68 126 184 242 350 402 462 524
30 60 120 180 240 360 480 600 720 960	<pre>min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	40 68 126 184 242 350 402 462 524 658
30 60 120 180 240 360 480 600 720 960 1440	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926
30 60 120 180 240 360 480 600 720 960 1440 2160	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320
30 60 120 180 240 360 480 600 720 960 1440 2160 2880	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537 er 1.817	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537 er 1.817 er 1.433	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384 3048
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537 er 1.817 er 1.433 er 1.192	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384 3048 3680
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537 er 1.817 er 1.433 er 1.192 er 1.024	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384 3048 3680 4408
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	<pre>min Summe min Summe</pre>	er       87.861         er       54.368         er       32.554         er       23.829         er       19.002         er       13.711         er       10.884         er       9.094         er       7.849         er       4.472         er       3.211         er       2.537         er       1.817         er       1.433         er       1.024         er       0.901	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384 3048 3680 4408 5144
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15	<pre>min Summe min Summe</pre>	er       87.861         er       54.368         er       32.554         er       23.829         er       19.002         er       13.711         er       10.884         er       9.094         er       7.849         er       3.211         er       2.537         er       1.433         er       1.024         er       0.901         er       1.35.270	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384 3048 3680 4408 5144 25
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	<pre>min Summe min Summe</pre>	er       87.861         er       54.368         er       32.554         er       23.829         er       19.002         er       13.711         er       10.884         er       9.094         er       7.849         er       3.211         er       2.537         er       1.433         er       1.024         er       0.901         er       1.35.270         er       135.270         er       87.861	$\begin{array}{c} 0 & . \\$	40 68 126 184 242 350 402 462 524 658 926 1320 1700 2384 3048 3680 4408 5144

EAS					Page	e 2
Unit 108 The	e Maltings					
Stanstead Abl	ootts					
Hertfordshire	e SG12 8HG					TREFO 0
Date 19/04/20	023 10:05	Designe	d by WIN	DES		Patran
File Car Parl		Checked	-			<u>ne necce</u>
Micro Draina			_	2013.1.1		
MICIO DIAINA	Je	Source	CONCLOI	2013.1.1		
c	Summary of Rea	culto fo	r = 100 vc	ar Potur	n Pori	od (+10%)
<u> </u>	Juninary or ite.	SUICS IO	1 100 ye	ai Necui	II LELL	04 (140%)
	Storm	Max	Max	Max	Max	Status
	Event	Level	-	iltration		
		(m)	(m)	(1/s)	(m³)	
	120 min Winter	102.546	0.346	1.3	63.1	Flood Risk
	180 min Winter	102.565	0.365	1.3	66.6	Flood Risk
	240 min Winter	102.572	0.372	1.3	68.0	Flood Risk
	360 min Winter	102.571	0.371	1.3	67.7	Flood Risk
	480 min Winter			1.3		Flood Risk
	600 min Winter			1.3		Flood Risk
	720 min Winter			1.3		Flood Risk
	960 min Winter			1.3		Flood Risk
	1440 min Winter			1.3		O K
	2160 min Winter			1.3		
	2880 min Winter 4320 min Winter			1.3		
	5760 min Winter			1.3		
	7200 min Winter			0.9		
	8640 min Winter			0.9		
	LOOSO min Winter			0.7		
		Storm	Rain			
	E	Ivent	(mm/hr)	Volume	(mins)	
				(m³)		
	120	min Winte	r 32.554	0.0	12	4
			r 23.829		18	2
	240	min Winte	r 19.002	0.0	23	8
	360	min Winte	r 13.711	0.0	35	0
	480	min Winte	r 10.884	0.0	45	6
		min Winte		0.0	49	
			r 7.849		56	
		min Winte			71	
		min Winte			101	
		min Winte			141	
		min Winte min Winte			178 238	
		min Winte min Winte			238 299	
		min Winte			372	
		min Winte			447	
		min Winte			514	

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		
Date 19/04/2023 10:05	Designed by WINDES	Pernece
File Car Park B.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
Rainfall Mo		inter Storms Yes
M5-60 (1	ion England and Wales mm) 19.200 Shortest o R 0.428 Longest	Cv (Summer) 0.750 Cv (Winter) 0.840 Storm (mins) 15 Storm (mins) 10080 ate Change % +40
	Time Area Diagram	
	Total Area (ha) 0.135	
	Area Time (mins) Area Time (ha) From: To: (ha) From:	
0 4	0.063 4 8 0.036 8	12 0.036
©1	1982-2013 Micro Drainage Lt	d

Unit 108 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Date 19/04/2023 10:05 File Car Park B.srcx Micro Drainage Source Control 2013.1.1 <u>Model Details</u> Storage is Online Cover Level (m) 102.800 <u>Porous Car Park Structure</u> Infiltration Coefficient Base (m/hr) 0.01476 Membrane Percolation (1/s) 175.0 Safety Factor 2.0 Depression Storage (nm) 5 Poroisty 0.30 Everosity 0.30 Invert Level (m) 102.200 Cap Volume Depth (m) 0.000	EAS		Page 4
Stanstead Abbotts         Hertfordshire SG12 8HG         Date 19/04/2023 10:05         File Car Park B.srcx         Checked by         Micro Drainage         Source Control 2013.1.1         Model Details         Storage is Online Cover Level (m) 102.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 25.1         Membrane Percolation (mm/hr)       1000         Length (m) 25.1         Max Percolation (1/s)       175.0         Safety Factor       2.0 Depression Storage (mm)         Storage (mm)       5         Porosity       0.30	Unit 108 The Maltings		
Date 19/04/2023 10:05 File Car Park B.srcx Designed by WINDES Checked by Dicro Drainage Source Control 2013.1.1 <u>Model Details</u> Storage is Online Cover Level (m) 102.800 <u>Porous Car Park Structure</u> Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 25.1 Membrane Percolation (mm/hr) 1000 Length (m) 25.1 Max Percolation (1/s) 175.0 Slope (1:X) 1000.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3			
File Car Park B.srcx       Checked by         Micro Drainage       Source Control 2013.1.1         Model Details         Storage is Online Cover Level (m) 102.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 25.1         Membrane Percolation (mm/hr)       1000         Length (m) 25.1       Max Percolation (1/s)         Max Percolation (1/s)       175.0         Slope (1:X)       1000.0         Safety Factor       2.0 Depression Storage (mm)         Porosity       0.30	Hertfordshire SG12 8HG		TTTTETE
Micro Drainage       Source Control 2013.1.1         Model Details         Storage is Online Cover Level (m) 102.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 25.1         Membrane Percolation (mm/hr) 1000       Length (m) 25.1         Max Percolation (1/s) 175.0       Slope (1:X) 1000.0         Safety Factor       2.0 Depression Storage (mm) 5         Porosity       0.30	Date 19/04/2023 10:05	Designed by WINDES	Drainare
Model Details         Storage is Online Cover Level (m) 102.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 25.1         Membrane Percolation (mm/hr)       1000       Length (m) 25.1         Max Percolation (1/s)       175.0       Slope (1:X)       1000.0         Safety Factor       2.0       Depression Storage (mm)       5         Porosity       0.30       Evaporation (mm/day)       3	File Car Park B.srcx	Checked by	
Storage is Online Cover Level (m) 102.800 Porous Car Park Structure Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 25.1 Membrane Percolation (mm/hr) 1000 Length (m) 25.1 Max Percolation (1/s) 175.0 Slope (1:X) 1000.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3	Micro Drainage	Source Control 2013.1.1	1
Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 25.1 Membrane Percolation (mm/hr) 1000 Length (m) 25.1 Max Percolation (l/s) 175.0 Slope (l:X) 1000.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3	Storad		.02.800
Membrane Percolation (mm/hr)1000Length (m)25.1Max Percolation (1/s)175.0Slope (1:X)1000.0Safety Factor2.0 Depression Storage (mm)5Porosity0.30Evaporation (mm/day)3		Porous Car Park Structure	2
	Membrane Perco. Max Per	lation (mm/hr) 1000 colation (l/s) 175.0 Safety Factor 2.0 Depress Porosity 0.30 Evap	Length (m) 25.1 Slope (1:X) 1000.0 ion Storage (mm) 5 oration (mm/day) 3

EAS				Page	- 1
Unit 108 The Maltings					
Stanstead Abbotts					79000
Hertfordshire SG12 8HG					
Date 19/04/2023 10:08	Designe	d by WIN	DFS		malmage
File Car Park C.srcx	-	-			
	Checked		0010 1 1		
Micro Drainage	Source	Control	2013.1.1		
Summary of Re	sults fo	r 100 ve	ar Retur	n Peri	od (+40%)
	Sares re	<u>1 100 y</u> c	ar nocur	III I OIII	04 (1100)
	Half Drai	n Time :	434 minute	es.	
Storm	Max	Max	Max	Max	Status
Event	Level (m)	(m)	iltration (1/s)	(m <sup>3</sup> )	
	()	()	(1)07	( )	
15 min Summer			0.7		ОК
30 min Summer			0.7		O K
60 min Summer			0.7		O K
120 min Summer			0.7		O K
180 min Summer			0.7		Flood Risk
240 min Summer			0.7		Flood Risk
360 min Summer			0.7		Flood Risk
480 min Summer			0.7		O K
600 min Summer			0.7		ОК
720 min Summer			0.7		ОК
960 min Summer			0.7		ОК
1440 min Summer			0.7		O K
2160 min Summer			0.7		O K
2880 min Summer			0.7		O K
4320 min Summer			0.7		O K
5760 min Summer	103.057	0.057	0.7	5.0	O K
7200 min Summer	103.046	0.046	0.7	3.8	O K
8640 min Summer	103.040	0.040	0.6	3.2	O K
10080 min Summer	103.036	0.036	0.5	2.8	O K
15 min Winter	103.183	0.183	0.7	18.2	O K
30 min Winter	103.238	0.238	0.7	24.0	O K
60 min Winter	103.290	0.290	0.7	29.4	O K
5	Storm	Rain	Flooded 1	lime-Pea	k
1	Ivent	(mm/hr)	Volume	(mins)	
			(m³)		
15	min Summe	r 135.270	0.0	2	5
30	min Summe	r 87.861	0.0	4	0
60	min Summe	r 54.368	0.0	6	8
120	min Summe	r 32.554	0.0	12	6
180	min Summe	r 23.829	0.0	18	4
240	min Summe	r 19.002	0.0	24	2
360	min Summe	r 13.711	0.0	34	4
480	min Summe	r 10.884	0.0	39	6
600	min Summe	r 9.094	0.0	45	6
720	min Summe	r 7.849	0.0	52	0
960	min Summe	r 6.218	0.0	65	4
1440	min Summe	r 4.472	0.0	92	4
2160	min Summe	r 3.211	0.0	132	0
2880	min Summe		0.0	168	4
4320	min Summe		0.0	238	0
	min Summe		0.0	300	
	min Summe		0.0	368	
	min Summe		0.0	440	
	min Summe		0.0	514	
		r 135.270	0.0	2	
15	min winte	1 133.270	0.0		
	min Winte min Winte		0.0	3	9
30		r 87.861			

EAS					Page	e 2
Unit 108 The M	-					
Stanstead Abbot	ts				$\Gamma$	
Hertfordshire	SG12 8HG					
Date 19/04/2023	10:08	Designe	d by WIN	DES		Pedrae
File Car Park C		Checked	-			<u>ne les</u> te
	· SICA		-	2013.1.1		
Micro Drainage		Source	CONCLOI	2013.1.1		
Sum	mary of Re	sults fo	r 100 ve	ar Betur	n Peri	od (+40%)
	ary or ne	54105 10	<u>- 100 yc</u>	ar neeur	<u> </u>	
	Storm	Max	Max	Max	Max	Status
	Event	Level	-	iltration		
		(m)	(m)	(1/s)	(m³)	
12	0 min Winter	103.334	0.334	0.7	34.0	Flood Risk
18	0 min Winter	103.352	0.352	0.7	35.9	Flood Risk
24	0 min Winter	103.359	0.359	0.7	36.6	Flood Risk
36	0 min Winter	103.357	0.357	0.7	36.4	Flood Risk
48	0 min Winter	103.347	0.347	0.7	35.5	Flood Risk
60	0 min Winter	103.335	0.335	0.7		Flood Risk
	0 min Winter			0.7		Flood Risk
	0 min Winter			0.7		Flood Risk
	0 min Winter			0.7		
	0 min Winter			0.7		
	0 min Winter			0.7		
	0 min Winter			0.7		
	0 min Winter			0.6		
	0 min Winter			0.5		
	0 min Winter			0.4		
1008	0 min Winter	5 103.026 Storm		0.4 Flooded 1		
		Ivent		Volume	(mins)	.K
	-	Ivene	(	(m <sup>3</sup> )	(	
	120	min Winte	r 32.554	0.0	12	4
			r 23.829		18	
			r 19.002		23	8
	360	min Winte	r 13.711	0.0	35	0
	480	min Winte	r 10.884	0.0	45	4
	600	min Winte	r 9.094	0.0	49	
	720	min Winte	r 7.849		56	2
		min Winte			71	
		min Winte			100	
		min Winte			140	
		min Winte			176	
		min Winte			233	
		min Winte			300	
		min Winte min Winte			368 440	
		min Winte			440 509	
	10000	MIII WINCE	1 0.901	0.0	509	.0

EAS	I	Page 3
Unit 108 The Maltings		
Stanstead Abbotts		Micro ~~~
Hertfordshire SG12 8HG		
Date 19/04/2023 10:08	Designed by WINDES	<u>L'Elles</u>
File Car Park C.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
M5-60 (:	ars) 100 gion England and Wales (mm) 19.200 Shortest S io R 0.428 Longest S	nter Storms Yes Cv (Summer) 0.750 Cv (Winter) 0.840 Storm (mins) 15 Storm (mins) 10080 Ate Change % +40
	Time Area Diagram	
	Total Area (ha) 0.073	
Time (mins) From: To:	Area Time (mins) Area Time (ha) From: To: (ha) From:	(mins) Area To: (ha)
0 4	0.035 4 8 0.019 8	12 0.019
	) 1982-2013 Micro Drainage Lto	d

EAS	1		Page 4
Unit 108 The Maltings			
Stanstead Abbotts			
Hertfordshire SG12 8HG			
Date 19/04/2023 10:08	Designed by WIN	NDES	Pranace
File Car Park C.srcx	Checked by		
Micro Drainage	Source Control	2013.1.1	
Stora	<u>Model Det</u> ge is Online Cover		03.600
	Porous Car Park	Structure	
Max Per	lation (mm/hr) colation (l/s) Safety Factor	1000 97.1 2.0 Depressi 0.30 Evapo	pration (mm/day) 3

EAS				Page	1
Unit 108 The Maltings					
Stanstead Abbotts					79
Hertfordshire SG12 8HG					
Date 19/04/2023 10:10	Designe	d by WIN			Dalpage
		-	UE5		
File Car Park D.srcx	Checked				
Micro Drainage	Source	Control	2013.1.1		
Summary of Re	esults fo	or 100 ye	ear Retur	n Perio	od (+40%)
	Half Drai	n Time :	429 minute	s.	
Storm	Max	Max	Max	Max	Status
Event	Level (m)	Depth Ind (m)	filtration (1/s)	Volume (m <sup>3</sup> )	
	(111)	(111)	(1/5)	(111-)	
15 min Summe			0.7	16.2	O K
30 min Summe	er 102.209	0.209	0.7	21.4	O K
60 min Summe	er 102.254	0.254	0.7	26.2	O K
120 min Summe	er 102.291	0.291	0.7	30.2	O K
180 min Summe	er 102.305	0.305	0.7	31.7	Flood Risk
240 min Summe	er 102.309	0.309	0.7	32.1	Flood Risk
360 min Summe	er 102.303	0.303	0.7	31.5	Flood Risk
480 min Summe	er 102.296	0.296	0.7	30.7	O K
600 min Summe	er 102.287	0.287	0.7	29.8	ОК
720 min Summe	er 102.279	0.279	0.7	28.9	O K
960 min Summe	er 102.261	0.261	0.7	27.0	O K
1440 min Summe	er 102.228	0.228	0.7	23.4	O K
2160 min Summe	er 102.183	0.183	0.7	18.6	O K
2880 min Summe	er 102.144	0.144	0.7	14.5	O K
4320 min Summe	er 102.088	0.088	0.7	8.4	0 K
5760 min Summe	er 102.056	0.056	0.7	5.0	0 K
7200 min Summe	er 102.046	0.046	0.7	3.9	0 K
8640 min Summe	er 102.040	0.040	0.6	3.2	0 K
10080 min Summe	er 102.035	0.035	0.5	2.8	0 K
15 min Winte	er 102.181	0.181	0.7	18.4	0 K
30 min Winte	er 102.236	0.236	0.7	24.3	0 K
60 min Winte	er 102.287	0.287	0.7	29.8	0 K
	Storm	Rain	Flooded T	ime-Peal	k
	Event	(mm/hr)	Volume	(mins)	
			1 2 \		
			(m³)		
1 5	min Summe	r 135 270		21	5
	min Summe		0.0	25	
30	min Summe	r 87.861	0.0	39	9
30 60	min Summe min Summe	r 87.861 r 54.368	0.0 0.0 0.0	39	9 3
30 60 120	min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554	0.0 0.0 0.0 0.0	39 68 120	9 3 6
30 60 120 180	min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829	0.0 0.0 0.0 0.0 0.0	39 68 120 184	9 3 6 4
30 60 120 180 240	min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002	0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242	9 3 6 4 2
30 60 120 180 240 360	min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711	0.0 0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242 342	9 3 6 4 2 2
30 60 120 180 240 360 480	min Summe min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242 342 394	9 3 6 4 2 2 2 4
30 60 120 180 240 360 480 600	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 9 68 12 0 18 4 24 2 34 2 39 4 45 4	9 3 6 4 2 2 2 4 4
30 60 120 180 240 360 480 600 720	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242 342 394 454 518	9 3 6 4 2 2 2 4 4 3
30 60 120 180 240 360 480 600 720 960	<pre>min Summe min Summe</pre>	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242 394 454 518 654	9 3 6 4 2 2 4 4 4 3 3 4
30 60 120 180 240 360 480 600 720 960 1440	<pre>min Summe min Summe</pre>	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242 394 454 518 654 924	9 3 6 4 2 2 4 4 4 3 3 4 4
30 60 120 180 240 360 480 600 720 960 1440 2160	<pre>min Summe min Summe</pre>	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	39 68 120 184 242 342 394 454 518 654 924 1310	9 3 6 4 2 2 2 4 4 3 4 4 4 5 6
30 60 120 180 240 360 480 600 720 960 1440 2160 2880	<pre>min Summe min Summe</pre>	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537		39 68 120 184 242 342 394 454 518 654 924 1316 1680	9 3 4 2 2 4 4 3 4 4 5 0
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537 er 1.817		39 68 120 184 242 344 394 454 518 654 924 1316 1680 2380	9 3 4 2 2 4 4 4 3 4 4 6 0 0
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	<pre>min Summe min Summe</pre>	er 87.861 er 54.368 er 32.554 er 23.829 er 19.002 er 13.711 er 10.884 er 9.094 er 7.849 er 6.218 er 4.472 er 3.211 er 2.537 er 1.817 er 1.433		39 68 120 184 242 394 454 518 654 924 1316 1680 2380 3008	9 3 4 2 2 4 4 4 3 4 4 6 0 0 0 3
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200	<pre>min Summe min Summe</pre>	ar       87.861         ar       54.368         ar       32.554         ar       23.829         ar       19.002         ar       10.884         ar       9.094         ar       7.849         ar       4.472         ar       3.211         ar       2.537         ar       1.817         ar       1.433         ar       1.192		39 68 120 184 242 394 454 518 654 924 1316 1680 2380 3008 3680	9 3 4 2 2 4 4 4 3 4 4 6 0 0 0 3 0
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	<pre>min Summe min Summe</pre>	ar       87.861         ar       54.368         ar       32.554         ar       23.829         ar       19.002         ar       10.884         ar       9.094         ar       7.849         ar       4.472         ar       3.211         ar       2.537         ar       1.817         ar       1.433         ar       1.192         ar       1.024		39 68 120 184 242 394 454 518 654 924 1316 1680 2380 3008 3680 4408	9 3 4 2 2 2 4 4 4 5 6 0 0 0 3 3
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	<pre>min Summe min Summe</pre>	ar       87.861         ar       54.368         ar       32.554         ar       23.829         ar       19.002         ar       10.884         ar       9.094         ar       7.849         ar       4.472         ar       3.211         ar       2.537         ar       1.433         ar       1.192         ar       1.024         ar       0.901		39 68 120 184 242 394 454 518 654 924 1316 1680 2380 3008 3680 4408 5144	9 3 6 4 2 2 2 4 4 4 5 6 0 0 0 3 3 0 3 4
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10880 15	<pre>min Summe min Summe</pre>	ar       87.861         ar       54.368         ar       32.554         ar       23.829         ar       19.002         ar       13.711         ar       9.094         ar       7.849         ar       4.472         ar       3.211         ar       2.537         ar       1.433         ar       1.192         ar       1.024         ar       0.901         ar       1.35.270		39 68 120 184 242 342 394 454 518 654 924 1316 1680 2380 3008 3680 4408 5144 25	9 3 6 4 2 2 2 4 4 4 5 5
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	<pre>min Summe min Summe</pre>	ar       87.861         ar       54.368         ar       32.554         ar       23.829         ar       19.002         ar       19.002         ar       10.884         ar       9.094         ar       7.849         ar       4.472         ar       3.211         ar       2.537         ar       1.433         ar       1.192         ar       1.024         ar       0.901         ar       1.35.270         ar       1.35.270		39 68 120 184 242 394 454 518 654 924 1316 1680 2380 3008 3680 4408 5144	9 3 4 2 2 4 4 4 5 9

EAS				Page	2
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG					
Date 19/04/2023 10:10	Designe	d by WIN	DES		Pathar
File Car Park D.srcx	Checked	-	-		
			2013.1.1		
Micro Drainage	Source	CONCLOI	2013.1.1		
Summary of F	esults fo	r 100 ye	ar Retur	n Peri	od (+40%)
Storm	Max	Max	Max	Max	Status
Event		-	iltration		
	(m)	(m)	(1/s)	(m³)	
120 min Wint	er 102.331	0.331	0.7	34.4	Flood Risk
180 min Wint	er 102.349	0.349	0.7	36.3	Flood Risk
240 min Wint			0.7	37.1	Flood Risk
360 min Wint	er 102.353	0.353	0.7	36.9	Flood Risk
480 min Wint			0.7	35.8	Flood Risk
600 min Wint			0.7		Flood Risk
720 min Wint			0.7		Flood Risk
960 min Wint			0.7		ОК
1440 min Wint			0.7		
2160 min Wint			0.7		
2880 min Wint			0.7		
4320 min Wint 5760 min Wint			0.7		
7200 min Wint			0.0		
8640 min Wint			0.3		
10080 min Wint			0.4		0 K
	Storm		Flooded 1		k
	Event	(mm/hr)	Volume	(mins)	
			(m³)		
12	0 min Winte	r 32.554	0.0	12	4
18	0 min Winte	r 23.829	0.0	18	0
24	0 min Winte	r 19.002	0.0	23	8
	0 min Winte			34	8
	0 min Winte			45	
	0 min Winte		0.0	48	
	0 min Winte			56	
	0 min Winte 0 min Winte			71	
	0 min Winte 0 min Winte			100 140	
	0 min Winte 0 min Winte			140	
	0 min Winte 0 min Winte			233	
	0 min Winte			299	
	0 min Winte			368	
	0 min Winte			448	
1008	0 min Winte	r 0.901		515	2

EAS	1	Page 3
Unit 108 The Maltings	6	
Stanstead Abbotts		
Hertfordshire SG12 8HG		
Date 19/04/2023 10:10	Designed by WINDES	PETRECE
File Car Park D.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Mo Return Period (yea Reg M5-60 ( Rati Summer Sto	ars) 100 gion England and Wales (mm) 19.200 Shortest S .o R 0.428 Longest S	inter Storms Yes Cv (Summer) 0.750 Cv (Winter) 0.840 Storm (mins) 15 Storm (mins) 10080 ate Change % +40
	Time Area Diagram	
	Total Area (ha) 0.074	
	AreaTime(mins)AreaTime(ha)From:To:(ha)From:	
0 4	0.036 4 8 0.019 8	12 0.019
	1982-2013 Micro Drainage Lt	d
0.	TYON SALE WITCED DEATHAGE TO	4

EAS		Page 4
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		Treato ~
Date 19/04/2023 10:10	Designed by WINDES	
File Car Park D.srcx	Checked by	
Micro Drainage	Source Control 2013.1.	.1
Stora	<u>Model Details</u> ge is Online Cover Level (m	n) 102.600
	Porous Car Park Struct	ure
Membrane Perco Max Per	ent Base (m/hr) 0.01476 Plation (mm/hr) 1000 colation (l/s) 99.2 Safety Factor 2.0 Depr Porosity 0.30 E Evert Level (m) 102.000 C	

EAS				Page	1
Unit 108 The Maltings					
Stanstead Abbotts					79
Hertfordshire SG12 8HG					
Date 18/04/2023 10:07	Designe	d by WIN			Dataar
	-	-			
File House Type 2B.srcx	Checked				
Micro Drainage	Source	Control	2013.1.1		
Summary of Re	esults fo	or 100 ye	ear Retur	n Peri	od (+40%)
	Half Drai	n Time :	736 minute	es.	
Storm	Max	Max	Max	Max	Status
Event	Level	-	filtration		
	(m)	(m)	(1/s)	(m³)	
15 min Summe	er 103.249	0.249	0.1	3.7	0 K
30 min Summe	er 103.324	0.324	0.1	4.9	O K
60 min Summe	er 103.397	0.397	0.1	6.0	O K
120 min Summe	er 103.462	0.462	0.1	6.9	O K
180 min Summe	er 103.492	0.492	0.1	7.4	O K
240 min Summe	er 103.507	0.507	0.1	7.6	Flood Risk
360 min Summe	er 103.515	0.515	0.1	7.7	Flood Risk
480 min Summe	er 103.512	0.512	0.1	7.7	Flood Risk
600 min Summe	er 103.503	0.503	0.1	7.5	Flood Risk
720 min Summe	er 103.492	0.492	0.1	7.4	0 K
960 min Summe	er 103.472	0.472	0.1	7.1	0 K
1440 min Summe	er 103.433	0.433	0.1	6.5	0 K
2160 min Summe			0.1		O K
2880 min Summe			0.1		O K
4320 min Summe			0.1		O K
5760 min Summe			0.1		0 K
7200 min Summe			0.1		O K
8640 min Summe			0.1		O K
10080 min Summe			0.1		O K
15 min Winte			0.1		O K
30 min Winte			0.1		O K
60 min Winte			0.1		O K
	Storm	Rain	Flooded !		
	Event		Volume	(mins)	-
	lvene	(1111)	(m <sup>3</sup> )	(11110)	
15	min Summe	r 135.270		22	2
	min Summe min Summe		0.0	22	
30		r 87.861	0.0		7
30 60	min Summe	r 87.861 r 54.368	0.0 0.0 0.0	3.	7
30 60 120	min Summe min Summe	r 87.861 r 54.368 r 32.554	0.0 0.0 0.0 0.0	31	7 5 1
30 60 120 180	min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829	0.0 0.0 0.0 0.0 0.0	3 60 124 184	7 5 4 4
30 60 120 180 240	min Summe min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002	0.0 0.0 0.0 0.0 0.0 0.0	3 60 124 184 242	7 6 4 4 2
30 60 120 180 240 360	min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711	0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 60 124 184 242 362	7 5 4 4 2 2
30 60 120 180 240 360 480	min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 60 124 184 242 362 480	7 5 4 2 2 2
30 60 120 180 240 360 480 600	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 66 124 184 242 362 480 572	7 5 4 2 2 2 2 2 2 2 2 2
30 60 120 180 240 360 480 600 720	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 66 124 184 242 362 480 572 618	7 5 4 4 2 2 2 0 2 3
30 60 120 180 240 360 480 600 720 960	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 64 124 242 362 480 572 618 740	7 5 4 4 2 2 2 0 2 3 0 2 3 0
30 60 120 180 240 360 480 600 720 960 1440	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 6 12 18 24 2 3 6 2 48 57 2 618 74 ( 99	7 5 4 4 2 2 2 0 2 3 3 0 5
30 60 120 180 240 360 480 600 720 960 1440 2160	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 66 124 184 242 362 480 572 618 740 996 1404	7 5 4 4 2 2 2 0 2 3 0 5 4
30 60 120 180 240 360 480 600 720 960 1440 2160 2880	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537	$\begin{array}{c} 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \\ 0 & . & 0 \end{array}$	3 6 124 184 242 362 480 572 618 740 996 1404 1792	7 5 4 4 2 2 2 0 2 3 0 5 4 2 2
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 6 124 184 242 362 480 572 618 740 996 1404 1792 2556	7 5 4 4 2 2 2 0 2 3 0 5 4 2 5
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3 6 124 184 242 362 480 572 618 740 996 1404 1792 2556 3288	7 5 4 4 2 2 2 2 3 0 5 4 4 2 5 3
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192	$\begin{array}{c} 0 & . & 0 \\ 0 & . & 0 \end{array}$	3 6 124 184 242 362 480 572 618 740 1404 1792 2556 3288 3960	7 5 4 4 2 2 2 3 0 2 3 3 0 5 4 4 2 5 3 0 0 5 4 2 3 0 0 5 5 3 0 0 5 5 3 0 0 5 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024	$\begin{array}{c} 0 & . & 0 \\$	3 6 124 184 242 362 480 572 618 740 1404 1792 2556 3288 3960 4584	7 5 4 4 2 2 2 3 0 2 3 3 0 5 4 4 2 5 3 0 5 4 4 2 5 3 0 1 4
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901	$\begin{array}{c} 0 & . & 0 \\$	3 6 124 184 242 362 480 572 618 740 1404 1792 2556 3288 3960 4584 5240	7 5 4 4 2 2 2 3 0 2 3 3 0 5 4 4 2 5 5 3 0 5 4 4 2 5 5 3 0 5 4 4 2 5 5 3 0 5 5 4 4 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270	$\begin{array}{c} 0 & . & 0 \\$	3 6 124 184 242 362 480 572 618 740 1404 1792 2556 3288 3960 4584 5240 22	7 5 4 4 2 2 2 3 0 5 4 2 2 3 0 5 5 4 2 2 5 3 0 5 5 4 2 2 5 3 0 5 5 4 2 2 5 5 5 4 2 2 5 5 5 5 5 5 5 5 5
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	min Summe min Summe	r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270 r 87.861	$\begin{array}{c} 0 & . & 0 \\$	3 6 124 184 242 362 480 572 618 740 1404 1792 2556 3288 3960 4584 5240	7 5 4 4 2 2 2 0 2 2 3 0 5 4 2 2 5 3 0 5 4 2 2 5 3 0 1 4 0 2 2 5 3 0 2 4 2 5 3 0 5 5 4 2 2 5 5 5 4 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7

EAS					Page	. 2
	The Maltings					
Stanstead A	Abbotts				$   \sum_{i=1}^{i}$	
Hertfordshi	re SG12 8HG					
Date 18/04/	2023 10:07	Designe	d by WIN	DES	<b>D</b>	patnage
File House	Type 2B.srcx	Checked	-			
Micro Drair			Control	2013 1 1		
	lage	Dource	00110101	2010.1.1		
	Summary of Re	sults fo	r 100 ve	ar Retur	n Peri	od (+40%)
	<b>*</b>		4			<u>.</u>
	Storm	Max	Max	Max	Max	Status
	Event		-	iltration		
		(m)	(m)	(1/s)	(m³)	
	120 min Winter	103.524	0.524	0.1	7.9	Flood Risk
	180 min Winter			0.1		Flood Risk
	240 min Winter			0.1	8.7	Flood Risk
	360 min Winter	103.594	0.594	0.1		Flood Risk
	480 min Winter	103.595	0.595	0.1	9.0	Flood Risk
	600 min Winter	103.589	0.589	0.1	8.9	Flood Risk
	720 min Winter			0.1		Flood Risk
	960 min Winter			0.1	8.3	Flood Risk
	1440 min Winter			0.1		O K
	2160 min Winter			0.1		
	2880 min Winter			0.1		
	4320 min Winter			0.1		
	5760 min Winter			0.1		ОК
	7200 min Winter			0.1		ОК
	8640 min Winter 10080 min Winter			0.1		O K O K
		Storm		Flooded I		
		Ivent		Volume	(mins)	-
			( <i>)</i>	(m <sup>3</sup> )	()	
	120	min Winto	r 32.554	0.0	12	2
			r 23.829		12	
			r 19.002		23	
			r 13.711		35	
			r 10.884		46	
	600	min Winte	r 9.094	0.0	57	8
	720	min Winte	r 7.849	0.0	68	4
	960	min Winte	r 6.218	0.0	79	4
	1440	min Winte			108	
		min Winte	r 3.211	0.0	153	
	2880	min Winte		0.0	195	
	2880 4320	min Winte min Winte	r 1.817	0.0	195 272	4
	2880 4320 5760	min Winte min Winte min Winte	r 1.817 r 1.433	0.0 0.0 0.0	195 272 340	4 0
	2880 4320 5760 7200	min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192	0.0 0.0 0.0 0.0	195 272 340 388	4 0 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0	195 272 340 388	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8
	2880 4320 5760 7200 8640	min Winte min Winte min Winte min Winte min Winte	r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0	195 272 340 388 440	4 0 8 8

EAS		Page 3		
Unit 108 The Maltings				
Stanstead Abbotts				
Hertfordshire SG12 8HG		THEFTE CO		
Date 18/04/2023 10:07	Designed by WINDES			
File House Type 2B.srcx	Checked by			
Micro Drainage	Source Control 2013.1.1			
	Rainfall Details			
Rainfall Mo Return Period (yea		Vinter Storms Yes Cv (Summer) 0.750		
		Cv (Winter) 0.840		
M5-60 (1				
Rati Summer Sto		Storm (mins) 10080 wate Change % +40		
	<u>Time Area Diagram</u>			
	Total Area (ha) 0.016			
Tim	e (mins) Area Time (mins) A n: To: (ha) From: To: (	rea ha)		
	0 4 0.011 4 8 0.	.005		
©1982-2013 Micro Drainage Ltd				

EAS	1	Page 4					
Unit 108 The Maltings							
Stanstead Abbotts							
Hertfordshire SG12 8HG							
Date 18/04/2023 10:07	Designed by WINDES						
File House Type 2B.srcx	Checked by						
Micro Drainage	Source Control 202	13.1.1					
	Model Details						
Stora	ge is Online Cover Lev	vel (m) 103.800					
	Porous Car Park St	ructure					
Max Per	nt Base (m/hr) 0.01476 lation (mm/hr) 1000 colation (l/s) 14.0	Width (m) 7.1 Length (m) 7.1 Slope (1:X) 1000.0 Depression Storage (mm) 5 Evaporation (mm/day) 3					

EAS						Page 1	L
Unit 108 The Maltings							
Stanstead Abbotts							2000
Hertfordshire SG12 8HG						ا بن ا	$(c; f(o)) \rightarrow (c)$
		1	1	550			
Date 18/04/2023 10:09	-		by WIN	DES		UL	
File House Type 3A.srcx	Check	ed b	У				
Micro Drainage	Sourc	e Co	ntrol	2013.1.	1		
Summary of Re	esults	for	100 ye	ar Retu	ırn I	Period	l (+40%)
	Half D	rain	Time :	531 minut	ces.		
						N	0 h a h u a
Storm Event		fax evel	Max Donth I	Max	ion	Max	Status
Event		(m)	(m)	nfiltrat (1/s)	1011	(m <sup>3</sup> )	
	,	,	(11)	(1/5)		(	
15 min Sun	nmer 103	3.188	0.188		0.1	2.7	O K
30 min Sum					0.1	3.6	O K
60 min Sun					0.1	4.4	O K
120 min Sum	nmer 103	3.346	0.346		0.1	5.0	O K
180 min Sum	nmer 103	3.366	0.366		0.1	5.3	O K
240 min Sum	nmer 103	3.374	0.374		0.1	5.4	O K
360 min Sun	nmer 103	3.373	0.373		0.1	5.4	O K
480 min Sum	nmer 103	3.365	0.365		0.1	5.3	O K
600 min Sum	nmer 103	3.357	0.357		0.1	5.2	ОК
720 min Sun	nmer 103	3.348	0.348		0.1	5.1	0 K
960 min Sun	nmer 103	3.330	0.330		0.1	4.8	O K
1440 min Sun	nmer 103	3.295	0.295		0.1	4.3	O K
2160 min Sun	nmer 103	3.246	0.246		0.1	3.6	0 K
2880 min Sun					0.1	2.9	0 K
4320 min Sun					0.1	1.9	0 K
5760 min Sun					0.1	1.2	0 K
7200 min Sun					0.1	0.8	O K
8640 min Sun					0.1	0.6	O K
10080 min Sun					0.1	0.6	0 K
15 min Wir					0.1	3.1	0 K
30 min Wir					0.1	4.0	O K
					0.1	4.9	O K
	nter 103	3.340	0.340				
60 min Wir		3.340					0 K
	nter 103 Storm Event		Rain	Flooded	Time		U K
	Storm		Rain		Time	-Peak	U K
60 min Wir	Storm Event		Rain (mm/hr)	Flooded Volume (m <sup>3</sup> )	Time	-Peak ins)	U K
60 min Wir 15	Storm Event min Sur	mmer	Rain (mm/hr) 135.270	Flooded Volume (m <sup>3</sup> ) 0.0	Time	-Peak ins) 22	U K
60 min Wir 15 30	Storm Event min Sur min Sur	mmer	Rain (mm/hr) 135.270 87.861	Flooded Volume (m <sup>3</sup> ) 0.0 0.0	Time	e-Peak ins) 22 37	U K
60 min Wir 15 30 60	Storm Event min Sur min Sur min Sur	mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0	Time	-Peak ins) 22 37 66	U K
60 min Wir 15 30 60 120	Storm Event min Sur min Sur min Sur min Sur	mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0	Time	<b>Peak</b> ins) 22 37 66 126	U K
60 min Wir 15 30 60 120	Storm Event min Sur min Sur min Sur	mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0	Time	-Peak ins) 22 37 66	U K
60 min Wir 15 30 60 120 180	Storm Event min Sur min Sur min Sur min Sur	mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0	Time	<b>Peak</b> ins) 22 37 66 126	U K
60 min Wir 15 30 60 120 180 240	Storm Event min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0	Time	<b>Peak</b> ins) 22 37 66 126 184	UK
60 min Wir 15 30 60 120 180 240 360	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0	Time	<b>-Peak</b> <b>ins)</b> 22 37 66 126 184 244	UK
60 min Wir 15 30 60 120 180 240 360 480	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time	<b>-Peak</b> <b>ins)</b> 22 37 66 126 184 244 360	U K
60 min Wir 15 30 60 120 180 240 360 480 600	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time	<b>-Peak</b> <b>ins)</b> 22 37 66 126 184 244 360 432	U K
60 min Wir 15 30 60 120 180 240 360 480 600 720	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time	<b>Peak</b> <b>ins)</b> 22 37 66 126 184 244 360 432 488	UK
60 min Wir 15 30 60 120 180 240 360 480 600 720 960	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160	Storm Event min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944	U K
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732 2464	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732 2464 3112 3752	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732 2464 3112	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732 2464 3112 3752 4408	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901 135.270	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732 2464 3112 3752 4408 5144 22	
60 min Wir 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	Storm Event min Sur min Sur	mmer mmer mmer mmer mmer mmer mmer mmer	Rain (mm/hr) 135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901	Flooded Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time	-Peak ins) 22 37 66 126 184 244 360 432 488 548 678 944 1344 1732 2464 3112 3752 4408 5144	

EAS					Page	2
Unit 108 Th	-					
Stanstead Al	bbotts				$\sum_{i=1}^{n}$	
Hertfordshi	re SG12 8HG					
Date 18/04/2	2023 10:09	Designed	by WIN	DES	ע (  ך	Pathac
File House Type 3A.srcx Check		Checked b	ру			
Micro Draina	age	Source Co	ontrol	2013.1.1	-	
	Summary of Re	sults for	100 ye	ear Return	Perio	d (+40%)
	Storm	Max	Max	Max	Max	Status
	Event	Level	Depth 1	Infiltration	n Volume	
		(m)	(m)	(1/s)	(m³)	
	120 min Wint	er 103.394	0.394	0.3	L 5.7	0 K
	180 min Wint			0.1		
	240 min Wint	er 103.429	0.429	0.1	L 6.3	O K
	360 min Wint	er 103.433	0.433	0.1	L 6.3	O K
	480 min Wint	er 103.427	0.427	0.1	1 6.2	O K
	600 min Wint			0.1	1 6.1	O K
	720 min Wint			0.1		
	960 min Wint			0.1		
	1440 min Wint			0.1		
	2160 min Wint			0.1		
	2880 min Wint			0.1		
	4320 min Wint 5760 min Wint			0.1		
	7200 min Wint			0.1		
	8640 min Wint			0.1		
	10080 min Wint			0.1		
		Storm	Rain	Flooded Ti		
	1	Ivent	(mm/hr)		(mins)	
				(m³)		
		min Winter			124	
		min Winter			182	
		min Winter			238	
		min Winter min Winter			352 462	
		min Winter			564	
		min Winter			588	
		min Winter			734	
		min Winter			1032	
		min Winter	3.211		1452	
	2880	min Winter			1848	
		min Winter		0.0	2512	
		min Winter			2992	
		min Winter			3680	
		min Winter			4488	
	10080	min Winter	0.901	0.0	5144	

EAS		Page 3			
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG		THERE A			
Date 18/04/2023 10:09	Designed by WINDES	D Prating (			
File House Type 3A.srcx	Checked by				
Micro Drainage	Source Control 2013.1.1				
	Rainfall Details				
Rainfall ModelFSRWinter StormsYesReturn Period (years)100Cv (Summer)0.750					
		Cv (Winter) 0.840			
M5-60 (1					
Summer Sto		Storm (mins) 10080 ate Change % +40			
	<u>Time Area Diagram</u>				
	Total Area (ha) 0.012				
Tim	e (mins) Area Time (mins) A	rea			
From		ha)			
	0 4 0.005 4 8 0.	.007			
©1	1982-2013 Micro Drainage Lt	a d			

		-				
EAS	1	Page 4				
Unit 108 The Maltings						
Stanstead Abbotts						
Hertfordshire SG12 8HG						
Date 18/04/2023 10:09	Designed by WINDES					
File House Type 3A.srcx	Checked by					
Micro Drainage	Source Control 2013.1.	.1				
Model Details						
Stora	ge is Online Cover Level (r	n) 103.800				
	Porous Car Park Struct	ure				
	nt Base (m/hr) 0.01476	Width (m) 7.0				
Membrane Perco		Length (m) 7.0				
Max Per	colation (l/s) 13.6 Safety Factor 2.0 Depi	Slope (1:X) 1000.0 ression Storage (mm) 5				
		Evaporation (mm/day) 3				
In		Cap Volume Depth (m) 0.000				

EAS					]	Page 1	L	
Unit 108 The Maltings								
Stanstead Abbotts							le mont	
Hertfordshire SG12 8HG						ا بُر ا	$\Gamma(c_1^{\prime}, (o)) \rightarrow \mathcal{I}$	m
	Dee		1 T-T N					R
Date 18/04/2023 10:12		-	by WIN	IDES		202	<u>Curce</u>	J
File House Type 4B.srcx	Che	ecked b	ру					
Micro Drainage	Sou	arce Co	ontrol	2013.1.	1			
Summary of Re	esult	ts for	100 ye	ear Retu	ırn E	Period	l (+40%)	
			4					
	Half	f Drain	Time :	651 minut	ces.			
Storm		Max	Max	Max		Max	Status	
Event		Level (m)	Depth 1 (m)	Infiltrat (1/s)	ion N	/olume (m³)		
15 min Sun					0.1	3.2	O K	
30 min Sun					0.1	4.2	O K	
60 min Sun 120 min Sun					0.1	5.2	O K	
120 min Sun 180 min Sun					0.1	6.0	ОК	
180 min Sun 240 min Sun					0.1	6.4 6.5	ок ок	
360 min Sun 480 min Sun					0.1	6.6 6.5	ок ок	
480 min Sun 600 min Sun					0.1	6.4	O K	
720 min Sun					0.1	6.4 6.2	O K	
960 min Sun					0.1	6.0	O K	
1440 min Sun					0.1	5.4	O K	
2160 min Sun					0.1	4.7	O K	
2100 min Sun 2880 min Sun					0.1	4.7	O K	
4320 min Sun					0.1	2.8	O K	
5760 min Sun					0.1	1.9	O K	
7200 min Sun					0.1	1.2	O K	
8640 min Sun					0.1	0.8	0 K	
10080 min Sum					0.1	0.7	O K	
15 min Wir					0.1	3.6	O K	
30 min Wir	nter	103.327	0.327		0.1	4.8	O K	
60 min Wir	nter	103.401	0.401		0.1	5.8	O K	
	Stor	m	Rain	Flooded	Time	-Peak		
	Event	t.	(mm/hr)	Volume	(mi	ins)		
		-	• • •	VOLUME				
		-		(m <sup>3</sup> )				
15	min		135.270	(m³)		23		
				(m³) 0.0		23 37		
30	) min	Summer	135.270	(m³) 0.0 0.0				
30 60	) min ) min	Summer Summer	135.270 87.861	(m <sup>3</sup> ) 0.0 0.0 0.0		37		
30 60 120 180	) min ) min ) min ) min	Summer Summer Summer Summer	135.270 87.861 54.368	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0		37 66		
30 60 120 180 240	) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0		37 66 126 186 244		
30 60 120 180 240 360	) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0		37 66 126 186 244 362		
30 60 120 180 240 360 480	) min ) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		37 66 126 186 244 362 480		
30 60 120 180 240 360 480 600	) min ) min ) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		37 66 126 186 244 362 480 526		
30 60 120 180 240 360 480 600 720	) min ) min ) min ) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588		
30 60 120 180 240 360 480 600 720 960	) min ) min ) min ) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708		
30 60 120 180 240 360 480 600 720 960 1440	) min ) min ) min ) min ) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 244 362 480 526 588 708 974		
30 60 120 180 240 360 480 600 720 960 1440 2160	) min ) min ) min ) min ) min ) min ) min ) min ) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512 3224		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512 3224		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512 3224 3888		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512 3224 3888 4496		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	) min ) min	Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901 135.270 87.861	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512 3224 3888 4496 5144 22 37		
30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	) min ) min	Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer Summer	135.270 87.861 54.368 32.554 23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901 135.270	(m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		37 66 126 186 244 362 480 526 588 708 974 1384 1764 2512 3224 3888 4496 5144 22		

EAS				Page 2	
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG				The Repo	
Date 18/04/2023 10:12	Designe	d by WIN	IDES		=
File House Type 4B.srcx	Checked	-			
Micro Drainage		-	2013.1.1		
	004100	00110101			
Summary of R	esults fo	or 100 ve	ear Retur	n Period (+40%)	
Storm	Max	Max	Max	Max Status	
Event	Level	Depth In:	filtration	Volume	
	(m)	(m)	(1/s)	(m <sup>3</sup> )	
120 min Winte	er 103.467	0.467	0.1	6.8 O K	
180 min Winte	er 103.498	0.498	0.1	7.3 ОК	
240 min Winte	er 103.514	0.514	0.1	7.5 Flood Risk	
360 min Winte	er 103.523	0.523	0.1	7.6 Flood Risk	
480 min Winte			0.1		
600 min Winte			0.1		
720 min Winte			0.1		
960 min Winte			0.1		
1440 min Winte			0.1		
2160 min Winte 2880 min Winte			0.1		
4320 min Winte			0.1		
5760 min Winte			0.1		
7200 min Winte			0.1		
8640 min Winte			0.1		
10080 min Winte			0.1		
	Storm	Rain	Flooded 1	'ime-Peak	
	Event	(mm/hr)	Volume	(mins)	
			(m³)		
120	min Winte	er 32.554	0.0	124	
	min Winte			182	
240	min Winte	er 19.002	0.0	240	
360	min Winte	er 13.711	0.0	354	
	min Winte		0.0	466	
	min Winte			574	
	min Winte			676	
	min Winte			762	
	min Winte min Winte			1060 1496	
	min Winte min Winte			1496 1908	
	min Winte			2640	
	min Winte			3232	
	min Winte			3680	
	min Winte			4416	
10080	min Winte	er 0.901	0.0	5144	
	1982-201				

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Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		
Date 18/04/2023 10:12	Designed by WINDES	
File House Type 4B.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	-
	Rainfall Details	
Rainfall Mod	del FSR	Winter Storms Yes
Return Period (yea:		Cv (Summer) 0.750
Reg. M5-60 (1		Cv (Winter) 0.840 est Storm (mins) 15
		est Storm (mins) 10080
Summer Sto:	rms Yes C	Climate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.014	
Tim	e (mins) Area Time (mins)	Area
From	n: To: (ha) From: To:	(ha)
	0 4 0.005 4 8	3 0.009
©1	1982-2013 Micro Drainage	Ltd

Stanstead Abbotts         Hertfordshire SG12 8HG         Date 18/04/2023 10:12         File House Type 4B.srcx         Checked by         Micro Drainage         Source Control 2013.1.1         Model Details         Storage is Online Cover Level (m) 103.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 7.         Membrane Percolation (mm/hr) 1000       Length (m) 7.         Max Percolation (1/s) 13.6       Slope (1:X) 1000.         Safety Factor       2.0 Depression Storage (mm)         Porosity       0.30	
Hertfordshire       SG12 8HG         Date       18/04/2023 10:12       Designed by WINDES         File       House Type 4B.srcx       Checked by         Micro       Drainage       Source Control 2013.1.1         Model Details         Storage is Online Cover Level (m) 103.800         Porous Car Park Structure         Infiltration       Coefficient Base (m/hr) 0.01476       Width (m) 7.         Membrane       Percolation (mm/hr) 1000       Length (m) 7.         Max       Percolation (1/s) 13.6       Slope (1:X) 1000.         Safety       Factor       2.0       Depression Storage (mm)         Porosity       0.30       Evaporation (mm/day)	
Date 18/04/2023 10:12 File House Type 4B.srcx Designed by WINDES Checked by DCCOTO Micro Drainage Source Control 2013.1.1 <u>Model Details</u> Storage is Online Cover Level (m) 103.800 <u>Porous Car Park Structure</u> Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 7. Membrane Percolation (mm/hr) 1000 Length (m) 7. Max Percolation (1/s) 13.6 Slope (1:X) 1000. Safety Factor 2.0 Depression Storage (mm) Porosity 0.30 Evaporation (mm/day)	
File House Type 4B.srcx       Checked by         Micro Drainage       Source Control 2013.1.1         Model Details       Storage is Online Cover Level (m) 103.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 7.         Membrane Percolation (mm/hr)       1000       Length (m) 7.         Max Percolation (1/s)       13.6       Slope (1:X) 1000.         Safety Factor       2.0 Depression Storage (mm)         Porosity       0.30       Evaporation (mm/day)	R
Micro Drainage       Source Control 2013.1.1         Model Details         Storage is Online Cover Level (m) 103.800         Porous Car Park Structure         Infiltration Coefficient Base (m/hr) 0.01476       Width (m) 7.         Membrane Percolation (mm/hr) 1000       Length (m) 7.         Max Percolation (1/s) 13.6       Slope (1:X) 1000.         Safety Factor       2.0 Depression Storage (mm)         Porosity       0.30       Evaporation (mm/day)	
<u>Model Details</u> Storage is Online Cover Level (m) 103.800 <u>Porous Car Park Structure</u> Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 7. Membrane Percolation (mm/hr) 1000 Length (m) 7. Max Percolation (1/s) 13.6 Slope (1:X) 1000. Safety Factor 2.0 Depression Storage (mm) Porosity 0.30 Evaporation (mm/day)	
Storage is Online Cover Level (m) 103.800 Porous Car Park Structure Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 7. Membrane Percolation (mm/hr) 1000 Length (m) 7. Max Percolation (1/s) 13.6 Slope (1:X) 1000. Safety Factor 2.0 Depression Storage (mm) Porosity 0.30 Evaporation (mm/day)	
Porous Car Park StructureInfiltration Coefficient Base (m/hr) 0.01476Width (m) 7.Membrane Percolation (mm/hr)1000Length (m) 7.Max Percolation (1/s)13.6Slope (1:X) 1000.Safety Factor2.0 Depression Storage (mm)Porosity0.30Evaporation (mm/day)	
Infiltration Coefficient Base (m/hr) 0.01476 Width (m) 7. Membrane Percolation (mm/hr) 1000 Length (m) 7. Max Percolation (l/s) 13.6 Slope (1:X) 1000. Safety Factor 2.0 Depression Storage (mm) Porosity 0.30 Evaporation (mm/day)	
Membrane Percolation (mm/hr)1000Length (m)7.Max Percolation (l/s)13.6Slope (1:X)1000.Safety Factor2.0Depression Storage (mm)Porosity0.30Evaporation (mm/day)	
	) ) 5 3

Unit 108 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG				Page 1
Hertfordshire SC12 8HG				
				TT REFO
	Designe	d by WIN	DES	Defese
	-	-	010	
File House Type 4C wG Checked by Micro Drainage Source Control 2013.1.1				
Micro Drainage	Source	Control	2013.1.1	
Summary of Re-	sults fo	r 100 ve	ar Return	Period (+40%)
<u>Summary of new</u>	JULES IO	<u>1 100 y</u> C	ar necurn	
	Half Drai	n Time :	342 minutes	
Storm	Max	Max	Max	Max Status
Event	Level		iltration N	
	(m)	(m)	(1/s)	(m <sup>3</sup> )
	100 400	0 000	0.1	
15 min Summer 30 min Summer			0.1	4.0 O K 5.2 Flood Risk
30 min Summer 60 min Summer			0.1	5.2 Flood Risk 6.4 Flood Risk
120 min Summer			0.1	7.5 Flood Risk
120 min Summer 180 min Summer			0.1	8.1 Flood Risk
240 min Summer			0.1	8.4 Flood Risk
360 min Summer				8.6 Flood Risk
480 min Summer				8.7 Flood Risk
600 min Summer			0.1	8.7 Flood Risk
720 min Summer	103.587	0.187	0.1	8.6 Flood Risk
960 min Summer	103.583	0.183	0.1	8.3 Flood Risk
1440 min Summer	103.573	0.173	0.1	7.9 Flood Risk
2160 min Summer	103.558	0.158	0.1	7.2 Flood Risk
2880 min Summer	103.543	0.143	0.1	6.5 Flood Risk
4320 min Summer	103.516	0.116	0.1	5.2 Flood Risk
5760 min Summer	103.493	0.093	0.1	4.2 O K
7200 min Summer	103.475	0.075	0.1	3.3 ОК
8640 min Summer	103.462	0.062	0.1	2.7 ОК
10080 min Summer	103.453	0.053	0.1	2.3 ОК
15 min Winter			0.1	4.5 Flood Risk
30 min Winter			0.1	5.9 Flood Risk
60 min Winter			0.1 Flooded Ti	7.2 Flood Risk
	Storm Ivent	Rain		me-Peak (mins)
E	ivenc	(1111)	(m <sup>3</sup> )	(11115)
15	min Summo	r 135 270	0 0	23
	min Summe min Summe	r 135.270 r 87.861	0.0	23 37
	min Summe		0.0	68
	min Summe		0.0	126
	min Summe		0.0	186
	min Summe		0.0	246
810	min Summe		0.0	364
360 :	min Summe		0.0	482
	min Summe	r 9.094		
480	mirri o'umine	1 9.094	0.0	600
480 ±	min Summe		0.0	658
480 ± 600 ± 720 ±		r 7.849		
480 ± 600 ± 720 ± 960 ±	min Summe	r 7.849 r 6.218	0.0	658
480 ± 600 ± 720 ± 960 ± 1440 ±	min Summe min Summe	r 7.849 r 6.218 r 4.472	0.0	658 766
480 : 600 : 720 : 960 : 1440 : 2160 : 2880 :	min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537	0.0 0.0 0.0	658 766 1016 1428 1820
480 = 600 = 720 = 960 = 1440 = 2880 = 4320 =	min Summe min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817	0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596
480 = 600 = 720 = 960 = 1440 = 2880 = 4320 = 5760 =	min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433	0.0 0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596 3344
480 = 600 = 720 = 960 = 1440 = 2880 = 4320 = 5760 = 7200 =	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596 3344 4032
480 1 600 1 720 1 960 1 1440 1 2160 1 2880 1 4320 1 5760 1 7200 1 8640 1	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596 3344 4032 4672
480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596 3344 4032 4672 5344
480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15	min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596 3344 4032 4672 5344 23
480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270 r 87.861	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	658 766 1016 1428 1820 2596 3344 4032 4672 5344

EAS					Page	2		
Unit 108 T	he Maltings							
Stanstead A	bbotts							
Hertfordshi	re SG12 8HG							
Date 18/04/	2023 10:24	Designed	d by WIN	DES		Patrag		
		Checked	-			<u>ne nece</u>		
				2013.1.1				
Micro Drain	aye	Source (	CONCLOT	2013.1.1				
Summary of Results for 100 year Return Period (+40%)								
	Summary of Rea	SUICS IO	1 100 ye	ai Netui	II LELL	04 (140%)		
	Storm	Max	Max	Max	Max	Status		
	Event	Level	Depth Inf	filtration	Volume			
		(m)	(m)	(l/s)	(m³)			
	120 min Winter	103 586	0 186	0.1	85	Flood Risk		
	180 min Winter			0.1		Flood Risk		
	240 min Winter			0.1		Flood Risk		
	360 min Winter			0.1		Flood Risk		
	480 min Winter	103.618	0.218	0.1	10.0	Flood Risk		
	600 min Winter	103.618	0.218	0.1	10.0	Flood Risk		
	720 min Winter			0.1		Flood Risk		
	960 min Winter			0.1		Flood Risk		
	1440 min Winter			0.1		Flood Risk		
	2160 min Winter			0.1		Flood Risk		
	2880 min Winter			0.1		Flood Risk		
	4320 min Winter			0.1		Flood Risk		
	5760 min Winter 7200 min Winter			0.1				
	8640 min Winter			0.1				
	10080 min Winter			0.1		O K		
		torm		Flooded 1				
		vent		Volume	(mins)			
			,	(m³)	. ,			
	120 r	nin Winte	r 32.554	0.0	12	Δ		
			r 23.829		18			
			r 19.002		24	0		
	360 r	min Winte:	r 13.711	0.0	35	6		
	480 r	min Winte:	r 10.884	0.0	47	0		
		min Winte		0.0	58			
			r 7.849		69			
		nin Winte			89			
		nin Winte:			110			
		nin Winte:			155			
		nin Winte: nin Winte:			198 277			
		min Winte:			346			
		min Winte:			404			
		min Winte:			466			
		min Winte:			534			

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		LIVERED ON
Date 18/04/2023 10:24	Designed by WINDES	Drainare
File House Type 4C wG	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Mod	del FSR	Winter Storms Yes
Return Period (yea:		Cv (Summer) 0.750
M5-60 (1		Cv (Winter) 0.840 st Storm (mins) 15
		st Storm (mins) 10080
Summer Sto:	rms Yes Cl	imate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.017	
Tim	e (mins) Area Time (mins) n: To: (ha) From: To:	Area (ha)
	0 4 0.005 4 8	0 012
		0.012
©1	1982-2013 Micro Drainage	Ltd

EAS				Page 4	
Unit 108 The Maltings				rage 4	
Stanstead Abbotts					<u> </u>
Hertfordshire SG12 8HG				N N N CSP	0
Date 18/04/2023 10:24	Designed by	WINDES		Draft	
File House Type 4C wG	Checked by	WINDED			<u>lel le</u>
Micro Drainage	Source Cont	rol 2017	3 1 1		
	Source come	101 201.			
		Details	_		
Stora	ge is Online C	over Leve	el (m) 10	03.800	
	Porous Car	Park Str	ructure		
Infiltration Coefficies				Width (m)	
Membrane Perco Max Per	lation (mm/hr) colation (l/s)			Length (m) Slope (1:X)	
	Safety Factor	2.0	Depressi	ion Storage (mm)	
	Porosity			pration (mm/day)	3
Tu.	vert Level (m)	103.400	Cap \	Volume Depth (m)	0.000

EAS					Page	1	
Unit 108 The Mal	tings						
Stanstead Abbotts						<u>7</u> 2~	
Hertfordshire SG	12 8HG						sho _ (~
Date 18/04/2023 1		Designe	d by WIN	DFS			h n n n n n n n n n n n n n n n n n n n
				<u>LC</u>			
File House Type 5B wG Checked by Micro Drainage Source Control 2013.1.1							
Micro Drainage		Source	Control	2013.1.1			
Gumma	ru of Pog	ulto fo	r = 100 vc	ar Return	. Pori	od (+)	109)
Julillia	LY UL KES	uits io	<u>i ioo ye</u>	ai ketuii	I FELL	0u (+·	10%)
	Н	alf Drain	n Time : 1	.203 minute	s.		
	Storm Ivent	Max Level	Max Dopth Inf	Max filtration	Max	Stat	us
E.	venc	(m)	(m)	(1/s)	(m <sup>3</sup> )		
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer min Summer			0.1		Flood	
	min Summer min Summer			0.1		Flood Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
	min Summer			0.1		Flood	
10080	min Summer	103.497	0.097	0.1	4.3		ОК
15 :	min Winter	103.537	0.137	0.1	6.2	Flood	Risk
30 :	min Winter	103.577	0.177	0.1	8.1	Flood	Risk
		103 618	0 010	0 1		TT 1 1	Risk
60 :	min Winter	103.010	0.218	0.1	10.0	Flood	
60 :	S	torm	Rain	Flooded T	ime-Peal		
60 .	S		Rain	Flooded T: Volume			
60	S <sup>.</sup> E	torm vent	Rain (mm/hr)	Flooded T: Volume (m <sup>3</sup> )	ime-Peal (mins)	k	
60	<b>S</b> <b>E</b> 15 m	torm vent nin Summe	Rain (mm/hr) r 135.270	Flooded T: Volume (m <sup>3</sup> ) 0.0	ime-Peal (mins) 23	<b>k</b> 3	
60	5 E 15 m 30 m	torm vent nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861	Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0	ime-Peal (mins) 2. 3	<b>k</b> 3 8	
60	5 m E 15 m 30 m 60 m	torm vent nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368	Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0	ime-Pea (mins) 2. 3 6	<b>k</b> 3 8 8	
60	5 m E 15 m 30 m 60 m 120 m	torm vent nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554	Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0	ime-Pea (mins) 2: 3: 6: 12:	<b>k</b> 3 8 8 6	
60	5 m 5 m 30 m 60 m 120 m 180 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829	Flooded         T           Volume         (m <sup>3</sup> )           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Pea (mins) 2: 3: 6: 12 18	<b>k</b> 3 8 8 6 6	
60	5 m 5 m 30 m 60 m 120 m 180 m 240 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002	Flooded         T           Volume         (m <sup>3</sup> )           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12: 18: 24	<b>k</b> 3 8 8 6 6 6	
60	5 m 15 m 30 m 120 m 180 m 240 m 360 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711	Flooded         T           Volume         (m <sup>3</sup> )           0.0         (m <sup>3</sup> )	ime-Peal (mins) 2: 3: 6: 12 18 24 36	<b>k</b> 3 8 8 6 6 6 6 6 6	
60	5 m 15 m 30 m 120 m 120 m 180 m 240 m 360 m 480 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884	Flooded         T           Volume         (m <sup>3</sup> )           0.0         (m <sup>3</sup> )	ime-Peal (mins) 2: 3: 6: 12 18 24 36 48	<b>k</b> 3 8 8 6 6 6 6 6 4	
60	5 m 15 m 30 m 120 m 120 m 180 m 240 m 360 m 480 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094	Flooded         T           Volume         (m <sup>3</sup> )           0.0         (m <sup>3</sup> )	ime-Peal (mins) 2: 3: 6: 12: 18: 24 36: 48: 60:	<b>k</b> 3 8 8 6 6 6 6 6 4 4	
60	5 m 15 m 30 m 120 m 120 m 180 m 240 m 360 m 480 m 600 m 720 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849	Flooded         T           Volume         (m <sup>3</sup> )           0.0         (m <sup>3</sup> )	ime-Peal (mins) 2: 3: 6: 12 18 24 36 48	<b>k</b> 3 8 8 6 6 6 6 4 4 2	
60	5 m 15 m 30 m 120 m 120 m 180 m 240 m 360 m 480 m 600 m 720 m 960 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12: 18: 24 36: 48: 60: 72:	<b>k</b> 3 8 8 6 6 6 6 4 4 2 8	
60	5 m 15 m 30 m 120 m 120 m 120 m 120 m 120 m 120 m 120 m 120 m 140 m 1440 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12: 18: 24 36: 48: 60: 72: 91:	<b>k</b> 3 8 8 6 6 6 6 4 4 2 8 0	
60	5 m 15 m 30 m 120 m 120 m 120 m 120 m 120 m 140 m 960 m 1440 m 2160 m	torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12: 18: 24 36: 48: 60: 72: 91: 114	<b>k</b> 3 8 8 6 6 6 6 4 4 2 8 0 6 6	
60	5 m 15 m 30 m 60 m 120 m 120 m 120 m 240 m 360 m 480 m 600 m 720 m 960 m 1440 m 2160 m 2880 m	torm vent nin Summe nin Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3; 6; 12; 18; 24; 36; 48; 60; 72; 91; 114; 151;	<b>k</b> 3 8 8 6 6 6 6 6 4 4 2 8 0 0 6 2	
60	5 m 15 m 30 m 60 m 120 m 120 m 120 m 240 m 360 m 480 m 600 m 720 m 960 m 1440 m 2160 m 2880 m 4320 m	torm vent ain Summe ain Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2 3 3 6 12 18 24 36 48 60 72 91 114 151 191	<b>k</b> 3 8 8 6 6 6 6 6 4 4 2 8 0 6 2 8 8	
60	5 m 15 m 30 m 10 m 120 m 120 m 120 m 120 m 120 m 140 m 240 m 240 m 140 m 240 m	torm vent ain Summe ain Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3; 6; 12; 18; 24; 36; 48; 60; 72; 91; 114; 151; 191; 272;	<b>k</b> 3 8 8 6 6 6 6 6 4 4 2 8 0 6 2 8 2 2 8 2	
60	5 m 15 m 30 m 120 m 120 m 120 m 120 m 240 m 360 m 480 m 600 m 720 m 960 m 1440 m 2160 m 2880 m 4320 m 5760 m 7200 m	torm vent ain Summe ain Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12 18 24 36 48 60 72: 91: 114 151 191: 272: 351:	<b>k</b> 3 8 8 6 6 6 6 4 4 2 8 0 6 2 8 2 6	
60	5 m 15 m 30 m 120 m 120 m 120 m 120 m 120 m 120 m 140 m 240 m	torm vent ain Summe ain Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024	Flooded         T           Volume         (m³)           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0           0.0         0.0	ime-Peal (mins) (mins) 2: 3: 6: 12 18 24 36 48 60 72: 91: 114 151 191: 272: 351: 425	<b>k</b> 3 8 8 6 6 6 6 6 4 4 2 8 0 6 2 8 2 6 6 6	
60	S E 15 m 30 m 60 m 120 m 180 m 240 m 360 m 480 m 600 m 720 m 240 m 2400 m 2400 m 240 m 240 m 240 m 240 m 240	torm vent ain Summe ain Summe	Rain (nm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024	Flooded         T           Volume         (m³)           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12 18 24 36 48 60 72: 91: 114 151 191: 272: 351: 425 493	<b>k</b> 3 8 8 6 6 6 6 6 4 4 2 8 0 6 2 8 2 6 6 8 8 2 6 6 8	
60	S E 15 m 30 m 60 m 120 m 180 m 240 m 360 m 480 m 480 m 240 m 240 m 240 m 240 m 5760 m 4320 m 5760 m 7200 m 8640 m 10080 m 15 m	torm vent ain Summe ain Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270	Flooded         T           Volume         (m³)           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12: 18: 24: 36: 48: 60: 72: 91: 114: 151: 191: 272: 351: 425: 493: 564:	<b>k</b> 3 8 8 6 6 6 6 4 4 2 8 0 6 2 8 2 6 6 8 3 3	
60	S E 15 m 30 m 120 m 120 m 120 m 240 m 240 m 360 m 480 m 480 m 240	torm vent in Summe in Summe	Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270 r 87.861	Flooded         T           Volume         (m³)           0.0         0.0	ime-Peal (mins) 2: 3: 6: 12 18 24 36 48 60 72: 91: 114 151 191: 272: 351: 425 493 564 2:	<b>k</b> 3 3 8 3 8 6 6 6 6 4 4 2 8 0 6 6 2 8 2 6 6 8 3 7	

EAS					Page	2
Unit 108 I	he Maltings					
Stanstead A	bbotts					
Hertfordshi	re SG12 8HG					
Date 18/04/	2023 10:16	Designe	d by WIN	DES		Patrage
		Checked	-			
			-	2013.1.1		
Micro Drain	aye	Source	CONCLOT	2013.1.1		
	Summary of Res	ulte fo	r 100 vc	ar Potur	n Pari	d(+108)
	<u>Summary or Rec</u>	II I CIII	04 (1908)			
	Storm	Max	Max	Max	Max	Status
	Event	Level	Depth Inf	filtration	Volume	
		(m)	(m)	(1/s)	(m³)	
	120 min Winter	102 656	0 256	0.1	11 0	Flood Risk
	180 min Winter			0.1		Flood Risk
	240 min Winter			0.1		Flood Risk
	360 min Winter			0.1		Flood Risk
	480 min Winter			0.1		Flood Risk
	600 min Winter			0.1		Flood Risk
	720 min Winter			0.1		Flood Risk
	960 min Winter			0.1		Flood Risk
	1440 min Winter	103.697	0.297	0.1	13.7	Flood Risk
	2160 min Winter	103.674	0.274	0.1	12.6	Flood Risk
	2880 min Winter	103.651	0.251	0.1	11.5	Flood Risk
	4320 min Winter	103.603	0.203			Flood Risk
	5760 min Winter	103.561	0.161	0.1	7.3	Flood Risk
	7200 min Winter			0.1	5.6	Flood Risk
	8640 min Winter			0.1		
	10080 min Winter			0.1		O K
		torm		Flooded 1		k
	E	vent	(mm/hr)	Volume	(mins)	
				(m³)		
	120 r	min Winte	r 32.554	0.0	12	6
			r 23.829		18	
			r 19.002		24	2
	360 r	min Winte	r 13.711	0.0	36	0
	480 r	nin Winte	r 10.884	0.0	47	6
	600 r	min Winte	r 9.094	0.0	59	0
	720 r	min Winte	r 7.849	0.0	70	4
		min Winte			92	
		min Winte			132	
		min Winte			164	
		min Winte			210	
		nin Winte			294	
		nin Winte			375	
		nin Winte nin Winte			447	
		nin Winte nin Winte			518 575	
	100801	uin wince	1 0.901	0.0	575	Ζ

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THEFTE C
Date 18/04/2023 10:16	Designed by WINDES	
File House Type 5B wG	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
		link ou Ohouma Noo
Rainfall Mo Return Period (yea		Vinter Storms Yes Cv (Summer) 0.750
		Cv (Winter) 0.840
M5-60 (1		
Rati Summer Sto		Storm (mins) 10080 ate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.023	
Tim From	e (mins) Area Time (mins) A n: To: (ha) From: To: (	
	0 4 0.005 4 8 0	.018
©1	1982-2013 Micro Drainage Lt	d

EAS			Page 4
Unit 108 The Maltings			
Stanstead Abbotts			
Hertfordshire SG12 8HG			
Date 18/04/2023 10:16	Designed by	WINDES	
File House Type 5B wG	Checked by		
Micro Drainage	Source Cont	rol 2013.	1.1
	Model	Details	
Stora	ge is Online C	over Level	(m) 103.800
	Porous Car I	Park Stru	cture
Infiltration Coefficie	nt Base (m/hr)	0.01476	Width (m) 7.0
Membrane Perco		1000	Length (m) 7.0
Max Per	colation (1/s)		Slope (1:X) 1000.0 epression Storage (mm) 5
	Porosity	0.95	
In	vert Level (m)	103.400	Cap Volume Depth (m) 0.000

EAS				Page 1
Unit 108 The Maltings				· · · · · · · · · · · · · · · · · · ·
Stanstead Abbotts				
Hertfordshire SG12 8HG				
	Deciano	d br WTN	DEC	
	-	d by WIN	DES	
	Checked			
Micro Drainage	Source	Control	2013.1.1	
Summary of Res	sults fo	r 100 ye	ar Return	n Period (+40%)
			0.51	
E.	Half Drain	n Time : l	.271 minute	5.
Storm	Max	Max	Max	Max Status
Event	Level	Depth Inf	filtration	Volume
	(m)	(m)	(1/s)	(m <sup>3</sup> )
15 min Summer	103 527	0 127	0.1	5.8 Flood Risk
30 min Summer			0.1	7.5 Flood Risk
60 min Summer			0.1	9.3 Flood Risk
120 min Summer			0.1	10.9 Flood Risk
180 min Summer			0.1	11.8 Flood Risk
240 min Summer			0.1	12.3 Flood Risk
360 min Summer	103.679	0.279	0.1	12.8 Flood Risk
480 min Summer	103.685	0.285	0.1	13.1 Flood Risk
600 min Summer	103.687	0.287	0.1	13.2 Flood Risk
720 min Summer	103.688	0.288	0.1	13.2 Flood Risk
960 min Summer	103.683	0.283	0.1	13.0 Flood Risk
1440 min Summer	103.671	0.271	0.1	12.5 Flood Risk
2160 min Summer			0.1	11.7 Flood Risk
2880 min Summer			0.1	10.9 Flood Risk
4320 min Summer			0.1	9.3 Flood Risk
5760 min Summer			0.1	8.0 Flood Risk
7200 min Summer			0.1	6.8 Flood Risk
8640 min Summer			0.1	5.7 Flood Risk
10080 min Summer 15 min Winter			0.1	4.8 Flood Risk 6.5 Flood Risk
NU MIN WINTAR		0 185	0 1	
30 min Winter 60 min Winter			0.1	8.5 Flood Risk
60 min Winter	103.627		0.1	10.4 Flood Risk
60 min Winter <b>S</b>		0.227 Rain		10.4 Flood Risk
60 min Winter <b>S</b>	103.627	0.227 Rain	0.1 Flooded T	10.4 Flood Risk me-Peak
60 min Winter S E	103.627 Storm	0.227 Rain (mm/hr)	0.1 Flooded T: Volume (m <sup>3</sup> )	10.4 Flood Risk me-Peak (mins)
60 min Winter S E 15 r	103.627 Storm Svent	0.227 Rain (mm/hr) r 135.270	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0	10.4 Flood Risk me-Peak (mins) 23
60 min Winter S E 15 r 30 r	103.627 Storm Svent nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0	10.4 Flood Risk me-Peak (mins) 23 38
60 min Winter S E 15 r 30 r 60 r	103.627 Storm Svent nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0	10.4 Flood Risk me-Peak (mins) 23 38 68
60 min Winter S 15 r 30 r 60 r 120 r	103.627 torm vent nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0	10.4 Flood Risk me-Peak (mins) 23 38 68 128
60 min Winter S 15 r 30 r 60 r 120 r 180 r	103.627 torm vent nin Summe nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r	103.627 torm vent nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0	10.4 Flood Risk me-Peak (mins) 23 38 68 128
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r	103.627 torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r 480 r	103.627 torm vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r 480 r 600 r	103.627 torm vent in Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk .me-Peak (mins) 23 38 68 128 186 246 366 486
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r 480 r 600 r 720 r	103.627 torm vent vent in Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r 480 r 600 r 720 r 960 r	103.627 torm vent vent nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r 480 r 600 r 720 r 960 r 1440 r 2160 r	103.627 torm vent vent in Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536
60 min Winter S 15 r 30 r 60 r 120 r 180 r 240 r 360 r 480 r 600 r 720 r 960 r 1440 r 2160 r	103.627 torm vent vent in Summe nin Summe	0.227 Rain (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936
60 min Winter S 15 r 30 r 60 r 120 r 120 r 180 r 240 r 360 r 480 r 600 r 720 r 960 r 1440 r 2160 r 2880 r 4320 r	103.627 torm vent vent in Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728
60 min Winter S 15 r 30 r 60 r 120 r	103.627 torm vent vent in Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728 3520
60 min Winter S 15 r 30 r 60 r 120 r 240 r 360 r 720 r 240 r 360 r 720 r 280 r 280 r 270 r 280 r 290 r 200 r	103.627 torm vent vent in Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728 3520 4256
60 min Winter S 15 r 30 r 60 r 120 r 120 r 120 r 120 r 120 r 120 r 120 r 120 r 120 r 240 r 360 r 720 r 280 r	103.627 torm vent vent vent nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.92 r 1.024	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728 3520 4256 5016
60 min Winter S 15 r 30 r 60 r 120 r 240 r 360 r 720 r 280 r 290 r 200 r	103.627 torm vent vent vent nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728 3520 4256 5016 5744
60 min Winter S 15 r 30 r 60 r 120 r	103.627 torm vent vent vent nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728 3520 4256 5016 5744 23
60 min Winter S 15 r 30 r 60 r 120 r	103.627 torm vent vent vent nin Summe nin Summe	0.227 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270 r 87.861	0.1 Flooded T: Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	10.4 Flood Risk me-Peak (mins) 23 38 68 128 186 246 366 486 604 724 954 1156 1536 1936 2728 3520 4256 5016 5744

EAS				Page	e 2
Jnit 108 The Maltings					
Stanstead Abbotts				$\Gamma$	
Hertfordshire SG12 8HG					
Date 18/04/2023 10:17	Designe	d by WIN	DES	- D	Pathan
'ile House Type 5C wG	Checked	by			
ficro Drainage		Control	2013 1 1		
	004200	00110202			
Summary of Re	sults fo	or 100 ye	ar Retur	n Peri	od (+40%)
Storm	Max	Max	Max	Max	Status
Event	Level	-	iltration		
	(m)	(m)	(1/s)	(m³)	
120 min Winte:	r 103.668	0.268	0.1	12.3	Flood Risk
180 min Winte:			0.1		Flood Risk
240 min Winte:	r 103.702	0.302	0.1	13.9	Flood Risk
360 min Winte:			0.1	14.6	Flood Risk
480 min Winte:			0.1		Flood Risk
600 min Winte:			0.1		Flood Risk
720 min Winte:			0.1		Flood Risk
960 min Winte			0.1		Flood Risk
1440 min Winte:			0.1		Flood Risk
2160 min Winte: 2880 min Winte:			0.1		Flood Risk Flood Risk
4320 min Winte			0.1		Flood Risk
5760 min Winte			0.1		Flood Risk
7200 min Winte					Flood Risk
8640 min Winte:	r 103.504	0.104			Flood Risk
10080 min Winte:	r 103.478	0.078	0.1	3.5	O K
:	Storm		Flooded 1	'ime-Pea	k
1	Event	(mm/hr)	Volume	(mins)	
			(m³)		
120	min Winte	r 32.554	0.0	12	6
		r 23.829		18	
		r 19.002		24	2
360	min Winte	r 13.711	0.0	36	0
480	min Winte	r 10.884	0.0	47	6
	min Winte		0.0	59	
		r 7.849		70	
	min Winte			92	
	min Winte min Winte			134	
	min Winte min Winte			165 210	
	min Winte			210	
	min Winte			380	
	min Winte			454	
	min Winte			519	
10080	min Winte	r 0.901	0.0	584	8

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		There is a set
Date 18/04/2023 10:17	Designed by WINDES	
File House Type 5C wG	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Dela Gell Me		inter Oterman Net
Rainfall Mo Return Period (yea		inter Storms Yes Cv (Summer) 0.750
		Cv (Winter) 0.840
M5-60 (1		
Rati Summer Sto		Storm (mins) 10080 ate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.024	
Tim	e (mins) Area Time (mins) A n: To: (ha) From: To: (1	
	0 4 0.005 4 8 0.	
	0 4 0.005 4 8 0.	019
	1982-2013 Micro Drainage Lt	d
C)	LYOZ-ZUIJ MICRO DRAINAGE LT	. (1

EAS		Page 4
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		Li Caro m
Date 18/04/2023 10:17	Designed by WINDES	
File House Type 5C wG	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Model Details	
Stora	ge is Online Cover Level (m) 1	
	Porous Car Park Structure	2
Infiltration Coefficie		Width (m) 7.0
Membrane Perco	lation (mm/hr) 1000 colation (l/s) 13.6	Length (m) 7.0 Slope (1:X) 1000.0
	Safety Factor 2.0 Depress	sion Storage (mm) 5
	Porosity 0.95 Evap	poration (mm/day) 3
In	vert Level (m) 103.400 Cap	Volume Depth (m) 0.000

EAS					I	Page 1		
Unit 108 The Maltings								
Stanstead Abbotts							9	
Hertfordshire SG12 8HG						ا بُ (	ר <mark>ק }</mark> נ	( <b>0</b> )
	Det		T.7 T > 7 ~				n Ar	B
Date 19/04/2023 10:11	Design	-	WINE	JE S		PL	<u>re n n</u>	IEL B
File PP1.srcx	Checke							
Micro Drainage	Source	e Conti	rol 2	2013.1.	1			
Summary of Re						eriod	(+40%)	-
				74 minut	tes.			
Storm	Ma -		ax -	Max		Max	Status	
Event	Lev (m	-	oth Ir n)	nfiltrat (1/s)	ion V	(m <sup>3</sup> )		
	(11	., (1	,	(1/3)		()		
15 min Sun	mer 102.	072 0.0	072		0.3	3.3	O K	
30 min Sum					0.3	4.4	O K	
60 min Sun					0.3	5.3	ΟK	
120 min Sun					0.3	5.9	ОК	
180 min Sun					0.3	6.0	ОК	
240 min Sun 260 min Sun					0.3	5.9	OK	
360 min Sun 480 min Sun					0.3	5.7	OK	
480 min Sun 600 min Sun					0.3 0.3	5.4 5.1	ОК	
720 min Sun					0.3	4.8	0 K	
960 min Sun					0.3	4.0	0 K	
1440 min Sun					0.3	3.1	0 K	
1440 min Sun 2160 min Sun					0.3	3.1 2.2	ОК	
2100 min Sun 2880 min Sun					0.3	1.8	0 K	
4320 min Sun					0.2	1.3	0 K	
5760 min Sun					0.2	1.0	ОК	
7200 min Sum					0.2	0.8	0 K	
8640 min Sun	mer 102.	019 0.0	019		0.1	0.6	ОК	
10080 min Sum	mer 102.	017 0.0	017		0.1	0.5	ΟK	
15 min Wir	ter 102.	082 0.0	082		0.3	3.8	O K	
30 min Wir	ter 102.	107 0.1	107		0.3	5.0	O K	
60 min Wir	ter 102.	129 0.1	129		0.3	6.1	ΟK	
	Storm	Ra	ain	Flooded	Time	-Peak		
	Event	(mm	/hr)	Volume (m³)	(mi	lns)		
15	min Sum	ner 135	.270	0.0		18		
	min Sum		.861	0.0		33		
60	min Sum		.368	0.0		62		
120	min Sum	ner 32	.554	0.0		120		
180	min Sum	mer 23	.829	0.0		154		
	min Sum		.002	0.0		184		
	min Sum		.711	0.0		250		
	min Sumr		.884	0.0		316		
	min Sumr		.094	0.0		384		
	min Sum		.849	0.0		450		
	min Sum		.218	0.0		578		
	min Sum		.472	0.0		822		
	min Sum min Sum		.211	0.0		1148		
2880	min Sum min Sum		.537 .817	0.0		1524 2248		
1000	min Sau		.433	0.0		2248 2944		
	min Com		. 400					
5760	min Sum min Sum		102	$\cap \cap$				
5760 7200	min Sum	ner 1	.192	0.0		3680 4408		
5760 7200 8640	min Sum min Sum	mer 1 mer 1	.024	0.0		4408		
5760 7200 8640 10080	min Sum min Sum min Sum	ner 1 ner 1 ner 0	.024 .901	0.0		4408 5144		
5760 7200 8640 10080 15	min Sum min Sum min Sum min Wint	ner 1 ner 1 ner 0 ter 135	.024 .901 .270	0.0 0.0 0.0		4408		
5760 7200 8640 10080 15 30	min Sum min Sum min Sum	mer 1 mer 1 mer 0 ter 135 ter 87	.024 .901	0.0		4408 5144 18		

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G				ncho . O
Designed	by WIN	DES		Pathaaa
-	-			<u>Jan nacio</u>
		2013 1 1		
bource ee	meror	2013.1.1		
Results for	100 ye	ear Retur	n Perio	d (+40%)
n Max	Max	Max	Max	Status
	-			
(m)	(m)	(1/s)	(m³)	
Winter 102.144	0.144	0	.3 6.8	O K
Winter 102.146	0.146	0	.3 6.9	O K
				O K
Storm				
Event	(mm/hr)	Volume	(mins)	
		(m³)		
120 min Winter	32.554	0.0	118	
180 min Winter	23.829	0.0	172	
			198	
			272	
			346	
			4416	
			4952	
	G Designed Checked k Source Co Results for Max Level (m) Winter 102.144 Winter 102.146 Winter 102.143 Winter 102.143 Winter 102.136 Winter 102.127 Winter 102.138 Winter 102.089 Winter 102.008 Winter 102.008 Winter 102.008 Winter 102.009 Winter 102.013 Storm Event 120 min Winter 102.013 Storm Event	G         Designed by WIN Checked by           Source Control           Results for 100 ye           n         Max         Max (m)           Winter 102.144         0.144           Winter 102.144         0.144           Winter 102.143         0.143           Winter 102.143         0.143           Winter 102.143         0.143           Winter 102.143         0.143           Winter 102.127         0.127           Winter 102.018         0.136           Winter 102.020         0.020           Winter 102.042         0.042           Winter 102.025         0.025           Winter 102.017         0.017           Winter 102.013         0.013           Storm         Rain           Event         (mm/hr)           120 min Winter         32.554           180 min Winter         10.884           600 min Winter         13.711           480 min Winter         10.884           600 min Winter         3.211           880 min Winter         3.211           880 min Winter         1.817           760 min Winter         1.433           200 min Winter         1.924	G         Designed by WINDES Checked by           Source Control 2013.1.1           Results for 100 year Return           n         Max         Max           Level         Depth         Infiltrati (m)           Winter 102.144         0.144         0           Winter 102.146         0.146         0           Winter 102.143         0.143         0           Winter 102.127         0.127         0           Winter 102.118         0.118         0           Winter 102.019         0.089         0           Winter 102.020         0.020         0           Winter 102.020         0.020         0           Winter 102.017         0.017         0           Winter 102.020         0.020         0           Winter 102.013         0.013         0           Winter 102.014         0.014         0           Winter 102.013         0.013         0           Storm         Rain         Flooded 5           Event         (mm/hr)         Volume           (m <sup>3</sup> )         120         min Winter         32.554         0.0           180 min Winter         19.002         0.0         0	G       Designed by WINDES Checked by       Designed by WINDES Checked by         Source Control 2013.1.1       Results for 100 year Return Period (m)       Max       Max       Max         n       Max       Max       Max       Max       Max         uinter       Level       Depth       Infiltration (l/s)       Volume (m <sup>3</sup> )         Winter       102.144       0.144       0.3       6.8         Winter       102.143       0.143       0.3       6.9         Winter       102.127       0.127       0.3       6.0         Winter       102.127       0.127       0.3       6.0         Winter       102.127       0.127       0.3       6.0         Winter       102.020       0.025       0.2       0.9         Winter       102.025       0.025       0.2       0.9         Winter       102.017       0.017       0.1       0.5         Winter       102.013       0.013       0.1       0.4         Winter       102.013       0.013       0.1       0.4         Winter       102.020       0.20       0.1       0.7         Winter       102.013       0.11       0.4       0.1

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THERE ON
Date 19/04/2023 10:11	Designed by WINDES	Drainare
File PP1.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Mod	del FSR	Winter Storms Yes
Return Period (yea:		Cv (Summer) 0.750
Кед. M5-60 (1	ion England and Wales mm) 19.200 Shortest	Cv (Winter) 0.840 Storm (mins) 15
Ratio		Storm (mins) 10080
Summer Sto		mate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.017	
	Time (mins) Area From: To: (ha)	
	0 4 0.017	

EAS		Page 4
Jnit 108 The Maltings		
Stanstead Abbotts		
lertfordshire SG12 8HG		
Date 19/04/2023 10:11	Designed by WINDE	s ) D. Sentracione
Tile PP1.srcx	Checked by	
licro Drainage	Source Control 20	13.1.1
	Model Detai	ls
Stora	age is Online Cover Le	vel (m) 102.600
	Porous Car Park S	tructure
	ent Base (m/hr) 0.0147	
	plation (mm/hr) 100 rcolation (l/s) 46.	- 5- ( )
Max Pe:	Safety Factor 2	2 Slope (1:X) 1000.0 0 Depression Storage (mm) 5
		0 Evaporation (mm/day) 3
II	nvert Level (m) 102.00	

EAS				Page	1	
Unit 108 The Maltings						
Stanstead Abbotts					Part in	
Hertfordshire SG12 8HG						$\mathcal{I}$
Date 19/04/2023 10:13	Designe	d by WIN	IDES		radinac	
File PP2.srcx	Checked	-			<u>feules</u>	6
			0010 1	1		
Micro Drainage	Source	Control	2013.1.	1		
Summary of Re	esults fo Half Drai				d (+40%)	
Storm	Max	Max	Max	Max	Status	
Event	Level	-		ion Volume		
	(m)	(m)	(1/s)	(m³)		
15 min Sum	mer 103.36	57 0.067		0.2 2.1	0 K	
30 min Sum	mer 103.38	88 0.088		0.2 2.8	O K	
60 min Sum	mer 103.40	06 0.106		0.2 3.4	O K	
120 min Sum	mer 103.41	7 0.117		0.2 3.8	O K	
180 min Sum	mer 103.41	.8 0.118		0.2 3.8	O K	
240 min Sum	mer 103.41	.8 0.118		0.2 3.8	O K	
360 min Sum	mer 103.41	4 0.114		0.2 3.6	O K	
480 min Sum	mer 103.40	0.108		0.2 3.5	O K	
600 min Sum	mer 103.40	0.102		0.2 3.3	O K	
720 min Sum	mer 103.39	0.096		0.2 3.1	O K	
960 min Sum	mer 103.38	34 0.084		0.2 2.7	O K	
1440 min Sum	mer 103.36	55 0.065		0.2 2.0	O K	
2160 min Sum				0.2 1.4	O K	
2880 min Sum				0.2 1.2	O K	
4320 min Sum				0.1 0.9	O K	
5760 min Sum				0.1 0.7	O K	
7200 min Sum				0.1 0.5	0 K	
8640 min Sum				0.1 0.4	0 K	
10080 min Sum	mer 103.31	6 0.016		0.1 0.4	O K	
15 min Win	ter 103.37	7 0.077		0.2 2.4	O K	
	ter 103.40			0.2 3.2	O K	
	ter 103.42			0.2 3.9	ОК	
	Storm	Rain		Time-Peak		
	Event	(mm/hr)	Volume (m³)	(mins)		
15	min Summe	r 135.270	0.0	18		
	min Summe			33		
	min Summe			62		
	min Summe			120		
	min Summe			150		
	min Summe			182		
	min Summe			248		
	min Summe			314		
	min Summe			382		
	min Summe			448		
	min Summe			578		
	min Summe			812		
	min Summe			1148		
	min Summe			1524		
	min Summe			2248		
	min Summe			2240		
	min Summe			3680		
	min Summe			4408		
	min Summe			4408 5144		
		⊥ U.JUI	0.0	J144		
10080		r 135 270	$\cap$ $\cap$	10		
10080 15	min Winte			18		
10080 15 30		r 87.861	0.0	18 32 60		

EAS				Page	2
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG					ncho . O
Date 19/04/2023 10:13	Designed	by WIN	IDES		pathaar
File PP2.srcx	Checked k	-			<u>ser nege</u>
Micro Drainage	Source Co	-	2013 1 1		
	bouree ee	JIICIOI	2013.1.1		
Summary of Res	sults for	100 ye	ear Retur	n Perio	d (+40%)
<del></del>					
Storm	Max	Max	Max	Max	Status
Event	Level	-	Infiltratio		
	(m)	(m)	(1/s)	(m³)	
120 min Wint	er 103.435	0.135	0.	2 4.4	O K
180 min Wint	er 103.437	0.137	0.	2 4.4	O K
240 min Wint			0.		
360 min Wint			0.		
480 min Wint			0.		
600 min Wint			0.		
720 min Wint			0.		
960 min Wint 1440 min Wint			0. 0.		
1440 min Wint 2160 min Wint			0.		
2880 min Wint			0.		
4320 min Wint			0.		
5760 min Wint			0.		
7200 min Wint	er 103.316	0.016	0.	1 0.3	ОК
8640 min Wint	er 103.314	0.014	0.	1 0.3	O K
10080 min Wint	er 103.312	0.012	0.	1 0.2	O K
S	torm	Rain		ime-Peak	
E	vent	(mm/hr)	Volume (m <sup>3</sup> )	(mins)	
	min Winter			118	
	min Winter			170	
	min Winter min Winter			194	
	min Winter			270 344	
	min Winter			416	
	min Winter			484	
	min Winter	6.218		614	
	min Winter			836	
2160 1	min Winter			1172	
	min Winter			1556	
	min Winter			2248	
	min Winter			2992	
	min Winter min Winter			3680	
	min Winter			4424 5144	
10000 1	uin wincer	0.901	0.0	2144	
©1	982-2013	Micro	Drainage	Ltd	

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		TTTERE
Date 19/04/2023 10:13	Designed by WINDES	
File PP2.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Mod	del FSR	Winter Storms Yes
Return Period (yea:		Cv (Summer) 0.750
Кед. M5-60 (г	ion England and Wales	Cv (Winter) 0.840 t Storm (mins) 15
		t Storm (mins) 10080
Summer Sto:		imate Change % +40
	Time Area Diagram	
	Total Area (ha) 0.011	
	Time (mins) Area From: To: (ha)	
	0 4 0.011	

EAS		Page 4
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		
Date 19/04/2023 10:13	Designed by WINDES	
File PP2.srcx	Checked by	
Micro Drainage	Source Control 2013.	1.1
	Model Details	
Stor	age is Online Cover Level	(m) 103.900
	Porous Car Park Struc	cture
Infiltration Coeffici	ent Base (m/hr) 0.01476	Width (m) 10.6
Membrane Perc	olation (mm/hr) 1000	Length (m) 10.6
Max Pe	rcolation (1/s) 31.2	Slope (1:X) 1000.0
	Safety Factor 2.0 De Porosity 0.30	
I	nvert Level (m) 103.300	1 1 2,

EAS				Page 2	1
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG				ا بن ا	$\int (c_1^{\prime}) \int (c_2^{\prime}) \int (c$
Date 19/04/2023 10:17	Deedersed				
	Designed	-	DES		
File PP3.srcx	Checked				
Micro Drainage	Source C	ontrol	2013.1.1		
Summary of Re	esults for Half Drain				d (+40%)
Storm	Max	Max	Max	Max	Status
Event	Level		Infiltrati		554545
	(m)	(m)	(1/s)	(m <sup>3</sup> )	
	mer 103.272			.3 2.7	O K
	mer 103.294			.3 3.6	O K
	umer 103.313 umer 103.324			.3 4.4 .3 4.9	ОК
	mer 103.324 mer 103.326			.3 4.9 .3 4.9	OK
	mer 103.325			.3 4.9	OK
	umer 103.323 umer 103.321			.3 4.7	O K
	umer 103.315			.3 4.5	O K
	mer 103.309			.3 4.2	0 K
720 min Sum	mer 103.303	8 0.103	0	.3 4.0	O K
960 min Sum	mer 103.290	0.090	0	.3 3.5	O K
1440 min Sum	umer 103.270	0.070	0	.3 2.6	O K
2160 min Sum	mer 103.250	0.050	0	.3 1.8	O K
2880 min Sum	umer 103.242	0.042	0	.2 1.5	O K
4320 min Sum			0	.2 1.1	O K
5760 min Sum				.1 0.8	O K
7200 min Sum				.1 0.7	O K
8640 min Sum				.1 0.5	O K
10080 min Sum				.1 0.5	O K
	ter 103.282			.3 3.1	ОК
	ter 103.307 ter 103.329			.3 4.2	O K
00 MILI WIN	Storm	Rain	Flooded 7	.3 5.0	O K
	Event		Volume	(mins)	
		(,,	(m <sup>3</sup> )	()	
	min Summer		0.0	18	
	min Summer	87.861	0.0	33	
	min Summer	54.368	0.0	62	
1 211	min Cummon	30 664		100	
	min Summer	32.554	0.0	120 154	
180	min Summer	23.829	0.0	154	
180 240	min Summer min Summer	23.829 19.002	0.0 0.0 0.0	154 184	
180 240 360	min Summer	23.829 19.002 13.711	0.0 0.0 0.0 0.0	154 184 250	
180 240 360 480	min Summer min Summer min Summer	23.829 19.002	0.0 0.0 0.0	154 184	
180 240 360 480 600	min Summer min Summer min Summer min Summer	23.829 19.002 13.711 10.884	0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318	
180 240 360 480 600 720	min Summer min Summer min Summer min Summer min Summer	23.829 19.002 13.711 10.884 9.094	0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384	
180 240 360 480 600 720 960	min Summer min Summer min Summer min Summer min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849	0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450	
180 240 360 480 600 720 960 1440	min Summer min Summer min Summer min Summer min Summer min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218	0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578	
180 240 360 480 600 720 960 1440 2160 2880	min Summer min Summer min Summer min Summer min Summer min Summer min Summer min Summer min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578 822 1148 1524	
180 240 360 480 600 720 960 1440 2160 2880 4320	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578 822 1148 1524 2248	
180 240 360 480 600 720 960 1440 2160 2880 4320 5760	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578 822 1148 1524 2248 2944	
180 240 360 480 720 960 1440 2160 2880 4320 5760 7200	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578 822 1148 1524 2248 2944 3680	
180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578 822 1148 1524 2248 2944 3680 4408	
180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901	$\begin{array}{c} 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0$	154 184 250 318 384 450 578 822 1148 1524 2248 2944 3680 4408 5144	
180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901 135.270	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	154 184 250 318 384 450 578 822 1148 1524 2248 2944 3680 4408 5144 18	
180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	min Summer min Summer	23.829 19.002 13.711 10.884 9.094 7.849 6.218 4.472 3.211 2.537 1.817 1.433 1.192 1.024 0.901	$\begin{array}{c} 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0$	154 184 250 318 384 450 578 822 1148 1524 2248 2944 3680 4408 5144	

			Page	2
			$\left\  \sum_{i=1}^{i} \right\ $	
Designed	by WIN	DES	1 D),	rainace
	-	2013.1.1		
esults for	100 ye	ar Return	Period	d (+40%)
Max	Max	Max	Max	Status
	-			
(m)	(m)	(1/5)	(m <sup>3</sup> )	
nter 103.343	0.143	0.3	5.6	O K
nter 103.345	0.145	0.3	5.7	O K
nter 103.234	0.034	0.2	1.2	O K
		0.1		
				0 K
Event				
		(m³)		
0 min Winter	32.554	0.0	118	
0 min Winter	23.829	0.0	172	
			198	
			272	
			1172	
	2.537	0.0	1556	
			2248	
			3000	
0 min wincer	0.901	0.0	JIJZ	
	Checked h Source Co Results for Max Level (m) .nter 103.343 .nter 103.343 .nter 103.343 .nter 103.336 .nter 103.336 .nter 103.327 .nter 103.328 .nter 103.289 .nter 103.289 .nter 103.243 .nter 103.225 .nter 103.225 .nter 103.221 .nter 103.212 Storm Event 0 min Winter 0 min Winte	Checked by           Source Control           Results for 100 yes           Max         Max           Level (m)         Depth 1	Source Control 2013.1.1           Results for 100 year Return           Max         Max         Max           Level         Depth         Infiltration           (m)         (m)         (1/s)           Inter 103.343         0.143         0.3           Inter 103.345         0.145         0.3           Inter 103.343         0.143         0.3           Inter 103.343         0.143         0.3           Inter 103.345         0.145         0.3           Inter 103.343         0.143         0.3           Inter 103.345         0.145         0.3           Inter 103.345         0.145         0.3           Inter 103.343         0.143         0.3           Inter 103.327         0.127         0.3           Inter 103.289         0.089         0.3           Inter 103.243         0.043         0.2           Inter 103.225         0.025         0.1           Inter 103.217         0.017         0.1           Inter 103.212         0.012         0.1           Inter 103.212         0.012         0.1           Inter 103.214         0.014         0.1           Inter 103.212         0.010 <td>Checked by       Source Control 2013.1.1         Results for 100 year Return Period         Max       Max       Max       Max       Max         Level       Depth       Infiltration       Volume         (m)       0       0.143       0.3       5.6         Inter       103.343       0.143       0.3       5.6         Inter       103.345       0.145       0.3       5.7         Inter       103.343       0.143       0.3       5.6         Inter       103.345       0.145       0.3       5.7         Inter       103.343       0.143       0.3       5.6         Inter       103.343       0.143       0.3       5.6         Inter       103.327       0.127       0.3       5.0         Inter       103.228       0.089       0.3       4.4         Inter       103.240       0.043       0.2       1.2         Inter       103.243       0.043       0.2       1.2         Inter       103.217       0.017       0.1       0.4         Inter       103.212       0.012       0.1       0.3         Inter       103.214       0.014</td>	Checked by       Source Control 2013.1.1         Results for 100 year Return Period         Max       Max       Max       Max       Max         Level       Depth       Infiltration       Volume         (m)       0       0.143       0.3       5.6         Inter       103.343       0.143       0.3       5.6         Inter       103.345       0.145       0.3       5.7         Inter       103.343       0.143       0.3       5.6         Inter       103.345       0.145       0.3       5.7         Inter       103.343       0.143       0.3       5.6         Inter       103.343       0.143       0.3       5.6         Inter       103.327       0.127       0.3       5.0         Inter       103.228       0.089       0.3       4.4         Inter       103.240       0.043       0.2       1.2         Inter       103.243       0.043       0.2       1.2         Inter       103.217       0.017       0.1       0.4         Inter       103.212       0.012       0.1       0.3         Inter       103.214       0.014

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		LILLELO ON
Date 19/04/2023 10:17	Designed by WINDES	D) PRIME (1)
File PP3.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Mod	del FSR	Winter Storms Yes
Return Period (yea:		Cv (Summer) 0.750
Кед. М5-60 (1	ion England and Wales mm) 19.200 Shortest	Cv (Winter) 0.840 Storm (mins) 15
Ratio		Storm (mins) 10080
Summer Sto		mate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.014	
	Time (mins) Area From: To: (ha)	
	0 4 0.014	

EAS			Page 4	
Unit 108 The Maltings				
Stanstead Abbotts				
Hertfordshire SG12 8HG				
Date 19/04/2023 10:17	Designed by	WINDES	1) D. Pentr	170C
File PP3.srcx	Checked by			
Micro Drainage	Source Contr	ol 2013.1.1		
	Model	Details		
Stora	age is Online Cc	ver Level (m) 1	03.800	
	Porous Car P	ark Structure	-	
Infiltration Coefficie	ent Base (m/hr)	0.01476	Width (m)	11.7
Membrane Perce	plation (mm/hr)	1000	Length (m)	11.7
Max Per	colation (1/s)	38.0	Slope (1:X) ion Storage (mm) oration (mm/day)	1000.0 5
	Safety Factor Porosity	0.30 Evap	oration (mm/day)	3
In	nvert Level (m)		Volume Depth (m)	

EAS				Page 1
Unit 108 The Maltings				
Stanstead Abbotts				
Hertfordshire SG12 8HG				The Caro
Date 19/04/2023 10:21	Designe	d by WIN	DFS	
		-	015	
File PP4.srcx	Checked	-		
Micro Drainage	Source	Control	2013.1.1	
	1		Det	
Summary of Re	SULTS IO	or IUU ye	ar Returr	n Period (+40%)
	Ualf Drai	n Timo .	306 minutes	
	nali Diai	II IIIIe :	500 milliules	•
Storm	Max	Max	Max	Max Status
Event	Level	Depth Inf	iltration	Volume
	(m)	(m)	(1/s)	(m <sup>3</sup> )
15 min Summer	r 102.678	0.278	0.5	10.9 ОК
30 min Summer			0.6	14.7 Flood Risk
60 min Summer			0.7	18.2 Flood Risk
120 min Summer	r 102.787	0.387	0.7	21.0 Flood Risk
180 min Summer	r 102.795	0.395	0.8	21.9 Flood Risk
240 min Summer	r 102.796	0.396	0.8	22.1 Flood Risk
360 min Summer	r 102.795	0.395	0.8	22.0 Flood Risk
480 min Summer	r 102.793	0.393	0.8	21.7 Flood Risk
600 min Summer	r 102.790	0.390	0.7	21.4 Flood Risk
720 min Summer			0.7	21.0 Flood Risk
960 min Summer			0.7	20.0 Flood Risk
1440 min Summer			0.7	18.0 Flood Risk
2160 min Summer			0.6	15.3 Flood Risk
2880 min Summer			0.6	13.1 Flood Risk
4320 min Summer			0.5	9.9 O K
5760 min Summer			0.4	7.7 ОК
7200 min Summer			0.4	6.2 O K
8640 min Summer 10080 min Summer			0.4	5.0 O K 4.2 O K
			0.3 0.6	4.2 OK 12.5 OK
15 min Winton				
15 min Winter 30 min Winter				
30 min Winter	r 102.746	0.346	0.7	16.8 Flood Risk
30 min Winter 60 min Winter	r 102.746	0.346		16.8 Flood Risk 20.8 Flood Risk
30 min Winter 60 min Winter	r 102.746 r 102.785	0.346 0.385 <b>Rain</b>	0.7 0.7	16.8 Flood Risk 20.8 Flood Risk
30 min Winter 60 min Winter	r 102.746 r 102.785 Storm	0.346 0.385 <b>Rain</b>	0.7 0.7 Flooded Ti	16.8 Flood Risk 20.8 Flood Risk .me-Peak
30 min Winter 60 min Winter 1	r 102.746 r 102.785 Storm Event	0.346 0.385 Rain (mm/hr)	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> )	16.8 Flood Risk 20.8 Flood Risk .me-Peak (mins)
30 min Winter 60 min Winter 1 1 15	r 102.746 r 102.785 Storm Event min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0	16.8 Flood Risk 20.8 Flood Risk .me-Peak (mins)
30 min Winter 60 min Winter 1 15 30	r 102.746 r 102.785 Storm Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33
30 min Winter 60 min Winter 1 15 30 60	r 102.746 r 102.785 Storm Event min Summe min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62
30 min Winter 60 min Winter 15 30 60 120	r 102.746 r 102.785 Storm Event min Summe min Summe min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk .me-Peak (mins) 19 33 62 122
30 min Winter 60 min Winter 15 30 60 120 180	r 102.746 r 102.785 Storm Event min Summe min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180
30 min Winter 60 min Winter 15 30 60 120 180 240	r 102.746 r 102.785 Storm Event min Summe min Summe min Summe min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk .me-Peak (mins) 19 33 62 122
30 min Winter 60 min Winter 15 30 60 120 180 240 360	x 102.746 x 102.785 Storm Event min Summe min Summe min Summe min Summe min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480	min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600	min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960	min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440	min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160	min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880	min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320	r 102.746 r 102.785 Storm Event Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760	r 102.746 r 102.785 Storm Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380 3112
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200	r 102.746 r 102.785 Storm Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380 3112 3824
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640	r 102.746 r 102.785 Storm Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380 3112 3824 4576
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080	r 102.746 r 102.785 Storm Event Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380 3112 3824 4576 5248
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15	r 102.746 r 102.785 Storm Event Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380 3112 3824 4576 5248 18
30 min Winter 60 min Winter 15 30 60 120 180 240 360 480 600 720 960 1440 2160 2880 4320 5760 7200 8640 10080 15 30	r 102.746 r 102.785 Storm Event Event min Summe min Summe	0.346 0.385 <b>Rain</b> (mm/hr) r 135.270 r 87.861 r 54.368 r 32.554 r 23.829 r 19.002 r 13.711 r 10.884 r 9.094 r 7.849 r 6.218 r 4.472 r 3.211 r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270 r 87.861	0.7 0.7 Flooded Ti Volume (m <sup>3</sup> ) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	16.8 Flood Risk 20.8 Flood Risk me-Peak (mins) 19 33 62 122 180 224 280 344 410 480 616 882 1276 1668 2380 3112 3824 4576 5248

EAS				Page	2
Unit 108 The Maltings					
Stanstead Abbotts					
Hertfordshire SG12 8HG					
Date 19/04/2023 10:21	Designe	d by WIN	DES		Pathane
File PP4.srcx	Checked	by			
Micro Drainage			2013.1.1		
		00110202			
Summary of Re	esults fo	or 100 ve	ar Retur	n Peri	od (+40%)
Storm	Max	Max	Max	Max	Status
Event	Level	Depth Inf	iltration	Volume	
	(m)	(m)	(1/s)	(m³)	
120 min Winte	r 102.814	0.414	0.8	24.0	Flood Risk
180 min Winte			0.8		Flood Risk
240 min Winte			0.8		Flood Risk
360 min Winte			0.8		Flood Risk
480 min Winte	er 102.820	0.420	0.8	24.7	Flood Risk
600 min Winte	er 102.815	0.415	0.8	24.1	Flood Risk
720 min Winte			0.8	23.5	Flood Risk
960 min Winte	er 102.795	0.395	0.8	21.9	Flood Risk
1440 min Winte	er 102.768	0.368	0.7	19.0	Flood Risk
2160 min Winte	er 102.729	0.329	0.6	15.2	Flood Risk
2880 min Winte			0.6		
4320 min Winte			0.5		
5760 min Winte			0.4		
7200 min Winte			0.3		
8640 min Winte			0.3		
10080 min Winte	Storm		0.3 Flooded 7		
	Event		Volume	(mins)	ĸ
	lvene	(1111)	(m <sup>3</sup> )	(11113)	
	min Winte			12	
	min Winte			17	
	min Winte min Winte			23 29	
	min Winte		0.0	36	
	min Winte		0.0	44	
	min Winte			52	
	min Winte			66	
	min Winte			95	
	min Winte			136	
2880	min Winte			173	2
	min Winte		0.0	246	8
	min Winte			317	
	min Winte			389	
	min Winte			458	
10080	min Winte	r 0.901	0.0	534	4
	1982-201	0			

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		Treate -
Date 19/04/2023 10:21	Designed by WINDES	
File PP4.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Moo Return Period (yea:		Winter Storms Yes Cv (Summer) 0.750
	ion England and Wales	Cv (Winter) 0.840
M5-60 (I		t Storm (mins) 15
Summer Sto		t Storm (mins) 10080 imate Change % +40
	<u>Time Area Diagram</u>	
	Total Area (ha) 0.055	
	Time (mins) Area From: To: (ha)	
	0 4 0.055	

EAS			Page 4
Unit 108 The Maltings			
Stanstead Abbotts			
Hertfordshire SG12 8HG			The Carlo
Date 19/04/2023 10:21	Designed by	WINDES	Draffagoe
File PP4.srcx	Checked by		
Micro Drainage	Source Conti	col 2013.1.1	
	Model	Details	
Store		over Level (m) 1	03 000
51012			
	Porous Car E	ark Structure	2
Max Pe	olation (mm/hr) rcolation (l/s) Safety Factor	1000 151.7 2.0 Depress 0.30 Evap	Width (m) 7.8 Length (m) 70.0 Slope (1:X) 120.0 sion Storage (mm) 5 poration (mm/day) 3 Volume Depth (m) 0.000

EAS				Page	1	
Unit 108 The Maltings						
Stanstead Abbotts				$\overline{}$		<u> </u>
Hertfordshire SG12 8HG					ncho _	Un
Date 19/04/2023 10:20	Designe	d by WIN	IDES		Dentra	Cores Cores
File PP5.srcx	Checked	-				
		Dy Control	2012 1	1		
Micro Drainage	Source	Jontrol	2013.1.	1		
Summary of Re	esults fo Half Drai				d (+40%)	
Storm	Max	Max	Max	Max	Status	
Event	Level	-		ion Volume		
	(m)	(m)	(1/s)	(m³)		
15 min Sur	nmer 101.77	4 0.074		0.2 1.9	O K	
30 min Sur	nmer 101.79	0.097		0.2 2.6	O K	
60 min Sur	nmer 101.81	7 0.117		0.2 3.2	O K	
120 min Sur				0.2 3.5	O K	
180 min Sur				0.2 3.6	O K	
240 min Sur				0.2 3.6	O K	
360 min Sur				0.2 3.4	O K	
480 min Sur				0.2 3.3	O K	
600 min Sur				0.2 3.1	O K	
720 min Sur	nmer 101.80	8 0.108		0.2 2.9	O K	
960 min Sur	nmer 101.79	6 0.096		0.2 2.6	O K	
1440 min Sur	nmer 101.77	4 0.074		0.2 2.0	O K	
2160 min Sur	nmer 101.75	3 0.053		0.2 1.4	O K	
2880 min Sur	nmer 101.74	4 0.044		0.2 1.1	O K	
4320 min Sur	nmer 101.73	3 0.033		0.1 0.8	O K	
5760 min Sur	nmer 101.72	7 0.027		0.1 0.6	O K	
7200 min Sur	nmer 101.72	3 0.023		0.1 0.5	O K	
8640 min Sur	nmer 101.72	0.020		0.1 0.4	O K	
10080 min Sur	nmer 101.71	8 0.018		0.1 0.4	O K	
15 min Wir	nter 101.78	5 0.085		0.2 2.3	O K	
30 min Wir	nter 101.81	1 0.111		0.2 3.0	O K	
60 min Wir	nter 101.83	4 0.134		0.2 3.6	O K	
	Storm	Rain	Flooded	Time-Peak		
	Event	(mm/hr)	Volume (m³)	(mins)		
15	min Summe	r 135.270	0.0	18		
	min Summe			33		
	min Summe			62		
	min Summe			120		
	min Summe			156		
	min Summe			188		
	min Summe			252		
480	min Summe	r 10.884		320		
600	min Summe			386		
720	min Summe			454		
	min Summe			584		
960	min Summe	r 4.472	0.0	824		
	Intri Dunine.		0.0	1168		
1440	min Summe	r 3.211				
1440 2160			0.0	1524		
1440 2160 2880	min Summe	r 2.537		1524 2248		
1440 2160 2880 4320	min Summe min Summe	r 2.537 r 1.817	0.0			
1440 2160 2880 4320 5760	min Summe min Summe min Summe	r 2.537 r 1.817 r 1.433	0.0	2248		
1440 2160 2880 4320 5760 7200	min Summe min Summe min Summe min Summe	r 2.537 r 1.817 r 1.433 r 1.192	0.0 0.0 0.0	2248 2944		
1440 2160 2880 4320 5760 7200 8640	min Summe min Summe min Summe min Summe	r 2.537 r 1.817 r 1.433 r 1.192 r 1.024	0.0 0.0 0.0 0.0	2248 2944 3680		
1440 2160 2880 4320 5760 7200 8640 10080	min Summe min Summe min Summe min Summe min Summe	r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901	0.0 0.0 0.0 0.0 0.0	2248 2944 3680 4408		
1440 2160 2880 4320 5760 7200 8640 10080 15	min Summe min Summe min Summe min Summe min Summe min Summe min Summe	r 2.537 r 1.817 r 1.433 r 1.192 r 1.024 r 0.901 r 135.270	0.0 0.0 0.0 0.0 0.0	2248 2944 3680 4408 5144		

The Maltings Abbotts       Max       Max       Max       Max       Store         A/2023 10:20 Srcx       Designed by WINDES Checked by       Designed by WINDES Checked by       Designed by WINDES       Designed by WINDES         Summary of Results for 100 year Return Period (+40%)       Storm       Max       Max       Max       Status         Storm       Max       Max       Max       Max       Status       Status         Event       Level       Depth Infiltration (m)       Volume       (m <sup>3</sup> )         120 min Winter 101.849       0.149       0.2       4.1       0 K         180 min Winter 101.852       0.152       0.2       4.2       0 K         240 min Winter 101.843       0.143       0.2       3.7       0 K         600 min Winter 101.834       0.134       0.2       3.7       0 K         960 min Winter 101.815       0.125       0.2       3.4       0 K         960 min Winter 101.764       0.064       0.2       1.7       0 K         280 min Winter 101.764       0.026       0.1       0.6       0 K         4420 min Winter 101.776       0.026       0.1       0.6       0 K         2160 min Winter 101.721       0.021       0.1       0.4
hire       SG12       SHG       Junch       Jun
4/2023 10:20       Designed by WINDES Checked by       Designed by WINDES Checked by         sinage       Source Control 2013.1.1         Summary of Results for 100 year Return Period (+40%)         Storm       Max       Max       Max       Max       Status         Event       Level       Depth       Infiltration       Volume (m)       0.2       4.1       0 K         120 min Winter       101.849       0.149       0.2       4.1       0 K         180 min Winter       101.852       0.152       0.2       4.2       0 K         240 min Winter       101.843       0.143       0.2       3.9       0 K         360 min Winter       101.843       0.143       0.2       3.7       0 K         600 min Winter       101.815       0.125       0.2       3.4       0 K         720 min Winter       101.815       0.125       0.2       3.4       0 K         960 min Winter       101.744       0.044       0.2       1.7       0 K         2800 min Winter       101.744       0.044       0.2       1.1       0 K         2800 min Winter       101.712       0.021       0.1       0.4       K         7200 min Winter <td< td=""></td<>
Sarcx         Checked by           inage         Source Control 2013.1.1           Summary of Results for 100 year Return Period (+40%)           Storm         Max         Max         Max         Status           Event         Max         Depth         Infiltration         Wolume (m <sup>3</sup> )           120 min Winter 101.849         0.149         0.2         4.1         0 K           180 min Winter 101.852         0.152         0.2         4.2         0 K           240 min Winter 101.850         0.150         0.2         4.1         0 K           360 min Winter 101.843         0.143         0.2         3.9         0 K           480 min Winter 101.850         0.150         0.2         3.4         0 K           720 min Winter 101.815         0.115         0.2         3.4         0 K           960 min Winter 101.764         0.064         0.2         1.7         0 K           2800 min Winter 101.764         0.064         0.2         1.1         0 K           2800 min Winter 101.726         0.026         0.1         0.6         0 K           2760 min Winter 101.721         0.021         0.1         0.4         0 K           2800 min Winter 101.721         0.026
Inage         Source Control 2013.1.1           Summary of Results for 100 year Return Period (+40%)           Storm         Max         Max         Max         Max         Status           Event         Level (m)         Depth (m)         Infiltration (1/s)         Volume (m <sup>3</sup> )           120 min Winter 101.849         0.149         0.2         4.1         0 K           180 min Winter 101.852         0.152         0.2         4.2         0 K           240 min Winter 101.850         0.150         0.2         4.1         0 K           360 min Winter 101.843         0.143         0.2         3.9         0 K           480 min Winter 101.843         0.143         0.2         3.9         0 K           480 min Winter 101.843         0.143         0.2         3.7         0 K           600 min Winter 101.855         0.125         0.2         3.4         0 K           720 min Winter 101.764         0.064         0.2         1.7         0 K           2160 min Winter 101.776         0.026         0.1         0.6         K           2200 min Winter 101.776         0.026         0.1         0.6         K           2300 min Winter 101.717         0.011         0.4         0 K </td
inage       Source Control 2013.1.1         Summary of Results for 100 year Return Period (+40%)         Storm       Max       Max       Max       Max       Status         Event       Level       Depth       Infiltration       Volume         (m)       (m)       (1/s)       (m³)         120 min Winter 101.849       0.149       0.2       4.1       0 K         180 min Winter 101.852       0.152       0.2       4.2       0 K         240 min Winter 101.850       0.150       0.2       4.1       0 K         360 min Winter 101.843       0.143       0.2       3.9       0 K         480 min Winter 101.843       0.143       0.2       3.7       0 K         600 min Winter 101.825       0.125       0.2       3.4       0 K         720 min Winter 101.815       0.115       0.2       3.1       0 K         960 min Winter 101.764       0.064       0.2       1.7       0 K         2160 min Winter 101.764       0.064       0.2       1.1       0 K         220 min Winter 101.726       0.026       0.1       0.6       K         760 min Winter 101.717       0.017       0.1       0.3       0 K         <
Summary of Results for 100 year Return Period (+40%)         Storm       Max       Max       Max       Max       Status         Event       Level       Depth       Infiltration       Volume         (m)       (1/s)       (m³)         120 min Winter 101.849       0.149       0.2       4.1       0 K         180 min Winter 101.852       0.152       0.2       4.2       0 K         240 min Winter 101.850       0.150       0.2       4.1       0 K         360 min Winter 101.843       0.143       0.2       3.9       0 K         480 min Winter 101.843       0.134       0.2       3.7       0 K         600 min Winter 101.825       0.125       0.2       3.4       0 K         720 min Winter 101.766       0.064       0.2       1.7       0 K         960 min Winter 101.764       0.064       0.2       1.1       0 K         2160 min Winter 101.764       0.026       0.1       0.6       0 K         2160 min Winter 101.726       0.026       0.1       0.6       0 K         2160 min Winter 101.717       0.017       0.1       0.3       0 K         2300 min Winter 101.713       0.013       0.0
Storm       Max       Max       Max       Max       Max       Max       Max       Volume       Status         120       min       Winter       101.849       0.149       0.2       4.1       0       K         120       min       Winter       101.852       0.152       0.2       4.2       0       K         140       min       Winter       101.852       0.152       0.2       4.1       0       K         240       min       Winter       101.852       0.152       0.2       4.1       0       K         360       min       Winter       101.843       0.143       0.2       3.7       K         480       min       Winter       101.845       0.115       0.2       3.1       K         600       min       Winter       101.855       0.115       0.2       3.1       K         700       min       Winter       101.764       0.044       0.2       1.1       K         7160       min       Winter       101.746       0.044       0.2       1.1       K         7200       min       Winter       101.716       0.021       0.1       0.4
EventLevel (m)Depth (m)Infiltration (l/s)Volume (m³)120minWinter101.8490.1490.24.10.K180minWinter101.8520.1520.24.20 K240minWinter101.8430.1500.23.90 K360minWinter101.8330.1430.23.70 K360minWinter101.8250.1250.23.40 K360minWinter101.8150.1150.23.10 K480minWinter101.8150.1150.23.10 K600minWinter101.7660.0263.10 K720minWinter101.7460.0440.21.10 K2880minWinter101.7460.0440.21.10 K2880minWinter101.7260.0260.10.60 K200minWinter101.7260.0260.10.60 K2800minWinter101.7170.0170.10.30 K200minWinter101.7150.0150.10.40 K7200minWinter101.7170.0170.10.30 K7200minWinter101.7150.0150.10.30 K7200minWinter101.7150.0150.10.3<
EventLevel (m)Depth (m)Infiltration (l/s)Volume (m³)120minWinter101.8490.1490.24.10 K180minWinter101.8520.1520.24.20 K240minWinter101.8430.1500.23.90 K360minWinter101.8340.1340.23.70 K360minWinter101.8250.1250.23.40 K360minWinter101.8150.1150.23.10 K480minWinter101.8150.1150.23.10 K600minWinter101.7640.0440.21.10 K720minWinter101.7440.0440.21.10 K2800minWinter101.7440.0440.21.10 K2800minWinter101.7450.0260.10.60 K2800minWinter101.7260.0260.10.40 K2800minWinter101.7170.0170.10.30 K2800minWinter101.7170.0170.10.40 K7200minWinter101.7150.0150.10.40 K7200minWinter101.7150.0150.10.3K7200minWinter101.7150.0150.1<
(m)       (1/s)       (m³)         120 min Winter 101.849       0.149       0.2       4.1       0 K         180 min Winter 101.852       0.152       0.2       4.2       0 K         240 min Winter 101.850       0.150       0.2       4.1       0 K         360 min Winter 101.843       0.143       0.2       3.9       0 K         480 min Winter 101.834       0.134       0.2       3.7       0 K         600 min Winter 101.825       0.125       0.2       3.4       0 K         720 min Winter 101.815       0.115       0.2       3.1       0 K         960 min Winter 101.796       0.096       0.2       2.6       0 K         1440 min Winter 101.764       0.064       0.2       1.7       0 K         2160 min Winter 101.726       0.026       0.1       0.6       K         2160 min Winter 101.726       0.026       0.1       0.6       K         2200 min Winter 101.717       0.017       0.1       0.3       0 K         320 min Winter 101.715       0.015       0.1       0.3       0 K         3640 min Winter 101.713       0.013       0.0       0.2       0 K         10080 min Winter 101.713       0.013
120 min Winter 101.849 0.149       0.2       4.1       0 K         180 min Winter 101.852 0.152       0.2       4.2       0 K         240 min Winter 101.850 0.150       0.2       4.1       0 K         360 min Winter 101.843 0.143       0.2       3.9       0 K         480 min Winter 101.843 0.134       0.2       3.7       0 K         600 min Winter 101.825 0.125       0.2       3.4       0 K         720 min Winter 101.815 0.115       0.2       3.1       0 K         960 min Winter 101.796 0.096       0.2       1.6       0 K         960 min Winter 101.764 0.064       0.2       1.7       0 K         2160 min Winter 101.764 0.064       0.2       1.1       0 K         2800 min Winter 101.715 0.026       0.11       0.6       0 K         4320 min Winter 101.721 0.021       0.1       0.4       0 K         7200 min Winter 101.717 0.017       0.1       0.3       0 K         7200 min Winter 101.715 0.015       0.1       0.3       0 K         7200 min Winter 101.713 0.013       0.00       0.2       0 K         7200 min Winter 101.715 0.015       0.1       0.3       0 K         7200 min Winter 101.715 0.015       0.1       0.3       K </td
180 min Winter 101.852       0.152       0.2       4.2       0 K         240 min Winter 101.850       0.150       0.2       4.1       0 K         360 min Winter 101.843       0.143       0.2       3.9       0 K         480 min Winter 101.834       0.134       0.2       3.7       0 K         600 min Winter 101.825       0.125       0.2       3.4       0 K         720 min Winter 101.815       0.115       0.2       3.1       0 K         960 min Winter 101.796       0.096       0.2       2.6       0 K         1440 min Winter 101.744       0.044       0.2       1.1       0 K         2880 min Winter 101.726       0.026       0.1       0.6       K         4320 min Winter 101.726       0.026       0.1       0.6       K         5760 min Winter 101.717       0.017       0.1       0.4       0 K         7200 min Winter 101.715       0.015       0.1       0.3       K         1080 min Winter 101.715       0.015       0.1       0.3       K         1080 min Winter 101.715       0.013       0.0       0.2       0 K         1080 min Winter 101.715       0.013       0.0       0.2       0 K
240 min Winter 101.850 0.150       0.2       4.1       0 K         360 min Winter 101.843 0.143       0.2       3.9       0 K         480 min Winter 101.834 0.134       0.2       3.7       0 K         600 min Winter 101.825 0.125       0.2       3.4       0 K         720 min Winter 101.815 0.115       0.2       3.1       0 K         960 min Winter 101.796 0.096       0.2       2.6       0 K         1440 min Winter 101.744 0.044       0.2       1.7       0 K         2160 min Winter 101.745 0.036       0.11       0.8       0.1       0.8         4320 min Winter 101.726 0.026       0.1       0.6       K         5760 min Winter 101.717 0.017       0.1       0.4       0 K         7200 min Winter 101.715 0.015       0.1       0.8       K         10080 min Winter 101.715 0.015       0.1       0.3       K         10080 min Winter 101.715       0.013       0.0       0.2       K
360 min Winter 101.843       0.143       0.2       3.9       0 K         480 min Winter 101.834       0.134       0.2       3.7       0 K         600 min Winter 101.825       0.125       0.2       3.4       0 K         720 min Winter 101.815       0.115       0.2       3.1       0 K         960 min Winter 101.796       0.096       0.2       2.6       0 K         1440 min Winter 101.744       0.044       0.2       1.7       0 K         2160 min Winter 101.745       0.036       0.1       0.9       0 K         2880 min Winter 101.726       0.026       0.1       0.6       0 K         4320 min Winter 101.717       0.021       0.1       0.6       0 K         5760 min Winter 101.721       0.021       0.1       0.4       0 K         7200 min Winter 101.715       0.015       0.1       0.4       0 K         7000 min Winter 101.715       0.013       0.0       0.2       0 K         1080 min Winter 101.715       0.015       0.1       0.3       0 K         1080 min Winter 101.715       0.013       0.0       0.2       0 K         1080 min Winter 101.715       0.013       0.0       0.2       0 K
480 min Winter 101.834       0.134       0.2       3.7       0 K         600 min Winter 101.825       0.125       0.2       3.4       0 K         720 min Winter 101.815       0.115       0.2       3.1       0 K         960 min Winter 101.796       0.096       0.2       2.6       0 K         1440 min Winter 101.744       0.044       0.2       1.7       0 K         2160 min Winter 101.745       0.036       0.1       0.9       0 K         2800 min Winter 101.746       0.044       0.2       1.1       0 K         2800 min Winter 101.747       0.016       0.1       0.9       0 K         4320 min Winter 101.716       0.026       0.1       0.6       0 K         5760 min Winter 101.717       0.017       0.1       0.4       0 K         7200 min Winter 101.715       0.015       0.1       0.4       0 K         8640 min Winter 101.715       0.013       0.0       0.2       0 K         10080 min Winter 101.715       0.013       0.0       0.2       0 K         10080 min Winter 101.715       0.013       0.0       0.2       0 K         1080 min Winter 101.715       0.013       0.0       0.2       0 K </td
600 min Winter 101.825 0.125       0.2       3.4       0 K         720 min Winter 101.815 0.115       0.2       3.1       0 K         960 min Winter 101.796 0.096       0.2       2.6       0 K         1440 min Winter 101.764 0.064       0.2       1.7       0 K         2160 min Winter 101.744 0.044       0.2       1.1       0 K         280 min Winter 101.736 0.036       0.1       0.9       0 K         4320 min Winter 101.726 0.026       0.1       0.6       0 K         5760 min Winter 101.717 0.021       0.1       0.4       0 K         7200 min Winter 101.715 0.015       0.1       0.3       0 K         8640 min Winter 101.713 0.013       0.0       0.2       0 K         1080 min Winter 101.715 Volume       0.1       0.8       K
720 min Winter 101.815 0.115       0.2       3.1       0 K         960 min Winter 101.796 0.096       0.2       2.6       0 K         1440 min Winter 101.764 0.064       0.2       1.7       0 K         2160 min Winter 101.744 0.044       0.2       1.1       0 K         2880 min Winter 101.726 0.036       0.1       0.9       0 K         4320 min Winter 101.726 0.026       0.1       0.6       0 K         5760 min Winter 101.717 0.017       0.1       0.4       0 K         7200 min Winter 101.715 0.015       0.1       0.3       0 K         8640 min Winter 101.713 0.013       0.0       0.2       0 K         10080 min Winter 101.715 0.015       0.1       0.3       0 K         Storm       Rain       Flooded Time-Peak       K         Event       (mm/hr)       Volume (mins)       K
960 min Winter 101.796 0.096 0.2 2.6 0 K 1440 min Winter 101.764 0.064 0.2 1.7 0 K 2160 min Winter 101.744 0.044 0.2 1.1 0 K 2880 min Winter 101.736 0.036 0.1 0.9 0 K 4320 min Winter 101.726 0.026 0.1 0.6 0 K 5760 min Winter 101.721 0.021 0.1 0.4 0 K 7200 min Winter 101.717 0.017 0.1 0.3 0 K 8640 min Winter 101.715 0.015 0.1 0.3 0 K 10080 min Winter 101.713 0.013 0.01 0.0 0.2 0 K <b>Storm Rain Flooded Time-Peak</b> <b>Event (mm/hr) Volume (mins)</b>
1440 min Winter 101.764 0.064       0.2       1.7       0 K         2160 min Winter 101.744 0.044       0.2       1.1       0 K         2880 min Winter 101.736 0.036       0.1       0.9       0 K         4320 min Winter 101.726 0.026       0.1       0.6       0 K         5760 min Winter 101.721 0.021       0.1       0.4       0 K         7200 min Winter 101.717 0.017       0.1       0.3       0 K         8640 min Winter 101.715 0.015       0.1       0.3       0 K         10080 min Winter 101.713       0.013       0.0       0.2       0 K         Storm Rain Flooded Time-Peak         Event (mm/hr) Volume (mins)
2160 min Winter 101.744       0.044       0.2       1.1       0 K         2880 min Winter 101.736       0.036       0.1       0.9       0 K         4320 min Winter 101.726       0.026       0.1       0.6       0 K         5760 min Winter 101.721       0.021       0.1       0.4       0 K         7200 min Winter 101.717       0.017       0.1       0.3       0 K         8640 min Winter 101.715       0.015       0.1       0.3       0 K         10080 min Winter 101.713       0.013       0.0       0.2       0 K         Storm Rain Flooded Time-Peak         Event (mm/hr) Volume (mins)
2880 min Winter 101.736 0.036       0.1       0.9       0 K         4320 min Winter 101.726 0.026       0.1       0.6       0 K         5760 min Winter 101.721 0.021       0.1       0.4       0 K         7200 min Winter 101.717 0.017       0.1       0.3       0 K         8640 min Winter 101.715 0.015       0.1       0.3       0 K         10080 min Winter 101.713 0.013       0.0       0.2       0 K         Storm Rain Flooded Time-Peak         Event (mm/hr) Volume (mins)
4320 min Winter 101.726 0.026       0.1       0.6       0 K         5760 min Winter 101.721 0.021       0.1       0.4       0 K         7200 min Winter 101.717 0.017       0.1       0.3       0 K         8640 min Winter 101.715 0.015       0.1       0.3       0 K         10080 min Winter 101.713 0.013       0.0       0.2       0 K         Storm Rain Flooded Time-Peak         Event (mm/hr) Volume (mins)
5760 min Winter 101.721 0.021       0.1       0.4       0 K         7200 min Winter 101.717 0.017       0.1       0.3       0 K         8640 min Winter 101.715 0.015       0.1       0.3       0 K         10080 min Winter 101.713 0.013       0.0       0.2       0 K         Storm Rain Flooded Time-Peak         Event (mm/hr) Volume (mins)
8640 min Winter 101.715 0.015 0.1 0.3 0 K 10080 min Winter 101.713 0.013 0.0 0.2 0 K Storm Rain Flooded Time-Peak Event (mm/hr) Volume (mins)
10080 min Winter 101.713 0.013 0.0 0.2 O K Storm Rain Flooded Time-Peak Event (mm/hr) Volume (mins)
Storm Rain Flooded Time-Peak Event (mm/hr) Volume (mins)
Event (mm/hr) Volume (mins)
(m <sup>3</sup> )
120 min Winter 32.554 0.0 118
180 min Winter 23.829 0.0 172
240 min Winter 19.002 0.0 218
360 min Winter 13.711 0.0 274
480 min Winter 10.884 0.0 348
600 min Winter 9.094 0.0 422
720 min Winter 7.849 0.0 492
960 min Winter 6.218 0.0 626 1440 min Winter 4.472 0.0 854
2160 min Winter 3.211 0.0 1172
2880 min Winter 2.537 0.0 1552
4320 min Winter 1.817 0.0 2248
5760 min Winter 1.433 0.0 2992
7200 min Winter 1.192 0.0 3680
10080 min Winter 0.901 0.0 5240
4320 min Winter1.8170.022485760 min Winter1.4330.029927200 min Winter1.1920.03680

EAS		Page 3
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		Treato M
Date 19/04/2023 10:20	Designed by WINDES	
File PP5.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Rainfall Details	
Rainfall Moo		Winter Storms Yes
Return Period (year	rs) 100 ion England and Wales	Cv (Summer) 0.750 Cv (Winter) 0.840
M5-60 (r		t Storm (mins) 15
	o R 0.428 Longes	t Storm (mins) 10080
Summer Stor	rms Yes Cl	imate Change % +40
	Time Area Diagram	
	Total Area (ha) 0.010	
	Time (mins) Area From: To: (ha)	
	0 4 0.010	
	0 4 0.010	

EAS		Page 4
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		
Date 19/04/2023 10:20	Designed by WINDES	<u>Prenece</u>
File PP5.srcx	Checked by	
Micro Drainage	Source Control 2013.1.1	
	Model Details	
Stor	rage is Online Cover Level (m)	102.300
	Porous Car Park Structu	re
	ient Base (m/hr) 0.01476	Width (m) 9.7
	colation (mm/hr) 1000 ercolation (l/s) 26.1	Length (m) 9.7
Max Pe		Slope (1:X) 1000.0 ssion Storage (mm) 5
	Safety Factor 2.0 Depre Porosity 0.30 Ev	aporation (mm/day) 3
I		p Volume Depth (m) 0.000

EAS						Page	1		
Unit 108 The Mal	ltings								
Stanstead Abbotts	S					$\sum$	78/	പ്പാ	
Hertfordshire SO	G12 8HG							کتر	
Date 03/05/2023 (	09:35	Designe	ed by W	INDES		D`	)776	<u> Tr</u>	12012
File Woodlands Pi	ipe N	Checked	d by						
Micro Drainage		Network	c 2013.	1.1					
	Exist	ing Ne	twork D	etails	for S	torm			
*	- Indicates	ning ha	a baan m	odified		o of (		m 1	
							-		
	PN Length (m)	Fall (m)	Slope I. (1:X)		.E. ins) (		HYD SECT	DIA (mm)	
	.000 65.000			0.031	4.00 0	.600	0	300	
	.001 21.300				0.00 0		0	300	
1.	.002 38.200	0.153	249./ (	0.027	0.00 0	.600	0	300	
2.	.000 29.500	0.118	250.0 (	0.027	4.00 0	.600	0	300	
1.	.003 68.400	0.274	249.6 (	0.027	0.00 0	.600	0	300	
	.000 55.800				4.00 0		0	300	
3.	.001 10.100	0.040	252.5 (	0.031	0.00 0	.600	0	300	
	.004 31.700			0.041	0.00 0	.600	0	300	
	.005 16.000				0.00 0		0	300	
	.006 25.000				0.00 0		0	150	
	.007 51.400 .008 5.000				0.00 0		0	150 150	
	'MH US/CL	US/IL	US	DS/CL	DS/I		DS		US/MH
Nan	me (m)	(m)	C.Depth	(m)	(m)	с.	Depth	L	(mm)
			(m)				(m)		
1.000 MH	101 102.860	101.360	1.200	103.000	) 101.1	00	1.600		1200
	102 103.000			103.000			1.685		1200
1.002 MH	103 103.000	101.015	1.685	103.200	100.8	62	2.038		1200
2.000 MH	104 103.400	100.980	2.120	103.200	100.8	62	2.038		1200
1.003 MH	105 103.200	100.862	2.038	103.870	) 100.5	88	2.982		1200
3.000 MH	106 103.800	100.852	2.648	103.900	100.6	28	2.972		1200
3.001 MH	107 103.900	100.628	2.972	103.870	100.5	88	2.982		1200
1.004 MH	108 103.870	100 500	2 000	103.800	) 100 4	62	3.038		1200
	108 103.870			103.800			3.050		1200
	D1 103.750			103.600			3.219		1200
* 1.007 PU				103.600				Pump	1200
* 1.008 D	R1 103.600	101.250	2.200	104.000	) 101.0	50	2.800	Pump	1200
	Free Fl	Lowing	Outfall	Detai	ls for	Sto	rm		
o	Outfall Ou	utfall C	. Level	I. Level	. Mir	n D	),L	W	
		Name	(m)	(m)	I. Le <sup>.</sup> (m)	vel (1		mm)	
	1.008		104.000	101.050	0.	000	0	0	
	1.008		104.000	101.050	0.	000	0	0	

EAS		Page 2
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THERE ON
Date 03/05/2023 09:35	Designed by WINDES	D) Renarce
File Woodlands Pipe N	Checked by	
Micro Drainage	Network 2013.1.1	
Si	mulation Criteria for Sto	rm
Areal Reduction Hot Start Hot Start Leve Manhole Headloss Coeff ( Foul Sewage per hectare	e (1/s) 0.000 Outp	r * 10m <sup>3</sup> /ha Storage 2.000 Inlet Coeffiecient 0.800 per Day (1/per/day) 0.000 Run Time (mins) 60 put Interval (mins) 1
Number of Onl	Hydrographs 0 Number of Stora ine Controls 2 Number of Time/ ine Controls 0 Number of Real	Area Diagrams O
	Synthetic Rainfall Details	3
Rainfall Mod Return Period (year Regi M5-60 (m Ratio	rs) 1 .on England and Wales m) 19.200 Storm Dur	Profile Type Summer Cv (Summer) 0.750 Cv (Winter) 0.840 ation (mins) 30

EAS					Page	e 3	
Unit 108 T	he Maltin	gs					
Stanstead A	bbotts						
Hertfordshi	re SG12	8HG				rect	<u> </u>
Date 03/05/	2023 09:3	5 De	signed by	WINDES		) TPEST	ner e
File Woodla	nds Pipe		necked by				<u>ner en</u>
Micro Drain			etwork 2013	.1.1			
		On	line Contro	ols for S	torm		
	Pump Ma	nhole: 1	PUMP, DS/PN	1: 1.007,	Volume (	m <sup>3</sup> ): 4.8	
			Invert Leve	l (m) 99.73	31		
Depth (m)	Flow (1/s)	Depth (m	) Flow (l/s)	Depth (m)	Flow (1/s	) Depth (m)	Flow (1/s)
		Depen (m	, 1100 (1,0)		110# (1/0		110# (1/0)
0.100	30.0000	0.90			30.000		
0.200	30.0000 30.0000	1.00 1.10			30.000 30.000		
0.300	30.0000	1.10			30.000		
0.500	30.0000	1.30					
0.600	30.0000	1.40					
0.700	30.0000	1.50					
0.800	30.0000	1.60	0 30.0000	2.400	30.000	0	
					/		
	Pump Ma	anhole:	DR1, DS/PN	: 1.008,	Volume (1	m³): 3.5	
			Invert Level	(m) 101.2	50		
Depth (m)	Flow (l/s)	Depth (m	) Flow (l/s)	Depth (m)	Flow (l/s	) Depth (m)	Flow (l/s)
0.100	0.0000	0.90	0 0.0000	1.700	0.000	2.500	0.0000
0.200	0.0000	1.00	0.0000	1.800	0.000	2.600	0.0000
0.300	0.0000	1.10		1.900	0.000		
0.400	0.0000	1.20		2.000	0.000		
0.500	0.0000	1.30			0.000		
0.600 0.700	0.0000 0.0000	1.40 1.50		2.200 2.300	0.000		0.0000
0.800	0.0000	1.50			0.000		
		©198	2-2013 Mic:	ro Draina	ge Ltd		

EAS		Page 4
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THERE ON
Date 03/05/2023 09:35	Designed by WINDES	D) PETTEROL
File Woodlands Pipe N	Checked by	
Micro Drainage	Network 2013.1.1	
<u></u>	torage Structures for Stor	<u>cm</u>
Filter	Drain Manhole: FD1, DS/PN	: 1.006
Infiltration Coefficient	Base (m/hr) 0.00000	Trench Length (m) 25.0
Infiltration Coefficient		Pipe Diameter (m) 0.150
S	afety Factor 2.0 Pipe Dept Porosity 0.30	
Inve	-	Slope (1:X) 150.0 p Volume Depth (m) 0.000
	nch Width (m) 1.0 Cap Infi	
Comp	lex Manhole: DR1, DS/PN: 1	1.008
	Cellular Storage	
	<u></u>	
	Invert Level (m) 101.250 Sa	-
	fficient Base (m/hr) 0.01476 fficient Side (m/hr) 0.01476	Porosity 0.95
Depth (m) Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> ) Depth (m) Area	(m <sup>2</sup> ) Inf. Area (m <sup>2</sup> )
0.000 70.0	70.0 1.321	0.0 114.9
1.320 70.0		
	Infiltration Basin	
	Invert Level (m) 103.100 Sa	afety Factor 2.0
Infiltration Coe	fficient Base (m/hr) 0.01476	Porosity 1.00
Infiltration Coe	fficient Side (m/hr) 0.01476	
Deptl	h (m) Area (m²) Depth (m) Area	(m <sup>2</sup> )
	0.000 42.0 0.500	746.0
©1	1982-2013 Micro Drainage L	td

EAS					Page 5	
Unit 108 The Maltin	gs					
Stanstead Abbotts						
Hertfordshire SG12	8HG					
Date 03/05/2023 09:3	5 I	Designed	by WINDE	S		<del>MARCE</del>
File Woodlands Pipe	N 0	Checked b	У			
Micro Drainage	1	Network 2	013.1.1			
Summary of Cri	ltical	Results 1	oy Maximu	ım Level	l (Rank 1	) for Storm
Hot Hot Star Manhole Headloss Co Foul Sewage per h	Start rt Level peff (GI hectare	Factor 1.00 (mins) L (mm) Lobal) 0.50	0 Mi 0 0 Flow pe: 0	ional Flo ADD Facto r Person	or * 10m³/h Inlet Coe per Day (1	
		ne Controls ne Controls				
	fall Mo Reg M5-60 (	del ion Englan		R Ra s Cv (Su	tio R 0.42 mmer) 0.75 nter) 0.84	0
Margin for F Durati Return Peric	An Profi .on(s) (	alysis Tim DTS S DVD S Inertia S le(s) mins) 15,	estep 2.5 tatus tatus tatus		Summer an	ON OFF OFF d Winter
	e Chang					0
PN Storm		irn Climate .od Change			Y First	Z O/F Lvl w Act. Exc.
1.000 15 Wint	ter	5 0%				
1.001 15 Wint		5 0%				
1.002 15 Wint		5 0%				
2.000 15 Wint 1.003 15 Wint		5 0% 5 0%				
3.000 15 Wint		5 0%				
3.001 15 Wint	cer	5 0%				
1.004 15 Wint			5/15 Wint			
1 005 15 5745+			5/15 Sumr 5/15 Sumr			
1.005 15 Wint		J U 8	J/IJ SUMI	uCT.		
1.006 15 Wint						
	ter	5 0%	5/15 Sumr	ner		
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint	ler	5 0% 5 0%	5/15 Sumr	ner		
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint	ter ter <b>Water</b>	5 0% 5 0%	5/15 Sumr		Pipe	
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint	ter ter Water Level	5 0% 5 0%	5/15 Sumr Flooded Volume Fl	ow / 0'f	-	Status
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint US/MH PN Name	ter Water Level (m)	5 0% 5 0% Surch'ed Depth (m)	5/15 Sumr Flooded Volume Fl (m <sup>3</sup> ) C	ow / O'f ap. (1,	low Flow /s) (l/s)	
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint US/MH PN Name 1.000 MH01 1	Water Level (m) 01.427	5 0% 5 0% Surch'ed Depth (m) -0.233	5/15 Sumr Flooded Volume Fl (m <sup>3</sup> ) C	ow / O'f ap. (1, 0.10	Flow         Flow           /s)         (1/s)           0.0         7.0	OK
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint US/MH PN Name 1.000 MH01 1 1.001 MH02 1	Water Level (m) 01.427 01.193	5 0% 5 0% Surch'ed Depth (m) -0.233 -0.207	5/15 Sumr Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000	ow / O'f ap. (1, 0.10 0.21	Flow         Flow           /s)         (1/s)           0.0         7.0           0.0         12.9	OK OK
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint US/MH PN Name 1.000 MH01 1	Water Level (m) 01.427 01.193 01.122	5 0% 5 0% Surch'ed Depth (m) -0.233	5/15 Sumr Flooded Volume Fl (m <sup>3</sup> ) C	ow / O'f ap. (1, 0.10	Flow         Flow           /s)         (1/s)           0.0         7.0	OK
1.006 15 Wint 1.007 15 Wint 1.008 1440 Wint US/MH PN Name 1.000 MH01 1 1.001 MH02 1 1.002 MH03 1	Water Level (m) 01.427 01.193 01.122 01.046	5 0% 5 0% Surch'ed Depth (m) -0.233 -0.207 -0.193	5/15 Sumr Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000	ow / O'f ap. (1, 0.10 0.21 0.27	Flow         Flow           (1/s)         (1/s)           0.0         7.0           0.0         12.9           0.0         17.6	OK OK

EAS		Page 6
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THERE CA
Date 03/05/2023 09:35	Designed by WINDES	
File Woodlands Pipe N	Checked by	
Micro Drainage	Network 2013.1.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m <sup>3</sup> )	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
3.000	MH06	100.919	-0.233	0.000	0.11	0.0	7.0	OK
3.001	MH07	100.909	-0.019	0.000	0.20	0.0	10.9	OK
1.004	MH08	100.907	0.019	0.000	0.56	0.0	35.7	SURCHARGED
1.005	MH09	100.882	0.120	0.000	0.54	0.0	32.2	SURCHARGED
1.006	FD1	100.859	0.311	0.000	1.70	0.0	23.5	SURCHARGED
1.007	PUMP	99.809	-0.072	0.000	4.36	0.0	23.3	OK
1.008	DR1	102.515	1.115	0.000	0.00	0.0	0.0	SURCHARGED

EAS							Pag	e 1			
	Maltir	ngs									
Stanstead Abbo	otts						$\left  \right  $	$\sqrt{2}$			~
Hertfordshire	SG12	8HG							ച്ചറ		
Date 03/05/202	3 09:3	33	Designe	ed by W	INDES	5		) TPE	<u> </u>	1201	1
File Woodlands	Pipe	N	Checked	d by					^		$\sim$
Micro Drainage	:		Networ}	c 2013.	1.1						
		dicates	<u>ing Ne</u> pipe ha	s been n	nodifi	ed outs:	ide of	Syste			
	PN	Length (m)	Fall (m)	Slope I (1:X)	.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)		
	1.000	65.000	0.260	250.0	0.031	4.00	0.600	0	300		
			0.085		0.031		0.600		300		
	1.002	38.200	0.153	249.7	0.027	0.00	0.600	0	300		
	2.000	29.500	0.118	250.0	0.027	4.00	0.600	0	300		
	1.003	68.400	0.274	249.6	0.027	0.00	0.600	0	300		
	3.000	55.800	0.224	249.1	0.031	4.00	0.600	0	300		
	3.001	10.100	0.040	252.5	0.031	0.00	0.600	0	300		
			0.126		0.041		0.600		300		
			0.064		0.041		0.600		300		
,			0.167 -1.519		0.000		0.600		150 150		
			0.200		0.000		0.600	0	150		
PN	US/MH		US/IL	US	DS/		/IL	DS		US/MH	
	Name	(m)	(m)	C.Depth (m)	n (m	) (:	m) C	(m)	1	(mm)	
1.000	MH01 1	L02.860	101.360	1.200	) 103.	000 101	.100	1.600	)	1200	
			101.100			000 101		1.685		1200	
1.002	MH03 1	103.000	101.015	1.685	b 103.	200 100	.862	2.038	3	1200	
2.000	MH04 1	L03.400	100.980	2.120	) 103.	200 100	.862	2.038	3	1200	
1.003	MH05 1	L03.200	100.862	2.038	3 103.	870 100	.588	2.982	2	1200	
3.000			100.852			900 100		2.972		1200	
3.001	MH07 1	L03.900	100.628	2.972	2 103.	870 100	.588	2.982	2	1200	
1.004	MH08 1	L03.870	100.588	2.982	2 103.	800 100	.462	3.038	3	1200	
			100.462			750 100		3.052		1200	
1.006			100.398			600 100		3.219		1200	
* 1.007 * 1.008			99.731 101.250			600 101 000 101			) Pump ) Pump	1200 1200	
	F	'ree Fl	owing	Outfall	l Deta	ails f	or St	orm			
	Outfa		itfall C				lin	D,L	W		
	Pipe Nu		Name	(m)	1. Le <sup>.</sup> (m)	I. 3	Level m)		w (mm)		
	1	.008		104.000	101.0	050	000.0	0	0		

EAS		Page 2
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THERE ON
Date 03/05/2023 09:33	Designed by WINDES	D) Refine (1)
File Woodlands Pipe N	Checked by	
Micro Drainage	Network 2013.1.1	
Si	imulation Criteria for Sto	rm
Areal Reduction Hot Start Hot Start Leve Manhole Headloss Coeff ( Foul Sewage per hectar	e (1/s) 0.000 Outp	r * 10m <sup>3</sup> /ha Storage 2.000 Inlet Coefficcient 0.800 per Day (1/per/day) 0.000 Run Time (mins) 60 put Interval (mins) 1
Number of Onl	Hydrographs 0 Number of Stora ine Controls 2 Number of Time/ ine Controls 0 Number of Real	Area Diagrams O
	Synthetic Rainfall Details	3
Rainfall Mod Return Period (year Regi M5-60 (m Ratio	rs) 1 .on England and Wales mm) 19.200 Storm Dur	Profile Type Summer Cv (Summer) 0.750 Cv (Winter) 0.840 Pation (mins) 30

EAS				Page	3	
Unit 108 The Malt	ings				- 0	
Stanstead Abbotts					Kar	
Hertfordshire SG1						R
Date 03/05/2023 09		esigned by N Necked by	WINDES			
File Woodlands Pip Micro Drainage		etwork 2013	1 1			
	116	ECWOIR ZOIS	• 1 • 1			
	On	line Contro	ols for St	torm		
Pump	Manhole: 1	PUMP, DS/PN	1.007.	Volume (m	1 <sup>3</sup> ): 4.8	
<u> </u>					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
		Invert Level	l (m) 99.73	1		
Depth (m) Flow (1/	s) Depth (m	) Flow (1/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100 30.00	00 0.90	0 30.0000	1.700	30.0000	2.500	30.0000
0.200 30.00			1.800	30.0000	2.600	
0.300 30.00			1.900	30.0000	2.700	
0.400 30.00 0.500 30.00			2.000 2.100	30.0000 30.0000	2.800	
0.600 30.00				30.0000		30.0000
0.700 30.00					3.000	
0.800 30.00				30.0000		
Pumu	Manhole:	DR1, DS/PN	: 1.008.	Volume (m	<sup>3</sup> ): 3.5	
<u>- unp</u>					,. <u>.</u> ,	
		Invert Level	(m) 101.25	50		
Depth (m) Flow (1/	s) Depth (m	) Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100 0.00	00 0.90	0.0000	1.700	0.0000	2.500	0.0000
0.200 0.00			1.800	0.0000	2.600	0.0000
0.300 0.00			1.900	0.0000	2.700	0.0000
0.400 0.00			2.000	0.0000	2.800	0.0000
0.500 0.00			2.100 2.200	0.0000 0.0000	2.900 3.000	0.0000 0.0000
0.700 0.00			2.200	0.0000	3.000	0.0000
0.800 0.00			2.400	0.0000		
	I		1		1	
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	0190	11201		<u></u>		

EAS		Page 4
Unit 108 The Maltings		
Stanstead Abbotts		
Hertfordshire SG12 8HG		THERE ON
Date 03/05/2023 09:33	Designed by WINDES	D) PETTEROL
File Woodlands Pipe N	Checked by	
Micro Drainage	Network 2013.1.1	
<u>S</u>	torage Structures for Stor	<u>cm</u>
Filter	Drain Manhole: FD1, DS/PN	: 1.006
Infiltration Coefficient	Base (m/hr) 0.00000	Trench Length (m) 25.0
Infiltration Coefficient	Side (m/hr) 0.00000	Pipe Diameter (m) 0.150
S	afety Factor 2.0 Pipe Dept Porosity 0.30	h above Invert (m) 0.000 Slope (1:X) 150.0
Inve	-	p Volume Depth (m) 0.000
	nch Width (m) 1.0 Cap Infi	
Comp	lex Manhole: DR1, DS/PN: 1	L.008
	Cellular Storage	
	Invert Level (m) 101.250 Sa	-
	fficient Base (m/hr) 0.01476 fficient Side (m/hr) 0.01476	Porosity 0.95
Depth (m) Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> ) Depth (m) Area	(m <sup>2</sup> ) Inf. Area (m <sup>2</sup> )
0.000 70.0	70.0 1.321	0.0 114.9
1.320 70.0		
	Infiltration Basin	
	Invert Level (m) 103.100 Sa	afety Factor 2.0
Infiltration Coe	fficient Base (m/hr) 0.01476	Porosity 1.00
Infiltration Coe	fficient Side (m/hr) 0.01476	
Dept	h (m) Area (m²) Depth (m) Area	(m <sup>2</sup> )
	0.000 42.0 0.500	746.0
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EAS				Pa	age 5
Unit 108 The Maltings	3				
Stanstead Abbotts				5	
Hertfordshire SG12 8H	IG				Milero M
Date 03/05/2023 09:33	De	signed	by WINDES	<mark>                               </mark>	DESTRECT
File Woodlands Pipe N.		ecked b	-		
Micro Drainage			013.1.1		
	ше	LWOIK Z	.013.1.1		
Summary of Crit:	ical Re	esults	by Maximum Le	evel ()	Rank 1) for Storm
Hot St Hot Start Manhole Headloss Coef Foul Sewage per heo Number of I Number of Number of Rainfa	tart (mi Level ( ff (Glob ctare (1 nput Hy Online Offline <u>S</u> 11 Mode Regio: -60 (mm	ctor 1.00 ins) (mm) bal) 0.50 L/s) 0.00 drograph Control Control Control i n Englan ) Warning	0 MADD F. 0 00 Flow per Per 00 s 0 Number of S s 2 Number of T s 0 Number of F c Rainfall Detai FSR d and Wales Cv 19.200 Cv (mm)	actor * In son per Storage Fime/Are Real Tin Lls Ratio (Summer (Winter	ea Diagrams 0 ne Controls 0 R 0.426 c) 0.750 c) 0.840 300.0
	Anal	-	estep 2.5 Secor tatus	nd incre	ON
-	I Profile h(s) (mi (s) (yea	DTS S DVD S nertia S (s) ns) 15, rs)	tatus tatus tatus	Sı	
Duration Return Period( Climate	I Profile h(s) (mi (s) (yea Change	DTS S DVD S Inertia S ((s) ns) 15, rs) (%) Climate	atatus atatus atatus 30, 60, 120, 24	Su 40, 360, First Y	ON OFF OFF . 480, 960, 1440 100
Duration Return Period( Climate	I Profile (s) (mi (s) (yea Change <b>Return</b>	DTS S DVD S nertia S (s) ns) 15, rs) (%) Climate Change	tatus tatus 30, 60, 120, 24 <b>First X F</b>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period( Climate <b>PN Storm</b>	I Profile n(s) (mi (s) (yea Change Return Period	DTS S DVD S Inertia S ((s) ns) 15, rs) (%) Climate Change +40%	status status 30, 60, 120, 24 First X F Surcharge	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period( Climate <b>PN Storm</b> 1.000 30 Winter	I Profile n(s) (mi (s) (yea Change Return Period 100	DTS S DVD S Inertia S ((s) ns) 15, rs) (%) Climate Change +40% +40%	<pre>status status status a0, 60, 120, 24 First X F Surcharge 100/15 Summer</pre>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period( Climate <b>PN Storm</b> 1.000 30 Winter 1.001 30 Winter	I Profile n(s) (mi (s) (yea Change Return Period 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40%	<pre>status status status status 30, 60, 120, 24  First X F Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period( Climate <b>PN Storm</b> 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40%	<pre>status status status status 30, 60, 120, 24  First X F Surcharge 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40%	<pre>status status status status 30, 60, 120, 24  First X F Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	<pre>status status status status 30, 60, 120, 24  First X F Surcharge 100/15 Summer 100/15 Summer</pre>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter 1.004 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	<pre>status status status status 30, 60, 120, 24  First X E Surcharge 100/15 Summer 100/15 Summer</pre>	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter 1.004 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	30, 60, 120, 24         First X         Burcharge         100/15         Summer         100/15	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter 1.004 30 Winter 1.005 30 Winter 1.006 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	30, 60, 120, 24         First X         Burcharge         100/15         Surcharge         100/15         Summer         100/15	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter 1.004 30 Winter 1.005 30 Winter 1.006 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100 100 100 10	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	30, 60, 120, 24         First X         Burcharge         100/15         Surcharge         100/15         Summer         100/15	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter 1.004 30 Winter 1.005 30 Winter 1.006 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100 100 100	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	30, 60, 120, 24         First X         Burcharge         100/15         Surcharge         100/15         Summer         100/15	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.000 30 Winter 3.001 30 Winter 1.004 30 Winter 1.005 30 Winter 1.006 30 Winter 1.007 30 Winter	I Profile (s) (mi (s) (yea Change Return Period 100 100 100 100 100 100 100 100 100 10	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	30, 60, 120, 24         First X         Burcharge         100/15         Surcharge         100/15         Summer         100/15	Su 40, 360, First Y	ON OFF OFF 480, 960, 1440 100 40 First Z O/F Lvl
Duration Return Period ( Climate PN Storm 1.000 30 Winter 1.001 30 Winter 1.002 30 Winter 1.002 30 Winter 2.000 30 Winter 1.003 30 Winter 3.001 30 Winter 3.001 30 Winter 1.004 30 Winter 1.005 30 Winter 1.005 30 Winter 1.006 30 Winter 1.007 30 Winter	I Profile (s) (mi (s) (yea Change Return ( Period 100 100 100 100 100 100 100 100 100 10	DTS S DVD S Inertia S (s) ns) 15, rs) (%) Climate Change +40% +40% +40% +40% +40% +40% +40% +40%	30, 60, 120, 24         First X         Burcharge         100/15         Surcharge         100/15         Summer         100/15	Su 40, 360, First Y Flood	ON OFF OFF Manmer and Winter 480, 960, 1440 100 40 First Z O/F Lvl Overflow Act. Exc.
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Micro Drainage	Network 2013.1.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
3.000 3.001 1.004	MH07	102.505 102.500 102.496	1.353 1.572 1.608	0.000 0.000 0.000	0.16 0.36 0.85	0.0	10.6 19.5 53.9	SURCHARGED SURCHARGED SURCHARGED
1.005 1.006 1.007 1.008	MH09 FD1	102.465 102.437 101.646	1.703 1.889 1.765 2.085	0.000 0.000 0.000 0.000	1.14 2.97 5.61 0.00	0.0 0.0 0.0	67.4 40.9 30.0	SURCHARGED SURCHARGED SURCHARGED FLOOD RISK

Appendix: L – Essex SuDS Proforma

Flood Risk Assessment & SuDS Report | Bull Field, Takeley



# Introduction

This proforma identifies the information required by Essex LLFA to enable technical assessment the Designers approach to water quantity and water quality as part of SuDS design approach in compliance with Essex SuDS Design Guide.

Completion of the proforma will also allow for technical assessment against Non-statutory technical standards (NSTS) for Sustainable Drainage. The proforma will accompany the site specific Flood Risk Assessment and Drainage Strategy submitted as part of the planning application.

Please complete this form in full for full applications and the coloured sections for outline applications. This will help us identify what information has been included and will assist with a smoother and quicker application.

# Instructions for use

Use the units defined for input of figures Numbers in brackets refer to accompanying notes.

Where  $\dots m^3$   $\dots m^3/m^2$  are noted – both values should be filled in.

# Site details

- 1.1 Planning application reference (if known)
- 1.2 Site name
- 1.3 Total application site area <sup>(1)</sup>
  - 1.4 Predevelopment use <sup>(4)</sup>
  - 1.5 Post development use If other, please sepcify
  - 1.6 Urban creep applicable
  - 1.7 Proposed design life / planning application life
  - 1.8 Method(s) of discharge: (5)

```
Reuse Ir
```

Infiltration

Waterbody

if yes, factor applied:

ha

Storm sewer

Combined sewer

- 1.9 Is discharge <u>direct</u> to estuary / sea
- 1.10 Have agreements in principle (where applicable) for discharge been provided

Hybrid



# **Calculation inputs**

- Area within site which is drained by SuDS <sup>(2)</sup> m<sup>2</sup> 2.1 m<sup>2</sup>
- Impermeable area drained pre development <sup>(3)</sup> 2.2
- Impermeable area drained post development (3) m<sup>2</sup> 2.3
- 2.4 Additional impermeable area (2.3 minus 2.2)
- 2.5 Method for assessing greenfield runoff rate
- 2.6 Method for assessing brownfield runoff rate
- Coefficient of runoff (Cv) (6) 2.7
- 2.8 Source of rainfall data (FEH Preferred)
- 2.9 Climate change factor applied

# Attenuation (positive outlet)

Drainage outlet at risk of drowning (tidal locking, elevated water levels in watercourse/sewer) 2.10 Note: Vortex controls require conditions of free discharge to operate as per manufacturers specification.

%

m<sup>2</sup>

2.11	Invert level at final outlet	mAOD				
2.12	Design level used for surcharge water level	at point of dischar	ge <sup>(16)</sup>	mAOD		
Infiltration (Discharge to Ground)						
2.13	Have infiltration tests been undertaken					
2.14	If yes, which method has been used					
2.15	Infiltration rate (where applicable)		m/s			
2.16	Depth to highest known ground water table	•	mAOD			
2.17	If there are multiple infiltration features please specify where they can be found in the FRA					
2.18	Depth of infiltration feature		mAOD			
2.19	Factor of safety used for sizing infiltration s	torage				



**Calculation outputs** Sections 3 and 4 refer to site where storage is provided by full attenuation or partial infiltration. Where all flows are infiltrated to ground go straight to Section 6.

<b>3</b> .0	Greenfield runoff rates (incl. Urban Creep)					
3.1	1 in 1 year rainfall	l/s/ha,		I/s for the site		
3.2	1 in 30 year rainfall	l/s/ha,		I/s for the site		
3.3	1 in 100 year rainfall + CCA	l/s/ha,		I/s for the site		
4.0	Brownfield runoff rates (incl. Urban Creep)					
4.1	1 in 1 year rainfall	l/s/ha,		I/s for the site		
4.2	1 in 30 year rainfall l/s/ha,			I/s for the site		
4.3	1 in 100 year rainfall + CCA	n 100 year rainfall + CCA l/s/ha,		I/s for the site		
5.0	$^{0}$ Proposed maximum rate of runoff from site (incl. Urban Creep) $^{(7)}$					
5.1	1 in 1 year rainfall	l/s/ha,		I/s for the site		
5.2	1 in 30 year rainfall	l/s/ha,		I/s for the site		
5.3	1 in 100 year rainfall + CCA I/s/ha,			I/s for the site		
<b>6</b> .0	6.0 Attenuation storage to manage flow rates from site (incl. <b>Climate Change Allowance</b> (CCA) and Urban Creep					
6.1	Storage - 1 in 100 year + CCA <sup>(9)</sup>		m <sup>3</sup>	m <sup>3</sup> /m <sup>2</sup>		
6.2	50% storage drain down time 1 in 30 years			hours		
7.0	7.0 Controlling volume of runoff from the site <sup>(10)</sup>					
7.1	Pre development runoff volume <sup>(12)</sup> (devel	lopment area)		m <sup>3</sup> for the site		
7.2	Post development runoff volume (unmitig	ated) <sup>(12)</sup>		m <sup>3</sup> for the site		
7.3	Volume to be controlled (5.2 - 5.1)			m <sup>3</sup> for the site		



	Volume control provided by: Interception losses <sup>(13)</sup> Rain harvesting <sup>(14)</sup>	m <sup>3</sup> m <sup>3</sup>			
-		m <sup>3</sup> m <sup>3</sup>			
	Attenuation			3	
<ul> <li>Separate volume designated as long term storage<sup>(15)</sup></li> </ul>				m <sup>3</sup>	
7.5	7.5 Total volume control (sum of inputs for 5.4)			m <sup>3</sup> (17)	
8.0 S	8.0 Site storage volumes (full infiltration only)				
8.1	Storage - 1in 30 year + CCA <sup>(8)</sup>		m <sup>3</sup>	$m^3/m^2$ (of developed impermeable area)	
8.2	Storage - 1 in 100 year + CCA (11)		m <sup>3</sup>	m <sup>3</sup> / <b>m</b> <sup>2</sup>	

# **Design Inputs**

Proposed site use

# Pollution hazard category (see C753 Table 26.2)

High risk area defined as area storing fuels chemicals, refuelling area, washdown area, loading bay.

**Design Outputs** 

List order of SuDS techniques proposed for treatment

Note that gully pots, pipes and tanks are not accepted by Essex LLFA as a form of treatment (for justification see C753 Section 4.1, Table 26.15 and Box B.2)

Are very high pollution risk areas drained separate from SuDS to foul system

## Other

Please include any other information that is relevant to your application

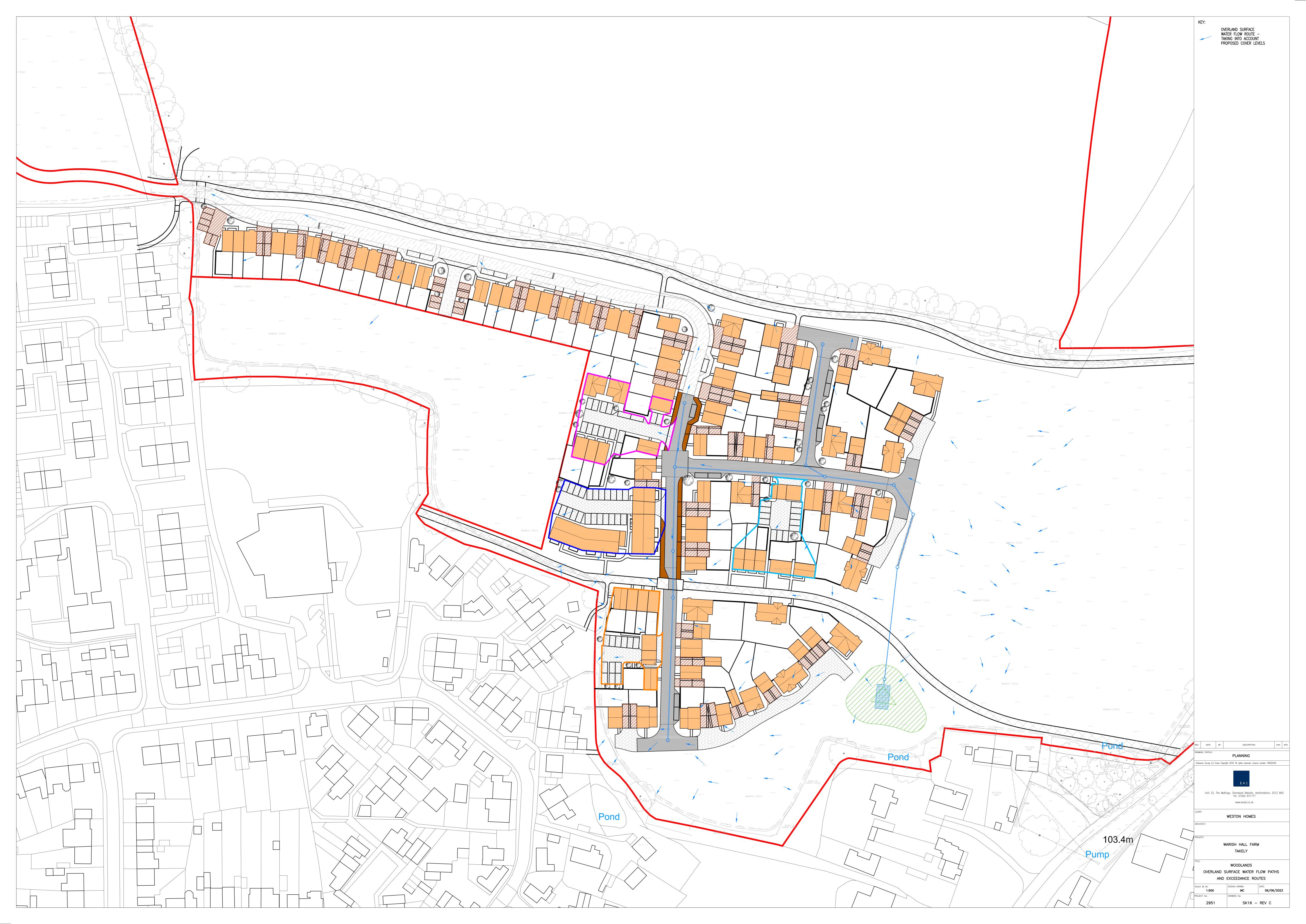


# Notes

- 1. All area with the proposed application site boundary to be included.
- The site area which is positively drained includes all green areas which drain to the SuDS system and area of surface SuDS features. It excludes large open green spaces which do not drain to the SuDS system.
- 3. Impermeable area should be measured pre and post development. Impermeable surfaces include, roofs, pavements, driveways and paths where runoff is conveyed to the drainage system.
- 4. Predevelopment use may impact on the allowable discharge rate. The LLFA will seek for reduction in flow rates to GF (Essex SuDS Design Guide).
- 5. Runoff may be discharge via one or more methods.
- 6. Sewers for Adoption 6<sup>th</sup> Edition recommends a Cv of 100% when designing drainage for impermeable area (assumes no loss of runoff from impermeable surfaces) and 0% for permeable areas. Where lower Cv's are used the applicant should justify the selection of Cv.
- 7. It is Essex County Council's preference that discharge rates for all events up to the 1 in 100 year event plus climate change are limited to the 1 in 1 greenfield rate. This is also considered to mitigate the increased runoff volumes that occur with the introduction of impermeable surfaces. If discharge rates are limited to a range of matched greenfield flows then it is necessary to provide additional mitigation of increased runoff volumes by the provision of Long-term Storage.
- 8. Storage for the 1 in 30 year must be fully contained within the SuDS components. Note that standing water within SuDS components such as ponds, basins and swales is not classified as flooding. Storage should be calculated for the critical duration rainfall event.
- 9. Runoff generated from rainfall events up to the 1 in 100 year will not be allowed to leave the site in an uncontrolled way. Temporary flooding of designated areas to shallow depths and velocities may be acceptable.
- 10. The following information should only be provided if increased runoff volumes are not mitigated by limiting all discharge rates back to the greenfield 1 in 1 year rate.
- 11. Climate change is specified as 40% increase to rainfall intensity, unless otherwise agreed with the LLFA / EA.
- 12. To be determined using the 100 year return period 6 hour duration winter rainfall event.
- 13. Where Source Control is provided Interception losses will occur. An allowance of <u>5mm rainfall</u> <u>depth</u> can be subtracted from the net inflow to the storage calculation where interception losses are demonstrated. The Applicant should demonstrate use of subcatchments and source control techniques. Further information is available in the SuDS Design Guide.
- 14. Please refer to Rain harvesting BS for guidance on available storage.
- 15. Flows within long term storage areas should be infiltrated to the ground or discharged at low flow rate of maximum 2 l/s/ha.
- 16. Careful consideration should be used for calculations where flow control / storage is likely to be influenced by surcharged sewer or peak levels within a watercourse. Outlets can be tidally locked where discharge is direct to estuary or sea. Calculations should demonstrate that risk of downed outlet has been taken into consideration. Vortex controls require conditions of free discharge to operate as per specification.
- 17. In controlling the volume of runoff the total volume from mitigation measures should be greater than or equal to the additional volume generated.

Appendix: M - Exceedance and Conveyance Routes

Flood Risk Assessment & SuDS Report | Bull Field, Takeley



Appendix: N – Maintenance and Management Plan

Flood Risk Assessment & SuDS Report | Bull Field, Takeley

Maintenance and Management Plan April 2023

# Bull Field, Warish Hall Farm, Takeley

Weston Homes

EAS

# **Document History**

JOB NUMBER:	2951/2023
DOCUMENT REF:	Maintenance and Management Plan
<b>REVISIONS:</b>	A - Final

Revision	Comments	Ву	Checked	Authorised	Date
A	Client Draft	MC	SA	SA	27/04/2023
В					
С					
D					
E					

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2 SuDS Strategy at Bull Field Proposed SuDS Strategy

3 Management of Development			
Dra	inage	4	
4	Summary and Conclusion	8	

## 1 Introduction

- 1.1 This maintenance and management plan has been prepared in support of a SuDS Strategy and Flood Risk Assessment submitted for an application by Weston Homes for a proposed development at Bull Field, Warish Hall Farm, Takeley, Essex.
- 1.2 The proposed development comprises of a residential development consisting of 96 two to fivebedroom dwellings along with garages, driveways and amenity areas. The proposals also include two separate flatted blocks comprising one – bedroom and two – bedroom apartments. The total site area is approximately 7.9ha.
- 1.3 Sustainable Drainage Systems (SuDS) are a sequence of water management techniques and features used to mimic the natural drainage system and provide a method of surface water drainage which can decrease the quantity of water discharged, and hence reduce the risk of flooding. In addition to reducing flood risk, these features can improve water quality and provide biodiversity and amenity benefits.

# 2 SuDS Strategy at Bull Field

#### **Proposed SuDS Strategy**

- 2.1 It is proposed that the private driveways and car parking areas will utilise permeable surfacing within its construction. The majority of the access road is to be adopted and therefore cannot utilise permeable surfacing however, the areas of the access road not being offered for adoption will also use permeable surfacing. This will allow surface water to infiltrate through the paving and be stored within the sub-base of the driveways, car parking areas and sections of the access road before allowing the surface water runoff to infiltrate to the ground.
- 2.2 The permeable private driveways are to manage surface water runoff from roof areas of the adjacent dwellings with the runoff from dwellings adjacent to car parking areas to be directed to these sections of permeable paving.
- 2.3 The depth of sub-base for the areas of permeable surfacing will range from 137mm to 426mm in order to provide adequate attenuation whilst allowing surface water runoff to infiltrate to the ground. Due to attenuation requirements, some sections of permeable paving are proposed to utilise a permavoid sub-base replacement in order to reduce sub-base depths.
- 2.4 As the main section of the access road is to be adopted it is proposed to utilise an impermeable tarmac construction. Therefore, a pipe network has been proposed to collect surface water runoff from this section of the access road. The pipe networks then directs the runoff to a filter drain followed by a crate soakaway with an infiltration basin located above the crate soakaway to act as an overflow for more sever rainfall events.

#### 3 Management of Development Drainage

- 3.1 It is assumed that all elements of the proposed drainage system will remain private and the responsibility will remain with a maintenance company set up by the developer.
- 3.2 Maintenance of the drainage systems serving the private driveways and residential roofs will be the responsibility of the individual residents.
- 3.3 Regular inspections of the permeable paving, inspection chambers and orifice plate controls should be made, to ensure they are effective throughout the lifetime of the development and do not become blocked or damaged over time.
- 3.4 Some maintenance activities for the proposed SuDS devices as detailed in CIRIA C753 'The SuDS Manual' are set out in Tables 3.1-3.4 below.

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Brushing and vacuuming.	Three times per year at end of winter, mid- summer, after autumn leaf fall, or as required based on site specific observations of clogging or manufacturer's recommendations.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required. As required.
	Removal of weeds.	
	Remediate any landscaping which, through vegetation maintenance of soil slip, has been raised to within 50mm of the level of the paving.	As required
Remedial actions	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance of a hazard to the user.	As required
	Rehabilitation of surface and upper sub-surface.	As required (if infiltration performance is reduced as a result of significant clogging.)
	Initial inspection	
	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action.	Monthly for 3 months after installation. 3 monthly, 48 hours after large storms.
Monitoring	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.

Table 3.1: Maintenance tasks for permeable paving (Source: CIRIA C753, The SuDS Manual)Manholes and Sewers

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Maintenance Schedule	Required Action	Frequency
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation and establish appropriate silt removal frequencies Remove sediment from pre-treatment devices	Monthly (or as required) Monthly Six monthly Six monthly, or as required
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3998:2010) At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying medium. Clear perforated pipework of blockages	As required Five yearly, or as required As required

Table 3.2: Maintenance tasks for filter drains (Source: CIRIA C753, The SuDS Manual)

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Removing litter, debris and trash Cut grass – for landscaped areas and access routes Cut grass – meadow grass in and around basin Manage other vegetation and remove nuisance plants	Monthly Monthly (during growing season) or as required Half yearly: spring (before nesting season) and autumn Monthly at start, then as required
Occasional maintenance	Reseed areas of poor vegetation growth Prune and trim trees and remove cuttings Remove sediment from pre-treatment system when 50% full	Annually, or as required As required As required

Remedial actions	Repair erosion or other damage by reseeding or returfing	As required
	Realign the rip-rap	As required
	Repair or rehabilitate inlets, outlets and overflows	As required
	Rehabilitate infiltration surface using scarifying and spiking techniques if performance deteriorates	
	Relevel uneven surfaces and reinstate design	As required
	levels	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and pre-treatment systems for silt accumulation; establish appropriate silt removal frequencies	Half yearly
	Inspect infiltration surfaces for compaction and ponding	Monthly

#### Table 3.3: Maintenance tasks for infiltration basins (Source: CIRIA C753, The SuDS Manual)

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings Cleaning of gutters and any filters on downpipes Trimming any roots that may be causing blockages	Annually Annually (or as required based on inspections) Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre- treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs Replacement of clogged geotextile (will require reconstruction of soakaway)	As required As required
Monitoring	Inspect silt traps and note rate of sediment accumulation Check soakaway to ensure emptying is occurring	Monthly in the first year and then annually Annually

Table 3.4: Maintenance tasks for soakaways (Source: CIRIA C753, The SuDS Manual

- 3.5 It is recommended that during the first 12 months of operation all SuDS and drainage features are visually inspected on a monthly basis to determine any seasonal patterns this includes the permeable surfacing, inspection chambers, inlets, outlets and flow control devices. This will determine whether or not the recommended service intervals set out by CIRIA in the figure above and recommended in this document will be sufficient for maintenance beyond the first year.
- 3.6 After the first 12 months of monitoring, the maintenance schedule may need to be revised to provide specific actions at more frequent intervals but it should be noted that maintenance should not be provided at intervals less than those specified in the tables above set out by CIRIA.
- 3.7 All catchpits prior to the permeable surfacing should be inspected on a quarterly basis after the first year and are likely to need maintenance once or twice a year to clear silt and debris but this should be based on the first years monitoring.
- 3.8 During the quarterly visual inspections, the final site inspection chamber and headwall should also be checked to ensure the drainage is able to leave the site and enter the receiving watercourse.
- 3.9 It is important that the maintenance schedule changes throughout the lifetime of the development and with changes in weather conditions. The maintenance schedule set out in this document is only a guideline and it may be necessary to increase the frequency of inspections during particularly wet seasons or if there are any signs of reduced performance.

#### **4** Summary and Conclusion

- 4.1 This maintenance and management plan has been prepared in support of an application by Weston Homes for a proposed development at Bull Field, Warish Hall Farm, Takeley, Essex.
- 4.2 The Sustainable Drainage System (SuDS) proposed on site consists of separate sections of permeable surfacing with varying subbase depths between 137-426mm, each allowing surface water to naturally infiltrate to the ground whilst providing the required attenuation.
- 4.3 Section of the proposed access road are to be adopted and therefore cannot utilise permeable paving. As such, surface water runoff from these areas are to be managed by a filter drain, crate soakaway and infiltration basin.
- 4.4 The development drainage is the responsibility of the site owner and will be maintained by a private management company who are yet to be appointed.
- 4.5 It is recommended that during the first 12 months of operation all SuDS and drainage features are visually inspected on a monthly basis to determine any seasonal patterns this includes all SuDS features, inspection chambers, inlets, outlets and flow control devices.
- 4.6 Following this initial 12 month period, maintenance will be carried out to at least the requirements set out in Figures 1 and 2 based on information from the CIRIA SuDS Manual. A visual inspection of all flow control devices and headwall will be carried out quarterly as a minimum.
- 4.7 It is important that the maintenance schedule changes throughout the lifetime of the development and with changes in weather conditions. The maintenance schedule set out in this document is only a guideline and it may be necessary to increase the frequency of inspections during particularly wet seasons or if there are any signs of reduced performance.