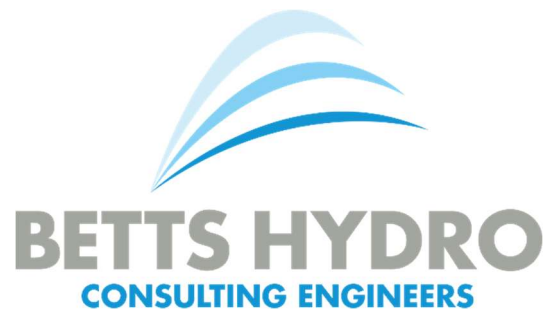




TURNPIKE CLOSE SEMINGTON

DRAINAGE MANAGEMENT STRATEGY



For

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HSL | HOLLINS STRATEGIC LAND

AUGUST 2026

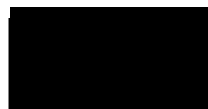
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TURNPIKE CLOSE SEMINGTON DRAINAGE MANAGEMENT STRATEGY

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EXECUTIVE SUMMARY

This Drainage Management Strategy was commissioned by Hollins Strategic Land LLP, referred to hereafter as 'the client'. This report has been prepared to support an outline planning application for the construction of 48no. residential dwellings and a village shop on land off Turnpike Close in Semington.

This assessment has been completed in accordance with National Planning Policy Framework and Planning Practice Guidance to consider the most appropriate sustainable drainage options for the proposals in line with the National Standards for Sustainable Drainage Systems (SuDS). There are five methods that have been reviewed for the management and discharge of surface water, these may be applied individually or collectively and should be applied in the order of priority.

Rainwater harvesting is not considered viable at plot or estate scale due to practical and financial constraints, although rainwater butts are recommended to encourage water reuse. Based on the ground conditions identified and Soakaway testing undertaken by Brownfield Solutions, it is understood that infiltration will not offer a suitable means of managing surface water generated by the site.

The nearest watercourse to the site is Semington Brook Main River, located 735m northeast of the site. At present, given the topography and lack natural drainage features, it is understood that surface water run-off generated drains informally to ground over an extended period, with overland flows generated in high rainfall events believed to drain informally to the highways drainage system within Turnpike Close.

Review of Wessex Water sewer records have identified a private surface water sewer within Turnpike Close to the east of the site. The right to form a connection to this private surface water sewer is upheld within the first schedule of the official 1982 conveyance. The proposals are therefore to discharge surface water flows generated by the site to this surface water sewer via MH6123.

In accordance with the SuDS Manual (CIRIA) and the National Standards for SuDS all sites should endeavour to achieve as close to pre-development greenfield rates as is viable. The LLFA have requested that a 30% betterment on the pre-development greenfield rate be utilised for the site. The pre-development greenfield rate (QBar) is calculated to be 5.3l/s (based on 3.3l/s/ha). The proposed rate of discharge for the development is therefore 4.0l/s. The LLFA (WC) will need to agree to this proposed discharge rate as part of their consultation.

The proposals are to discharge foul water generated by the site to the public foul water sewer system within Turnpike Close. Any offsite asset routing works will need to be considered in terms of consents with the relevant offsite landowners (Highways Authority). Consent for work to the public sewer network will be required from WW at an early stage, this includes consent for the proposed rates of discharge and the points of connection.

This Drainage Management Strategy has been prepared in consultation with the relevant interested parties. The report is commensurate with the scale and nature of the development, and the development is appropriate in accordance with the National Standards for SuDS.

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Specialist Software

-  MicroDrainage WinDES (v.2020.1.3) – Calculation of Greenfield run-off volumes, rates of rainfall and stormwater storage estimates.

Abbreviations & Acronyms

BGS	British Geological Survey
WC	Wiltshire Council
DMS	Drainage Management Strategy
DCG	Design and Construction Guidance
EA	Environment Agency
FEH	Flood Estimation Handbook
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
QBAR	Mean Annual Flood
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
QSE	Quick Storage Estimate
SuDS	Sustainable Drainage Systems
WW	Wessex Water

1.0 INTRODUCTION

1.1 Planning Policy Context

- 1.1.1 All forms of flooding and their impact on the natural and built environment are material planning considerations. The National Planning Policy Framework (NPPF) sets out the Government's objectives for the planning system, and how planning should facilitate and promote sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change.
- 1.1.2 Government policy with respect to development in flood risk areas is contained within the NPPF and the supporting Planning Practice Guidance (PPG) (refer to extracts in **Appendix A**). This Drainage Management Strategy (DMS) has been completed in accordance with NPPF/PPG to consider the most appropriate sustainable surface water and foul water drainage options for the proposals.
- 1.1.3 The purpose of this assessment is to ensure that there is no increased flood risk because of the development in line with the NPPF guidance. The use of Sustainable Drainage Systems (SuDS) to manage surface water run-off has also been considered as part of the assessment in line with the National Standards for SuDS.

1.2 Site Context

- 1.2.1 This DMS has been prepared to support an outline planning application for 48no. residential properties and a village shop on land off Turnpike Close in Semington. The DMS sets out broad principles for a drainage design. A detailed drainage design will be required as part of Reserved Matters application.

1.3 Consultation

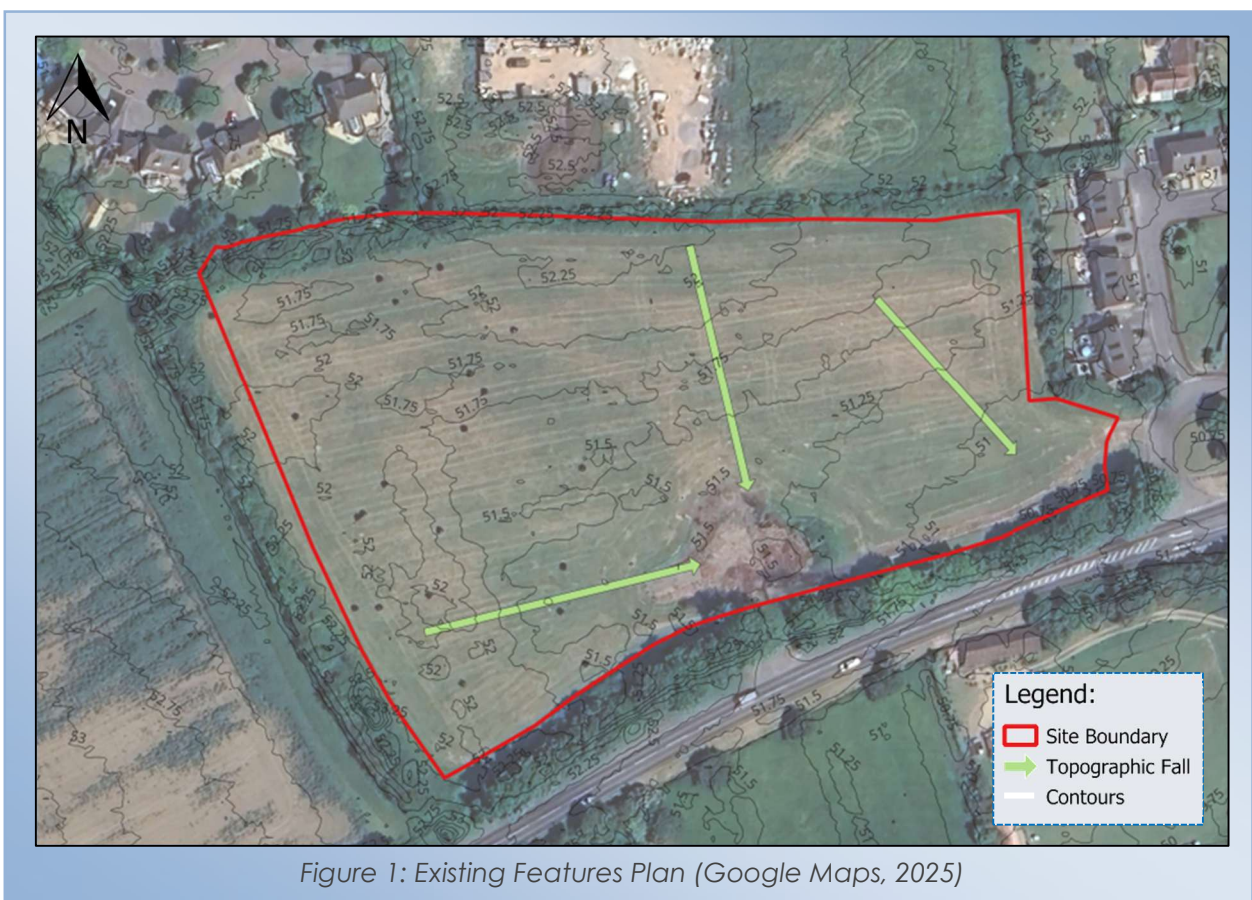
- 1.3.1 The preparation of this report has been undertaken in consultation with the Environment Agency (EA), Wessex Water (WW) and Wiltshire Council (WC). The consultation responses can be seen in **Appendix B, C and D** respectively.

2.0 EXISTING SITE LOCATION

2.1 Location

2.1.1 The site is located off Turnpike Close in Semington. The nearest Ordnance Survey National Grid Reference is E: 389391, N: 160209 and the nearest postcode is BA14 6GY (see Location Plan in **Appendix E**). The whole site covers 2.6ha and is edged in red in **Figure 1**.

2.1.2 In terms of the surrounding land-use, the site is bound to the north by residential development. To the east is more residential development off Turnpike Close, this is illustrated in **Figure 1**. To the south of the site is the A361, and further south is undeveloped agricultural land. To the west, the site is bound by undeveloped agricultural land, with a commercial caravan storage area beyond.



2.2 Existing and Historical Land Use

2.2.1 The wider site is currently undeveloped agricultural land and comprises of low-density vegetation, with larger shrubs and trees located along the site boundaries. Mapping has identified a possible brick wall and a tarmac access from the south, with a dirt path alongside into the boundary. Review of historical mapping from 1888 to 1915 has identified no historical uses of the site other than agricultural.

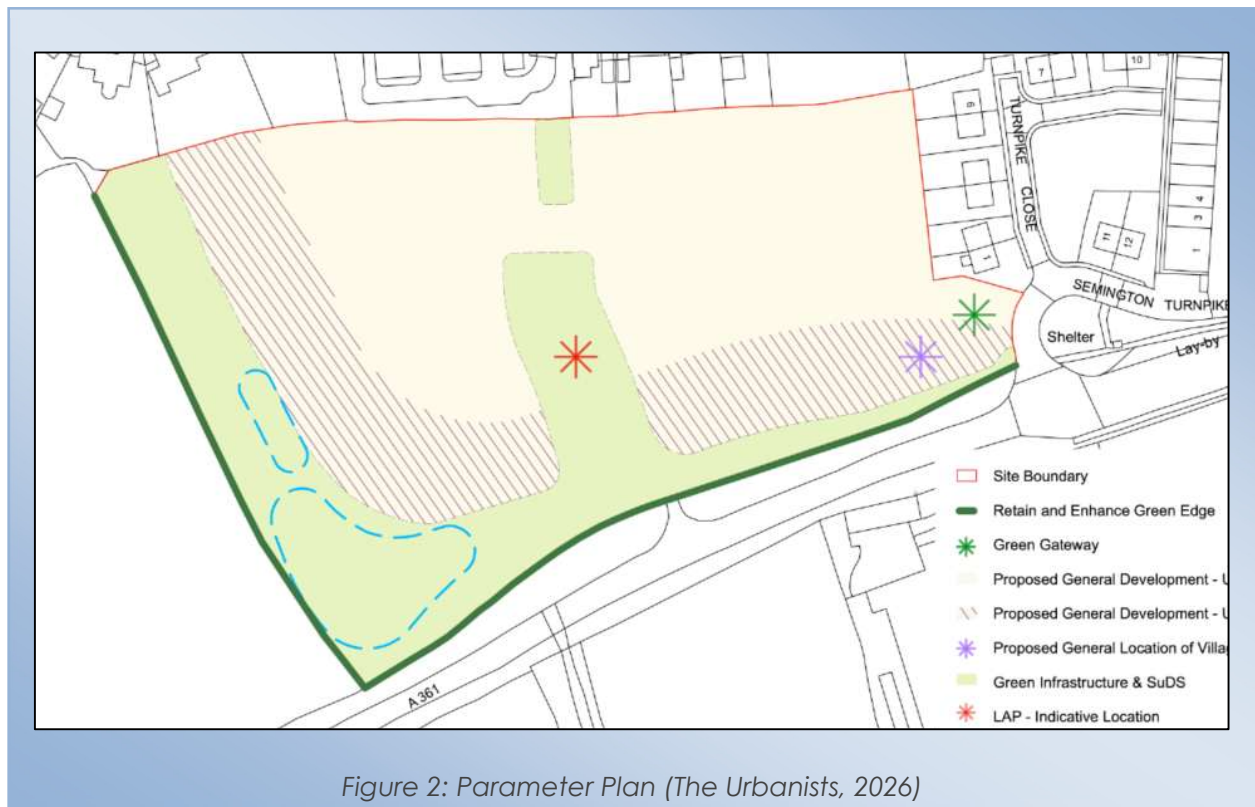
2.3 Topography

- 2.3.1 Generally the levels onsite fall from the north to south-east as illustrated in **Figure 1**; a topographical survey has been completed and is included in **Appendix F**. The highest point of the site is 52.035mAOD along the northern boundary and the lowest is 50.681mAOD in the south-eastern corner.
- 2.3.2 There is a small part of the site (north-western corner) which falls to the north-west away from the rest of the site. The patch of tarmac located along the southern boundary is at 51.453mAOD and lies at a slightly higher level than surrounding land. The arrows shown in **Figure 1** indicate the general falls across the site.

3.0 DEVELOPMENT PROPOSALS

3.1 Nature of the Development

- 3.1.1 This is an outline planning application is for development on land off Turnpike Close, Semington. The proposals comprise of residential development with 48no. dwellings. The Parameter Plan is included in **Figure 2** (see full plan in **Appendix G**).



- 3.1.2 The total site covers 2.156ha and is understood to be 100% permeable at present. Based on the outline proposals, the development area covers a smaller 1.75ha, of which approximately 55% will be impermeable post-development (0.963ha). An additional 10% allowance for urban creep has been added with the estimated impermeable areas equating to 65% of the development area at 1.138ha.
- 3.1.3 Betterment in the form of permeable surfaces opposed to external hardstanding should also be considered where feasible to reduce the surface water run-off. Opportunities to provide soft landscaping on the site would provide added benefits to water quality and ecology.
- 3.1.4 National and local policy identifies that SuDS should be incorporated into new development where feasible to manage surface water run-off generated by new development.

4.0 SURFACE WATER MANAGEMENT

- 4.0.1 In accordance with national and local drainage policies, the principal focus of this assessment is on the effective management of surface water run-off generated by the proposed development. Surface water runoff management options have been assessed in accordance with the sustainable drainage hierarchy, as outlined within the National Standards for SuDS (July 2025).
- 4.0.2 The aim of the National Standards for SuDS is to provide information to support the design of surface water drainage systems for new infrastructure and development. The standards are noted below and are discussed in turn within this section of the report.
- Standard 1 - Runoff Destinations*
 - Standard 2 - Management of Everyday Rainfall*
 - Standard 3 - Management of Extreme Rainfall and Flooding*
 - Standard 4 - Water Quality*
 - Standard 5 - Amenity*
 - Standard 6 - Biodiversity*
 - Standard 7 - Design of Drainage for Construction, Operation, Maintenance, Decommissioning, and Structural Integrity*
- 4.0.3 Standard 1 is a hierarchy standard, and this provides the criteria for determining the final runoff destination. The remaining standards (Standards 2 – 7) detail the minimum design criteria that all surface water drainage systems should meet.

4.0 Standard 1 – Runoff Destinations

- 4.1.1 Standard 1 as noted, sets out the surface water drainage hierarchy, in order of priority. Surface water runoff generated by the proposed development is to be discharged to the final destinations, to the maximum extent practicable. The five levels, in order of priority, are:
- Priority 1: Collected for Non-Potable Use.*
 - Priority 2: Infiltrated to Ground.*
 - Priority 3: Discharged to an Above Ground Surface Water Body.*
 - Priority 4: Discharged to a Surface Water Sewer, or Another Piped Surface Water Drainage System.*
 - Priority 5: Discharged to a Combined Sewer.*

Priority 1: Collected for Non-Potable Use

- 4.1.2 The National Standards for Sustainable Drainage Systems (SuDS) require that the potential for rainwater re-use is considered as the first destination for surface water run-off. In accordance with this hierarchy, the feasibility of incorporating rainwater harvesting (RWH) within the proposed residential development has been assessed.
- 4.1.3 The proposed development comprises a traditional housing estate with standard domestic water demands. Whilst rainwater harvesting can offer benefits in certain circumstances, its use at plot or estate scale is not considered viable for this type of development due to financial and practical constraints.

- 4.1.4 Rainwater harvesting systems require significant additional capital investment, including storage tanks, pumping equipment, filtration systems, dual pumping networks, and ongoing maintenance. For individual dwellings, these costs are disproportionate to the limited potable water savings typically achievable, while communal systems introduce further cost, operational complexity and long-term management and liability issues.
- 4.1.5 Industry guidance and experience indicate that rainwater harvesting for low-to-medium density housing is generally not cost-effective when assessed on a whole-life basis and is associated with long payback periods. This is especially the case where alternative SuDS measures can achieve the required surface water management objectives without introducing mechanical systems or maintenance burdens for future occupants.
- 4.1.6 Whilst traditional rainwater harvesting systems are not practical, it is recommended that rainwater butts are included within the rear garden of the proposed dwellings to encourage collection of non-potable water for re-use. It is however, noted that this will not offer a full drainage solution for the proposed development, and therefore alternative drainage destinations have also been assessed.

Priority 2: Discharged to Ground

- 4.1.7 Any impermeable areas that can drain to soakaway or an alternative method of infiltration would significantly improve the sustainability of any new surface water systems. The published online datasets have been reviewed to assess how favourable the underlying strata are for a potential infiltration-based solution for the development proposals.
- 4.1.8 The British Geology Survey (BGS) mapping data indicates that the bedrock geology consists of Cornbrash Formation - Limestone. The underlying strata (noted above) appear to suggest that underlying permeability is medium to high.
- 4.1.9 The Cranfield Soil and AgriFood Institute (CSAI), Soilscales viewer identifies the soils to be 'shallow lime-rich soils over chalk or limestone'. An FEH soil factor of 0.388 suggests that the underlying soils have a medium-low permeability (0.1 is very high and 0.5 is very low).
- 4.1.10 To confirm whether infiltration would offer a viable means of managing surface water for the development, soakaway testing was undertaken by Brownfield Solutions in May 2026. The results can be seen in **Appendix H** and concluded that infiltration rates on the site were poor, with the highest rate recorded to be 1.51×10^{-7} m/s. It was also concluded that none of the tests drained past the 25% effective depth and as such, could not be considered BRE 365 compliant.
- 4.1.11 Regardless, the proposals are to utilise permeable surfaces in private, non-adoptable areas where an engineerable solution can be achieved, even if a full infiltration solution is not viable. The permeable surfaces can be designed to allow for natural losses to occur and the first 5mm of rainfall to be dealt with at source, with a connection to the proposed main drainage serving the development proposals. Detailed design will be required in due course to confirm the specifics.

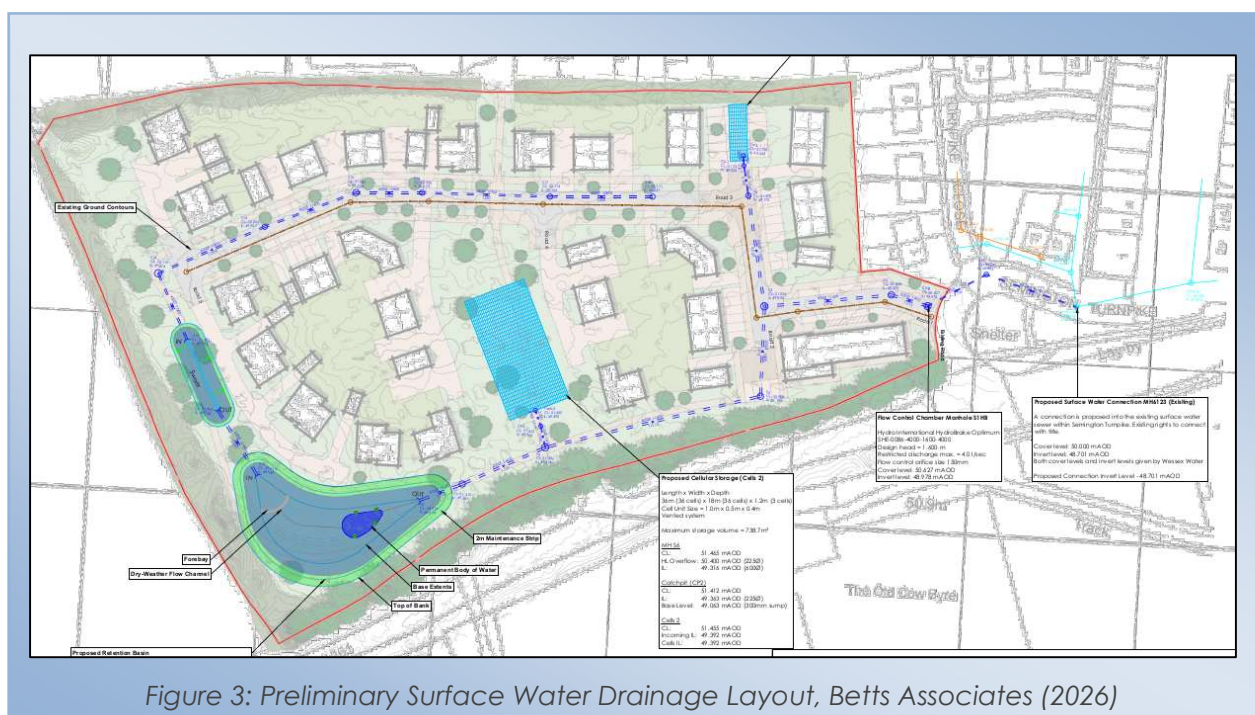
4.1.12 As rainwater collection, and discharge to ground will not provide a full drainage solution, this assessment has considered the next option in accordance with the surface water drainage hierarchy.

Priority 4: Discharged to a Surface Water Sewer, or Another Piped Surface Water Drainage System

4.1.14 At present, small volumes of surface water are believed to infiltrate to ground over time, with flows thought to informally enter the highways drainage with Turnpike Close during high rainfall events.

4.1.15 Review of Wessex Water sewer records have identified a private surface water sewer within Turnpike Close to the east of the site. The right to form a connection to this private surface water sewer is upheld within the first schedule of the official 1982 conveyance, whereby Wiltshire Council purchased land for the construction of Semington Turnpike (*as a private and sensitive document, this is available upon request from the client*).

4.1.16 As the highest available priority destination, the proposals are to discharge surface water flows generated by the proposals to the private surface water sewer network via a connection at MH6123. A Preliminary Surface Water Drainage Layout has been completed to demonstrate the viability of the proposals and can be seen within **Figure 3** below (see full plan in **Appendix I**).



- 4.1.17 Whilst these works have not determined specific ground and finished floor levels, they demonstrate that a gravity connection to the private surface water sewer is viable, with sufficient stormwater storage capacity provided onsite. The drainage proposed to serve this development will utilise a below ground pipe network and above ground swale feature for conveyance. Stormwater storage is to be provided via an above ground retention basin and below ground cellular storage.
- 4.1.18 Bioretention areas are proposed along the highway, these will likely be in the form of tree pits and/or raingardens, although the specifics are to be determined at the detailed design stage as part of a reserved matters application following further discussion with Wiltshire Council Highways regarding design requirements for adoption.
- 4.1.19 Regardless, the proposals are to utilise permeable surfaces in private, non-adoptable areas where an engineerable solution can be achieved, even if a full infiltration solution is not viable. The permeable surfaces can be designed to allow for natural losses to occur and the first 5mm of rainfall to be dealt with at source, with a connection to the proposed main drainage serving the development proposals. Detailed design will be required in due course to confirm the specifics.
- 4.1.20 The proposals are to form a connection to the private surface water sewer for which routing through the highway will be required. Consultation should be carried out with Wiltshire Councils Highways team to obtain consent for the works. These discussions will also highlight the presence of any existing assets which will need to be accounted for as part of the works, with any appropriate offsets maintained or diversions agreed where applicable.

Priority 5: Discharged to a Combined Sewer

- 4.1.21 The location of the nearest combined sewer system is unknown at this stage. Regardless, given that a higher priority destination is achievable, there are no proposals at this time to discharge surface water generated post-development to the public combined sewer network.

4.2 Standard 2: Management of Everyday Rainfall (Interception)

- 4.2.1 Standard 2 of the National Standards for SuDS identifies that source control measures should be applied, such that at least the first 5mm of rainfall for most rainfall events is intercepted. A SuDS approach should be adopted, to ensure this is delivered alongside water quality improvement, amenity value, and biodiversity benefits (Standards 4, 5, and 6).
- 4.2.1 The proposals are to utilise permeable surfaces in private, non-adoptable areas where an engineerable solution can be achieved, even if a full infiltration solution is not viable. The permeable surfaces can be designed to allow for natural losses to occur and the first 5mm of rainfall to be dealt with at source, as required by Standard 2.
- 4.2.2 Bioretention areas are proposed along the highway, these will likely be in the form of tree pits and/or raingardens, although the specific are to be determined at the detailed design stage as part of a reserved matters application following further discussion with Wiltshire Council Highways regarding design requirements for adoption.

4.3 Standard 3: Management of Extreme Rainfall and Flooding

- 4.3.1 The total site covers 2.16ha and is understood to be 100% permeable at present. Based on the outline proposals, the development area covers a smaller 1.75ha. At present, it is thought that surface water would drain to ground over an extended period, with any run-off generated during high rainfall events entering the highways drainage within Turnpike Close given topography of the site.

Pre-Development Greenfield Rates

- 4.3.2 The peak rates and volumes of run-off generated by the site have been calculated for the peak events shown in **Table 1**. The surface water run-off rates have been calculated using the FEH Method (2025), utilising the proposed post-development impermeable area as requested by WC.
- 4.3.3 The peak rates and volumes of run-off generated by the site have been calculated for the peak events shown in **Table 1**. The surface water run-off rates have been calculated using the FEH Method. The full calculations in **Appendix J** are based on an area of 1ha, and these rates and volumes are calculated pro-rata for the proposed development area of 1.75ha.

Table 1: Pre-Development Surface Water Run-Off Rates (Betts Hydro, 2026)

Dev. Area	Run-Off Rates				Run-Off Volumes	
	1 In 1yr	1 In 30yr	1 In 100yr	QBar	1 In 1yr	1 In 100yr
1.75ha	4.6l/s	11.2l/s	14.0l/s	5.8l/s	169.4cu.m	488.6cu.m

Post-Development Runoff Rates

- 4.3.4 Due to the nature of the development proposals, it is understood that the impermeable areas of the site will increase. We have estimated that the post-development impermeable areas will cover to 55% of the development area (this equates to 0.963ha). In accordance with WC's requirements, an additional 10% allowance has also been added to the proposed impermeable area as part of this assessment to account for urban creep (totalling 1.138ha).
- 4.3.5 These proposed impermeable areas will however be defined as part of the detailed drainage design work at RM stage. The unrestricted post-development run-off rates generated by the assumed impermeable area are detailed in **Table 2**.

Table 2: Post-Development Un-Restricted Run-Off Rates (Betts Hydro, 2026)

Proposed Imp. Area (Plus 10% UC)	Run-Off Rates (l/s)			Run-Off Volumes (cu.m)	
	1 In 1yr	1 In 30yr	1 In 100yr + 45% CC	1 in 1yr	1 in 100yr
1.138ha	57.3	110.7	210.2	274.4	761.8

- 4.3.6 In accordance with national and local planning policies, it is necessary to restrict surface water run-off rates, where at all practical, to mimic a pre-development greenfield situation. The pre-development greenfield runoff rates are detailed in **Table**

2 (shown previously). Full details on the proposed rates of discharge can be found in subsequently.

Proposed Discharge Rates

- 4.3.7 In accordance with the SuDS Manual (CIRIA) and the National Standards for SuDS all sites should endeavour to achieve as close to pre-development greenfield rates as is viable. Wiltshire Councils drainage policy indicates the rainfall methodology which produces the worst-case rainfall model for the site should be used, in this instance the FEH is the conservative model.
- 4.3.8 The LLFA have requested that a 30% betterment on the pre-development greenfield rate be utilised for the site. The pre-development greenfield rate (QBar) is calculated to be 5.3l/s (based on 3.3l/s/ha). The proposed rate of discharge for the development is therefore 4.0l/s. The LLFA (WC) will need to agree to this proposed discharge rate as part of their consultation.
- 4.3.9 Restricting the rate of discharge will generate a requirement to provide onsite stormwater storage for the extreme rainfall events. Hydraulic calculations have been provided as part of the Preliminary Surface Water Drainage Layout works (see **Appendix I**). Detailed design in due course will determine with accuracy the attenuation requirements considering engineering constraints and hydraulics.
- 4.3.10 The surface water scheme for the development will need to be designed to cater for the surface water run-off generated in the events up to and including the 1 in 100yr return period event with 45% allowance for climate change. The hydraulic calculations discussed previously indicate this is achieved within the design.
- 4.3.11 A below ground pipe network and above ground swale feature will be utilised for conveyance. The required onsite attenuation will be provided within an above ground retention basin and below ground geo-cellular crates. The specific means are to be determined during the detailed design stage.

Climate Change Allowance

- 4.3.12 In light of the future uncertainties Climate Change should be accounted for within the design of all new developments. Climate change factors have been considered and any increase in the level of flood risk (to the site) from climate change is likely to be related to the increase in rainfall intensity and duration and its impact upon the surface water drainage system.
- 4.3.13 In accordance with the Avon Bristol and North Somerset Streams Management Catchment peak rainfall allowances, the upper end allowance (**Table 4**) for the 2070's has been utilised (based on 100yr design life).

Table 3: Change to Peak Rainfall Compared to 1981-2000 Baseline (Environment Agency, 2026)

PROJECTIONS	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE 2070'S
Upper End Allowance	45%
Central Allowance	25%

4.4 Standard 4: Water Quality

- 4.4.1 To ensure that surface waters, ground waters, and coastal waters are protected, the National Standards for SuDS (Standard 4) requires appropriate management of the quality of surface water runoff post-development. This should be provided, via a SuDS based approach.
- 4.4.2 Permeable paving is to be used within private drive areas where engineerable solution can be achieved. Even if a full infiltration solution is not viable, the permeable surfaces can be designed to allow for natural losses to occur (allowing the first 5mm of rainfall to be dealt with at source), but with a connection to the proposed main drainage serving the development proposals. This would allow for filtration through the subgrade and thus provide treatment of water quality.
- 4.4.3 The proposals are also to include bioretention areas along the highway, these will likely be in the form of tree pits and/or raingardens, although the specific are to be determined at the detailed design stage as part of a reserved matters application following further discussion with Wiltshire Council Highways regarding design requirements for adoption.
- 4.4.4 A swale feature and retention basin are also proposed as part of the development, water quality improvement can be achieved through appropriate planting (which will allow some filtration to occur), and via the settling of particulate pollutants.
- 4.4.5 Ultimately, the full scope of the SuDS to be provided within the proposed development parcels will be confirmed at the detailed design. To demonstrate compliance with the National Standards for SuDS, a Water Quality Assessment has been prepared, as included within **Appendix K**. This demonstrates that at this stage, sufficient treatment of water quality can be provided post-development.

4.5 Standard 5: Amenity

- 4.5.1 Within new development proposals, SuDS features should be implemented to provide benefit to amenity. This is to be achieved through the creation of multi-functional places and landscapes.
- 4.5.2 The inclusion of bio-retention areas along the highways will provide visual amenity through the development proposals. Alongside delivery of benefit to water quality (Standard 4) and biodiversity (Standard 6), these will be situated prominently through the development proposals to maximise positive visual impact.
- 4.5.3 The proposals are also to include a swale feature and retention basin, providing amenity value through multi-functional public open space. The amenity value provided by has been maximised where at all practical, by situating these within proximity to proposed footpaths.

4.6 Standard 6: Biodiversity

- 4.6.1 In accordance with Standard 6, the proposed SuDS features will look to maximise biodiversity benefit for the intended design lifetime (min. 100yrs). This will primarily be achieved through the incorporation of bio-retention areas, a swale and a retention basin.
- 4.6.2 All associated planting proposed will be native to the area and provide benefits to natural and local ecosystems, the specific design and criteria will be confirmed during detailed design, in conjunction with the project ecologist and landscape architect.

4.7 Standard 7: Design of Drainage for Construction, Operation, Maintenance, Decommissioning and Structure Integrity

- 4.7.1 To demonstrate compliance with Standard 7, the National Standards for SuDS require that a Maintenance and Management Plan is prepared. This is to ensure that the objectives set out within Standards 1 – 6 are delivered and maintained for lifetime of the development proposals.
- 4.7.2 A SuDS Maintenance and Management Plan will be prepared as part of a reserved matters application to identify the typical maintenance requirements in accordance with CIRIA (2015) for the SuDS features that have been considered.

5.0 FOUL WATER MANAGEMENT

- 5.1 WW sewer records have identified a public foul water sewer within Turnpike Close to the east of the site (sewer records included in **Appendix C**). The proposals are to discharge foul water generated by the site to this system within Turnpike Close, downstream of FWMH6001. Detailed design will need to confirm the exact point of connection.
- 5.2 Based on the proposals for the construction of 48no. residential dwellings, the approximate peak foul water flows generated by the site have been calculated at 2.2l/s, based on 4000 litres per dwelling per 24 hours as per the guidance contained within the Design and Construction Guidelines (DCG)
- 5.3 Consent for work to the public sewer network will be required from WW at an early stage, this includes consent for the proposed rates of discharge and the points of connection. Any offsite asset routing works will also need to be considered in terms of consents with the relevant offsite landowners (Highways Authority).

6.0 SUMMARY AND CONCLUSIONS

- 6.0.1 This assessment has been completed in accordance with National Planning Policy Framework and Planning Practice Guidance to consider the most appropriate sustainable drainage options for the proposals in line with the National Standards for Sustainable Drainage Systems (July 2025). There are five methods that have been reviewed for the management and discharge of surface water, these may be applied individually or collectively and should be applied in the order of priority.
- 6.0.2 Rainwater harvesting is not considered viable at plot or estate scale due to practical and financial constraints, although rainwater butts are recommended to encourage water reuse. Based on the ground conditions identified and Soakaway testing undertaken by Brownfield Solutions, it is understood that infiltration will not offer a suitable means of managing surface water generated by the site.
- 6.0.3 The nearest watercourse to the site is Semington Brook (Main River), located 735m northeast of the site. At present, given the topography and lack natural drainage features, it is understood that surface water run-off generated drains informally to ground over an extended period, with overland flows generated in high rainfall events believed to drain informally to the highways drainage system within Turnpike Close
- 6.0.4 Review of Wessex Water sewer records have identified a private surface water sewer within Turnpike Close to the east of the site. The right to form a connection to this private surface water sewer is upheld within the first schedule of the official 1982 conveyance. The proposals are therefore to discharge surface water flows generated by the site to this surface water sewer via MH6123.
- 6.0.5 The proposals are to provide surface water conveyance via a below ground pipe network and above ground swale feature. An above ground retention basin and below ground cellular storage are to be utilised for stormwater storage. Lined permeable paving is proposed as part of the development to provide the opportunity for natural losses, with bioretention areas also proposed along the highway extent, the specific of which are to be confirmed following further discussions with Wiltshire Highways regarding adoption standards.
- 6.1.1 In accordance with the SuDS Manual (CIRIA) and the National Standards for SuDS all sites should endeavour to achieve as close to pre-development greenfield rates as is viable. The LLFA have requested that a 30% betterment on the pre-development greenfield rate be utilised for the site. The pre-development greenfield rate (QBar) is calculated to be 5.3l/s (based on 3.3l/s/ha). The proposed rate of discharge for the development is therefore 4.0l/s. The LLFA (WC) will need to agree to this proposed discharge rate as part of their consultation.
- 6.0.7 The proposed surface water drainage system will be designed to cater for the surface water run-off generated in the events up to and including the 1 in 100yr return period event with 45% allowance for Climate Change. A Preliminary Surface Water Drainage Layout has been completed to demonstrate the proposals and the viability of a gravity connection based on existing ground levels. Accompanying network calculations have also been provided to demonstrate sufficient stormwater storage can be provided based on the proposed layout.

- 6.0.8 Detailed design in due course will confirm with accuracy, any stormwater storage requirements, along with finished floor levels, ground levels and the specific SuDS bioretention features to be included along the highway extent.
- 6.0.9 The proposals are to discharge foul water generated by the site to the public foul water sewer system within Turnpike Close. Any offsite asset routing works will need to be considered in terms of consents with the relevant offsite landowners (Highways Authority). Consent for work to the public sewer network will be required from WW at an early stage, this includes consent for the proposed rates of discharge and the points of connection.
- 6.0.10 This Drainage Management Strategy has been prepared in consultation with the relevant interested parties. The report is commensurate with the scale and nature of the development, and the development is appropriate in accordance with the National Standards for SuDS.

7.0 RECOMMENDATIONS

- 7.1 Further consultation will be required with Wiltshire Highways at the detailed design stage in regard to the design requirements of proposed bioretention areas along the highways extents.
- 7.2 By keeping the finished floor levels elevated relative to the externals, this should help create an overland flood flow route in the event of a breach or any other source of flooding that could lead to overland flow.
- 7.3 Any overland flows generated by the development must be carefully controlled. Safe avenues directing overland flow away from any existing and proposed buildings are advised.
- 7.4 To minimise the flood risk to the neighbouring properties it is recommended that the surface water run-off generated by the proposals be managed effectively with the peak rates of run-off being restricted to the equivalent of the pre-development situation (with betterment where required).
- 7.6 The proposed onsite surface water drainage system will need to be sized to contain up to and including the 1 in 100yr return period storm event with a 45% allowance for climate change being contained onsite.
- 7.7 Any offsite works to accommodate the drainage proposals will need to be discussed with the relevant parties during the detailed design stage.
- 7.8 As with any drainage system, blockages within either the foul or surface water system have the potential to cause flooding or disruption. It is important that should any drainage systems not be offered for adoption to either the Water Company or the Local Authority then an appropriate maintenance regime should be scheduled with a suitably qualified management company for these private drainage systems.
- 7.9 If an extreme rainfall event exceeds the design criteria for the drainage system it is likely that there will be some overland flows that are unable to enter the system, it is important that these potential overland flows are catered for within the proposed development site if the capacity of the drainage system is exceeded.

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HR Wallingford UK SuDS – <https://www.uksuds.com/>
Rainfall Climate Change Allowance - <https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall>
Streetmap – <http://www.streetmap.co.uk/>
United Utilities - <https://www.unitedutilities.com/>

APPENDIX A: NPPF + PPG EXTRACTS

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14. Meeting the challenge of climate change, flooding and coastal change

161. The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Planning for climate change

162. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures⁶¹. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.
163. The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of potential climate change impacts.
164. New development should be planned for in ways that:
- a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through incorporating green infrastructure and sustainable drainage systems; and
 - b) help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings in plans should reflect the Government's policy for national technical standards.
165. To help increase the use and supply of renewable and low carbon energy and heat, plans should:
- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

⁶¹ In line with the objectives and provisions of the Climate Change Act 2008.

- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
 - c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.
166. In determining planning applications, local planning authorities should expect new development to:
- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
 - b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
167. Local planning authorities should also give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights). Where the proposals would affect conservation areas, listed buildings or other relevant designated heritage assets, local planning authorities should also apply the policies set out in chapter 16 of this Framework.
168. When determining planning applications for all forms of renewable and low carbon energy developments and their associated infrastructure, local planning authorities should:
- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future;
 - b) recognise that small-scale and community-led projects provide a valuable contribution to cutting greenhouse gas emissions;
 - c) in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site.
169. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Planning and flood risk

170. 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.

171. 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.
172. All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:
 - a) applying the sequential test and then, if necessary, the exception test as set out below;
 - b) safeguarding land from development that is required, or likely to be required, for current or future flood management;
 - c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and
 - d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.
173. A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in future from any form of flooding, by following the steps set out below.
174. Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test.
175. The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).
176. Applications for some minor development and changes of use⁶² should also not be subject to the sequential test, nor the exception test set out below, but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.

⁶² This includes householder development, small non-residential extensions (with a footprint of less than 250m²) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park

177. Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.
178. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:
- a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
 - b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
179. Both elements of the exception test should be satisfied for development to be allocated or permitted.
180. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.
181. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment⁶³. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
 - b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
 - c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

home site, where the sequential and exception tests should be applied as appropriate.

⁶³ A site-specific flood risk assessment should be provided for all development 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.

- d) any residual risk can be safely managed; and
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

182. Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:
- a) take account of advice from the Lead Local Flood Authority;
 - b) have appropriate proposed minimum operational standards; and
 - c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.

Coastal change

183. In coastal areas, planning policies and decisions should take account of the UK Marine Policy Statement and marine plans. Integrated Coastal Zone Management should be pursued across local authority and land/sea boundaries, to ensure effective alignment of the terrestrial and marine planning regimes.
184. Plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas and not exacerbating the impacts of physical changes to the coast. They should identify as a Coastal Change Management Area any area likely to be affected by physical changes to the coast, and:
- a) be clear as to what development will be appropriate in such areas and in what circumstances; and
 - b) make provision for development and infrastructure that needs to be relocated away from Coastal Change Management Areas.
185. Development in a Coastal Change Management Area will be appropriate only where it is demonstrated that:
- a) it will be safe over its planned lifetime and not have an unacceptable impact on coastal change;
 - b) the character of the coast including designations is not compromised;
 - c) the development provides wider sustainability benefits; and
 - d) the development does not hinder the creation and maintenance of a continuous signed and managed route around the coast⁶⁴.

⁶⁴ As required by the Marine and Coastal Access Act 2009.

186. Local planning authorities should limit the planned lifetime of development in a Coastal Change Management Area through temporary permission and restoration conditions, where this is necessary to reduce a potentially unacceptable level of future risk to people and the development.

How can neighbourhood plans and neighbourhood development/community right to build orders take account of coastal change?

In any instance where a Neighbourhood Area is proposed in a Coastal Change Management Area, careful attention should be paid to the guidance on [what development would be appropriate in such an area](#), including whether [time-limiting planning permissions](#) are needed. The local planning authority will need to be consulted about existing and anticipated levels of risk, and the types of development that may or may not be appropriate.

See related policy in [paragraphs 170 to 173 of the National Planning Policy Framework](#) (<https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change>).

Paragraph: 076 Reference ID: 7-076-20220825

Revision date: 25 08 2022

Flood Zone and flood risk tables

- Table 1: Flood Zones
- [National Planning Policy Framework Annex 3 - Flood risk vulnerability classification](#) (<https://www.gov.uk/guidance/national-planning-policy-framework/annex-3-flood-risk-vulnerability-classification>)
- [Table 2: Flood risk vulnerability and flood zone 'incompatibility'](#)

Paragraph: 077 Reference ID: 7-077-20220825

Revision date: 25 08 2022

Table 1: Flood Zones

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)

Flood Zone	Definition
Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the [Strategic Flood Risk Assessment \(https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment\)](https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment) when considering location and potential future flood risks to developments and land uses.

Paragraph: 078 Reference ID: 7-078-20220825

Revision date: 25 08 2022

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓ *

Key:

✓ Exception test is not required

X Development should not be permitted

Notes to table 2:

- This table does not show the application of the [Sequential Test](#) which should be applied first to guide development to the lowest flood risk areas; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and [Exception Tests](#) do not need to be applied to those developments set out in [National Planning Policy Framework footnote 56](#) (<https://www.gov.uk/guidance/national-planning-policy-framework/14-meeting-the-challenge-of-climate-change-flooding-and-coastal-change>). The Sequential and Exception Tests should be applied to ‘major’ and ‘non major’ development;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

“†” In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

APPENDIX B: EA INFORMATION & CORRESPONDENCE

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Hollie Waud
Betts Hydro
holliewaud@betts-associates.co.uk

Our ref: EIR2025/16511
Date: 22nd July 2025

Dear Hollie Waud,

Thank you for your enquiry which was received on 3rd July 2025. We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Abstract

Name	Product 4
Description	Detailed Flood Risk Assessment Map for BA14 6GY NGR: ST8939160209
Licence	Open Government Licence
Information Warnings	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2025 Ordnance Survey AC0000807064.

Open Data

Environment Agency published datasets are available on the weblink below as part of the Government's 'Open Data' project and are available for you to download free of charge.

Environment Agency published datasets: [Find open data - data.gov.uk](#)

Examples of datasets you may require:

- Flood Map for Planning
- Recorded Flood Outlines
- Historic Flood Map
- Surface Water for Spatial Planning extents

You can also access the Flood Map for Planning here: <https://flood-map-for-planning.service.gov.uk/>

You can also access the Risk of Flooding from Surface Water maps and Risk of Flooding from Reservoirs information here: <https://check-long-term-flood-risk.service.gov.uk/>

If you have requested this information to help inform a development proposal, then you should also note the detail in the attached advisory text on the use of Environment Agency Information and Further Guidance for FRAs.

Recorded Historic Flood Events

We no longer produce pdf copies of the Historic Flood Map. This information is available to search select, and download free of charge as part of the Government's 'Open Data' project as

- Recorded Flood Outlines
- Historic Flood Map

These are GIS layers and can be downloaded from: [Environment Agency - Publishers - data.gov.uk](https://data.gov.uk/publishers/environment-agency)

Please note: we cannot guarantee that this is an exhaustive list of all past flood events in this location. All reasonable care has been taken to ensure that the historical flood event data is as accurate as possible. The Environment Agency will update it's records if new evidence emerges.

Strategic Flood Risk Assessment (SFRA)

When preparing a FRA to support a development proposal in this location you should refer to Wiltshire Council's SFRA Reports Level 1 which is available to download via the following link:

https://www.wiltshire.gov.uk/media/14497/SD67-Wiltshire-Level-1-Strategic-Flood-Risk-Assessment-2024/pdf/SD67_Wiltshire_Level_1_Strategic_Flood_Risk_Assessment_2024.pdf?m=1733141632550

The Wiltshire Council Local Plan is available via this link: <https://www.wiltshire.gov.uk/planning-policy-local-plan-review-consultation>. Please contact Wiltshire Council for further information about their latest SFRA.

Planning Advice

We now charge for aspects of discretionary planning advice including pre-application enquiries. This approach provides advice to developers in two ways. Firstly, there is the provision of 'free' high level advice available to everyone where we give a preliminary opinion on a proposed development. This sets out the environmental constraints together with any issues this raises for us. Should you wish us to obtain more detailed advice, we may be able to provide this through our discretionary chargeable scheme aimed at recovering our costs. If you have questions regarding elements of your enquiry related to Planning and Development, please contact our Sustainable Places team on wx.sp@environment-agency.gov.uk.

Flood Levels

The site is situated outside of Flood Zone 2 and Flood Zone 3. Therefore, we do not have any relevant 1D/ 2D modelled water level or depth data to provide.

Please note: If your site is in Flood Zone 1 but the Flood Map for Planning (FMfP) or your Local Planning Authority's (LPA) Strategic Flood Risk Assessment (SFRA) shows it will be at increased risk of flooding from rivers or the sea during the development lifetime, you should make sure a Flood Risk Assessment (FRA) is done, and treat the site as if it were in Flood Zone 2 when deciding which advice you need to access.

Environmental Permit for Flood Risk Activities

In addition to any other permission(s) that you may have already obtained e.g. planning permission, you may need an environmental permit for flood risk activities (formerly known as Flood Defence Consent prior to 06 April 2016) if you want to do work:

- in, under, over or near a main river (including where the river is in a culvert)
- on or near a flood defence on a main river
- in the flood plain of a main river
- on or near a sea defence

For further information and to check whether a permit is required please visit:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

For any further advice, please email Blandford.frap@environment-agency.gov.uk.

Flood Defences

If there are any formal flood defences within 1km of the site boundary provided, a PDF containing flood defence information will be enclosed. This information has been taken from our Asset Information Management System database (AIMS). A data download can be accessed here: [AIMS Asset Bundle](#)

Please note that flood defences can increase water levels elsewhere e.g. through channels being restricted by defences, or because defences prevent flood water flowing back into the river channel.

Further Information

We advise that you also contact Wiltshire Council by email: drainage@wiltshire.gov.uk, or by phone: 0300 456 0105, based at: Bythesea Road, Trowbridge, Wiltshire, BA14 8JN as they may be able to provide further advice with respect to localised flooding and drainage issues.

Further details about the Environment Agency information supplied can be found on our website: <https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for FRAs:

<https://www.gov.uk/planning-applications-assessing-flood-risk>

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

We hope you find this information helpful. It is provided subject to the guidance below, which we strongly recommend you read.

Yours sincerely

Katy Barnes

Customer & Engagement, Wessex
Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS
Email: wessexenquiries@environment-agency.gov.uk

Enc: Use of Environment Agency Information for Flood Risk Assessments (below)
EIR2025/16511 Defences Map & Data (if applicable)

Use of Environment Agency Information for Flood Risk Assessments (FRAs)

Important

Use of Environment Agency data: you should note that

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment (FRA) where one is required, but the use of Environment Agency information does not constitute such an assessment on its own.
2. As part of your data request, we have provided all of the modelled data we hold for your location. Please note that some of our modelled information may have been produced for purposes other than for flood zone generation. This may mean that some of the modelled data you have been provided with has a lower confidence level, and has not been used in producing our flood map, nor definitively reflects the predicted flood water level at the property/development site scale. To check the suitability of the use of this information in your FRA please contact your local Partnership & Strategic Overview (PSO) team.
3. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or surface water runoff. The information produced by the Local Planning Authority and the Lead Local Flood Authority (LLFA) may assist in assessing other sources of flood risk.
4. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection.
5. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your Local Planning Authority.

Pre-Planning Advice from the Environment Agency

If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:

Pre-application Preliminary Opinion:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Pre-application Charged Service:

<https://www.gov.uk/government/publications/planning-advice-environment-agency-standard-terms-and-conditions>

Depending on the enquiry we may also provide advice on other issues related to our responsibilities, including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

Flood Risk Assessment (FRA) Guidance

You should refer to the Planning Practice Guidance of the National Planning Policy Framework (NPPF) and the Environment Agency's Flood Risk Standing Advice for information about Flood Risk Assessment (FRA) for new development in the different Flood Zones. These documents can be accessed via:

National Planning Policy Framework Planning Practice Guidance:

<http://planningguidance.planningportal.gov.uk/>

Environment Agency advice on FRAs:

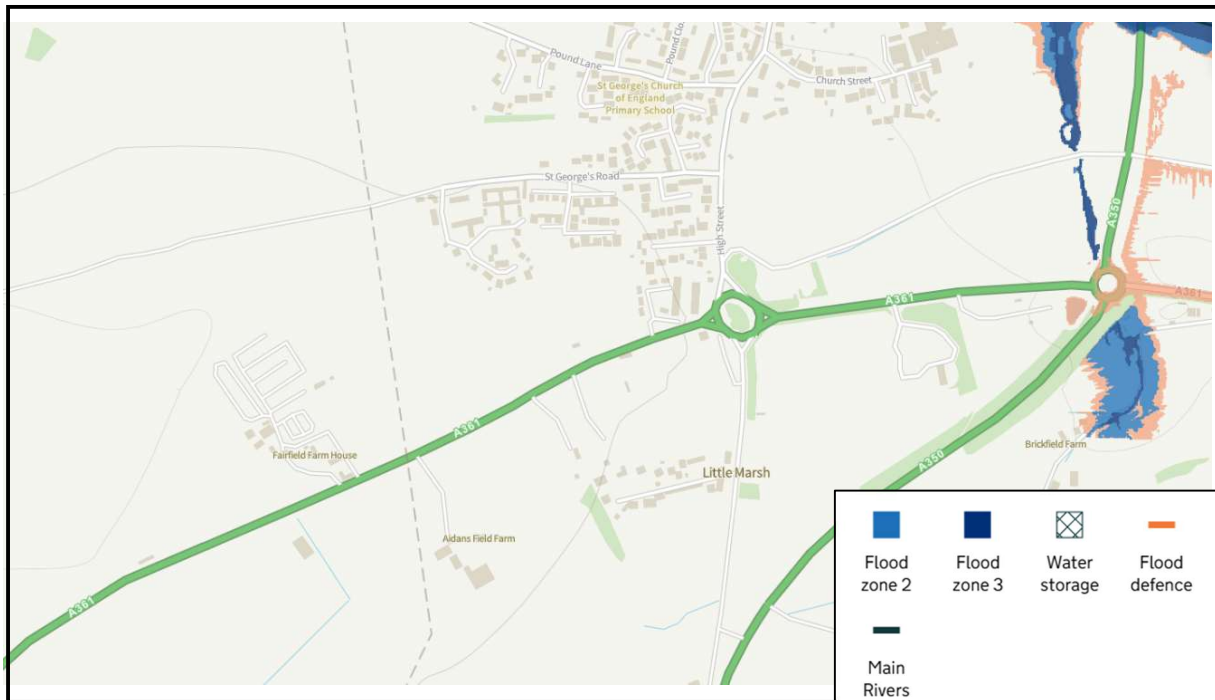
customer service line 03708 506 506
gov.uk/environment-agency

<https://www.gov.uk/flood-risk-assessment-for-planning-applications#when-to-follow-standing-advice>

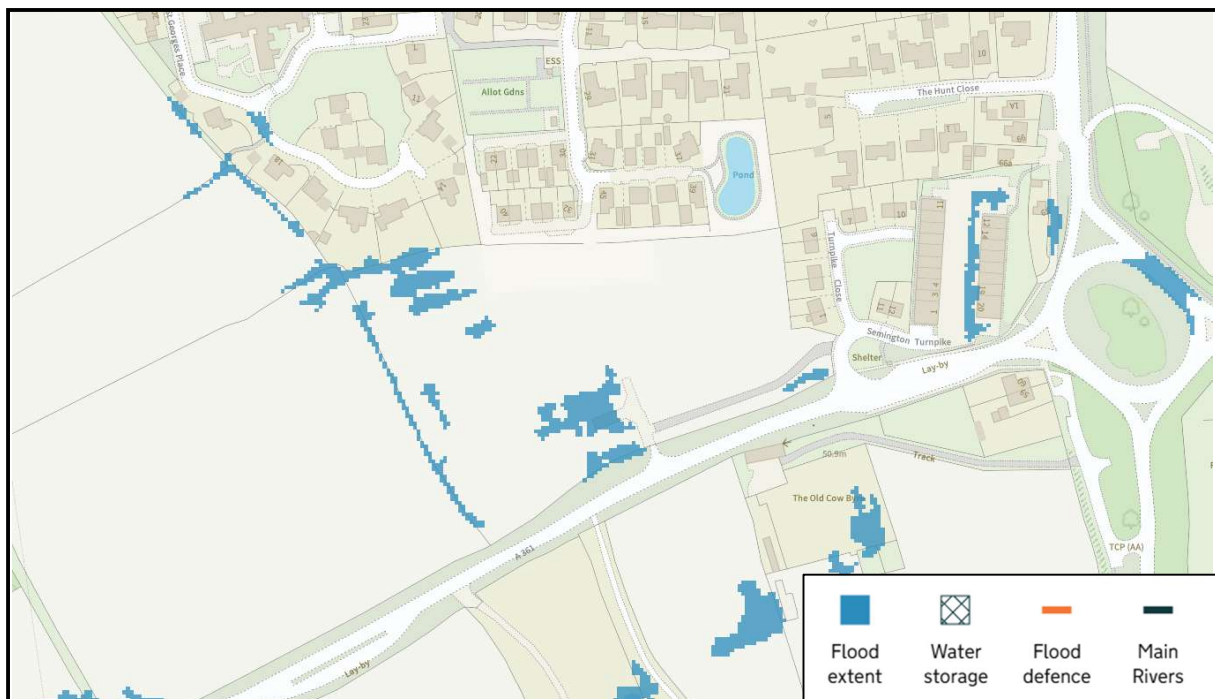
<https://www.gov.uk/government/publications/planning-applications-assessing-flood-risk>

FLOOD MAP FOR PLANNING

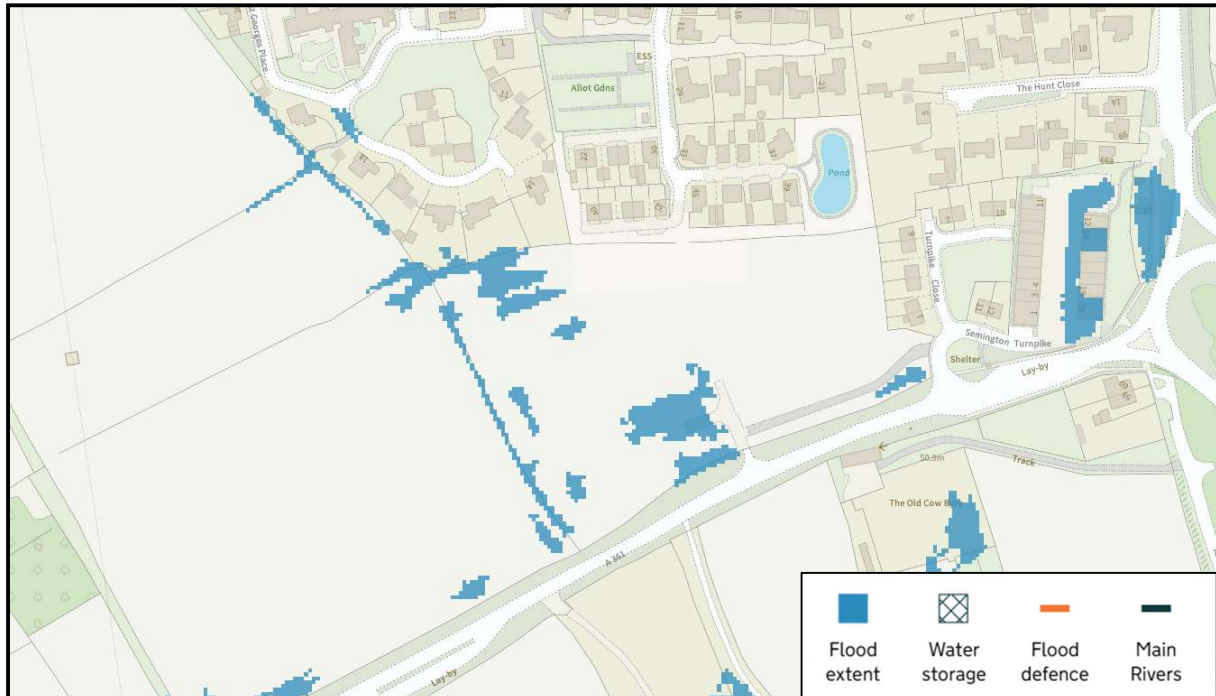
Flood Zones (2070 to 2125)



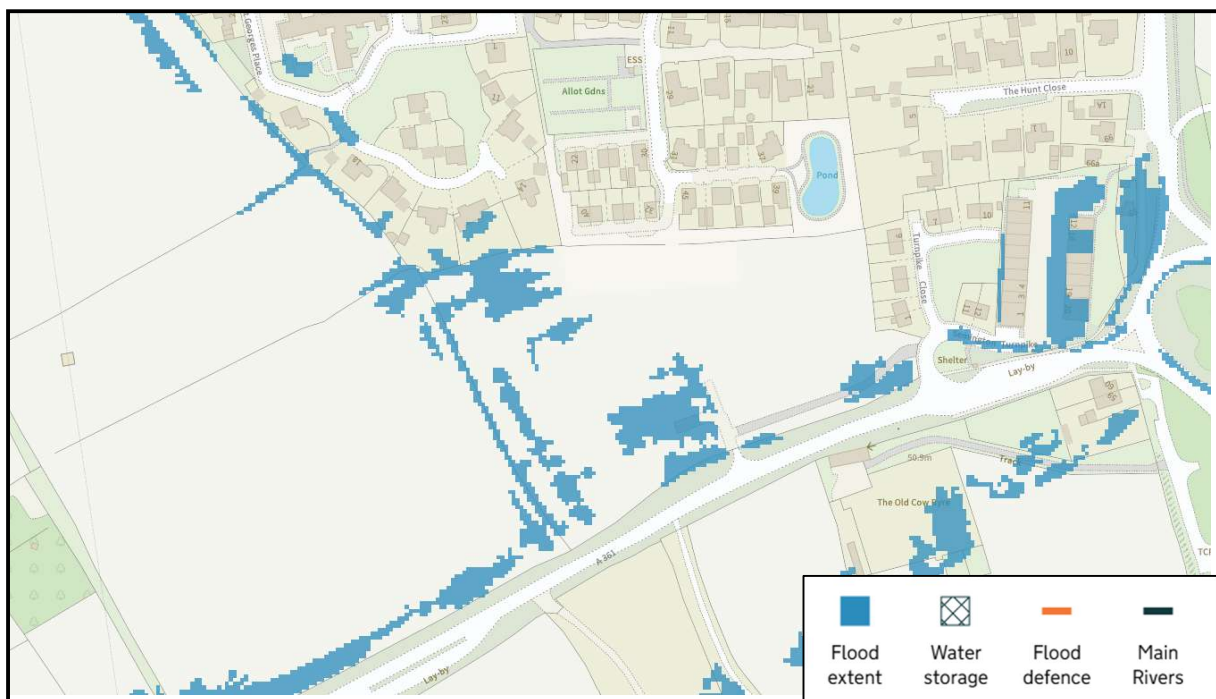
Surface Water Annual Likelihood of Flooding – 1 in 30yr Present Day



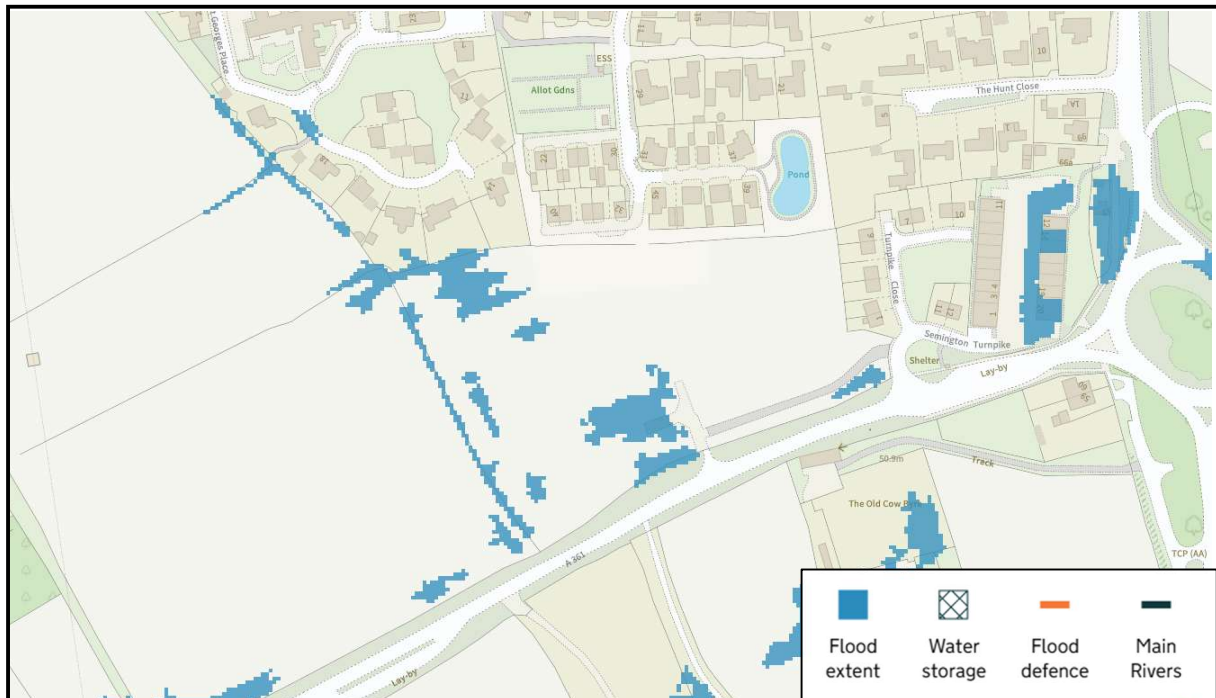
Surface Water Annual Likelihood of Flooding – 1 in 100yr Present Day



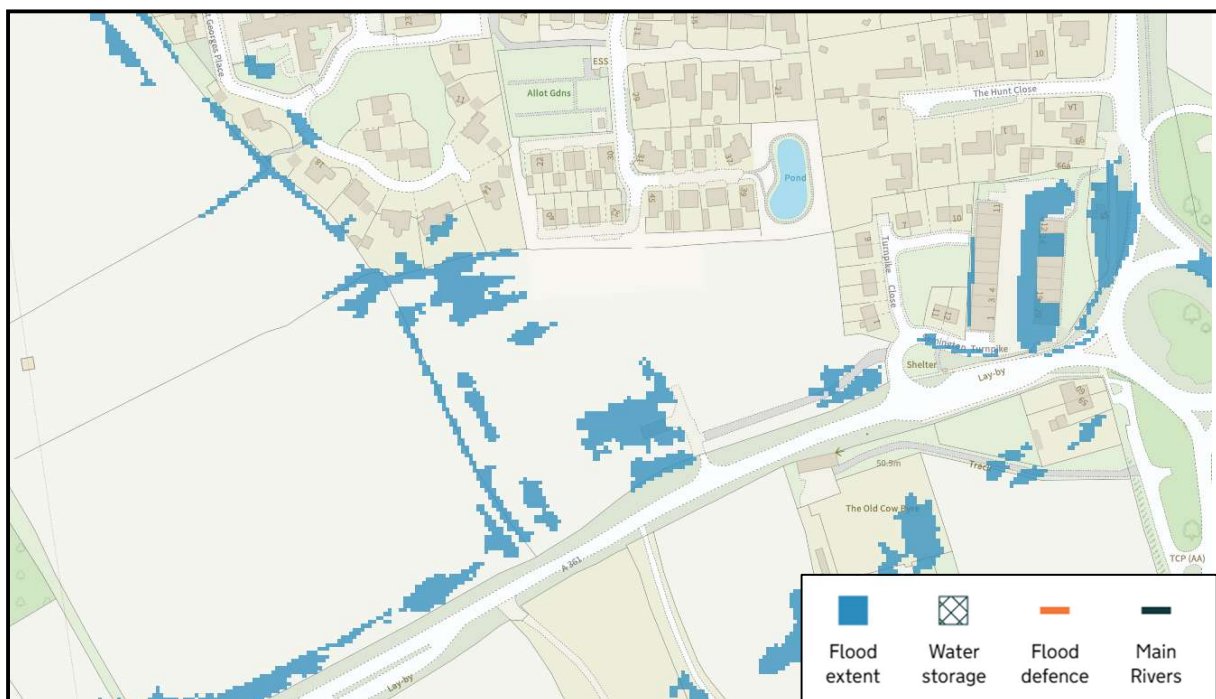
Surface Water Annual Likelihood of Flooding – 1 in 1000yr Present Day



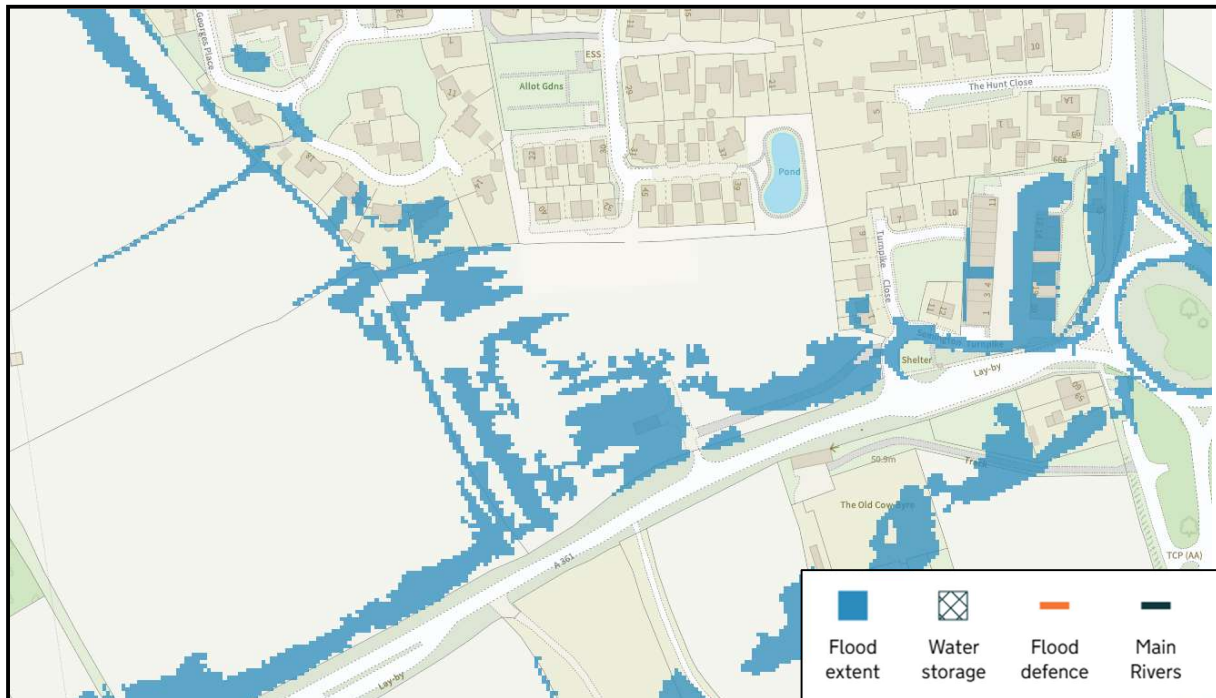
Surface Water Annual Likelihood of Flooding – 1 in 30yr Future (2061-2125)



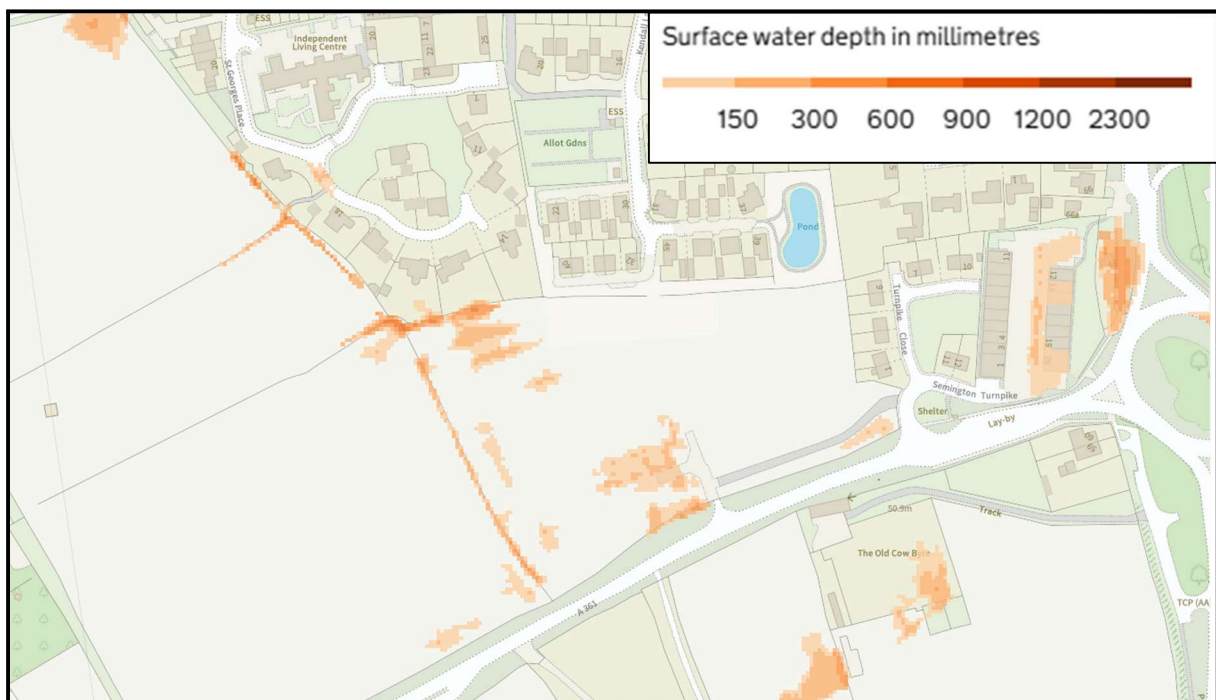
Surface Water Annual Likelihood of Flooding – 1 in 100yr Future (2061-2125)



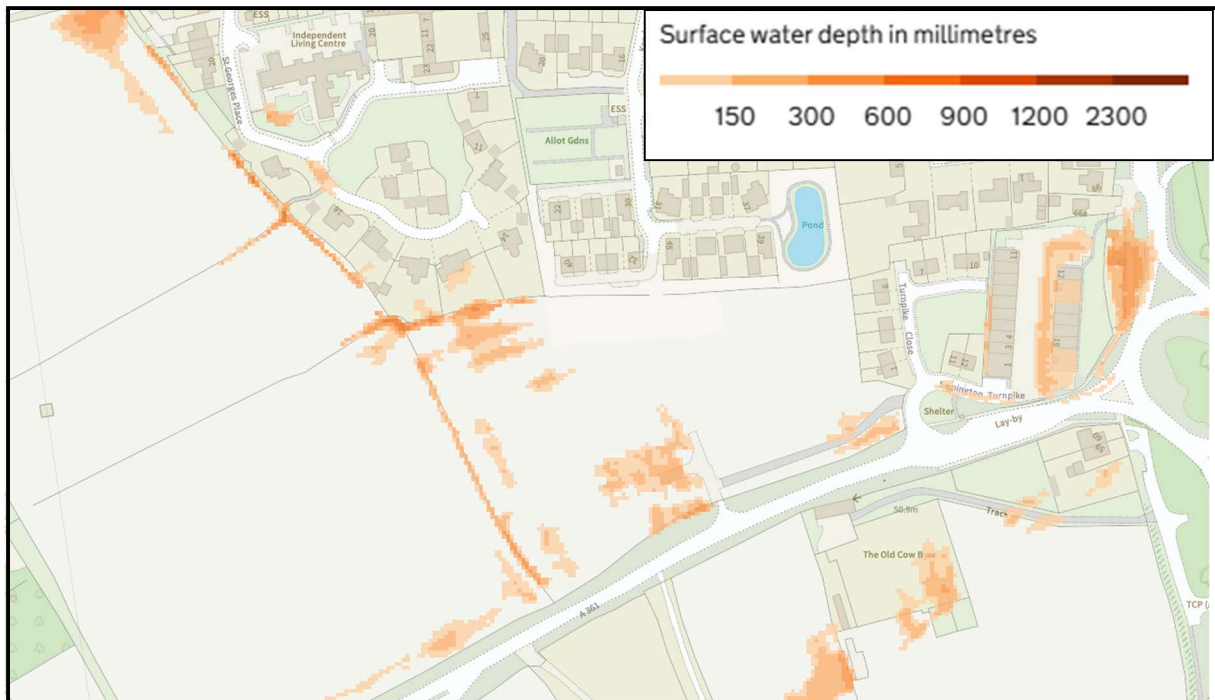
Surface Water Annual Likelihood of Flooding – 1 in 1000yr Future (2061-2125)



Surface Water Annual Likelihood of Flooding Depths – 1 in 30yr Future (2061-2125)

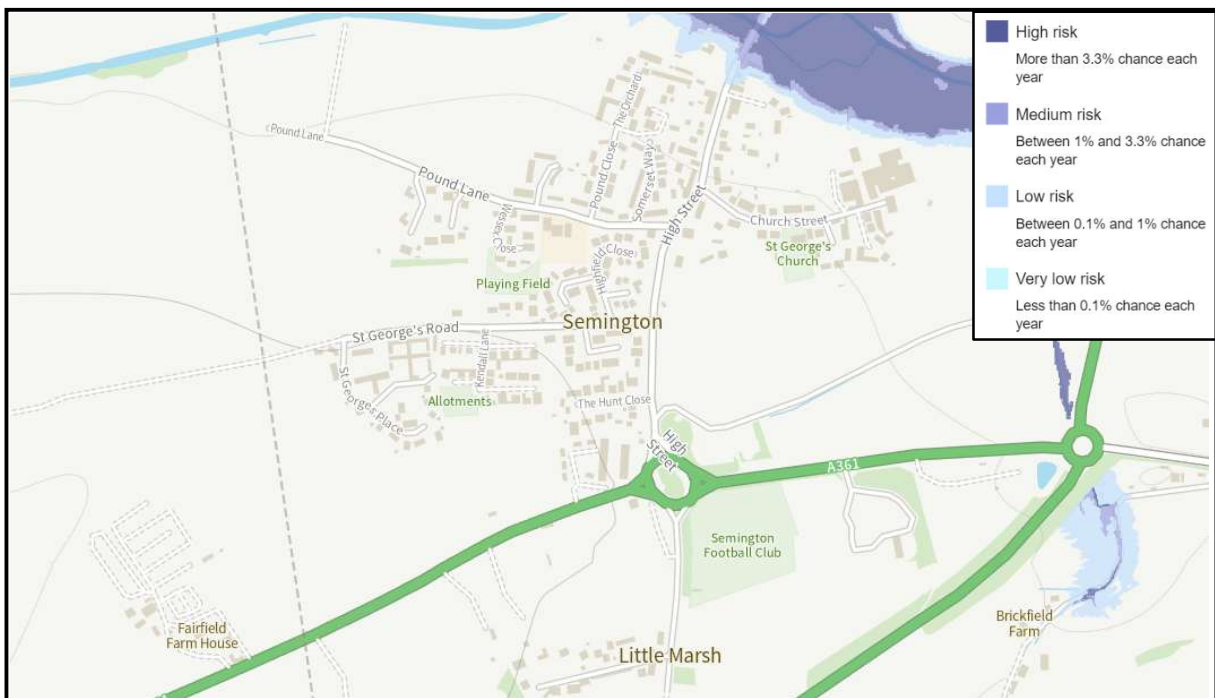


Surface Water Annual Likelihood of Flooding Depths- 1 in 100yr Future (2061-2125)

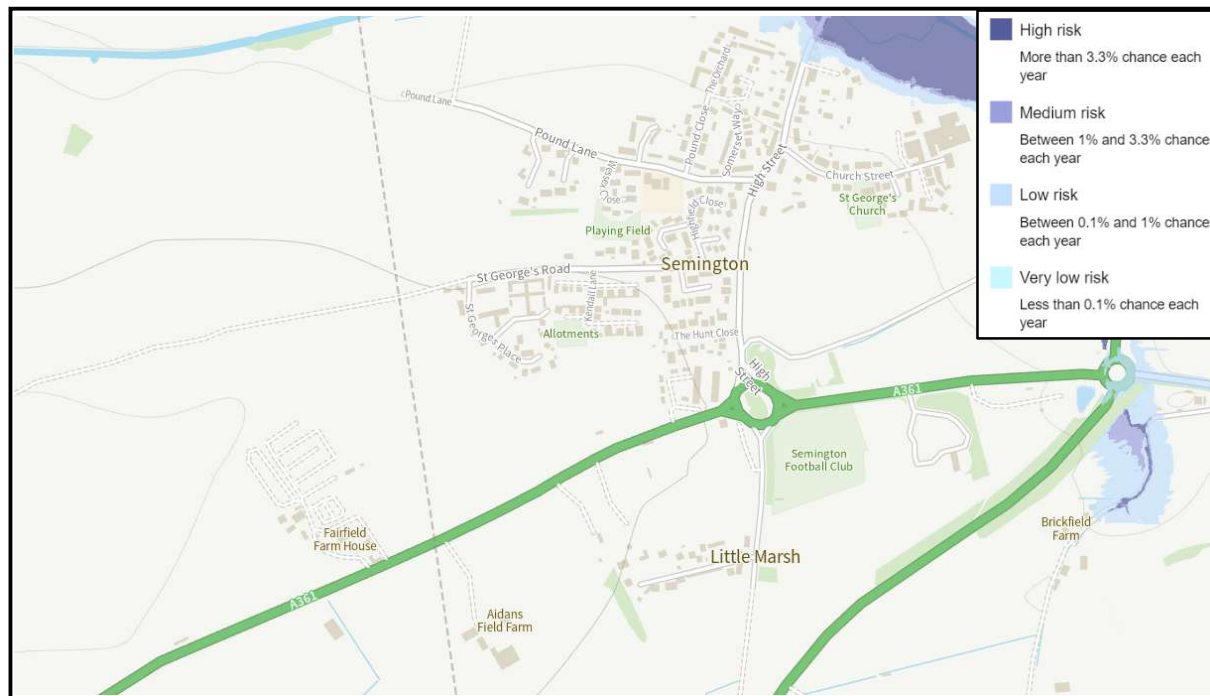


LONG TERM RISK OF FLOODING MAPPING

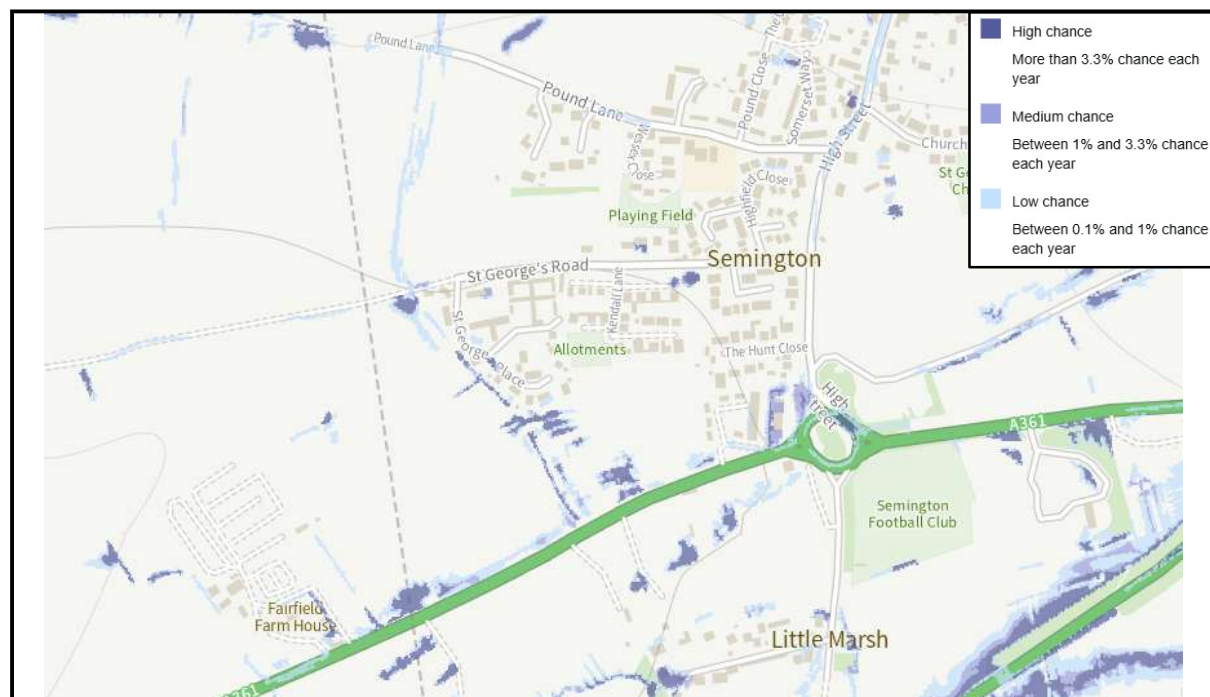
Rivers or Sea – Current



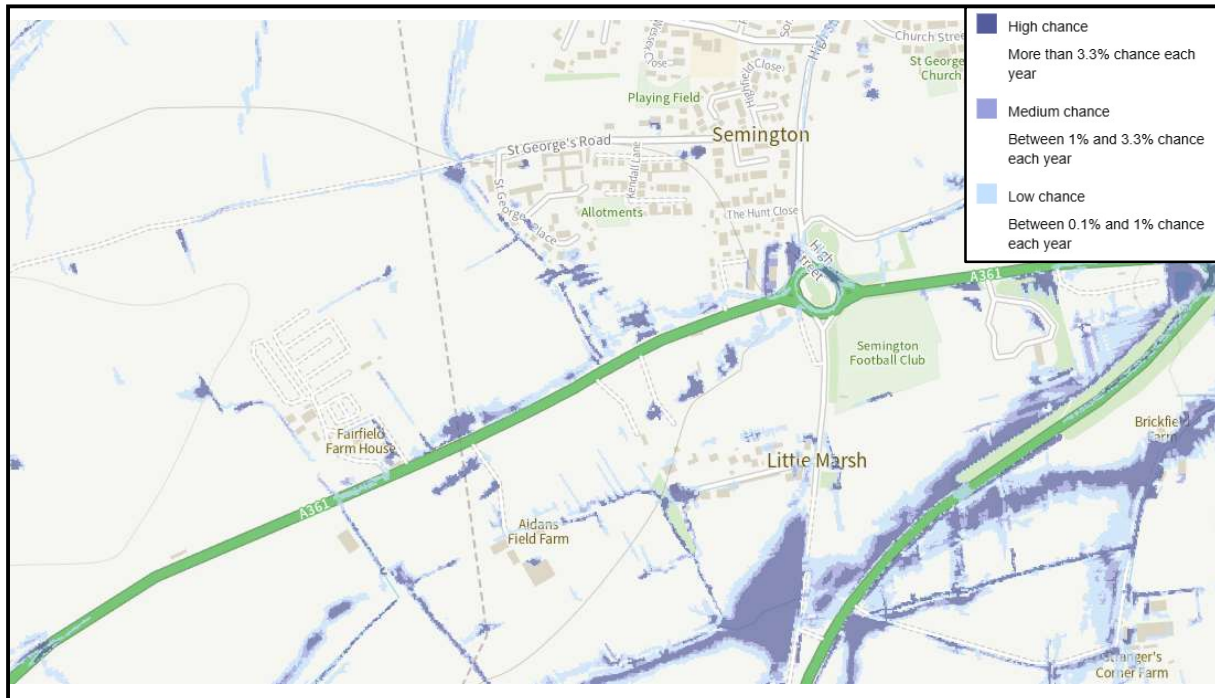
Rivers or Sea – Future (2036-2069)



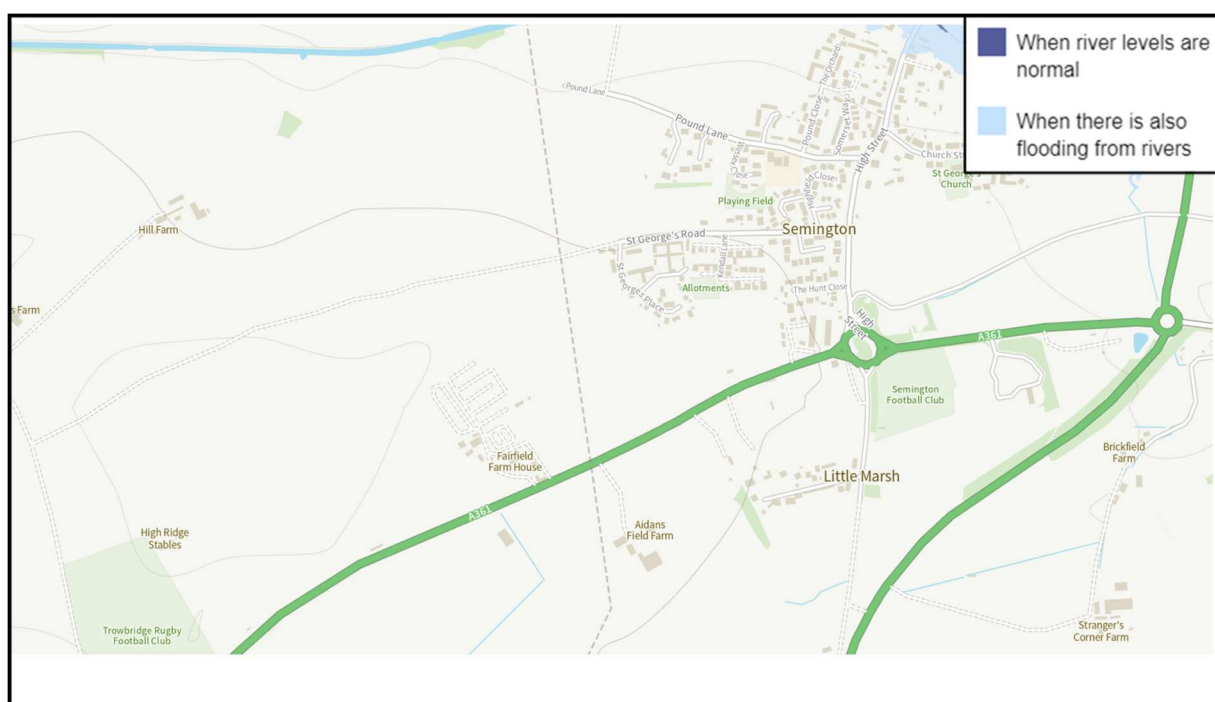
Surface Water – Current



Future (2040-2060)



Long Term Flood Risk - Reservoirs



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APPENDIX C: WW CORRESPONDENCE

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WW Dev Resp PL53247 Turnpike Close, Semington.

From Stella Davies <Stella.Davies@wessexwater.co.uk>

Date Mon 2025-07-07 10:49 AM

To Hollie Waud <holliewaud@betts-associates.co.uk>; Hayley Freeman <Hayley.Freeman@wessexwater.co.uk>

 1 attachment (1,020 KB)

WW Dev Map PL53247 Turnpike Close, Semington.pdf;

Thank you for your recent enquiry. From the information provided it is hard to determine the exact location and site boundary. Only high-level response is available at this stage. Developer is required to submit a new enquiry when housing numbers are known and masterplan is established as this will dictate supply demands.

Map of Wessex Water assets in the vicinity of the area is attached.

-
Foul Sewerage

Wessex Water will accommodate domestic type foul flows in the public foul sewer with connections made on a size for size basis. Developers fund the cost of connecting to the nearest 'size for size' sewer and Wessex Water will manage the sewer network to accommodate foul flows from granted development. We fund this through our infrastructure charging arrangements.

The developer should contact the local development team development.north@wessexwater.co.uk to agree proposals for the Section 104 adoption or Section 106 connection and submit details for technical review prior to construction. We will not accept foul connections from below ground level, foul flows from below ground level must be pumped to ground level prior to connection to the public foul sewer.

Please Note: No surface water runoff or land drainage will be accepted into the foul sewer either directly or indirectly.

Surface Water Drainage:

Surface water must be disposed of via the SuDS Hierarchy which is subject to Building Regulations and NPPF.

No surface water runoff, land drainage or ground water will be accepted into a public sewer that carries sewerage, either directly or indirectly.

The National Planning Policy Framework (NPPF) mandates that Sustainable Drainage Systems (SuDS) must be incorporated into new developments to manage surface water runoff, mitigate flood risks, and provide additional benefits, including enhanced water quality and green spaces. However, the proposed surface water drainage strategy fails to meet NPPF requirements regarding SuDS and sustainable development. Additionally, it omits compliance with the surface water discharge hierarchy.

In line with the drainage hierarchy outlined in Approved Document H of the Building Regulations, Planning Practice Guidance, and the necessity to address water scarcity, all surface water runoff should aim to be discharged as high up the following hierarchy as feasible:

- Rainwater reuse through harvesting or greywater recycling
- An adequate soakaway or other infiltration system

- A hybrid solution involving infiltration and discharge to a surface water body
 - Discharge directly to a surface water body (e.g., an ordinary watercourse)
 - Discharge to a surface water sewer, highway drain, or other drainage system
- Proposed surface water strategy to be agreed with LLFA.

Wessex Water statement on surface water discharge can be accessed via the following link:
<https://developerservices.wessexwater.co.uk/media/m4rjrmg/wwds-dev063p-rainwater-drainage-policy.pdf>

Water Supply – Point of Connection

Water mains are available in the area.

Wessex Water can provide a point of connection for new water mains to be laid into the development site, either through a Section 41 agreement or a self-lay arrangement. Developers may connect to our water network on a 'size for size' basis at their cost and Wessex Water will undertake any network reinforcement that may be required to accommodate granted development, this is funded through our infrastructure charging arrangements.

We can liaise with you to agree the point of connection subject to your site layout.

For more details and guidance for applying to connect to our networks please see our website:
<https://www.wessexwater.co.uk/services/building-and-developing/building-multiple-properties-or-large-developments>

Note: These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this email is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g. changes in development numbers or phasing). Please email review requests to planning.liaison@wessexwater.co.uk

Best Regards,

Stella Davies

Senior Planning Liaison Engineer



Wessex Water

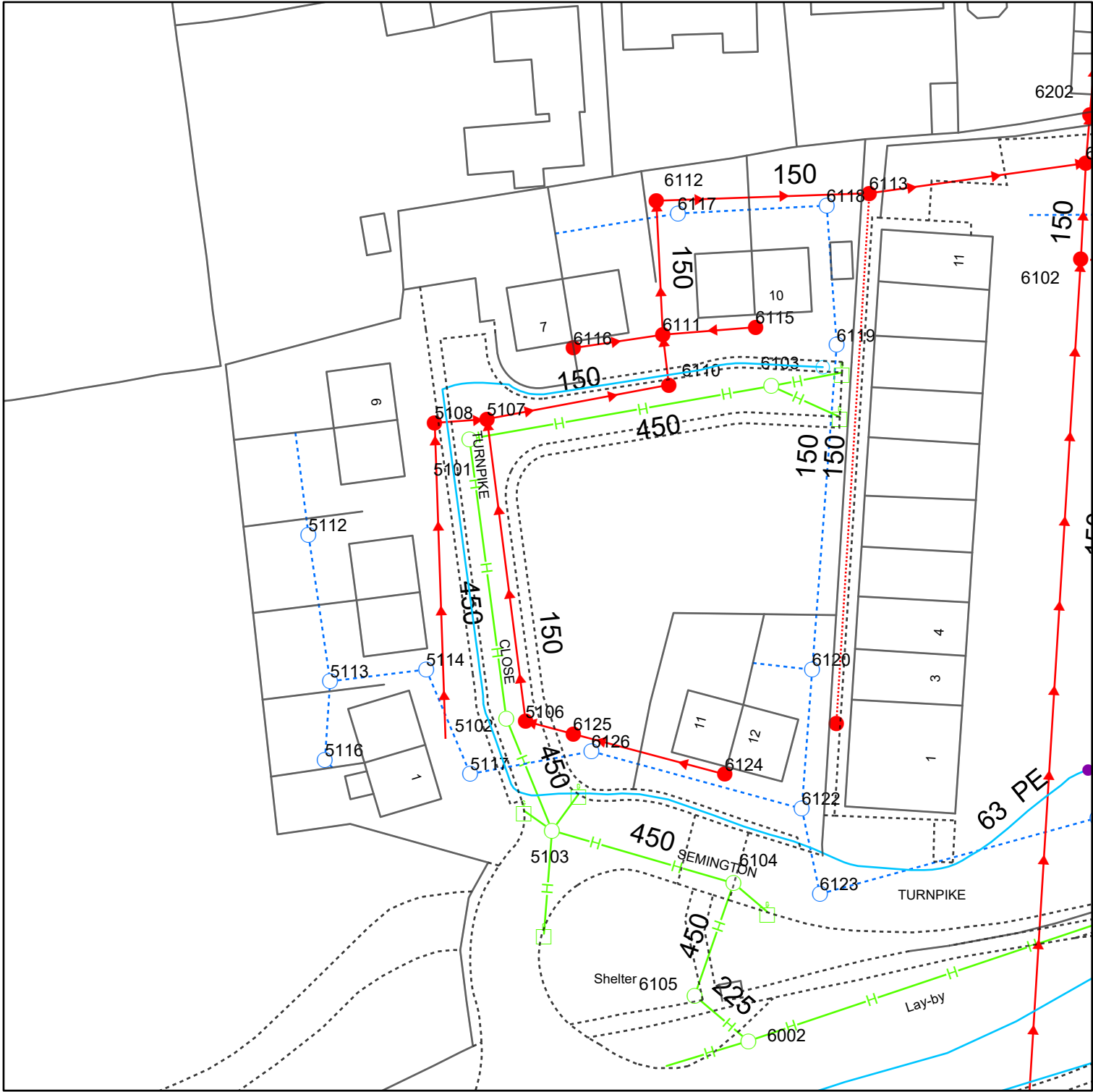
Operations Centre, Claverton Down, Bath BA2 7WW

Web ytl.com | wessexwater.co.uk



Disclaimer

Wessex Water Network Map



Reproduced from the Ordnance Survey map with the permission of the Controller of His Majesty's Stationery Office. © Crown copyright and database rights (2025) OS AC0000848304

WATER MAINS	SEWERS	STRATEGIC PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
Distribution	Foul	Strategic Public	Private	Section 104	Rising Mains	Private Rising Mains
Washout	Surface	Strategic Public	Private	Section 104	Standby Rising Mains	Culverted Watercourse
Raw Water	Combined	Strategic Public	Private	Section 104	EDM Effluent Disposal	Highway Drain
Abandoned	Abandoned	Strategic Public	Private	Section 104	Overflow	Use Unknown
Private	Colours generally indicate the use of the sewer/drain (i.e. Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow). Some styles of line and symbol are shown on the key in sample/typical colours.	Strategic Public	Private	Section 104	Syphon	Status Unknown
FITTINGS	STRUCTURES	Pumping Station - Surface	Pumping Stn - Foul/Combined	Section 104	Attenuation Tank	Chamber
Hydrant	Manhole - Foul	Gully	Vent Column	Section 104	Storage Tank	Tunnel
Other	Manhole - Surface	Rodding Eye	Catchpit	Section 104		Interceptor
	Manhole - Combined	Flushing Chamber	Soakaway	Section 104		
	Inlet	Non Return Valve	Air Valve	Section 104		
	Outfall	Hatch Box	Washout	Section 104		
	Lamphole					
	Bifurcation - Foul					
	Bifurcation - Surface					
	Bifurcation - Combined					
	Combined Sewage Overflow					

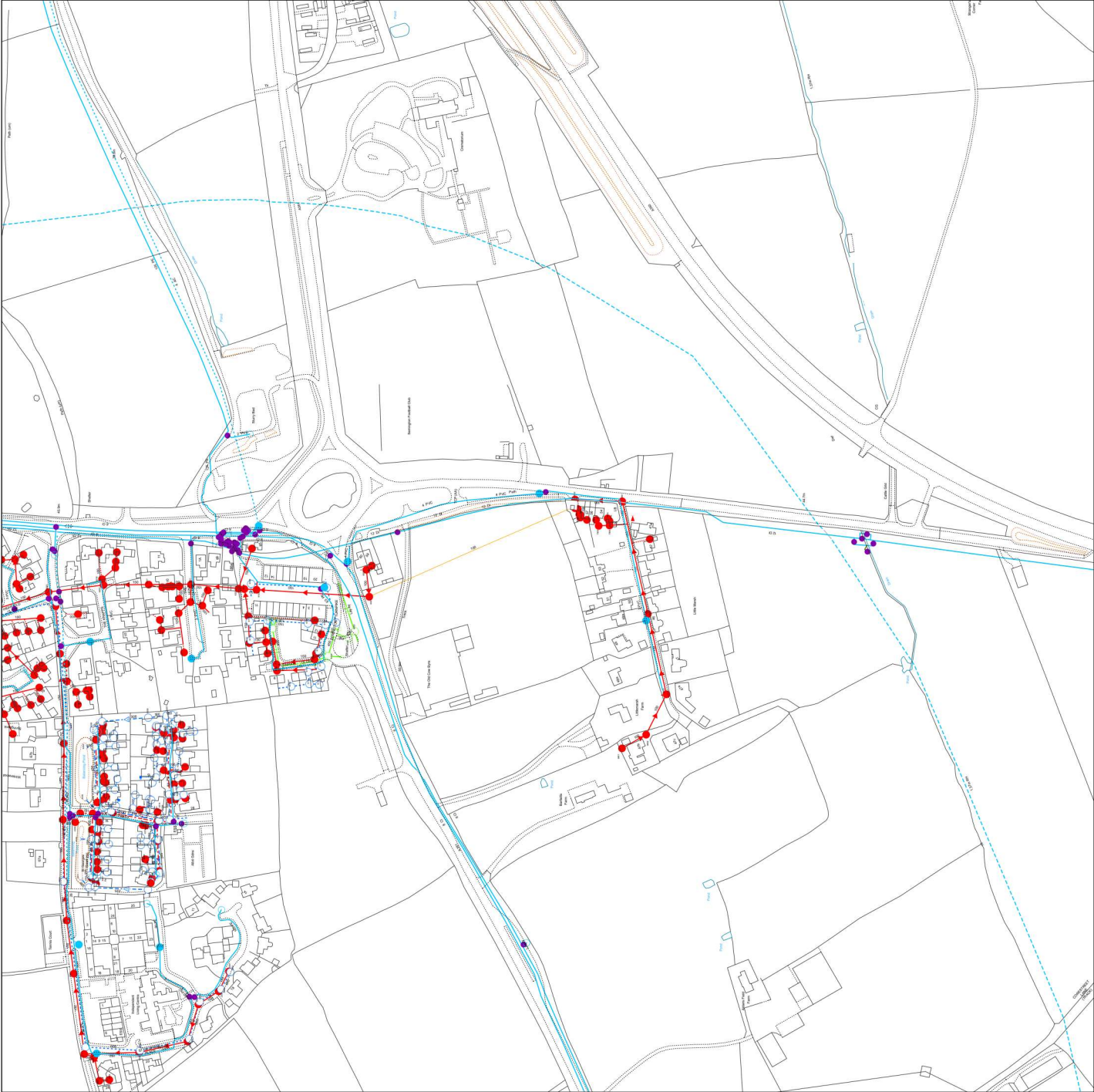
OTHER STRUCTURES

- Attenuation Tank
- Storage Tank
- Chamber
- Tunnel
- Interceptor

Wessex Water
YTL GROUP

Date: 21/10/2025
Centre: 389598E, 160156N
Scale: 1:625
(when printed at A4 size)

Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.



WATER MAINS
Distribution
Washout
Raw Water
Abandoned
Private

FITTINGS
Hydrant
Other

SEWERS
Foul
Surface
Combined
Abandoned

STRATEGIC
PUBLIC
PRIVATE

SECTION 104
Colours generally indicate the use of the sewer/drain (i.e Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow).
Some styles of line and symbol are shown on the key in sample/typical colours.

OTHER WESSEX PIPES
Rising Mains
Standby Rising Mains
Effluent Disposal
Overflow
Syphon
NON-WESSEX / UNKNOWN
Private Rising Mains
Inverted Watercourse
Highway Drain
Unknown
Status Unknown

STRUCTURES
Manhole - Foul
Manhole - Surface
Manhole - Combined
Inlet
Outfall
Lamphole
Bifurcation - Foul
Bifurcation - Surface
Bifurcation - Combined
Combined Sewage Overflow
Pumping Station - Surface
Pumping Station - Foul/Combined
Gully
Vent Column
Rodding Eye
Catchpit
Flushing Chamber
Soakaway
Non Return Valve
Air Valve
Hatch Box
Washout

OTHER STRUCTURES
Attenuation Tank
Storage Tank
Chamber
Tunnel
Interceptor

Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Wessex Water
YTL GROUP

Date: 07/07/2025
Centre: 389698E, 159923N
Scale: 1:2,500
(when printed at A2 size)

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APPENDIX D: LPA/LLFA CORRESPONDENCE

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RE: Historic Flood Risk and Drainage Information Request / Turnpike, Semington

From Drainage <Drainage@wiltshire.gov.uk>
Date Fri 2025-07-04 10:30 AM
To Hollie Waud <holliewaud@betts-associates.co.uk>
Cc Drainage <Drainage@wiltshire.gov.uk>

Hi Hollie,

We are unable to provide information outside of the planning process, further information on pre-application advice is available on our website: [Pre-application advice - Wiltshire Council](#)

Best regards,
Emma

Emma Biggs IEng MICE
Drainage Engineer
Highways Asset Management and Commissioning



From: Hollie Waud <holliewaud@betts-associates.co.uk>
Sent: 03 July 2025 09:17
To: Drainage <Drainage@wiltshire.gov.uk>
Subject: Historic Flood Risk and Drainage Information Request

You don't often get email from holliewaud@betts-associates.co.uk. [Learn why this is important](#)

To whom it may concern,

(Turnpike Close, Semington)

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the above site (location plan attached), including details of historical flooding and specific drainage requirements; this would be greatly appreciated. If there are any other specific requirements that you require in a scope of works for this site, please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards

Hollie Waud BSc(Hons)

Graduate Flood Risk Analyst

BETTS HYDRO

Consulting Engineers

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY

Chester +44 (0)1244 289041

holliewaud@betts-associates.co.uk

www.betts-associates.co.uk

CIVIL | STRUCTURAL | GEO-ENVIRONMENTAL | HYDROLOGY | FLOOD RISK MANAGEMENT

SUDS | STRUCTURAL SURVEYS | PARTY WALL DUTIES | INFILTRATION | GEOTECHNICAL

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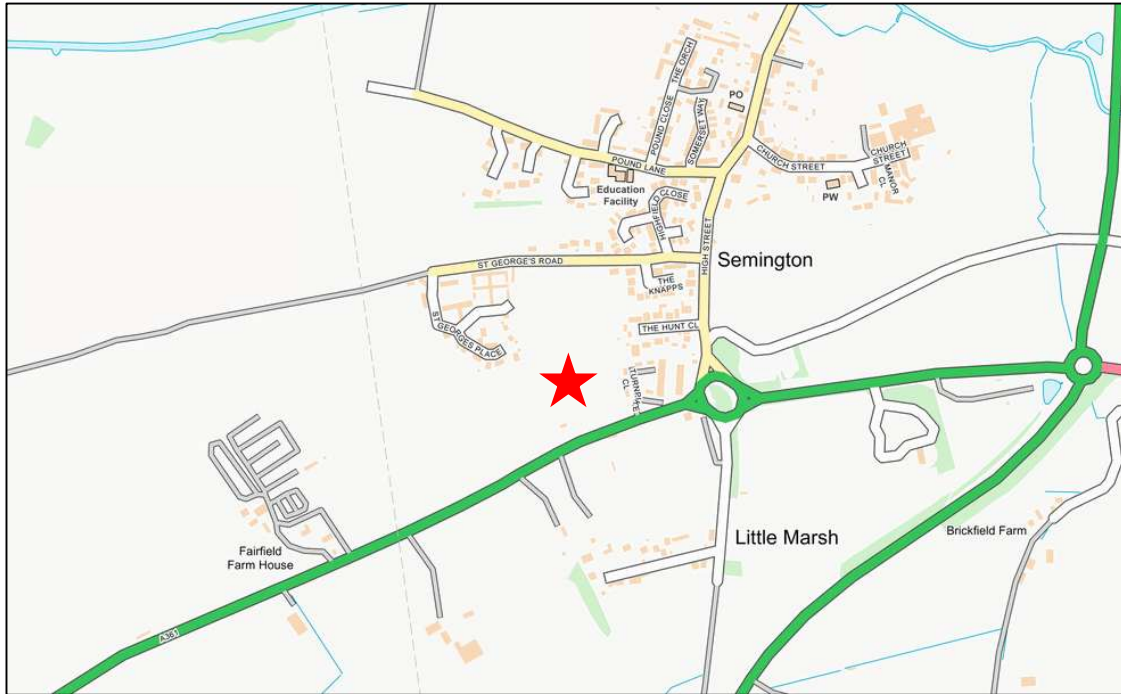
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APPENDIX E: LOCATION PLAN

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LOCATION PLAN

Turnpike Close, Semington

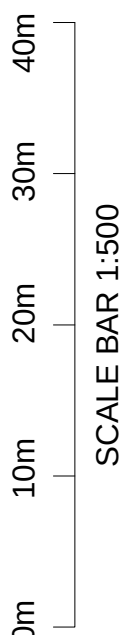


OS X (Eastings)	389391
OS Y (Northings)	160209
Nat Grid	ST893602 / ST8939160209
Nearest Post Code	BA14 6GY
Lat (WGS84)	N51:20:27 (51.340866519510634)
Long (WGS84)	W2:09:13 (-2.1536914267103158)
Lat,Long (WGS84)	51.340866519510634,-2.1536914267103158
Lat (OSGB36)	N51:20:25 (51.340367111065106)
Long (OSGB36)	W2:09:08 (-2.152322541451127)
Lat,Long (OSGB36)	51.340367111065106,-2.152322541451127



APPENDIX F: TOPOGRAPHICAL SURVEY

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NOTES AND AMENDMENTS

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels detaining edge of carriageway are observed at kerbside (bottom of kerb). Unless otherwise stated.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD. THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

REVISIONS

REV.	DESCRIPTION	DRAWN	CHKD.	DATE

[illegible]

BENCH MARK INFORMATION

All levels relate to OSBM Newlyn
Datum Generated by VRS GPS

SURVEY STATIONS	
STN1	389688.738 160115.015 49.434
STN2	389605.363 160100.839 50.600
STN3	389500.185 160044.124 51.629
STN4	389481.174 160097.207 51.424

JLP Surveying

JLP Surveying Consultants Ltd,
Suite 25 Rodney House,
King Street,
Wigan

Tel - 01942 243313
Fax - 01942 492230
Mobile - 07710 428498
EMAIL:- peterhouston@jipsurveys.com

PROJECT
TURNPIKE CLOSE
SEMINGTON

DRAFTING TITLE

Topographical Land Survey

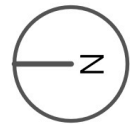
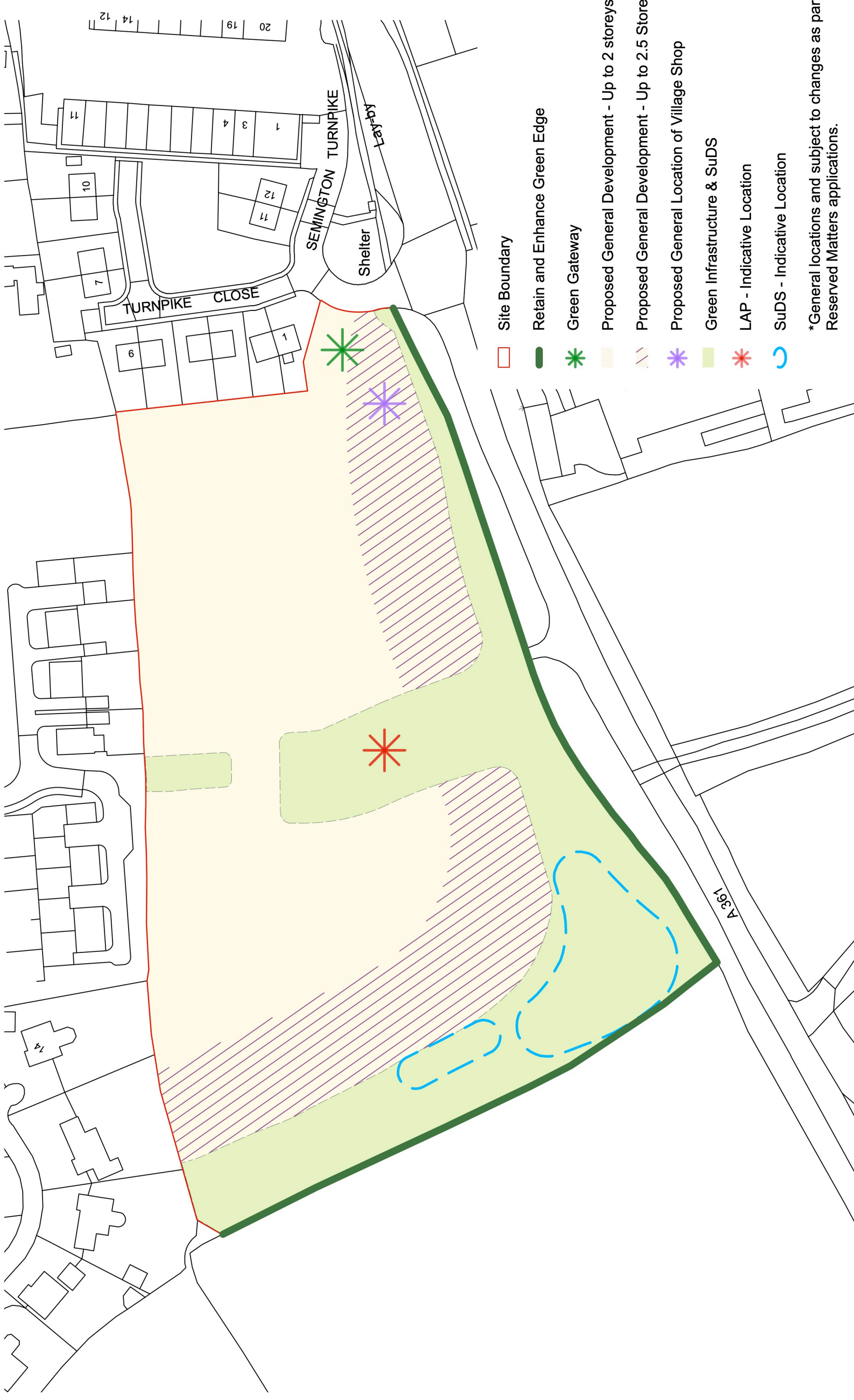
SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
1:500	A1	1	30.11.18	

DRAWING NUMBER

S18-1093

APPENDIX G: PARAMETER PLAN

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Drawing Title: Parameter Plan
Drawing Number: 2483 - URB - XX - XX - DR - UD - 9002
Project: Land at Turnpike Close, Semington, Wiltshire

Revision: 08
Scale: 1:1000 @ A3
Date: 14.08.2026

APPENDIX H: SOAKAWAY TESTING - BROWNFIELD SOLUTIONS

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10 June 2026

Hollins Strategic Land
Suite 3
First Floor
Victoria Court
Bexton Road
Knutsford
Cheshire
WS16 0PF

For the Attention of Paul O'Shea

Dear Paul,

Re: Turnpike Close, Semington – Infiltration Testing Results

This report describes the results of soil infiltration testing carried out by Brownfield Solutions Limited (BSL) for Hollins Strategic Land LLP at Turnpike Close, Semington and has been completed in general accordance with the following guidance:

-
- BS 10175:2026 Investigation of Potentially Contaminated Sites.
 - BS5930: 2015+A1:2020 Code of Practice for Ground Investigations.
 - BRE 365 BRE Digest 365: Soakaway design.
 - CIRIA C753 The SuDS Manual.
-

Background

The site is located off Turnpike Close, Semington as shown on the Site Location Plan, Drawing No. C6161/01.

Proposed Development

The proposed development is within the Semington Neighbourhood Plan for a residential end use with associated private gardens, highways, public open space (POS) areas and infrastructure / commercial end use comprising a local shop for the proposed dwellings as shown on the Semington Parish Neighbourhood Plan 2023-2028 (issued March 2025) provided to BSL by the client.

Current Site Description

Based on observations undertaken during the site works, the area of investigation comprised an open green field with grass and bare soil covering the entire site, the grass having been cut recently. The site was accessed through an unlocked metal gate from the southeast.

Objectives

The objective of the investigation was to investigate ground conditions and determine infiltration rates in general accordance with BRE 365 and the CIRIA SuDS Manual (C753) to provide preliminary guidance on the potential viability of infiltration-based drainage at the site.

Site Works

Eight trial pits (SA01 to SA08) were excavated to depths of between 1.80m and 2.80m bgl using a tracked excavator between the dates of 27th and 28th May 2026. The locations and depths of the tests were originally provided by the Client, and were completed in order to get an appropriate spread of information across the entire site. The locations of the trial pits are shown on the attached Exploratory Hole Location Plan (Drawing No. C6161/03).

The exploratory holes were logged by an experienced geo-environmental consultant in general accordance with the following guidance:

-
- BS 5930:2015+A1:2020 Code of Practice for Site Investigations.
 - BS EN 14688-1:2018 Geotechnical Investigation and Testing – Identification and classification of soil.
 - BS EN ISO 14689-1:2018 – Geotechnical investigation and testing – Identification and classification of rock.
-

Ground Conditions

Anticipated Ground Conditions

Reference to the BGS 1:10,000 scale mapping from the Geo-Environmental Data Report, obtained as part of the Phase I Geo-Environmental Report (ref. AF/C6161/14230 issued June 2025) indicates that superficial deposits are not present beneath the site, however in near proximity to the site to the west, east and south, Head deposits consisting of clay, silt, sand and gravel of the Quaternary age are mapped.

The solid geology beneath the site comprises the Cornbrash Formation comprising limestone of Bathonian-Callovian age.

Topsoil

Topsoil was encountered in all trial pits from ground level to 0.25-0.30m bgl, comprising grass over dark brown sandy clay with occasional rootlets. In SA02 and SA05, the clay was slightly gravelly.

Natural Superficial Strata

The topsoil was typically underlain by soft to firm brown sandy clay, encountered to base depths ranging between 0.40m and 1.50m bgl.

In SA02 between 0.25m and 0.50m bgl, the head deposits comprised slightly gravelly slightly clayey sand.

Solid Geology

Beneath the head deposits, firm to stiff grey slightly sandy gravelly clays were encountered to the base of the pits, encountered to a maximum depth of 2.80m bgl. It is considered that these deposits are likely the upper horizon of the Cornbrash Formation, which typically comprises limestone.

Groundwater

Groundwater was encountered in three locations; SA01 at 2.70m bgl, SA03 at 1.20m bgl and SA07 at 2.40m bgl.

Observations

During the works undertaken by BSL, observations for both visual and olfactory evidence of contamination were undertaken. No evidence of contamination was observed.

The sides of the trial pits were stable during excavation, except for SA04, where the sides became unstable below 1.50m bgl.

Results

The results of the infiltration tests indicate generally poor conditions, as shown in the table below. The highest infiltration rates were recorded in SA03 with the best being 1.51×10^{-7} m/s, indicating poor drainage conditions in all tests conducted.

Location	Infiltration Rate (m/s)
SA01	5.31×10^{-8}
SA02	1.49×10^{-7}
SA03	1.51×10^{-7}
SA04	No measurable infiltration
SA05	No measurable infiltration
SA06	No measurable infiltration
SA07	1.15×10^{-7}
SA08	6.27×10^{-8}

As none of the above tests drained past 25% effective depth, the soakaway tests are not considered BRE 365 compliant, and the infiltration rates presented should not be relied upon for design of drainage systems.

Assessment

The use of soakaways within the natural ground is not considered to be feasible at the site due to the low infiltration rates obtained (on the order of 10^{-7} to 10^{-8} m/s) and the presence of low permeability cohesive strata underlying the site.

For drainage systems, flexible jointed pipes should be used wherever possible; particular care should be taken for the avoidance of leaks in both water supply and drainage pipework.

Closing Remarks

Based on the results of the infiltration testing and the assessment undertaken, drainage via soakaways is unlikely to be feasible at the site. However, other sustainable drainage solutions in accordance with the CIRIA SuDS Manual (C753), such as attenuated discharge or lined SuDS features, may still be viable subject to detailed drainage design.

We trust the above meets your requirements. If you have any queries, then please do not hesitate to contact the undersigned.

Yours sincerely

For Brownfield Solutions Limited

Produced by:



R M Miyamoto
BSc (Hons)
Graduate Geo-Environmental
Consultant
r.miyamoto@brownfield-
solutions.co.uk

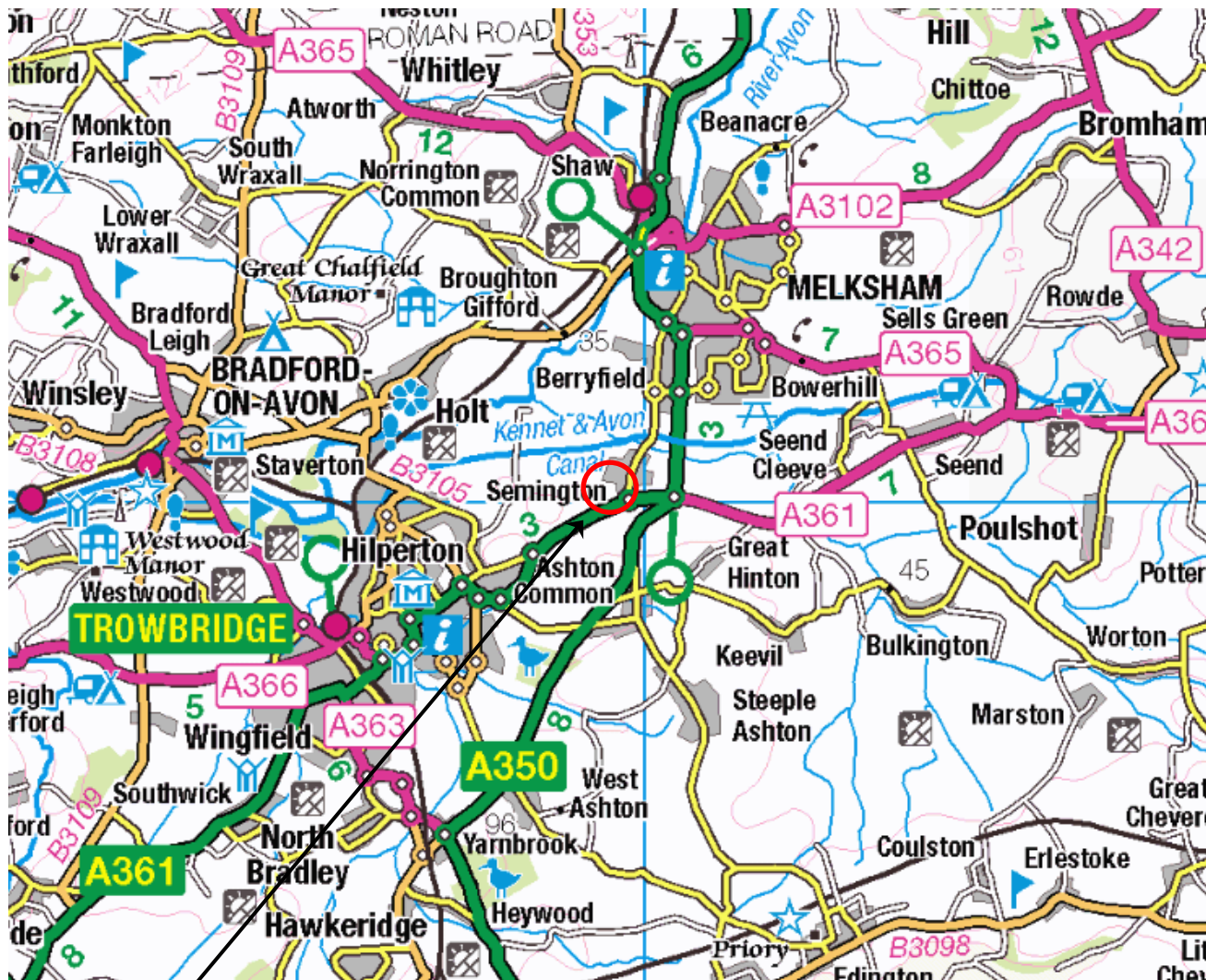
Checked by:



J Wheaton
BSc (Hons) MEnvSc FGS
Principal Geo-Environmental
Consultant
j.wheaton@brownfield-solutions.co.uk

Enc Drawings
 Appendix A – Exploratory Hole Logs
 Appendix B – Infiltration Test Results

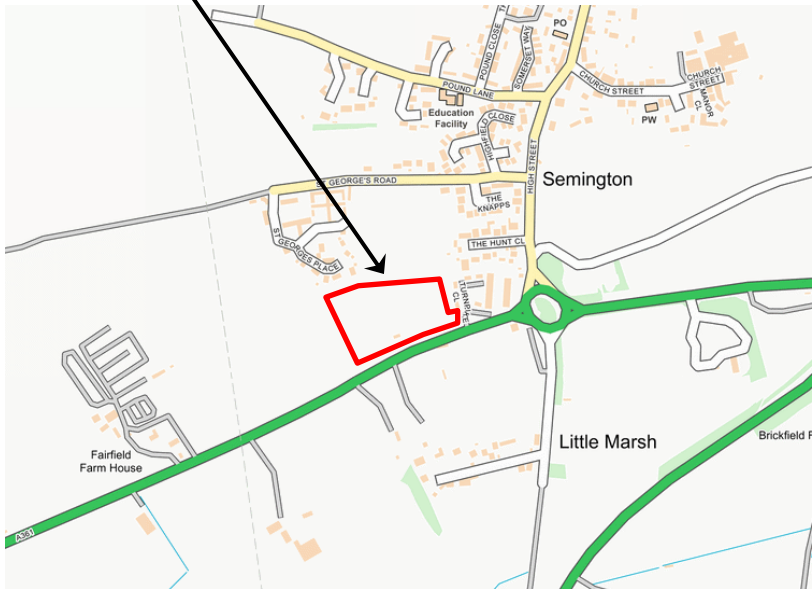
DRAWINGS



SITE LOCATION

NEAREST POSTCODE: BA14 6LB

SITE ENTRANCE WHAT3WORDS: ///HAMPER.SHEADSET.SMARTING



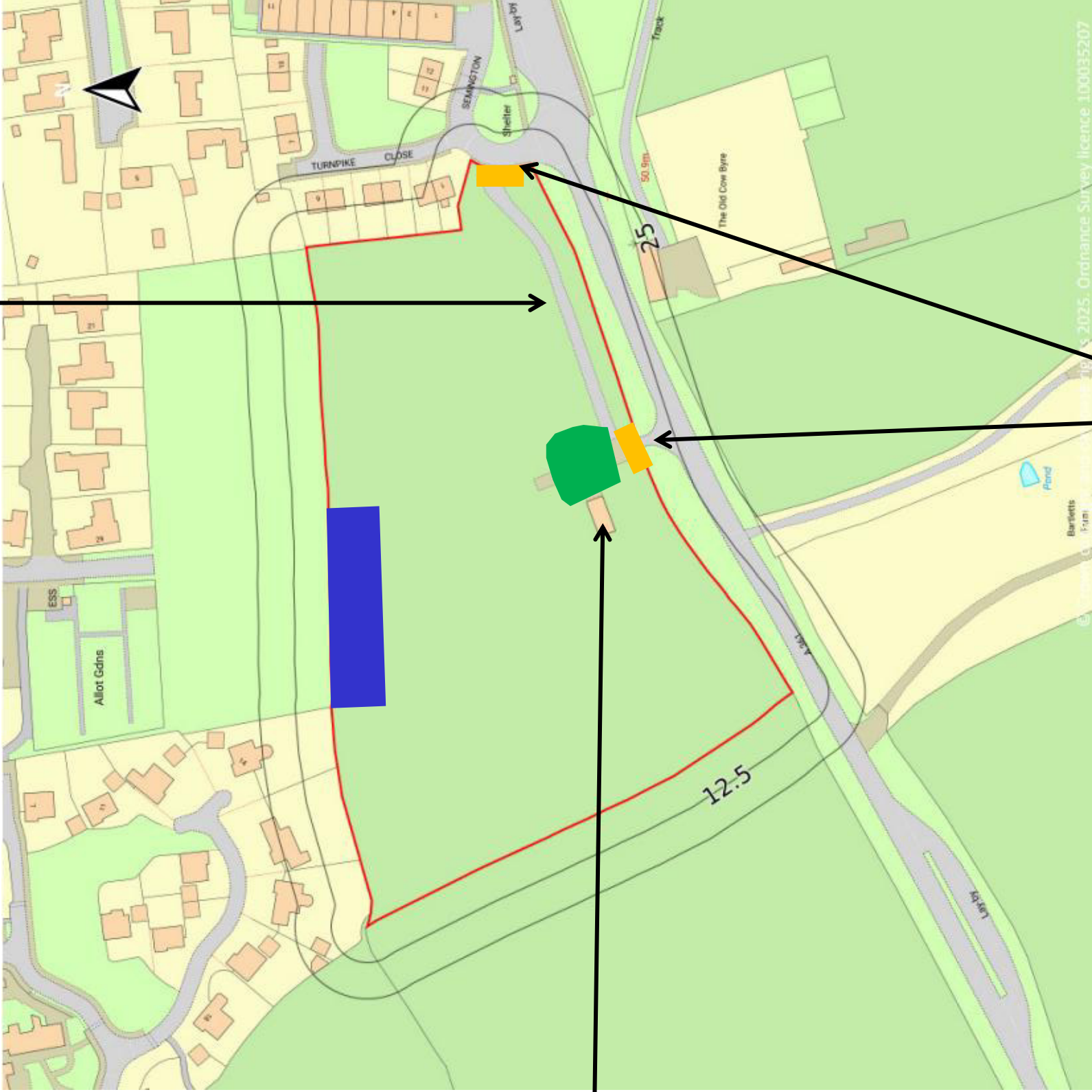
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 BROWNFIELD SOLUTIONS LTD GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE				
CLIENT				
HOLLINS STRATEGIC LAND LLP				
PROJECT TITLE				
TURNPIKE CLOSE, SEMINGTON				
DRAWING TITLE				
SITE LOCATION PLAN				
DRAWING No. C6161/01	REVISION -	SCALE NTS	DATE 16/05/25	
DRAWN BY SD		CHECKED BY NS		



GRAVEL TRACK

RAMP

SITE ACCESS



KEY

- APPROXIMATE SITE BOUNDARY
- ACCESS GATE
- CONSTRUCTION YARD
- GRASS STOCKPILE

NOTES

- ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
- DRAWING NOT FOR CONSTRUCTION PURPOSES.

REV	DATE	DESCRIPTION	BY	CKD



CLIENT
HOLLINS STRATEGIC LAND LLP

PROJECT TITLE
TURNPIKE CLOSE

DRAWING TITLE
SITE FEATURES PLAN

DRAWING No.	REVISION	SCALE	DATE
C6161/02	-	NTS	20/05/25
DRAWN BY	AF	CHECKED BY	NS



KEY

-  APPROXIMATE SITE BOUNDARY
-  SOAKAWAYS

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
3. DRAWING NOT FOR CONSTRUCTION PURPOSES.

REV	DATE	DESCRIPTION	BY	CKD



CLIENT
HOLLINS STRATEGIC LAND LLP

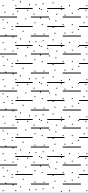
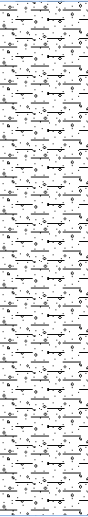
PROJECT TITLE
TURNPIKE CLOSE, SEMINGTON

DRAWING TITLE
EXPLORATORY HOLE LOCATION PLAN

DRAWING No. C6161/03	REVISION -	SCALE 1:1200	DATE 19/05/26
DRAWN BY MP		CHECKED BY JW	

APPENDIX A

Exploratory Hole Logs

 BROWNFIELD SOLUTIONS						Trial Pit Log		No. SA01 Sheet 1 of 1		
PROJECT NO: C6161						CO-ORDS:		Hole Type TP		
PROJECT NAME: TURNPIKE CLOSE, SEMINGTON						LEVEL:		Scale 1:25		
CLIENT: HOLLINS STRATEGIC LAND LLP						DATES: 28/05/26 - 28/05/26		Logged MP	Checked JW	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
				0.25			Grass over dark brown sandy CLAY with occasional rootlets. Sand is fine to medium.		1.0 2.0 3.0 4.0 5.0	
							TOPSOIL			
	0.90	B			1.10			Firm brown slightly sandy CLAY. Sand is fine to medium. HEAD DEPOSIT		
								Firm to stiff bluish grey mottled orange gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium of limestone. CORNBRAsh FORMATION		
	2.60	B		2.80			End of Trial Pit at 2.80m			
Remarks 1. Location scanned and cleared via radio detection method. 2. Groundwater encountered at 2.70m bgl. 3. Hole terminated at 2.80m bgl. 4. Sides stable. 5. Hole backfilled with arisings. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane										



No.

SA02

Sheet 1 of 1

CO-ORDS:

LEVEL:

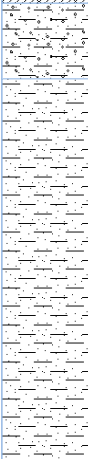
DATES: 28/05/26 - 28/05/26

Logged

Checked

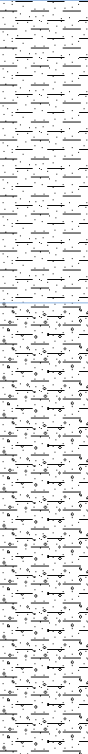
MP

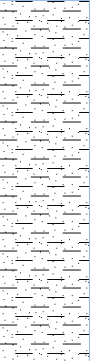
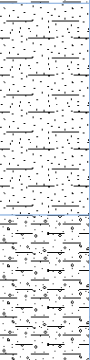
JW

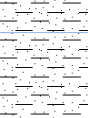
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	1.40	B		0.25			Grass over dark brown slightly gravelly sandy CLAY with occasional rootlets. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone and chert. TOPSOIL	1.0
			0.50			Light brown slightly gravelly slightly clayey SAND. Sand is fine to coarse. Gravel is subrounded fine to medium of limestone. HEAD DEPOSIT Firm brownish grey slightly sandy CLAY. Sand is fine to coarse. CORNBRASSH FORMATION		
			1.80			<i>Becoming very stiff at 1.75m bgl.</i> End of Trial Pit at 1.80m	2.0	
								3.0
								4.0
								5.0

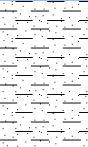
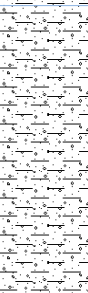
1. Location scanned and cleared via radio detection method.
2. Groundwater encountered at 1.20m bgl.
3. Hole terminated at 1.80m bgl.
4. Sides stable.
5. Hole backfilled with arisings.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS						Trial Pit Log		No. SA03 Sheet 1 of 1 Hole Type TP Scale 1:25 Logged Checked MP JW	
PROJECT NO: C6161						CO-ORDS:			
PROJECT NAME: TURNPIKE CLOSE, SEMINGTON						LEVEL:			
CLIENT: HOLLINS STRATEGIC LAND LLP						DATES: 27/05/26 - 27/05/26			
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	1.00	B		0.30			Grass over dark brown sandy CLAY with occasional rootlets. Sand is fine to medium. TOPSOIL		1.0
							Soft brown sandy CLAY with bands of clayey sand. Sand is fine to medium. HEAD DEPOSIT		
							Firm to stiff greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of limestone. CORNBRASSH FORMATION		
				1.30					2.0
				2.80			End of Trial Pit at 2.80m		
									4.0
									5.0
Remarks 1. Location scanned and cleared via radio detection method. 2. Groundwater encountered at 1.20m bgl. 3. Hole terminated at 2.80m bgl. 4. Sides stable. 5. Hole backfilled with arisings. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane									

 BROWNFIELD SOLUTIONS						Trial Pit Log		No. SA04 Sheet 1 of 1		
PROJECT NO: C6161						CO-ORDS:		Hole Type TP		
PROJECT NAME: TURNPIKE CLOSE, SEMINGTON						LEVEL:		Scale 1:25		
CLIENT: HOLLINS STRATEGIC LAND LLP						DATES: 27/05/26 - 27/05/26		Logged MP	Checked JW	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	2.00	B		0.30			Grass over dark brown sandy CLAY with occasional rootlets. Sand is fine to medium. TOPSOIL		1.0	
							Firm brown slightly sandy CLAY. Sand is fine to medium. HEAD DEPOSIT			
				1.50				Bluish grey slightly clayey SAND. Sand is fine to medium. CORNBRAsh FORMATION		
				2.20				Firm to stiff greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of limestone. CORNBRAsh FORMATION		
				2.70			End of Trial Pit at 2.70m		3.0	
									4.0	
									5.0	
Remarks 1. Location scanned and cleared via radio detection method. 2. Groundwater not encountered. 3. Hole terminated at 2.70m bgl. 4. Sides unstable from 1.50m bgl. 5. Hole backfilled with arisings. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane										

 BROWNFIELD SOLUTIONS						Trial Pit Log		No. SA05 Sheet 1 of 1	
PROJECT NO: C6161						CO-ORDS:		Hole Type TP	
PROJECT NAME: TURNPIKE CLOSE, SEMINGTON						LEVEL:		Scale 1:25	
CLIENT: HOLLINS STRATEGIC LAND LLP						DATES: 27/05/26 - 27/05/26		Logged MP	Checked JW
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.50	B		0.25			Grass over dark brown slightly gravelly sandy CLAY with occasional rootlets. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone and chert.		
							TOPSOIL		
				0.80			Firm dark brown slightly sandy CLAY. Sand is fine to medium. HEAD DEPOSIT		
	1.50	B					Firm brownish grey slightly sandy CLAY. Sand is fine to coarse. CORNBRASS FORMATION		1.0
				2.20			End of Trial Pit at 2.20m		2.0
									3.0
									4.0
									5.0
Remarks 1. Location scanned and cleared via radio detection method. 2. Groundwater not encountered. 3. Hole terminated at 2.20m bgl. 4. Sides stable. 5. Hole backfilled with arisings. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane									

 BROWNFIELD SOLUTIONS						Trial Pit Log		No. SA06 Sheet 1 of 1	
PROJECT NO: C6161						CO-ORDS:		Hole Type TP	
PROJECT NAME: TURNPIKE CLOSE, SEMINGTON						LEVEL:		Scale 1:25	
CLIENT: HOLLINS STRATEGIC LAND LLP						DATES: 27/05/26 - 27/05/26		Logged MP	Checked JW
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	2.30	B		0.30			Grass over dark brown sandy CLAY. Sand is fine to medium. TOPSOIL		1.0
				0.80			Firm brown slightly sandy CLAY. Sand is fine to medium. HEAD DEPOSIT		
							Firm brownish grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium of limestone. CORNBRASS FORMATION		
				2.50			End of Trial Pit at 2.50m		3.0
									4.0
									5.0
Remarks 1. Location scanned and cleared via radio detection method. 2. Groundwater not encountered. 3. Hole terminated at 2.50m bgl. 4. Sides stable. 5. Hole backfilled with arisings. ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane									



Trial Pit Log

No.

SA07

Sheet 1 of 1

Hole Type

TP

Scale

1:25

Logged

MP

Checked

JW

PROJECT NO: C6161

CO-ORDS:

PROJECT NAME: TURNPIKE CLOSE, SEMINGTON

LEVEL:

CLIENT: HOLLINS STRATEGIC LAND LLP

DATES: 28/05/26 - 28/05/26

Water Strikes

Sample and In Situ Testing

Depth (m)

Type

Results

**Depth
(m)**

Level
(m OD)

Legend

Stratum Description

Grass over dark brown sandy CLAY with occasional rootlets. Sand is fine to medium.
TOPSOIL

Firm dark brown sandy CLAY. Sand is fine to medium.
HEAD DEPOSIT

Firm grey mottled orange slightly sandy CLAY. Sand is fine to medium.

CORNBRAH FORMATION

1.0

2.0

4.0

5.0

End of Trial Pit at 2.50m

Remarks

1. Location scanned and cleared via radio detection method.
2. Groundwater encountered at 2.40m bgl.
3. Hole terminated at 2.50m bgl.
4. Sides stable.
5. Hole backfilled with arisings.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane



Trial Pit Log

No.

SA08

Sheet 1 of 1

Hole Type

TP

Scale

1:25

Logged

MP

Checked

JW

PROJECT NO: C6161

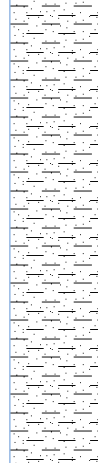
CO-ORDS:

PROJECT NAME: TURNPIKE CLOSE, SEMINGTON

LEVEL:

CLIENT: HOLLINS STRATEGIC LAND LLP

DATES: 28/05/26 - 28/05/26

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	1.00	B		0.25			Grass over dark brown sandy CLAY with occasional rootlets. Sand is fine to medium. TOPSOIL	1.0
				0.40			Firm dark brown sandy CLAY. Sand is fine to medium. HEAD DEPOSIT	
				2.10			Firm grey mottled orange sandy CLAY. Sand is fine to medium. CORNBRAsh FORMATION	
							<i>Becoming very stiff at 2.05m bgl.</i> End of Trial Pit at 2.10m	2.0
								3.0
								4.0
								5.0

Remarks

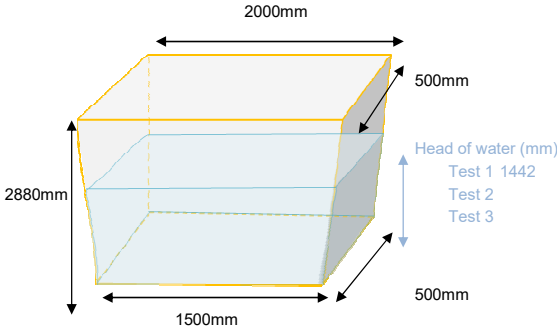
1. Location scanned and cleared via radio detection method.
2. Groundwater not encountered.
3. Hole terminated at 2.10m bgl.
4. Sides stable.
5. Hole backfilled with arisings.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

APPENDIX B

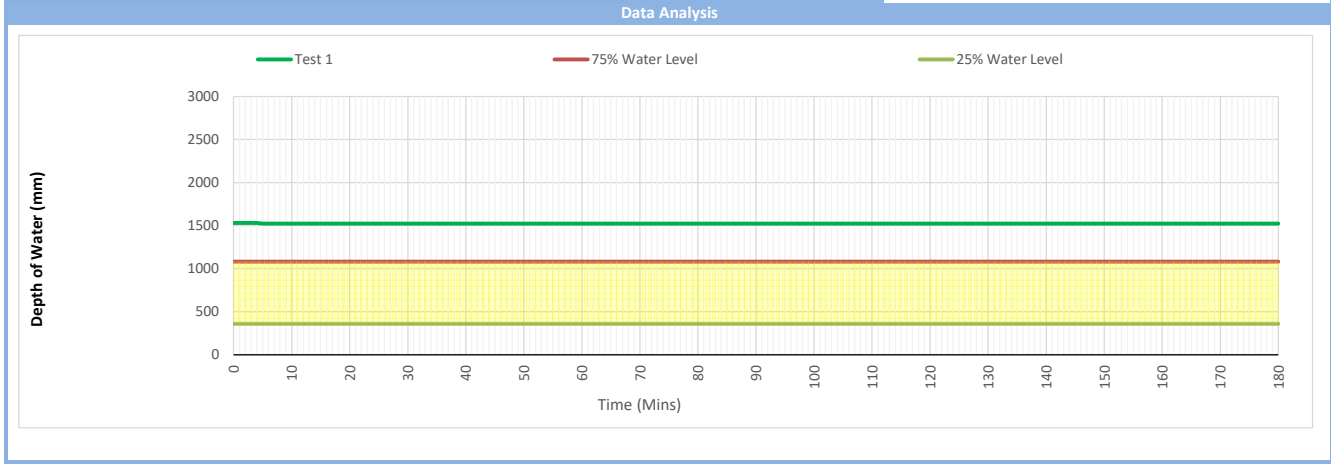
Infiltration Test Results

Percolation Test SA01	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026		 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: IE		
	C6161	Checked By: JW		

Dimensions (mm)	TEST 1	TEST 2	TEST 3	
Length at Top	2000			
Length at Bottom	1500			
Width at Top	500			
Width at Bottom	500			
Depth Tested (Head of Water)	1442			
Depth of Excavation	2880			
Volume of Water (m3)	1.26175			
Void Ratio	1			
Factored Volume of Water (m3)	1.26175			
Strata Description	Slightly sandy gravelly CLAY			
Pit Details	Open with no stone filling See associated log for stratum details			

Site Recorded Data								
	Test 1			Test 2			Test 3	
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	1350	1530						
1.00	1350	1530						
2.00	1350	1530						
3.00	1350	1530						
4.00	1350	1530						
5.00	1355	1525						
7.00	1355	1525						
9.00	1355	1525						
11.00	1355	1525						
13.00	1355	1525						
15.00	1355	1525						
20.00	1355	1525						
25.00	1355	1525						
30.00	1355	1525						
40.00	1355	1525						
50.00	1355	1525						
60.00	1355	1525						
90.00	1355	1525						
120.00	1355	1525						
150.00	1355	1525						
180.00	1355	1525						

Percolation Test SA01	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026	 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: IE	
	C6161	Checked By: JW	



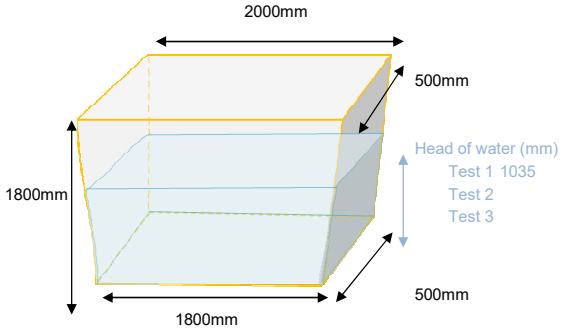
Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1530.000		
Water Level 2	1525.000		
Time to drain from Water Level 1 to Level 2 (mins)	180.000		
Volume of Water Discharged (m3)	0.0043750		
Discharge Area (m2)	7.624		
Soil Infiltration Rate (m/min)	0.0000032		
Soil Infiltration Rate (m/sec)	5.31E-08		

Compliance Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	1147.5		
Water Level at 25% effective depth (mm)	382.5		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Percolation Test SA02	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026			 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: IE			
	C6161	Checked By: JW			

Dimensions (mm)	TEST 1	TEST 2	TEST 3	Test Pit Construction			
Length at Top	2000						
Length at Bottom	1800						
Width at Top	500						
Width at Bottom	500						
Depth Tested (Head of Water)	1035						
Depth of Excavation	1800						
Volume of Water (m3)				0.98325			
Void Ratio				1			
Factored Volume of Water (m3)				0.98325			
Strata Description				Slightly sandy CLAY			
Pit Details				Open with no stone filling See associated log for stratum details			

Site Recorded Data								
Test 1			Test 2			Test 3		
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	750	1050						
1.00	750	1050						
2.00	750	1050						
3.00	750	1050						
4.00	750	1050						
5.00	750	1050						
7.00	750	1050						
9.00	750	1050						
11.00	750	1050						
13.00	750	1050						
15.00	755	1045						
20.00	760	1040						
25.00	760	1040						
30.00	760	1040						
40.00	760	1040						
50.00	760	1040						
60.00	760	1040						
90.00	760	1040						
120.00	760	1040						
150.00	760	1040						
180.00	760	1040						

Percolation Test	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026	 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: IE	
	SA02 C6161	Checked By: JW	



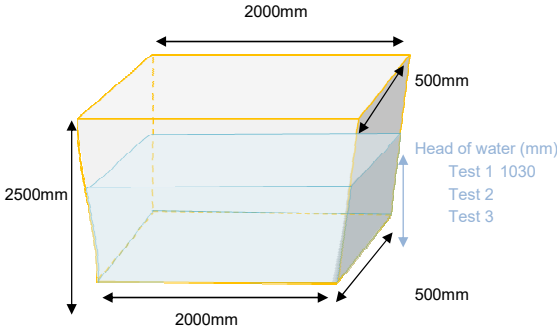
Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1050.000		
Water Level 2	1040.000		
Time to drain from Water Level 1 to Level 2 (mins)	180.000		
Volume of Water Discharged (m3)	0.0095000		
Discharge Area (m2)	5.916		
Soil Infiltration Rate (m/min)	0.0000089		
Soil Infiltration Rate (m/sec)	1.49E-07		

Compliance Check

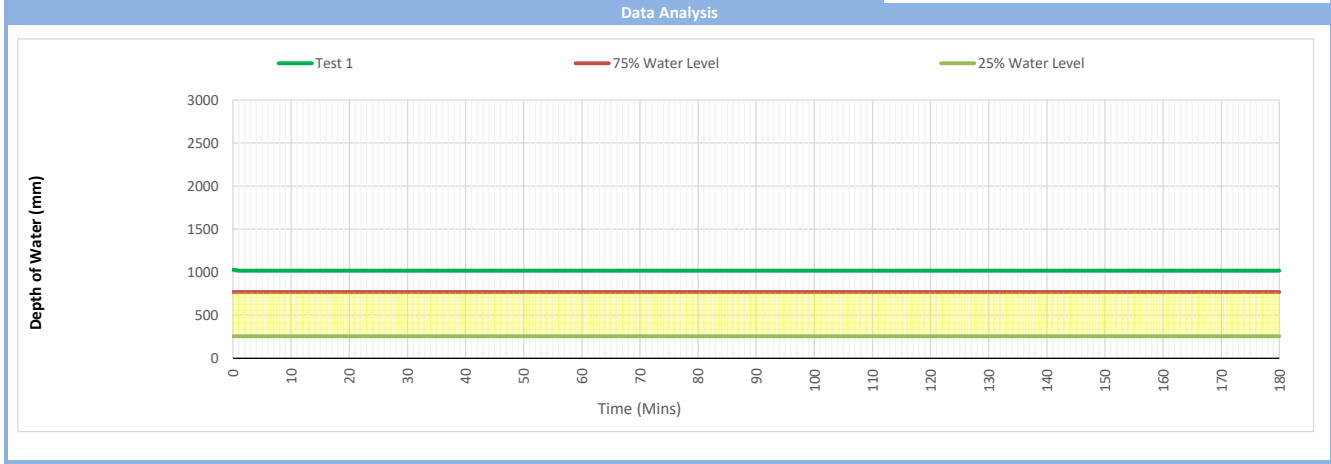
	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	787.5		
Water Level at 25% effective depth (mm)	262.5		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Percolation Test SA03	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026		 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP		
	C6161	Checked By: JW		

Dimensions (mm)	TEST 1	TEST 2	TEST 3	
Length at Top	2000			
Length at Bottom	2000			
Width at Top	500			
Width at Bottom	500			
Depth Tested (Head of Water)	1030			
Depth of Excavation	2500			
Volume of Water (m3)	1.03			
Void Ratio	1			
Factored Volume of Water (m3)	1.03			
Strata Description	Slightly gravelly sandy CLAY			
Pit Details	Open with no stone filling See associated log for stratum details			

Site Recorded Data								
	Test 1			Test 2			Test 3	
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	1470	1030						
1.00	1480	1020						
2.00	1480	1020						
3.00	1480	1020						
4.00	1480	1020						
5.00	1480	1020						
7.00	1480	1020						
9.00	1480	1020						
11.00	1480	1020						
13.00	1480	1020						
15.00	1480	1020						
20.00	1480	1020						
25.00	1480	1020						
30.00	1480	1020						
40.00	1480	1020						
50.00	1480	1020						
60.00	1480	1020						
90.00	1480	1020						
120.00	1480	1020						
150.00	1480	1020						
180.00	1480	1020						

Percolation Test SA03	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026	 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP	
	C6161	Checked By: JW	



Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1030.000		
Water Level 2	1020.000		
Time to drain from Water Level 1 to Level 2 (min)	180.000		
Volume of Water Discharged (m3)	0.0100000		
Discharge Area (m2)	6.125		
Soil Infiltration Rate (m/min)	0.0000091		
Soil Infiltration Rate (m/sec)	1.51E-07		

Compliance Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	772.5		
Water Level at 25% effective depth (mm)	257.5		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Percolation Test SA04	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026	 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP	
	C6161	Checked By: JW	



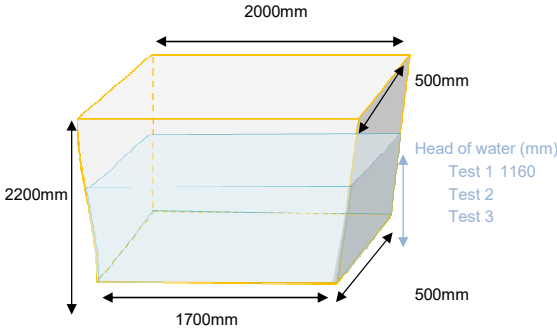
Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1350.000		
Water Level 2	1350.000		
Time to drain from Water Level 1 to Level 2 (min)	180.000		
Volume of Water Discharged (m3)	0.0000000		
Discharge Area (m2)	8.755		
Soil Infiltration Rate (m/min)	0.0000000		
Soil Infiltration Rate (m/sec)	0.00E+00		

Compliance Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	1012.5		
Water Level at 25% effective depth (mm)	337.5		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

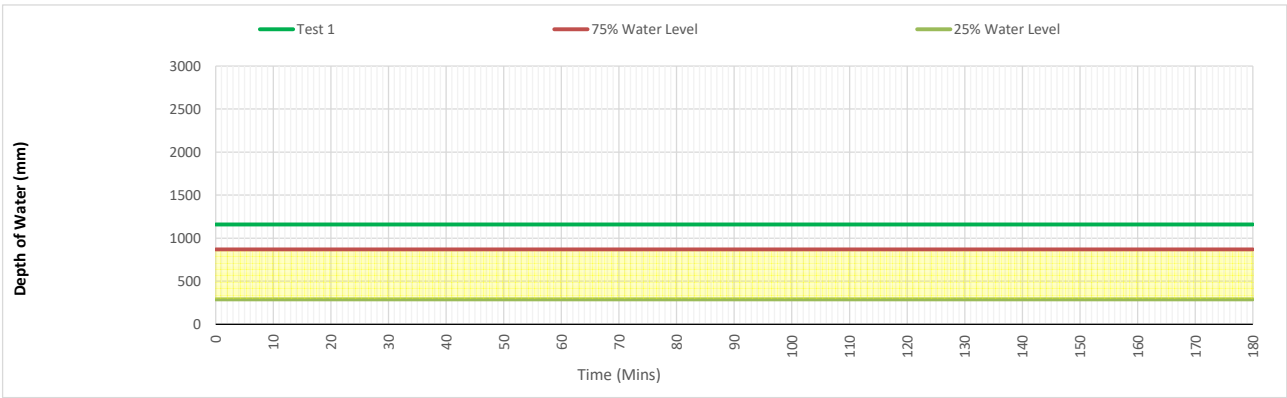
Percolation Test SA05	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026		 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP		
	C6161	Checked By: JW		

Dimensions (mm)	TEST 1	TEST 2	TEST 3	
Length at Top	2000			
Length at Bottom	1700			
Width at Top	500			
Width at Bottom	500			
Depth Tested (Head of Water)	1160			
Depth of Excavation	2200			
Volume of Water (m3)	1.073			
Void Ratio	1			
Factored Volume of Water (m3)	1.073			
Strata Description	Slightly sandy CLAY			
Pit Details	Open with no stone filling See associated log for stratum details			

Site Recorded Data								
	Test 1		Test 2			Test 3		
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	1040	1160						
1.00	1040	1160						
2.00	1040	1160						
3.00	1040	1160						
4.00	1040	1160						
5.00	1040	1160						
7.00	1040	1160						
9.00	1040	1160						
11.00	1040	1160						
13.00	1040	1160						
15.00	1040	1160						
20.00	1040	1160						
25.00	1040	1160						
30.00	1040	1160						
40.00	1040	1160						
50.00	1040	1160						
60.00	1040	1160						
90.00	1040	1160						
120.00	1040	1160						
150.00	1040	1160						
180.00	1040	1160						

Percolation Test SA05	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026	 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP	
	C6161	Checked By: JW	

Data Analysis



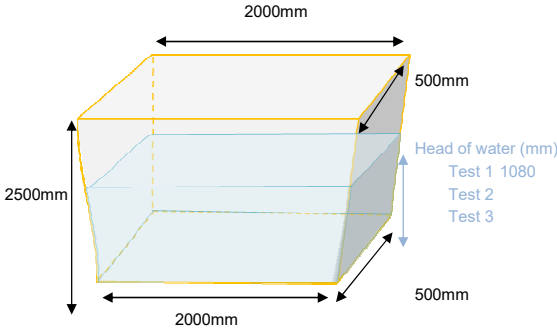
Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1160.000		
Water Level 2	1160.000		
Time to drain from Water Level 1 to Level 2 (mins)	180.000		
Volume of Water Discharged (m3)	0.0000000		
Discharge Area (m2)	6.302		
Soil Infiltration Rate (m/min)	0.0000000		
Soil Infiltration Rate (m/sec)	0.00E+00		

Compliance Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	870		
Water Level at 25% effective depth (mm)	290		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

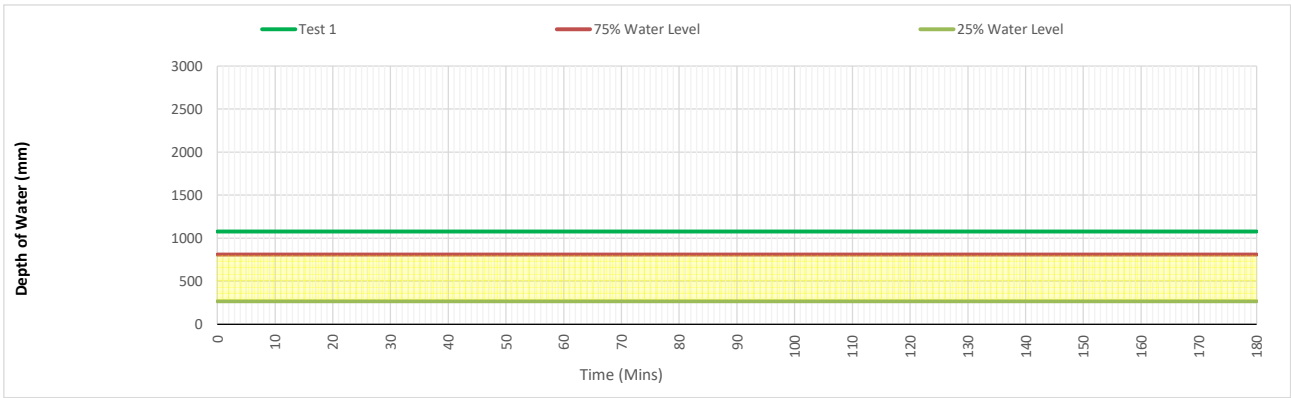
Percolation Test SA06	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026		 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP		
	C6161	Checked By: JW		

Dimensions (mm)	TEST 1	TEST 2	TEST 3	
Length at Top	2000			
Length at Bottom	2000			
Width at Top	500			
Width at Bottom	500			
Depth Tested (Head of Water)	1080			
Depth of Excavation	2500			
Volume of Water (m3)	1.08			
Void Ratio	1			
Factored Volume of Water (m3)	1.08			
Strata Description	Slightly gravelly slightly sandy CLAY			
Pit Details	Open with no stone filling See associated log for stratum details			

Site Recorded Data																																																																																																																																																																																																																							
<table><tr><th colspan="3">Test 1</th><th colspan="3">Test 2</th><th colspan="3">Test 3</th></tr><tr><th>Time (mins)</th><th>Depth to water (mm)</th><th>Head of water (mm)</th><th>Time (mins)</th><th>Depth to water (mm)</th><th>Head of water (mm)</th><th>Time (mins)</th><th>Depth to water (mm)</th><th>Head of water (mm)</th></tr><tr><td>0.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>13.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>15.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>20.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>25.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>30.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>40.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>50.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>60.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>90.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>120.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>150.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>180.00</td><td>1420</td><td>1080</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									Test 1			Test 2			Test 3			Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	0.00	1420	1080							1.00	1420	1080							2.00	1420	1080							3.00	1420	1080							4.00	1420	1080							5.00	1420	1080							7.00	1420	1080							9.00	1420	1080							11.00	1420	1080							13.00	1420	1080							15.00	1420	1080							20.00	1420	1080							25.00	1420	1080							30.00	1420	1080							40.00	1420	1080							50.00	1420	1080							60.00	1420	1080							90.00	1420	1080							120.00	1420	1080							150.00	1420	1080							180.00	1420	1080						
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Percolation Test SA06	HOLLINS STRATEGIC LAND LLP	Date of Test: 27/05/2026	 BROWNFIELD SOLUTIONS LTD
	TURNPIKE CLOSE, SEMINGTON	Logged By: MP	
	C6161	Checked By: JW	

Data Analysis



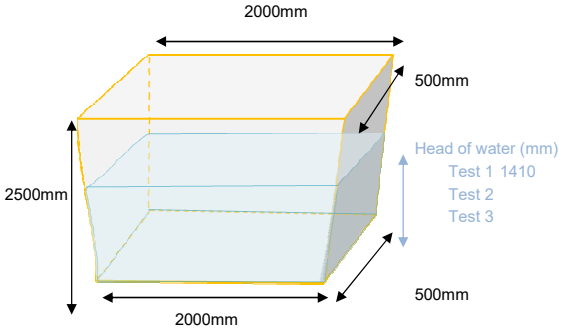
Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1080.000		
Water Level 2	1080.000		
Time to drain from Water Level 1 to Level 2 (min)	180.000		
Volume of Water Discharged (m3)	0.0000000		
Discharge Area (m2)	6.400		
Soil Infiltration Rate (m/min)	0.0000000		
Soil Infiltration Rate (m/sec)	0.00E+00		

Compliance Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	810		
Water Level at 25% effective depth (mm)	270		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Percolation Test SA07	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026			 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: RM			
	C6161	Checked By: JW			

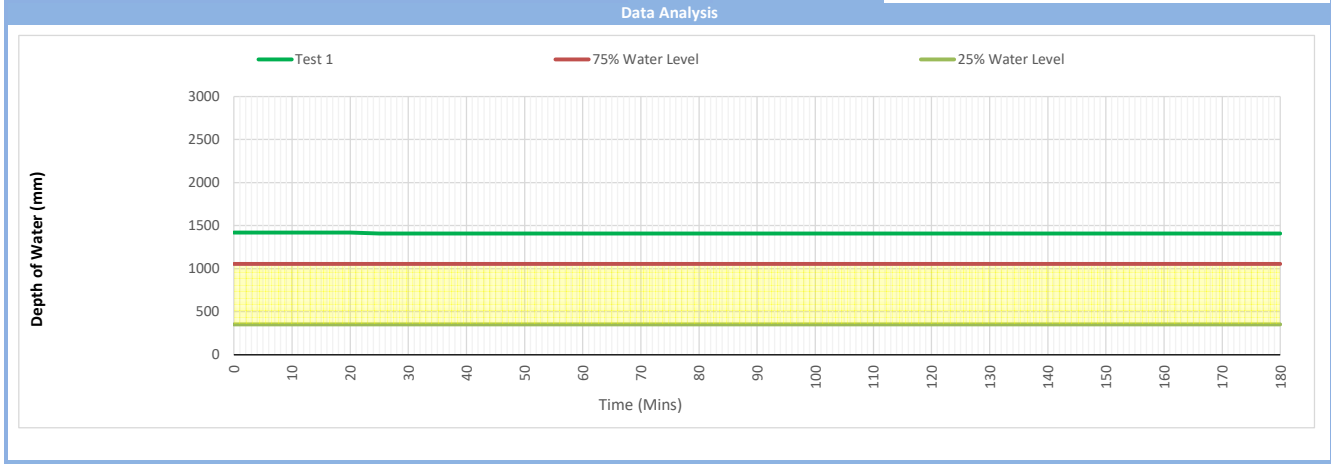
Dimensions (mm)	TEST 1	TEST 2	TEST 3	Test Pit Construction
Length at Top	2000			
Length at Bottom	2000			
Width at Top	500			
Width at Bottom	500			
Depth Tested (Head of Water)	1410			
Depth of Excavation	2500			

Volume of Water (m3)	1.41		
Void Ratio	1		
Factored Volume of Water (m3)	1.41		

Strata Description	Slightly sandy CLAY
Pit Details	Open with no stone filling See associated log for stratum details

Site Recorded Data								
Test 1			Test 2			Test 3		
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	1080	1420						
1.00	1080	1420						
2.00	1080	1420						
3.00	1080	1420						
5.00	1080	1420						
7.00	1080	1420						
9.00	1080	1420						
11.00	1080	1420						
13.00	1080	1420						
15.00	1080	1420						
18.00	1080	1420						
20.00	1080	1420						
25.00	1090	1410						
30.00	1090	1410						
40.00	1090	1410						
50.00	1090	1410						
60.00	1090	1410						
90.00	1090	1410						
120.00	1090	1410						
150.00	1090	1410						
180.00	1090	1410						

Percolation Test SA07	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026	 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: RM	
	C6161	Checked By: JW	



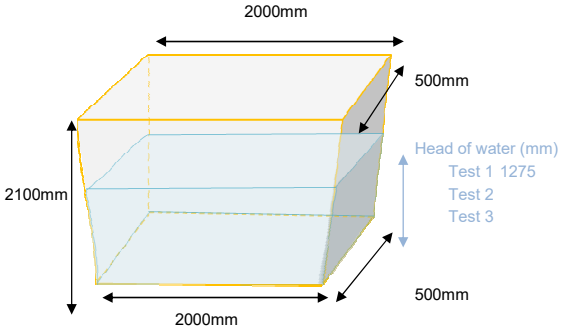
Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1420.000		
Water Level 2	1410.000		
Time to drain from Water Level 1 to Level 2 (min)	180.000		
Volume of Water Discharged (m3)	0.0100000		
Discharge Area (m2)	8.075		
Soil Infiltration Rate (m/min)	0.0000069		
Soil Infiltration Rate (m/sec)	1.15E-07		

Compliance Check

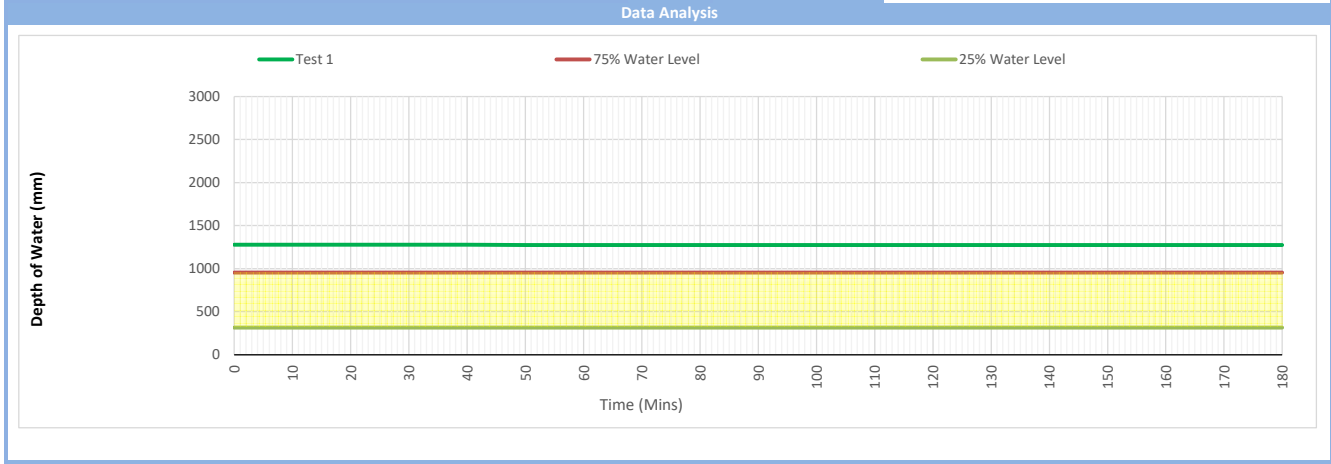
	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	1065		
Water Level at 25% effective depth (mm)	355		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Percolation Test SA08	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026			 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: RM			
	C6161	Checked By: JW			

Dimensions (mm)	TEST 1	TEST 2	TEST 3	Test Pit Construction
Length at Top	2000			
Length at Bottom	2000			
Width at Top	500			
Width at Bottom	500			
Depth Tested (Head of Water)	1275			
Depth of Excavation	2100			
Volume of Water (m3)	1.275			
Void Ratio	1			
Factored Volume of Water (m3)	1.275			
Strata Description	Sandy CLAY			
Pit Details	Open with no stone filling See associated log for stratum details			

Site Recorded Data								
Test 1			Test 2			Test 3		
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	820	1280						
1.00	820	1280						
2.00	820	1280						
3.00	820	1280						
4.00	820	1280						
5.00	820	1280						
7.00	820	1280						
9.00	820	1280						
11.00	820	1280						
13.00	820	1280						
15.00	820	1280						
20.00	820	1280						
25.00	820	1280						
30.00	820	1280						
40.00	820	1280						
50.00	825	1275						
60.00	825	1275						
90.00	825	1275						
120.00	825	1275						
150.00	825	1275						
180.00	825	1275						

Percolation Test SA08	HOLLINS STRATEGIC LAND LLP	Date of Test: 28/05/2026	 BROWNFIELD SOLUTIONS LTD
	Turnpike Close, Semington	Logged By: RM	
	C6161	Checked By: JW	



Soil Infiltration Rate Calculation

	Test 1	Test 2	Test 3
Water Level 1	1280.000		
Water Level 2	1275.000		
Time to drain from Water Level 1 to Level 2 (mins)	180.000		
Volume of Water Discharged (m3)	0.0050000		
Discharge Area (m2)	7.388		
Soil Infiltration Rate (m/min)	0.0000038		
Soil Infiltration Rate (m/sec)	6.27E-08		

Compliance Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	960		
Water Level at 25% effective depth (mm)	320		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

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APPENDIX I: PRELIMINARY SURFACE WATER DRAINAGE STRATEGY AND NETWORK CALCULATIONS

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Legend

- Site Extents
- Existing Surface Water System
- Existing Foul Water System
- Proposed Adoptable Surface Water System
- Proposed Adoptable Foul Water System

Drainage Strategy - Surface water

Sodakway testing conducted in accordance with BRE365 confirm infiltration is not viable. Surface water from the development site will discharge into the existing surface water drain **MH Ref: 6123** located to the east of the boundary of the site at a greenfield runoff of 4.0 l/s.

We are proposing permeable paving on all driveways, as well as water butts for each property. Additionally, tree pits are proposed to be used along the highway verges, subject to approval with the relevant adopting bodies.

The surface water pipe network has been designed to cater for all storm events up to and including the 1:100yr+45% Climate Change event.

Proposed Cellular Storage (Cells 1)

Length x Width x Depth
5m (5 cells) x 16m (32 cells) x 1.2m (3 cells)
Cell Unit Size = 1.0m x 0.5m x 0.4m
Ventilated System

Maximum storage volume = 91.2m³

MH S4
CL: 51.490 mAOd
HL Overflow: 50.450 mAOd (2250)
IL: 49.175 mAOd (4500)

Catchpit (CP1)
CL: 51.741 mAOd
IL: 49.226 mAOd (2250)
Base Level: 48.926 mAOd (300mm sump)

Cells 1
CL: 51.756 mAOd
Incoming IL: 49.243 mAOd
Cells IL: 49.243 mAOd

Proposed Cellular Storage (Cells 2)

Length x Width x Depth
36m (36 cells) x 16m (36 cells) x 1.2m (3 cells)
Cell Unit Size = 1.0m x 0.5m x 0.4m
Ventilated System

Maximum storage volume = 738.7m³

MH S6
CL: 51.465 mAOd
HL Overflow: 50.400 mAOd (2250)
IL: 49.316 mAOd (6000)

Catchpit (CP2)
CL: 51.412 mAOd
IL: 49.363 mAOd (2250)
Base Level: 49.063 mAOd (300mm sump)

Cells 2
CL: 51.455 mAOd
Incoming IL: 49.392 mAOd
Cells IL: 49.392 mAOd

Proposed Surface Water Connection MH6123 (Existing)

A connection is proposed into the existing surface water sewer within Semington Turnpike. Existing rights to connect with title.

Cover level: 50.000 mAOd
Invert level: 48.701 mAOd
Both cover levels and invert levels given by Wessex Water
Proposed Connection Invert Level: 48.701 mAOd

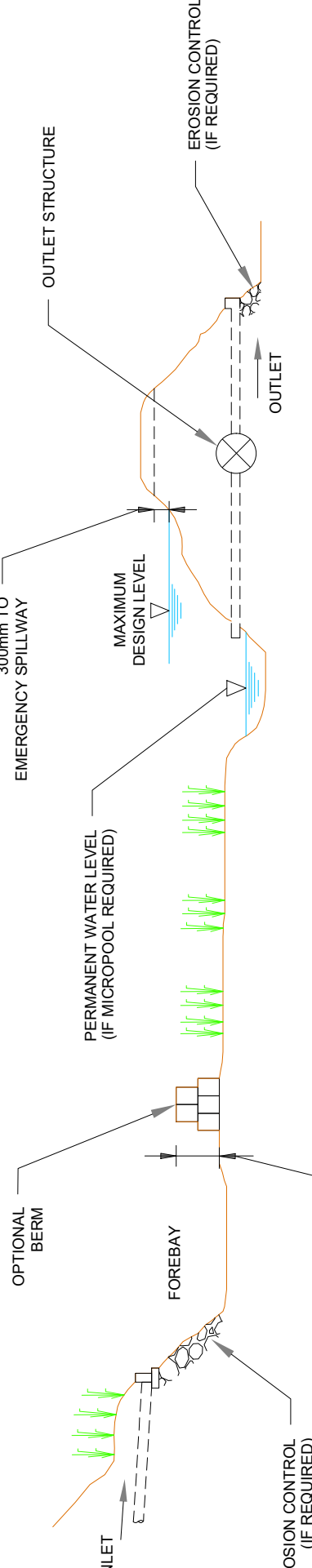
Flow Control Chamber Manhole S1H8

Hydro International Hydrabrace Optimum
SHE-0086-4000-1.600-4000
Design head = 1.600 m
Restricted discharge max. = 4.0 l/sec
Flow control orifice size 150mm
Cover level: 50.627 mAOd
Invert level: 48.376 mAOd

Proposed Retention Basin

Sized to contain the 1:100 year storm + 45% climate change stormwater storage

Base Level: 49.414 mAOd
Top of Bank Level: 50.714 mAOd
Top Water Level (1 in 100 yr+cc): 50.612 mAOd
Freeboard: 302 mm
Maximum storage volume: 942 m³



Preliminary Surface Water Drainage Layout

Turnpike Close
Semington

WM RN
07.06.24 Preliminary Issue for review
07.06.24

WM RN
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PRELIMINARY SURFACE WATER DRAINAGE NETWORK DETAILS

Site at Turnpike Close, Semington

For

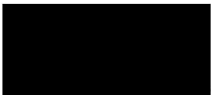
Hollins Strategic Land

Rev. 1.0

7th August 2026

**Surface Water Drainage Network Details
Turnpike Close, Semington**

7th August 2026

Issue no.	Rev. 1.0	
Date:	7 th August 2026	
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Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	4.0
Rainfall Events	Singular	Drain Down Time (mins)	1440	2 year (l/s)	4.0
Summer CV	1.000	Additional Storage (m³/ha)	0.0	30 year (l/s)	4.0
Winter CV	1.000	Starting Level (m)		100 year (l/s)	4.0
Analysis Speed	Detailed	Check Discharge Rate(s)	✓	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
100	0	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	1.000
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S18	0.099	5.00	52.111	1500	389506.261	160141.102	1.874	50.237
S17	0.124	5.00	52.114	1500	389477.173	160139.542	1.950	50.164
S16	0.062	5.00	52.060	1500	389440.763	160138.659	1.987	50.073
S15	0.094	5.00	51.987	1800	389421.994	160137.686	1.961	50.026
S14	0.113	5.00	52.006	1500	389396.614	160126.696	2.049	49.957
S13	0.068	5.00	52.119	2100	389367.056	160111.750	2.245	49.874
S12	0.073	5.00	51.483	1350	389376.239	160093.481	1.660	49.823
S11	0.071	5.00	51.429	1350	389386.088	160073.888	1.661	49.768
S10	0.069		50.914	1350	389397.462	160057.314	1.363	49.552
CP1			51.741	1350	389531.754	160151.325	2.515	49.226
S8	0.018	5.00	50.914	1350	389448.937	160053.272	1.500	49.414
S7	0.123	5.00	51.415	1800	389456.652	160056.674	2.034	49.381
S6	0.218	5.00	51.465	2100	389479.639	160068.338	2.149	49.316
S5	0.086	5.00	50.908	1800	389539.992	160086.186	1.749	49.159
S4	0.108	5.00	51.490	1500	389533.470	160142.886	2.315	49.175
S3	0.124	5.00	51.054	2100	389539.729	160111.725	1.959	49.095
S2	0.034	5.00	50.858	1800	389575.604	160116.913	1.853	49.005
S1HB			50.627	2100	389585.940	160114.459	1.649	48.978
S19			50.500	1350	389602.262	160124.155	1.636	48.864
MH6123			50.000	1350	389628.395	160116.356	1.299	48.701
Cells 1		5.00	51.756		389531.397	160154.089	2.513	49.243
Cells 2		5.00	51.455		389476.265	160078.704	2.063	49.392
CP2			51.412	1350	389478.058	160074.313	2.049	49.363

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S18	S17	29.129	0.600	50.237	50.164	0.073	399.0	450	5.48	30.0
1.001	S17	S16	36.421	0.600	50.164	50.073	0.091	400.2	450	6.08	28.5
1.002	S16	S15	18.794	0.600	50.073	50.026	0.047	399.9	450	6.39	27.9
1.003	S15	S14	27.692	0.600	50.026	49.957	0.069	401.3	450	6.85	26.9
1.004	S14	S13	33.082	0.600	49.957	49.874	0.083	398.6	450	7.39	26.0
1.005	S13	S12	20.447	0.600	49.874	49.823	0.051	400.9	450	7.73	25.4
3.000	Cells 1	CP1	2.787	0.600	49.243	49.226	0.017	163.9	225	5.05	31.1
1.007	S11	S10	21.607	0.600	49.768	49.714	0.054	400.1	600	8.13	24.7
3.001	CP1	S4	8.612	0.600	50.398	50.450	-0.052	-165.6	225	20.45	14.5
2.000	Cells 2	CP2	4.743	0.600	49.392	49.363	0.029	163.6	225	5.08	31.0
1.010	S8	S7	13.058	0.600	49.414	49.381	0.033	395.7	600	5.18	30.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.011	160.8	10.7	1.424	1.500	0.099	0.0
1.001	1.010	160.6	23.0	1.500	1.537	0.223	0.0
1.002	1.010	160.7	28.7	1.537	1.511	0.285	0.0
1.003	1.008	160.4	36.9	1.511	1.599	0.379	0.0
1.004	1.012	160.9	46.1	1.599	1.795	0.492	0.0
1.005	1.009	160.5	51.4	1.795	1.210	0.560	0.0
3.000	1.018	40.5	0.0	2.288	2.290	0.000	0.0
1.007	1.211	342.4	62.9	1.061	0.600	0.704	0.0
3.001	0.009	0.4	0.0	1.118	0.815	0.000	0.0
2.000	1.019	40.5	0.0	1.838	1.824	0.000	0.0
1.010	1.218	344.3	2.0	0.900	1.434	0.018	0.0

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.011	S7	S6	25.777	0.600	49.381	49.316	0.065	396.6	600	5.53	29.9
1.012	S6	S5	62.937	0.600	49.316	49.159	0.157	400.9	600	17.00	16.3
1.013	S5	S3	25.540	0.600	49.159	49.095	0.064	399.1	600	17.35	16.1
3.002	S4	S3	31.784	0.600	49.175	49.095	0.080	397.3	600	20.88	14.3
1.014	S3	S2	36.248	0.600	49.095	49.005	0.090	402.8	600	21.38	14.1
1.015	S2	S1HB	10.766	0.600	49.005	48.978	0.027	398.7	600	21.53	14.1
1.016	S1HB	S19	18.944	0.600	48.978	48.864	0.114	166.2	225	21.84	13.9
2.001	CP2	S6	6.181	0.600	50.363	50.400	-0.037	-167.0	225	16.13	16.9
4.006	S12	S11	21.929	0.600	49.823	49.768	0.055	398.7	600	7.84	25.2
1.017	S19	MH6123	27.272	0.600	48.864	48.701	0.163	167.3	225	22.29	13.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.011	1.216	343.9	15.2	1.434	1.549	0.141	0.0
1.012	1.210	342.1	21.2	1.549	1.149	0.359	0.0
1.013	1.213	342.8	25.9	1.149	1.359	0.445	0.0
3.002	1.215	343.6	5.6	1.715	1.359	0.108	0.0
1.014	1.207	341.3	34.6	1.359	1.253	0.677	0.0
1.015	1.213	343.0	36.2	1.253	1.049	0.711	0.0
1.016	1.011	40.2	35.8	1.424	1.411	0.711	0.0
2.001	0.009	0.4	0.0	0.824	0.840	0.000	0.0
4.006	3.483	32260.5	57.6	0.000	0.001	0.633	0.0
1.017	1.008	40.1	35.4	1.411	1.074	0.711	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	29.129	399.0	450	Circular	52.111	50.237	1.424	52.114	50.164	1.500
1.001	36.421	400.2	450	Circular	52.114	50.164	1.500	52.060	50.073	1.537
1.002	18.794	399.9	450	Circular	52.060	50.073	1.537	51.987	50.026	1.511
1.003	27.692	401.3	450	Circular	51.987	50.026	1.511	52.006	49.957	1.599
1.004	33.082	398.6	450	Circular	52.006	49.957	1.599	52.119	49.874	1.795
1.005	20.447	400.9	450	Circular	52.119	49.874	1.795	51.483	49.823	1.210
3.000	2.787	163.9	225	Circular	51.756	49.243	2.288	51.741	49.226	2.290
1.007	21.607	400.1	600	Circular	51.429	49.768	1.061	50.914	49.714	0.600
3.001	8.612	-165.6	225	Circular	51.741	50.398	1.118	51.490	50.450	0.815
2.000	4.743	163.6	225	Circular	51.455	49.392	1.838	51.412	49.363	1.824
1.010	13.058	395.7	600	Circular	50.914	49.414	0.900	51.415	49.381	1.434
1.011	25.777	396.6	600	Circular	51.415	49.381	1.434	51.465	49.316	1.549
1.012	62.937	400.9	600	Circular	51.465	49.316	1.549	50.908	49.159	1.149
1.013	25.540	399.1	600	Circular	50.908	49.159	1.149	51.054	49.095	1.359
3.002	31.784	397.3	600	Circular	51.490	49.175	1.715	51.054	49.095	1.359
1.014	36.248	402.8	600	Circular	51.054	49.095	1.359	50.858	49.005	1.253

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S18	1500	Manhole	Adoptable	S17	1500	Manhole	Adoptable
1.001	S17	1500	Manhole	Adoptable	S16	1500	Manhole	Adoptable
1.002	S16	1500	Manhole	Adoptable	S15	1800	Manhole	Adoptable
1.003	S15	1800	Manhole	Adoptable	S14	1500	Manhole	Adoptable
1.004	S14	1500	Manhole	Adoptable	S13	2100	Manhole	Adoptable
1.005	S13	2100	Manhole	Adoptable	S12	1350	Junction	
3.000	Cells 1		Junction		CP1	1350	Manhole	Adoptable
1.007	S11	1350	Junction		S10	1350	Junction	
3.001	CP1	1350	Manhole	Adoptable	S4	1500	Manhole	Adoptable
2.000	Cells 2		Junction		CP2	1350	Manhole	Adoptable
1.010	S8	1350	Junction		S7	1800	Manhole	Adoptable
1.011	S7	1800	Manhole	Adoptable	S6	2100	Manhole	Adoptable
1.012	S6	2100	Manhole	Adoptable	S5	1800	Manhole	Adoptable
1.013	S5	1800	Manhole	Adoptable	S3	2100	Manhole	Adoptable
3.002	S4	1500	Manhole	Adoptable	S3	2100	Manhole	Adoptable
1.014	S3	2100	Manhole	Adoptable	S2	1800	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.015	10.766	398.7	600	Circular	50.858	49.005	1.253	50.627	48.978	1.049
1.016	18.944	166.2	225	Circular	50.627	48.978	1.424	50.500	48.864	1.411
2.001	6.181	-167.0	225	Circular	51.412	50.363	0.824	51.465	50.400	0.840
4.006	21.929	398.7	600	Swale	51.483	49.823	0.000	51.429	49.768	0.001
1.017	27.272	167.3	225	Circular	50.500	48.864	1.411	50.000	48.701	1.074

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.015	S2	1800	Manhole	Adoptable	S1HB	2100	Manhole	Adoptable
1.016	S1HB	2100	Manhole	Adoptable	S19	1350	Manhole	Adoptable
2.001	CP2	1350	Manhole	Adoptable	S6	2100	Manhole	Adoptable
4.006	S12	1350	Junction		S11	1350	Junction	
1.017	S19	1350	Manhole	Adoptable	MH6123	1350	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S18	389506.261	160141.102	52.111	1.874	1500				
						0	1.000	50.237	450
S17	389477.173	160139.542	52.114	1.950	1500		1	1.000	50.164
						0	1.001	50.164	450
S16	389440.763	160138.659	52.060	1.987	1500		1	1.001	50.073
						0	1.002	50.073	450
S15	389421.994	160137.686	51.987	1.961	1800		1	1.002	50.026
						0	1.003	50.026	450
S14	389396.614	160126.696	52.006	2.049	1500		1	1.003	49.957
						0	1.004	49.957	450
S13	389367.056	160111.750	52.119	2.245	2100		1	1.004	49.874
						0	1.005	49.874	450
S12	389376.239	160093.481	51.483	1.660	1350		1	1.005	49.823
						0	4.006	49.823	600
S11	389386.088	160073.888	51.429	1.661	1350		1	4.006	49.768
						0	1.007	49.768	600
S10	389397.462	160057.314	50.914	1.363	1350		1	1.007	49.714
						0	3.000	49.226	225
CP1	389531.754	160151.325	51.741	2.515	1350		1	3.000	49.226
						0	3.001	50.398	225
S8	389448.937	160053.272	50.914	1.500	1350				
						0	1.010	49.414	600

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S7	389456.652	160056.674	51.415	2.034	1800		1	1.010	49.381	600
							0	1.011	49.381	600
S6	389479.639	160068.338	51.465	2.149	2100		1	2.001	50.400	225
							2	1.011	49.316	600
							0	1.012	49.316	600
S5	389539.992	160086.186	50.908	1.749	1800		1	1.012	49.159	600
							0	1.013	49.159	600
S4	389533.470	160142.886	51.490	2.315	1500		1	3.001	50.450	225
							0	3.002	49.175	600
S3	389539.729	160111.725	51.054	1.959	2100		1	3.002	49.095	600
							2	1.013	49.095	600
							0	1.014	49.095	600
S2	389575.604	160116.913	50.858	1.853	1800		1	1.014	49.005	600
							0	1.015	49.005	600
S1HB	389585.940	160114.459	50.627	1.649	2100		1	1.015	48.978	600
							0	1.016	48.978	225
S19	389602.262	160124.155	50.500	1.636	1350		1	1.016	48.864	225
							0	1.017	48.864	225
MH6123	389628.395	160116.356	50.000	1.299	1350		1	1.017	48.701	225
Cells 1	389531.397	160154.089	51.756	2.513						
							0	3.000	49.243	225
Cells 2	389476.265	160078.704	51.455	2.063						
							0	2.000	49.392	225
CP2	389478.058	160074.313	51.412	2.049	1350		1	2.000	49.363	225
							0	2.001	50.363	225

Node S1HB Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	48.978	Product Number	CTL-SHE-0086-4000-1600-4000
Design Depth (m)	1.600	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	4.0	Min Node Diameter (mm)	1200

Node CP2 Offline Orifice Control

Flap Valve	✓	Invert Level (m)	49.363	Discharge Coefficient	0.600
Loop to Node	S6	Diameter (m)	0.225		

Node CP1 Offline Orifice Control

Flap Valve	✓	Invert Level (m)	49.226	Discharge Coefficient	0.600
Loop to Node	S4	Diameter (m)	0.225		

Node S8 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	55.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	49.414	Main Channel Slope (1:X)	400.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.035

Inlets
S10

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	547.7	547.7	1.500	1167.6	1186.2

Node Cells 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	49.243
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	80.0	0.0	1.200	80.0	38.0	1.201	0.0	38.0

Node Cells 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	49.392
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	648.0	648.0	1.200	648.0	756.3	1.201	0.0	756.3

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S18	10	50.311	0.074	10.1	0.1311	0.0000	OK
15 minute summer	S17	11	50.276	0.112	22.4	0.1973	0.0000	OK
15 minute summer	S16	11	50.211	0.138	28.3	0.2432	0.0000	OK
15 minute summer	S15	11	50.179	0.153	36.7	0.3884	0.0000	OK
15 minute summer	S14	12	50.127	0.170	46.4	0.3007	0.0000	OK
15 minute summer	S13	12	50.033	0.159	51.5	0.5507	0.0000	OK
15 minute summer	S12	12	49.933	0.110	57.6	0.0000	0.0000	OK
15 minute summer	S11	12	49.932	0.164	62.6	0.0000	0.0000	OK
720 minute winter	S10	675	49.741	0.190	10.3	0.0000	0.0000	OK
15 minute summer	CP1	1	49.226	0.000	0.0	0.0000	0.0000	OK
720 minute winter	S8	675	49.742	0.328	11.4	0.0000	0.0000	OK
720 minute winter	S7	675	49.742	0.361	6.4	0.9183	0.0000	OK
720 minute winter	S6	675	49.742	0.426	8.4	1.4752	0.0000	OK
720 minute winter	S5	675	49.742	0.583	7.8	1.4833	0.0000	OK
720 minute winter	S4	675	49.742	0.567	1.4	1.0017	0.0000	OK
720 minute winter	S3	675	49.742	0.647	7.0	2.2408	0.0000	SURCHARGED
720 minute winter	S2	675	49.742	0.737	5.2	1.8755	0.0000	SURCHARGED
720 minute winter	S1HB	675	49.742	0.764	4.0	2.6462	0.0000	SURCHARGED
15 minute summer	S19	162	48.910	0.046	3.6	0.0656	0.0000	OK
15 minute summer	MH6123	162	48.746	0.045	3.6	0.0000	0.0000	OK
15 minute summer	Cells 1	1	49.243	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Cells 2	1	49.392	0.000	0.0	0.0000	0.0000	OK
15 minute summer	CP2	1	49.363	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S18	1.000	S17	9.8	0.419	0.061	0.6927	
15 minute summer	S17	1.001	S16	22.3	0.627	0.139	1.3039	
15 minute summer	S16	1.002	S15	27.6	0.624	0.172	0.8301	
15 minute summer	S15	1.003	S14	35.8	0.702	0.223	1.4108	
15 minute summer	S14	1.004	S13	46.0	0.878	0.286	1.7351	
15 minute summer	S13	1.005	S12	51.8	1.318	0.323	0.8179	
15 minute summer	S12	4.006	S11	56.9	0.412	0.002	3.0916	
15 minute summer	S11	1.007	S10	60.8	1.016	0.178	1.3007	
720 minute winter	S10	Flow through Pond	S8	9.6	0.032	0.000	156.6663	
15 minute summer	CP1	3.001	S4	0.0	0.000	0.000	0.0000	
15 minute summer	CP1	Orifice	S4	0.0				0.0
720 minute winter	S8	1.010	S7	5.3	0.430	0.015	2.1837	
720 minute winter	S7	1.011	S6	6.4	0.424	0.018	5.0384	
720 minute winter	S6	1.012	S5	7.1	0.395	0.021	15.5256	
720 minute winter	S5	1.013	S3	5.9	0.334	0.017	7.1656	
720 minute winter	S4	3.002	S3	1.4	0.093	0.004	8.8585	
720 minute winter	S3	1.014	S2	4.9	0.219	0.014	10.2102	
720 minute winter	S2	1.015	S1HB	4.0	0.260	0.012	3.0325	
720 minute winter	S1HB	1.016	S19	3.6	0.615	0.089	0.1097	
15 minute summer	S19	1.017	MH6123	3.6	0.624	0.089	0.1557	64.5
15 minute summer	Cells 1	3.000	CP1	0.0	0.000	0.000	0.0000	
15 minute summer	Cells 2	2.000	CP2	0.0	0.000	0.000	0.0000	
15 minute summer	CP2	2.001	S6	0.0	0.000	0.000	0.0000	
15 minute summer	CP2	Orifice	S6	0.0				0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S18	10	50.330	0.093	15.8	0.1637	0.0000	OK
15 minute summer	S17	11	50.308	0.144	35.3	0.2547	0.0000	OK
15 minute summer	S16	11	50.257	0.184	44.3	0.3244	0.0000	OK
15 minute summer	S15	11	50.228	0.202	57.6	0.5153	0.0000	OK
15 minute summer	S14	11	50.178	0.221	73.6	0.3911	0.0000	OK
15 minute summer	S13	12	50.077	0.203	82.2	0.7032	0.0000	OK
15 minute summer	S12	12	49.978	0.155	91.1	0.0000	0.0000	OK
15 minute summer	S11	12	49.978	0.210	99.8	0.0000	0.0000	OK
720 minute winter	S10	705	49.867	0.316	13.3	0.0000	0.0000	OK
15 minute summer	CP1	1	49.226	0.000	0.0	0.0000	0.0000	OK
720 minute winter	S8	705	49.868	0.454	12.9	0.0000	0.0000	OK
720 minute winter	S7	705	49.868	0.487	6.1	1.2393	0.0000	OK
720 minute winter	S6	705	49.868	0.552	7.9	1.9119	0.0000	OK
720 minute winter	S5	705	49.868	0.709	7.1	1.8043	0.0000	SURCHARGED
720 minute winter	S4	705	49.868	0.693	1.9	1.2244	0.0000	SURCHARGED
720 minute winter	S3	705	49.868	0.773	6.6	2.6775	0.0000	SURCHARGED
720 minute winter	S2	705	49.868	0.863	5.0	2.1962	0.0000	SURCHARGED
720 minute winter	S1HB	705	49.868	0.890	4.0	3.0827	0.0000	SURCHARGED
15 minute summer	S19	340	48.910	0.046	3.6	0.0656	0.0000	OK
15 minute summer	MH6123	340	48.746	0.045	3.6	0.0000	0.0000	OK
15 minute summer	Cells 1	1	49.243	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Cells 2	1	49.392	0.000	0.0	0.0000	0.0000	OK
15 minute summer	CP2	1	49.363	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S18	1.000	S17	15.5	0.470	0.096	0.9761	
15 minute summer	S17	1.001	S16	34.7	0.680	0.216	1.9028	
15 minute summer	S16	1.002	S15	43.3	0.667	0.270	1.2207	
15 minute summer	S15	1.003	S14	56.4	0.772	0.351	2.0317	
15 minute summer	S14	1.004	S13	72.4	0.989	0.450	2.4215	
15 minute summer	S13	1.005	S12	81.9	1.417	0.510	1.2014	
15 minute summer	S12	4.006	S11	90.8	0.442	0.003	4.6250	
15 minute summer	S11	1.007	S10	98.4	1.165	0.287	1.8328	
720 minute winter	S10	Flow through Pond	S8	10.5	0.043	0.000	242.6137	
15 minute summer	CP1	3.001	S4	0.0	0.000	0.000	0.0000	
15 minute summer	CP1	Orifice	S4	0.0				0.0
720 minute winter	S8	1.010	S7	-5.7	0.420	-0.017	3.0931	
720 minute winter	S7	1.011	S6	6.0	0.414	0.018	6.6532	
720 minute winter	S6	1.012	S5	6.5	0.387	0.019	17.3991	
720 minute winter	S5	1.013	S3	5.5	0.334	0.016	7.1940	
720 minute winter	S4	3.002	S3	1.7	0.101	0.005	8.9528	
720 minute winter	S3	1.014	S2	4.7	0.240	0.014	10.2102	
720 minute winter	S2	1.015	S1HB	4.0	0.188	0.012	3.0325	
720 minute winter	S1HB	1.016	S19	3.6	0.615	0.089	0.1097	
15 minute summer	S19	1.017	MH6123	3.6	0.624	0.089	0.1557	101.9
15 minute summer	Cells 1	3.000	CP1	0.0	0.000	0.000	0.0000	
15 minute summer	Cells 2	2.000	CP2	0.0	0.000	0.000	0.0000	
15 minute summer	CP2	2.001	S6	0.0	0.000	0.000	0.0000	
15 minute summer	CP2	Orifice	S6	0.0				0.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.84%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S18	12	50.521	0.284	44.2	0.5022	0.0000	OK
15 minute summer	S17	12	50.516	0.352	92.0	0.6219	0.0000	OK
15 minute summer	S16	12	50.489	0.416	109.1	0.7347	0.0000	OK
15 minute summer	S15	12	50.459	0.433	144.2	1.1027	0.0000	OK
15 minute summer	S14	11	50.393	0.436	189.1	0.7697	0.0000	OK
1440 minute winter	S13	1410	50.378	0.504	11.8	1.7475	0.0000	SURCHARGED
1440 minute winter	S12	1410	50.378	0.555	13.0	0.0000	0.0000	OK
1440 minute winter	S11	1410	50.378	0.610	13.8	0.0000	0.0000	SURCHARGED
1440 minute winter	S10	1410	50.378	0.826	14.6	0.0000	0.0000	OK
15 minute summer	CP1	1	49.226	0.000	0.0	0.0000	0.0000	OK
1440 minute winter	S8	1410	50.378	0.964	13.1	0.0000	0.0000	SURCHARGED
1440 minute winter	S7	1410	50.378	0.997	10.9	2.5386	0.0000	SURCHARGED
1440 minute winter	S6	1410	50.378	1.062	8.4	3.6804	0.0000	SURCHARGED
1440 minute winter	S5	1410	50.378	1.219	4.8	3.1035	0.0000	SURCHARGED
1440 minute winter	S4	1410	50.378	1.203	2.3	2.1265	0.0000	SURCHARGED
1440 minute winter	S3	1410	50.378	1.283	4.8	4.4458	0.0000	SURCHARGED
1440 minute winter	S2	1410	50.378	1.373	4.1	3.4954	0.0000	SURCHARGED
1440 minute winter	S1HB	1410	50.378	1.400	3.7	4.8510	0.0000	FLOOD RISK
1440 minute winter	S19	1410	48.911	0.047	3.7	0.0669	0.0000	OK
1440 minute winter	MH6123	1410	48.747	0.046	3.7	0.0000	0.0000	OK
15 minute summer	Cells 1	1	49.243	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Cells 2	1	49.392	0.000	0.0	0.0000	0.0000	OK
15 minute summer	CP2	1	49.363	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S18	1.000	S17	37.7	0.505	0.234	3.4738	
15 minute summer	S17	1.001	S16	83.8	0.744	0.522	5.2091	
15 minute summer	S16	1.002	S15	108.8	0.729	0.677	2.9095	
15 minute summer	S15	1.003	S14	144.1	0.921	0.898	4.3419	
15 minute summer	S14	1.004	S13	186.5	1.245	1.159	4.9222	
1440 minute winter	S13	1.005	S12	11.5	0.929	0.072	3.2397	
1440 minute winter	S12	4.006	S11	12.3	0.267	0.000	30.0819	
1440 minute winter	S11	1.007	S10	13.3	0.642	0.039	6.0862	
1440 minute winter	S10	Flow through Pond	S8	5.8	0.028	0.000	657.4277	
15 minute summer	CP1	3.001	S4	0.0	0.000	0.000	0.0000	
15 minute summer	CP1	Orifice	S4	0.0				0.0
1440 minute winter	S8	1.010	S7	-10.7	0.374	-0.031	3.6781	
1440 minute winter	S7	1.011	S6	-8.3	0.382	-0.024	7.2608	
1440 minute winter	S6	1.012	S5	4.5	0.373	0.013	17.7279	
1440 minute winter	S5	1.013	S3	4.1	0.309	0.012	7.1940	
1440 minute winter	S4	3.002	S3	2.2	0.090	0.007	8.9528	
1440 minute winter	S3	1.014	S2	4.0	0.194	0.012	10.2102	
1440 minute winter	S2	1.015	S1HB	3.7	0.081	0.011	3.0325	
1440 minute winter	S1HB	1.016	S19	3.7	0.622	0.092	0.1129	
1440 minute winter	S19	1.017	MH6123	3.7	0.631	0.092	0.1601	584.8
15 minute summer	Cells 1	3.000	CP1	0.0	0.000	0.000	0.0000	
15 minute summer	Cells 2	2.000	CP2	0.0	0.000	0.000	0.0000	
15 minute summer	CP2	2.001	S6	0.0	0.000	0.000	0.0000	
15 minute summer	CP2	Orifice	S6	0.0				0.0

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.91%

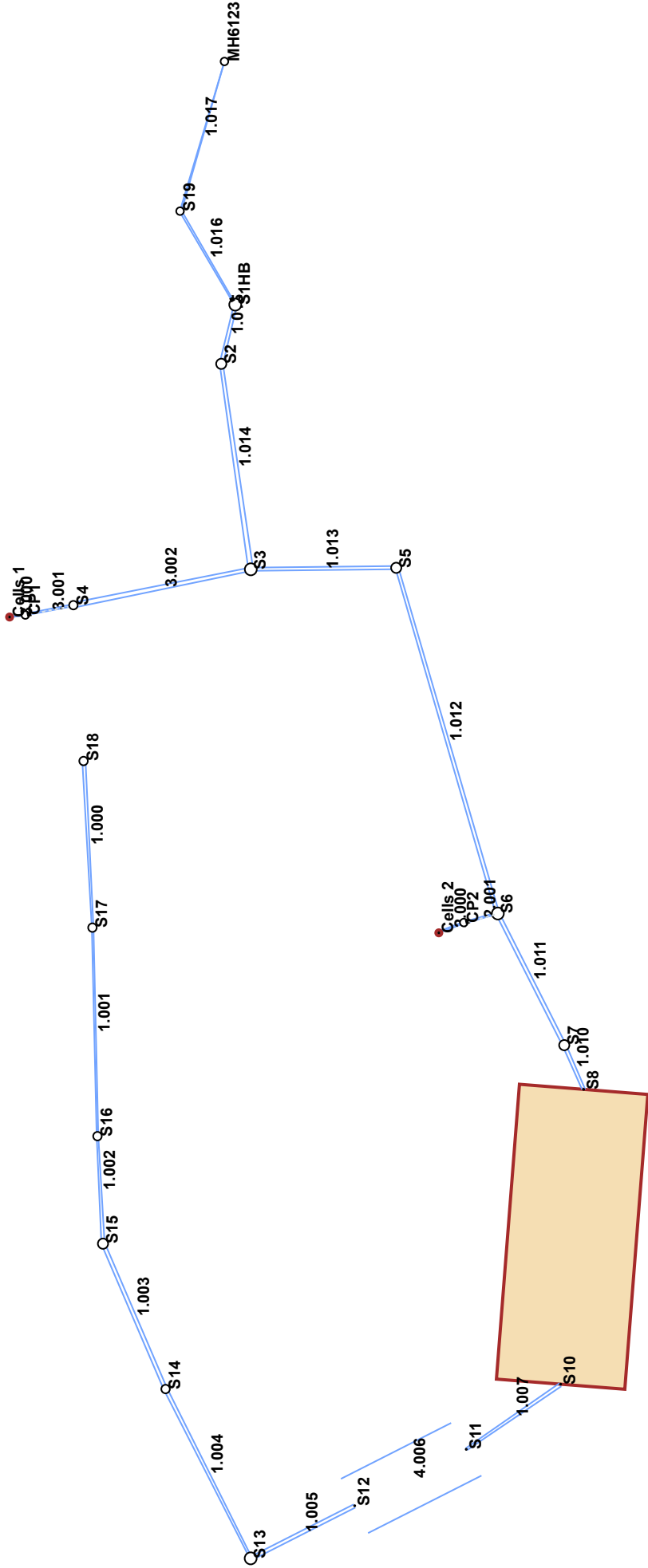
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S18	11	50.962	0.725	56.5	1.2807	0.0000	SURCHARGED
15 minute summer	S17	11	50.941	0.777	118.9	1.3727	0.0000	SURCHARGED
15 minute summer	S16	11	50.874	0.801	144.1	1.4147	0.0000	SURCHARGED
15 minute summer	S15	11	50.820	0.794	193.3	2.0212	0.0000	SURCHARGED
15 minute summer	S14	11	50.681	0.724	255.5	1.2797	0.0000	SURCHARGED
960 minute winter	S13	675	50.497	0.623	20.1	2.1590	0.0000	SURCHARGED
960 minute winter	S12	675	50.497	0.674	22.0	0.0000	0.0000	OK
960 minute winter	S11	675	50.497	0.729	23.0	0.0000	0.0000	SURCHARGED
960 minute winter	S10	675	50.497	0.945	23.9	0.0000	0.0000	OK
960 minute winter	CP1	1875	49.638	0.412	3.5	0.5894	0.0000	OK
960 minute winter	S8	675	50.497	1.083	23.6	0.0000	0.0000	SURCHARGED
960 minute winter	S7	675	50.497	1.116	22.3	2.8403	0.0000	SURCHARGED
960 minute winter	S6	675	50.497	1.181	17.8	4.0906	0.0000	SURCHARGED
960 minute winter	S5	675	50.497	1.338	9.5	3.4048	0.0000	SURCHARGED
960 minute winter	S4	675	50.497	1.322	4.1	2.3357	0.0000	SURCHARGED
960 minute winter	S3	675	50.497	1.402	8.8	4.8560	0.0000	SURCHARGED
960 minute winter	S2	675	50.497	1.492	5.0	3.7967	0.0000	SURCHARGED
960 minute winter	S1HB	675	50.497	1.519	3.9	5.2612	0.0000	FLOOD RISK
960 minute winter	S19	675	48.912	0.048	3.9	0.0682	0.0000	OK
960 minute winter	MH6123	675	48.748	0.047	3.9	0.0000	0.0000	OK
960 minute winter	Cells 1	2010	49.638	0.395	3.5	29.9997	0.0000	SURCHARGED
1440 minute winter	Cells 2	1950	49.793	0.401	12.4	246.6953	0.0000	SURCHARGED
1440 minute winter	CP2	1800	49.793	0.430	12.4	0.6152	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S18	1.000	S17	51.3	0.504	0.319	4.6153	
15 minute summer	S17	1.001	S16	111.4	0.754	0.693	5.7707	
15 minute summer	S16	1.002	S15	144.1	0.909	0.897	2.9778	
15 minute summer	S15	1.003	S14	193.9	1.224	1.209	4.3876	
15 minute summer	S14	1.004	S13	251.1	1.585	1.560	5.2416	
960 minute winter	S13	1.005	S12	19.3	1.031	0.120	3.2397	
960 minute winter	S12	4.006	S11	20.4	0.304	0.001	41.6712	
960 minute winter	S11	1.007	S10	21.4	0.706	0.062	6.0862	
960 minute winter	S10	Flow through Pond	S8	10.7	0.040	0.000	769.2717	
960 minute winter	CP1	3.001	S4	-3.5	-0.613	-9.555	0.0498	
960 minute winter	CP1	Orifice	S4	0.0				0.0
960 minute winter	S8	1.010	S7	-22.1	0.429	-0.064	3.6781	
960 minute winter	S7	1.011	S6	-17.6	0.429	-0.051	7.2608	
960 minute winter	S6	1.012	S5	-9.4	0.374	-0.027	17.7279	
960 minute winter	S5	1.013	S3	-6.2	0.313	-0.018	7.1940	
960 minute winter	S4	3.002	S3	4.0	0.109	0.012	8.9528	
960 minute winter	S3	1.014	S2	4.8	0.302	0.014	10.2102	
960 minute winter	S2	1.015	S1HB	3.9	0.178	0.011	3.0325	
960 minute winter	S1HB	1.016	S19	3.9	0.629	0.096	0.1161	
960 minute winter	S19	1.017	MH6123	3.9	0.638	0.096	0.1646	505.9
960 minute winter	Cells 1	3.000	CP1	-3.5	-0.492	-0.086	0.1108	
1440 minute winter	Cells 2	2.000	CP2	-12.4	-0.939	-0.306	0.1886	
1440 minute winter	CP2	2.001	S6	-12.4	-0.847	-33.482	0.0906	
1440 minute winter	CP2	Orifice	S6	0.0				0.0

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S18	11	51.936	1.699	82.0	3.0014	0.0000	FLOOD RISK
15 minute summer	S17	11	51.914	1.750	173.9	3.0924	0.0000	FLOOD RISK
15 minute summer	S16	11	51.779	1.706	220.5	3.0143	0.0000	FLOOD RISK
15 minute summer	S15	11	51.642	1.616	291.9	4.1127	0.0000	SURCHARGED
15 minute summer	S14	11	51.332	1.375	377.2	2.4301	0.0000	SURCHARGED
15 minute summer	S13	11	50.736	0.862	428.8	2.9843	0.0000	SURCHARGED
960 minute summer	S12	600	50.612	0.789	48.9	0.0000	0.0000	OK
960 minute summer	S11	600	50.612	0.844	49.8	0.0000	0.0000	SURCHARGED
960 minute summer	S10	600	50.611	1.060	50.4	0.0000	0.0000	OK
720 minute summer	CP1	450	50.658	1.432	28.9	2.0493	0.0000	SURCHARGED
960 minute summer	S8	600	50.612	1.198	53.8	0.0000	0.0000	SURCHARGED
960 minute summer	S7	600	50.612	1.231	52.6	3.1319	0.0000	SURCHARGED
960 minute summer	S6	600	50.611	1.295	54.7	4.4854	0.0000	SURCHARGED
720 minute summer	S5	450	50.630	1.471	30.8	3.7443	0.0000	FLOOD RISK
720 minute summer	S4	450	50.641	1.466	28.9	2.5908	0.0000	SURCHARGED
720 minute summer	S3	450	50.633	1.538	26.1	5.3275	0.0000	SURCHARGED
720 minute summer	S2	450	50.616	1.611	19.0	4.1011	0.0000	FLOOD RISK
720 minute summer	S1HB	450	50.612	1.634	13.4	5.6612	0.0000	FLOOD RISK
960 minute summer	S19	600	48.912	0.048	4.0	0.0694	0.0000	OK
960 minute summer	MH6123	600	48.749	0.048	4.0	0.0000	0.0000	OK
720 minute summer	Cells 1	450	50.658	1.415	28.4	91.2380	0.0000	SURCHARGED
1440 minute winter	Cells 2	1440	50.532	1.140	33.4	701.9413	0.0000	SURCHARGED
1440 minute winter	CP2	1440	50.532	1.169	33.5	1.6731	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S18	1.000	S17	75.6	0.499	0.470	4.6153	
15 minute summer	S17	1.001	S16	171.4	1.082	1.067	5.7707	
15 minute summer	S16	1.002	S15	217.7	1.374	1.355	2.9778	
15 minute summer	S15	1.003	S14	287.9	1.817	1.795	4.3876	
15 minute summer	S14	1.004	S13	375.0	2.367	2.330	5.2416	
15 minute summer	S13	1.005	S12	424.0	2.676	2.642	3.2397	
960 minute summer	S12	4.006	S11	43.8	0.297	0.001	54.6575	
960 minute summer	S11	1.007	S10	44.6	0.671	0.130	6.0862	
960 minute summer	S10	Flow through Pond	S8	36.8	0.043	0.002	882.9570	
720 minute summer	CP1	3.001	S4	-28.9	-1.045	-78.010	0.3262	
720 minute summer	CP1	Orifice	S4	13.6				38.9
960 minute summer	S8	1.010	S7	-52.3	0.439	-0.152	3.6781	
960 minute summer	S7	1.011	S6	45.7	0.432	0.133	7.2608	
960 minute summer	S6	1.012	S5	-24.3	0.360	-0.071	17.7279	
720 minute summer	S5	1.013	S3	-22.0	0.357	-0.064	7.1940	
720 minute summer	S4	3.002	S3	-23.8	0.131	-0.069	8.9528	
720 minute summer	S3	1.014	S2	17.7	0.192	0.052	10.2102	
720 minute summer	S2	1.015	S1HB	13.4	0.073	0.039	3.0325	
720 minute summer	S1HB	1.016	S19	4.0	0.634	0.099	0.1189	
960 minute summer	S19	1.017	MH6123	4.0	0.644	0.099	0.1687	524.3
720 minute summer	Cells 1	3.000	CP1	-28.4	-0.997	-0.701	0.1108	
1440 minute winter	Cells 2	2.000	CP2	-33.4	-1.267	-0.823	0.1886	
1440 minute winter	CP2	2.001	S6	-33.5	-1.067	-90.295	0.1933	
1440 minute winter	CP2	Orifice	S6	1.5				109.6



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APPENDIX J: SURFACE WATER RUN-OFF CALCULATIONS

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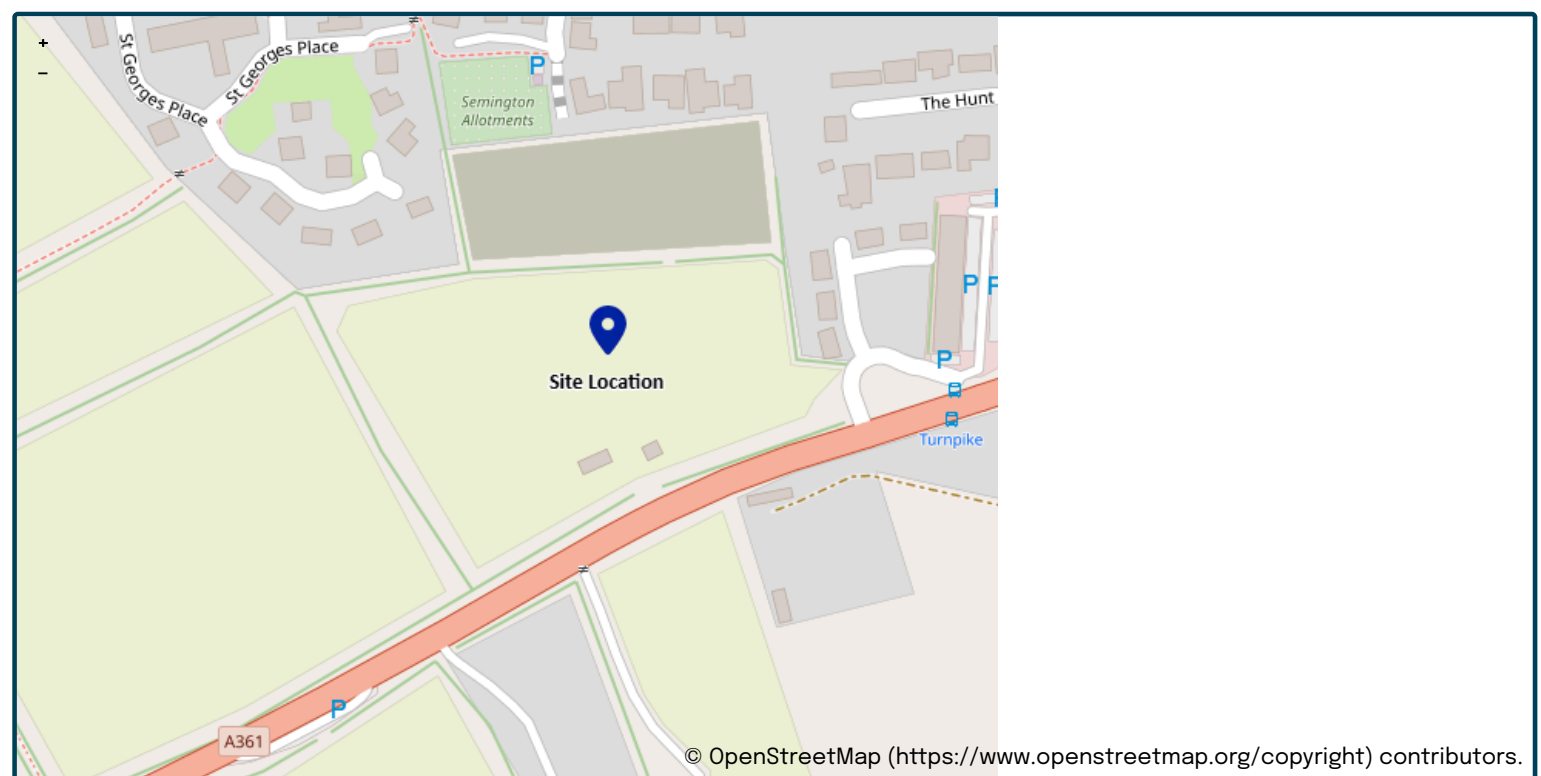
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	15/10/2025
Calculated by	SM
Reference	HYD1097
Model version	2.2.1

Location

Site name	Turnpike Close
Site location	Semington



Site easting (British National Grid)	389474
Site northing (British National Grid)	160114

Site details

Total site area (ha)	1	ha
----------------------	--------------------------------	----

Greenfield runoff

Method

Method	FEH statistical (2025)
--------	-----------------------------------

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	733 mm	
BFIHOST19scaled	0.499	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	3.1 l/s	
QBar (FEH statistical 2025) (l/s)	3.3 l/s	

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	8	8
1 year growth factor	0.78	
2 year growth factor	0.93	
10 year growth factor	1.49	
30 year growth factor	1.95	
100 year growth factor	2.43	
200 year growth factor	2.78	

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	2.6 l/s
Flow rate 2 year (l/s)	3.1 l/s
Flow rate 10 years (l/s)	4.9 l/s
Flow rate 30 years (l/s)	6.4 l/s
Flow rate 100 years (l/s)	8.0 l/s
Flow rate 200 years (l/s)	9.1 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.1) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

SURFACE WATER RUN-OFF CALCULATION SHEET



Development	Turnpike Close, Semington
Project No.	HYD1097

Revision	C	Completed by	SM
Date	07/08/2026	Checked by	HB

Areas			
Total Site	2.156	ha	
Development Area ¹	1.750	ha	
Existing Impermeable		ha	
Existing Impermeable ²		ha	
Existing Pervious	2.156	ha	
Existing Pervious ²	0.000	ha	
Proposed total Impermeable	0.963	ha	55%
10% Urban Creep	1.138	ha	65%

Catchment Characteristics			
SAAR	733	mm	*SAAR9120.
SPR	0.388		*Estimated using BFI19Scaled.
BFI	0.499		*BFI19Scaled.
i_1	18.1	mm/hr	d_1 24.1 mm
i_{30}	35.0	mm/hr	d_{30} 52.1 mm
i_{100}	45.9	mm/hr	d_{100} 67.0 mm

Run-off Rates (FEH Method)			
Pre-development			
Impermeable -----	1yr	0.0	l/s
	30yr	0.0	l/s
	100yr	0.0	l/s
	50mm/hr ³	0.0	l/s
Pervious ⁴ -----	1yr	4.6	l/s
	30yr	11.2	l/s
	100yr	14.0	l/s
	QBar ⁵	5.8	l/s
Total -----	1yr	4.6	l/s
	30yr	11.2	l/s
	100yr	14.0	l/s
Post-development (without control)			
Impermeable ⁶ -----	1yr	57.3	l/s
	30yr	110.7	l/s
	100yr+45%CC	210.2	l/s

Volumes			
Pre-development			
Impermeable -----	1yr	0.0	cu.m
	30yr	0.0	cu.m
	100yr	0.0	cu.m
Pervious ⁴ -----	1yr	169.4	cu.m
	30yr	353.6	cu.m
	100yr	488.6	cu.m
Total -----	1yr	169.4	cu.m
	30yr	353.6	cu.m
	100yr	488.6	cu.m
Post-development			
Impermeable ⁶ -----	1yr	274.4	cu.m
	30yr	592.2	cu.m
	100yr	761.8	cu.m

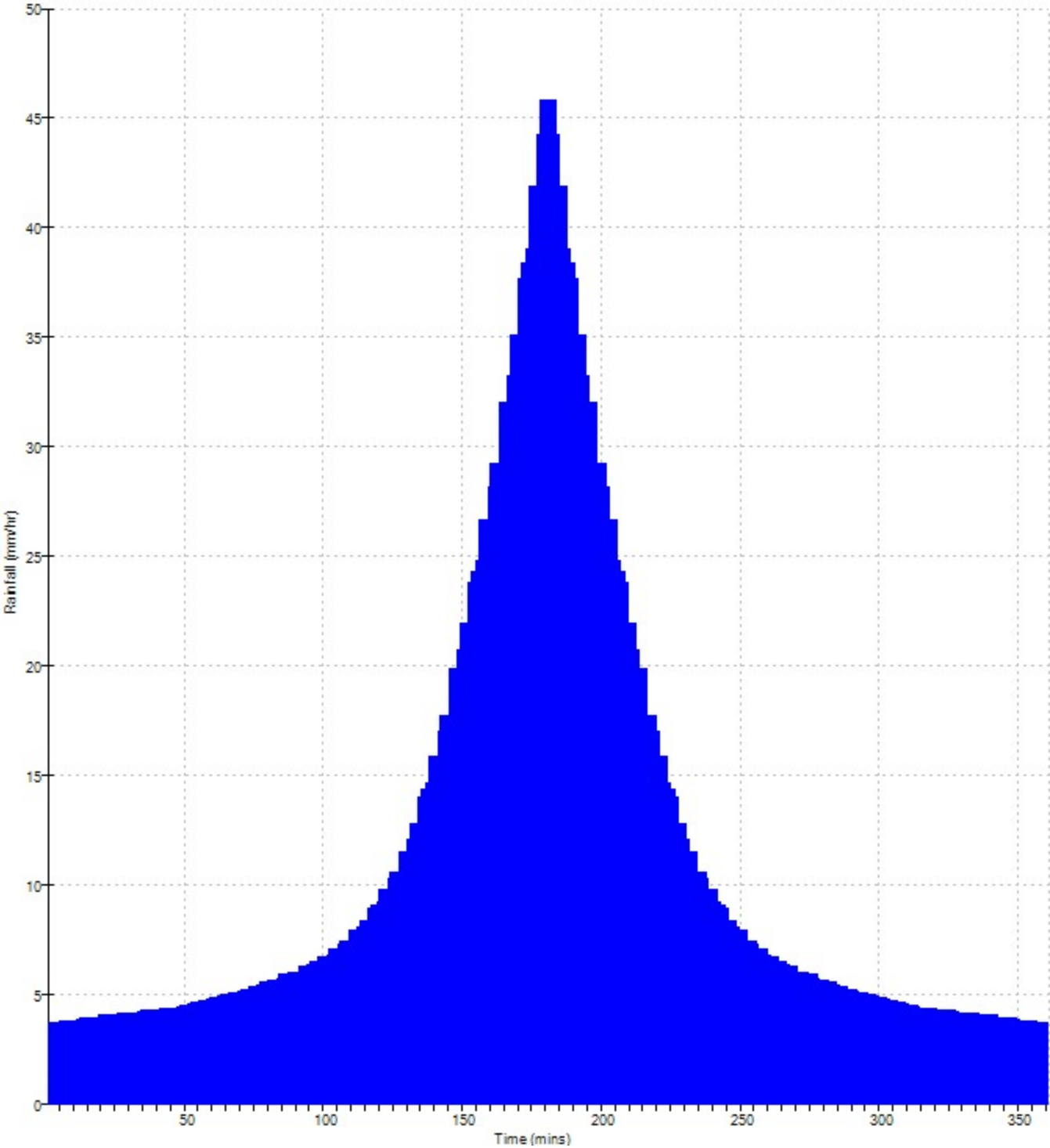
- 1/ The 'development area' removes areas of POS and/or landscaped areas of the wider site that are to remain as existing.
 2/ On occasion the existing impermeable area cannot be evidenced to connect and a reduction is applied.
 3/ 50mm/hr is used for BRegs calculations and often used by Water Companies when considering allowable post-development rates of discharge. (Rational Method)
 4/ The Greenfield rates and of run-off have been calculated using the UK SUDS Calculator
 5/ QBar is the estimated flood flow for the 2.33yr return period event and is often used as a post-development rate restriction.
 6/ Post-development run-off is only considered from the impermeable area when the proposed post-development impermeable area >50% in accordance with the EA Guidance Preliminary rainfall runoff management for developments [WS-074/A/TR1/1 rev E (2012).

NB. The catchment characteristics are from the FEH catchment, the UK SUDS Calculator and Microdrainage. |
 NB. The rainfall intensities and depths are calculated for the 6hr duration rainfall event (peak summer intensity)

Rainfall profile

Storm duration (mins) 360

FEH Data	
FEH Rainfall Version	2013
Site Location	GB 389474 160210 ST 89474 60210
Data Type	Point
Peak Intensity (mm/hr)	45.883
Ave. Intensity (mm/hr)	11.705
Return Period (years)	100.0



Betts Associates Ltd		Page 1
Old Marsh Farm Barns	Turnpike Close	
Welsh Road		
Sealand Flintshire CH5 2LY		
Date 19/11/2025	Designed by SM	
File	Checked by HB	
Micro Drainage	Source Control 2020.1	

Greenfield Runoff Volume

FEH Data

Return Period (years)	2
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 389474 160210 ST 89474 60210
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	1.750
SAAR (mm)	733
CWI	109.258
SPR Host	38.800
URBEXT (1990)	0.0000

Results

Percentage Runoff (%)	34.86
Greenfield Runoff Volume (m³)	169.356

Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY	Turnpike Close	
Date 19/11/2025 File	Designed by SM Checked by HB	
Micro Drainage	Source Control 2020.1	

Greenfield Runoff Volume

FEH Data

Return Period (years)	30
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 389474 160210 ST 89474 60210
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	1.750
SAAR (mm)	733
CWI	109.258
SPR Host	38.800
URBEXT (1990)	0.0000

Results

Percentage Runoff (%)	37.67
Greenfield Runoff Volume (m³)	353.602

Betts Associates Ltd		Page 1
Old Marsh Farm Barns	Turnpike Close	
Welsh Road		
Sealand Flintshire CH5 2LY		
Date 19/11/2025	Designed by Sm	
File	Checked by HB	
Micro Drainage	Source Control 2020.1	

Greenfield Runoff Volume

FEH Data

Return Period (years)	100
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 389474 160210 ST 89474 60210
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	1.750
SAAR (mm)	733
CWI	109.258
SPR Host	38.800
URBEXT (1990)	0.0000

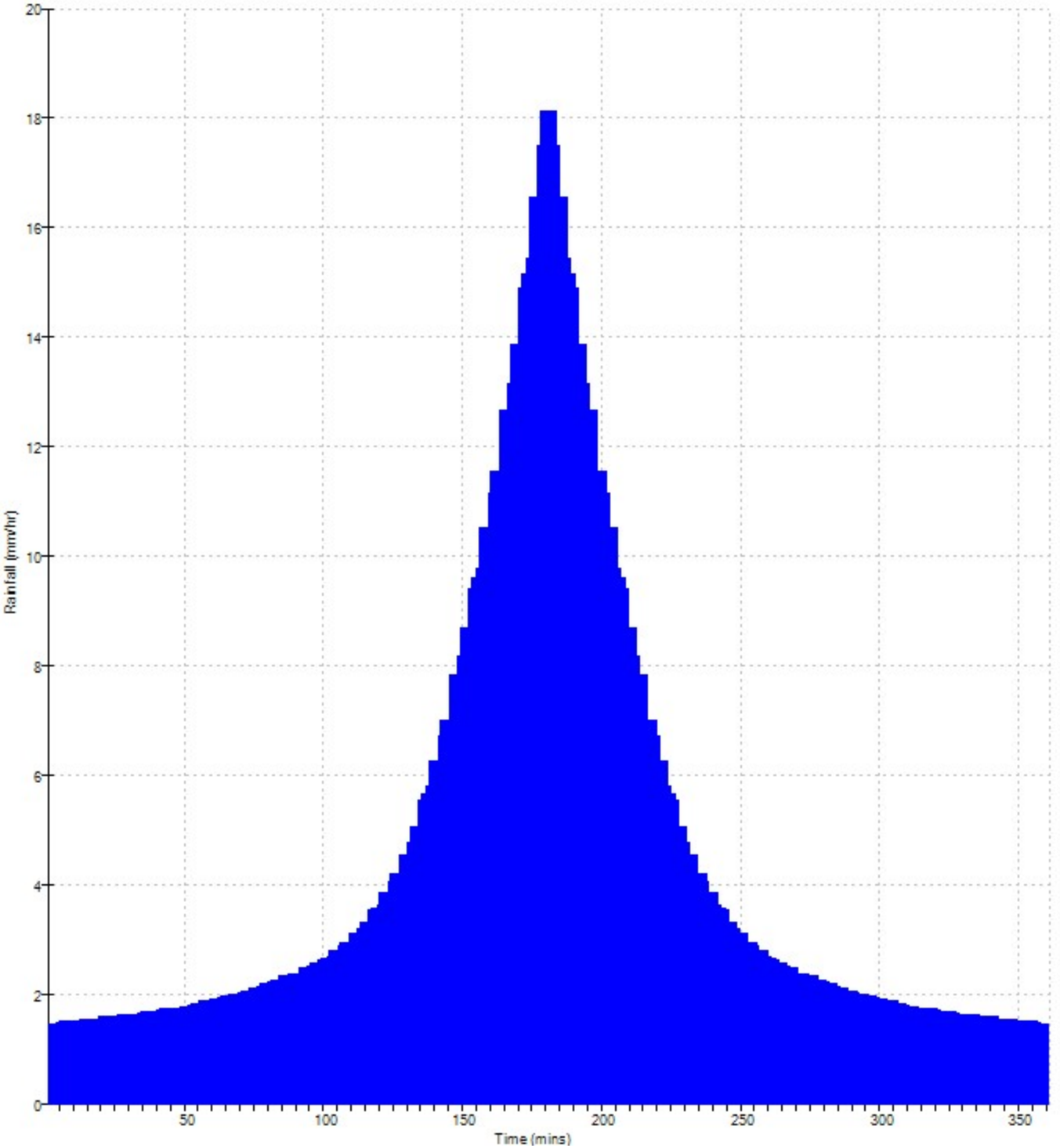
Results

Percentage Runoff (%)	39.76
Greenfield Runoff Volume (m³)	488.615

Rainfall profile

Storm duration (mins) 360

FEH Data	
FEH Rainfall Version	2013
Site Location	GB 389474 160210 ST 89474 60210
Data Type	Point
Peak Intensity (mm/hr)	18.135
Ave. Intensity (mm/hr)	4.626
Return Period (years)	2.0

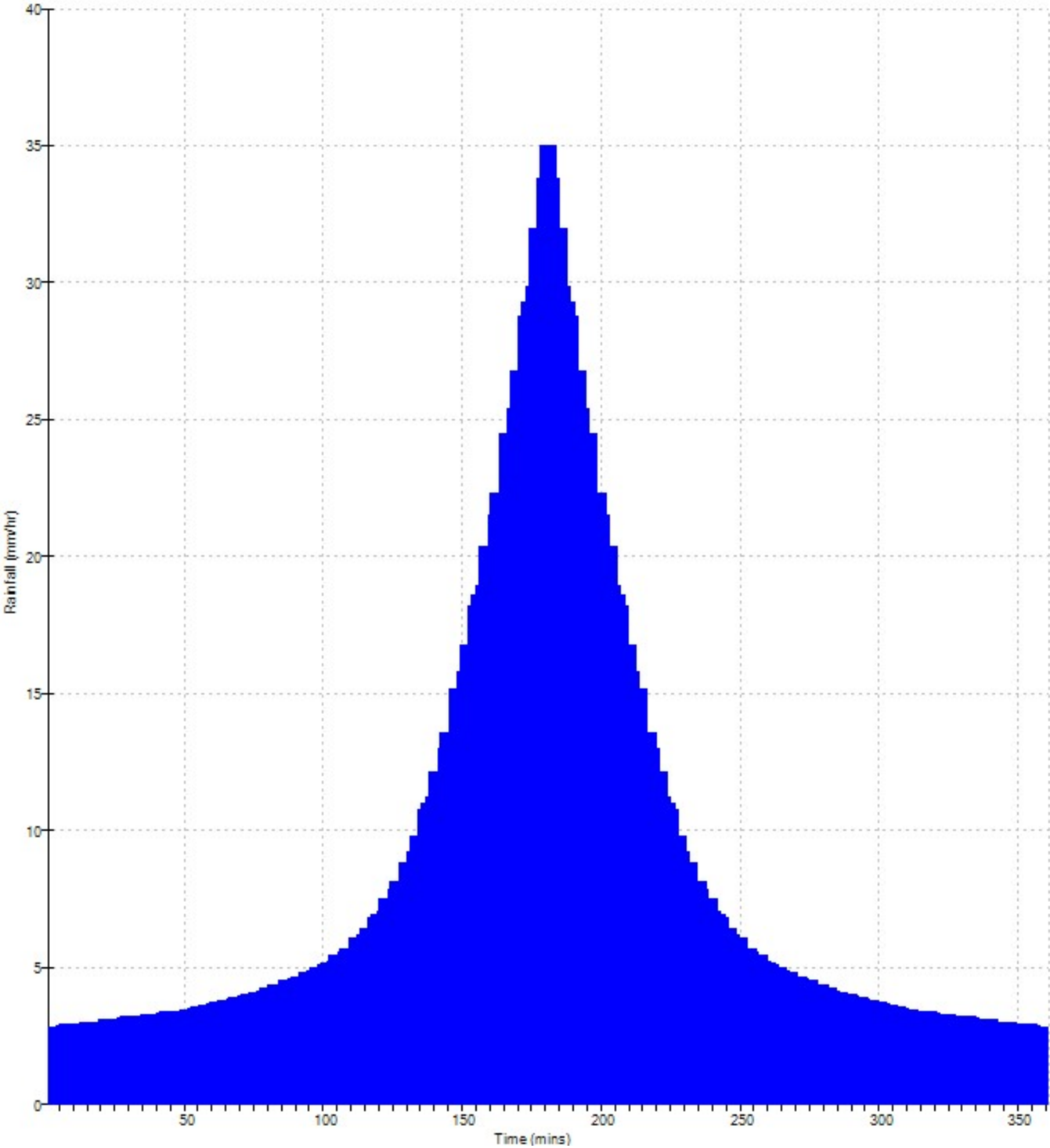


Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY	Turnpike Close Semington	
Date 15/10/2025	Designed by SM	
File	Checked by KH	
Micro Drainage	Network 2020.1	

Rainfall profile

Storm duration (mins) 360

FEH Data	
FEH Rainfall Version	2013
Site Location	GB 389474 160210 ST 89474 60210
Data Type	Point
Peak Intensity (mm/hr)	35.046
Ave. Intensity (mm/hr)	8.940
Return Period (years)	30.0



APPENDIX K: WATER QUALITY ASSESSMENT - SIA

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Water quality management assessment - CIRIA SuDS Manual 'Simplified Index Approach'

Turnpike Close Semington

Pollution hazard indices from Table 26.2 'Pollution hazard indices for different land use classifications'
Mitigation indices from Table 26.3 'Indicative SuDS mitigation indices for discharges to surface waters'

v1.0 HYD1097

Description of area being served		Ref. no.	Category	Pollution type	Hazard index	Primary	Secondary	Tertiary	Total SuDS mitigation index	Assessment criteria	Acceptable (y/n)
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Development surrounding Roads 3, 4 and 5											
Roof area	001	Residential roofs	Pollution hazard level	Very low	Permeable Surfacing	Swale	(factored by 0.5)	Detention Basin	(factored by 0.5)		
			Total suspended solids (TSS)	0.2	0.70	0.50	0.25	0.50	0.25	1.20	0.20
			Metals	0.2	0.60	0.60	0.30	0.50	0.25	1.15	y
			Hydrocarbons	0.05	0.70	0.60	0.30	0.60	0.30	1.30	y
Domestic Driveways	002	Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Pollution hazard level	Low	Permeable Surfacing	Swale	(factored by 0.5)	Detention Basin	(factored by 0.5)		
			Total suspended solids (TSS)	0.5	0.70	0.50	0.25	0.50	0.25	1.20	y
			Metals	0.4	0.60	0.60	0.30	0.50	0.25	1.15	y
			Hydrocarbons	0.4	0.70	0.60	0.30	0.60	0.30	1.30	y
Estate Roads	003	Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Pollution hazard level	Low	Bioretention	Swale	(factored by 0.5)	Detention Basin	(factored by 0.5)		
			Total suspended solids (TSS)	0.5	0.80	0.50	0.25	0.50	0.25	1.30	y
			Metals	0.4	0.80	0.60	0.30	0.50	0.25	1.35	y
			Hydrocarbons	0.4	0.80	0.60	0.30	0.60	0.30	1.40	y

Development surrounding Roads 1 and 2											
Roof area	001	Residential roofs	Pollution hazard level	Very low	Permeable Surfacing						
			Total suspended solids (TSS)	0.2	0.70					0.70	0.20
			Metals	0.2	0.60					0.60	0.20
			Hydrocarbons	0.05	0.70					0.70	0.05
Domestic Driveways	002	Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Pollution hazard level	Low	Permeable Surfacing						
			Total suspended solids (TSS)	0.5	0.70					0.70	0.50
			Metals	0.4	0.60					0.60	0.40
			Hydrocarbons	0.4	0.70					0.70	0.40
Estate Roads	003	Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Pollution hazard level	Low	Bioretention						
			Total suspended solids (TSS)	0.5	0.80					0.80	0.50
			Metals	0.4	0.80					0.80	0.40
			Hydrocarbons	0.4	0.80					0.80	0.40

APPENDIX L: NOTES OF LIMITATIONS

The data essentially comprised a study of available documented information from various sources together with discussions with relevant authorities and other interested parties. There may also be circumstances at the site that are not documented. The information reviewed is not exhaustive and has been accepted in good faith as providing representative and true data pertaining to site conditions. If additional information becomes available which might impact our conclusions, we request the opportunity to review the information, reassess the potential concerns, and modify our opinion if warranted.

It should be noted that any risks identified in this report are perceived risks based on the available information.

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