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Flood Risk Assessment

For

Land off Park Street

At

Park Street

Heytesbury

BA12 0AF

Client:	C Martin
Job Ref:	25006
Document Number:	25006-SVC-R-001
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Rev	Date	Issued By	Description
-	29th October 2025	J Watling	For inclusion with planning submission
A	26 th March 2026	J Watling	Updated following ground investigation results
B	27 th March 2026	J Watling	Foul drainage commentary added

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APPENDICES

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1. Executive Summary

The development site is in Flood Zone 1 and is not at risk of flooding from rivers or the sea. The proposals are classed as 'More Vulnerable' and 'More Vulnerable' development is considered appropriate in Flood Zone 1.

The site is at low risk of flooding from surface water, with an overland flow route present running from the north of the site toward the south east. The site plan takes account of the overland flow route and it will be incorporated into the detailed design. There will be no risk of surface water flooding to any of the proposed dwellings or to any other properties as a result of the development.

Groundwater levels have been recorded and found to be sufficiently deep so as not to pose any risk to the development. The risk of flooding from groundwater is considered low.

A surface water drainage strategy has been proposed using infiltration via permeable paving to deal with all surface water runoff. The strategy is based on infiltration testing undertaken in February 2026. The strategy has been prepared in accordance with the National SuDS Standards and demonstrates that the site can be effectively drained.

The site is not in a sewered area and so foul drainage will be dealt with using package treatment plants draining into drainage fields. The requirements of the Nutrient Neutrality statement will be adhered to when the detailed foul drainage design is prepared.

2. Introduction

Development Background

The site is located to the south of Park Street, Heytesbury, BA12 0AF and the planning development boundary is outlined indicatively in red in Figure 1. The overall site ownership boundary is outlined in blue. The development proposals involve the construction of new residential dwellings along with associated access roads, parking areas and paddocks.

The National Grid Reference for the site is ST 92870 42519.



Figure 1 Aerial view of Site

This report forms a Site Specific Flood Risk Assessment for the development, and includes strategy proposals for dealing with surface water drainage on the site.

Site Location

The site lies on the eastern edge of the village of Heytesbury, approximately 6km south east of Warminster. The site is bounded to the north by Park Street. To the east and south east lies undeveloped pastureland. Large detached residential dwellings form the south western boundaries, while to the north west lies a small housing development. The site has an existing access of Mantles Lane, on the western boundary.

The site slopes from north west to south east, with levels varying from a high of 95.0mAOD in the north west to a low of 91.5mAOD in the south east.

Flood Zone (UK Government Flood Map for Planning)

An extract of the UK Government's Flood Map for Planning for the site is shown in Figure 2 below. The areas shown in dark blue are at risk of river flooding with a 1% (1 in 100) or greater chance of occurring (Zone 3) and the areas shown in light blue are at risk of flooding in a major flood with up to a 1% to 0.1% (1 in 100 to 1 in 1000) chance of occurring (Zone 2). All areas falling outside of Zones 2 & 3 are in Flood Zone 1, low risk.

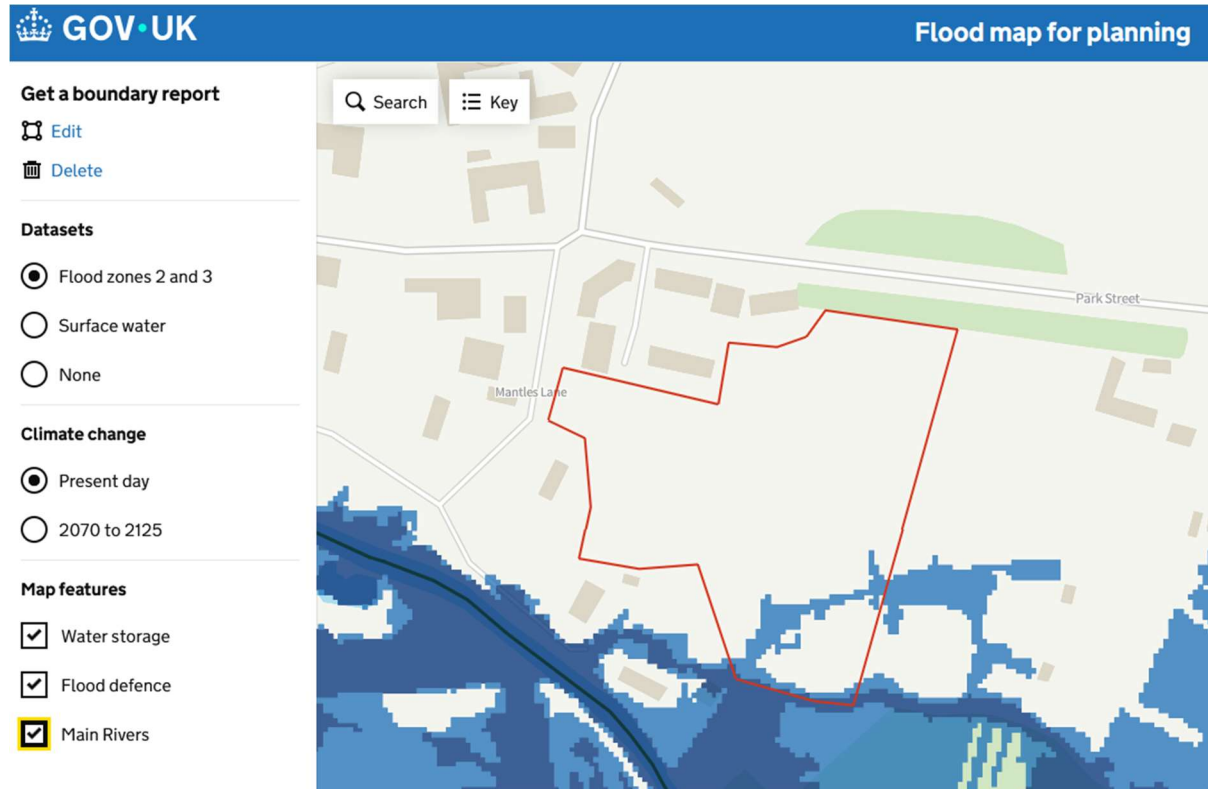


Figure 2 UK Government Indicative Flood mapping for planning showing blue line extent of site

There is some flooding noted within the blue lined boundary of the site, in the lower south eastern corner. The majority of the flooding is Zone 2, with a very small section of Zone 3 on the extreme boundary.

It is noted that whilst the flooding encroaches within the overall ownership site, it falls outside of the red line boundary for planning.

Therefore, for planning purposes, the development lies within Flood Zone 1.

3. Flood Risk Vulnerability and Flood Zone Compatibility

Flood Zone Vulnerability

In accordance with 'Annex 3: Flood risk vulnerability classification' of Planning Practice Guidance, the proposed development can be classed as "More Vulnerable".

More Vulnerable:
Buildings used for dwelling house, student halls of residence, drinking establishments, nightclubs and hotels.

Figure 3 Extract from Planning Practice Guidance Annex 3, (August 2022 update)

Flood Zone Compatibility

Table 2 of Planning Practice Guidance below (flood risk vulnerability and flood zone compatibility), shows that 'More Vulnerable' development in Flood Zone 1 is appropriate.

Flood risk Vulnerability classification		Essential infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception test required	✓	✓
	Zone 3a	Exception test required	✓	x	Exception test required	✓
	Zone 3b	Exception test required	✓	x	x	x

Figure 4 Planning Practice Guidance Table 2 (August 2022 update)

4. Potential Sources of Flooding

Flooding Risk Information Sources

UK Government mapping (Figure 2) shows that the site lies within Flood Zone 1; this is taken from the Flood Map for Planning service. More detailed flood information is available via the Long Term Flood Risk Service (LTFRS), the Wiltshire Council Strategic Flood Risk Assessment (SFRA) and direct from the Environment Agency.

Flooding from Rivers and the Sea

The closest watercourse is the River Wylye which runs a short distance to the south of the site. The Wylye is a designated main river and is the source of the flooding which affects the lower, south eastern, parts of the overall site ownership.

The Flood Map for Planning (Figure 2) shows the risk of flooding from rivers and the sea. From this mapping, the development site lies in Flood Zone 1. A review of the SFRA shows that it uses the same data as the Flood Map for Planning.

A request was submitted to the Environment Agency for any Product 4 data they may hold for the site. Their response is included in the appendices; in summary, it advises that although the Flood Map for Planning shows flood zones published on 25th March 2025, flood level and depth data for the site is not available. The response did include depth maps for information only, with a clear caveat that the depth information is not suitable for use in a site specific flood risk assessment.

On the basis of the above the Flood Map for Planning is the most up to date and current source of information. The mapping shows that the development site itself lies within Flood Zone 1 and so is not at risk of flooding from rivers or the sea.

Flooding from Surface Water

Flooding from surface water is classified as follows:

- High Risk - more than 3.3% chance each year (1 in 30 year event)
- Medium Risk - between 1% and 3.3% chance each year (between 1 in 100 and 1 in 30 year events)
- Low Risk - between 1% and 0.1% chance each year (between 1 in 1000 and 1 in 100 year events)

The Flood Map for Planning includes a tool to view predicted surface water flood risk at site level.

Figure 5 shows the areas at high risk of surface water flooding on the site; two discrete areas are noted on the mapping, both of which fall within the ownership boundary but outside of the planning red line boundary.

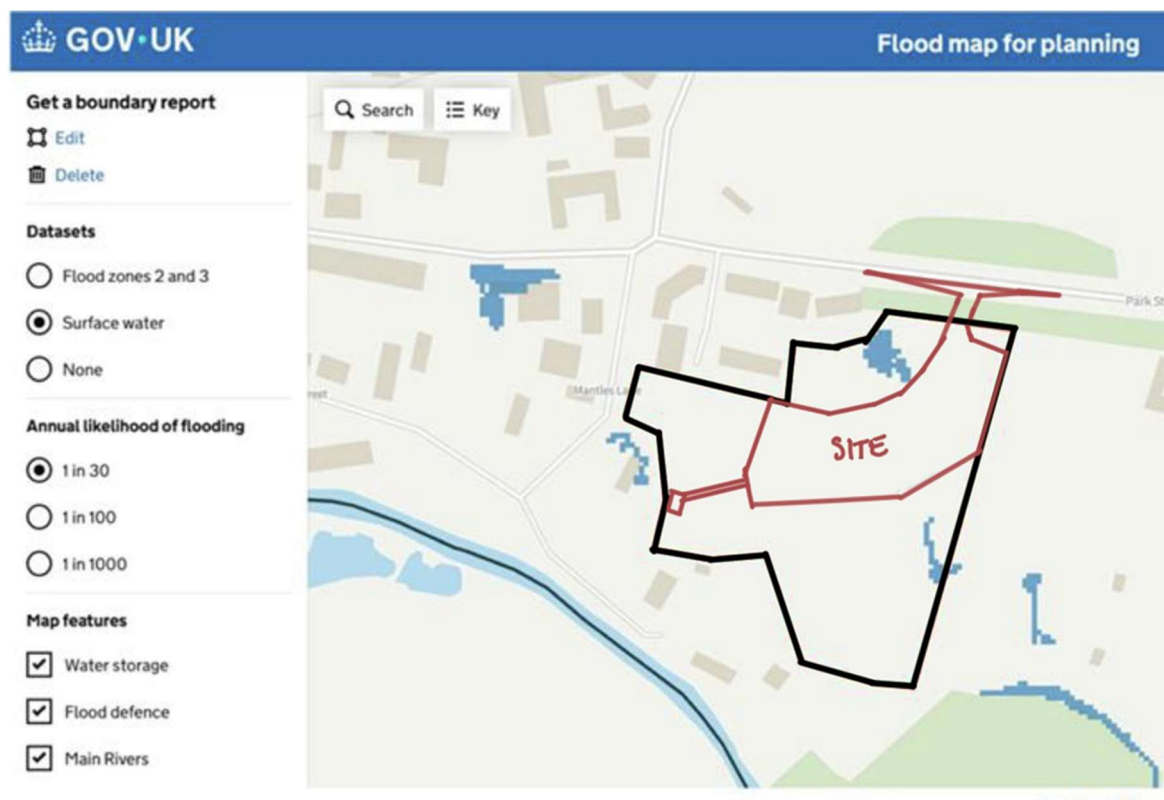


Figure 5 Areas at high risk of surface water flooding with the blue line site
Figure 6 shows the areas at medium risk of surface water flooding on the site; the two discrete areas noted above have increased in size on the mapping, but both remain outside of the planning red line boundary.

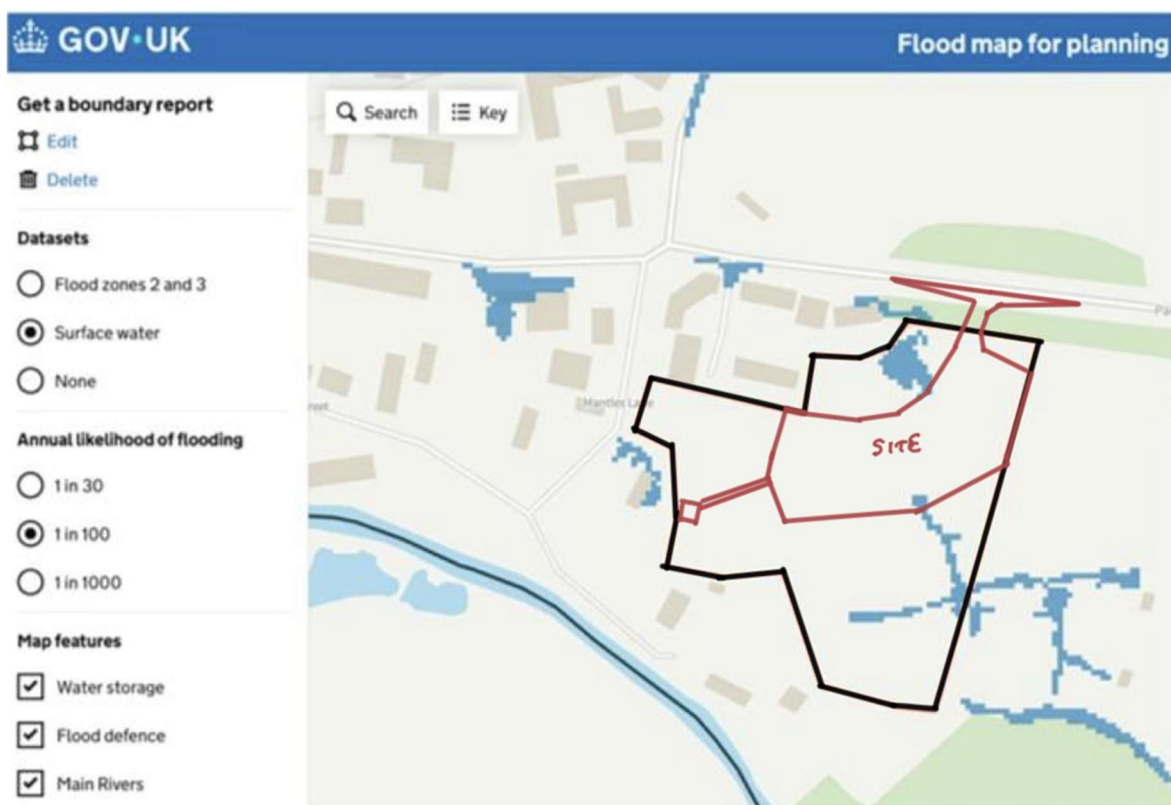


Figure 6 Areas at medium risk of surface water flooding

Figure 7 shows the areas at low risk of surface water flooding on the wider site; the two discrete areas noted above appear to almost merge, forming a potential flow route across the site from north to south. Elements of the flooding fall within the planning red line boundary.

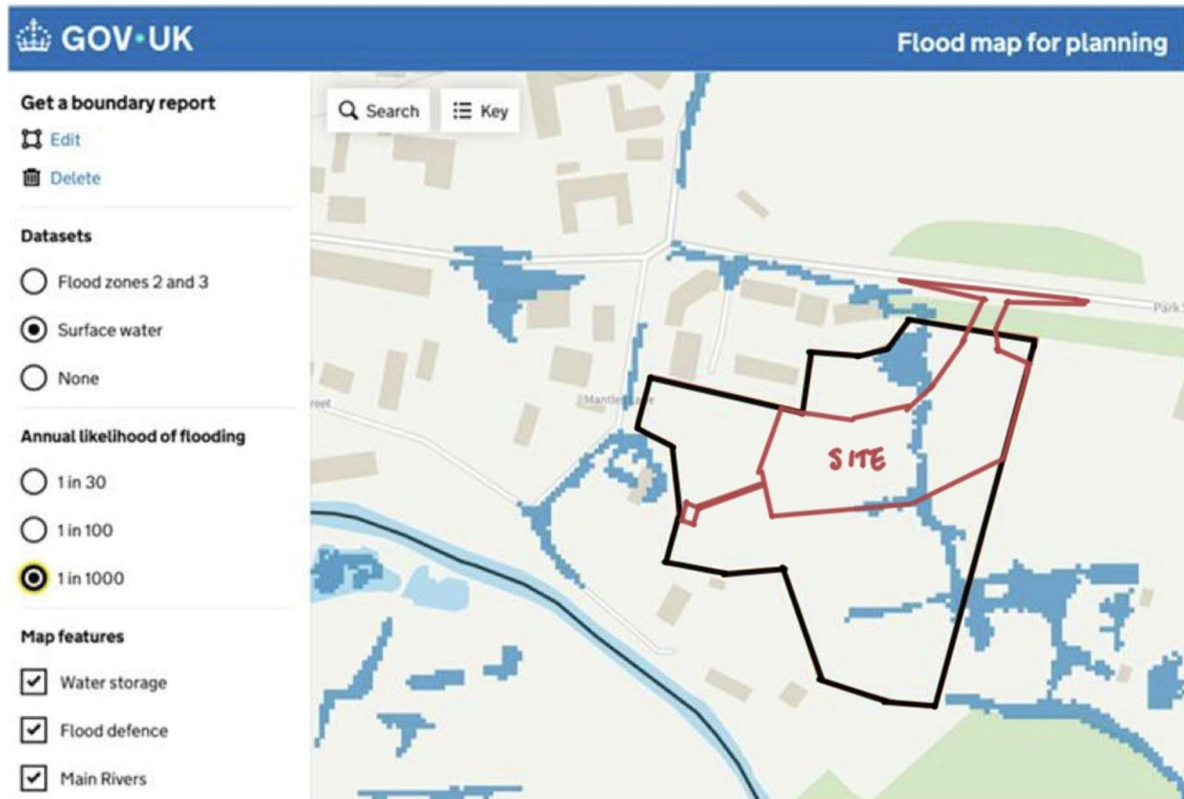


Figure 7 Areas at low risk of surface water flooding

The SFRA shows the same data as the Flood Map for Planning. It is interesting to note that the SFRA layer showing a 1% AEP event including for upper end climate change allowances correlates very closely to the Flood Map for Planning 0.1% AEP flooding.

The SFRA mapping suggests that an overland flow path emerges in extreme events, running from the northern part of the site toward lower land in the south east corner. The flow path does not appear to convey water from Park Street itself but instead drains areas within the site itself, although it is acknowledged that at this scale the mapping is indicative rather than prescriptive.



Figure 8 SFRA map showing 1% AEP + Climate Change flood extents

In addition to studying published mapping, a review of the topographical survey of the site was undertaken. Part of this review involved creating a digital ground model of the survey using Causeway Live Design software. Once created, a flow trace study of the model was undertaken to determine where runoff falling on the site will flow.

The study correlated strongly with the published mapping, identifying discrete low lying areas on the site where excess runoff could potentially pool before spilling over to follow the topography to lower areas of the site. The two primary areas where pooling could occur are localised low spots; a review of the digital ground model and the topographic survey suggest that pooling water would reach a depth of no more than 150mm in either area, before spilling over and flow further downstream. Any localised pooling would therefore be shallow and slow moving. Any overland runoff would likewise be shallow.

On the basis of the above, the overall site and the development site itself are at risk of flooding from surface water, albeit at low risk only within the development site.

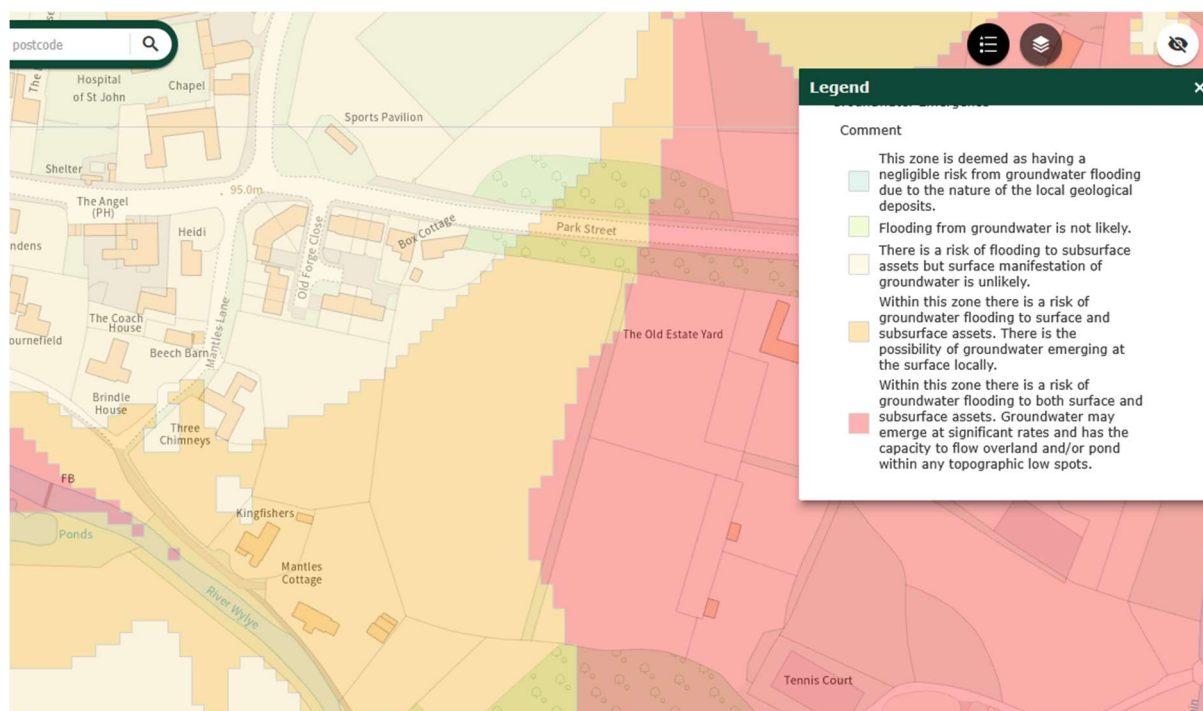
A flow trace study has concluded that the published mapping is accurate, with a potential overland flow path conveying runoff across the site from north to south east. Both pooling water and moving runoff would be shallow. The development proposals maintain the existing flow paths and leave the majority of the affected area undeveloped. The only development within the affected area is for an access road; the design of this will take into account the presence of the flow path and will ensure there are no negative impacts on the flow path, and no increase in the risk of flooding to either the development site or to neighbouring or downstream properties.

Flooding from Reservoirs

The SFRA shows the site to be at potential risk of flooding from reservoirs. The flood extents mirror those for flooding from rivers, suggesting that the route for floodwaters from the reservoir to the site is via the Wylfe. As noted earlier, the development site itself lies within Flood Zone 1 and so is not at risk of flooding from the Wylfe. This remains the case for flooding from reservoirs.

Flooding from Groundwater

The SFRA includes mapping showing the risk of groundwater emergence on the site. The mapping includes various coloured layers corresponding to the risk of groundwater reaching ground level. The development site is split between two coloured areas. The darker orange area indicates that there is a risk of groundwater flooding to surface and subsurface assets, and that there is the possibility of groundwater emerging at the surface locally. The paler area indicates that there is a risk of flooding to subsurface assets but that surface manifestation of groundwater is unlikely.



Trial pits, including the installation of groundwater monitoring points, was undertaken in February 2026, following two extremely wet months (refer to Environment Agency rainfall report in the appendices). Three monitoring points were installed across the site and groundwater levels were recorded. The location of the monitoring points is shown on the surface water drainage layout in the appendices. Whilst the depth to groundwater varied between 1.2m and 1.4m below ground level, the actual level of groundwater across the site appears to be consistent at 92.15-92.20mAOD.

With groundwater being recorded at depths in excess of 1m below ground level after weeks of prolonged rainfall, when levels are unseasonably high across

much of the area, it is considered highly unlikely that groundwater will pose any risk to the development.

Should groundwater in the future rise to a level where it is close to the surface, it would emerge in the lower (undeveloped) parts of the site without posing any risk to the development itself.

The risk of flooding from groundwater is considered low.

Historic Flooding

The SFRA does not contain any records of historic flood events on or in the vicinity of the site.

Flood Warnings & Alerts

The site is within the Salisbury Plain Groundwater Flood Alert Area and part of the site is within the Wylfe Valley Groundwater Flood Alert Area.

Flood Defences

There are no flood defences on the site. The nearest recorded defence is the north bank of the river Wylfe; this is noted as being 'natural high ground' rather than an engineered defence structure.

5. Surface Water Drainage

Existing Surface Water Drainage

The site is undeveloped and has no existing drainage infrastructure.

Proposed Surface Water Drainage Strategy

Testing has been undertaken on the site to ascertain if ground conditions are suitable for infiltration. Testing took place in a number of locations across the site at depths of 0.5m (for permeable paving) and at 1.5m (for conventional soakaways). The test results are appended.

Workable results were obtained in all test locations, with notably better results being obtained in the shallow tests. Groundwater was noted in some test locations; levels were consistent with those recorded at the groundwater monitoring points. As noted previously, groundwater levels are consistent at 92.15-92.20mAOD. Whilst deep enough to not pose a risk to the development itself, this level is sufficiently shallow to preclude the use of conventional soakaways as there is not enough vertical clearance to achieve a 1m buffer between the base of the soakaway and groundwater. For this reason, the use of soakaways on the site has been discounted.

Whilst groundwater is relatively shallow, there is sufficient depth available to use permeable paving (system A - total infiltration) whilst maintaining the required 1m vertical buffer. The drainage strategy has been prepared on this basis, with the access road and driveways laid using permeable paving with subbase storage beneath, acting as both infiltration device and attenuation storage.

The drainage strategy follows the standards as laid out in the National Standards for Sustainable Drainage, updated 31/07/2025.

Standard 1 - Runoff Destinations

A SuDS approach has been adopted when preparing this strategy, using the highest viable priority level options to discharge surface water runoff.

Initially, runoff from the houses will be collected for reuse using a below ground rainwater harvesting tank located within the gardens of each property. The rainwater harvesting systems will be designed by a specialist and will comply with the requirements of BS EN 16941. The systems will be designed for re-use only, i.e. they will not provide attenuation for more intense storm events.

Excess runoff from the rainwater harvesting tanks will drain via high level overflows into adjacent sections of permeable paving.

The access road and all driveways / parking areas will be constructed using permeable surfacing, with an additional depth of subbase storage beneath to provide attenuation whilst runoff infiltrates into the ground.

Any patios and paved footpaths will be constructed using conventional paving laid with SuDS spacers, so that they act as permeable surfaces. They will infiltrate runoff into the ground.

All runoff will infiltrate into the ground with no off site discharge during the design rainfall event.

Standard 2 - Management of Everyday Rainfall (interception)

The proposals incorporate the use of below ground rainwater harvesting systems designed in accordance with BS EN 16941. As noted in the National Standards for Sustainable Drainage, these systems are deemed compliant for interception for the roof areas they serve.

All remaining runoff, plus any overflow from the rainwater harvesting systems, utilises infiltration, which far exceeds the minimum 5mm interception requirement.

Standard 3 - Management of Extreme Rainfall and Flooding

The drainage strategy calculations are based on keeping runoff below ground for all rainfall events up to and including the 1% AEP event. The detailed design will maintain this approach.

The test results gave a range of infiltration rates between 1×10^{-5} m/s and 3×10^{-5} m/s. The lowest of these values has been used when preparing the design; 1×10^{-5} m/s, which equates to 0.108m/hr in the hydraulic calculations. In accordance with National Standards for Sustainable Drainage Table S3.1, a factor of safety has been applied to this figure; the selected factor for this design is 3, representing minor inconvenience for a drained area of between 100m² and 1000m².

Causeway software 'Flow' has been used to prepare the strategy model using the following design criteria:

Return Period	50%, 3.3% and 1% AEP
Climate Change	40% for 3.3% AEP, 45% for 1% AEP
Rainfall Method	FEH-22
C _v	1.0
Urban Creep	+10% area

A copy of the hydraulic calculations is appended to this document. Note that the rainwater harvesting tanks have not been included within the model as they are not intended to provide any attenuation within the network.

For rainfall events over and above the 1% AEP design event, excess runoff will build up within each network before breaking ground at the lowest point available. From this point, excess runoff will flow overground toward the southern boundary of the site, following existing topography. Care will be taken at detailed design stage to ensure any overland flow paths are engineering to avoid risk to any proposed dwellings or existing properties. Indicative overland flow paths are shown on the drainage strategy drawing. All paths ensure that there is no risk of flooding to either the new dwellings or to neighbouring properties.

Standard 4 - Water Quality

The quality of the runoff from the site has been assessed in accordance with Table 4.2 of the SuDS Manual.

Runoff from the site will be split between two land classifications: residential roofs and individual property driveways. The figure below shows

an extract from Table 4.2 of the SuDS Manual and gives the appropriate assessment requirements for each.

TABLE 4.3 Minimum water quality management requirements for discharges to receiving surface waters and groundwater			
Land use	Pollution hazard level	Requirements for discharge to surface waters, including coasts and estuaries²	Requirements for discharge to groundwater
Residential roofs	Very low	Removal of gross solids and sediments only	
Individual property driveways, roofs (excluding residential), residential car parks, low traffic roads (eg cul de sacs, home zones, general access roads), non-residential car parking with infrequent change (eg schools, offices)	Low	Simple index approach ³ <i>Note: extra measures may be required for discharges to protected resources¹</i>	

Runoff from building roofs has a very low pollution hazard level and requires the removal of gross solids and sediments only. This will be achieved through the incorporation of the following elements:

- Leaf guards on all downpipes
- Catch pits immediately upstream of any infiltration devices

Through the use of these elements, water quality requirements for roof runoff have been met.

Runoff from the permeable paved areas has a low pollution hazard level and requires assessment using the Simple Index Approach. Table 26.2 of the SuDS Manual gives the pollution hazard indices for this land use classification.

TABLE 26.2 Pollution hazard indices for different land use classifications				
Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4

Table 26.4 of the SuDS Manual gives the pollution mitigation indices for permeable pavements discharging to ground.

TABLE 26.4 Indicative SuDS mitigation indices for discharges to groundwater

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates ¹	TSS	Metals	Hydrocarbons
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential ² of at least 300 mm in depth ³	0.7	0.6	0.7

The pollution mitigation indices for the permeable pavements exceed the pollution hazard indices, and so water quality requirements for these surfaces have been met.

Standard 5 - Amenity

The proposals include substantial retention of open paddocks, which will provide ongoing visual amenity to both the residents and to the local community.

For the residents of the dwellings, the inclusion of a rainwater harvesting system will provide significant benefits in terms of financial savings and water usage, particularly during the summer months when water can be reused for irrigation within the gardens.

A planting plan will be designed for the gardens and shared spaces which will, where possible, incorporate native planting and create pleasant outdoor spaces for the benefit of the residents and their visitors. Where possible, the retention of the overland surface water flow path through the site will be developed to provide both amenity and biodiversity benefits.

Standard 6 - Biodiversity

The scale of the development is such that a proportionate approach will be applied for biodiversity. A planting plan will be developed to take account of the proposed overland flow path and will be tailored to maximise biodiversity gains through the use of specific seed mixes and planting species.

Standard 7 - Design of Drainage for Construction, Operation, Maintenance, Decommissioning and Structural Integrity

The surface water drainage strategy has been designed in accordance with Building Regulations, the National Standards for Sustainable Drainage and, where appropriate, Sewer Sector Guidance. Through designing to these publications, the proposed sewer network will be straightforward to install, operate and maintain.

Maintenance of the sewer network will be the responsibility of the individual homeowners. A maintenance plan will be provided to each homeowner on completion of the development, which will contain information on all aspects of the new drainage infrastructure which require regular maintenance.

Items which will require regular inspection and maintenance include pipework, chambers, catch pits and permeable paving.

Recommended frequencies for inspections of various drainage elements are tabulated in the SuDS Manual. A copy of these, with the items above highlighted, are given below. This table should be used as the basis for a maintenance and management plan which should be prepared at detailed design stage.

Operation & Maintenance Activity	SuDS Component		
	Rainwater Harvesting	Pervious Pavements	Pipework & Chambers
Regular Maintenance			
Inspection	■	■	■
Litter & Debris Removal	■	■	□
Grass Cutting	■	□	
Weed Control	□	□	
Shrub Management			
Occasional Maintenance			
Sediment Management	■	■	■
Vacuum Sweeping & Brushing		□	
Remedial Maintenance			
Structural Rehabilitation/Repair	□	□	□
Infiltration Surface Reconditioning	□	□	

■ Items that will be required

□ Items that may be required

6. Flood Risk Management Measures

Flood Mitigation Measures

As noted above, the site is at low risk of flooding from surface water and groundwater.

The risk of flooding from surface water will be mitigated by maintaining the existing overland flow path which runs from the north of the site toward the south east corner. The development proposals have been prepared to ensure the flow path has no impact on the dwellings or their gardens, and the development proposals will not increase the risk of flooding either on or off the site.

The risk of flooding from groundwater is considered low and no mitigation measures are required.

Access and Egress

Access and egress to the development would not be affected by surface water flooding. Access is available onto Park Street.

Off Site Impacts

The development proposals include a surface water drainage strategy which complies with National SuDS Standards. By adhering to these standards, the proposals will deal with all runoff on site, with no off site discharges. The risk of flooding to the site and to neighbouring or downstream properties will not be affected by the development proposals.

Residual Risks

There are no residual flood risks to the proposed new dwellings. The mitigation measures noted above will ensure that all flood risks are dealt with away from properties, either on the site itself or within the wider blue lined land.

7. Foul Drainage

The site is an unsewered area, meaning there are no public sewers in the immediate vicinity of the site. The development therefore proposes to use package treatment plants to serve the new dwellings.

The infiltration testing undertaken at shallow depths provides an insight into the grounds' capacity to accommodate treated foul effluent. The results demonstrate that the ground is sufficiently permeable, with V_p estimated at 28. This provides a workable rate toward the higher end of the acceptable range, meaning drainage fields will be relatively compact.

At this stage of the project, the intention is to use two package treatment plants; one to serve the 6 semi detached houses, and one to serve the three detached units. Each plant will have its own drainage field.

A separate Nutrient Neutrality report has been prepared to accompany the planning submission for the site. The report requires the use of specific treatment plants; the requirements of the report will be followed when the detailed foul drainage design is prepared.

8. Summary and Conclusions

The development site is in Flood Zone 1 and is not at risk of flooding from rivers or the sea. The proposals are classed as 'More Vulnerable' and 'More Vulnerable' development is considered appropriate in Flood Zone 1.

The site is at low risk of flooding from surface water, with an overland flow route present running from the north of the site toward the south east. The site plan takes account of the overland flow route and it will be incorporated into the detailed design. There will be no risk of surface water flooding to any of the proposed dwellings or to any other properties as a result of the development.

Groundwater levels have been recorded and found to be sufficiently deep so as not to pose any risk to the development. The risk of flooding from groundwater is considered low.

A surface water drainage strategy has been proposed using infiltration via permeable paving to deal with all surface water runoff. The strategy is based on infiltration testing undertaken in February 2026. The strategy has been prepared in accordance with the National SuDS Standards and demonstrates that the site can be effectively drained.

The site is not in a sewered area and so foul drainage will be dealt with using package treatment plants draining into drainage fields. The requirements of the Nutrient Neutrality statement will be adhered to when the detailed foul drainage design is prepared.

Appendix A: Environment Agency Flood Data

EIR2025/24656 - JFLOW Fluvial Water depths (m) Without Flood Defences. 1000 year (0.1% AEP)
Centred on land at ST 92868 42496. Created 03/09/2025.



Scale 1:10,000



Legend

— Statutory_Main_Rivers

1000yr JFLOW Depth

metres



Information Warning

We do not recommend the use of water depths/levels derived from JFLOW for site specific investigations such as Flood Risk Assessments.

EIR2025/24656 - JFLOW Fluvial Water depths (m) Without Flood Defences. 100 year (1% AEP)
Centred on land at ST 92868 42496. Created 03/09/2025.



Scale 1:10,000



Legend

— Statutory_Main_Rivers

100yr JFLOW Depth

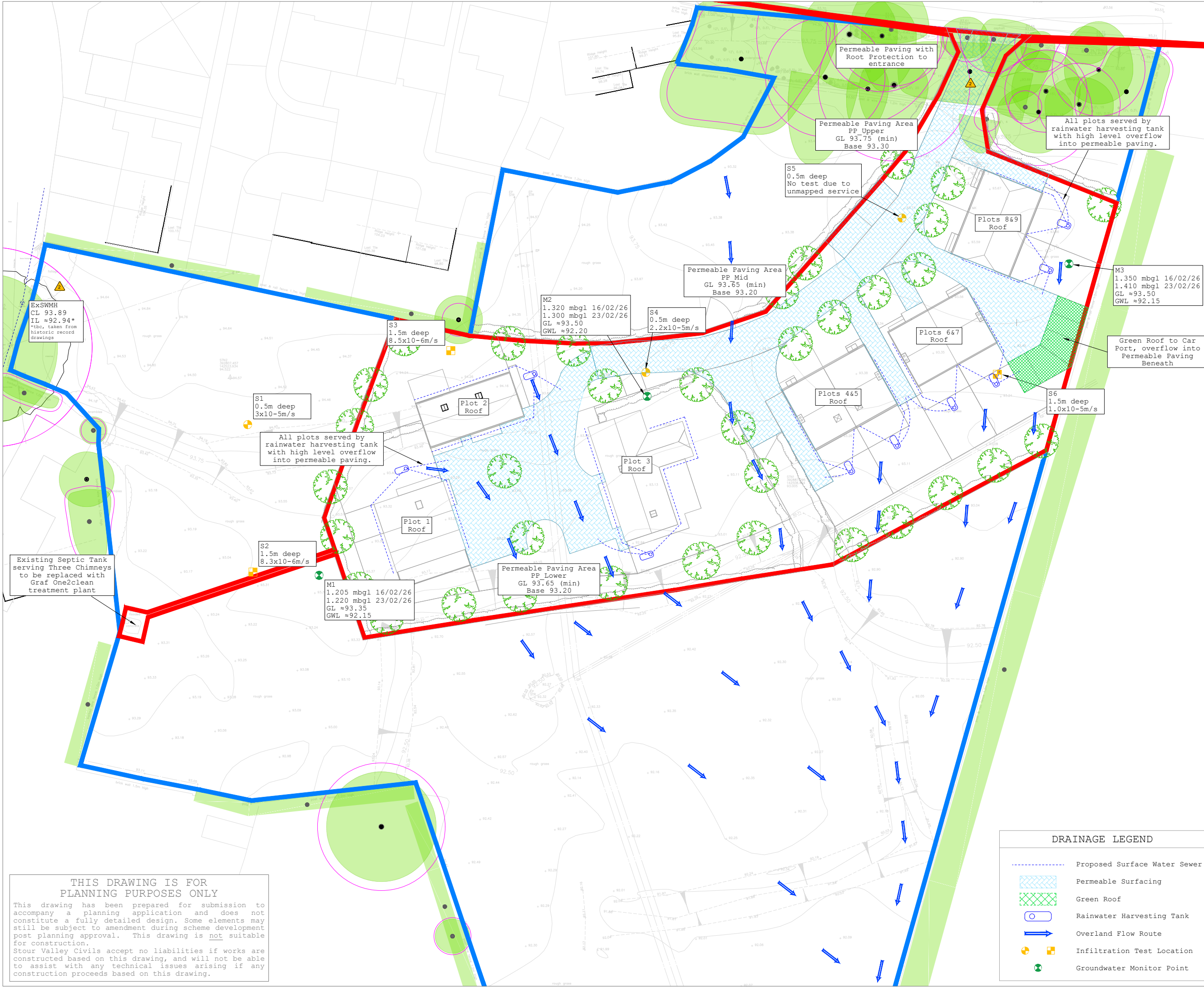
metres



Information Warning

We do not recommend the use of water depths/levels derived from JFLOW for site specific investigations such as Flood Risk Assessments.

Appendix B: Surface Water Drainage Strategy Drawing



GENERAL NOTES

- These drawings are to be read in conjunction with all relevant Architect's and Engineer's drawings and specifications.
- All setting out shall be in accordance with the architects drawings and specifications. Any discrepancy between these drawings and the architects drawings or the actual site dimensions should be referred to the engineer immediately and confirmed in writing. The contractor is responsible for the accuracy of all dimensions and setting out.
- Do not scale from these drawings. If in doubt, ask.
- All dimensions are in millimetres unless noted otherwise.

DESIGN RISKS

The CDM regulations 2015 require designers to identify any specific residual risks associated with their designs, over and above those normally associated with the type of work being undertaken. The following notes refer to hazards and risks identified which are considered atypical or which require specific consideration. Numbered references on the drawing correspond to the list below:

- Ground Conditions & Temporary Works**
- Ground conditions are to be confirmed by survey. BGS records indicate that they are chalk overlain with head deposits / alluvium; these may require temporary support during construction.
- Tree Roots**
- This area denotes the root protection areas, refer to detailed Arboricultural reports for full details.

NOT FOR CONSTRUCTION

P03	26.03.26	Site plan updated; Three Chimneys septic tank shown
P02	25.03.26	Updated to reflect SI results and revised site plan
P01	29.10.25	First Issue

Rev	Date	Revision Description
S4 - Suitable for Approval		

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Client:	C Martin
Project:	Land off Park Street
Drawing Title:	Surface Water Drainage Strategy Layout
Scale:	1:250 @ A1
Drawn:	JHW
Date:	29.10.25
Drawing Number:	25006-SVC-000
Revision:	P03

Appendix C: Surface Water Drainage Strategy Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
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)	Add Inflow (l/s)	Cover Level (m)	Diameter (mm)	Depth (m)	Invert Level (m)
Plot 8+9 Roof	0.012	5.00	0.0	93.750	450	0.450	93.300
PP_Upper	0.053	5.00	0.0	93.750	450	0.500	93.250
Plot 6+7 Roof	0.012	5.00	0.0	93.650	450	0.400	93.250
Plot 4+5 Roof	0.014	5.00	0.0	93.650	450	0.400	93.250
PP_Mid	0.039	5.00	0.0	93.650	450	0.450	93.200
Plot 3 Roof	0.016	5.00	0.0	93.650	450	0.400	93.250
Plot 2 Roof	0.010	5.00	0.0	93.650	450	0.400	93.250
Plot 1 Roof	0.011	5.00	0.0	93.650	450	0.400	93.250
PP_Lower	0.041	5.00	0.0	93.650	450	0.450	93.200

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	Plot 8+9 Roof	PP_Upper	5.000	0.600	93.300	93.250	0.050	100.0	100	5.11	50.0
2.000	Plot 6+7 Roof	PP_Mid	5.000	0.600	93.250	93.200	0.050	100.0	100	5.11	50.0
3.000	Plot 4+5 Roof	PP_Mid	5.000	0.600	93.250	93.200	0.050	100.0	100	5.11	50.0
4.000	Plot 3 Roof	PP_Lower	5.000	0.600	93.250	93.200	0.050	100.0	100	5.11	50.0
5.000	Plot 2 Roof	PP_Lower	5.000	0.600	93.250	93.200	0.050	100.0	100	5.11	50.0
6.000	Plot 1 Roof	PP_Lower	5.000	0.600	93.250	93.200	0.050	100.0	100	5.11	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.769	6.0	2.2	0.350	0.400	0.012	0.0	42	0.708
2.000	0.769	6.0	2.2	0.300	0.350	0.012	0.0	42	0.708
3.000	0.769	6.0	2.5	0.300	0.350	0.014	0.0	45	0.733
4.000	0.769	6.0	2.9	0.300	0.350	0.016	0.0	49	0.761
5.000	0.769	6.0	1.8	0.300	0.350	0.010	0.0	38	0.675
6.000	0.769	6.0	2.0	0.300	0.350	0.011	0.0	39	0.689

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	5.000	100.0	100	Circular	93.750	93.300	0.350	93.750	93.250	0.400
2.000	5.000	100.0	100	Circular	93.650	93.250	0.300	93.650	93.200	0.350
3.000	5.000	100.0	100	Circular	93.650	93.250	0.300	93.650	93.200	0.350
4.000	5.000	100.0	100	Circular	93.650	93.250	0.300	93.650	93.200	0.350
5.000	5.000	100.0	100	Circular	93.650	93.250	0.300	93.650	93.200	0.350
6.000	5.000	100.0	100	Circular	93.650	93.250	0.300	93.650	93.200	0.350

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	Plot 8+9 Roof	450	Manhole	Adoptable	PP_Upper	450	Manhole	Adoptable
2.000	Plot 6+7 Roof	450	Manhole	Adoptable	PP_Mid	450	Manhole	Adoptable
3.000	Plot 4+5 Roof	450	Manhole	Adoptable	PP_Mid	450	Manhole	Adoptable
4.000	Plot 3 Roof	450	Manhole	Adoptable	PP_Lower	450	Manhole	Adoptable
5.000	Plot 2 Roof	450	Manhole	Adoptable	PP_Lower	450	Manhole	Adoptable
6.000	Plot 1 Roof	450	Manhole	Adoptable	PP_Lower	450	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
Plot 8+9 Roof	93.750	0.450	450					
				0	1.000	93.300	100	
PP_Upper	93.750	0.500	450		1	1.000	93.250	100
Plot 6+7 Roof	93.650	0.400	450					
				0	2.000	93.250	100	
Plot 4+5 Roof	93.650	0.400	450					
				0	3.000	93.250	100	
PP_Mid	93.650	0.450	450		1	3.000	93.200	100
				2	2.000	93.200	100	
Plot 3 Roof	93.650	0.400	450					
				0	4.000	93.250	100	
Plot 2 Roof	93.650	0.400	450					
				0	5.000	93.250	100	

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Plot 1 Roof	93.650	0.400	450				
					0	6.000	93.250
PP_Lower	93.650	0.450	450		1	6.000	93.200
					2	5.000	93.200
					3	4.000	93.200

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	20.0		

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 %)
2	0	10	0
30	40	10	0
100	45	10	0

Node PP_Upper Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.10800	Invert Level (m)	93.300	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.10800	Time to half empty (mins)	37	Depth (m)	0.320
Safety Factor	3.0	Width (m)	10.000	Inf Depth (m)	0.320
Porosity	0.30	Length (m)	53.500		

Node PP_Mid Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.10800	Invert Level (m)	93.200	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.10800	Time to half empty (mins)	37	Depth (m)	0.320
Safety Factor	3.0	Width (m)	13.000	Inf Depth (m)	0.320
Porosity	0.30	Length (m)	30.000		

Node PP_Lower Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.10800	Invert Level (m)	93.200	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.10800	Time to half empty (mins)	37	Depth (m)	0.320
Safety Factor	3.0	Width (m)	20.000	Inf Depth (m)	0.320
Porosity	0.30	Length (m)	20.750		

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Plot 8+9 Roof	10	93.341	0.041	2.1	0.0305	0.0000	OK
120 minute summer	PP_Upper	72	93.329	0.079	5.9	4.1789	0.0000	OK
15 minute summer	Plot 6+7 Roof	10	93.295	0.045	2.1	0.0369	0.0000	OK
15 minute summer	Plot 4+5 Roof	10	93.300	0.050	2.5	0.0463	0.0000	OK
120 minute summer	PP_Mid	74	93.238	0.038	5.9	4.3856	0.0000	OK
15 minute summer	Plot 3 Roof	10	93.303	0.053	2.8	0.0551	0.0000	OK
15 minute summer	Plot 2 Roof	10	93.291	0.041	1.8	0.0288	0.0000	OK
15 minute summer	Plot 1 Roof	10	93.292	0.042	1.9	0.0320	0.0000	OK
120 minute summer	PP_Lower	74	93.244	0.044	7.0	5.2742	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	Plot 8+9 Roof	1.000	PP_Upper	2.1	0.492	0.345	0.0217
120 minute summer	PP_Upper	Infiltration		3.1			
15 minute summer	Plot 6+7 Roof	2.000	PP_Mid	2.1	1.014	0.348	0.0116
15 minute summer	Plot 4+5 Roof	3.000	PP_Mid	2.5	1.066	0.410	0.0126
120 minute summer	PP_Mid	Infiltration		3.0			
15 minute summer	Plot 3 Roof	4.000	PP_Lower	2.8	1.102	0.465	0.0143
15 minute summer	Plot 2 Roof	5.000	PP_Lower	1.8	0.932	0.297	0.0115
15 minute summer	Plot 1 Roof	6.000	PP_Lower	1.9	0.956	0.314	0.0118
120 minute summer	PP_Lower	Infiltration		3.7			

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Plot 8+9 Roof	11	93.463	0.163	7.6	0.1218	0.0000	FLOOD RISK
60 minute summer	PP_Upper	45	93.421	0.171	28.5	18.4699	0.0000	OK
15 minute summer	Plot 6+7 Roof	11	93.383	0.133	7.6	0.1091	0.0000	FLOOD RISK
15 minute summer	Plot 4+5 Roof	11	93.423	0.173	8.9	0.1606	0.0000	FLOOD RISK
60 minute summer	PP_Mid	50	93.370	0.170	28.3	20.1219	0.0000	OK
15 minute summer	Plot 3 Roof	11	93.470	0.220	10.2	0.2281	0.0000	FLOOD RISK
120 minute summer	Plot 2 Roof	86	93.402	0.152	2.9	0.1079	0.0000	FLOOD RISK
120 minute summer	Plot 1 Roof	86	93.402	0.152	3.2	0.1162	0.0000	FLOOD RISK
120 minute summer	PP_Lower	86	93.401	0.201	22.1	24.7748	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	Plot 8+9 Roof	1.000	PP_Upper	7.2	0.919	1.191	0.0391
60 minute summer	PP_Upper	Infiltration		5.5			
15 minute summer	Plot 6+7 Roof	2.000	PP_Mid	7.4	1.194	1.219	0.0391
15 minute summer	Plot 4+5 Roof	3.000	PP_Mid	8.7	1.217	1.434	0.0391
60 minute summer	PP_Mid	Infiltration		4.0			
15 minute summer	Plot 3 Roof	4.000	PP_Lower	9.7	1.270	1.606	0.0391
120 minute summer	Plot 2 Roof	5.000	PP_Lower	2.7	0.637	0.450	0.0391
120 minute summer	Plot 1 Roof	6.000	PP_Lower	3.0	0.637	0.499	0.0391
120 minute summer	PP_Lower	Infiltration		4.3			

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Plot 8+9 Roof	11	93.554	0.254	10.0	0.1895	0.0000	FLOOD RISK
60 minute summer	PP_Upper	49	93.473	0.223	38.1	26.5547	0.0000	OK
30 minute summer	Plot 6+7 Roof	19	93.480	0.230	9.2	0.1885	0.0000	FLOOD RISK
15 minute summer	Plot 4+5 Roof	11	93.535	0.285	11.6	0.2644	0.0000	FLOOD RISK
60 minute winter	PP_Mid	59	93.444	0.244	27.2	28.8496	0.0000	OK
15 minute summer	Plot 3 Roof	11	93.619	0.369	13.3	0.3830	0.0000	FLOOD RISK
60 minute winter	Plot 2 Roof	59	93.488	0.238	4.2	0.1688	0.0000	FLOOD RISK
60 minute winter	Plot 1 Roof	59	93.488	0.238	4.7	0.1821	0.0000	FLOOD RISK
60 minute winter	PP_Lower	59	93.487	0.287	32.4	35.5718	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	Plot 8+9 Roof	1.000	PP_Upper	9.4	1.202	1.558	0.0391
60 minute summer	PP_Upper	Infiltration		5.6			
30 minute summer	Plot 6+7 Roof	2.000	PP_Mid	8.7	1.117	1.448	0.0391
15 minute summer	Plot 4+5 Roof	3.000	PP_Mid	11.1	1.425	1.839	0.0391
60 minute winter	PP_Mid	Infiltration		4.1			
15 minute summer	Plot 3 Roof	4.000	PP_Lower	12.4	1.585	2.054	0.0391
60 minute winter	Plot 2 Roof	5.000	PP_Lower	4.0	0.784	0.659	0.0391
60 minute winter	Plot 1 Roof	6.000	PP_Lower	4.5	0.803	0.741	0.0391
60 minute winter	PP_Lower	Infiltration		4.4			

Appendix D: Infiltration Test Results

Infiltration Test Results Summary



Project: Park Street, Heytesbury
Job Code: 25006
Test Type: BRE365 Soakaway Tests

Test Date: 16/02/2026

Test Location:	S1	S2	S3	S4	S5	S6
Test Depth:	0.5m	1.5m	1.5m	0.5m	No Test	0.5m
Test Result:	2.97E-05	8.31E-06	8.48E-06	2.26E-05	No Test	1.02E-05
Notes:	Dry	GW at 0.9mbgl	Dry	Dry	No Test	GW at 1.25mbgl

Job Number25006

Job NamePark Street, Heytesbury

Test Date16th February 2026

Test HoleS1

Observed water level:

Time (mins)	Depth (m)
0	0
15	0.06
25	0.11
40	0.165
65	0.25
90	0.3

Pit Size	
Length (m)	0.8
Width (m)	0.4

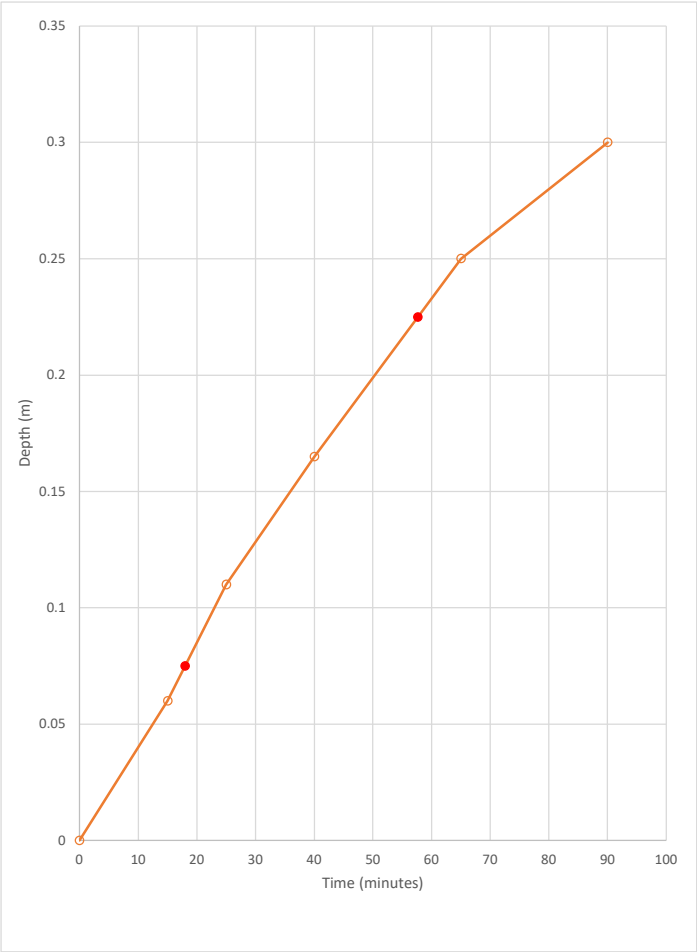
Results:

Soil Infiltration Rate, $f = \frac{V_{P75-25}}{a_{p50} \times t_{p75-25}}$

Effective depth =	0.3	
$P_{75} =$	0.225	0.225
$P_{25} =$	0.075	0.075
$V_{P75-25} =$	0.048	m^3

$a_{p50} =$	0.68	m2
$t_{p75-25} =$	2379	Seconds

$f =$	2.9674E-05	m/s
$f =$	0.1068	m/hr



Job Number25006

Job NamePark Street, Heytesbury

Test Date16th February 2026

Test HoleS2

Observed water level:

Time (mins)	Depth (m)
0	0
10	0.03
20	0.05
37	0.085
61	0.12
102	0.14
216	0.27
240	0.28

Pit Size	
Length (m)	0.7
Width (m)	0.4

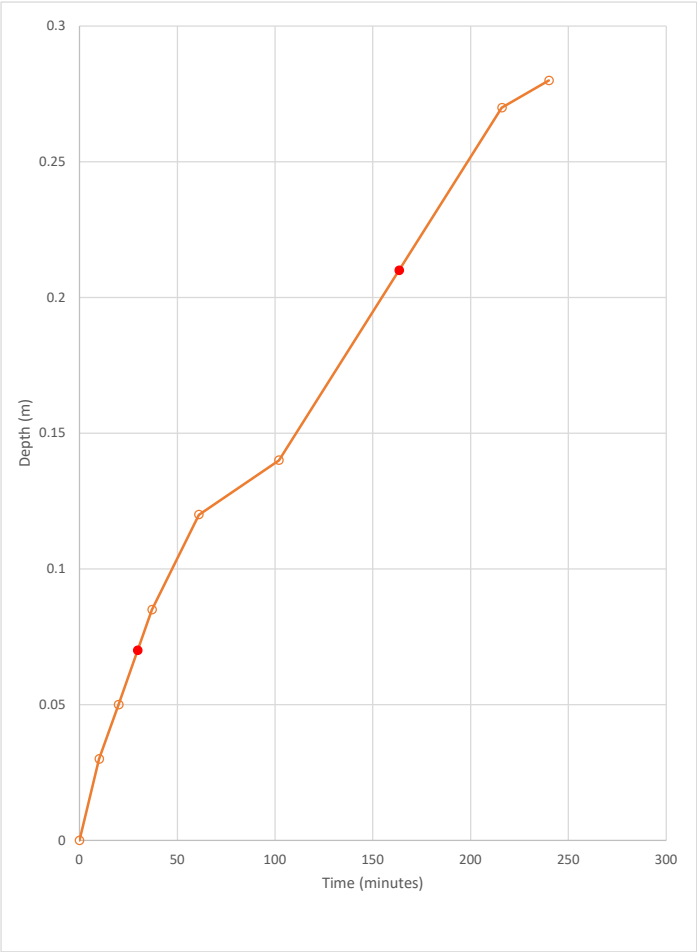
Results:

Soil Infiltration Rate, $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

Effective depth =	0.28	
$P_{75} =$	0.21	0.21
$P_{25} =$	0.07	0.07
$V_{p75-25} =$	0.039	m^3

$a_{p50} =$	0.588	m^2
$t_{p75-25} =$	8020	Seconds

$f =$	8.3123E-06	m/s
$f =$	0.0299	m/hr



Job Number25006

Job NamePark Street, Heytesbury

Test Date16th February 2026

Test HoleS3

Observed water level:

Time (mins)	Depth (m)
0	0
23	0.01
73	0.04
89	0.045
129	0.08
190	0.12
253	0.225

Pit Size	
Length (m)	0.7
Width (m)	0.4

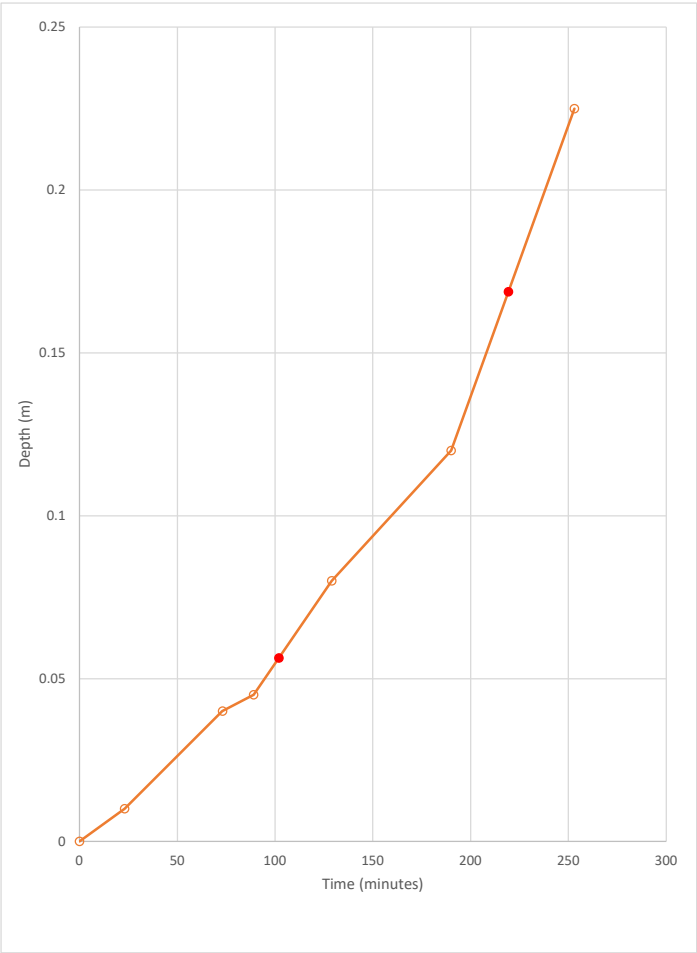
Results:

Soil Infiltration Rate, $f = \frac{V_{P75-25}}{a_{p50} \times t_{p75-25}}$

Effective depth =		0.225
$P_{75} =$	0.16875	0.16875
$P_{25} =$	0.05625	0.05625
$V_{P75-25} =$	0.032	m^3

$a_{p50} =$	0.5275	m^2
$t_{p75-25} =$	7044	Seconds

$f =$	8.4780E-06	m/s
$f =$	0.0305	m/hr



Job Number25006

Job NamePark Street, Heytesbury

Test Date16th February 2026

Test HoleS4

Observed water level:

Time (mins)	Depth (m)
0	0
15	0.08
20	0.12
25	0.145
63	0.25
124	0.35

Pit Size	
Length (m)	0.6
Width (m)	0.45

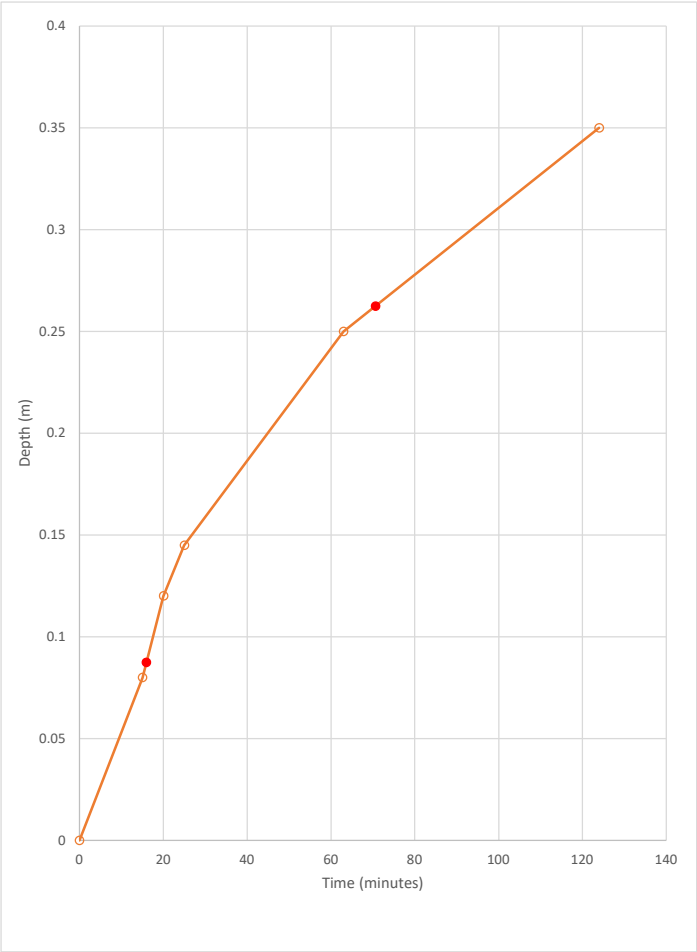
Results:

Soil Infiltration Rate, $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

Effective depth =	0.35	
$P_{75} =$	0.2625	0.2625
$P_{25} =$	0.0875	0.0875
$V_{p75-25} =$	0.047	m^3

$a_{p50} =$	0.6375	m^2
$t_{p75-25} =$	3281	Seconds

$f =$	2.2588E-05	m/s
$f =$	0.0813	m/hr



Job Number25006

Job NamePark Street, Heytesbury

Test Date16th February 2026

Test HoleS6

Observed water level:

Time (mins)	Depth (m)
0	0
13	0.06
49	0.075
64	0.185
76	0.215
110	0.255
210	0.37
240	0.43
295	0.475

Pit Size	
Length (m)	0.9
Width (m)	0.4

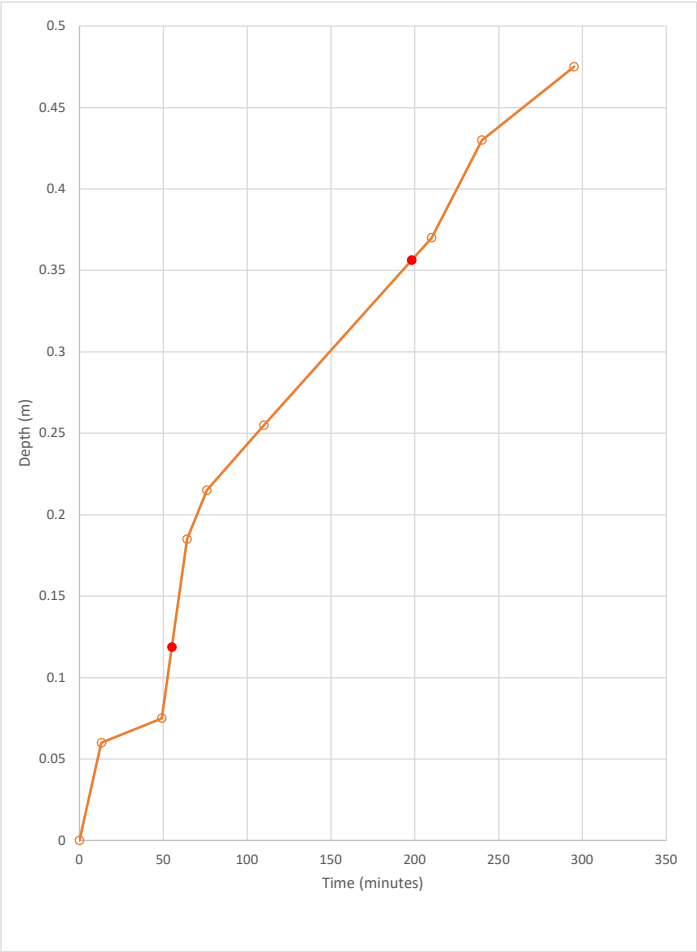
Results:

Soil Infiltration Rate, $f = \frac{V_{P75-25}}{a_{p50} \times t_{p75-25}}$

Effective depth =	0.475	
$P_{75} =$	0.35625	0.35625
$P_{25} =$	0.11875	0.11875
$V_{P75-25} =$	0.086	m^3

$a_{p50} =$	0.9775	m^2
$t_{p75-25} =$	8585	Seconds

$f =$	1.0189E-05	m/s
$f =$	0.0367	m/hr



Appendix E: Environment Agency Rainfall Data 11-17 March 2026

Weekly rainfall and river flow summary

Wednesday 11 March to Tuesday 17 March 2026

1 Summary

It has been a much wetter week across the whole country, particularly in north-west England. River flows increased at nearly two-thirds of the river flow sites we report on compared with the previous week but typically remain normal or above normal for the time of year.

1.1 Rainfall

It has been a much wetter week across the whole country, particularly in north-west England. Rainfall totals ranged from 14 mm in east and south-east England to 41 mm in north-west England. Rainfall totals for March so far range from 41% of the long term average (LTA) in south-west England to 71% in north-west England. Additionally, rainfall totals across England for the month of March to date are 53% of the LTA (Table 1).

1.2 River flows

River flows increased at nearly two-thirds of the river flow sites we report on compared with the previous week. All sites were classed as normal or higher for the time of year with 28 sites (53%) classed as normal. A further 20 sites (38%) were classed as above normal and 5 sites (9%) were notably high (Figure 3.1).

1.3 Outlook

After a chilly start on Thursday, most areas will have a warm and sunny day with light winds, however northern England could remain rather cloudy. Dry conditions with sunny spells are forecast to continue across England throughout Friday and into the weekend. Conditions become more changeable and unsettled on Monday and Tuesday with rain forecast for northern England with the potential for snow on higher ground.

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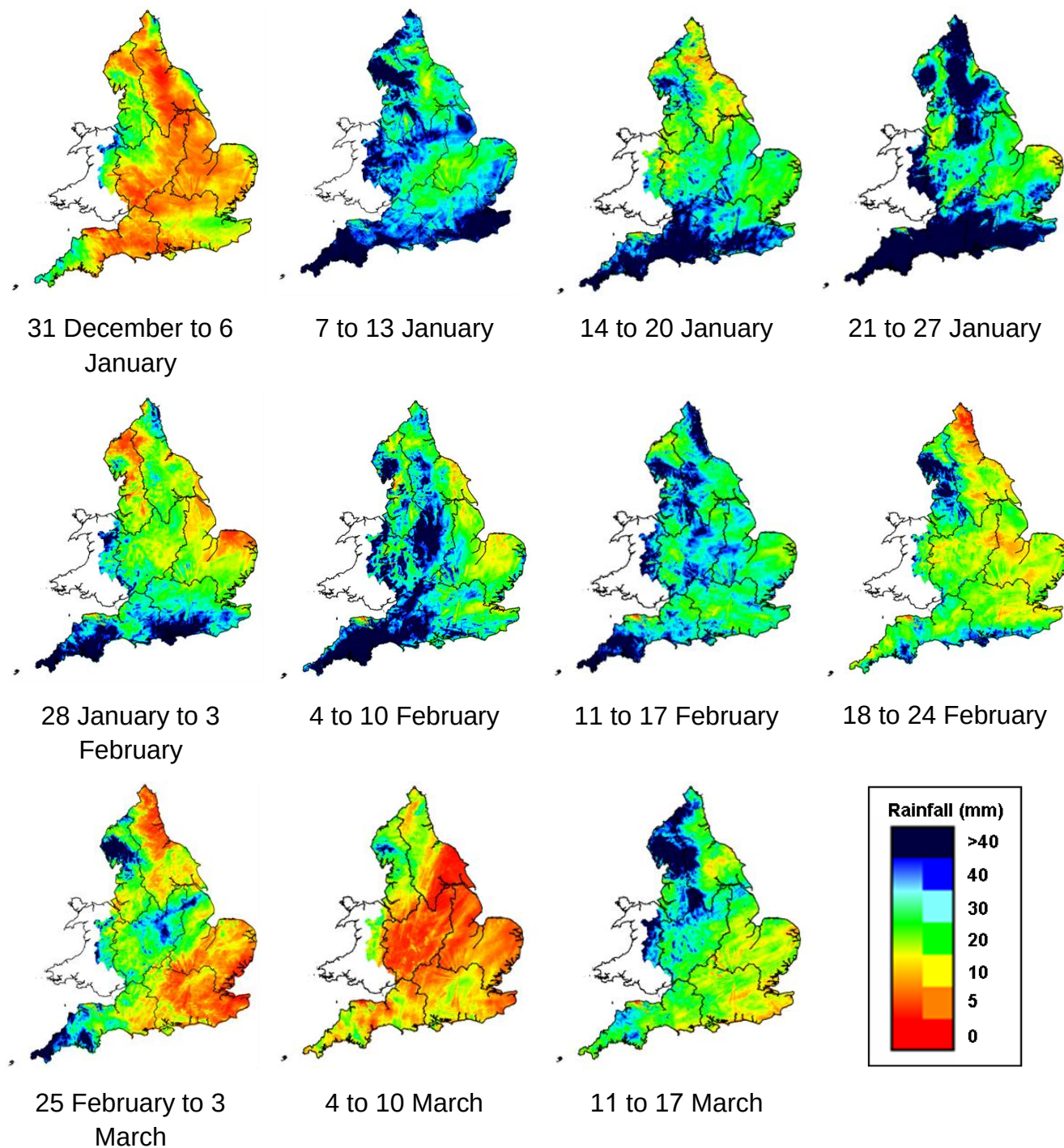
Table 1: Latest rainfall summary information (Source: Met Office © Crown Copyright, 2026)

Geographic regions	11 to 17 Mar 2026 total rainfall (mm)	Mar 2026 to date total rainfall (mm)	Mar 2026 to date rainfall % of LTA	Feb 2026 total rainfall (mm)	Feb 2026 rainfall % of LTA	Last 3 months Dec 2025 to Feb 2026 total rainfall (mm)	Last 3 months Dec 2025 to Feb 2026 rainfall % of LTA	Last 6 months Sep 2025 to Feb 2026 total rainfall (mm)	Last 6 months Sep 2025 to Feb 2026 rainfall % of LTA	Last 12 months Mar 2025 to Feb 2026 total rainfall (mm)	Last 12 months Mar 2025 to Feb 2026 rainfall % of LTA
north-west	41	64	71	115	111	386	104	922	124	1,340	105
north-east	26	37	60	97	139	288	120	644	132	858	97
central	22	26	52	122	229	323	165	614	151	778	102
east	14	19	48	77	183	214	140	427	129	577	91
south-east	14	23	47	109	189	340	155	588	130	761	98
south-west	18	31	41	167	189	558	167	940	143	1,214	111
England	21	31	53	112	170	342	142	662	135	880	101

Notes: Long term average (LTA) rainfall for 1991 to 2020. Data for the current month are calculated using MORECS (Met Office Rainfall and Evaporation Calculation System); data for past months are provisional values from the National Climate Information Centre (NCIC). The data are rounded to the nearest millimetre or percent except when values are less than 1. Recorded amounts of rainfall are likely to be underestimated during snow events.

2 Rainfall

Figure 2: Weekly precipitation across England and Wales for the past 11 weeks. UKPP radar. Note: Images may sometimes include straight lines originating from the centre of the radar, resulting from tall trees and buildings located near the radar installation affecting its performance. This does not reflect actual conditions on the ground.



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