



Ashflame Properties Limited

Land East of Calne Road, Lyneham

Flood Risk Assessment

681915-R1(1)-FRA
December 2025



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RSK GENERAL NOTES

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK LDE Ltd.

CONTENTS

1	INTRODUCTION	1
2	SITE DESCRIPTION & PROPOSALS.....	2
2.1	Existing site	2
2.2	Development proposals.....	3
3	ENVIRONMENTAL SETTING.....	4
3.1	Hydrology	4
3.2	Geology	4
3.3	Hydrogeology	5
4	SOURCES OF FLOOD RISK.....	6
4.1	Criteria	6
4.2	Definitions of risk	6
4.3	Flood risk from rivers (fluvial flood risk).....	8
4.4	Flood risk from the sea (tidal flood risk)	8
4.5	Flood risk from the land (surface water flood risk)	9
4.6	Flood risk from groundwater.....	10
4.7	Flood risk from sewers	10
4.8	Flood risk from reservoirs	11
4.9	Other sources of flood risk	12
5	MITIGATION MEASURES AND RESIDUAL RISK	13
5.1	Sequential approach within application boundary	13
5.2	Overland flood flow	13
5.3	Finished floor levels.....	13
5.4	Safe access/egress	13
5.5	Groundwater flooding mitigation.....	13
6	PLANNING POLICY CONTEXT	15
6.1	National planning policy	15
6.2	Local planning policy	16
7	SURFACE WATER DRAINAGE SUMMARY	20
7.1	Scope	20
7.2	Pre-development situation.....	20
7.3	Post-development situation	21
7.4	Water quality.....	23
7.5	Foul drainage provision	27
8	CONCLUSIONS AND RECOMMENDATIONS	28

TABLES

Table 3.1:	Trial pit reference and average infiltration rate	5
Table 4.1:	Flood map for planning risk zoning	6
Table 4.2:	Flood risk from rivers or the sea and flood risk from surface water	7

Table 4.3: Flood risk category matrix from reservoirs, groundwater, sewers and other artificial sources	7
Table 6.1: Flood risk vulnerability and flood zone 'compatibility'	16
Table 7.1: Existing and proposed site areas.....	20
Table 7.2: IOH 124 surface water runoff (greenfield)	21
Table 7.3: Extract of SuDS Manual Table 26.2: Pollution hazard indices for different land use classifications	24
Table 7.4: Extract of Table 26.3: Indicative SuDS mitigation indices for discharges to surface waters	24
Table 7.5: National SuDS Standards Comparison	25
Table 8.1: Flood risk summary.....	28

FIGURES

Figure 2.1: Site location plan.....	2
Figure 4.1: Environment Agency 'Flood map for planning'	8
Figure 4.2: Environment Agency 'Flood risk from surface water' map.....	9
Figure 4.3: Environment Agency 'Flood risk from reservoirs' map.....	11

APPENDICES

APPENDIX A RSK GROUP SERVICE CONSTRAINTS

APPENDIX B SITE WALKOVER PHOTOS

APPENDIX C TOPOGRAPHIC SURVEY

APPENDIX D WESSEX WATER SEWER RECORDS

APPENDIX E DEVELOPMENT PLANS

APPENDIX F SOAKAGE TEST RESULTS

APPENDIX G ENVIRONMENT AGENCY CORRESPONDENCE

APPENDIX H GREENFIELD RUNOFF CALCULATIONS

APPENDIX I SURFACE WATER DRAINAGE CALCULATIONS AND STRATEGY

1 INTRODUCTION

RSK Land and Development Engineering Ltd were commissioned by Ashflame Properties Limited (the client) to provide a Flood Risk Assessment (FRA) to support the outline planning application at land east of Calne Road, Lyneham (the site). Development proposals include the development of up to 200 residential dwellings including provision of public open space and associated infrastructure.

The purpose of the FRA is to establish the risk associated with the proposed development and to propose suitable mitigation, if required, to reduce the flood risk to a more acceptable level. The FRA must demonstrate that the development will be safe for its lifetime (in this case assumed to be 100 years) taking account of the vulnerability of its users, without increasing flood risk elsewhere.

This document has been produced to assess the flood risk from tidal, fluvial, surface water, groundwater, sewers, reservoirs and artificial sources in line with the National Planning Policy Framework (NPPF)¹ and its corresponding Planning Practice Guidance (PPG)². It includes a summary of the proposed surface water drainage strategy, showing how Sustainable Drainage Systems (SuDS) have been used to demonstrate how surface water can be appropriately managed on-site, with no increased risk of flooding on-site or elsewhere as a result of the development.

This assessment has been undertaken in consultation with the relevant authorities, and with reference to data, documents and guidance published by the Environment Agency (EA), the Lead Local Flood Authority (LLFA) (Wiltshire Council), the Local Planning Authority (LPA) (Wiltshire Council) and the Water Authority (Wessex Water).

The comments given in this report and opinions expressed are subject to RSK Group Service Constraints provided in **Appendix A**.

¹ Communities and Local Government, 'National Planning Policy Framework', published March 2012 and last updated February 2025.

² Communities and Local Government, 'Planning Practice Guidance - Flood Risk and Coastal Change, ID 7', published March 2014 and last updated September 2025.

2 SITE DESCRIPTION & PROPOSALS

2.1 Existing site

2.1.1 Site description

The site is located to the east of Calne Road in the county of Wiltshire and can be located at National Grid Reference 402019E, 177707N and closest postcode of SN15 4QW. A site location plan is included as **Figure 2.1**.

The site covers an area of approximately 8.76ha and currently comprises agricultural land.

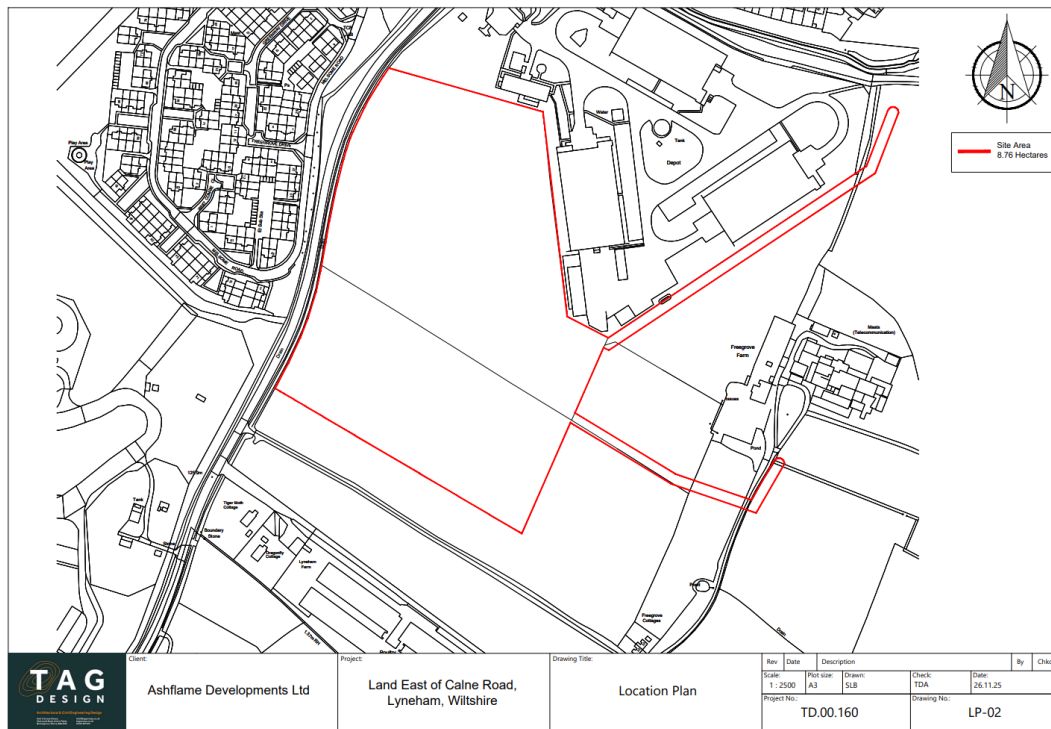


Figure 2.1: Site location plan

A site walkover was conducted on 2nd October 2025 and site walkover photos can be found in **Appendix B**. The site was noted to be generally flat with some localised undulation. A drainage ditch was noted on the western boundary of the site.

2.1.2 Topography

A site-specific topographic survey has been carried out by TAG Surveys. The survey shows the existing site levels vary from 126.16m above ordnance datum (mAOD) on the northwestern boundary of the site to 121.mAOD on the southeastern boundary of the site. The land generally slopes evenly from west to east.

The topographic survey is included in **Appendix C**.

2.1.3 Existing drainage

2.1.3.1 Public

Wessex Water sewer plans have been obtained for the site and are included in **Appendix D**. These plans indicate the following network of sewers in the vicinity of the site:

- Foul sewers are located to the north of the site and eventually flow eastwards to the Sewage Treatment Works located north east of the site.
- Private surface water sewers are located north of the site.

2.1.3.2 Private

Surface water runoff is currently thought to infiltrate into the ground.

2.2 Development proposals

The development proposals for the site include outline planning application (with all matters reserved except for access) for residential development (Use Class C3), provision of public open space, and associated infrastructure on land east of the A3102, Lyneham.

The relevant proposed site plans are included as **Appendix E**.

3 ENVIRONMENTAL SETTING

3.1 Hydrology

Reference to Ordnance Survey (OS) mapping and the EA's web-based mapping indicates that the nearest EA Main River is Cowage Brook, which is located approximately 1.59km south of the site.

A ditch is located on the western boundary of the site. Two unnamed watercourse are located approximately 280m and 302m east of the site.

An unnamed ordinary watercourse is located 375m north of the site. Two ponds are located approximately 305m and 360m east of the site.

3.2 Geology

Based on published geological records for the area (British Geological Survey online mapping), the site exhibits the following geology:

- Superficial Geology: None mapped.
- Bedrock Geology: Stanford Formation – Limestone.

BGS Borehole data shows multiple borehole records located approximately 215m north of the centre of the site (ref: SU07NW49, SU07NW24 and SU07NW25). These boreholes show the following geology:

- Topsoil to a maximum depth of 0.3m below ground level (bgl);
- Soft to firm silty clay to a maximum depth of 0.6mbgl;
- Weathered ragstone to a maximum depth of 3.0mbgl; and
- Hard rag bedrock at a depth of 3.1mbgl.

Most locations found hard rag bedrock between 1.4m and 1.7mbgl. Standing water levels were found between 1.3mbgl and 1.5mbgl.

Site-specific geotechnical investigations have been undertaken by KAB Geo-Solutions Ltd carried out in December 2025 (report reference 25031). The full results can be found in **Appendix F**. Key points are highlighted below:

- The geological strata on site was found to include topsoil to a maximum depth of 0.30mbgl, underlain by weathered Stanford Formation to a maximum depth of 0.80mbgl underlain by Stanford Formation to a maximum depth of 1.50mbgl.
- Groundwater seepage was noted in all locations at depths between 1.25mbgl and 1.50mbgl.

Soakage Tests were carried out in a number of trial pits across the site and the infiltration rates in Table 3.1 were calculated.

Table 3.1: Trial pit reference and average infiltration rate

Trial pit	Average infiltration rate (m/s)
STP01	N/A
STP02	N/A
STP03	N/A
STP04	N/A

As seen in the table above the tests were unsuccessful within all locations and therefore infiltration is not considered a suitable method for the disposal of surface water.

3.3 Hydrogeology

Hydrogeological information was obtained from the online Magic Maps service. These maps indicate that the site is underlain by an unproductive superficial aquifer. The maps also indicate that the site is underlain by a Secondary A bedrock aquifer.

The site is located within a Zone II – Subsurface activity groundwater Source Protection Zone.

Standing water levels were found between 1.3mbgl and 1.5mbgl within available online borehole logs. Groundwater seepage was encountered during the site specific ground investigation between depths of 1.25mbgl and 1.50mbgl.

4 SOURCES OF FLOOD RISK

4.1 Criteria

In accordance with the NPPF and advice from the EA, an assessment of the risk associated with various flooding sources is required along with consideration of the effects of climate change over the design life of the development (in this case assumed to be 100 years).

The EA's most recent climate change guidance, published in May 2022³, should be referenced in order to identify the appropriate peak river flow and rainfall intensity allowances for the scheme. The appropriate allowance for peak river flow is based on the location of the site in the country, the lifetime of development, the relevant flood zone and the vulnerability of the proposed end use.

The flood risk elements that need to be considered for any site are defined in BS 8533 'Assessing and managing flood risk in development Code of practice'⁴ as the "Forms of Flooding" and are listed as:

- Flooding from rivers (fluvial flood risk);
- Flooding from the sea (tidal flood risk);
- Flooding from the land;
- Flooding from groundwater;
- Flooding from sewers (sewer and drain exceedance, pumping station failure etc); and
- Flooding from reservoirs, canals and other artificial structures.

The following section reviews each of these in respect of the subject site.

4.2 Definitions of risk

Table 4.1: Flood map for planning risk zoning

Flood Zone	Description
Flood Zone 1	Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)
Flood Zone 2	Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year

³ Environment Agency, 'Guidance: Flood Risk Assessments: Climate Change Allowances'.
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>, last updated May 2022

⁴ BSI, 'BS 8533-2017 Assessing and managing flood risk in development Code of practice', December 2017.

Flood Zone	Description
Flood Zone 3	Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Flood Zone 3b	Land having the potential to flood for storm events up to the 1 in 30 year return period (>3.3% annual probability of flooding occurring). It is classified as 'functional floodplain'

Table 4.2: Flood risk from rivers or the sea and flood risk from surface water

Flood Risk	Description
High	High risk means that each year this area has a chance of flooding of greater than 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.
Medium	Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.
Low	Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.
Very Low	Means that each year this area has a chance of flooding of less than 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Table 4.3: Flood risk category matrix from reservoirs, groundwater, sewers and other artificial sources

Threat Probability	Low Impact	Medium Impact	High Impact
High	Medium	Medium	High
Medium	Low	Medium	Medium
Low	Low	Low	Medium
Very Low	Very Low		

4.3 Flood risk from rivers (fluvial flood risk)

The EA Flood Zone mapping study for England is available on their website at: <https://flood-map-for-planning.service.gov.uk>.

The latest EA published flood zone map (**Figure 4.1**) shows that the site lies within Flood Zone 1, representing a less than 1 in 1000 year or greater probability of flooding from fluvial sources.

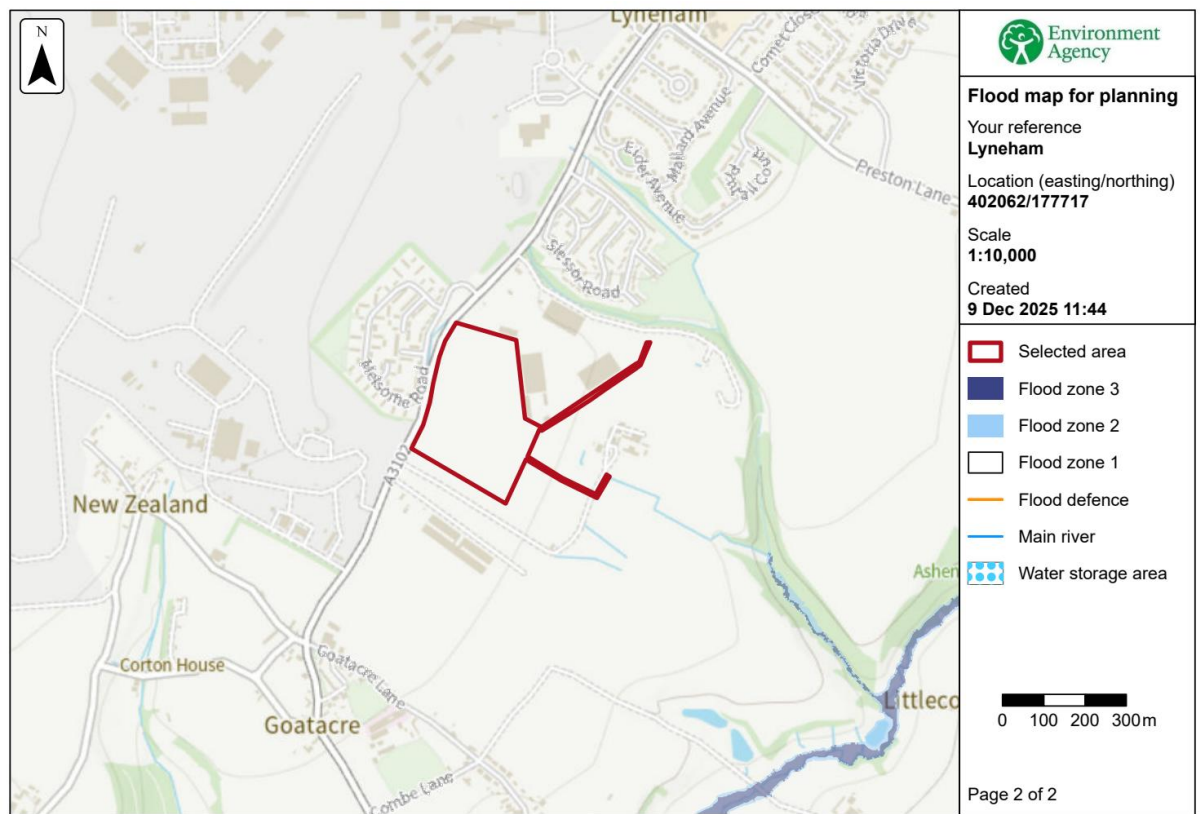


Figure 4.1: Environment Agency ‘Flood map for planning’

The overall risk of fluvial flooding is **very low**.

Due to the location of the site in Flood Zone 1, the impacts of climate change on the fluvial floodplain would not impact the site.

The EA was formally consulted as part of this assessment, with request for flood related information (including flood levels) included in the consultation. Their full response to the flood data request can be found in **Appendix G**.

4.4 Flood risk from the sea (tidal flood risk)

The site is not considered to be at risk from tidal flooding due to its inland location.

The overall tidal flood risk is **very low**.

4.5 Flood risk from the land (surface water flood risk)

If intense rain is unable to soak into the ground or be carried through manmade drainage systems, for a variety of reasons, it can run off over the surface causing localised floods before reaching a river or other watercourse.

Generally, where there is impermeable surfacing or where the ground infiltration capacity is exceeded, surface water runoff can occur. Excess surface water flows from the site are believed to drain naturally to the local water features, either by overland flow or through infiltration.

The EA's surface water flood map (**Figure 4.2**) shows that the site is at very low risk of surface water flooding. Some areas of surface water ponding are noted to the north east of the site around built development and there is some surface water flooding within the ditches that flow alongside the road on the western boundary of the site.

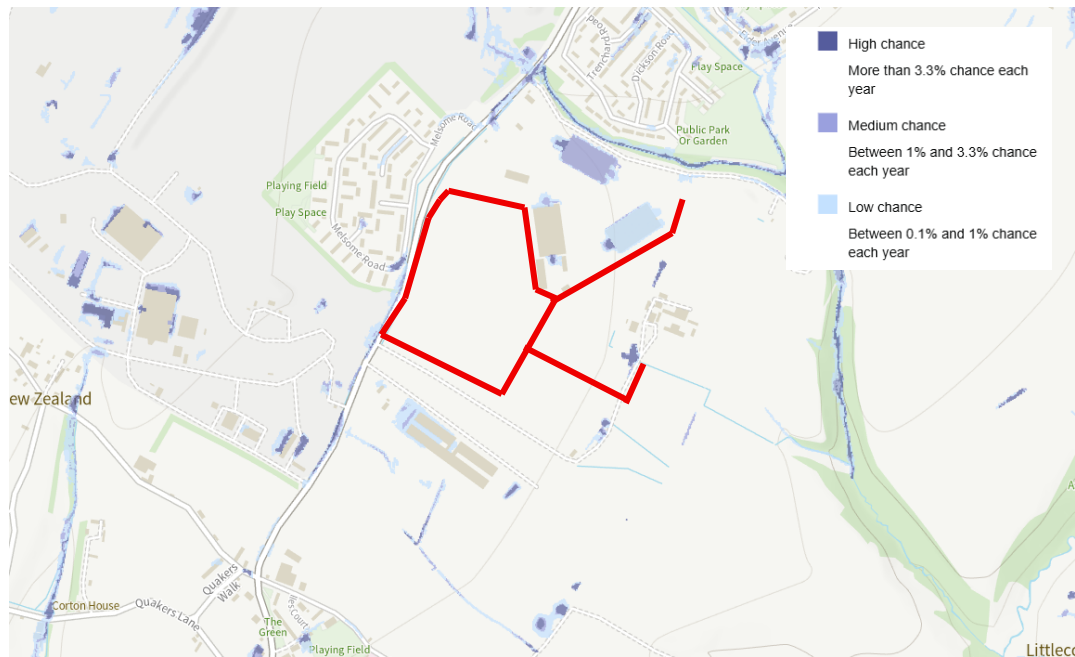


Figure 4.2: Environment Agency 'Flood risk from surface water' map

The topography on site shows the site falls away towards the east and therefore any surface water runoff will likely fall away in this direction. Runoff generated by the proposed development will need to be controlled to prevent surface water flooding elsewhere.

The surrounding topography indicates a small area of land to the west falls towards the site. However, runoff may be captured by highway ditches along the A3102 and therefore the upstream rainfall catchment is considered to be relatively small and it is considered

unlikely that significant runoff generated from the surrounding areas would flow towards the site.

Surface water flooding is likely to increase as a result of climate change in a similar ratio to fluvial flooding. Increased intensity and frequency of precipitation is likely to lead to reduced infiltration and increased overland flow. Climate change guidance was updated by the EA in May 2022.

The overall risk of surface water flooding at the site is **very low**.

4.6 Flood risk from groundwater

Groundwater flooding tends to occur after long periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Available geological mapping does not indicate any superficial deposits and bedrock of limestone. BGS borehole records located 215m north of the site indicate that groundwater levels range between 1.3mbgl and 1.5mbgl.

Wiltshire Council Level 1 Strategic Flood Risk Assessment⁵ shows that the site is located within an area where there is a risk of groundwater flooding to surface and subsurface assets. The SFRA states that there is the possibility of groundwater emerging at the surface locally.

There is no ground investigation data available for the site to confirm the geology and groundwater levels on the site.

Climate change could increase the risk of groundwater flooding as a result of increased precipitation filtering into the groundwater body. This is less likely to cause a significant change to flood risk than from other sources, since groundwater flow is not as confined. It is probable that any locally perched aquifers may be more affected, but these are likely to be isolated. The change in flood risk as a result of climate change is likely to be low.

The overall groundwater flood risk is **medium**.

4.7 Flood risk from sewers

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its conveyance capacity, the system becomes blocked or it cannot discharge due to a high water level in the receiving watercourse. When exceeded, the surcharged pipe work could lead to flooding from backed up manholes and gully connections.

⁵ [Strategic Flood Risk Assessments \(SFRA\) - Wiltshire Council](#)

Sewer details have been referenced from sewer record plans obtained from Wessex Water. The plans indicate a network of foul and surface water sewers to the north of the site with no sewers located within the site boundary.

Based on the local topography, any surcharged water would most likely follow the local topography and flow away from the site eastwards.

Climate change is likely to result in an increase in flooding from sewers. Increased rainfall and more frequent flooding put existing sewer and drainage systems under additional pressure resulting in the potential for more frequent surcharging and potential flooding. This would increase the frequency of local sewer flooding but would not be significant in terms of the proposed development.

The overall sewer flood risk to the site is **low**.

4.8 Flood risk from reservoirs

Flood events can occur from a sudden release of large volumes of water from reservoirs.

The EA reservoir flood map (reproduced as **Figure 4.3**) shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. Since this is a prediction of a worst-case scenario, it is unlikely that any actual flood would be this large.

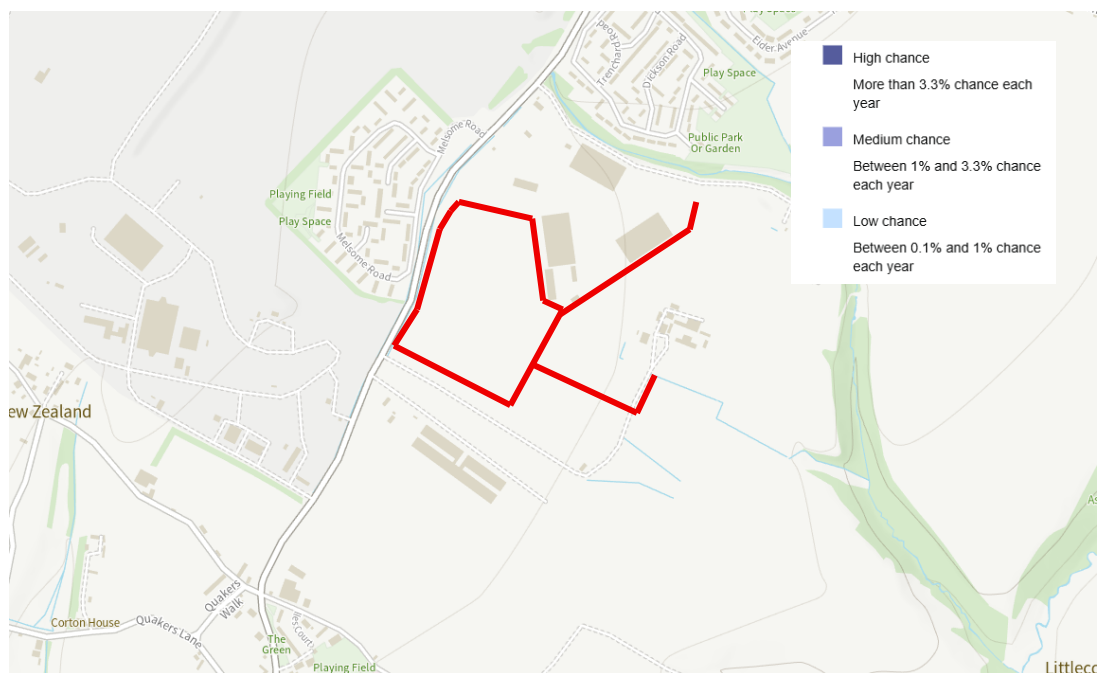


Figure 4.3: Environment Agency 'Flood risk from reservoirs' map

The EA mapping was updated in 2021 to demonstrate the potential maximum extent of flooding for two scenarios - a "dry day scenario" in which river levels are "normal", and a "wet day scenario" where the flooding from the reservoir coincides with flooding from rivers.

The map shows that the site is not in a location at risk of reservoir flooding when river levels are normal or when there is also flooding from rivers. There is considered to be a residual risk should the peak fluvial event and reservoir failure occur at the same time. However, the reality is a reservoir failure is more likely to occur sometime after the peak of the event.

Reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. Since then reservoir safety legislation has been introduced to ensure reservoirs are maintained.

Reservoirs can be managed over time, controlling inflow/outflow of water and therefore there is the capacity to control the effects of climate change. Increased rainfall has the potential to increase base flow, but this should be minimal. It is unlikely that there will be a substantial change to the risk of flooding for this site as a result of climate change.

The resultant flood risk is **very low**.

4.9 Other sources of flood risk

4.9.1 Canals

There are no Canal & River Trust owned canals within the vicinity of the site.

4.9.2 Other artificial features

No other artificial features with the potential to result in a flood risk to the site have been identified.

5 MITIGATION MEASURES AND RESIDUAL RISK

5.1 Sequential approach within application boundary

No parts of the site have been identified as being at a significant risk of flooding from any source. Therefore, there is no requirement to apply the sequential approach to the location of more vulnerable elements of the scheme to the lowest risk parts of the site.

5.2 Overland flood flow

No overland flow routes have been identified across the site from any source of flooding. All surface water runoff up to the 1 in 100 year climate change storm generated on site will need to be stored on site and then discharged.

5.3 Finished floor levels

As this site is unlikely to be affected by fluvial, surface water or any other sources of flooding there is no need to incorporate any raised finished floor levels into the design. Low lying areas that could lead to ponding of surface flows will be avoided by careful design of finished levels.

5.4 Safe access/egress

As the site lies outside of the 1 in 100 year plus climate change fluvial flood extent and is not identified as being at significant risk of flooding from other sources, safe access and egress will be available for the design flood event.

5.5 Groundwater flooding mitigation

Given the potential for elevated groundwater, the following mitigation measures should be considered and incorporated where feasible:

- Best practice should be followed for all new pipes/sewers to prevent the ingress of groundwater into the drainage systems;
- Non-return valves could also be fitted to prevent flooding within properties;
- Additional jointing/sealing should be incorporated in manholes, in areas potentially at risk;
- As suggested by HDC, groundwater monitoring should be undertaken through the winter months; and

- As stated above, raised building FFLs and local land-re-profiling should be considered to mitigate against groundwater flood risk as well as flood risk from surface water.

6 PLANNING POLICY CONTEXT

6.1 National planning policy

Section 14 of the NPPF details the overarching requirements relating to flood risk for any development. The key message is that 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.

In areas at risk of flooding, the NPPF requires that the following criteria are met:

- 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;
- 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.

The PPG supports the NPPF and provides further advice regarding the assessment of flood risk and the application of the Sequential and Exception Tests.

The Sequential Test aims to direct new development to areas with the lowest probability of flooding and is required *“in areas known to be at risk now or in the future from any form of flooding, except in situation 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 regards to potential changes in flood risk)”* (NPPF). This FRA has demonstrated that the entire site is located within Flood Zone 1 and at a low flood risk from all other sources.

In relation to surface water flood risk, paragraph 27 of the PPG states that *“where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied”*. This FRA has demonstrated that the proposed development will be safe from a surface water flood risk perspective as a result of the scheme incorporating a suitable surface water drainage system managing rainfall contributing to the areas of surface water flood risk. Additionally, there will be no increase in flood risk elsewhere as there will be no disruption to existing flow paths or displacement of floodwater.

6.1.1 Land use vulnerability

Table 2 of the PPG indicates the compatibility of various land uses in each flood zone, dependent on their vulnerability to flooding. Table 6.1 below is reproduced from Table 2 of PPG.

Table 6.1: Flood risk vulnerability and flood zone 'compatibility'

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
	Zone 2	Appropriate	Appropriate	Exception Test Required	Appropriate	Appropriate
	Zone 3a	Exception Test Required	Appropriate	Should not be permitted	Exception Test Required	Appropriate
	Zone 3b functional floodplain	Exception Test Required	Appropriate	Should not be permitted	Should not be permitted	Should not be permitted

With reference to Annex 3 of the NPPF, the proposed development, based on its residential use, is classed as 'more vulnerable'. This classification of development is appropriate for areas within Flood Zone 1 and therefore appropriate for the subject site.

6.1.2 Sequential Test

The Sequential Test aims to direct new development to areas with the lowest probability of flooding. The site has been identified as located within Flood Zone 1 with no other significant flooding issues from other sources.

6.1.3 Exception Test

In accordance with Table 6.1, there is no requirement to apply the Exception Test for a 'more vulnerable' development within Flood Zone 1.

6.2 Local planning policy

Current planning policy relating to flood risk and drainage for the Wiltshire Council area is detailed within the Wiltshire Core Strategy 2015⁶. Key policies of relevance to the proposed development are reproduced below:

⁶ [Wiltshire Core Strategy 2015](#)

- Core Policy 67: Flood Risk

Development proposed in Flood Zones 2 and 3 as identified within Strategic Flood Risk Assessment will need to refer to the Strategic Housing Land Availability Assessment when providing evidence to the local planning authority in order to apply the sequential test in line with the requirements of national policy and established best practice.

All new development will need to include measures to reduce the rate of rainwater run-off and improve rainwater infiltration to soil and ground (sustainable urban drainage) unless site or environmental conditions make these measures unsuitable.

- Core Policy 68: Water Resources

Development must not prejudice the delivery of the actions and targets of the relevant River Basin or Catchment Management Plan, and should contribute towards their delivery where possible.

Non-residential development will be required to incorporate water efficiency measures. Developers will be expected to submit details of how water efficiency has been taken into account during the design of proposals.

Development proposals within a Source Protection Zone, Safeguard Zone or Water Protection Zone must assess any risk to groundwater resources and groundwater quality and demonstrate that these would be protected throughout the construction and operational phases of development.

Relevant planning policy relating to flood risk and drainage for the Wiltshire Local Plan Regulation 19⁷ is detailed below:

- Core Policy 95: Flood Risk

The council will follow a sequential approach to flood risk management, in line with national policy and guidance. All development proposals will be required to consider the effect of the proposed development on flood risk from all sources, both on and offsite, commensurate with the scale and impact of the development.

Where required, a Site-Specific Flood Risk Assessment, Surface Water Drainage Strategy and Groundwater Assessment should be conducted. This must take account of all flood risk sources and cumulative effects and should incorporate suitable flood risk measures to account for site conditions.

All new development, including where appropriate retrofitting proposals, will include measures to reduce the rate of rainwater run-off and incorporate sustainable drainage systems (SuDS). All major development should achieve a 20% betterment on greenfield runoff rates whereby runoff is managed as close to the source as possible, in line with the surface water discharge hierarchy:

rainwater re-use (rainwater harvesting/greywater recycling)

⁷ [Local Plan Review Pre-Submission Review 2023](#)

- an adequate soakaway or other infiltration system (viability testing required)
- hybrid solution of infiltration and discharging to a surface water body
- to a surface water body (e.g., an ordinary watercourse)
- to a surface water sewer, highway drain, or other drainage system (add justification for no discharge to highway)
- to a combined sewer

As part of drainage strategies, the council, in accordance with national policy guidance, will discourage culverting or the building over of watercourses wherever practicable. In addition, opportunities should be taken to secure the removal of existing culverting and the retention of all existing land drainage features.

The drainage strategy must ensure that flood risk is addressed to flood depths for a 1 in 100-year storm event plus climate change in line with Environment Agency guidance. The drainage strategy must demonstrate that development proposals will remain safe during a flood event throughout its lifetime and consider access, egress and emergency exit routes. The Drainage Strategy must recognise and demonstrate opportunities for SuDS to provide other multiple benefits.

The drainage strategy should be informed by the council's Green and Blue Infrastructure Strategy, the Climate Change Adaptation Plan, and the Wiltshire Design Guide as these all provide guidance on SuDS by incorporating the synergistic benefits and a nature-based approach, dealing with runoff onsite where possible and avoiding methods such as culverting which alters the natural formation of watercourses.

- Core Policy 96: Water Resources

Development must not prejudice the delivery of actions and targets within relevant River Basin or Catchment Flood Management Plans and should contribute towards their delivery where possible.

Since 2021, Wiltshire has been classified as a water stressed area⁷². Accordingly, the council requires that:

new residential development should have a predicted mains water consumption of no more than 85 litres per person per day;

non-household development should achieve a score of three credits within the water (Wat 01 Water Consumption) issue category for the BREEAM New Construction Standard, achieving 40% reduction compared to baseline standards;

all new development should incorporate water saving opportunities into their design, such as grey water recycling and rainwater harvesting. Developers will be expected to demonstrate how water efficiency has been taken into account during the design of their proposals.

Development proposals within a Source Protection Zone, Safeguard Zone or Water Protection Zone must assess any risk to groundwater resources and groundwater quality and demonstrate that these would be protected throughout the construction and operational phases of development.

Development will only be supported where adequate foul drainage, sewerage and sewage treatment facilities are available or where suitable arrangements are made for their provision. Development should not be permitted in areas within buffer zones or safeguarded areas, set out by utility companies unless impacts can be satisfactorily mitigated.

7 SURFACE WATER DRAINAGE SUMMARY

7.1 Scope

This section discusses the potential quantitative effects of the development on both the risk of surface water flooding on-site and elsewhere within the catchment, as well as the type of potential SuDS features that could be incorporated as part of the masterplan.

The NPPF states that SuDS should be considered wherever practical. The use of SuDS is also encouraged by regional and local policy. The drainage strategy has been designed in accordance with the National Standards for SuDS in line with Wiltshire Council guidance.

In addition, Building Regulations Part H⁸ requires that the first choice of surface water disposal should be to discharge to an adequate soakaway or infiltration system, where practicable. If this is not reasonably practicable then discharge should be to a watercourse, the least favourable option being to a sewer (surface water before combined). Infiltration techniques should therefore be applied wherever they are appropriate.

This assessment includes an overview and comparison of the existing greenfield scenario and proposed development scenario. The existing and proposed areas are provided in the Table below:

Table 7.1: Existing and proposed site areas

Land use	Existing area (ha)	Proposed area (ha)
Impermeable	0.00 (0%)	5.10 (58%)
Permeable	8.76 (100%)	3.66 (42%)
Total	8.76	8.76

7.2 Pre-development situation

The existing site area is 8.76ha and 0% impermeable.

The IoH 124⁹ method has been used to estimate the Greenfield surface water runoff for the site, using the HR Wallingford Greenfield runoff rate estimation tool. Calculations are contained in **Appendix H**.

⁸ HM Government (2010 with 2013 amendments), 'The Building Regulations 2010: Approved Document H - Drainage and Waste Disposal (2002 Edition incorporating 2010 amendments)'.

⁹ Institute of Hydrology (IoH), 'Flood Estimation for small catchments - Report 124', 1994.

Table 7.2: IOH 124 surface water runoff (greenfield)

Return period	Peak flow (l/s)
QBar	40.0
1 in 1 year	31.2
1 in 2 year	37.2
1 in 30 year	78.1
1 in 100 year	97.3

7.3 Post-development situation

The proposed development is for a residential end use. This will result in an increase in impermeable area and surface water runoff across the site. It will therefore be necessary to manage surface water on-site through conveyance towards the proposed point of discharge, whilst providing sufficient attenuation for all events up to the 1 in 100 year event inclusive of 45% climate change.

7.3.1 Point of discharge

Discharge options from the site have been considered in line with the SuDS hierarchy, as follows.

Infiltration

Infiltration should be considered as the primary option to discharge surface water from the developed study area. The effectiveness of infiltration is completely dependent on the physical conditions at the study area. Potential obstacles include:

- Local variations in permeability preventing infiltration – Soakaway testing undertaken in December 2025, infiltration based SuDS will not be suitable due to the poor rates obtained;
- Shallow groundwater table - For infiltration drainage devices, Building Regulation approved document H2 states that these “*should not be built in ground where the water table reaches the bottom of the device at any time of the year*”. Groundwater was observed at depth between 1.25m bgl and 1.50mbgl, this may limit the depth at which infiltration can be used.
- Source Protection Zones - The study area is not located within a Groundwater Source Protection Zone.

Discharge to watercourse

Discharging surface water directly to a local watercourse is considered feasible as there is an unnamed watercourse located approximately 305m east of the site with connectivity into the watercourse network to the east. The site drains naturally in this way, and therefore utilising/enhancing the existing connection will act to mimic the natural scenario.

Discharge to surface water sewer

There will be no surface water connection into the public sewer as preferable methods are available.

7.3.2 Network modelling

Allsop and Avery have provided calculations and a drainage strategy for the proposed development. To determine whether the proposed SuDS provide sufficient attenuation storage, the HR Wallingford Surface Water Storage Volume Design Tool has been used.

Calculations have been run using the 50%AEP Greenfield runoff rate as a discharge rate in accordance with National Standards for SuDS requirements, restricting offsite flows to 37.2l/s. The proposed impermeable area has been calculated based on the highway catchment area included within the development framework plan. No allowance is included in the calculations for infiltration as a worse-case scenario.

Calculations show this system can attenuate surface water runoff without flooding during a 1 in 100 year event inclusive of 45% climate change. Further details on the storage structure and sizing, with attenuation calculations can be found in **Appendix I**.

7.3.3 Proposed drainage strategy

The proposed SuDS for the site includes a combination of swales and a detention basin which have been located depending on the positions of proposed buildings, relative groundwater depths and the underlying soil type.

The proposed SuDS features are designed to provide the required storage volume to retain the 1 in 100 plus 45% climate change event. The SuDS measures are outlined in the Indicative Surface Water Strategy as attached in **Appendix H**.

In principle, the strategy contains the following features:

- **Swales** have been utilised along the southern and eastern site boundary to convey runoff to the detention basin;
- A large **detention basin** has been strategically located within the area of open space in the south east of the site. The topography in this area is suitable for SuDS features. To accommodate the required volumes, the feature has been designed up to 1.5m deep and has side slopes of 1:3 to comply with safety and maintenance guidelines as highlighted in the SuDS Manual¹⁰;

The dimensions, volumes and location of the SuDS features will need to be revised as the masterplan develops and during the detailed planning stage. Detailed design of individual features is not part of the scope of this report. Preliminary design criteria have been based upon guidance given in the CIRIA publication 'The SUDS Manual'¹⁰.

Temporary drainage should be established for the construction phase of development to prevent silt mobilisation, potentially impacting on flow regimes and silt pollution

¹⁰ CIRIA, 'The SUDS Manual – C753', 2015.

downstream. The construction of SuDS should be considered in the early stages of site design.

7.3.4 Adoption and maintenance

The Design and Construction Guidance for Foul and Surface Water Sewers (DCG)¹¹ states that as of April 1st 2020, sewerage authorities are required to adopt some SuDS features, including basins and swales. However, SuDS features that are classified as forming part of a building or yard (i.e. permeable paving and green roofs) will not be adoptable under the DCG and will require a second adopting authority or maintenance company. Therefore, the long-term maintenance of some SuDS features within the site boundary will most likely be undertaken by Wessex Water as the adopting authority. However, the maintenance of other features such as permeable paving will most likely be undertaken by a management company.

Maintenance of SuDS features should be undertaken in line with maintenance schedules outlined in the SuDS Manual and if adopted, any Wessex Water maintenance guidance.. Full maintenance schedules should be confirmed at the detailed design stage in consultation with appropriate product suppliers.

7.4 Water quality

The SUDS Manual contains guidance on how to assess water quality, stating *“Determining the hazard posed by the land use activities at a site and the extent to which underlying soil layers and/or proposed treatment components reduce the associated risk can be done using a variety of methods that vary in complexity and data requirements.”*

The assessment methodology required is determined by reference to Table 4.3 of the SuDS Manual. Based on this, the quality impacts of the proposed development can be summarised with the following pollution hazard levels and management requirements for discharge to the receiving surface water (there will be no infiltration on site, therefore receiving groundwater is not considered here):

- Residential roofs – **Very Low** Pollution Hazard – Simple Index Approach;
- Individual property driveways, roofs, residential car parks, low traffic roads, non-residential car parking with infrequent change (schools, offices) – **Low** Pollution Hazard – Simple Index Approach; and

It is therefore considered appropriate to use the Simple Index Approach (SIA) for the purpose of this assessment. The SIA for assessing water quality management requirements has been developed by CIRIA to support the implementation of the water quality management design methods set out in the SuDS Manual, with appropriate cross

¹¹ Water UK, ‘Sewerage Sector Guidance Appendix C – Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England’, March 2020.

referencing to the relevant 'Design Conditions'. The CIRIA Susdrain website contains a spreadsheet based procedure that can be used for all the UK.

Simple Index Approach

Table 26.1 of the SUDS Manual indicates that for the Simple Index Approach:

- Simple pollution hazard indices should be based on land use (e.g. Table 26.2); and
- Risk reduction for Surface Water should be done using Simple SuDS hazard mitigation indices (e.g. Table 26.3).

Extracts of Tables 26.2 and 26.3 are replicated below, highlighting the relevant features applicable to this site:

Table 7.3: Extract of SuDS Manual Table 26.2: Pollution hazard indices for different land use classifications

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very Low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. <300 traffic movements/day	Low	0.5	0.4	0.4

Table 7.4: Extract of Table 26.3: Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation Indices		
	TSS	Metals	Hydro-carbons
Swale	0.5	0.6	0.6
Detention basin	0.5	0.5	0.6

The SuDS Manual States:

Total SuDS mitigation index $\geq$ pollution hazard index
(for each contaminant type) (for each contaminant type)

Taking each land type use in turn:

- Residential roofs – a swale alone (mitigation 0.5 – 0.6) is sufficient to mitigate for any of the potential pollutants (indices 0.05-0.2); and
- Individual property driveways, residential car parks, low traffic roads, non-residential car parking with infrequent change (schools, offices) – a detention basin alone (mitigation 0.5 – 0.6) is sufficient to mitigate for any of the potential pollutants (indices 0.4-0.5);

7.4.1 National Suds Standards Response

In light of the recent issue of the National Standards for SuDS we have compared the series of Standards as to their application in the sites proposed drainage strategy: -

Table 7.5: National SuDS Standards Comparison

SuDS Standard	How will standard be met
Standard 1 Runoff Destinations	The National Standards runoff destinations hierarchy is described in Section 7.3 The entire site is proposed to outfall into a neighbouring watercourse (Priority 3). The use of a basin will allow some degree of surface percolation (Priority 2), although this is insufficient as the primary outfall method.
Standard 2 Management of everyday rainfall	The first 5mm of rain is proposed to be intercepted and retained through the use of permeable paving, and unlined basins. The surface geology consists of Topsoil over weathered Stanford Formation overlying Stanford Formation. The detention basins and swales are of sufficient size to allow surface percolation of the first 5mm of rain. The detailed design of any drainage feature is to be secured through an appropriately worded planning condition.
Standard 3 Management of extreme rainfall	Outfall from the detention basin is to be restricted to its 50%AEP greenfield rate (in accordance with National Standards for SuDS). The calculations are included in Appendix G . The detention basin has been designed with a freeboard during the 1 in 100yr event. All calculations will include a 45% allowance for climate change in accordance with catchment characteristics. All surface runoff from the highway catchment will be collected via swales and retained within the detention basin. All surface water runoff from roofscapes and private drives will be managed within the private extents.

SuDS Standard	How will standard be met
	Any exceedance flow will be confined to the roadways and become incorporated into the site drainage.
Standard 4 Water quality	The Simple Index Approach has been carried out within Section 7.4 which concludes that the use of multiple attenuation features provides a higher than required level of water quality treatment. The Water Framework Directive “Cowage Brook – source to conf unnamed trib” is noted to be of Moderate Ecological Status. The use of SuDS provides an effective water quality treatment prior to outfall and so may help contribute to improved quality and status or prevent it from deteriorating further. The detailed design of any drainage feature is to be secured through an appropriately worded planning condition.
Standard 5 Amenity	All principal drainage or water conveyance features have been located within public open areas. The proposed layout (see Appendix D) includes a potential recreational route. The detention basin will have multifunctional uses and should be designed in line with the latest best practice in terms of H&S requirements. The detailed design of any drainage feature is to be secured through an appropriately worded planning condition.
Standard 6 Biodiversity	The SuDS drainage strategy (see Appendix H and described in Section 7.3.3) incorporates the use of basins which both have the potential for biodiversity development in the form of planting, open water areas, and other landscaping features. The detention basin is located within the open green space already included in the development layout. The layout will also incorporate planting, green space and other amenity features in both public and private areas. The detailed design of any drainage feature is to be secured through an appropriately worded planning condition.
Standard 7 Design of drainage for construction, operation, maintenance, decommissioning and structural integrity	A proposed strategies ‘SuDS approach’ ensures that surface water drainage systems are designed to be easily and safely constructed, operated and maintained taking account of the need to minimise negative impacts on natural resources and the environment. The details and features of the strategies components are to be designed based on the appropriate CIRIA guidance (i.e. side slope profile, fall gradient, materials etc.) The detailed design of any drainage feature, construction details and maintenance schedule is to be secured through an appropriately worded condition.

7.5 Foul drainage provision

The preliminary drainage scheme for the site is shown in **Appendix H**. The design uses a gravity network thus removing the need for pumping stations and the potential flood risk that these may present to connect into a foul sewer located to the north east of the site.

8 CONCLUSIONS AND RECOMMENDATIONS

This FRA complies with the NPPF and Planning Practice Guidance and demonstrates that flood risk from all sources has been considered in the proposed development. It is also consistent with the Local Planning Authority requirements with regard to flood risk.

The proposed development site lies in an area designated by the EA as Flood Zone 1, and is outlined to have a chance of flooding of less than 1 in 1,000 (<0.1%) in any year from fluvial sources.

The proposed development is classified as 'more vulnerable' and therefore considered appropriate within Flood Zone 1 without application of the Exception Test.

This FRA has considered multiple sources of flooding and concluded the following:

Table 8.1: Flood risk summary

Source	Level of risk	Mitigation
Fluvial	Very Low Flood Zone 1	None required
Tidal	Very Low	None required due to distance to tidally influenced watercourses
Surface water	Very Low	The development will incorporate a surface water drainage strategy to accommodate surface water generated on site.
Groundwater	Medium	Groundwater monitoring should be undertaken through winter months. Groundwater mitigation measures should be put in place if groundwater is found to be elevated underneath the site,
Sewers	Very Low	No mitigation required.
Reservoir	Very Low	No mitigation required.
Other sources	Very Low	No mitigation required.

Overall, taking into account the above points, the development of the site should not be precluded on flood risk grounds.

APPENDIX A

RSK GROUP SERVICE CONSTRAINTS

1. This report and the drainage design carried out in connection with the report (together the "Services") were compiled and carried out by RSK LDE Ltd (RSK) for Ashflame Properties Limited (the "client") in accordance with the terms of a contract between RSK and the "client" dated August 2025. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable civil engineer at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.
7. The Services are based upon RSK's observations of existing physical conditions at the site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.
9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (boreholes, trial pits etc) annotated on site plans are

not drawn to scale but are centred over the appropriate location. Such features should not be used for setting out and should be considered indicative only.

APPENDIX B

SITE WALKOVER PHOTOS

	Report No:	PHOTOGRAPHIC LOG
Client name: Ashflame Properties Limited		Site Location: Land off Calne Road, Lyneham
Photo No. 1	Date: 02/10/25	
Description: Looking south east across the site		

Photo No.

2

Description:

Looking north across
the site



Photo No.

3

Description:

Looking east across
the site



Photo No. 4	
Description: Looking south across the site	
Photo No. 5	
Description: Looking south across the site	

Photo No.

6

Description:

Looking north west
across the site





APPENDIX C

TOPOGRAPHIC SURVEY

NOTES

GENERAL NOTES:
ALL LEVELS ARE IN METRES DERIVED FROM GPS TRANSFORMATION.
GRID COORDINATES ARE ORDNANCE SURVEY NATIONAL GRID DERIVED FROM GPS TRANSFORMATION.
GPS COORDINATES AND LEVELS SET AT ST01
THIS DRAWING HAS BEEN PRODUCED WITH A PLOT SCALE ACCURACY OF 1:500
DRAINAGE COVERS INDICATED WHERE VERIFIABLE PIPES INVERTS / DETAILS SURVEYED FROM SURFACE
INSPECTION ONLY. GENERALLY DAMAGED COVERS AND COVERS WITH HIGHWAYS WILL NOT BE LIFTED
SPECIES SHOULD BE CONFIRMED BY THEIR SPECIALIST IF CRITICAL
OVERHEAD CABLES ARE INDICATED USING REMOTE SURVEY METHODS AND ARE SUBJECT TO SEASONAL
VARIATION AND SHOULD BE TREATED AS APPROXIMATE
DRAINAGE COVERS LOCATED UNDER PARK VEHICLES/MOBILE STRUCTURES MAYBE OMITTED.
SURVEY SERVICE COVERS WILL NOT BE INDICATED.

TOPOGRAPHICAL SURVEY/UTILITY KEY :-

[illegible]

SURVEY CONTROL :-

STATION	EASTING	NORTHING	LEVEL
ST01	401985.644	177949.790	124.485
ST02	401940.455	177868.186	126.929
ST03	402030.063	177736.210	124.812
ST04	401918.672	177725.670	126.497
ST05	401850.332	177801.764	126.289

ACTIVITY SURVEY KEY :-

	HATCHED AREA		HV CABLE
	BOREHOLE		ELECTRIC CABLE
	CPT		WATER PIPE
	TRENCH PIT		FUEL SEWER
	HAND PIT		STORM SEWER
	WINDOW SAMPLE		COMBINED SEWER
			CABLE TELEVISION
			TELECOM CABLE
			GAS PIPE
			UNIDENTIFIED SERVICE
			OIL PIPE
			FIBER OPTICS
			PIPE
			BT CABLE

RESUMEN 11

Electronic techniques have been used in the location of underground utilities and not all utilities and field excavations should be carried out to confirm service identification, positions and particularly depths, where the utility company is not satisfied that the information can be guaranteed.

Where there may be some uncertainty between live and dead services, the use of such services should be treated as such. This drawing may not indicate the location of a service and the utility company should be contacted to confirm that the service should be obtained from the appropriate utility company and used in conjunction with the service.

Private service pipes and cables in highways are not shown, but these presence should be indicated.

Additional below ground structures or obstructions not shown on this drawing may be present. Reference should be made to historical plans and on-site drawings.

Location of the vicinity of the proposed excavation should be indicated.

REF: Information drawn together from underground services.

Points of interest shown on this drawing are not to be used as a guide, material and method of construction have no influence on the quality of the data.

100% DETECTION

TSA Standards - To meet appropriate and professionally recognised survey may not be able to achieve a 100% detection rate.

UTILITY NOTES



Client		GALLAGHER DEVELOPMENTS	
Project		LYNDHAM, WILTSHIRE	
Title			
TOPOGRAPHICAL SURVEY			
Date	AUGUST 2025	Revisions	
Scale	1:500@AD		
Orig No	T0957 - 2		
Surveyor	SWC		
Checked	SB		

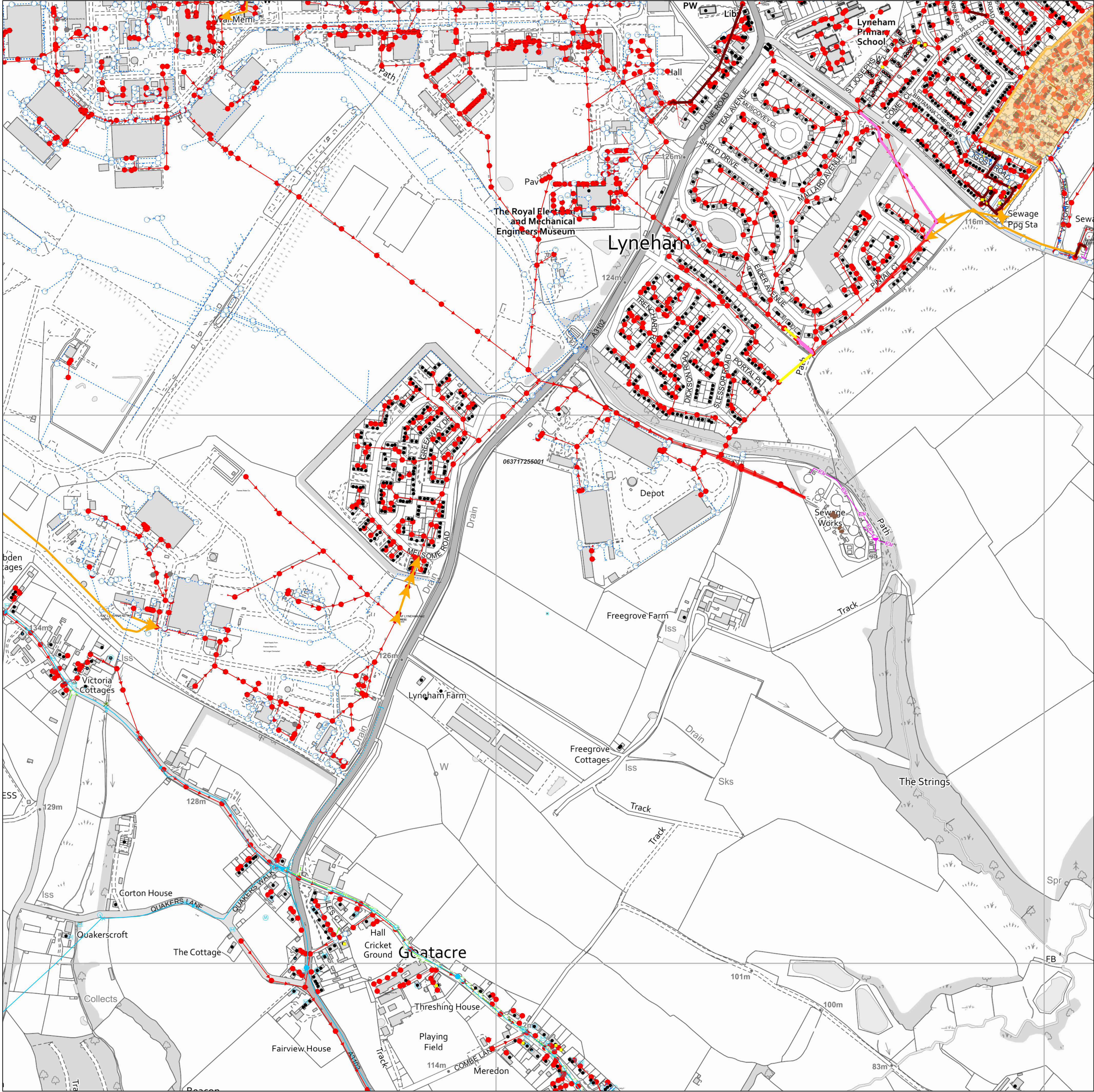
TOPOGRAPHICAL (LAND) SURVEYORS / UTILITY SURVEYORS
BUILDING MEASUREMENT SURVEYORS / 3D LASER SCANNING



APPENDIX D

WESSEX WATER SEWER RECORDS

Wessex Water Web 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	PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
Distribution Main	Foul	Surface	Combined	Abandoned	Rising Mains	Private Rising Mains
Washout Main	Surface	Combined	Abandoned	Abandoned	Standby Rising Mains	Culverted Watercourse
Raw Water Main	Combined	Abandoned	Abandoned	Abandoned	Effluent Disposal	Highway Drain
Abandoned Main	Abandoned	Abandoned	Abandoned	Abandoned	Overflow	Use Unknown
Private Main	Abandoned	Abandoned	Abandoned	Abandoned	Syphon	Status Unknown
SITES	STRUCTURES	OTHER STRUCTURES	OTHER STRUCTURES	OTHER STRUCTURES	OTHER STRUCTURES	OTHER STRUCTURES
Source	Manhole - Foul	Attenuation Tank	Storage Tank	Chamber	Tunnel	Interceptor
Reservoir	Manhole - Surface	Pumping Station - Surface	Pumping Stn - Foul/Combined	Gully	Vent Column	Rodding Eye
Pump	Manhole - Combined	Catchpit	Flushing Chamber	Soakaway	Non Return Valve	Washout
Treatment Works	Outfall	Air Valve	Hatch Box	Bifurcation - Foul	Bifurcation - Surface	Bifurcation - Combined
FITTINGS	Inlet	Combined Sewage Overflow	Combined Sewage Overflow	Combined Sewage Overflow	Combined Sewage Overflow	Combined Sewage Overflow
Valve - Open	Valve - Closed	Fire Hydrant	Pressure Reducing Valve	Meter	Meter	Meter

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) styles of line are shown on the key in sample/typical colours.

Information in this plan 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. Building over or near Wessex Water's apparatus is not normally permitted.

Date: 22/08/2025

Centre: 402096E, 177761N

Scale: 1:3,536
(when printed at A1 size)

APPENDIX E

DEVELOPMENT PLANS

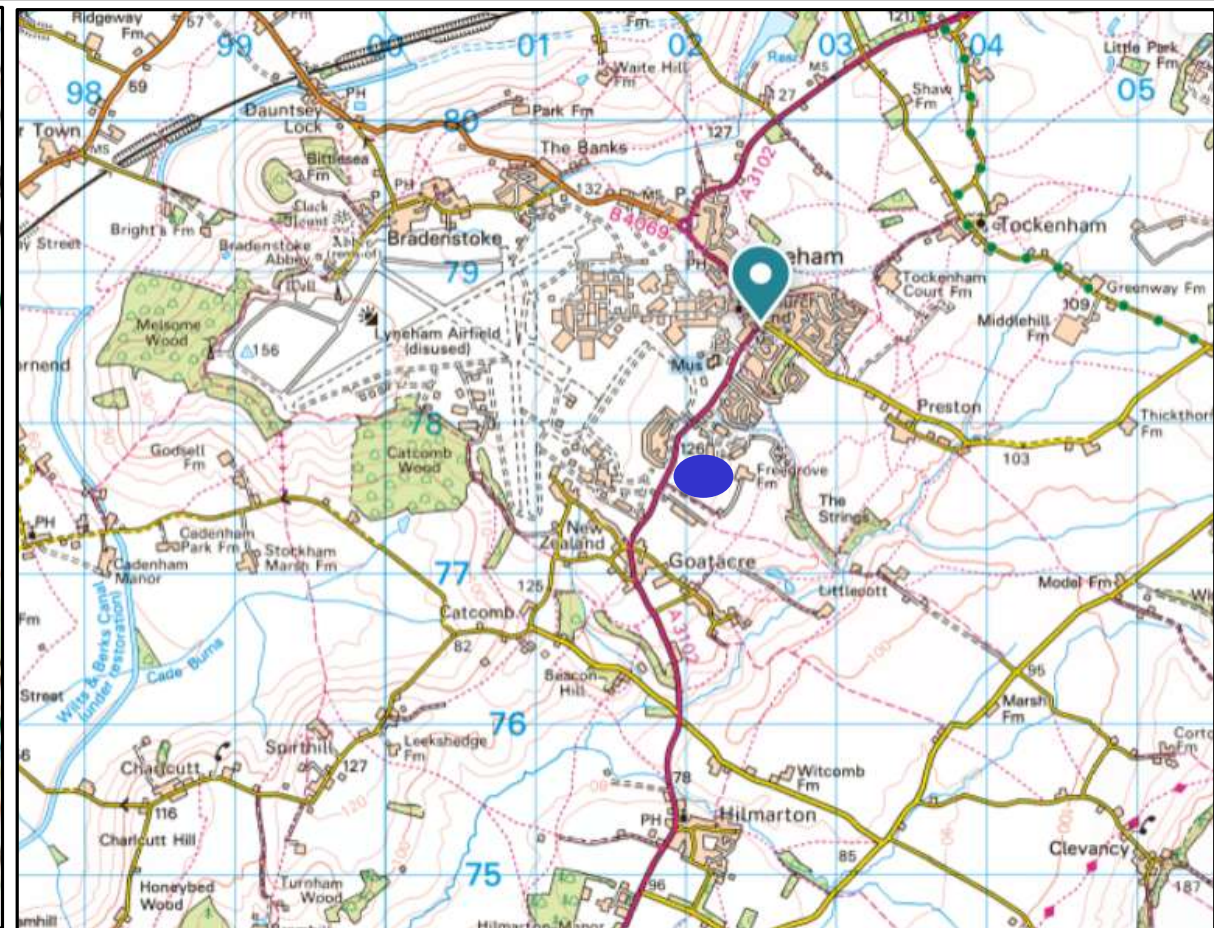
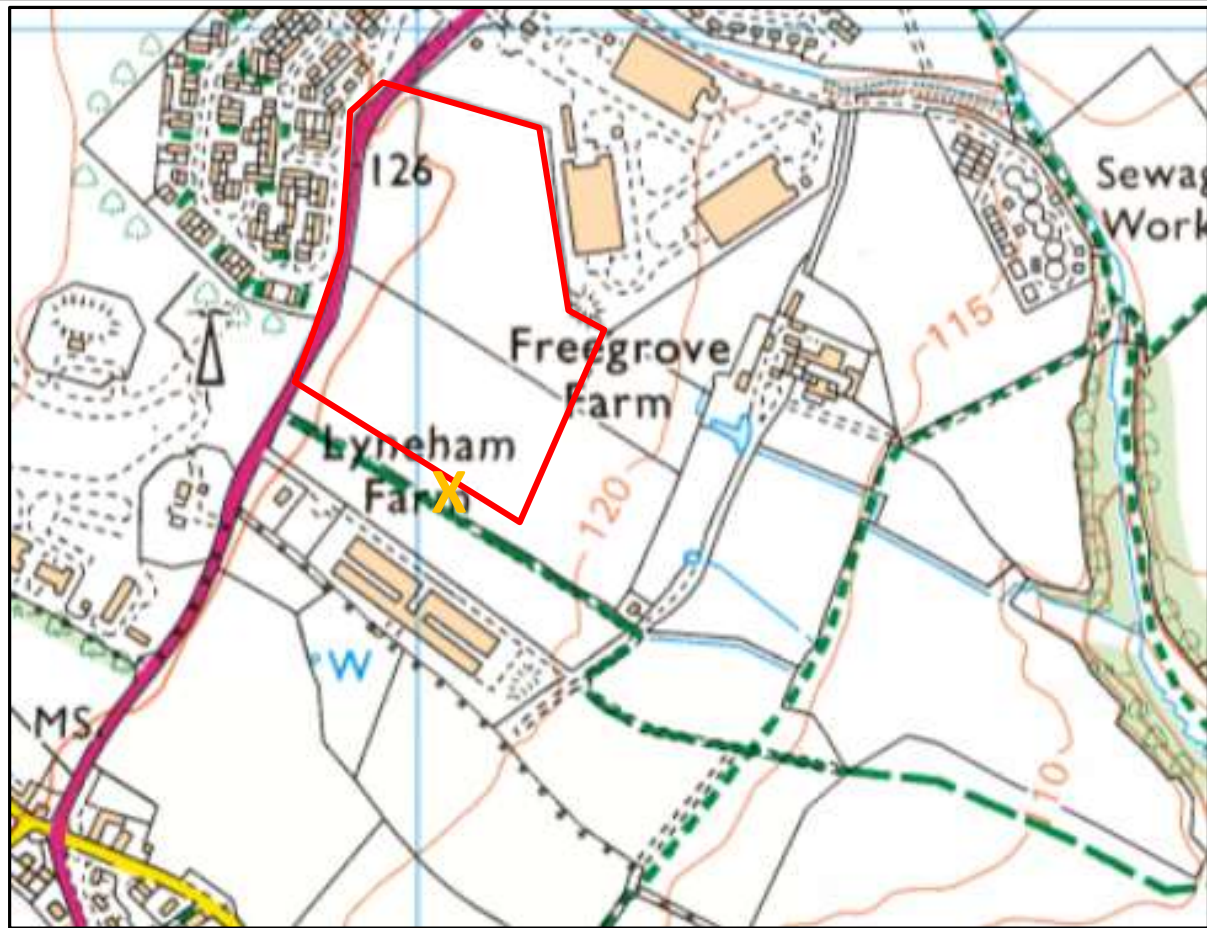


- Key:
- Site Boundary (8.17ha)
 - Built Development
 - Road network
 - Private Drives
 - Footway & Cycleway routes
 - Existing Trees & Vegetation
 - Proposed Trees & Vegetation
 - Open Space
 - Proposed Ponds & Swales
 - Proposed Play Space (LAP)

 Architectural & Civil Engineering Design Unit 1 Access House, Dorchester Road, Bournemouth, Bournemouth, Dorset, BH2 9AA 01202 888888	Client: <
--	--

APPENDIX F

SOAKAGE TEST RESULTS



DO NOT SCALE

NOTES:

Approx. Site Location

Approx. Site Boundary

Approx. Site Access Locations
(plus dropped pin)

kevinbullock1962@gmail.com
kevin@kabgeo.com

CLIENT:

Gallagher Developments

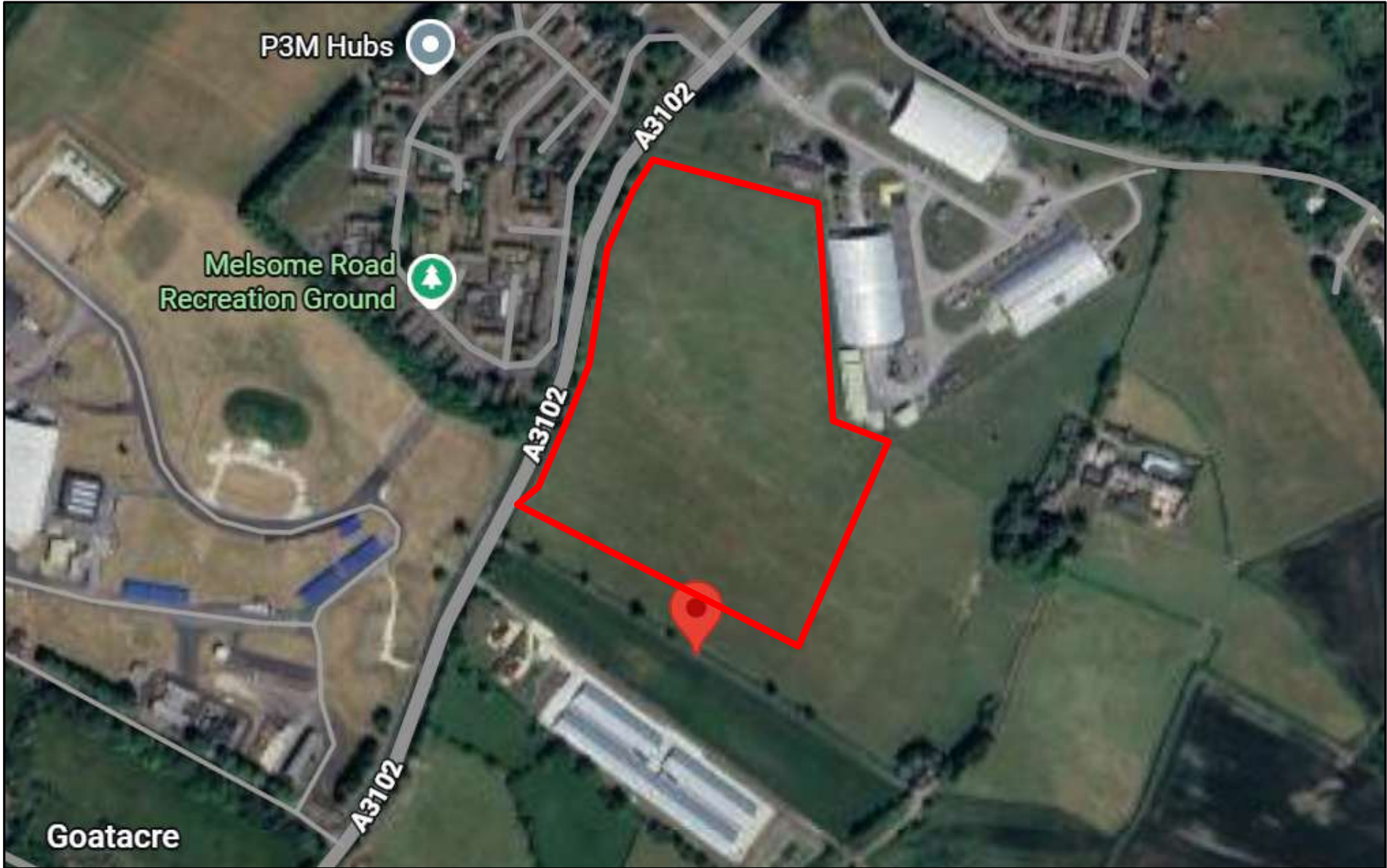
PROJECT:

Land East of the A3102,
Lyneham, Wilshire

TITLE:

Site Location Plan

SCALE@SIZE : NTS	ISSUE: Final
DESIGN/DRAWN : KAB	DATE: December 2025
PROJECT No: 25031	DRAWING No: 001





DO NOT SCALE

NOTES:

[kevinbullock1962@gmail.com/](mailto:kevinbullock1962@gmail.com)
kevin@kabgeo.com

CLIENT:

Gallagher Developments

PROJECT:

Land East of the A3102,
Lyneham, Wilshire

TITLE:

Soakaway Test Location Plan
on Aerial Image

SCALE@SIZE :
NTS

ISSUE:
Final

DESIGN/DRAWN :
KAB

DATE:
December 2025

PROJECT No:
25031

DRAWING No:
002

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kevinbullock1962@gmail.com
kevin@kabgeo.com

CLIENT:

Gallagher Developments

PROJECT:

Land East of the A3102,
Lyneham, Wilshire

TITLE:

Soakaway Test Location Plan
Geological Data Sheet - Superficial

SCALE@SIZE : NTS	ISSUE: Final
DESIGN/DRAWN : KAB	DATE: December 2025
PROJECT No: 25031	DRAWING No: 002A

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kevin@kabgeo.com

CLIENT:

Gallagher Developments

PROJECT:

Land East of the A3102,
Lyneham, Wilshire

TITLE:

Soakaway Test Location Plan
Geological Data Sheet - Solid

SCALE@SIZE : NTS	ISSUE: Final
DESIGN/DRAWN : KAB	DATE: December 2025
PROJECT No: 25031	DRAWING No: 002B

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Trial Pit

STP01
Sheet 1 of 1

Hole Type TP	Easting 402005.00	Northing 177580.00	Ground Level (m)	Scale 1:10
Project Name Land to the East of the A3102, Lyneham, Wiltshire	Project No. 25031	Start Date 2025-12-02	End Date 2025-12-02	

Client Gallagher Developments	Consultant KAB Geo-Solutions Ltd	Contractor TP - E. Royal Plant
----------------------------------	-------------------------------------	-----------------------------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata	
		Depth (m)	Type/ Ref	Results			Legend	Description
						(0.30)		Grass over brown slightly gravelly slightly sandy silty clay. Gravel includes subangular to subrounded fine to medium limestone. [TOPSOIL]
						0.30 (0.25)		Soft brown slightly sandy slightly gravelly locally gravelly silty CLAY. Gravel includes subangular to subrounded fine to coarse limestone. [STANFORD FORMATION]
						0.55 (0.95)		(Loose) light grey slightly clayey very silty sandy GRAVEL. Gravel includes angular to subrounded fine to coarse flint and chalk. Damp. [WEATHERED STANFORD FORMATION]
						1.50		End of Trial Pit at 1.50m

Remarks Trial pit for soakaway testing. Trial pits terminated in hard dig conditions (possible large cobbles - possibly weathered limestone). Groundwater seepages were observed close to termination depth, which pooled in the base of the trial pit.	Method, Plant, Stability, Dimensions 0.00 - 1.50m TP 360 Excavator Stable during excavation and testing Inclination: 90° L = 1.20m W = 0.50m	Logger KAB
	Checked By: KAB Approved By: KAB	



Trial Pit

STP02
Sheet 1 of 1

Hole Type TP	Easting 402156.00	Northing 177629.00	Ground Level (m)	Scale 1:10
Project Name Land to the East of the A3102, Lyneham, Wiltshire	Project No. 25031	Start Date 2025-12-02	End Date 2025-12-02	

Client Gallagher Developments	Consultant KAB Geo-Solutions Ltd	Contractor TP - E. Royal Plant
----------------------------------	-------------------------------------	-----------------------------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata	
		Depth (m)	Type/ Ref	Results			Legend	Description
						(0.30)		Grass over brown slightly gravelly slightly sandy silty clay. Gravel includes subangular to subrounded fine to coarse limestone. [TOPSOIL]
						0.30 (0.30)		Soft brown slightly sandy slightly gravelly silty CLAY. Gravel includes subangular to subrounded fine to coarse limestone. [WEATHERED STANFORD FORMATION]
						0.60 (0.80)		(Loose) light grey slightly sandy slightly clayey locally clayey very silty GRAVEL. Gravel includes angular to subrounded fine to coarse flint and chalk. Damp. [STANFORD FORMATION] includes occasional limestone cobbles (1.00 - 1.40m)
						1.40		End of Trial Pit at 1.40m

Remarks Trial pit for soakaway testing. Trial pits terminated in hard dig conditions (possible large cobbles - possibly weathered limestone). Groundwater seepages were observed close to termination depth, which pooled in the base of the trial pit.	Method, Plant, Stability, Dimensions 0.00 - 1.40m TP 360 Excavator Stable during excavation and testing Inclination: 90° L = 1.10m W = 0.50m	Logger KAB
Checked By: KAB Approved By: KAB		



Trial Pit

STP03

Sheet 1 of 1

Hole Type TP	Easting 402001.00	Northing 177738.00	Ground Level (m)	Scale 1:10
Project Name Land to the East of the A3102, Lyneham, Wiltshire	Project No. 25031	Start Date 2025-12-02	End Date 2025-12-02	

Client Gallagher Developments	Consultant KAB Geo-Solutions Ltd	Contractor TP - E. Royal Plant
----------------------------------	-------------------------------------	-----------------------------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata	
		Depth (m)	Type/ Ref	Results			Legend	Description
						(0.30)		Grass over brown slightly gravelly slightly sandy silty clay. Gravel includes subangular to subrounded fine to coarse limestone. [TOPSOIL]
						0.30 (0.50)		Soft light brown and grey slightly sandy gravelly silty CLAY. Gravel includes subangular to subrounded fine to coarse limestone. [WEATHERED STANFORD FORMATION]
						0.80 (0.50)		(Loose) light grey slightly sandy slightly clayey very silty GRAVEL. Gravel includes angular to subrounded fine to coarse flint and chalk. Damp. [STANFORD FORMATION]
						1.30		includes occasional limestone cobbles (1.20 - 1.30m)
								End of Trial Pit at 1.30m

Remarks Trial pit for soakaway testing. Trial pits terminated in hard dig conditions (possible large cobbles - possibly weathered limestone). Groundwater seepages were observed close to termination depth, which pooled in the base of the trial pit.	Method, Plant, Stability, Dimensions 0.00 - 1.30m TP 360 Excavator Stable during excavation and testing Inclination: 90° L = 1.10m W = 0.50m	Logger KAB
--	---	---------------

Checked By: KAB Approved By: KAB

Project Land east of the A3012, Lyneham, Wiltshire
Client Gallagher Developments
Job ref. 25031

Page No. 1
Calcs by KAB
Test Date 03/12/25

Soil infiltration test

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Trial pit ref. **STP01-Test 1**
 Length **1.200 m**
 Width **0.500 m**
 Depth **1.500 m**
 Ground water level

Weather Conditions: **Mild/Dry with occasional showers**

Time mins	Depth to water (m)
0	0.710
1	0.720
2	0.720
3	0.720
4	0.720
5	0.720
6	0.725
8	0.725
10	0.725
15	0.730
43	0.750
67	0.770
86	0.780
105	0.785
150	0.805
187	0.810
199	0.810

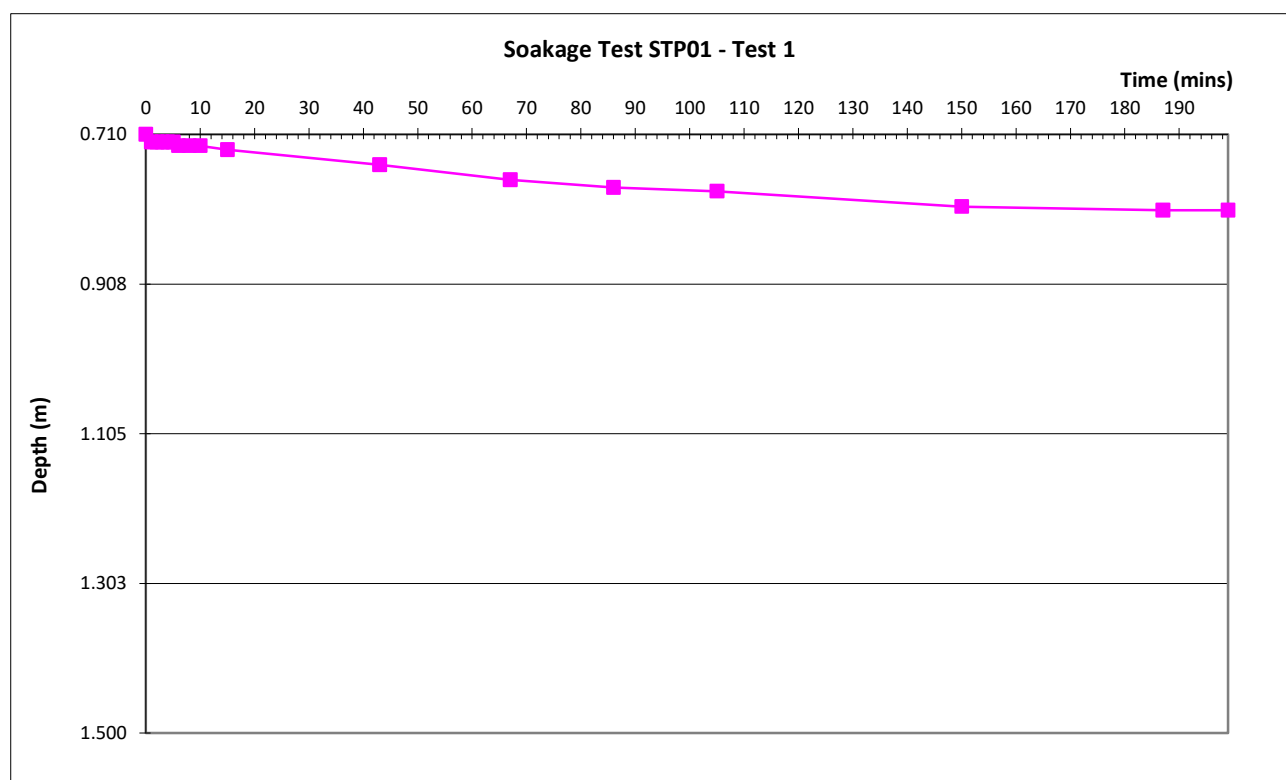
Effective storage depth = 0.79 m
 75% effective storage depth = 0.59 m
 (ie depth below GL) = 0.91 m
 25% effective storage depth = 0.20 m
 (ie depth below GL) = 1.30 m
 effective storage depth 75%-25% = 0.40 m

Time to fall to 75% effective depth = - mins
 Time to fall to 25% effective depth = - mins

V (75%-25%) = 0.24 m³
 a (50%) = 1.94 m²
 t (75%-25%) = #VALUE! mins

SOIL INFILTRATION RATE (NO GRAVEL) = #VALUE! m/s
SOIL INFILTRATION RATE (WITH GRAVEL) = m/s

The fall in water was insufficient to calculate an infiltration rate. A 0.1m drop in the water level (13%) took 199 minutes. An assessment of the curve shape, suggests a best-case infiltration rate of between 2.0 and 4.5×10^{-7} m/s



Project Land east of the A3012, Lyneham, Wiltshire
Client Gallagher Developments
Job ref. 25031

Page No. 1
Calcs by KAB
Test Date 03/12/25

Soil infiltration test

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Trial pit ref. **STP02-Test 1**
Length **1.100 m**
Width **0.500 m**
Depth **1.400 m**
Ground water level

Weather Conditions: **Mild/Dry with occasional showers**

Time mins	Depth to water (m)
0	0.730
1	0.730
2	0.725
3	0.725
4	0.725
5	0.725
6	0.725
8	0.725
40	0.725
60	0.715
78	0.715
123	0.710

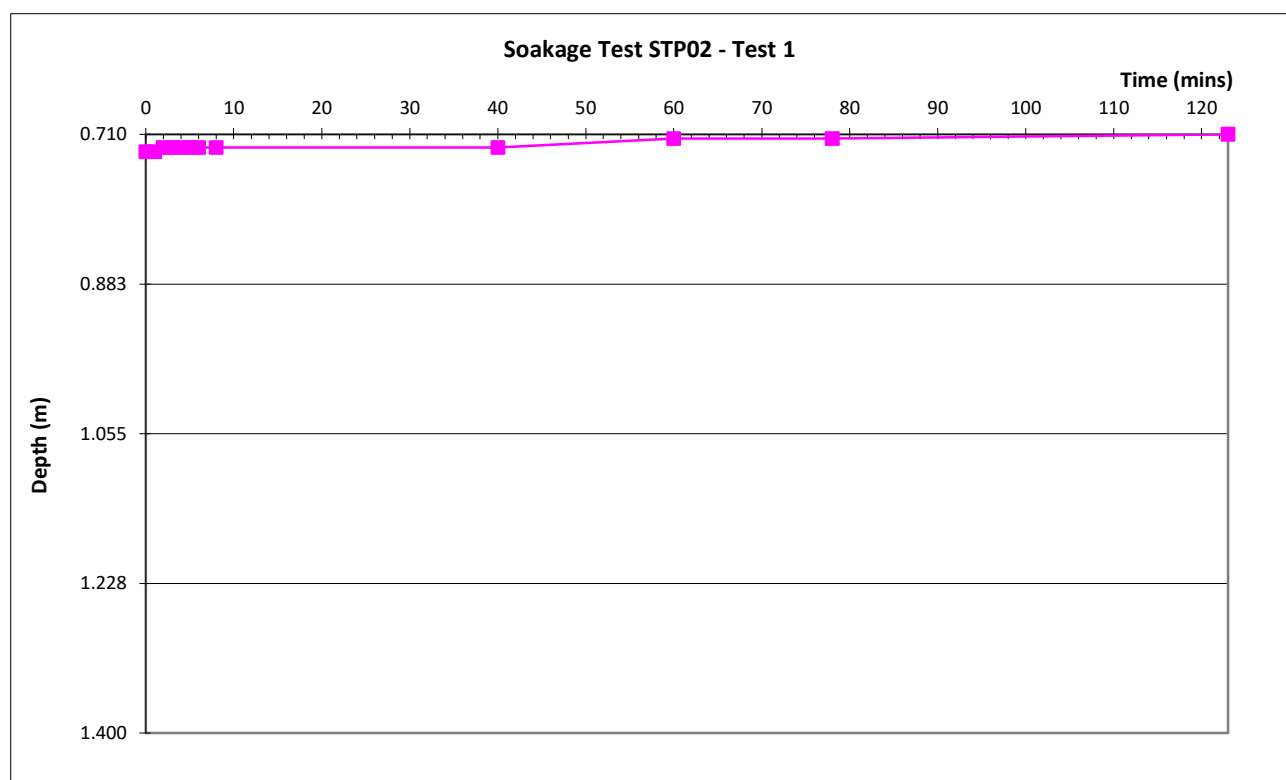
Effective storage depth = 0.67 m
75% effective storage depth = 0.50 m
(ie depth below GL) = 0.90 m
25% effective storage depth = 0.17 m
(ie depth below GL) = 1.23 m
effective storage depth 75%-25% = 0.34 m

Time to fall to 75% effective depth = - mins
Time to fall to 25% effective depth = - mins

V (75%-25%) = 0.18 m³
a (50%) = 1.62 m²
t (75%-25%) = #VALUE! mins

SOIL INFILTRATION RATE (NO GRAVEL) = #VALUE! m/s
SOIL INFILTRATION RATE (WITH GRAVEL) = m/s

The fall in water was insufficient to calculate an infiltration rate. No drop in the water level over a period of 123 minutes (water rose due to groundwater seepages).



Project Land east of the A3012, Lyneham, Wiltshire
Client Gallagher Developments
Job ref. 25031

Page No. 1
Calcs by KAB
Test Date 03/12/25

Soil infiltration test

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Trial pit ref. **STP03-Test 1**
 Length **1.100 m**
 Width **0.500 m**
 Depth **1.300 m**
 Ground water level

Weather Conditions: **Mild/Dry with occasional showers**

Time mins	Depth to water (m)
0	0.520
1	0.520
2	0.520
7	0.520
8	0.520
23	0.520
44	0.515
62	0.515
106	0.505
120	0.500

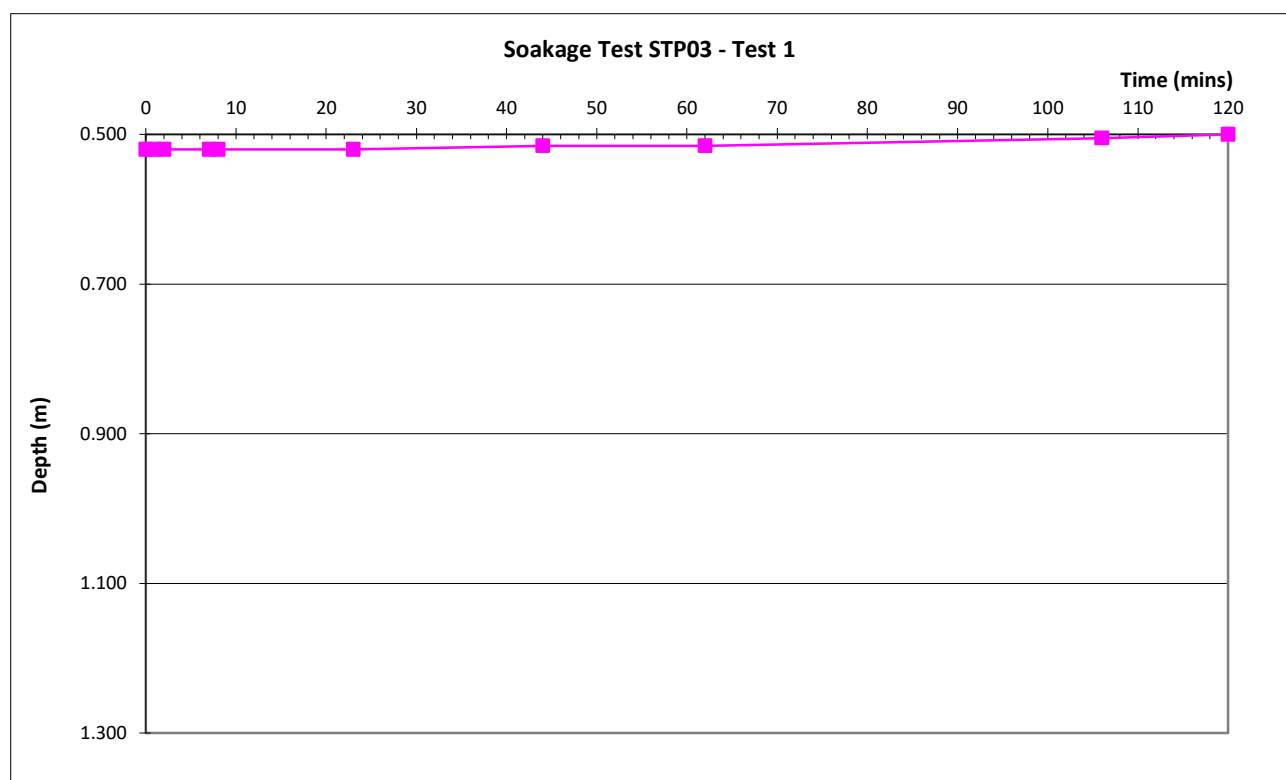
Effective storage depth = 0.78 m
 75% effective storage depth = 0.59 m
 (ie depth below GL) = 0.72 m
 25% effective storage depth = 0.20 m
 (ie depth below GL) = 1.11 m
 effective storage depth 75%-25% = 0.39 m

Time to fall to 75% effective depth = - mins
 Time to fall to 25% effective depth = - mins

V (75%-25%) = 0.21 m³
 a (50%) = 1.80 m²
 t (75%-25%) = #VALUE! mins

SOIL INFILTRATION RATE (NO GRAVEL) = #VALUE! m/s
SOIL INFILTRATION RATE (WITH GRAVEL) = m/s

The fall in water was insufficient to calculate an infiltration rate. No drop in the water level over a period of 120 minutes (water rose due to groundwater seepages).



Project Land east of the A3012, Lyneham, Wiltshire
Client Gallagher Developments
Job ref. 25031

Page No. 1
Calcs by KAB
Test Date 03/12/25

Soil infiltration test

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Trial pit ref. **STP04-Test 1**
 Length **1.100 m**
 Width **0.500 m**
 Depth **1.250 m**
 Ground water level

Weather Conditions: **Mild/Dry with occasional showers**

Time mins	Depth to water (m)
0	0.440
1	0.440
2	0.440
3	0.435
5	0.435
6	0.430
16	0.420
27	0.410
35	0.390
65	0.360
75	0.350
82	0.345

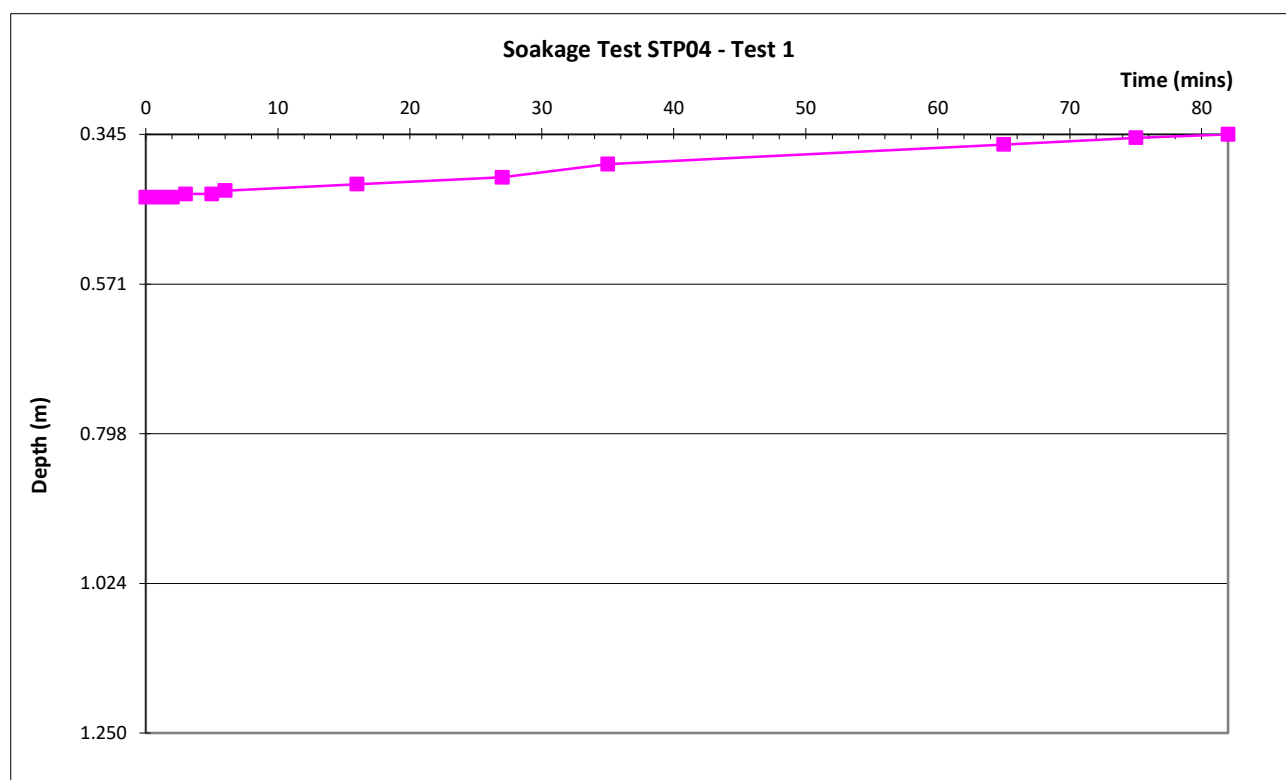
Effective storage depth = 0.81 m
 75% effective storage depth = 0.61 m
 (ie depth below GL) = 0.64 m
 25% effective storage depth = 0.20 m
 (ie depth below GL) = 1.05 m
 effective storage depth 75%-25% = 0.41 m

Time to fall to 75% effective depth = - mins
 Time to fall to 25% effective depth = - mins

V (75%-25%) = 0.22 m³
 a (50%) = 1.85 m²
 t (75%-25%) = #VALUE! mins

SOIL INFILTRATION RATE (NO GRAVEL) = #VALUE! m/s
SOIL INFILTRATION RATE (WITH GRAVEL) = m/s

The fall in water was insufficient to calculate an infiltration rate. No drop in the water level over a period of 82 minutes (water rose due to groundwater seepages).



APPENDIX G

ENVIRONMENT AGENCY CORRESPONDENCE

Lydia Silcock
LSilcock@rsk.co.uk

Our ref: EIR2025/26848
Date: 16th September 2025

Dear Lydia

Thank you for your enquiry which was received on 29th August 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 Site In Lyneham, Lyneham, SN15 4QW NGR: SU0204077700
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.

Updates to National Modelling

Please note – The Environment Agency has carried out a National project to update our flood risk information for the whole of England. We have updated our flood risk information in 2025 as part of the new National Flood Risk Assessment (NaFRA2). This includes the data displayed on the Check Your Long-Term Flood Risk service and the data displayed in the Flood Map for Planning (Rivers and Sea). The Risk of Flooding from Rivers and Sea (RoFRS), and Risk of Flooding from Surface Water (RoFSW) was updated on 28th January 2025 using NaFRA2 information. The Flood Map for Planning update took place on 25th March 2025.

This should result in improvements to our mapping products, especially where we do not currently have any detailed local modelling. This means there will be some changes to our flood risk information in many areas when the new data is published.

The flood zone extent may have changed for your area of interest, but the flood levels provided in this Product 4 have not. There is no need to contact us again to request flood risk data. You can visit our Flood Map for Planning service now and download the map showing the new flood zone (Product 1).

You can find further information on the NaFRA2 project here: <https://www.gov.uk/guidance/updates-to-national-flood-and-coastal-erosion-risk-information>

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

Corinne Moyse

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)

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:

<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>

APPENDIX H

GREENFIELD RUNOFF CALCULATIONS

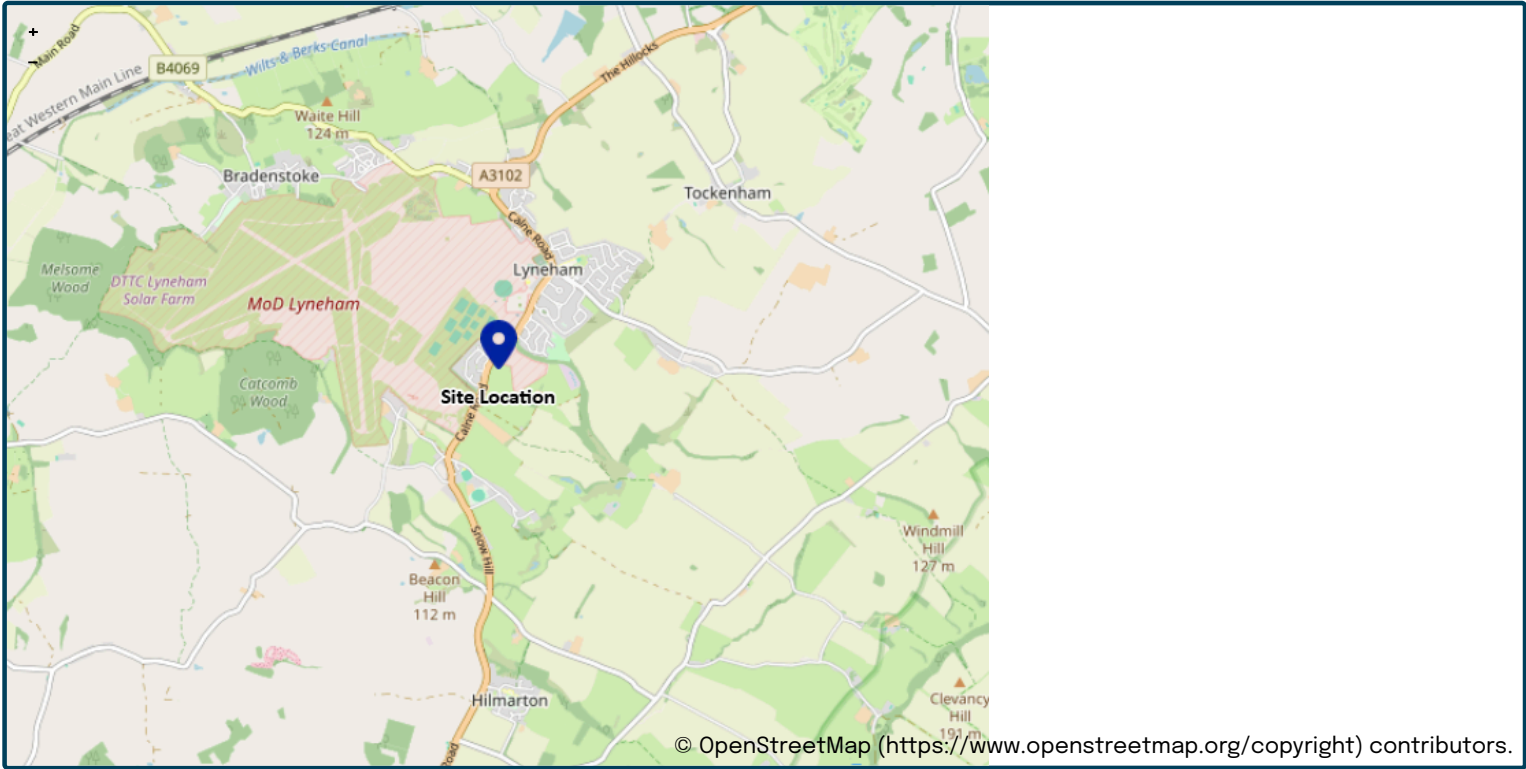
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). 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	16/10/2025
Calculated by	MA
Reference	25-030
Model version	2.2.1

Location

Site name	
Site location	



Site easting (British National Grid)	402038
Site northing (British National Grid)	177706

Site details

Total site area (ha)	8.168	ha
----------------------	------------------------------------	----

Greenfield runoff

Method

Method	IH124	
IH124		
	<u>My value</u>	<u>Map value</u>
SAAR (mm)	709 mm	☐ 709
How should SPR be derived?	WRAP soil type	
WRAP soil type	4 ☐	4
SPR	0.47	
QBar (IH124) (l/s)	40 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	IH124	
Flow rate 1 year (l/s)	31.2 l/s	
Flow rate 2 year (l/s)	37.2 l/s	
Flow rate 10 years (l/s)	59.6 l/s	
Flow rate 30 years (l/s)	78.1 l/s	
Flow rate 100 years (l/s)	97.3 l/s	
Flow rate 200 years (l/s)	111.3 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.

APPENDIX I SURFACE WATER DRAINAGE CALCULATIONS AND STRATEGY

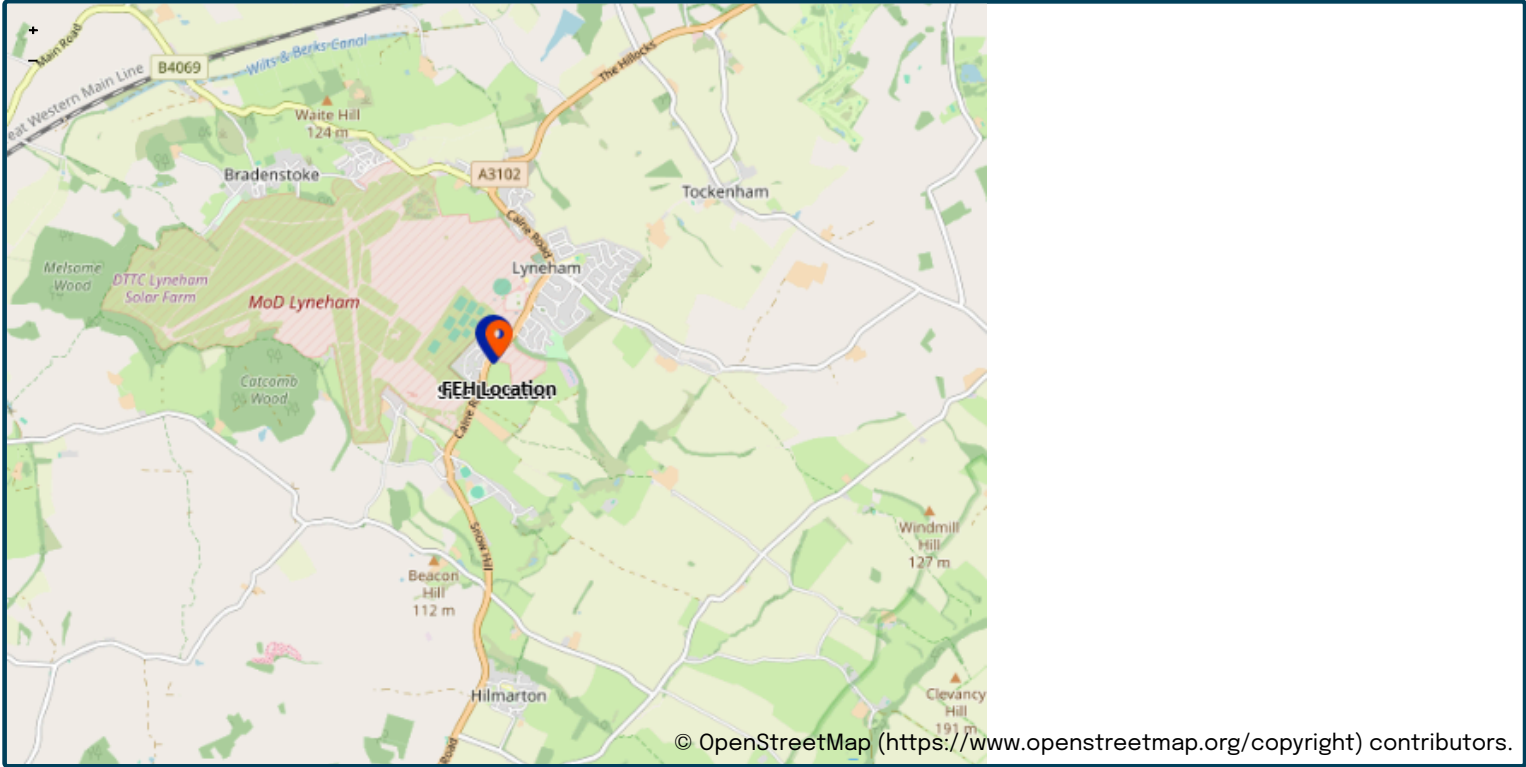
This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is recommended that the total storage volume for the site is distributed across the site using multiple SuDS and that hydraulic modelling software is used to undertake and finalise the detailed design of the drainage system.

Project details

Date	01/12/2025
Calculated by	MA
Reference	25-030
Model version	2.2.2

Location

Site name	Lyneham
Site location	Land off A3102



Site easting (British National Grid)	402023
Site northing (British National Grid)	177722

Site areas

Total site area (ha)	8.168	ha
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Roof area

Total roof area (ha)	1.544	ha
Contributing roof area (ha)	1.544	ha
Non-contributing roof area (ha)	0	ha

Paved area

Total paved area (ha)	1.183	ha
Contributing paved area (ha)	1.183	ha
Non-contributing paved area (ha)	0	ha

Grass / vegetated area

Total grass / vegetated area (ha)	5.081	ha
Contributing grass / vegetated area (ha)		ha
Non-contributing grass / vegetated area (ha)	5.081	ha

Total area

Total contributing area (ha)	2.727	ha
------------------------------	------------------	----

Contributing areas with urban creep allowance

Urban creep allowance factor	+10%	
Contributing roof area (adjusted for urban creep) (ha)	1.544	ha
Contributing paved area (adjusted for urban creep) (ha)	1.183	ha
Contributing grass / vegetated area (adjusted for urban creep) (ha)	0	ha

Storage design parameters

Storage base shape	Rectangular / square	
Storage base length to width ratio	3:1	
Storage design depth (m)	1.1	m
Storage side slope (1 in x)	1 in 3	
Storage voids ratio (%)	100% (all voids)	
Storage volume design return period (years)	1:100 years	

Discharge flow rate from the site

Method

Type of site

Greenfield

Specify the method

IH124

IH124

My value

SAAR (mm)

709

mm

Map/default value

709

How should SPR be derived?

WRAP soil type

WRAP soil type

4

4

SPR

0.47

Total area for greenfield runoff calculation (ha)

7.808

ha

7.808

QBar (l/s)

38.3

l/s

Hydrological region

8

8

Return period (years)

1:2 year

Growth curve factor

0.93

Flow rate (IH124) (l/s)

35.6

l/s

Final discharge rate

Runoff calculation method

IH124

Design flow rate (l/s)

35.6

l/s

Blockage risk

Specify the method

Orifice diameter

Minimum orifice diameter to prevent blockage (mm)

50

mm

My value

Design orifice diameter (mm)

129

mm

Calculated value

129

Flow rate of orifice (l/s)

35.41

l/s

Rainfall and runoff

Rainfall input type

FEH22 CSV file

FEH_Point_Rainfall_FEH22_AM_402057_177678.csv

Distance from FEH location to site (km)

0.1

km

Climate change allowance factor

145%

Specify the runoff method from grass / vegetated areas

Fixed percentage - based on rainfall event depth and SPR

My value

How should SPR be derived?

WRAP soil type

4

4

Model results

- Maximum discharge flow rate: 35.4 (l/s)
- Outflow orifice diameter: 129 (mm)
- Storage base length: 70 (m)
- Storage base width: 23 (m)
- Storage base area: 1652 (m²)
- Storage total volume: 2171 (m³)
- Storage total water volume: 2171 (m³)
- Storm return periods run: 1, 2, 10, 30, 100, 200 (years)
- Storm durations run: 15, 30, 60, 120, 180, 240, 360, 540, 720, 900, 1080, 1440, 1800, 2160, 2880, 3600, 4320, 5040, 5760 (minutes)

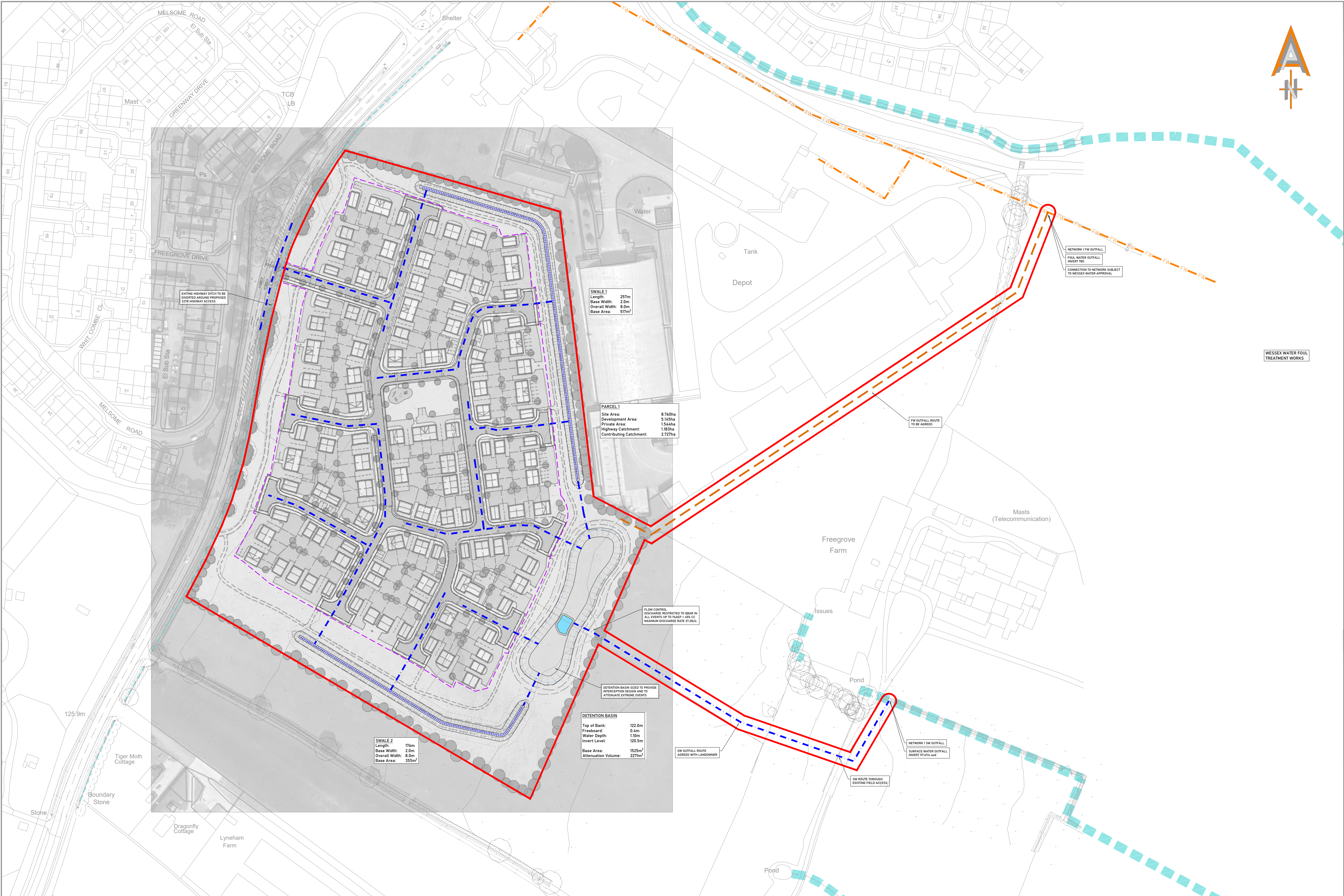
Return Period (years)	Critical Duration (minutes)	Peak Flow Rate (l/s)	Max Depth (m)	Max water volume (m ³)	Max storage volume (m ³)
1	720	18.6	0.35	613	613
2	720	20.5	0.41	729	729
10	540	26.9	0.66	1221	1221
30	720	30.8	0.85	1607	1607
<u>100</u>	<u>720</u>	<u>35.4</u>	<u>1.10</u>	<u>2171</u>	<u>2171</u>
200	720	38.1	1.26	2562	2562

Please note runoff estimation and storage volume estimation are subject to uncertainty. Storage volume results are therefore reported to the nearest 1 m³ value, unless storage volumes are less than 10 m³, in which case, storage volumes are provided to 1 decimal place.

Disclaimer

This report was produced using the surface water storage volume design tool (2.2.2) developed by HR Wallingford and available at [uksuds.com](https://www.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 surface water storage volumes for the whole site based on a limiting discharge rate from the site. 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.

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KEY

Application Boundary

Development Boundary

- NOTES
- General
1.

Drainage strategy based on TAG masterplan reference TD.00.160-1001 dated 06.11.2025
2.

Infiltration testing has been completed and all failed to return a rate.
3.

Drainage Strategy subject to Wiltshire LLFA approval
- Surface Water
4.

SW outfall to connect to existing watercourse.
5.

Off site SW route to be agreed, proposed route is adjacent to field boundary and through existing gate to avoid existing stone wall.
6.

SW design to be in accordance with DEFRA national SuDS standards.
7.

NSS Standard 1 - Outfall hierarchy
- 7.1.

All plots to utilise rain water collection for garden irrigation.
- 7.2.

Infiltration is not anticipated to be feasible due to underlying Sandstone.
- 7.3.

Connection to be made to existing watercourse to the east of development area.
8.

NSS Standard 2 - Interception Design
- 8.1.

Interception is to be for the first 5mm of rainfall.
- 8.2.

Interception for Roof catchment and Private drives to be provided by a range of features potentially including Permeable Paving, Bio-retention and Rain Gardens.
- 8.3.

Interception for adoptable highway to be provided by Swales and Detention Basin.
- 8.4.

A SuDS factor of 5 has been proposed due to assumed poor infiltration rates.
9.

NSS Standard 3 - Extreme Rainfall
- 9.1.

SW to discharge to above ground watercourse, SW to be attenuated for all events up to the 1% + cc AEP event.
- 9.2.

Attenuation to be provided within linear swales and a single detention basin.
- 9.3.

Attenuation is sized to QBAR discharge rate.
- Foul Water
10.

Foul water outfall for the development shall be to the existing Wessex Water asset at co-ordinate 402463,177893.
11.

Outfall is subject to Wessex Water approval.
12.

Pre-development enquiry submitted to Wessex Water.

E	Flow control changed to max discharge rate of 37.2l/s. Soakaway testing notes amended.	MA	KA	05.12.25
D	Redline boundary amended and climate change updated to 45%	MA	KA	01.12.25
C	Updated to illustrative masterplan	MA	KA	11.11.25
B	Strategy updated to latest TAG masterplan, swale and basin reduced	MA	KA	21.10.25
A	Strategy updated to latest TAG masterplan	MA	KA	17.10.25
-	First Issue	MA	KA	16.09.25

REV	AMENDMENTS	DRN/CHK	DATE
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PROJECT NAME:
Land East of the A3102
Lyneham
Wiltshire

CLIENT NAME:
Ashflame Properties Ltd

DRAWING TITLE:
Preliminary Drainage Strategy

DRAWING NUMBER:
25-030_01_01

CURRENT REVISION:
E

SHEET SIZE:
A1

DRAWING SCALE:
1:1250

Allsopp Avery
Partnership

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Site Information & Measurements								
Parcel	Site Area (ha)	Development Area (ha)	Type of Site	Greenfield Flow rates		Catchment Area		
				1:2 = QBAR	100 years	Private Area (ha)	Highway Area (ha)	Grass Area (ha)
1	8.162	5.145	Greenfield	37.20	97.30	1.544	1.183	5.075
Totals	8.16	5.15				1.54	1.18	5.07

Standard 2 - Interception Design - Highway Areas							
Parcel	Highway Area (m2)	Site SuDS Factor	Required Vegetated Base Area (m2)	Proposed SuDS Features	Total Vegetated Base Area	Vegetated Base Check, Total Area ≥ Required Area	
1	11830	5	2366	1525 872	2397	OK	
Totals	11830		2366	1525 872	2397		

Standard 3 - Extreme Event Design - 1%AEP with 45% Climate Change									
Parcel	Design Discharge Restriction	Design Discharge Rate (l/s)	Attn Vol (m3)	Basin Design				Basin Check, Design Volume ≥ Attenuation Volume	
				Base Area (m2)	Water Level Area (m2)	Water Depth (m)	Volume (m3)		
1	50%AEP QBAR	35.40	2171	1525	2605	1.1	2271.5	OK	
Totals		35.40	2171	1525	2605		2272		