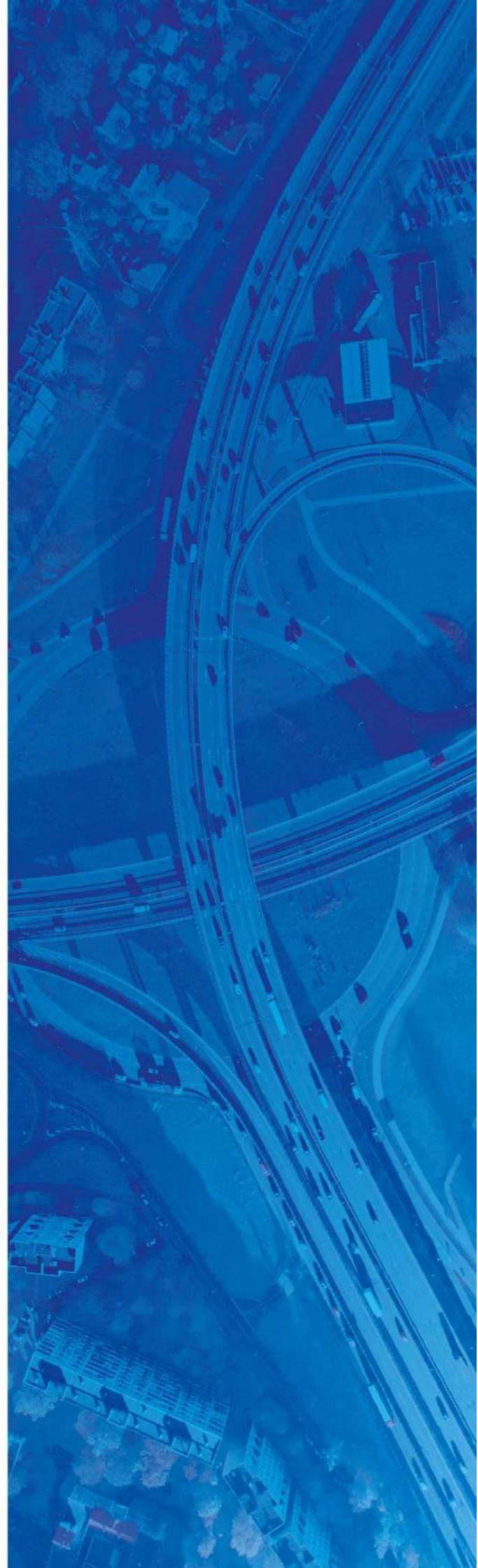




Specialist in Highway,
Drainage & Utility
Infrastructure

Combined Flood Risk Assessment & Drainage Strategy

Residential Development at
Deans Yard, South Road, Baldock
(SG7 6BZ)



Document Control Sheet

Project Name	Residential Development at Deans Yard, South Road, Baldock (SG7 6BZ)
Report Title	Combined Flood Risk Assessment & Drainage Strategy
Client	JP & S Services Ltd
Date of Origin	28/08/2025
Project Number	2-294

Revision	Date	Issued for	Prepared by	Approved by
P1	28/08/2025	Planning	FR	DM

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Appendices

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Appendix B – Existing Drainage Regime

Appendix C – Topographical Survey

Appendix D – Ground Investigation

Appendix E – Development Masterplan

Appendix F – Fluvial Flooding Information

Appendix G – Surface Water Flooding Information

Appendix H – Groundwater Flooding Information

Appendix I – Reservoir Flooding Information

Appendix J – Artificial Flooding Information

Appendix K – Drainage Strategy Plans

1 Introduction

Civilistix Consulting Engineers has been commissioned by JP & S Services Ltd to prepare a Combined Flood Risk Assessment and Drainage Strategy (FRA & DS) report to support a planning application for the creation of 9no. residential dwellings, access road, car parking and other associated external hardstanding area.

The site is located at Deans Yard, South Road, Baldock (SG7 6BZ), and occupies a redline boundary area of 0.187ha. The existing site is currently brownfield and is occupied by commercial premises. A total of 0.132ha within the site redline boundary is currently hardstanding.

Development proposals generate a total impermeable area of 0.119ha when fully constructed. Thus, there is a decrease of 0.013ha in the impermeable area when compared to the existing site scenario.

The purpose of this combined FRA and DS is to demonstrate how this impermeable area can be satisfactorily drained without increasing flood risk onsite and elsewhere. The strategy has been developed in full accordance with National and Local standards as well as best practice documentation.

Specifically, this combined Flood Risk Assessment and Drainage Strategy demonstrates that the proposed development does not lead to an increase in;

- Peak runoff rate of storm water runoff leaving the site.
- Volume of runoff leaving the site.
- Pollution to receiving waters from storm water runoff.
- Flood risk to nearby or neighbouring sites.

2 Existing Site

2.1 Site Location

The site is located at grid reference (525102, 233535) and has a redline boundary area of 0.187ha.

The address of the site is Deans Yard, South Road, Baldock (SG7 6BZ).

The existing site is currently brownfield, used as commercial premises.

The site is bound by South Road to the south, and private properties to all other directions.

A site location plan is shown in **Appendix A**.

2.2 Site Hydrology

Based on a Topographical survey undertaken by ASP Surveys, dated December 2024, and satellite/OS mapping, there are no existing watercourses within vicinity of the site.

Based on Anglian Water (AW) asset mapping, there is a 225mm public foul water sewer and a 225mm public surface water sewer within South Road and Clothall Road.

The extents of private surface and foul water sewers are unknown at this stage. It is recommended that these are confirmed by carrying out a comprehensive CCTV survey during the detailed design stage.

AW sewer records and an Existing Drainage General Arrangement Plan are shown in **Appendix B**.

2.3 Site Topography

A Topographical survey of the site and surrounding area has been prepared by ASP Surveys, dated December 2024, ref. 241212.

The topographical survey indicates the site falls from east to west, with a maximum level of ~69.73m Above Ordnance Datum (AOD) at the south-east boundary, and a minimum level of ~69.02mADD at the north-west boundary.

The Topographical survey is shown in **Appendix C**.

2.4 Site Geology

At this time, an intrusive ground investigation has not yet been carried out.

Results from nearby British Geological Survey (BGS) historic boreholes identifies the following;

- Historical borehole TL23SW10 located 340m to the west from the site identified 0.46m of TOPSOIL; 14.93m of medium hard CHALK; and 12.04m of medium hard CHALK. Groundwater was encountered at a depth of 15.85m Below Ground Level (BGL)
- Historical borehole TL23SE10 located 100m to the north from the site identified 10.67m CHALK with no flints; 8.23m of CHALK with flints; and 36.58m CHALK MARL. Groundwater was encountered at a depth of 30.00mBGL.

The BGS Geology Viewer identifies the site as being underlain by the Zig Zag Chalk Formation and the Holywell Nodular Chalk Formation.

British Geology Survey information is provided in [Appendix D](#).

3 Development Proposal

Development proposals are for the creation of 9no. residential dwellings, access road, car parking and other associated external hardstanding area.

The site is located at Deans Yard, South Road, Baldock (SG7 6BZ), and occupies a redline boundary area of 0.187ha.

Development proposals generate a total impermeable area of 0.119ha when fully constructed.

Development proposals are provided in **Appendix E**.

4 Flood Risk

4.1 Policy & Best Practice

This proposed Flood Risk Assessment has been primarily prepared in accordance with the following best practice drainage documentation;

- North Hertfordshire District Council Strategic Flood Risk Assessment (SFRA, July 2008).
- Department for Communities and Local Government National Planning Policy Framework, 2012.
- Environment Agency (EA) publications and modelling outputs.
- CIRIA 753, 2015: The SuDS Manual; This document provides current best practice and National guidance on the planning, design, construction, operation and maintenance of SuDS to facilitate their effective implementation within developments.

4.2 Fluvial Flooding

Review of EA fluvial flood mapping identifies the development to be within the *very low flooding extents* (Flood Zone 1).

Review of Hertfordshire County Council Flood Risk Management Viewer identifies the development to be within Flood Zone 1.

Fluvial flood maps are shown in **Appendix F**.

It is believed therefore the site is at *very low risk* of fluvial flooding.

4.3 Surface Water Flooding

Review of EA surface water flood mapping and Hertfordshire County Council Flood Risk Management Viewer identifies some areas of the existing development within the medium/high risk extent.

Surface water flood maps are shown in **Appendix G**.

It is believed therefore the existing site is at medium/high risk of surface water flooding.

It is proposed implementation of the SuDS Strategy identified in **Section 5** will sufficiently mitigate surface water flooding.

It is believed therefore the proposed development will be at *low risk* of surface water flooding.

4.4 Groundwater Flooding

At this time, an intrusive ground investigation has not yet been carried out.

Results from nearby British Geological Survey (BGS) historic boreholes identifies the following;

- Historical borehole TL23SW10 located 340m to the west from the site identified 0.46m of TOPSOIL; 14.93m of medium hard CHALK; and 12.04m of medium hard CHALK. Groundwater was encountered at a depth of 15.85m Below Ground Level (BGL)
- Historical borehole TL23SE10 located 100m to the north from the site identified 10.67m CHALK with no flints; 8.23m of CHALK with flints; and 36.58m CHALK MARL. Groundwater was encountered at a depth of 30.00mBGL.

The BGS Geology Viewer identifies the site as being underlain by the Zig Zag Chalk Formation and the Holywell Nodular Chalk Formation.

British Geology Survey information is provided in [Appendix D](#).

Review of Hertfordshire County Council Flood Risk Management Viewer identifies the site outside of the areas susceptible to groundwater flooding and therefore not at risk of groundwater flooding.

Groundwater flood maps are shown in [Appendix H](#).

It is believed therefore the existing site is at *very low risk* of groundwater flooding, based on the deep groundwater levels recorded in nearby BGS boreholes and the Hertfordshire CC mapping review.

4.5 Reservoir Flooding

EA Reservoir Flood mapping identifies the site to be at no risk from reservoir flooding.

Reservoir flood maps are shown in [Appendix I](#).

It is believed therefore the site is at *very low risk* of reservoir flooding.

4.6 Artificial Flooding

Based on Anglian Water (AW) asset mapping, there is a 225mm public foul water sewer and a 225mm public surface water sewer within South Road and Clothall Road.

AW sewers records and an Existing Drainage General Arrangement Plan are shown in [Appendix B](#).

Review of North Hertfordshire District Council SFRA Appendix F does not identify any historic sewer flooding within vicinity of the site.

An historical sewer flooding map is identified in [Appendix F](#) of the SFRA (and also shown in [Appendix J](#) of the report).

The historical sewer flooding map does not show any historical flooding incidences nearby the site. Additionally, the SuDS strategy outlined in **Section 5**—including the installation of non-return valves at the demarcation chambers—will provide further protection against potential surcharge from the public sewer network.

It is believed therefore the site will be at *low risk* of artificial flooding.

4.7 Flood Vulnerability

Technical guidance to the National Planning Policy Framework (NPPF) 2024, divides land use into five classifications as follows;

- Essential infrastructure e.g essential transport infrastructure and utility infrastructure, wind turbines
- Highly vulnerable e.g caravans, mobile homes and park home intended for permanent residential use.
- More vulnerable e.g hospitals, residential institutions, dwelling houses.
- Less vulnerable e.g shops, land and buildings used for agriculture, non-residential institutions, assembly and leisure.
- Water compatible e.g docks, marinas and wharves, amenity open space, sports grounds (and essential facilities such as changing rooms).

The flood risk vulnerability categorisation for the site is “more vulnerable” development. “More vulnerable” development is fully permissible within flood Zone 1.

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

Key:

✓ Exception test is not required

X Development should not be permitted

Figure 1 – NPPF Flood Risk Vulnerability & Flood Zone Compatibility

4.8 Flood Risk Summary

A summary of the flood risk posed from each flood source before and after development (with the proposed drainage / flood mitigation measures in place) are provided in **Table 1**;

Type of Flooding	Existing Risk Category	Proposed Risk Category
Fluvial flooding	Very Low Risk	Very Low Risk
Surface Water flooding	Medium/high Risk	Low Risk
Groundwater flooding	Very Low Risk	Very Low Risk
Reservoir flooding	Very Low Risk	Very Low Risk
Artificial Flooding	Low Risk	Low Risk

Table 1 – Flood Risk Summary from all sources before and after development

5 Surface Water (SuDS) Drainage Strategy

5.1 Surface Water Discharge Strategy

Part H of the Building Regulations (2010) recommends surface water run-off shall discharge to one of the following, listed in order of priority:

- An adequate soakaway or some other adequate infiltration system, or where that is not reasonably practicable,
- A watercourse, or, where that is not reasonably practicable,
- A sewer.

Each disposal option has been reviewed in the context of the site below;

Infiltration Disposal

At this time, an intrusive ground investigation has not yet been carried out.

Results from nearby British Geological Survey (BGS) historic boreholes identifies the following;

- Historical borehole TL23SW10 located 340m to the west from the site identified 0.46m of TOPSOIL; 14.93m of medium hard CHALK; and 12.04m of medium hard CHALK. Groundwater was encountered at a depth of 15.85m Below Ground Level (BGL)
- Historical borehole TL23SE10 located 100m to the north from the site identified 10.67m CHALK with no flints; 8.23m of CHALK with flints; and 36.58m CHALK MARL. Groundwater was encountered at a depth of 30.00mBGL.

The BGS Geology Viewer identifies the site as being underlain by the Zig Zag Chalk Formation and the Holywell Nodular Chalk Formation.

British Geology Survey information is provided in **Appendix D**.

The infiltration characteristics of chalk can vary significantly, however generally are found to have infiltration rates typically $> 1 \times 10^{-6}$ m/s (the point at which infiltration discharge becomes unfeasable). Based on the nearby BGS historic borehole data, groundwater was encountered at depths greater than 15.85 m BGL, which further supports the likelihood of infiltration being feasible.

On this basis, infiltration is considered likely to be feasible. For the purposes of this assessment—and pending BRE 365 testing at the detailed design stage—infiltration has been assumed, adopting the precautionary lowest infiltration rate of 1×10^{-6} m/s in line with *The SuDS Manual (CIRIA C753)*.

It is proposed BRE 365 infiltration testing is carried out to verify the above.

Should infiltration prove unfeasible, an alternative strategy would be to discharge surface water at a controlled rate into the nearby Anglian Water public surface water sewers located within South Road or Clothall Road.

5.2 SuDS Strategy

It is proposed the new development impermeable area of 0.119ha is attenuated via the use of a geo-cellular tank, before infiltrating to ground.

Permeable paving is proposed for all external hardstanding areas.

The geo-cellular storage tanks and Type 3 Sub-base storage provided will be sufficient to accommodate the critical 1 in 100 years plus 40% climate change storm event.

A Drainage Strategy plan and associated calculations are shown in **Appendix K**.

5.3 Rainfall Simulation & Climate Change

This drainage strategy uses Flood Estimation Handbook (FEH) rainfall data.

An allowance of +40% for climate change corresponding to the 'upper end' of current legislation on climate change published by the EA has been used. Additionally, a 10% allowance for urban creep has been factored into the impervious areas of the proposed development.

All attenuation structures have been sized based on the 1 in 100 year critical storm event plus an additional 40% allowance for climate change.

5.4 Surface Water Treatment

The SuDS Manual, 2015 identifies pollution hazard levels of new development based off their proposed land use. In line with the SuDS Manual pollution hazard categorisations, a *low risk* for the proposed development has been adopted (residential car parks). **Table 2** shows the total suspended solids, metals and hydrocarbons associated with a low pollution categorization (as provided within the SuDS Manual).

	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Low pollution hazard index	0.5	0.4	0.4

Table 2: Total suspended solids, and hydrocarbons associated with a low pollution categorization (as provided within the SuDS Manual)

As of the SuDS Manual guidance, conveying run off through different forms of SuDS provides varied mitigation values. On the basis the combined mitigation index value is higher than the initial mitigation values associated with a low pollution risk, the drainage system is deemed to have sufficiently mitigated the pollution hazard posed.

All roof and external hardstanding areas will pass through a geo-cellular attenuation tank and permeable paving prior to discharge. Furthermore, Catchpits will be used prior to entry into the proposed geo-cellular tanks. **Table 3** shows the mitigation indices associated to the proposed SuDS (as provided within the SuDS Manual Table 26.4).

	Total Suspended Solids (TSS)	Metals	Hydrocarbons
<i>Permeable Pavement</i>	0.7	0.6	0.7

Table 3: Mitigation indices associated to the proposed SuDS (as provided within the SuDS Manual Table 26.3)

It can be confirmed the proposed drainage strategy treats runoff over and above the guidance provided within the SuDS Manual (C753).

5.5 Surface Water Management & Maintenance

For any surface water drainage system to operate as originally designed, it is necessary to ensure that it is adequately maintained to ensure its continued performance throughout its design life.

It is proposed the SuDS features used within this development will be fully maintained and managed by a private management company.

Table 4 and 5 stipulates the proposed maintenance activities and frequencies the private management company would carry out over the lifetime of the development.

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

Table 4: Operation and Maintenance Requirements for Geo-cellular Tank

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

Table 5: Operation and Maintenance Requirements for Pervious Pavements

6 Proposed Foul Water Drainage

In accordance with Building Regulations Part H1 the preferred priority order of foul water disposal is:

H1. (1) An adequate system of drainage shall be provided to carry foul water from appliances within the building to one of the following, listed in order of priority:

- a) a public sewer; or, where that is not reasonably practicable,
- b) a private sewer communicating with a public sewer; or,
- c) where that is not reasonably practicable, either a septic tank which has an appropriate form of secondary treatment or another wastewater treatment system; or,
- d) where that is not reasonably practicable, a cesspool.

Based on Anglian Water (AW) asset mapping, there is a 225mm public foul water sewer and a 225mm public surface water sewer within South Road and Clothall Road.

It is proposed all foul water flows from development will be directed via gravity into a new demarcation chamber located within the adjacent Petrol Filling Station development (which shares the same ownership), before discharging into the existing AW Foul Water sewer within Clothall Road.

The total foul water flow rate from development proposals can be calculated based on guidance given within Design and Construction Guidance. A peak discharge rate of 4000l/day/ dwelling has been assumed:

- Foul Water Peak = $9 \times 4,000 \text{ l/d} / 86,400 = 0.42 \text{ l/s}$.

Thus, a total foul water peak flow rate of 0.42 l/s is estimated for the proposed development.

It is recommended detailed design drawings are provided to AW in due course as part of a S106 application to formally agree the sewerage connection.

A Drainage Strategy plan and associated documentation are shown in **Appendix K**.

7 Conclusion

Civilistix Consulting Engineers has been commissioned by JP & S Services Ltd to prepare a Combined Flood Risk Assessment and Drainage Strategy (FRA & DS) report to support a planning application for the creation of 9no. residential dwellings, access road, car parking and other associated external hardstanding area.

The site is located at Deans Yard, South Road, Baldock (SG7 6BZ), and occupies a redline boundary area of 0.187ha. The existing site is currently brownfield and is occupied by commercial premises. A total of 0.132ha within the site redline boundary is currently hardstanding.

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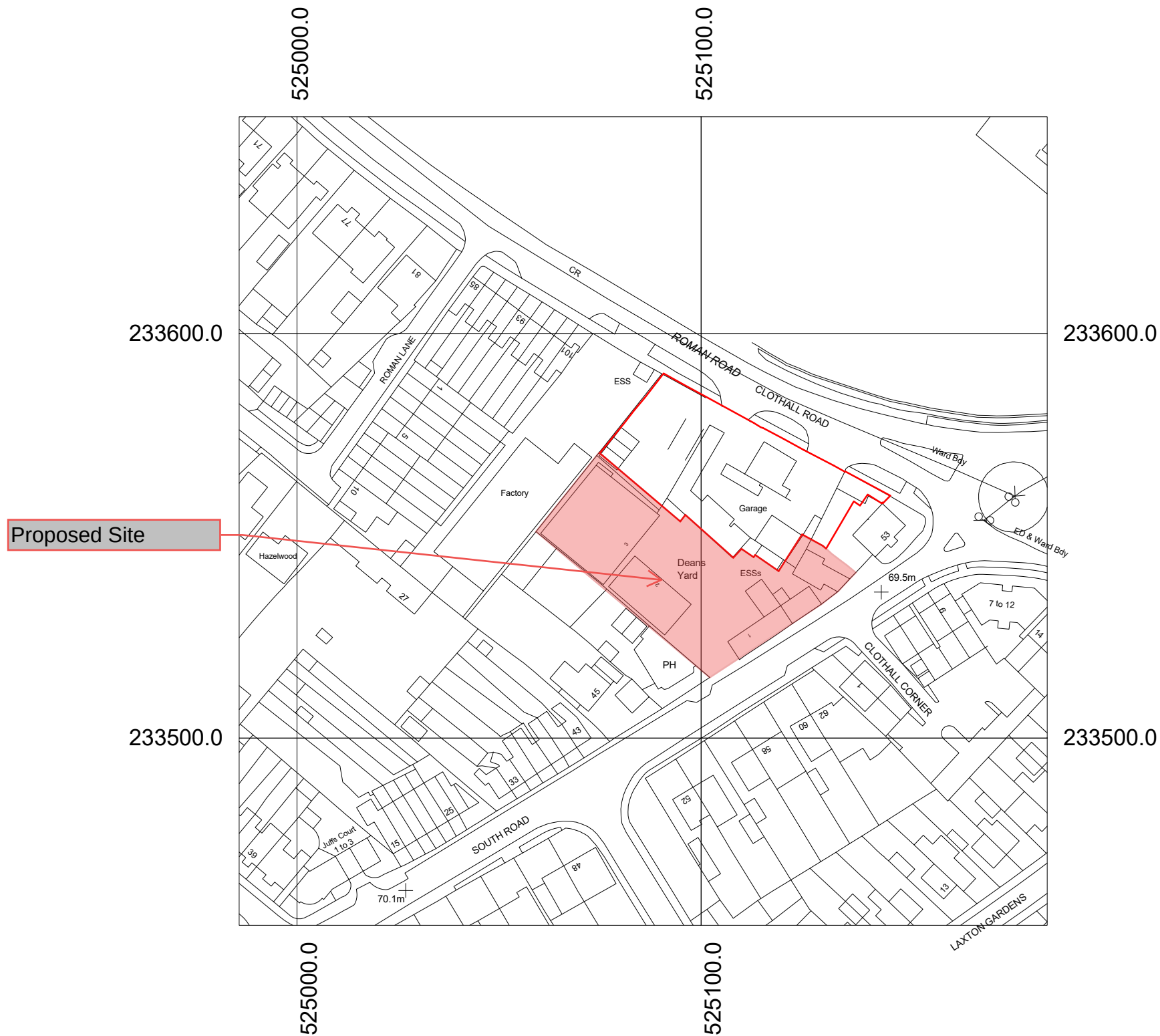
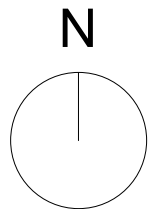
A summary of the flood risk posed from each flood source before and after development (including with the implemented proposed mitigation measures) are provided below;

Type of Flooding	Existing Risk Category	Proposed Risk Category
Fluvial flooding	Very Low Risk	Very Low Risk
Surface Water flooding	Medium/high Risk	Low Risk
Groundwater flooding	Very Low Risk	Very Low Risk
Reservoir flooding	Very Low Risk	Very Low Risk
Artificial Flooding	Low Risk	Low Risk

This report makes the following key conclusions;

- The BGS Geology Viewer identifies the site as being underlain by the Zig Zag Chalk Formation and the Holywell Nodular Chalk Formation. Chalk formations are generally well-draining, with a high permeability that often makes them suitable for infiltration-based drainage solutions, provided the water table is sufficiently deep. Based on the nearby BGS historic borehole data, groundwater was encountered at depths greater than 15.85 m BGL, which further supports the likelihood of infiltration being feasible.
- On this basis, infiltration is considered likely to be feasible. For the purposes of this assessment—and pending BRE 365 testing at the detailed design stage—infiltration has been assumed, adopting the precautionary lowest infiltration rate of 1×10^{-6} m/s in line with *The SuDS Manual (CIRIA C753)*. It is proposed BRE 365 infiltration testing is carried out to verify the above. Should infiltration prove unfeasible, an alternative strategy would be to discharge surface water at a controlled rate into the nearby Anglian Water public surface water sewers located within South Road or Clothall Road.
- It is proposed that the new development impermeable area of 0.119ha is attenuated via the use of a geo-cellular tank, before infiltrating to ground.
- Permeable paving is proposed for all external hardstanding areas.
- It is proposed all foul water flows from development will be directed via gravity into a new demarcation chamber located within the adjacent Petrol Filling Station development (which shares the same ownership), before discharging into the existing AW Foul Water sewer within Clothall Road.

Appendix A – Site Location Plan



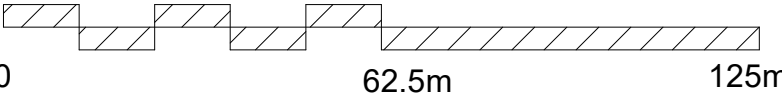
Site Location Plan (PFS)

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Red line denotes approximate application boundary

"Ordnance Survey MasterMap Data purchased under 12 month license from Stanfords (OS Partner license 100035409) 08/07/2024, Order license reference CC-00021003

SCALE : 1 to 1250



Note: This maybe a reduced sized print, check scales below

MS4 Architects LLP
Figured dimensions only are to be taken from this drawing.
All dimensions are to be checked on site before any work is put in hand.

P1	Planning Submission	EF	02.06.2025	IMAS
Revision	Description	Drawn	Date	Checked

Client's Name

JP&S Servicess Ltd

Job Title

Clothall Road, Baldock

Drawing Title

Site Location Plan (PFS)

Scale

As indicated @A3

Job No

1209

Drawing No

104

Status

PLANNING SUBMISSION P1



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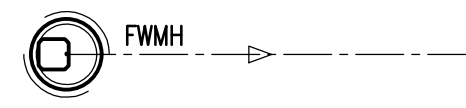


Appendix B – Existing Site Drainage Regime

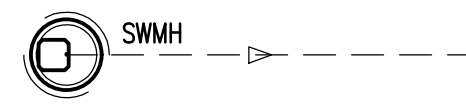
GENERAL LEGEND:

Total red line boundary (0.187 ha)

EXISTING DRAINAGE LEGEND



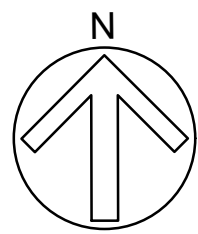
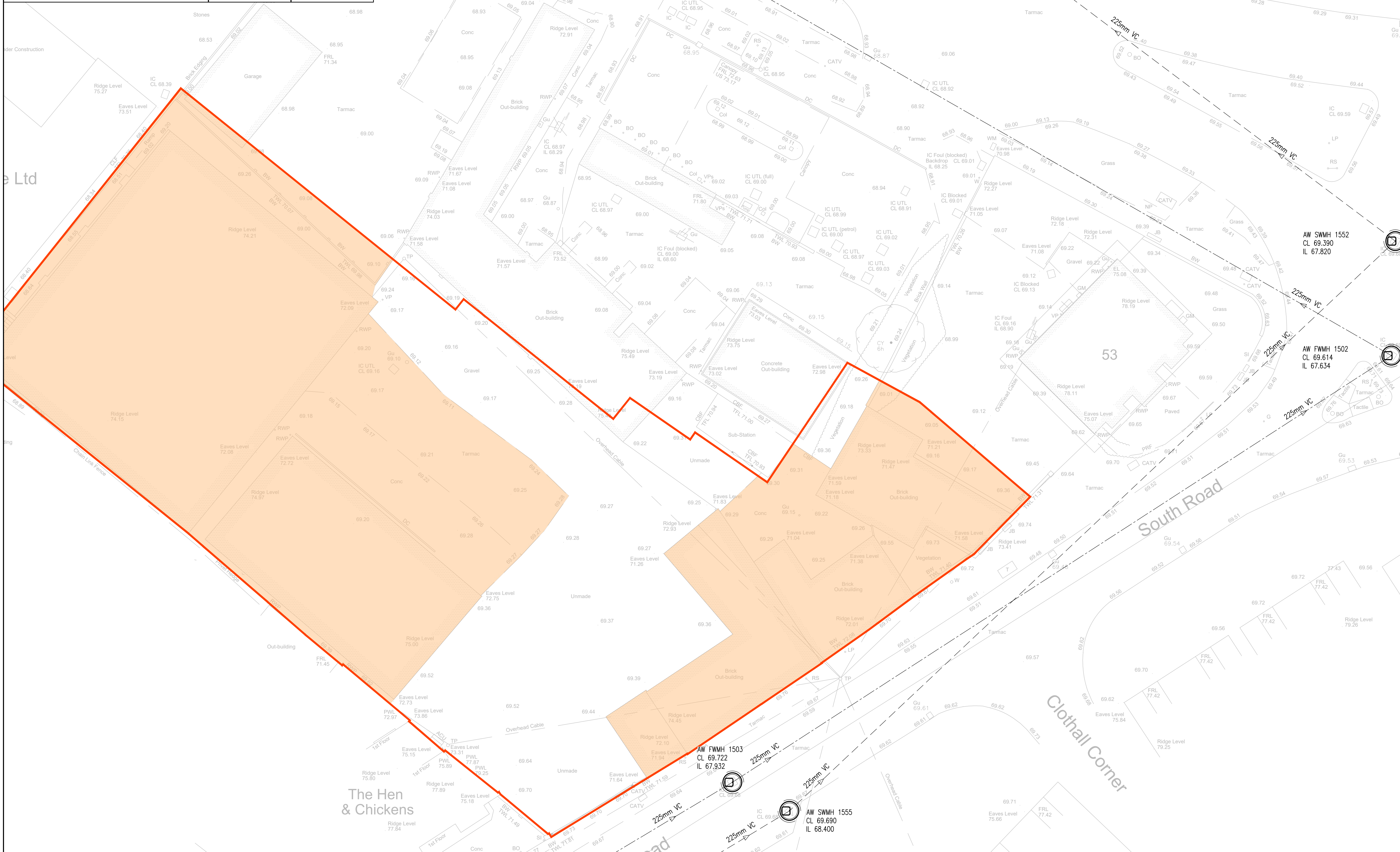
Existing Anglian Water Foul Water Drainage.
(Drainage information as taken from Anglian Water asset mapping)
(Extents, depth, condition and size to be confirmed onsite via CCTV survey)



Existing Anglian Water Surface Water Drainage.
(Drainage information as taken from Anglian Water asset mapping)
(Extents, depth, condition and size to be confirmed onsite via CCTV survey)

EXISTING HARDSTANDING PLAN LEGEND:

Catchment Area (ha)	Impermeable Area (ha)	Direct Discharge location
Total Catchment Area 	0.132 ha	To be confirmed



DO NOT SCALE

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CP/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

P1	28-08-2025	KH	PLANNING ISSUE	FR	DM
REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD

DRAWING STATUS:

FOR PLANNING



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JP & S Services Ltd

ARCHITECT

MS4 Architects LTD

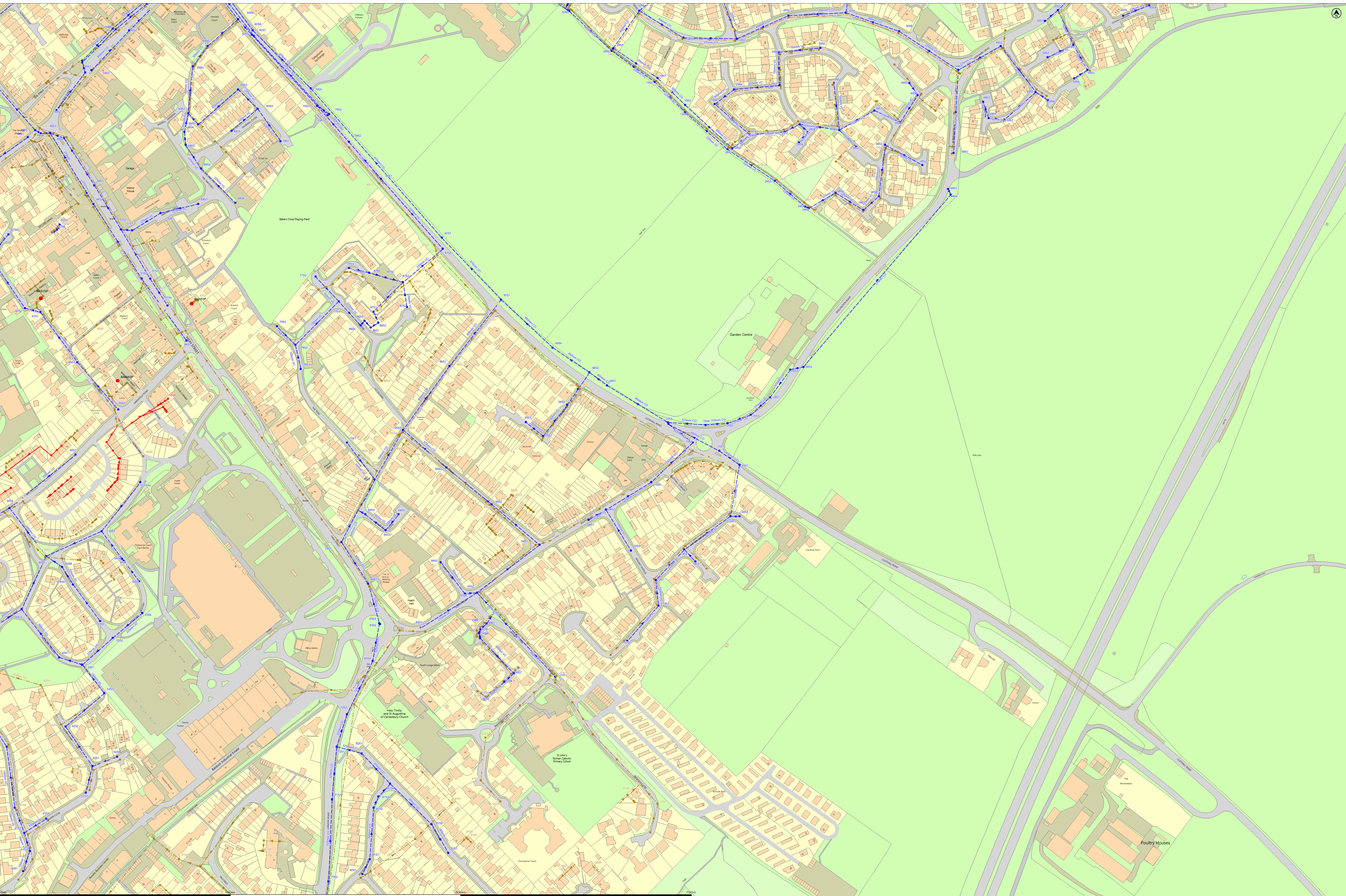
PROJECT:

Deans Yard, South Road, Baldock (SG7 6BZ)

DRAWING TITLE:

Existing Drainage General Arrangement Plan

SCALE @ A1: 1:150	CHECKED / APPROVED BY: FR/DM	DATE: August 2025
PROJECT No: 2-294	DRAWING No: C-010	REV: P1



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- | | |
|----------------------|---|
| Foul Sewer | — |
| Surface Sewer | — |
| Combined Sewer | — |
| Final Effluent | — |
| Rising Main | — |
| Private Sewer | — |
| Decommissioned Sewer | — |
- | | |
|---------|---|
| Outfall | — |
| Inlet | — |
| Manhole | — |

- | | |
|---|--------------------------------|
| ⊕ | Sewage Treatment Works |
| ⊕ | Public Pumping Station |
| ● | Decommissioned Pumping Station |
| ● | Valve (denotes effluent type) |
- | |
|--------------------|
| 2.294 - Deans Yard |
|--------------------|

enquiries@cwsl.co.uk

love every drop
anglianwater

Webstream Plan 62
Powered by digipix

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert	Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert	Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert	Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert	Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
5604	524586	233608	C	-	-	-	5502	524541	233578	F	69.2	67.73	1.47	0952	525077	233985	S	69.979	66.919	3.06	7252	524790	233265	S	73.92	71.13	2.79							
0000	525028	233094	F	-	-	-	5503	524548	233574	F	69.58	67.57	2.01	1058	525107	234028	S	72.398	68.478	3.92	7451	524784	233452	S	69.97	67.77	2.2							
0001	525032	234034	F	71.125	67.425	3.7	5504	524569	233545	F	70.14	67.9	2.24	1093	525152	233560	S	69.39	67.82	1.57	7551	524790	233560	S	70.1	68.81	1.29							
0002	525034	234029	F	70.861	65.571	5.29	5600	524519	233687	F	-	-	-	1351	525128	233683	S	71.7	70.2	1.5	7651	524740	233640	S	69.56	68.17	1.39							
0003	525078	234014	F	71.167	69.767	1.4	5601	524593	233657	F	-	-	-	1451	525125	233411	S	71.051	69.581	1.47	7652	524734	233666	S	69.4	67.23	2.17							
0100	525095	233177	F	-	-	-	5605	524529	233618	F	-	-	-	1452	525156	233444	S	70.3	69.25	1.05	7653	524714	233686	S	69.08	67.65	1.43							
0200	525026	233300	F	-	-	-	5606	524532	233610	F	-	-	-	1453	525108	233431	S	70.578	69.598	0.98														
0201	525035	233278	F	-	-	-	5607	524536	233622	F	-	-	-	1501	525146	233651	S	69.709	68.109	1.6	7751	524781	233713	S	68.13	66.71	1.42							
0202	525057	233243	F	-	-	-	5610	524562	233614	F	-	-	-	1552	525152	233560	S	69.39	67.82	1.57	7752	524756	233740	S	67.82	67.17	0.65							
0301	525017	233307	F	74.138	72.438	1.7	5612	524557	233610	F	-	-	-	1553	525138	233582	S	69.18	67.58	1.6	7753	524792	233749	S	67.71	66.51	1.2							
0302	525091	233345	F	72.649	70.859	1.79	5613	524552	233625	F	-	-	-	1554	525179	233579	S	69.577	67.967	1.61	7851	524718	233887	S	65.41	64.24	1.17							
0303	525012	233312	F	74.004	72.422	1.582	5614	524540	233614	F	-	-	-	1555	525120	233517	S	69.69	68.4	1.29	7852	524792	233886	S	65.5	63.8	1.7							
0304	525009	233354	F	74	72.472	1.528	5615	524522	233617	F	-	-	-	1562	525124	233951	S	69.486	67.175	2.31	7951	524769	233915	S	64.87	63.14	1.73							
0305	525076	233330	F	-	-	-	5616	524535	233610	F	-	-	-	1563	525157	233926	S	67.37	67.55	1.42	7952	524771	233916	S	65.05	63.91	1.14							
0401	525010	233453	F	70.332	69.122	1.21	5618	524512	233662	F	-	-	-	1954	525157	233918	S	68.94	67.31	1.63	7953	524759	233925	S	64.69	63.3	1.39							
0402	525064	233488	F	70.012	68.252	1.76	5702	524566	233724	F	65.04	63.11	1.93	1955	525155	233999	S	71.601	68.851	2.75	8051	524807	233902	S	80.59	78.83	1.76							
0404	525062	233454	F	-	-	-	5703	524558	233773	F	64.25	62.52	1.73	1956	525189	233927	S	69.448	68.368	1.08	8151	524815	233108	S	80.25	78.06	2.19							
0405	525056	233451	F	-	-	-	5704	524569	233733	F	-	-	-	1957	525127	233955	S	-	-	-	8152	524819	233164	S	78.87	76.75	2.12							
0501	525025	233594	F	68.498	67.038	1.46	5705	524579	233779	F	-	-	-	2052	525209	234023	S	73.329	69.609	3.72	8153	524824	233176	S	78.37	76.26	2.11							
0502	525023	233595	F	68.798	67.418	1.39	5706	524586	233779	F	-	-	-	2451	525206	233480	S	69.852	68.792	1.06	8154	524837	233190	S	77.84	76.05	1.79							
0601	525039	233623	F	68.162	66.362	1.8	5901	524515	233815	F	63.69	61.58	2.11	2452	525216	233404	S	69.972	69.052	0.92	8155	524892	233146	S	78.58	76.83	1.75							
0602	525043	233618	F	68.247	66.587	1.66	5901	525052	233988	F	73.801	72.051	1.75	2551	525216	233536	S	69.93	68.29	1.64	8251	524806	233223	S	77.41	74.08	3.33							
0603	525034	233605	F	68.349	66.739	1.61	5902	524538	233987	F	60.71	59.44	1.27	2552	525203	233981	S	69.683	68.143	1.54	8351	524870	233359	S	72.53	71.09	1.44							
0901	525079	233985	F	70	66.01	3.99	5902	525579	233993	F	72.994	70.944	2.05	2553	525228	233590	S	69.873	68.483	1.39	8352	524826	233363	S	72.9	70.04	2.86							
1005	525107	234025	F	72.327	68.007	4.32	5903	525596	233963	F	73.104	71.324	1.78	2651	525249	233609	S	70.216	68.886	1.33	8353	524825	233364	S	73	69.08	3.92							
1010	525108	233190	F	-	-	-	5904	525593	233943	F	74.405	72.825	1.58	2652	525271	233943	S	70.403	69.053	1.46	8354	524818	233323	S	72.8	69.05	2.85							
1011	525127	233158	F	-	-	-	5905	525549	233936	F	74.343	72.973	1.37	2653	525285	233842	S	70.571	69.231	1.34	8451	524813	233407	S	71.17	68.03	3.14							
1102	525119	233137	F	-	-	-	5906	525564	233930	F	-	-	-	2654	525286	233879	S	70.907	69.517	1.2	8452	524806	233400	S	72.77	71.22	1.55							
1103	525101	233171	F	-	-	-	5907	525556	233997	F	-	-	-	2852	525203	233978	S	69.095	67.945	1.15	8453	524832	233465	S	71.58	70.31	1.27							
1301	525126	233384	F	71.679	69.869	1.81	5925	524513	233924	F	-	-	-	2853	525254	233944	S	69.347	68.387	0.96	8454	524810	233482	S	71.32	69.62	1.7							
1301	525126	233384	F	71.679	69.869	1.81	5926	524506	233956	F	-	-																						

Appendix C – Topographical Survey

Appendix D – Ground Investigation Information



British
Geological
Survey

GeoIndex Onshore

Whitehorse Service Station,



Data



Borehole records



Add Data

Show Legend

TL23SW11

TL23SW10

Mercia Rd

West Close

TL23SE10

Clothall Road Allotment
Gardens

Wallington Rd

Clothall Rd

Site Location

A507



Location: 524768, 234015



MAP LAYERS

☐ Superficial Geology

☒ Bedrock Geology

About this layer:

Bedrock geology is a term used for the main mass of rocks forming the Earth that are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.



Info



Opacity



Legend

☐ Combined Geology

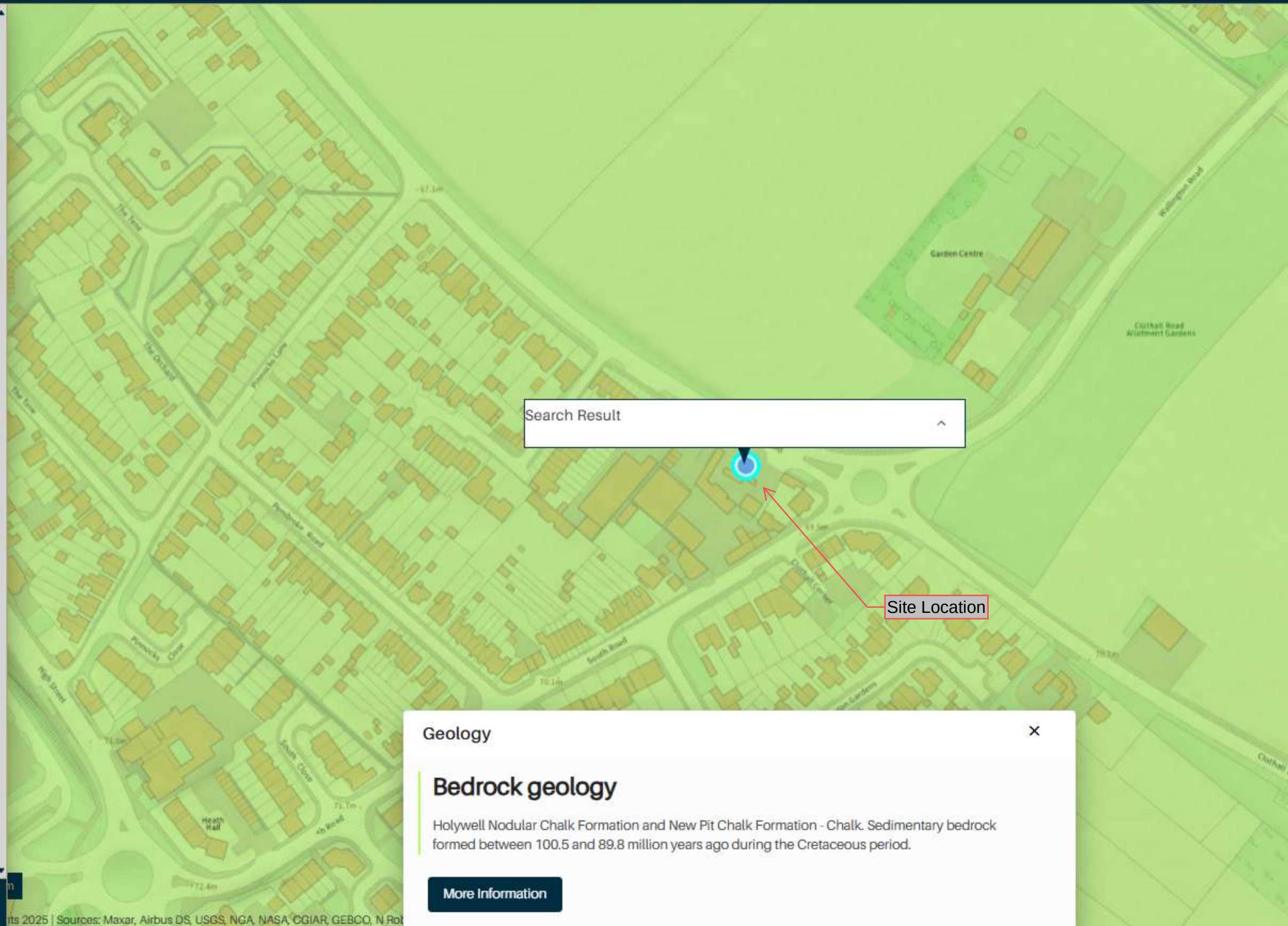
OPTIONS

Select Basemap

Settings

Contact BGS

More data? Try BGS GeoIndex



Search Result

Geology



Bedrock geology

Holywell Nodular Chalk Formation and New Pit Chalk Formation - Chalk. Sedimentary bedrock formed between 100.5 and 89.8 million years ago during the Cretaceous period.

[More Information](#)

LOG FOR BOREHOLE No. 61 B Fig.81a

Location No. 4168 BALDOCK BY-PASS

Sheet 1 of 2

Carried out for Hertfordshire County Council

Date : 23/26.4.63 NGR 2784.3374

TL 23 SW 10

Equipment:- Mobile Boring Rig.

Hole diameter: 8 and 6 inch.

Description	Reduced Level	Legend	Sample	Depth	Thickness	Standard Penetration test	23
Ground Level (Ft. above N.D.) Brown, slightly sandy silty TOPSOIL.	235.2 Tide 8m 233.7		1	0' 0"	1' 6"	21	
			2	1' 6"		26	
			3			29	
			4		6' 6"	58	24
			5		1'		28
			6				28
			7		11' 6"	43	26
			8		1'		27
			9		16' 6"	45	25
			10		1'		21
			11		21' 6"	47	23
			12	49' 0"	1'		24
			13		25' 6"	56	20
			14		29' 0"	42	26
			15		1'		22
			16		39' 0"	65	20
			17		43' 8"	70	21
			18		48' 6"	63	21

Scale : 1 in. = 5 ft.

- Disturbed Sample
- △ Bulk Sample
- Tube or Core
- Sample (length in scale)
- Initial penetration only
- △ Water Sample

SOIL MECHANICS LTD., 55, OLD CHURCH ST., S.W.3.

CONTINUATION LOG FOR BOREHOLE No. 61 B

Fig. 81b
Sheet 2 of 2

LOC.

Description	Reduced Level	Legend	Sample	Depth	Thickness	Standard Penetration test		#5
						Depth and penetration	No. of blows	
TL 23 50/10 <								

LOG FOR BOREHOLE No. 62 B Fig.82a

Sheet 1 of 2

Location No. 4168 BALDOCK BY-PASS

Carried out for Hertfordshire County Council

Date : 21/30.4.63 NG-R 2784.3374

TL 23 SW 10

Equipment: - Mobile Boring Rig.

Hole diameter: - 8 and 6 inch

Description	Reduced Level	Legend	Sample	Depth	Thickness	Standard Penetration test	#
Ground Level (Ft. above N.D.)	72.01m			0' 0"	1' 0"		20
Brown, slightly sandy, silty TOPSOIL	236.3		1	1' 0"			23
	235.3		2	0.30m			30
Weak			3				31
			4		6' 6"	50	27
			5		1'		31
			6				29
			7		11' 6"	44	25
			8		1'		24
Medium hard, greyish white CHALK with joints, softened in some areas, easily shattered and softened.	222.5		9		16' 6"	70	25
	Form		10		1'		23
			11		21' 6"	74	21
			12		1'		20
			13		28' 0"	60	23
			14		8"		19
			15		34' 0"	60	24
			16		3"		
					38' 6"	70	
					6"		
					45' 0"	60	
					3"		

Scale : 1 in. = 5 ft.

• Disturbed Sample

▲ Bulk Sample

▼

- Tube or Core

- Sample (length to hole)

* Initial penetration only

Δ Water Sample

SOIL MECHANICS LTD., 65, OLD CHURCH ST., S.W.3.

FORM NO. 119, FEBRUARY 1962, REVISED 1963

70. NOT PLUM

TL123SW110

CONTINUATION LOG FOR BOREHOLE No. 62 B FIG. 82b
Sheet 2 of 2

LOC.

Description	Reduced Level	Legend	Sample	Depth	Thickness	Standard Penetration test		#
TL 23 SW/10 <								

221/231 Homeland, Wallington Road, Baldock

TL 23 SE 10
2522.3365

Surface +230. Bore 12 in. Water struck at +200. R.W.L. +192; Ell. Jan. 1935.
Drawdown 3. Yield 12,000 g.p.h. June 1943. R.W.L. +186½. P.W.L. +184. Yield 10,000 g.p.h.
Aug. 1948. R.W.L. +192. P.W.L. +188. Yield 10,000 g.p.h. Sept. 1954. R.W.L. +189. P.W.L. +185.
Yield 12,000 g.p.h. Oct. 1958. R.W.L. +189. P.W.L. +187. Yield 10,000 g.p.h. Electric pump.
Oct. 1961. Pumped only in summer.

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS ft.	DEPTH ft.
Middle chalk	Chalk with no flints	35'	35'
Lower chalk	Chalk with flints		182'
182'	Chalk Marl.		

pp. h.p. Thomas
March 1968.



221/231 Homeland, Wallington Road, Baldock

TL ~~2251~~ 3367
2522 TL 23/30

Surface +230. Bore 12 in. Water struck at +200. R.W.L. +192. Ell, Jan. 1935.

Drawdown 3. Yield 12,000 g.p.h. June 1943. R.W.L. +186½. P.W.L. +184. Yield 10,000 g.p.h.

Aug. 1948. R.W.L. +192. P.W.L. +188. Yield 10,000 g.p.h. Sept. 1954. R.W.L. +189. P.W.L. +185.

Yield 12,000 g.p.h. Oct. 1958. R.W.L. +189. P.W.L. +187. Yield 10,000 g.p.h. Electric pump.

Oct. 1963. Pumped only in summer.

Mck)

Lck)

...

...

182

182

GEOLOGICAL
CLASSIFICATION

NATURE OF STRATA

THICKNESS
ft.

DEPTH
ft.

Middle chalk
lower chalk
182'

{ Chalk with no flints
Chalk with flints
Chalk Marl.

35'

35'

182'

pp. L.P. Thomas
March 1968.



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Telephone: LUTON 1200

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BORING PLANTS
and TOOLS
for
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PUMPS
for all duties and
GENERAL
PUMPING
MACHINERY

STEEL
WATER TOWERS

"ELSEX" WATER
SOFTENERS

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Geological Survey & Museum
Exhibition Road
South Kensington
London S.W.7.

NEAREST STATION: LEAGRAVE, L.M.S.R.

ONE MINUTE BUS ROUTE

CHAS. J. ELL & SONS

(PARTNERS: H. W. ELL, S. C. ELL)

Victoria Well Works

LEAGRAVE

LUTON

Contractors

OR HOLES

Rotary or Percussion
Process

DEEP WELLS

Complete Installation
for
WORKS, TOWNS
VILLAGES, etc.

AIR LIFT PLANTS

Jan 10th 1935

SUBJECT Baldock - Herts. 7NE-E

Home land,

strictly this is in
wallington parish

Dear Sir

We have just completed the borehole for Mr Hart at the
above who is a Nurseryman.

The Site is about 200 Yards up the Wallington Road.

Chalk with no Flints	to	35	feet
Chalk with Flints	to	62	feet
Chalk Marl	to	182	feet

We have just reached the Gault at 171 feet.

Diameter of Borehole 12" Rest Water Level 38 feet.

The pumping test is being carried out next week when we
hope to raise 10000 Gallons per hour.

Yours Faithfully

Per Pro Chas J Ell & Sons

400 yds. E.S.E. of St. Mary's Ch. Surface c. 230 ft. ^{on chalk outcrop}
well situated at back of dwelling house. When pumping 12,000 galls. per
hour, water will fall a yard in half a minute, then stay at that
stage. When boring water struck at 30 ft.

the rest of the day
pumping all the time.

def + silt (see over) from St. Hart, Esq., in letter dated 9.6.43

Visited and site amended. Supplies nursery; electric pump.

used in summer only; abstraction not known to lady of the house

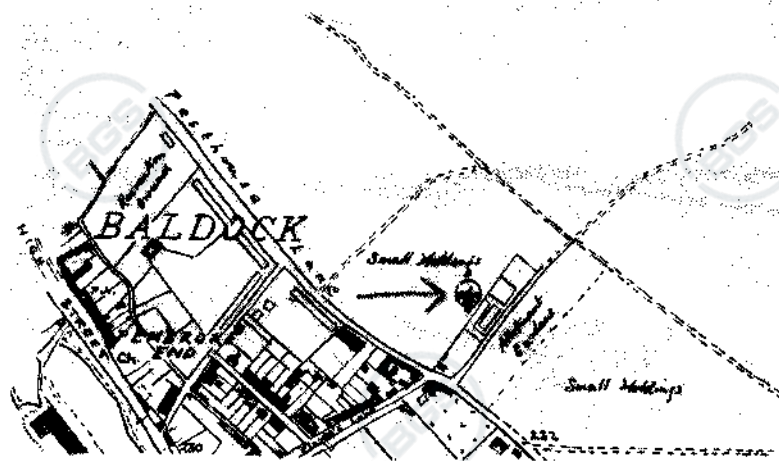
OD + 230. A.S. 29/9/60.

2

HERTS

SHEET 2 NE/E

6" = 1 mile



DATA Bank

ACCOMMODATION SCHEDULE

PLOT 1 to PLOT 9 -

9 x 3bedroom 6person Houses

SITE LEGEND

GENERAL NOTES:

- Existing tree to be removed
- Application boundary
- Existing buildings to be demolished
- Scheduled Monument (Ref: 1016305)
- Sub-Station
- Below ground electric cables (to Groundsure property search (Ref: Q/JP&S/001929))
- House Type 1.0
- House Type 2.0
- House Type 3.0
- House Type 4.0

Notes: Base plan references ASP Surveys
'Topographical Survey' data indicated magenta

P4	Planning Submission	MAS	15.08.2025	MAS
P3	Revised to LPA pre-application advice (25/00813/PRE)	MAS	08.08.2025	MAS
P2	Pre-Application Submission	MAS	20.03.2025	MAS
P1	Information Issue	MAS	11.09.2024	MAS
Revision	Description	Drawn	Date	Checked

Client's Name
Baldock Operations Limited

Job Title
Clothall Road, Baldock

Drawing Title
**Proposed Site Plan
RESIDENTIAL SCHEME**

Scale
1:100 @A1

Job No
1209

Drawing No
103

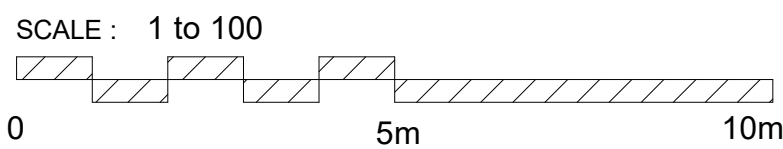
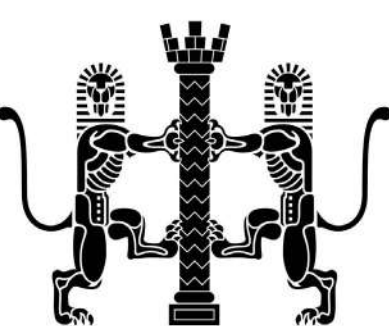
Status
PLANNING SUBMISSION

Rev
P4

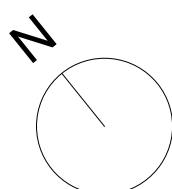


Arena Business Centre
Abbey House
282 Farnborough Road
Farnborough
Hampshire
GU14 7NA

T| +44 (0)1276 402 433
M| +44 (0)777 208 3303
E| mike@ms4architects.co.uk



Note: This maybe a reduced sized print, check scales below



Appendix F – Fluvial Flooding Information



Legend

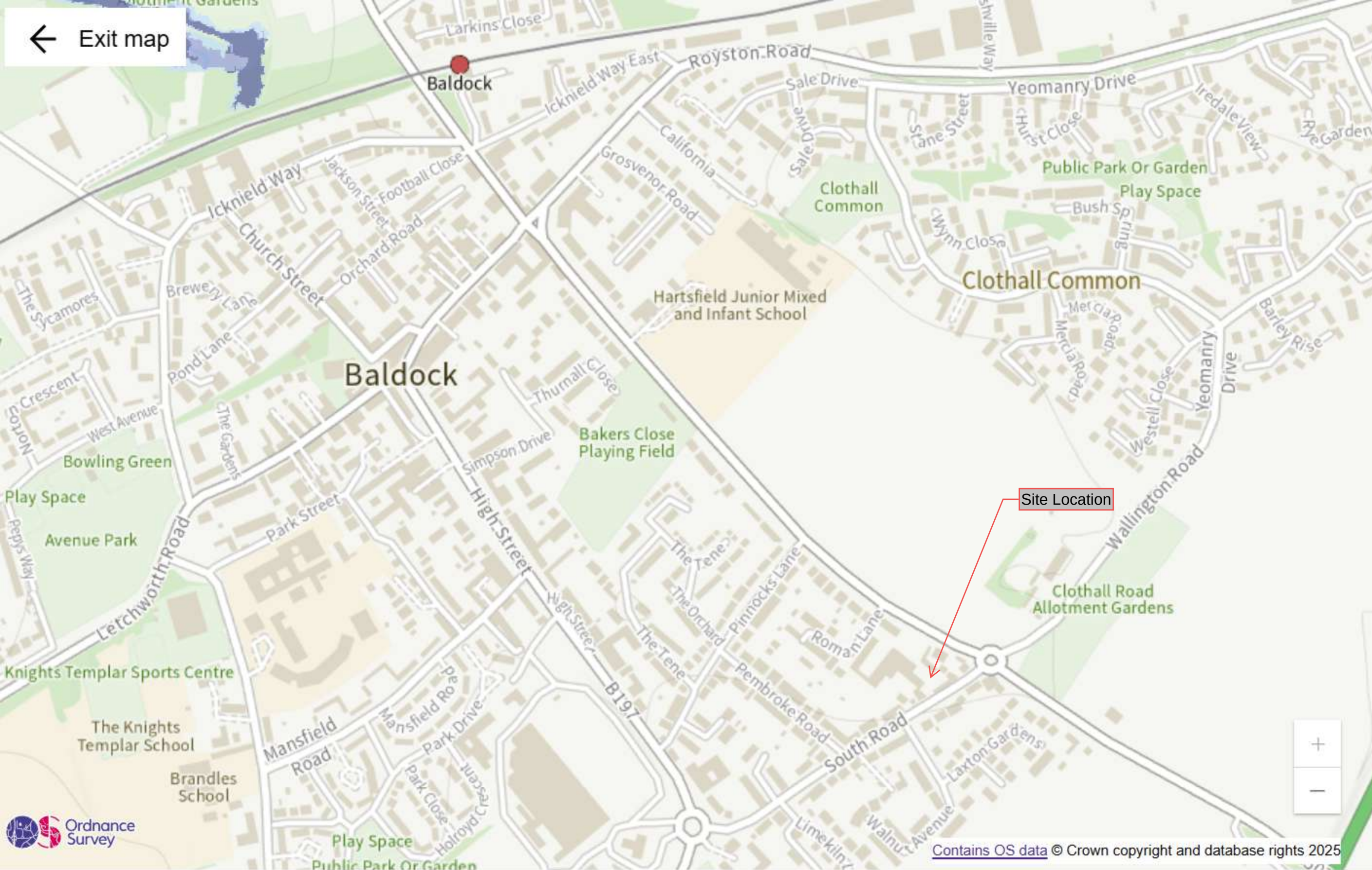
EA Flood Zone 3



EA Flood Zone 2



← Exit map



Rivers and sea map

Yearly chance of flooding

● Flood area (extent)

High chance

Medium chance

Low chance

Very low chance

Yearly chance of flooding between 2036 and 2069

○ Flood area (extent)

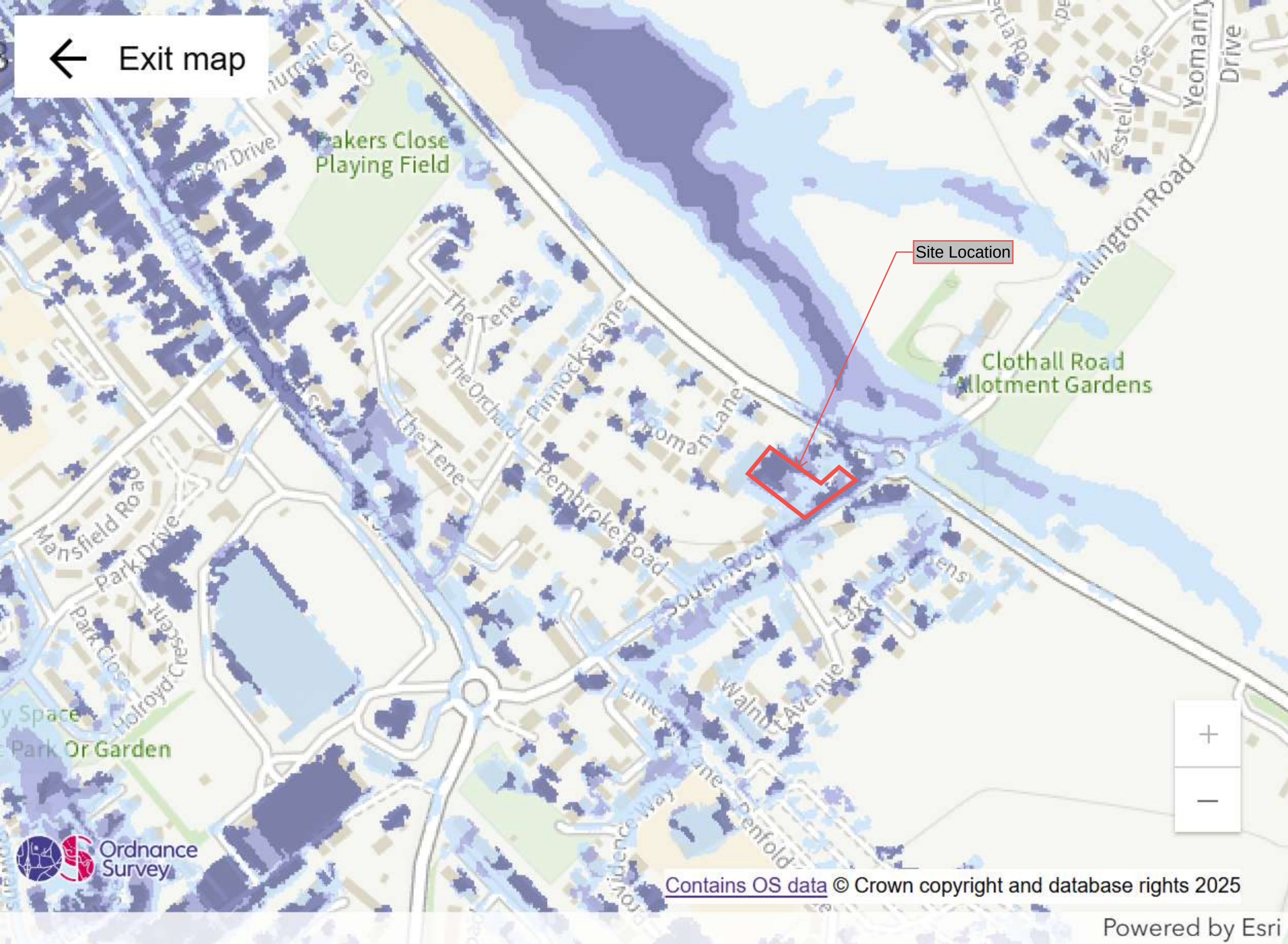
Map details

☒ Show flooding

☐ Selected address

Appendix G – Surface Water Flooding Information

← Exit map



Surface water map

-  High chance
-  Medium chance
-  Low chance

Yearly chance of flooding
between 2040 and 2060

 Flood area (extent)

Map details

☒ Show flooding

☐  Selected address

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Home

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SG7 6PD

X

Q

Buscar resultados de SG7 6PD



Leyenda

^

X

Surface Water and Groundwater Flooding

Risk of Flooding from Surface Water

Max Extent

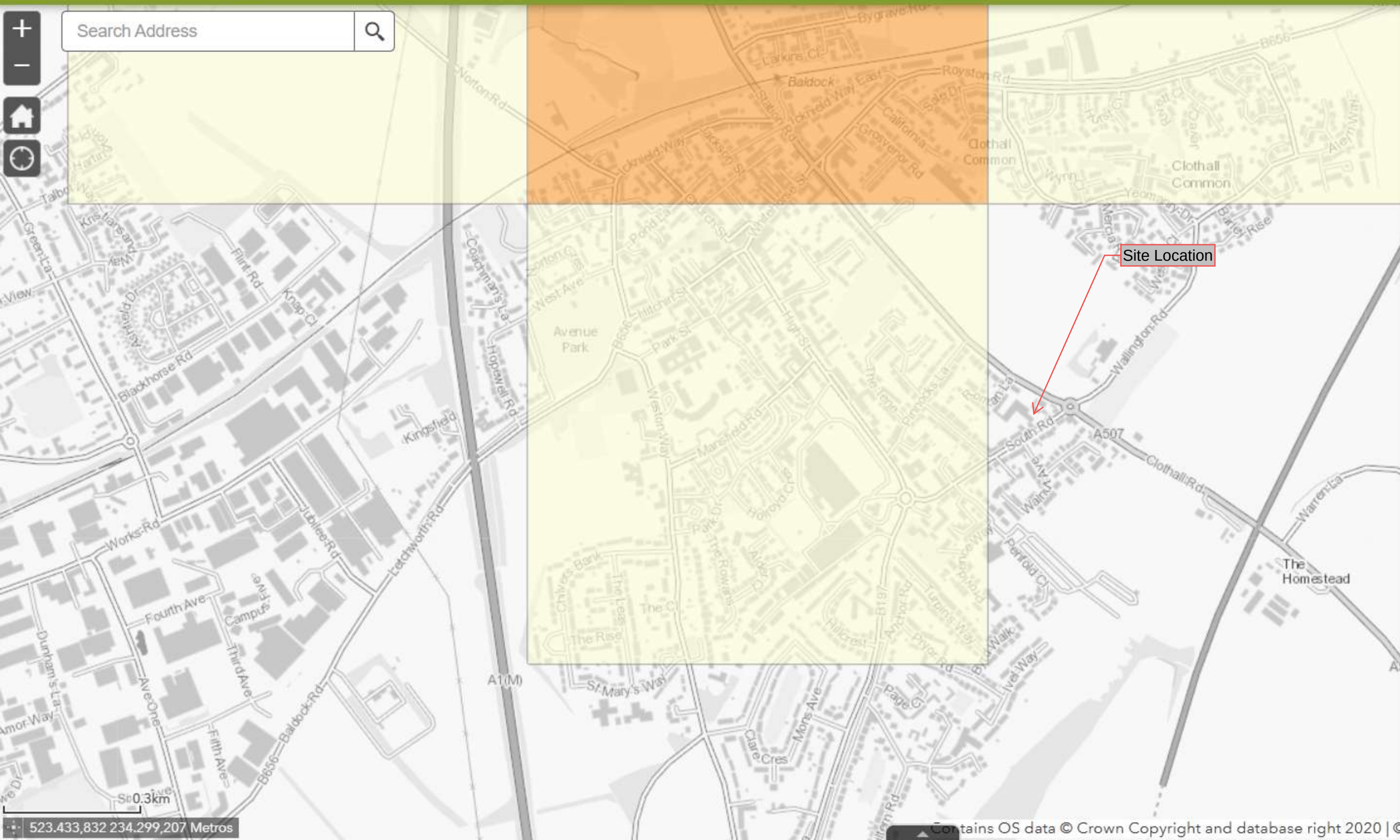
Risk of Flooding from Surface Water map (1 in 30yr)

Risk of Flooding from Surface Water map (1 in 100yr)

Risk of Flooding from Surface Water map (1 in 1000yr)

Appendix H – Groundwater Flooding Information

Search Address



Legend

Surface Water and Groundwater Flooding

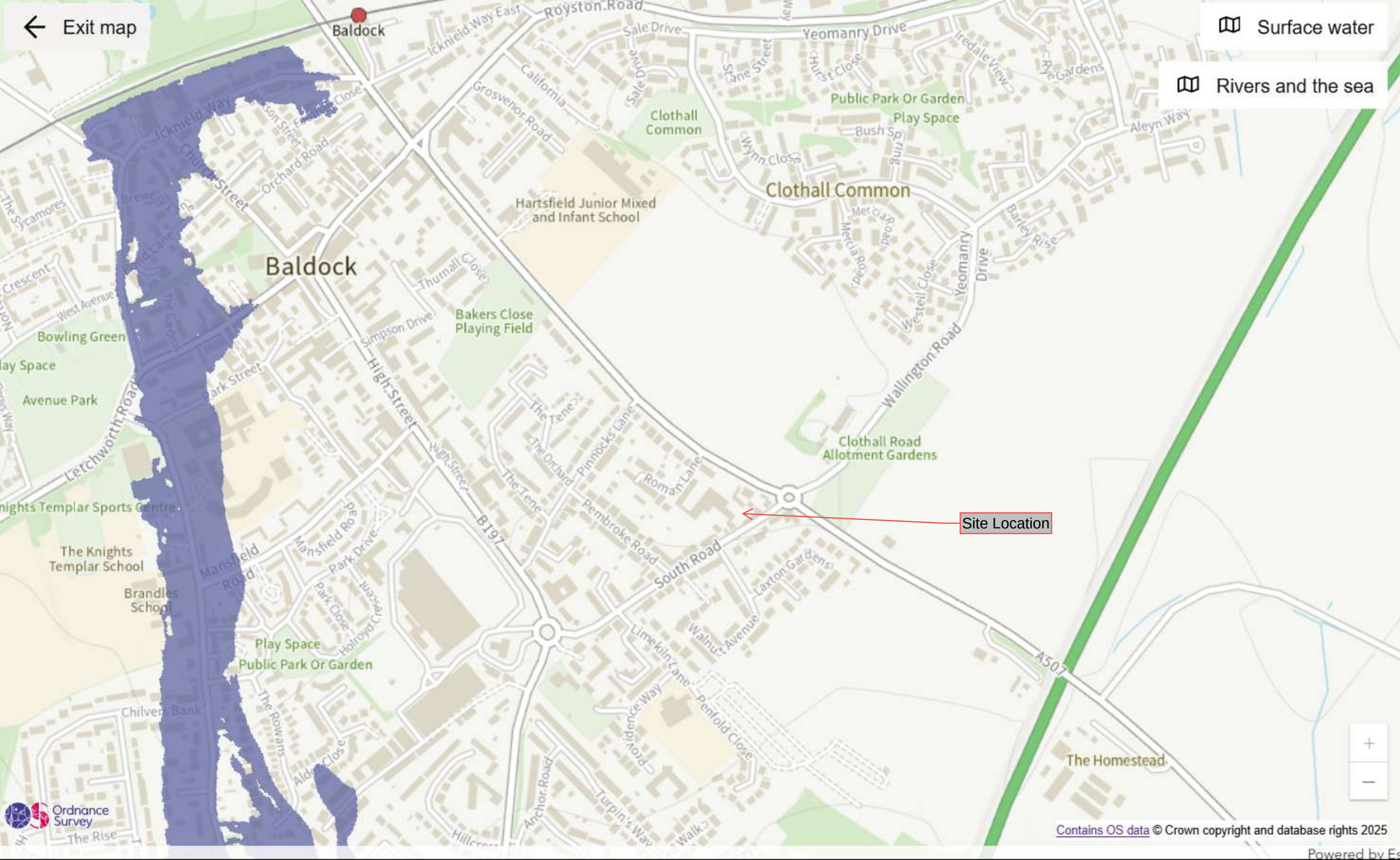
Risk of Flooding from Groundwater

Areas Susceptible to Groundwater Flooding

- $\geq 75\%$
- $\geq 50\% < 75\%$
- $\geq 25\% < 50\%$
- $< 25\%$

Appendix I – Reservoir Flooding Information

← Exit map



Surface water

Rivers and the sea

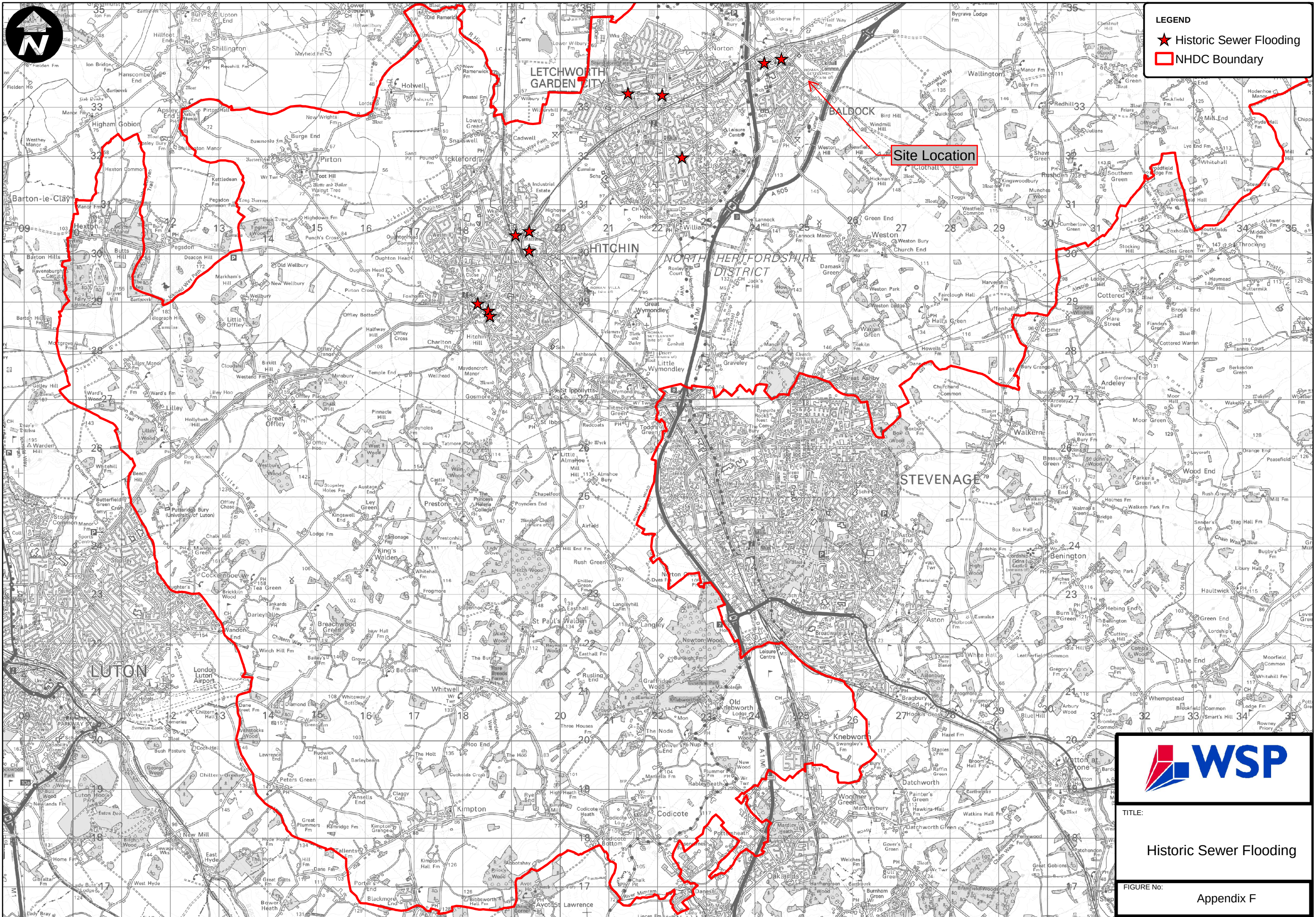
Reservoirs map

- Extent
 - When river levels are normal
 - When there is also flooding from rivers

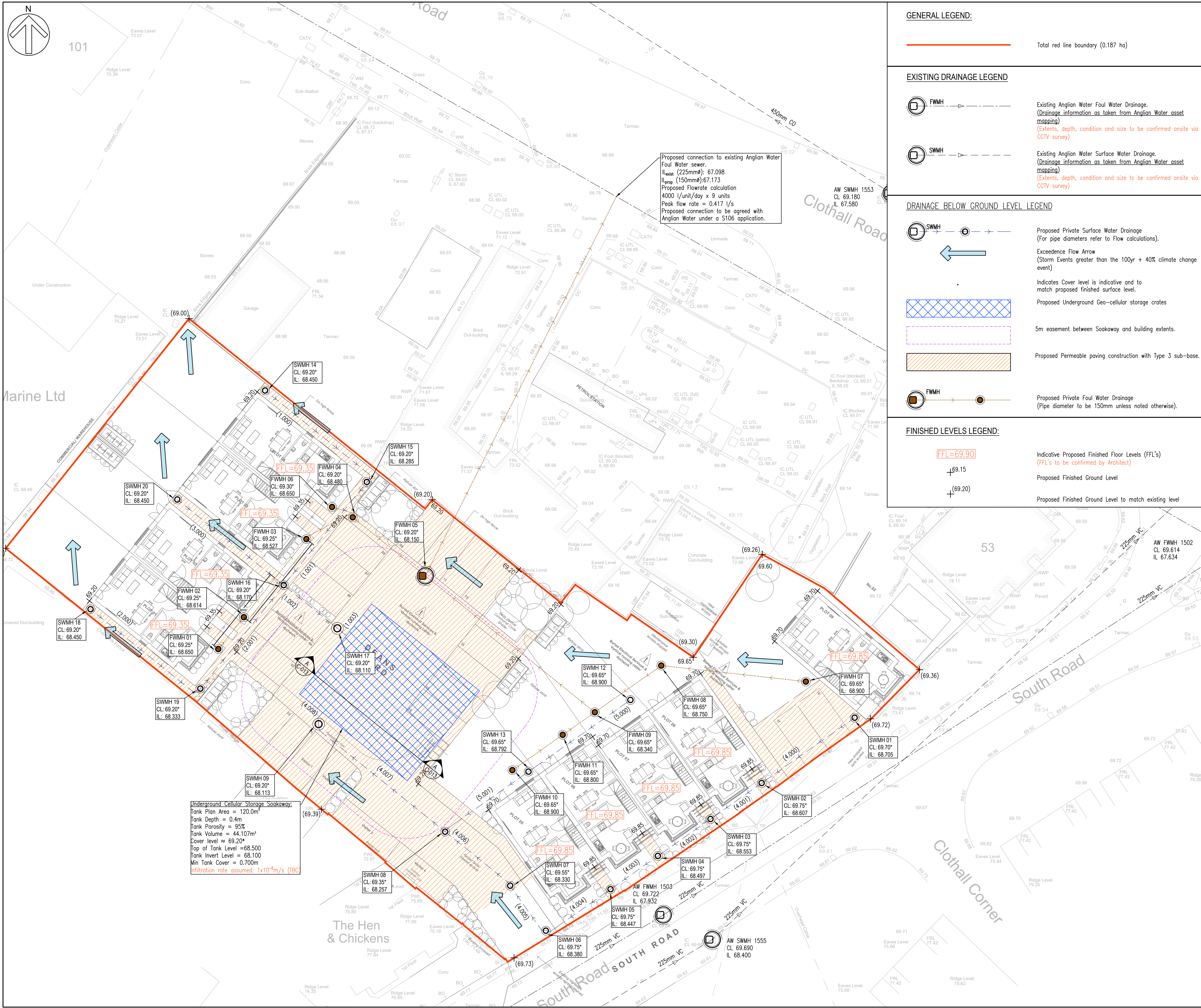
Map details

☒ Show flooding

Appendix J – Artificial Flooding Information



Appendix K – Drainage Strategy Plans



GENERAL LEGEND:

— Total red line boundary (0.187 ha)

EXISTING DRAINAGE LEGEND

- FWMH Existing Anglian Water Foul Water Drainage. (Drainage information as taken from Anglian Water asset mapping) (Extents, depth, condition and size to be confirmed onsite via CCTV survey)
- SWMH Existing Anglian Water Surface Water Drainage. (Drainage information as taken from Anglian Water asset mapping) (Extents, depth, condition and size to be confirmed onsite via CCTV survey)

DRAINAGE BELOW GROUND LEVEL LEGEND

- SWMH Proposed Private Surface Water Drainage (For pipe diameters refer to Flow calculations). Exceedence Flow Arrow (Storm Events greater than the 100yr + 40% climate change event) Indicates Cover level is indicative and to match proposed finished surface level.
- Proposed Underground Geo-cellular storage crates
- 5m easement between Soakaway and building extents.
- Proposed Permeable paving construction with Type 3 sub-base.
- FWMH Proposed Private Foul Water Drainage (Pipe diameter to be 150mm unless noted otherwise).

FINISHED LEVELS LEGEND:

- FFL=69.90 Indicative Proposed Finished Floor Levels (FFL's) (FFL's to be confirmed by Architect)
- +69.15 Proposed Finished Ground Level
- +69.20 Proposed Finished Ground Level to match existing level

DO NOT SCALE

- GENERAL
- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
 - All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
 - Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
 - The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. The contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
 - All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
 - The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
 - Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
 - This drawing should not be used for setting out
 - All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

P1	28-08-2025	KH	PLANNING ISSUE	FR	DM
REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD

DRAWING STATUS: FOR PLANNING

Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com
www.civilistix.com

CLIENT: JP & S Services Ltd

ARCHITECT: MS4 Architects LTD

PROJECT: Deans Yard, South Road, Baldock (SG7 6BZ)

DRAWING TITLE: Proposed Private Drainage General Arrangement Plan

SCALE @ A1: 1:150	CHECKED / APPROVED BY: FR/DM	DATE: August 2025
PROJECT No: 2-294	DRAWING No: C-011	REV: P1



GENERAL LEGEND:

— Total red line boundary (0.187 ha)

CATCHMENT PLAN LEGEND:

Catchment Area (ha)	Impermeable Area (ha)	Direct Discharge location
Roofs	0.049ha	Infiltration to ground.
Permeable Paving	0.070ha	Infiltration to ground.
	Total 0.119ha	

DO NOT SCALE

GENERAL

- The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
- All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
- Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
- The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
- All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
- The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
- Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
- This drawing should not be used for setting out
- All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

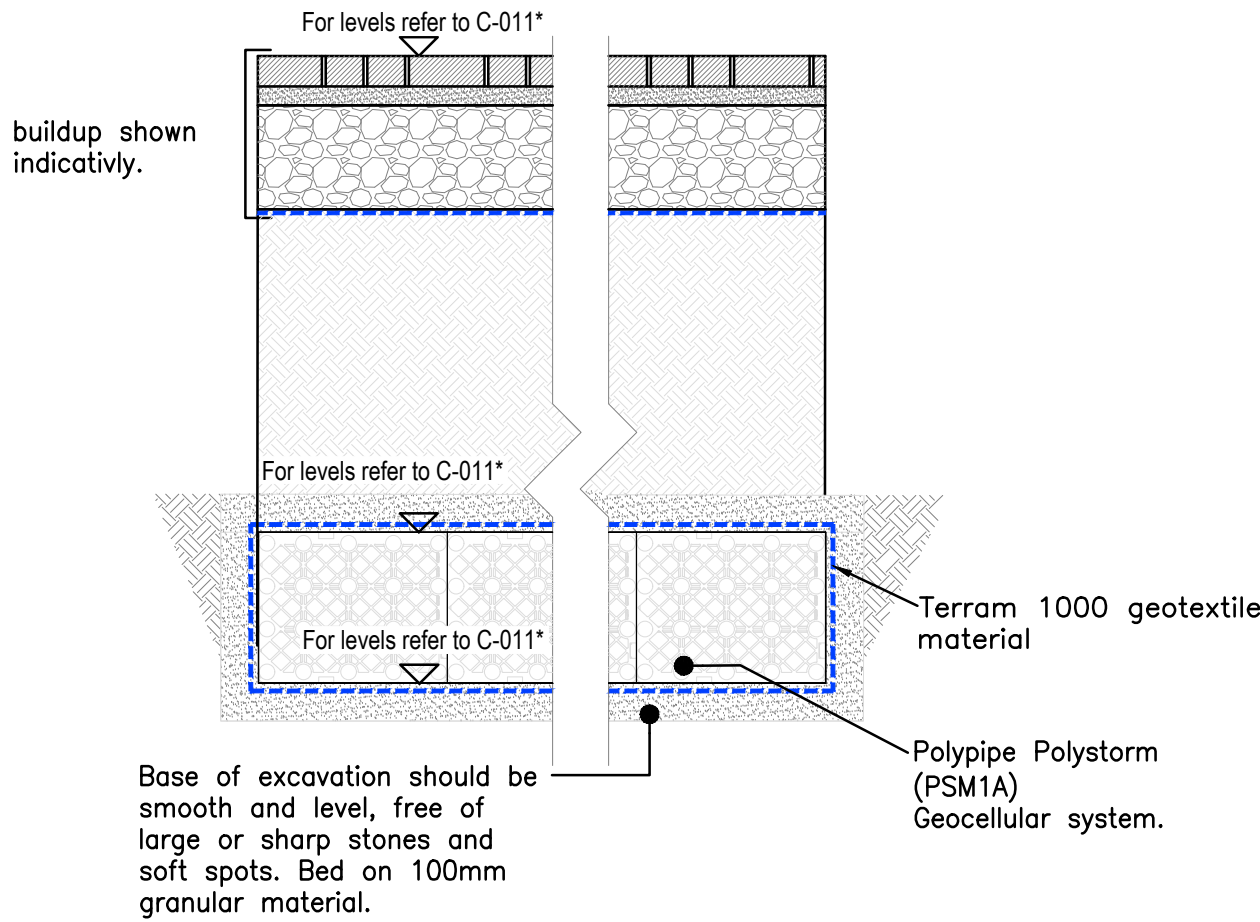
P1	28-08-2025	KH	PLANNING ISSUE	FR	DM
REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD

DRAWING STATUS:					
FOR PLANNING					

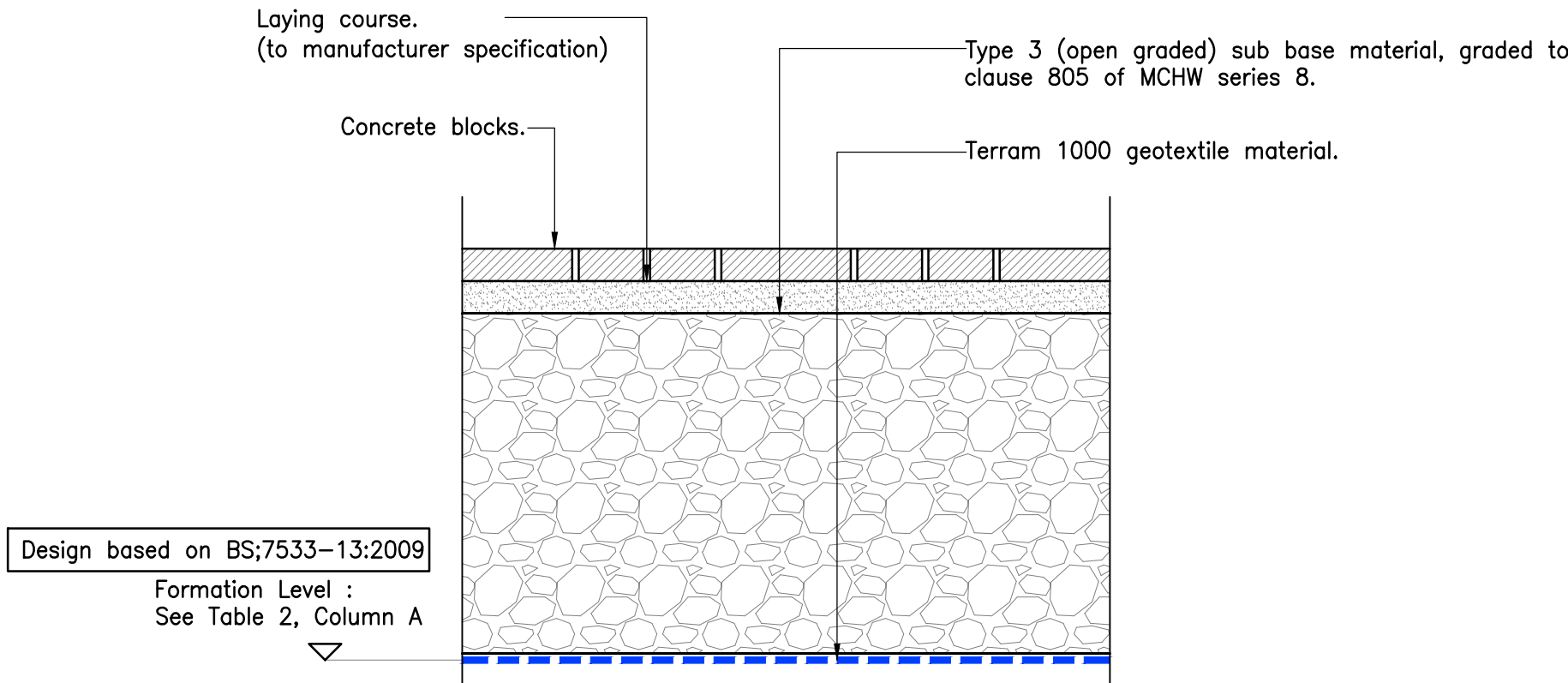


Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civistix.com
www.civistix.com

CLIENT:	JP & S Services Ltd				
ARCHITECT:	MS4 Architects LTD				
PROJECT:	Deans Yard, South Road, Baldock (SG7 6BZ)				
DRAWING TITLE:	Proposed Surface Water Catchment Plan				
SCALE @ A1:	1:150	CHECKED / APPROVED BY:	FR/DM	DATE:	August 2025
PROJECT No:	2-294	DRAWING No:	C-012	REV:	P1



Section A-A - Typical Geo-Cellular Soakaway Tank Detail
(1:20)



Proposed Permeable Block Paving Driveway Construction Detail
(System A & B - Un-tanked permeable paving)
(1:10)

DO NOT SCALE

GENERAL

1. The contractor shall comply with the health and safety requirements as set out in the CDM Regulations
2. All works are to be undertaken in accordance with the Building Regulations and latest relevant British Standards.
3. Conflicting information between this drawing and information given by others must be referred to the engineer before the works commence.
4. The contractor shall, before commencing the works, verify all existing outfall invert levels and site and setting out dimensions. the contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the works. Any discrepancies are to be reported to the Engineer
5. All products used are to be CE marked in accordance with the Construction Products Directive CPD/89/106/EEC.
6. The contractor shall be responsible for locating all existing utilities prior to commencing construction and protecting all existing services affected by the works.
7. Any unidentified hazards discovered during the progress of works are to be reported immediately to the engineer.
8. This drawing should not be used for setting out
9. All land, ownership and asset boundaries / extents, shown on this plan should be assumed to be indicative and should be legally verified prior to any works commencing

P1	28-08-2025	KH	PLANNING ISSUE	FR	DM
REV	DATE	BY	SUMMARY OF CHANGE	CHK	APD

DRAWING STATUS: FOR PLANNING



Allia Future Business Centre, The Guildhall, Cambridge (CB2 3QJ)
Tel: +44 (0)1223 343 277 E: enquiries@civilistix.com
www.civilistix.com

CLIENT: JP & S Services Ltd

ARCHITECT: MS4 Architects LTD

PROJECT: Deans Yard, South Road, Baldock (SG7 6BZ)

DRAWING TITLE: Proposed Private Drainage Construction Details

SCALE @ A1: AS SHOWN	CHECKED / APPROVED BY: FR/DM	DATE: August 2025
PROJECT No: 2-294	DRAWING No: C-013	REV: P1

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.000
CV	1.000	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWMH 01	0.006	4.00	69.700	450	525132.719	233536.362	0.995
SWMH 02	0.006	4.00	69.750	450	525124.662	233530.699	1.143
SWMH 03			69.750	450	525120.226	233527.582	1.197
SWMH 04	0.005	4.00	69.750	450	525115.668	233524.379	1.253
SWMH 05			69.750	450	525111.568	233521.497	1.303
SWMH 06			69.750	450	525105.961	233517.903	1.370
SWMH 07			69.550	450	525102.875	233521.800	1.220
SWMH 08			69.350	450	525097.236	233526.484	1.093
SWMH 09			69.200	600	525086.268	233535.802	1.087
SWMH 12	0.005	4.00	69.650	450	525113.288	233537.897	0.750
SWMH 13	0.005	4.00	69.650	450	525104.453	233531.688	0.858
SWMH 14	0.005	4.00	69.200	450	525081.634	233564.721	0.750
SWMH 15			69.200	450	525090.443	233556.788	0.915
SWMH 16			69.200	450	525083.244	233547.850	1.030
SWMH 17			69.200	600	525087.890	233544.108	1.090
SWMH 18	0.005	4.00	69.200	450	525066.504	233545.768	0.750
SWMH 19			69.200	450	525076.020	233538.882	0.867
SWMH 20	0.011	4.00	69.200	450	525074.026	233555.275	0.750
TANK			69.200	1	525088.669	233543.481	1.100
GOST	0.000		69.200	1			0.610

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SWMH 14	SWMH 15	11.855	0.600	68.450	68.285	0.165	71.8	150	4.17	50.0
1.001	SWMH 15	SWMH 16	11.477	0.600	68.285	68.170	0.115	99.8	150	4.36	50.0
1.002	SWMH 16	SWMH 17	5.966	0.600	68.170	68.110	0.060	99.4	150	4.49	50.0
1.003	SWMH 17	TANK	1.000	0.600	68.110	68.100	0.010	100.0	150	4.50	50.0
1.004	TANK	GOST	1.000	0.600	68.600	68.590	0.010	100.0	100	5.02	50.0

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	SWMH 18	SWMH 19	11.746	0.600	68.450	68.333	0.117	100.4	150	4.20	50.0
2.001	SWMH 19	SWMH 16	11.516	0.600	68.333	68.220	0.113	101.9	150	4.39	50.0
3.000	SWMH 20	SWMH 16	11.836	0.600	68.450	68.220	0.230	51.5	150	4.14	50.0
4.000	SWMH 01	SWMH 02	9.848	0.600	68.705	68.607	0.098	100.5	150	4.16	50.0
4.001	SWMH 02	SWMH 03	5.422	0.600	68.607	68.553	0.054	100.4	150	4.25	50.0
4.002	SWMH 03	SWMH 04	5.571	0.600	68.553	68.497	0.056	99.5	150	4.35	50.0
4.003	SWMH 04	SWMH 05	5.012	0.600	68.497	68.447	0.050	100.2	150	4.43	50.0
4.004	SWMH 05	SWMH 06	6.660	0.600	68.447	68.380	0.067	99.4	150	4.54	50.0
4.005	SWMH 06	SWMH 07	4.971	0.600	68.380	68.330	0.050	99.4	150	4.62	50.0
4.006	SWMH 07	SWMH 08	7.331	0.600	68.330	68.257	0.073	100.4	150	4.74	50.0
4.007	SWMH 08	SWMH 09	14.392	0.600	68.257	68.113	0.144	99.9	150	4.98	50.0
4.008	SWMH 09	TANK	1.156	0.600	68.113	68.100	0.013	88.9	150	5.00	50.0
5.000	SWMH 12	SWMH 13	10.799	0.600	68.900	68.792	0.108	100.0	150	4.18	50.0
5.001	SWMH 13	SWMH 08	8.898	0.600	68.792	68.307	0.485	18.3	150	4.24	50.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
2.000	SWMH 18	SWMH 19	1.003	17.7	0.9	0.600	0.717	0.005	0.0
2.001	SWMH 19	SWMH 16	0.995	17.6	0.9	0.717	0.830	0.005	0.0
3.000	SWMH 20	SWMH 16	1.405	24.8	2.0	0.600	0.830	0.011	0.0
4.000	SWMH 01	SWMH 02	1.002	17.7	1.1	0.845	0.993	0.006	0.0
4.001	SWMH 02	SWMH 03	1.003	17.7	2.2	0.993	1.047	0.012	0.0
4.002	SWMH 03	SWMH 04	1.007	17.8	2.2	1.047	1.103	0.012	0.0
4.003	SWMH 04	SWMH 05	1.003	17.7	3.1	1.103	1.153	0.017	0.0
4.004	SWMH 05	SWMH 06	1.008	17.8	3.1	1.153	1.220	0.017	0.0
4.005	SWMH 06	SWMH 07	1.008	17.8	3.1	1.220	1.070	0.017	0.0
4.006	SWMH 07	SWMH 08	1.002	17.7	3.1	1.070	0.943	0.017	0.0
4.007	SWMH 08	SWMH 09	1.005	17.8	4.9	0.943	0.937	0.027	0.0
4.008	SWMH 09	TANK	1.066	18.8	4.9	0.937	0.950	0.027	0.0
5.000	SWMH 12	SWMH 13	1.005	17.8	0.9	0.600	0.708	0.005	0.0
5.001	SWMH 13	SWMH 08	2.362	41.7	1.8	0.708	0.893	0.010	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	11.855	71.8	150	Circular	69.200	68.450	0.600	69.200	68.285	0.765
1.001	11.477	99.8	150	Circular	69.200	68.285	0.765	69.200	68.170	0.880
1.002	5.966	99.4	150	Circular	69.200	68.170	0.880	69.200	68.110	0.940
1.003	1.000	100.0	150	Circular	69.200	68.110	0.940	69.200	68.100	0.950
1.004	1.000	100.0	100	Circular	69.200	68.600	0.500	69.200	68.590	0.510
2.000	11.746	100.4	150	Circular	69.200	68.450	0.600	69.200	68.333	0.717
2.001	11.516	101.9	150	Circular	69.200	68.333	0.717	69.200	68.220	0.830
3.000	11.836	51.5	150	Circular	69.200	68.450	0.600	69.200	68.220	0.830
4.000	9.848	100.5	150	Circular	69.700	68.705	0.845	69.750	68.607	0.993
4.001	5.422	100.4	150	Circular	69.750	68.607	0.993	69.750	68.553	1.047
4.002	5.571	99.5	150	Circular	69.750	68.553	1.047	69.750	68.497	1.103
4.003	5.012	100.2	150	Circular	69.750	68.497	1.103	69.750	68.447	1.153
4.004	6.660	99.4	150	Circular	69.750	68.447	1.153	69.750	68.380	1.220
4.005	4.971	99.4	150	Circular	69.750	68.380	1.220	69.550	68.330	1.070
4.006	7.331	100.4	150	Circular	69.550	68.330	1.070	69.350	68.257	0.943
4.007	14.392	99.9	150	Circular	69.350	68.257	0.943	69.200	68.113	0.937
4.008	1.156	88.9	150	Circular	69.200	68.113	0.937	69.200	68.100	0.950
5.000	10.799	100.0	150	Circular	69.650	68.900	0.600	69.650	68.792	0.708
5.001	8.898	18.3	150	Circular	69.650	68.792	0.708	69.350	68.307	0.893

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SWMH 14	450	Manhole	Adoptable	SWMH 15	450	Manhole	Adoptable
1.001	SWMH 15	450	Manhole	Adoptable	SWMH 16	450	Manhole	Adoptable
1.002	SWMH 16	450	Manhole	Adoptable	SWMH 17	600	Manhole	Adoptable
1.003	SWMH 17	600	Manhole	Adoptable	TANK	1	Manhole	Adoptable
1.004	TANK	1	Manhole	Adoptable	GOST	1	Manhole	Adoptable
2.000	SWMH 18	450	Manhole	Adoptable	SWMH 19	450	Manhole	Adoptable
2.001	SWMH 19	450	Manhole	Adoptable	SWMH 16	450	Manhole	Adoptable
3.000	SWMH 20	450	Manhole	Adoptable	SWMH 16	450	Manhole	Adoptable
4.000	SWMH 01	450	Manhole	Adoptable	SWMH 02	450	Manhole	Adoptable
4.001	SWMH 02	450	Manhole	Adoptable	SWMH 03	450	Manhole	Adoptable
4.002	SWMH 03	450	Manhole	Adoptable	SWMH 04	450	Manhole	Adoptable
4.003	SWMH 04	450	Manhole	Adoptable	SWMH 05	450	Manhole	Adoptable
4.004	SWMH 05	450	Manhole	Adoptable	SWMH 06	450	Manhole	Adoptable
4.005	SWMH 06	450	Manhole	Adoptable	SWMH 07	450	Manhole	Adoptable
4.006	SWMH 07	450	Manhole	Adoptable	SWMH 08	450	Manhole	Adoptable
4.007	SWMH 08	450	Manhole	Adoptable	SWMH 09	600	Manhole	Adoptable
4.008	SWMH 09	600	Manhole	Adoptable	TANK	1	Manhole	Adoptable
5.000	SWMH 12	450	Manhole	Adoptable	SWMH 13	450	Manhole	Adoptable
5.001	SWMH 13	450	Manhole	Adoptable	SWMH 08	450	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	40	0	0
100	40	0	0

Node TANK Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00360	Invert Level (m)	68.100	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.00360	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	10.000	Number Required	1
Porosity	0.95	Pit Length (m)	12.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 97.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	10	68.725	0.020	0.7	0.0032	0.0000	OK
15 minute summer	SWMH 02	10	68.637	0.030	1.4	0.0047	0.0000	OK
15 minute summer	SWMH 03	10	68.582	0.029	1.4	0.0046	0.0000	OK
15 minute summer	SWMH 04	10	68.532	0.035	2.0	0.0056	0.0000	OK
15 minute summer	SWMH 05	11	68.482	0.035	1.9	0.0055	0.0000	OK
15 minute summer	SWMH 06	11	68.415	0.035	1.9	0.0056	0.0000	OK
15 minute summer	SWMH 07	11	68.364	0.034	1.9	0.0055	0.0000	OK
15 minute summer	SWMH 08	11	68.299	0.042	3.0	0.0066	0.0000	OK
15 minute summer	SWMH 09	11	68.235	0.122	3.0	0.0345	0.0000	OK
15 minute summer	SWMH 12	10	68.919	0.019	0.6	0.0031	0.0000	OK
15 minute summer	SWMH 13	10	68.810	0.018	1.2	0.0028	0.0000	OK
15 minute summer	SWMH 14	10	68.468	0.018	0.6	0.0028	0.0000	OK
15 minute summer	SWMH 15	10	68.304	0.019	0.6	0.0029	0.0000	OK
15 minute summer	SWMH 16	11	68.227	0.057	2.3	0.0091	0.0000	OK
15 minute summer	SWMH 17	11	68.223	0.113	2.9	0.0320	0.0000	OK
15 minute summer	SWMH 18	10	68.469	0.019	0.6	0.0031	0.0000	OK
15 minute summer	SWMH 19	11	68.352	0.019	0.6	0.0030	0.0000	OK
15 minute summer	SWMH 20	10	68.473	0.023	1.2	0.0036	0.0000	OK
480 minute winter	TANK	360	68.161	0.061	0.9	6.9337	0.0000	OK
15 minute summer	GOST	1	68.590	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 01	4.000	SWMH 02	0.7	0.363	0.039	0.0191	
15 minute summer	SWMH 02	4.001	SWMH 03	1.4	0.574	0.079	0.0132	
15 minute summer	SWMH 03	4.002	SWMH 04	1.4	0.496	0.077	0.0155	
15 minute summer	SWMH 04	4.003	SWMH 05	1.9	0.626	0.109	0.0155	
15 minute summer	SWMH 05	4.004	SWMH 06	1.9	0.625	0.108	0.0207	
15 minute summer	SWMH 06	4.005	SWMH 07	1.9	0.629	0.109	0.0154	
15 minute summer	SWMH 07	4.006	SWMH 08	1.9	0.552	0.109	0.0257	
15 minute summer	SWMH 08	4.007	SWMH 09	3.0	0.549	0.169	0.1388	
15 minute summer	SWMH 09	4.008	TANK	4.7	1.144	0.248	0.0089	
15 minute summer	SWMH 12	5.000	SWMH 13	0.6	0.480	0.034	0.0135	
15 minute summer	SWMH 13	5.001	SWMH 08	1.2	1.029	0.029	0.0103	
15 minute summer	SWMH 14	1.000	SWMH 15	0.6	0.513	0.029	0.0142	
15 minute summer	SWMH 15	1.001	SWMH 16	0.6	0.246	0.032	0.0424	
15 minute summer	SWMH 16	1.002	SWMH 17	2.9	0.499	0.163	0.0609	
15 minute summer	SWMH 17	1.003	TANK	3.7	1.134	0.211	0.0072	
15 minute summer	SWMH 18	2.000	SWMH 19	0.6	0.483	0.034	0.0151	
15 minute summer	SWMH 19	2.001	SWMH 16	0.6	0.455	0.033	0.0145	
15 minute summer	SWMH 20	3.000	SWMH 16	1.2	0.720	0.048	0.0197	
480 minute winter	TANK	1.004	GOST	0.0	0.000	0.000	0.0000	0.0
480 minute winter	TANK	Infiltration		0.1				

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 97.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	10	68.755	0.050	4.3	0.0080	0.0000	OK
15 minute summer	SWMH 02	10	68.691	0.084	8.6	0.0133	0.0000	OK
15 minute summer	SWMH 03	10	68.639	0.086	8.6	0.0136	0.0000	OK
15 minute summer	SWMH 04	10	68.604	0.107	12.2	0.0170	0.0000	OK
15 minute summer	SWMH 05	10	68.550	0.103	12.1	0.0164	0.0000	OK
15 minute summer	SWMH 06	11	68.486	0.106	11.9	0.0169	0.0000	OK
15 minute summer	SWMH 07	11	68.441	0.111	11.7	0.0177	0.0000	OK
15 minute summer	SWMH 08	11	68.409	0.152	18.5	0.0242	0.0000	SURCHARGED
480 minute winter	SWMH 09	472	68.397	0.284	1.7	0.0804	0.0000	SURCHARGED
15 minute summer	SWMH 12	10	68.948	0.048	3.6	0.0076	0.0000	OK
15 minute summer	SWMH 13	10	68.834	0.042	7.2	0.0067	0.0000	OK
15 minute summer	SWMH 14	10	68.493	0.043	3.6	0.0068	0.0000	OK
480 minute winter	SWMH 15	472	68.397	0.112	0.3	0.0179	0.0000	OK
600 minute winter	SWMH 16	585	68.397	0.227	1.2	0.0361	0.0000	SURCHARGED
480 minute winter	SWMH 17	464	68.397	0.287	1.3	0.0813	0.0000	SURCHARGED
15 minute summer	SWMH 18	10	68.498	0.048	3.6	0.0076	0.0000	OK
480 minute winter	SWMH 19	464	68.397	0.064	0.3	0.0102	0.0000	OK
15 minute summer	SWMH 20	9	68.509	0.059	7.8	0.0094	0.0000	OK
480 minute winter	TANK	480	68.397	0.297	2.9	33.8450	0.0000	OK

15 minute summer GOST 1 68.590 0.000 0.0 0.0000 0.0000 OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 01	4.000	SWMH 02	4.3	0.569	0.243	0.0753	
15 minute summer	SWMH 02	4.001	SWMH 03	8.6	0.841	0.485	0.0556	
15 minute summer	SWMH 03	4.002	SWMH 04	8.6	0.717	0.481	0.0663	
15 minute summer	SWMH 04	4.003	SWMH 05	12.1	0.916	0.681	0.0661	
15 minute summer	SWMH 05	4.004	SWMH 06	11.9	0.914	0.670	0.0870	
15 minute summer	SWMH 06	4.005	SWMH 07	11.7	0.900	0.657	0.0681	
15 minute summer	SWMH 07	4.006	SWMH 08	11.7	0.758	0.659	0.1159	
15 minute summer	SWMH 08	4.007	SWMH 09	17.9	1.088	1.007	0.2367	
480 minute winter	SWMH 09	4.008	TANK	1.7	0.732	0.088	0.0204	
15 minute summer	SWMH 12	5.000	SWMH 13	3.6	0.810	0.203	0.0481	
15 minute summer	SWMH 13	5.001	SWMH 08	7.2	1.556	0.172	0.0729	
15 minute summer	SWMH 14	1.000	SWMH 15	3.6	0.834	0.172	0.0515	
480 minute winter	SWMH 15	1.001	SWMH 16	0.3	0.212	0.017	0.1822	
600 minute winter	SWMH 16	1.002	SWMH 17	1.1	0.353	0.063	0.1050	
480 minute winter	SWMH 17	1.003	TANK	1.5	0.641	0.086	0.0176	
15 minute summer	SWMH 18	2.000	SWMH 19	3.6	0.774	0.203	0.0549	
480 minute winter	SWMH 19	2.001	SWMH 16	0.3	0.375	0.017	0.1428	
15 minute summer	SWMH 20	3.000	SWMH 16	7.8	1.082	0.314	0.0883	
480 minute winter	TANK	1.004	GOST	0.0	0.000	0.000	0.0000	0.0
480 minute winter	TANK	Infiltration		0.1				

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 97.30%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SWMH 01	10	68.762	0.057	5.4	0.0090	0.0000	OK
15 minute summer	SWMH 02	10	68.706	0.099	10.8	0.0158	0.0000	OK
15 minute summer	SWMH 03	11	68.667	0.114	10.8	0.0181	0.0000	OK
15 minute summer	SWMH 04	11	68.651	0.154	15.2	0.0246	0.0000	SURCHARGED
15 minute summer	SWMH 05	11	68.610	0.163	14.9	0.0260	0.0000	SURCHARGED
15 minute summer	SWMH 06	11	68.560	0.180	13.8	0.0287	0.0000	SURCHARGED
15 minute summer	SWMH 07	11	68.520	0.190	13.0	0.0302	0.0000	SURCHARGED
720 minute winter	SWMH 08	705	68.487	0.230	1.5	0.0366	0.0000	SURCHARGED
720 minute winter	SWMH 09	705	68.487	0.374	1.5	0.1058	0.0000	SURCHARGED
15 minute summer	SWMH 12	10	68.954	0.054	4.5	0.0086	0.0000	OK
15 minute summer	SWMH 13	10	68.839	0.047	9.0	0.0075	0.0000	OK
15 minute summer	SWMH 14	10	68.499	0.049	4.5	0.0077	0.0000	OK
720 minute winter	SWMH 15	705	68.487	0.202	0.3	0.0322	0.0000	SURCHARGED
720 minute winter	SWMH 16	705	68.488	0.318	1.2	0.0505	0.0000	SURCHARGED
720 minute winter	SWMH 17	705	68.487	0.377	1.1	0.1068	0.0000	SURCHARGED
15 minute summer	SWMH 18	10	68.504	0.054	4.5	0.0085	0.0000	OK
720 minute winter	SWMH 19	705	68.487	0.154	0.3	0.0245	0.0000	SURCHARGED
15 minute summer	SWMH 20	9	68.517	0.067	9.9	0.0107	0.0000	OK
720 minute winter	TANK	705	68.487	0.387	2.6	44.1069	0.0000	OK

15 minute summer	GOST	1	68.590	0.000	0.0	0.0000	0.0000	OK
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Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SWMH 01	4.000	SWMH 02	5.4	0.592	0.305	0.0910	
15 minute summer	SWMH 02	4.001	SWMH 03	10.8	0.866	0.607	0.0696	
15 minute summer	SWMH 03	4.002	SWMH 04	10.7	0.728	0.599	0.0889	
15 minute summer	SWMH 04	4.003	SWMH 05	14.9	0.944	0.840	0.0882	
15 minute summer	SWMH 05	4.004	SWMH 06	13.8	0.941	0.775	0.1172	
15 minute summer	SWMH 06	4.005	SWMH 07	13.0	0.914	0.731	0.0875	
15 minute summer	SWMH 07	4.006	SWMH 08	13.6	0.775	0.768	0.1291	
720 minute winter	SWMH 08	4.007	SWMH 09	1.5	0.428	0.084	0.2534	
720 minute winter	SWMH 09	4.008	TANK	1.5	0.704	0.078	0.0204	
15 minute summer	SWMH 12	5.000	SWMH 13	4.5	0.860	0.253	0.0566	
15 minute summer	SWMH 13	5.001	SWMH 08	9.0	1.600	0.216	0.0984	
15 minute summer	SWMH 14	1.000	SWMH 15	4.5	0.883	0.215	0.0607	
720 minute winter	SWMH 15	1.001	SWMH 16	0.4	0.188	0.021	0.2021	
720 minute winter	SWMH 16	1.002	SWMH 17	1.1	0.363	0.063	0.1050	
720 minute winter	SWMH 17	1.003	TANK	1.1	0.610	0.063	0.0176	
15 minute summer	SWMH 18	2.000	SWMH 19	4.5	0.820	0.254	0.0647	
720 minute winter	SWMH 19	2.001	SWMH 16	0.3	0.331	0.017	0.2027	
15 minute summer	SWMH 20	3.000	SWMH 16	9.9	1.091	0.399	0.1284	
720 minute winter	TANK	1.004	GOST	0.0	0.000	0.000	0.0000	0.0
720 minute winter	TANK	Infiltration		0.1				

	Allia Future Business Centre The Guildhall Cambridge CB2 3QJ		File: 2-294_SW Network Model(f Network: Storm Network Kevin Henning 28-08-2025		Page 1 2-294 (Residential Dev.) SW Network Model P1 (Half Drain Down Time)						
	Design Settings										
	Rainfall Methodology		FEH-22		Minimum Velocity (m/s)		1.00				
	Return Period (years)		100		Connection Type		Level Soffits				
Additional Flow (%)		0		Minimum Backdrop Height (m)		0.000					
CV		1.000		Preferred Cover Depth (m)		0.900					
Time of Entry (mins)		4.00		Include Intermediate Ground		✓					
Maximum Time of Concentration (mins)		30.00		Enforce best practice design rules		✓					
Maximum Rainfall (mm/hr)		50.0									
Nodes											
Name		Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)			
SWMH 01		0.006	4.00	69.700	450	525132.719	233536.362	0.995			
SWMH 02		0.006	4.00	69.750	450	525124.662	233530.699	1.143			
SWMH 03				69.750	450	525120.226	233527.582	1.197			
SWMH 04		0.005	4.00	69.750	450	525115.668	233524.379	1.253			
SWMH 05				69.750	450	525111.568	233521.497	1.303			
SWMH 06				69.750	450	525105.961	233517.903	1.370			
SWMH 07				69.550	450	525102.875	233521.800	1.220			
SWMH 08				69.350	450	525097.236	233526.484	1.093			
SWMH 09				69.200	600	525086.268	233535.802	1.087			
SWMH 12		0.005	4.00	69.650	450	525113.288	233537.897	0.750			
SWMH 13		0.005	4.00	69.650	450	525104.453	233531.688	0.858			
SWMH 14		0.005	4.00	69.200	450	525081.634	233564.721	0.750			
SWMH 15				69.200	450	525090.443	233556.788	0.915			
SWMH 16				69.200	450	525083.244	233547.850	1.030			
SWMH 17				69.200	600	525087.890	233544.108	1.090			
SWMH 18		0.005	4.00	69.200	450	525066.504	233545.768	0.750			
SWMH 19				69.200	450	525076.020	233538.882	0.867			
SWMH 20		0.011	4.00	69.200	450	525074.026	233555.275	0.750			
TANK				69.200	1	525088.669	233543.481	1.100			
GOST		0.000		69.200	1			0.610			
Links											
Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SWMH 14	SWMH 15	11.855	0.600	68.450	68.285	0.165	71.8	150	4.17	50.0
1.001	SWMH 15	SWMH 16	11.477	0.600	68.285	68.170	0.115	99.8	150	4.36	50.0
1.002	SWMH 16	SWMH 17	5.966	0.600	68.170	68.110	0.060	99.4	150	4.49	50.0
1.003	SWMH 17	TANK	1.000	0.600	68.110	68.100	0.010	100.0	150	4.50	50.0
1.004	TANK	GOST	1.000	0.600	68.600	68.590	0.010	100.0	100	5.02	50.0
Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)		
1.000	SWMH 14	SWMH 15	1.187	21.0	0.9	0.600	0.765	0.005	0.0		
1.001	SWMH 15	SWMH 16	1.006	17.8	0.9	0.765	0.880	0.005	0.0		
1.002	SWMH 16	SWMH 17	1.007	17.8	3.8	0.880	0.940	0.021	0.0		
1.003	SWMH 17	TANK	1.005	17.8	3.8	0.940	0.950	0.021	0.0		
1.004	TANK	GOST	0.769	6.0	8.7	0.500	0.510	0.048	0.0		
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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	11.855	71.8	150	Circular	69.200	68.450	0.600	69.200	68.285	0.765
1.001	11.477	99.8	150	Circular	69.200	68.285	0.765	69.200	68.170	0.880
1.002	5.966	99.4	150	Circular	69.200	68.170	0.880	69.200	68.110	0.940
1.003	1.000	100.0	150	Circular	69.200	68.110	0.940	69.200	68.100	0.950
1.004	1.000	100.0	100	Circular	69.200	68.600	0.500	69.200	68.590	0.510
2.000	11.746	100.4	150	Circular	69.200	68.450	0.600	69.200	68.333	0.717
2.001	11.516	101.9	150	Circular	69.200	68.333	0.717	69.200	68.220	0.830
3.000	11.836	51.5	150	Circular	69.200	68.450	0.600	69.200	68.220	0.830
4.000	9.848	100.5	150	Circular	69.700	68.705	0.845	69.750	68.607	0.993
4.001	5.422	100.4	150	Circular	69.750	68.607	0.993	69.750	68.553	1.047
4.002	5.571	99.5	150	Circular	69.750	68.553	1.047	69.750	68.497	1.103
4.003	5.012	100.2	150	Circular	69.750	68.497	1.103	69.750	68.447	1.153
4.004	6.660	99.4	150	Circular	69.750	68.447	1.153	69.750	68.380	1.220
4.005	4.971	99.4	150	Circular	69.750	68.380	1.220	69.550	68.330	1.070
4.006	7.331	100.4	150	Circular	69.550	68.330	1.070	69.350	68.257	0.943
4.007	14.392	99.9	150	Circular	69.350	68.257	0.943	69.200	68.113	0.937
4.008	1.156	88.9	150	Circular	69.200	68.113	0.937	69.200	68.100	0.950
5.000	10.799	100.0	150	Circular	69.650	68.900	0.600	69.650	68.792	0.708
5.001	8.898	18.3	150	Circular	69.650	68.792	0.708	69.350	68.307	0.893

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SWMH 14	450	Manhole	Adoptable	SWMH 15	450	Manhole	Adoptable
1.001	SWMH 15	450	Manhole	Adoptable	SWMH 16	450	Manhole	Adoptable
1.002	SWMH 16	450	Manhole	Adoptable	SWMH 17	600	Manhole	Adoptable
1.003	SWMH 17	600	Manhole	Adoptable	TANK	1	Manhole	Adoptable
1.004	TANK	1	Manhole	Adoptable	GOST	1	Manhole	Adoptable
2.000	SWMH 18	450	Manhole	Adoptable	SWMH 19	450	Manhole	Adoptable
2.001	SWMH 19	450	Manhole	Adoptable	SWMH 16	450	Manhole	Adoptable
3.000	SWMH 20	450	Manhole	Adoptable	SWMH 16	450	Manhole	Adoptable
4.000	SWMH 01	450	Manhole	Adoptable	SWMH 02	450	Manhole	Adoptable
4.001	SWMH 02	450	Manhole	Adoptable	SWMH 03	450	Manhole	Adoptable
4.002	SWMH 03	450	Manhole	Adoptable	SWMH 04	450	Manhole	Adoptable
4.003	SWMH 04	450	Manhole	Adoptable	SWMH 05	450	Manhole	Adoptable
4.004	SWMH 05	450	Manhole	Adoptable	SWMH 06	450	Manhole	Adoptable
4.005	SWMH 06	450	Manhole	Adoptable	SWMH 07	450	Manhole	Adoptable
4.006	SWMH 07	450	Manhole	Adoptable	SWMH 08	450	Manhole	Adoptable
4.007	SWMH 08	450	Manhole	Adoptable	SWMH 09	600	Manhole	Adoptable
4.008	SWMH 09	600	Manhole	Adoptable	TANK	1	Manhole	Adoptable
5.000	SWMH 12	450	Manhole	Adoptable	SWMH 13	450	Manhole	Adoptable
5.001	SWMH 13	450	Manhole	Adoptable	SWMH 08	450	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x
Rainfall Events	Consecutive	Drain Down Time (mins)	1440
Summer CV	1.000	Additional Storage (m³/ha)	0.0
Additional Area (A %)	0	Starting Level (m)	
Additional Flow (Q %)	10	Check Discharge Rate(s)	x
Analysis Speed	Normal	Check Discharge Volume	x

Time Offset (mins)	Duration (mins)	Return Period (years)	Climate Change (CC %)	Time Offset (mins)	Duration (mins)	Return Period (years)	Climate Change (CC %)
0	1440	30	40	1440	1440	10	0

Node TANK Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00360	Invert Level (m)	68.100	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.00360	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	10.000	Number Required	1
Porosity	0.95	Pit Length (m)	12.000		

Results for Consecutive Rainfall Critical Storm Duration. Lowest mass balance: 98.25%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440-1440	SWMH 01	750	68.719	0.014	0.3	0.0022	0.0000	OK
1440-1440	SWMH 02	750	68.626	0.019	0.6	0.0031	0.0000	OK
1440-1440	SWMH 03	750	68.572	0.019	0.6	0.0030	0.0000	OK
1440-1440	SWMH 04	750	68.519	0.022	0.8	0.0036	0.0000	OK
1440-1440	SWMH 05	750	68.469	0.022	0.8	0.0035	0.0000	OK
1440-1440	SWMH 06	3900	68.451	0.071	0.8	0.0113	0.0000	OK
1440-1440	SWMH 07	3900	68.451	0.121	0.8	0.0192	0.0000	OK
1440-1440	SWMH 08	3900	68.451	0.194	1.2	0.0308	0.0000	SURCHARGED
1440-1440	SWMH 09	3870	68.451	0.338	1.2	0.0956	0.0000	SURCHARGED
1440-1440	SWMH 12	720	68.911	0.011	0.2	0.0018	0.0000	OK
1440-1440	SWMH 13	720	68.803	0.011	0.4	0.0017	0.0000	OK
1440-1440	SWMH 14	720	68.460	0.010	0.2	0.0017	0.0000	OK
1440-1440	SWMH 15	3870	68.451	0.166	0.2	0.0263	0.0000	SURCHARGED
1440-1440	SWMH 16	3870	68.452	0.282	0.9	0.0448	0.0000	SURCHARGED
1440-1440	SWMH 17	3870	68.451	0.341	0.9	0.0966	0.0000	SURCHARGED
1440-1440	SWMH 18	750	68.461	0.011	0.2	0.0018	0.0000	OK
1440-1440	SWMH 19	3900	68.451	0.118	0.2	0.0187	0.0000	OK
1440-1440	SWMH 20	720	68.465	0.015	0.5	0.0024	0.0000	OK
1440-1440	TANK	3870	68.451	0.351	2.0	39.9991	0.0000	OK
1440-1440	GOST	30	68.590	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440-1440	SWMH 01	4.000	SWMH 02	0.3	0.286	0.017	0.0104	
1440-1440	SWMH 02	4.001	SWMH 03	0.6	0.457	0.034	0.0071	
1440-1440	SWMH 03	4.002	SWMH 04	0.6	0.410	0.034	0.0082	
1440-1440	SWMH 04	4.003	SWMH 05	0.8	0.492	0.045	0.0082	
1440-1440	SWMH 05	4.004	SWMH 06	0.8	0.492	0.045	0.0277	
1440-1440	SWMH 06	4.005	SWMH 07	0.8	0.499	0.045	0.0581	
1440-1440	SWMH 07	4.006	SWMH 08	0.8	0.439	0.045	0.1203	
1440-1440	SWMH 08	4.007	SWMH 09	1.2	0.415	0.068	0.2534	
1440-1440	SWMH 09	4.008	TANK	1.2	0.365	0.062	0.0204	
1440-1440	SWMH 12	5.000	SWMH 13	0.2	0.346	0.011	0.0062	
1440-1440	SWMH 13	5.001	SWMH 08	0.4	0.741	0.010	0.0772	
1440-1440	SWMH 14	1.000	SWMH 15	0.2	0.355	0.010	0.1063	
1440-1440	SWMH 15	1.001	SWMH 16	0.2	0.177	0.011	0.2021	
1440-1440	SWMH 16	1.002	SWMH 17	0.9	0.352	0.048	0.1050	
1440-1440	SWMH 17	1.003	TANK	0.9	0.605	0.049	0.0176	
1440-1440	SWMH 18	2.000	SWMH 19	0.2	0.332	0.011	0.0873	
1440-1440	SWMH 19	2.001	SWMH 16	0.2	0.328	0.012	0.1868	
1440-1440	SWMH 20	3.000	SWMH 16	0.5	0.547	0.020	0.1079	
1440-1440	TANK	1.004	GOST	0.0	0.000	0.000	0.0000	0.0
1440-1440	TANK	Infiltration		0.1				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.000
CV	1.000	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Permeable Paving	0.001	69.200	1	1.000	1.000	0.625

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	3000	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	40	0	0
100	40	0	0

Node Permeable Paving Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00360	Invert Level (m)	68.575	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00360	Time to half empty (mins)	1348	Depth (m)	0.525
Safety Factor	2.0	Width (m)	3.163	Inf Depth (m)	
Porosity	0.30	Length (m)	3.163		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	Permeable Paving	21	68.616	0.041	0.1	0.0087	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)					
30 minute summer	Permeable Paving	Infiltration	0.0					

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	Permeable Paving	240	68.987	0.412	0.1	0.5112	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)					
360 minute winter	Permeable Paving	Infiltration	0.0					

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	Permeable Paving	312	69.040	0.465	0.1	0.6444	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)					
480 minute winter	Permeable Paving	Infiltration	0.0					

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.000
CV	1.000	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Permeable Paving	0.001	69.200	1	1.000	1.000	0.625

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x
Rainfall Events	Consecutive	Drain Down Time (mins)	3000
Summer CV	1.000	Additional Storage (m³/ha)	0.0
Additional Area (A %)	0	Starting Level (m)	
Additional Flow (Q %)	10	Check Discharge Rate(s)	x
Analysis Speed	Normal	Check Discharge Volume	x

Time Offset (mins)	Duration (mins)	Return Period (years)	Climate Change (CC %)	Time Offset (mins)	Duration (mins)	Return Period (years)	Climate Change (CC %)
0	1440	30	40	1440	1440	10	0

Node Permeable Paving Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00360	Invert Level (m)	68.575	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00360	Time to half empty (mins)	1348	Depth (m)	0.525
Safety Factor	2.0	Width (m)	3.163	Inf Depth (m)	
Porosity	0.30	Length (m)	3.163		

Results for Consecutive Rainfall Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440-1440	Permeable Paving	30	68.575	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)		US Node		Link	Outflow (l/s)			
1440-1440		Permeable Paving		Infiltration	0.0			