

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

Land at Malmesbury Road, Cricklade, Wiltshire, SN6 6EZ



Prepared for: Mac Mic Strategic Land
Ref: 002_4250451_ML_Flood Risk Assessment

Document History

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1.0 Introduction

Purpose

- 1.1 Glanville has been appointed by Mac Mic Strategic Land Ltd, hereafter referred to as 'the applicant', to produce a Flood Risk Assessment (FRA) and Drainage Statement to support the Outline planning application for the proposed 315 dwelling residential development on land to the north of Malmesbury Road in Cricklade, Wiltshire. The location of the site is shown within Figure 1.

Site Location & Description

- 1.2 The proposed 20.72ha site is split into two parcels with the southern parcel (17.22ha) comprising the residential development, whilst the northern parcel (3.50ha) will consist of a SANG (Suitable Alternative Natural Greenspace). The southern parcel is located to the south of Stones Lane, which forms the northern boundary, whilst Common Hill forms the southern boundary. The eastern boundary is formed by the Bloor Homes' 49 dwelling residential development which is currently progressing through an Outline planning application (reference PL/2021/10404). The western boundary is formed by hedgerow separating the site from adjacent grass pasture land.
- 1.3 The northern parcel is sited to the north of Stones Lane, which forms the southern boundary and a former disused railway line, which now comprises National Cycle Route 45, forms the northern boundary. The eastern and western boundaries are formed by mature hedgerow, separating the site from adjacent grass pasture land.
- 1.4 A new vehicular site access will be provided onto Common Hill on the southern boundary and an emergency access onto Stones Lane on the northern boundary of the southern site. A copy of the proposed site layout has been provided within Figure 2.

Responding to the LLFA Comments

- 1.5 The FRA and Drainage Statement submitted as part of the planning application has been updated to provide the additional information requested by the LLFA as part of their consultation response dated 14 May 2026. This revision of the report, therefore, incorporates the following additional information requested by the LLFA, with the bullet point numbers relating to the LLFA's comment numbers:
1. Figure 5 has been updated to clearly show the catchment areas consistent with the greenfield runoff rate calculations. The topographical survey within Figure 3 shows where the high point is located.
 2. Table 5 within Chapter 5 of this report, shows that a 30% betterment against greenfield runoff rates is achievable for all storm events. This is explained further within paragraphs 5.19 and 5.20.
 3. Additional Causeway Flow outputs have been provided within Appendix C to show that the surface water strategy is acceptable. The electronic modelling files can be provided on request.
 4. As outlined within paragraph 5.13, the first 5mm of rainfall will be collected and conveyed to the attenuation ponds. These ponds will have an area which will be permanently wet to ensure that the first 5mm is kept on site and the associated Causeway Flow outputs have been provided within Appendix C.
 5. Figure 6 shows the indicative pipe routes based on the current illustrative layout but these will change as the site layout develops and therefore have not been modelled in detail. Consequently Figure 6 shows the pipe details for the pipes that have been included within the Causeway Flow model.
 6. The Causeway Flow outputs provided within Appendix C show that no flooding on site will occur for a 1:100 year event + climate change.

7. Figure 4 provides the overland flow routes. As the application is an Outline application, the site layout and ground levels will change as part of a future Reserved Matters application as the design is progressed. The overland flows have, however, been determined based on the preliminary road centrelines which have been developed to confirm the feasibility of the gravity connections. The road contours and levels are shown within Figure 4 but will be subject to further level design. More detailed level information can be provided as part of the future Reserved Matters application.

Data Sources

1.6 Data used for this report is as follows:

- Topographical survey, Google Earth observations & historical mapping.
- On-line Flood Maps -. Gov
- Drainage record plans
- Wiltshire Council Strategic Flood Risk Assessment
- Wiltshire Council SuDS proforma
- LFRMS – 2015-2029 – Wiltshire Council
- Wiltshire Council Drainage Betterment Strategy

1.7 All the level information quoted in this report refers to the Ordnance Datum, defined as the mean sea level recorded at Newlyn in Cornwall.

2.0 Flood Risk & SuDS Planning Policy

National Flood Risk Policy

2.1 The National Planning Policy Framework (December 2024) includes policies on planning and flood risk, the most relevant of which are listed below:

- 170 Inappropriate developments 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.
- 173 A sequential risk-based approach should also be taken to individual applications in areas known to be at risk now or in future from any form of flooding, by following the steps set out below.
- 174. Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test.
- 176 Applications for some minor development⁶² and changes of use should also not be subject to the sequential test, nor the exception test set out below, but should still meet the requirements for site-specific flood risk assessments set out in footnote 63. Minor development includes householder development, small non-residential extensions (with a footprint of less than 250m²) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park.

Footnote ⁶³ A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

- 177. Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.
- 178. The application of the exception test should be informed by a strategic or site specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that: a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

181. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment ⁶³. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
 - b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
 - c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
182. Applications which could affect drainage on or around the site should incorporate sustainable drainage systems to control flow rates and reduce volumes of runoff, and which are proportionate to the nature and scale of the proposal. These should provide multifunctional benefits wherever possible, through facilitating improvements in water quality and biodiversity, as well as benefits for amenity. Sustainable drainage systems provided as part of proposals for major development should:
- a) take account of advice from the Lead Local Flood Authority;
 - b) have appropriate proposed minimum operational standards;
 - and c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development.

2.2 In relation to this development, the national flood risk policy is interpreted as follows:

- The development is entirely within Zone 1 and therefore, the development is not subject to The Sequential or Exception test.
- The site area is over 1ha and therefore a Flood Risk Assessment is required.
- The development is greater than 1000m² and therefore qualifies as Major development. SuDS proposals should take account of LLFA requirements and standards aimed at major development.

Local Flood Risk Policy

2.3 Wiltshire Council are the Lead Local Flood Authority (LLFA) and statutory consultee for all Major Development. The LLFA web page includes a proforma covering information required to be submitted with Drainage Statements. This proforma has been provided within Appendix B.

3.0 Existing Conditions and Sources of Flooding

Topography

- 3.1 The site occupies approximately 17 hectares and has two distinct catchment areas. Ground levels range from 107m in the southeast corner of site to 89m in the east and 87m in the north western corner. There are some hedgerows breaking up the fields and hedges making up the site boundary. The surface of the site comprises grass currently used for grazing.

Geology & Ground Conditions

- 3.2 The British Geological Survey indicate the site to have no superficial deposits recorded over Oxford Clay Formation - Mudstone (Bedrock).

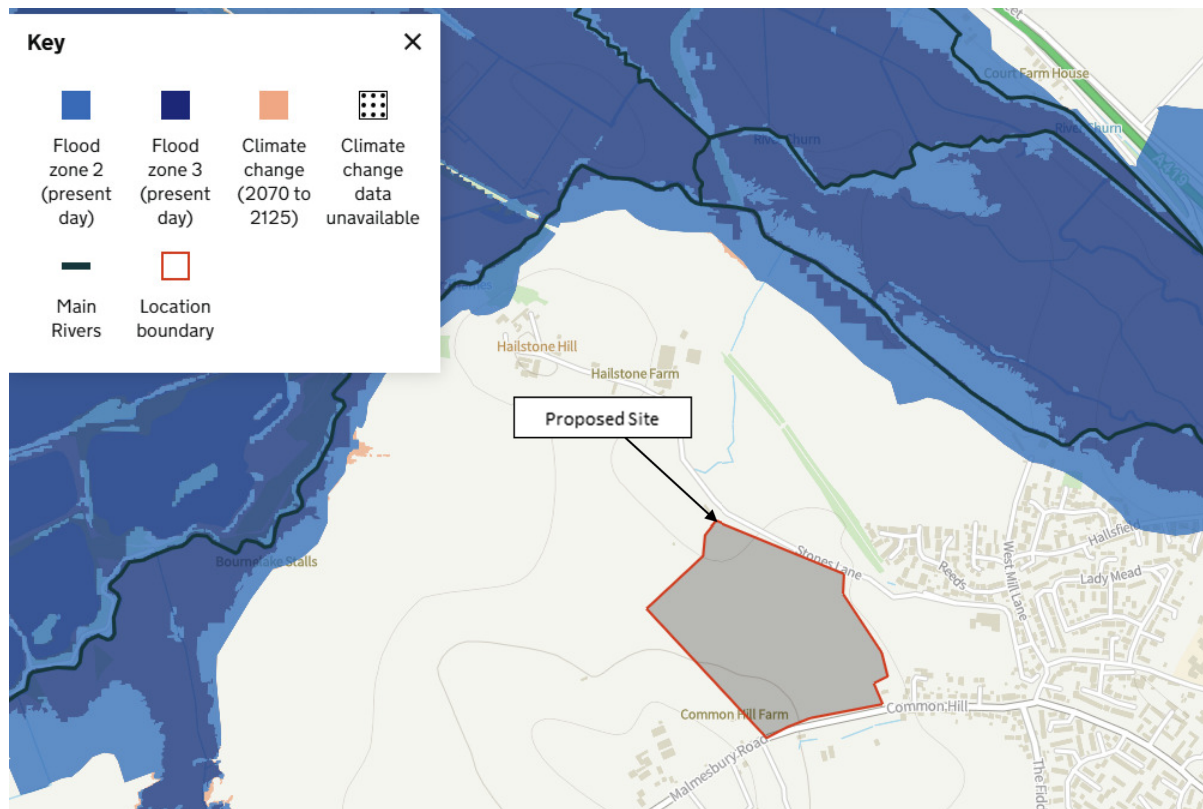
Tidal & Fluvial Flooding

- 3.3 Flood Zone definitions are set out in the National Planning Policy Guidance:
- Flood Zone 1 - land assessed as having a less than 1 in 1,000 annual probabilities 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
 - 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

Note: Flood zones refer to the probability of river and sea flooding, ignoring defences.

3.4 Image 1 shows the site to be located in Flood Zone 1.

Image 1: Gov.UK Fluvial & Tidal Flood Risk Map for Planning (defences ignored)



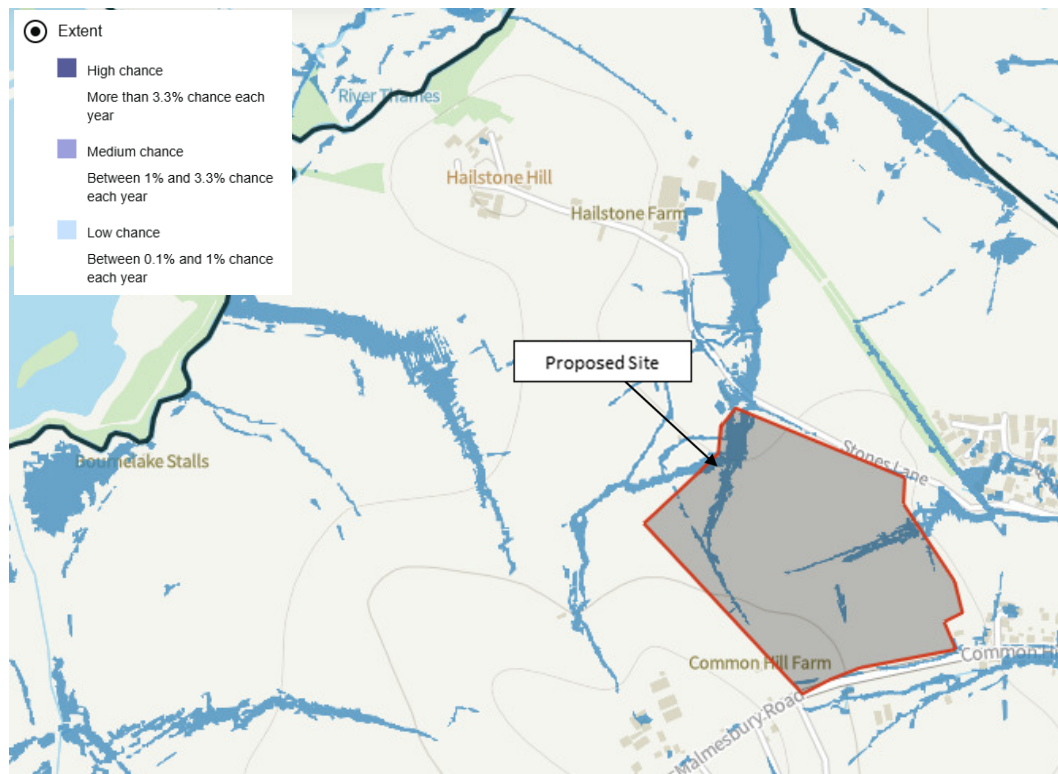
Groundwater Flooding

3.5 The Level-1 SFRA provides a general assessment of groundwater flood risk in Wiltshire, providing a map of 1km² grid areas with varying susceptibility to groundwater. The SFRA Data Explorer provided by Wiltshire Council identifies that the site has a negligible risk from groundwater flooding due to the 'nature of the local geological deposits'. It should be noted that this provides an assessment of the ability for groundwater to emerge (based on ground conditions) and not the probability of occurrence.

Overland (Pluvial) Flooding

3.6 The Gov.uk website, as shown in Image 2, indicates a surface water flood route, running west to east within the site in the 1:30 year event. This flow route follows the existing hedge line and is contained within a ditch feature. The proposed layout has been designed to keep this existing flow route. The additional areas are within low spots along hedge lines within the site, causing localised ponding, but formal drainage will reduce the risk from these areas. The surface water flooding areas around the boundary of the site are caused by highway ditches. There is an area within the northern parcel of the site with low to high flood risk, but the layout has been designed so that there will be no development in this area, with only a SANG being proposed to the north of Stones Lane.

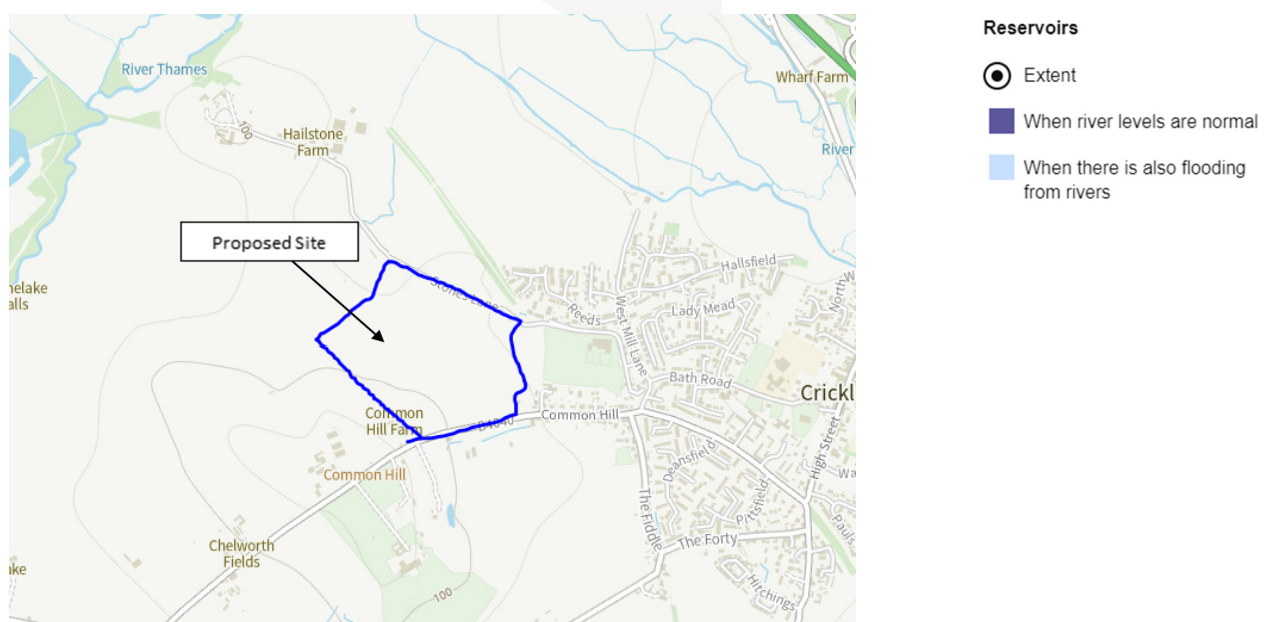
Image 2: Gov.UK Surface Water Flood Risk Map (1:1000yr extent shown)



Flooding from Reservoirs, Canals and other Artificial Sources

- 3.7 The Flood Warning Information Service website indicates the site to be outside the area at risk of reservoir flooding, as shown in Image 3.

Image 3: Gov.UK Reservoir Flood Breach Extent Map



Existing Sewer Flooding

- 3.8 Thames Water asset plans included in Appendix A shows no foul or surface water sewers within the immediate vicinity of the site. The closest sewers are circa 150m to the east of the site and around 5-10m lower than the site. Therefore sewer flooding risk is considered to be low.



4.0 Development Flood Risk

Development Proposals

- 4.1 The proposed development consists of 315 units, and associated roads, driveway, soft landscaping and SuDS features. The illustrative development layout can be seen in Figure 1, however, this may change as part of a future Reserved Matters application.

Flood Risk Management

- 4.2 The development design includes flood risk reducing features which are listed in Table 2. The following sub sections of this chapter describe in more detail each of the potential sources of flooding and how the development design features will reduce these risks.

Table 2: Flood Risk Reducing Design Features

Possible Design Features	Description of Feature	Flood Risk Reduction
Surface levels & FFL	Surfaces drained into the SuDS. Exceedance flow routes are checked to ensure they do not create a flood risk.	Pluvial flooding
SuDS Drainage	1:100 + 40% climate change allowance included within drainage system.	Pluvial /drainage flooding
Flood Resilience Measures	Not required, buildings not expected to flood.	N/A
Flood Compensation	Not required, not developing in floodplain.	N/A
Flow Control Devices	Discharge is to adjacent sewers and attenuation basins, and then an existing watercourse.	Sewer &, fluvial flooding
Safe Pedestrian Escape Route	The site is dry & proposed levels designed to ensure overland surface water flow routes do not create a flood risk.	Pluvial flooding
Safe Escape Route Vehicular	The site is dry & proposed levels designed to ensure overland surface water flow routes do not create a flood risk.	Pluvial flooding
Dry parking area	Proposed levels designed to ensure overland surface water flow routes do not create a flood risk.	Pluvial flooding
Flood Plan & Warning	Not required, development outside floodplain.	N/A

Tidal & Fluvial Flooding

- 4.3 The development is outside of the floodplain and therefore no design features are required to address fluvial flood risks. Hence, the risk of fluvial flooding will remain very low.

Groundwater Flooding

- 4.4 The site level design will ensure that in the unlikely event that any groundwater does flood at surface level, the proposed overland flow routes do not create a risk to the development (refer to Figure 2).

Overland Surface Water Flooding (Pluvial) On Site

- 4.5 The proposed overland flow paths and levels are shown in Figure 4 with the existing flow path shown in Figure 3. As the levels will change as part of the future Reserved Matters application as the site layout develops further, the overland flow routes are based on the indicative road centrelines and contours. In addition, with the improved on-site drainage and raised building FFLs, the site level design will ensure that any pluvial flooding is routed to avoid a risk to the development and to match any existing flow routes through the site. The area of existing flood risk running through the centre of the site will be maintained to enable the continuation of the flow route.

Overland Surface Water Flooding from the Site onto Surrounding Land

- 4.6 The proposed on-site drainage system will be designed to accommodate a 1 in 100 plus 40% climate change rainfall event, without creating a flood hazard. If an exceedance event occurs (greater in magnitude than a 1 in 100 plus climate change storm event) then the existing overland flood routes on and off the site will not be changed by the development, so the development cannot adversely impact surrounding land, as shown in Figures 3, and 4.

Flooding from Reservoirs, Canals and other Artificial Sources

- 4.7 The site is outside the reservoir flood risk area and therefore no design features are necessary to mitigate risk.

Sewer Flooding

- 4.8 The proposed development surface and foul water drainage layouts are shown in Figure 6. The new foul water drainage infrastructure on the site will be designed in accordance with the Building Regulations and therefore no significant flood risk is expected from the proposed on-site foul water drainage.
- 4.9 The new on-site surface water drainage will be designed to accommodate a 1 in 100 year plus 40% climate change event without creating a flood hazard and therefore the risk of flooding is low (see Appendix C for the Causeway Flow outputs).
- 4.10 As there are no existing sewers within the site, there is not expected to be any flooding from existing sewers.

Flood Impacts, Mitigation and Residual Effects

- 4.11 Table 3 below, rates the different flood risks to the development, considering the development design proposals as described in this report. Design proposals are not considered to be mitigation, but any action required in addition to the current design proposals is considered mitigation and listed in the table. We have rated the risks as none, low, medium and high based on our assessment of the facts relating to each source of flooding and the potential hazards.

Table 3: Residual Flood Risk

Type of Flood Risk	Flood Risk Rating				Mitigation required	Mitigation Measure
	None	Low	Med	High		
Tidal / Fluvial Flooding		Low			No	None
Groundwater flooding		Low			No	None
Overland SW flooding from adjacent land		Low			No	None
Overland SW flooding onto adjacent land		Low			No	None
Flooding from reservoirs		Low			No	None
Flooding from sewers		Low			Yes	Normal maintenance of drainage systems



5.0 Proposed Sustainable Drainage

National Standards For SuDS

The National Standards for sustainable drainage systems, which were introduced in July 2025, include the following Standards which need to be followed:

Standard 1: Runoff Destinations

5.1 The National Standards for sustainable drainage systems includes the following drainage hierarchy.

1.2 Runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- priority 1: collected for non-potable use
- priority 2: infiltrated to ground
- priority 3: discharged to an above ground surface water body
- priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- priority 5: discharged to a combined sewer

5.2 This is an outline application and priority 1 requires a greater understanding of the end user's requirements and the final site layout, before the viability of this option can be fully considered. However private water butts can be provided for irrigation of gardens and planting. These, however, have not been included within the drainage calculations.

5.3 A priority 2 solution was ruled out, due to the BGS data showing ground which is likely to have poor infiltration, which was also found in the adjacent Bloor Homes Development FRA.

5.4 A priority 3 solution is possible due to the existing drainage ditch in the north west and a stream within the SANG area north of Stone's Lane.

5.5 Priority 4 and 5 solutions are not required.

Standard 2: management of everyday rainfall (interception)

2.1 Apply a 'SuDS approach' so that at least the first 5mm of rainfall for the majority of rainfall events does not result in runoff from the site to surface waters or piped drainage systems.

2.2 Evidence shall be provided that the approach to managing runoff from 'everyday' rainfall has been developed alongside and in support of the management of runoff quality (standard 4) and the delivery of amenity and biodiversity benefits (standards 5 and 6).

- 5.6 While it is anticipated that there is poor infiltration, full infiltration is not considered to be feasible. Therefore a positive connection will be required. To achieve the required interception, attenuation basins will have unlined areas with high level overflows enabling temporary storage and discharge via infiltration and evapotranspiration.

Standard 3: management of extreme rainfall and flooding

3.1 A 'SuDS approach' shall be adopted to address the management of development runoff during extreme rainfall, including allowances for climate change and urban creep to:

- protect people and property on the development from flooding of the surface water drainage system
- mitigate any increased flood risk to people and property adjacent to or downstream of the development
- protect the receiving water body from morphological damage or minimise the impact on sewer capacity

3.2 When discharging to an infiltration feature, the system shall be appropriately sized to accommodate the design event based on ground conditions and contributing areas.

3.3 When discharging to an above ground surface water body, sewer or other piped drainage system, the surface water runoff (rate and volume) for the 1% annual exceedance probability (AEP) event shall be controlled to ensure the runoff from the development does not increase flood risk elsewhere.

3.4 When discharging to an above ground surface water body, sewer or other piped drainage system, the surface water runoff rate for the 50% AEP event shall be controlled to ensure development runoff from an event of this magnitude has no negative impact.

3.5 Any flooding from the surface water drainage system for events up to the 1% AEP event shall be managed within the development.

3.6 Any flooding from off-site sources for the 1% AEP event should be managed on site or safely routed through the site, ensuring any downstream risks are not increased compared to the pre-development scenario.

3.7 The risks (both on and off the development) associated with flooding from the surface water drainage system for exceedance events greater than the 1% AEP event shall be appropriately managed.

- 5.7 The SuDS features have been designed for no flooding in the 1:100 year plus **40%** climate change event (see Appendix C). 10% urban creep has been included within the calculations see Appendix C5. All offsite flows will be discharged at the theoretical greenfield runoff rate therefore minimizing flows off the site, see Appendices C1 to C4.

Standard 4: Water Quality

4.1 Apply a 'SuDS approach' that protects surface waters, groundwater and coastal waters by managing the quality of the surface water runoff to adequately address water quality risks from the development.

4.2 The proposed SuDS management train(s) shall be based on a robust water quality risk assessment, appropriate to the pollution hazard and sensitivity of receiving waters, reflecting industry recognised guidance^[footnote 21] or other quantitative assessment as agreed with the approving body and permitting requirements^[footnote 22].

- 5.8 The design has only sized the major SuDS features as the scheme is an outline application, however, additional SuDS features will be provided once a layout has been fixed enabling a compliant SuDS management train to be provided. Further details will be provided as part of a future Reserved Matters application.

Standard 5: Amenity

5.1 A 'SuDS approach' shall be adopted that maximises benefits for amenity through the creation of multi-functional places and landscapes.

- 5.9 The design has only sized the major SuDS features as the scheme is an outline application, however, these have been designed in conjunction with the landscape architect to provide attractive features which blend into the landscape and site features. Further details will be provided as part of a future Reserved Matters application.

Standard 6: Biodiversity

6.1 A 'SuDS approach' shall be adopted to ensure the surface water drainage system maximises biodiversity benefits throughout the development lifecycle.

6.2 The surface water drainage system shall add biodiversity value by:

- creating diverse, self-sustaining, resilient local ecosystems^[footnote 34] which contribute to net gains in biodiversity
- supporting and promoting natural local habitat and species, for example, through local nature recovery strategies (LNRS)^[footnote 35]
- contributing to the delivery of local biodiversity strategies
- contributing to habitat connectivity

- 5.10 The design has utilised large attenuation basins with a mix of dry and wet areas to aid in the biodiversity within the site. The basins will be planted and detailed in conjunction with the landscape architect/ecologist. Additional SuDS features will be provided throughout the site aiding in biodiversity. Further details will be provided as part of a future Reserved Matters application when the site layout is fixed.

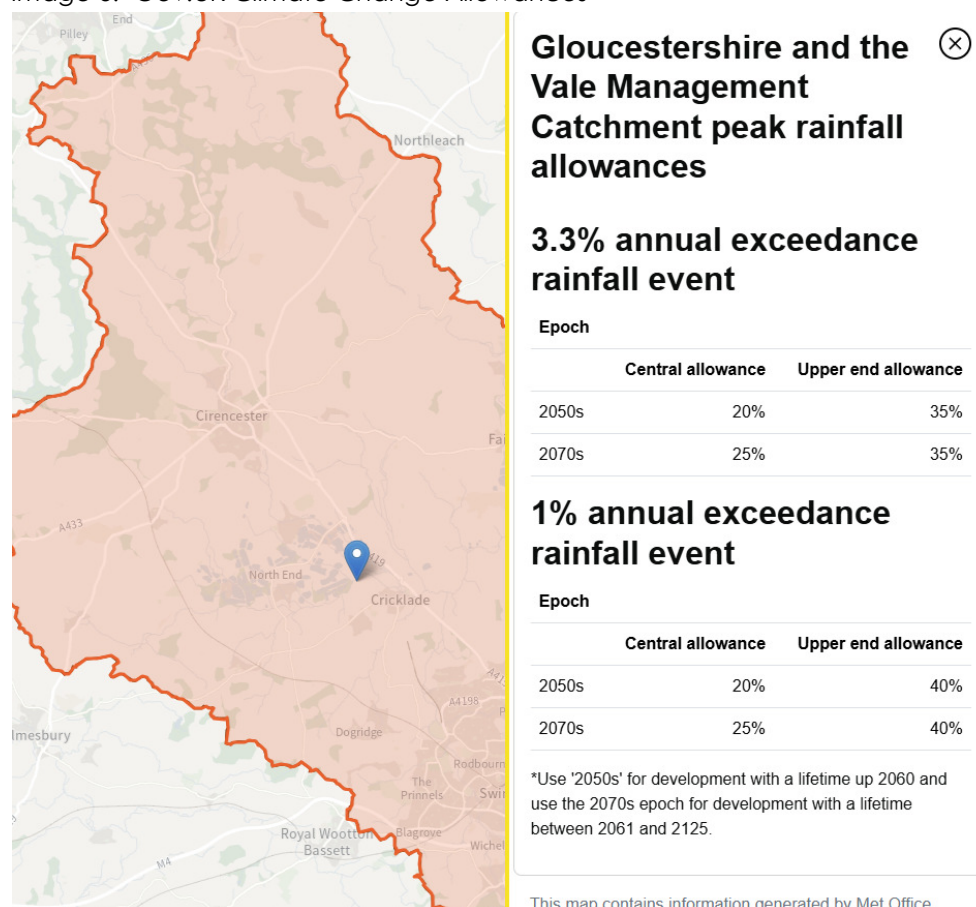
Selected Sustainable Drainage Measures

- 5.11 This FRA also considers the 2025 National Standards for drainage systems (SuDS) and the Wiltshire County Council betterment strategy. The SuDS detailed checklist has been completed, as shown in Appendix B.
- 5.12 The selection of SuDS techniques for this site has followed the SuDS management train concept explained in the SuDS Manual. The concept is to use drainage techniques in series to incrementally reduce pollution, flow rates and volumes. The hierarchy of techniques to be used are as follows:
- Prevention - prevent runoff & pollution e.g. rainwater recycling and road sweeping.
 - Source Control - control runoff at or near its source e.g. local infiltration methods.
 - Site Control - routing water to site controls e.g. pipes to a large detention basin.
 - Regional Control - routing water from several sites to regional controls e.g. pipes to a balancing pond or wetland.
- 5.13 The proposed surface water drainage layout is shown in Figure 6 and includes the following features:
- Rainfall will be collected from roofs with conventional rainwater goods including rainwater butts & discharged into below ground pipework, leading into above ground detention basins.
 - The detention basins are designed to have an area of permanent water to aid in biodiversity, with an additional area unlined providing additional interception within the features. This is required to achieve the first 5mm of rainfall being discharged on site, i.e. without entering the watercourse, see appendix C.
 - Storm events exceeding 5mm, will rise and flow through a flow control device before reaching the outflow pipework, which discharges to the existing land drainage ditch to the north which passes into the SANG area.
 - Additional SuDS features such as raingardens, bioretention areas, tree pits and swales will be included within the parcels during the reserved matters stage.

Climate Change

- 5.14 The climate change allowances map places the site within the 'Gloucestershire and the Vale Management Catchment', as shown in Image 6. The design life for the proposed development is 100 years, but planning practice guidance requires residential development to have a minimum 100-year life for the purpose of climate change assessments which places it within the 2070's epoch. For Flood Risk Assessments, the developments should be designed to cater for 1% annual exceedance and the 'upper end allowance' events so that:
- there is no increase in flood risk elsewhere; and
 - the development will be safe from surface water flooding.
- 5.15 Development drainage should therefore be designed for no flooding in the 1:100 year plus **40%** climate change event.

Image 6: Gov.UK Climate Change Allowances



Flow Rates & Attenuation

- 5.16 The existing greenfield area and the proposed impermeable areas have been calculated and are shown in Figure 5. These areas have been used to calculate the existing and proposed discharge from the site for a range of storm events, as shown in Table 4 overleaf and Appendix C.
- 5.17 As the proposal is at outline stage therefore the exact layout is yet to be determined. Therefore, it is assumed that 60% of the developable areas will be impermeable.
- 5.18 The topography of the site creates two distinct discharge points, one in the northwest and the other in the centre of the eastern boundary see Image 7 overleaf and Figure 5. The Wiltshire Council Drainage Betterment strategy states that discharge should be catchment based. However, the eastern catchment has no defined discharge point. It appears that there may be a shallow ditch within the parcel of land to the east with possible connection under Stones Lane which is then piped into Cricklade. It is not clear if there is any connectivity at all and if the pipe/ditch network is suitable.
- 5.19 As such, it is proposed that all the drainage discharges to the north to the existing ditch in the northwest, see Image 8. This ditch crosses under Stones Lane and into a stream within the development boundary in the SANG area. As there is an increase in area going to the northwest, it is proposed that the site discharge will be controlled to the QBAR rate for just the northwestern catchment area (7.5l/s), including a 30% betterment reducing the flows to 5.25/s. Therefore, the net discharge rate for the whole site will be reduced. This creates between 78% and 94% betterment for the whole site, see Table 5.

Table 4: Existing Flows

Storm Event (Annual Exceedance Probability)	Greenfield Run Off Rate (l/s) whole site (17.19ha) (redline)	North Western Parcel (l/s) (6.29ha) (green)	South Eastern Parcel (l/s) (10.9ha) (yellow)
1 in 2 (QBar)	82.4	32.6	49.8
1 in 30 (3.3% AEP)	214.2	78.4	135.8
1 in 100 (1% AEP)	284.7	104.2	180.5

Image 7: Existing Catchment areas and discharge rates

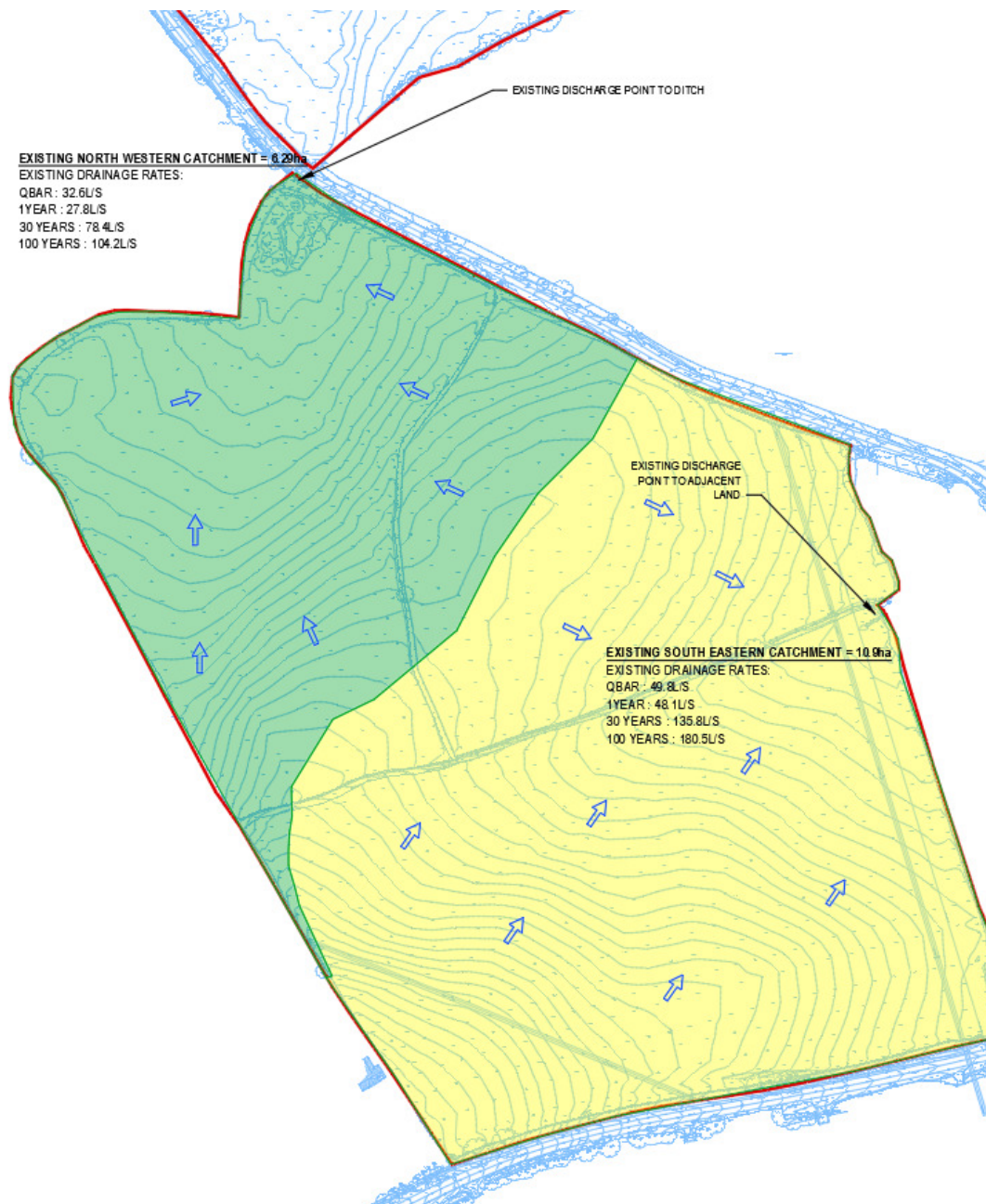
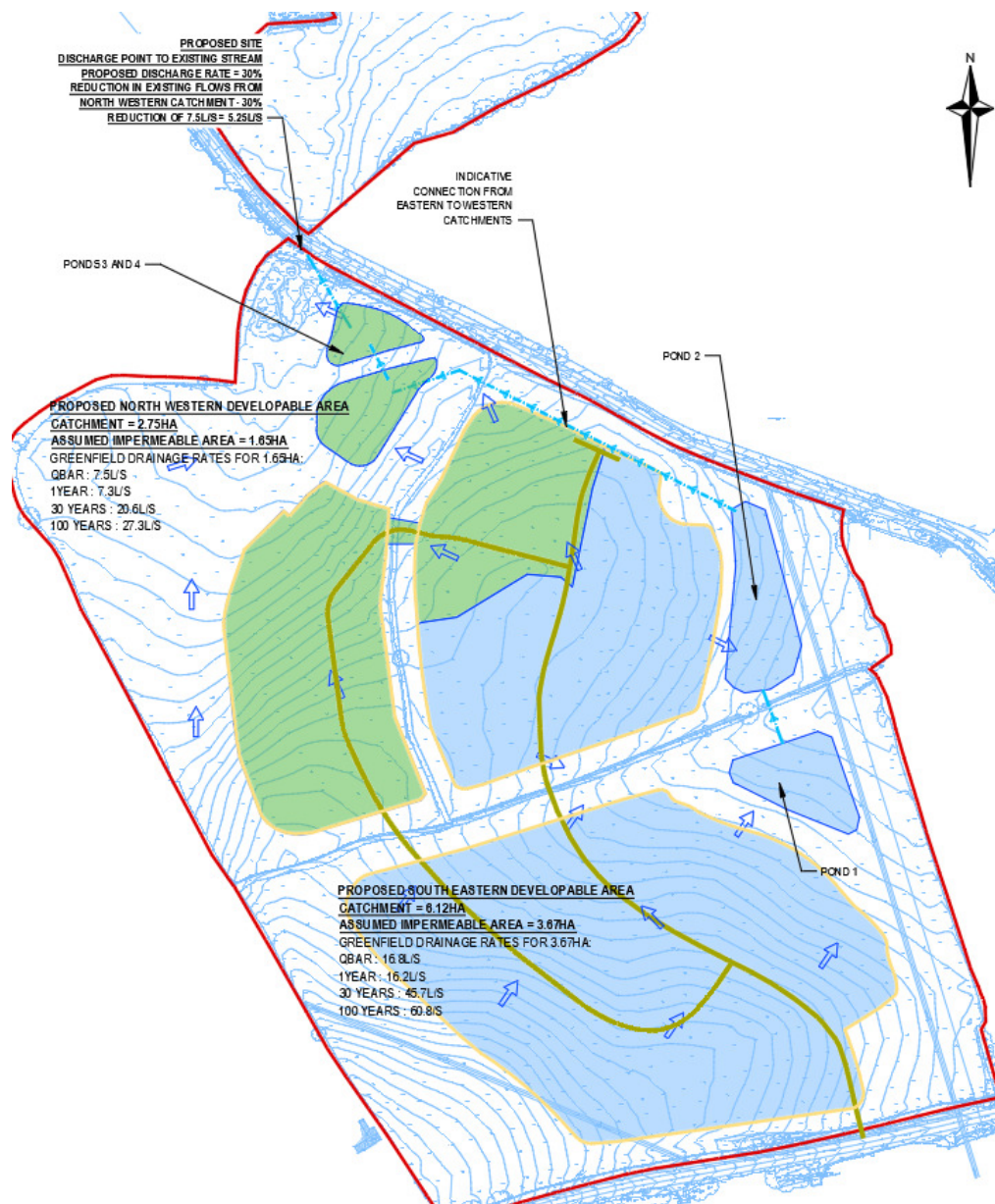


Table 5: Development Flows

Storm Event (Annual Exceedance Probability)	North Western Parcel (l/s) (1.65ha Green)	South Eastern Parcel (3.67ha) (l/s)	Combined Discharge Rate (l/s) (5.32ha)	Proposed Discharge Rate(l/s)	Percentage Betterment (vs combined developed parcels rates)
1 in 2 (QBar)	7.5	16.8	24.3	5.25*	78.4%
1 in 30 (3.3% AEP)	20.6	45.7	66.3	5.25*	92.1%
1 in 100 (1% AEP)	27.3	60.8	88.1	5.25*	94.0%
1 in 100 + 40% CC (1% AEP)	NA	NA	NA	5.25*	NA

*Rounded down to 5.2l/s within the model as Hydro-International Hydrobrake can only be designed to 0.1/l/s

Image 8: Proposed development areas and discharge rates



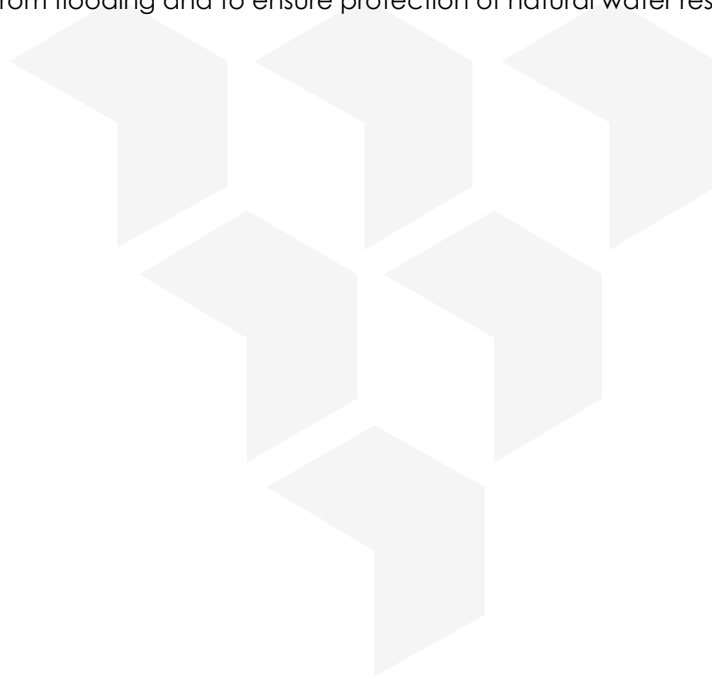
- 5.20 As the site has poor infiltration, it is unable to meet the volume discharge reduction criteria set out in the WCC SuDS proforma. Instead, the development has flows restricted to 50% AEP greenfield run-off rate (Q_{bar}), in accordance with paragraph 3.19 of the National standards for drainage systems (SuDS), with a 30% betterment to align with the Wiltshire Council Drainage Betterment strategy. This is equivalent to the Q_{BAR} rate. The Interception calculations in Appendix C, allow for some infiltration at the measured $1. \times 10^{-7}$ m/sec rate. This is below the standard required for infiltration drainage and is therefore only used to replicate the initial inception. The detention basins have been designed to be sufficient to contain the 1:100 year event plus climate change.
- 5.21 The Causeway Flow model has included 10% urban creep within the calculations.

Foul Water (FW) Drainage Strategy

- 5.1 The development will connect foul water flows, via gravity, to the two pumping stations one in the northeast corner and one in the northwest corner of the southern parcel. Rising mains will connect to a proposed gravity foul water sewer to the south of the site within Common Hill, as shown in Figure 6. The pumping station will be able to control its discharge so that foul water is discharged at quiet times when there is spare capacity.
- 5.2 A pre-application enquiry has been sent to Thames Water. Thames Water have advised there is currently no foul water capacity within their network for the proposed number of dwellings. They are, however, in the process of completing an upgrade to the Cricklade sewage treatment works to increase the capacity of the sewage work. This is due to be completed in Autumn 2026.
- 5.3 Thames Water will carry out additional modelling work, following receipt of planning consent, to determine how to address any additional off-site capacity constraints and to identify the off-site reinforcement required to provide sufficient capacity. As the statutory undertaker, it is their responsibility to provide sufficient capacity for future developments, however, they are only able to undertake the required detailed modelling once planning consent has been granted.

6.0 Further Investigations & Approvals

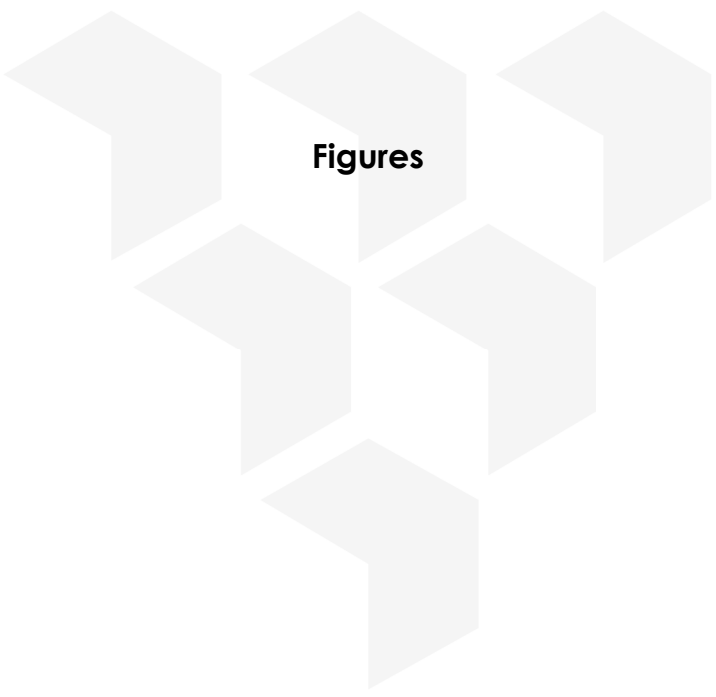
- 6.1 The information in this report is sufficient to demonstrate the suitability of the proposed Outline development in respect of Flood Risk and Sustainable Drainage. It is expected that planning conditions will be imposed requiring drainage proposals to be in accordance with this Flood Risk Assessment, and that details of the on-site foul and surface water drainage designs will need to be provided prior to during the Reserved Matters application.
- 6.2 The detailed drainage design must comply with the Building Regulations and approval will be required from a qualified Building Inspector.
- 6.3 Prior to construction a formal application will need to be submitted to obtain consent for physical connections (direct or indirect) and the discharge of flows to the adopted sewer. This applies to the foul water flows from this development. Land drainage consent will also be required for the surface water connection.
- 6.4 Surface water must be carefully managed on site during construction to safeguard the works and neighbouring land from flooding and to ensure protection of natural water resources and ecology.



7.0 Conclusion

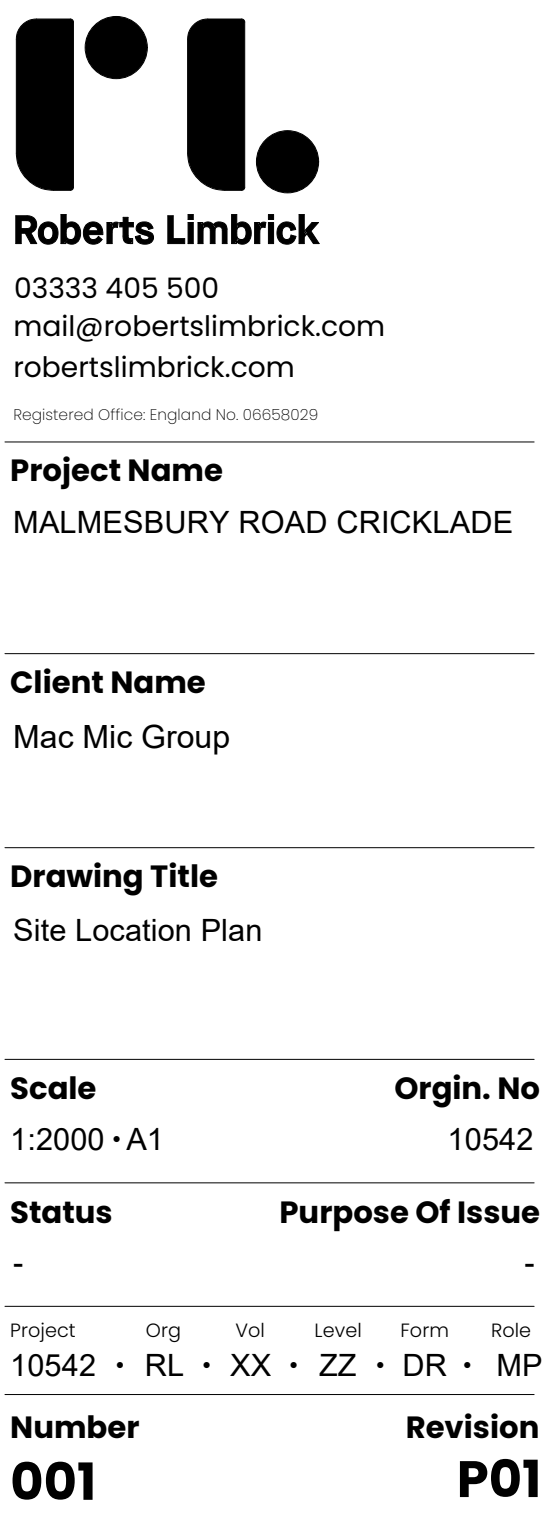
- 7.1 The development proposals have been designed after consideration of national and local planning policy and best practice guidance, in the context of the proposed use and site conditions.
- 7.2 Flood risks within the site have been assessed and are low. The proposed design ensures that flood risks are not increased by the development.
- 7.3 The development's surface water drainage strategy follows sustainable drainage guidance.
- 7.5 The development's foul water drainage strategy utilises pumping stations to take effluent to the existing foul water sewer to the in the east. Thames Water are currently undertaking capacity upgrades to the Cricklade sewage treatment works which are due to be completed in Autumn 2026.
- 7.6 In summary, the development proposals comply with relevant standards for flood risk and sustainable drainage.





Figures

Rev	Date	By	Chk	Description
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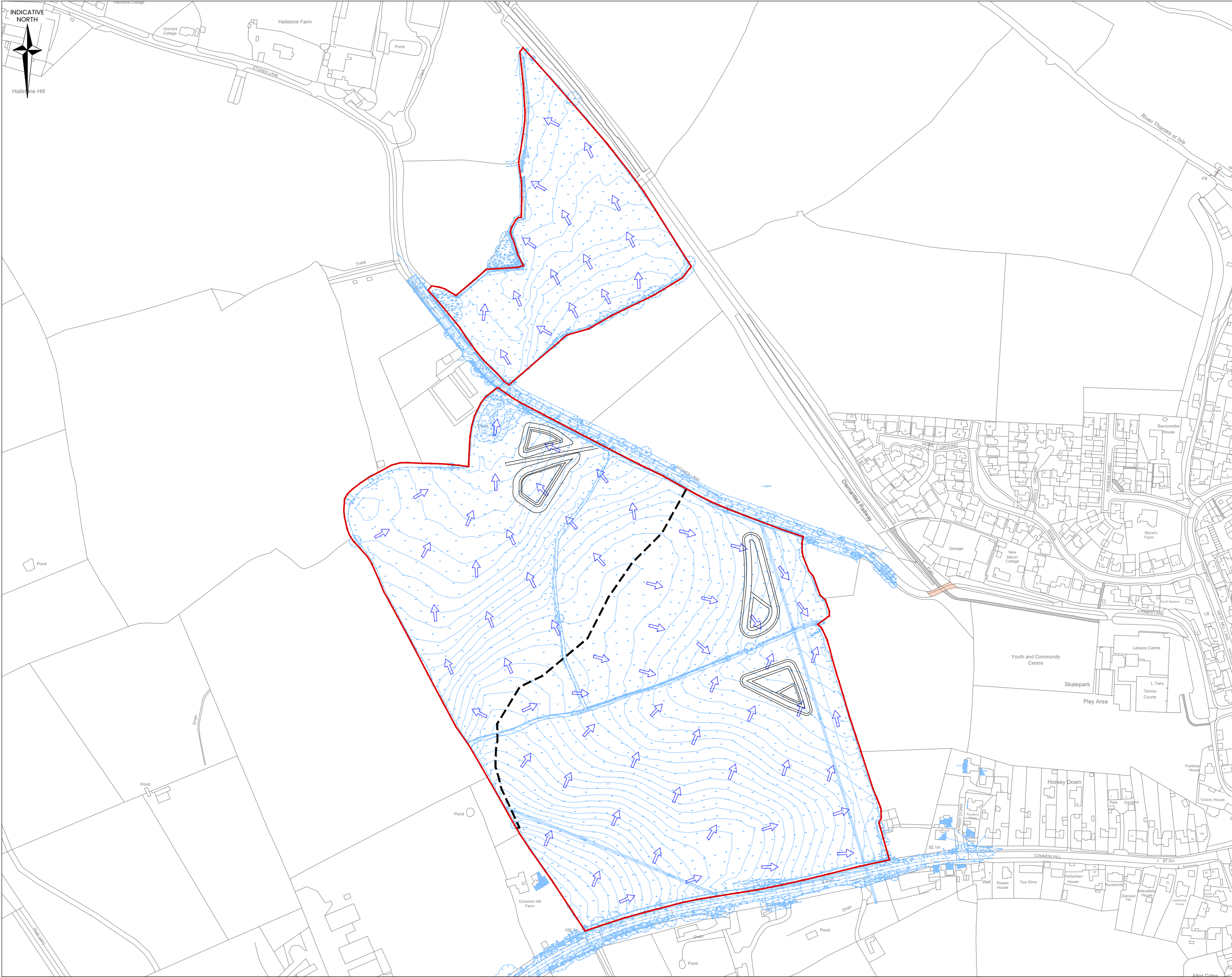
Client Name
Mac Mic Group

Drawing Title
Framework Plan

Scale	Orgin. No
1:1500 • A1	10542

Status	Purpose Of Issue				
-	-				
Project	Org	Vol	Level	Form	Role
10542	RL	XX	ZZ	DR	MF

Number	Revision
0002	03



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KEY

- SITE BOUNDARY
- TOPOGRAPHICAL SURVEY
- ORDNANCE SURVEY
- EXISTING OVERLAND FLOW ROUTE
- EXISTING LOCAL HIGHPOINT

FIGURE 3

P1	FIRST ISSUE	30.06.26	ML	DK
Rev.	Description	Date	By	Chkd

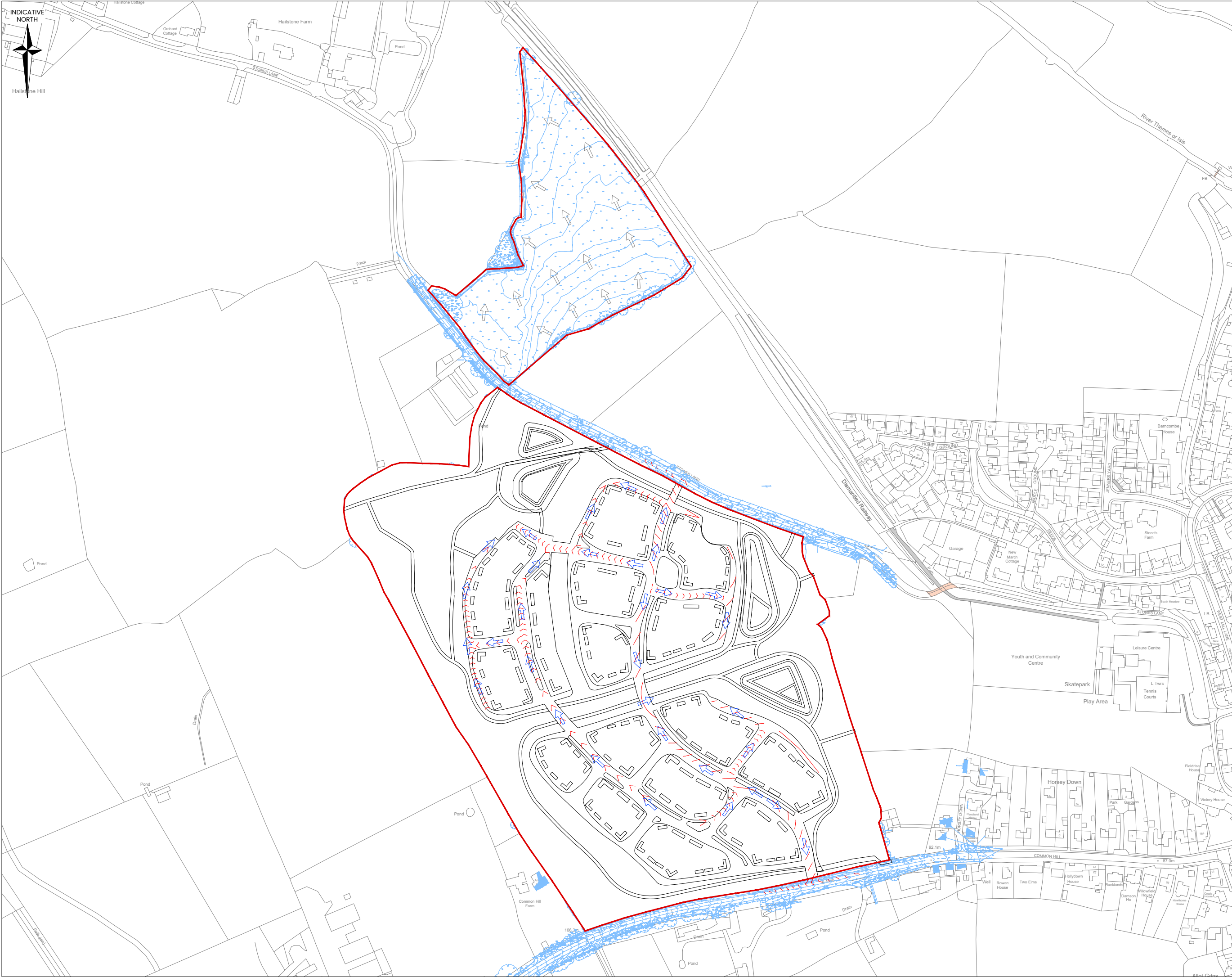
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Survey > Plan > Engineer

Civil Engineering
 Structural Engineering
 Transport Planning

Highways Engineering
 Building Surveying
 Geomatics

Hertfordshire | Oxfordshire | Cambridgeshire | Bristol

Client:	MAC MIC STRATEGIC LAND		
Project:	LAND AT MALMESBURY ROAD, CRICKLADE, SN6 6EZ		
Title:	EXISTING SITE SURVEY AND OVERLAND FLOW ROUTES		
Engineer:	ML	Date:	JUNE 2026
Director:	HG	Scale:	1:1750 @ A1
Status:	PRELIMINARY		
Drawing No.	4250451-SK008	Rev	P1



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FIGURE 4

P1	FIRST ISSUE	17/06/26	ML	DK
Rev.	Description	Date	By	Chkd

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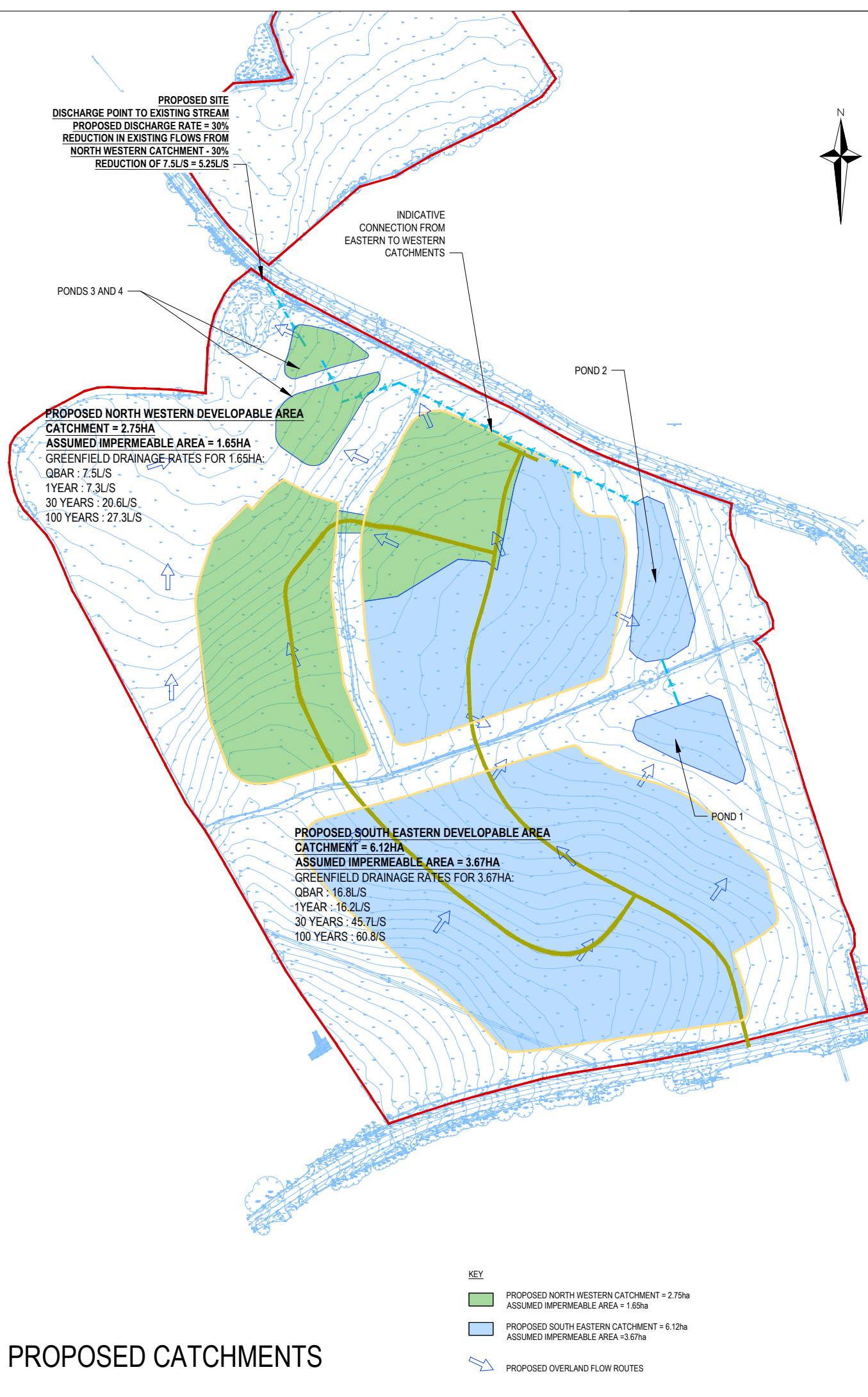
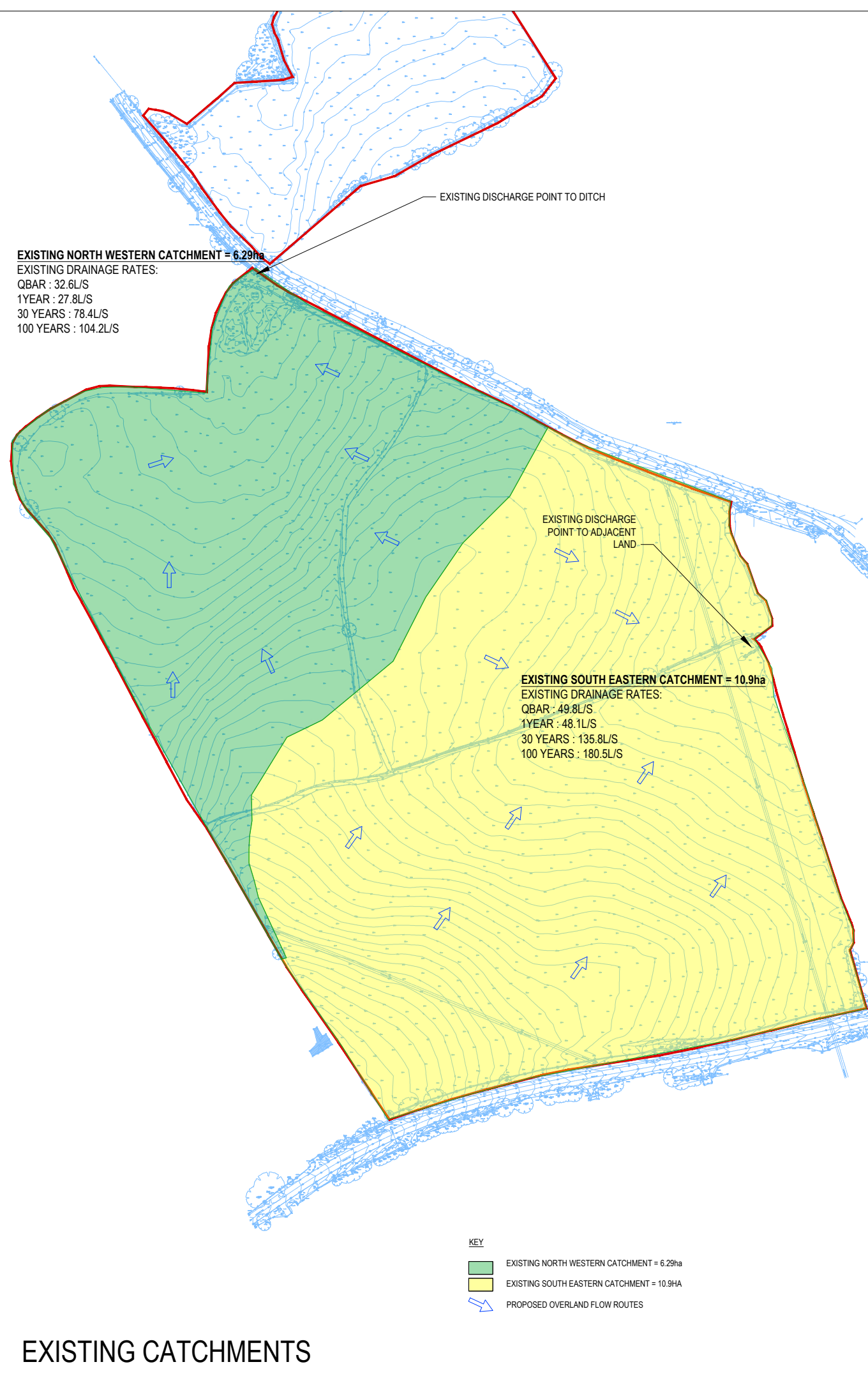
Herfordshire

Oxfordshire

Cambridgeshire

Bristol

Client:	MAC MIC STRATEGIC LAND		
Project:	LAND AT MALMESBURY ROAD, CRICKLADE, SN6 6EZ		
Title:	PROPOSED OVERLAND FLOW ROUTES		
Engineer:	ML	Date:	JUN 2026
Director:	HG	Scale:	NTS
Status:	PRELIMINARY		
Drawing No.	4250451-SK009	Rev	P1



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KEY

- PROPOSED SITE BOUNDARY
- PROPOSED INTERNAL ROAD
- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED/EXISTING OVERLAND FLOW ROUTES

P2	UPDATED WITH ADDITIONAL INFORMATION	17/06/26	ML	DK
P1	FIRST ISSUE	30/01/2026	ML	DK
Rev.	Description	Date	By	Chkd

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Project : **LAND AT MALMESBURY ROAD, CRICKLADE, SN6 6EZ**

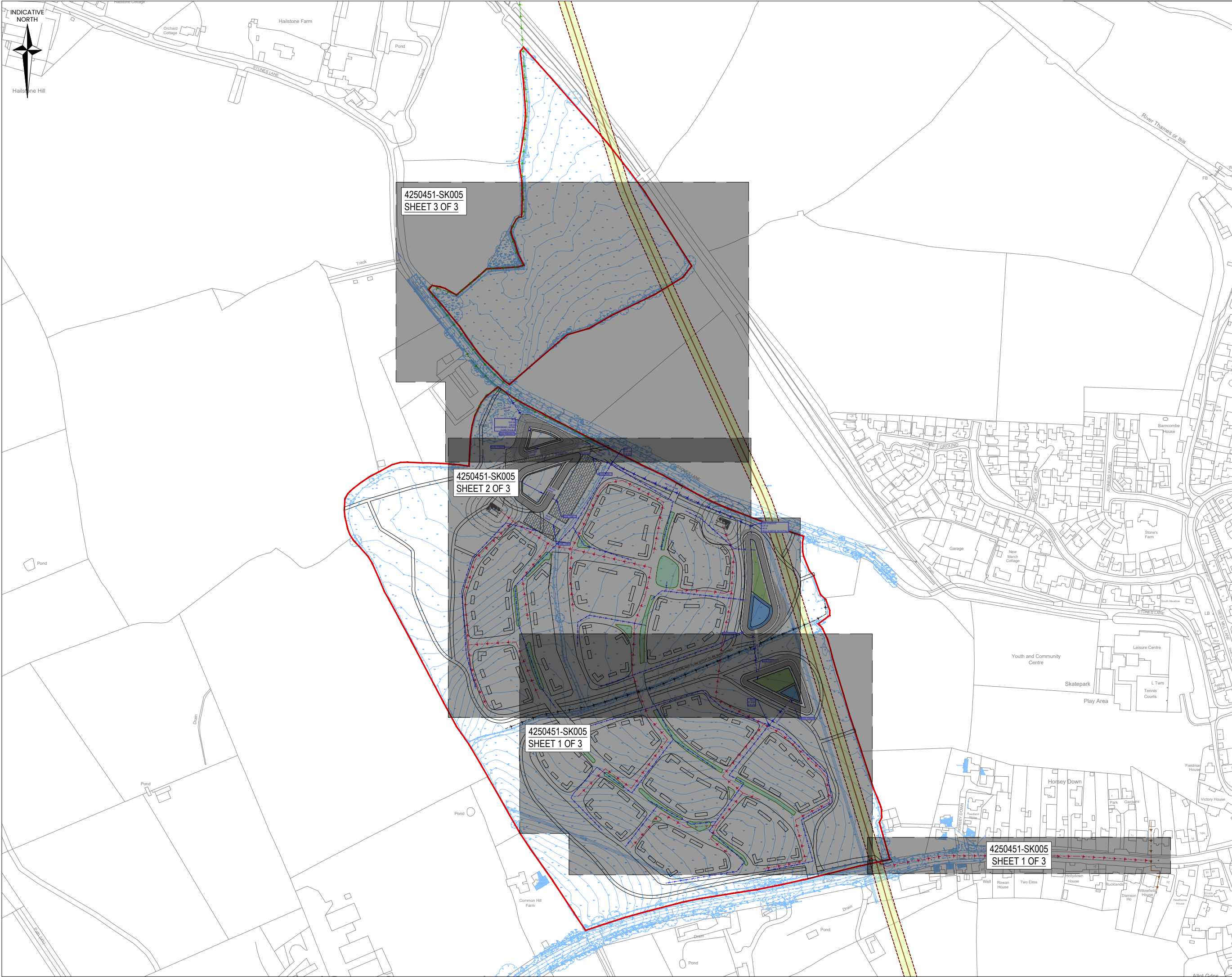
Title : **Catchment/Impereable Areas Plan**

Engineer : ML Date : DECEMBER 2025

Director : HG Scale : NTS

Status : INFORMATION

Drawing No. 4250451-SK006 Rev P2



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KEY

- SITE BOUNDARY
- TOPOGRAPHICAL SURVEY
- ORDNANCE SURVEY
- PROPOSED SITE LAYOUT
- EXISTING OIL PIPELINE AND EASEMENT
- EXISTING THAMES WATER FOUL SEWER
- PROPOSED FOUL SEWER WITH DIRECTION FLOW
- PROPOSED SURFACE WATER SEWER WITH DIRECTIONAL FLOW
- EXISTING OVERLAND DRAINAGE DITCH/PIPE TO BE MAINTAINED
- ATTENUATION BASIN OR POND WITH NO INFILTRATION THROUGH BASE
- ATTENUATION OR POND BASIN WITH INFILTRATION THROUGH BASE
- INDICATIVE POSSIBLE ADDITIONAL SUDS FEATURES

FIGURE 6A

P1	FIRST ISSUE	30.06.26	ML	DK
Rev.	Description	Date	By	Chkd

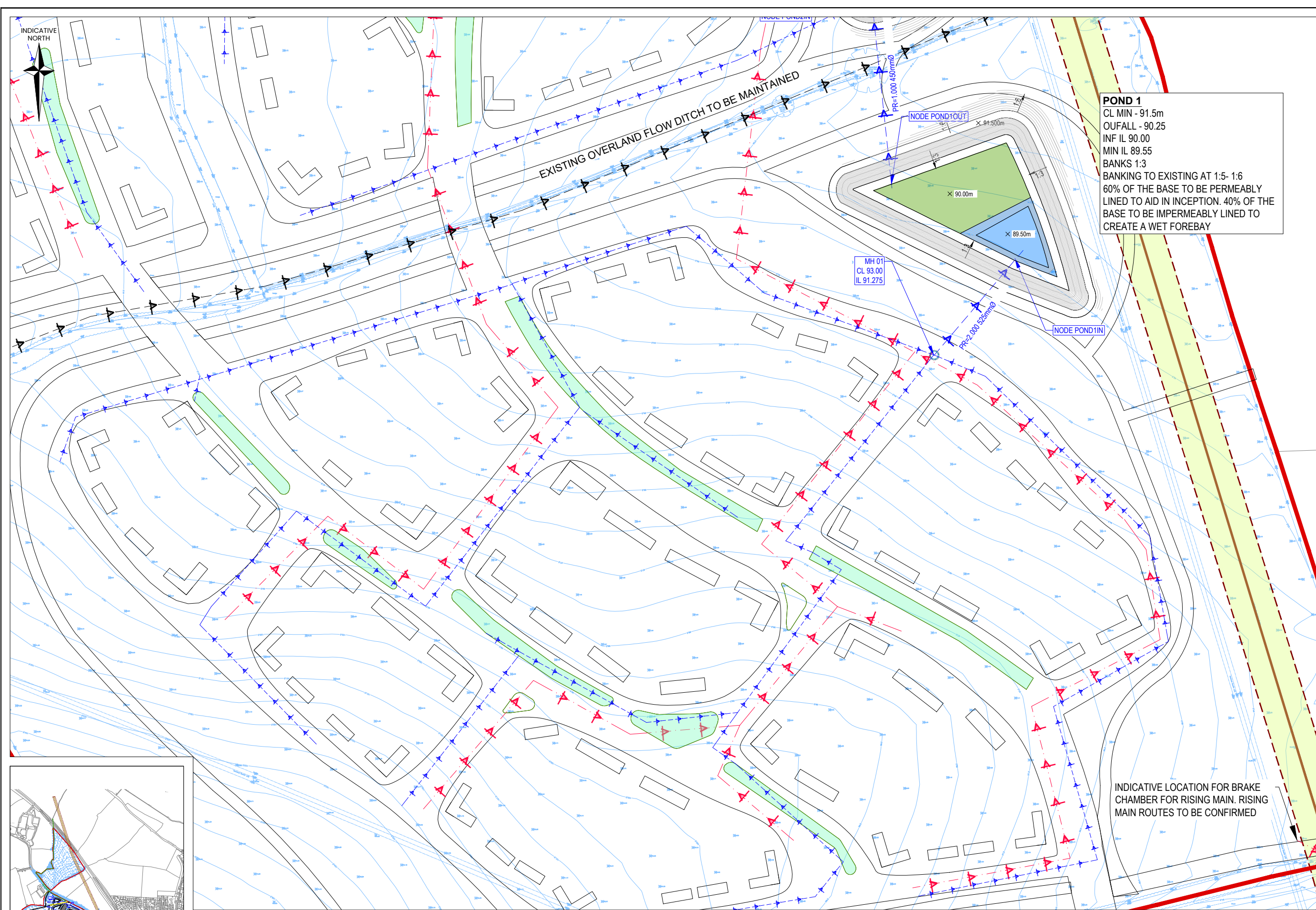
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Client:	MAC MIC STRATEGIC LAND		
Project:	LAND AT MALMESBURY ROAD, CRICKLADE, SN6 6EZ		
Title:	DRAINAGE LAYOUT PLAN		
Engineer:	ML	Date:	JUN 2026
Director:	HG	Scale:	1:1750 @ A1
Status:	PRELIMINARY		
Drawing No.	4250451-SK005	Rev	P1



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- KEY
- SITE BOUNDARY
 - TOPOGRAPHICAL SURVEY
 - ORDNANCE SURVEY
 - PROPOSED SITE LAYOUT
 - EXISTING OIL PIPELINE AND EASEMENT
 - EXISTING THAMES WATER FOUL SEWER
 - PROPOSED FOUL SEWER WITH DIRECTION FLOW
 - PROPOSED SURFACE WATER SEWER WITH DIRECTIONAL FLOW
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 - ATTENUATION BASIN OR POND WITH NO INFILTRATION THROUGH BASE
 - ATTENUATION OR POND BASIN WITH INFILTRATION THROUGH BASE
 - INDICATIVE POSSIBLE ADDITIONAL SUDS FEATURES

FIGURE 6B

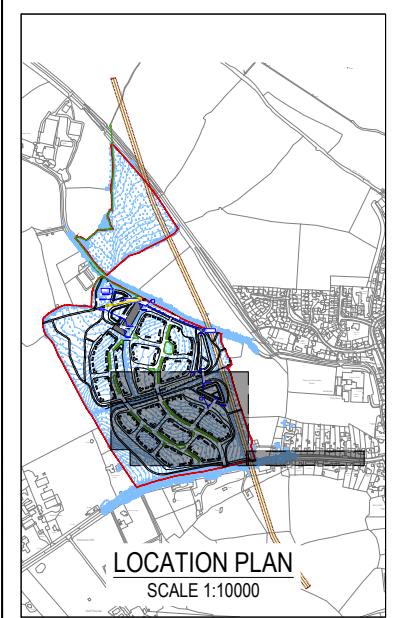
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P1	FIRST ISSUE	30.01.26	ML	DK
Rev.	Description	Date	By	Chkd

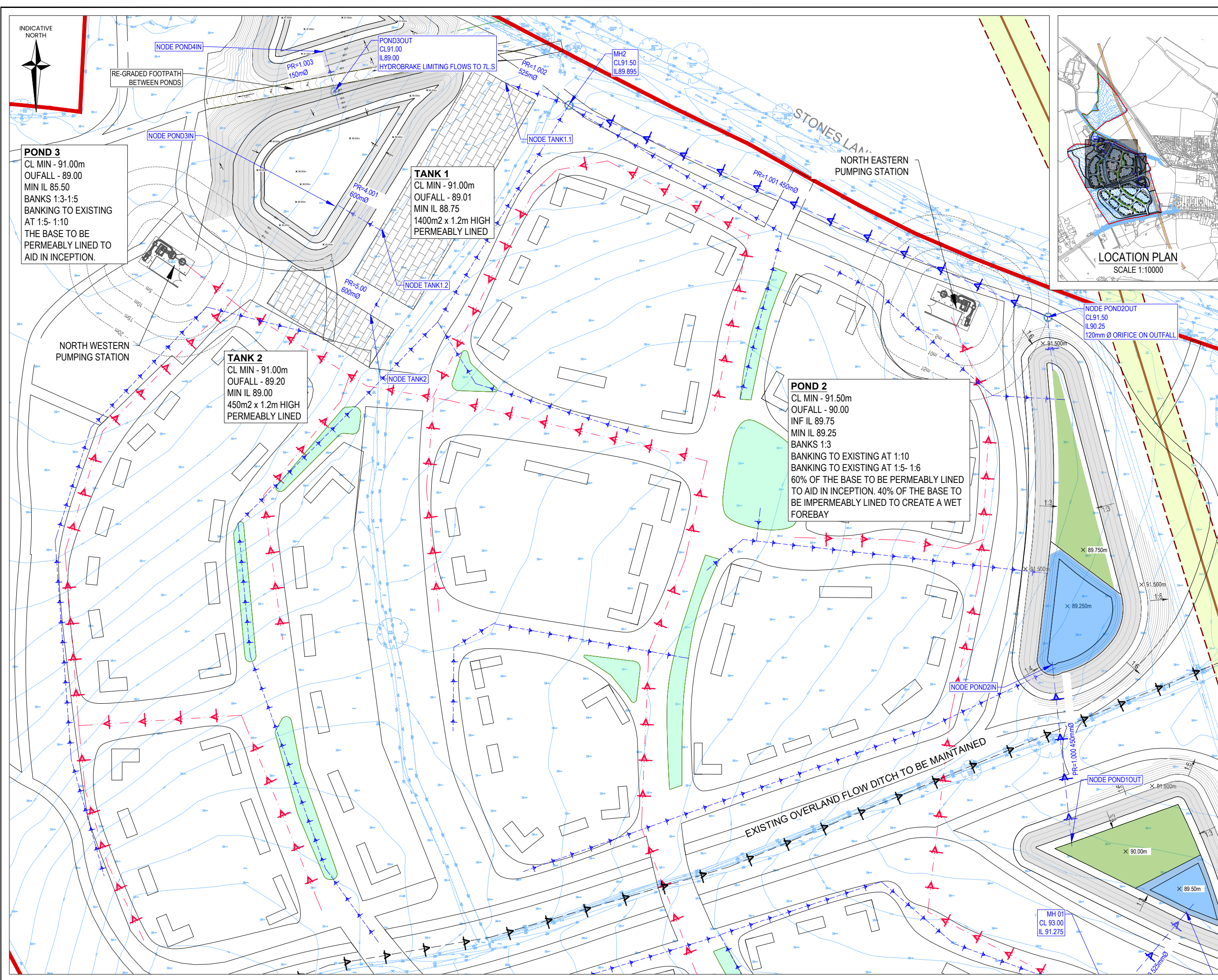
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Project:	LAND AT MALMESBURY ROAD, CRICKLADE, SN6 6EZ		
Title:	DRAINAGE LAYOUT SHEET 1 OF 3		
Engineer:	ML	Date:	DECEMBER 2025
Director:	HG	Scale:	1:500 @ A1
Status:	PRELIMINARY		
Drawing No.	4250451-SK005	Rev	P2





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- EXISTING THAMES WATER FOUL SEWER
- ASSUMED PROPOSED FOUL SEWER WITH DIRECTION FLOW
- ASSUMED PROPOSED SURFACE WATER SEWER WITH DIRECTIONAL FLOW
- EXISTING OVERLAND DRAINAGE DITCH/PIPE TO BE MAINTAINED
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- ATTENUATION OR POND BASIN WITH INFILTRATION THROUGH BASE
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FIGURE 6C

P2	DRAWING UPDATED TO SUIT COMMENTS	30.06.26	ML	DK
P1	FIRST ISSUE	30.01.26	ML	DK
Rev.	Description	Date	By	Chkd

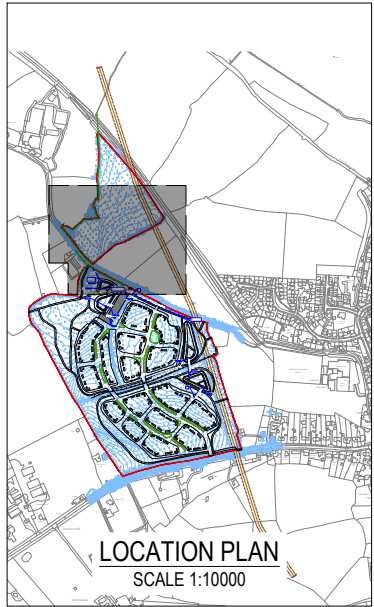
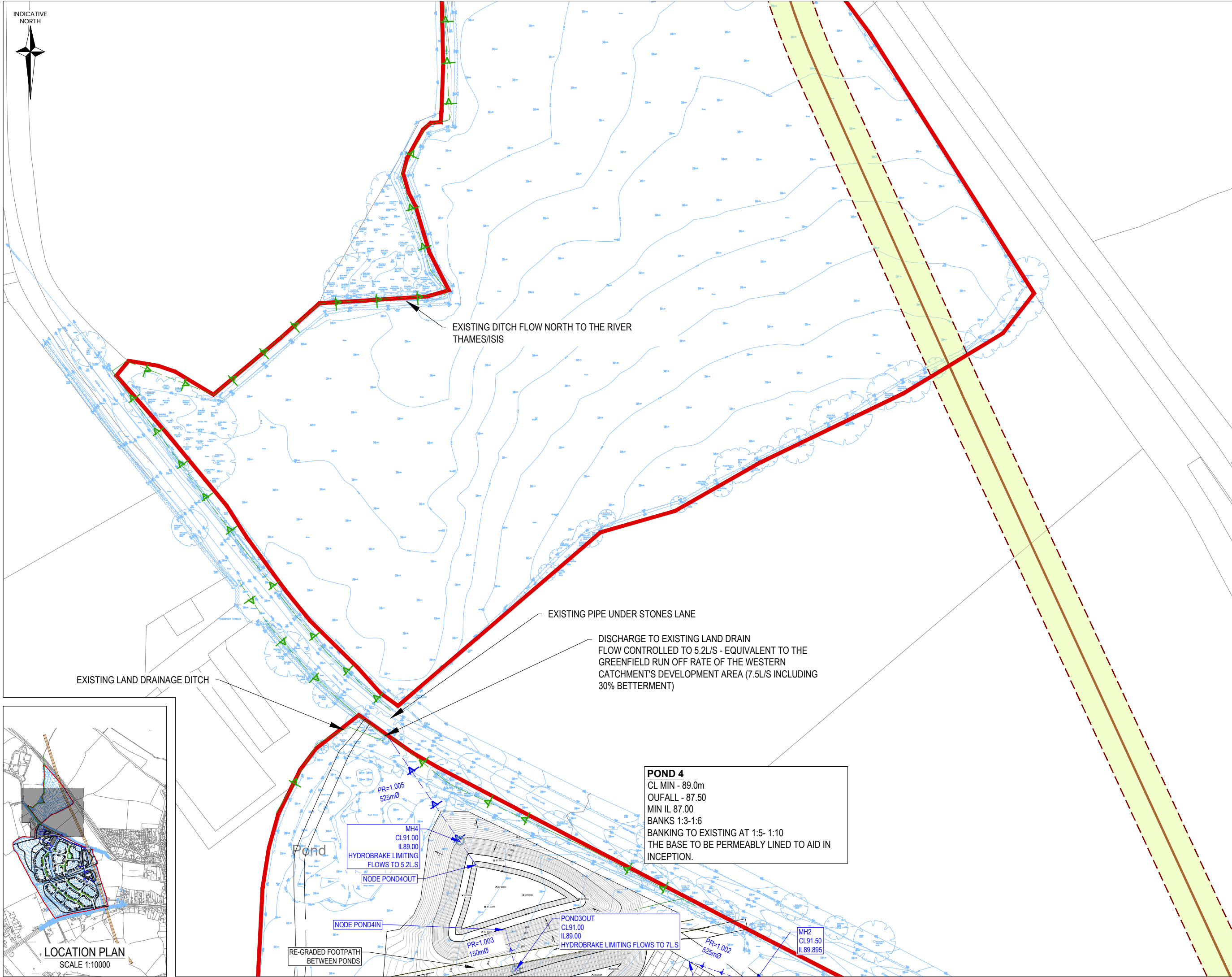
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Engineer:	ML	Date:	DECEMBER 2025
Director:	HG	Scale:	1:500 @ A1
Status:	PRELIMINARY		
Drawing No.	4250451-SK005	Rev	P2



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KEY	
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	ORDNANCE SURVEY
	PROPOSED SITE LAYOUT
	EXISTING OIL PIPELINE AND EASEMENT
	EXISTING THAMES WATER FOUL SEWER
	PROPOSED FOUL SEWER WITH DIRECTION FLOW
	PROPOSED SURFACE WATER SEWER WITH DIRECTIONAL FLOW
	EXISTING OVERLAND DRAINAGE DITCH/PIPE TO BE MAINTAINED
	ATTENUATION BASIN OR POND WITH NO INFILTRATION THROUGH BASE
	ATTENUATION OR POND BASIN WITH INFILTRATION THROUGH BASE
	INDICATIVE POSSIBLE ADDITIONAL SUDS FEATURES

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P1	FIRST ISSUE	30.01.26	ML	D
Rev.	Description	Date	By	Ch



Client:	MAC MIC STRATEGIC LAND		
Project:	LAND AT MALMESBURY ROAD, CRICKLADE, SN6 6EZ		
Title:	DRAINAGE LAYOUT SHEET 3 OF 3		
Engineer:	ML	Date:	DECEMBER 2025
Director:	HG	Scale:	1:500 @ A1
Status:	PRELIMINARY		
Drawing No.	4250451-SK005	Rev	P2



Appendices

Appendix A
Thames Water Asset Plans

Glanville Consultants Ltd
GLANVILLE CONSULTANTS, FIRST F
HEMEL HEMPSTEAD
HP2 7TE

Search address supplied 1
Stones Lane
Cricklade
Swindon
SN6 6JW

Your reference SN6 6JW

Our reference ALS/ALS Standard/2025_5261018

Search date 12 December 2025

Keeping you up-to-date

Notification of price changes

We're changing our report prices from 4th June 2025. The price will increase by 3.5% based on Retail Price Index (RPI).

Find our new prices on our website thameswater.co.uk/property-searches

Any Questions? We're happy to talk through the changes with you – give our Property Searches team a call on 0800 009 4540 .



Thames Water Utilities Ltd
Property Searches,
Clearwater Court, Vastern Road, Reading RG1 8DB



property.searches@thameswater.co.uk
thameswater.co.uk/propertysearches



0800 009 4540

Search address supplied: 1, Stones Lane, Cricklade, Swindon, SN6 6JW

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position and size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the contact details below:

Thames Water Utilities Ltd
Property Searches
Clearwater Court
Vastern Road
Reading
RG1 8DB

Email: property.searches@thameswater.co.uk

Web: thameswater.co.uk/propertysearches

Waste Water Services

Please provide a copy extract from the public sewer map.

The following quartiles have been printed as they fall within Thames' sewerage area:

SU0993NE
SU0994SW
SU0993NW
SU0993SE
SU0993SW

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority. Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners. The public sewer map relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus. The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

The following quartiles have not been printed as they contain no assets:

SU0894SE
SU0994NW
SU0893SE
SU0894NE
SU0893NE

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

The following quartiles have been printed as they fall within Thames' water area:

SU0993NE
SU0994SW
SU0894SE
SU0993NW
SU0993SE
SU0893SE
SU0893NE
SU0993SW

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies. For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

The following quartiles have not been printed as they contain no assets:

SU0994NW
SU0894NE

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. You can do this by emailing customer.feedback@thameswater.co.uk with the email subject header 'Enquiry – TWOSA', along with details of the request.

If you have any questions regarding sewer connections, budget estimates, diversions or building over issues please direct them to our service desk which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

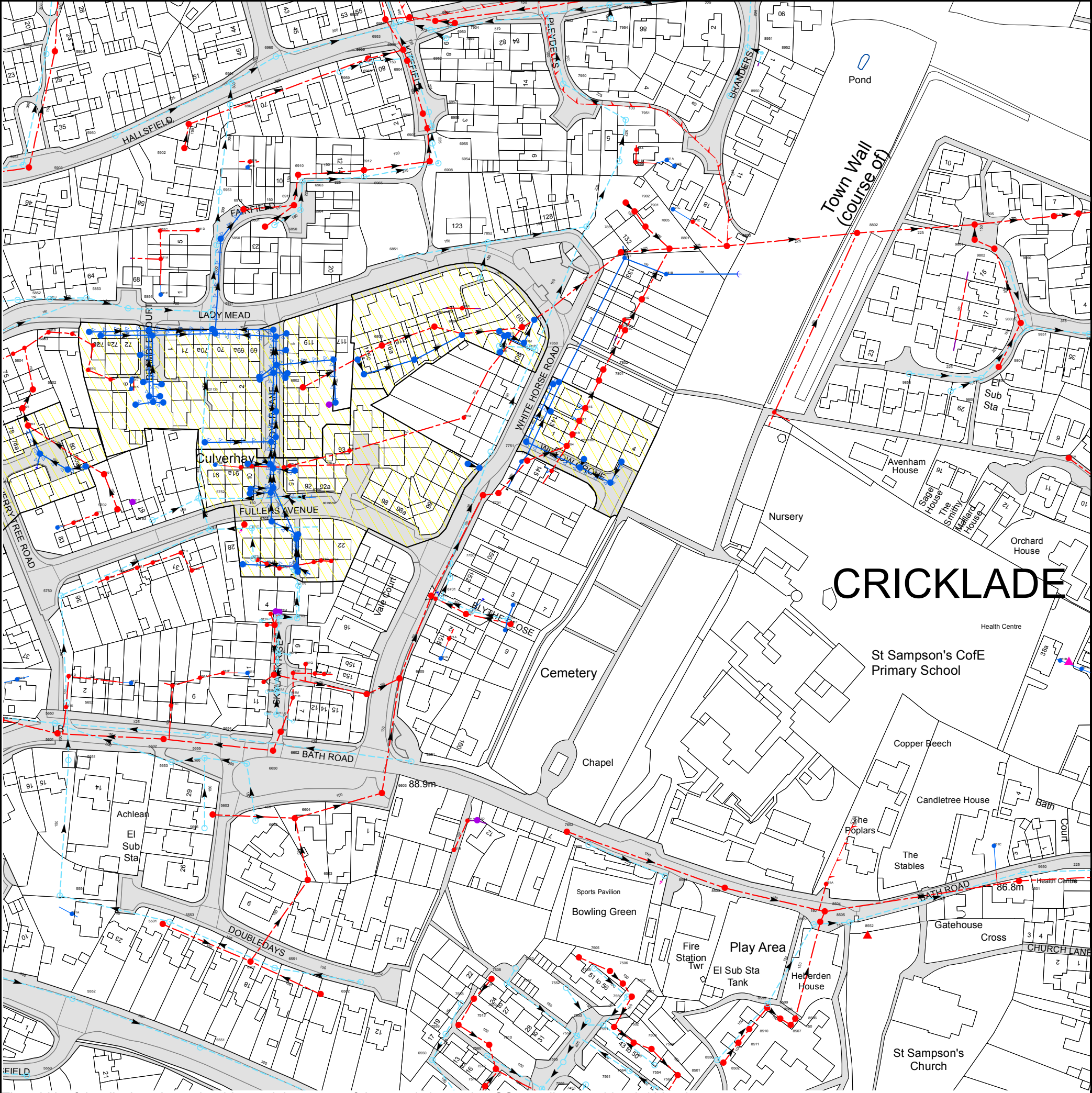
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 409750,193750

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6902	80	78.22
7952	80.07	78.68
7953	80.33	78.78
7903	80.31	78.83
6960	80.17	78.78
5952	81	79.33
5904	81	78.95
961A	n/a	n/a
961B	n/a	n/a
971A	n/a	n/a
9854	81.06	79.21
8802	81.47	80.02
9801	80.6	79.88
9805	80.51	79.75
9802	80.73	79.97
981A	n/a	n/a
991A	n/a	n/a
8553	89.53	88.37
8508	89.52	87.8
8507	89.55	87.65
8506	89.41	87.41
8551	87.52	86.94
8505	87.48	86.67
8504	87.43	86.41
851A	n/a	n/a
8552	87.35	86.52
961C	n/a	n/a
9501	86.64	85.29
9650	86.6	85.75
781F	82.02	81.41
7803	81.91	80.52
8801	81.79	80.41
8803	81.7	80.32
7851	81.94	80.27
7805	81.78	80.65
881C	n/a	n/a
7901	81.78	80.8
891C	n/a	n/a
7902	81.66	80.82
891B	n/a	n/a
791B	n/a	n/a
7956	n/a	n/a
891A	n/a	n/a
791A	n/a	n/a
7951	81.3	79.58
8950	80.75	79.48
8952	80.76	79.39
8951	80.47	79.26
7954	80.38	79.02
7556	89.19	86.73
7505	89.87	88.95
7561	88.81	86.98
7553	89.45	86.89
7650	88.97	88.37
7555	89.88	89.02
7551	88.86	86.61
7506	89.87	88.67
7502	89.95	88.05
7507	89.9	88.35
7550	89.76	88.16
7564	89.91	89.13
7501	89.81	88.23
7503	89.92	87.87
7504	89.89	87.81
7554	89.91	89.18
7563	89.78	89.22
8554	88.53	88.02
8501	89.96	87.65
8550	89.55	88.72
8502	89.58	88.64
8503	88.02	86.88
8511	89.55	88.33
8510	89.53	88.09
8509	89.51	87.85
n/a	n/a	n/a
7704	84.05	82.96
781R	n/a	n/a
781T	83.49	82.44
n/a	n/a	n/a
n/a	n/a	n/a
781S	83.38	82.27
7801	83.01	81.69
7802	83.04	81.47
n/a	n/a	n/a
781E	n/a	n/a
n/a	n/a	n/a
781D	n/a	n/a
781C	n/a	n/a
781G	n/a	n/a
881B	n/a	n/a
881A	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9853	81.46	79.87
9855	81.58	80.43
9852	81.26	79.71
9804	81.22	80.48
9850	80.81	79.62
9803	81.09	80.19
9851	81.08	79.28
7566	87.94	84.84
7511	87.95	85.65
7512	88.3	85.09
7565	88.77	85.93
6550	88.02	87.01
7560	88.37	87.37
7510	88.36	85.47
7559	88.28	87.15
7513	88.52	86.15
681A	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
681B	82.5	81.84
681D	82.8	81.76
6803	82.4	81.61
681C	82.8	81.58
6804	82.47	81.35
781N	82.7	81.39
781A	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
781O	n/a	n/a
781I	82.55	81.25
781K	82.9	81.5
781Q	82.6	82.05
781L	82.55	81.22
771B	n/a	n/a
7804	82.53	81.13
781M	82.4	81.16
n/a	n/a	n/a
7703	84.52	83.1
781P	n/a	n/a
781J	82.41	81.08
n/a	n/a	n/a
771L	84.55	83.56
n/a	n/a	n/a
7558	88.88	87.61
7509	88.94	87.15
6502	89.02	86.67
7552	89.81	88.94
7557	89.29	87.99
6552	89.32	88.3
7508	89.07	87.64
7562	89.44	88.15
761B	n/a	n/a
7652	n/a	n/a
761C	n/a	n/a
761D	n/a	n/a
661H	88.7	85.32
6605	88.38	84.78
661Q	88.1	87.13
771C	87.5	86.62
771F	87.36	86.19
771H	87.3	85.62
771G	87.25	85.85
771I	87.17	85.59
771D	87.15	86.01
771J	87.27	85.56
6701	87.12	84.31
671R	87.2	85.9
771K	86.8	85.54
7750	86.48	85.45
6910	80.85	79.2
6964	81.12	79.88
6963	80.83	79.72
6959	80.48	79.07
6912	81.12	78.98
6965	81.2	79.54
6909	80.45	78.63
6958	80.54	78.93
6903	80.05	78.05
6953	79.96	78.3
6951	79.96	78.34
6905	79.9	78.35
6904	79.94	78.19
6952	79.91	78.69
6906	80.54	78.46
6907	80.67	78.59
6957	80.58	79.05
6908	81.06	78.74
6950	79.82	78.58
6956	80.66	79.14
6955	80.96	79.25
6901	79.82	78.32
6954	81	79.32
7955	80.09	78.89

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7904	80.13	78.64
7852	82.35	80.73
7950	80.65	79.16
6603	89.38	85.26
6651	88.77	87.56
661A	n/a	n/a
661B	n/a	n/a
761A	n/a	n/a
771A	n/a	n/a
671Q	87.35	85.98
n/a	n/a	n/a
671H	n/a	n/a
671F	n/a	n/a
671G	n/a	n/a
n/a	n/a	n/a
6750	85.06	83.67
7701	85.22	84.08
7702	85.13	83.88
7751	84.19	83.1
671E	n/a	n/a
6802	82.61	82.06
7850	82.75	81.56
781B	n/a	n/a
7853	82.14	80.94
6851	82.02	81.04
6702	85.18	84.06
n/a	n/a	n/a
5752	84.77	82.99
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
671B	n/a	n/a
671D	n/a	n/a
671C	n/a	n/a
671A	n/a	n/a
n/a	n/a	n/a
571B	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
671Y	87.5	86.51
671W	87.55	86.61
671V	87.35	86.13
671P	87.42	86.03
671X	87.45	86.7
671M	n/a	n/a
671L	n/a	n/a
571G	n/a	n/a
671S	86.2	85.5
671K	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
671J	n/a	n/a
671I	n/a	n/a
671U	n/a	84.9
571H	n/a	n/a
n/a	n/a	n/a
5751	85.32	83.95
671T	85.44	84.69
5602	87.28	86.24
561C	n/a	n/a
5653	87.76	86.75
561B	n/a	n/a
561A	n/a	n/a
5655	87.83	87.04
5654	87.62	86.18
661F	n/a	n/a
6650	88.17	87.39
661E	n/a	n/a
661P	87.09	87.04
661L	88	87
661N	88	87
6602	88.04	86.79
661G	87.85	85.85
661I	88.01	86.96
661J	87.9	86.21
671O	87.67	86.12
6601	88.59	87.16
661O	87.8	86.99
661M	88.4	87.49
661D	n/a	n/a
661K	88.27	87.7
661C	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
5851	81.43	80.38
581E	n/a	n/a
581A	n/a	n/a
5850	81.17	80.27
n/a	n/a	n/a
581C	n/a	n/a
581D	n/a	n/a
5802	82.51	81.52
581B	n/a	n/a
581J	n/a	n/a
581I	n/a	n/a
5853	81.79	80.66
581G	n/a	n/a
n/a	n/a	n/a
581H	n/a	n/a
n/a	n/a	n/a
581F	n/a	n/a
5854	81.61	80.58
581L	n/a	n/a
581K	n/a	n/a
581M	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
6801	81.18	79.86
6850	81.2	79.98
6913	81.05	79.66
6911	81.03	79.34
5953	n/a	n/a
5903	80.72	79.42
691B	n/a	n/a
691A	n/a	n/a
5902	80.86	79.87
5950	80.32	79.33
5901	80.62	79.64
6962	80.5	79
6961	80.33	78.87
561G	n/a	n/a
5650	87.03	85.63
5601	86.96	85.89
5750	86.14	84.94
561E	n/a	n/a
5652	87.11	85.39
5651	87.29	85.7
561D	n/a	n/a
571K	n/a	n/a
561F	n/a	n/a
571J	n/a	n/a
571I	n/a	n/a
5550	85.42	84.1
5551	85.83	83.69
5552	85.97	84.17
6551	88.97	87.46
6501	88.57	86.23
5501	87.9	86.78
5553	87.82	86.78
551A	n/a	n/a
5554	87.53	86.24
6503	n/a	n/a
5656	88.5	87.4
6652	89.12	87.91
6604	89.38	85.64
5603	88.6	86.59
n/a	n/a	n/a
571D	n/a	n/a
n/a	n/a	n/a
571E	n/a	n/a
n/a	n/a	n/a
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 409250,194250

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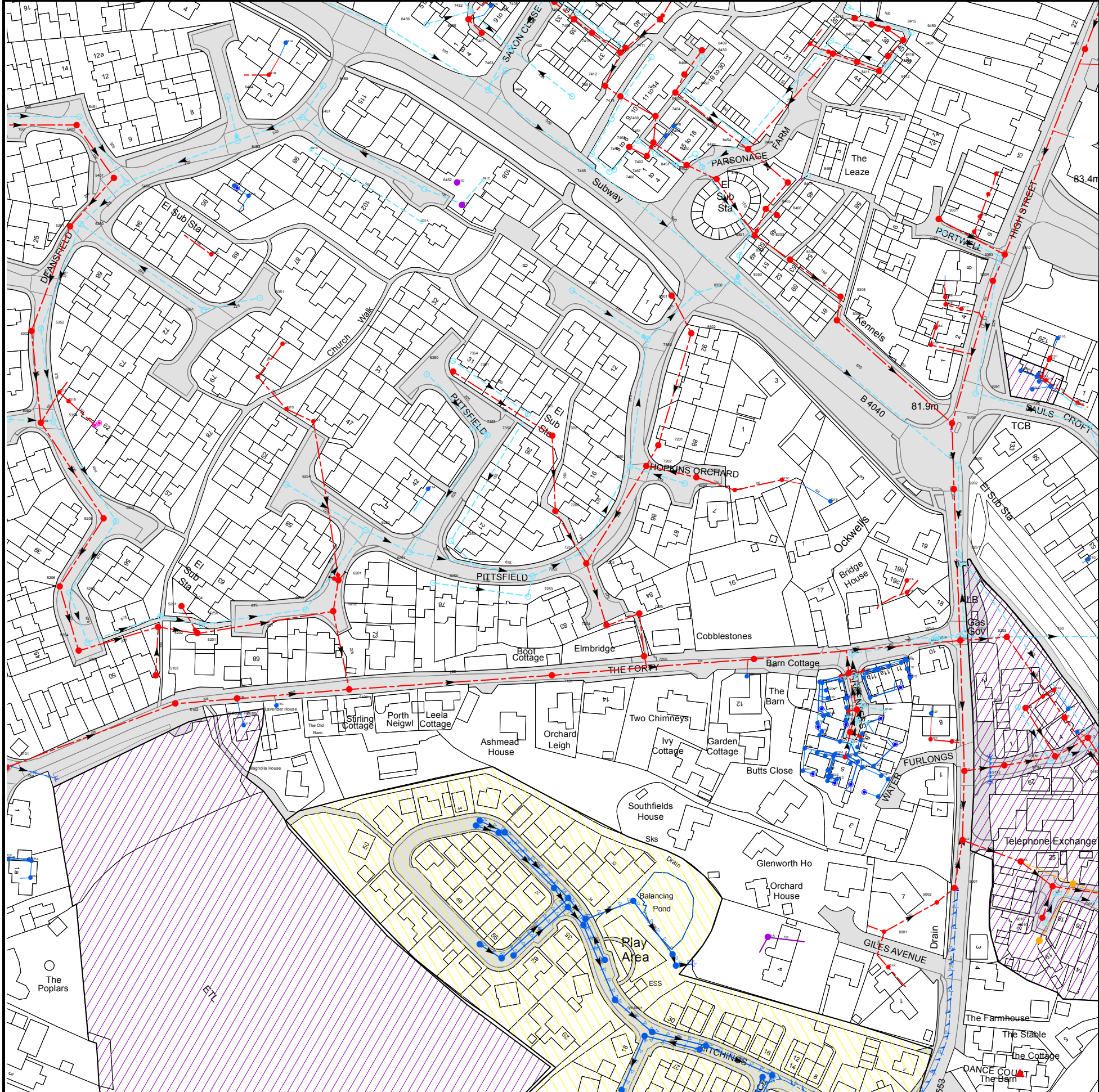
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
4003	81.24	79.41
4051	81.27	79.85
401A	n/a	n/a
401A	n/a	n/a
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
491B	n/a	n/a
4955	81.54	80.25
4954	81.56	80.2
4002	81.54	80.25
4050	81.56	80.2
0901	87.64	86.2
0950	87.59	86.37
191A	n/a	n/a
1955	87.31	85.44
191B	n/a	n/a
1906	87.25	84.96
1954	86.7	84.96
181A	n/a	n/a
1905	86.64	85.11
1953	87.16	85.07
1904	87.1	84.48
1903	86.01	84.14
1952	87.01	84.78
1902	85.78	83.77
1909	85.78	83.88
1801	85.28	83.43
1910	85.78	83.88
2804	84.41	82.47
2853	84.4	82.81
4604	87.22	85.77
n/a	n/a	n/a
461B	n/a	n/a
4606	87.33	85.66
4550	85.8	83.69
451B	n/a	n/a
4501	85.82	84.32
4551	86.73	84.62
4555	86.66	85.32
4502	86.74	86.02
4554	87.06	85.62
4605	87.28	85.82
471F	n/a	n/a
471G	n/a	n/a
4754	84.14	n/a
n/a	n/a	n/a
4851	82.94	82.18
4803	82.59	80.33
4804	82.29	80.44
4852	82.55	81.93
4807	82.06	80.69
4853	82.2	81.5
4805	83.04	80.53
4806	82.88	81.41
4808	81.86	80.77
4859	n/a	n/a
4854	82.56	81.52
4856	82.44	81.22
4855	82.66	81.84
4857	82.06	81.05
4809	81.85	80.83
4810	81.68	80.9
481A	n/a	n/a
481D	n/a	n/a
481B	n/a	n/a
481C	n/a	n/a
4801	82.06	80.49
4850	82.05	80.91
4951	81.54	80.33
4902	81.54	80.06
4901	81.45	79.8
4950	81.29	80.16
4952	81.54	80.48
4706	n/a	n/a
4610	n/a	n/a
4609	n/a	n/a
4703	84.49	82.74
4751	85.12	83.6
4611	n/a	n/a
471I	n/a	n/a
471J	n/a	n/a
461A	n/a	n/a
4650	87.08	85.19
4651	86.51	85.09
4602	87.32	85.29
4603	87.68	85.64
471E	n/a	n/a
471D	n/a	n/a
381A	n/a	n/a
3750	82.94	81.55
3805	83.07	79.8
3701	n/a	n/a
4802	82.67	79.83
4750	83.25	81.57
4701	83.29	81.64
4702	83.33	81.91



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 409750,193250

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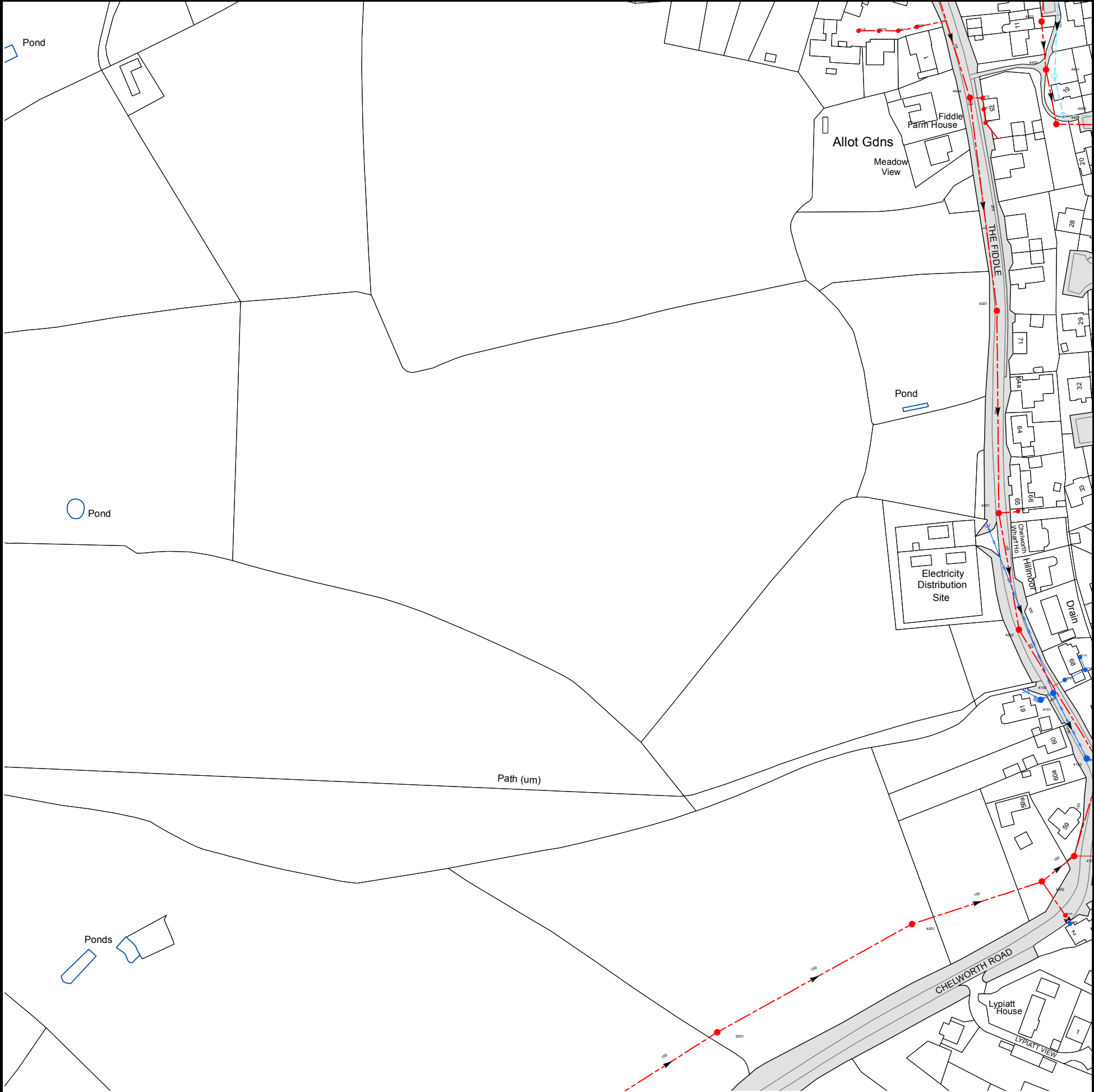
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9303	81.9	80.4
931R	n/a	n/a
931K	n/a	n/a
9351	81.89	80.94
931S	n/a	n/a
931Q	n/a	n/a
931M	n/a	n/a
931N	n/a	n/a
931J	n/a	n/a
931P	n/a	n/a
931L	n/a	n/a
931O	n/a	n/a
931I	n/a	n/a
931H	n/a	n/a
931G	n/a	n/a
931C	n/a	n/a
931F	n/a	n/a
9304	82.62	81.21
9354	82.67	81.92
9353	82.72	81.83
9302	82.78	81.53
931A	n/a	n/a
931B	n/a	n/a
9460	n/a	n/a
941A	n/a	n/a
8406	85.49	84.63
8407	85.84	n/a
8304	85.43	82.53
8455	85.57	84.85
8306	84.37	81.89
8305	84.66	82.03
8411	86.98	85.41
8412	86.3	85.6
8416	86.67	85.72
8459	86.31	85.26
931D	n/a	n/a
9355	n/a	n/a
9301	83.99	81.98
9352	83.85	82.28
931E	n/a	n/a
841A	n/a	n/a
8457	87.44	84.77
8410	87.43	85.15
8458	87.26	84.94
8460	87.92	86.64
8413	87.57	86.28
8414	87.14	86.15
8415	87.05	85.99
9401	86.77	85.81
9450	86.91	85.53
9402	85.61	83.47
7457	86.39	85.73
741F	n/a	n/a
7403	86.02	85.11
7451	86.13	84.43
7458	87.57	86.97
7401	86.05	83.39
7404	86.84	83.49
741B	n/a	n/a
841B	n/a	n/a
8403	87.66	85.76
8452	87.67	85.5
8408	88.11	86.81
8456	88.38	87.28
8409	88.39	87.1
8454	85.86	84.03
8404	85.8	84.39
7454	88.51	86.73
7413	88.4	84.9
741D	n/a	n/a
741E	n/a	n/a
7407	86.71	86.19
741C	n/a	n/a
7464	86.24	82.18
7463	86.58	85.27
7462	86.66	83.3
7461	86.92	85.34
7410	88.44	84.36
7455	88.51	86.93
7412	87.21	83.85
7460	85.81	85.16
7456	88.41	87.02
7414	86.35	83.75
7411	88.27	84.07
6456	86.21	82.69
6455	86.8	86.1
7406	86.74	85.95
7409	88.47	84.53
7452	87.09	85.65
741A	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7408	88.33	84.7
7405	87.94	85.74
7453	88.31	85.88
901J	98.97	96.82
9150	n/a	n/a
911P	99.09	96.37
911O	99.16	97.09
901K	n/a	n/a
8001	80.44	78.95
901G	99	97.15
901F	99.05	97.05
9002	80.22	78.76
901I	99.18	97.06
9001	80.6	78.7
901H	99.17	96.9
911K	99.1	97.01
9102	80.55	78.54
812P	n/a	n/a
911W	n/a	n/a
811F	n/a	n/a
911I	80.61	78.58
812Q	n/a	n/a
812Z	n/a	n/a
812J	n/a	n/a
813D	n/a	n/a
911Q	n/a	n/a
912C	n/a	n/a
912F	n/a	n/a
912D	n/a	n/a
911J	99.2	97.18
911L	99.27	97.23
9152	99.32	97.67
912B	n/a	n/a
911M	99.4	96.61
912A	n/a	n/a
911N	99.41	97.13
912I	n/a	n/a
911Z	n/a	n/a
911Y	n/a	n/a
812G	n/a	n/a
812F	n/a	n/a
812E	n/a	n/a
911S	n/a	n/a
911T	n/a	n/a
911R	n/a	n/a
921E	n/a	n/a
921F	n/a	n/a
911U	n/a	n/a
911X	n/a	n/a
921B	n/a	n/a
9250	80.88	80.41
921A	n/a	n/a
9202	81.48	80.09
9255	81.55	79.28
9251	81.15	78.71
921D	n/a	n/a
9204	99.63	97.4
9252	81.02	80.34
921C	n/a	n/a
9203	80.95	78.82
921G	n/a	n/a
9350	81.95	80.05
811G	n/a	n/a
811I	n/a	n/a
812L	n/a	n/a
811E	n/a	n/a
811H	n/a	n/a
811B	n/a	n/a
812K	n/a	n/a
812R	n/a	n/a
812M	n/a	n/a
811A	n/a	n/a
812N	n/a	n/a
811R	n/a	n/a
812T	n/a	n/a
812V	n/a	n/a
811S	n/a	n/a
811K	n/a	n/a
812U	n/a	n/a
811Q	n/a	n/a
811J	n/a	n/a
811Y	n/a	n/a
811X	n/a	n/a
811T	n/a	n/a
812W	n/a	n/a
813A	n/a	n/a
812A	n/a	n/a
812B	n/a	n/a
811M	n/a	n/a
811L	n/a	n/a
811V	n/a	n/a
812X	n/a	n/a
812C	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
811U	n/a	n/a
812D	n/a	n/a
813C	n/a	n/a
811W	n/a	n/a
811Z	n/a	n/a
813B	n/a	n/a
812I	n/a	n/a
811O	n/a	n/a
813H	n/a	n/a
812Y	n/a	n/a
812H	n/a	n/a
811N	n/a	n/a
811P	n/a	n/a
8101	80.99	79.13
821A	n/a	n/a
821B	n/a	n/a
821D	n/a	n/a
821C	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
801A	n/a	n/a
812S	n/a	n/a
811D	n/a	n/a
811C	n/a	n/a
813E	n/a	n/a
812O	n/a	n/a
813F	n/a	n/a
7355	82.47	81.26
6350	82.45	80.99
7301	82.61	81.7
7354	82.6	81.87
7350	83.21	79.78
8302	83.74	81.3
8301	84.23	81.63
8350	84.49	79.76
7351	82.93	81.45
8353	84.92	79.71
8352	85.39	83.08
8303	85.44	82.72
8351	85.43	83.2
631A	n/a	n/a
8405	85.54	83.88
6452	84.04	82.82
8401	85.38	83.05
7466	85.93	84.75
7467	85.84	84.71
7465	86.2	81.06
8450	85.25	83.55
8451	85.54	84.11
8402	85.31	83.26
7402	85.92	85
7450	85.92	84.21
7459	85.87	84.93
8453	85.87	84.01
611B	81.29	80.06
611A	81.1	80.14
611C	n/a	n/a
6101	81.04	79.8
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
7101	80.89	79.4
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a
7206	81.01	79.31
7204	81.6	79.52
5250	81.74	80.16
7205	81.52	79.45
6202	81.93	80.13
6253	81.85	80.13
7253	81.33	80.59
6250	81.69	81.11
6201	81.87	80.42
7252	81.18	79.98
7203	81.32	79.75
7251	81.31	79.96

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6251	81.5	80.04
7254	81.63	80.67
6252	81.73	80.05
7207	n/a	n/a
621A	n/a	n/a
6254	82.08	81.25
8250	81.66	80.51
8201	81.55	80.25
7250	81.78	79.83
7202	81.87	80.11
7201	81.81	80.21
7302	82.24	80.79
7352	82.16	80.76
7353	82.26	80.93
511B	n/a	n/a
511C	n/a	n/a
501A	n/a	n/a
511A	n/a	n/a
5206	81.57	80.87
5253	81.65	80.44
5203	81.78	80.77
5254	81.78	80.37
5205	81.71	81.07
5252	81.73	80.53
5103	81.8	80.7
5202	81.76	80.43
5251	81.73	80.27
5102	81.52	80.17
5204	81.71	81.04
5201	81.7	80.3
5303	82.27	81.39
6301	82.3	81.4
5354	82.35	81.11
5353	82.25	81.25
631D	n/a	n/a
531B	n/a	n/a
531A	n/a	n/a
631C	n/a	n/a
631B	n/a	n/a
5302	82.91	81.71
5352	82.97	81.42
5351	82.98	81.95
6351	83.25	82.14
531C	n/a	n/a
5301	83.35	82.12
5350	83.47	81.71
641E	n/a	n/a
641D	n/a	n/a
5450	83.8	81.88
5401	83.77	82.28
641C	n/a	n/a
6453	84.34	82.11
5402	84.19	82.61
6451	84.83	82.32
5451	84.18	82.31
5101	82.88	80.36
6454	85.03	83.81
6450	85.22	83.85
641B	n/a	n/a
641A	n/a	n/a
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3001	n/a	n/a
4401	84.89	83.29
4450	84.95	83.01
4001	n/a	n/a
4201	82.71	81.01
421A	n/a	n/a
4202	82.52	80.92
4151	82.45	81.3
4002	n/a	n/a
4150	82.47	81.07
411D	n/a	n/a
401A	n/a	n/a
401B	n/a	n/a
4101	82.23	80.67
411A	n/a	n/a
411B	n/a	n/a
4153	82.87	80.9
411C	n/a	n/a
4451	85.35	83.24
4301	84.8	82.75
441C	n/a	n/a
441D	n/a	n/a
441E	n/a	n/a
4404	86.46	84.53
4402	85.37	83.62
441A	n/a	n/a
341A	n/a	n/a
341B	n/a	n/a
441B	n/a	n/a
4403	86.13	83.85
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Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

	Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
	Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
	Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
	Storm Sewer
	Sludge Sewer
	Foul Trunk Sewer
	Surface Trunk Sewer
	Combined Trunk Sewer
	Foul Rising Main
	Surface Water Rising Main
	Combined Rising Main
	Vacuum
	Thames Water Proposed
	Vent Pipe
	Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

	Sewer		Culverted Watercourse
	Proposed		Decommissioned Sewer
	Content of this drainage network is currently unknown		Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

	Air Valve		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

	Ancillary		Drop Pipe
	Control Valve		Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

	Inlet		Outfall
	Undefined End		

Other Symbols

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

	Change of Characteristic Indicator		Public / Private Pumping Station
	Invert Level		Summit

Areas

Lines denoting areas of underground surveys, etc.

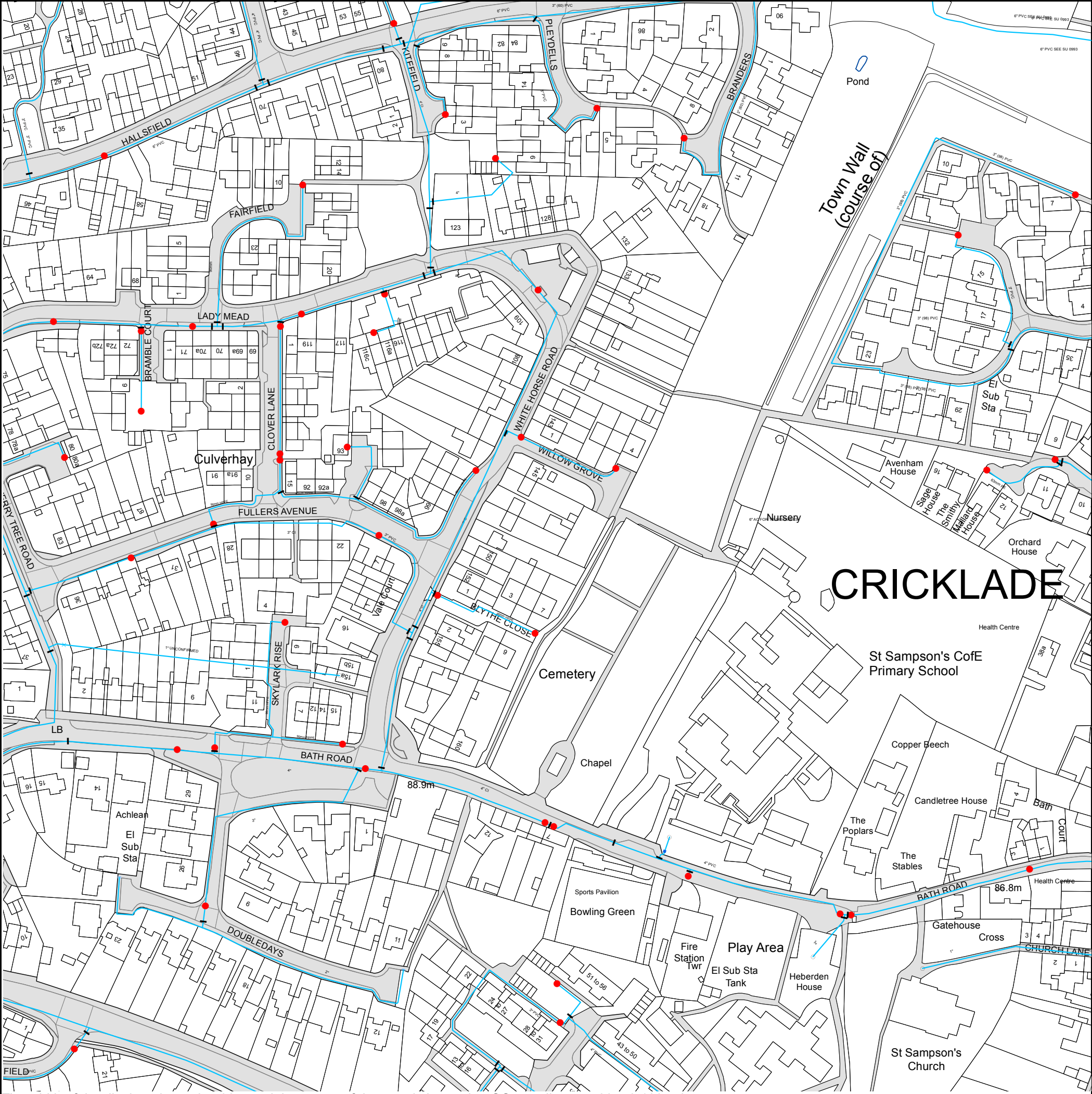
	Agreement
	Chamber
	Operational Site

Ducts or Crossings

	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 409750,193750

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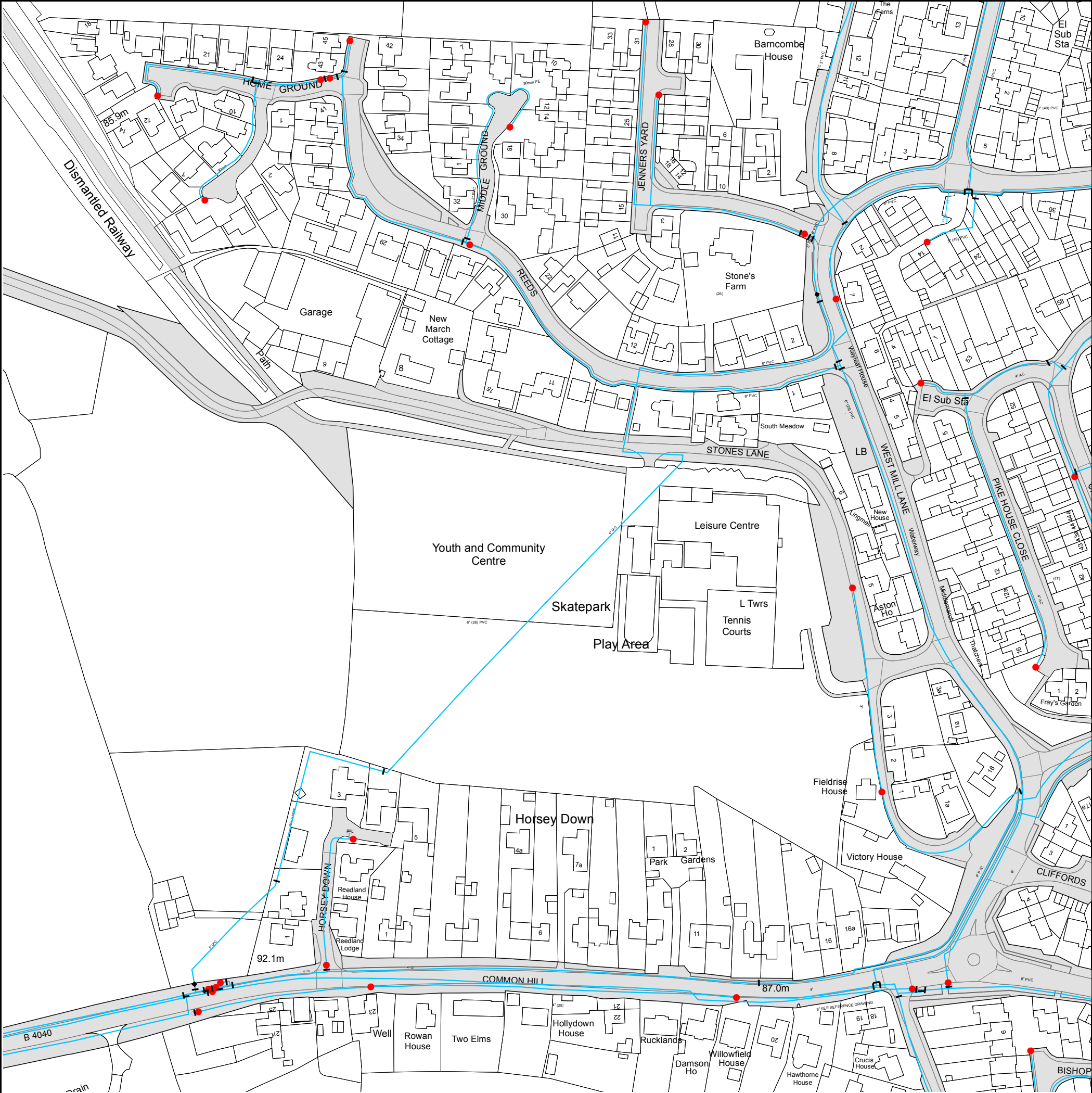
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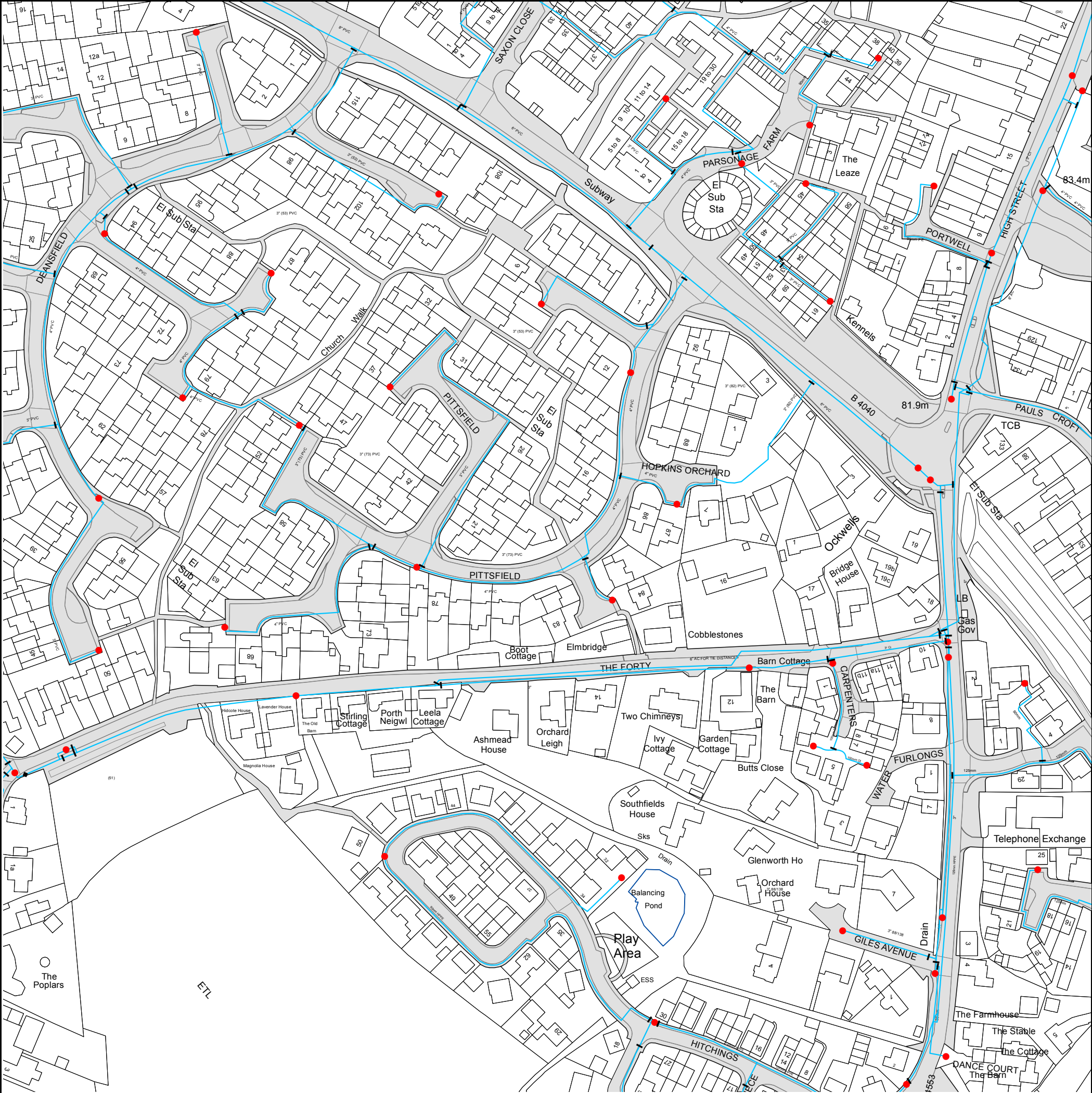
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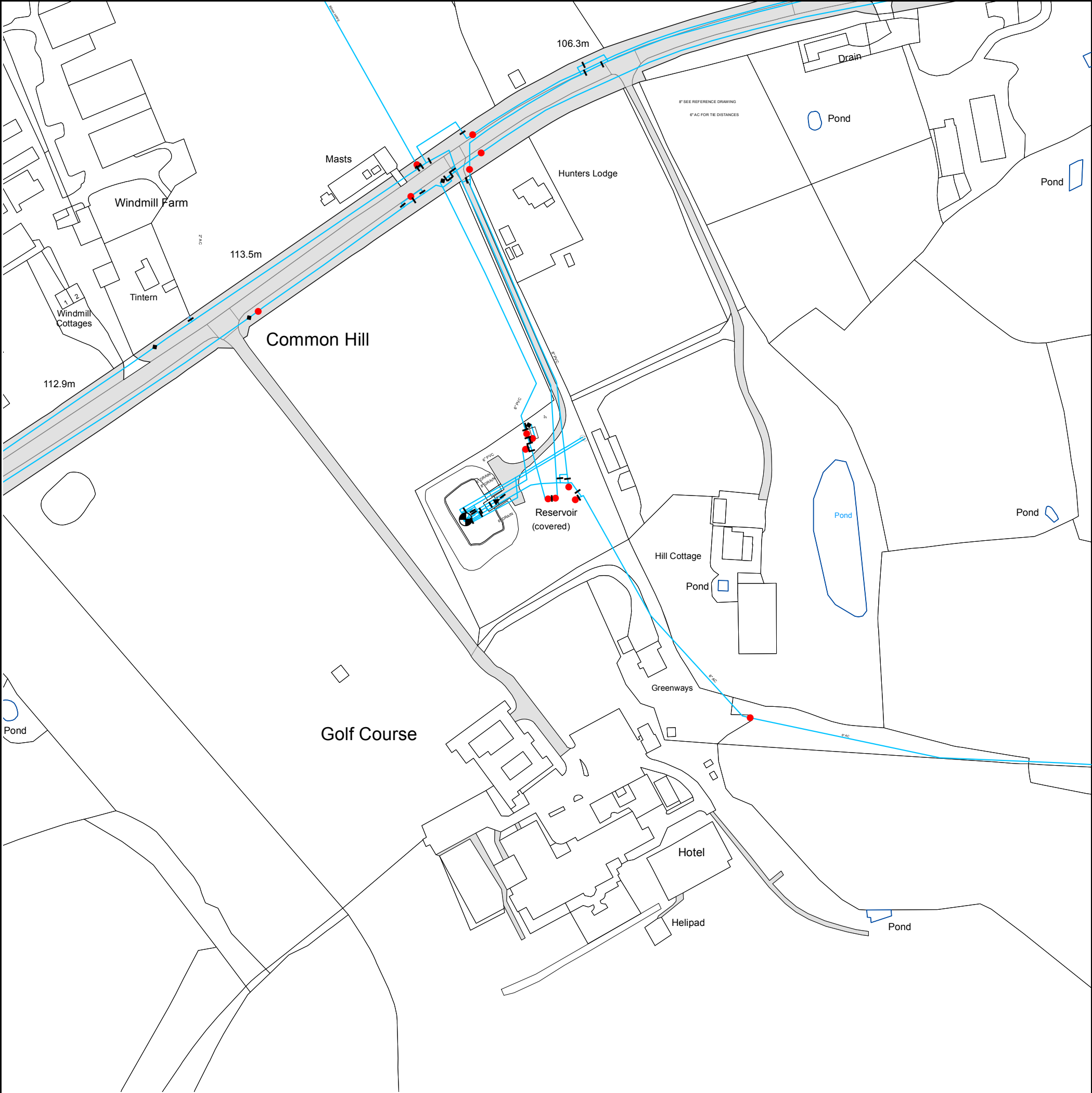
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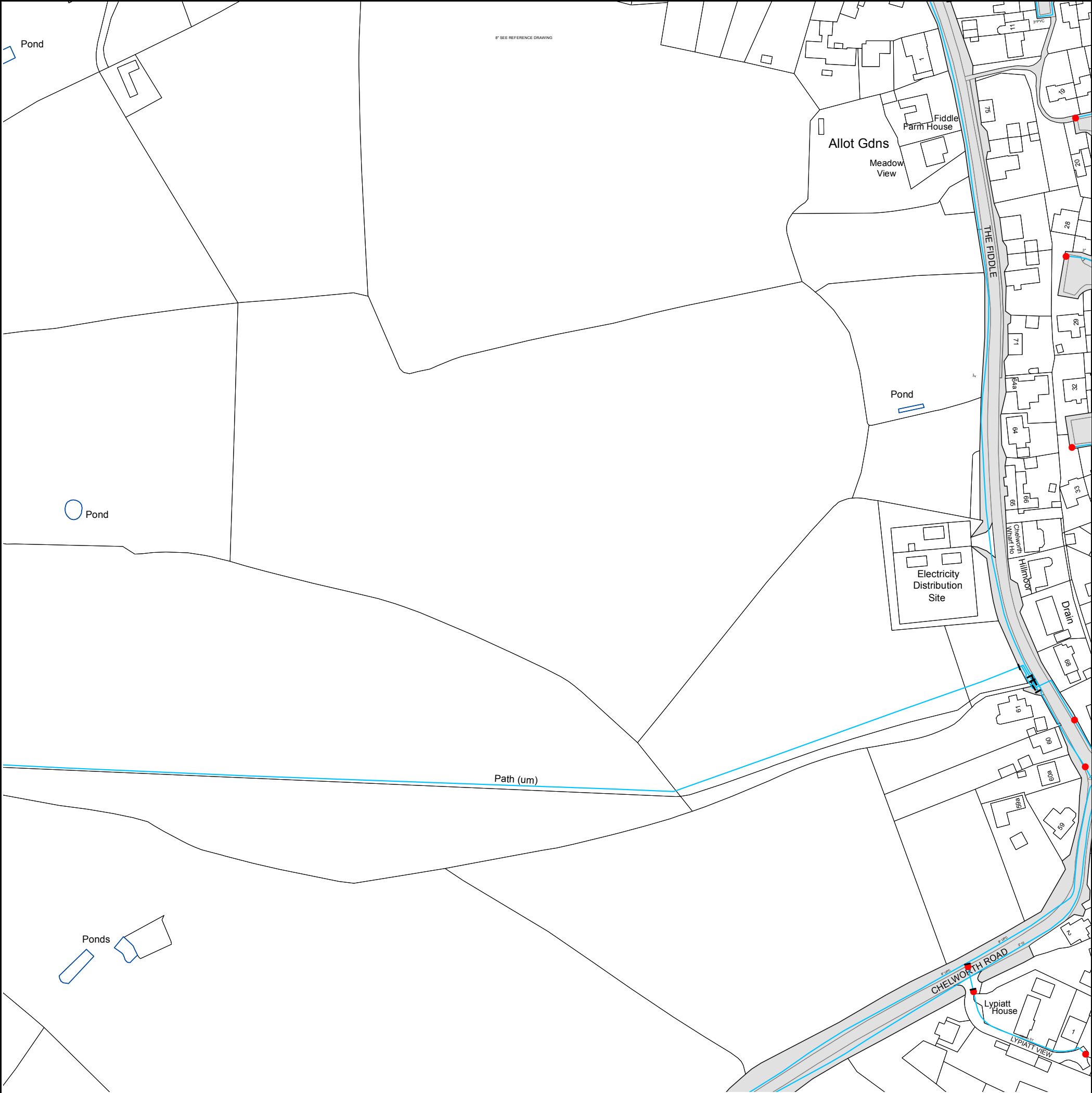
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Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

- 4"** **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 16"** **Trunk Main:** A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
- 3" SUPPLY** **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
- 3" FIRE** **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- 3" METERED** **Metered Pipe:** A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
- Transmission Tunnel:** A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main:** A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger
- Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

- Other Water Company Main:** Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Appendix B
SuDS Checklist

Detailed Technical Check List

Detailed Technical Check List					To be populated by the applicant		
Outline	Full	Reserved Matters	<--- STAGE OF APPLICATION ("Y" DENOTES REQUIRED INFORMATION RELEVANT TO STAGE)	Further Context / Useful Links	Has this been provided?	Justification for not supplying information	Where has this been information been provided?
			Flood Risk Assessment / Statement				
			<i>Has a Flood Risk Assessment been Provided which assesses flood risk from all sources, and assesses the suitability of the development in line with its Flood Vulnerability Classification (as per PPG). Specific flood risk sources, are outlined below</i>	Wiltshire Flood Maps: https://wiltscouncil.maps.arcgis.com/apps/webappviewer/index.html?id=28c00215d87b468a9a0cd79c63d3d270			
Y	Y		Records of historic Flooding (based historic flood records, SFRA, consultee concerns on planning portal (where there are adjacent / historic applications, and S19 investigation reports)		Yes	#NAME?	See FRA section 3
Y	Y		Risk of Pluvial Flooding?		Yes		See FRA section 3
Y	Y		Risk of Groundwater Flooding?		Yes		See FRA section 3
Y	Y		Risk of Reservoir Flooding?		Yes		See FRA section 3
Y	Y		Risk of Canal Flooding?		Yes		See FRA section 3
Y	Y		Risk of Sewer Flooding?		Yes		See FRA section 3
Y	Y		Risk of Fluvial Flooding (including climate change allowances)?		Yes		See FRA section 3
Y	Y		Has a SEQUENTIAL TEST been undertaken? :	https://www.gov.uk/guidance/flood-risk-and-coastal-change#The-Exception-Test-section	Yes		
Y	Y		Evidence of sequential approach to the site layout i.e. the most vulnerable development should be steered to the areas at lowest flood risk		N/A		
Y	Y		If required, evidence of the EXCEPTION required (MAJOR DEVELOPMENTS ONLY) and based on the Vulnerability Classification)?	Sequential test & Exception test: https://www.gov.uk/guidance/flood-risk-and-coastal-change#The-Exception-Test-section	N/A		
			Surface Water Drainage Strategy	All drainage systems must comply with the National SuDS Standards, unless the Wiltshire Council Standard provides a stricter level of restriction. Applicants should expect to provide a matrix of how they have complied with the National SuDS Standards in full			
			<i>We would expect the following information to be provided as part of the drainage strategy for the site. To aid clarity, we have broken this down by theme</i>				
			Existing Runoff Rates				
Y	Y		Catchment plans showing the existing catchment areas draining to each outfall	The applicant should provide catchment plans showing the current catchment areas which drain to an outfall. This is to ensure that calculations of existing discharge rates (either greenfield or brownfield) accurately represent the current drainage regime, therefore avoiding increasing catchment areas draining to a specific outfall (i.e. catchment transfer).	Yes		See Figure 3 of the FRA
Y	Y		Calculations for Greenfield runoff rates using one of two methods: 1. Flood Estimation Handbook (FEH); or 2. Institute of Hydrology Report 124 (IH124) based on Flood Studies Report (FSR)	The applicant should undertake greenfield runoff calculations using both the FEH and FSR datasets and select the most conservative rainfall dataset for their specific site. If this comparison cannot be undertaken, the applicant should provide justification for this.		FEH 2022 data has been used as it is the most up to date data set	See appendix 3 of the FRA
Y	Y		If applicable, calculations for Brownfield Site existing discharge rates	Only relevant for brownfield sites. The calculations can be provided in the form of hydraulic model outputs from an existing drainage model or can be based on Modified Rational Method Calculations in accordance with the Wallingford Procedure.	N/A		
			Surface Water Drainage Hierarchy and Point of Discharge Requirements				
Y	Y		Evidence the surface water disposal hierarchy (outlined below) has been implemented: a) Surface water runoff is collected for use. b) Discharge into the ground via infiltration. c) Discharge to a watercourse or other surface water body. d) Discharge to surface water sewer e) Discharge to another drainage system (e.g. highways drainage) which ultimately discharges to a watercourse / waterbody f) Discharge to a combined sewer.	As per National SuDS Standards Additional requirements dependent on the level of the hierarchy are detailed below.	Yes		See section 5 of the FRA
			Where an Infiltration Based Drainage Strategy is Proposed				
Y	Y	Y	Soakaway tests carried out in accordance with BRE365 methodology at the location and depth of proposed soakaway features. Test logs, and calculations of infiltration rates to be provided	Wiltshire Council Soakaway Guidance CIRIA C753 BRE Digest 365	No	Desk study of BGS data, and adjacent application logs undertaken as at the outline stage	See section 3 and 5 of the FRA
Y	Y	Y	Desk study, supported by ground investigations to establish the peak winter groundwater level.	Wiltshire Council Soakaway Guidance CIRIA C753 BRE Digest 365	No	Desk study of BGS data, and adjacent application logs undertaken as at the outline stage	See section 3 and 5 of the FRA
	Y	Y	For sites in chalk-based geologies (or where there is a risk of dissolution features forming), desk study supported by ground investigations to establish the density and dissolution risk of the underlying chalk.	Wiltshire Council Soakaway Guidance CIRIA C753 BRE Digest 365 CIRIA C753	N/A		
Y	Y	Y	Calculations that demonstrate that the soakaway has been designed for: • 1 in 100yr + cc flows (for multiple properties) • 1 in 10yr + cc flows (for individual properties) • Half drain time <24hrs • Appropriate factor of safety in line with CIRIA C753 (Table 25.2) guidance has been included.	Wiltshire Council Soakaway Guidance CIRIA C753 BRE Digest 365	N/A	Mix of infiltration and positive connections	See section 3 and 5 of the FRA
	Y	Y	Demarcation on drainage plan drawings showing the minimum clearance (5m / 10m / 20m depending on underlying ground conditions and dissolution risk) from point-soakaway to structures, buildings, public highways, site boundaries, other soakaways	Wiltshire Council Soakaway Guidance CIRIA C753 BRE Digest 365	N/A		
	Y	Y	Details of how silt ingress into soakaways will be prevented, to ensure that soakaway performance is maintained across its full design life, and does not fail due to siltation over time	CIRIA C753 National SuDS Standards	N/A		
			Where an Attenuation Based Drainage Strategy is Proposed (i.e. Discharge to watercourse, sewers etc.)				
	Y	Y	Catchment plans showing the proposed (post-development) catchment areas draining to each outfall		Yes		See Figure 3 of the FRA
Y	Y	Y	Proposed discharge rates from the site (post-development) in compliance with Wiltshire Council's policy for Discharge Rates. Proposed Discharge Rates to be provided for the 1 in 1, 1in 30, 1 in 100yr events, including climate change allowances in line with EA Guidance	Wiltshire Council Discharge Rate Policy	Yes		See appendix 3 of the FRA
Y	Y	Y	When discharging to an above ground surface water body, sewer or other piped drainage system, the surface water runoff volume for the 1 in 100yr, 6hr event shall be controlled to ensure the runoff from the development does not increase flood risk elsewhere	National SuDS Standards	Yes		See appendix 3 of the FRA
Y	Y		Demonstration via plans that proposed attenuation features are located outside of Flood Zones 2 and 3, or that they are either protected from inundation from the 1 in 100yr + climate change flood event or adequately sized to accommodate the inundation volume in addition to the required attenuation	National SuDS Standards	Yes		See figure 4 of the FRA
			Additional requirements where there is proposed discharge Highways Drainage System				
	Y	Y	There is no automatic right of connection to the highways drainage system, and therefore other methods of discharge should be prioritised. Where there is a request to discharge to the Highways Drainage Systems the following will also need to be provided: - CCTV condition survey from the proposed point of connection to the ultimate discharge point to watercourse / waterbody. - Hydraulic modelling of the existing highways drainage system - Hydraulic modelling to demonstrate that the proposed discharge can be fully and safely accommodated within the highways drainage system, without increasing flood risk to the highway in the 1in 100yr + climate change event. - Details of any proposed remedial works and mitigations to facilitate the discharge to the highways drainage system.		No	Connection to existing land drainage ditch	See figure 4 of the FRA
			Additional requirements where there is proposed discharge to Sewer				
	Y	Y	Where there is a request to discharge to existing sewers the following will also need to be provided: - Agreement from the asset owner on the point and location of discharge - Any other information required by the asset owner		N/A		
			Drainage Calculations				
Y	Y	Y	Where relevant, infiltration calculations to size proposed infiltration based features and demonstrate compliance with the Council's Soakaway Policy		Yes	Mix of infiltration and positive connections. Minimal infiltration has been applied	
Y			Outline calculations to determine the volume of attenuation storage required on site in order to limit discharge rates in line with the Discharge Rate Policy		Yes	Calculations have been undertaken to confirm there is enough storage on site. As the layout has not been fully confirmed the major attenuation features have been sized for 60% of the developable area to drain directly to the features. Urban creep has been included within the model	See appendix 3 of the FRA
Y	Y	Y	Evidence shall be provided to demonstrate that Interception shall be delivered within the development for the first 5mm of rainfall for the majority of rainfall events, for both winter and summer seasons. This is to prevent runoff from the site for the majority of small (frequent) rainfall events and for the initial depth of rainfall for larger events. For compliance to be demonstrated, 80% interception shall be achieved during the summer (May to October) and 50% in winter (November to April).	National SuDS Standards	Yes		See appendix 3 of the FRA
	Y	Y	Detailed hydraulic calculations demonstrating that the required discharge rates in line with WC policy/ external asset owner agreements are met whilst also demonstrating: • Calculations and drawings for the drainage system design showing designated holding areas and conveyance routes based on no flooding on site for a 1 in 30 year plus climate change rainfall event. • Calculations and drawings for the drainage system design showing designated holding areas and conveyance routes based on no flooding on site for a 1 in 100 year plus climate change rainfall event in respect to a building (including basement) or utility plant susceptible to water within the development. • Calculations should include an allowance for increased surface water runoff, as a result of urban creep, in accordance with LASOO guidance. • Hydraulic Models should set the MADD factor / additional storage volume factor to 0m3 / ha in order to prevent an overestimation of storage capacity in the proposed drainage network. • If attenuation tanks are proposed that an allowance for reduced attenuation volume due to silt ingress (as per Section 21.9.9 of the SuDS Manual CIRIA C753)		N/A		
	Y	Y	Evidence that a sensitivity analysis on the network considering surcharged outfall conditions has been undertaken.	National SuDS Standards	N/A		
	Y	Y	Evidence that in attenuation basins / infiltration basins / ponds, a min 300mm freeboard above the critical 1 in 100yr + cc storm is achieved		N/A		
	Y	Y	Demonstration that in the 1 in 30yr storm event, attenuation / infiltration features half drain within 24hrs		N/A		
	Y	Y	Water quality calculations based on a developed SuDS Treatment Train (and not a Pipe-to-Pond) to demonstrate that water quality within surface water runoff can be appropriately managed to prevent an increased pollution risk.	National SuDS Standards	N/A		
	Y	Y	Structural calculations to demonstrate that proposed drainage components are sufficiently designed to resist anticipated forces. (Depending on the system this may require consideration of vertical and lateral loads)		N/A		
			Drainage Drawings				
Y			Preliminary layout plans showing the existing site location, and proposed drainage strategy for the site (to an outline design level of detail)		Yes		See figures 4 of the FRA
	Y	Y	A detailed topographical survey that clearly identifies the existing drainage features on the site as well as level contours to show overland flow routes.		Yes		See figures 4 of the FRA
	Y	Y	A detailed plan showing the existing and proposed drainage features on the site and how the proposed drainage strategy will be implemented. Pipe numbers, manhole numbers etc. should link to those used in the hydraulic model so as the design can be correlated. Nature based SuDS Solutions shall be included within the design in accordance with NPPF, and holistically planned into the overall development layout.		N/A		

	Y	Y	Demonstration on drainage drawings that finished floor levels will be set a min 150mm above surrounding ground levels and above the 1 in 100yr + cc flood level, and in areas where the 100yr + cc flood depth is uncertain that FFL are set mm above this in line with EA Guidance		N/A		
	Y	Y	Drawing showing how overland exceedance flows in excess of the 1 in 100yr + cc storm event will be wholly and safely managed on site, such that flood risk is not increased to people, property, public highways. Existing overland flow routes and watercourses originating outside of the site and flowing through the site should be shown on the plan to demonstrate how these will be managed.	National SuDS Standards	N/A		
	Y	Y	Cross-section and long-section drawings through any attenuation and infiltration features showing top water levels for the 1 in 100yr + cc storm event		N/A		
			Management of Safe Access / Egress from the site				
Y	Y		If access to the site (vehicular or pedestrian) predicted to flood, evidence that the Flood Hazard Rating has been assessed in accordance with FD2320 Guidance and PPG with regards maintaining safe access/ egress during the design storm.		N/A	No areas of the site are predicted to flood	
	Y	Y	If access to the site (vehicular or pedestrian) predicted to flood, evidence of an emergency plan in place that has been agreed with Wiltshire Council.	Guidance on the preparation of an emergency plan can be found here. https://www.adeptnet.org.uk/floodriskemergencyplan	N/A		
			Construction Management				
	Y	Y	Provision of a Construction Management Plan detailing measures during construction to control pollution to existing watercourses and groundwater, and prevent an increase in flood risk.		N/A		
			Contamination water quality				
	Y	Y	Production of contamination risk assessment for brownfield / contaminated sites / sites that are shown to interact with sensitive environmental receptors (SPZ1, Principal Aquifers, RAMSAR sites, SSSI etc.) to demonstrate contamination risk will be appropriately managed		N/A		
	Y	Y	Calculations which demonstrate that the proposed drainage design provides a sufficient level of water treatment.		N/A		
			Amenity and biodiversity				
	Y	Y	Evidence that the drainage proposal takes opportunities available for improving the character and quality of the area through the provision of amenity, biodiversity, maintaining water quality and climate change resilience in accordance with the National Planning Policy Guidance.	National SuDS Standards	Yes	The attenuation basins have been designed with input from the landscape architect. Shallow slopes and permanent water have been used for amenity and biodiversity. Planting will be used to enhance this	See section 5 of the FRA and figure 4
			Legal and Permissions				
	Y	Y	Consent for any outfalls from the proposed drainage systems into a public sewer, canal, or other drainage system not owned by the applicant.		N/A		
	Y	Y	Evidence of permissions to cross third party land and permissions from riparian owners to discharge to the watercourse/river in perpetuity.		N/A		
			Maintenance				
	Y	Y	Evidence of clear arrangements for the ownership and ongoing maintenance of the SUDS over the lifetime of the development		N/A		
	Y	Y	Details of how the proposed and existing drainage features on the site will be maintained and managed after completion with confirmation from the relevant authority that they will adopt any systems that are being offered for adoption. This must include access arrangements / access easements, proposed maintenance activities, maintenance frequency, responsible parties, and funding mechanisms for ongoing maintenance		N/A		
	Y	Y	Where the design life of proposed drainage features is less than the design life of the development, details of how the drainage will be replaced at the end of its design life	National SuDS Standards	NA		

Appendix C
Drainage Calculations
Existing Discharge Rates North Catchment

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	27.8
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	78.4
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	104.2
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	✓
Analysis Speed	Normal	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	419

Storm Durations

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

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

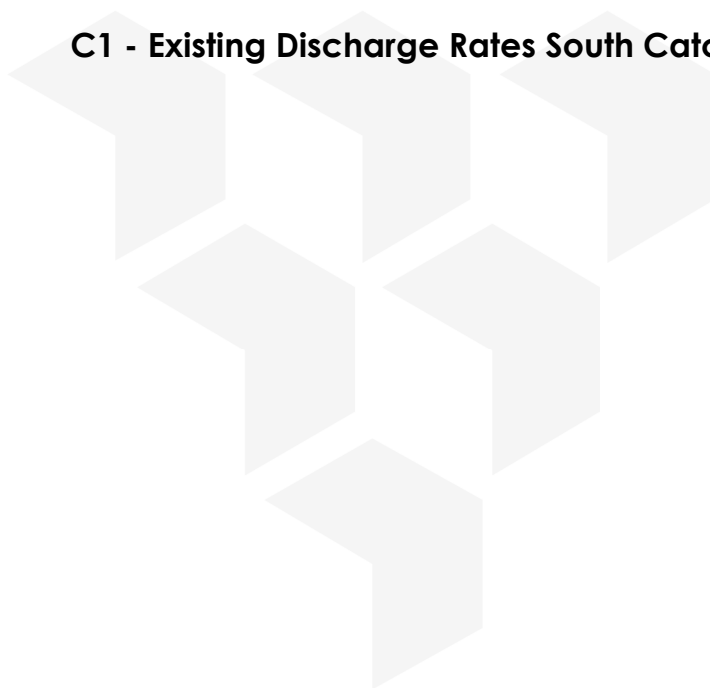
Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	FEH	Growth Factor 100 year	3.19
Positively Drained Area (ha)	6.290	Betterment (%)	0
SAAR (mm)	700	QMed	28.7
Host	1	QBar	32.6
BFIHost	0.326	Q 1 year (l/s)	27.8
Region	6	Q 30 year (l/s)	78.4
QBar/QMed conversion factor	1.136	Q 100 year (l/s)	104.2
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	6.290	Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	0.097
CWI	105.185	Runoff Volume (m³)	419

C1 - Existing Discharge Rates South Catchment



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	27.8
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	78.4
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	104.2
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	✓
Analysis Speed	Normal	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	419

Storm Durations

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

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	FEH	Growth Factor 100 year	3.19
Positively Drained Area (ha)	10.900	Betterment (%)	0
SAAR (mm)	700	QMed	49.8
Host	1	QBar	56.6
BFIHost	0.326	Q 1 year (l/s)	48.1
Region	6	Q 30 year (l/s)	135.8
QBar/QMed conversion factor	1.136	Q 100 year (l/s)	180.5
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	10.900	Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	0.097
CWI	105.185	Runoff Volume (m³)	726

C2 - Theoretical Discharge Rates South Catchment

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	7.3
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	20.6
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	27.3
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

Storm Durations

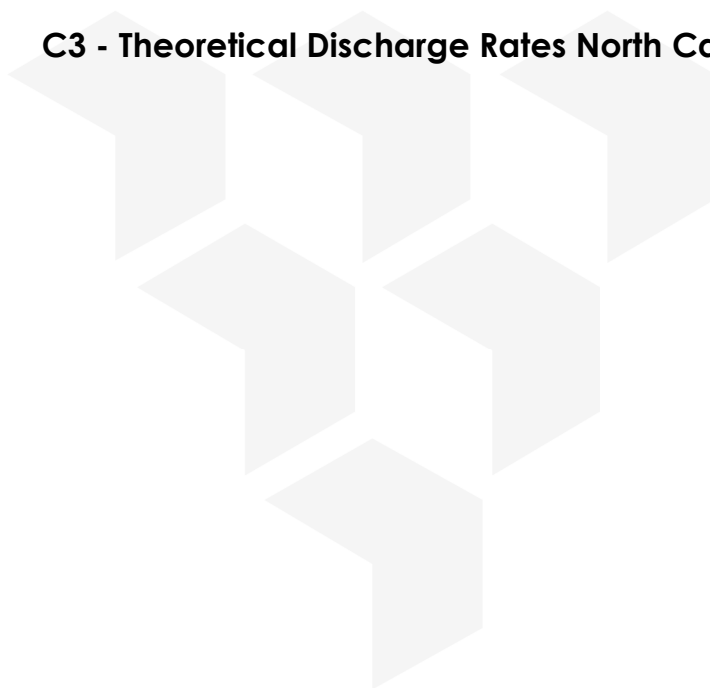
15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	FEH	Growth Factor 100 year	3.19
Positively Drained Area (ha)	3.670	Betterment (%)	0
SAAR (mm)	700	QMed	16.8
Host	1	QBar	19.0
BFIHost	0.326	Q 1 year (l/s)	16.2
Region	6	Q 30 year (l/s)	45.7
QBar/QMed conversion factor	1.136	Q 100 year (l/s)	60.8
Growth Factor 1 year	0.85		

C3 - Theoretical Discharge Rates North Catchment



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	1 year (l/s)	7.3
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	20.6
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	27.3
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

Storm Durations

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

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	FEH	Growth Factor 100 year	3.19
Positively Drained Area (ha)	1.650	Betterment (%)	0
SAAR (mm)	700	QMed	7.5
Host	1	QBar	8.6
BFIHost	0.326	Q 1 year (l/s)	7.3
Region	6	Q 30 year (l/s)	20.6
QBar/QMed conversion factor	1.136	Q 100 year (l/s)	27.3
Growth Factor 1 year	0.85		

C4 - Proposed Drainage Network



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
Pond2OUT	0.610	5.00	91.500	1350	408938.509	193870.744	1.250	90.250
2	0.650	5.00	91.500	1500	408814.978	193936.825	1.605	89.895
tank1.1			91.000	1500	408785.299	193944.001	2.249	88.751
1	1.220	5.00	93.000	1500	408940.003	193676.713	1.725	91.275
pond1in			91.500	1500	408988.922	193704.648	1.500	90.000
Pond1OUT	1.220	5.00	91.500	1350	408942.879	193725.556	1.000	90.500
Pond2IN	0.610		91.500	1350	408938.882	193768.496	1.749	89.751
Tank2	1.000	5.00	91.000	1500	408764.192	193908.472	1.800	89.200
TANK1.2	0.000	5.00	91.000	1500	408768.050	193915.524	1.987	89.013
pond3.2			91.000	1500	408761.550	193919.032	2.500	88.500
pond4out		5.00	89.000	1500	408722.902	193969.233	1.500	87.500
4			89.000	2100	408726.235	193973.291	2.420	86.580
6_OUT			87.000	1500	408696.864	194009.739	0.550	86.450
pond3out		5.00	91.000	1500	408720.715	193936.139	2.000	89.000
pond4in			89.000	1350	408717.746	193942.344	1.998	87.002
pond3.3			91.000	1350	408734.654	193899.252	2.500	88.500
Pond3.1			91.000	1350	408768.026	193947.516	2.500	88.500

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)
1.001	Pond2OUT	2	140.095	0.600	90.250	89.970	0.280	500.0	450	7.59	50.0
1.002	2	tank1.1	30.534	0.600	89.895	89.800	0.095	321.4	525	8.00	50.0
2.000	1	pond1in	56.333	0.600	91.275	90.500	0.775	72.7	600	5.33	50.0
1.000	Pond1OUT	Pond2IN	43.126	0.600	90.500	90.250	0.250	172.5	450	5.47	50.0
5.000	Tank2	TANK1.2	8.038	0.600	89.200	89.013	0.187	43.0	600	5.04	50.0
5.001	TANK1.2	pond3.2	7.386	0.600	89.013	89.000	0.013	568.2	600	5.16	50.0
1.004	pond4out	4	5.251	0.600	87.500	87.447	0.053	100.0	600	5.04	50.0
1.005	4	6_OUT	31.736	0.600	86.580	86.450	0.130	244.1	525	5.41	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.001	0.902	143.5	110.2	0.800	1.080	0.610	0.0	297	0.991
1.002	1.244	269.2	227.7	1.080	0.675	1.260	0.0	372	1.387
2.000	2.858	808.1	220.5	1.125	0.400	1.220	0.0	213	2.451
1.000	1.545	245.7	220.5	0.550	0.800	1.220	0.0	335	1.737
5.000	3.721	1052.0	180.7	1.200	1.387	1.000	0.0	167	2.816
5.001	1.014	286.8	180.7	1.387	1.400	1.000	0.0	346	1.069
1.004	2.435	688.5	0.0	0.900	0.953	0.000	0.0	0	0.000
1.005	1.429	309.3	0.0	1.895	0.025	0.000	0.0	0	0.000

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)
1.003	pond3out	pond4in	6.879	0.600	89.000	88.000	1.000	6.9	150	5.03	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.003	3.866	68.3	0.0	1.850	0.850	0.000	0.0	0	0.000

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	Check Discharge Rate(s)	x
Rainfall Events	Singular	Drain Down Time (mins)	10080	Check Discharge Volume	x
Summer CV	1.000	Additional Storage (m³/ha)	0.0		
Analysis Speed	Detailed	Starting Level (m)			

Storm Durations

15	60	180	360	600	960	2160
30	120	240	480	720	1440	2880

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	10	0
30	0	10	0
30	40	10	0
100	0	10	0
100	40	10	0

Node 4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.005	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0096-5200-1800-5200
Invert Level (m)	86.580	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.800	Min Node Diameter (mm)	1200
Design Flow (l/s)	5.2		

Node Pond2OUT Online Orifice Control

Flap Valve	x	Invert Level (m)	90.250	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.120		

Node pond3out Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.003	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0109-7000-2000-7000
Invert Level (m)	89.000	Min Outlet Diameter (m)	0.150
Design Depth (m)	2.000	Min Node Diameter (mm)	1200
Design Flow (l/s)	7.0		

Node Pond1OUT Infiltration Basin Storage Structure

Base Inf Coefficient (m/hr)	0.00036	Analyse flow through structure	✓
Side Inf Coefficient (m/hr)	0.00036	Main Channel Length (m)	29.000
Safety Factor	5.0	Main Channel Slope (1:X)	99999.0
Invert Level (m)	90.000	Main Channel n	0.050
Time to half empty (mins)	1740		

Inlets

pond1in

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	1091.0	736.0	1.500	1853.0	1524.4

Node Pond2OUT Infiltration Basin Storage Structure

Base Inf Coefficient (m/hr)	0.00036	Analyse flow through structure	✓
Side Inf Coefficient (m/hr)	0.00036	Main Channel Length (m)	85.000
Safety Factor	5.0	Main Channel Slope (1:X)	99999.0
Invert Level (m)	89.750	Main Channel n	0.050
Time to half empty (mins)	2130		

Inlets

Pond2IN

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	1225.0	638.0	1.750	2359.0	1801.2

Node pond4out Infiltration Basin Storage Structure

Base Inf Coefficient (m/hr)	0.00036	Analyse flow through structure	✓
Side Inf Coefficient (m/hr)	0.00036	Main Channel Length (m)	24.000
Safety Factor	5.0	Main Channel Slope (1:X)	9999.0
Invert Level (m)	87.000	Main Channel n	0.060
Time to half empty (mins)			

Inlets

pond4in

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	267.0	267.0	0.500	393.0	397.0	0.501	588.0	592.0	2.000	1163.0	1187.5

Node pond3out Infiltration Basin Storage Structure

Base Inf Coefficient (m/hr)	0.00036	Analyse flow through structure	✓
Side Inf Coefficient (m/hr)	0.00036	Main Channel Length (m)	26.000
Safety Factor	5.0	Main Channel Slope (1:X)	99999.0
Invert Level (m)	88.500	Main Channel n	0.060
Time to half empty (mins)	6660		

Inlets

Pond3.1 | pond3.2 | pond3.3

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	707.0	707.0	0.500	893.0	899.6	0.501	1179.0	1185.6	2.500	2197.0	2243.5

Node TANK1.2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00036	Porosity	0.95	Main Channel Length (m)	70.000
Side Inf Coefficient (m/hr)	0.00036	Invert Level (m)	88.750	Main Channel Slope (1:X)	100000.0
Safety Factor	5.0	Time to half empty (mins)		Main Channel n	0.600

Inlets tank1.1

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	1400.0	1400.0	1.200	1400.0	1559.2	1.201	0.0	1559.2

Node Tank2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00036	Safety Factor	5.0	Invert Level (m)	89.000
Side Inf Coefficient (m/hr)	0.00036	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	450.0	450.0	1.200	450.0	540.2	1.201	0.0	540.2

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2880 minute summer	Pond2OUT	2640	90.339	0.089	10.1	834.6000	0.0000	OK
15 minute summer	2	11	90.155	0.260	127.0	0.4603	0.0000	OK
2880 minute summer	tank1.1	1800	89.075	0.324	8.1	0.5723	0.0000	OK
15 minute summer	1	10	91.506	0.231	238.4	0.4091	0.0000	OK
2880 minute summer	pond1in	1680	90.572	0.572	12.0	0.0000	0.0000	OK
2880 minute summer	Pond1OUT	1680	90.572	0.072	14.1	708.9340	0.0000	OK
2880 minute summer	Pond2IN	2640	90.339	0.588	16.9	0.0000	0.0000	OK
240 minute summer	Tank2	136	89.291	0.091	61.5	124.6632	0.0000	OK
2880 minute summer	TANK1.2	1800	89.075	0.062	9.8	0.1365	0.0000	OK
2880 minute summer	pond3.2	3660	89.061	0.560	6.6	0.0000	0.0000	OK
2880 minute summer	pond4out	8880	87.507	0.007	0.5	170.9331	0.0000	OK
2880 minute summer	4	8880	86.602	0.022	0.1	0.0769	0.0000	OK
2880 minute summer	6_OUT	8880	86.452	0.002	0.1	0.0000	0.0000	OK
2880 minute summer	pond3out	3720	89.058	0.058	2.9	469.7814	0.0000	OK
2880 minute summer	pond4in	8880	87.507	0.505	1.1	0.0000	0.0000	OK
2880 minute summer	pond3.3	3720	89.058	0.558	0.2	0.0000	0.0000	OK
2880 minute summer	Pond3.1	3720	89.058	0.558	0.2	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)
2880 minute summer	Pond2OUT	1.001	2	3.7	0.427	0.026	1.2283	
2880 minute summer	Pond2OUT	Infiltration		0.0				
15 minute summer	2	1.002	tank1.1	122.5	1.229	0.455	3.0458	
2880 minute summer	tank1.1	Flow through Pond	TANK1.2	4.3	0.002	0.054	431.5180	
15 minute summer	1	2.000	pond1in	235.3	2.459	0.291	5.4050	
2880 minute summer	pond1in	Infiltration Basin	Pond1OUT	6.7	0.000	0.002		
2880 minute summer	Pond1OUT	1.000	Pond2IN	13.5	0.840	0.055	0.6945	
2880 minute summer	Pond1OUT	Infiltration		0.0				
2880 minute summer	Pond2IN	Infiltration Basin	Pond2OUT	6.7	0.001	0.004		
240 minute summer	Tank2	5.000	TANK1.2	43.0	1.732	0.041	0.1998	
240 minute summer	Tank2	Infiltration		0.0				
2880 minute summer	TANK1.2	5.001	pond3.2	6.6	0.499	0.023	0.0976	
2880 minute summer	TANK1.2	Infiltration		0.0				
2880 minute summer	pond3.2	Infiltration Basin	pond3out	2.9	0.005	0.000		
2880 minute summer	pond4out	1.004	4	0.1	0.337	0.000	0.0018	
2880 minute summer	pond4out	Infiltration		0.0				
2880 minute summer	4	1.005	6_OUT	0.1	0.266	0.000	0.0141	14.9
2880 minute summer	pond3out	1.003	pond4in	1.1	1.408	0.016	0.0052	
2880 minute summer	pond3out	Infiltration		0.0				
2880 minute summer	pond4in	Infiltration Basin	pond4out	0.5	0.003	0.000		
2880 minute summer	pond3.3	Infiltration Basin	pond3out	2.9	0.005	0.000		
2880 minute summer	Pond3.1	Infiltration Basin	pond3out	2.9	0.005	0.000		

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2880 minute summer	Pond2OUT	1920	90.704	0.454	40.8	1464.5560	0.0000	SURCHARGED
15 minute summer	2	10	90.375	0.480	337.5	0.8475	0.0000	OK
2880 minute summer	tank1.1	3600	89.603	0.852	24.5	1.5056	0.0000	OK
15 minute summer	1	10	91.711	0.436	633.5	0.7696	0.0000	OK
480 minute summer	pond1in	280	90.717	0.717	100.6	0.0000	0.0000	OK
480 minute summer	Pond1OUT	280	90.717	0.217	124.2	915.1266	0.0000	OK
2880 minute summer	Pond2IN	1920	90.704	0.953	60.1	0.0000	0.0000	OK
2880 minute summer	Tank2	3600	89.603	0.403	19.7	258.5231	0.0000	OK
2880 minute summer	TANK1.2	3600	89.603	0.590	40.1	1.0698	0.0000	OK
2880 minute summer	pond3.2	3600	89.603	1.103	39.5	0.0000	0.0000	OK
2880 minute summer	pond4out	7800	88.227	0.727	73.1	694.7028	0.0000	SURCHARGED
2880 minute summer	4	7800	88.229	1.649	14.3	5.7128	0.0000	SURCHARGED
2880 minute summer	6_OUT	7800	86.495	0.045	4.9	0.0000	0.0000	OK
2880 minute summer	pond3out	3600	89.597	0.597	18.1	1198.0520	0.0000	SURCHARGED
2880 minute summer	pond4in	7800	88.227	1.225	54.4	0.0000	0.0000	OK
2880 minute summer	pond3.3	3600	89.597	1.097	1.4	0.0000	0.0000	OK
2880 minute summer	Pond3.1	3600	89.597	1.097	1.4	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)
2880 minute summer	Pond2OUT	1.001	2	17.6	0.675	0.123	3.6671	
2880 minute summer	Pond2OUT	Infiltration		0.0				
15 minute summer	2	1.002	tank1.1	303.5	1.617	1.127	5.6622	
2880 minute summer	tank1.1	Flow through Pond	TANK1.2	24.9	0.003	0.312	1134.1091	
15 minute summer	1	2.000	pond1in	626.1	3.065	0.775	11.5461	
480 minute summer	pond1in	Infiltration Basin	Pond1OUT	56.0	-0.005	0.016		
480 minute summer	Pond1OUT	1.000	Pond2IN	107.4	1.476	0.437	3.9214	
480 minute summer	Pond1OUT	Infiltration		0.0				
2880 minute summer	Pond2IN	Infiltration Basin	Pond2OUT	28.8	0.003	0.016		
2880 minute summer	Tank2	5.000	TANK1.2	19.7	1.255	0.019	1.9369	
2880 minute summer	Tank2	Infiltration		0.0				
2880 minute summer	TANK1.2	5.001	pond3.2	39.5	0.823	0.138	2.0762	
2880 minute summer	TANK1.2	Infiltration		0.0				
2880 minute summer	pond3.2	Infiltration Basin	pond3out	18.1	0.008	0.003		
2880 minute summer	pond4out	1.004	4	14.3	0.670	0.021	1.4791	
2880 minute summer	pond4out	Infiltration		0.0				
2880 minute summer	4	1.005	6_OUT	4.9	0.542	0.016	0.2886	2404.0
2880 minute summer	pond3out	1.003	pond4in	6.3	2.347	0.092	0.0692	
2880 minute summer	pond3out	Infiltration		0.0				
2880 minute summer	pond4in	Infiltration Basin	pond4out	73.1	0.006	0.010		
2880 minute summer	pond3.3	Infiltration Basin	pond3out	18.1	0.008	0.003		
2880 minute summer	Pond3.1	Infiltration Basin	pond3out	18.1	0.008	0.003		

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2160 minute summer	Pond2OUT	1560	90.960	0.710	65.7	1958.9260	0.0000	SURCHARGED
15 minute summer	2	10	90.530	0.635	472.5	1.1229	0.0000	SURCHARGED
2880 minute summer	tank1.1	4320	90.196	1.446	35.6	2.5542	0.0000	OK
15 minute summer	1	10	92.231	0.956	886.9	1.6887	0.0000	SURCHARGED
2160 minute summer	pond1in	1560	90.962	0.961	41.5	0.0000	0.0000	OK
2160 minute summer	Pond1OUT	1560	90.961	0.461	80.3	1286.6760	0.0000	SURCHARGED
2160 minute summer	Pond2IN	1560	90.960	1.209	98.3	0.0000	0.0000	OK
2880 minute summer	Tank2	4320	90.197	0.997	27.6	513.2787	0.0000	SURCHARGED
2880 minute summer	TANK1.2	4320	90.197	1.184	82.1	2.1184	0.0000	SURCHARGED
2880 minute summer	pond3.2	4320	90.197	1.697	59.8	0.0000	0.0000	OK
2880 minute summer	pond4out	12960	88.454	0.954	70.1	902.1234	0.0000	SURCHARGED
2880 minute summer	4	12900	88.456	1.876	12.4	6.4971	0.0000	SURCHARGED
2880 minute summer	6_OUT	12960	86.497	0.047	5.2	0.0000	0.0000	OK
2880 minute summer	pond3out	4380	90.190	1.190	28.6	2170.7920	0.0000	SURCHARGED
2880 minute summer	pond4in	12960	88.454	1.452	56.2	0.0000	0.0000	OK
2880 minute summer	pond3.3	4380	90.190	1.690	1.9	0.0000	0.0000	OK
2880 minute summer	Pond3.1	4380	90.190	1.690	1.9	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)
2160 minute summer	Pond2OUT	1.001	2	23.0	0.727	0.160	4.4373	
2160 minute summer	Pond2OUT	Infiltration		0.0				
15 minute summer	2	1.002	tank1.1	397.3	1.869	1.476	6.1586	
2880 minute summer	tank1.1	Flow through Pond	TANK1.2	33.9	0.004	0.424	1605.0018	
15 minute summer	1	2.000	pond1in	891.0	3.164	1.103	15.7002	
2160 minute summer	pond1in	Infiltration Basin	Pond1OUT	38.8	0.001	0.011		
2160 minute summer	Pond1OUT	1.000	Pond2IN	77.5	1.238	0.316	6.8330	
2160 minute summer	Pond1OUT	Infiltration		0.0				
2160 minute summer	Pond2IN	Infiltration Basin	Pond2OUT	44.9	0.003	0.025		
2880 minute summer	Tank2	5.000	TANK1.2	82.1	1.230	0.078	2.2641	
2880 minute summer	Tank2	Infiltration		0.0				
2880 minute summer	TANK1.2	5.001	pond3.2	59.8	0.922	0.208	2.0805	
2880 minute summer	TANK1.2	Infiltration		0.0				
2880 minute summer	pond3.2	Infiltration Basin	pond3out	28.6	0.006	0.004		
2880 minute summer	pond4out	1.004	4	12.4	0.677	0.018	1.4791	
2880 minute summer	pond4out	Infiltration		0.0				
2880 minute summer	4	1.005	6_OUT	5.2	0.550	0.017	0.3022	3069.0
2880 minute summer	pond3out	1.003	pond4in	6.3	2.347	0.092	0.0695	
2880 minute summer	pond3out	Infiltration		0.0				
2880 minute summer	pond4in	Infiltration Basin	pond4out	70.1	0.016	0.009		
2880 minute summer	pond3.3	Infiltration Basin	pond3out	28.6	0.006	0.004		
2880 minute summer	Pond3.1	Infiltration Basin	pond3out	28.6	0.006	0.004		

Results for 100 year +10% A Critical Storm Duration. Lowest mass balance: 99.88%

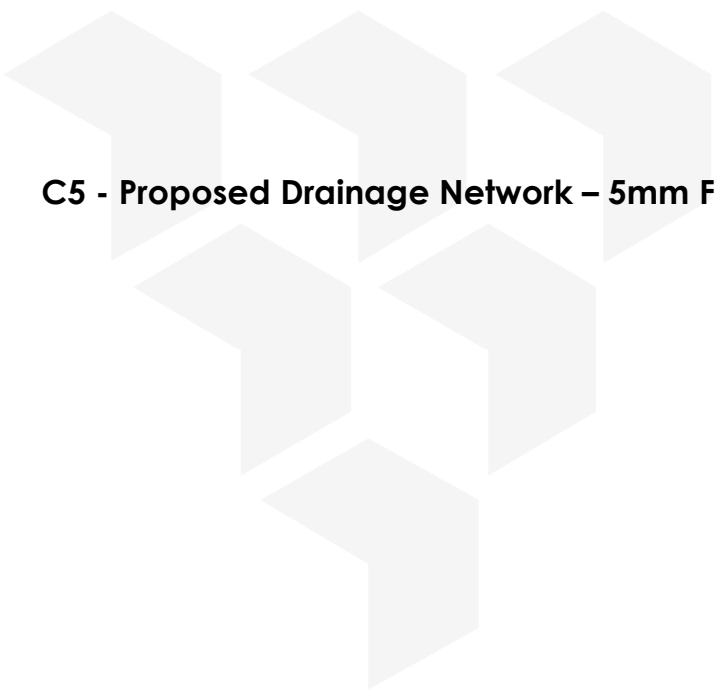
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	Pond2OUT	1140	90.883	0.633	84.4	1806.5190	0.0000	SURCHARGED
15 minute summer	2	10	90.489	0.594	436.0	1.0494	0.0000	SURCHARGED
2880 minute summer	tank1.1	4080	89.915	1.165	31.9	2.0581	0.0000	OK
15 minute summer	1	11	91.852	0.577	818.3	1.0189	0.0000	OK
1440 minute summer	pond1in	1140	90.884	0.884	54.8	0.0000	0.0000	OK
1440 minute summer	Pond1OUT	1140	90.884	0.384	104.9	1165.9770	0.0000	OK
1440 minute summer	Pond2IN	1140	90.883	1.132	128.2	0.0000	0.0000	OK
2880 minute summer	Tank2	4080	89.916	0.716	27.8	392.7382	0.0000	SURCHARGED
2880 minute summer	TANK1.2	4080	89.916	0.903	63.4	1.6222	0.0000	SURCHARGED
2880 minute summer	pond3.2	4080	89.916	1.416	52.0	0.0000	0.0000	OK
2880 minute summer	pond4out	10980	88.419	0.919	66.0	869.3552	0.0000	SURCHARGED
2880 minute summer	4	10920	88.422	1.842	15.8	6.3807	0.0000	SURCHARGED
2880 minute summer	6_OUT	10980	86.497	0.047	5.2	0.0000	0.0000	OK
2880 minute summer	pond3out	4080	89.909	0.909	23.3	1688.1770	0.0000	SURCHARGED
2880 minute summer	pond4in	10980	88.420	1.417	37.7	0.0000	0.0000	OK
2880 minute summer	pond3.3	4140	89.909	1.409	1.6	0.0000	0.0000	OK
2880 minute summer	Pond3.1	4140	89.909	1.409	1.6	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 minute summer	Pond2OUT	1.001	2	21.5	0.713	0.150	4.2360	
1440 minute summer	Pond2OUT	Infiltration		0.0				
15 minute summer	2	1.002	tank1.1	371.8	1.761	1.381	6.0782	
2880 minute summer	tank1.1	Flow through Pond	TANK1.2	29.6	0.004	0.370	1546.4851	
15 minute summer	1	2.000	pond1in	801.6	3.176	0.992	14.4570	
1440 minute summer	pond1in	Infiltration Basin	Pond1OUT	52.9	0.002	0.016		
1440 minute summer	Pond1OUT	1.000	Pond2IN	105.3	1.399	0.429	6.5247	
1440 minute summer	Pond1OUT	Infiltration		0.0				
1440 minute summer	Pond2IN	Infiltration Basin	Pond2OUT	59.6	0.005	0.034		
2880 minute summer	Tank2	5.000	TANK1.2	62.4	1.247	0.059	2.2641	
2880 minute summer	Tank2	Infiltration		0.0				
2880 minute summer	TANK1.2	5.001	pond3.2	52.0	0.889	0.181	2.0805	
2880 minute summer	TANK1.2	Infiltration		0.0				
2880 minute summer	pond3.2	Infiltration Basin	pond3out	23.3	0.009	0.003		
2880 minute summer	pond4out	1.004	4	15.8	0.696	0.023	1.4791	
2880 minute summer	pond4out	Infiltration		0.0				
2880 minute summer	4	1.005	6_OUT	5.2	0.549	0.017	0.3004	3114.1
2880 minute summer	pond3out	1.003	pond4in	6.3	2.347	0.092	0.0695	
2880 minute summer	pond3out	Infiltration		0.0				
2880 minute summer	pond4in	Infiltration Basin	pond4out	66.0	0.008	0.009		
2880 minute summer	pond3.3	Infiltration Basin	pond3out	23.3	0.009	0.003		
2880 minute summer	Pond3.1	Infiltration Basin	pond3out	23.3	0.009	0.003		

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 93.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	Pond2OUT	1200	91.207	0.957	109.1	2474.8890	0.0000	FLOOD RISK
15 minute summer	2	11	90.830	0.935	610.4	1.6521	0.0000	SURCHARGED
2160 minute summer	tank1.1	3900	90.562	1.811	49.1	3.2009	0.0000	OK
15 minute summer	1	10	92.985	1.710	1145.6	3.0218	0.0000	FLOOD RISK
1440 minute summer	pond1in	1170	91.209	1.208	76.7	0.0000	0.0000	OK
1440 minute summer	Pond1OUT	1170	91.208	0.708	139.4	1693.2220	0.0000	FLOOD RISK
1440 minute summer	Pond2IN	1200	91.207	1.456	163.8	0.0000	0.0000	OK
2160 minute summer	Tank2	3900	90.562	1.362	70.2	515.6221	0.0000	SURCHARGED
2160 minute summer	TANK1.2	3900	90.562	1.549	82.0	2.7650	0.0000	SURCHARGED
2160 minute summer	pond3.2	3900	90.563	2.062	76.0	0.0000	0.0000	OK
600 minute summer	pond4out	10680	88.423	0.923	70.4	873.1603	0.0000	SURCHARGED
600 minute summer	4	10680	88.426	1.846	16.3	6.3936	0.0000	SURCHARGED
600 minute summer	6_OUT	10680	86.497	0.047	5.2	0.0000	0.0000	OK
2160 minute summer	pond3out	3960	90.555	1.555	34.7	2859.4490	0.0000	SURCHARGED
600 minute summer	pond4in	10680	88.424	1.421	64.8	0.0000	0.0000	OK
2160 minute summer	pond3.3	3960	90.555	2.055	2.6	0.0000	0.0000	OK
2160 minute summer	Pond3.1	3960	90.555	2.055	2.6	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 minute summer	Pond2OUT	1.001	2	27.2	0.763	0.190	17.4928	
1440 minute summer	Pond2OUT	Infiltration		0.0				
15 minute summer	2	1.002	tank1.1	571.1	2.644	2.121	6.4865	
2160 minute summer	tank1.1	Flow through Pond	TANK1.2	77.2	0.005	0.966	1605.0018	
15 minute summer	1	2.000	pond1in	1140.7	4.050	1.411	15.7072	
1440 minute summer	pond1in	Infiltration Basin	Pond1OUT	62.7	0.002	0.018		
1440 minute summer	Pond1OUT	1.000	Pond2IN	125.4	1.386	0.510	6.8330	
1440 minute summer	Pond1OUT	Infiltration		0.0				
1440 minute summer	Pond2IN	Infiltration Basin	Pond2OUT	70.7	0.004	0.040		
2160 minute summer	Tank2	5.000	TANK1.2	44.7	1.278	0.042	2.2641	
2160 minute summer	Tank2	Infiltration		0.0				
2160 minute summer	TANK1.2	5.001	pond3.2	76.0	0.988	0.265	2.0805	
2160 minute summer	TANK1.2	Infiltration		0.0				
2160 minute summer	pond3.2	Infiltration Basin	pond3out	34.7	0.008	0.005		
600 minute summer	pond4out	1.004	4	16.3	0.723	0.024	1.4791	
600 minute summer	pond4out	Infiltration		0.0				
600 minute summer	4	1.005	6_OUT	5.2	0.549	0.017	0.3006	2743.3
2160 minute summer	pond3out	1.003	pond4in	6.3	2.347	0.092	0.0694	
2160 minute summer	pond3out	Infiltration		0.0				
600 minute summer	pond4in	Infiltration Basin	pond4out	70.4	0.023	0.009		
2160 minute summer	pond3.3	Infiltration Basin	pond3out	34.7	0.008	0.005		
2160 minute summer	Pond3.1	Infiltration Basin	pond3out	34.7	0.008	0.005		



C5 - Proposed Drainage Network – 5mm First Flush

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Approval Results

The network has been designed using IDF rainfall
 It contains 17 nodes (1 outfall) and 9 links
 The total impermeable area is 5.310 ha
 3 online controls have been defined
 6 structures have been defined, providing 10218m³ of storage below the flood risk level
 Infiltration based on BRE 365 has been applied at 6 of the structures
 Simulations have been completed using FEH-22 summer storms from 15 to 1440 minute duration

The node size test has not been completed

The node losses test has not been completed

The link size test has not been completed

The link length test has not been completed

The coordinates test has not been completed

The crossings test has not been completed

The cover depth test has not been completed

The backdrops test has not been completed

The full bore velocity test has not been completed

The proportional velocity test has not been completed

The surcharged depth test has not been completed

The flooding test has not been completed

The time to half empty test has not been completed

The discharge rate test has not been completed

The discharge volume test has not been completed

No outfalls have a positive discharge during the 100 year return period (first 5mm)

US Node	DS Node	Link	Discharge Rate (l/s)
✓ 4	6_OUT	1.005	0.0

Appendix D
Thames Water Correspondence



Mark Lewis

Glanville Consultants
3 Grovelands Business Centre
Boundary Way
Hemel Hempstead
HP2 7TE



05 March 2026

Pre-planning enquiry: Capacity concerns (foul water)

Dear Mark,

Thank you for providing information on your development consisting of 315 residential houses on greenfield site. Proposed FW to discharge to 225mm foul sewer in Common Hill between MHs 3505 & 3559 at a pumped rate of 10l/s.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

We've assessed your **foul water** proposals and concluded that unfortunately we're unable to meet the needs of your development at this time.

In order to ensure we make the appropriate upgrades – or 'off-site reinforcement' – to serve the remainder of your development, we'll need to carry out modelling work, design a solution and build the necessary improvements. This work is done at our cost.

Once we've begun modelling, we may need to contact you to discuss changing the connection point for capacity reasons. Please note that we'll pay the cost of covering any extra distance if the connection needs to be made at a point further away than the nearest practicable point of at least the same diameter.

How long could modelling and reinforcement take?

Typical timescales for a development of your size are:

Modelling: 9-12 months

Design: 6 months

Construction: Up to 18 months*

Total: Up to 36 months

*(dependent on Traffic Management, Local Authority and Third Party Landowners)

If the time you're likely to take from planning and construction through to first occupancy is longer than this, we'll be able to carry out the necessary upgrades in time for your development.

If it's shorter, we may seek planning conditions, please contact me on the number below to discuss the timing of our activities.

What do you need to tell us before we start modelling?

We will only carry out modelling once we're confident that your development will proceed. In order to have this confidence, we will need you to provide **1) proof of land ownership; 2) either outline or full planning permission; 3) construction program**. Please email this information to us as soon as you have it.

If the modelling shows we need to carry out reinforcement work, then before we start construction we'll need you to supply us with notification that you've confirmed your F10 – Notification of construction project - submission to the Health and Safety Executive.

Surface Water

In accordance with the Building Act 2000 Clause H3.3 and the National SuDS Standards, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

National SuDS Standards, Standard 1.2: Runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

priority 1: collected for non-potable use

priority 2: infiltrated to ground

priority 3: discharged to an above ground surface water body

priority 4: discharged to a surface water sewer, or another piped surface water drainage system

priority 5: discharged to a combined sewer

Note 1: priority 1 is the highest priority and priority 5 is the lowest.

Note 2: for the purposes of this standard, a combined sewer is a sewer intended to receive both foul sewage and surface runoff and does not include a sewer intended to receive only foul sewage, even if it has the capacity to accommodate additional flows or has an element of surface water in it already.

Capacity at STW?

The receiving network is served by Cricklade STW and there is a known performance issue which may cause the EA to object to the development. A more detailed assessment will be carried out when the LPA consult our Development Control team and we may require a planning condition to allow us time to upgrade the STW. Please visit our [website](#) for updates on the site specific upgrades.

What do I need to do next?

If you've satisfied the points above, then you should compare your own timeline with the typical timescales we've suggested for our activities. If the time you're likely to take from planning and construction through to first occupancy is **more** than the total time we're likely to take, we'll be able to carry out the necessary upgrades in time for your development.

Please see our [FAQ's leaflet](#) for additional information.

If you've any further questions, please contact us.

Yours sincerely

Hamza Moalim

Adoption Engineer

Developer Services – Sewer Adoptions Team

Hertfordshire

|

Oxfordshire

|

Cambridgeshire

|

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