

Analytical Report Number : 24-012489

Project / Site name: Observer Park

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



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This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS01	D1	S	162595	b	BTEX and/or Volatile organic compounds in soil	L073B	b
WS01	D1	S	162595	b	PCB's By GC-MS in soil	L027B	b
WS01	D1	S	162595	b	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	b
WS01	D1	S	162595	b	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	b
WS03	D1	S	162596	b	BTEX and/or Volatile organic compounds in soil	L073B	b
WS03	D1	S	162596	b	PCB's By GC-MS in soil	L027B	b
WS03	D1	S	162596	b	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	b
WS03	D1	S	162596	b	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	b
WS04	D1	S	162597	b	BTEX and/or Volatile organic compounds in soil	L073B	b
WS04	D1	S	162597	b	PCB's By GC-MS in soil	L027B	b
WS04	D1	S	162597	b	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	L064B	b
WS04	D1	S	162597	b	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088	b

APPENDIX E

Assessment of Analysis of Contamination

UK Guidance

In the UK, the principal numerical criteria used to assess the results of geochemical testing of soil samples for potential contaminants and their significance to human health were the Soil Guideline Values (SGVs). These were published by the Department for the Environment, Food and Rural Affairs (DEFRA) in their Contaminated Land Research Reports Nos. 7-10 inclusive and were accompanied by the Research and Development (R&D) Publications (TOX and SGV series) also published by DEFRA in collaboration with and the Environment Agency (2002).

Additionally, between 2002 and 2005, Contaminated Land Exposure Assessment (CLEA) UK (beta) software was released along with briefing notes 1 to 4.

In 2006, DEFRA released "Soil Guideline Values - The Way Forward" in an attempt to clarify matters.

In August 2008, the EA published a revised CLEA framework guidance in SR2, 3 and 4, along with CLEA v1.03 (beta software), this software was a testing version and comments upon its usefulness were requested. The original SGVs were withdrawn together with CIR7-10, however, the accompanying TOX reports remained valid.

SGVs had been formulated to represent a combination of authoritative scientific and policy judgements. The scientific information includes human toxicological information on the health effects of different contaminants, and judgement on what is regarded as an "unacceptable risk".

Soil is only one source of contaminant exposure, and its effects need to be kept in proportion with total exposure from all sources.

Generic SGVs must be capable of use over a wide range of soil conditions and types of site. They are based on the underlying, albeit incomplete, science of contaminant behaviour, human activity patterns, and contaminant toxicology. Although these make the derivation of generally applicable criteria difficult, use of "worst-case" scenarios is more likely to result in impracticable or over-conservative criteria.

The SGVs are designed to generate a consistent approach to the investigation of contaminated land as well assisting with focusing resources on situations that require a more detailed assessment. Only the first of the R&D publications addressing individual contaminants, have so far been published, and these will be added to in due course. As indicated above, some of these publications have already been withdrawn, whilst some have been revised. Guidance on additional organic contaminants, in particular, is yet to be published.

DEFRA is actively promoting a site-specific risk assessment methodology to support professional judgement resulting in a site-specific assessment criterion (SSAC) for individual compounds. The Contaminated Land Exposure Assessment Model (CLEA) was originally detailed in CLR10 and is described in the conceptual exposure models for each standard land use used to derive the SGVs,

this was replaced by SR3 in August 2008 and then revised again in January 2009. The CLEA model itself was revised in January 2009 to v1.04 and a handbook (SR4) was also issued.

In late 2009, the LQM/CIEH (Land Quality Management/Chartered Institute of Environmental Health) Generic Assessment Criteria for Human Health Risk Assessment Second Edition was published, which provides Generic Assessment Criteria (GAC) values for the 'common' contaminants based upon the principles published by the EA and uses the CLEA model to define values.

Category 4 Screening Levels (C4SLs) were prepared by DEFRA under the Research Project SP1010 and published initially in 2013 as an interim report, with the final (revision 2) issued in 2014.

In early 2015, LQM/CIEH S4ULs ("suitable 4 use levels") for Human Health Risk Assessment was published providing clarification on S4ULs to be used for the assessment of risk posed to human health by contaminants in soil. Concentrations of contaminants above these levels indicate that further assessment of risk is required and not necessarily that a problem exists.

Contamination in near surface soils should be considered with respect to water supply pipes; initially risk guidance was supplied by Water Regulations Advisor Scheme (WRAS) but these have recently been replaced with guidance produced by United Kingdom Water Industry Research (UKWIR), however, some local water authorities still use the old guidance. For the purposes of this report, it is assumed that all water supply pipes will be in MDPE however, if other types of pipes are used then lower threshold values may be appropriate.

Contamination Assessment

Each determinant, for which a published SGV/GAC exists, has a mean and standard deviation calculated followed by "T-test" statistical calculation (Mean Value and Maximum Value Tests). Reference is then made to the SGV for the individual determinant in order to assess the level of risk posed.

Assessment of the geochemical environment is based on guidance given in "Guidance on Comparing Soil Contamination Data with a Critical Concentration" (CIEH and Contaminated Land: Application in Real Environments [CL:aire], May 2008), SR2, 3 and 4 inclusive, SGVs and Human Toxicity (TOX) R&D Reports (EA, 2002 to 2005).

The samples recovered from site were found to be relevant, sufficient, reliable and transparent based upon the requirements indicated within "Guidance on Comparing Soil Contamination Data with a Critical Concentration". As the Site is being assessed under the planning scenario, the critical question that needs to be answered is "Is there sufficient evidence that the true mean concentration of substance X (U) is less than the critical concentration (Cc)?"

Mean concentration of a determinant based on a low number of samples may be a poor indicator of the true mean (population) for the site as a whole. A subsequent remediation strategy based on comparison of such a sample mean against SGV may not be sufficiently health protective. Therefore, the Mean Value Test allows a statement to be made with a given level of confidence (usually 95%) that the population mean is less than the SGV and considers the number of samples analysed.

The calculated values of the upper confidence level of the sample group (US95) may be compared with the SGV or GAC, and if it is less, then the Mean Value Test has been passed and the site may be considered as not presenting a significant possibility of harm to human health within the context of Part IIA of the Environment Protection Act. Where a result shows the concentration to be less than the limit of detection adopted for the analysis, the value of the limit of detection has been used in the calculation.

The calculation is based on the following equation:

Where:

$$US^{95} = \bar{x} + \frac{t \cdot s}{\sqrt{n}}$$

- $\bar{x}$ is the mean.
- t is a statistical function based on sample size.
- s is standard deviation.
- n is the number of samples.

Using the t-tables included in CLR7, the value of “ t ” for four samples ($n=4$) is 2.353 and that for sixteen samples, is 1.753. The results of the statistical analysis are given below. It should be noted that the SGVs given in the table include the SGVs, as cited in CLR8, and also a series of “hybrid” SGVs adopted for the analysis. These have been derived from the upper limit of concentrations for natural (uncontaminated) soils found within the United Kingdom.

The Maximum Value Test is used to determine whether the maximum value of a determinant from a set of analyses is likely to have come from the same population as other concentrations for that determinant, or whether it is a statistical outlier (hot spot).

If the value of “ t ” is smaller than some critical value, determined from statistical tables and based on the number of samples, the maximum value may be accepted (at the prescribed level of confidence) as a member of the underlying population from which the other results were drawn.

If “ t ” is greater than the critical value, the maximum value is treated as an outlier. This may indicate a hot spot of contamination requiring additional investigation in order to reveal its extent. The Maximum Value Test uses the relationship:

Where:

$$T = \frac{y_{\max} - \bar{Y}}{S_y}$$

- $y_{\max}$ is the log of the maximum value of a population.
- $\bar{Y}$ is the mean value of the logs of the population.
- S_y is the standard deviation from the mean of the logs of the population.

For all hydrocarbon analysis values derived above, the soil organic matter (SOM) has been assumed to be 1%, giving an worst-case scenario, were not otherwise proven by laboratory testing.

APPENDIX F

In accordance with Environment Agency publication CLR 11 '*Model Procedures for the Management of Land Contamination*', now superseded by LCRA 2022, a quantitative risk assessment for contaminated land has been developed for the Site.

The risk assessment has been carried out using the risk model defined and outlined in the following table. Potential sources have been identified from the desk study information as well as guidance provided in EA publication CLR 8 '*Potential Contaminants for the Assessment of Land*'. Hazard linkages were determined by the ground investigation and the risk re-assessed on the basis of the viability of the linkage. If the hazard linkage is confirmed, then remediation or management solutions will be proposed to ensure that no unacceptable risk remains following development.

	Category	Definition
Potential Severity	Severe	Acute risks to human health, catastrophic damage to buildings/property, major pollution of controlled waters.
	Medium	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species, significant damage to buildings or structures.
	Mild	Pollution of non-sensitive waters, minor damage to buildings or structures.
	Minor	Requirement for protective equipment during site works to mitigate health effects, damage to non-sensitive ecosystems or species.
Probability of Risk	High Likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor.
	Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable.

		Potential severity			
		Severe	Medium	Mild	Minor
Probability of Risk	High Likelihood	Very High	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Negligible
	Unlikely	Moderate/Low	Low	Negligible	Negligible

APPENDIX G

1. This report has been prepared and written specifically for the Client named in the introduction and is exclusively for their benefit. No reliance may be placed in the contents of this report by any third party except with the express agreement of the original Client and the written agreement of PRP. Such written agreement may require the payment of an additional fee.
2. The *Recommendations* section of this report only provides an overview of the guidance and should not be specifically relied upon in their own right but should be considered in relation to the whole report and the development described in this report.
3. This report has been prepared and written in the context of the proposals for the development of the site, as stated by the Client, and will not be valid in a differing context. Furthermore, new information, improved practices, or legislation may necessitate alterations to the report in whole or in part after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of this report, it should be referred to us for re-assessment.
4. The assessment and interpretation of contamination and associated risks are based upon the scope of the work described in the fee proposal and agreed with the Client, the report may not be sufficient to fully address the contamination or allow a detailed remediation scheme to proceed without further investigation or analysis.
5. Any assessments made in this report are based on the ground conditions and as revealed by the test pits and/or boreholes together with the results of any field or laboratory testing undertaken and where appropriate other relevant data which may have been obtained for the site. The sources of such information are detailed in this report and while PRP use only such sources as are believed to be reliable, PRP will not be liable for the authenticity or reliability of information obtained from others.
6. Notwithstanding that factual reports from third-parties concerning asbestos or mould of any kind may have been included for information purposes in this report, PRP will have no liability whatsoever for any claim or claims arising related to asbestos or mould of any kind.
7. There may also be special conditions appertaining to the site which were not revealed by the investigation and which will not, therefore, have been considered in this report. Any assessments may be subject to amendment in the light of additional information becoming available.
8. Whilst an opinion may be expressed or implied in this report on possible configurations of strata between or beyond test pit or borehole locations, or on the possible presence of features based on either visual, verbal or published evidence, this is for guidance only and no liability can be accepted for the accuracy of such opinions.
9. Comments on groundwater conditions will have been based on observations made only at the time of the investigation unless otherwise stated. It should be noted, however, that groundwater levels vary due to seasonal and other effects.
10. This report is not a site categorisation, and hazards could occur which have not been detected.
11. Where data has been provided or is made available to PRP and this has been used in the report, it has been assumed that the information is correct. No responsibility can be accepted by PRP for inaccuracies within the data supplied.
12. The copyright in this report and other related plans and documents prepared by PRP is owned by them and no such report, plan or document may be reproduced, published or adapted without their written consent. Complete copies of the report may however be made and distributed by the Client as an expedient in dealing with matters related to its commission.
13. This report has been prepared solely for the Client's purposes in obtaining planning permission and discharge of the planning conditions related to the proposed development indicated in the report. The discharge of these conditions does not constitute that the site could be determined under Part IIA of the Environmental Protection Act 1990.

APPENDIX H

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2. BRE Digest 298, 1987, Influence of trees on house foundations in clays soils, BRE, Watford
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7. BS1377:1990, Methods for Tests for Soils for Civil Engineering Purposes, BSI, London
8. BS5930:2015 +A1 2020, Code of Practice for Site investigations, BSI, London
9. BS8485:2015, Code of Practice for the Design of Protective Measures for Methane and Carbon dioxide Ground Gases for New Buildings, BSI, London
10. BS8500-1:2015+A2:2019, Concrete – Complementary British Standard to BSEN206. Part 1: Method of specifying and guidance for the specifier, BSI, London
11. BS8576:2013, Guidance on Investigation for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs), BSI, London
12. C665, 2007, Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA, London
13. C758, 2019, Abandoned Mine Works Manual, CIRIA, London
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23. Environmental Protection Act 1990, Part 2A 2006, Contaminated land, DEFRA, London.
24. HD22/08, 2008, Volume 1, Section 1, Part 2: Managing Geotechnical Risk, Highways Agency.
25. HD41/15, 2015, DMRB Volume 4 Section 1 Part 3: Geotechnics and drainage – Earthworks, Highways Agency
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27. MJ Tomlinson, 2001, 7th Ed., Foundation Design and Construction, Pitman Publishing Ltd, London.
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29. NHBC Standards, 2019, Chapter 4.1 "Land Quality – Managing Ground Conditions.
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33. Science Report Final SC050021/SR2, 2009, Human Health Toxicological Assessment of Contaminants in Soil, Environment Agency, Bristol.
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APPENDIX IV

TW ASSET MAPS
& DEVELOPER ENQUIRY RESPONSE



The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale: 1:2649
Width: 525m
Printed By: tlove
Print Date: 12/07/2022
Map Centre: 474994,167467
Grid Reference: SU7467SE

Comments:



0 15 30 60 90 120
Meters

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale: 1:2649
Width: 525m
Printed By: tlove
Print Date: 12/07/2022
Map Centre: 474994,167467
Grid Reference: SU7467SE

Comments:

ALS/ALS Standard/2022_4671380

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
1301	48.6	46.46
1202	49.12	47.58
2502	47.38	45.1
1504	47.5	45.4
1502	47.71	44.43
2501	47.41	44.98
1201	48.94	46.92
261A		
161C		

REFERENCE	COVER LEVEL	INVERT LEVEL
1401	47.81	45.96
1505	47.29	45.43
2401		
1402	47.84	45.06
1503	47.51	44.68
2603	47.7	45.63
2701	48.03	46.14
151A		
161D		

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Caroline Gower

Mayer Brown Ltd
Lion House
147 Oriental Road
Woking
Surrey
GU22 8AR



25 September 2022

Pre-planning enquiry: Capacity concerns

Dear Caroline,

Thank you for providing information on your development at Greenwards Lane, Arborfield, Berks, RG2 9HT.

Proposed: Construction of 6025m² of commercial space on the area of previously greenfield land at the above location and proposed foul water discharge via pump at 5l/s into 150mm diameter foul water public sewer located in Greenwards Lane.

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 our sewerage network does not have sufficient capacity to accommodate foul water flows from the proposed development.

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: 8 months
Design: 6 months
Construction: 6 months
Total: 20 months

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, 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'll need to know that you **own the land and have either outline or full planning permission**. Please email this information to us as soon as you have it.

If you'd like us to start modelling work ahead of this point, we can do this if you agree to underwrite the cost of modelling and design. That means we'll fund the work – but you agree to pay the cost if you don't achieve first occupancy within five years.

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, 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.

The disposal hierarchy being:

- 1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
- 2) rainwater infiltration to ground at or close to source
- 3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
- 4) rainwater discharge direct to a watercourse (unless not appropriate)
- 5) controlled rainwater discharge to a surface water sewer or drain
- 6) controlled rainwater discharge to a combined sewer.

Where connection to the public sewerage network is required to manage surface water flows we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

Please see the attached 'Planning your wastewater' leaflet for additional information.

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.

If it's **less** than this, you might want to ask us to start modelling earlier – in which case we'll require you to underwrite the cost, as noted above.

If you've any further questions, please contact me on 0800 009 3921.

Yours sincerely

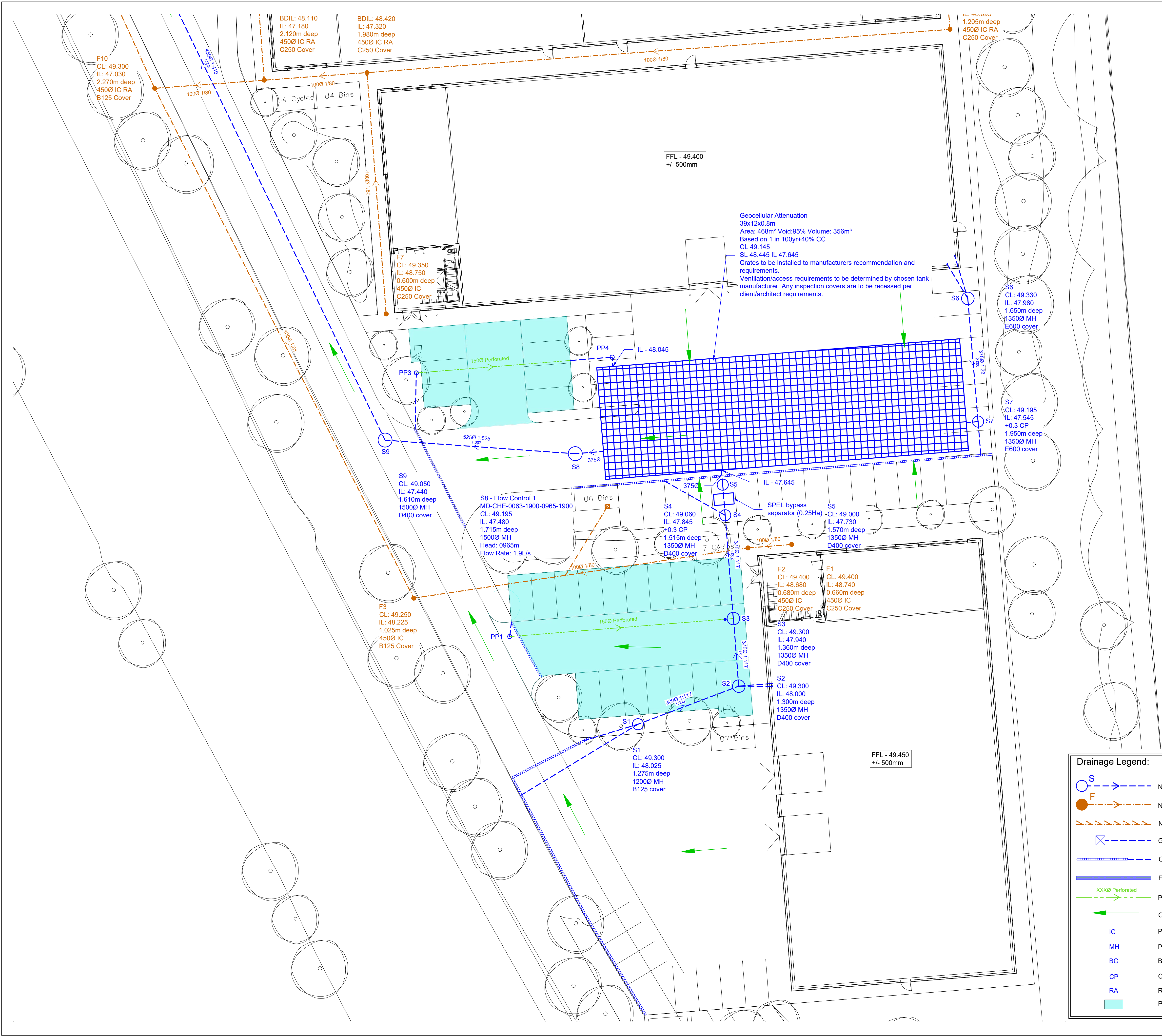
Maria Merchan

Adoption Engineer

Developer Services – Adoptions Engineer, Sewer Adoptions Team

APPENDIX V

PROPOSED DRAINAGE LAYOUTS
& SuDS DETAILS



Drainage Legend:

- New Surface Water
- New Foul Water
- New Rising Sewer
- Gully
- Channel Drain
- Filter Drain
- Perforated Pipe
- Overland Flow Route
- Plastic Inspection Chamber
- Pre-Cast Concrete Manhole
- Brick Chamber/Manhole
- Catchpit
- Restricted Access Cover
- Permeable Asphalt Vehicular

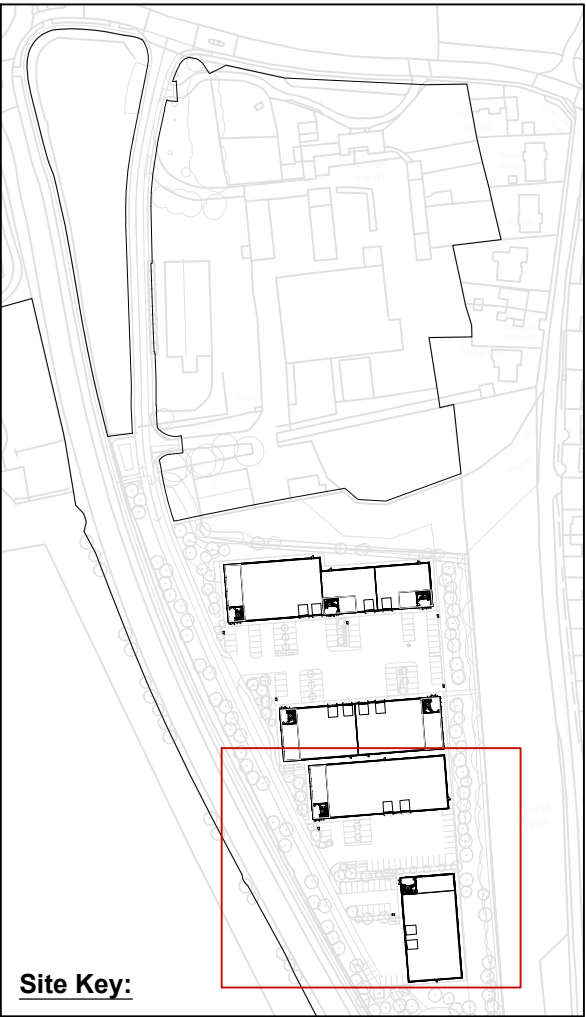
- Notes:**
- DO NOT SCALE FROM THIS DRAWING.
 - All dimensions are in millimetres Unless Noted Otherwise (u.n.o.)
 - Drawing is to be read in conjunction with all relevant architect's drawings. Any inconsistencies should be reported to PRP immediately.
 - All levels and dimensions are to be checked on site before any work commences.

Drawing Reference Note:
This drawing is based on drawings provided by others:

- Topographical Survey: By Woods Hardwick Drawing reference No: 18959-7-851
- Site Plan: by HTC Architects. ; Drawing reference No: 3389 P403 Rev H

Note:
Rain water pipe positions shown are assumed in position and assumed to be siphonic - final position to be confirmed by specialist.
Final position, sizing and invert and cover levels of all drainage to be confirmed with external works drawing.
Ground water issues to be investigated further prior to works commencing on site per ground investigation recommendations - attenuation shown may require mitigation measures with regards to floatation.

Foul Drainage Note:
Final position, sizing and cover and invert levels of all drainage to be confirmed with external works drawing and internal layout drawings.



P2	30/07/2025	Site layout updated	JD / GF
P1	06/06/2025	Issued for comments	HW / GF
Rev	Date	Description	By / Chk



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northampton@prp.uk.com
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Leicester
Northampton
London

engineering excellence | creating advantage

Client:
Tungsten Dev Co 4 Limited

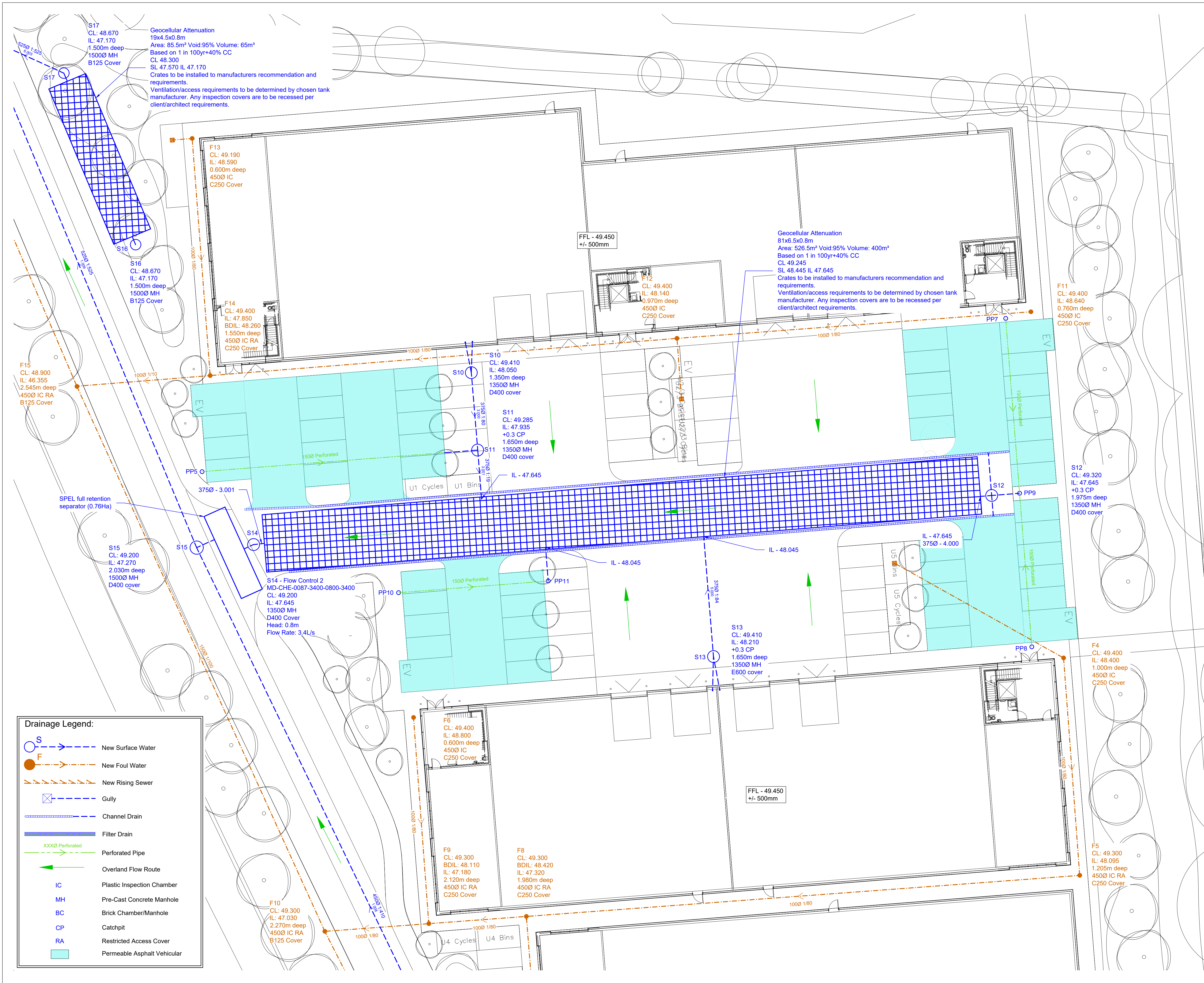
Architect:
HTC Architects

Project:
Observer Park, Reading

Title:
**Drainage Plan
Sheet 1**

Status:
PRELIMINARY

Engineer:	HW	Date:	May 2025
Drawn:	HW	Scales @ A1:	
Checked:	GF		1:200
Project No:	64120	Drg No:	001
		Rev:	P2



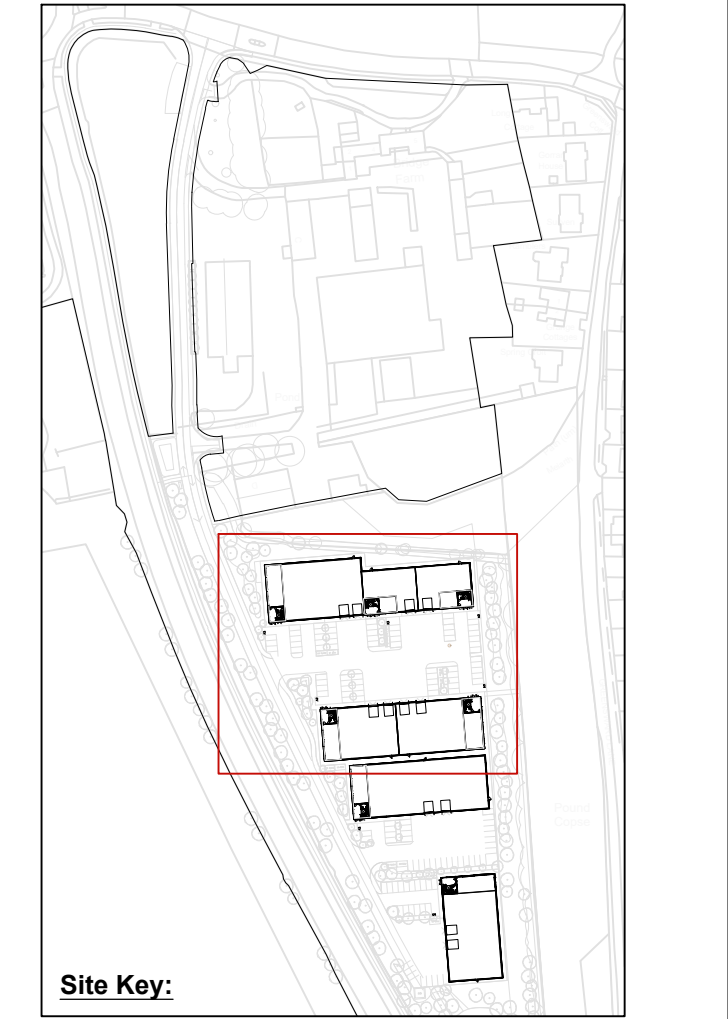
- Notes:**
- DO NOT SCALE FROM THIS DRAWING.
 - All dimensions are in millimetres Unless Noted Otherwise (u.n.o.)
 - Drawing is to be read in conjunction with all relevant architect's drawings. Any inconsistencies should be reported to PRP immediately.
 - All levels and dimensions are to be checked on site before any work commences.

Drawing Reference Note:
This drawing is based on drawings provided by others:

- Topographical Survey: By Woods Hardwick Drawing reference No: 18959-7-851
- Site Plan: by HTC Architects. ; Drawing reference No: 3389 P403 Rev H

Note:
Rain water pipe positions shown are assumed in position and assumed to be siphonic - final position to be confirmed by specialist.
Final position, sizing and invert and cover levels of all drainage to be confirmed with external works drawing.
Ground water issues to be investigated further prior to works commencing on site per ground investigation recommendations - attenuation shown may require mitigation measures with regards to floatation.

Foul Drainage Note:
Final position, sizing and cover and invert levels of all drainage to be confirmed with external works drawing and internal layout drawings.



P2	30/07/2025	Site layout updated	JD / GF
P1	06/06/2025	Issued for comments	HW / GF
Rev	Date	Description	By / Chk

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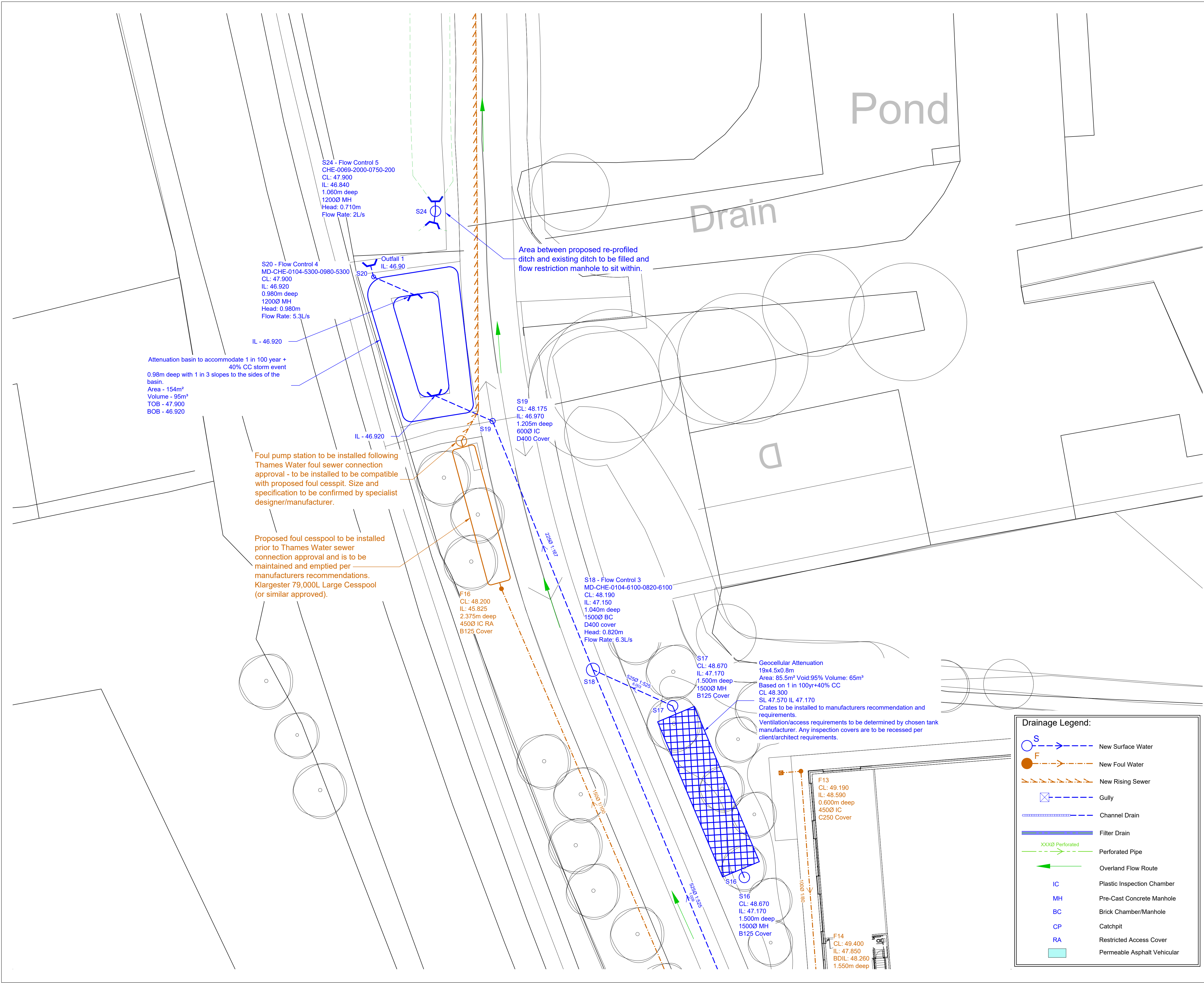
Client:
Tungsten Dev Co 4 Limited

Architect:
HTC Architects

Project:
Observer Park, Reading

Title:
**Drainage Plan
Sheet 2**

Status:	PRELIMINARY		
Engineer:	HW	Date:	May 2025
Drawn:	HW	Scales @ A1:	
Checked:	GF		1:200
Project No:	64120	Drg No:	002
		Rev:	P2



- Notes:**
- DO NOT SCALE FROM THIS DRAWING.
 - All dimensions are in millimetres Unless Noted Otherwise (u.n.o.)
 - Drawing is to be read in conjunction with all relevant architect's drawings. Any inconsistencies should be reported to PRP immediately.
 - All levels and dimensions are to be checked on site before any work commences.

Drawing Reference Note:
This drawing is based on drawings provided by others:

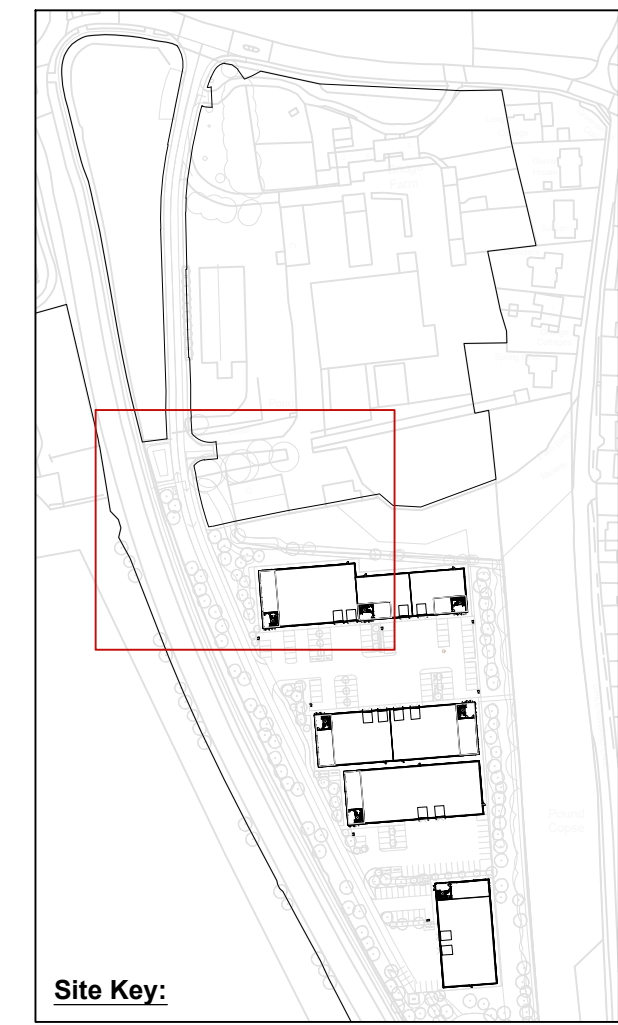
- Topographical Survey: By Woods Hardwick Drawing reference No: 18959-7-851
- Site Plan: by HTC Architects. ; Drawing reference No: 3389 P403 Rev H

Note:
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Final position, sizing and invert and cover levels of all drainage to be confirmed with external works drawing.

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Foul Drainage Note:
Final position, sizing and cover and invert levels of all drainage to be confirmed with external works drawing and internal layout drawings.



P2	30/07/2025	Site layout updated	JD / GF
P1	06/06/2025	Issued for comments	HW / GF
Rev	Date	Description	By / Chk



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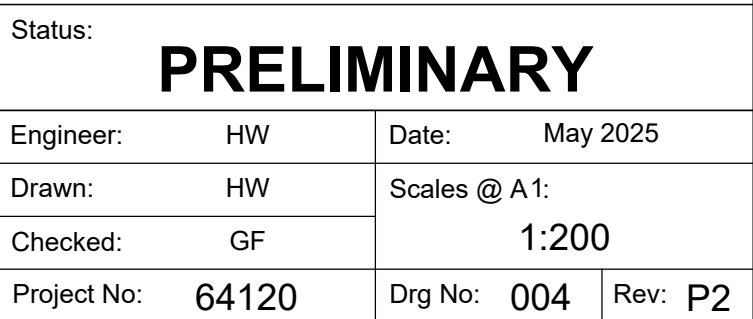
Client:
Tungsten Dev Co 4 Limited

Architect:
HTC Architects

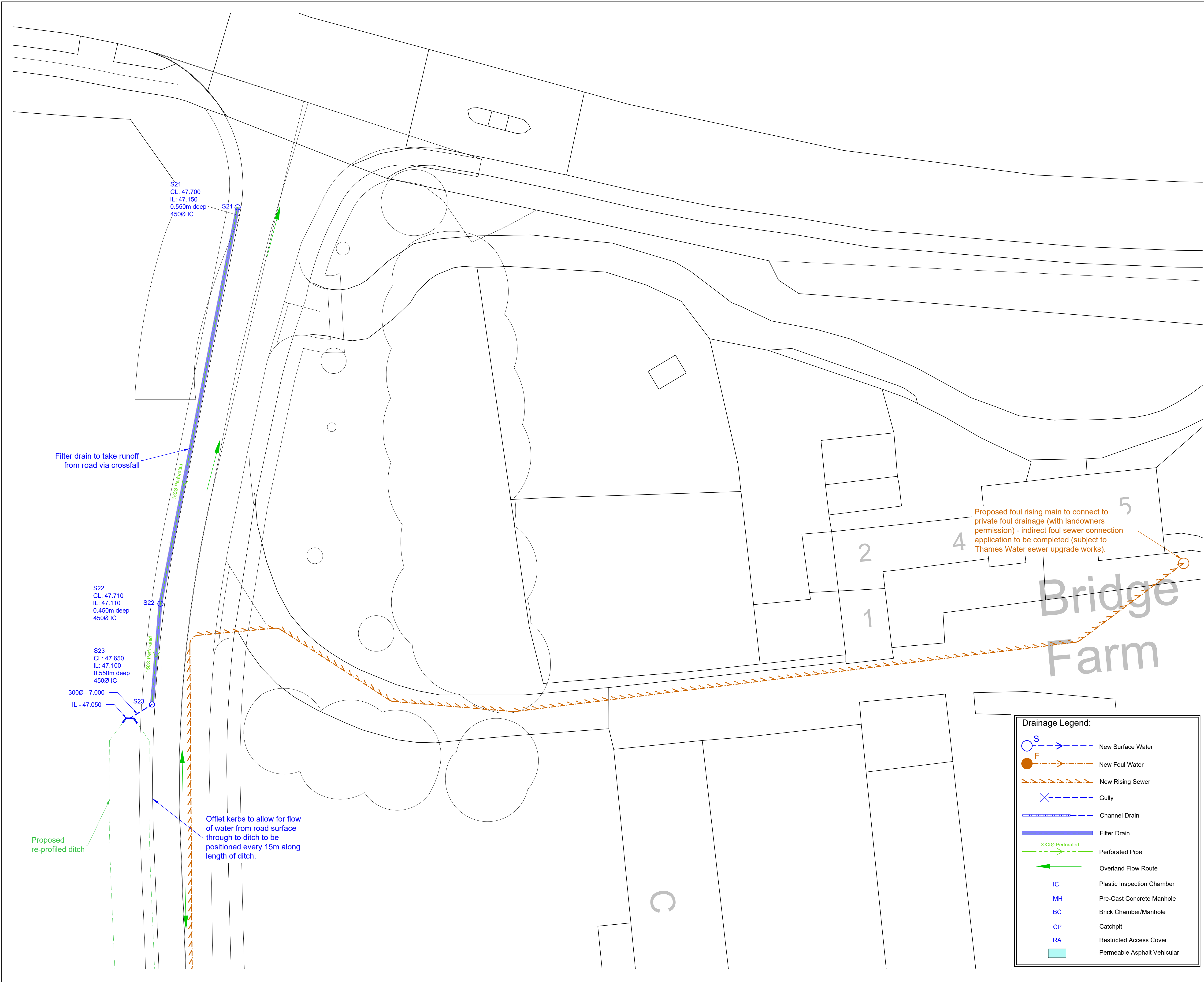
Project:
Observer Park, Reading

Title:
**Drainage Plan
Sheet 3**

Status:	PRELIMINARY		
Engineer:	HW	Date:	May 2025
Drawn:	HW	Scales @ A1:	1:200
Checked:	GF		
Project No:	64120	Drg No:	003
		Rev:	P2



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- Notes:**
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 - All dimensions are in millimetres Unless Noted Otherwise (u.n.o.)
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Drawing Reference Note:
This drawing is based on drawings provided by others:

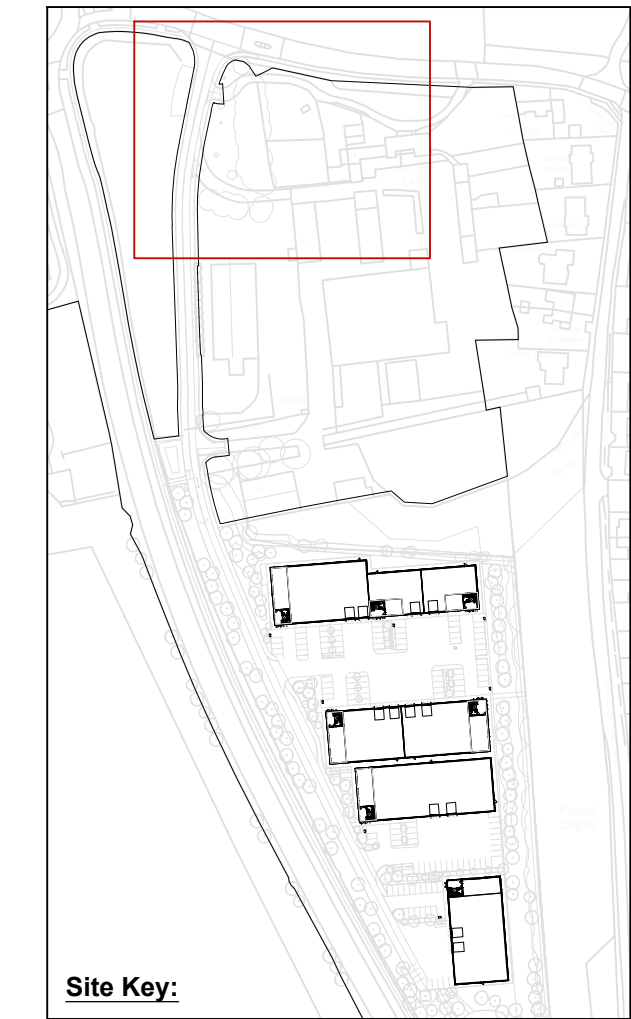
- Topographical Survey: By Woods Hardwick Drawing reference No: 18959-7-851
- Site Plan: by HTC Architects. ; Drawing reference No: 3389 P403 Rev H

Note:
Rain water pipe positions shown are assumed in position and assumed to be siphonic - final position to be confirmed by specialist.

Final position, sizing and invert and cover levels of all drainage to be confirmed with external works drawing.

Ground water issues to be investigated further prior to works commencing on site per ground investigation recommendations - attenuation shown may require mitigation measures with regards to floatation.

Foul Drainage Note:
Final position, sizing and cover and invert levels of all drainage to be confirmed with external works drawing and internal layout drawings.



P2	30/07/2025	Site layout updated	JD / GF
P1	06/06/2025	Issued for comments	HW / GF
Rev	Date	Description	By / Chk

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Client:
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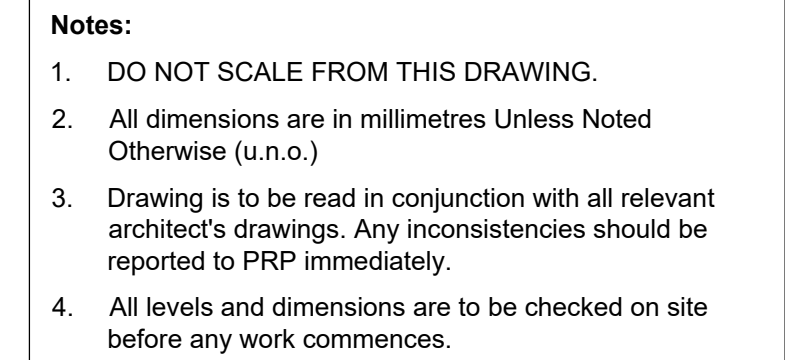
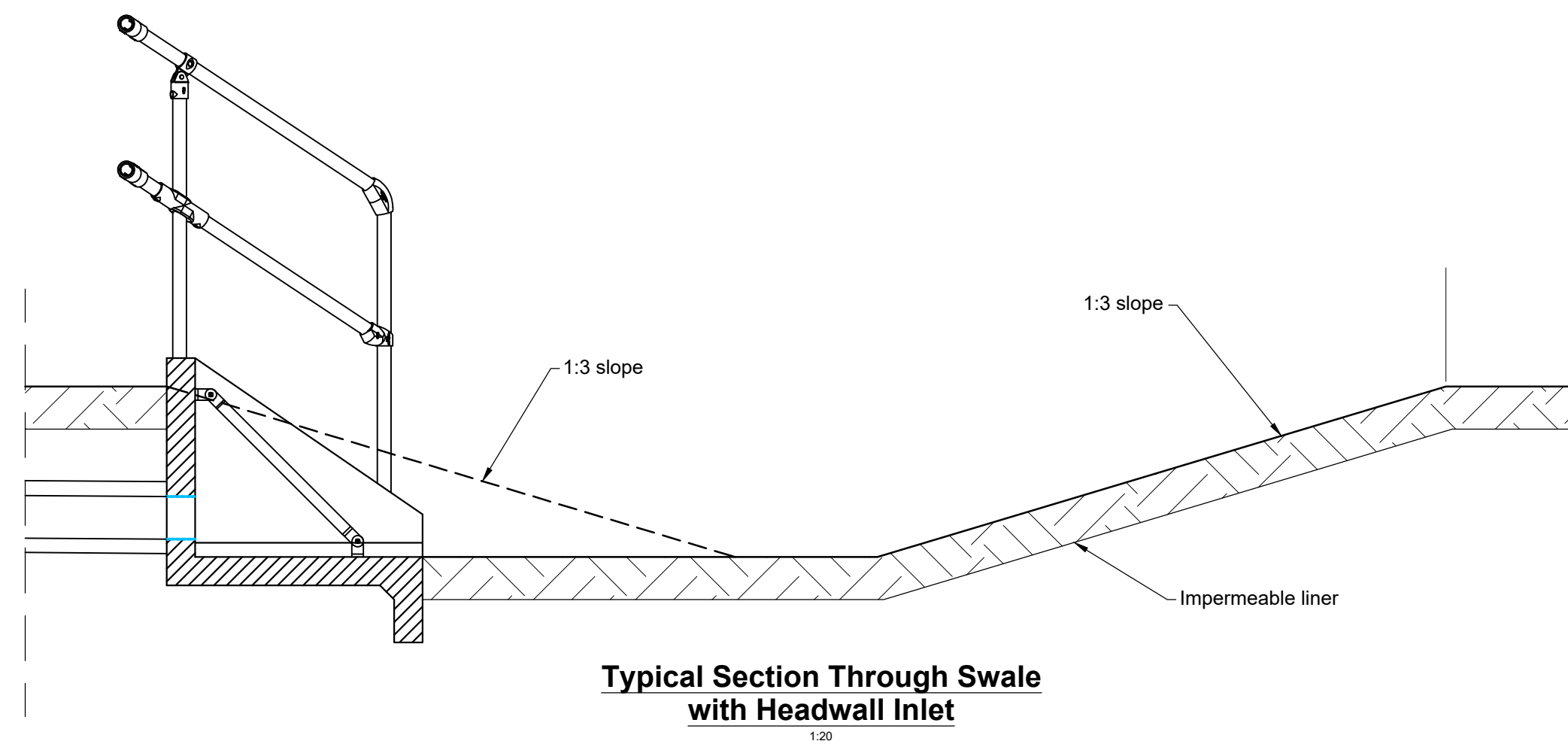
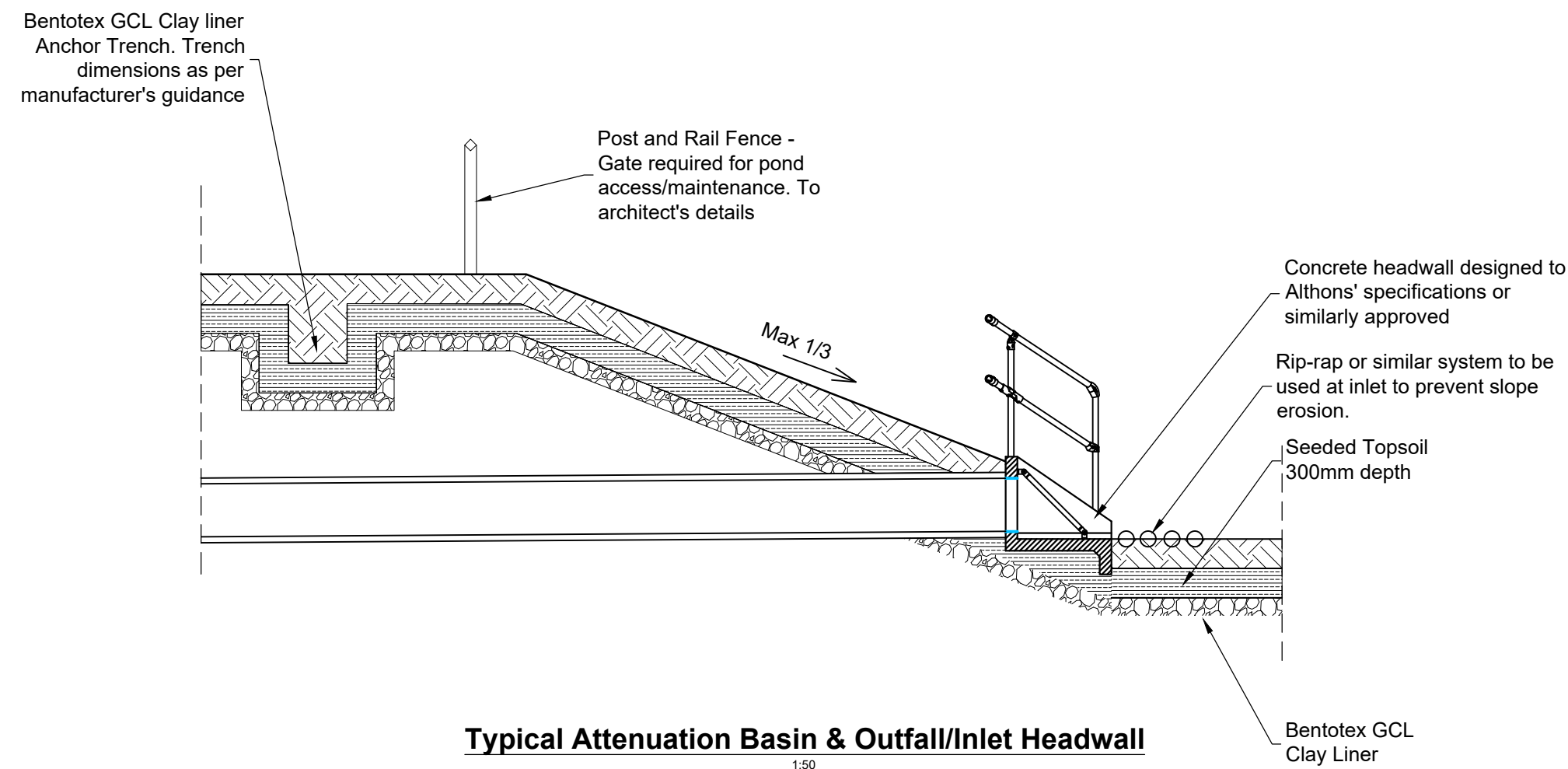
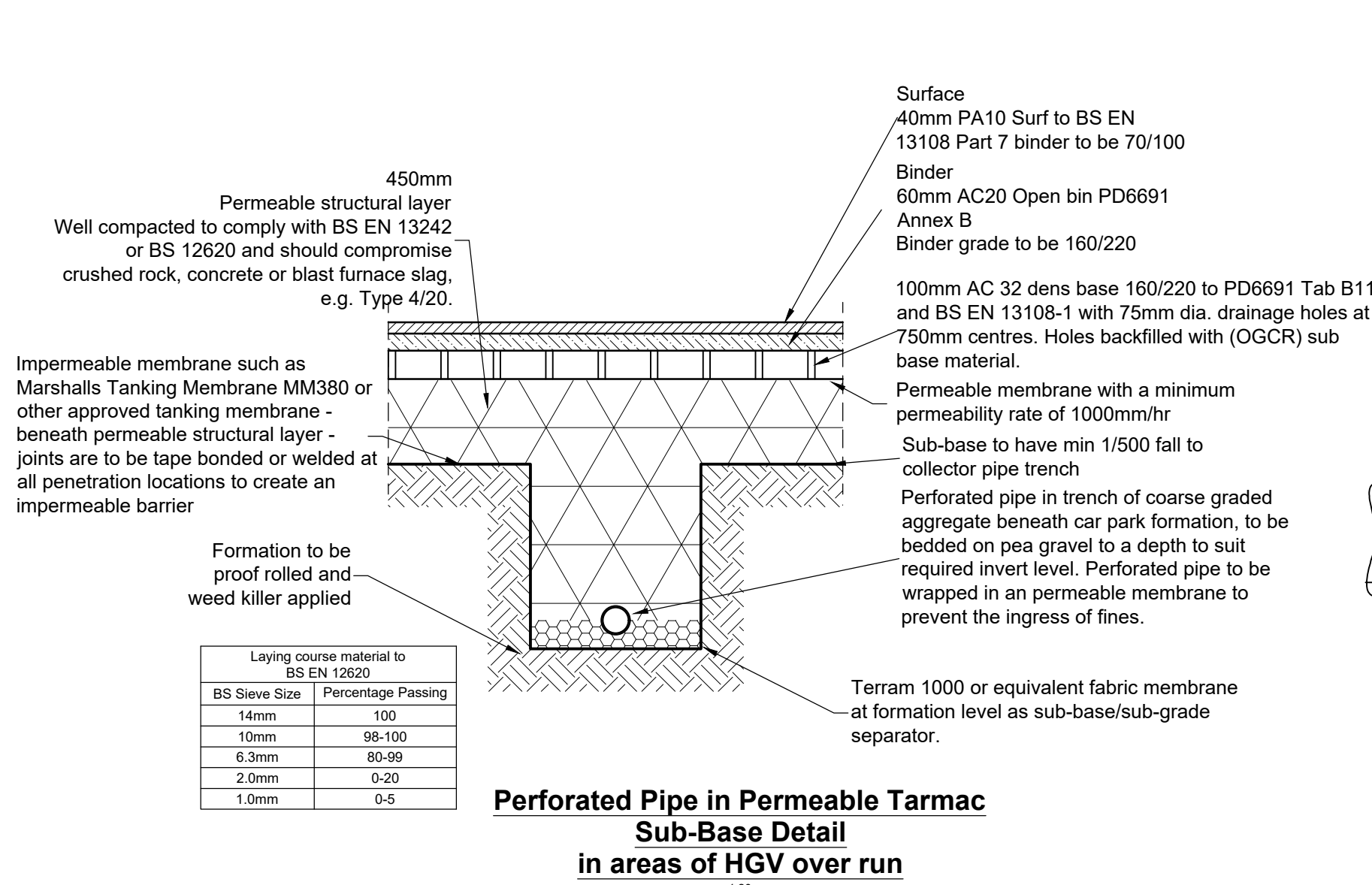
Architect:
HTC Architects

Project:
Observer Park, Reading

Title:
Drainage Plan
Sheet 4

Status:
PRELIMINARY

Engineer:	HW	Date:	May 2025
Drawn:	HW	Scales @ A1:	
Checked:	GF	1:200	
Project No:	64120	Drg No:	005
		Rev:	P2



1. Topographical Survey: By Woods Hardwick Drawing reference No: 18959-7-851
2. Site Plan: by HTC Architects. ; Drawing reference No: 3389 P403 Rev H

Laying course material to BS EN 12620	
BS Sieve Size	Percentage Passing
14mm	100
10mm	98-100
6.3mm	80-99
2.0mm	0-20
1.0mm	0-5

P1	06/06/2025	Issued for comments	HW / GF
Rev	Date	Description	By / Chk



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Client:
Tungsten Dev Co 4 Limited

Architect:
HTC Architects

Project:	Observer Park, Reading
----------	------------------------

Title:
Drainage Details

Status: **PRELIMINARY**

Engineer:	HW	Date: May 2025	
Drawn:	HW	Scales @ A 1: As Shown	
Checked:	GF		
Project No:	64120	Drg No: 006	Rev: P1

APPENDIX VI

**PROPOSED DRAINAGE NETWORK
& GREENFIELD RUNOFF CALCULATIONS**

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: HW	Checked by: GF		Approved By: HP
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
S20	47.900 46.920	Diameter / Length: 1.200	{1} 1.012	Pipe	46.920	Diam/Width:225	Manhole
E:474906.729 N:167368.985	0.980						
			{a} 1.013	Pipe	46.920	Diam/Width:150	Not Applicable
S19	48.175 46.970	Diameter / Length: 1.200	{1} 1.010	Pipe	46.970	Diam/Width:225	Manhole
E:474920.290 N:167352.230	1.205						
			{a} 1.011	Pipe	46.970	Diam/Width:225	Not Applicable
S18	48.190 47.150	Diameter / Length: 1.500	{1} 1.009	Pipe	47.150	Diam/Width:525	Manhole
E:474931.630 N:167324.138	1.040		{2} 6.000	Pipe	47.150	Diam/Width:525	
			{a} 1.010	Pipe	47.150	Diam/Width:225	Not Applicable
S17	48.670 47.170	Diameter / Length: 1.500	{1} 6.001	Pipe	47.170	Diam/Width:525	Manhole
E:474940.621 N:167320.056	1.500						
			{a} 6.000	Pipe	47.170	Diam/Width:525	Not Applicable
S16	48.670 47.170	Diameter / Length: 1.500					Manhole
E:474948.725 N:167300.682	1.500						
			{a} 6.002	Pipe	47.170	Diam/Width:525	Not Applicable

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: HW	Checked by: GF		Approved By: HP
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
S15	49.200 47.270	Diameter / Length: 1.500	{1} 1.008	Pipe	47.270	Diam/Width:525	Manhole
E:474955.613 N:167266.473	1.930		{2} 3.002 (1)	Pipe	47.420	Diam/Width:375	
			{a} 1.009	Pipe	47.270	Diam/Width:525	Not Applicable
S14	49.200 47.645	Diameter / Length: 1.350	{1} 3.002	Pipe	47.645	Diam/Width:375	Manhole
E:474962.040 N:167266.821	1.555						
			{a} 3.002 (1)	Pipe	47.645	Diam/Width:375	Not Applicable
S10	49.410 48.050	Diameter / Length: 1.350					Manhole
E:474986.623 N:167286.235	1.360						
			{a} 3.000	Pipe	48.050	Diam/Width:375	Not Applicable
S11	49.300 47.935	Diameter / Length: 1.350	{1} 3.000	Pipe	47.935	Diam/Width:375	Manhole
E:474987.350 N:167277.487	1.365		{2} PPO1	Pipe	47.935	Diam/Width:150	
			{a} 3.001	Pipe	47.935	Diam/Width:375	Not Applicable

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: HW	Checked by: GF		Approved By: HP
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
S12	49.320 47.645	Diameter / Length: 1.350	{1} 4.000	Pipe	47.645	Diam/Width:225	Manhole
E:475045.612	1.675						
N:167272.372			{a} 4.001	Pipe	47.645	Diam/Width:375	Not Applicable
PP9	49.445 48.445	Diameter / Length: 0.450	{1} PPO2	Pipe	48.445	Diam/Width:150	Manhole
E:475048.519	1.000		{2} PPO4	Pipe	48.445	Diam/Width:150	
N:167272.613			{a} 4.000	Pipe	48.445	Diam/Width:225	Not Applicable
S13	49.410 48.210	Diameter / Length: 1.350					Manhole
E:475013.959	1.200						
N:167254.197			{a} 5.000	Pipe	48.210	Diam/Width:375	Not Applicable
S9	49.050 47.440	Diameter / Length: 1.500	{1} 1.007	Pipe	47.440	Diam/Width:525	Manhole
E:474994.776	1.610						
N:167185.441			{a} 1.008	Pipe	47.440	Diam/Width:525	Not Applicable
S8	49.195 47.480	Diameter / Length: 1.500	{1} 1.006	Pipe	47.630	Diam/Width:375	Manhole
E:475015.155	1.715						
N:167183.988			{a} 1.007	Pipe	47.480	Diam/Width:525	Not Applicable

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: HW	Checked by: GF		Approved By: HP
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
S7	49.195 47.645	Diameter / Length: 1.350	{1} 2.000	Pipe	47.645	Diam/Width:375	Manhole
E:475058.325 N:167187.423	1.550		{a} 2.001	Pipe	47.645	Diam/Width:375	Not Applicable
S6	49.330 47.980	Diameter / Length: 1.350					Manhole
E:475057.223 N:167200.628	1.350		{a} 2.000	Pipe	47.980	Diam/Width:375	Not Applicable
S4	49.060 47.845	Diameter / Length: 1.350	{1} 1.003	Pipe	47.845	Diam/Width:375	Manhole
E:475031.280 N:167177.386	1.215		{a} 1.004	Pipe	47.845	Diam/Width:375	Not Applicable
S3	49.400 47.940	Diameter / Length: 1.350	{1} 1.001	Pipe	47.940	Diam/Width:375	Manhole
E:475032.093 N:167166.318	1.460		{2} PPO6	Pipe	47.940	Diam/Width:150	
			{a} 1.003	Pipe	47.940	Diam/Width:375	Not Applicable
S2	49.400 48.000	Diameter / Length: 1.350	{1} 1.000	Pipe	48.000	Diam/Width:300	Manhole
E:475032.676 N:167159.075	1.400		{a} 1.001	Pipe	48.000	Diam/Width:375	Not Applicable

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: HW	Checked by: GF		Approved By: HP
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
S1	49.300 48.025	Diameter / Length: 1.200					Manhole
E:475021.872	1.275						
N:167154.994			{a} 1.000	Pipe	48.025	Diam/Width:300	Not Applicable
Watercourse Outfall	47.900 46.880	Diameter / Length: 1.200	{1} 1.013	Pipe	46.880	Diam/Width:150	Manhole
E:474905.976	1.020						
N:167371.609							Not Applicable
S5	49.000 47.730	Diameter / Length: 1.200	{1} 1.004	Pipe	47.730	Diam/Width:375	Manhole
E:475031.012	1.270						
N:167180.671			{a} 1.005	Pipe	47.730	Diam/Width:375	Not Applicable

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
		Designed by: HW	Checked by: GF
		Approved By: HP	
Report Details: Type: Inflow Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Access Road 1	S18		Time of Concentration	0.072	100	0	100	0.072
Access Road 2	S9		Time of Concentration	0.030	100	0	100	0.030
Catchment Area	S12		Time of Concentration	0.029	100	0	100	0.029
Lower Road 2	S15		Time of Concentration	0.086	100	0	100	0.086
PP1	PP1		Time of Concentration	0.036	100	0	100	0.036
PP2	PP2		Time of Concentration	0.025	100	0	100	0.025
PP3	PP3		Time of Concentration	0.022	100	0	100	0.022
PP4	PP4		Time of Concentration	0.023	100	0	100	0.023
PP5	PP5		Time of Concentration	0.017	100	0	100	0.017
PP6	PP6		Time of Concentration	0.036	100	0	100	0.036
U1-5 Shared Road 1	S12		Time of Concentration	0.034	100	0	100	0.034
Unit 1 Yard	S10		Time of Concentration	0.035	100	0	100	0.035
Unit 1/2/3	S10		Time of Concentration	0.249	100	0	100	0.249
Unit 2/3 Yard	S12		Time of Concentration	0.041	100	0	100	0.041
Unit 4 Yard	S13		Time of Concentration	0.029	100	0	100	0.029
Unit 4/5	S13		Time of Concentration	0.205	100	0	100	0.205
Unit 5 Yard	S12		Time of Concentration	0.030	100	0	100	0.030
Unit 6	S6		Time of Concentration	0.172	100	0	100	0.172
Unit 6 Entrance	S8		Time of Concentration	0.011	100	0	100	0.011
Unit 6 Yard	S7		Time of Concentration	0.107	100	0	100	0.107
Unit 7	S2		Time of Concentration	0.133	100	0	100	0.133
Unit 7 Yard	S1		Time of Concentration	0.068	100	0	100	0.068
TOTAL		0.0		1.492				1.492

64120: Observer Park, Reading Drainage Calculations Set 1	Date: 06/06/2025		
	Designed by: HW	Checked by: GF	Approved By: HP
Report Details: Type: Network Design Criteria Storm Phase: Phase	PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Manhole Options

Apply Offset	☐
--------------	--------------------------

64120: Observer Park, Reading Drainage Calculations Set 1	Date: 06/06/2025		
	Designed by: HW	Checked by: GF	Approved By: HP
	Report Details: Type: Outfall Details Storm Phase: Phase		
PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
Watercourse Outfall	Free Discharge			

64120: Observer Park, Reading Drainage Calculations Set 1	Date: 06/06/2025		
	Designed by: HW	Checked by: GF	Approved By: HP
Report Title: Rainfall Analysis Criteria	PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	18.3
Ratio R	0.400
Summer	☒
Winter	☒

Return Period

Return Period (years)	Increase Rainfall (%)
1.0	0.000
10.0	0.000
30.0	0.000
100.0	0.000
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

64120: Observer Park, Reading Drainage Calculations Set 1	Date: 06/06/2025		
	Designed by: HW	Checked by: GF	Approved By: HP
Report Title: UK and Ireland Rural Runoff Calculator	PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



ICP SUDS / IH 124

Details

Method	ICP SUDS
Area (ha)	1.67
SAAR (mm)	700.0
Soil	0.45
Region	Region 6
Urban	0
Return Period (years)	100

Results

Region	QBAR Rural (L/s)	QBAR Urban (L/s)	Q 100 (years) (L/s)	Q 1 (years) (L/s)	Q 30 (years) (L/s)	Q 100 (years) (L/s)
Region 6	7.3	7.3	23.4	6.2	16.6	23.4

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: HW	Checked by: GF
		Approved By: HP	
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Unit 1/2/3	FSR: 1 years: +0 %: 15 mins: Winter	0.25	31.9	14.751
PP1	FSR: 1 years: +0 %: 15 mins: Winter	0.04	4.6	2.141
PP2	FSR: 1 years: +0 %: 15 mins: Winter	0.02	3.2	1.472
Unit 1 Yard	FSR: 1 years: +0 %: 15 mins: Winter	0.03	4.5	2.069
Unit 2/3 Yard	FSR: 1 years: +0 %: 15 mins: Winter	0.04	5.3	2.438
PP3	FSR: 1 years: +0 %: 15 mins: Winter	0.02	2.9	1.319
PP4	FSR: 1 years: +0 %: 15 mins: Winter	0.02	3.0	1.391
Unit 4 Yard	FSR: 1 years: +0 %: 15 mins: Winter	0.03	3.8	1.745
Unit 5 Yard	FSR: 1 years: +0 %: 15 mins: Winter	0.03	3.9	1.784
U1-5 Shared Road 1	FSR: 1 years: +0 %: 15 mins: Winter	0.03	4.4	2.039
Catchment Area	FSR: 1 years: +0 %: 15 mins: Winter	0.03	3.7	1.718
Unit 4/5	FSR: 1 years: +0 %: 15 mins: Winter	0.21	26.4	12.187
Unit 6	FSR: 1 years: +0 %: 15 mins: Winter	0.17	22.1	10.196
PP5	FSR: 1 years: +0 %: 15 mins: Winter	0.02	2.1	0.981
Unit 6 Yard	FSR: 1 years: +0 %: 15 mins: Winter	0.11	13.8	6.369
Unit 6 Entrance	FSR: 1 years: +0 %: 15 mins: Winter	0.01	1.4	0.669
PP6	FSR: 1 years: +0 %: 15 mins: Winter	0.04	4.7	2.159
Unit 7	FSR: 1 years: +0 %: 15 mins: Winter	0.13	17.1	7.914
Unit 7 Yard	FSR: 1 years: +0 %: 15 mins: Winter	0.07	8.7	4.012

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
		Designed by: HW	Checked by: GF
		Approved By: HP	
Report Details: Type: Inflows Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



Access Road 2	FSR: 1 years: +0 %: 15 mins: Winter	0.03	3.9	1.781
Lower Road 2	FSR: 1 years: +0 %: 15 mins: Winter	0.09	11.0	5.083
Access Road 1	FSR: 1 years: +0 %: 15 mins: Winter	0.07	9.3	4.270

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
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		Approved By: HP	
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



FSR: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Unit 1/2/3	FSR: 10 years: +0 %: 15 mins: Winter	0.25	61.9	28.567
PP1	FSR: 10 years: +0 %: 15 mins: Winter	0.04	9.0	4.145
PP2	FSR: 10 years: +0 %: 15 mins: Winter	0.02	6.2	2.846
Unit 1 Yard	FSR: 10 years: +0 %: 15 mins: Winter	0.03	8.7	3.998
Unit 2/3 Yard	FSR: 10 years: +0 %: 15 mins: Winter	0.04	10.2	4.727
PP3	FSR: 10 years: +0 %: 15 mins: Winter	0.02	5.5	2.555
PP4	FSR: 10 years: +0 %: 15 mins: Winter	0.02	5.8	2.696
Unit 4 Yard	FSR: 10 years: +0 %: 15 mins: Winter	0.03	7.3	3.377
Unit 5 Yard	FSR: 10 years: +0 %: 15 mins: Winter	0.03	7.5	3.461
U1-5 Shared Road 1	FSR: 10 years: +0 %: 15 mins: Winter	0.03	8.5	3.944
Catchment Area	FSR: 10 years: +0 %: 15 mins: Winter	0.03	7.2	3.338
Unit 4/5	FSR: 10 years: +0 %: 15 mins: Winter	0.21	51.1	23.603
Unit 6	FSR: 10 years: +0 %: 15 mins: Winter	0.17	42.7	19.743
PP5	FSR: 10 years: +0 %: 15 mins: Winter	0.02	4.1	1.904

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
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		Approved By: HP	
Report Details: Type: Inflows Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



Unit 6 Yard	FSR: 10 years: +0 %: 15 mins: Winter	0.11	26.7	12.327
Unit 6 Entrance	FSR: 10 years: +0 %: 15 mins: Winter	0.01	2.8	1.302
PP6	FSR: 10 years: +0 %: 15 mins: Winter	0.04	9.0	4.178
Unit 7	FSR: 10 years: +0 %: 15 mins: Winter	0.13	33.2	15.326
Unit 7 Yard	FSR: 10 years: +0 %: 15 mins: Winter	0.07	16.8	7.777
Access Road 2	FSR: 10 years: +0 %: 15 mins: Winter	0.03	7.5	3.446
Lower Road 2	FSR: 10 years: +0 %: 15 mins: Winter	0.09	21.3	9.840
Access Road 1	FSR: 10 years: +0 %: 15 mins: Winter	0.07	17.9	8.275

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: HW	Checked by: GF
		Approved By: HP	
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Unit 1/2/3	FSR: 30 years: +0 %: 15 mins: Winter	0.25	78.2	36.129
PP1	FSR: 30 years: +0 %: 15 mins: Winter	0.04	11.3	5.243
PP2	FSR: 30 years: +0 %: 15 mins: Winter	0.02	7.8	3.602
Unit 1 Yard	FSR: 30 years: +0 %: 15 mins: Winter	0.03	10.9	5.057
Unit 2/3 Yard	FSR: 30 years: +0 %: 15 mins: Winter	0.04	12.9	5.978
PP3	FSR: 30 years: +0 %: 15 mins: Winter	0.02	7.0	3.233
PP4	FSR: 30 years: +0 %: 15 mins: Winter	0.02	7.4	3.410
Unit 4 Yard	FSR: 30 years: +0 %: 15 mins: Winter	0.03	9.2	4.268
Unit 5 Yard	FSR: 30 years: +0 %: 15 mins: Winter	0.03	9.5	4.373
U1-5 Shared Road 1	FSR: 30 years: +0 %: 15 mins: Winter	0.03	10.8	4.988
Catchment Area	FSR: 30 years: +0 %: 15 mins: Winter	0.03	9.1	4.217
Unit 4/5	FSR: 30 years: +0 %: 15 mins: Winter	0.21	64.6	29.855
Unit 6	FSR: 30 years: +0 %: 15 mins: Winter	0.17	54.1	24.972
PP5	FSR: 30 years: +0 %: 15 mins: Winter	0.02	5.2	2.405

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
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Report Details: Type: Inflows Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



Unit 6 Yard	FSR: 30 years: +0 %: 15 mins: Winter	0.11	33.8	15.596
Unit 6 Entrance	FSR: 30 years: +0 %: 15 mins: Winter	0.01	3.6	1.644
PP6	FSR: 30 years: +0 %: 15 mins: Winter	0.04	11.4	5.282
Unit 7	FSR: 30 years: +0 %: 15 mins: Winter	0.13	42.0	19.384
Unit 7 Yard	FSR: 30 years: +0 %: 15 mins: Winter	0.07	21.3	9.835
Access Road 2	FSR: 30 years: +0 %: 15 mins: Winter	0.03	9.4	4.364
Lower Road 2	FSR: 30 years: +0 %: 15 mins: Winter	0.09	27.0	12.447
Access Road 1	FSR: 30 years: +0 %: 15 mins: Winter	0.07	22.7	10.468

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
		Designed by: HW	Checked by: GF
		Approved By: HP	
Report Details: Type: Inflows Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Unit 1/2/3	FSR: 100 years: +0 %: 15 mins: Winter	0.25	101.2	46.736
PP1	FSR: 100 years: +0 %: 15 mins: Winter	0.04	14.7	6.785
PP2	FSR: 100 years: +0 %: 15 mins: Winter	0.02	10.1	4.661
Unit 1 Yard	FSR: 100 years: +0 %: 15 mins: Winter	0.03	14.2	6.545
Unit 2/3 Yard	FSR: 100 years: +0 %: 15 mins: Winter	0.04	16.7	7.729
PP3	FSR: 100 years: +0 %: 15 mins: Winter	0.02	9.1	4.181
PP4	FSR: 100 years: +0 %: 15 mins: Winter	0.02	9.6	4.409
Unit 4 Yard	FSR: 100 years: +0 %: 15 mins: Winter	0.03	12.0	5.522
Unit 5 Yard	FSR: 100 years: +0 %: 15 mins: Winter	0.03	12.3	5.660
U1-5 Shared Road 1	FSR: 100 years: +0 %: 15 mins: Winter	0.03	14.0	6.458
Catchment Area	FSR: 100 years: +0 %: 15 mins: Winter	0.03	11.8	5.453
Unit 4/5	FSR: 100 years: +0 %: 15 mins: Winter	0.21	83.6	38.616
Unit 6	FSR: 100 years: +0 %: 15 mins: Winter	0.17	69.9	32.306
PP5	FSR: 100 years: +0 %: 15 mins: Winter	0.02	6.7	3.116

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
		Designed by: HW	Checked by: GF
		Approved By: HP	
Report Details: Type: Inflows Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



Unit 6 Yard	FSR: 100 years: +0 %: 15 mins: Winter	0.11	43.7	20.171
Unit 6 Entrance	FSR: 100 years: +0 %: 15 mins: Winter	0.01	4.6	2.127
PP6	FSR: 100 years: +0 %: 15 mins: Winter	0.04	14.8	6.835
Unit 7	FSR: 100 years: +0 %: 15 mins: Winter	0.13	54.3	25.074
Unit 7 Yard	FSR: 100 years: +0 %: 15 mins: Winter	0.07	27.5	12.720
Access Road 2	FSR: 100 years: +0 %: 15 mins: Winter	0.03	12.2	5.642
Lower Road 2	FSR: 100 years: +0 %: 15 mins: Winter	0.09	34.9	16.097
Access Road 1	FSR: 100 years: +0 %: 15 mins: Winter	0.07	29.3	13.536

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: HW	Checked by: GF
		Approved By: HP	
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Unit 1/2/3	FSR: 100 years: +40 %: 15 mins: Winter	0.25	141.7	65.426
PP1	FSR: 100 years: +40 %: 15 mins: Winter	0.04	20.6	9.496
PP2	FSR: 100 years: +40 %: 15 mins: Winter	0.02	14.1	6.527
Unit 1 Yard	FSR: 100 years: +40 %: 15 mins: Winter	0.03	19.8	9.157
Unit 2/3 Yard	FSR: 100 years: +40 %: 15 mins: Winter	0.04	23.4	10.816
PP3	FSR: 100 years: +40 %: 15 mins: Winter	0.02	12.7	5.849
PP4	FSR: 100 years: +40 %: 15 mins: Winter	0.02	13.4	6.176
Unit 4 Yard	FSR: 100 years: +40 %: 15 mins: Winter	0.03	16.7	7.732
Unit 5 Yard	FSR: 100 years: +40 %: 15 mins: Winter	0.03	17.2	7.924
U1-5 Shared Road 1	FSR: 100 years: +40 %: 15 mins: Winter	0.03	19.6	9.034
Catchment Area	FSR: 100 years: +40 %: 15 mins: Winter	0.03	16.5	7.639
Unit 4/5	FSR: 100 years: +40 %: 15 mins: Winter	0.21	117.1	54.064
Unit 6	FSR: 100 years: +40 %: 15 mins: Winter	0.17	97.9	45.228
PP5	FSR: 100 years: +40 %: 15 mins: Winter	0.02	9.4	4.358

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025	
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		Approved By: HP	
Report Details: Type: Inflows Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire	



Unit 6 Yard	FSR: 100 years: +40 %: 15 mins: Winter	0.11	61.2	28.242
Unit 6 Entrance	FSR: 100 years: +40 %: 15 mins: Winter	0.01	6.4	2.978
PP6	FSR: 100 years: +40 %: 15 mins: Winter	0.04	20.7	9.568
Unit 7	FSR: 100 years: +40 %: 15 mins: Winter	0.13	76.0	35.102
Unit 7 Yard	FSR: 100 years: +40 %: 15 mins: Winter	0.07	38.6	17.807
Access Road 2	FSR: 100 years: +40 %: 15 mins: Winter	0.03	17.1	7.900
Lower Road 2	FSR: 100 years: +40 %: 15 mins: Winter	0.09	48.8	22.540
Access Road 1	FSR: 100 years: +40 %: 15 mins: Winter	0.07	41.0	18.953

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025		
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: HW	Checked by: GF	
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S20	FSR: 1 years: +0 %: 15 mins: Summer	47.90 0	46.92 0	46.973	0.053	0.6	0.060	0.000	0.6	0.319	OK
S19	FSR: 1 years: +0 %: 15 mins: Summer	48.17 5	46.97 0	47.013	0.043	3.1	0.049	0.000	3.3	3.193	OK
S18	FSR: 1 years: +0 %: 15 mins: Summer	48.19 0	47.15 0	47.295	0.145	17.4	0.256	0.000	3.4	10.488	OK
S17	FSR: 1 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.293	0.123	13.0	0.217	0.000	0.0	6.868	OK
S16	FSR: 1 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.253	0.083	0.4	0.146	0.000	0.0	0.000	OK
S15	FSR: 1 years: +0 %: 15 mins: Summer	49.20 0	47.27 0	47.342	0.072	13.5	0.127	0.000	8.9	7.874	OK
S14	FSR: 1 years: +0 %: 15 mins: Summer	49.20 0	47.64 5	47.712	0.067	1.0	0.096	0.000	1.0	1.066	OK
S10	FSR: 1 years: +0 %: 15 mins: Summer	49.41 0	48.05 0	48.157	0.107	34.6	0.154	0.000	34.2	15.016	OK
S11	FSR: 1 years: +0 %: 15 mins: Summer	49.30 0	47.93 5	48.016	0.081	34.2	0.117	0.000	33.6	15.019	OK
S12	FSR: 1 years: +0 %: 15 mins: Summer	49.32 0	47.64 5	47.764	0.119	16.4	0.170	0.000	19.7	7.021	OK
PP9	FSR: 1 years: +0 %: 15 mins: Summer	49.44 5	48.44 5	48.445	0.000	0.0	0.000	0.000	0.0	0.000	OK
S13	FSR: 1 years: +0 %: 15 mins: Summer	49.41 0	48.21 0	48.307	0.097	28.7	0.138	0.000	27.9	12.435	OK
S9	FSR: 1 years: +0 %: 15 mins: Summer	49.05 0	47.44 0	47.483	0.043	4.7	0.076	0.000	3.0	2.828	OK
S8	FSR: 1 years: +0 %: 15 mins: Summer	49.19 5	47.48 0	47.699	0.219	2.4	0.387	0.000	1.2	1.579	OK
S7	FSR: 1 years: +0 %: 15 mins: Summer	49.19 5	47.64 5	47.809	0.164	33.8	0.234	0.000	39.8	14.633	OK
S6	FSR: 1 years: +0 %: 15 mins: Summer	49.33 0	47.98 0	48.043	0.063	21.0	0.091	0.000	20.7	9.108	OK
S4	FSR: 1 years: +0 %: 15 mins: Summer	49.06 0	47.84 5	47.917	0.072	22.7	0.104	0.000	22.2	10.632	OK
S3	FSR: 1 years: +0 %: 15 mins: Summer	49.40 0	47.94 0	48.034	0.094	23.5	0.135	0.000	22.7	10.639	OK
S2	FSR: 1 years: +0 %: 15 mins: Summer	49.40 0	48.00 0	48.101	0.101	24.2	0.145	0.000	23.5	10.645	OK
S1	FSR: 1 years: +0 %: 15 mins: Summer	49.30 0	48.02 5	48.115	0.090	8.3	0.102	0.000	7.9	3.582	OK
Watercourse Outfall	FSR: 1 years: +0 %: 15 mins: Summer	47.90 0	46.88 0	46.896	0.016	0.5	0.000	0.000	0.5	0.298	OK
S5	FSR: 1 years: +0 %: 15 mins: Summer	49.00 0	47.73 0	47.799	0.069	22.2	0.078	0.000	22.0	10.630	OK

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025			
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: HW	Checked by: GF		
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire			



FSR: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S20	FSR: 10 years: +0 %: 15 mins: Summer	47.90 0	46.92 0	47.010	0.090	1.6	0.102	0.000	1.5	0.826	OK
S19	FSR: 10 years: +0 %: 15 mins: Summer	48.17 5	46.97 0	47.023	0.053	5.1	0.059	0.000	4.8	5.865	OK
S18	FSR: 10 years: +0 %: 15 mins: Summer	48.19 0	47.15 0	47.367	0.217	30.0	0.384	0.000	5.2	19.858	OK
S17	FSR: 10 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.362	0.192	20.7	0.340	0.000	0.6	13.449	OK
S16	FSR: 10 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.327	0.157	0.5	0.278	0.000	0.0	0.007	OK
S15	FSR: 10 years: +0 %: 15 mins: Summer	49.20 0	47.27 0	47.383	0.113	27.2	0.199	0.000	17.6	14.624	OK
S14	FSR: 10 years: +0 %: 15 mins: Summer	49.20 0	47.64 5	47.775	0.130	2.4	0.186	0.000	2.4	2.683	OK
S10	FSR: 10 years: +0 %: 15 mins: Summer	49.41 0	48.05 0	48.205	0.155	67.1	0.222	0.000	66.4	29.074	OK
S11	FSR: 10 years: +0 %: 15 mins: Summer	49.30 0	47.93 5	48.050	0.115	66.4	0.164	0.000	65.4	29.084	OK
S12	FSR: 10 years: +0 %: 15 mins: Summer	49.32 0	47.64 5	47.819	0.174	31.8	0.249	0.000	48.0	13.584	OK
PP9	FSR: 10 years: +0 %: 15 mins: Summer	49.44 5	48.44 5	48.445	0.000	0.0	0.000	0.000	0.0	0.000	OK
S13	FSR: 10 years: +0 %: 15 mins: Summer	49.41 0	48.21 0	48.350	0.140	55.6	0.200	0.000	54.2	24.082	OK
S9	FSR: 10 years: +0 %: 15 mins: Summer	49.05 0	47.44 0	47.500	0.060	8.4	0.106	0.000	6.1	4.273	OK
S8	FSR: 10 years: +0 %: 15 mins: Summer	49.19 5	47.48 0	47.754	0.274	2.7	0.483	0.000	1.3	1.648	OK
S7	FSR: 10 years: +0 %: 15 mins: Summer	49.19 5	47.64 5	47.882	0.237	65.6	0.338	0.000	71.5	28.226	OK
S6	FSR: 10 years: +0 %: 15 mins: Summer	49.33 0	47.98 0	48.068	0.088	40.7	0.126	0.000	40.2	17.635	OK
S4	FSR: 10 years: +0 %: 15 mins: Summer	49.06 0	47.84 5	47.953	0.108	44.6	0.154	0.000	43.8	20.603	OK
S3	FSR: 10 years: +0 %: 15 mins: Summer	49.40 0	47.94 0	48.076	0.136	45.8	0.194	0.000	44.6	20.609	OK
S2	FSR: 10 years: +0 %: 15 mins: Summer	49.40 0	48.00 0	48.148	0.148	46.9	0.212	0.000	45.8	20.618	OK

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025		
		Designed by: HW	Checked by: GF	Approved By: HP
Report Details: Type: Junctions Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



S1	FSR: 10 years: +0 %: 15 mins: Summer	49.30 0	48.02 5	48.162	0.137	16.0	0.155	0.000	15.3	6.937	OK
Watercourse Outfall	FSR: 10 years: +0 %: 15 mins: Summer	47.90 0	46.88 0	46.906	0.026	1.5	0.000	0.000	1.5	0.793	OK
S5	FSR: 10 years: +0 %: 15 mins: Summer	49.00 0	47.73 0	47.830	0.100	43.8	0.113	0.000	43.5	20.572	OK

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025		
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: HW	Checked by: GF	
		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S20	FSR: 30 years: +0 %: 15 mins: Summer	47.90 0	46.92 0	47.024	0.104	2.0	0.118	0.000	1.9	1.072	OK
S19	FSR: 30 years: +0 %: 15 mins: Summer	48.17 5	46.97 0	47.032	0.062	5.6	0.070	0.000	5.4	6.919	OK
S18	FSR: 30 years: +0 %: 15 mins: Summer	48.19 0	47.15 0	47.388	0.238	37.4	0.421	0.000	5.7	24.111	Surcharged
S17	FSR: 30 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.379	0.209	27.8	0.369	0.000	0.8	16.480	OK
S16	FSR: 30 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.364	0.194	0.8	0.342	0.000	0.0	0.009	OK
S15	FSR: 30 years: +0 %: 15 mins: Summer	49.20 0	47.27 0	47.409	0.139	34.5	0.246	0.000	22.0	17.538	OK
S14	FSR: 30 years: +0 %: 15 mins: Summer	49.20 0	47.64 5	47.809	0.164	2.9	0.235	0.000	2.9	3.360	OK
S10	FSR: 30 years: +0 %: 15 mins: Summer	49.41 0	48.05 0	48.228	0.178	84.8	0.254	0.000	84.0	36.768	OK
S11	FSR: 30 years: +0 %: 15 mins: Summer	49.30 0	47.93 5	48.066	0.131	84.0	0.188	0.000	82.9	36.781	OK
S12	FSR: 30 years: +0 %: 15 mins: Summer	49.32 0	47.64 5	47.843	0.198	40.3	0.284	0.000	44.0	17.169	OK
PP9	FSR: 30 years: +0 %: 15 mins: Summer	49.44 5	48.44 5	48.445	0.000	0.0	0.000	0.000	0.0	0.000	OK
S13	FSR: 30 years: +0 %: 15 mins: Summer	49.41 0	48.21 0	48.371	0.161	70.3	0.230	0.000	68.7	30.459	OK
S9	FSR: 30 years: +0 %: 15 mins: Summer	49.05 0	47.44 0	47.507	0.067	9.9	0.118	0.000	7.7	5.173	OK
S8	FSR: 30 years: +0 %: 15 mins: Summer	49.19 5	47.48 0	47.783	0.303	3.4	0.535	0.000	1.0	1.895	OK
S7	FSR: 30 years: +0 %: 15 mins: Summer	49.19 5	47.64 5	47.918	0.273	83.0	0.391	0.000	126.2	35.696	OK
S6	FSR: 30 years: +0 %: 15 mins: Summer	49.33 0	47.98 0	48.079	0.099	51.4	0.142	0.000	50.8	22.311	OK
S4	FSR: 30 years: +0 %: 15 mins: Summer	49.06 0	47.84 5	47.970	0.125	56.7	0.179	0.000	55.8	26.068	OK
S3	FSR: 30 years: +0 %: 15 mins: Summer	49.40 0	47.94 0	48.096	0.156	58.1	0.223	0.000	56.7	26.074	OK
S2	FSR: 30 years: +0 %: 15 mins: Summer	49.40 0	48.00 0	48.171	0.171	59.4	0.244	0.000	58.1	26.083	OK

64120: Observer Park, Reading Drainage Calculations Set 1		Date: 06/06/2025		
		Designed by: HW	Checked by: GF	Approved By: HP
Report Details: Type: Junctions Summary Storm Phase: Phase		PRP UK LTD: Catherine House, Brixworth NN6 9BX Northamptonshire		



S1	FSR: 30 years: +0 %: 15 mins: Summer	49.30 0	48.02 5	48.185	0.160	20.3	0.181	0.000	19.4	8.776	OK
Watercourse Outfall	FSR: 30 years: +0 %: 15 mins: Summer	47.90 0	46.88 0	46.910	0.030	1.9	0.000	0.000	1.9	1.034	OK
S5	FSR: 30 years: +0 %: 15 mins: Summer	49.00 0	47.73 0	47.845	0.115	55.8	0.130	0.000	55.3	25.986	OK

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FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flooded Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S20	FSR: 100 years: +0 %: 15 mins: Summer	47.90 0	46.92 0	47.039	0.119	2.4	0.134	0.000	2.3	1.361	OK
S19	FSR: 100 years: +0 %: 15 mins: Summer	48.17 5	46.97 0	47.047	0.077	6.1	0.087	0.000	6.1	8.103	OK
S18	FSR: 100 years: +0 %: 15 mins: Summer	48.19 0	47.15 0	47.411	0.261	52.8	0.461	0.000	6.1	29.656	Surcharged
S17	FSR: 100 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.411	0.241	46.2	0.426	0.000	0.7	20.688	OK
S16	FSR: 100 years: +0 %: 15 mins: Summer	48.67 0	47.17 0	47.411	0.241	2.0	0.426	0.000	0.0	0.012	OK
S15	FSR: 100 years: +0 %: 15 mins: Summer	49.20 0	47.27 0	47.444	0.174	44.6	0.307	0.000	24.9	21.139	OK
S14	FSR: 100 years: +0 %: 15 mins: Summer	49.20 0	47.64 5	47.858	0.213	3.5	0.305	0.000	3.4	4.060	OK
S10	FSR: 100 years: +0 %: 15 mins: Summer	49.41 0	48.05 0	48.258	0.208	109.7	0.297	0.000	108.7	47.565	OK
S11	FSR: 100 years: +0 %: 15 mins: Summer	49.30 0	47.93 5	48.088	0.153	108.7	0.219	0.000	107.4	47.581	OK
S12	FSR: 100 years: +0 %: 15 mins: Summer	49.32 0	47.64 5	47.870	0.225	52.1	0.322	0.000	82.2	22.201	OK
PP9	FSR: 100 years: +0 %: 15 mins: Summer	49.44 5	48.44 5	48.445	0.000	0.0	0.000	0.000	0.0	0.000	OK
S13	FSR: 100 years: +0 %: 15 mins: Summer	49.41 0	48.21 0	48.398	0.188	90.9	0.269	0.000	88.9	39.410	OK
S9	FSR: 100 years: +0 %: 15 mins: Summer	49.05 0	47.44 0	47.515	0.075	12.1	0.132	0.000	9.6	6.426	OK
S8	FSR: 100 years: +0 %: 15 mins: Summer	49.19 5	47.48 0	47.824	0.344	4.4	0.608	0.000	1.1	2.246	OK
S7	FSR: 100 years: +0 %: 15 mins: Summer	49.19 5	47.64 5	47.970	0.325	107.6	0.465	0.000	113.2	46.140	OK
S6	FSR: 100 years: +0 %: 15 mins: Summer	49.33 0	47.98 0	48.094	0.114	66.5	0.162	0.000	66.0	28.858	OK
S4	FSR: 100 years: +0 %: 15 mins: Summer	49.06 0	47.84 5	47.992	0.147	73.6	0.211	0.000	72.4	33.724	OK
S3	FSR: 100 years: +0 %: 15 mins: Summer	49.40 0	47.94 0	48.122	0.182	75.3	0.260	0.000	73.6	33.730	OK
S2	FSR: 100 years: +0 %: 15 mins: Summer	49.40 0	48.00 0	48.200	0.200	76.9	0.286	0.000	75.3	33.739	OK

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S1	FSR: 100 years: +0 %: 15 mins: Summer	49.30 0	48.02 5	48.216	0.191	26.2	0.216	0.000	25.2	11.352	OK
Watercourse Outfall	FSR: 100 years: +0 %: 15 mins: Summer	47.90 0	46.88 0	46.913	0.033	2.3	0.000	0.000	2.3	1.319	OK
S5	FSR: 100 years: +0 %: 15 mins: Summer	49.00 0	47.73 0	47.866	0.136	72.4	0.154	0.000	71.9	33.567	OK