

investigation was undertaken by RPS which included trial holes, boreholes and borehole soakaway testing (Ref: BMK23256_Barkway Ground Conditions Report, dated 13 May 2024)

The conclusion of the investigation was that shallow soakage rates up to 5m in depth would be very poor due to the extent of clay within the material. Beyond 5m the clay content reduced significantly and the infiltration potential increased, therefore infiltration by deep bore soakage was recommended. The other major conclusion was that the location of the permeable chalk strata varied across the site and this variance was very acute in some locations. Therefore, locations of infiltration systems would need to be carefully considered against the trial hole data obtained. This also confirmed the use of large plan infiltration systems would give inaccurate design results, due to the inconsistent infiltration rate across the basin area.

A recent scheme located to the south of the proposed development site (Planning ref: 18_00919_DOC) has similarly utilised a deep bore soakage disposal method, further confirming the proposed solution.

3.0 Alternative drainage strategy

Following the conclusion of the recent RPS ground investigation, it is clear that the outline drainage strategy would not generate a suitable surface water disposal system and an alternative solution would be required. Therefore, the current design has developed into the provision of infiltration through deep bore soakaways as the primary method of surface water disposal for the site.

The proposed drainage strategy has been developed to utilise a storage system of balancing ponds located strategically around the development. Due to the location of the chalk and its varying surface depth, the location of the ponds are required to be as close to the borehole soakaway outfalls as possible. Also, the second pond to the northeast of the site was located within the buffer zone and within the official right of way and therefore had to be relocated. Thus, the additional ponds located within the central area of the site have been proposed to contain the western field run-off with the eastern field run-off directed towards the northeastern pond. The water from these balancing ponds is then directed towards borehole soakaways located adjacent to the ponds in the chalk to disperse the water and infiltrate to the ground.

The proposed drainage strategy plans are appended to this technical note in Appendix B

Due to the limited space available within the central area and the depths required to accommodate the lowest levels of the site, the narrowest balancing pond to the southwestern side of the hedgeline was originally proposed to contain a near vertical edge to its eastern side. However, following consultation with the planning authority, the layout has been adjusted to accommodate all the balancing ponds with sloped sides and therefore be similar to the concept indicated in the approved FRA.

With regards to the borehole soakaways and water quality provision, Environment Agency consent will be sought for this disposal method, via the water quality permitting scheme.

The calculations provided by Robert West identify that the infiltration systems can half drain in 24 hours for the 1 in 10-year return period event in accordance with the approved FRA and Ciria guidance and the whole system can accommodate the 1 in 100 year event including climate change. Refer to the detailed Robert West drawings and documents for further details.

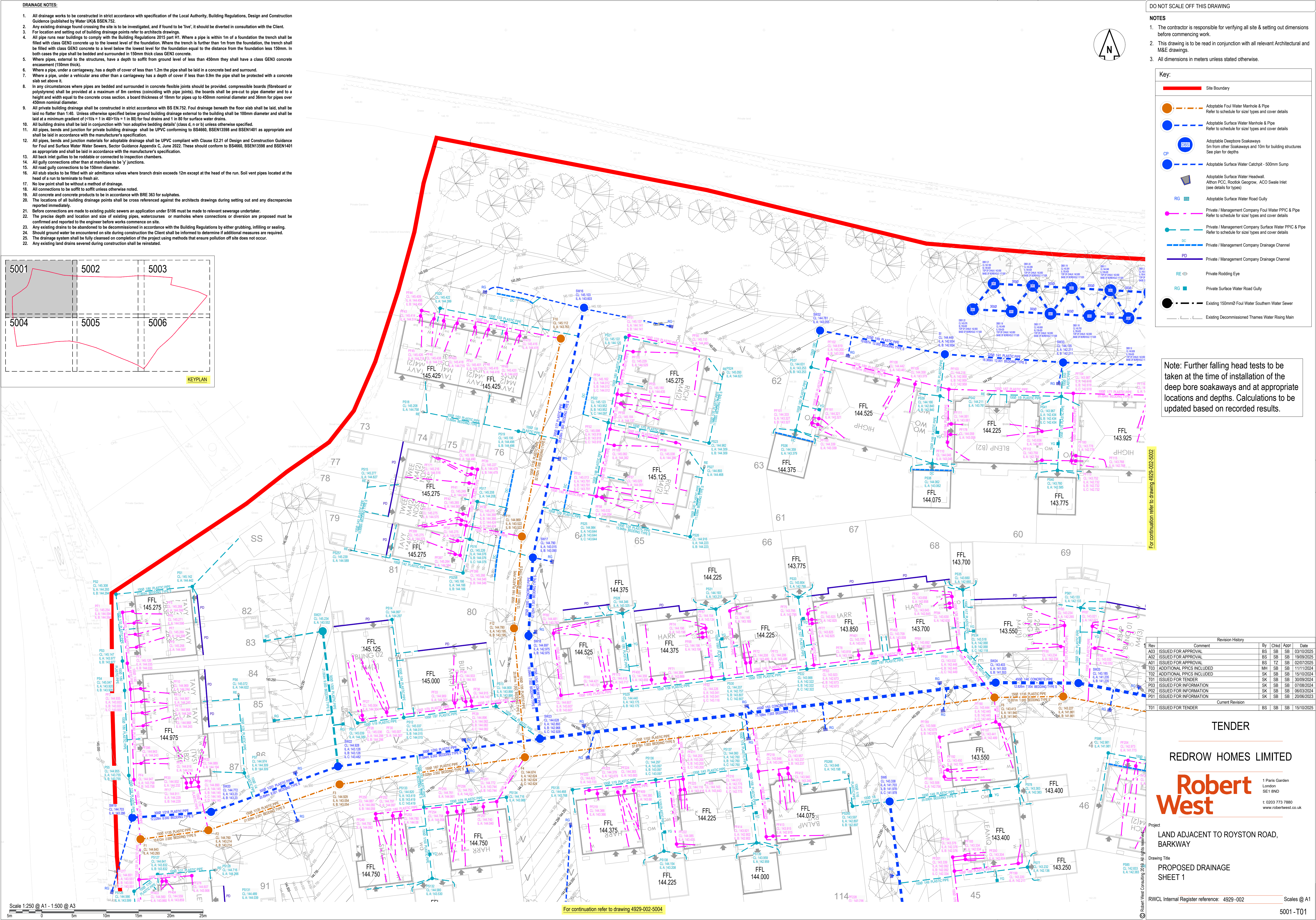
Shaun Pentlow

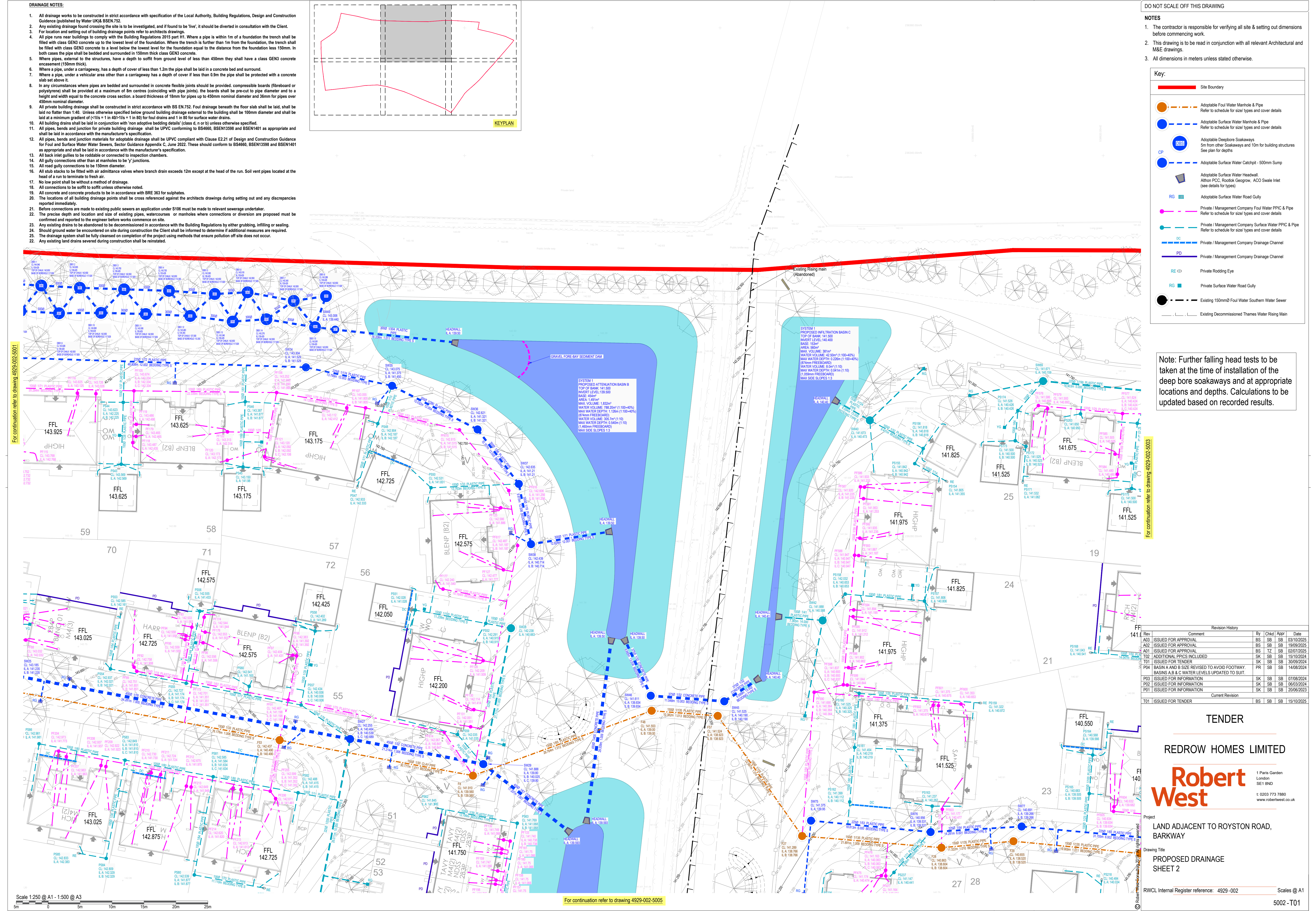
Redrow Homes South Midlands Ltd.

22.10.2025

APPENDIX A – ORIGINAL DRAINAGE STRATEGY PLAN

APPENDIX B- PROPOSED DRAINAGE STRATEGY PLANS





DO NOT SCALE OFF THIS DRAWING

NOTES

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Key:

- Site Boundary
- Adoptable Foul Water Manhole & Pipe
Refer to schedule for size/types and cover details
- Adoptable Surface Water Manhole & Pipe
Refer to schedule for size/types and cover details
- Adoptable Deepbore Soakaways
5m from other Soakaways and 10m from building structures
See plan for depths
- Adoptable Surface Water Catchpit - 500mm Sump
- Adoptable Surface Water Headwall,
Althorn PCC, Rooflok Geogrow, ACO Swale Inlet
(see details for types)
- Adoptable Surface Water Road Gully
- Private / Management Company Foul Water PPIC & Pipe
Refer to schedule for size/types and cover details
- Private / Management Company Surface Water PPIC & Pipe
Refer to schedule for size/types and cover details
- Private / Management Company Drainage Channel
- Private Rodding Eye
- Private Surface Water Road Gully
- Existing 150mm Foul Water Southern Water Sewer
- Existing Decommissioned Thames Water Rising Main

Note: Further falling head tests to be taken at the time of installation of the deep bore soakaways and at appropriate locations and depths. Calculations to be updated based on recorded results.

Revision History				
Rev	Comment	By	Chkd	Date
A03	ISSUED FOR APPROVAL	BS	SB	03/10/2025
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Current Revision				
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TENDER

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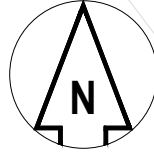
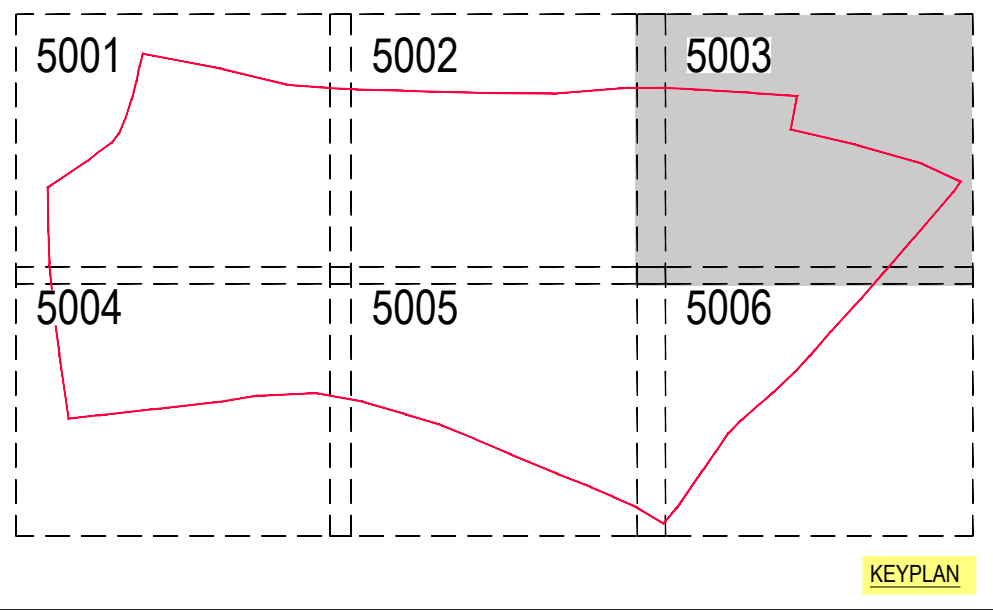
Project
LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title
PROPOSED DRAINAGE SHEET 2

RWVL Internal Register reference: 4929-002
Scales @ A1
5002 - T01

DRAINAGE NOTES:

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- Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
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- Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.5m the pipe shall be protected with a concrete slab set above it.
- In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreboard or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
- All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 (1 in 40 for foul drains and 1 in 80 for surface water drains).
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- All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BS EN13598 and BS EN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
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- All connections to be soffit to soffit unless otherwise noted.
- All concrete and concrete products to be in accordance with BRE 363 for sulphates.
- The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
- Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
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TENDER

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Project
LAND ADJACENT TO ROYSTON ROAD,
BARKWAY

Drawing Title
PROPOSED DRAINAGE
SHEET 3

RWCL Internal Register reference: 4929-002

Scales @ A1

5003 - T01

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For continuation refer to drawing 4929-002-5002

For continuation refer to drawing 4929-002-5006

For continuation refer to drawing 4929-002-5001

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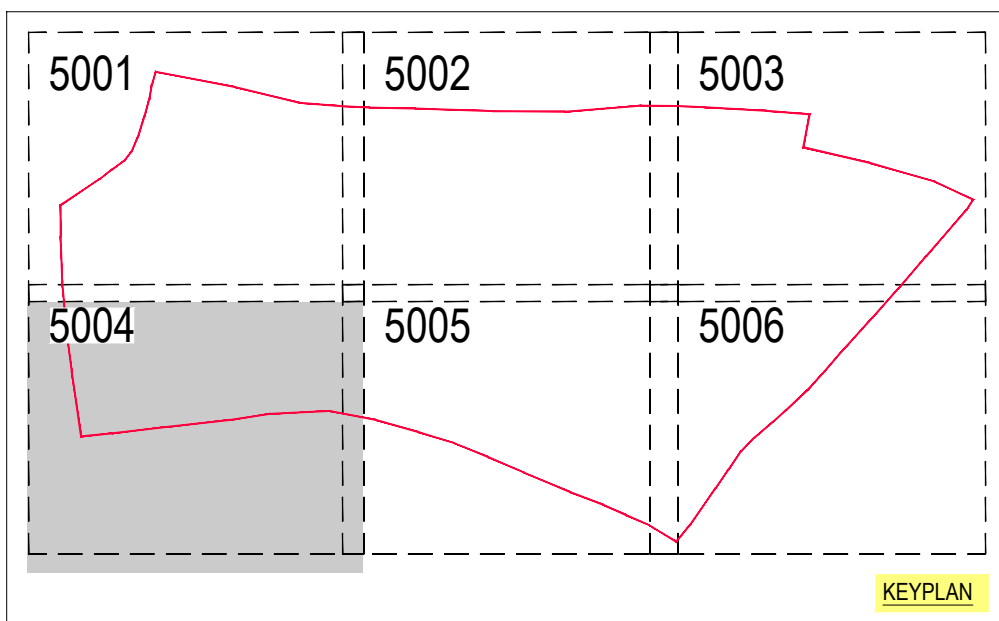
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KEYPLAN

Scale 1:250 @ A1 - 1:500 @ A3
5m 0 5m 10m 15m 20m 25m

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Current Revision					
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TENDER

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Project

LAND ADJACENT TO ROYSTON ROAD,
BARKWAY

Drawing Title

PROPOSED DRAINAGE
SHEET 4

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RWCL Internal Register reference: 4929-002

Scales @ A1

5004 - T01

For continuation refer to drawing 4929-002-5002

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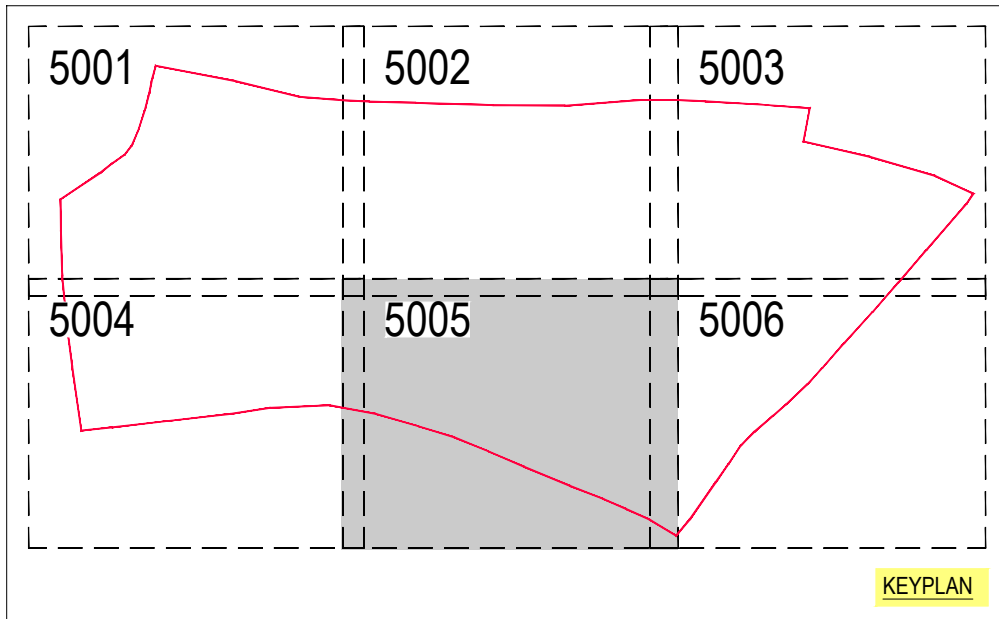
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Scale 1:250 @ A1 - 1:500 @ A3
5m 0 5m 10m 15m 20m 25m

For continuation refer to drawing Inset A on drawing 5006

Revision History				
Rev	Comment	By	Chkd	Appr
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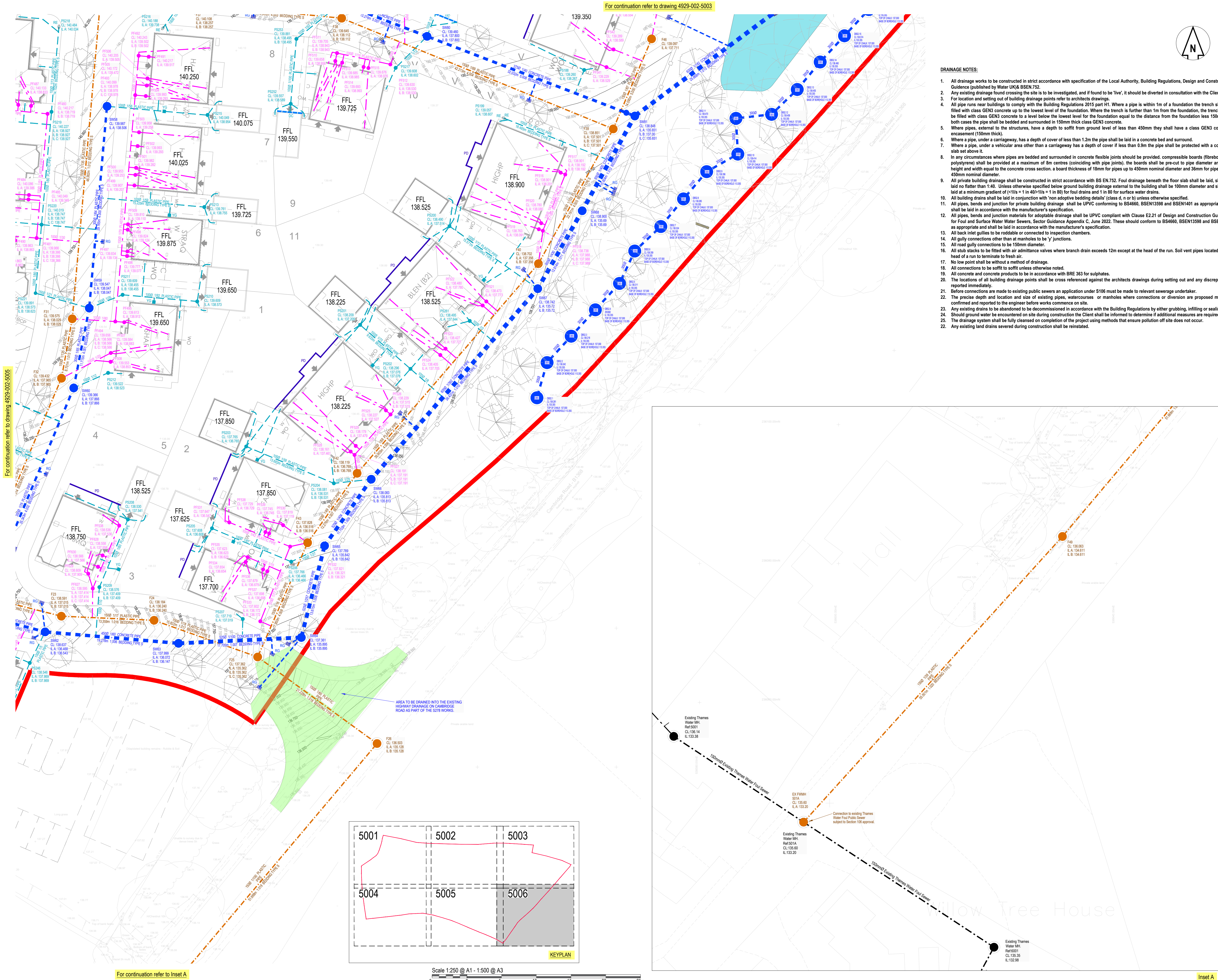
Project
LAND ADJACENT TO ROYSTON ROAD,
BARKWAY

Drawing Title
PROPOSED DRAINAGE
SHEET 5

RWCL Internal Register reference: 4929-002

Scales @ A1

5005 - T01



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 - Where a pipe, under a vehicular area other than a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
 - Where a pipe, under a vehicular area other than a carriageway has a depth of cover if less than 0.5m the pipe shall be protected with a concrete slab set above it.
 - In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
 - All private building drainage shall be constructed in strict accordance with BS EN 752. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of $1:100$ for foul drains and 1 in 80 for surface water drains.
 - All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
 - All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660, BS EN13598 and BS EN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All pipes, bends and junction materials for adoptable drainage shall be UPVC compliant with Clause E2.21 of Design and Construction Guidance for Foul and Surface Water Water Sewers, Sector Guidance Appendix C, June 2022. These should conform to BS4660, BS EN13598 and BS EN1401 as appropriate and shall be laid in accordance with the manufacturer's specification.
 - All back inlet gullies to be roddable or connected to inspection chambers.
 - All gully connections other than at manholes to be 'Y' junctions.
 - All road gully connections to be 150mm diameter.
 - All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
 - No low point shall be without a method of drainage.
 - All connections to be soffit to soffit unless otherwise noted.
 - All concrete and concrete products to be in accordance with BRE 363 for sulphates.
 - The locations of all building drainage points shall be cross referenced against the architects drawings during setting out and any discrepancies reported immediately.
 - Before connections are made to existing public sewers an application under S106 must be made to relevant sewerage undertaker.
 - The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
 - Any existing drains to be abandoned to be decommissioned in accordance with the Building Regulations by either grubbing, infilling or sealing.
 - Should ground water be encountered on site during construction the Client shall be informed to determine if additional measures are required.
 - The drainage system shall be fully cleansed on completion of the project using methods that ensure pollution off site does not occur.
 - Any existing land drains severed during construction shall be reinstated.

Note: Further falling head tests to be taken at the time of installation of the deep bore soakaways and at appropriate locations and depths. Calculations to be updated based on recorded results.

Revision History				
Rev	Comment	By	Chkd	Appr
A03	ISSUED FOR APPROVAL	BS	SB	SB
A02	ISSUED FOR APPROVAL	BS	SB	SB
A01	ISSUED FOR APPROVAL	BS	TZ	SB
T02	ADDITIONAL PPICs INCLUDED	SK	SB	SB
T01	ISSUED FOR TENDER	SK	SB	SB
P03	ISSUED FOR INFORMATION	SK	SB	SB
P02	ISSUED FOR INFORMATION	SK	SB	SB
P01	ISSUED FOR INFORMATION	SK	SB	SB

Current Revision				
T01	ISSUED FOR TENDER	BS	SB	SB

TENDER

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Project
LAND ADJACENT TO ROYSTON ROAD,
BARKWAY

Drawing Title
PROPOSED DRAINAGE
SHEET 6

RWCL Internal Register reference: 4929-002

Scales @ A1
5006 - T01