Robert West

Drainage Maintenance Strategy

Project: Land adjacent to Royston Road, Barkway	**Date: 06/08/2024** **RW Doc Ref: 4929/002/001 – Rev 01**

Introduction

Background

1. Robert West (RW) is instructed by Redrow Homes to prepare a Drainage Maintenance Strategy for a residential development in relation to the development on Land adjacent to Royston Road, Barkway.
2. This Drainage Maintenance Strategy has been prepared in support of the Reserved Matters Application for up to 140 units, new retail building, access onto Royston Road and Cambridge Road, landscaping, open space and pedestrian / cycle routes.
3. The purpose of this document is to set out the basis of the development's drainage maintenance requirements as well ensuring that those who will be responsible for maintenance tasks and activities have a detailed programme for both inspection and maintenance. This is to ensure that the surface water and foul water drainage networks can operate effectively, and as designed. This document will assist in ensuring that the surface water drainage network is continually maintained for the lifetime of the development to help prevent an increased risk of flooding both on and off-site in accordance with the National Planning Policy Framework (NPPF).
4. The tasks detailed herewith are specific to the components applicable to the development and represent the minimum maintenance and inspection requirements. Additional tasks or varied maintenance frequencies may be deemed appropriate. The specific maintenance needs of the drainage infrastructure implemented on site should be monitored and maintenance schedules adjusted as necessary.
5. Those responsible for maintenance should adhere to current Health and Safety Legislation enforced at the time of the work(s) being undertaken.
6. This report has been prepared for the benefit of Redrow Homes.

Proposed Drainage Strategy

Surface Water

7. A detailed drainage design for surface water run off was prepared by Robert West for the development.
8. Surface water drainage for the development is provided by 2 separate systems, System 1 serving the east of the site and System 2 serving the west of the site.
9. Both systems are designed to attenuate surface water on site within attenuation basins to then be discharged to ground via an array of deepbore soakaways.
10. Plans which contain details of the surface water system are located at the rear of this document.

Surface Water System 1

11. System 1 provides drainage for Plots 41 – 117 together with associated access road and hard standing areas.
12. System 1 drains surface water to ground via an array of 22 deepbore soakaways which are located along the northern boundary of the site with storage provided by 3 attenuation basins in the centre of the site adjacent to the exiting bridleway.
13. Surface water from all access roads, hardstanding and dwellings in this area drains though a traditional gravity pipe network before being discharged into the attenuation basins.
14. The attenuation basin provides sufficient storage to accommodate the 1 in 100-year storm event plus 40% to account for climate change including a minimum of 300mm freeboard an attenuation basin is proposed.

Surface Water System 2

15. System 2 provides drainage for Plots 1 – 40 and 118 - 140 together with associated access road and hard standing areas.
16. System 2 drains surface water to ground via an array of 18 deepbore soakaways which are located along the eastern boundary of the site with storage provided by 1 attenuation basin in the north eastern corner of the site.
17. Surface water from all access roads, hardstanding and dwellings in this area drains though a traditional gravity pipe network before being discharged into the attenuation basin.
18. The attenuation basin provides sufficient storage to accommodate the 1 in 100-year storm event plus 40% to account for climate change including a minimum of 300mm freeboard an attenuation basin is proposed.

Foul Drainage

20. Foul drainage for the development is provided by 1 system which drains foul water by gravity into the existing public foul sewer.
21. There is an existing 150mm Thames Water Public Foul sewer beneath Cambridge Road to the southeast of the site. Foul drainage from the site is proposed to drain into this sewer.
22. Approval for this connection will be sought via a Section 106 with Thames Water whilst the connecting offsite pipework will be offered for adoption under a Section 104 application.
23. Thames Water have an obligation to upgrade the existing network if a connection to an equivalent or larger sized public sewer is technically achievable.
24. Plans which contain details of the foul water system are located at the rear of this document.

Drainage Maintenance Arrangements

Maintenance During Construction

26. Once appointed the Contractor will prepare a site-specific method statement for the control of silt and other pollutants during construction. CIRIA Report C532 'Control of Water Pollution from Construction Sites' provides further guidance on this.
27. It is recommended that the construction of the basins is completed prior to the commencement of construction of the buildings and hardstanding areas. This will ensure that flows are controlled and treated during construction. The proposed drainage systems will need a complete maintenance check upon completion of the development and any required remedial tasks undertaken.
28. By constructing these drainage components first, runoff from the construction site and the hardstanding areas will travel overland into the basins channelled by temporary swales. This will ensure that run-off from the site receives the level of treatment required in accordance with CIRIA Report C532.
29. Should the above not be feasible and should hardstanding areas be constructed prior to the completion of the proposed drainage scheme, surface water flows will be temporarily channelled into localised storage basins before being discharged to ground.
30. The temporary storage structures will be sized to accommodate a 1:10 year storm event. Appropriate water quality mitigation in accordance with CIRIA Report C532 will be provided. This approach allows for surface water to be attenuated and sediments captured during the construction phase.
31. The Contractor will maintain the proposed drainage system during construction and until the site is handed over to the Management Company.

Adoption, Management and Maintenance of Proposed SuDS and Foul Water Drainage Systems

32. The main foul and surface water systems will be offered for adoption to a Local Drainage Authority via a Section 104 or New Appointment & Variation (NAV) agreement.
33. Any drainage features or systems which are not adopted will be maintained be the individual property owner or through a Management Company.
34. The intended ownership of each element of the drainage systems is indicated on the Proposed Drainage plans located at the rear of this document.
35. Upon completion and prior to occupation of the development, the applicant will form a Management Company who will own, manage and maintain the development in perpetuity including but not limited to the building, footpaths, communal landscape areas and any communal structures and services (including underground drainage) in order to protect the integrity and appearance of the site.
36. The Management Company will be set up prior to the occupation of the development.
37. All maintenance will be carried out by an appointed specialist retained by the Management Company on a fixed contract (of at least 1 year) paid for by the Management Company in perpetuity via an annual maintenance fee for the upkeep of the communal areas including the SuDS network.

38. The Management Company will appoint a Managing Agent, who shall be responsible for the day-to-day maintenance of the site, and will appoint relevant subcontractors, arranging Public Liability Insurance and look after the financial arrangements, establishing a budget for the maintenance and upkeep of the site, and setting up and collecting service charges from the Residents.
39. The contact details for the Management Company will be included in this document when confirmed.
40. The Developer is obliged to pay the service charge for any unsold units to the Managing Agent until the last plot on the site has been sold.
41. The regular and corrective maintenance of all non-adopted shared (i.e. serving more than a single plot and / or falling outside of any individual plot's curtilage) elements of the drainage systems, including the pipework, infiltration structures, catchpits and manholes / inspection chambers will be managed and funded through the Management Company on behalf of the Occupiers.
42. The Management Company is obliged to provide the services listed however individual Occupiers are obliged to contribute to the Reserved Fund Contribution and any expenses the Management Company may have incurred.
43. Provisions will be made to replace any infrastructure that has reached the end of its serviceable design life and will be replaced on a like for like basis as far as reasonably practicable.
44. In the event that the Management Company becomes unable to discharge its duties within 2 years of first appointment the Developer will endeavour to appoint an alternative on behalf of the Occupiers.
45. Collection of all litter and debris from communal areas is to be undertaken on a monthly basis by the Management Company.
46. For non-adopted drainage which is not shared (i.e. serving a single plot and / or falling inside any individual plot's curtilage) responsibility for the ongoing maintenance of drainage network will fall to the end user(s) / property owner. Regular maintenance of all non-shared connections will be the responsibility of the individual homeowner and should be undertaken every 3 months.

Attenuation Basins

47. The inlets and outlets to the attenuation basins should be checked regularly for blockages to ensure free flowing conditions into and through the structure. Excessive silt, detritus and vegetation building should be removed and disposed of.
48. Whilst the basin liners are covered to protect them from elements and accidental damage, they should be inspected periodically and if found to be defective should be replaced or repaired. The inspection / repair should take place when groundwater is expected to be at its lowest and the mass removal of the fill over the liner should be undertaken with caution.

49. It is recommended that regular maintenance is undertaken in accordance with the following schedule:

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass in and around structure	Monthly or as required
	Manage other vegetation and remove nuisance plants – aesthetics	Annually (or as required based on inspection)
	Inspect for sediment and debris in inlets and outlets and clear blockages	Monthly
	Trim any roots that may be cause blockages to the system.	Annually (or as required based on inspection)
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly for 3 months, then annually
	Inspect inlets and structure surface for silt accumulation. Establish silt removal frequency	Monthly for first year then annually or as required
	Tidy all dead growth before start of growing season. Remove tree saplings.	Annually
Occasional Maintenance	After monthly inspection, reseed areas of poor growth	As required
	After monthly inspection trim overhanging trees and remove cuttings	Annually (or as required based on inspection)
Corrective Maintenance	Repair erosion or other damage by reseeding or returfing	As required based on inspection
	Repair inlets and outlets	As required based on inspection
	Reconstruct structure if performance deteriorates or failure occurs	As required based on inspection
	Replacement of defective geotextile (will require reconstruction of structures) and any root barrier	As required based on inspection
	Relevel uneven surfaces and reinstate design levels	As required based on inspection

	Removal of any blockages by rodding or jetting through an access point	As required based on inspection
	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled.	As required based on inspection
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate.	As required based on inspection
	Where there is a build-up of silt in the basin, or at inlets, i.e. 50mm or more above the design level, then remove and spread on site. Undertake when ground is damp in autumn or early spring and transplant turf and overseed to original design levels.	As required based on inspection
Monitoring	Inspect inlet, outlet to basin for blockages, standing water and clear	Monthly
	Inspect silt traps and note the rate sediment has accumulated	Monthly in the first year and then annually
	Inspect storage structures to ensure they are fully emptying	After heavy rainfall

Table 1: Schedule of Regular and Corrective Maintenance for the Attenuation Basin and Swales

Drainage Network Components

50. It is recommended that regular maintenance is undertaken in accordance with the following schedule:

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment and debris from silt trap chambers, gullies traps, channel drains and inlet chambers	3 monthly
	Litter and debris removal – catch pits / gullies	Monthly or as required
	Surface and foul water pipework – jetting / rodding	Every 2 years or as required
	Manage other vegetation and remove nuisance plants – aesthetics	Annually (or as required based on inspection)
	Cleaning of gutters and any filters on down pipes.	Annually (or as required based on inspection)
	Trim any roots that may be cause blockages to the system.	Annually (or as required based on inspection)
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly for 3 months, then annually
	Manhole and Inspection Chamber - Inspect and identify blockages, debris and litter. If required, take remedial action.	Annually (or as required based on inspection)
	Manhole and Inspection Chamber - Removal of sediments, debris and litter from the manhole and inspection chamber.	Annually (or as required based on inspection)
Occasional Maintenance	Remove sediment and debris inside of concrete manhole rings.	Annually (or as required based on inspection)
	Inspection gullies to determine whether they are operating correctly.	Annually (or as required based on inspection)

	Inspect all manholes and inspection chambers to determine whether they are operating correctly	3 monthly
Corrective Maintenance	Repairs to access chambers / manhole covers	As required based on inspection
	Remove debris / blockages to silt traps / channel drains	As required based on inspection
	Repair gullies and any identified areas that are not operating correctly.	As required based on inspection
	Removal of any blockages by rodding or jetting through an access point	As required based on inspection
	If any drain inlet has settled, cracked or moved, investigate and repair as appropriate.	As required based on inspection
Monitoring	Inspect inlet, outlet from downpipes, channel drains and gullies for blockages, standing water and clear	Monthly
	Inspect silt traps and note the rate sediment has Accumulated	Monthly in the first year and then annually

Table 2: Schedule of Regular and Corrective Maintenance for the Drainage Network Components

Repair Actions

51. Significant storm events may cause considerable damage to SuDS and their associated components. As such, it may be necessary to inspect and carry out essential recovery works to return the feature to full working order.

Design Life

52. The design life of the development is likely to exceed the design life of the components within the SuDS network. During the routine drainage inspections it may be determined that some components have reached the end of their functional life cycle. Where possible repairs should be the first option considered however if repairs are unviable, it will be necessary for the property owner / Management Company to replace the faulty component.

Emergency Plan and Spillages

53. Potential flood and maintenance indicators:
    - Manhole chambers / PPICs overflowing
    - Vent pipe overflowing

- Gullies overflowing or ponding
- Channel drains overflowing or ponding
- Other visual indicators of the drainage system not performing as it should

54. Should any of the items above occur then immediate action as outlined below should be undertaken:
    - Inspect for blockages in the problem area
    - Should the problem not be identified via an initial inspection and the drainage system is connected to Sothern Water's network then make them aware and report the problem.
    - For Management Company controlled drainage a suitable drainage inspection engineer should be contacted to survey the system and jet any blockages.
55. It is not envisaged that any materials are to be stored onsite once the development has been completed, which could cause major spills and potential pollution issues within the drainage system. If this situation alters in the future consultation with a specialist will be required in order to confirm if any upgrades to the existing system are necessary.
56. If a serious spillage in volume or toxicity occurs on site then the spillage should be isolated with soil, turf or specialist fabric and all downstream outlets should be bunged / blocked.
57. Once the major spillage is contained contact the Environment Agency immediately. Tel: 0370 850 6506
58. Minor spillages of fuels and oils from motor vehicles will be dealt with by the permeable paving and deep trapped gullies, by biodegrading / collecting the hydrocarbons respectively.

Future Alterations to the Development

59. Any future alterations to the drainage system should be confirmed by a specialist. If new services are required to run through areas of permeable paving, services should be installed below the permeable paving level with the permeable system reinstalled above.

Appendix A – Supporting Information

DO NOT SCALE OFF THIS DRAWING

NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in meters unless stated otherwise.

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
- RG — Adoptable Surface Water Road Gully
- Adoptable Deepbore Soakaways — 5m from other Soakaways and 10m for building structures — See plan for depths
- CP — Adoptable Surface Water Catchpit - 500mm Sump
- Adoptable Surface Water Headwall. Althon PCC, Rootlok Geogrow, ACO Swale Inlet (see details for types)
- Private / Management Company Foul Water PPIC & Pipe — Refer to schedule for size/ types and cover details
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- Private / Management Company Permeable Paving
- Private / Management Company Fin Drain within Subbase
- Existing 150mmØ Foul Water Southern Water Sewer
- Existing Thames Water Rising Main

For continuation refer to drawing 4929-002-5002

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.

For continuation refer to drawing 4929-002-5004

Scale 1:250 @ A1 - 1:500 @ A3

5m 0 5m 10m 15m 20m 25m

Revision History					
Rev	Comment	By	Chkd	Appr	Date
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
Current Revision					
P03	ISSUED FOR INFORMATION	SK	SB	SB	07/08/2024

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Project

LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title

PROPOSED DRAINAGE
SHEET 1

RWCL Internal Register reference: 4929 - 002 Scales @ A1

5001 - P03

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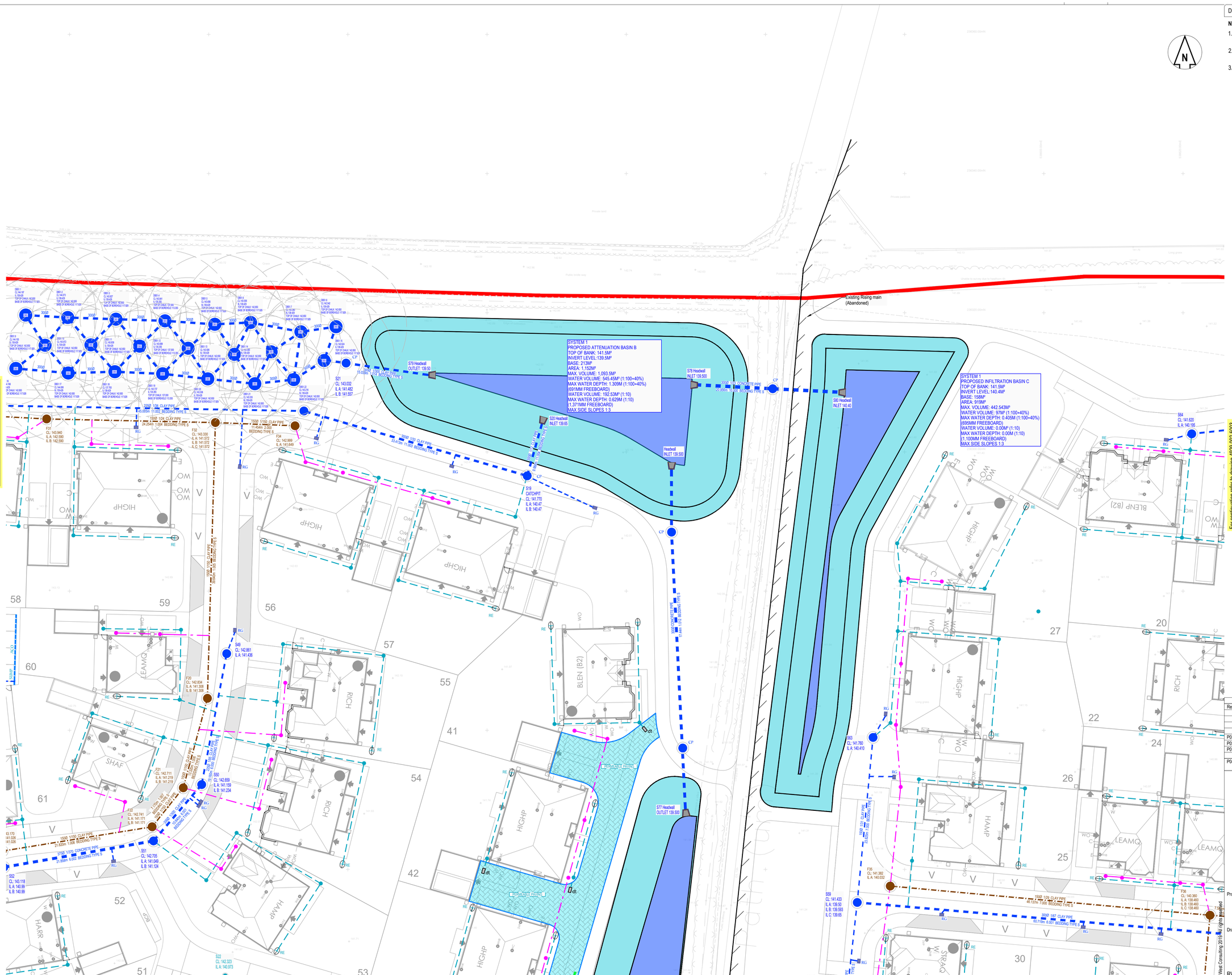

For continuation refer to drawing 4929-002-5001

For continuation refer to drawing 4929-002-5003

For continuation refer to drawing 4929-002-5005

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	Date
P03	ISSUED FOR INFORMATION	SK	SB	SB	07/08/2024
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
Current Revision					
P04	BASIN A AND B SIZE REVISED TO AVOID FOOTWAY. BASINS A,B & C WATER LEVELS UPDATED TO SUIT.	PR	SB	SB	14/08/2024

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Project

LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title

PROPOSED DRAINAGE SHEET 2

RWCL Internal Register reference: 4929 - 002

Scales @ A1

5002 - P04

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For continuation refer to drawing 4929-002-5002

For continuation refer to drawing 4929-002-5006

Scale 1:250 @ A1 - 1:500 @ A3

5m 0 5m 10m 15m 20m 25m

Revision History					
Rev	Comment	By	Chkd	Appr	Date
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
Current Revision					
P03	ISSUED FOR INFORMATION	SK	SB	SB	07/08/2024

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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 - P03

For continuation refer to drawing 4929-002-5001

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For continuation refer to drawing 4929-002-5005

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Scale 1:250 @ A1 - 1:500 @ A3

5m 0 5m 10m 15m 20m 25m

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Rev	Comment	By	Chkd	Appr	Date
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
Current Revision					
P03	ISSUED FOR INFORMATION	SK	SB	SB	07/08/2024

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Project
LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title
PROPOSED DRAINAGE
SHEET 4

RWCL Internal Register reference: 4929 - 002 — Scales @ A1

5004 - P03

For continuation refer to drawing 4929-002-5002

For continuation refer to drawing 4929-002-5004

For continuation refer to drawing 4929-002-5006

For continuation refer to drawing Inset A on drawing 5006

SYSTEM 1
PROPOSED INFILTRATION BASIN A
TOP OF BANK: 141.5MP
INVERT LEVEL: 139.5MP
BASE: 443M²
AREA: 923M²
MAX. VOLUME: 1,348.58M³
WATER VOLUME: 768.84M³ (1:100+40%)
MAX WATER DEPTH: 1.305M (1:100+40%)
(699MM FREEBOARD)
WATER VOLUME: 319.21M³ (1:10)
MAX WATER DEPTH: 0.625M (1:10)
(1.375MM FREEBOARD)
MAX SIDE SLOPES 1:3

Existing Rising main (Abandoned)

PERMEABLE PAVING NO DIG CONSTOUTION DUE TO RPA

Scale 1:250 @ A1 - 1:500 @ A3

5m 0 5m 10m 15m 20m 25m

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P03	ISSUED FOR INFORMATION	SK	SB	SB	07/08/2024
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
	Current Revision				
P04	BASIN A AND B SIZE REVISED TO AVOID FOOTWAY. BASINS A,B & C WATER LEVELS UPDATED TO SUIT.	PR	SB	SB	14/08/2024

INFORMATION

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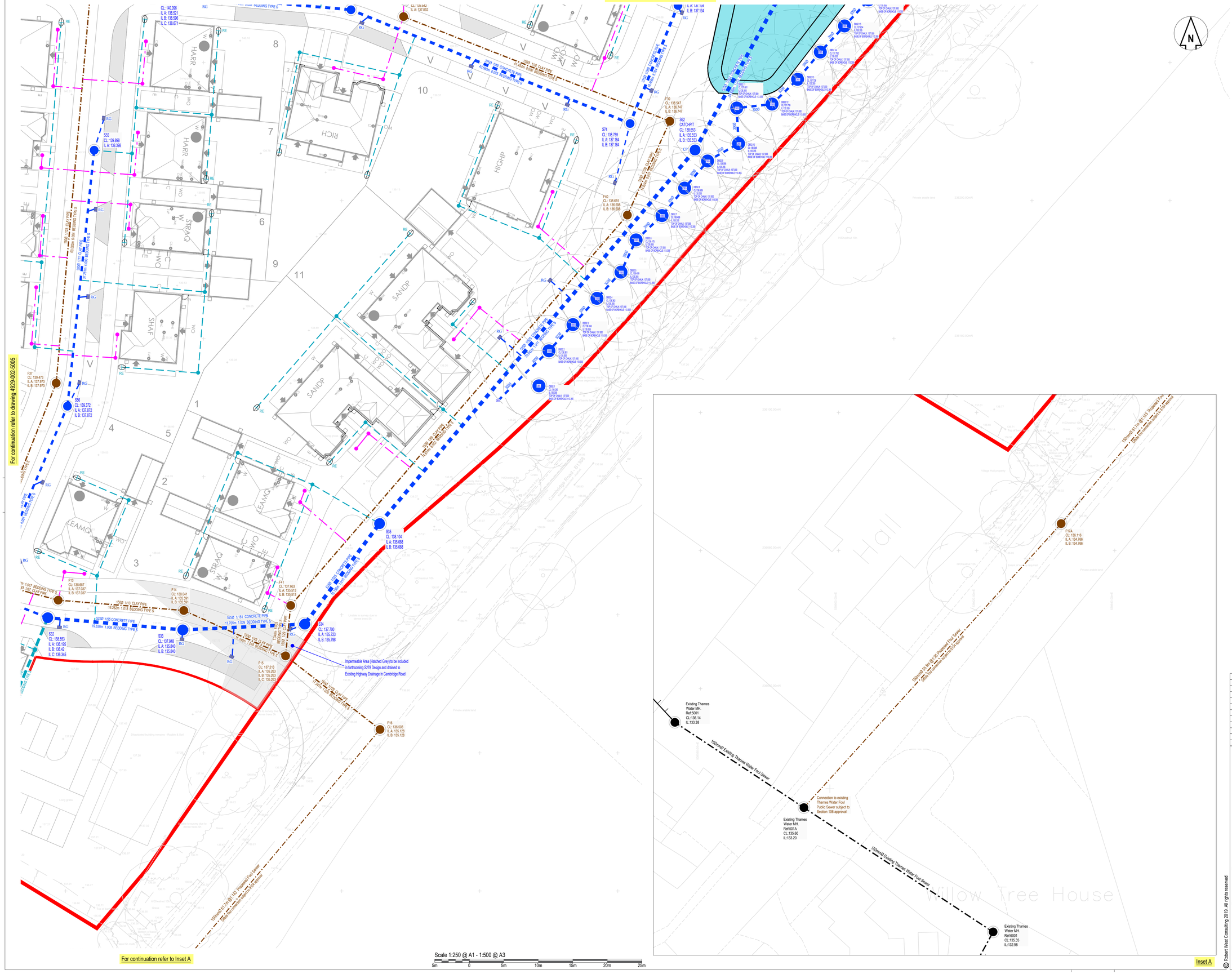
Project
LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title
PROPOSED DRAINAGE
SHEET 5

RWCL Internal Register reference: 4929 - 002

Scales @ A1

5005 - P04



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- Adoptable Surface Water Headwall. Althon PCC, Rootlok Geogrow, ACO Swale Inlet (see details for types)
- 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
- ACO — Private / Management Company Aco Drainage Channel
- RE — Private / Management Company Rodding Eye
- dt — Private / Management Company Distribution Tank
- RG — Private / Management Company Surface Water Road Gully
- Private / Management Company Permeable Paving
- Private / Management Company Fin Drain within Subbase
- Existing 150mmØ Foul Water Southern Water Sewer
- Existing 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	Appr	Date
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
Current Revision					
P03	ISSUED FOR INFORMATION	SK	SB	SB	07/08/2024

INFORMATION

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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 - P03

SURFACE WATER MANHOLE SCHEDULE - NETWORK 1

MH No.	MANHOLE DIAMETER (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
S1	1350	Type C	D400	144.599	143.249	1.200	538300.259	236233.963
S2	1350	Type C	D400	144.328	142.707	1.246	538373.193	236243.912
S3	1350	Type C	D400	143.491	141.841	1.200	538420.170	236247.954
S4	1350	Type C	D400	143.263	141.613	1.200	538432.008	236243.245
S5	1350	Type B	D400	143.059	140.881	1.728	538438.824	236234.493
S6	1350	Type C	D400	142.747	140.843	1.454	538441.646	236218.072
S7	1500	Type C	D400	142.437	140.437	1.400	538452.146	236202.136
S8	1500	Type C	D400	142.194	140.394	1.200	538463.298	236194.396
S9	1500	Type C	D400	141.284	139.530	1.154	538513.171	236179.624
S11	1350	Type C	B125	145.218	143.793	1.200	538313.195	236255.880
S12	1200	Type B	D400	144.836	142.956	1.580	538321.548	236236.828
S13	1350	Type C	D400	145.158	143.600	1.333	538370.620	236311.985
S14	1350	Type C	D400	144.801	143.376	1.200	538373.940	236276.371
S15	1350	Type C	D400	144.674	143.174	1.275	538371.242	236263.503
S16	1350	Type C	B125	144.705	143.355	1.200	538411.391	236311.968
S19	1350	Type C	B125	141.770	140.470	1.000	538525.767	236296.558
S21	1350	Type C	D400	143.032	141.482	1.250	538493.681	236305.882
S22	600	Type D	B125	142.323	140.973	1.200	538482.371	236224.714
S23	600	Type D	B125	141.873	140.449	1.199	538501.647	236219.082
S24	1500	Type C	D400	141.670	139.770	1.300	538492.194	236185.837
S41	1350	Type C	B125	142.856	141.506	1.200	538407.381	236214.386
S42	1350	Type C	D400	142.587	140.912	1.300	538409.663	236190.964
S44	1350	Type C	D400	143.290	141.765	1.300	538323.982	236181.783
S45	1350	Type C	D400	142.817	141.092	1.350	538356.080	236185.378
S46	1350	Type C	D400	142.329	140.754	1.200	538432.790	236194.664
S48	1350	Type C	B125	144.014	142.489	1.300	538321.124	236208.043
S49	1350	Type C	D400	142.861	141.436	1.200	538482.582	236271.011
S50	1350	Type C	D400	142.659	141.159	1.200	538478.987	236252.191
S51	1350	Type C	D400	142.705	141.049	1.281	538472.072	236244.104
S52	1200	Type B	D400	143.118	140.990	1.753	538450.545	236240.314
S81	1350	Type C	B125	143.560	142.210	1.200	538442.509	236267.206
S82	1350	Type C	B125	143.734	142.384	1.200	538421.682	236265.774
S83	1350	Type C	B125	144.552	143.078	1.249	538424.301	236309.112
S84	1350	Type C	D400	144.154	142.729	1.200	538448.683	236306.668
S86	1200	Type A	B125	143.230	139.429	3.501	538492.851	236311.416

SURFACE WATER MANHOLE SCHEDULE - NETWORK 1

MH No.	MANHOLE DIAMETER (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
S25	600	Type D	B125	141.955	140.605	1.200	538453.930	236173.954
S26	600	Type B	B125	142.393	140.498	1.745	538458.025	236189.474
S27	600	Type D	B125	141.372	139.619	1.528	538515.923	236172.605
S28	1350	Type C	B125	141.206	139.591	1.390	538517.943	236178.555
S29	1350	Type C	B125	141.141	139.547	1.369	538527.619	236176.136
S30	1350	Type C	B125	140.204	138.704	1.200	538562.516	236161.215
S32	1500	Type B	B125	138.653	136.195	1.933	538617.410	236139.580
S33	1500	Type B	B125	137.948	135.840	1.583	538636.967	236137.819
S34	1350	Type C	B125	137.700	135.723	1.452	538654.652	236138.661
S35	1500	Type B	B125	138.104	135.688	1.891	538665.471	236153.216
S37	600	Type D	B125	138.974	137.624	1.125	538583.893	236125.743
S38	900	Type D	B125	137.990	136.475	1.140	538607.565	236115.556
S40	1350	Type C	B125	140.584	139.234	1.200	538568.233	236174.754
S53	600	Type D	B125	141.319	139.969	1.200	538483.784	236160.231
S54	600	Type D	B125	141.875	139.742	1.908	538489.310	236180.358
S55	1350	Type C	B125	139.898	138.398	1.200	538624.133	236207.296
S56	1350	Type C	B125	139.372	137.872	1.200	538620.263	236170.216
S57	1350	Type C	B125	138.930	137.355	1.275	538608.724	236143.003
S58	1350	Type C	B125	141.113	139.763	1.200	538570.351	236209.923
S59	1200	Type B	D400	141.433	139.500	1.633	538573.189	236235.255
S60	1350	Type C	D400	140.096	138.521	1.200	538633.686	236230.062
S61	1350	Type C	D400	139.650	138.075	1.200	538661.333	236227.642
S62	1500	Type B	B125	138.653	135.553	2.575	538711.185	236207.335
S63	1350	Type C	B125	141.760	140.410	1.200	538575.460	236258.972
S64	1350	Type C	B125	141.620	140.195	1.200	538621.249	236302.596
S65	1350	Type C	B125	141.187	139.762	1.200	538645.079	236305.222
S66	1350	Type C	B125	141.086	139.661	1.200	538662.935	236302.269
S67	1350	Type C	B125	140.732	139.308	1.199	538672.437	236291.724
S68	1350	Type C	B125	140.706	139.267	1.214	538681.756	236292.092
S69	1350	Type C	B125	139.550	138.200	1.125	538719.212	236282.265
S72	1350	Type B	B125	139.259	137.093	1.791	538710.601	236243.213
S73	1350	Type B	B125	139.075	137.134	1.566	538708.716	236228.269
S74	1350	Type C	D400	138.759	137.184	1.200	538701.767	236211.171
S75	1350	Type C	D400	140.787	139.437	1.200	538643.950	236271.036
S76	1350	Type C	D400	140.579	139.154	1.200	538635.438	236255.681
S88	1200	Type B	B125	138.358	135.355	2.703	538704.892	236191.944

FOUL WATER MANHOLE SCHEDULE

MH No.	MANHOLE DIAMETER (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
F1	1350	Type C	D400	144.904	143.554	1.200	538322.080	236239.308
F2	1200	Type B	D400	144.425	142.575	1.700	538370.520	236245.834
F3	1200	Type B	D400	143.583	141.833	1.600	538418.768	236250.595
F4	1200	Type B	D400	143.351	141.601	1.600	538431.766	236246.155
F5	1200	Type B	D400	143.144	140.694	2.300	538440.059	236236.997
F6	1200	Type B	D400	142.817	140.569	2.098	538444.480	236218.740
F7	1200	Type B	D400	142.528	140.278	2.100	538452.260	236205.124
F8	1350	Type B	D400	142.286	140.191	1.945	538462.604	236197.344
F9	1200	Type B	D400	141.353	139.203	2.000	538514.016	236182.314
F10	1200	Type B	B125	141.150	139.094	1.906	538529.557	236177.067
F11	1200	Type B	D400	140.215	138.565	1.500	538565.460	236162.822
F12	1200	Type B	D400	139.024	137.174	1.700	538607.394	236145.214
F13	1200	Type B	D400	138.687	137.037	1.500	538618.919	236142.125
F14	1200	Type B	D400	138.041	135.591	2.300	538637.119	236140.630
F15	1200	Type B	D400	137.213	135.263	1.800	538651.866	236134.054
F16	1350	Type C	B125	136.503	135.128	1.225	538665.549	236123.393
F17	1350	Type C	B125	143.237	141.737	1.350	538327.793	236183.388
F18	1350	Type C	B125	142.886	141.386	1.350	538353.941	236186.969
F19	1200	Type B	B125	142.376	140.476	1.750	538430.097	236195.685
F20	1350	Type C	B125	142.834	141.308	1.376	538479.816	236264.593
F21	1350	Type C	B125	142.711	141.219	1.342	538476.345	236251.733
F22	1350	Type C	B125	142.741	141.171	1.419	538471.871	236246.131
F23	1200	Type B	B125	143.170	141.026	1.994	538450.332	236242.636
F25	1350	Type C	B125	144.843	143.493	1.200	538371.422	236274.948
F26	1350	Type C	B125	144.728	143.378	1.200	538369.066	236263.436
F27	1350	Type C	B125	145.162	143.812	1.200	538371.093	236315.424
F28	1350	Type C	B125	145.013	143.513	1.350	538391.868	236316.712
F29	1350	Type C	B125	144.531	143.181	1.200	538418.875	236307.996
F30	1350	Type C	B125	144.442	143.092	1.200	538432.723	236306.032
F31	1350	Type C	B125	143.940	142.590	1.200	538456.712	236304.735
F32	1200	Type B	B125	143.330	141.572	1.608	538480.961	236304.217
F34	1350	Type C	B125	142.999	141.649	1.200	538492.406	236303.758
F35	1350	Type C	B125	141.382	140.032	1.200	538577.930	236237.615
F36	1200	Type B	D400	140.360	138.460	1.750	538623.875	236233.417
F37	1350	Type C	D400	139.473	137.973	1.350	538618.636	236173.564
F38	1200	Type B	B125	139.542	137.892	1.500	538668.959	236226.650
F39	1200	Type B	B125	138.547	136.747	1.650	538707.541	236211.493
F40	1200	Type B	B125	138.615	136.598	1.867	538701.386	236197.897
F41	1200	Type B	B125	137.663	135.513	2.000	538652.608	236141.357
F42	1350	Type C	B125	141.180	139.830	1.200	538644.437	236297.594
F43	1350	Type C	B125	140.849	139.499	1.200	538642.108	236272.346
F44	1350	Type C	B125	140.634	139.284	1.200	538633.771	236256.785
F45	1350	Type C	D400	140.211	138.861	1.200	538631.437	236232.887
F17A	1350	Type C	B125	136.116	134.766	1.200	538632.236	236083.898

DO NOT SCALE OFF THIS DRAWING

NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in meters unless stated otherwise.

Revision History

Rev	Comment	By	Chkd	Appr	Date
P02	ISSUED FOR INFORMATION	SK	SB	SB	06/03/2024
P01	ISSUED FOR INFORMATION	SK	SB	SB	20/06/2023
Current Revision					
P03	SCHEDULE UPDATED	SK	SB	SB	07/08/2024

INFORMATION

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Project

LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title

PROPOSED MANHOLE SCHEDULE

RWCL Internal Register reference: 4929 - 002

Scales @ A1

5007 - P03

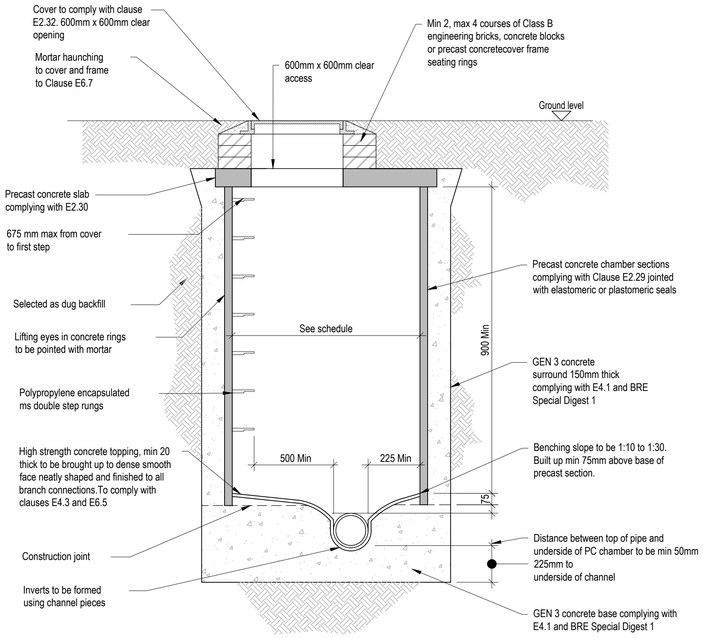
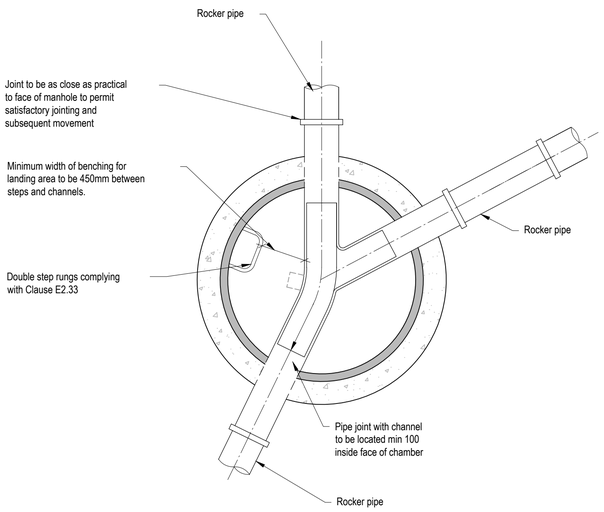
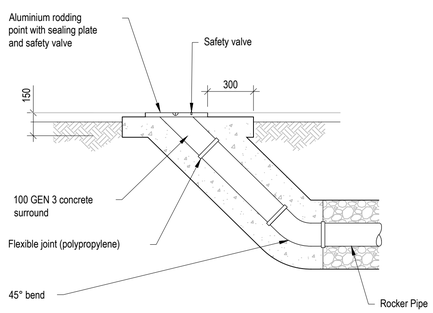


FIG B10 - TYPE B MANHOLE - SECTION





RODDING EYE

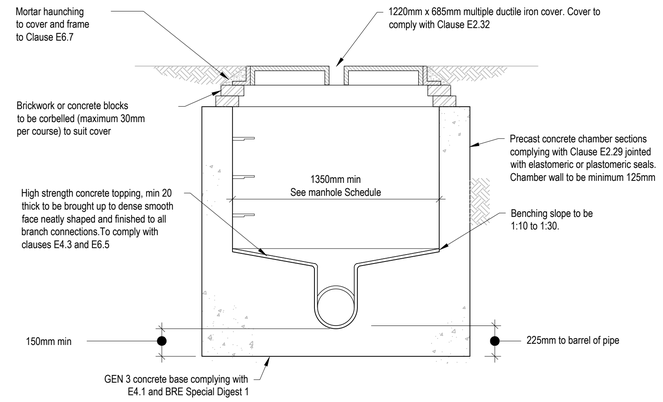


FIG B15 - TYPE C MANHOLE - SECTION

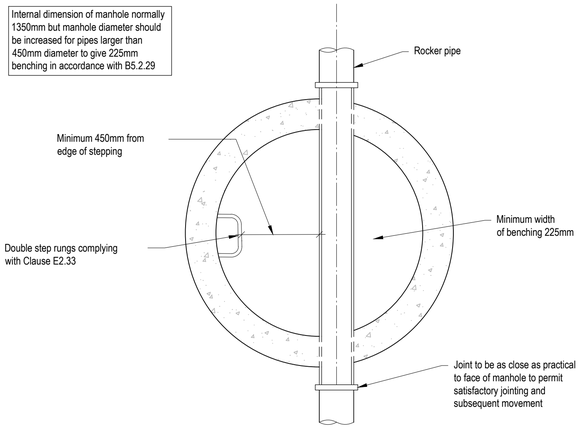
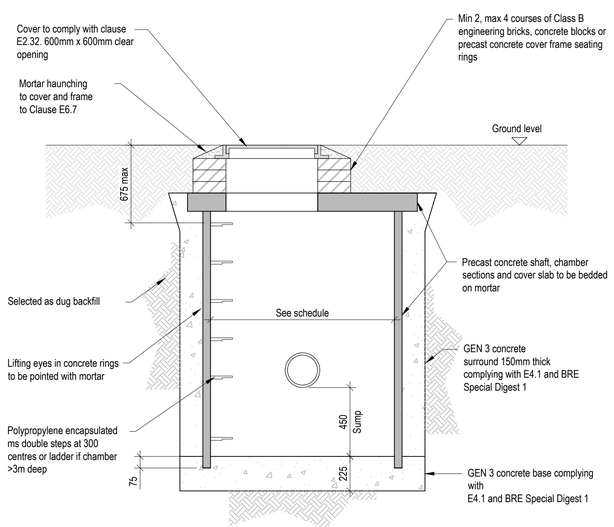


FIG B15 - TYPE C MANHOLE - PLAN

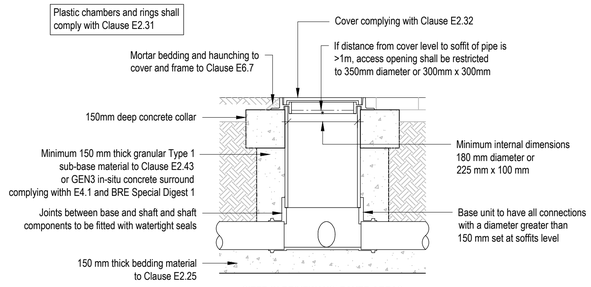
DEPTH TO SOFFIT: LESS THAN 1.5m

SEE SCHEDULE FOR DIMENSIONS AND GA FOR CONNECTIONS

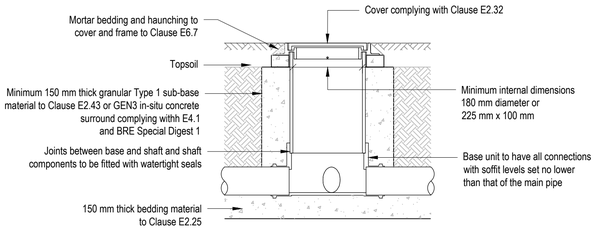


PRECAST CONCRETE CATCHPIT DETAIL

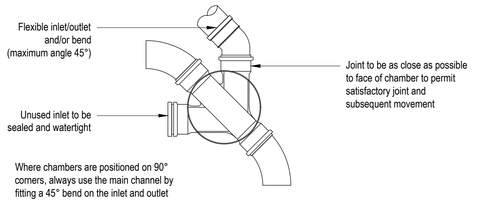
Plastic chambers and rings shall comply with Clause E2.31



SITED IN DRIVEWAYS/ PAVED AREAS



SITED IN DOMESTIC GARDENS



Note: Where the access chamber is in the highway (including any footway) the highway Authority can have specific requirements

FIGURE B 23 - TYPE E - TYPICAL INSPECTION CHAMBER DETAIL

For 450 diameter chambers in :-depth from cover level to soffit of pipe up to 2m flexible material construction

Scale: 1:20

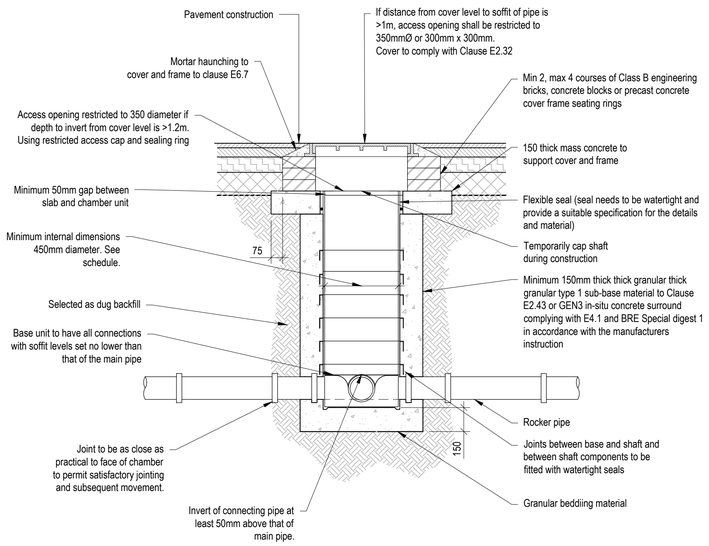


FIG B 18 - TYPE D - PLASTIC INSPECTION CHAMBER

Depth from cover to soffit of pipe up to 3m - flexible material construction for use in areas subject to vehicle loading

Scale: 1:20

Scale 1:20 @ A1 - 1:40 @ A3

400mm 0 400mm 800mm 1200mm 1600mm 2000mm

DO NOT SCALE OFF THIS DRAWING

NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in millimeters unless stated otherwise.

Revision History					
Rev	Comment	By	Chkd	Appr	Date

Current Revision					
P01	ISSUED FOR PLANNING	SK	SB	SB	06/08/2024

PLANNING

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Project

LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title

PROPOSED DRAINAGE DETAILS SHEET 1

RWCL Internal Register reference: 4929 - 002

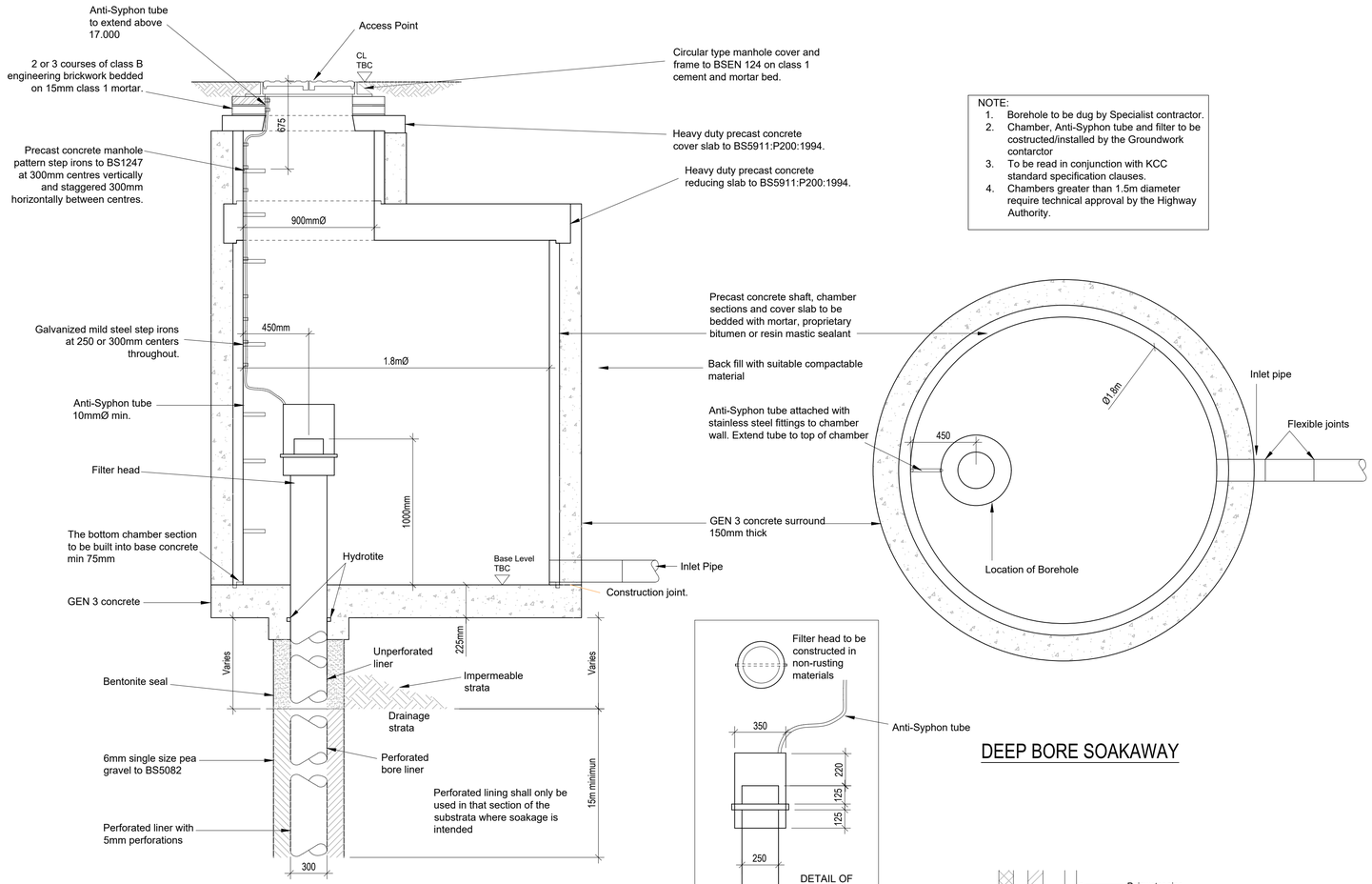
Scales @ A1

5051 - P01

DO NOT SCALE OFF THIS DRAWING

NOTES

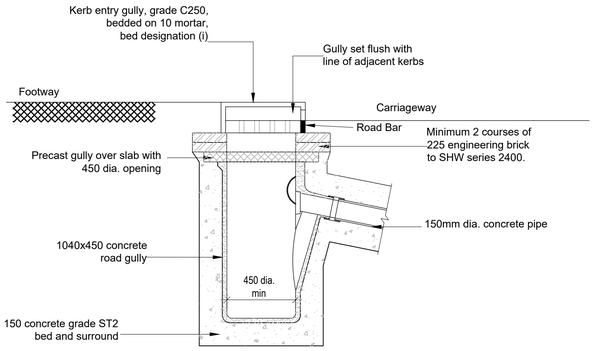
1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in millimeters unless stated otherwise.



NOTE:
1. Borehole to be dug by Specialist contractor.
2. Chamber, Anti-Syphon tube and filter to be costructed/installed by the Groundwork contarctor
3. To be read in conjunction with KCC standard specification clauses.
4. Chambers greater than 1.5m diameter require technical approval by the Highway Authority.

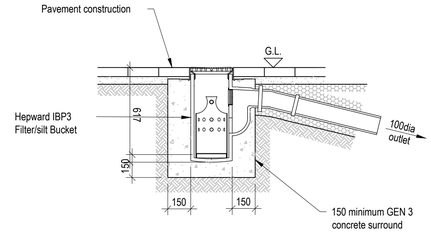
DEEP BORE SOAKAWAY

DETAIL OF FILTER HEAD

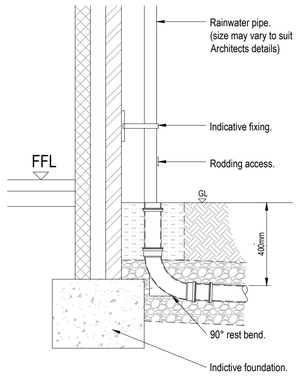


ROAD GULLY AT KERB

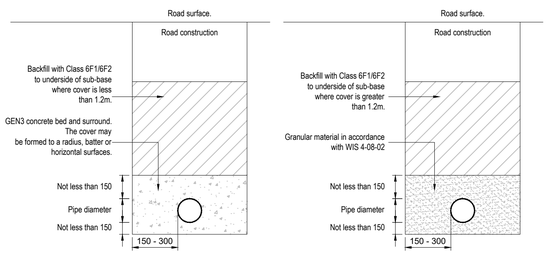
Note:-
The depth of the gully can be increased by up to 300 by fitting a 225 coupling code and a 300 high raising piece code between the frame and the gully body.



YARD GULLY

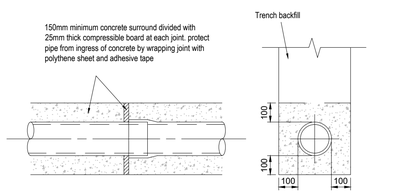


TYPICAL RWP REST BEND DETAIL



PIPE BEDDING DETAILS (UNDER HIGHWAYS)

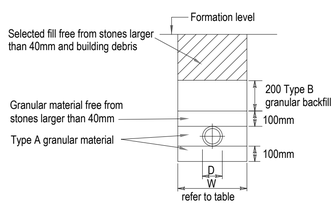
(Scale 1:20)



CONCRETE BED AND SURROUND TO PIPES UNDER DRIVES AND GARDENS

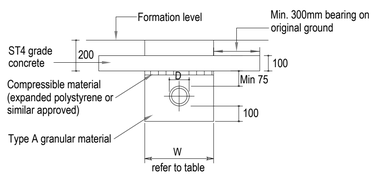
Depth of cover less than 0.6m under private gardens and 0.9m under private drives

(Scale 1:20)



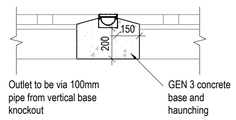
CLASS Q (UPVC PIPES)

Location: Pedestrian areas, 0.6m- 7.0m Vehicle areas, 0.9m - 7.0m Under buildings

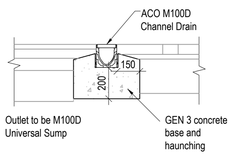


CLASS Q (UPVC PIPES)

When laid in landscape areas subject to no loading (incl. construction traffic) ST4 concrete can be omitted.



DRAINAGE CHANNEL LIGHT DUTY (OSMA RAIN CHANNEL)



DRAINAGE CHANNEL HEAVY DUTY (ACO M100D CHANNEL)

Scale 1:20 @ A1 - 1:40 @ A3

400mm 0 400mm 800mm 1200mm 1600mm 2000mm

Revision History					
Rev	Comment	By	Chkd	Appr	Date
Current Revision					
P01	ISSUED FOR PLANNING	SK	SB	SB	06/08/2024

PLANNING

REDROW HOMES LIMITED

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Project

LAND ADJACENT TO ROYSTON ROAD, BARKWAY

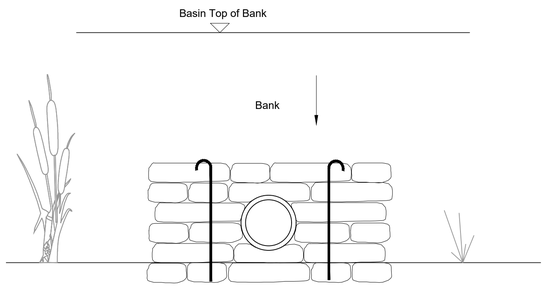
Drawing Title

PROPOSED DRAINAGE DETAILS SHEET 2

RWCL Internal Register reference: 4929-002

Scales @ A1

5052-P01



ELEVATION

NOTES

1. Rootlok Vegetated wall system headwall to be constructed in accordance with Installation recommendations

2. Bags to be Rootlok Bags by GeoGrow. Bags to be filled with the correct material and hydroseeding applied to encourage vegetation growth

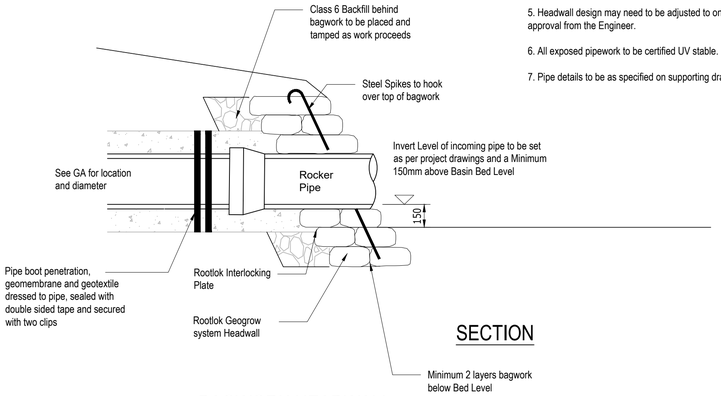
3. Bags to be connected using Rootlok interlocking plates

4. The bags shall be placed in a modified Flemish bond so as to 'break joint' with the mouths away from the surface and be tamped into position to form a rectangular block

5. Headwall design may need to be adjusted to on site conditions following approval from the Engineer.

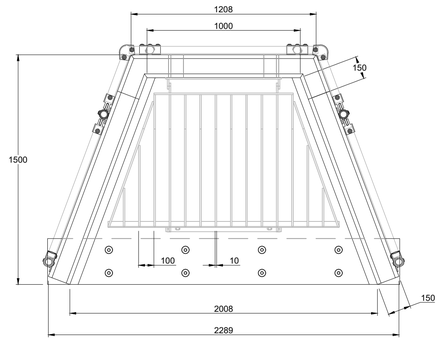
6. All exposed pipework to be certified UV stable.

7. Pipe details to be as specified on supporting drawings.

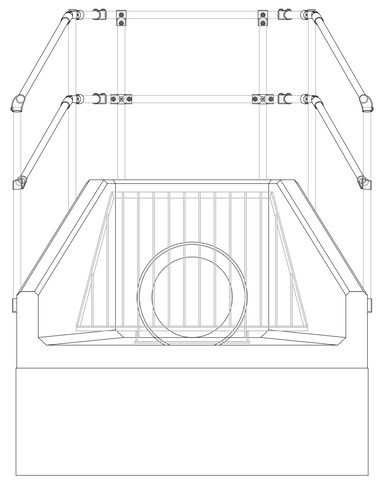


SECTION

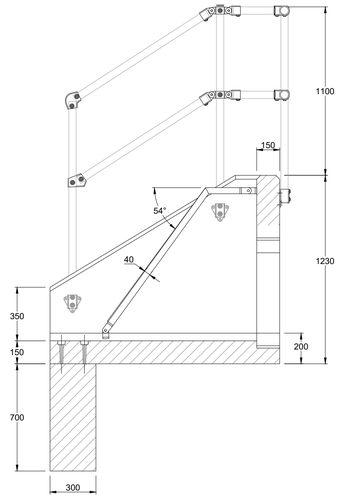
BAGWORK HEADWALL
FOR 225mm - 375mm PIPES
SCALE 1:20



PLAN VIEW
NTS

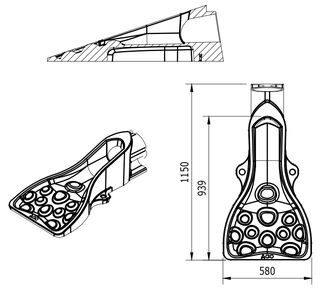


FRONT VIEW
NTS

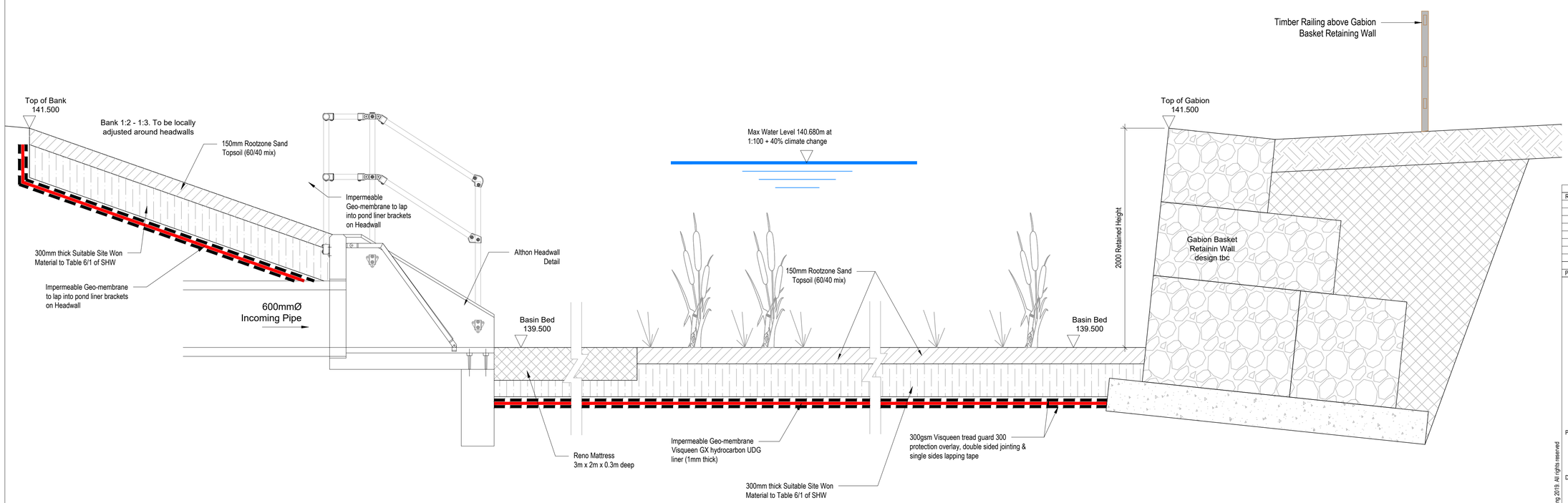


CROSS-SECTION VIEW
NTS

ALTHON PRECAST CONCRETE HEADWALL
FOR 450mm - 600mm PIPES



ACO SWALE INLET
FOR 150Ø PIPES
SCALE 1:20



CONVEYANCE BASIN A
SCALE 1:20

Scale 1:20 @ A1 - 1:40 @ A3

400mm 0 400mm 800mm 1200mm 1600mm 2000mm

DO NOT SCALE OFF THIS DRAWING

NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
2. This drawing is to be read in conjunction with all relevant Architectural and M&E drawings.
3. All dimensions in millimeters unless stated otherwise.

Revision History					
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Project
LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title
PROPOSED DRAINAGE DETAILS
SHEET 3

RWCL Internal Register reference: 4929 - 002

Scales @ A1

5053 - P01

DO NOT SCALE OFF THIS DRAWING

NOTES

1. The contractor is responsible for verifying all site & setting out dimensions before commencing work.
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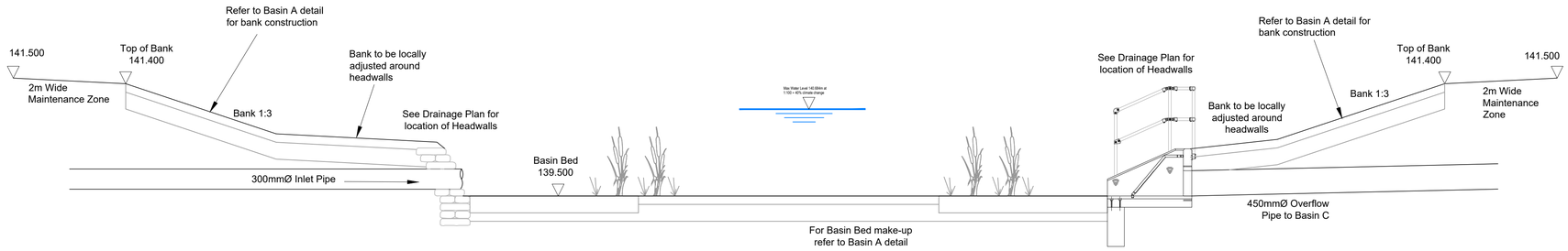
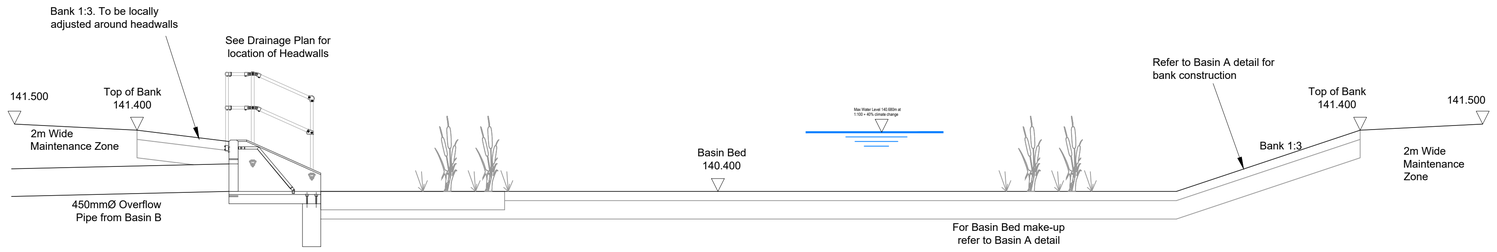
3. All dimensions in millimeters unless stated otherwise.



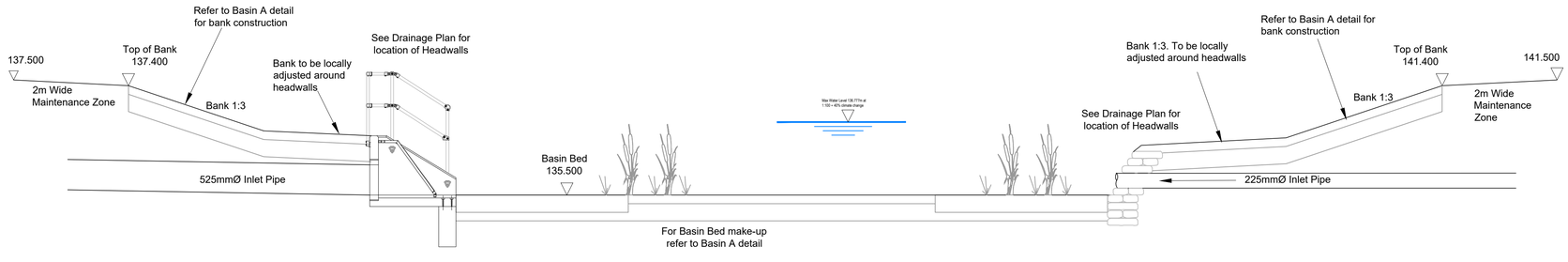
CONVEYANCE BASIN B

SCALE 1:50



CONVEYANCE BASIN C

SCALE 1:50



CONVEYANCE BASIN D

SCALE 1:50

Scale 1:50 @ A1 - 1:100 @ A3

1m 0 1m 2m 3m 4m 5m

Revision History					
Rev	Comment	By	Chkd	Appr	Date
Current Revision					
P01	ISSUED FOR PLANNING	SK	SB	SB	06/08/2024

PLANNING

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Project

LAND ADJACENT TO ROYSTON ROAD, BARKWAY

Drawing Title

PROPOSED DRAINAGE DETAILS
SHEET 4

RWCL Internal Register reference: 4929 - 002

Scales @ A1

5053 - P01