DRAINAGE TECHNICAL NOTE

BLOXHAM ROAD
BANBURY

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DOCUMENT CONTROL

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version	date	author	reviewer	comments
1	17/02/2023	Alice Kirsz		internal draft
2	24/02/2023	Alice Kirsz	Richard Winn	first issue

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 This technical note has been prepared in response to comments received from Oxfordshire County Council (OCC) in their role as Lead Local Flood Authority (LLFA), regarding the proposed outline planning application (ref 22/03868/OUT) for a residential development off Bloxham Road, Banbury. The following additional information was requested;

- Provide a surface water catchment plan, demonstrating the breakdown of areas and stating the area. Also state the area after allowing for additional 10% urban creep.
- Provide consent to discharge to the drainage ditch. Provide ownership details and capacity of the drainage ditch.

1.2 This report should be read in conjunction with the Flood Risk Assessment and Drainage Strategy report (ADC3114-RP-A) submitted as part of the validation of the outline planning application.

2.0 RESPONSE TO OXFORDSHIRE COUNTY COUNCIL

Surface water catchment plan

2.1 A surface water catchment plan, based upon the outline proposals, is presented within **Appendix A** of this report. The plan demonstrates; the NET area of each catchment, the impermeable area of each catchment (based upon a 65% PIMP classification), the impermeable area of the catchment once urban creep has been considered (based upon a 75% PIMP classification), and the route of flows from each catchment into the proposed surface water sewer network.

2.2 The catchment plan demonstrates that the anticipated impermeable area onsite, with an inclusion for urban creep, equates to 1.26ha. The proposed pond has been designed to cater for an area of up to 1.43ha for up to the 1 in 100-year+40% design storm event. This area was based upon a conservative estimate of onsite impermeable areas (plus urban creep), see calculations within appendix G within the submitted FRA. Given the above the proposed drainage strategy possesses more than sufficient storage for the proposed impermeable areas onsite, plus the relevant consideration for urban creep.

Drainage ditch

2.3 The proposed outfall for surface water runoff from the development is to a drainage ditch, which flows in an easterly direction along the site's southern boundary. The ditch and the proposed outfall is located within the application site boundary, and within the client's land ownership. A plan demonstrating the application site boundary and wider landownership is located within **Appendix B** of this report.

2.4 The proposed outfall location is classified as an ordinary watercourse. An application for consent for works in proximity to an ordinary watercourse will be submitted to Oxfordshire County Council as LLFA, under Section 23 of the Land Drainage Act (1991), as the planning proposals progress, and drainage details confirmed.

2.5 A site visit was conducted by ADC Infrastructure in November 2022; during the visit the proposed outfall ditch was identified and examined. The ditch was shown to flow in an easterly direction towards Bloxham Road where it became culverted via a 225mm pipe. An existing outfall from phase 2 of the wider development scheme (granted outline planning permission under planning reference; 14/01188/OUT) into the proposed outfall ditch was also identified. Images of the

outfall ditch taken as part of the site visit, alongside a map demonstrating the location of the images taken, are presented within **Appendix C** of this report. The images demonstrate a defined channel both within the site and downstream of the site, which not only accepts flows from existing runoff within the site but also from phase 2 of the wider development.

2.6 To gain a further appreciation of the conveyance capacity of the ditch cross sectional dimensions, from varied locations along the ditch, have been reviewed. This information has been taken from the topographical survey conducted for the wider site, and the relevant data is summarised within the table below. A plan demonstrating the locations of the sections is presented within **Appendix D**.

Cross section	Depth (m)	Width- top of bank to top of bank (m)
1	0.49	2.00
2	0.46	1.80
3	0.57	2.65
4	0.40	2.15
5	0.58	2.00
6	0.58	2.22

2.7 Given the parameters above the approximate average cross-sectional area of the outfall ditch is 1.1m^2.

2.8 The length of the ditch from the proposed outfall to the 225mm culvert beneath Bloxham Road is approximately 120m, the outfall ditch therefore provides approximately 132m^3 of conveyance capacity from the proposed outfall to the culvert beneath Bloxham Road.

2.9 A restricted discharge of 6.5l/s is to be made into the outfall ditch; this mimics the existing mean annual greenfield runoff rate from the site received by the ditch and will provide a +39% betterment upon the existing 1 in 100-year greenfield runoff rate. A rate of 6.5l/s converts to 0.0065m^3/s. The ditch has an average gradient along the site's southern boundary of approximately 1 in 110, which continues in a downward slope towards Bloxham Road. The estimated capacity of the ditch based on a Manning's calculation is approximately 1.94m^3/s (1940l/s). Therefore, the capacity of the ditch is significantly greater than the proposed restricted discharge rate from the site.

2.10 Prior to the ditches exit from the site it is temporarily culverted for approximately 5m via a 225mm pipe beneath a field access. The 225mm pipe has an estimated capacity of 37l/s which is significantly less than the capacity of the ditch. Should the capacity of the 225mm pipe be exceeded, water levels would build up in the ditch before overtopping the field access and continuing downstream in the ditch. The ground levels in the site are a minimum of one metre higher than the field access above the 225mm culvert so the site would be unaffected by this overtopping scenario.

2.11 The 225mm culvert acts as a restriction to flows continuing downstream along the ditch course in an extreme event and is a like for like diameter to the existing culvert beneath Bloxham Road, as such it is not proposed to alter the culvert diameter as part of the drainage proposals.

2.12 Given the above the proposed outfall ditch is considered to possess sufficient capacity to cater for the anticipated surface water flows produced as a result of the proposed development, which in any event are designed to mimic the current greenfield conditions of the site.

APPENDIX A

SURFACE WATER CATCHMENT PLAN

Catchment A

NET area- 0.45ha
Impermeable area- 0.29ha
Impermeable area with +10% UC- 0.34ha

Catchment B

NET area- 0.33ha
Impermeable area- 0.21ha
Impermeable area with +10% UC- 0.25ha

Catchment C

NET area- 0.26ha
Impermeable area- 0.17ha
Impermeable area with +10% UC- 0.20ha

Catchment D

NET area- 0.27ha
Impermeable area- 0.18ha
Impermeable area with +10% UC- 0.20ha

Catchment E (Spine road)

NET area- 0.27ha
Impermeable area- 0.27ha

Attenuation pond

The anticipated contributing impermeable area onsite, with a +10% consideration for urban creep, is 1.26ha. The proposed pond has been designed to cater for runoff from all impermeable areas onsite up to and including the 1 in 100-year+40% storm event.

Bloxham Road

BALANCING POND

Lagoon

Lagoon

Cattle Grid

Planting

Pond

LAP

Tarmac

Key

Proposed pond/basin

Ditch maintenance easements

Surface water flow route

Drainage Notes

1. All adoptable surface and foul water drainage works to be carried out in accordance with 'Sewers for Adoption 8th edition' and any specific requirements of the adopting authority/sewerage undermaker.
2. All adoptable highway drainage works to be carried out in accordance with the Local Highway Authority requirements and the DfT MCHW specification for highway works.
3. All private drainage works are to be carried out in accordance with Building Regulations Part H, BS EN 752, the Civil Engineering Specification for the Water Industry.
4. Where applicable the contractor shall allow free and full access to the drainage works for the local/highway authority, drainage authority or the overseeing organisation.
5. The exact position, level, line, size and use of existing drainage is to be confirmed on site. Any discrepancies to be reported to the engineer prior to the commencement of works.
6. All temporary works associated with the construction of the drainage works shall be the responsibility of the contractor, including the protection of any uncovered/shallow pipework against construction traffic.
7. The Contractor is responsible for obtaining and paying for all necessary permissions to enable construction of the works to be undertaken, including but not limited to licences for street works and connections to existing sewers. This includes Section 106 applications when connecting directly or indirectly to the public sewerage network (complete application to be made at least 3 weeks prior to the planned outfall construction works).
8. All proposed chamber covers are to be marked permanently with "SWS" (or equiv.) on surface water sewers and "FWS" (or equiv.) on foul sewers. all covers to be in accordance with BS EN 124.
9. Finished floor levels shown are indicative and subject to detailed design and co-ordination with site levels design.
10. Works in proximity to the watercourse will be subject to gaining the necessary consent and approval from the Lead Local Flood Authority.

Rev	Description	Date
P1	First issue	15/02/22

Client:
Barwood Development Securities Limited

Project:
Bloxham Road, Banbury

Title:
Surface water catchment plan

ADC INFRASTRUCTURE

Drg Size:	Scale:	Date:
A1	1:500	15/02/2023

Drg No: ADC3114-DR-051

Rev: P1

APPENDIX B

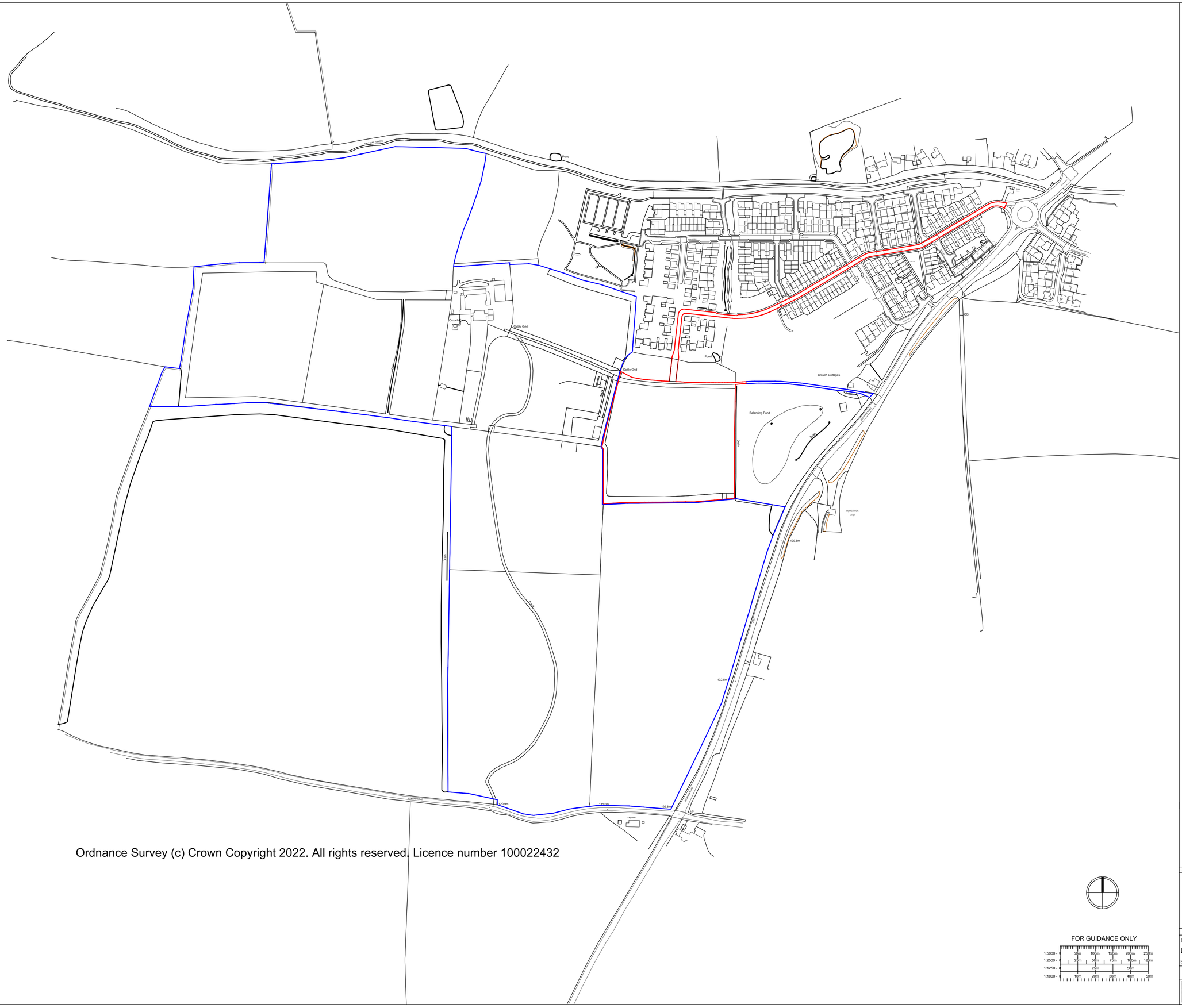
SITE BOUNDARY AND LAND OWNERSHIP PLAN

A1

Notes:

Application site boundary

Land under applicants ownership



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FOR GUIDANCE ONLY

1:5000 - 0 50m 100m 150m 200m 250m
1:2500 - 0 25m 50m 75m 100m 125m
1:1250 - 0 25m 50m
1:1000 - 0 10m 20m 30m 40m 50m

REV	DETAILS	DATE	CHECKED

brownhill hayward brown
chartered architects

01543 254357 - mail@bhbarchitects.co.uk

Land West of Bloxham Road, Banbury

Location Plan

Barwood Development Securities Ltd

DRAWING NO. 3831 - 05

REV /

DATE Dec '22

PLANNING

DRAWN	CHECKED	SCALE
NRJ	MW	1:2500 @ A1

ISO 9001 REGISTERED FIRM

ISO 14001 REGISTERED FIRM

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PART OF bhb architects

APPENDIX C

SITE WALKOVER PHOTOS


1
2
3
4
5
6
7
8
9
10
Bloxham
0
25
50 m
Site boundary
Figures

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

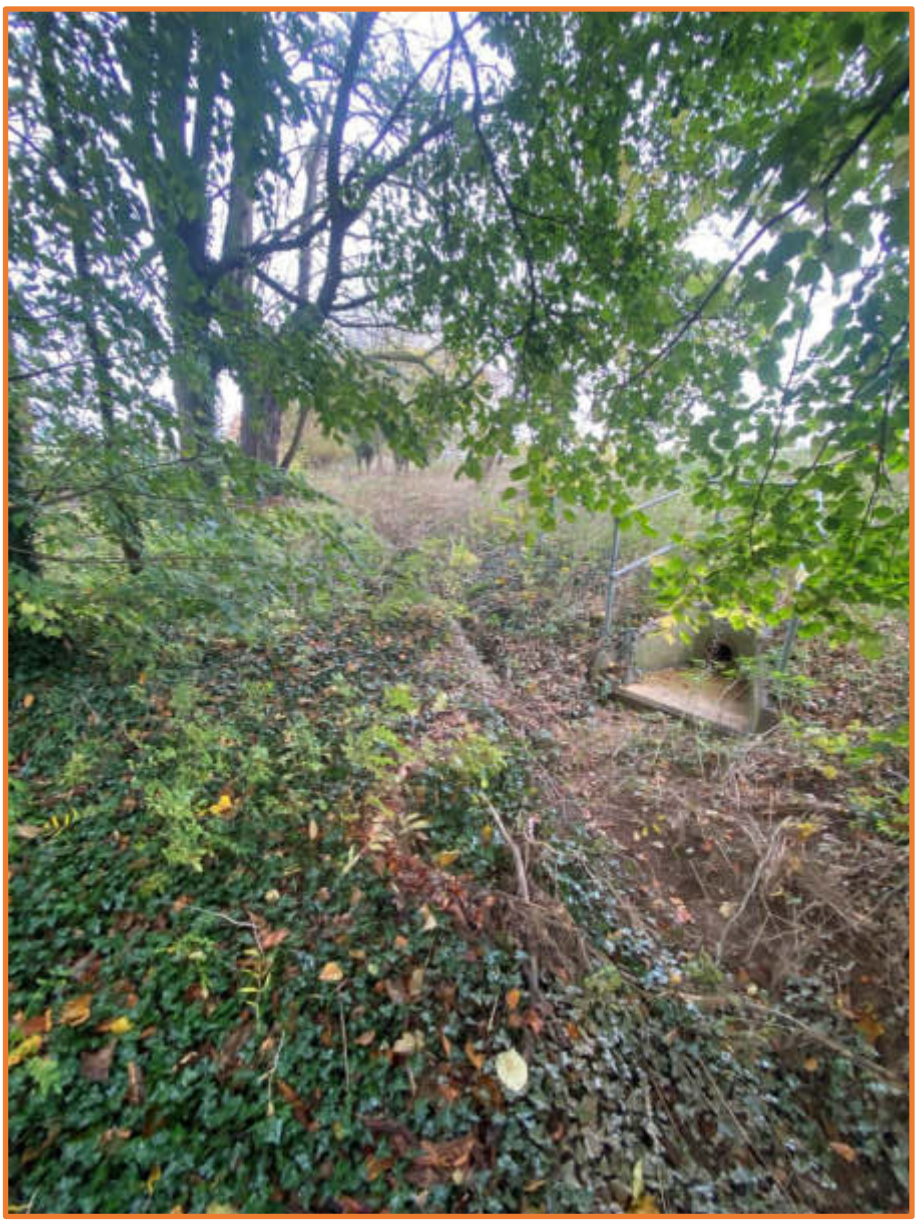
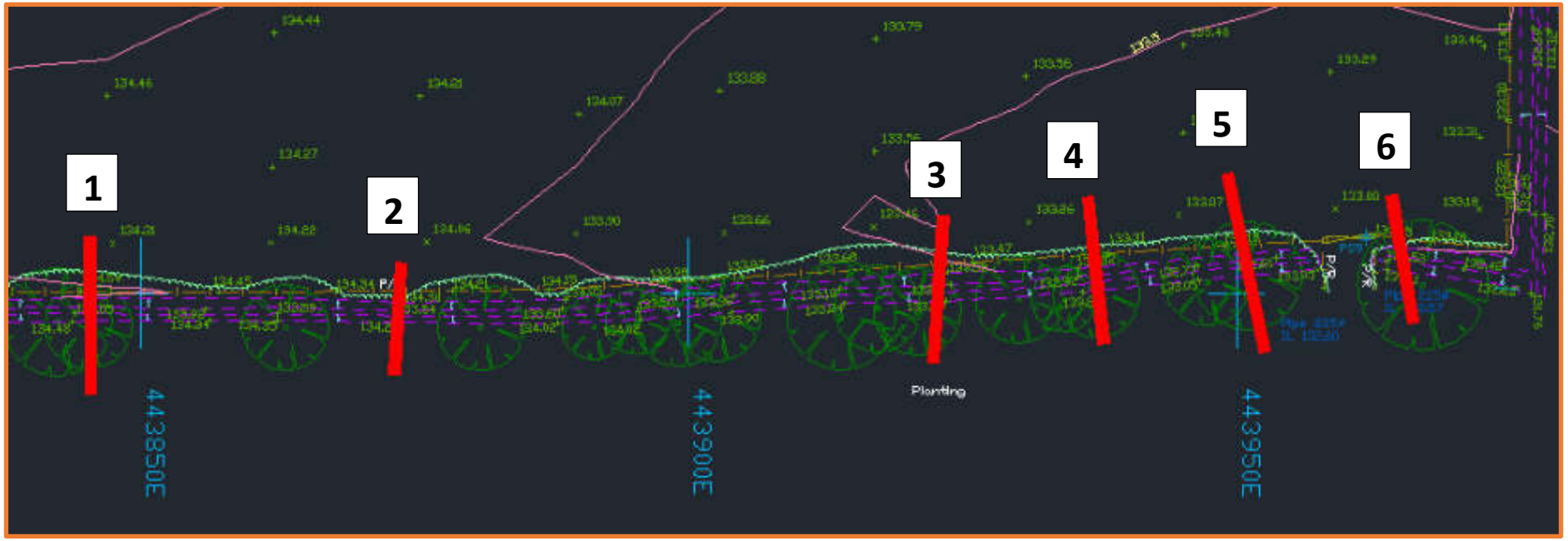


Figure 10

APPENDIX D

CROSS SECTION PLAN



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