Shepherd Gilmour
Consulting Engineers

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CANALSIDE DEVELOPMENT
ELLESMERE, SHROPSHIRE

FOUL WATER DRAINAGE STRATEGY

Shepherd Gilmour Infrastructure Ltd.

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Report Title: *Canalside Development Ellesmere*

Foul Water Strategy

Client: *Burbury Investments (Care of Formal Investments) Ltd*

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-	06.04.2023	DOR	First Issue
A	21.04.2023	DOR	Updated Plans

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Shepherd Gilmour Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

SECTION 1 INTRODUCTION

INTRODUCTION

1.1. Shepherd Gilmour Infrastructure Ltd (SGi) has been engaged by Burbury Investments (Care of Formal Investments) Ltd (the Client) to prepare a Site Wide Foul Water Drainage Strategy in support of the Canalside Development in Ellesmere, Shropshire.

SITE LOCATION

1.2. The Proposed Development Site (PDS) is located within the town of Ellesmere in Shropshire and is approximately 650m to the southwest of the town centre. The site is currently used as agricultural land and can be found using National Grid Reference SU535863 or Postcode SY12 0EA (nearest available).

1.3. The site boundary is irregular in shape and is formed by mainly hedgerows and fences. There are several hardboards such as the Shropshire Union Canal to the south and east. Scotland Street to the north and the sewage treatment works to the north.

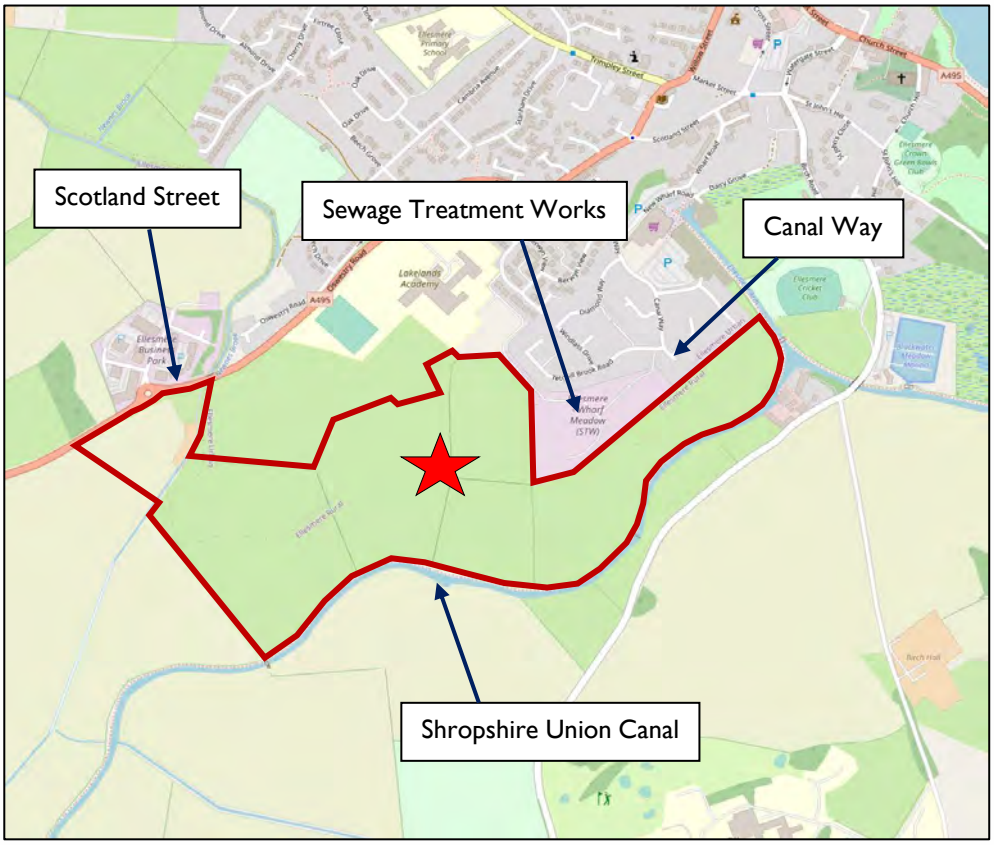

Figure 1.1 Site Location (OpenStreetMap Contributors)

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PROPOSED DEVELOPMENT

1.4. The PDS is a phased development that will be submitted as a detailed application with reserved matters on the individual plots. The number of phases at this stage is an unknown and will be influenced by market conditions, but the initial phase will be the enabling works which consists of:

- *The proposed flood mitigation works (discussed in detail within the BWB Flood Risk Assessment)*
- *The site wide earthworks and reprofiling to suit the flood mitigation works.*
- *The construction of the main link road through the site.*
- *The construction of the critical foul and surface water infrastructure onsite.*

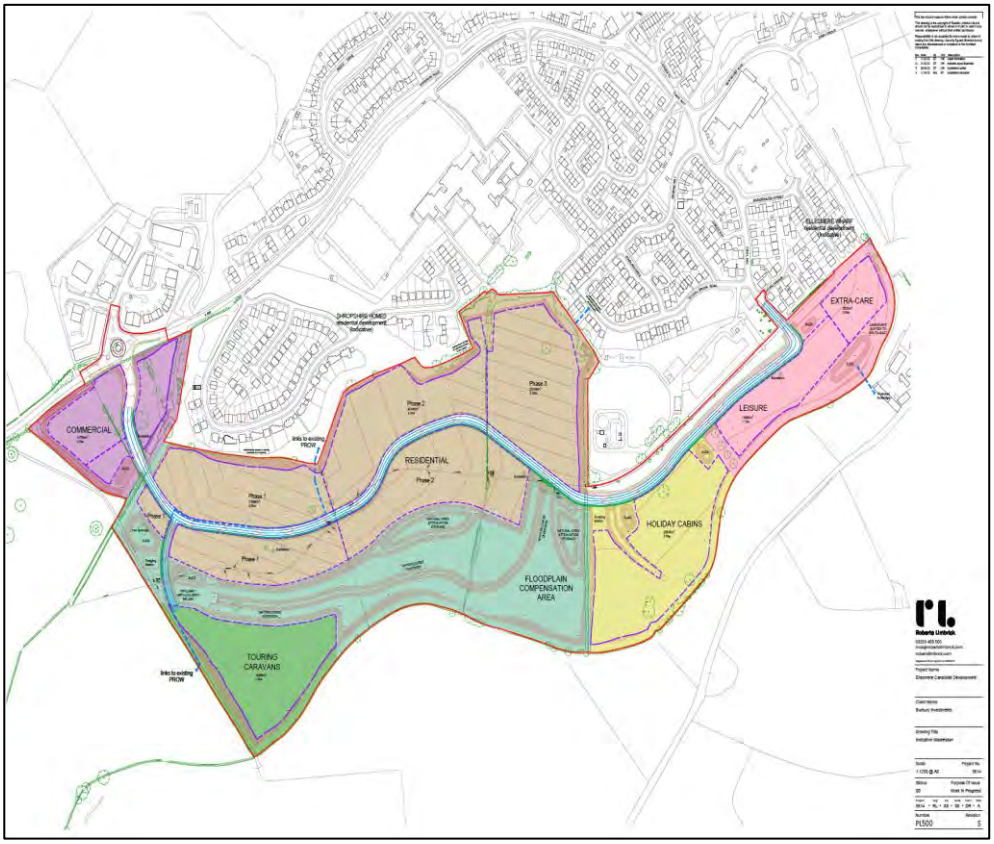

Figure 1.2 Illustrative Masterplan

1.5. A copy of the illustrative masterplan has been included within **Appendix A**.

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SECTION 2 FOUL WATER STRATEGY

EXISTING INFRASTRUCTURE

2.1. Severn Trent Water (STW) sewer records show that there are no gravity sewers on the development. There is a rising main that flows through the site in a south to north direction and connection to the adjacent sewerage works. This rising main will be impacted by the enabling works and will need to be diverted/protected.

2.2. These diversionary works will be discussed with STW during the detailed design stage and will be carried out under a S185 application.

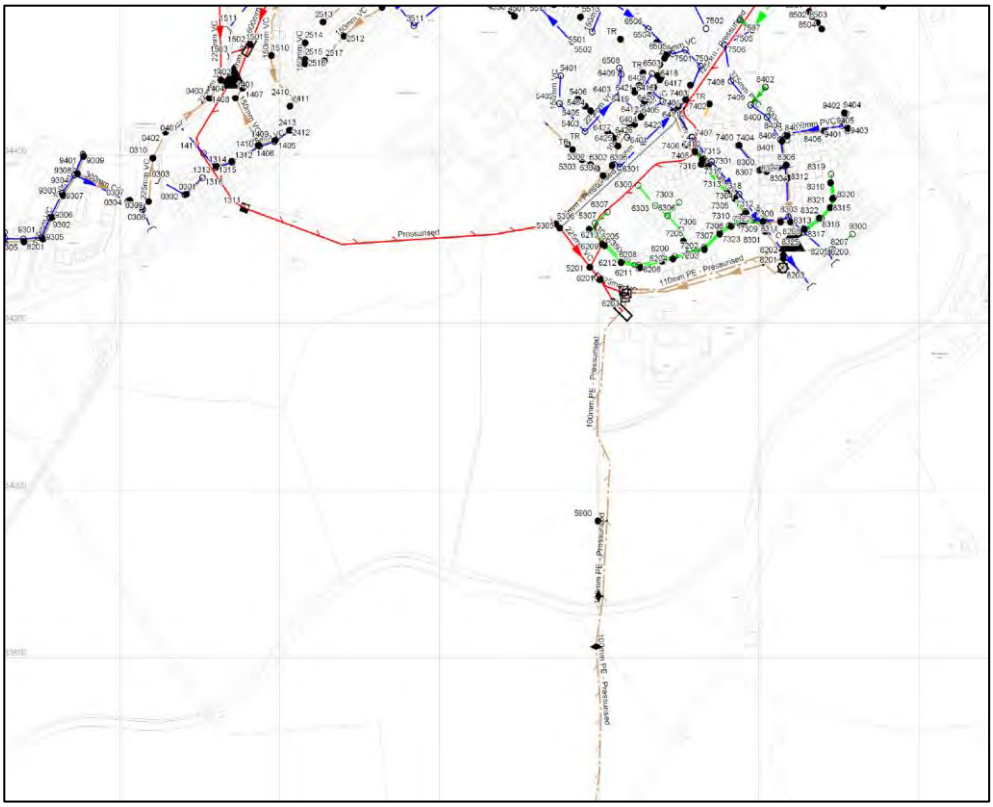

Figure 2.1 Sewer Records

FOUL WATER PROPOSALS

2.3. The topography of the PDS naturally splits the foul water network into two (East and West). The Eastern Network will serve half of the Residential Zones, the Leisure & Extra Care, and the Holiday Cabins. The Western and network will serve the other half of the Residential Zones, the Caravan Park and the Commercial Zone which includes the Foodstore.

2.4. Due to the lack of infrastructure in the area both the East and West Networks will carry flows to their own central Pump Station, which will eject effluent to STW's existing

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infrastructure. The discharge/connection point for each of the rising main will be established during the detailed design stage and the S104 submission.

2.5. An indicative drainage plan has been included within **Appendix B**.

FOUL WATER FLOWS

2.6. Sewers for Adoption 7th Edition recommends that drainage designs for Commercial developments should be based on 0.6 litres per second per hectare of developable land and Residential developments should be based on 4000 litre per dwelling.

2.7. The Clients proposals within **Table 2.1** are subject to change but the following flows would be considered a maximum.

Land Use	**Current Proposal**
Retail	Food Store 2000m^2
Commercial / Employment	B2 / B8 11,000m^2
Care Home	100 bed
Residential	Up to 400 Dwellings
Leisure	Hotel (80 bed)
	Log Cabins (no.70)
	Touring Caravan Site (no.35)
	Pub / Restaurant 750m^2
	Play Centre 500m^2

Table 2.1 Proposed Development Uses.

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Estimated Foul Flows – Commercial/Retail

Q Foul Water (litres) = *0.6 litres per second per hectare*

Development Area = *30470m2 (3.05ha)*

Q Foul Water (l/s) = *3.05 x 0.6 = 1.83 l/s*

Estimated Foul Flows – Residential

Q Foul Water (litres) = *4000 litres per dwelling per day*

Approximate Units = *685*

Q Foul Water (litres) = *685 x 4000 = 2740000 litres*

Q Foul Water (l/s) = *2740000 / 24 x 3600 = 31.71 l/s*

Estimated Total Foul Flows

Q Foul Water (l/s) = *1.83 + 31.71 = 33.54 l/s*

2.8. The proposed flow rate and any connection point must be agreed with Severn Trent Water during the detailed design stage. Any proposed drainage should also be designed in accordance with Building Regulations Document H1 and Sewers for Adoption 7th Edition.

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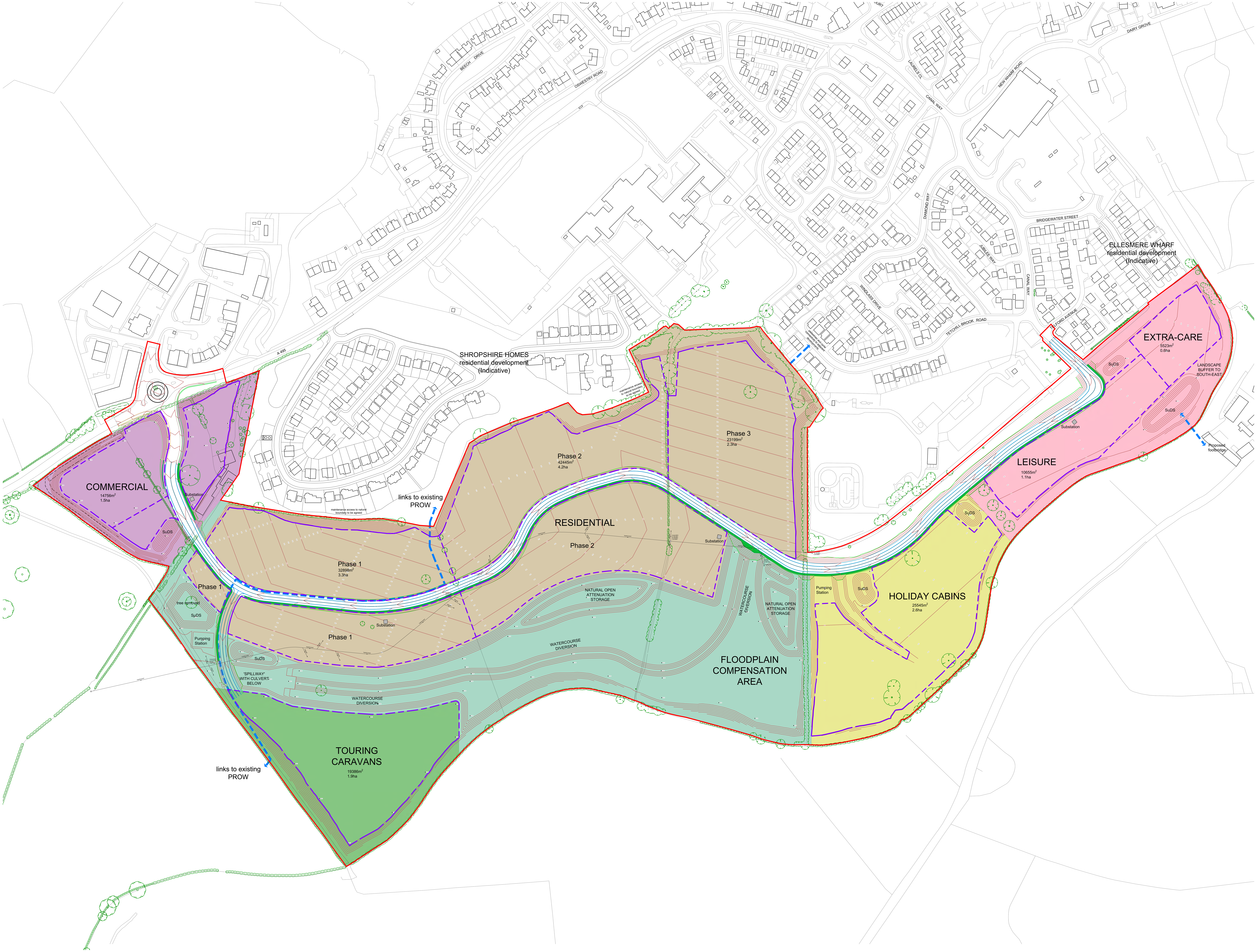
APPENDIX A



Rev	Date	By	Chk	Description
P	17.03.23	EP	CW	Latest Information
Q	31.03.23	EP	CW	Indicative layout illustrated
R	06.04.23	EP	CW	Substations added
S	11.04.23	MJL	EP	Substations relocated.

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Registered Office: England No. 06658029

Project Name
Ellesmere Canalside Development

Client Name
Burbury Investments

Drawing Title
Indicative Masterplan

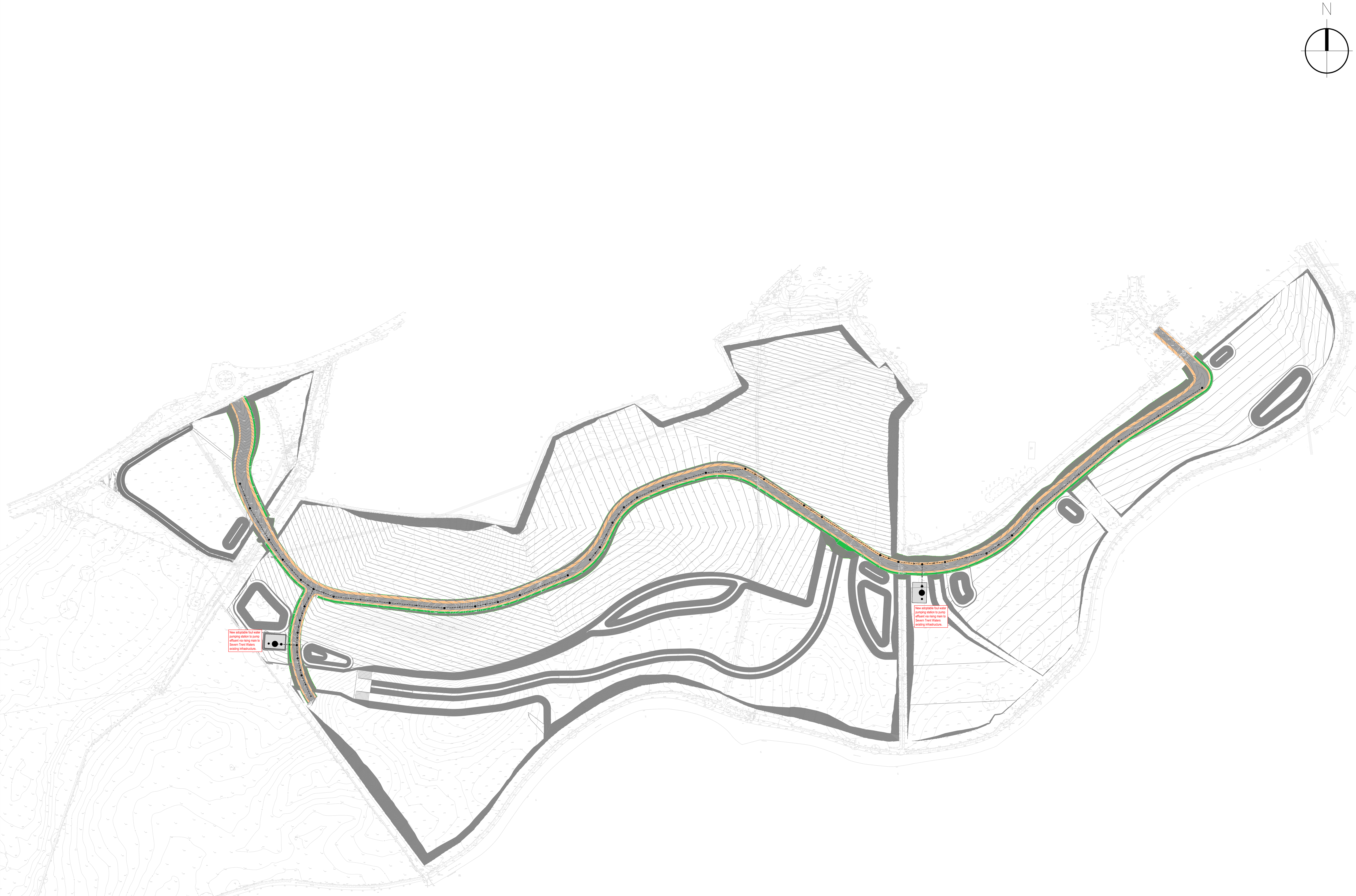
Scale	Project No.
1:1250 @ A0	5614

Status	Purpose Of Issue
S0	Work In Progress

Project	Org	Vol	Level	Form	Role
5614	RL	XX	00	DR	A

Number	Revision
PL500	S

APPENDIX B



KEY

PROPOSED FOUL SEWER

Rev.	Description	Rev. by	Date

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Client
Formal Investments

Architect
Roberts Limbrick

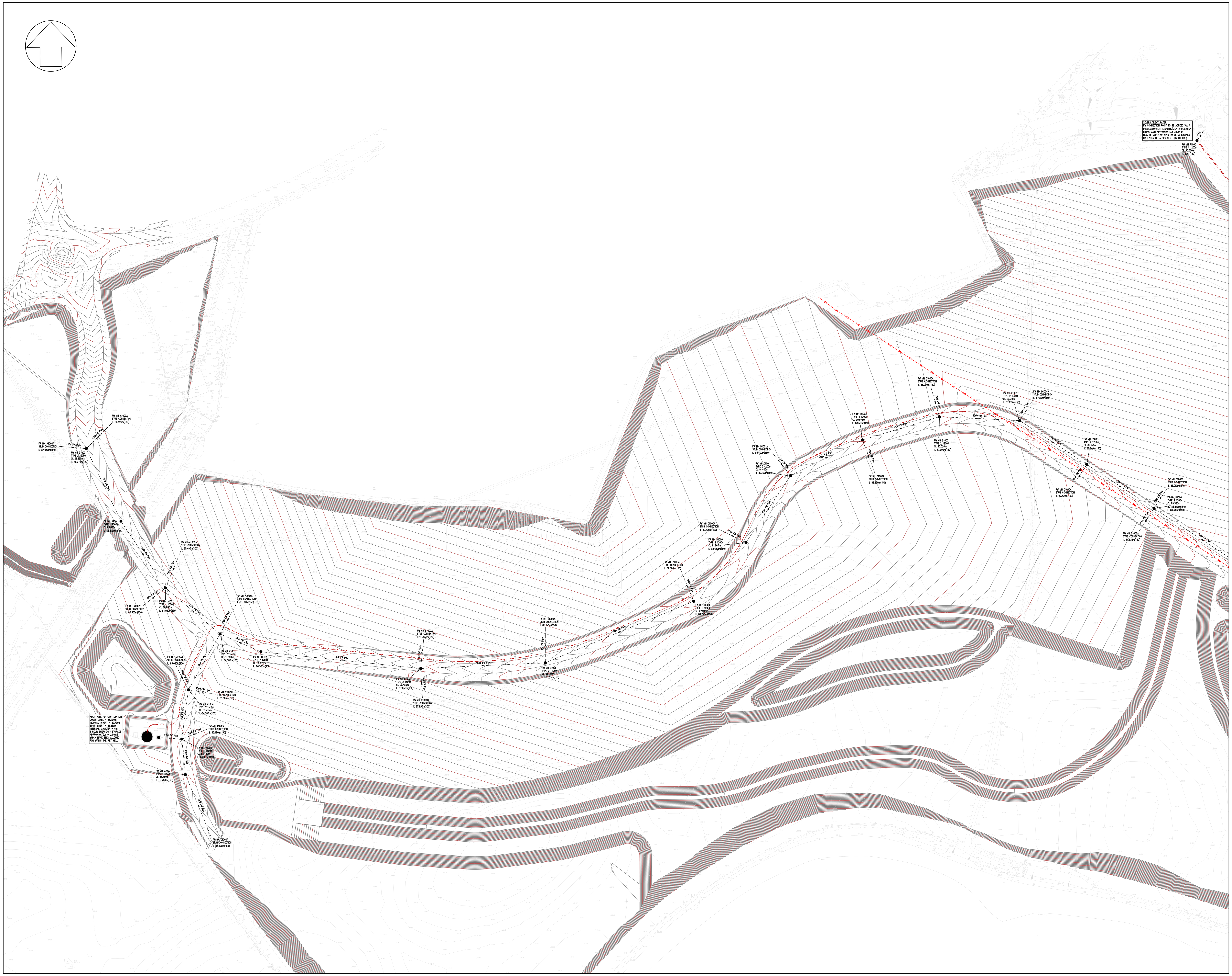
Project
Ellesmere Wharf Phase 2

Title
Foul Drainage Strategy
Canalside Development, Ellesmere

Date	05.04.2023	Drawn By	WC
Size	A1	Checked By	DOR
Scale	1/2000	Approved By	DOR

Dwg. No.
C1581-SGI-ZZ-00-DR-C-0105

Rev
P1



Drainage notes

1. This drainage drawing is to be read in conjunction with all relevant Architect's, Engineer's drawings and specifications.
2. Do not scale this drawing. Any ambiguities, omissions and errors on the drawings shall be brought to the Engineer's attention immediately. All dimensions must be checked and verified on-site before construction commences.
3. All external underground drainage works are to be constructed in accordance with the Civil Engineering Specification for the Water Industry 7th Edition (CESWI), Sewers for Adoption 7th Edition (SFA) and any site-specific details provided on the contract drawings.
4. All internal underground drainage works are to be constructed in accordance with the Building Regulations Approved Document H (2015 Edition) and any site-specific details provided on the contract drawings.
5. The contractor must survey any retained drainage on-site and report the line, level and condition of the existing drainage to the engineer. We would recommend that the existing drainage is cleansed before any surveying and that these works are undertaken before the contractor commences on-site.
6. Adoptable Drainage Pipes:- All foul and surface water pipes up to and including 300mm diameter are to be Vitrified Clay in accordance with BS EN 295-1. All pipes greater than 300mm diameter to be Concrete Class 120 in accordance with BS EN 1916:2002.
7. All concrete manholes are to be in accordance with BS EN 1917.
8. All pipes laid within vehicle trafficked areas with less than 900mm of cover shall be surrounded in Class Z bedding. All pipes less than 300mm below the underside of a ground floor slab shall be surrounded in Class Z bedding. Where Class Z bedding is used as a surround a compressible material must be placed at every pipe joint to provide flexibility. All other pipes are to be laid in a Class S bedding.
9. All underground drainage must be protected during the construction phase where intermediate cover is less than 900mm.
10. Where foul and surface drains and/or sewers cross within 100mm of each other then concrete protection (Class Z bedding) may be required to prevent any potential cross-contamination.
11. All cover levels shown are approximate only. All manhole covers are to be set at the proposed finished pavement or floor level provided by the Architect.
12. For typical manhole construction details, pipe bedding/trench details and typical drainage details refer to SGi typical details drawing.
13. All manhole covers shall be Class D400.
14. Channels within Type 1 & 2 manholes must use pre-formed using clayware sections for pipes up to and including 300mm diameter. All manhole channels to be set at the appropriate level for the incoming and outgoing pipe gradients.
15. All manholes connections to be formed at soffit to soffit unless otherwise stated. All internal branch connections to be made with swept bends in the direction of flow in the main pipe.

Filename : K:\projects\JOB-Nos C1500-1599\C1581 Ellesmere Wharf Shropshire Phase 2\000 CIVILS DRAWINGS\C1581-SGI-ZZ-00-DR-C-0300 - 0304 P1 - Foul Water Strategy.dwg
Plot Date/Time : 11/5/2021 9:48 AM

Rev.	Description	Rev. by	Date

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Client
Formal Investments

Architect
Roberts Limbrick

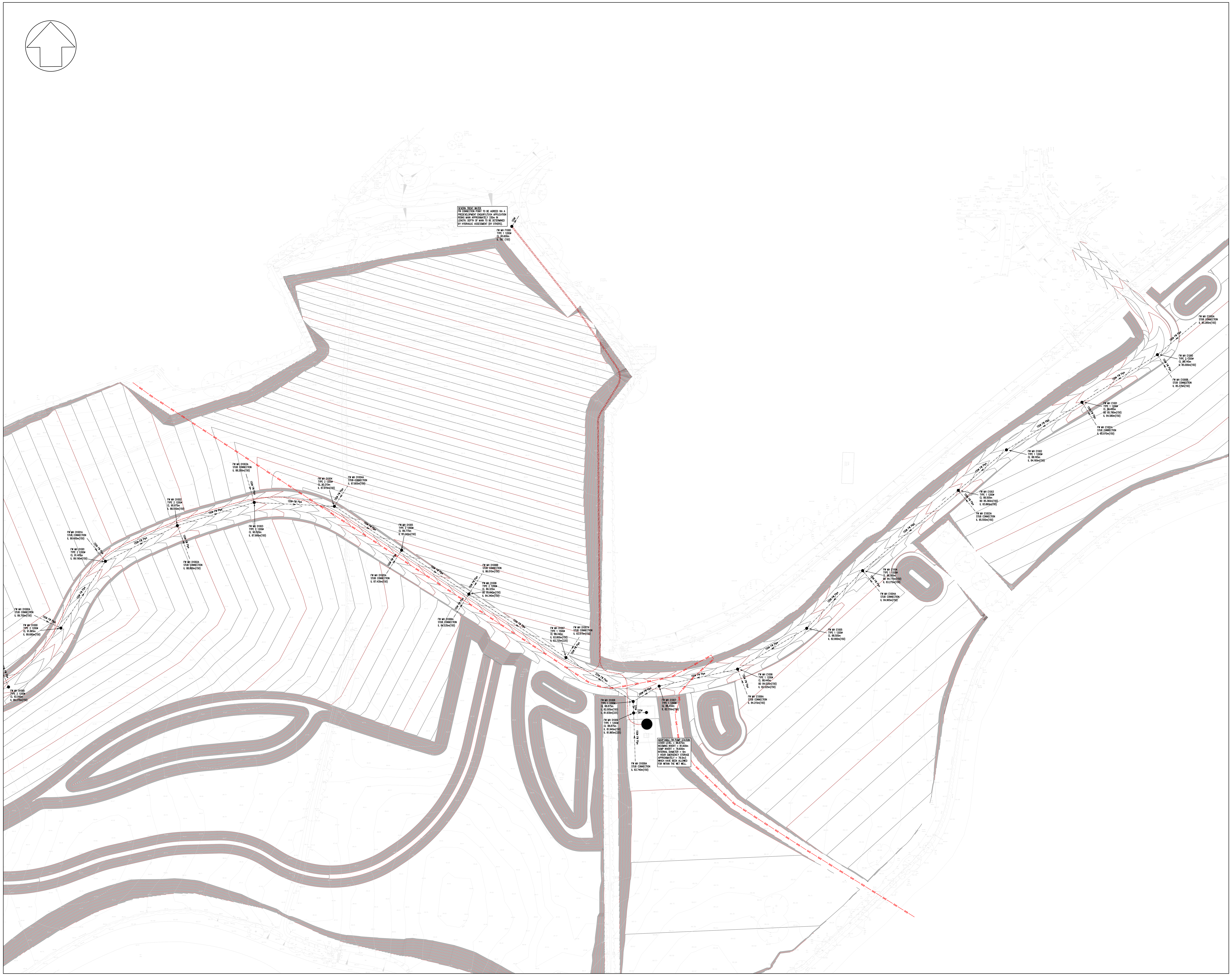
Project
Canalside Development, Ellesmere

Title
Enabling Works Drainage
FW Drainage - West

Date	18.04.2023	Drawn By	DOR
Size	A1	Checked By	DOR
Scale	1/1000	Approved By	DOR

Dwg. No.
C1581-SGI-ZZ-00-DR-C-0300

Rev
P1



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Filename : K:\projects\JOB-Nos C1500-1599\C1581 Ellesmere Wharf Shropshire Phase 2000 CIVILS DRAWINGS\C1581-SGI-ZZ-00-DR-C-0300 - 0304 P1 - Foul Water Strategy.dwg
Plot Date/Time : 11/5/2021 9:48 AM

Rev.	Description	Rev. by	Date

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Client
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Architect
Roberts Limbrick

Project
Canalside Development, Ellesmere

Title
Enabling Works Drainage
FW Drainage - East

Date	18.04.2023	Drawn By	DOR
Size	A1	Checked By	DOR
Scale	1/1000	Approved By	DOR

Dwg. No. **C1581-SGI-ZZ-00-DR-C-0301**
Rev **P1**