

Drainage Assessment

ALBRIGHTON SOUTH

BONINGALE HOMES LIMITED

04/07/2024



04 July 2024

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DRAINAGE ASSESSMENT
ALBRIGHTON SOUTH
FOR
BONINGALE HOMES LIMITED

Job No. : 48842
Report Status : Issue 1
Document Date : 04 July 2024
Approved :

Andrew Allison
Technical Director

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Issue 1: 04 July 2024

EXECUTIVE SUMMARY

The project comprises the proposed development of an approximately 47-hectare greenfield site for residential use. For the purpose of this report, the site is split into Zone A (west) and Zone B (east).

Surface water disposal is considered in accordance with the drainage hierarchy in Building Regulations Part H 2015 and Planning Practice Guidance 'Reducing the causes and impacts of flooding', paragraph 080 reference ID 7-080-20150323.

Infiltration type SuDS such as soakaways are not viable on the site due to the expected presence of impermeable ground (mudstone).

SuDS features such as basins, swales, permeable paving (Type C) and rain gardens may be suitable to incorporate into the site to provide water treatment and attenuation as well as biodiversity and amenity value. The suitability of different SuDS features is subject to site conditions and detailed design.

Surface water from Zone A will discharge via a pumped system to the unnamed watercourse within its eastern boundary. Surface water disposal in Zone B will be to unnamed watercourses located to the south-east and north-west of the site (a pumped system may be required subject to confirmation of watercourse levels). All proposed connections to existing watercourses are subject to approval from the Lead Local Flood Authority and ordinary watercourse consent will be required.

Zones A and B have both been split into four smaller parcels for the purpose of draining the site, resulting in a total of eight drainage parcels. Surface water discharge for each parcel will likely be restricted to 1.4 l/s/ha for the development area, or 3.5 l/s as a minimum practical rate if the rate is lower than this. The total surface water discharge rate equates to 17.7 l/s and 19.7 l/s for Zone A and Zone B respectively, subject to approval from the Lead Local Flood Authority.

Attenuation storage will be provided in basins or tanks within each of the smaller drainage parcels for rainfall events up to the return period of 1 in 100 year plus 40% climate change. The total estimated storage volumes for Zone A and Zone B are approximately 12,740 m³ and 14,200 m³ respectively, subject to detailed design.

Foul effluent will discharge via gravity to the site low points in Zone A and B, before being pumped to the 150 mm public combined sewer in Cross Road north of the site, subject to approval from Severn Trent Water. Severn Trent Water state that additional investigations/modelling will be required to better understand the impact of the additional properties on the public sewer network.

Maintenance of the drainage system will be in accordance with the recommendations provided by suppliers and product specifications. Maintenance of the potential SuDS systems for this site will also be in accordance with the recommendations within The SuDS Manual.

Method statements will be provided prior to construction. These will include details on how contaminated water, erosion and sediment control will be dealt with during construction

Both the surface and foul water drainage systems will be offered for adoption to Severn Trent Water.

1.0 INTRODUCTION

This Drainage Assessment has been prepared on the instruction of Boningale Homes Limited. This Drainage Assessment is to be read in conjunction with the Flood Risk Assessment (Ref:48842-ECE-XX-XX-C-0003). The drainage strategy has been based on a framework layout and is subject to change as a detailed layout of the site is developed.

The project comprises the proposed development of an approximately 47-hectare greenfield site for residential use.

1.2 Site location and description

The site is located within Albrighton, to the north-west of Wolverhampton, and is centred on coordinates 380707E, 303359N (Appendix 1).

The site is separated into two areas referenced as Zone A (west) and Zone B (east), both bounded by Cross Road to the north and Holyhead Road to the south. Patshull Road and residential properties are located between Zone A and Zone B. Zone B is also bounded by Newhouse Lane to the east.

The site is currently occupied by open farmland boarded by mature trees and hedgerows.

Zone A falls from approximately 98.49 mAOD in the west to 92.88 mAOD in the south, 90.97 mAOD in the south-east and 91.12 mAOD in the east at average gradients of 1 in 46, 1 in 63 and 1 in 88, respectively. Zone B falls from approximately 94.38 mAOD in the north-east to approximately 91.85 mAOD in the west and 87.13 mAOD in the south at average gradients of 1 in 200 and 1 in 92, respectively (Appendix 2).

Proposals are for the development of residential properties, a school, care home and local centre (Appendix 3).

2.0 DRAINAGE STRATEGY

2.1 Existing drainage

Severn Trent Water sewer maps (Appendix 4) record a 150 mm public combined sewer in Cross Road, north of the site. The nearest surface water sewer is a 525 mm public surface water sewer in Cross Road at a point approximately 200 m north-east of the site, with a headwall orientated south towards the site. There is also a manhole located off Patshull Road between the eastern and western parcel of the site, however there is no information on the purpose of this manhole or any upstream or downstream connection.

2.2 Consultation with the statutory bodies

2.2.1 South Staffordshire Council (LLFA)

South Staffordshire Council were contacted to determine any restrictions and requirements for developing the site and discharging surface water to the unnamed watercourses around the site. A response received on 19th March 2024 states the following (Appendix 5):

- Please see the Staffordshire SuDS handbook for policies and general guidance relating to SuDS.
- Land drainage consent may be required depending on the nature of the work. If no physical impoundment, bunding or damming of the watercourse flow is planned and no structural changes are being made, then land drainage consent is unlikely to be required.
- Discharge to an ordinary watercourse will require consent from the Environment Agency.

2.2.2 Environment Agency

The Environment Agency have been contacted to determine any restrictions or requirements to discharge surface water to an unnamed watercourse. A response is pending.

2.2.3 Severn Trent Water

Pre-planning advice has been received from Severn Trent Water; their reference 1109468 dated 5th March 2024. The main points of the advice are summarised below.

Foul water:

- The nearest network to receive flows is in Cross Road, north of the site.
- Based on 30 properties per hectare and a development area of approximately 20 ha, it is estimated that there will be approximately 600 houses on the development, with estimated foul flows of approximately 10 l/s.
- Due to surcharge levels within the sewer, historic flooding in the wider catchment area and capacity issues within the receiving treatment works, additional investigations / modelling will be required to better understand the impact of the additional properties on the public network.
- Given that planning approval has not yet been granted, the site will be added to the Severn Trent Water modelling tracker and reviewed regularly until the site can be progressed for sewer modelling.

Surface water:

- The surface water discharge hierarchy should be followed.
- Severn Trent Water expects all surface water from the development to be drained in a sustainable way to the nearest watercourse or land drainage channel, including highway drainage, subject to the developer discussing all aspects of the surface water drainage proposals with the Lead Local Flood Authority. The discharge rate to a watercourse or drainage ditch will be determined by the LLFA / EA.

2.3 Ground conditions

The British Geological Survey maps show the bedrock geology for the majority of the site is recorded as mudstone and halite-stone of the Mercia Mudstone Group. Bedrock geology in the south-eastern and western portions of the site is recorded as sandstone of the Helsby

Sandstone Formation. Superficial deposits are recorded as Till, Devensian – Diamicton, with multiple areas across the site with no records of superficial deposits.

A historical borehole log (Ref: SJ80SW4) located between the eastern and western parcel of the site records mudstone and sandstone. Another historical borehole log (Ref: SJ80SW10) located approximately 220 m north-east of the site records 0.4 m topsoil, 1.6 m clay overlying mudstone, with no groundwater encountered.

2.4 Drainage hierarchy

Surface water disposal should be in accordance with the drainage hierarchy in Building Regulations Part H 2015¹ and Planning Practice Guidance ‘Reducing the causes and impacts of flooding’, paragraph 080. Disposal via SuDS methods should be considered as the first option. Disposal to the public sewer should be considered only when SuDS methods and disposal to the watercourse are shown to be unsuitable.

2.4.1 Sustainable Drainage Systems (SuDS)

SuDS methods include water infiltration systems such as soakaways, basins and filter strips, together with swales, pervious pavements, detention basins, ponds and other wetland solutions. The various methods are considered in detail in The SuDS Manual (CIRIA C753).

Infiltration type SuDS such as soakaways are not viable on the site due to the expected presence of impermeable ground (mudstone). This is corroborated with Shropshire Councils SuDS Applicability map (Appendix 5), which shows that the site lies within a zone suitable only for attenuation (and not infiltration).

An assessment of SuDS methods and their applicability to this site is included in Appendix 5. SuDS features such as basins, swales, permeable paving (Type C) and rain gardens may be suitable to incorporate into the site to provide water treatment and attenuation as well as biodiversity and amenity value. This suitability of different SuDS features is subject to confirmation of the site conditions and detailed design.

¹ <https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h>

2.4.2 Watercourse

The nearest watercourse is an unnamed watercourse located within the eastern portion of Zone A flowing in a southern direction. Additional unnamed watercourses are also located 230 m south-east of Zone B and 330 m south-west of Zone A. These watercourses connect into a wider drainage network south of the site. Discharge to a watercourse will require approval from the Lead Local Flood Authority.

2.5 Proposals for surface water disposal

The final disposal strategy for surface water run-off requires detailed consideration and approval during the design phase of the project. The final design will need the approval of the relevant statutory bodies but will broadly follow these principles:

- Surface water from Zone A will discharge via a pumped system to the unnamed watercourse within its eastern boundary. Surface water disposal in Zone B will be to unnamed watercourses located to the south-east and north-west of the site (a pumped system may be required subject to confirmation of watercourse levels). All proposed connections to existing watercourses are subject to approval from the Lead Local Flood Authority and ordinary watercourse consent will be required.
- Zones A and B have both been split into four smaller parcels for the purpose of draining the site, resulting in a total of eight drainage parcels. Surface water discharge for each parcel will likely be restricted to 1.4 l/s/ha for the development area, or 3.5 l/s as a minimum practical rate if the rate is lower than this. The total surface water discharge rate equates to 17.7 l/s and 19.7 l/s for Zones A and Zone B respectively, subject to approval from the Lead Local Flood Authority.
- Attenuation storage will be provided in basins or tanks within each of the smaller drainage parcels for rainfall events up to the return period of 1 in 100 year plus 40% climate change. The total estimated storage volumes for Zone A and Zone B are approximately 12,740 m³ and 14,200 m³ respectively, subject to detailed design. Attenuation calculations are provided in Appendix 6.
- SuDS features such as basins, swales, permeable paving (Type C) and rain gardens may be suitable to incorporate into the site to provide water treatment and attenuation

as well as biodiversity and amenity value. The suitability of different SuDS features is subject to site conditions and detailed design.

- The surface water drainage system will be offered for adoption to Severn Trent Water.

2.6 SuDS Maintenance

Maintenance of the potential SuDS systems for this site will be in accordance with the recommendations within The SuDS Manual (CIRIA C753, 2015) as stipulated in Table 1, along with any recommendations provided by suppliers and product specifications.

Table 1 summarises maintenance actions and frequency for each component (surface and sub surface) of the drainage system. Maintenance access requirements such as vehicle and machinery access (where applicable) will also need consideration.

Features adopted by authorities, such as drainage authorities, will be maintained under their normal regime of inspection and maintenance.

The maintenance schedules below should be followed to ensure flood risk on site does not increase through system blockages or poor maintenance. Following the maintenance schedule is required to ensure the drainage features remain functional for the lifetime of the development.

<u>SuDS System</u>	<u>ACTION</u>	<u>FREQUENCY</u>
Permeable Paving (Type C)	Initial inspection of porous pavement	Monthly for three months after installation
	General removal of litter and debris. Brush regularly.	Monthly (or more frequently if required)
	Inspect porous pavements for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms for first six months

<u>SuDS System</u>	<u>ACTION</u>	<u>FREQUENCY</u>
Permeable Paving (Type C)	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Brushing and vacuuming of porous pavements (standard cosmetic sweep over whole surface)	Annually, after autumn leaf fall
	Removal of weeds from porous pavements or management using glyphosate applied direction into the weeds by an applicator rather than spraying	Annually (or more frequently if necessary)
	Remedial work to any depressions, rutting and cracks of the permeable pavement considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure of the permeable pavement by remedial sweeping	Every 15 years or as required
Rain garden	Ornamental tree and shrub planting. – Remove stakes and ties from trees when no longer needed for support and within 3 years of planting.	As required
	Protect from strimmer damage and remove competitive growth until well established.	As required
	Replace trees and shrubs which fail within the first 5 years after planting. Carry out tree surgery as necessary.	As required

<u>SuDS System</u>	<u>ACTION</u>	<u>FREQUENCY</u>
Sub-surface storage	Remove debris from catchment surface where it may affect performance	Monthly
	If the system allows rainfall infiltration from above, check filter surface for blockages. Remove and replace infiltration material if deemed necessary.	Annually
	Remove sediment from pre-treatment structures	Annually or as required
	Inspect inlets, outlets, vents and overflows to ensure they are operating as designed	Annually
	Remedial work to repair inlets, outlets, overflows and vents	As required
	Survey inside of storage area for sediment build up. Remove sediment if required.	As required
Silt trap manholes	Inspect surface structures of inlets and outlets removing obstructions and silt as necessary. Check there is no physical damage.	Monthly
	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually (or more frequently if necessary)
	Remove cover and inspect ensuring water is flowing freely and that the exist route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in autumn.	Annually
	Where there is a build-up of silt, remove and spread on site. Undertake when ground is damp	As required

<u>SuDS System</u>	<u>ACTION</u>	<u>FREQUENCY</u>
	in autumn or early spring and transplant turf and overseed to original design level.	
Basin	Inspect surface inlet/ outlet structures removing obstructions and silt as necessary. Check there is no physical damage.	Monthly
	Mow grass access paths and verges surrounding basins at 35 to 50 mm minimum and 75 mm or as specified to provide a cared for appearance and allow pedestrian access.	Monthly or as required.
	Confirm whether a liner is present to hold water or prevent pollution of groundwater to protect.	Annually or every 3 years as required
	Where silt accumulated on apron or around inlet/ outlet, then remove.	Annually or every 3 years as required
	Retain as much existing vegetation as possible to ensure rapid re-colonisation of open areas.	Annually or every 3 years as required
	Undertake silt removal during September-October to minimise damage to protected wildlife and ensure re-growth of aquatic vegetation before winter.	Annually or every 3 years as required
Swales	Mow amenity grass access paths and verges around swales at 35 – 50 mm minimum and 75 mm maximum.	Monthly or as required
	Mow swales at 100 mm with 150 mm maximum to filter and control runoff in normal grass swales.	Monthly or as required
	Where marsh or wetland develops in the swale due to wet conditions, cut annually, or as required at 100 mm.	Annually or as required

<u>SuDS System</u>	<u>ACTION</u>	<u>FREQUENCY</u>
Swales	Where there is a build-up of silt, 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
	Spread excavated material (silt) on site above the SuDS design profile, in accordance with EA Waste Exemption Guidance.	As required
	All damage to be returned to design profile unless there is a design flaw.	As required
Guttering, gullies and piped drainage system	General removal of litter and debris.	6 monthly, after autumn leaf fall (or as required)
	Cleaning of gullies, drainage channel and drainage channel sump units to remove debris and silt.	6 monthly, after autumn leaf fall (or more frequently if necessary)
	Cleaning of manholes to remove debris and silt.	Annually, after autumn leaf fall (or more frequently if necessary)
	If the system allows rainfall infiltration from above, check filter surface for blockages. Remove and replace infiltration material if deemed necessary.	Annually
	Remove sediment from pre-treatment structures.	Annually or as required

<u>SuDS System</u>	<u>ACTION</u>	<u>FREQUENCY</u>
Guttering, gullies and piped drainage system	Inspection of all access chambers, inspection chambers, manholes and proprietary storage units to identify and make good any defects as necessary.	Annually
	Inspect inlets, outlets, vents and overflows to ensure they are operating as designed.	Annually
Vortex flow control	Remove Litter and Debris	Monthly
	Cleaning of flow control to remove debris and silt	Annually (or more frequently if necessary)
	Inspect inlets and outlets for blockages and clear if required	Monthly
	Repair any damages to flow control device and manhole	As required
	Repair any damage to manhole cover	As required
	Repair any damage to inlet/outlet	As required
Inlets	Inspection for debris and sediment build up.	Annually (and following poor performance)
	Inspect inlets for blockages and clear if required.	Monthly
	Inspect inlet pipework for blockages, clogging, standing water and structural damage.	Monthly
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate.	As required

Table 1: SuDS Maintenance

Method statements will be provided prior to construction. These will include details on how contaminated water, erosion and sediment control will be dealt with during construction.

2.7 Proposals for foul disposal

Foul effluent will discharge via gravity to the site low points in Zone A and B, before being pumped to the 150 mm public combined sewer in Cross Road north of the site, subject to approval from Severn Trent Water.

Severn Trent Water state that additional investigations / modelling will be required to better understand the impact of the additional properties on the public sewer network (Appendix 7).

The foul drainage system will be offered for adoption to Severn Trent Water.

2.8 Residual flood risk

There is a potential flood risk to site occupiers and to others from surface water runoff as a result of developing the site. The residual risk can be managed by the general flood mitigation measures outlined below.

2.9 Mitigation measures

The proposed surface water drainage system is designed to current best practice and to the standards laid out in the publication 'Design and Construction Guidance for foul and surface water sewers' and Building Regulations Part H 2015.

In the event of surface water exceedance during extreme rainfall events the site is laid out so that surface water runoff is directed away from houses, including those on neighbouring streets.

3.0 CONCLUSIONS

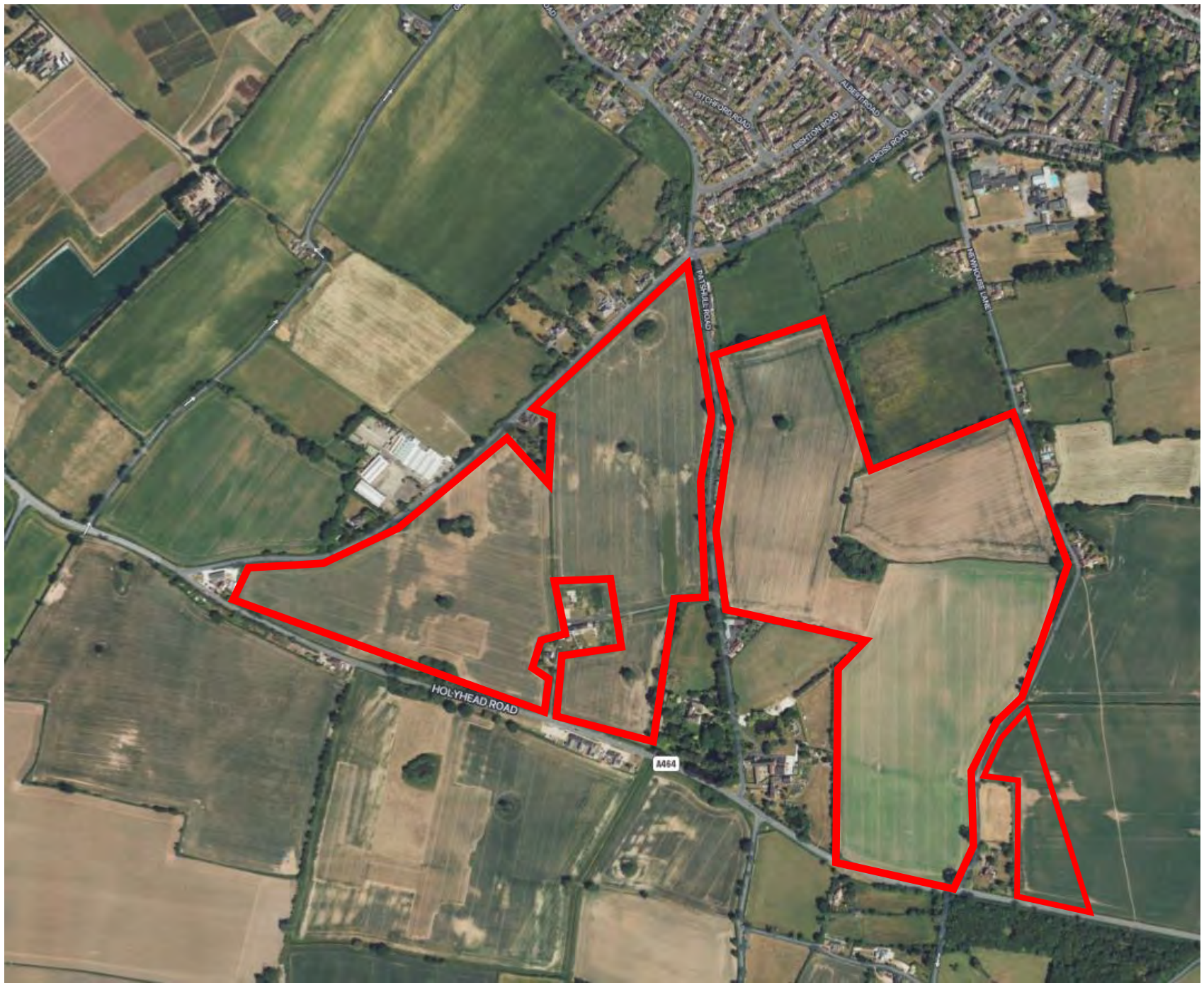
1. Surface water disposal has been considered in accordance with the drainage hierarchy in Building Regulations Part H 2015 and Planning Practice Guidance 'Reducing the causes and impacts of flooding', paragraph 080 reference ID 7-080-20150323.
2. Infiltration type SuDS such as soakaways are not viable on the site due to the expected presence of impermeable ground (mudstone).
3. SuDS features such as basins, swales, permeable paving (Type C) and rain gardens may be suitable to incorporate into the site to provide water treatment and attenuation as well as biodiversity and amenity value. The suitability of different SuDS features is subject to site conditions and detailed design.
4. Surface water from Zone A will discharge via a pumped system to the unnamed watercourse within its eastern boundary. Surface water disposal in Zone B will be to unnamed watercourses located to the south-east and north-west of the site (a pumped system may be required subject to confirmation of watercourse levels). All proposed connections to existing watercourses are subject to approval from the Lead Local Flood Authority and ordinary watercourse consent will be required.
5. Zones A and B have both been split into four smaller parcels for the purpose of draining the site, resulting in a total of eight drainage parcels. Surface water discharge for each parcel will likely be restricted to 1.4 l/s/ha for the development area, or 3.5 l/s as a minimum practical rate if the rate is lower than this. The total surface water discharge rate equates to 17.7 l/s and 19.7 l/s for Zone A and Zone B respectively, subject to approval from the Lead Local Flood Authority.
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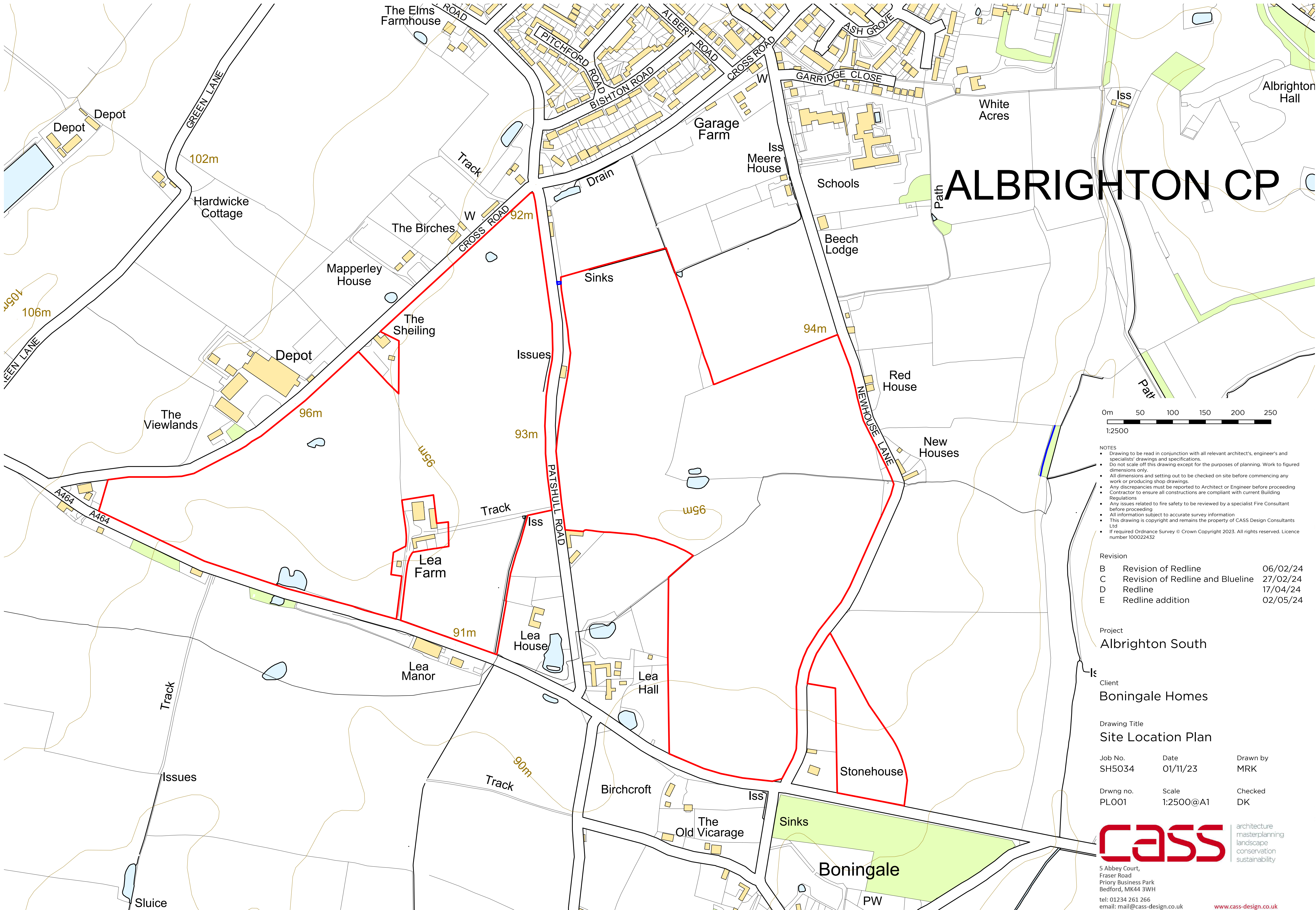
investigations/modelling will be required to better understand the impact of the additional properties on the public sewer network.

8. Maintenance of the drainage system will be in accordance with the recommendations provided by suppliers and product specifications. Maintenance of the potential SuDS systems for this site will also be in accordance with the recommendations within The SuDS Manual.
9. Method statements will be provided prior to construction. These will include details on how contaminated water, erosion and sediment control will be dealt with during construction
10. Both the surface and foul water drainage systems will be offered for adoption to Severn Trent Water.

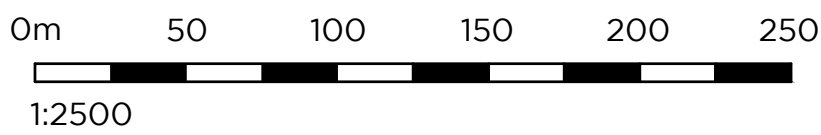
APPENDICES

APPENDIX 1





ALBRIGHTON CP



- NOTES
- Drawing to be read in conjunction with all relevant architect's, engineer's and specialists' drawings and specifications.
 - Do not scale off this drawing except for the purposes of planning. Work to figured dimensions only.
 - All dimensions and setting out to be checked on site before commencing any work or producing shop drawings.
 - Any discrepancies must be reported to Architect or Engineer before proceeding
 - Contractor to ensure all constructions are compliant with current Building Regulations
 - Any issues related to fire safety to be reviewed by a specialist Fire Consultant before proceeding
 - All information subject to accurate survey information
 - This drawing is copyright and remains the property of CASS Design Consultants Ltd
 - If required Ordnance Survey © Crown Copyright 2023. All rights reserved. Licence number 100022432

Revision		
B	Revision of Redline	06/02/24
C	Revision of Redline and Blueline	27/02/24
D	Redline	17/04/24
E	Redline addition	02/05/24

Project
Albrighton South

Client
Boningle Homes

Drawing Title
Site Location Plan

Job No.	Date	Drawn by
SH5034	01/11/23	MRK

Drwng no.	Scale	Checked
PL001	1:2500@A1	DK

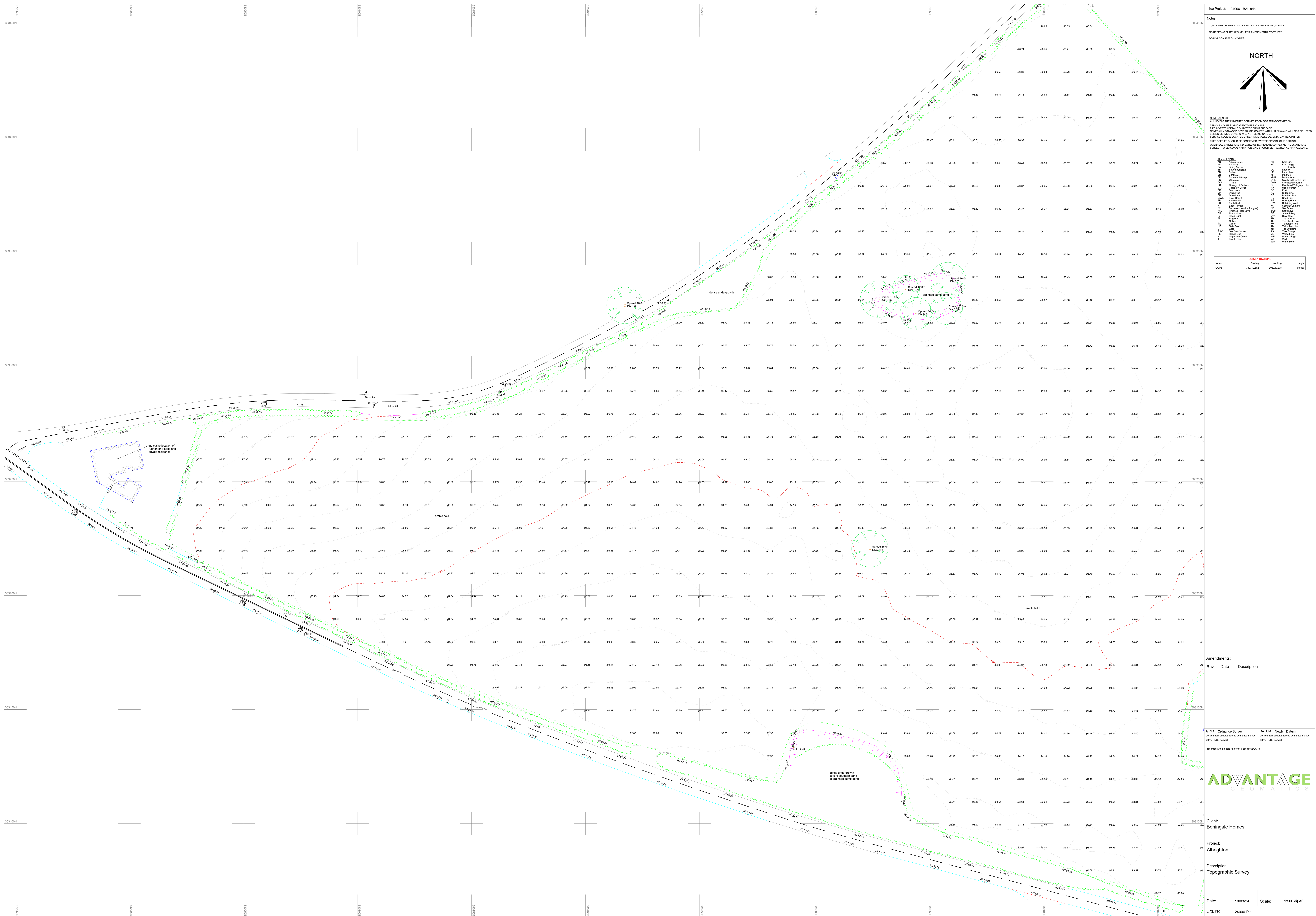


architecture
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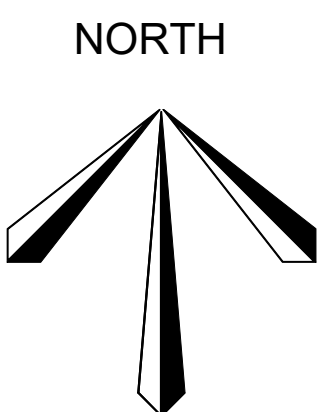
APPENDIX 2



4ce Project: 24006 - BAL.sdb

Notes:

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GENERAL NOTES:
ALL LEVELS ARE IN METRES DERIVED FROM GPS TRANSFORMATION.
SERVICE COVERS INDICATED WHERE VISIBLE.
PIPE INVERTS/DETAILS SURVEYED FROM SURFACE.
GENERALLY DAMAGED COVERS AND COVERS WITHIN HIGHWAYS WILL NOT BE LIFTED
BURIED SERVICE COVERS WILL NOT BE INDICATED.
SERVICE COVERS LOCATED UNDER IMMOVABLE OBJECTS MAY BE OMITTED
TREE SPECIES SHOULD BE CONFIRMED BY TREE SPECIALIST IF CRITICAL.
OVERHEAD CABLES ARE INDICATED USING REMOTE SURVEY METHODS AND ARE
SUBJECT TO SEASONAL VARIATION, AND SHOULD BE TREATED AS APPROXIMATE.

ACY	General	
AR	Arrow Bender	KB
AS	As Vines	KC
BA	Billing Barren	KD
BB	Bottle Of Bank	KE
BD	Bombard	KF
BE	Belted Rump	KG
BN	Bonaparte	KH
BO	Bonaparte	KI
CB	Change of Surface	KJ
CC	Change of Surface	KK
CD	Change of Surface	KL
CE	Change of Surface	KM
CF	Change of Surface	KN
CG	Change of Surface	KO
CH	Change of Surface	KP
CI	Change of Surface	KQ
CJ	Change of Surface	KR
CK	Change of Surface	KS
CL	Change of Surface	KT
CM	Change of Surface	KU
CN	Change of Surface	KV
CO	Change of Surface	KW
CP	Change of Surface	KX
CQ	Change of Surface	KY
CR	Change of Surface	KZ
CS	Change of Surface	LA
CT	Change of Surface	LB
CU	Change of Surface	LC
CV	Change of Surface	LD
CW	Change of Surface	LE
CX	Change of Surface	LF
CY	Change of Surface	LG
CA	Change of Surface	LH
CB	Change of Surface	LI
CC	Change of Surface	LJ
CD	Change of Surface	LK
CE	Change of Surface	LL
CF	Change of Surface	LM
CG	Change of Surface	LN
CH	Change of Surface	LO
CI	Change of Surface	LP
CJ	Change of Surface	LQ
CK	Change of Surface	LR
CL	Change of Surface	LS
CM	Change of Surface	LT
CN	Change of Surface	LU
CO	Change of Surface	LV
CP	Change of Surface	LW
CQ	Change of Surface	LY
CR	Change of Surface	LZ
CS	Change of Surface	MA
CT	Change of Surface	MB
CU	Change of Surface	MC
CV	Change of Surface	MD
CW	Change of Surface	ME
CX	Change of Surface	MF
CY	Change of Surface	MG
CA	Change of Surface	MH
CB	Change of Surface	MI
CC	Change of Surface	MJ
CD	Change of Surface	MK
CE	Change of Surface	ML
CF	Change of Surface	MM
CG	Change of Surface	MN
CH	Change of Surface	MO
CI	Change of Surface	MP
CJ	Change of Surface	MQ
CK	Change of Surface	MR
CL	Change of Surface	MS
CM	Change of Surface	MT
CN	Change of Surface	MU
CO	Change of Surface	MV
CP	Change of Surface	MW
CQ	Change of Surface	MX
CR	Change of Surface	MY
CS	Change of Surface	MZ
CT	Change of Surface	NA
CU	Change of Surface	NB
CV	Change of Surface	NC
CW	Change of Surface	ND
CX	Change of Surface	NE
CY	Change of Surface	NF
CA	Change of Surface	NG
CB	Change of Surface	NH
CC	Change of Surface	NI
CD	Change of Surface	NJ
CE	Change of Surface	NK
CF	Change of Surface	NL
CG	Change of Surface	NM
CH	Change of Surface	NO
CI	Change of Surface	NP
CJ	Change of Surface	NQ
CK	Change of Surface	NR
CL	Change of Surface	NS
CM	Change of Surface	NT
CN	Change of Surface	NU
CO	Change of Surface	NV
CP	Change of Surface	NW
CQ	Change of Surface	NX
CR	Change of Surface	NY
CS	Change of Surface	NZ
CT	Change of Surface	OA
CU	Change of Surface	OB
CV	Change of Surface	OC
CW	Change of Surface	OD
CX	Change of Surface	OE
CY	Change of Surface	OF
CA	Change of Surface	OG
CB	Change of Surface	OH
CC	Change of Surface	OI
CD	Change of Surface	OJ
CE	Change of Surface	OK
CF	Change of Surface	OL
CG	Change of Surface	OM
CH	Change of Surface	ON
CI	Change of Surface	OO
CJ	Change of Surface	OP
CK	Change of Surface	OQ
CL	Change of Surface	OR
CM	Change of Surface	OS
CN	Change of Surface	OT
CO	Change of Surface	OU
CP	Change of Surface	OV
CQ	Change of Surface	OW
CR	Change of Surface	OX
CS	Change of Surface	OY
CT	Change of Surface	OZ
CU	Change of Surface	PA
CV	Change of Surface	PB
CW	Change of Surface	PC
CX	Change of Surface	PD
CY	Change of Surface	PE
CA	Change of Surface	PF
CB	Change of Surface	PG
CC	Change of Surface	PH
CD		

SURVEY STATIONS			
Name	Easting	Northing	Height
GCP3	390719.502	303229.278	93.080

Amendments:

Rev	Date	Description
-----	------	-------------

GRID Ordnance Survey Derived from observations to Ordnance Survey active GNSS network presented with a Scale Factor of 1 set about GCP3	DATUM Newlyn Datum Derived from observations to Ordnance Survey active GNSS network
---	--

ADVANTAGE
GEOMETRICS

Client:
Boningale Homes

Project:
Albrighton

Description:
Topographic Survey

Date:	10/03/24	S
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Drg. No: 24008-P-1



Project: 24006 - BAL.sdb

Notes:

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NORTH

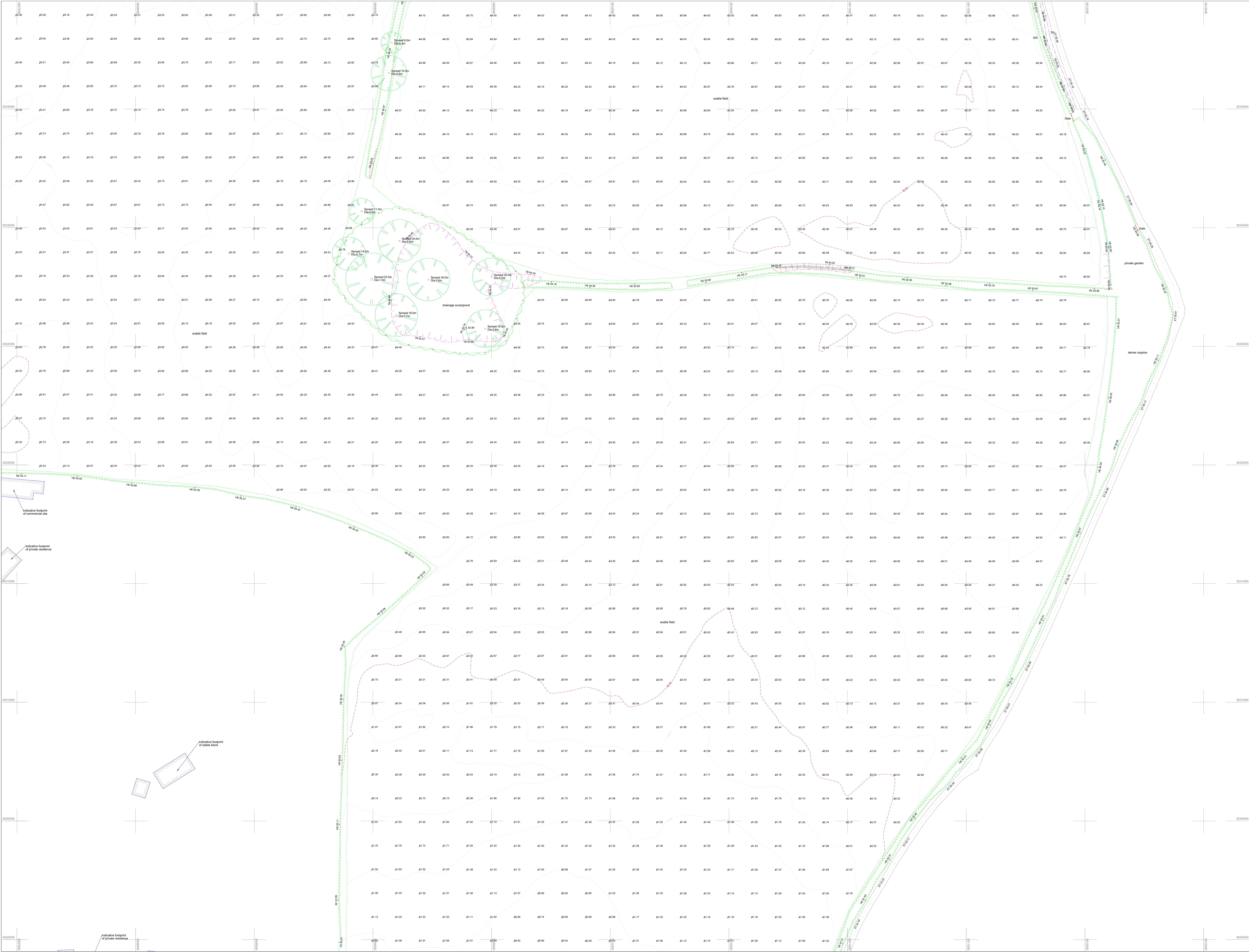
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- PIPE SWEPTS: DETAILS SUPPLIED FROM SURFACE.
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- OVERHEAD CABLES ARE INDICATED USING REMOTE SURVEY METHODS AND ARE SUBJECT TO SEASONAL VARIATION AND SHOULD BE TREATED AS APPROXIMATE.

KEY - GENERAL

AC	Access	KS	Kelly Line
AD	Air Valve	KD	Kelly Drain
BA	Backwater	KT	Kelly Tank
BD	Borehole	LD	Level Drain
BE	Boundary	LP	Level Point
BS	Bottom of Range	MS	Manhole
CA	Cable	MS	Manhole
CB	Cable Box	MS	Manhole
CC	Cable Box	MS	Manhole
CD	Cable Box	MS	Manhole
CE	Cable Box	MS	Manhole
CF	Cable Box	MS	Manhole
CG	Cable Box	MS	Manhole
CH	Cable Box	MS	Manhole
CI	Cable Box	MS	Manhole
CJ	Cable Box	MS	Manhole
CK	Cable Box	MS	Manhole
CL	Cable Box	MS	Manhole
CM	Cable Box	MS	Manhole
CN	Cable Box	MS	Manhole
CO	Cable Box	MS	Manhole
CP	Cable Box	MS	Manhole
CQ	Cable Box	MS	Manhole
CR	Cable Box	MS	Manhole
CS	Cable Box	MS	Manhole
CT	Cable Box	MS	Manhole
CU	Cable Box	MS	Manhole
CV	Cable Box	MS	Manhole
CW	Cable Box	MS	Manhole
CX	Cable Box	MS	Manhole
CY	Cable Box	MS	Manhole
CZ	Cable Box	MS	Manhole
DA	Ditch	MS	Manhole
DB	Ditch	MS	Manhole
DC	Ditch	MS	Manhole
DD	Ditch	MS	Manhole
DE	Ditch	MS	Manhole
DF	Ditch	MS	Manhole
DG	Ditch	MS	Manhole
DH	Ditch	MS	Manhole
DI	Ditch	MS	Manhole
DJ	Ditch	MS	Manhole
DK	Ditch	MS	Manhole
DL	Ditch	MS	Manhole
DM	Ditch	MS	Manhole
DN	Ditch	MS	Manhole
DO	Ditch	MS	Manhole
DP	Ditch	MS	Manhole
DQ	Ditch	MS	Manhole
DR	Ditch	MS	Manhole
DS	Ditch	MS	Manhole
DT	Ditch	MS	Manhole
DU	Ditch	MS	Manhole
DV	Ditch	MS	Manhole
DW	Ditch	MS	Manhole
DX	Ditch	MS	Manhole
DY	Ditch	MS	Manhole
DZ	Ditch	MS	Manhole
EA	Edge	MS	Manhole
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EC	Edge	MS	Manhole
ED	Edge	MS	Manhole
EE	Edge	MS	Manhole
EF	Edge	MS	Manhole
EG	Edge	MS	Manhole
EH	Edge	MS	Manhole
EI	Edge	MS	Manhole
EJ	Edge	MS	Manhole
EK	Edge	MS	Manhole
EL	Edge	MS	Manhole
EM	Edge	MS	Manhole
EN	Edge	MS	Manhole
EO	Edge	MS	Manhole
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ER	Edge	MS	Manhole
ES	Edge	MS	Manhole
ET	Edge	MS	Manhole
EU	Edge	MS	Manhole
EV	Edge	MS	Manhole
EW	Edge	MS	Manhole
EX	Edge	MS	Manhole
EY	Edge	MS	Manhole
EZ	Edge	MS	Manhole
FA	Face	MS	Manhole
FB	Face	MS	Manhole
FC	Face	MS	Manhole
FD	Face	MS	Manhole
FE	Face	MS	Manhole
FF	Face	MS	Manhole
FG	Face	MS	Manhole
FH	Face	MS	Manhole
FI	Face	MS	Manhole
FJ	Face	MS	Manhole
FK	Face	MS	Manhole
FL	Face	MS	Manhole
FM	Face	MS	Manhole
FN	Face	MS	Manhole
FO	Face	MS	Manhole
FP	Face	MS	Manhole
FQ	Face	MS	Manhole
FR	Face	MS	Manhole
FS	Face	MS	Manhole
FT	Face	MS	Manhole
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FV	Face	MS	Manhole
FW	Face	MS	Manhole
FX	Face	MS	Manhole
FY	Face	MS	Manhole
FZ	Face	MS	Manhole
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GD	Gate	MS	Manhole
GE	Gate	MS	Manhole
GF	Gate	MS	Manhole
GG	Gate	MS	Manhole
GH	Gate	MS	Manhole
GI	Gate	MS	Manhole
GJ	Gate	MS	Manhole
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GL	Gate	MS	Manhole
GM	Gate	MS	Manhole
GN	Gate	MS	Manhole
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GQ	Gate	MS	Manhole
GR	Gate	MS	Manhole
GS	Gate	MS	Manhole
GT	Gate	MS	Manhole
GU	Gate	MS	Manhole
GV	Gate	MS	Manhole
GW	Gate	MS	Manhole
GX	Gate	MS	Manhole
GY	Gate	MS	Manhole
GZ	Gate	MS	Manhole
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HB	Head	MS	Manhole
HC	Head	MS	Manhole
HD	Head	MS	Manhole
HE	Head	MS	Manhole
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HG	Head	MS	Manhole
HH	Head	MS	Manhole
HI	Head	MS	Manhole
HJ	Head	MS	Manhole
HK	Head	MS	Manhole
HL	Head	MS	Manhole
HM	Head	MS	Manhole
HN	Head	MS	Manhole
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HR	Head	MS	Manhole
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HV	Head	MS	Manhole
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HZ	Head	MS	Manhole
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IB	Intersection	MS	Manhole
IC	Intersection	MS	Manhole
ID	Intersection	MS	Manhole
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IF	Intersection	MS	Manhole
IG	Intersection	MS	Manhole
IH	Intersection	MS	Manhole
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IJ	Intersection	MS	Manhole
IK	Intersection	MS	Manhole
IL	Intersection	MS	Manhole
IM	Intersection	MS	Manhole
IN	Intersection	MS	Manhole
IO	Intersection	MS	Manhole
IP	Intersection	MS	Manhole
IQ	Intersection	MS	Manhole
IR	Intersection	MS	Manhole
IS	Intersection	MS	Manhole
IT	Intersection	MS	Manhole
IU	Intersection	MS	Manhole
IV	Intersection	MS	Manhole
IW	Intersection	MS	Manhole
IX	Intersection	MS	Manhole
IY	Intersection	MS	Manhole
IZ	Intersection	MS	Manhole
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JB	Junction	MS	Manhole
JC	Junction	MS	Manhole
JD	Junction	MS	Manhole
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JF	Junction	MS	Manhole
JG	Junction	MS	Manhole
JH	Junction	MS	Manhole
JI	Junction	MS	Manhole
JJ	Junction	MS	Manhole
JK	Junction	MS	Manhole
JL	Junction	MS	Manhole
JM	Junction	MS	Manhole
JN	Junction	MS	Manhole
JO	Junction	MS	Manhole
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KO	Kelly	MS	Manhole
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KQ	Kelly	MS	Manhole
KR	Kelly	MS	Manhole
KS	Kelly	MS	Manhole
KT	Kelly	MS	Manhole
KU	Kelly	MS	Manhole
KV	Kelly	MS	Manhole
KW	Kelly	MS	Manhole
KX	Kelly	MS	Manhole
KY	Kelly	MS	Manhole
KZ	Kelly	MS	Manhole
LA	Level	MS	Manhole
LB	Level	MS	Manhole
LC	Level	MS	Manhole
LD	Level	MS	Manhole
LE	Level	MS	Manhole
LF	Level	MS	Manhole
LG	Level	MS	Manhole
LH	Level	MS	Manhole
LI	Level	MS	Manhole
LJ	Level	MS	Manhole
LK	Level	MS	Manhole
LL	Level	MS	Manhole
LM	Level	MS	Manhole
LN	Level	MS	Manhole
LO	Level	MS	Manhole
LP	Level	MS	Manhole
LQ	Level	MS	Manhole
LR	Level	MS	Manhole
LS	Level	MS	Manhole
LT	Level	MS	Manhole
LU	Level	MS	Manhole
LV	Level	MS	Manhole
LW	Level	MS	Manhole
LX	Level	MS	Manhole
LY	Level	MS	Manhole
LZ	Level	MS	Manhole
MA	Manhole	MS	Manhole
MB	Manhole	MS	Manhole
MC	Manhole	MS	Manhole
MD	Manhole	MS	Manhole
ME	Manhole	MS	Manhole
MF	Manhole	MS	Manhole
MG	Manhole	MS	Manhole
MH	Manhole	MS	Manhole
MI	Manhole	MS	Manhole
MJ	Manhole	MS	Manhole
MK	Manhole	MS	Manhole
ML	Manhole	MS	Manhole
MM	Manhole	MS	Manhole
MN	Manhole	MS	Manhole
MO	Manhole	MS	Manhole
MP	Manhole	MS	Manhole
MQ	Manhole	MS	Manhole
MR	Manhole	MS	Manhole
MS	Manhole	MS	Manhole
MT	Manhole	MS	Manhole
MU	Manhole	MS	Manhole
MV	Manhole	MS	Manhole
MW	Manhole	MS	Manhole
MX	Manhole	MS	Manhole
MY	Manhole	MS	Manhole
MZ	Manhole	MS	Manhole
NA	Natural	MS	Manhole
NB	Natural	MS	Manhole
NC	Natural	MS	Manhole
ND	Natural	MS	Manhole
NE	Natural	MS	Manhole
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NG	Natural	MS	Manhole
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NI	Natural	MS	Manhole
NJ	Natural	MS	Manhole
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NL	Natural	MS	Manhole
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NN	Natural	MS	Manhole
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NR	Natural	MS	Manhole
NS	Natural	MS	Manhole
NT	Natural	MS	Manhole
NU	Natural	MS	Manhole
NV	Natural	MS	Manhole
NW	Natural	MS	Manhole
NX	Natural	MS	Manhole
NY	Natural	MS	Manhole
NZ	Natural	MS	Manhole
OA	Obstacle	MS	Manhole
OB	Obstacle	MS	Manhole
OC	Obstacle	MS	Manhole
OD	Obstacle	MS	Manhole
OE	Obstacle	MS	Manhole
OF	Obstacle	MS	Manhole
OG	Obstacle	MS	Manhole
OH	Obstacle	MS	Manhole
OI	Obstacle	MS	Manhole
OJ	Obstacle	MS	Manhole
OK	Obstacle	MS	Manhole
OL	Obstacle	MS	Manhole
OM	Obstacle	MS	Manhole
ON	Obstacle	MS	Manhole
OO	Obstacle	MS	Manhole
OP	Obstacle	MS	Manhole
OQ	Obstacle	MS	Manhole
OR	Obstacle	MS	Manhole
OS	Obstacle	MS	Manhole
OT	Obstacle	MS	Manhole
OU	Obstacle	MS	Manhole
OV	Obstacle	MS	Manhole
OW	Obstacle	MS	Manhole
OX	Obstacle	MS	Manhole
OY	Obstacle	MS	Manhole
OZ	Obstacle	MS	Manhole
PA	Pipe	MS	Manhole
PB	Pipe	MS	Manhole
PC	Pipe	MS	Manhole
PD	Pipe	MS	Manhole
PE	Pipe	MS	Manhole
PF	Pipe	MS	Manhole
PG	Pipe	MS	Manhole
PH	Pipe	MS	Manhole
PI	Pipe	MS	Manhole
PJ	Pipe	MS	Manhole
PK	Pipe	MS	Manhole
PL	Pipe	MS	Manhole
PM	Pipe	MS	Manhole
PN	Pipe	MS	Manhole
PO	Pipe	MS	Manhole
PP	Pipe	MS	Manhole
PQ	Pipe	MS	Manhole
PR	Pipe	MS	Manhole
PS	Pipe	MS	Manhole
PT	Pipe	MS	Manhole
PU	Pipe	MS	Manhole
PV	Pipe	MS	Manhole
PW	Pipe	MS	Manhole
PX	Pipe	MS	Manhole
PY	Pipe	MS	Manhole
PZ	Pipe	MS	Manhole
QA	Quality	MS	Manhole
QB	Quality	MS	Manhole
QC	Quality	MS	Manhole
QD	Quality	MS	Manhole
QE	Quality	MS	Manhole
QF	Quality	MS	Manhole
QG	Quality	MS	Manhole
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QI	Quality	MS	Manhole
QJ	Quality	MS	Manhole
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QN	Quality	MS	Manhole
QO	Quality	MS	Manhole
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QQ	Quality	MS	Manhole
QR	Quality	MS	Manhole
QS	Quality	MS	Manhole
QT	Quality	MS	Manhole
QU	Quality	MS	Manhole
QV	Quality	MS	Manhole
QW	Quality	MS	Manhole
QX	Quality	MS	Manhole
QY	Quality	MS	Manhole
QZ	Quality	MS	Manhole
RA	Range	MS	Manhole
RB	Range	MS	Manhole
RC	Range	MS	Manhole
RD	Range	MS	Manhole
RE	Range	MS	Manhole
RF	Range	MS	Manhole
RG	Range	MS	Manhole
RH	Range	MS	Manhole
RI	Range	MS	Manhole
RJ	Range	MS	Manhole
RK	Range	MS	Manhole
RL	Range	MS	Manhole
RM	Range	MS	Manhole
RN	Range	MS	Manhole
RO	Range	MS	Manhole





Index Project: 24006 - BAL-sub

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NORTH

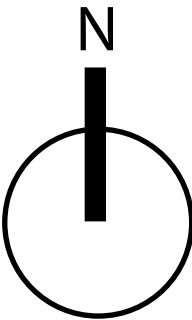
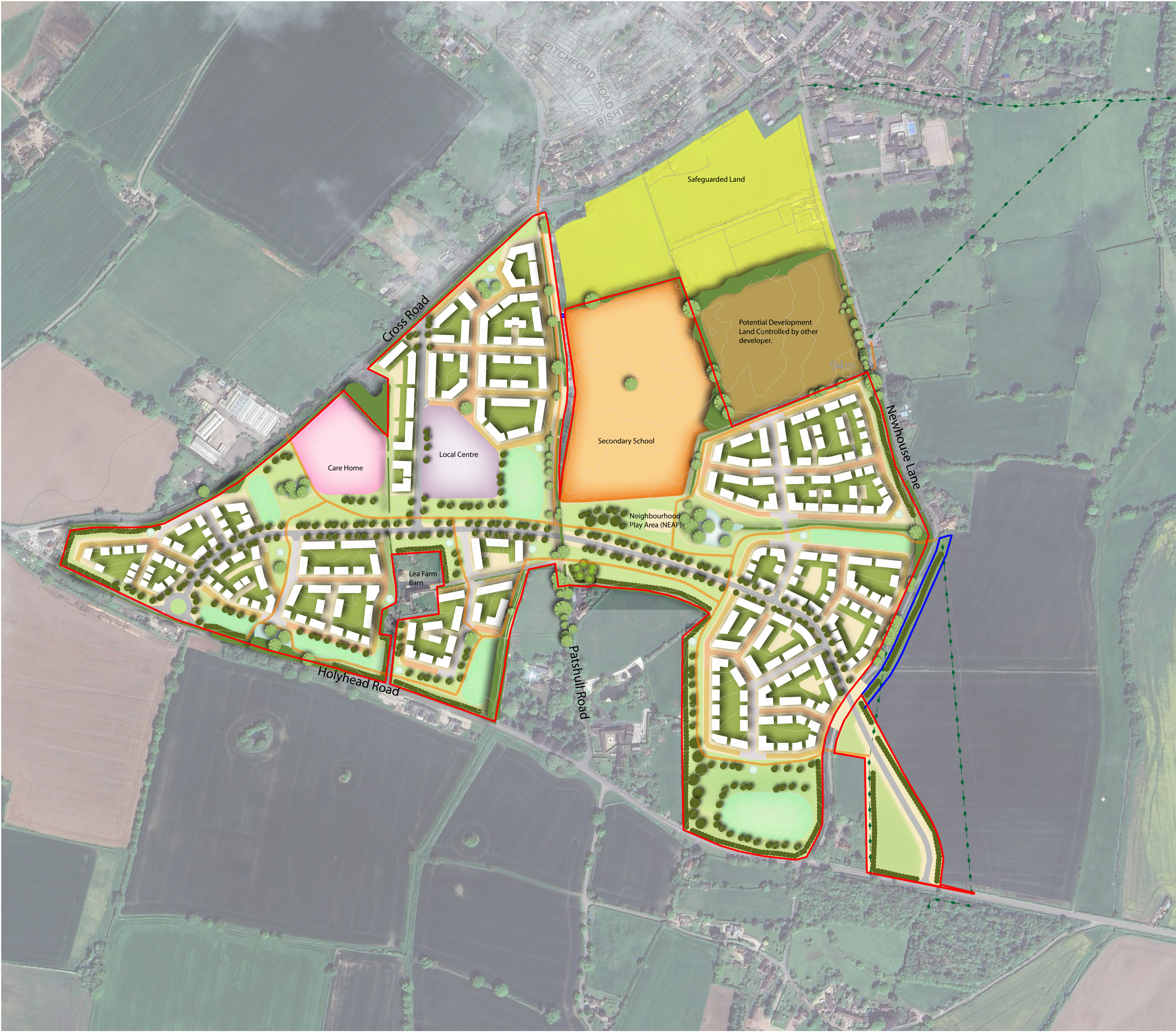
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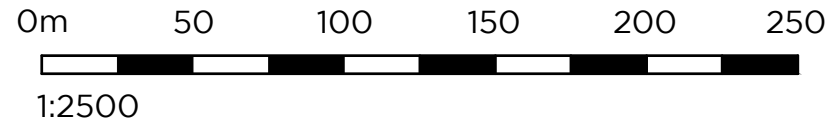
KEY - GENERAL

AC	Access	KS	Kids Line
AD	Air Valve	KD	Kids Drain
BA	Bar	KT	Kid of Area
BD	Bolt	LD	Line Drain
BE	Barrel	LP	Line Post
BM	Bench Mark	MA	Manhole
BN	Burn	MB	Manhole Box
CA	Channel	MC	Channel
CB	Channel	MD	Channel
CC	Channel	ME	Channel
CD	Channel	MF	Channel
CE	Channel	MG	Channel
CF	Channel	MH	Manhole
CG	Channel	MI	Manhole
CH	Channel	ML	Manhole
CI	Channel	MM	Manhole
CJ	Channel	MN	Manhole
CK	Channel	MO	Manhole
CL	Channel	MP	Manhole
CM	Channel	MQ	Manhole
CN	Channel	MR	Manhole
CO	Channel	MS	Manhole
CP	Channel	MT	Manhole
CQ	Channel	MU	Manhole
CR	Channel	MV	Manhole
CS	Channel	MW	Manhole
CT	Channel	MX	Manhole
CU	Channel	MY	Manhole
CV	Channel	MZ	Manhole
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CB	Channel	NB	Manhole
CC	Channel	NC	Manhole
CD	Channel	ND	Manhole
CE	Channel	NE	Manhole
CF	Channel	NF	Manhole
CG	Channel	NG	Manhole
CH	Channel	NH	Manhole
CI	Channel	NI	Manhole
CJ	Channel	NJ	Manhole
CK	Channel	NK	Manhole
CL	Channel	NL	Manhole
CM	Channel	NO	Manhole
CN	Channel	NP	Manhole
CO	Channel	NQ	Manhole
CP	Channel	NR	Manhole
CQ	Channel	NS	Manhole
CR	Channel	NT	Manhole
CS	Channel	NU	Manhole
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CU	Channel	NW	Manhole
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CD	Channel	OB	Manhole
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CG	Channel	OE	Manhole
CH	Channel	OF	Manhole
CI	Channel	OG	Manhole
CJ	Channel	OH	Manhole
CK	Channel	OI	Manhole
CL	Channel	OJ	Manhole
CM	Channel	OK	Manhole
CN	Channel	OL	Manhole
CO	Channel	OM	Manhole
CP	Channel	ON	Manhole
CQ	Channel	OO	Manhole
CR	Channel	OP	Manhole
CS	Channel	OQ	Manhole
CT	Channel	OR	Manhole
CU	Channel	OS	Manhole
CV	Channel	OT	Manhole
CA	Channel	OU	Manhole
CB	Channel	OV	Manhole
CC	Channel	OW	Manhole
CD	Channel	OX	Manhole
CE	Channel	OY	Manhole
CF	Channel	OZ	Manhole
CG	Channel	PA	Manhole
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CG	Channel	PW	Manhole
CH	Channel	PX	Manhole
CI	Channel	PY	Manhole
CJ	Channel	PZ	Manhole
CK	Channel	QA	Manhole
CL	Channel	QB	Manhole
CM	Channel	QC	Manhole
CN	Channel	QD	Manhole
CO	Channel	QE	Manhole
CP	Channel	QF	Manhole
CQ	Channel	QG	Manhole
CR	Channel	QH	Manhole
CS	Channel	QI	Manhole
CT	Channel	QJ	Manhole
CU	Channel	QK	Manhole
CV	Channel	QL	Manhole
CA	Channel	QM	Manhole
CB	Channel	QN	Manhole
CC	Channel	QO	Manhole
CD	Channel	QP	Manhole
CE	Channel	QQ	Manhole
CF	Channel	QR	Manhole
CG	Channel	QS	Manhole
CH	Channel	QT	Manhole
CI	Channel	QU	Manhole
CJ	Channel	QV	Manhole
CK	Channel	QW	Manhole
CL	Channel	QX	Manhole
CM	Channel	QY	Manhole
CN	Channel	QZ	Manhole
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CG	Channel	RO	Manhole
CH	Channel	RP	Manhole
CI	Channel	RQ	Manhole
CJ	Channel	RR	Manhole
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CL	Channel	RT	Manhole
CM	Channel	RU	Manhole
CN	Channel	RV	Manhole
CO	Channel	RW	Manhole
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CS	Channel	SA	Manhole
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CC	Channel	SG	Manhole
CD	Channel	SH	Manhole
CE	Channel	SI	Manhole
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CG	Channel	SK	Manhole
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CI	Channel	SM	Manhole
CJ	Channel	SN	Manhole
CK	Channel	SO	Manhole
CL	Channel	SP	Manhole
CM	Channel	SQ	Manhole
CN	Channel	SR	Manhole
CO	Channel	SS	Manhole
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CE	Channel	TF	Manhole
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CG	Channel	TH	Manhole
CH	Channel	TI	Manhole
CI	Channel	TJ	Manhole
CJ	Channel	TK	Manhole
CK	Channel	TL	Manhole
CL	Channel	TM	Manhole
CM	Channel	TN	Manhole
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CO	Channel	TP	Manhole
CP	Channel	TQ	Manhole
CQ	Channel	TR	Manhole
CR	Channel	TS	Manhole
CS	Channel	TT	Manhole
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CG	Channel	TV	Manhole
CH	Channel	TV	Manhole
CI	Channel	TV	Manhole
CJ	Channel	TV	Manhole
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CN	Channel	TV	Manhole
CO	Channel	TV	Manhole
CP	Channel	TV	Manhole
CQ	Channel	TV	Manhole
CR	Channel	TV	Manhole
CS	Channel	TV	Manhole
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CG	Channel	TV	Manhole
CH	Channel	TV	Manhole
CI	Channel	TV	Manhole
CJ	Channel	TV	Manhole
CK	Channel	TV	Manhole
CL	Channel	TV	Manhole
CM	Channel	TV	Manhole
CN	Channel	TV	Manhole
CO	Channel	TV	Manhole
CP	Channel	TV	Manhole
CQ	Channel	TV	Manhole
CR	Channel	TV	Manhole
CS	Channel	TV	Manhole
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APPENDIX 3



- Key
- Blocks
 - Rear Gardens
 - Road
 - Shared Surface
 - Public Open Space
 - Green Infrastructure
 - SUDS Infrastructure/Ponds
 - Existing Trees
 - Existing Vegetation
 - Existing Hedgerows
 - Proposed Trees
 - Local Play Areas (LAP)
 - Existing Ponds
 - Existing Public Right of Way
 - Proposed Pedestrian Links



Project
Albrighton South
Client
Boningle Homes

Drawing Title
Framework Plan

Job No.	Date	Drawn by
SH5034	21/05/24	MRK

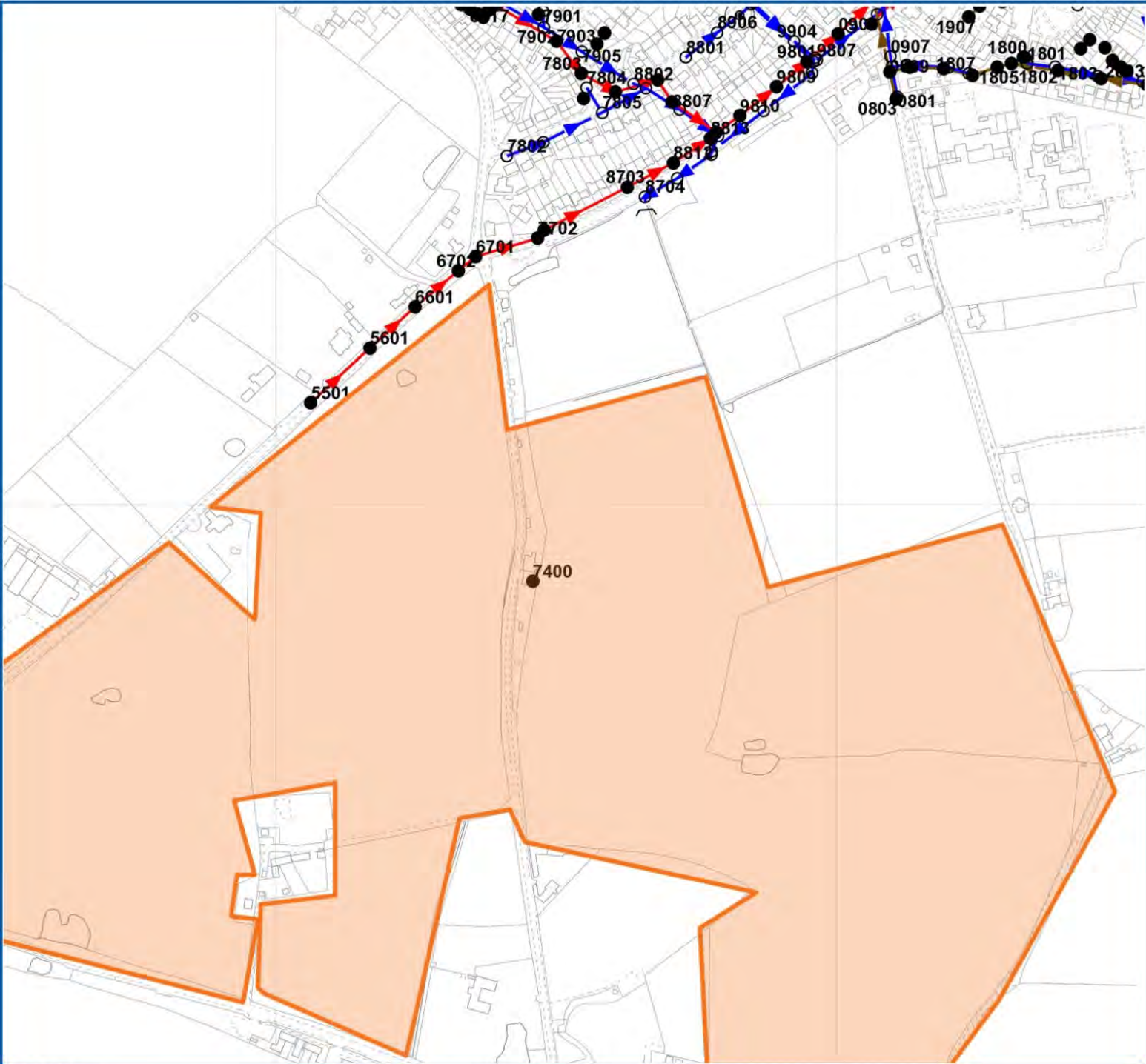
Drwng no.	Scale	Checked
SK003	1:2500@A1	DK



5 Abbey Court
Fraser Road
Bedford MK44 3WH
t: 01234 261 266
e: mail@cass-design.co.uk

cass-design.co.uk

APPENDIX 4



Reference	Cover Level	Invert Level Upstream	Invert Level Downstream	Purpose	Material	Pipe Shape	Max Size	Min Size	Gradient	Year Laid
SJ80039903	95.3939	93.544	93.484	S	VC	C	225	<UNK>	224.17	31/12/1899 00:00:00
SJ80039906	<UNK>	<UNK>	<UNK>	F	VC	C	225	<UNK>	0	19/11/2010 00:00:00
SJ81030805	95.1669	93.477	93.31	S	U	C	225	<UNK>	75.94	31/12/1899 00:00:00
SJ81030807	95.72	93.37	92.94	F	U	C	150	<UNK>	71.56	31/12/1899 00:00:00
SJ80035601	95.397	94.107	93.771	C	VC	C	150	<UNK>	164.41	31/12/1899 00:00:00
SJ81031806	96.0439	93.594	93.42	F	U	C	150	<UNK>	152.7	31/12/1899 00:00:00
SJ80037701	93.926	92.816	92.22	C	VC	C	225	<UNK>	138.65	31/12/1899 00:00:00
SJ81031802	97.039	94.879	94.735	S	U	C	225	<UNK>	270.97	31/12/1899 00:00:00
SJ80036911	97.6009	96.451	96.403	C	VC	C	150	<UNK>	100	31/12/1899 00:00:00
SJ80038804	94.799	92.899	92.749	S	CO	C	450	<UNK>	233.27	31/12/1899 00:00:00
SJ81031906	95.527	94.077	93.737	F	VC	C	150	<UNK>	115.76	31/12/1899 00:00:00
SJ81031804	96.581	94.281	94.075	F	U	C	150	<UNK>	63.45	31/12/1899 00:00:00
SJ80038906	95.2539	93.634	93.544	S	VC	C	225	<UNK>	269	31/12/1899 00:00:00
SJ81030808	95.2399	92.91	92.75	F	U	C	150	<UNK>	113.13	31/12/1899 00:00:00
SJ81030907	94.676	93.186	<UNK>	S	VC	C	225	<UNK>	0	31/12/1899 00:00:00
SJ81030906	94.86	91.56	91.454	C	VC	C	225	<UNK>	398.55	31/12/1899 00:00:00
SJ81031807	95.998	94.328	<UNK>	S	U	C	225	<UNK>	0.21	31/12/1899 00:00:00
SJ80036917	97.8519	96.742	96.461	C	VC	C	150	<UNK>	33.68	31/12/1899 00:00:00
SJ80038802	94.7669	92.977	92.899	S	CO	C	450	<UNK>	156.63	31/12/1899 00:00:00
SJ80038704	93.7259	92.326	92.252	S	CO	C	525	<UNK>	57.14	31/12/1899 00:00:00
SJ81030801	94.4479	93.278	<UNK>	S	VC	C	225	<UNK>	0.29	31/12/1899 00:00:00
SJ80039810	94.013	91.893	91.804	C	VC	C	225	<UNK>	466.78	31/12/1899 00:00:00
SJ80037702	93.567	92.857	92.826	C	VC	C	150	<UNK>	333.33	31/12/1899 00:00:00
SJ80039801	94.4619	91.712	91.59	C	VC	C	225	<UNK>	318.42	31/12/1899 00:00:00
SJ81031803	97.083	94.763	94.381	F	U	C	150	<UNK>	109.58	31/12/1899 00:00:00
SJ81031800	<UNK>	<UNK>	<UNK>	F	P	C	150	<UNK>	<UNK>	25/04/2018 00:00:00
SJ80039905	95.3539	93.354	92.907	S	CO	C	450	<UNK>	165.18	31/12/1899 00:00:00
SJ80037805	94.8629	93.133	92.989	S	VC	C	225	<UNK>	316.36	31/12/1899 00:00:00
SJ81031907	95.748	94.328	94.137	F	VC	C	150	<UNK>	74.42	31/12/1899 00:00:00

LEGEND

Operational Site

Waste Water Pump

Transfered Asset

S24

S104

S102

Null Private

Null

None

Highway Drain

Adopted Sewer

Storage

DS

Disposal Site

Off-Line Waste Water Storage

On-Line Waste Water Storage

Wet Well

Waste Water Process Structure

Sewage Treatment Point

Sewage Treatment Structure

Sludge Treatment Point

Sludge Treatment Structure

Manhole

Twin Manhole

Foul Manhole

Surface Water Manhole

Combined Manhole

Dual Manhole

Unsurveyed Foul Manhole

Unsurveyed Surface Water Manhole

Unsurveyed Combined Manhole

Unsurveyed Unknown Manhole

Gravity Sewer Pipe

Foul Gravity Sewer

Combined Gravity Sewer

Surface Water Gravity Sewer

S104 Surface Water Gravity Sewer

S104 Combined Gravity Sewer

S104 Foul Gravity Sewer

Private Surface Water Gravity Sewer

Private Combined Gravity Sewer

Surface Water Unserved Pipe

Combined Unserved Pipe

Foul Unserved Pipe

Transfered Surface Water Sewer

Transfered Combined Sewer

Transfered Foul Sewer

Disposal Pipe

Overflow Pipe

Culverted Water Course

Waste Internal Site Pipe

Sewer Service Connection

Gravity Sewer Others

Pressure Sewer Pipe

Surface Water Pressure Sewer

Combined Pressure Sewer

Foul Pressure Sewer

S104 Surface Water Pressure Sewer

S104 Combined Pressure Sewer

S104 Foul Pressure Sewer

Private Surface Water Pressure Sewer

Private Combined Pressure Sewer

Foul Vacuum Sewer

Combined Vacuum Sewer

S104 Surface Water Vacuum Sewer

S104 Combined Vacuum Sewer

S104 Foul Vacuum Sewer

Private Surface Water Vacuum Sewer

Private Combined Vacuum Sewer

Surface Water Siphon

Combined Siphon

Foul Siphon

Private Surface Water Siphon

Private Combined Siphon

S104 Surface Water Siphon

S104 Combined Siphon

S104 Foul Siphon

Surface Water Unserved Pipe

Combined Unserved Pipe

Foul Unserved Pipe

Disposal Pipe

Combined Lateral Drain

Foul Lateral Drain

S104 Surface Water Lateral Drain

S104 Combined Lateral Drain

S104 Foul Lateral Drain

Private Surface Water Lateral Drain

Private Combined Lateral Drain

Private Foul Lateral Drain

Transfered Surface Water Lateral Da

Transfered Foul Lateral Drain

Ancillary

Balancing Lagoon

Grease Trap

Interceptor

Screen

Chamber

Flushing Chamber

Scalway

Overflow

Fitting

Blind Shaft

Facility Connector

Head Node

Lamphole

Sewerage Air Valve

Sewerage Chemical Injection Point

Sewerage Hatch Box

Sewerage Pressure Washout

Vent Column

Waste Water Outfall

Control Valve

Hydroblade

Pentstock

Sewerage Isolation Valve

Sewerage Non Return Valve

Print500mLine

MATERIALS

- NONE
- AC - ASBESTOS CEME
- BR - BRICK
- CC - CONCRETE BOX CULVERT
- CI - CAST IRON
- CO - CONCRETE
- CSB - CONCRETE SEGMENTS (BOLTED)
- CSU - CONCRETE SEGMENTS (UNBOLTED)
- DI - DUCTILE IRON
- GRP - GLASS REINFORCED PLASTIC
- MAC - MASONRY IN REGULAR COURSES
- MAR - MASONRY RANDOMLY COURSED
- PE - POLYETHYLENE
- PF - PITCH
- PP - POLYPROPYLENE
- PSC - PLASTIC STEEL COMPOSITE
- PVC - POLYVINYL CHLORIDE
- RPM - REINFORCED PLASTIC MATRIX
- SI - SPUN (GREY) IRON
- ST - STEEL
- U - UNKNOWN
- VC - VITRIFIED CLAY
- XXX - OTHER

CATEGORIES

- W - WEIR
- C - CASCADE
- DB - DAMBOARD
- SE - SIDE ENTRY
- FV - FLAP VALVE
- BD - BACK DROP
- S - SIPHON
- D - HIGHWAY DRAIN
- S104 - SECTION 104

SHAPE

- C - CIRCULAR
- E - EGG SHAPED
- O - OTHER
- R - RECTANGLE
- S - SQUARE
- T - TRAPEZOIDAL
- U - UNKNOWN

PURPOSE

- C - COMBINED
- E - FINAL EFFLUENT
- F - FOUL
- L - SLUDGE
- S - SURFACE WATER



Severn Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0345 601 6616

SEWER RECORD (Tabular)

O/S Map Scale: 1:5,000

This map is centred upon:

Date of Issue: 05-03-24

X: 380765.63

Y: 303473.36

Disclaimer Statement

- 1 Do not scale off this Map.
- 2 This plan and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this plan and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of SEVERN TRENT WATER assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.
- 3 On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012. Private pumping stations, which form part of these sewers or lateral drains, will transfer to ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets. These assets may not be displayed on the map.
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WONDERFUL ON TAP



5th March 2024

Jessica Stevenson-Steels
St Andrews House
23 Kingfield Road
Sheffield
S11 9AS

Severn Trent Water Ltd
Oxley Moor Road
Wolverhampton
WV9 5HN

www.stwater.co.uk

Email:
Network.Solutions@SevernTrent.co.uk

Dear Jessica

Our ref: 1109468

Proposed Development: Holyhead Rd Albrighton

I refer to your 'Development Enquiry Request' of 2000 houses and school and commercial sites in respect of the above named site. Please find enclosed the sewer records that are included in the fee together with the Supplementary Guidance Notes (SGN) which refer to surface water disposal from development sites.

Protective Strip

Due to a change in legislation on 1 October 2011, there may be former private sewers on the site which have transferred to the responsibility of Severn Trent Water Ltd, which are not shown on the statutory sewer records, but are located in your client's land. These sewers would also have protective strips that we will not allow to be built over. If such sewers are identified to be present on the site, please contact us for further guidance.

Foul Water Drainage

The nearest network to receive flows is in Cross Rd to the north-Working on an estimated 30 properties per ha, and a development area of approx. 20ha we estimate there to be approx. 600 houses within the development, Estimated flows for the whole site we estimate to be approx. 10l/s(this can be amended when numbers are confirmed)

Due to surcharge levels within the sewer, historic flooding to the wider catchment area and capacity issues within the receiving treatment works, flows for the overall site but due to surcharge levels and the expected additional flows into the network downstream then additional investigation/modelling will be required.

Due to the performance of the downstream network, modelling will be required to better understand the impact of the additional properties on the public network.

In a change to our previous process, we no longer charge developers for the hydraulic modelling service. We will liaise with you over time with regards to the outcome of our investigations and any impact that may have on the planning status, occupation, or phasing of the site. However, while we can provide a brief summary of our findings if you need us to, we will no longer provide the full external capacity assessment report.

From the application you have submitted, I am assuming that the development has not been granted planning approval. In the meantime, the site will be added to our modelling tracker and reviewed regularly until the site can be progressed for sewer modelling. I would therefore be grateful if you would forward as soon as possible the following details:

- Confirmation whether a pumped solution is required (please provide pump rate and frequency, if available)
- Anticipated flow rate from the site including property numbers
- Proposed planned start and completion date
- Any phasing details of the proposed development
- Confirm how many properties will discharge into each of the connections to the public sewer.
- Planned occupation date

Surface Water Drainage

Under the terms of Section H of the Building Regulations 2000, the disposal of surface water by means of soakaways should be considered as the primary method. If these are found to be unsuitable, satisfactory evidence will need to be submitted. The evidence should be either percolation test results or by the submission of a statement from the SI consultant (extract or a supplementary letter).

Subject to above Severn Trent Water expects all surface water from the development to be drained in a sustainable way to the nearest watercourse or land drainage channel, including highway drainage etc. subject to the developer discussing all aspects of the developments surface water drainage, with the Local Lead Flood Authority (LLFA). Any discharge rate to a watercourse or drainage ditch will be determined by the LLFA / EA.

New Connections

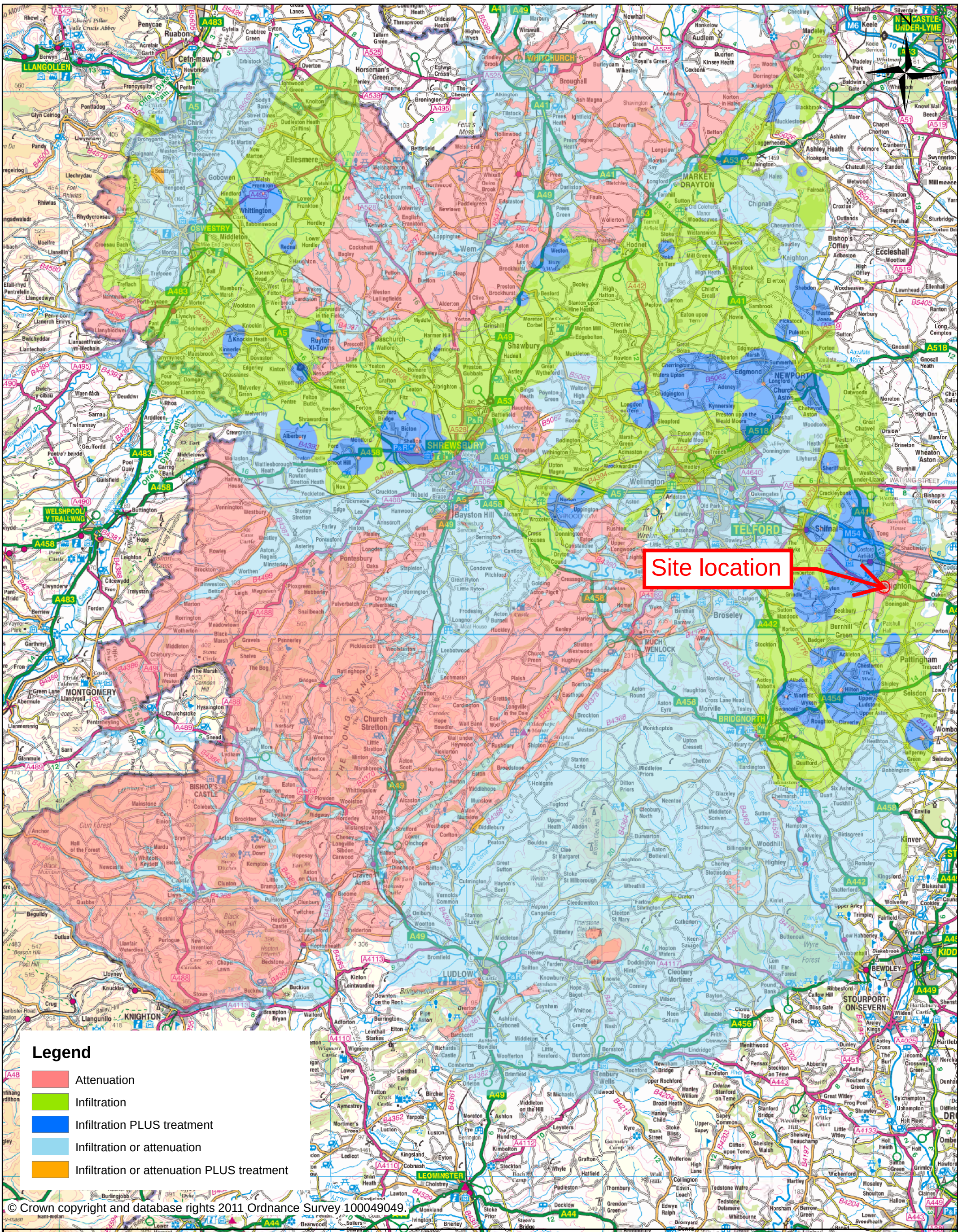
For any new connections (including the re-use of existing connections) to the public sewerage system, the developer will need to submit a Section 106 application form. Our Developer Services department are responsible for handling all new connections enquiries and applications. To contact them for an application form and associated guidance notes please call 0800 707 6600 or download from www.stwater.co.uk. We would suggest when numbers and plans progress that pre-design application is submitted(free of charge) to Joel.Haden@severntrent.co.uk, who will advise on best designs, due to the new infrastructure required.

Please quote the reference 1109468 in any future correspondence (including e-mails) with STW Limited. Please note that Developer Enquiry responses are only valid for 6 months from the date of this letter.

Yours sincerely,

Michael Taylor
Network Solutions
Developer Services

APPENDIX 5



Shropshire
Council

SuDS Applicability Map

Development Services

The Shirehall, Abbey Foregate,
Shrewsbury, Shropshire, SY2 6ND
Scale : 1:250,000

Jessica Stevenson-Steels

From: Flood Risk Management Team <flood.team@staffordshire.gov.uk> on behalf of Flood Risk Management Team
Sent: 19 March 2024 08:26
To: Jessica Stevenson-Steels
Subject: RE: 48842- Holyhead Road, Albrighton - Discharge to watercourse enquiry [Filed 20 Mar 2024 08:50]

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Filed by Mail Manager

Good afternoon Jessica,

Thank you for your enquiry regarding surface water discharge at a site off Holyhead Road, Albrighton.

We direct you to the following links which provide information to assist with your query:-

Staffordshire SuDS Handbook

[Information for planners and developers - Staffordshire County Council](#)

This contains:

Policies and general guidance relating to SuDS within our SuDS Handbook (<https://www.staffordshire.gov.uk/environment/Flood-Risk-Management/Documents/SuDS-Handbook.pdf>)

Land Drainage Consent

Depending on the nature of the works and if no physical impoundment, bunding or damming of the watercourse flow is planned and no structural changes are being made to the existing watercourse then Land Drainage Consent is unlikely to be required.

You can check our guidance diagrams for a list of consentable activities by visiting our website:

[Applying for consent for watercourse works - Staffordshire County Council](#)

To apply for Land Drainage Consent please place an order using the Developer Advice Online Form.

[Developer Advice Online Form - Order Online - Staffordshire County Council](#)

Section 3 of the form allows you to choose Flood Risk Advice and Section 4 allows you to upload documents up to 8mb in size.

Once you pick the Flood Risk option, the next part of the form will ask you to opt for either pre-application advice service or land drainage consent. You would opt for land drainage consent.

Discharge Consent from the Environment Agency

Discharging to an ordinary watercourse will require consent from the Environment Agency. Please follow the link below which we consider may be helpful to you:

[Check if you need an environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

We trust this is of assistance.

Kind regards,

Flood Risk Management Team



Flood Risk Management

Economy, Infrastructure and Skills

Third Floor, Staffordshire Place 1

Tipping Street, Stafford, ST16 2DH

E-mail: flood.team@staffordshire.gov.uk

www.staffordshire.gov.uk

Providing a Flood Risk Management service for Staffordshire County, Dudley, Sandwell, Walsall and Wolverhampton Councils.

Staffordshire County Council now charges for their Pre-Application Advice Service. Pre-Application Advice and Consent for ordinary watercourse works for sites in Staffordshire can be ordered through our Developer Advice online form. Please see details and links on our [website](#)

From: Jessica Stevenson-Steels <jessica.stevenson-steels@eastwoodce.com>

Sent: Thursday, March 14, 2024 2:35 PM

To: Flood Risk Management Team <flood.team@staffordshire.gov.uk>

Subject: 48842- Holyhead Road, Albrighton - Discharge to watercourse enquiry

CAUTION: This email originated from outside of Staffordshire County Council. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

We are preparing a drainage strategy for a site off Holyhead Road/ Cross Road, Albrighton. The site is centred on 380707E, 303359N (see location plan attached).

Proposals are for surface water to discharge to watercourses around the site.

Please can you advise on any LLFA restrictions or requirements for discharging surface water to a watercourse.

Kind regards,

Jessica Stevenson-Steels

Environmental Engineer

DD: 0114 399 4224

T: 0114 255 4554

www.eastwoodce.com



Eastwood Consulting Engineers is a trading name of Eastwood and Partners (Consulting Engineers) Limited
Registered Office: St Andrew's House, 23 Kingfield Road, Sheffield, S11 9AS
Company No: 1835021, VAT Registration No: 738 2114 44, Web: www.eastwoodce.com Tel: 0114 255 4554

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APPENDIX 6

SUDS Type	SUDS Technique	Description	Suitable	Comments
Source Control	Green roof	Vegetated roof that reduces runoff volume and rate	No	Expected planning requirement for traditional pitched roofs to match neighbouring housing.
	Rain garden/ bio retention area	Small depressions in the ground that can act as infiltration points.	Possible	Potential areas for rain gardens to be developed.
	Rainwater harvesting/rainwater butts	Rainwater is stored and re-used	No	Individual storage tank capacity unlikely to meet volume required. Individual water butts can be used for garden watering.
	Permeable paving	Paving which allows inflow of rainwater into underlying construction/soil	Possible	Permeable paving (Type C) may be suitable for private drives.
Infiltration	Soakaway	Pit or trench which stores and disposes of water to the ground	No	Expected presence of impermeable ground (mudstone).
	Filter Drain	Trench which conveys and/or disposes of water to the ground.	No	Expected presence of impermeable ground (mudstone).
	Infiltration Basin	Shallow basin which stores and disposes of water to the ground	No	Lack of suitable open space.
Conveyance	Swale	Shallow vegetated depression which conducts and retains water	Possible	Potential areas for swales to be developed.
Detention	Subsurface storage	Traditional underground pipes, tank storage, or modular systems	Yes	Area available on the site for an attenuation tank/ crates.
	Detention Basin	Normally dry but may have small permanent water pools at the inlet and outlet. They can function as POS	Possible	Potential areas for a basin to be developed.

Cross Road, Albrighton South
SuDS Checklist

Detention	Pond	Permanent body of water	No	Lack of suitable public open space.
	Wetland	Permanent body of shallow water or marsh	No	

General Information			
Site ID			
Site Location and co-ordinates			
Elements forming the SUDs scheme		Approved drawing reference	
Inspection Frequency		Approved specification reference	
Type of Development		Specific purpose of any parts of the scheme (eg biodiversity, wildlife and visual aspects)	

Inspection Date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
General Inspection Items								
Evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance								
Evidence of poor water quality								

Inspection Date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Infrastructure								
Is the flow control in good condition (silt, damages, evidence of tampering) – if yes, please provide details								
Is there evidence of unauthorised inflows?								
Is the inflow/outflow structures in a suitable condition – please provide information								
Are there any other matters that could affect the performance of the system – if yes give details								

Inspection Date								
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Other Observations								
Information appended (photos etc)								
Suitability of current maintenance regime								
Continue as current Increase maintenance Decrease maintenance								
Next Inspection								
Proposed date for next inspection								

Further Comments	
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Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	B

Site Details :**Information From Wallingford Maps :**

East-1			
Location :	Cross Road, Albington	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	10.840 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	10.840 ha	SOIL	0.3 (Section 7.4)

Total Impermeable	4.525 ha
Allow for Urban Creep	<u>0.144</u> ha
Total Impermeable	4.669 ha

PIMP	43.1%	
PR	<u>28.0</u>	Equation 7.3
Cv	0.65	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System	1.4 Litres/sec.ha
	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85 %
Average Rate of Flow	5.4 Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3500	3600	3700	3800	3900	4000	4100
Average Point Intensity (mm/hr)	1.7	1.6	1.6	1.6	1.5	1.5	1.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	4593.0	4617.3	4641.0	4664.2	4686.9	4709.0	4730.7
With climate change	6430.2	6464.2	6497.4	6529.9	6561.6	6592.7	6623.0
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	1133.8	1166.1	1198.4	1230.7	1263.0	1295.3	1327.6
Storage Volume for this Duration (m3)	5296	5298	5299	5299	5299	5297	5295

Storage Volume Required for

100 Year Return Period = **5299 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	B

Site Details :**Information From Wallingford Maps :**

East-2			
Location :	Cross Road, Albington	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	5.470 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	5.470 ha	SOIL	0.3 (Section 7.4)
Total Impermeable	2.376 ha		
Allow for Urban Creep	0.094 ha	10% roof area	
Total Impermeable	2.470 ha		
PIMP	45.2%		
PR	<u>29.8</u>	Equation 7.3	
Cv	0.66	Equation 7.21	
Default Cv	1.00	Designer to insert to override calculated Cv	

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System		Litres/sec.ha
	3.5	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85	%
Average Rate of Flow	3.0	Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3100	3200	3300	3400	3500	3600	3700
Average Point Intensity (mm/hr)	1.9	1.8	1.8	1.7	1.7	1.6	1.6
Volume of Run-off for the period = Area x Cv x i x D (m3)	2375.1	2389.4	2403.3	2416.8	2430.0	2442.8	2455.4
With climate change	3325.2	3345.1	3364.6	3383.5	3402.0	3420.0	3437.6
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	555.0	572.8	590.7	608.5	626.4	644.2	662.1
Storage Volume for this Duration (m3)	2770	2772	2774	2775	2776	2776	2775

Storage Volume Required for

100 Year Return Period = **2776 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	B

Site Details :**Information From Wallingford Maps :**

East-3			
Location :	Cross Road, Albington	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	7.610 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	7.610 ha	SOIL	0.3 (Section 7.4)

Total Impermeable	4.566 ha	60%	assumed impermeable area
Allow for Urban Creep	<u>0.000</u> ha		
Total Impermeable	4.566 ha		

PIMP	60.0%	
PR	<u>42.1</u>	Equation 7.3
Cv	0.70	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System	1.4 Litres/sec.ha
	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85 %
Average Rate of Flow	5.4 Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3400	3500	3600	3700	3800	3900	4000
Average Point Intensity (mm/hr)	1.7	1.7	1.6	1.6	1.6	1.5	1.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	4467.3	4491.7	4515.4	4538.6	4561.3	4583.5	4605.2
With climate change	6254.2	6288.3	6321.6	6354.1	6385.8	6416.9	6447.2
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	1111.4	1144.0	1176.6	1209.2	1241.8	1274.4	1307.0
Storage Volume for this Duration (m3)	5143	5144	5145	5145	5144	5142	5140

Storage Volume Required for

100 Year Return Period = **5145 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	A

Site Details :**Information From Wallingford Maps :**

East-4			
Location :	Cross Road, Albington	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	1.875 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	1.875 ha	SOIL	0.3 (Section 7.4)

Total Impermeable	0.866 ha
Allow for Urban Creep	0.000 ha
Total Impermeable	0.866 ha

PIMP	46.2%	
PR	<u>30.6</u>	Equation 7.3
Cv	0.66	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System	1.4 Litres/sec.ha
	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85 %
Average Rate of Flow	1.0 Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3400	3500	3600	3700	3800	3900	4000
Average Point Intensity (mm/hr)	1.7	1.7	1.6	1.6	1.6	1.5	1.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	847.3	851.9	856.4	860.8	865.1	869.3	873.4
With climate change	1186.2	1192.7	1199.0	1205.1	1211.2	1217.0	1222.8
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	210.8	217.0	223.2	229.3	235.5	241.7	247.9
Storage Volume for this Duration (m3)	975	976	976	976	976	975	975

Storage Volume Required for

100 Year Return Period = **976 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	B

Site Details :**Information From Wallingford Maps :**

West-1			
Location :	Cross Road, Albington	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	7.280 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	7.280 ha	SOIL	0.3 (Section 7.4)

Total Impermeable	3.526 ha
Allow for Urban Creep	<u>0.103</u> ha
Total Impermeable	3.629 ha

PIMP	49.8%	
PR	<u>33.6</u>	Equation 7.3
Cv	0.67	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System	1.4 Litres/sec.ha
	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85 %
Average Rate of Flow	4.2 Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3400	3500	3600	3700	3800	3900	4000
Average Point Intensity (mm/hr)	1.7	1.7	1.6	1.6	1.6	1.5	1.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	3550.5	3569.9	3588.8	3607.3	3625.3	3642.9	3660.1
With climate change	4970.8	4997.9	5024.3	5050.2	5075.4	5100.1	5124.2
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	858.3	883.5	908.6	933.8	959.0	984.2	1009.3
Storage Volume for this Duration (m3)	4112	4114	4116	4116	4116	4116	4115

Storage Volume Required for

100 Year Return Period = **4116 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Alrbighton	Date	20.06.2024
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	B

Site Details :**Information From Wallingford Maps :**

West-2			
Location :	Cross Road, Albrighton	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	4.410 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	4.410 ha	SOIL	0.3 (Section 7.4)

Total Impermeable	2.188 ha
Allow for Urban Creep	0.045 ha
Total Impermeable	2.233 ha

PIMP	50.6%	
PR	<u>34.3</u>	Equation 7.3
Cv	0.68	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System		Litres/sec.ha
	3.5	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85	%
Average Rate of Flow	3.0	Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3000	3100	3200	3300	3400	4100	4200
Average Point Intensity (mm/hr)	1.9	1.9	1.8	1.8	1.7	1.5	1.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	2133.8	2147.1	2159.9	2172.5	2184.7	2262.5	2272.7
With climate change	2987.3	3005.9	3023.9	3041.5	3058.6	3167.5	3181.8
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	537.1	555.0	572.8	590.7	608.5	733.5	751.3
Storage Volume for this Duration (m3)	2450	2451	2451	2451	2450	2434	2430

Storage Volume Required for

100 Year Return Period = **2451 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject:	Designed	JSS
Surface Water Drainage	Checked	KBE
Storage Estimates	Revision	A

Site Details :**Information From Wallingford Maps :**

West-3				
Location :	Cross Road, Albington	M5-60	20.0	mm
Grid Ref :	380707E, 303359N	r	0.40	
		SAAR	683	mm
Total Site Area	2.640	ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u>	ha	Soil Type	2
Effective Drainage Area	2.640	ha	SOIL	0.3 (Section 7.4)

Total Impermeable	1.256	ha
Allow for Urban Creep	<u>0.042</u>	ha
Total Impermeable	1.298	ha

PIMP	49.2%	
PR	<u>33.1</u>	Equation 7.3
Cv	0.67	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550	metres
			Approx. Time of Flow	9.2	mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System		Litres/sec.ha
	3.5	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85	%
Average Rate of Flow	3.0	Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	1500	1600	1700	1800	1900	2000	2100
Average Point Intensity (mm/hr)	3.3	3.2	3.0	2.9	2.8	2.7	2.6
Volume of Run-off for the period = Area x Cv x i x D (m3)	1085.4	1099.2	1112.3	1124.7	1136.5	1147.9	1158.7
With climate change	1519.5	1538.9	1557.2	1574.6	1591.2	1607.0	1622.2
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	269.4	287.2	305.1	322.9	340.8	358.6	376.5
Storage Volume for this Duration (m3)	1250	1252	1252	1252	1250	1248	1246

Storage Volume Required for

100 Year Return Period = **1252 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)

Project: 48842	Sheet	1.00
location Cross Road	Job No.	48852
town Albington	Date	20.06.24
Subject: Surface Water Drainage	Designed	JSS
Storage Estimates	Checked	KBE
	Revision	B

Site Details :**Information From Wallingford Maps :**

West-4			
Location :	Cross Road, Albington	M5-60	20.0 mm
Grid Ref :	380707E, 303359N	r	0.40
		SAAR	683 mm
Total Site Area	7.800 ha	UCWI	71 (Fig. 9.7)
Deduct areas to soakaways	<u>0.000</u> ha	Soil Type	2
Effective Drainage Area	7.800 ha	SOIL	0.3 (Section 7.4)

Total Impermeable	4.130 ha
Allow for Urban Creep	<u>0.190</u> ha
Total Impermeable	4.320 ha

PIMP	55.4%	
PR	<u>38.2</u>	Equation 7.3
Cv	0.69	Equation 7.21
Default Cv	1.00	Designer to insert to override calculated Cv

Design Return Period	100	Years	Max. Branch Length	550 metres
			Approx. Time of Flow	9.2 mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

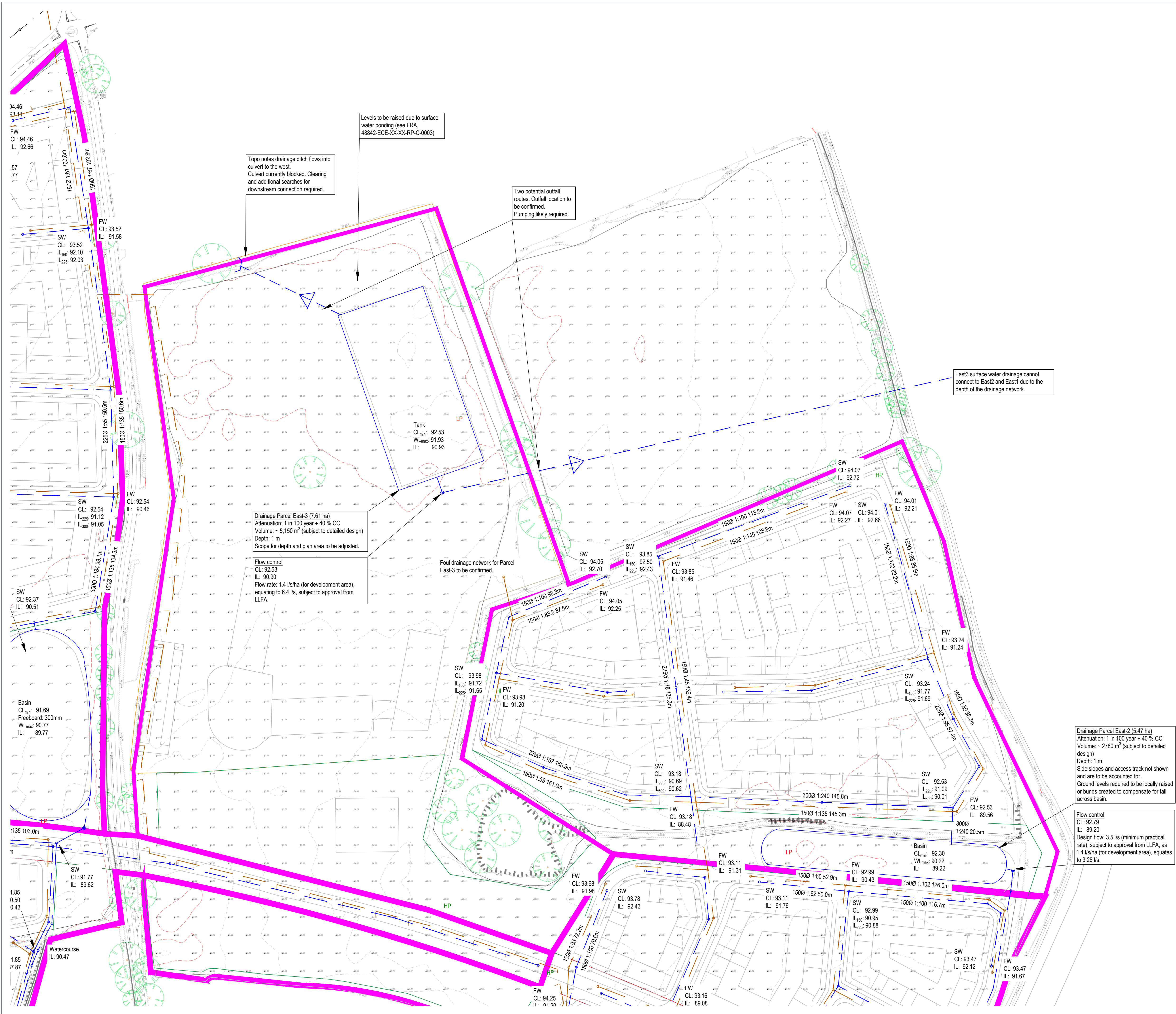
Maximum Permitted Rate of Flow from the System	1.4 Litres/sec.ha
	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	85 %
Average Rate of Flow	4.9 Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	3500	3600	3700	3800	3900	4000	4100
Average Point Intensity (mm/hr)	1.7	1.6	1.6	1.6	1.5	1.5	1.5
Volume of Run-off for the period = Area x Cv x i x D (m3)	4249.7	4272.2	4294.1	4315.6	4336.5	4357.0	4377.1
With climate change	5949.5	5981.0	6011.8	6041.8	6071.2	6099.9	6128.0
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	1034.8	1064.3	1093.8	1123.3	1152.7	1182.2	1211.7
Storage Volume for this Duration (m3)	4915	4917	4918	4919	4918	4918	4916

Storage Volume Required for

100 Year Return Period = **4919 m³**
 Is this the worst case (ie. Critical Duration)? 1 (1 = Yes, 0 = No)



KEY:

- Attenuation basin
- Below ground attenuation (tank/ crates)
- Headwall
- Surface water drainage
- Surface water rising main
- Flow control device
- Foul water drainage
- Foul water rising main
- Existing Severn Trent Water foul water sewer
- Drainage parcel boundary
- HP
- LP

- NOTES:
- Sketch based on Framework Plan (SK003). Drainage strategy is subject to final layout plan and detailed design.
 - All manhole and pipe locations are indicative. Final locations to be confirmed at the detailed design stage.
 - Cover levels are based on topographic survey level.
 - Final cover and invert levels to be confirmed at detailed design stage.
 - Topographic survey does not cover the watercourse to the south-west of the site. Additional survey required to confirm levels and viability of gravity surface water drainage system.
 - All pipe connections to be soffit to soffit unless noted otherwise.
 - Root guard for all pipework/drainage in close proximity to trees to prevent structural damage.
 - Pipes within highways with less than 1200 mm cover to have a Class Z concrete bed and surround or concrete slab protection.
 - All outfall locations and discharge rates to be agreed to by Severn Trent Water and Staffordshire County Council LLFA.
 - Attenuation volumes are approximate and subject to change following layout details.
 - Attenuation basin footprints are currently shown for attenuation volume requirements only. Additional footprint will be required to account for; basin side slopes with a maximum allowable gradient of 1 in 3, access track and tie in to ground levels (not shown on plan).
 - Attenuation basin to include child proof fencing.
 - Additional SuDS features will likely be required to provide source control water quality treatment and attenuation.
 - Details of attenuation structures to be confirmed at detailed design. Attenuation locations and plan areas shown are indicative only and subject to final layout plan and confirmation of watercourse levels. All attenuation assumed to be 1 m deep.
 - Layout adjustments are required for attenuation basins to align with existing site levels and gradients.
 - Discharge rates shown as 1.4 l/s/ha for the developable area. Surface water discharge rates and connections to watercourses are subject to LLFA approval.
 - Localised raising of levels around attenuation basins or the construction of bunds may be necessary to compensate for the fall across the attenuation basin.
 - Tie in levels to existing ground will extend the basin footprints currently shown. Total attenuation footprint areas to be determined at detailed design stage.
 - Offset from watercourse to be confirmed by LLFA.
 - Adoption of drainage to be confirmed. This will impact minimum discharge rates.
 - Septicity check required due to distance of the foul water rising main. Air valve also likely required in rising main.

P01	First Issue.	JSS	AA	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

ALBRIGHTON SOUTH

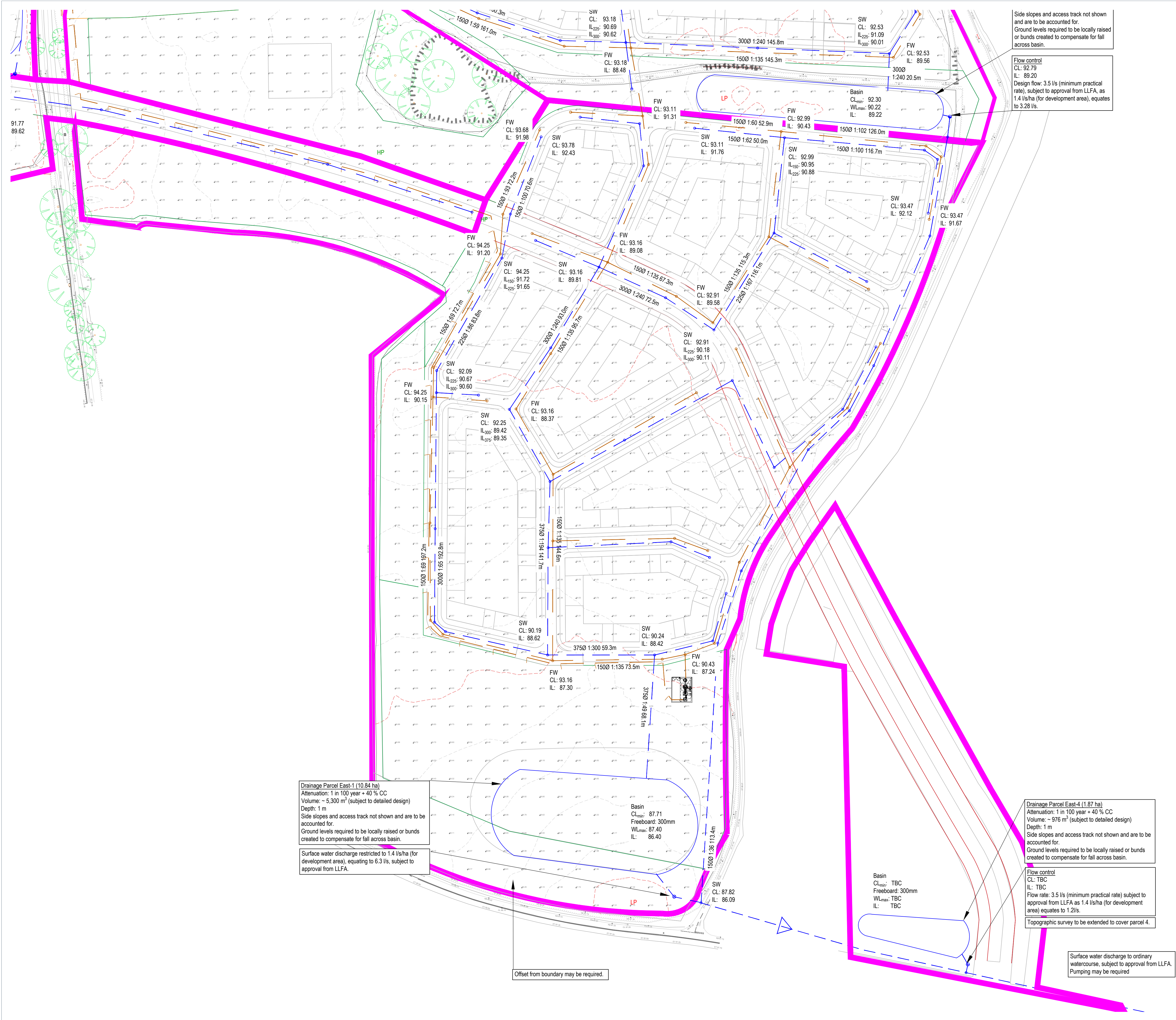
Drainage Strategy Sketch (East2 and East3)

Eastwood
CONSULTING ENGINEERS

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Sheffield, S11 9AS

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	1:1000	S2	Information
DRAWING NUMBER		REV	
48842 - ECE - XX - XX - SK - C - 0005		P01	
Project	Originator	Zone	Level
	Type	Role	Number



KEY:

- Attenuation basin
- Below ground attenuation (tank/ crates)
- Headwall
- Surface water drainage
- Surface water rising main
- Flow control device
- Foul water drainage
- Foul water rising main
- Existing Severn Trent Water foul water sewer
- Drainage parcel boundary
- HP Parcel high point
- LP Parcel low point

- NOTES:
- Sketch based on Framework Plan (SK003). Drainage strategy is subject to final layout plan and detailed design.
 - All manhole and pipe locations are indicative. Final locations to be confirmed at the detailed design stage.
 - Cover levels are based on topographic survey level.
 - Final cover and invert levels to be confirmed at detailed design stage.
 - Topographic survey does not cover the watercourse to the south-west of the site. Additional survey required to confirm levels and viability of gravity surface water drainage system.
 - All pipe connections to be soffit to soffit unless noted otherwise.
 - Root guard for all pipework/drainage in close proximity to trees to prevent structural damage.
 - Pipes within highways with less than 1200 mm cover to have a Class Z concrete bed and surround or concrete slab protection.
 - All outfall locations and discharge rates to be agreed to by Severn Trent Water and Staffordshire County Council LLFA.
 - Attenuation volumes are approximate and subject to change following layout details.
 - Attenuation basin footprints are currently shown for attenuation volume requirements only. Additional footprint will be required to account for; basin side slopes with a maximum allowable gradient of 1 in 3, access track and tie in to ground levels (not shown on plan).
 - Attenuation basin to include child proof fencing.
 - Additional SuDS features will likely be required to provide source control water quality treatment and attenuation.
 - Details of attenuation structures to be confirmed at detailed design. Attenuation locations and plan areas shown are indicative only and subject to final layout plan and confirmation of watercourse levels. All attenuation assumed to be 1 m deep.
 - Layout adjustments are required for attenuation basins to align with existing site levels and gradients.
 - Discharge rates shown as 1.4 l/s/ha for the developable area. Surface water discharge rates and connections to watercourses are subject to LLFA approval.
 - Localised raising of levels around attenuation basins or the construction of bunds may be necessary to compensate for the fall across the attenuation basin.
 - Tie in levels to existing ground will extend the basin footprints currently shown. Total attenuation footprint areas to be determined at detailed design stage.
 - Offset from watercourse to be confirmed by LLFA.
 - Adoption of drainage to be confirmed. This will impact minimum discharge rates.
 - Septicity check required due to distance of the foul water rising main. Air valve also likely required in rising main.

P01	First Issue.	JSS	AA	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

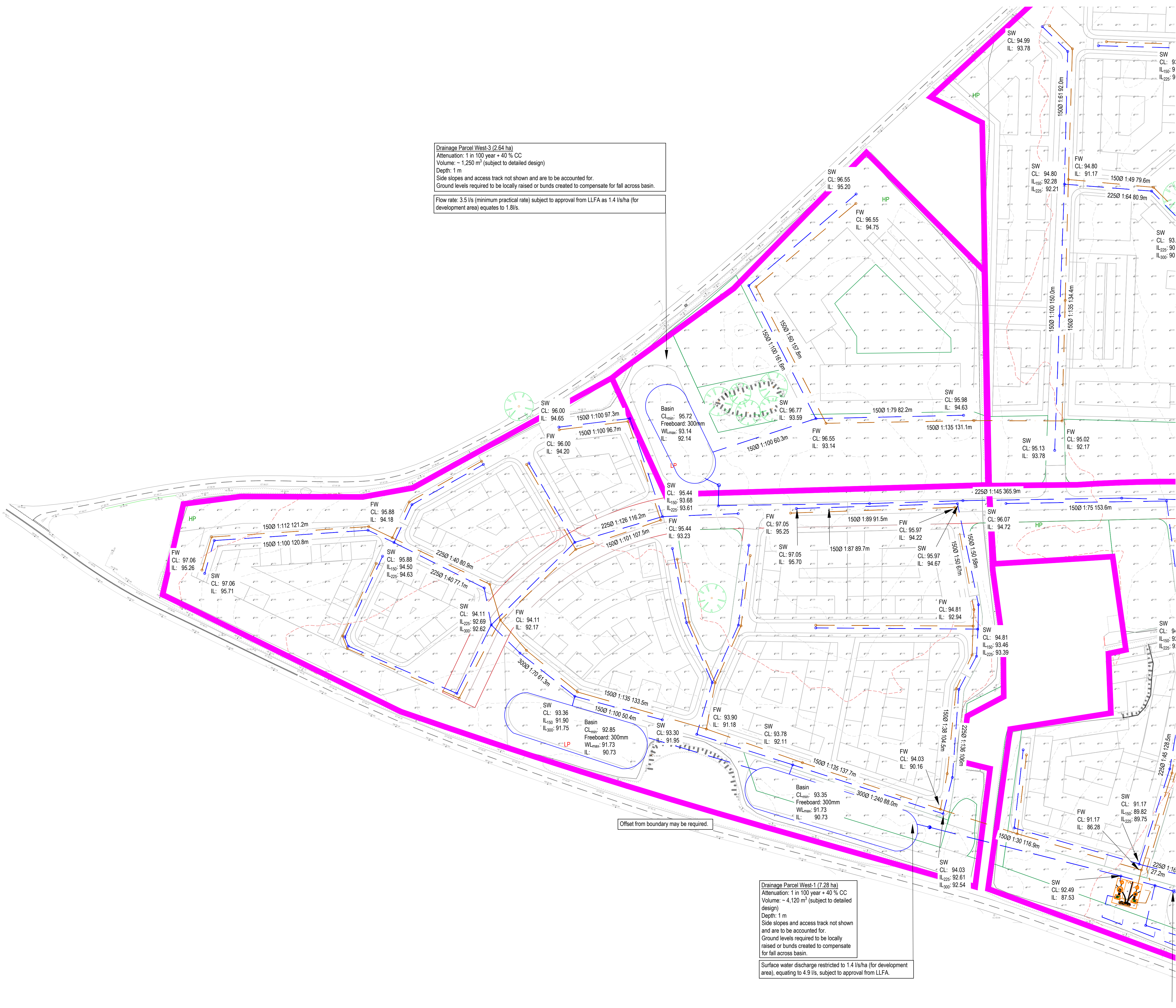
ALBRIGHTON SOUTH

Drainage Strategy Sketch (East1 and East4)

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	NTS	S2	Information
DRAWING NUMBER			
48842 - ECE - XX - XX - SK - C - 0006	P01	REV	
Project	Originator	Zone	Level
	Type	Role	Number



Drainage Parcel West-3 (2.64 ha)
Attenuation: 1 in 100 year + 40 % CC
Volume: ~ 1,250 m³ (subject to detailed design)
Depth: 1 m
Side slopes and access track not shown and are to be accounted for.
Ground levels required to be locally raised or bunds created to compensate for fall across basin.

Flow rate: 3.5 l/s (minimum practical rate) subject to approval from LLFA as 1.4 l/s/ha (for development area) equates to 1.8l/s.

Drainage Parcel West-1 (7.28 ha)
Attenuation: 1 in 100 year + 40 % CC
Volume: ~ 4,120 m³ (subject to detailed design)
Depth: 1 m
Side slopes and access track not shown and are to be accounted for.
Ground levels required to be locally raised or bunds created to compensate for fall across basin.

Surface water discharge restricted to 1.4 l/s/ha (for development area), equating to 4.9 l/s, subject to approval from LLFA.

- KEY:
- Attenuation basin
 - Below ground attenuation (tank/ crates)
 - Headwall
 - Surface water drainage
 - Surface water rising main
 - Flow control device
 - Foul water drainage
 - Foul water rising main
 - Existing Severn Trent Water foul water sewer
 - Drainage parcel boundary
 - Parcel high point
 - Parcel low point

- NOTES:
- Sketch based on Framework Plan (SK003). Drainage strategy is subject to final layout plan and detailed design.
 - All manhole and pipe locations are indicative. Final locations to be confirmed at the detailed design stage.
 - Cover levels are based on topographic survey level.
 - Final cover and invert levels to be confirmed at detailed design stage.
 - Topographic survey does not cover the watercourse to the south-west of the site. Additional survey required to confirm levels and viability of gravity surface water drainage system.
 - All pipe connections to be soffit to soffit unless noted otherwise.
 - Root guard for all pipework/drainage in close proximity to trees to prevent structural damage.
 - Pipes within highways with less than 1200 mm cover to have a Class Z concrete bed and surround or concrete slab protection.
 - All outfall locations and discharge rates to be agreed to by Severn Trent Water and Staffordshire County Council LLFA.
 - Attenuation volumes are approximate and subject to change following layout details.
 - Attenuation basin footprints are currently shown for attenuation volume requirements only. Additional footprint will be required to account for: basin side slopes with a maximum allowable gradient of 1 in 3, access track and tie in to ground levels (not shown on plan).
 - Attenuation basin to include child proof fencing.
 - Additional SuDS features will likely be required to provide source control water quality treatment and attenuation.
 - Details of attenuation structures to be confirmed at detailed design. Attenuation locations and plan areas shown are indicative only and subject to final layout plan and confirmation of watercourse levels. All attenuation assumed to be 1 m deep.
 - Layout adjustments are required for attenuation basins to align with existing site levels and gradients.
 - Discharge rates shown as 1.4 l/s/ha for the developable area. Surface water discharge rates and connections to watercourses are subject to LLFA approval.
 - Localised raising of levels around attenuation basins or the construction of bunds may be necessary to compensate for the fall across the attenuation basin.
 - Tie in levels to existing ground will extend the basin footprints currently shown. Total attenuation footprint areas to be determined at detailed design stage.
 - Offset from watercourse to be confirmed by LLFA.
 - Adoption of drainage to be confirmed. This will impact minimum discharge rates.
 - Septicity check required due to distance of the foul water rising main. Air valve also likely required in rising main.

P01	First Issue.	JJS	AA	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

ALBRIGHTON SOUTH

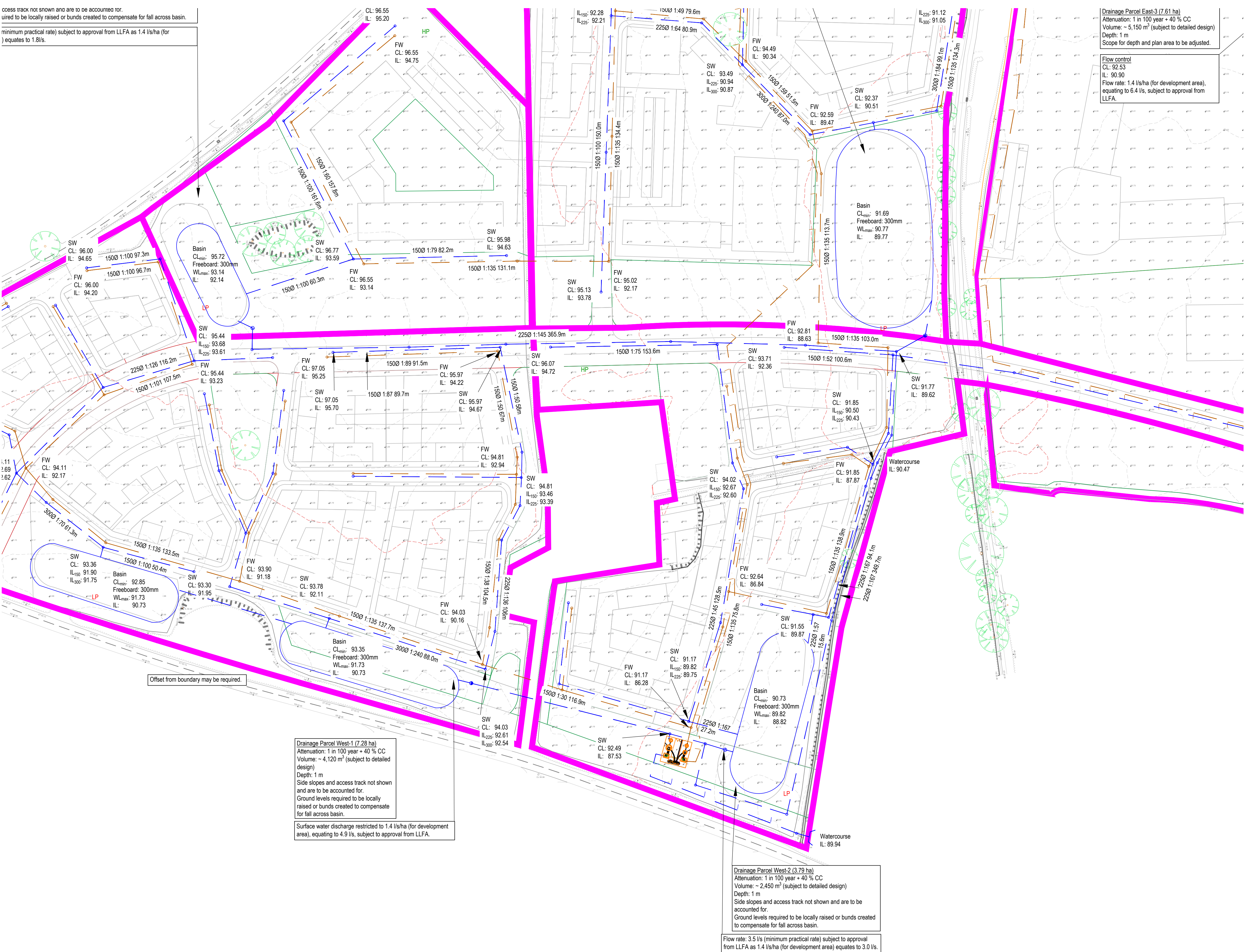
DRAINAGE STRATEGY SKETCH
(WEST1 AND WEST3)

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	NTS	S2	Information
DRAWING NUMBER		REV	
48842 - ECE - XX - XX - SK - C - 0007		P01	
Project	Originator	Zone	Level
	Type	Role	Number

cess track not shown and are to be accounted for.
ured to be locally raised or bunds created to compensate for fall across basin.
minimum practical rate) subject to approval from LLFA as 1.4 l/s/ha (for
) equates to 1.8l/s.



- KEY:
- Attenuation basin
 - Below ground attenuation (tank/ crates)
 - Headwall
 - Surface water drainage
 - Surface water rising main
 - Flow control device
 - Foul water drainage
 - Foul water rising main
 - Existing Severn Trent Water foul water sewer
 - Drainage parcel boundary
 - Parcel high point
 - Parcel low point

- NOTES:
- Sketch based on Framework Plan (SK003). Drainage strategy is subject to final layout plan and detailed design.
 - All manhole and pipe locations are indicative. Final locations to be confirmed at the detailed design stage.
 - Cover levels are based on topographic survey level.
 - Final cover and invert levels to be confirmed at detailed design stage.
 - Topographic survey does not cover the watercourse to the south-west of the site. Additional survey required to confirm levels and viability of gravity surface water drainage system.
 - All pipe connections to be soffit to soffit unless noted otherwise.
 - Root guard for all pipework/drainage in close proximity to trees to prevent structural damage.
 - Pipes within highways with less than 1200 mm cover to have a Class Z concrete bed and surround or concrete slab protection.
 - All outfall locations and discharge rates to be agreed to by Severn Trent Water and Staffordshire County Council LLFA.
 - Attenuation volumes are approximate and subject to change following layout details.
 - Attenuation basin footprints are currently shown for attenuation volume requirements only. Additional footprint will be required to account for: basin side slopes with a maximum allowable gradient of 1 in 3, access track and tie in to ground levels (not shown on plan).
 - Attenuation basin to include child proof fencing.
 - Additional SuDS features will likely be required to provide source control water quality treatment and attenuation.
 - Details of attenuation structures to be confirmed at detailed design. Attenuation locations and plan areas shown are indicative only and subject to final layout plan and confirmation of watercourse levels. All attenuation assumed to be 1 m deep.
 - Layout adjustments are required for attenuation basins to align with existing site levels and gradients.
 - Discharge rates shown as 1.4 l/s/ha for the developable area. Surface water discharge rates and connections to watercourses are subject to LLFA approval.
 - Localised raising of levels around attenuation basins or the construction of bunds may be necessary to compensate for the fall across the attenuation basin.
 - Tie in levels to existing ground will extend the basin footprints currently shown. Total attenuation footprint areas to be determined at detailed design stage.
 - Offset from watercourse to be confirmed by LLFA.
 - Adoption of drainage to be confirmed. This will impact minimum discharge rates.
 - Septicity check required due to distance of the foul water rising main. Air valve also likely required in rising main.

P01	First Issue.	JSS	AA	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

ALBRIGHTON SOUTH

DRAINAGE STRATEGY SKETCH
(WEST2)

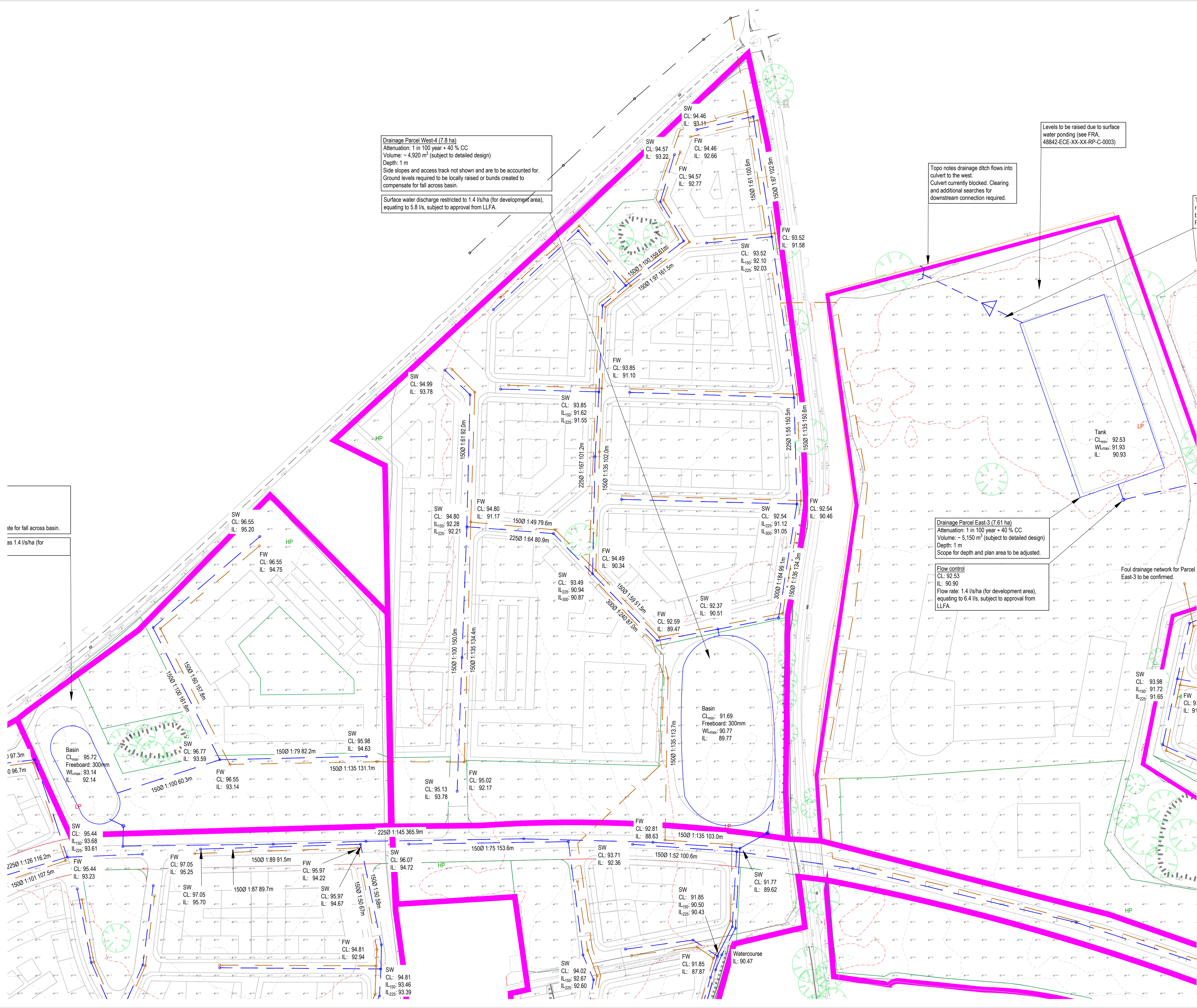


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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	NTS	S2	Information
DRAWING NUMBER			
48842 - ECE - XX - XX - SK - C - 0008	P01		
Project	Originator	Zone	Level
	Type	Role	Number



KEY:

- Attenuation basin
- Below ground attenuation (tank/ crates)
- Headwall
- Surface water drainage
- Surface water rising main
- Flow control device
- Foul water drainage
- Foul water rising main
- Existing Severn Trent Water foul water sewer
- Drainage parcel boundary
- Parcel high point
- Parcel low point

- NOTES:
- Sketch based on Framework Plan (SK003). Drainage strategy is subject to final layout plan and detailed design.
 - All manhole and pipe locations are indicative. Final locations to be confirmed at the detailed design stage.
 - Cover levels are based on topographic survey level.
 - Final cover and invert levels to be confirmed at detailed design stage.
 - Topographic survey does not cover the watercourse to the south-west of the site. Additional survey required to confirm levels and viability of gravity surface water drainage system.
 - All pipe connections to be soffit to soffit unless noted otherwise.
 - Root guard for all pipework/drainage in close proximity to trees to prevent structural damage.
 - Pipes within highways with less than 1200 mm cover to have a Class Z concrete bed and surround or concrete slab protection.
 - All outfall locations and discharge rates to be agreed to by Severn Trent Water and Staffordshire County Council LLFA.
 - Attenuation volumes are approximate and subject to change following layout details.
 - Attenuation basin footprints are currently shown for attenuation volume requirements only. Additional footprint will be required to account for; basin side slopes with a maximum allowable gradient of 1 in 3, access track and tie in to ground levels (not shown on plan).
 - Attenuation basin to include child proof fencing.
 - Additional SuDS features will likely be required to provide source control water quality treatment and attenuation.
 - Details of attenuation structures to be confirmed at detailed design. Attenuation locations and plan areas shown are indicative only and subject to final layout plan and confirmation of watercourse levels. All attenuation assumed to be 1 m deep.
 - Layout adjustments are required for attenuation basins to align with existing site levels and gradients.
 - Discharge rates shown as 1.4 l/s/ha for the developable area. Surface water discharge rates and connections to watercourses are subject to LLFA approval.
 - Localised raising of levels around attenuation basins or the construction of bunds may be necessary to compensate for the fall across the attenuation basin.
 - Tie in levels to existing ground will extend the basin footprints currently shown. Total attenuation footprint areas to be determined at detailed design stage.
 - Offset from watercourse to be confirmed by LLFA.
 - Adoption of drainage to be confirmed. This will impact minimum discharge rates.
 - Septicity check required due to distance of the foul water rising main. Air valve also likely required in rising main.

P01	First Issue.	JSS	AA	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

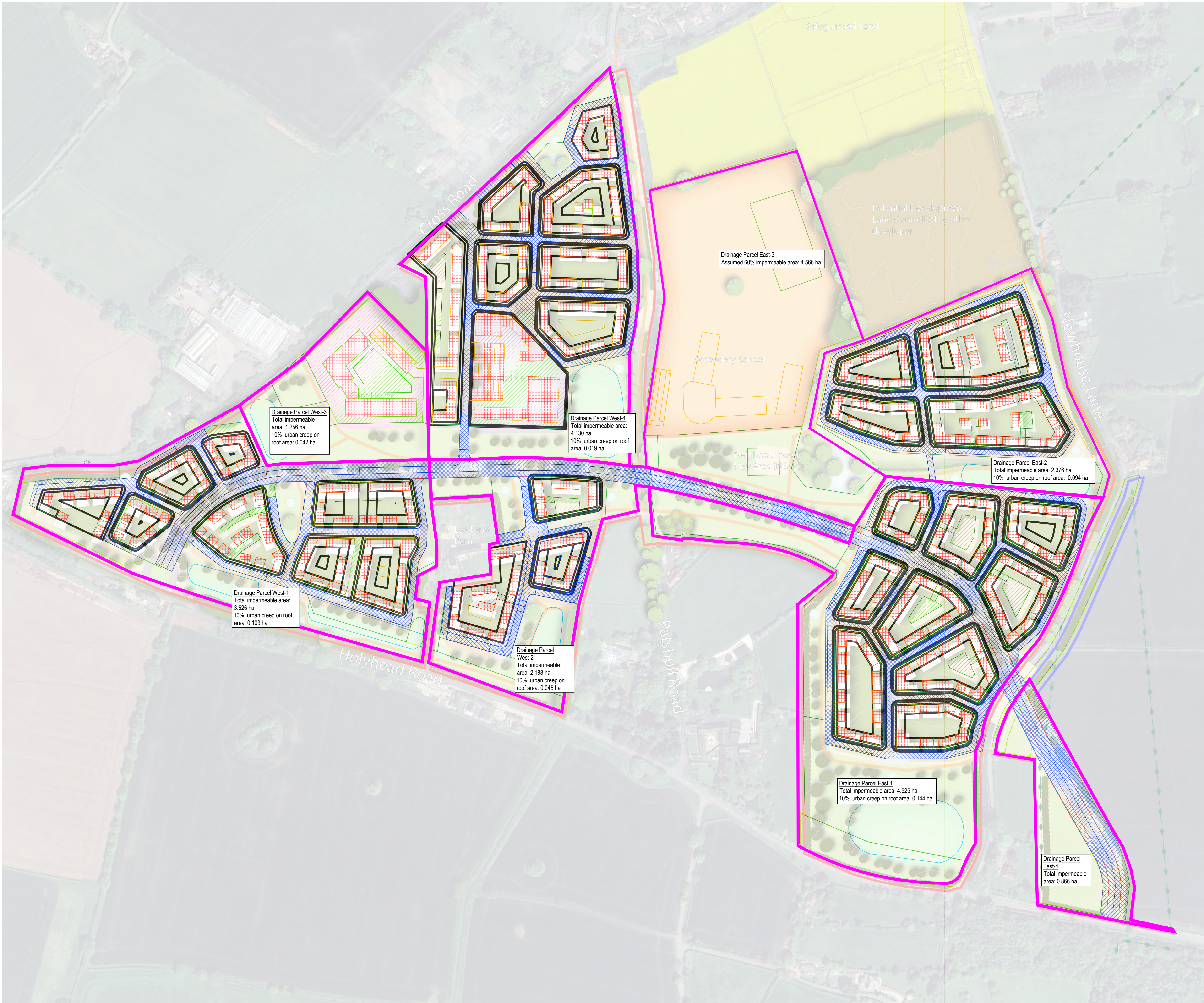
ALBRIGHTON SOUTH

DRAINAGE STRATEGY SKETCH (WEST4)

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	NTS	S2	Information
DRAWING NUMBER		REV	
48842 - ECE - XX - XX - SK - C - 0009		P01	
Project	Originator	Zone	Level
			Type
			Role
			Number



Proposed impermeable area:

Roof area

Road area

Drives/ additional impermeable area

Total impermeable area: 23.433 ha

Total urban creep allowance: 0.447 ha

- Notes:
- Proposed impermeable area is based on sketch layout plan and are subject to change at detailed design.
 - Basins shown on layout plan are indicative only and subject to drainage strategy.

P01	First Issue.	JSS	KBE	25.06.2024
REV	DESCRIPTION	SIG	CHK	DATE

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ALBRIGHTON SOUTH

PROPOSED DRAINED AREAS

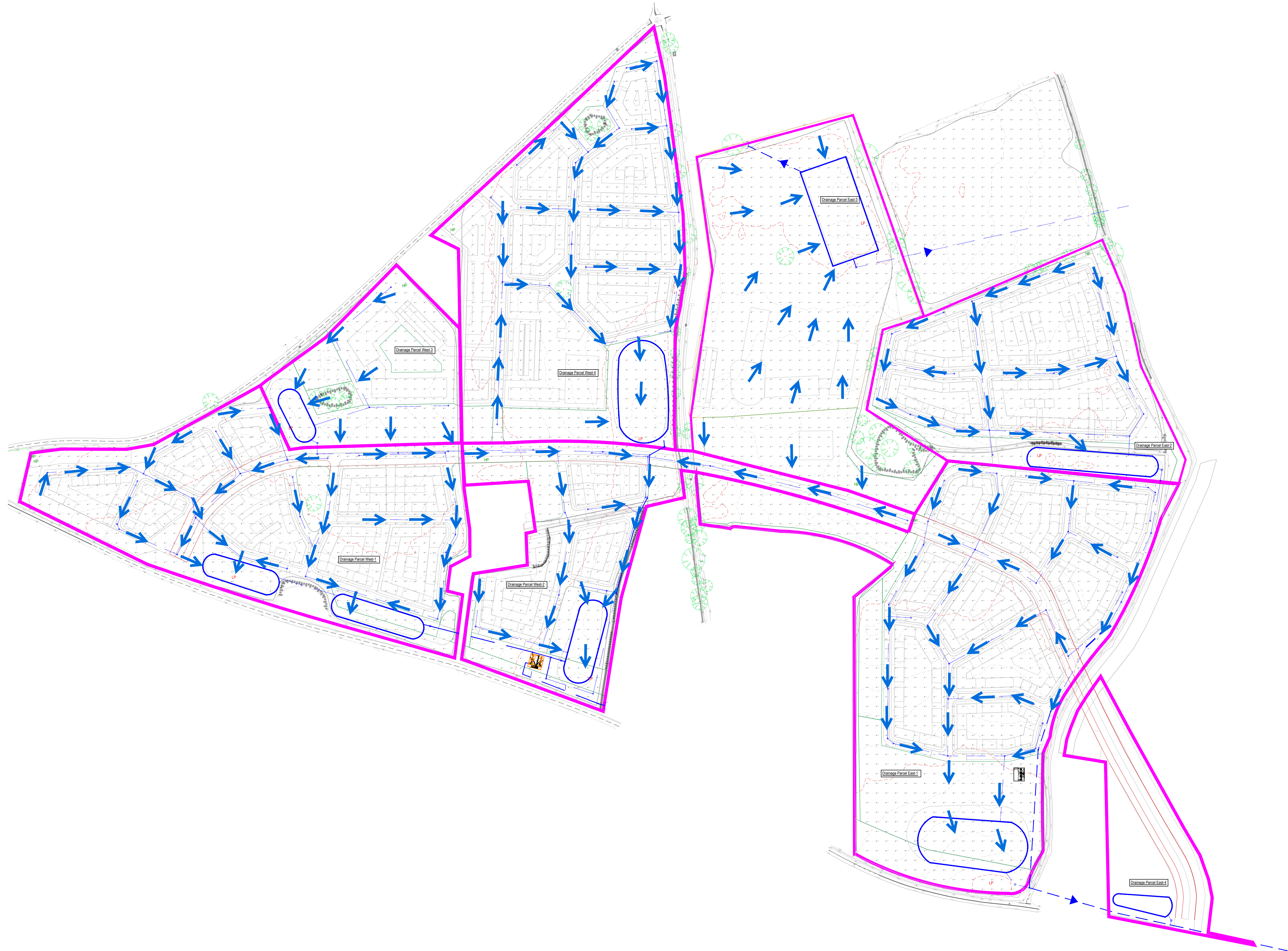
Eastwood

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR	REV
48842	NTS	S2	Information	
DRAWING NUMBER				
48842 - ECE - XX - XX - SK - C - 0010				P01
Project	Originator	Zone	Level	Type
				Role
				Number



KEY:

- Attenuation basin
- Below ground attenuation (tank/ crates)
- Headwall
- Surface water drainage
- Drainage parcel boundary
- HP Parcel high point
- LP Parcel low point
- Route of Exceedance Flow

Notes:

1. To be read in conjunction with the site Drainage Strategy (48842-ECE-XX-XX-SK-C-0004-7) and Drainage Assessment Report (48842-ECE-XX-XX-RP-C-0004).

P01	First Issue.	JW	JSS	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

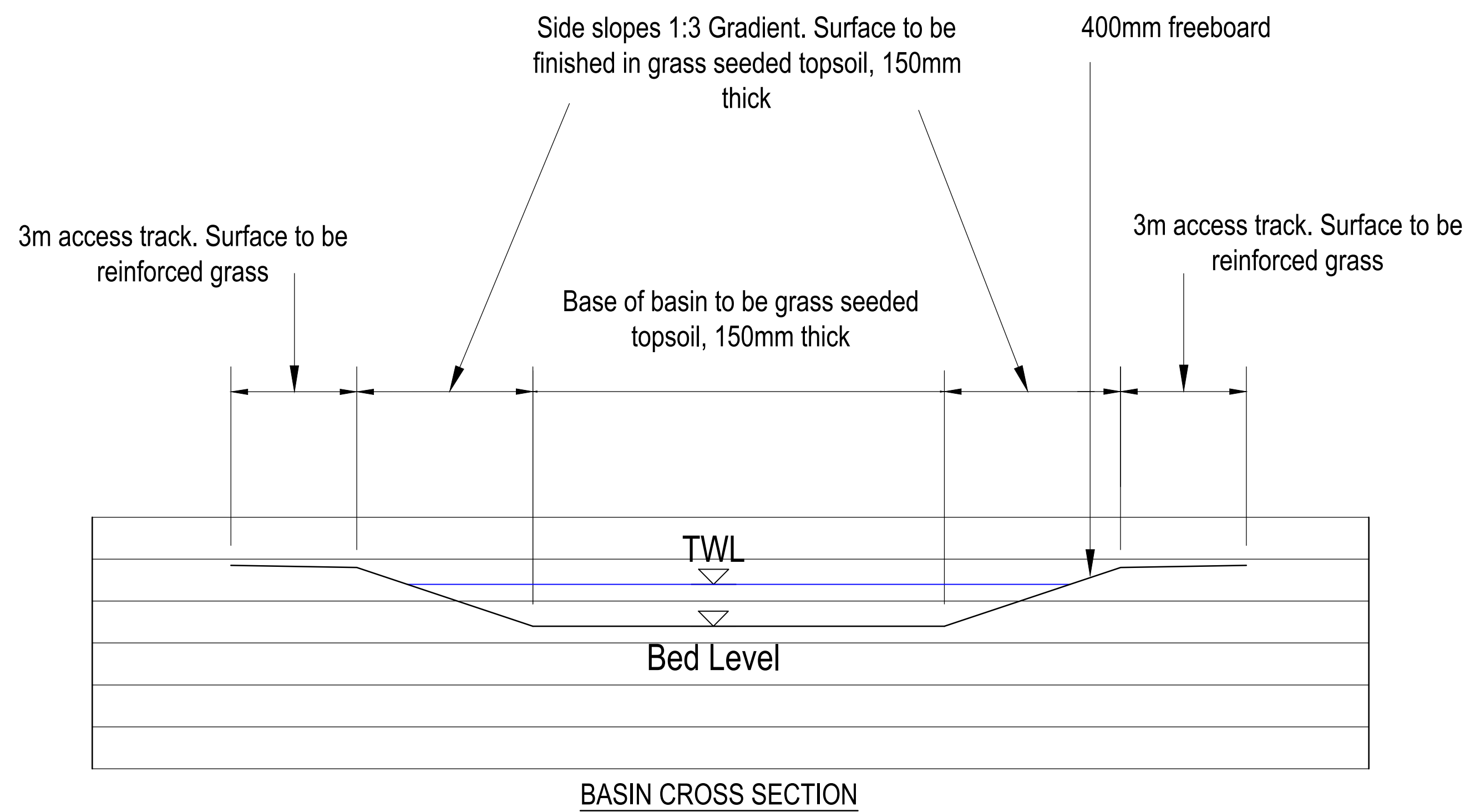
ALBRIGHTON SOUTH

EXCEEDANCE FLOW ROUTING

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	NTS	S2	Information
DRAWING NUMBER			
48842 - ECE - XX - XX - SK - C - 0011	P01		
Project	Originator	Zone	Level Type Role Number



- Notes:
1. Typical basin cross section shown.
 2. Site specific details and dimensions to be provided at detailed design.

P01	First Issue.	JSS	KBE	04.07.2024
REV	DESCRIPTION	SIG	CHK	DATE

BONINGALE HOMES LIMITED

ALBRIGHTON SOUTH

TYPICAL BASIN CROSS SECTION



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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48842	NTS	S0	Initial
DRAWING NUMBER			
48842 - ECE - XX - XX - SK - C - 0012	P01		
Project	Originator	Zone	Level
Type	Role	Number	

A black and white photograph of a flooded residential street. On the left, there are multi-story stone houses with several windows. The street is completely submerged in murky water, with some debris floating. A small stone outbuilding is partially submerged in the foreground. A large teal diagonal shape covers the right side of the image, containing the company's contact information.

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