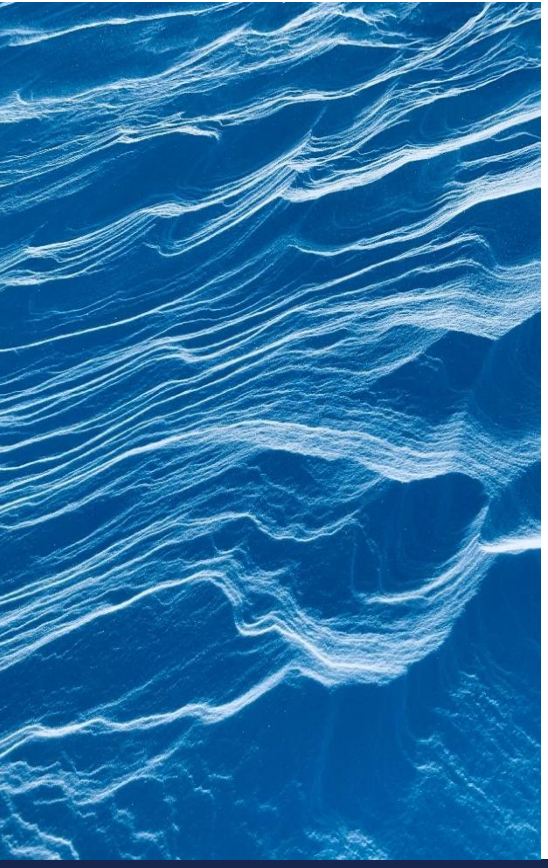
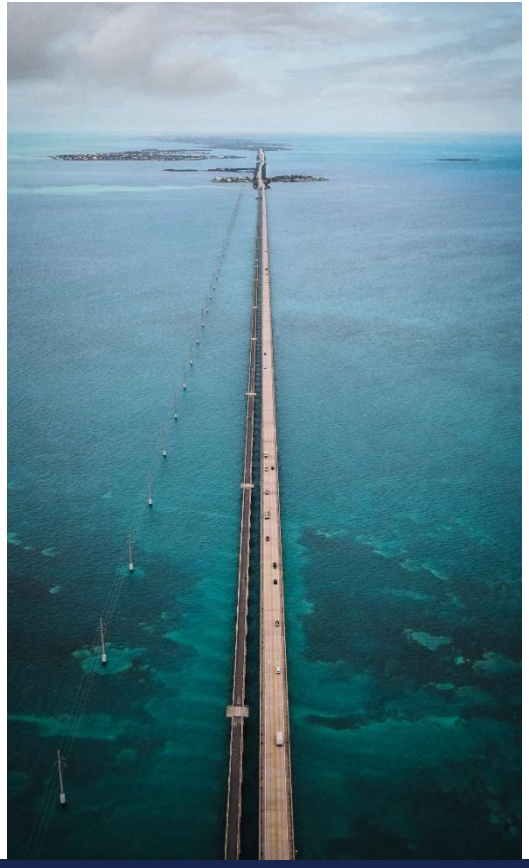




Drainage Strategy

7657_RH20_Pickhurst Lane_07

aegaea
water, civils and environment

Site Address: Land West of Parsons Field Stables
Pickhurst Lane
Pulborough
RH20 1DA

UK Experts in Flood Modelling, Flood Risk Assessments, and Surface Water Drainage Strategies

aegaea
water, civils and environment

Document Issue Record

Project: Drainage Strategy

Prepared for: Manorwood Construction Limited

Reference: 7657_RH20_Pickhurst Lane_07

Site Location: Land West of Parsons Field Stables, Pickhurst Lane, Pulborough, RH20 1DA

Issue	Date	Author	Check	Auth.	Comments
1	28/04/2025	Ceri Metcalfe	Daniel Buciak	James Mahoney	First issue
2	02/05/2025	Ceri Metcalfe	Daniel Buciak	James Mahoney	Amended site layout
3	04/07/2025	Ceri Metcalfe	Daniel Buciak	James Mahoney	Amended site layout
4	22/08/2025	Ceri Metcalfe	Daniel Buciak	James Mahoney	Amended site layout
5	21/10/2025	Ceri Metcalfe	Daniel Buciak	James Mahoney	Strategy updated to suit latest layout

Please Note:

Table of Contents

1. Introduction

1.1. Aegaea were commissioned by the Client to prepare a Drainage Strategy to support a planning application associated with the proposed development at the below address.

Site Overview

1.2. The site of the proposed development is Land West of Parsons Field Stables, Pickhurst Lane, Pulborough, RH20 1DA.

Figure 1: Site Location

1.3. The proposed development site measures approximately 5,920m^2 (0.592ha), situated and accessed from Pickhurst Lane to the north of the site.

1.4. The topographical survey is included in Appendix A, which illustrates that existing site levels vary between 22.869m Above Ordnance Datum (AOD) north of the site and 18.700m AOD to the south.

1.5. Horsham District Council is the Local Planning Authority (LPA) for the site and West Sussex County Council is the designated Lead Local Flood Authority (LLFA).

1.6. Southern Water are the Sewerage Undertaker for the area.

Development Proposals

1.7. The proposed development comprises of stationing of 2 static caravans for residential purposes and associated day rooms with the formation of hardstanding and associated landscaping.

1.8. The proposed development layout can be seen in Figure 2 below and is contained within Appendix B.

Figure 2: Proposed Site Plan

Ground Conditions

1.9. A review of readily available information indicates that the site is in an area of slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage (Soilscapes soil types viewer). British Geological Survey (BGS) data indicates that the bedrock underlying the site is Weald Clay Formation.

1.10. Based on the above, it is considered that the disposal of surface water via infiltration is not feasible and an alternative strategy in line with the SuDS hierarchy is to be sought.

2. Surface Water Drainage Strategy

Existing Drainage System

2.1. No information regarding the existing onsite drainage system has been provided, however, it is assumed that surface water drainage currently discharges via gravity to the ditch located along the southern site boundary.

Proposed Drainage Hierarchy

2.2. Current guidance indicates that the following surface water disposal options should be considered, listed in order of preference:

i. **Disposal via on-site infiltration systems:** As mentioned above, infiltration has been discounted due to unfavourable ground condition.

ii. **Disposal to a watercourse/surface water body:** There is an existing drainage ditch that runs along the southern boundary of the site which it is proposed that surface water flows are to discharge to.

iii. **Disposal to surface water sewer:** There are no public surface water sewers within the proximity of the proposed development.

iv. **Disposal to combined sewer:** There are no public surface water sewers within the proximity of the proposed development.

2.3. In accordance with the SuDS hierarchy, it is proposed that surface water flows from roof areas are to be re-used within a rainwater harvesting system. The remaining of the developments surface water flows and any overflows from the rainwater harvesting systems are to discharge at a controlled rate into the existing ditch along the southern site boundary.

Runoff Rates

2.4. An assessment of greenfield runoff rates based on the proposed development drainage catchment areas (circa 395m^2) was made using the pre-development calculator in Causeway Flow software based on the input parameters shown in Figure 3 below.

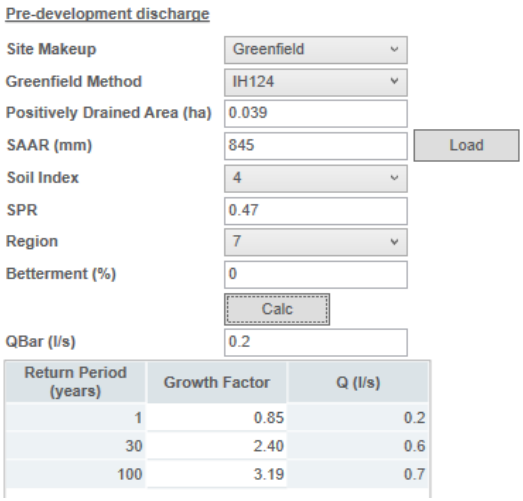


Figure 3: Extract from Causeway Flow Greenfield Runoff Rate Calculator

2.5. The greenfield runoff rates for the proposed development site are set out in the Table 1 below.

Return Period	Greenfield Runoff Rate
Q_{BAR}	0.2 l/s
1 in 1 Year	0.2 l/s
1 in 30 Year	0.6 l/s
1 in 100 Year	0.7 l/s

Table 1: Greenfield Runoff Rates

2.6. The table above shows that due to the small nature of the proposed development and the associated soil class type, greenfield runoff rates are extremely low.

2.7. Where a site is below 1ha and greenfield runoff rates are low, it is considered that 1 l/s forms a practical minimum flow rate that balances and mitigates both the increased flood risk and blockage risk to the proposed drainage system. It is therefore proposed to restrict flows to 1 l/s as an appropriate minimum flow for small sites.

Proposed Drainage Strategy

2.8. The use of porous surface for hardstanding areas is proposed to filter water and improve water quality of surface water flows arising from these hardstanding areas. These areas will not be positively drained and would therefore drain as in the pre-development scenario i.e. no change/increase to impermeable areas within its extents

2.9. For the proposed development roof areas the strategy will comprise of geocellular attenuation tank proposed to attenuate flows prior to discharging at a controlled rate into an existing ditch running along the southern site boundary.

2.10. All on site drainage has been designed to accommodate surface water runoff including all modelled 1 in 100-year storms plus 45% climate change and 10% urban creep.

2.11. The contractor is to consider methods of drainage installation that avoids the loss of existing tress and mitigates existing tree roots wherever possible, i.e. vacuum excavator/airspade, trenchless techniques, etc. If alternative/optimised routes are identified on site this should be reported back to the engineer.

2.12. The proposed drainage layout can be found within Appendix C with supporting drainage calculations can be found in Appendix D.

3. Future Maintenance Strategy

General Maintenance

3.1. The surface water drainage network will be managed throughout the lifetime by the owners of the proposed development in accordance with details set out below.

3.2. All drainage, whether piped or SuDS require regular maintenance. The tables below provide an overview of general maintenance tasks and frequency of which they need to be undertaken.

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspect for sediment and debris in catchpit manholes and gullies. Clean out as required	Twice Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris in catchpits, gullies, attenuation devices and inside concrete manhole rings.	As required, based on inspections.
Remedial actions	Reconstruct and/or replace components, if performance deteriorates or failure/blockage occurs.	As required
	Replacement of clogged components (flow restriction)	As required
Monitoring	Inspect silt traps/gullies/catchpits and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check attenuation devices	Annually

General maintenance for Surface Water Drainage Systems as per CIRIA C753.

3.3. The required maintenance for each component making up the drainage system is scheduled in the tables below, based on CIRIA report C753 – The SuDS manual.

Permeable Paving

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Regular raking to ensure even spread and smooth surface, may require additional top up.	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements
Remedial Maintenance	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remediate work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action.	Three-monthly, 48 hr after large storms in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Cellular attenuation tank

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	As required, based on inspections.
Remedial actions	Reconstruct tank and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of tank)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check tank to ensure emptying is occurring	Annually

Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/debris removal for large systems. If maintenance is not undertaken for long periods, deposits can become hard packed and require considerable effort to remove.

Orifice Plate (Flow Control)

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove sediment and debris from flow control chambers and upstream manholes. Check for signs of damage, wear and tear. Check any visible fixing bolts.	Monthly (for the first 12 months, then 6 monthly).
Remedial Actions	Clean or replace orifice plate if defects are located or, if performance deteriorates or failure occurs. In the event of the blockage, the blockage/foreign material should be manually removed	As necessary.
Monitoring	Check flow control to ensure emptying is occurring.	Quarterly and post high intensity storm event.

Headwalls (inlets and outlets)

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Inspect inlets, outlets for blockages and clear if required	Monthly (for the first 12 months, then 6 monthly).
	Check for signs of damage, erosion of banks or scour.	
	Inspect structural integrity of head wall structure	
	Check integrity of metal work and replace when needed.	
Occasional Maintenance	In the event of the blockage, the blockage/foreign material should be manually removed	Annual/bi-annual visual checks are basic recommendation
	Galvanised Grates and Handrails	
Remedial Actions	In the event of damage, erosion of banks or scour, rehabilitate as required.	As required
	Repair/rehabilitation of inlets/outlets/overflows	As required
	Re-level uneven surfaces and reinstate design levels	As required

4. Pollution Prevention & Water Quality Management

SuDS Mitigation Indices

4.1. Chapter 26 of the CIRIA C753 The SuDS Manual, provides design advice to meet water quality standards by adopting the SuDS train treatment mechanism and thereby reduce the risk of pollution by evaluating potential pollution hazards at the outset.

4.2. The proposed site layout provides the opportunity to introduce SuDS into the scheme to reduce potential contaminant risk further.

4.3. Runoff from individual property driveways, residential car parks and low traffic roads are generally viewed as low risk (as per Table 26.2 of C753), shown in the tables below.

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Individual property driveways, residential car parks and low traffic roads	Low	0.5	0.4	0.4

Pollutant Hazard Indices

	Mitigation Indices				Indices for Calculation		
	TSS	Metals	Hydrocarbons		TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7	100%	0.7	0.6	0.7
Total Mitigation Indices score					**0.7**	**0.6**	**0.7**
Sufficiency of Pollution Mitigation Indices					Sufficient (No additional mitigation required)		

SuDS Mitigation Indices

4.4. The mitigation indices offered by the proposed SuDS features exceed the hazard indices from roof areas and therefore provides adequate mitigation. It is therefore considered that the proposed SuDS features on site are appropriate and acceptable in terms of water quality.

5. Foul Drainage Strategy

5.1. There are no public foul sewers within the vicinity of the site. Southern Water Asset Mapping is included within Appendix E.

5.2. Discharge to ground, i.e. drainage field, has been discounted due to the above information deeming infiltration techniques unfeasible for the site.

5.3. Based on the above information it is therefore proposed that foul flows from the proposed development are directed to a package treatment plant, prior to the treated flows discharging into the existing ditch located along the southern boundary of the site. Subject to relevant approvals.

5.4. It is proposed that the stable washdown areas are to discharge to onsite cesspools, capacity of the cesspool tanks will be dependent on frequency of use and is subject to detailed design.

Appendix A - Topographical Survey

NOTES
Survey accurate at time of site attendance. Do not scale from printed drawings except for planning purposes.
Although this is a digital survey the accuracy and amount of detail shown is only commensurate with the graphical scale of mapping as specified. Care should be exercised when working to larger scales.

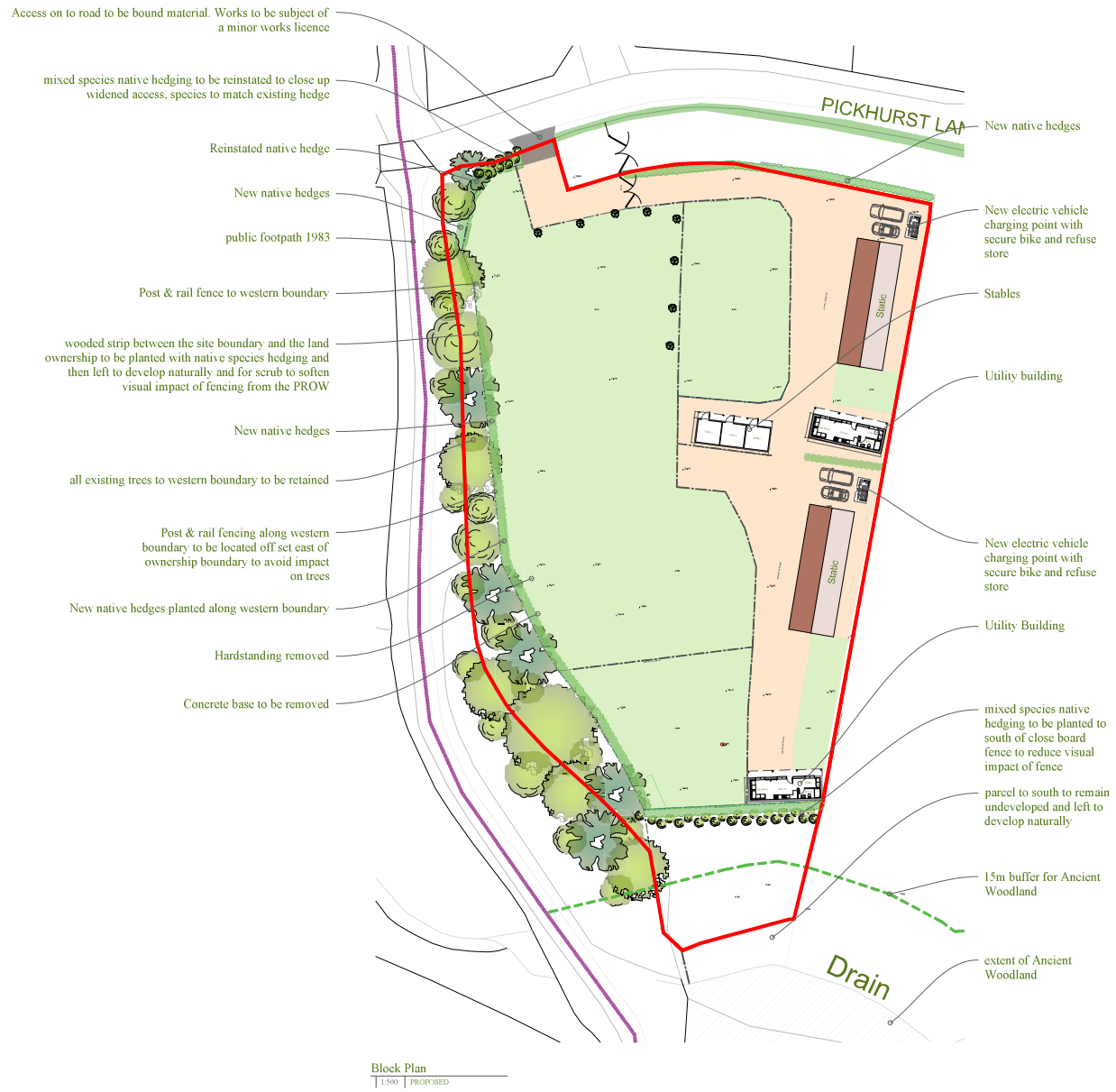
National Grid 1:2500 (Accuracy data) Surveying tolerances:
Distances up to 200 metres ±1 in100m
Distances 200 to1,000 metres ±2m
Distances over 1,000 metres ±1 in 500m

0 5 10 15 20
SCALE 1:500

medlams
surveys limited
www.medlams-surveys.co.uk
info@medlams-surveys.co.uk
07717 205 388

project: Land adjacent to Parsonsfield Stables
client: Manorwood
job ref: S3048
title: As built site survey
scale: 1:500@A3
date: April 2025
dwg no: EX101 rev: A

Appendix B - Proposed Site Layout



Block Plan

1:500 | PROPOSED

PROMETHEAN PLANNING

Suite 114
26 The Hornet
Chichester
West Sussex
PO19 7BB

tel: 01243 201 102
email: enquiries@prometheamplanning.co.uk
web: www.prometheamplanning.co.uk

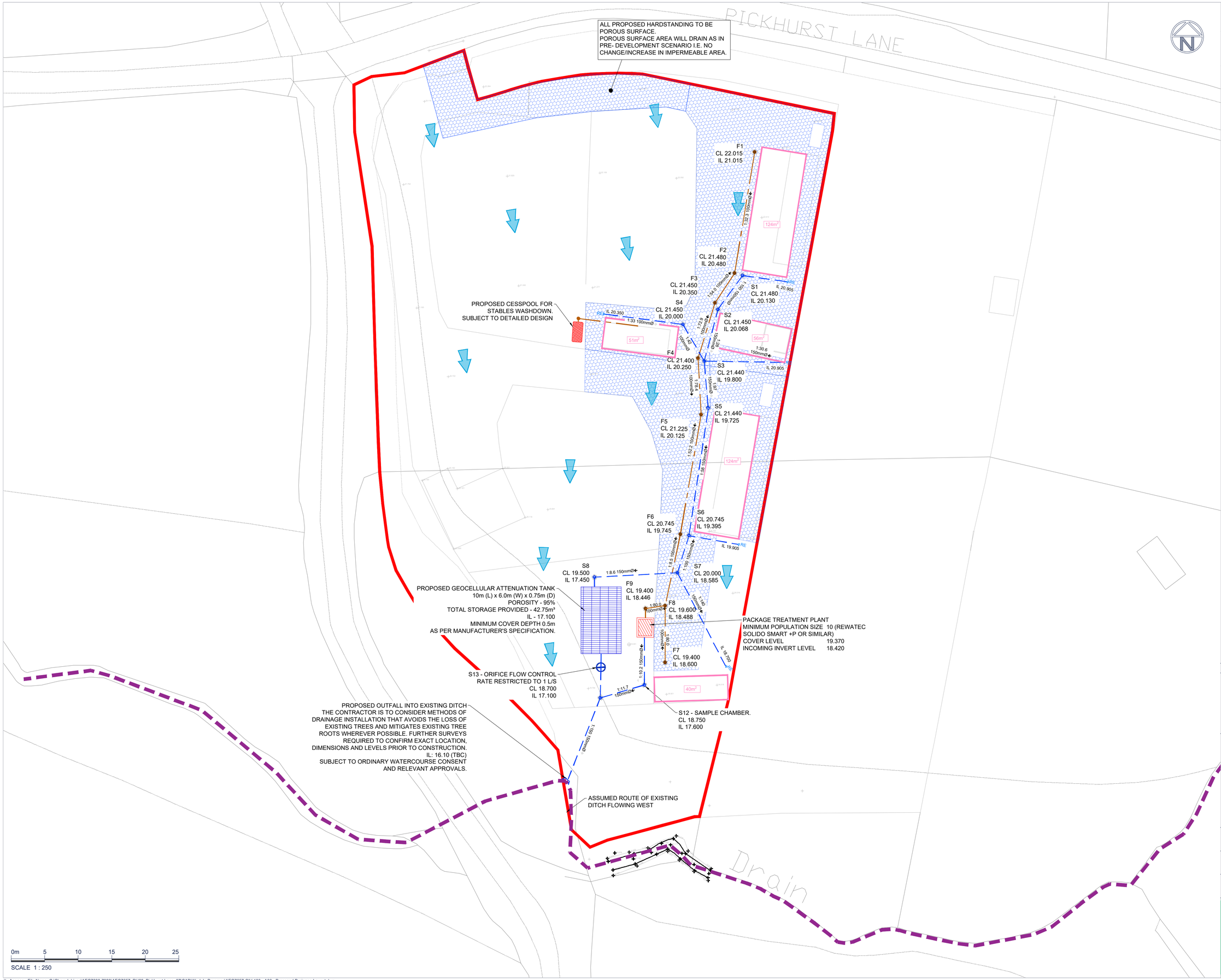
Address	Land West Of Parsons Field Stables, Pickhurst Lane, Pulborough, West Sussex, RH20 1DA
Drawing No.	2507PI_002
Scale @ A2	As Indicated
Job No.	2507PI
Drawn By	MD
Checked By	BK
Drawn On	08.10.2025
Issued On	09.10.2025
Status	Existing + Proposed
Drawing	Block Plans
Submission	Planning
Revision	004

N

Indicative: 0.0°

1m @ 1:
50
100
200
500
1250

Appendix C - Proposed Drainage Layout



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
REFER TO THE RELEVANT CONSTRUCTION (DESIGN AND MANAGEMENT) DOCUMENTATION WHERE APPLICABLE.
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.

GENERAL NOTES

1. THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO CHANGE DURING DETAILED DESIGN AND APPROVALS FROM RELEVANT STATUTORY BODIES.
2. POSITIONS OF EXISTING SERVICES/STATUTORY UNDERTAKERS APPARATUS ADJACENT TO OR CROSSING PROPOSED EXCAVATIONS ARE TO BE CONFIRMED PRIOR TO START ON SITE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AND CHECKED AGAINST ALL ENGINEERING DETAILS, SPECIFICATIONS, GEOTECHNICAL AND OTHER RELEVANT DOCUMENTATION PROVIDED.
4. THIS DRAWING IS SCHEMATIC FOR CLARITY ONLY, POSITIONS OF PIPE RUNS AND MANHOLES MAY VARY ON SITE DUE TO SITE CONDITIONS.
5. WHERE EXISTING OR PROPOSED TREES ARE ADJACENT TO ACCESS ROADS OR DRAINAGE, ROOT BARRIERS (TYPE TO BE APPROVED) ARE REQUIRED TO PREVENT STRUCTURAL DAMAGE.
6. ANY ANOMALY OR CONTRADICTIONS BETWEEN ANY OF THE ABOVE IS TO BE REPORTED IMMEDIATELY.
7. THE DESIGN IS TO COMPLY IN ALL ASPECTS WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND BUILDING LEGISLATION ETC.
8. ALL PIPE SIZES, CHAMBER DEPTHS, SIZE & QUANTITY SUBJECT TO REVIEW AND DETAILED DESIGN. ALL ADOPTED PIPE WORK ROUTING AND ANY EASEMENTS SUBJECT TO FULL DESIGN REVIEW AND APPROVAL BY THE RELEVANT BODIES.
9. DRAINAGE DESIGN SUBJECT TO DETAILED LEVELS AND EXTERNAL WORKS DESIGN.
10. SUBJECT TO DETAILED DESIGN AND APPROVAL.
11. THE CONTRACTOR IS TO CONSIDER METHODS OF DRAINAGE INSTALLATION THAT AVOIDS THE LOSS OF EXISTING TREES AND MITIGATES EXISTING TREE ROOTS WHEREVER POSSIBLE. IF ALTERNATIVE/ OPTIMISED ROUTES ARE IDENTIFIED ON SITE THIS SHOULD BE REPORTED BACK TO THE ENGINEER.

THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND NOT FOR CONSTRUCTION SUBJECT TO RELEVANT APPROVALS

LEGEND

- SITE BOUNDARY
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED FOUL DRAINAGE
- RE PROPOSED RODDING EYE
- PROPOSED SURFACE WATER ORIFICE PLATE
- PROPOSED POROUS SURFACE (GRAVEL SURFACING)
- PROPOSED ATTENUATION TANK
- EXISTING DITCH
- OVERLAND FLOW ROUTE
- CONTRIBUTING AREA

Rev	Date	Description	By
A06	20.10.25	UPDATED IN ACCORDANCE WITH LATEST LAYOUT	DB
A05	22.08.25	UPDATED TO SUIT AMENDED SITE LAYOUT, OUTFALL ROUTE AND DITCH SURVEY UPDATED	DB
A04	01.07.25	UPDATED TO SUIT AMENDED SITE LAYOUT	CM
A03	02.05.25	UPDATED TO SUIT AMENDED SITE LAYOUT	CM
A02	24.04.25	UPDATED TO SUIT NEW SITE LAYOUT	CM
A01	09.04.25	FIRST ISSUE	CM

Client
MANORWOOD CONSTRUCTION LIMITED

Project
LAND WEST OF PARSONS FIELD STABLES, PICKHURST LANE

Title
PROPOSED DRAINAGE LAYOUT

Project No.	Drawing No.	Revision
AEG7657	CIV-100	A06

Drawn	Checked	Approved	Date	Scale @ A1
CM	DB	JM	APR 2025	1:250

Drawing Status
PLANNING

aegaea
water, civils and environment

FIGURE B18
TYPICAL INSPECTION CHAMBER DETAIL - TYPE D (FLEXIBLE MATERIAL DETAIL)

MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE
IN AREAS SUBJECT TO VEHICLE LOADING 2M, NON-ENTRY

PLASTIC CHAMBERS AND RINGS SHALL COMPLY WITH BS EN 13598-1 AND BS EN 13598-2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL

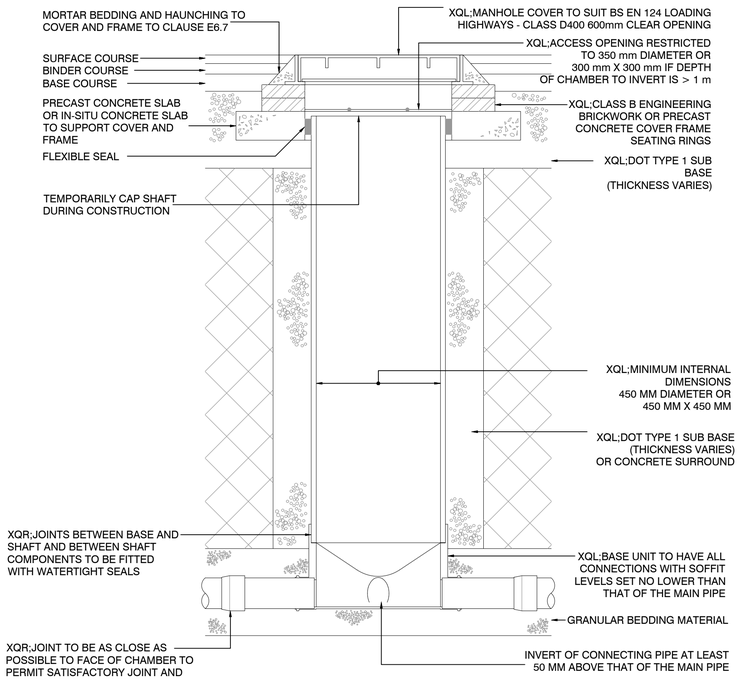
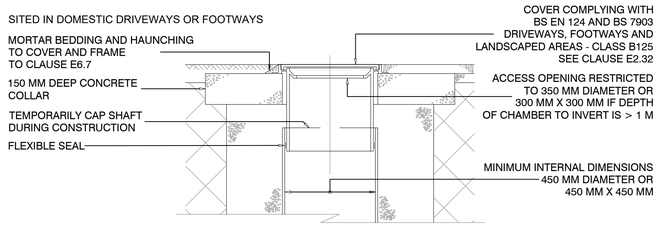


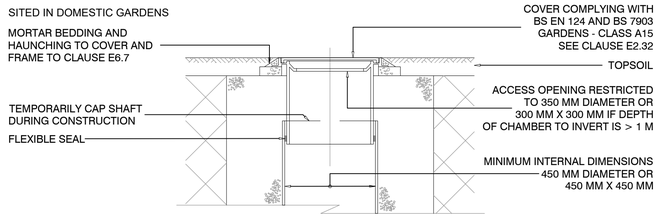
FIGURE B19
ALTERNATIVE TOP DETAILS FOR LIGHT VEHICLE LOADING AND LANDSCAPED AREAS - TYPE D

PLASTIC CHAMBERS AND RINGS SHALL COMPLY WITH BS EN 13598-1 AND BS EN 13598-2 OR HAVE EQUIVALENT INDEPENDENT APPROVAL

SITED IN DOMESTIC DRIVEWAYS OR FOOTWAYS

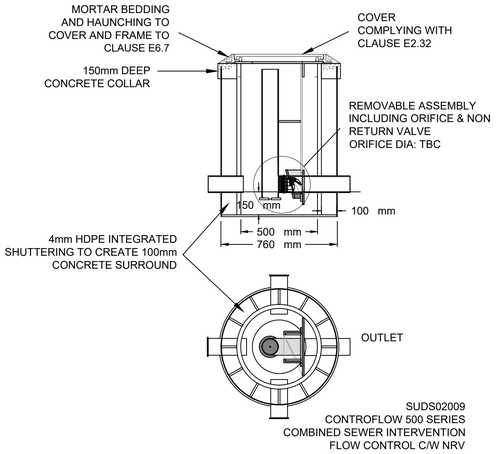


SITED IN DOMESTIC GARDENS

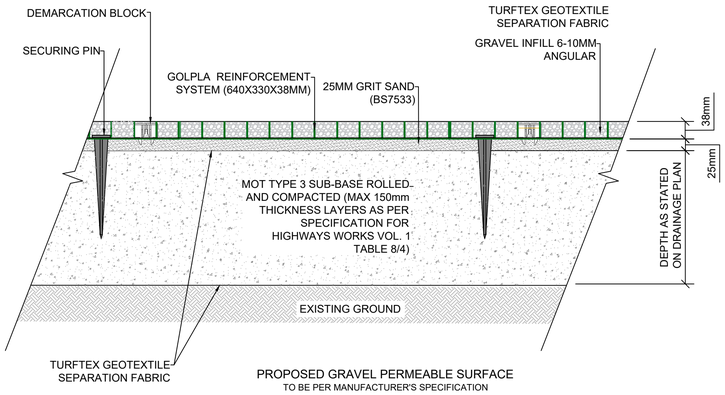


NOTE: WHERE THE ACCESS CHAMBER IS IN THE HIGHWAY THE HIGHWAY AUTHORITY CAN HAVE SPECIFIC REQUIREMENTS

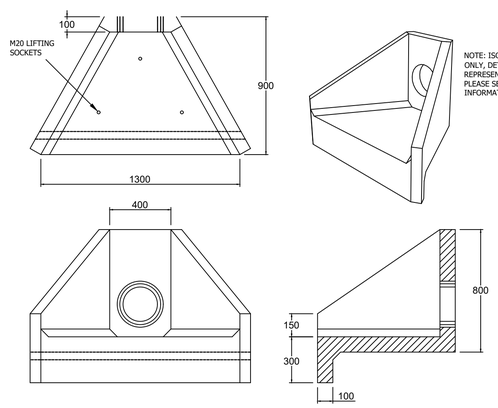
NOT TO SCALE



ORIFICE FLOW CONTROL CHAMBER
DETAIL TO BE CONFIRMED WITH MANUFACTURER FOR SITE SPECIFIC REQUIREMENTS

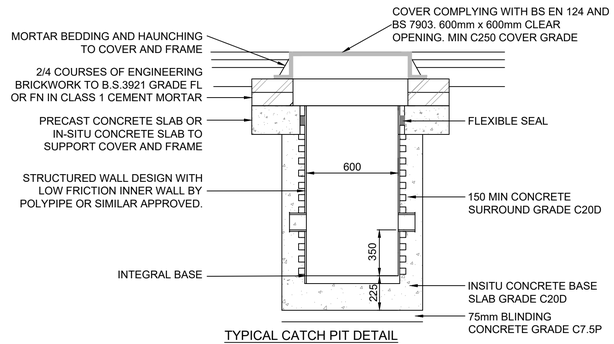


PROPOSED GRAVEL PERMEABLE SURFACE
TO BE PER MANUFACTURER'S SPECIFICATION

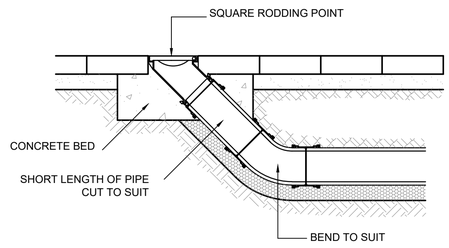


NOTE: ISOMETRIC DRAWING IS FOR REFERENCE ONLY, DETAILS MAY NOT ACCURATELY REPRESENT ACTUAL DESIGN - PLEASE SEE DETAILED VIEWS FOR TECHNICAL INFORMATION

OUTFALL HEADWALL DETAIL
ALTHON H3C HEADWALL

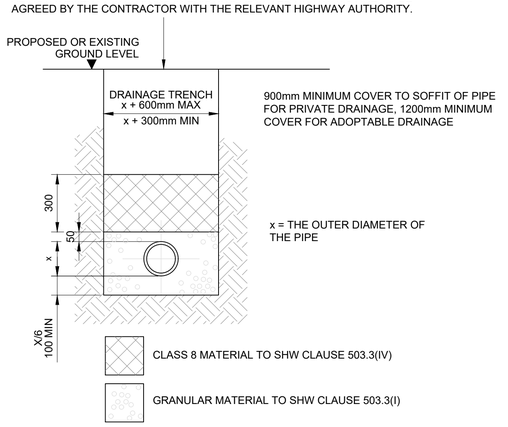


TYPICAL CATCH PIT DETAIL
SCALE 1:20



RODDING EYE DETAIL
NTS

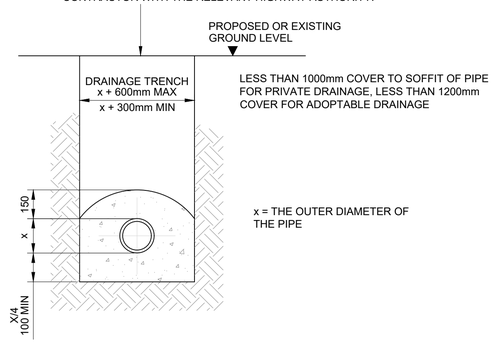
FOR SURFACE FINISH TO DRAINAGE EXCAVATION REFER TO THE EXTERNAL FINISHES PLAN AND THEN RELEVANT HIGHWAY DETAILS. NOTE THAT REINSTATEMENT FOR WORKS IN EXISTING ADOPTED HIGHWAYS ARE TO BE AGREED BY THE CONTRACTOR WITH THE RELEVANT HIGHWAY AUTHORITY.



NOTE: CLASS 'S' BEDDING FOR USE WITH ALL ADOPTABLE DRAINAGE WITH COVER TO SOFFIT OF PIPE GREATER THAN 1200MM. PRIVATE DRAINAGE WITHIN LANDSCAPED AND OTHER NON-TRAFFICKED AREAS WITH COVER GREATER THAN 1000MM TO THE PIPE SOFFIT MAY USE PIPE BEDDING CLASS 'T' REFER TO DRAWING F1 (SHW) HIGHWAY CONSTRUCTION DETAILS.

CLASS 'S' PIPE BEDDING

FOR SURFACE FINISH TO DRAINAGE EXCAVATION REFER TO THE EXTERNAL FINISHES PLAN AND THEN RELEVANT HIGHWAY DETAILS. NOTE THAT REINSTATEMENT FOR WORKS IN EXISTING ADOPTED HIGHWAYS ARE TO BE AGREED BY THE CONTRACTOR WITH THE RELEVANT HIGHWAY AUTHORITY.



NOTE: CLASS 'Z' BEDDING FOR USE WITH ALL ADOPTABLE DRAINAGE WITH COVER TO SOFFIT OF PIPE LESS THAN 1200mm.

CLASS 'Z' PIPE BEDDING

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION
REFER TO THE RELEVANT CONSTRUCTION (DESIGN AND MANAGEMENT) DOCUMENTATION WHERE APPLICABLE.
IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.

GENERAL NOTES

1. THE CONTRACTOR IS TO CHECK AND VERIFY ALL SITE DIMENSIONS AND LEVELS, INCLUDING EXISTING SEWER INVERT LEVELS AND UTILITIES, PRIOR TO START ON SITE.
2. POSITIONS OF EXISTING SERVICES ADJACENT TO OR CROSSING PROPOSED EXCAVATIONS ARE TO BE CONFIRMED PRIOR TO START ON SITE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AND CHECKED AGAINST ALL, ENGINEERING DETAILS, SPECIFICATIONS, GEOTECHNICAL AND OTHER RELEVANT DOCUMENTATION PROVIDED.
4. POSITIONS OF PIPE RUNS AND MANHOLES MAY VARY ON SITE DUE TO ONGOING STATUTORY UNDERTAKER COMMENTS/SITE CONDITIONS.
5. ANY ANOMALY OR CONTRADICTIONS BETWEEN ANY OF THE ABOVE IS TO BE REPORTED IMMEDIATELY.
6. THE CONTRACTOR IS TO COMPLY IN ALL ASPECTS WITH THE CURRENT BRITISH STANDARDS, BUILDING REGULATIONS AND BUILDING LEGISLATION ETC.
7. WE RECOMMEND INFILTRATION TESTING IS UNDERTAKEN TO THE BASE OF THE INFILTRATION BASIN ONCE CONSTRUCTED TO CONFIRM THE RATE.

THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND NOT FOR CONSTRUCTION
SUBJECT TO RELEVANT APPROVALS

Rev	Date	Description	By
A01	09.04.25	FIRST ISSUE	CM

Client
MANORWOOD CONSTRUCTION LIMITED

Project
LAND WEST OF PARSONS FIELD STABLES, PICKHURST LANE

Title
PROPOSED DRAINAGE DETAILS

Project No.	Drawing No.	Revision
AEG7657	CIV-110	A01

Drawn	Checked	Approved	Date	Scale @ A1
CM	DB	JM	MAR 2025	1:100

Drawing Status
PLANNING

aegaea
water, civils and environment

Appendix D - Drainage Calculations

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	5	Maximum Rainfall (mm/hr)	150.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.013	5.00	21.480	Manhole	600	505385.169	120899.357	1.350
2			21.450	Manhole	600	505381.512	120894.324	1.382
4	0.006	5.00	21.440	Manhole	600	505380.061	120886.887	1.640
3	0.005	5.00	21.450	Manhole	600	505376.276	120892.059	1.450
5	0.000		21.225	Manhole	600	505380.033	120879.615	1.500
6	0.013	5.00	20.745	Manhole	600	505377.174	120860.566	1.350
7	0.004	5.00	20.000	Manhole	600	505375.460	120854.999	1.415
8			19.500	Manhole	600	505366.504	120851.028	2.050
9			18.700	Manhole	1200	505366.133	120836.411	1.600
9_OUT			18.000	Manhole	1200	505362.660	120814.755	1.350

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
1.000	1	2	6.221	0.600	20.130	20.068	0.062	100.3	150	Circular	5.10	96.3
1.001	2	4	7.577	0.600	20.068	19.800	0.268	28.3	150	Circular	5.17	95.8
1.002	4	5	7.272	0.600	19.800	19.725	0.075	97.0	150	Circular	5.29	95.1
1.003	5	6	19.262	0.600	19.725	19.395	0.330	58.4	150	Circular	5.53	93.5
1.004	6	7	5.825	0.600	19.395	18.585	0.810	7.2	150	Circular	5.56	93.3
1.005	7	8	9.797	0.600	18.585	17.450	1.135	8.6	150	Circular	5.61	93.0
2.000	3	4	6.409	0.600	20.000	19.850	0.150	42.7	100	Circular	5.09	96.3
1.006	8	9	14.622	0.600	17.450	17.305	0.145	100.8	150	Circular	5.85	91.4
1.007	9	9_OUT	21.933	0.600	17.100	16.650	0.450	48.7	150	Circular	6.10	89.8

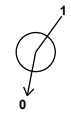
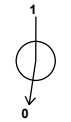
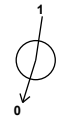
Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1	2	1.003	17.7	4.5	1.200	1.232	0.013	0.0	52	0.842
1.001	2	4	1.900	33.6	4.5	1.232	1.490	0.013	0.0	37	1.332
1.002	4	5	1.020	18.0	8.2	1.490	1.350	0.024	0.0	71	0.998
1.003	5	6	1.319	23.3	8.1	1.350	1.200	0.024	0.0	61	1.204
1.004	6	7	3.781	66.8	12.5	1.200	1.265	0.037	0.0	44	2.901
1.005	7	8	3.450	61.0	13.8	1.265	1.900	0.041	0.0	48	2.796
2.000	3	4	1.183	9.3	1.7	1.350	1.490	0.005	0.0	29	0.905
1.006	8	9	1.000	17.7	13.5	1.900	1.245	0.041	0.0	99	1.101
1.007	9	9_OUT	1.444	25.5	13.3	1.450	1.200	0.041	0.0	77	1.460

Pipeline Schedule

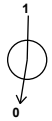
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	6.221	100.3	150	Circular	21.480	20.130	1.200	21.450	20.068	1.232
1.001	7.577	28.3	150	Circular	21.450	20.068	1.232	21.440	19.800	1.490
1.002	7.272	97.0	150	Circular	21.440	19.800	1.490	21.225	19.725	1.350
1.003	19.262	58.4	150	Circular	21.225	19.725	1.350	20.745	19.395	1.200
1.004	5.825	7.2	150	Circular	20.745	19.395	1.200	20.000	18.585	1.265
1.005	9.797	8.6	150	Circular	20.000	18.585	1.265	19.500	17.450	1.900
2.000	6.409	42.7	100	Circular	21.450	20.000	1.350	21.440	19.850	1.490
1.006	14.622	100.8	150	Circular	19.500	17.450	1.900	18.700	17.305	1.245
1.007	21.933	48.7	150	Circular	18.700	17.100	1.450	18.000	16.650	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	600	Manhole	Adoptable	2	600	Manhole	Adoptable
1.001	2	600	Manhole	Adoptable	4	600	Manhole	Adoptable
1.002	4	600	Manhole	Adoptable	5	600	Manhole	Adoptable
1.003	5	600	Manhole	Adoptable	6	600	Manhole	Adoptable
1.004	6	600	Manhole	Adoptable	7	600	Manhole	Adoptable
1.005	7	600	Manhole	Adoptable	8	600	Manhole	Adoptable
2.000	3	600	Manhole	Adoptable	4	600	Manhole	Adoptable
1.006	8	600	Manhole	Adoptable	9	1200	Manhole	Adoptable
1.007	9	1200	Manhole	Adoptable	9_OUT	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	505385.169	120899.357	21.480	1.350	600	 0	1.000	20.130	150
2	505381.512	120894.324	21.450	1.382	600	 1 0	1.000 1.001	20.068 20.068	150 150
4	505380.061	120886.887	21.440	1.640	600	 1 2 0	2.000 1.001 1.002	19.850 19.800 19.800	100 150 150
3	505376.276	120892.059	21.450	1.450	600	 0	2.000	20.000	100
5	505380.033	120879.615	21.225	1.500	600	 1 0	1.002 1.003	19.725 19.725	150 150
6	505377.174	120860.566	20.745	1.350	600	 1 0	1.003 1.004	19.395 19.395	150 150
7	505375.460	120854.999	20.000	1.415	600	 1 0	1.004 1.005	18.585 18.585	150 150
8	505366.504	120851.028	19.500	2.050	600	 1 0	1.005 1.006	17.450 17.450	150 150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
9	505366.133	120836.411	18.700	1.600	1200		1	1.006	17.305	150
							0	1.007	17.100	150
9_OUT	505362.660	120814.755	18.000	1.350	1200		1	1.007	16.650	150

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Detailed	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440	2160

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	10	0	100	0	10	0
30	0	10	0	100	45	10	0

Node 9 Online Orifice Control

Flap Valve	x	Invert Level (m)	17.100	Design Flow (l/s)	1.0	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Depth (m)	1.700	Diameter (m)	0.025		

Node 9 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	17.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	60.0	60.0	0.750	60.0	80.6	0.751	0.0	80.6

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Results for 1 year +10% A Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	20.164	0.034	1.8	0.0097	0.0000	OK
15 minute summer	2	10	20.091	0.023	1.8	0.0066	0.0000	OK
15 minute summer	4	11	19.846	0.046	3.3	0.0129	0.0000	OK
15 minute summer	3	11	20.019	0.019	0.7	0.0054	0.0000	OK
15 minute summer	5	11	19.766	0.041	3.3	0.0115	0.0000	OK
15 minute summer	6	11	19.424	0.029	5.0	0.0081	0.0000	OK
15 minute summer	7	11	18.615	0.030	5.5	0.0086	0.0000	OK
15 minute summer	8	11	17.509	0.059	5.5	0.0168	0.0000	OK
360 minute summer	9	240	17.208	0.108	1.8	6.2678	0.0000	OK
360 minute summer	9_OUT	248	16.663	0.013	0.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	1.8	0.752	0.100	0.0148	
15 minute summer	2	1.001	4	1.8	0.579	0.052	0.0236	
15 minute summer	4	1.002	5	3.3	0.784	0.181	0.0303	
15 minute summer	3	2.000	4	0.7	0.685	0.075	0.0065	
15 minute summer	5	1.003	6	3.3	1.068	0.140	0.0594	
15 minute summer	6	1.004	7	5.0	2.042	0.074	0.0142	
15 minute summer	7	1.005	8	5.5	1.259	0.090	0.0443	
15 minute summer	8	1.006	9	5.5	0.864	0.309	0.0923	
360 minute summer	9	1.007	9_OUT	0.4	0.533	0.016	0.0165	8.5

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	20.204	0.074	7.7	0.0211	0.0000	OK
15 minute summer	2	10	20.117	0.049	7.6	0.0137	0.0000	OK
15 minute summer	4	10	19.909	0.109	14.1	0.0308	0.0000	OK
15 minute summer	3	10	20.039	0.039	3.0	0.0111	0.0000	OK
15 minute summer	5	11	19.816	0.091	13.9	0.0257	0.0000	OK
15 minute summer	6	10	19.459	0.064	21.4	0.0180	0.0000	OK
15 minute summer	7	10	18.650	0.065	23.7	0.0184	0.0000	OK
15 minute summer	8	11	17.741	0.291	23.7	0.0825	0.0000	SURCHARGED
360 minute summer	9	272	17.444	0.344	5.2	20.0163	0.0000	SURCHARGED
360 minute summer	9_OUT	272	16.668	0.018	0.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	7.6	1.126	0.431	0.0424	
15 minute summer	2	1.001	4	7.6	0.813	0.226	0.0705	
15 minute summer	4	1.002	5	13.9	1.120	0.771	0.0901	
15 minute summer	3	2.000	4	3.0	0.893	0.320	0.0245	
15 minute summer	5	1.003	6	13.9	1.524	0.597	0.1758	
15 minute summer	6	1.004	7	21.3	2.960	0.319	0.0420	
15 minute summer	7	1.005	8	23.7	1.655	0.388	0.1220	
15 minute summer	8	1.006	9	23.4	1.329	1.323	0.2516	
360 minute summer	9	1.007	9_OUT	0.7	0.640	0.029	0.0256	19.2

Results for 100 year +10% A Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	20.215	0.085	9.6	0.0240	0.0000	OK
15 minute summer	2	10	20.123	0.055	9.5	0.0155	0.0000	OK
15 minute summer	4	10	19.931	0.131	17.6	0.0372	0.0000	OK
15 minute summer	3	10	20.044	0.044	3.7	0.0126	0.0000	OK
15 minute summer	5	11	19.831	0.106	17.4	0.0300	0.0000	OK
15 minute summer	6	10	19.468	0.073	26.7	0.0206	0.0000	OK
15 minute summer	7	11	18.664	0.079	29.7	0.0223	0.0000	OK
15 minute summer	8	11	17.921	0.471	29.5	0.1334	0.0000	SURCHARGED
240 minute winter	9	232	17.527	0.427	5.7	24.8308	0.0000	SURCHARGED
240 minute winter	9_OUT	232	16.669	0.019	0.8	0.0000	0.0000	OK

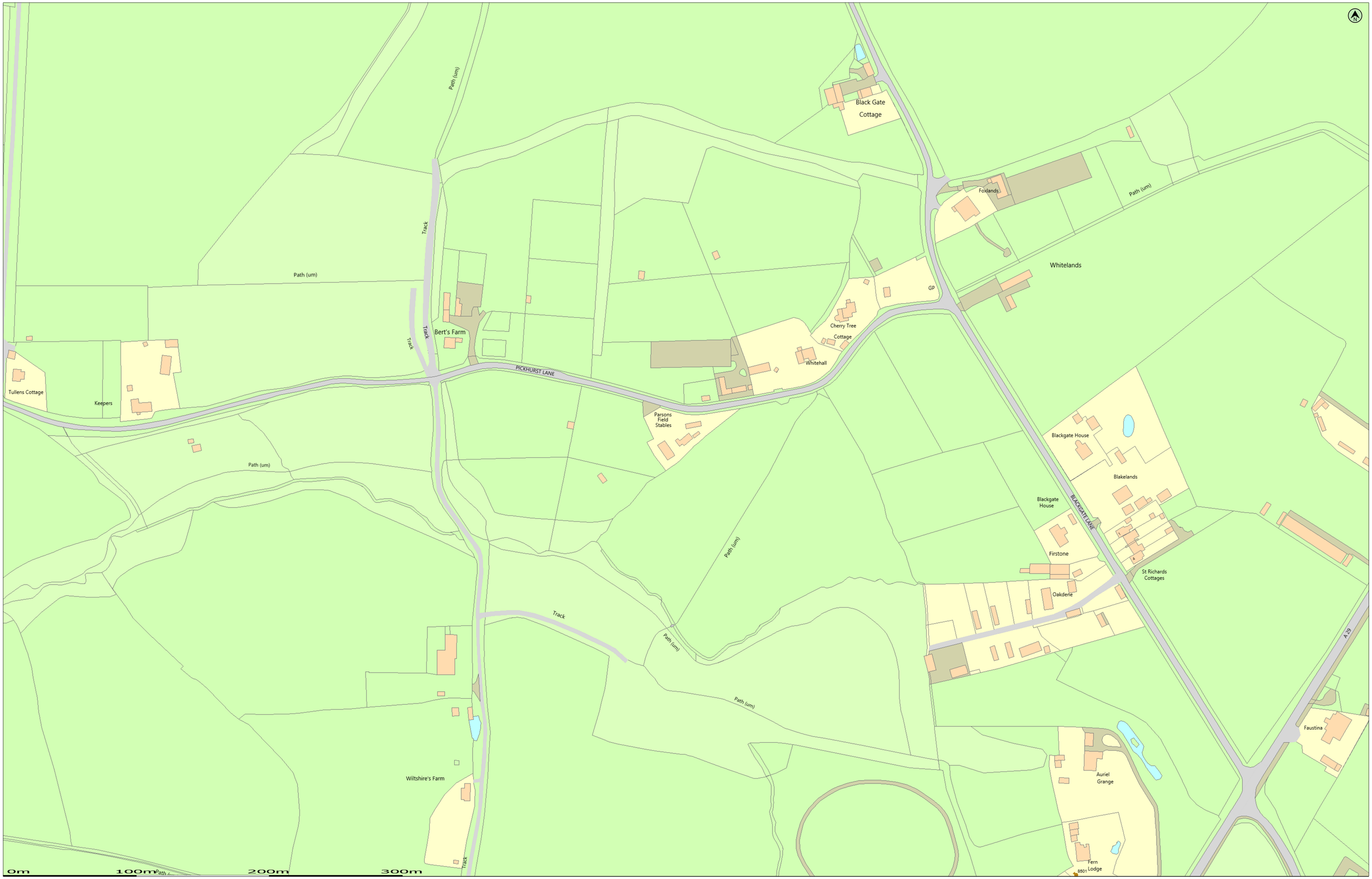
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	9.5	1.193	0.539	0.0499	
15 minute summer	2	1.001	4	9.5	0.839	0.283	0.0839	
15 minute summer	4	1.002	5	17.4	1.165	0.962	0.1074	
15 minute summer	3	2.000	4	3.7	0.860	0.398	0.0326	
15 minute summer	5	1.003	6	17.4	1.594	0.745	0.2089	
15 minute summer	6	1.004	7	26.7	3.051	0.399	0.0517	
15 minute summer	7	1.005	8	29.5	1.935	0.484	0.1323	
15 minute summer	8	1.006	9	29.1	1.655	1.648	0.2548	
240 minute winter	9	1.007	9_OUT	0.8	0.662	0.033	0.0276	17.9

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	20.238	0.108	14.0	0.0305	0.0000	OK
15 minute summer	2	11	20.150	0.082	13.9	0.0232	0.0000	OK
15 minute summer	4	11	20.095	0.295	24.3	0.0833	0.0000	SURCHARGED
15 minute summer	3	11	20.143	0.143	5.4	0.0404	0.0000	SURCHARGED
15 minute summer	5	12	19.924	0.199	23.7	0.0562	0.0000	SURCHARGED
15 minute summer	6	11	19.482	0.087	36.5	0.0245	0.0000	OK
15 minute summer	7	12	18.874	0.289	41.3	0.0819	0.0000	SURCHARGED
15 minute summer	8	12	18.266	0.816	38.5	0.2310	0.0000	SURCHARGED
240 minute winter	9	236	17.744	0.644	8.2	37.4536	0.0000	SURCHARGED
240 minute winter	9_OUT	236	16.671	0.021	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	13.9	1.286	0.784	0.0719	
15 minute summer	2	1.001	4	13.5	0.903	0.403	0.1041	
15 minute summer	4	1.002	5	23.7	1.345	1.313	0.1280	
15 minute summer	3	2.000	4	5.1	0.868	0.553	0.0501	
15 minute summer	5	1.003	6	22.9	1.592	0.981	0.2711	
15 minute summer	6	1.004	7	37.0	3.066	0.554	0.0820	
15 minute summer	7	1.005	8	38.5	2.208	0.631	0.1725	
15 minute summer	8	1.006	9	38.3	2.178	2.168	0.2548	
240 minute winter	9	1.007	9_OUT	1.0	0.705	0.040	0.0320	22.5

Appendix E - Southern Water Asset Mapping



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Foul Gravity Sewer
Combined Gravity Sewer
Culverted Water Course or Treated Effluent
Surface Water Gravity Sewer
Rising Main, Vacuum or Syphon
Combined Outfall
Surface Water Outfall
Foul Outfall
Surface Water Inlet
Combined Pumping Station
Surface Water Pumping Station
Foul Pumping Station
Water Treatment Works
Section 104 Area
Building Over Agreement Area
Foul Manhole
Combined Manhole
Surface Water Manhole
Side Entry Manhole, Interception Chamber, Dummy Manhole or Surface Water Soakaway

ceri@aegaea.com
Pickhurst Lane

WATER for LIFE from Southern Water.

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
8501	F	28.44	27.22	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert