enzygo
environmental consultants

Detailed Drainage Strategy

Ossett Lane, Dewsbury

Campbell Homes Ltd

SHF.1888.002.HY.R.001.A

'Experience and expertise working in union'

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Executive Summary

A Detailed Drainage Strategy (surface water and foul) has been prepared for demolition of an existing two storey residential building and erection of five residential units and associated parking area.

The hierarchy of discharge has been considered alongside SuDS options and concluded that surface water will be attenuated in a geocellular tank for the 1 in 100-year plus 45% climate change event, with an outfall to the existing surface water sewer via the existing lateral drain connection restricted to the 1-year brownfield rate.

Additional water treatment is to be provided via the permeable paving areas under the single driveways.

It is proposed that foul flows discharge to the nearby combined sewer via a new connection.

This report demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of national policy and guidance.

The development should not therefore be precluded on the grounds of surface water and foul drainage.

1.0 Introduction

1.1 Background

1.1.1 Enzygo Ltd was commissioned by Campbell Homes Ltd to produce a Detailed Drainage Strategy (surface water and foul) for a residential development consisting of five dwellings.

1.1.2 A copy of the proposed layout is included in Appendix 1.

1.2 Purpose

1.2.1 The purpose of the drainage strategy is to provide an assessment of the surface water and foul drainage requirements for the proposed development, in accordance with the requirements of the Local Planning Authority for a full planning application.

1.3 Scope of Works

1.3.1 The scope of works is as follows:

- A desktop study of Ordnance Survey mapping, soils and geology mapping, and borehole records.
- Review online drainage policy/guidance documents.
- Obtain Yorkshire Water asset plans.
- Request a pre-development enquiry from Yorkshire Water for the surface water and foul connection to sewer. The pre-development enquiry is required to agree a point of connection and allowable discharge rate.
- Develop a surface water and foul drainage strategy from the proposed development that will aim to identify appropriate discharge points/rates, surface water attenuation storage, pipe sizes, and Sustainable Drainage System (SuDS) options.
- Prepare a Detailed Drainage Strategy report.

1.4 Report Structure

1.4.1 This report is structured as follows:

- Section 2 identifies the national/regional/local policy and guidance, as well as best practice and guidance, applicable to the Site.
- Section 3 identifies the sources of information that were consulted.
- Section 4 describes the Site.
- Section 5 presents the proposed surface water and foul drainage strategy that will serve the proposed development.
- Section 6 includes the maintenance and management plan.
- Section 7 presents a summary and conclusions.

2.0 Planning Context

2.1 Introduction

2.1.1 This section sets out the national, regional, and local planning policy and guidance relevant to the management of surface water and foul drainage applicable to the proposed development.

2.2 National Policy

- HM Government (2017 as updated) Flood Risk Assessments: Climate Change Allowances. Making an allowance for climate change in a flood risk assessment will help to minimise vulnerability and provide resilience to flooding and coastal change in the future. The climate change allowances are produced by the Environment Agency and are predictions of anticipated change for:
  - Peak river flow by river basin district.
  - Peak rainfall intensity.
  - Sea level rise.
  - Offshore wind speed and extreme wave height.

  They are based on climate change projections and different scenarios of carbon dioxide (CO2) emissions to the atmosphere. There are allowances for different periods of time over the next century.
- Department for Communities and Local Government (2012 as updated) National Planning Policy Framework (NPPF). The NPPF was published on 27 March 2012; it sets out the Government planning policies for England and outlines how these are expected to be applied. Paragraphs 148-169 of the NPPF are relevant to flooding and drainage.
- Department for Communities and Local Government (2014 as updated) National Planning Practice Guidance (NPPG) ID7-030-20140306: Flood Risk & Coastal Change. The NPPG supports the NPPF by providing advice on how planning can take account of the risks associated with flooding in plan-making and the application process.
- Department for Environment, Food and Rural Affairs (2015) Non-Statutory Technical Standards for Sustainable Drainage Systems. These standards provide advice and guidance for the design, maintenance, and operation of sustainable drainage systems to support the LLFA consultee role.

2.3 Regional/Local Policy and Guidance

- Kirklees Local Plan - Strategy and Policies – Adopted 27th February 2019

2.4 Best Practice and Guidance

- Local Authority SUDS Officer Organisation - LASOO (2016). Non-Statutory technical Standards for Sustainable Drainage - Practice Guidance.
- UK Sustainable Drainage Guidance. The UK SUDS Tools website http://www.uksuds.com/drainagecalculation-tools/greenfield-runoff-rate-estimation provides estimation tools for the design and evaluation of surface water management systems. The website has been developed and is supported by HR Wallingford. The website provides estimates for greenfield runoff and storage analysis.

- BS 8582:2013 Code of practice for surface water management for development sites. The British Standard gives recommendation on the planning, design, construction, and maintenance of surface water management systems for new development and redevelopment sites in minimizing and/or mitigating flooding and maximizing the social and environmental benefits.
- CIRIA SUDS Manual (C753), 2015. This guidance document provides comprehensive information on all aspects of the life cycle of sustainable drainage from initial planning, design through to construction and management including landscaping, waste management and costs.
- DG Digest 365 (2019) Soakaway Design. Provides guidance for designers to support planning and development applications.
- WRc (2012) Sewers for Adoption (7th Edition): Contains guidance for the design and construction of sewers that are adoptable by Sewerage Undertakers in England and Wales in accordance with Section 104 of the Water Industry Act 1991. In areas covered by Water and Sewerage Companies where Section 42 of the Flood and Water Management Act has not been implemented, the existing Sewers for Adoption 6th edition is still applicable.
- Building Regulations 2010: Drainage and Waste Disposal - Part H.
- BS EN 752 (2008) Drain and Sewer Systems Outside Buildings.

3.0 Sources of Information

3.1 Sources of Information

3.1.1 The following information was used in preparation of this Drainage Strategy:

- Detailed topographic survey (Appendix 2).
- National Soils Resources Institute: Soilscapes online mapping[1].
- British Geological Survey [BGS] online mapping: Geology of Britain Viewer[2].
- DEFRA's Magic Map for identifying Source Protection Zones (SPZ), Aquifer Designations and Designated Sites[3].
- Environment Agency online mapping (Flood Map for Planning[4], Long Term Flood Risk Assessment for Locations in England[5], Catchment Data Explorer[6] and Main River Map[7]).

3.2 Consultation and Discussion with Regulators

Lead Local Flood Authority (LLFA)

3.2.1 Kirklees Council as the Lead Local Flood Authority (LLFA) will provide comments and approval on the scheme.

Water Utility

3.2.2 Drainage and sewerage services in the UK are provided by a number of water and sewerage companies. Yorkshire Water is responsible for sewerage within the area of the Site.

3.2.3 Yorkshire Water asset plans and response to a pre-development enquiry are included in Appendix 4.

[1] http://www.landis.org.uk/soilscapes/
[2] http://mapapps.bgs.ac.uk/geologyofbritain/home.html
[3] http://www.natureonthemap.naturalengland.org.uk/
[4] https://flood-map-for-planning.service.gov.uk/
[5] https://flood-warning-information.service.gov.uk/long-term-flood-risk/
[6] http://environment.data.gov.uk/catchment-planning/
[7] https://environment.maps.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386

4.0 Site Location and Description

4.1 Location

4.1.1 The Site is located at 5-7 Ossett Lane, Dewsbury WF12 8LU.

4.1.2 The Site is centred on National Grid Reference (NGR) 425888, 421096.

4.1.3 The 0.155-hectare (ha) Site location is shown in Figure 4.1.

4.2 Existing Use

4.2.1 The Site is comprised of two existing dwellings, garages, and associated hardstanding (Figure 4.1).

4.2.2 The Site is bounded by residential properties and Ossett Lane to the south.

4.2.3 The Site is currently accessed from Ossett Lane on the south-western boundary.

Figure 4.1: Aerial Photograph

Image courtesy of Google Image Pro 7.3.6. Imagery date 08/04/2015, Accessed on 06/02/2023.

4.3 Topographic Information

4.3.1 A detailed topographic survey was carried out during December 22 and a copy is included as (Appendix 2). The Site falls from the west at 72 metres Above Ordnance Datum (m AOD) to 67.5 AOD along the south-east boundary. The fall of 4.5m over 50m gives a gradient of 1:11, with some sections of the site being much flatter compared to the steeper area of the south eastern section of the site.

4.4 Catchment Hydrology

4.4.1 OS mapping shows there are no watercourses in or bounding the Site. The nearest watercourse is the Chickenley Beck (an 'ordinary watercourse'), located approximately 100m to the south of the Site.

4.4.2 The Environment Agency Catchment Data Explorer Mapping shows that the Site resides within the Calder from River Colne to River Chald Water Body. The Site is located in Aire and CalderManagement Catchment.

4.5 Soils and Geology

4.5.1 The Soilscapes online soils map viewer shows the Site is underlain by Slowly permeable seasonally wet acid loamy and clayey soils.

4.5.2 The Geology of Britain online map viewer shows there is no superficial deposits recorded. The bedrock beneath the Site is Thornhill Rock – Sandstone, Sedimentary bedrock.

4.6 Hydrogeology

4.6.1 The DEFRA Magic Map shows the Site is not located above a Source Protection Zone (SPZ) Zone.

4.6.2 The Site is not located above a Secondary A (bedrock).

4.7 Public Sewerage and Mains Assets

4.7.1 Yorkshire Water sewer asset plans (Appendix 5) show separate combined and surface water sewer networks within Ossett Lane to the south of the Site. There is a combined sewer shown to the west of the site. This is to be abandoned as it cannot be reused due to the topography of the site.

Private Assets

4.7.2 The Site is currently served by a private drainage network used to drain the existing residential units, this is to be abandoned.

4.8 Designated Sites

4.8.1 The DEFRA Magic Map (England and Wales) shows there are no designated sites in or close to the Site including downstream from a flood risk and drainage perspective.

5.0 Site Drainage

5.1 Surface Water Drainage

Introduction

5.1.1 A surface water management strategy for the development is proposed to manage and reduce the flood risk posed by surface water runoff from the Site. The developer will be required to ensure that any scheme for surface water should build in sufficient capacity for the entire Site.

5.1.2 The surface water drainage arrangements for any development Site should be such that the volume and peak flow rates of surface water leaving a developed Site are no greater than the rates prior to the proposed development unless specific off-Site arrangements are made and result in the same net effect.

5.1.3 An assessment of the surface water runoff rates was undertaken to determine the surface water options and attenuation requirements for the Site.

Existing Drainage System

5.1.4 The 0.155ha Site is comprised of two existing dwellings, garages and hardstanding areas.

5.1.5 Downpipes are observed on the building's exterior and the topographical survey (Appendix 2) shows possible connections from downpipes into the existing manholes.

5.1.6 Pre-planning consultation has been undertaken with Yorkshire Water. Confirmation of the flow rate to the surface water sewer has been confirmed at 3.5l/s and confirmation has been provided that the combined sewer has capacity for a foul connection. An S106 application will be required prior to any connection to the public sewer. Correspondence is attached in appendix 5.

Impermeable Areas

5.1.7 An impermeable area 0.025ha (existing building footprints and asphalt surfacing) was measured from the topographic survey, which accounts for 16% of the total 0.155ha Site area.

5.1.8 An impermeable area 0.073ha (proposed building footprint and car park) was measured from the proposed layout, which accounts for 47% of the total 0.155ha Site area.

5.1.9 There is an increase between the existing and proposed impermeable area so the amount of runoff post development will increase.

Existing Brownfield Runoff Rates

5.1.10 Existing runoff rates were estimated using the Modified Rational Method in order to calculate the existing flow rate from the 1 year return period storm.

5.1.11 The following parameters were used in the runoff calculations:

- Impermeable Area: 0.025ha roof area, access area.
- Rainfall Intensity): 50mm/hour

Table 5.1: Brownfield Runoff Rates

Annual Probability (Return Period, years)	Brownfield Runoff (l/s)
100% (1)	3.5

Hierarchy of Discharge

5.1.12 In accordance with requirement H3 of the Building Regulations 2018 rainwater runoff must discharge to one of the following, listed in order of priority:

1. **An adequate soakaway or some other adequate infiltration system:** The use of infiltration-based SUDs would not be feasible due to the Site being located on made-ground. The presence of the existing retaining wall on the southern boundary also precludes the use of soakaways.
2. **A watercourse:** There are no watercourses in the immediate vicinity of the Site.
3. **A sewer:** The Site has a connection to the existing public combined sewer network to the south of the Site. This connection will be abandoned, and flows separated and connected into the combined sewer and surface water sewer respectively, offering an improvement on the current system.

5.1.13 The potential route to discharge surface water and foul flows from the proposed development will be by a separate connection to the public foul and surface water sewer networks.

Sustainable Drainage Options (SUDS) / Attenuation

Choice of SuDS Options

5.1.14 Sustainable water management measures should be used to control the surface water runoff from the proposed development Site, thereby managing the flood risk to the Site and surrounding areas from surface water runoff. These measures will also improve the quality of water discharged from the Site.

5.1.15 Current guidance promotes sustainable water management using SuDS. Options applicable to this Site are identified in Table 5.2.

Table 5.2: SuDS Options

Green roofs	Infiltration basins
Water butts	Detention basins
Permeable paving	Oversized pipes
Rainwater harvesting	Brown roofs
Filter strips	Swales
Wetland Areas	Cellular Storage

Note: *SuDS appropriate to the development are highlighted green.*

[8] Office of the Deputy Prime Minister, The Building Regulations 2010.

5.1.16 A hierarchy of SuDS techniques is identified[9]:

1. **Prevention** - the use of good Site design and housekeeping measures on individual Sites to prevent runoff and pollution (e.g. minimise areas of hard standing).
2. **Source Control** - control of runoff at or very near its source (such as the use of rainwater harvesting).
3. **Site Control** - management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole Site).
4. **Regional Control** - management of runoff from several Sites, typically in a detention pond or wetland.

5.1.17 Using SuDS as opposed to conventional drainage systems provides several benefits by:

- Reducing peak flows to watercourses or sewers and potentially reducing the risk of flooding downstream.
- Reducing the volumes and frequency of water flowing directly to watercourses or sewers from developed Sites.
- Improving water quality over conventional surface water sewers by removing pollutants from diffuse pollutant sources.
- Reducing potable water demand through rainwater harvesting.
- Improving amenity through the provision of public open spaces and wildlife habitat.
- Replicating natural drainage patterns, including the recharge of groundwater so that base flows are maintained.

5.2 Surface Water Management Strategy

Proposed Drainage System

5.2.1 Surface water runoff would be directed to the drainage system through rainwater pipes located around the perimeter of the residential buildings, gullies for the shared driveway and connections via perforated pipes in the subbase of the permeable paved single driveways.

5.2.2 Surface water will be directed to an onsite attenuation tank located underneath the proposed shared driveway, positioned to achieve a gravity fed connection to the public surface water sewer in Ossett Lane. Consideration of the proximity of the existing retaining wall will need to be given during the construction phase.

5.2.3 Surface water and foul drainage layouts are included in Drawings SHF.1888.002-ENZ-XX-DR-D-0001-C01 & SHF.1888.002-ENZ-XX-DR-D-0002-C01.

Attenuation Requirements

5.2.4 Attenuation storage is required to reduce the post-application surface water runoff from the Site to 3.5 l/s, up to and including the 1 in 100-year (+45%CC) rainfall event.

5.2.5 The following input parameters were assumed in the calculations:

- Impermeable Area: 0.073ha
- Cv (proportion of rainfall forming surface water runoff): 100%

[9] CIRIA (2004) Report C609, Sustainable Drainage Systems – Hydraulic, Structural and Water Quality advice.

- Infiltration losses: 0.00m/hour
- With outfall to sewer: 3.5 l/s

5.2.6 The attenuation volume for the 1 in 100-year event (plus climate change) is 31m³ within the geocellular attenuation tank.

5.2.7 Attenuation calculations are included in Appendix 3.

Exceedance

5.2.8 A storm event in excess of this design standard would cause the drainage network to surcharge (with no sudden deluge) and would then shed south-east towards Ossett Lane.

5.2.9 It is recommended that finished floor levels are set above external levels to mitigate any residual risk of flooding from the drainage network surcharge.

5.3 Foul Drainage

5.3.1 It is proposed that foul flows are discharged to the Ø225mm combined sewer in Ossett Lane.

5.3.2 As part of the pre-development enquiry to Yorkshire Water, it was confirmed that the was capacity for a connection from the proposed 5 plots. See Appendix 4 for a copy of the correspondence.

5.3.3 All foul sewerage should be designed in accordance with Building Regulations Part H. A connection will be made to the existing Yorkshire Water network, therefore a S106 application will be required.

6.0 Maintenance and Management Plan

6.1 Drainage Layout

6.1.1 The drainage strategy drawing includes information on:

- Surface water drainage runs, including pipe sizes, invert levels. All cover levels TBC prior to construction.
- The position of the onsite cellular storage, including invert level, total volume, and tank dimensions.
- Flow control structures.
- Outfall arrangements.

6.2 Operation Phase

Principles of the Maintenance and Management Plan

6.2.2 Key areas of maintenance have been identified from the drainage layout. The following identifies how the drainage layout has considered access, the anticipated maintenance activities and who might be responsible for the maintenance.

6.2.3 Maintenance of the SuDS features would be in line with the SuDS Manual (CIRIA C753, 2015). The maintenance shall be undertaken by the Site Owner or management company. In the event that the company goes into administration, maintenance will be contracted to the new Site owner or management company.

6.2.4 The schedule should be a living document as it may change, where inspections advise changes to the scheme maintenance requirements.

Proprietary Systems

i. Flow Control Structures

6.2.5 Flow control structures (Hydrobrake) will be positioned downstream from the tank in a chamber which would allow access for inspection and maintenance. The Hydro-brake vortex flow control provides water quantity management for surface, foul or combined water across a wide range of flows and for a variety of applications. It has no moving parts and no power requirements and provides reliable, low- maintenance, engineered flood management as part of green infrastructure developments.

6.2.6 The flow control structure will be the privately maintained according to the manufacturer's guidelines.

Below Ground Drainage Pipes

6.2.7 Pipes between the attenuation tank and Hydrobrake chamber and from the chamber to outfalls will be the responsibility of the private maintenance company. Pipes within the individual property boundaries will be the responsibility of the homeowner to maintain. The lateral connections from the site to the existing sewers can be offered for adoption by Yorkshire Water which may be a requirement of the highway authority.

6.2.8 Typical maintenance activities and frequency are summarised in Table 6.1.

Table 6.1: Below Ground Drainage Pipes

Maintenance Frequency	Required Action	Maintenance Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually.
	Remove debris from the catchment surface where it can cause risks to performance.	Monthly for 3 months, then Quarterly
	Remove sediment from pre-treatment inlet structures and inspection chambers.	Quarterly/as required.
	Maintain vegetation to design limits within the vicinity of the below ground drainage pipes/soakaways to avoid damage to the system.	Monthly/as required.
Remedial Work	Repair physical damage if necessary.	As required.
Monitoring	Inspect all inlets, outlets, and wets to ensure that they are in good condition and operating as designed.	Annually.
	Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years/as required.

Geocellular Storage

6.2.9 The attenuation tank will be the responsibility of the private maintenance company. The SuDS attenuation features were designed in line with design guidance by the LLFA.

6.2.10 Typical maintenance activities and frequency are summarised in Table 6.2.

Table 6.2: Attenuation Tank Storage Maintenance Activities

Maintenance Frequency	Required Action	Maintenance Frequency
Regular Maintenance	Inspect and remove debris from inlet structure.	Quarterly or as required.
	Remove sediment from pre-treatment structure where present.	Quarterly or as required.
	Check inlets, outlets, control structure and overflows.	Annually or as required.
Occasional Maintenance	Jetting and suction where silt has settled in the structure.	On completion of drainage works, Year 1, Year 3, then every 5 years. This would allow for first year flush when sediment from construction would be greatest, then less frequently as the Site matures (i.e. compaction of ground and vegetation growth reduces erosion).
Remedial Work	Full replacement of the structure if permanently silted or structural failure.	As required.

Pervious Paving

6.2.11 Typical maintenance activities and frequency are summarised in Table 6.3.

Table 6.3: Pervious Paving

Maintenance Frequency	Required Action	Maintenance Frequency
Regular Maintenance	Brushing and vacuuming to remove silt and detritus.	Annually after autumn leaf fall, and at other times as required.
	Weed and grass removal.	As required.
Remedial Work	Remedial work to repair any depressions or rutting which may affect performance or a hazard to users.	As required.
Monitoring	Inspect for poor performance and/or weed growth.	48 hours after a large storm event in the first six months, then three monthly.
	Inspect silt accumulation rates.	Annually.

6.3 Construction Phase

6.3.2 Mitigation measures are designed in to reduce the potential for impacts on hydrology, flood risk and water quality:

6.3.3 A summary of the mitigation measures during the construction phase, timetable for implementation and validation of the final drainage design is provided below.

- Good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management in PPG1 (Environment Agency, 2013) and more specific guidance including:
  - CIRIA C650 (2005) Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors.
  - CIRIA C648 (2006) Control of Water Pollution from Linear Construction Projects.
  - PPG21: Pollution Prevention Guidelines. Incident Response Planning.
- Minimise where practicable the production of silt and contaminated water by minimising:
  - Dewatering and pumping of excavations and subsequent disposal of water.
  - Runoff from exposed ground and stockpiles.
  - Plant and wheel washing.
  - Site roads.
  - Fuel and other spillages.
  - Waste storage and disposal.
- Surface Water Management (SuDS) Scheme. The development will result in the construction of low permeability surfacing, increasing the rate of surface water run-off. The surface water drainage scheme ensures the runoff rates to the surrounding water environment are maintained at pre-development greenfield rates incorporating the effects of climate change.

6.3.4 The maintenance and management of the SuDS during the construction phase is essential in managing runoff on and from the Site. It is also key in ensuring the prevention of sediment and pollutants entering the bounding watercourses.

6.3.5 A separate Construction Environmental Management Plan (CEMP) will be required to control environmental issues during the construction process. The CEMP forms part of the Project Management Plan, which integrates the core arrangements for health and safety, quality and environmental management for the construction phase. This integrated approach ensures that environmental aspects are considered at all stages of the design and construction process.

6.3.6 The construction phase will be undertaken in accordance with good practice guidelines on hydrology, flood risk and water quality for consultants and contractors, including:

- CIRIA Environmental Good Practice on Site (C502) (1999).
- CIRIA Control of Water Pollution from Construction Sites (C532) (2001).
- Environment Agency Pollution Prevention Guidelines.

Timetable for Implementation

6.3.7 The attenuation and conveyance features will be constructed before development begins, so that they are ready to accept runoff from impermeable areas (i.e. roofs and car park) as these are constructed.

7.0 Summary and Conclusions

7.1 Introduction

7.1.1 A Detailed Drainage Strategy (surface water and foul) has been prepared for a proposed residential development, including demolition of existing building and construction of new buildings and driveways.

7.2 Site Drainage

7.2.1 The Site has an existing drainage arrangement, with an adopted connection to the public combined sewer network via onsite pipework and manholes.

7.2.2 The hierarchy of discharge has been considered alongside SuDS options and concluded that surface water will be attenuated in a geocellular tank for the 1 in 100-year plus 45% climate change event, with an outfall to the surface water sewer to the south restricted to the 1-year brownfield rate (3.5l/s).

7.2.3 It is proposed that foul flows discharge to the combined sewer via a new connection.

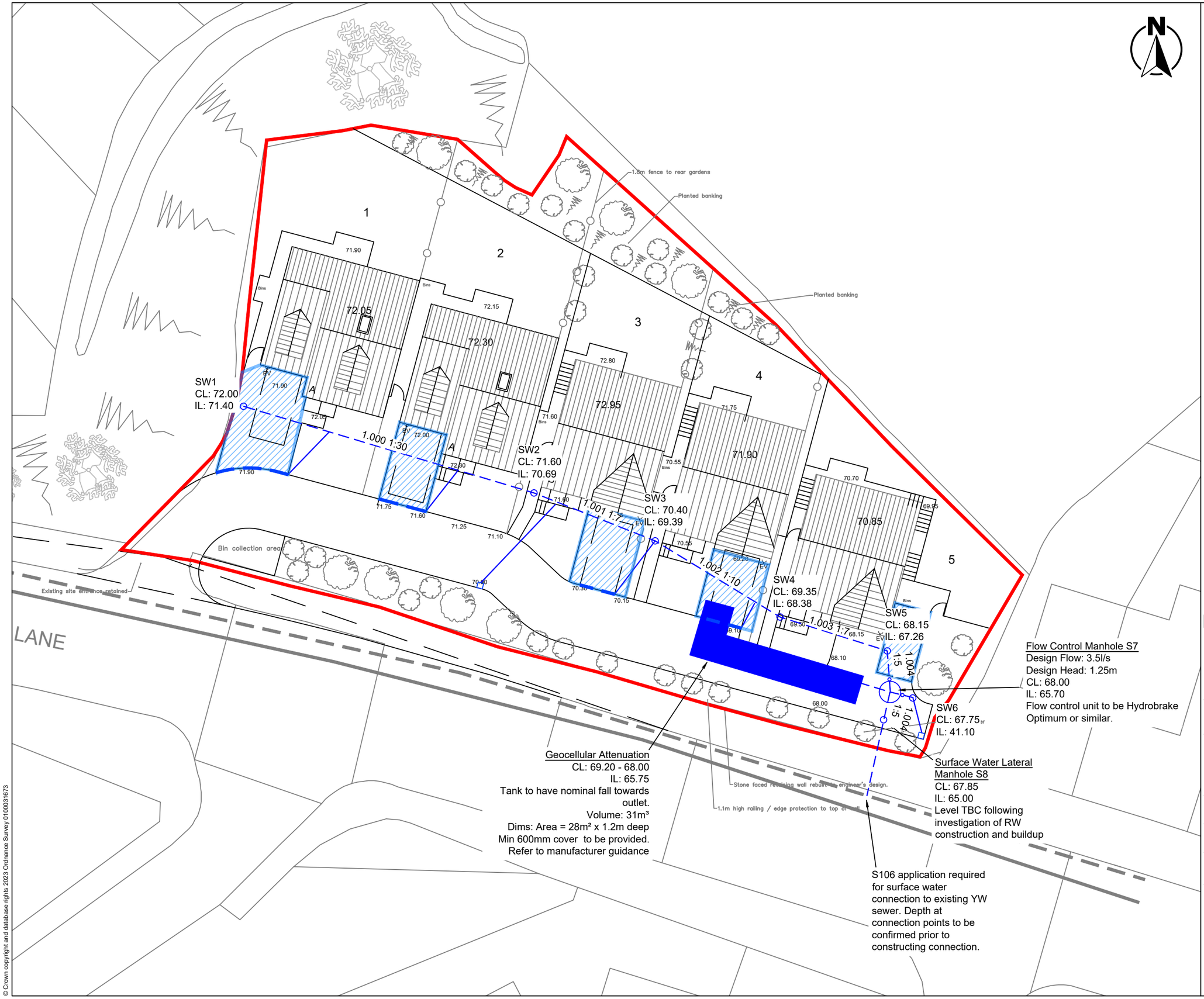
7.2.4 An S106 application will be required for both surface water and foul prior to construction.

7.3 Conclusion

7.3.1 This drainage strategy demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of national policy and guidance.

7.3.2 The development should not therefore be precluded on the grounds of surface water and foul drainage.

DRAWINGS



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- All surveyed information including levels and layout is provided by others
- All existing and proposed dimensions, levels and locations to be checked and verified by the main contractor on site prior to the commencement of the works and any anomalies reported to the engineer.
- Internal foul disposal pipe locations and surface water downpipe positions TBC
- Proposed levels are taken from architect layout. Enzygo to be kept informed of any changes.
- All proposed foul drainage pipes to be 100Ømm and surface water to be 150Ømm unless otherwise stated.
- Permeable paving to be impermeably lined with perforated pipe at low spot to collect water and connect to the the private drainage system.

KEY

Red Line Boundary

Existing Combined Sewer

Existing Surface Water Sewer

Proposed Surface Water Pipe

Proposed Road Gully

Channel Drain

Permeable Asphalt

Rev	Date	Description	DRA	CHK	APP
C01	09/03/23	First Issue	RB	LA	LA

Project
Ossett Lane, Dewsbury

Client
Campbell Homes Ltd

Drawing Title
Detailed Surface Water Drainage Design

Status	Date	Scale
For Construction	09/03/23	1:250 @ A3

Drawn	Designed	Checked	Approved
RB	RB	LA	LA

DWG No. SHF.1888.002-ENZ-XX-DR-D-0001

Revision C01

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- Permeable paving to be impermeably lined with perforated pipe at low spot to collect water and connect to the the private drainage system.

KEY

Red Line Boundary

Proposed Foul Drain

Existing Combined Sewer

Existing Surface Water Sewer

1.8m fence to rear gardens

Planted banking

Planted banking

Planted buffer

Bin collection area

Existing site entrance retained

LANE

1

2

3

4

5

57

FW1
CL: 71.85
IL: 70.85

1.000 1:50

FW2
CL: 71.30
IL: 70.30

1.001 1:50

FW3
CL: 70.40
IL: 69.10

1.002 1:50

FW4
CL: 69.35
IL: 68.10

1.003 1:50

FW5
CL: 68.15
IL: 67.00

1.004 1:50

1.005 1:TBC

Foul Lateral Manhole F6
CL: 67.90
IL: 65.00
Level TBC following investigation of RW construction, buildup and level of combined sewer.

S106 application required for foul connection to existing YW combined sewers. Depth at connection points to be confirmed prior to constructing connection.

Rev	Date	Description	DRA	CHK	APP
C01	09/03/23	First Issue	RB	LA	LA

Project
Ossett Lane, Dewsbury

Client
Campbell Homes Ltd

Drawing Title
Detailed Foul Drainage Design

Status	Date	Scale
For Construction	09/03/23	1:250 @ A3

Drawn	Designed	Checked	Approved
RB	RB	LA	LA

DWG No. SHF.1888.002-ENZ-XX-DR-D-0002

Revision C01

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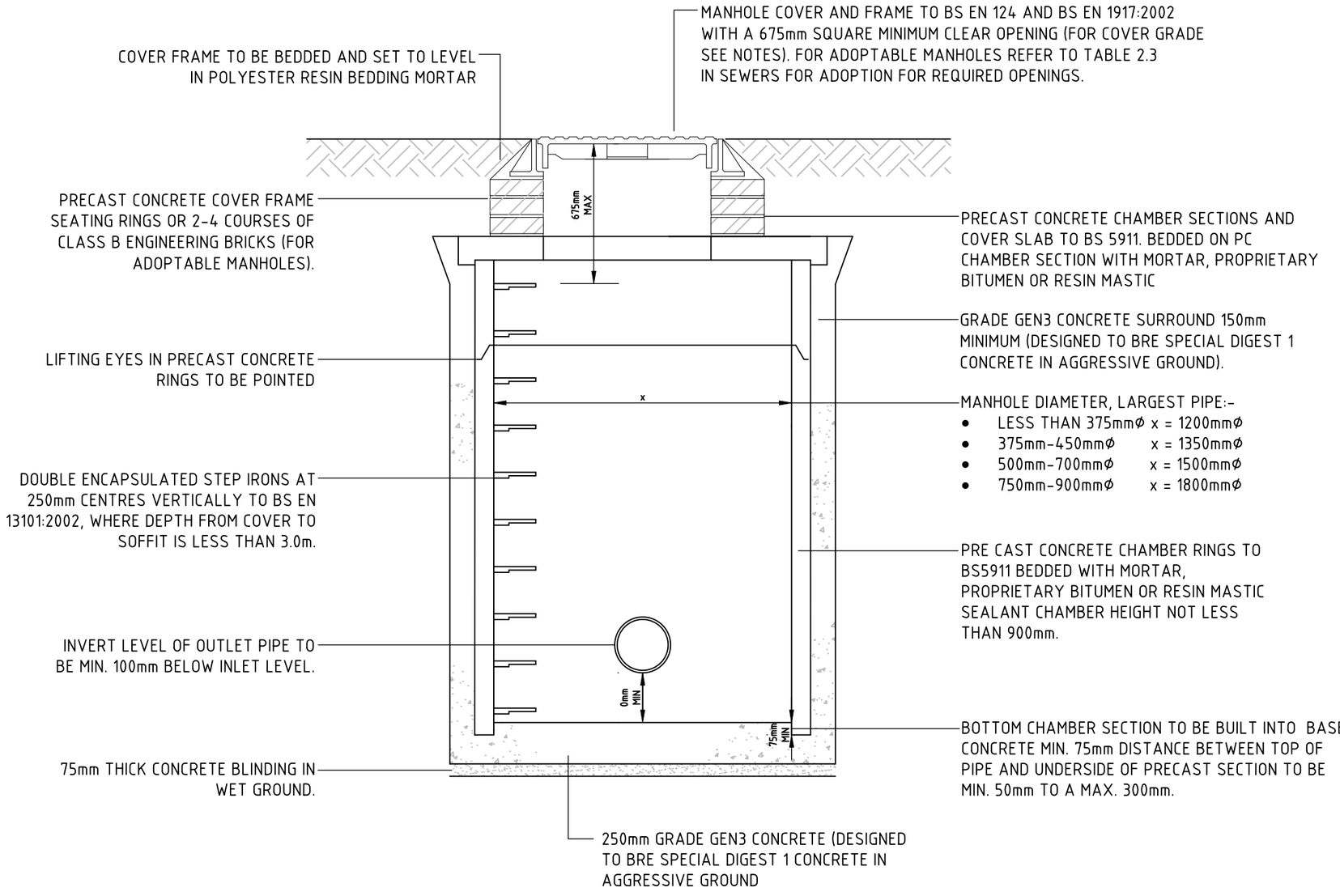

TYPICAL CATCHPIT DETAIL

NOTES

1. Do not scale from these drawings.
2. These drawings are to be read in conjunction with all relevant drawings and documents associated with this project.
3. These standard details show typical construction details that are to be used throughout the works. for scheme specific information refer to scheme drawings.
4. For cover and ground levels are refer to scheme drawings
5. All works, workmanship and materials on private drainage to be in accordance with building regulations and the civil engineering specification for water industry 7th edition published by the water research council.
6. Where planning permission is required work should not begin until planning approval has been granted and any conditions set relating to drainage have been met.
7. All adoptable drainage to be designed and constructed in accordance with the requirements of 'sewers for adoption' (6th edition). and the relevant undertakers safety policy.
8. No work is to be conducted on public sewers without the permission of the relevant water authority.
9. No new connections, indirect or otherwise are to be made without first obtaining approval under section 106 of the water industries act.
10. All manholes constructed on public sewers or for adoption shall be in accordance with the relevant water authority requirements and approvals which may differ from those provided in standard details
11. Covers and frames to BS EN 124 to be:-
    - 11.1. Ductile iron grade D400 in carriageways and hardstandings.
    - 11.2. Grade C250 in footpaths and areas adjacent to vehicle areas.
    - 11.3. Grade A15 in footpath areas inaccessible to motor vehicles.
    - 11.4. Grade a recessed fabricated to accept architects floor finishes to internal areas. duct and access to be double sealed with lock and lifting eyes. edging finish to architects requirements.
12. Two sets of manhole keys to be provided for different key way types on completion of the project.
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14. All manhole access openings to be eccentrically located except for prefabricated chambers.

Rev	Date	Description	DRA	CHK	APP
C01	03/03/23	First Issue	RB	EA	EA

Project
Ossett Lane
Dewsbury

Client
Campbell Homes Ltd

Drawing Title
Catchpit Chamber
Typical Construction Detail

Status	Date	Scale
Construction	03/03/2023	1:20 @ A3

Drawn	Designed	Checked	Approved
RB	RB	EA	EA

DWG No. SHF.1888.001-ENZ-XX-DR-D-0004
Revision C01

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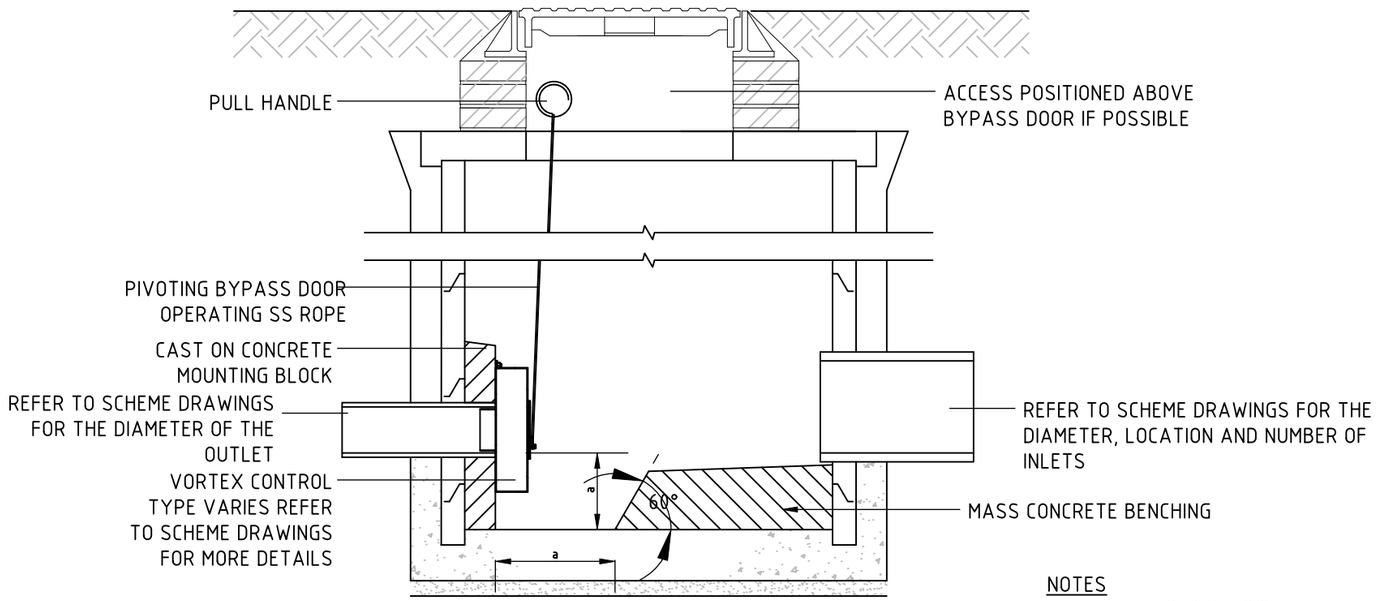
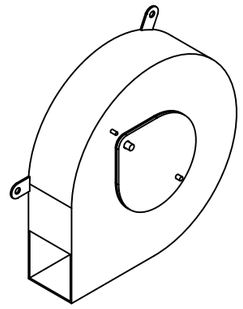


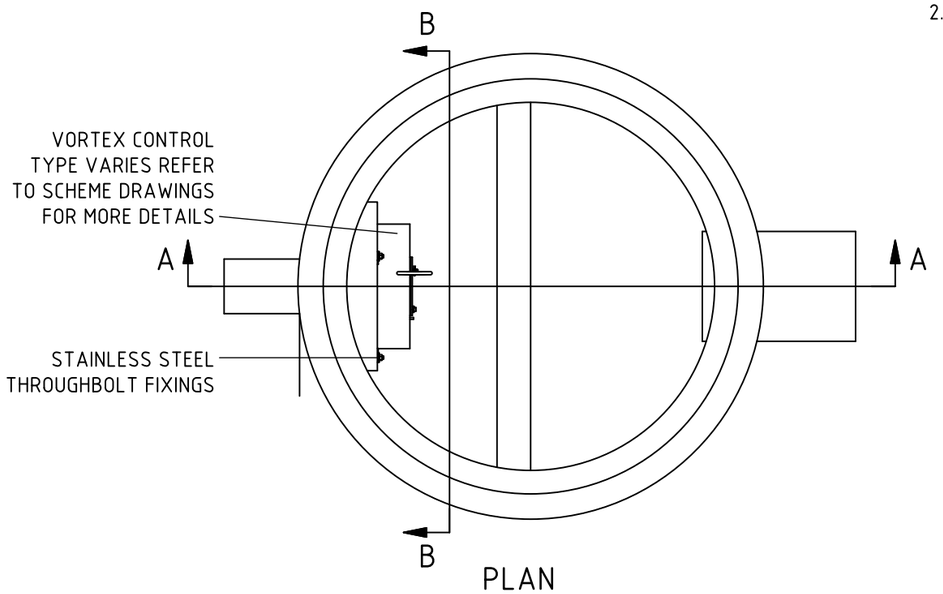
SECTION A-A



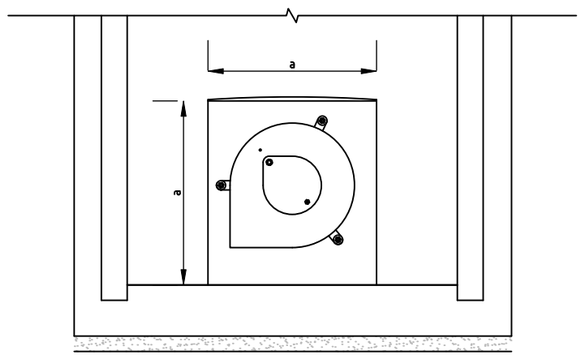
NOTE - A PRE-FORMED HYDRO-BRAKE® CHAMBER BASE IS AVAILABLE FROM HYDRO INTERNATIONAL WITH HYDRO-BRAKE™ PRE-FITTED

NOTES

1. a - THIS DIMENSION WILL VARY DEPENDING ON THE VORTEX CONTROL SIZE AND MANUFACTURERS REQUIREMENTS. REFER TO SCHEME DRAWINGS FOR VORTEX CONTROL SIZE AND REFER TO CHOSEN MANFACTURERS PRODUCTS TO CONFIRM THE MANHOLE AND BENCHING REQUIREMENTS PRIOR TO CONSTRUCTION
2. HEAD FLOW CHARACTERISTICS ARE TO BE SUPPLIED TO THE DESIGN ENGINEER FOR THE CHOSEN VORTEX CONTROL, PRIOR TO PURCHASE AND CONSTRUCTION. THIS IS TO CONFIRM ITS FLOW CHARACTERISTIS MATCH THOSE USED IN THE CALCULATED MODEL FOR THE SCHEME FOR THE DEVELOPMENT.



PLAN



SECTION B-B
(VIEW ON MOUNTING BLOCK)

TYPICAL VORTEX FLOW CONTROL ARRANGEMENT DETAIL

NOTES

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2. These drawings are to be read in conjunction with all relevant drawings and documents associated with this project.
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14. All manhole access openings to be eccentrically located except for prefabricated chambers.

Rev	Date	Description	DRA	CHK	APP
C01	03/03/23	First Issue	RB	EA	EA

Project
Ossett Lane
Dewsbury

Client
Campbell Homes Ltd

Drawing Title
Flow Control Chamber
Typical Construction Detail

Status	Date	Scale
Construction	03/03/2023	1:20 @ A3

Drawn	Designed	Checked	Approved
RB	RB	EA	EA

DWG No. SHF.1888.001-ENZ-XX-DR-D-0003
Revision C01

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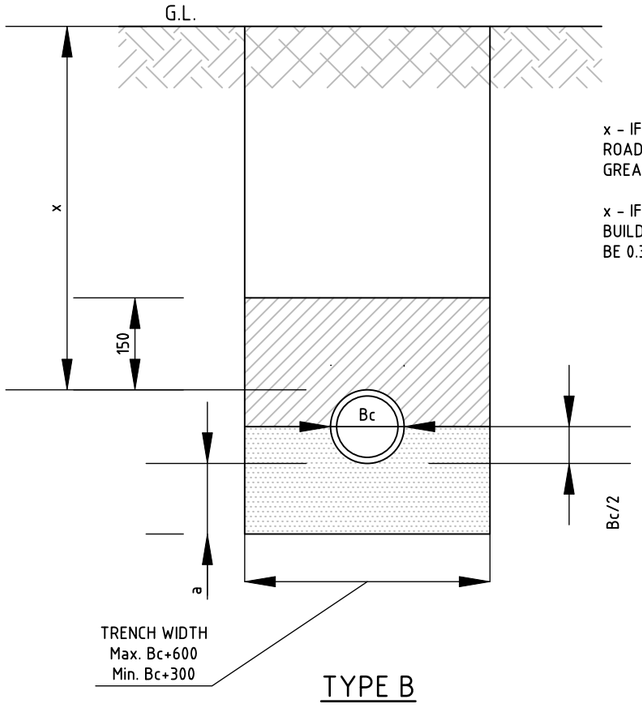
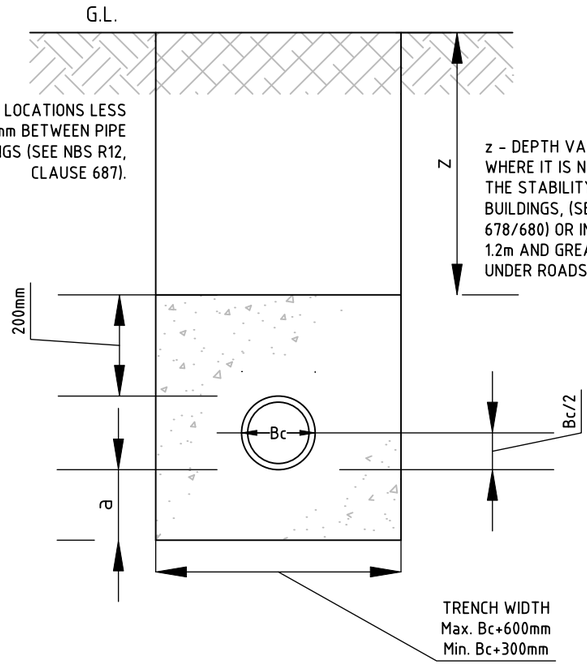


x - IF LOCATED UNDER ROADS THEN SHOULD BE GREATER THAN 1.2m.

x - IF NOT UNDER ROADS/ BUILDINGS THEN SHOULD BE 0.35m

TYPE B



y - USED IN LOCATIONS LESS THAN 300mm BETWEEN PIPE CROSSINGS (SEE NBS R12, CLAUSE 687).

z - DEPTH VARIES IN LOCATIONS WHERE IT IS NECESSARY TO ENSURE THE STABILITY OF ADJACENT BUILDINGS, (SEE NBS R12, CLAUSE 678/680) OR IN AREAS LESS THAN 1.2m AND GREATER THAN 0.6m UNDER ROADS.

TYPE Z

NOTES

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Rev	Date	Description	DRA	CHK	APP
C01	03/03/23	First Issue	RB	EA	EA

Project
Ossett Lane
Dewsbury

Client
Campbell Homes Ltd

Drawing Title
Pipe Bedding
Typical Construction Detail

Status	Date	Scale
Construction	03/03/2023	1:10 @ A3

Drawn	Designed	Checked	Approved
RB	RB	EA	EA

DWG No. SHF.1888.001-ENZ-XX-DR-D-0005

Revision C01

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APPENDICES

Appendix 1 - Proposed Layout

Site Area approx. 1,550 sq.m

2No. HOUSE TYPE-A
5-Bed, 6 person 2½ storey detached dwelling
GIA (excluding garage): 146.5 sq.m (1,576 sq. ft)

3 No. HOUSE TYPE-B
4-Bed, 5 person 2½ storey detached dwelling
GIA (excluding garage): 119.8 sq.m (1,290 sq. ft)

Two parking spaces per dwelling including integrated single garage.

One electric vehicle charging point per dwelling
Min. 16A/3.5kW

1.8m fence to rear gardens

Planted banking

Planted banking

Bin collection area

Existing site entrance retained

41000 Visibility splay

37000 Visibility splay

OSSETT LANE

Stone faced retaining wall rebuilt to engineer's design.

1.1m high railing / edge protection to top of wall

Planted buffer

421120N

421100N

421080N

DRAFT

SITE LAYOUT PLAN

1:100 SCALE BAR

CONCEPT DESIGN

4 Mare
London Riverside
London
SE12AU
0207 642 7979

Quayside House
Furnival Road
Sheffield
S4 7YA
0114 224 0255

111 Piccadilly
Manchester
M1 2HY

selfarchitects.co.uk

Client: Campbell Homes

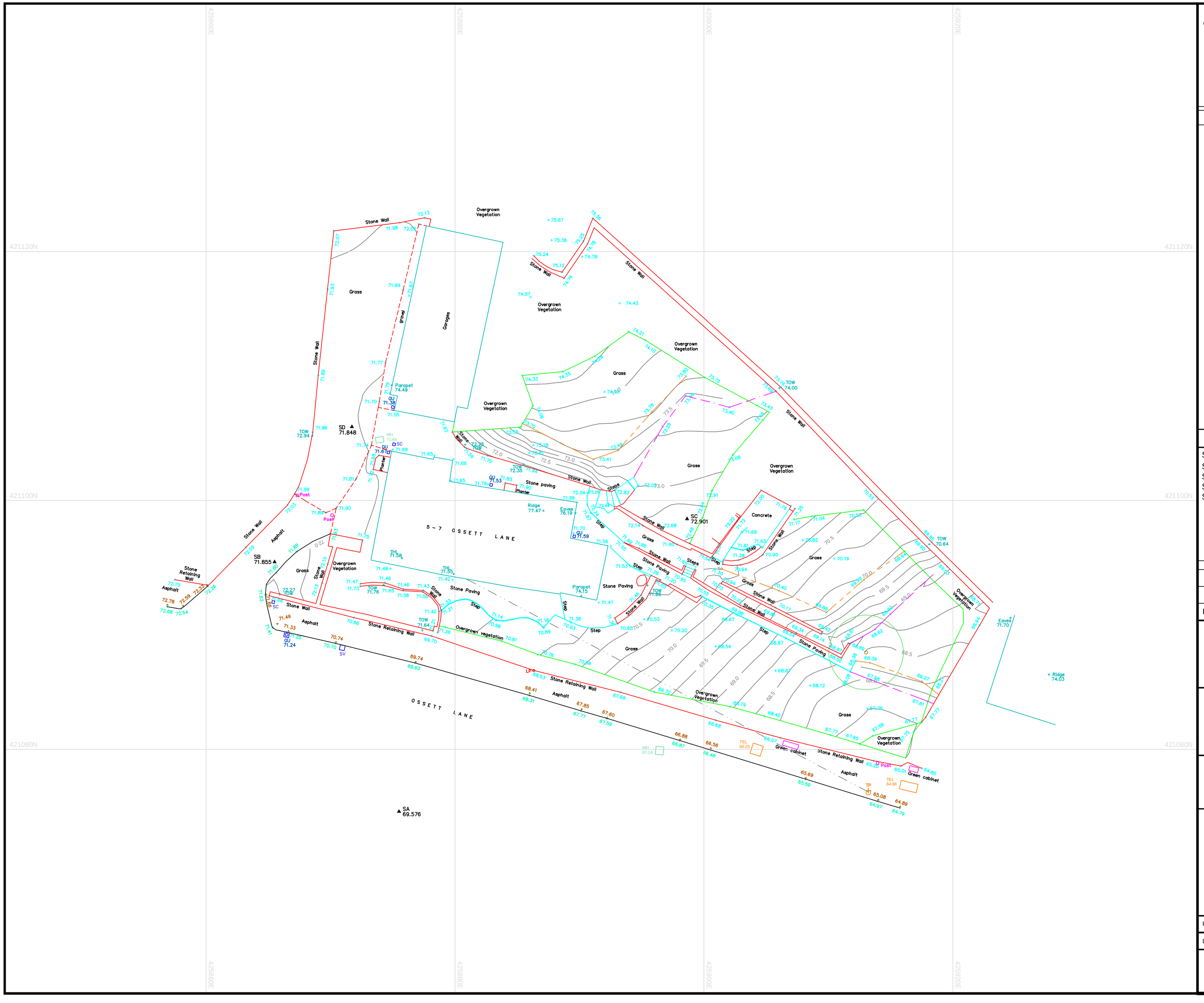
Project: Residential Development at 5-7 Ossett Lane

Drawing no.: 13125-SA-ZZ-DR-A-201

Scales@A1:	Drawn:	Date:	Checked:
1:100	SJ	Jan 2023	

Rev	Date	Drawn	Description

Appendix 2 - Topographic Survey



Station Listing

Station	Easting	Northing	Level
SA	425875.502	421074.998	69.576
SB	425865.507	421095.060	71.855
SC	425898.646	421098.517	72.901
SD	425871.716	421105.913	71.848

Rev	Description	Date	By

Self Architects

5-7 Ossett Lane, Earlsheaton, Dewsbury, WF12 8LU

2D Topographical Survey

Silkstone Surveys

Land & Measured Building Surveyors

7, Hall Annex, Thorncliffe Park, Chapeltown, Sheffield, S35 2PH
mail@silkstoneenvironmental.co.uk
Tel : 0114 2573487 www.silkstoneenvironmental.co.uk

Project No. 22313	Dwg No. 22313_2DT	Ø
Date: 12/22	Drawn: MS	Chkd: SC	Scale: 1:200	A2

Appendix 3 - Proposed Drainage Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW.SWS

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 425877 421101 SE 25877 21101
Data Type	Point
Maximum Rainfall (mm/hr)	75
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	0.75
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for SW.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	21.135	0.705	30.0	0.023	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	9.123	1.303	7.0	0.018	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	10.101	1.010	10.0	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	7.842	1.120	7.0	0.007	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	3.383	0.677	5.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	6.067	0.867	7.0	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	

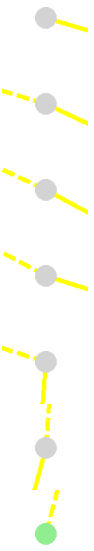
Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	53.31	5.19	71.400	0.023	0.0	0.0	0.0	1.85	32.6	3.3
1.001	53.14	5.23	70.695	0.041	0.0	0.0	0.0	3.83	67.7	5.9
1.002	52.91	5.28	69.392	0.051	0.0	0.0	0.0	3.20	56.6	7.3
1.003	52.76	5.32	68.382	0.058	0.0	0.0	0.0	3.83	67.7	8.3
1.004	52.71	5.33	67.262	0.058	0.0	0.0	0.0	4.54	80.2	8.3
1.005	52.60	5.36	65.750	0.073	0.0	0.0	0.0	3.83	67.8	10.4

Manhole Schedules for SW.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	72.000	0.600	Open Manhole	450	1.000	71.400	150				
2	71.600	0.905	Open Manhole	450	1.001	70.695	150	1.000	70.695	150	
3	70.400	1.008	Open Manhole	450	1.002	69.392	150	1.001	69.392	150	
4	69.350	0.968	Open Manhole	450	1.003	68.382	150	1.002	68.382	150	
5	68.150	0.888	Open Manhole	450	1.004	67.262	150	1.003	67.262	150	
6	67.750	2.000	Open Manhole	1500	1.005	65.750	150	1.004	66.585	150	835
7	66.000	1.117	Open Manhole	0		OUTFALL		1.005	64.883	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	425868.650	421103.100	425868.650	421103.100	Required	
2	425888.904	421097.059	425888.904	421097.059	Required	
3	425897.164	421093.188	425897.164	421093.188	Required	
4	425906.062	421088.408	425906.062	421088.408	Required	
5	425913.539	421086.044	425913.539	421086.044	Required	
6	425913.284	421082.671	425913.284	421082.671	Required	
7	425911.730	421076.806			No Entry	



Free Flowing Outfall Details for SW.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	7	66.000	64.883	0.000	0	0

Simulation Criteria for SW.SWS

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	2

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 425877 421101 SE 25877 21101
Data Type	Point
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	1.000
Storm Duration (mins)	60

Online Controls for SW.SWS

Hydro-Brake® Optimum Manhole: 6, DS/PN: 1.005, Volume (m³): 3.6

Unit Reference	MD-SHE-0085-3500-1250-3500
Design Head (m)	1.250
Design Flow (l/s)	3.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	85
Invert Level (m)	65.750
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.250	3.5	Kick-Flo®	0.759	2.8
Flush-Flo™	0.372	3.5	Mean Flow over Head Range	-	3.1

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.6	1.200	3.4	3.000	5.2	7.000	7.8
0.200	3.2	1.400	3.7	3.500	5.6	7.500	8.1
0.300	3.4	1.600	3.9	4.000	6.0	8.000	8.3
0.400	3.5	1.800	4.1	4.500	6.3	8.500	8.6
0.500	3.4	2.000	4.3	5.000	6.7	9.000	8.8
0.600	3.3	2.200	4.5	5.500	7.0	9.500	9.0
0.800	2.8	2.400	4.7	6.000	7.3		
1.000	3.2	2.600	4.9	6.500	7.5		

Storage Structures for SW.SWS

Cellular Storage Manhole: 6, DS/PN: 1.005

Invert Level (m) 65.750 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	29.0	0.0	1.201	0.0	0.0
1.200	29.0	0.0			

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 425877 421101 SE 25877 21101
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	15 Summer	2	+0%					71.436	-0.114
1.001	2	15 Summer	2	+0%					70.729	-0.116
1.002	3	15 Summer	2	+0%					69.433	-0.109
1.003	4	15 Summer	2	+0%					68.422	-0.110
1.004	5	15 Summer	2	+0%					67.305	-0.107
1.005	6	60 Summer	2	+0%	2/30 Summer				65.910	0.010

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.13			4.1	OK	
1.001	2	0.000	0.11			6.7	OK	
1.002	3	0.000	0.16			8.2	OK	
1.003	4	0.000	0.16			9.2	OK	
1.004	5	0.000	0.18			9.2	OK	
1.005	6	0.000	0.05		26	3.1	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 425877 421101 SE 25877 21101
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	15 Summer	30	+0%					71.458	-0.092
1.001	2	15 Summer	30	+0%					70.752	-0.093
1.002	3	15 Summer	30	+0%					69.463	-0.079
1.003	4	15 Summer	30	+0%					68.453	-0.079
1.004	5	15 Summer	30	+0%					67.338	-0.074
1.005	6	60 Summer	30	+0%	2/30 Summer				66.247	0.347

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.32			9.8	OK	
1.001	2	0.000	0.31			18.3	OK	
1.002	3	0.000	0.46			23.0	OK	
1.003	4	0.000	0.45			26.3	OK	
1.004	5	0.000	0.51			26.2	OK	
1.005	6	0.000	0.06		50	3.5	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 425877 421101 SE 25877 21101
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	15 Summer	100	+45%					71.485	-0.065
1.001	2	15 Summer	100	+45%					70.778	-0.067
1.002	3	15 Summer	100	+45%					69.501	-0.041
1.003	4	15 Summer	100	+45%					68.490	-0.042
1.004	5	15 Summer	100	+45%					67.381	-0.031
1.005	6	60 Winter	100	+45%	2/30 Summer				66.919	1.019

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.61			18.7	OK	
1.001	2	0.000	0.59			34.9	OK	
1.002	3	0.000	0.87			43.9	OK	
1.003	4	0.000	0.86			50.1	OK	
1.004	5	0.000	0.97			49.9	OK	
1.005	6	0.000	0.06		98	3.5	SURCHARGED	

Appendix 4 - Yorkshire Water Pre-development Enquiry Response

YorkshireWater

Mr L Whitworth
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lewis.whitworth@enzygo.com

Yorkshire Water Services
Developer Services
Pre-Development Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax:

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

Your Ref:
Our Ref: Z000342

31st January 2023

Dear Mr Whitworth,

5 Ossett Lane, Earlsheaton, Dewsbury, WF12 8LU - Pre-Planning Enquiry U910683

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months:

Foul Water

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

Foul water domestic waste can discharge to the 225 mm diameter public combined sewer recorded in Ossett Lane, at a point to the south of the site.

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2010. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

YorkshireWater

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the 225 mm diameter public surface water sewer recorded in Ossett Lane, at a point to the south of the site.

The surface water discharge from the site to be restricted to not greater than 3.5 (three point five) litres/second. This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply on line or obtain an application form from our website - https://www.yorkshirewater.com/developers/sewerage/sewerage-connections/

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for Code for Adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the Code for Adoption 2022/23, pursuant to an agreement under Section 104 of the Water Industry Act 1991. We are happy to offer pre-development technical advice on any prospective sites that you would like to put forward for for adoption, prior to submission of your adoption application.

An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Sewer Adoption, Diversion and Requisition (telephone 0345 120 84 82) or email technical.sewerage@yorkshirewater.co.uk or visit - https://www.yorkshirewater.com/developers/sewerage/sewer-adoptions/ for further information.

All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

Chris Roberts
Development Services Technician

YorkshireWater

Appendix 5 - Yorkshire Water Sewer Records

YORKSHIRE WATER
PROTECTION OF MAINS AND SERVICES

1. The position of Yorkshire Water Services Ltd (YWS) apparatus shown on the existing mains record drawing(s) indicates the ***general*** position and nature of our apparatus and the accuracy of this information cannot be guaranteed. Any damage to YWS apparatus as a result of your works may have serious consequences and you will be held responsible for all costs incurred. Prior to commencing major works, the exact location of apparatus must be determined on site, if necessary by excavating trial holes. The actual position of such apparatus and that of service pipes which have not been indicated must be established on site by contacting the Customer Helpline on 0845 124 24 24 for both water and sewerage.

2. The public sewer and water network is lawfully retained in its existing position and the sewerage and water undertaker is entitled to have it remain so without any disturbance. The provisions of section 159 of the Water Industry Act 1991 provides that the undertaker may "inspect, maintain, adjust, repair or alter" the network. Those rights are given to enable the undertaker to perform its statutory duties. Any development of the land or any other action that unacceptably hindered the exercise of those rights would be unlawful. The provisions contained in Section 185 of the Water Industry Act 1991 state that where it is reasonable to do so, a person may require the water supply undertaker to alter or remove a pipe where it is necessary to enable that person to carry out a proposed change of use of the land. The provisions contained in Section 185 also require the person making the request to pay the full cost of carrying out the necessary works.

3. Ground levels over existing YWS apparatus are to be maintained. Sewers in highways will ***generally*** be laid to give 1200mm of cover from finished ground level working to kerb races, other permanent identification of the limits of the road or to an agreed line and level. Substantial increases or decreases to this 1200mm depth of cover will result in the sewer being re-laid at your expense. Water mains and services will ***generally*** be laid with a minimum of 750mm depth of cover however some mains and services usually those installed over 50 years ago may have less ground cover.

4. If surface levels are to be decreased / increased significantly the effects on existing water supply apparatus will be carefully considered and if any alterations are necessary, the costs of the alterations will be recharged to you in full. Outlets on fire hydrants must be no more than 300mm below the new levels and all surface boxes must be adjusted as part of the scheme.

5. To enable future repair works to be carried out without hindrance; any pipe, cable, duct, etc. installed parallel to a water main or service pipe should not be installed directly over or within 300mm of a water main or service pipe or 1000mm of a waste water asset. Where a pipe, cable, duct, etc. crosses a main or service it should preferably cross perpendicular or at an angle of no less than 45o and with a minimum clearance of 150mm. These requirements apply to activities within an existing highway and are relevant to the installation of pipes, cables, ducts, etc. up to and including 250mm in diameter *(see illustration below)*. Necessary protection measures for installations greater than 250mm in diameter and/or in private land will need to be agreed on an individual basis. Installations within a new development site must comply with the National Joint Utilities Group publication Volume 2: NJUG Guidelines On The Positioning Of Underground Utilities Apparatus For New Development Sites.

6. All excavation works near to YW apparatus should be by hand digging only.

7. Backfilling with a suitable material to a minimum 300mm above YW apparatus is required.

8. Adequate support must be provided where any works pass under YW apparatus.

9. Jointing chambers, lighting columns and other structures must be installed in such a way that future repair or maintenance works to YW apparatus will not be hindered.

10. Apparatus such as; railings, sign posts, etc. must not be placed in such a way that they prevent access to or full operation of controlling valves, hydrants or similar apparatus. YWS surface boxes must not be covered or buried. Any adjustment, alteration or replacement of manhole covers must be agreed on site prior to the commencement of the works with a YWS Inspector who may be contacted via our Call Centre on 0845 124 24 24.

11. Explosives shall not be used within 100 metres of any Yorkshire Water Services apparatus or installations.

12. Vibrating plant should not be used directly over any apparatus. Movement or operation by vehicles or heavy plant is not to be permitted in the immediate vicinity of YWS plant or apparatus unless there has been prior consultation and, if necessary, adequate protection provided without cost to YWS.

13. ***Under no circumstances*** should thrust boring or similar trenchless techniques commence until the actual position of the Company's mains/services along the proposed route have been confirmed by trial holes.

14. Any alterations to the highway should be notified following the procedures outlined in the New Road and Street Works Act 1991 Code of Practice; Measures Necessary Where Apparatus Is Affected By Major Works (Diversionary Works).

15. You will be held responsible for any damage or loss to YWS apparatus during and after completion of work, caused by yourselves, your servant or agent. Any damage caused or observed to YWS plant or apparatus should be immediately reported to YWS. Should YW incur any costs as a result of non-compliance with the above, all costs will be rechargeable in full.

16. You should ensure that nothing is done on the site to prejudice the safety or operation of YWS employees, plant or apparatus.

17. In accordance with the New Roads and Street Works Act 1991, Chapter 22, Part 3, Section 80. The location of any identified YW asset "*which is not marked, or is wrongly marked, on the records made available*" should be communicated back to Yorkshire Water. The location of the apparatus should be identified on copies of the supplied plans which should be returned to Yorkshire Water (Asset Records Team) with photographic supporting evidence where possible.

18. The Government has decided that responsibility for private sewers serving two or more properties and lateral drains (the section of pipe beyond the boundary of a single property, connecting it to the public sewer) will be transferred to the water companies on Oct 1 2011.

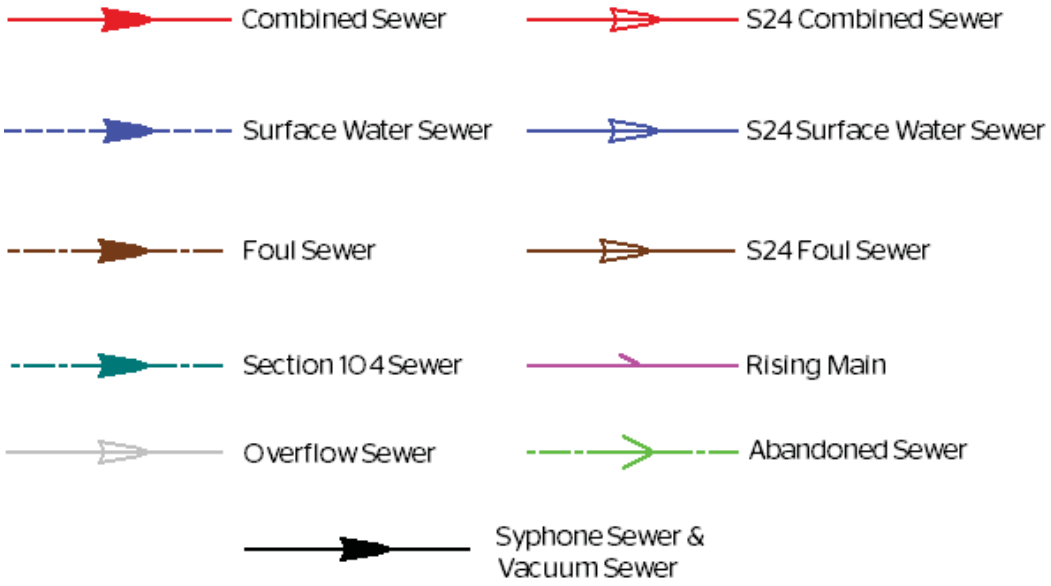
Private pumping stations will also transfer during the period 1 October 2011 – 1 Oct 2016. Records of these assets may not yet be shown on the existing mains record drawing(s). If you encounter any of these assets you must inform Yorkshire Water Services Ltd (YWS).

19. Please note that the information supplied on the enclosed plans is reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office, © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number 1000019559.

20. This information is for guidance only and the position and depth of any YW apparatus is approximate only. Likewise, the nature and condition of any YW apparatus cannot be guaranteed. YW has no responsibility for recording the locations of privately owned apparatus. As of 1 October 2011, there may be some lateral drains and/or public sewers which are not documented on YW records but may still be present. For the avoidance of doubt, this information is not a substitute for appropriate professional and/or legal advice. YW accepts no responsibility for any inaccuracy or omissions in this information. The actual position of YW apparatus must be determined on site by excavating trail holes by hand. YW requires a minimum of two working days' written notice of the intention to excavate any trial holes before any excavation can be undertaken. If there are any queries in this respect please contact Yorkshire Water on 0845 124 24 24.

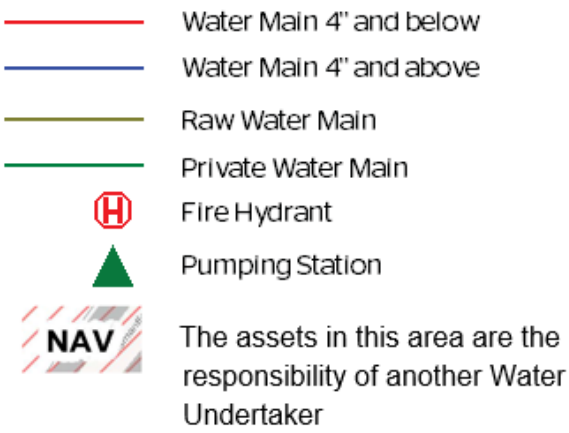
Property Identfier

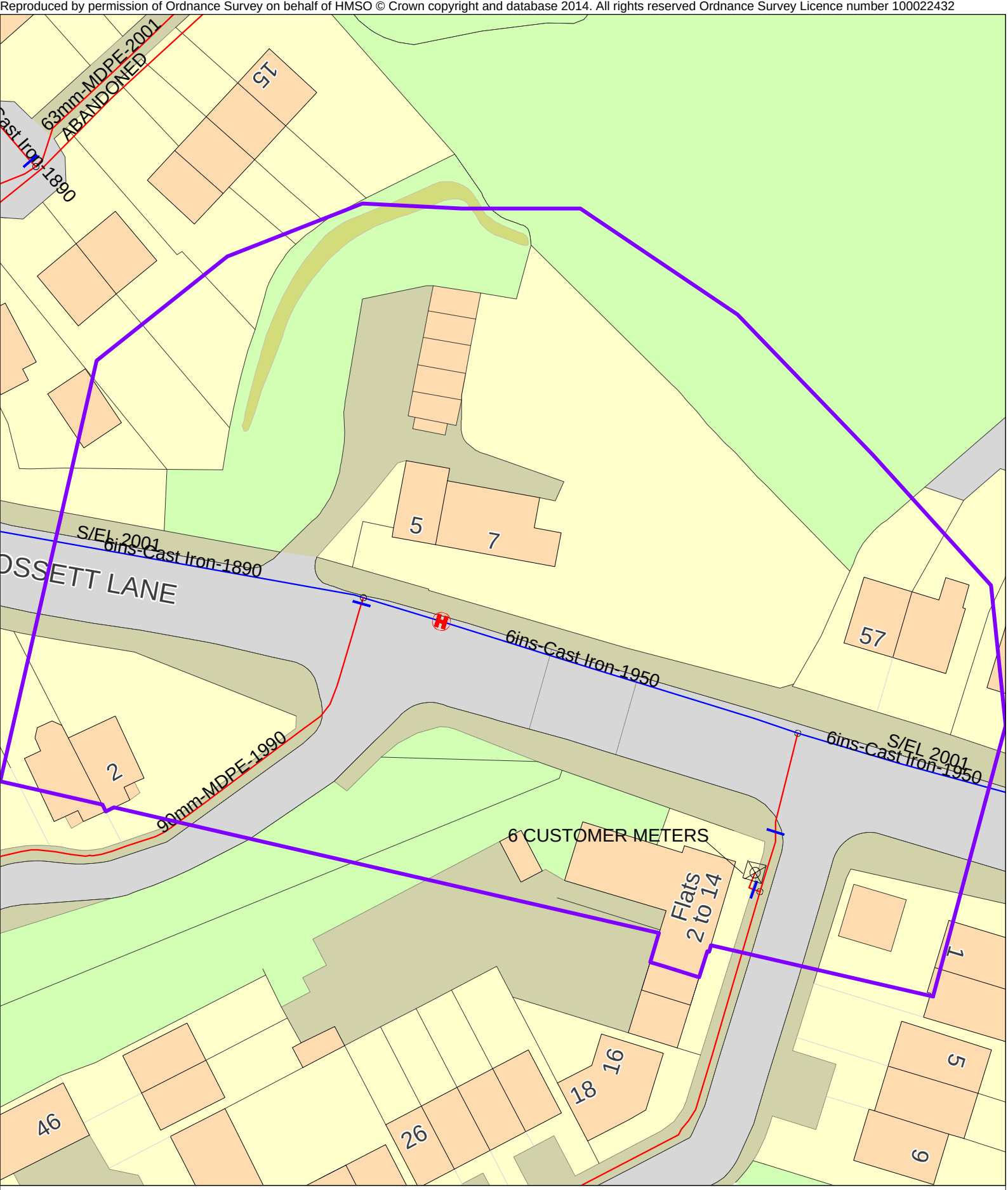
Sewer Legend



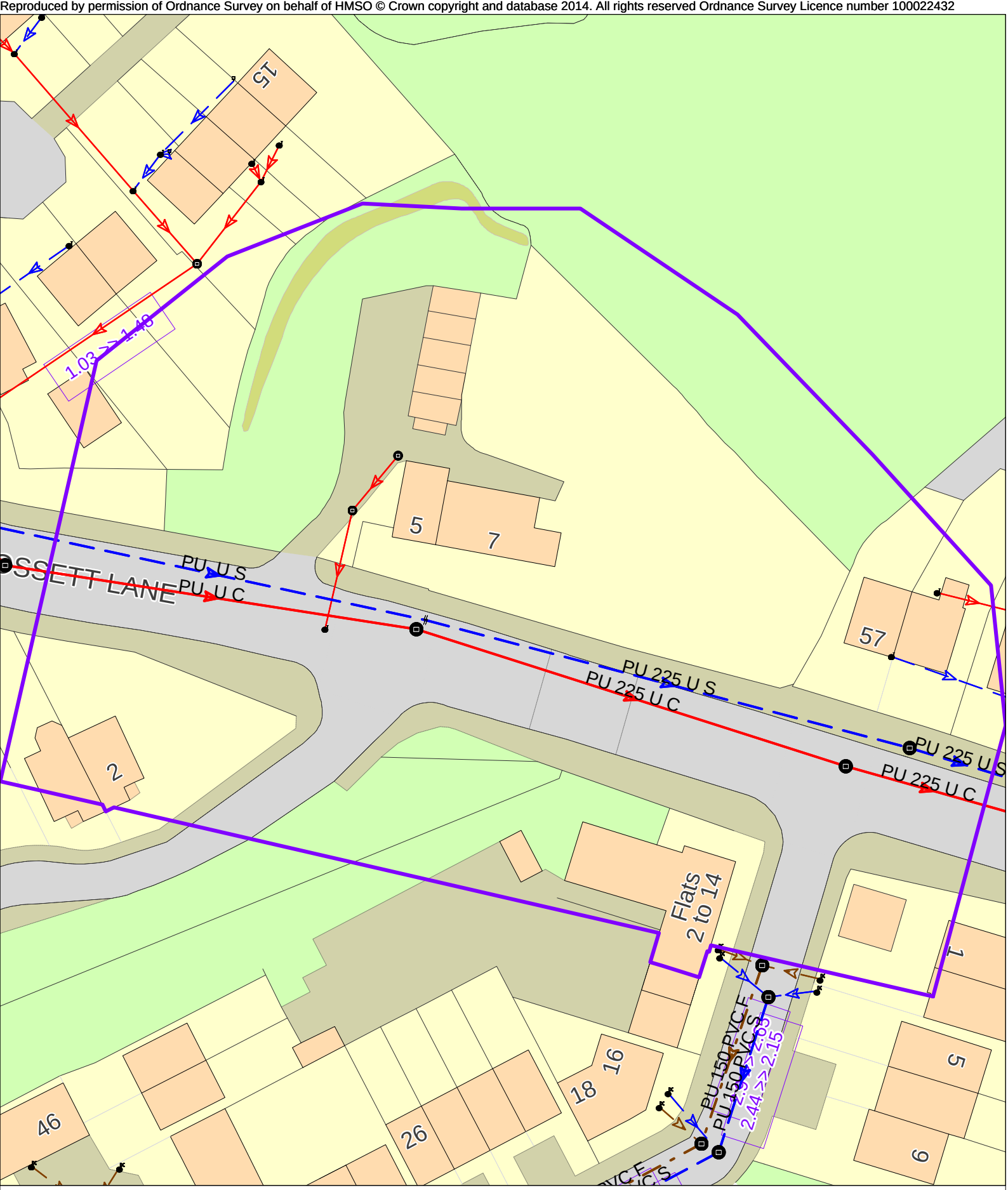
Please note that the direction of flow arrows may not always appear depending on the scale of the map.

Water Legend





Public Clean Water Network 05/01/2023 16:40:17 OS Grid Coordinates: 425830 : 421024 Map Name : SE2521SE svcGISSafeMovePD



Public Waste Water Network 05/01/2023 16:40:18 OS Grid Coordinates: 425830 : 421024 Map Name : SE2521SE svcGISSafeMovePD

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