

Drainage Strategy - Foul water

The proposed foul water drainage strategy for the development is divided into four separate drainage networks, each designed to discharge to the existing United Utilities public sewerage system.

Network 1

Network 1 comprises a gravity drainage system located within the north-west corner of the site. This network is designed to connect to the existing combined sewer within Stony Lane, upstream of existing United Utilities manhole reference B604.

Connection Manhole Details:

MH Ref: F24 (Proposed)
Cover Level (CL): 59.938 mAO
Invert Level (IL): 57.853 mAO (150mm Ø - proposed foul connection)
Invert Level (IL): 57.104 mAO (900mm Ø - existing sewer)

Network 2

Network 2 serves the majority of the site and drains to a proposed pumping station located adjacent to Plot 51 in the southern corner of the site. The associated rising main is wholly contained within the development and discharges to proposed manhole F15.

The ultimate discharge point is to an Existing United Utilities foul water manhole Ref. 8503, located within the site boundary. The existing downstream connection to the United Utilities combined sewer (MH Ref. 8501) within Cumber Lane is to remain and shall continue to serve the development as a foul water discharge point.

Connection Manhole Details:

MH Ref: 8503
Cover Level (CL): 58.518 mAO
Invert Level (IL): 57.77 mAO (150mm Ø - existing sewer connection)
Invert Level (IL): 57.104 mAO (900mm Ø - existing sewer)

Network 3

Network 3 comprises a gravity drainage system located within the northern part of the site, adjacent to Plot 180. This network is designed to connect to the existing United Utilities combined sewer within Stony Lane via existing manhole reference U0402.

Connection Manhole Details:

MH Ref: 9602 (Existing)
Cover Level (CL): 60.75 mAO
Invert Level (IL): 58.330 mAO (150mm Ø - proposed foul connection)
Invert Level (IL): 57.580 mAO (900mm Ø - existing sewer)

Network 4

Network 4 comprises a gravity drainage system located within the northern part of the site, within Road 5, serving Plots 184-205. This network is designed to connect to the existing United Utilities combined sewer within Stony Lane via existing manhole reference U0401.

Connection Manhole Details:

MH Ref: 0401 (Existing)
Cover Level (CL): 61.03 mAO
Invert Level (IL): 58.842 mAO (150mm Ø - proposed foul connection)
Invert Level (IL): 58.167 mAO (825mm Ø - existing sewer)

Overall, the proposed foul water drainage strategy utilises a combination of gravity drainage and a single adaptable pumping station to serve the development. Foul flows discharge to existing United Utilities foul and combined sewerage infrastructure via four separate connection points, with all new foul sewers and associated infrastructure designed in accordance with the relevant United Utilities and Sewers for Adoption requirements.

Drainage Strategy - Surface water

Surface water runoff generated by the proposed development will discharge to the existing on-site culverted watercourse via a new manhole reference S33, located along the southern site boundary, at a restricted discharge rate of 42.4 l/s.

The surface water drainage network has been designed to accommodate the 1 in 30 year storm event, with additional attenuation provided by an online attenuation basin to manage the 1 in 100 year event plus 45% allowance for climate change.

Connection Manhole Details:
MH Ref: S33 (Proposed)
Cover Level (CL): 59.549 mAO
Invert Level (IL): 57.056 mAO (225 mm Ø)

Proposed Foul Water Connection (0401 Existing) Network 4

A new connection to existing manhole Ref 0401 is proposed. This United Utilities combined sewer is located within Stony Lane. The proposed development shall connect to the existing public combined sewer via a 150mm Ø soffit to soffit connection.

MH Ref: 9602
Cover Level (CL): 61.03 mAO
Invert Level (IL): 58.842 mAO (150mm Ø - proposed foul connection)
Invert Level (IL): 58.167 mAO (825mm Ø - existing sewer)

Proposed Foul Water Connection (9602 Existing) Network 3

A new connection to existing manhole Ref 9602 is proposed. This United Utilities combined sewer is located within Stony Lane. The proposed development shall connect to the existing public combined sewer via a 150mm Ø soffit to soffit connection.

MH Ref: 9602
Cover Level (CL): 60.75 mAO
Invert Level (IL): 58.330 mAO (150mm Ø - proposed foul connection)
Invert Level (IL): 57.580 mAO (900mm Ø - existing sewer)

Proposed Foul Water Connection (F24 Proposed) Network 1

A new online manhole is proposed on the existing United Utilities 900mm Ø combined water sewer within Stony Lane. The proposed development shall connect to the existing public foul water sewer via a 150mm Ø soffit to soffit connection.

MH Ref: F24
Cover Level (CL): 59.938 mAO
Invert Level (IL): 57.853 mAO (150mm Ø - proposed foul connection)
Invert Level (IL): 57.104 mAO (900mm Ø - existing sewer)

Attenuation Basin
To attenuate flows up to 1:100 year storm + 45% CC
Base Level: 57.383 m
Top of Bank Level: 59.383 m
Freeboard: 300 mm
Temp maximum storage volume: 1003.09 m³

Flow Control Chamber Manhole S31 HB

Hydro International HydroBrake Optimum
SHE-0263-4240-1900-4240
Design head = 1,900 mm
Restricted discharge max. = 42.4 l/sec
Flow control orifice size 263mm
Cover level: 60.074 mAO
Invert level: 57.585 mAO

Proposed Diversion

Minor diversion works proposed to accommodate proposed site layout.

Proposed Surface Water Connection (S33)

A new manhole is to be constructed online of the existing on-site culverted watercourse.
MH Ref: S32 (Proposed)
Cover Level (CL): 59.549 mAO
Invert Level (IL): 57.056 mAO (225 mm Ø)

Proposed Interception Drain

Interception drain located to rear of proposed gardens, along site boundary. Designed to intercept surface water runoff from adjacent land and prevent uncontrolled flows entering or leaving the development.

Foul Water Rising Main

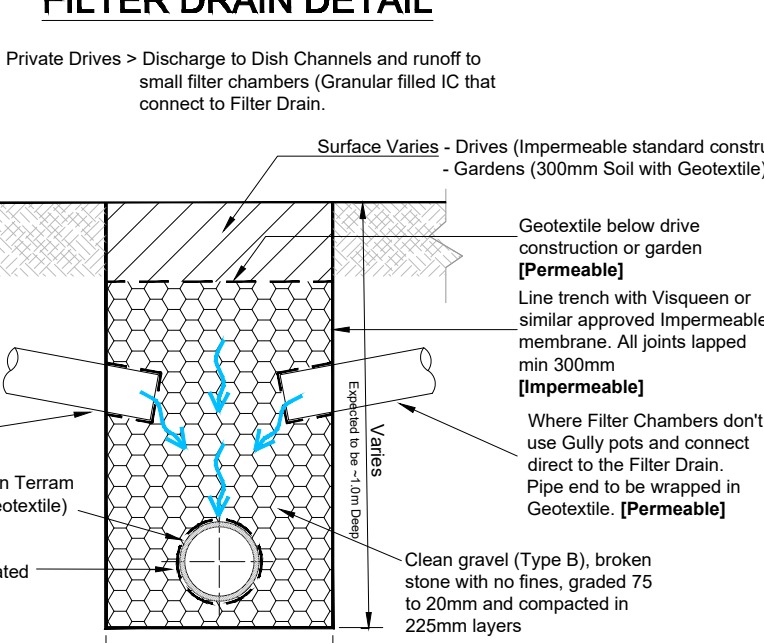
The proposed foul water rising main will be routed through the site within the proposed road network and will discharge to proposed manhole F15. From this point, flows will continue via gravity to the existing Foul Water Manhole Ref. 8503, ultimately discharging to the existing combined sewer within Cumber Lane.

Rising Main Length: Approx. 320m
Termination Manhole: F15

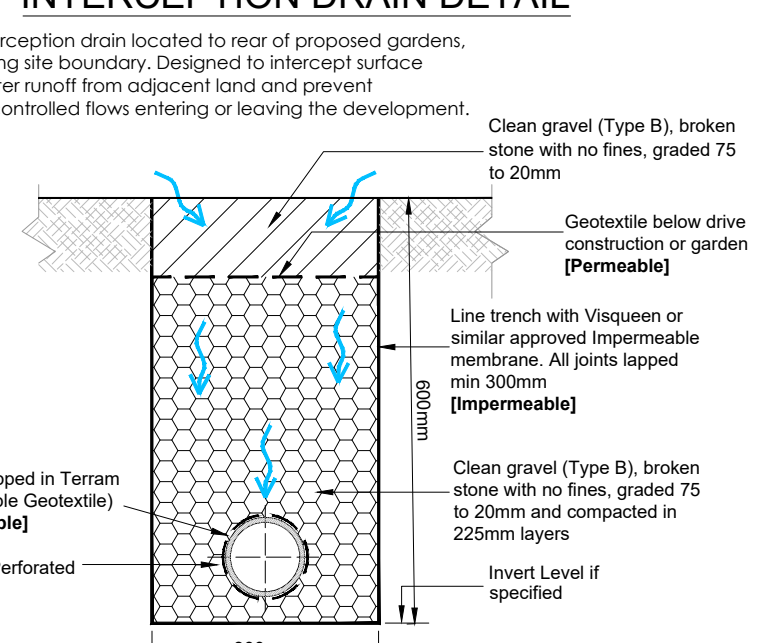
Foul Water Pumping Station

Proposed foul water pumping station serving the southern catchment of the development. Flows shall be conveyed via a proposed rising main to manhole F15, before continuing by gravity through the foul water network to existing United Utilities manhole Ref. 8503 and the existing combined sewer within Cumber Lane.

FILTER DRAIN DETAIL



INTERCEPTION DRAIN DETAIL



Legend

- Development boundary
- Proposed Adoptable Surface Water Sewer
- Highway Sewer & Manhole
- Proposed Adoptable Foul Water Sewer
- Proposed Adoptable Foul Water Rising Main
- Proposed Interception Drain
- Proposed Sewer Easement (3m from Centre Line)
- Existing Public Foul Water Sewer
- Existing Public Surface Water Sewer
- Existing Public Combined Sewer
- Existing Ordinary Watercourse Culvert

- FFL 134.65 Proposed Finished Floor Level
- +133.70 Existing Boundary Ground Level
- +17.100 Proposed Spot Level
- Proposed Earthwork Batter
- Underbuild - Measured from FFL to PGL
- Tanking - Measured from FFL to PGL
- FOE +0.150m
- Flag on Edge (up to 450mm)
- Masonry Retaining Wall (over 450mm)

Notes

- Planning layout ref. Taylor Wimpey - 22053-VIM-2026-07-29
- Topographical survey provided by 'Geographical Engineering Operations', ref G24104 Stony Lane, Whiston Cross, Dated March 2024.
- Road detail, levels and layout are subject to local authority section 38 Highways approval.

Notes

- The use of any other flow control devices not associated with the Hydro International HydroBrake Optimum references provided may constitute a flood risk.
- Drainage design and construction in accordance with Design and Construction Guidance 2020 (DCG) and the requirements of the statutory undertaker.
- Tolerances in pipe laying to be in accordance with Design and Construction Guidance 2020 (DCG).
- For pipes 100-450mm dia, all outer pipes to be in accordance with Design and Construction Guidance 2020 (DCG).
- Engineering bricks shall not contain frogs or holes.
- Brickwork to manholes to be English bond.
- Where pipes are surrounded in concrete, flexibility is to be maintained at pipe joints to the use of a suitable compressible material eg. "Tunnel" or "Flexseal".
- All manhole covers and frames must comply with BS EN124, covers in roads to be grade 4000 and be 150mm deep. Manhole covers in car parking areas and drives to be grade 1515, whilst landscaped areas may be grade 415.
- Clayware pipes to be 65 extra strength quality "Hoped" or similar approved.
- Granolithic bedding to manholes to be 40mm minimum thickness.
- Precast concrete chamber rings to be reinforced.
- The slope of bedding in all cases should be 1 in 30.
- Manholes shall not incorporate double square or double oblique channel junctions in their frames.
- All incoming pipes shall be surrounded with 150mm of concrete to the base of the collar of the first flexible joint and the outgoing pipe shall also be surrounded within 30mm of the first flexible joint and a compressible filler used as a former between the concrete around and downstream pipe collar.
- All underground services to be confirmed by contractor prior to commencement on site. Any discrepancies to be reported to engineer.
- Private sewers not located in roads to be class F granular bed and surround as per standard details.
- Sewers located under adopted roads to be class A granular bed and surround (more than 1.2m cover).
- Sewers located under private roads and car parking ways to be class F granular bed and surround as per standard details unless adopted, then provide class A (if more than 1.2m cover).
- Private sewers with less than 0.6m of cover to be concrete surrounded as class 2 or standard details.
- Adopted sewers with less than 1.2m cover, provide class 2 concrete bed and surround. Concrete haunching may be suitable for large diameter storage sewers. Guidance must be sought from controlling authority prior to use.
- Road gullies to be pcc and trapped with 150mm ST4 concrete surround.
- No deep or wide rooted trees to be planted with close proximity of the proposed drainage system.
- Pipes less than 300mm dia to be Polypropylene (PPVC) unless otherwise stated.

NBS Standards
Effective from 1st January 2025

IMPORTANT: Invert levels of proposed points of connection are to be confirmed prior to any works commencing on site or crane drainage and slab levels may be affected

P13 24.08.26	Minor amendment to notes	CP
P12 10.08.26	Updated with new layout and additional SUDs	CP
P11 26.03.26	Up-to-date flow indicated	CP
P10 23.03.26	Updated with additional notes & existing assets	CP
P09 10.01.26	Scale bar shown	TR
P08 05.12.25	Proposed discharge rate amended	CP
P07 05.12.25	Amended to suit new planning layout	TR
P06 15.10.25	Amended to suit latest layout	TR
P05 02.10.25	Cellular storage removed & rising main shown	TR
P04 25.09.25	Amended to suit latest layout	TR
P03 11.04.25	Plots 13 and 14 FFL changed	TR
P02 07.04.25	Drainage strategy amended, ground removed, tank added, pipes downsized	NR
P01 04.04.25	Preliminary issues for review	NR

Mark Date Date Revision history By: CH

Drawing originator: Drawing title: Revision history: By: CH

BETTS HYDRO BETTS ASSOCIATES BETTS GEO

Client: Taylor Wimpey

Project title: Glen Dimplex Stony Lane

Drawing title: Preliminary Drainage Layout

Scale: 1:500 for the original size of A0

Drawn by: CP Checked by: - Pinned by: - Date: Apr 2025

Drawing status: For Planning

Job No: Drawing No: Project: Design: Volume: Level: Type: Date: Number: Revision:

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