

1.0 GENERAL REQUIREMENTS

All drainage systems must comply with:

- Building Regulations Part H (2015 Edition)
- BS EN 752:2008 - Drain and sewer systems outside buildings
- BS 12056:2000 - Gravity drainage systems inside buildings

• Design and Construction Guidance (DCG, 2020) for adoptable sewers

• BS EN 1610:2015 - Construction and testing of drains and sewers

• NHBC Standards Chapter 5.3 - Drainage below ground

Products used must be Kitemarked or CE marked, where applicable, and installed as per manufacturers' guidelines.

HydroGround Civils Ltd is the Designer under the Construction (Design and Management) Regulations 2015. The Principal Designer role is to be appointed by the Client or Principal Contractor as required.

2.0 PIPES

• Pipe Materials:

- Vitrified clay (VC) to BS EN 295 or BS 65, extra strength, Kitemarked.
- uPVC (PVC-U) to BS EN 1401-1, SN4 for private drainage; and SN8 where adoptable.
- Concrete pipes to BS EN 1916 / BS 5911-1, strength class M.

• Bedding Classes:

- Class S (granular bedding with selected backfill surround).
- Class Z (concrete bedding and surround) only used where cover is insufficient, see pipe protection.

• Pipe Protection:

Where depth to crown is <1.2m in vehicular areas or <0.6m in landscaped areas, provide concrete protection (150mm min. surround) - Refer to Site/Soil Investigation Report by others for appropriate concrete mix.

• Rocker Pipes:

These must be provided adjacent to fixed structures and manholes: 600mm length for drains ≤600mm diameter.

Surface water drainage should be kept separate from foul water drainage.

All pipes to be laid soffit to soffit unless noted otherwise.

Drains are to be 100mm nominal diameter laid at a gradient no flatter than 1 in 80 for surface water, and 1 in 70 for foul water, unless shown otherwise. Foul drains without at least one WC connected are to be laid no flatter than 1 in 30.

Soil Vent Pipes (SVPs) and Stub Stacks (SSs) to be provided with a roddable access point, otherwise connection must be made to an external chamber.

Lond radius bends to be used at the base of all soil stacks.

Location of all drainage connections in the building and rainwater pipes are to be set out from the Architects and MEP drawings.

3.0 INSPECTION CHAMBERS & MANHOLES

- Polypropylene Inspection Chambers (PPIC) must comply with BS EN 13598-1/2. ≤1.2m deep: 450mm diameter PPIC allowed. For 1.2m to 3.0m deep PPIC, reduced access type (max 350mm shaft) with concrete collar.

• Installation Requirements:

- For depths <1.5m: install on compacted granular bedding, backfilled with as-dug or granular material.
- For depths >1.5m or in poor ground: surround with GEN3 concrete (sulphate resisting cement) -- Refer to Site/Soil Investigation Report by others in available.
- Chambers must be installed strictly in accordance with manufacturer's installation guidance, including the use of appropriate shingle surround or base bedding to support structural loads.

• Covers and Frames: to BS EN 124

- A15: landscaped/pedestrian use only
- B125: private driveways, areas where other mechanical equipment might be used
- D400: highways, adoptable roads

• Precast Concrete Manholes:

- To BS EN 1917 and BS 5911-3/4, minimum 675mm cover opening, GEN3 concrete surround -- Refer to Site/Soil Investigation Report by others if available.
- Benching 1:10 to 1:30 slope, smooth finish; step irons per BS EN 13101

4.0 SURFACE WATER STORAGE TANKS

Refer to manufacturer guidance for installation. Following guidance is based on Wavin Aquacell Units:

4.1 Soakaway

1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
2. Lay 100mm bed of coarse sand or non-angular granular material, level and compact.
3. Lay the geotextile* over the base and up the sides of the trench.
4. Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a 'brick bonded' formation (i.e. to overlap the joints below). For single layer applications use the AquaCell Clips and for multi layers use the AquaCell Clips and the AquaCell Shear Connectors (vertical rods).
5. Fix the Adaptors to the AquaCell units as required and connect pipework.
6. In order to prevent silt from entering the tank, clogging inlet pipework and reducing storage capacity, it is recommended that the Domestic Silt Trap (6LB300) or one of the standard Silt Traps (6LB600, 6LB625, 6LB630) is installed prior to the inlet pipework.
7. Wrap and overlap the geotextile covering the entire AquaCell structure.
8. Lay 100mm of coarse sand or non-angular granular material between the trench walls and the AquaCell structure and compact.
9. Lay 100mm of coarse sand or non-angular granular material over the geotextile and compact.
10. Backfill with suitable material.

4.2 Attenuation Tank

1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
2. Lay 100mm bed of coarse sand or non-angular granular material, level and compact.
3. Lay the geotextile* over the base and up the sides of the trench.
4. Lay the geomembrane on top of the geotextile over the base and up the sides of the trench.
5. Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a 'brick bonded' formation (i.e. to overlap the joints below). For single layer applications use the AquaCell Clips and for multi layers use the AquaCell Clips and the AquaCell Shear Connectors (vertical rods).
6. Wrap the geomembrane around the AquaCell structure and seal to manufacturers recommendations*
7. If side connections into the AquaCell units is required, (other than the preformed socket), use the appropriate Flange Adaptor (6LB104 or 6LB106). Fix the flange adaptor to the unit using self-tapping screws. Drill a hole through the Flange Adaptor and connect the pipework. (6LB106 should not be used with AquaCell Eco).
8. In order to prevent silt from entering the tank, clogging inlet pipework and reducing storage capacity, it is recommended that the Domestic Silt Trap (6LB300) or the standard Silt Trap (6LB600) is installed prior to the inlet pipework.
9. Wrap and overlap the geotextile covering the entire AquaCell structure, to protect the geomembrane.
10. Lay 100mm of coarse sand or non-angular granular material between the trench walls and the AquaCell structure and compact.
11. Lay 100mm of coarse sand or non-angular granular material over the geotextile/geomembrane and compact.
12. Backfill with suitable material.

* For protective geotextiles CIRIA C753 - The SuDS Manual recommends a geotextile of at least 2mm thick and 300gsm.

* The geomembrane should be designed to survive the rigours of construction, this is typically at least 0.5mm thick. Joints should be sealed using proprietary welding techniques.

NB: A storage tank must be vented, and it is recommended that one vent pipe, 110mm in diameter is provided per 7,500 square metres of impermeable catchment area on a site.

5.0 GULLIES

5.1 Road Gullies

- Type: Road gullies shall be proprietary trapped road gully pots or precast concrete trapped gullies, complying with BS EN 124 and BS EN 1917 where applicable.
- Size: Typically 450mm dia. pot with 900mm-1050mm depth, to suit hydraulic and maintenance requirements.
- Grating and Frame:
 - Ductile iron gully grates and frames to BS EN 124 Class D400 for carriageways.
 - Locking grates required on highways or trafficked areas.
- Connections:
 - Gully pot to be connected to carrier drain via a 150mm diameter outlet pipe, minimum.
 - All connections shall be flexible, watertight, and provide smooth flow transition.

• Traps:

- All gullies shall be permanently trapped to prevent the passage of odours.
- Traps shall be integral or proprietary u-bend connections.
- Installation:
 - Road gullies shall be bedded and surrounded in C16/20 concrete to minimum 150mm thickness, or as otherwise recommended based on soil report.
 - Concrete surround: Refer to Site/Soil Investigation Report by others.
 - Installed level with road surface; grating shall be flush with finished tarmac to avoid ponding.
- Silt Bucket:
 - Provide removable silt bucket for maintenance access.

5.2 Yard Gullies

- Type:
 - Yard gullies shall be shallow, trapped polypropylene or concrete gullies, suitable for paved areas and private driveways.
 - Must comply with BS EN 752 and BS EN 1253.
- Size:
 - 300mm dia. chamber or proprietary gully trap with a 100mm or 150mm outlet.
 - Depth to suit local gradients and connection levels.
- Grating and Cover:
 - Galvanised steel or ductile iron gratings depending on loading.
 - Class A15 (non-trafficked), B125 (driveways), or C250 (lightly trafficked) to BS EN 124.
- Traps:
 - All gullies shall incorporate a built-in water trap (minimum 50mm seal) to prevent odour.
- Connections:
 - Yard gullies to be connected via 100mm diameter pipes (unless otherwise required), with sealed and flexible joints.
- Installation:
 - Gullies shall be bedded and surrounded in concrete (minimum 100mm thickness) or granular sub-base material if in soft landscaping.
 - Refer to Site/Soil Investigation Report by others for appropriate concrete type. Always refer to BRE SD1 guidance and match the concrete class accordingly.
- Cover Level:
 - Top of gully grating shall be level with finished ground/paving and installed to match slope.

6.0 LINEAR DRAINS

All channel drains to be ACO MultiDrain M100D, or similar, sloping invert drainage channel. Channel to drain via trapped roddable sump units connected to drain using 100mm diameter pipework. Channels & sump units to have galvanised edge rails & be fitted with class C250 lockable 'Heelguard' ductile iron gratings. Slot drains to be ACO HexDrain Brickslot for non-vehicular access and ACO MultiDrain MD for vehicular access.

Installation to be fully compliant with the manufacturer

7.0 WORKMANSHIP

- Work must be carried out to a high standard, using competent operatives under appropriate supervision.
- Pipes and fittings must be protected from damage during handling, storage, and installation. All ends shall be temporarily capped to prevent ingress of debris.
- Pipes must be laid true to line and level, on a firm and even bed. Deviations should be avoided unless clearly shown on design drawings or approved on site.
- Granular bedding materials shall be free from contaminants and conform to specified grading (e.g., 10mm-20mm for standard installations). Bedding shall be hand-tamped around and under the haunch of the pipe to provide uniform support.
- Trench backfilling must proceed in layers ≤150mm thickness and be compacted adequately to prevent settlement. No mechanical compaction shall be carried out within 300mm above the crown of pipes
- Where pipework is installed near buildings or foundations, ensure rocker pipes are provided and that differential settlement is prevented by careful re-compaction
- All unused inlets to chambers must be securely blanked with proprietary stoppers.
- All pipe joints within manholes must have a minimum 100mm clearance inside the wall to allow for settlement and re-bedding if required
- Any concrete surround or bed (e.g. GEN3 or FND4) must be specified only where required and subject to confirmation from the Site/Soil Investigation Report by others, especially regarding sulphate resistance needs.
- Where precast components are used, all joints must be sealed using proprietary mortar, bitumen sealant, or mastic to provide watertightness.
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- Manholes and inspection chambers must be vertically plumb, bedded on appropriate bases (granular or concrete as required), and installed with benching shaped to guide flows smoothly to the outlet.
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7.0 TEST

- All pipework to be tested in accordance with BS EN 1610.
- Preferred method: air testing to 100mm water gauge pressure, held for 3 minutes with no loss.
- If air test is not practicable or fails, water test is permitted:
 - Fill section with water, leave to stabilise, then top up to original level after 30 minutes (allowing for evaporation).
- Joints to be visually inspected for leakage during testing.
- Test each pipe run between manholes, chambers or fittings.

8.0 REDUNDANT / ABANDONED DRAINAGE / SEWERS

Where existing drainage or sewer infrastructure is no longer required:

- Private Drainage (non-adopted):
 - Short sections (<3m): remove and backfill with compacted material
 - Longer sections:
 - Grout in place with cementitious or foam concrete mix; or
 - Remove entirely if interfering with structures or new works
- Public Sewers (adopted or ex-adopted):
 - Require written approval from sewerage undertaker
 - Typically capped and grouted unless removal is specified
 - Manholes to be broken out or sealed with reinforced concrete slabs
- Minimum Abandonment Requirements:
 - Cap all connections with stoppers or plugs
 - Flush/clean foul systems before grouting
 - Record abandoned sections clearly on as-builts
 - Confirm invert levels to prevent backfall risk

GENERAL NOTES 1. This drawing is to be read in conjunction with all relevant architects, engineers drawings & specifications. 2. The contractor is to be responsible for all dimensions & for the correct setting out of the works on site. 3. Do not scale from this drawing.					PROJECT NAME The Platt Turners Hill Road Crawley Down RH10 4EY				PROJECT DESCRIPTION Drainage Specification Notes					
	P01	CM	21 Dec 2025	First Issue	Revision		Prepared		CM	Approved	CM	Scale:	Dwg No:	REVISION
	REV	BY	DATE	Revision Notes	Original		Approved		CM	Date	21 Dec 2025	NTS [A1]	RH112401/5120	P01
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