INFRASTRUCTURE DESIGN LTD
EST 2000

61 Copse Wood Way, Northwood HA6 2TZ,

8933/APP/2025/1414

Pre-Commencement Condition 13 Summary Report

Detailed Surface Water Drainage Scheme

Issue 1: 24th April 2026

1.0 Introduction

1.1 Dr Reena Shah has appointed Infrastructure Design Ltd (IDL) to prepare a Surface Water detail design for their proposed development site to satisfy the planning conditions imposed on the above Planning Consent.

1.2 The Planning permission has been granted under the above planning reference for the redevelopment of the site, including the demolition of the existing detached two-storey dwelling and its replacement with 1 no. detached two-storey dwelling incorporating the use of the roof space with dormer windows. The proposal also includes the retention of the existing access points, together with landscaping works, including a raised patio and swimming pool, and other ancillary works.

1.3 This summary report supplies the information required to satisfy pre-commencement condition 13 of the consent.

2.0 Condition 13

No development approved by this permission shall be commenced until a scheme for the provision of sustainable water management has been submitted to and approved in writing by the Local Planning Authority. The scheme shall clearly demonstrate that sustainable drainage systems (SUDS) have been incorporated into the designs of the development and will:
i. Information about the design storm period and intensity, the method employed to delay and control the surface water discharged from the site and the measures taken to prevent pollution of the receiving groundwater and/or surface waters;
ii. A timetable for its implementation; and
iii. Provide a management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime. The scheme should also demonstrate the use of methods to minimise the use of potable water through water collection, reuse and recycling and:

iv. Provide details of water collection facilities to capture excess rainwater;
v. Provide details of how rain and grey water will be recycled and reused in the development.
vi. Details of how the dwelling will achieve a water efficiency standard of no more than 110 litres per person per day maximum water consumption (to include a fixed factor of water for outdoor use of 5 litres per person per day in accordance with the optional requirement defined within Approved Document G of the Building Regulations).

Condition 13 Response

A detailed drainage layout, levels and calculations have been prepared in accordance with national and local planning policy, with reference to CIRIA C753 (The SuDS Manual) and Building Regulations Approved Document H.

The proposed development incorporates SuDS measures selected to suit the site layout, levels and geotechnical constraints.

To support the water efficiency criteria in Approved Document G (110 litres per person per day, including the 5 litres per person per day outdoor use factor), rainwater collection is proposed via water butts connected to roof downpipes. Collected rainwater will be used for garden watering and other suitable external uses, reducing demand on potable water supplies. Greywater recycling is not proposed as part of this scheme.

The following SuDS features are proposed:

- **Permeable paving (permeable block paving):** Permeable paving will be used in the construction of the new driveway. This area will comprise a minimum 350 mm low-fines sub-base, lined with an impermeable membrane, with connection to the pipe network via a distributed tank. The permeable paving will reduce peak flows to the downstream receiver and provide treatment to improve runoff water quality.
- **Water butts:** Water butts (2No) will be installed and connected to roof downpipes to capture rainwater for garden watering and other suitable external uses. This provides source control by reducing runoff volumes and supports the potable water reduction measures required by Approved Document G.
- **Cellular crate storage:** Cellular crate storage is proposed to attenuate surface water runoff from the development and provide storage for extreme storm events.
- **Surface water package pump station (control device):** The existing surface water outfall is at a higher level than the proposed drainage system. A private package pump station is therefore proposed to lift, discharge and control runoff from the development.

The proposed drainage system has been assessed using FEH2022 rainfall data for a range of storm events, including the 1 in 100 year + 40% climate change critical event. A 10% allowance has been applied to impermeable areas to account for urban creep. A runoff coefficient (Cv) of 1.0 has been used for the impermeable areas. The drainage calculations have also been checked for long-duration critical storms, including up to 7-day events. The modelling indicates no flooding within the drainage network for any of the events tested, including the 1 in 100 year + 40% climate change event.

The private surface water pump will discharge runoff at a controlled rate of 2 l/s to the on-site private surface water manhole, and then onward to the Thames Water sewer, in line with the existing arrangement.

A total of 19.2 m3 of cellular attenuation storage has been provided to accommodate all modelled storm events.

Appendix A includes the detailed drainage layout (pipe references, diameters, cover and invert levels) and construction details for the control manholes, catchpits, cellular crate storage and permeable paving.

Refer to Appendix A for the construction details of the various component parts of the surface water drainage system.

Appendix B contains the Flow drainage calculations.

Implementation Timetable: The cellular storage will be installed early in the programme to minimise the risk of surface water flooding on site or elsewhere. Construction works will commence immediately upon written approval of this pre-commencement condition, with installation of the attenuation system forming one of the earliest on-site activities.

A typical sequence of implementation is as follows:

- Stage 1 – Immediately following discharge of Condition 13: Installation of the cellular attenuation storage and primary drainage infrastructure.
- Stage 2 – During superstructure works: Installation of remaining pipework, catchpits, control manholes and permeable paving sub-base.
- Stage 3 – Pre-occupation: Commissioning of the private surface water pump station, final connectivity checks and confirmation that all SuDS features are fully operational.

The proposed drainage system will remain private. Responsibility for maintaining all elements of the system will remain with the developer until handover to the homeowner. Following handover, the homeowner will be responsible for routine maintenance and any remedial works in the event of failure. A maintenance and management regime for all drainage elements, including the SuDS features and the private surface water pump station (control manhole), is provided in Appendix C.

3.0 Conclusions:

(i) The drainage strategy provides full details of the design storm periods, intensities and hydraulic modelling using FEH2022 data, together with the SuDS measures used to delay, control and treat surface water runoff, including permeable paving, cellular attenuation, catchpits and a controlled-rate pump discharge to prevent pollution of receiving sewer network and ultimate outfall.

(ii) A clear implementation timetable is provided, confirming that construction will commence immediately upon written approval of this pre-commencement condition, with

early installation of the attenuation system and a staged programme through to pre-occupation.

(iii) A comprehensive lifetime management and maintenance plan is included, setting out responsibilities, inspection frequencies and maintenance procedures for all SuDS components, with the system remaining private and maintained by the homeowner after handover.

(iv) Rainwater collection facilities are incorporated through water butts connected to roof downpipes to capture excess rainfall for reuse.

(v) Rainwater reuse is provided via water butts, and greywater recycling is confirmed as not proposed for this single dwelling.

(vi) The development meets the 110 litres per person per day water efficiency requirement in accordance with Approved Document G, supported by rainwater harvesting, and low-flow faucets to reduce potable water demand.

Appendix A

Levels Layout, Drainage Layout and Construction Details

CONTRACT DOCUMENT

Notes

1. This drawing is to be read in conjunction with the private drainage construction details 1348-07 series and all other relevant contract documents.
2. All private drainage works to be carried out in accordance with the provisions laid down in BS EN 944 & The Building Regulations, Part H.
3. Levels shown in buildings are Finished Floor Level.
4. Before commencing any Sewer or drainage works, the Developer's Groundworker must satisfy themselves, the developer and the Local Authority of actual levels and conditions of existing sewers.
5. Buried concrete to satisfy the requirements of BRE Special Digest 1 as predetermined by the site's Geotechnical Report
6. Depth and Location of existing services to be traced prior to any excavation.
7. All private drainage to be laid to levels shown using flexibly jointed pipes, either uPVC to BS 4660 and BS 5481 or vitrified clayware to BS EN 295.
8. Generally pipes to have granular Bed & Surround in accordance with manufacturers recommendations, ensuring adequate protection with respect to depth and location. Where bedding material is placed at depths susceptible to ground water ingress, it is to be wrapped in a geotextile (Terram 700 or better).
9. Private precast concrete manholes and catchpits to be constructed using conc. box sections or circular rings to BS 5911-200, with 150mm conc. surround, size and construction to comply with Table 12 of Approved Document, Part H.
10. Rodding eyes, etc are to be laid to manufacturers minimum cover and depth to allow adequate fall from adjoining unit.
11. Access panels are to be provided to all rainwater pipes, a max. 600 above finished ground level.
12. All manholes / inspection chambers in hard surfaced areas, to have recessed covers. These are to be orientated such as to minimise cut blocks.
13. All pipework to be 100mmØ unless otherwise stated, 150mm dia from road gullies.
14. All levels in metres (m) unless specified otherwise.
15. Upon completion of all underground drainage works, the groundworker is to provide a written report and CCTV record of the as built foul and surface water drainage systems installed
16. All drain runs from SVP's, stub stacks or FW gullies to be laid at min. 1:40 gradient unless otherwise stated.
17. Svp's, stub stacks & RWP's are shown indicative only. Refer to Architectural dimensioned GA's for accurate locations
18. External drainage to be laid prior to erection of scaffold.
19. All cover and invert levels shown are in metres. All pipe diameters are in millimetres U.N.O.

20 IMPORTANT NOTE:
At depths where groundwater ingress is encountered, consider the use of a sump / pump arrangement.
Where excavations are >1m deep, consider the use of full perimeter trench support.

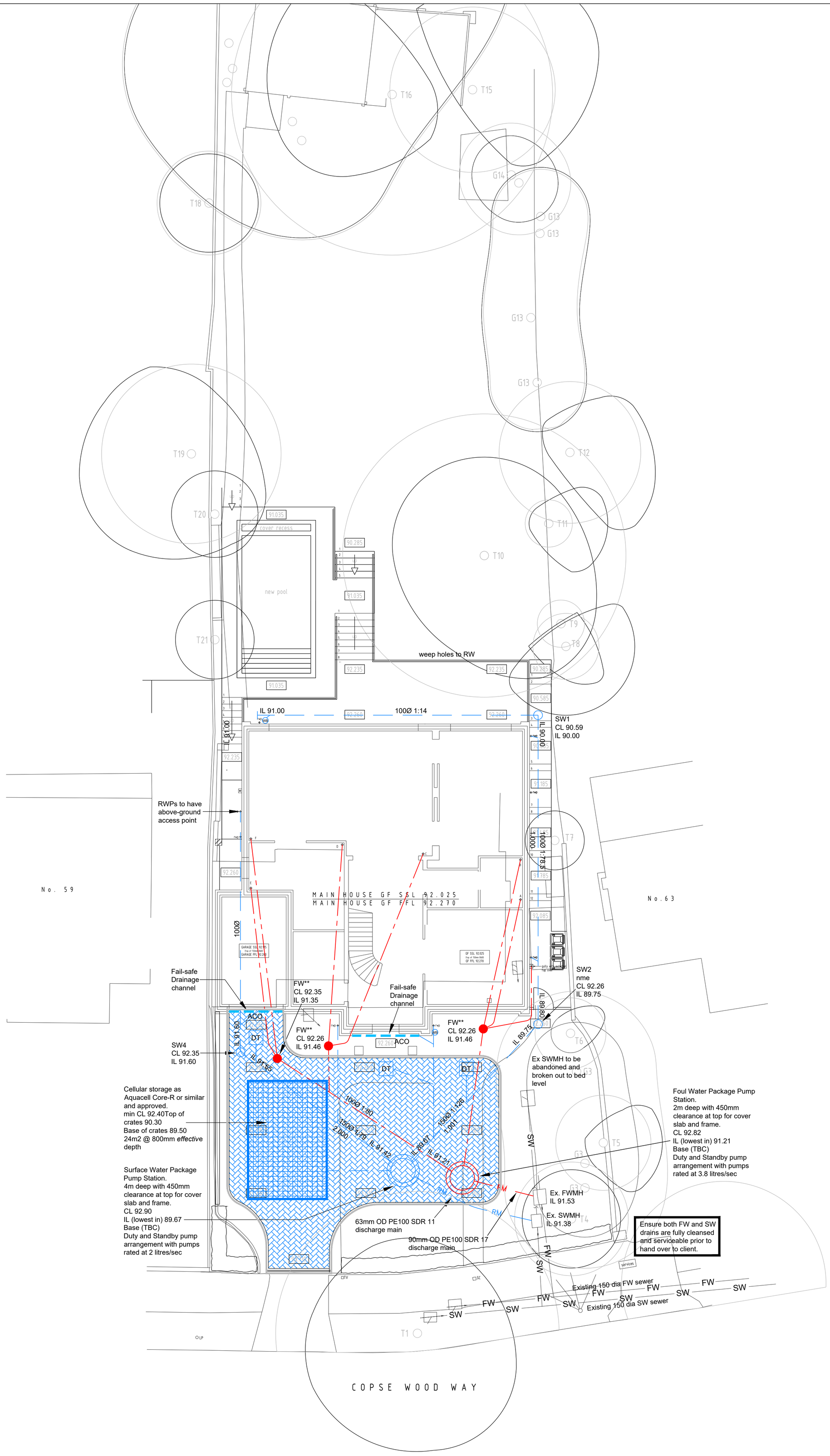
21 IMPORTANT NOTE:
The new sewer connections are be successfully made prior to commencing any upstream drainage works.

22 IMPORTANT NOTE:
Upon completion of all underground drainage works, the groundworker is to provide a written report and CCTV record of the as built foul and surface water drainage systems installed

Key

- SW — Existing surface water sewer
- FW — Existing foul water sewer
- Foul Water Drainage
- Surface Water Drainage
- RM — Foul Water Pumped Discharge Main
- RM — Surface Water Pumped Discharge Main
- ACO or similar approved
- Polypropylene inspection chambers 1200 deep max, 450 dia, 100 inlet / outlet connections (6 no. max), 150 inlet/outlet connections (4 no max).
- nme — Where deeper than 1.2m, use polypropylene 'non-entry' inspection chambers 3000 deep max, 450 dia (with 300 dia. or square cover) 100 inlet / outlet connections (6 no. max), or 150 inlet/outlet connections (4 no max)
- Rodding eye.
- Cellular Soakaway as Aquacell Core R or similar approved.
- Parking spaces and drives in Permeable Block Paving wrapped in impermeable membrane
- DT — Denotes approximate location of 1062x708x150mm distribution tank by Formpave or similar approved. To be located as close as practicable to the low point of construction. Sub base to be formed to create a low point where the distribution tank is not at the lowest point.
- WB — Water butts

Note: An impermeable area of approximately 400m2 has been allowed for in the drainage calculation. This comprises 235m2 of roof area plus 10% urban creep, and 125m2 of external paved areas.



P01 Preliminary Issue 27.04.26

Rev	Description	Date

Status: Preliminary Issue

Title : Private Drainage Layout

Scale : 1:100@A1
Date : April 2026
Drawn : IDL
Checked: BM
Approved: PT

Project : 61 Copse Wood Way, Northwood HA6 2TZ

Drg. No: IDL/1348/07/01
Rev: P01
File Ref: 1348-07.dwg
Plot Ref: 1348-07-01.pdf

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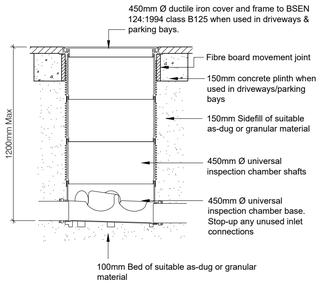
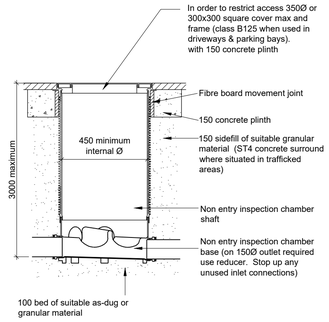


(Inlet/Outlet & 4 branch connections for 100Ø pipes)
(Inlet/Outlet & 2 branch connections for 150Ø pipes)

Note: Chambers in driveways and parking bays to have 150mm ST4 concrete surround.

1.2m Max. Polypropylene inspection chamber

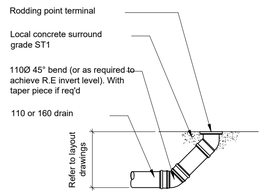
For use in soft areas, driveways and parking bays only



Note: Chambers in driveways and parking bays to have 150mm ST4 concrete surround.

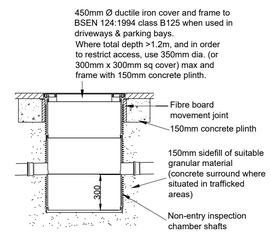
1.2m to 3.0m deep non entry inspection chamber

For use in soft areas, driveways and parking bays only, where noted 'nme' on layouts



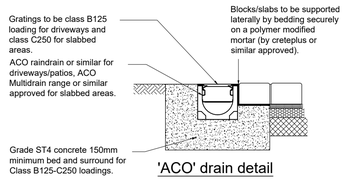
Rodding eye

Where noted 're' on layouts



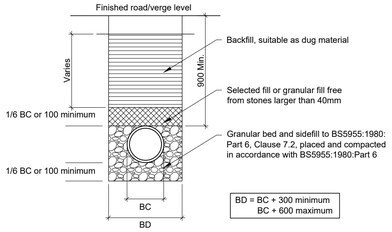
Silt Trap

Where noted 'st' on layouts

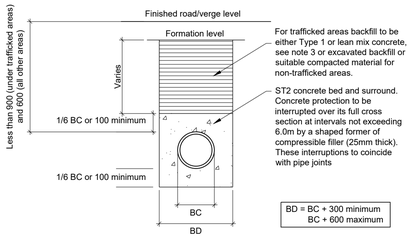


'ACO' drain detail

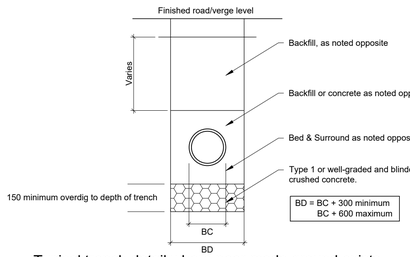
NOTES:
1. Roddable trapped sump units to be positioned at connection to drain, see layouts.
2. Loadings to BS EN 124: 1994



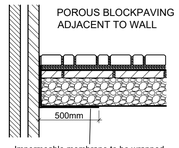
Typical trench detail

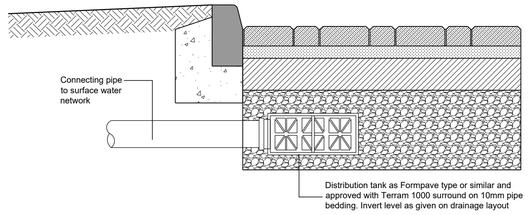


Shallow trench detail

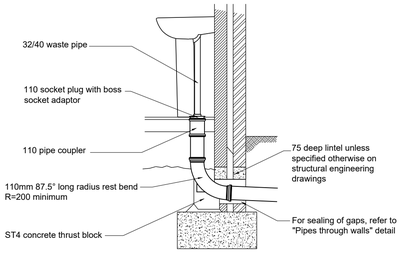


Typical trench detail where poor made ground exists

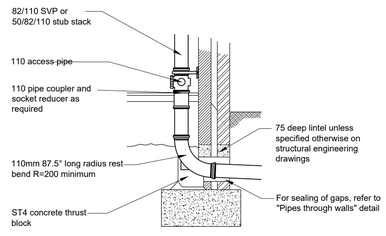




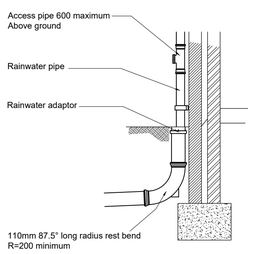
Permeable Pavement Distribution Tank Detail



Internal waste pipe connection



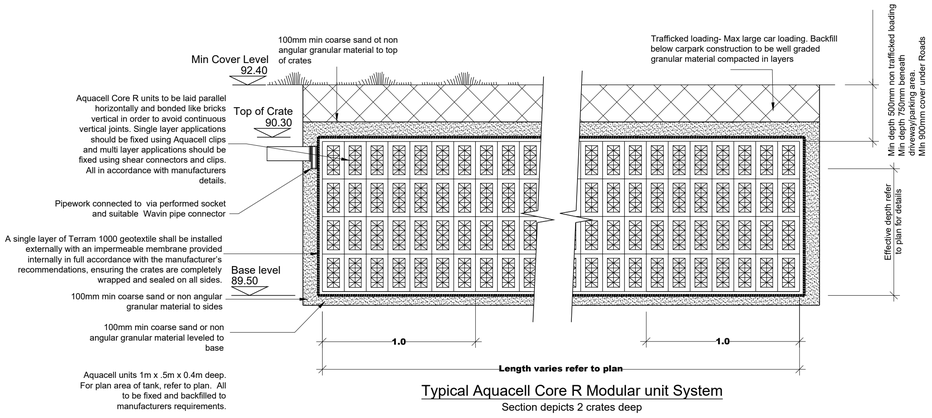
Soil and vent pipe connection and stub stack connection



External R.W.P. to drain

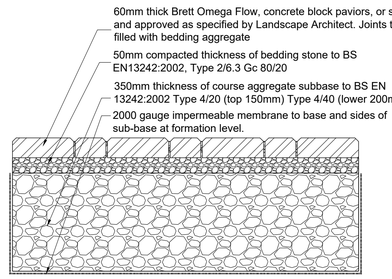
TABLE 11 MIN. DIMENSIONS FOR ACCESS FITTINGS AND INSPECTION CHAMBERS					
TYPE	DEPTH TO INVERT FROM COVER LEVEL (m)	INTERNAL SIZES		COVER SIZES	
		RECTANGULAR LENGTH AND WIDTH	CIRCULAR DIAMETER	RECTANGULAR LENGTH AND WIDTH	CIRCULAR DIAMETER
Rodding Eye		As drain but min 100			Same size as pipework (1)
Access Fittings small 150 dia / 150x100	0.6 or less, except where situated in a chamber	150x100	150	150x100 (1)	Same size as access fitting
large 225x100		225x100	225	225x100 (1)	
Inspection Chamber Shallow	0.6 or less	225x100	190 (2)	-	190 (1)
	1.2 or less	450x450	450	Min 430x430	430
Deep	>1.2 but <3.0	450x450	450	max 300x300 (3)	Access restricted to max 350 (3)

Notes:
(1) The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame.
(2) Drains upto 150mm.
(3) A larger clear opening may be used in conjunction with a restricted access. The size is restricted for health and safety reasons to deter entry.



Typical Aquacell Core R Modular unit System

Section depicts 2 crates deep



Permeable Block Paved Driveway

If constructed early in the build programme, the driveway is to be benefit from a base layer over the subbase. This is to comprise 75mm Recipe mix AC20 dense bin 40/60 to EN13108-1, this layer to be core drilled on a 750x750mm grid using 75 dia holes prior to laying bedding course and blocks. Holes to be filled with bedding aggregate.

CONTRACT DOCUMENT

Notes

1. This drawing is to be read in conjunction with the Drainage Layout, IDL/1309/07/01
2. All private drainage works to be constructed in accordance with the latest edition of the Building Regulations part H (Drainage & Waste Disposal) and to BSEN752.
3. This drawing is to be read in conjunction with the structural and architectural drawings and specification. Bespoke detailing of lintels / pipe sleeving, etc shown on the structural engineers drawings take precedence over the standard details shown on this drawing.
4. All manholes within block paved areas to have recessed covers and frames.

Rev	Description	Date
P01	Preliminary Issue	27.04.26

Status: Preliminary Issue

Scale : NTS@A1
Date : April 2026
Drawn : IDL
Checked: BM
Approved: PT

Title : Private Drainage Construction Details

Project : 61 Copse Wood Way, Northwood HA6 2TZ

Drg. No:	Rev:	File Ref:	1348-07.dwg
IDL/1348/07/02	P01	Plot Ref:	1348-07-02.pdf

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Appendix B

Surface Water Drainage Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	155.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SW1	0.005	4.00	90.590	450	507973.926	190728.488	0.590
SW2	0.017	4.00	92.260	450	507961.012	190737.430	2.510
SW3	0.018	4.00	92.350	450	507968.447	190750.671	0.800
SWP			92.900	1200	507958.795	190747.308	3.400
Outfall			92.900	1	507957.238	190746.498	3.401

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SW1	SW2	15.708	0.600	90.000	89.800	0.200	78.5	100	4.30	155.0
1.001	SW2	SWP	10.124	0.600	89.750	89.670	0.080	126.5	150	4.49	155.0
2.000	SW3	SWP	10.221	0.600	91.550	91.420	0.130	78.6	150	4.15	155.0
1.002	SWP	Outfall	1.755	0.600	89.500	89.499	0.001	1755.1	63	4.72	155.0

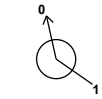
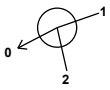
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.869	6.8	2.8	0.490	2.360	0.005	0.0
1.001	0.892	15.8	12.3	2.360	3.080	0.022	0.0
2.000	1.135	20.0	10.1	0.650	1.330	0.018	0.0
1.002	0.127	0.4	22.4	3.337	3.338	0.040	0.0

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	15.708	78.5	100	Circular	90.590	90.000	0.490	92.260	89.800	2.360
1.001	10.124	126.5	150	Circular	92.260	89.750	2.360	92.900	89.670	3.080
2.000	10.221	78.6	150	Circular	92.350	91.550	0.650	92.900	91.420	1.330
1.002	1.755	1755.1	63	Circular	92.900	89.500	3.337	92.900	89.499	3.338

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SW1	450	Manhole	Adoptable	SW2	450	Manhole	Adoptable
1.001	SW2	450	Manhole	Adoptable	SWP	1200	Manhole	Adoptable
2.000	SW3	450	Manhole	Adoptable	SWP	1200	Manhole	Adoptable
1.002	SWP	1200	Manhole	Adoptable	Outfall	1	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW1	507973.926	190728.488	90.590	0.590	450				
						0	1.000	90.000	100
SW2	507961.012	190737.430	92.260	2.510	450		1.000	89.800	100
						0	1.001	89.750	150
SW3	507968.447	190750.671	92.350	0.800	450				
						0	2.000	91.550	150
SWP	507958.795	190747.308	92.900	3.400	1200		2.000	91.420	150
							1.001	89.670	150
						0	1.002	89.500	63
Outfall	507957.238	190746.498	92.900	3.401	1		1.002	89.499	63

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	2 year (l/s)	0.2
Rainfall Events	Singular	Drain Down Time (mins)	10080	30 year (l/s)	0.4
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	0.6
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Detailed	Check Discharge Rate(s)	✓		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	IH124	Growth Factor 100 year	3.19
Positively Drained Area (ha)	0.040	Betterment (%)	0
SAAR (mm)	672	QBar	0.2
Soil Index	4	Q 2 year (l/s)	0.2
SPR	0.47	Q 30 year (l/s)	0.4
Region	6	Q 100 year (l/s)	0.6
Growth Factor 2 year	0.88		

Node SWP Online Pump Control

Flap Valve	x	Design Depth (m)	0.800	Switch off depth (m)	0.040
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	89.500	Switch on depth (m)	0.050		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	2.000	3.230	2.000

Node SWP Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	89.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	100

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	24.0	0.0	0.400	24.0	0.0	0.800	24.0	0.0	0.801	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW1	10	90.020	0.020	0.6	0.0032	0.0000	OK
15 minute summer	SW2	10	89.793	0.043	2.6	0.0068	0.0000	OK
15 minute summer	SW3	10	91.584	0.034	2.1	0.0054	0.0000	OK
30 minute summer	SWP	21	89.558	0.058	3.9	1.3979	0.0000	OK
15 minute summer	Outfall	1	89.499	0.000	2.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	0.6	0.533	0.088	0.0176	
15 minute summer	SW2	1.001	SWP	2.6	0.648	0.165	0.0406	
15 minute summer	SW3	2.000	SWP	2.1	0.725	0.105	0.0296	
15 minute summer	SWP	Pump	Outfall	2.0				0.7

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW1	10	90.026	0.026	1.0	0.0042	0.0000	OK
15 minute summer	SW2	10	89.806	0.056	4.3	0.0089	0.0000	OK
15 minute summer	SW3	10	91.594	0.044	3.5	0.0070	0.0000	OK
30 minute summer	SWP	22	89.598	0.098	6.5	2.3522	0.0000	SURCHARGED
15 minute summer	Outfall	1	89.499	0.000	2.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	1.0	0.617	0.146	0.0254	
15 minute summer	SW2	1.001	SWP	4.3	0.741	0.273	0.0587	
15 minute summer	SW3	2.000	SWP	3.5	0.835	0.175	0.0429	
15 minute summer	SWP	Pump	Outfall	2.0				2.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.37%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW1	10	90.044	0.044	2.7	0.0069	0.0000	OK
15 minute summer	SW2	10	89.856	0.106	12.0	0.0168	0.0000	OK
15 minute summer	SW3	10	91.629	0.079	9.8	0.0126	0.0000	OK
60 minute summer	SWP	47	89.851	0.351	13.3	8.3898	0.0000	SURCHARGED
15 minute summer	Outfall	1	89.499	0.000	2.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	2.7	0.736	0.396	0.0612	
15 minute summer	SW2	1.001	SWP	12.0	0.944	0.762	0.1286	
15 minute summer	SW3	2.000	SWP	9.8	1.084	0.489	0.0924	
15 minute summer	SWP	Pump	Outfall	2.0				7.6

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW1	10	90.052	0.052	3.7	0.0083	0.0000	OK
60 minute winter	SW2	57	90.018	0.268	7.0	0.0427	0.0000	SURCHARGED
15 minute summer	SW3	10	91.647	0.097	13.3	0.0154	0.0000	OK
60 minute winter	SWP	58	90.018	0.518	12.8	12.3939	0.0000	SURCHARGED
15 minute summer	Outfall	1	89.499	0.000	2.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	3.7	0.701	0.542	0.0936	
15 minute summer	SW2	1.001	SWP	16.2	0.984	1.029	0.1782	
15 minute summer	SW3	2.000	SWP	13.3	1.159	0.663	0.1173	
15 minute summer	SWP	Pump	Outfall	2.0				10.6

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW1	10	90.051	0.051	3.5	0.0081	0.0000	OK
60 minute winter	SW2	57	89.993	0.243	6.7	0.0387	0.0000	SURCHARGED
15 minute summer	SW3	10	91.644	0.094	12.7	0.0149	0.0000	OK
60 minute winter	SWP	58	89.993	0.493	12.3	11.7914	0.0000	SURCHARGED
15 minute summer	Outfall	1	89.499	0.000	2.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	3.5	0.725	0.513	0.0873	
15 minute summer	SW2	1.001	SWP	15.5	0.984	0.982	0.1736	
15 minute summer	SW3	2.000	SWP	12.7	1.148	0.633	0.1130	
15 minute summer	SWP	Pump	Outfall	2.0				10.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.42%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	SW1	98	90.262	0.262	1.4	0.0416	0.0000	SURCHARGED
120 minute winter	SW2	98	90.261	0.511	6.0	0.0813	0.0000	SURCHARGED
15 minute summer	SW3	10	91.672	0.122	17.7	0.0194	0.0000	OK
120 minute winter	SWP	100	90.261	0.761	10.5	18.2042	0.0000	SURCHARGED
15 minute summer	Outfall	1	89.499	0.000	2.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	4.7	0.741	0.695	0.1191	
15 minute summer	SW2	1.001	SWP	20.7	1.173	1.311	0.1782	
15 minute summer	SW3	2.000	SWP	17.7	1.215	0.883	0.1486	
15 minute summer	SWP	Pump	Outfall	2.0				14.4

Appendix C

MANAGEMENT & MAINTENANCE REGIME

As this property is a privately owned home, all responsibility for the maintenance, repair and general upkeep of the house and its external areas rests with the homeowner. There is no Management Company or Managing Agent involved, and no shared communal areas that require collective maintenance arrangements.

Any issues that arise, including defects, drainage concerns or flooding, are reported directly by the homeowner to the relevant contractor, warranty provider or service professional. Where applicable, the homeowner may also rely on any existing building warranties or guarantees provided at the time of construction or purchase.

All operation and maintenance information relating to the property — including manuals, certificates and as-built details — is held by the homeowner for future reference and for use by any contractors carrying out maintenance work. As a private residence, there are no resident elections, management company directors, or handover procedures. The homeowner retains full control over how the property is maintained and who is appointed to carry out any required works throughout the life of the home.

Private Homeowner – Surface Water Drainage Maintenance Summary

Cellular Storage (Attenuation Crates)

The primary method of surface water attenuation for this property is via underground cellular storage crates. As the homeowner, they will be responsible for ensuring the system continues to operate effectively. Routine checks should include:

- Inspecting for signs of poor performance such as standing water, slow drainage, blocked inlets/outlets, or visible pollution.
- Removing any debris, leaves, litter or materials that may obstruct the system or reduce its efficiency.
- Ensuring surrounding areas are kept clear of soil migration, silt build-up or materials that could enter the system.

On-Plot Surface Water Drainage System (General)

Surface water from the property drains into a wider SuDS network (as designed by PBA). To maintain the system's performance, the homeowner should undertake the following:

Every 6 months

- Remove silt build-up from all catchpits and gullies serving the property.

Annually

- Select and inspect approximately 20% of the accessible surface water inspection chambers on the property for silt, debris or blockages.
- Remove any build-up found.

- Rotate inspections so that all chambers are checked over a 5-year cycle.

Every 2–5 years

(Depending on the condition observed during routine inspections)

- Commission a CCTV survey of the surface water pipework leading to the outfall and attenuation system.

- Check for structural defects, blockages, or reduced hydraulic performance.
- Carry out any remedial works recommended in the CCTV report.

Surface Water Package Pump Station (A-Control Device)

If the property includes a private surface water pump station, the homeowner must maintain it as follows:

- After installation, ensure all construction debris is removed from the chamber and pump unit.
- Once operational, inspect the pump monthly for the first three months, then every six months thereafter. Hose down if required.
- Check the chamber for structural integrity and clear any debris every six months.
- If the downstream outfall (connection to Thames Water sewer) shows signs of reduced performance, arrange for remedial works in accordance with the original design.

Permeable Paving (Driveway / Parking Areas)

Permeable block paving is used to slow runoff and improve water quality before discharge. To maintain its effectiveness:

Quarterly

- Inspect the paving for ponding or slow infiltration.
- Check for soil migration from landscaped areas or debris that may clog the joints.
- Ideally inspect after heavy rainfall.

Vacuum Sweeping (Minimum 3 times per year)

- **April** – remove winter debris
- **July/August** – remove dust, pollen and organic deposits
- **November** – remove autumn leaf fall

The contractor should adjust equipment to avoid removing jointing stone. Any lost jointing material must be replaced promptly to prevent block movement.

Last-Resort Remedial Action

If an area becomes significantly clogged and impermeable:

1. Lift the block paving and bedding layer.

2. Remove the underlying bitmac layer and replace it with a compacted Type 4/20 aggregate sub-base wrapped in Terram 1000 (or similar).
3. Reinstate the bedding layer, blocks and jointing material.

Note: Removed materials may contain contaminants (e.g., hydrocarbons, heavy metals). Sediment testing may be required to determine correct disposal as controlled waste.