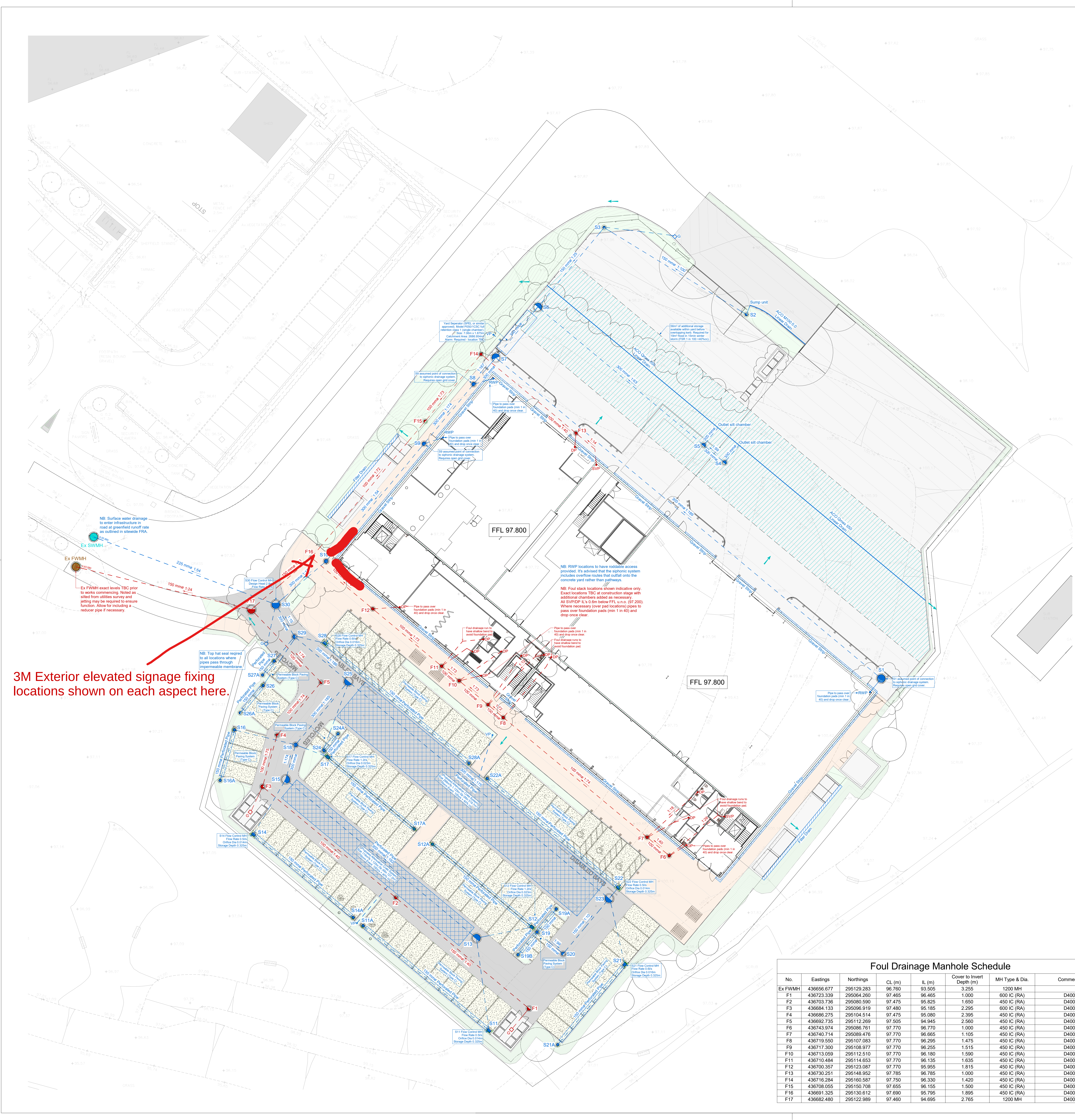




3M Exterior elevated signage fixing locations shown on each aspect here.

Drainage
Scale 1: 200

Drainage Notes

- 1. Drawing based on:
 - Topographical survey by MK Surveys, Project number 32912, dated August 2023.
 - Utilities survey by MK Surveys, Project number 34379, dated June 2024.
 - Site plan by Stephen George Architects. Refer to drawing 21-592-03-SGP-44-ZZ-DR-A-201002_Rev P1.
 - Access road Milestone Transport. Refer to drawing 24-050/150_P03.
 - Pop-up locations by CPW. Refer to drawings 240236-CPW-44A-00-DR-P-140151_P01, 240236-CPW-44A-00-DR-P-140153_P01, 240236-CPW-44B-00-DR-P-140201_P02 & 240236-CPW-22-ZZ-DR-P-141001_P01.
- 2. All cover levels shown are indicative only, actual level to be used on site. If level is significantly different consult Engineer for advice - additional protection may be required to shallower pipes or larger chambers needed if chambers are deeper than anticipated.
- 3. An overland flow route is to be provided to ensure excess surface water is routed around buildings.
- 4. All works to generally be carried out in accordance with the requirements of the 'Design and Construction Guidance for foul and surface water sewers' version 2.1 dated 25 May 2021.
- 5. All private drainage is to be constructed in accordance with the Building Regulations as current at construction.
- 6. All drains to have Class S granular bed and surround, except where
 - a, cover beneath roads or hardstanding is less than 0.9m
 - b, cover beneath soft landscaping is less than 0.6m
 - in which case class Z concrete bed and surround is required.
- 7. All Road gully connections to be 150Ø and all Footway gully connections to be 100Ø unless noted otherwise or lying into existing gully connection.
- 8. Rain water pipe positions (siphonic) and sizes are based on information supplied by the Architect / Specialist. For accurate positioning and requirements, refer to Architects / Specialist details.
- 9. Rain water pipe connections are to be roddable.
- 10. Refer to Architect / M&E details for above ground to below ground drainage pipe positions.
- 11. All foul connections are to have rodding access from the base of the stack or point of connection to the below ground drainage to enable the clearance of blockages in the below ground pipework.
- 12. All drainage pipes to be Clayware, Plastic or Concrete:
 - Clay to BS EN 205-1. 'Plastics' to be BS 'Kitemarked', Agrément certified, or both.
 - PVC-U solid wall systems to be to BS EN 1401 with fittings to BS 4600 or BS EN 13598-1. Structured wall pipes in PVC-U, PE or PP to be to BS EN 13476-1 and either -2 or -3. All systems to be installed in accordance with manufacturers recommendations and with appropriate bed and surround. All pipe systems must have appropriate levels of ring stiffness - typically 6kN/m² and jetting pressure resistance of 2600psi without damage as per the Sewer Jetting Code of Practice 2nd Edition (2005-2009) Table 5.2. Additional concrete protection must be provided where side support may be lost in the future due to parallel trench excavation eg for services or drain repair/replacement.
 - Precast Concrete L, M, or H to BS 5911.
- 13. All perforated collector pipes, unless noted otherwise, to be 150mm dia. rigid twinwall fully perforated pipe and wrapped/sleeved with protection fleece.
- 14. When connecting to existing drains/sewers the contractor must ensure the final run is roddable.
- 15. Where new pipes connect into existing pipe runs, connection is to be made by insertion of proprietary pre-formed junction pipe into run using appropriate hand seal type repair couplers. Saddle connections are not permitted.
- 16. Where pipes pass through the manhole wall a joint must be formed within 150mm of the wall.
- 17. All pipes to enter manhole with soffits level.
- 18. Where drains pass through footings and openings are formed provide lintels over, ensuring 50mm minimum clearance all around, pipe is to be provided with compressible material surround, the opening is to be masked by rigid sheet, i.e. cement particle board material to prevent ingress of vermin.
- 19. All chambers to have ductile iron, single seal lock down covers to BS EN 124 to grade D400 in areas subjected to vehicles and B125 in all other areas. Recessed covers to be used in areas of black paving, covers are to be aligned parallel to kerbs, paving orientation or structures unless otherwise shown.
- 20. New pipeline design is based on the drains final loading on completion of the roads and landscaping above, additional protection may be required to these pipes during construction, particularly the shallower sections.
- 21. At completion, all manhole covers, access covers and gratings to be lifted, cleaned and painted with two coats of bituminous paint and when replaced frames to have grease applied to provide seal.
- 22. Outside HGV turning areas, linear channel drainage to be ACO MultiDrain system, or similar approved. Units to include appropriate rodding access and outlet sump chambers / units. Ductile iron heightguard gratings min load class D400. All to be installed in accordance with manufacturers details / recommendations.
- 23. Within HGV turning areas, linear channel drainage to be ACO Qmax system, or similar approved. Units to include appropriate rodding access units. Outlets to include silt trap. All to be installed in accordance with manufacturers details / recommendations.
- 24. Surface water attenuation tank has been sized to accommodate the worst 1 in 100 year plus climate change allowance of 40% storm. Refer to drawings for storage volume provided. To comprise SDS Geolight crate system with min 95% void ratio, or similar approved, and include vent pipe. All installed in accordance with manufacturer's details / recommendations.
- 25. Full Retention / Bypass Separator class 1 including oil & silt storage capacity. Refer to drawing for catchment area. To be Spel product or similar approved, with high level alarm, warning beacon, control cabinet / kiosk (incl. electricity supply) and vent. Covers to be min. load class D400. All installed in accordance with manufacturers details / recommendations.

Drainage Key

- Proposed Surface Water Chamber / pipe run
- Proposed Foul Water Chamber / pipe run
- Existing Surface Water Chamber / pipe run
- Existing Foul Water Chamber / pipe run
- Surface Water Chamber and Ref No.
- Foul Water Chamber and Ref No.
- Proposed Pipe Diameter & Gradient
- RWP Rain Water Pipe
- SVDP Above to below ground drainage connection
- G Gully
- Linear Drain (ACO references)
- Attenuation Crates
- Permeable Construction
- Filter Drain
- Gravel Strip
- Overland Flow (Direction)

Foul Drainage Manhole Schedule							
No.	Eastings	Northings	CL (m)	IL (m)	Cover to Invert Depth (m)	MH Type & Dia.	Comments
Ex FWMH	436656.677	295129.283	96.760	93.505	3.255	1200 MH	
F1	436723.339	295064.260	97.465	96.465	1.000	600 IC (RA)	D400
F2	436703.136	295080.590	97.475	95.825	1.650	450 IC (RA)	D400
F3	436684.133	295096.919	97.480	95.185	2.295	600 IC (RA)	D400
F4	436686.275	295104.514	97.475	95.080	2.395	450 IC (RA)	D400
F5	436692.735	295112.269	97.505	94.945	2.560	450 IC (RA)	D400
F6	436743.974	295086.761	97.770	96.770	1.000	450 IC (RA)	D400
F7	436740.714	295089.476	97.770	96.665	1.105	450 IC (RA)	D400
F8	436719.550	295107.083	97.770	96.295	1.475	450 IC (RA)	D400
F9	436717.300	295108.977	97.770	96.255	1.515	450 IC (RA)	D400
F10	436713.059	295112.510	97.770	96.180	1.590	450 IC (RA)	D400
F11	436710.484	295114.653	97.770	96.135	1.635	450 IC (RA)	D400
F12	436700.357	295123.087	97.770	96.955	1.815	450 IC (RA)	D400
F13	436730.251	295148.952	97.785	96.785	1.000	450 IC (RA)	D400
F14	436716.284	295160.587	97.750	96.330	1.420	450 IC (RA)	D400
F15	436708.055	295150.708	97.655	96.155	1.500	450 IC (RA)	D400
F16	436691.325	295130.612	97.690	95.795	1.895	450 IC (RA)	D400
F17	436682.480	295122.989	97.460	94.695	2.765	1200 MH	D400

Storm Drainage Manhole Schedule							
No.	Eastings	Northings	CL (m)	IL (m)	Cover to Invert Depth (m)	MH Type & Dia.	Comments
Ex SWMH	436659.286	295133.681	96.780	93.860	2.920	1200Dha	
S1	436775.170	295112.828	97.770	96.170	1.600	1200 MH	D400, Open Grid Cover
S2	436755.329	295166.427	98.060	96.870	1.190	450 IC (RA)	D400
S3	436734.400	295179.218	97.900	96.625	1.275	450 IC (RA)	D400
S4	436752.119	295144.640	97.605	96.405	1.200	600 IC (RA)	D400
S5	436749.045	295147.201	97.605	96.365	1.240	600 IC (RA)	D400
S6	436724.654	295167.518	97.605	95.860	1.745	1200 MH	D400, Catchpit
S7	436718.453	295160.074	97.750	95.780	1.970	1200 MH	D400
S8	436715.197	295165.165	97.780	95.750	2.030	600 IC (RA)	D400, Open Grid Cover
S9	436707.890	295147.393	97.780	95.685	2.095	600 IC (RA)	D400, Open Grid Cover
S10	436693.491	295130.108	97.760	95.270	2.490	600 IC (RA)	D400
S11	436717.457	295081.021	97.320	96.110	1.210	450 x 600mm	D400, Catchpit, Flow Control
S11A	436698.938	295078.450	97.320	96.270	1.050	450 IC	D400
S12	436723.776	295076.255	97.390	96.210	1.180	450 x 600mm	D400, Catchpit, Flow Control
S12A	436709.138	295088.453	97.390	96.340	1.050	450 IC	D400
S13	436715.599	295074.625	97.475	95.110	2.365	1200 MH	D400
S14	436682.803	295089.892	97.320	96.140	1.180	450 x 600mm	D400, Catchpit, Flow Control
S14A	436697.479	295077.667	97.320	96.270	1.050	450 IC	D400
S15	436687.549	295097.980	97.485	94.920	2.565	1200 MH	D400
S16	436679.993	295105.280	97.390	96.280	1.110	450 IC	D400, Catchpit
S16A	436677.898	295097.840	97.510	96.335	1.175	450 IC	D400
S17	436693.730	295101.284	97.390	96.230	1.160	450 x 600mm	D400, Catchpit, Flow Control
S17A	436706.449	295090.694	97.390	96.340	1.050	450 IC	D400
S18	436688.989	295103.084	97.485	94.890	2.595	600 IC (RA)	D400
S19	436724.515	295075.515	97.395	96.345	1.050	450 IC	D400, Catchpit
S19A	436727.347	295078.915	97.565	96.375	1.190	450 IC	D400
S19B	436721.731	295072.173	97.565	96.375	1.190	450 IC	D400
S20	436728.360	295072.313	97.505	96.295	1.210	600 IC	D400
S21	436737.410	295070.757	97.390	96.230	1.160	450 x 600mm	D400, Catchpit, Flow Control
S21A	436727.568	295058.947	97.400	96.335	1.065	450 IC	D400
S22	436736.488	295082.064	97.620	96.400	1.220	450 x 600mm	D400, Catchpit, Flow Control
S22A	436717.202	295098.134	97.620	96.570	1.050	450 IC	D400
S23	436735.128	295080.437	97.570	96.310	1.260	1200 MH	D400
S24	436693.172	295102.247	97.395	96.340	1.055	450 IC	D400, Catchpit
S24A	436695.236	295104.725	97.550	96.365	1.185	450 IC	D400
S25	436696.752	295112.404	97.570	94.825	2.745	1200 MH	D400
S26	436694.213	295111.893	97.370	96.310	1.060	450 IC	D400, Catchpit
S26A	436680.869	295107.788	97.520	96.345	1.175	450 IC	D400
S27	436685.846	295115.405	97.400	96.310	1.090	450 IC	D400, Catchpit
S27A	436684.134	295113.350	97.505	96.330	1.175	450 IC	D400
S28	436693.307	295118.034	97.620	96.385	1.235	450 x 600mm	D400, Catchpit, Flow Control
S28A	436714.513	295100.375	97.620	96.570	1.050	450 IC	D400
S29	436688.838	295118.996	97.480	94.770	2.710	600 IC (RA)	D400
S30	436686.076	295123.727	97.480	94.420	3.060	1200 MH	D400, Flow Control

BCAL retain no liability to the Client arising out of any unauthorised alteration, modification, transmission, copy or use of the information contained within this drawing by the Client, other Members of the Project Team or Third Parties. The material contained is only applicable to the named project on the drawings.

This drawing to be read in conjunction with all relevant BCAL Architects, M&E, Specialist Consultants & Contractors project specific drawings & specifications.

All dimensions are in millimetres. (U.N.O)

All levels are in metres. (U.N.O)

Do not Scale. Written dimensions only shall be used.

Any discrepancies shall be brought to the attention of BCAL immediately.

IF IN DOUBT ASK.

Notes:

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks:-

Services - Some services are present on this site, the contractor should satisfy himself as to their location prior to commencing any excavations. Any services indicated on the drawings are based on information given on the survey. No warranty is given as to the accuracy of this information and no liability accepted for incorrectly located plant. The contractor is to obtain all necessary utility company information prior to commencing any excavations on site. Contractor is recommended to accurately locate services by hand dig trial holes prior to carrying out mechanical excavation.

Refer also to Drawings/Specifications:

- 0001 Civil & E&M Infrastructure
- 0101 External Footings
- 0201 Concrete Joint Layout

P04 Waste bund removed. Updated to 27/02/25 JDH suit latest above ground drainage and signage proposals. Future foul connection in yard omitted. Depths of drainage reduced where practical.

P03 Tender issue. Updated to suit 13/01/25 JDH latest layouts.

P02 Updated to suit latest layout and GI information. 25/10/24 JDH

P01 First Issue. Preliminary/Comment. 24/07/24 JDH

No	Description	Date	By	Chk
Revisions to this Drawing				
Drn:	JDH	Date:	July 2024	Chk: JDH

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Client

Swanvale Developments

Project

MIRA Technology Park Plot 44

Dwg. Title

Drainage Layout

Scales @ A0 Drawing No. Rev
As indicated **10394-000500 P04**

Ref **L055-BCL-90-ZZ-ZZ-D-C-000500**

Status **Tender**