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This drawing is 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:-

Risks - 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 dug trial holes prior to carrying out mechanical excavation.

Refer also to Drawings/Specifications:

Drainage Notes

- Drawing based on:
 - MK Surveys topographical survey, Project number 32912, dated August 2023.
 - Stephen George Architects site plan, Reference 21-092-03-SGP-ZZ-ZZ-DR-A-131010_Rev P5.
- 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.
- An overland flow route is to be provided to ensure excess surface water is routed around buildings.
- 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.
- All private drainage is to be constructed in accordance with the Building Regulations as current at construction.
- All drains to have Class 3 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 0.6min which case class 2 concrete bed and surround is required.
- All Road gully connections to be 1500 and all Footway gully connections to be 1000 unless noted otherwise or tying into existing gully connection.
- Rain water pipe positions (siphonic) are based on information supplied by the Architect, For accurate positioning refer to Architects / Specialist details.
- Rain water pipe connections are to be roddable.
- Refer to Architect / M&E details for above ground to below ground drainage pipe positions.
- 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.
 - Clay to BS EN 205-1, 'Plastics' to be BS1 'Kitemarked' Agrément certified, or both.
 - PVC-U solid wall systems to be to BS EN 1401 with fittings to BS 4680 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 2000psi without damage as per the 'Sewer Jetting Code of Practice 2nd Edition (2005-2006)' 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
- All perforated collector pipes, unless noted otherwise, to be 150mm dia. rigid twinwall fully perforated pipe and wrapped/sleeved with protection fleece.
- When connecting to existing drains/sewers the contractor must ensure the final run is roddable.
- 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 'band seal type' repair couplers. Saddle connections are not permitted.
- Where pipes pass through the manhole wall a joint must be formed within 150mm of the wall.
- All pipes to enter manhole with soffits level.
- Where drains pass through footings and openings are formed provide intals 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.
- 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 block paving. Covers are to be aligned parallel to kerbs, paving orientation or structures unless otherwise shown.
- 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.
- 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.
- 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 heatguard gratings min load class D400. All to be installed in accordance with manufacturers details / recommendations.
- 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.
- 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.
- Full Retention / By-pass 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
- S## Surface Water Chamber and Ref No.
- F## Foul Water Chamber and Ref No.
- 150mm 1:150 Proposed Pipe Diameter & Gradient
- RWP Rain Water Pipe
- SV/POP Above to below ground drainage connection
- G Gully
- Linear Drain (ACO reference)
- Attenuation Crates
- Permeable Construction
- Filter Drain
- Gravel Strip
- Overland Flow (Direction)

Storm Drainage Manhole Schedule

wt	Easting	Northings	CL (m)	IL (m)	Cover to Invert Depth (m)	MH Type & Dia.	Comments
Ex SWMH	436656.286	295123.681	96.780	93.880	2.900	1200dia	
S1	436755.323	295106.427	96.960	96.570	1.490	450 IC (RA)	D400
S2	436734.400	295179.218	97.900	96.395	1.505	450 IC (RA)	D400
S3	436751.864	295144.335	97.615	96.115	1.500	600 IC (RA)	D400
S4	436748.791	295146.895	97.615	96.095	1.520	600 IC (RA)	D400
S5	436724.400	295107.213	97.615	95.305	1.680	600 IC (RA)	D400, Catchpit
S6	436718.773	295160.458	97.745	95.855	1.890	600 IC (RA)	D400
S7	436705.661	295144.705	97.780	95.750	2.030	600 IC (RA)	D400, Open Grid Cover
S8	436717.457	295081.021	97.320	96.100	1.220	450 x 600mm	D400, Catchpit, Flow Control
S8A	436698.938	295076.450	97.320	96.260	1.060	450 IC	D400
S9	436723.776	295076.255	97.390	96.205	1.185	450 x 600mm	D400, Catchpit, Flow Control
S9A	436709.138	295088.453	97.390	96.335	1.055	450 IC	D400
S10	436714.062	295075.904	97.475	95.110	2.365	1200 MH	D400
S11	436682.803	295086.862	97.320	96.130	1.190	450 x 600mm	D400, Catchpit, Flow Control
S11A	436697.479	295077.667	97.320	96.260	1.060	450 IC	D400
S12	436687.549	295097.980	97.485	94.935	2.550	1200 MH	D400
S13	436679.993	295105.280	97.390	96.280	1.110	450 IC	D400, Catchpit
S13A	436677.898	295097.840	97.510	96.335	1.175	450 IC	D400
S14	436693.730	295101.284	97.390	96.225	1.165	450 x 600mm	D400, Catchpit, Flow Control
S14A	436706.448	295090.694	97.390	96.335	1.055	450 IC	D400
S15	436688.989	295103.084	97.485	94.905	2.580	600 IC (RA)	D400
S16	436724.515	295075.515	97.395	96.335	1.060	450 IC	D400, Catchpit
S16A	436727.347	295078.915	97.565	96.375	1.190	450 IC	D400
S16B	436721.731	295072.173	97.565	96.375	1.190	450 IC	D400
S17	436726.360	295073.313	97.505	96.115	1.390	600 IC (RA)	D400
S18	436731.410	295070.757	97.390	96.230	1.160	450 x 600mm	D400, Catchpit, Flow Control
S18A	436727.568	295058.947	97.400	96.335	1.065	450 IC	D400
S19	436736.488	295082.064	97.620	96.395	1.225	450 x 600mm	D400, Catchpit, Flow Control
S19A	436717.202	295098.134	97.620	96.565	1.055	450 IC	D400
S20	436735.128	295080.437	97.570	96.110	1.260	1200 MH	D400
S21	436693.172	295102.247	97.395	96.335	1.060	450 IC	D400, Catchpit
S21A	436695.236	295104.725	97.550	96.365	1.185	450 IC	D400
S22	436696.752	295112.404	97.570	94.840	2.730	1200 MH	D400
S22A	436694.213	295111.803	97.370	96.310	1.060	450 IC	D400, Catchpit
S23A	436680.869	295107.788	97.520	96.345	1.175	450 IC	D400
S24	436685.846	295115.405	97.600	96.310	1.090	450 IC	D400, Catchpit
S24A	436684.134	295113.350	97.505	96.330	1.175	450 IC	D400
S25	436693.307	295118.034	97.620	96.380	1.240	450 x 600mm	D400, Catchpit, Flow Control
S25A	436714.513	295100.375	97.620	96.565	1.055	450 IC	D400
S26	436688.838	295118.996	97.475	94.785	2.690	600 IC (RA)	D400
S27	436686.872	295122.157	97.445	94.765	2.680	1200 MH	Flow Control, D400

Foul Drainage Manhole Schedule

No.	Easting	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	436754.274	295153.478	97.675	96.325	1.350	450 IC (RA)	D400
F2	436724.147	295170.027	97.450	96.465	1.985	450 IC (RA)	D400
F3	436708.055	295150.708	97.655	95.125	2.530	450 IC (RA)	D400
F4	436691.963	295131.390	97.715	94.785	2.930	450 IC (RA)	D400
F5	436747.074	295085.487	97.785	96.785	1.000	450 IC	D400
F6	436721.774	295106.563	97.785	96.960	1.825	450 IC (RA)	D400
F7	436684.968	295128.862	97.785	94.680	3.105	450 IC (RA)	D400
F8	436723.339	295084.260	97.465	96.465	1.000	450 IC	D400
F9	436703.736	295080.590	97.475	96.120	1.355	450 IC (RA)	D400
F10	436684.133	295098.919	97.480	96.775	1.705	450 IC (RA)	D400
F11	436688.275	295104.514	97.475	95.665	1.810	450 IC (RA)	D400
F12	436692.735	295112.269	97.505	95.530	1.975	450 IC (RA)	D400
F13	436686.110	295118.193	97.380	94.335	3.045	1200 MH	D400

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

No	Description	Date	By	Chk
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Revisions to this Drawing

Drn:	JDH	Date:	July 2024	Chk:	JDH
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BCAL

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Client

Swanvale Developments

Project

MIRA Technology Park
Plot 44

Dwg. Title

Drainage Layout

Scales @ A0 Drawing No. Rev

As indicated 10394-0500 P01

Ref 10394-BCL-XX-XX-DR-C-0500

Status

Preliminary