


Key

Site Boundary

Highway Gully and Connection

P7	300/450/750 pipe materials changed	PAE	PAE	12/31/20
P6	900 dia pipes replaced with 450 & 750	JW	PAE	18/09/20
P5	F5 increased to 1500	JW	PAE	16/04/20
P4	Revised - AW comments	JW	PAE	03/04/20
P3	PN SW 4,000 reduced to 600 dia	JW	PAE	05/03/20
P2	Updated to suit revised S104 Layout	JW	PAE	02/03/20
P1	Initial issue	JW	PAE	14/02/20
Rev	Description	Drm	VFd	Date

As outlined in section 2.3 of the CIB Industry Guidance to Designers, insignificant risks can usually be ignored, as can risks arising from routine construction activities, unless the design compounds or significantly alters these risks. In accordance with CDM Regulations 8, 9 and 11, any significant risks relating to the design features shown on this drawing have been identified and are annotated thus: 

- ☒ No significant risks have been identified.
- ☐ Significant risks have been identified - refer to notes on drawing for information on residual risks and any control measures to be employed.

Refer to the current Designer's Risk Assessment sheets for further details.

Designer's Signature

JW

Date

02/20

Drawing Status

REGULATORY APPROVAL

williamsaunders

architecture: engineering: building consultancy

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Project

Proposed Residential Development  
Land off Fenside Road,  
Boston

Client

Seagate Homes (UK) Ltd

Title

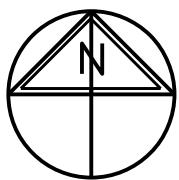
S104 Impermeable Area Plan

WmS Project Ref.	Drawn	Date	Scale	@ A1
12079	JW	02/2020	1:500	

Drawing/Document Reference

Project Originator Zone Level Type Role Number Status Rev.

12079 - WMS - ZZ - XX - DR - C - 39203 - S8 - P7



Storm: S104							
MH Ref.	Cover Level	Invert Level	Depth to soffit	Pipe Dia	MH Type	MH Size	MH Cover
S1	2.640	1.300	0.910	450	Special - Shallow Type B	1500	D400
S2	3.010	1.350	1.210	450	Special - Shallow Type B	1500	D400
S3	3.050	1.240	1.340	450	Special - Shallow Type B	1800	D400
S4	3.040	1.909	0.681	450	Special - Shallow Type B	1500	D400
S5	2.950	1.854	0.644	450	Special - Shallow Type B	1800	D400
S6	3.090	1.093	1.547	450	Type B	1800	D400
S8	2.980	1.023	1.507	450	Type B	1800	D400
S9	3.000	1.012	1.538	450	Type B	1500	D400
S10	2.925	0.956	1.219	750	Special - Shallow Type B	1800	D400
S11	3.015	0.939	1.326	750	Special - Shallow Type B	2100	D400
S12	3.000	1.212	1.488	300	Special - Shallow Type B	1200	D400
S13	3.000	1.136	1.564	300	Type B	1200	D400
S14	2.980	0.900	1.330	750	Special - Shallow Type B	1800	D400
S15	3.045	0.880	1.415	750	Special - Shallow Type B	1800	D400
S16	3.030	0.887	1.393	750	Special - Shallow Type B	1800	D400
S17	3.140	0.802	1.588	750	Type B	2100	D400
S18	3.035	0.762	1.523	750	Type B	2100	D400
S19	2.850	0.814	1.286	750	Special - Shallow Type B	1800	D400
S20	2.935	0.712	1.473	750	Special - Control	2400	D400

Foul: S104							
MH Ref.	Cover Level	Invert Level	Depth to soffit	Pipe Dia	MH Type	MH Size	MH Cover
F1	3.025	2.035	0.840	150	Type D	900 x 675	D400
F2	3.070	2.162	0.758	150	Type D	900 x 675	D400
F3	3.110	1.911	1.049	150	Type E	1500	D400
F4	2.990	1.625	1.215	150	Type E	1200	D400
F5	3.005	1.536	1.319	150	Type E	1500	D400
F6	3.055	1.463	1.442	150	Type E	1200	D400
F7	2.985	1.362	1.473	150	Type E	1200	D400
F8	3.020	1.440	1.430	150	Type E	1200	D400
F9	3.065	1.228	1.687	150	Type B	1200	D400
F10	3.035	1.421	1.514	100	Type B	1200	D400
F11	3.175	1.179	1.896	100	Type B	1500	D400
F12	3.050	0.926	1.974	150	Type B	1500	D400
F13	2.540	0.773	1.617	150	Type B	1200	D400
F14	2.310	0.330	1.680	300	Type B	1200	D400

ADOPTABLE PIPELINE SCHEDULE: FOUL							
Pipe Ref.	Upstream IL	Downstream IL	Pipe Dia	Distance	Pipe Gradient 1:X	Pipe Gradient %	Pipe Material
1.000	2.035	1.911	150	18.640	150	0.67%	Clayware
2.000	2.162	1.911	150	37.408	150	0.67%	Clayware
1.001	1.911	1.435	150	42.899	150	0.67%	Clayware
1.002	1.435	1.536	150	13.356	150	0.67%	Clayware
1.003	1.536	1.463	150	10.912	149	0.67%	Clayware
1.004	1.463	1.362	150	15.101	150	0.67%	Clayware
1.005	1.362	1.228	150	20.140	150	0.67%	Clayware
3.000	1.440	1.228	150	31.778	150	0.67%	Clayware
1.006	1.228	0.926	150	45.175	150	0.67%	Clayware
4.000	1.421	1.179	100	19.320	80	1.25%	Clayware
4.001	1.179	0.976	100	16.093	79	1.26%	Clayware
1.007	0.926	0.773	150	22.853	149	0.67%	Clayware
1.008	0.773	0.480	150	44.060	150	0.67%	Clayware

ADOPTABLE PIPELINE SCHEDULE: STORM							
Pipe Ref.	Upstream IL	Downstream IL	Pipe Dia	Distance	Pipe Gradient 1:X	Pipe Gradient %	Pipe Material
1.000	1.300	1.260	450	18.000	450	0.22%	JDP Ultra 3
2.000	1.350	1.260	450	44.951	499	0.20%	JDP Ultra 3
1.001	1.260	1.093	450	48.075	288	0.35%	JDP Ultra 3
3.000	1.909	1.854	450	27.361	497	0.20%	JDP Ultra 3
3.001	1.854	1.548	450	17.105	55	1.80%	JDP Ultra 3
1.002	1.093	1.023	450	20.420	292	0.34%	JDP Ultra 3
4.000	1.400	1.023	450	5.675	10	10.37%	JDP Ultra 3
1.003	1.023	0.939	450	22.790	271	0.37%	JDP Ultra 3
5.000	1.012	0.956	450	28.006	500	0.20%	JDP Ultra 3
5.001	0.956	0.939	750	8.643	510	0.20%	Concrete
1.004	0.939	0.900	750	10.758	276	0.34%	Concrete
6.000	1.212	1.138	300	18.878	248	0.40%	JDP Ultra 3
6.001	1.138	1.100	300	9.278	232	0.40%	JDP Ultra 3
1.005	0.900	0.880	750	10.088	504	0.20%	Concrete
1.006	0.880	0.802	750	38.872	498	0.20%	Concrete
7.000	0.887	0.802	750	42.500	500	0.20%	Concrete
1.007	0.802	0.762	750	20.116	503	0.20%	Concrete
1.008	0.762	0.712	750	24.119	482	0.21%	Concrete
8.000	0.814	0.712	750	50.958	500	0.20%	Concrete
1.009	0.712	0.615	150	14.500	149	0.67%	Clayware

Impermeable Areas

- PN 1.000 = 780m<sup>2</sup>
- PN 2.000 = 660m<sup>2</sup>
- PN 1.001 = 850m<sup>2</sup>
- PN 3.000 = 520m<sup>2</sup>
- PN 3.001 = 310m<sup>2</sup>
- PN 1.002 = 260m<sup>2</sup>
- PN 5.000 = 420m<sup>2</sup>
- PN 5.001 = 180m<sup>2</sup>
- PN 1.004 = 430m<sup>2</sup>
- PN 6.000 = 370m<sup>2</sup>
- PN 6.001 = 80m<sup>2</sup>
- PN 1.006 = 680m<sup>2</sup>
- PN 7.000 = 810m<sup>2</sup>
- PN 1.007 = 280m<sup>2</sup>
- PN 1.008 = 530m<sup>2</sup>
- PN 8.000 = 830m<sup>2</sup>
- PN 1.090 = 160m<sup>2</sup>

Total Impermeable Area = 8150m<sup>2</sup>

- Drawing to be read in conjunction with all other relevant Engineers and Architects detail.
- All works to be carried out in accordance with the current British Standards, Codes of Practice, Building Regulations and Sewers for Adoption 6th Edition.
- All uncovered and shallow pipework to be protected against construction traffic as part of the Contractors temporary works requirements.
- Pipes of different diameters entering manholes should be installed with soffits at the same level.
- Pre-formed channels to be used at all manholes.
- High strength concrete benching to be steel trowelled to a dense smooth face neatly shaped and finished to all branch connections and laid in accordance with the specification.
- Pipe bends to be provided in direction of flow.
- All manhole covers and frames to be heavy duty ductile iron grade D400 double triangular to BS EN 124 unless noted otherwise.
- First flexible joint to pipes adjacent to a manhole shall be 600mm maximum from inside face of manhole connecting to a rocker pipe. Rocker pipe length to be 600mm (150 - 300mm dia) and 1000mm (750mm dia).
- All soil spots encountered in the trench formation to be removed and replaced with graded granular material.
- All buried concrete manhole rings must cater for Class 2 sulphate conditions in accordance with BRE Digest 363.
- Pre-cast concrete manhole rings will not be cut under any circumstances. Other options, manhole built up with concrete or brick work to the top of the pipe.
- All landscaping and tree planting existing or proposed to adhere to fig. 2.3 (SIA 6th Edition)".
- A temporary screen (gillie) to be fitted over the last new manhole before entering the existing sewer in accordance with SIA 6th Edition. The screen shall only be removed once the on-site construction has been completed.
- Where pipe crossings occur plastic membrane to be used for protection to eliminate any chances of cross contamination.
- 11" T type covers should not be used, where a cover is located in an area of black paving the frame should be 150mm deep.
- Cover and frames should be life marked.
- Pipework up to and including 300mm dia to have a 3.0m easement taken from the centreline of the pipeline on each side up to a depth of 3.0m, as per Table 2.1 in Sewers for Adoption 6th Edition.
- Protective concrete cover slabs to be used on pipes in non trafficked area which doesn't achieve 0.9/900m cover level and 1.2m/1200mm cover in trafficked area.
- The proposed materials for the pipework and manholes are suitable for the existing ground conditions on site.

\*ALL S104 WORKS DESIGNED  
IN ACCORDANCE WITH SEWERS  
FOR ADOPTION 6TH EDITION