

APPENDIX F

Foul Water Drainage Calculations

Table 1. INDICATIVE FOUL PEAK FLOWS FOR PHASE 3 - ASSUMED GRAVITY CONNECTION

Development type	No. of units	Occupancy Persons/Dwellings	Per Capita Flow (l/unit/day)	Peaking Factor	Infiltration	Population of Development	Development Peak Flow Southern Water Guidance (l/s)
Residential	278	2.4	125	2.5	10%	667.2	2.51
Total Pumped Foul loading (Parcel 1)							2.51

* Based on Southern Water Guidance - DS Foul Sewerage Modelling Criteria, V1.1 2018

Developer Services

Foul Sewerage Modelling Criteria:

Southern Water continues to review its modelling procedures and design standards. Our current update on the impact of a new development on the public sewer network is as below:

Item			
Development Size – Number of units	N		
Per Capita Flow -Litres/ head / day	G	125	(see note 4)
Infiltration – Percentage	I	10	(see note 5)
Occupancy – Persons/Dwelling	O	2.4	(see notes 6 & 7)
Dry Weather Flow multiplier (PF - Peaking Factor) (SD –Storm Duration– minutes)		SD	PF
		30 to 240	2.5
		240 to 480	2.0
		Above 480	1.4
Allowance for misconnected surface water		1.4 Square Metres per Dwelling (see note 8)	
Population – Number of people	P	N x O	

Hence: Design flow = (PF + 0.1) PG (foul flow element) plus the impact of 1.4 x N sq. m. (allowance for misconnected surface water)

Note that the above criteria applies subject to:

- 1) Only to the case of new domestic foul flow.
- 2) No proposed discharge of surface water into the foul sewer.
- 3) Southern Water supports the Hierarchy of H3 of Building Regulations with regards to the disposal of Surface Water.
- 4) Compliance with G2 of Building Regulations; that reasonable provision must be made by the installation of fittings and fixed appliances that use water efficiency for the prevention of undue consumption of water.
- 5) That upstream sewers are designed and constructed with materials and method fully compliant with Sewers for Adoption and Southern Water published addendum and corrigendum, in order to ensure that the infiltration of groundwater is minimised to the low rate of 10% of base flow.

- 6) That unless we are advised otherwise, we will assume the occupancy rate of 2.4 persons per property to be appropriate and in accordance with survey data that Southern Water has for development within its area.
- 7) Should the makeup of development be known and advised to Southern Water, with regards to the number of 1-bedroom, 2-bedroom units etc. then the modelling can be revised on the basis of:
- Number of bedrooms + 1, as the occupancy for each unit type.
 - This level of information may not be available for initial Capacity Check assessments and in this case the default figure of 2.4 persons/dwelling is considered appropriate.
- 8) Should the density of the development be known, (where development density is calculated based on the number of expected new addresses divided by the area of the proposed site development) and advised to Southern Water, then the allowance for misconnected surface water can be adjusted to the following:

Development Density (Properties / 4Ha)	Misconnected surface water allowance m ² /property
<=100	2.1
120	1.6
140	1.1
180	0.6
>=200	0.3

Flats, housing association, and commercial property addresses will have no misconnected surface water allowance applied.

- 9) With regards to the allowance for misconnected surface water, reference is made to published guidance or studies including LASOO, CIRIA, DEFRA, and UKWIR.
- 10) With regards to any proposed pumped flow rates.
- For the hydraulic design of pumping stations (and associated rising mains) we are guided by Sewers for Adoption and in the case of Edition 7, by clauses D4.6 and D5.3.1.
 - This has a range of velocity of discharge in the rising main between 0.75 to 1.8 m/s, when the pump is operating. Our preference would be for a higher velocity than the minimum.
 - If however the discharge is by gravity, then we would seek flows within the pipe capacity and self cleansing range.