Sydney WATER

PIPE SIZING AND GRADING TABLES

TABLE SW 4.1

DN 150 RETICULATION SEWERS

Grade%	Min PDWF[1] (L/s)	Max DF[2] (L/s)	≤100 EP/Ha		>100 EP/Ha	
			Min EP[3]	Max EP[4]	Min EP[3]	Max EP[4]
0.65	2.4	12.5	170	270	130	320
0.70	2.0	13.0	130	280	100	340
0.75	1.5	13.4	90	290	70	350
0.80	1.3	13.9	70	310	50	370
0.85	1.1	14.3	50	320	40	380
0.90	0.8	14.7	30	330	30	390
0.95	0.6	15.1	20	340	20	410
1.00	0.5	15.5	20	350	20	420
1.05	0.5	15.9	1	360	1	440
1.20	0.5	17.0	1	390	1	470
1.40	0.5	18.4	1	420	1	520
1.60	0.5	19.7	1	460	1	550
1.80	0.5	20.9	1	490	1	570
2.00	0.5	22.0	1	530	1	590
2.50	0.5	24.6	1	580	1	600*
≥2.90	0.5	26.5*	1	600*	1	600*

Notes:

1. *Minimum PDWF (peak dry weather flow) is the minimum flow rate at the nominated grade required for self cleaning (i.e. flow to achieve a velocity of 0.7 m/s).*
2. *Maximum DF (design wet weather flow) is the flow that would result in the pipe running full at the nominated grade.*
3. *The EP connected to the sewer at the nominated grade shall be at least "Min EP", i.e. the EP required to achieve self cleaning flow as nominated in Column 2.*
4. *The EP connected to the sewer at the nominated grade shall not exceed "Max EP", i.e. at the nominated grade and "Max EP" the design flow would be as shown in Column 3.*

** Maximum allowable EP = 600 (Refer WSA 02 Clause 4.5, Table 4.4)*

TABLE SW 4.2

DN 225 RETICULATION SEWERS

Grade %	Min PDWF[1] (L/s)	Max DF[2] (L/s)	≤100 EP/Ha		>100 EP/Ha	
			Min EP[3]	Max EP[4]	Min EP[3]	Max EP[4]
0.40	5.8	29.0	550	720	430	910
0.45	4.7	30.7	410	780	320	970
0.50	3.8	32.4	310	830	250	1030
0.55	3.1	34.0	230	880	180	1100
0.60	2.5	35.5	180	930	140	1160
0.65	2.1	36.9	140	970	110	1210
0.70	1.6	38.3	100	1000	80	1270
0.75	1.4	39.7	80	1060	70	1320
0.80	1.2	41.0	60	1100	60	1380
0.85	0.9	42.2	50	1140	40	1420
0.90	0.8	43.3	30	1170	30	1440
0.95	0.6	44.7	20	1220	20	1470
1.00	0.5	45.8	1	1250	1	1490
1.05	0.5	47.0	1	1290	1	1510
1.20	0.5	50.2	1	1390	1	1560
1.40	0.5	56.1	1	1520	1	1600*
1.60	0.5	60.6	1	1590	1	1600*
≥1.80	0.5	61.5*	1	1600*	1	1600*

Notes:

1. *Minimum PDWF (peak dry weather flow) is the minimum flow rate at the nominated grade required for self cleaning (i.e. flow to achieve a velocity of 0.7 m/s).*
2. *Maximum DF (design wet weather flow) is the flow that would result in the pipe running full at the nominated grade.*
3. *The EP connected to the sewer at the nominated grade shall be at least "Min EP", i.e. the EP required to achieve self cleaning flow as nominated in Column 2.*
4. *The EP connected to the sewer at the nominated grade shall not exceed "Max EP", i.e. at the nominated grade and "Max EP" the design flow would be as shown in Column 3.*

** Maximum allowable EP = 1600 (Refer WSA 02 Clause 4.5, Table 4.4)*

TABLE SW 4.3

RECEIVING SEWER LOADINGS

PUMPED FLOWS FROM SINGLE-SPEED STATIONS

Table SW 4.3 addresses flow adjustments to be made to a sewer's PDWF, DF, minimum EP and maximum EP where the sewer is to receive flow from a fixed-speed pumping station.

1. *Table SW 4.3 does not apply to flows from variable-speed pumping stations*.

2. Designs of new sewers receiving pumped flows shall be prepared in consultation with Sydney Water.

TABLE SW 4.3

PUMPED FLOWS / RECEIVING SEWER LOADINGS

Pump Discharge Rate (L/s)	Pumped Contribution to Receiving Sewer's Min PDWF and Min EP					Pumped Contribution to Receiving Sewer's DF and Max EP				
	PDWF (L/s) *Note 1*	Contribution to Receiving Sewer Min EP *Note 2*				DF (L/s) *Note 3*	Contribution to Receiving Sewer Max EP *Note 4*			
		≤50 EP/Ha	100 EP/Ha	200 EP/Ha	≥400 EP/Ha		≤50 EP/Ha	100 EP/Ha	200 EP/Ha	≥400 EP/Ha
10	5	500	400	300	200	10	300	300	400	400
30	15	2100	1700	1300	1100	30	1000	1200	1400	1700
50	25	4000	3300	2700	2100	50	1900	2200	2700	3200
100	50	9100	7900	6600	5300	100	4300	4500	6300	6800
150	75	14600	13000	11000	9100	150	6800	8100	10200	12800
200	100	20300	18300	15800	13200	200	9400	11300	14300	18000

Notes:

1 Fifty (50) percent of the pump discharge rate shall be deemed to contribute to the receiving sewer's PDWF.

2 One hundred (100) percent of the pump (single-speed) discharge rate shall be deemed to contribute to the receiving sewer's DF (L/s).

3 *The equivalent EP loading on the receiving sewer from the pumped inflow is dependent on the population density (EP/Ha) of the receiving sewer's catchment.*

4 *The "Max EP" loading on the receiving sewer from the pumped inflow is dependent on the population density (EP/Ha) of the receiving sewer's catchment.*

TABLE SW 4.4

RECEIVING SEWER LOADINGS

UPSTREAM GRAVITY FLOWS

Table SW 4.4 addresses the impact of flows from an existing upstream gravity sewer that will be diverted into the new sewer.

1. Designs of new sewers receiving flows from existing gravity sewers shall be prepared in consultation with Sydney Water.

2. Peak dry weather (PDWF) and wet weather flows (DF) from an existing upstream gravity sewer shall be as determined and advised by Sydney Water *(generally based on gauged data and / or modelling of the existing sewer).*

3. *Given that the existing sewer may be aged and subject to higher levels of inflow / infiltration, the default values of the Sewerage Flow Schedule may not be suitable for estimating flows from existing upstream sewers or converting upstream EP to receiving sewer EP loadings.* Flows from existing upstream sewers must therefore be stated in L/s, not EP.

TABLE SW 4.4

UPSTREAM (U/S) GRAVITY FLOWS / RECEIVING SEWER LOADINGS

U/S Sewer PDWF (L/s) *Note 1*	U/S Contribution to Receiving Sewer's PDWF and Min EP					U/S Sewer DF (L/s) *Note 1*	U/S Contribution to Receiving Sewer's DF and Max EP				
	PDWF (L/s) *Note 2*	Contribution to Receiving Sewer Min EP *Note 3*					DF (L/s) *Note 4*	Contribution to Receiving Sewer Max EP *Note 5*			
		≤50 EP/Ha	100 EP/Ha	200 EP/Ha	≥400 EP/Ha			≤50 EP/Ha	100 EP/Ha	200 EP/Ha	≥400 EP/Ha
5	5	500	400	300	200	**10**	10	300	300	400	400
10	10	1200	1000	800	600	**25**	25	800	900	1100	1300
20	20	3000	2500	2000	1600	**50**	50	1900	2200	2700	3200
30	30	5000	4200	3400	2700	**100**	100	4300	4500	6300	6800
40	40	7000	6000	5000	4000	**150**	150	6800	8100	10200	12800
50	50	9100	7900	6600	5300	**200**	200	9400	11300	14300	18000
60	60	11300	9900	8300	6800	**250**	250	12200	14700	18500	23700
70	70	13500	11900	10100	8300	**300**	300	14900	18000	23000	29500
80	80	15700	14000	12000	9900	**350**	350	17800	21500	27500	35500

Notes:

1. *PDWF and DF from the existing upstream sewer will be determined by Sydney Water*.
2. One hundred (100) percent of the upstream PDWF (L/s), as advised by Sydney Water, shall be deemed to contribute to the receiving sewer's PDWF.
3. *The equivalent self-cleansing EP loading on the receiving sewer from an existing upstream sewer is dependent on the population density (EP/Ha) of the receiving sewer's catchment*.
4. One hundred (100) percent of the upstream wet weather flow, DF (L/s), as advised by Sydney Water, shall be deemed to contribute to the receiving sewer's DF (L/s).
5. *The equivalent "Max EP" loading on the receiving sewer from an existing upstream sewer is dependent on the population density (EP/Ha) of the receiving sewer's catchment*.