Quilty Training
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Engineering Fundamentals Stormwater

Inlet Design

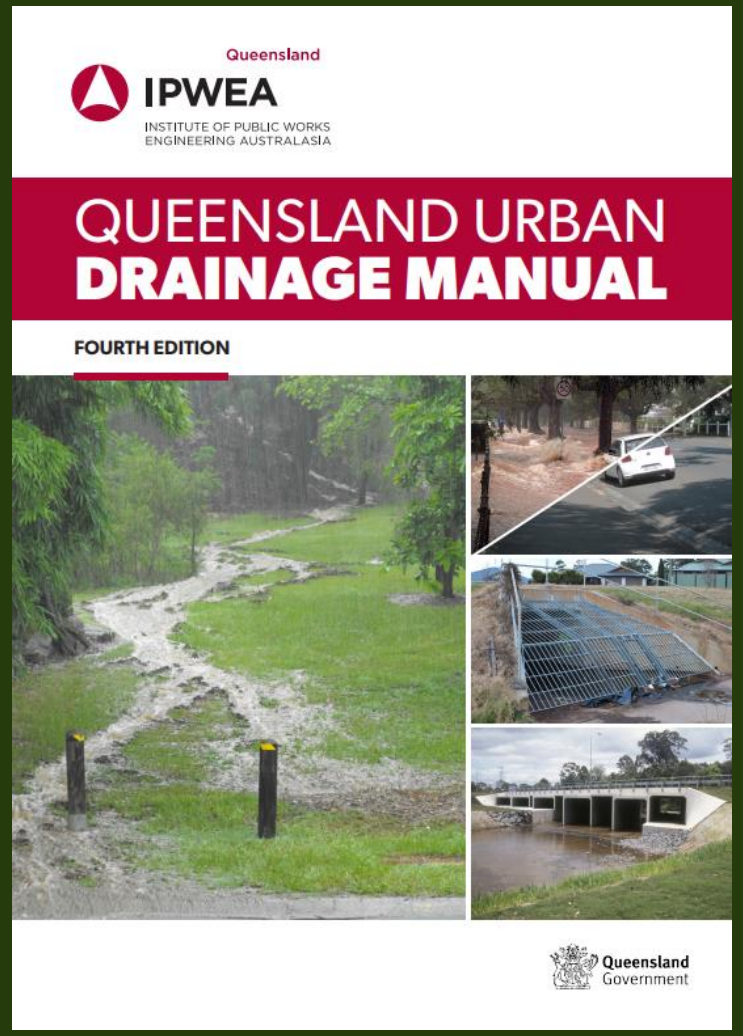
Introduction

Local Standards and Guidelines

Queensland Urban Drainage Manual (QUDM):

- Widely adopted throughout Queensland
- QUDM's Flow Limits and Storm Frequency vs Development Category will differ from other States and Territories

Get in touch if you need help!



Source: Institute of Public Works Engineering Australasia, Queensland 2017

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Inlet Terminology

Flow Limits

Q_c Q_a
Q_i Q_b

Flow Terminology

Inlet Capture Charts

Inlet Terminology

Urban Environment

- Densely populated
- Spatially constrained
- Lots of vehicle movement
- Lots of pedestrian activities

Must control flooding:

- Frequent, infrequent, rare events
  - Convenience
  - Safety
  - Protect property

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Longitudinal Drainage

Longitudinal drainage or pit and pipe drainage

Combination of stormwater inlets and interconnected pipes

Gravity system to free-drain

Majority of Australian systems discharge into creeks, rivers or the ocean

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Longitudinal Drainage

Needed to reduce flooding

Transfers overland flow into underground piped network

Strategically placed infrastructure

- Based on calculations and flood estimation
- Provide convenience
- Provide safety
- Reduce risk to community
- Capture water for re-use

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Stormwater Inlets

Two classifications:

- Sag inlet
- On-grade inlet

Many names:

- Inlets, pits, gully pits
- Field inlets, drop inlets
- Kerb openings, side entry pits

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Storm Frequency

Minor

- Underground flow
- Longitudinal drainage system

Major

- Overland flow
- Road reserve or drainage channel

Typical Storm Frequency - Minor Storm

Development category		ARI (yrs)	AEP
Central business and commercial		10	10%
Industrial		2	39%
Urban residential high density		10	10%
Urban residential low density		2	39%
Rural residential		2	39%
Open space		1	63%
Major road	Kerb and channel flow	10	10%
	Cross drainage (culverts)	50	2%
Minor road	Kerb and channel flow	Dev. Cat.	Dev. Cat.
	Cross drainage (culverts)	10	10%

Typical Storm Frequency - Major Storm

Development category	ARI (yrs)	AEP
Set floor levels in hospitals, emergency services, flood evacuation buildings	500	0.2%
Set floor levels in emergency shelters, libraries, aged care housing, critical utility infrastructure	200	0.5%
Set floor levels in residential buildings, overland flow paths	100	1%

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Kerb Inlet

- Kerb inlet (side entry pit)
- Grated inlet
- Combination inlet (gully pit)

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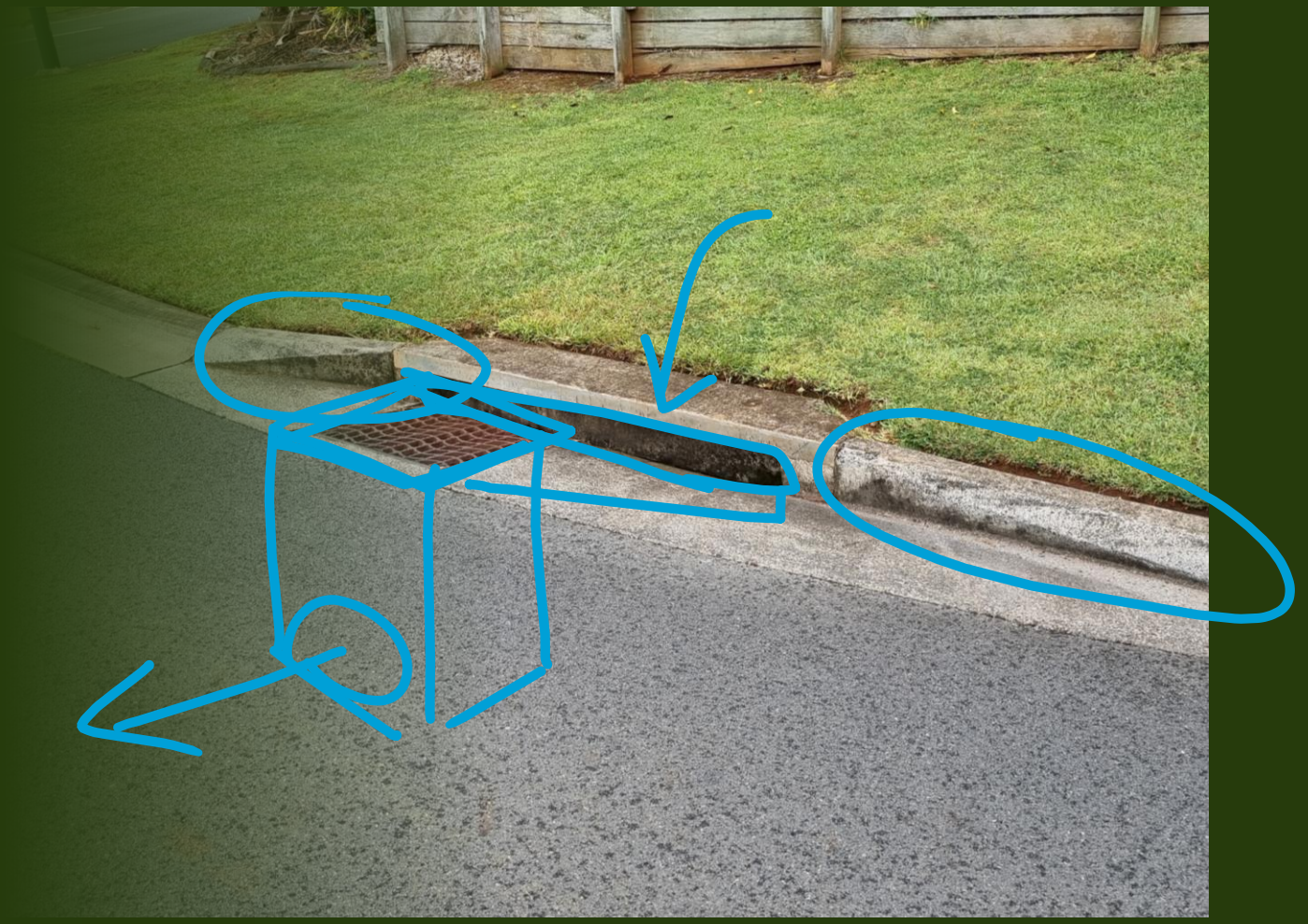
Kerb Inlet

- Kerb opening
- Lintel
- Trough
- Grate
- Chamber
- Kerb transitions



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Field Inlet (Drop Inlet)

- Flush-mounted grate
- Elevated grate
- Dome screen

Yep, you need to maintain these things… And quickly – before the next storm hits!

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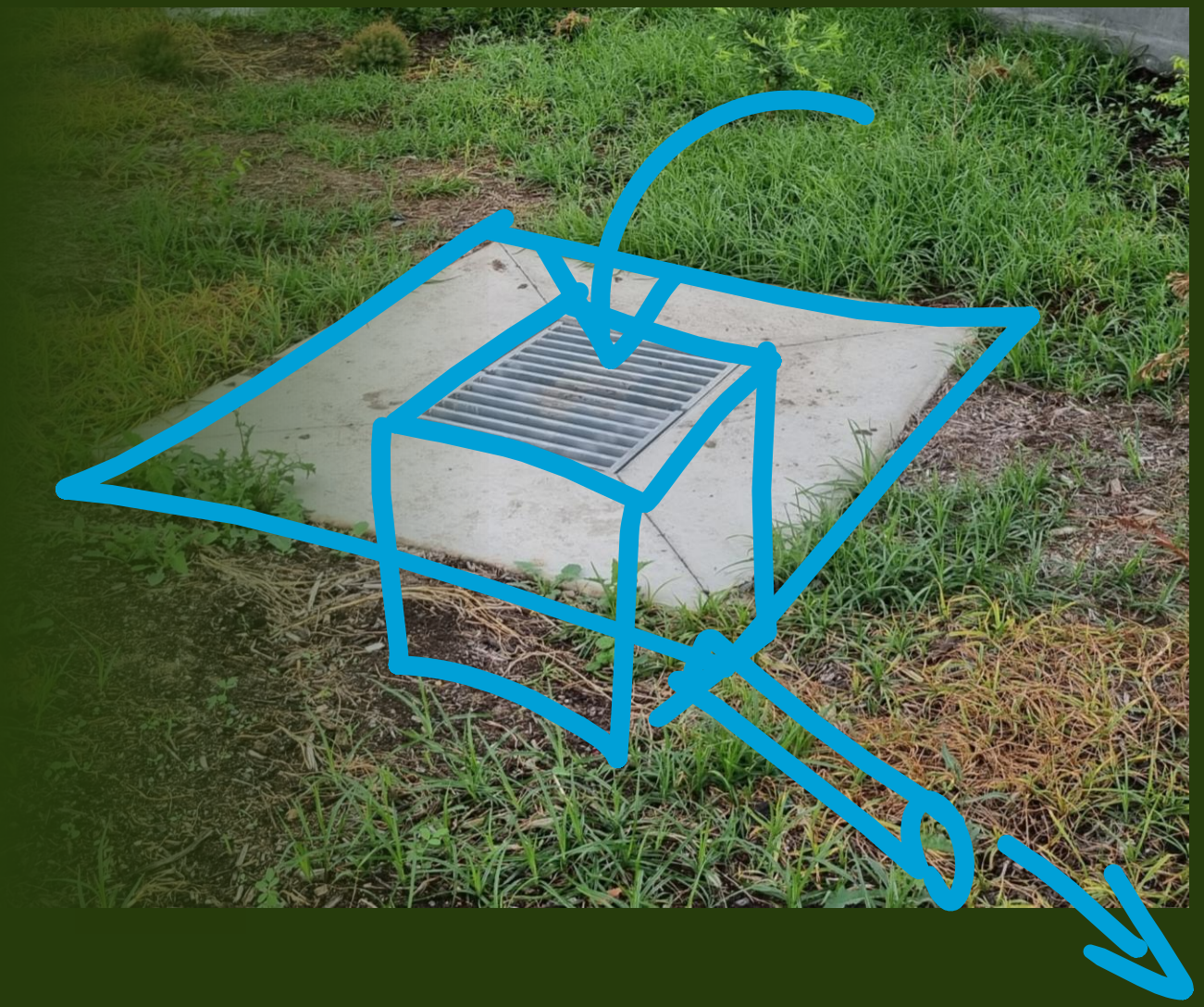
Field Inlet

- Grate
- Apron (optional)
- Chamber



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Inlet Terminology

Flow Limits

Q_c Q_a
Q_i Q_b

Flow Terminology

Inlet Capture Charts

Flow Limits

Flow Limits

Before calculating how much runoff our inlet will capture rate, we <u>must</u>:

- Assess the approaching flow heading towards the inlet
- Ensure safe flow width
- Ensure safe flow depth
- Ensure safe depth*velocity product

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Flow Limits

Vehicle consideration

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Flow Limits

Pedestrian consideration

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Flow Limits – Minor Storm

Table 7.4.2 - Flow width limits for 'longitudinal' flow during MINOR STORM

Site condition	Major road	Minor road
Normal situation	Parking lane width (usually 2.5m) or breakdown lane width	(i) Full pavement width with zero depth at crown (ii) Where one way crossfall exists (i.e. no crown), flow width is limited to the high side of road pavement, but not above top of kerb on low side
Where parking lane may become an acceleration, deceleration or turn lane	1.0m	Not applicable
Where road falls towards median	1.0m	Not applicable
Pedestrian crossings or bus stops	0.45m	0.45m
At intersection kerb returns (including entrances to shopping centres and other major developments)	1.0m	1.0m
Vehicular safety	Flow depth and depth*velocity limits as per the Major Storm requirements (Table 7.4.4)	

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Flow Limits – Minor Storm

Table 7.4.3 — Flow limits for 'transverse' flow during MINOR STORM

Site condition	Flow depth and width limits
Still water at road sag	Maximum flow depth, dg ≤ 300mm
Vehicle safety: Transverse flow limits (no risk to life) e.g. road intersection	Maximum flow depth, $d_g \leq 300mm$ Depth*velocity product, $d_g.V_{ave} \leq 0.3m^2/s$
Vehicle safety: Transverse flow limits (risk to life) e.g. causeway	Maximum flow depth, $d_g \leq 200mm$ Depth*velocity product, $d_g.V_{ave} \leq 0.3m^2/s$

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Flow Limits – Major Storm

Table 7.4.4 - Flow limits for 'longitudinal' flow during MAJOR STORM

Site condition	Flow depth and width limits
Where floor levels of adjacent buildings are above road level	Total flow is contained within road reserve. Minimum freeboard of 300 mm to floor level of adjacent buildings.
Where floor levels of existing adjacent buildings are below, or less than 300 mm above, the top of kerb; and there is at least 100 mm fall on footpath towards the kerb	Maximum flow depth of 50 mm above top of kerb
Where floor levels of existing adjacent buildings are below, or less than 300 mm above, the top of kerb; and there is less than 100 mm fall on footpath towards the kerb	Maximum flow depth at top of kerb
Vehicle safety: Flow conditions at kerb for flow along a road (no risk to life)	Maximum flow depth, $d_g \leq 250mm$ Depth*velocity product, $d_g.V_{ave} \leq 0.6m^2/s$
Vehicle safety: Flow conditions at kerb for flow along kerb (potential risk to life)	Maximum flow depth, $d_g \leq 250mm$ Depth*velocity product, $d_g.V_{ave} \leq 0.4m^2/s$

Flow Limits – Major Storm

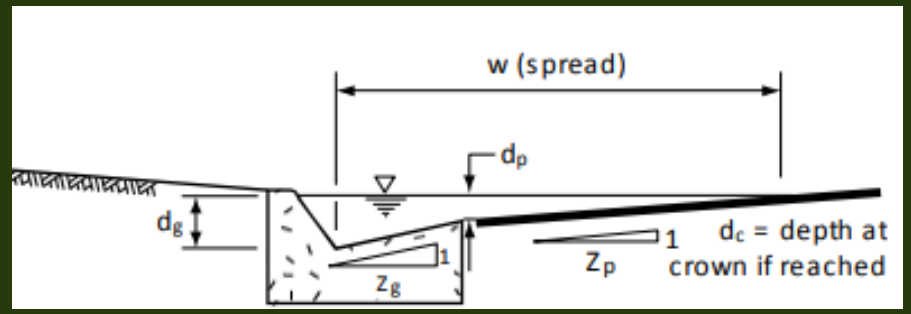
Table 7.4.5 — Flow limits for 'transverse' flow during MAJOR STORM

Site condition	Flow depth and width limits
Still water at road sag	Maximum flow depth, $d_g \leq 300mm$
Vehicle safety: Transverse flow limits (no risk to life) e.g. road intersection	Maximum flow depth, $d_g \leq 300mm$ Depth*velocity product, $d_g.V_{ave} \leq 0.45m^2/s$
Vehicle safety: Transverse flow limits (risk to life) e.g. causeway	Maximum flow depth, $d_g \leq 200mm$ Depth*velocity product, $d_g.V_{ave} \leq 0.3m^2/s$

Flow Limits
Half Road Capacity

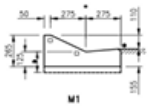
Izzard's Equation

- One method
- Based on Manning's equation for triangular section
- Estimates half-road capacity
- Used for approach flow, Q_a



$$Q = 0.375F\left[\left(\frac{Z_g}{n_g}\right)\left({d_g}^{2.667} - {d_p}^{2.667}\right) + \left(\frac{Z_p}{n_p}\right)\left({d_p}^{2.667} - {d_c}^{2.667}\right)\right]S^{0.5}$$

Half-Road Flow Capacity - Izzard's Equation



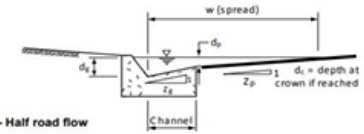


Figure 7.4.2 – Half road flow

Flow Correction Factor	F	0.9	
Width of kerb (invert to lip)	w_{chnl}	0.275	m
Depth of kerb (invert to lip)	d_{chnl}	0.030	m
Cross slope gradient of kerb	Z_g	9.167	1 V : Z_g H
Manning's roughness of kerb	n_g	0.013	

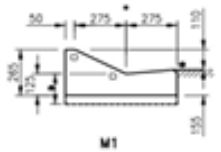
Width of half road (invert to crown)	$w_{halfroad}$	3.000	m
Width of pavement (lip to crown)	w_p	2.725	m
Cross slope gradient of pavement	Z_p	40.000	1 V : Z_p H
Manning's roughness of pavement	n_p	0.015	

Max. allowable d*V product	d*V	0.400	m^2/s
Max. allowable flooded width	w_{flood}	2.500	m

$$Q = 0.375F\left[\left(\frac{Z_g}{n_g}\right)\left(d_g^{\,2.667} - d_p^{\,2.667}\right) + \left(\frac{Z_p}{n_p}\right)\left(d_p^{\,2.667} - d_c^{\,2.667}\right)\right]S^{0.5}$$

																								Flow over crown			Flow over crown			Flow over crown			Flow over crown			Flow over crown			Flow over crown		
		d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W
		0.030	0.004	0.275	0.040	0.009	0.675	0.050	0.018	1.075	0.060	0.030	1.475	0.070	0.047	1.875	0.080	0.068	2.275	0.090	0.093	2.675	0.100	0.121	3.000	0.110	0.151	3.000	0.120	0.181	3.000	0.130	0.211	3.000	0.140	0.241	3.000	0.150	0.271	3.000
		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c	
		0.000	0.000		0.010	0.000		0.020	0.000		0.030	0.000		0.040	0.000		0.050	0.000		0.060	0.000		0.070	0.002		0.080	0.012		0.090	0.022		0.100	0.032		0.110	0.042		0.120	0.052	
Grade		Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V
m/m	%	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s
0.005	0.5%	0.001	0.354	0.011	0.003	0.379	0.015	0.007	0.402	0.020	0.013	0.439	0.026	0.023	0.483	0.034	0.036	0.528	0.042	0.053	0.574	0.052	0.075	0.620	0.062	0.102	0.673	0.074	0.133	0.731	0.088	0.167	0.791	0.103	0.205	0.851	0.119	0.247	0.910	0.137
0.010	1.0%	0.002	0.501	0.015	0.005	0.536	0.021	0.010	0.568	0.028	0.019	0.621	0.037	0.032	0.683	0.048	0.051	0.747	0.060	0.075	0.812	0.073	0.106	0.876	0.088	0.144	0.952	0.105	0.188	1.034	0.124	0.236	1.119	0.145	0.290	1.204	0.169	0.349	1.287	0.193
0.015	1.5%	0.003	0.613	0.018	0.006	0.656	0.026	0.012	0.696	0.035	0.023	0.761	0.046	0.039	0.836	0.059	0.062	0.915	0.073	0.092	0.994	0.089	0.130	1.073	0.107	0.176	1.166	0.128	0.230	1.267	0.152	0.290	1.371	0.178	0.356	1.474	0.206	0.428	1.576	0.236
0.020	2.0%	0.003	0.708	0.021	0.007	0.758	0.030	0.014	0.804	0.040	0.027	0.878	0.053	0.045	0.965	0.068	0.072	1.056	0.084	0.106	1.148	0.103	0.150	1.239	0.124	0.204	1.346	0.148	0.265	1.463	0.176	0.334	1.583	0.206	0.411	1.702	0.238	0.494	1.820	0.273
0.025	2.5%	0.003	0.792	0.024	0.008	0.847	0.034	0.016	0.898	0.045	0.030	0.982	0.059	0.051	1.079	0.076	0.080	1.181	0.094	0.119	1.283	0.115	0.168	1.385	0.139	0.228	1.505	0.166	0.297	1.636	0.196	0.374	1.769	0.230	0.459	1.903	0.266	0.552	2.035	0.305
0.030	3.0%	0.004	0.867	0.026	0.008	0.928	0.037	0.017	0.984	0.049	0.033	1.076	0.065	0.056	1.182	0.083	0.088	1.294	0.103	0.130	1.406	0.127	0.184	1.517	0.152	0.249	1.648	0.181	0.325	1.792	0.215	0.410	1.938	0.252	0.503	2.085	0.292	0.605	2.229	0.334
0.035	3.5%	0.004	0.937	0.028	0.009	1.002	0.040	0.019	1.063	0.053	0.035	1.162	0.070	0.060	1.277	0.089	0.095	1.397	0.112	0.141	1.518	0.137	0.199	1.639	0.164	0.269	1.780	0.196	0.351	1.935	0.232	0.442	2.094	0.272	0.543	2.252	0.315	0.653	2.408	0.361
0.040	4.0%	0.004	1.001	0.030	0.010	1.072	0.043	0.020	1.136	0.057	0.038	1.242	0.075	0.064	1.365	0.096	0.101	1.494	0.120	0.150	1.623	0.146	0.213	1.752	0.175	0.288	1.903	0.209	0.375	2.069	0.248	0.473	2.238	0.291	0.581	2.407	0.337	0.698	2.574	0.386
0.045	4.5%	0.004	1.062	0.032	0.010	1.137	0.045	0.021	1.205	0.060	0.040	1.317	0.079	0.068	1.448	0.101	0.108	1.584	0.127	0.159	1.722	0.155	0.225	1.859	0.186	0.305	2.019	0.222	0.398	2.194	0.263	0.502	2.374	0.309	0.616	2.553	0.357	0.741	2.730	0.410
0.050	5.0%	0.005	1.120	0.034	0.011	1.198	0.048	0.022	1.271	0.064	0.042	1.389	0.083	0.072	1.526	0.107	0.113	1.670	0.134	0.168	1.815	0.163	0.238	1.959	0.196	0.322	2.128	0.234	0.419	2.313	0.278	0.529	2.502	0.325	0.649	2.691	0.377	0.781	2.878	0.432
0.055	5.5%	0.005	1.174	0.035	0.011	1.257	0.050	0.023	1.333	0.067	0.044	1.456	0.087	0.075	1.601	0.112	0.119	1.752	0.140	0.176	1.903	0.171	0.249	2.055	0.205	0.338	2.232	0.246	0.440	2.426	0.291	0.555	2.625	0.341	0.681	2.823	0.395	0.819	3.018	0.453
0.060	6.0%	0.005	1.227	0.037	0.012	1.313	0.053	0.025	1.392	0.070	0.046	1.521	0.091	0.079	1.672	0.117	0.124	1.829	0.146	0.184	1.988	0.179	0.260	2.146	0.215	0.353	2.331	0.256	0.459	2.534	0.304	0.579	2.741	0.356	0.711	2.948	0.413	0.855	3.153	0.473
0.065	6.5%	0.005	1.277	0.038	0.012	1.366	0.055	0.026	1.449	0.072	0.048	1.583	0.095	0.082	1.740	0.122	0.129	1.904	0.152	0.192	2.069	0.186	0.271	2.234	0.223	0.367	2.426	0.267	0.478	2.637	0.316	0.603	2.853	0.371	0.740	3.069	0.430	0.890	3.281	0.492
0.070	7.0%	0.005	1.325	0.040	0.013	1.418	0.057	0.026	1.503	0.075	0.050	1.643	0.099	0.085	1.806	0.126	0.134	1.976	0.158	0.199	2.147	0.193	0.281	2.318	0.232	0.381	2.518	0.277	0.496	2.737	0.328	0.626	2.961	0.385	0.768	3.184	0.446	0.924	3.405	0.511
0.075	7.5%	0.006	1.371	0.041	0.013	1.467	0.059	0.027	1.556	0.078	0.052	1.701	0.102	0.088	1.869	0.131	0.139	2.045	0.164	0.206	2.223	0.200	0.291	2.399	0.240	0.394	2.606	0.287	0.514	2.833	0.340	0.648	3.065	0.398	0.795	3.296	0.461	0.956	3.525	0.529
0.080	8.0%	0.006	1.416	0.042	0.013	1.516	0.061	0.028	1.607	0.080	0.053	1.757	0.105	0.091	1.930	0.135	0.143	2.112	0.169	0.213	2.296	0.207	0.301	2.478	0.248	0.407	2.692	0.296	0.530	2.926	0.351	0.669	3.165	0.411	0.821	3.404	0.477	0.988	3.640	0.546
0.085	8.5%	0.006	1.460	0.044	0.014	1.562	0.062	0.029	1.657	0.083	0.055	1.811	0.109	0.094	1.990	0.139	0.148	2.177	0.174	0.219	2.366	0.213	0.310	2.554	0.255	0.420	2.775	0.305	0.547	3.016	0.362	0.689	3.263	0.424	0.847	3.509	0.491	1.018	3.752	0.563
0.090	9.0%	0.006	1.502	0.045	0.014	1.608	0.064	0.030	1.705	0.085	0.057	1.863	0.112	0.096	2.048	0.143	0.152	2.241	0.179	0.226	2.435	0.219	0.319	2.628	0.263	0.432	2.855	0.314	0.563	3.103	0.372	0.709	3.357	0.436	0.871	3.611	0.506	1.048	3.861	0.579
0.095	9.5%	0.006	1.543	0.046	0.015	1.652	0.066	0.031	1.751	0.088	0.058	1.914	0.115	0.099	2.104	0.147	0.156	2.302	0.184	0.232	2.502	0.225	0.328	2.700	0.270	0.444	2.933	0.323	0.578	3.188	0.383	0.729	3.449	0.448	0.895	3.710	0.519	1.076	3.967	0.595
0.100	10.0%	0.007	1.583	0.048	0.015	1.694	0.068	0.032	1.797	0.090	0.060	1.964	0.118	0.102	2.158	0.151	0.160	2.362	0.189	0.238	2.566	0.231	0.336	2.770	0.277	0.455	3.010	0.331	0.593	3.271	0.393	0.748	3.539	0.460	0.918	3.806	0.533	1.104	4.070	0.610

Half-Road Flow Capacity - Izzard's Equation



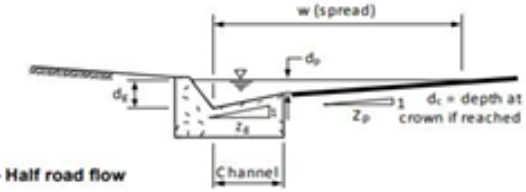


Figure 7.4.2 – Half road flow

Flow Correction Factor	F	0.9	
Width of kerb (invert to lip)	w_{chnl}	0.275	m
Depth of kerb (invert to lip)	d_{chnl}	0.030	m
Cross slope gradient of kerb	Z_g	9.167	1 V : Z_g H
Manning's roughness of kerb	n_g	0.013	

Width of half road (invert to crown)	$w_{halfroad}$	3.000	m
Width of pavement (lip to crown)	w_p	2.725	m
Cross slope gradient of pavement	Z_p	40.000	1 V : Z_p H
Manning's roughness of pavement	n_p	0.015	

Max. allowable d*V product	d*V	0.400	m^2/s
Max. allowable flooded width	w_{flood}	2.500	m

																								Flow over crown			
		d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W	d_g	A	W		
		0.030	0.004	0.275	0.040	0.009	0.675	0.050	0.018	1.075	0.060	0.030	1.475	0.070	0.047	1.875	0.080	0.068	2.275	0.090	0.093	2.675	0.100	0.121	3.000		
		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c		d_p	d_c			
		0.000	0.000		0.010	0.000		0.020	0.000		0.030	0.000		0.040	0.000		0.050	0.000		0.060	0.000		0.070	0.002			
Grade		Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V	Q	V	d_g.V		
m/m	%	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s	m3/s	m/s	m2/s		
0.005	0.5%	0.001	0.354	0.011	0.003	0.379	0.015	0.007	0.402	0.020	0.013	0.439	0.026	0.023	0.483	0.034	0.036	0.528	0.042	0.053	0.574	0.052	0.075	0.620	0.062		
0.010	1.0%	0.002	0.501	0.015	0.005	0.536	0.021	0.010	0.568	0.028	0.019	0.621	0.037	0.032	0.683	0.048	0.051	0.747	0.060	0.075	0.812	0.073	0.106	0.876	0.088		
0.015	1.5%	0.003	0.613	0.018	0.006	0.656	0.026	0.012	0.696	0.035	0.023	0.761	0.046	0.039	0.836	0.059	0.062	0.915	0.073	0.092	0.994	0.089	0.130	1.073	0.107		
0.020	2.0%	0.003	0.708	0.021	0.007	0.758	0.030	0.014	0.804	0.040	0.027	0.878	0.053	0.045	0.965	0.068	0.072	1.056	0.084	0.106	1.148	0.103	0.150	1.239	0.124		
0.025	2.5%	0.003	0.792	0.024	0.008	0.847	0.034	0.016	0.898	0.045	0.030	0.982	0.059	0.051	1.079	0.076	0.080	1.181	0.094	0.119	1.283	0.115	0.168	[illegible]	[illegible]		

You get this design spreadsheet when you enrol in our online course!

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Inlet Terminology

Flow Limits

Q_c Q_a
Q_i Q_b

Flow Terminology

Inlet Capture Charts

Q_c Q_a

Q_i Q_b

Flow Terminology

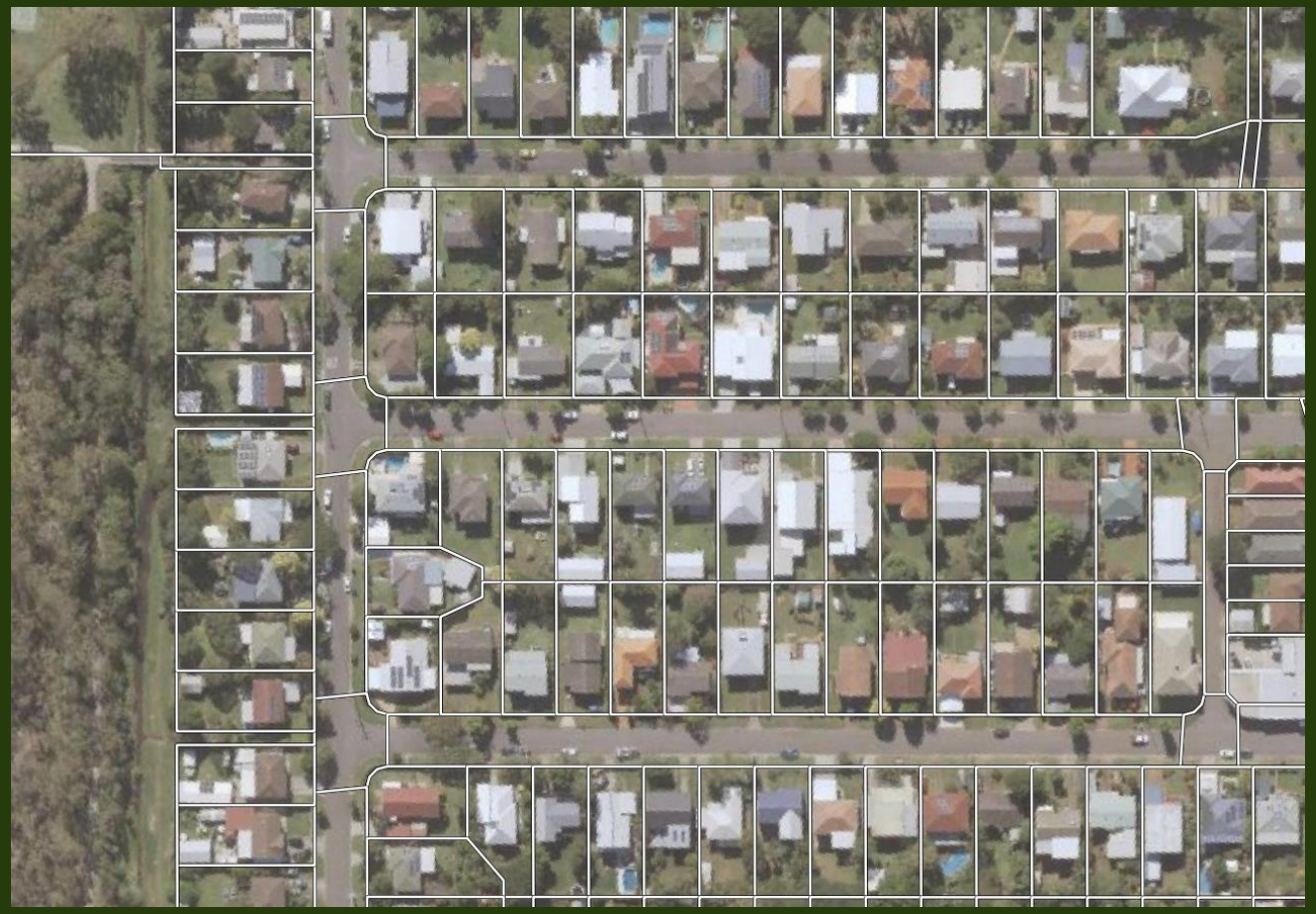
Flow Terminology

Q_c Catchment flow

Q_a Approach flow

Q_i Inflow

Q_b Bypass flow



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Understanding Your Catchments

Need to understand topography:

- Obtain contours
- Survey
- Site visit

Then we understand where:

- Road falls (%) = on-grade pits
- Road has a low point = sag pits
- Lots grade to / from road

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Understanding Your Catchments

- Lots grade to or away from roads

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Understanding Your Catchments

- Road crests push water in opposite directions

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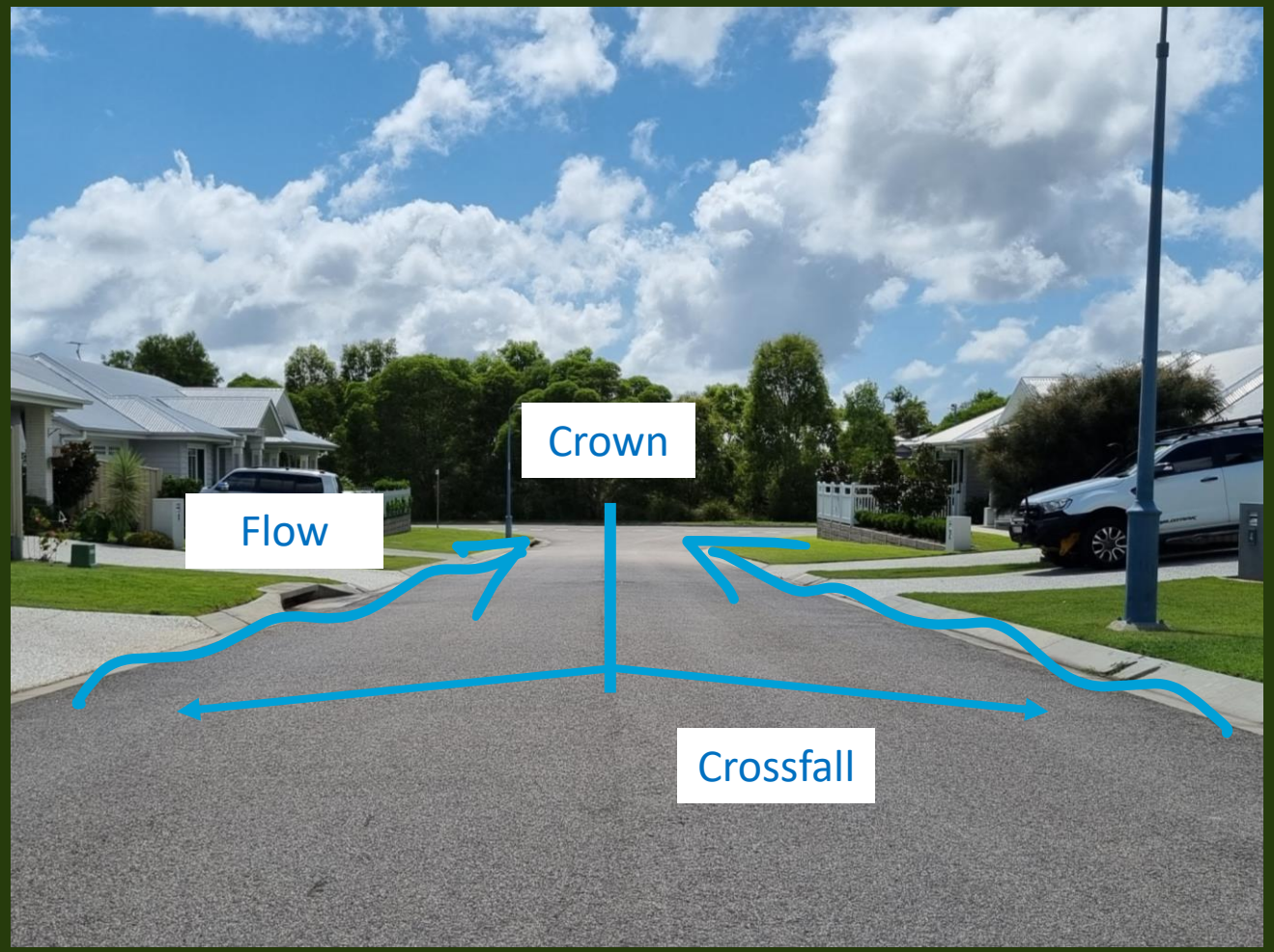
Understanding Your Catchments

- Two-way crossfall = water runs along kerb on both sides of road
- Kerb returns direct flow around intersections



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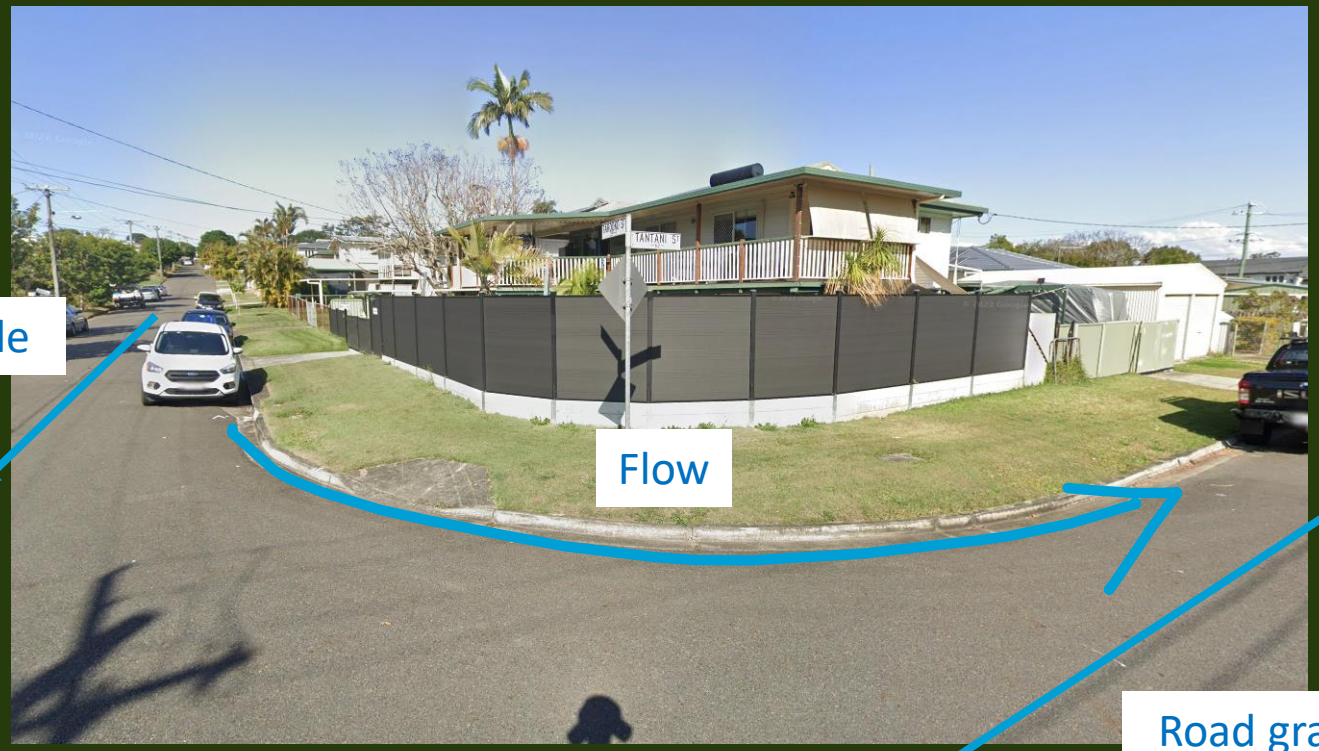
Understanding Your Catchments

- Kerb returns direct flow around intersections



Source: Google 2024

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Flow Terminology

Q_c Catchment flow

- Flow approaching inlet
- Consists of only the catchment for the inlet pit
- Rational Method to calculate peak discharge, Q

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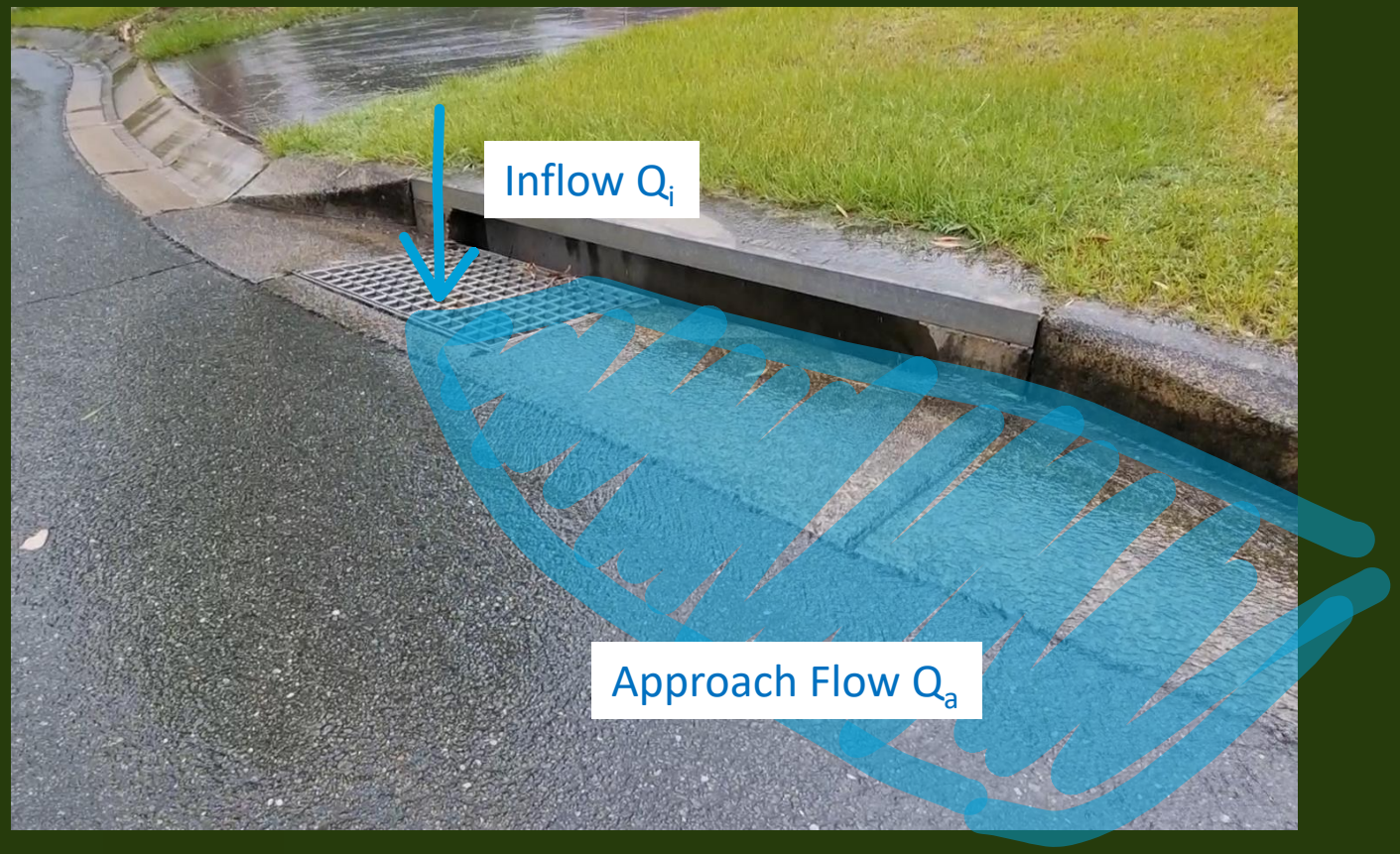
Flow Terminology

Q_i Inflow

- Total flow inlet captures and conveys underground through the stormwater piped network
- Inlet capture charts are needed to calculate inflow



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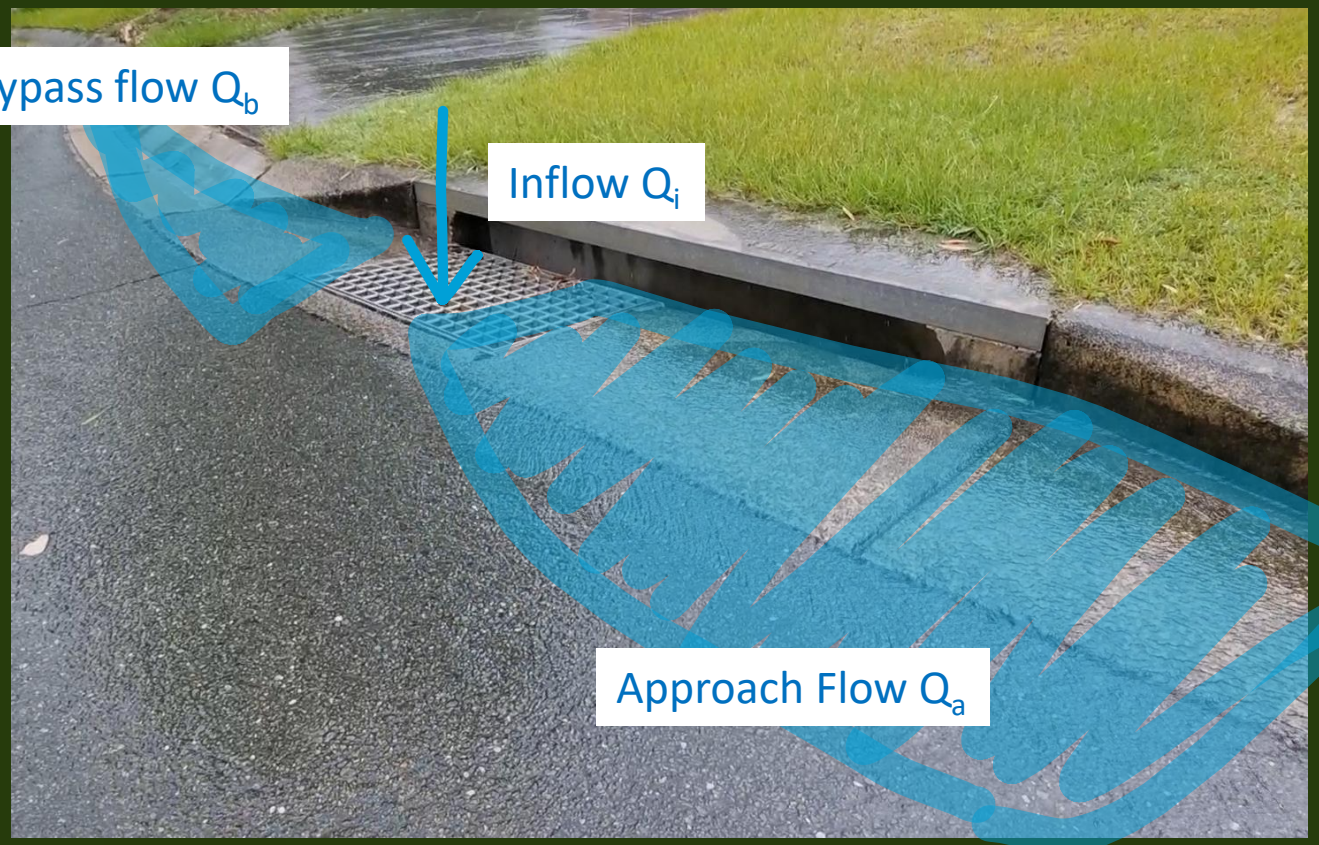
Flow Terminology

Q_b Bypass flow

- Remaining flow that is not captured by inlet
- Bypass flow = Approach flow minus captured flow

$$Q_b = Q_a - Q_i$$



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Flow Terminology

Q_a Approach flow

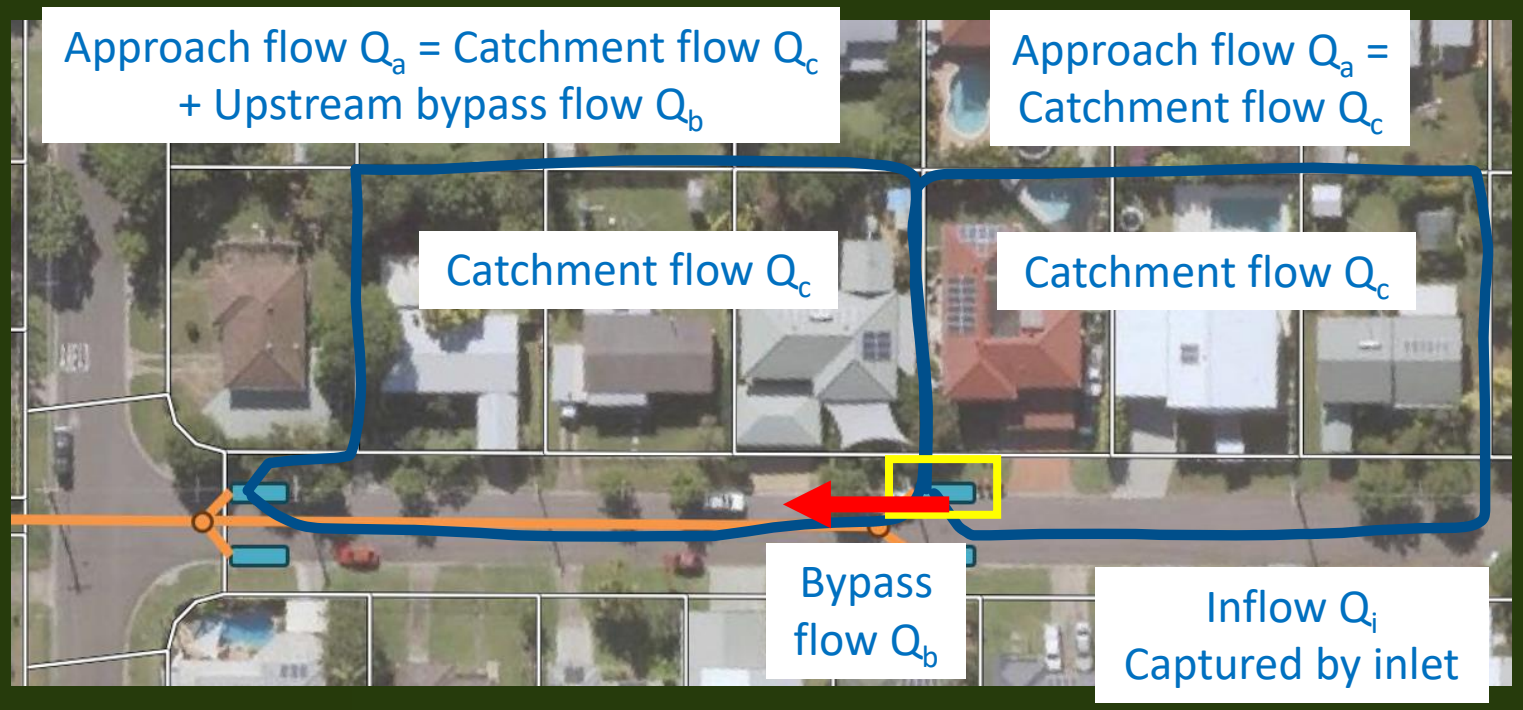
If inlet is at <u>top of catchment</u>

Approach flow = Catchment flow

(no upstream bypass flow)

If inlet <u>has upstream catchment</u>

Approach flow = Catchment flow + Upstream bypass flow



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Inlet Terminology

Flow Limits

Q_c Q_a
Q_i Q_b

Flow Terminology

Inlet Capture Charts

Inlet Capture Charts

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Inlet Capture

- Mathematical equations can estimate how much stormwater an inlet can capture
- Laboratory testing can prove with results
- Hydraulic capture charts created from equations or test results
- Allows engineers and designers to predict behaviour of stormwater inlets

Source: University of South Australia 2024

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Sag Condition

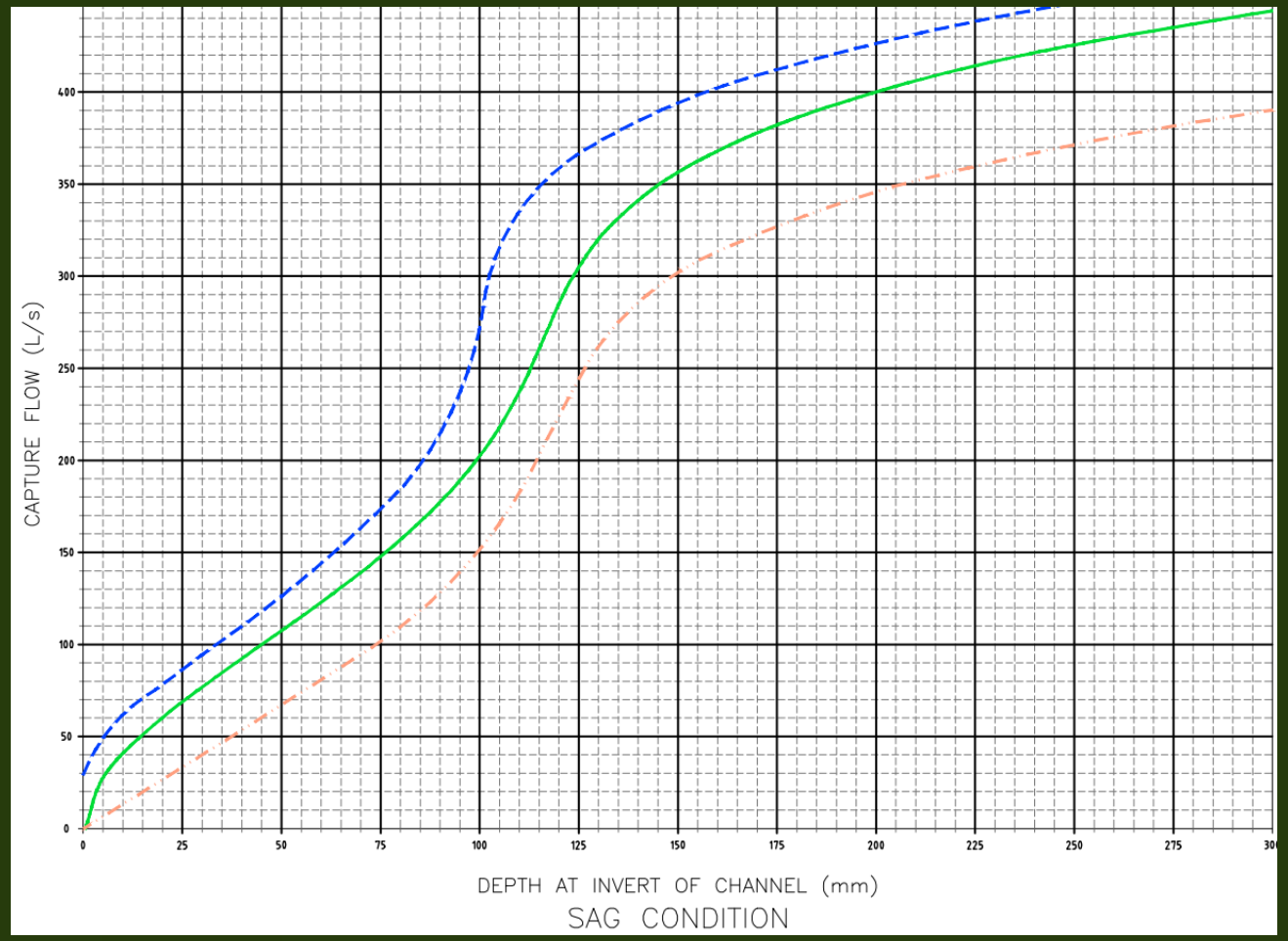
Hydraulic performance based on:

- Ponding depth above inlet opening
- Physical dimensions of inlet
  - Kerb opening
  - Grate opening

Sag Condition

Once approach flow has been calculated:

- Select trial inlet type
- Identify chart curve representing inlet type
- Read from ‘capture flow’ intersecting with curve
- Read down to ‘depth at invert of channel’
- Check if depth is acceptable



Source: Brisbane City Council – BSD-8077 2023

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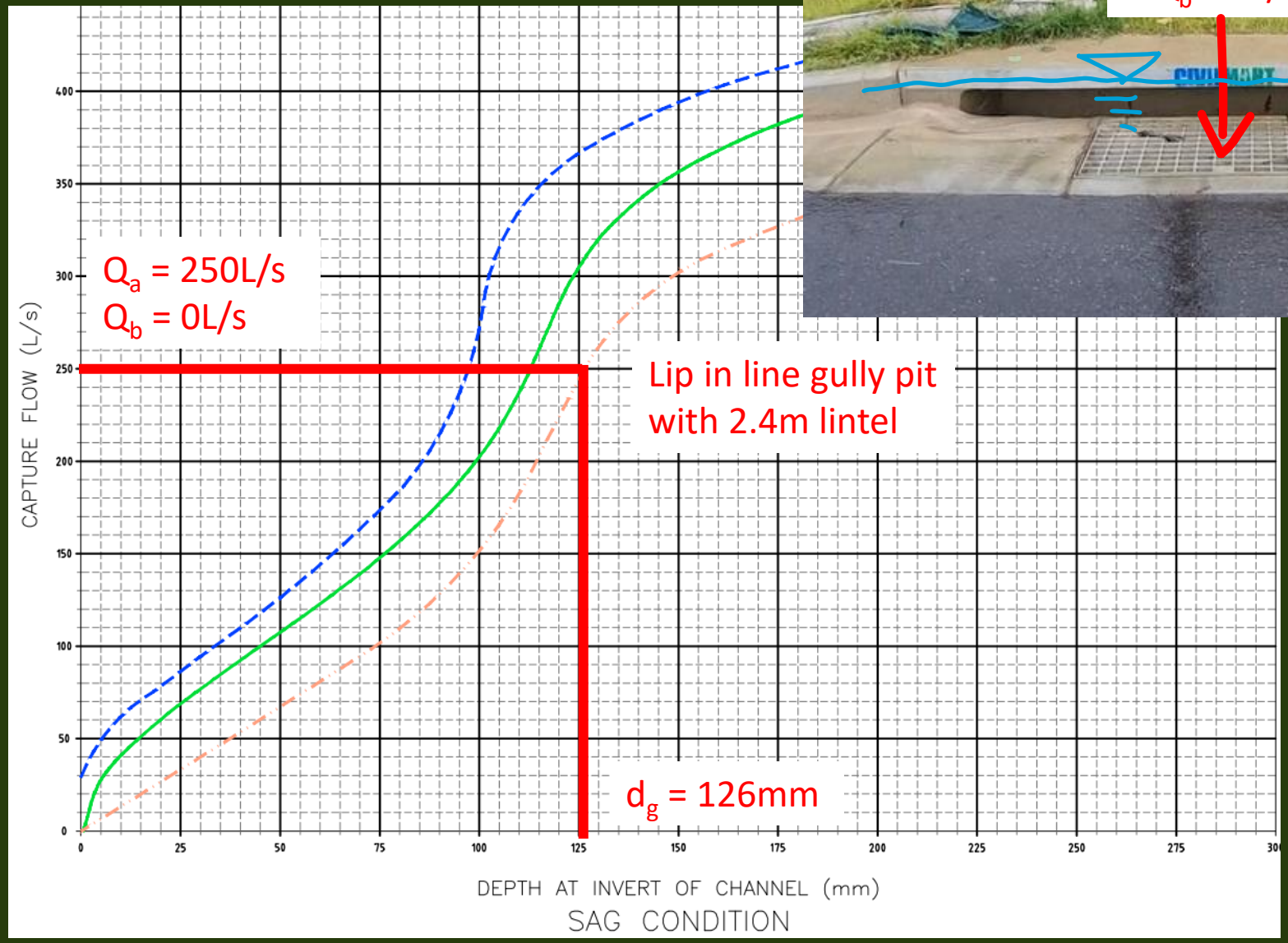
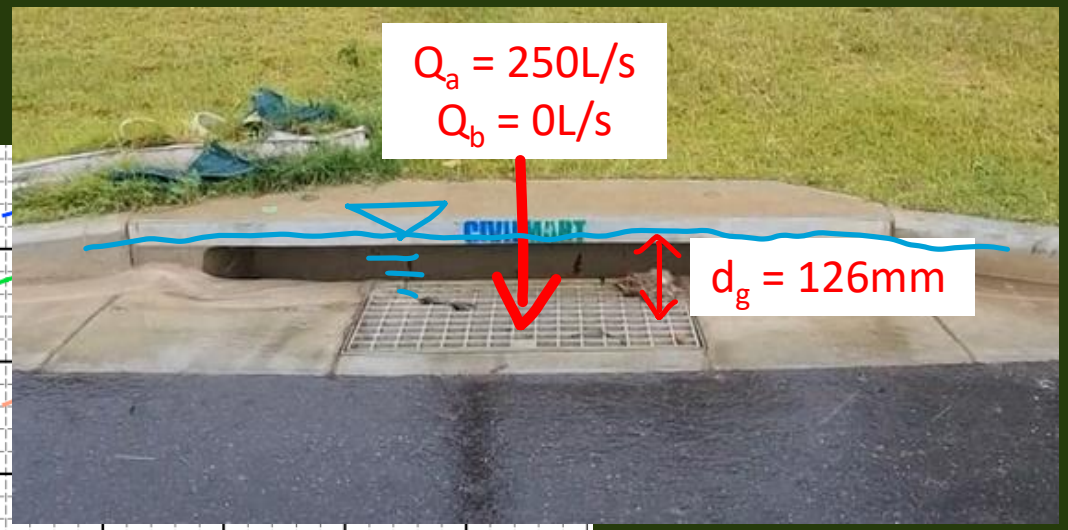
Sag Condition





Source: Brisbane City Council – BSD-8077 2023

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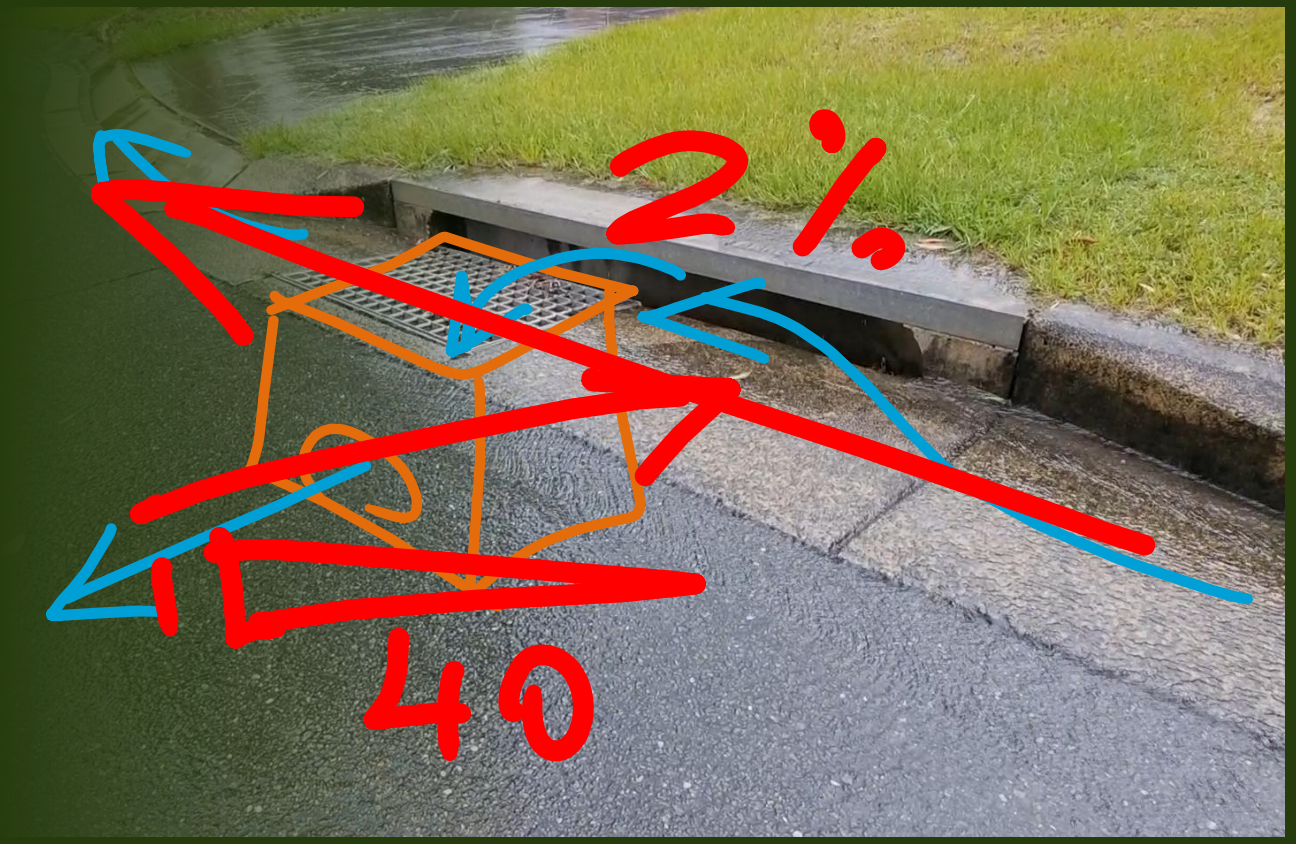
On-grade Condition

Hydraulic performance based on:

- Physical dimensions of inlet
  - Kerb opening
  - Grate opening
- Road longitudinal grade
- Road crossfall



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On-grade Condition

Hydraulic performance based on:

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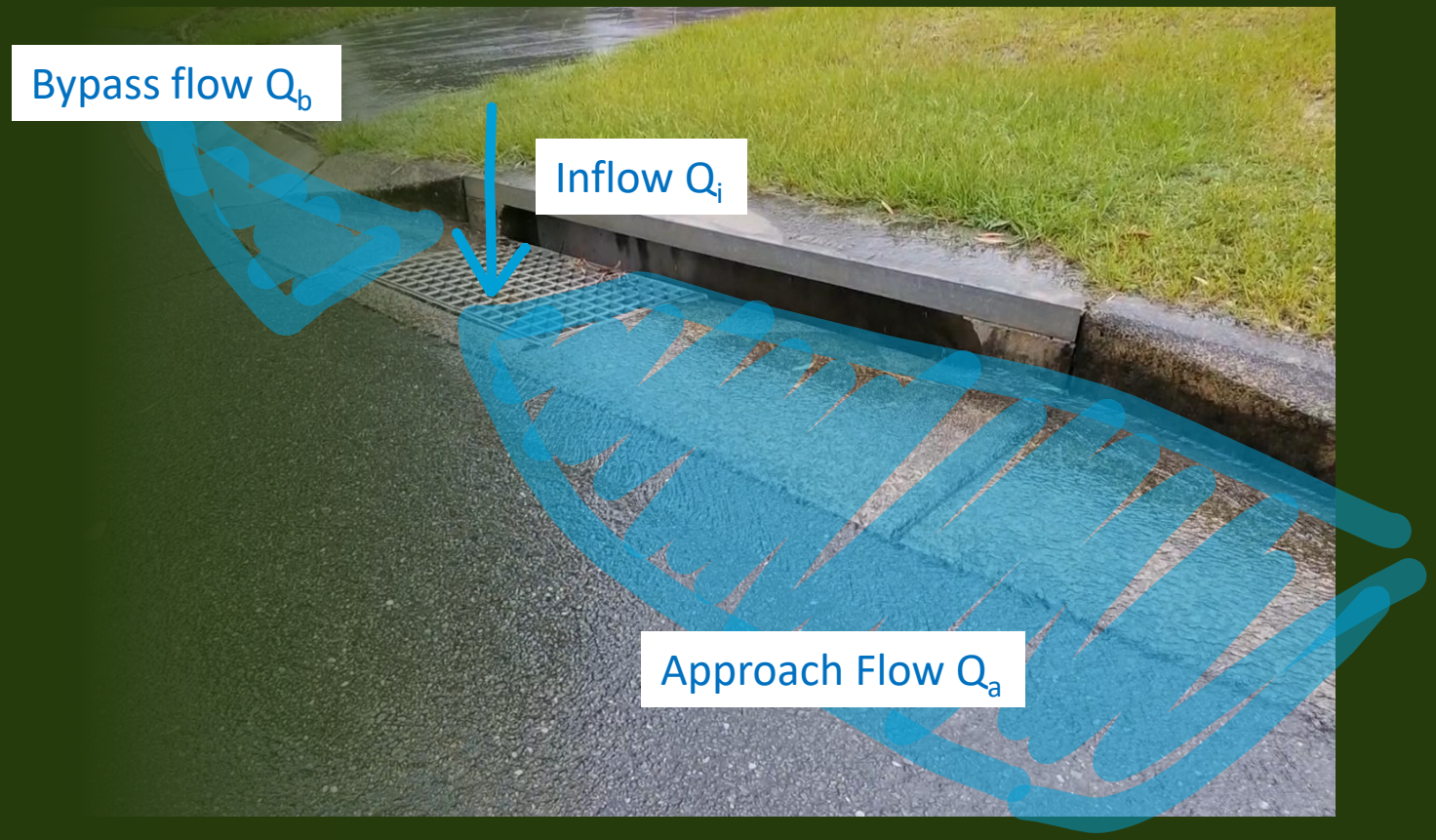

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On-grade Condition

Once approach flow has been calculated:

- Select trial inlet type
- Identify chart curve representing road longitudinal grade
- Read from ‘approach flow’ intersecting with curve
- Read across to ‘capture flow’

Source: Brisbane City Council – BSD-8071 2023

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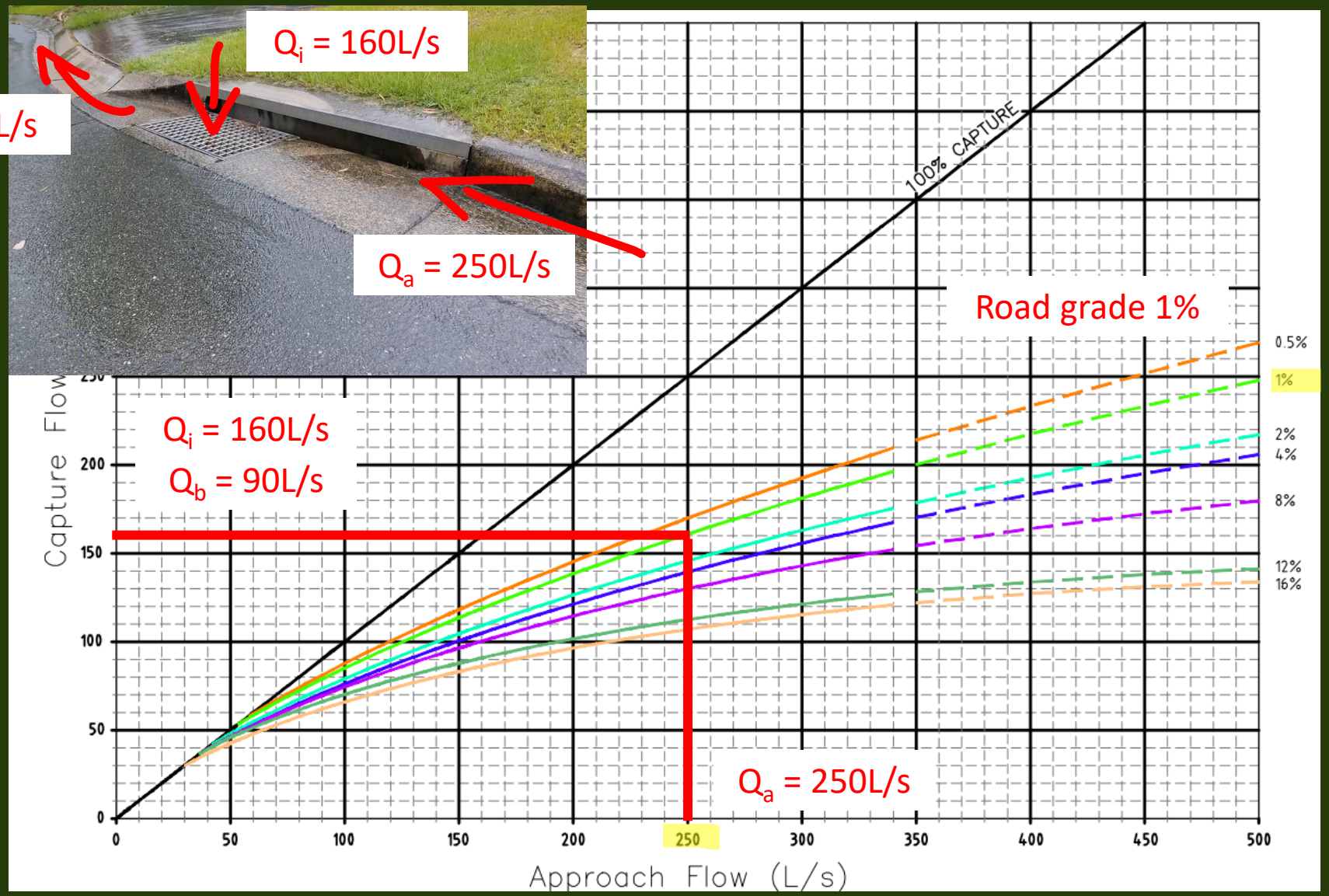
On-grade Condition



Source: Brisbane City Council – BSD-8071 2023

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Here are common problems we encounter in the industry:

- Custom inlet charts
- Various inlet configurations
- Different States & Territories, Councils
- Field inlets on-grade (not in sag)
- Blockage factors
- Sensitivity analysis (what-if scenarios)
- Severe storm impact statement

If these sound familiar but you're not 100% confident,
get in touch and we can teach you.

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Want to learn more?

We can help with:

- Free consultations
- Online self-paced learning
- Coaching
- Face-to-face workshops
- In-house training delivery

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