

Quick Guide to Application for Clearance Certificate for Detailed Plan

Punggol Reservoir

Centralised Services Department (Building Plan Unit)



Quick Guide to Application for Clearance Certificate for Detailed Plan on Sewerage (Sewer) Works

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FILL UP PUB-DPCLR.XFD form

PLEASE TICK THE CORRECT SUBMISSION TYPE
(multiple selection is allowed)

Particulars of Project	
Project Reference Number	<input type="text"/>
Project Title	<input type="text"/>
Location Description [Include Lot/Plot, MK/TS, House No, Building Address and Road information]	<input type="text"/>
Project Address	<input type="text"/>
Plan Type	BP <input type="text" value="Please Select"/>
Particulars of Application	
Submission Type	<input type="checkbox"/> Works Affecting Sanitary <input type="checkbox"/> Used Water Pumping System (M&E) <input type="checkbox"/> Works Affecting Sewer <input type="checkbox"/> RC Trench <input type="checkbox"/> Works Affecting Minor Drainage <input type="checkbox"/> Works Affecting Other Drainage
Department File Reference No (if applicable)	<input type="text"/>

For works involving sanitary plumbing and sanitary drainage system, including last IC connection to sewer

For works involving used water pumping system (e.g. ejector pump)

For works involving sewerage system (e.g. propose new sewer, pumping main, MH)

For works involving new RC trench

FILL UP PUB-DPCLR.XFD form

ONLY **VALID** LICENCED PLUMBER (LP) IS ALLOWED EFFECTIVE FROM 1 APR 2018



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I hereby certify that these plans and the works shown therein comply with the provisions of the Sewerage and Drainage Act (Chapter 294), the Sewerage and Drainage (Sanitary Works) Regulations and the current Code of Practice on the Sewerage and Sanitary Works.	Select					

Please state if any deviance from the COP

Particulars of Plumber/Contractor

Name	Please select
Firm Details	
Contact No	
Email	
Please indicate your Registration / License Number	<input type="checkbox"/> SPS registered
	<input type="checkbox"/> PUB LP
	<input type="checkbox"/> N.A

QP shall ensure the LP engaged in the project is a valid LP

THINGS TO NOTE

- Site/location plan, layout plans and longitudinal plan shall be submitted and endorsed by PE (Civil/Structural)
 - Alignment, size, material and top/invert levels of proposed sewer and manhole shall be in accordance with those provided in the approved DC plan. Any deviation should be highlighted to the processing officer for further review.
 - The layout plans shall indicate the sewer pipe length, diameter, gradient, material, and top/invert levels of manhole(s).
 - The longitudinal plans shall indicate the sewer pipe diameter, gradient, pipe material, type of bedding and piling (if constructed by open cut), top/invert level of manhole(s) and sewer length.
 - For new manhole, detailed plan of manhole showing netting and intermediate platform (if applicable) shall be provided. Refer to standard drawing PUB/WRN/STD/001B for more details.
-

THINGS TO NOTE

- All sewers and manholes shall be at minimum depth of 1.5m below ground level unless the ground profile and the existing sewer level do not permit.
- For laying of pipe by cut and cover method, pipe bedding shall be constructed in accordance with the section types detailed in standard drawing PUB/WRN/STD/001B.
- New sewers shall be designed to achieve a velocity of approximately 1.5m/s at design peak flow. Accepted sewer velocity is 0.9 m/s - 2.4m/s.

Quick Guide to Application for Clearance Certificate for Detailed Plan on Sewerage (RC Trench) Works

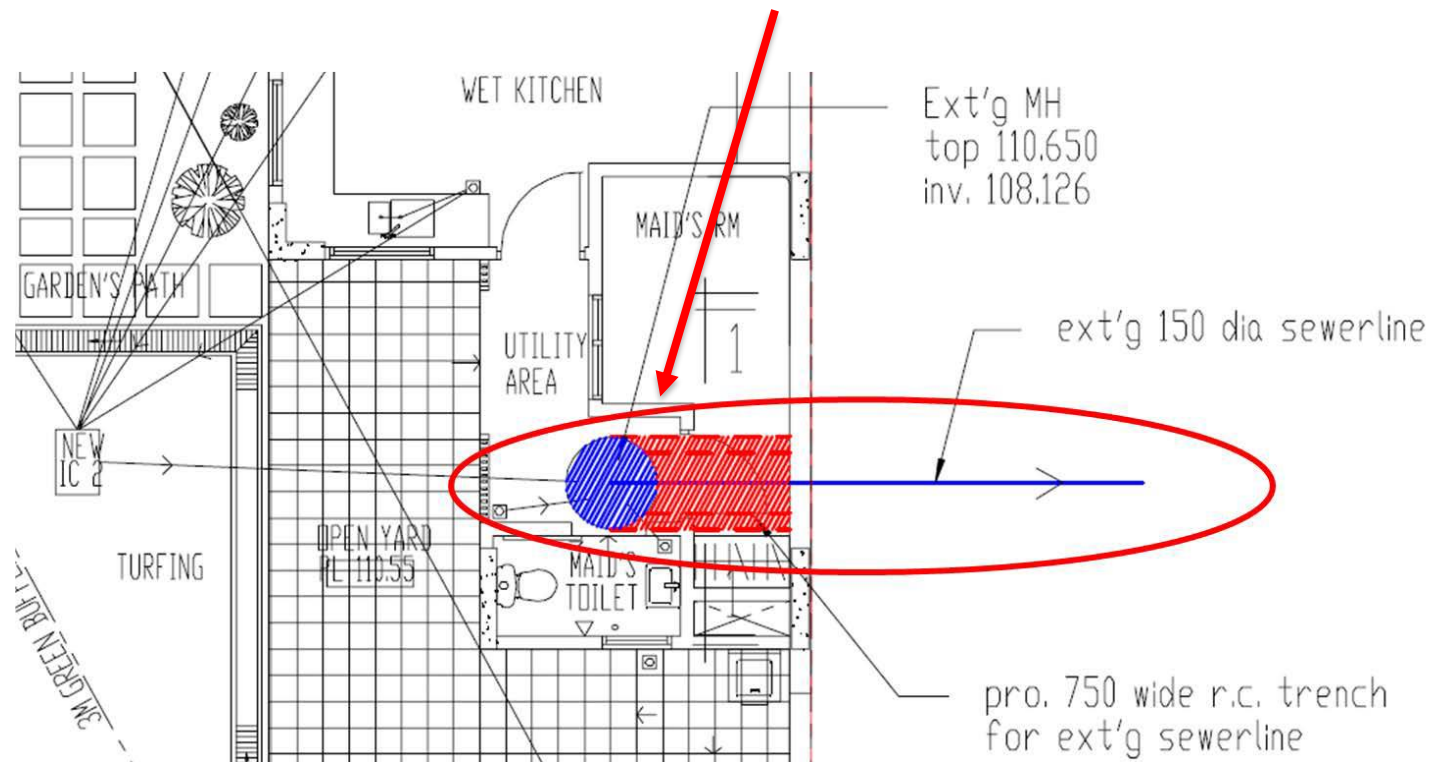
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THINGS TO NOTE

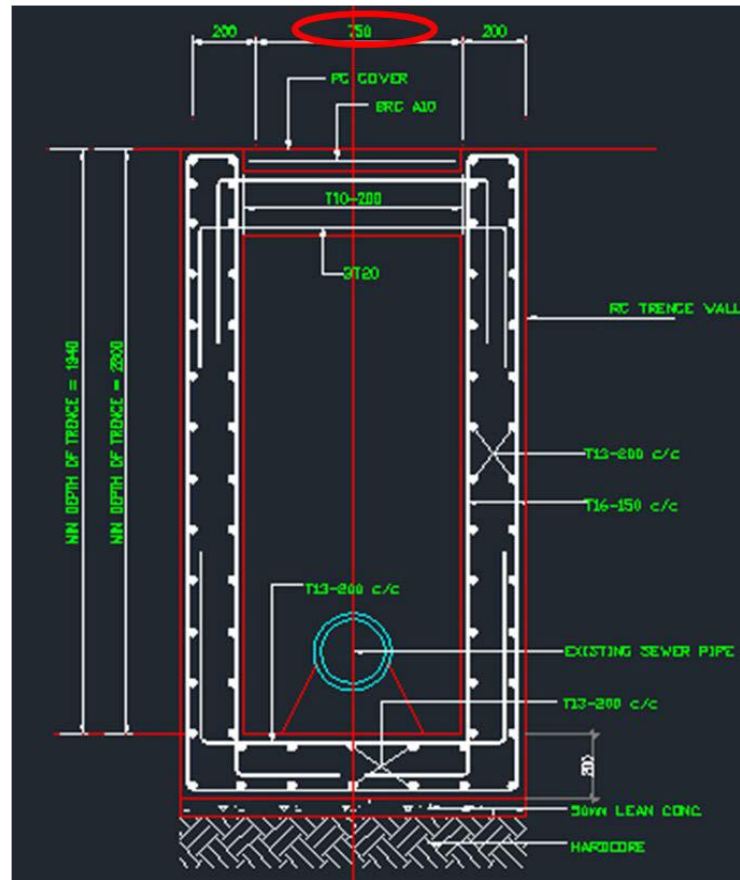
- You should ensure no permanent structure (e.g. kitchen cabinet) is to be erected / installed over the RC Trench to ensure readily access when maintenance is needed.



THINGS TO NOTE

- For minor sewers that are $\leq 3\text{m}$ deep, QP shall ensure the minimum width of RC trench is 750mm to allow a man to work within it.
- For minor sewers that are $> 3\text{m}$ deep, the width of the trench required shall be as advised by Water Reclamation Department, PUB.
- Tiling of the individual removable covers is allowed provided they remain removable without cutting/hacking of tiles when access is required.
- Siting of bathroom above RC Trench
 - a. WC to be sited away from RCT
 - b. Wash basins are removable
 - c. Waterproofing of wet area, such as toilet, to prevent water from seeping into RCT


THINGS TO NOTE



For minor sewers that are $\leq 3\text{m}$ deep, QP shall ensure the minimum width of RC trench is 750mm to allow a man to work within it.

RC TRENCH DESIGN CALCULATIONS

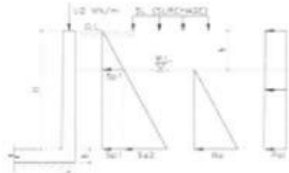
- RC Trench design calculations must be formalized with PE stamp and signature.




GND CONSULTING ENGINEERS
3791 Jalan Bukit Merah, 4-Corner @ Radisson Bld-23, Singapore 159471. Tel: 6274 0331, Fax: 6274 0330

Date: 12-Aug-2014
Prepared by: GS

Project: 49 Jalan Kertumbi
Subject: RC Trench



General Input		Unitweight of retained material	
Wall height (h)	1.05 m	Soil unitweight (γ ₁)	18.00 KN/m ³
Wall width (a)	150.00 mm	Water unitweight (γ _w)	9.81 KN/m ³
Base depth (b)	1.05 mm	Surcharge Load (SL)	11.50 KN/m ²
Water level from G.L. (h)	0.00 m	Friction Angle (α)	30.00 °
Clear length of base (l)	0.75 m		
Material Specification			
Concrete strength (f _{cu})	35.00 N/mm ²	Concrete unitweight	24.00 KN/m ³
Tension steel strength (f _y)	460.00 N/mm ²	γ _w conc.	1.50
Concrete cover (cc)	30.00 mm	γ _w steel	1.15
Loading (considering 2m strip):			
Soil dry unitweight (γ ₂)	8.19 KN/m ³	Coeff. Earth pres. @ rest (K ₀)	0.50
Soil pressure-1, Sp1 = K*γ ₁ *h	0.00 KN/m	Coeff. Active pressure (K _a)	0.33
Soil pressure-2, Sp2 = K*γ ₂ * (h-h)	2.87 KN/m	Coeff. Passive pressure (K _p)	3.00
Water pressure, Wp = γ _w * (h-h)	10.30 KN/m	Soil behavior behind wall:	Active
Surcharge pressure, Ps1 = K*SL	3.83 KN/m	Coeff. used (K)	0.33
Design of Wall			
Moments:			
M _{SOIL}	0.53 KN m	Effective depth (d)	110.00 mm
M _{WATER}	1.89 KN m	K = M / b*d ² *f _{cu}	0.0150
M _{SURCHARGE}	2.11 KN m	Lever arm (z)	104.50 mm
M _{TOTAL SERVICE}	4.53 KN m	A _{required} = M _U / 0.87fy z	151.81 mm ²
M _{SAFETY} = 1.4*M _{TOTAL}	6.35 KN m	Provide vertical reinf.	T10 - 200
		Provide horizontal reinf.	T10 - 300



Quick Guide to Drainage Detailed Plan Submission



Punggol Reservoir

USEFUL REFERENCES

Useful drainage design guidelines can be found in the following:

- Drainage
 - Drainage Handbook on Managing Urban Runoff
 - Technical Guide on On-site Stormwater Detention Tank Systems
- Alternate Sources of Water
 - Rainwater Harvesting
- ABC Waters Design Guidelines

Developers/owners are advised to purchase the DIP within 6 months prior to DC Submission so that the latest information is available for planning of the development proposals.

WHAT DO YOU NEED TO SUBMIT?

Your DP submission should show proposed drainage works clearly as follow:

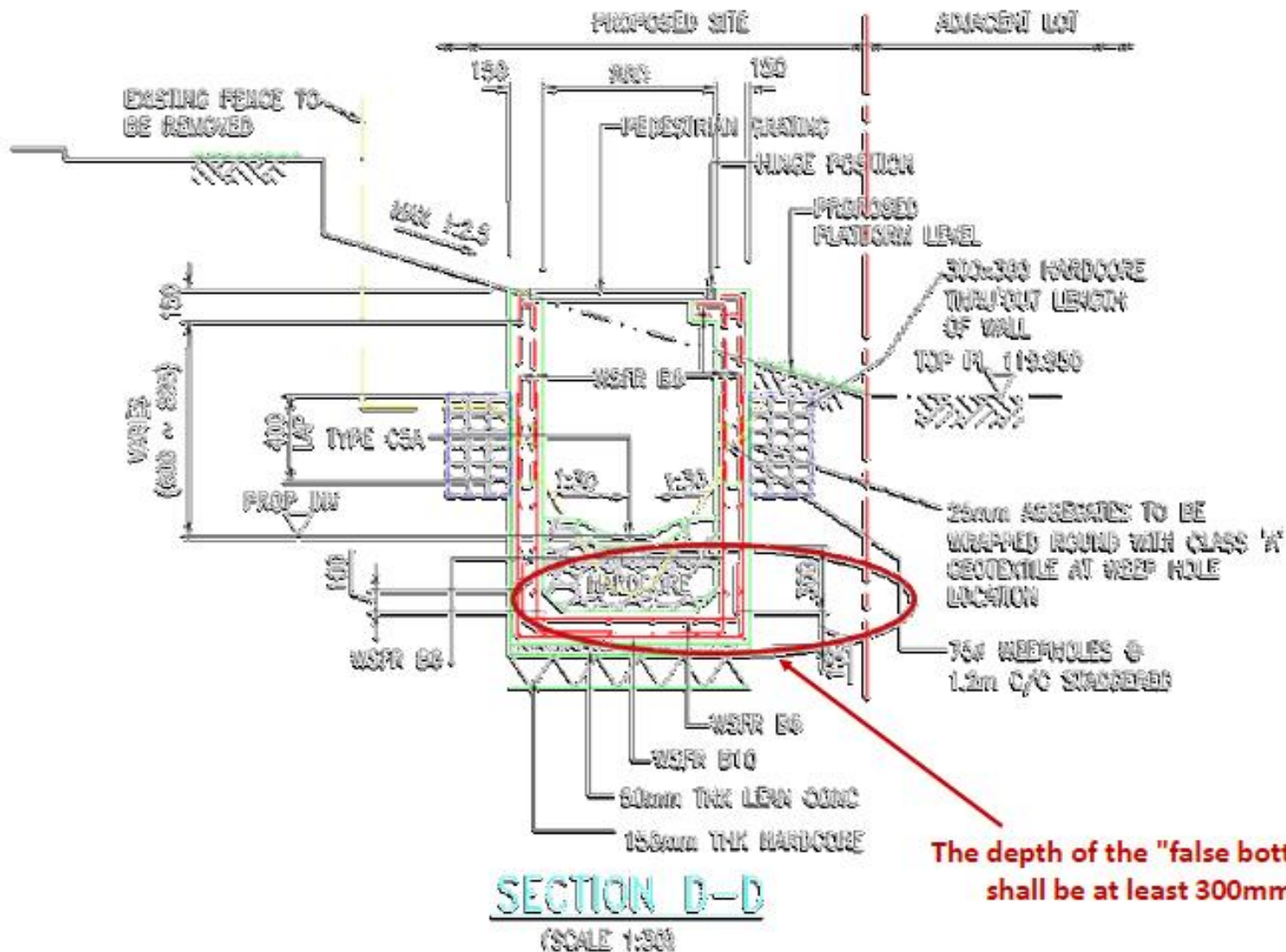
- Drainage layout plan showing the platform levels, crest levels, internal and external drainage systems, common drain, DR, basement stormwater tank, structural detention and retention features, ABC Waters design features, flood protection measures, and discharge points.
- Longitudinal section of the drain indicating drain gradient, invert and cope levels (including existing drain connections).
- Cross sectional details of the drains.
- Other required details for flood protection measures, basement stormwater tank, structural detention and retention features, ABC Waters design features, pumped drainage systems.

FOR DEVELOPMENT WITH PROPOSED ROADSIDE DRAIN/ ENTRANCE CULVERT

- The submission should include the Professional Engineer (PE)'s endorsement of the following live loads for design of the drain:
 - The entrance culvert is designed to withstand vehicular loading in accordance to Land Transport Authority's latest standards and relevant code of practices.
 - Drains (box drain or open drain) are designed with a nominal live load surcharge of 10kN/m^2 .
 - Drains (adjacent to roads and affected by vehicular loading) are designed with a live load surcharge of 20kN/m^2

FOR DEVELOPMENT WITH PROPOSED ROADSIDE DRAIN/ ENTRANCE CULVERT

- Where an entrance culvert/crossing is proposed at a stretch of closed drain, gratings/openings shall be provided at the closed drain sections upstream and downstream of the proposed entrance culvert/crossing.
- The internal width and clear depth of a roadside drain/culvert (including entrance culvert) shall be at least 600mm or same as the size of the existing drain size (whichever is bigger).
- False bottom of well compacted hardcore shall be provided for the reconstructed drain to tie in with upstream and downstream invert levels of existing drains. The depth of the false bottom shall be at least 300mm.



FOR SERVICES WITHIN AND/OR ACROSS DRAIN/DRAINAGE RESERVE

Services are required to undercross drain/drainage reserve

- Services shall be laid to undercross the drain throughout the full width of the drain with a 1.0 m minimum clearance below the invert of the existing or proposed drain.
- Where new drains are to be constructed or existing drains are to be reconstructed, all existing services within or across the drains shall be re-laid at the cost of the developer/owner to undercross the new or reconstructed drains

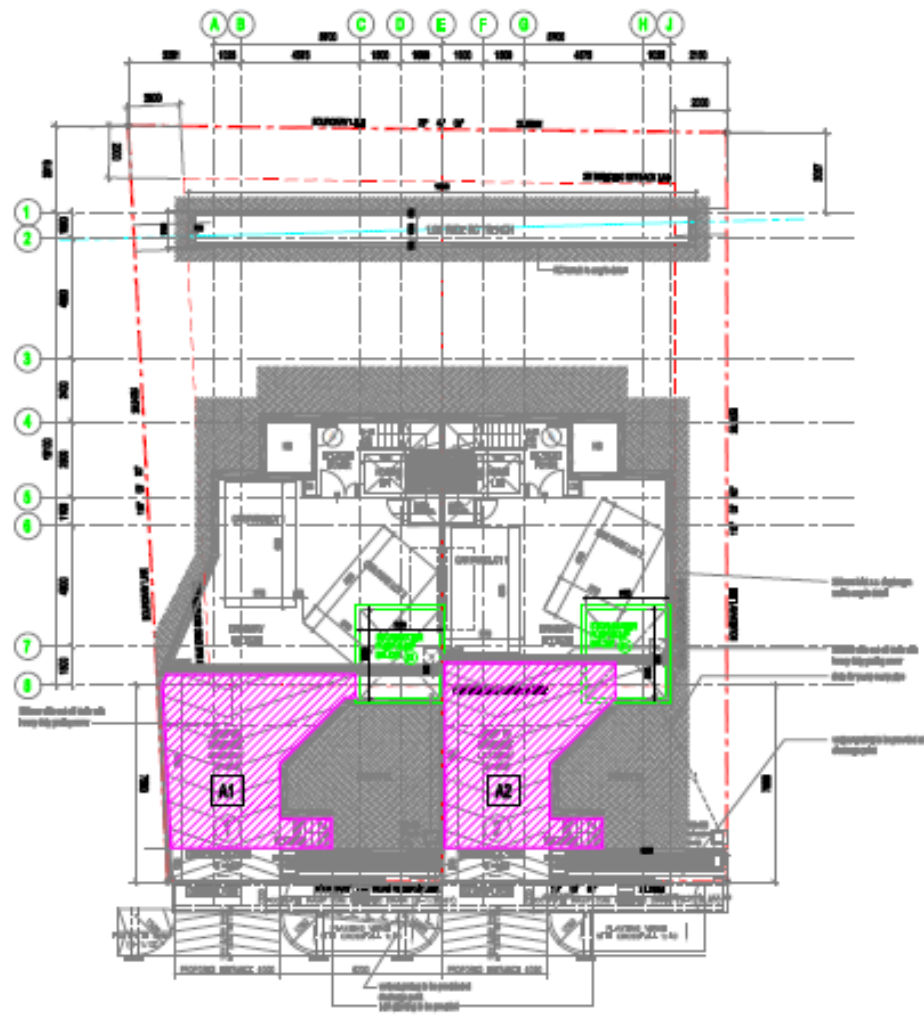
FOR DEVELOPMENT WITH BASEMENT PUMP DRAINAGE SYSTEM

The submission should include the relevant PE's endorsement showing clearly the following details:

- Catchment plan of the rain water ingress to basement
- Basement drainage system with summit point and flow direction indicated
- Location, plan and cross-section plan of the pump sump
- Pump outlet discharge pipe showing the swan neck connection to the surface internal drain or internal sump before conveyance to the roadside drain.

FOR DEVELOPMENT WITH BASEMENT PUMP DRAINAGE SYSTEM

- Pumped drainage system shall comply with sections 4.9 and 10 of the current Code of Practice on Surface Water Drainage.
- PE (Civil) shall submit design calculations for pump sump with sufficient storage capacity to cater for the total quantum of inflow from the entire source catchment area over duration of at least 3 hours shall be provided.
- PE (Mech) shall submit pump design calculations including the operation sequence, maintenance and monitoring measures of the proposed pumped drainage system at DP stage.
- Basement pump drainage system shall not be discharged directly into the roadside/public drain.
- Swan neck connection to internal drain must comply with the minimum crest level requirement as stated in Clause 2.2.



 **BASEMENT PLAN**
 1:100

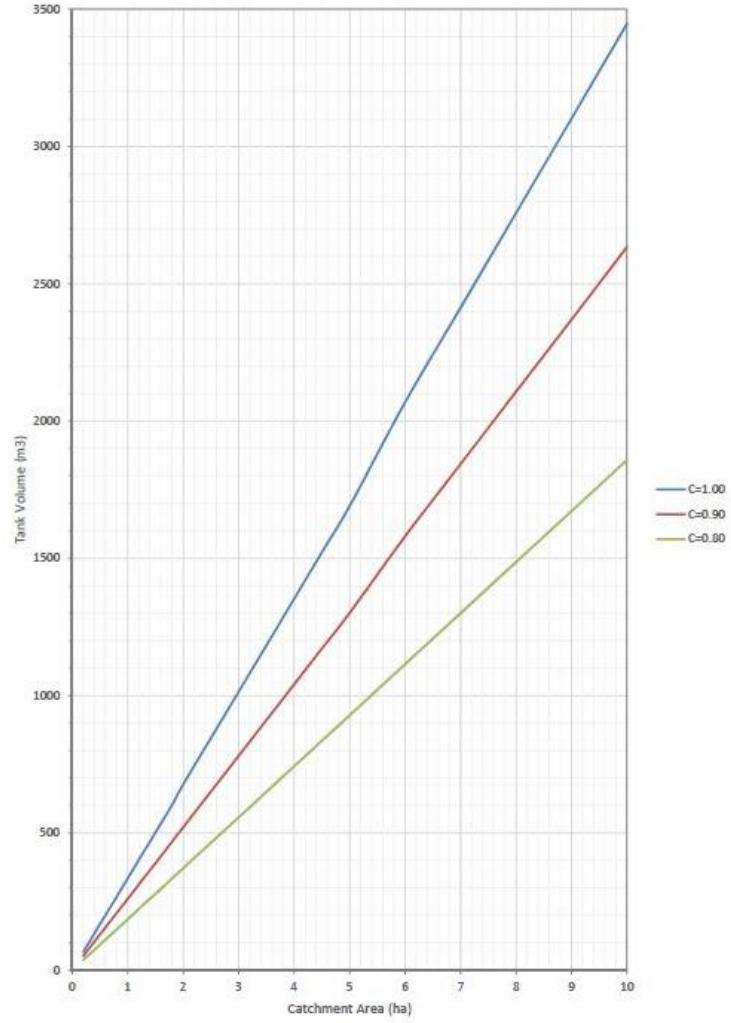
STAIRS SECTION NUMBER	PROPOSED COVERAGE AREA (sq m)	VALUE OF WORK (sq m)	STAIRS SECTION NO.	STAIRS SECTION NO. PROFESSIONAL	STAIRS SECTION NO. PROFESSIONAL
A1	10.0	1.1	1	1000(1) + 1000(2) + 1000(3)	Min 1000-1000
A2	10.0	1.2	2	1000(1) + 1000(2) + 1000(3)	Min 1000-1000

FOR DEVELOPMENT WITH STORMWATER DETENTION TANK

- New erection and reconstruction works to commercial, industrial, institutional and residential developments ≥ 0.2 ha in site area and Additions & Alterations (A&A) works to existing commercial, industrial, institutional and residential developments where affected site area is ≥ 0.2 ha are required to control the peak runoff discharged from the proposed development.
- Design of stormwater detention tank shall comply with section 7.1.5 of the current Code of Practice on Surface Water Drainage.

FOR DEVELOPMENT WITH STORMWATER DETENTION TANK

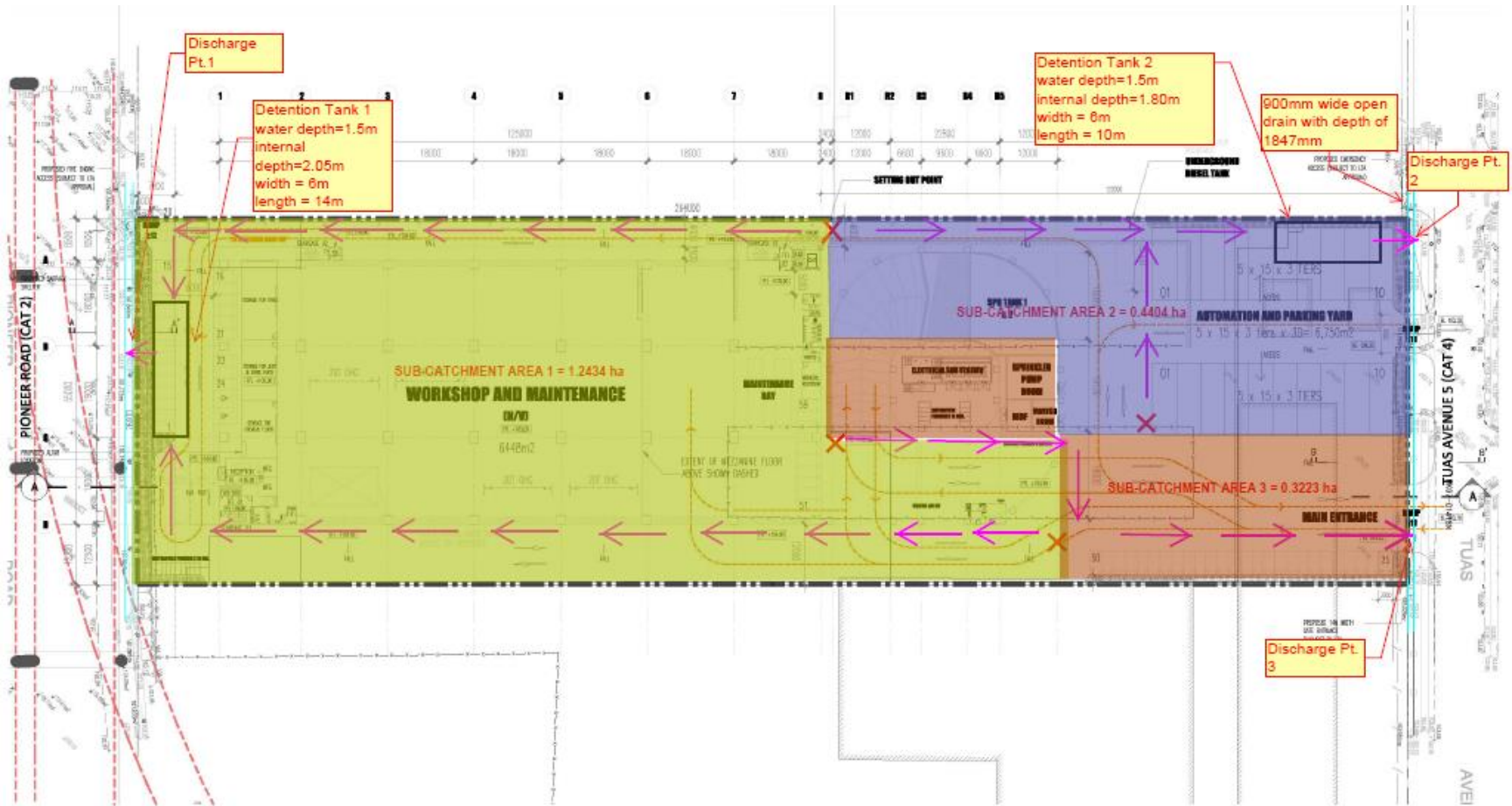
Estimated Size of Online Detention Tank
for each sub-catchment

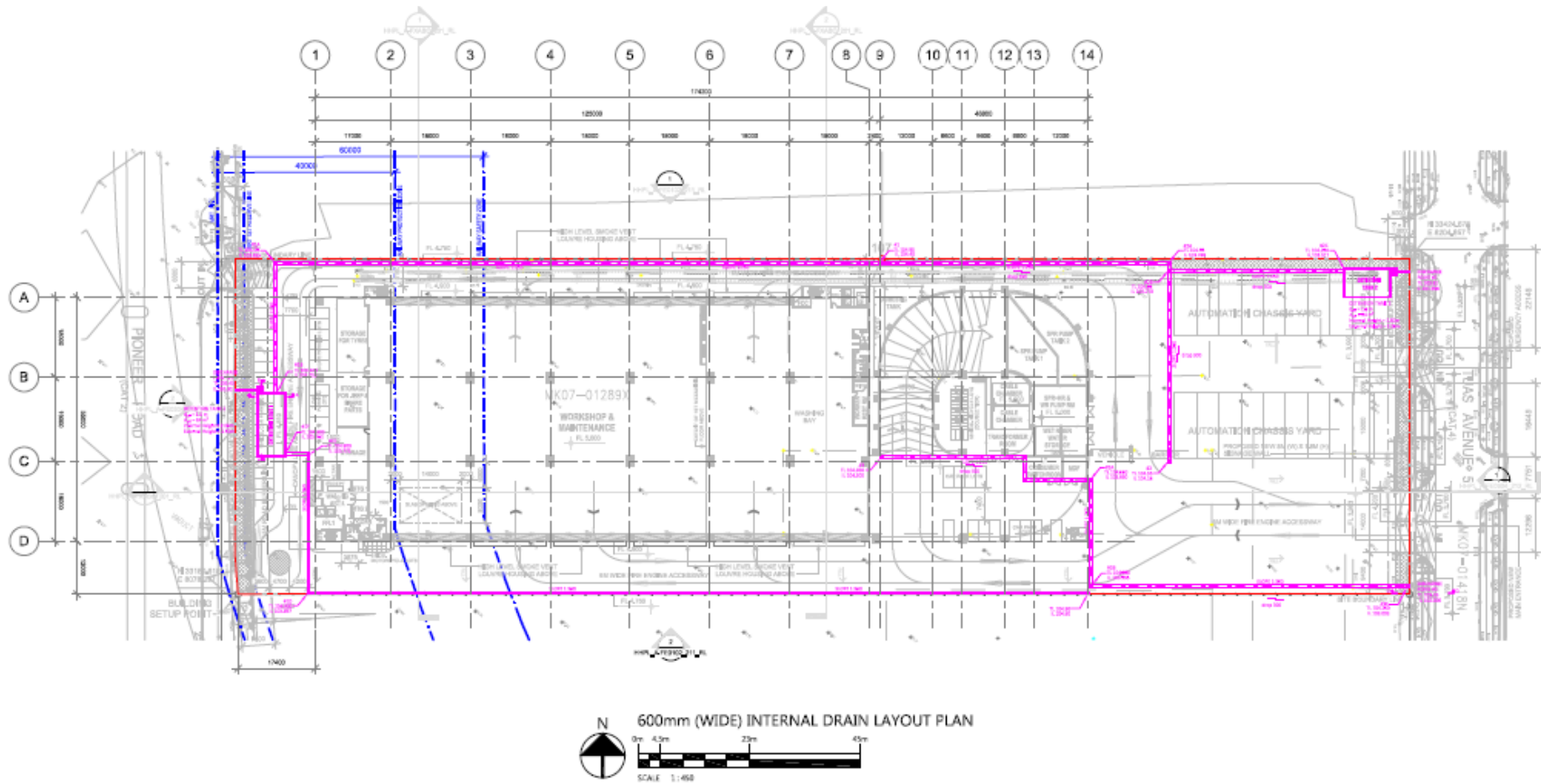


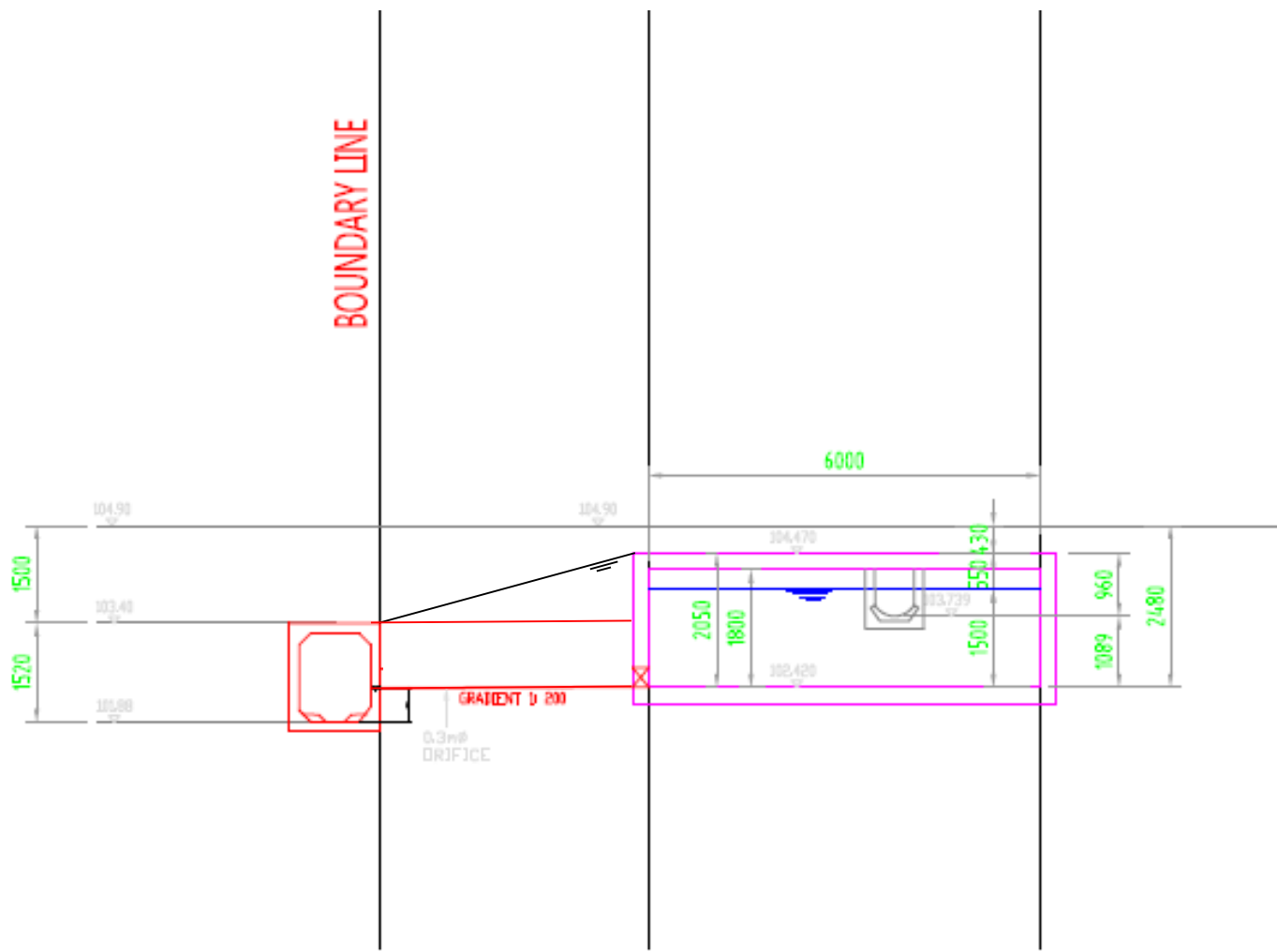
FOR DEVELOPMENT WITH STORMWATER DETENTION TANK

The PE(Civil)'s submission should show clearly the following:

- Catchment and sub-catchment plan for the proposed internal drainage system within the development.
- Internal drainage system flowing to the stormwater detention tank system with summit point and flow direction indicated.
- Layout plan, cross-sectional details, inlet and outlet configuration and levels, connections to upstream drainage network and downstream internal and external of the stormwater detention tank system.
- Detailed design calculations and modelling check computations of the stormwater detention tank system.
- The details of the proposed pumped discharge system or gravity discharge system.
- Operation sequence, maintenance and monitoring measures of the proposed stormwater detention tank system.







FOR DEVELOPMENT OF SITE AREA EXCEEDING 0.4 HA

- Hydraulic calculations for the proposed internal drainage system shall be submitted at DP stage.
- The submission shall include catchment/sub-catchment plan of the drainage system.
- The calculations shall be endorsed by a PE (Civil).

COMMONLY MADE MISTAKES

- No cover letter and wrong CORENET form
 - Remember to attach a cover letter with the correct CORENET form for your submission
 - Seek approval for waivers and deviations from the COP by highlighting clearly in cover letter and Deviation Form (PUB-DEV-DRA).
- Wrong classification of drainage works
 - Tick the correct drainage works according to classification under “minor” and “other drainage”.
- Incomplete submission
 - Missing endorsements as required by PUB.

COMMONLY MADE MISTAKES

- Please remember to attach a cover letter together with your submission
- Endorse the following certifications on plan (as directed in the DC checklist):
 - The planning, design, construction activities and procedures for plan submission shall comply fully with the requirements as stipulated in the latest edition of the Code of Practice on Surface Water Drainage and the Sewerage and Drainage (Surface Water Drainage) Regulations
 - The capacity of internal drains shall be sufficient to intercept and discharge all runoff from the development site.
 - The runoff within, upstream of and adjacent to the development lot can be effectively drained away without causing flooding within the lot or in areas outside the lot.

Thank You

Punggol Reservoir