GUIDELINES FOR BUILDING PLAN SUBMISSION TO PUB FOR LANDED HOUSING DEVELOPMENTS

September 2020

PUB SINGAPORE'S NATIONAL WATER AGENCY

Contents

1 INTRODUCTION

This guideline serves as a reference to provide Qualified Person (QP) and owners, who intend to undertake developing, reconstruction or alterations & additions to residential landed property with general information on the submission requirements to PUB. Examples of residential landed properties are detached houses, semi-detached houses and terrace houses.

Any building and structural works shall comply with the relevant government agencies' requirements and regulations. For PUB, it will be in the aspect of environmental control (Drainage/Sewerage/Sanitary) and water service installation. This guideline will provide an overview of the submission and approval procedures including the details on the requirements.

2 SUBMISSION PROCEDURES

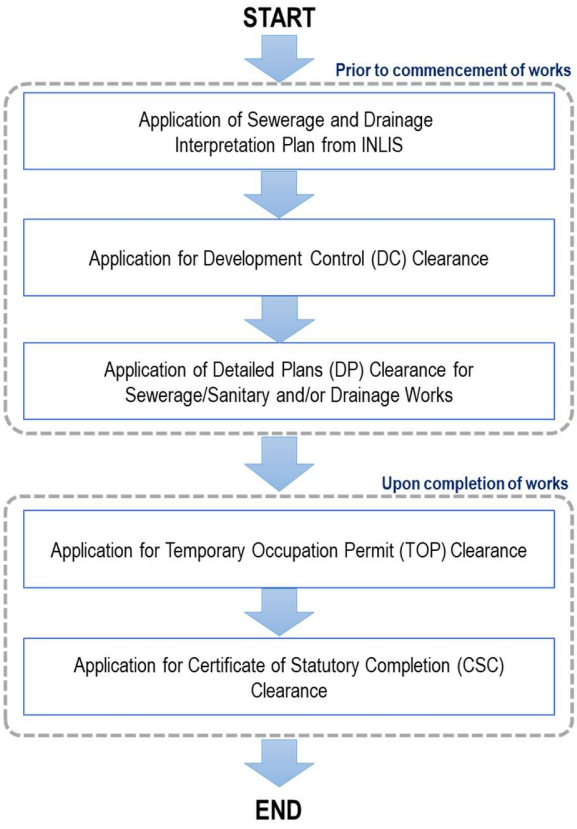
Overview of the Building Plan Submission Process

Under the Sewerage and Drainage Act, QPs are required to submit detailed building plans for the proposed development and the detailed plans for the sewerage works, sanitary facilities and drainage works related to any building and structural works to PUB for clearance. This is necessary to ensure that the premises are served by proper sanitation as well as to minimise flood risks to developments so as to safeguard public health and water resources, and also to protect the integrity of the public sewerage system and public drainage system during the construction works.

To obtain clearances from PUB, the owner is required to appoint a QP (Architect or Professional Engineer) to prepare plans and submit the necessary applications electronically via the BCA's Corenet e-submission system (https://www.corenet.gov.sg).

Before Sanitary, Sewerage and Drainage works can proceed, planning clearance need to be obtained from PUB for Development Control (DC) in compliance with the broad planning parameters for the project and Detailed Plan (DP) for the detailed design of the various works in compliance with the respective Codes of Practice (COP) requirements. Upon completion of works, QPs shall apply for PUB's clearances for Temporary Occupation Permit (TOP)/Certificate of Statutory Completion (CSC) before applying to BCA for the TOP/CSC. The KPIs for the submissions/applications is published on PUB's website.

Below is a simplified overview of the submission process. For overview of the respective submission stages, please refer to ***Annex 1***.



Application for Service Plans (SIP, DIP & WSP)

Before proceeding with the design of a proposed development and prior to DC submission, QP shall apply for the relevant sewerage information plan (SIP), drainage interpretation plan (DIP) and water services plan (WSP) related to the development site.

The PUB service plans can be purchased from the SLA's INLIS Portal (https://www.sla.gov.sg/INLIS/#/PUB/UP/Search).

As the information given in the service plans is indicative, QP shall conduct site survey to ascertain the information.

QPs may visit the Qualified Persons (QP) Portal[1] for more information.

[1] The QP Portal (https://www.pub.gov.sg/compliance/qualifiedpersonsportal) serves as a one-stop resource centre for QPs and building professionals to locate information on water, sewerage and drainage submissions to PUB.

Overview of Key Technical Requirements

The following is an overview of key technical requirements that will be applicable to any residential landed development. Nonetheless, QP shall always refer to the latest Code of Practices and relevant Regulations for full requirements.

A. Sewerage/Sanitary Requirements

[Code of Practice on Sewerage and Sanitary Works (2nd Edition – Jan 2019)]

CONNECTION TO PUBLIC SEWER	Sanitary facilities and sewerage system for the landed premises shall be connected to a public sewer at a PUB-approved connection point, which QP is advised to pre-consult PUB prior to DC submission. Every detached, semi-detached or terrace houses shall be provided with an individual drain-line connection to the public sewer. For redevelopment, re-use of existing drain-line connection is allowed if it: (i) has the adequate capacity and be in serviceable condition, and (ii) is not encroaching into the neighbouring premises Any existing drain-line encroaching into neighbouring premises shall be discontinued where direct connection to a public sewer, either located within the development lot or in the public area, is feasible.
PREVENTION OF USED WATER BACKFLOW FROM PUBLIC SEWER	The finished floor level of the development and the levels of the sanitary appliances, floor traps and inspection chambers (usually on the compound) shall be constructed suitably higher than the top level of the manhole to which the sanitary drain line is connected. This is to prevent the overflow of used water from the inspection chamber, floor traps and other sanitary appliances into the development lot. Pumped system (e.g. ejector) shall be provided where: (i) top level of ICs and floor traps within a development are lower than the top level of the public sewer manhole to which the drain-line is connected; or (ii) there are sanitary facilities located in the basement.
READILY ACCESSIBLE TO SEWER	It is essential that the sewers and manholes shall remain readily accessible at all times so that any maintenance works to the sewers can be carried out expeditiously. Manholes shall not be covered up or paved over with cement, concrete slab or any hard material. The RC trench which houses the sewer must be readily accessible, no object or permanent structure which can obstruct the opening from the top of the RC trench is to be placed over and on it.

POSITION OF SANITARY PIPES	Sanitary pipes shall not be placed above potable water storage tank, electrical transformer/switchgear or above swimming pools and their balancing tanks.
SEWER SETBACK	No structure or buildings shall be placed over or across any sewer without the approval of PUB. All structures shall maintain the minimum setback from sewers as specified in Clause 1.2.5 Table 1 of the Code of Practice on Sewerage and Sanitary Works (2nd Edition – Jan 2019). No manhole shall be built or sited inside any building or under any structures. Manhole shall not be covered up or paved over without the approval of PUB.

B. Drainage Requirements
[Code of Practice on Surface Water Drainage (7th Edition – Dec 2018)]

MINIMUM PLATFORM LEVEL (MPL)	The minimum platform level shall not be lower than: • 4.0m above SHD for developments along the southern coast, and 4.5m above SHD for developments along the northern coast; or • 300 mm above the adjacent road/ground level; or • any other level specified by the Board whichever is the highest.
INTERNAL DRAINAGE SYSTEM	• The capacity of internal drains shall be sufficient to intercept and discharge all runoff from the development site. • The internal drains shall be designed for safety and ease of maintenance. • Prior to discharging any storm water within the development site to public drain, vertical grating shall be installed at the outlet discharge point(s) of the internal drain located within the development site.
MAXIMUM ALLOWABLE PEAK RUNOFF	• Developments greater than or equal to 0.2 hectares in size are required to control the peak runoff discharged from the development sites. • The maximum allowable peak runoff to be discharged to the public drains will be calculated based on a runoff coefficient of 0.55 and for design storms with a return period of 10 years and for various storm durations of up to 4 hours (inclusive). • Peak runoff reduction can be achieved through the implementation of ABC Waters design features and/or structural detention and retention features.
DRAINAGE AFFECTING OTHER PREMISES	• All runoff within a development site shall be discharged into a roadside drain or an outlet drain and not into the adjacent premises. • A minimum 600mm high solid boundary wall shall be erected around your development site to prevent surface runoff from overflowing into adjacent premises.

DRAINAGE RESERVE (DR)	• The Drainage Reserve is any land set aside for drainage works pursuant to development proposals approved by a competent authority. • QP shall ensure that the development works does not encroach into existing Drainage Reserve • QP shall ensure that the Drainage Reserve affected by the development and set aside to be vested to State, shall be kept free of all encumbrances. All structures shall be set outside the Drainage Reserve. • The Drainage Reserve shall not be realigned without PUB's approval
COMMON DRAIN	• Where the existing common drain is located within the lot boundary but outside the existing boundary wall or fencing of the development site, the location/position of the existing boundary wall or fencing shall not be altered or realigned. • The proposed location of new boundary wall or fencing shall be erected at the same position of the existing boundary wall or fencing. Any deviation to this arrangement shall be approved by PUB.
IMPROVEMENTS TO EXISTING DRAIN	• PUB may require improvements to the drains on your development, including the outlet drain flowing through the development site, the entrance culvert or the roadside drain. • The size (width and depth) and the alignment of the proposed drain must be determined and approved by PUB. • No structure shall be constructed over the roadside drain or outlet drain.

Application for Development Control (DC) Clearance

At DC stage, the QP shall submit DC plans to PUB for clearance before commencing any building works, sewerage works and drainage works on site.

Generally, PUB's DC clearance is required if the proposed residential landed development involves:

a. Buildings or structures to be erected over, across or adjacent to any public sewerage system (e.g. sewers, pumping mains, DTSS tunnels etc.)

b. Proposed connection of the development/premises to the public sewers/sewerage system;

c. Any works which could affect any public sewers/sewerage system or public drains including common drains directly or indirectly

d. any storm water drainage works, erection or placement of any structures or object in, above or across any drain or drainage reserve

e. any temporary structure/works/services over, across or adjacent to any drain or storm water drainage system

f. Any proposed realignment of Drainage Reserve or Drainage Reserve to be set aside and vested to State

For submission involving land use such as Drainage Reserve to be set aside and vested to State or realignment of Drainage Reserve, the QP is required to obtain planning approval from URA (being the Authority for Land-use) and also the land owner[2] of the Drainage Reserve, prior to submitting the details of the proposal to PUB for comments on technical requirements and any other conditions which PUB may impose.

For landed housing developments affected by MPL requirements in low-lying areas, where the existing road level is lower than 2.5m above SHD, the ancillary areas of the development fronting the road with a stipulated road buffer can be lower than MPL. The ancillary area shall be at least 300mm higher than adjacent road level or not lower than the existing ground level, whichever is higher. For more information on the revised guidelines, QP may refer to the circular jointly issued by URA and PUB at (https://www.ura.gov.sg/Corporate/Guidelines/Circulars/dc18-05).

Any deviation(s) to the approved plan should be re-submitted for amendment and clearance.

[2] For land ownership, QP is advised to check via SLA's OneMap (https://www.onemap.sg/main/v2/).

Submission Requirements

The following information must be provided using the PUB-DCCLR application form. Please note that submissions with missing information will not be processed.

a. Entire set of QP/Architect endorsed Architectural drawing plans (Location plan of the development site, site plan, 1st storey plan, cross section, longitudinal section, elevation plan etc.)
b. Total used water discharge calculations
c. Cover Letter stating the scope of works in the proposal
d. SIP and/or DIP

For submission requirements on drawing plans, please refer to ***Annex 2***.

Simplified Submission

If the project meets the published criteria (refer to ***Annex 3***), QP can make a simplified submission. This is a lodgment based on the QP's declaration. Simplified Submission may be subjected to audit checks, whereby QP is required to provide the required plans.

Upon completion of work, QP is required to make a submission for PUB TOP/CSC, attached with as-built plans, for clearance. For more information on simplified submission, please refer to PUB's website.

Application for Deviation

If there are deviations from the Code of Practice due to site constraints, QP shall seek PUB's approval for the deviations before commencing with the proposed works using the forms shown in the table.

QP is advised to include all relevant technical information and any mitigating measures that will be implemented in the submission for the Board's consideration.

Please note that we will assess the application based on the information that you have provided and the decision from the Board is final. Subsequent appeals on the same deviation without new information would not be considered.

Application Type	Application Form	Purpose
Application for Deviation on Sewerage Matters	PUB-DEV-SEW	To apply for Deviation on Sewerage Matters
Application for Deviation on Drainage Matters	PUB-DEV-DRA	To apply for Deviation on Drainage Matters
Application for Deviation on Water Matters	PUB-DEV-WTR	To apply for Deviation on Water Matters

Application for Detailed Plan (DP) Clearance

Generally, PUB's DP clearance is required if the proposed residential landed development involves:

a. Works affecting Sanitary (e.g. sanitary drainage and plumbing work including last IC connection to public sewer)

b. Works affecting Sanitary M&E (used water pumping system, sewage ejector)

c. Works affecting Sewer (e.g. proposed sewers/manhole, abandon sewers/manhole)

d. RC Trench for housing the public sewer

e. Works affecting Drainage (e.g. common drain, basement pump drainage system, entrance culvert/roadside drain, slab over drain for meter compartment)

PUB's Clearance Certificates must be obtained before the respective works can commence. Any deviation(s) to the approved plan should be re-submitted for DP amendment and clearance.

Submission Requirements

The following information to be included in the submission:

Type of DPs	Works	Information to be Provided (where applicable)
DP on Sanitary	Internal sanitary plumbing and drainage system	▪ QP, who is an Architect or PE, endorsed technical detailed plans on proposed internal sanitary plumbing and drainage system including site, floor and sanitary schematic plans, in accordance to his/her discipline ▪ Cover Letter ▪ SEW DC No Objection Letter (Note: Sanitary works must be carried out by a PUB licensed plumber)
DP on Sanitary (M&E)	Used water pumping system (M&E)	▪ QP, who is a PE(M&E), endorsed technical detailed plans on proposed M&E equipment for sewage ejector or sewerage installations including site and floor plans ▪ Proposed pump catalogue, pump calculations and pump curve ▪ PE endorsed mechanical drawings ▪ LEW endorsed electrical drawings ▪ Cover Letter

Type of DPs	Works	Information to be Provided (where applicable)
		▪ SEW DC No Objection Letter
DP on Sewerage	Minor sewer	▪ QP who is a PE (Civil or Structural), endorsed technical detailed plans on proposed minor sewers or pump sump/pumping mains including site, floor and longitudinal plans ▪ PUB's Standard drawing of the proposed manhole to be provided ▪ Cover Letter ▪ Topo plan endorsed by Registered Surveyor
DP on RC Trench	RC trench	▪ QP, who is a PE (Civil or Structural), endorsed technical detailed plans on proposed RC trench including site, floor and sectional plans ▪ PE endorsed RC trench calculations ▪ SEW DC No Objection Letter ▪ Cover Letter
DP on Drainage	▪ Basement pump drainage system ▪ Entrance culverts/roadside drains ▪ Common Drain ▪ Detention Tank (for site area equal to or more than 2000m^2) ▪ Flood protection measures	▪ QP, who is a PE (Civil or Structural) or PE (M&E), endorsed detailed Engineering drawing plans (Site plan, cross section, longitudinal section), in accordance to his/her discipline ▪ PE endorsed design calculations ▪ PE endorsed Standard Operating Procedure (SOP) ▪ Cover Letter

Other Applications before Commencement of Works

a) Protection of PUB Infrastructure

All developments and construction activities shall be carried out with provisions to protect the sewers and watermains in the vicinity of the developments. Before commencing any specified activity such as temporary works, site formation works or piling/building works etc. within the public sewer and watermains corridors, QP/contractor shall submit an application online via Protection of Water and Sewer Pipes (POWS) at (https://bpu.pub.gov.sg/POWS) to notify/seek PUB's approval.

i. Protection of Water Pipes Infrastructure

Works within the protection corridor of watermains <300mm diameter require only a notification. There is no need to await PUB's response upon notification with the required declaration and supporting documents before commencement of work.

For works within the protection corridor of watermains ≥300mm diameter, PUB's approval is required. No works are to commence until approval has been granted by PUB.

For the list of conditions and requirements, please refer to the Advisory Note at https://www.pub.gov.sg/Documents/Watermains_AdvisoryNotes.pdf.

ii. Protection of Public Sewerage System

QP/contractor is required to comply with the technical requirements for sewer protection stipulated in Section 2 of the Code of Practice on Sewerage and Sanitary Works (2nd Edition – Jan 2019). PUB's DC Clearance or approval for the proposed development or building or works likely to affect sewer or sewerage system **in or outside** a public sewer corridor shall be obtained from PUB.

After obtaining PUB's clearance and before commencing any specified activity, QP/contractor shall submit an application online via POWS to obtain approval for the specified activity. No works are to commence until approval has been granted by PUB. QP/contractor shall also refer to the Advisory Note at https://www.pub.gov.sg/Documents/WRN_AdvisoryNotes.pdf.

For small development/A&A works of single landed property (terrace, semi-detached and detached house), QP is only required to submit the post-construction CCTV survey report and video via the online portal (https://www.sewtv.sg/home). The survey report and video shall clearly show the condition of all relevant existing sewers. Any errors in recording, CCTV imagery, unclear video footage, incomplete surveys and/or error in interpretation of sewers, unrectified defects, and uncleared debris/silt will be rejected. For further details on the sewer CCTV inspection requirements, please refer to https://www.pub.gov.sg/Documents/Sewer_CCTV_Guidebook.pdf.

During the various stages of the construction works, QP shall submit the following forms/ documents:

- **Form B** (via Corenet) – Application to Work in Public Sewerage System. PUB's approval is required before allowing any worker to enter the public sewer/manhole or other confined spaces at any sewerage installations to carry out works or inspection.

- **Form B1** (via QP Portal) - Notice for Carrying Out Sewer Connection Work. If sewer connection work is required, in addition to obtaining Form B approval, the contractor shall submit Form B1 with details of the type of connection prior to construction, and to arrange for PUB officer to witness the sewer connection works after completion, via email at PUB_Form_B1@pub.gov.sg.

b) Temporary Works Affecting PUB's Drain/Drainage Reserve

If there is any temporary works that could potentially affect any drain or drainage reserves, QP shall seek PUB's approval via https://bpu.pub.gov.sg/Forms/EForms. Examples of such works include temporary drain diversions, works within drain, temporary crossings over drain or soil investigation works.

c) Works Requiring Earth Control Measures

If there is any works onsite involving earthworks, QECPs shall seek PUB' approval via https://bpu.pub.gov.sg/Forms/EForms.

d) Application for Rainwater Collection System

If the owner/developer plans to construct a rainwater collection system to collect rainwater for non-potable use within their own premises, a separate PE's application shall be submitted to PUB for approval via PUB_BPU@pub.gov.sg.

For application procedure and requirements, please refer to https://www.pub.gov.sg/savewater/atwork/alternatesources.

Application for Temporary Occupation Permit (TOP) Clearance

Upon completion of works, QP may apply for compliance certificate for Sanitary/Sewerage and TOP clearance for Drainage. Please note that PUB may carry out random audit inspections of the completed works before issuing our compliance certificate. As BCA requires the compliance certificates from all technical agencies including PUB before issuing TOP, QP is advised to make the submissions early to avoid delay.

Submission Requirements

The following information shall be included in the submission:

Type of Application	Information to be Provided (where applicable)
Compliance Certificate for Sanitary	▪ PUB-BPU-COMPOFWORK application form ▪ Relevant DP clearance certificate for sanitary works ▪ Form B1 clearance document ▪ Complete set of QP endorsed As-built plans ▪ Hydrostatic test report ▪ Air test report for sanitary plumbing system ▪ Schematic sanitary drawing ▪ Cover Letter ▪ Post-construction CCTV survey report and video to be submitted the online portal (https://www.sewtv.sg/home). Please note that PUB may conduct low air pressure test on selected plumbing system as part of the TOP inspection to confirm the water closet (WC) connections and floor traps are airtight.
Compliance Certificate for Sewerage	▪ PUB-BPU-COMPOFWORK application form ▪ Relevant DP clearance certificate for sewer works ▪ Registered Surveyor endorsed As-built sewer plans including site layout plan and longitudinal section ▪ Form B1 clearance document ▪ Hydrostatic test report ▪ Pre DLP CCTV /Post-construction CCTV survey report and video to be submitted the online portal (https://www.sewtv.sg/home) ▪ For RC trench, photos showing the process of before/after backfilling and covering up the RC trench with RC slab and document showing date of RC trench inspection and in order. ▪ Cover Letter

Type of Application	Information to be Provided (where applicable)
TOP Clearance for Drainage	▪ PUB-DRATOP application form ▪ Entire set of QP/Architect endorsed As-built Architectural drawing plans showing all the drainage requirements (Location plan of the development site, Site plan, 1st Storey plan, cross section, longitudinal section, elevation plan etc.) ***and/or*** ▪ Entire set of QP/PE endorsed As-built Engineering drawing plans (Site plan, 1st storey plan, cross section, longitudinal section, etc.) ▪ Registered Surveyor endorsed As-built survey plan showing all the drainage requirements (Site plan, 1st storey plan, cross section, longitudinal section etc.) ▪ Cover Letter ▪ PE endorsed final design calculations (if there is any deviations) ▪ Written confirmation letters from the QP ▪ Inspection & Commissioning Test Report ▪ PE endorsed Standard Operating Procedure (SOP)
PUB TOP	Upon obtaining all the respective clearances and compliance certificates from PUB, QP shall apply to PUB for the PUB TOP clearance. ▪ PUB-TOP-CLR application form ▪ Clearances and/or compliance certificates where applicable **OR** PUB's confirmation through Corenet or email that project does not have works involving sanitary/sewerage and/or drainage ▪ Cover Letter

Application for Certificate of Statutory Completion (CSC) Clearance

CSC is a statutory requirement administered by the Commissioner of Building Control. QP is required to apply to BCA for CSC when a building work registered under him/her is completed. Prior to CSC application to BCA, QP must obtain all the clearances from PUB.

Upon completion of works, QP shall apply for compliance certificate for Sanitary/Sewerage and Drainage. If there are any drainage or sewerage works to be handed over to PUB for maintenance, the works have to be satisfactory completed and taken over by PUB before CSC is issued.

Submission Requirements

The following Information shall be included in the submission:

Type of Application	Information to be Provided (where applicable)
Compliance Certificate for Sanitary	▪ PUB-BPU-COMPOFWORK application form ▪ Relevant DP clearance certificate for sanitary works ▪ Form B1 clearance document ▪ Complete set of QP endorsed As-built plans ▪ Hydrostatic test report ▪ Air test report for sanitary plumbing system ▪ Schematic sanitary drawing ▪ Cover Letter ▪ Post-construction CCTV survey report and video to be submitted the online portal (https://www.sewtv.sg/home) Please note that PUB may conduct low air pressure test on selected plumbing system as part of the CSC inspection to confirm the water closet (WC) connections and floor traps are airtight.

Type of Application	Information to be Provided (where applicable)
Compliance Certificate for Sewerage	▪ PUB-BPU-COMPOFWORK application form ▪ Relevant DP clearance certificate for sewer works ▪ Registered Surveyor endorsed As-built sewer plans including site layout plan and longitudinal section ▪ Form B1 clearance document ▪ Hydrostatic test report ▪ Pre DLP CCTV/Post-construction CCTV survey report and video to be submitted the online portal (https://www.sewtv.sg/home) ▪ For RC trench, photos showing the process of before/after backfilling and covering up the RC trench with RC slab and document showing date of RC trench inspection and in order. ▪ Cover Letter
Compliance Certificate for Drainage	▪ PUB-DD-CSIDRA application form ▪ Entire set of QP/Architect endorsed As-built Architectural drawing plans showing all the drainage requirements (Location plan of the development site, Site plan, 1st Storey plan, cross section, longitudinal section, elevation plan etc.) ***and/or*** ▪ Entire set of QP/PE endorsed As-built Engineering drawing plans (Site plan, 1st storey plan, cross section, longitudinal section, etc.) ▪ Registered Surveyor endorsed As-built survey plan showing all the drainage requirements (Site plan, 1st storey plan, cross section, longitudinal section etc.) ▪ Cover Letter ▪ Inspection & Commissioning Test Report ▪ PE endorsed final design calculations (if there is any deviations) ▪ PE endorsed Handing over Form for completed drains ▪ Photos of the completed works/drains ▪ Written confirmation letters from the QP ▪ PE endorsed Standard Operating Procedure (SOP) For CSC clearance that involves drainage works such as entrance culvert and roadside drains, the one-year Defects Liability Period (DLP) starts from the date the CSC clearance certificate was granted (excluding fenced-in drains which are receiving runoff from the neighbouring lots).

Type of Application	Information to be Provided (where applicable)
	One month before the end of the DLP, QP shall inform PUB to arrange for an inspection and to hand over the drainage works to PUB for structural maintenance.
PUB CSC	Upon obtaining all the respective clearances and compliance certificates from PUB, QP shall apply to PUB for the PUB CSC clearance. ▪ PUB-CSC-CLR application form ▪ Clearances and/or compliance certificates where applicable **OR** PUB's confirmation through Corenet or email that project does not have works involving sanitary/sewerage and/or drainage ▪ Cover Letter

3 SUBMISSION FOR WATER SERVICE INSTALLATION (WSI) WORKS

Overview of the Submission Process for Water Service Installation

All water service work carried out shall comply with the ***Singapore Standard, SS636 - Code of Practice for Water Services***. This standard is expected to be used by Professional Engineers, registered Architects and Licensed Plumbers in the design, installation, fixing, testing and maintenance of water services in all residential, commercial and industrial buildings/ premises. The scope of the code extends from the Authority's water supply to the point where the water s drawn off for use, including storage.

Water service work shall only be carried out by a water service worker of an appropriate class as prescribed by the latest edition of ***Public Utilities Act*** and ***Public Utilities Regulations***.

There are two classes of water service workers, namely:

a) Professional Engineer registered under the Professional Engineers Act

Water Service Installation (WSI) design works can be carried out by a Professional Engineer as prescribed in the Public Utilities Act. Where the water service installation involves pumping equipment or water tank, the Developer / Customer shall engage a Professional Engineer to design the water service installation. The Professional Engineer is also responsible for the supervision of the WSI works carried out by the Licensed Plumber.

b) Licensed Plumber

Limited WSI design works and WSI works shall only be carried out by a Licensed Plumber as prescribed in the Public Utilities Act. Developer / Customer shall engage a Licensed Plumber to design (if no pumping equipment or water tank are required), construct, erect, install, alter, maintain, replace or repair the water service installation within its premises to convey the supply of water from PUB.

Pre-Planning Consultation Stage (Optional)

PE/LP may consult PUB, if necessary on matters pertaining to the supply of water to the proposed development. Such pre-planning consultations shall be carried out as early as possible. PE/LP shall provide the location plans together with details of the development for any pre-planning consultations. The primary information needed are:

a. Estimated daily water requirements;
b. Type of development;
c. Phasing of development;
d. Platform level of development;
e. Reduced level of highest direct supply water fittings;
f. Temporary water supply requirement during construction stage; and
g. Approximate date of completion of project including date when water supply is expected to be turned-on.

The common issues that may be discussed during the pre-planning consultation stage include:

a. availability of water mains in the development vicinity;
b. mode of water supply;
c. location of water meter;
d. risk of contamination to PUB network through backflow; and
e. impact on existing mains and installation, etc.

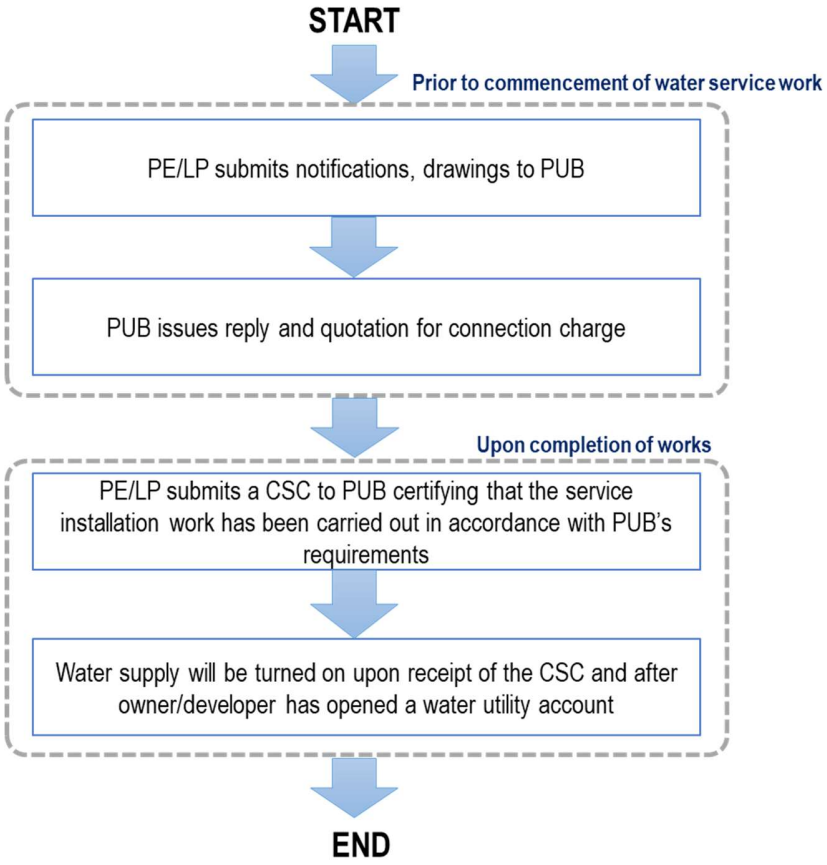
Simplified Procedure

Under the simplified procedure introduced for the design and installation of water service installations within the customer's premises, PE/LP are responsible for the Water Service Installation (WSI) design works, limited WSI design works and WSI works under their charge. They are not required to obtain PUB's approval and apply for PUB's inspection before turn-on of water supply.

The simplified procedure requires the PE/LP to notify PUB before commencement of WSI works by submitting the site plans, layout and schematic drawings of the WSI design works/ limited WSI design works. Upon completion of WSI works, PE/LP are required to submit a Certificate of Satisfactory Completion (CSC) of WSI Works certifying that the works are completed in accordance with the Public Utilities Board's requirements including the Public Utilities (Water Supply) Regulations, Singapore Standard, SS636 - Code of Practice for Water Services, other Authorities' requirements and other statutory requirements.

Notifying PUB before commencement of WSI works is a mandatory requirement. Within 7 days upon completion of the WSI works, the PE/LP shall inspect the water service installation and submit a Certificate of Satisfactory Completion to PUB. Where applicable, water supply will be turned on upon receipt of the Certificate of Satisfactory Completion of WSI Works and after the Owner / Developer has opened an account with SP Services.

Below is an overview of the simplified procedure:



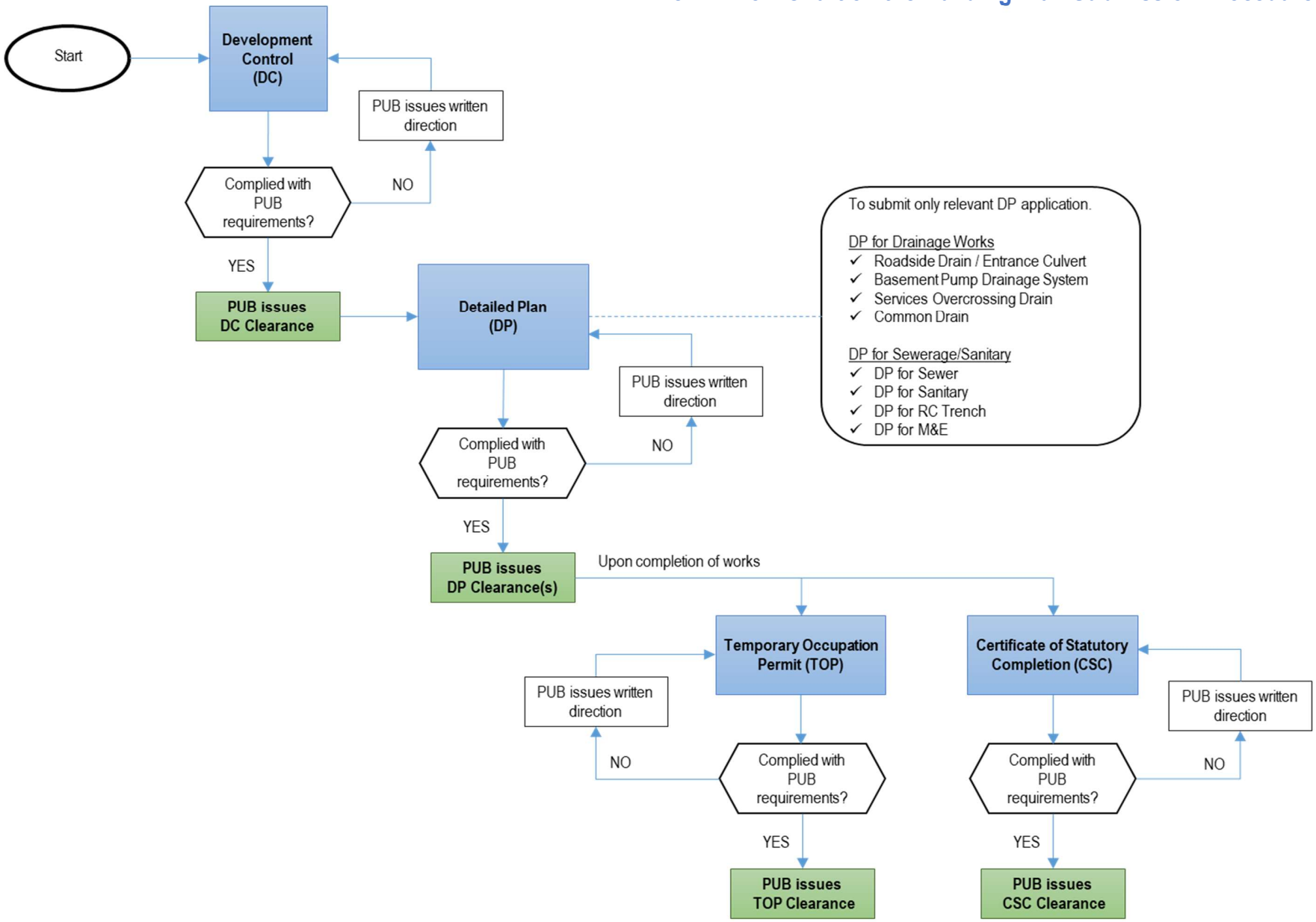
Submission Requirements

PE/LP is required to submit the following drawings and documents to PUB as part of your application.

Type of CSC	Requirements (where applicable)
Notification of Water Service Installation (WSI)	PE to submit the following: ▪ Site / location plan ▪ Water reticulation schematic/layout drawing ▪ Form PUBWTR-0-WSW01 through e-Corenet (www.corenet-ess.gov.sg) LP to submit the following: ▪ Site / location plan ▪ Water reticulation schematic/layout drawing ▪ E-form through BPU portal (https://bpu.pub.gov.sg)
Certificate of Satisfactory Completion (CSC) for Water Service Installation Works	PE to submit the following: ▪ SP water account number ▪ Form PUBWTR-0-CSC01, through e-corenet (www.corenet-ess.gov.sg) LP to submit the following: ▪ SP water account number ▪ E-form through BPU Portal (https://bpu.pub.gov.sg)

An overview of the respective submission stages including key documents required are shown in ***Annex 5***.

Annex 1: Flow Chart on the Building Plan Submission Procedure



Annex 2: Submission Requirements for Drawings

The information stipulated in the following table is applicable for **all** submission drawings. All drawings submitted must be in BIM (IFC) or Lightweight BIM file format or CAD file format, whichever is applicable based on the prevailing mandatory requirements.

(A) General Requirements for All Submission Drawings

No.	Information to be provided
1	Proposed development layout
2	Existing and proposed road reserve line
3	Development boundary outlined in red
4	Outline of neighbouring development plots or buildings within 1km radius shall be shown on the Key Plan.
5	Outline of neighbouring development plots or buildings and MRT tracks, within 100m radius shall be shown on the Location Plan.
6	Existing structures to be retained are to be indicated in cyan colour
7	Existing structures to be demolished to be indicated in yellow colour
8	Proposed structures to be indicated in magenta colour
9	Title block indicating the project title, address, lot and/or plot number, project ref. no., QP/PE's endorsement etc. shall be provided on all the plans
10	Endorsement of drainage/sewerage/sanitary requirements on the Site Plan
11	SVY21 projected map coordinate system, North arrow, scale bar and legend

(B) Application for Development Control (DC)

For DC submission, the following information shall be included in the submission drawings:

No.	Information to be provided (where applicable)
	Drainage Requirements
1	Existing and proposed platform levels of the development site on the 1st Storey Plan
2	Adjacent road/ground levels at the outlet discharge points of internal drains shall be shown on Site and 1st Storey plans
3	Existing drainage reserves, entrance culverts or roadside drains shall be shown on the Site Plan
4	Alignment and width of drainage reserve
5	Alignment, type, size, flow direction, summit point and outlet discharge point of the existing/proposed internal drains to the existing or proposed roadside drain or outlet drain shall be clearly indicated on the 1st Storey Plan
6	Cross-section of the proposed drain in relation to the drainage reserve/lot boundary/retaining wall/boundary fence
7	Alignment and flow direction of existing common drain within the development site
8	Vertical grating at the outlet discharge point(s) of the internal drain shall be indicated on the 1st Storey Plan
9	All voids which are open to sky shall be clearly outlined in thick line with annotation “Open to Sky” on both the Site and 1st Storey plans
10	All entrance or openings to the basement, crest levels, platform levels, cut-off drains, provision of basement pump drainage system shall be indicated on the Basement Plan
11	Rainwater downpipes shall be indicated to show that runoff from the roof is effectively conveyed to the 1st storey drainage system
12	For external works, the following shall be clearly annotated on plan: • All external works details are to be submitted separately by a Professional Engineer (PE) (Civil) during DP stage.
13	If the development site is affected by common drain, the following requirements are to be endorsed on Site Plan:

No.	Information to be provided (where applicable)
	• Surface runoff from the proposed site and all neighbouring lots shall continue to be allowed to discharge through the common drain within the premises. • The owner shall be responsible for the maintenance of the common drain within their premises.
	Sewerage/Sanitary Requirements
14	Existing, proposed or abandoned public sewer, pumping mains, sewer connection including all the sizes, manholes, discharge chambers, their top and invert levels, and their setback from buildings/structures on Site and 1st Storey plans. The setback distance shall be measured the outer most edge of the structure, including footings and overhangs, to the centerline of the sewer pipe or DTSS.
15	Existing or proposed point of sewer connection (including type, material, diameter) serving the proposed development site on the Site and 1st Storey plans
16	Top and invert levels, material type, size, length, gradient of the proposed sanitary pipes and connections shall be clearly indicated
17	Top and invert levels, pipe size of the last inspection chamber (IC) and connecting manhole
18	Provision of pump sump or holding tank or sewage ejector tank
19	Reinforced concrete (RC) trench for sewer that do not meet building setback requirement

(C) Application for Detailed Plan (DP)

For DP submission, the following information shall be included in the submission drawings:

DP on Drainage Works

No.	Information to be provided (where applicable)
1	Alignment and width of drainage reserve
2	Alignment, type, size, flow direction, summit point and outlet discharge point of the existing/proposed internal drains to the existing or proposed roadside drain or outlet drain shall be clearly indicated on the 1st Storey Plan
3	Proposed platform levels and road or ground levels at the outlet discharge point of the internal drains
4	Alignment, type, size and flow direction of the existing roadside drain or outlet drain adjacent to the development site and existing common drain
5	For proposed roadside drain/culvert, the following details shall be submitted: • Alignment, extent, size and type of the proposed drain/culvert • Road reserve or widening line or boundary line • Drainage reserve lines with dimensions • Summit point and direction of flow of proposed drain • Invert levels, top levels and road or ground levels • Size and spacing of grating covers for closed drain • Drop inlet chambers and scupper drains • Cross sectional and longitudinal section details of the drain such as drain gradient, invert levels, cope levels, internal width, clear depth, false bottom depth, rebar details, type of safety railings (if applicable)
6	All entrance or openings to the basement, crest levels, platform levels, cut-off drains, provision of basement pump drainage system shall be indicated on the Basement Plan
7	For development with basement pump drainage system, the following details shall be submitted: • 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

DP on Sewerage Works (Proposed Sewer/Sewer Diversion Works)

No.	Information to be provided (where applicable)
1	Alignment, size, material and top/invert levels of existing or proposed sewer and manhole
2	Sewer pipe length, diameter, gradient, material, and top/invert levels of manhole(s) shall be indicated on the layout plan
3	Sewer pipe diameter, gradient, material, type of bedding and piling (if constructed by open cut), top/invert level of manhole(s) and sewer length shall be indicated on the longitudinal plan.
4	Method of laying and pipe haunching details shall be indicated on longitudinal plan
5	Northern and Eastern of the new manhole shall be indicated based on SVY21 coordinate cadastral base established by SLA
6	For new manhole, detailed plan of manhole showing netting and intermediate platform (if applicable) shall be provided.
7	Reinforced concrete (RC) trench with removable slabs (annotated on plan) for existing or proposed sewer under building or structures or with insufficient setback from building or structures.
8	Headroom clearance for overhanding or overhead structures or roof eaves above existing or proposed sewer/pumping main on the elevation plan
9	Provision of pump sump or holding tank or sewage ejector tank

DP on Sanitary Works (For Sanitary Plumbing & Drainage System/Sewer Connection)

No.	Information to be provided (where applicable)
1	All sanitary appliances or fittings or soil and vent stack(s) and their connection to inspection chambers
2	Internal sanitary drainage system and its connection to existing or proposed sewer or manhole
3	Existing or proposed point of sewer connection (including type, material, diameter) serving the proposed development site on the Site and 1st storey plans
4	Pipe size, top and invert levels of existing or proposed sewer or pumping main and their setback distance from building or structures
5	Top and invert levels, pipe size of the last inspection chamber (IC) and connecting manhole

No.	Information to be provided (where applicable)
6	Provision of pump sump or holding tank or sewage ejector tank
7	Reinforced concrete (RC) trench with removable slabs (annotated on plan) for exisitng or proposed sewer under building or structures or with insufficient setback from building or structures.

DP on Sewerage M&E Works

The electrical drawings shall be endorsed by LEW/Electrical QP and shall include the following information:

No.	Information to be provided (where applicable)
1	• Electrical single line diagram; • Electrical control schematic diagram; • Electrical panel diagram; and • Float switches or electrodes level arrangement diagram and the description of their operations.
2	Mechanical floor plan and sectional view shall show the following: • Dimension, size and material used for the equipment; • Pipe material, size; • Centre line of RSJ; • Ventilation system; • Indicate the end point of vent pipe connection; • Location of control panel • Discharge point of the pump sump; and • Make and model of the pump

Annex 3: Criteria for Simplified Submission Scheme

SS CRITERIA FOR DRAINAGE

Projects (minor/A&A works) that meets all the following conditions:

1. No reconstruction of the first storey (no increase of site area of building),
2. No linkages to special underground facilities,
3. Not affecting public drain (i.e. at least 300mm away from the drain wall),
4. Not within Drainage Reserve,
5. Not affected by common drain

Examples of such projects are as follow:-

- Construction of additional floors without reconstructing the first storey and where there are no linkages to special underground facilities.
- Internal upgrading works such as internal staircase, lift installation/upgrading (without basement), doors, partitions, floor/wall finishes and other similar architectural fittings.
- Addition or alteration to the architectural or interior floor layout of the building.
- Addition or alteration to the void decks of HDB residential blocks such as education centre, study centre, child care centre, day activity centre (disabled/senior citizens), and RC centre.
- Addition or erection of external structures such as canopy, awning, booth, kiosk, bicycle rack, covered linkways (within development site) and other similar amenities.

SS CRITERIA FOR SEWERAGE/SANITARY

Projects shall meet all of the conditions listed under (1) or (2):

1. A/A works that involves only construction works/activities within the existing building meeting the following conditions:
    - The new or alteration to the sanitary facilities and sanitary pipes fully complied with the Code of Practice on Sewerage and Sanitary
    - There are no buildings/structures/piling works outside the existing buildings that affect the public sewer/combined sanitary drain-line.
    - There is no change to drain-line connection to public sewer
    - There is no proposal of on-site facilities such as retention tank, holding tank and sewerage treatment plant (STP).
    - The total discharge of used water will not exceed 2 litres/second (including ejector system)

2. New erection or reconstruction that meets the following conditions:
    - There is no public sewer or combined sanitary drain-line within the lot

- Reuse existing drain-line connection which is connected to the public sewer located at public area. However, if the existing drain-line connection is to the neighbour's inspection chamber, the QP is to pre-consult with PUB and obtain a written advice before SS is made. The written advice is to be included together with the SS.
- There is no new sewer proposed.
- There is no proposal for on-site facilities such as retention tank, holding tank and sewerage treatment plant (STP).
- Total discharge of used water will not exceed 2 litres/second (including ejector system)

Annex 4: Site Inspection for Completed Works

A. TOP/CSC Site Inspection for Completed Sanitary/Sewerage Works

PUB may carry out audit water tightness testing of the sanitary drain-lines and sewers below 900mm diameter (including inspection chambers and manholes) before granting the CSC sewerage clearance.

Sanitary drain-lines/inspection chambers and sewer/manholes failing the water tightness tests would need to be rectified. QP shall give at least 4 weeks of advance notice to PUB to process the application and carry out the water tests to avoid delay in obtaining the CSC.

The table below is a list of common observations on site based on PUB's requirements, which PUB officer will inspect/verify before granting the Compliance Certificate. Please refer to the Code of Practice on Sewerage and Sanitary Works (2nd Edition – Jan 2019) for more requirements.

No.	List of Requirements (where applicable)
	Sanitary Requirements
1	Sanitary works fully completed.
2	The discharge pipes on ground level are individually connected to IC. Interconnection or connection to main drain-line via Y-junction is not allowed.
3	Termination of the ventilating pipe is located at a place that is in accordance to COP SSW.
4	Sanitary pipes not running above potable water storage tank, electrical transformer/switchgear or above swimming pools and their balancing tanks.
5	The correct size and material of sanitary pipe is used for the discharge/stack pipes.
6	Concealed fittings and pipework are provided with adequate inspection openings/cleaning eyes.
	Sewer Requirements (Manhole/Sewer)
1	Chamber wall / joint is smooth or not leaking
2	Basewall / benching joint is smooth or not leaking
3	Benching is smooth or not leaking Benching & channel is constructed
4	The ends of all pipes at manhole walls shall be ground smooth (Drawing No. PUB/WRN/STD/006B)
5	Channel width is according to size of sewer (Drawing No. PUB/WRN/STD/001B)
6	Diversion/Connection works are completed
7	Stainless steel marker plate for offset sewer and curved sewer installed on manhole cover.

No.	List of Requirements (where applicable)
	Sewer Requirements (RC Trench)
1	No leakage into the Trench
2	Debris free
3	No holes carved onto the inner walls
4	Constructed inner walls are smooth and straight
5	Base slab is undamaged and visible

B. CSC Site Inspection for Completed Drainage Works

The table below is a list of requirements, which PUB officer will inspect/verify before granting the CSC drainage clearance or handing over to PUB (end of DLP).

No.	List of Requirements (where applicable)
1	Drainage works fully completed.
2	Fence-in public drain/common drains
3	Drain invert visible for site inspection.
4	Type, size, depth of drain/culvert constructed according to approved plan.
5	No silt, earth, debris, concrete waste or other construction material in drain, culvert, drop-inlet chamber and scupper drain.
6	No honeycomb, bulging/rough surface, nail, formwork, exposed steel bar on wall/ benching/soffit of drain.
7	Base and invert of drain/culvert/sump well graded and will not cause water stagnation.
8	Invert of sump higher than drain downstream.
9	Abandoned opening on drain wall properly sealed.
10	Joint of precast half round channel/composite channel/cascaded channel drain /scupper drain properly sealed.
11	Safety railing is hot-dipped galvanized and is provided for drain depth exceeding 1.0m.
12	Chequered plate/Mild steel grating hot-dipped galvanized.

No.	List of Requirements (where applicable)
13	Manhole cover/vehicular grating /Mild steel grating/levelled with entrance culvert/drain slab.
14	Parapet walls for culvert constructed.
15	No services inside drain/drainage reserve.
16	No unauthorized slab-crossing built over drain.
17	Aluminium rung provided inside drain opening for drain depth equal to or greater than 0.9m.
18	Outlet of compound drain properly connected to public drain.
19	Geotextile with hardcore provided behind weephole of drain.
20	Drop inlet chamber and scupper drain constructed according to approved plan.
21	Drop-inlet chamber flushed with road level.
22	Invert of drop-inlet chamber not lower than that of scupper drain.
23	Scupper drain properly connected and flushed with drain wall.
24	Compound drain across drainage reserve slabbed over and kept below cope of drain.
25	No overgrown vegetation in drainage reserve and drain.
26	Drainage reserve levelled/turfed/paved and free from encumbrances.
27	Damage to existing drainage facilities reinstated.

The following are some examples of acceptable and unacceptable drain conditions:

Drain free from encumbrances/debris and smooth drain wall

Hair line crack on drain slab

Abandoned services

No safety rungs at the opening

Debris, honeycomb on wall, stagnant water at the discharge point

Annex 5: Flow Chart for Water Service Installation Submission