



Guide on Construction of Industrial Developments in Singapore

Foreword

Singapore's industrial development has gone through a vast transformation over the past few decades; from developments for labour-intensive industries, e.g. garments, textiles, wood products in the 60s to skill-intensive industries, e.g. computer parts, computer peripherals, software packages and silicon wafers in the 70s. In the 80s to 90s, emphasis was on technology-intensive industries e.g. electronics. At the turn of the century, with increased focus on knowledge and innovation-intensive activities, industries such as biomedical sciences flourished.

The increase in the number of industrial developments has contributed significantly to the economic growth of Singapore. In today's fast moving and competitive economic environment, it is important to have a good knowledge of the regulations and procedures involved to achieve efficient and speedy completion of any industrial developments.

The aim of this guide is to provide investors and industry players, e.g. developers, consultants and builders, with an overview of the key regulations, processes and procedures involved in the planning, design, construct and implementation of an industrial building development.



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Published in 2010

Note:

Procedures and requirements highlighted in this guide are accurate and up to date as at the time of issue. Nothing herein shall be construed to exempt any person submitting an application or any plans from otherwise complying with the provisions of the Act or any rules and/or guidelines made there under or any Act or rules and/or guidelines for the time being in force. The various authorities reserve the right to change their policies and/or to amend any information in this document without prior notice.

Introduction

This Guide serves as a reference to provide investors, developers, consultants, builders and any parties, who intend to undertake industrial development but are not familiar with the regulatory requirements, processes and procedures with some basic information on how to approach, plan, design, construct and implement the requirements in an industrial building development. It is not a statement of the law but is intended to help you understand the system.

This guide provides an overview of the major regulations, submission and approval procedures involved for the carrying out of any industrial developments. In the subsequent chapters, details on the requirement of the various key government agencies have also been incorporated and a chapter has been devoted to the frequently asked questions (FAQ). The guide ends with a list of contact information on other common government agencies that may need to be consulted for the development of industrial buildings.



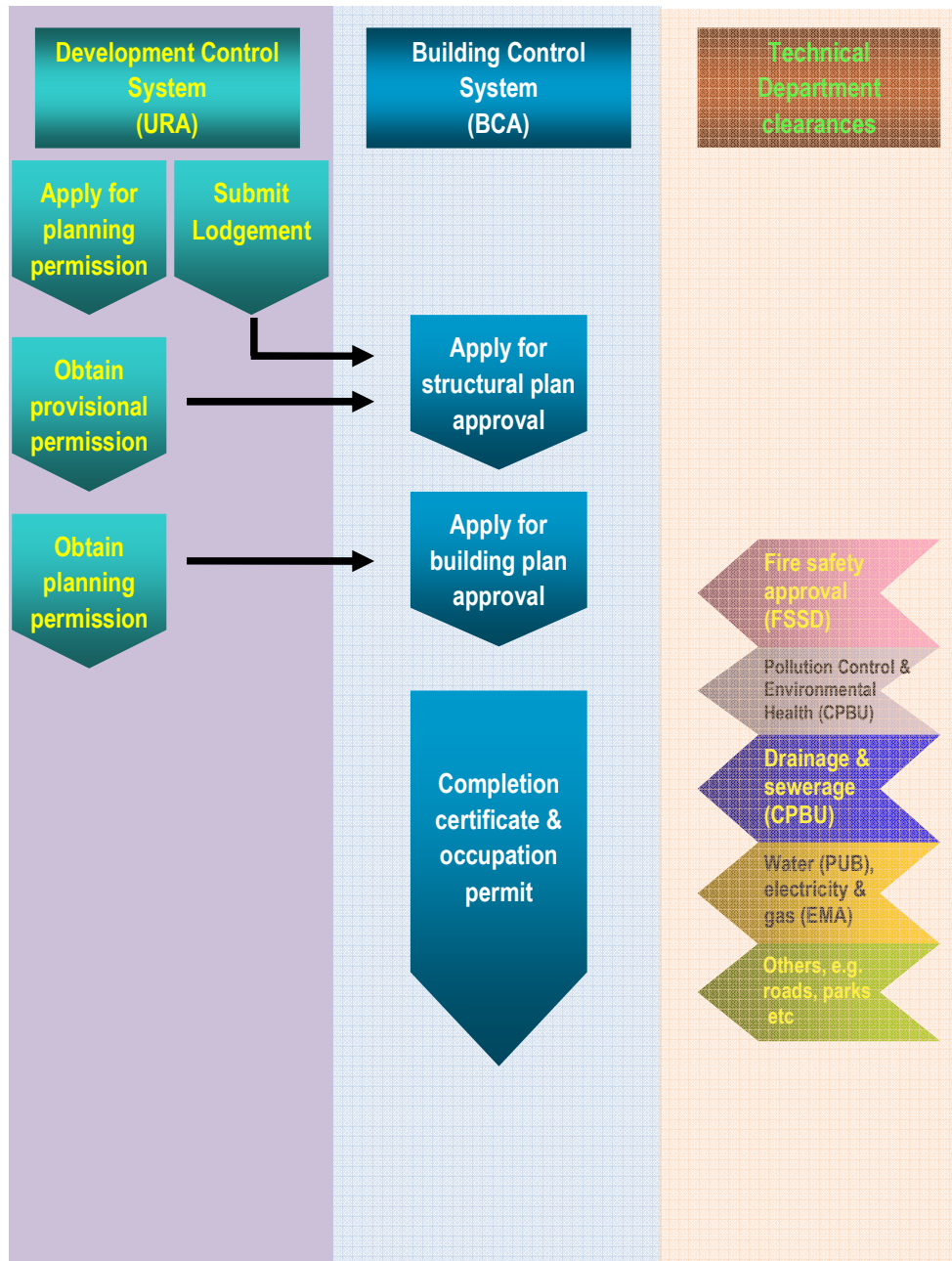


Overview of Key Regulations

Development and Building Control Systems

This chapter gives an overview of the key regulations involved for the development of industrial buildings in Singapore. In general, industrial developments will have to comply with the relevant regulations on the following aspects i.e. Development Planning & Control, Building & Structural Safety, Fire Safety, Environmental Control, Utilities (water, electricity & gas supply).

A schematic of the interdependence between the various aspects of Regulatory Control Systems and Technical Clearances is as shown.



Development Planning & Control

To carry out any industrial developments, planning permission from the Urban Redevelopment Authority (URA), Singapore's national land use planning authority will first have to be obtained. For the issuance of planning permission, the development proposal will have to comply with planning requirements, such as use quantum, building height, setback, plot ratio, vehicular access, plot configuration, land/building subdivision. A formal Written Permission (WP) would be given if the proposal has complied with all the planning requirements or a Provisional Permission (PP) may be granted with conditions imposed if the proposal has outstanding development issues. Alternatively, the development proposal can be submitted under the URA Plan Lodgment Scheme. The development proposal is authorised once it is lodged under the Plan Lodgment Scheme.

Building & Structural Safety

This is followed with the submissions to the Building and Construction Authority (BCA) to comply with the regulations imposed for building and structural safety. The BCA develops and regulates Singapore's building and construction industry to shape a Safe, High Quality, Sustainable and Friendly built-environment for Singapore. Before the construction work can commence on site, approval of the structural plan for the development and a permit will have to be obtained from the BCA. The application of plan approval can be submitted to the BCA while seeking planning permission from the URA. Once the plans are approved and the permit to start work is issued, the construction work can commence on site. In the mean time, consultation with other relevant technical agencies or departments e.g. Fire Safety & Shelter Department (FSSD), Central Building Plan Unit (CBPU) of National Environment Agency (NEA), Public Utilities Board (PUB) and Energy Market Authority (EMA) can be made to incorporate their requirements onto the building plans.

Fire Safety

Industrial developments will also need to comply with fire safety requirements stipulated by the Fire Safety and Shelter Department (FSSD). The FSSD administers the Fire Safety Act and Civil Defence Shelter Act and regulates fire safety and CD shelter standards in Singapore. Fire safety plans complying fully with the requirements stipulated in the Fire Code (Code of Practice for Fire Precautions in Buildings) will have to be submitted to FSSD for approval. Upon the satisfactory completion and inspection of the fire safety works, Fire Safety Certificate (FSC) will be issued by the FSSD before the building can be allowed to use or occupy.

Environmental Control

The Central Building Plan Unit (CBPU) of NEA provides one-stop service for clearance of Industrial Allocation/Land use applications, Development Control (DC) Plans and Building/Detailed Plans (BP/DP) for development proposals on environmental matters consisting of Pollution Control, Environmental Health, Sewerage/Sanitary and Drainage Matters. CBPU screens and assesses the hazards and pollution impacts of the proposed development to ensure that they do not pose unmanageable health and safety hazards and pollution problems, and do not generate wastes that cannot be safely managed and properly disposed off.

Utilities - water supply

Developer / Consumer shall engage an appropriate water service work (Professional Engineer or Licensed Water Service Plumber) to design, construct, alter or repair at his own cost the water service installation within his premises to convey the supply of water from the Public Utilities Board (PUB). Prior to commencement of water service works, water service workers are required to notify PUB, Water Supply (Network) Department by submitting the site plan and schematic drawings of the water service installation. Upon completion of the water service works, water service workers are required to submit a Certificate of Satisfactory Completion of Water Service Work certifying that the water service installation is completed in accordance with the Public Utilities (Water Supply) Regulations, Singapore Standard CP 48 – Code of Practice for Water Services, all other relevant statutory requirements and other PUB requirements.

Utilities - electricity & gas supply

The Energy Market Authority (EMA) sets out the regulatory framework for both electricity and gas industries. At the same time, the EMA promotes effective competition in the energy market and ensure a reliable and secure energy supply. Consumers who wish to have their electrical installations connected to the electricity transmission system should submit their applications to SP Services through their Licensed Electrical Worker (LEW). Separately, applications for the supply of gas should be made to gas retailers.

Clearance for occupation of buildings

After obtaining the clearances from the technical agencies and incorporating the requirements onto the building plans, the building plans are submitted to the Commissioner of Building Control, BCA for approval of plans. Thereafter, an application for the Temporary Occupation Permit (TOP) or Certificate of Statutory Completion (CSC) can be made to the BCA for the building to allow for occupation and commence operations.

Other Regulations - Workplace Safety and Health

While the guide has mentioned the key legislation, there are other relevant legislations which are not covered in this guide. One such legislation is the Workplace Safety and Health Act (WSH Act). This Act governs safety and health in workplaces. It mandates requirements for various stakeholders, such as the occupier, principal and employer to ensure the safety and health of persons at work. In addition, there are a number of subsidiary legislation made under the WSH Act, which includes the WSH (Registrations of Factories) Regulations, the WSH (Risk Management) Regulations and the WSH (Incident Reporting) Regulations.

The WSH (Registration of Factories) Regulations require "factories" such as construction worksites and manufacturing plants to register with the Ministry of Manpower or to submit a notification prior to the commencement of their factory operation. Under the WSH (Risk Management) Regulations, every employer must conduct a comprehensive risk assessment to identify safety and health hazards associated with all work at the workplace and to take all reasonably practicable measures to eliminate or reduce the risks associated with these hazards by setting out proper safe work procedures for their workers. The WSH (Incident Reporting) Regulations specify the responsibilities of relevant parties (employer, occupier and medical practitioner) to report accidents, dangerous occurrences and occupational diseases at workplaces.

One-stop Portal for Authority Submission

A one-stop on-line portal, Construction and Real Estate Network (CORENET) <http://www.corenet.gov.sg>, has been developed to enable industry professionals to submit project related electronic plans and documents to various regulatory authorities for approval. This CORENET portal provides a one-stop convenience for submission of plans to multiple approving authorities from anywhere, at any time and access to check submission status online.



Development Planning & Control

Agency: Urban Redevelopment Authority (URA)

Introduction on agency

The Urban Redevelopment Authority (URA) is Singapore's national land use planning and conservation agency. URA's mission is "to make Singapore a great city to live, work and play in". We strive to create a vibrant and sustainable city of distinction by planning and facilitating Singapore's physical development in partnership with the community.

The URA has successfully transformed Singapore into one of the most liveable cities in Asia through judicious land use planning and good urban design. URA adopts a long term and comprehensive planning approach in formulating strategic plans such as the Concept Plan and the Master Plan, to guide the physical development of Singapore in a sustainable manner. Its plans and policies focus on achieving a balance between economic growth and a quality living environment. As the conservation authority, URA has an internationally recognised conservation programme, having successfully conserved not only single buildings, but entire districts.

To turn its plans and visions into reality, URA takes on a multi faceted role. In addition to its planning function, URA is also the main government land sales agent. Through sale of state land, it attracts and channels private capital investment to develop sites to meet Singapore land use needs. URA is also the development agency for Marina Bay, the new city extension. To create an exciting cityscape, URA also actively promotes architecture and urban design excellence.

For more information, please visit us at <http://www.ura.gov.sg>.

What are the plans & development regulations?

The **Planning Act** provides for and regulates the development of land in Singapore according to provisions in the Master Plan. The Planning Act requires a written planning permission to be obtained before commencement of any works for a development.

The **Master Plan** (<http://www.ura.gov.sg/MP2008/>) is a statutory document that designates land use zoning and gross plot ratio (GPR) for each development site. The Master Plan forms the basis for approving the development works.

The guidelines for industrial developments can be found in URA's **Handbook for Non-Residential Developments** (http://www.ura.gov.sg/circulars/text/dcdnrhb_d0e4.htm). Lands zoned Business 1 or Business 2 in the Master Plan 2008 are for industrial developments which are used for manufacturing or warehousing purposes. They are allowed on lands zoned "Business 1" or "Business 2" in the Master Plan 2008. At least 60% of the gross floor area must be used for industrial or warehousing purposes. Generally, the industrial buildings are required to be setback 5m from the road (or 15m if it faces an expressway). The buildings are also required to setback 4.5m from the common boundary if they are next to non-industrial developments. However, no building setback is required if they are next to industrial developments.

Who are the parties involved?

As the Owner or Developer of the industrial land, you are advised to appoint a Qualified Persons (QP) who is a Registered Architect or Professional Engineer) to prepare plans and submit a development application to Development Control Group of URA for planning permission.

Requirements of submission

The followings are required in a Development Application

(https://edanet.ura.gov.sg/edanet_SubmissionRequirement/subm_requirement.html):

- a) Proposal plans which includes site plan, floor plans, sections, elevations and floor area calculation plan of the proposed industrial developments
- b) EDA form with information on the applicant, developer and planning data
- c) Land owner's endorsement (e.g. JTC, if the land owned by JTC)
- d) Developer's authorization letter for the QP
- e) Processing fee

Procedures

Pre-application consultation

Before submitting the development application, or at any time during the development application process, you and/or your QP may make an appointment with the URA officer-in-charge to discuss the planning requirements pertaining to the proposal, e.g. use quantum, road buffer and building setback requirements. You can make your appointments via fax or email using the discussion memo which is also available on the URA website.

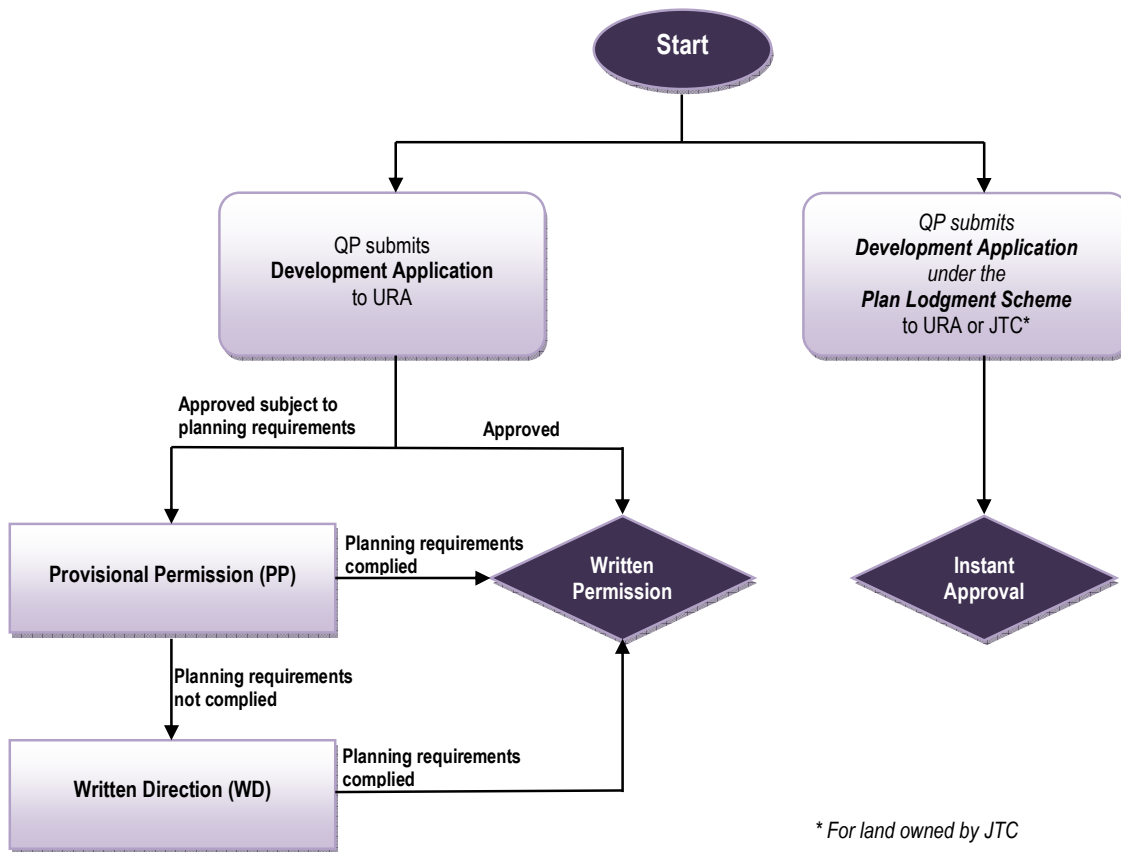
Submission for planning permission

The QP submits a development application to URA for planning permission and a formal Written Permission (WP) would be given if the proposal has complied with the planning requirements and is approved. If the proposal needs to comply with planning requirements, such as use quantum or building setback; a Provisional Permission (PP) will be given. The PP is valid for 6 months to allow the QP to revise or amend the proposal to comply with the planning requirements. The QP resubmits the proposal to follow up on the PP and a WP will be granted when the planning requirements have been complied with. The WP is valid for 2 years and may be extended if required. Please refer to the flow chart on the Development Application process.

URA's Plan Lodgment Scheme

Alternatively, the development proposal can be submitted under the URA Plan Lodgment Scheme. The development proposal is authorised once it is lodged under the Plan Lodgment Scheme. The Plan Lodgment Scheme is for industrial development located on land owned by JTC. It is a scheme designed to benefit owners or developers like you with zero waiting time and much lower fee. More details on the Plan Lodgment Scheme can be found in <http://www.ura.gov.sg/dc/lodgment/PlanLodgmentScheme.htm>.

Flowchart & how to make the submission



Fees involved

The current processing fee for erecting a new industrial development is summarized in the table below:

Fee for Development Application submitted to URA for planning permission	
For 1 st 1,000m ² of floor area	\$2,500
For every 100m ² of floor area (from 1,001m ² to 10,000m ²)	\$60 for every 100m ² of floor area
For every 100m ² (beyond 10,001m ²)	\$50 for every 100m ² of floor area
Fee for Development Application submitted under the Plan Lodgment Scheme	
Single fee, not linked to proposed GFA	\$800

Note: No fees will be refunded once the application is processed

Authority's response

Planning decision will be granted within 4 weeks from the submission of a Development Application.

Instant authorisation for development proposals lodged under the URA Plan Lodgment Scheme.

Contact

Urban Redevelopment Authority
 Development Control Group
 45 Maxwell Road
 The URA Centre
 Singapore 069118
 Main line: (65)6223 481
 Website: <http://www.ura.gov.sg>
 Email: ura_dcd@ura.gov.sg



Building & Structural Safety

Agency: Building and Construction Authority (BCA)

Introduction on agency

The BCA was established on 1 April 1999 to develop and regulate Singapore's building and construction industry. A statutory board under MND, BCA's vision is to provide "The Best Built Environment for Singapore, our Distinctive Global City". Its mission is to shape a Safe, High Quality, Sustainable and Friendly built environment for Singapore.

Together with its education and research hub, the BCA Academy of the Built Environment, BCA works closely with its industry partners to develop skills and expertise that help shape the best built environment for Singapore.

The BCA approves building and structural plans, and regulates requirements at construction sites. It is also responsible for the issuance of permits to start work, temporary occupation permits and certificates of statutory completion. It champions barrier-free accessibility and sustainability of the built environment. It also reviews building regulations and codes that are related to energy efficiency, barrier-free and buildable design.

What are the regulations involved?

Building Control Act & Building Control Regulations

The prime objective of building control is to ensure building works comply with standards of safety, amenity and matters of public policy as prescribed in the Building Control Act & Building Control Regulations.

The requirements on the application for plans approval and permit to commence works, supervision of the construction works and application of Temporary Occupation Permit and Certificate of Statutory Completion for occupation and operation of the buildings are stipulated in the Building Control Act & Building Control Regulations.

Who are the parties involved?

- a) Developer is the person for whom the development is carried out
- b) Qualified Person (QP) who is a Professional Engineer (PE) in civil & structural or geotechnical, to prepare and submit structural plans for approval, apply for a permit to commence works and to supervise the works
- c) Qualified Person (QP) who is a registered architect, to prepare and submit the building plans
- d) Accredited Checker (AC) is an experienced PE in civil & structural or geotechnical to carry out independent checks on the structural or geotechnical design
- e) Registered Site Supervisor (RSS) i.e. Resident Engineer (RE) or Resident Technical Officer (RTO) to supervise the carrying out of structural or geotechnical works
- f) Licensed Builder to carry out the works

- g) Specialist Builder to carry out specialist building works e.g. piling works, site investigation and instrumentation monitoring works, structural steelworks, ground support and stabilization works, pre-cast concrete works and in-situ post-tensioning works

Requirements of submission

Before commencing any building or structural works, the approval of the plans and a permit to carry out structural work will have to be applied to and obtained from BCA. The developer will need to appoint a QP or QPs to carry out structural design and to prepare and submit structural plans for approval and supervision of the works. You can apply for a permit together with your application for approval of structural plans or after obtaining the plan approval. In order to expedite and streamline the whole process, the BCA allows parallel and phased submissions, as follows:

Parallel submission

You can submit your application for approval of structural plans to the BCA while you are seeking planning permission from the Chief Planner, URA. The BCA will process your application but approval will be granted only when you have already obtained planning permission (either a provisional or written permission) from the Chief Planner, URA.

Phased submission

If your building works involve several stages of work, you can submit your structural plan approval application in phases according to your proposed stages of work. This will allow you to commence construction works on the first stage early, without having to wait for plans of the entire structure to be approved. In addition, if your project is complex and consists of many independent structures, you may also submit plans for the various structures separately for approval.

Building Works Requiring Accredited Checker's Certificate

In general, most industrial building projects will require the appointment of an Accredited Checker (AC) to carry out independent checks on the structural design prepared by the QP. For exemption of works from the requirement of AC checking, please refer to the Fourth Schedule of the Building Control Regulations.

Validity Periods of Approval

Building works must commence within 24 months from the date of building or structural plan approval, failing which the approval will automatically lapse. The plan approval can be extended by sending the request to the BCA if more time is needed to commence the construction of the building.

Modification of requirement/waiver applications

The requirements of the building regulations must be complied with and the QPs have to certify that the plans are prepared in compliance with these regulations unless modification or waiver of certain requirements has been allowed by the BCA. Any application to request for waiver has to be submitted using the forms available on the CORENET together with the requisite fees payable.

Site Supervisor

The QP needs to appoint a team of RSS comprising either a Resident Technical Officer or a Resident Engineer to assist him in supervising the structural works. The number of RSS to be appointed will depend on the value of the project.

Occupation of Buildings – Certificate of Statutory Completion or Temporary Occupation Permit

Upon completion of building works, the applicant has to apply for the Certificate of Statutory Completion (CSC) or at least a Temporary Occupation Permit (TOP) before occupying these buildings. The QP can submit his request for a date of joint site inspection using the CORENET e-submission. This request can be made one month before the schedule date of site inspection.

Application may be made directly for a CSC when all the requirements have been complied with. These requirements will include building plan clearances from the relevant technical authorities such as the Fire Safety & Shelter Department and National Environment Agency. Otherwise an application for TOP can be considered when the non-completion of the works is minor and is neither of a serious nature nor in any way detrimental to the well-being or safety of the persons who may occupy the building.

Express TOP

This is a fast-track system to issue TOP within one working day provided all requisite requirements for the TOP application have been met. The application must first meet all the requirements for the release of TOP similar to the normal TOP application such as submission of the required certificates of supervision for works done and clearances from the key technical departments. The QP shall also confirm and certify that the requirements as spelt out in the written directions from the BCA following the site inspection have also been complied with.

Procedures

Pre-submission general consultation

The project parties, e.g. QPs and ACs may consult BCA by calling BCA hotline, walk-in consultation at the service counter, e-mail or writing, if necessary on matters pertaining to submission requirement to the proposed development. Such pre-submission consultations should be carried out as early as possible so as the requirements can be incorporated into the building or structural plans before commencement of the works.

Consultation platform for issues involving other agencies

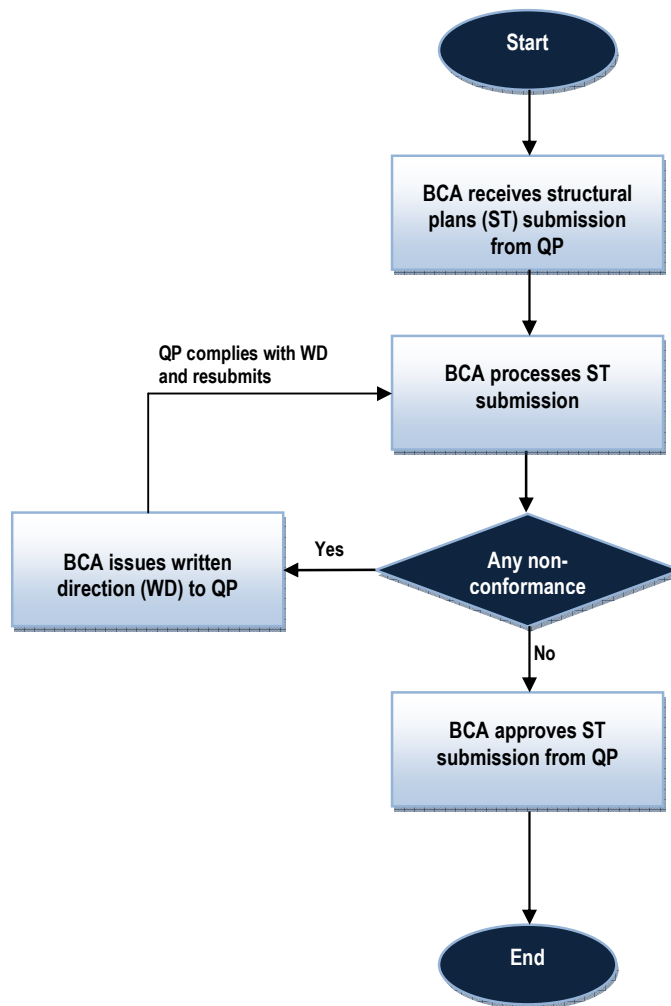
BCA currently chairs two platforms with representatives from the agencies and professional and industry representative to co-ordinate and resolve any conflicting requirements among agencies.

- a) Tabling of cases for BP/CSC Meetings
For specific cases with issues involving requirements of other agencies, the QPs can table their cases at the BP/CSC Meeting for discussion. QPs may submit their request indicating the departments involved and the reasons for requests. The BP/CSC meeting is held once a month. Representatives from the relevant departments including FSSD (Fire Safety and Shelter Department), LTA (Land Transport Authority), NParks and NEA (National Environment Agency) are invited to the meeting to help explain and resolve issues concerning their clearances for building plan approval or the certificate of statutory completion (CSC) issuance.
- b) Inter-departmental Co-ordination Committee (IDCC) Meeting
The Inter-departmental Co-ordination Committee (IDCC) was formed to provide a platform to discuss and help resolve conflicting policy or issues among government agencies (NEA, URA, FSSD, LTA, NParks). Meetings are convened on a need basis or upon request by members of the industry. Request to table conflicting policy issues or co-ordination problems among agencies can be made through the respective representative of institutes or associations (REDAS, SIA, ACES, IES and SCAL). Alternatively, it could also be emailed to the Secretary of the IDCC with details of the agencies and issues involved.

Flowchart & how to make the submission

Structural Plans & Permit

The following flowchart below shows the procedure for the structural plan submission and approval process.

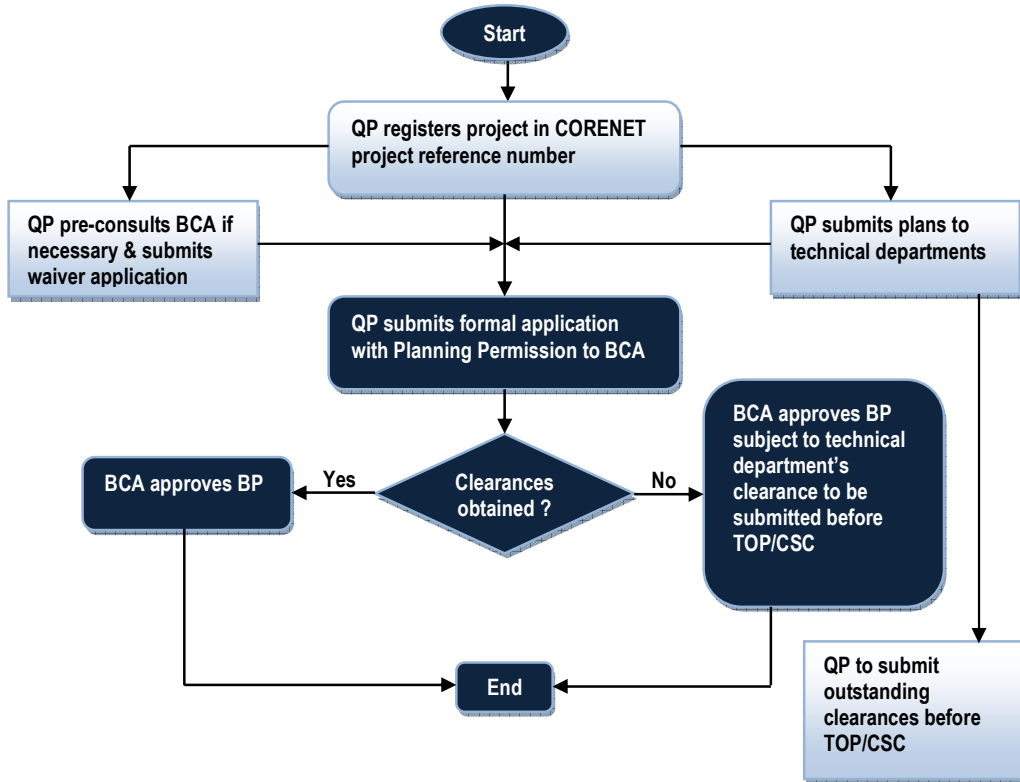


Please refer to the "Guidelines on Submission of Applications to Commissioner of Building Control"
<http://www.bca.gov.sg/PerformanceBased/others/Submission.pdf>

Building Plans (BP)

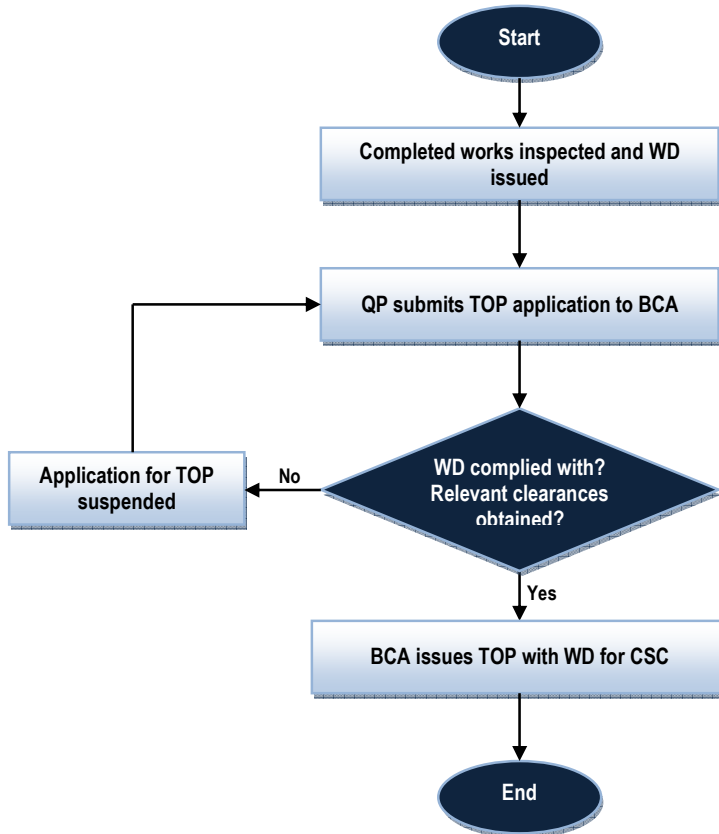
Building plans are essentially architectural plans for the building development. These plans will have to be submitted to the BCA for approval after the Written Permission from the Chief Planner, URA has been obtained.

The following flowchart below shows the procedure for the building plan submission and approval process.



TOP/ CSC

The following flowchart below shows the procedure for TOP/CSC application process.



Note:
The workflow for processing CSC application is similar, except that site is not inspected again and clearances from all the relevant technical departments are obtained

QP: Qualified Person
WD: Written Directions

Other Requirements of Building Control

Barrier-free Designs

Since 1990, Singapore's new buildings had to be designed for barrier-free accessibility with the objective of making them more user-friendly. It was first introduced primarily to cater for the wheelchair-bound and had been reviewed periodically to meet the expectations of the community. The current code, Code of Accessibility for the Built Environment also caters to the needs of the elderly and family with young children. It is not only applicable to new buildings but to buildings undergoing major addition and alteration works. You will find information on the website at:

http://www.bca.gov.sg/BarrierFree/barrierfree_buildings.html

Universal Design

Universal Design is increasing in importance as designers are expected to cater to the differing needs and requirements of the different users of our society. It seeks to create an environment addressing the needs for all age groups and people of different ability including temporary disability. In Singapore, the move towards Universal Design has gathered pace to cater to the growing proportion of greying population as well as to make our society a more inclusive one. You will find the requirements in the guide which can be found on the website at:

http://www.bca.gov.sg/BarrierFree/others/ud_guides.pdf.

Buildable Designs

The objective of introducing buildability legislation is to ensure the wider use of buildable design through ease of construction and to reduce the industry's dependence on site workers. The buildable design legislation require all new building projects with Gross Floor Areas (GFA) of 2000 m² and above to comply with the minimum buildability scores stipulated in the Code of Practice on Buildable Design. New extension or addition to existing building shall also be subjected to the minimum buildability requirement if the GFA of the new extension or addition equals or exceeds 2000m². The Guide to the Buildable Design Appraisal System and the Code of Practice on Buildable Design are available at the following links http://www.bca.gov.sg/BuildableDesign/others/guide_to_bdsoct03.pdf and http://www.bca.gov.sg/BuildableDesign/buildable_design_codes.html.

Civil Defence Shelter Design

A civil defence shelter is designed and constructed for the protection of people against weapon effects during a war emergency. Household shelters, storey shelters, public shelters are various types of civil defence shelters implemented. You will find more information on the technical requirements and guidelines for plan submission, construction and commissioning of civil defence shelters on the website at:

http://www.bca.gov.sg/Professionals/BuildingControl/building_control.html.

Environmental Sustainability Requirement

As Singapore aspires to be a leading global city in environmental sustainability, there is scope to further improve on energy efficiency requirements in buildings, to address the impact of climate change. Among other initiatives, BCA has enhanced the Building Control Act and put in place legislation to require a minimum environmental sustainability standard that is equivalent to the Green Mark Certified Level for new buildings. The new Building Control (Environmental Sustainability) Regulations 2008 will apply to:

- a) All new building works with gross floor area of 2000 m² or more
- b) Additions or extensions to existing buildings which involve increasing gross floor area of the existing buildings by 2000 m² or more
- c) Building works which involve major retrofitting to existing buildings with existing gross floor area of 2000 m² or more

The requirements on environmental sustainability of buildings will be integrated with the building plan process. The QP who submits the building plan and the other appropriate practitioners will be responsible for assessing and scoring the building works under their charge using the criteria and scoring methodology spelled out in the Code for Environmental Sustainability of Buildings which can be found on BCA's website at:

http://www.bca.gov.sg/EnvSusLegislation/others/Env_Sus_Code.pdf.

Forms and documents for submission

Where plans are to be submitted for approval, the application shall be made on the relevant forms and accompanied by relevant documents found in BCA's website

Fees involved

Details of the plan fees structure are tabulated below:

Plan Processing	
New Building Works / Structures	Rate
For the 1 st 2500m ² of SGFA / plan area	\$300 per 100m ² or part thereof
For the subsequent SGFA / plan area	\$200 per 100m ² or part thereof
Express TOP	
New Building Works / Structures	Rate
Major project	\$1000
Minor project	\$500

* SGFA - "Statistical gross floor area" is the aggregate of the floor areas of all the storeys, including basements, in all of the buildings in a development.

Authority's response

The general guide on the time taken to respond to applications for approval of building and structural plans and permit to carry out structural works is shown in the table below. These time frames are only a general guide since each submission can vary greatly in terms of complexity. Complete and good quality submissions which do not require written directions to be issued and complied with, as well as quick response and compliance to written directions by the QP will facilitate the process and shorten the time taken.

S/No.	Types of Submission	Time taken to respond (working days)
1	Structural Plans where an accredited checker's certificate is not required.	7
2	Structural Plans where an accredited checker's certificate is required.	14
3	Permit to carry out structural works	7
4	Building Plans	7
5	Certificate of Statutory Completion/Temporary Occupation Permit	7

Codes and standards

All the design and construction of building works shall comply with the design, materials and construction testing codes in the Approved Document. Examples of some of the common code of practices are:

Item	Accepted Code of Practice
Structural Design	
Reinforced and prestressed concrete structures	- Code of Practice for Structural Use of Concrete- SS CP 65; and - Design Guide of High Strength Concrete to Singapore Standard CP 65 – BC 2
Steel Structures	- Structural Use of Steelwork in Building - BS 5950; and - Design Guide on Use of Alternative Steel Materials to BS 5950 – BC 1
Construction Materials	
Steel reinforcement	- Steel for the Reinforcement of Concrete – SS2
Concrete	- Concrete – Specification, performance, production and conformity – SS EN 206-1
Structural Steel	- Hot rolled products of structural steels – BS EN 10025

The full list of the design, materials and construction testing codes can be found in the Approved Document which is available at BCA's website.

Codes for other Building Control Requirement

The Code for Environmental Sustainability of Buildings established the environmentally friendly practices for the planning, design and construction of buildings, which would help to mitigate the environmental impact of built structures.

Code of Accessibility in the Built Environment 2007 sets out the fundamental design and construction requirements and guidelines for making those buildings accessible to persons with disabilities.

Code for Envelope Thermal Performance for Buildings assists architects and professional engineers to comply with the envelope thermal performance standards prescribed in the Building Regulations.

Code of Practices on Buildable Design sets out the requirements of minimum buildability and the submission procedures and also the method of determining the Buildability Score so that industry could adopt labour-efficient designs.

Contact

Building and Construction Authority
5 Maxwell Road
#16-00 Tower Block MND Complex
Singapore 069110
Main Line: 1800-3425222 (1800-DIAL BCA)
Website: <http://www.bca.gov.sg>
Email: bca_enquiry@bca.gov.sg



Fire Safety

Agency: Fire Safety & Shelter Department (FSSD)

Introduction on agency

The Fire Safety and Shelter Department (FSSD) is one of the departments under the Singapore Civil Defence Force (SCDF). The role of FSSD is to administer Fire Safety Act and Civil Defence Shelter Act and regulates fire safety and CD shelter standards in Singapore. FSSD also reviews, develops, formulates, plans and implements fire safety and civil defence shelter policies and programmes. This will allow our population to live, work, play and learn in a fire safe environment during peace time and have protection during war emergency.

For more information, please visit us at:

<http://www.scdf.gov.sg>

What are the regulations involved?

Self Regulation Scheme

On 7 Sep 1998, FSSD implemented self regulation scheme. Under this scheme, Qualified Person (QP) has to ensure that their plans comply fully with the requirements stipulated in the Fire Code (Code of Practice for Fire Precautions in Buildings) before submitting to FSSD for approval. FSSD may approve without checking the plans basing on the QP's written declaration that the plans have been prepared in accordance with the Fire Code and comply with the provisions of the Fire Safety Act and its regulations.

Plan Approval

Any person who wishes to commence or carry out any proposed fire safety works in any building shall apply in accordance with the Regulations made under the Fire Safety Act to the Fire Safety and Shelter Department (FSSD) for approval of the plans of the fire safety works. Such plans shall be prepared and submitted by appropriate QPs who are Registered Architects or Professional Engineers.

Who are the parties involved?

QP (Registered Architect/Professional Engineer) with relevant discipline for the kind of work involved is qualified for making plan submission. The following QPs are qualified to submit plans to FSSD:

- a) QP (Architect) from Board of Architect
- b) QP (Mechanical/Electrical/Civil/Structural) from Professional Engineer Board

Requirements of submission

Appointment of Registered Inspector (RI)

Before applying for Temporary Fire Permit (TFP) or Fire Safety Certificate (FSC), the building owner or developer shall appoint a RI to inspect the completed fire safety works. No TFP/FSC will be issued until the fire safety works are cleared and certified by the RI.

Fire Safety Certificate (FSC)

A FSC provides for the safety of the building's occupants. Therefore, owners and their QPs whom they have engaged for their fire safety works are required to apply and obtain the FSC before using or occupying the premises. The FSC is only issued after full compliance of all fire safety works in the project.

Temporary Fire Permit (TFP)

A building owner may also apply and obtain a TFP for a limited period to occupy or use the premises, prior to obtaining the FSC. The TFP is only issued on condition that the fire safety works of the project has been satisfactorily completed with very minor outstanding issues left to be complied with. The timeframe to obtain the FSC after issuance of the TFP will depend on the size, type and complexity of the project. Normally, a maximum of 6 months will be granted.

Note: Applications may also be selected for an inspection by FSSD. If there are non-compliances or deviations found during the inspection, the QP is then required to make the rectifications and re-submit the application for FSC complying with the outstanding items.

Performance-Based Fire Safety Design

The performance-based approach to fire safety design relies on the use of fire engineering principles, calculations and/or appropriate software modeling tools to satisfy the intentions of the Code of Practice for Fire Precautions in Buildings (Fire Code). This new approach provides alternative means of meeting the intentions of the Fire Code. Building owners or developers will have the added flexibility in the application of fire safety for their buildings by having a choice of using the performance-based approach, the prescriptive approach or a combination of both.

The performance-based approach is unique in that its provisions spell out the intent of the code qualitatively but the means of achieving the desired intents of the Fire Code is open to the fire safety engineers (FSE). The FSE will need to substantiate that the proposed solution fully meets the intent of the Fire Code using established fire safety engineering methodology. The building owner is required to engage a Fire Safety Engineer (FSE) for the preparation of performance-based solutions as part of the plan submission to SCDF.

Waiver Application

The QP should make every effort to explore alternatives or solutions to comply with the fire safety requirements. If there are genuine problems of compliance, the QP may apply for a waiver or modification of the requirement, by submitting a waiver application to FSSD for consideration before plan submission. In making the waiver application, the QP should give the reasons for not being able to comply and offer alternative measures to meet the intent of the requirement.

Auditing of plans

Plans submitted to FSSD are subject to audit check. Plan Audit Officer will check the selected plans thoroughly. QP is required to give his explanation to FSSD if his plans are found to contain any non-compliant items.

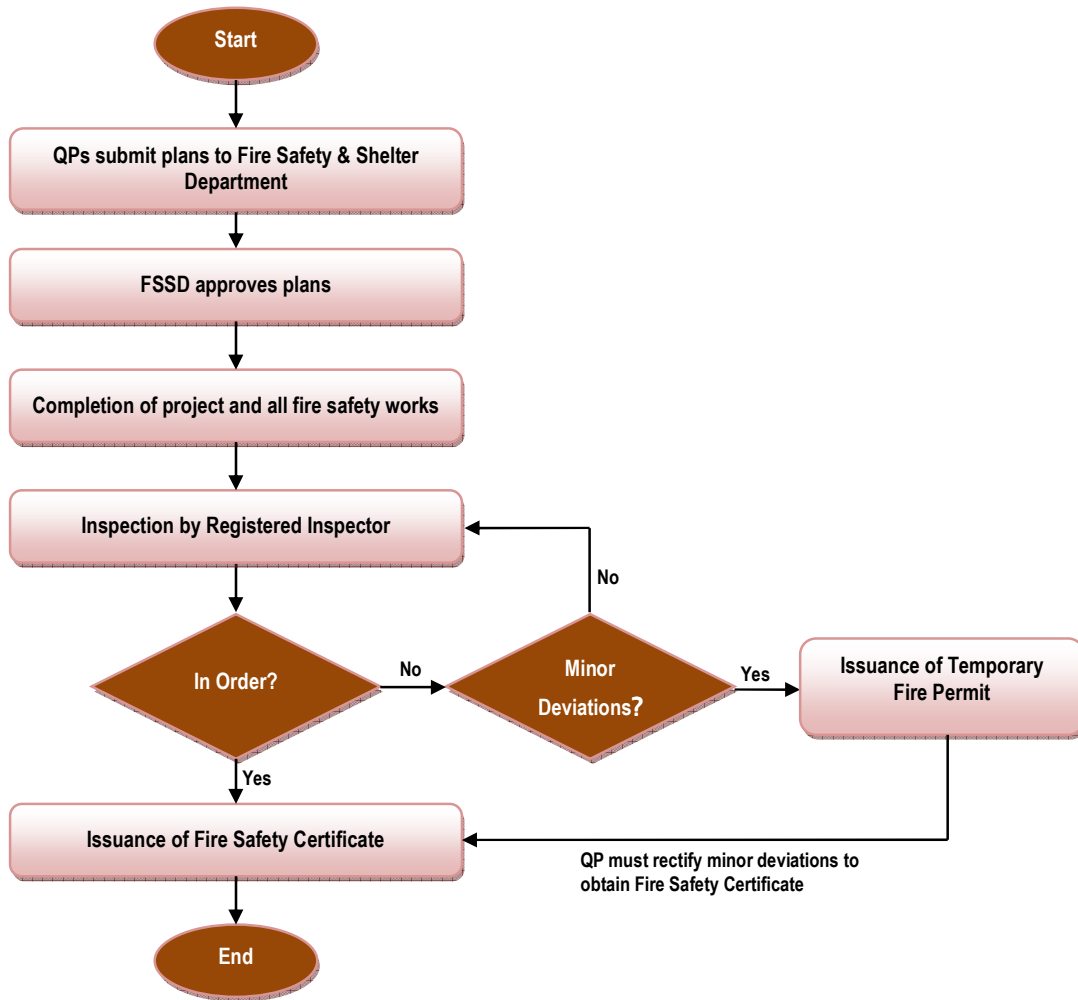
Procedures

Pre-submission consultation

QPs may consult FSSD's officers before making his plan submission. The purpose of the consultation is to assist the QPs in interpreting the Fire Code's requirement. Three avenues are available for the QPs to consult SCDF:

- a) Verbal Consultation
QP may drop in any time during office hours to consult the FSSD officer
- b) Appointment-made Consultation
QP applicants need to pre-arrange with the relevant officers for consultation either by letters or through phone calls
- c) Written Consultation
QP may write in via electronic submission or letter to the FSSD with a set of plan showing the issues

Flowchart on procedure of obtaining temporary fire permit/fire safety certificate



Forms & documents for submission

Type of plans to be submitted by QPs

Where relevant, the following plans shall be submitted to FSSD for approval:

- a) building plan
- b) mechanical ventilation plan
- c) fire protection plan

Fees involved

Type of Proposal	Building Plans	M&E Plans
New building or new additional floor area	\$150 per 100 m ²	\$75 per storey
Amendment & A/A	\$75 per storey	\$75 per storey
Waiver	\$100 per specific requirement	\$100 per specific requirement

Authority's response

Type of services		Response Time
Waiver Application		7 working days
Approval of Fire Safety Plan		2 working days
Processing of Temporary Fire Permit/Fire Safety Certificate		3 working days
Consultation	Walk-in	3 working days
	Written	10 working days

Codes & standards

Type of Plan Submission	Accepted Code of Practice
Building plan for fire safety works	- Code of Practice for Fire Precautions in Buildings
Fire protection plan for automatic fire alarm system	- Code of Practice for Fire Precautions in Buildings; and - CP 10
Fire protection plan for automatic sprinkler system	- Code of Practice for Fire Precautions in Buildings; and - CP 52
Fire protection plan for rising main system	- Code of Practice for Fire Precautions in Buildings; and - CP 29
Fire protection plan for water spray system	- Code of Practice for Fire Precautions in Buildings; and - NFPA 15
Fire protection plan for foam system	- Code of Practice for Fire Precautions in Buildings; and - NFPA 11
Air-conditioning and mechanical ventilation system	- Code of Practice for Fire Precautions in Buildings; and - CP 13
Engineered smoke control system	- Code of Practice for Fire Precautions in Buildings; and - CP 13 - BR 186 – Design principles for Smoke Ventilation in Enclosed Shopping Centres - BR 258 – Design Approaches for Smoke Control in Atrium Buildings - Other acceptable standards

Contact

Singapore Civil Defence Force
 Fire Safety & Shelter Department
 91 Ubi Ave 4
 Singapore 408827
 Main Line: 1800-2800000
 Website: <http://www.scdf.gov.sg>
 Email : SCDF_QP_Consultant@scdf.gov.sg



Environmental Control - Pollution Control, Sewerage, Drainage & Environmental Health

Agency: National Environmental Agency/Public Utilities Board

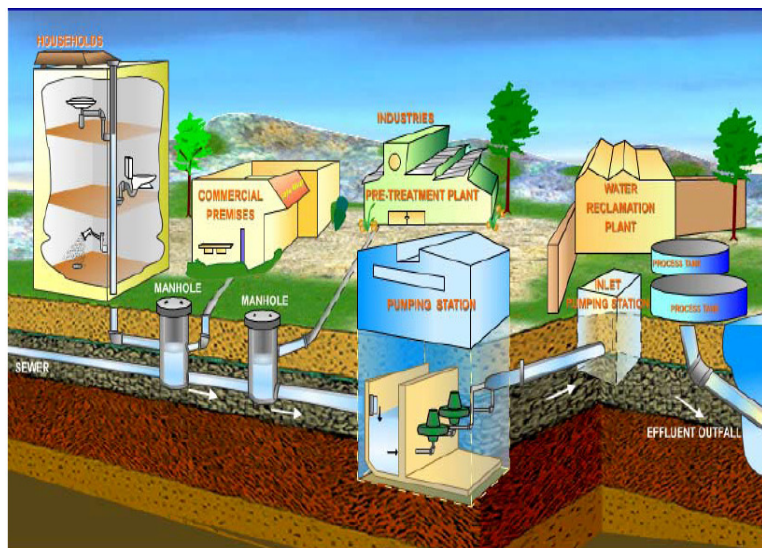
Introduction on agency

The Central Building Plan Unit (CBPU) of NEA provides one-stop service for clearance of Industrial Allocation/Landuse applications, Development Control (DC) Plans and Building/Detailed Plans (BP/DP) for development proposals on environmental matters consisting of Pollution Control, Environmental Health, Sewerage/Sanitary and Drainage Matters.

To ensure that Singaporeans continue to enjoy a quality living environment, environmental considerations and factors are incorporated at the land use planning, development control and building control stages so as to minimise pollution impacts to the environment, mitigate nuisance impacts to surrounding land use and safeguard environmental health. CBPU screens and assesses the hazards and pollution impacts of the proposed industries at the Industrial Allocation (IA) stage to ensure that they do not pose unmanageable health and safety hazards and pollution problems, and do not generate wastes that cannot be safely managed and properly disposed off. A proposed factory will be allowed only if it is sited in an appropriate industrial estate, is compatible with the surrounding land use and can comply with the pollution control requirements. The siting requirements for industries and pollution control requirements are specified in the Code of Practice on Pollution Control.

The Water Reclamation (Network) Department, PUB or PUB(WRN) plans, operates and maintains the public sewerage network and also regulates the provision of sewerage system and sanitary facilities in Singapore. The public sewerage network collects used water from domestic and non-domestic (e.g. industrial, commercial, etc) sources.

The used water is channeled, through a combination of gravity sewers, pumping stations and deep tunnel sewerage system, to the water reclamation plants where it is treated to acceptable international standards before the treated effluent is either reclaimed for use or disposed to the sea. ►



The Catchment and Waterways Department, PUB or PUB(C&W) plans, develops and manages our reservoirs and waterways for water supply and flood control, and integrates them with the surrounding environment in a sustainable manner.

What are the regulations involved?

Pollution Control

The Environmental Protection and Management Act (EPMA) & Regulations provide for and regulate the installation, operation and maintenance of the industrial plant and pollution control facilities. It also regulates the limits for emission of air impurities into atmosphere, discharge of wastewater into watercourse and the factory boundary noise. The EPMA requires a Clearance Certificate to be obtained before the commencement of any industrial plant work and a Compliance Certificate to be obtained after satisfactory completion of any industrial plant work.

Environmental Health

The Environmental Public Health Act and Regulations provides for and regulates the installation, operation and maintenance of the solid waste management facilities in developments.

Sewerage

The Sewerage and Drainage Act (SDA) provides for and regulates the construction, maintenance and improvement of sewerage system. It also regulates the discharge of sewage and trade effluent and for matters connected therewith.

The Sewerage and Drainage Act requires:

- a) Clearance Certificate to be obtained before the commencement of any sewerage and sanitary works
- b) Compliance Certificate to be obtained upon satisfactory completion of any sewerage and sanitary works
- c) Approval to be obtained before carrying out any building/structure works, piling works or temporary structure works over, across or adjacent to any sewer or sewerage system
- d) Approval to be obtained before the discharge of any trade effluent into public sewers

Drainage

The construction, maintenance, improvement and safeguard of land drainage systems are regulated under Sewerage and Drainage Act (SDA) and the Sewerage and Drainage (Surface Water Drainage).

The Sewerage and Drainage Act requires:

- a) Clearance Certificate to be obtained before the commencement of any storm water drainage works, or to erect or place any structures or object in, above or across any drain or drainage reserve
- b) Compliance Certificate to be obtained upon satisfactory completion of any storm water drainage works, erection or placement of any structures or object in, above or across any drain or drainage reserve
- c) Approval to be obtained before carrying out any temporary structure works/services over, across or adjacent to any drain or storm water drainage system
- d) Approval to be obtained before construction of any works for taking or intercepting water from any place or sea, within the territorial limits of Singapore

Who are the parties involved?

- a) Developer appoints a process consultant or Qualified Persons (QP- Registered Architect or Professional Engineer) to prepare and submit the necessary applications to obtain Industrial Allocation clearance, Development Control clearance, Building Plan clearance certificates, Temporary Occupation Permit clearance and Certificate for Statutory Completion clearance (Compliance Certificate)
- b) QP shall also supervise, inspect the building works and certify completion of building works in accordance to the environmental codes

Requirements of submission

Land Use and Development Planning Stage

Industrial developments are generally incompatible with residential premises. Even with pollution control facilities to comply with emission standards, residual or fugitive emissions of smell, dust and noise cannot be totally eliminated from industries. Although these emissions are well within safe levels, they would cause nuisance problems if industries are built too close to residential premises.

To minimise nuisance from industries, adequate buffers are provided between residential premises and industries. To guide land use planning, industries are classified in four categories namely clean, light, general and special. Industrial estates close to residential areas are designated for clean or light industries whilst those located sufficiently far away from residential areas such as Tuas and Jurong Island are designated for special industries which have the potential to cause serious pollution or use large quantities of hazardous chemicals. To minimise pollution of water catchments, limited land within water catchments is zoned for clean or light industrial use that do not use large quantities of chemicals.

Land zoned for industrial use will be allocated to the industrial land developing agencies such as JTC Corporation (JTC) and Housing Development Board (HDB) or tendered out for development by private sectors. JTC, HDB and private developers consult CBPU on the allocation of industrial premises.

Any new development or change in land use will result in the discharge or increase in the discharge of used water, which requires an adequate public sewerage system to convey to the water reclamation plants for treatment and disposal.

It is critical that developing agencies such as EDB, URA & JTC etc. inform/consult PUB, Water Reclamation (Network) Department (WRN) at the earliest moment possible of developments that are likely to take place to enable PUB (WRN) to assess the availability and adequacy of the public sewerage system to support the proposed developments. This is because some sewerage system upgrading works, if necessary to support the proposed developments, may take 5 years or more to implement.

The following critical information on used water discharge from the proposed development/land use shall be submitted to PUB (WRN):

- a) the timeframe for completion of development upon making of Final Investment Decision (FID)
- b) the timeline for discharge to public sewer and the estimated quantity & discharge rates (average and peak) of used water discharge

(Note: peak to average ratio should be kept to about 3)

Singapore is a tropical country with annual rainfall of around 2400mm. Rain is felt throughout the year but tends to be heavier from November to January. Any new land development will result in the increase in surface storm runoffs. It is essential that an effective and adequate drainage system be put in place to prevent flood and public health risks.

Before proceeding with the design of a proposed development, developing agencies or QP shall apply to CBPU for the drainage information related to the development site. Drainage Interpretation Plan (DIP) indicates drainage reserves or land safeguarded for future drainage schemes and the Minimum Platform Level (MPL) for effectual surface water drainage. The DIP may not show details of the common drain at the development. Upon receipt of DIP, QP/developing agency shall conduct site surveys to verify the alignment and invert levels of the drainage reserves, outlet drains and common drains (if any).

Industrial Allocation (IA)

At this early stage of industrial development, CBPU screens industries to ensure compliance with the following:

- a) Sited in designated industrial estates and compatible with the surrounding land use
- b) Adopt clean technology to minimise the use of hazardous chemicals and the generation of wastes. They will also adopt processes which facilitate the recycling, reuse and recovery of wastes
- c) Do not pose unmanageable health and safety hazards and pollution problems
- d) Install pollution control equipment to comply with discharge or emission standards
- e) Generate wastes which can be safely managed and properly disposed of

The siting requirements for industries and pollution control requirements are specified in the Code of Practice on Pollution Control.

To facilitate evaluation, prospective industrialists shall complete the IA application form available online in CBPU's Industrial Allocation System (IAS) at website address <http://ias.nea.gov.sg/PublicApplicant/Homepage.aspx>, and provide all necessary information on the company's activities, raw materials used, details of fuel burning equipment (if any), and types of waste generated (air emission, trade effluent & toxic waste) for CBPU's evaluation and approval. The developer shall engage a consultant to conduct and prepare Quantitative Risk Assessment/Pollution Control Study report for the proposed industrial development, if required by CBPU.

Sewerage and Drainage Information

Before proceeding with the design of a proposed development, QP shall apply to CBPU for the following sewerage and drainage information related to the development site:

- a) Sewerage Interpretation Plan (SIP) indicates the location and alignments of public sewers or pumping mains in the vicinity of the development. The SIP may not show details of the existing sewer connections at the development. QP should ascertain/verify details of the existing sewer connection on site
- b) Drainage Interpretation Plan (DIP) indicates drainage reserves or land safeguarded for future drainage schemes. The DIP may not show details of the common drain at the development. QP should ascertain/verify details of the common drains on site
- c) The Minimum Platform Level (MPL) for effectual surface water drainage

For additions and alterations to existing developments which do not involve an increase in the existing building coverage area, QP need not apply for SIP & DIP.

QP can apply for DIP/SIP on-line (Internet) and make payment online using cash card or credit card. The fee charged is \$20 for DIP and \$20 per standard plan not exceeding A3 size for SIP.

QP shall furnish the following information for the SIP/DIP application:

- a) site information such as Mukim/TS No. and Lot No. and/or road address; a site plan showing the location of site if it is reclaimed land or has recently been subdivided/amalgamated
- b) an outline of the proposed development

Upon receipt of SIP & DIP, QP shall conduct site surveys to verify the alignments and invert levels of the public sewers/pumping mains/sewer connections and drainage reserves/common drains.

QP shall also check if the development site is adjacent to Mass Rapid Transit System (MRT) above ground tracks and existing factories.

For infrastructure projects (e.g. MRT/road tunnels, roadworks, MRT/road viaducts, etc.), QP shall submit the development plans directly to PUB(Water Reclamation Network Dept) and PUB(Catchment & Waterways Dept) for clearance. DC/BP/TOP/CSC clearances from CBPU are not required. However, for MRT stations, depots, ventilation buildings/shafts, etc which requires building plan approval from BCA, QP shall obtain clearance from CBPU at the DC/BP/TOP/CSC stage.

Development Control

Upon obtaining the IA clearance and planning clearance from URA, the developer shall appoint a QP to design and submit DC plan to CBPU for clearance. At DC stage, CBPU checks layout of developments for compliance with the following requirements:

- a) Adequate setbacks are provided between the MRT above ground tracks, factories or public sewerage system and residential buildings
- b) Buildings/structures do not encroach into public sewers, pumping mains, DTSS tunnels, drainage reserves or common drain
- c) Proposed diversion of public sewer affected by development proposal or provision/extension of public sewer to serve the development
- d) Platform level of the development is raised above the minimum platform level for effectual land drainage
- e) Land is set aside for the provision of holding tanks/pump sump in areas where public sewer is not available
- f) Minimum crest level for the underground linkage to MRT station/underground linkage to development having underground linkage to the MRT station

For proposals involving structures overcrossing waterbodies with Drainage Reserve at least 17.5m wide, QP shall seek clearance from the Secretary, Waterbodies Design Panel c/o URA.

CBPU will reject DC plans if QP has not applied for SIP & DIP for the development site.

QP consults CBPU on the preparation of layout plan of the proposed development and seeks waivers if required upfront.

QP submits the DC plans to CBPU. CBPU will check the DC plans for compliance with environmental requirements mentioned above and clear the DC plans when the requirements are met.

For infrastructure projects (e.g. MRT/road tunnels, roadworks, MRT/road viaducts, etc.), QPs shall apply to CBPU for SIP/DIP for information on sewerage and drainage infrastructure. Thereafter, the QP shall submit their proposal directly to PUB(Water Reclamation Network Dept) and PUB(Catchment & Waterways Dept) for clearance. DC/BP/TOP/CSC clearances from CBPU is not required for infrastructure projects. However, for MRT stations, depots, ventilation buildings/shafts, etc. which requires building plan approval from BCA, QP shall obtain clearance from CBPU at the DC/BP/TOP/CSC stage.

Building Plan

At building plan stage, QP shall prepare building plans (BPs) and detailed plans (DPs) of buildings works as well as related building services such as solid waste, sewerage/sanitary, surface water drainage and pollution control systems to comply with environmental requirements stipulated in the codes of practices and relevant regulations. CBPU will reject building plans and detailed plans if QP has not applied for SIP & DIP nor obtained the DC Clearance for the development proposal.

For a typical development, the QP shall prepare and submit to CBPU the following BPs and DPs:

Type of Plans	Works	Requirements
BP on Environmental Health (EH)	<ul style="list-style-type: none"> a. Refuse storage and collection system (including for recyclables at Strata-titled properties with residential units) b. Public toilet c. Food Retail Outlet d. Food Factory e. Market f. Swimming Pool 	BP on EH is related to building design and shall be submitted and registered with CBPU before applying to BCA for BP approval
BP on Pollution Control	<ul style="list-style-type: none"> a. Pollution Control Equipment b. Wastewater treatment plant c. Fuel Burning Equipment d. Storage of oils and chemicals e. Incinerators 	BP on PC is related to building design and shall be submitted and cleared with CBPU before applying to BCA for BP approval
DP on Sewerage/ Sanitary Works	<ul style="list-style-type: none"> a. Internal sanitary plumbing and drainage system b. M&E equipment for sewerage installations c. Minor sewer d. On-site sewerage system (holding tanks, pump sewerage system) if public sewer is not available 	These are detailed plans on sanitary/sewerage services which do not affect building design and will be registered separately with CBPU independent of BCA's BP approval process
DPs on Surface Water Drainage	<ul style="list-style-type: none"> e. Internal surface water drainage system f. Pumped drainage system for basements g. Culverts h. Road Side Drains i. Retaining wall in the vicinity of public drains 	These are detailed plans on surface water drainage systems which do not affect building design and will be registered separately with CBPU independent of BCA's BP approval process. QPs shall pre-consult the Catchment & Waterways Department on the sizing of the entrance culvert/roadside drains before submitting the detailed plans to CBPU for registration

Submission procedure for BPs and DPs as follows:

- a) QP consults CBPU on the preparation of plans and seeks waivers in writing for deviations, if required upfront before submitting the plans to CBPU for registration
- b) QP submits plans with standard application forms to CBPU via the CORENET e-Submission system. These standard application forms contain the latest endorsements on compliance with codes on environmental health, pollution control, sewerage and drainage matters
- c) CBPU will register the BP on Environmental Health and DPs on Sewerage/Sanitary Works and Drainage Works without checking based on QP's certification of compliance with the respective environmental codes of practices

For industrial developments, which may have health & safety hazards and pollution impact, CBPU will continue to check and clear the BP on pollution control.

Building Construction Stage

Following the issuance of Clearance Certificate for sewerage/sanitary and drainage works, QP shall submit the following via the CORENET e-Submission System directly to PUB at various stages of the construction works:

PUB (Water Reclamation Department [WRN])

- a) QP/Form A - to notify PUB (WRN) before commencement of the works
- b) QP/Form B - to obtain the PUB (WRN)'s approval before allowing the workmen to enter the public sewer/manhole or other confined spaces to carry out any works or inspection
- c) QP/Form C - to certify completion and inspection of the completed sewerage/sanitary works and to arrange for spot checks by PUB(WRN)

(The guidelines and procedures on form submission are published in the PUB's website at <http://www.pub.gov.sg/general/Pages/SewerageandSanitary.aspx>)

PUB(Catchment & Waterways Department [C&W])



After the rain, our waterways often turn muddy. The muddy water is mainly caused by construction sites. Contractors, developers and professionals of construction sites have to play their part to keep our waterways free from mud.

- d) The proposed erosion and sediment control measures shall be submitted by a Qualified Erosion Control Professional (QECP) to PUB(C&W) before commencement of earthworks. The objective of the earth control measures (ECM) is to control the discharge of silt into the watercourse due to rainwater. Other wastewater (slurry water, bentonite etc) due to construction activities such as piling, tunneling work should be separately treated. Effective erosion and sediment control measures shall be provided by the developer/owner and the QP shall advise his developer/owner to provide such effective measures and facilities with inputs from Qualified Erosion

Control Professional (including site management system and perimeter cut-off drain, silt traps, storage ponds, treatment plants, etc) to ensure clean discharge that complies with the statutory requirement at all times during the construction period. All affected watercourses shall be desilted and cleared until completion of the construction works. QP can refer to PUB's website at address www.pub.gov.sg/ECM for more information on ECM

- e) Certificate of Inspection for Drainage Works to certify completion of the drainage works and to arrange spot checks by PUB(C&W)

PUB (WRN) and PUB(C&W) will issue the Sewerage/Drainage Clearance for the completed development when all requirements pertaining to sewerage, sanitary, mechanical and electrical works for sewerage installations or drainage works have been complied with and certified by the QP to be in order.

Upon obtaining PUB's Sewerage and/or Drainage Clearance for the completed building works, the QP shall apply to CBPU for issuance of the TOP/CSC clearance.

TOP Clearance

The Qualified Person shall be fully responsible for the supervision and construction of the building works in accordance to the approved building plans on pollution control and sewerage/sanitary works. Upon completion of the building works, QP shall apply to CBPU for TOP clearance after he has inspected and confirmed the following:

- a) The sanitary/sewerage works have been completed in accordance with the registered DPs on Sewerage and the Certificate of Completion and Inspection for Sanitary/Sewerage Works has been submitted to PUB (Water Reclamation Department)
- b) The industrial plant and related pollution control works have been completed in accordance with the BPs on PC

Upon receipt of the Certificate of Completion, PUB(WRN) may carry out spot checks on the completed sanitary/sewerage works and inform CBPU if the sanitary/sewerage works have been constructed in accordance with the registered DPs.

CBPU will also arrange with QP to carry out inspection of the completed industrial plant and its related pollution control works.

CBPU will issue the TOP clearance after the pollution control measures/equipment are in order and PUB(WRN) has issued its clearance for the sewerage/sanitary works.

Applications for the licence to discharge trade effluent into watercourse/operate scheduled premises may be submitted after building plan approval.

CSC Clearance

The Qualified Person shall be fully responsible for the supervision and construction of the building works in accordance to the approved building plans on pollution control, environmental health sewerage/sanitary and drainage. QP shall apply to CBPU for the Compliance Certificate (CSC clearance) for the completed building works after QP has inspected and confirmed the following:

- a) Outstanding sanitary/sewerage works, if any, have been completed in accordance with the registered DPs on Sewerage. The Certificate of Completion and Inspection for Sanitary/Sewerage Works has been submitted to PUB (WRN). This certificate is required only if the QP has not applied for TOP for the development
- b) Outstanding pollution control works (for an industrial development), if any, have been completed in accordance with the BP on PC
- c) Building works related to environmental health have been completed in accordance with the registered BP on EH. A Certificate of Completion and Inspection of the related building works has been submitted to CBPU; and Surface water drainage works have been completed in accordance with the registered DPs on Surface Water Drainage. The required Certificates on Inspection and Completion have been submitted to PUB(C&W)

CBPU, PUB(WRN) and PUB(C&W) may arrange with QP to carry out spot checks on the completed building works.

CBPU will issue the CSC clearance after the environmental health, pollution control, sanitary/sewerage and surface water drainage works are in order.

Licence

Once the TOP clearance/Compliance Certificate has been obtained, the factory owner can occupy and start the production activities. The factory owner shall ensure that all licences or permits, such as poison permit/licence, schedule premises, discharge of treated trade effluent and etc are obtained prior to commissioning of factory.

Procedures

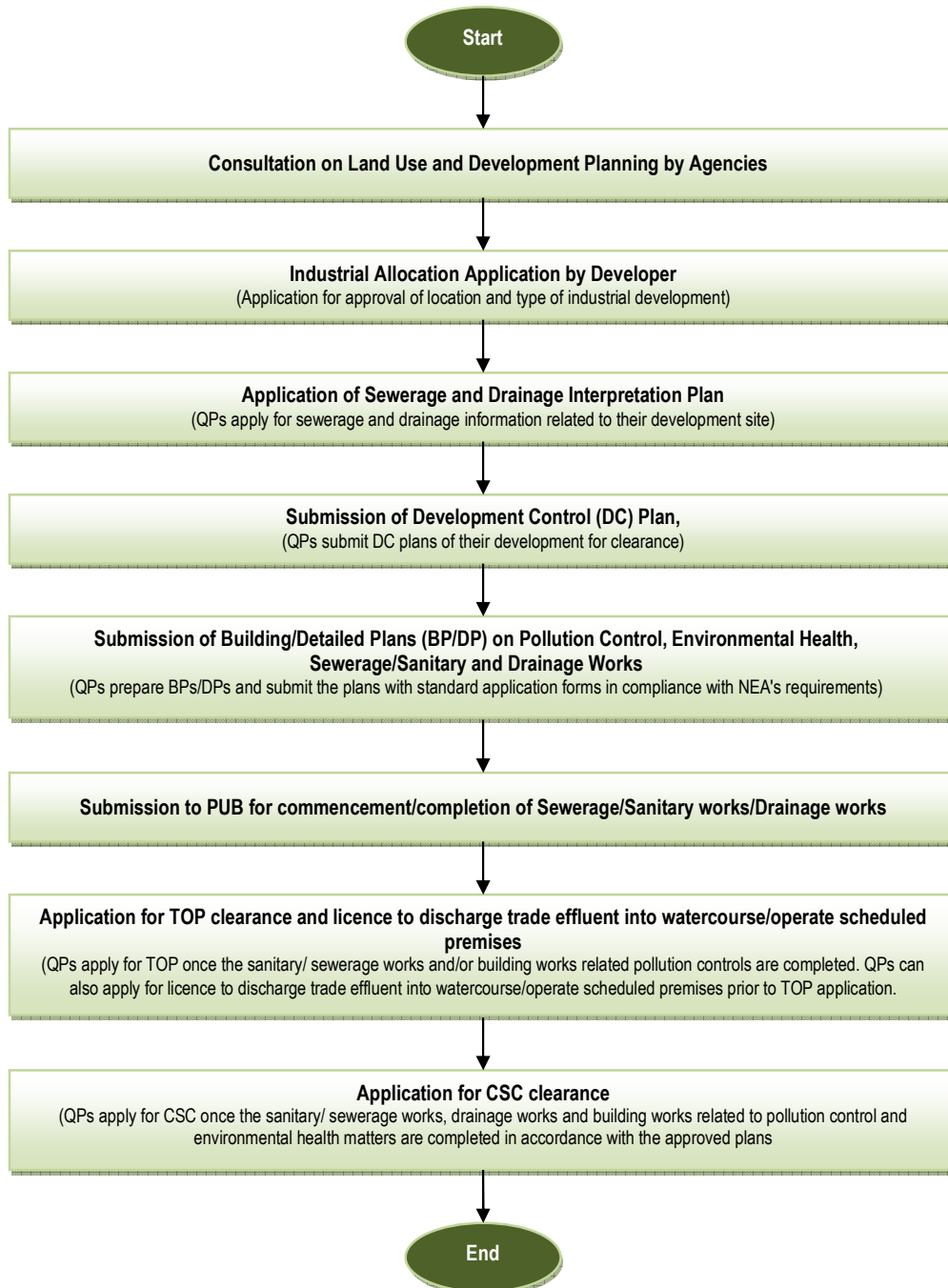
Pre-submission consultation

CBPU, PUB(WRN) and PUB(C&W) conduct walk-in consultation sessions every Monday to Friday morning from 9 am - 12 noon for QPs to consult on the preparation of plans as well as to seek clarification or waiver on the requirements specified in the environmental codes of practices as well as on the protection and prevention of damage to the public sewerage system. QPs may also pre-consult the PUB(C&W) on the sizing of the entrance culvert or roadside drains before submitting the detailed plans to CBPU for registration. QPs shall bring along the sewerage interpretation plan or drainage interpretation plan (SIP/DIP) purchased from CBPU, the proposed development plan, registered survey plan, etc

necessary to facilitate the consultation session. There is no need for QPs to make prior appointment to attend the consultation sessions.

Alternatively, QPs could also make written consultations to CBPU, PUB(WRN) or PUB(C&W) to seek advice or clarifications on submission procedure or environmental requirements. The written consultation shall be forwarded through the CORENET e-Submission System.

Flowchart & how to make the submission



Fees involved

Currently, CBPU/PUB does not charge any processing fees for the processing of development plan applications

Authority's response

The processing time will vary according to the complexity of the industrial development. In general, the processing time upon receipt of complete and accurate submission of all required information and documents are as follows:

Applications	Response time
Processing of Industrial Allocation Application	7 working days
Processing of Development Control Plans	7 working days
Processing of Building Plan on Pollution Control	7 working days
Processing of Building Plan on Environmental Health	1 working days (plan registration without checking based on QP certification)
Processing of Detailed Plans on Sewerage/Sanitary and Drainage Works	1 working days (plan registration without checking based on QP certification)
Processing of Application for Temporary Occupation Permit/ Certificate of Statutory Compliance	7 working days (from date of clearance granted for sewerage (TOP), pollution control(TOP) or drainage(CSC) works, whichever is later)
Processing of Earth Control Measures	7 working days
Processing of M&E Plans for Sewerage/Sanitary works	7 working days
Processing of QP's Forms and Application for Sewerage Clearance upon completion of sewerage/sanitary works	7 working days

Factory owner/operator has to ensure that all necessary licences/permits mentioned below (where applicable) have been obtained prior to commissioning of factory. Information on the licences/permits can be obtained from the website at:

<http://app2.nea.gov.sg/licenses.aspx>

Necessary Permits/Licences

- Licence to use scheduled premises
- Licence to discharge trade effluent into Watercourse
- Approval for transport of toxic industrial waste
- Licence for toxic industrial waste collector
- Hazardous substances licence
- Hazardous substances permit
- Ozone depleting substance licence
- Written permission to dispose asbestos waste at Semakau Landfill
- Written permission to dispose toxic industrial waste at Semakau Landfill
- Licence to set up and operate a waste disposal facility

Codes & standards

The Code of Practice on Pollution Control specifies the pollution control requirements to be complied with for industrial plant works.

The Code of Practice on Environmental Health (COPEH) provides the guidelines to address environmental health concerns in the design of buildings.

The Code of Practice on Sewerage and Sanitary Works provides the guidelines to address sewerage and sanitary concerns in the design of buildings.

The Code of Practice on Surface Water Drainage provides the guidelines to address surface water drainage concerns in the design of buildings.

The Code of Practice on Pollution Control and the Code of Practice on Environmental Health are available at CBPU's website at:

http://app2.nea.gov.sg/env_plan_cbpu.aspx

The Sewerage and Drainage Act (SDA), Code of Practice on Sewerage and Sanitary Works, and Code of Practice on Surface Water Drainage are available at PUB's website at:

<http://www.pub.gov.sg/general/Pages/default.aspx>

Contacts

Central Building Plan Unit
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40 Scotts Road #14-00
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Main Line: 1800-2846600
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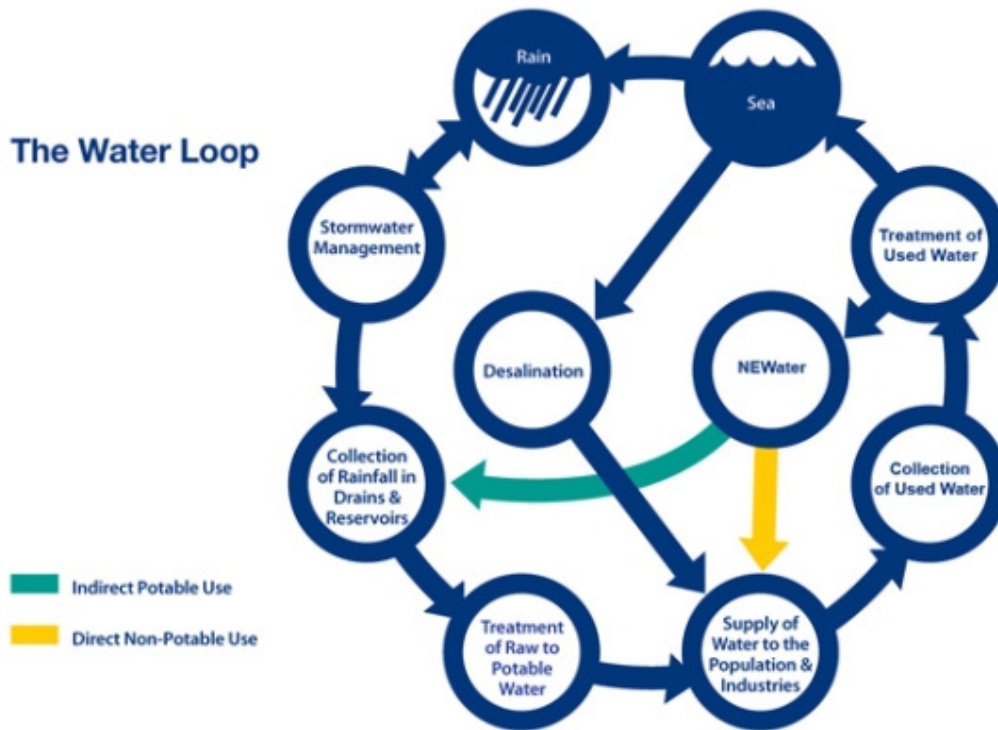


Utilities - Water Supply

Agency: Public Utilities Board - Water Supply (Network) Department

Introduction on agency

The Water Supply (Network) Department of the Public Utilities Board is responsible for the operation and maintenance of the water mains and connecting pipes up to the water meter. Water service installation downstream of a water meter shall be maintained by the consumer.



From rainwater collection to used water treatment, the entire water loop is managed by PUB.

Collection

Rainwater is collected through rivers, streams, canals and drains, and stored in reservoirs. Various reservoirs are linked by pipelines so that excess water can be pumped from one reservoir to another, thus optimizing storage capacity.

Production

Raw water is then piped to the waterworks for treatment.

Distribution

After treatment, the water is stored in service reservoirs before being distributed to customers.

Reclamation

Water that has been used by customers is collected via an extensive sewerage system and treated and further purified to produce high-grade reclaimed water, known as NEWater. It is a product of PUB's continuous investment in research and technology and is supplied to applicable industries and commercial buildings for their non-potable use (e.g. for cooling towers, industrial processes, general washing, landscaping and toilet flushing etc). More information on NEWater is available at PUB website at:

<http://www.pub.gov.sg/newater>.

The **Water Supply (Network) Department** of PUB is responsible for the operation and maintenance of the watermains and connecting pipes up to the water meter. Water service installation downstream of a water meter shall be maintained by the consumer.

What are the regulations involved?

- a) Public Utilities Act
- b) Public Utilities (Water Supply) Regulations

Who are the parties involved?

Water service work shall only be carried out by a water service worker of an appropriate class as prescribed in the Public Utilities (Water Supply) Regulations. The 2 classes of water service workers are:

- a) Professional Engineer registered under the Professional Engineers Act
A Professional Engineer (PE) is authorized to design any water service installation that requires pumping equipment or water storage tank and he shall be responsible for the supervision of any water service work undertaken on his behalf by a licensed water service plumber
- b) Licensed Water Service Plumber
A licensed water service plumber (LWSP) is authorized to carry out any water service work and design any water service installation which does not require any pumping equipment or storage tank

Requirements of submission

Water service workers shall submit their notifications, drawings and certificates electronically to PUB through CORENET e-submission system at:

<http://www.corenet-ess.gov.sg>.

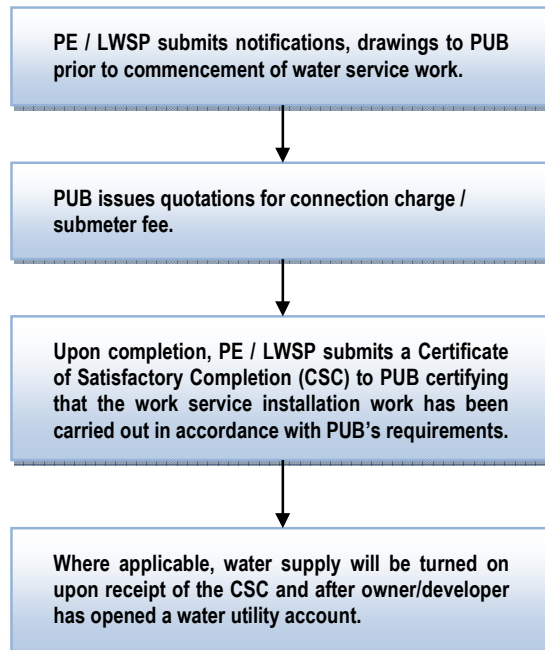
Procedures

Pre-submission consultation

PE/LWSP may consult PUB, if necessary on matters pertaining to the supply of water to the proposed development. Such pre-submission consultations should be carried out as early as possible. PE/LWSP shall provide the location plans together with details of the development for any pre-submission consultations. Common issues that may be discussed during the pre-submission consultation stage include:

- a) Availability of water mains in the vicinity of the development
- b) Mode of water supply
- c) Feasible location of water meter
- d) Impact on existing water mains and installations

Flowchart and how to make the submission



Forms and documents for submission

- a) Notification of Water Service Work
- b) 1 set of site plan
- c) 1 set of water reticulation schematic drawing

Fees involved

There is no fee for submission of notification / drawings to PUB.

Authority's response

Applications	Response Time
Processing licensed plumber application for water supply	12 working days
Completing new water connections after receiving approval for road opening and upon availability of site for laying of connection	6 working days
Turning on water supply after completion of piping works	1 working day

Codes and standards

Singapore Standard CP 48 – Code of Practice for Water Services

All water service work carried out shall comply with the Singapore Standard CP 48 – Code of Practice for Water Services which is available for sale at the SPRING Singapore e-shop website at:

<http://www.singaporestandardseshop.sg>.

Standards and Water Fittings

All water fittings to be used shall comply with the standards and requirements stipulated by PUB and their use in water service installations shall conform to the Public Utilities (Water Supply) Regulations and Singapore Standard CP 48 – Code of Practice for Water Services.

A water fitting shall be deemed to comply with the stipulated standards if it is certified or tested as complying with such standards by a product certification body or a testing laboratory accredited by the Singapore Accreditation Board (SAC) or its Mutual Recognition Arrangement (MRA) partners. A list of the stipulated standards and requirements which the water fittings shall comply with can be found at PUB's website at:

<http://www.pub.gov.sg>.

Contact

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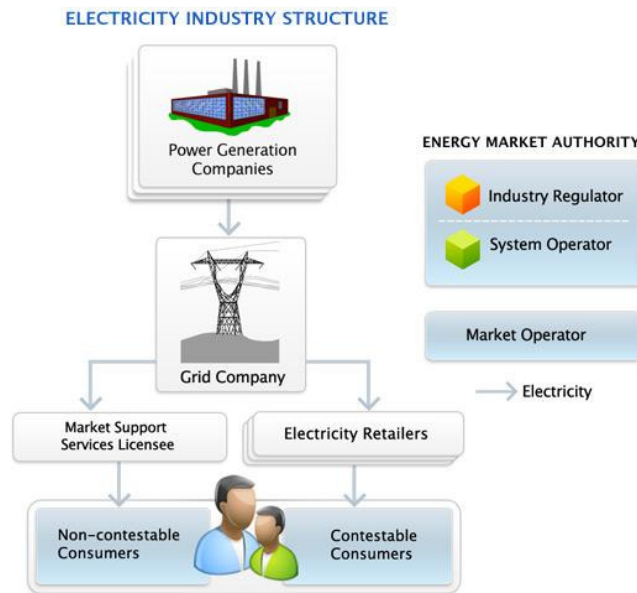
Utilities - Electricity & Gas Supply

Agency: Energy Market Authority

Introduction on agency

The Energy Market Authority's (EMA) main goal is to promote effective competition in the energy market, ensure a reliable and secure energy supply, and develop a dynamic energy sector in Singapore.

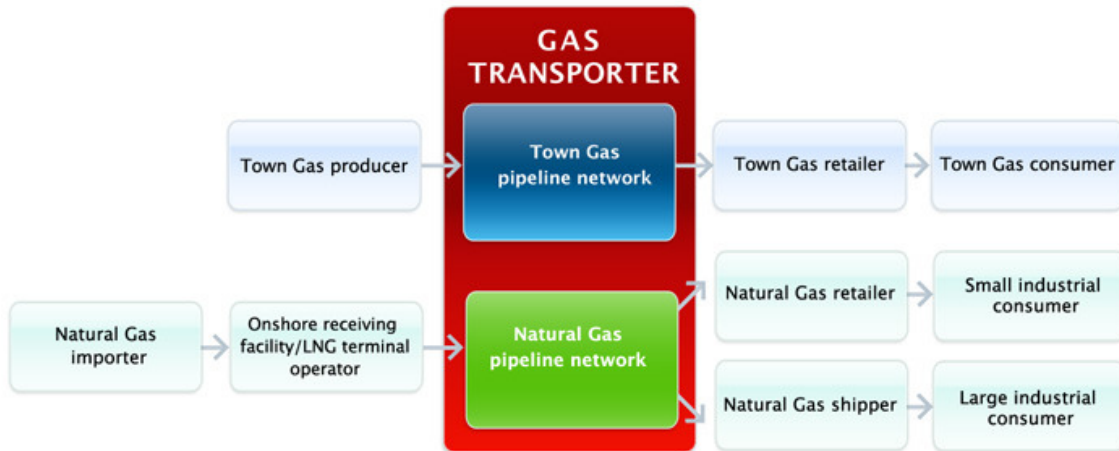
Electricity Industry Framework



On 1 January 2003, the National Electricity Market of Singapore commenced operation. In this market, the transmission system is managed and operated by SP PowerGrid Ltd, as agent for and on behalf of the Transmission Licensee, SP PowerAssets Ltd. The Energy Market Company Pte Ltd operates and administers the competitive wholesale electricity market. The generation companies compete to sell electricity they generate at the wholesale market. Electricity retailers will buy electricity and retail to contestable consumers. The Market Support Services Licensee, SP Services Ltd, provides market support services to the wholesale market as well as supplies electricity to all non-contestable consumers at regulated tariffs.

The Energy Market Authority (EMA) sets out the regulatory framework, viz Electricity Act, the relevant regulations, licences and codes governing the electricity industry.

Gas Industry Framework



With natural gas being the dominant fuel for electricity generation in Singapore, the gas industry has been restructured with a competitive market framework to support the reform of the electricity industry. The new gas industry structure has been put in place since 15 Sep 2008. As part of the restructuring, the gas transport business has been separated from the competitive business of gas import and retail. PowerGas Ltd, the gas transporter, owns and operates the gas pipeline network, and does not participate in the gas import and retail businesses.

Currently, the gas system in Singapore consists of two separate gas pipeline networks namely, the town gas pipeline network and the natural gas pipeline network. Town gas (used mainly for cooking and water heating by domestic and commercial consumers) is manufactured and retailed by City Gas Pte Ltd. Natural gas is imported into Singapore from Malaysia and Indonesia via four offshore pipelines.

Consumers who are electricity generation companies or large industrial users of gas can make arrangements with either the gas transporter or a gas shipper for the conveyance of gas to their premises. For small gas consumers, the gas retailers will arrange with the gas transporter for the conveyance of gas to them.

The EMA sets out the regulatory framework, viz Gas Act, the relevant regulations, licences and codes governing the gas industry.

What are the regulations involved?

Electricity:

- a) Electricity Act (Chapter 89A)
- b) Electricity (Electrical Installations) Regulations
- c) Electricity (Electrical Workers) Regulations
- d) Electricity (Contestable Consumers) (no. 2) Regulations
- e) Metering Code
- f) Transmission Code
- g) Singapore Standard CP5 – Code of Practice for Electrical Installations

Gas:

- a) Gas Act (Chapter 116A)
- b) Gas (Metering) Regulations
- c) Gas (Supply) Regulations
- d) Gas Metering Code
- e) Gas Network Code
- f) Gas Supply Code
- g) Singapore Standard CP51 - Code of Practice for Manufactured Gas Pipe Installation

Who are the parties involved?

Electricity:

- a) Energy Market Company Pte Ltd - operates and administers the competitive wholesale electricity market
- b) Generation companies - compete to sell electricity they generate at the wholesale market
- c) Electricity Retailers - retail electricity to contestable consumers
- d) SP PowerGrid Ltd - manages and operates the transmission system. It is the agent for and on behalf of the Transmission Licensee, SP PowerAssets Ltd
- e) SP Services Ltd - the Market Support Services Licensee which, provides market support services to the wholesale market as well as supplies electricity to all non-contestable consumers at regulated tariffs
- f) Licensed Electrical Worker (LEW) – licensed personnel who could design, install, repair, maintain, operate, inspect and test electrical and supply installations in accordance with their licence

Gas:

- a) PowerGas Ltd - licensed gas transporter in Singapore that owns and manages the gas pipeline network for conveying natural gas and town gas. As the gas transporter, it provides open and non-discriminatory access to the gas pipeline network
- b) Gas Shipper – entities that contract with the gas transporter to convey gas through the gas pipeline network
- c) Gas Retailers - entities that supply gas to retail consumers

Requirements of submission

Electricity

The LEW shall submit to SP Services Ltd the “Application Form for Connection to the Transmission System” together with all supporting documentation requested by them.

Developers/consumers in the conception/planning stage should consult SP PowerGrid Ltd with regard to the requirements for connecting their developments to the transmission system. The LEW will submit the “Consultation Form for Connection to the Transmission System” directly to SP PowerGrid Ltd.

For connection at 66kV and above, the LEW shall submit detail technical calculations (load flow and fault current) to SP PowerGrid Ltd for evaluation and onward submission to EMA for endorsement. The consumer has to enter into a Customer Connection Agreement with SP PowerAssets Ltd before SP PowerGrid Ltd proceed to procure the equipment to effect the service connection.

Gas

The consumer should approach any of the gas shippers or gas retailers to obtain the separate requirements for obtaining gas connection. The gas shipper or gas retailer will then liaise with the Gas Transporter for laying of gas pipes, if necessary.

The consumer is also required to appoint a Designated Representative who is a Professional Engineer (Mechanical) or Licensed Gas Service Worker, to consult and submit the relevant forms to, and arrange for connection with the relevant gas retailer and Gas Transporter.

Procedures

Electricity

Planning consultation (for connection and application of electricity)

SP Services Ltd provides a one-stop service for utility supplies in Singapore. It processes all applications for connection to the transmission system submitted by licensed electrical workers (who act on behalf of electricity consumers).

Consumers who wish to have their electrical installations connected to the SP PowerAssets Ltd’s transmission system must submit their applications through their LEW. They should engage a LEW of the appropriate class to design, install, and test and certify fitness of the electrical installation.

Developers/consumers in the conception/planning stage should consult SP PowerGrid Ltd with regard to the requirements for connecting their developments to the transmission system.

When the development is ready to receive electricity supply, the LEW will then apply to SP Services Ltd to turn on the electricity supply. SP PowerGrid Ltd will issue a “Statement of Turn-On of Electricity” to the LEW and the consumer after the electricity supply is successfully turned on.

Please see the flowchart on the next page for the process of connection application.

Gas

Consumers who wish to obtain information on obtaining a gas connection should approach any of the gas shippers or gas retailers listed below.

The Gas Shippers are:

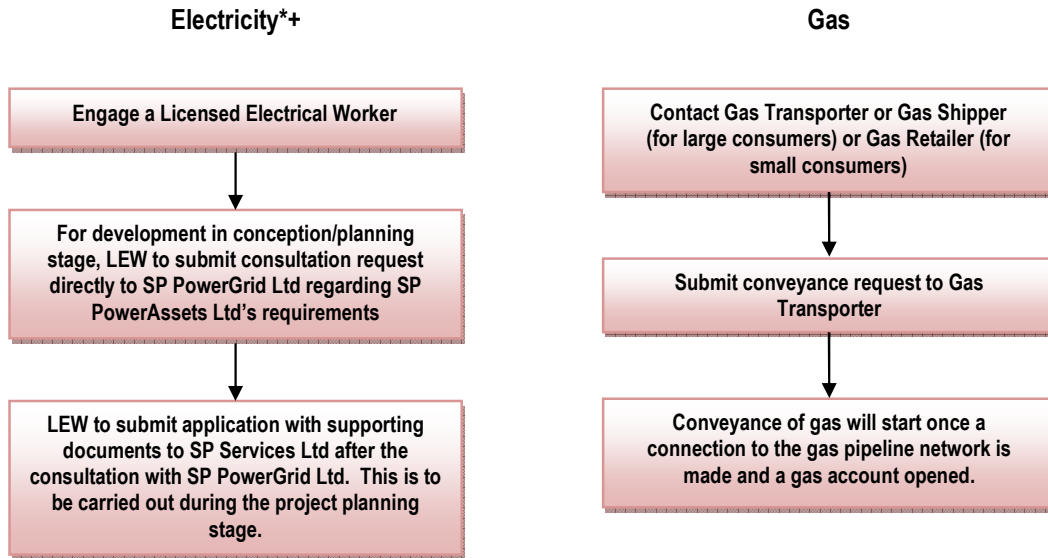
- a) City Gas Pte Ltd
- b) Gas Supply Pte Ltd
- c) Keppel Gas Pte Ltd
- d) Senoko Gas Supply Pte Ltd
- e) SembCorp Gas Pte Ltd

The Gas Retailers are:

- a) Gas Supply Pte Ltd
- b) SembCorp Gas Pte Ltd
- c) City Gas Pte Ltd

Please see the flowchart on the next page for the process of connection application.

Flowchart and how to make the submission



*High-tension consumers or consumers with average monthly consumption over the past 12 months of 10,000 kWh or more may become contestable. Contestable consumers may apply to buy electricity service packages from retailers if they choose to do so. Consumers who are not eligible to be contestable will be supplied with electricity by SP Services Ltd at the regulated tariff.

†Please refer to SP PowerGrid Ltd's handbook, "How to Apply for Electricity Connection" at <http://www.sppowergrid.com.sg/cms/admin/contentfiles/howtoapply.pdf> for more details on applying for electricity connection.

Forms and documents for submission

Electricity

- a) Application form for Connection to the Transmission System
- b) Consultation Form for Connection to the Transmission System

Gas

Application forms for gas supply, gas connection, admittance of gas and turn-on of gas supply are available in the relevant retailer's Handbook on Gas Supply.

Fees involved

Please refer to SP PowerGrid Ltd /PowerGas/SP Services Ltd/Gas Retailers for the fees involved.

Codes and standards

Electricity

Metering Code

The Metering Code sets out the rights and obligations of metering service providers and metered entities. It also lays out the technical specifications for meter installations and equipment. The code is reviewed periodically and changes will be made known via EMA's website.

Transmission Code

The Transmission Code sets the minimum conditions which the Transmission Licensee must meet in carrying out its obligations to provide transmission services and to provide non-discriminatory access to the Transmission Licensee's transmission system. It spells out the rights and obligations of the Transmission licensee in providing the transmission services, together with the rights and obligations of the users of transmission services. It also lays out the technical requirements for those who are connected to the transmission system.

Generation facilities and systems for transmission and distribution of electricity shall comply with the Transmission Code.

The code is reviewed periodically and changes will be made known via EMA's website.

Singapore Standard CP 5 – Code of Practice for Electrical Installation

All electrical installations shall comply with the Singapore Standard CP 5 – Code of Practice for Electrical Installation. This Code covers the design, selection, erection, inspection and testing of consumer electrical installations, including installations utilising extra-low voltage and low-voltage. This Code is available for sale at the SPRING Singapore e-shop website at: <http://www.singaporestandardseshop.sg>.

Gas

Gas Network Code

The Gas Network Code sets out the common terms and conditions between PowerGas Ltd (the Gas Transporter) and Gas Shippers who engage the gas transporter to convey natural gas through the gas pipeline network.

Gas Supply Code

The Gas Supply Code sets out the standards and procedures which the gas licensee must comply with for the safe operation of the gas supply system. It also stipulates the rights and obligations of the gas licensees on the conveyance of gas and provision of gas supply.

Gas Metering Code

The Gas Metering Code sets out the obligations of the gas shipper in providing meter data to the gas transporter, the gas transporter in owning certain meter installations, and the gas retailer in selling gas to its customers. The Code also addresses matters concerning the storage, collection, transmission and verification of meter data from all meter installations. It also stipulates the specification of meter installations.

Singapore Standard CP51 - Code of Practice for Manufactured Gas Pipe Installation

All gas installations obtaining town gas or natural gas at operating pressures of up to 20kPa gauge shall comply with the Singapore Standard CP51 - Code of Practice for Manufactured Gas Pipe Installation.

This Code covers the design considerations, prohibitions, material specifications, installation requirements, inspection, gas pipe pressure tests, purging, charging in of gas and maintenance for the gas installation pipework, from downstream of the gas service isolation valve to the appliance connecting points.

This Code is available for sale at the SPRING Singapore e-shop website at:

<http://www.singaporestandardseshop.sg>.

Contacts

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Main Line: 1800-2222333
Website: <http://www.spservices.com.sg>
Email: spservices@singaporepower.com.sg

SP PowerGrid Ltd
111 Somerset Road #08-05
Singapore 238164
Main Line: 1800-7788888
Website: <http://www.sppowergrid.com.sg>

PowerGas Ltd
111 Somerset Road #08-05
Singapore 238164
Main Line: 68298888
Website: <http://www.powergas.com.sg>

City Gas Pte Ltd
26 Senoko Avenue
Singapore 758312
Tel: 65787878
Website: <http://www.citygas.com.sg>

Gas Supply Pte Ltd
111 Somerset Road
#07-01
Singapore 238164
Tel: 67378700
Website: <http://www.gassupply.com.sg>

SembCorp Gas Pte Ltd
80 Sakra Road
Jurong Island
Singapore 627863
Tel: 68223293
Website: <http://www.sembcorp.com>

Frequently Asked Questions

Development & Planning Control

1. What is gross plot ratio?

Gross Plot ratio means the ratio between the floor area of the building and site area as shown below:

$$GPR = \frac{\text{Gross Floor Area}}{\text{Gross Site Area}}$$

For instance, for a site with allowable GPR of 2.5 and site area of 10,000m², the allowable gross floor area is 25,000m² (derived by 10,000m² x 2.5 GPR)

2. What is gross floor area?

All covered floor areas of a building are considered as gross floor areas, unless they are specifically exempted (such as car parks and driveways). The gross floor area is the total area of the covered floor space measured between the centre line of party walls, including the thickness of external walls but excluding voids. The guidelines on gross floor area can be found in URA's [Handbook for Gross Floor Area](#).

3. What are allowed on sites zoned Business 1 and Business 2?

Sites zoned Business 1 are generally for clean industry & warehouse developments which do not impose a nuisance buffer greater than 50m; while sites zoned Business 2 are for industries & warehouse developments which impose nuisance buffer of more than 50m. The nuisance buffers level is defined by Pollution Control Department (PCD), NEA (http://www.nea.gov.sg/cms/pcd/coppcc_2002.pdf). Special industries such as manufacture of industrial machinery, shipbuilding and repairing, may be allowed in selected areas subject to URA's evaluation.

Building & Structural Safety

4. There are various appointments to be made in a building project. Is there a summary explaining who can appoint who?

The following table is a summary of the appointments to be made in building works:

The developer <u>must</u> appoint (if any of the party to the right column has to be appointed):	<ul style="list-style-type: none"> a) the builder b) the accredited checker c) the specialist accredited checker d) the specialist builder to monitor instruments measuring pore pressures for saturated and unsaturated levels, groundwater levels, ground movements or building movements and to measure forces, deformations or displacements
The supervising qualified person <u>must</u> appoint:	<ul style="list-style-type: none"> a) the required number of qualified site supervisors working under his control and direction
The developer or the builder can appoint (if any of the party to the right column has to be appointed):	<ul style="list-style-type: none"> b) any of the qualified persons required (architectural, structural, geotechnical) to prepare the plans or to supervise the relevant building works in the project

5. In a D&B project, can a builder appoint his staff or employee (who is a PE) as the design QP(Struct) or design QP(Geo) for the project? Can the builder appoint his staff as the supervising QP(Struct) or supervising QP(Geo)?

The builder may appoint his staff as the design QP(Struct) or design QP(Geo) but not as supervising QP(Struct) or supervising QP(Geo).

6. Can the developer or builder appoint the Registered Site Supervisor (RSS)? If not, can the developer or builder pay the salary of the RSS?

The developer and the builder cannot appoint the RSS. The RSS can only be appointed by the supervising QP(Struct) or supervising QP(Geo). The Act also provides that the appointed RSS shall not be a partner, officer or employee of the developer and the builder or their associates.

However, there is no prohibition in the Act on the RSS with regard to his entitlement to any fee paid for carrying out his function as the RSS. So, while the RSS has to be appointed by the supervising QP, there may be cases where the developer or builder may choose to help the QP in the procurement of the RSS. This may be done in the form of a procurement contract between the developer or builder and the RSS.

While such procurement can be allowed, the contract must be clear that the RSS is procured to fulfill his statutory requirements under the Act and that he works under the control and direction of the supervising QP. The RSS cannot be made to work for the developer or the builder, otherwise it will be taken that the RSS is an employee of the developer or builder respectively.

7. The number of RSS to be appointed depends on the value of the building works in the project. Does the value of building works include the cost of equipment or machinery?

In some industrial projects, the contractual costs may include the costs of various equipment or machinery to be installed for the operational purpose of the building. While these equipment or machinery are part and parcel of the building contract, they are not relevant in so far as the value of the design and construction processes of the building are concerned. In computing the value of building works, the cost of such equipment or machinery need not be included.

8. When can the joint site inspection date be scheduled with BCA?

The building works must be physically completed and request for date submitted via Corenet e-submission using the forms. The date of requisition should not be earlier than 2 weeks and not later than 4 weeks from the proposed date of site inspection.

9. When do I need to obtain a CSC after the TOP has been issued?

The time frame for you to obtain a CSC will be spelt out in the written direction following the issue of TOP or any grant of extension thereafter, or as per the conditions imposed on the approved building plans. However, CSC should be obtained early, as soon as all outstanding requirements have been complied with.

Fire Safety

10. What are the fire safety works that need to submit to the Fire Safety & Shelter Department for approval?

The following fire safety works shall be submitted to FSSD for approval:

- a) any installation, equipment or works manufactured, used or designed to be used for the purposes of:
 - i. extinguishing, attacking, preventing or limiting a fire and its by-product
 - ii. giving warning of a fire
 - iii. providing access to any premises or place for the purpose of extinguishing attacking, preventing or limiting a fire
 - iv. providing means of escape
- b) the provision, extension or alteration of any fire protection system
- c) the provision, extension or alteration of any air-conditioning service, mechanical ventilation system in connection with a building
- d) any building works, including external works that may affect fire safety provisions of the building

11. What are the accepted codes of practice?

The accepted codes of practice for various types of plan submission are shown in Fire Safety's Codes and standards.

12. Where can I get a copy of each of the codes and legislations?

The Code of Practice for Fire Precautions in Buildings is available on SCDF's website at: <http://www.scdf.gov.sg>.

Code of Practices eg. CP 10, CP 13, CP 29, CP 52 are published by SPRING SINGAPORE and NFPA standards (eg. NFPA 11, NFPA 13) are published by the National Fire Protection Association, USA.

Codes of practice not published by FSSD may be purchased from the original publishers.

Fire Safety Act and Fire Safety Regulations can be purchased from the Toppan Leefung Pte Ltd at Great World City. The Fire Safety Act can also be downloaded from SCDF website at: <http://www.scdf.gov.sg>.

13. What is a Registered Inspector (RI) and why are they required?

A registered Inspector (RI) is a person who is qualified and competent to inspect the fire safety works of a project to determine whether the fire safety works have been completed in accordance with the required fire safety standards. An inspection certificate issued by a RI is a prerequisite for the issuance of TFP/FSC by FSSD. There are 2 types of RIs, one specializes in architectural/building aspects and the other on mechanical/electrical aspects of a project. Depending on the type of fire safety works for the project, both types of RIs may be needed to inspect a project for the issuance of TFP/FSC. The list of Registered Inspectors is available on SCDF website at: <http://www.scdf.gov.sg>.

Environmental Control - Pollution Control, Sewerage, Drainage & Environmental Health

Pollution Control

14. Where can I obtain information on landuse?

Information on landuse plan showing permissible land use and density for developments in Singapore can be obtained from URA's Master Plan at website at:

<http://www.ura.gov.sg/mp08/map.jsf?goToRegion=SIN>.

15. What is the difference between poison licence and poison permit?

Poison Licence is for any person who wishes to import, sell or export hazardous substances. The poison chemicals are listed in **Appendix 7** of Code of Practice on Pollution Control.

Poison Permit is for any person who wishes to store, purchase or use any hazardous substances excluding ozone depleting substances except for methyl bromide.

Environmental Health

16. How to size a bin centre for industrial premises since there is no guideline for the refuse output computation in the Code of Practice on Environmental Health?

Bin centre is required if the total refuse output of the proposed development exceeds 1,000 litres/day. A compactor shall be provided in the bin centre if the daily refuse output is 4,000 litres or more.

QP shall ascertain from the factory owner/occupier the estimated daily refuse output generated from the industrial premises and size the bin centre adequately.

Sewerage

17. What is "trade effluent"?

Trade effluent is generated by factories from manufacturing process. Trade effluent discharge is controlled through the Trade Effluent Regulations under the Sewerage and Drainage Act. Industries may have to pre-treat the trade effluent to remove any chemical or undesirable pollutants to meet the discharge standards stipulated in the regulations before it is discharged into the public sewer. The requirement for discharge of trade effluent into public sewer can be found at the PUB's website at:

<http://www.pub.gov.sg/general/Documents/RequirementsForDischargeToSewer.doc>.

18. What is “Sewer Interpretation Plan (SIP)” and how to obtain it?

Information on the public sewerage system is captured on PUB’s Sewerage Interpretation Plans (SIP). QPs must check for the presence of public sewers and deep sewerage tunnels in the development site by referring to the Sewer Interpretation Plans. The SIP can be purchased online from PUB’s website at:

<http://www.pub.gov.sg/products/E-Services/Pages/Sewer.aspx>.

19. What are the “sewer setback” requirements?

To safeguard the public sewerage infrastructure against damage by building works and construction activities, the PUB’s Code of Practice on Sewerage and Sanitary Works stipulates a minimum lateral separation distance to be provided between any building/structure and the public sewers/pumping mains within or near the development site. The information on requirements for protection of public sewers and sewer setback distances can be found at PUB’s website at:

<http://www.pub.gov.sg/general/Pages/PreventionofDamage.aspx#Prevention>.

20. What are the Sewerage Fees for disposal of used water into public sewer?

Our Sewage Fees are structured in two-tier comprising the **Sanitary Appliances Fee** as the fixed charge component based on number of sanitary fittings (toilet bowl, urinal bowl, etc) and the **Waterborne Fee** as the variable charge component depending on water usage. The two fees together enable the collection of revenues to help defray the costs for the operation and maintenance of the public sewerage system to cater to the sanitation needs of premises. The information on sewerage fees is available at PUB’s website at:

<http://www.pub.gov.sg/mpublications/FactsandFigures/Pages/WaterTariff.aspx>.

In addition, **Trade Effluent Fees** are levied on **industrial premises** with the prior permission of PUB to discharge into any public sewer trade effluent containing BOD or TSS greater than 400 milligrams per litre but not exceeding 6000 milligrams per litre of the trade effluent. The tariffs are computed in accordance with the scales set out in the Schedule under the Sewerage and Drainage (Trade Effluent) Regulations. The information on Trade Effluent Fee is available at PUB’s website at:

<http://www.pub.gov.sg/general/Documents/RequirementsForDischargeToSewer.doc>.

Drainage

21. Can Drainage Reserve be integrated into the proposed development site or the existing premises?

The QP is required to obtain prior approval from URA (being the Authority for Land-use) and also the landowner of the Drainage Reserve, SLA if the Drainage Reserve is State Land. Once planning approval is granted, the Developer is required to comply with the conditions for use of Drainage Reserve, as stipulated in the Code of Practice on Surface Water Drainage and any other conditions as may be imposed by the PUB. The integrated Drainage Reserve can be allowed to be used as car parks, driveways and landscaped areas, etc.

22. Can the developer divert an existing outlet drain with a Drainage Reserve?

The QP is required to obtain approval from URA (being the Authority for Land-use) and also the land owner of the Drainage Reserve, prior to submitting the details of the proposed drain diversion to PUB for comments on technical requirements and any other conditions which PUB may impose. The QP shall ensure that the proposed drain diversion is technically feasible. The developer shall secure the land for new Drainage Reserve, should his proposal involve additional land.

23. Will PUB allow utility services to be laid crossing drain?

Services shall be laid undercrossing drains with the required clearances as given in the Current Code of Practice on Surface Water Drainage. Where Services Departments have strong reasons for not undercrossing the drain, the QP may apply for the services to be laid across the drain. The application by QP shall attach the letter from the Services Department giving the reason and also the letter of undertaking from the Services Department to remove the services at their own cost when required by PUB. PUB can consider allowing utility services to be laid crossing a drain if the proposal will not affect the conveyance capacity and impede the maintenance of the drain. We can allow services to be embedded within the top slab of the drain provided the thickening of the top slab does not exceed 10% of the original depth of the drain. The utility services shall be laid in compliance with the requirements as specified by the PUB.

24. Can my client collect rain water for irrigation and washing of the building premises?

PUB allows rainwater collection for non-potable use. However, waterborne fee (WBF) will be levied if the rainwater collection pond/tank size exceeds 20m³ and the used rainwater is discharged into sewers. The design of the rainwater collection system shall also comply with NEA's guidelines requirements for vector control, public health and pollution control.

Utilities – Water Supply

25. How does PUB ensure an adequate and sustainable supply of water for Singapore?

Singapore has a robust, diversified and sustainable water supply from four different sources known as the *Four National Taps*:

- a) Water from local catchment areas,
- b) Imported water,
- c) Reclaimed water known as NEWater and
- d) Desalinated water

By integrating the system and maximising the efficiency of each of the four taps, Singapore has ensured a stable, sustainable water supply capable of catering to the country's continued growth.

26. What is the available pressure in our water supply system?

The water pressure available in different parts of Singapore varies depending on the elevation of the land and on the time of the day. Generally PUB maintains a water pressure capable of supplying directly to water fittings not exceeding 25 metres above mean sea level. This means that water supply to water fittings above this level has to be indirect via water storage tanks. The daily water pressure in the distribution system varies with the consumption pattern, being at the highest when the consumption is minimum and lowest when consumption is at the peak. The following mode of supply (as stipulated in Singapore Standard CP48 – Code of Practice for Water Services) is to be adopted:

Height of Highest Fittings:

<u>Above Mean Sea Level</u>	<u>Mode of Supply</u>
a) Not exceeding 25 metres	Direct supply to fittings from PUB mains.
b) Above 25 metres but not exceeding 37 metres	Indirect supply through high level water storage tank.
c) Above 37 metres	Indirect supply through low level water storage tank with pumping to high level water storage tank.

27. What is the quality of water supplied by PUB?

Singapore's water supply is well within the World Health Organization (WHO) Drinking Water Guidelines and is suitable for drinking without any further filtration. It is safe to drink directly from the tap.

28. What is the water tariff in Singapore?

There are different tariffs categories applicable in Singapore:

- a. Domestic Tariff
- b. Non-domestic Tariff
- c. Tariff for shipping

Information on the water tariffs is available at PUB website at <http://www.pub.gov.sg>.

29. What is NEWater and what can it be used for?

NEWater is reclaimed water that has been treated to ultra-purity. It is a product of PUB's continuous investment in research and technology and is supplied to applicable industries and commercial buildings for their non-potable use (e.g. for cooling towers, industrial processes, general washing, landscaping and toilet flushing etc). More information on NEWater is available at PUB website: <http://www.pub.gov.sg/newater>.

Utilities - Electricity & Gas Supply

30. How do I open a utilities account?

You can apply to open a utilities account by the following ways:

- a) Online at SP Services Ltd's website (<http://www.spservices.com.sg>) or
- b) By visiting one of SP Services Ltd's Customer Service Centres.

More information is also available at http://services.spservices.sg/cs_services_open_acc_frameset.asp?ID.

31. What are the ways I can buy electricity in the liberalised electricity market?

As a contestable consumer, there are 3 ways you can buy electricity in the liberalised electricity market:

- a) From a licensed electricity retailer
- b) Directly from the wholesale market
- c) Indirectly from the wholesale market through SP Services Ltd.

32. How do I find a licensed electrical worker?

You can find a list of licensed electrical workers on the EMA website at <http://www.ema.gov.sg>.

33. How can I become contestable?

If you are a low-tension with average monthly consumption over the past 12 months of at least 10,000kWh, or if you are a high tension consumer, you may become contestable. You may approach SP Services for assistance in applying for contestability.

34. Do I need an electrical installation licence?

You are required to obtain an electrical installation licence when you use or operate an electrical installation of approved load exceeding 45 kilo volt ampere (kVA) for non-domestic purposes.

Electrical installations in premises used for 'hazardous trades', irrespective of their approved loads, are also required to be licensed. Examples are garage for painting motor vehicle, wood-working or saw-milling, petrol stations, paints and petroleum products, and temporary supply where building operations or works of engineering construction are being carried.

35. How do I apply for an electrical installation licence?

You are required to appoint a licensed electrical worker (LEW) of appropriate class to take charge of the electrical installation. Your appointed LEW will submit the licence application online using EMA's e-Licence Information Services (ELISE).

You may check your licence application status at <https://www.ema.gov.sg/eservices/selectmethod.php> using the application reference number issued during the online submission.

Upon approval of the licence application, your appointed LEW will be notified and he shall print the electrical installation licence and deliver the licence to you within 7 working days from receipt of the notification.

Find out more from the "Handbook for Application of Electrical Installation Licence" at http://www.ema.gov.sg/images/Handbook_for_Application_of_Electrical_Installation_Licence.pdf.

36. Where can I get more information on how the electricity market works?

Details on how the market works can be obtained from the Statement of Opportunities. A copy can be downloaded from the Resources page on EMA's website.

37. If I wish to install a generator, what license do I need?

You will need to apply for an Electricity Licence for Wholesaler Licensee (Generation) if your generation facility has an aggregated capacity of 1 Megawatt (MW) or more but less than 10MW. If your generation facility has an aggregated capacity of at least 10MW, you will need to apply for an Electricity Licence for Generation Licensee. Application forms can be obtained from EMA's website (<http://www.ema.gov.sg/page/126/id:116/>).

38. I wish to purchase natural gas for my plant's usage, how can I buy gas and from whom?

Natural gas can be purchased from any of the three gas retailers in Singapore:

- a) Gas Supply Pte Ltd (<http://www.gassupply.com.sg>)
- b) City Gas Pte Ltd (<http://www.citygas.com.sg>)
- c) SembCorp Gas Pte Ltd (http://www.sembcorp.com.sg/sembcorp/business_utilities_energy.html)

39. Currently, there are no gas pipes leading to my plant. If I wish to buy natural gas, who should I contact to lay the pipes, apart from the gas retailer, who sells the gas?

When you apply to purchase natural gas from the gas retailers, the gas retailer will liaise with the gas transporter, PowerGas Ltd, to connect your plant to the gas network.

List of Websites for Registers of Local Professionals

Accredited Checker (civil & structural and geotechnical)

<http://www.bca.gov.sg>

Architect registered under the Board of Architect's Act

<http://www.boa.gov.sg/register.html>

Fire Safety Engineer

<http://www.scdf.gov.sg>

Licensed Builder/Specialist Builder

<http://www.bca.gov.sg>

Licensed Electrical Workers / Licensed Gas Service Workers / Licensed Cable Detection Workers

<http://elise.ema.gov.sg>

Licensed water service plumber (LWSP)

<http://www.pub.gov.sg>

Professional Engineer (Civil/Structural/Geotechnical/ Mechanical/Electrical/) registered under the Professional Engineers Act

<http://www.peb.gov.sg>

Qualified Site Supervisor (RE or RTO)

<http://www.ies.org.sg>

Registered Inspector (RI) (architectural / building / mechanical / electrical)

<http://www.scdf.gov.sg>

Information on other relevant government agencies

ECONOMIC DEVELOPMENT BOARD (EDB)

EDB is the lead government agency responsible for planning and executing strategies to enhance Singapore's position as a global business centre and grow the Singapore economy.

250 North Bridge Road #28-00 Raffles City Tower Singapore 179101

Website: <http://www.sedb.gov.sg> or <http://www.contactsingapore.sg>

e-mail address: clientservices@edb.gov.sg or Singapore@contactsingapore.sg

Hotline: 6508 3508

JTC CORPORATION

JTC Corporation is Singapore's lead agency to plan, promote and develop a dynamic industrial landscape, in support of Singapore's economic advancement.

The JTC Summit, 8 Jurong Town Hall Road, Singapore 609434

Website: <http://www.jtc.gov.sg>

e-mail address: askjtc@jtc.gov.sg

Contact Centre Hotline: 1800-5687000

LAND TRANSPORT AUTHORITY (LTA)

The Land Transport Authority spearheads land transport developments in Singapore.

1 Hampshire Road Singapore 219428

Website: <http://www.lta.gov.sg>

e-mail address: feedback@lta.gov.sg

Quality Service Manager Hotline: 1800 - CALL LTA (1800 - 2255 582)

MINISTRY OF MANPOWER (MOM)

Ministry of Manpower develops a globally competitive workforce and great workplace, for a cohesive society and a secure economic future for all Singaporeans.

18 Havelock Road, #07-01 Singapore 059764

Website: <http://www.mom.gov.sg>

e-mail address: mom_qsm@mom.gov.sg

Quality Service Manager Hotline: 1800-5386930

NATIONAL PARKS BOARD (NParks)

The National Parks Board plans, develops and manages parks and greenery in Singapore.

Headquarters, Singapore Botanic Gardens, 1 Cluny Road, Singapore 259569

Website: <http://www.nparks.gov.sg>

e-mail address : nparks_mailbox@nparks.gov.sg

Quality Service Manager Hotline: 1800-4717300

SINGAPORE LAND AUTHORITY (SLA)

Singapore Land Authority ensures the best use of State land and buildings, provides an effective and reliable land management system and enables the full use of land information for better land management.

55 Newton Road #12-01 Revenue House Singapore 307987

Website: <http://www.sla.gov.sg>

e-mail address : sla_enquiry@sla.gov.sg

Quality Service Manager Hotline: 1800-3256360

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- VI. Public Utilities Board (PUB)
- VII. Singapore Civil Defence Force (SCDF)
- VIII. Urban Redevelopment Authority (URA)

