CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Reference Material

Statutory Requirements for Modular Integrated Construction Projects

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FOREWORD

The use of Modular Integrated Construction (MiC) is a growing trend worldwide because of the benefits that MiC brings in terms of the controlled engineering processes and enhanced construction safety, quality and productivity. As in conventional building projects, a number of government departments are involved in the regulatory control of the plan submissions and works of the MiC building projects.

This reference material gives information on the statutory requirements imposed by the respective regulatory bodies in Hong Kong, namely the Buildings Department, Fire Services Department, Water Supplies Department, Electrical and Mechanical Services Department, Transport Department, Environmental Protection Department and Customs and Excise Department, in respect of the MiC projects. The statutory requirements concern primarily private building projects, although the technical aspects presented are equally applicable to public building projects. Useful information on the transport of MiC modules involving Wide Load Permit application and a guidance note on the traffic aspects and analysis that need to be considered in the Traffic Impact Assessment for MiC projects is also included.

This reference material was prepared by Ir Dr Thomas Lam under the direction of Ir Dr Richard Pang, the then Director of Industry Development (May 2018 – September 2021). Many government departments have provided useful comments and helpful assistance in the preparation of this publication, including the Buildings Department, Customs and Excise Department, Electrical and Mechanical Services Department, Environmental Protection Department, Fire Services Department, Hong Kong Police Force, Transport Department and Water Supplies Department. All contributions are gratefully acknowledged. Thanks are also due to Ove Arup & Partners Hong Kong Ltd. and CTA Consultants Ltd. for providing comments and input to the guidance note on Traffic Impact Assessment for MiC Projects.

Practitioners are encouraged to send comments and suggestions at any time to the Construction Industry Council on the contents of this reference material, so that improvements can be made to future editions.

Industry Development
Construction Industry Council

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PREFACE

The Construction Industry Council (CIC) is committed to seeking continuous improvement in all aspects of the construction industry in Hong Kong. To achieve this aim, the CIC forms Committees, Task Forces and other forums to review specific areas of work with the intention of producing Alerts, Reference Materials, Guidelines and Codes of Conduct to assist participants in the industry to strive for excellence.

The CIC appreciates that some improvements and practices can be implemented immediately whilst others may take more time for implementation. It is for this reason that four separate categories of publication have been adopted, the purposes of which are as follows:

Alerts	The Alerts are reminders in form of brief leaflets produced quickly to draw the immediate attention of relevant stakeholders to the need to follow some good practices or to implement some preventive measures in relation to the construction industry.
Reference Materials	The Reference Materials provide standards or methodologies generally adopted and regarded by the industry as good practices. The CIC recommends the adoption of the Reference Materials by industry stakeholders where appropriate.
Guidelines	The Guidelines provide information and guidance on particular topics relevant to the construction industry. The CIC expects all industry stakeholders to adopt the recommendations set out in the Guidelines where applicable.
Code of Conduct	The Codes of Conduct set out the principles that all relevant industry participants should follow. Under the Construction Industry Council (Cap. 587), the CIC is tasked to formulate codes of conduct and enforce such codes. The CIC may take necessary actions to ensure compliance with the codes.

To allow us to further enhance this publication, we encourage you to share your feedback with us after you have read this publication. Please take a moment to fill out the Feedback Form attached to this publication and send it back to us. With our joint efforts, we believe our construction industry will develop further and will continue to prosper in the years to come.

ABBREVIATIONS

AP	Authorized Person
AS	Authorized Signatory
BA	Building Authority
BD	Buildings Department
C&ED	Customs and Excise Department
CFL	Compact Fluorescent Lamp
CNP	Construction Noise Permit
DGA	Domestic Gas Appliances
EMAN	Electronic System for Cargo Manifests
EMSD	Electrical and Mechanical Services Department
EPD	Environmental Protection Department
FRC	Fire Resisting Construction
FRR	Fire Resistance Rating
FSD	Fire Services Department
FSI	Fire Service Installations
GBP	General Building Plan
HKPF	Hong Kong Police Force
HyD	Highways Department
IPA	In-principle Acceptance
LBCP	Land Boundary Control Point
LP	Licensed Plumber
MiC	Modular Integrated Construction
MoE	Means of Escape
PCWA	Public Cargo Working Area
PME	Powered Mechanical Equipment
PNAP	Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers
QA	Quality Assurance
QC	Quality Control
REC	Registered Electrical Contractor
REW	Registered Electrical Worker
RFSIC	Registered Fire Service Installation Contractor
RGBC	Registered General Building Contractor

RGC	Registered Gas Contractor
RGI	Registered Gas Installer
RGSC	Registered Gas Supply Company
RMO	Road Management Office
ROCARS	Road Cargo System
RPW	Registered Plumbing Worker
RC	Registered Contractors
RSC	Registered Specialist Contractor
RSE	Registered Structural Engineer
RW	Registered Worker
TD	Transport Department
TIA	Traffic Impact Assessment
TMLG	Traffic Management Liaison Group
TTM	Temporary Traffic Management
WLP	Wide Load Permit
WSD	Water Supplies Department

AMENDMENT NO. 1/2023

Revised Chapters 3, 4, 5, 6 and 7 for
Reference Material on the Statutory Requirements for Modular Integrated Construction Projects (September 2020)

Chapter	Department	New/Revised Documents, Guidelines, etc. on MiC Issued by the Respective Department Since September 2020	Amendments Made in the Revised Chapters
3	Buildings Department	The following documents have been revised/issued: (a) PNAP ADV-36 MiC (Apr 2022); (b) BD, LandsD & PlanD JPN No. 2 Second Package of Incentives to Promote Green and Innovative Buildings (July 2022); (a) BD, LandsD & PlanD JPN No. 8 Incentive to Promote Green and Innovative Buildings - Enhanced Facilitation Measures for Buildings Adopting Modular Integrated Construction (July 2022)	The following revisions have been made: (a) Approval of plans for MiC project was clarified in Section 3.3. (b) The enhanced/alternative arrangements for qualified supervision and quality audit for MiC as promulgated in Appendix B to PNAP ADV-36, including provision of quality audit checks arrangement by videotelephony, was updated in Section 3.4. A figure showing the critical stages of IPA application and plan submissions for MiC project was included. (c) The enhanced facilitation measures for buildings adopting MiC including increasing the concession of gross floor area and providing corresponding site coverage concession as well as supporting applications for exceeding building height limits as promulgated in JPN No. 8 were updated in Section 3.5. An example of GFA concession calulations was included.
4	Fire Services Department	The following document has been issued: (a) FSD Circular Letter No. 3/2020 - Facilitation Measures of Application for Approval of Portable Equipment and Acceptance of Fire Service Installations and Equipment (FSIs) and Fire Safety Products (Jul 2020).	Section 4.4 on Acceptance Inpection was revised to give more details on the revised application procedure for inspection and testing of fire service installations and equipment by FSI/501 submission.
5	Water Supplies Department	The following documents have been issued: (a) Guide to Application for Water Supply (December 2021 version); and	Section 5.4 on Final Inspection at Building Site and Commissioning Requirements and Section 5.5 on Effect of Water Supply were updated.

		(b) Technical Requirements for Plumbing Works in Buildings (December 2021 version).	
6	Electrical and Mechanical Services Department	The following documents have been issued: (a) Code of Practice for the Electricity (Wiring) Regulations (2020 Edition) (see Code 26T on Installation of MiC) (2020); (b) Code of Practice on Energy Labelling of Products (Dec 2020); and (c) Guideline on Submission of Product Information (Jun 2022).	Section 6.2 on Fixed Electrical Installations and Section 6.5 on Gas Supply Installations were updated.
7	Transport Department	The following documents have been issued: (a) Form TD 290 - Application for "Long Load" and "Wide Load" Permits; and (b) Guidelines on Application for Long/Wide Load Permit (July 2022).	Section 7.2 on Wide Load Permit was updated.

1. INTRODUCTION

The use of Modular Integrated Construction (MiC) is a growing trend worldwide because of the benefits that MiC brings in terms of the controlled engineering processes and enhanced construction safety, quality and productivity.

MiC is a construction method that employs the technique of having freestanding volumetric modules (with finishes, fixtures, fittings, etc.) manufactured off-site and then transported to site for assembly as defined in PNAP ADV-36. By transferring the on-site construction processes to a controlled factory environment, the impacts of adverse weather conditions, scarce skilled labour resources and site constraints that often affect conventional on-site construction methods can be minimised. MiC also enhances construction safety, quality and productivity, reduces construction waste, and helps to reduce nuisances arising from on-site construction due to the reduced site works. It is known that MiC can be more cost-effective than the conventional on-site construction method and can reduce the overall project programme significantly.

The Development Bureau of the HKSAR Government has promulgated a policy that MiC shall be adopted for new building works[1] with a total construction floor area (CFA) larger than 300 m^2 under the Capital Works Programme (DEVB, 2020) tendered after 1.4.2020. A list of building types for which use of MiC is mandated or encouraged is included in the circular.

The purpose of this document is to provide information on the statutory requirements imposed by the respective regulatory bodies in Hong Kong, namely the Buildings Department (BD), Fire Services Department (FSD), Water Supplies Department (WSD), Electrical and Mechanical Services Department (EMSD), Transport Department (TD), Environmental Protection Department (EPD) and Customs and Excise Department (C&ED), in respect of MiC projects. The aim is to produce a clear overall picture to the parties concerned to facilitate the implementation of their projects.

[1] These include building works funded under Heads 702 to 707, 709 and 711 and Capital Subvention Projects funded under Head 708 of the Capital Works Reserve Fund (CWRF).

2. TYPES OF WORKS/PERMITS

MiC involves many different types of works, including the following:

(a) building works;
(b) ventilating systems;
(c) Fire Service Installations (FSI) and equipment installation works;
(d) plumbing works;
(e) electrical installation works;
(f) supply and installation of electrical products/appliances; and
(g) gas installation works.

For the implementation of MiC projects, apart from MiC suppliers, building professionals such as Authorized Persons (AP) and Registered Structural Engineers (RSE) registered under the Buildings Ordinance (BO) (Cap. 123) should be engaged to develop, plan, design and supervise the works, and Registered General Building Contractors (RGBC) and Registered Specialist Contractors (RSC) registered under the BO should be engaged to carry out each particular category of works.

The carrying out of the building works should satisfy the requirements under the BO and its subsidiary regulations which set out the safety, health and environmental standards for the planning, design and construction of buildings. Codes of practice (CoP), design manuals and PNAPs issued by BD provide guidelines to meet various performance requirements under the BO, such as wind effects, dead and imposed loads, use of construction materials, provisions for means of escape (MoE) in case of fire, fire resisting construction (FRC), means of access for firefighting and rescue, and access and facilities for persons with a disability. Such publications are listed in the Bibliography and are available for download at the BD website[2].

For unconventional designs not matching the Deemed-to-Comply provisions under the codes of practice, justifications have to be provided to demonstrate that the alternative design solutions have equivalent performance as the prescriptive standards (e.g. application of fire engineering according to the framework under the CoP for Fire Safety in Buildings 2011 (June 2023 Edition) (BD, 2023) for formulation of an alternative solution to comply with the fire safety objectives).

BD has also promulgated PNAP ADV-36 which sets out the guidelines to facilitate the industry in meeting the relevant standards and requirements under the BO in adopting MiC. Design considerations unique to MiC are given in PNAP ADV-36 for particular attention.

For ventilating systems incorporating the use of ducting or trunking which passes through any wall, floor or ceiling of the building in which the ventilating system is installed, from one compartment of such building to another, the completed works should meet the requirements given in the Building (Ventilating Systems) Regulations (Cap. 123J).

For FSI and equipment, the completed works should satisfy the requirements given in the CoP for Minimum Fire Service Installations and Equipment and Inspection, Testing, and Maintenance of

[2] https://www.bd.gov.hk/en/resources/index.html

Installations and Equipment issued by FSD, pursuant to Regulation 10 of the Fire Service (Installations and Equipment) Regulations (Cap. 95B).

The plumbing installations should comply in all respects with the provisions of the Waterworks Ordinance (Cap. 102) and Waterworks Regulations (Cap. 102A) and all prevailing requirements given in the Technical Requirements for Plumbing Works in Buildings issued by WSD.

The fixed electrical installation works should satisfy the CoP for the Electricity (Wiring) Regulations under the Electricity (Wiring) Regulations (Cap. 406E). The supply of electrical products and energy-using products should satisfy the Electrical Products (Safety) Regulation (Cap. 406G) under the Electricity Ordinance (Cap. 406) and the Energy Efficiency (Labelling of Products) Ordinance (Cap. 598) respectively. EMSD has also promulgated guidance notes which set out the guidelines to facilitate the industry in meeting the relevant requirements under the Electricity Ordinance (Cap. 406) and the Energy Efficiency (Labelling of Products) Ordinance (Cap. 598) in adopting MiC.

The gas installation works should meet the requirements stipulated under the Gas Safety Ordinance (Cap. 51) and should satisfy the codes of practice in respect of approval of domestic gas appliances (DGA) and flexible tubing for low pressure applications, and installation of domestic gas water heaters where applicable, under the Gas Safety Ordinance (Cap. 51). EMSD has also promulgated guidance notes to provide guidelines on the requirements for the design and installation of gas supply installations in conventional projects and projects with MiC method for use by industry.

The relevant guidance notes on fixed electrical installations, household electrical products, energy label prescribed products and gas supply installations can be accessed via the MiC webpage at the EMSD website[3]. The types of RGBC and/or RSC (RC)/Registered Workers (RW) needed for the works are given in Table 2.1.

Table 2.1 – Type of Personnel Required for the Works

Type of Works	Type of RC/RW	Link
Building works	RC registered under the BO (Practice Note for Registered Contractors (PNRC) 38 issued by BD)	https://www.bd.gov.hk/en/resources/online-tools/registers-search/registrationsearch.html
Ventilating systems	RSC (Ventilation Works) registered under the BO (Cap. 123) (PNRC 38)	
FSI and equipment installation works	Registered FSI contractor (RFSIC)[4] registered with FSD	https://www.hkfsd.gov.hk/eng/source/FSIC_list_eng.pdf
Plumbing works	Licensed Plumber (LP)[5] registered with WSD / Registered Plumbing Worker (RPW)	https://www.wsd.gov.hk/en/plumbing-engineering/licensed-plumbers/index.html
Electrical installation works	Registered Electrical Contractor (REC) /Registered Electrical Worker (REW)[6] registered with EMSD	REC

[3] https://www.emsd.gov.hk/en/supporting_government_initiatives/mic/index.html
[4] Registered FSI Contractors are contractors registered under the Fire Service (Installation Contractors) Regulations (Cap. 95A).
[5] Licensed Plumbers are persons licensed under the Waterworks Ordinance (Cap. 102) to construct, install, maintain, alter, repair or remove fire services or inside services.
[6] Registered Electrical Contractors and Registered Electrical Workers are contractors and persons respectively registered under the Electricity (Registration) Regulations (Cap. 406D).

		https://www.emsd.gov.hk/en/electricity_safety/registers/registered_electrical_contractors/ REW https://www.emsd.gov.hk/en/electricity_safety/registers/registered_electrical_workers/
Gas installation works	Registered Gas Contractor (RGC)/ Registered Gas Installer (RGI)[7] registered with EMSD	RGC https://www.emsd.gov.hk/filemanager/en/content_261/overall_RGC.pdf RGI https://www.emsd.gov.hk/en/gas_safety/registers/registered_gas_installers_search/

The types of permits/clearance that may need to be obtained in respect of MiC projects include a Wide Load Permit (WLP) from TD, Construction Noise Permit (CNP) from EPD and customs clearance from C&ED.

A list of the contact points of the respective Government departments in relation to this Reference Material is given in Appendix A.

[7] Registered Gas Contractors and Registered Gas Installers are contractors and persons respectively registered under the Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations (Cap. 51D).

3. BUILDINGS DEPARTMENT

3.1 Pre-submission Enquiry

There is a pre-submission enquiry service in place to allow AP and RSE to settle the design principles involved and to clear with BD any unconventional design or performance of a modular prototype for acceptance under the BO in the early design stage before preparing the detailed designs. BD may hold pre-submission conferences with the AP/RSE and, if necessary, invite representatives of the concerned Government departments, RC and MiC suppliers/manufacturers to discuss and examine the issues and principles involved (see PNAP ADM-19). A determination will normally be given within 45 days.

3.2 Pre-acceptance of MiC Systems

To further facilitate the use of MiC in private development projects, BD has set up a pre-acceptance mechanism for granting in-principle acceptance (IPA) to MiC systems/components on specific performance. The pre-acceptance mechanism aims to resolve any non-site specific design and construction matters[8] of an MiC system/component and provide a curtailed assessment on whether the design and materials used meet certain minimum standards for a particular aspect set out under the BO. The application may cover a single volumetric module or a combination of various modules forming a typical floor and a building block, including the associated standard structural and connection details. Essential information which should be contained in the application is given in Appendix C to PNAP ADV-36. A determination will normally be given within 45 days.

An MiC system accepted by BD will be assigned a unique IPA reference number, which will be included in the Lists of Pre-accepted MiC Systems/Components (IPA lists) in the BD website and should be quoted in the formal plan submissions for MiC project adopting such systems/components. General information on the accepted MiC systems/components can be found at the BD website[9]. To cater for advancements in construction technology and possible revision to codes of practice, the IPA of any MiC system is subject to a validity period of a maximum of 5 years. Upon expiry, an application for renewal of the IPA prepared by an AP and a RSE (as necessary) should be made in relevant form in compliance with the latest requirements of the BO.

The IPA of the MiC systems may cover certain performance aspects set under the BO, for example:

(a) MoE provisions;
(b) FRC provisions;
(c) construction of external wall and cladding;
(d) provisions of natural lighting and ventilation;
(e) sanitary fitments and associated drainage works;
(f) structural system and design loads;
(g) provisions for structural performance of the modules (including material specifications and compliance standards, corrosion and fire protection of structural elements);

[8] Site specific matters or specific issues of uncertainty related to plan submissions should be handled in the formal plan submissions under the centralised processing system or the established mechanism of pre-submission enquiry as stipulated in PNAP ADM-19.

[9] https://www.bd.gov.hk/en/resources/codes-and-references/modular-integrated-construction/mic_acceptedList.html

(h) Quality Assurance Scheme (QAS) and certification; and
(i) fabrication, logistics, assembly and installation.

For the pre-accepted MiC systems, the checking is based on the specific assumptions made by the applicants in respect of building height, integration with cast in-situ structural elements, wind pressure, imposed loads, superimposed loads and facade loads, covering the following:

(a) vertical and lateral load transfer mechanism;
(b) structural stability, including lateral stability;
(c) robustness and structural integrity;
(d) capacity of structural connections between modules, and between modules and cast in-situ structural elements;
(e) design for temporary stages (lifting, storage, installation, etc.), including the design of lifting frames, if any;
(f) durability and workmanship requirements;
(g) fabrication and installation tolerance of modules;
(h) movement joint between modules and in-situ parts to allow for thermal and shrinkage effects;
(i) structural analysis;
(j) overall stability;
(k) adequacy of structural members and/or structural connections; and
(l) lateral deflection.

The IPA will be granted subject to the following conditions, among others:

(a) intended use, height and storey of the building adopting the MiC system;
(b) provision of supplementary documentary proof of materials/components having the required Fire Resistance Rating (FRR) before actual production in the MiC factory;
(c) provision of access points for inspection/maintenance/repair of building services and construction elements in accordance with the accepted plans; and
(d) provision of a user manual to owners/occupants/users of the building adopting the MiC system, to include maintenance and building safety instructions for future fitting, decoration, alterations and additions of the MiC modules.

There are benefits in adopting pre-accepted MiC systems if they meet the size, height and material requirements and other design requirements of the project because the material used, connection capacity and other technical aspects of the modules have been checked by BD to meet the minimum standards set out under the BO. It also helps to streamline the workflow and facilitate the plan approval process of private development projects. If suitable pre-accepted MiC systems are not available, the project proponents are highly recommended to appoint a competent MiC supplier at an early stage of the development.

3.3 Approval of Plans for MiC Project

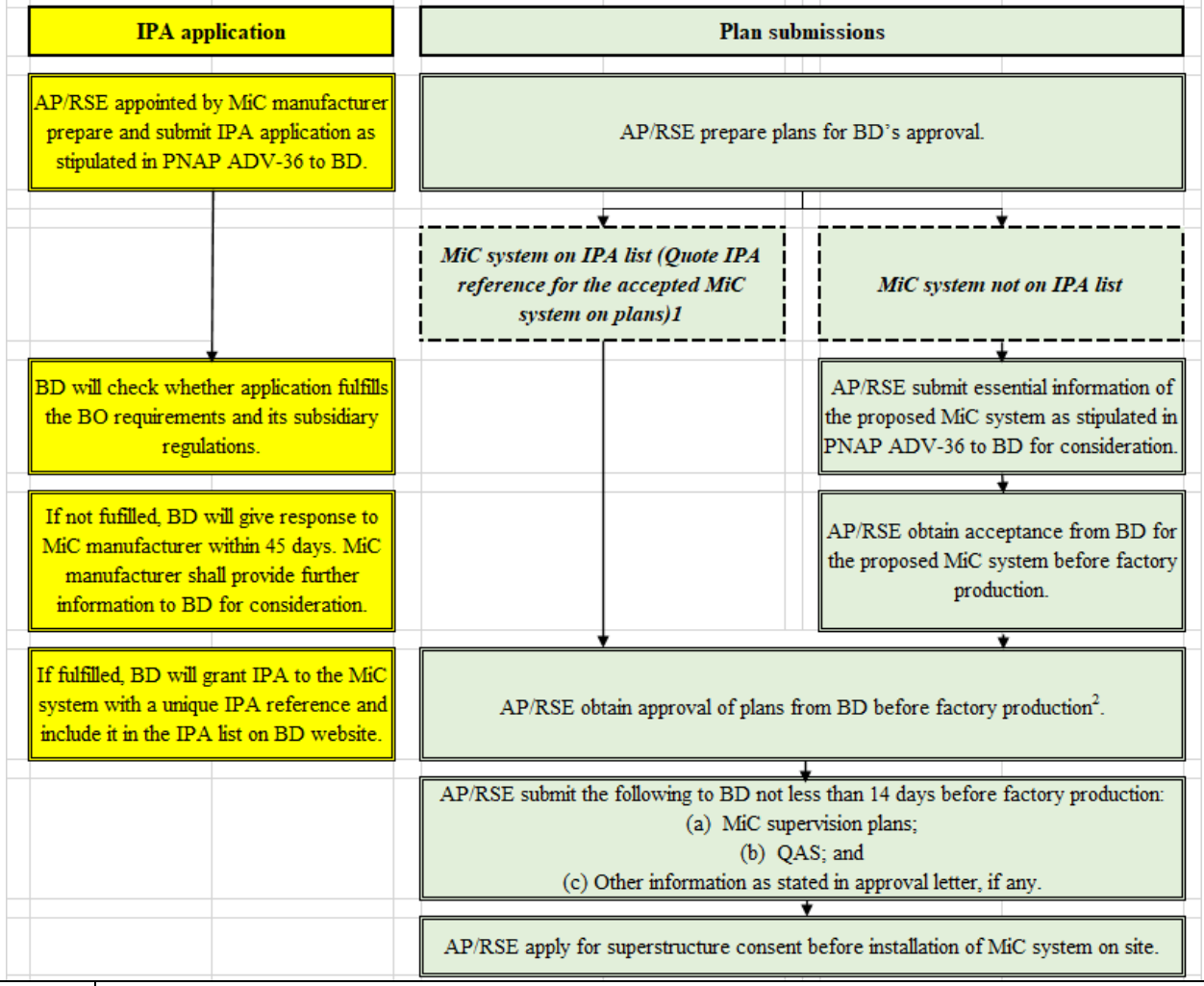
Similar to a project adopting conventional design and on-site construction, the AP and RSE of an MiC project are required to prepare and submit the General Building Plan (GBP) and other necessary plans (such as superstructure plan and drainage plan) to BD for approval in accordance

with the principles and guidelines given in PNAP ADM-19. The plans will be handled under the centralised processing system as stipulated in PNAP ADM-2, through which all interested government departments will be consulted and their comments will be collated by BD.

For a project adopting MiC system on the IPA list, re-assessment of the proposed MiC system in respect of the various performance aspects that have been pre-accepted will not be necessary unless alterative design and materials/construction methods, which deviate materially from the pre-accepted MiC system, component or testing criteria of the accepted test reports, are proposed.

For a project adopting MiC system not on the IPA list, AP and RSE should submit essential information as listed in PNAP ADV-36 to BD for consideration of the performance and technical aspects of the proposed MiC system as mentioned in Section 3.2. While IPA is not a pre-requisite for the approval of plans, any MiC details not yet available at the plan submissions may be submitted later for BD's acceptance prior to factory production.

Critical stages of IPA application and plan submissions for MiC project are illustrated in Figure 3.1.



Notes:	1. Re-assessment of MiC system is not necessary unless it deviates materially from the pre-accepted MiC system. 2. While IPA is not a pre-requisite for approval of plans, any MiC details not yet available at the plan submissions may be submitted later for BD's acceptance prior to factory production.

Figure 3.1 – Critical Stages of IPA Application and Plan Submissions for MiC project

A workflow for submission and approval of plans for MiC projects is provided in Appendix B.

3.4 Quality Control and Supervision of MiC

Modules are to be fabricated by a factory with ISO 9001 or equivalent quality assurance certification. Upon approval of plans, conditions will be imposed under item 6 in Section 17(1) of the BO and the Building (Administration) Regulations to:

(a) specify the qualified supervision to be provided by the AP, RSE and RC for the fabrication, assembly, installation and examination of modules and pre-installed finishes; and

(b) require submission of a MiC Supervision Plan[10] and a copy of the QAS of the MiC supplier (unless the QAS has been covered in BD's IPA and remains unchanged[11]) at least 14 days before the commencement of the production work in the prefabrication factory. The project AP and RSE should provide a written confirmation that the QAS has adequate provisions in ensuring the quality of production complying with the provisions of the BO and the approved plans.

The AP and RSE should assign their respective Quality Control Supervisory Team (QCST) to supervise the modular unit production work in respect of fire resisting constructions (such as fire resisting doors and fire resisting pipe collars), drainage works, structures, etc., in accordance with the requirements stipulated in PNAP APP-158. Similarly, the RC should assign a Quality Control Co-ordination Team (QCCT) to supervise the modular unit production work in the prefabrication factory. The minimum qualification and supervision frequency of QCST and QCCT are given in Table 1 below.

Table 1 – Minimum Qualification and Supervision Frequency of QCST and QCCT

	AP Stream	RSE Stream	RC Stream	
Qualifications of Supervisory Personnel	T3*	T3*	T3*	T1*
Supervision Frequency	Weekly	Weekly	Weekly	Continuous

Note: *T3/T1 refers to Grade T3/T1 Technically Competent Person equivalent as stipulated in the Code of Practice for Site Supervision 2009 (2021 Edition).

Consent to commence superstructure works should be obtained before the installation of modules on building site. Detailed requirements for the quality audit of the MiC works by the AP, RSE and AS of the RC at the prefabrication factory are given in Appendix B of PNAP ADV-36, and the circular letter issued by BD on 22.4.2022 (BD, 2022). Where AP/RSE adopts the alternative arrangement for the quality audit checks at the prefabrication factory as stated in Appendix B of

[10] The MiC Supervision Plan should contain the names, qualifications, identification, inspection frequency, confirmation of appointment and contact information of the supervisory personnel in the QCST and QCCT assigned by the AP, RSE and RC as specified in Table 1.

[11] The MiC supplier should submit a written confirmation if the QAS is based on the one accepted under the Pre-acceptance Mechanism for MiC Systems. If some items of such QAS have been amended, only the amendments are required to be submitted.

PNAP ADV-36, the AP/RSE is required to submit written notification to BD at least one month before the commencement of the production works in the prefabrication factory.

3.5 Gross Floor Area and Site Coverage Concessions and Building Height Relaxation

To encourage a wider use of MiC in new buildings, the enhanced facilitation measures promulgated in Joint Practice Note (JPN) No. 8 (BD, LandsD & PlanD, 2022) are given as follows:

(a) 10% of the MiC floor area[12] of a new building may be disregarded from calculation of the Gross Floor Area[13] (GFA) of the development The granting of such GFA concession is not subject to the overall GFA cap of 10% stipulated in PNAP APP-151;
(b) 10% of the MiC floor area at each floor level need not be counted for Site Coverage[14] (SC); and
(c) Increase of building height up to 4% of the total storey height of MiC floors[15]. In this regard, MiC floor is taken as a floor of a building where the MiC floor area is not less than 50% of the total area on that floor.

In general, MiC can be adopted for plant room or similar services, or green/amenity features such as balcony, utility platform, common corridor and lift lobby, non-structural prefabricated external wall, or the floor areas of such rooms or features which may already have been exempted or disregarded from GFA calculations under the BO subject to compliance with criteria and requirements under the respective PNAPs / JPNs / B(P)R23(3)(b)[16] may also be included in the MiC floor area for the purpose of working out GFA concessions under JPN No. 8. An example of the GFA concession calculations is given in Figure 3.2.

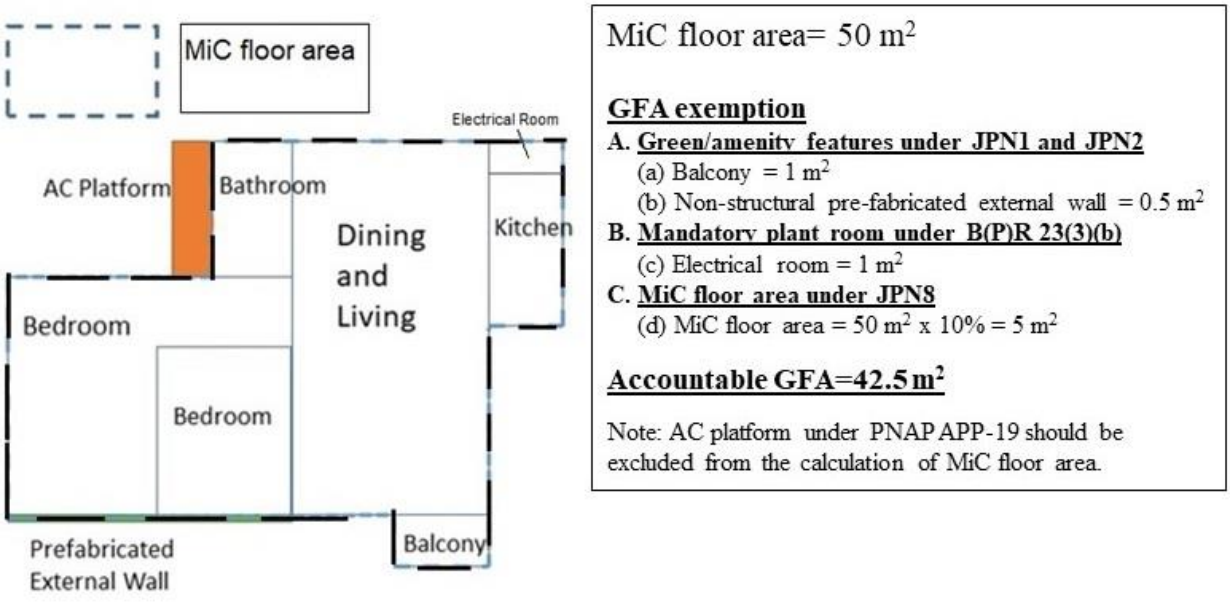
[12] The MiC floor area is the floor area contained within the external walls of the combined MiC modules, together with the floor areas of associated construction joints and including the thickness of such walls.

[13] The Gross Floor Area (GFA) (總樓面面積) of a building, as defined in regulation 23(3)(a) of the Building (Planning) Regulation (B(P)R) (Cap. 123F), is the area contained within the external walls of the building measured at each floor level (including any floor below the level of the ground), together with the area of each balcony in the building, which shall be calculated from the overall dimensions of the balcony (including the thickness of the sides thereof), and the thickness of the external walls of the building. The GFA of a building is used to compute the plot ratio (PR) of a building development for building control purposes under the BO.

[14] The Site Coverage (SC) (上蓋面積), as defined in regulation 2 of the B(P)R, is the area of the site that is covered by the building that is erected thereon. The SC is expressed as a percentage of the area covered by the building structures over the site area. Save for minor projection features or green/amenity features, i.e. balcony, utility platform, non-structural prefabricated external wall which are disregarded or exempted from SC calculations under PNAPs or JPNs, all components of a building, including all projections, should be accountable for SC.

[15] Storey height of MiC floor should be measured from the lowest level of the MiC module to the highest level of the MiC module, including the thickness of slab(s), on that MiC floor together with the associated construction joints below.

[16] Green/amenity feaures and plant rooms and similar services and the relevant practice notes promulgating the criteria and requirements for granting GFA concessions are summarised in Appendix A to PNAP APP-151.



JPN No. 1: Green and Innovative Buildings (BD, LandsD & PlanD, 2019)
JPN No. 2: Second Package of Incentives to Promote Green and Innovative Buildings (BD, LandsD & PlanD, 2022)
JPN No. 8: Incentive to Promote Green and Innovative Buildings Enhanced Facilitation Measures for Buildings Adopting Modular Integrated Construction (BD, LandsD & PlanD, 2022)

Figure 3.2 – Example of GFA Concession Calculations

4. FIRE SERVICES DEPARTMENT

4.1 Fire Service Installations

The procedure in meeting the standards and requirements of Fire Service Installations (FSI) and Equipment is divided into two stages: Design Submission and Approval, and Acceptance Inspection (see FSD Circular Letter No. 1/2005, FSD Circular Letter No. 1/2015, FSD Circular Letter No. 3/2019 and FSD Circular Letter No. 1/2020[17]). The procedure for submission of GBP and FSI plans at the Design Submission and Approval Stage and as-fitted layout plans at the Acceptance Inspection Stage for MiC projects follows that for conventional building projects, as shown in the workflow in Appendix C.

4.2 Design Submission and Approval

Under the centralised processing system as stated in PNAP ADM-2, BD will refer the GBP to FSD for processing.

The design of the FSI should be based on the Code of Practice for Minimum FSI and Equipment and Inspection, Testing, and Maintenance of Installations and Equipment issued by FSD, pursuant to Regulation 10 of the Fire Service (Installations and Equipment) Regulations (Cap. 95B). An AP/Registered FSI Contractor (RFSIC) should be engaged at the early design stage where appropriate to resolve issues not usually encountered in conventional on-site construction.

The AP should clearly indicate in the F.S. Notes of the GBP that the building is to be constructed using the MiC method and highlight in the corresponding covering letters that the MiC method will be adopted.

The following design considerations should be made during the design of FSI of MiC building projects (see FSD Circular Letter No. 3/2019):

(a) Covered-up FSI. Adequate access points, inspection pits or accessible recesses for covered up installations should be provided to facilitate installation, inspection, testing and future maintenance.
(b) Flexible pipe jointing. Flexible pipe jointing between modules, where required, may be installed for services connection.
(c) Cabling facilities for FSI. Cabling facilities for FSI between modules should be allowed for on-site installations of power and control cables. Cable joints should not be used for fire resistant cables serving FSI.
(d) FSI materials and equipment. The materials and equipment selected and installed shall be accompanied with relevant documentary proof issued by the respective product certification bodies or product approval/acceptance letters issued by FSD in accordance with FSD Circular Letter No. 3/2020.

If the GPB are acceptable, FSD will issue a standard letter or a Fire Services Certificate (FS 161), and return one set of the endorsed GPB to the AP/RFSIC. If the GBP are acceptable subject to minor changes, the AP/RFSIC will be invited by FSD to make the necessary amendment. If the GBP

[17] https://www.hkfsd.gov.hk/eng/fire_protection/notices/circular.html

are not acceptable, FSD will retain one set of the GBP and issue a letter to the AP/RFSIC notifying them of the adverse comments and to collect the remaining set of GBP from FSD.

The processing time of GBP is 40 days for new submissions and 20 days for re-submitted/amended submissions.

The design of pressurization of staircase, ventilation/air conditioning control system, smoke control system and improvised sprinkler system, if applicable, shall be submitted to FSD for approval. The target processing time of FSI plans for pressurization of staircase, ventilation/air conditioning control system and smoke control system is 12 weeks. The target processing time of FSI plans for improvised sprinkler system is 8 weeks. The detailed arrangements can be found in FSD Circular Letter No. 4/2008

4.3 Quality Assurance

It is the responsibility of the RFSIC to ensure that FSI are installed/constructed in compliance with the approved plans, relevant statutory requirements, and the Code of Practice for Minimum FSI and Equipment and Inspection, Testing, and Maintenance of Installations and Equipment. To ensure quality at the MiC factory, the RFSIC should:

(a) conduct their own regular supervision as appropriate in the prefabrication process of modules to ensure that all materials and equipment used in FSI are in full compliance with relevant statutory requirements; and
(b) keep an inspection log book, including names and registration numbers (FSD/RC No.) of the RFSIC responsible for conducting the quality assurance supervision, and details of the inspection, auditing and testing of the off-site FSI installation works at the MiC factory, and provide the log book to FSD when required (Notes: Use of appropriate digital technologies will facilitate such work.).

At the building site, after the modules are delivered to site and before the on-site assembling process, the RFSIC should check and inspect the FSI installed in the integrated modules, especially if there is concern over possible damage during transit and difficulty in replacing/repairing the installed FSI after assembly. The RFSIC is also advised to monitor the on-site assembling process to ensure proper fixing of the FSI elements.

4.4 Acceptance Inspection

After the FSI have been installed, the AP should submit the following documents and request FSD to carry out acceptance inspection of the FSI and equipment installed at the building as given in FSD Circular Letter No. 1/2015 and FSD Circular No. 1/2020, following the same procedures used for new conventional buildings:

(a) Form FSI/501a. Signed Certificate FSI/501a by RFSIC (Certificate of Completion of Installation of Fire Service Installations and Equipment in New Buildings).
(b) Form FSI/501. Signed Application Form FSI/501 by AP (Application for Inspection and Testing of Fire Service Installations and Equipment).
(c) Form FSI/314. Completed Form FSI/314 together with two sets of as-fitted FSI layout plans and a schedule of the submitted FSI layout plans.

(d) Testing and Commissioning (T&C) Checklists for FSI and equipment as given in FSD Circular Letter No. 1/2015.

(e) FSI Equipment List. Completed Equipment List with RFSIC's signature on each page together with supporting documents, including listing certificates/records/documents/printouts from product certification bodies, FSD approval/acceptance letters, test certificates/data sheets/catalogues/calculations and other necessary technical information.

With effect from 1.5.2020, Form FSI/501 should be tendered by an AP after certification at Part B of the form. The completed FSI/501 should be submitted together with, inter alia, duly signed FSI/501a provided by the RFSIC. For FSI in a new building involving staircase pressurization system, dynamic smoke extraction system, water mist system or other FSI falling under the RPE's purview, certification by a RPE in Part A of FSI/501 is also needed.

Provision of digital records, including photographs and videos taken during inspection and testing, will facilitate the acceptance inspection by FSD.

FSD will arrange acceptance inspection within 15 working days after receipt of the application. FSD will issue Form FS 172 for non-government buildings, or an acceptance memo/letter for government buildings, after confirming that the installed FSI are in full compliance with the FS requirements.

5. WATER SUPPLIES DEPARTMENT

5.1 Design Stage

In applying for water supply for MiC projects, the procedure basically follows that for conventional building projects. Some additional requirements as detailed in the WSD's website on Water Supply for New Buildings adopting Modular Integrated Construction (MiC)[18] (as summarised in the workflow in Appendix D1). Reference should also be made to Sections 3.12, 4.1.3, 4.2A, 4.3.2A and 4.3.3A and Appendices 2 and 26 of the Guide to Application for Water Supply[19].

The applicant should check the lease conditions of the development site to confirm that the mains water supply would be available. The applicant should then write to WSD and indicate briefly the development's requirements for water supply, together with a block plan showing the exact plumbing locations.

If provision of water supply is found feasible, WSD will send details of the requirements to the applicant for preparation of a plumbing proposal.

The following should be submitted to WSD for approval[20]:

(a) Application Form WWO 542[21];
(b) A plumbing proposal with a section included clearly specifying the part of the plumbing installations (plumbing works) to be constructed off-site in a MiC factory (Notes: The extent of the plumbing installations to be constructed in the MiC factory should also be clearly indicated in the Vertical Plumbing Line Diagram, and other documents of the plumbing proposal as appropriate.); and
(c) A list of pipes and fittings intended to be installed (using Form WWO 1149) if a licensed plumber (LP) has already been appointed by the contractor at this stage.

5.2 Before Commencement of Plumbing Works in MiC Factory

Prior to commencement of the plumbing works in the MiC factory, the LP is required to submit the following to WSD for agreement:

(a) Form WWO 46[22] (Parts I and II). Form WWO 1149 should be submitted, if it has not been previously submitted.

(b) Supervision Plan. The plumbing works should be installed under the instruction and supervision of the LP[23] and Registered Plumbing Worker (RPW)[24]. The details of the supervision plan shall be determined based on the extent and complexity of the plumbing

[18] https://www.wsd.gov.hk/en/customer-services/application-for-water-supply/water-supply-for-new-buildings-adopting-mic/index.html
[19] https://www.wsd.gov.hk/en/plumbing-engineering/requirements-for-plumbing-installation/guide-to-application-for-water-supply/index.html
[20] https://www.wsd.gov.hk/en/customer-services/application-for-water-supply/water-supply-for-new-buildings/index.html
[21] WWO 542. Application for water supply.
[22] WWO 46. Application form for constructing, installing, altering or removing an inside service or fire service.
[23] The responsible LP who submits Form WWO 46 for the plumbing works to be constructed in the MiC factory.
[24] The definition of a RPW is given in Part 1 of the Schedule of the Waterworks Ordinance.

works. In general, the responsible LP who submits the Form WWO 46 for the plumbing works to be constructed in the MiC factory shall visit the MiC factory at least once a week to oversee and inspect the plumbing works, and continuous supervision of the plumbing works in the MiC factory shall be provided by a RPW. The supervision plan should include:

(i) the name, the qualificaion proof, the supervision frequency and the supervision period of the supervision personnel to ensure that there will be adequate supervison for the plumbing works in the MiC factory; and

(ii) the name, the address, the responsible contact person and the contact means of the MiC factory.

(c) Shop Drawings. These drawings should show the details of the plumbing installations in the MiC modules that will be covered up in the MiC factory.

(d) Production Schedule. A production schedule of the MiC modules in particular the production schedule of the plumbing works in the MiC modules and the corresponding inspection schedule for the plumbing works to be covered up in the MiC modules at the MiC factory for WSD to arrange for interim inspection of the plumbing installations by his Inspection Agent before the concealed parts are covered up in the MiC factory.

WSD will issue Form WWO 46 (Part III) to give consent to the commencement of works if there is no objection.

It is stated in the Waterworks Regulations (Cap. 102A) that "No pipe or fitting forming part of a fire service or inside service shall be used or covered up until it has been inspected and approved by the Water Authority". Hence, items (c) and (d) above are particularly important for the parts of plumbing works to be covered up in the MiC factory, but which cannot be subsequently exposed easily for inspection and non-destructive tests after assembly at the building site in Hong Kong. It is important for the designer to include in the design access points for inspection of all pipes and fittings forming part of a fire service or inside service in the modules, to facilitate the subsequent inspection by WSD.

5.3 Plumbing Works at MiC Factory

5.3.1 Supervision by Licenced Plumber

The responsible LP shall ensure that adequate supervision is provided for the plumbing works in the MiC factory in accordance with the supervision plan agreed by WSD. Proper supervision records shall be kept, including the date and time of inspection and supervision of the plumbing works conducted by LP and RPW. The supervision records shall be submitted to WSD for inspection when required and WSD will assign agent to carry out audit checks of the supervision records at the MiC factory if considered necessary. A sample supervision record is at Appendix D2 for reference. The responsible LP will be required to declare that the plumbing works carried out in the MiC factory have been supervised according to the supervision plan.

Provision of robust digital supervision records, including photographs, videos and details of the supervision personnel who have undertaken the inspection, will facilitate the acceptance by WSD.

5.3.2 Interim Inspections

For plumbing installations to be covered up in the MiC factory as indicated in the shop drawings, WSD will arrange an Inspection Agent to carry out interim inspections in the MIC factory before the concealed parts of the plumbing installations are covered up to ensure that they comply in all respects with the provisons of the Waterworks Ordinance (WWO)/Waterworks Regulations (WWR) and all the prevailing requirements of WSD[25]. The Inspection Agent will conduct inspections and carry out non-destructive tests to determine the lead content in the solder joints for the plumbing installations. The responsible LP or his/her representative shall be present in all interim inspections such that any non-compliance identified during the inspections could be immediately communicated to the LP or his/her representative for rectification. If the plumbing installations to be covered up are in order, the Inspection Agent will also advise the LP or his/her representative on the spot.

The Inspection Agent will also carry out audit checks of the LP's supervision records.

The responsible LP shall coordinate and liaise with the WSD's Inspection Agent regarding the exact inspection dates of the plumbing works to be covered up at the MiC factory. The responsible LP is not required to submit Form WWO 46 Part IV to WSD for arranging interim inspection. If the inspection frequency so warrants, the responsible LP may be required to arrange a working place in the MiC factory for the Inspection Agent to field its resident staff for conducting interim inspection, and/or adopt digital technologies for joint witnessing of the inspection checks and tests required and the preparation of supervision records.

5.4 Final Inspection at Building Site and Commissioning Requirements

The applicant for water supply for the MiC project shall, as for all other plumbing projects, be required to submit Form WWO 46 Part IV upon completion of the plumbing works at the building site in Hong Kong. Upon receipt of Form WWO 46 Part IV, WSD will conduct final inspection of the completed plumbing installations at the building site. Approval of plumbing works of the MiC project will be granted by WSD subject to:

(a) satisfactory results of the final inspection as stated in Section 4.3.3 of the Guide to Application for Water Supply[26] by WSD at the building site;
(b) satisfactory results of the interim inspections by the WSD's Inspection Agent on the concealed parts of the plumbing works before they are covered up in the MiC factory (in which case no opening up of the concealed plumbing works for inspection will be required at the building site), and

[25] The interim inspections will cover, among others, the aspects of material and size of pipes and fittings as well as their jointing method.
[26] The final inspections shall include (i) carrying out spotcheck of the pipes and fittings at the premises; (ii) taking water samples at random locations of the Approved Plumbing Works; and (iii) checking of samples of taps, shower mixers, valves, and pipes listed in the Form WWO 1149 as well as solder materials if used, relevant certificates/testing reports/catalogues as appropriate, and relevant supporting documents for the pipes and fittings as listed in the Form WWO 1149 (such as delivery notes, purchase order, product certificate or confirmation from relevant suppliers/distributors stating the place of origin of the pipes, fittings and solder materials). The LP responsible for the completed plumbing works shall attend the final inspection such that defects found by WSD can be brought to his immediate attention. After the identified defects have been rectified, the LP should report to WSD in writing the completion of rectification. WSD will arrange further inspection.

(c) compliance with the commissioning requirements as specified in Section 4.4 of the Guide to Application for Water Supply[27].

5.5 Effect of Water Supply

WSD will issue Form WWO 46 Part V(b) when the following have been received and found in order:

(a) water test reports indicating all water samples are within the acceptance criteria;
(b) record of systematic flushing;
(c) completed meter installation table with meter readings recorded after completion of systematic flushing; and
(d) record of cleansing and disinfection as requested and received by WSD (for those plumbing works where systematic flushing is required and generally practicable).

WSD will effect water supply within seven days after the date of water sampling with satisfactory results at the connection point (the 7-day requirement). Form WWO 1005 will be issued upon request after water supply is effected.

[27] Upon satisfactory completion of the final inspection, the building contractor/LP is then required to (i) carry out systematic flushing and keep record of the systematic flushing carried out; (ii) cleanse and disinfect the fresh water inside services; and (iii) take water samples for testing for fresh water supply, and (i) cleanse and disinfect the connection point of fresh water flushing and fire service system; and (ii) take water samples for testing for fresh water flushing and fire service supply.

6. ELECTRICAL AND MECHANICAL SERVICES DEPARTMENT

6.1 General

To support the adoption of innovative technologies in developing MiC method for the Hong Kong's construction industry, EMSD is committed to facilitating the implementation of MiC method, and providing advice and guidance to the trade on how the method can comply[28] with the Electricity Ordinance, Gas Safety Ordinance and Energy Efficiency (Labelling of Products) Ordinance.

6.2 Fixed Electrical Installations

The procedure for provision of fixed electrical installations for MiC projects follows that for conventional new buildings.

The statutory requirements imposed by EMSD under the Electricity Ordinance (Cap. 406) are that all electrical work should be carried out by a Registered Electrical Contractor (REC) and the REC should employ appropriate grades of Registered Electrical Workers (REWs) for the work. Electrical work refers to installation, commissioning, inspection, testing, maintenance, modification or repair of a low voltage or high voltage fixed electrical installation, and includes the supervision and certification of the work and the design of the installation. REC/REW should follow the technical requirements given in the Code of Practice for the Electricity (Wiring) Regulations[29] to design, construct, install, inspect and test the fixed electrical installations, in particular Code 26T regarding installation for MiC. A fixed electrical installation refers to a low or high voltage electrical installation (e.g. distribution boards, wiring installations and lighting fittings, etc.) that is fixed to the premises, but it does not include any electrical equipment supplied with electricity after passing through a socket of the installation at which the supply can be disconnected without the use of a tool.

Upon completion of the installation of electrical work in the premises, and before the installation is energized for use, the responsible REC and REW should have inspected, tested and certified the installation to confirm that the requirements of the Electricity Ordinance (Cap. 406) have been met. The REC should submit the Work Completion Certificate (Form WR1[30]) as proof of compliance with the Electricity Ordinance (Cap. 406) to the electricity supplier. Inspection of the electrical installation will be conducted by the electricity supplier prior to connection of electricity supply to the installation. The Work Completion Certificate (Form WR1) should be supported with relevant test records, plan and other documents, and the documents should be kept for at least 5 years and produced for inspection by EMSD upon request. To effectively monitor the standard of electrical work, EMSD will carry out random inspection of electrical installations that are designed, installed or tested by the REC at the building site. Copies of relevant test records, plans and documents should be made available for checking by EMSD as required.

It is recommended that the responsible REC should establish or agree with the factory to implement a quality control and supervision system including the factory test requirements to ensure the MiC electrical assembly being constructed and installed at the off-site workshop with good workmanship and quality. A Guidance Note on Fixed Electrical Installations with Modular Integrated

[28] https://www.emsd.gov.hk/en/supporting_government_initiatives/mic/index.html
[29] https://www.emsd.gov.hk/filemanager/en/content_443/COP_E_2020.pdf
[30] https://www.emsd.gov.hk/filemanager/en/share/electricity_safety/public_forms/wr1.pdf

Construction Method[31] is available which provides guidance on the requirements for the design, construction and installation of fixed electrical installations in MiC buildings/developments.

An Information Note on the procedures and relevant details of electricity supply application from electricty suppliers is given in Appendix E1.

6.3 Safety of Household Electrical Products

Household electrical products supplied in MiC projects, e.g. television sets, refrigerators, electric water heaters, etc., are regulated by the Electrical Products (Safety) Regulation (Cap. 406G) under the Electricity Ordinance (Cap. 406). Under the Regulation, the categories of persons that are regarded as suppliers are wide ranging, and include manufacturers, importers, wholesalers, retailers, etc., if such persons supply household electrical products in Hong Kong. Property developers may also be regarded as suppliers, as the Regulation also applies to the supply of household electrical products as part of or in connection with a disposition of any premises, if such a disposition, which includes a sale, lease, licence and permission to occupy, is the first disposition made prior to the first occupation of the premises.

Suppliers should ensure that the household electrical products comply with the applicable safety requirements of the Regulation, and the products should have been issued with valid certificates of safety compliance, as detailed in the Guidance Notes for the Electrical Products (Safety) Regulation[32].

A Guidance Note on Household Electrical Products with Modular Integrated Construction Method[33] is available which provides guidance on the requirements for the supply of household electrical products at integrated modules in MiC projects.

6.4 Energy Efficiency of Products

The supply of prescribed products in MiC projects are regulated by the Energy Efficiency (Labelling of Products) Ordinance (Cap. 598). Currently, the Ordinance covers eight types of prescribed products, namely room air conditioners, refrigerating appliances, compact fluorescent lamps (CFLs), washing machines, dehumidifiers, televisions, storage type electric water heaters and induction cookers. Under the Ordinance, a prescribed product supplied by an importer or a Hong Kong manufacturer should be a listed model having a reference number assigned in the supplier's name by EMSD and bear an energy label that complies with the specified requirement. Any other supplier who is not an importer or a Hong Kong manufacturer should ensure that the prescribed products are listed models with a reference number and bear an appropriate energy label.

A contractor may purchase prescribed products from a Mainland/overseas supplier or manufacturer for installation at the integrated module. Irrespective of whether the product model is a listed model or a non-listed model under the Ordinance, the contractor who imports the integrated module with the prescribed product should be the importer of the product model. The importer should submit the product information, including an energy performance test report of the product model issued by an accredited testing laboratory, to EMSD for assignment of a reference number. Energy

[31] https://www.emsd.gov.hk/filemanager/en/content_444/GN_FEI_Modular_Integrated_Construction_Method.pdf
[32] https://www.emsd.gov.hk/filemanager/en/content_444/GN-ElectricalProductsSafetyRegulation2019.pdf
[33] https://www.emsd.gov.hk/filemanager/en/content_444/GN_HEP_Modular_Integrated_Construction_Method.pdf

labels should also be attached or affixed to the products before being supplied in Hong Kong. The Guideline on Submission of Product Information[34] and Code of Practice on Energy Labelling of Products[35] provide practical guidance and technical details about the energy efficiency labelling of prescribed products. The target response time for submission of product information under the Mandatory Energy Efficiency Labelling Scheme is 17 working days.

Alternatively, the contractor may purchase prescribed products from a Hong Kong importer (i.e. the specified person to whom a reference number for the prescribed product under the Ordinance has been assigned) for installation at the integrated module. The prescribed product should be a listed product model, and bear an energy label.

A person other than a Hong Kong importer (e.g. project agent, integrated module owner, private developer, etc., depending on the contract arrangement) should not supply prescribed products unless the products are listed product models, which bear an energy label.

The Guidance Note on Supply of Energy Label Prescribed Products at Modular Integrated Construction (MiC) Projects[36] provides guidance on the requirements in the supply of prescribed products at integrated modules in MiC projects.

Details of the energy efficiency labelling of products in Hong Kong can be found at the EMSD website from the following link: https://www.emsd.gov.hk/energylabel.

6.5 Gas Supply Installations

The procedure for provision of gas supply installations in MiC projects follows that for conventional new buildings. The Gas Authority of EMSD is responsible for the enforcement of the Gas Safety Ordinance (Cap. 51) and acts as the regulator on gas safety in Hong Kong.

Gas installation work refers to the fabrication, connection, disconnection, testing, commissioning, decommissioning, maintenance, repair or replacement of gas pipes, gas fittings and gas appliances, etc., but it does not include the connection/disconnection of a cylinder or a bunsen burner. The requirements imposed by EMSD under the Gas Safety Ordinance are that all gas installation works conducted in Hong Kong, including the installation, testing and commissioning of gas pipes/fittings/gas appliances in buildings, installation, testing and commissioning of gas pipes/fittings in the MiC modules, and assembling of pre-laid gas pipes/fittings in MiC modules, should be carried out by a Registered Gas Installer (RGI) of an appropriate class, who is a Registered Gas Contractor (RGC) or employed by a RGC. The gas installation works carried out by a RGC/RGI should comply with the Gas Safety Ordinance, and conform to the relevant Codes of Practices[37] and guidance notes[38] issued by the Gas Authority, and the operating procedures issued by the relevant

[34] https://www.emsd.gov.hk/energylabel/en/doc/Guideline%20for%20Form%201%20(EN)%20(Jun%202022).pdf
[35] https://www.emsd.gov.hk/energylabel/en/doc/Code%20of%20Practice%202020_Eng%20(Effective%20on%2031.12.2020).pdf
[36] https://www.emsd.gov.hk/energylabel/en/doc/Guidance%20Note%20on%20Supply%20of%20Prescribed%20Products%20at%20MiC%20Projects_ENG(201906).pdf
[37] https://www.emsd.gov.hk/en/gas_safety/publications/codes_of_practice/index.html
[38] https://www.emsd.gov.hk/en/gas_safety/publications/guidance_notes/index.html

Registered Gas Supply Company (RGSC). The Guidance Note on Gas Supply Installations[39] provides guidance on the requirements for the design and installation of gas supply installations in conventional and MiC projects.

In addition, all domestic gas appliances (DGA) imported, supplied and installed for use in Hong Kong should be of the type approved by the Gas Authority, in accordance with the Gas Safety (Miscellaneous) Regulations (Cap. 51F) and Code of Practice GU05 – Approval of Domestic Gas Appliances[40]. These include gas appliances designed for or intended to be primarily used in domestic premises, irrespective of whether it is so used (e.g. gas cookers, gas water heaters and clothes dryers). Approved DGA should bear a "GU" Mark. A list of the approved models can be found from the following link: https://www.emsd.gov.hk/en/gas_safety/registers/.

The flexible gas tubing (either imported or manufactured) for use in Hong Kong for low-pressure applications (supply pressure not exceeding 7.5 kPa) should also be approved by the Gas Authority, in accordance with the Gas Safety (Miscellaneous) Regulations (Cap. 51F) and Code of Practice GU01 – Approval of Flexible Gas Tubing for Low Pressure Applications[41]. Also, the installation requirements for domestic gas water heaters (up to 70 kW) are given in Code of Practice GU03[42].

An AP or contractor, who intends to pre-install a DGA in the MiC module at workshops in the Mainland of China or overseas countries for use in Hong Kong, should engage an importer who has obtained the Gas Authority's approval of that particular brand and model of DGA for importation under the "Approval Scheme for Domestic Gas Appliances" of EMSD. Alternatively, the AP or contractor may apply for the Gas Authority's approval to import any DGA under the Scheme in accordance with the Code of Practice GU05. The connection, testing and commissioning of DGAs in Hong Kong shall be carried out by a RGI of the appropriate class of gas installation work and employed by a RGC.

For the implementation of MiC projects, the developer(s) and APs should consider to engage the MiC suppliers and RGC(s) to develop, plan, design and supervise the gas installation works (including the installation of DGAs) to be carried out at the offsite workshop as well as the project site in Hong Kong. The completion of all gas installation works for use in Hong Kong shall satisfy the requirements under the Gas Safety Ordinance and its subsidiary regulations.

The RGC should ensure that the gas installation works, including the installation of gas pipes/fittings in the MiC modules for use in Hong Kong, are properly carried out with safe and sound materials that conform to the Gas Safety Ordinance and Guidance Note on Gas Supply Installations. For the gas installations in the MiC modules installed at workshops locally or outside Hong Kong, the RGC is recommended to liaise with the AP/developer/ MiC supplier/RGSC as early as practicable for the establishment and implementation of a quality control and supervision system to ensure that the gas installations will be installed, inspected and tested at the workshops with good workmanship

[39] https://www.emsd.gov.hk/filemanager/en/content_287/Guidance%20Note%20on%20Gas%20Supply%20Installations%20202009_ENG.pdf

[40] https://www.emsd.gov.hk/filemanager/en/content_286/gas_approval.pdf

[41] https://www.emsd.gov.hk/filemanager/en/content_286/gu01_cop_2009-revA.pdf

[42] https://www.emsd.gov.hk/filemanager/en/content_286/gu03.pdf

and suitable materials. The quality control and supervision arrangement include but not be limited to provision of manpower to provide training and carry out the gas installation works at workshop and site as well as deployment of supervision staff stationed at the MiC workshop and project site to supervise the gas installation works conducted in accordance with the established quality control and supervision system.

Prior to commissioning of the gas installations and DGAs, the RGC should ensure that a soundness test, purging and other necessary testing and commissioning (T&C) procedures associated with those gas installations are satisfactorily completed, in compliance with the Gas Safety (Gas Supply) Regulations (Cap. 51B) and the Gas Safety (Installation and Use) Regulations (Cap. 51C). The RGC should keep the record of Certificate of Completion for gas installation works as well as arrange inspection with RGSC to ensure that the gas installations connected to the gas supply network could operate in a safe manner. Copies of relevant test records, plans and documents should be made available for checking by EMSD as required.

The RGSC should also check and ensure that the gas installations connected to their gas supply network are safe and sound for operation in a safe manner so that members of the public are not exposed to undue risks. The RGSC should ensure that the RGC has satisfactorily completed the soundness test and purging prior to commissioning of the gas installations.

The AP/Consultant/RGC should liaise directly with the relevant RGSC to plan and arrange for the gas main supply to the new buildings/developments at an early project stage. For details of gas supply requirements, the AP(s)/consultant/RGC should check with the associated RGSC.

7. TRANSPORT DEPARTMENT

7.1 Project Planning Stage/Design Stage

In MiC projects, modules are delivered to site for assembly and installation. Before a decision is made on the use of MiC for a project, a feasibility study should be carried out at the early project planning stage/design stage to assess and establish whether there is any route for transporting the modules from the MiC factory to the project site, taking into account the ports and marine unloading points for marine transport, road conditions and constraints for road transport, and the need for traffic impact assessments at different stages of the project, etc.

The 'Just-in-time delivery' of the modules to the project site is the best approach. However, if this is not feasible, the feasibility study should include identification of temporary parking space and/or storage locations for the modules. Early advice from experienced logistics companies and trailer drivers on the logistics of delivery should be sought.

During the project planning stage/design stage, assessment of the traffic impact on the proposed delivery routes should be carried out in consultation with the relevant Traffic Engineering (TE) Division/Regional Office of TD and the Road Management Office (RMO)/Hong Kong Police Force (HKPF). Contacts of the TE Divisions and RMOs are given in Tables 7.1 and 7.2 respectively.

The width of traffic lanes in Hong Kong is typically 3.3 m, but may be less than 3 m at some local road sections. Vehicles delivering a load of a width not exceeding 3 m may generally be accommodated within a single traffic lane. In contrast, vehicles delivering a load of a width exceeding 3 m may encroach upon the adjacent or opposite traffic lane, which will impose significant traffic impact and road safety concern.

To facilitate consideration by TD/HKPF, the following supporting information will usually be required to be submitted, in particular for the case of a load width exceeding 3 m:

(a) Swept path analysis to demonstrate the maneuverability of the vehicles at critical road sections such as narrow road segments, sharp bends, junctions, vehicular ingress and egress to destination/site, etc. (using AutoTrack, AutoTurn, AutoPath, etc.);

(b) Traffic Impact Assessment (TIA) or traffic review to demonstrate the practicability of the delivery proposal, particularly on the time of delivery and its impact on road and junction capacities (Note: Reference can be made to Guidance Notes No. RD/GN/021A (Feb 2020) - Guidelines on Traffic Impact Assessment & Day-time Ban Requirements for Road Works on Traffic Sensitive Routes published by HyD (2020). A Guidance Note on TIA for MiC projects is given in Appendix F1.);

(c) Temporary Traffic Management (TTM) schemes (or traffic improvement schemes) for the module transportation, if any, to illustrate the escort and road/ lane closure arrangement, temporary loading bay, and contingency parking place, etc. (Note: See HyD's Guidance Notes No. RD/GN/021A (Feb 2020), in particular Annex 2 of Appendix 1, for advice on the conditions under which TTM is required); and

(d) Contingency plan to handle emergency situations, including the rescue arrangement for breakdown of transportation vehicle, evacuation proposal when the delivery route is being blocked by other vehicles, and procedures for reporting incidents to relevant personnel, etc.

In-principle approval of the proposed routes, and the conditions to be imposed on the use of the routes/vehicles, should be obtained. The approved routes and conditions should be included in the conditions of tender for reference by tenderers during the tendering process. This will give confirmation to the tenderers on the feasibility of adopting MiC in the project, reduce risks and uncertainties to the project, and save cost and time.

7.2 Wide Load Permit

According to Regulation 55 of the Road Traffic (Traffic Control) Regulations (Cap. 374G), no driver shall drive on a road a vehicle that is so loaded that the load:

(a) in the case of a vehicle other than a trailer, extends forwards more than 1.5 m from the foremost part of the vehicle;
(b) extends backwards more than 1.4 m behind the rearmost part of the vehicle;
(c) extends sideways so that the total width of the load is in excess of 2.5 m; or
(d) rises to such a height in excess of 4.6 m or to such lesser height as may cause damage to any object or wires lawfully erected above the road.

Road users must apply for a Wide Load Permit (WLP) from the TD's Licensing Office for delivering a load of width exceeding 2.5 m by vehicle. A vehicle may be driven loaded within the limits prescribed in the WLP issued under Regulation 54 of the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374E).

Details of WLP application can be found in the Guidelines on Application for Long/Wide Load Permit[43] published by TD.

An application form TD 290[44] should be duly completed and submitted to TD's Licensing Offices for the WLP application. The information and documents required for the application include the following:

(a) Particulars of Applicant
  (i) name of the registered owner of the vehicle under WLP application;
  (ii) identity document/Certificate of Incorporation of the registered owner;
  (iii) residential/company and correspondence address with acceptable proof of address issued not more than three months from the date of application (for a full list of acceptable proof of address, reference should be made to https://www.td.gov.hk/en/public_services/licences_and_permits/proof_of_address/index.html#apoa); and
  (iv) contact phone number.

[43] https://www.td.gov.hk/filemanager/en/publication/guidelines%20on%20application%20for%20long_wide%20load%20permit_jul%202022%20version.pdf

[44] https://www.td.gov.hk/filemanager/common/td290_eng.pdf

(b) Particulars of Vehicle

(i) registration mark, class, make, overall width and length of vehicle, where the vehicle under application must be a medium goods vehicle or a heavy goods vehicle, whether or not articulated with a trailer, with a total length not less than 9.1 m;

(ii) vehicle registration document of the vehicle under WLP application; and

(iii) valid third party insurance certificate or cover note in respect of the vehicle in the name of the registered owner for the entire period of the permit being sought.

(c) Particulars of Operation

(i) reason for application;

(ii) projection of loads: front projection/ rear projection/ overall projection; beyond both sides/ total width of loads/total weight of loads/ total length of loads; and

(iii) details of routes, including delivery period and time schedule.

Upon receipt of the duly completed application form and all the required documents, the TD's Licensing Office will consult the Traffic Branch Headquarters/HKPF on the application. The respective Traffic Engineering and Transport Operations Divisions/ Regional Office of TD will also be invited to provide comments on the application with specific route(s).

The TD's Licensing Office will inform the applicant of the application result in writing within 25 working days upon receipt of the duly completed application with all required documents.

The loading and transportation of MiC modules should comply with the Code of Practice for the Loading of Vehicles[45] published by TD.

Some commonly asked questions on the transport of MiC modules involving WLP application are given in Appendix F2.

7.3 Conditions Imposed in a Wide Load Permit

Some or all of the following conditions may be imposed in the WLP:

(a) Trial runs may be required to substantiate the practicability of the delivery proposal.

(b) The vehicle issued with the WLP should only be operated on the route specified in the permit, and used together with the specified trailers.

(c) The permit should be displayed on the front windscreen of the vehicle near to the vehicle licence.

(d) The load should be properly secured to the vehicle, and no portion of the load should touch the road.

(e) A red flag of an area (>1 m^2) should be displayed at the rear extremity of the load.

[45] https://www.td.gov.hk/filemanager/en/publication/cop_loading_of_vehicles_eng.pdf

(f) During the hours of darkness or in poor visibility conditions, a white light showing ahead at each side of the front extremity of the load, and a red light showing to the rear at the rear extremity of the load should be used.

(g) In general, the approved operating hours are from 1000 hrs to 1600 hrs and 2000 hrs to 0700 hrs. For WLP issued for application with specific route(s) and/or vehicle with coded permits, the approved operating hours are from 0100 hrs to 0600 hrs. The permit validity is 12 months or the validity period of the third party risk insurance in respect of the vehicle or the validity period of the vehicle licence of the vehicle, whichever is shorter.

(h) Provision of escort vehicles to the front and rear of the load-carrying vehicle is required when the loads exceeds the width as stipulated in Regulation 55 of the Road Traffic (Traffic Control) Regulations. The condition imposed will depend on the road/route conditions and the justifications given in the application.

(i) Permission should be obtained from the relevant management authority or owner of any areas or private roads prior to carrying the load through the areas or private roads, as the management authority or owner may restrict access of the vehicle, rendering the proposed route infeasible.

(j) The overall height of the vehicle (i.e. including the height of the module) needs to be considered if the route passes through overhead bridges or structures. Beneath some bridges, gantries and other structures, where the clearance provided may be less than the maximum permitted vehicle height of 4.6 m, regulatory and/or warning traffic signs are erected to inform drivers of the restriction/prohibition. Drivers transporting high loads should pay particular attention to such signs while driving on the road.

(k) Prior routing approval for the project must be sought from the respective RMO/HKPF, TD and HyD to ensure that the deliveries will not cause any undue inconvenience to other road users nor damage to road pavements and underground utilities.

7.4 Module Delivery Stage

Depending on the routes taken, the degree of severity of impacts on the traffic and the transport and traffic management measures required, it may be necessary to set up a Traffic Management Liaison Group (TMLG) with representatives from TD, RMO/HKPF and HyD during the module delivery stage to consider and fine-tune the TTM measures.

Table 7.1 – Contacts of Traffic Engineering Divisions of Transport Department			
Traffic Engineering Division	**Address**	**Telephone**	**Fax Number**
Traffic Engineering (HK) Division Urban Regional Office	37/F, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong	2829 5815	2824 0399
Traffic Engineering (Kowloon) Division Urban Regional Office	8/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon	2399 2193	2397 8046
Traffic Engineering (NTE) Division NT Regional Office	9/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon	2399 2194	2381 3799
Traffic Engineering (NTW) Division NT Regional Office	7/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon	2399 2194	2381 3799
Traffic Survey & Support Division Islands Section and Tsuen Wan Section	9/F, Mongkok Government Offices, 30 Luen Wan Street, Mongkok, Kowloon	2399 2194	2381 3799

Table 7.2 – Contacts of Road Management Offices of Hong Kong Police Force			
Road Management Office	**Address**	**Telephone**	**Fax Number**
Traffic Management Division **Traffic Management and Prosecutions Bureau, Traffic Branch HQs**	32/F, Arsenal House, Police Headquarters, No.1, Arsenal Street, Wan Chai, Hong Kong	2860 6263	2200 4377
Road Management Office (HK Island) Enforcement & Control Division, Traffic HK Island, HK Island Regional HQs	60 Sing Woo Road, Happy Valley, Hong Kong	3660 1893	2834 4699
Road Management Office (Kowloon West) Enforcement & Control Division, Traffic Kowloon West, Kowloon West Regional HQs	8 Wai Wan Lane, Hung Hom, Kowloon	3661 9000	2789 8214
Road Management Office (Kowloon East) Enforcement & Control Division, Traffic Kowloon East, Kowloon East Regional HQs	105 Concorde Road, Kai Tak, Kowloon	3661 0306	2758 0609
Road Management Office (New Territories South) Enforcement & Control Division, Traffic New Territories South, New Territories South Regional HQs	8 Shing Mun Road, Tsuen Wan, New Territories	3661 1364	2200 4662
Road Management Office (New Territories North) Enforcement & Control Division, Traffic New Territories North, New Territories North Regional HQs	East Operational Base 1st and 3rd floors, Sheung Shui Police Station, Fanling Roundabout, Fanling, New Territories	3661 3877	2683 1801
	Tai Hing Operational Base 1st and 2nd floors, Tai Hing Police Operational Base, 80, Tsun Wen Road, Tuen Mun, New Territories	3661 3977	2464 4044

8. ENVIRONMENTAL PROTECTION DEPARTMENT

8.1 Project Planning Stage/Design Stage

A MiC project generally faces two regulatory constraints: traffic and noise. While there is severe traffic constraint which warrants modules to be delivered during night time, the MiC works face the constraint of noise when they are carried out within the restricted hours[46].

It is a usual practice that the modules, upon arrival on site, are unloaded, hoisted and installed in position, after appropriate quality checks of the modules have been carried out. There is no restriction on the MiC works carried out between 0700 hours and 1900 hours on a non-holiday from Monday to Saturday (i.e. normal weekdays). However, when the MiC works are carried out at any other time (i.e. within the restricted hours), a valid Construction Noise Permit (CNP) issued by the Noise Control Authority (EPD) in accordance with the Noise Control Ordinance (NCO) (Cap. 400) is needed. Therefore, carrying out of construction work including transportation of MiC modules during daytime in normal weekdays should be accorded priority as far as practicable.

An assessment of the noise impacts of the MiC works at the project site should be carried out in advance and the relevant Regional Offices of EPD may be consulted as necessary. The aims of the noise assessment are to establish the feasibility of carrying out the MiC works within the restricted hours, and to identify the potential noise issues that the project may face. The results of the noise assessment should be reviewed together with the traffic restrictions imposed by TD/HKPF to check if it is unavoidable to carry out the MiC works within the restricted hours. If it is genuinely unavoidable, then recommendations should be made on the appropriate noise mitigation measures, such as use of the quietest practical construction equipment and methods, to eliminate or minimize the noise impacts.

In-principle approval of the noise assessment, the mitigation measures proposed and the conditions to be imposed on the MiC works carried out within the restricted hours should be obtained before the tendering. The information obtained from the noise assessment is useful for the planning and programming of the MiC works, and should be included in the conditions of tender for reference by the tenderers during the tendering process.

8.2 Construction Noise Permit

A CNP is required from EPD for carrying out the following work during evening and night time (1900 hours to 0700 hours) and any time on public holidays, including Sundays:

(a) Prescribed Construction Work within the Designated Areas, including (i) erection or dismantling of formwork or scaffolding; (ii) loading, unloading or handling of rubble, wooden boards, steel bars, wood or scaffolding material; and (iii) hammering; and
(b) General construction work using any powered mechanical equipment (PME).

[46] Restricted hours are 7 pm to 7 am or at any time on a general holiday (including Sunday) under the Noise Control Ordinance (NCO) (Cap. 400).

Designated Areas under the NCO are densely-populated built-up areas and their locations can be found at the EPD website from this link: https://www.epd.gov.hk/epd/english/environmentinhk/noise/help_corner/da.html.

Reference can be made to the following details in making a CNP application:

(a) How to complete and submit CNP application forms[47];
(b) Requirements and Procedure for Application of Environmental Permits/Licences under the NCO[48]; and
(c) Guidelines on Application of CNP for using MiC Method[49].

The CNP application should be made to the Regional Offices of EPD. Contacts of the Regional Offices are given in Table 8.1. The information and documents required for the CNP application include:

(a) Application Form (Form 1 [EPD 74A(S)][50]) (application can be made using paper form or online: https://epic.epd.gov.hk/EFORMUPD/main/epic/apps-download?execution=e2s1);
(b) site plan (s) of appropriate scale (preferably 1:1000) showing the construction site and the nearby Noise Sensitive Receivers (NSRs) (Item B of Form 1);
(c) site plan showing the locations of the Prescribed Construction Work (if appropriate);
(d) photographs (two 3R size colour photographs) for each item of PME to be used (with the distance of the fixed PME items to be used from the site boundary or grid lines indicated in metres on the site plan (s));
(e) photocopy of the Noise Emission Label for each and every proposed air compressor and hand-held percussive breaker, if appropriate;
(f) photocopy of the Business Registration Certificate (BRC) if the applicant is a company or HKID if the applicant is an individual;
(g) Noise Management Plan giving details of the quietest practical working method and equipment and other practical noise mitigation measures as detailed in the noise assessment carried out at the project planning stage/design stage; and
(h) documentary proof from the relevant Authorities (i.e. TD/HKPF) to indicate that there are genuine traffic restrictions on transporting large/wide modules outside the restricted hours.

8.3 Assessment of Noise

The CNP will be processed and assessed in accordance with the Technical Memorandum (TM) on Noise from Construction Work other than Percussive Piling[51] , and also the TM on Noise from

[47] https://www.epd.gov.hk/epd/english/application_for_licences/guidance/cnp.html
[48] https://www.epd.gov.hk/epd/english/application_for_licences/guidance/application_maincontent36.html
[49] https://www.epd.gov.hk/epd/sites/default/files/epd/g_cnp_mic_e.pdf
[50] https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/applic_froms/files/epd74ae.pdf
[51] https://www.epd.gov.hk/epd/sites/default/files/epd/english/envir_standards/files/GN2014P107-2014c-e.pdf

Construction Work in Designated Areas[52] issued by EPD. Reference should also be made to the web links to the TM[53].

Generally, the process of assessing noise from the construction works is to:

(a) identify the most affected Noise Sensitive Receivers (NSRs);
(b) determine the Area Sensitivity Rating (ASR) for the area within which the NSRs are located, and hence determine the relevant Acceptable Noise Level (ANL);
(c) calculate the Corrected Noise Level (CNL) at the NSR which will be generated by the construction work; and
(d) compare the CNL with the ANL.

If the CNL is equal to or less than the ANL, the CNP may be issued by EPD in the prescribed form and may include such conditions as EPD considers appropriate, such as some conditions mentioned in paragraph 8.4. If the CNL exceeds the ANL, a CNP will not generally be issued. Nonetheless, if the CNP applicant considers that it is unavoidable to carry out their works within the restricted hours, documentary proof from the relevant Authorities (i.e. TD/HKPF) shall be submitted with the application for consideration whether there exists unavoidable constraints on working hours according to the TM, together with details of all the quietest practical working methods, quieter PME (e.g. PME with Quality PME Label) and other practicable noise mitigation measures to be employed on site. If a CNP is issued under such circumstances, all these proposed measures will be imposed as conditions in the CNP.

In general, a CNP application can be processed within 18 days if all criteria in the relevant EPD checklist(s) can be met. No appeal can be made in relation to the decision on issuance of a CNP for the purpose of carrying out construction work during the restricted hours.

8.4 Conditions Imposed in a Construction Noise Permit

Some or all of the following conditions may be imposed in the CNP:

(a) the initial period of such duration as EPD considers appropriate;
(b) the renewal period before or after the date of expiry for such further period or periods and subject to such alterations or new conditions as EPD considers appropriate;
(c) the permissible items of PME which may be used on the construction site;
(d) the hours during which the CNP is valid;
(e) the dates of commencement and expiry of the CNP;
(f) any noise levels which may not be exceeded at specified locations during specified times, and any special noise control measures that must be adopted;
(g) any noise mitigation measures mentioned in the Noise Management Plan submitted;
(h) the time limit for the specific construction activities concerned (e.g. transportation and unloading of the MiC modules within the site); and

[52] https://www.epd.gov.hk/epd/sites/default/files/epd/english/envir_standards/files/GN2014P110-2014c-e.pdf
[53] https://www.epd.gov.hk/epd/english/environmentinhk/noise/guide_ref/tm_nonpp.html and https://www.epd.gov.hk/epd/english/environmentinhk/noise/guide_ref/tm_des_area.html

(i) the requirement to notify EPD soon upon the commencement of construction, indicating the construction involved and the noise mitigation measures taken for carrying out the construction works during the restricted hours.

8.5 Module Delivery and Installation Stage

Prior to commencement of the MiC works, the contractor should inform (e.g. via issuing a notice and/or give a briefing) the estate management/owners' corporation of the nearby NSRs on the programme of the works, the advantages of MiC, and the need for carrying out the MiC works within the restricted hours. A hotline/enquiry number for effective communication should be provided.

Table 8.1 – Contacts of Regional Offices of EPD[54]					
Office/ Regional Offices	**Address**	**Telephone**	**Fax Number**	**Email Address**	**Control Districts**
Regional Office (East)	5/F., Nan Fung Commercial Centre, 19 Lam Lok Street, Kowloon Bay, Kowloon.	2755 5518	2756 8588	hotline_e@epd.gov.hk	Kwun Tong, Wong Tai Sin, Sai Kung and Kowloon City
	8/F., Cheung Sha Wan Government Offices, 303 Cheung Sha Wan Road, Kowloon.	2402 5200	2402 8272	hotline_e@epd.gov.hk	Yau Tsim Mong
Regional Office (South)	2/F, Chinachem Exchange Square, 1 Hoi Wan Street, Quarry Bay, Hong Kong.	2516 1718	2960 1760	hotline_s@epd.gov.hk	Hong Kong Island and Islands
Regional Office (West)	8/F, Tsuen Wan Government Offices, 38 Sai Lau Kok Road, Tsuen Wan, New Territories.	2417 6116	2411 3073	hotline_w@epd.gov.hk	Tuen Mun, Tsuen Wan, Kwai Tsing and Sham Shui Po
Regional Office (North)	10/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin, New Territories.	2158 5757	2685 1133	hotline_n@epd.gov.hk	Yuen Long, Sha Tin, Tai Po and North

[54] https://www.epd.gov.hk/epd/english/application_for_licences/sub_applic/application_maincontent38.html

9. CUSTOMS AND EXCISE DEPARTMENT

9.1 Import and Export Declaration

According to the Import and Export Ordinance (Cap. 60), the person in charge of a vehicle/vessel, on entering or leaving Hong Kong, should furnish the following for custom clearance: (i) a manifest in respect of the cargo on board, (ii) an import/export licence or a removal permit (if required), and/or (iii) other supporting documents such as a bill of lading, airway bill, invoice, packing list, etc.

In addition, all persons importing or exporting any articles, other than exempted articles, are required to lodge accurate and complete import/export declarations within 14 days after the importation/exportation of the article. With effect from 1 August 2018, the charge for each import and export declaration is capped at $200. The cap will apply to goods imported, exported or re-exported to and from Hong Kong on or after 1 August 2018[55]. Information on the cargo clearance requirements and import and export declaration can be found at the C&ED website from these links: http://www.customs.gov.hk/en/cargo_clearance/index.html and https://www.customs.gov.hk/en/cargo_clearance/declaration/index.html. Details of the articles which are exempted from the import and export declaration requirements can be found from this link: https://www.elegislation.gov.hk/hk/cap60E?xpid=ID_1438403523489_003.

9.2 Cargo Examination

Details of customs clearance of cargo conveyed by goods vehicles/vessels[56] are described below:

(a) Land. There are six land boundary control points (LBCPs) for cross-boundary goods vehicles in operation[57]: Man Kam To/ *Wenjin Du* (7 am to 10 pm), Sha Tau Kok/ *Shatou Jiao* (7 am to 10 pm), Lok Ma Chau/ *Huanggang* (24 hours), Shenzhen Bay/*Shenzhen Wan Port* (6:30 am to 12 mid-night), Hong Kong-Zhuhai Macao Bridge (Hong Kong Port) (24 hours) and Heung Yuen Wai/*Liantang Port* (7 am to 10 pm), as shown in Figure 9.1. There is generally no restriction in the size of modules processed at the LBCPs. The Heung Yuen Wai LPCP became operational on 26.8.2020. This new LBCP has enabled a more balanced distribution of cross-boundary connection with the Mainland network.

Drivers entering Hong Kong are subjected to duty charge for dutiable goods[58]. In addition, drivers should comply with any requirement, direction or demand given or made by a member of C&ED, or instruction conveyed by a visual display unit installed at a customs clearance point. Otherwise, they may be prosecuted.

For cargo imported or exported by trucks through the LBCPs, registered shippers or their authorised agents can make use of the Road Cargo System (ROCARS[59]) to submit

[55] https://www.customs.gov.hk/en/cargo_clearance/declaration/charges/index.html
[56] https://www.customs.gov.hk/en/cargo_clearance/clearance/examination/index.html
[57] https://www.customs.gov.hk/en/contact_us/passenger_clearance/index.html
[58] Under the Dutiable Commodities Ordinance, dutiable goods include liquors, tobacco (except smokeless tobacco and alternative smoking products), certain hydrocarbon oil and methyl alcohol.
[59] https://www.rocars.gov.hk/en/landing_page.html

advanced cargo information to C&ED by electronic means. The ROCARS commenced its mandatory implementation on 17 November 2011. Under the system, truck drivers can enjoy seamless customs clearance service when they convey road cargoes across LBCPs. They will be signalled by ROCARS whether their vehicles should be examined upon arrival at the fully automated customs clearance facilities at the LBCPs.

C&ED adopts a risk management approach to identify and select cargoes/vehicles/drivers/passengers for inspection at the LBCPs. Different inspection methods/equipment, including physical checks, vehicle searches, use of detector dogs, Mobile X-ray Vehicle Scanning Systems and Vehicle X-ray Inspection Systems, etc., are used in the inspection process as and when necessary.

The size of the cargo loaded on board a vehicle, among other information, is also governed by the requirements set by TD given in Section 7.

Notwithstanding the above, it is necessary to check the customs clearance procedures outside Hong Kong to ensure smooth delivery. The contact numbers of the respective LBCPs can be found at the C&ED website from this link: https://www.customs.gov.hk/en/service-enforcement-information/passenger-clearance/contact-us/index.html.

(b) Sea. The places that handle sea cargoes are the container terminals, mid-stream sites, River Trade Terminal and Public Cargo Working Areas (PCWAs) and their locations are included in Figure 9.1. The container terminals are located at Kwai Tsing. There are 10 mid-stream sites in Hong Kong. The River Trade Terminal is located near Pillar Point, just to the west of Tuen Mun. The six PCWAs are located in Chai Wan, Western District, Rambler Channel, New Yaumatei, Stonecutters Island and Tuen Mun.

For ocean and river cargoes, there is an Electronic System for Cargo Manifests (EMAN)[60] which enables carriers to submit cargo manifests electronically to C&ED, the Census and Statistics Department and the Trade and Industry Departmnt in one go prior to arrival of shipments.

For containerized cargoes conveyed by ocean-going vessels, C&ED will issue detention notices to the shipping agents, container terminal operators, godown operators and consignees requiring their submission of cargo manifests for customs scrutiny.

For containerized cargoes conveyed by river trade vessels, C&ED will issue detention notices to the consignees of the cargoes, shipping agents, container terminal operators and godown operators requiring their cargoes to be removed to premises nominated by the consignees, owners or shipping agents for cargo examination.

For non-containerized sea cargoes, C&ED will deploy officers to conduct strike and search operations onboard the vessels or at the respective loading spots, e.g. Public Cargo Working Areas or buoys. The masters or agents of the vessels are required to

[60] https://www.cedb.gov.hk/assets/document/cedb/policies/EMAN_Guidebook_(Eng).pdf

furnish manifests in respect of the cargoes being imported or exported if they are requested to do so.

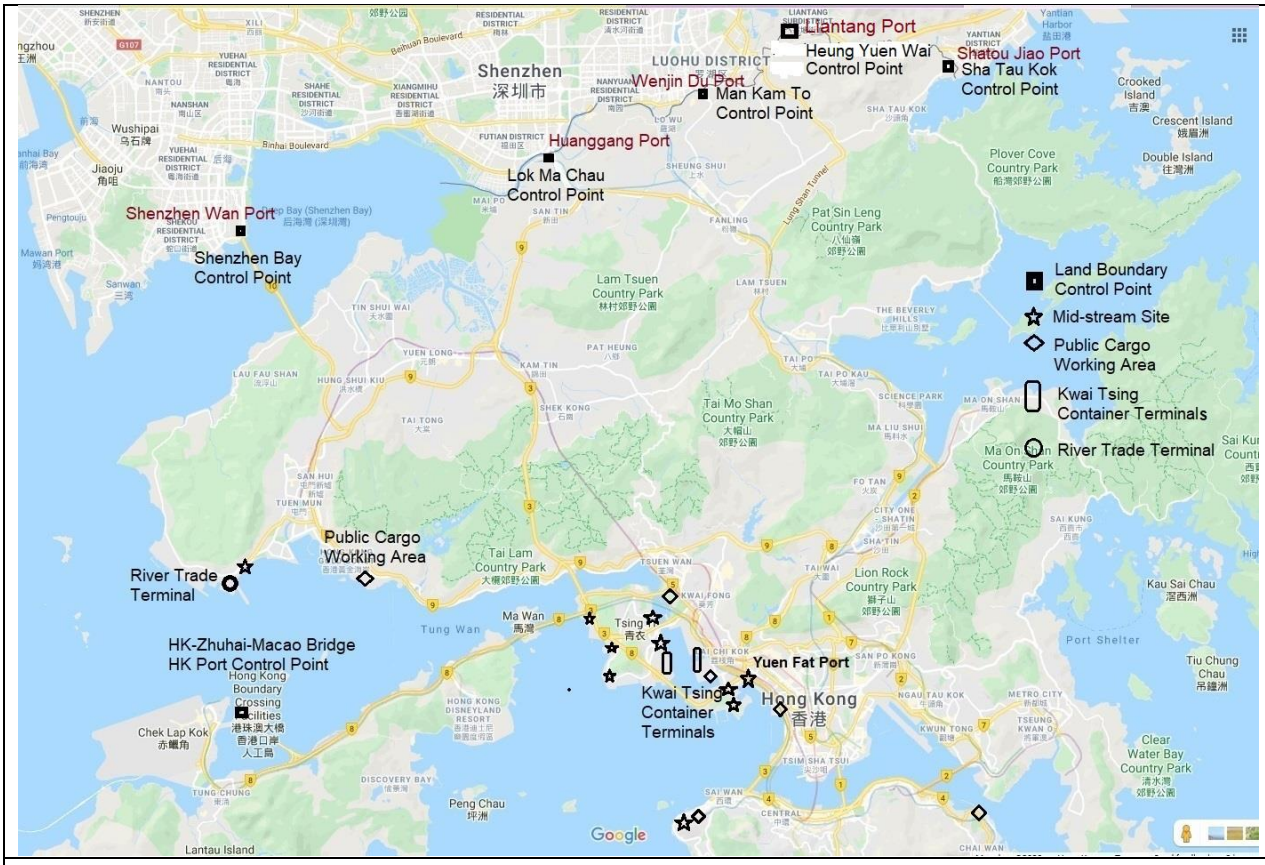


Figure 9.1 – Locations of Land Boundary Control Points, Kwai Tsing Container Terminal, mid-stream sites, River Trade Terminal and Public Cargo Working Areas (https://www.hkmpb.gov.hk/en/port.html)

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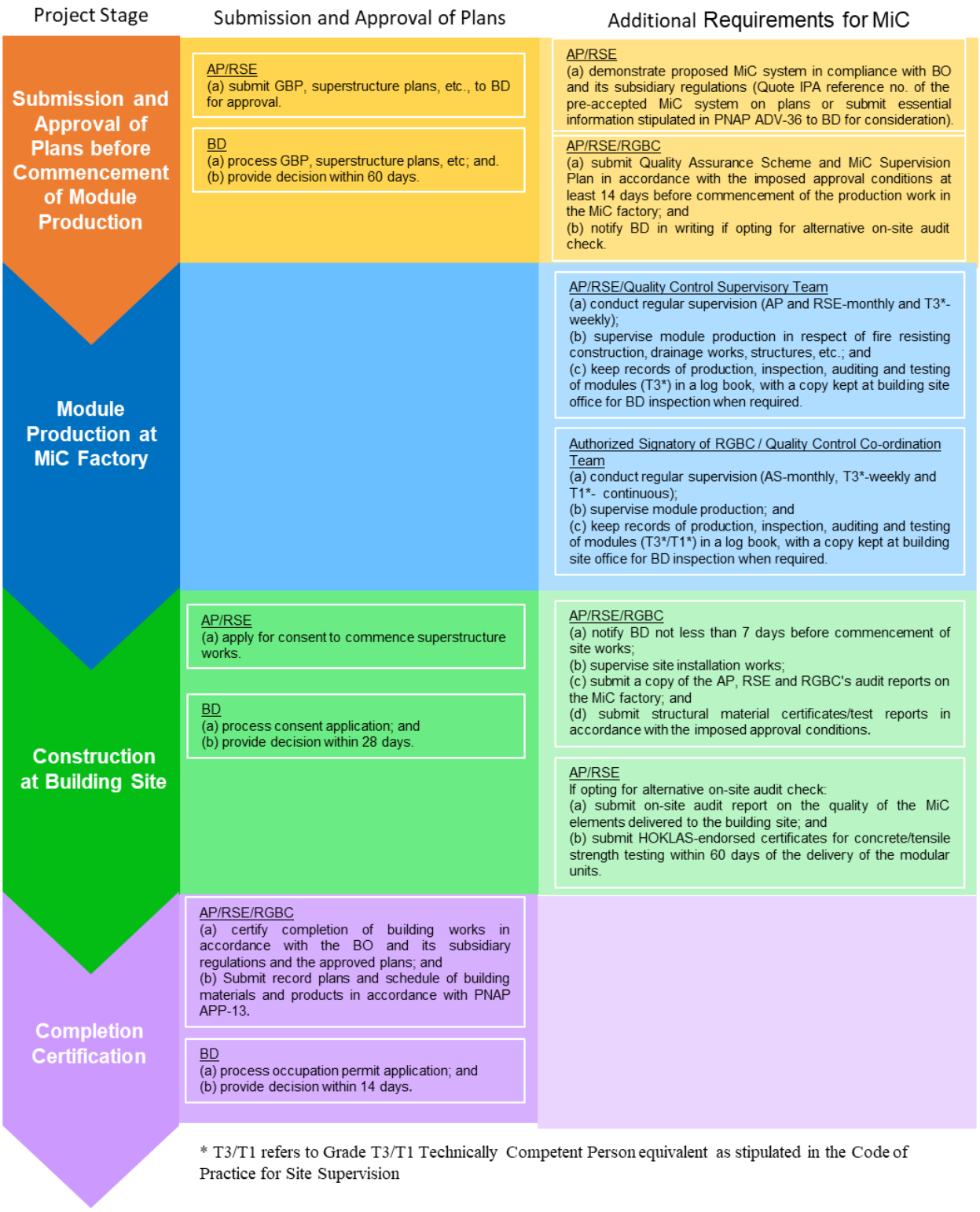
APPENDIX A – LIST OF CONTACT POINTS OF RESPECTIVE GOVERNMENT DEPARTMENTS IN RELATION TO THIS REFERENCE MATERIAL

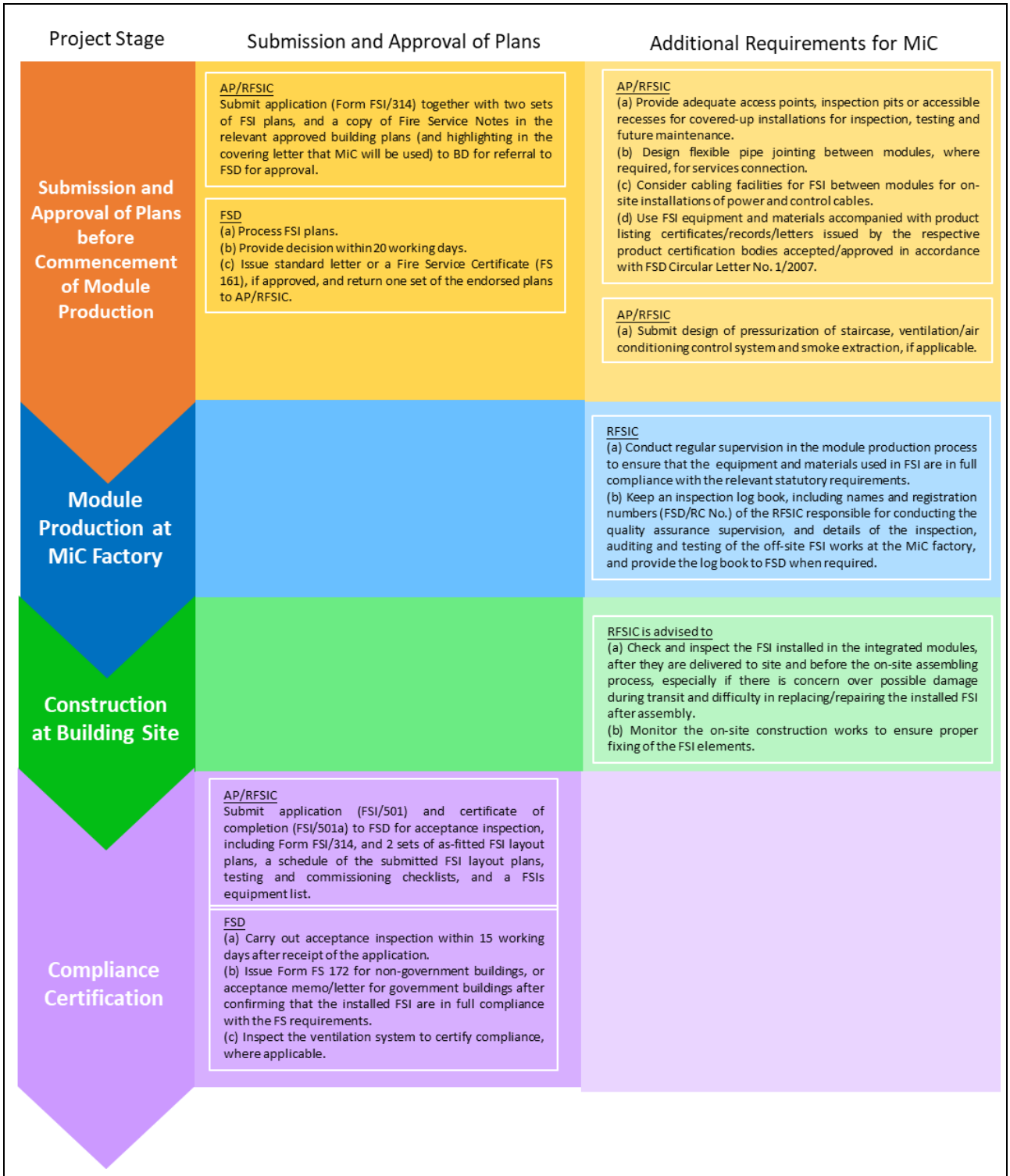
Chapter	Department	Post	Division/Section	Telephone
3	Buildings Department	TS/Building BS/TS3	Corporate Services Division Technical Services Section Technical Services Unit (Building)	3842 3453 3842 3447
4	Fire Services Department	Assistant Divisional Officer (Policy)3	Policy Division Licensing and Certification Command	2733 1543
5	Water Supplies Department	E/Technical Support 4	Supply and Distribution (NT) Branch Technical Support Division Technical Support Unit	2829 5657
6	Electrical and Mechanical Services Department	SEME/Consumer Installations 1/1	Electricity and Energy Efficiency Branch Electricity Legislation Division Consumer Installations Sub-division 1	2808 3833
		EME/Electrical Products/4	Electricity and Energy Efficiency Branch Electricity Legislation Division Electrical Products Sub-division	2808 3109
		E/Gas Standards A1/3	Gas and General Legislation Branch Gas Standards Division A Gas Standards A1 Sub-division (Domestic Gas Appliances)	2808 3667
		E/Gas Standards A3/3	Gas and General Legislation Branch Gas Standards Division A Gas Standards A3 Sub-division (Gas Installations)	2808 3657
		SE/Energy Efficiency A4	Energy Efficiency Sub-division A4 (Energy Efficiency of Products)	
7	Transport Department	SE/Road Safety 2	Technical Services Branch Road Safety and Standards Division Road Safety 2 Section	3842 6090
		EO/Licensing (HK)	Licensing Unit Hong Kong Licensing Office VALID and Licensing Division Licensing Section	2804 2630
8	Environmental Protection Department	SEPO(Regional E)7 Noise Management & Control Section	Noise Management & Control Section Environmental Compliance Division Regional Office (East)	2411 9605
9	Customs & Excise Department		General Enquiry (customsenquiry@customs.gov.hk)	2815 7711

APPENDIX B - WORKFLOW FOR SUBMISSION AND APPROVAL OF PLANS TO BUILDINGS DEPARTMENT AND ADDITIONAL REQUIREMENTS FOR MIC



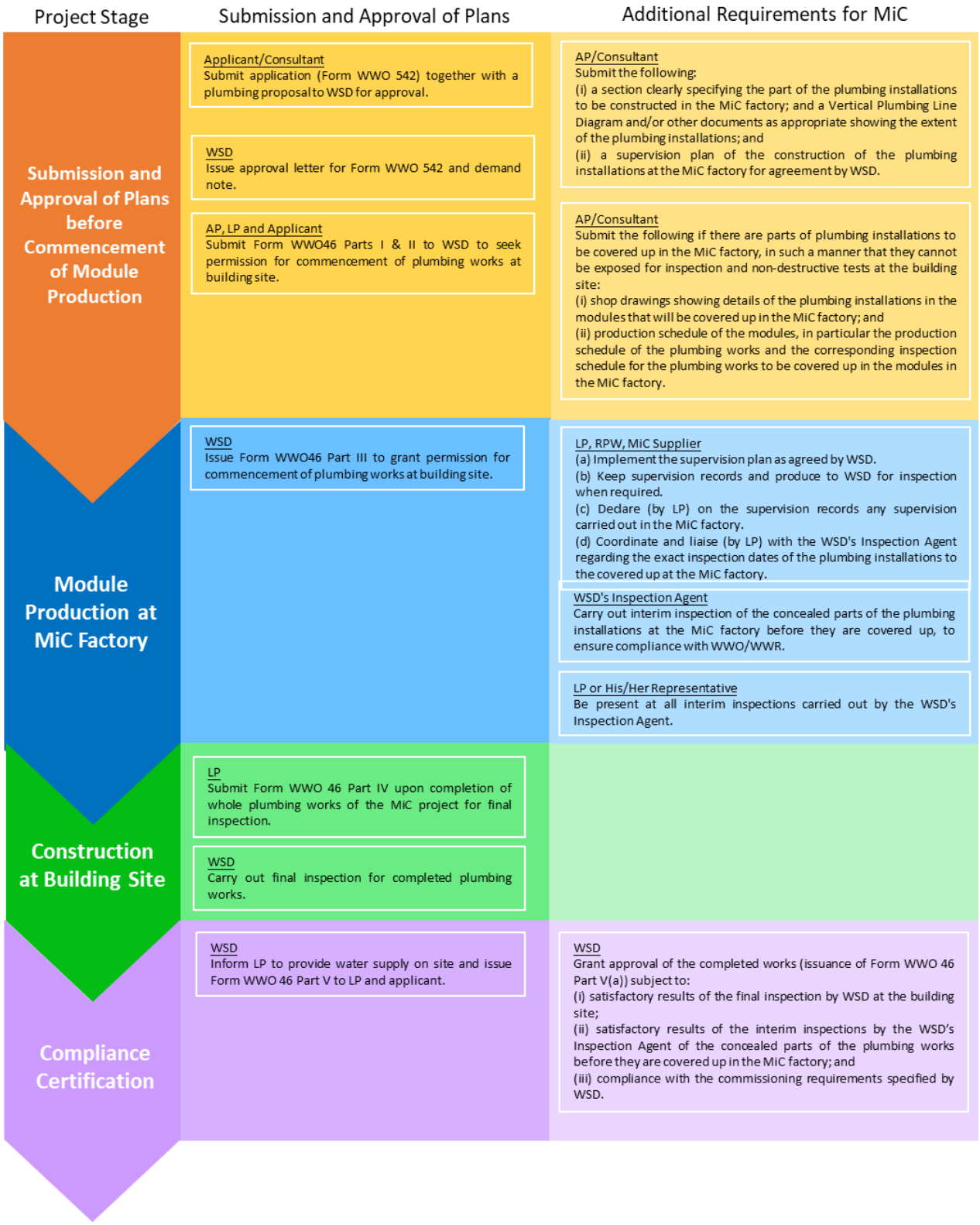
Note: Reference should be made to PNAP ADV-36 - Modular Integrated Construction.

APPENDIX C - WORKFLOW FOR SUBMISSION AND APPROVAL OF PLANS TO FIRE SERVICES DEPARTMENT AND ADDITIONAL REQUIREMENTS FOR MIC



Note: Reference should be made to FSD Circular Letter No. 3/2019 - Guidance Notes on Submission, Approval and Acceptance Inspection of Fire Service Installations and Equipment in Modular Integrated Construction Building Projects and FSD Circular No. 1/2020 - Revised Application Procedure for Inspection and Testing of Fire Service Installations and Equipment in New Building.

APPENDIX D1 - WORKFLOW FOR SUBMISSION AND APPROVAL OF PLANS TO WATER SUPPLIES DEPARTMENT AND ADDITIONAL REQUIREMENTS FOR MIC



Note: Reference should be made to Sections 3.12, 4.1.3, 4.2A, 4.3.2A and 4.3.3A and Appendices 2 and 26 of the WSD's Guide to Application for Water Supply (December 2021 version) (https://www.wsd.gov.hk/filemanager/en/content_1805/Guide%20to%20Application%20for%20Water%20Supply%20-%202021_Final.pdf)

APPENDIX D2 - RECORD FORM FOR SUPERVISION OF PLUMBING WORKS CONSTRUCTED AT OFF-SITE MIC FACTORY

Project Name: _____
Address of MiC factory: _____
WSD Reference No. (CCID/ASN): _____
Period of supervision of construction at MiC factory: / / to / /

A. Registered Plumbing Workers (RPW) Supervision Record:

Name of RPW	Registration no.	Date	Start Time	End Time

_____ _____
Signature(s) of RPW Date

B. Licensed Plumbers (LP) Supervision and Inspection Record:
Name of responsible LP: _____ LP No.: _____

Date	Start Time	End Time

I, _____, declare that plumbing works carried out in the MiC factory mentioned above during DD/MM/YY to DD/MM/YY have been supervised according to the supervision plan accepted by the Water Authority under the CCID/ASN No. mentioned above. The supervision and inspection are carried out at the date and time as detailed in this record form.

_____ _____
Signature of LP Date

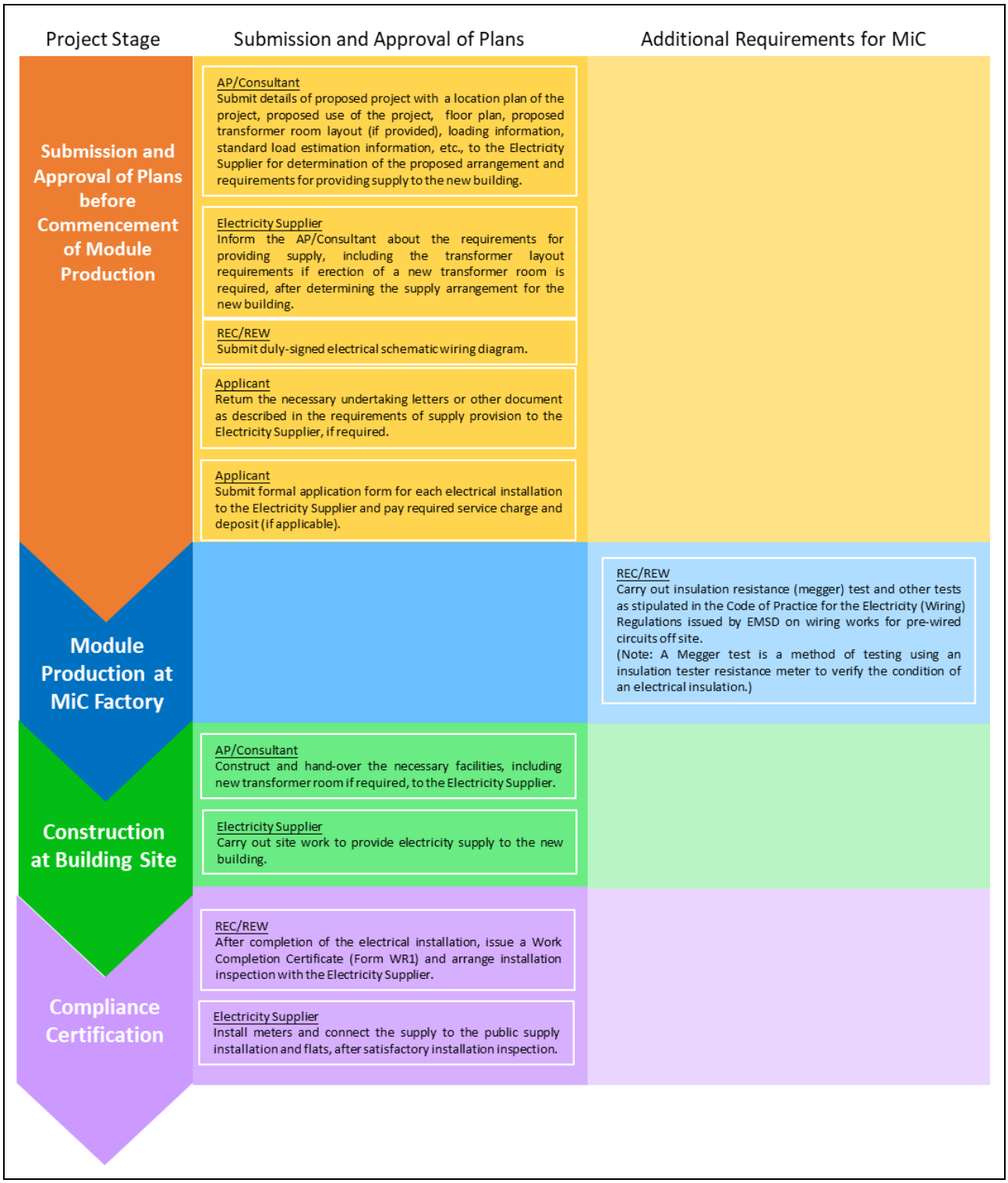
Note: This form is taken from Appendix 26 of the Guide to Application for Water Supply (December 2021 version) (WSD, 2021)

APPENDIX E1 – INFORMATION NOTE ON ELECTRICITY SUPPLY APPLICATION

To apply for electricity supply, apart from complying with the staturory requirements of the Electricity Ordinance (Cap. 406), the AP/Consultant should submit directly to the electricity supplier relevant information about the proposed development, including a location plan of the project, proposed use of the project, floor plan, proposed transformer room (if required)/customer's switch room location, loading information, standard load estimation information, etc., as shown in the workflow in Appendix E2. The electricity suppliers in Hong Kong are CLP Power Hong Kong Limited and The Hongkong Electric Company Limited. The electricity supplier will determine the proposed supply and inform the AP/Consultant about the requirements and arrangement for providing electricity supply, including transformer room layout requirements (if a transformer room is required) /requirements for the customer's switch room. The REC/REW will then submit a duly-signed electrical schematic wiring diagram. The applicant will return the necessary undertaking letters or other documents to the electricity supplier, as described in the requirements for provision of supply.

The applicant should submit an application form for each electrical installation to the electricity supplier and pay the required service charge and deposit (if applicable). Upon completion of the construction, the AP/Consultant/REC/REW should hand over the necessary facilities, including a new transformer room if required, to the electricity supplier. The electricity supplier will then carry out site work to provide electricity supply to the new building.

APPENDIX E2 - WORKFLOW FOR SUBMISSION AND APPROVAL OF PLANS TO ELECTRICITY SUPPLIER AND ADDITIONAL REQUIREMENTS FOR MIC



APPENDIX F1 – A GUIDANCE NOTE ON TRAFFIC IMPACT ASSESSMENT FOR MIC PROJECTS

1. Requirements for Traffic Impact Assessment

In the delivery of modules wider than 2.5 m for MiC projects, a Wide Load Permit (WLP) is needed for vehicles carrying the load from the TD's Licensing Office, in accordance with Regulation 54 of the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374E).

In the WLP application, supporting information, including a Traffic Impact Assessment (TIA), for submission to the relevant Traffic Engineering Division/Regional Office of TD and the Road Management Office (RMO)/Hong Kong Police Force (HKPF) is needed, in particular for the case of load width exceeding 3 m, to demonstrate the practicability of the delivery proposal and time of delivery and its impact on road and junction traffic. Reference should be made to the requirements given in the Guidelines on Application for Long/Wide Load Permit published by TD for preparing the TIA for MiC projects.

2. Objective

The objective of carrying out the TIA is to:

(a) assess the traffic implications of delivering the MiC modules along a given route from the loading point/port/boundary control point to the building site in each hour for the proposed delivery time period of the day, including entry and exit of the trailers to and from the site to facilitate smooth delivery of the modules;

(b) based on the data obtained and the analysis carried out, establish that the proposed delivery time period is feasible with due consideration given to other regulatory constraints encountered such as noise[61] and any physical constraints along the route; and

(c) devise appropriate traffic improvement/diversion schemes along the route/at junctions and at the building site, as necessary, to ameliorate the traffic impacts to demonstrate that the selected hours of delivery are practical after the proposed traffic improvement/diversion schemes are in place.

3. Contents of Traffic Impact Assessment

3.1 Extent of Study Area

The proposed route covering the roads and junctions should be indicated. Roads and junctions which are identified as key roads/key junctions should be specified. Roads connecting to the key roads and adjacent junctions may need to be assessed, if they have an impact on the traffic in the delivery of the modules.

[61] The other regulatory constraint that needs to be considered is noise. When construction works, including transportation of modules, are carried out within the restricted hours under the Noise Control Ordinance (NCO) (Cap. 400), a valid Construction Noise Permit (CNP) issued by EPD is needed. A CNP will only be issued if it can be shown with strong justifications that the works can only be carried out within the restricted hours. A good noise management plan is also needed to support the application. Restricted hours are 7:00 pm to 7:00 am or at any time on a general holiday (including Sunday).

3.2 Street Inventory along the Route

Street name, number of lanes, lane widths, direction of traffic flows, road markings, traffic aids, geometric and characteristics at critical intersections, existing site access points, etc. should be included. On-site measurements of the physical dimensions of the roads along the route at critical points (e.g. junction width, headroom, sightline, etc.) may need to be carried out.

3.3 Existing Traffic Conditions

Traffic counts should be carried out. Traffic data along the key roads/at key junctions in each hour for the proposed delivery time period (± 2 hours) of the day should be collected. Traffic data over a few days are needed to obtain representative data, and at weekends if the delivery of modules is planned for during weekends. The signal phasing and timing at signal-controlled junctions and the public transport services affected should be included. Pedestrian count is also required if existing pedestrian facilities are affected.

3.4 Forecast Traffic Conditions

A forecast of the traffic conditions due to delivery of modules along the key roads/at key junctions (in pcu/hr)[62] for the proposed delivery time period (± 2 hours) of the day should be made, taking into account size of the modules delivered, type of vehicles/ trailers used (length, no. of axles, flatbed/low bed, etc.), escort arrangement, number of deliveries per day/night/week, road routes to be taken from the loading point/ port/ boundary control point to the building site, start date and end date of the land transport, etc.

3.5 Analysis of Traffic Impacts Due to Delivery of Modules

3.5.1 Link Capacity Analysis

(a) Design flow to capacity. The design flow of a link is the maximum volume of vehicles using the road with a traffic density that will not give unreasonable delay, hazard or restriction to the drivers the freedom to manoeuver. The design flows for two way urban roads of different road types can be found in Section 2.4 of the Traffic Planning & Design Manual (TPDM) Vol. 2 (TD, 2020). The design flow of a road will be reduced if the proportion of heavy vehicles/vehicles carrying modules wider than 2.5 m using the road exceeds 15%.

(b) V/C (volume of vehicles/capacity or volume/capacity) ratio. The V/C ratio is used to reflect the traffic situation along a road. For existing traffic conditions, the volume of vehicles using the road is based on the traffic count data. For traffic conditions with module delivery, the forecast traffic flow data is used. A V/C ratio equal to or less than 1.0 means that the road has sufficient capacity to cope with the anticipated traffic volume. A V/C ratio between 1.0 and 1.2 indicates a manageable degree of congestion along the road. *A V/C ratio above 1.2 indicates a more serious congestion along the road.*

(c) Presentation method. The link capacity of the key roads along a route for existing traffic conditions and forecast traffic conditions with module delivery during the selected hours

[62] Passenger car unit/hour (pcu/hr) is a unit for measuring traffic flow in equivalent number of private cars as design basis. For example, a pcu value of 1.0 is assigned to private cars and taxis. Heavy vehicles such as goods vehicles or buses or vehicles carrying a load wider than 2.5 m which usually travel at a lower speed are assigned higher pcu values.

of delivery should be assessed. A summary of the findings for the hour with the heaviest traffic flow that should be presented is as given in Table 1. As shown in the table, the potential problematic link is Link L29. Link L29 has a V/C ratio of 1.16 for the hour of delivery with the heaviest traffic flow. This implies that there will be congestion along Link 29 for the hour of delivery examined but the congestion is manageable.

Table 1 - Link Capacity Analysis

Link Index	Road Name (Example)	Direction	Capacity (pcu/hr)	Existing Traffic Conditions		Forecast Traffic Conditions with Module Delivery	
				Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
L1	Lung Cheung Rd between Kwun Ton Rd and Clear Water Bay Rd	N/B	6400	2088	0.33	2456	0.38
L29	New Clear Water Bay Rd near Shun Lee Tsuen Rd	W/B	1800	1315	0.73	2081	1.16
Note:	The flow is for the hour with the heaviest traffic flow as obtained from the traffic count.						
Legend:	pcu/hr = passenger car unit/hr						

3.5.2 Junction Capacity Analysis

(a) Junction types. There are three types of junctions: signal-controlled junctions[63], priority junctions[64] and roundabouts[65].

(b) Reserve Capacity (RC) (in %). For signal-controlled junctions, RC is used to evaluate the capacity of these junctions. The method of calculation can be found in Section 2.4 of TPDM Vol. 4. A positive RC figure indicates that the junction is operating with spare capacity, and *a negative RC figure indicates that the junction is overloaded*, resulting in traffic queues and longer travelling time.

(c) Design Flow to Capacity (DFC) ratio. For priority junctions and roundabouts, the DFC ratio is used to evaluate the capacity of these junctions. The DFC ratio compares the design flow to capacity of the junctions. The methods of calculation of the design flow and capacity can be found in Section 4.2.4, and Appendices 1 and 2 of TPDM Vol. 2 respectively. A DFC ratio of 0.85 indicates the junction has a reasonable capacity which would prevent queueing in the majority (85%) of cases. A DFC ratio of 0.7 indicates that queueing would theoretically be avoided in nearly all (95%) of cases at the junction. *A DFC ratio greater than 1.0 indicates that the junction is overloaded.*

(d) Presentation method. The capacity of the key junctions along the route for existing traffic conditions and forecast traffic conditions with module delivery during the selected hours of delivery should be assessed. A summary of the findings for the hour with the heaviest traffic flow that should be presented is as given in Table 2. As shown in the table, the potential problematic junctions are Junctions 11 and 21. Junction 11

[63] Signal-controlled junctions operate on a time sharing basis. Traffic streams are allowed to enter the junction for a period of time, indicated by an illuminated signals, and during which period conflicting traffic streams are halted.
[64] Priority junctions operate on the basis that traffic on the major road has continual priority over the traffic on the minor road. Minor road traffic is controlled by "stop" and "give way" signs and associated carriageway marking.
[65] Roundabouts could be considered as a form of channelized priority junction. Vehicles enter a one way carriageway and move in a clockwise direction around a central island. Entering vehicles give priority to those vehicles already circulating across their entry.

has a DFC ratio greater than 1 for the hour of delivery with the heaviest traffic flow. For Junction 21, RC is negative for the hour of delivery with the heaviest traffic flow. This implies that Junctions 11 and 21 will be overloaded.

Table 2 - Junction Capacity Analysis

No.	Junction (Example)	Analysis Type	Existing Traffic Conditions	Forecast Traffic Conditions With Module Delivery
1	New Clear Water Bay Rd/ Clear Water Bay Rd (Upper)	RC	39%	21%
11	Kwun Tong Rd/ Hip Wo St	DFC	0.84	1.2
21	Lin Tak Rd/ Tseung Kwan O Rd/ Sau Mau Ping Rd	RC	5%	-3%
Note:	The flow is for the hour with the heaviest traffic flow as obtained from the traffic count.			

3.6 Traffic Improvement/Diversion Schemes (or Temporary Traffic Management Schemes)

Recommendation of traffic improvement/diversion schemes to improve traffic flows along the key roads/at key junctions concerned to ameliorate the traffic impacts to facilitate module delivery during the selected hours of delivery, as necessary, should be made. The following schemes, among others, can be considered:

(a) temporary road/lane closure;
(b) provision of temporary loading bay, contingency parking place, etc.
(c) increased signal cycle time;
(d) localized road widening works;
(e) conversion of a kerbside lane to left-turn lane;
(f) provision of a new slip road to enhance traffic capacity;
(g) provision of new passing lane and bus laybys;
(h) provision of a new U-turn facility to enhance traffic movement;
(i) provision of a second gantry at the building site;
(j) widening of the gantry to say 7.5 m at the building site, etc.

3.7 Capacity Assessment with Traffic Improvement/Diversion Schemes

3.7.1 Implementation of Traffic Improvement/Diversion Schemes

By implementing the proposed traffic improvement/diversion schemes, the identified problematic traffic links and junctions with potential capacity problems induced by the module delivery during the selected hours of delivery can be suitably alleviated.

3.7.2 Presentation Method

The results of the revised link and junction capacity analysis with the traffic improvement/diversion schemes implemented should be provided to justify the findings. A summary of the findings that should be presented is as given in Tables 3 and 4. With the traffic improvement/diversion schemes, *the V/C ratio for the potential problematic Link L29 becomes 0.94* for the hour of delivery with the heaviest traffic flow, which means that the road has sufficient capacity. *The DFC ratio for Junction 11 becomes 0.95, and RC for Junction 21 becomes positive*, which means that both junctions can now operate with spare capacity for the hour of delivery examined.

Table 3 - Link Operation Performance with Traffic Improvement/Diversion Schemes (with findings of Road Link Capacity Analysis included)

Link Index	Road Name (Example)	Direction	Capacity (pcu/hr)	Existing Traffic Conditions		Forecast Traffic Conditions with Module Delivery	
				Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
L29	New Clear Water Bay Rd near Shun Lee Tsuen Rd	W/B	1800	1315	0.73	1700	0.94
Note:	The flow is for the hour with the heaviest traffic flow as obtained from the traffic count.						
Legend:	pcu/hr = passenger car unit/hr						

Table 4 - Junction Operation Performance with Traffic Improvement/Diversion Schemes (with findings of Junction Capacity Analysis included)

No.	Junction (Example)	Analysis Type	Existing Traffic Conditions	Forecast Traffic Conditions With Module Delivery
11	Kwun Tong Rd/ Hip Wo St	DFC	0.84	0.95
21	Lin Tak Rd/ Tseung Kwan O Rd/ Sau Mau Ping Rd	RC	5%	2%
Note:	The flow is for the hour with the heaviest traffic flow as obtained from the traffic count.			

3.8 Other Analyses

Based on the details given in the above sections, swept path analyses supported by drawings to demonstrate the maneuverability of the vehicles at critical road sections such as narrow road segments, sharp bends, junctions, vehicular ingress and egress to destination/site, etc., should be carried out. A contingency plan to handle emergency situations, including the rescue arrangement for breakdown of transportation vehicle, evacuation proposal when the delivery route is being blocked by other vehicles, and procedures for reporting incidents to relevant personnel, etc., should be included as appropriate.

3.9 Conclusions and Recommendations

This section should be provided in the TIA Report to cover the following:

(a) summary of existing traffic conditions and forecast traffic conditions with module delivery for the hours of delivery examined;
(b) recommendations of traffic improvement/diversion schemes to facilitate module delivery during the selected hours of delivery;
(c) summary of forecast traffic conditions with module delivery with the recommended traffic improvement/diversion schemes in place;
(d) summary of findings from the swept path analysis and details of the contingency plan;
(e) recommendation for other measures such as trial run before implementation of the delivery, need for escort vehicles, etc.
(f) recommendation for consultation, as necessary, etc.

APPENDIX F2 – SOME COMMONLY ASKED QUESTIONS ON TRANSPORT OF MIC MODULES INVOLVING WIDE LOAD PERMIT APPLICATION

Q1. Under what circumstances will a Wide Load Permit be needed?

A1. In accordance with Regulation 55 of the Road Traffic (Traffic Control) Regulations (Cap. 374G), no driver shall drive on a road a vehicle with its load extending sideways so that the total width of the load is in excess of 2.5 m unless the vehicle is issued with a Wide Load Permit (WLP) under the Road Traffic (Registration and Licensing of Vehicles) Regulations (Cap. 374 E). As such, obtaining a valid WLP is a statutory requirement for delivering a load of width exceeding 2.5 m. The typical submission requirements for a WLP application are stated in the Guidelines on Application for Long/Wide Load Permit published by the Transport Department (TD)[66] in July 2022.

The WLP application can be made through the Licensing Office/TD, and for general enquiry on transportation of MiC modules, the client/traffic consultant may approach the Road Safety and Standards Division/TD. The client/traffic consultant may also liaise with the relevant Traffic Engineering (TE) Division/TD on the details and particular requirements for the supporting materials on the WLP application.

Q2. What is the procedure involved in the Wide Load Permit application for transport of MiC modules wider than 2.5 m?

A2. Road users will need to apply for a WLP when they drive a vehicle with a load wider than 2.5 m. The WLP can be applied through the Licensing Office of TD. There are two ways to deal with the transport of a MiC module wider than 2.5 m for MiC projects. The main difference is the time frame in conducting the traffic study for the project, as follows:

(a) Traffic study at project planning stage/design stage. In this case, the client/consultant will need to engage a traffic consultant at the project planning/design stage to carry out a feasibility study to assess and establish whether there is any route for transporting the MiC modules from the MiC factory to the project site, taking into account the ports and marine unloading points for marine transport, road conditions and constraints for road transport, time period and frequency, and the need for traffic impact assessments at different stages of the project, etc. The assessment of the traffic impact on the proposed delivery routes should be carried out in consultation with the relevant TE Division/TD and the Road Management Office (RMO)/ Hong Kong Police Force (HKPF).

In-principle approval of the proposed routes, and the conditions to be imposed on the use of the routes/ vehicles, will be given in not less than 3 months by TD. The approved routes and conditions, such as delivery logistics for the modules, constraints to be imposed on the module width, height and length, time period and frequency, etc., can be included in the conditions of tender for reference by tenderers during the tendering process. This will give confirmation to the tenderers on the feasibility of adoption of MiC in the project, reduce risks and uncertainties to the project, and save cost and time.

66 https://www.td.gov.hk/filemanager/en/publication/guidelines%20on%20application%20for%20long_wide%20load%20permit_jul%202022%20version.pdf

The contractor, after the contract has been awarded, should liaise with a logistics company to apply for the WLP for the vehicles involved in the delivery based on the proposed routes and conditions given in the in-principle approval. The Licensing Office of TD will inform the applicant of the application result in writing within 25 working days upon receipt of the duly completed application and all the required documents.

The above project arrangement, as shown in Annex A, is strongly recommended for MiC projects.

(b) Traffic study at project construction stage. In this case, the contractor will need to engage a traffic consultant to assess the feasibility of transporting the modules to the project site only after the contract has been awarded. The traffic consultant should touch base/ make contact with the relevant TE Division of TD on the details/ types/ depth of analysis in the traffic study. It should be noted that this submission process will take not less than 3 months, in the same way given in A2(a) above. The submissions can be made to RMO for parallel assessment. After the queries in respect of the submissions have been resolved and the submissions have been agreed, the contractor should then engage a logistics company to apply for the WLP through the Licensing Office of TD. The Licensing Office of TD will inform the applicant of the application result in writing within 25 working days upon receipt of the duly completed application and all the required documents.

Q3. How many WLPs have been issued?

A3. The number of WLPs issued as of 31.3.2023 is given in Annex B.

Q4. The WLP application will be made through the Licensing Office of TD, together with the necessary reports and documents. Can the reports and documents be submitted to the relevant TE Divisions and RMO for parallel assessment?

A4. See A2(b) above. The traffic consultant responsible for the project is recommended to submit the assessment reports and documents to the relevant TE Divisions and RMO for parallel assessment. After the queries in respect of the submissions have been resolved and the submissions have been agreed, the contractor should then engage a logistics company to apply for the WLP through the Licensing Office.

Q5. What supporting information is needed to support the WLP application, in particular for the transport of MiC modules up to 3 m?

A5. The general requirements for delivery of wide load are given in the table in Annex C. According to the Guidelines on Application for Long/Wide Load Permit published by TD, supporting information including Swept Path Analysis (SPA), Traffic Impact Assessment (TIA), Temporary Traffic Management (TTM) scheme (or traffic improvement/diversion scheme) and Contingency Plan (CP) is needed for the transport of MiC modules up to 3 m, in particular.

Q6. In a TIA, what are the aspects which need to be considered and what are the acceptance criteria that TD adopts to accept the hours of delivery of MiC modules proposed in the TIA?

A6. Each TIA will be assessed on a case-by-case basis. The aspects that need to be considered in the TIA are: existing traffic conditions, forecast traffic conditions with module delivery, results of the analysis of traffic impacts due to delivery of modules, proposed TTM schemes

(or traffic improvement/diversion schemes) to improve traffic flow, swept path analysis at critical locations, contingency plan for emergency/incidents, etc. TD will consider the assumptions made in the analysis, justifications provided, functionality/ practicality/ effectiveness of the proposed traffic improvement/diversion schemes to ameliorate the traffic impacts, etc., in deciding to accept or not the proposed hours of delivery of the modules. A Guidance Note on TIA for MiC projects is given in Appendix F1.

Q7. Under what condition will a TTM scheme be needed? Will traffic police be needed in the operation of a TTM scheme? If so, under what condition would it be needed? What is the response time to a submission for a TTM scheme?

A7. A TTM scheme may be needed for narrow road segments, sharp bends, junctions, vehicular ingress and egress to destinations, etc., specific to the project, which should be highlighted in the TIA. Traffic police will only be needed on a case-by-case basis to assist and supervise the setup of a TTM scheme for operation. RMO will be able to provide comment on the submitted TTM scheme within 2 to 3 weeks depending on the complexity of the proposal.

Q8. The condition of police escort in the delivery of MiC modules may be imposed. Under what condition will this condition be imposed?

A8. Self-arranged escort is the practice recommended by the police. According to Condition No. 6 given in Form TD 290 (for WLP application), escort vehicles to the front and rear of the load-carrying vehicle are required. An escort vehicle shall be equipped with an amber flashing light in accordance with Regulation 111 of the Road Traffic (Construction and Maintenance of Vehicles) Regulations (Cap. 374A), and shall display in a prominent position, either at the front, rear or on the roof of the vehicle (but such that the flashing light is not obscured), with a sign conforming with diagram "A" or "B" shown in Form TD 290 as appropriate. On the leading escort vehicle, the sign shall be displayed to the front so as to face oncoming vehicles, and on the trailing escort vehicle, the sign shall be displayed to the rear to face the following vehicles. When mounted on the roof of an escort vehicle, signs may be double-sided.

There are however situations where police escort may be needed, for example, when the delivery crashes with a VIP convoy on the day, there is an accident along the route, etc. Under the above-mentioned special situations, there is no charge for the police escort provided. It is recommended that adequate securing, safety and delivery support measures are provided for delivery of MiC modules and implementation of the TTM schemes, if necessary.

Q9. Cross region deliveries are common in the delivery of MiC modules. A few TE Divisions/ Sections will be involved. Is there a one-stop shop service in TD for cross region deliveries? Who are the contact persons in TD in this case? Also, is there a one-stop shop service in RMO for cross region boundaries? Who are the contact persons in this case?

A9. Contacts of the TE Divisions and RMOs are given in Tables 7.1 and and 7.2 respectively in Chapter 7. The RMOs will co-ordinate among themselves when cross region deliveries are involved. When necessary, the Traffic Branch HQs/HKPF will provide the one-stop service for cross region deliveries. No one-stop shop service is provided by TD.

Q10. **What are the details required for seeking approval for use of the Eastern Harbour Crossing (EHC)/Western Harbour Crossing (WHC) in transporting the modules wider than 2.5 m?**

A10. According to Condition No. 9 given in Form TD 290 (for WLP application), the applicant is required to seek approval from the relevant authority prior to carrying the load in any area or private road of which the management authority or owner may restrict the access of the vehicle. The applicant is required to approach directly the authority of the EHC/WHC for approval of transporting the modules across the tunnel. The application requirements are: application letter, vehicle/ trailer registration details, WLP of the vehicle and 3rd party insurance of the vehicle/ trailer. The following steps are involved:

EHC

(a) applicant to send the application together with the necessary papers to the operator of the EHC for approval, including the proposed date and time of crossing the tunnel (a confirmation letter will be issued by the operator of the EHC);

(b) applicant to arrange the vehicle to arrive at the EHC Control Area at the time specified (MUST);

(c) vehicle driver to pay the handling fee to the operator of the EHC by cash; and

(d) vehicle driver to drive the vehicle under arrangement by the EHC Tunnel Control Team.

WHC

(a) applicant to fax the application letter together with the necessary document to the operator of the WHC **at least 48 hours** before the proposed passage for approval, including the following details:

  (i) proposed date, time and direction of crossing the tunnel;
  (ii) company name, contact person, tel. no.;
  (iii) nos. of vehicles/trailers, vehicle registration no./serial no.;
  (iv) description of special vehicles/trailers and loads; and
  (v) copies of vehicle/trailer registration document; motor vehicle licence; motor vehicle certificate of insurance; WLP; photo or sketch of the load.

(b) the operator of the WHC to confirm the applicant by phone;

(c) applicant to arrange the vehicle to arrive at the WHC Control Area at the time and location specified (MUST);

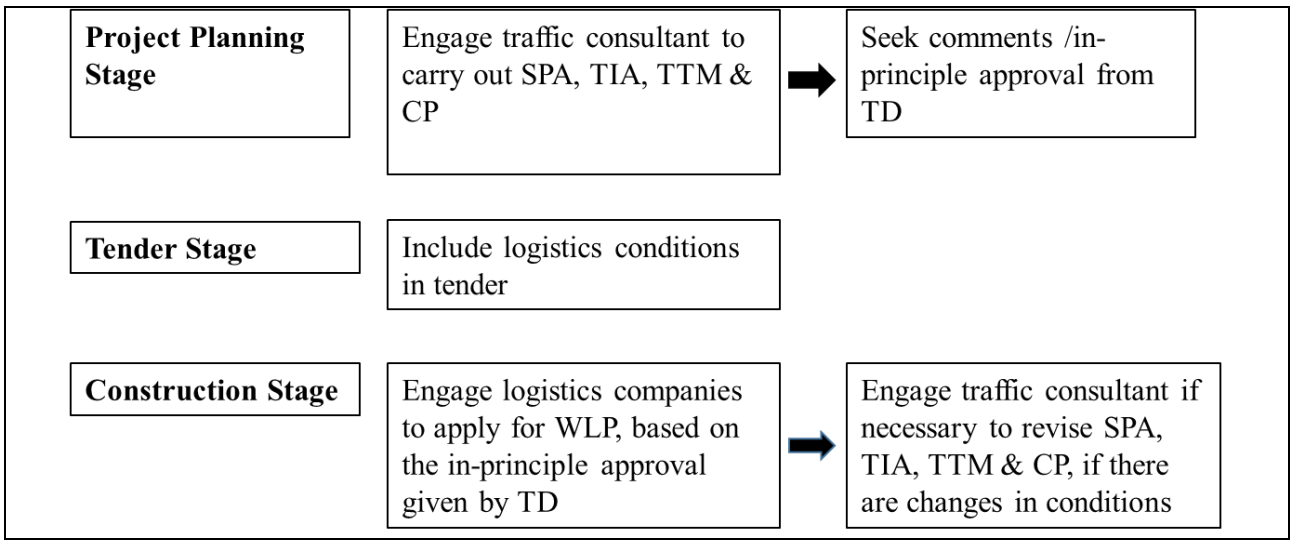
(d) vehicle driver to pay the handling fee to the operator of the WHC by cash; and

(e) vehicle driver to drive the vehicle under arrangement by the WHC Tunnel Control Team.

Contact details of the operators of the EHC/WHC are given in Annex D. Similar application procedures apply to other tunnels, and the contacts of their operators and be found in the TD's website[67].

[67] https://www.td.gov.hk/en/transport_in_hong_kong/tunnels_and_bridges/index.html and https://www.td.gov.hk/filemanager/en/content_5010/contact_tunnels_control_areas_operators_revised_20230120_eng.pdf

Annex A – Suggested Project Arrangement for MiC Projects



Annex B – No. of WLPs Issued (as of 31.3.2023)

In Terms of	Type	No. of WLPs Issued in						No. of Valid WLPs (as of 31.3.2023)
		2018	2019	2020	2021	2022	2023 (up to 31.3.23)	
Type of Vehicle	Medium goods vehicle	438	525	683	677	694	152	580
	Heavy goods vehicle	234	250	291	318	348	83	294
Registered Owner	Individual		100	135	144	157	27	110
	Business		675	839	851	885	208	764

Annex C – General Requirements for Delivery of Wide Load in Hong Kong

	Routine	Case by Case	Case by Case
	Overall Width ≤2.5m	2.5m<Overall Width≤3m	Overall>3m
WLP Required	No	Yes	Yes
TIA, TTM, SPA & CP Required	No	Yes	Yes (with more careful consideration of the traffic implications and proposal of more sophisticated TTM schemes)
Time of Delivery	No time restriction	The permitted hours of delivery will depend on the selected route, traffic flows, road conditions, etc., and the results of the TIA acceptable to TD	
Self-arranged Escort (Notes 1 and 2)	No	Yes	
Police Escort (Note 1)	No	No	

Notes:

1. Self-arranged escort is the practice recommended by the police. There are however situations where police escort may be needed, for example, when the delivery crashes with a VIP convoy on the day, there is an accident along the route, etc. Under the above-mentioned special situations, there is no charge for the police escort provided.
2. Reference can be made to Section 5.9 of the CoP for the Loading of Vehicles (TD, 2019) on the duties of escort vehicles.

Annex D – Contacts of the Operators of Eastern Harbour Crossing and Western Harbour Crossing

Tunnel	Operator	Telephone	Fax Number
Eastern Harbour Crossing (EHC)	Pacific Infrastructure Ltd.	2379 2358/ 2348 0011	2347 5037
Western Harbour Crossing (WHC)	Western Harbour Tunnel Co. Ltd.	2302 5760/ 2302 5888	2781 1729

CONSTRUCTION INDUSTRY COUNCIL
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Thank you for reading this publication. To help us improve our future versions, we would appreciate your suggestions/feedback on the publication.

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	❑	❑	❑
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	❑	❑	❑

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	❑	❑	❑	❑	❑

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