# Construction Site Environmental Manual for Public Works

# ELECTRICAL & MECHANICAL

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#### **About the Manual**

The Hong Kong Construction Association (HKCA) has published a series of environmental publications over the years in response to industry trends and information of interest to the industry. These publications include:

- Best Practice Guide for Environmental Protection on Construction Sites
- Practical Guide for Carbon Reduction at Construction Sites Temporary Works
- Construction Innovative Environmental Practices
- Environmental Toolbox Training Kit

In order to unite these materials as a useful and practical guide to help the industry to deliver construction projects in a more environmentally friendly way, HKCA has commissioned AECOM Asia Co., Ltd. to compile the "Construction Site Environment Manual" (the Manual) to meet our expectations.

The Manual serves a practical guide for the construction industry to manage key areas of environmental protection at different types of public works sites, such as

- Civil
- Building
- Foundation
- Alteration & Additions/Demolition
- Electrical & Mechanical

The Manual provides construction personnel with good practice suggestions and a framework for managing environmental issues at all stages of construction, from contract award to completion of the project defect liability period.

#### Acknowledgements

The preparation of the Manual has been placed under the stewardship of HKCA Environmental Committee.

The HKCA Environmental Committee would like to record our acknowledgements and thanks to the following Construction Site Environmental Manual Task Group Members:

- Stephen Yim
- Eddie Tse
- Ben Ho
- Tony Yam
- Brian Kam

#### Preface

The Hong Kong Construction Association (HKCA) have always been committed to the goal of sustainable construction. We, the Environmental Committee of HKCA, have been looking at the environmental challenges facing our industry and how HKCA members can work together to develop practical solutions to address a wide range of environmental issues and concerns.

To help the industry deliver construction projects in a greener way, we commissioned AECOM Asia Co., Ltd. to develop this "Construction Site Environment Manual" (the Manual). We take into account that target users of the Manual will be from different stakeholders in the construction industry, such as government authorities, developers, designers, architects, engineers, contractors and subcontractors. The Manual provides them with a framework for managing environmental issues in all stages of construction, from contract award to completion of the project's defect liability period.

The Manual provides practical guidance for the construction industry to manage key areas of environmental protection at different types of public works sites. It also gives an analysis of local statutory provisions and contractual requirements and links environmental management responsibilities with the organizational requirements under the Development Bureau's Technical Circular (Works) No. 19/2005 for the provision of onsite environmental personnel and their training needs.

Lastly, but by no means least, we would like to thank the Environmental Protection Department for their wholehearted support and expert advice on both the genesis and the particulars of the Manual. We shall jointly together with all our many friends across the construction industry strike to continuous improvement on environmental performance on construction sites all over Hong Kong.

**HKCA Environmental Committee** 

October 2022

Application of Environmental related Licence / Permit

# Application for an Environmental Permit under the EIA Ordinance (Cap. 499)

Under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), a person who wishes to have constructed, construct, or operate a **designated project** listed in Part I of Schedule 2 or to decommission a designated project listed in Part II of Schedule 2 should submit an application of an **environmental permit** in the prescribed form to the Director and pay the prescribed fee.

Based on the changes of construction, Application of Further Environmental Permit and Variation of an Environmental Permit should also be considered by Permit Holder or Contractor. Relevant information can be found in the following website:

https://www.epd.gov.hk/eia/english/guid/ordinance/guide7\_4-8.html

The processing time required for application of environmental permits is summarised below:

# Application under EIAO Statutory Time Limit (days)\*

Environmental Permit	30
Further Environmental Permit	30
Variation of an Environmental Permit	30

The information is also available online at:

https://www.epd.gov.hk/eia/operation/english/appendix11\_5.html

\*Only counts on the Authority's response time but excluding the time for preparing supporting documents (e.g. Env Review Report, if required) for the application.

#### Construction Noise Permit

Noise Control Ordinance (Cap. 400) provides statutory control to restrict and reduce specific sources of environmental noise. The Contractor should apply the Construction Noise Permit for:

- Undertaking the construction works during the **restricted hour** that is between 7p.m. and 7a.m. or at any time on a general holiday (including Sunday).
- During the restricted hours in **Designated Areas**, the use of **specified powered** mechanical equipment (for example, hand-held breakers and dump truck) and/
   or the carrying out of the prescribed construction activities (for example, erection
   or dismantling of formwork and hammering) is subject to more stringent control.
- The carrying out of percussive piling is prohibited between 7 p.m. and 7 a.m. and on general holiday (including Sunday). A valid Construction Noise Permit issued by the Environmental Protection Department is required for the carrying out of percussive piling during the permitted hours. The permitted hours generally fall into the period of 7 a.m. to 7 p.m. on weekdays not being on a general holiday (including Sunday).

The requirements and procedure for application of permit for Construction Noise Permit can be found in the following link:

https://www.epd.gov.hk/epd/english/application for licences/guidance/application maincontent36.html

It is a statutory requirement for the Authority to notify applicants of the outcome of the applications within 28 days after receipt of the applications. However, EPD aims to complete processing the applications within 14 days.

[Remarks: In general, only CNP applications of good quality meeting all criteria of relevant check-list(s) may be processed within 14 days. However, for complicated case necessitating assessments involving a few projects or insufficient information provided by the applicant, the processing time would take longer or leading to the refusal of issuing a CNP.]

The information regarding the timeframe for EPD to response to the CNP applicant after receiving the CNP application is extracted online from:

https://www.epd.gov.hk/epd/english/application for licences/guidance/cnp.html

# Licence under the Water Pollution Control Ordinance (Cap. 358)

The Water Pollution Control Ordinance (WPCO) (Cap.358) provides for declaration of Water Control Zones (WCZs) to cover the whole of Hong Kong. Discharge of all effluents except domestic sewage into **communal sewers** and **unpolluted water** into stormwater drains, river courses and water bodies are subject to control under WPCO and should be covered by a licence which specifies the requirements of the effluent discharge.

The requirements and procedure for application of Wastewater Discharge Licence can be found in the following link:

https://www.epd.gov.hk/epd/english/application for licences/guidance/aw 331.html

The applicants should check that all essential supporting information (such as copies of Business Registration Certificate, estimation of discharge flow rate, location of the discharge points, etc) to be submitted along their application. The applicants are advised to plan ahead their applications and reserve sufficient time for application processing and settling of payment. The Authority may carry out site inspection to verify the set-up of Contractor's wastewater treatment facilities and request the Contractor to provide supplementary information. In addition, applications for making a discharge into the waters of Hong Kong requires the applicant to publish a notice to publicly notify the application in an English and a Chinese newspaper, at his own expense. The only exceptions are:

- the application for a licence to discharge domestic sewage from a separate household; and
- the application for renewal of a licence in respect of a discharge from the applicant's establishment that consumes 10 cubic meters or less of water a day and the rate of flow of the discharge applied for is not greater than that.

https://www.epd.gov.hk/epd/english/environmentinhk/water/guide ref/guide wpc wpco 4.html

The application form for the licence can be found in the EPD website (EPD117 Form A - Application for a licence / Application for renewal /variation of a licence ):

https://www.epd.gov.hk/epd/english/application for licences/applic froms/forms.html

Approval to be obtained under the Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations (Cap. 311A)

Under the Air Pollution Control (Furnaces, Ovens and Chimneys)(Installation and Alteration) Regulations (Cap. 311A), any person who wishes to install, alter or modify any furnace or chimney exceeding a certain fuel consumption needs to submit an Application for Approval of Installation/Alteration of Furnace/Oven/Chimney to EPD to get prior approval. The Contractor should review and strictly follow the requirements listed in the Notes to Applicants of the application form the Contractor should note that all plans, drawings, block plan, diagrams or specifications submitted with or in relation to the application should be provided and prepared by a qualified engineer or an authorized person and in appropriate scale.

The Contractor must submit plans to the Authority for approval not less than 28 days prior to the commencement of work. The Authority may refuse to grant approval if the Authority is not satisfied that the furnace, oven or chimney can be operated without:

- a. causing or contributing to the existence or imminence of air pollution; or
- b. emitting air pollutant due to improper design, maintenance, or operation.

The timeframe for the whole application process varies, depending on the quality and whether all the required information is submitted on time, EPD aims to complete processing the application within 16 days for responding/issuing approval on the specifications and plans for installation or alteration of furnaces or chimneys. However, the Contractor should be aware that if additional information is requested by the authority or if there are comments to be addressed by the Contractor, the whole application process could take longer.

# Application Forms for Environmental Related Licence of Permit

All application forms can be found in the following website: https://www.epd.gov.hk/epd/english/application\_for\_licences/applic\_froms/forms.html

For more information on the timeframe for the application of licence and permit, please use the below hyperlink to access:

https://www.epd.gov.hk/epd/english/about\_epd/perf\_pledge/perf\_pledge.html

Environmental related Registration

## Air Pollution Control (Construction Dust) Regulation (Cap. 311R)

According to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation (Cap.311R), the contractor responsible for a construction site where any **notifiable work** is proposed to be carried out should give notice to the Authority of the proposal to carry out the work.

Under the regulation, notifiable work includes:

- a. site formation;
- b. reclamation;
- c. demolition of a building;
- d. work carried out in any part of a tunnel that is within 100m of any exit to the open air:
- e. construction of the foundation of a building;
- f. construction of the superstructure of a building; or
- g. road construction work.

The related application (**Form NA**) can be found in the following website:

https://www.epd.gov.hk/epd/sites/default/files/epd/english/application\_for\_licences/applic\_froms/files/cdr-e-na.pdf

For giving notice to EPD of the proposal to carry out the **notifiable work**, the notification must be made before the proposed work is to be commenced. If there is any proposed change to the particulars of the submitted Form NA, the Contractor should notify Environmental Protection Department in **Form NB** before the proposed change takes effect.

The related application (Form NB) can be found in the following website:

https://www.epd.gov.hk/epd/sites/default/files/epd/english/application\_for\_licences/applic\_froms/files/cdr-e-nb.pdf

The application and notification process will be deemed successful and completed once Contractor obtained acknowledgement receipt from one of the EPD's Customer Service Counters.

# Billing Account for Construction Waste Disposal

Main contractor who undertakes construction work under a contract with value of \$1 million or above is required to open a **billing account** solely for the contract. Application should be made within 21 days after the contract is awarded. Failing this will be an offence under the law.

For construction work under a contract with value less than \$1 million, such as minor construction or renovation work, any person such as the owner of the premises where the construction work takes place or his/her contractor can open a billing account; the account can also be used for contracts each with value less than \$1 million. The premises owner concerned may also engage a contractor with a valid billing account to make arrangement for disposal of construction waste.

Relevant information of the application for the billing account and **Construction Waste Disposal Charging Scheme** (Charging Scheme) can be found in the following link:

<a href="https://www.epd.gov.hk/epd/misc/cdm/scheme.htm#c">https://www.epd.gov.hk/epd/misc/cdm/scheme.htm#c</a>

Once EPD received Contractor's application for opening a billing account, it will usually take 2-4 weeks to obtain the billing account number and **disposal CHITs**. The deposit for the disposal of construction waste generated from a contract with a value of \$1 million or above is charged at a minimum of \$15,000 for 200 chits. For issuance of more than 200 Chits, the deposit is \$75 per Chit. For a contract with a value of less than \$1 million or other general uses, a deposit of \$300 for each chit is required.

For intended disposal transportation of inert construction waste by vessels to the public fill bank **Vessel CHIT** application should be separately made to CEDD and c.c. to EPD.

The vessel CHIT application form can be downloaded by using the following hyperlink: <a href="https://www.cedd.gov.hk/filemanager/eng/content-640/form7.pdf">https://www.cedd.gov.hk/filemanager/eng/content-640/form7.pdf</a>

# Chemical Waste Producer Registration

The Waste Disposal (Chemical Waste) (General) Regulation (Cap.354C) controls all chemical waste from non-household sources, from the point of production to point of disposal. The controls are on chemical waste but NOT activities. All **chemical waste producers** are required to be registered with EPD, and to provide suitable packaging, proper labelling and storage of their chemical waste. Only **licenced waste collectors** should transport chemical waste and any disposal which includes treatment, re-processing and recycling of chemical wastes should be carried out at **licenced disposal facilities**. The requirements are summarised as follow:

- a. Production
- b. Packaging, Labelling, Storage\*
- c. Collection and Transportation#
- d. Disposal
  - \* For code of practice on setup of storage of chemical wastes on site, the Contractor should refer to EPD's Code of Practice on The Packaging, Labelling and Storage of Chemical waste which is available online at:

https://www.epd.gov.hk/epd/english/environmentinhk/waste/guide\_ref/guide\_cwc\_sub3.

# For the duties of Contractor as chemical waste producers under collection of chemical waste and the trip ticket system, please refer to section B.5 of EPD's publication - A Guide to The Chemical Waste Control Scheme which is available online at:

https://www.epd.gov.hk/epd/english/environmentinhk/waste/guide\_ref/guide\_cwc\_sub1.

Relevant information for the Chemical Waste Producer Registration can be found in following website:

https://www.epd.gov.hk/epd/english/application for licences/guidance/aw 341.html

EPD aims to complete the registration of chemical waste producers in 30 days after receiving completed application form with the required document.

# **Environmental Personnel**

#### **Environmental Officer**

The Contractor should assign a person as the **Environmental Officer** for overseeing all environmental matters of the Works. The minimum qualification of duties of the Environmental Officer are shown in Appendix C of the Environmental, Transport and Works Bureau Technical Circular (Works) No.19/2005

(https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/19/1/C-2005-19-0-1.pdf).

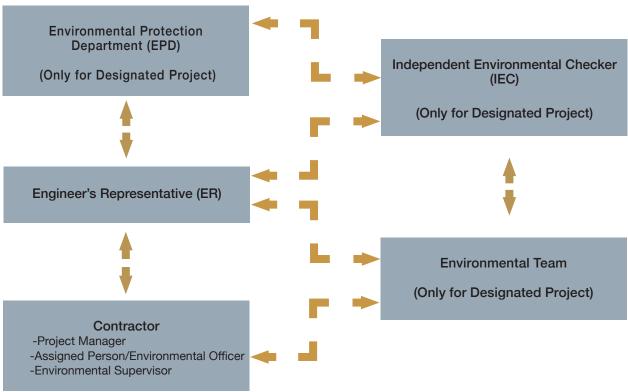
#### **Environmental Supervisor**

In addition, the Contractor should appoint at least one additional site staff as the **Environmental Supervisor** to assist the Environmental Officer for the inspection, supervision, and monitoring of the environmental performance of the Works.

Where the number of workers employed on the Works, whether in the employment of the Contractor or his sub-contractors, exceeds 50 in aggregate, the number of Environmental Supervisor shall be increased by one for every additional 50 persons or part thereof.

The requirements and the duties of the Environmental Supervisor are shown in Appendix C of the Environmental, Transport and Works Bureau Technical Circular (Works) No.19/2005 (https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/19/1/C-2005-19-0-1.pdf).

#### Organization



#### Environmental Monitoring Manager

In some Design-Build-Operate (DBO) projects, the Contractor is required to appoint an **Environmental Monitoring Manager** as the leader of environmental officer and environmental supervisor for overseeing the environmental issue for the Works and Operation of the Facility.

The Environmental Monitoring Manager should have a Bachelor degree or Master degree, or equivalent, in a relevant science or engineering subject; or corporate member of the Hong Kong Institution of Engineers, or the Chartered Institute of Water and Environmental Management, or the Royal Society of Chemistry, or classification as a Chartered Environmentalist, or an institution of equivalent.

The Environmental Monitoring Manager should have not less than 5 years of experience in environmental monitoring in Hong Kong.

Waste Management Plan In accordance with the Technical Circular TCW No.19/2005, waste management will normally be included in the **Environmental Management Plan** of the construction project. However, for some **designated projects** under EIAO or projects following **BEAM Plus** requirements, an individual **Waste Management Plan (WMP)** is required. Contractors should review the contract requirements before the commencement of projects.

The WMP provides an overall framework for waste management and reduction. It identifies major waste types and defines ways for waste reduction. The Contractor should review and update the WMP regularly. An appropriate waste management plan should contain:

#### Key types of waste to be reduced

• In general, waste that are hazardous to the environment, bulky, valuable, reusable or recyclable would obtain higher priority for reduction.

#### Waste reduction targets

• For each identified item, waste reduction targets such as percentage reduction and recycling rate should be set out.

#### **Waste reduction programmes**

• Actions for waste reduction should be worked out for each identified waste type in the form of waste reduction programmes, procedures and guidelines.

#### Waste disposal procedures

Proper waste disposal procedures should be defined for each waste type.

#### **Waste Management Facilities**

- Provision of waste receptacles for each waste type.
- Provisions of Waste handling/ sorting area and stockpiling area.
- Provision of on-site weighbridge.

#### **Monitoring and Audit**

- Monitoring Programme should be set up to record the quantity of waste generated/reduced/recycled/disposed as well as other performance indicators in the WMP. The performance of the WMP should be reviewed and the plan should be updated whenever necessary.
- The technical circular ETWB TCW No.19/2005 "Environmental Management on Construction Site" issued by the Government is recommended as a good reference for WMP.

#### **Benefits of Waste Management**

- Proper waste management could reduce material wastage by improper use and damage during handling and storage, and thus
  - Reduce project expenditure.
  - Reduced amount of waste costs less in waste transportation and disposal.
  - Reduced amount of waste conserves landfill space.
  - Proper waste management increases site safety, work efficiency and also increases company's public image.

#### Levels of Management and Corresponding Roles on Waste Management

- Different parties and levels of management should have specific roles on waste management.
- Client's responsibility: consider waste minimization concepts and specify waste in the brief minimization requirements for designer and contractor to follow.
- Designer's responsibility: incorporate waste minimization in the design concept, material selection, construction method, etc.
- Contractor's responsibility: implement waste minimization measures on-site, e.g. on-site sorting, recovery for reuse/recycle, waste flow record, etc.

#### Site Management Plan for Trip Ticket System (TTS)

The Contractor shall prepare a site management plan for implementation of the **TTS** for the whole Contract. The Contractor shall submit within **45 days** of the date of the Employer's letter of acceptance of the Tender the site management plan to the Architect/ Engineer/Supervising Officer/Maintenance Surveyor for approval.

The Contractor shall obtain the approval of the Architect/Engineer/Supervising Officer/Maintenance Surveyor for the site management plan before disposing any C&D materials from the Site. The Contractor shall review the site management plan on a monthly basis.

The plan shall include the following details:

- a. Site organization and staff duties
- b. Disposal Programme
- c. Site procedures
- d. Surveillance
- e. Recording system
- f. Control Measures to track internal movement of materials
- g. Video Recording System

The Contractor should inform the Truck Drivers to follow the requirements and procedures of TTS.

The review site management plan and implementation of TTS and review of non-compliance incidents and follow up actions should be included in agenda of the site safety and environmental committee meeting and site safety and environmental management committee meeting for discussing.

Recording system should be set up to ensure timely retrieval of the **CHIT/DDF** and/ or the **Transaction Record Slip** and makes it available for inspection by the Architect/ Engineer/Supervising Officer/Maintenance Surveyor or his staffs upon request or where irregularities are observed.

The Contractor shall also note that the Employer takes a very serious view of any non-compliance with the TTS requirements. Without prejudice to other regulating action which may be taken against the Contractor, the Contractor's performance in implementing the TTS will be fully reflected in the Report on the Contractor's Performance.

Relevant information can be found in Technical Circular (Works) No.6/2010 - Trip Ticket System for Disposal of Construction & Demolition Materials which can be accessed via the following hyperlink:

https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/308/1/C-2010-06-01.pdf

Environmental Control
Equipment Setup

# Environmental Control Equipment Setup

There are different types of environmental control equipment which could be setup on site to effectively mitigate or prevent potential environmental impacts to the environment. The following are examples of environmental control equipment.

#### **Construction Dust Controls**

#### Site Boundary, Entrance and Hoarding



Using high-pressure water for vehicle cleaning.



Using automatic wheel washing facility for vehicle cleaning.



Erecting 2.4m high for site hoarding to act as a general barrier against construction dust dispersion.

(Photo is extracted from EPD's website)



Erecting double deck hoarding for building construction work.

(Photo is extracted from EPD's website)

#### **Road Opening / Resurfacing Work**



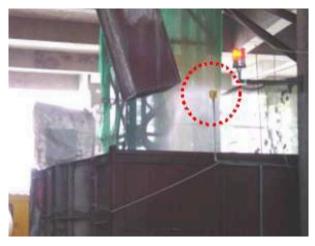
Using impervious sheeting as dust screen.

#### **Breaking**



Dampening the breaking surface to suppress dust during breaking work.

#### **Use of Sprinkler System for Dust Suppression**



Spraying with water spray to suppress dust at waste discharge point.

(Photo is extracted from EPD's website)



Using sprinkler system to suppress dust at large construction sites.

#### **Haul road & Exposed Area**



Main haul road shall be paved with concrete, bituminous materials, hardcore or metal plates, and kept clear of dusty materials.



Spraying with water regularly on the exposed area to suppress dust.

#### Stockpile & Exposed Slope



Covering dusty stockpile and exposed slope entirely by impervious sheeting to avoid windblown dust emission.

#### **Soil Nailing**



Spraying with water continuously and providing dust screen during drilling work.

#### **Handling of Dusty Material**



Covering dusty materials on dump truck entirely by impervious sheeting to avoid dust emission during transportation.

#### Cement



Carrying out de-bagging, batching and mixing processes for production of concrete using bagged cement in an area sheltered on the top and the 3 sides.



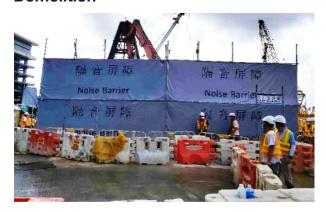
Covering every stock of more than 20 bags of cement entirely with impervious sheeting.

Relevant information of construction dust controls can be found in Section 4 of Best Practice Guide for Environmental Protection on Construction Sites:

**Best Practice Guide for Environmental Protection on Construction Sites (2013)** 

#### **Construction Noise Control**

#### **Demolition**



Erecting noise barriers to screen demolition activities.



Using hydraulic concrete crusher for demolition works.



Adopting hammer bracket (the bracket made of special alloy lined sound insulating material) to reduce the noise from excavator-mounted breaker.

#### **QPME**



Using QPME as far as possible.

#### Sample of a QPME Label

Relevant information of construction noise controls can be found in Section 6 of Best Practice Guide for Environmental Protection on Construction Sites:

Best Practice Guide for Environmental Protection on Construction Sites (2013)

#### Water Pollution Control



Providing earth bunds/channels to divert site runoff and wastewater to wastewater treatment facility.



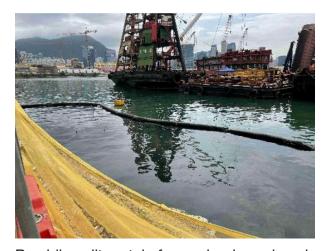
Providing earth bund/channels at site boundaries to intercept surface runoff from leaking out of the site.



Treating wastewater from all sources by proper wastewater treatment facilities before discharging.



Providing earth bunds or geotextile for gullies to prevent discharging surface runoff without desilting.



Providing silt curtain for marine-based work.

Relevant information of water pollution controls at site can be found in Section 7 of Best Practice Guide for Environmental Protection on Construction Sites:

Best Practice Guide for Environmental Protection on Construction Sites (2013)

#### Waste Management



Providing suitable storage areas for segregating inert and non-inert waste.



Sorting general refuse on site for reuse and recycling.



Disposing of the collected general refuse in garbage skip or bin regularly.

Relevant information of water pollution controls at site can be found in Section 8 of Best Practice Guide for Environmental Protection on Construction Sites:

Best Practice Guide for Environmental Protection on Construction Sites (2013)

#### Chemical Waste Management

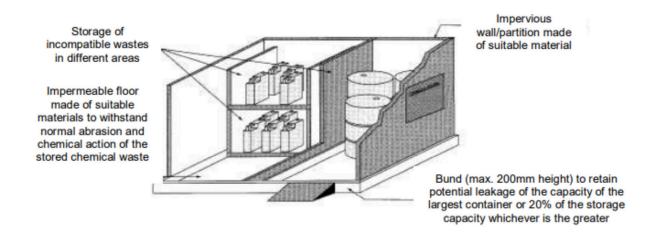


Providing proper drip tray for chemical storage to prevent accidental spillage



Providing enclosed chemical waste storage facilities at site

The following figure shows the requirement of Enclosed Chemical Waste Storage Facilities:



Relevant information of water pollution controls at site can be found in Section 9 of Best Practice Guide for Environmental Protection on Construction Sites:

**Best Practice Guide for Environmental Protection on Construction Sites (2013)** 



Under the Development Bureau Technical Circular (Works) No.2/2011 and Environment Bureau Circular Memorandum No.1/2011, the use of recycled and other **green materials** in public works projects is encouraged. Contractor should observe the requirements of the use of recycled and other green materials in the contracts.

**Public works projects** which generate inert C&D materials are generally required to dispose of the materials at designated **public fill reception facilities**. However, Contractors are encouraged to use their best endeavours to identify other recycling facilities or construction sites, where such materials can be used subject to the approval of the subject Architects/Engineers.

Information of **green suppliers** for different kinds of construction or building materials are available in the following websites:

Eco-Product Directory of HKGBC website:

http://epdir.hkgbc.org.hk/xspsearch.php?serial=72

List of Recycled Construction Products of EPD website:

https://www.epd.gov.hk/epd/misc/cdm/products list.htm#

Relevant information of green suppliers can be found in in the following website: Waste Reduction Website of EPD:

https://www.wastereduction.gov.hk/en/household/Supplier\_List.htm

List of Recognized Recyclers of EPD website:

http://www.wastereduction.gov.hk/en/workplace/index\_lookforlistedrecyclers.htm

Collection of Grade 200 Recycled Rockfill from TKO137 Fill Bank:

https://www.cedd.gov.hk/eng/public-services-forms/fill-management/recycling-of-construction-demolition-c-d-materials/index.html

Recycler/ Waste Collector

#### Recycler/Waste Collector

Recycling is an important part of waste management for construction work which may reduce the amount of waste to be disposed of to landfill. To arrange handling of recyclable waste, Contractors may contact the recyclers and a list of recyclers is available at EPD's website.

A Hong Kong Collector/Recycler Directory can be accessed online: <a href="https://www.wastereduction.gov.hk/en/quickaccess/vicinity.htm?collection\_type=collector&mate-rial\_type=all&district\_id=0">https://www.wastereduction.gov.hk/en/quickaccess/vicinity.htm?collection\_type=collector&mate-rial\_type=all&district\_id=0</a>

### Recycler for construction and demolition (C&D) materials

To encourage the Use of **Recycled and other Green Materials** in Public Works Projects, DEVB TC(W) 2/2011 sets out a comprehensive framework for the procurement of recycled and other green materials with a view to promote their use in public works projects. It also streamlines the process for recyclers which manufacture recycled materials to collect **construction and demolition (C&D)** materials and introduces a recycler's list for C&D materials.

DEVB TC(W) 2/2011 - Encouraging the Use of Recycled and other Green Materials in Public Works Projects is available online:

https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/310/1/C-2011-02-01.pdf

List of Recyclers for Construction and Demolition (C&D) Materials is available online: <a href="https://www.wastereduction.gov.hk/en/workplace/index\_lookforlistedrecyclers2.htm">https://www.wastereduction.gov.hk/en/workplace/index\_lookforlistedrecyclers2.htm</a>

#### Chemical Waste Collector

The Waste Disposal Ordinance provides for the licensing of waste collection, transport and disposal activities and the control on import and export of chemical waste. A **licensed chemical waste collector** should be employed and engaged for the collection before the disposal of chemical waste.

A list of licensed chemical waste collector is available at EPD's website: <a href="https://cd.epic.epd.gov.hk/EPICDI/chemicalwaste/download/?lang=en">https://cd.epic.epd.gov.hk/EPICDI/chemicalwaste/download/?lang=en</a>

Neighbourhood Communication

### **Neighbourhood Communication**

It is important to maintain good relationship with neighbours in the vicinity of the construction site.

A suggested public relation strategy can be developed and implemented using the following approaches:

### Set up clear communication channels

- Display **environmental hotline** at prominent locations along the site boundary.
- Provide contact details to key sensitive receivers such as schools and residential buildings nearby.
- Deploy **designated personnel** to be responsible for receiving, investigating, and responding to enquiries and complaints in a timely manner.

### Meet with relevant stakeholders

- Explain details of the construction project.
- Organize activities and environmental promotion to engage with the public and neighbours.
- Show the mitigation measures such as noise barriers, dust suppression, treatment facilities being implemented on site.
- Consider posting results of environmental inspections and monitoring to demonstrate performance.

### Monitoring and Measurement (if necessary)

In general, EPD or general public would appreciate the main contractor undertaking additional/further monitoring works in order to satisfy their own environmental policy, objectives and targets.

Sustainability Requirements

### Sustainability Rating Schemes

The circular on **Green Government Buildings** (Development Bureau Technical Circular No.2/2015 and Environment Bureau Circular Memorandum No.3/2015) (the Joint Circular) sets out the best practicable targets to be achieved for green Government buildings, including the requirement that **renewable energy (RE) technologies** should be incorporated in all new Government buildings and all capital works projects as far as reasonably practicable.

All new government buildings of **CFA** above 5,000m<sup>2</sup> with central air-conditioning or above 10,000m<sup>2</sup> (e.g. fire stations and sports centres) should aim to obtain the second highest grade or above under the **BEAM Plus** as promulgated by the Hong Kong Green Building Council (HKGBC) as far as practicable. Other internationally recognised building environmental assessment systems which are suitable for Hong Kong's local use and the relevant building types may be considered with full justifications.

The Contractor should observe the sustainability requirements stated in the tender documents during tendering stage and allow sufficient budget and suitable personnel including **BEAM Pro** or **BEAM Co-ordinator**, to manage and implementing the requirements.

Relevant information of BEAM Plus New Buildings can be found in the following link: <a href="https://www.hkgbc.org.hk/eng/beam-plus/beam-plus-new-buildings/">https://www.hkgbc.org.hk/eng/beam-plus/beam-plus-new-buildings/</a>

For some Infrastructure projects, other internationally recognized rating schemes may be adopted to drive the project sustainability performance. Possible schemes are:

- CEEQUAL administrated by Building Research Establishment (BRE), UK (<a href="https://www.ceequal.com/">https://www.ceequal.com/</a>)
- 2. IS Rating Scheme administrated by Infrastructure Sustainability Council of Australia (https://www.isca.org.au/)

The Contractor should check contract specifications before tendering.

Contractors should observe the contract requirements for the provision of **electric vehicles**. Electric Vehicles should be provided for each works contract in accordance with the minimum number as follows:

Number of contract vehicles supplied in a public works contract	Minimum number of EVs (5-seater or 7-seater) to be specified
2-3	1
4-5	2
6 or above	3

A designated medium-speed charger for each EV should be installed at the site accommodation of each works contract.

Reference information can be found in Development Bureau Technical Circular (Works) No.13/2020 - Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts by using the following link:

https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/378/1/TCW%2013-2020.pdf

To further promote green procurement and the use of **biodiesel**, the Government has already required, through tendering and contractual arrangements made from March 2016 and January 2017 respectively, the full use of biodiesel by non-road construction machinery in all newly tendered public works projects and public housing projects. Such machinery includes air compressors, generators, excavators, crawler cranes, crane lorries, road rollers, etc. ..." in HKSAR Press Release. (https://www.info.gov.hk/gia/general/201906/05/P2019060500435.htm)

Under the Development Bureau Technical Circular (Works) No.2/2020, it sets out the policy on the adoption of **Modular Integrated Construction (MiC)** for new building works with total **construction floor area (CFA)** larger than 300m<sup>2</sup> under the **Capital Works Programme (CWP)** to be tendered on or after 1 April 2020. **Reference information** can be found by using the following link: <a href="https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/375/1/C-2020-02-01.pdf">https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/375/1/C-2020-02-01.pdf</a>

Under the Development Bureau Technical Circular (Works) No.11/2020, it promulgates the adoption of sustainable designs and features in site accommodations for **Resident Site Staff (RSS)** in public works contracts. Reference information can be found by using the following link: <a href="https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/379/1/TCW">https://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/379/1/TCW 11-2020.pdf</a>

Contractors are also recommended to consider promoting low carbon construction, emission reduction and the use of recycled materials in construction work and implementing measures including promoting the use of biodiesel as fuel for construction machineries in construction sites, adopting green site offices, and using waste glass as fill materials for reclamation works.

Environmental Permit (EP) Requirements

# Environmental Permit (EP) Requirements

The Permit Holder and any person including Contractors working on a **Designated Project** under **Environmental Impact Assessment Ordinance** (EIAO) should comply with all conditions which include **General Conditions** and **Special Conditions** set out in the Project **EP**.

The following items in the EP should be checked and resources should be allowed if necessary:

- Employment of EM&A Personnel
- Employment of Environmental Team (ET)
- Employment of Independent Environmental Checker (IEC)
- Submissions and/or Measures to be Implemented before Construction and/or Op eration of the Project
- Submissions and/or Measures to be Implemented during Construction and/or Op eration of the Project
- Environmental Monitoring and Audit Requirements

Remark: The EP requirements of individual projects should be reviewed before commencement.

Caution: If the Project/Contract is not a Designated Project under EIAO, this Section can be omitted.

Environmental Permit (EP) Submissions

# Environmental Permit (EP) Submissions

Under the **Special Conditions** specified in **EP, EP submissions** may usually include the following:

- Submissions and/or Measures to be Implemented before Construction and/or Operation of the Project:
  - Management Organizations
  - Construction Works Schedule and Location Plans
  - Date of Commencement of Construction of the Project
  - EP Submissions Schedule
  - Updated EM&A Manual
  - Construction Noise Mitigation Measures Plan (CNMMP)
  - Continuous Noise Monitoring Plan (CNMP)
  - Construction and Demolition Materials Management Plan (C&DMMP)
  - Contamination Assessment Report (CAR) and Remedial Action Plan (RAP)
  - Sediment Quality Report (SQR)
  - Sediment Management Plan
  - Marine Ecological Baseline Report
  - Marine Travel Route Plan
  - Silt Curtain Deployment Plan
  - Archaeological Action Plan
  - Landscape and Visual Plan
  - Transplantation Proposal for Plant Species
- Submissions and/or Measures to be Implemented during Construction and/or Operation of the Project:
  - Noise Mitigation Plan
  - Operational Ground-borne Noise Mitigation Measures Plan
  - As-Built Drawings of Measures for Mitigating Landscape and Visual Impacts
- Submissions under EM&A Manual
  - Monthly EM&A Report
  - Quarterly EM&A Review Report
  - Final EM&A Summary Report

The contractor should check statutory submission timeframe and respective particular specifications to identify the responsible party of individual EP submissions.

Caution: If the Project/Contract is not a Designated Project under EIAO, this Section can be omitted.

Implementation
Schedule for
Key Issue / Site Aspect

# Implementation Schedule for Key Issue/Site Aspect

For **Designated Projects** under EIAO, an implementation schedule should be included in the **Environmental Monitoring and Audit Manual** which summarizes all recommended environmental mitigation measures. The contractor should review the contract's particular specification. If the Contractor is deemed responsible for implementing the recommended environmental mitigation measures, the Contractor should provide sufficient resources to execute the implementation of them for the period as specified by the schedule. The contractor should advise the permit holder as soon as practicable if there is any potentially impractical recommendation listed in the **implementation schedule**, such that timely amendment can be made, if necessary.

Typical mitigation measures which requires Contractor's implementation, including but not limited to the following:

 Noise reduction – Contractors may be requested to control the potential noise disturbance to the nearby noise sensitive receivers, resources and implementation actions including but not limited to, to hire professional acoustic consultant to conduct acoustic measurement and prepare acoustic reports, construction of noise barrier and noise enclosure structures.

More relevant information can be found in section 6 of the Construction Best Practice Guide which can be accessed online via the following hyperlink:

**Best Practice Guide for Environmental Protection on Construction Sites (2013)** 

Other relevant information can be found in the following website:

Technical Memorandum - Annex 21: Contents of an Environmental Monitoring and Audit (EM&A) Programme - <a href="https://www.epd.gov.hk/eia/english/legis/memorandum/annex21.html">https://www.epd.gov.hk/eia/english/legis/memorandum/annex21.html</a> and;

Implementation Schedule for Mitigation Measures arising from the Environmental Impact Assessment Process [GN 5/2010] - https://www.epd.gov.hk/eia/hb/materials/GN5.pdf

Application updating of Environmental related Licence / Permit Environmental Permit Application for a Further Environmental Permit under the EIA Ordinance (Cap. 499)

Where the responsibility for a **designated project** for which an **environmental permit** has been issued changes, the person who takes up the responsibility should obtain an environmental permit. An application can be made for a further environmental permit in the prescribed form. The **further environmental permit** should be obtained before he or she assumes the responsibility. The applicant should pay the prescribed fee. The further environmental permit would be issued if the Director is satisfied that there has been no **material change** to the designated project(s) covered by the current permit and the findings in the EIA report are still relevant.

The current permit holder can surrender the whole or part of the environmental permit after ceasing to be responsible, by submitting a form to the Director.

# Application for a Variation of Environmental Permit under the EIA Ordinance (Cap. 499)

When the need for variation of conditions of an environmental permit arises, the permit holder could apply for a **variation of an environmental permit** under section 13 of the Ordinance in the prescribed form and pay the prescribed fee. The application will be processed within 30 days.

A variation of the environmental permit would be issued without the need for an environmental impact assessment report if the Director is satisfied that there is **no material change** to the environmental impact of the designated project with mitigation measures in place and the designated project complies with the requirements in the Technical Memorandum on Environmental Impact Assessment Process. Should the design for permanent works or major temporary works being developed in Construction Stage change materially from the assumptions in EIA report or EP conditions, variation of EP would be necessary subject to consultation to the EIAO Authority. If an environmental impact assessment report is required, the procedures described in sections 5, 6, 7 and 8 of the Ordinance should be followed.

Based on the changes of construction, Application of Further Environmental Permit and Variation of Environmental Permit should also be considered by Permit Holder or Contractor. Relevant information can be found in the following website:

https://www.epd.gov.hk/eia/english/guid/ordinance/guide7 4-8.html

The processing time required for application of environmental permits is summarised below:

### **Application under**

### **EIAO Statutory Time Limit (days)\***

Further Environmental Permit	30
Variation of an Environmental Permit	30

The information is also available online at: <a href="https://www.epd.gov.hk/eia/operation/english/appendix11">https://www.epd.gov.hk/eia/operation/english/appendix11</a> 5.html

<sup>\*</sup>Only counts on the Authority's response time but excluding the time for preparing supporting documents (e.g., Env Review Report, if required) for the application.

# Construction Noise Permit under Noise Control Ordinance (Cap. 400)

The construction noise permit should be renewed regularly based on the validity of permit, usage of PMEs and variations of construction area.

The requirements and procedure for application of permit for Construction Noise Permit can be found in the following link:

https://www.epd.gov.hk/epd/english/application\_for\_licences/guidance/application\_maincontent36.html

It is a statutory requirement for the Authority to notify applicants of the outcome of the applications within 28 days after receipt of the applications. However, EPD aims to complete processing the applications within 14 days.

[Remarks: In general, only CNP applications of good quality meeting all criteria of relevant checklist(s) may be processed within 14 days. However, for complicated case necessitating assessments involving a few projects or insufficient information provided by the applicant, the processing time would take longer or leading to the refusal of issuing a CNP.]

The information regarding the timeframe for EPD to response to the CNP applicant after receiving the CNP application is extracted online from:

https://www.epd.gov.hk/epd/english/application for licences/guidance/cnp.html

# Chemical Waste Producer Registration

Registration is a one-off requirement and not subject to renewal. However, each **registered chemical waste producer** has the obligation to notify EPD of any change in the particulars of the registration. For example, changes in:

- Contact person
- Telephone number or fax number
- Correspondence address
- Company name
- Waste location
- Business Registration Certificate

Such notifications should be made in writing within two weeks of the change.

Relevant information for the Chemical Waste Producer Registration can be found in following website:

https://www.epd.gov.hk/epd/english/application\_for\_licences/guidance/aw\_341.html

Changes to existing registration of chemical waste producers may take about 30 days for processing after receiving the notification of any changes to existing registration of chemical waste producers.

Application Forms for updating the Environmental Related Licence of Permit

All application forms can be found in the following website:

https://www.epd.gov.hk/epd/english/application\_for\_licences/applic\_froms/forms.html

Update of Environmental related Registration

# Air Pollution Control (Construction Dust) Regulation

Where any change relating to any of the particulars given in a notice is proposed, the contractor should give notice to the Authority of the proposed change.

The related application for **Form NB** can be found in the following website:

https://www.epd.gov.hk/epd/sites/default/files/epd/english/application for licences/applic froms/files/cdr-e-nb.pdf

The changes will take effect after EPD acknowledge receipt of the applications.

# Billing Account for Construction Waste Disposal

The applicant can use **Form 5** to change the account information which can be found in the following link:

https://www.epd.gov.hk/epd/misc/cdm/info/Form5.pdf

The timeframe for the changes to take effect should be similar to the timeframe for opening a **billing account**. Once EPD receives Contractor's application for the change of a billing account, it will usually take 2-4weeks for processing.

# Environmental related Labelling

### Noise Emission Label (NEL)

A Noise Emission Label (NEL) is required for each of the following items when used in a construction site at any time:

- Any Hand Held Percussive Breaker weighted above 10kg; and
- Any Air Compressor capable of supplying compressed air at 500 kPa pressure or above.

### Application for a NEL

The Contractor should ensure that a valid NEL is available before the above items are used and they are fitted with NELs issued by EPD.

In case the original NEL is lost, a duplicate NEL can be applied by completing a prescribed form.

https://www.epd.gov.hk/epd/sites/default/files/epd/english/application\_for\_licences/applic\_froms/files/epd5.pdf

Relevant information for the application of NEL can be found in Section 6.7 of Best Practice for Environmental Protection on Construction Sites:

**Best Practice Guide for Environmental Protection on Construction Sites (2013)** 

# Quality Powered Mechanical Equipment (QPME)

**QPME** is equipment that is recognized by EPD as new, notably quieter, more environmentally friendly and efficient. Typically, QPME is:

- Certified to comply with the European Council (EC) Directive 2000/14/EC; issued with Low Noise or Super Low Noise Emission Label by the Ministry of Land, Infrastructure and Transport of Japan (MLIT); and
- In compliance with other equivalent or better environmental standards; or for a
  piece of equipment with years of services (counting from the date of manufacture)
  less than 6 years, the validity period of the first label will be diminishingly apportioned.

For those QPME with validity of labels to be expired, the applicants may re-apply, within 6 months before the date of expiry, for the label with the provision of the following documents to demonstrate that the QPME still maintains with quality noise emission complying with the prevailing requirement implemented by the relevant parties.

### Application for a OPME Label

A QPME label for individual item of equipment can be applied by submitting a completed application form to EPD. The application is free of charge and will be processed within **28** days. The following documents should be submitted together with the application form:

- PME photos in hard or soft copy showing the serial number, the CE and SWL marking for EU equipment or the low noise / super low noise emission label for Japanese equipment;
- Manufacturer's documents showing equipment model type / number, serial number, manufacturing location and the commissioning date; and
- Either (a) EC Declaration of Conformity or (b) Japan MLIT letter together with the relevant noise test report/certificate attached.

# Actions after Obtaining a QPME Label

If the application is successful, the equipment will be registered into the QPME database and the applicant will be assigned with a QPME User Account.

An user can login on to EPD QPME's website with the assigned User Account and print out the QPME label of the corresponding QPME on a piece of white paper then laminate with clear plastic. Then, the label should be affixed to the corresponding QPME.

Relevant information for the QPME Label can be found in Section 6.8 of Best Practice for Environmental Protection on Construction Sites:

### **Best Practice Guide for Environmental Protection on Construction Sites (2013)**

Relevant information for the application, update and renewal of QPME label can be applied by completing a prescribed form(s):

https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/howtoapply.html

All **NRMM** newly supplied in Hong Kong must comply with the requirements of the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (Cap. 311 sub. leg. Z).

Non-road mobile machinery (NRMM) means a regulated machine or a non-road vehicle.

- Regulated machine means any mobile machine or transportable industrial equipment that is powered by an internal combustion engine with a rated engine power output of which is greater than 19kW but not greater than 560kW.
- Examples are air compressors, drilling rigs, excavators, lifting platforms, loaders, mobile cranes, mobile generators, mobile pumps, and road works machines.
- Non-road vehicle means a private car, goods vehicle, bus, light bus, motor cycle, motor tricycle or not licenced under Cap. 374E.

Applications for approval or exemption of NRMMs, or for modification of approved/exempted NRMMs can be submitted via the web-based NRMM system starting from 1 June 2015. Applicants can also check whether a particular NRMM has been approved or exempted by EPD via the system.

### #Note:

All exempted NRMM for generators, air compressors, excavators and crawler cranes were phased out in new capital works contracts of public works including design and build contracts, with an estimated contract value exceeding \$200 million and tenders invited on or after 1 June 2019. Relevant information can be found in Technical Circular (Works) No.1/2015.

Application forms for NRMM can also be downloaded in the web-based NRMM system in the following link:

https://nrmm.epd.gov.hk/application/formDownload

The web-based NRMM system can be found in the following link: https://nrmm.epd.gov.hk/application/common/home

Relevant information for Emissions Control of NRMM in Capital Works Contracts of Public Works can be found in the Technical Circular (Works) No.1/2015: <a href="https://www.devb.gov.html">https://www.devb.gov.html</a> https://www.devb.gov.

Updating of Waste Management Plan

### Updating of Waste Mannagement

### Waste Management Plan (WMP) becomes part of the EMP.

The Contractor should review and update the WMP (if any) and incorporate the updated waste disposal records in the EMP at least monthly and submit the updated EMP to the Architect/Engineer.

If an individual WMP is required based on the contract requirements, the WMP should be updated at least monthly and include the following:

- a. providing the actual quantities of C&D materials generated for the month by completing the monthly summary Waste Flow Table, and a forecast of the quantities;
- b. updating of the summary table for work processes or activities requiring the use of timbers for **Temporary Works** construction;
- c. reviewing the adequacy of resources and facilities for on-site sorting of C&D ma terials.

**Environmental Complaint** 

### **Environmental Complaint**

In general practices, once Contractors receive **Environmental Complaint(s)**, the following procedures should be undertaken:

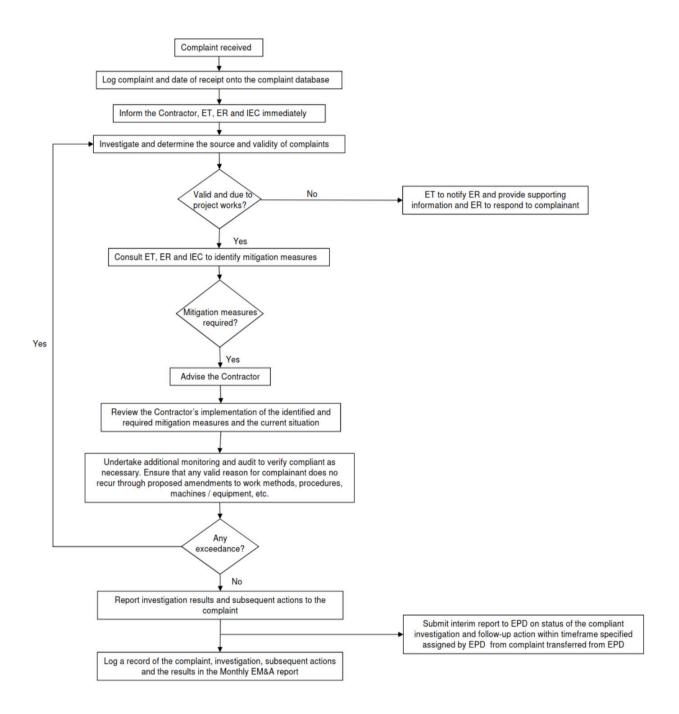
The Contractor to log complaint and date of receipt onto the complaint database and inform the **ER**, **ET** and **IEC** immediately;

- The Contractor/ET to investigate the complaint to determine its validity, and assess whether the source of the problem is due to construction works of the Project with the support of additional monitoring frequency, stations and parameters, if necessary;
- The Contractor to identify mitigation measures in consultation with **IEC, ET and ER** if a complaint is valid and due to the construction works of the Project;
- The Contractor to implement the remedial measures as required by the ER and to agree with the ET and IEC any additional monitoring frequency, stations and parameters, where necessary, for checking the effectiveness of the mitigation measures;
- The ER, ET and IEC to review the effectiveness of the Contractor's remedial measures and the updated situation;
- The ET to undertake additional monitoring and audit to verify the situation if necessary, and oversee that circumstances leading to the complaint do not recur;
- If the complaint is referred by the EPD, the Contractor is to prepare an interim report on the status of the complaint investigation and follow-up actions stipulated above, including the details of the remedial measures and additional monitoring identified or already taken. The interim report shall be reviewed by the ET prior to submission to EPD within the time frame assigned by EPD; and
- The ET to record the details of the complaint, results of the investigation, subsequent actions taken to address the complaint and updated situation including the effectiveness of the remedial measures, supported by regular and additional monitoring results, in the monthly EM&A reports.

During the complaint investigation, the Contractor and ER should co-operate with and adhere to the advice of the ET and IEC for completion of the investigation. If mitigation measures are identified in the investigation, the Contractor should promptly carry out the mitigation works. The ER should ensure that the measures have been carried out by the Contractor.

Note: If the project is a **non-Designated Project** under EIAO, IEC or ET will not be involved and the complaint investigation will be carried out by the Contractor.

# **An Example of Complaint Handling Procedures** (refers to Project EM&A Manual for Designated Projects under EIAO)



**Environmental Mitigation Measures on Site** 

# Environmental Mitigation Measures on Site

The common types of mitigation measures applied on construction site may include Air Quality, Noise, Water Quality, Waste Management and Landscape and Visual.

### Air Quality

Contractors should provide dust mitigation measures or controls for the following activities, which include:

- · Good housekeeping on site
- · Erection of site boundary, entrance and hoarding
- Road opening / resurfacing Work
- · Excavation or earth moving
- Site clearance
- Exposed surface in open areas
- Exposed dust generating stockpile
- · Haul roads and access roads
- Loading and unloading of dusty materials
- Concrete production
- Disposal of dusty material
- Debris handling
- Pneumatic or power-driven drilling, cutting and polishing
- Blasting
- Control of dark smoke
- Implementing dust suppression measures
- Avoiding bad practice

Air Quality Monitoring is often required to verify performance under an **EM&A programme** or to validate the effectiveness of mitigation measures applied on site.

Practical examples of construction dust controls can be found in Section 4.4 of Best Practice Guide for Environmental Protection on Construction Sites with the following link:

### Construction Noise

Contractors should pay attention to the construction activities which may cause adverse noise impact and they include:

- Installation,
- Construction,
- Alteration,
- Repair,
- Maintenance and
- · Demolition.

In order to minimize noise impact from construction activities, the noise mitigation measures below may be adopted:

- Developing and Implementing Noise Policy and Programme aiming to:
  - Minimize noise impact and avoid causing annoyance to noise sensitive receivers
  - Ensure compliance with all legislative requirements
- Use of Quality Powered Mechanical Equipment (QPME)
- · Noise Mitigation Measures at Source such as
  - Hand-held Breakers
  - Excavator-mounted breakers
  - Equipment with internal combustion engines
  - Piling
  - Joint cutter/stone saw
  - Demolition and concrete breaking works
- Noise Mitigation Measures at Sound Propagation Path such as
  - Noise enclosures
  - Noise barriers
- Administrative Site Control to reduce noise impacts

(e.g schedule of noisy works, switching off noisy equipment when not in use, lo cating noisy equipment away from NSRs, arranging regular maintenance for all PMEs...etc)

Noise Monitoring is often required under EM&A programmes or to evaluate the effectiveness of mitigation measures applied on site such as noise barriers.

Practical examples of construction noise controls can be found in Section 6.9 of Best Practice Guide for Environmental Protection on Construction Sites with the following link:

### Water Ouality

For a construction site, it includes the contaminated surface runoff and wastewater generated from dewatering, cleaning activities and sewage. Construction site wastewater can be divided into trade effluent, sewage effluent and contaminated surface runoff. Discharge of all effluents except discharge domestic sewage into **communal sewers** and **unpolluted water** into stormwater drains, river courses and water bodies are subject to control under WPCO and should be covered by a licence which specifies the requirements of the effluent discharge.

Mitigation measures or controls of construction site wastewater should be applied, which include:

- Site Drainage Management Plan
- Apply and obtain Water Discharge Licence before discharge
- · Minimisation of generation of wastewater
- Installation of wastewater treatment system
- Reuse of treated wastewater
- · Management and control of rainwater, groundwater and general site runoff

Water Quality Monitoring may be required to ensure the quality of the effluent discharged complies with licence requirements.

Relevant information of water pollution controls on site can be found in Section 7.3 of Best Practice Guide for Environmental Protection on Construction Sites:

## Waste Management C&D Material

Construction & Demolition (C&D) Material will be generated from construction works and can be classified as:

- inert substances and
- non-inert substances.

The principle of waste management should be properly planned and implemented to reduce waste generation during construction works as listed below:

- Avoidance;
- Minimization;
- Recycling;
- · Treatment; and
- Disposal.

The mitigation measures or controls of waste management on site should be adopted, which include:

- Develop and implementation of Waste Management Plan
- Set up waste reduction targets
- · Establish waste reduction programme
- Arrange on-site sorting
- Proper waste disposal
- Good housekeeping practice

Waste Management Implementation as stated in ETWB TCW No. 19/2005 includes procedures on waste management requiring contractors to reduce the C&D material to be disposed of during the course of construction and can be found in the following:

www.devb.gov.hk/filemanager/technicalcirculars/en/upload/19/1/C-2005-19-0-1.pdf

Relevant information of waste management on site can be found in Section 8 of Best Practice Guide for Environmental Protection on Construction Sites:

### Use of Skips

Contractors should follow the Guidelines for Mounting and Placing of Skips when using skips for collection and temporary storage of construction waste. The existing Voluntary Skips Management System, which includes the Certification Scheme for Skips, aims at facilitating skip users to meet the relevant requirements on road safety and environmental protection. Contractors should use skips certified compliance with the mounting requirements in the Guidelines under the Scheme.

Relevant information of Guidelines for Mounting and Placing of Skips can be found in the following:

https://www.td.gov.hk/filemanager/en/publication/skip\_en.pdf

# Waste Management Chemical

Chemical Waste arising during the construction phase may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner. The potential hazards include:

- Toxic effect to workers;
- · Adverse effect on soil and water quality from spills and improper disposal; and
- Fire hazard.

Registration as a **Chemical Waste Producer** is required for construction sites generating chemical wastes including:

- Surplus adhesives with solvent content
- · Spent lubricating oils and mineral oils
- Unwanted paint, paint thinners and paint removers
- Spent acid and alkaline solutions
- Spent solvent
- Waste containers
- Asbestos sheets/waterpipes/Asbestos waste
- Demolition wastes containing dioxins, asbestos, Polychlorinated biphenyls (PCB)
- Unwanted Dangerous Goods Classes 2, 3, 3A, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 8 and 9

Special handling and storing procedures are required for chemical wastes and relevant information can be found in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste, Code of Practice on the Handling, Transportation and Disposal of Polychlorinated Biphenyl (PCB) Waste and A Guide to the Registration of Chemical Waste Producers which are available online at:

https://www.epd.gov.hk/epd/english/environmentinhk/waste/guide\_ref/guide\_cwc.html

The mitigation measures or controls of chemical waste management on site should be adopted, which includes:

- Good planning and housekeeping
- · Minimising the generation of chemical waste
- Treatment/recycling/disposal of chemical wastes
- Packaging/labelling/storage of chemical wastes

Relevant information of chemical waste management on site can be found in Section 9 of Best Practice Guide for Environmental Protection on Construction Sites:

### Waste Management Plan

In general construction site, **land contamination** caused by construction activities may includes:

- · Plant maintenance;
- Refuelling;
- Accidental spillage from storage of fuel, chemical and chemical waste; and
- Accidental leakage of fuel, hydraulic oil and lubrication oil from construction plant and vehicles.

The scale of the land contamination arising from these construction activities is usually very small. The Contractor may adopt the emergency procedure for chemical spillage for cleaning up any contamination.

If the construction work area contains any potential land contamination source, relevant mitigation measures will usually be stated in the particular specification (PS). The Contractor should check and review the PS and strictly follow the stated mitigation measures.

The Contractor should check whether a Contamination Assessment Plan (CAP), a Contamination Assessment Report (CAR) and a Remediation Action Plan (RAP) are available in the particular specification. For some contracts, the Contractor is required to prepare the CAP, CAR, RAP and Remediation Report (RR).

Relevant information can be found in Section 10.5 of the Construction Best Practice Guide which can be accessed via the following hyperlink:

Environmental
Promotion
(Green initiatives, recycling etc)

# Environmental Promotion (Green initiatives recycling etc.)

Contractors are encouraged to incorporate their own **green initiatives** into their projects. There are practices currently adopted and fall into categories of energy conservation, water conservation, waste reduction etc.

The following examples are being adopted by some construction sites and often, Contractors are instructed to incorporate the initiative starting at early stage of the whole construction life cycle, from planning to procurement and implementation:

### **Energy conservation**

- Use of photovoltaic / solar panel to convert energy from the sunlight to electricity to power equipment on-site.
- Provision of green roof which gives buffer to energy loss of a building which reduces the energy for air conditioning operation.
- · Use of electric vehicles.

### Water conservation

 There is a large demand of water for dust suppression or wheel washing on construction site. Wastewater generated on site could be reused for dust suppression after proper treatment.

### Waste reduction and recycling

- There are engineering methods which can be used to recycle construction waste.
   For instance, stabilization/solidification (S/S) method can be adopted to solidify/
   stabilise potentially toxic pollutant in excavated sediment, this can turn the waste
   excavated sediment into material suitable for backfilling.
- Very often, in Contractor's particular specification, there are clauses focus on recycling of construction waste material and required the Contractor to conduct waste segregation and store different types of waste in different containers or stockpiles to enhance reuse or recycling of material as far as practicable.

Recognition
Award /
Competition

### Recognition Award/Competition

To enhance the environmental awareness of construction practitioners and encourage them to be actively involved in environmental protection in construction work. Contractors are encouraged to participate the following recognition awards and competitions organized by the Government or HKCA:

### Considerate Contractors Site Award Scheme

More information regarding criteria and application form can be found via the following link:

https://www.devb.gov.hk/en/construction\_sector\_matters/contractors/considerate\_contractors site/index.html

- Hong Kong Awards for Environmental Excellence
- Hong Kong Green Innovations Awards
- Outstanding Green Achiever Commendation Scheme
- Outstanding Promotional Partner Commendation Scheme

More information regarding criteria and application forms can be found via the following link:

https://www.ecc.org.hk/english/hkaee/awards.html#hkaee

HKCA Construction Environmental Award

# Plant Maintenance

# Use of Powered Mechanical Equipment (PME)

According to the Air Pollution Control (Smoke) Regulations, dark smoke emission from stationary combustion sources is prohibited at the construction area. Contractors should take the following actions:

- · Carry out routine maintenance of plant and equipment;
- Retrofit construction plant with particulate reduction device to reduce dark smoke emission;
- Divert plant exhaust away from public area.

An Introduction to the Air Pollution Control (Smoke) Regulations can be found in the following link:

https://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/air/guide\_ref/files/dark smoke.pdf

### Fuel Usage

Based on Air Pollution Control (Fuel Restriction) Regulations, the use of high sulphur content solid and liquid fuel for commercial and industrial appliances is prohibited. Contractors should take the following actions:

• Use ultra-low sulphur diesel for all diesel-powered plants and equipment.

Relevant information for Fuel Usage can be found in the following link: <a href="https://www.epd.gov.hk/epd/english/laws-regulations/envir-legislation/leg\_air.html">https://www.epd.gov.hk/epd/english/laws-regulations/envir-legislation/leg\_air.html</a>

# Environmental Issue caused by Plant Maintenance

Oil spillage during the plant maintenance and refuelling for PMEs usually happens at construction sites. In order to reduce the risk of spillage, the following practice is recommended to conduct:

 Use absorbent materials to absorb spillage of chemicals or chemical wastes. (Note: Used absorbent materials should be handled as chemical wastes). The following figures show the spill control kit and the handling of chemical spill.



Using chemical spill control kit



Using absorbent material for oil spillage at construction site.



### Record Keeping

Records are often required to be kept properly for a certain period of time for checking and verification, these records include environmental monitoring, construction and chemical waste generation and disposal, regular monitoring. The Contractor should maintain of the environmental records as required by particular specification.

The Contractor should follow the timeframe as stated in particular specification and/or statutory requirements.

### Trip Ticket System (TTS)

Government has implemented the **Trip Ticket System (TTS)** since the year of 2005 to track the disposal of **construction and demolition (C&D)** materials using **Disposal Delivery Form (DDF)** or **CHIT**. A good record should be kept for tracking disposal of C&D material at designated disposal ground. The copies of the CHIT/DDF and the receipt should be maintained on site for future references. A **Daily Record Summary (DRS)** to record with details of daily disposal of C&D materials from the Site should be completed and maintained by the contractor.

### Monthly Summary Waste Flow Table

As part of the EMP on waste management, the contractor should establish a mechanism to record the quantities of C&D materials generated each month and report the quantities to the Architect/Engineer Representative on a monthly basis, using the "Monthly Summary **Waste Flow Table**".

# Water Pollution Control Ordinance License

A Licence granted under the Water Pollution Control Ordinance (CAP. 358) always requires the following records to be kept in the premises for inspection by duly authorized officer(s) of the Authority:

- records of flow rate;
- nature and composition of the discharge;
- · updated records of all monitoring information;
- · records of all desludging and degreasing operation, and
- · records of corresponding disposal operation.

### Training

Records of environmental training including the site specific induction training and tool-box talks, etc. should be should be kept properly may be required to be reported in the monthly environmental report.

### The following records should be provided, updated regularly and kept properly:

- Inventory of licences, registration particulars and permits;
- Inspection reports for weekly environmental walks;
- Inventory of complaints, inspections by enforcement authorities, abatement notices, environmental offences and convictions;
- Summary record of non-compliance of air, noise and wastewater pollution incidents;
- Summary record of delivery notes for ordering of ULSD from oil companies and the replenishment of such fuel to individual diesel-operated construction plant and equipment on the Site;
- Monthly Summary of Waste Flow Table;
- Summary record of chemical waste disposal;
- Summary record of trip ticket system;
- Records of environmental training;
- Records of timber usage;
- Summary record of quality powered mechanical equipment (QPME) used on the Site including their servicing period.

Relevant information for records can be found in Appendix C of Technical Circular (Works) No.19/2005:

http://www.devb.gov.hk/filemanager/technicalcirculars/en/upload/19/1/C-2005-19-0-1.pdf.

Implementation of EM&A Manual and Environmental Permit Submission

# Implementation of EM&A Manual and Environmental Permit Submission

For **Designated Projects** under Environmental Impact Assessment Ordinance (EIAO), the **Contractor's responsibility under the EM&A** includes:

- To comply with the relevant contract conditions and specifications on environmental protection;
- To facilitate Environmental Team (ET)'s monitoring and site inspection activities;
- To participate in the site inspections undertake by the ET and **Independent Envi**ronmental Checker, and undertake any corrective actions;
- To provide information / advice to the ET regarding works programme and activities which may contribute to the generation of adverse environmental impacts;
- To submit proposals on mitigation measures in case of exceedance of Action and Limit Levels in accordance with the Event and Action Plans;
- To implement measures to reduce impact where Action and Limit Levels are exceeded; and
- To adhere to the complaint handling procedures in accordance with the EM&A
   Manual and the Complaint Management Plan.

### Contractor's responsibility under EP submissions

Apart from specific environmental requirements, in some cases, Contractors might be asked to adopt an existing **EP submission** as a basis to develop their own contract-specific documents, which should be reviewed by ET and IEC and approved by permit holders. Contractors should review their responsibilities under all EP submissions.

### Project specific requirements under EP submissions

Project specific **EP conditions** are often incorporated into EP submissions. These conditions are tailored to mitigate specific project specific impact and varied from project to project. Contractors should review their responsibilities under all EP submissions.

Environmental monitoring, Event and Action Plan (EAP)

# Environmental Monitoring Event and Action Plan (EAP)

For **designated project** under Environmental Impact Assessment Ordinance (EIAO), environmental monitoring can timely find out when potential adverse impact arises. The **Environmental Team Leader (ETL)** will design an EM&A monitoring programme base on the project **EM&A manual**, action and limit level would be set with reference to the baseline condition prior to the commencement of project's construction works. If there is exceedance of the **action and limit level**, the actions stated in the **EAP** plan should be strictly followed.

The Contractor should strictly follow the requirement stated in the EAP of the project EM&A manual. In general, the Contractor's role in the event of exceedance covers the following key points:

- confirm receipt of ET's notification of the exceedance in writing,
- check all plants and equipment,
- to provide information per ETL's request i.e., status and condition of plants, equipment and mitigation measures, in order to assist ETL's investigation into the cause of the exceedance,
- to carry out inspection undertaken by the ET,
- to carry out corrective actions instructed by the project proponent,
- to submit proposals on mitigation measures in case of exceedance of Action and Limit Levels in accordance with the EAP, and
- to carry out preventive measure to prevent recurrence.

Update / Surrender of Environmental related Licence / Permit

### Testing and Commissioning

The Contractor should review the contract and particular specifications, subject to the exact contract specifications, environmental related licences/ permits may be required for following circumstances at **T&C** stage:

- Licence under Water Pollution Control Ordinance (Cap. 358) for "Trade Effluents" from a permanent installation (e.g., water, wastewater treatment works, etc.) requiring discharge into drainage & sewerage systems, inland and coastal waters.
- Licence for Specified Process under Air Pollution Control Ordinance (Cap. 311) for the permanent works involving any **specified process** (e.g., chemical works, permanent set up of concrete batching plant, etc.)

Relevant information of application can be found under the topic - Application of Environmental related Licence / Permit of this Manual.

### Surrender of Environmental Permit

According to Section 11 of Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), a person who is issued with an environmental permit may surrender the whole or a part of the permit after ceasing to be responsible for implementing the whole or a part of the project. The applicant can use Form 7 for environmental permit surrender, and it can be found with the following link:

https://www.epd.gov.hk/eia/english/forms/files/application\_7.pdf

In the application form, environmental permit holder can specify the effective date of surrender of a part or the whole of the environmental permit, it takes immediate effect after EPD acknowledge receipt of permit holder's application. EPD will subsequently update the list of environmental permits surrendered which can be accessed online at:

https://www.epd.gov.hk/eia/english/register/surrend/latest.html

# Licence under the Water Pollution Control Ordinance (Cap. 358)

The Licence holder can surrender the wastewater discharge licence through a notification letter/email to corresponding Regional Offices of EPD. It should take immediate effect on the day after the permit holder notified EPD.

Application for Closure of Billing Account

# Application for Closure of Billing Account

Contractors can use **Form 6** to apply the billing account closure or reinstatement of an account. Form 6 can be found in the following link:

https://www.epd.gov.hk/epd/misc/cdm/info/Form6.pdf

Contractors should pay attention that all unused **CHITS** should be returned to EPD upon closure of the account. The completed application Form 6 should be submitted in person to an office of EPD / CEDD (Full addresses of the offices are contained in Section VI of Form 6).

### Disclaimer

The materials contained in this Construction Site Environmental Manual's (hereunder 'Manual') have been developed with every due care taking into account the circumstances of local working environment and requirements of the laws of Hong Kong. Any advice or comment in this Manual is given in this general context and should not be relied upon as a substitute for legal or other professional advice.

This document is produced to provide practical guidance on site environmental management aspects that meet legal obligations. There is no intention whatsoever to offer exhaustive guidance and interpretation of the environmental legislations and regulations of Hong Kong. Anyone wishing to affirm the legal position of individual facts or situation should refer to the relevant regulations and other related statutory documents or consult a lawyer.

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