



CHINA HARBOUR ENGINEERING CO., LTD.

Spill Response Plan

for

Contract No. HY/2013/02

**Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities
– Infrastructure Works Stage I (Western Portion)**




**Highways Department
The Government of the Hong Kong Special Administrative Region**

Revision No.: 3

Date : 9th January, 2016

Prepared by :



Environmental Officer

Endorsed by :



Project Manager/ Site Agent

REVISION HISTORY					
REV	REV DATE	DESCRIPTION OF CHANGE	PREPARED BY	REVIEWED BY	APPROVED BY
1	24-Nov-2014	For EP Submission	EO	PM	PM
2	7-Oct-2015	Section 4 - Adding Section 4.2 Spill into the Marine Environment and renumbered the following sub-sections Section1 - Update EP Version to EP-353/2009/I Section 5.2 - Adding sub-section to Section 5.2 Section 6.2 - Emergency drill will be conducted from bi-yearly to yearly Section 7 - Change of Environmental Officer and RE (S&E) Section 10 - Update Emergency Team Organization	EO	PM	PM
3	9-Jan-2016	By EPD comment, Section 3.1(ii) – adding “chemicals” after “transfer oil/hazardous” Section 5.2(i) – Revised. Section 7 – Rectified Safety Manager telephone number to consist with Section 10.	EO	PM	PM

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1 Introduction

CHEC (China Harbour Engineering Company Limited, hereafter CHEC) are the Main Contractor to responsible for the execution of the construction works for the Hong Kong-Zhuhai-Macao Bridge (HZMB) – Hong Kong Boundary Crossing Facilities (HKBCF) – Infrastructure Works Stage I (Western Portion) under Highways Department Contract number HY/2013/02. The works to be executed under the Contract comprise the following major items of Works:-

- (a) Construction of the viaducts and roads at the western portion of Hong Kong Boundary Crossing Facilities (HKBCF) mainly for connection with the Hong Kong – Zhuhai – Macao Bridge (HZMB), Hong Kong Link Road (HKLR), Hong Kong International Airport (HKIA) and the Tuen Mun-Chek Lap Kok Link (TM-CLKL);
- (b) Construction of the road modification at the SkyCity Interchange at Airport Island;
- (c) Construction of associated street lighting, street furniture, road marking, road signage, drainage, sewerage, fresh water and flushing water supply, irrigation, landscape, electrical and mechanical (E&M), utilities and services works;
- (d) Provisioning of civil engineering works and power supply installation for the Traffic Control and Surveillance System (TCSS); and
- (e) Other works in accordance with the Contracts.

Under the clause 2.7 of Specific Condition of Environmental Permit No. EP-353/2009/I, a Spill Response Plan should be submitted at least 1 month before the commencement of construction of the project. The plan includes the actions to be taken in the event of accidental spillage of oil or other hazardous chemicals aiming to minimize the adverse effects to marine ecology and the Chinese White Dolphins.

2 Site Characteristics

The site areas of Hong Kong Boundary Crossing Facilities (HKBCF) –Infrastructure Works Stage I (Western Portion) are located at the western portion of the Hong Kong Boundary Crossing Facilities. The layout illustrated the location of the site area; please refer to the *Appendix A* for reference.

3 General Precautions

In order to minimize the possibilities of accidental spillage of oil or other hazardous chemicals at the construction site, the following precautionary measures will be implemented on site as far as possible:

- i) Drip trays should be provided for oil/ hazardous chemicals containers and / or generators.
- ii) Stack oil/ hazardous chemical containers properly to prevent falling of such containers.
- iii) Provide tightly closed lids so as to avoid leakage of oil/ hazardous chemicals.
- iv) Store compatible chemicals and the waste in the same storage area.
- v) Inspected the storage area regularly to ensure compliance.
- vi) The storage areas of oil/ hazardous chemicals should be located remote from the coast and any other water bodies as far as practicable.
- vii) Label the storage containers and the chemical tanks according to the EPD's "Code of Practice on the Package, Labeling and Storage of Chemical Wastes Labeling".
- viii) Provide adequate ventilation in the storage area as necessary.
- ix) Prohibit open flames and smoking near the chemical storage and fuel storage areas.
- x) Store large and heavy containers on the floor as far as possible and avoid storing these containers higher than 0.75m above the floor level (storage in vessel / barges are exclusive).
- xi) Keep all chemical, chemical waste and fuel oil storage containers below eye level for easy inspection.
- xii) Provide adequate space for safe and easy handling and inspection of the containers.
- xiii) Maintain an up-to-date log of all chemicals, chemical waste and fuel oil stored at site.
- xiv) Separate incompatible chemicals from one another.

- xv) Keep the ingress to the chemical storage area locked and restrict access.
- xvi) Provide a bucket of dry sand and a suitable fire extinguisher in the storage area.

3.1 Transfer and Transport Precautions

In order to minimize the change of accidental spillage occurring during the transportation of chemicals or containers of chemicals to and from the construction site, some precautionary measures will be implemented on site. These precautions are subject to site conditions and constraints. These are:

- i) Use a suitably sized container so as to avoid overfilling.
- ii) Use pumps to transfer oil/ hazardous/chemicals instead of manually pouring.
- iii) Provide a containment structure able to hold any chemical or chemical waste that is accidentally spilled.
- iv) Label the oil/ hazardous chemical containers suitably.
- v) Use suitable carrying equipment to transfer the oil/ hazardous chemical containers from one location to another.
- vi) Only employ and use suitably licensed, trained and responsible chemical waste collector to carry out the transportation requirements.

4 General Response to the Spill

The general response to the spill shall be carried out to minimize the amount of oil or hazardous chemicals to the environment. The location of the spill is also a consideration. The general response includes the following:

4.1 *Spill contained on the deck of a vessel or on land*

Workers should be made aware of the emergency telephone numbers, locations of emergency showers, location of Spill Kits and emergency evacuation routes. The response actions to an incident should include the following steps:

- i) Immediately inform the Emergency Team of the spill incident occurring.
- ii) Take all possible measures to reduce or stop the spillage, such as shut off the valve.
- iii) Provided it is safe to do so, the area containing the spill shall have forced ventilation installed in order to make a safe spillage condition.
- iv) The Emergency Team Leader shall be responsible for organizing the manpower to identify the spill source and stop or cease it.
- v) The Emergency Team Leader as the assigned person shall equip all people involved in the cleanup works suitable personal protective equipment prior to the removal of any leaked chemical or chemical waste.
- vi) If possible and practical, the spilt chemical shall be put back into the containers of origin. Otherwise a suitable material like dry sand or sawdust shall be used to absorb the leakage.
- vii) Any contaminated sand / sawdust / other materials shall be collected and put into black plastic bags and shall be clearly labeled as "chemical waste".
- viii) All collected chemical waste shall be placed in an area designated for chemical waste storage.

4.2 *Spill into the Marine Environment*

This type of spill is considered the most serious in terms of the possibility of causing impact to the local cetacean community and other marine organisms. The general response to the spill shall be carried out to minimize the amount of oil or hazardous chemicals to the marine environment.

All the persons shall responsible for observing the spill and to report this immediately to their immediate supervisor who shall inform the Emergency Team Leader. A safety manager in Emergency Team shall be assigned to lead a working team and to deploy the Spill Kits to the spillage site. Depending on the scale of the spillage area of 100m², there are two scenarios of spill response procedures to be applied.

Scenario 1 – Spillage area within 100m²

- i) The Emergency Team Leader shall inform the parties such as Engineer's Representative (ER), Environmental Team (ET), Independent Environmental Checker (IEC) and the emergency team members;
- ii) The Emergency Team shall be responsible for organizing the manpower and resource to identify the spill source and stop or cease it;
- iii) The Emergency Team who equip with suitable personal protective equipment to remove of any leaked chemical or chemical waste;
- iv) The spillage area shall be contained by using secondary oil containment (SOC);
- v) Pads and pillow of the spill kit shall be applied to absorb and remove the spillage within the SOC;
- vi) The absorbent pads and pillows will be collected by disposal bags as part of the spill kits item;
- vii) The used spill kits will be treated, stored and disposed of as chemical waste according to the necessary procedures; and
- viii) An incident report will be submitted to the ER, ET, IEC and ENPO within 2 working days.

Scenario 2 – Spillage area exceed 100m²

- i) The Emergency Team Leader shall inform all parties such as ER, ET, Highways Department (HyD), Independent Environmental Checker (IEC), Marine Department (MD), Fire Services Department (FSD), Agriculture, Fisheries and Conservation Department (AFCD), Environmental Protection Department (EPD) and the Project Emergency Team members immediately. The contacts of the other concerned parties are shown in ***Section 7***.
- ii) The weather forecast for the area will also be used to determine the likely direction of movement (if any) of the surface spill.

- iii) The Emergency Team shall be responsible for organizing the manpower and resource to identify the spill source and stop or cease it.
- iv) The Emergency Team who equip with suitable personal protective equipment to remove any leaked chemical or chemical waste.
- v) The spillage area shall be contained by using secondary oil containment (SOC).
- vi) Pads and pillow of the spill kit shall be applied to absorb and remove the spillage within the SOC.
- vii) The absorbent pads and pillows will be collected by disposal bags as part of the spill kits item.
- viii) The used spill kits will be treated, stored and disposed of as chemical waste according to the necessary procedures.
- ix) An incident report will be submitted to the ER, ET, IEC and ENPO within 2 working days.

4.3 Spillage Control Equipment / Materials

Sufficient standard Spill Kits will be available on site as stated in **Section 6.3**. The standard Spill Kits includes items such as pads, pillow and Secondary Oil Containment (SOC). SOC is used to enclose the spillage area to contain the spillage spreading outside of the SOC. The pads and pillow are used for absorbing and removing the spillage within the SOC. The standard spill kit detail is shown in **Appendix C**.

4.4 Inventory of hazardous chemicals / compounds

An inventory of the oil and hazardous chemicals that are stored on site will be recorded, maintained and updated regularly. The details, amounts and location of the materials will be recorded. The senior foreman will responsible for maintaining such record on site.

4.5 Protection of sensitive receivers

- i) Application of this section will apply if any one of the following conditions are met:
 - A) If the site area of spillage of chemical / hazardous compounds more than 100m².
 - B) The location of spillage relative to the water intakes, Tai Ho Wan Inlet and coral sites such as Brothers Island is less than 1 km distance

- ii) Deployed a layer of physical absorbent at the water intakes, Tai Ho Wan Inlet and coral site in order to protect such areas from the adverse affect due to spillage.
- iii) The Contractor will inform Fire Services Department (FSD), Agriculture, Fisheries and Conservation Department (AFCD), Environmental Protection Department (EPD), Environmental Team (ET) and Independent Environmental Checker (IEC) immediately.
- iv) The on shift senior foreman or Emergency Team Leader’s delegates will in - charge all the mitigate measures implement on site in order to minimize the adverse effect.
- v) Follow the procedures as stated in *Appendix B*.
- vi) Scope of additional water quality monitoring would be implemented with the agreement of ER, ET and IEC.

5. General dolphin contingency plan for petroleum/chemical spill event

It is not known to what ability Chinese White Dolphin (CWD) can detect chemicals within its environment. At best, cetaceans will be able to detect chemicals that float on the water surface that have a high viscosity (*sludge* like) but may not be able to detect more volatile fractions such as petrol / aviation fuel. As such, an emergency spill plan must provide for keeping CWD away from the affected area.

5.1 *Initial Action*

- i) Observation from high platforms or aerial surveys to determine the extent of the spill as well as the presence of CWDs in the vicinity of the spill. The weather forecast for the area will be used to determine the likely direction of movement of the surface spill.
- ii) The course of action decided on will be related to such factors as the extent of the spill, the proximity of cetaceans to it and the likelihood of contact, e.g., enclosing the spill area or enclosing important habitats.

5.2 *All reasonable attempts must be made to keep dolphins away from contaminated areas*

- i) The use of absorbent booms is an effective containment method and can also act as a barrier to dolphins. Deployment of such absorbent booms with concomitant visual observation is appropriate for small and controllable spills that can be dealt with in the short term.
- ii) In the event of larger spills, the deployment of barrier nets (such silt curtains or anti-shark nets) would be an effective means of keeping dolphins out of the contaminated area until such times as the area was free of contamination.

6 Implementation of the Spill Response Plan

6.1 Notification to workers and frontier workforces

Personnel will receive information regarding the existence of a Spill Response Plan during the site induction training carried out by the EO / ES at the site. This is correct since any chemical spill is considered as a safety and environmental issue with regards to the workers at a site. It is also normal that all workers involved with handling chemicals and oils shall be supervised. For this reason it is important that all site supervisors (senior foreman and foreman) are trained in the necessary procedures involved in containing a spill control practices. Then there are those workers that are constantly involved in handling hazardous chemicals and oils. These workers shall also receive the appropriate training with regards to the handling of a spill.

This training and briefing should be carried out by a member of the EO / ES at the site area.

Trainer	Notified the workers	Participant
Environmental Officer / Environmental Supervisor	Worker safety Containment Clearing up Correct disposal Reporting spills	All Workers All Supervisors All Foreman
	Types of sensitive receivers Locations of these receivers Methods to protect these receivers Need for prompt action	Workers usually involved with hazardous chemicals or oil. All Supervisors All Foreman

In case of a spill happening, the worker noticing a spill shall immediately notify his supervisor. The supervisor shall then immediately contact the Site Engineer / Foreman, EO and ER. Any or all of these people shall have the responsibility to instruct the Emergency Team Leader or his delegate upon the necessary course of action to contain the spill. All of these people shall report to the area where the spill occurs to follow up on the action required to contain the spill. The patrol car would be immediately dispatched to the site of spill and use the spillage control kit to contain the spill.

As soon as the spill has been noted by the senior foreman and / or foreman, and if any of the chemical or oil escaped into the marine environment, then relevant parties shall be notified for support as needed. Incident report after the incident would be submitted to ER within 2 working days. For the contacts of relevant parties please refer to **Section 7** for more details. The Contractor will follow the procedures attached in **Appendix B**.

6.2 Training - workers and frontier workforces

The onsite workforce will receive training from Environmental Officer or his delegate regarding the measures outlined in this Plan during the Site Specific Environmental Induction Training. The Environmental Officer or his delegate shall conduct Tool Box Talks with the site workers regarding this Plan quarterly. All site workers will be required to receive this training. A refreshed training for the Site Specific Environmental Induction Training is conducted half-yearly. Emergency drill will be conducted with the Emergency Response Team yearly.

6.3 Location of Spill Kits

One set of spillage control kit would be provided at site area WA2 and stored at the entrance of the Temporary Chemical Waste Container. Another 2 sets of Spill Kits would be equipped at work places at HKBCF working zone ready for use if spillage occurred. 1 set of Spill Kits would be stored at patrol car.

Foremen and engineers would be notified by EO of the locations of the spillage control kits.

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7 Contact of Relevant Parties

	Name	Telephone no.
Emergency Team		
Safety Manager (Team Leader)	John Lau	6131 8082
Environmental Officer	Richard Ng	5977 0593
Environmental Supervisor	Joy Chan	5977 0594
Environmental Supervisor	Selena Yang	5977 0595
Senior Foreman	Ma Hoi Tsan	9135 8579
Senior Foreman	Cheung Kam Wah	9336 8763
Foreman	Luk Wai Keung	9043 0412
Relevant Government Departments		
General Emergency Services	-	999
Labour Department	-	2717 1717
Fire Services Department	-	2723 2233
Agriculture, Fisheries and Conservation Department (AFCD)	Dolphin Stranding Hotline	1823
Environmental Protection Department (EPD)	-	2838 3111
Nearest Fire Station	Tung Chung Fire Station	2988 1898
	Chek Lap Kok Fire Station	2949 9081
Nearest Ambulance Depot	Tung Chung Ambulance Depot	2988 8282
	Castle Peak Bay Ambulance Depot	2451 7193
Nearest Hospital	North Lantau Hospital	3467 7000
Airport Authority Hong Kong	-	2186 7111
Weather Forecast	-	187 8200
Marine Department	-	2852 4472-77
Vessel Traffic Centre	-	2858 2163 , VHF channel 12 or 14
Marine Police Control Centre	-	2803 6241
Maritime Rescue Coordination Centre	-	2545 0181, 2233 7999
Relevant Utility Companies		
China Light and Power Co. Ltd.	-	2728 8333
China Gas Co. Ltd.	-	2880 6999
Water Supplies Department	(Hong Kong & Island)	2811 0788
	(Kowloon & New Territory)	2396 0210

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ER (Engineer Representatives) – AECOM		
RE (S&E)	Fred Yeung	6330 8293
RIOW (S&E)	C.K. Chan	6330 1395
Environmental Team – ETS		
Environmental Team Leader (ETL)	C.L. Lau	6190 4315
Independent Environmental Checker – Ramboll Environ Hong Kong Limited		
IEC	Raymond Dai	5181 8401

8 Role and Responsibilities of Management Parties

8.1 *Emergency Team Leader - Safety Manager (SM)*

The Safety Manager (SM) is a senior staff responsible for safety, health and environmental matter for the Contract. He is also responsible for general administration work of the safety and environmental divisions, including recruitment, supervision and appraisal for safety officers and environmental officers, meeting with safety officers and environmental officers regularly. SM is also to assist in handling investigation of incidents and accidents.

8.2 *Construction Managers (CM)*

The Construction Manager (CM) is a senior staff on site in which report to the Project Director has the responsibility to coordinate all environmental matters on site with all relative authorities. CM is also responsible for all site operations, management of environmental issues, staff supervision, control, coordination & planning, external liaison as well as implementing and monitoring necessary corrective actions. CM is working full-time on the site.

The Construction Manager will also carry out immediate action to rectify any non-compliance of environmental requirements as well as handle any complaints received from the public.

Construction Manager has the responsibility to coordinate all environmental matters on site areas and to report these to the Site Safety and Environmental Committee, HyD, EPD and Engineer's Representatives. The Construction Manager is also responsible for ensuring commitment to environmental performance is fulfilled and assigning adequate resources and facilities. With the assistance of the Environmental Officer, he would also oversee the implementation and performance of the Spill Response Plan.

8.3 Environmental Officer (EO)

The Environmental Officer will be appointed on site for the overall coordination, monitoring and overseeing the performance and implementation of the Spill Response Plan for the Contract. The Environmental Officer directly reports to the Construction Manager.

The responsibilities of the Environmental Officer are also included as follows:

- Review the Spill Response Plan and ensure works are executed in accordance with the plan;
- Monitor and control the works including those of subcontractors to ensure compliance with specified requirements;
- Train the worker and frontier workforces;
- Assist in handling any complaints received; and
- Ensure regular environmental monitoring is carried out, and that all environmental monitoring results are recorded.

8.4 Environmental Supervisor (ES)

Environmental Supervisor (ES) is responsible for the implementation of this Spill Response Plan with the assistance of the foreman. They are also responsible for:

- Co-operate with the Environmental Officer to rectify any non-conformances being identified;
- Attend environmental meetings whenever necessary;
- Carry out ad hoc environmental site inspections when deficiencies are being found; and
- Assist with Environmental Officer on any environmental accidents like chemical spillage.

8.5 Senior Foremen / Foremen

The Senior Foremen / Foremen are responsible for site supervision and coordination of the works as well as implementation of any remedial actions or environmental protection measures as directed by the CM / EO.

The Senior Foremen / Foremen are also responsible for:

- Assisting in the daily implementation of the Spill Response Plan including to ensure all waste is sorted, segregated, recycled or reused when applicable;
- Supervise the whole process of cleaning;
- Ensuring waste is avoided and / or minimised as much as practically possible and
- Ensure waste is clean and stored in temporary chemical waste container before left.

8.6 Workers

The workers are responsible to carry out the waste collection practice and follow the instruction of Senior Foreman/ Foreman. They are obligated to carry out the works like:

- Trained before handling chemical spillage;
- Pick up the Spill Kits
- Transfer the Spill Kits to Site and
- Collection of chemical wastes from site area and stored back to the temporary chemical storage area.

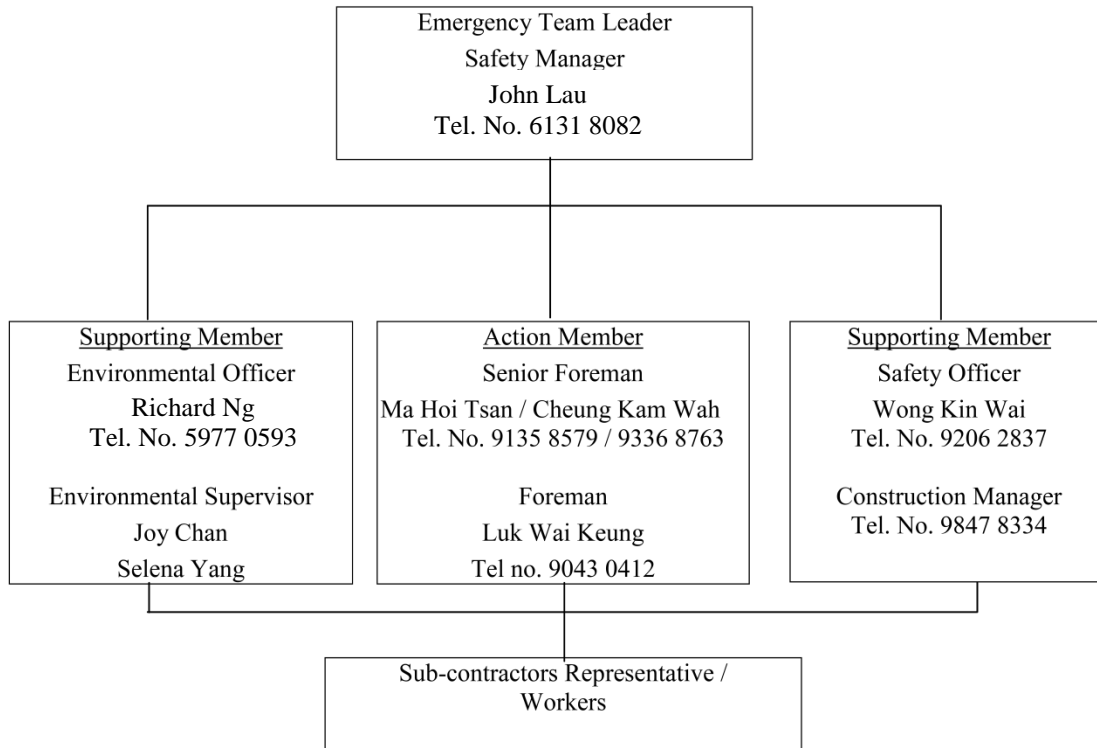
9 Notification the relevant parties

This will be the responsibility of the most senior and experienced worker involved and the immediate works supervisor. If the spill is small and contained easily, then the EO shall be informed and information will be given to the Engineer Representative (ER) as soon as practical. Both may choose to inspect the area if the spill is less than 100m² to confirm that the spill is contained and the correct / most suitable clean up procedure has been implemented. In all cases of spillage, representative photographs shall be taken before and after clean up. If the spillage persists, daily photo records should be taken. The EO shall be responsible for keeping a record of the spill incidence.

Spills greater than site area 100m² shall require both the EO and the ER to attend the area to check that the spill was contained and proper cleanup was carried out. A photograph record shall be kept, as shall be a record by both the EO and the ER. The Construction Manager /Engineer / Senior Foreman / Foreman shall also be informed of the incident. If there was full containment and no significant quantity entered into the marine environment, then the event shall be documented.

If any significant quantity enters the marine environment (site area 100m²), then a full scale notification shall occur. Under such circumstances, identified people in the relevant parties shall be notified for support as needed, the contact of the relevant parties listed in *Section 7*.

10 Emergency Team Organization

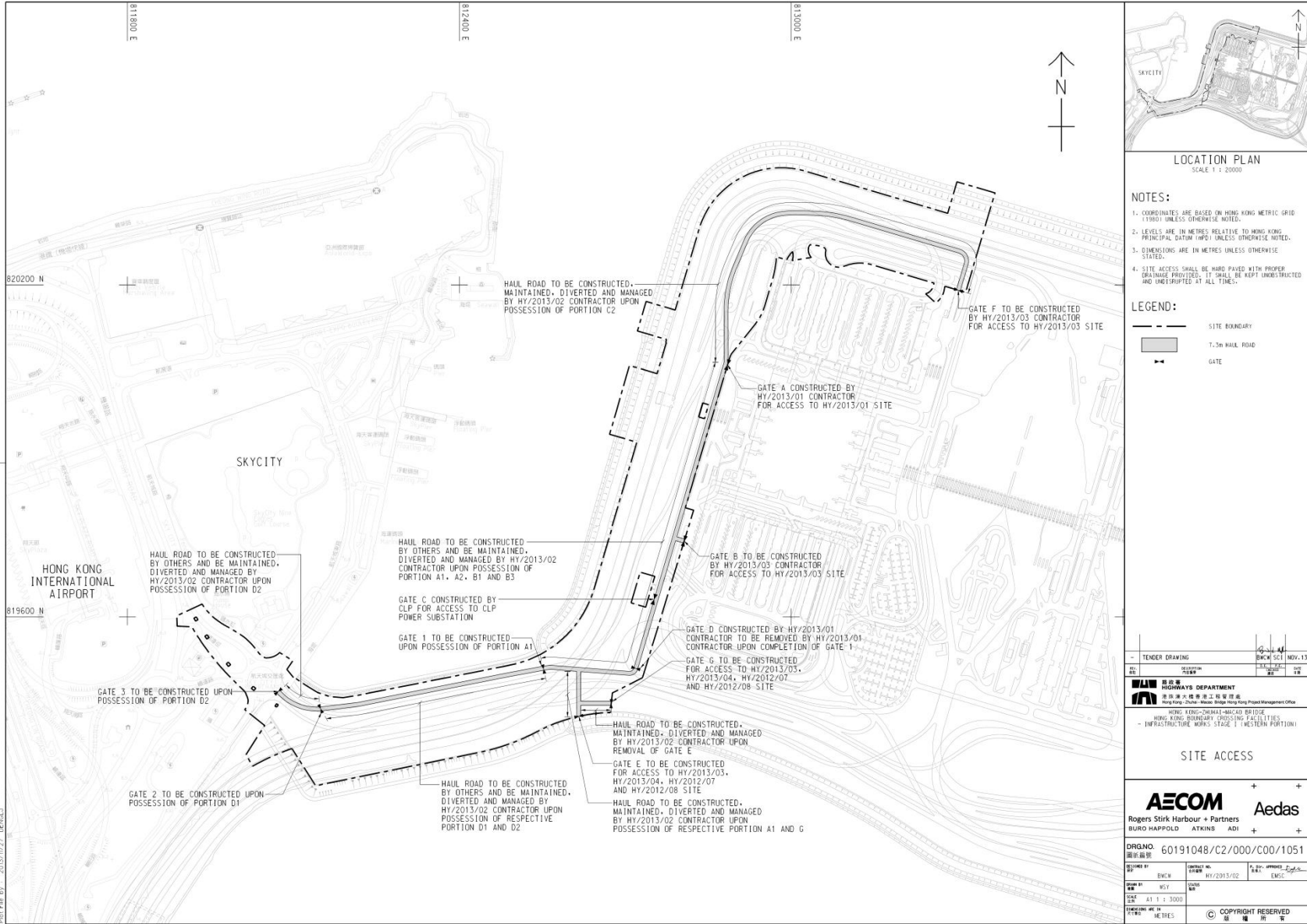


Appendix A

General Layout of the Site Area

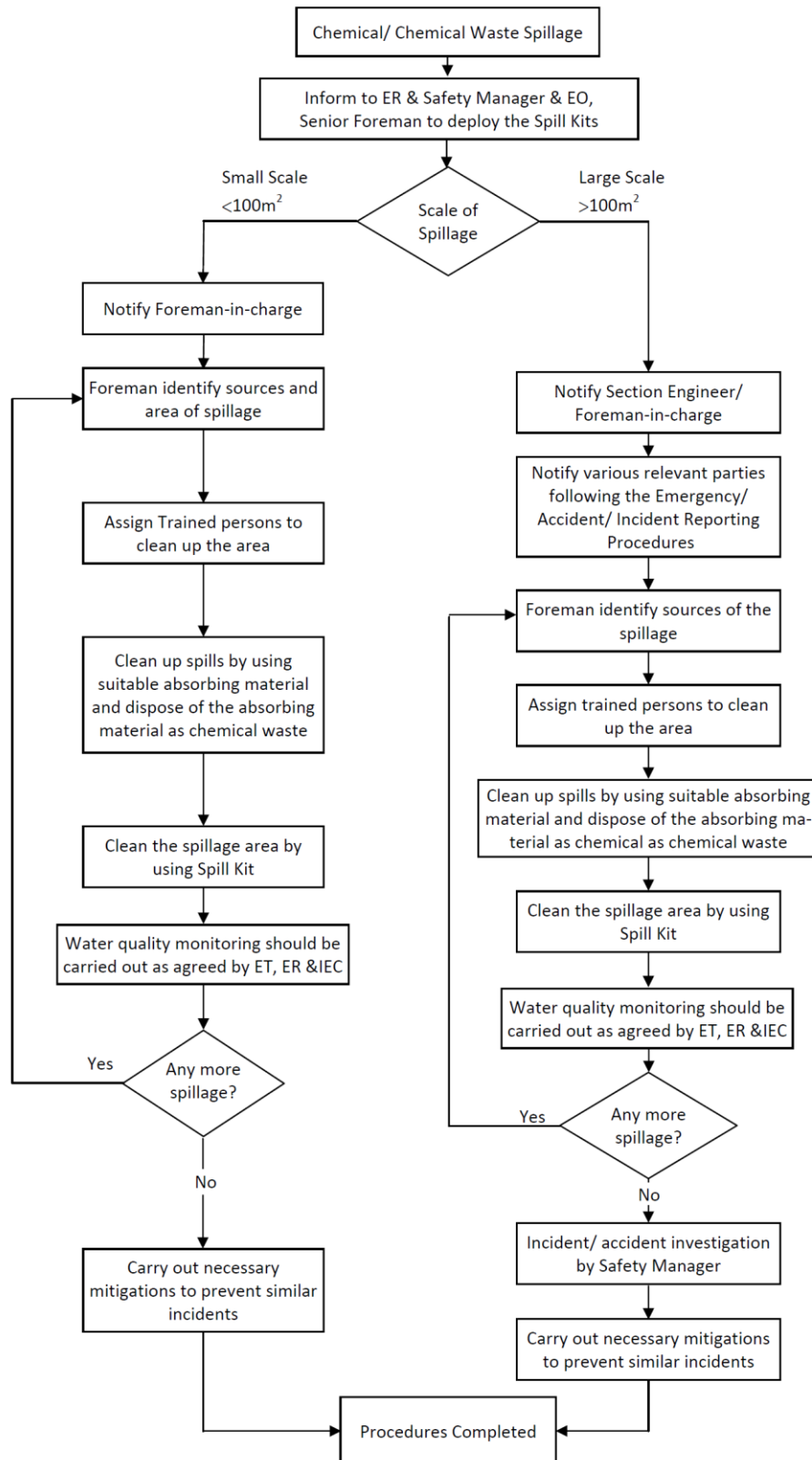
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Appendix B

Flow Diagram of Handling the Spillage on Site



Appendix C

Information of Spill Kits

Appendix C

SPC Environmental Spill Kits



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55-Gallon Drum Spill Kit

Be prepared to respond quickly to spills with the 55-Gallon Drum Spill Kit.

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- Kit is stored in a reusable 55-gallon drum with a lever-locked lid.
- Kit includes fifty 15 x 19" pads, four 3" x 12" socks, eight 18 x 18" pillows, goggles, nitrile gloves, five disposal bags and an emergency response handbook.



95-Gallon Overpack Spill Kit

For fast response to a larger spill, choose the 95 Gallon Overpack Spill Kit.

[Features](#)

[Reviews](#)

[Related Items](#)

[Shipping Info](#)

- Tough, secure and highly visible, the kit absorbs up to 82 gallons.
- Top quality screw-top overpack drum meets UN and DOT specifications.
- For responding to larger spills.
- Available in Oil Only, Allwik (Maintenance Only) and Hazwik (Chemical Only) versions.
- [Click here for Kit Contents](#)