

Appendix 7D

Emergency Response Framework to deal with Potential Chemical Spillage

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D.1 EMERGENCY RESPONSE FRAMEWORK TO DEAL WITH POTENTIAL CHEMICAL SPILLAGE

D.1.1 Objectives

D.1.1.1 This document presents the emergency response framework to deal with chemical spillage due to vehicle accidents that may occur on the Shenzhen Western Corridor (SWC) bridge during the operational stage. The objectives of the framework are to ensure:

- A timely and effective response to any spill incidents occurred on the SWC bridge;
- The coordination of the relevant government departments to deal with the spill; and
- Minimal impacts to the aquatic environment and ecological system in Deep Bay.

D.1.1.2 The priorities for control of the spill are as follows:

- The primary aim is to control the spreading of spill on the road surface of the SWC bridge and release of spills into Deep Bay; and
- The secondary aim is to clean up the spill.

D.1.2 Chemicals of Concern

D.1.2.1 There are a wide variety of chemicals. Classification of dangerous goods under the Dangerous Goods (Application and Exemption) Regulations by Fire Services Department categorises different types chemical substances with similar properties.

D.1.2.2 Under the Dangerous Goods Ordinances, the definition of “Dangerous Goods” is:

“All explosives, compressed gases, petroleum and other substances giving off inflammable vapours, substances giving off poisonous gas or vapour, corrosive substances, substances which become dangerous by interaction with water or air, substances liable to spontaneous combustion or of a readily combustible nature, radioactive material and to such substances to which it is applied by the Chief Executive in Council under section 5: Provided that this Ordinance shall not apply-

- (a) to any dangerous goods carried in Her Majesty’s ships of war, or in the ships of war of any foreign state; or (Amended 23 of 1998 s.2); and*
- (b) subject to Part III, to any dangerous goods in the possession and control of the State. (Amended 9 of 1971 s.4)”*

D.1.2.3 There are 11 categories of dangerous goods under the Dangerous Goods (Application and Exemption) Regulations. Vehicle accidents involving chemical spillage may cause potential water quality and ecological impacts. For the case of the SWC, the following categories of dangerous goods are of concern:

- Category 3: Corrosive substances
- Category 4: Poisonous substances
- Category 5: Substances giving off inflammable vapours
- Category 6: Substances, which become dangerous by interaction with water.

D.1.2.4 The chemicals in liquid state are of most concern because there is a higher risk of this form of chemicals to release into the seawater through the bridge drainage system.

D.1.3 Sensitive Areas

D.1.3.1 The SWC bridge is located within Deep Bay, which is an ecologically sensitive area. Deep Bay covers a large area of mangrove and mudflat, which is a feeding ground for birds. The bridge

drainage system collecting the road runoff would be directly discharged into the Deep Bay waters or the mudflat. In case of an accident on the bridge, it may cause the spillage of oil, toxic chemicals or hazardous substances. There would be potential impacts to the aquatic environment in Deep Bay.

D.1.3.2 There are a number of sensitive areas within Deep Bay. Some of them are located in the close proximity to the SWC bridge. The following gives a list of the sensitive areas in Deep Bay:

- Mai Po Nature Reserve in the Inner Deep Bay
- Ramsar site in the Inner Deep Bay
- Mangrove near Ngau Hom Shek
- The Marine Park at Sha Chau/Lung Kwu Chau
- Oyster beds extended from Lau Fau Shan to Sheung Pak Nai coastal area
- Pak Nai Site of Special Scientific Interest (Pak Nai SSSI)
- Tsim Bei Tsui SSSI
- Seagrass and horseshoe crabs at Ha Pak Nai
- Chinese White Dolphin feeding ground in the Urmston Road Channel
- Cooling water intake for China Light & Power (CLP) Black Point Power Station
- Mangroves and mudflat at Futian (within the Mainland waters)
- Oyster beds at Shekou (within the Mainland waters)

D.1.3.3 **Figure D.1** shows the locations of these sensitive areas.

D.1.4 Response Organizations and Emergency Response Plans

D.1.4.1 In the event of DGV accidents, a joint effort from relevant government departments is required to control the spill and to minimise the impacts to Deep Bay. The main response departments and the relevant emergency response plans being implemented include:

Management Authority

D.1.4.2 The future Management Authority of the SWC bridge is responsible for the overall co-ordination with other government departments in dealing with the spill incident on SWC; employing a licensed chemical waste collector to clear the waste; and providing plant, equipment and manpower in cleaning up the affected area with advice provided by EPD. The future Management Authority will take the lead to develop a detailed Emergency Response Plan based on this Framework.

Transport Department (TD)

D.1.4.3 A 24-hour Traffic Control Surveillance System (TCSS) operated by TD will be installed on the SWC bridge. This system also serves the purpose of monitoring any vehicle accident on the bridge.

D.1.4.4 HKPF's "Regional Command and Coordination Centre" would monitor the traffic through the TCSS and notice any incident immediately.

Highways Department (HyD)

D.1.4.5 The *Handbook on Emergency, Earthquake and Storm Damage Organization* defines the responsibilities of HyD and provides detailed procedures to deal with emergency situations that may occur on roads. In case of chemical spillage on the SWC bridge, HyD will initiate the procedures specified in the Handbook and co-ordinate with relevant government departments to

deal with the incident. Within the resources of the department, HyD will also provide necessary plant, equipment and manpower.

Fire Services Department (FSD)

- D.1.4.6 FSD is mainly responsible for fire-fighting and rescue, and is not responsible for cleaning up the spill unless it is still hazardous. Notwithstanding that, when the FSD Officer-In-Charge (OiC) attending the incident declared that the incident/accident is a Major and/or Prolonged Chemical Incident, the *Operational Procedures for Incidents Involving Chemicals* will be implemented accordingly. FSD will provide assistance to control the situation and to confine the chemical spillage; and recover/handle of oil, toxic chemicals and hazardous substances.

Hong Kong Police Force (HKPF)

- D.1.4.7 The “Control and Command Centre” of HKPF operates 24 hours in parallel with “Fire Services Communications Centre (FSCC)” of FSD. Upon receiving the report of DGV accident on the SWC bridge from TD or other sources, the centre will inform the relevant government departments including but not limited to HyD, EPD, AFCD, GL, MD and Management Authority to take necessary actions to deal with the DGV accident.
- D.1.4.8 HKPF will control the traffic; cordon off the affected area under the direction of FSD; control the entry by people, vehicles or vessels into the affected area; and assist in evacuation in the affected area, if necessary. In the event of a DGV accident on the SWC bridge, HKPF will also transport saw dust, dry sand, suitable absorbent or neutralising agent from the weigh-station near Ha Tsuen Interchange to the accident scene (See **Figure D.2**). HKPF will also provide assistance to control the situation and to confine the chemical spillage.
- D.1.4.9 HKPF will be responsible for overall co-ordination with the Mainland Authority in dealing with any spill incident.

Government Laboratory (GL)

- D.1.4.10 There are a wide variety of chemicals under Categories 3, 4, 5 and 6 dangerous goods. In case of the spill incident, GL will provide assistance to identify the types of chemicals and to advise on the characteristics of chemicals involved so as to help FSD and HKPF to plan the operational strategy. Upon request, GL will also arrange to send an officer to scene to assist in locating/identifying the chemical(s), if consider necessary; and is responsible for analysing the levels of toxic substances at scene as requested.

Marine Department (MD)

- D.1.4.11 MD is the designated authority for the clean up of oil at sea. The response actions from MD will follow the *Maritime Oil Spill Response Plan (MOSRP)*, which has been developed to deal with oil spill and their potential hazard to the waters of HKSAR, in order to provide a timely response to oil spillages. When the spill from a DGV accident released from the bridge into the seawater, assistance from MD for the control of marine traffic is required. The existing MOSRP developed by MD is to deal with oil. For non-oil related marine pollution incidents, the plan can only be used as a reference by relevant departments. The responsibilities of MD are to:
- Provide absorbents, booms, skimmers, dispersants and spray equipment to control the spreading of spill;
 - Assist in controlling all vessel movements in the affected area; and
 - Monitor the spill situation and reporting extent of pollution.

Environmental Protection Department (EPD)

- D.1.4.12 EPD will advise on the environmental effects of chemical waste arising from the incident; and responsible for collecting and transporting chemical waste that can be treated at the Chemical

Waste Treatment Centre (CWTC). For other chemical waste which cannot be treated in CWTC, EPD will provide advice on the collection and clearing.

D.1.4.13 If necessary, EPD will carry out water quality monitoring to assess the water quality impacts.

Agriculture, Fisheries and Conservation Department (AFCD)

D.1.4.14 AFCD will advise on the protection of ecologically sensitive areas in Deep Bay; provide necessary support to clean up substances/wastes washed ashore in the Ramsar Site and Marine Parks; and monitor the ecological conditions and assess the potential ecological/fisheries impacts at the likely affected sensitive areas.

Leisure and Cultural Services Department (LCSD)

D.1.4.15 LCSD will clean up substances/wastes washed ashore.

D.1.5 Emergency Response Actions

D.1.5.1 In the event of DGV accident on the SWC bridge, the relevant government departments will implement the existing emergency response plans to deal with the incident.

D.1.5.2 It is important for the relevant government departments to confine the spill to be within the bridge such that water quality and ecological impacts would be minimised.

D.1.5.3 Saw dust, dry sand, absorbents and neutralising agents will be stored at the HKPF's weigh-station near Ha Tsuen Interchange (See **Figure D.2**). HKPF will provide assistance to transport the clean up materials to the accident scene to control the spreading of the spill.

D.1.5.4 The operational guidelines to deal with the spill to minimise water quality and ecological impacts include:

- Stop the flow of spill from the source of the pollution;
- Contain the spill in a limited area and prevent the spill from entering the road drainage system to Deep Bay;
- Avoid spraying water or chemicals unless it is necessary;
- Remove the oil/chemicals by using suitable equipment and materials; e.g. absorbent to absorb the oil on the bridge surface. The absorbent should be able to absorb oil material at a high ratio of oil to sorbent.
- Dispose the collected spill and the used absorbent as chemical wastes once the spill has been removed from the road surface.

D.1.5.5 The personnel who are responsible for the clean up operation should take safety precautions in accordance with the corresponding departmental guidelines and procedures.

D.1.6 Liaison with Mainland Authority

D.1.6.1 HKPF has the existing channel to liaise with the Mainland side in case of any cross-boundary vehicle accidents and will be responsible for overall co-ordination with the Mainland Authority for the SWC case.

D.1.6.2 Depending on the final agreement with the Mainland Authority, responses under this emergency response framework should be implemented as far as possible to prevent the spillage of chemicals from releasing into Deep Bay.

D.1.7 Training and Drill

D.1.7.1 In order to provide a prompt response to an emergency event, relevant government departments who are responsible for dealing with the spill incident must be familiar with the procedures and the operation of the essential equipment. Training should be provided to all designated

personnel of the future Management Authority of SWC or HyD and other relevant departments to deal with the spill incident on SWC. The areas that should be covered in the training include:

- Procedures to deal with spill incident
- Ordinance and regulations related to chemical waste control
- Awareness of chemical waste hazards and pollution
- Roles and responsibilities
- Precaution and safety measures
- Spill clean up
- Spill disposal

D.1.7.2 In addition, it is important to test-run to establish the effectiveness of the Emergency Response Plan to be developed based on this Framework. The aim is to ensure good coordination and prompt action amongst relevant government departments. Testing will take the form of an exercise or drill to practice responding to a spill on the SWC bridge. The future Management Authority of SWC or HyD should take the lead in organising the drill. The exercise is aimed to build the sense of teamwork and familiarity from relevant government departments. It makes the response more effective and efficient when an actual spill incident occurs.



