7 Potential Oil Spillage during the Operation Stage at Tsing Yi

7.1 Introduction

7.1.1 During the operation stage of the Dock at Tsing Yi, oil spillage may occur, which will have the potential to impact on the water quality and therefore the SRs. This section identifies the potential oil spillage sources and the SRs of oil spillage, assesses the potential environmental impacts and recommends necessary mitigation measures, with particular references to the latest oil spillage incident.

7.2 Environmental Legislation and Standards

7.2.1 Oil and fuel spills to coastal waters are controlled under the Shipping and Port Control Ordinance (Cap.313). The Ordinance prohibits pollution of the sea by oil and fuel from both land-based and marine sources.

7.3 Sensitive Receivers

7.3.1 The SRs potentially affected by oil spillage will be the same as those WSRs identified in Section 3 – Water Quality Impact Assessment. Table 3-7 and Figures 3-6 and 3-7. The nearest SR is Ma Wan Fish Culture Zone, about 3,100m to the north west of the Tsing Yi site and on the other side of Ma Wan Channel.

7.4 Oil Spillage Sources

7.4.1 Potential oil spillage mainly comes from the vessels received by the Dock for servicing. The vessels received by the Dock tend to be unloaded with any goods and any oil tankers received will be empty. As such, the scale of any oil leakage from the vessels for servicing in the Dock tends to be small as compared to in an oil jetty or a port.

7.5 Historical Spillage Incidents

7.5.1 According to Yiu Lian's records, there has been only two minor incident occurred to Yiu Lian's floating dock operation since 1990.

7.5.2 The first minor incident occurred to Yiu Lian Floating Dock No.1 in Tsing Yi in 1990. When emptying the ballast water, an oil tank plug was mistaken as the ballast water tank plug. The mistake was corrected immediately and only a small amount of oil was leaked. No significant water pollution was caused.

7.5.3 The latest incident occurred to Yiu Lian Floating Dock No.3 at the existing site in Yam O Wan on 30 August 2006.

7.5.4 The oil leakage came from a badly damaged ocean going vessel when the Dock was lifting the vessel up during the dock-in operation. The vessel was grounded in shallow water in a preceding typhoon event. It scraped its bottom on rocks and made large openings at the bottom shell plating to the sea. Structural members were seriously distorted with floor panels, transverses, longitudinals and subdivision bulkheads twisted and skewed around in the tanks. The oil in the damaged fuel tank and the mixture of oil and water in the water ballast tank were emptied by pumping and water replacement before the vessel entered Hong Kong waters. The oil removal process was carried out and affirmed by the salvage company.

7.5.5 The damaged vessel was received by the Dock for repair services in order to restore its safe conditions. The Dock was the only one in the region which could accommodate the vessel which required an extraordinary combination of draught and width up to 9.5m and 44.5m respectively.

7.5.6 Before the vessel was lifted up, a conventional oil sounding device was used to check any signs of remaining oil contamination inside the fuel tank and the ballast water tank of the vessel and no oil contamination was detected.

7.5.7 The Dock was ready with two layers of oil booms placed at the fore and the aft entrances of the Dock to form a barrier ring to prevent any potential oil spillage from the Dock into the sea. However, a small portion of fuel and oily water was drained away from the vessel into the Dock while the vessel was being lifted up into the dry. Some of the oil spills escaped from the oil barrier ring as the second layer of the oil boom at the aft entrance was broken due to a swift tidal current.

7.5.8 On noticing the oil leakage, the Oil Pollution Contingency Procedure as described in Section 7.6 was enacted immediately. All reasonable steps and care were undertaken by Yiu Lian to stop the oil spillage into the sea. Under the supervision and monitoring of the Marine Department, the resulting oil pollution in the sea was contained within 5 hours and no significant pollution to the WSRs was observed. The Oil Pollution Contingency Procedure was found to be adequate and effective.

7.5.9 The latest oil spillage could have been prevented had the oil contamination been totally taken out from the vessel by the pumping and replacement process before it entered the Hong Kong water.

7.5.10 It was later found that water had flooded into the fuel oil tanks. As a result, the remaining fuel oil was pushed to the inner tank top, which could not be detected by the conventional sounding device. Some oil spills may have also come from the residues trapped on the twisted and skewed structural members.

7.6 Oil Pollution Contingency Procedure

7.6.1 Based on the nature of the Dock operation, Yiu Lian's operation experience and the international practice, an Oil Pollution Contingency Procedure has been developed by Yiu Lian and updated over time.

7.6.2 The Procedure lays down the organisation, assigns responsibilities to each responsible officer, defines the reporting line and sets out procedures for prevention and handling of any oil spillage.

7.6.3 It emphasises prevention of any oil spillage. Those include:

- Preparation required from the ship owner;
- Information exchange between Yiu Lian, Harbour Master and the Ship Owner before a ship enters the Hong Kong waters;
- Dedicated officer to keep a constant watch for any signs of oil leakage during the docking operation;
- Ship inspection by Yiu Lian before carrying out any ship services;
- Double layers of oil booms enclosing both the fore and aft entrance of the dock; and
- Provision of decontamination materials and equipment on site ready for any potential spillage, including absorbent booms, spray guns, oil dispersant and ship soap solvent, etc.

7.6.4 The contingency procedure in the event of an oil spillage incident starts with minimising the pollution spreading and prescribes the procedures for cleaning of oil pollution, calling for necessary assistance from relevant government departments and after event reporting.

7.6.5 The latest version of the Procedure is provided in Appendix 7A.

7.7 Potential Impact of Oil Spillage at Tsing Yi

7.7.1 The nearest WSRs are Ma Wan Tung Wan Beach 3,100m from the Dock, on the opposite side of the fast flowing Ma Wan Channel. The Ma Wan Fish Culture Zone is on the eastern side of Kap Shui Mun Channel. Any oil spill crossing the fast flowing Ma Wan Channel and thus affecting those two WSRs is unlikely within the first half a tidal cycle (i.e. the first 6 hours approximately) from the occurrence of the incident under the normal wind conditions.

7.7.2 The other WSRs are the bathing beaches in the Tsuen Wan District, on the north shore of Rambler Channel or Ma Wan Channel and, the bathing beaches in the Tuen Mun District. Those beaches are 3,520m to 12,200m away from the Dock. Any oil spill from the Dock needs to cross the fast flowing Ma Wan Channel or Ramble Channel or Urmston Road before

affecting those beaches. Under the normal wind conditions, this is unlikely within the first half a tidal cycle or 6 hours from the occurrence of the incident.

7.7.3 Under the extreme south easterly wind conditions, the oil spill may reach the WSRs in less than 6 hours. However the Tsing Yi site is well sheltered form the south easterly wind and the probability of an oil spillage coinciding with such an extreme wind condition is low.

7.7.4 It is anticipated that, the potential pollution risk of an oil spill incident to those WSRs will be small if the Oil Pollution Contingency Procedure is implemented properly.

7.8 Cumulative Impacts

7.8.1 There are a number of oil jetties around the site, including Shell oil jetty and Caltex oil jetty to the north, Exxon-Mobil oil jetty and CRC oil jetty to the south of the Dock. Also, two other floating docks – United Dockyard and Yiu Lian Floating Dock No.1, are in the close vicinity of the Dock. Those facilities all have the potential of oil spillage.

7.8.2 Each of the above facilities has its own procedures to prevent, minimise and contain any oil spillage. The probability of an oil spill from the Dock coinciding with that from another of the above facilities is extremely low. After relocation, the Dock at Tsing Yi will be further away than at the existing site from the nearest fish culture zone at Ma Wan. In view of the above, the additional cumulative impact of any oil spillage on the nearby WSRs resulting from the Dock relocation to Tsing Yi, is minimal.

7.9 Mitigation Measures

7.9.1 In the latest incident, the oil spill could have been reduced or prevented if the oil contamination in the ballast water tank and the fuel tank had been detected. The oil spillage into the sea could have been prevented had one of the oil booms not been broken by a swift tidal current. As such the following environmental control measures are recommended to prevent and to minimise the oil spillage:

- Before emptying any water from a vessel at the Dock, check should be carried out by a trained staff for any signs of oil contamination using a device capable of detecting the oil-water interface. No draining of the water from the vessel into the sea should be allowed if there is any signs of oil contamination;
- The fore and the aft entrances of the Dock should be fully enclosed with two layer oil booms during the process of lifting up the Dock. The oil booms should be regularly checked for any defects and replaced immediately should there be any significant defects. In any case, the rope of the oil booms should be replaced at least once every two years.

7.9.2 Annual drills of the Oil Pollution Contingency Procedure should be carried out to ensure the all staff involved is familiar with the Procedures and their respective responsibilities in preventing, minimizing and cleaning up any oil spillage. The drills should also be targeting the effectiveness of the communications among all relevant parties in the event of an oil spillage incident. The Procedure should be closely followed in the event of an oil spillage. The Procedure should be regularly reviewed and updated in view of any lessons learned from the drills or oil spillage incidents.

7.10 Residual Impacts

7.10.1 With the implementation of the mitigation measures as recommended, the risks of the potential water pollution resulting from any oil spillage incidents at the Tsing Yi site can be limited to an acceptable level.

7.11 Conclusions

7.11.1 Any accidental oil spillage from the vessels at the Dock has the potential of causing water pollution at the nearby WSRs. The existing Oil Pollution Contingency Procedure has been found to be effective. Improvement in preventive measures has been recommended. With the full implementation of the Emergency Response Action Plan and the improved preventive measures, the risks of the potential water pollution resulting from any oil spillage incidents can be limited to an acceptable level. The Dock relocation will lead to a reduction in the pollution risk at Ma Wan Fish Culture Zone as the Tsing Yi site is further away than the existing site from the fish culture zone.