立法會
Legislative Council

LC Paper No. CB(1)665/09-10

Ref. : CB1/SS/3/09

Paper for House Committee meeting on 18 December 2009

Report of the Subcommittee on Dumping at Sea (Exemption) (Amendment) Order 2009

Purpose

This paper reports on the deliberations of the Subcommittee on Dumping at Sea (Exemption) (Amendment) Order 2009 (the Amendment Order).

Background

Existing control of dumping at sea

2. Following the spirit of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the London Convention), the Dumping at Sea Ordinance (Cap. 466) (DASO) controls the disposal and dumping of substances and articles from vessels, aircraft and marine structures in the sea and under the seabed, the related loading operations as well as incineration at sea. Under section 8 of DASO, any person intending to perform those operations is required to obtain a permit from the Director of Environmental Protection before carrying out such operations.

3. Section 3 of the Dumping at Sea (Exemption) Order (Cap. 466 sub. leg. B) (DAS(E)O) provides general exemptions from the permit requirements to operations specified in Schedule 1. Section 4(1) of the DAS(E)O exempts a relevant reclamation as defined in section 2, but such exemption is removed for operations in reclamation areas listed in Schedule 2. Before being listed under Schedule 2 to DAS(E)O, the affected foreshore and sea-bed in the reclamation area had, pursuant to the Foreshore and Sea-bed (Reclamations) Ordinance (Cap. 127) (FS(R)O), to be gazetted for notification, followed by the publication of the relevant notice of authorization if no objection is received.

New sediment disposal facility at the east of Sha Chau

4. From 1992, contaminated sediments were being disposed in the seabed pits at the east of Sha Chau. As it was envisaged that the existing pits (i.e. Contaminated Mud Pit (CMP) IV) would be filled up in 2010, the Administration proposed to

construct a new sediment disposal facility (i.e. CMP V) in the east of Sha Chau which was found to be a suitable and most preferred site after a territory-wide site search. CMP V comprises four disposal pits each of which is about 2 million cubic metre (m^3) in capacity giving an aggregate design capacity of about 8 million m^3. Construction works of CMP V commenced in September 2009, aiming at coming into service in stages from June 2010 to 2014.

5. The foreshore and seabed affected by CMP V was gazetted for notification under section 5 of FS(R)O on 20 March 2008 (G. N. 1814 of 2008). No objection was received after the gazettal, and the notice of authorization was made under section 9 of FS(R)O on 13 June 2008 (G. N. 3966 of 2008).

6. In order to apply the regulatory control regime under DASO to CMP V, it is necessary to include the aforesaid authorized foreshore and seabed (i.e. G.N. 3966 of 2008) in Schedule 2 to DAS(E)O, similar to the arrangement for the existing sediment disposal facilities at the east of Sha Chau.[1]

The Amendment Order

7. The Amendment Order amends Schedule 2 to DAS(E)O by specifying CMP V situated in the east of Sha Chau as a reclamation area for the purpose of section 4(2)(a) of DAS(E)O, so that a permit is required under section 8 of DASO for dumping operations in that reclamation area. The Amendment Order will come into operation on 1 January 2010.

The Subcommittee

8. At the meeting of the House Committee on 6 November 2009, Members agreed that a subcommittee should be formed to study the Amendment Order. To allow sufficient time for the Subcommittee to study the subsidiary legislation, a resolution was passed at the Council meeting on 25 November 2009 to extend the scrutiny period to 6 January 2010.

9. The membership list of the Subcommittee is in **Appendix I**. Under the chairmanship of Hon Albert HO, the Subcommittee has held two meetings.

Deliberations of the Subcommittee

10. The Subcommittee expresses support in principle for the Amendment Order, as without which the regulatory control regime under DASO could not be applied to CMP V at the east of Sha Chau. When scrutinising the Amendment Order, the Subcommittee has discussed with the Administration the regulatory control for contaminated sediment disposal operations as well as the environmental monitoring

[1] Item 18 of Schedule 2 to DAS(E)O lists the foreshore and seabed affected by the previous and existing sediment disposal facilities at the east of Sha Chau.

and audit for the existing disposal facilities at the east of Sha Chau. The deliberations of the Subcommittee are summarized below.

Reclamation areas specified under Schedule 2

11. The Subcommittee has noted that among the 24 reclamation areas listed in Schedule 2 to DAS(E)O, marine dumping operations are being carried out in only five of them, i.e. the south of Cheung Chau (Nos. 2 and 5 in Schedule 2), the east of Ninepin Group (No. 3), the east of Tung Lung Chau (No. 10) and the east of Sha Chau (No. 18), whilst back filling and dumping activities in other areas have discontinued. Of these five areas still in use, four of them (i.e. Nos. 2, 3, 5 and 10) are open sea disposal sites for uncontaminated sediment, whereas the east of Sha Chau (No. 18) is a dumping site for contaminated sediments which may arise from local projects such as the dredging works at Kai Tak Approach Channel and regular maintenance works at river channels like the Tuen Mun River.

12. Hon Albert HO has queried the arrangement for locating most sediment disposal facilities in New Territories West (NTW). The Administration has explained that waters in NTW are relatively still comparing to the stronger current in New Territories East waters, and the waters of the selected sites in NTW are comparatively shallow, with water depth of just 5m to 6m. With this water characteristics, pits of a surface area as big as 5 000 m^2 (1 000m x 500m) have been formed to facilitate the sediments settling within the pit boundary more easily, and the chance of the contaminated sediments spreading to the adjoining waters has thus been greatly reduced. As such, in anticipation that the last pit of CMP IV at the east of Sha Chau will soon be filled up, construction works for a new facility also situated to the east of Sha Chau (i.e. CMP V in No. 25 of Schedule 2 under the Amendment Order) have commenced in September 2009, with a view to putting it into service in June 2010 onward to meet the future needs.

Regulatory control for disposal operations

13. According to the Administration, application of chemical treatment to the contaminated sediments dredged from the sea or river is not practicable in most circumstances as such sediments have very high water content. However, in-situ biological treatment could be applied to remove the odour of the contaminated sediments in some river channels, e.g. those in the Shing Mun River. Overseas experience suggested that the best treatment and disposal option for those contaminated sediments requiring removal and dredging will be confined marine disposal, which is the method adopted in the East Sha Chau facilities.

14. Hon Albert HO has expressed concern about the regulatory control for disposal operations for contaminated sediments. The Administration has advised that the Director of Environmental Protection will issue a permit to an operator for carrying out disposal operation. A detailed chemical and biological analysis of the sediments to be disposed showing their level of contamination and distribution should be conducted by the operator to facilitate classification of the sediments for disposal at the right facility. The permit is valid for one month and has to be renewed if the

disposal operation cannot be completed within the period. The permit bears the name and type of the dumping barge for carrying out the operation, and specifies the quantity of sediments to be disposed. In addition, the dumping barge is required to be installed with a global positioning system which feeds real-time data of the disposal operation, including the location of the barge, to the control centre of the Environmental Protection Department (EPD) which monitors all dumping activities round-the-clock. When an anomaly such as disposal at non-designated location is identified, EPD would take action to rectify the situation.

15. Regarding the regulation of the disposal operations within the facility, the Administration has advised that the "drift disposal" method is adopted. Upon arrival at the facility, the dumping barge will be led by the guide boat of Civil Engineering and Development Department (CEDD) to the designated disposal location which is selected based on the water current speed and direction. The best disposal location, determined from the water flow data, is at the upstream of the water current within the pit such that the disposed sediments after drifting following the water current direction will settle within the pit boundary. The dumping barge should switch off the engine and be allowed to drift into the designated location before disposing the sediments. It should remain drifting until all disposed sediments are settled into the mud pit. The whole process is monitored by the on-site staff of CEDD, and consideration would be given to cancelling the permit if the operator does not follow the instructions of the on-site staff. Besides, EPD will conduct surprise inspections, and about 500 inspections will be conducted by land, sea and helicopter in a year.

Environmental monitoring of the disposal facilities

16. Hon WONG Yung-kan has expressed concern about the adverse impacts of the contaminated sediment disposal facilities on marine environment and the reinstatement of the marine ecology. Hon Albert HO shared the concern and asked about the extent and time taken for the affected seabed in the east of Sha Chau to return to its pre-dredged state for marine organisms.

17. According to the Administration, pits in the east of Sha Chau are about 20m deep beneath the shallow water, and after a pit is filled with contaminated sediments reaching a level of at least 3m below the surrounding seabed, it will be capped with a layer of 3m to 6m of clean marine sediment, the thickness of which is sufficient to isolate the contaminated sediments from the surrounding waters and to enable recolonization of marine organisms in the area. Based on the benthic surveys conducted in early 2004 at the completed CMP III at the east of Sha Chau, which ceased to operate and was capped with clean marine sediment in 2002, the monitoring results indicate that the benthic community at the capped CMP III has increased in biomass, number of individuals and species richness over time. This shows that marine organisms have returned to the affected seabed shortly after completion of the reinstatement work and progressive recolonization is achieved within a short period of around one year. Regarding the existing disposal facility at CMP IV, two completed disposal pits are being capped and reinstatement works are being carried out, while the remaining disposal pit is still in operation.

18. Hon WONG Yung-kan has pointed out that there have been changes to the marine ecology at NTW including a reduction in fisheries resources and a change in the varieties of marine organisms recolonized in the affected seabed. He considered that the Administration should step up environmental monitoring and adopt measures to expedite natural reinstatement.

19. The Administration has explained that environmental monitoring and audit for the previous and existing CMPs (i.e. CMP I to IV) at the east of Sha Chau have been conducted since 1993. Apart from monitoring of water quality, ecological community structure and biotic tissue contamination, sediment samples are collected outside the mud pits to check their chemical contamination levels and toxicity to ascertain whether the disposal facilities are properly designed and operated such that there is no leakage or dispersion of contaminated mud outside the pits. The Administration has provided an updated summary on the types and frequency of monitoring data collected as well as the method of collection for the current disposal facility at CMP IV (**Appendix II**). The monitoring findings are summarised below:

(a) Quality monitoring of sediments outside the facilities

Concentrations of most contaminants in the sediment were below their respective Lower Chemical Exceedance Level (LCEL) [2], and exceedances of LCEL were observed for some contaminants very occasionally. There were no observable trends of increasing contaminant concentrations in sediment with increasing proximity to the CMP, and all contaminants showed either no or a weak relationship between their concentrations and time. The results show no evidence of dispersion of contaminated mud outside the mud pits to the surrounding waters, nor any adverse environmental impacts to the sediment quality as a result of the disposal operation at the east of Sha Chau.

(b) Sediment toxicity testing of sediments outside the facilities

Long term monitoring result indicated no history of toxic responses in organisms related to mud disposal operations as little or no toxicity was observed in the sediments.

(c) Testing for contaminant concentration of target species

For samples collected from trawling, it was noted that the abundance of fisheries resources was similar between the Reference and Impact stations, and occasionally, was higher in the Impact than the Reference stations. This indicates that disposal operations at the CMP may not have

[2] In accordance with the Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002 –Management of Dredged/Excavated Sediment, a set of chemical contaminant levels is laid down for the purpose of sediment classification. Those sediments containing low levels of chemical contaminants which do not exceed the Lower Chemical Exceedance Level (LCEL) are classified as Category L sediment, and they are considered suitable for open sea disposal since they will unlikely pose toxic effects upon the marine organisms.

any adverse effects on the abundance of fisheries resources. The CMP facility and its operation are therefore considered to be environmentally acceptable in the context of fisheries resources.

For the tissue/whole body contaminant testing, contaminant concentrations in the tissues and the whole body of the target species fluctuated over time, but no temporal trends of concern, i.e. no increasing concentration over time, was observed for any of the target species.

(d) Water quality

There was no evidence of any adverse environmental impacts to water quality as a result of contaminated mud disposal operations at the CMP, and the CMP facility and its operation are considered to be environmentally acceptable in the context of water quality.

20. The Administration has further advised that analysis of the human body and ecological risk assessment show that the chance for the general public and fishermen to develop chronic diseases from the consumption of marine produce from the area of east of Sha Chau was small. Studies also show that the marine produce in the area do not pose any risks for the Chinese white dolphins. Based on the environmental monitoring results, there is no evidence of any adverse impacts caused by the disposal activities in the east of Sha Chau CMP facilities, and the operations have proceeded in an environmentally acceptable manner.

21. Hon WONG Yung-kan considered that environmental monitoring should be conducted both before the dredging and after the capping of the pit with a view to ascertaining whether the same species have returned to their original habitat.

22. According to the Administration, the three pits of CMP IV at the east of Sha Chau were put into service one by one, such that the monitoring conducted after capping the second pit could be considered as the pre-dredging monitoring for the third pit. For the new CMP V, the facility is designed as four separate pits, each of which will be put into use one after another. This will minimize the exposure time of dumped contaminated mud to the marine environment and allow early reinstatement works to be made in phases. CEDD will reinstate the affected seabed using clean marine sediment generated from other works within Hong Kong waters, soon after completion of each of the four disposal pits of CMP V.

<u>Follow-up actions to be taken by the Administration</u>

23. As environmental monitoring results will reflect the severity of the impacts of dredging and disposal activities at NTW, Hon Albert HO has requested the Administration to provide regular reports on the monitoring results for reference of the Tuen Mun District Council (TMDC).

24. The Administration has advised that CEDD has been providing bimonthly

reports on environmental monitoring results of the existing disposal facility at the east of Sha Chau to the Environmental Hygiene and District Development Committee of TMDC. CEDD has undertaken to continue this practice until the completion of the new disposal facility CMP V.

Proposed amendments

25. The Administration has not proposed any amendments to the Amendment Order and the Subcommittee will not move any amendments in its name.

Advice sought

26. Members are invited to note the deliberations of the Subcommittee.

Council Business Division 1
Legislative Council Secretariat
15 December 2009

Appendix I

Subcommittee on Dumping at Sea (Exemption) (Amendment) Order 2009

Membership List

Chairman	Hon Albert HO Chun-yan
Members	Hon WONG Yung-kan, SBS, JP Hon Audrey EU Yuet-mee, SC, JP
	(Total : 3 members)
Clerk	Ms Debbie YAU
Legal Adviser	Miss Winnie LO
Date	20 November 2009

Appendix II

An updated summary table of the ESC CMP IV environmental monitoring programme

Parameters	**Method of collection**	**Sampling frequency**
Water Quality Temperature, DO, pH, Salinity, Current Velocity & Direction, SS, Ammonia, Nutrients (NOx & TIN), BOD5, COD, Turbidity, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Zinc, Arsenic	*In-situ* measurement and water sample collection	6 times/year
Sediment Quality Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Zinc, Arsenic, PAHs, PCBs, DDE & DDT, TBT, TOC, Particle Size Distribution	Sediment collection with sea bed grab samplers	5 times/year
Sediment Toxicity Test	Sediment collection with sea bed grab samplers	2 times/year
Tissue/Whole Body Contaminant Testing Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Zinc, Arsenic, PAHs, PCBs, DDE & DDT, TBT	Trawl Sampling	2 times/year
Fisheries Resources	Trawl Sampling	4 times/year
Benthic Ecology Benthic Communities, Benthic Colonisation	Sediment collection with sea bed grab samplers	2 times/year