

**Port Operations Committee**

**Dredging, Management and Capping of Contaminated Sediment Disposal Facility at West of Lamma Island**

**Purpose**

The Civil Engineering and Development Department (CEDD) plans to construct and operate a contaminated sediment disposal facility at West of Lamma Island. The project brief is set out in the *Annex*.

2. Members are invited to submit your comments, if any, on the above project by replying to the Secretariat on or before 31 October 2022.

Marine Department

17 October 2022

## **Dredging, Management and Capping of Contaminated Sediment Disposal Facility at West of Lamma Island**

### **Purpose**

This paper is to brief and consult Members' views on the marine activities associated with the construction and operation of the Contaminated Sediment Disposal Facility at the West of Lamma Island (refer to *Appendix A*).

### **Background**

2. The Civil Engineering and Development Department (CEDD) has been managing a number of contaminated sediment disposal facilities in Hong Kong waters, including the existing contaminated mud pits (CMPs) to the east of Sha Chau (ESC). According to the latest estimate, the total remaining capacity of the ESC CMPs can only cope with the contaminated sediment disposal demand up to 2027. The existing CMPs cannot be expanded further due to the limited usable seabed in the vicinity. A new contaminated sediment disposal facility has to be planned for meeting the sediment disposal demand after 2027 arising from routine harbour / channel / river maintenance dredging works and other projects.

3. CEDD has conducted studies to identify options for contaminated sediment disposal and potential sites suitable for developing into future contaminated sediment disposal facilities. It is identified from the study that a portion of the seabed to the West of Lamma Island has good potential for developing into a new contaminated sediment disposal facility ("the Project"). Based on the review of site constraints supplemented by field investigation data, the area for potential CMP development ("the Project Area") is further identified which has a size of about 235 ha with water depth ranged from -8 mCD to -10 mCD from north to south. The preliminary design of the proposed facility consists of a series of seven separated CMPs. Each CMP has an area ranging from about 23 ha to about 33 ha which is able to handle about 2-4 Mm<sup>3</sup> contaminated sediments. (*Appendix A*).

4. To cater for possible surge of disposal demand which may expedite the exhaustion of existing CMPs and any unforeseeable interruption to the project progress, the construction of the Project is planned to commence in 2024, for

operation by 2025-2026. The CMPs will be constructed and operated in phases depending on the contaminated sediment disposal demand. It is expected that the proposed CMPs within the Project Area could provide disposal service lifetime of up to 20 years.

### **Construction and Operation Activities of the Proposed Facility**

5. The construction and operation activities for the new marine contaminated sediment disposal facility at West of Lamma Island include:

- (i) Construction activities – dredging of the seabed for the formation of CMP;
- (ii) Operation activities – disposal of contaminated sediment in the formed CMP; and
- (iii) Operation activities – capping of the exhausted CMP by uncontaminated sediment up to the original seabed depth.

6. Typical construction vessels to be deployed for the construction and operation activities for the Project include grab dredgers and/or trailing suction hopper dredgers, hopper barges and work boats. Based on the conservative estimate, up to 36 vessel movements per day would be generated by construction dredging works and 136 vessel movements per day would arise from backfilling and capping works <sup>1</sup>.

7. It should be noted that the Project will be implemented in phases and the above maximum daily vessel movements are derived based on the assumed peak level of demand. Programme for development of subsequent CMPs would depend on the actual contaminated sediment disposal demand. Given the long service lifetime of the Project, the dredging schedule / rate, and thus the vessel movements, in reality could be adjusted and under normal situation may be lowered throughout most of the service lifetime of the Project.

<sup>1</sup> While a conservative estimate is assumed for the purpose of marine traffic impact assessment, with reference to the annual average disposal demand, the average daily vessel movement during backfilling and capping works would be less than 10 vessel movements per day in general.

## Marine Traffic Impacts

8. CEDD has conducted a Marine Traffic Impact Assessment (MTIA) for the construction and operation phases of the Project to assess the marine traffic risks arising from the increase in marine traffic activity using marine traffic risk simulations, and to recommend appropriate mitigation measures. The results of the assessment are as follows:

- (i) Based on the findings of the MTIA, the majority of vessel movements within the Project Area are made by small vessels (e.g. local fishing vessels) and these vessels can manoeuvre and maintain a safe distance from the Project Area easily. A marine traffic risk model was conducted taking in consideration of traffic growth with/without this project and no significant increase in risk level is found in the assessment area as a result of the construction and operation of the Project.
- (ii) The existing marine facilities in the vicinity of the Project Area are shown in *Appendix B*. The construction and operation activities of the Project would be carried out within the Project Area away from the recommended Traffic Separation Scheme (TSS) between south of Kau Yi Chau and Fan Lau (route via south of Cheung Chau) and other marine facilities. Works barges for the Project would mainly stay within the Project Area. It is expected that the works would not impose significant impact on existing operations of marine facilities and traffic flows within the recommended TSS.
- (iii) Apart from the existing open sea disposal areas at South of Cheung Chau, East of Tung Lung Chau and East of Ninepin, area to the south of Tsing Yi (Refer to *Appendix C*) is planned to be used as a potential site for disposal of dredged uncontaminated sediment generated from the Project construction works. For the open sea disposal areas to the south of Tsing Yi, the disposal operation would typically involve a hopper barge being towed by a tug boat to an area within the disposal area and no anchoring of vessels is required. The dumping operation is anticipated to require no more than 30 minutes and no more than two disposal operations are expected to be carried out per day at the area to the south of Tsing Yi for this Project. However, the disposal operation at the area to the south of Tsing Yi would

temporarily occupy the fairway and anchorages that overlap the disposal area, and other vessels in transit would be required to navigate around the dumping vessel.

### **Proposed Marine Traffic Risk Control and Mitigation Measures**

9. The basic principle of the Project is not to hinder marine traffic and must pay attention to maritime safety. Appropriate risk control and mitigation measures have been recommended in the MTIA to alleviate potential impacts due to the Project, including (but not limited to) the following:

- (i) The operation of the Project will be similar to the operation of other existing sediment disposal facilities. A guard boat would escort incoming works barges, one at a time to the disposal site. This operation ensures that marine activities at the site is arranged in a controlled manner.
- (ii) During construction phase of the Project, a working area of approximately 50 metres will be established around works barges and appropriate marker buoys shall be laid to mark the positions of the anchors extending from the works barges. The working area of works barges shall remain within the Project Area. Evacuation of works vessels from the Project Area will be arranged as early as a possible in the event of low visibility or advent of typhoon.
- (iii) The duration of the disposal operation at the open sea disposal area to the south of Tsing Yi shall be kept to a minimum; vessels shall immediately vacate the disposal area upon completion of the dumping operation and waiting of vessels within the disposal area shall be strictly prohibited. An adequate number of guard boats/tugs shall be deployed to ensure the safety of the disposal area and maintain safe passage of other vessels.
- (iv) Other control measures for marine works will also be applied, including promulgation of Marine Department Notice (MDN), work barges equipped with positioning and radio systems for monitoring and communication, implementation of safety measures for poor visibility, typhoon and emergency evacuation, etc.

## **Way Forward**

10. CEDD will establish effective communication mechanism with relevant stakeholders to ensure that the works will not adversely affect any existing marine activities, and maritime safety and interface issues before and during the construction and operation period will be managed properly.

11. The Project Contractor will liaise with the Marine Department to provide all relevant information including vessels, schedule and implementation plan, etc., for review and timely promulgation of MDN.

## **Advice Sought**

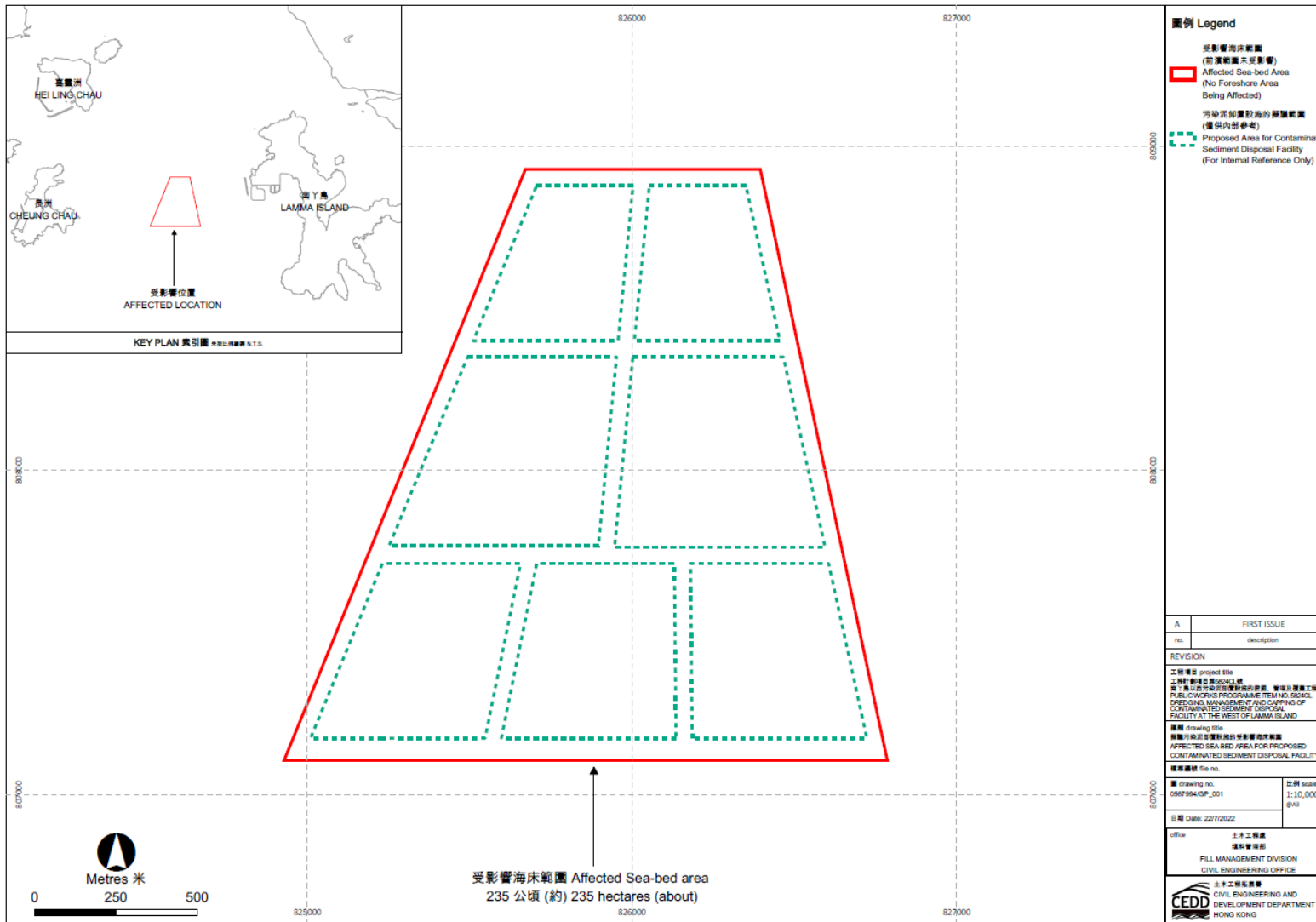
12. Members are invited to note the forthcoming marine works and provide comments to the abovementioned proposed marine traffic risk control and mitigation measures. In case of any enquiry on the related matters, please contact Ms. Kit-man Li of CEDD by phone at 2762 5559, or by email: kmli@cedd.gov.hk.

**Fill Management Division**

**Civil Engineering and Development Department**

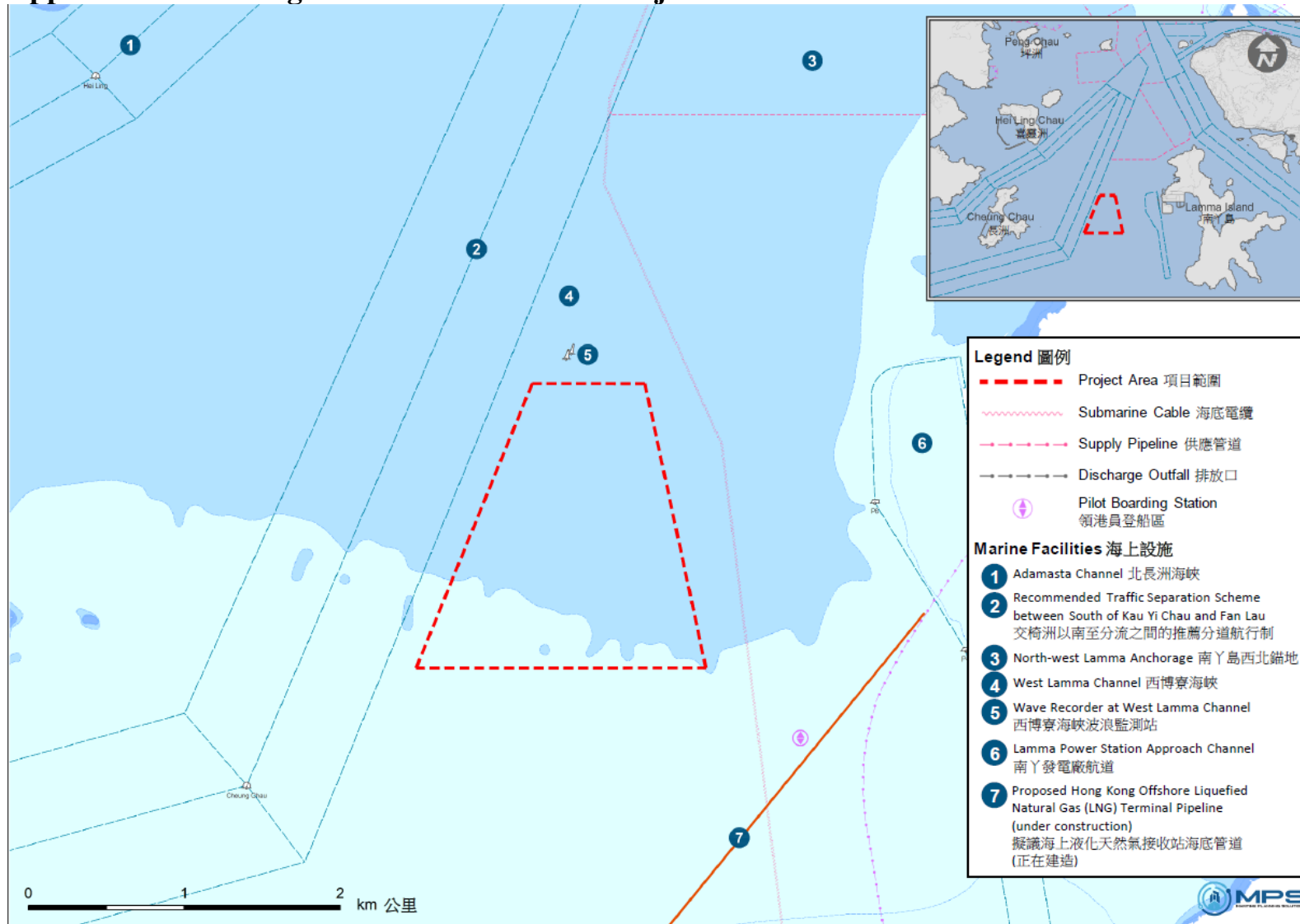
**October 2022**

# Appendix A – Project Area



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## Appendix B – Existing Marine Facilities near Project Area





## Appendix C – Open Sea Disposal Area for Uncontaminated Sediment to the South of Tsing Yi

