

PORT OPERATIONS COMMITTEE

Airport Authority Hong Kong (AAHK)

Typhoon Evacuation Plan For

Construction Vessels Engaged in the Three-Runway System Project

PURPOSE

This paper informs Members of the Port Operations Committee on formulation of a typhoon evacuation plan (the PLAN) for 3RS marine construction vessels operating in the Three-Runway System (3RS) project. This PLAN is designed to facilitate the safe and orderly evacuation of these vessels from the works site during the passage of a typhoon.

2. The PLAN considers the evacuation operations for marine vessels including:
 - Non-self-propelled vessels require assistance of tug boats in the event of an evacuation operation from the works site. In particular, Deep Cement Mixing (DCM) barges need special attention and would have limitation in seeking refuge in existing typhoon shelters due to their high air-draft and length overall (LOA) constraints; and
 - Self-propelled vessels include (i) supporting vessels (tugboat, anchor handling boat), (ii) local passenger carrying vessels (launch), (iii) oil carriers for bunkering and (iv) Mainland vessels (pelican sand barges for example) for material delivering.

BACKGROUND

3. The 3RS project requires reclamation of approximately 650 hectares of land locating north of the existing airport island. This reclamation project has been contracted out to 6 contractors since August 2016. During the peak construction period in 2017 and 2018, a total of approximately 200 construction vessels will be on site, of which about 100

of them are non-self-propelled specialized vessels such as DCM barges, Prefabricated Vertical Drains barges, jack-up barges and Dumb Steel Lighters, etc. From the perspective of marine safety, an effective evacuation plan is needed to ensure all of these vessels can leave the 3RS works site in a safe and orderly manner, and to take refuge at suitable sheltered water space in the advent of a typhoon.

4. An agenda item "Evacuation Arrangement of Working Barges under the Airport Third Runway Reclamation Project during the approach of Typhoon" was discussed in the 68th Port Operations Committee meeting held on 24 January 2017. As a follow-up, AAHK has committed to provide Members of this Committee with a consolidated plan to ensure safe evacuation of construction vessels from the works site in the event of a typhoon.

5. To address these critical issues, BMT Asia Pacific has been employed by all 6 contractors of the 3RS project as Marine Consultant together with the AAHK to formulate a feasible evacuation plan.

THE PLAN

6. The PLAN has two objectives: (i) to draw up a feasible evacuation procedure for all marine construction vessels involved in the 3RS project; and (ii) to identify suitable sheltered space(s) for 3RS marine construction vessels to seek shelter in the advent of a typhoon.

7. The following factors have been considered when preparing the PLAN:

- Sheltered Space and Routing for 3RS Marine Construction Vessels;
 - Non-self-propelled vessels should take refuge in various typhoon shelters, gazetted anchorages and commercial berths with the assistance of tug boats. A map showing the possible sheltered spaces and routings are presented in **Figure 1**. Due to physical constraints of the DCM barges, Sham Shui Kwok Anchorage No. 1 and No. 2 (SSKA) are included as a contingency option / last resort for providing sheltered space. The accommodation of up

to 15 barges in SSKA is considered. A map showing the proposed locations of barges at SSKA is presented in **Figure 2**.

- Self-propelled local vessels should proceed to gazetted typhoon shelters subject to the length restriction and availability of space. Mainland barges should navigate on their own power to evacuate forthwith towards sheltered waters outside Hong Kong.
- Mitigation measures to minimise potential impingements on existing port users by including waiting areas and maintain safe separation distance between the towing of 2 DCM barges;
- Journey time for vessels to reach their pre-planned shelters and deployment of tug resources;
- Execution of the Plan with an aim to completely evacuate all 3RS construction vessels from the works site within 24 hours or before hoisting of Typhoon Signal No.3 (T3). To achieve this end, evacuation operation should start well in advance before the hoisting of T1; and
- Communication with Marine Department and other Government search and rescue agencies.

TYPHOONS IN 2017

8. Since mid-June this year, Hong Kong was hit by 6 typhoons in a row namely: MERKOK, ROKE, HATO, PAKHAR, MAWAR and KHANUN. In executing the PLAN during the passage of these typhoons, with the exception of ROKE, it has proved to be workable and satisfactory. All 3RS construction vessels were timely evacuated from the works site in a safe and orderly manner.

9. For typhoon ROKE, the failure to evacuate about 15 vessels away from the works site was due to the sudden announcement of T1 by the Hong Kong Observatory and the reaching of T8 from T1 in a short period of time (about 16 hours). To ensure the safety

of vessels remaining on site during the passage of ROKE, a considerable number of tug boats were deployed on site as a contingency measure to safe guard against unexpected circumstances.

LAYING OF PRIVATE MOORING BUOYS FOR 2018 TYPHOON SEASON

10. To ensure availability of more typhoon shelter facility in 2018, 3 sets of private mooring buoys (PMBs) owned and managed by the AAHK will be laid in the waters off Sunny Bay (Yam Tsai Wan). These PMBs will have the capacity to receive vessels with LOA ranging from 60 meters to 80 meters. These buoys would only be allocated to 3RS construction vessels during inclement weather conditions. A map showing the location of these 3 PMBs is depicted in Figure 3.

ADVICE SOUGHT

11. Members are invited to note and comment on the PLAN.

**Airport Authority Hong Kong
December 2017**

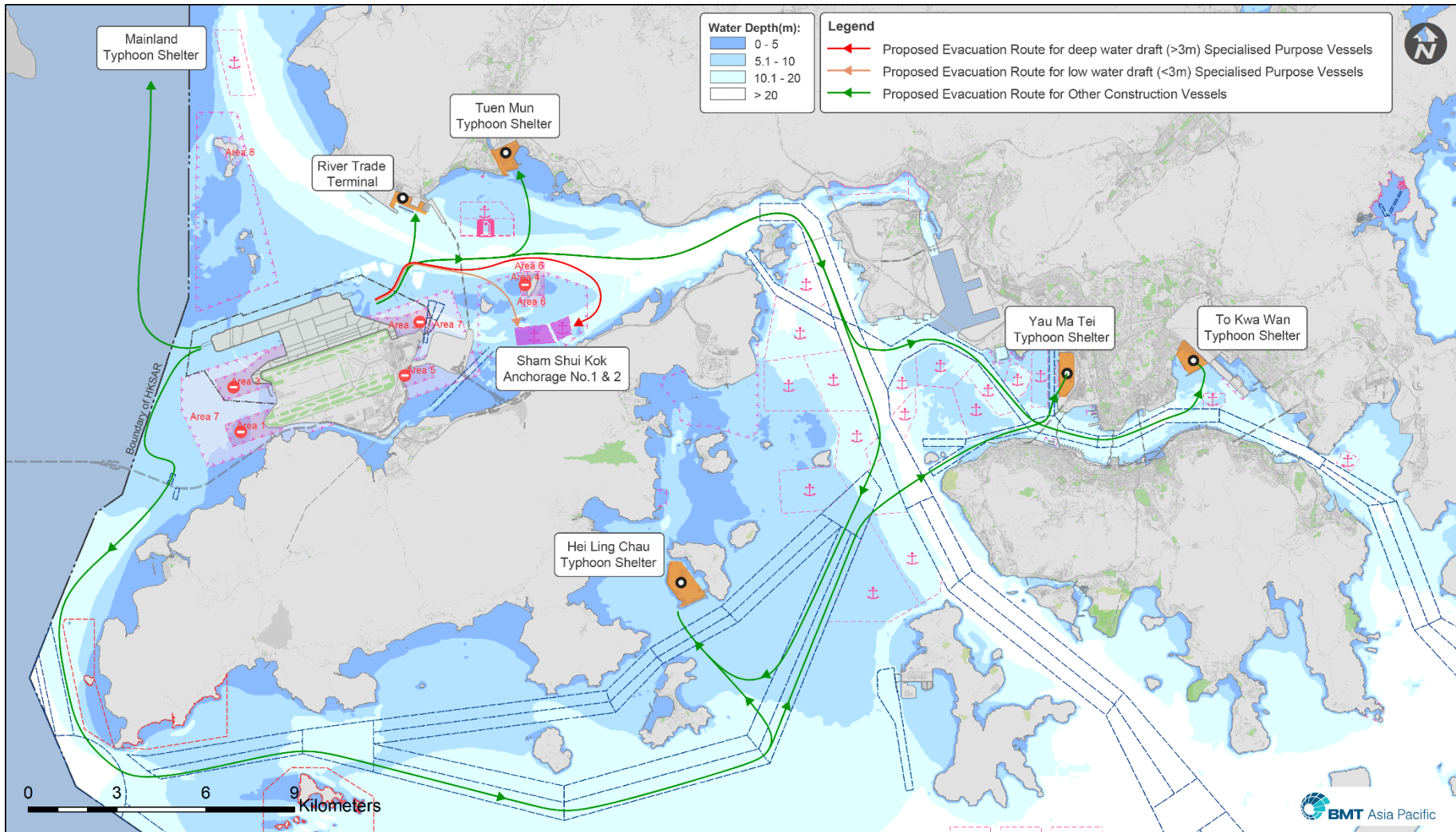


Figure 1 Possible Sheltered Spaces and Routings

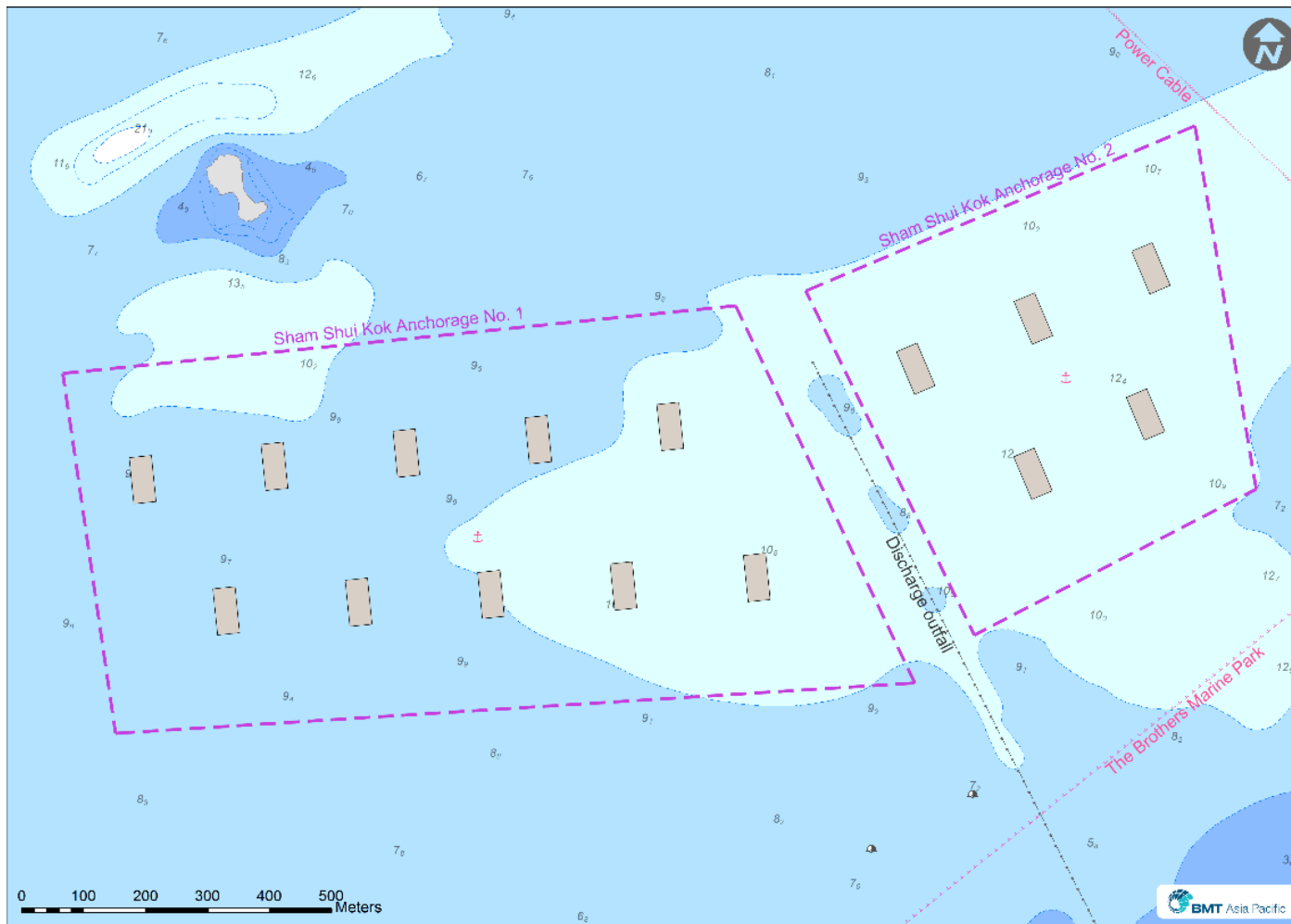


Figure 2 Allocation of Barges at SSKA

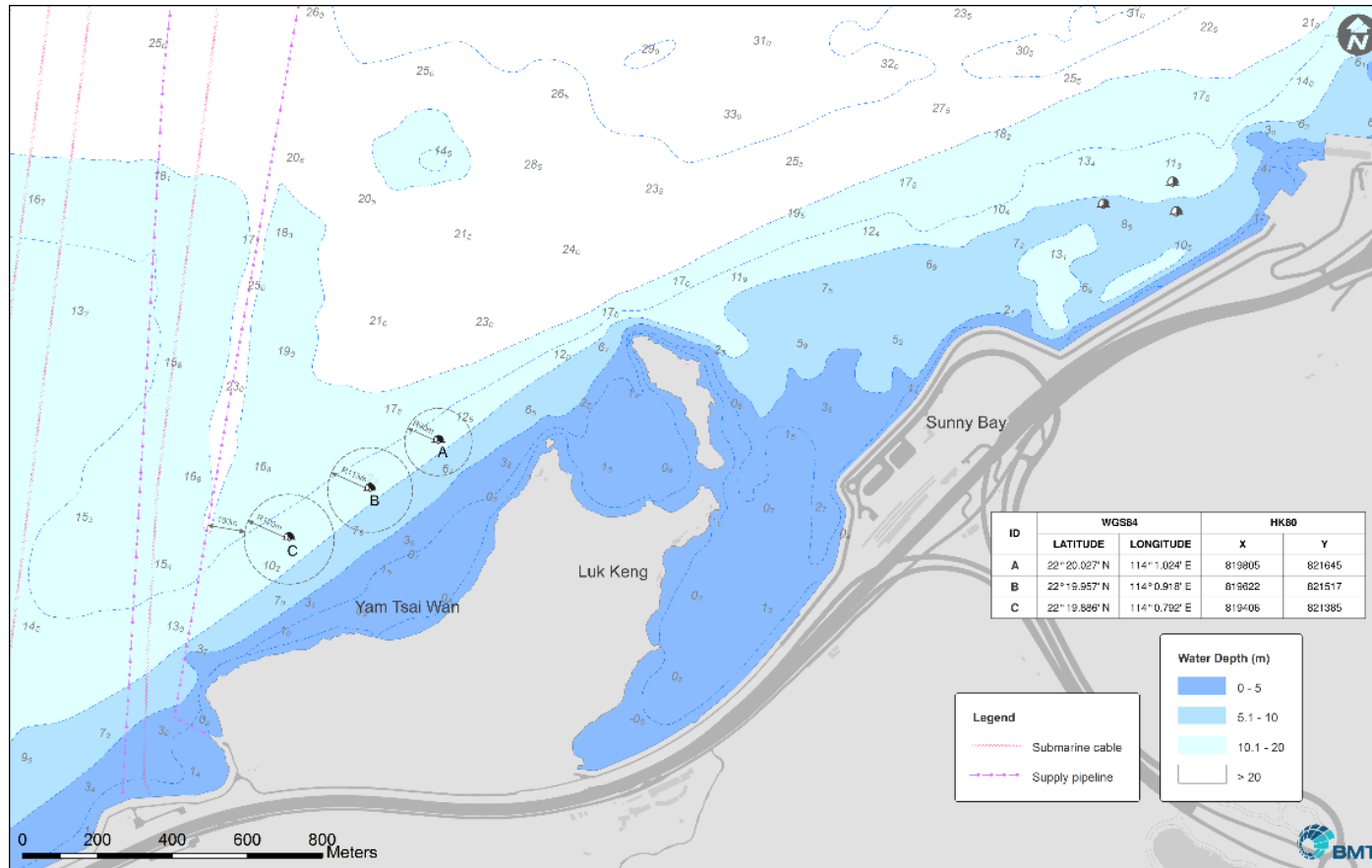


Figure 3 Private Mooring Buoys (PMBs) at Sunny Bay (Yam Tsai Wan)