

Comments from Geotechnical Engineering Office, Civil Engineering and Development Department

Contact Person: Mr. T K TSE Tel.: 2762 5384

The Geotechnical Engineering Office has the following comments on the responses-to-comments (R-to-C) and the associated contents of the revised Geotechnical Planning Review Report (GPRR) for the captioned application.

1. R-to-C item 1:

- i. Please provide records showing the dimensions and geometry of the unregistered retaining wall (i.e. width, embedment depth and composing materials). Photographs and the relevant measurement records should be included.
- ii. Please justify the design surcharge of 4kPa adopted for the stability checks.
- iii. Please take into account any unplanned excavation depth or erosion due to the tide at the passive side of the wall in the retaining wall stability checks.
- iv. Please carry out a review of the existing unregistered retaining wall stability based on the global stability approach.
- v. Please provide the groundwater monitoring record and justify why only the highest measured groundwater level from Halcrow (2004) has been adopted in the stability checks without allowing for fluctuations or considering the maximum mean sea level.
- vi. It is noted that the Slope/W model covers both the existing unregistered retaining wall and the natural terrain on its crest side. However, given that the model should be intended for reviewing the stability of the unregistered retaining wall, the geological conditions (i.e. proposed geotechnical parameters for COLL and CDT) and model inputs pertaining to the natural terrain appears to be irrelevant to the assessment. Please review and revise the Slope/W model as necessary.

In response to the above comments and in connection to the comments provided in para. 4 of Batch 1, we clarify the scope and usage of the portable cabin.

1. The cabin has the only scope to store and protect the electronics of the radar system. The electronics consist in a series of apparatus needed to handle the signals transmitted from and received by the antennas mounted in a rack. The approximate dimensions are 80 x 60 x 142 cm. Below a picture of the server rack taken from another installation and provided by the supplier. Together with the server rack, other ancillary equipment is hosted in the cabin, such as a UPS system.



2. as detailed in the application the dimensions of the portable cabin are 1 x 1.2 x 2.2 m, which are the minimum dimensions to host the server rack. The portable cabin will be installed with the access aligned with the wall and not facing the slope or the beach, see Appendix “G Tai O- Pier Station- Section BB” and Figure 24 of the application.

3. Except during the installation of the equipment, no personnel will stay

inside the portable cabin during the operation of the radar network. Monitored data will be automatically transferred to the server located in PolyU campus using mobile data communication. The portable cabin must be considered as matter of fact as an unmanned facility, and it can be classified as Category 3 under the Consequence-to-Life classification. We have already mentioned that the cabin is not intended for being a manned facility (see reply to comment 3 of the Batch 1).

We included in the supporting document of the application these details, see section 6.3.2 and 7.2.

4. the portable cabin will be installed at the maximum possible distance from the wall edge, thereby maximizing its setback

Comments from District Planning Officer/Sai Kung & Islands, Planning Department

Contact Person: Mr. Dicky CHAN Tel.: 2158 6056

Please provide us with a brief record of relevant sea level references or historical tidal data from the Hong Kong Observatory at or near the application sites and elaborate on the design considerations / measures of the proposed installation to mitigate the potential flood risks to further justify the application.

To reply to this comment, we considered the maximum sea levels available from the public website of the Hong Kong Observatory for the Tai O station, which is the closest to the proposed location for the radar installation.

As defined by the HKO: “Storm surge is a rise of sea level due to the combined effects of low pressure and high winds associated with a tropical cyclone. It is the sea level rise above the astronomical tide and does not have a reference level.

Maximum sea level is the maximum tide level due to the combination of storm surge and astronomical tide during a tropical cyclone. The reference level used is the "Chart Datum".”

The historical records of maximum sea levels is available at this link,

https://www.hko.gov.hk/en/wservice/tsheet/pms/stormsurgedb.htm?t=RANK&v=SEA_LEVEL

where the observations have been ranked from the highest to the lowest for 121 events.

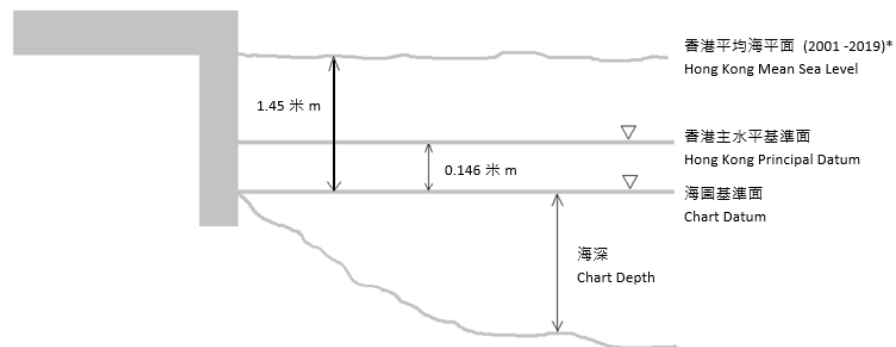
For the sake of clarity we report here only the ten most highest water levels.

Rank	Sea Level (Metres above Chart Datum)	Tropical Cyclone	DateTime
1	3.87	Hato	2017-08-23 12:54
2	3.86	Mangkhut	2018-09-16 16:46
3	3.65	Ragasa	2025-09-24 11:43

4	3.50	Gordon	1989-07-18 07:19
5	3.36	Man-yi	2024-11-18 23:50
6	3.27	Kompasu	2021-10-13 03:28
7	3.21	Brendan	1991-07-24 07:50
8	3.19	Saola	2023-09-01 10:41
9	3.18	Wipha	2019-08-01 09:02
10	3.16	Nalgae	2011-10-02 02:12

The elevation of the top of the wall, where the cabin will be placed, has been measured during the GPS survey used for the preparation of the application.

The profile of the wall has an elevation between 5 to 5.13 m above the Honk Kong Principal Datum (HKPD). To compare the sea level measured in m above the Chart Datum and the wall elevation measured in m above the Honk Kong Principal Datum, we used the explanatory notes released by the Hong Kong Observatory (<https://www.hko.gov.hk/en/tide/enotes.htm>) where the figure below can be found.



Referring the wall elevation to the Chart Datum leads to an elevation between 5.146 m to 5.276 m above the Chart Datum. The difference between the wall crest and **the maximum water level**

ever observed (during Typhoon Hato, 2023) is between **1.276 m and 1.406 m**.

Based on the above considerations, the probability of flooding hazard during extreme events must be considered extremely low and does not require any mitigation measure.

We take this opportunity to reiterate that: **the portable cabin is design as an environmental protection for the hardware components and is an unmanned facility. No personnel will directly operate the hardware and in case a maintenance is require the staff will strictly obey to the safety provisions during extreme weather alerts issued by the HKO.**