

## **LOCAL VESSELS ADVISORY COMMITTEE**

### **Deployment of Real-time Wave Monitoring Station to the South of Tung Lung Chau**

#### **Purpose**

Members are invited to note the details of the deployment of a real-time wave monitoring station to the south of Tung Lung Chau as set out in this information paper.

#### **Background**

2. Collection of wave data helps understand how waves behave in calm and stormy weather conditions within Hong Kong waters. The Civil Engineering and Development Department (CEDD) has been monitoring wave data in Hong Kong water since 1994. Two wave monitoring stations are set-up in the central waters of Hong Kong near Kau Yi Chau and West Lamma Channel to collect wave data (including spectral significant wave height, maximum recorded wave height, peak wave period, zero crossing wave period, mean wave direction and average water depth) by using underwater wave recorders.

3. In order to cope with the challenges of extreme weather due to climate change and the pace of infrastructural development in Hong Kong, it is considered beneficial to extend the wave monitoring systems to cover the eastern and western waters of Hong Kong where more port works are being/will be undertaken. This could provide important information for planning and design of marine structures/works which are crucial to protect lives and properties.

#### **Proposal**

4. The CEDD proposes to set-up a real-time wave monitoring station at the eastern water of Hong Kong (near the south of Tung Lung Chau) as a trial run in the first phase. The real-time wave monitoring station comprises three main components including an Acoustic Doppler Current Profiler (ADCP) deployed on the sea-bed for measurement of wave and current data, a special

mark buoy with a modem for transmission of wave and current data, and an office server for storage of wave and current data. The proposed location and the schematic diagram of the real-time wave monitoring station are shown in **Appendices A and B**.

5. The proposed ADCP will be installed in a Trawl Resistance Bottom Mount (TRBM) with height of about 0.5m and sufficient weight for stable deployment on the seabed. The TRBM will be deployed on the sea-bed (about -20mCD) at the south of Tung Lung Chau for measurement of wave and current data. The proposed special mark buoy will be equipped with a modem, internal batteries and solar panels (see **Appendix C**). The special mark buoy is designed in compliance with the specifications and requirements of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Guideline No. 1099 on the Hydrostatic design of buoys (Edition 1 May 2013) published by the IALA. According to the Navguide 2018 Marine Aids to Navigation Manual (8th Edition) published by the IALA, the minimum length of mooring chain should be two times of the water depth. For the water depth of about 21m, an about 45m long single mooring chain connected to a sinker with weight of about 15 tonnes will be used for the special mark buoy. The particulars of the special mark buoy are as follows:

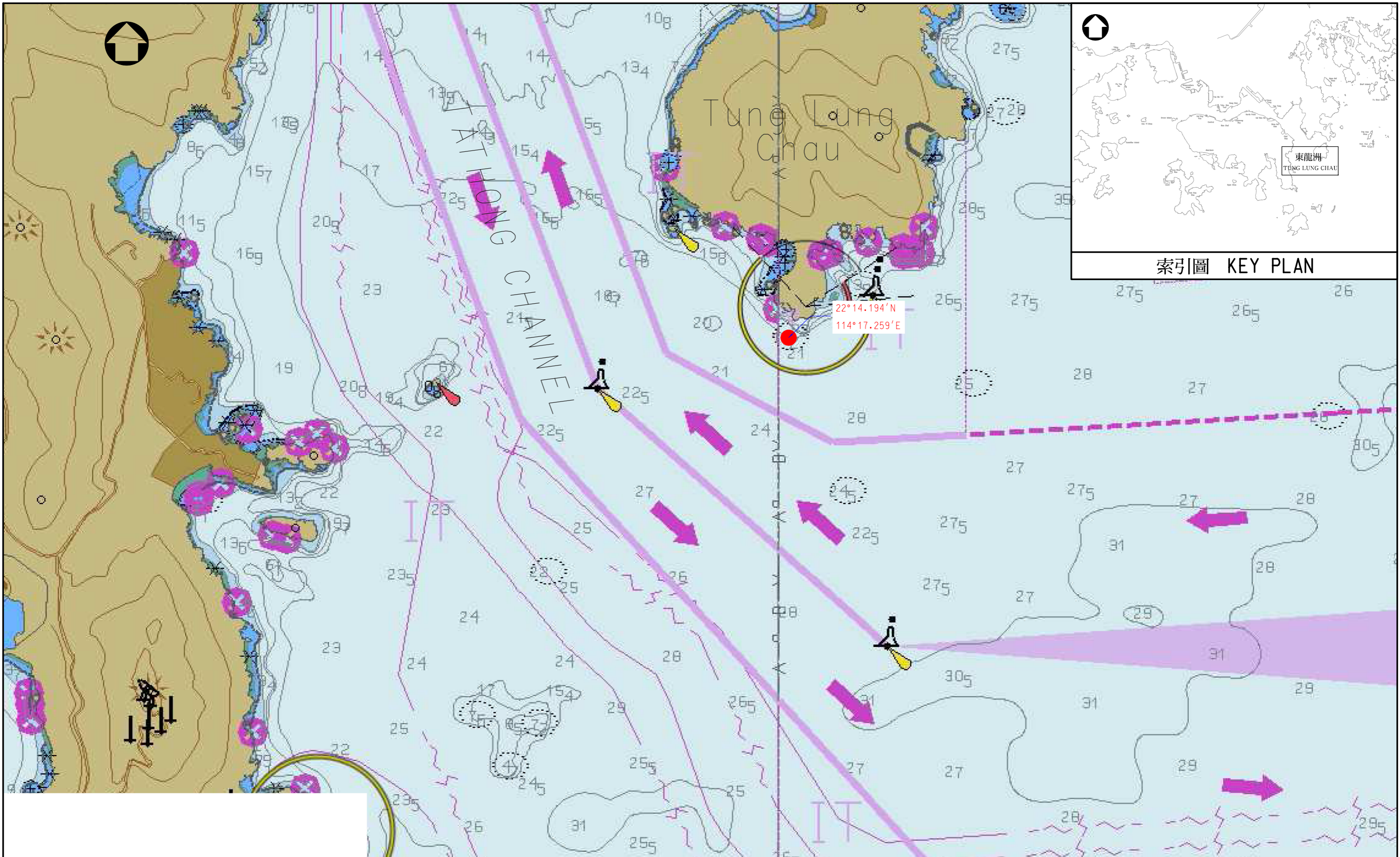
Name	:	TLC
Position (WGS 84 Datum)	:	22°14.194'N 114°17.259'E
Shape	:	Pillar
Colour	:	Yellow
Light Characteristics	:	F1 (5)Y.20s
Top Mark	:	Yellow "X"
Radar Reflector	:	Fitted
Automatic Identification System	:	Fitted

6. Regular maintenance service (usually once every 3 months) will be provided by the contractor including cleansing of equipment and replacement of batteries, etc. During routine maintenance, if any chemical would be used, it will be stored and disposed of properly. The position of the special mark buoy will be real-time monitored by GPS device in the buoy. Any drift of the buoy from its original position for more than 100m, the contractor will perform inspection and relocate the buoy back to its original position within 1 day if the weather allows. Upon completion of the 1-year trial run, it is proposed that the real-time wave monitoring station will continuously be deployed at the south of Tung Lung Chau for measurement of wave and current.

## **Way Forward**

7. Members are invited to note the details described in paragraphs 4 to 6 above.

Port Works Division  
Civil Engineering and Development Department  
September 2019



圖則名稱 drawing title

# 擬議實時波浪監測站地點

PROPOSED LOCATION FOR REAL TIME WAVE MONITORING STATION

附錄

項目編號 item no.

比例 scale

圖則編號 drawing no.

PW-SK19-153

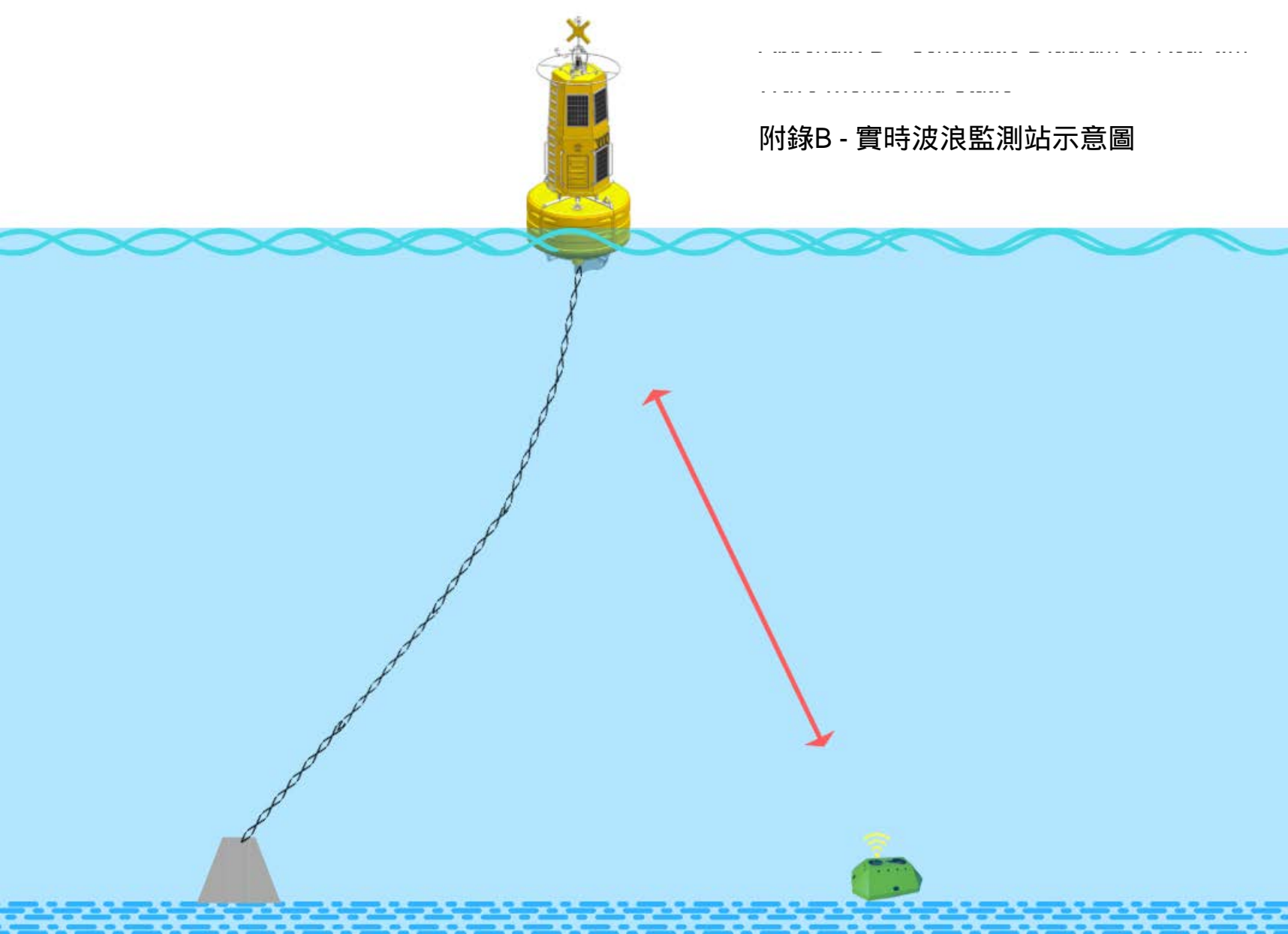
辦事處 office

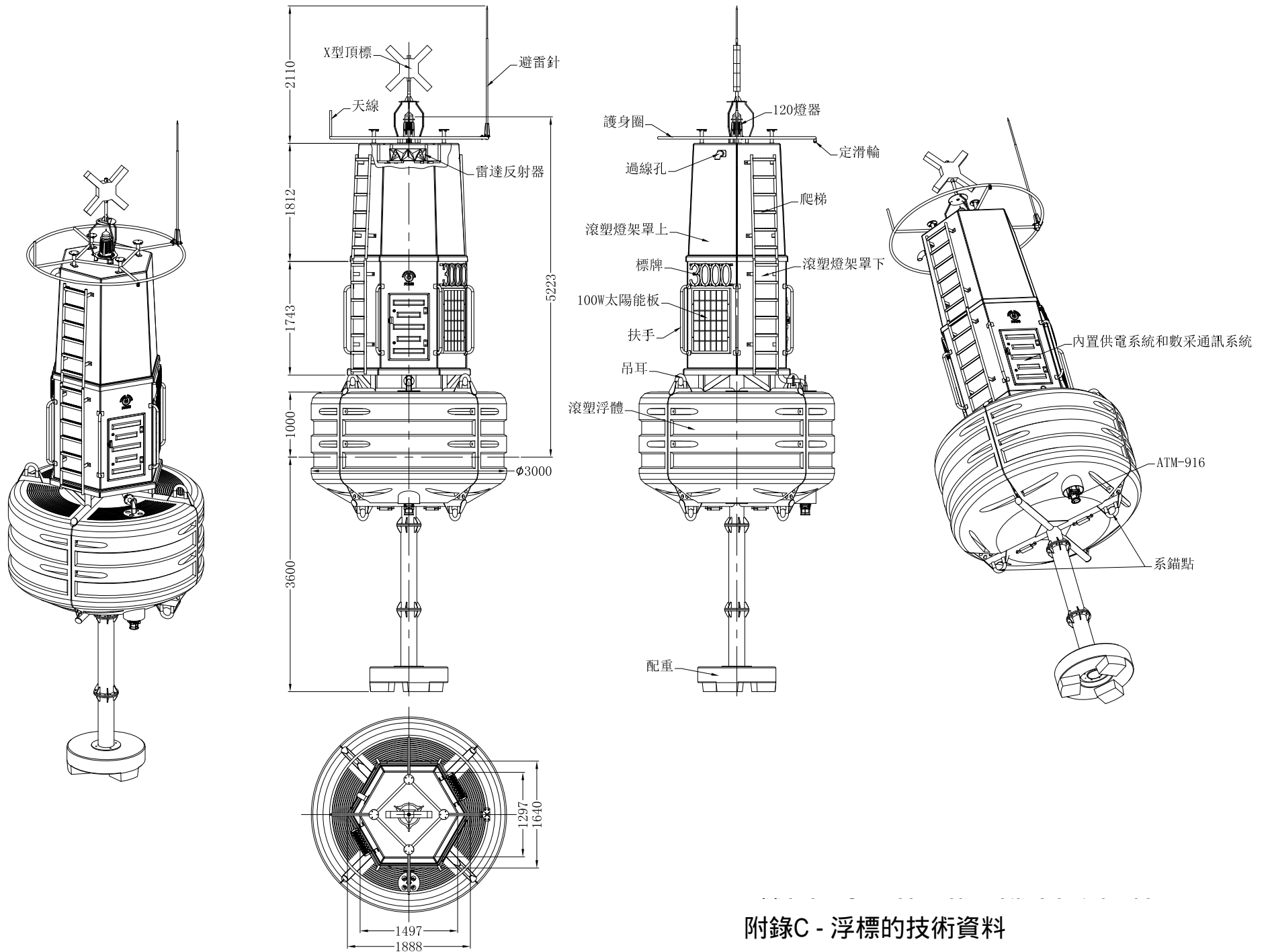
海港工程處 PORT WORKS DIVISION  
土木工程處 CIVIL ENGINEERING OFFICE



土木工程拓展署  
CIVIL ENGINEERING  
AND DEVELOPMENT  
DEPARTMENT

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附錄B - 實時波浪監測站示意圖





附錄C - 浮標的技術資料