

**Local Vessels Advisory Committee**

**Establishment of Two Weather Buoys  
at the Hong Kong International Airport Approach Area No. 7  
for the Three-Runway System**

**Purpose**

This paper is to brief members on the establishment of two weather buoys at the Hong Kong International Airport Approach Area (“HKIAAA”) No. 7. Members are invited to note the details.

**Background**

2. The World Meteorological Organisation (WMO) Bulletin, Volume 53, No.4, October 2004 noted that weather buoys have proved to be very effective in extending the coverage of the surface anemometer network in detecting wind shear caused by sea breezes, gust fronts and low-level shear lines induced by terrain.

3. An in-house algorithm developed by the Hong Kong Observatory (HKO), known as the Anemometer-based Windshear Alerting Rules–Enhanced (AWARE), has been in operation for detecting low level windshear for HKIA since 2004 based on runway-oriented wind-speed difference between runway anemometers and weather buoys. Currently weather buoys have been setup at both ends of the South and Centre Runway. AWARE has been skilful in detecting sea breeze, gust front and shear line formed near the surface in the vicinity of the HKIA.

4. As HKIA is extending into a 3RS, currently it is in I-2RS phase with the new North Runway commissioned in latter part of 2022. However, no weather buoy has been installed yet to provide observations for the new North Runway. Therefore, AWARE rules could not be implemented to fully cover the new North Runway for low level windshear detection.

5. Establishment of two weather buoys to locations at the HKIAAA No. 7 would allow enhancement of AWARE to better cover the new North Runway.

### **Proposal**

6. HKO proposes to establish two weather buoys at the east and west ends of the new North Runway respectively (**Appendix A**). The two weather buoys comprise three main components, including scientific instruments for measurement and sensing; communication and data transmitting equipment; and a power unit to harness and store solar energy (**Appendix B**). They are self-contained and running automatically to conduct real-time monitoring of wind speed, wind direction, air temperature, sea temperature and barometric pressure. No emission will be generated during the operation of monitoring system. The performance of the buoys will be closely monitored via remote terminals. Maintenance would be conducted as other existing weather buoys when required. The particulars of the weather buoy are as follows:

Name	:	Weather 12	
Position (WGS 84 Datum)	:	22° 20.198' N	113° 55.723' E
Shape	:	Pillar	
Colour	:	Yellow	
Light Characteristics	:	Fl (2) Y. 6s	
Radar Reflector	:	Fitted	

Name	:	Weather 13	
Position (WGS 84 Datum)	:	22° 19.013' N	113° 52.059' E
Shape	:	Pillar	
Colour	:	Yellow	
Light Characteristics	:	Fl (2) Y. 6s	
Radar Reflector	:	Fitted	

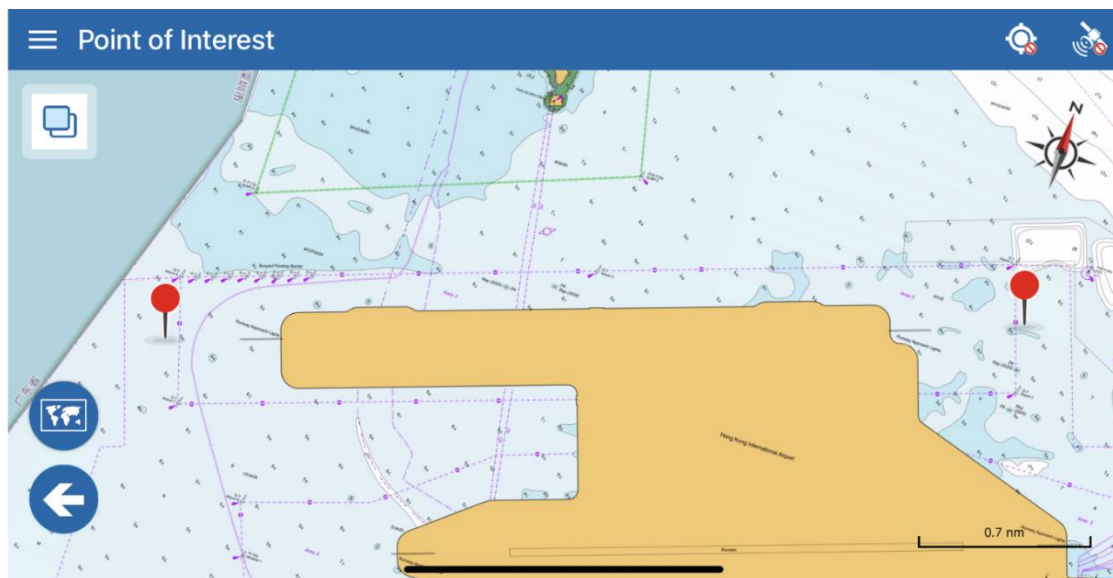
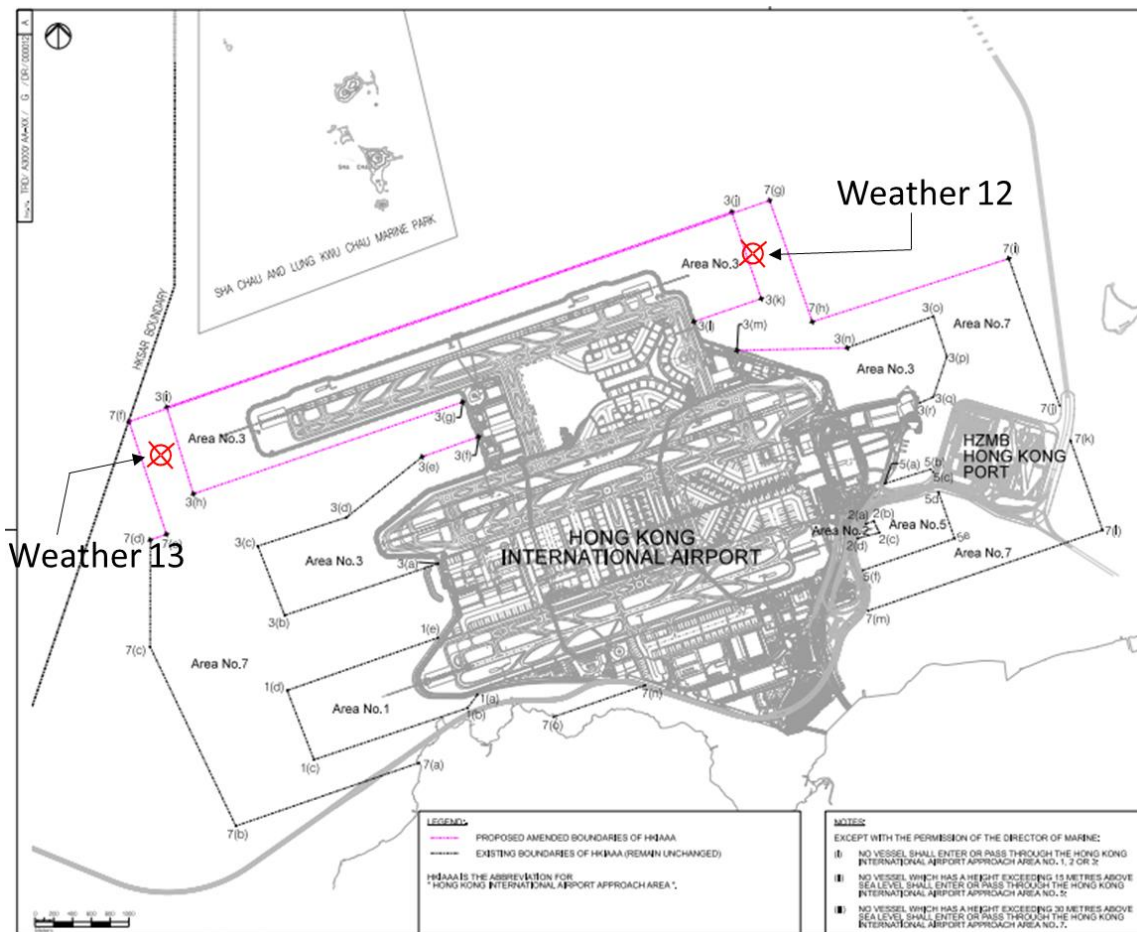
### **Way Forward**

7. HKO will liaise with MD for the installation of the two weather buoys. Operation is expected to be carried out in Q3 2023.

8. Members are invited to note this paper. For enquiries, please contact Mr. Ping CHEUNG (Senior Scientific Officer) of HKO at telephone 2926 8642 or email [pcheung@hko.gov.hk](mailto:pcheung@hko.gov.hk).

**Aviation Meteorological Data Analytics Division**  
**Aviation Weather Services Branch**  
**Hong Kong Observatory**  
**May 2023**

**Proposed Locations of the Two Weather Buoys**

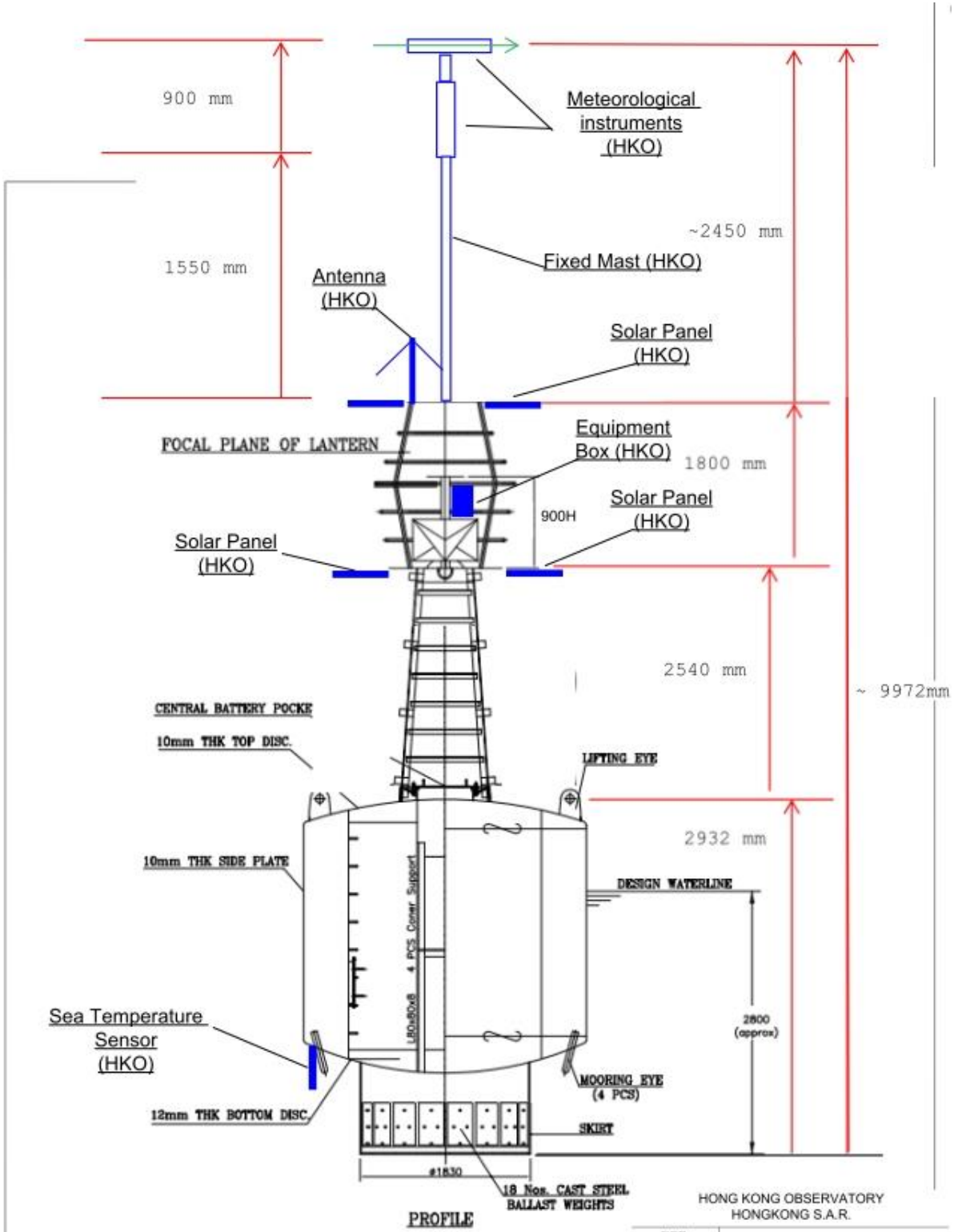


Note: locations of buoys (WGS 84 Datum). “Weather 12”: 22° 20.198’ N 113° 55.723’ E and “Weather 13”: 22° 19.013’ N 113° 52.059’ E

Photo of Sample Weather Buoy



## Dimensions and Components of Weather Buoy



#All dimension is not in scale

REP		
PROJECT		
TITLE	Weather Buoy V1.0	
DRAWING NO.	P-554 SHT 1/9	DATE
REVISION	2019	JULY 2019