

# Report No. 55 of the Director of Audit — Chapter 3

## HONG KONG OBSERVATORY

### Summary

1. The Hong Kong Observatory (HKO) provides three categories of services: (a) Weather Services; (b) Time Standard and Geophysical Services; and (c) Radiation Monitoring and Assessment. In 2009-10, the financial provision for the HKO was \$220 million. As at 31 March 2010, the HKO had a strength of 313 staff. HKO staff are accommodated in the Headquarters at Tsim Sha Tsui and three offices, including the Miramar Tower Office (MTO). The Audit Commission (Audit) conducted a review of the HKO.

#### Automatic weather stations

2. *Removal of automatic weather stations and weather element sensors.* The HKO operates a network of automatic weather stations (AWSs) in the territory to collect meteorological information round-the-clock. In April 2007, the HKO completed a review of the AWS network and concluded that five AWSs and six weather element sensors should be removed. In May 2010, the HKO informed Audit that in addition to those AWSs identified in 2007, another three AWSs should also be removed. Up to 31 July 2010, only three AWSs and three sensors had been removed. *Audit has recommended that the Director of the Hong Kong Observatory should ensure that AWSs and sensors earmarked for removal are removed in a timely manner.*

3. *Maintenance of meteorological equipment at automatic weather stations.* Audit examined the 2009 preventive maintenance records of the meteorological equipment installed at 70 AWSs and found that the actual frequency of preventive maintenance visits for the equipment installed at 47 (67%) AWSs was below the target level. Audit noted that only two of the three divisions responsible for making maintenance visits had promulgated procedural guidelines for the maintenance work. Different maintenance records were kept by the three divisions. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) ensure that preventive maintenance of the AWS meteorological equipment is carried out according to the target frequency; (b) promulgate a set of comprehensive guidelines on maintenance of the meteorological equipment; and (c) consider the need to standardise the maintenance records.*

4. ***Maintenance of non-meteorological equipment by the Electrical and Mechanical Services Department.*** The Electrical and Mechanical Services Department (EMSD) provides maintenance and repair services for some engineering systems and equipment installed at 61 AWSs under two Service Level Agreements (SLAs). Under the Aviation SLA, the EMSD should submit a preventive maintenance schedule to the HKO at the beginning of each financial year. For the three years from 2008-09 to 2010-11, only the 2010-11 preventive maintenance schedule was available for audit examination. Moreover, information on the actual frequency of preventive maintenance carried out by the EMSD was not readily available for monitoring purpose. Audit examined the EMSD maintenance reports for the period 2007-08 to 2009-10 and noted that: (a) 1 of the 12 quarterly reports required under the Aviation SLA was received more than 5 months after the quarter; and (b) no annual report required under the Non-aviation SLA was received. Furthermore, only 8 of the required 12 quarterly Service Review Meetings (SRMs) under the Aviation SLA were held during the period. Although regular SRMs should be held under the Non-aviation SLA, no record was available showing that any SRMs had been held. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) maintain proper records of the preventive maintenance schedules and the maintenance work carried out by the EMSD; (b) ensure that the EMSD submit the preventive maintenance reports in a timely manner; and (c) organise SRMs with the EMSD according to the requirements of the SLAs.*

5. ***Site selection for new automatic weather stations.*** Audit examined the site selection records of 8 of the 22 AWSs established during the period April 2006 to March 2010 and found that: (a) for 5 AWSs, a paper showing photos, location maps and some descriptions of the proposed sites was submitted to the management for consideration; (b) for 2 AWSs, basic analyses of the sites were made; and (c) for the Ho Koon Education cum Astronomical Centre, the temperature measurement taken at the station was later criticised by the public for being not representative of the Tsuen Wan region. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) ensure that thorough site selection analysis is conducted and properly documented before deciding to establish a new AWS; and (b) expedite the action to find a suitable site for establishing a new AWS in the Tsuen Wan region.*

#### **Accommodation management**

6. ***Facilities converted to other uses.*** Some facilities in the HKO Headquarters and the MTO had been converted to other uses. However, no record was available showing that the HKO had submitted proposals to the Government Property Agency (GPA) on rationalisation or co-location of such facilities to achieve savings. In the Headquarters, the kitchen and the dining area of the canteen were used as a pantry and a multi-function room. Four pantries and the language laboratory were used as store rooms. *Audit has recommended that the Director of the Hong Kong Observatory should submit proposals to the GPA on the rationalisation of the office space occupied by the canteen, the pantries and the language laboratory.*

7. **Classroom and conference room.** A classroom and a conference room are provided in the MTO. The classroom can be divided into Classroom A and Classroom B. The HKO does not keep records on the actual utilisation of the classroom. Audit considers that meetings can be arranged to be held in either Classroom A or Classroom B, which can be converted easily to a conference room. Furthermore, in the Headquarters, there are a conference hall and a conference room, both of which can be used for meetings. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) review the usage of Classrooms A and B and the conference room in the MTO; and (b) explore saving opportunities by rationalising the usage of the rooms.*

8. **Resource Centre.** The HKO has a Resource Centre in the MTO. It serves as a one-stop shop for information access by the public and for selling the HKO's publications and souvenirs. The number of visitors to the Resource Centre has decreased by 64% from 1,600 in 2000-01 to only a few hundreds in recent years. In 2009-10, the cost of operating the Centre was about \$497,000. *Audit has recommended that the Director of the Hong Kong Observatory should carry out a comprehensive review of the operation of the Resource Centre and, if the Centre is to be retained, improve its utilisation.*

## **Stores Management**

9. **Inventory items.** Audit found that five inventory items costing \$92,600 issued in April 2009 were struck off from the Inventory Sheet and Distribution Record of the issuing unit. However, they were not entered in the Record of the receiving unit. For three divisions selected by Audit for examination, records were not available to show that they had conducted the annual inventory checks for 2007-08 to 2009-10. *Audit has recommended that the Director of the Hong Kong Observatory should ensure that: (a) issues of inventory stores are properly entered in the Inventory Sheet and Distribution Record of the receiving entity; (b) inventory checks are properly carried out at least once a year; and (c) the results of the inventory checks are properly documented.*

10. **Non-inventory items.** Some stores items classified by the HKO as non-inventory items (e.g. cameras and transmitters) were relatively expensive and might worth being accounted for as inventory items. Of 53 stores items in the Non-inventory Stores Ledger selected by Audit for examination, there were delays ranging from 231 days to 534 days in recording seven issues of the items. Audit selected 24 stores items for stock verification and found discrepancies between the physical balances and the ledger balances of 5 items. Audit also found that the stores and the Non-inventory Stores Ledger were not under the custody of any designated officer but were left in an open office area. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) critically review the Non-inventory Stores Ledger with a view to identifying non-inventory items which should be accounted for as inventory ones; (b) issue guidelines to staff to ensure that stores are properly classified in future; (c) ensure that issues of non-inventory stores are recorded in a timely manner; (d) investigate discrepancies found during stock verification; and (e) ensure that stores and stores ledgers are kept in safe custody of the responsible officers.*

## Other administrative issues

11. ***Presentation on television weather programme.*** Since 1987, the HKO has made an arrangement with television (TV) stations to provide staff to present weather information. All the presenters have been volunteers. In 1989, the HKO obtained the approval of the then Secretary for the Treasury for paying honorarium to the presenters on two justifications: (a) the presentation was a duty undertaken outside the officer's conditioned hours of service; and (b) the presentation was a duty outside the scope of the officer's normal duties. In 2009-10, 18 HKO officers presented weather information in 1,236 TV programmes and received honorariums of \$494,400. *As the arrangement was made about 23 years ago, Audit has recommended that the Director of the Hong Kong Observatory should, in consultation with the Secretary for Financial Services and the Treasury, revisit the arrangement of providing staff volunteers and paying them honorarium.*

12. ***Freelance scriptwriters for TV weather programme.*** Approval was given by the Director of the HKO to some staff to take up paid outside work as freelance scriptwriters for TV weather programme for presentation by staff of the TV stations. However, the scripts provided by the scriptwriters may be regarded by the TV stations as if they were provided officially by the HKO. This is because the HKO provides support to the scriptwriters in their scriptwriting and each script is faxed to the TV stations under an official memo of the HKO. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) review the current practice of approving HKO staff to take up paid outside work in providing weather scripts to the TV stations; and (b) take appropriate action to rationalise the arrangement of providing weather scripts to the TV stations.*

13. ***Installation of a new Terminal Doppler Weather Radar.*** The Terminal Doppler Weather Radar (TDWR) located at Tai Lam Chung is approaching the end of its serviceable life. In February 2009, the Finance Committee of the Legislative Council approved the creation of a new commitment of \$110 million for the HKO to replace the existing TDWR. To ensure uninterrupted service of the TDWR during the replacement project, the HKO considers it necessary for the new TDWR to be installed on a site at Brothers Point, Tai Lam Chung. The HKO expected to have the site available by 2009 for site formation, building construction and equipment installation. However, up to August 2010, it had only obtained temporary land allocation to start geotechnical investigation works. Because of ageing, the annual downtime of the existing TDWR had increased. The HKO informed Audit that it had a contingency plan to address the potential risk of prolonged failure of the existing TDWR. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) closely liaise with the relevant stakeholders to advance the implementation of the new TDWR project; and (b) take forward the contingency plan to address the risk of the increasing downtime of the existing TDWR.*

14. ***Talks for the public.*** The HKO organises talks for the public on weather related topics. Some talks were not well received with the attendance rates ranging from 3% to 68%. *Audit has recommended that the Director of the Hong Kong Observatory should consider adjusting the frequency of organising talks not well received by the public.*

#### **Performance measurement and reporting**

15. ***Accuracy of weather forecast.*** The HKO uses a verification scheme to assess the accuracy of weather forecasts as perceived by the public. Under the scheme, the HKO compares the difference between the weather forecast and the actual weather out-turn in terms of five weather elements. A score is obtained for each element. If the final score meets an “accurate/acceptable” mark set by the HKO, the forecast is considered accurate in the public’s view. The current “accurate/acceptable” mark of 85 was set more than 14 years ago. In addition to the verification scheme, the HKO conducts two surveys each year to gauge the public’s views on the accuracy of the forecasts. For the years 2005 to 2009, about 90% of the forecasts were assessed as accurate under the scheme. However, the surveys revealed that the percentage of forecasts perceived as accurate by the public was below 80%. *Audit has recommended that the Director of the Hong Kong Observatory should: (a) consider the desirability of adjusting the “accurate/acceptable” mark for the weather forecast verification scheme; (b) consider conducting a review to identify the reasons for the variance in the accuracy of weather forecast between the verification scheme and the public’s views; and (c) consider the action necessary for reducing the variance.*

16. ***Reporting performance.*** There were inaccuracies in some of the actual performance figures for 2007 and 2008 reported in the HKO’s 2009-10 Controlling Officer’s Report (COR). *Audit has recommended that the Director of the Hong Kong Observatory should ensure the accuracy of the performance information published in the COR and on the website.*

#### **Response from the Administration**

17. The Administration agrees with the audit recommendations.

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