

## Head 168 — HONG KONG OBSERVATORY

**Controlling officer:** the Director of the Hong Kong Observatory will account for expenditure under this Head.

**Estimate 2007–08** ..... **\$195.2m**

**Establishment ceiling 2007–08** (notional annual mid-point salary value) representing an estimated 282 non-directorate posts as at 31 March 2007 and as at 31 March 2008 ..... **\$100.1m**

In addition, there will be an estimated five directorate posts as at 31 March 2007 and as at 31 March 2008.

### Controlling Officer's Report

#### Programmes

<b>Programme (1) Weather Services</b>	This programme contributes to Policy Area 7: Public Safety (Secretary for Economic Development and Labour).
<b>Programme (2) Radiation Monitoring and Assessment</b>	This programme contributes to Policy Area 9: Internal Security (Secretary for Security).
<b>Programme (3) Time Standard and Geophysical Services</b>	This programme contributes to Policy Area 7: Public Safety (Secretary for Economic Development and Labour).

#### Detail

##### Programme (1): Weather Services

	2005–06 (Actual)	2006–07 (Original)	2006–07 (Revised)	2007–08 (Estimate)
Financial provision (\$m)	163.4	166.2	162.0 (–2.5%)	<b>163.1</b> (+0.7%)
				(or –1.9% on 2006–07 Original)

#### Aim

2 The aim is to provide weather forecasts and issue warnings to the public, special users, the shipping community, aircraft and aviation groups in order to reduce loss of life and damage to property, and minimise disruption to economic and social activities during hazardous weather.

#### Brief Description

3 The Hong Kong Observatory's Central Forecasting Office and Airport Meteorological Office are responsible for the preparation and issue of weather information, forecasts and various warnings on hazardous weather to the public, shipping community and aviation groups. The Hong Kong Observatory also promotes public awareness of, and community preparedness for, natural disasters. This work involves:

- operating a network of mostly automated weather stations;
- carrying out real-time exchange of data with meteorological centres in the world;
- receiving meteorological satellite imageries and operating weather radar systems;
- analysing meteorological data and computing the future weather by numerical modelling;
- disseminating weather information by a diversity of means;
- issuing warnings on hazardous weather such as tropical cyclones, storm surges, rainstorms, landslips, flooding, thunderstorms, windshear, fire danger and extreme hot and cold conditions; and
- conducting public talks, interviews and training courses as well as producing publicity material on hazardous weather phenomena.

4 In 2006, the Hong Kong Observatory fulfilled its performance pledge of issuing at least one bulletin every hour of the day, disseminating the bulletins within ten minutes after each hour, and maintaining, on average, a forecast accuracy score of 85% or more. The range of the forecasting system in support of rainstorm warning operation was extended from two hours to six hours, thus enhancing the rainfall prediction capability of the Observatory. Ultraviolet (UV) index forecasts were launched, facilitating the public to take protective measures against intense UV radiation. The technical study on future computing resource requirements for running the next generation of numerical model for weather prediction was completed. The Observatory's website was enhanced to include higher resolution radar images, visibility

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measurements in urban areas, wind gusts, areas affected by gale and strong winds, webcam images taken at the Victoria Harbour and the Hong Kong Wetland Park and a webpage for water sports. To support the 2008 Olympic and Paralympic Equestrian Events in Hong Kong, instruments were installed at the contest venues to measure heat stress. A comprehensive review of the tropical cyclone warning system was initiated. Under the outreach programme, Observatory officers spoke on radio programmes and wrote featured articles in newspapers about various types of hazardous weather and the precautions against them. The Observatory maintained a close surveillance of the weather at and around the Hong Kong International Airport and provided aircraft with the weather information needed for operations. A backup light detection and ranging system was installed to ensure uninterrupted windshear detection. New products were added to the Observatory's web-based aviation weather information system to meet user requirements.

5 The key performance measures in respect of weather services are:

### *Targets*

	Target	2005 (Actual)	2006 (Actual)	2007 (Plan)
forecasts perceived as accurate by the public (%).....	78	79	78	79
accurate public forecasts as verified by objective means (%).....	85	91	90	89
accurate forecasts as assessed by ship captains (%).....	95	96	97	95
accurate forecasts as assessed by airline operators (%).....	95	98	98	98

### *Indicators*

	2005 (Actual)	2006 (Actual)	2007 (Estimate)
calls answered by Dial-a-Weather system .....	22 000 000	22 000 000	24 000 000
telephone enquiries answered manually .....	44 000	64 000 <sup>Ψ</sup>	67 000
visits to the Observatory's website .....	524 000 000	918 000 000 <sup>Ψ</sup>	1 000 000 000
companies and organisations subscribing to special weather and warning services.....	68	75 <sup>Δ</sup>	80
total revenue from above subscribers (\$m) .....	1.4	1.3 <sup>Δ</sup>	1.3
media interviews and public lectures/talks on weather.....	1 200	1 400 <sup>#</sup>	1 200
meteorological documents for flights departing Hong Kong...	130 000	142 000	150 000
visits to aviation weather information system.....	8 000 000	12 000 000 <sup>^</sup>	12 500 000

<sup>Ψ</sup> The increase in 2006 was mainly due to the growing public demand for timely access to weather information, especially on severe weather.

<sup>Δ</sup> The decrease in revenue in 2006, despite an increase in the number of subscribers, was due to the adoption of more cost-effective means, and hence lower cost, of transmitting weather information to customers.

<sup>#</sup> The increase in 2006 was due to a large number of media interviews in connection with Typhoon Prapiroon in August 2006.

<sup>^</sup> The increase in 2006 was mainly due to aviation users' growing demand for timely aviation weather information for operations during severe weather.

### *Matters Requiring Special Attention in 2007–08*

6 During 2007–08, the Department will:

- continue to enrich the contents of the Observatory's website in response to the evolving needs of the public and further develop the delivery of weather services through the Internet;
- acquire a new computer system for implementing a suite of high resolution mesoscale models for weather prediction;
- continue to promote public awareness of, and preparedness for, natural disasters through various outreach activities and continuous development of educational resources;
- develop weather services to support the 2008 Olympic and Paralympic Equestrian Events;
- continue to enhance the aviation weather service through the use of technology to meet user needs;
- install a reception system for the Japanese geostationary meteorological satellite (known as Multi-functional Transport Satellite) for weather monitoring; and
- complete the review of the tropical cyclone warning system and implement appropriate measures to enhance the system.

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### Programme (2): Radiation Monitoring and Assessment

	2005–06 (Actual)	2006–07 (Original)	2006–07 (Revised)	<b>2007–08 (Estimate)</b>
Financial provision (\$m)	21.8	22.5	21.6 (–4.0%)	<b>23.0</b> (+6.5%)
				(or +2.2% on 2006–07 Original)

#### *Aim*

7 The aim is to provide information on environmental radiation levels in Hong Kong and advise government departments on the protective action that may be necessary during nuclear emergencies.

#### *Brief Description*

8 The Hong Kong Observatory monitors ambient radiation levels in Hong Kong and conducts radiological measurements on air, soil, water and food samples. In the event of a nuclear emergency, the Observatory will notify and advise government departments on the possible consequences in Hong Kong and recommend protective action. The Observatory organises training and exercises on radiation monitoring for other government departments involved in the Hong Kong contingency plan for nuclear emergencies. The work involves:

- operating a network of radiation monitoring stations, an aerial monitoring system, a radiological survey vehicle, a radiation laboratory and an emergency radiation data management system;
- keeping abreast of the latest development on the methodology for nuclear accident consequence assessment; and
- planning and participating in exercises and drills in response to nuclear emergencies.

9 In 2006, all radiation monitoring and assessment work in this programme was carried out satisfactorily. All equipment was maintained in a state of readiness. Inter-comparison between Hong Kong and Guangdong on radiological measurements continued. Training on radiation monitoring and assessment, as well as radiological protection, was conducted for relevant government departments and organisations involved in the contingency plan for nuclear emergencies.

10 The key performance measures in respect of radiation monitoring and assessment are:

#### *Target*

	Target	2005 (Actual)	2006 (Actual)	<b>2007 (Plan)</b>
data availability of radiation monitoring network (%).....	99.0	99.9	99.2	<b>99.0</b>

#### *Indicators*

	2005 (Actual)	2006 (Actual)	<b>2007 (Estimate)</b>
exercises and drills .....	13	20Ω	<b>17</b>
visits to the Observatory's webpage on radiation .....	380 000	709 000φ	<b>800 000</b>

Ω Some exercises and drills were postponed from 2005 to 2006 due to the Sixth World Trade Organization Ministerial Conference in late 2005.

φ The increase in 2006 was mainly due to the availability of more educational material following enhancement of the webpage.

#### *Matters Requiring Special Attention in 2007–08*

11 During 2007–08, the Department will continue to:

- implement the agreed arrangements between Hong Kong and Guangdong on radiation monitoring and assessment;
- conduct drills and exercises on emergency response in conjunction with other government departments as well as the relevant Guangdong counterparts; and
- organise training on radiation monitoring and assessment.

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### Programme (3): Time Standard and Geophysical Services

	2005–06 (Actual)	2006–07 (Original)	2006–07 (Revised)	<b>2007–08 (Estimate)</b>
Financial provision (\$m)	8.8	8.7	8.8 (+1.1%)	<b>9.1</b> (+3.4%)
				(or +4.6% on 2006–07 Original)

#### *Aim*

12 The aim is to maintain the Hong Kong time standard and to provide geophysical, oceanographical, astronomical and climatological information to the public.

#### *Brief Description*

13 The Hong Kong Observatory maintains the Hong Kong time standard and provides time signals for the public. It prepares, collates and provides geophysical, oceanographical and climatological information required for engineering planning, design and environmental impact assessments. It also keeps abreast of research and development on international issues such as global climate change and advises government departments on likely implications. This work involves:

- maintaining a caesium beam clock as the Hong Kong time standard and providing time signals for radio broadcasts, automatic telephone answering service and synchronisation of clocks via Internet;
- operating seismological, tide and water level monitoring networks and conducting data analyses;
- compiling climatological and other data; and
- providing updates on the effects of El Nino and other longer term weather phenomena on Hong Kong.

14 In 2006, the objectives and targets of this programme were generally met. A study of the long-term change in heat stress in Hong Kong was completed and the results published. With a view to improving the capability of forecasting tsunamis, a numerical model was developed to compute the heights of tsunami generated by large earthquakes in the South China Sea. The Observatory also co-ordinated the participation of government departments in the first Pacific-wide tsunami exercise organised by the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System. To promote public awareness of, and preparedness for, tsunamis, the Observatory, in collaboration with the National Marine Environment Forecasting Centre of China, produced and made available to the public an educational booklet on tsunamis.

15 The key performance measures in respect of time standard and geophysical services are:

#### *Targets*

	Target	2005 (Actual)	2006 (Actual)	<b>2007 (Plan)</b>
time standard accuracy (microseconds per day) .....	0.1	0.1	0.1	<b>0.1</b>
geophysical, meteorological and oceanographical data capture rate (%) ...	95	99	99	<b>99</b>

#### *Indicators*

	2005 (Actual)	2006 (Actual)	<b>2007 (Estimate)</b>
visits to the Observatory's internet time service .....	355 000 000	395 000 000	<b>430 000 000</b>
requests for geophysical, climatological and oceanographical information and advice .....	1 060	1 750@	<b>1 200</b>

@ The increase in 2006 was due to a large number of requests for information on two locally felt earthquakes which occurred in September 2006 and December 2006.

#### *Matters Requiring Special Attention in 2007–08*

16 During 2007–08, the Department will:

- continue to provide information and data to users efficiently and through user-friendly means;
- continue to keep abreast of earthquake risk assessment in the region;

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- acquire a broadband seismograph to improve local and regional capabilities of determining the focal mechanism of earthquakes for tsunami forecasting; and
- strengthen the capability to forecast tsunamis through the use of a numerical model.

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### ANALYSIS OF FINANCIAL PROVISION

Programme	2005-06 (Actual) (\$m)	2006-07 (Original) (\$m)	2006-07 (Revised) (\$m)	2007-08 (Estimate) (\$m)
(1) Weather Services .....	163.4	166.2	162.0	<b>163.1</b>
(2) Radiation Monitoring and Assessment.....	21.8	22.5	21.6	<b>23.0</b>
(3) Time Standard and Geophysical Services.....	8.8	8.7	8.8	<b>9.1</b>
	194.0	197.4	192.4 (-2.5%)	<b>195.2</b> <b>(+1.5%)</b>
				<b>(or -1.1% on 2006-07 Original)</b>

#### Analysis of Financial and Staffing Provision

##### Programme (1)

Provision for 2007-08 is \$1.1 million (0.7%) higher than the revised estimate for 2006-07. This is mainly due to salary increments for existing staff, filling of vacancies and increased provision for maintaining meteorological equipment, partly offset by the reduced requirement for new or replacement equipment.

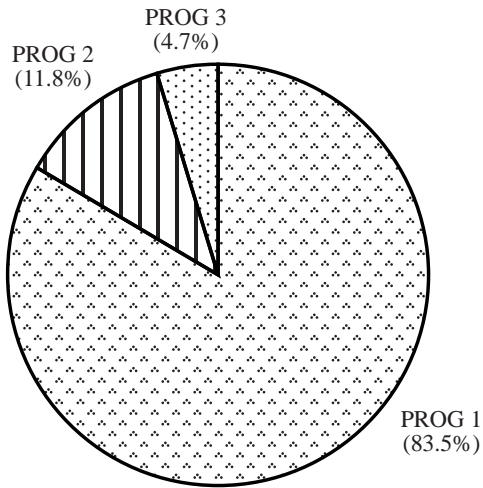
##### Programme (2)

Provision for 2007-08 is \$1.4 million (6.5%) higher than the revised estimate for 2006-07. This is mainly due to salary increments for existing staff, filling of vacancies and replacement of an obsolete radiation measurement instrument.

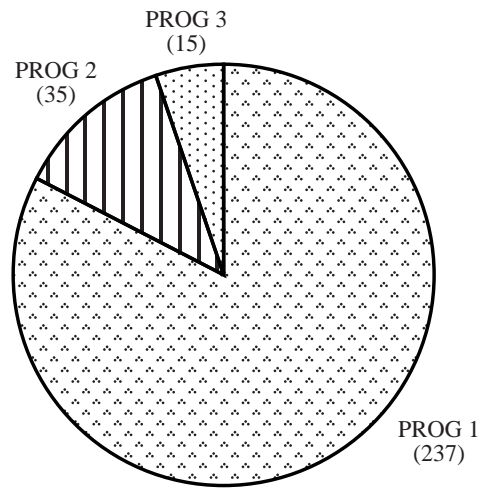
##### Programme (3)

Provision for 2007-08 is \$0.3 million (3.4%) higher than the revised estimate for 2006-07. This is mainly due to salary increments for existing staff, filling of vacancies and increased provision for renting data communication lines for transmission of seismic data.

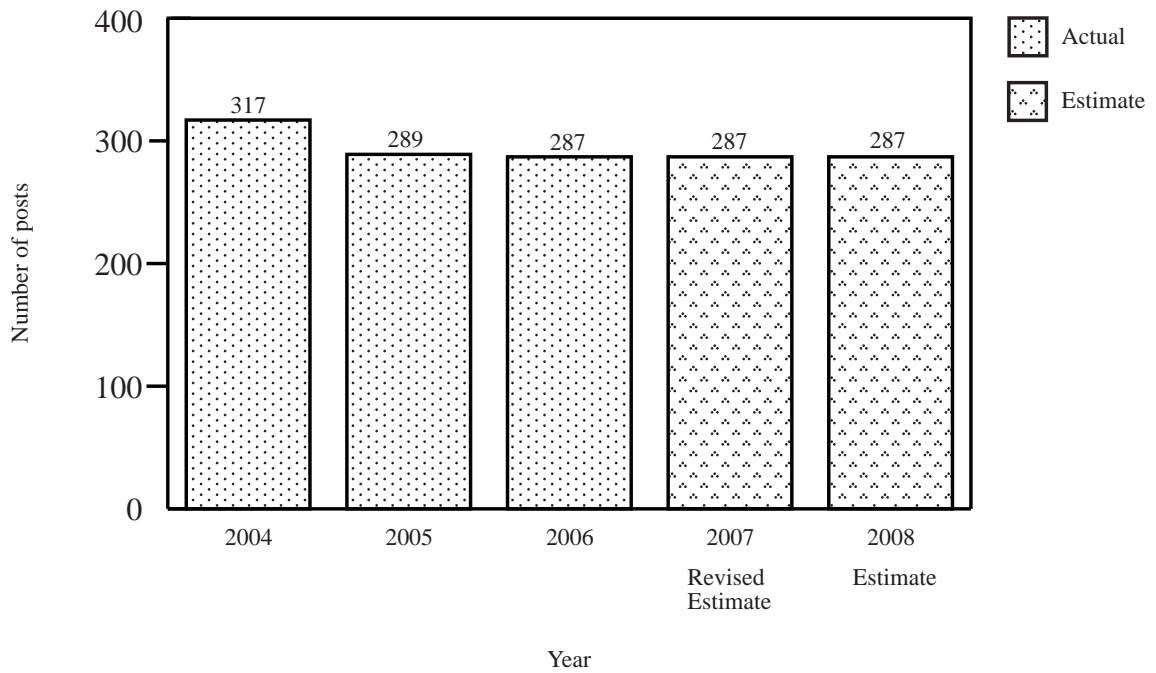
*Allocation of provision to programmes (2007-08)*



*Staff by programme (as at 31 March 2008)*



*Changes in the size of the establishment (as at 31 March)*



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Sub-head (Code)	Actual expenditure 2005–06	Approved estimate 2006–07	Revised estimate 2006–07	<b>Estimate 2007–08</b>	
	\$'000	\$'000	\$'000	<b>\$'000</b>	
<b>Operating Account</b>					
Recurrent					
000	Operational expenses.....	188,959	195,474	187,943	<b>193,004</b>
	Total, Recurrent .....	188,959	195,474	187,943	<b>193,004</b>
	Total, Operating Account.....	188,959	195,474	187,943	<b>193,004</b>
<b>Capital Account</b>					
Plant, Equipment and Works					
661	Minor plant, vehicles and equipment (block vote).....	5,046	1,900	4,412	<b>2,200</b>
	Total, Plant, Equipment and Works .....	5,046	1,900	4,412	<b>2,200</b>
	Total, Capital Account .....	5,046	1,900	4,412	<b>2,200</b>
	Total Expenditure.....	194,005	197,374	192,355	<b>195,204</b>



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### Details of Expenditure by Subhead

The estimate of the amount required in 2007–08 for the salaries and expenses of the Hong Kong Observatory is \$195,204,000. This represents an increase of \$2,849,000 over the revised estimate for 2006–07 and of \$1,199,000 over actual expenditure in 2005–06.

#### *Operating Account*

##### Recurrent

**2** Provision of \$193,004,000 under *Subhead 000 Operational expenses* is for the salaries, allowances and other operating expenses of the Hong Kong Observatory.

**3** The establishment as at 31 March 2007 will be 287 permanent posts. No change in establishment is expected in 2007–08. Subject to certain conditions, the controlling officer may under delegated power create or delete non-directorate posts during 2007–08, but the notional annual mid-point salary value of all such posts must not exceed \$100,106,000.

**4** An analysis of the financial provision under *Subhead 000 Operational expenses* is as follows:

	2005–06 (Actual) (\$'000)	2006–07 (Original) (\$'000)	2006–07 (Revised) (\$'000)	2007–08 (Estimate) (\$'000)
Personal Emoluments				
- Salaries.....	122,764	126,491	124,232	<b>127,410</b>
- Allowances.....	1,281	1,486	1,275	<b>1,275</b>
- Job-related allowances.....	84	134	81	<b>131</b>
Personnel Related Expenses				
- Mandatory Provident Fund contribution.....	105	120	120	<b>120</b>
- Civil Service Provident Fund contribution.....	11	20	20	<b>196</b>
Departmental Expenses				
- Technical Services Agreement.....	2,327	1,400	1,300	—
- General departmental expenses.....	62,310	65,739	60,835	<b>63,788</b>
Other Charges				
- World Meteorological Organization.....	77	84	80	<b>84</b>
	188,959	195,474	187,943	<b>193,004</b>

#### *Capital Account*

##### Plant, Equipment and Works

**5** Provision of \$2,200,000 under *Subhead 661 Minor plant, vehicles and equipment (block vote)* represents a decrease of \$2,212,000 (50.1%) against the revised estimate for 2006–07. This is mainly due to the reduced requirement for new or replacement equipment.