Civil Aviation Department

Environmental Report 2009

Contents

Executive Summary

This is the eleventh Civil Aviation Department (CAD) Environmental Report, which reviewed our performance in 2009.

This report aims to provide information about our work in aircraft noise management and our efforts in contributing to environmental protection at CAD offices.

On managing aircraft noise, while we strive to develop a safe and efficient air transport system, we are mindful of the impact of aircraft noise on the local communities and have continued to develop, review and implement measures to minimize the disturbance of aircraft noise on the local community wherever possible.

For the implementation of green measures at our workplace, our core strategy is to promote energy efficiency, energy conservation, paper conservation, recycling, proper disposal of waste, and promotion of environmental awareness among all staff. We remained on track with these initiatives and achieved satisfactory results in 2009. A decrease of 3.1% in daily average electricity consumption was recorded at CAD's premises. We will strive to further reduce energy consumption in the year ahead.

We welcome comments and feedback from readers so that we can identify rooms for improvement. Readers can provide their views by email to enquiry@cad.gov.hk or by fax on 2326 3654 or by post to 46/F, Queensway Government Offices, 66 Queensway, Hong Kong.

Foreword

As a whole, the aviation industry in Hong Kong has been growing steadily over the years. Recognising the importance of the development of civil aviation, the Department is committed to maintaining a safe and efficient air transport system in Hong Kong. At the same time, we are conscious of the need to minimise the disturbance to the living environment that may be caused by the operations of aircraft, and to implement effective green measures in our office operations for environmental protection purpose.

On reducing the impact of aircraft noise, we continue to manage the issue using the "Balanced Approach" recommended by the International Civil Aviation Organisation (ICAO)*. The objective of such approach is to address the issue in the most cost effective way through an exploration of taking measures such as:

- reducing noise at source;
- implementing noise abatement operational procedures; and
- imposing operating restrictions on aircraft

We have established and implemented a number of measures to help mitigate aircraft noise as highlighted in the report and will continue to review, develop and implement any applicable measures in the light of the changing environment and any international developments in the field of environmental protection.

For taking green measures in-house, we continue to keep a close watch on the consumption of electricity, paper and other materials with a view to reducing their consumption as far as possible. We also promote and encourage the re-use and proper disposal of wasted materials so that they can be utilised or recycled to the best possible extent, and emphasize the need to take the green element into account in our procurement.

Note:

* The International Civil Aviation Organisation (ICAO) is a specialised agency of the United Nations. ICAO was established in 1944 to promote the safe and orderly development of international civil aviation. It sets standards and regulations necessary for aviation safety, security, efficiency and regularity, as well as for aviation environmental protection. The Organisation serves as the forum for cooperation in all fields of civil aviation among its 190 Contracting States.

Chapter 1 Our Green Policy

While CAD is committed to a safe and efficient air transport system, we strive to protect our environment at all times. In this regard, we aim at minimizing–

- aircraft noise disturbance to local communities through the implementation of applicable international standards and recommended practices under an effective aircraft noise management system; and
- the consumption of energy, paper and other materials in the day-to-day operation of the department through the implementation of effective green housekeeping measures.

Aircraft Noise Management

- Monitor new or amended developments ICAO standards and recommended practices on aircraft noise and review any applicable changes for implementation in Hong Kong including requirements on aircraft noise certification and noise mitigating measures
- Maintain dialogue with local communities and citizens affected by aircraft noise and handle complaints
- Monitor aircraft noise
- Consult stakeholders on the feasibility of new noise mitigating measures
- Develop and implement measures to minimise the impact of aircraft noise on local communities

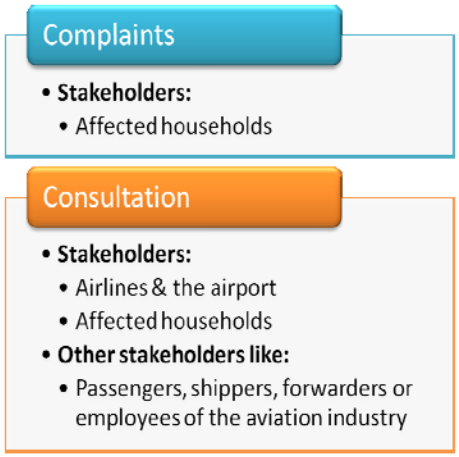

Figure 1 *Stakeholders in aircraft noise monitoring and consultation process*

Green Housekeeping

- Strengthen management of green housekeeping through the establishment of a dedicated committee and the appointment of office green managers
- Economise on the use of energy, paper and other materials
- Follow the 4Rs principle of Reduce, Reuse, Recycle and Replace if possible
- Comply with environmental regulations as a minimum standard of performance
- Promote staff awareness to ensure that environmentally related considerations are included in all our decision-making process

Figure 2 *Recycled bins are placed in the office to encourage recycling*

Implementation of Policy in Aircraft Noise Management

To minimise aircraft noise impacts on local communities, CAD keeps a close watch on the development of international standards and recommended practices in aircraft noise management and implements noise mitigating measures by adopting a Review-Plan-Implement-Check Cycle (Figure 3).

CAD keeps reviewing and assessing the present noise impacts. When planning new noise mitigating measures, CAD would consult different stakeholders including local communities, airlines and the airport operator. Noise mitigating measures that are feasible would be implemented and are subject to regular review.

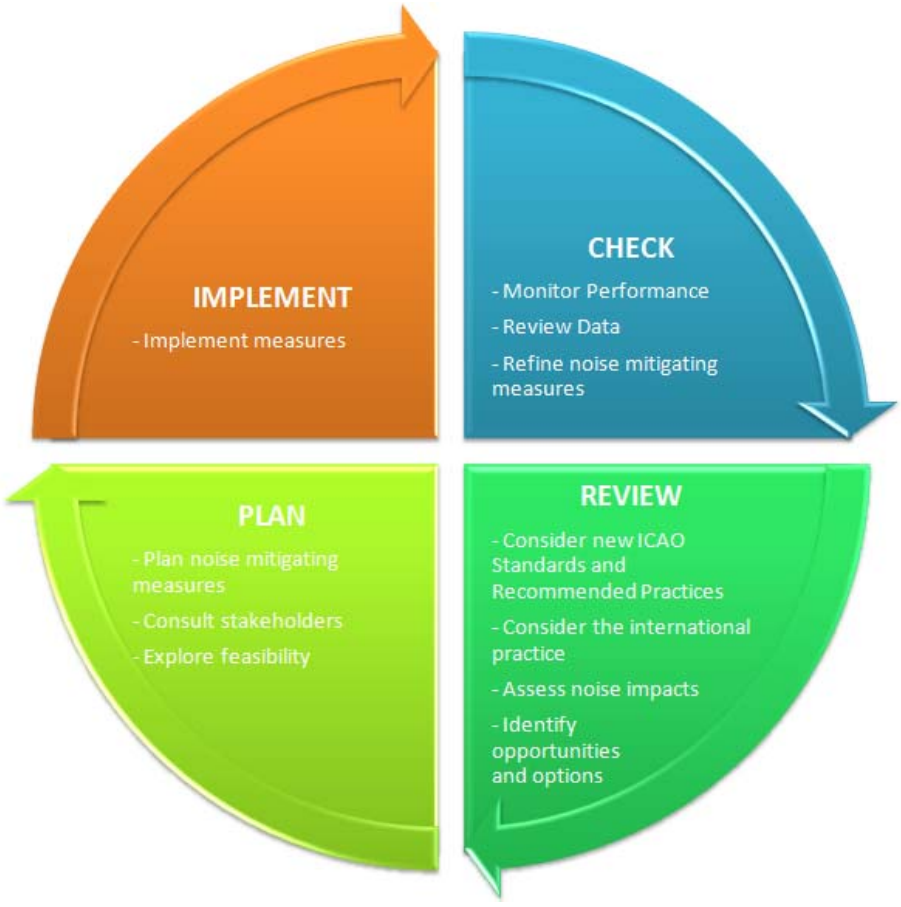

Figure 3 *Review-Plan-Implement-Check Cycle*

Implementation of Policy for Green Housekeeping

CAD has established the Environmental Management Committee (Figure 4) since 1999 to monitor the environmental friendliness of all CAD operations and to work out practical green policy. The committee would also set green targets for the year ahead, such as reducing electricity consumption and recycling waste in CAD offices.

All CAD offices were reminded of the green measures in offices by means of circulation of departmental circular on a quarterly basis.

Figure 4 *Composition of the Environmental Management Committee*

Chapter 2 Aircraft Noise Management

We are conscious of the effect that aircraft operations may have on local communities and strive to minimise the noise impact. In this regard, we work closely with various stakeholders, including affected households and the airlines, trying to balance and resolve the conflicts of interests.

We continuously monitor aircraft noise and implement noise-mitigating measures wherever possible, and always strive to develop solutions to the aircraft noise problem in a cost-effective manner. The aircraft noise management process is illustrated in the figure below. (Figure 5)

Figure 5 *Aircraft noise management process*

In addition, we promulgate relevant aircraft noise monitoring data and keep track of the aviation technology developments with a view to strengthening current measures and putting forward new insight on aircraft noise reduction.

Using Flight Paths over Water to Minimise Noise

To minimise noise nuisance in populated districts caused by aircraft operations during night-time hours, under safe weather and flight conditions, arriving and departing aircraft are to use the flight paths which are over water for landings at and take-offs from HKIA.

Night Arrivals

Subject to acceptable wind direction and safety consideration, all aircraft arriving between midnight and 7:00am are required to approach from the southwest over water. (Figure 6)

With this arrangement, populated districts such as Shatin, Tsuen Wan, Kwai Chung, Tsing Yi, Sham Tseng and Tsing Lung Tau are not affected by the noise from arriving aircraft during the overnight period.

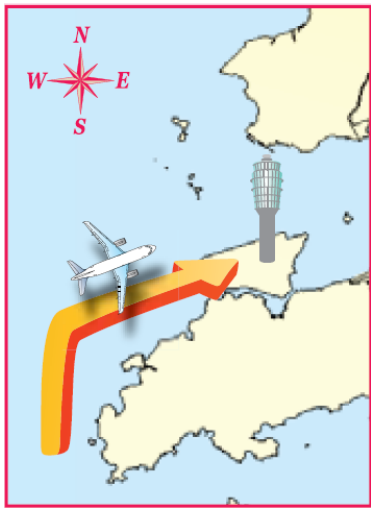

Figure 6

Night Departures

Subject to acceptable wind direction and safety consideration, all aircraft taking off to the northeast between 11:00pm and 7:00am are required to depart via the West Lamma Channel. (Figure 7)

With this arrangement, populated districts such as Kowloon, North Point, Shau Kei Wan and Chai Wan are not affected by noise from departing aircraft during the overnight period.

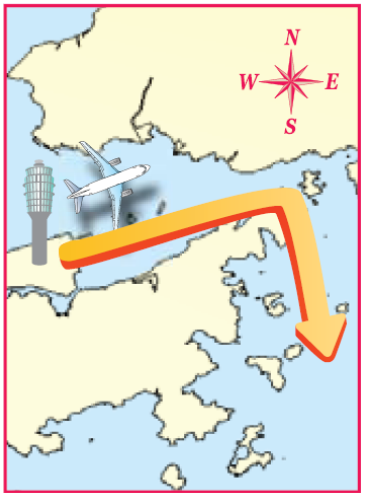

Figure 7

Noise Abatement Procedures

Quieter Arrivals

When weather and flight conditions do not allow night arrivals between midnight and 7:00am to approach from the southwest but the northeast, arriving aircraft are encouraged to adopt the Continuous Descent Approach (CDA).

The CDA approach requires the aircraft to fly higher and adopt a lower power and drag configuration during the commencement of the approach, thereby reducing aircraft noise impacts to areas such as Sai Kung, Tseung Kwan O and Ma On Shan.

Quieter Departures

All aircraft departing to the northeast are required to adopt the Noise Abatement Departure Procedures (NADP) stipulated by ICAO so long as safe flight operations permit.

These procedures require aircraft to initiate noise abatement procedures by means of power reduction upon reaching an altitude of 800 feet or above, thus alleviate aircraft noise impact during take-offs on communities in the vicinity of the airport.

Keeping Noisy Aircraft out of Hong Kong

Since 1 July 2002, we have banned the operations of old and noisy “Chapter 2”* aircraft from using the Hong Kong International Airport. Only newer and quieter “Chapter 3”** aircraft are allowed to land and depart in Hong Kong. The prohibition of “Chapter 2”* aircraft helps reduce the overall noise impact to communities in the proximity of flight paths.

Note:

* “Chapter 2” aircraft are those aircraft which only comply with the noise standard stipulated in Chapter 2 of Annex 16, Volume 1, Part II to the Convention on International Civil Aviation.

** “Chapter 3” aircraft are those aircraft which comply with the more stringent noise standard stipulated in Chapter 3 of Annex 16, Volume 1, Part II to the Convention on International Civil Aviation.

Noise Monitoring

Aircraft Noise and Flight Tracking Monitoring System

The aircraft noise levels in areas located near the flight paths have been closely monitored with the aid of the Aircraft Noise and Flight Tracking Monitoring System (ANFTMS). This system currently connects to 16 fixed noise monitoring terminals (NMTs) installed in the vicinity of flight paths (Figure 8), which constantly collect real-time noise data. The ANFTMS would automatically correlate flight track information from the radar with noise data from NMTs, thereby enabling us to compile accurate statistics on aircraft noise and more effectively investigate any noise complaints.

Figure 8 *Location of noise monitoring terminals*

Improvement Works in 2009

We identified a new location for relocating the NMT in Tung Chung at a residential estate closer to the flight paths. An NMT has been installed at the location with the trial operation commenced in June 2009.

To ensure that all NMTs collect accurate noise data, we started a laboratory calibration exercise for the microphone units of NMTs.

Working with the Public

Complaint Handling

We regularly listen to the public opinions. In 2009, we handled 982 aircraft noise complaints. The monthly statistics remained stable as compared with last year, except in the month of June to August* (Figure 9).

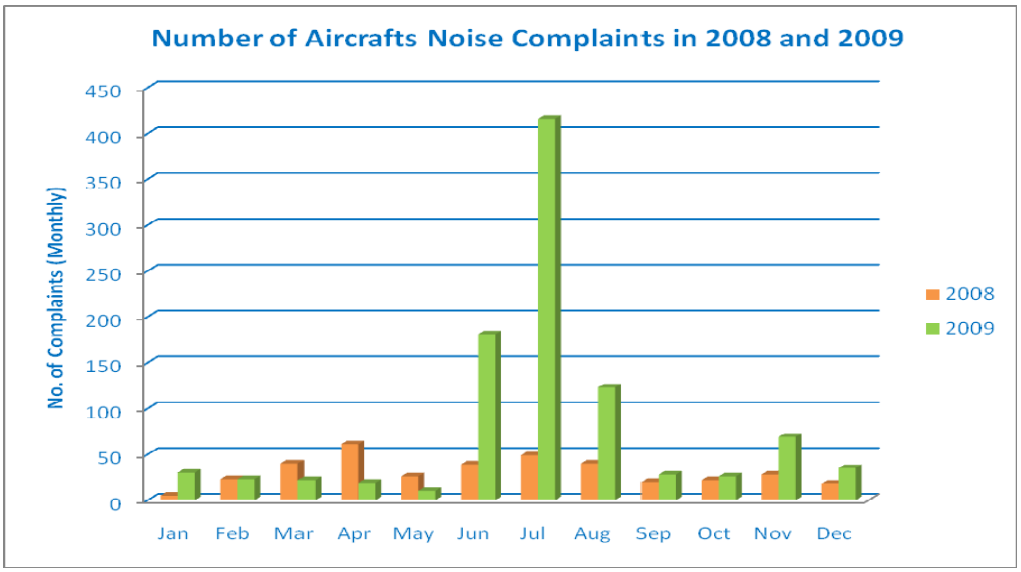

Figure 9 *Monthly figures of aircraft noise complaints*

Note:

* Between June and August 2009, a residential estate organised a campaign to express their views on aircraft noise issues. This constituted two-third of the complaints received in 2009.

Public and Government Liaison

In 2009, we attended one meeting with Legislative Council members and six District Council and District Council committee meetings. During these meetings, we discussed aircraft noise issues and explained the noise mitigating measures we had implemented.

In addition, two visits to the Air Traffic Control (ATC) facilities had been conducted for the members of a District Council Committee and a Rural Area Committee.

Provision of Noise Data

Noise data collected by the ANFTMS were regularly analysed and uploaded to the CAD homepage to enable members of the public to access aircraft noise information.

Chapter 3 Green Housekeeping

Green housekeeping is always high on our agenda. Our green policy emphasizes energy conservation, paper conservation, recycling, proper disposal of environmentally hazardous waste, and promotion of environmental awareness among all staff.

Energy Conservation

Buildings managed by CAD

In buildings and premises managed by CAD, that is, the Air Traffic Control Complex and Tower (ATCX/TWR) and the Back-up Air Traffic Control Complex (BATCX), we have incorporated energy-saving building services features and implemented green housekeeping measures so as to put energy into efficient use.

Air-conditioning

Air-conditioning accounts for the majority of the CAD's electricity consumption. In 2009, we upgraded the air-cooled air-conditioning system of ATCX/TWR and BATCX to the more energy efficient water-cooled air-conditioning system. This aside, we adjusted the rate of fresh air supply in ATCX by the centralised air-conditioning system during night-time.

Lighting systems

Using lights in a responsible manner is one of the quickest and easiest ways to help care for the environment. In 2009, we completed the replacement of all tungsten filament lights at ATCX/TWR and BATCX with energy efficient lightings, e.g. T5 fluorescent lights.

Other measures

In addition to the initiatives mentioned above, we implemented a list of energy saving measures. These include

- not using the architectural floodlights at BATCX
- switching off all unnecessary corridor lights at ATCX/TWR and BATCX
- turning off photocopiers, computers if they are idled for a period of time
- suspending the service of one passenger lift and one cargo lift at ATCX during overnight period

Buildings managed by a Third Party

Besides CAD's own premises, we would meet with the managers of non CAD-owned buildings to discuss energy saving initiatives if needed. For instance, at the Queensway Government Offices, the building management strictly controls the temperature of the air-conditioning system and limits the operating hours of its chiller plant, which significantly reduce energy wastage.

Our Performance in 2009

In 2009, CAD premises consumed a total amount of 29,584 kilowatt-hours of electricity on an average day, which represents a 3.1% decrease compared with the consumption in 2008.

Paper Conservation

We practice paper conservation by :

Reduce

- Minimise paper use by not making personal copies and by posting circulars on CAD intranet
- Disseminate information by electronic means (email or e-bulletin boards) instead of printing documents
- Print paper on both sides by using printers/ photocopiers that support double-sided printing

Reuse

- Reuse envelopes and loose minute jackets
- Use blank side of used paper for drafting
- Install "green tray" in LAN laser printer to use blank side of used paper

Replace

- Use recycled paper instead of plain paper

Recycle

- Waste paper is collected and recycled

Our Performance in 2009

In 2009, we used 7,353 reams of paper (Figure 10), which was an increase compared with 2008 due to increased activities.

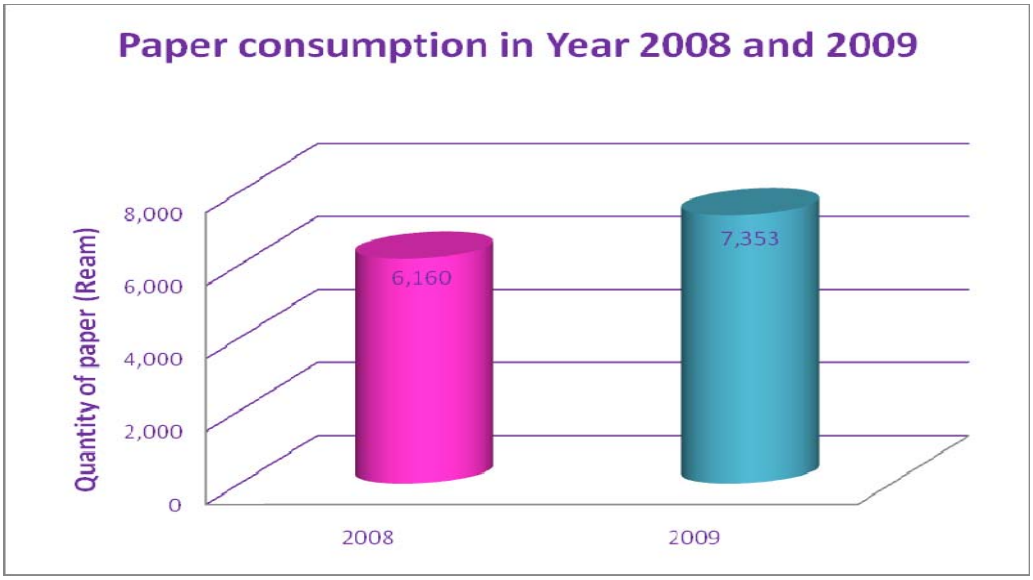

Figure 10 *Yearly figures of paper consumption*

Recycling

We recycle waste paper, used Compact Discs and laser printer cartridges. Recycling bins are available in CAD offices to collect these recyclable materials. All the materials collected were forwarded to our suppliers or other designated parties for recycling. The following table shows the volume of materials sent for recycling in 2009 compared with 2008.

Our Performance in 2009

	Year 2008	Year 2009
Waste Paper Collection (kg)	4,470	4,236
Used Compact Disc Collection (g)	13,694	9,360
Laser Printer Cartridge recycled (units)	467	550

Figure 11 *Collection points of waste paper for recycling within the office*

Green Procurement

In line with the Government's green procurement policy, we avoid procuring single-use disposable items. As far as practicable, we purchase items that are more durable, energy-efficient and recyclable. Our efforts made in green procurement include but not limited to the follows -

- We buy green stationery such as mechanical pencils, refillable ball pens and pencils made of recycled materials instead of wood
- We buy other green items such as recyclable laser printer cartridges
- We buy equipment such as air traffic control equipment, fluorescent tubes, photocopiers and printers that have obtained energy label under the Energy Efficiency Labelling Scheme of Electrical and Mechanical Services Department
- We replaced the old 50-seater shuttle bus with EURO V environmental friendly 49-seater bus

Figure 12 *Green stationery and recyclable laser printer cartridge*

Figure 13 *The more environmental friendly EURO V shuttle bus*

Besides buying smart, we conduct stock-taking regularly. Items with expiry dates are ordered on needed basis, thus reduce wastage.

Proper Disposal of Waste

Chemical Waste

We operate 13 outstations for provision of air traffic control. In the event that the mains electricity supply to these outstations is interrupted, they automatically switch to other power supplies, such as standby diesel generators or battery packs. However, both these alternative power supplies generate chemical waste, which may pose possible risks to the environment. These wastes have to be disposed of in a safe and appropriate way.

Our Performance in 2009

In 2009, our appointed contractor handled all wastes in accordance with statutory requirements.

Sea Water Effluent

Both ATCX/TWR and BATCX use sea water for their cooling systems. As water pollution in Hong Kong has become more serious over the years, in order to safeguard public health and the life of aquatic organisms, it is necessary to implement controls on wastewater discharges. To minimise environmental impact, all sea water discharges are monitored for their flow rate, temperature, pH value and residual chlorine under standards set by the Water Pollution Control Ordinance.

Our Performance in 2009

In 2009, the average daily flow rate and temperature of the sea water effluent discharge from ATCX/TWR and BATCX remained well below the prescribed limits. Monthly figures of 2009 are presented in Figures 14-17.

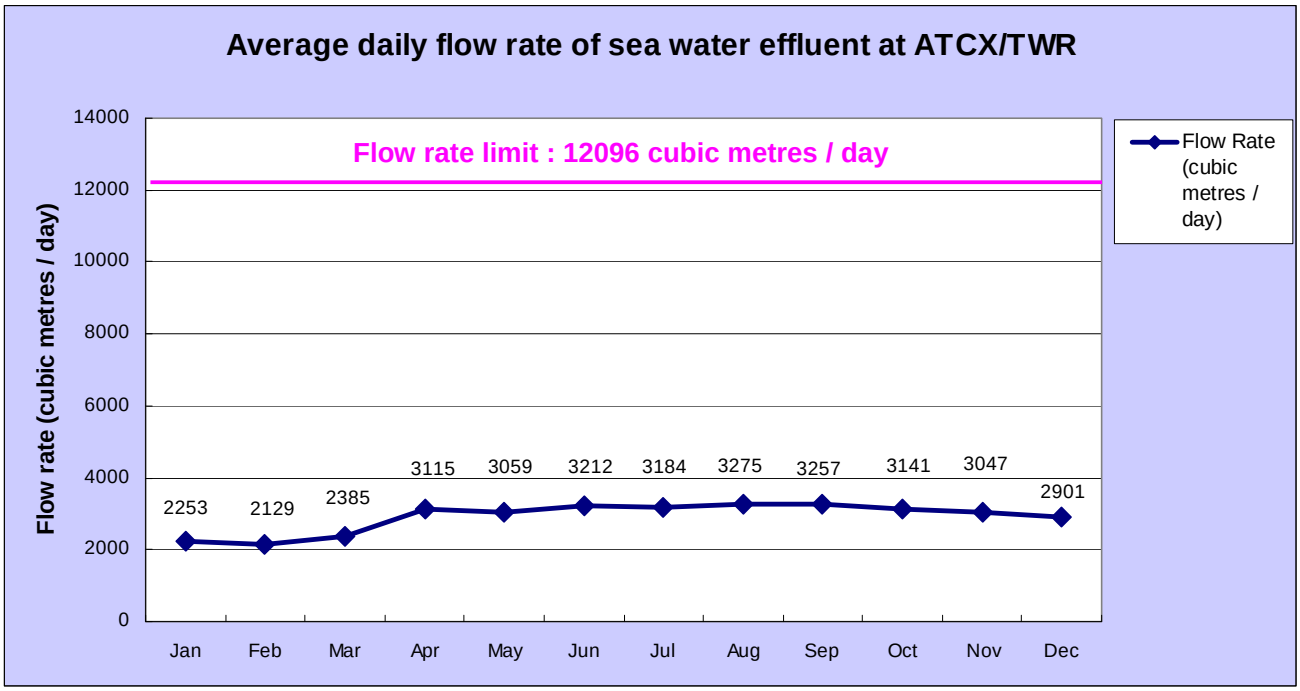

Figure 14 *Average daily flow rate of sea water effluent at ATCX/TWR*

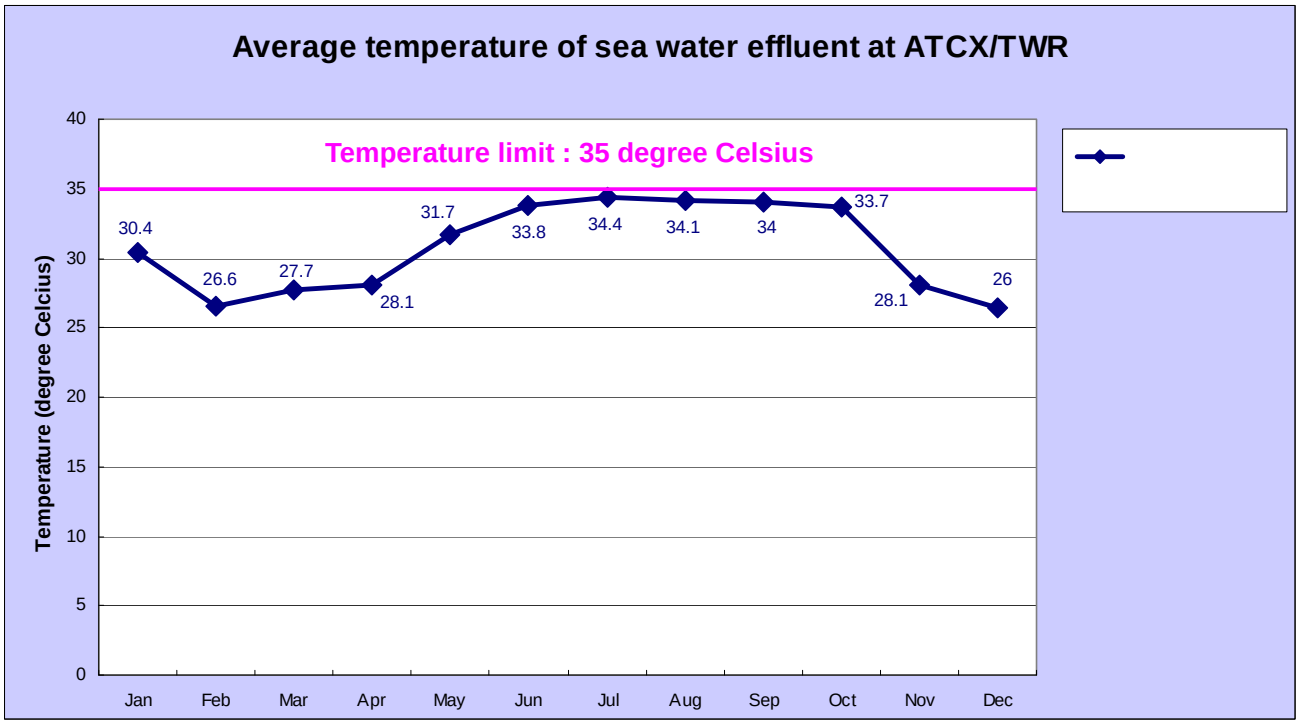

Figure 15 *Average temperature of sea water effluent at ATCX/TWR*

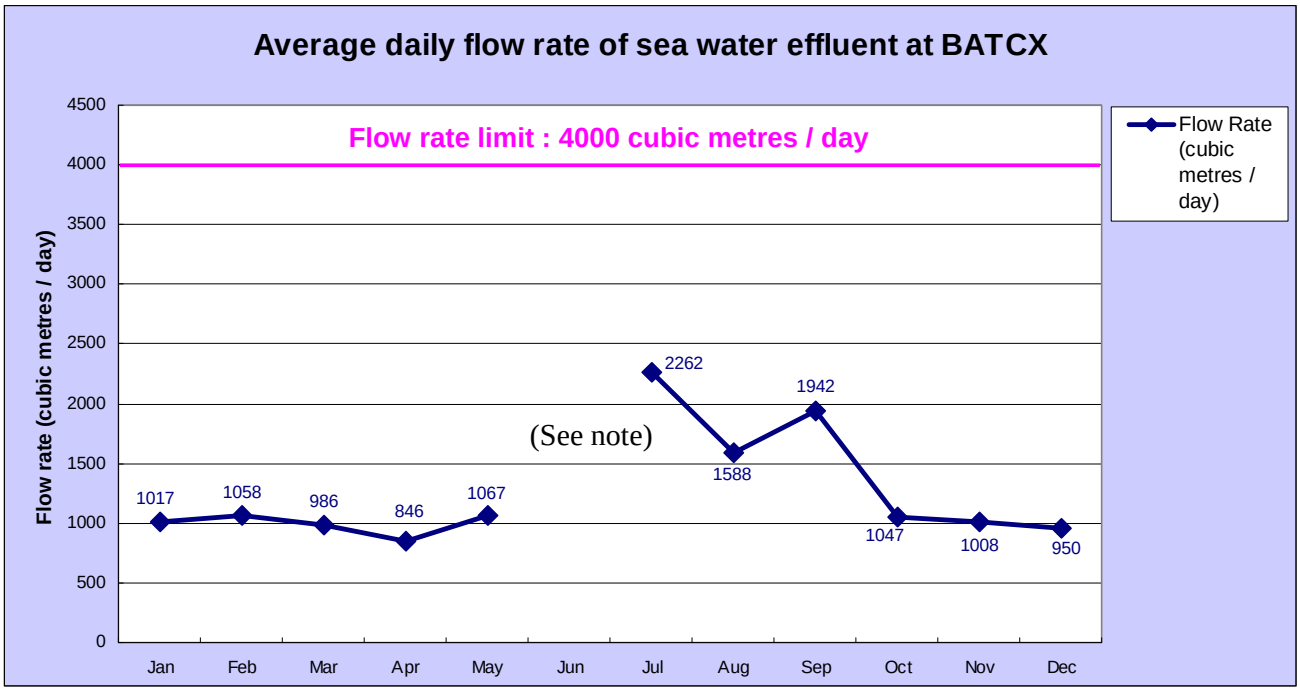

Figure 16 *Average daily flow rate of sea water effluent at BATCX*

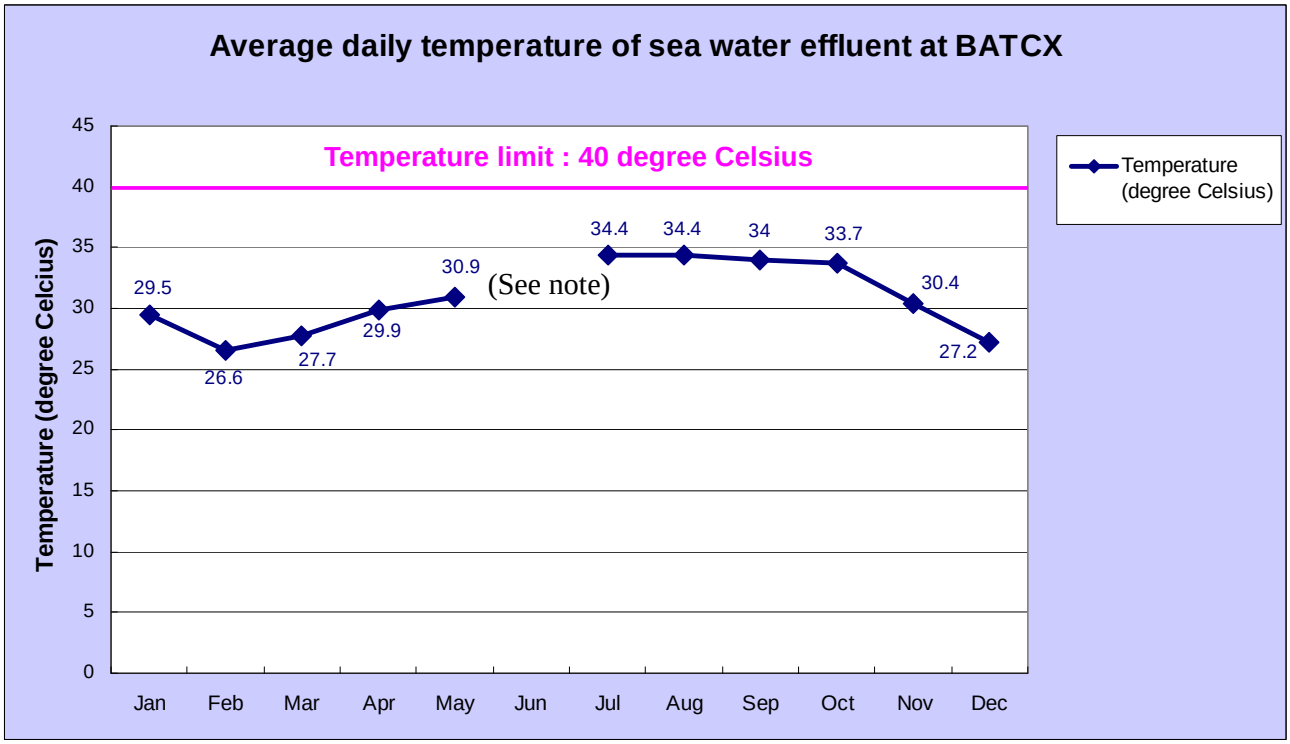

Figure 17 *Average temperature of sea water effluent at BATCX*

Note: The sea water pumps and the water-cooled chiller at BATCX were under maintenance in June 2009, therefore, no sea water was used during that month.

Chapter 4 Performance Summary

Our Performance in 2009

In 2009, we achieved the following targets:

- We required aircraft departing to the northeast to take-off over water via the West Lamma Channel between 11:00 p.m. and 7:00 a.m.
- We required arriving aircraft between midnight and 7:00 a.m. to approach from the southwest over water.
- We encouraged airlines to adopt the Continuous Descent Approach procedure for night-time approaches from the northeast.
- We encouraged airlines to adopt the Noise Abatement Departure Procedures for departures to the northeast.
- Older, noisier ICAO 'Chapter 2' aircraft were prohibited from landing and taking-off in Hong Kong.
- We maintained dialogue with concerned District Councils, the media, other concerned parties and the general public, and provided aircraft noise information as necessary.
- We maintained dedicated webpages enabling easy access to general public on aircraft noise related information.
- We commenced the calibration exercise for the microphone units of noise monitoring terminals.
- We relocated the noise monitoring terminal in Tung Chung to a residential estate closer to the flight paths with trial operation commenced.
- We reduced electricity consumption.
- We collected and recycled waste paper, used CDs and laser printer cartridges.
- We complied with all environmental regulations regarding the disposal of chemical waste and the discharge of sea water effluent.

Verification Statement

The Environmental Management Committee of CAD has independently verified the information and data contained in this Environmental Report 2009, including a review of all source materials used in the report. The Committee hereby confirms that the data presented are authentic and consistent with the source documents, and that the methodology for the collection, maintenance and analysis of the data is appropriate. As such, I am confident that this report represents an accurate account of CAD's environmental action and performance in 2009.

Matthew Ip
Chairman
Environmental Management Committee
Civil Aviation Department

Useful Information

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Aircraft Noise Complaint

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Complaint Hotline	**:**	2769 6969
Fax	**:**	2326 3654
Email	**:**	aircraftnoise@cad.gov.hk