



**Civil Aviation Department**  
*Environmental Report 2011*

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# Foreword

This Environmental Report reviews our performance in 2011. It is the 13<sup>th</sup> report in the series.

CAD is committed to a safe and efficient air transport system in Hong Kong. We also strive to minimize the disturbance caused by aircraft operations to the local communities and to implement green measures in our offices to protect the environment.

In managing aircraft noise, we follow the “Balanced Approach” recommended by the International Civil Aviation Organization\* (ICAO). The goal is to address the local noise problem in the most cost-effective manner by identifying the noise problem at an airport and then analyzing the various measures available to reduce noise using elements such as:

- Reducing noise at source
- Implementing noise abatement operational procedures
- Imposing operating restrictions on aircraft

We have implemented various aircraft noise mitigating measures as stated in the report and will continue to review, develop and implement any feasible measures in the light of development of international standards and recommended practices in aircraft noise management and in the field of environmental protection.

In green housekeeping, we continue to keep a close watch on the consumption of electricity, paper and other materials and aim to reduce their consumption as far as practicable.

Note:

\* The International Civil Aviation Organization (ICAO) is a specialized 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 organization serves as the forum for cooperation in all fields of civil aviation among its 191 Contracting States

# Chapter 1 – Environmental Management

We are aware of the impacts of the daily aircraft operations and office operations brought to the environment, therefore it is of utmost importance to care for the environment in our everyday business.

The environmental management at our department could be classified into 2 areas:

- Aircraft Noise Management
- Green Housekeeping

## *Aircraft Noise Management*

To minimize the aircraft noise disturbance to the local communities, we implement applicable international standards and recommended practices through –

- Developing and implementing aircraft noise mitigating measures
- Monitoring the implementation of noise mitigating measures using an effective aircraft noise and flight track monitoring system
- Keeping track of new developments of ICAO standards and recommended practices on aircraft noise
- Reviewing applicable changes for implementation in Hong Kong (e.g. requirements on aircraft noise certification and noise mitigating measures)

## *Green Housekeeping*

To contribute to a greener environment, we implement green housekeeping measures which aim to minimize the consumption of energy, paper and other materials in our daily office operations. Below are some examples of our green housekeeping measures –

- Following 4Rs Principle: **R**educe, **R**euse, **R**ecycle and **R**eplace
- Encouraging the use of environmental friendly items (e.g. non-single use stationeries and double-sided printers)
- Compliance with environmental regulations
- Facilitating staff participation by placing recycling bins at office
- Strengthening the management of green housekeeping by
  - ✓ Establishing “Environmental Management Committee”
  - ✓ Appointing office green managers



Figures 1-3:  
Examples of green measures in office

## Chapter 2 – Aircraft Noise Management

CAD is conscious of the aircraft noise impacts on local communities and has developed and implemented a number of noise mitigating measures to reduce aircraft noise disturbance. We adopt a “Review- Plan- Implement- Check” Cycle in aircraft noise management.

We keep reviewing and assessing present aircraft noise impacts and the implemented noise mitigating measures. When planning new aircraft noise mitigating measures, we take into account development of international standards and recommended practices. We consult regularly different stakeholders including affected communities, airlines and airport operators on implementation of noise mitigation measures.

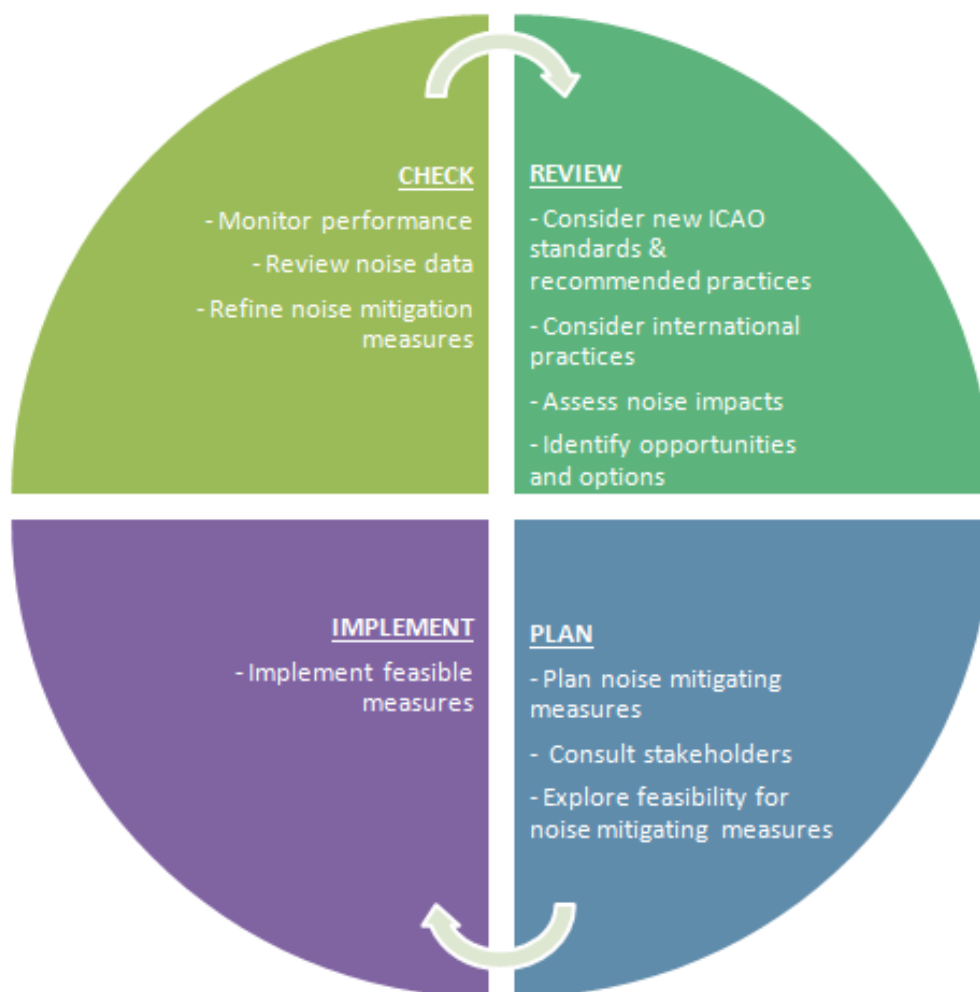


Figure 4: Review- Plan- Implement- Check Cycle

## *Flight paths over water to minimize noise*

To reduce the noise disturbance that overnight aircraft operations may have on local communities, subject to acceptable wind direction and safety consideration, arriving and departing aircraft are required to use the flight paths which are over water for landings at and taking-off from the HKIA.

### **Night Arrivals**

Arrival aircraft between midnight and 7:00 a.m. approaching from the southwest over water could reduce the noise disturbance in populated districts such as Shatin, Kwai Chung, Tsing Yi, Tsuen Wan, Sham Tseng and Tsing Lung Tau.

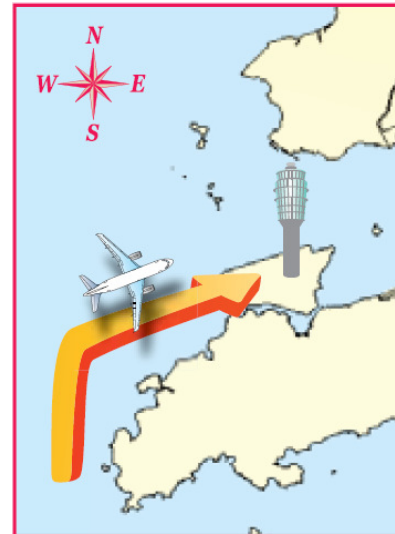


Figure 5

### **Night Departures**

Aircraft taking off to the northeast between 11:00pm and 7:00am depart via the West Lamma Channel could reduce the noise disturbance in populated areas such as Kowloon, North Point, Shau Kei Wan and Chai Wan.

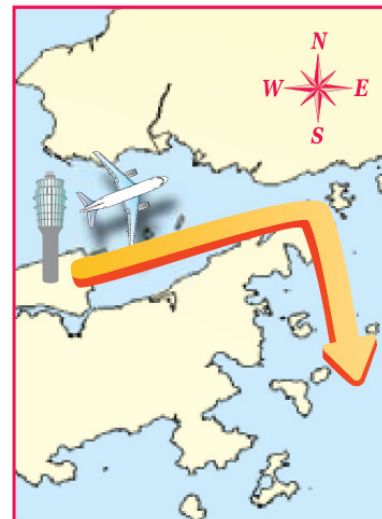


Figure 6

# 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, arriving aircraft from the northeast direction 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 Tseung Kwan O, Sai Kung, and Ma On Shan.

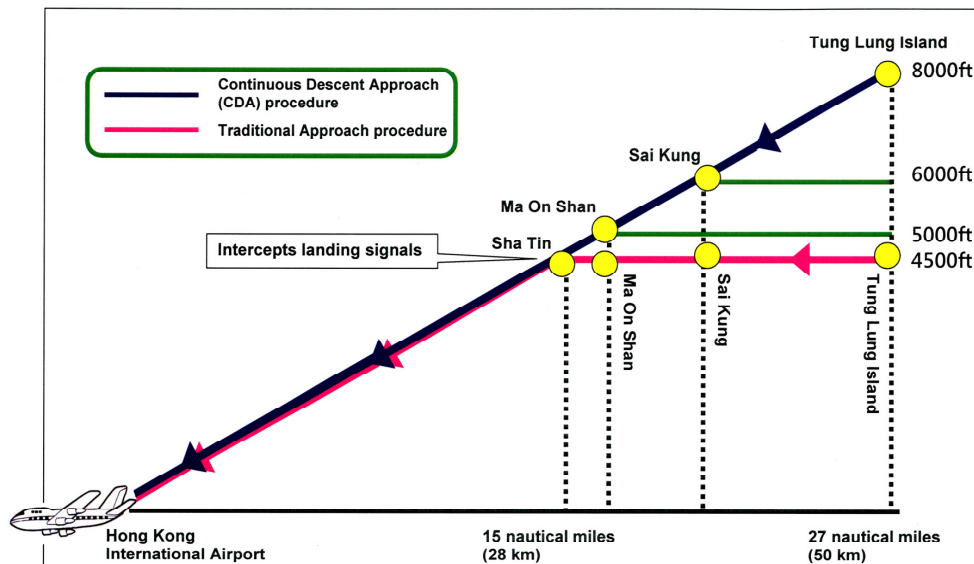


Figure 7: CDA Diagram

## 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.



## **Use of Modern Navigation Technology**

CAD promulgated in 2011 an additional set of noise mitigating departure procedures to be used in February 2012 utilizing satellite navigation. For aircraft departing to the northeast of the airport, the enhanced procedures enable modern aircraft to use satellite-based navigation technology to achieve higher track-keeping accuracy during the turn around Lantau Island towards the south, thereby aircraft will maintain distance from residential areas at Ma Wan.

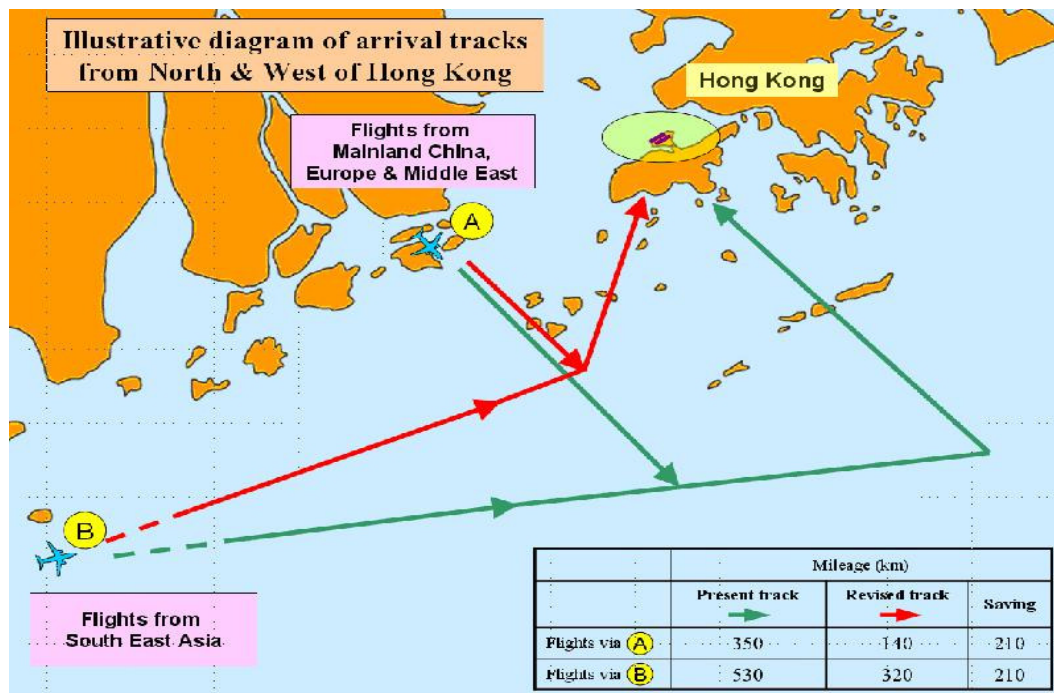
## ***Banning of noisy aircraft***

Since 1 July 2002, all noisy jet aircraft which do not comply with ICAO Annex 16 Vol I, Part II, Chapter 3 noise standards are not allowed to operate at Hong Kong. This measure helps to reduce the overall noise impact to the communities in the proximity of flight paths.

## Chapter 3 – Aircraft Emissions

Taking advantage of the latest development in satellite navigation technologies, CAD has been able to achieve rationalization of the Hong Kong air route system with a view to enhancing its operating efficiency. The rationalized air routes entail fuel savings and reduction of emissions.

CAD has implemented new air routes with effect from October 22, 2009, which have shorter travelling distances for aircraft arriving from the west and the north of Hong Kong. Each arrival flight from the Mainland, South East Asia and Europe has been able to save up to about 210 kilometres in flight journey or 14 minutes in flight time. During 2011, more than 63,000 flights benefited from these shortened routes.



Through collaborative efforts with adjacent air traffic control centres, CAD has implemented reduction of spacing requirement between flights on an air route transiting the Hong Kong and Taipei Flight Information Regions for Korea since July 2011. By reducing spacing requirement between flights, the air route capacity is increased and more aircraft are able to fly at optimum and fuel efficient altitudes, thereby achieving fuel saving and reduction of CO<sub>2</sub> emission. Since implementation, around 8,500 flights have used these routes between July and December 2011.

# Chapter 4 – Green Housekeeping

We set out different green housekeeping measures in offices to encourage energy conservation, paper conservation, recycling, proper disposal of environmentally hazardous waste and promote environmental awareness among all staff.

## *Energy Conservation*

### **CAD Premises**

#### Minimize the use of energy

Besides incorporating energy-saving building services features in Air Traffic Control Complex and Tower (ATCX) and the Back-up Air Traffic Control Complex and Tower (BATCX), we continue to implement green measures in CAD premises to minimize energy usage. In 2011, 133 nos. of 50W halogen down lights were replaced with 18W compact fluorescent lights inside ATCX.

### **Buildings managed by a Third Party**

For non CAD-owned buildings, e.g., Queensway Government Offices, we would meet with the respective buildings managers to discuss the energy saving initiatives if needed. The green measures implemented in such buildings include controlling the temperature of air-conditioning system and limiting the operation hours of chiller plants.

### **Our Performance in 2011**

In 2011, 31,142 kilowatt-hours (kWh) of electricity were consumed by CAD owned-premises on an average day, a slight increase of 3% compared to 2010.

## Paper Conservation

We emphasize on “4R principle” in paper conservation:

### Reduce

- Minimize paper usage by conducting online e-application for flights schedule coordination
- Minimize paper usage by communicating in E-mails and posting circulars on CAD intranet
- Minimize photocopies (e.g., avoid making personal copies)

### Reuse

- Reuse envelopes and loose minutes jackets
- Use blank side of used paper for printing and drafting

### Replace

- Use recycled paper instead of plain paper

### Recycle

- Waste paper is collected for recycle

## Our Performance in 2011

In 2011, we used 6,960 reams of paper, which represented an increase of 12.3% compared with 2010.

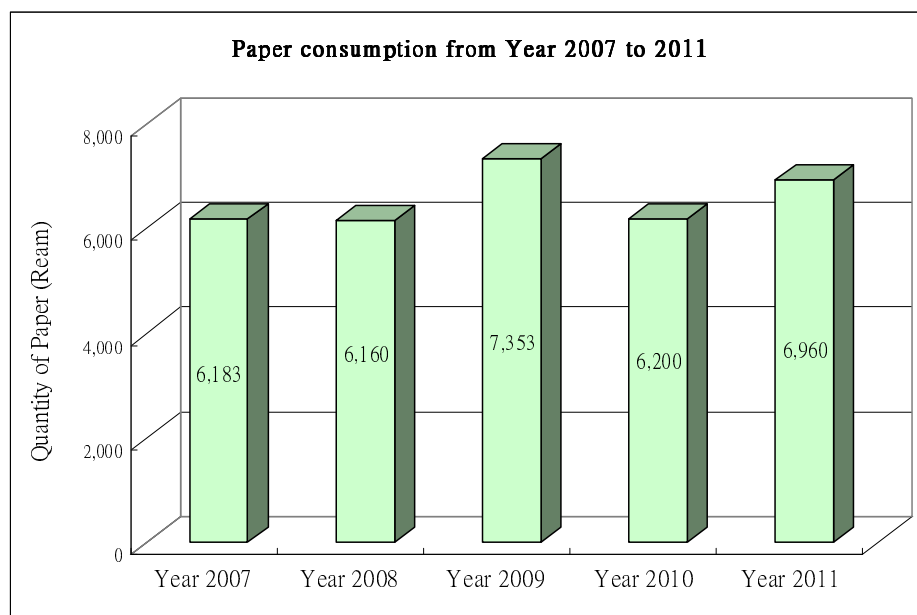


Figure 8: Paper consumption from Year 2007 to 2011

## Recycling

We collect waste paper, used Compact Discs and laser printer cartridges for recycling. Recycling bins are also available in our office to encourage staff's participation. We would forward the materials to our suppliers or other designated parties for recycling on a regular basis. The table below shows the comparison of volume of materials sent for recycling in year 2010 and 2011.

### Our Performance in 2011

	Year 2010	Year 2011
Waste Paper Collected (kg)	6,127	4,917
Used Compact Disc Collected (g)	6,815	7,027
Laser Printer Cartridge Collected (units)	697	892



Figures 9-10: Used CD and Laser Printer Cartridge Collection Point

## Green Procurement

We follow the guidelines advised in the Government's green procurement policy and avoid procuring single-use disposable items. We purchase items that are durable, energy-efficient and recyclable. Below are some examples of green procurement measures implemented in our department:

- Procure equipment such as air traffic control equipment, fluorescent tubes, photocopiers and printers that have obtained energy label
- Choose green products such as refillable ball pens and pencils and recyclable laser printer cartridges
- Regularly review of actual need against monthly supply items that have expiry dates
- Avoid using items that are environmental unfriendly, for example, correction fluid and batteries that contain mercury



Figures 11-12: Examples of equipment that have obtained energy label



Figures 13-14: Examples of environmental friendly stationeries

## *Proper Disposal of Waste*

### **Chemical Waste**

We operate 13 outstations for the provision of air traffic services. In case the mains electricity supply to these outstations is interrupted, it automatically switches to back-up power supplies (e.g., standby diesel generators or battery packs). However, these alternative power supplies generate chemical wastes which could be hazardous to our environment thus they have to be disposed in a safe and appropriate way.

### **Our Performance in 2011**

In 2011, our appointed contractor handled all wastes in accordance with the statutory requirements.

### **Sea Water Effluent**

Both ATCX and BATCX use sea water for their cooling systems. To avoid worsening the water pollution problem in Hong Kong, it is necessary to implement controls on wastewater discharges to protect public health and the life of aquatic organisms. Under the Water Pollution Control Ordinance, all sea water discharges should be monitored for their flow rate, temperature, pH value and residual chlorine in order to minimize the environmental impacts.

### **Our Performance in 2011**

In 2011, the average daily flow rate and temperature of the sea water effluent discharge from ATCX and BATCX remained well below the prescribed limits. Monthly figures of 2011 are presented in Figures 15 – 18.

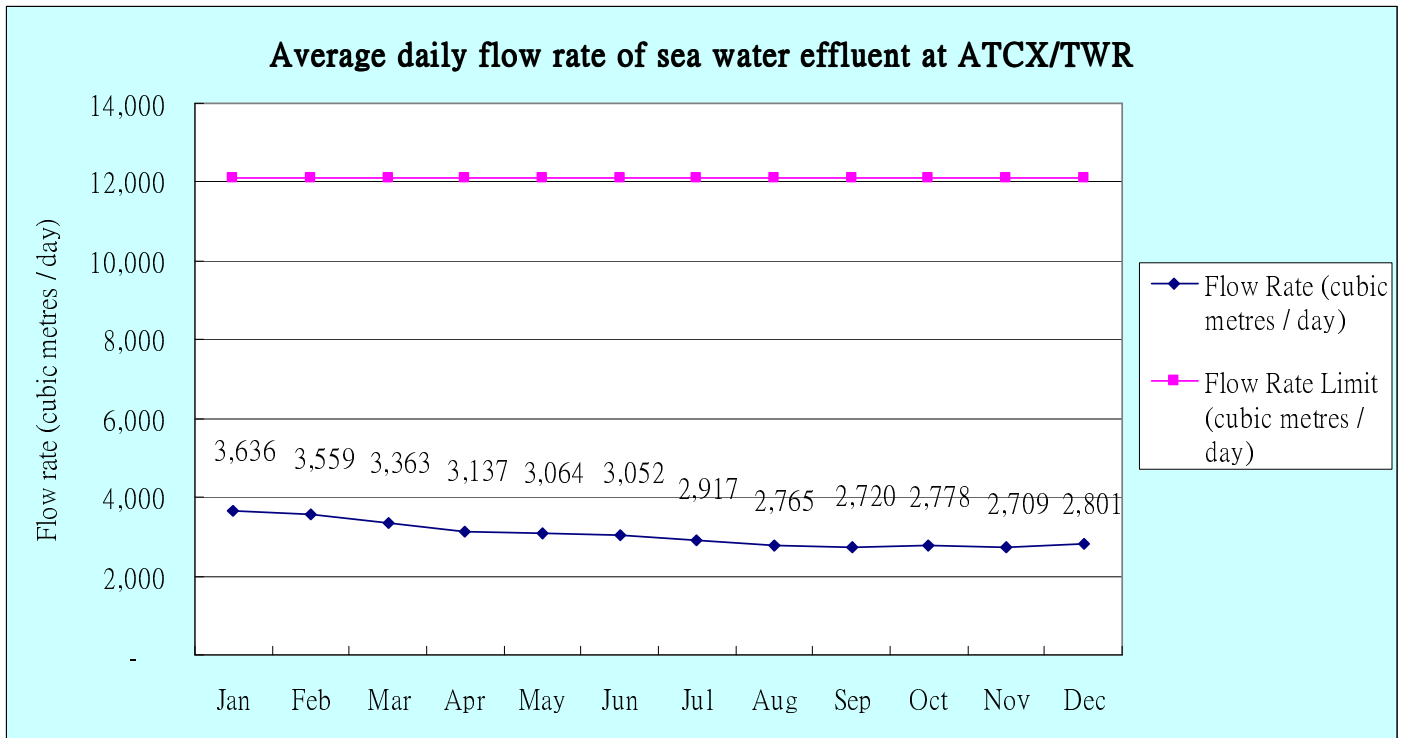


Figure 15: Average daily flow rate of sea water effluent at ATCX/TWR

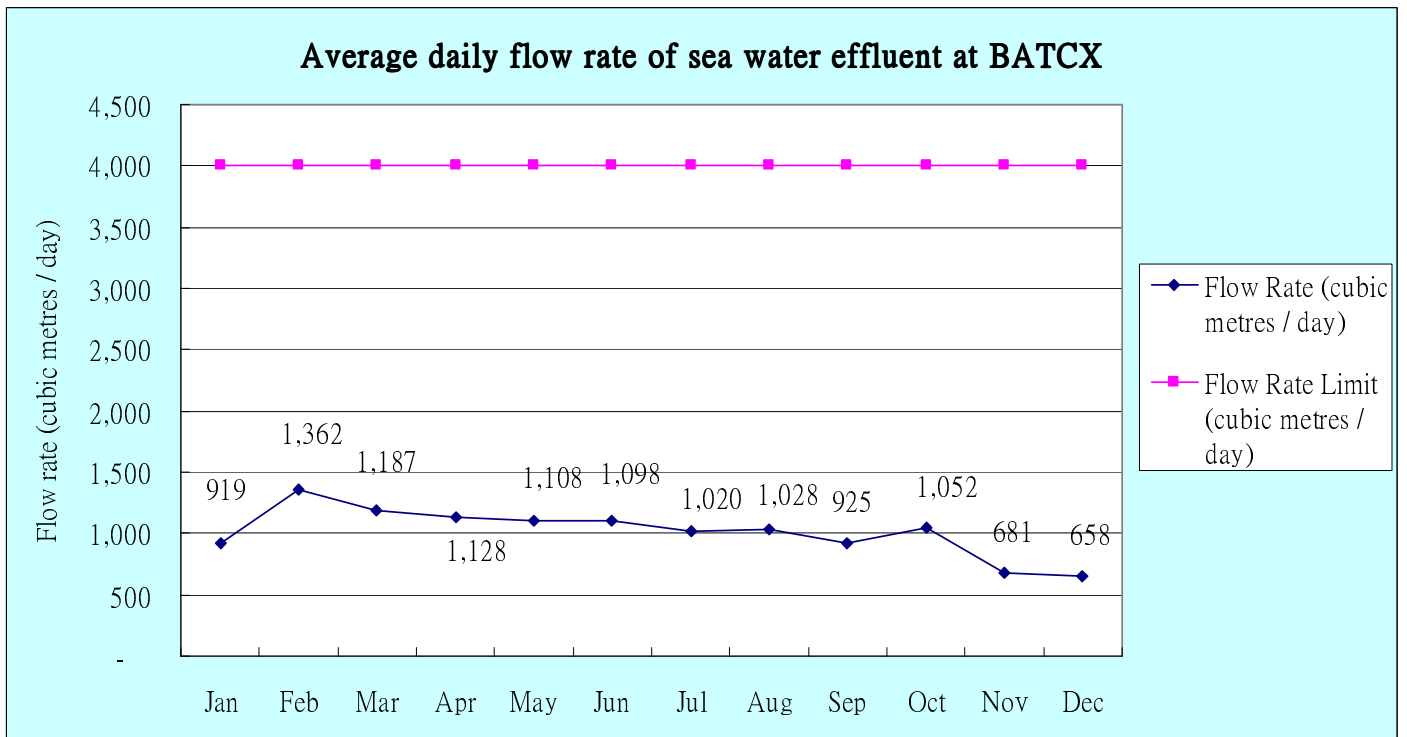


Figure 16: Average daily flow rate of sea water effluent at BATCX



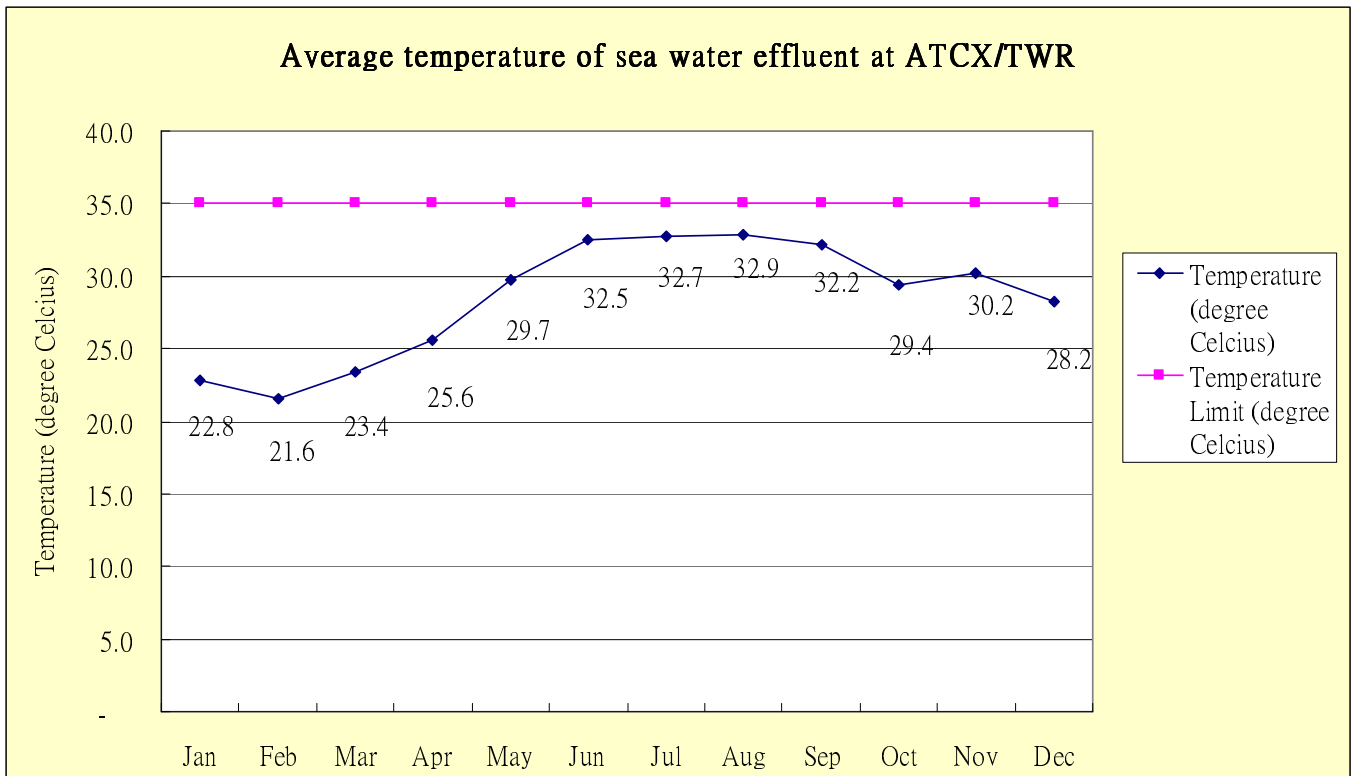


Figure 17: Average temperature of sea water effluent at ATCX/TWR

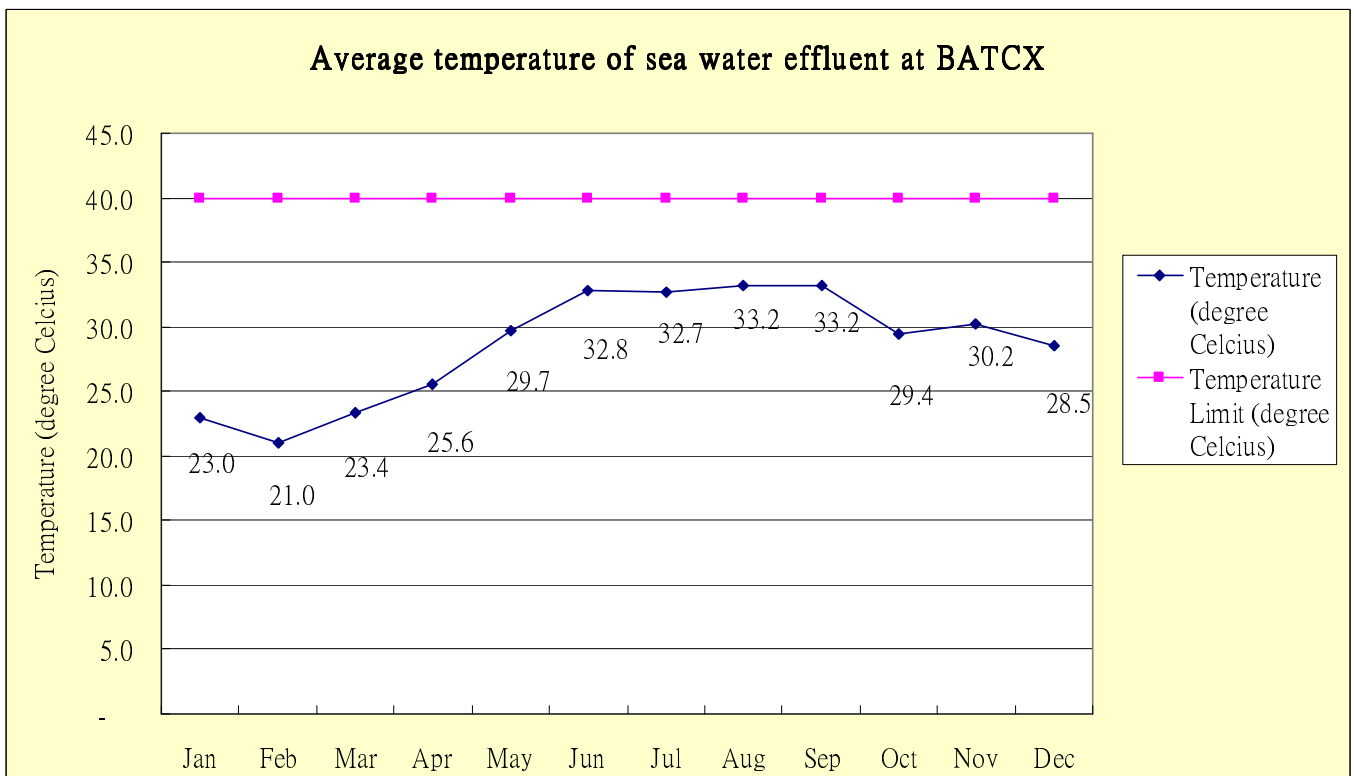


Figure 18: Average temperature of sea water effluent at BATCX

# Chapter 5 – Performance Summary

## *Our performance in 2011*

- A mass majority of aircraft departing to the northeast flew over water via the West Lamma Channel between 11:00p.m. and 7:00a.m.
- All arriving aircraft between midnight and 7:00a.m. were able to approach from the southwest over water, in the case of acceptable wind direction and safety consideration
- Most of the overnight arrival aircraft from the northeast were able to adopt the Continuous Descent Approach procedure
- We encouraged airlines to adopt the Noise Abatement Departure Procedures for departure aircraft to the northeast
- No older, noisier aircraft operated in Hong Kong
- We implemented rationalized air routes to reduce the environmental footprint of aircraft operations in Hong Kong
- We embarked to introduce new noise mitigation procedures using modern navigation technology
- 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

# Contact Us

We welcome comments and feedback from readers so that we could identify ways for improvements. You can provide your views to us by:

## General Enquiry

Address : 46/F, Queensway Government Offices  
66 Queensway, Hong Kong  
Contact no. : 2867 4332  
Fax : 2326 3654  
Email : [enquiry@cad.gov.hk](mailto:enquiry@cad.gov.hk)  
Website : [www.cad.gov.hk](http://www.cad.gov.hk)

## Aircraft Noise Complaint

Address : (same as above)  
Complaint hotline : 2769 6969  
Fax : 2326 3654  
Email : [aircraftnoise@cad.gov.hk](mailto:aircraftnoise@cad.gov.hk)