Environmental Impact Assessment for the Expansion of HKIA into a Three-Runway System

Public Forum

Airport Authority Hong Kong

28 June 2014
### 3RS Key Milestones

<table>
<thead>
<tr>
<th>Year/Timeframe</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2010</td>
<td>Preliminary study and compilation of HKIA Master Plan 2030</td>
</tr>
<tr>
<td>Jun 2011</td>
<td>Release of MP2030 and start of a 3-month public consultation</td>
</tr>
<tr>
<td>Dec 2011</td>
<td>Release of results of public questionnaire, compiled and analysed by SSRC of HKU. 73% of respondents preferred the 3RS option</td>
</tr>
<tr>
<td>Mar 2012</td>
<td>Government’s in-principle approval for AAHK to adopt, for planning purposes, 3RS as the future development direction</td>
</tr>
<tr>
<td>Aug 2012</td>
<td>Receive EIA Study Brief from the Director of Environmental Protection</td>
</tr>
</tbody>
</table>
| Aug 2012 to Apr 2014 | • Conduct the EIA study  
• Engage and communicate with stakeholders on EIA  
• Develop scheme designs for 3RS |
| Apr 2014      | • EIA Report submission to EPD |
Target to Commission 3RS in 2023

**Planning**
- Environmental Impact Assessment studies
- Associated designs/details

**Approval**
- Environmental permit
- Project cost updates and funding options
- Other statutory requirements

**Implementation**
- Detailed designs/contract documentation
- Land formation
- Construction of related facilities

*Indicative timeline that is subject to change*
Statutory Process to be completed within 2014

17 Apr
EIA Final Report to EPD

Mid Apr–Mid Jun
Review by EPD
Requires 2 months

20 Jun – 19 Jul
Public Inspection
 Requires 1 month

Mid Jul–Mid Sept
Review by ACE
Requires 2 months

Mid Sept–Mid Oct
EPD to consider approval of EIA Report

Issue of EP
Mid Oct
Growth of Air Traffic faster than expected

In the past 12 months, airport passenger throughput, cargo volume and flight movement saw annual growth of 7.2%, 4.1% and 6.4%, respectively.
Two-runway system will reach maximum handling capacity earlier

Comparison between MP2030 aircraft movement forecast against 2013 actual figures

Yr 2013 Actual ATM: >370,000

Capacity of Two Runways

2019

2022
Consequences of NOT developing 3RS

- No new flights can be added by airlines
- Fewer choices of airlines and destinations
- More expensive airfares
- Less ability in dealing with contingency
- Less attractive as a hub airport

HK’s aviation status and long term competitiveness will be undermined
A three-runway system will bring enormous economic benefit to Hong Kong

GDP

Generate **HK$167 billion** in economic value*, equivalent to 4.6% of HK’s GDP forecast in 2030

JOBS

Create **141,000 direct** jobs and **199,000 indirect and induced** jobs in 2030

CONSTRUCTION JOBS

Create **97,000 jobs** during construction phase

*Direct, indirect and induced value added
3RS is much more than building a new runway

- Land formation of about 650 hectares
- Third Runway, Third Runway Concourse, apron and related facilities
- New Automated People Mover & Baggage Handling System
- Terminal 2 Expansion
- Other modification works within existing Airport Island
Comprehensive 3RS EIA Study Brief Covering 12 Environmental Aspects

- Air Quality
- Noise
- Health Impact Assessment (Air Emissions and Aircraft Noise)
- Ecology (Terrestrial and Marine Ecology, including Chinese White Dolphins)
- Fisheries
- Hazard to Human Life
- Water Quality
- Sewerage and Sewage Treatment
- Waste Management
- Land Contamination
- Landscape and Visual
- Cultural Heritage
Experienced EIA Team with Local and International Experts

- Airport Authority
  - EIA Review Consultant
    - ERM
  - EIA Lead Consultant
    - Mott MacDonald
  - Air Quality Consultant
    - Arup
  - Aircraft Noise Consultant
    - URS
  - Health Impact Experts
    - Prof Wong Tze Wai and Bernard Berry
  - Chinese White Dolphin Experts
    - Dr Bernd Würsig & Dr Tom Jefferson
All 12 Aspects assessed and fully complied with the requirements of the EI AO Technical Memorandum and the Study Brief to be “environmentally acceptable”

<table>
<thead>
<tr>
<th>Environmental Aspect</th>
<th>Construction Phase With Mitigation where applicable</th>
<th>Operation Phase With Mitigation where applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Hazards to Human Life</td>
<td>Acceptable</td>
<td>As Low As Reasonably Practicable</td>
</tr>
<tr>
<td>Noise</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Sewerage and Sewage Treatment</td>
<td>N/A</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Waste Management</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Land Contamination</td>
<td>Acceptable</td>
<td>N/A</td>
</tr>
<tr>
<td>Terrestrial &amp; Marine Ecology</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Fisheries</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Landscape and Visual</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>Acceptable</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Health</td>
<td>N/A</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>

Over 250 initiatives formulated under the EIA to address the environmental issues
Concerns that 3RS will drive Chinese White Dolphins (CWD) out of HK Waters

1. Will the 3RS lead to the extinction of CWD in HK waters?

2. Why are you confident in sustaining the CWD population in Hong Kong?

3. It is said that not all of the experts’ suggestions are adopted and reflected in the EIA report. Is this true?
Chinese White Dolphins (CWDs)
Chinese White Dolphins (CWDs) – AFCD Survey Area (Year 1996-2013)

Marine Exclusion Zone not covered in AFCD survey area

Map extracted from AFCD Monitoring of Marine Mammals in Hong Kong Waters (Final Report)
Comprehensive Chinese White Dolphins Surveys

Vessel Line Transect Surveys: (Oct 2012 – Nov 2013)
- Distribution
- Density/abundance
- Behaviour / movements (photo-ID, focal follows)

Land-Based Theodolite Tracking: (Oct 2012 – Nov 2013)
- Behaviour / activities
- Vessel responses
- Travel patterns

Passive Acoustic Monitoring: (Dec 2012 – Dec 2013)
- Diurnal behavioural patterns
- Noise characteristics of environment
### Moderate to Low CWD abundance in the proposed Project Area

#### Comparison of Recent Density and Abundance Parameters between the Survey Area and other Waters in Hong Kong

<table>
<thead>
<tr>
<th>Area</th>
<th>Year(s) (All Seasons)</th>
<th>Average Group Size</th>
<th>Sighting Rate (No./100km)</th>
<th>Density (No./100km²)</th>
<th>Abundance</th>
<th>CV (1)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airport North</td>
<td>2012/2013</td>
<td>4.1</td>
<td>2.05</td>
<td>14.48</td>
<td>3</td>
<td>52</td>
<td>This Study</td>
</tr>
<tr>
<td>Airport West</td>
<td>2012/2013</td>
<td>4.5</td>
<td>3.99</td>
<td>13.01</td>
<td>1</td>
<td>64</td>
<td>This Study</td>
</tr>
<tr>
<td>Northeast Lantau</td>
<td>2012</td>
<td>2.8</td>
<td>2.99</td>
<td>12.33</td>
<td>7</td>
<td>25</td>
<td>AFCD Dataset</td>
</tr>
<tr>
<td>Northwest Lantau</td>
<td>2012</td>
<td>3.4</td>
<td>7.39</td>
<td>44.10</td>
<td>38</td>
<td>13</td>
<td>AFCD Dataset</td>
</tr>
<tr>
<td>West Lantau</td>
<td>2012</td>
<td>3.2</td>
<td>13.73</td>
<td>67.41</td>
<td>19</td>
<td>17</td>
<td>AFCD Dataset</td>
</tr>
<tr>
<td>Southwest Lantau</td>
<td>2012</td>
<td>2.2</td>
<td>3.49</td>
<td>13.99</td>
<td>9</td>
<td>36</td>
<td>AFCD Dataset</td>
</tr>
</tbody>
</table>

Note (1): CV is the coefficient of variation, a measure of variance.

⭐ Abundance is a ‘snapshot’ of average numbers of CWD in area during a time period

● Densities of survey areas appear to be moderate/low
The waters between Northwest Lantau, West Lantau and The Brothers mainly used as travel corridors / areas

Photo-ID and focal follows survey findings indicate dolphins move across the study area between the North and West Lantau regions

CWDs use the study area / proposed 3RS works area between The Brothers and West Lantau areas mainly for travelling and do not appear to use it as much for other critical activities (e.g. feeding and social behavior)
Key Mitigation Measures to Minimise Impact to CWD during Planning/Construction Phase

Other mitigation measures include:
• Avoidance of peak calving season for CWDs during bored piling
• Implementation of water quality mitigation measures (filling behind seawall, good construction site practices and silt curtains)
• Control the speed (<10 knots) of construction vessels within works area
• Establishment of 250hm dolphin exclusion zones

Use of Horizontal Directional Drilling (HDD) Construction Methods to avoid disturbance to seabed

Re-routing of SkyPier ferries to/from Zhuhai & Macau
Speed reduction of SkyPier ferries close to SCLKCMP

Field joint location outside the existing marine park area to avoid disturbance to marine park

Use of non-dredge methods during land formation to minimize risk / disturbance to the environment e.g. use of DCM for CMP area

Minimization of land formation area to 650ha and consideration of alternative layout options

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Mitigation Measures for CWD during Operation Phase

(i) Designation of 2,400 ha of marine park;
(ii) Re-routing of SkyPier ferries; and
(iii) Speed reduction of SkyPier ferries close to SCLKCMP

Note: The boundary of the proposed marine park is indicative only and subject to the draft map published in the Gazette under Marine Parks Ordinance.
Mitigation Measures for CWD during Operation Phase

Mitigation Measures

(i) Designation of 2,400 ha of marine park;
(ii) Re-routing of SkyPier ferries; and
(iii) Speed reduction of SkyPier ferries close to SCLKCMP

Note: The boundary of the proposed marine park is indicative only and subject to the draft map published in the Gazette under Marine Parks Ordinance.

<table>
<thead>
<tr>
<th>Marine Protected Area</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing SCLKCMP</td>
<td>1,200 ha</td>
</tr>
<tr>
<td>Planned BMP</td>
<td>850 ha</td>
</tr>
<tr>
<td>Tentative HKIAAA</td>
<td>Approx. 730 ha</td>
</tr>
<tr>
<td>Proposed New Marine Park</td>
<td>Approx. 2,400 ha</td>
</tr>
<tr>
<td>Total</td>
<td>Approx. 5,180 ha</td>
</tr>
</tbody>
</table>

PRE CWD National Nature Reserve

Existing Sha Chau & Lung Kwu Chau Marine Park (SCLKCMP)

Planned the Brothers Marine Park (BMP)
The proposed Marine Park area is about the total size of all existing Marine Parks in Hong Kong.

<table>
<thead>
<tr>
<th>Designated Marine Park (Existing)</th>
<th>Size (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoi Ha Wan Marine Park</td>
<td>260</td>
</tr>
<tr>
<td>Yan Chau Tong Marine Park</td>
<td>680</td>
</tr>
<tr>
<td>Sha Chau and Lung Kwu Chau Marine Park</td>
<td>1,200</td>
</tr>
<tr>
<td>Tung Ping Chau Marine Park</td>
<td>270</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>2,410</td>
</tr>
<tr>
<td>Cape D'Aguilar Marine Reserve</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>2,430</td>
</tr>
<tr>
<td>Proposed 3RS Marine Park</td>
<td>Approx. 2,400</td>
</tr>
</tbody>
</table>
# Dolphins and porpoises can rebound after large scale habitat disturbance

<table>
<thead>
<tr>
<th>Area Influenced</th>
<th>Impact Removed or Lessened</th>
</tr>
</thead>
</table>
| **Northwest Chek Lap Kok waters, end 1992 to 1998** | Construction of the existing Chek Lap Kok airport and associated facilities  
Dolphin declined from end 1995 (earliest time when dolphin survey data was available) to 1998, but rebounded in 1999 to similar levels in end 1995/1996  
Sha Chau & Lung Kwu Chau Marine Park established as a mitigation measure – currently a CWD major feeding area |
| **San Francisco Bay, 1930’s – 1980’s** | Dredging, underwater explosions, shore-side reclamation, large scale military concrete walls  
*Bottlenose dolphins and harbour porpoises returned in 1990’s and 2008, respectively* |
| **Galveston Bay, Galveston Ship Channel, TX, 1905 - Present** | Shipping, pollution, oil and gas piers, massive artificial island (1,350ha) built by 1915. Less than 10% of coastline “natural”  
*Bottlenose dolphins returned to artificial island almost immediately after construction, and returning to areas further north as noise and pollution aspects are improving* |
Assessed Potential Cumulative Air Quality Impact

Airport Operation Contribution
- Landing/ Take-off Activities
- Associated Activities e.g. Operation of GSE
- Airport Island Vehicular Emissions
Assessed Potential Cumulative Air Quality Impact

Airport Operation Contribution
- Landing/ Take-off Activities
- Associated Activities e.g. Operation of GSE
- Airport Island Vehicular Emissions

Proximity Infrastructure Contribution
- Road and Marine Traffic Emissions
- Industrial Activities
Assessed Potential Cumulative Air Quality Impact

Airport Operation Contribution
- Landing/ Take-off Activities
- Associated Activities e.g. Operation of GSE
- Airport Island Vehicular Emissions

Proximity Infrastructure Contribution
- Road and Marine Traffic Emissions
- Industrial Activities

Ambient Contribution (Future Air Quality Background)
- HK Activities
- PRD Activities
Assessed All Major Air Sensitive Receivers (ASRs) within 5km from the Project Boundary

Industrial uses in Tap Shek Kok

BCF Terminal Building

Tung Chung Remaining Development

Sha Lo Wan
San Tau
Tung Chung

Full Compliance with the AQO for all ASRs within Study Area
### Minor Contribution of Emissions from HKIA to annual NO$_2$ concentrations at Tung Chung and Tuen Mun

#### Annual NO$_2$ Concentration Breakdown at Representative Areas

<table>
<thead>
<tr>
<th>Area</th>
<th>AQO for Annual NO$_2$ (ug/m$^3$)</th>
<th>Cumulative Impact (ug/m$^3$)</th>
<th>Ambient Contribution (ug/m$^3$)</th>
<th>Proximity Infrastructure Contribution (ug/m$^3$)</th>
<th>Airport Contribution (ug/m$^3$)</th>
<th>Airport Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCF</td>
<td>40</td>
<td>39</td>
<td>24</td>
<td>11</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>Tung Chung</td>
<td>40</td>
<td>33</td>
<td>22</td>
<td>9</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>Tung Chung West</td>
<td>40</td>
<td>30</td>
<td>22</td>
<td>6</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Tung Chung East</td>
<td>40</td>
<td>28</td>
<td>22</td>
<td>4</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Sha Lo Wan</td>
<td>40</td>
<td>36</td>
<td>20</td>
<td>4</td>
<td>12</td>
<td>33%</td>
</tr>
<tr>
<td>Tuen Mun</td>
<td>40</td>
<td>38</td>
<td>27</td>
<td>9</td>
<td>2$^{[1]}$</td>
<td>5%</td>
</tr>
</tbody>
</table>

Note: [1] Airport related emissions are included as ambient in PATH model for Tuen Mun area.
Ongoing Commitment to Reduce Emissions

Implemented measures:
Banned all idling vehicle engines on the airside since 2008, except for certain vehicles that are exempted

By end 2014: Ban the use of APU for all aircraft at frontal stands
Now: Around 80% airlines are using fixed ground power and pre-conditioned air systems

By end 2017: ALL airside saloon vehicles as electric vehicles
Now: 52 electric vehicles (EVs)

By end 2018: Total of 290 charging stations for EVs and electric ground support equipment
Now: 54 charging stations
New Generation of Aircraft with Less Noise and Emissions

- Boeing 747-8 Freighter
- Airbus A350-900

- 17% more fuel efficient
- 52% below relevant limits for NOx
- 30% smaller noise footprint

- 40% below relevant limits for Nox
- 25% lower fuel burn and CO₂ emissions
- 14 EPNdB cumulative noise margin below Chapter 4 standard
  - Lighter airframe
  - Optimized efficient wings
  - Latest generation engines
Aircraft Noise
Most international airports, including Hong Kong, have adopted cumulative average noise energy metrics for noise planning.

A lower figure reflects a more stringent standard.

<table>
<thead>
<tr>
<th>Regions / Airports</th>
<th>Noise Metric</th>
<th>Criteria</th>
<th>Corresponding NEF Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>$L_{eq} \ (16\text{hr})$</td>
<td>57</td>
<td>22</td>
</tr>
<tr>
<td>Chek Lap Kok</td>
<td>NEF</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Australia</td>
<td>ANEF</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>Kai Tak</td>
<td>NEF</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Canada</td>
<td>NEF$_{can}$</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>US</td>
<td>$L_{dn}$</td>
<td>65</td>
<td>30</td>
</tr>
<tr>
<td>Switzerland</td>
<td>NNI</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>Singapore</td>
<td>NEF</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Remark: NEF – Noise Exposure Forecast.
Aircraft Noise Assessment Scenarios

The EIA has examined the following scenarios specified in the EIA Study Brief:

**Prevailing Aircraft Noise Environment:**
- Year 2011 (Annual ATM: 333,806)
- 2011 is the full year data available when EIA process started in year 2012

**Interim Phase Operation Mode:**
- Year 2021 (Annual ATM: 420,000)

**Worst Operation Mode:**
- Year 2030 (Annual ATM: 607,480)
- Full Operation Mode at Design Capacity
- Year 2032 (Annual ATM: 620,000)
Short-term Noise Mitigation Measures for 2RS

1. With effect from end of March 2014, Marginally Compliant Chapter 3 (MCC3) Aircraft have been banned for landing and take-off by Civil Aviation Department (CAD) at night between 2300 and 0659 (MCC3-Prohibited Period)

2. CAD has planned to extend the MCC3-Prohibited Period to cover the whole day for the existing two-runway operation from late October 2014

3. Airport Authority (AAHK) will develop an environmental charges/incentives scheme to encourage airlines to use quieter aircraft

4. Introduce administrative management of night flights demand to ensure noise contour would not expand into new NSRs
3rd runway starts operation in conjunction with South Runway while North Runway is temporarily closed.
1. South Runway On Standby at Night

When practical, south runway will remain on standby at night to minimise impact on North Lantau
2. Adjust Flight Paths to Avoid Populated Areas at Night

- **East Flow Flight Tracks**
  - Restricted use from 23:00 to 07:00

- **West Flow Flight Tracks**
  - Straight-in Tracks 4 and 5
  - Track 6

Note: Track 6 will be used to the extent practicable at night
3. Managing Night-time Runway Directions to Minimise Noise

When wind conditions permit, use east flow at night where there are more landing than take-offs.

Restricted use from 23:00 to 07:00

When wind conditions permit, use west flow at night when there are more take-offs than landing.
In 2030, the NEF25 contour will shift northward, further away from Tung Chung and the North Lantau areas.
In 2032, with continuing improvement in aircraft technology, the NEF25 contour will be similar to that of 2030.
Proposed Aircraft Noise EM&A Arrangement

• Conduct a prediction verification exercise when first full-year operation data of third runway is available

• Prepare an Annual Review Report to review statistics of noise related operation data and compliance status

• Prepare Noise Contour Report every five years

• Continue to proactively engage stakeholders to gauge views on aircraft noise
Health Impact Assessment

Air Quality and Aircraft Noise
Literature Review for Air Quality HIA

Reviewed 2 decades (since 1993) of relevant literatures including:

• World Health Organization (WHO) publications

• United States Environmental Protection Agency (USEPA) publications

• International Air Transport Association (IATA), Federal Aviation Administration (FAA) and International Civil Aviation Organization (ICAO) publications

• Public domain websites e.g. USEPA IRIS, USEPA SPECIATE Data Browser, OEHHA – Hot Spots Guidelines
Air Quality Health Impact Assessment

Assessment covered both:

**Toxic Air Pollutants (TAP)**
- Cancer Health Risk
- Non-cancer Health Risk

**AQO Air Pollutants**
- Short Term Risk
- Long Term Risk
Reviewed 120 TAPs and shortlisted more than 30 relevant ones for assessment

TAP considered for short listing include more than 120 species. Examples TAP are as follows:

- 1,3-Butadiene
- Acrolein
- Acetaldehyde
- Benzene
- Chrysene
- Diesel Particulate Matters
- Ethylbenzene
- Formaldehyde
- Naphthalene
- Propionaldehyde
- Toluene
- Xylene
- Phenol (carbolic acid)
- Benzo(a)pyrene
- Benz(a)anthracene
- Benzo(bk)fluoranthene
- 1,2,3-trimethylbenzene
- 1,2,4-trimethylbenzene
- 1,3,5-trimethylbenzene
- Isopropylbenzene
- n-Hexane
- Propylene
- Styrene
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium VI
- Cobalt
- Copper
- Mercury
- Manganese
Modelling Scenarios

The **increase in risk level** established by comparing the with-project and without-project scenarios:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
<th>Assessment Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Highest aircraft emission scenario as per the EIA Study Brief</td>
<td>Year 2031</td>
</tr>
<tr>
<td>2</td>
<td>Without project scenario</td>
<td>Same year as Scenario 1, but based on a two-runway system</td>
</tr>
</tbody>
</table>

A comparison of Scenarios 1 & 2 allows determination of the **cancer risk** due to the Project
Incremental Cancer and Non-cancer Health Risks are Considered Acceptable

1. Toxic Air Pollutants (TAP)

Cancer Health Risk
• maximum incremental risk due to 3RS is around 1.14 in hundred thousand (about 1/10 of USEPA recommended criteria of 1 in ten thousand)

Non-cancer Health Risk
• short-term (1-hr / 24hr) and long-term (annual) TAP concentrations due to 3RS would comply with criteria
Incremental Short-term and Long-term Risks are Considered Acceptable

2. AQO Air Pollutants

Short-term Risk
• short-term concentrations of CO, NO$_2$ and SO$_2$ are below the respective AQO

Long-term Risk
• incremental change in annual concentrations of NO$_2$, RSP, FSP and SO$_2$ is less than 3%
Literature Review for Aircraft Noise HIA

The study team reviewed all relevant local and overseas reports, guidance documents and published papers including:

- World Health Organization
- European Environmental Agency
- Hong Kong Environmental Protection Department
Aircraft Noise Health Impact Assessment

After literature review process, principal health impacts for assessment include:

- Annoyance
- Sleep Disturbance
Study Area for Aircraft Noise HIA

Covered the noise sensitive residential districts/regions located adjacent to the NEF25 contour in Year 2030.
Analysis Findings

Aircraft noise mitigation measures include:

• Putting south runway on standby during nighttime
• Adjust flight paths to avoid populated areas at night
• Management of runway directions to minimise nighttime noise impact

With the implementation of 3RS compared to the 2RS in year 2030, within the study area, the assessment findings on aircraft noise HIA shows:

• The highly annoyed population will be reduced by about 10%
• The highly sleep disturbed population will be reduced by about 50%
Thank you