

## Important Note

Airport Authority Hong Kong (AAHK) is responsible for preparing the Hong Kong International Airport (HKIA) Master Plan 2030 and commissioning the associated consultancies. At different stages of these consultancies, the consultants produced various documents for AAHK's consideration, culminating in the production of final reports. Where a final report was not produced, the consultants' work was consolidated into the HKIA Master Plan 2030 Technical Report. As the reports were produced at different times, they may contain outdated or inconsistent contents.

The HKIA Master Plan 2030 was not drawn up solely on the basis of the various consultancies commissioned by AAHK, but also has incorporated input from relevant airport stakeholders as well as AAHK's own input on the basis of its solid experience in airport operations. Hence, for any differences between the consultancy reports and the HKIA Master Plan 2030, the latter and the Technical Report should always be referred to.

The consultancy reports are the outcome of preliminary studies carried out at a master planning stage. **They are no substitute for the environmental impact assessment which will be carried out in accordance with the prevailing statutory process.** More comprehensive studies will also be implemented to identify measures to reduce, avoid, mitigate and compensate for impact on the environment.

Airport Authority Hong Kong

August 2011

FINAL

# NOISE CONTOUR REPORT

## NOISE CONTOUR ANALYSIS FOR THIRD RUNWAY ALTERNATIVES

*Hong Kong International Airport*



香港 | HONG KONG  
國際機場 | INTERNATIONAL  
AIRPORT

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## SECTION 1

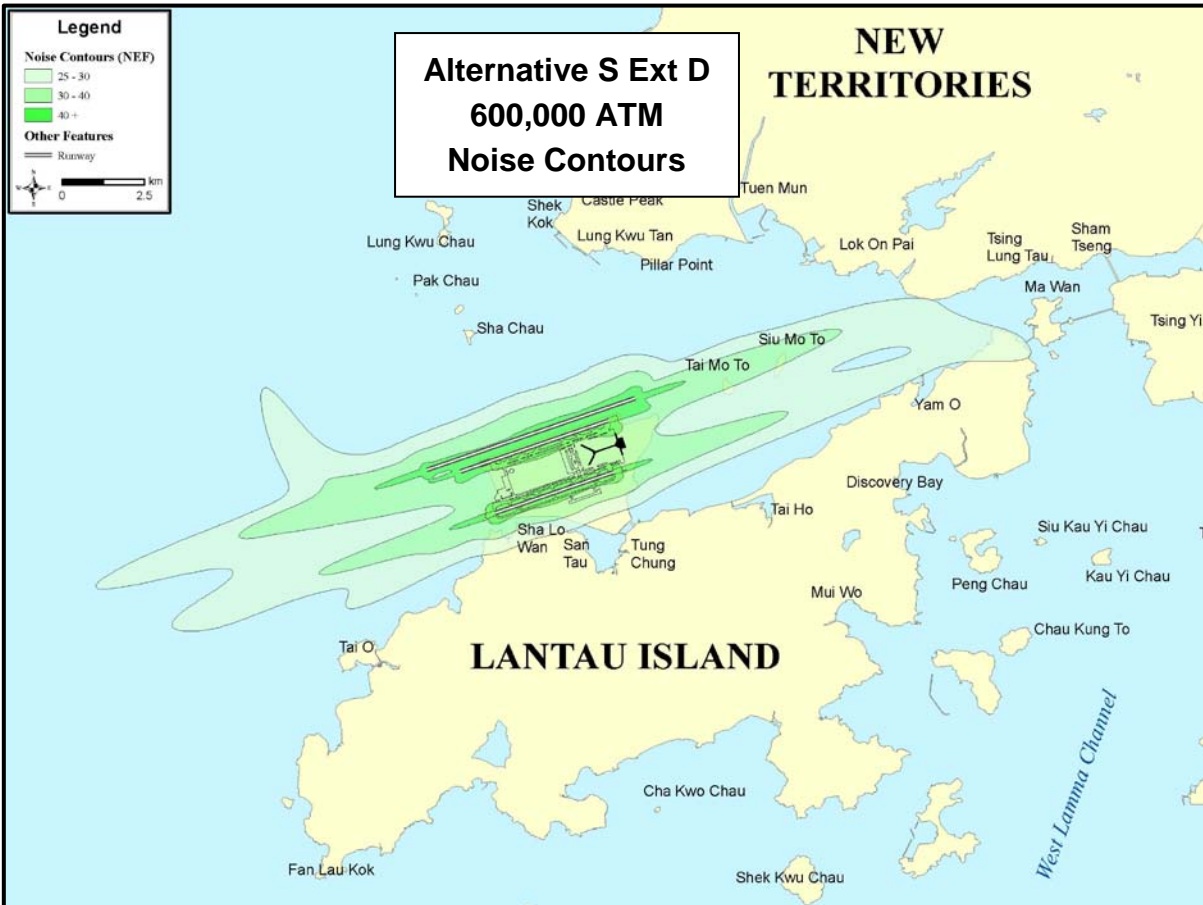
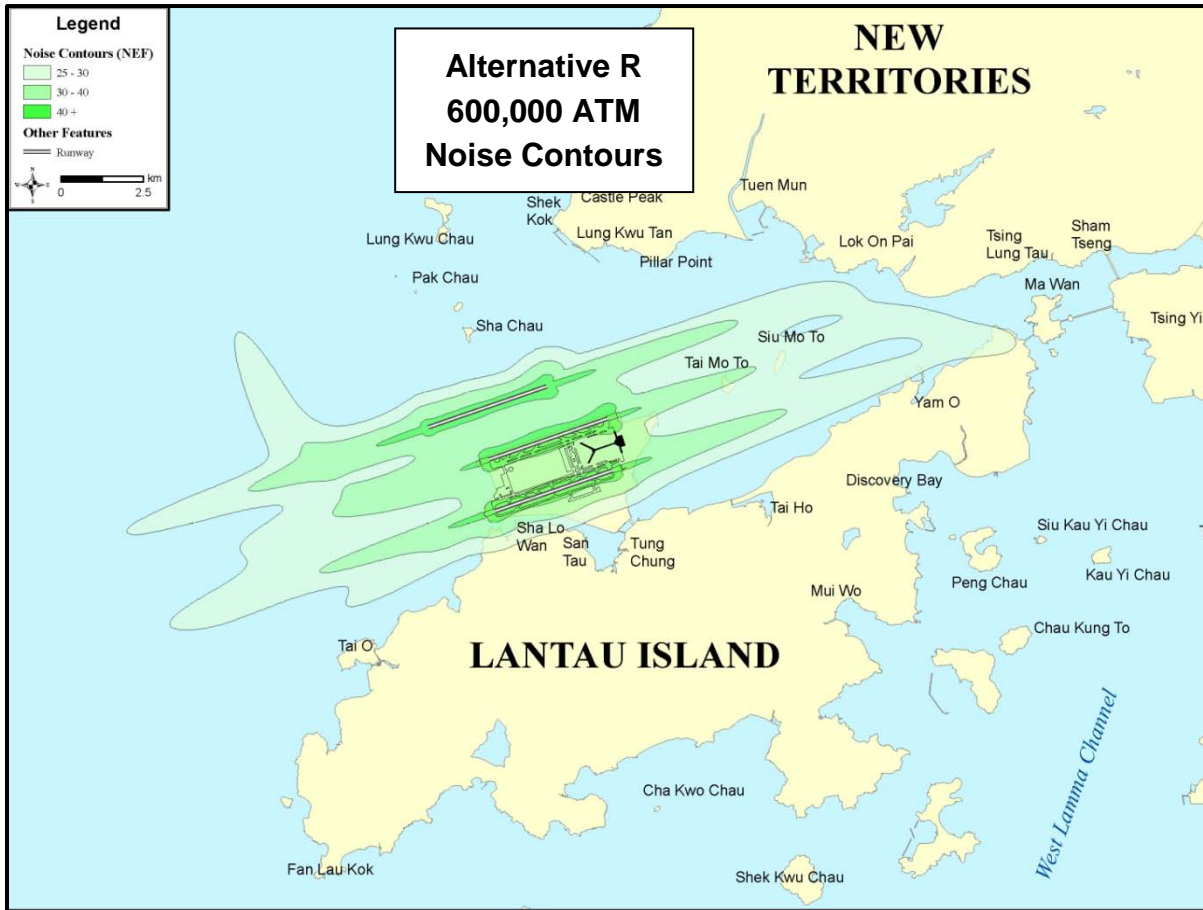
### EXECUTIVE SUMMARY

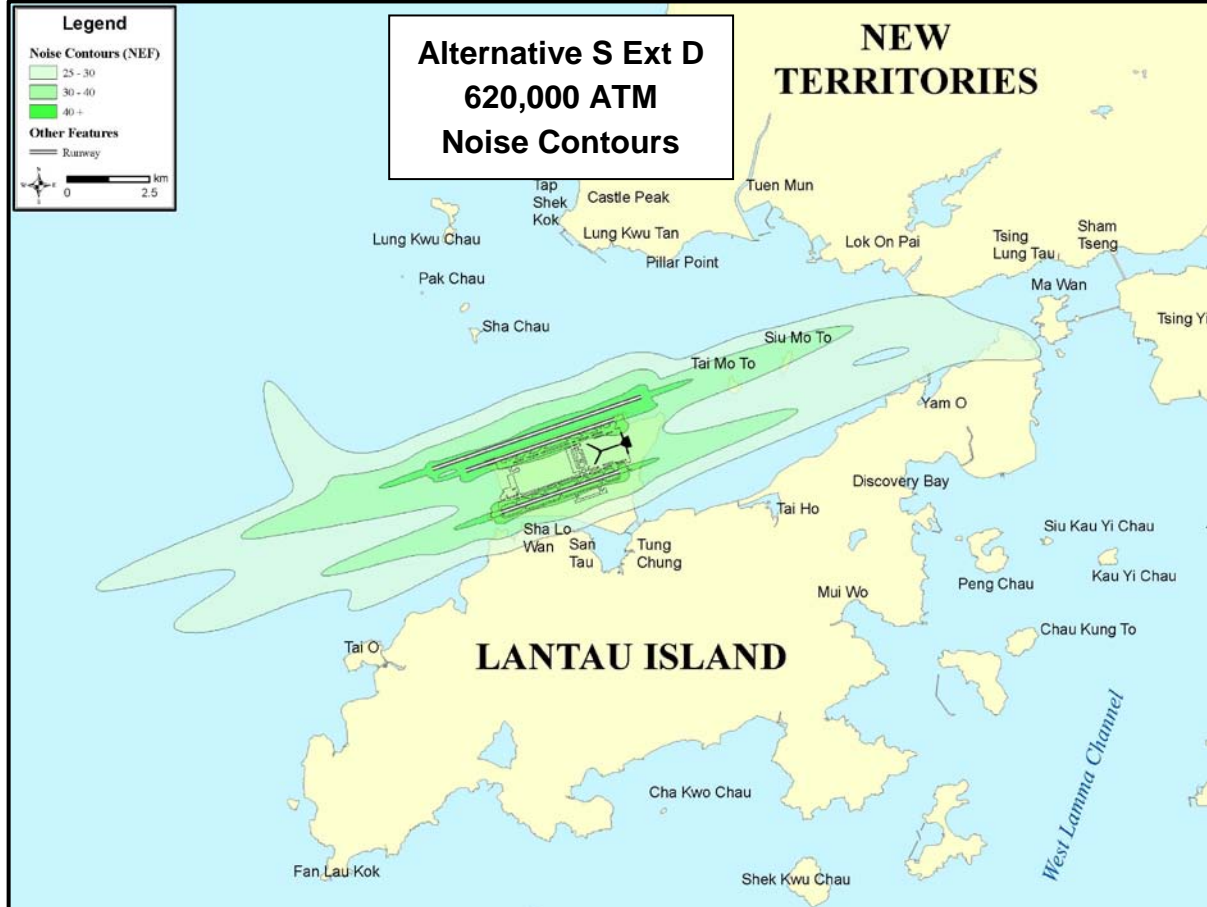
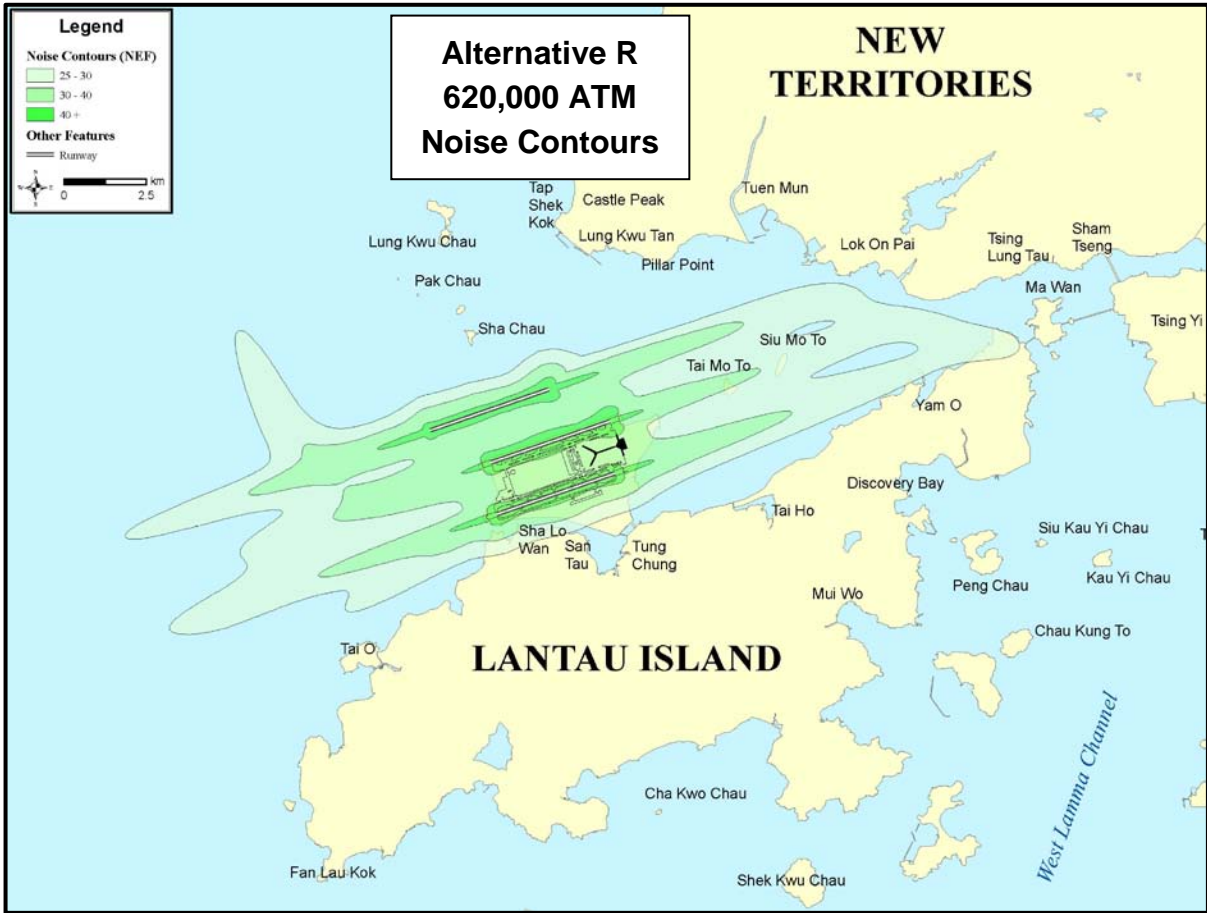
This Noise Contour Report provides a summary of Airport Authority Hong Kong's (AAHK) Noise Exposure Forecast (NEF) contour analysis for third runway alternatives, at the Hong Kong International Airport at Chek Lap Kok. The report and associated analyses were accomplished through a cooperative effort of the Airport Authority Hong Kong and the consulting firm of URS Corporation (URS).

The study evaluated the noise impacts of each alternative being considered for the third runway scenario, based on AAHK's consultation outcome with the User Working Group ("UWG") on Airport Infrastructure and Planning Development. Assumptions data was provided by AAHK and applied to the forecast scenario by URS. A summary of the baseline third runway alternative scenario is described below:

- Future annual aircraft movements modeled at 600,000 movements per year for the Revised Year 2030, and 620,000 movements per year for the Design Capacity Year.
- Two scenarios were modeled: Alternative R, and Alternative S Extension D.
- Between the hours of 7:00 a.m. and 10:59 p.m. runway use for runways 07/25 is 60% and 40%, respectively. Between the hours of 11:00 p.m. and 4:59 a.m. runway use for runways 07/25 is 10% and 90%, respectively. Between the hours of 5:00 a.m. and 6:59 a.m. runway use for runways 07/25 is 90% and 10%, respectively.
- Operational noise abatement procedures were modeled.

The study assumed "average daily" operational conditions. Operational assumptions were developed for two time periods: Day (from 7:00 a.m. to 9:59 p.m.) and Night (from 10:00 p.m. to 6:59 a.m.). These considerations are standard analytical procedures in the development of cumulative noise contours using the NEF metric. Other time-of-day splits, or "operational timeframes", were assumed in order to consider movements, nighttime runway utilization, flight track management, and segregated runway operations periods in the analysis. These timeframes were: Day 1 (7 a.m. to 7:59 a.m.), Day 2 (8 a.m. to 9:59 p.m.), Night 1 (10 p.m. to 10:59 p.m.), Night 2 (11 p.m. to 11:59 p.m.), Night 3 (12 a.m. to 12:59 a.m.), Night 4 (1 a.m. to 4:59 a.m.), and Night 5 (5 a.m. to 6:59 a.m.). The Integrated Noise Model (INM) Version 7.0b was used to generate the 25, 30, and 40 NEF contours for each of the study scenarios. The resulting contours of each alternative are shown below on a digital base map of the surrounding Hong Kong area.





## SECTION 2

### INTRODUCTION

This Noise Contour Report provides a summary of the Airport Authority Hong Kong's (AAHK) Noise Exposure Forecast (NEF) contour analysis for third runway alternatives, at the Hong Kong International Airport (HKIA) at Chek Lap Kok. This section provides background related to the airport, previous noise studies, and the current noise study. **Section 3** provides a discussion of methodology, data, and inputs. The resulting noise contours are discussed in **Section 4**. The report and associated analyses were accomplished through a cooperative effort of the Airport Authority Hong Kong and the consulting firm of URS Corporation (URS).

#### **2.1 BACKGROUND**

Hong Kong International Airport opened in 1998, following an extensive planning and assessment of potential environmental impacts. There were 295,366 aircraft movements at HKIA in Calendar Year 2007. The operations from Calendar Year 2007 were used as the basis for this analysis.

#### **2.2 PREVIOUS NOISE STUDIES**

##### **2.2.1 1991 NEW AIRPORT MASTER PLAN - ENVIRONMENTAL IMPACT ASSESSMENT (NAMP-EIA)**

In the 1991 NAMP-EIA, the 25, 30, and 40 NEF contours were generated based on conditions anticipated for the year 2000, which was expected to be the first year of dual runway operations, and year 2030, which was expected to be a "worst-case" noise scenario, based on the best available information assumptions at the time.

As stated in the NAMP-EIA Executive Summary, "The total number of noise sensitive receptors (NSRs) projected to be impacted is exceptionally small for a major international airport." As a comparison, the NAMP-EIA included estimates of the impacts associated with the operation of Kai Tak Airport, which were 240,000 residents in 1990 and projected to be 350,000 residents when the airport reached its maximum capacity. From an aircraft-generated noise impact standpoint, the NAMP-EIA concluded that shifting movements to the new airport would be a substantial benefit to the environment.

##### **2.2.2 1992 NAMP-EIA SUPPLEMENT**

The NAMP-EIA Supplement, completed in 1992, included an updated aircraft noise analysis that superseded the 1991 NAMP-EIA noise analysis. Notably, the noise impacts were virtually the same as those in the previous study. The results indicated that in the year 2000, approximately 14 NSRs from the Sha Lo Wan area would be within the 25 NEF contour. For the year 2030, the number of NSRs located within the contour would increase to approximately 500 sites from the Sha Lo Wan and Ma Wan island areas.

### **2.2.3 1997 NOISE STUDY UPDATE AND 1998 NAMP-EIA UPDATE**

In 1997, AAHK and URS (then URS Greiner) accomplished a noise contour update, which evaluated the aircraft noise characteristics of the new airport that was under construction at the time. The study considered three discrete operational scenarios:

1. Year 2000, operating under segregated runway use mode;
2. Year 2005, operating under integrated (mixed) runway use mode; and
3. Design Capacity, operating under integrated (mixed) runway use mode.

The operational input data utilized in the analysis were based primarily on the results of the Comprehensive Traffic Demand Forecast Study (CTFS). Subsequent environmental feasibility studies will develop detailed NEFs and included related modeling based on operational forecasts for a three-runway operation.

The study developed noise contours from the CTFS data in 25, 30, and 40 NEF for each of the three scenarios. The results were documented in a Noise Contour Report prepared by URS and submitted to AAHK in December 1997. The AAHK incorporated the results of the noise study into the NAMP-EIA Update, which was published in February 1998.

### **2.2.4 NOISE FROM HKIA OPERATIONS AND THE 2025 STUDY**

A commitment from the NAMP is that airport operational forecasts should be updated periodically, with operational noise levels around HKIA modeled and predicted based on expected modes of operation for certain years – in Noise Exposure Forecasts (NEFs). The Authority published the HKIA 2025 Study at the end of 2006. This study considered all potential future growth strategies at HKIA by critically assessing the demand, supply, and competition / co-operation dynamics that HKIA will face in the future. Growth strategies identified in the study include the potential requirement for a third runway at HKIA at some point in time. As a third runway at HKIA has not previously been considered, detailed engineering and environmental feasibility studies are required both to determine a suitable location and layout for a third runway and to substantiate the need for such a development.

The first phase studies explored possible improvements in air traffic management procedures and equipment and determining the optimized capacity of the existing two runway operation, thereby providing a best estimate for if and when a third runway may be needed. Subsequent environmental feasibility studies will develop detailed NEFs and included related modeling based on operational forecasts for both a three runway operation and an optimized two runway operation. Since the environmental feasibility studies had not yet been completed, reliable information was not available to update the projections on NEFs. The projections were therefore excluded from the Interim Updated EIA Report.

## **2.3 CURRENT NOISE STUDY**

This report documents a noise contour analysis for third runway alternatives. The alternatives that were modeled are based on information provided in the 2008 NATS report, *Airspace and Runway Capacity Study Phase 2, Deliverable P5, Final Runway Options Report*, 2008. The purpose of the

NATS study was to examine the feasibility of a third runway scenario. A summary of runway flow and capacity developed in the NATS study is included in **Table 1**. It is to be noted that the mode of runway operations (arrivals/departures/mixed) mentioned in Table 1 is the primary mode of operations only. However, different modes of operations may be employed in actual operations if flight and weather conditions require.

As detailed in the NATS study, Alternative R is a parallel runway at 1,525m offset to the west. Alternative S Extension Variant D is a closely spaced parallel runway extended to the east and west, with a 950m extension of the existing Runway 07L/25R to the west. The proposed third runway alternatives can be viewed in **Figure 1**. The runway lengths and coordinates are provided in **Table 2**.

The purpose of this study is to produce noise contour projections for Options R and S Extension D, based on AAHK's consultation outcome with the User Working Group ("UWG") on Airport Infrastructure and Planning Development, and compare them with the previously published NEFs for two runway operations.

Two runway alternatives (Option R and Option S Ext D) and two forecasted operational levels (600,000 and 620,000 Annual Traffic Movements) were modeled in order to compare the potential impact of each alternative. The operational input data utilized in the analyses were developed from data provided to URS by AAHK, and are described further in **Section 3** and **Appendix A**. The study was conducted using Version 7.0b of the INM.

The operational timeframes used for this study were: Day 1 (7 a.m. to 7:59 a.m.), Day 2 (8 a.m. to 9:59 p.m.), Night 1 (10 p.m. to 10:59 p.m.), Night 2 (11 p.m. to 11:59 p.m.), Night 3 (12 a.m. to 12:59 a.m.), Night 4 (1 a.m. to 4:59 a.m.), and Night 5 (5 a.m. to 6:59 a.m.).

**Table 1  
Runway Directional Use**

Option R Runway 07 Direction			Option S Ext D Runway 07 Direction		
Runway	Use	Capacity	Runway	Use	Capacity
07L	Arrivals	33	07L	Arrivals	33
07C	Departures	35	07C	Departures	35
07R	Mixed	34	07R	Mixed	34
<b>Total</b>		<b>102</b>	<b>Total</b>		<b>102</b>
<b>Increase</b>		<b>34</b>	<b>Increase</b>		<b>34</b>
Option R Runway 25 Direction			Option S Ext D Runway 25 Direction		
Runway	Use	Capacity	Runway	Use	Capacity
25R	Arrivals	33	25R	Arrivals	33
25C	Departures	35	25C	Departures	35
25L	Mixed	34	25L	Mixed	34
<b>Total</b>		<b>102</b>	<b>Total</b>		<b>102</b>
<b>Increase</b>		<b>34</b>	<b>Increase</b>		<b>34</b>

Source: NATS Airspace and Runway Capacity Study Phase 1b, Deliverable P2, Final Report, 2008.

**Table 2  
Runway Information**

<b>Existing Runway Information</b>					
<b>Runway</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Width</b>	<b>Length</b>	<b>Elevation</b>
07R	22.296203	113.897975	60m	3,800m	8.5m
25L	22.307431	113.932823	60m	3,800m	8.2m
07L <sup>1</sup>	22.310407	113.896384	60m	3,800m	6.7m
25R <sup>1</sup>	22.321636	113.931235	60m	3,800m	7.0m
<b>Alternative Runway Assumptions</b>					
<b>Runway Alternative</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Width</b>	<b>Length</b>	<b>Elevation</b>
07 Alt R	22.319191	113.878405	60m	3,800m	6.7m
25 Alt R	22.330431	113.913271	60m	3,800m	6.7m
07 Alt S Ext D	22.308061	113.877837	60m	6,689m	6.7m
25 Alt S Ext D	22.327837	113.939208	60m	6,689m	6.7m

Note<sup>1</sup>: The existing Runway 07L/25R will be extended to the west by 950m in Alternative S Ext D. The length would then be 4,750m.

Source: URS Corp., 2009.

## SECTION 3

### METHODOLOGY

This section provides an overview of the assumptions considered in this study and the analytical techniques utilized to develop the NEF contours. The Final Assumptions Report, that describes these assumptions in more detail, is included in its entirety in **Appendix A**.

The Final Assumptions Report established the assumptions used in this Noise Contour Report for Third Runway Alternatives, described below:

- Future annual aircraft movements modeled at 600,000 movements per year for the Revised Year 2030, and 620,000 movements per year for the Design Capacity Year.
- Two scenarios were modeled: Alternative R, and Alternative S Extension D.
- Between the hours of 7:00 a.m. and 10:59 p.m. runway use for runways 07/25 is 60% and 40%, respectively. Between the hours of 11:00 p.m. and 4:59 a.m. runway use for runways 07/25 is 10% and 90%, respectively. Between the hours of 5:00 a.m. and 6:59 a.m. runway use for runways 07/25 is 90% and 10%, respectively.
- Operational noise abatement procedures were modeled.

For all scenarios considered in the study, it was necessary to estimate operating conditions on an “average daily” basis. Where applicable, it was also necessary to split operational assumptions into two daily time periods: Day (from 7:00 a.m. to 9:59 p.m.) and Night (from 10:00 p.m. to 6:59 a.m.). These considerations are standard analytical procedures in the development of cumulative noise contours using the NEF metric. Other time-of-day splits, or “operational timeframes”, were assumed in order to consider movements, nighttime runway utilization, flight track management, and segregated runway operations periods in the analysis. The timeframes were: Day 1 (7 a.m. to 7:59 a.m.), Day 2 (8 a.m. to 9:59 p.m.), Night 1 (10 p.m. to 10:59 p.m.), Night 2 (11 p.m. to 11:59 p.m.), Night 3 (12 a.m. to 12:59 a.m.), Night 4 (1 a.m. to 4:59 a.m.), and Night 5 (5 a.m. to 6:59 a.m.).

AAHK provided the broad assumptions used for the modeling effort. URS extrapolated from AAHK data and compiled the detailed model input parameters that were used in noise modeling. Detailed parameters were developed by URS for AAHK approval and formatted to the specific needs of the INM. The data provided by AAHK, and the INM input parameters used by URS in the study, are summarized in the text below and fully detailed in **Appendix A**.

### **3.1 COMPUTER NOISE MODELING**

The average daily airport operational data and assumptions described in the following sections were used to develop cumulative noise contours in the NEF metric using the INM. The following provides additional information regarding the INM and the NEF metric.

#### **3.1.1 INTEGRATED NOISE MODEL**

INM Version 7.0b, was used to perform the noise analysis. The INM was developed in the United States by the Federal Aviation Administration (FAA) specifically for the analysis of aircraft noise levels

in the vicinity of airports. Although developed in the U.S., the INM is a state-of-the-art and internationally accepted method for the prediction of airport-related noise levels.

The INM combines accepted mathematical methods for the calculation of aircraft noise with an extensive database of aircraft acoustic and performance information. The model operates on a Microsoft Windows platform and requires user input in the form of aircraft movements, runways, runway use, flight tracks, flight track use, and other airport operational conditions. The output can be obtained in either tabular or graphic form for a variety of noise metrics. The model is most frequently used to develop plots of equal cumulative average daily noise levels called noise contours.

### 3.1.2 NOISE EXPOSURE FORECAST METRIC AND HONG KONG NOISE STANDARDS

The INM was used to generate cumulative noise contours for average-daily conditions assuming the Noise Exposure Forecast metric, or NEF. The NEF metric is one of several accepted methods to measure and evaluate cumulative aircraft noise levels. NEF has been adopted as the official noise metric for several countries and is the official metric used in Hong Kong.

The NEF metric represents average daily noise levels that would occur over a 24-hour period with a 12.2 dB penalty added to noise levels of aircraft movements occurring between the hours of 10:00 p.m. and 6:59 a.m., which is considered nighttime. The 12.2 dB penalty is applied to account for the increased disturbance that noise intrusions can cause during nighttime hours. Therefore, in terms of disturbance and NEF impacts, this penalty is equivalent to one nighttime movement equaling 16.7 daytime movements (of the same aircraft). Since the penalty is applied to nighttime (10:00 p.m. through 6:59 a.m.) movements in the NEF metric, daytime and nighttime movements by aircraft types (and departure stage length) are separated in the INM.

Contours were generated at levels of NEF 25, 30, and 40. In Hong Kong, most land uses are considered compatible at noise levels of 25 NEF or less. Conversely, most non-aviation and non-industrial land uses are considered to be incompatible at noise levels of 40 NEF or more. Noise standards documented in *Environmental Guidelines for Planning in Hong Kong* (April 1991) are summarized in **Table 3**.

**Table 3  
Summary of Hong Kong Noise Standards**

Uses	Aircraft Noise (Noise Exposure Forecast: NEF)
All domestic premises including temporary housing accommodation	25
Hotels and hostels	25
Offices	30
Educational institutions including kindergartens, nurseries, and all other where unaided voice communication is required	25
Places of public worship and courts of law	25
Hospitals, clinics, convalescences and homes for the aged	25
Amphitheatres, and auditoria, libraries, performing arts centres and country parks	Depends on use, extent, and construction.

Notes: The above standards apply to uses that rely on opened windows for ventilation.  
The above standards should be viewed as the maximum permissible noise levels at the external facade.

Source: Planning Department's Hong Kong Planning Standards and Guidelines, Chapter 9 on Environment relating to Guidelines on Noise Emitters for Aircraft Noise, Table 4.1 on Summary of Noise Standards, Weblink: [http://www.pland.gov.hk/pland\\_en/tech\\_doc/hkpsg/full/index.htm](http://www.pland.gov.hk/pland_en/tech_doc/hkpsg/full/index.htm)

### 3.2 AIRPORT OPERATIONS

For this noise study update, the AAHK provided 2007 movement data and URS extrapolated the information in order to develop aircraft operational data for the future conditions. The future conditions input data were based on a forecast of annual aircraft movements that was developed by AAHK. **Appendix A** provides annual operational data of the movements modeled for this noise study.

#### 3.2.1 AIRCRAFT OPERATIONAL DATA

AAHK developed annual movement data and provided it to URS for this study. However, INM models average daily movements (not annual movements) which are detailed aircraft operational estimates for a 24-hour period. Average daily movements are calculated by dividing the total annual movements by 365 (days in a calendar year). Therefore, URS converted annual movements to average daily movements in order to input the data into INM, which were provided to AAHK for approval. The activity level included consideration of aircraft type (fleet mix), the time of day, and the departure stage length. The fleet mix and operational data applied for this study are provided in **Appendix A**.

While the primary source of data has been provided by AAHK, and is outlined in the Final Assumptions Report, additional operational considerations developed for the study were utilized to complete the noise model inputs. The following comprises a step-by-step description of the derivation of data required to establish the detail necessary for the input specification of the INM.

#### 3.2.2 AIRCRAFT MOVEMENTS

The INM requires that the rate of aircraft movements be represented by the average daily movement rate. AAHK provided forecasted annual movement data for a calendar year. The movement data is categorized by large, medium, and small aircraft classifications.

A summary of the annual and average day movement rates for the forecasted scenario is shown in **Table 4**.

**Table 4  
Aircraft Movement Summary**

Aircraft Group	600,000 ATM		620,000 ATM	
	Annual	Average Day	Annual	Average Day
Large	360,014	986.34	372,014	1,019.22
Medium	32,065	87.85	33,133	90.78
Small	207,804	569.33	214,731	588.30
Military	117	0.32	121	0.33
<b>Total Movements</b>	<b>600,000</b>	<b>1,643.84</b>	<b>620,000</b>	<b>1,698.63</b>

Note: Forecasted Condition movements were divided by 365 to obtain average day movements.

Sources: AAHK, 2010; URS Corporation, 2010.

### **3.2.3 AIRCRAFT FLEET MIX**

Aircraft fleet mix data was developed from 2007 movement data provided by AAHK for this study. The data is broken down into four aircraft categories: Large, Medium, Small, and Military. The AAHK's scenario data was further defined by International Air Transport Association (IATA) aircraft types, which are shown by a three-character code. Fleet mix assumptions used in the modeling effort are provided in **Appendix A. Table 5** provides a profile summary.

HKIA is served by airlines providing direct passenger service to most major cities in the world. Also, HKIA is a major air cargo hub with air cargo shipments processed for global delivery. Due to the airport's position as a major international airport and a gateway to the Pearl River Delta region and Southeast Asia, many carriers at HKIA utilize large wide-bodied aircraft for long-haul passenger and cargo operations.

#### **3.2.3.1 Day/Night Distribution**

Before aircraft movements can be distributed by runway and flight track, the day/night split must be determined (day is defined as between 7:00 a.m. - 9:59 p.m., and night is defined as 10:00 p.m. to 6:59 a.m.). This is necessary because the NEF noise metric includes a penalty for aircraft movements occurring in the nighttime period. Temporal distribution of aircraft movements for the forecasted conditions was based on the 2007 HKIA movement data. The periods included: Day 1 (7 a.m. to 7:59 a.m.), Day 2 (8 a.m. to 9:59 p.m.), Night 1 (10 p.m. to 10:59 p.m.), Night 2 (11 p.m. to 11:59 p.m.), Night 3 (12 a.m. to 12:59 a.m.), Night 4 (1 a.m. to 4:59 a.m.), and Night 5 (5 a.m. to 6:59 a.m.). According to the data provided, 81.6 percent of aircraft movements would occur during the NEF daytime period in the forecasted scenario. A summary table of day/night utilization is provided in **Table 5** of **Appendix A**. Greater details are provided in Appendices of the Final Assumptions Report.

**Table 5  
Profile Summary by Aircraft Type**

Aircraft Group	IATA Aircraft	Arrivals							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	1.02%	98.98%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	332	0.07%	99.93%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	333	1.66%	98.34%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	340	0.49%	99.51%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	342	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	343	10.44%	89.56%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	345	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	346	2.24%	97.76%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	380	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	741	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	742	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	743	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	744	10.59%	89.41%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	747	1.78%	98.22%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	772	3.16%	96.84%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	773	0.53%	99.47%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	777	0.06%	1.83%	33.80%	12.76%	13.60%	16.06%	21.89%	100.00%
	74C	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74E	0.40%	99.60%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74F	6.52%	93.48%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74L	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74T	1.35%	98.65%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74U	8.23%	91.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74X	7.87%	92.13%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74Y	6.72%	93.28%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77L	0.56%	99.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77W	2.70%	97.30%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	7F4	4.05%	95.95%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	D10	2.33%	97.67%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	D1C	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
D1F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
D1Y	1.49%	98.51%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M11	46.27%	53.73%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M1F	2.10%	97.90%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Medium	310	18.59%	81.41%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	313	22.20%	77.80%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	752	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	757	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	762	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	763	0.22%	99.78%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	767	1.06%	98.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31F	57.14%	42.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31X	60.00%	40.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	75F	1.54%	98.46%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76F	5.17%	94.83%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76Y	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	AB3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	AB6	1.72%	98.28%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABF	3.70%	96.30%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABX	4.26%	95.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABY	0.51%	99.49%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

**Table 5 (Continued)**  
**Profile Summary by Aircraft Type**

Aircraft Group	IATA Aircraft	Arrivals							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Small	100	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	319	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	320	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	321	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	712	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	717	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	732	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	733	0.05%	99.95%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	734	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	735	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	736	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	737	0.56%	99.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	738	0.06%	99.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	739	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	72F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73F	20.00%	80.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BBJ	28.57%	71.43%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BE2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CCJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CD2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	CL6	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CNJ	6.15%	93.85%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR7	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CRJ	14.29%	85.71%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF2	3.23%	96.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF3	0.75%	99.25%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E19	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E70	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EM4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EMB	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ER4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ERJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	G4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	GLE	5.26%	94.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	GRJ	2.26%	97.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	H25	5.56%	94.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	LRJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
M81	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M82	2.87%	97.13%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M87	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M90	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
XXX	1.44%	98.56%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Military	777	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	C17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ERJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	XXX	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

**Table 5 (Continued)**  
**Profile Summary by Aircraft Type**

Aircraft Group	IATA Aircraft	Departures							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	0.55%	99.45%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	332	0.25%	99.75%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	333	0.08%	99.92%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	340	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	342	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	343	0.04%	99.96%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	345	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	346	0.23%	99.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	380	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	741	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	742	1.82%	98.18%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	743	1.06%	98.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	744	1.02%	98.98%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	747	2.03%	97.97%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	772	0.14%	99.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	773	0.13%	99.87%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	777	0.00%	1.41%	18.37%	16.89%	26.55%	31.56%	5.23%	100.00%
	74C	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74E	0.37%	99.63%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74F	6.71%	93.29%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74L	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	74T	26.67%	73.33%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74U	17.23%	82.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74X	7.64%	92.36%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74Y	4.60%	95.40%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77L	0.56%	99.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77W	4.17%	95.83%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	7F4	8.06%	91.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	D10	8.33%	91.67%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	D1C	8.33%	91.67%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
D1F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
D1Y	5.41%	94.59%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M11	3.08%	96.92%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M1F	8.22%	91.78%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Medium	310	4.88%	95.12%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	313	5.68%	94.32%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	752	0.18%	99.82%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	757	1.68%	98.32%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	762	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	763	0.14%	99.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	767	0.35%	99.65%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31X	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	75F	2.56%	97.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76F	15.43%	84.57%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76Y	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	AB3	40.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	AB6	0.52%	99.48%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABF	2.07%	97.93%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABX	10.00%	90.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABY	0.98%	99.02%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

**Table 5 (Continued)**  
**Profile Summary by Aircraft Type**

Aircraft Group	IATA Aircraft	Departures							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Small	100	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	319	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	320	0.18%	99.82%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	321	0.09%	99.91%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	712	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	717	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	732	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	733	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	734	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	735	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	736	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	737	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	738	0.37%	99.63%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	739	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	72F	70.83%	29.17%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BBJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BE2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CCJ	2.52%	97.48%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CD2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CL6	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CNJ	8.11%	91.89%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR7	3.13%	96.88%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CRJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF2	3.13%	96.88%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF3	4.07%	95.93%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E19	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E70	2.92%	97.08%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EM4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
EMB	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
ER4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
ERJ	7.14%	92.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
G4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
GLE	9.09%	90.91%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
GRJ	5.23%	94.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
H25	6.90%	93.10%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
LRJ	4.00%	96.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M81	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M82	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M87	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M90	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
XXX	6.84%	93.16%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Military	777	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	C17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ERJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	XXX	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

Sources: INPUT\_Base\_Year\_Stat.xls provided by AAHK  
URS Corp., 2010.

### **3.2.3.2 Stage Length**

The next step was to distribute these day/night time movements into their various departure stage lengths for each of the different aircraft type groupings. Stage length is a term used in airport planning and noise modeling that refers to the distance in nautical miles (nm) to the destination airport. INM Version 7.0b, used for this study, provides a maximum of 9 stage lengths. Stage lengths form the basis for assigning aircraft different departure profiles (operating characteristics) based on gross takeoff weight and are determined by reviewing the destination regions of each aircraft departure, which was provided by AAHK. INM departure stage length for each region was based on the July 2008 Arrival and Departure Flight Analysis provided by AAHK. The resulting movements by stage length are provided in **Table 8** of **Appendix A**.

## **3.3 RUNWAY UTILIZATION**

Runway use includes the number, location (characterized by latitude and longitude of runway end points), and orientation of the active runways, as well as the directions and types of movements that occur on each runway. Runway use depends primarily on wind direction and speed. However, it is also a function of factors such as air traffic control procedures and separation standards, terminal location, taxiing distances, origin/destination, runway length, and preferential runway use related to noise abatement.

### **3.3.1 DISTRIBUTION BETWEEN RUNWAYS**

For this study it was assumed (see **Appendix A**) that HKIA would operate with three parallel runway surfaces (as shown in **Figure 1**):

- South Runway (07R/25L)  
The South Runway is 3,800 meters in length and approximately 60 meters in width. Runway 07R is equipped with a Category II (CAT-II) Instrument Landing System (ILS) and Precision Approach Path Indicator (PAPI) navigational aids. Runway 25L is equipped with a CAT-II ILS and PAPI navigational aids.
- Center Runway (07C/25C)  
The Center Runway is 3,800 meters in length and approximately 60 meters in width. Runway 07L is equipped with a CAT-II ILS and PAPI navigational aids. Runway 25R is equipped with a CAT-III ILS and PAPI navigational aids. If Alternative S Extension D were implemented, this runway would be extended to the west by 950m.
- North Runway (07L/25R)  
The proposed North Runway would be 3,800m for Alternative R, or 6,689m for Alternative S Extension D. The width would be approximately 60m for each of the alternatives.

Flight track utilization provides an additional characterization of runway utilization (see **Section 3.4**).

### **Segregated Runway Mode**

AAHK advised that one runway will be closed for maintenance from 01:00 a.m. to 7:59 a.m., to align with the existing practice. The runway maintenance closure period is incorporated in the flight track utilization files provided by AAHK.

The south runway will be assigned as standby mode where possible during the night-time penalty period from 23:00 to 06:59 in order to minimize the aircraft noise impact along North Lantau shoreline. The runway standby mode is incorporated into the flight track utilization files provided by AAHK.

Operating the south runway on standby mode would mean that the aircraft taxiing distances to and from the other two runways may be increased significantly, especially when the center runway is under maintenance.

It is to be noted that between 2300 and 0100 LT and in order to accommodate the anticipated number of departures and arrivals with only two (2) runways, one of the runways needs to be operated on mixed mode (i.e., segregated mode cannot fulfill the demand during that period of time).

#### **3.3.2 EAST/WEST DISTRIBUTION**

For purposes of noise modeling, AAHK provided a runway utilization of 60% for runways 07L/C/R and 40% for runways 25L/C/R between the hours of 7:00 a.m. and 10:59 p.m. Between the hours of 11:00 p.m. and 4:59 a.m. runway utilization was modeled at 10% for runways 07L/C/R and 90% for runways 25L/C/R. A runway utilization of 90% for runways 07L/C/R and 10% for runways 25L/C/R between the hours of 5:00 a.m. and 6:59 a.m.

### **Nighttime Runway Operating Period**

AAHK is conscious of the effect that night-time aircraft operations may have on local communities and has developed a number of initiatives to try to reduce the disturbance caused by these aircraft. As stated on the Civil Aviation Department (CAD) website ([http://www.cad.gov.hk/english/ac\\_noise.html](http://www.cad.gov.hk/english/ac_noise.html)), aircraft noise mitigation measures relating to runway utilization include:

- a) "Since October 1998, between midnight and 07:00 am, arriving aircraft are required to land from the southwest, subject to acceptable wind direction and safety consideration. This measure aims to reduce the number of aircraft overflying populated areas like Shatin, Tsuen Wan, Sham Tseng and Tsing Lung Tau;"
- b) "Since October 1998, aircraft departing to the northeast of the airport between midnight and 07:00 am are required to use the southbound route via the West Lamma Channel, subject to acceptable operational and safety consideration. This measure aims to reduce the number of aircraft overflying populated districts like Hung Hom, North Point, Shaukeiwan and Chai Wan (Following further consultation with the district boards and detailed assessment by CAD, the application period was revised from midnight – 07:00 am to 11:00 pm – 07:00 am starting from 7 January 1999)."

### 3.4 FLIGHT TRACKS

Flight tracks describe the estimated average or “typical” flight corridors of aircraft operating at an airport. As with the other operational assumptions, average-daily conditions were considered in the analysis. Generalized departure and arrival flight tracks were provided by AAHK for use in noise modeling. **Figure 2** summarizes the flight tracks used in this study. The Final Assumptions Report includes figures which depict the future departure and arrival flight tracks for each of the alternatives, for each operational timeframe (see **Figures 2** through **15** of **Appendix A**).

Flight track utilization, which includes runway utilization based on the track, for arrivals and departures is provided in **Tables 6** and **7**. Flight track utilization is provided for the periods between the hours of 7 a.m. to 7:59 a.m., 8 a.m. to 9:59 p.m., 10 p.m. to 10:59 p.m., 11 p.m. to 11:59 p.m., 12 a.m. to 12:59 a.m., 1 a.m. to 4:59 a.m., and 5 a.m. to 6:59 a.m.. The aircraft utilize flight tracks based on their destination.

**Table 6  
Arrival Flight Track Utilization By Time Period**

Region/Market	Countries	Day 1 - 7:00 a.m. to 7:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		100%	
Japan			100%		100%		
Mainland China		4%		96%			
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			100%		
Taiwan			100%		100%		
USA / Canada			100%		100%		
Australasia	Australia	100%			100%		
Others	Others, Middle East, Korea	21%	69%	10%	90%	10%	
Region/Market	Countries	Day 2 - 8:00 a.m. to 21:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		100%	
Japan			100%		100%		
Mainland China		4%		96%	4%	96%	
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			100%		
Taiwan			100%		100%		
USA / Canada			100%		100%		
Australasia	Australia	100%			100%		
Others	Others, Middle East, Korea	21%	69%	10%	90%	10%	

**Table 6 (Continued)**  
**Arrival Flight Track Utilization By Time Period**

Region/Market	Countries	Night 1 - 22:00 a.m. to 22:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		100%	
Japan			100%		100%		
Mainland China		4%		96%	4%	96%	
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			100%		
Taiwan			100%		100%		
USA / Canada			100%		100%		
Australasia	Australia	100%			100%		
Others	Others, Middle East, Korea	21%	69%	10%	90%	10%	
Region/Market	Countries	Night 2 - 23:00 a.m. to 23:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.20%	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%
Region/Market	Countries	Night 3 - 00:00 a.m. to 00:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.20	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%

**Table 6 (Continued)**  
**Arrival Flight Track Utilization By Time Period**

Region/Market	Countries	Night 4 - 01:00 a.m. to 04:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.2%	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%
Region/Market	Countries	Night 5 - 05:00 a.m. to 06:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.20	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%

Sources – AAHK & URS Corp., 2010.

**Table 7**  
**Departure Flight Track Utilization By Time Period**

Region/Market	Countries	Day 1 - 7:00 a.m. to 7:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe		100%				100%
Japan		100%			100%	
Mainland China		92.5%	7.5%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan		100%			100%	
USA / Canada		100%			100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea	76%	24%		90%	10%
Region/Market	Countries	Day 2 - 8:00 a.m. to 21:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe				100%		100%
Japan		100%			100%	
Mainland China			7.5%	92.5%	7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan		100%			100%	
USA / Canada		100%			100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea	66%	24%	10%	90%	10%
Region/Market	Countries	Night 1 - 22:00 a.m. to 22:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe				100%		100%
Japan		100%			100%	
Mainland China			7.5%	92.5%	7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan		100%			100%	
USA / Canada		100%			100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea	66%	24%	10%	90%	10%

**Table 7 (Continued)**  
**Departure Flight Track Utilization By Time Period**

Region/Market	Countries	Night 2 - 23:00 a.m. to 23:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
	Europe		100%			100%
	Japan		100%		100%	
	Mainland China		100%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
	Taiwan		100%		100%	
	USA / Canada		100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		100%		90%	10%
Region/Market	Countries	Night 3 - 00:00 a.m. to 00:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
	Europe			100%		100%
	Japan		100%		100%	
	Mainland China		7.5%	92.5%	7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
	Taiwan		100%		100%	
	USA / Canada		100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		24%	76%	90%	10%
Region/Market	Countries	Night 4 - 01:00 a.m. to 04:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
	Europe		100%			100%
	Japan		100%		100%	
	Mainland China		100%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
	Taiwan		100%		100%	
	USA / Canada		100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		100%		90%	10%

**Table 7 (Continued)**  
**Departure Flight Track Utilization By Time Period**

Region/Market	Countries	Night 5 - 05:00 a.m. to 06:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
	Europe		100%			100%
	Japan		100%		100%	
	Mainland China		100%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
	Taiwan		100%		100%	
	USA / Canada		100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		100%		90%	10%

Sources – AAHK & URS Corp., 2010.

## SECTION 4

### **NOISE CONTOURS**

The INM was used to generate cumulative noise contours for average-daily conditions assuming the Noise Exposure Forecast metric, or NEF. The NEF metric represents average daily noise levels that would occur over a 24-hour period with a 12.2 dB penalty added to noise levels of aircraft movements occurring between the hours of 10:00 p.m. and 6:59 a.m., which is considered nighttime. In Hong Kong, most land uses are considered compatible at noise levels of 25 NEF or less.

Contours were generated at levels of NEF 25, 30, and 40. A digital base map of the Hong Kong area provided by the AAHK was used in a Geographic Information System (GIS) for the illustration of the noise contours. The INM case echo report for each alternative is provided in **Appendix B**. The resulting NEF contours are illustrated in **Figures 3** through **6**. Further discussion regarding the NEF contours is provided below.

#### **4.1 COMPARISON OF THE REVISED YEAR 2030 CONTOURS**

Two potential runways layouts were analyzed: Alternative R is a parallel runway at 1,525m offset to the north-west. Alternative S Extension D is a closely spaced parallel runway extended to the east and west, with a 950m extension of the existing Runway 07L/25R to the west.

As shown on **Figures 3** and **4**, the size and shape of the NEF contours of the two alternatives are very similar. The 1,525m north-west offset of the parallel runway in Option R causes a slight increase in the area covered by the 25 NEF contour, as shown in **Table 8**.

The 25 NEF contour for both alternatives remains clear of the north shore of the Lantau Island. A slight overlap occurs over Sha Lo Wan and the north-east area of the Lantau Island. The areas of potential reclaimed land are not affected by the 25 NEF contour.

#### **4.2 COMPARISON OF THE REVISED YEAR 2030 CONTOURS AND THE DESIGN CAPACITY YEAR CONTOURS**

**Figures 7** and **8** compare the Revised Year 2030 Contours to the Design Capacity Year Contours. Alternative R and Alternative S Extension D were studied at the Year 2030 forecasted demand (600,000 ATM) and the Design Capacity of the airport (620,000 ATM). The increase in aircraft operations, while maintaining the same fleet mix, causes a slight increase in the area covered by the 25 NEF contour, as shown in **Table 8**. The 25 NEF contour for both alternatives remains clear of the north shore of the Lantau Island. A slight overlap occurs over Sha Lo Wan and the north-east area of the Lantau Island. The areas of potential reclaimed land are not affected by the 25 NEF contour.

**Table 8**  
**Third Runway Scenario Land Impacts**

Scenario	25+ NEF Area of Coverage
Alternative R 600,000 ATM	107 km <sup>2</sup>
Alternative R 620,000 ATM	109 km <sup>2</sup>
Alternative S Extension D 600,000ATM	94 km <sup>2</sup>
Alternative S Extension D 620,000 ATM	96 km <sup>2</sup>

Source: URS Corporation, 2010.

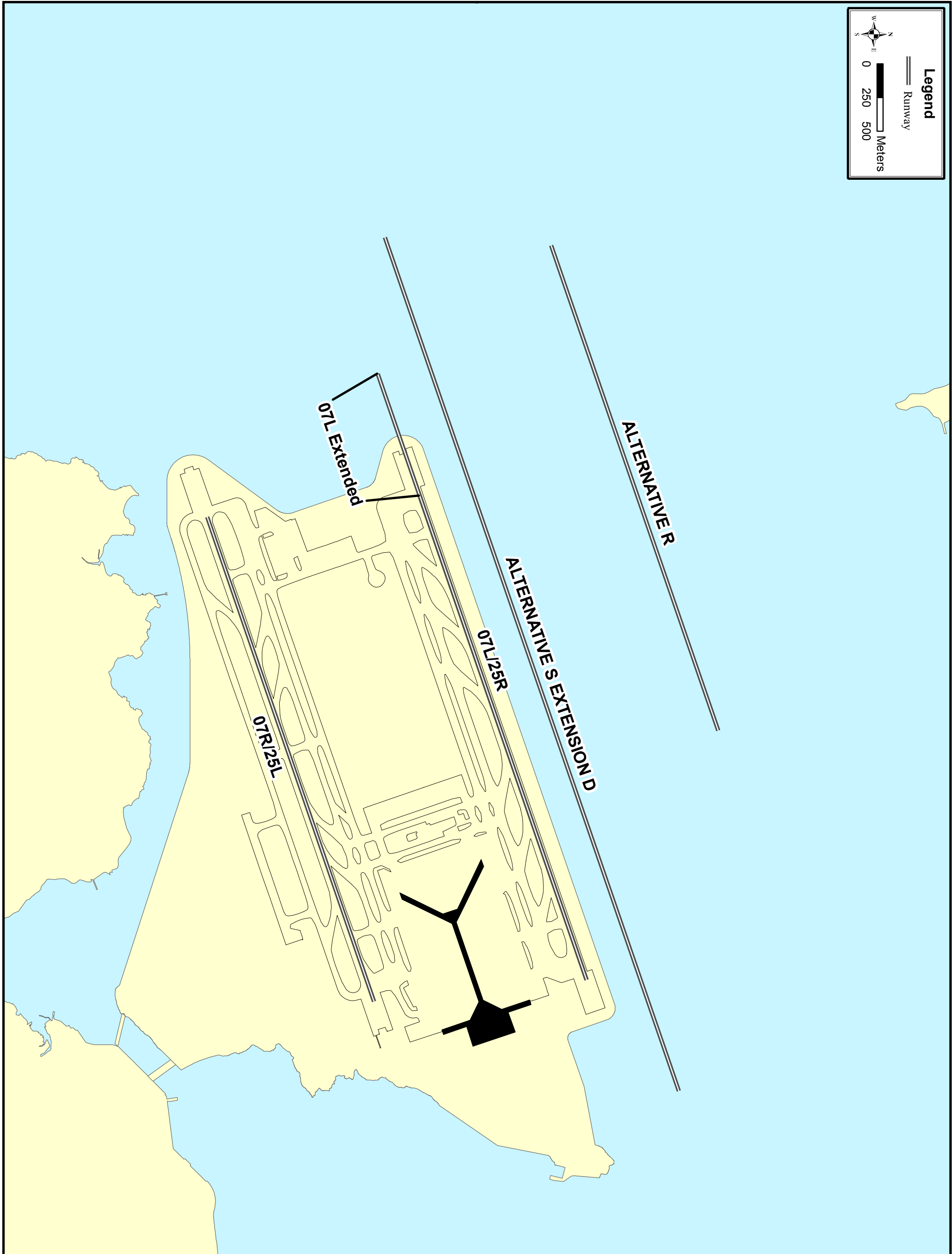
**4.3 COMPARISON OF THE REVISED YEAR 2030 CONTOURS AND THE DESIGN CAPACITY YEAR CONTOURS TO THE 1998 DESIGN CAPACITY CONTOURS**

**Figures 9** through **12** compare the 25 NEF contour for each alternative to the 25 NEF design capacity contour published by HKIA in 1998, which was provided to URS Corporation by AAHK on October 7, 2010.

In general, these contours are similar in size and shape. The primary difference between the revised design capacity contours and the 1998 contour are three distinct “lobes” of the 25 NEF contour. The first “lobe” extends to the northwest and it appears to be a result of the departure operations on Track 5. The second “lobe” slightly extends over the northeast area of the Lantau Island into the West Lamma Channel. The third “lobe” extends to the southwest, and it appears to be are result of the aircraft activity on the proposed runway.

As expected, Alternative R widens the contours to the northwest, while Alternative S Extension D only slightly widens the contours to the northwest when compared to the 1998 design capacity contours.

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**FIGURE**  
**1**

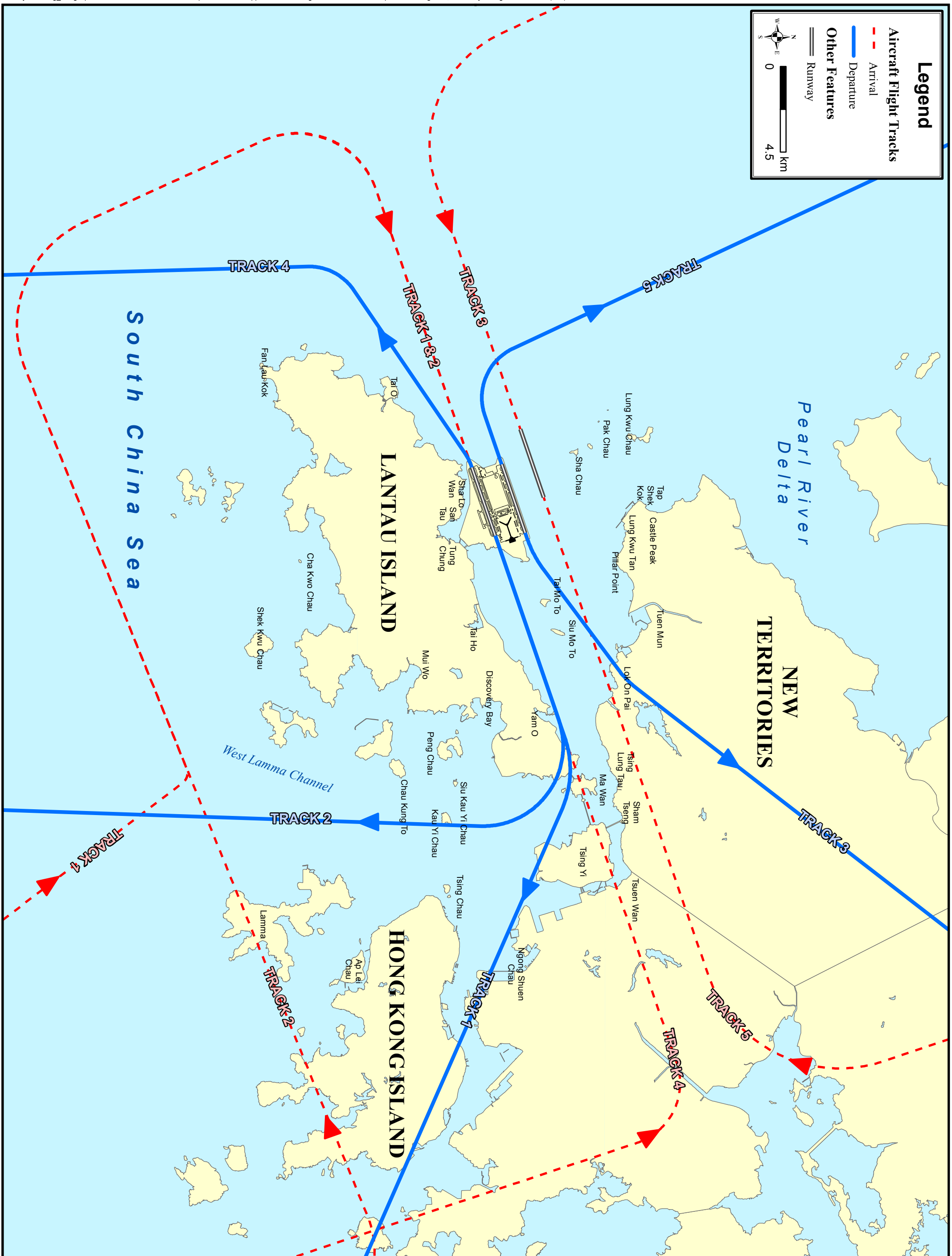
**Third Runway Alternatives**



**Noise Contour  
Report Update for Third  
Runway Alternatives**



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**FIGURE 2**

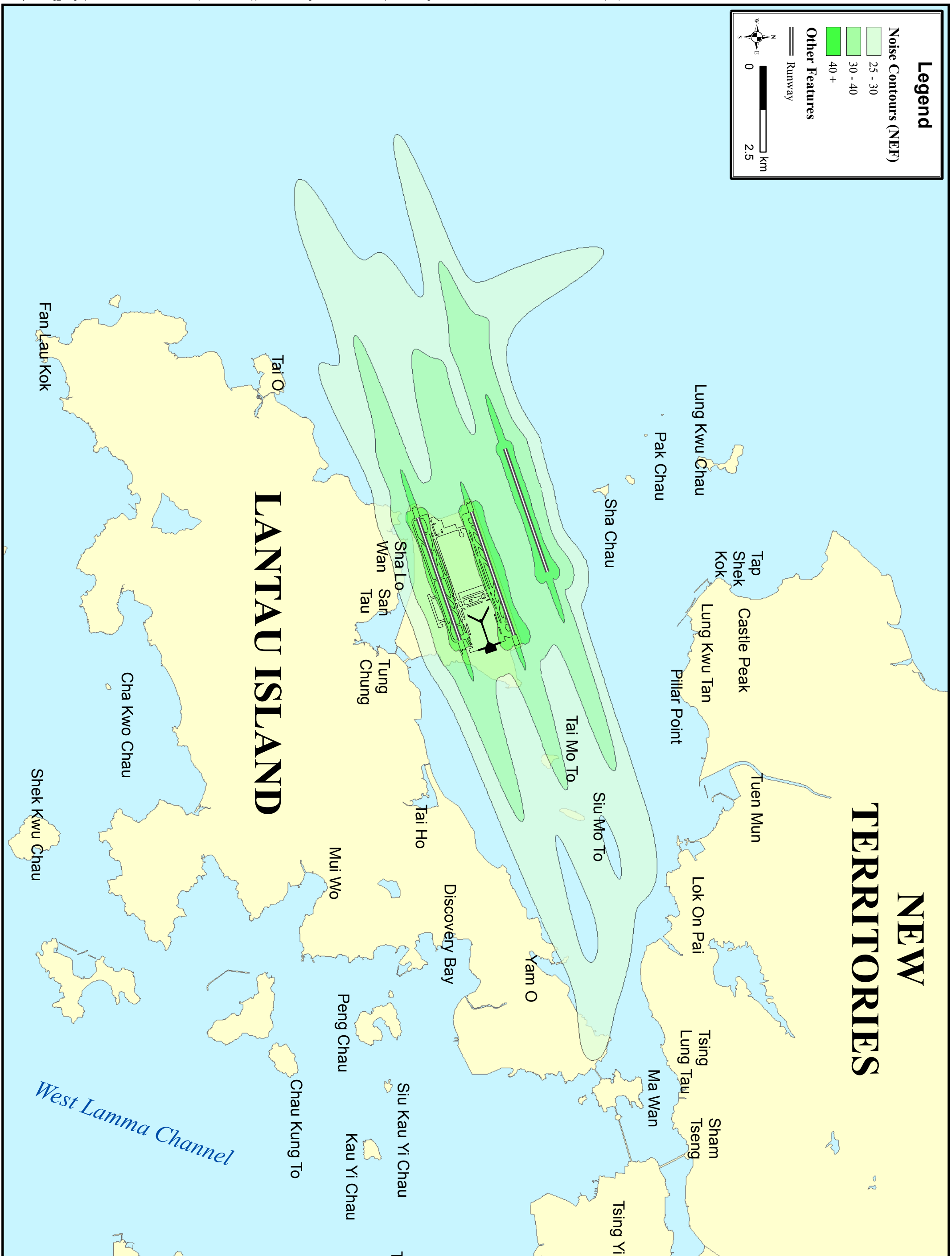
**Summary of Flight Tracks**



**Preliminary Noise Contour Analysis for Third Runway Alternatives**



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**Legend**

**Noise Contours (NEF)**

- 25 - 30
- 30 - 40
- 40 +

**Other Features**

- Runway

0 2.5 km

**FIGURE 3**

**Alternative R 600,000 ATM Noise Contours**



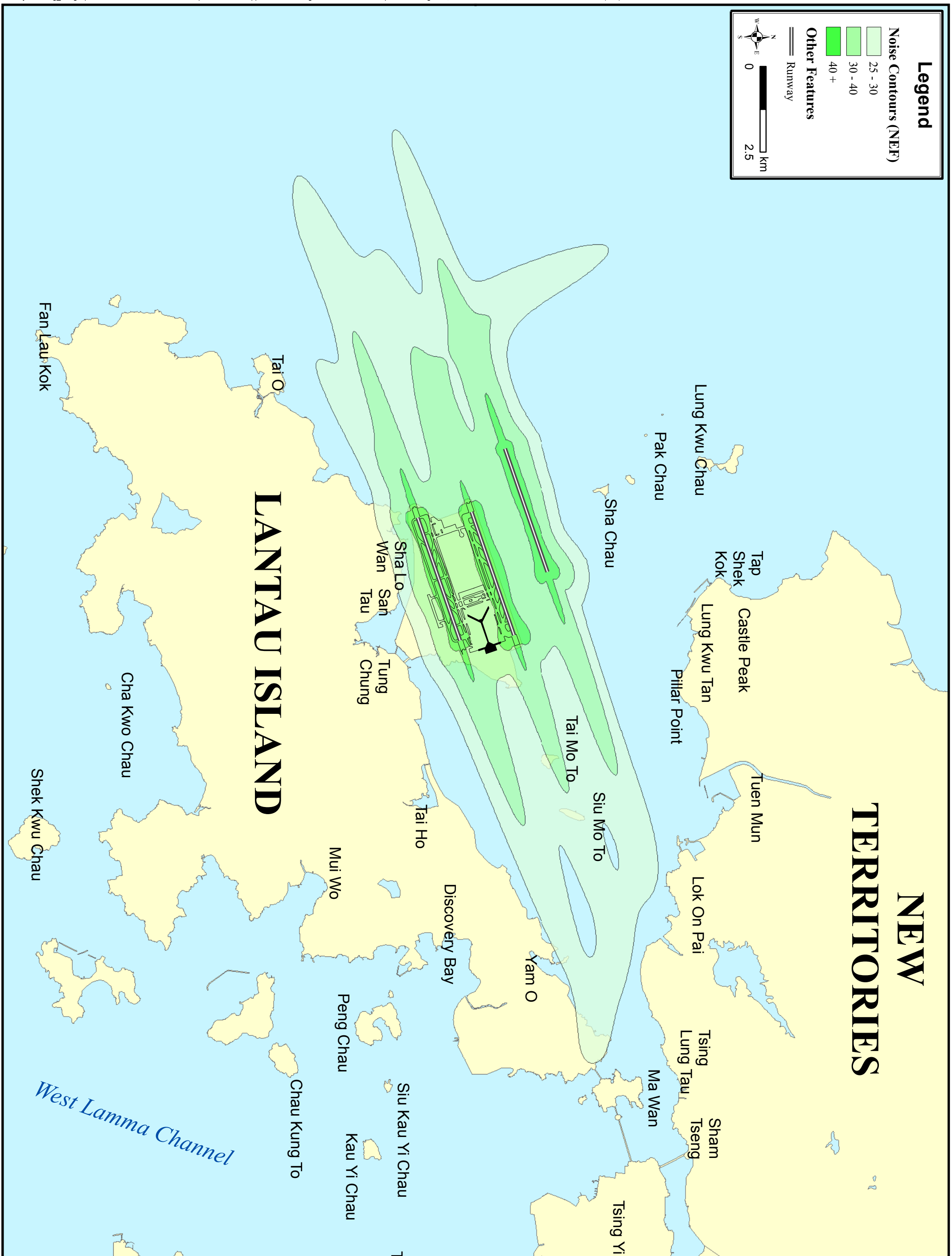
**Noise Contour Report Update for Third Runway Alternatives**



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**FIGURE 5**

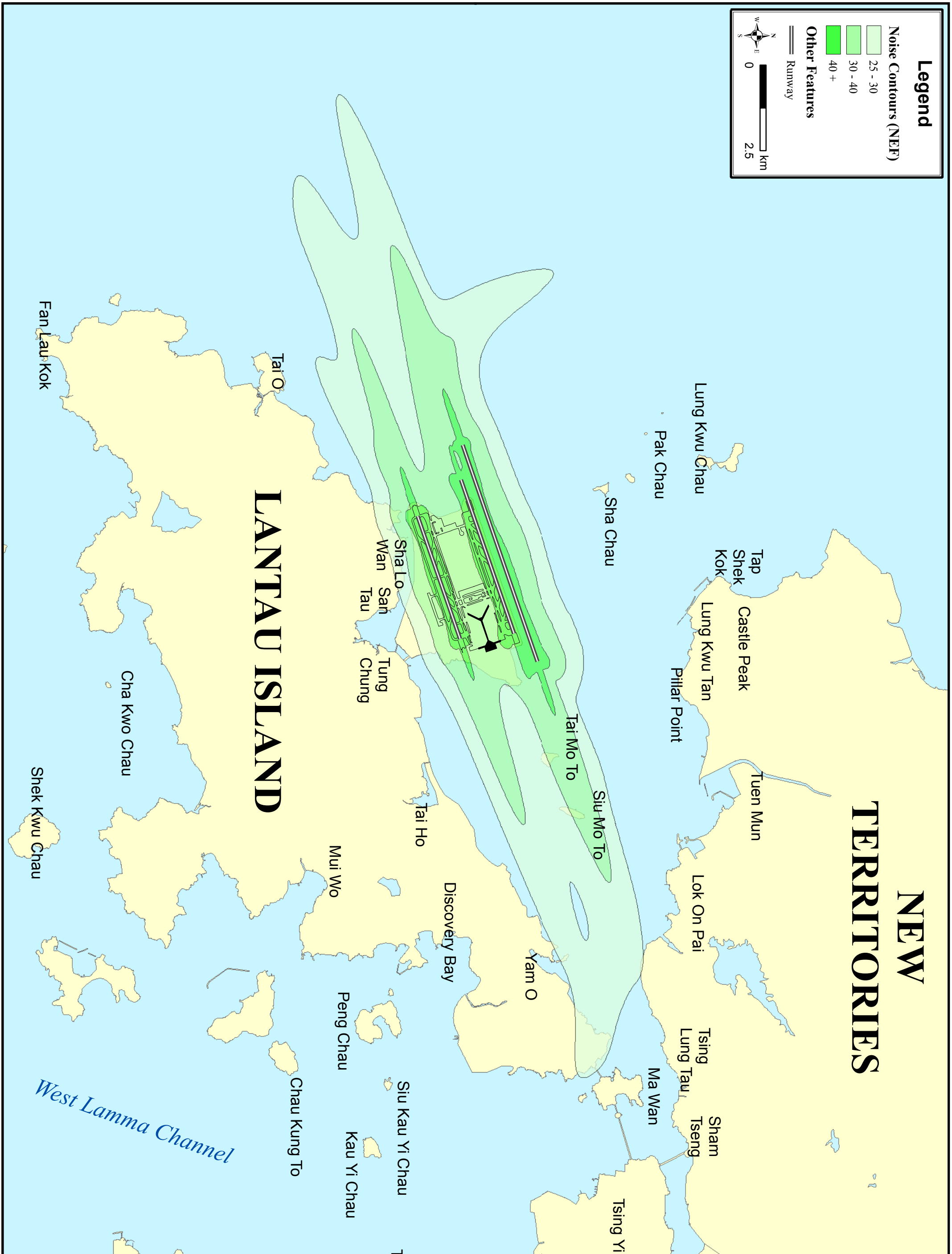
**Alternative R 620,000 ATM Noise Contours**



**Noise Contour Report Update for Third Runway Alternatives**



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**FIGURE 6**

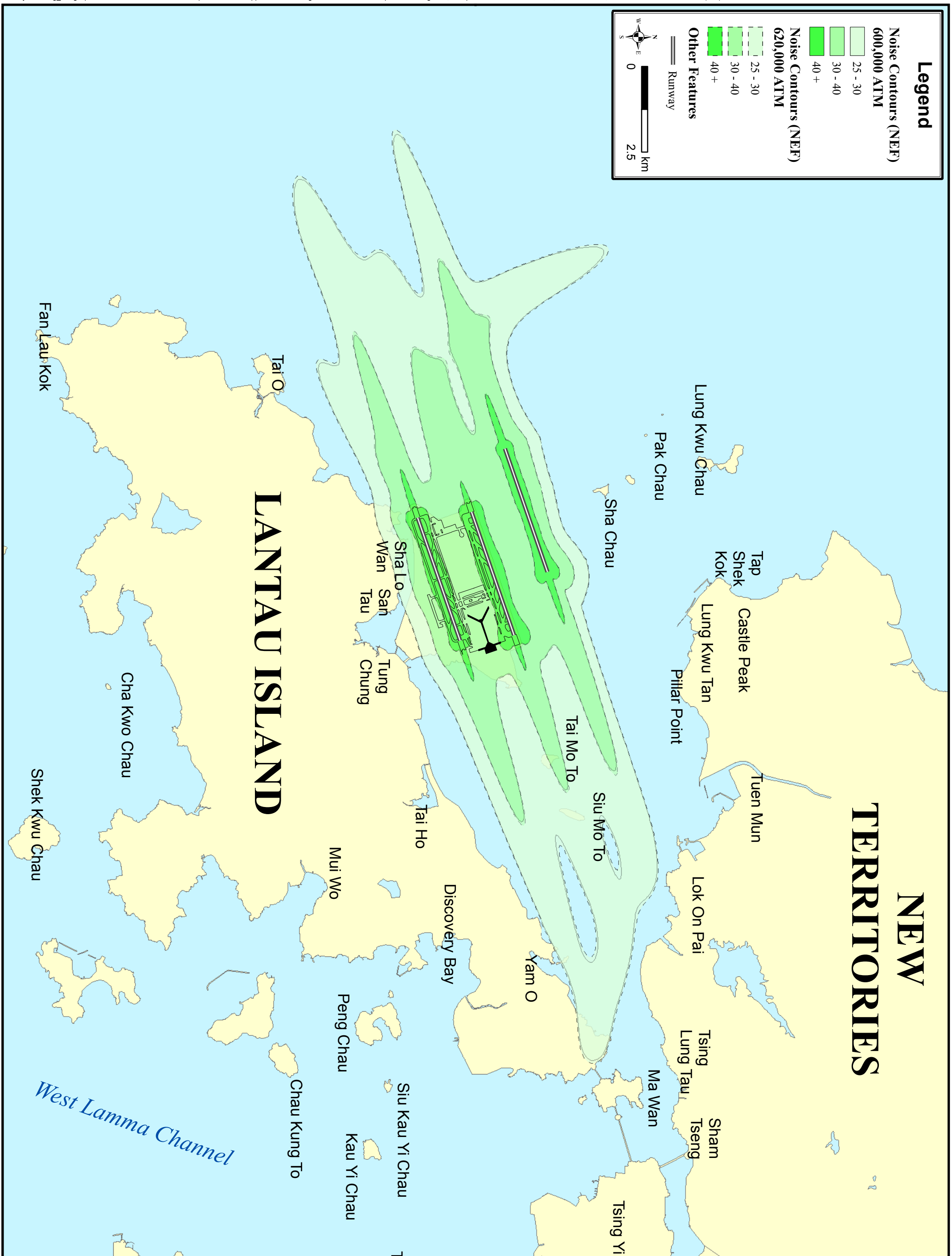
**Alternative S Ext. D 620,000 ATM Noise Contours**



**Noise Contour Report Update for Third Runway Alternatives**



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**FIGURE 7**

**Comparison of Alternative R 600,000 ATM to Alternative R 620,000 ATM Noise Contours**



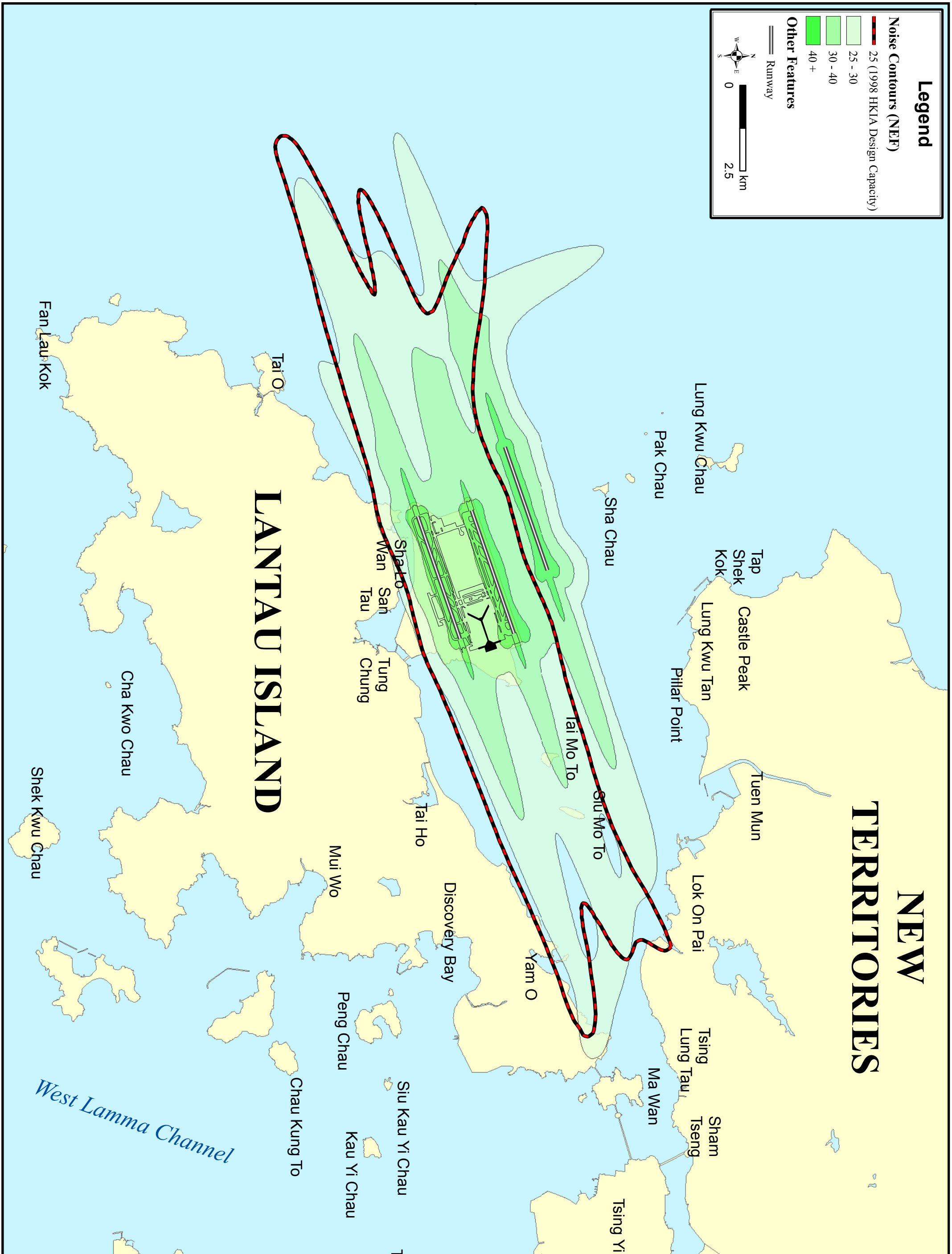
**Noise Contour Report Update for Third Runway Alternatives**



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**FIGURE 9**

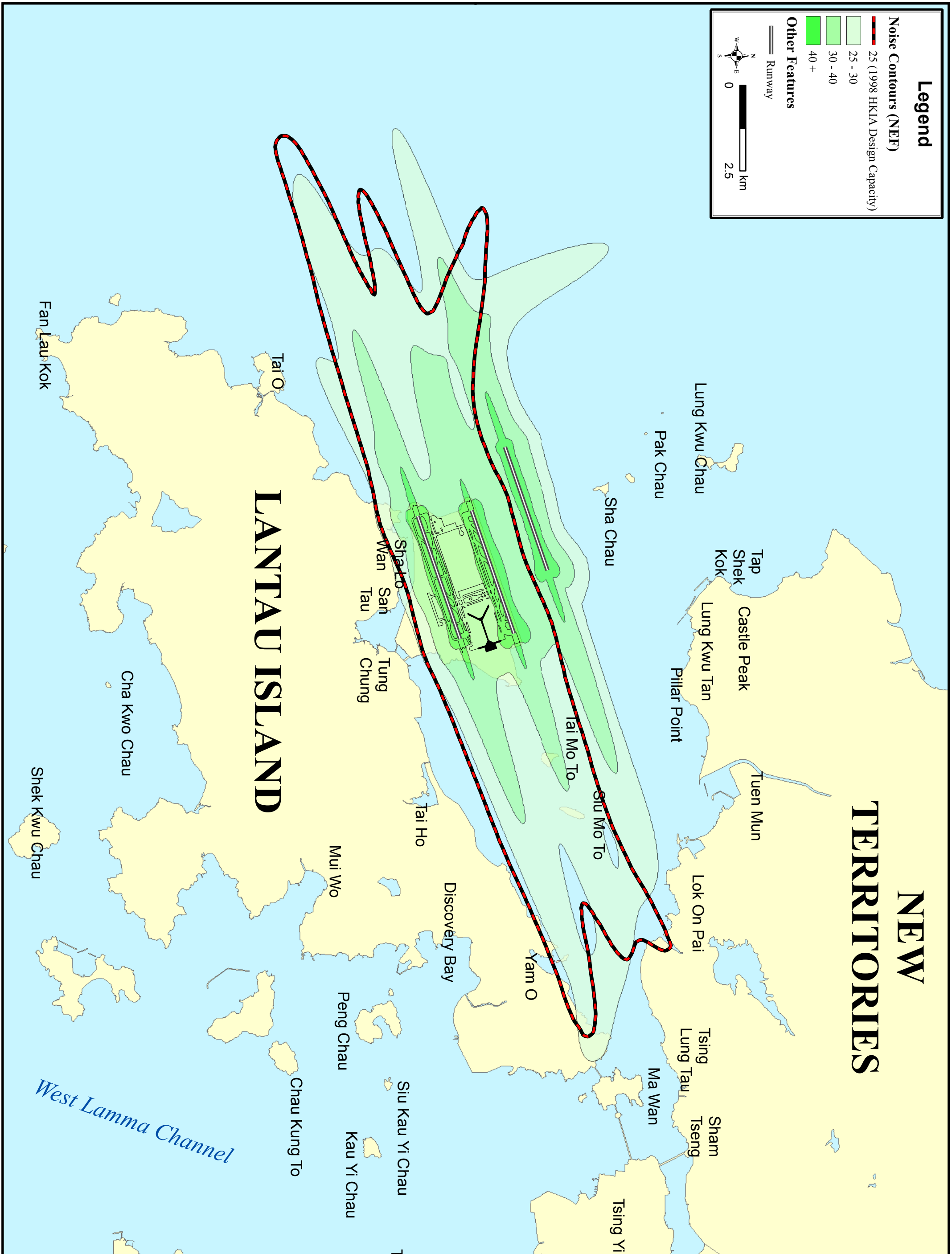
**Comparison of Alternative R 600,000 ATM to 1998 HKIA Design Capacity Noise Contours**



**Noise Contour Report Update for Third Runway Alternatives**



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**Legend**

**Noise Contours (NEF)**

- 25 (1998 HKIA Design Capacity)
- 30 - 40
- 40 +

**Other Features**

- Runway

0 2.5 km

**FIGURE 10**

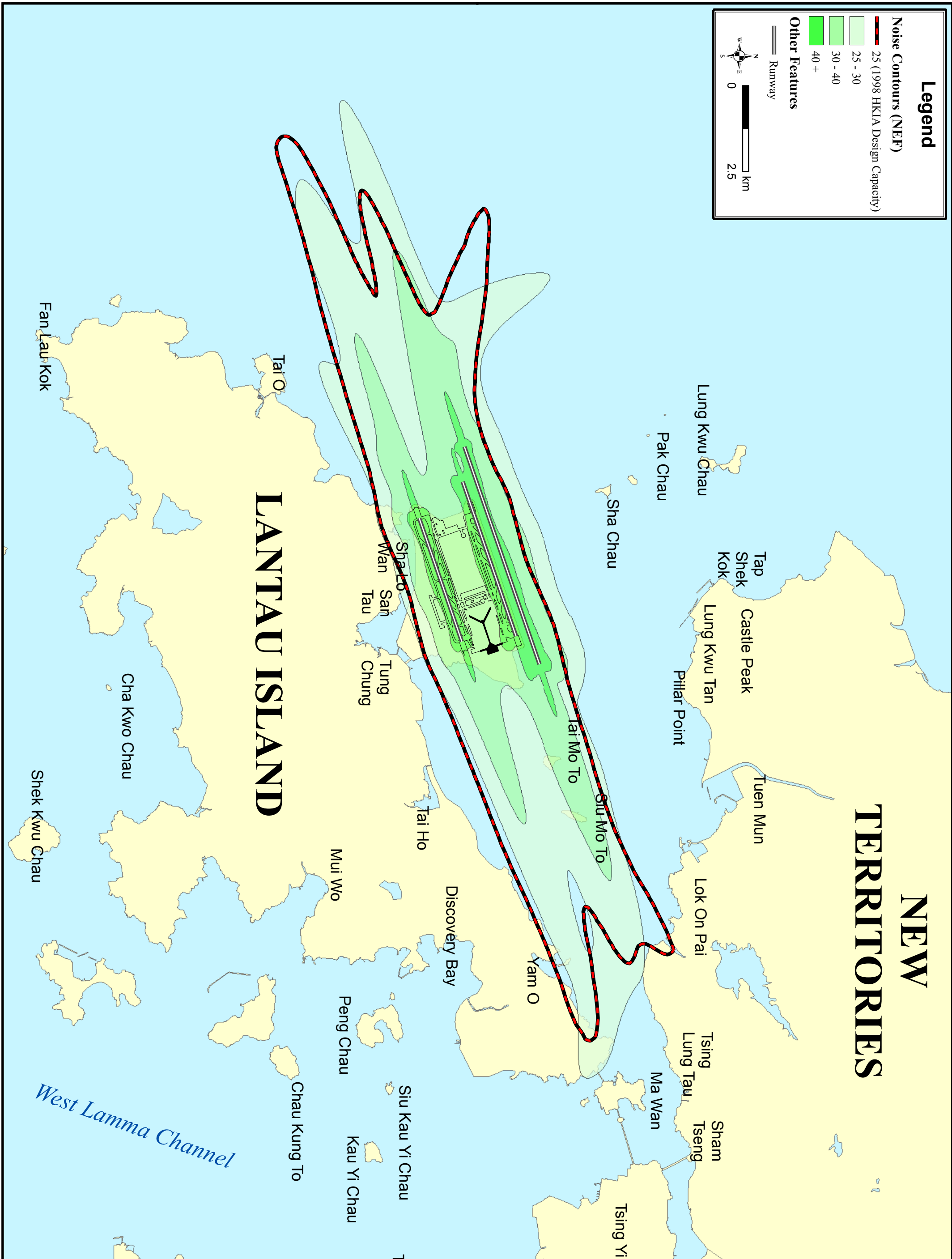
**Comparison of Alternative R 620,000 ATM to 1998 HKIA Design Capacity Noise Contours**



**Noise Contour Report Update for Third Runway Alternatives**



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**FIGURE 11**

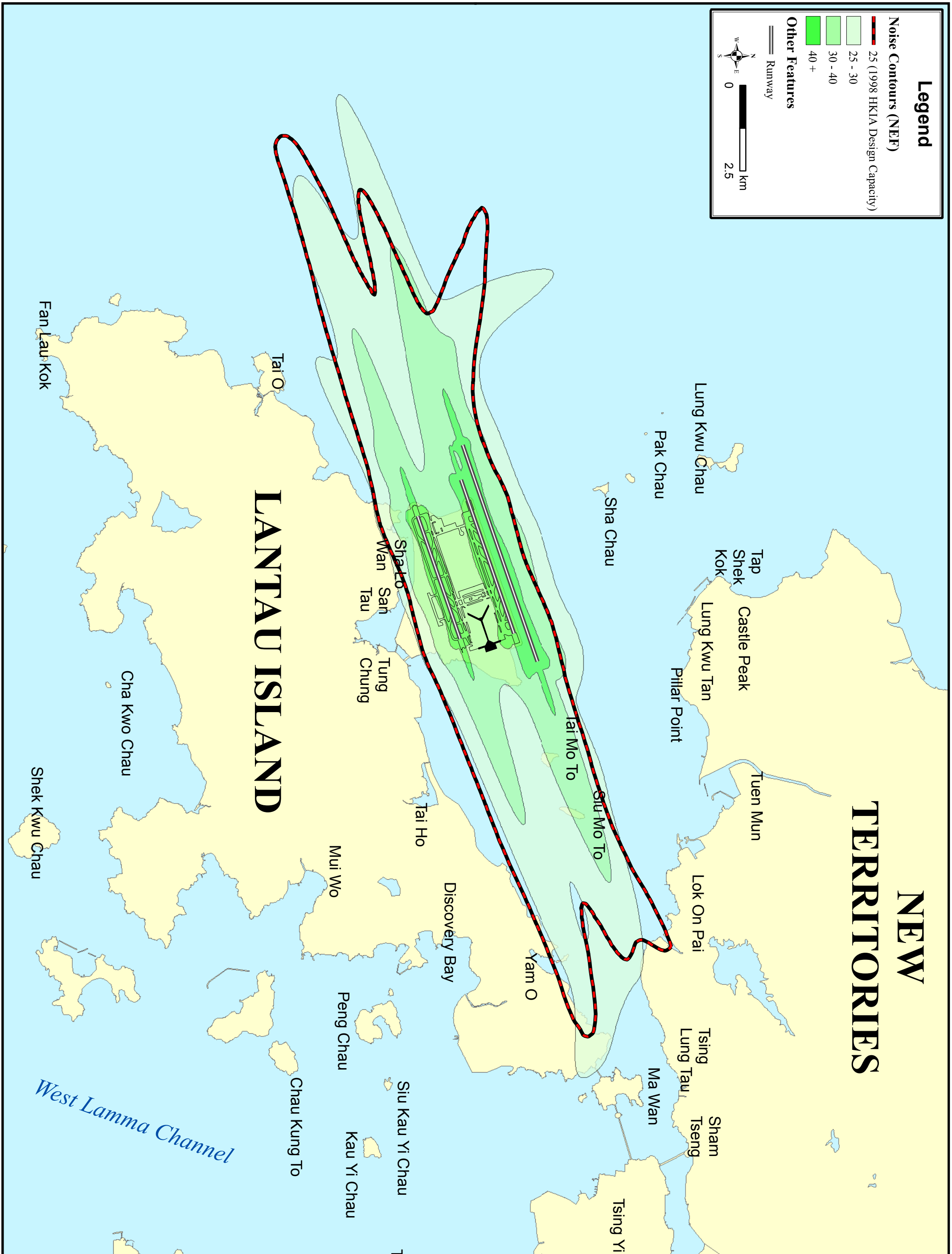
**Comparison of Alternative S Ext D 600,000 ATM to 1998 HKIA Design Capacity Noise Contours**



**Noise Contour Report Update for Third Runway Alternatives**



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**FIGURE 12**

**Comparison of Alternative S Ext D 620,000 ATM to 1998 HKIA Design Capacity Noise Contours**



**Noise Contour Report Update for Third Runway Alternatives**



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# FINAL NOISE CONTOUR REPORT

## APPENDIX A

### NOISE CONTOUR ANALYSIS FOR THIRD RUNWAY ALTERNATIVES

*Hong Kong International Airport*



香港 | HONG KONG  
國際機場 | INTERNATIONAL  
AIRPORT

Prepared by:

**URS**

Prepared for:

*Airport Authority Hong Kong*

December 29, 2010

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# FINAL ASSUMPTIONS REPORT

## NOISE CONTOUR ANALYSIS FOR THIRD RUNWAY ALTERNATIVES

*Hong Kong International Airport*



香港 | HONG KONG  
國際機場 | INTERNATIONAL  
AIRPORT

Prepared by:

**URS**

Prepared for:

*Airport Authority Hong Kong*

September 30, 2010

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**Update of the Final Noise Contour Report:  
Noise Contour Analyses for Third Runway Alternatives (dated September 2009)  
Draft Assumptions Report  
Hong Kong International Airport**

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## Appendix Material

Appendix A	Data Tables for the Year 2030
Appendix B	Data Tables for the Design Capacity Year

**Update of the Final Noise Contour Report:  
Noise Contour Analysis for the Third Runway Alternatives (dated September 2009)  
Draft Assumptions Report  
Hong Kong International Airport**

**A. Objective and Scope of Assumptions Report**

In 2009, URS was commissioned by Airport Authority Hong Kong (Authority) to conduct a preliminary noise contour assessment for the three-runway scenario for various alignment options of the third runway, namely Options P, R and S Extension D.

The purpose of this study is to update the noise contour projections for Options R & S Extension D with revised input assumptions, and to delete Option P in the Noise Contour Report of Noise Contour Analysis for the Third Runway Alternatives dated September 2009 (“Sep09 Report”), and to produce a Final Noise Contour Report for Options R and S Extension D, based on Authority’s consultation outcome with the User Working Group (“UWG”) on Airport Infrastructure and Planning Development.

This Assumptions Report presents the detailed modeling assumptions used by URS Corporation (URS) to develop “baseline” Noise Exposure Forecast (NEF) contours for several third runway alternative scenarios at Hong Kong International Airport (HKIA) based on projected aircraft movements. The URS assumptions are formulated from parameters provided by Airport Authority Hong Kong (AAHK) for this noise study.

URS used the U.S. Federal Aviation Administration’s Integrated Noise Model (INM), version 7.0b, to develop noise contours for this study. To meet the input requirements for INM, the average<sup>1</sup> daily civil and military fixed-wing aircraft movements were disaggregated by direction (for runway use), by market<sup>2</sup> (for stage length), by hour<sup>3</sup> (for day vs. night), and by aircraft type<sup>4</sup> (for INM aircraft type) for the future runway alternative scenarios. The disaggregated data was then aggregated for input into the INM.

The methodology used by URS in preparing the noise contours for the Noise Contour Analysis for the Third Runway Alternatives project is consistent with that used on previous noise analyses, prepared under AAHK Contract E003 and PO 67927. The current exercise is a basic analysis with simplified modeling assumptions. Contours produced under a more detailed analysis may result in differing contour shape and/or size.

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<sup>1</sup> Average of the year, but not the busy day.

<sup>2</sup> Eight markets of previous/next stop: Australasia, Europe, Japan, Mainland China, Others, SE Asia, Taiwan, USA & Canada.

<sup>3</sup> On clock hour basis, and refers to the time for aircraft landing at or taking off from the runway.

<sup>4</sup> Four categories: Large (wide body aircraft such as the B747, B777, A380, and A330); Medium (aircraft such as the B757, B767, and A300), Small (aircraft such as the B737, MD80, and A320), and Military (C-17 and C-130E).

## **B. Methodology**

The development of modeling assumptions required the following key steps:

- Reviewing the parameters provided by AAHK and noise analyses for HKIA conducted by URS under the previous contract.
- Analyzing the 2007 Base Year data provided by AAHK for application to this task.
- Establishing average daily movements of fixed-wing aircraft by aircraft type and by market for the projected Year 2030 (600,000 ATM) and Design Capacity Year (620,000 ATM).
- Aggregating all aircraft movement profiles subject to future assumptions.
- Documenting the assumptions in this Assumptions Report.

## **C. Parameters Provided by Airport Authority Hong Kong and Detailed Modeling Assumptions Used by URS for Noise Contour Analyses for Third Runway Alternatives**

This Section provides a summary of the information provided by AAHK for URS to use in developing the modeling assumptions for the projected Year 2030 and Design Capacity Year on three runways. It also describes the assumptions URS used in modeling the third runway alternative scenarios.

The following scenarios are to be evaluated:

- i. Design Capacity Year for 3 runways of Option R at annual aircraft movements (ATMs) of 620,000;
- ii. Design Capacity Year for 3 runways of Option S Extension D at ATMs of 620,000;
- iii. Revised Year 2030 for Option R at ATMs 600,000 with revised flight tracks and assumptions; and
- iv. Revised Year 2030 for Option S Extension D at ATMs of 600,000 with revised flight tracks and assumptions.

For each of the scenarios identified above, AAHK provided the Consultant with a set of Excel spreadsheets that defined the assumptions. The spreadsheets are identified as follows:

INPUT\_Base\_Year\_Stat.xls  
INPUT\_Stage\_Length.xls  
INPUT\_Demand.xls  
INPUT\_AC\_LIST.xls  
INPUT\_RWY\_DIR.xls  
INPUT\_Flight\_Track\_ARR\_R25.xls  
INPUT\_Flight\_Track\_ARR\_R07.xls  
INPUT\_Flight\_Track\_DEP\_R25.xls  
INPUT\_Flight\_Track\_DEP\_R07.xls

**1. Fleet Mix and Movements.** The Modified Base Year Aircraft Fleet Mix is shown in **Table 1**. AAHK's consultation with the airline industry representatives in the UWG indicated that their existing Chapter 3 (noise standard certified) aircraft fleet would be mostly phased out in twenty years' time. It can be expected that all night-time flight operations at Hong Kong International Airport (HKIA) by then would be flown by future generation aircraft (e.g. B787, A350, B747-8F, B777F) which would be at least as quiet as, if not quieter than, the currently certified Chapter 4 aircraft. In order to reflect the aforesaid trend, all aircraft operations during night-time penalty period will be assumed as B777 or equivalent quiet aircraft type for the purpose of noise contour generation. The Original Base Year Aircraft Fleet Mix provided by AAHK is shown in **Table 2**.

**Table 1  
Modified Base Year Aircraft Fleet Mix Provided by AAHK**

Aircraft Group	IATA Aircraft Type	Market								Grand Total
		Australasia	Europe	Japan	Mainland China	Others	SE Asia	Taiwan	USA Canada	
Large	330	834	8	1,225	6,323	1,560	3,781	5,852		19,583
	332				443	253	156	1,851		2,703
	333	2,600	1	1,715	7,309	2,336	7,846	9,998		31,805
	340		23	1	1	62	11	169	116	383
	342					5				5
	343	944	2,637	275	1,038	544	1,833	1,412	1,928	10,611
	345						8		363	371
	346	607	608	63	349	525	201	172	711	3,236
	380		2			1	1			4
	741			4			29			33
	742			3	15		19	68		105
	743	9		28		88	419			544
	744	1,487	4,744	3,365	77	524	7,228	4,914	4,512	26,851
	747	15	35	597		52	636	1	14	1,350
	772	13	665	704	602	1,382	3,883	1,100	1,107	9,456
	773		4	1,799	154	638	5,893	3,136	20	11,644
	777	3,571	7,916	5,323	8,266	10,927	10,993	5,430	3,943	56,369
	74C			7		17	9			33
	74E		698	1	26	458	21	2,673		3,877
	74F	120	484	516	673	2,991	238	681	380	6,083
	74L					1		1		2
	74T			11	10		14		69	104
	74U	1	2	56	179	276		49	3	566
	74X	12	281	825	278	1,400	240	247	78	3,361
	74Y	82	380	325	136	1,886	441	679	2,340	6,269
	77L			5	11	26	111	89	116	358
	77W		11				9	39	2	61
7F4	7		23	2	83	1	20		136	
D10		22	1	1	54	1			79	
D1C					28				28	
D1F			45	2					47	
D1Y		102	1		1				104	
M11			351		19	7	78	27	482	
M1F	90	241	182	27	1,657	892	601	1,961	5,651	
Medium	310	2		82		377	351		812	
	313			218	2	671	102		993	
	752			1	1,060	90	1		1,152	
	757	1		2	123	108	5		239	
	762				304				304	
	763	561	182	1,394	1,700	54	542		4,435	
	767	5	32	161	199	5	151	1	566	
	31F				1	94	16	1	112	
	31X					90	14		104	
	75F				35		251		286	
	76F			169	43	53		4	9	278
	76Y			114	78	4				196
	AB3					5				5
	AB6				1,077		58	18		1,153
ABF				253	9	116	4		382	

**Table 1 (Continued)**  
**Modified Base Year Aircraft Fleet Mix Provided by AAHK**

Aircraft Group	IATA Aircraft Type	Market								
		Australasia	Europe	Japan	Mainland China	Others	SE Asia	Taiwan	USA Canada	Grand Total
Medium	ABX				57					57
	ABY			8	1	2	375	14		400
Small	100				4			359		363
	319				4,890	8	1,023	2		5,923
	320	1		192	23,674	296	5,531	271		29,965
	321			121	7,175	22	2,061	260		9,639
	712						244			244
	717						239			239
	732				3		4			7
	733				3,715		2			3,717
	734					8	738	2		748
	735				146		1			147
	736				4					4
	737		1	3	334	1	10		4	353
	738			411	14,410	1,340	1,849	1,662	76	19,748
	739					20				20
	72F						57		2	59
	73F				13					13
	73G				3,159					3,159
	BBJ		4	1			9	1		15
	BE2				7			11		18
	CCJ	4	2	11	107	26	71	11	5	237
	CD2						1			1
	CL6				6					6
	CNJ	2	1	12	50	2	58	3	11	139
	CR2				7					7
	CR7				63			1		64
	CRJ	1			11	1	1			14
	DF2	2	3	8	26	10	10	3	1	63
	DF3	31	15	27	101	46	30	5	2	257
	E17		1		61		6	22		90
	E19				2			594		596
	E70				400	1	76	268		745
	EM4				4					4
	EMB						2			2
ER4				20					20	
ERJ				14	1	13			28	
G4				2					2	
GLE		2	8	14	1	11	3	2	41	
GRJ	60	76	171	593	107	232	96	57	1,392	
H25	1		1	157		17		1	177	
LRJ			4	8	4	30	1	1	48	
M81				1			1	5	7	
M82				606		484			1,090	
M87			1			1			2	
M90				1,522			196		1,718	
XXX	8	14	30	239	20	99	23	10	443	
Military	777	2				2			4	
	73G			2			2		4	
	C17			1			1		2	
	ERJ					1	1		2	
	XXX	1		2	1	1	6	1	12	
<b>Grand Total</b>		<b>11,074</b>	<b>19,607</b>	<b>20,223</b>	<b>92,396</b>	<b>31,304</b>	<b>59,932</b>	<b>42,967</b>	<b>17,863</b>	<b>295,366</b>

Source: INPUT\_Base\_Year\_Stats.xls, AAHK, 2010.

**Table 2**  
**Original Base Year Aircraft Fleet Mix Provided by AAHK**

Aircraft Group	IATA Aircraft Type	Market								Total
		Australasia	Europe	Japan	Mainland China	Others	SE Asia	Taiwan	USA & Canada	
Large	330	1,480	15	1,263	6,858	2,365	4,444	6,791	0	23,216
	332	0	0	1	446	536	233	1,992	0	3,208
	333	3,954	1	1,744	7,871	3,076	9,300	11,197	0	37,143
	340	0	44	1	1	66	12	173	118	415
	342	0	0	0	0	8	0	0	0	8
	343	1,030	4,357	276	1,084	866	1,963	1,524	2,288	13,388
	345	0	0	0	0	0	8	0	370	378
	346	731	972	63	360	899	204	188	728	4,145
	380	0	2	0	0	1	1	0	0	4
	741	0	0	7	0	1	32	0	0	40
	742	0	4	41	1	29	78	0	1	154
	743	17	0	38	0	103	463	0	0	621
	744	2,170	8,440	3,936	91	966	7,663	5,030	6,607	34,903
	747	33	40	765	1	80	793	1	14	1,727
	772	25	954	859	622	1,583	4,740	1,205	1,123	11,111
	773	0	8	1,842	158	782	6,748	3,343	24	12,905
	777	0	196	80	0	205	364	226	76	1,147
	74F	188	968	1,130	1,299	4,342	335	1,146	515	9,923
	74L	0	0	0	0	1	0	2	1	4
	74T	0	61	27	0	16	1	0	81	186
	74U	1	3	198	268	406	0	110	4	990
	74X	55	381	1,388	652	2,239	292	285	112	5,404
	74Y	194	692	447	274	2,922	791	1,256	3,194	9,770
	77L	0	0	7	11	32	119	100	116	385
	77W	0	20	0	0	0	18	40	2	80
	7F4	10	0	23	2	112	1	40	0	188
D10	0	36	1	1	84	1	0	0	123	
D1C	0	0	0	0	76	0	0	0	76	
D1F	0	68	2	0	0	0	0	0	70	
D1Y	0	170	2	0	6	0	0	0	178	
M11	0	356	0	183	10	112	36	0	697	
M1F	92	510	309	127	2,839	2,249	1,140	2,112	9,378	
Medium	310	2	0	90	1	449	352	0	0	894
	313	0	0	230	2	782	148	0	0	1,162
	752	0	0	1	1,098	108	1	0	0	1,208
	757	1	0	3	225	127	5	0	0	361
	762	0	0	0	312	0	0	0	0	312
	763	948	368	1,737	1,724	161	679	0	2	5,619
	767	5	52	194	202	5	186	1	15	660
	31F	0	1	0	1	96	140	1	0	239
	31X	0	0	0	0	94	138	0	0	232
	75F	0	0	0	383	0	270	0	0	653
	76F	0	0	766	44	155	3	39	13	1,020
	76Y	0	0	114	80	163	0	1	0	358
	AB3	0	0	0	0	13	0	0	0	13
	AB6	0	0	0	1,452	0	118	20	0	1,590
	ABF	1	0	220	548	84	309	73	0	1,235
	ABX	0	0	0	120	1	0	0	0	121
	ABY	0	0	1,296	430	442	1,207	390	0	3,765
Small	100	0	0	0	4	0	0	360	0	364
	319	0	0	0	4,926	10	1,902	2	0	6,840
	320	1	0	198	24,892	501	5,926	305	0	31,823
	321	0	0	122	8,045	40	2,232	274	0	10,713
	712	0	0	0	0	0	244	0	0	244
	717	0	0	0	0	0	241	0	0	241
	732	0	0	0	4	0	4	0	0	8
	733	0	0	0	3,740	0	2	0	0	3,742
	734	0	0	0	0	20	746	2	0	768
	735	0	0	0	151	0	1	0	0	152
	736	0	0	0	4	0	0	0	0	4
	737	0	3	3	341	2	11	0	4	364
	738	0	0	464	15,259	1,650	2,054	1,702	214	21,343
	739	0	0	0	0	72	0	0	0	72
	72F	0	0	0	187	0	656	0	4	847
	73F	0	0	0	342	0	0	0	0	342
	73G	0	0	0	3,216	0	0	0	0	3,216
74C	0	0	12	0	30	32	0	0	74	
74E	0	728	1	26	1,348	44	2,722	0	4,869	

**Table 2 (Continued)**  
**Original Base Year Aircraft Fleet Mix Provided by AAHK**

Aircraft Group	IATA Aircraft Type	Market								Total
		Australasia	Europe	Japan	Mainland China	Others	SE Asia	Taiwan	USA & Canada	
Small	BBJ	0	4	1	1	13	1	1	0	21
	BE2	0	0	0	10	0	14	0	0	24
	CCJ	6	3	16	117	34	77	11	5	269
	CD2	0	0	0	0	0	1	0	0	1
	CL6	0	0	0	6	0	0	0	0	6
	CNJ	2	1	13	57	7	68	3	11	162
	CR2	0	0	0	7	0	0	0	0	7
	CR7	0	0	0	64	0	0	1	0	65
	CRJ	1	0	0	11	1	1	0	0	14
	DF2	2	3	8	27	12	12	3	1	68
	DF3	32	17	30	105	57	32	5	4	282
	E17	0	1	0	80	0	6	22	0	109
	E19	0	0	0	2	0	0	594	0	596
	E70	0	0	0	479	1	76	268	0	824
	EM4	0	0	0	4	0	0	0	0	4
	EMB	0	1	0	0	0	2	0	0	3
	EMJ	0	0	0	0	0	1	0	0	1
	ER4	0	0	0	20	0	0	0	0	20
	ERJ	0	0	1	14	1	18	0	0	34
	G4	0	0	0	2	0	0	0	0	2
	GLE	2	2	8	15	5	11	4	2	49
	GRJ	79	110	199	674	137	271	113	83	1,666
	H25	1	0	2	226	1	19	0	1	250
LRJ	0	0	4	11	5	32	1	1	54	
M81	0	0	0	1	0	0	1	6	8	
M82	0	0	0	606	0	553	0	0	1,159	
M87	0	0	1	0	0	1	0	0	2	
M90	0	0	0	1,536	0	0	196	0	1,732	
XXX	8	15	34	251	22	110	26	11	477	
Military	73G	0	0	2	0	0	2	0	0	4
	C17	0	0	1	0	0	1	0	0	2
	ERJ	0	0	0	0	1	1	0	0	2
	XXX	3	0	2	1	3	6	1	0	16
<b>Grand Total</b>		<b>11,074</b>	<b>19,607</b>	<b>20,223</b>	<b>92,396</b>	<b>31,304</b>	<b>59,932</b>	<b>42,967</b>	<b>17,863</b>	<b>295,366</b>

Source: Final Assumptions Report (Revised), *Preliminary Noise Contour Analysis for Third Runway Alternatives*, January 2009.

The Air Traffic Movement (ATM) forecasts for the Year 2030 and the Design Capacity Year, provided by AAHK, are shown in **Table 3**. The Modified Base Year Aircraft Fleet Mix shown in **Table 1** and the Air Traffic Movement (ATM) forecasts shown **Table 3** were used as the basis to scale up to the forecasted movements for the modeled scenarios.

Annual movements for Year 2030 are detailed in **Appendix A, Tables A-1 through A-8**; and for the Design Capacity Year in **Appendix B, Tables B-1 through B-8**. It should be noted that the data in these tables are formatted for presentation as whole numbers, and the total number of movements among each aircraft type may not add. This is due to rounding movements to whole numbers; however, the actual movements modeled are input to the hundred-thousandth and do not have this rounding error.

**Table 3  
Movements by Aircraft Category and Market Provided by AAHK**

Aircraft Category	Market								Total
	Europe	Japan	Mainland China	SE Asia	Taiwan	USA & Canada	Australasia	Others	
<b>Year 2030</b>									
Large	51,242	26,960	49,063	68,913	61,770	38,812	20,395	42,860	<b>360,014</b>
Medium	75	6,988	12,693	3,327	991	1,089	888	6,014	<b>32,065</b>
Small	300	1,862	166,244	26,052	5,988	196	217	6,944	<b>207,804</b>
Military	0	24	5	49	5	0	15	20	<b>117</b>
<b>Total ATM</b>	<b>51,617</b>	<b>35,834</b>	<b>228,004</b>	<b>98,341</b>	<b>68,754</b>	<b>40,098</b>	<b>21,515</b>	<b>55,838</b>	<b>600,000</b>
<b>Design Capacity Year</b>									
Large	52,950	27,858	50,698	71,211	63,829	40,106	21,075	44,288	<b>372,014</b>
Medium	77	7,221	13,116	3,437	1,024	1,126	917	6,214	<b>33,133</b>
Small	310	1,924	171,785	26,921	6,188	203	225	7,176	<b>214,731</b>
Military	0	25	5	50	5	0	15	20	<b>121</b>
<b>Total ATM</b>	<b>53,337</b>	<b>37,028</b>	<b>235,604</b>	<b>101,619</b>	<b>71,046</b>	<b>41,434</b>	<b>22,232</b>	<b>57,699</b>	<b>620,000</b>

Source: INPUT\_Demand.xls for 600,000 ATM and INPUT\_Demand.xls for 620,000 ATM, AAHK, 2010.

**2. Time of Day.** The 24-hour day is comprised of the seven time periods described in **Table 4**, which were defined and provided by AAHK.

The Base Year aircraft movements provided by AAHK in INPUT\_Base\_Year\_stat.xls were aggregated into the seven time periods, and the results are shown in **Table 5**.

**Table 4  
Daytime and Nighttime Periods Provided by AAHK**

Description	24-hour clock time period	12-hour clock time period
Day 1	0700 until 0759	7:00 a.m. until 7:59 a.m.
Day 2	0800 until 2159	8:00 a.m. until 9:59 p.m.
Night 1	2200 until 2259	10:00 p.m. until 10:59 p.m.
Night 2	2300 until 2359	11:00 p.m. until 11:59 p.m.
Night 3	0000 until 0059	12:00 a.m. until 12:59 a.m.
Night 4	0100 until 0459	1:00 a.m. until 4:59 a.m.
Night 5	0500 until 0659	5:00 a.m. until 6:59 a.m.

Source: AAHK, 2010.

**Table 5  
Movements by Aircraft Category and Time of Day**

Aircraft Group	IATA Aircraft	Arrivals							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	1.02%	98.98%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	332	0.07%	99.93%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	333	1.66%	98.34%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	340	0.49%	99.51%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	342	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	343	10.44%	89.56%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	345	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	346	2.24%	97.76%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	380	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	741	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	742	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	743	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	744	10.59%	89.41%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	747	1.78%	98.22%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	772	3.16%	96.84%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	773	0.53%	99.47%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	777	0.06%	1.83%	33.80%	12.76%	13.60%	16.06%	21.89%	100.00%
	74C	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74E	0.40%	99.60%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74F	6.52%	93.48%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74L	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74T	1.35%	98.65%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74U	8.23%	91.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74X	7.87%	92.13%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74Y	6.72%	93.28%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77L	0.56%	99.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77W	2.70%	97.30%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	7F4	4.05%	95.95%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	D10	2.33%	97.67%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	D1C	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
D1F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
D1Y	1.49%	98.51%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M11	46.27%	53.73%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M1F	2.10%	97.90%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Medium	310	18.59%	81.41%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	313	22.20%	77.80%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	752	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	757	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	762	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	763	0.22%	99.78%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	767	1.06%	98.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31F	57.14%	42.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31X	60.00%	40.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	75F	1.54%	98.46%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76F	5.17%	94.83%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76Y	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	AB3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	AB6	1.72%	98.28%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABF	3.70%	96.30%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
ABX	4.26%	95.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
ABY	0.51%	99.49%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	

**Table 5 (Continued)**  
**Movements by Aircraft Category and Time of Day**

Aircraft Group	IATA Aircraft	Arrivals							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Small	100	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	319	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	320	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	321	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	712	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	717	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	732	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	733	0.05%	99.95%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	734	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	735	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	736	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	737	0.56%	99.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	738	0.06%	99.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	739	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	72F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73F	20.00%	80.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BBJ	28.57%	71.43%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BE2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CCJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CD2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	CL6	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CNJ	6.15%	93.85%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR7	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CRJ	14.29%	85.71%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF2	3.23%	96.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF3	0.75%	99.25%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E19	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E70	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EM4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EMB	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
ER4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
ERJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
G4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
GLE	5.26%	94.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
GRJ	2.26%	97.74%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
H25	5.56%	94.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
LRJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M81	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M82	2.87%	97.13%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M87	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M90	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
XXX	1.44%	98.56%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Military	777	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	C17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ERJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	XXX	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

**Table 5 (Continued)**  
**Movements by Aircraft Category and Time of Day**

Aircraft Group	IATA Aircraft	Departures							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	0.55%	99.45%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	332	0.25%	99.75%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	333	0.08%	99.92%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	340	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	342	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	343	0.04%	99.96%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	345	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	346	0.23%	99.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	380	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	741	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	742	1.82%	98.18%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	743	1.06%	98.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	744	1.02%	98.98%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	747	2.03%	97.97%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	772	0.14%	99.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	773	0.13%	99.87%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	777	0.00%	1.41%	18.37%	16.89%	26.55%	31.56%	5.23%	100.00%
	74C	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74E	0.37%	99.63%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74F	6.71%	93.29%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74L	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	74T	26.67%	73.33%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74U	17.23%	82.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74X	7.64%	92.36%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	74Y	4.60%	95.40%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77L	0.56%	99.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	77W	4.17%	95.83%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	7F4	8.06%	91.94%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
D10	8.33%	91.67%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
D1C	8.33%	91.67%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
D1F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
D1Y	5.41%	94.59%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M11	3.08%	96.92%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M1F	8.22%	91.78%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Medium	310	4.88%	95.12%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	313	5.68%	94.32%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	752	0.18%	99.82%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	757	1.68%	98.32%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	762	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	763	0.14%	99.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	767	0.35%	99.65%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	31X	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	75F	2.56%	97.44%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76F	15.43%	84.57%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	76Y	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	AB3	40.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	AB6	0.52%	99.48%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ABF	2.07%	97.93%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
ABX	10.00%	90.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
ABY	0.98%	99.02%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	

**Table 5 (Continued)**  
**Movements by Aircraft Category and Time of Day**

Aircraft Group	IATA Aircraft	Departures							
		Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Small	100	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	319	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	320	0.18%	99.82%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	321	0.09%	99.91%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	712	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	717	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	732	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	733	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	734	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	735	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	736	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	737	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	738	0.37%	99.63%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	739	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	72F	70.83%	29.17%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73F	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BBJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	BE2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CCJ	2.52%	97.48%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CD2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CL6	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CNJ	8.11%	91.89%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR2	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CR7	3.13%	96.88%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	CRJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF2	3.13%	96.88%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	DF3	4.07%	95.93%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E19	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	E70	2.92%	97.08%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EM4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	EMB	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ER4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ERJ	7.14%	92.86%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	G4	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	GLE	9.09%	90.91%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	GRJ	5.23%	94.77%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	H25	6.90%	93.10%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	LRJ	4.00%	96.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
M81	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M82	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M87	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
M90	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
XXX	6.84%	93.16%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Military	777	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
	73G	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	C17	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	ERJ	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	XXX	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

Sources: INPUT\_Base\_Year\_Stat.xls provided by AAHK  
URS Corp., 2010.

**3. INM Aircraft Type Substitution.** The aircraft provided by AAHK in **Table 1** were compared to the INM aircraft type substitution list, which is detailed by aircraft group, and is provided in **Table 6**. The INM aircraft database contains actual noise and performance data for 273 types of aircraft. Although the INM aircraft database provides a large selection of aircraft to model, it does not contain every known aircraft. For this reason, the FAA has developed an official aircraft substitution list, containing 260 types of aircraft, which allows the modeler to substitute similar aircraft when necessary for modeling purposes. These substitutions represent a very close estimate of the noise produced by the actual aircraft.

FAA recommended substitutions were used unless other information was available. For example, the A340 was substituted for the A380 based on the manufacturer's recommendation.

**Table 6  
INM Aircraft Type Substitution List**

HKIA Aircraft				INM Aircraft Modeled		
Aircraft Group	IATA Aircraft Type	Aircraft Description	ICAO Noise Chapter	INM Aircraft Type	Max Stage Length	ICAO Noise Chapter
Large	330	Airbus Industrie A330	3-4	A330-343	7	3-4
	332	Airbus Industrie A330-200	3-4	A330-343	7	3-4
	333	Airbus Industrie A330	3-4	A330-343	7	3-4
	340	Airbus Industrie A340	3-4	A340-211	7	3-4
	342	Airbus Industrie A340-200	3-4	A340-211	7	3-4
	343	Airbus Industrie A340-300	3-4	A340-211	7	3-4
	345	Airbus Industrie A340-500	4	A340-211	7	3-4
	346	Airbus Industrie A340-600	4	A340-211	7	3-4
	380	Airbus Industrie A380	4	A340-211	7	3-4
	741	Boeing 747-100 Passenger	3	74710Q	6	3
	742	Boeing 747-200 Passenger	3	747200	7	3
	743	Boeing 747-300 Passenger	3	74720B	7	3
	744	Boeing 747-400 Passenger	3	747400	9	3
	747	Boeing 747	3	747400	9	3
	772	Boeing 777-200	3-4	777200	9	3-4
	773	Boeing 777-300	3-4	777300	7	3-4
	777	Boeing 777	3-4	777200	9	3-4
	74F	Boeing 747 Full-Freighter	3	747400	9	3
	74L	Boeing 747SP	3	747SP	7	3
	74T	Boeing 747 Freighter	3	747200	7	3
	74U	Boeing 747	3	747200	7	3
	74X	Boeing 747-100/200 Freighter	3	747200	7	3
	74Y	Boeing 747-400 Freighter	3	747400	9	3
	77L	Boeing 777	3-4	777200	9	3-4
	77W	Boeing 777	3-4	777200	9	3-4
	7F4	Boeing 747-400 Freighter	3	747400	9	3
	D10	McDonnell Douglas DC-10-10/15	*	DC1010	6	*
	D1C	McDonnell Douglas DC-10-30 Passenger	*	DC1030	7	*
	D1F	McDonnell Douglas DC-10 Freighter	*	DC1010	6	*
	D1Y	DC Freighter	*	DC1010	6	*
M11	McDonnell Douglas MD-11 Passenger	*	MD11PW	7	*	
M1F	McDonnell Douglas MD-11 Freighter	*	MD11PW	7	*	

**Table 6 (Continued)**  
**INM Aircraft Type Substitution List**

HKIA Aircraft				INM Aircraft Modeled		
Aircraft Group	IATA Aircraft Type	Aircraft Description	ICAO Noise Chapter	INM Aircraft Type	Max Stage Length	ICAO Noise Chapter
Medium	310	Airbus Industrie A310	3-4	A310-304	6	3-4
	313	Airbus Industrie A310-300	3-4	A310-304	6	3-4
	752	Boeing 757 Passenger	3-4	757RR	7	3-4
	757	Boeing 757	3-4	757RR	7	3-4
	762	Boeing 767-200 Passenger	3	767CF6	7	3
	763	Boeing 767-300 Passenger	3	767300	7	3
	767	Boeing 767	3	767300	7	3
	31F	Airbus Industrie A310 Freighter	3-4	A310-304	6	3-4
	31X	Airbus 310	3-4	A310-304	6	3-4
	75F	Boeing 757 Freighter	3-4	757RR	7	3-4
	76F	Boeing 767 Freighter	3	767300	7	3
	76Y	Boeing 767 Freighter	3	767300	7	3
	AB3	Airbus Industrie A300	3-4	A300-622R	6	3-4
	AB6	Airbus Industrie A300-600 Passenger	3-4	A300-622R	6	3-4
	ABF	Airbus Industrie A300C4/F4/A300-600 Freighter	3-4	A300-622R	6	3-4
	ABX	Airbus Industrie A300 Freighter	3-4	A300-622R	6	3-4
ABY	Airbus Industrie A300 Freighter	3-4	A300-622R	6	3-4	
Small	100	Fokker 100	*	F10062	3	*
	319	Airbus Industrie A319	3-4	A319-131	5	3-4
	320	Airbus Industrie A320	3-4	A320-232	5	3-4
	321	Airbus Industrie A321	3-4	A321-232	5	3-4
	712	Boeing 717-200	3	717200	6	3
	717	Boeing 717-200	3	717200	6	3
	732	Boeing 737-200 Passenger	*	737N17	4	*
	733	Boeing 737-300 Passenger	3	737300	4	3
	734	Boeing 737-400	3	737400	5	3
	735	Boeing 737-500	3	737500	6	3
	736	Boeing 737-600	3-4	737700	6	3-4
	737	Boeing 737	3-4	737300	4	3
	738	Boeing 737-800	3-4	737800	6	3-4
	739	Boeing 737-900	3-4	737800	6	3-4
	72F	Boeing 727 Freighter	*	727EM2	5	*
	73F	Boeing 737	3-4	737300	4	3
	73G	Boeing 737-700	3-4	737700	6	3-4
	74C	Boeing 747-200 Mixed Configuration	3	747200	7	3
	74E	Boeing 747-400 Mixed Configuration	3	747400	9	3
	BBJ	Boeing Business Jet	3-4	737700	6	3-4
	BE2	Beechcraft (Light aircraft - twin piston engines)	*	BEC58P	1	*
	CCJ	Canadair Challenger	*	CL601	1	*
	CD2	Government Aircraft Factories N22B/N24A Nomad	*	C*441	1	*
	CL6	Cessna (Light Aircraft)	*	C*206	1	*
	CNJ	Cessna Citation	3	C*750	1	3
	CR2	Canadair Regional Jet 200	*	CL601	1	*
	CR7	Canadair Regional Jet 700	*	GV	1	3
CRJ	Canadair Regional Jet	*	CL601	1	*	
DF2	Dassault (Breguet Mystere) Falcon 10/20/200/2000	3-4	FAL20	1	3	
DF3	Dassault (Breguet Mystere) Falcon 50/900	3-4	LEAR35	1	3	

**Table 6 (Continued)**  
**INM Aircraft Type Substitution List**

HKIA Aircraft				INM Aircraft Modeled		
Aircraft Group	IATA Aircraft Type	Aircraft Description	ICAO Noise Chapter	INM Aircraft Type	Max Stage Length	ICAO Noise Chapter
Small	E17	Embraer EMB-170	3	GV	1	3
	E19	Embraer EMB-190	3	GV	1	3
	E70	Embraer EMB-170	3	GV	1	3
	EM4	Embraer EMB-145	3	EMB145	4	3
	EMB	Embraer EMB-110 Bandeirante	*	DHC6	1	*
	EMJ	Embraer 170/190	3	GV	1	3
	ER4	Embraer EMB-145	3	EMB145	4	3
	ERJ	Embraer 135/140/145	3	EMB145	4	3
	G4	Grumman 4 Seater	*	GASEPF	1	*
	GLE	Global Express	*	GV	1	3
	GRJ	Gulfstream Aerospace G-1159 Gulfstream II/III/V	*	GV	1	3
	H25	British Aerospace (Hawker Siddeley) 125	*	LEAR25	1	*
	LRJ	Learjet	*	LEAR35	1	3
	M81	McDonnell Douglas MD-81	*	MD81	4	*
	M82	McDonnell Douglas MD-82	*	MD82	5	*
	M87	McDonnell Douglas MD-87	*	MD81	4	*
M90	McDonnell Douglas MD-90	*	MD9025	5	*	
XXX	OTHERS	*	737300	4	3	
Military	73G	Boeing 737-700	3-4	737300	4	3
	777	Boeing 777	3-4	777200	9	3-4
	C17	Boeing C17 Globemaster 3	*	C17	1	*
	ERJ	Embraer 135/140/145	3	EMB14L	6	3
	XXX	OTHERS	*	C-130E	1	*

Sources: INPUT\_Base\_Year\_Stat.xls and INPUT\_AC\_LIST.xls provided by AAHK, URS Corp., 2008 & 2010.

Note: Some aircraft list a range for ICAO Noise Chapter because the noise chapter varies by engine type. Detailed data on engine types in use at HKIA is not available for this study.  
\* Indicates ICAO Noise Chapter is not available from ICAO sources.

**4. Stage Length.** INM departure stage length was based on the Base Year data, provided by AAHK. INM version 7.0b, used for this study, provides a maximum of 9 stage lengths (**Table 7**). INM Stage Length by market is provided in **Table 8**. An examination of the stage lengths in each market was completed for this analysis. Not all aircraft have all departure stage lengths available; therefore, when a stage length isn't available, the movements are assigned to the highest stage length available, which are shown in **Table 6**.

**Table 7  
INM Version 7.0 Departure Stage Lengths**

Stage Length Distances in Nautical Miles	
Stage #	Distance
1	0-500
2	501-1,000
3	1,001-1,500
4	1,501-2,500
5	2,501-3,500
6	3,501-4,500
7	4,501-5,500
8	5,501-6,500
9	> 6,500

Source: FAA INM v. 7 User's Guide, 2007.

**Table 8  
INM Stage Length Utilization by Market as Provided by AAHK**

Market	Stage Length									Total
	1	2	3	4	5	6	7	8	9	
Europe	0.00%	0.00%	0.00%	1.13%	0.14%	8.21%	90.52%	0.00%	0.00%	100.0%
Japan	0.00%	2.41%	44.50%	53.09%	0.00%	0.00%	0.00%	0.00%	0.00%	100.0%
Mainland China	23.13%	58.30%	18.50%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	100.0%
SE Asia	4.40%	43.70%	43.00%	7.30%	0.00%	0.00%	0.00%	1.60%	0.00%	100.0%
Taiwan	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.0%
USA Canada	0.00%	0.00%	0.00%	0.00%	0.00%	0.66%	0.05%	40.51%	58.78%	100.0%
Australasia	0.00%	0.00%	0.00%	0.66%	10.44%	74.48%	14.42%	0.00%	0.00%	100.0%
Others	0.00%	0.00%	41.66%	23.95%	21.93%	6.49%	1.31%	4.66%	0.00%	100.0%

Source: INPUT\_Stage\_Length.xls provided by AAHK.

**5. Runway End Points.** Runway end coordinates, width and elevation for the runway alternatives were assumed to be consistent with data used in previous noise studies (Table 9).

**Table 9  
Runway Information**

Existing Runway Information					
Runway	Latitude	Longitude	Width	Length	Elevation
07R	22° 17' 46.3"	113° 53' 52.0"	60m	3,800m	8.5m
25L	22° 18' 26.7"	113° 55' 58.0"	60m	3,800m	8.2m
07L*	22° 18' 37.4"	113° 53' 46.0"	60m	3,800m	6.7m
25R*	22° 19' 17.8"	113° 55' 52.0"	60m	3,800m	7.0m
Alternative Runway Assumptions					
Runway Alternative	Latitude	Longitude	Width	Length	Elevation
07 Alt R	22° 19' 09.1"	113° 52' 42.3"	60m	3,800m	6.7m
25 Alt R	22° 19' 49.6"	113° 54' 47.8"	60m	3,800m	6.7m
07 Alt S Ext D	22° 18' 29.0"	113° 52' 40.2"	60m	6,689m	6.7m
25 Alt S Ext D	22° 19' 40.2"	113° 56' 21.2"	60m	6,689m	6.7m

Source: URS Corp., 2008.

\*The existing Runway 07L/25R will be extended to the west by 950m in Alternative S Ext D. The length would then be 4,750m.

**6. Runway Utilization.** Projected runway flow percentages were provided by AAHK as shown in **Table 10**. This alternate Runway 07/25 usage was adopted so that the majority of the night-time period flights can land and take-off over water at the western end of the airport to minimize overflying residential areas in the vicinity of HKIA, taking into account the imbalanced demand distribution pattern of aircraft arrivals and departures during the night-time period (23:00 to 06:59). The updated primary mode of operation assumptions for the three-runway scenario is provided in **Table 11**.

**Table 10**  
**Runway Split (07/25) Provided by AAHK**

<b>Runway Utilization 7:00 A.M. to 10:59 P.M.</b>		
<b>Runway End</b>	<b>Arrivals</b>	<b>Departures</b>
07	60%	60%
25	40%	40%
<b>Runway Utilization 11:00 P.M. to 4:59 A.M.</b>		
<b>Runway End</b>	<b>Arrivals</b>	<b>Departures</b>
07	10%	10%
25	90%	90%
<b>Runway Utilization 5:00 A.M. to 6:59 A.M.</b>		
<b>Runway End</b>	<b>Arrivals</b>	<b>Departures</b>
07	90%	90%
25	10%	10%

Source: INPUT\_RWY\_DIR.xls AAHK, 2010.

**Table 11**  
**Runway Mode of Operation Provided by AAHK**

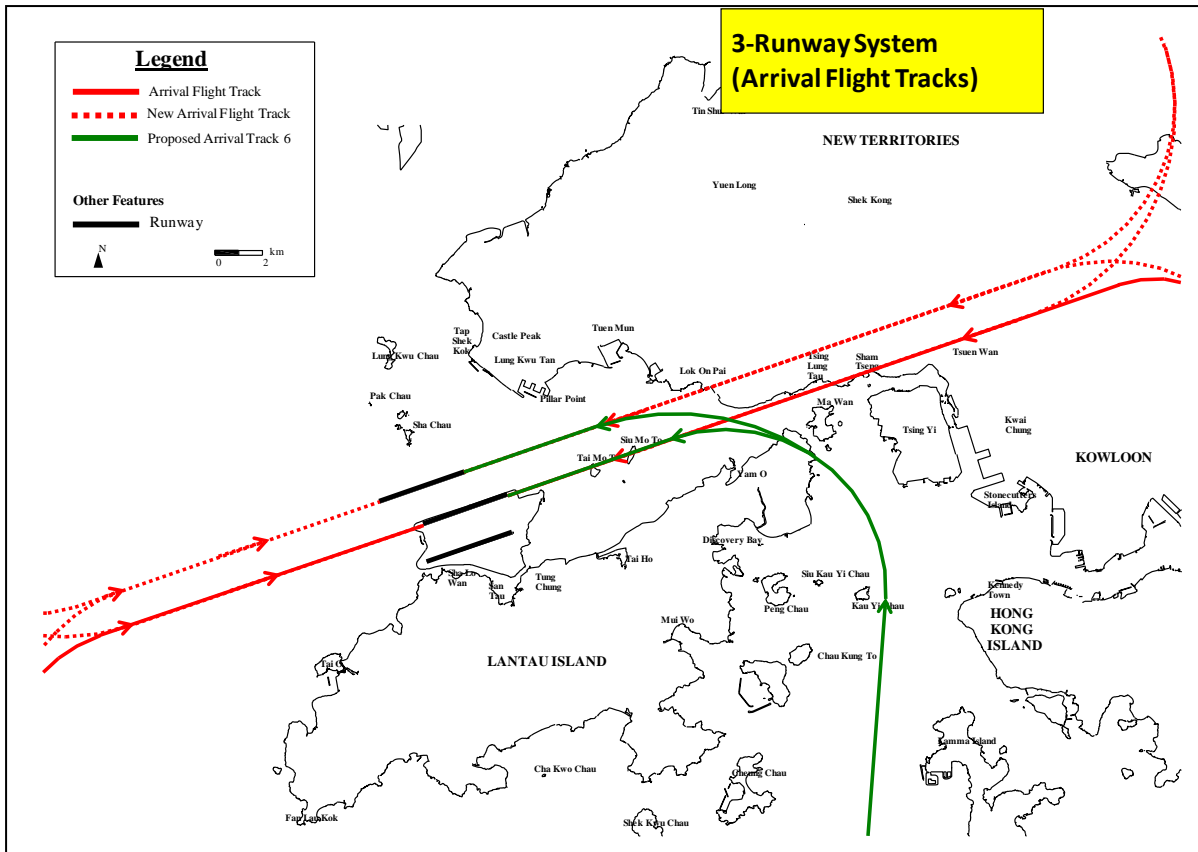
<b>Runway 07 Direction</b>	
<b>Runway</b>	<b>Use</b>
07L	Arrivals
07C	Departures
07R	Mixed
<b>Runway 25 Direction</b>	
<b>Runway</b>	<b>Use</b>
25R	Arrivals
25C	Departures
25L	Mixed

Source: AAHK, 2010.

**7. Flight Tracks and Flight Track Utilization.** A new arrival flight track (Track 6) has been added in the Runway 25 direction for use between 23:00 and 06:59. This track was added in order to minimize aircraft arrivals in the 25 direction to overfly populated residential areas, in line with Civil Aviation Department's (CAD's) existing noise mitigation measures requirements. Track 6 was provided by AAHK and is shown in **Figure 1**.

The flight tracks used in the INM model for Alternatives R, and S Ext D can be seen on **Figures 2** through **15**. Flight track utilization for arrivals and departures is provided in **Tables 12** and **13**.

**Figure 1**  
**New Arrival Track Provided by AAHK**



Source: AAHK, 2010

**Table 12  
Arrival Flight Track Utilization  
By Time Period**

Region/Market	Countries	Day 1 - 7:00 a.m. to 7:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		100%	
Japan			100%		100%		
Mainland China		4%		96%			
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			100%		
Taiwan			100%		100%		
USA / Canada			100%		100%		
Australasia	Australia	100%			100%		
Others	Others, Middle East, Korea	21%	69%	10%	90%	10%	
Region/Market	Countries	Day 2 - 8:00 a.m. to 21:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		100%	
Japan			100%		100%		
Mainland China		4%		96%	4%	96%	
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			100%		
Taiwan			100%		100%		
USA / Canada			100%		100%		
Australasia	Australia	100%			100%		
Others	Others, Middle East, Korea	21%	69%	10%	90%	10%	
Region/Market	Countries	Night 1 - 22:00 a.m. to 22:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		100%	
Japan			100%		100%		
Mainland China		4%		96%	4%	96%	
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			100%		
Taiwan			100%		100%		
USA / Canada			100%		100%		
Australasia	Australia	100%			100%		
Others	Others, Middle East, Korea	21%	69%	10%	90%	10%	

**Table 12 (Continued)**  
**Arrival Flight Track Utilization**  
**By Time Period**

Region/Market	Countries	Night 2 - 23:00 a.m. to 23:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.20%	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%
Region/Market	Countries	Night 3 - 00:00 a.m. to 00:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.20%	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%
Region/Market	Countries	Night 4 - 01:00 a.m. to 04:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.2%	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%

**Table 12 (Continued)**  
**Arrival Flight Track Utilization**  
**By Time Period**

Region/Market	Countries	Night 5 - 05:00 a.m. to 06:59 p.m.					
		Runway 07			Runway 25		
		1	2	3	4	5	6
Europe				100%		20%	80%
Japan			100%		20%		80%
Mainland China		4%		96%	0.8%	19.20	80%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines	100%			20%		80%
Taiwan			100%		20%		80%
USA / Canada			100%		20%		80%
Australasia	Australia	100%			20%		80%
Others	Others, Middle East, Korea	21%	69%	10%	18%	2%	80%

Sources – AAHK & URS Corp., 2010.

**Table 13**  
**Departure Flight Track Utilization**  
**By Time Period**

Region/Market	Countries	Day 1 - 7:00 a.m. to 7:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe		100%				100%
Japan		100%			100%	
Mainland China		92.5%	7.5%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan		100%			100%	
USA / Canada		100%			100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea	76%	24%		90%	10%

**Table 13 (Continued)**  
**Departure Flight Track Utilization**  
**By Time Period**

Region/Market	Countries	Day 2 - 8:00 a.m. to 21:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe				100%		100%
Japan		100%			100%	
Mainland China			7.5%	92.5%	7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan		100%			100%	
USA / Canada		100%			100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea	66%	24%	10%	90%	10%
Region/Market	Countries	Night 1 - 22:00 a.m. to 22:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe				100%		100%
Japan		100%			100%	
Mainland China			7.5%	92.5%	7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan		100%			100%	
USA / Canada		100%			100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea	66%	24%	10%	90%	10%
Region/Market	Countries	Night 2 - 23:00 a.m. to 23:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe			100%			100%
Japan			100%		100%	
Mainland China			100%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan			100%		100%	
USA / Canada			100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		100%		90%	10%

**Table 13 (Continued)**  
**Departure Flight Track Utilization**  
**By Time Period**

Region/Market	Countries	Night 3 - 00:00 a.m. to 00:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe				100%		100%
Japan			100%		100%	
Mainland China			7.5%	92.5%	7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan			100%		100%	
USA / Canada			100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		24%	76%	90%	10%
Region/Market	Countries	Night 4 - 01:00 a.m. to 04:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe			100%			100%
Japan			100%		100%	
Mainland China			100%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan			100%		100%	
USA / Canada			100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		100%		90%	10%
Region/Market	Countries	Night 5 - 05:00 a.m. to 06:59 p.m.				
		Runway 07			Runway 25	
		1	2	3	4	5
Europe			100%			100%
Japan			100%		100%	
Mainland China			100%		7.5%	92.5%
SE Asia	Singapore, Thailand, Malaysia, Indonesia, Philippines		100%		100%	
Taiwan			100%		100%	
USA / Canada			100%		100%	
Australasia	Australia		100%		100%	
Others	Others, Middle East, Korea		100%		90%	10%

Sources – AAHK & URS Corp., 2010.

**8. Runway Closure.** AAHK advised that one runway will be closed for maintenance from 01:00 a.m. to 7:59 a.m., to align with the existing practice. The runway maintenance closure period is incorporated in the flight track utilization files provided by AAHK.

**9. South Runway in Standby Mode at Night.** The south runway will be assigned as standby mode where possible during the night-time penalty period from 23:00 to 06:59 in order to minimize the aircraft noise impact along North Lantau shoreline. The runway standby mode is incorporated into the flight track utilization files provided by AAHK.

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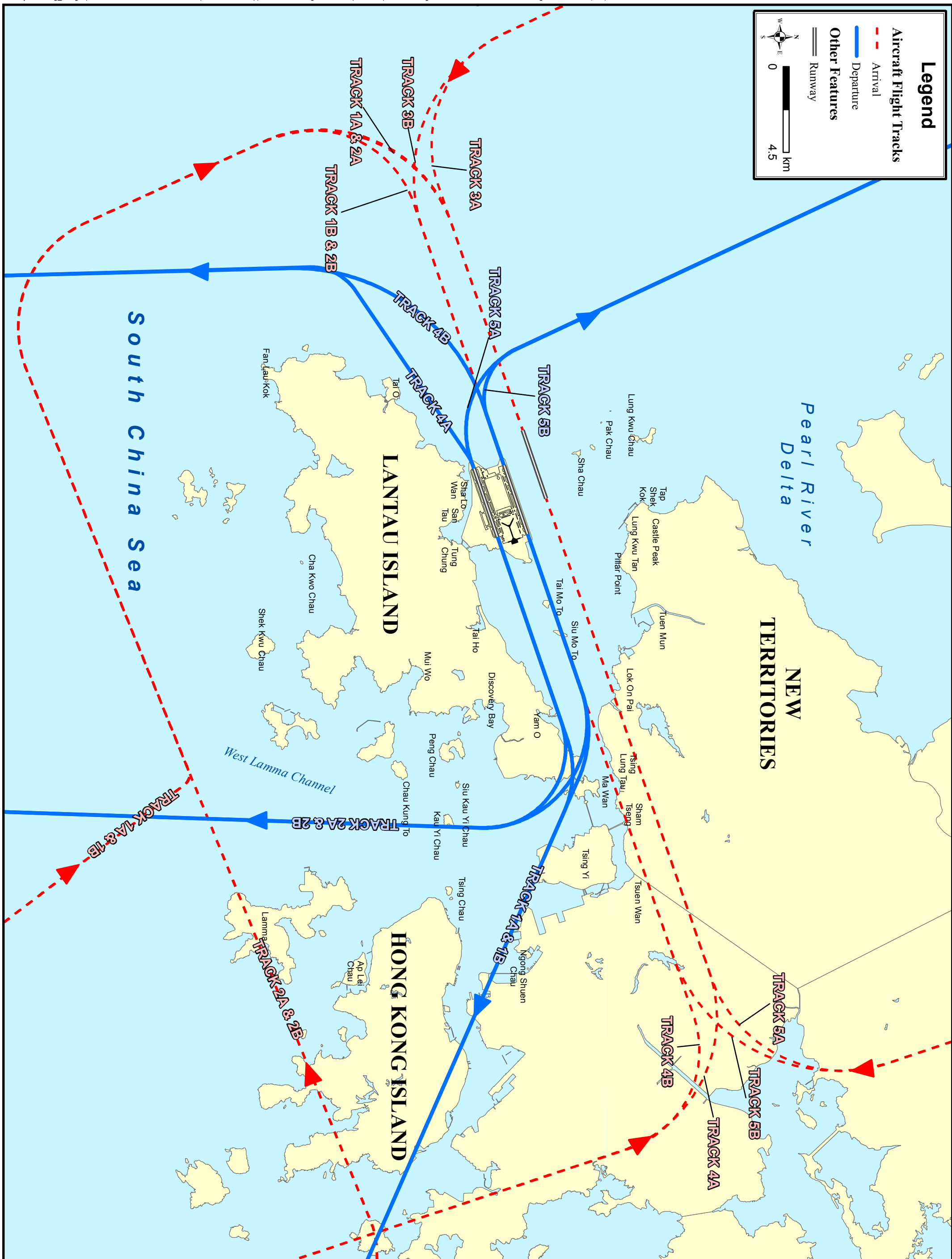


FIGURE 2

**Alternative R**  
**7:00 a.m. to 8:00 a.m.**  
**Flight Tracks**



**Preliminary Noise Contour**  
**Analysis for Third**  
**Runway Alternatives**



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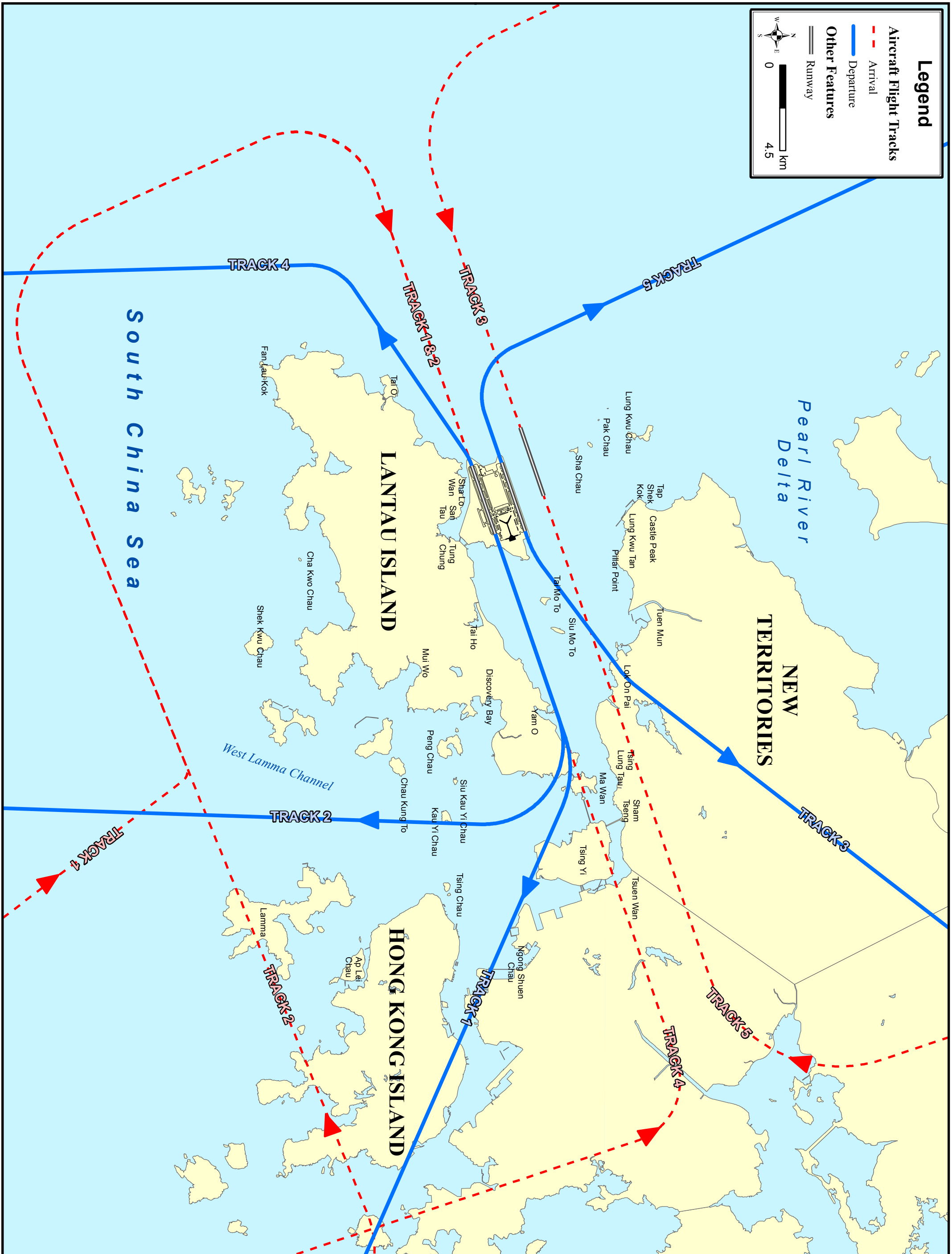


FIGURE 3

**Alternative R**  
**8:00 a.m. to 10:00 p.m.**  
**Flight Tracks**



**Preliminary Noise Contour**  
**Analysis for Third**  
**Runway Alternatives**



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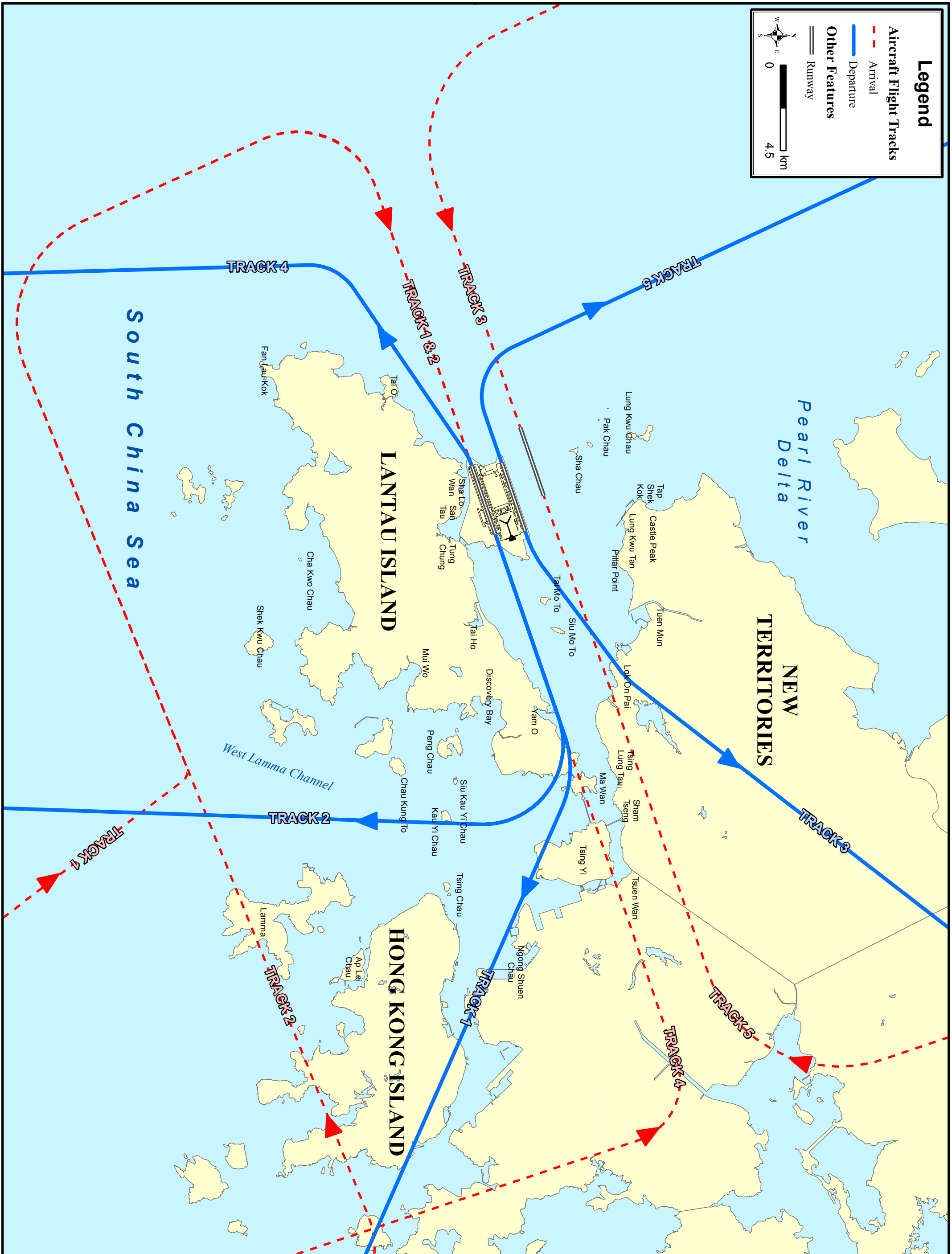


FIGURE 4

**Alternative R**  
**10:00 p.m. to 11:00 p.m.**  
**Flight Tracks**



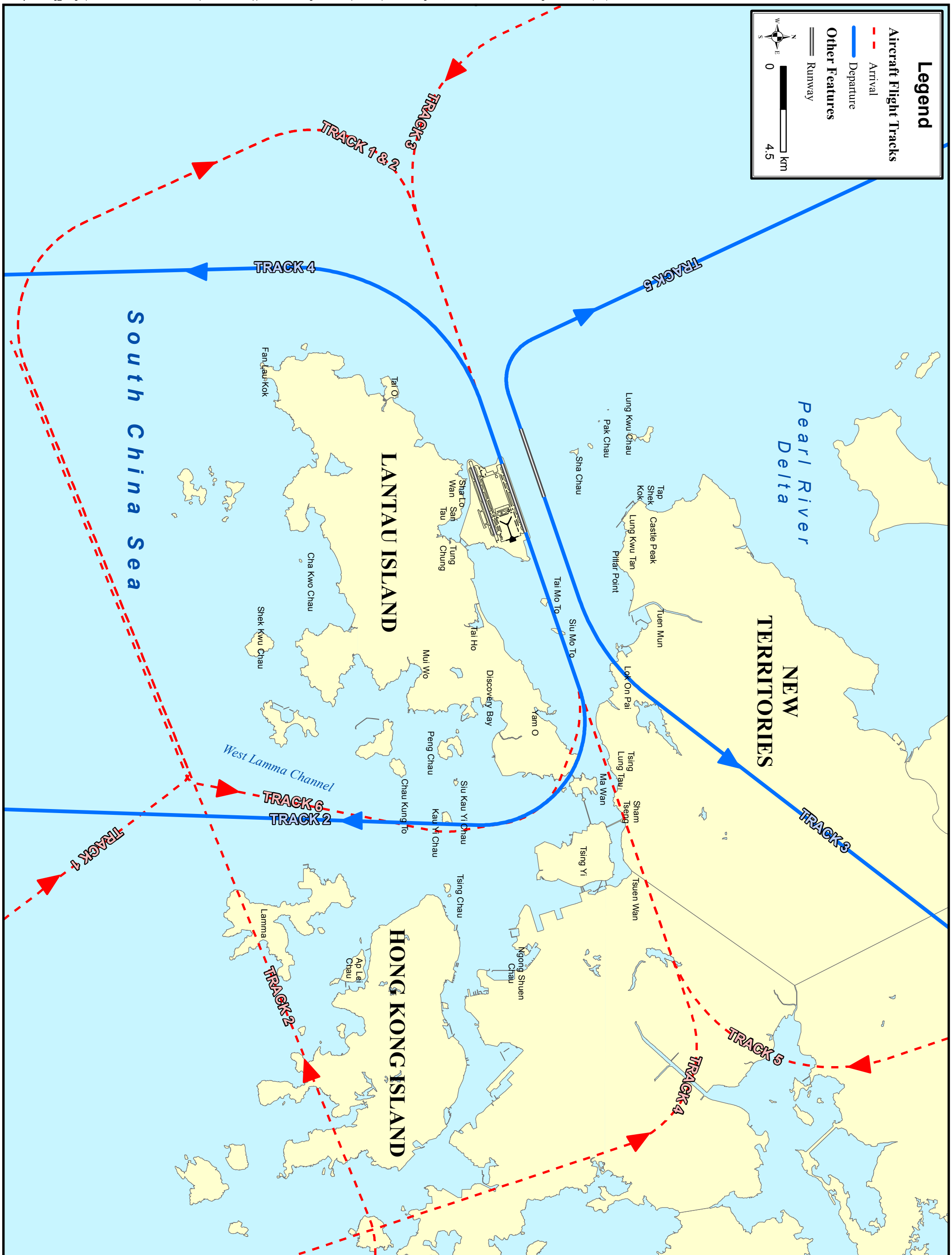
**Preliminary Noise Contour**  
**Analysis for Third**  
**Runway Alternatives**



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**FIGURE 6**

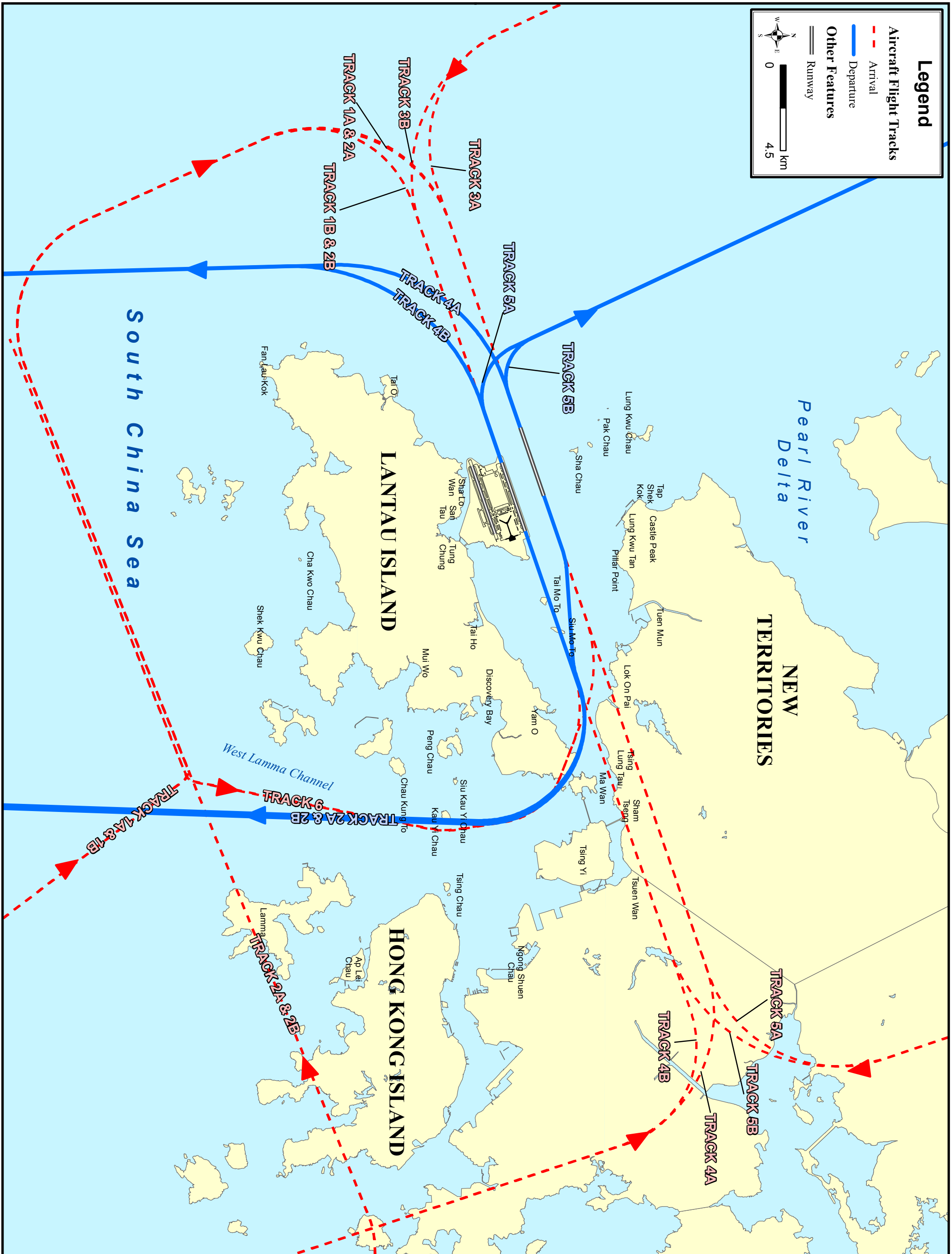
**Alternative R  
12:00 a.m. to 1:00 a.m.  
Flight Tracks**



**Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives**



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**FIGURE 7**

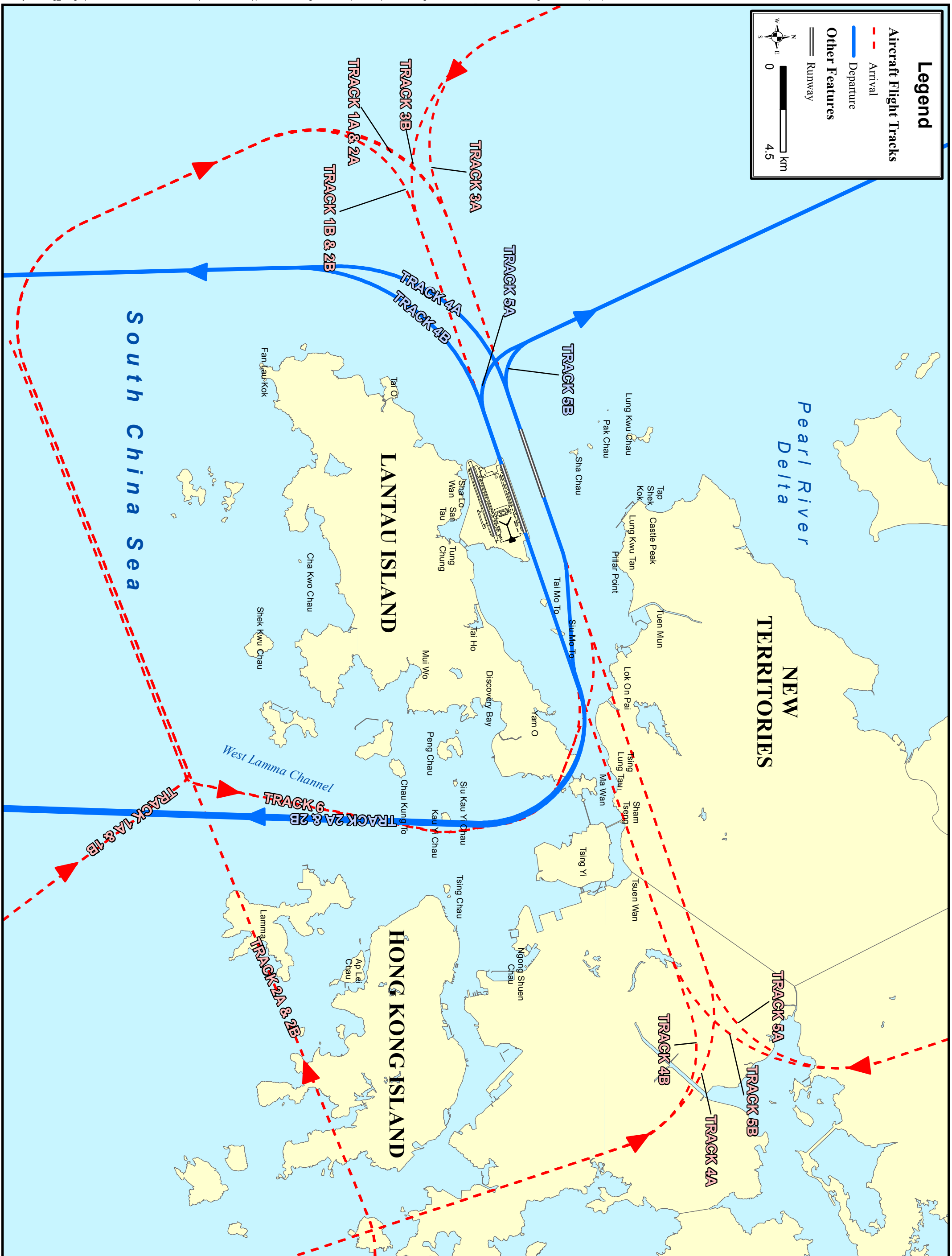
**Alternative R  
1:00 a.m. to 5:00 a.m.  
Flight Tracks**



**Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives**



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**FIGURE 8**

**Alternative R  
5:00 a.m. to 7:00 a.m.  
Flight Tracks**



**Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives**



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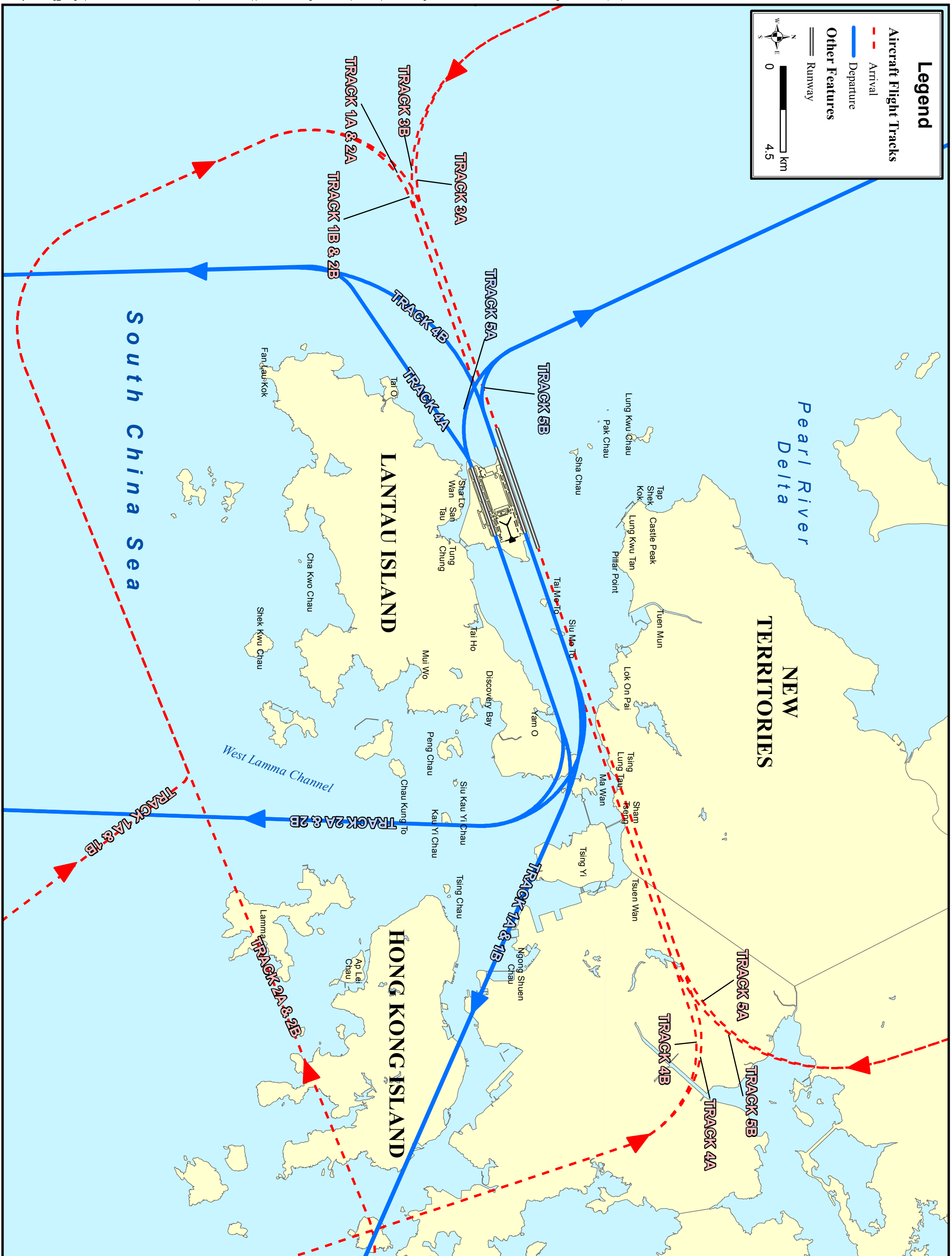


FIGURE 9

Alternative S Ext D  
7:00 a.m. to 8:00 a.m.  
Flight Tracks



Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives



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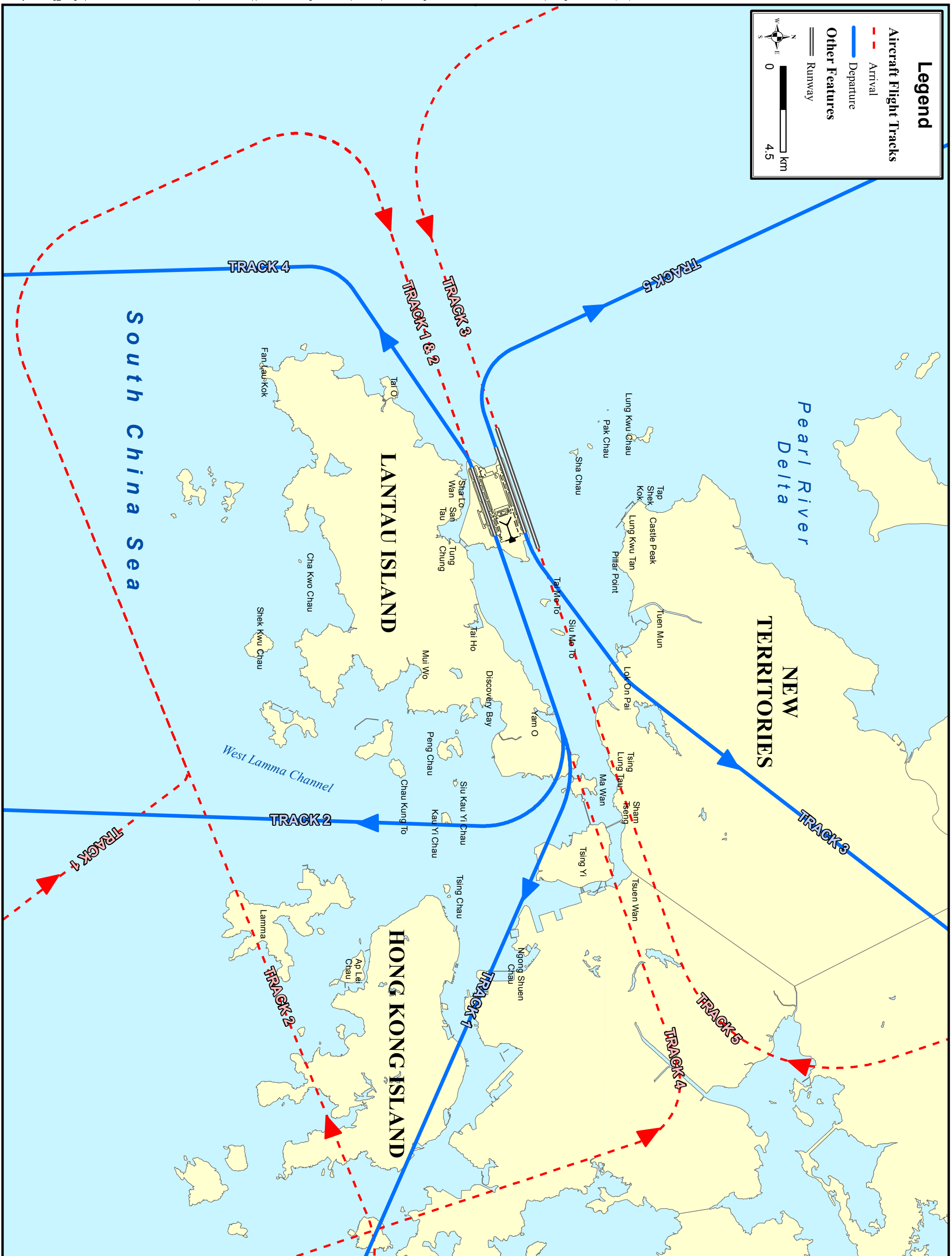


FIGURE 10

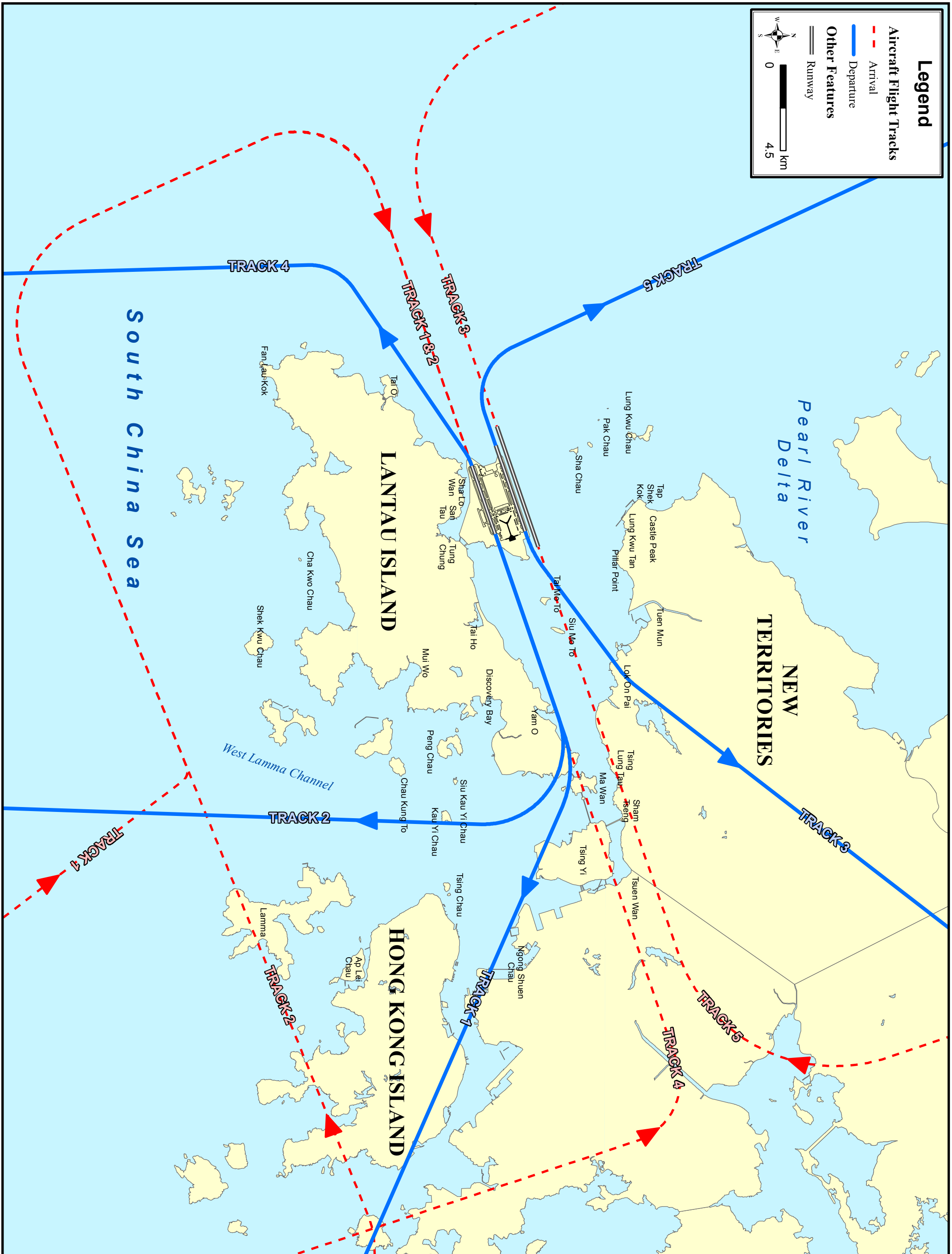
Alternative S Ext D  
8:00 a.m. to 10:00 p.m.  
Flight Tracks



Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives



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**FIGURE 11**

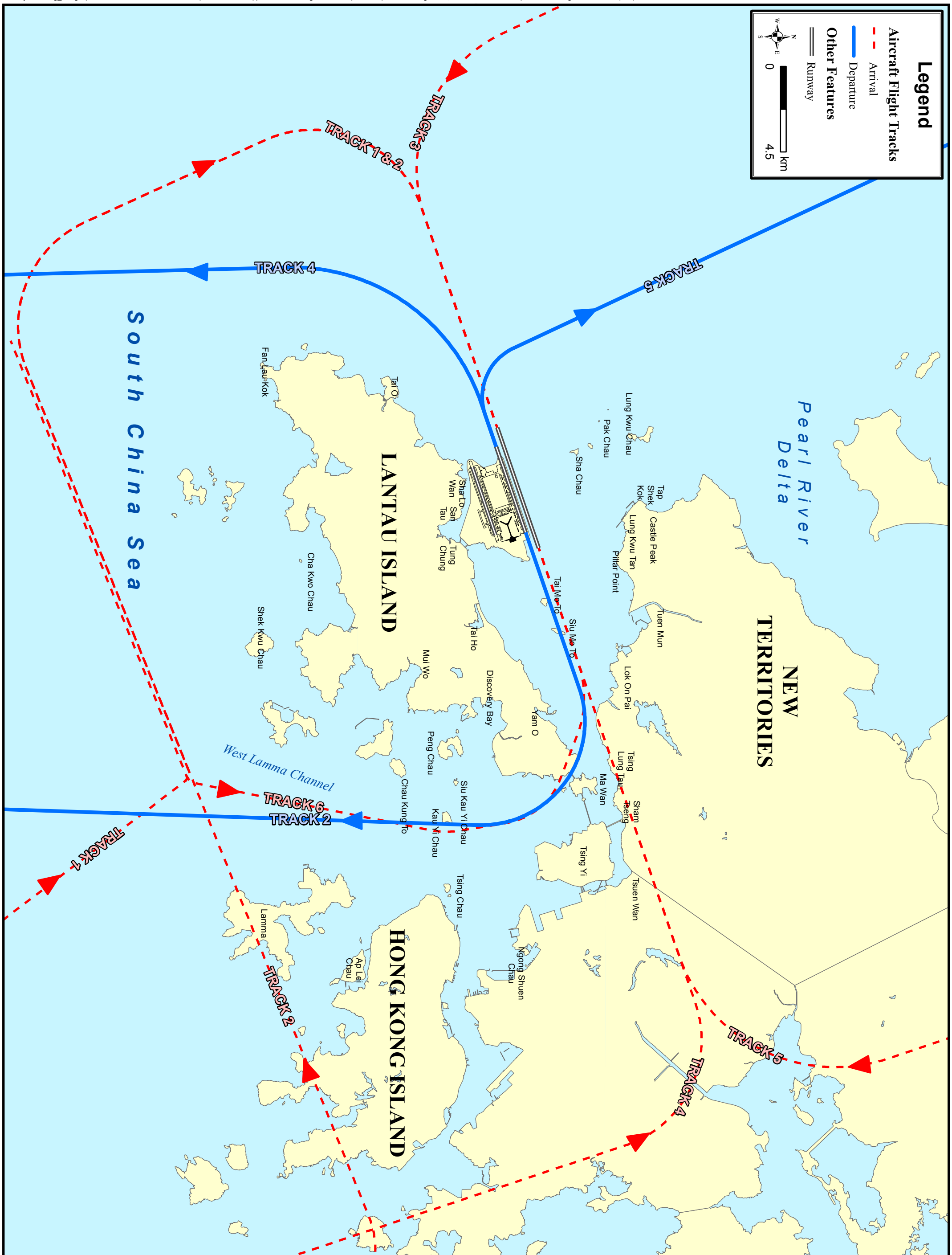
**Alternative S Ext D  
10:00 p.m. to 11:00 p.m.  
Flight Tracks**



**Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives**



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**FIGURE 12**

**Alternative S Ext D  
11:00 p.m. to 12:00 a.m.  
Flight Tracks**



**Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives**



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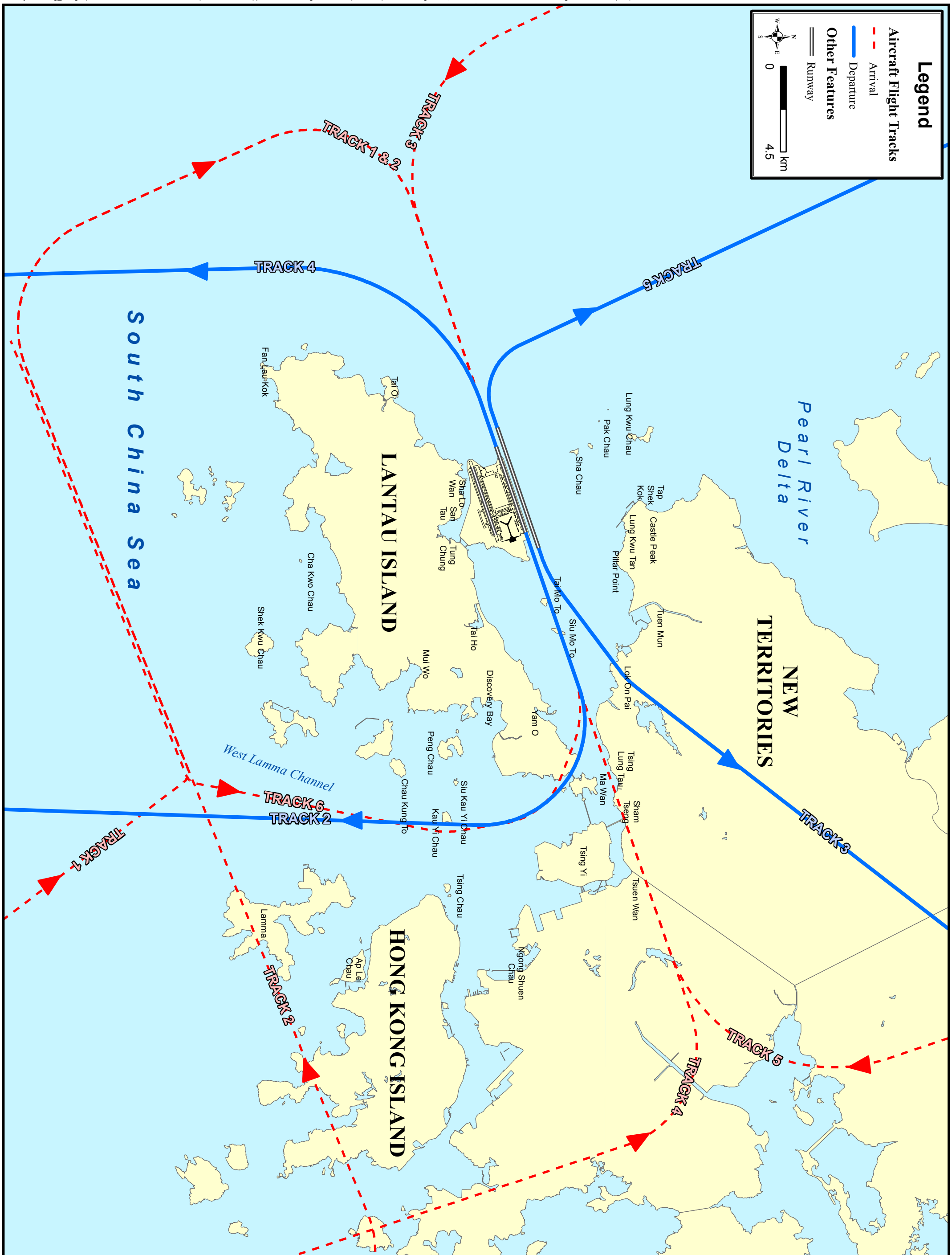


FIGURE 13

Alternative S Ext D  
12:00 a.m. to 1:00 a.m.  
Flight Tracks



Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives



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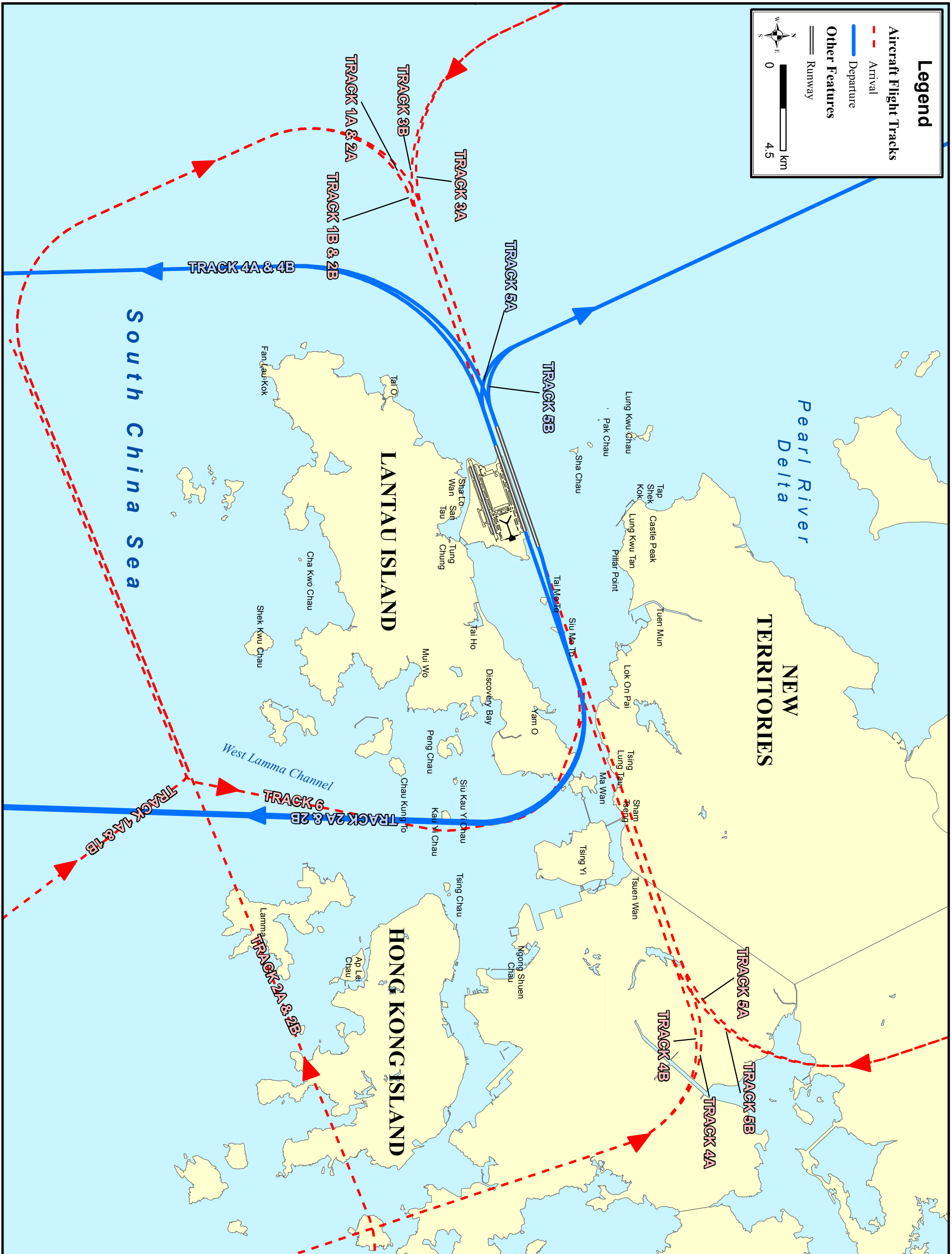


FIGURE 14

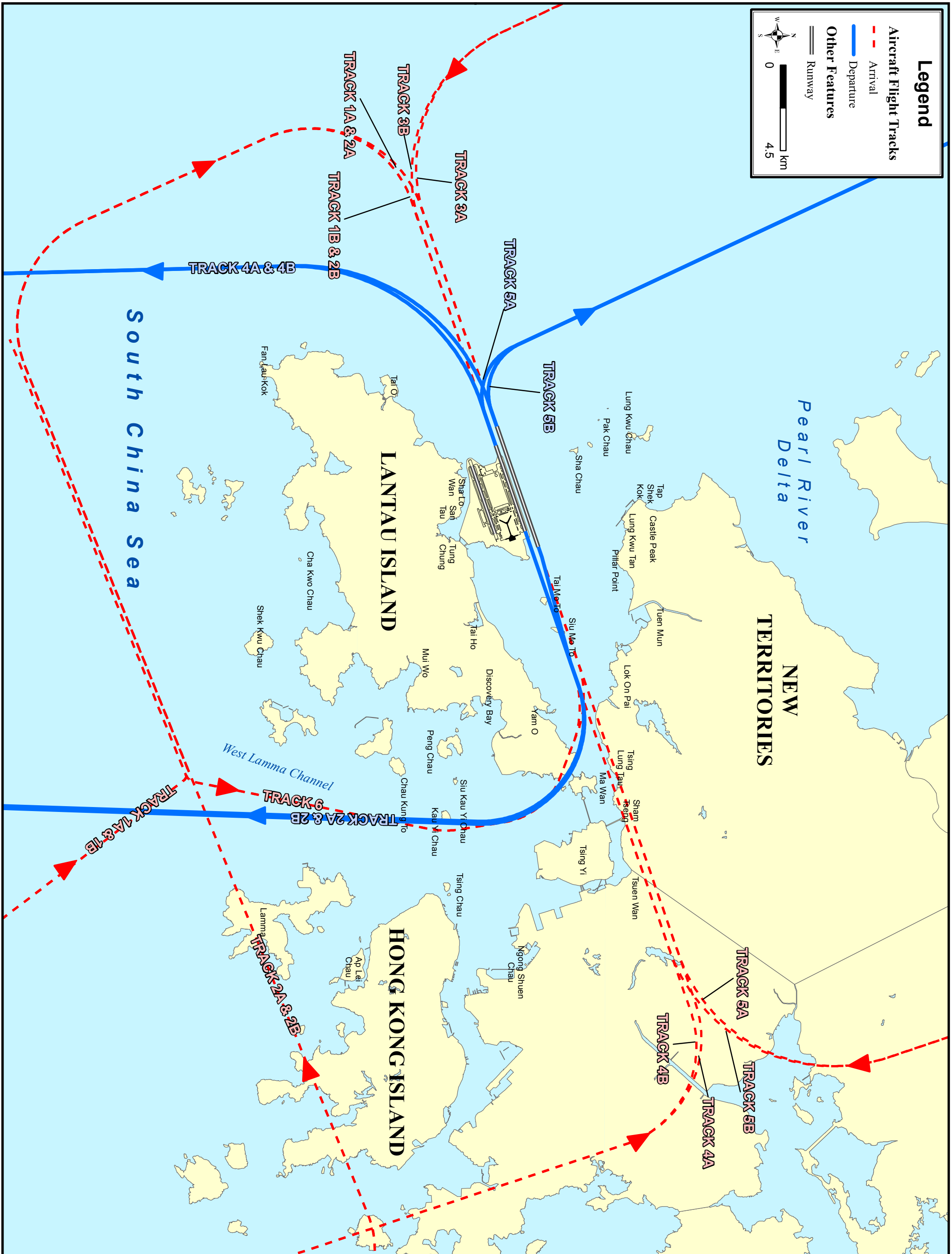
Alternative S Ext D  
1:00 a.m. to 5:00 a.m.  
Flight Tracks



Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives



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**Legend**

**Aircraft Flight Tracks**

- - - Arrival
- Departure

**Other Features**

- Runway

Scale: 0 to 4.5 km

**FIGURE 15**

**Alternative S Ext D  
5:00 a.m. to 7:00 a.m.  
Flight Tracks**



**Preliminary Noise Contour  
Analysis for Third  
Runway Alternatives**



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# FINAL ASSUMPTIONS REPORT

## APPENDIX MATERIALS

### NOISE CONTOUR ANALYSIS FOR THIRD RUNWAY ALTERNATIVES

*Hong Kong International Airport*



香港 | HONG KONG  
國際機場 | INTERNATIONAL  
AIRPORT

Prepared by:

**URS**

Prepared for:

*Airport Authority Hong Kong*

September 30, 2010

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**Update of the Final Noise Contour Report:**  
***Noise Contour Analysis for the Third Runway Alternatives,***  
***dated September 2009***

**Hong Kong International Airport**  
**Appendix A Material**

**Data for Year 2030 – 600,000 Annual Traffic Movements (ATM)**

**Appendix A Data Tables**

Table A-1	Europe Annual Aircraft Movements for Year 2030 by Time of Day .....	A-3
Table A-2	Japan Annual Aircraft Movements for Year 2030 by Time of Day .....	A-5
Table A-3	Mainland China Annual Aircraft Movements for Year 2030 by Time of Day .....	A-7
Table A-4	SE Asia Annual Aircraft Movements for Year 2030 by Time of Day .....	A-9
Table A-5	Taiwan Annual Aircraft Movements for Year 2030 by Time of Day .....	A-11
Table A-6	USA & Canada Annual Aircraft Movements for Year 2030 by Time of Day .....	A-13
Table A-7	Australasia Annual Aircraft Movements for Year 2030 by Time of Day .....	A-15
Table A-8	Others Annual Aircraft Movements for Year 2030 by Time of Day .....	A-17

The source for Tables A-1 through A-8 includes several EXCEL spreadsheets provided by AAHK on July 23, 2010. These spreadsheets were named:

- INPUT\_Base\_Year\_Stat.xls,
- INPUT\_Demand.xls (for 600,000 ATM), and
- INPUT\_AC\_LIST.xls

URS Corporation used the information in these spreadsheets, along with information collected and compiled by URS Corporation, to create Tables A-1 through A-8.

The numbers in Tables A-1 through A-8 may not add up exactly to the totals due to rounding.

The 24-hour day is composed of the seven time periods described below. These time periods were defined and provided by AAHK.

<b><u>Description</u></b>	<b><u>24-hour clock time period</u></b>	<b><u>12-hour clock time period</u></b>
Day 1	0700 until 0759	7:00 a.m. until 7:59 a.m.
Day 2	0800 until 2159	8:00 a.m. until 9:59 p.m.
Night 1	2200 until 2259	10:00 p.m. until 10:59 p.m.
Night 2	2300 until 2359	11:00 p.m. until 11:59 p.m.
Night 3	0000 until 0059	12:00 a.m. until 12:59 a.m.
Night 4	0100 until 0459	1:00 a.m. until 4:59 a.m.
Night 5	0500 until 0659	5:00 a.m. until 6:59 a.m.

**Table A-1  
Europe Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	EUROPE DEPARTURES (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	340	A340-211		3						3
	343			1,696						1,696
	346			335						335
	380			3						3
	74T	747200	11	17						28
	74X		130	330						460
	744	747400	335	2,740						3,075
	747			47						47
	74E				964					964
	74F			91	504					596
	74Y			11	269					280
	772	777200		549						549
	777			72	324	4,945	7,658	3,693	233	16,925
	77W			3	8					11
	D10		DC1010	8	19					
	D1F				50					50
D1Y		6		97					103	
M11	MD11PW	0	485						485	
Medium	763	767300		33						33
	767			5						5
Small	XXX	737300	3	13						16
	BBJ	737700		5						5
	DF2	FAL20		5						5
	E17	GV		3						3
	GRJ			82						82
	DF3	LEAR35	3	21						24
<b>Grand Total</b>			<b>601</b>	<b>8,354</b>	<b>324</b>	<b>4,945</b>	<b>7,658</b>	<b>3,693</b>	<b>233</b>	<b>25,809</b>

**Table A-1 (Continued)**  
**Europe Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	EUROPE ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		20						20
	333			3						3
	340	A340-211	3	54						56
	343		846	4,329						5,175
	346			1,244						1,244
	380	747200		3						3
	742			8						8
	74T			3						3
	74U		3	3						5
	74X		10	284						294
	744	747400	2,187	7,099						9,286
	747		3	43						46
	74E		20	874						894
	74F		36	652						687
	74Y		112	601						713
	772	777200	276	917						1,193
	777		38	210	330	843	279	601	2,318	4,618
	77W		3	15						18
	773	777300		10						10
	D10	DC1010	3	28						31
D1F			69						69	
D1Y	3		164						166	
M11	MD11PW	299	151						450	
M1F		18	598						616	
Medium	763	767300		30						30
	767			5						5
Small	737	737300		2						2
	XXX		2	17						19
	BBJ	737700	5	0						5
	CCJ	CL601		5						5
	CNJ	CNA750		2						2
	DF2	FAL20		2						2
	GLE	GV	2	2						5
	GRJ		10	99						109
DF3	LEAR35		15						15	
<b>Grand Total</b>			<b>3,878</b>	<b>17,560</b>	<b>330</b>	<b>843</b>	<b>279</b>	<b>601</b>	<b>2,318</b>	<b>25,808</b>

**Table A-2  
Japan Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	JAPAN DEPARTURES (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	3	938						941
	333		2	1,299						1,300
	343	A340-211		208						208
	346			48						48
	742	747200	2	15						17
	74C			9						9
	74T		6	9						15
	74U			51						51
	74X		45	707						753
	744	747400	2	2,920						2,921
	747		5	539						543
	74F		27	461						488
	74Y			229						229
	7F4			15						15
	772	777200		644						644
	777			60	11	15	51	2,631	652	3,419
	77L			5						5
	773		777300		1,358					
	741	74710Q		6						6
	743	74720B		23						23
D10	DC1010		2						2	
D1F			2						2	
M1F	MD11PW	26	68						93	
Medium	763	767300		2,665						2,665
	767			288						288
	76F		3	266						270
	76Y			177						177
	757	757RR		3						3
	ABY	A300-622R	3	15						19
	310	A310-304	19	96						115
313	46		294						341	
Small	737	737300		4						4
	XXX			25						25
	738	737800	7	386						393
	320	A320-232	4	168						172
	321	A321-232		108						108
	CCJ	CL601		14						14
	CNJ	CNA750	2	11						12
	DF2	FAL20		12						12
	GLE	GV		7						7
	GRJ		5	163						168
	H25	LEAR25		2						2
	DF3	LEAR35		19						19
LRJ			2						2	
Military	73G	737300		9						9
	XXX	C-130E		5						5
<b>Grand Total</b>			<b>205</b>	<b>14,353</b>	<b>11</b>	<b>15</b>	<b>51</b>	<b>2,631</b>	<b>652</b>	<b>17,917</b>

**Table A-2 (Continued)**  
**Japan Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	JAPAN ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		997						997
	333			1,414						1,414
	340	A340-211		2						2
	343			228						228
	346			52						52
	742	747200		7						7
	74C			2						2
	74U			37						37
	74X		2	538						540
	744	747400		2,366						2,366
	747			392						392
	74E			2						2
	74F			319						319
	74Y		2	286						287
	7F4			22						22
	772	777200		459						459
	777			2	1,914	612	1,476	1,055	12	5,070
	77L			3						3
	773	777300		1,491						1,491
	743	74720B		22						22
D1F	DC1010		2						2	
D1Y			2						2	
M1F	MD11PW		199						199	
Medium	763	767300		1,827						1,827
	767			233						233
	76F			281						281
	76Y			195						195
	752	757RR		3						3
	757			3						3
	ABY	A300-622R		7						7
	310	A310-304		154						154
313			369						369	
Small	737	737300		2						2
	XXX		2	29						31
	BBJ	737700		2						2
	738	737800		370						370
	320	A320-232		186						186
	321	A321-232		117						117
	CCJ	CL601		6						6
	CNJ	CNA750		10						10
	DF2	FAL20		2						2
	GLE	GV		8						8
	GRJ			149						149
	DF3	LEAR35		31						31
	LRJ			6						6
M87	MD81		2						2	
Military	XXX	C-130E		5						5
	C17	C17		5						5
<b>Grand Total</b>			<b>5</b>	<b>12,843</b>	<b>1,914</b>	<b>612</b>	<b>1,476</b>	<b>1,055</b>	<b>12</b>	<b>17,917</b>

**Table A-3  
Mainland China Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA aircraft subtype	INM aircraft type	MAINLAND CHINA DEPARTURES (600,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	330	A330-343	4	6,215						6,219
	332		415						415	
	333		15	7,248					7,263	
	340	A340-211	2	2					2	
	343		2	1,001				1,003		
	346		2	327				329		
	74U	747200	32	64					96	
	74X		17	92				109		
	744	747400	13	53					66	
	74E		24					24		
	74F		84	278				362		
	74Y		8	71				79		
	7F4		2	2				2		
	772	777200	11	563					575	
	777				635	426	627	2,847	742	5,276
	77L		2	9					11	
	773	777300	9	135					145	
	D10	DC1010		2					2	
M11	MD11PW	13	15					28		
M1F		15	19					34		
Medium	763	767300		2,159					2,159	
	767		253					253		
	76F		56					56		
	76Y		97					97		
	752	757RR		1,335				1,335		
	757		3	156			158			
	75F		10	48			59			
	762	767CF6		390			390			
	AB6	A300-622R	8	1,370			1,378			
	ABF		8	314			322			
	ABX		3	23			26			
	ABY		3	3			3			
	313	A310-304		3			3			
Small	733	737300		4,969			4,969			
	737		445			445				
	73F		21			21				
	XXX		27	300			327			
	735	737500		190			190			
	736	737700		5			5			
	73G			4,211			4,211			
	738	737800	80	20,030			20,110			
	732	737N17		5			5			
	319	A319-131		6,520			6,520			
	320	A320-232	21	32,950			32,971			
	321	A321-232	11	10,702			10,713			
	BE2	BEC58P		8			8			
	CCJ	CL601		155			155			
	CR2		11			11				
	CRJ		16			16				
	CL6		CNA206		8		8			
	CNJ	CNA750	5	64			70			
	EM4	EMB145		5			5			
	ER4		27			27				
	ERJ		3	16			19			
	100	F10062		5			5			
	DF2	FAL20		32			32			
	G4	GASEPF		3			3			
	CR7	GV	3	83			86			
	E17		107			107				
	E19		3			3				
	E70		16	624			640			
	GLE		3	19			21			
	GRJ		62	761			822			
	H25		LEAR25	16	193			209		
	DF3	LEAR35	5	131			137			
LRJ	11				11					
M81	MD81		3			3				
M82	MD82		812			812				
M90	MD9025		2,028			2,028				
<b>Grand Total</b>			<b>510</b>	<b>108,216</b>	<b>635</b>	<b>426</b>	<b>627</b>	<b>2,847</b>	<b>742</b>	<b>114,002</b>

**Table A-3 (Continued)**  
**Mainland China Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	MAINLAND CHINA ARRIVALS (600,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	330	A330-343		5,748						5,748
	332			424						424
	333			6,569						6,569
	343	A340-211		962						962
	346			332						332
	74U	747200	44	200						244
	74X		160	260						420
	744	747400		80						80
	74E			25						25
	74F		199	718						916
	74Y		61	118						179
	7F4		2							2
	772			4	561					
	777	777200			3,881	2,190	2,266	1,523	556	10,416
	77L			10						10
	773	777300		147						147
	M11	MD11PW		8						8
M1F	4		13						17	
Medium	763	767300		2,216						2,216
	767			259					259	
	76F			54					54	
	76Y			104					104	
	752	757RR		1,393					1,393	
	757			158					158	
	75F		5	26					31	
	762	767CF6		392					392	
	AB6	A300-622R	26	1,367						1,393
	ABF		18	311						330
	ABX		5	117						122
	313	A310-304		3						3
	31F			3						3
Small	733	737300	3	5,063						5,066
	737			458						458
	73F		3	11						14
	XXX			319						319
	735	737500		204					204	
	736	737700		5						5
	73G			4,322						4,322
	738	737800	3	18,798						18,801
	732	737N17		3						3
	319	A319-131		6,689						6,689
	320	A320-232		30,956						30,956
	321	A321-232		8,650						8,650
	BE2	BEC58P		11						11
	CCJ	CL601		133						133
	CR2			8						8
	CRJ			14						14
	CL6		CNA206		8					8
	CNJ	CNA750	8	57						65
	EM4	EMB145		5						5
	ER4			27						27
	ERJ			19						19
	100	F10062		5						5
	DF2	FAL20		38						38
	G4	GASEPF		3						3
	CR7	GV		84						84
	E17			57						57
	E19			3						3
	E70			438						438
	GLE			16						16
	GRJ			11	768					
H25	LEAR25	14	202						215	
DF3	LEAR35		136						136	
LRJ			11						11	
M82	MD82		825						825	
M90	MD9025		2,084						2,084	
Military	XXX	C-130E		5						5
<b>Grand Total</b>			<b>569</b>	<b>103,017</b>	<b>3,881</b>	<b>2,190</b>	<b>2,266</b>	<b>1,523</b>	<b>556</b>	<b>114,002</b>

**Table A-4  
SE Asia Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	SE ASIA DEPARTURES (600,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	330	A330-343	9	3,067						3,076
	332			92						92
	333		2	6,264						6,266
	340	A340-211		8						8
	343		2	1,450						1,452
	345			6						6
	346			157						157
	742	747200		55						55
	74X			257						257
	744	747400	3	5,757						5,760
	747		18	541						559
	74E			2						2
	74F		5	255						260
	74Y		11	238						249
	7F4			2						2
	772	777200		3,483						3,483
	777			151	2,953	785	708	2,065	174	6,836
	77L			89						89
	773		3	4,268						4,271
	741	74710Q		25						25
743	74720B	2	347						349	
M11	MD11PW		34						34	
M1F		11	820						831	
763		3	369						372	
Medium	767	767300		108					108	
	752			2					2	
	757	757RR		7					7	
	75F			224					224	
	AB6	A300-622R		42						42
	ABF			98						98
	ABY			313						313
	310	A310-304		295						295
	313			52						52
	31F			19						19
31X			15						15	
Small	712	717200		247					247	
	717			243					243	
	733	737300		2					2	
	737			12					12	
	XXX		4	113						117
	734	737400		747					747	
	735	737500		2					2	
	BBJ	737700		2					2	
	738	737800	8	2,021					2,029	
	72F	727EM2	69	26					95	
	732	737N17		4					4	
	319	A319-131		713					713	
	320	A320-232	36	5,845					5,882	
	321	A321-232	2	2,256					2,258	
	BE2	BEC58P		12					12	
	CCJ	CL601	2	67						69
	CRJ			2						2
	CD2	CNA441		2						2
	CNJ	CNA750	2	59						61
	EMB	DHC6		2						2
	ERJ	EMB145		14						14
	DF2	FAL20		10						10
	E17	GV		6						6
	E70		12	65						77
	GLE		2	8						10
	GRJ		14	229						243
	H25	LEAR25		16						16
	DF3	LEAR35		28						28
	LRJ		2	34						36
	M87	MD81		2						2
M82	MD82		537						537	
Military	XXX	C-130E		20						20
	C17	C17		5						5
<b>Grand Total</b>			<b>222</b>	<b>42,264</b>	<b>2,953</b>	<b>785</b>	<b>708</b>	<b>2,065</b>	<b>174</b>	<b>49,171</b>

**Table A-4 (Continued)**  
**SE Asia Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	SE ASIA ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	3	2,709						2,712
	332			146						146
	333		2	5,743						5,745
	340	A340-211		9						9
	343			1,354						1,354
	345			6						6
	346			151						151
	380			2						2
	742			49						49
	74C	747200		14						14
	74X			111						111
	744	747400	6	5,298						5,304
	747		8	407						415
	74E			30						30
	74F		9	96						105
	74Y		73	352						425
	772	777200	3	2,461						2,464
	777			252	4,493	991	1,031	1,538	1,672	9,977
	77L			81						81
	77W			14						14
	773		777300	2	4,745					4,746
	741	74710Q		20					20	
	743	74720B		293					293	
	D10	DC1010		2					2	
M11	MD11PW		85						85	
M1F		15	520						535	
763		767300	2	535					537	
767			145					145		
757	757RR		2					2		
75F			197					197		
AB6	A300-622R		55					55		
ABF			97					97		
ABY			316					316		
310		A310-304		294					294	
313				119					119	
31F	7		2					8		
31X	5		3					8		
712	717200		245					245		
717			239					239		
733	737300		2					2		
737			8					8		
XXX			82					82		
734		737400		742				742		
738	737800		1,702				1,702			
72F	727EM2		20				20			
732	737N17		4				4			
319	A319-131		1,349				1,349			
320	A320-232		5,280				5,280			
321	A321-232		1,901				1,901			
BE2	BEC58P		10				10			
CCJ	CL601		74				74			
CNJ	CNA750	2	54				56			
EMB	DHC6		2				2			
ERJ	EMB145		12				12			
DF2	FAL20		10				10			
E17	GV		6				6			
E70			76				76			
GLE			12				12			
GRJ			225				225			
H25	LEAR25		18				18			
DF3	LEAR35		32				32			
LRJ			24				24			
M82	MD82	30	410				440			
Military	73G	737300		10			10			
	XXX	C-130E		10			10			
	ERJ	EMB14L		5			5			
<b>Grand Total</b>			<b>166</b>	<b>39,279</b>	<b>4,493</b>	<b>991</b>	<b>1,031</b>	<b>1,538</b>	<b>1,672</b>	<b>49,171</b>

**Table A-5  
Taiwan Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Subtype	INM Aircraft Type	TAIWAN DEPARTURES (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		4,420						4,420
	332			1,385						1,385
	333		5	7,641						7,646
	340	A340-211		130						130
	343			1,056						1,056
	346		2	122						124
	74U	747200		78						78
	74X			72						72
	744	747400		3,863						3,863
	74E			2,115						2,115
	74F			468						468
	74Y		2	364						366
	7F4			10						10
	772	777200	2	802						803
	777			172	2,752	1,090	673	843	75	5,603
	77L			62						62
	77W			30						30
	773		777300		2,389					
M11	MD11PW		16						16	
M1F			256						256	
Medium	767	767300		24						24
	AB6	A300-622R		190						190
	ABF			48						48
	ABY		24	214						238
Small	100	F10062		286						286
	320	A320-232		199						199
	321			212						212
	734	737400		2						2
	738	737800		1,310						1,310
	CCJ	CL601		8						8
	CNJ	CNA750		2						2
	DF2	FAL20		2						2
	E17	GV		18						18
	E19			474						474
	E70			212						212
	GLE			3						3
	GRJ		3	73						77
	DF3	LEAR35	2	3						5
	LRJ			2						2
M90	MD9025		156						156	
XXX	737300	2	18						19	
<b>Grand Total</b>			<b>40</b>	<b>28,906</b>	<b>2,752</b>	<b>1,090</b>	<b>673</b>	<b>843</b>	<b>75</b>	<b>34,377</b>

**Table A-5 (Continued)**  
**Taiwan Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	TAIWAN ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	56	4,756						4,812
	332		2	1,533						1,535
	333		121	8,008						8,129
	340	A340-211		136						136
	343		119	1,052						1,171
	346		45	102						147
	74X	747200		316						316
	744	747400	3	3,888						3,891
	747			2						2
	74E			2,103						2,103
	74F		3	603						606
	74Y		3	700						703
	7F4			22						22
	772	777200	45	886						932
	777			175	1,297	550	495	396	74	2,986
	77L		2	77						78
	77W			31						31
	773	777300	49	2,510						2,559
	74L	747SP		2						2
M11	MD11PW	2	25						27	
M1F		13	676						689	
Medium	31F	A310-304		23						23
	76F	767300	70	23						94
	AB6	A300-622R		234						234
	ABF			47						47
ABY	23		70						94	
Small	100	F10062		283						283
	319	A319-131		3						3
	320	A320-232		229						229
	321	A321-232		199						199
	734	737400		2						2
	738	737800	8	1,313						1,321
	CCJ	CL601		9						9
	CNJ	CNA750		3						3
	DF2	FAL20		3						3
	CR7	GV		2						2
	E17			17						17
	E19			466						466
	E70			212						212
	GLE			2						2
	GRJ		2	74						75
	DF3	LEAR35		3						3
	M81	MD81		2						2
M90	MD9025		154						154	
XXX	737300		17						17	
Military	XXX	C-130E		5						5
<b>Grand Total</b>			<b>565</b>	<b>31,001</b>	<b>1,297</b>	<b>550</b>	<b>495</b>	<b>396</b>	<b>74</b>	<b>34,377</b>

**Table A-6  
USA & Canada Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	USA CANADA DEPARTURES (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	340	A340-211		131						131
	343			2,336						2,336
	345			399						399
	346			808						808
	74T	747200		4						4
	74U									0
	74X			2						2
	744	747400	4	5,741						5,745
	747			15						15
	74F		44	151						195
	74Y		108	2,473						2,582
	772	777200		1,227						1,227
	777			84	1,171	850	1,005	356	82	3,549
	77L			128						128
	77W			2						2
773	777300			22						22
M1F	MD11PW	9	2,544						2,553	
Medium	763	767300		48						48
	767		48	191					239	
	76F			0						0
Small	737	737300		2						2
	XXX			7						7
	738	737800		1						1
	72F	727EM2		1						1
	CCJ	CL601	1							1
	CNJ	CNA750		7						7
	DF2	FAL20		1						1
	GLE	GV		2						2
	GRJ			39						39
	H25	LEAR25								0
	DF3	LEAR35								0
	LRJ									0
	M81	MD81		3						3
<b>Grand Total</b>			<b>215</b>	<b>16,369</b>	<b>1,171</b>	<b>850</b>	<b>1,005</b>	<b>356</b>	<b>82</b>	<b>20,049</b>

**Table A-6 (Continued)**  
**USA & Canada Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	USA CANADA ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	340	A340-211		124						124
	343		196	1,708						1,904
	345			399						399
	346			755						755
	74T	747200	2	144						146
	74U			7						7
	74X			7	161					168
	744	747400	907	3,274						4,181
	747			4	11					15
	74F			7	630					637
	74Y			65	2,495					2,561
	772	777200		1,206						1,206
	777			83	443	172	131	539	3,736	5,104
	77L				126					126
	77W				2					2
773	777300		22						22	
M1F	MD11PW		1,762						1,762	
Medium	763	767300	47							47
	767		47	282					329	
	76F		141	282					423	
Small	737	737300	1	1						2
	XXX		1	3						4
	738	737800		83						83
	72F	727EM2		1						1
	CCJ	CL601		4						4
	CNJ	CNA750		6						6
	GLE	GV								0
	GRJ		4	20						24
	H25	LEAR25		1						1
	DF3	LEAR35		2						2
	LRJ			1						1
	M81	MD81		2						2
<b>Grand Total</b>			<b>1,430</b>	<b>13,598</b>	<b>443</b>	<b>172</b>	<b>131</b>	<b>539</b>	<b>3,736</b>	<b>20,049</b>

**Table A-7  
Australasia Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	AUSTRALASIA DEPARTURES (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	0	595	0	0	0	0	0	595
	333		0	2,343	0	0	0	0	0	2,343
	343		0	924	0	0	0	0	0	924
	346	747200	0	727	0	0	0	0	0	727
	74X		0	6	0	0	0	0	0	6
	744	747400	0	2,104	0	0	0	0	0	2,104
	747		0	30	0	0	0	0	0	30
	74F		0	12	0	0	0	0	0	12
	74Y		2	46	0	0	0	0	0	48
	7F4		0	6	0	0	0	0	0	6
	772	777200	0	2	0	0	0	0	0	2
	777		0	0	145	1,587	1,808	84	16	3,639
743	74720B	4	6	0	0	0	0	0	10	
Medium	763	767300	2	177	0	0	0	0	0	179
	767		0	6	0	0	0	0	6	
	757	757RR	0	2	0	0	0	0	2	
	310	A310-304	0	3	0	0	0	0	0	3
Small	XXX	737300	2	6	0	0	0	0	0	8
	320	A320-232	0	2	0	0	0	0	0	2
	CCJ	CL601	0	2	0	0	0	0	0	2
	CNJ	CNA750	2	2	0	0	0	0	0	4
	DF2	FAL20	0	2	0	0	0	0	0	2
	GRJ	GV	0	64	0	0	0	0	0	64
	DF3	LEAR35	2	28	0	0	0	0	0	30
Military	777	777200	0	0	0	5	0	0	0	5
	XXX	C-130E	0	5	0	0	0	0	0	5
<b>Grand Total</b>			<b>14</b>	<b>7,100</b>	<b>145</b>	<b>1,592</b>	<b>1,808</b>	<b>84</b>	<b>16</b>	<b>10,758</b>

**Table A-7 (Continued)**  
**Australasia Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	AUSTRALASIA ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	2	1,033						1,035
	333		242	2,512						2,754
	343	A340-211	2	927						929
	346		468						468	
	74U	747200	2	2						2
	74X		17						17	
	744	747400	89	743						832
	74F		221						221	
	74Y		112						112	
	7F4		8						8	
	772	777200	2	21						23
	777		0	1,153	81	46	445	1,647	3,373	
	743	74720B		8						8
	M1F	MD11PW		174						174
Medium	763	767300	2	688						689
	767		2						2	
	XXX	737300		8						8
Small	CCJ	CL601		6						6
	CRJ		2						2	
	DF2	FAL20		2					2	
	GRJ	GV	2	53					55	
	H25	LEAR25		2					2	
	DF3	LEAR35		31					31	
Military	777	777200							5	5
<b>Grand Total</b>			<b>342</b>	<b>7,037</b>	<b>1,153</b>	<b>81</b>	<b>46</b>	<b>445</b>	<b>1,652</b>	<b>10,758</b>

**Table A-8  
Others Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Subtype	INM Aircraft Type	OTHERS DEPARTURES (600,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	742	747200		12						12
	74C			6						6
	74T			12						12
	74U			35	118					153
	74X			43	790					833
	744	747400		1	267					268
	747			1	35					37
	74E			10	264					274
	74F			99	2084					2182
	74Y			99	1396					1494
	7F4		7	53					60	
	772	777200		1033						1033
	777			147	936	769	3472	3712	600	9636
	77L			22						22
	773	777300		477						477
	743	74720B		55						55
	330	A330-343		63	875					939
	332			4	34					38
	333				1552					1552
	340	A340-211			46					46
	342				1					1
	343					175				175
	346			1	113					115
	380					1				1
	D10	DC1010			35					35
	D1C	DC1030	1	16						18
M11	MD11PW			7					7	
M1F		290	1037						1328	
Medium	763	767300		92					92	
	767			11					11	
	76F			88	107				195	
	76Y				15				15	
	752	757RR	4	155					158	
	757		4	184					188	
	AB3	A300-622R	7	11					18	
	ABF		4	22					26	
	ABY			7					7	
	310		A310-304	55	740					795
	313			52	1307					1359
31F		346						346		
31X		331						331		
Small	XXX	737300	3	38					41	
	734	737400		14					14	
	BBJ	737700		17					17	
	738	737800		2165					2165	
	739			35					35	
	319	A319-131		10					10	
	320	A320-232		863					863	
	321	A321-232		69					69	
	CCJ	CL601	3	38					41	
	CNJ	CNA750	3	3					7	
	DF2	FAL20	3	7					10	
	E70	GV		3					3	
	GLE			3					3	
	GRJ		10	193					204	
	DF3	LEAR35		69					69	
	LRJ			3					3	
Military	777	777200				5			5	
	ERJ	EMB14L		5					5	
<b>Grand Total</b>			<b>895</b>	<b>17531</b>	<b>936</b>	<b>774</b>	<b>3472</b>	<b>3712</b>	<b>600</b>	<b>27919</b>

**Table A-8 (Continued)**  
**Others Annual Aircraft Movements for Year 2030 by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	OTHERS ARRIVALS (600,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	742	747200		18						18
	74C			21						21
	74T			10						10
	74U			5	271					276
	74X			86	1,251					1,337
	744	747400	211	336						548
	747		3	40						43
	74E			436						436
	74F		139	2,279						2,419
	74Y		112	1,285						1,397
	7F4		3	64						67
	772	777200		1,091						1,091
	777			162	2,113	812	713	1,551	1,679	7,029
	77L			18						18
	773	777300		503						503
	743	74720B		82						82
	74L	747SP		2						2
	330	A330-343	99	1,379						1,478
	332			364						364
	333			99	1,956					2,055
	340	A340-211		50						50
	342			6						6
	343		219	461						681
346	22		694						716	
D10	DC1010		48						48	
D1Y			2						2	
D1C	DC1030		26						26	
M11	MD11PW		3						3	
M1F		51	1,160						1,211	
Medium	763	767300	4	112					116	
	767		4	4					8	
	752	757RR		188					188	
	757			228					228	
	ABF	A300-622R		8					8	
	310	A310-304	284	360						644
313	428		780						1,209	
Small	737	737300		4					4	
	XXX			32					32	
	734	737400		16					16	
	BBJ	737700		16					16	
	738	737800		2,854					2,854	
	739	737800		40					40	
	319	A319-131		20					20	
	320	A320-232		184					184	
	321	A321-232		8					8	
	CCJ	CL601		56					56	
	CRJ			4					4	
	ERJ	EMB145		4					4	
	DF2	FAL20	4	24					28	
	GRJ	GV	4	188					192	
DF3	LEAR35	4	100					104		
LRJ			12					12		
Military	777	777200					5		5	
	XXX	C-130E		5					5	
<b>Grand Total</b>			<b>1,785</b>	<b>19,262</b>	<b>2,113</b>	<b>812</b>	<b>713</b>	<b>1,556</b>	<b>1,679</b>	<b>27,919</b>

**Update of the Final Noise Contour Report:**  
**Noise Contour Analysis for the Third Runway Alternatives,**  
**dated September 2009**

**Hong Kong International Airport**  
**Appendix B Material**

**Data for Design Capacity Year – 620,000 Annual Traffic Movements (ATM)**

**Appendix B Data Tables**

Table B-1	Europe Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-3
Table B-2	Japan Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-5
Table B-3	Mainland China Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-7
Table B-4	SE Asia Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-9
Table B-5	Taiwan Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-11
Table B-6	USA & Canada Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-13
Table B-7	Australasia Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-15
Table B-8	Others Annual Aircraft Movements for the Design Capacity Year by Time of Day .....	B-17

The source for Tables B-1 through B-8 includes several EXCEL spreadsheets provided by AAHK on July 23, 2010. These spreadsheets were named:

- INPUT\_Base\_Year\_Stat.xls,
- INPUT\_Demand.xls (for 620,000 ATM), and
- INPUT\_AC\_LIST.xls

URS Corporation used the information in these spreadsheets, along with information collected and compiled by URS Corporation, to create Tables B-1 through B-8.

The numbers in Tables B-1 through B-8 may not add up exactly to the totals due to rounding.

The 24-hour day is composed of the seven time periods described below. These time periods were defined and provided by AAHK.

<b><u>Description</u></b>	<b><u>24-hour clock time period</u></b>	<b><u>12-hour clock time period</u></b>
Day 1	0700 until 0759	7:00 a.m. until 7:59 a.m.
Day 2	0800 until 2159	8:00 a.m. until 9:59 p.m.
Night 1	2200 until 2259	10:00 p.m. until 10:59 p.m.
Night 2	2300 until 2359	11:00 p.m. until 11:59 p.m.
Night 3	0000 until 0059	12:00 a.m. until 12:59 a.m.
Night 4	0100 until 0459	1:00 a.m. until 4:59 a.m.
Night 5	0500 until 0659	5:00 a.m. until 6:59 a.m.

**Table B-1  
Europe Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	EUROPE DEPARTURES (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	340	A340-211		3						3
	343			1,752						1,752
	346			346						346
	380			3						3
	74T	747200	11	17						29
	74X		135	341						475
	744	747400	346	2,831						3,178
	747			49						49
	74E				996					996
	74F			94	521					616
	74Y			11	278					289
	772	777200		567						567
	777			74	335	5,110	7,913	3,816	240	17,489
	77W			3	9					11
	D10		DC1010	9	20					
	D1F				52					52
D1Y		6		100					106	
M11	MD11PW		501						501	
Medium	763	767300		34						34
	767			6						6
Small	XXX	737300	3	14						16
	BBJ	737700		5						5
	DF2	FAL20		5						5
	E17	GV		3						3
	GRJ			84						84
	DF3	LEAR35	3	22						24
<b>Grand Total</b>			<b>621</b>	<b>8,633</b>	<b>335</b>	<b>5,110</b>	<b>7,913</b>	<b>3,816</b>	<b>240</b>	<b>26,669</b>

**Table B-1 (continued)**  
**Europe Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	EUROPE ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		21						21
	333			3						3
	340	A340-211	3	55						58
	343		874	4,473						5,347
	346			1,286						1,286
	380	747200		3						3
	742			8						8
	74T			3						3
	74U		3	3						5
	74X		11	293						304
	744	747400	2,260	7,335						9,596
	747		3	45						48
	74E		21	903						924
	74F		37	673						710
	74Y		116	621						737
	772	777200	285	948						1,233
	777		40	217	341	871	288	621	2,395	4,771
	77W		3	16						18
	773	777300		11						11
	D10	DC1010	3	29						32
D1F			71						71	
D1Y	3		169						172	
M11	MD11PW	309	156						465	
M1F		18	618						636	
Medium	763	767300		31						31
	767			6						6
Small	737	737300		3						3
	XXX		3	18						20
	BBJ	737700	5							5
	CCJ	CL601		5						5
	CNJ	CNA750		3						3
	DF2	FAL20		3						3
	GLE	GV	3	3						5
	GRJ		10	103						113
DF3	LEAR35		15						15	
<b>Grand Total</b>			<b>4,007</b>	<b>18,145</b>	<b>341</b>	<b>871</b>	<b>288</b>	<b>621</b>	<b>2,395</b>	<b>26,668</b>

**Table B-2  
Japan Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	JAPAN DEPARTURES (620,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	330	A330-343	3	969						972
	333		2	1,342						1,344
	343	A340-211		215						215
	346			50						50
	742	747200	2	16						17
	74C			9						9
	74T		6	9						16
	74U			53						53
	74X		47	731						778
	744	747400	2	3,017						3,019
	747		5	557						561
	74F		28	476						504
	74Y			236						236
	7F4			16						16
	772	777200		666						666
	777			62	11	16	53	2,718	673	3,533
	77L			5						5
	773	777300		1,403						1,403
	741	74710Q		6						6
	743	74720B		23						23
D10	DC1010		2						2	
D1F			2						2	
M1F	MD11PW	26	70						96	
Medium	763	767300		2,753						2,753
	767			298					298	
	76F		3	275					279	
	76Y			182					182	
	757	757RR		3					3	
	ABY	A300-622R	3	16					19	
	310	A310-304	19	99					118	
313	48		304					352		
Small	737	737300		4					4	
	XXX			26					26	
	738	737800	7	399					407	
	320	A320-232	4	174					178	
	321	A321-232		112					112	
	CCJ	CL601		15					15	
	CNJ	CNA750	2	11					13	
	DF2	FAL20		13					13	
	GLE	GV		7					7	
	GRJ		5	168					174	
	H25	LEAR25		2					2	
DF3	LEAR35		20					20		
LRJ			2					2		
Military	73G	737300		10					10	
	XXX	C-130E		5					5	
<b>Grand Total</b>			<b>212</b>	<b>14,831</b>	<b>11</b>	<b>16</b>	<b>53</b>	<b>2,718</b>	<b>673</b>	<b>18,514</b>

**Table B-2 (Continued)**  
**Japan Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	JAPAN ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		1,030						1,030
	333			1,461						1,461
	340	A340-211		2						2
	343			235						235
	346			53						53
	742	747200		7						7
	74C			2						2
	74U			38						38
	74X		2	556						558
	744	747400		2,445						2,445
	747			405						405
	74E			2						2
	74F			330						330
	74Y		2	295						297
	7F4			22						22
	772	777200		474						474
	777			2	1,978	632	1,525	1,090	12	5,239
	77L			3						3
	773			1,540						1,540
	743	74720B		22						22
D1F	DC1010		2						2	
D1Y			2						2	
M1F	MD11PW		206						206	
Medium	763	767300		1,888						1,888
	767			240						240
	76F			290						290
	76Y			202						202
	752	757RR		4						4
	757			4						4
	ABY	A300-622R		7						7
	310	A310-304		159						159
313			382						382	
Small	737	737300		2						2
	XXX		2	30						32
	BBJ	737700		2						2
	738	737800		382						382
	320	A320-232		192						192
	321	A321-232		121						121
	CCJ	CL601		6						6
	CNJ	CNA750		10						10
	DF2	FAL20		2						2
	GLE	GV		8						8
	GRJ			154						154
	DF3	LEAR35		32						32
	LRJ			6						6
	M87	MD81		2						2
Military	XXX	C-130E		5						5
	C17	C17		5						5
<b>Grand Total</b>			<b>5</b>	<b>13,271</b>	<b>1,978</b>	<b>632</b>	<b>1,525</b>	<b>1,090</b>	<b>12</b>	<b>18,514</b>

**Table B-3  
Mainland China Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA aircraft subtype	INM aircraft type	MAINLAND CHINA DEPARTURES (620,000 ATM)							Total	
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5		
Large	330	A330-343	4	6,422						6,426	
	332			429						429	
	333			16	7,490					7,505	
	340	A340-211		2						2	
	343			2	1,034					1,036	
	346			2	338					340	
	74U	747200	33	66						99	
	74X		17	95						113	
	744		14	54						68	
	74E	747400		25						25	
	74F		87	287						374	
	74Y		8	74						81	
	7F4			2						2	
	772		777200	12	582						594
	777				656	440	648	2,942	766	5,452	
	77L	2		10						12	
	773	777300		10	140					149	
	D10	DC1010		0	2					2	
M11	MD11PW	14	16						29		
M1F		16	19						35		
763		767300		2,231						2,231	
767			261						261		
76F			58						58		
76Y			100						100		
752	757RR		1,379						1,379		
757		3	161						163		
75F		11	50						61		
762	767CF6		403						403		
AB6	A300-622R	8	1,416						1,424		
ABF		8	324						332		
ABX		3	24						26		
ABY			3						3		
313	A310-304		3						3		
Small	733	737300		5,135						5,135	
	737			460						460	
	73F			22						22	
	XXX		28	310						338	
	735	737500		197						197	
	736	737700		6						6	
	73G			4,352						4,352	
	738	737800	83	20,697						20,781	
	732	737N17		6						6	
	319	A319-131		6,738						6,738	
	320	A320-232	22	34,048						34,070	
	321	A321-232	11	11,059						11,070	
	BE2	BEC58P		8						8	
	CCJ	CL601		161						161	
	CR2			11						11	
	CRJ			17						17	
	CL6		CNA206		8						8
	CNJ	CNA750	6	66						72	
	EM4	EMB145		6						6	
	ER4			28						28	
	ERJ		3	17						19	
	100	F10062		6						6	
	DF2	FAL20		33						33	
	G4	GASEPF		3						3	
	CR7	GV	3	86						89	
	E17				111						111
	E19				3						3
	E70			17	645						662
	GLE			3	19						22
	GRJ			64	786						850
	H25	LEAR25	17	199						216	
	DF3	LEAR35	6	136						141	
LRJ				11						11	
M81	MD81		3						3		
M82	MD82		839						839		
M90	MD9025		2,095						2,095		
<b>Grand Total</b>			<b>527</b>	<b>111,823</b>	<b>656</b>	<b>440</b>	<b>648</b>	<b>2,942</b>	<b>766</b>	<b>117,802</b>	

**Table B-3 (Continued)**  
**Mainland China Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	MAINLAND CHINA ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		5,940						5,940
	332			438						438
	333			6,788						6,788
	343	A340-211		994						994
	346			343						343
	74U	747200	45	207						253
	74X		166	268						434
	744	747400		83						83
	74E			26						26
	74F		205	742						947
	74Y		63	122						185
	7F4		2							2
	772	777200	4	580						584
	777				4,011	2,263	2,342	1,574	574	10,763
	77L			10						10
	773	777300		152						152
M11	MD11PW		8						8	
M1F		4	14						18	
763			2,290						2,290	
Medium	767	767300		268						268
	76F			56						56
	76Y			107						107
	752			1,440						1,440
	757	757RR		164						164
	75F		5	27						32
	762	767CF6		405						405
	AB6	A300-622R	27	1,413						1,440
	ABF		19	322						340
	ABX		5	121						126
	313	A310-304		3						3
	31F			3						3
	733			3	5,232					
	Small	737	737300		473					
73F		3		11						14
XXX				329						329
735		737500			211					
736		737700		6						6
73G				4,466						4,466
738		737800	3	19,425						19,428
732		737N17		3						3
319		A319-131		6,912						6,912
320		A320-232		31,988						31,988
321		A321-232		8,938						8,938
BE2		BEC58P		11						11
CCJ		CL601		138						138
CR2				8						8
CRJ				14						14
CL6			CNA206		8					
CNJ		CNA750	8	59						68
EM4		EMB145		6						6
ER4				28						28
ERJ				20						20
100		F10062		6						6
DF2		FAL20		39						39
G4		GASEPF		3						3
CR7		GV		87						87
E17				59						59
E19				3						3
E70				453						453
GLE				17						17
GRJ				11	794					
H25		LEAR25	14	208						222
DF3		LEAR35		141						141
LRJ				11						11
M82		MD82		853						853
M90		MD9025		2,153						2,153
Military	XXX	C-130E		5						5
<b>Grand Total</b>			<b>588</b>	<b>106,451</b>	<b>4,011</b>	<b>2,263</b>	<b>2,342</b>	<b>1,574</b>	<b>574</b>	<b>117,802</b>

**Table B-4  
SE Asia Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	SE ASIA DEPARTURES (620,000 ATM)								
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total	
Large	330	A330-343	10	3,169						3,178	
	332		95						95		
	333		2	6,473						6,474	
	340	A340-211		8						8	
	343		2	1,499						1,500	
	345			6						6	
	346			162						162	
	742	747200		57						57	
	74X			265						265	
	744	747400	3	5,949						5,952	
	747		19	559						578	
	74E			2						2	
	74F			5	264						268
	74Y			11	246						257
	7F4				2						2
	772	777200		3,599						3,599	
	777			156	3,051	811	732	2,134	179	7,063	
	77L			92							92
	773	777300	3	4,410						4,414	
	741	74710Q		25						25	
743	74720B	2	359						360		
M11	MD11PW		35						35		
M1F		11	848						859		
310	A310-304		305						305		
313			54						54		
752	757RR		2						2		
757			7						7		
763	767300	3	381						385		
767				111					111		
31F	A310-304		19						19		
31X				16					16		
75F				232					232		
AB6	A300-622R		44						44		
ABF			101						101		
ABY			324						324		
319	A319-131		737						737		
320	A320-232	38	6,040						6,078		
321		2	2,331						2,334		
712	717200		255						255		
717				251					251		
733	737300		2						2		
737				13					13		
734	737400		772						772		
735	737500		2						2		
738	737800	8	2,089						2,097		
732	737N17		4						4		
72F	727EM2	71	27						98		
BBJ	737700		2						2		
BE2	BEC58P		13						13		
CCJ	CL601	2	69						71		
CD2	CNA441		2						2		
CNJ	CNA750	2	61						63		
CRJ	CL601		2						2		
DF2	FAL20		10						10		
DF3	LEAR35		29						29		
EMB	DHC6		2						2		
ERJ	EMB145		15						15		
E17	GV		6						6		
E70		13	67						80		
GLE		2	8						10		
GRJ		15	236						251		
H25	LEAR25		17						17		
LRJ	LEAR35	2	36						38		
M82	MD82		555						555		
M87	MD81		2						2		
XXX	737300	4	117						121		
C17	C17		5						5		
XXX	C-130E		20						20		
<b>Grand Total</b>			<b>229</b>	<b>43,673</b>	<b>3,051</b>	<b>811</b>	<b>732</b>	<b>2,134</b>	<b>179</b>	<b>50,810</b>	

**Table B-4 (Continued)**  
**SE Asia Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	SE ASIA ARRIVALS (620,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	330	A330-343	3	2,800						2,803
	332			151						151
	333		2	5,935						5,936
	340	A340-211		9						9
	343			1,399						1,399
	345			6						6
	346			156						156
	380			2						2
	742	747200		50						50
	74C			14						14
	74X			115						115
	744	747400	6	5,475						5,481
	747		8	421						429
	74E			32						32
	74F		9	99						109
	74Y		76	364						440
	772	777200	3	2,543						2,546
	777			260	4,643	1,024	1,065	1,590	1,728	10,309
	77L			83						83
	77W			14						14
	773	777300	2	4,903						4,904
	741	74710Q		20						20
	743	74720B		302						302
D10	DC1010		2						2	
M11	MD11PW		88						88	
M1F		16	537						553	
Medium	310	A310-304		304						304
	313			123						123
	757	757RR		2						2
	763	767300	2	553						555
	767			150						150
	31F	A310-304	7	2						9
	31X		5	3						9
	75F	757RR		204						204
	AB6	A300-622R		57						57
	ABF			100						100
	ABY			327						327
Small	319	A319-131		1,393						1,393
	320	A320-232		5,456						5,456
	321			1,965						1,965
	712	717200		253						253
	717			247						247
	732	737N17		4						4
	733	737300		2						2
	737			8						8
	734	737400		766						766
	738	737800		1,759						1,759
	72F	727EM2		21						21
	BE2	BEC58P		10						10
	CCJ	CL601		77						77
	CNJ	CNA750	2	56						58
	DF2	FAL20		10						10
	DF3	LEAR35		33						33
	EMB	DHC6		2						2
	ERJ	EMB145		12						12
	E17	GV		6						6
	E70			79						79
	GLE			12						12
	GRJ			233						233
	H25	LEAR25		19						19
LRJ	LEAR35		25						25	
M82	MD82	31	424						455	
XXX	737300		85						85	
73G	737300		10						10	
ERJ	EMB14L		5						5	
XXX	C-130E		10						10	
<b>Grand Total</b>			<b>172</b>	<b>40,588</b>	<b>4,643</b>	<b>1,024</b>	<b>1,065</b>	<b>1,590</b>	<b>1,728</b>	<b>50,810</b>

**Table B-5  
Taiwan Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Subtype	INM Aircraft Type	TAIWAN DEPARTURES (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343		4,567						4,567
	332			1,432						1,432
	333		5	7,896						7,900
	340	A340-211		135						135
	343			1,091						1,091
	346		2	127						128
	74U	747200		81						81
	74X			74						74
	744	747400		3,992						3,992
	74E			2,186						2,186
	74F			483						483
	74Y		2	376						378
	7F4			10						10
	772	777200	2	828						830
	777			178	2,843	1,126	695	871	77	5,790
	77L			64						64
	77W			31						31
	773	777300		2,469						2,469
M11	MD11PW		16						16	
M1F			265						265	
Medium	767	767300		25						25
	AB6	A300-622R		197						197
	ABF			49						49
	ABY		25	221						246
Small	100	F10062		295						295
	320	A320-232		206						206
	321			219						219
	734	737400		2						2
	738	737800		1,353						1,353
	CCJ	CL601		8						8
	CNJ	CNA750		2						2
	DF2	FAL20		2						2
	E17	GV		18						18
	E19			490						490
	E70			219						219
	GLE			3						3
	GRJ		3	76						79
	DF3	LEAR35	2	3						5
	LRJ			2						2
M90	MD9025		162						162	
XXX	737300	2	18						20	
<b>Grand Total</b>			<b>41</b>	<b>29,869</b>	<b>2,843</b>	<b>1,126</b>	<b>695</b>	<b>871</b>	<b>77</b>	<b>35,523</b>

**Table B-5 (Continued)**  
**Taiwan Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	TAIWAN ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	58	4,914						4,973
	332		2	1,584						1,586
	333		125	8,275						8,400
	340	A340-211		141						141
	343		123	1,087						1,210
	346		47	105						152
	74X	747200		327						327
	744	747400	3	4,018						4,021
	747			2						2
	74E			2,173						2,173
	74F		3	623						626
	74Y		3	723						727
	7F4			23						23
	772	777200	47	916						963
	777			181	1,340	568	511	409	76	3,086
	77L		2	79						81
	77W			32						32
	773	777300	50	2,594						2,644
	74L	747SP		2						2
	M11	MD11PW	2	26						28
M1F	13		699						712	
Medium	31F	A310-304		24						24
	76F	767300	73	24						97
	AB6	A300-622R		242						242
	ABF			48						48
ABY	24		73						97	
Small	100	F10062		292						292
	319	A319-131		3						3
	320	A320-232		237						237
	321	A321-232		206						206
	734	737400		2						2
	738	737800	8	1,357						1,365
	CCJ	CL601		10						10
	CNJ	CNA750		3						3
	DF2	FAL20		3						3
	CR7	GV		2						2
	E17			18						18
	E19			482						482
	E70			219						219
	GLE			2						2
	GRJ		2	76						78
	DF3	LEAR35		3						3
	M81	MD81		2						2
M90	MD9025		159						159	
XXX	737300		18						18	
Military	XXX	C-130E		5						5
<b>Grand Total</b>			<b>584</b>	<b>32,035</b>	<b>1,340</b>	<b>568</b>	<b>511</b>	<b>409</b>	<b>76</b>	<b>35,523</b>

**Table B-6  
USA & Canada Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	INM Aircraft Type	IATA Aircraft Type	USA CANADA DEPARTURES (620,000 ATM)								
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total	
Large	747200	74T		5						5	
		74U								0	
		74X		2						2	
	747400	744	5	5932						5,937	
		747	0	16						16	
		74F	46	156						201	
		74Y	112	2555						2,668	
	777200	772		1267						1,267	
		777		87	1210	878	1039	368	85	3,667	
		77L		133						133	
		77W		2						2	
	777300	773		23						23	
	A340-211	340		135						135	
		343		2414						2,414	
		345		412						412	
346			835						835		
MD11PW	M1F	9	2629						2,638		
Medium	767300	763		49						49	
		767	49	197						247	
		76F	0	0						0	
Small	737300	737		2						2	
		XXX		7						7	
	737800	738		1						1	
	727EM2	72F		1						1	
	CL601	CCJ	1	0						1	
	CNA750	CNJ		7						7	
	FAL20	DF2		1						1	
	GV	GLE		2							2
		GRJ		40							40
MD81	M81		3						3		
<b>Grand Total</b>			<b>222</b>	<b>16915</b>	<b>1210</b>	<b>878</b>	<b>1039</b>	<b>368</b>	<b>85</b>	<b>20,717</b>	

**Table B-6 (Continued)**  
**USA & Canada Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	INM Aircraft Type	IATA Aircraft Type	USA CANADA ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	747200	74T	2	149						151
		74U		7						7
		74X	7	167						174
	747400	744	938	3383						4,320
		747	5	11						16
		74F	7	651						658
		74Y	68	2578						2,646
	777200	772		1246						1,246
		777		86	457	178	135	557	3861	5,274
		77L		131						131
		77W		2						2
	777300	773		23						23
	A340-211	340		128						128
		343	203	1765						1,967
		345		412						412
346			780						780	
MD11PW	M1F		1821						1,821	
Medium	767300	763	49	0						49
		767	49	291						340
		76F	146	291						437
Small	737300	737	1	1						2
		XXX	1	3						5
	737800	738		85						85
	727EM2	72F		1						1
	CL601	CCJ		5						5
	CNA750	CNJ		6						6
	GV	GLE		0						0
		GRJ	5	20						25
	LEAR25	H25		1						1
	LEAR35	DF3		2						2
		LRJ		1						1
MD81	M81		2						2	
<b>Grand Total</b>			<b>1478</b>	<b>14051</b>	<b>457</b>	<b>178</b>	<b>135</b>	<b>557</b>	<b>3861</b>	<b>20,717</b>

**Table B-7  
Australasia Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	AUSTRALASIA DEPARTURES (620,000 ATM)							Total
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	
Large	330	A330-343		615						615
	333	A330-343		2,421						2,421
	343	A330-343		954						954
	346	A330-343		751						751
	74X	747200		6						6
	744	747400		2,174						2,174
	747	747400		31						31
	74F	747400		12						12
	74Y	747400	2	47						49
	7F4	747400		6						6
772	777200		2						2	
777	777200				150	1,639	1,868	86	16	3,760
743	74720B	4	6							10
763	767300	2	183							185
Medium	767	767300		7						7
	757	757RR		2						2
	310	A310-304		3						3
Small	XXX	737300	2	6						8
	320	A320-232		2						2
	CCJ	CL601		2						2
	CNJ	CNA750	2	2						4
	DF2	FAL20		2						2
	GRJ	GV		66						66
	DF3	LEAR35	2	29						31
Military	777	777200		0		5				5
	XXX	C-130E		5						5
<b>Grand Total</b>			<b>14</b>	<b>7,337</b>	<b>150</b>	<b>1,645</b>	<b>1,868</b>	<b>86</b>	<b>16</b>	<b>11,116</b>

**Table B-7 (Continued)**  
**Australasia Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	AUSTRALASIA ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	330	A330-343	2	1,068						1,070
	333	A330-343	250	2,596						2,846
	343	A340-211	2	958						960
	346	A340-211		484						484
	74U	747200		2						2
	74X	747200		18						18
	744	747400	92	768						860
	74F	747400		228						228
	74Y	747400		116						116
	7F4	747400		8						8
	772	777200	2	22						24
	777	777200			1,192	84	48	460	1,702	3,485
	743	74720B		8						8
M1F	MD11PW		180						180	
Medium	763	767300	2	711						712
	767	767300		2						2
	XXX	737300		8						8
Small	CCJ	CL601		6						6
	CRJ	CL601	2							2
	DF2	FAL20		2						2
	GRJ	GV	2	54						56
	H25	LEAR25		2						2
	DF3	LEAR35		32						32
Military	777	777200						5	5	
<b>Grand Total</b>			<b>354</b>	<b>7,272</b>	<b>1,192</b>	<b>84</b>	<b>48</b>	<b>460</b>	<b>1,707</b>	<b>11,116</b>

**Table B-8  
Others Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Subtype	INM Aircraft Type	OTHERS DEPARTURES (620,000 ATM)								
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total	
Large	742	747200		12						12	
	74C			6						6	
	74T			12						12	
	74U			37	122					158	
	74X			44	816					860	
	744	747400		2	276					277	
	747			2	37					38	
	74E			11	273					283	
	74F			102	2153					2255	
	74Y			102	1442					1544	
	7F4	777200		8	55					62	
	772				1067					1067	
	777				152	967	795	3587	3835	620	9956
	77L				23						23
	773		777300			493					493
	743	74720B			56					56	
	330	A330-343		65	904					970	
	332			5	35					40	
	333				1603					1603	
	340				47					47	
	342		A340-211			2					2
	343				181					181	
	346			2	117					119	
380				2					2		
D10	DC1010				37					37	
D1C	DC1030		2	17					18		
M11	MD11PW			8					8		
M1F			300	1072					1372		
763		767300			95					95	
767				11					11		
76F			91	110					202		
76Y				15					15		
752	757RR			4	160					164	
757			4	190					194		
AB3		A300-622R		8	11					19	
ABF				4	23					27	
ABY					8					8	
310	A310-304			57	765					822	
313				53	1350					1404	
31F				358					358		
31X				342					342		
XXX		737300		4	39					43	
734	737400			14					14		
BBJ	737700			18					18		
738	737800			2237					2237		
739				36					36		
319		A319-131			11					11	
320		A320-232			892					892	
321		A321-232			71					71	
CCJ	CL601		4	39					43		
CNJ	CNA750		4	4					7		
DF2	FAL20		4	7					11		
E70	GV			4					4		
GLE				4					4		
GRJ			11	200					211		
DF3		LEAR35			71					71	
LRJ					4					4	
ABY	A300-622R				8					8	
777	777200					5			5		
<b>Grand Total</b>			<b>925</b>	<b>18116</b>	<b>967</b>	<b>800</b>	<b>3587</b>	<b>3835</b>	<b>620</b>	<b>28850</b>	

**Table B-8 (Continued)**  
**Others Annual Aircraft Movements for the Design Capacity Year by Time of Day**

Aircraft Group	IATA Aircraft Type	INM Aircraft Type	OTHERS ARRIVALS (620,000 ATM)							
			Day 1	Day 2	Night 1	Night 2	Night 3	Night 4	Night 5	Total
Large	742	747200		22						22
	74C			24						24
	74T			12						12
	74U			6	285					291
	74X			94	1341					1435
	744	747400	215	356						571
	747		4	46						50
	74E			445						445
	74F		151	2403						2554
	74Y		119	1378						1497
	7F4		4	77						81
	772	777200		1115						1115
	777			167	2170	865	756	1689	1771	7418
	77L			19						19
	773		777300		517					517
	743		74720B		86					86
	74L	747SP		2					2	
	330	A330-343	102	1410						1511
	332		0	371						371
	333		102	1991						2093
	340	A340-211		52						52
	342			8						8
	343		223	476						699
	346		23	709						732
	D10		DC1010		52					
	D1Y			2						2
D1C	DC1030		28						28	
M11	MD11PW		4						4	
M1F		55	1214						1269	
763		767300	4	114						118
767	4		4						8	
752	757RR		191						191	
757			232						232	
ABF	A300-622R		8						8	
310	A310-304	289	366						655	
313		433	792						1225	
Small	737	737300		4					4	
	XXX			33					33	
	734	737400		16					16	
	BBJ	737700		16					16	
	738	737800		2721					2721	
	739	737800		40					40	
	319	A319-131		20					20	
	320	A320-232		175					175	
	321	A321-232		8					8	
	CCJ	CL601		57					57	
	CRJ			4					4	
	ERJ	EMB145		4					4	
	DF2	FAL20	4	24					28	
	GRJ	GV	4	191					195	
	DF3	LEAR35	4	102					106	
LRJ			12					12		
Military	777	777200					5		5	
	XXX	C-130E		5					5	
<b>Grand Total</b>			<b>1839</b>	<b>19755</b>	<b>2170</b>	<b>865</b>	<b>756</b>	<b>1694</b>	<b>1771</b>	<b>28850</b>