For Information

Legislative Council Subcommittee to Follow Up Issues Relating to the Three-runway System at the Hong Kong International Airport

Issues Raised at the meeting on 12 April 2016

Introduction

In discussing LC Paper No. CB(4)832/15-16(01) at the meeting on 12 April 2016, the Government undertook to provide the following additional information as per Members' requests :

(a) charts on existing air route structure;

(b) information to support that Hong Kong International Airport ("HKIA") could achieve 102 Air Traffic Movements ("ATM") per hour under the three-runway system (3RS);

(c) air traffic growth rate in the Pearl River Delta ("PRD") region from 2007 to 2015 and whether there had been improvement in air traffic delay during the same period;

(d) target maximum number of ATMs per hour at HKIA upon commissioning of the 3RS in 2023-2024 if the "Pearl River Delta Region Air Traffic Management Planning and Implementation Plan (Version 2.0)" ("2007 Plan") could not be fully implemented, and any action plan/estimated timeline to achieve 102 ATMs per hour;

(e) NATS' full assessment report on the system and staff readiness of the new Air Traffic Management System ("ATMS") operation; and

(f) copies of the Airport Authority Hong Kong ("AAHK")'s two Marine Traffic Impact Assessment Reports.

This paper sets out the Government's response.

(a) Charts on existing air route structure

2. Please find at Annex A Charts 1-4 on existing air route structure which have been included in the Aeronautical Information Publication Hong Kong published by the Civil Aviation Department (CAD).

Chart 1: Enroute Chart (showing existing airways)

Chart 2: Area Chart (showing existing flight paths for flight overflying Hong Kong Flight Information Region)

Chart 3: Area Chart – Departure Routes (showing existing flight paths for flight departing from HKIA)

Chart 4: Area Chart – Arrival Routes and Terminal Holding Patterns (showing existing flight paths and holding locations for flight arriving at HKIA)

(b) Information to support that HKIA could achieve 102 ATM per hour under the 3RS

3. Members may refer to Government's written response, issued on 20 May 2016, to the motion carried at the meeting of the Subcommittee on 12 April 2016. A copy of the same response is at Annex B.

(c) Air traffic growth rate and traffic delay in the PRD region from 2007 to 2015

4. The growth rates (year-on-year percentage change) of aircraft movements[1] at HKIA, Guangzhou Baiyun International Airport, Shenzhen Bao'an International Airport, Zhuhai Jinwan Airport, and Macau International Airport from 2007 to 2015 are as follows:

Year	Hong Kong[2]	Guangzhou[3]	Shenzhen[3]	Zhuhai[3]	Macau[4]
2007	+5.3%	+12.2%	+7.1%	+4.3%	+4.6%
2008	+2.0%	+7.5%	+3.6%	+19.8%	-6.8%
2009	-7.2%	+10.2%	+7.8%	-23.9%	-18.4%
2010	+9.7%	+6.6%	+7.0%	+62.6%	-8.5%
2011	+8.9%	+6.1%	+3.4%	+27.6%	+4.8%
2012	+5.4%	+6.9%	+7.0%	-8.8%	+7.8%
2013	+5.8%	+5.6%	+7.2%	+2.1%	+16.6%
2014	+5.1%	+4.5%	+11.2%	+13.9%	+7.4%
2015	+3.8%	-0.6%	+6.7%	-0.9%	+6.0%

5. As to flight delay, according to the definition of the International Air Transport Association ("IATA"), it refers to the situation where the actual time of flight arriving at or departing from the aircraft parking stand is delayed by 15 minutes or more from the time allocated by CAD.

6. Record shows that out of the total number of departure flights, flights delayed due to the Mainland flow control constitute only a tiny percentage and had remained relatively stable over the years despite growth in air traffic movements. The statistics from 2007 to 2015 is tabulated below:

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1 The figures refer to the number of movement in/out of each of the airports named.

2 Source for air traffic statistics of HKIA is from: http://www.cad.gov.hk/english/statistics.html

3 Source for air traffic statistics of PRC airports: http://www.caac.gov.cn/XXGK/XXGK/index_172.html?fl=11

4 Air traffic statistics of Macau adapted from http://www.macau-airport.com/en/media-centre/facts-figures/statistics-passengers

Year	Percentage of delayed flights due to Mainland flow control out of total number of departure flights
2007	1.62%
2008	1.40%
2009	1.46%
2010	2.46%
2011	0.89%
2012	1.50%
2013	1.57%
2014	1.66%
2015	2.28%

7. When an airport is subject to unusual situations, including inclement weather, airway or airspace restrictions in adjacent airspace, air traffic volume exceeding the handling capacity of an Air Traffic Control ("ATC") unit during a particular point in time, the relevant ATC unit may consider imposing some tactical flow control measures to reduce the number of aircraft entering its airspace during a certain period of time. Such measures aim at ensuring that the ATC unit has the capacity to maintain safe and orderly aircraft operations within its airspace.

8. When flow control is imposed, depending on its effective time and area of coverage, it may lead to delay in departure and arrival flights. The CAD has all along been maintaining close communication and exchanging important real-time information with relevant parties including the AAHK, airlines and ATC units of the adjacent airspace, to ensure smooth operation of passenger and cargo flights at HKIA.

9. The CAD and AAHK implemented the Airport Collaborative Decision Making ("A-CDM") data sharing platform in 2012 to facilitate the sharing of real-time operational information of HKIA and the ATC, including details of the arrival and departure flights, allocation of aircraft parking stands, conditions of the airfield and meteorological information, among airlines, ground handling agents, and aircraft maintenance organisations, etc. The platform seeks to allow various stakeholders to make necessary plans and coordinated arrangements through the sharing

of real-time information, thereby facilitating and enhancing the overall operations at HKIA. In April 2016, AAHK commenced a project to replace the existing A-CDM System with enhanced functions and expanded the scope of information shared, enhancing the connectivity of the platform, thereby enabling relevant stakeholders to make well-informed decisions efficiently and effectively. The new A-CDM System is expected to be commissioned for service in the third quarter of 2017.

10. Handling capacity is also a factor contributing to potential flight delays. To enhance the handling capacity of HKIA, AAHK has been taking forward various initiatives including the West Apron Expansion and Midfield Development Project. The West Apron Expansion consists of 28 new parking stands and other related supporting facilities, it has been operating in full since 2015. The Midfield Concourse, with 20 additional parking stands, has been in full operation since March 2016, increasing HKIA's passenger handling capacity by 10 million passengers per annum. The remaining Midfield Apron Development, which would provide an extra 34 full service stands, is targeted for completion by 2020**.**

(d) Target maximum number of ATMs per hour at HKIA upon commissioning of the 3RS in 2023-2024 if the 2007 Plan could not be fully implemented; and any action plan/estimated timeline to achieve 102 ATMs per hour

11. A tripartite working group (TWG), comprising the aviation authorities of the Mainland, Hong Kong and Macau, was formed in 2004 with the aim of optimising the use of airspace in the Pearl River Delta (PRD) Region. The TWG drew up the "Pearl River Delta Region Air Traffic Management Planning and Implementation Plan (Version 2.0)" (the 2007 Plan) in 2007, which has taken into account the operational need for 3RS of HKIA, as well as the planned development of other key airports in the PRD (including Shenzhen and Guangzhou airports). The phased implementation of the 2007 Plan, which was agreed by all parties concerned, provides the basis for achieving the eventual target maximum capacity of 102 ATMs per hour under the 3RS operation at HKIA in the long run. A brief summary of the progress made in the phased

implementation of the 2007 Plan is at Annex C. On 9 May 2016, the three parties signed an agreement on a strengthened liaison mechanism to enhance co-operation and exchange, reflecting the determination of the three parties to continue to take forward the 2007 Plan in a progressive manner (the relevant press release is at Annex D).

12. In parallel, CAD is conducting a study to explore various means to increase the capacity of 3RS before the full implementation of the 2007 Plan. We will brief the relevant Panel of the Legislative Council on the findings of the study in due course. In any case, it is not envisaged that projected traffic demand will already add up to 102 ATMs per hour when the 3RS is commissioned. The maximum capacity of 102 ATMs per hour is a target to be reached in the longer run.

(e) NATS' full assessment report on the system and staff readiness of the new ATMS operation

13. The Administration had received similar requests both from the LegCo Panel on Economic Development ("ED Panel") and the Public Accounts Committee ("PAC"). We are prepared to provide NATS' assessment report on the system and staff readiness of the new ATMS operation based on the "snapshot" review done in December 2015. Furthermore, to provide Members with a comprehensive picture and the latest progress, we will also provide NATS' latest report, expected within May 2016, on the overall readiness of the operational transition of Stage 1 of the phased functional implementation of the ATMS. The two NATS reports, together with an explanatory note by THB, will be provided to the Subcommittee, the ED Panel as well as the PAC once they are available.

(f) Marine Traffic Impact Assessment Reports

14. Members have requested AAHK to provide copies of the above reports. AAHK has issued copies of the reports (in the form of CD ROMs) to Members for reference. A note on the reports is prepared at Annex E.

Advice Sought

15. Members are invited to note the information set out above.

Transport and Housing Bureau
May 2016

Prohibited, Restricted and Danger Areas - Long Range

LEGEND

Prohibited, Restricted and Danger Areas Airspace

Identification of area — ZG(D)155
Vertical limits — 15000m / 6000m AMSL
P = Prohibited
R = Restricted
D = Danger

ACTIVE PERIODS OF RESTRICTED AREA

VHR7	H24

ACTIVE PERIODS OF DANGER AREAS

ZG(D)155	0030 - 0400	0601 - 1200
ZG(D)156	0030 - 1400	
ZG(D)158	2300 - 0030	1400 - 1700

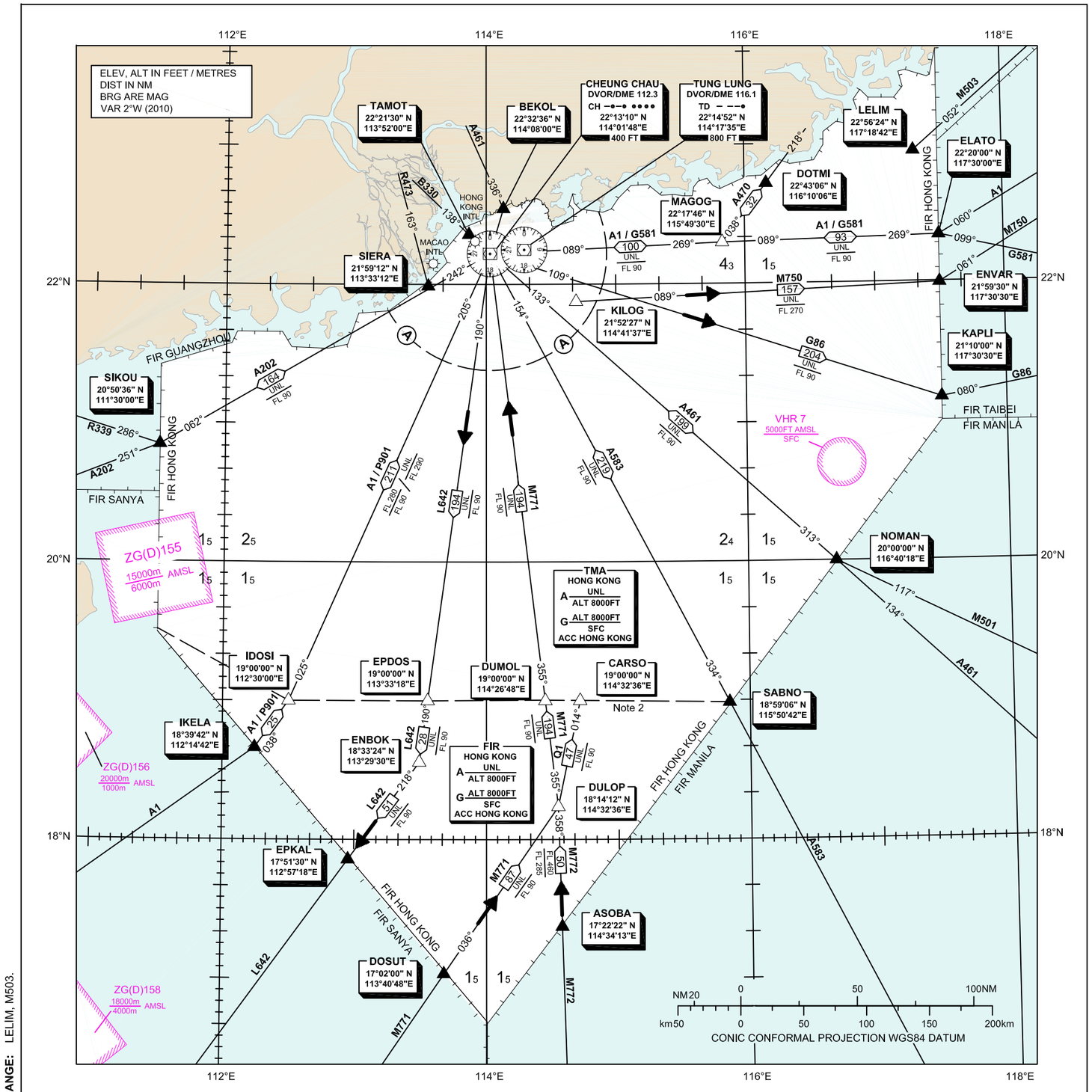
FOR COMPLETE INFORMATION OUTSIDE HONG KONG AIRSPCE, SEE RESPECTIVE AIPs

COMMUNICATION FACILITIES
SEE ENR 6-3

Area Minimum Altitude (AMA)

Each 2° quadrilateral contains an Area Minimum Altitude (AMA) which represents the lowest altitude which may be used within Hong Kong airspace under instrument meteorological conditions (IMC). The AMA provides a minimum clearance of 1,000 ft (300m) above all obstacles within Hong Kong airspace in the quadrilateral. It is represented in thousands and hundreds of feet above mean sea level.

Example : 2,400 feet 24



CHANGE: LELIM, M503.

Civil Aviation Department Hong Kong

ENROUTE CHART - HONG KONG

LEGEND

Aerodrome	☼
Flight Information Region (FIR) Boundary	
Terminal Control Area (TMA) Boundary	
Name of airspace / Upper limit / Category of airspace / Lower limit / Name of airspace	TMA HONG KONG UNL A ALT 8000FT ACC HONG KONG
Route designator / Magnetic track / Distance in NM / Upper limit / Minimum cruising level	A461 133° 199 313° UNL FL 90
Reporting point	Complusory ▲ / On request △
VHF omnidirectional radio range (VOR) — Compass rose orientated on the chart to Magnetic North	
Co-located VOR and DME navigational aids (VOR/DME)	⊡
Altimeter setting boundary (50 NM from airport)	—Ⓐ—
Identification for radio navigation aids (NAVAIDS) — Name / NAVAID, frequency, identification or callsign / Geographical coordinates / Elevation of DME site (to the nearest 100 feet)	CHEUNG CHAU DVOR/DME 112.3 CH 22°13'10" N 114°01'48"E 300 FT
Identification for reporting point / Geographical coordinates	SABNO 22°13'10" N 114°01'48"E

Note 1: Refer to ENR1.10 for flights transiting Hong Kong FIR

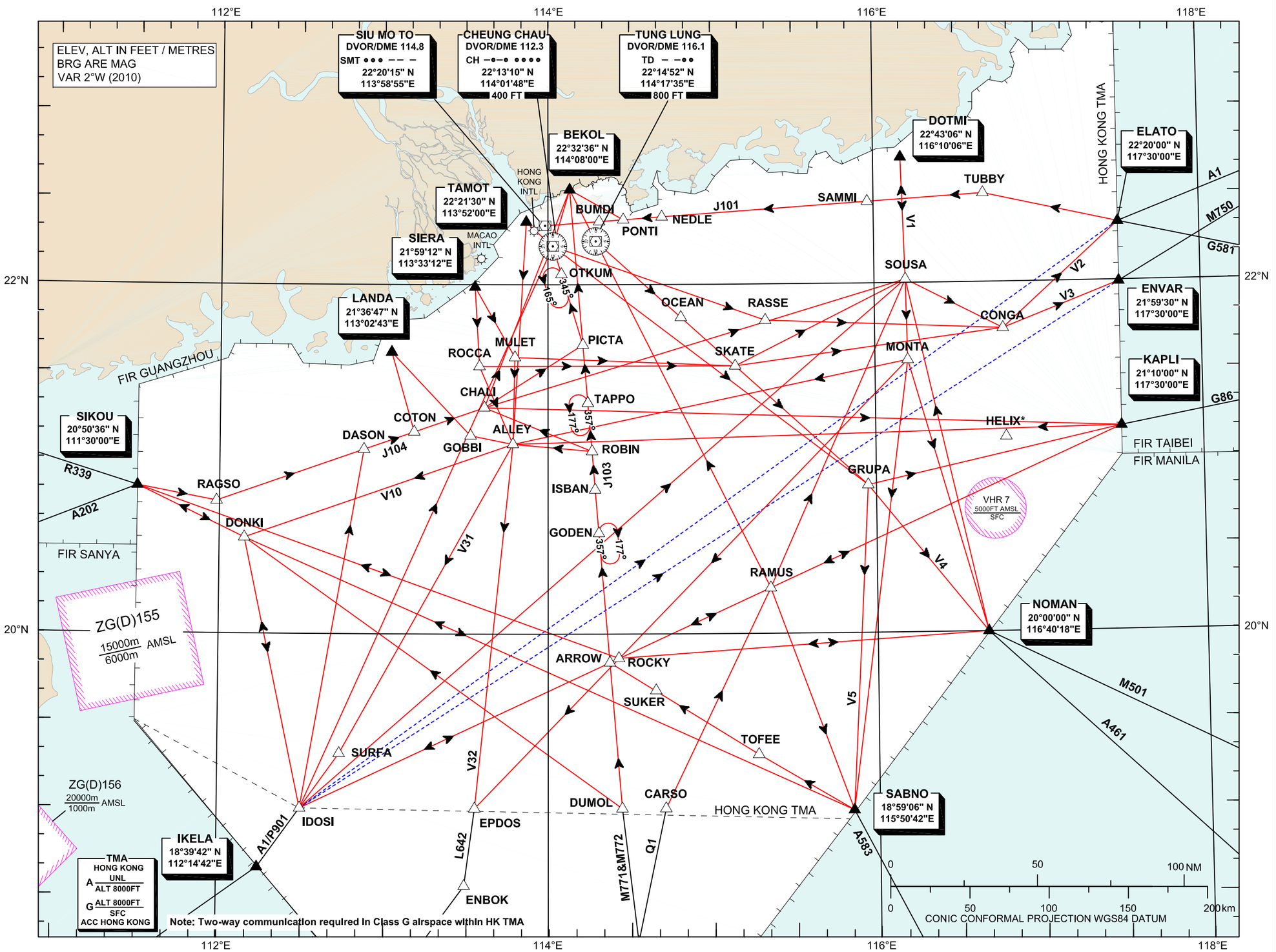
Note 2: PBN Route Q1 joins STAR at CARSO

Note 3: Two-way communication required in Class G airspace within HK TMA

AREA CHART

FLIGHT PLAN ROUTES TRANSITING HONG KONG TMA

VHHH / HONG KONG TMA



LEGEND

Transit Routes Availability

H24

1700 - 0059 UTC

See page ENR 6-1 ENROUTE CHART for additional legend.

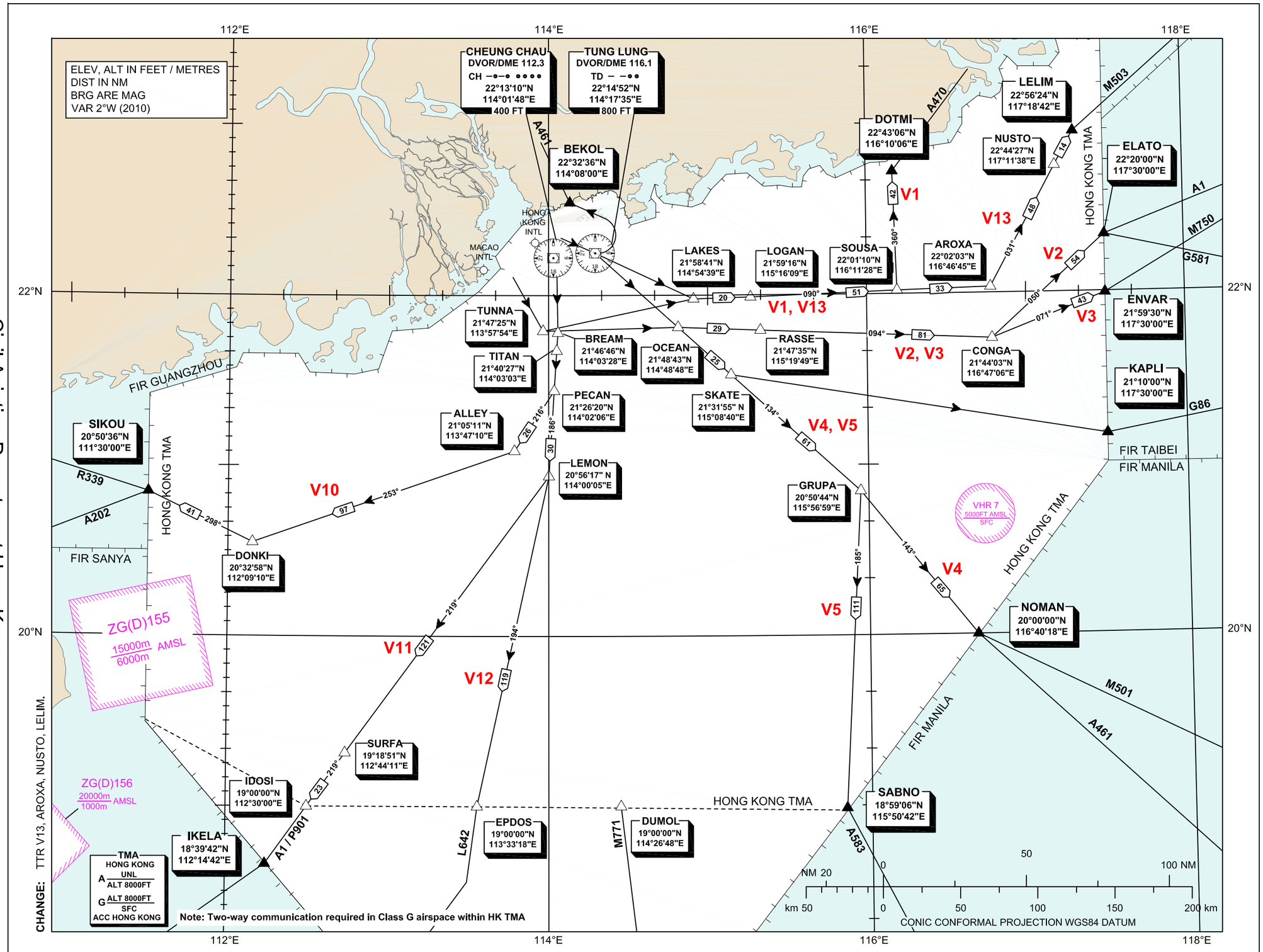
See page ENR 6-3 for communication frequencies.

*HELIX - additional waypoint to/from DOTMI when required

Note1: Refer to ENR 1.10 for flights transiting Hong Kong FIR

Note2: Refer to ENR 3.6 for enroute holding procedures.

CHANGE: ENBOK, SUKER, flight plan routes updated, graduation marks

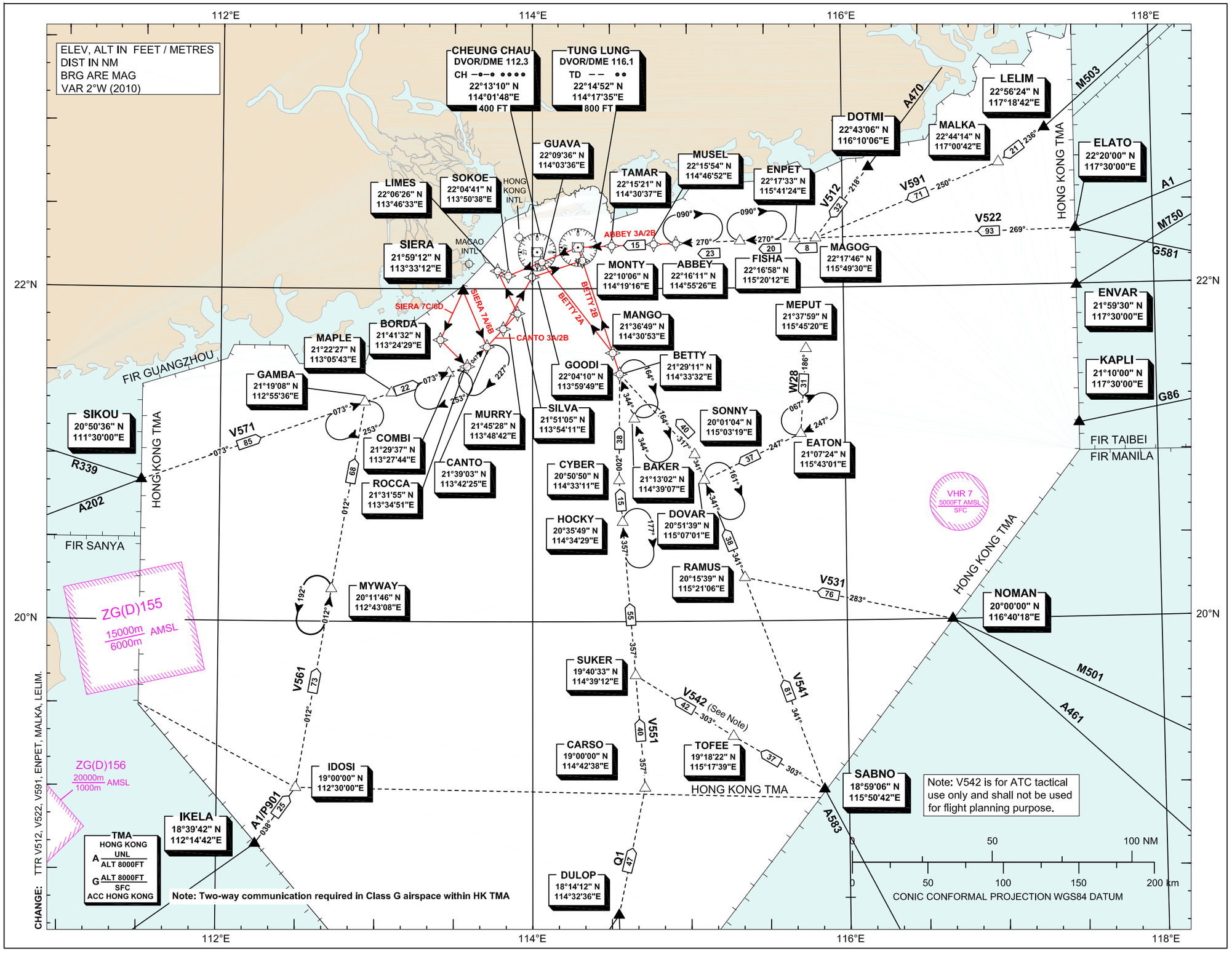


LEGEND

Standard Instrument Departure Routes

See page ENR 6-1 ENROUTE CHART for additional legend.

See page ENR 6-3 for communication frequencies.



LEGEND

Standard Instrument Arrival Routes

Terminal Transition Routes

ATS Routes

See page ENR 6-1 ENROUTE CHART for additional legend.

See page ENR 6-3 for communication frequencies.

For Information

Legislative Council Subcommittee to Follow up Issues Relating to the Three-runway System at the Hong Kong International Airport

Motion Passed at the Meeting on 12 April 2016

Introduction

At the Subcommittee meeting held on 12 April 2016, the following motion was passed –

> "As the overall runway capacity of the Hong Kong International Airport (HKIA) under a Three-runway System (3RS) operation was based on the Pearl River Delta (PRD) Region Air Traffic Management Planning and Implementation Plan (Version 2.0) (the 2007 Plan) signed by Hong Kong, the Mainland and Macao, this Subcommittee requests the Government to provide this Subcommittee with the content of the 2007 Plan concerning the basis for coming up with 102 air traffic movements per hour."

This paper sets out the Government's response.

Background

2. The National Air Traffic Services (NATS)[1] was commissioned by the Airport Authority Hong Kong in 2008 to conduct the Airspace and Runway Capacity Study (ARCS) to assess the maximum practical hourly capacity of the 3RS.

Basis for runway capacity derivation of the 3RS

3. The runway capacity of HKIA under 3RS is determined by a number of factors: surrounding terrain, minimum separation between aircraft operating on the runways, the mode of operation of each runway

[1] NATS is a British aviation expert consultant.

which may be arrivals only (A), departures only (D) or mixed mode (MM) comprising arrivals and departures.

4. Taking into account HKIA's special circumstances (for example, the surrounding terrain constraint, congested airspace, the aircraft mix at HKIA, etc.) and the need to comply in full with the International Civil Aviation Organisation (ICAO)'s safety and minimum separation requirements, NATS calculated the potential runway capacity for each of the three runways considered individually.

5. After studying various possible modes of operations, NATS concluded that the primary mode of operations of the 3RS should be the one offering the highest balanced capacity between Departures and Arrivals, which would see the North/Centre/South runways operating in A/D/MM respectively, giving 33 + 35 + 34 movements per hour, i.e. a total of 102 movements per hour. This is the highest balanced capacity that can be achieved for the 3RS under independent operation. The full ARCS Reports, which were made public in July 2011, can be accessed via HKIA's website: http://www.threerunwaysystem.com/tc/Information/Consultancy_reports.aspx. Paragraphs extracted from the ARCS reports which are of particular relevance to the above are at Attachment A.

6. In summary, the maximum practical hourly capacity of the 3RS, i.e. 102 movements per hour, was derived by NATS via the ARCS in 2008, which had taken into consideration the projected flight tracks anticipated in the 2007 Plan. The projected flight tracks extracted from the ARCS Reports can be found in Attachment B.

Civil Aviation Department
May 2016

Annex B
(Attachment A)

Extracted from NATS ARCS Phase 1b Report

11 STAGE 3: THREE RUNWAY OPERATIONS

11.1 Initial Investigation of Modes of Operation

The modes of operation are described for each runway from North to South.

Mode of Operations may be Arrivals only (**A**), Departures only (**D**) or Mixed Mode Arrivals and Departures (**MM**).

For a 3-runway airport each runway is, in theory, capable of operating in one of these three modes, resulting in 27 potential operating modes. These 27 modes have been placed in a table and each mode evaluated for operability and capacity. At the end of this process a number of core operating modes are identified as suitable for further investigation.

11.2 Detail Review of Modes of Operation for each Runway Option

The three runway options (including variants) have been assessed based on the modes of operation selected from the initial review. The issues have been identified and a number of mitigation measures have been proposed. The capacity of each mode of operation, after implementation of these mitigations has then been assessed.

The review has been undertaken by developing a table for each runway option, for each mode of operation and in both the Runway 25 and the Runway 07 directions. The SOIR compliance issues in respect of parallel approaches, departures, missed approaches and wake vortex are identified in each case. Possible mitigations are then proposed where appropriate and considered to be viable.

Each table contains an assessment of the potential capacity of the airport operating in the chosen mode of operation on the assumption that the issues have been resolved. A final table for each option describes the primary mode of operation and the actual capacity that is likely to be achieved. Due to the significant and complex nature of the issues, particularly the interaction between the various issues, these capacity figures may be significantly lower than the theoretical maximum capacity.

The detailed review and the tables developed are contained in Appendix B.

The result of this is a review of the development of a recommended mode of operation for each runway option. This includes a recommended primary mode of operations where arrival and departure capacities are generally balanced. Modes of operation to deal with arrival and departure peaks are also recommended.

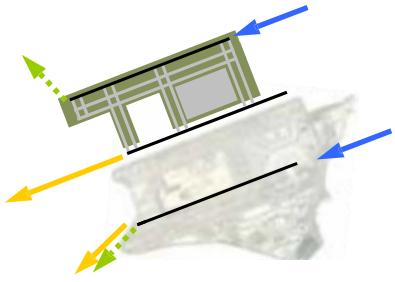
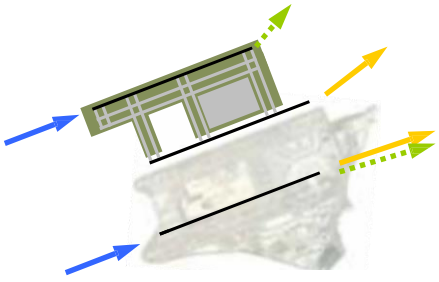
A summary of the review and these recommended modes are described below together with the mitigations that are required to operate these modes, and the capacity achieved with the mitigations in place.

11.3 Summary of the Review of Options P and R

Options P and R have the lowest number of SOIR compliant and operational issues. The outer runways are far enough apart to support Independent Parallel Operations using the proposed breakout manoeuvre. The arrival capacity of the dedicated arrival runway (07L/25R) has been assessed as 33 arrivals per hour for compatibility with the rest of the report. In practice, the improved consistency and reduced contingency margins proposed for two runways in segregated mode could also be applied to this runway which might result in the achievable arrival rate being slightly higher (up to around 36 arrivals per hour).

Significant issues that remain are the ability to apply 15 degrees separation between the missed approach and the SID tracks and the fact that the SIDs and missed approaches, while providing the required track separation, both turn in the same direction. A specific safety case is required to support these operations.

The analysis of Options P and R indicate that Mode 9 (MM/D/A) is the highest capacity mode. However, it requires a SID from Runway 07L that turns left by 30 degrees, and this creates a significant confliction with the Shenzhen circuit. As a result, Mode 9 is not recommended in the Runway 07 direction. This problem does not exist in the Runway 25 direction, as the Runway 25C SID can climb straight ahead, or turn only 15 degrees right, depending on the separation required from Runway 25L. Operating Mode 9 in one direction only does not provided any increase in the declared capacity, as only the lowest capacity can be declared. Operating different modes in each direction creates operational difficulties when changing runway direction and further complicated the process of terminal and runway allocations. As a result, Mode 23 is recommended as the primary mode of operations in both runway directions.

<table>
<tr><td colspan="2">Options P & R</td><td colspan="2">Mode 23
A/D/MM</td><td>Runway Separation 2240/1525m</td></tr>
<tr><td colspan="5">RECOMMENDED PRIMARY MODE OF OPERATION</td></tr>
<tr><td colspan="2">Runway 25 Direction</td><td colspan="3">Runway 07 Direction</td></tr>
<tr><td colspan="2">  </td><td colspan="3">  </td></tr>
<tr><td>Runway</td><td>Use</td><td>Capacity</td><td>Arrivals</td><td>Departures</td></tr>
<tr><td>25R/07L</td><td>Arrivals</td><td>33/36*</td><td>33/36*</td><td>-</td></tr>
<tr><td>25C/07C</td><td>Departures</td><td>35</td><td>-</td><td>35</td></tr>
<tr><td>25L/07R</td><td>Mixed</td><td>34</td><td>17</td><td>17</td></tr>
<tr><td>Total</td><td></td><td>102/105*</td><td>50/53*</td><td>52</td></tr>
</table>

*Note: up to 36 arrivals and total capacity up to 105 movements per hour with the reduction in contingency in the arrival spacing.

Note:

Option P – Wide Spaced Parallel Runway (2240m) Offset to the West

Option R – Parallel Runway at 1525m Offset to the West

Annex B
(Attachment B)

NATS

Projected Flight Tracks for 3RS in NATS Report

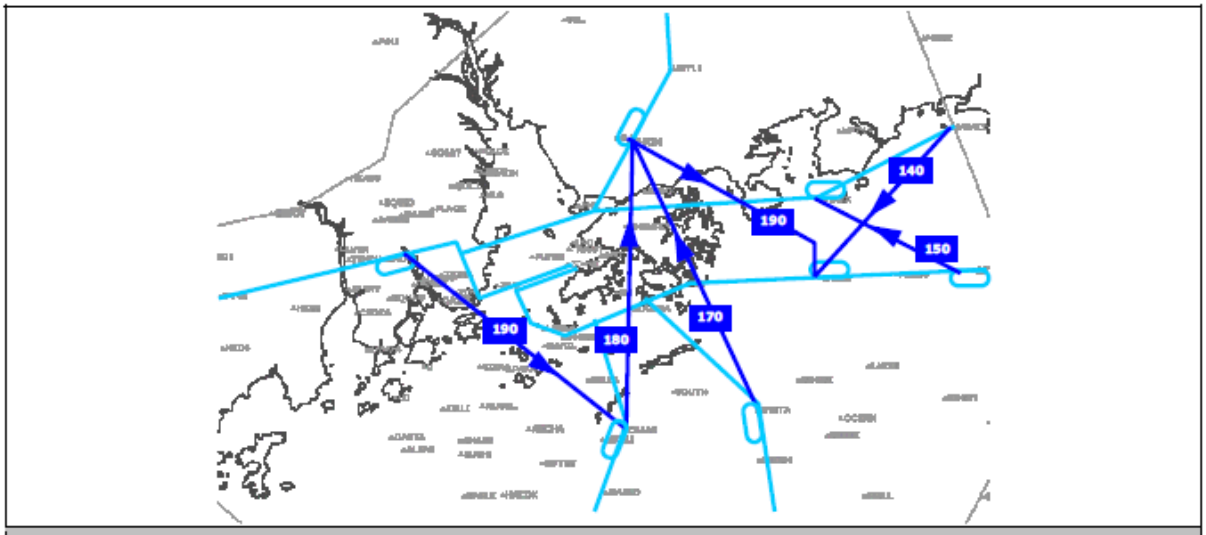


Figure 3.2 Suggested Airborne Crossover Tracks – Easterly Arrivals

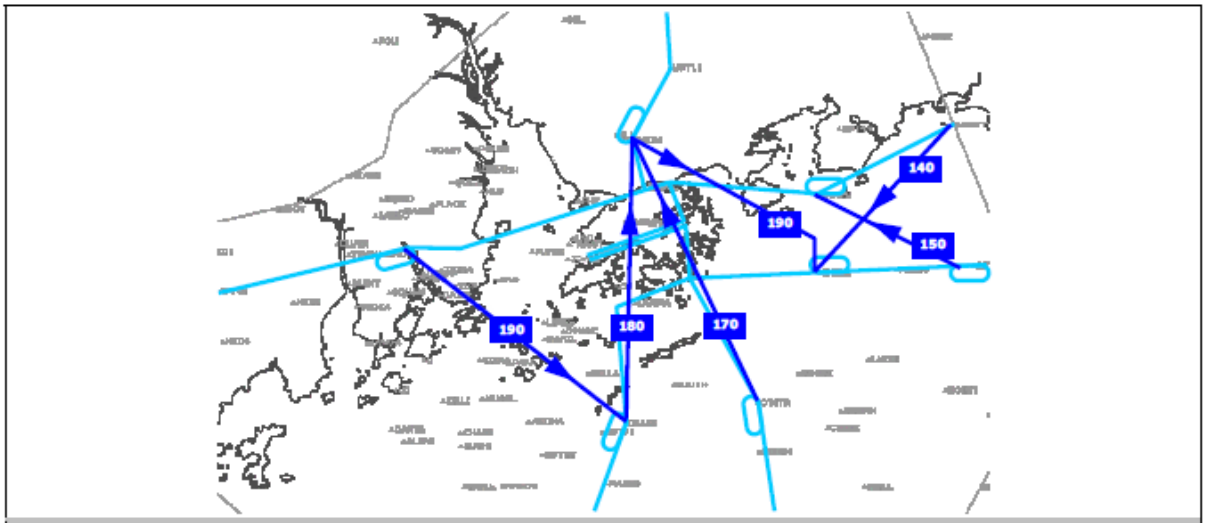


Figure 3.3 Suggested Airborne Crossover Tracks – Westerly Arrivals

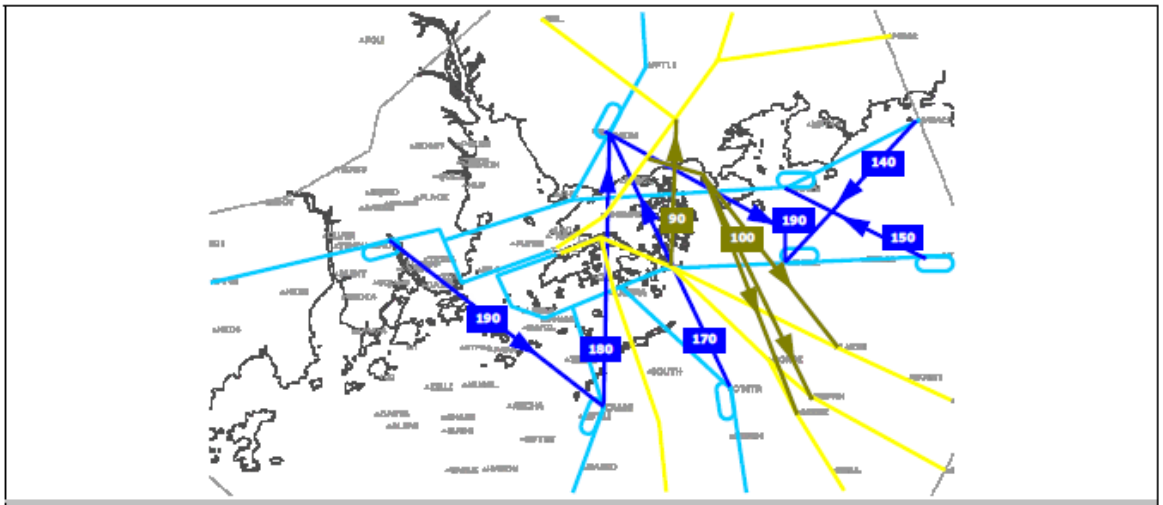


Figure 3.4 Airborne Crossover Tracks – Easterly Departures

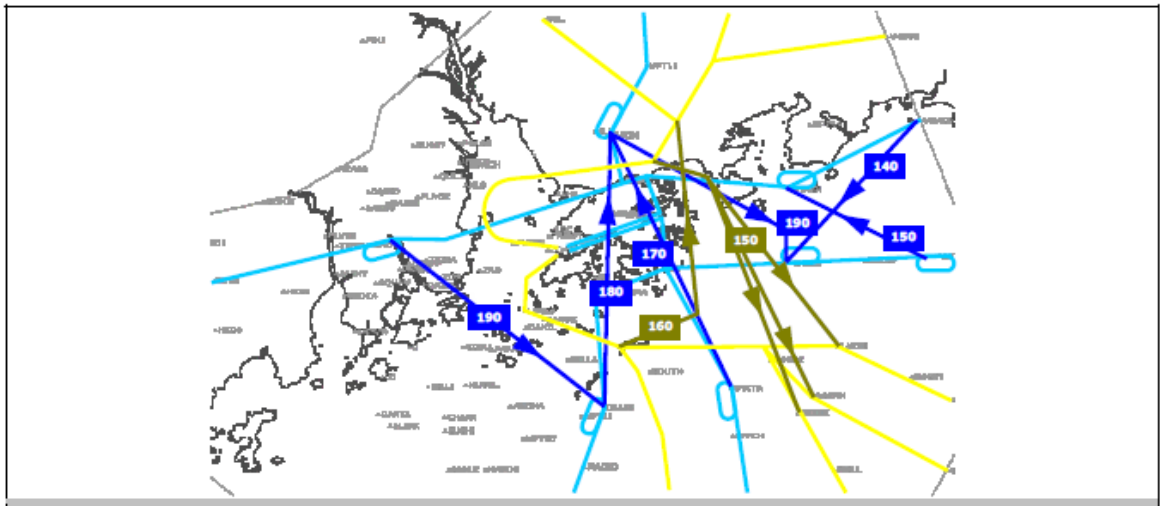


Figure 3.5 Airborne Crossover Tracks – Westerly Departures

Annex C

Summary of Progress of Implementation of the 2007 Plan

The Tripartite Working Group has been dedicated to implement the 2007 Plan over the years. Some of the measures have already been implemented to enhance air traffic management, including:

(i) establishment of two additional handover points and corresponding air routes between the Guangzhou and Hong Kong Flight Information Regions ("FIRs") to cater for flights overflying Hong Kong and landing in Guangzhou and Shenzhen;

(ii) establishment of new air routes for the eastern part of the Mainland and an additional handover point between the Hong Kong and Guangzhou FIRs for flights operating between Hong Kong, Macao and the eastern part of the Mainland with effect from 7 January 2016; and

(iii) adjustment of the Zhuhai airspace structure and establishment of peripheral flight paths in the PRD region.

Annex D

Press Releases

CAAC, CAD and AACM sign agreement on liaison mechanism to enhance co-operation and exchange (with photos)

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The Air Traffic Management Bureau (ATMB) of the Civil Aviation Administration of China (CAAC), the Civil Aviation Department and the Civil Aviation Authority of the Macau Special Administrative Region (AACM) signed an agreement in Hong Kong today (May 9) on establishing a strengthened liaison mechanism to enhance co-operation and exchange among the civil aviation authorities in the Mainland, Hong Kong and Macau on air traffic management planning and implementation in the Pearl River Delta (PRD) region.

Witnessed by the Deputy Administrator of the CAAC, Mr Wang Zhiqing, and the Secretary for Transport and Housing, Professor Anthony Cheung Bing-leung, the agreement was signed by the Director General of the ATMB of the CAAC, Mr Che Jinjun; the Director-General of Civil Aviation, Mr Norman Lo and the President of the AACM, Mr Chan Weng-hong.

Specific contents of the agreement on the strengthened liaison mechanism to enhance tripartite co-operation and exchange include:

(1) The top management of the three civil aviation authorities will host high-level meetings in the Mainland, Hong Kong and Macau on a rotational basis and/or tele-conferencing twice a year to proactively strengthen the close co-operation among the three sides on the planning and implementation of air traffic management in the PRD region, enhance communication at the top management level, and synergy in overall planning, and foster co-operation in the PRD region; and

(2) Air traffic control technical personnel of the three sides

will have more interaction and communications where necessary, share experience with each other, and conduct more meetings and exchanges at the technical level, with no limitation on the scale and number of meetings to be held.

Professor Cheung said at the signing ceremony that the agreement on the strengthened liaison mechanism to enhance co-operation and exchange helped to take forward the PRD Region Air Traffic Management Planning and Implementation Plan progressively and was also one of the means to implement the Guiding Opinions of the State Council on Deepening the Cooperation within the Pan-PRD Region. The signing of the agreement marked an enhanced partnership among the Mainland, Hong Kong and Macau in the planning of airspace resources in the PRD region which helped strengthen synergies, ensure efficient use of the airspace, and bring mutual benefits, thus achieving a win-win situation. Together, a world-class airport cluster in the PRD region would be built and the unique strengths of the region would be given full play.

Mr Wang noted that over the years, the Mainland, Hong Kong and Macau have all along been maintaining close working relationships and have established a good rapport in the field of civil aviation. The signing of the agreement on the strengthened liaison mechanism to enhance co-operation and exchange among the civil aviation authorities in the Mainland, Hong Kong and Macau on air traffic management is a good example. In line with the concept of "Innovation, Co-ordination, Integration and Mutual Benefits", the CAAC will work with the civil aviation authorities in Hong Kong and Macau to create a safer, smoother and healthier environment for sustainable development of the civil aviation industry in the PRD region through the approach of collaborative decision making, coordinated operations and development.

Professor Cheung also held a meeting today with Mr Wang to exchange views on various issues, including enhancement of flight procedures and airspace structure of the PRD region,

optimising the airspace utilisation in the region, and the three-runway system (3RS) project at the Hong Kong International Airport. Mr Wang said that, under the national directive of supporting the development of the 3RS project, the CAAC will provide full support with the aim of enabling the 3RS to maximise its potential and achieve the target runway capacity of 102 air traffic movements per hour in the long run.

Ends/Monday, May 9, 2016
Issued at HKT 20:43

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For Information

Legislative Council Subcommittee
to Follow Up Issues Relating to the
Three-runway System at the Hong Kong International Airport

Three-Runway System
Marine Traffic Impact Assessment Study

Introduction

This paper sets out Airport Authority Hong Kong's ("AAHK's") response to the letter of 12 April 2016 from Hon Kenneth Chan to the Chairman of the Subcommittee.

Three-Runway System ("3RS") Marine Traffic Impact Assessment ("MTIA") Studies

2. As part of the 3RS project scheme design, AAHK conducted two MTIA studies, namely:

(a) Contract P281 – Third Runway Reclamation Design Consultancy Services – Preliminary Construction Marine Traffic Impact Assessment for Land Formation Works (December 2014); and

(b) Contract P283 – Third Runway Scheme Design Consultancy Services – Marine Traffic Impact Assessment Report (March 2015).

3. The main objective of the first study (i.e. under contract P281) was to assess the marine traffic and navigation risks associated with marine activity generated by the construction of the third runway, in

particular during the land formation stage, and to reduce any risks to an acceptable level.

4. The objectives of the second study (i.e. under contract P283) were to assess the marine traffic impacts arising from :

(a) the operation of the third runway and the 3RS;
(b) the marine ecological mitigation measures proposed under the 3RS during the operation and peak construction; and
(c) the marine traffic arising from any infrastructure and concourse works.

5. As requested by Hon Kenneth Chan, soft copies of the above two MTIA reports have been provided to the Legislative Council ("LegCo") separately[1].

6. The salient points of the reports are highlighted below.

Approach and Methodology Adopted in the MTIA Studies

7. The two MTIA studies were both conducted by the same specialist marine consultant who had assessed the cumulative marine traffic risk in the future navigable water space as a result of the 3RS project (both during construction and operation). Both MTIA studies adopted a structured approach in the assessment of marine risks in accordance with the Formal Safety Assessment methodology adopted by the International Maritime Organization.

8. The following key issues were taken into account and assessed in the MTIA studies:

(a) the anticipated marine traffic activities up to year 2030[2];

[1] The reports are for LegCo Members' reference only.

[2] The activities that had been taken into account included the best available published information by the relevant Authorities which are specific for Hong Kong waters (including Urmston Road), including : (a) "Study on Hong Kong Port Cargo Forecast 2005/06"; (b) "Port of Hong Kong Statistical Tables" (1996 - 2013) by the Marine Department ("MD"); (c) "Annual Transport Digest" by the Transport Department; (d) "The Assessment of Typhoon Shelter Space Requirements 2009 - 2025" by the MD; (e)

(b) construction activities of the 3RS project;

(c) the geometry of the future water space including (i) the latest 3RS land formation footprint; (ii) the proposed Hong Kong International Airport Approach Areas ("HKIAAA") to be expanded as a result of the 3RS; and (iii) the layout of the marine park proposed in the Environmental Impact Assessment;

(d) route diversion and speed restriction of SkyPier high-speed ferries ("HSF") plying between SkyPier and Macau/Zhuhai; and

(e) the works areas of the 3RS project.

9. The approach and methodology adopted in the 3RS MTIA studies, including the marine traffic collision risk modelling and risk assessment, are widely adopted in the MTIAs for various infrastructure projects in Hong Kong[3] and "Marine Traffic Risk Assessment For Hong Kong Waters" commissioned by the Marine Department in 2004.

The Findings

10. Findings of the MTIA studies affirm that marine safety will not be compromised by the expansion of Hong Kong International Airport ("HKIA") into a 3RS with the implementation of the recommended marine traffic mitigation and enforcement measures. Specifically :

(a) the marine traffic risk in the future navigable water space as a result of the 3RS project (both during construction and

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for SkyPier high-speed ferry ("HSF") volumes, the 2030 SkyPier Passenger forecasts conducted by AAHK; and (f) for HSFs from the China Ferry Terminal and Macau Ferry Terminal, the Cross Boundary Passenger Vessel arrival records from MD.

[3] Examples of such infrastructure projects include the Hong Kong Boundary Crossing Facilities; the Tuen Mun – Chek Lap Kok Link; the Shatin to Central Link; and the Cross Bay Link, Tseung Kwan O.

operation) remains within acceptable levels with respect to the Hong Kong Societal Risk criteria[4]; and

(b) the navigation simulation workshops concluded that the simulated water space is viable and safe for navigation.

Consultation with Stakeholder of Marine Industries

11. Findings of the MTIA studies, including the marine traffic collision risk modeling and risk assessment results at various design/planning stages, were presented to the stakeholders of the marine industries in the Marine Industry Consultation Workshops held in July 2012 and June 2014. These stakeholders include concerned government bureaux and departments and relevant consultative committees of the marine industry, such as the Local Vessels Advisory Committee, Pilotage Advisory Committee, Port Operations Committee and High Speed Craft Consultative Committee. The marine industry stakeholders in general considered the MTIA conclusion acceptable.

Advice Sought

12. Members are invited to note the information set out in this paper.

Airport Authority Hong Kong
May 2016

[4] Societal risk expresses the average risks to the whole population living, working or travelling near a hazardous installation/operation. Risk acceptability may be considered a matter of personal viewpoint but in order to provide a yardstick for potentially hazardous installation/operation sited close to local populations, a clear and unambiguous Societal Risk Guideline is provided in Annex 4 of the Environmental Impact Assessment Ordinance Technical Memorandum.