For Discussion
On 3 November 2015

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

Three-Runway System Project at the Hong Kong International Airport: Overview, Need and Urgency and Latest Progress

Introduction

This paper sets out :

(a) an overview of the need and urgency of as well as the economic impact of the Three-Runway System ("3RS"); and

(b) the latest progress on the 3RS.

Background

2. Through the preparation of a 20-year Master Plan, which is reviewed and updated every five years, the Airport Authority Hong Kong ("AAHK") sets out the strategic direction of the future development of the Hong Kong International Airport ("HKIA"). AAHK's Master Plan 2030 ("MP2030") was commissioned in 2008 and completed in late 2010. MP2030 sets out two development options for HKIA, i.e. to enhance the existing two runway system ("2RS") by expanding terminal and apron facilities; or to expand the 2RS into a 3RS. The then Panel on Economic Development was briefed on the MP2030 at its meeting on 10 June 2011. Members were generally supportive of the option of expanding HKIA into a 3RS.

3. Between 3 June and 2 September 2011, AAHK conducted a three-month public consultation exercise ("PCE") on MP2030 to seek public views on the future development of HKIA. As part of the PCE, AAHK appointed the Social Science Research Centre ("SSRC") of the University of Hong Kong to independently compile, analyse and report on the views collected during the three-month PCE. This was to ensure a fair and impartial process in the compilation of public opinion. The two proposed development options were presented in questionnaires for respondents to indicate their overall preference as well as their preferred option after considering each of the following eight

considerations – Hong Kong's air connectivity, service quality, competitiveness, economic growth, creation of jobs, convenience for travel, environmental impact and construction cost.

4. Of the 24,242 questionnaires received, there was a clear preference for the three-runway option. 73% of the respondents preferred the three-runway option overall, while 11.1% preferred the two-runway option overall. In addition, SSRC analyzed some 15,200 entries of qualitative feedback collected through a total of ten different channels.

5. In March 2012, the Executive Council ("ExCo") gave approval in principle for AAHK to adopt the 3RS as the future development option for HKIA for planning purpose; and for AAHK to proceed with the planning work related to the development of the 3RS, which included specifically the statutory Environmental Impact Assessment ("EIA"), the associated design details, and the financial arrangements.

6. AAHK completed the above planning work in January 2015 and submitted a recommendation to the Government for consideration. In March 2015, the ExCo affirmed the need for the 3RS for maintaining Hong Kong's competitiveness as a global and regional aviation hub, and for catering to our long-term economic and development needs.

Overview of the 3RS Project

7. The 3RS project is more than building an additional runway. The project includes the following seven core components :

(a) formation of approximately 650 hectares of land north of the existing airport island by reclamation partly on top of disused contaminated mud pits using non-dredged methods including deep cement mixing ("DCM") technique for ground improvement. A huge quantity of marine sand, of some 100 million cubic metres, is expected to be required for the reclamation works;

(b) construction of the Third Runway, taxiways and apron;

(c) construction of the Third Runway Concourse ("TRC") with 57 parking positions upon 3RS commissioning;

(d) modification/expansion of the existing Terminal 2 ("T2") and construction of associated road network;

(e) provision of a new Automated People Mover System and an integrated maintenance depot;

(f) provision of a new high-speed Baggage Handling System serving TRC and T2; and

(g) construction of airport support infrastructure, utilities and facilities.

The layout plan for the 3RS project is at **Annex A**. The construction of the 3RS project will take some eight years to complete, counting from the date when reclamation commences.

Need and Urgency of the 3RS

8. HKIA has experienced strong traffic growth since airport opening in 1998. In 2014, HKIA received 63.3 million passengers, 4.38 million tonnes of cargo and handled 391,000 air traffic movements ("ATMs"), representing a year-on-year growth of 5.7%, 6.0% and 5.1% respectively. With more than 100 airlines operating over 1,100 daily flights to approximately 180 destinations worldwide, including 47 on the Mainland, HKIA is a leading global and regional aviation hub that helps maintain Hong Kong's status as "Asia's World City".

9. According to the latest projection, HKIA's annual traffic demand is projected to reach 102.3 million passengers, 8.9 million tonnes of cargo and 607,000 ATMs by 2030. As at end October 2015, the airport's two runways[1] are already handling a total of 68 ATMs per hour at 2 peak hours (i.e. during 11 am – 12 noon, and 4 pm – 5 pm), which is the 2RS' hourly maximum capacity. Actual ATM growth is a few years ahead of the original MP2030 forecast, and based on the latest projection, the existing 2RS would likely reach its maximum practical capacity of 420,000 ATMs per annum in 2016 or 2017. With the continued strong growth in air traffic, while the Government and AAHK are actively exploring ways to increase the capacity of the 2RS as a temporary relief measure, there is a pressing need for HKIA to develop into a 3RS. A detailed explanation of the capacity of the 2RS at HKIA is set out in **Annex B**.

10. To increase ground handling capacity in the short to medium terms, AAHK is pushing ahead with the Midfield Development Project, which will provide a passenger concourse with 20 additional parking stands to serve an

[1] At present, the two runways at HKIA are operating an "independent segregated mode". Under normal circumstances, the south runway is exclusively for departures while the north runway exclusively for arrivals.

additional 10 million passengers per year. However, expansion of the midfield will not increase the airport's overall handling capacity as the bottleneck lies in the airport's runway capacity. A third runway is still needed to meet long-term traffic demand.

11. Meanwhile, neighbouring aviation hubs in cities like Singapore, Seoul, Bangkok, etc, have already committed/planned or are in the course of implementing major airport expansion plans[2]. Without a major expansion plan like 3RS at HKIA, Hong Kong will eventually lose out on its competitiveness as an aviation hub, as well as associated businesses particularly in the logistics, tourism, trade and retail sectors, to major competitors. There is therefore an urgent need for the implementation of 3RS to meet Hong Kong's long-term air traffic demand.

12. There are comments and suggestions that the capacity constraints at HKIA could be resolved through means other than expanding into a 3RS. The misunderstandings are elaborated in **Annex C**.

Economic benefit of the 3RS

13. AAHK commissioned a consultancy study on the economic impact of the 3RS as part of the Master Plan 2030. An updated study was conducted in 2014/15 and the final report has been uploaded on AAHK's website for public reference. The main findings of the study are summarised in paragraphs 14 to 16 below.

14. HKIA generates enormous economic value for Hong Kong. In 2012, the airport's direct, indirect and induced contributions to the local economy amounted to around $94 billion, representing 4.6% of Hong Kong's gross domestic product ("GDP"). The airport also supports Hong Kong's four economic pillars : financial services; trading and logistics; tourism; and

[2] Some of the major expansion plans of the neighbouring airports include a five-runway system at Shanghai Pudong International airport (raising total annual handling capacity to 80 million passengers and 4.7 million tonnes of cargo by 2020); a five-runway system at Guangzhou Baiyun airport (raising total annual handling capacity to 80 million passengers and 2.5 million tonnes of cargo by 2020); the third runway at Shenzhen Bao'an airport (raising total annual handling capacity to 45 million passengers and 2.4 million tonnes of cargo by 2020); the third runway at Singapore Changi airport (raising total annual handling capacity to 135 million passengers by 2025); a five-runway system at Seoul Incheon airport (raising total annual handling capacity to 62 million passengers and 5.8 million tonnes of cargo by 2020); the third runway at Bangkok Suvarnabhumi airport (raising total annual handling capacity to 80 million passengers by 2020); and a third and fourth passenger terminal at Taipei Taoyuan airport (raising total annual handling capacity to 86 million passengers by 2042).

producer and professional services. Together, these four sectors accounted for around 58% of the GDP in 2013.

15. Based on the passenger/cargo throughput that can be handled under 3RS, we projected that the overall economic benefits of 3RS would be around $1,046 billion[3] (2012 dollars) over the 50-year period from 2012 to 2061, while that of 2RS would be around $591 billion (2012 dollars). Compared with 2RS, the 3RS will bring additional economic benefits of $455 billion (2012 dollars) over the 50-year period, which represents substantial incremental economic contribution to Hong Kong in the long term.

16. In terms of employment opportunities, HKIA provides directly more than 65,000 jobs at present. It is anticipated that the 3RS would create direct employment of around 123,000 jobs as well as indirect and induced employment of 165,000 jobs, much higher than that of the 2RS comparables of 89,000 and 119,000 jobs.

Latest Progress on the 3RS Project

(a) Statutory EIA Process

17. AAHK attaches great importance to addressing all environmental impacts associated with 3RS. Through the statutory EIA process, AAHK has ensured that all the potential environmental impacts are properly avoided, minimized and compensated. On 7 November 2014, the Director of Environmental Protection ("DEP") granted the Environmental Permit ("EP") for the 3RS project to AAHK. The EP sets out a number of conditions covering proposed environmental mitigation measures, enhancement initiatives, monitoring, and submission requirements during different stages of the project. In particular, AAHK has committed to undertaking the following tasks before construction/reclamation commences:

(a) formulation of Marine Travel Routes and Management Plan for high speed ferries of the SkyPier;

(b) formulation of a 2,400-hectare Marine Park Proposal, including the management plan, which will be the largest of its kind in Hong Kong;

[3] The overall economic benefits of 3RS would be the Economic Net Present Value ("ENPV") projected between 2012 and 2061.

(c) establishment of Marine Ecology Enhancement Fund and formulation of Marine Ecology Conservation Plan for the conservation of marine life particularly the Chinese White Dolphins ("CWDs") within the Hong Kong and the Pearl River Estuary waters;

(d) establishment of Fisheries Enhancement Fund and formulation of Fisheries Management Plan for supporting the fishing industry and enhancing fisheries resources in the western Hong Kong waters especially the Lantau waters;

(e) setting up of an Environmental Team ("ET") with an Independent Environmental Checker ("IEC") to conduct baseline monitoring, and to prepare and verify necessary EP submissions before construction commences; and

(f) setting up of community and professional liaison groups to enhance transparency and communication with the public on all project related environmental issues.

18. Following the granting of the EP, AAHK has been proactively taking forward its plan to fulfill the commitments made in the EIA Report and to comply with the respective requirements stipulated in the EP granted under the EIA Ordinance. Concrete progress has been made in the following areas :

(a) three environmental services contracts for ET, IEC and EP Consultant have been awarded;

(b) the Marine Travel Routes and Management Plan has been devised following negotiations with the SkyPier high speed ferry operators. The Plan sets out the required route diversion and speed limit within Hong Kong waters for high speed ferries travelling between SkyPier and Macau/Zhuhai during the construction phase to ensure marine traffic safety and minimize disturbance to CWDs. The Plan has been submitted to the DEP for approval after consultation with the ACE; and

(c) the Community Liaison Group ("CLG") and the Professional Liaison Group ("PLG") have been set up. A new round of CLG meetings was held in late July 2015 and the first meeting of the PLG was held in October 2015.

19. It should be noted that out of the estimated capital cost of $141.5 billion for the 3RS, about $22 billion will be used to employ various environmentally friendly construction methods (e.g. DCM for reclamation ground improvements and horizontal directional drilling for undersea aviation fuel pipeline diversion) and to implement green features in its design.

(b) Financial Arrangement Proposal

20. In considering the financial arrangements for the 3RS, AAHK has adopted the "joint contribution; user pay" principle, i.e. whilst AAHK will fund part of the project cost, users of HKIA, including passengers, airlines and operators at HKIA, should also contribute. With the advice of its financial consultant, AAHK has proposed to fund the 3RS through the following three sources[4] :

(a) third party debts raised from the market leveraging on AAHK's financial capability and credit rating;

(b) AAHK's operating surplus after reviewing and adjusting existing fees and charges; and

(c) introduction of a new Airport Construction Fee ("ACF").

21. The ACF was originally proposed to be set at a flat rate of $180 per departing passenger (excluding transit passengers). AAHK estimated that the ACF would contribute a funding of $42 billion for AAHK for the period up to 2023/24. According to the original financial arrangement proposal, each source of funding would roughly contribute one-third of the estimated capital cost, and AAHK would have to raise additional debt of around $53 billion to bridge the funding gap.

22. At the meeting on 17 March 2015, ExCo affirmed the need for the 3RS project at HKIA and, at the same time, requested AAHK to further refine the financial arrangement proposal to optimize borrowing from the market with a view to lowering the ACF level.

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[4] It should be noted that AAHK's recommendations on the 3RS project are formulated on the basis of section 5(1) of the Airport Authority Ordinance (Cap. 483) which provides that AAHK shall, in accordance with the objective of maintaining Hong Kong's status as an international and regional aviation hub, provide, operate, develop and maintain, at and in the vicinity of Chek Lap Kok, an airport for civil aviation; and that AAHK may provide, at the airport, such facilities, amenities or services as are, in its opinion, requisite or expedient.

23. Accordingly, without adversely affecting its credit ratings and borrowing capability in material terms, AAHK has assessed (with the advice of its financial consultant) the feasibility of stretching its borrowing capacity further in the light of its excellent credit rating (i.e. AAA). It came to the view that it would be viable to increase borrowing incrementally from $53 billion to $69 billion. Through optimizing AAHK's borrowing from the market, AAHK devise a revised proposal to allow for reduction in ACF level so as to lower the burden of passengers. As a result, ACF contribution to the estimated capital cost will come down from $42 billion to $26 billion. A comparison of the original and revised financial arrangement proposals is at **Annex D.**

24. AAHK proposed a revised ACF regime with differential charging levels which distinguish:-

(a) short haul passengers from long haul passengers[5];

(b) premium class passengers from economy class passengers[6]; and

(c) transfer/transit ("TT") departing passengers from other departing passengers.

25. The ACF for short-haul departing passengers in economy class will be $90, while the charge for short-haul passengers in first/business class will be $160. For long-haul passengers, the charges for flying in economy and first/business classes will be $160 and $180 respectively. To maintain the competitiveness of HKIA as a hub airport, the ACF for short-haul TT passengers in economy class will be set at $70. A table summarising the revised ACF scheme is as below.

ACF (HK$ per departing passenger)		**Premium**	**Economy**
	Long haul	$180	$160
	Short haul	$160	**$90***

* To maintain the competitiveness of HKIA's hub status, ACF for short haul economy TT passengers is set at $70.

[5] The definition of long/short hauls follows that adopted by the Civil Aviation Department in determining fuel surcharges. Long haul destinations include those in North and South America, Europe, Middle East, Africa, Southwest Pacific and Indian Subcontinent. The rest are short haul destinations.

[6] Premium class passengers include first and business class passengers. Economy class (including premium economy) passengers are non-premium class passengers.

26. In devising the revised ACF regime with differential charging levels, AAHK has taken into account feedback from the consultation with key stakeholders, including home-based carriers and the travel industry, and passenger surveys.

27. As a result of AAHK's revised ACF regime, the ACF to be charged to the bulk of departing passengers at HKIA, i.e. short haul origin/destination ("OD") & TT economy class passengers (constituting 70% of all passengers), will be substantially reduced to $90 or less per passenger. A breakdown of ACF to be charged by flying distance, ticket class and flight type is at **Annex E**.

28. With the revised ACF scheme, AAHK estimates that there will be some $16 billion less in net revenue (after deducting tax and airlines' handling fees) as compared to the original proposal for funding the 3RS project. AAHK will therefore need to raise an additional debt of $16 billion from the market to cover the funding shortfall, which brings its total debt (including AAHK's existing debt and the associated debt service charges) to $77 billion in FY 2023/24 or around 4.5 times EBITDA in FY2022/23. Given its healthy financial position and the anticipated steady growth in air traffic in future years, AAHK is confident that the increased funding gap would still be manageable and can be met by sufficient loans raised from the market on competitive terms.

(c) Statutory Gazettal Processes

29. The 3RS-related statutory gazettal processes under the Foreshore and Sea-bed (Reclamations) Ordinance ("FSRO") (Cap. 127) and the Town Planning Ordinance ("TPO") (Cap. 131) are in progress. During the public inspection period between 8 May and 8 July 2015, around 870 objections under the FSRO and some 12,000 representations under the TPO have been received by the Lands Department and the Town Planning Board respectively. These are being processed by relevant authorities.

The Way Forward

30. AAHK will continue to take forward its plan to fulfill the commitments made in the EIA Report and to comply with the respective requirements stipulated in the EP granted under the EIA Ordinance. AAHK aims to achieve "development alongside environmental conservation" in the implementation of the 3RS project. EIA commitments aside, AAHK will continue to enhance its efforts in making HKIA one of the "greenest" airports in the world.

31. As regards the financial arrangements, AAHK will begin levying the proposed ACF once all the statutory gazettal processes for the 3RS have been completed; the ACF will remain in effect until all the 3RS-related borrowings have been repaid. AAHK will work with its financial consultant on the detailed financing plan and funding strategy, including the possibility for the need to encourage the general public to participate in the financing of the 3RS project.

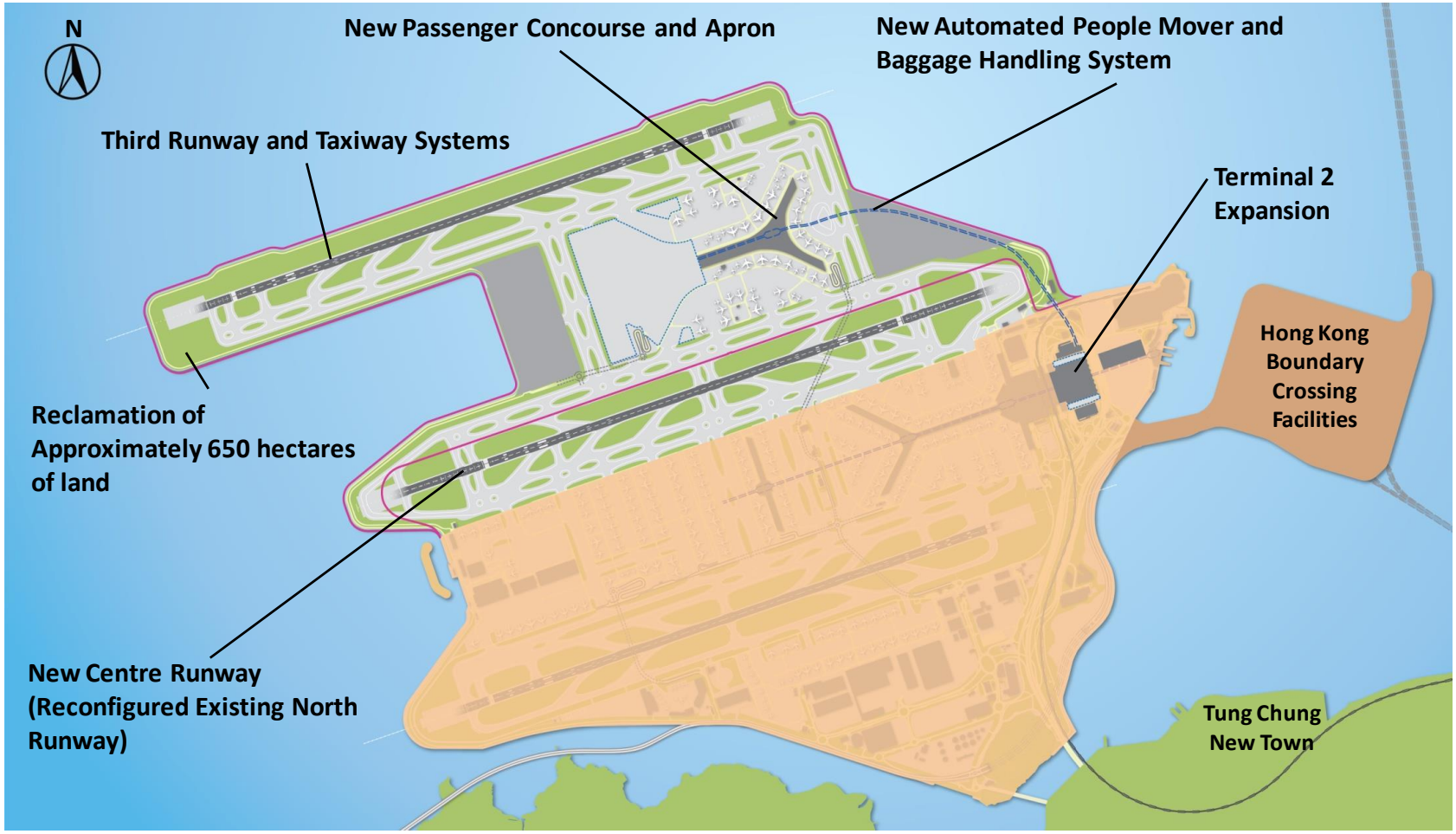
Advice Sought

32. Members are invited to note and comment on the issues covered in this paper.

Airport Authority Hong Kong
October 2015

Annex A

Three-Runway System Project Layout Plan



Annex B

Capacity of the Two-Runway System at HKIA

Various studies [see **Table 1**] in the past, including the New Airport Master Plan in 1992 ("NAMP"), the study by the Washington Consultancy Group in 1994 ("WCG") and the study conducted by National Air Traffic Services ("NATS") in 2008, have been conducted to assess the capacity of the 2RS at HKIA. According to the latest study conducted by NATS, the maximum practical capacity of the 2RS, in full compliance with the safety standard/requirements of the International Civil Aviation Organization ("ICAO"), would be **68 air traffic movements (ATMs) per hour, or 420 000 ATMs per year**.

Year	Report	Runway Capacity (Movements per hour)
1992	New Airport Master Plan	Ranging from 52 to 86 Under different modes of operation of the 2RS (Theoretically)
1994	Airspace Design Consultancy	63
2008	Airspace and Runway Capacity Study	68

Table 1 : Capacity of the 2RS

2. It is stated in the 1992 NAMP report that the terrain in and around Hong Kong precludes constraint-free operations within the low altitude airspace surrounding Chek Lap Kok. Lantau Island is one of the primary constraints, precluding aircraft operations to the immediate south of the proposed runways.

3. Following the report of NAMP, Civil Aviation Department ("CAD") engaged WCG in 1994 to conduct in-depth study of Air Traffic Control operations, surrounding terrain and airspace conditions etc. to design the flight procedures for HKIA at Chek Lap Kok in accordance with the ICAO's international standards. The study confirmed that,

constrained by the surrounding terrain, **the maximum capacity of the two runways at HKIA was no more than 63 movements per hour**.

4. In 2008, AAHK commissioned the British Aviation expert NATS[7] to conduct the "Airspace and Runway Capacity Study" for HKIA, taking into account the latest Air Traffic Control technology and international standards. NATS confirmed that, **after implementing 46 improvement recommendations** such as "Airfield Infrastructure Improvements", "Air Traffic Control System Upgrade", "Air Traffic Control and Flight Procedures Enhancement", increasing the number of Air Traffic Control staff and enhancement in relevant training, etc., the capacity of the two runways at HKIA under **Segregated Mode**[8] could be increased to **68 movements per hour**.

5. NATS has also studied if there would be capacity gain by changing the mode of operation of the two runways at HKIA from Segregated Mode to Dependent Mixed Mode[9], or even Independent Mixed Mode[10]. NATS reaffirmed findings in previous studies that **Independent Mixed Mode could NOT be supported by the two runways owing to the surrounding terrain**. On the other hand, NATS stated that while **Dependent Mixed Mode** can be supported by the existing two runways at HKIA, the maximum capacity of the 2RS under this mode of operation would still be **68 movements per hour**, given the current fleet mix.

6. Noting that there would be no capacity gain in switching the mode of operation to Dependent Mixed Mode, as well as the administrative/operational difficulties (including the considerable changes in training and infrastructure requirements e.g. departure management to balance the two runways, the more complex ground movement environment, etc.) arising from such a change, NATS did not recommend it for HKIA. **Currently, the HKIA is operating under Segregated Mode**.

7. Over the past years, CAD has, through various optimization measures of air traffic management, increased the aircraft movements at

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[7] NATS has also conducted similar study for London Heathrow Airport.

[8] Segregated Mode – one runway used exclusively for approaches and the other exclusively for departures.

[9] Dependent Mixed Mode – departures and approaches on one runway must take into consideration an aircraft landing or departing on the parallel runway.

[10] Independent Mixed Mode – operations on one runway can take place completely separately and without interference from the parallel runway, as if the two runways were two different airports.

HKIA under the 2RS from 55 movements per hour in 2008 to the maximum of 68 movements per hour in the fourth quarter of 2015. With the hourly maximum practical capacity reached, room for further increase in the annual air traffic movements is very limited. **The saturation of the 2RS is imminent**.

Preliminary Terrain Assessment for 2RS

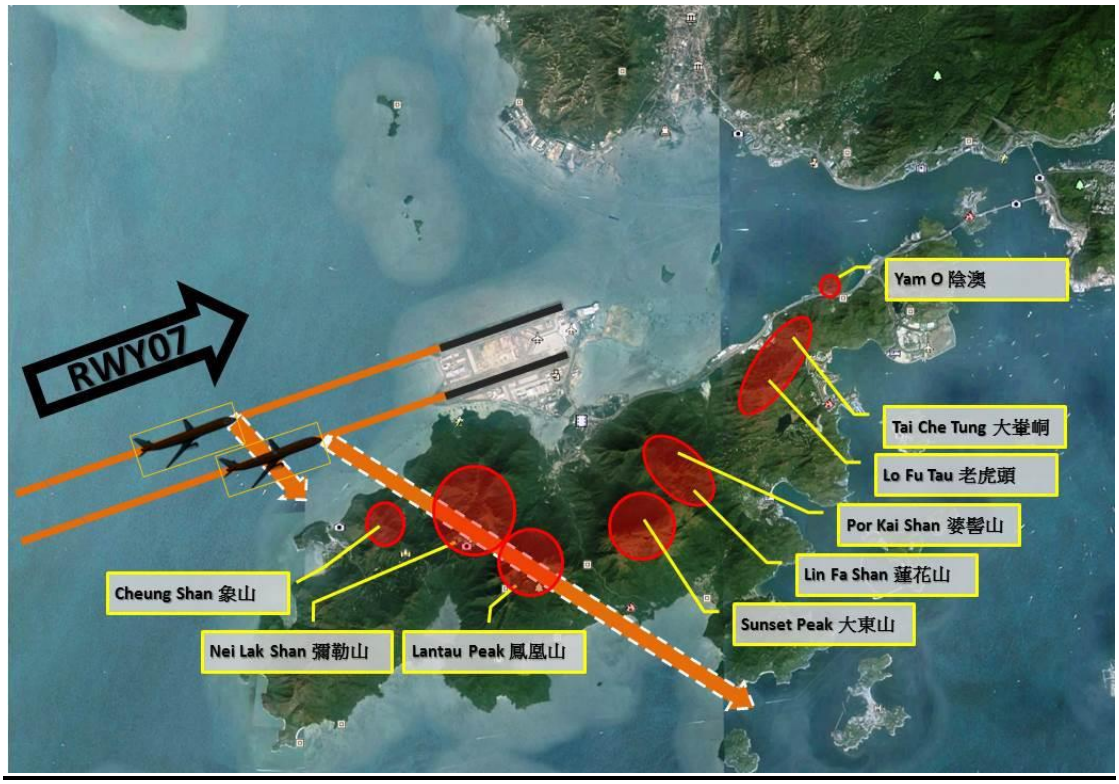
8. Some comments suggested that if the peak of Tai Yam Teng (610 feet) and Fa Peng Teng (810 feet) were removed, the runway capacity of 2RS at HKIA could be further increased as this will facilitate the operation of Independent Mixed Mode at HKIA. These comments claimed that removal of the peaks of Tai Yam Teng and Fa Peng Teng were suggested in the 1992 NAMP report. In fact, the suggestion made in the NAMP report was made in connection with possible options to enhance the climb gradient of **contingency departure procedures** for departures on engine out during initial climb (i.e. to reduce restriction on the aircraft engine out climb performance). The primary objective of NAMP's suggestion should not be confused as a measure which seeks to achieve Independent Mixed Mode operation to increase runway capacity.

9. If an Independent Mixed Mode operation (which can support a higher ATM limit) were to be adopted for the 2RS, then to satisfy ICAO safety requirements, most of the high peaks on Lantau Island, including Lantau Peak, Sunset Peak and other high mountains on Lantau Island (see Appendix) would have to be levelled. In this connection, some crucial infrastructures / landmarks such as the Ngong Ping Cable Car, Big Buddha and Po Lin Monastery, would also be affected, not to mention that most of these areas fall within the boundaries of the Lantau Country Parks.

10. Both NAMP and the subsequent consultancy studies by WCG and NATS already confirmed that **what really limits HKIA's maximum runway capacity from achieving the high end hypothesized in NAMP (i.e. 86 ATMs per hour) is the entire stretch of North Lantau terrain**.

Appendix

Areas/peaks to be levelled for 2RS to operate Under Independent Mixed Mode



Annex C

Misunderstandings on Options Other Than Expanding into the 3RS

Misunderstanding on ways to overcome HKIA capacity constraints

There have been comments suggesting that the capacity constraint at HKIA could be relieved/resolved via means like collaboration with neighbouring Mainland airports, the use of wide-bodied aircraft to replace the narrow ones and reducing flights to third/fourth-tier cities in the Mainland, etc. Such suggestions are not feasible.

Collaboration with Shenzhen Airport

2. The international aviation industry is highly regulated and is subject to a network of bilateral air services agreements ("ASAs") entered into between government authorities. These agreements are international treaties which provide the framework for scheduled air services between bilateral aviation partners. The Hong Kong Special Administrative Region Government ("HKSARG"), with Central People's Government ("CPG")'s authorization in accordance with the Basic Law, negotiates traffic rights with our aviation partners, having regard to the needs of our aviation industry and home-based airlines. CPG concludes ASAs with its own bilateral partners for destinations covering the Mainland of China and the relevant bilateral partners. Generally speaking, all ASAs are the product of balanced exchange of rights on a bilateral basis. Rights accrued to a particular jurisdiction may only be exercised by the designated airlines of that jurisdiction. It is therefore unrealistic and impracticable to suggest that flights could be funneled to other airports (which, by definition, are outside Hong Kong's jurisdiction) at the wish of individual airports or authorities.

3. For scheduled air services to and from Hong Kong, it is for the airlines (not the Government or the airport) to determine the level of air services (including destination and frequency) in response to market situation, within the agreed framework as provided for in our ASAs. If any airlines were forced to stop providing services between Hong Kong and certain Mainland or short-haul destinations, there would definitely be adverse financial implications for the airlines concerned. It would also be inconvenient to passengers as they would have fewer choices and have to

use indirect flights or shift to neighbouring airports. This would undermine HKIA's position and competitiveness as an international and regional aviation hub.

4. Research also indicates that inter-airport connection is inconvenient to travelers. According to a research conducted by Strategic Access in 2011, among 12 cities served by two or more airports, there has not been one single example of meaningful collaboration between airports notwithstanding that most of these city pairs are within the same jurisdiction[11]. Cross-boundary and multimodal connection would make passenger connection an even less attractive proposition.

Deployment of more wide-bodied aircraft

5. HKIA is currently one of the world's most efficient airports[12]. Among the world's top 100 airports, HKIA has the second-highest proportion of wide-bodied aircraft (at 62.1%). In addition, the aircraft mix at the airport is driven by market demand and determined by airlines. It is not for the airport operators or governments to dictate such decision, not to mention that unnecessary interference will undermine the operational efficiencies of both airports and airlines. Having an extensive flight network is one of the core elements to help maintain HKIA's connectivity. Giving up less prominent but still commercially popular destinations would not only inconvenience travelers, but also adversely undermine Hong Kong's overall competitiveness and status as an aviation hub.

"Air Wall" constraint

6. There have also been discussions on the so-called "air wall" between the Hong Kong and Mainland airspace. A more appropriate term is "point of control transfer" (between air traffic control jurisdictions). In

[11] The research found that synergies seemed not to have developed amongst airports, with each airport basically operating independently and in competition. In cities such as Tokyo, Washington, Seoul, Osaka and Taipei, authorities restricted one airport to serve domestic destinations only, but this appeared to be the limit of synergistic development, and appeared frequently to lead to backtracking in response to passenger complaint (for example, the re-opening of Haneda Airport in Tokyo and Songshan Airport in Taipei to international services in light of political initiatives and passenger complaints about long and difficult journeys).

[12] Airport efficiency is measured in terms of workload unit. One workload unit is equivalent to one passenger or 100 kg of cargo. According to Airport Council International Annual Report 2014, HKIA is one of the most efficient airports with each air traffic movement carrying 267.0 workload units on average.

the present context, it refers to an arrangement between the Hong Kong and the Mainland air traffic control units to fix a minimum altitude of 15,700 feet for handover of flights between Hong Kong and the Mainland air traffic control units[13]. Given the proximity of the HKIA and the Shenzhen Bao'an International Airport, and as they are under the respective control of the two separate air traffic control units in Hong Kong and the Mainland, the requirement for flights departing from the HKIA to enter the Mainland airspace (or for flights entering Hong Kong airspace from the Mainland) at such an altitude follows normal international civil aviation arrangement that seeks to segregate the operations of aircraft in the adjacent airspace, thus preventing aircraft tracks from crossing so as to ensure the safe operation of aircraft. Similar arrangements can also be found in other airports with high traffic volume.

7. The Civil Aviation Department has confirmed that the requirement for transfer of control point is not relevant to runway capacity.

Maintaining the 2RS at status quo

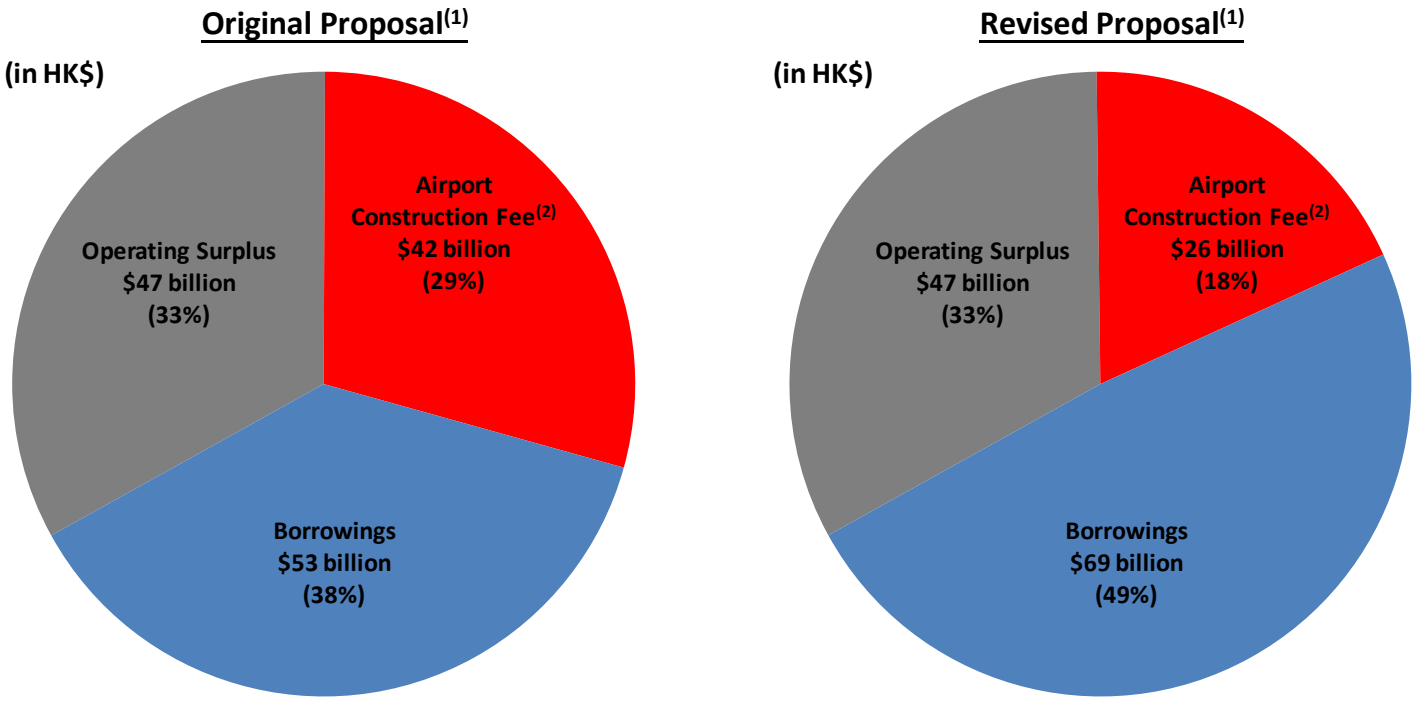
8. Maintaining the existing 2RS at status quo with further improvements in terminal and apron facilities is not a practicable alternative to 3RS. Upon the completion of the midfield development at HKIA, there is in practice limited room for further expansion at HKIA under 2RS. There are suggestions from the critics of 3RS that the 2RS at HKIA could be enhanced to cater for more flight movements well exceeding its maximum capacity of 68 ATMs per hour. Various expert assessments conducted in the past have already confirmed that such suggestions are not practicable and could not meet the safety standards of ICAO. The details of the technical assessments are summarized in **Annex B**.

9. In the absence of 3RS, the capacity constraint at HKIA will result in significant economic benefits foregone for Hong Kong as a whole with Hong Kong's overall competiveness as an international business and trading centre and aviation hub adversely affected vis-à-vis its major competitors.

[13] The handover altitude has been lowered/relaxed from 15 700 feet to 12 800 feet since 2005 for non-peak hours at night (i.e. 11pm – 7 am).

Annex D

Comparison of the Original and Revised Financial Arrangement Proposals



Notes:

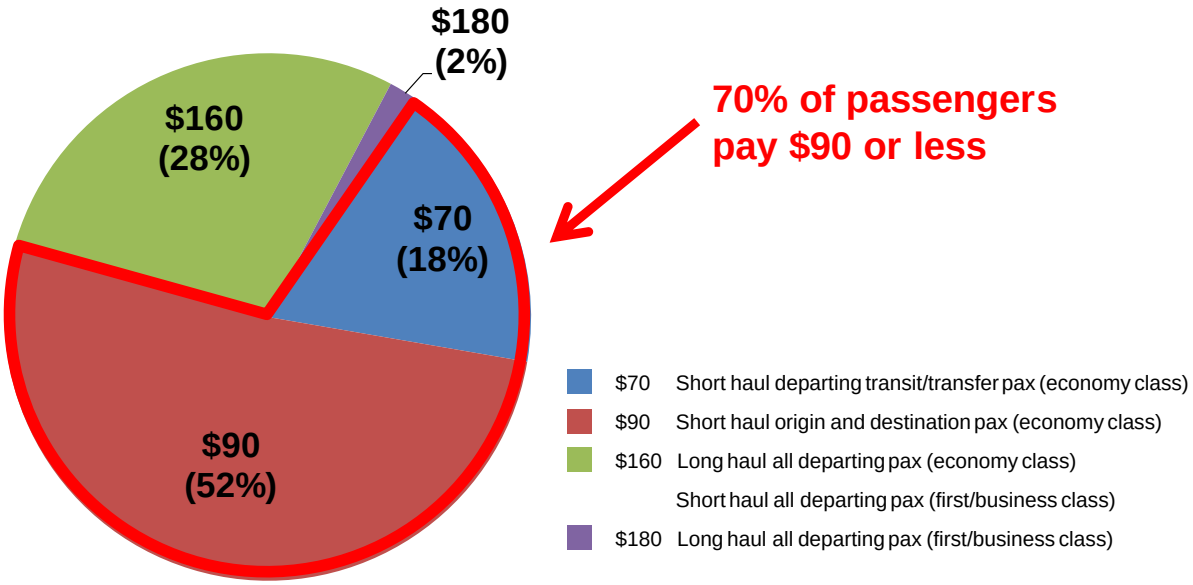
(1) Subject to rounding.

(2) After tax and expenses.

Source: AAHK, 3RS Consultancy Study: Financial Arrangement for the Three-runway System (3RS) at HKIA – Financial Advisor Report, HSBC (2015)

Annex E

A breakdown of ACF to be charged by flying distance, ticket class and flight type



Notes:

(1) The collection of ACF will be imposed on departing passengers only. They are estimated based on the passenger traffic statistics (OD/TT, short/long haul) of HKIA and the passenger split by cabin information provided by a number of airlines.

(2) Subject to rounding.