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LEGISLATIVE COUNCIL BRIEF

HONG KONG INTERNATIONAL AIRPORT

THREE-RUNWAY SYSTEM

INTRODUCTION

At the meeting of the Executive Council on 17 March 2015, the Council **ADVISED** and the Chief Executive **ORDERED** that -

(a) the need for the three-runway system (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 was affirmed; and

(b) the Airport Authority Hong Kong (AAHK) should be invited to actively explore, in consultation with the Government, ways to facilitate the early implementation of the 3RS.

JUSTIFICATIONS

AAHK's Planning Work

Statutory Environmental Impact Assessment (EIA)

2. AAHK has completed the statutory EIA for the 3RS project in accordance with the provisions of the Environmental Impact Assessment Ordinance (EIAO) (Chapter 499), its Technical Memorandum (TM) and the relevant EIA Study Brief for the 3RS project issued by the Environmental Protection Department (EPD) in August 2012. A team of local and overseas consultants and experts was engaged by AAHK to conduct the EIA which assessed 12 environmental aspects including, for example, impact from aircraft noise, impact on air quality, impact on marine ecology including Chinese White Dolphins (CWD) and fisheries, as well as the impact on human health arising from aircraft noise and

emissions with respect to the scope of 3RS as provided in the Hong Kong International Airport (HKIA) Master Plan 2030 (MP2030)[1]. AAHK has committed to undertaking a number of mitigation measures in the EIA Report to address various environmental concerns and to minimize, mitigate and compensate for all potential impacts arising from the 3RS project in full compliance with the EIAO with respect to the requirements stipulated in the TM and EIA Study Brief.

3. AAHK submitted the EIA Report to EPD on 17 April 2014 and the Report was made available for public inspection for 30 days from 20 June to 19 July 2014 in accordance with the EIAO. The Advisory Council on the Environment (ACE) was consulted afterwards over a period of 60 days until 17 September 2014. After considering the advice of ACE and the supplementary information submitted by AAHK under section 8(1) of the EIAO, the Director of Environmental Protection approved the EIA Report on 7 November 2014 with 18 implementation requirements[2]. The Environmental Permit (EP) for the 3RS project was also granted on the same day.

4. AAHK will start its work to fulfill the commitments made in the EIA Report and to comply with the respective requirements stipulated in the EP granted under the EIAO. In particular, AAHK will kick-start the preparatory groundwork for the marine park proposal by developing a management plan for the proposed 2 400-hectare marine park which will be the largest of its kind in Hong Kong. AAHK will also formulate and finance a detailed Marine Ecology Conservation Plan with support from relevant experts and stakeholder groups in devising the long-term conservation plan for marine life, particularly CWDs within Hong Kong and Pearl River Estuary waters. To facilitate early protection of CWDs, AAHK will devise a Marine Traffic Routes and Management Plan for control of high-speed ferries operating from the SkyPier of the airport island to minimize the chance of disturbance to CWDs in Hong Kong's western waters, and designate dolphin protection zones around HKIA to minimise the impact of construction vessels on CWDs. Some of the

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1 The MP2030 was published in June 2011 by AAHK to map out the development needs that help HKIA achieve sustainable growth while retaining its long-term competitiveness and position as an international aviation hub. It outlined two options for HKIA's future development, namely, (a) to maintain the existing two-runway system (2RS); or (b) to expand HKIA into a 3RS.

2 All of the requirements have already been covered and committed by AAHK in the EIA Report.

above measures will be implemented early and before construction works of the 3RS start. AAHK aims to achieve "development alongside environmental conservation" in the implementation of the 3RS project.

Associated Design Details

5. On the basis of the scope as set out in HKIA's MP2030, the 3RS is planned to cater for an additional 30 million passengers per annum on top of the capacity of the existing HKIA to handle around 70 million passengers. AAHK has commissioned consultancy studies to carry out the relevant design details for 3RS, which broadly comprise the following major works –

(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 method with deep cement mixing 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 in 2023;

(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.

AAHK will, in consultation with the Government, fine-tune the details of the above works as necessary in the course of detailed design of the

project to ensure cost-effectiveness.

6. In addition to the 3RS major works set out in paragraph 5 above, there are a number of new government facilities required for the operation of the 3RS. These include a new air traffic control (ATC) tower, fire stations, a police station, a weather monitoring system operated by the Hong Kong Observatory, additional immigration and customs facilities, etc.

Financial Arrangement

7. According to MP2030, the cost of 3RS was estimated to be around $86.2 billion (in 2010 prices) or $136.2 billion in money-of-the-day (MOD) prices. Noting the need for due economy and the mounting public concern over the escalating cost of major public infrastructure projects lately, AAHK has critically reviewed the scope of the 3RS project and the related design details. AAHK advises that the infrastructure and facilities covered in the design details are essential for the efficient operation of HKIA under 3RS. On this basis, AAHK estimates that the revised capital cost for 3RS is around $84.5 billion (in 2010 prices) or $141.5 billion in MOD prices[3]. The estimate assumes, inter alia, that marine sand for the reclamation works, being a key component of the project cost, can be sourced from the Pearl River Delta (PRD) region[4]. As with the estimate contained in MP2030, the revised capital cost estimate has not included the cost of design and construction of various new government facilities mentioned in paragraph 6 above.

8. As mentioned in paragraph 5 above, the 3RS is planned to cater for an additional 30 million passengers per annum. With an eye to allowing for further passenger growth beyond this number, AAHK has included in its revised capital cost estimate the construction of essential enabling works, estimated at $2.4 billion in MOD prices (i.e. around 1.7% of the revised capital cost estimate), to cater for any necessary expansion in the future to cope with a total of 50 million additional passengers per annum. The enabling works comprise a road tunnel box

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[3] The latest estimated MOD price is higher than that in MP2030 (i.e. $136.2 billion) despite a lower 2010 prices. This is mainly due to the use of the updated price adjustment factors with higher inflation estimates for converting the 2010 prices to MOD prices.

[4] Similar to the arrangement for the supply of marine sand to the Boundary Crossing Facilities of the Hong Kong-Zhuhai-Macau Bridge project.

underneath the existing north runway (which is planned to be closed for re-construction between 2021 and 2023, by which time the new (i.e. third) runway will have been completed and available for use), the foundation/basement for further expansion of T2, T2 North Annex Building and TRC, and an additional APM tunnel box. These underground works are practically difficult to be constructed at a later stage without adversely affecting the operation of HKIA.

9. Having regard to its current strong financial position and projected steady growth in revenue in coming years, AAHK considered that the Authority should exhaust all possible means to finance the project by itself as far as practicable. AAHK has critically examined room for reducing the capital cost on the one hand, while adopting a more robust approach in maximizing revenue on the other. On revenue, AAHK has proposed to adopt the "joint contribution" principle, i.e. users of HKIA, including passengers, airlines and operators at HKIA should contribute to the project cost. With the advice of its financial consultant, AAHK has proposed the following –

(a) upward adjustment of airport charges (including landing, parking and terminal building charges payable by airlines) to bring the airport charges back to the level of 15 years ago (when the charges were reduced in January 2000 due to the Asian Financial Crisis). There will be subsequent increases to keep the charges in line with inflation;

(b) introduction of an Airport Construction Fee (ACF) per departing passenger (with exemption for transit passengers); and

(c) due increase in retail and advertising revenue, in accordance with the projected increase in traffic and Consumer Price Index.

10. AAHK also plans to retain all profits earned from 2014/15 onwards until the full commissioning of 3RS in 2023/24 without declaring dividends.

11. With the above revenue raising measures, after netting off the expected operating and capital expenditure (inclusive of 3RS project) from 2015/16 to 2023/24, AAHK has advised that there will still be a funding gap. According to AAHK's financial consultant, with its current AAA credit rating and 100% ownership by the Government, AAHK should be able to raise sufficient funds from the market to fully bridge the funding gap and the associated debt services charges on its own.

The Government's Views

12. The Government attaches great importance to the 3RS project. A high-level Steering Committee chaired by the Financial Secretary has been formed to steer the implementation of the project. AAHK's proposals and recommendations have been considered thoroughly and critically by the Government. The following paragraphs 13-21 set out the Government's views on AAHK's recommendations.

Need and Urgency of the 3RS Project

13. The Government agrees with AAHK that there are strong justifications to proceed with the implementation of the 3RS project –

(a) *Early saturation of the existing airport*
Since its opening in 1998, HKIA has experienced tremendous traffic growth and played a pivotal role in maintaining Hong Kong's status as an international and regional aviation hub as well as an international business centre. HKIA is now the world's busiest cargo airport, and the third largest international passenger airport. In 2014, HKIA received 63.4 million passengers and handled 390 955 aircraft movements, representing year-on-year growth of 5.8% and 5.1% respectively. Cargo throughput rose by 6%, reaching 4.38 million tonnes. At peak hours (i.e. during 10 am – 12 noon, and 3 pm – 5 pm), the two runways together[5] are already operating at a total of 66 air traffic movements (ATMs) per

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

hour while the maximum runway capacity for the present 2RS is 68 ATMs per hour. According to the latest projection, the existing 2RS would likely reach its maximum practical capacity of 420 000 ATMs per annum in 2016/2017, a few years ahead of the original forecast in MP2030. AAHK also projects that by 2030, annual demand for passenger traffic will reach around 102.3 million, cargo at 8.9 million tonnes, and ATMs at 607 000, well exceeding the existing 2RS capacity. The 3RS, premised on the full implementation of the PRD Airspace Plan as agreed in 2007 with the Mainland and Macao aviation authorities (see paragraph 22 below), will be able to handle 620 000 ATMs per annum (i.e. 102 ATMs per hour) ultimately. This will enable Hong Kong to reap the economic benefits of the ever-rising cargo and passenger traffic, as global trade moves eastward.

(b) *Competition from neighbouring airports*

Notwithstanding the various facilities upgrading and expansion plans being undertaken at HKIA (such as the Midfield Development Project and the West Apron Expansion Project[6]), these can only marginally increase its terminal capacity to cater for medium-term air traffic demand. If HKIA runs out of runway capacity, once all available slots are taken up, any new flight movements will only be possible as a substitute for an existing flight and airlines would likely concentrate on the more lucrative routes, resulting in fewer destinations being served at HKIA which will adversely affect Hong Kong's hard-earned aviation network and connectivity, and hence its competitiveness as an aviation hub.

Besides, Hong Kong is facing intensifying competition from neighbouring airports in cities like Shanghai, Guangzhou, Shenzhen, Singapore, Seoul, etc. which have already committed/planned or in the course of implementing major

[6] The Midfield Development Project, expected to be completed in 2015, involves a passenger concourse to provide 20 additional parking stands and cater for an additional 10 million passengers. The West Apron Expansion Project, completed in 2014, involves the construction of 28 additional aircraft parking stands on the West Apron. Upon completion of all these expansion projects, the number of aircraft parking stands at HKIA will increase to around 180.

airport expansion plans[7]. Without major expansion plan like 3RS at HKIA, Hong Kong will eventually lose out on aviation business, as well as affiliated businesses particularly in the logistics, tourism, trade and retail sectors, to our major competitors. There is therefore an urgent need for the implementation of 3RS to meet Hong Kong's long-term air traffic demand.

(c) *Economic impact of 3RS*

AAHK has projected that 3RS will bring about enormous overall economic benefits to Hong Kong, including significant growth in employment opportunities[8]. According to AAHK's latest projections and based on the maximum passenger/cargo throughput that can be achieved under 3RS (i.e. 102 ATMs per hour, or 620 000 ATMs per year), the overall economic benefits of 3RS would be around $1,046 billion[9] (2012 dollars) over the 50-year period from 2012 to 2061, while that of 2RS would be around $591 billion (2012 dollars)[10]. Compared with 2RS, the 3RS will bring additional economic benefits of $455 billion (2012 dollars) over the 50-year period, which would represent substantial economic contribution to Hong Kong in the long term. On this basis, the capital investment involved in implementing

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7 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), the fifth runway at Seoul Incheon airport (raising total annual handling capacity to 62 million passengers and 5.8 million tonnes of cargo by 2020) and the fourth passenger concourse at Dubai airport (raising total annual handling capacity to 90 million passengers by 2018).

8 In MP2030, AAHK projected that the economic impact of 3RS would be in the order of $912 billion (2009 dollars) in Economic Net Present Value (ENPV) for the 50-year period 2012 to 2061, compared to that for the 2RS at around $432 billion (2009 dollars). The 3RS would also create direct employment of around 141 000 jobs as well as indirect and induced employment of 199 000 jobs, much higher than that of the 2RS comparables of 101 000 jobs and 143 000 jobs.

9 The overall economic benefits of 3RS would be the ENPV projected between 2012 and 2061. These should not be mixed up with the financial NPV of 3RS as a standalone project which does not measure the overall benefits brought about by 3RS to Hong Kong. According to MP2030, the financial NPV of the 3RS project was estimated to be negative $43 billion. The figure was based on AAHK's revenue streams at the time of the study, and did not take into account the financial measures (e.g. raising airport charges and introducing ACF) that AAHK currently proposes.

10 The higher ENPV of 2RS as compared to that in MP2030, i.e. $432 billion is due to faster-than-expected growth in air traffic demand.

3RS is well justified.

EIA

14. As far as the EIA is concerned, with the approval of the EIA Report and the granting of the EP, it is confirmed under EIAO that with respect to the respective requirements stipulated in the TM and EIA Study Brief, all environmental concerns associated with 3RS would be adequately addressed with the implementation of various mitigation/enhancement measures committed to by AAHK. We will continue to monitor AAHK in formulating detailed action plans for the delivery of those measures to ensure that the construction works of 3RS can be implemented as scheduled. The implementation of some key mitigation measures requires Government support action. For example, the proposed 2 400-hectare marine park requires legislation and subsequent implementation by the Government. We note that two applications for granting of leave for judicial review (JR) against DEP's decisions to approve the EIA Report and grant the EP for 3RS are being processed in court. The JR process may take some time to complete. Pending the result of the JR applications, AAHK will start preparatory work to take forward the various mitigation measures to fulfil its commitments in the EIA Report and comply with the requirements in the EP. We will also work closely with AAHK and relevant Government departments with a view to minimizing and containing the impact on the implementation of 3RS.

15. EIA commitments aside, we consider that AAHK should enhance its efforts in making HKIA one of the "greenest" airports in the world.

3RS Scope and Design Details

16. The Airport Expansion Project Coordination Office, established under the Transport and Housing Bureau in July 2012, has engaged two independent Monitoring and Verification consultants, to assist in vetting the design details and the associated project cost estimate prepared by AAHK. Our consultants generally found that AAHK's recommendations are reasonable and in order. We have also examined the scope of 3RS as proposed by AAHK, and considered that AAHK's recommendations are in broad terms reasonable and sufficient for

catering for an additional 30 million passengers as projected under MP2030. AAHK will be asked to fine-tune the project scope and design details of 3RS where appropriate and practicable. AAHK should ensure that the final project scope and designs are well justified taking into account due economy as well as safety and operational efficiency. Separately, we note that under AAHK's proposal, the TRC, currently designed to handle 30 million passengers per annum, will be capable of expansion to handle an additional 20 million passengers beyond 2030 subject to further assessment where necessary.

Financial Arrangement

17. The 3RS is more than just a strategic transport infrastructure project. It is also crucial to the future economic growth and global connectivity of Hong Kong. The Government has a clear interest in ensuring early implementation and smooth delivery of the project. We have engaged a financial consultant to vet and validate independently the financial analysis and financial arrangement proposals compiled by AAHK. Given AAHK's robust revenue performance in the past and the continued growth in revenue projected for future years in the light of steadily rising air traffic demand at HKIA, we are satisfied that AAHK's proposal to self-finance the project is overall reasonable and practicable. A principal component of AAHK's proposed funding package is external borrowing. The approach is not only financially viable given AAHK's excellent (AAA) credit rating, but also makes prudent commercial sense, since the market can help to assess whether there is indeed a sound economic and business case for the 3RS project.

18. In financing the project, AAHK has proposed that users of HKIA namely, airlines, passengers and airport operators should contribute to the cost of 3RS, i.e. the"joint contribution" principle. We consider such an approach more equitable than direct Government funding out of general revenue. Regarding AAHK's proposal to increase the airport charges, it essentially seeks to restore the charges back to the pre-2000 level, with further planned increases in future in line with inflation[11]. According to a survey conducted by the consultancy firm LeighFisher,

[11] Under section 34 of Airport Authority Ordinance (Cap. 483), to make changes in the airport charges, AAHK should submit the scheme(s) to CE in Council and, after approval, arrange for the scheme(s) to be published in the Gazette as soon as practicable for effecting the scheme(s).

HKIA's overall airport charges now ranks 54th among the 55 international airports studied[12], indicating such charges are low by international standard. The information provided by the International Civil Aviation Organization (ICAO) further indicates that airport charges accounts for only around 4% of the airlines' operating expenses[13]. The proposed increase therefore should not constitute a major impact on airlines. On balance, we consider that AAHK's proposed increase in airport charges is of the right order. Nevertheless, for long-term and proper fiscal planning, AAHK should put in place a mechanism to regularly review the charging level and structure of aeronautical charges at HKIA which will also facilitate a sustainable and efficient operation of HKIA (for instance, charges to incentivise the use of wide-bodied aircraft).

19. As regards ACF, while it is new to Hong Kong, it is not uncommon in other airports in the world to impose similar levies on passengers to finance airport expansion/development projects (e.g. airports in the Mainland, the US, Toronto, Athens, etc.) (See Annex A). It is not envisaged that the introduction of ACF, as long as the amount is reasonable, would have significant impact on the demand of air travel at HKIA. AAHK's proposed ACF will not be levied on transit passengers. While ACF is not uncommon in other airports in the world, we consider that AAHK should set its amount at a lower level to minimise the burden on passengers. AAHK will explore options for lowering the ACF.

20. On borrowings, according to AAHK's assessment, notwithstanding its plan for implementing the fees/charges as mentioned in paragraph 9, it will have to raise debt to bridge the funding gap. Given AAHK's prevailing AAA credit rating, and particularly in the light of its strong balance sheet in the past years and the projected growth in revenue in the coming years, AAHK should revisit its financial proposal with a view to maximising its borrowing capacity so as to lower the level of ACF. We also note that AAHK will explore different combinations of debt vehicles, where appropriate, to maximise its debt capacity.

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[12] Some of the airports with higher aeronautical charges that HKIA has studied include London Heathrow Airport, New York John F. Kennedy International Airport, Singapore Changi Airport, etc.. Their charges are some 30% to 178% higher than that of HKIA.

[13] Cathay Pacific Airways' annual reports (2007 – 2013) indicated that HKIA's airport charges constituted an average of around 2% of Cathay Pacific Airways' operating expenses.

21. We consider that it is the responsibility of AAHK to exercise due diligence in managing the delivery of the project and containing the cost within the agreed budget, and make the best effort in raising the revenue as planned. In the event of cost overrun, Government would expect AAHK to exhaust all possible and reasonable means to maximise its borrowings.

Recent Developments – PRD Airspace

22. There has been phenomenal growth in the volume of air traffic serving the five airports in the PRD region (namely, Guangzhou Baiyun Airport, Hong Kong International Airport, Macau International Airport, Shenzhen Baoan Airport and Zhuhai Airport). Since 2004, the Civil Aviation Administration of China (CAAC), the Civil Aviation Department (CAD) of Hong Kong and the Civil Aviation Authority of Macao (CAAM) have set up a Tripartite Working Group (TWG) to formulate measures to improve the airspace structure and air traffic control arrangements in the PRD region to optimise the use of airspace and enhance safety. In 2007, the TWG drew up and agreed to the "PRD Region Air Traffic Management Planning and Implementation Plan (Version 2.0)" (the PRD Airspace Plan), which clearly stipulated the short, medium and long term optimization targets and measures to be achieved and implemented before 2020.

23. The ultimate target of the Plan is to achieve joint airspace planning, use of common standards and harmonized flight procedure design for air traffic in the region, thereby ensuring safe and efficient use of the airspace in the PRD region. The Plan has already taken into account the operational need of our 3RS, as well as the planned development of other key airports in the PRD (including three runways in Shenzhen and an eventual five-runway system in Guangzhou). The implementation of the Plan, which was agreed by all parties concerned, is the basis for achieving the target maximum capacity of 102 ATMs per hour under the 3RS operation at HKIA.

24. The TWG has been meeting since 2007 to review progress. Some short-term measures have been implemented, such as the addition of entry points between Hong Kong and the Mainland airspace. We will

continue to press ahead the implementation of measures agreed in the 2007 Plan through the established TWG platform.

Next Stage of Work

25. Given that the existing two runways at HKIA will soon be reaching maximum capacity and in view of the acute competition from neighbouring international airports, notably Singapore, Seoul and Shanghai, there is a pressing need to take forward the 3RS project. Any delay in Hong Kong pressing ahead with 3RS will defacto surrender our air business as well as related economic opportunities to our regional competitors.

26. AAHK will carry out the following work -

(a) AAHK will, in consultation with the Government, (i) take forth the 3RS project expeditiously and explore ways to facilitate the early implementation of the project, and (ii) develop appropriate planning contingencies to cater for possible scenarios in the course of implementation; and

(b) AAHK will, taking into account Government's feedback, refine the financial arrangements proposal to (i) maximise borrowings from the market with a view to lowering the amount of ACF; and (ii) devise an airport charging mechanism to facilitate the most efficient use of HKIA through, for instance, the use of more wide-bodied aircraft.

Separately, we will continue to push forward the implementation of the measures agreed under the 2007 Plan through TWG.

27. A further submission will be made by AAHK to the Government after completion of the tasks mentioned in paragraph 26 above.

OTHER OPTIONS

Misunderstanding on ways to overcome HKIA capacity constraints

28. 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.

29. 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 authorisation 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.

30. 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. As well, it would 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.

31. 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[14]. Cross-boundary and multimodal connection would make passenger connection an even less attractive proposition.

32. HKIA is currently one of the world's most efficient airports[15]. Among the world's top 100 airports, HKIA has the second-highest proportion of wide-bodied aircraft (at 63.3%). 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

33. 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 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[16]. Given the proximity

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[14] 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).

[15] 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 2013, HKIA was named the most efficient airport with each air traffic movement carrying 264.5 workload units on average.

[16] 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. 1 am – 7 am).

of the HKIA and the Shenzhen Baoan 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.

34. The requirement for transfer of control point is not relevant to runway capacity. The constraints of runway capacity are determined by the time interval and space separation between successive runway movements. In addition, as there is a 10-minute flying distance between the HKIA runway and the "point of control transfer", the runway operation will not be affected by the requirement of a minimal altitude.

Maintaining the two-runway system (2RS) at status quo

35. 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. 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 summarised in Annex B.

36. 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.

IMPLICATIONS OF THE PROPOSAL

37. The proposal has economic, financial, civil service, environmental and sustainability implications as shown in Annex C. The proposal is in conformity with the Basic Law, including the provisions concerning human rights. It has no productivity or family implications.

PUBLIC CONSULTATION

38. AAHK has been implementing an extensive communication and engagement plan to engage relevant stakeholder groups and lobby the general support for the 3RS project. Over the years and particularly during the EIA period, AAHK has reached out to promote the 3RS project and conducted regular 3RS briefings as well as airport visits for business and aviation sectors, community leaders, resident groups, professional and industry organisations, Members of the Legislative and District Councils, green groups, school and academic sector and the media. AAHK has established five Community Liaison Groups comprising members who are District Councillors and community/resident leaders for the five districts more affected by HKIA operation (i.e. Islands, Tuen Mun, Tsuen Wan, Kwai Tsing and Shatin), as well as four Technical Briefing Groups comprising members of relevant professionals, experts and academia to establish dialogue and seek advice on EIA-specific issues covering aircraft noise, air quality, marine ecology and fisheries, and CWDs.

39. Besides, AAHK organised two public forums in August 2013 and June 2014 to update the general public on the findings of the EIA and 3RS development. AAHK also attended joint-panel meetings of the Legislative Council (LegCo) Panel on Economic Development and Panel on Environmental Affairs on 30 September 2014 and 7 October 2014, and meeting of the LegCo Panel on Environmental Affairs on 6 January 2015 to hear deputations' views on the 3RS project.

40. AAHK will continue to step up its publicity and engagement efforts to generate wider and sustained community support for the 3RS project with focus on building a stronger bond between the community

and the airport under the themes of HKIA being the airport for the people of Hong Kong and HKIA's striving to be one of the world's greenest airports.

PUBLICITY

41. The Government will work closely with AAHK on an effective public engagement process – both to secure community buy-in and to clarify any misunderstanding about environmental, financial, runway capacity and airspace issues. The LegCo Panel on Economic Development will be briefed at its meeting on 23 March 2015.

BACKGROUND

42. On 20 March 2012, the Executive Council advised and the Chief Executive ordered that –

(a) approval, in-principle, should be given to AAHK's recommendation to adopt the option of expanding into a 3RS as the future development option for HKIA for planning purpose;

(b) AAHK should be asked to proceed with the planning related to the development of the 3RS, which include specifically the statutory environmental assessment, the associated design details, and the financial arrangements; and

(c) AAHK should be asked to report to the Government after completion of the planning work at (b) above. A final decision on whether to proceed with the implementation of the 3RS will be made when the relevant inputs are available.

AAHK completed the above planning work in January 2015 and submitted a recommendation to Government for consideration.

ENQUIRIES

43. Any enquiry on this brief should be directed to Ms. Grace Kwok, Principal Assistant Secretary (Airport Expansion Project Coordination Office) (telephone number 3153 2913).

Transport and Housing Bureau
20 March 2015

Annex A

Examples of Airport Construction Fees in other airports

Airport/ Country	Name of Charge	HK$ equivalent[1]
Toronto	Airport Improvement Fee	172
Vancouver	Airport Improvement Fee	138
Calgary	Airport Improvement Fee	206
Athens	Airport Development Tax	218
Mumbai	Airport Development Fee	78
United States	International Transportation Tax[2]	136
Mainland	Airport Construction Fee[3]	114

Source: IATA Airport, ATC and Fuel Charges Monitor (January 2015)

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1 HKD 1 = CAD 0.1454, EUR 0.101, INR 7.92, USD 0.1289, RMB 0.7895 (Bloomberg, 19 Oct 2014)

2 Tax collected will go to Airport and Airway Trust Fund that feeds the Airport Improvement Program which provides funds for airports to pay for approved infrastructure projects.

3 Contribute to Aviation Development Fund under the Ministry of Finance which provides funds to individual airports for their expansion needs.

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 two-runway system (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 Organisation (ICAO), would be **68 air traffic movements (ATMs) per hour, or 420 000 ATMs per year**.

Table 1 Capacity of 2RS

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

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 Washington Consulting Group 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 [1] 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** 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, or even Independent Mixed Mode. NATS reaffirmed findings in previous studies that **Independent Mixed Mode could <u>NOT</u> 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**.

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 HKIA under the 2RS from 55 movements per hour in 2008 to the currently 66 movements per hour. CAD will continue to further increase

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

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

Preliminary Terrain Assessment for 2RS

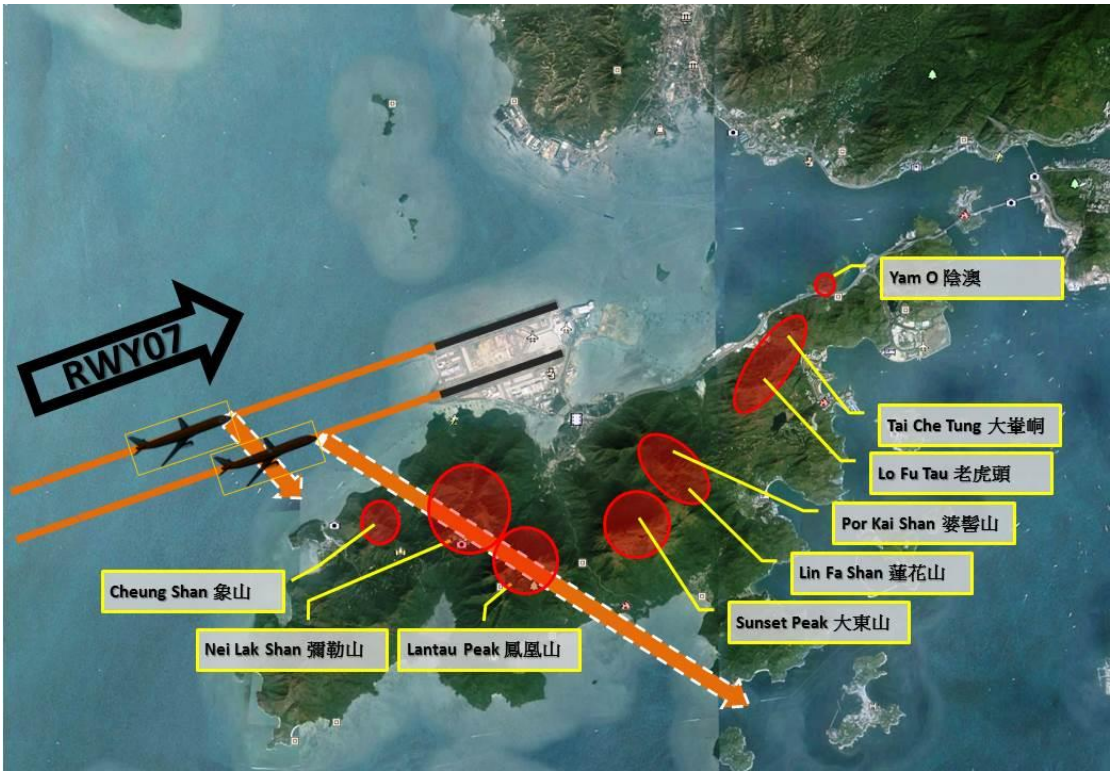
8. Some comments suggested that if the peak of Tai Yam Teng (大陰頂) (610 feet) and Fa Peng Teng (花瓶頂) (810 feet) were removed, the runway capacity of 2RS at HKIA could be further increased as this will facilitate the operation of Independent Mixed Mode at HKIA. These comments claimed that removal of the 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

Economic, Financial, Civil Service, Environmental and Sustainability Implications

Economic Implications

HKIA plays a critical role in maintaining Hong Kong's status as an aviation hub and Hong Kong's competitiveness as a business hub and international financial centre. In the light of the imminent saturation of the existing two-runway system (2RS), the three-runway system (3RS) will significantly increase the handling capacity of HKIA, and help maintain HKIA's level of services, efficiency as well as connectivity. Given the importance of HKIA in rendering supportive function to various pillar sectors including trading and logistics, tourism and professional services, the 3RS would provide Hong Kong with the capacity expansion needed to capture the opportunities arising from the strong regional economic growth, and in turn conducive to the long-term economic development and growth of Hong Kong.

Financial Implications

2. 3RS involves a capital investment of **around $141.5 billion in MOD** by AAHK. Given its strong financial position and AAA credit rating, AAHK would be able to fully fund the cost of the 3RS, including the cost of providing environmental mitigation measures as committed under the EIA, without requiring any financial support from the Government. After optimising the AAHK's revenue stream on the basis of the "joint contribution" principle, the pre-financing funding gap will be bridged by leveraging on AAHK's borrowing capacity.

3. The Government's independent financial consultant has vetted and evaluated AAHK's proposal, including the assumptions and computation of AAHK's financial model. The consultant agreed that AAHK's proposal is generally in order and align with the prevailing market practice. Given AAHK's robust financial situation and the proposed measures to raise revenue, and benchmarking on the experience of similar airport expansion projects around the world, the consultant also agreed that there should not be difficulties for AAHK to raise sufficient

funds from the market under reasonable terms and conditions to bridge the funding gap. Having considered the consultant's advice, we agree that the 3RS project is financially feasible.

4. In addition to the capital cost of 3RS, there will be financial implications to the Government for constructing, operating and maintaining the **associated Government facilities**. These facilities include a new air traffic control tower, fire stations, a police station, a weather monitoring system operated by the Hong Kong Observatory, additional immigration and customs facilities, etc. These are essential for the efficient and safe operation of the 3RS.

Civil Service Implications

5. While AAHK, a statutory body wholly owned by the Government, will be responsible for undertaking the 3RS project, it is necessary for the Government to closely work with AAHK to protect the Government's and the public's interests on the one hand, and smoothen out the planning and implementation process of 3RS on the other. Given the scale, cost and complexity of the 3RS project, it is particularly important for the Government to work in close partnership with AAHK to ensure that the works are taken forward on the right track and the project is delivered in a timely manner. To this end, there is an absolute need for the **dedicated team**, the **Airport Expansion Project Coordination Office** (AEPCO) comprising 11 officers[1] which has been established under the Transport and Housing Bureau since July 2012, to continue operation to undertake the daily monitoring and coordination work between various bureaux/ departments and AAHK relating to the implementation of the 3RS project. In addition to close communication/liaison with AAHK, AEPCO will also provide requisite policy advice and technical inputs to AAHK for implementing the 3RS project through attending AAHK's Board and Committee meetings,

[1] AEPCO is led by one Principal Government Engineer (D3) and comprises one Administrative Officer Staff Grade C (D2), one Chief Engineer (D1), and eight non-directorate staff from different grades. All the posts are time-limited and the three supernumerary directorate posts will lapse on 1 April 2015. Approval has been given in the 2014 Resource Allocation Exercise (RAE) for the extension of the above posts from 1 April 2015 to 31 March 2018. The notional annual mid-point salary involved is $10,800,960. The approval of Finance Committee (FC) will be sought for the proposed extension of the three supernumerary directorate posts. Pending FC's approval, THB will make interim arrangement to handle the necessary work.

scrutinizing the 3RS detailed designs, and providing secretariat support to the Steering Committee chaired by the Financial Secretary.

6. In addition to the above, various Government departments (e.g. CAD, EPD, Marine Department, Buildings Department (BD), Fire Services Department (FSD), Hong Kong Observatory (HKO), Lands Department (LandsD), Hong Kong Police Force, Immigration Department and Customs and Excise Department) will need additional staffing resources at various stages in the future to provide input and advice to AAHK as it takes forward the 3RS project, to plan for the associated government facilities, and to provide the necessary public services to tie in with the coming into operation of the 3RS; in particular, CAD will bid for relevant resources to carry out necessary work relating to 3RS operation. AEPCO will coordinate the requirements of these departments.

Environmental Implications

7. The approval of the EIA and issuance of the EP under the EIAO on 7 November 2014 signify that all environmental concerns or impacts arising from 3RS pertaining to the 12 environmental aspects covered in the EIA process will be minimized, mitigated and compensated within the acceptable levels and in full compliance with the requirements of the EIAO with respect to the requirements stipulated in the Technical Memorandum (TM) and EIA Study Brief through various measures which AAHK has committed to undertake in the EIA Report as well as those to be implemented according to the EP conditions. Among these, AAHK's efforts and commitments in establishing a marine ecology conservation plan will bring about long-term conservation for marine life particularly CWDs both within and outside Hong Kong waters.

8. In accordance with the EIAO, AAHK will need to ensure that the project is designed, constructed and operated in accordance with the recommendations contained in the approved EIA Report as well as the EP conditions. AAHK is also required to carry out comprehensive environmental monitoring and audit (EM&A) in accordance with the requirements described in the EIA Report as well as the EP to ensure effective implementation of the proposed mitigation measures, and to

identify the need for remedial action if required during both construction and operation phases of the project. AAHK will establish a full time on-site environmental team to this end. In addition, a full time on-site independent environmental checker will be engaged to audit the EM&A performance. The independent environmental checker will follow the respective EM&A requirements under the EP if any non-compliance is identified. The above will ensure that all the environmental mitigation and enhancement measures are properly implemented and the environmental impact of the 3RS project is duly monitored and contained.

9. Two applications for grant of leave for judicial review were filed to court on 6 February 2015 to quash DEP's decisions to approve the EIA Report and grant the EP for 3RS project. Pending the court's decision on the applications, AAHK, in collaboration with relevant Government departments, will continue to engage stakeholders including the Advisory Committee for the Environment as it works on the mitigation and enhancement measures as committed in the EIA Report, and comply with the requirements stipulated in the EP.

Sustainability Implications

10. The 3RS project would bring about economic benefits to Hong Kong, particularly in reinforcing the competitiveness of Hong Kong and generating more employment, investment and business opportunities. At the same time, it is acknowledged that the project will bring about environmental concerns. These have been identified in the EIA Report and addressed through the statutory EIA process as set out in paragraphs 7 and 8 above. AAHK will continue to engage the various stakeholders through its established and regular platforms to address their concerns properly in the implementation of the 3RS project with a view to ensuring that the project is in the interest of Hong Kong's sustainable development.
