For Information
on 24 December 2019

Legislative Council Panel on Economic Development

Update on the Development of the Three-Runway System at Hong Kong International Airport

Purpose

This paper provides an update on the developments of the Three-Runway System ("3RS") project since last reporting to this Panel in April 2019 (LC Paper No. CB(4)775/18-19(05)).

Background

2. This paper presents updates on the overall progress of the 3RS project as well as its key individual aspects: (a) construction; (b) labour supply; (c) construction safety; (d) environmental-related issues; and (e) financial arrangement plan, which are summarised in the paragraphs below.

Progress Update on 3RS Works

(a) Construction

3. The construction of the 3RS at Hong Kong International Airport ("HKIA") comprises different components, including formation of about 650 hectares of land; construction of the Third Runway, taxiways and aprons, and the Third Runway Passenger Building ("TRPB"); expansion of the existing Terminal 2 ("T2"); provisions of a new automated people mover ("APM") system and a high-speed baggage handling system ("BHS"); modification of the existing North Runway; and construction of airport support infrastructure, utilities and facilities. A layout plan showing the 3RS project scope is in **Annex A**.

(i) Land Formation

4. Over 95% of the Deep Cement Mixing ("DCM") works, one of the major components of the reclamation, has been completed, including all in the critical areas and under the seawall areas. Over 600 hectares of the reclamation works areas, representing about 96% of the total, have been handed over to the main reclamation contractor and reclamation filling continues to progress in these areas. Land-based ground improvement works are also proceeding in multiple work fronts on the platforms of the reclaimed land. More than 11.5 km long seawall areas have been handed over from the DCM contractors to the main reclamation contractor, who has completed 10.0 km seawall rock core and vertical seawall blocks above sea level. Over 40 hectares of reclaimed land have been handed over to the follow-on contractor for the construction of taxiways, airfield infrastructure and facilities and the establishment of construction support facilities, with more land parcels to be readied according to set schedule and priorities.

5. The demand for fill materials is expected to peak in the coming year as the reclamation filling within the critical areas approaches completion in 2020 as scheduled. It has always been the Airport Authority Hong Kong's ("AAHK") plan to use different types of fill materials from multiple sources, including manufactured sand from the Mainland; suitable fill materials from the public fill reception facilities and other ongoing local infrastructure projects; as well as sand fill from Malaysia and the Philippines. So far, manufactured sand has been a major source of fill material for the reclamation works. The competing demand for fill materials in the region, nevertheless, continues to pose significant challenges to the main reclamation contractor in sourcing fill materials, be it from the Mainland or other sources.

6. In the past months, the overall fill supply has gained robust momentum through fill sourcing effort on multiple fronts. AAHK, with the support of the Hong Kong Special Administrative Region Government and Guangxi authorities, introduced marine sand supplies from Guangxi in end September 2019. Meanwhile, Guangdong authorities are also processing the necessary procedures for marine sand supply. Another significant development is that manufactured sand supply from Guangdong has climbed to new heights as production accelerates under favourable weather condition. On the other hand, AAHK has also fine-tuned the reclamation design by identifying more suitable areas for receipt of public fill above and below seawater level. At present, four sorting facilities are operating at Tseung Kwan O Fill Bank and Tuen Mun Fill Bank, two of which operate round-the-clock. With these enhancement measures, the intake of public fill by the 3RS project has seen a notable increase over the past few months.

7. Overall, the fill supply has been increasing as the reclamation works enters its peak, having reached a record high in October and remained steady in November. Over the past few months, the contractor has been able to increase the delivery of manufactured sand from more quarries both in Guangdong and Hainan, in addition to the new sand supply from Guangxi. With an increased fill supply from the Mainland, AAHK anticipates that the overall fill supply will continue to support the completion of the reclamation works.

8. As AAHK reported to the Panel in April 2019, the continuing challenges associated with the supply of fill materials had caused a slippage in the schedule of reclamation filling in the non-critical areas for land formation. With the implementation of the enhancement measures in paragraph 9 below and more favourable weather in 2019, AAHK has managed to contain the impact within the reclamation filling in non-critical areas (i.e. areas not required for commissioning the Third Runway in 2022). The reclamation filling in critical areas, where time-critical infrastructure and superstructure (e.g. the Third Runway, taxiways, fire station, interim air traffic control tower, etc.) are required to be built on top for commissioning the Third Runway in 2022, is currently progressing on schedule. While the reclamation works continue with a non-critical delay of several months, given the increased and improved fill supply, the latest overall progress provides a reasonable prospect of recovering the delay through the course of the re-phased reclamation filling works going forward and/or subsequent infrastructure and superstructure construction, thereby enabling AAHK to continue proceeding with the target to complete the entire 3RS in 2024.

9. Meanwhile, AAHK continues to work with the main reclamation contractor to implement the following programme re-phasing and enhancement measures as well as adjustment of reclamation design for maintaining the progress of reclamation filling:

(i) <u>Programme Re-phasing/Re-prioritisation</u>

It has always been AAHK's plan that reclaimed land will be formed in phases/stages according to set priorities and sequences of various civil/building works to be built on top. In accordance with such a plan, AAHK continues to moderate the fill requirements of critical and non-critical areas by adjusting the reclamation phasing and filling stages. AAHK has worked with the main reclamation contractor to schedule the timely handover of different parcels of reclaimed land to contractors responsible for subsequent construction works for the runway and critical facilities. The phased handover schedule will help ensure the progress of works for

meeting the original targets to commission the Third Runway in 2022 and to complete the entire 3RS in 2024. The updated reclamation phasing plan is attached in **Annex B**.

(ii) Adjustment of Reclamation Design

Having considered the effectiveness of the DCM works in terms of the engineering, programme and environmental benefits, more use has been made of DCM outside the Contaminated Mud Pits areas. The use of DCM reduces construction idling time whilst awaiting the consolidation of the marine deposit layer by placing surcharge on top of the reclaimed land. It is particularly significant as it has the added advantage in reducing the need of fill material for surcharging as well as eliminating the process of the lengthy surcharging, thus allowing the subsequent follow-on construction works to commence soon after the land is formed. In addition, a notable amount of fill materials (about 20 million m^3) can be reduced with the use of DCM.

10. In summary, with an improved fill supply momentum and the implementation of the programme re-phasing and enhancement measures, as well as the additional deployment of the necessary machinery and manpower by the main reclamation contractor on site, the reclamation works are anticipated to proceed according to the planned schedule in the months ahead, thereby enabling AAHK to continue proceeding with the targets to commission the Third Runway in 2022 and the entire 3RS in 2024.

(ii) Buildings and Infrastructure Works

11. T2, as planned, commenced decommissioning on 29 November 2019 to enable the major reconfiguration. The relocation of the check-in counters and facilities from T2 to Terminal 1 Extension area was completed smoothly. Targeted for re-opening in 2024, the reconfigured and expanded T2 will be a fully-fledged terminal.

12. The site works relating to the foundations and substructure of the T2 expansion works are continuing as planned with utilities diversions, bridge demolition, South Annex Building works, diaphragm wall works and both bored piles and H-rock socket piling works ongoing. Early contractors' involvement for the main works of T2 Expansion was completed in October and tendering is now in progress. The off-site assembly and lifting of the T2 roof mock-up, which provides valuable construction details of the T2 roof to the tenderers of T2 Expansion works, is substantially complete.

13. The detailed design for the Third Runway Passenger Building, which commenced in 2016, is progressing well. Tendering for the Third Runway Passenger Building foundation and substructure works is ongoing. As regards the Third Runway and the associated taxiways contract, the construction of the airfield infrastructure and facilities is in progress. Works on the North Runway Crossover Taxiway is proceeding on schedule.

14. In addition to the above works, the design and build contracts for the highly specialised APM system and the high-speed BHS are in progress. Works for the new APM Depot are substantially complete, with the occupation permit expected to be in end 2019. The APM and BHS tunnels on the existing airport island, which commenced construction in mid-2017, are also proceeding as planned. Meanwhile, construction support facilities and services, e.g. marine transportation services, quay management services and medical services, have commenced to facilitate construction works on the new reclaimed land.

(iii) Project Cost

15. AAHK continues to manage the 3RS project within the budget. The total value of the major contracts awarded (about HKD50.2 billion) as at end November 2019 is within the estimated budget. Details of the major construction works contracts are in **Annex C**. It remains AAHK's target to deliver the 3RS project within the budget of HKD141.5 billion.

(b) Labour Supply

16. AAHK always accords priority to recruitment of local workers; local recruitment through various channels has been ongoing. In addition, AAHK has been working with its contractors and the Construction Industry Council ("CIC") to provide training courses for local workers under the "Construction Tradesman Collaborative Training Scheme" ("CTS") in relation to specialist marine trades. To date, the main reclamation contractor has conducted six CTS training courses out of a total of eleven trades as approved by the CIC.

17. It is anticipated that starting from 2020, the demand for workers is set to rise and reach the peak in 2022/23, with about 9 000 skilled workers to be deployed on the construction of the major airfield infrastructure works, tunnels and terminal buildings. Employment opportunities generated by the 3RS works for local workers therefore will be made available progressively as reclamation works approach completion in phases, and will continue to increase in the years ahead.

18. AAHK continues to liaise closely with the Government and the relevant authorities to project the capacity of the local labour market to ensure the employment opportunities of local workers on the one hand and a sufficient supply of skilled labour on the other. As reported in LC Paper No. CB(4)775/18-19(05), the Labour Department ("LD") approved in April 2018 the main reclamation contractor's application for importing skilled marine workers under the Supplementary Labour Scheme ("SLS"). To date, about 88%[1] of the approved 518 quotas have been deployed to fill up positions in the specialist marine trades to supplement the workforce, which has helped maintain the progress of reclamation works. To ease the significant shortage of skilled workers in the specialised reclamation trades in the run up to 2021, the main reclamation contractor has submitted a second application under the SLS. AAHK and the main reclamation contractor remain highly cautious in making use of imported workers, and will keep enhancing its local recruitment and training efforts for meeting the manpower needs of future works.

(c) Construction Safety

19. AAHK is committed to maintaining the highest standard in construction safety. As of November 2019, the 12-month rolling Accident Frequency Rate ("AFR"[2]) is 4.1; though higher than that reported in the last progress report (2.3), it is still substantially lower than the Hong Kong construction industry accident rate of 31.7 per 1 000 workers in 2018. Unfortunately, a fatal accident took place in August 2019 when a certified and experienced operator reversed into the sea while driving a certified bulldozer. An accident investigation, led by LD, is underway.

20. AAHK and its contractors have always accorded the highest priority to construction safety. Following this accident, AAHK has conducted a thorough review to identify possible safety improvements and introduced a number of safety measures, which are mainly related to the strengthening of site safety management, the control of heavy machinery operation, and the enhanced training for plant operatives and site workers. AAHK and its contractors will continue to accord the highest priority to construction safety. Meanwhile, on the education and publicity front, the promotion campaign under AAHK's "V Commit Safety Programme" continues, with a view to promoting high vigilance among the contractors and workers in maintaining construction safety. One of the contractors was awarded the "Highly Commended Award" under the

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[1] The remaining 12% "vacancy" are mainly vacant positions to accommodate normal staff turnover.

[2] AFR is the number of reportable accidents per 1 000 workers per year. This calculation is in accordance with the LD's and is widely used in the Hong Kong construction industry.

"Safe Project Team" category in the Lighthouse Club Hong Kong Contractor Safety Awards 2019[3].

(d) Environment-Related Issues

21. The implementation of the Environmental Monitoring and Audit ("EM&A") programme for the 3RS project is ongoing. All of the EM&A information, including finalised Environmental Permit submissions, monitoring results, implementation status of mitigation measures, events of non-compliance and the corresponding follow-up actions etc., is reported on a monthly basis and made publicly available on a dedicated website[4]. The EM&A programme and all the required environmental mitigation measures for the 3RS project have been properly implemented since the commencement of construction.

22. AAHK continues to fulfil its commitments to enhancing marine ecology and fisheries for the benefit of marine ecology (including the Chinese White Dolphins) and fisheries resources in the vicinity of the project area. Since the setting up of a Marine Ecology Enhancement Fund ("MEEF") and a Fisheries Enhancement Fund ("FEF") with a total budget of HKD400 million from AAHK in late 2016, over HKD28 million was granted from the MEEF and FEF to 21 projects for years 2017/18, 2018/19 and 2019/20. Details of the funded projects for the MEEF and FEF, including the reports of those completed projects, can be found on the dedicated websites[5]. These projects are managed and conducted by universities, research groups, or associations from the fisheries industry.

23. Meanwhile, AAHK continues to provide funding, other than the above two Funds, for several marine ecology and fisheries enhancement measures in Lantau waters on a voluntary basis. These include:

(i) the eco-enhancement seawall design for the 3RS reclamation, which incorporates concrete seawall blocks and vertical seawall panels with rough surfaces to facilitate and promote colonisation of epifauna and to increase microhabitat complexity, was completed with the first batch of eco-seawall blocks casted and installed; and

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[3] The Lighthouse Club, originally established in England and later becomes worldwide, promotes and improves health and safety in the construction industry, amongst its other work.

[4] http://env.threerunwaysystem.com/en/index.html

[5] Marine Ecology Enhancement Fund webpage: http://env.threerunwaysystem.com/en/meef/index.html
Fisheries Enhancement Fund webpage: http://env.threerunwaysystem.com/en/fef/index.html

(ii) the preparatory work for pilot tests on artificial reef ("AR") deployment and fish fry restocking, intended to evaluate their effectiveness within the proposed 3RS Marine Park, is continuing. The first round of fish fry restocking was conducted in Q2/Q3 2019 with ongoing post-release monitoring. Subject to gazettal under the Foreshore and Sea-bed (Reclamation) Ordinance (Cap. 127) and statutory authorisation, the pilot test on AR deployment would commence in 2020.

24. As recommended in the approved 3RS Environmental Impact Assessment Report, a new marine park comprising an area of approximately 2 400 hectares will be designated in north Lantau waters to tie in with the full operation of the 3RS project in 2024. AAHK continues to liaise with green groups, fishery sectors, marine users, local communities and other stakeholders to solicit their views on the goals, boundary and preliminary management plan for the proposed 3RS Marine Park. AAHK will continue working with the Agriculture, Fisheries and Conservation Department in the preparatory work for the designation of the proposed 3RS Marine Park.

25. To enhance transparency and communication with the community in a proactive way, AAHK continues to engage its stakeholders through meetings with the Professional Liaison Group and Community Liaison Groups[6], with a view to facilitating communications, enquiries and complaints handling on environmental issues related to the 3RS project.

(e) Financial Arrangement Plan

26. In the last report to this Panel on 29 April 2019, Members were updated on the key financial arrangement preparation work in 2018 and the successful launch of the USD500 million bond due in 2029 with a coupon rate of 3.45% per annum, or approximately HKD4 billion equivalent, under AAHK's MTN programme on 13 February 2019.

[6] Five Community Liaison Groups were set up in the neighbouring districts of HKIA, namely Islands, Kwai Tsing, Shatin, Tsuen Wan and Tuen Mun.

27. With reference to the detailed funding plan to raise third-party debts from the market as advised by AAHK's financial advisor, The Hongkong and Shanghai Banking Corporation Limited ("HSBC"), AAHK is planning to issue a 3-year HKD5 billion fixed-coupon retail bond to retail investors within 2019/20. The plan is to offer the bonds to retail investors who have HKID card through various channels (retail banks, securities brokers, etc.) to have broad coverage. The indicative implementation timeline of the detailed funding plan is set out in **Annex D**.

28. AAHK will coordinate with the Government's retail bond offering programme to ensure that both the timing and the terms of AAHK's programme are appropriate and optimised. AAHK is going through the required regulatory process that is pertinent to the Bond issuance.

29. Apart from the issuance of the HKD retail bond mentioned above, over the medium term, AAHK plans to tap the bank loans market and the bond market (including Green Bond) to provide further sources of funds. To broaden its capital access and to ride on its sustainability achievements, AAHK is preparing the Green Framework such that it can tap Green Financing, e.g. Green Bond, when the time is right. AAHK has been kept abreast of the market environment and condition through constant engagement with major lending banks. In good time, AAHK will also arrange a HKD10 billion standby revolving facility to act as the backup to the funding exercise as planned.

30. The final details and the timing of the execution of the retail bond and other financing transactions will depend on the funding needs of the AAHK, 3RS project progress, and market environment. As and when the timing is appropriate, and the market conditions allow, AAHK will execute these financing transactions accordingly.

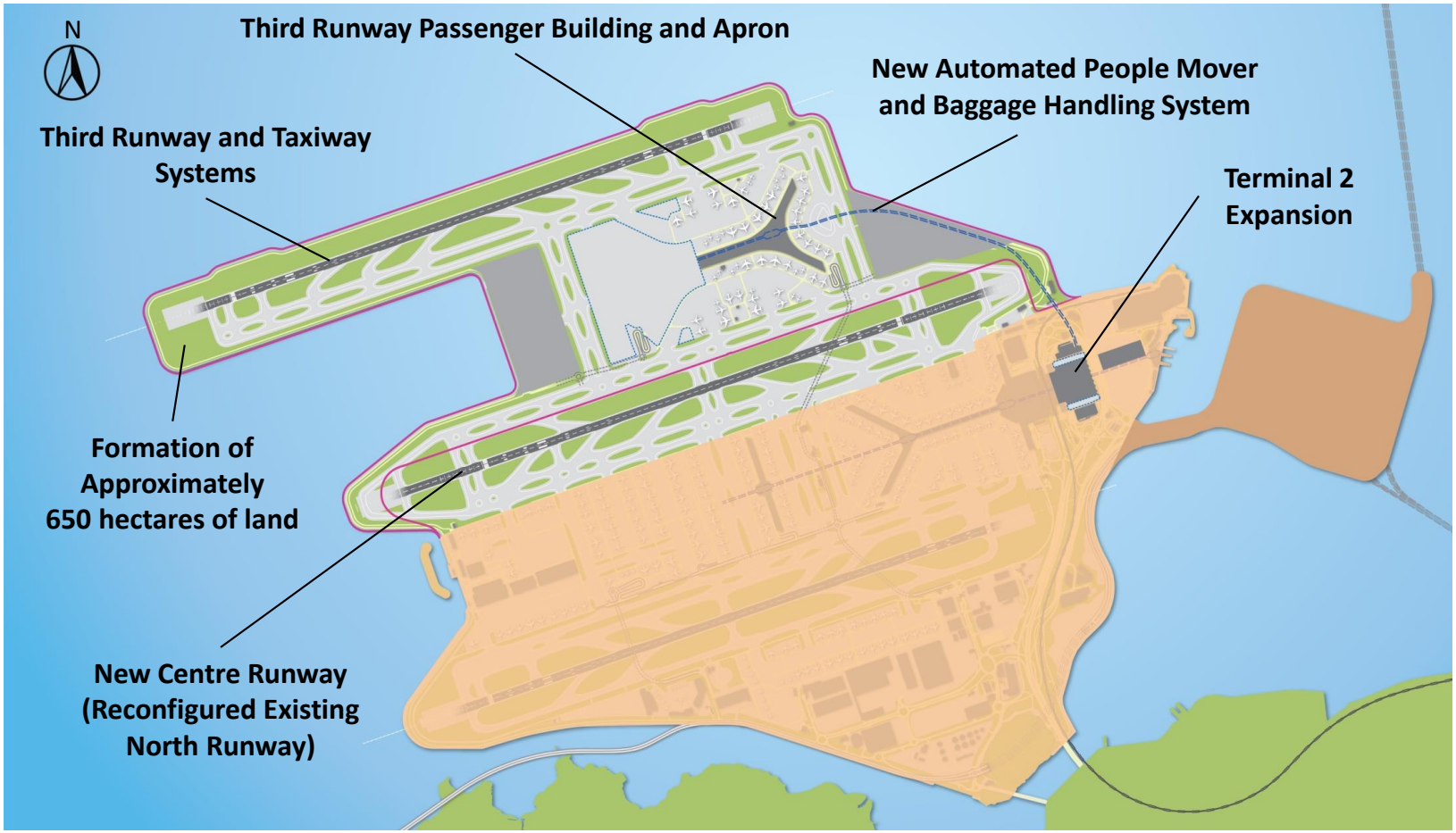
Advice Sought

31. Members are invited to note the above.

Airport Authority Hong Kong
December 2019

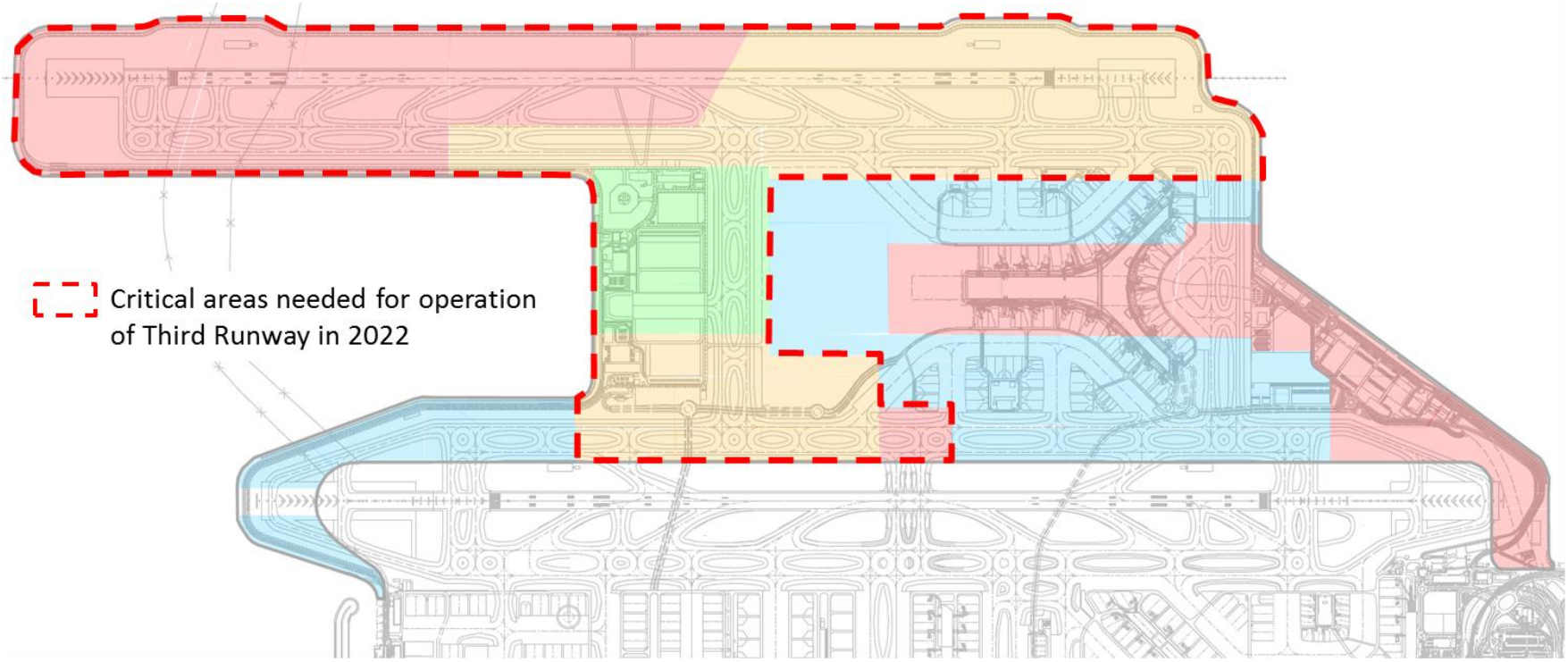
Annex A

Three-Runway System Layout Plan Illustrating the Project Scope



Annex B

Reclamation Phasing Plan



Target Completion Time of Reclamation	Progress Status
2019	Being handed over for follow-on works in phases
End 2019 / Early 2020	In progress
Mid 2020	In progress
Late 2020 to 2021 / 2022	In progress

Annex C

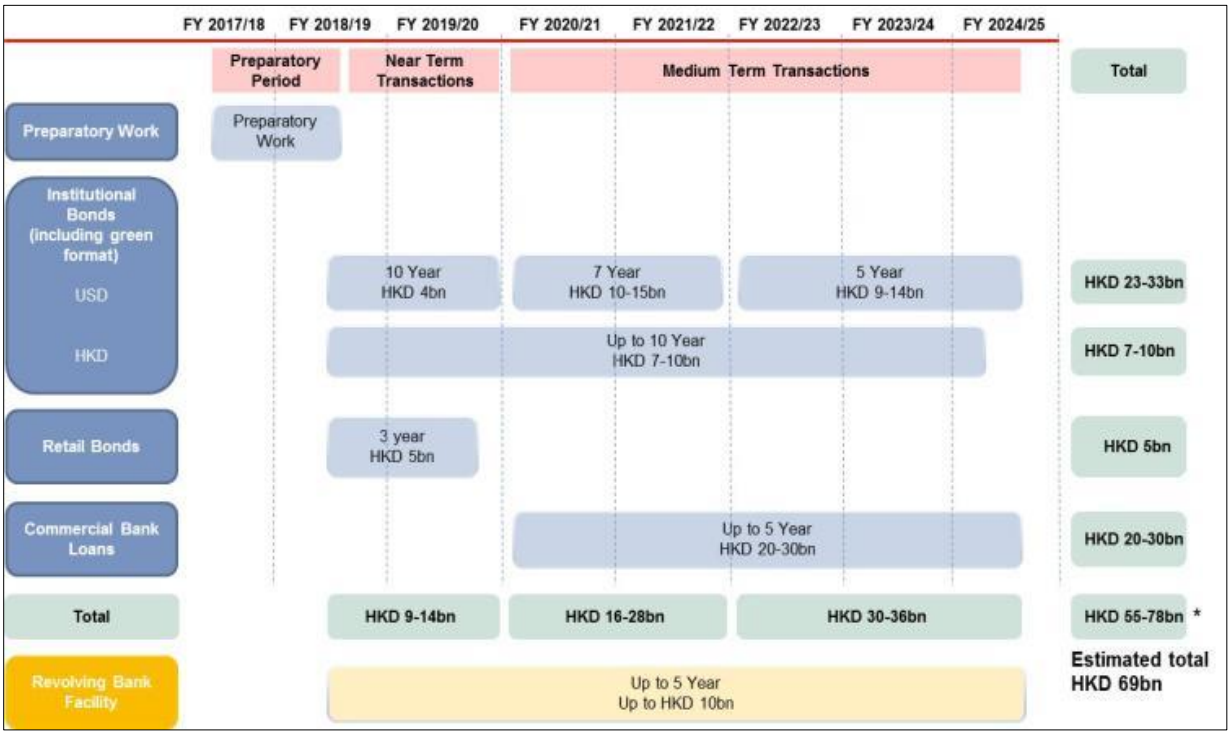
Three-Runway System Project
An Overview of the Major Construction Works
(as at November 2019)

	Construction Works Contract	Works Contract Award Date	Contract Sum (HKD)
1.	Contract No.: P560(R) Aviation Fuel Pipeline Diversion Works	29 July 2015	1,289,000,000
2.	Contract No.: 3201 Deep Cement Mixing Works (Package 1)	28 July 2016	3,686,890,096
3.	Contract No.: 3202 Deep Cement Mixing Works (Package 2)	28 July 2016	2,813,918,000
4.	Contract No.: 3203 Deep Cement Mixing Works (Package 3)	28 July 2016	2,120,914,933
5.	Contract No.: 3204 Deep Cement Mixing Works (Package 4)	28 July 2016	1,800,000,000
6.	Contract No.: 3205 Deep Cement Mixing Works (Low Headroom)	27 September 2016	3,314,806,000
7.	Contract No.: 3206 Main Reclamation Works	27 September 2016	15,263,960,097
8.	Contract No.: 3602 Existing APM System Modification Works	30 March 2017	843,430,000
9.	Contract No.: 3301 North Runway Crossover Taxiway	3 April 2017	356,277,178
10.	Contract No.: 3501 Antenna Farm and Sewage Pumping Station	9 June 2017	67,628,000
11.	Contract No.: 3601 New Automated People Mover System (TRC Line)	13 June 2017	1,668,324,457
12.	Contract No.: 3801 APM and BHS Tunnels on Existing Airport Island	14 June 2017	2,370,896,942
13.	Contract No.: 3402 New Integrated Airport Centres Enabling Works	30 October 2017	59,151,346
14.	Contract No.: 3503 Terminal 2 Foundation and Substructure Works	28 November 2017	2,435,123,581
15.	Contract No.: 3603 3RS Baggage Handling System	28 November 2017	3,076,491,885
16.	Contract No.: 3302 Eastern Vehicular Tunnel Advance Works	28 November 2018	682,000,000

	Construction Works Contract	Works Contract Award Date	Contract Sum (HKD)
17.	Contract No.: 3303 Third Runway and Associated Works	8 April 2019	6,273,725,171
18.	Contract No.: 3305 Airfield Ground Lighting System	1 August 2019	835,760,167
19.	Contract No.: 3403 New Integrated Airport Centres - Building and Civil Works	9 August 2019	440,698,000
20.	Contract No.: 3404 Integrated Airport Control Systems	9 August 2019	172,345,000
21.	Contract No.: 3721 Construction Support Infrastructure Works	16 August 2019	488,477,541
22.	Contract No.: 3713 Third Runway Concourse and Infrastructure Site Investigation Works	25 September 2019	127,388,888
		Total :	**50,187,207,282**

Annex D

The Detailed Funding Plan and Indicative Implementation Timeline



Source: AAHK, 3RS Consultancy Study: Detailed Funding Plan for 3RS at HKIA – Financial Advisor Report, HSBC (2017)

Notes:

1. Revolving bank facilities serve to provide liquidity only and do not form part of the core debt funding required for the 3RS.

2. As market conditions and the terms of different instruments would vary from time to time, ranges indicating the potential issuance sizes for each debt instrument in the medium term are used to provide flexibility for AAHK to optimise the choice of instruments closer to the time of fund raising.

3. For the avoidance of doubt, the total aggregate debt issuance across all instruments in the recommended funding plan is not expected to exceed the debt requirement to fund the 3RS.

4. HKD55-78 billion represents the summation of the lowest and highest range of each debt instrument type.