For discussion
on 28 May 2018

Legislative Council Panel on Economic Development

Resources proposals relating to the Government facilities and equipment to support the Three-Runway System at the Hong Kong International Airport

PURPOSE

To support the Three-Runway System (the 3RS) at the Hong Kong International Airport (HKIA), it is necessary for the Civil Aviation Department (CAD), the Hong Kong Observatory (HKO) and the Fire Services Department (FSD) to provide Government facilities and equipment to tie in with the implementation programme of the 3RS. This paper briefs Members on the proposals to –

(a) upgrade the following Public Works Programme (PWP) projects to Category A:

(i) 3069GI - Provision of Air Traffic Control Facilities to support the Three-Runway System at the Hong Kong International Airport;

(ii) 3070GI - Provision of Aviation Weather Services Facilities to support the Three-Runway System at the Hong Kong International Airport; and

(iii) 3176BF - Provision of Fire Services Facilities to support the Three-Runway System at the Hong Kong International Airport; and

(b) procure the following equipment and vehicles to support the 3RS:

(i) the associated air navigation service (ANS) equipment; and

(ii) the associated fire services vehicles.

Background

2. To meet the growing air traffic demand and maintain Hong Kong's competitiveness as an international and regional aviation hub, the Airport Authority Hong Kong (AAHK) is taking forward the 3RS project. According to AAHK[1], the 3RS project will bring additional economic benefits of $455 billion (in 2012 dollars) over a 50-year period and additional employment opportunities of 80 000 direct and indirect/induced jobs, which represent a substantial contribution to the Hong Kong economy in the long term.

3. In March 2012, the Government approved in principle the 3RS as the future development option for the HKIA for planning purpose. AAHK was asked to proceed with the related planning, which included, specifically the statutory environmental impact assessment (EIA), the associated design details, and the financial arrangement of the project. Following the Executive Council's affirmation of the need for the 3RS on 17 March 2015, AAHK has been actively taking forward the project, including carrying out detailed design, planning of reclamation works, as well as implementation of financial arrangement plan and a series of environmental mitigation measures committed in the EIA report and in compliance with the conditions of the Environmental Permit.

4. The 3RS project comprises reclamation of some 650 hectares of land north of the existing Airport Island, the construction of a new third runway with associated taxiways, aprons and aircraft stands, a new

[1] According to Hong Kong International Airport Master Plan 2030, compared with the two-runway system, the 3RS will bring additional economic benefits of $455 billion (in 2012 dollars) over the period of 2012 to 2061.

passenger building, expansion of the existing Terminal 2 into a full service processing terminal, a new automated people mover system, a new baggage handling system, related airside and landside works with associated ancillary and supporting facilities. The scale of works is comparable to the construction of a new airport. Upon the full commissioning of the 3RS, the HKIA will have the capacity to handle air traffic demand at least up to 2030, by which time the annual passenger and cargo volume are expected to increase to around 100 million and 9 million tonnes respectively. To cater for the growth in air traffic, the relevant Government departments need to enhance their services at the HKIA to ensure the safe and efficient operation of the HKIA.

5. AAHK will self-finance the 3RS project, which is around $141.5 billion in money-of-the-day (MOD) prices. As stated in the Legislative Council (LegCo) Brief (THB(T) CR2/582/08) issued on 20 March 2015 and discussed at the meeting of the LegCo Panel on Economic Development on 23 March 2015, a number of Government facilities, such as a new air traffic control tower, fire stations, weather monitoring systems, etc., would be required for the operation of the 3RS, and the Government undertook to seek LegCo's funding approval for such works in batches to tie in with the development stages.

6. The 3RS construction works commenced in August 2016. According to AAHK, the 3RS construction works will take around eight years to complete. The commissioning of the new third runway is scheduled for 2022, after which the existing North Runway will be closed for reconfiguration for about two years. The commissioning of the full 3RS is targeted in end 2024. The Government facilities, which are part and parcel of the 3RS, will need to be provided in batches in accordance with the programme of the 3RS.

7. In accordance with the requirements of the International Civil Aviation Organization (ICAO), the first batch of Government facilities to support the 3RS will include the facilities and equipment of CAD and FSD as well as the facilities of HKO. Various CAD facilities should be provided along or in the close proximity of the new third runway to house the ANS equipment, which are essential to provide ANS for the runway operation in accordance with the International Standards and

Recommended Practices specified in ICAO Annex 10. A new Air Traffic Control tower should be provided in a strategic location with an unobstructed view of the new third runway to comply with the requirements of ICAO Document 9184. The HKO facilities should be provided along or in the close proximity of the new third runway to house and support their equipment for collecting meteorological information for the safe operation of air traffic to comply with the requirements of ICAO Annex 3. Various FSD facilities should be provided in strategic locations to enable quick response for firefighting and emergency rescue operations for the new third runway and the new buildings in the 3RS to achieve the response times specified in ICAO Annex 14. According to the implementation programme of AAHK, these facilities shall commence construction in early 2019 the latest to dovetail with the construction progress of reclamation and airfield works.

8. Planning is underway for the second batch of Government facilities and equipment for customs, immigration, quarantines, port health control, and law enforcement, required within the new passenger building, expanded Terminal 2 and various locations at the airport, as well as systems for aviation weather services. We will consult the Panel and seek funding approval from LegCo for these facilities and systems at a later stage.

PROJECT SCOPE AND NATURE

9. The details and the justification for the first batch of Government facilities, including the three PWP projects, **3069GI**, **3070GI** and **3176BF**, and the associated ANS equipment and fire services vehicles to support the 3RS are at **Enclosures 1 to 5**.

Proposed Entrustment to AAHK

10. In view of the exceptionally high degree of integration required amongst the airport facilities under the 3RS project and various Government facilities located at different parts of the 3RS

project area[2], and the critical interfacing issues such as overlapping works sites, construction works sequences and programme dependence among the proposed works, we plan to entrust the design and construction of the three PWP projects, with details in **Enclosures 1 to 3**, to AAHK for better integration, and management of interfacing issues. It would be impractical for AAHK to design and construct the 3RS project, while the Government separately undertakes the design and construction of the three PWP projects co-located within the 3RS project area. Due to the significant interfacing issues, a segregated approach will be highly undesirable. A segregated approach will lengthen the design programme as more time would be required for the design consultants of both parties to integrate the design, and this may expose both parties to contractual claims on the potential delay in exchanging design information among the consultants. In addition, a segregated approach would involve frequent handover of sites among different contractors of 3RS project and Government facilities. Such process is not only inefficient as conservative handover schedules would inevitably be adopted in the construction programme, but would also expose both AAHK and the Government to contractual claims from contractors on delay possession of sites when works could not be completed for handover of the sites as scheduled. In view of the above, a segregated approach will not only increase the time and potential costs required for the design and construction of the proposed Government facilities, but will also give rise to interface and logistics problems, causing delay to the implementation programme of the 3RS.

11. Besides, the existing airport is in round-the-clock operation with heavy air traffic. To avoid disturbance to the operation of the airport and to uphold aviation safety, close coordination amongst parties responsible for airport operation, the construction of the 3RS and the three PWP projects is of paramount importance. The entrustment approach would enable both the 3RS works and the Government facilities at the same location to be designed and constructed at the same time. Such arrangement will not only ensure design integration, enable efficient coordination and facilitate control of construction progress under a single

[2] The 3RS project area includes the existing Airport Island and the 650 hectares newly reclaimed land north of existing Airport Island.

managing party, but also ensure timely commissioning of facilities for commencing operation of the 3RS. Moreover, the project sites of the Government facilities are remote and physically integrated with the development of the 3RS under the same development programme. Unless the design and construction of the proposed Government facilities is entrusted to AAHK, efficient planning and use of resources resulting in timely completion of 3RS will be difficult, if not impossible, to achieve.

12. Having considered the works implementation arrangement and the commissioning requirement of the 3RS project, we consider it necessary to entrust to AAHK the design and construction of the proposed Government facilities which will be carried out in conjunction with the 3RS project in a holistic and timely manner.

PROJECT ESTIMATE AND PROGRAMME

13. The preliminary estimated project costs of the three PWP projects **3069GI, 3070GI and 3176BF** would be about $1,902.9 million, $281.5 million and $2,605.8 million in MOD prices respectively. The preliminary estimated costs of the associated ANS equipment and fire services vehicles would be about $3,108 million and $228 million respectively. As mentioned in paragraphs 10 to 12 above, we plan to entrust the design and construction works of the three PWP projects to AAHK after funding approval by the Finance Committee for completion in phases so as to meet the target commissioning of the new third runway in 2022, after which the existing North Runway will be closed for reconfiguration for about two years, and the full 3RS in end 2024. The upgrading and replacement/refurbishment of off-airport ANS equipment will continue after the full 3RS operation until end 2027 and their costs are included in the preliminary estimated cost of $3,108 million for the ANS equipment already.

PUBLIC CONSULTATION

14. As explained in paragraph 6 above, Government facilities are part and parcel of the 3RS. AAHK has been implementing an extensive

public communication and engagement plan to engage stakeholder groups for the 3RS project. Over the years, AAHK has reached out to promote the 3RS project and conducted regular 3RS briefings as well as airport visits for the business and aviation sectors, community leaders, residents groups, professional and industry organisations, Members of the LegCo and District Councils, green groups, schools and academic sector and the media. AAHK has also established five Community Liaison Groups comprising members who are District Councillors and community/resident leaders for the five districts in the vicinity of HKIA (i.e. Islands, Tuen Mun, Tsuen Wan, Kwai Tsing and Shatin), and Professional Liaison Groups comprising relevant professionals/experts and academia to enhance communications.

15. The Subcommittee to Follow Up Issues Relating to the 3RS at the HKIA was set up from 2015 to 2017 under the LegCo's House Committee to study and follow up on issues relating to the 3RS, including the feasibility of the 3RS, its scope and design details, financial arrangement, environmental impacts, and related matters. The construction works of 3RS commenced in August 2016 and will take around eight years to complete. AAHK will continue to provide progress update to the LegCo Panel on Economic Development on a half-yearly basis.

WAY FORWARD

16. We plan to seek funding approval from the LegCo according to established procedures, including submitting the three PWP projects to the Public Works Subcommittee in around mid-2018 and seeking funding approval from the Finance Committee afterwards. Members are invited to comment on the proposed funding applications.

Transport and Housing Bureau
Architectural Services Department
Civil Aviation Department
Fire Services Department
Hong Kong Observatory

May 2018

Enclosure 1

Provision of Air Traffic Control Facilities to support the Three-Runway System at the Hong Kong International Airport

PROJECT SCOPE AND NATURE

The scope of the project comprises –

(a) facilities with a target date for commissioning in 2022:

associated on-airport air navigation service (ANS) equipment shelters, platforms and sites to house the new ANS equipment and one other equipment room;

(b) facilities with a target date for commissioning before end of 2024:

(i) associated on-airport ANS equipment shelters, platforms and sites to house the new ANS equipment, and other equipment rooms;

(ii) new Air Traffic Control (ATC) tower and the associated accommodation for Civil Aviation Department (CAD), the Hong Kong Observatory, the Hong Kong Police Force and the Customs and Excise Department; and

(iii) a link bridge between the ATC tower and the Third Runway Passenger Building (TRPB); and

(c) underground cable duct system linking the above facilities with the existing ATC towers and the various on-airport ANS equipment and facilities.

2. The location plan and underground cable duct layout are at **Annexes 1 and 2**.

JUSTIFICATION

3. CAD has to ensure the provision of safe and efficient ANS. At present, there are two ATC towers, one as a main tower and one as a

backup, to support the existing two runway operation at the Hong Kong International Airport (HKIA). Due to the long distance between the existing ATC towers and the new third runway under the Three-Runway System (the 3RS), some of the future new taxiways and parking stands are beyond the line of sight of the existing South ATC tower (see **Annex 3**). In this connection, a new ATC tower located at an appropriate location is required so that air traffic controllers could have clear and unobstructed views to monitor all aircraft and vehicle movements at the HKIA and provide ATC services in accordance with the requirement of the International Civil Aviation Organization (ICAO)[1]. Also, a link bridge connecting the new ATC tower and the TRPB is provided to make it easier and safer for staff to access the tower[2]. With the new ATC tower in place under the 3RS operation, it is proposed that the new third runway be under the control of the new ATC tower[3], while the centre runway and south runway be under the control of the existing South ATC tower. The existing North tower will be used as backup.

4. In addition to ATC towers, there are also ANS equipment to support the existing two runway operation at the HKIA. The ANS equipment is currently located at the two ATC towers, ATC centre and various on-airport locations. To support the air traffic growth brought by the 3RS and to enhance the handling capacity of the HKIA, there is a need to procure various new on-airport ANS equipment as well as associated facilities to be used by the CAD for providing air navigation services. For details, please refer to **Enclosure 4**. Various equipment

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[1] Under ICAO Doc 9184 "Airport Planning Manual", an ATC tower should be so located and be of such a height that aprons, taxiways, runways and the airspace surrounding the airport, particularly approach and departure areas, are clearly visible from the control room and that future developments of the maneuvering area or future construction of buildings would not restrict this view.

[2] If access to the new ATC tower is only provided at the ground floor, staff entering or leaving new ATC tower, who may not be familiar with apron operations, have to cross the head of stand road which may result in safety hazards to staff as well as disrupt the airside vehicular traffic. The situation and hazards will be much more severe during inclement weather conditions, such as thunderstorm and typhoon.

[3] Pending the commissioning of the new ATC tower by end 2024, the new third runway scheduled for commissioning in 2022 will be under the control of an interim ATC tower constructed on top of AAHK's premise for aircraft recovery equipment store. The interim ATC tower will be fully funded by AAHK to allow CAD and HKO to provide ATC and aviation weather service respectively during the interim Two-Runway System operation (i.e. the operation of the new third runway and the existing south runway). Upon the commissioning of the new ATC tower, all ATC and aviation weather service functions for the new third runway will be transferred back to it. The interim ATC tower will be decommissioned as the new TRPB which will be commissioned by end 2024 will block part of its view of the new taxiways.

shelters, platforms and sites are required to house these additional on-airport ANS equipment and associated facilities (see **Annex 1**).

FINANCIAL IMPLICATIONS

5. We estimate the cost of the project to be about $1,902.9 million in money-of-the-day prices.

6. Under the Government's "user pays" principle, the cost for CAD to provide ANS will be fully recovered from airlines (through en-route navigation charges) for overflying aircraft without taking off/landing at the HKIA and from AAHK (through ATC services charges) for aircraft taking off/landing at the HKIA. The additional recurrent cost and depreciation cost of the proposal will be taken into account in setting the en-route navigation charges and the ATC services charges for AAHK in future.

ENVIRONMENTAL IMPLICATIONS

7. The project forms part of the designated project "Expansion of Hong Kong International Airport into a Three-Runway System" under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). The Director of Environmental Protection approved the 3RS EIA report on 7 November 2014, with the Environmental Permit (EP) granted on the same day. We will require the contractors to implement all of the relevant environmental mitigation measures and environmental monitoring and audit (EM&A) requirements specified in the approved EIA report, and shall comply with relevant conditions under the EP as well as all other applicable statutory environmental requirements during the development of Government facilities.

8. During the construction phase of Government facilities, the contractors shall implement mitigation measures not limited to water spraying in site areas, wheel washing and covering of materials on trucks to reduce dust emissions; use of quality powered mechanical equipment, movable noise barriers and noise enclosures for noise mitigation, but also shall ensure full compliance with the construction noise permit system and other requirements of the Noise Control Ordinance; installation of sand/silt removal facilities and implement proper treatment of site runoff

to meet requirements and standards under the Water Pollution Control Ordinance.

9. As regards construction waste management, the contractors shall comply with all the 3RS EIA, EP and EM&A manual commitments for waste management and waste minimisation captured in the approved 3RS Project Waste Management Plan (WMP) (November 2015). The contractors shall also comply with project specific approved waste management plans, separate inert portions from non-inert portions of construction waste and reuse inert construction waste on site or in other 3RS construction sites as far as practicable. The disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively will be controlled in accordance with WMP commitments and through strict implementation of the Government's trip-ticket system, which requires contractors and site supervisory staff to undertake duties and responsibilities in tracking movement of construction and demolition materials from works sites to designated disposal destinations.

HERITAGE IMPLICATIONS

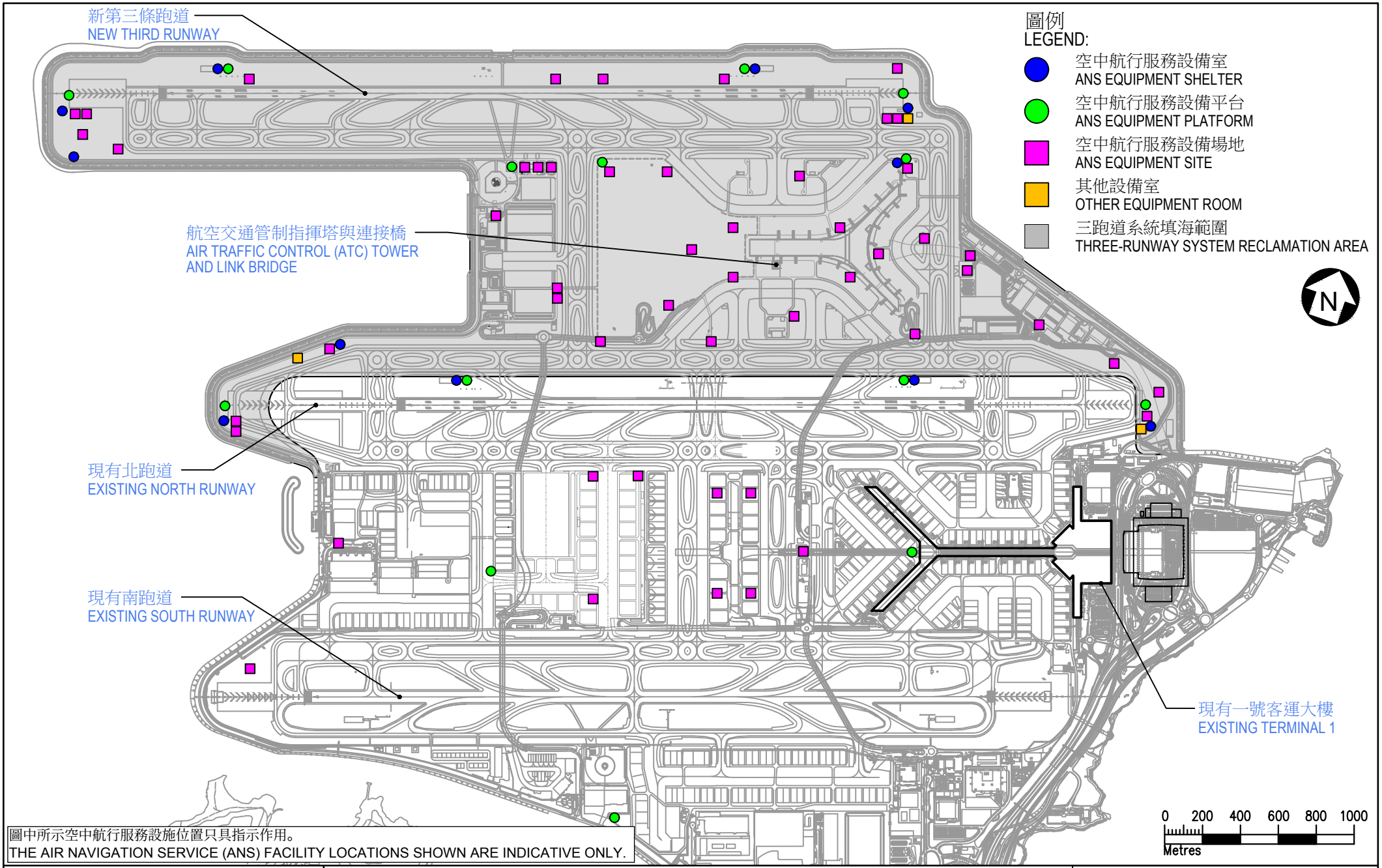
10. The project will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

11. The project does not require any land acquisition.

Architectural Services Department
Civil Aviation Department

May 2018

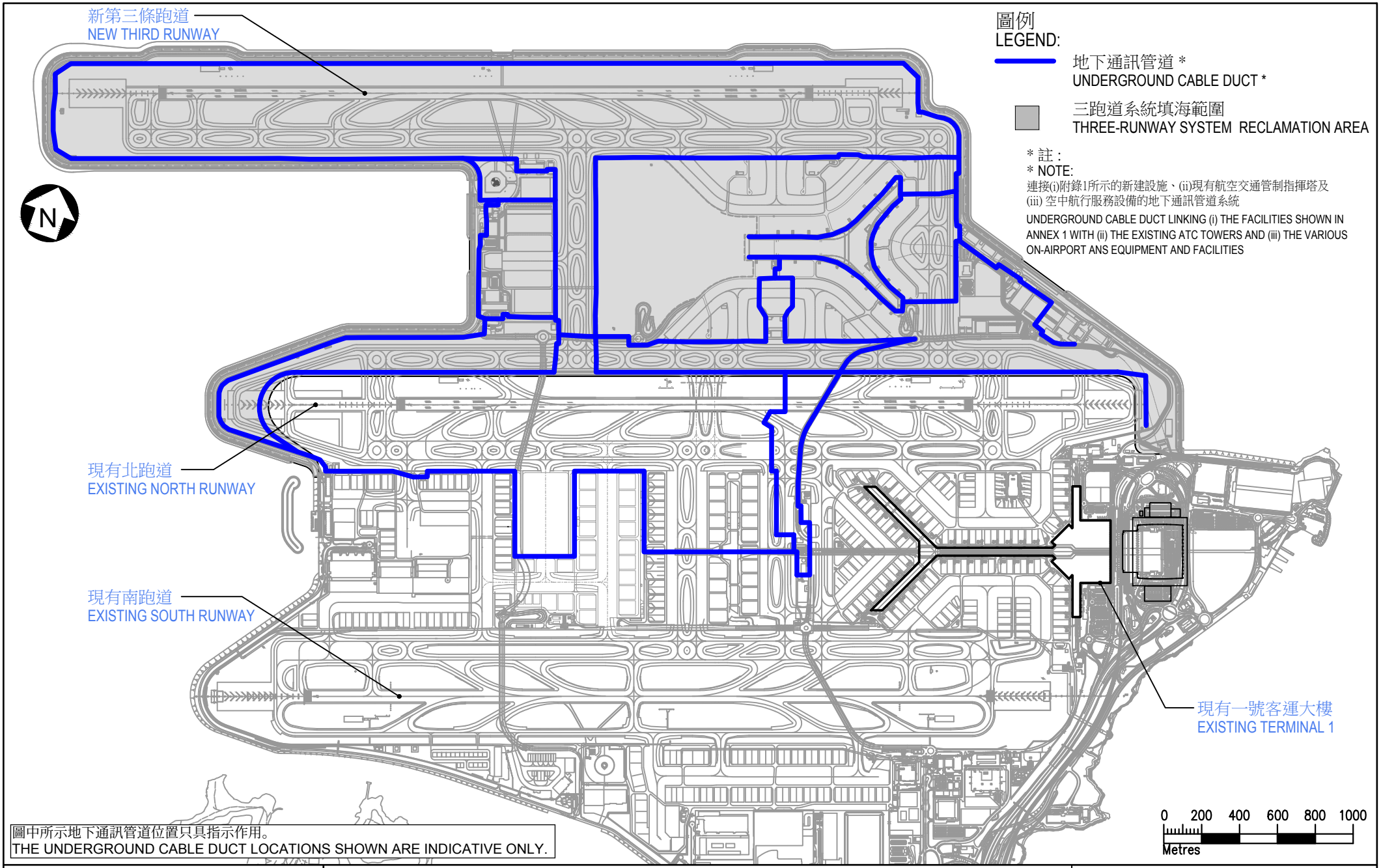


圖中所示空中航行服務設施位置只具指示作用。
THE AIR NAVIGATION SERVICE (ANS) FACILITY LOCATIONS SHOWN ARE INDICATIVE ONLY.

位置圖
LOCATION PLAN

69GI 香港國際機場三跑道系統的相關航空交通管制設施
PROVISION OF AIR TRAFFIC CONTROL FACILITIES TO SUPPORT THE THREE-RUNWAY SYSTEM AT THE HONG KONG INTERNATIONAL AIRPORT

ARCHITECTURAL SERVICES DEPARTMENT 建築署



地下通訊管道分佈圖
UNDERGROUND CABLE DUCT LAYOUT PLAN

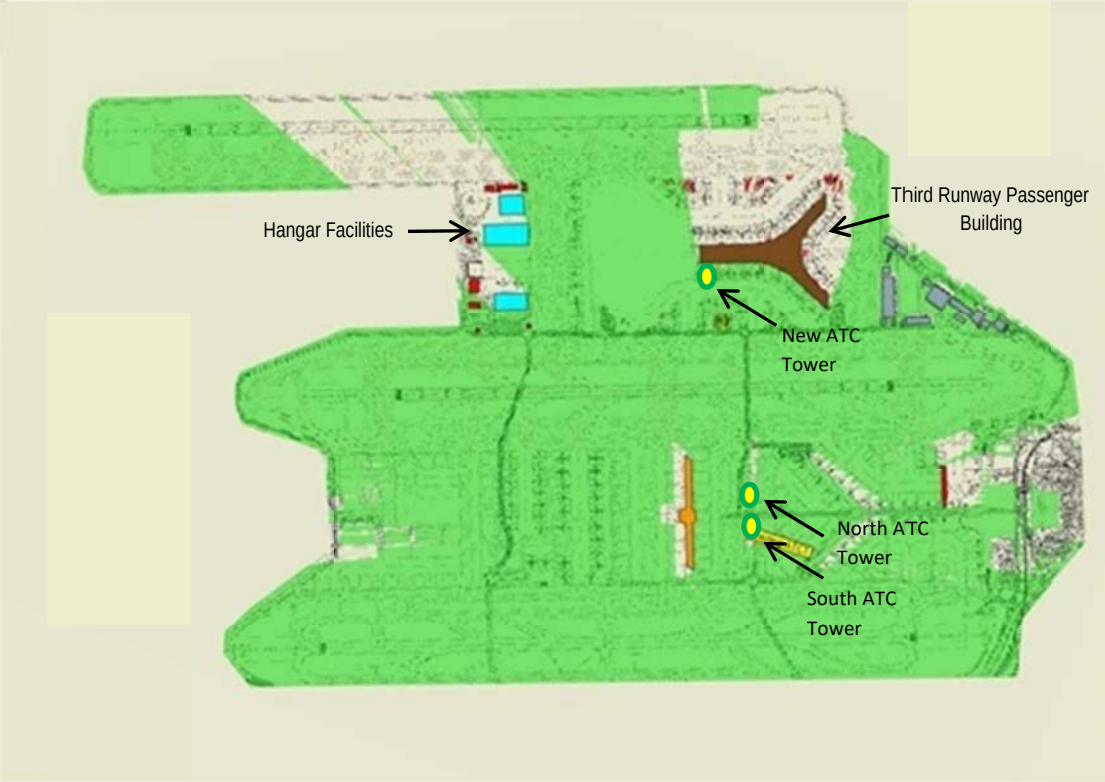
69GI 香港國際機場三跑道系統的相關航空交通管制設施

PROVISION OF AIR TRAFFIC CONTROL FACILITIES TO SUPPORT THE THREE-RUNWAY SYSTEM AT THE HONG KONG INTERNATIONAL AIRPORT

ARCHITECTURAL SERVICES DEPARTMENT 建築署

Annex 3 to Enclosure 1

Line of Sight of the Existing South ATC Tower



Remarks: Areas not coloured green are invisible to the air traffic controllers from the existing South ATC Tower, e.g. part of the new third runway and the associated taxiways.

Enclosure 2

Provision of Aviation Weather Services Facilities to support the Three-Runway System at the Hong Kong International Airport

PROJECT SCOPE AND NATURE

The scope of the project comprises –

(a) facilities with a target date for commissioning in 2022:

  (i) two underground equipment rooms near mid-point to the new third runway;

  (ii) a meteorological garden and an equipment room in the Western Support Area (WSA); and

  (iii) equipment sites for meteorological equipment;

(b) facilities with a target date for commissioning before end of 2024:

  (i) an equipment room in the WSA; and

  (ii) equipment sites for meteorological equipment; and

(c) underground cable duct system linking the above facilities with various existing aviation weather services systems and facilities and the Hong Kong Observatory (HKO) office at the existing Air Traffic Control (ATC) towers and the new ATC tower.

2. The location plan and underground cable duct layout are at **Annexes 1 and 2**.

JUSTIFICATION

3. Within the framework of the International Civil Aviation Organization (ICAO), HKO is a designated meteorological authority and is responsible for the provision of weather services for international air navigation in Hong Kong. In accordance with the International Standards

and Recommended Practices of ICAO[1], each runway has to be equipped with its own meteorological equipment to capture the atmospheric conditions at specific locations of the runway for safeguarding the safety of flights taking off and landing. Such information include surface wind speed and direction, runway visual range (RVR), visibility and height of cloud base, measured using equipment such as anemometers, RVR transmissometers, forward scatterers and ceilometers respectively.

4. Furthermore, for the safe and efficient operation of the new third runway, windshear alerting, wake vortex and lightning sensing equipment commensurate with the standards for the existing runways are required for the new third runway. In addition, considering the distance of the new third runway from the existing meteorological facilities, a new meteorological garden and a new wind profiler are required for measuring the surface and upper air conditions near the new third runway.

5. Equipment rooms and associated facilities such as cabling are required to house and support the above equipment. The spatial provisioning of HKO's equipment follows the International Standards and Recommended Practices of the World Meteorological Organization (WMO) and ICAO[2], for instance, the RVR for the touchdown zone should be located about 300 metres from the start of the landing zone and at a lateral distance of not more than 120 metres from the runway centre line. The planning of the relevant system for aviation weather services is underway and we will consult the Panel and seek funding approval from Legislative Council for these systems separately at a later stage.

6. HKO had consulted the aviation users through the Liaison Group on Aviation Weather Services and the Windshear and High Impact Weather Panel, consisting the Airport Authority Hong Kong (AAHK), pilots and airlines, on the relevant meteorological facilities and systems in support of the Three-Runway System (the 3RS) respectively and they were supportive of HKO's proposals.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the project to be about $281.5 million in money-of-the-day prices. Under the Government's "user pays" principle,

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1 ICAO Annex 3 – Meteorological Service for International Air Navigation.

2 WMO Guide to Meteorological Instruments and Methods of Observation WMO-No. 8, ICAO Annex 3 / WMO Technical Regulations Volume II – Meteorological Service for International Air Navigation, and ICAO Manual of Aeronautical Meteorological Practice (Doc. 8896)

the costs for HKO to provide aviation weather services will be fully recovered from airlines (through en-route navigation charges) for overflying aircraft without taking off/ landing at the Hong Kong International Airport (HKIA) and from AAHK for aircraft taking off/ landing at the HKIA. The additional recurrent cost and depreciation cost of the proposal will be taken into account in setting the services charges for en-route navigations charges and AAHK in future.

ENVIRONMENTAL IMPLICATIONS

8. The project forms part of the designated project "Expansion of Hong Kong International Airport into a Three-Runway System" under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). The Director of Environmental Protection approved the 3RS EIA report on 7 November 2014, with the Environmental Permit (EP) granted on the same day. We will require the contractors to implement all of the relevant environmental mitigation measures and environmental monitoring and audit (EM&A) requirements specified in the approved EIA report, and shall comply with relevant conditions under the EP as well as all other applicable statutory environmental requirements during the development of Government facilities.

9. During the construction phase of Government facilities, the contractors shall implement mitigation measures not limited to water spraying in site areas, wheel washing and covering of materials on trucks to reduce dust emissions; use of quality powered mechanical equipment, movable noise barriers and noise enclosures for noise mitigation, but also shall ensure full compliance with the construction noise permit system and other requirements of the Noise Control Ordinance; installation of sand/silt removal facilities and implement proper treatment of site runoff to meet requirements and standards under the Water Pollution Control Ordinance.

10. As regards construction waste management, the contractors shall comply with all the 3RS EIA, EP and EM&A manual commitments for waste management and waste minimisation captured in the approved 3RS Project Waste Management Plan (WMP) (November 2015). The contractors shall also comply with project specific approved waste management plans, separate inert portions from non-inert portions of construction waste and reuse inert construction waste on site or in other 3RS construction sites as far as practicable. The disposal of inert construction waste and non-inert construction waste to public fill

reception facilities and landfills respectively will be controlled in accordance with WMP commitments and through strict implementation of the Government's trip-ticket system, which requires contractors and site supervisory staff to undertake duties and responsibilities in tracking movement of construction and demolition materials from works sites to designated disposal destinations.

HERITAGE IMPLICATIONS

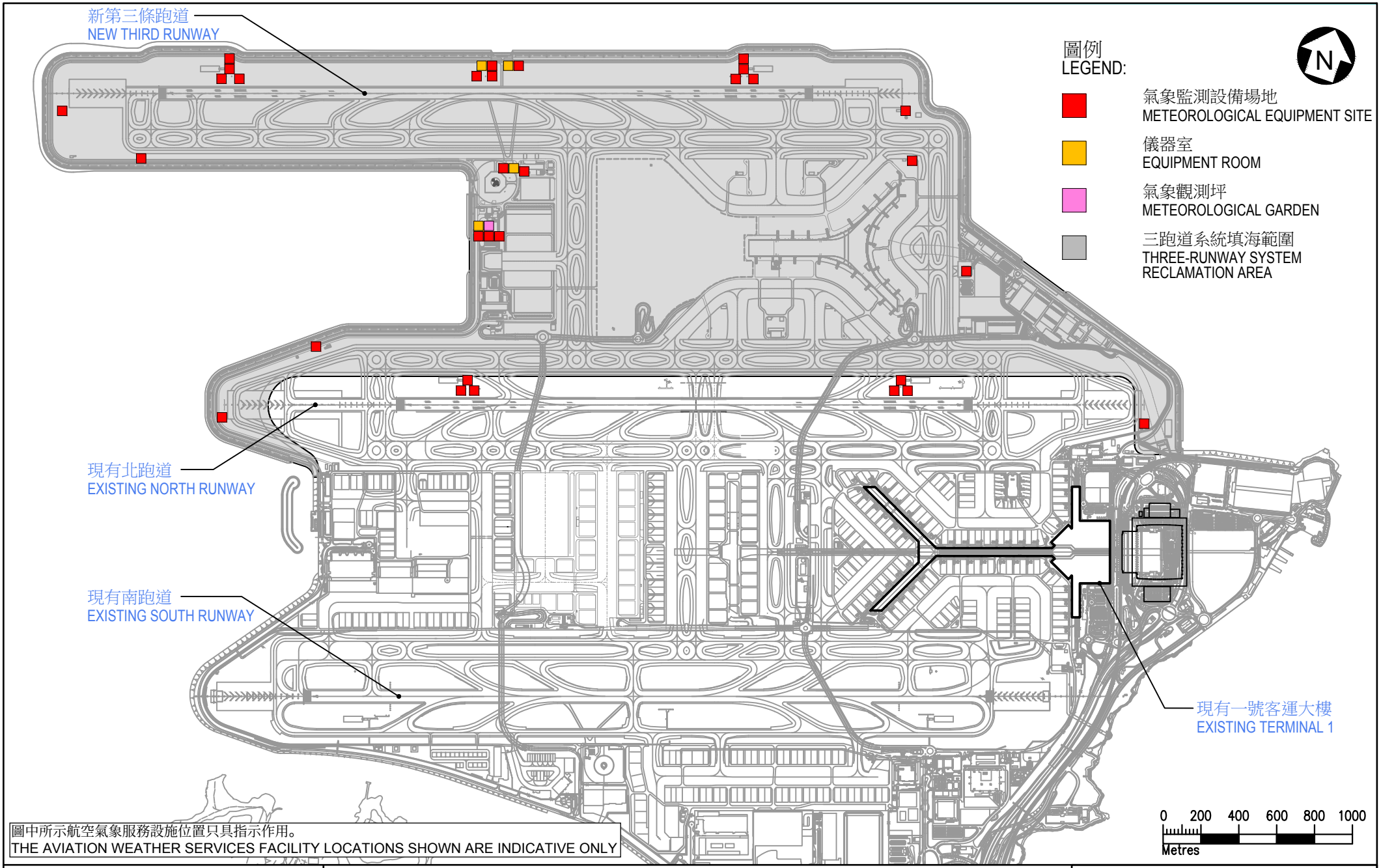
11. The project will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

12. The project does not require any land acquisition.

Architectural Services Department
Hong Kong Observatory

May 2018

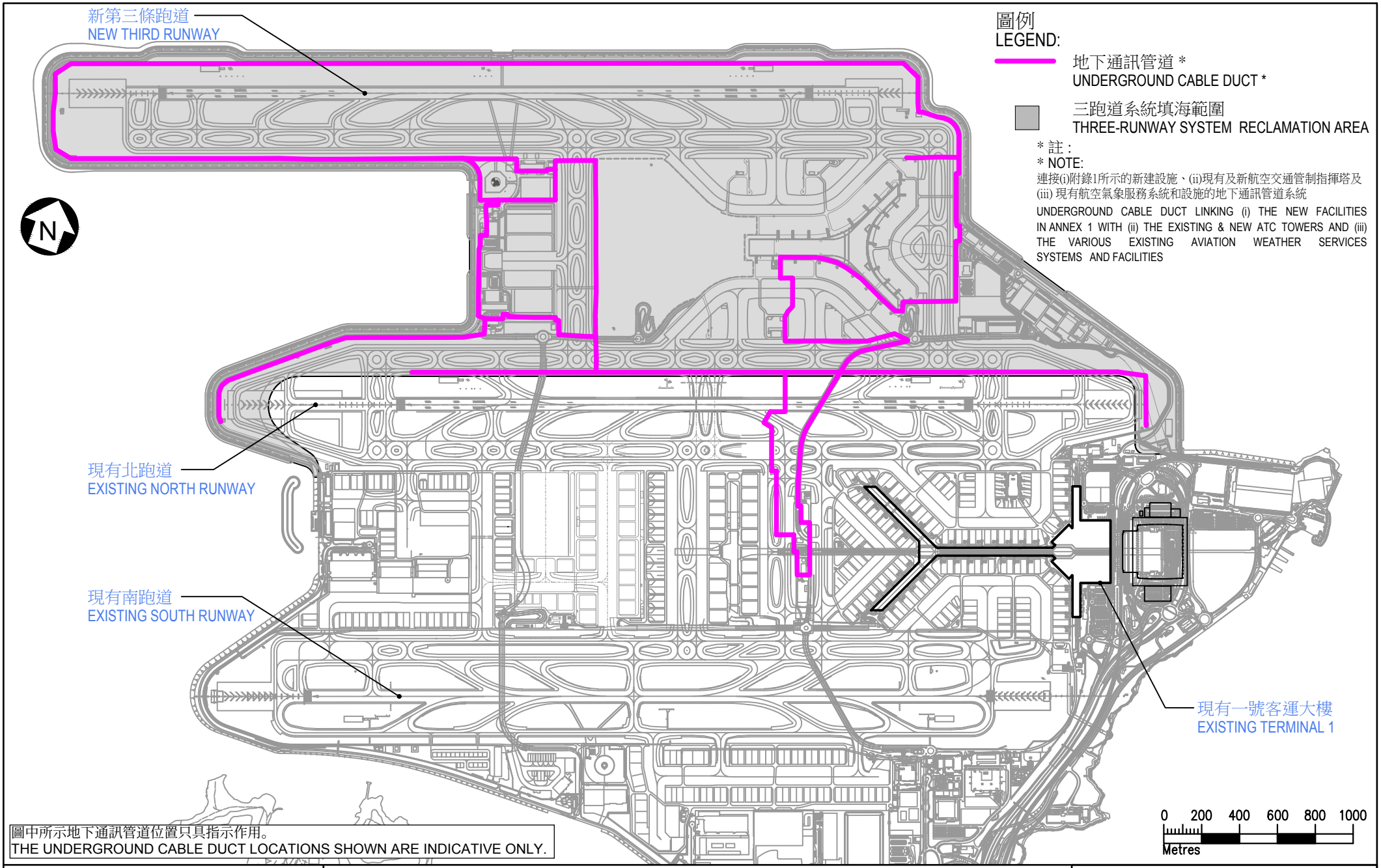


圖中所示航空氣象服務設施位置只具指示作用。
THE AVIATION WEATHER SERVICES FACILITY LOCATIONS SHOWN ARE INDICATIVE ONLY

位置圖
LOCATION PLAN

70GI 香港國際機場三跑道系統的相關航空氣象服務設施
PROVISION OF AVIATION WEATHER SERVICES FACILITIES TO SUPPORT THE THREE-RUNWAY SYSTEM AT THE HONG KONG INTERNATIONAL AIRPORT

ARCHITECTURAL SERVICES DEPARTMENT 建築署



地下通訊管道分佈圖
UNDERGROUND CABLE DUCT LAYOUT PLAN

70GI 香港國際機場三跑道系統的相關航空氣象服務設施
PROVISION OF AVIATION WEATHER SERVICES FACILITIES TO SUPPORT THE THREE-RUNWAY SYSTEM AT THE HONG KONG INTERNATIONAL AIRPORT

ARCHITECTURAL SERVICES DEPARTMENT 建築署

Enclosure 3

Provision of Fire Services Facilities to support the Three-Runway System at the Hong Kong International Airport

PROJECT SCOPE AND NATURE

The scope of the project comprises –

(a) fire services facilities in Western Support Area (WSA) with a target date for commissioning in 2022:

  (i) Airside Fire Station with a 9-bay appliance room;
  (ii) Speed Boat Launching Facility; and
  (iii) Decontamination Facility;

(b) fire services facilities in Eastern Support Area (ESA) with a target date for commissioning before end of 2024:

  (i) Airside Fire Station with a 9-bay appliance room; and
  (ii) Landside Fire Station-cum-Ambulance Depot with a 7-bay appliance room; and

(c) underground cable duct system linking the above facilities with the existing fire services facilities and the new and existing Air Traffic Control towers.

2. The location plan and underground cable duct layout are at **Annexes 1** and **2**.

JUSTIFICATION

3. The Airport Fire Contingent of the Fire Services Department is responsible for performing firefighting and emergency rescue operations as well as providing emergency ambulance services in cases of aircraft accidents at the Hong Kong International Airport (HKIA) and its surrounding areas and waters. According to the International Standards and Recommended Practices of the International Civil Aviation Organization (ICAO), the rescue and firefighting services at an aerodrome should be able to achieve a response time not exceeding two minutes to any point of each operational runway, and to achieve a

response time not exceeding three minutes to any other parts of the movement area, in optimum visibility and surface conditions. There are two existing airport fire stations at the HKIA, namely the Main Airport Fire Station located at the existing South Runway and the Sub Airport Fire Station located near the existing North Runway. In addition, there are two rescue boat berths at the HKIA located at the eastern and western ends of the existing runways respectively.

4. With the development of the Three-Runway System (the 3RS), the two existing airport fire stations will be unable to achieve the aforesaid response times for incidents on the new third runway.

5. In order to provide swift aircraft rescue and firefighting services to support the safe operation of the HKIA and to meet the ICAO requirements, two new airside fire stations are required at the WSA and ESA of the 3RS to achieve the aforesaid response times. Furthermore, a landside fire station-cum-ambulance depot is necessary for delivering emergency services to the new buildings in the 3RS and providing support for the airside fire stations in the event of a major aircraft incident. In addition, a speedboat launching facility near the WSA will facilitate the prompt turn-out of speedboats in the event of aircraft emergencies, and a decontamination facility is essential for carrying out mass decontamination in case of chemical, biological, radiological and nuclear incidents at the HKIA.

FINANCIAL IMPLICATIONS

6. We estimate the cost of the project to be about $2,605.8 million in money-of-the-day prices.

ENVIRONMENTAL IMPLICATIONS

7. The project forms part of the designated project "Expansion of Hong Kong International Airport into a Three-Runway System" under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). The Director of Environmental Protection approved the 3RS EIA report on 7 November 2014, with the Environmental Permit (EP) granted on the same day. We will require the contractors to implement all of the relevant environmental mitigation measures and environmental monitoring and audit (EM&A) requirements specified in the approved EIA report, and shall comply with relevant conditions under the EP as

well as all other applicable statutory environmental requirements during the development of Government facilities.

8. During the construction phase of Government facilities, the contractors shall implement mitigation measures not limited to water spraying in site areas, wheel washing and covering of materials on trucks to reduce dust emissions; use of quality powered mechanical equipment, movable noise barriers and noise enclosures for noise mitigation, shall ensure full compliance with the construction noise permit system and other requirements of the Noise Control Ordinance; installation of sand/silt removal facilities and implement proper treatment of site runoff to meet requirements and standards under the Water Pollution Control Ordinance.

9. As regards construction waste management, the contractors shall comply with all the 3RS EIA, EP and EM&A manual commitments for waste management and waste minimisation captured in the approved 3RS Project Waste Management Plan (WMP) (November 2015). The contractors shall also comply with project specific approved waste management plans, separate inert portions from non-inert portions of construction waste and reuse inert construction waste on site or in other 3RS construction sites as far as practicable. The disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively will be controlled in accordance with WMP commitments and through strict implementation of the Government's trip-ticket system, which requires contractors and site supervisory staff to undertake duties and responsibilities in tracking movement of construction and demolition materials from works sites to designated disposal destinations.

HERITAGE IMPLICATIONS

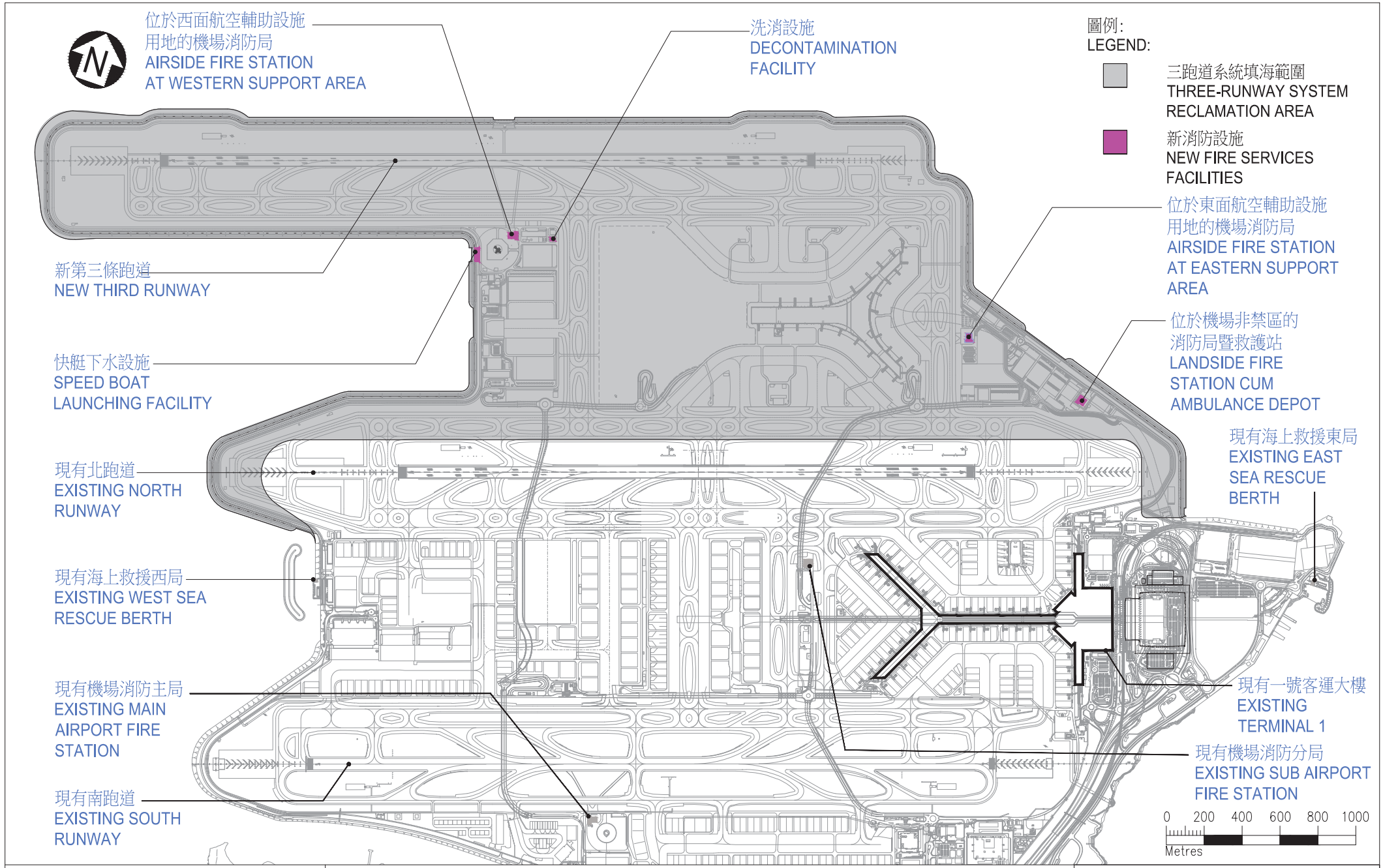
10. The project will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

11. The project does not require any land acquisition.

Architectural Services Department
Fire Services Department

May 2018

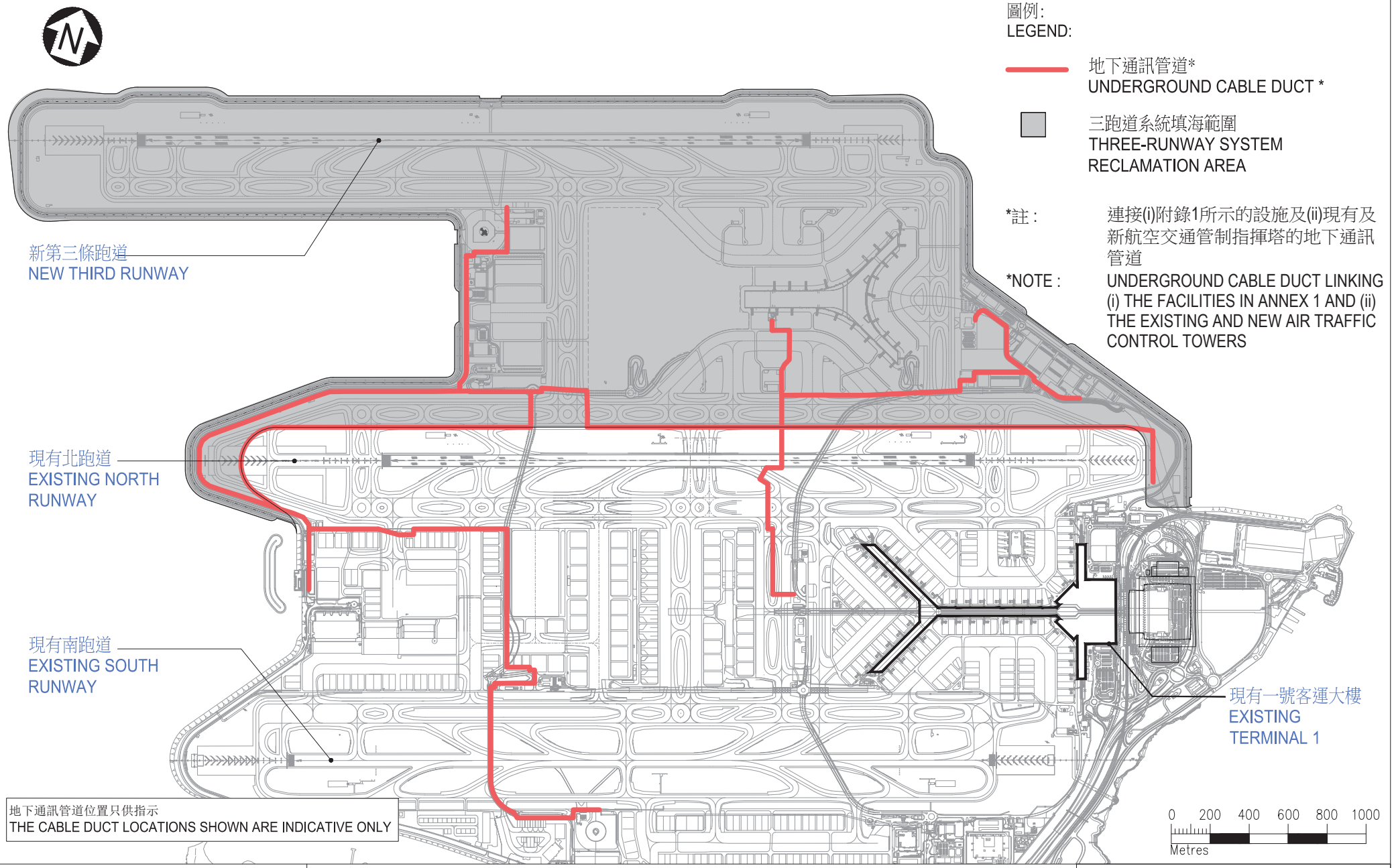


位置圖
LOCATION PLAN

176BF

香港國際機場三跑道系統的相關消防設施
PROVISION OF FIRE SERVICES FACILITIES TO SUPPORT THE THREE-RUNWAY SYSTEM AT THE HONG KONG INTERNATIONAL AIRPORT

ARCHITECTURAL SERVICES DEPARTMENT 建築署



地下通訊管道分佈圖
UNDERGROUND CABLE DUCT LAYOUT PLAN

176BF

香港國際機場三跑道系統的相關消防設施
PROVISION OF FIRE SERVICES FACILITIES TO SUPPORT THE THREE-RUNWAY SYSTEM AT THE HONG KONG INTERNATIONAL AIRPORT

ARCHITECTURAL SERVICES DEPARTMENT 建築署

Enclosure 4

Provision of Air Navigation Service Equipment to Support the Three-Runway System at the Hong Kong International Airport

PROJECT SCOPE AND NATURE

At present, air navigation service (ANS) equipment at the two existing Air Traffic Control (ATC) towers (one as main tower and one as back-up), ATC centre[1] and various on-airport and off-airport locations[2] are in place to jointly provide safe and efficient provision of ANS for the operation at the Hong Kong International Airport (HKIA) as well as the Hong Kong Flight Information Region. The scope of the project comprises –

(a) provision of new ANS equipment and associated facilities at on-airport locations, to support the air traffic growth brought by the implementation of the Three-Runway System (the 3RS) and to enhance the handling capacity of the HKIA[3]; and

(b) replacement of existing aged ANS equipment at off-airport locations, to ensure the continuous provision of ANS as the existing equipment reach the end of their serviceable life. The opportunity is also taken to upgrade the equipment to support the air traffic growth brought by the implementation of the 3RS.

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[1] Currently, the two ATC towers (one as main tower and one as back-up) housing ANS equipment are located near the existing two runways to support ATC services provided for aircraft operating at the HKIA. In addition, an ATC centre with ANS equipment located at the Civil Aviation Department (CAD) Headquarters on the airport island supports ATC services provided for aircraft operating further away from the HKIA but within the Hong Kong Flight Information Region.

[2] The off-airport locations installed with ANS equipment include Victoria Peak, Mount Butler, Cape D'Aguilar, Tai Mo Shan, Sha Chau, Mount Parker, Beacon Hill, Tung Lung Island, Cheung Chau, Siu Mo To, Lung Kwu Chau, Shek Uk Shan and North Lantau.

[3] Including a few on-airport equipment such as the Instrument Landing System at the existing south runway, which have been in use for a long period of time like 20 years. They should be replaced for continuous provision of service or operational efficiency in any case, and opportunity is taken to upgrade them to support the 3RS operation.

Provision of new ANS equipment and associated facilities at on-airport locations

2. The present ANS equipment at the existing ATC towers, ATC centre and various on-airport locations support the existing Two-Runway System operation of the HKIA. Under PWP project 3069GI, a new ATC tower will be constructed for providing ATC services to support the 3RS operation. For details, please refer to **Enclosure 1**. New ANS equipment with various advanced functions and enhanced capacity as detailed in Items 1-3 at **Annex 1** will be provided at the new tower (and existing towers/centres where necessary) in order to deliver safe, expeditious and orderly ATC services to increased number of aircraft landing and taking off at the HKIA. New technologies (e.g. digital tower using high-resolution surveillance cameras and video to provide a panoramic view of the airfield, which supplements the physical tower by enhancing the visual capabilities of air traffic controllers) will be employed to improve operational efficiency.

3. In addition, new/upgraded ANS equipment for the purpose of supporting communication between air traffic controllers and pilots, detecting aircraft movements and navigating aircraft to the runways and associated taxiways as detailed in Items 4-8 at **Annex 1**, will be procured and installed to support the 3RS operation at HKIA[4]. New technologies, for example, the Ground Based Augmentation System using satellites to support precision approach and landing of aircraft, will be employed to enhance flexibility in procedure design and resilience. Furthermore, various associated/ancillary facilities as detailed in Item 9 at **Annex 1** will also be procured.

Replacement/Upgrade of existing aged ANS equipment at off-airport locations

4. Apart from the on-airport ANS equipment, off-airport ANS equipment are installed at various locations throughout Hong Kong for providing timely aircraft information to facilitate the work of air traffic controllers. These systems are detailed in Items 10-12 at **Annex 1**.

5. It should be noted that most of the existing off-airport ANS equipment has been in continuous service for nearly 20 years. While their performance has been maintained through on-going maintenance

[4] See footnote 3.

and enhancements, they are reaching the end of their serviceable life. They have to be replaced and upgraded timely to meet the latest International Civil Aviation Organization (ICAO) requirements/technical standards and be equipped with enhanced information processing capability for the continuous provision of safe and efficient ANS. For example, the replaced/upgraded radars will be equipped with advanced surveillance capabilities for greater precision. In addition, these off-airport ANS equipment are not originally designed to cope with the projected increase in aircraft movements of the 3RS operation. They have to be replaced and upgraded in order to support the increased traffic brought by the implementation of the 3RS. Furthermore, replacement or refurbishment works for the aging ANS equipment shelters and associated building services/electrical and mechanical facilities, antenna towers, etc. are also required to ensure continuous and reliable ANS equipment operation.

6. All new ANS equipment will be provided in full compliance with the safety and technical requirements of the ICAO as well as the latest technical standards. In the light of the complexity and scale of the project, experienced external experts/consultants will be engaged to provide professional services. The scope of service covers consultancy on procurement, design, safety assessment, cutover and transition of new and replaced/upgraded ANS equipment; as well as on-site technical support/assistance during installation, integration, testing, commissioning cutover, transition and decommissioning as necessary.

7. The Civil Aviation Department (CAD) sought views from the International Air Transport Association and the Aviation Development and Three-Runway System Advisory Committee in January 2018. They support the provision of ANS equipment as presented above. Throughout the project life cycle, CAD will liaise with, and seek views from, the aviation industry as appropriate on the project implementation. CAD will also consult frontline staff on the provision of ANS equipment with human interface to gather their views from operational angle.

FINANCIAL IMPLICATIONS

8. The estimated cost for the project is about $3,108 million, covering all provisions for equipment, installation/commissioning, professional services, site refurbishment capital works and contingency. A cost breakdown is given at **Annex 2**. In addition, a recurrent cost

estimated to be $96.3 million (subject to further detailed assessment) will be required for the project.

9. Under the Government's "user pays" principle, the cost for CAD to provide ANS will be fully recovered from airlines (through en-route navigation charges) for overflying aircraft without taking off/landing at the HKIA and from AAHK (through ATC services charges) for aircraft taking off/landing at the HKIA. The additional recurrent cost and depreciation cost of the project will therefore be taken into account in setting the en-route navigation charges and the ATC services charges for AAHK in future.

IMPLEMENTATION TIMEFRAME

10. Subject to funding approval from the Legislative Council, we plan to commence the project in Q4 of 2018. CAD will procure the systems in accordance with the standard procurement procedures of the Government. The external experts/consultants will be engaged to provide independent advice and assessment to CAD to ensure that the equipment to be procured will best suit the operational needs. The project will be completed in phases, with the required ANS equipment ready to support the commissioning of the new third runway in 2022 and full commissioning of the 3RS by end 2024 when the new ATC tower and associated ANS equipment will be ready. The upgrade and replacement/refurbishment of off-airport ANS equipment will continue after the full commissioning of the 3RS until end 2027.

Civil Aviation Department

May 2018

Annex 1 to Enclosure 4

Functional Description of ANS Equipment for Supporting the 3RS at the HKIA

(I) Provision of new ANS equipment and associated facilities at on-airport locations

Item	Equipment / Systems	Functional description
(A) New ANS Equipment for ATC Towers/Centres		
1	Controller Working Positions (CWPs)	To support the safe and efficient air traffic operation at the HKIA, the CWPs will be used in conjunction with additional ANS equipment, including but not limited to surveillance/flight data displays and associated systems, electronic flight strips, voice communication system, and operational information display of various air traffic services information, etc. Taking into consideration the possible technological advancement on CWPs in future, information presented to air traffic controllers may be consolidated to minimise the number of display screens if considered appropriate and cost effective[5].
2	Digital Tower Facilities (DTF)	The DTF will make use of high resolution surveillance cameras to provide panoramic views of the airfield environment to the air traffic

[5] If a consolidated approach is adopted, the same would also apply to the CWPs to be procured and funded by AAHK for use in the interim ATC tower pending the commissioning of the new ATC tower by end 2024 (See footnote 3 to Enclosure 1). This would ensure consistency in operational procedures and enhance efficiency. As AAHK will be responsible for the procurement and installation of the CWPs for the interim ATC tower, subject to discussion with AAHK we may consider entrusting the procurement and installation of the CWPs under this project to AAHK as well to ensure that the right type of CWPs as specified by CAD is used for all ATC towers thus achieving cost effectiveness.

Item	Equipment / Systems	Functional description
		controllers. The DTF will provide enhanced visual capabilities as well as controllers' situation awareness and alerting functions to facilitate air traffic controllers' monitoring of aircraft in sight-obstructed apron/taxiway areas and approaching runways, especially during night time and low visibility conditions.
3	Air Traffic Flow Management (ATFM) Facilities	The ATFM facilities aim to ensure an optimum flow of air traffic throughout all phases of the operation of a flight by balancing demand and capacity. The ATFM facilities will exchange relevant operational data with overseas ATFM systems and local ANS equipment for demand/situation prediction in order to deduce the required airspace capacity at different phases of flight operations for air traffic flow management planning.
(B) New/Upgraded ANS Equipment on the airport		
Communications		
4	Radio Communication System (RCS)	These include, but are not limited to, the Very High Frequency/High Frequency Communication System on airfield supporting radio communications between air traffic controllers and aircraft on-ground movement or flying in vicinity of the airport, search and rescue operation and broadcasting of aerodrome terminal and weather information to pilots, the Trunk Mobile Radio Facilities enabling air traffic controllers to have direct radio communications with Fire Services Department and AAHK for daily ATC operation, and the Microwave Link

Item	Equipment / Systems	Functional description
		System (MLS) transmitting and relaying data and remote control and status indication signals, etc.
Navigation		
5	Instrument Landing System (ILS)	The ILS, consisting of Localizer, and Glide Path/Distance Measuring Equipment, at each of the runway ends, provides accurate azimuth and descent guidance signals for use by aircraft for landing on the runways. Two new ILSs will be provided at runway ends of the new runway, and four existing ILSs at each of the existing runway ends will be replaced and upgraded.
6	Ground Based Augmentation System (GBAS)	The GBAS makes use of the Global Navigation Satellite System for supporting satellite-based precision approach and landing of aircraft at the HKIA. The GBAS provides approach path data, corrections and integrity information to appropriately equipped aircraft landing at the runway ends.
Surveillance		
7	Surface Movement Radar (SMR)	The SMR consists of a network of radars on airfield providing primary surveillance of aircraft and vehicles approaching/positioned on runways and taxiways. The existing SMR will be replaced and upgraded.
8	Advanced Surface Movement and Guidance Control System (A-SMGCS)	The A-SMGCS consists of a network of detectors/sensors on airfield providing secondary surveillance of aircraft approaching/positioned on runways and taxiways. The existing A-SMGCS will be replaced and

Item	Equipment / Systems	Functional description
		upgraded.
(C) New Associated/Ancillary Facilities		
9	Other associated/ancillary facilities (including but not limited to, Aeronautical Data Analysis Tools, Obstacle Lighting System, Communication Infrastructure, Fault Reporting Centre Facilities, Air Traffic Control Tower Interfaces, Closed Circuit Television and Recording System, Geospatial Database and Charting System, Simulators, etc.)	These are associated/ancillary facilities that need to be provided so as to make the new ANS equipment fully equipped for functional use.

(II) Upgrade/Replacement of existing aged ANS equipment at off-airport locations

Item	Equipment / Systems	Functional description
(A) Communications		
10	Communication System	These include, but are not limited to, the Very High Frequency/High Frequency Communication System at off-airport locations supporting radio communications with aircraft flying within the Hong Kong Flight Information Region (HKFIR), search and rescue operation and broadcasting of aerodrome terminal and weather information; and the MLS transmitting and relaying data and remote control and status indication signals, the data lines providing alternative paths to the MLS, etc.
(B) Navigation		
11	Doppler Very High Frequency Omni-directional Radio Range (DVOR) and Distance Measuring Equipment (DME)	The DVOR and DME are radio navigational aids that provide direction and distance information respectively for the aircraft to/from Hong Kong.
(C) Surveillance		
12	Surveillance System	These include, but are not limited to, the Primary Surveillance Radar, Secondary Surveillance Radar and ground receivers, which provide the respective primary and secondary surveillance of aircraft in approach/terminal and en-route airspace within the HKFIR, etc.

Annex 2 to Enclosure 4

Cost Breakdown

(I) Provision of new ANS equipment and associated facilities at on-airport locations ($1,521M)

		Estimated Cost[6] ($M)
(A)	**New ANS Equipment for ATC Towers/Centres**	
(i)	Controller Working Positions	350
(ii)	Digital Tower Facilities	80
(iii)	Air Traffic Flow Management Facilities	90
(B)	**New/Upgraded ANS Equipment on the airport**	
(i)	Radio Communication System	90
(ii)	Instrument Landing System	70
(iii)	Ground Based Augmentation System	90
(iv)	Surface Movement Radar	250
(v)	Advanced Surface Movement and Guidance Control System	160

[6] For items (I)(A) – I(C), the estimated cost includes cost of equipment, installation and commissioning. For item (I) (D), the estimated cost includes cost of consultancy on procurement, design, safety assessment, cutover and transition of new and replaced/upgraded ANS equipment; as well as on-site technical support/assistance during installation, integration, testing, commissioning cutover, transition and decommissioning as necessary.

		Estimated Cost[6] ($M)
(C)	**New Associated/Ancillary Facilities**	
	Other Associated/Ancillary Facilities (including but not limited to, Aeronautical Data Analysis Tools, Obstacle Lighting System, Communication Infrastructure, Fault Reporting Centre Facilities, Air Traffic Control Tower Interfaces, Closed Circuit Television and Recording System, Geospatial Database and Charting System, Simulators, etc.)	130
(D)	**Professional Services**	60
(E)	**Contingency**	151
	Sub-total	**1,521**

(II) Upgrade/Replacement of existing aged ANS equipment at off-airport locations ($1,587M)

		Estimated Cost[7] ($M)
(A)	**Communications**	
	Communication System	315
(B)	**Navigation**	
	Doppler Very High Frequency Omni-directional Radio Range and Distance Measuring Equipment	60
(C)	**Surveillance**	
	Surveillance System	455
(D)	**Site Refurbishment Capital Works**	530
(E)	**Professional Services**	70
(F)	**Contingency**	157
	Sub-total	**1,587**

[7] For items (II)(A) – II(C), the estimated cost includes cost of equipment, installation and commissioning. For item (II) (D), the estimated cost covers replacement or refurbishment works for the aged ANS equipment shelters and associated building services/electrical and mechanical facilities, antenna towers, etc. For item (II) (E), the estimated cost includes cost of consultancy on procurement, design, safety assessment, cutover and transition of new and replaced/upgraded ANS equipment; as well as on-site technical support/assistance during installation, integration, testing, commissioning cutover, transition and decommissioning as necessary.

Enclosure 5

Proposed Procurement of
Fire Services Vehicles for the Fire Services Facilities
to Support the Three-Runway System
at the Hong Kong International Airport

PROJECT SCOPE AND NATURE

To provide swift aircraft firefighting, rescue and emergency ambulance services in support of the Three-Runway System, certain types of fire services vehicles are to be provided at the additional fire services facilities, namely the Airside Fire Station at Western Support Area (WSA), Airside Fire Station and the Landside Fire Station-cum-Ambulance Depot at Eastern Support Area (ESA).

2. A brief description of the vehicles is tabulated as follows –

Type of vehicle	**Main function**
For the two Airside Fire Stations	
(a) Rapid Intervention Vehicle	The Rapid Intervention Vehicle provides a large quantity of fire extinguishing foam to tackle aircraft fire at its incipient stage within a specified response time in order to maintain a fire-free escape path for facilitating rescue and evacuating passengers as well as flight crews.
(b) Crash Fire Tender	The Crash Fire Tender carries a large amount of extinguishing agent to serve as a backup to the Rapid Intervention Vehicle for applying uninterrupted fire extinguishing foam to protect the evacuation path and attack the fire.
(c) Hose Foam Carrier	As a supporting aerodrome rescue and firefighting vehicle, the Hose Foam Carrier provides water and foam supplies to back up the Crash Fire Tender in aircraft firefighting and rescue operations.

Type of vehicle	Main function
(d) High Reach Extendable Turret	As a supporting aerodrome rescue and firefighting vehicle, the High Reach Extendable Turret pierces into the fuselage and discharges water, foam or fire extinguishing gas to tackle the cabin fire and fires at various heights of the aircraft, in particular high-mounted engines.
(e) Mobile Command Unit	The Mobile Command Unit serves as a fire incident field command centre during major fires or incidents with compartments for radio communication, incident scene surveillance and conference.
For the Landside Fire Station-cum-Ambulance Depot	
(f) First Intervention Vehicle	The First Intervention Vehicle performs prolonged firefighting operations, particularly in bulk oil storage areas.
(g) HazMat Tender	The HazMat Tender is equipped with a variety of equipment for handling hazardous materials (HazMat) incidents, such as advanced detectors for detecting and identifying HazMat, mitigation and containment tools for handling different kinds of HazMat leakage, different levels of chemical protection suits for HazMat technicians, etc.. In HazMat incidents, the HazMat Tender will be turned out together with a Decontamination Tender. It will also convey HazMat specialists to the scene.
(h) Decontamination Tender	The Decontamination Tender is equipped with decontamination equipment, such as decontamination pools, solutions and tools for setting up a decontamination area at the scene of a HazMat incident. In HazMat incidents, the Decon Tender will be turned out together with the HazMat Tender. It will also convey HazMat specialists to the scene.

Type of vehicle	Main function
(i) Bulk Foam Tender	The Bulk Foam Tender provides a continuous supply of foam concentrate to the First Intervention Vehcile for prolonged firefighting operations requiring a large quantity of foam.
(j) Hydraulic Platform	The Hydraulic Platform is a standard initial fire appliance to be turned out for a building fire call for carrying out firefighting and rescue operations at a high level.
(k) Major Pump	The Major Pump is a standard initial fire appliance to be turned out for a building fire call for providing water supply for firefighting at the frontline.
(l) Major Rescue Unit	The Major Rescue Unit is a first strike fire appliance equipped with a wide variety of rescue equipment for conducting forced entry, search and rescue operations. Moreover, in HazMat incidents, the Major Rescue Unit will convey HazMat specialists to the scene.
(m) Turntable Ladder	The Turntable Ladder is a standard initial fire appliance to be turned out for a building fire call for conducting aerial rescue and preventing the spread of fire to neighbouring developments.

FINANCIAL IMPLICATIONS

3. We estimate the acquisition cost of the aforementioned fire services vehicles to be about $228 million. The estimated costs of the fire services vehicles are set out as follows –

Airside Fire Station – West Support Area
(with target date of commissioning in 2022)

		$ million
(i)	Two Rapid Intervention Vehicles[1]	20.9
(ii)	Two Crash Fire Tenders[1]	19.8
(iii)	Two Hose Foam Carriers[1]	14.7
(iv)	One High Reach Extendable Turret[1]	12.8
		68.2

Airside Fire Station – East Support Area
(with target commissioning by end 2024)

		$ million
(v)	Two Rapid Intervention Vehicles[1]	22.5
(vi)	Two Crash Fire Tenders[1]	20.0
(vii)	Two Hose Foam Carriers[1]	15.9
(viii)	One High Reach Extendable Turret[1]	13.5
(ix)	One Mobile Command Unit	10.0
		81.9

Landside Fire Station cum Ambulance Depot
(with target commissioning by end 2024)

		$ million
(x)	One First Intervention Vehicle	11.7
(xi)	One HazMat Tender	9.3
(xii)	One Decontamination Tender	12.4
(xiii)	One Bulk Foam Tender	11.1
(xiv)	One Hydraulic Platform	8.7
(xv)	One Major Pump	7.8
(xvi)	One Major Rescue Unit	6.0
(xvii)	One Turntable Ladder	10.9
		77.9
	Total:	**228.0**

[1] While each of the two Airside Fire Stations (AFS) will require the provision of two Rapid Intervention Vehicles, two Crash Fire Tenders, two Hose Foam Carriers and one High Reach Extendable Turret, the costs of the vehicles at each station are estimated to be different. This is because the AFS at the WSA is expected to be commissioned in 2022, whereas the AFS at the ESA is expected to be commissioned in 2024, thus justifying a higher cost estimate to cater for the possible inflation and fluctuation in exchange rates.

IMPLEMENTATION TIMEFRAME

4. Subject to Members' views, we will seek funding approval from the Legislative Council according to established procedures in phases starting from 2019-20. The procurement programme of the respective fire services vehicles will match with the commissioning of the fire services facilities they support. The Electrical and Mechanical Services Trading Fund will be engaged to provide advice and assistance to ensure that the fire services vehicles to be procured will best suit the operational needs of the Fire Services Department.

Fire Services Department

May 2018