BUILDING OUR FUTURE AIRPORT

We are developing the airport to ensure HKIA has sufficient capacity to meet Hong Kong's growing demand for air transport. Our ambition is to build a smart and green airport that applies the latest technology and integrates environmental considerations into airport growth.

BUILDING CAPACITY

In 2015/16, passenger numbers, aircraft movements and cargo throughput all continued to grow, putting increasing pressure on the capacity of the existing two-runway system (2RS). Our medium- and long-term development strategies will address both ground handling and runway capacity to meet air traffic demand forecasts for 2030 and beyond, ensuring that HKIA can continue to support Hong Kong's social and economic development.

Making Progress on 3RS

The 3RS project, which anchors our long-term development strategy, made significant progress during the year. The construction of the 3RS commenced on schedule in August 2016, and is expected to be completed in 2024, with the commissioning of the new runway in 2022.

May 2015

- The Director of Lands published in the Government Gazette a Notice of the proposed reclamation works of the 3RS project under the Foreshore and Sea-bed (Reclamations) Ordinance.
- The Town Planning Board published in the Government Gazette the draft Chek Lap Kok Outline Zoning Plan with amendments under the Town Planning Ordinance.

September 2015

- AAHK announced the revised financial arrangement plan for the 3RS project.

April 2016

- The Chief Executive-in-Council authorised the proposed reclamation under the Foreshore and Sea-bed (Reclamations) Ordinance and approved the draft Chek Lap Kok Outline Zoning Plan under the Town Planning Ordinance for the 3RS project.

August 2016

- AAHK commenced the construction of the 3RS.

During the year, we continued to carry out mitigation measures to ensure compliance with the conditions set out in the Environmental Permit for the 3RS project. Measures that have been implemented prior to the commencement of construction in August 2016 include:

- Establishment of a Marine Ecology Conservation Plan and a Fisheries Management Plan, including the proposed mechanism for the management and administration of the Marine Ecology Enhancement Fund and Fisheries Enhancement Fund.
- Early implementation of route diversion and speed control commitments within Hong Kong waters for SkyPier high-speed ferries travelling between SkyPier and Macau/ Zhuhai.
- Preparation for commencing the reclamation works – using non-dredge methods, including deep cement mixing.

DEEP CEMENT MIXING

The 3RS project involves the reclamation of approximately 650 hectares of land north of the existing airport island. About 40% of the land is located on an area of contaminated mud pits (CMPs) which contain heavy metals and organic compounds. To prevent possible leakage of contaminants during construction, AAHK has adopted Deep Cement Mixing (DCM), a non-dredge method where cement is directly injected and mixed into the mud of CMPs to create cement clusters which then increase the stiffness of the mud, providing a stable foundation for construction.

This method is substantially more costly than that of the conventional method, but the environmental benefits are significant. Apart from avoiding potential leakage of contaminants, underwater noise levels and undesirable water quality impacts can also be reduced.

AAHK conducted two field trials between 2012 and 2016. The results from the first trial showed that DCM has minor and acceptable environmental impact on the marine environment of surrounding waters. The second trial provided valuable data for optimising the engineering performance of applying DCM, as well as the construction planning and detailed design for the reclamation. Details of the trial can be viewed here.

Enhancing the Capacity of the Existing 2RS

AAHK has invested over HK$12.5 billion in new facilities to meet medium-term air traffic demand and to maintain service quality and operational efficiency at optimum levels. After completing the West Apron expansion in July 2015, which added 31 aircraft parking stands on the maintenance and cargo aprons, we also completed Midfield Development Phase 1, and the detailed design of Midfield Phase 2 and the remaining Midfield (collectively known as Midfield Apron Development) within 2015/16. We also continued with our preparation work for the Terminal 1 Capacity Expansion project which commenced construction in Q2 2016.

CASE STUDY

Midfield Development

Located west of Terminal 1 between the two existing runways, the midfield was the last piece of land on the existing airport island available for large-scale development. The Midfield Development is a major project to address 2RS capacity constraints.

The first phase of the project was completed in December 2015 with the opening of the HK$10 billion Midfield Concourse (MFC). With the capacity to serve over 10 million additional passengers each year, the MFC will make a significant contribution to HKIA's passenger handling facilities and increase the percentage of aircraft that can be served by airbridges rather than step mounting and passenger buses, thus enhancing the overall passenger experience.

The next phase of the project, Midfield Apron Development, is targeted for completion in phases between 2018 and 2020. Upon completion, there will be 216 aircraft parking stands in total at HKIA, providing sufficient capacity in the interim period before the completion of the 3RS.

PHASE 1: Completed (2011-2015)

- MFC, a five-storey concourse building of 105,000 sqm
- 19 frontal and 1 remote aircraft parking stands
- A cross-field taxiway
- Extension of the existing automated people mover (APM) system from Terminal 1

PHASE 2: Midfield Apron Development (To be completed by 2020)

- 34 remote aircraft parking stands
- Associated cross-field taxiways and taxilanes
- Enhance the APM and baggage handling system services between Terminal 1 and MFC

ADOPTING GREEN DESIGN AND INNOVATION

Environmental considerations are an integral part of our strategy for airport growth. For the 3RS project, an experienced team of local and international experts spent two years on the most extensive Environmental Impact Assessment ever conducted in Hong Kong, culminating in the granting of an Environmental Permit by the Director of Environmental Protection. As required by the Environmental Permit conditions, we are adopting a comprehensive set of measures to manage and minimise the environmental impacts during detailed design, construction and operation of the 3RS. Beyond regulatory compliance, we have established a Green Airport Design Strategy to drive environmental best practices and innovative solutions in the design of airport buildings and facilities.

Legacy of Green Design and Innovation

2RS

The green design features adopted when HKIA was first built are our legacy of best practice and form a strong platform for continued leadership and innovation:

- Efficiencies in construction
- Efficient airport layout
- Excellent public transport connectivity
- Seawater for cooling/flushing
- Energy efficient buildings
- Greywater collection, treatment and reuse
- Other green infrastructure

MFC

A multi-pronged strategy was adopted to minimise the environmental footprint of the MFC.

35 key initiatives and environmental technologies were implemented in the design, construction and operation of MFC. Examples include:

- Optimised glazed façade
- North-facing skylights
- Façade solar shading
- 1,200 sqm of rooftop solar panels
- Reuse of treated greywater and condensate water for the cooling system

3RS

The 3RS Scheme Designs includes the development of a 3RS Green Airport Design Strategy as a key deliverable.

The strategy guides the development of 3RS Green Performance Targets representing international best practices in:

- Energy
- Waste and resources
- Green procurement, materials and construction
- Site-wide aspects
- Water use
- Indoor Environmental Quality

3RS Green Airport Design Strategy

The 3RS Green Airport Design Strategy provides the template for development of best practices, systems and Green Performance Targets (GPIs) for the entire 3RS development. All 3RS detailed design work includes early review of the green design strategy template, followed by the development of GPIs for each design works package, specific to the type of development under design. Best practice environmental design initiatives, systems and approaches are further considered and quantified as the detailed designs progress, and are agreed and incorporated into the design as part of the design approval process. This approach not only facilitates informed decision making but also ensures that the environmental elements are fully embedded in the construction and operation of the 3RS. Performance against the GPIs is monitored and reported to ensure that the Green Airport Design Strategy is effective in promoting best practice and innovation.

One important outcome of the 3RS Green Airport Design Strategy is designing for the climate change challenge.

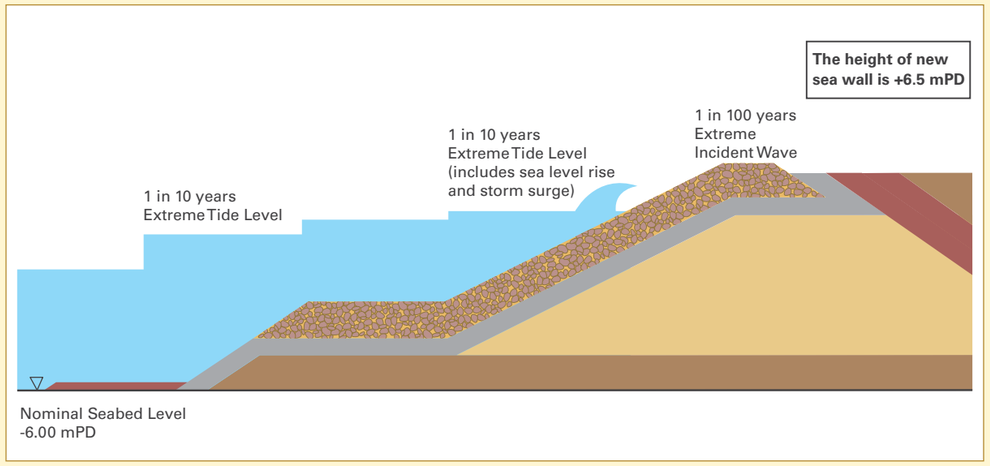
DESIGNING FOR FUTURE ADVERSE WEATHER CONDITIONS

Sea-level rise and extreme weather events, exacerbated by climate change, pose an increasing threat to the operational performance and resilience of HKIA. In planning for the 3RS, a range of oceanographic and meteorological factors have been considered in developing the design of the new 3RS seawall to ensure that it can withstand predicted future adverse weather and climate conditions.

The most recent Intergovernmental Panel on Climate Change (IPCC) projections on future sea level rise have been considered in the design process along with simulations of extreme tide levels, storm surge and worst-case wave activity, all of which could realistically be experienced as a result of predicted future increases in storm (typhoon) intensity.

A seawall height of +6.5 meters above sea-level* is expected to adequately protect the 3RS from future weather and climate conditions. In addition, the airfield drainage system for the 3RS will be designed and equipped to handle any rare overtopping events in the unlikely event that these happen in the future.

* Meters above the Hong Kong Principal Datum (mPD)



SHAPING A SMART FUTURE AIRPORT

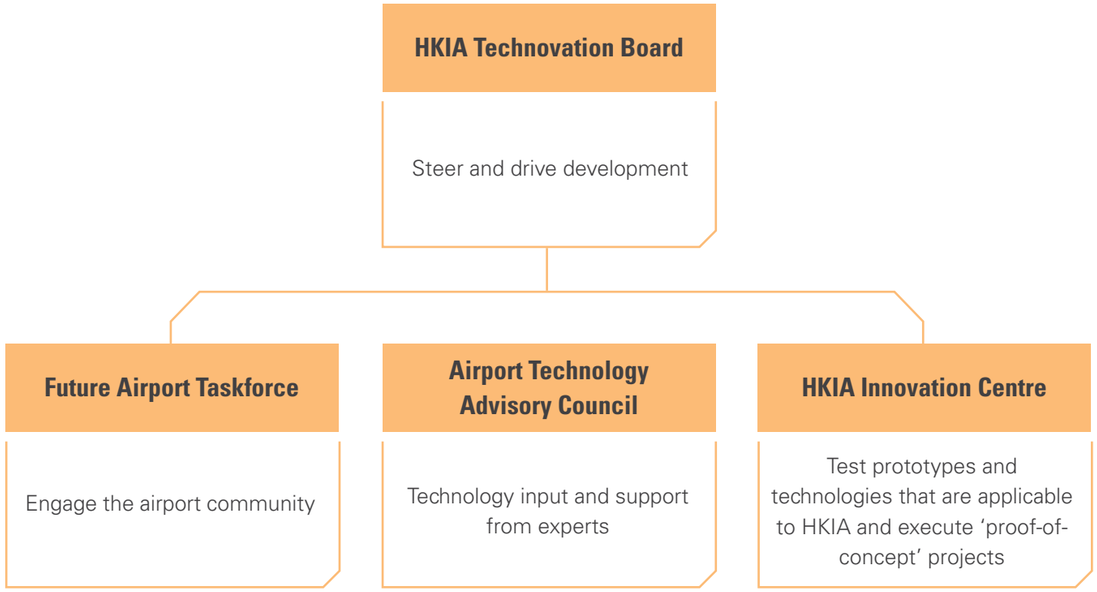
Technological developments are opening up new possibilities for effectively increasing capacity and enhancing safety, security and passenger satisfaction. To make HKIA a smart airport, we established the HKIA Technovation Board, under which the Airport Technology Advisory Council provides guidance on introducing advanced technologies at HKIA. We also developed a 10-year technology roadmap to ensure that we invest in technological solutions that are most relevant to HKIA and that complement our future expansion.

HKIA Technovation Board

The HKIA Technovation Board was established in February 2015 to drive systematic innovation and technology development at HKIA, with an initial funding of HK$20 million allocated to support development projects. In September 2015, we held the inaugural HKIA Technovation Conference and Exhibition based around the theme of 'Smart Airport: Object Tracking', with the participation of some 500 representatives from our business partners and the airport community. The event focused on the latest developments in indoor and outdoor object tracking applications and related technologies, which offer high potential to facilitate operational efficiency at the airport.

We will organise similar future events to provide a regular platform for relevant stakeholder groups to exchange ideas on technological applications for a smart airport.

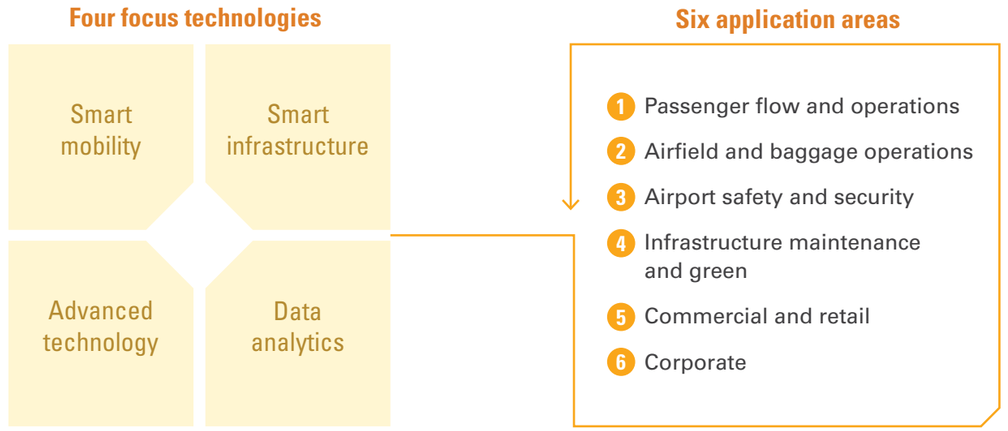
Structure and approach of the HKIA Technovation Board



Please refer to 'Investing in the Local Community' for details of the collaboration between HKIA Innovation Centre and the Hong Kong Science and Technology Parks Corporation.

10-year technology roadmap

The 10-year technology roadmap defines the focus technologies, application areas and the timetable for creating a smart airport. Under each of the application areas, we have also identified the initiatives and programmes to be implemented in the next five and ten years.



Please refer to 'Creating a Seamless Passenger Experience' for details of the technologies we have applied at HKIA to enhance and personalise the airport experience for passengers.