1. Introduction

1.1 General

1.1.1 Project Background

1.1.1.1 In 2008, Airport Authority Hong Kong (AAHK) commissioned Mott MacDonald Hong Kong Limited (MMHK) to carry out preliminary design and environmental assessments to compare different airport expansion options to identify an environmentally-preferred airport expansion scheme that can cope with the projected demand for air traffic up to Year 2030\(^1\). The study was part of the Hong Kong International Airport (HKIA) Master Plan 2030.

1.1.1.2 A public consultation on HKIA Master Plan 2030 (MP2030) was held from 3 June 2011 to 2 September 2011. The aim of the consultation was to present and solicit public views on the two airport development options proposed in MP2030 namely “maintaining the existing two-runway (2RS) system (Option 1)”; and “expanding into a three–runway system (3RS) (Option 2)”. During this consultation a total of 194 events related to MP2030 were organised or participated by AAHK, including various seminars, briefings, forums, and roving exhibitions. At the end of the public consultation, a total of 401 written submissions and 29,882 feedback questionnaires had been received, of which a total of 24,242 questionnaires were analysed in the main text of the consultation report\(^2\).

1.1.1.3 The Social Sciences Research Centre of The University of Hong Kong (SSRC) was engaged to provide independent analysis and reporting of the public consultation, which included collection, compilation, analysis and reporting of the views of stakeholder groups, including those of the general public, expressed during the public consultation\(^3\). The survey output indicated that 73% of respondents preferred Option 2, with 11.1 % preferring Option 1 and 15.9 % expressing no preference.

1.1.1.4 On 20 March 2012, the Government of Hong Kong Special Administrative Region (HKSAR) approved in principle the adoption of Option 2 (3RS) as the future development option for HKIA for planning purposes, and also approved AAHK’s recommendation to proceed with the statutory Environmental Impact Assessment (EIA) process.

1.1.1.5 MMHK was instructed by AAHK to proceed with preparation of the statutory EIA for the proposed expansion of HKIA into a 3RS (hereafter also referred to as the third runway project or ‘the project’) and to seek an Environmental Permit (EP) for the construction and operation of the three-runway system.

1.1.1.6 This document is the EIA report for the project.

\(^1\) Contract P132 – Phase 1 Preliminary Engineering Feasibility and Environment Assessment Study

\(^2\) The remaining feedback questionnaires were those received from collection boxes located in HKIA with living district missing. These were analysed in Annex A of the consultation report by the Social Sciences Research Centre.

\(^3\) Social Sciences Research Centre, The University of Hong Kong, Report on Independent Compilation of Views and Reporting for HKIA Master Plan 2030 Public Consultation Exercise, 23 December 2011.
1.1.2 Submission of the Project Profile

1.1.2.1 The project profile for the project was submitted to the Environmental Protection Department (EPD) on 28 May 2012, and was exhibited for public consultation between 29 May 2012 and 11 June 2012. Approximately 800 written comments were received by EPD with the main focus of public comments on potential air quality impact, noise impact, marine ecology and fisheries impact, and impacts to Chinese White Dolphin (CWD).

1.1.2.2 On 8 June 2012, EPD issued a request for further information from the project proponent under Section 5(4) of the EIA Ordinance (EIAO). Further information to supplement the project profile was submitted to EPD on 29 June 2012. This further information was exhibited for public consultation between 30 June 2012 and 13 July 2012. During this period, approximately 100 additional written comments were received by EPD.

1.1.2.3 On 10 August 2012, EPD issued an EIA Study Brief for the project (ESB-250/2012).

1.1.3 Purpose and Objectives of the Project

1.1.3.1 The purpose of the project is to carry out the intentions of the MP2030, which is to enable continued optimisation of operations at HKIA up to the Year 2030.

1.1.3.2 The MP2030 is part of a rolling five-year planning process intended to:

- Identify the development needs of HKIA over a twenty-year horizon;
- Achieve sustainable traffic growth; and
- Maintain Hong Kong’s long-term competitiveness and position as an international and regional aviation hub.

1.1.3.3 Findings from the MP2030 identified a need to expand into a 3RS in order to meet operational demands up to the Year 2030. This project will take forward and further develop the findings from the MP2030 to identify and recommend the optimal design scheme for construction and operation of the 3RS, with emphasis on avoidance and minimisation of environmental impacts. Specific objectives of the project are to:

- Further develop the MP2030 into initial scheme designs for construction and operation phases;
- Conduct an environmental impact assessment in accordance with the statutory EIA Ordinance requirements;
- Consult stakeholders and the general public to ascertain and address the key design, environmental and operational concerns; and
- Seek and obtain approvals from relevant statutory governing bodies to enable commencement of construction and operation of the project.
1.1.4  **Location and Scale of the Project**

1.1.4.1  The project will be implemented on new reclamation immediately north of HKIA in North Lantau. It will cover a permanent footprint of approximately 650 ha. Further details of the project are described in Chapter 4.

1.2  **EIA Study Brief Requirements**

1.2.1  **General**

1.2.1.1  The EIA Study Brief issued for the project (ESB-250/2012) sets out the purposes and objectives of the EIA study, the scope of environmental issues to be addressed, the requirements that the EIA study needs to fulfil, and the necessary procedural and reporting requirements. Appendix 1.1 was included to demonstrate the compliance to the EIA Study Brief and EIAO-TM. The designated projects covered and the EIA study requirements are described below.

1.2.2  **Designated Projects under the EIA Ordinance**

1.2.2.1  As stated in the project profile and the EIA Study Brief, the project comprises the following Designated Projects (DPs) based on item A.2, A.7, B.1, C.1, F.4 and H.2 in Part I of Schedule 2 to the EIAO:

i. Reclamation works (including associated dredging works) more than 5 ha in size (Item C.1, Part I, Schedule 2);

ii. An airport (including its runway and the development and activities related to aircraft maintenance, repair, fueling and fuel storage, engine testing or air cargo handling) (Item B.1, Part I, Schedule 2);

iii. A railway and its associated stations (Item A.2, Part I, Schedule 2);

iv. A road or railway tunnel more than 800 m in length between portals (Item A.7, Part I, Schedule 2);

v. An activity for the reuse of treated sewage effluent from a treatment plant (Item F.4, Part I, Schedule 2); and

vi. A submarine gas pipeline or submarine oil pipeline (Item H.2, Part I, Schedule 2).

1.2.2.2  Following issue of the EIA Study Brief, scheme design consultancy studies were commenced to develop engineering designs for the proposed airport expansion. In the course of these studies, further details of the proposed diversion of the sub-marine fuel pipeline, extension of the Automated People Mover (APM), improvements to existing road networks and construction-related facilities were developed, resulting in seven additional DPs to be addressed in the EIA study:

vii. All projects including new access roads, railways, sewers, sewage treatment facilities, earthworks, dredging works and other building works partly or wholly in an existing or gazetted proposed country park or special area, a conservation area, an existing or gazetted
proposed marine park or marine reserve, a site of cultural heritage, and a site of special scientific interest (Item Q.1, Part I, Schedule 2);

viii. A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road (Item A.1, Part I, Schedule 2);

ix. A railway siding, depot, maintenance workshop, marshalling yard or goods yard (Item A.4, Part I, Schedule 2);

x. A road or railway bridge more than 100 m in length between abutments (Item A.8, Part I, Schedule 2);

xi. Reclamation works (including associated dredging works) more than 1 ha in size and a boundary of which is less than 100 m from a seawater intake point (Item C.2(b), Part I, Schedule 2);

xii. A cement works or concrete batching plant with a total silo capacity of more than 10,000 tonnes in which cement is handled and manufactured (Item K.5, Part I, Schedule 2); and

xiii. A sand depot with a site area of more than 1 ha in size (Item K.11, Part I, Schedule 2).

1.2.2.3 In accordance with Clause 6.2 of the EIA Study Brief, a letter was submitted to the Director of Environmental Protection (DEP) on 8 November 2013 to seek confirmation that the additional DPs do not involve key changes in the scope of the project. A letter was received from DEP on 14 November 2013, confirming that the EIA Study Brief remains valid and is adequate to cover the additional DPs identified.

1.2.3 Objectives of the EIA Study

1.2.3.1 In accordance with Clause 2.1 of the EIA Study Brief, the objectives of the EIA study are:

i. to describe the project and associated works together with the requirements and environmental benefits for carrying out the project;

ii. to identify and describe the elements of the community and environment likely to be affected by the project, and/or likely to cause adverse impacts to the project, including both the natural and man-made environment and the associated environmental constraints;

iii. to identify and quantify emission sources and determine the significance of impacts on sensitive receivers and potentially affected uses;

iv. to identify and quantify any potential losses or damage to flora, fauna and natural habitats;

v. to identify any negative impacts on sites of cultural heritage and to propose measures to mitigate these impacts;

vi. to propose the provision of infrastructure or mitigation measures to minimise pollution, environmental disturbance and nuisance during construction and operation of the project;
vii. to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;

eviii. to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and the cumulative effects expected to arise during the construction and operation phases of the project in relation to the sensitive receivers and potential affected uses;

ix. to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels;

x. to design and specify the environmental monitoring and audit requirements; and

xi. to identify any additional studies necessary to implement the mitigation measures or monitoring and proposals recommended in the EIA report.

1.2.4 Scope of the EIA Study

1.2.4.1 This EIA report addresses all key potential environmental issues associated with the construction and operation phases of the project, which are as specified under Clause 3.2 of the EIA Study Brief:

i. air quality impact due to the construction and operation of the project and associated works;

ii. hazard to human life due to construction activities affecting the existing aviation fuel pipelines and modification works of the underwater aviation fuel pipelines, the use of new aviation fuel pipelines and new fuel hydrant systems for aircraft refuelling at the new aircraft stands and the operation of diesel, gasoline and liquefied petroleum gas (LPG) storage facilities in the airport expansion area;

iii. noise impact on sensitive receivers due to the project and associated works, including impact from construction equipment during construction and operational noise impact from aircraft, road traffic, railways, marine vessels and fixed noise sources;

iv. water quality impact due to the project and associated works, such as works associated with reclamation during construction and accidental fuel spillage during operation;

v. sewerage and sewage treatment implications arising from the project;

vi. waste management implications arising from the construction and operation of the project;

vii. land contamination arising from the project;

viii. impact on ecological sensitive areas due to the construction and operation of the project;

ix. fisheries impacts due to the construction and operation of the project;

x. landscape and visual impacts during the construction and operation of the project;
xi. impacts on sites of cultural heritage due to construction and operation of the project;

xii. health impacts on human due to the operation of the project; and

xiii. cumulative environmental impacts of the project, through interaction or in combination with other existing, committed and planned projects, and that the impacts of these projects may have a bearing on the environmental acceptability of the project.

1.3 Public Engagement

1.3.1.1 Since 2008 (when preparations for the MP2030 began), AAHK has been reaching out to a wide spectrum of stakeholders to seek their views and explain the proposed development plans for HKIA. These public engagement activities included briefings, seminars, discussion forums, exhibitions, airport visits and various published materials (videos, leaflets and newsletters) for the general public as well as meetings with key concern groups. From late 2008 to early 2014, AAHK organised and took part in 970 engagement activities with a variety of stakeholder groups to explain the airport’s long-term development plan.

1.3.1.2 During the EIA study for this project, public consultation has continued in the form of organising airport visits and publishing various informative materials. In addition, a wide range of stakeholder engagement activities have been underway to enable better understanding of various stakeholders’ concerns and soliciting their views and suggestions about the project. These stakeholder engagement activities include:

- AAHK has set up four Technical Briefing Groups (TBGs) comprising experts and academia with technical expertise in specific environmental aspects to discuss issues of noise, air quality, marine ecology and fisheries, and Chinese White Dolphins. Three rounds of TBG meetings were held – the first round was held in September and October 2012; the second round in April and June 2013; and the last round in November and December 2013.

- Five Community Liaison Groups (CLGs) comprising District Councillors and Community Leaders from HKIA’s neighbouring districts (Islands, Kwai Tsing, Shatin, Tsuen Wan and Tuen Mun) were established and meetings were held in October 2012 and June, July and December 2013 to exchange views on airport development and a range of environmental subjects.

- Focused consultations were held with green groups in September 2012 and June, August, November and December 2013 to enable better communication and understanding of the environmental issues associated with the project, and how such issues should be properly addressed.

- A Public Exhibition was held from 1 to 4 August 2013 including two sessions of public forums, which took place on 3 and 4 August 2013, to update the public on the progress of the EIA and the direction for avoiding / mitigating the potential impacts of the project.

1.3.1.3 Further details of the stakeholder engagement programme during the EIA are presented in Appendix 1.2. The feedback and advice obtained from the various stakeholder engagement activities have been considered and incorporated where applicable as part of the technical assessments under this EIA study.
1.4 Structure of the EIA Report

1.4.1.1 This EIA report has been structured as follows:

Chapter 1 – Introduction presents the background, purpose and scope of the project.

Chapter 2 – Need of the Project presents the need and benefits of the project.

Chapter 3 – Consideration of Alternatives presents the considerations for alternative alignments, locations, layouts and construction methods.

Chapter 4 – Project Description presents a description of the project including concurrent projects.

Chapter 5 – Air Quality Impact presents the approach, findings and recommendations from the air quality impact assessment.

Chapter 6 – Hazard to Human Life presents the approach, findings and recommendations from the hazard to human life impact assessment.

Chapter 7 – Noise Impact presents the approach, findings and recommendations from the noise impact assessment.

Chapter 8 – Water Quality Impact presents the approach, findings and recommendations from the water quality impact assessment.

Chapter 9 – Sewerage and Sewage Treatment Implication presents the approach, findings and recommendations from the sewerage and sewage assessment.

Chapter 10 – Waste Management Implication presents the approach, findings and recommendations from the waste assessment.

Chapter 11 – Land Contamination presents the approach, findings and recommendations from the land contamination assessment.

Chapter 12 – Ecological (Terrestrial) Impact presents the approach, findings and recommendations from the terrestrial ecology impact assessment.

Chapter 13 – Ecological (Marine) Impact presents the approach, findings and recommendations from the marine ecology impact assessment.

Chapter 14 – Fisheries Impact presents the approach, findings and recommendations from the fisheries impact assessment.

Chapter 15 – Landscape and Visual Impact presents the approach, findings and recommendations from the landscape and visual impact assessment.

Chapter 16 – Cultural Heritage presents the approach, findings and recommendations from the cultural heritage impact assessment.
Chapter 17 – Health Impact presents the approach, findings and recommendations from the Health impact assessment.

Chapter 18 – Environmental Monitoring and Audit Requirements summarises the environmental monitoring and audit requirements specified in Chapters 5 to 17.

Chapter 19 – Conclusions summarises the findings and recommendations from the EIA.

Chapter 20 – Implementation Schedule of Mitigation Measures summarises the schedule for implementation of mitigation measures specified in Chapters 5 to 17.