



# 三跑道系統專訊

## 3RS Bulletin

香港國際機場三跑道系統刊物  
A newsletter on HKIA's Three-Runway System

第5期 2014年6月  
ISSUE 05, June 2014



## 香港的成功之道 The Key to Hong Kong's Success

香港國際機場是最繁忙的貨運樞紐，也是全球最繁忙客運機場之一。現時共有超過100家航空公司在香港國際機場提供航空服務，往來全球約180個航點，當中44個位於內地，讓香港國際機場成為具競爭優勢的國際及區域航空中心。機場不但將香港連接世界各地，更為本港帶來龐大的社會及經濟貢獻。

香港國際機場支持本港四大支柱產業，包括金融服務、貿易及物流、旅遊，以及工商業支援及專業服務。這些產業合共佔2012年香港本地生產總值58%。機場亦對就業市場作出貢獻，直接聘用員工超過65 000人。若計及酒店、餐飲營運商、零售商品供應商及旅遊業等間接創造的就業機會，職位數目將增至近三倍。

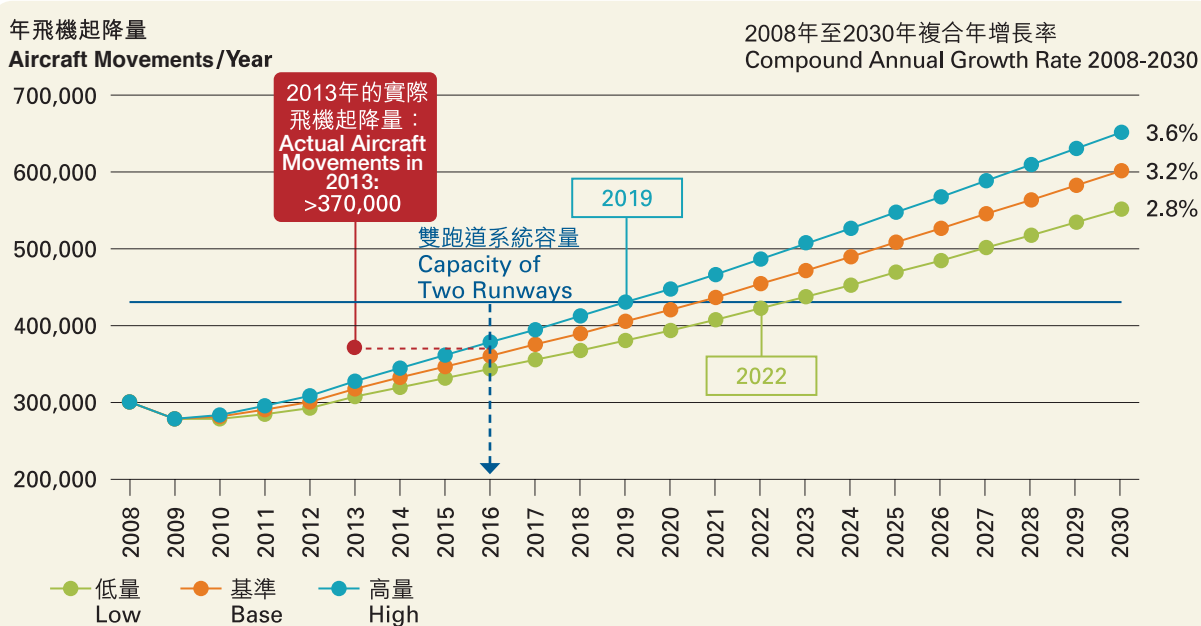
機場的航空交通量增長較預期快。於2013年，機場的客運量達到5 990萬人次，貨運量達412萬公噸。在未來20年，預測香港的航空交通需求將會持續增長。為了應付未來的航空交通需求及維持香港的競爭力，機場必須在切實可行範圍內盡快提升其容量。

Hong Kong International Airport (HKIA) is the busiest cargo gateway and one of the busiest passenger airports in the world. With over 100 airlines serving about 180 destinations worldwide, including 44 in the Mainland, HKIA is a uniquely competitive international and regional aviation centre that not only connects Hong Kong with the world, but also makes significant social and economic contributions to the city.

HKIA supports the four pillar industries of Hong Kong – financial services, trading and logistics, tourism, and producer and professional services – which together accounted for 58% of Hong Kong's GDP in 2012. It also contributes to the job market by directly employing over 65,000 people. This number almost triples when indirect employment – such as jobs created by hotels, catering operators, retail goods suppliers, the tourism industry and more – is taken into account.

Air traffic at the airport has been growing faster than forecast. In 2013, HKIA handled 59.9 million passenger trips and moved 4.12 million tonnes of cargo. Aviation demand in Hong Kong is forecast to continue growing over the next 20 years. In order to meet future air traffic demand and maintain Hong Kong's competitiveness, HKIA must enhance its capacity as soon as practicable.

2013年的飛機起降量  
超前《香港國際機場  
2030規劃大綱》的預測  
2013 Aircraft Movements  
Ahead of HKIA Master  
Plan 2030 Forecast





# 三跑道系統

## The Three-Runway System

中場範圍及西停機坪的擴建工程將可提高機場的地面處理能力，然而跑道容量仍是機場最主要限制。長遠而言，機場須擴建成為三跑道系統，以應付與日俱增的航空交通需求量。

While the Midfield and West Apron expansions will provide additional handling capacity on the ground, runway capacity remains the primary constraint. The long-term solution to meeting the growing air traffic demand is to expand the airport into a three-runway system (3RS).

### 計劃中的三跑道系統布局

#### Planned Three-Runway System Layout



## 維持現狀並不可行

### Maintaining the Status Quo is Not an Option

若香港國際機場不擴建成為三跑道系統，香港將面對嚴重後果，例如：

- 機票價格上升
- 航空公司及航點選擇減少
- 無法增加新航班；航空公司將選擇飛往利潤較高的一線航點
- 減低香港國際機場的應變能力
- 旅客的機場體驗變差
- 削弱香港的整體競爭力
- 對航空及物流業的就業機會造成直接及負面影響

香港若未能滿足日後的航空交通需求量，將會逐漸失去作為區域及國際樞紐的地位，其作為國際物流、貿易、旅遊及金融中心的地位亦會受損。

If HKIA is not expanded into a three-runway system, Hong Kong will face severe consequences such as:

- **More expensive airfares**
- **Fewer choices of airlines and destinations**
- **No new flights can be added; airlines will fly more profitable first-tier destinations**
- **Less ability for HKIA to deal with contingencies**
- **Deterioration of the airport experience**
- **Diminishing Hong Kong's overall competitiveness**
- **Directly and adversely affecting job opportunities relating to aviation and logistics sectors**

If Hong Kong is unable to meet its future aviation demand, the city will gradually lose its position as a regional and international hub. This could jeopardise the status of Hong Kong as an international centre of logistics, trade, tourism and finance.



# 緩解影響

## Mitigating the Impact

法定環境影響評估是規劃三跑道系統的主要部分，當中涉及全面的研究，以評估計劃對12個環境範疇的潛在影響。

經驗豐富的環評團隊由多名本地和國際專家組成，在團隊的支援下，機場管理局用了約兩年時間進行各方面的研究。於2014年4月中旬，機管局向環境保護署提交環評報告。報告的結論是，透過實行建議的各項緩解措施，這些對環境的潛在影響得以減低至可接受水平，並符合環評研究概要所載的要求。環評結果概要載於下表。

An integral part of the planning for the 3RS is the statutory Environmental Impact Assessment (EIA) involving thorough studies assessing potential impacts of the project on 12 environmental aspects.

The Airport Authority (AA) has spent approximately two years on the respective studies with the support of an experienced EIA team comprising local and international experts. In mid April 2014, the AA submitted the EIA Report to the Environmental Protection Department (EPD). With the proposed mitigation measures in place, the report concluded that the potential impacts have been alleviated to acceptable levels, in line with the requirements set out in the EIA Study Brief. The results of the EIA are summarised in the following table.

環境範疇 Environmental Aspect	施工階段 (有緩解措施，如適用) Construction Phase With Mitigation Where Applicable	營運階段 (有緩解措施，如適用) Operation Phase With Mitigation Where Applicable
空氣質素 Air Quality	可接受 Acceptable	可接受 Acceptable
生命危害 Hazard to Human Life		合理而實際可行情況下可承擔的最低風險 As low as reasonably practicable
噪音 Noise		可接受 Acceptable
水質 Water Quality		
污水收集及處理 Sewerage and Sewage Treatment	不適用 N/A	不適用 N/A
廢物管理 Waste Management	可接受 Acceptable	
土地污染 Land Contamination		
生態 (陸地及海洋生態，包括中華白海豚) Ecology (Terrestrial and Marine Ecology, including Chinese White Dolphin)		
漁業 Fisheries		
景觀及視覺 Landscape and Visual	可接受 Acceptable	
文化遺產 Cultural Heritage		
健康影響評估 (空氣污染物排放及飛機噪音) Health Impact Assessment (Air Emissions & Aircraft Noise)	不適用 N/A	



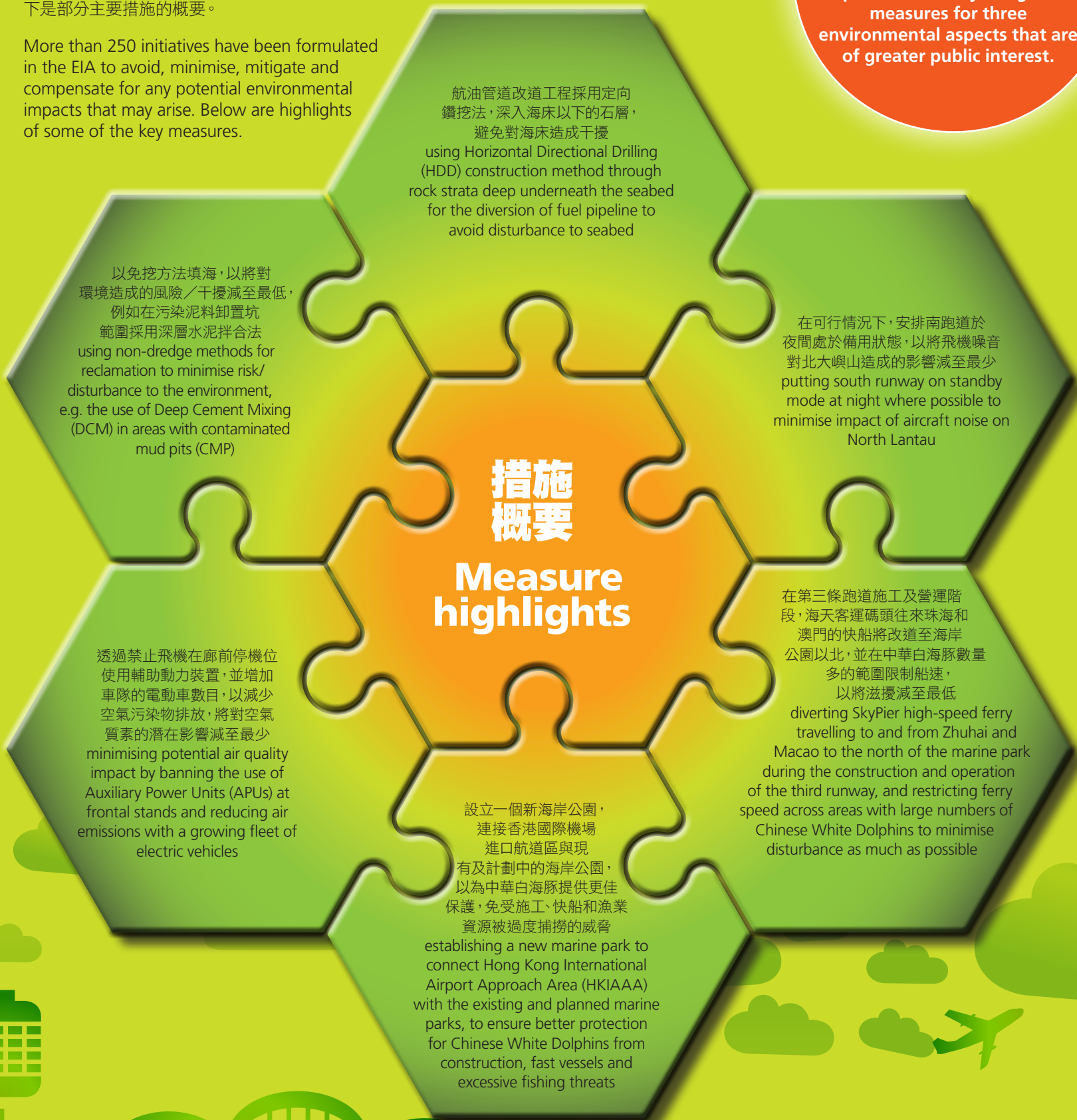
# 緩解影響 (續)

## Mitigating the Impact (continued)

在環評中已制訂超過250項措施，以避免、盡量減少、緩解及補償任何可能造成的潛在環境影響。以下是部分主要措施的概要。

More than 250 initiatives have been formulated in the EIA to avoid, minimise, mitigate and compensate for any potential environmental impacts that may arise. Below are highlights of some of the key measures.

今期《三跑道系統專訊》會介紹三個環境範疇的主要緩解措施，而這些範疇亦較受公眾關注。  
This issue of the 3RS Bulletin reports on the key mitigation measures for three environmental aspects that are of greater public interest.



# 海洋生態及中華白海豚 Marine Ecology and Chinese White Dolphins

香港國際機場位於大嶼山，機場附近水域的海洋生態蘊藏豐富物種，例如中華白海豚。為保護中華白海豚的自然棲息地，機管局將在施工階段實施以下緩解措施：

Situated on Lantau Island, the airport is a neighbour to diverse marine ecology such as the Chinese White Dolphins (CWDs) in the surrounding waters of HKIA. To protect the natural habitat of CWDs, the AA will implement the following mitigation measures during the construction stage:

避免在中華白海豚生育高峰期進行鑽孔打樁工程  
Bored piling will not be undertaken during the peak calving season of the CWDs

實施水質緩解措施，例如在海堤後填料、實施良好工地措施及安裝淤泥屏障  
Implementation of water quality mitigation measures such as filling behind the seawall, good construction site practices and silt curtains

限制工程船隻在施工範圍內的速度在10海浬以下  
Speed of construction vessels within the works area will be limited to below 10 knots

設立250米的海豚管制區  
Establishment of a 250-metre dolphin exclusion zone

更改海天客運碼頭快船航道  
Re-routing of SkyPier ferries

採用先進技術確保緩解措施盡量達到最佳成效，當中包括：

Advanced technology will be utilised to ensure the mitigation measures produce the most efficient results as possible including:

使用定向鑽挖法以避免對海床造成干擾  
Use of Horizontal Directional Drilling (HDD) Construction Method to avoid disturbances to the seabed

電纜接口位置設於現有海岸公園範圍外，以避免對海岸公園造成干擾  
Field joints are located outside the existing marine park area to avoid disruptions to the marine park

採用免挖方法進行拓地，以將風險／對環境的干擾減至最低（例如在污泥坑採用深層水泥拌合法）  
Use of non-dredge methods during land formation, such as Deep Cement Mixing in Contaminated Mud Pits (CMP), to minimise risks/disturbances to the environment

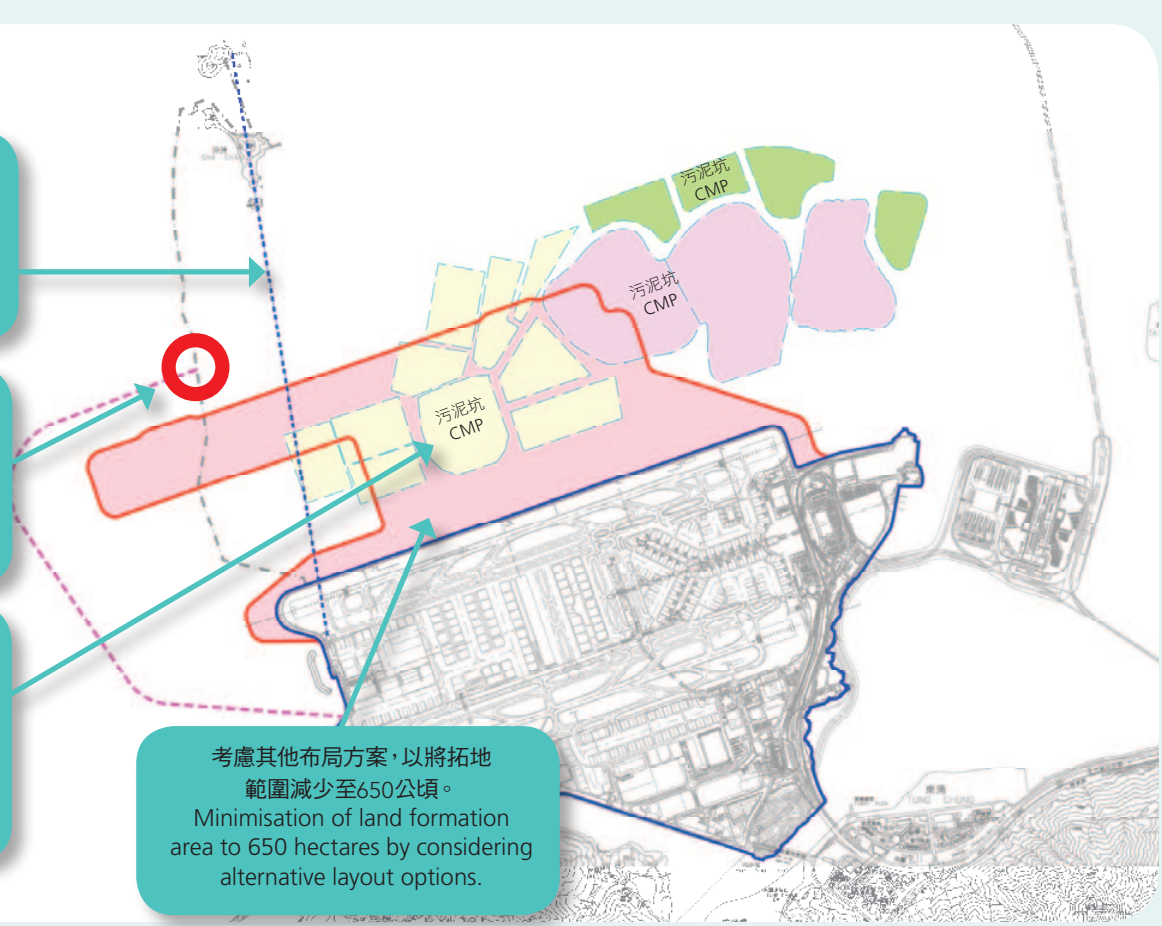
考慮其他布局方案，以將拓地範圍減少至650公頃  
Minimisation of land formation area to 650 hectares by considering alternative layout options

使用定向鑽挖法以避免對海床造成干擾。  
Use of Horizontal Directional Drilling (HDD) Construction Method to avoid disturbances to the seabed.

電纜接口位置設於現有海岸公園範圍外，以避免對海岸公園造成干擾。  
Field joints are located outside the existing marine park area to avoid disruptions to the marine park.

採用免挖方法進行拓地，以將風險／對環境的干擾減至最低（例如在污泥坑採用深層水泥拌合法）。  
Use of non-dredge methods during land formation, such as Deep Cement Mixing in CMP, to minimise risks/disturbances to the environment.

考慮其他布局方案，以將拓地範圍減少至650公頃。  
Minimisation of land formation area to 650 hectares by considering alternative layout options.



## 海洋生態及中華白海豚 (續)

## Marine Ecology and Chinese White Dolphins (continued)

此外，建議設立一個新的大型海岸公園，面積約2,400公頃，約相當於香港所有現有海岸公園面積的總和。

新海岸公園將連接現有的沙洲及龍鼓洲海岸公園、面積約730公頃的經擴大香港國際機場進口航道區（基於安全理由就機場設立的海事禁區範圍）及計劃中的大小磨刀海岸公園。在連接海岸公園及進口航道區後，受保護範圍的總面積將超過5,000公頃，貫通中華白海豚的主要棲息地，幫助和改善牠們游弋的水域。上述措施為中華白海豚提供更佳保護，免受施工、快船和漁業資源被過度捕撈的威脅。此外，在三跑道系統施工及營運階段，快船服務將改道至海岸公園以北，以將對中華白海豚造成的滋擾減至最低。

設立新海岸公園和快船改道措施，將緩解三跑道系統營運期間的潛在影響。我們亦將採取多項其他措施，以避免、盡量減少或緩解可能造成的影響，例如將拓地範圍盡量減少至650公頃、採用免挖方法進行拓地工程、採用定向鑽挖法更改航油管道走線以避免對海床造成干擾，以及避免在中華白海豚生育高峰期進行鑽孔打樁工程。建築人員會時刻恪守良好工地措施，執行嚴格的廢物管理政策，保護周邊環境。

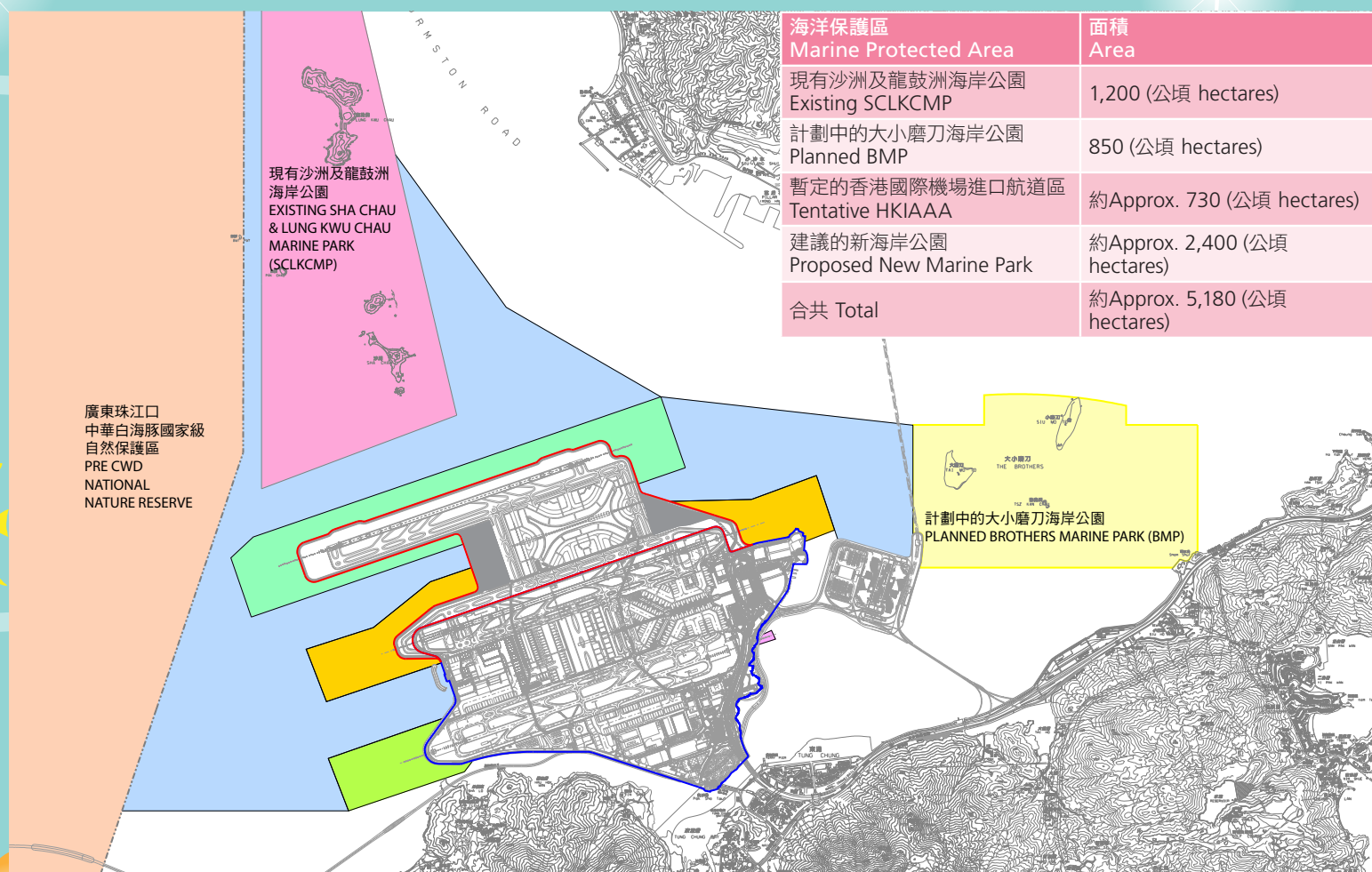
In addition, it is proposed that a large new marine park of approximately 2,400 hectares be created, which is about the total size of all existing marine parks in Hong Kong.

The new marine park will connect with the existing Sha Chau and Lung Kwu Chau Marine Park, the extended HKIA Approach Area of about 730 hectares (a marine exclusion zone designated for the airport for safety reason), and the planned Brothers Marine Park. By linking up the marine parks and Approach Area, the total size of the protected area will exceed 5,000 hectares, which will be used to connect the major habitats of CWDs, and facilitate and improve their navigation channels. This will provide better protection for CWDs from disturbances posed by construction, fast vessels, and excessive fishing activities. In addition, high-speed ferry services will be directed to the north of the marine park during the construction and operation of the three-runway system, to ensure disruptions to CWDs are kept at a minimum.

The establishment of the new marine park and the diversion of ferry routes will mitigate potential impact during the operation of the three-runway system. Many other measures will be adopted to avoid, minimise or mitigate the possible repercussions. Examples include minimising the land formation area to 650 hectares, using non-dredge methods during land formation, using Horizontal Directional Drilling (HDD) for the realignment of aviation fuel pipelines to avoid disturbance to seabed, and avoiding peak calving season of CWDs during bored piling activities. The construction crew is committed to good site practices at all times, and strict waste management policies are enforced to safeguard the integrity of the surrounding environment.

### 設立海洋保護區

### Establishment of Marine Protected Area



## 飛機噪音 Aircraft Noise

為減輕噪音影響，現已實施短期緩解措施。由2014年3月底起，民航處已禁止僅僅符合第三章噪音標準的飛機，於夜間至清晨時段的八個小時內在香港國際機場起降。民航處已計劃在現有雙跑道運作下，將僅僅符合第三章噪音標準的飛機的禁止起降時段延長至全日。

機管局亦考慮設立與飛機噪音相關的收費，以鼓勵航空公司採用較寧靜的飛機，並透過夜間航班需求管理，以進一步限制噪音影響的水平。

待三跑道系統擴建工程完成後，在可行情況下將實施多項措施，包括安排南跑道於夜間處於備用狀態、調整飛機航道以避免在夜間飛越人口稠密的地區，以及在可行及安全情況下管理跑道的使用方向，以進一步減少噪音的影響。

To alleviate noise impacts, short-term measures are already in place. Effective since the end of March 2014, Marginally Compliant Chapter 3 (MCC3) aircraft have been banned from landing and take-off at HKIA by the Civil Aviation Department (CAD) during an eight-hour time frame at night and early morning. CAD has planned to extend the MCC3-prohibited period to cover the whole day for the existing two-runway operation.

The AA is also considering environmental charges in relation to aircraft noises to encourage airlines to use quieter aircraft, as well as introducing administrative management of night flights demand to further limit the extent of the noise impact.

Following the completion of the 3RS expansion, the noise impact would be further alleviated by, where possible, putting the South Runway on standby mode at night, re-routing flights to avoid populated areas at night and managing runway directions when feasibility and safety conditions allow.



在實際可行情況下，南跑道於夜間將處於備用狀態，以將對北大嶼山造成的影響減至最少。  
When practical, the South Runway will remain on standby at night to minimise impact on North Lantau.



## 空氣質素 Air Quality

香港國際機場一直致力減少排放。自2008年起，除了某些車輛獲得豁免外，機場禁區內車輛不得空轉引擎。其他緩解措施包括於2014年年底，禁止停泊於廊前停機位的所有飛機使用輔助動力裝置，達到「停機熄匙」的目標。此外，隨着飛機科技進步，飛機噪音及空氣污染物排放將會逐步減少。

在2017年年底，機場禁區內所有房車將更換為電動車。在2018年年底，供電動車及電動地勤支援設備使用的充電站數量，將由目前的54個增加至290個。

HKIA has long been a firm advocate for emissions reduction. Since 2008, it has banned idling vehicle engines on the airside except for certain vehicles that are exempted. Other mitigation measures include banning the use of Auxiliary Power Units (APU) for all aircraft at frontal stands by the end of 2014 to achieve its goal of "switching off all idling engines". In addition, aircraft noise and air emissions will be gradually reduced thanks to the advancement in aircraft technology.

On the airside of HKIA, the entire fleet of saloon vehicles will be replaced by electric vehicles by the end of 2017. By the end of 2018, the number of charging stations for electric vehicles and electric ground support equipment will increase to 290 from 54 today.



### 措施 Measures:

<b>現在 Now</b>	約80%航空公司使用固定地面供電系統及預調空氣系統 Around 80% of airlines are using fixed ground power and pre-conditioned air systems	52輛電動車 52 electric vehicles (EVs)	設有54個充電站供電動車及電動地勤支援設備使用 54 charging stations for EVs and electric ground support equipment
<b>將來 Future</b>	<b>2014年年底前 By end 2014:</b> 禁止停泊於廊前停機位的所有飛機使用輔助動力裝置 Ban the use of APU for all aircraft at frontal stands	<b>2017年年底前 By end 2017:</b> 機場禁區內所有房車須為電動車 All airside saloon vehicles as EVs	<b>2018年年底前 By end 2018:</b> 充電站數目合共為290個 Total of 290 charging stations

