

## The Three-Runway System Project at the Hong Kong International Airport and the Relevant Environmental Impact Assessment Report

### Written Submission to the Legislative Council Panel on Economic Development and Panel on Environmental Affairs from Civic Exchange

16 September 2014

#### Introduction

1. Civic Exchange acknowledges Hong Kong's need to plan ahead of time our airport facilities in meeting future demand and challenge as an international and regional aviation hub. It could be done either through maximising and optimising capacity under the current two-runway system or expanding into a three-runway system (3RS). In this respect, the Airport Authority Hong Kong (AAHK) has opted for the three-runway system.
2. While the 3RS would generate economic benefits to Hong Kong, like other large-scale transport infrastructure projects, it would also bring adverse impact to the environment during construction and operation.
3. Civic Exchange therefore argues that any plans to expand the airport should be supported only if it is demonstrated that the proposed plan would be the best option with least environmental impact, and that the remaining, unavoidable impact could be minimised through effective mitigation measures. We also strongly hold the view that any identified negative environmental impact should be remedied as soon as possible, before the damage becomes irreversible or more costly to repair.

#### Air quality and public health

4. Civic Exchange is most concerned about the impact of the 3RS on air quality and public health for a number of reasons. First, despite Government's recent effort in reducing air pollution, air quality in many places in Hong Kong remain unhealthy, including Tung Chung. Second, airport is a major emission source of nitrogen oxides (NO<sub>x</sub>), which in turn is a precursor of ozone (O<sub>3</sub>). New road traffic attracted to an expanded airport would also emit more sulphur dioxide (SO<sub>2</sub>) and particulates (PM). In other words, the 3RS would add enormous pressure on the Government to meet Hong Kong's short- and long-term emission reduction targets. Third, given the location of Tung Chung, a new runway and the additional road traffic associated with it would almost certainly add to the air pollution problem there and further undermine the health of the local residents.
5. Chapter 5 of the 3RS environmental impact assessment (EIA) report explains the assessment of potential air quality impacts of the project during the construction and operation phases. While the modelled results of air pollutant concentrations for the Year 2031 (the year representing the highest aircraft emissions scenario) are in compliance with the relevant Air Quality Objectives (AQOs) at all air sensitive receivers (ASRs), hence leading to the conclusion that the 3RS would not result in adverse air quality impacts, Civic Exchange urges caution in certain aspects of the air quality assessment.

6. First, predicted air pollutant concentrations at some of the ASRs in Tuen Mun are getting very close to the respective concentration limits set under Hong Kong's current AQOs. One might argue that a minor twig in any assumptions might lead to a non-compliance outcome. While it is unfair to make such an assertion, as information about the model assumptions and input parameters are very limited (and Civic Exchange welcomes transparency), those numbers from Tuen Mun still make worrying reading. The best way to ease our doubt is to make all the model assumptions public.
7. Second, some of the concentration limits adopted under the current Hong Kong AQOs in fact fall short of the World Health Organization's air quality guidelines. Therefore, even though air pollutant concentrations at all the key sensitive areas are in compliance with the relevant AQOs according to law, in reality the predicted level of air pollutant concentrations would still pose significant health risk to people living and working in Tuen Mun, Tung Chung, Sha Lo Wan and other neighbourhood areas.
8. Third, it is estimated in the assessment that except for Sha Lo Wan, less than 10% of the total concentration of a key air pollutant such as NO<sub>x</sub> are contributed by airport emissions. The dominant emission sources are ambient emissions, followed by proximity infrastructure emissions. In other words, the emission reduction measures undertaken by AAHK within the airport perimeter would only make an insignificant (but still necessary) contribution to better air quality in the key sensitive areas. Rather, it is important to note that the Government's local and regional air pollution reduction plans and strategies are far more critical to achieving compliance with our current AQOs, as well as future, more stringent AQOs.

#### **Nature conservation**

9. Civic Exchange is also very worried about the permanent loss of approximately 672 hectares of habitat for marine life. To put the above number in context, about 2,000 hectares of habitat are already destroyed or degraded in Hong Kong's western waters over the years.
10. With the Convention on Biological Diversity (CBD) extended to Hong Kong, we have to apply the principles of CBD for all developments and decisions that will have an impact on biodiversity. In the cases where knowledge is insufficient, the principle is to veer on the side of caution. Therefore, a precautionary principle should be applied to mitigation measures with little past experience regarding effectiveness.
11. It is also important to take an ecosystem approach in impact assessment, which should include examining the cumulative impacts of multiple projects being developed in one particular area.
12. AAHK has proposed a Marine Ecology and Fishery Enhancement Plan<sup>1</sup> (MEFEP), but the plan did not include adequate measures to address the adverse impact of high-volume marine traffic on the Chinese White Dolphin. This is especially a concern during the construction phase, when marine traffic will intensify beyond existing levels. Expanding the proposed mechanised vessels prohibited zones in conjunction with a marine traffic management plan that results in a reduction in the impact of marine traffic needs to be urgently considered.

---

<sup>1</sup> [http://www.epd.gov.hk/epd/sites/default/files/epd/english/boards/advisory\\_council/files/Plan\\_29-8-2014.pdf](http://www.epd.gov.hk/epd/sites/default/files/epd/english/boards/advisory_council/files/Plan_29-8-2014.pdf)

13. The MEFEP has provided an outline of the marine park management and enhancement plan, which includes the deployment of artificial reef and introduction of fish fry to regenerate fish stock. While efforts to implement ecological restoration are welcomed, these initiatives are not without concerns and lack scientific evidence of their effectiveness and net benefit.
14. International best practice in park management have adopted the concept of adaptive management, which allows management policies and decisions to be constantly reviewed and updated when new scientific understanding comes to light. Civic Exchange recommends that the management of the proposed marine park, and indeed other protected areas in Hong Kong under the authority of the AFCD, take an adaptive management approach.<sup>2</sup> The marine park should be led by an overarching vision, followed by a hierarchy of management objectives, with a capacity to integrate scientific research into management practice, administered under a well-resourced management authority, and formalised with the regular publication of a management plan, to ensure the visions and goals of the marine park continues to meet public aspirations.
15. One key issue related to the EIA report is how to quantify biodiversity impact. Biodiversity impact is not quantified in the EIA report in terms of cost, but could potentially be assessed in terms of the loss of ecosystem services, using the Economics of Ecosystems and Biodiversity (TEEB) methodologies<sup>3</sup>, an international standard for measuring the value of ecosystem services. The proposed fund should be formulated based on the cost incurred with the loss of ecosystem services, and additional sums to “enhance” the ecosystem beyond current baseline quality.
16. Another key issue is how to compensate for impact in marine environments under the MEFEP. Civic Exchange would like to make three suggestions.
17. The first option is to set up of a conservation trust, an independent fund contributed by AAHK to carry out conservation projects, either within a defined geographical area (e.g. Hong Kong’s western waters) or carries out specified types of work (e.g. marine conservation only). Proposed enhancement measures could come under this centralized trust organisation, with a portion of the fund enabling individuals and groups to submit non-profit making proposals to assist in the enhancement of marine ecology in the affected areas.
18. The second option is to perform biodiversity offset. At present, the principle of “no net loss” is applied to wetland areas only, but the concept is transferable to development projects that have an impact on other habitat types, such as marine areas in the case of the proposed 3RS. The impact of biodiversity loss in one area is offset by the restoration, improvement and continued conservation of another, usually via an injection of money to restore an external site, or funding for habitat management elsewhere. This could allow the AAHK to propose enhancement measures for areas outside of the affected areas, such as the establishment of a marine protected area in West Lantau to ensure an important habitat of the Chinese White Dolphin is protected.
19. The third option is through payment of ecosystem services (PES). PES has been applied in different places around the world and administered by governments that wish to maintain the integrity of an ecological function, by paying individuals or groups to maintain a piece of land for conservation, e.g. payment to maintain vegetation as a check on erosion. An option here would be for an

---

<sup>2</sup> Lau, W. (2011), *Adaptive Governance for Hong Kong’s Country Parks Network*, Civic Exchange, <http://www.civic-exchange.org/en/publications/4292624>.

<sup>3</sup> <http://www.teebweb.org/>

independent fund to be set up and paid to fishermen to maintain a no-take zone within and around marine parks, to facilitate the restoration of the marine ecosystem; to NGOs to conduct conservation work in Lantau's coastal areas or independent species or habitat assessments.

### **Strategic Environmental Assessment for Lantau Development**

20. In view of a number of large-scale transport and development projects and proposals on Lantau Island, including the Hong Kong – Zhuhai – Macau Bridge, Tung Chung New Town Development Extension, the 3RS, and the latest plan for the development of Lantau, Civic Exchange urges the Government to undertake a strategic environmental assessment (SEA) for Lantau development as soon as possible.
21. While project proponent of individual projects are required by law to carry out an EIA, the scope of assessment will focus on the project and its impact on the environment. Little attention will be given to cumulative environmental impacts of projects in close proximity.
22. The SEA for Lantau development would provide a systematic platform for analysing and evaluating the cumulative environmental impacts of the development policies and plans in Lantau, as well as other alternatives. It will facilitate decision makers in identifying sustainable development options and making informed decisions.