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Expansion of Hong Kong International Airport into a Three-Runway System ("3RS")

Update on the Implementation of Marine Ecology Mitigation and Enhancement Measures in association with the 3RS Project

PURPOSE

This paper presents an update to Members on progress with implementing marine ecology mitigation and enhancement measures for the 3RS Project and seeks Members' views on the SMART[1] goals for the proposed 3RS Marine Park ("3RSMP").

BACKGROUND

2. The 3RS Environmental Impact Assessment ("EIA") proposed a broad range of mitigation measures intended to avoid, minimise and compensate for the potential impact on Chinese White Dolphins ("CWD") and marine ecology during the construction and operational phases of the 3RS Project. A Marine Ecology and Fisheries Enhancement Strategy ("MEFES") was also recommended, intended to enhance marine ecology (including CWD) and fisheries resources.

3. Key 3RS Project construction activities in the past 12 months of relevance to marine ecology were reclamation and land formation works. As reported to the Legislative Council Panel on Economic Development on 22 June 2020, the reclamation contractor has completed about 11 kilometres of seawall rock core and vertical seawall blocks above sea level, out of a total of about 13.5 kilometres long seawall; and about 69% of the reclamation filling.

4. The Airport Authority Hong Kong ("AAHK") continues to implement all the required marine ecology mitigation and enhancement measures in conjunction with the

[1] SMART refers to the five principles of specific, measurable, achievable, results-focused, and time-bound.

works activities related to the 3RS Project, with details regularly updated and made publicly available on a dedicated 3RS Project website[2].

5. AAHK has also regularly updated the Advisory Council on the Environment ("ACE") on the implementation of key commitments since 2015, including the marine ecology and fisheries enhancement measures directly funded by AAHK and the 3RSMP proposal.

MITIGATION MEASURES DURING THE CONSTRUCTION PHASE

6. Implementation of construction phase mitigation measures intending to minimise potential disturbance to CWD continues, including the monitoring of Dolphin Exclusion Zones around potentially noisy marine works activities, SkyPier high speed ferries route diversion and speed restrictions, advance seawall construction and silt curtain deployment prior to marine filling, as well as acoustic decoupling for noisy equipment on marine vessels. As regards to the proactive management of construction marine traffic, AAHK continues to conduct real-time monitoring of all construction vessel activities, through the Marine Surveillance System at the Marine Traffic Control Centre, including the enforcement of the 10-knot speed limit within the works areas and CWD hotspots, and the compliance of designated travel routes with the use of designated marine works access gates, in order to ensure marine traffic impacts on CWD are minimised.

7. Besides, CWD monitoring continues as part of the 3RS Environmental Monitoring and Audit ("EM&A") programme. For year 2019, vessel-based line transect monitoring results indicated that West Lantau waters continue to be the most important CWD habitat in Hong Kong. There has been an apparent shift in areas used by CWD, in particular, decreasing use of North Lantau waters; this temporary shift in habitat use away from North Lantau waters was predicted in the 3RS EIA as an expected response to reclamation construction activities. From the land-based theodolite tracking survey findings, waters around Lung Kwu Chau remain a significant year-round foraging area for CWD. Passive acoustic monitoring provided evidence that dolphins continue to use the area around south of Sha Chau throughout the year, with comparatively higher detection during winter and spring compared with other seasons. Diurnal results also aligned with findings from the previous year as recorded from both baseline and impact monitoring, in which higher levels of dolphin activity were recorded at night compared with the daytime.

8. The Environmental Team ("ET") has been conducting regular and ad-hoc inspections to check compliance of all implemented mitigation measures with requirements outlined in the Environmental Permit ("EP") and the Updated EM&A Manual of the 3RS Project. Observations relating to non-compliance have been followed up promptly with the involvement of the ET, the Independent Environmental Checker ("IEC") and related construction contractors. Overall, the EM&A programme and the required mitigation measures have been properly implemented to the

[2] http://env.threerunwaysystem.com/en/index.html

satisfaction of the IEC and the relevant authorities since the commencement of construction.

MARINE ECOLOGY AND FISHERIES ENHANCEMENT MEASURES UNDER MEFES

9. Enhancement measures under MEFES include the setting up of Marine Ecology Enhancement Fund ("MEEF") and Fisheries Enhancement Fund ("FEF") ("the Funds") and also other initiatives by AAHK on a voluntary basis. For the Funds, since its inception in late 2016 with a total budget of HK$400 million, over HK$42 million was granted to 29 projects for years 2017/18, 2018/19, 2019/20 and 2020/21. The funded projects are managed and conducted by, among others, universities, research organisations, and associations from the fisheries industry. Details of the funded projects, including completion reports and promotional videos, are available at dedicated webpages[3] in the 3RS Project website.

10. Apart from the Funds, AAHK is also pursuing a number of ecological enhancement initiatives on a voluntary basis since commencement of the 3RS construction works. These include coral transplantation, fish restocking pilot test, artificial reef ("AR") deployment pilot test, and eco-enhancement seawall design for the 3RS reclamation, with details described below.

Coral transplantation

11. The 3RS EIA anticipated direct impacts on gorgonian coral communities (*Guaiagorgia* sp.) along the northern seawall of the Airport Island due to the land formation works. While coral translocation was the only known viable method in Hong Kong for moving coral colonies from an affected site to an alternative recipient site, it is only possible for colonies attached to moveable boulders. Many of the gorgonian colonies along the northern seawall could not be translocated because they are attached to large immovable boulders. To supplement the EP-required coral translocation effort, AAHK engaged with the ET and a team of respected coral experts to investigate the potential for moving additional corals using coral transplantation as an initiative beyond the EP requirements. Transplantation involves corals being detached from the large immovable boulders along the existing Hong Kong International Airport ("HKIA") seawall and reattached to suitable substrate at a recipient location.

12. 56 whole colonies and 460 fragments were transplanted in January 2017; however, after one year of post-transplantation monitoring, only three whole colonies and no fragment transplants survived. It was hypothesised that a number of environmental factors contributed to the failure of this transplantation exercise. Even with the initial transplant failure, in early 2018 the coral transplantation work effort was extended with some adjustments made in light of key lessons learnt during the

[3] MEEF funded projects: http://env.threerunwaysystem.com/en/meef/meef_projects.html
FEF funded projects: http://env.threerunwaysystem.com/en/fef/fef_projects.html

first transplantation exercise. In May 2018, a further 527 coral colonies were transplanted from the northern seawall to a new recipient site area. By the end of the second transplantation monitoring period in September 2019, 98% of the monitored transplants were still healthy with high live tissue coverage. Overall, the coral transplantation exercise has therefore been a success and findings from the two transplantation exercises are valuable to others seeking to protect or move gorgonian corals potentially impacted by coastal development.

Fish restocking pilot test

13. With the potential to enhance fish population at the proposed 3RSMP, AAHK conducted a pilot test on fish restocking in Q2 and Q3 2019. The pilot test released more than 8,000 fish fingerlings of commercially important species, including green grouper, yellowfin seabream and black seabream near the existing HKIA seawall, within the vessel-restricted Hong Kong International Airport Approach Area ("HKIAAA"), in order to provide better protection to the freshly released fishes.

14. Post-release monitoring surveys were conducted for six months, using a combination of methods, including traditional methods like cage-trapping and hand-lining, and also non-invasive methods that may be suitable for the low visibility underwater environments in the western Hong Kong waters like baited remote underwater video system and acoustic telemetry surveys. The monitoring results indicated that the released fingerlings of black seabream and green grouper were detected at the natural shores of Tai O, Sham Wat, San Shek Wan, Sha Lo Wan and at artificial seawalls near HKIA and Tung Chung. AAHK will review the results of this pilot test to evaluate the potential of fish restocking in the vicinity of the proposed 3RSMP and/or the adjacent waters.

AR deployment pilot test

15. Preparatory works for a pilot test on AR deployment, another AAHK-funded initiative under MEFES, and the required gazettal procedures under the Foreshore and Sea-bed (Reclamations) Ordinance (Cap. 127) are in progress. The pilot test is intended to evaluate the ecological performance of placing different types of AR structure in North Lantau marine environment for examining the potential of deploying similar structures in the vicinity of the proposed 3RSMP and/or the adjacent waters. The pilot test is targeted to commence in late 2020 to early 2021, subject to the gazettal under the Foreshore and Sea-bed (Reclamations) Ordinance and statutory authorisation.

Eco-enhancement seawall design

16. Regarding eco-enhancement seawall design for the 3RS reclamation, the first phase with over 140 eco-enhanced seawall blocks were installed at the northern and eastern sections of the 3RS vertical seawalls by April 2020. The eco-enhanced seawall blocks featured with rough surfaces, pits, holes and rock pools to facilitate and promote colonisation of epifauna and to increase microhabitat complexity as well as offering refuge for marine organisms. Ecological monitoring will be carried out to

assess the ecological performance of the seawalls with and without eco-enhancement as well as between different types of eco-enhancement feature.

PROPOSED 3RSMP

17. AAHK continues to work with the Agriculture, Fisheries and Conservation Department ("AFCD") on the preparatory works for the designation of the 3RSMP. The proposed 3RSMP, covers an area of about 2,400 hectares, is intended to link the current Sha Chau and Lung Kwu Chau Marine Park and The Brothers Marine Park in North Lantau waters, forming a marine park matrix of over 4,500 hectares near HKIA. The proposed 3RSMP will also connect with the existing and proposed HKIAAAs, with an area of approximately 670 hectares. As part of the preparatory works, a multi-pronged management plan has been developed to support the effective management of the proposed 3RSMP and a set of SMART goals have been developed in consultation with relevant stakeholders and AFCD.

18. Since mid-2019, AAHK has continued to consult relevant stakeholders on the design and management plan of the proposed 3RSMP, including the Islands and Tuen Mun District Councils, the fisheries sector, green groups, academics, eco-tour operators, marine and local ferry operators, and the Marine Parks Committee. Further consultation with the Country and Marine Parks Board ("CMPB") is planned for October 2020 and endorsement from the CMPB will be sought before proceeding with the necessary statutory procedures for designating the 3RSMP under the Marine Parks Ordinance (Cap. 476). Time frame of the designation will tie in with the full operation of the 3RS Project targeted for 2024.

SMART goals for the proposed 3RSMP

19. To monitor the effectiveness of the proposed 3RSMP in CWD conservation, SMART goals have been developed that focus on CWD's use of North Lantau waters over time after the designation of the 3RSMP. The SMART goals focus on quantifying an expected rebound in CWD's usage of North Lantau waters including Northeast Lantau (NEL) waters and Northwest Lantau (NWL) waters, with reference to a set of quantitative indicators, including CWD abundance and density derived from vessel line-transect surveys. Besides, underwater acoustic monitoring by C-POD, a passive acoustic monitoring device for marine mammal monitoring, or similar methods will also be conducted to detect CWD presence in various locations in NEL and NWL waters to provide supplemental information on CWD activity in North Lantau waters during daytime and night-time. In order to detect any potential early rebound in CWD's use of North Lantau waters prior to the establishment of the proposed 3RSMP, AAHK has initiated and voluntarily deployed four C-POD stations across the proposed 3RSMP area since early 2020.

20. A monitoring framework has been developed to monitor and evaluate the effectiveness of the 3RSMP against the SMART goals. Under the monitoring framework, CWD's use of NEL and NWL waters, in terms of abundance and density, within the first six years after designation of the 3RSMP (i.e. 2025-2027 and

2028-2030 three-year data[4]) will be monitored by AAHK. It is expected that results from the three-year periods will facilitate a reliable review of the effectiveness of the 3RSMP against the SMART goals. The methods adopted for CWD monitoring after the 3RSMP designation will be consistent with the EM&A programme and also with AFCD's long-term marine mammals monitoring, to enable direct comparison of monitoring results. The collected data will be evaluated against the pre-3RS Project construction abundance and density levels (i.e. 2014-2016) obtained from available historical data including those from the 3RS EM&A programme and AFCD's long-term marine mammals monitoring.

21. In terms of management targets, AAHK would undertake ecological and fisheries enhancement measures, including AR deployment and fish restocking in the vicinity of the proposed 3RSMP and/or the adjacent waters by the end of the second year after designation of the 3RSMP subject to the pilot test results; and also undertake regular publicity programmes and activities for the 3RSMP and to promote public awareness on marine conservation.

STAKEHOLDER ENGAGEMENT

22. AAHK continues to actively engage key stakeholders through meetings with the Community and Professional Liaison Groups comprised of representatives from HKIA's neighbouring districts as well as qualified professionals and experts with interests in the 3RS Project, providing a platform for facilitating communications and information sharing on all environmental issues related to the 3RS Project.

23. AAHK strives to be highly transparent in its works. The dedicated 3RS Project website provides the general public with up-to-date information on the 3RS Project, including EM&A data and results, updated plans and submissions in accordance with requirements in the EP and the sharing of materials presented at liaison group meetings, as well as information on the status and operation of the Funds. In this connection, the layout of the dedicated 3RS Project website has been refreshed in July 2020 together with continuous addition of one-page flyers introducing various 3RS environmental initiatives and short videos on selected MEEF- and FEF-funded projects, for the general public's information and viewings.

WAY FORWARD

24. AAHK will continue to implement all marine ecology mitigation and enhancement measures, as well as proactively engage with relevant stakeholders on environmental matters for the 3RS Project through the established engagement platforms.

[4] Three-year averages of 2025-2027 and 2028-2030 are recommended in order to derive more representative and reliable indications of potential rebound or recovery of CWD usage of NEL and NWL waters over time, allowing for expected and possibly significant annual fluctuations in numbers.

25. Members are invited to note the above and advise.

Airport Authority Hong Kong
August 2020