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Expansion of Hong Kong International Airport into a Three-Runway System

Update on the Implementation of Marine Ecology and Fisheries Enhancement Measures

PURPOSE

This paper presents Members with several marine ecology and fisheries enhancement measures that are proposed by the Airport Authority Hong Kong ("AAHK") for early implementation prior to the commissioning of the Three-runway system ("3RS").

BACKGROUND

2. As part of the Environmental Impact Assessment ("EIA") Study for the Expansion of Hong Kong International Airport ("HKIA") into a Three-runway system ("the Project"), the AAHK has committed to formulating and implementing a Marine Ecology and Fisheries Enhancement Strategy ("MEFES") for the Project. The purpose of the MEFES is to enhance the marine environment for the benefit of marine ecology (including Chinese White Dolphins) and fisheries resources.

3. Under the MEFES, AAHK will provide funding for several potential marine ecology and fisheries enhancement measures within the vicinity of the proposed 3RS marine park area and / or near to the 3RS works area, including:

- Eco-enhancement of seawall designs
- Voluntary surveillance, and other potential measures[1] that may aid or assist in the effective management of Marine Parks ("MPs")
- Artificial reef deployment[1]
- Fish restocking / fish fry release[1]

UPDATE ON IMPLEMENTATION OF ENHANCEMENT MEASURES DIRECTLY FUNDED BY AAHK

Eco-enhancement of seawall designs

4. The purpose of eco-enhancing artificial seawalls is to enrich or enhance the marine biodiversity and ecological value of the seawalls. The AAHK has reviewed potential seawall eco-enhancement designs to best enhance or enrich biodiversity and ecological value, taking into consideration the local hydrodynamics around the 3RS reclamation areas and overall hydrodynamic conditions in North Lantau waters.

5. Granite rocks will be used to form the substrate of the armour rock on the sloping seawalls with a view to providing rough surfaces to facilitate and promote colonisation of epifauna. In addition, certain areas of the seawall will be further eco-enhanced with specially designed concrete blocks that incorporate pits and holes as well as rock pool features to increase microhabitat complexity and provide refuge for marine organisms.

6. Ecological monitoring is planned to ascertain the effectiveness of the eco-enhancement features, primarily by comparing intertidal assemblages between seawalls with and without eco-enhancement. Comparative performance assessments of the different eco-enhancement features adopted are also planned.

Voluntary surveillance and other potential measures that may aid or assist in the effective management of Marine Parks

7. The AAHK has conducted a feasibility study to identify potential measures that may aid or assist in the effective management of MPs. Different enhancement technologies have been reviewed as part of the feasibility study, and these potential measures are being further considered through a pilot test described below.

[1] Implementation would be subject to outcome of feasibility studies

8. A pilot test using voluntary surveillance (vessel- and land-based surveys) is now proposed over a period of approximately six months covering daytime and night-time periods to record suspected prohibited activities within Sha Chau and Lung Kwu Chau Marine Park ("SCLKCMP"). In addition, data received at the AAHK operated Marine Traffic Control Centre ("MTCC") for AIS-equipped vessels during the pilot test period will be analysed to identify patterns of vessel speeding inside the SCLKCMP and The Brothers Marine Park ("BMP") boundary.

9. The details of these measures and future reporting / communication protocol would be discussed with the Agriculture, Fisheries and Conservation Department ("AFCD") at the later stage. AFCD can determine how to use this additional information in their enforcement effort and successful measures may in future be adopted to assist overall marine park management effort.

Artificial reef deployment

10. The AAHK has also conducted a feasibility study on artificial reef ("AR") deployment to establish a scientific basis for whether ARs deployed in western Hong Kong waters can enhance ecological and fisheries value. The study reviewed AR design options and possible deployment locations in the area and considered the available local and overseas experiences with AR deployment. The feasibility study concluded that AR deployment is likely to have ecological and fisheries enhancement value.

11. A pilot test is recommended by the feasibility study to make use of certain AR designs to better determine the value of AR deployment in the area. The pilot test AR deployment area is proposed within the existing Hong Kong International Airport Approach Area ("HKIAAA") to the west of HKIA's south runway where fishing is prohibited, resulting in better potential for fishery nursery / recovery.

12. The proposed pilot test location is outside the 3RS works area in an area with similar characteristics to the potential areas where ARs are likely to be considered in the future. A mixture of quarry rocks and concrete blocks is proposed to provide a wide range of spaces and voids as well as irregular and rough surfaces to increase habitat complexity for colonisation. Monitoring will be conducted to assess the effectiveness of AR deployment, including fisheries surveys, benthic colonisation studies and structural monitoring of the actual ARs. The pilot test is expected to provide useful information for determining the potential value of ARs within the proposed 3RS MP. The deployment of ARs under the proposed pilot test will be subject to the successful authorisation under the Foreshore and Sea-bed (Reclamations) Ordinance.

Fish restocking / fish fry release

13. The AAHK has conducted a feasibility study on fish restocking / fish fry release to establish a scientific basis for whether such activities in western Hong Kong waters can provide benefit to or enhance the ecological and fisheries value of an area. After considering available local and overseas fish restocking experiences, the feasibility study concluded that fish restocking does have potential for restoring or enhancing populations as long as good restocking practices are adopted. The feasibility study recommended carrying out a pilot test using certain fish restocking methods and arrangements in order to better determine the value of fish fry restocking in the area.

14. The pilot fish restocking / fish fry release exercise is also proposed in the existing HKIAAA to the west of the HKIA's south runway as this location is outside the 3RS works area and has similar characteristics to the areas where fish restocking / fish fry release may be considered in the future. It is recommended to conduct the pilot test in two phases, the first phase taking place before the proposed AR deployment described above, while the second phase conducted after the proposed AR deployment. Fish species recommended to be released include native, reef-associated species that are generally available in nearby hatcheries and are known to be well adapted to western Hong Kong waters. Monitoring will be conducted to assess the effectiveness of fish restocking through fisheries surveys. The outcome of this pilot test will provide useful information for determining the potential value of fish restocking / fish fry release within the proposed 3RS MP.

NEXT STEPS

15. We would like to gather Members' views on the aforementioned pilot tests on voluntary surveillance, AR deployment and fish fry release. Subject to the views from Members, AAHK will proceed with the pilot tests as part of the committed marine ecological and fisheries enhancement measures for early implementation prior to the commissioning of the 3RS.

Airport Authority Hong Kong
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