



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

7th Professional Liaison Group Meeting

21 December 2018

Airport Authority Hong Kong

Agenda

1. Latest Progress of the 3RS Project
2. EM&A Updates
3. Marine Ecology and Fisheries Enhancement Strategy
4. 3RS Marine Park Designation



Latest Progress of the 3RS Project



Overview of 3RS Work Progress

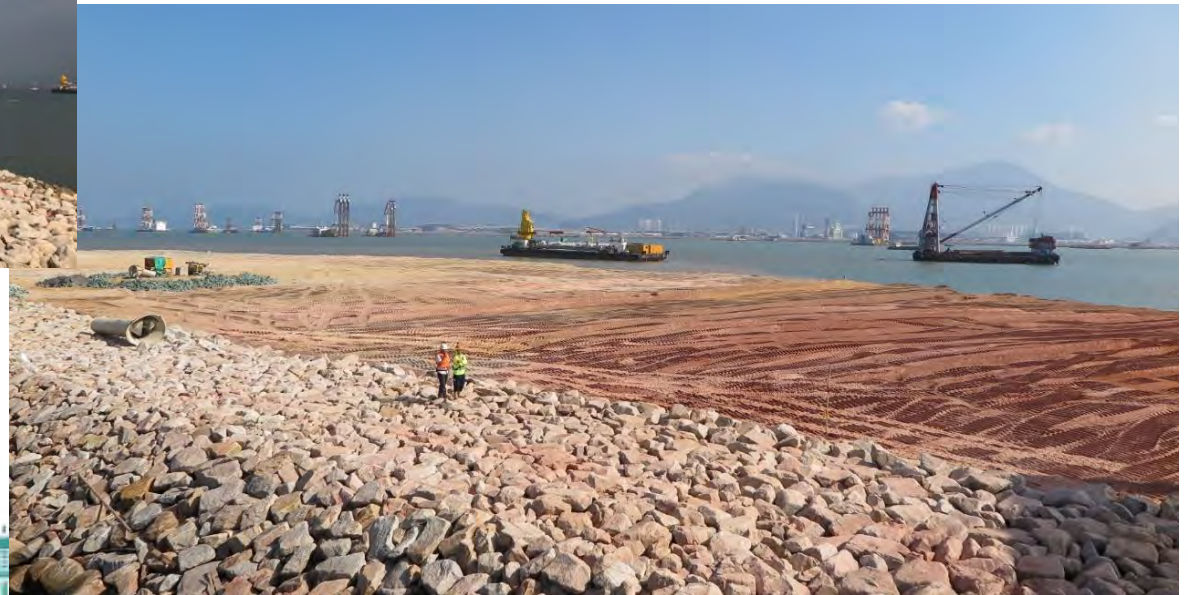
Activity	Status
Existing submarine cable and aviation fuel pipelines diversion works	Completed
Deep Cement Mixing Works	Substantially completed
Reclamation Works	In progress
Terminal 2 expansion works and foundation and substructure works	In progress
Automated People Mover (APM) depot	In progress
Design and build contracts of new APM and the new high-speed baggage handling system	In progress



Reclamation Activities



Seawall construction and filling activities



Supply of Fill Materials

Main reclamation contractor has been using a combination of fill materials from a number of sources

- Manufactured sand;
- Supplemented by public fill generated locally; &
- Imported fill materials



Public Fill

To step up the utilisation of public fill

- Set up more sorting facilities at fill banks
- Maximise the intake of suitable public fill

Tseung Kwan O Fill Bank (TKOFB)

- 3 sorting facilities have been set up

Tuen Mun Fill Bank

- Sorting facility is being set up, target to commission by Q1 2019



1st TKOFB sorting facility commenced in mid 2018



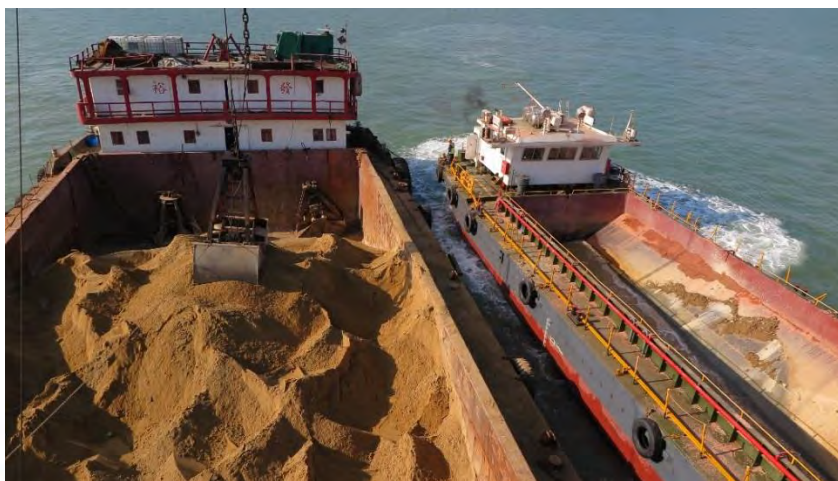
2nd and 3rd TKOFB sorting facility commenced recently



Public fill must be sorted before use



Public fill after sorting



Transportation of public fill to 3RS works area



Land-based Construction Activities



T2 expansion works and foundation and substructure works



APM Depot



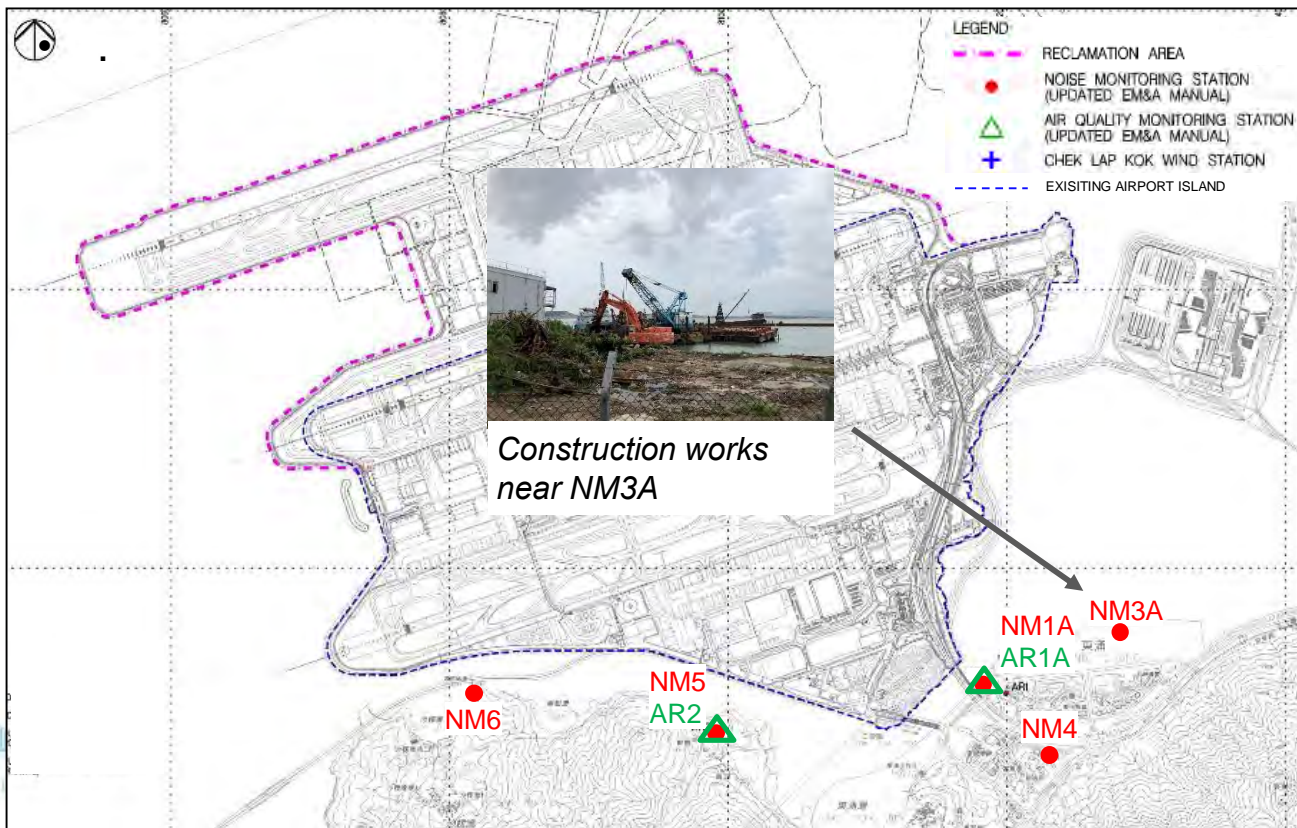
EM&A Updates



EM&A Monitoring Status (Jul-Nov 2018) (1)

Air Quality (2 stations) & Noise Monitoring (5 stations)

- 168 air quality and 97 noise monitoring events
- No exceedance of project-related Action/ Limit Levels was recorded
- Due to the commencement of construction works for Tung Chung East Development, noise monitoring at NM3A was suspended since September 2018



Air quality monitoring equipment (AR2)

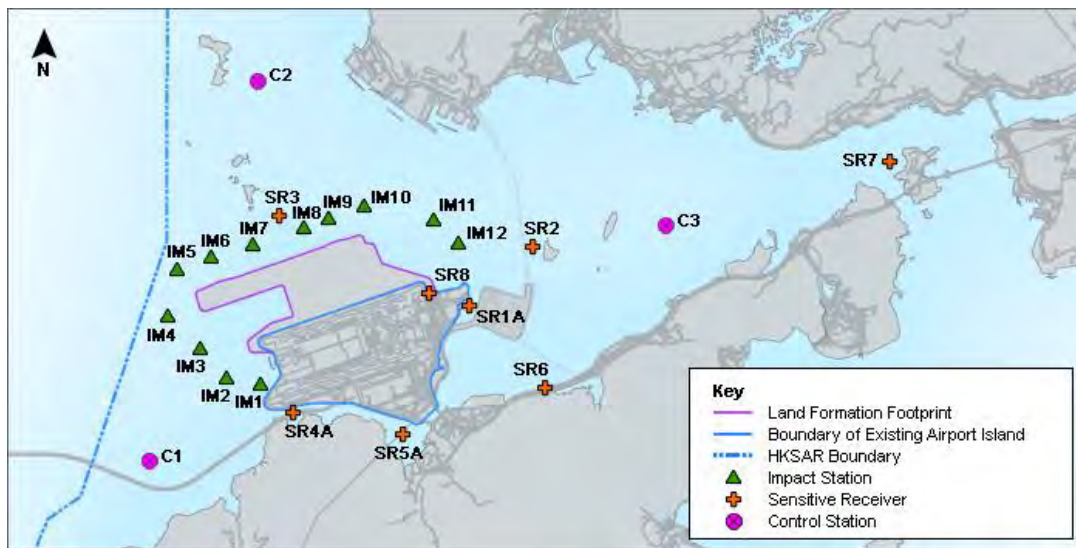


Noise monitoring equipment (NM1A)

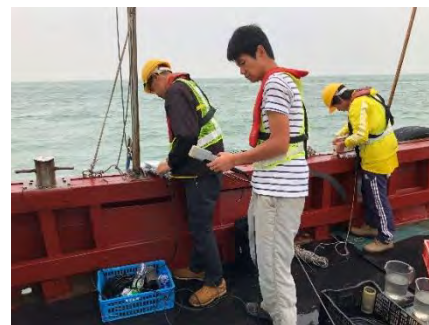
EM&A Monitoring Status (Jul-Nov 2018) (2)

General Impact & Regular DCM Water Quality Monitoring (23 stations)

- 12 impact stations, 8 sensitive receiver stations and 3 control stations
- 63 monitoring events
- No exceedance of project-related Action/ Limit Levels was recorded
- Monitoring at SR1A commenced in October 2018 with the commissioning of the HKBCF seawater intake



SR1A – HKBCF seawater intake



Water quality monitoring & sampling



EM&A Implementation (Jul-Nov 2018) (1)

Dolphin Exclusion Zone (DEZ)

- No Chinese White Dolphin (CWD) sightings occurred within DEZs in Jul-Nov 2018 (6 in 2017 and 6 in Jan-Jun 2018, during which works were temporarily suspended in accordance with the DEZ Plan, and only resumed until DEZ was clear of dolphins for a continuous period of at least 30 minutes)
- Conducted ad-hoc inspections in both daytime and night-time to check the performance of dolphin observers in DEZ implementation
- 12-23 dolphin observation stations were deployed by the contractors for continuous monitoring of the DEZ



EM&A Implementation (Jul-Nov 2018) (2)

313 environmental site inspections (marine and land-based works) were conducted during the period

Construction Noise Management

- Implemented Permit-to-work system with contractors to ensure compliance of the requirements of Construction Noise Permits (CNP)
- A cumulative total of 16 CNP trainings were provided

Construction Dust Mitigation Measures

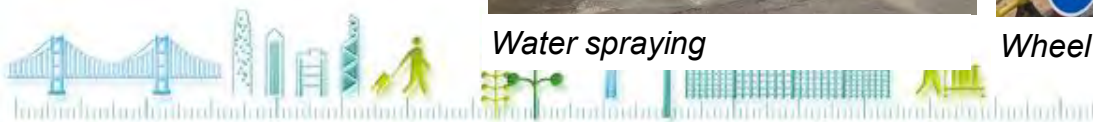
- Water spraying applied on site regularly to suppress fugitive dust emission
- Dusty stockpile, construction works and plants were covered with tarpaulin sheets to minimise dust emission



Water spraying



Wheel washing facility



EM&A Implementation (Jul-Nov 2018) (3)

Construction Wastewater Management

- Site practices outlined in guidelines and practice notes are followed to minimise surface runoff from construction site
- Regular checking of wastewater treatment facility on site to ensure all wastewater was treated according to the requirement of the Water Pollution Control Ordinance (WPCO) prior to discharge



Regular checking of wastewater treatment facility

Construction Waste Management

- Different types of waste are segregated on site to maximise re-use and proper disposal
- Regular checking of contractors' chit tickets and waste disposal record to ensure proper implementation of waste management system

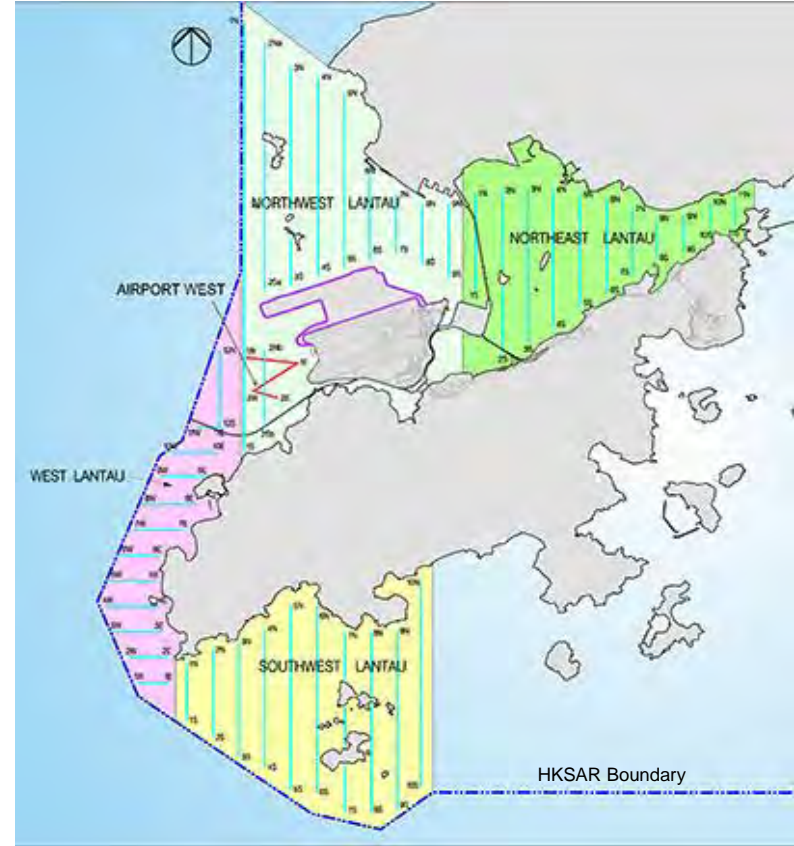


Checking of records presented by truck driver on delivery of construction and demolition (C&D) waste



CWD Monitoring Results – Vessel-based Line Transect Survey (Jul-Nov 2018)

- 10 rounds of vessel-based line transect surveys, covering a total distance of 2,251km, were conducted
- 99 groups of CWDs with 307 dolphins were sighted
- First CWD sighting in NEL survey area in Aug 2018, with another one in Oct 2018
- Most CWD sightings were recorded in WL survey area; similar number of sightings in NWL and SWL survey areas were recorded
- The waters off Lung Kwu Chau (LKC) remain important habitats for CWDs in Hong Kong
- Average CWD group size was 3.1, ranging from 1 to 15 dolphins; 18 sightings were recorded with the presence of mother and calf



CWD Monitoring Results – Land-based Theodolite Tracking (Jul-Nov 2018)

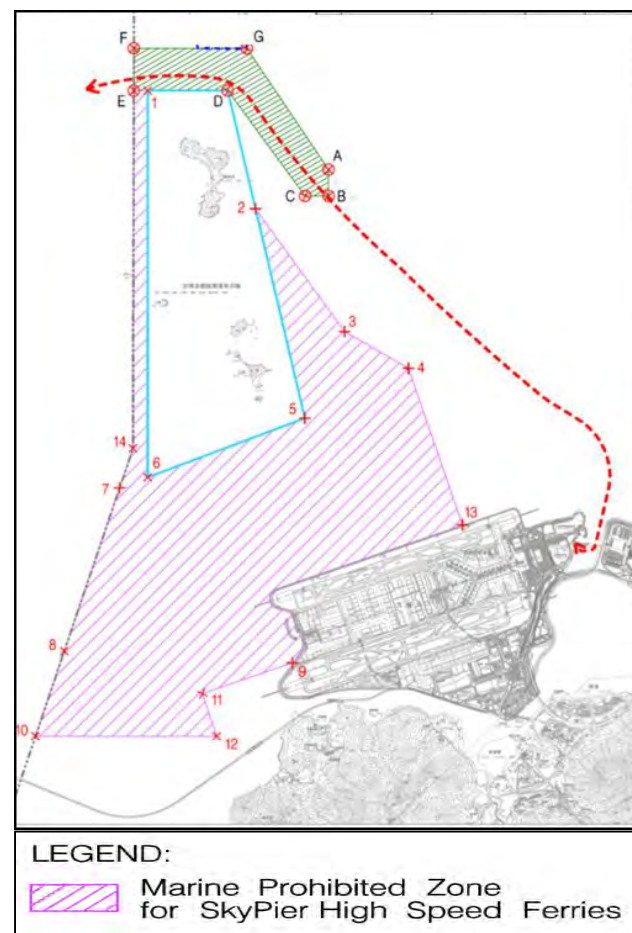
- 25 days (150 hours of effort) land-based theodolite tracking were conducted on Lung Kwu Chau (LKC) and Sha Chau (SC)
- 48 CWD groups were tracked from LKC station
- No CWD groups were tracked from SC station



Implementation of Marine Traffic Route and Management Plan for High Speed Ferries of SkyPier (SkyPier Plan) (Jul-Nov 2018)

- Total no. of diverted HSF trips*: 4,334
- Diverted SkyPier HSF trips* with average speed within 15 knots: 99.98%
- Maximum daily no. of SkyPier HSF movement: 102 (within the maximum daily cap of 125 movements)
- Annual daily average SkyPier HSF movements: 72 (within the maximum cap of 99 movements)
- No. of workshops held to discuss previous deviation cases and share experience to further strengthen the implementation of SkyPier Plan: 2

* To and from Zhuhai & Macau



Update on Review of Impact on CWD due to Fisheries Activities

Background

A suggestion raised in earlier PLG meeting to review impact on CWD due to changes in fisheries activities after trawl ban on 31 December 2012

Works Done

1. Reviewed CWD stranding data in last decade
2. Interviewed fishermen in Western Hong Kong waters in 2017 for comparison with 2013 findings
3. Carried out surveys on fisheries activities for 12 months (September 2016 to August 2017) as part of the CWD surveys

Outcome

No conclusive findings from the review due to:

1. No observable trend in CWD stranding data before and after trawl ban;
2. Limited number of interviews that could be conducted; &
3. Limited observations of CWD associated with fishing vessels.



Complaints and Enquiries Handling

	2015 (from 28 Dec)	2016 (Full Year)	2017 (Full Year)	2018 (Jan-Jun)	2018 (Jul-Nov)
Complaints	0	1	7	4	4
Enquiries	0	25	16	9	9
Total	0	26	23	13	13



Marine Ecology and Fisheries Enhancement Strategy



Year 2017/18 Completed MEEF Funded Projects (1)

Results & Outcome



Year 2017/18 Completed MEEF Funded Projects (1)

Monitoring of population dynamics of Indo-Pacific humpback dolphins (*Sousa chinensis*) in Lingding Bay of the PRD region (cont'd)

Results & Outcome (cont'd)

- Estimated CWD abundance in Lingding Bay*:
945 (2017-18) vs 957 (2015-16) vs 1,167 (2005-06)
- Dolphin densities:
Highest – Macau (89 individuals/100 km²)
Lowest – Southwest Macau (6 individuals/100 km²)
- Declining trend has likely stabilised in the past few years
- 162 individual dolphins with 279 re-sightings were identified (43 individuals never occurred in Hong Kong waters in past 2 decades + 119 individuals regularly sighted around Lantau Island)

Next Step & Recommendation

- Recommended to continue long-term monitoring



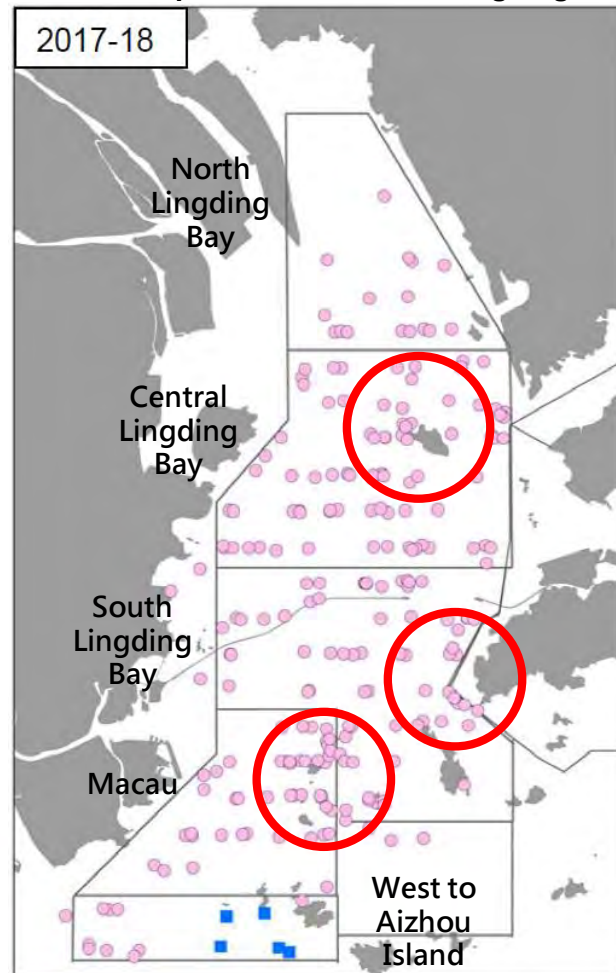
* Remarks: Estimated CWD abundances for Years 2005-06 and 2015-16 were referenced from the followings and will be updated according to the project's final Completion Report to be accepted by the MEEF Management Committee:

1. Chen T, Hung SK, Qiu YS, Jia XP, Jefferson TA (2010). Distribution, abundance, and individual movements of Indo-Pacific humpback dolphins (*Sousa chinensis*) in the Pearl River Estuary, China. *Mammalia* 74: 117-125.
2. <http://www.hzmb.org/cn/bencandy.asp?id=3903>

Year 2017/18 Completed MEEF Funded Projects (1)

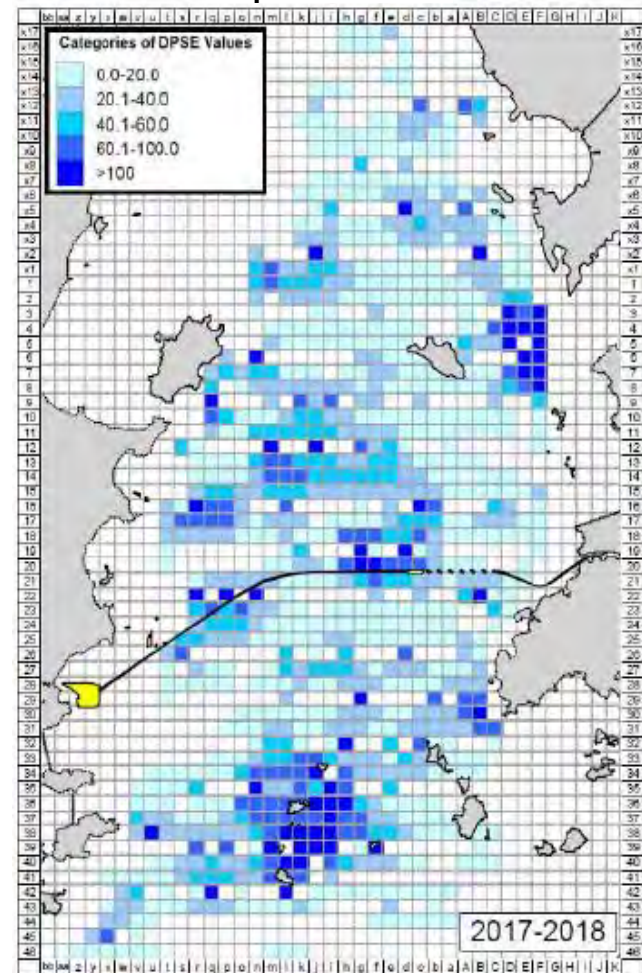
Monitoring of population dynamics of Indo-Pacific humpback dolphins (*Sousa chinensis*) in Lingding Bay of the PRD region (cont'd)

Distribution patterns of CWD in Lingding Bay



Southwest waters to
Macau

Dolphin densities



Year 2017/18 Completed MEEF Funded Projects (2)

Virtopsy for characterization and documentation of injury and death caused by human interaction, in stranded Indo-Pacific humpbacked dolphins (*Sousa chinensis*) in the HK waters

Results and Outcome

- Performed virtopsy on 36 stranded cetaceans (6 CWDs, 25 FPs and others) from July 2017 to June 2018
- 19 were considered associated with human interactions (including fishery and vessel interaction)
- 17 were associated with different causes of death, e.g. respiratory diseases, drowning and natural death

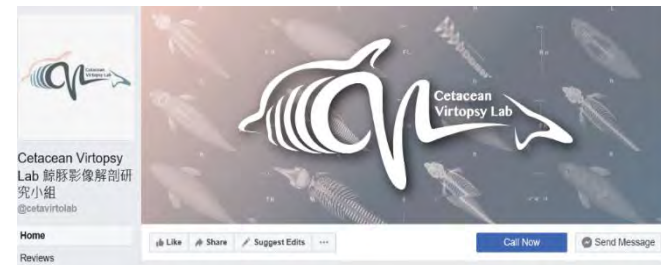


Year 2017/18 Completed MEEF Funded Projects (2)

Virtopsy for characterization and documentation of injury and death caused by human interaction, in stranded Indo-Pacific humpbacked dolphins (*Sousa chinensis*) in the HK waters (cont'd)

Results and Outcome

- Preliminary results of 3-D models demonstrated excellent colour-texture information, allowing further data postprocessing and measurement in a true-to-scale 3-D model
- A standardised protocol on 3-D surface scanning of cetacean carcass was established
- Data compilation of 118 virtopsy cases and respective links between the web server and DICOM viewer were completed. Inclusion of the corresponding stranding information and other multimedia of retrospective cases are in progress
- Virtopsy findings shared bilingually on stranded cetacean blog



Year 2017/18 Completed MEEF Funded Projects (2)

Virtopsy for characterization and documentation of injury and death caused by human interaction, in stranded Indo-Pacific humpbacked dolphins (*Sousa chinensis*) in the HK waters (cont'd)

Results and Outcome (cont'd)

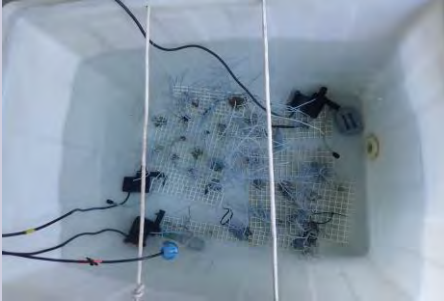

- Delivered outreach activities (public seminar, talks, workshops jointly organised with the Hong Kong Science Museum and universities)
- Published 3 peer-review articles and 1 conference proceedings entitled “Three-dimensional surface scanning in postmortem investigation of stranded cetaceans: A step-by-step guide for carcass surface documentation” in an international conference in May 2018

Next Step & Recommendation



- Continue to upgrade the established web-based database to be more comprehensive and user-friendly
- Enhance communication and collaboration amongst cetacean health scientists and veterinarians for better understanding of relationship between health and environmental factors



Year 2017/18 On-going MEEF Funded Projects (1)

Project	Progress / Key Project Outcomes
<p>Reproductive Biology of the Dominant Octocoral <i>Guaia</i>gorgia in Hong Kong Western Waters</p> 	<ul style="list-style-type: none"> Sampling was conducted in November and December 2017, initial results showed that gonads were not present in the polyps of the coral species
<p>Revealing cryptic faunal biodiversity in HK western waters using environmental DNA approach</p> 	<ul style="list-style-type: none"> Identified the ability of using eDNA to detect fish and crustacean species in western waters of Hong Kong Spatial variation of species composition and unexpected taxa revealed by eDNA datasets Identified limitations and potential applications of using eDNA in ecological studies

Year 2017/18 On-going MEEF Funded Projects (2)

Project	Progress / Key Project Outcomes
<p>Contributing to Marine Spatial Planning: working with fishing communities to map areas of dolphin and active fishing gear overlap</p> 	<ul style="list-style-type: none"> • Autonomous acoustic devices have been deployed in fishing vessels • Conducted interviews with fishermen in Tuen Mun, Cheung Chau and Tai O • Change of data collection method through contacting fishermen at their workplace rather than through formal meetings • Overall project will end in late December 2018 • Planned to conduct a group meeting with 3 fishing communities to present study findings
<p>Conservation Ecology of Chinese White Dolphins across the Pearl River Estuary Phase 2: Population Parameters, Socio-Demographic Structure and Habitat Requirements</p> 	<ul style="list-style-type: none"> • Conducted 21 and 35 boat-based surveys in Hong Kong and PRE respectively with a total of 1,168 dolphin sightings • Preliminary analysis on CWD population numbers and habitat use pattern across in Eastern PRE, including mark-recapture analysis, and analysis of health conditions through photo-ID • Evidence to support that the reliance of CWD on coastal habitats for daily needs and survival

Year 2018/19 On-going MEEF Funded Projects

Project

Virtopsy for characterization and documentation of injury and death caused by human interaction, in stranded Indo-Pacific humpbacked dolphins (*Sousa chinensis*) in the Hong Kong waters

Conservation Ecology of Chinese White Dolphins across the Pearl River Estuary Phase 2: Population Parameters, Demographic Structure and Habitat Requirements

Unravelling the strength behind the ecosystem resilience of Tung Chung mangrove: A high-resolution mapping of its food web

Long-term monitoring of population dynamics of Chinese White Dolphins (*Sousa chinensis*) in Lingding Bay of the Pearl River Delta region: the second stage

What Do Dolphins Do At Night? Filling knowledge gaps in night time range and behaviour activities of Chinese White Dolphins in Hong Kong

Impact of microplastics on the Chinese horseshoe crab *Tachypleus tridentatus* in Hong Kong western waters (change of project commencement date from 1 July to 23 July 2018)



Year 2017/18 Completed FEF Funded Projects (1)

Pearl Farming Pilot Project

Results & Outcome

- The growth of pearl oysters was satisfactory, overall survival rate was ~80%
- Size of pearl oysters: ~5-8 cm in length
- Project progress and performance within expectations



Next Step & Recommendations

- Conducting pearl seeding in FY 2018/19
- Embedding RFID tags into the pearl nucleus is not considered for cost saving
- Continuous monitoring the growth of pearl oysters and the nucleus after pearl seeding

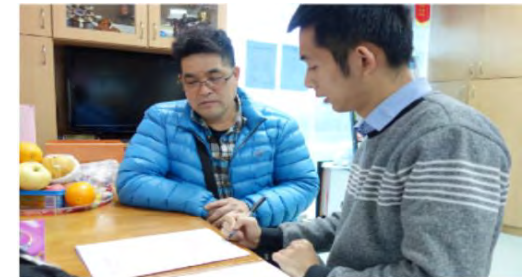


Year 2017/18 Completed FEF Funded Projects (2)

Study on the Current Status of Capture Fisheries Industry in Hong Kong and Strategy towards Sustainable Fisheries Development

Results & Outcome

- Completed 310 numbers of questionnaires on the current status of capture fisheries industry in Hong Kong
- Major findings of the surveys
 - Fishing boats and fishing equipment are old and without automation
 - Fisheries production area is limited
 - Fishermen are aging, without retirement or fishing moratorium subsidy. Young people are not willing to work in the industry and recruitment of workers is hard
 - Limited profit due to the increase in fuel consumption and labour cost
 - Extended fishing moratorium, limited financial support and environmental pollution affected the sustainable development of fisheries industry



Year 2017/18 Completed FEF Funded Projects (2)

Study on the Current Status of Capture Fisheries Industry in Hong Kong and Strategy towards Sustainable Fisheries Development (cont'd)

Results & Outcome (cont'd)

- Compiled a Study Report for sharing the findings with AFCD after agreement with FEFMC. Major recommended policy updates on capture fisheries industry in Hong Kong
 - Renewal of old fishing boats with navigation equipment and advanced technological equipment
 - Delivering workshops on the use of equipment and vessel control to fishermen and their children during fishing moratorium
 - Investigating fishermen pension system
 - Offering subsidy during fishing moratorium
 - Encouraging fishermen to participate in marine park management
 - Implementing fishing moratorium with proper enforcement and prohibition of electric fishing, illegal fishing and sand mining activities



Year 2017/18 Completed FEF Funded Projects (2)


Study on the Current Status of Capture Fisheries Industry in Hong Kong and Strategy towards Sustainable Fisheries Development (cont'd)

Next Step & Recommendations

- Presenting the Study findings to relevant fishermen organisations for support in policy updates
- Liaising with AFCD to draw up a strategy towards sustainable fisheries development
- Publication of papers on the Study findings by the study team for sharing with local and Mainland China academics



Year 2017/18 & 2018/19 On-going FEF Funded Projects

Project	Progress / Key Project Outcomes
<p>Year 2017/18 Installation of Radar Reflector for Fishing Vessels under 15 m</p> 	<ul style="list-style-type: none"> • Installed more than 500 radar reflectors for fishing vessels under 15m • Questionnaire surveys were conducted to evaluate whether the radar reflector is useful to fishermen
<p>Year 2017/18 & 2018/19 Pearl Farming Pilot Project</p>	<ul style="list-style-type: none"> • Continuous monitoring the growth of pearl oysters and the nucleus after pearl seeding • Delivered workshop on the techniques in pearl seeding to selected local fishermen • Pearl seeding to be undertaken
<p>Year 2018/19 Development of Mobile Application to Support the Sales of Local Capture Fisheries</p>	<ul style="list-style-type: none"> • Undertaking market research on the conventional seafood sales model and the demand of customers in Hong Kong

Potential Enhancement Measures

Potential Enhancement Measures	Status
Eco-enhancement of seawall design	Contractors are constructing the seawall according to design, eco-enhanced seawall blocks are being fabricated for installation
Voluntary surveillance & potential measures that may aid or assist in the effective management of Marine Parks	A six-month pilot test was conducted from May to October 2018. The test recorded any activities suspected to be non-compliant and information was shared with AFCD
Artificial reef deployment	Feasibility studies have been conducted, preparation for the pilot tests in progress
Fish restocking / Fish fry release	Feasibility studies have been conducted, pilot test to be conducted in 2019



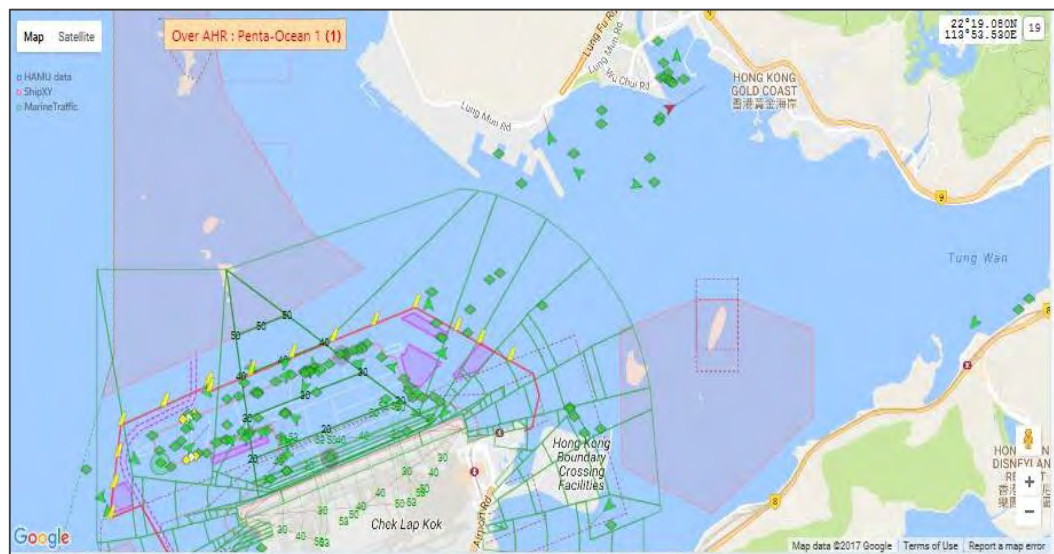
Eco-enhancement of Seawall Design

- Eco-enhancement seawall design, which incorporates concrete seawall blocks and vertical seawall panels with rough surfaces to facilitate and promote colonisation of epifauna and to increase microhabitat complexity



Voluntary Surveillance and Potential Measures that May Aid or Assist In the Effective Management of Marine Parks

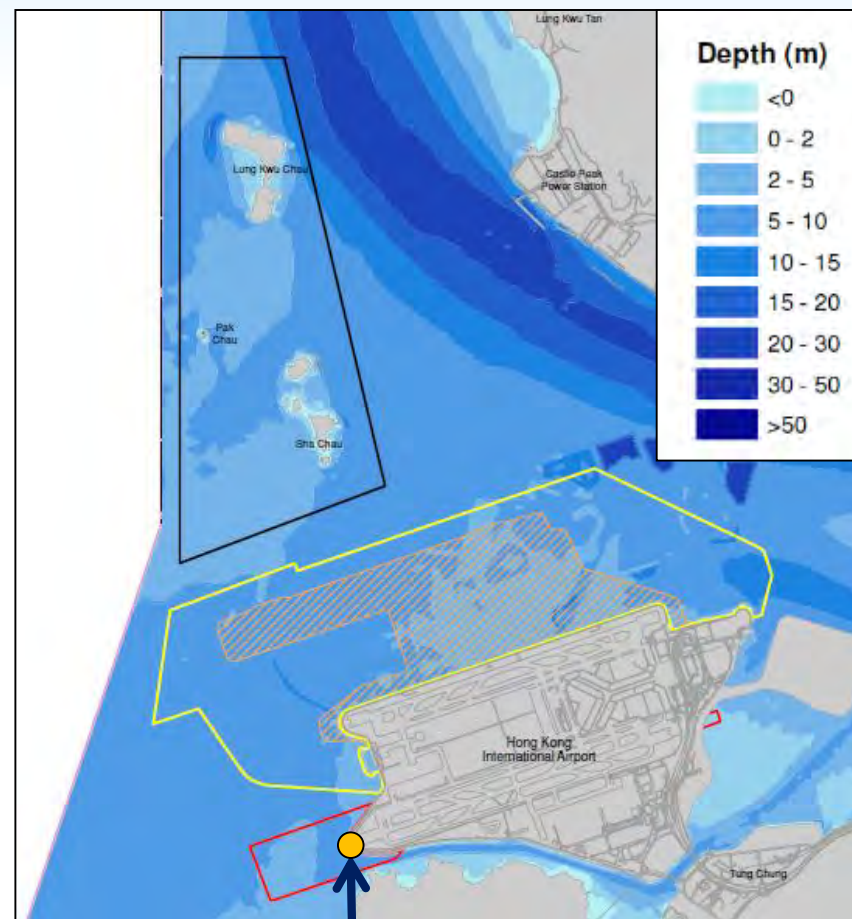
- Surveillance in SCLKCMP* and BMP conducted from May to October 2018
- Included review of historical vessel data from land-based CWD monitoring; MPVMS to record any vessel equipped with automatic identification system (AIS); and regular surveillance patrol
- Over 20,000 vessels were monitored in the surveillance by both MPVMS and regular surveillance patrol. Suspected cases were recorded including possible anchoring or mooring, possible fishing and speeding over 10 knots within the Marine Parks
- Information and experience shared with the AFCD



* SCLKCMP: Sha Chau and Lung Kwu Chau Marine Park; BMP: The Brothers Marine Park;
MPVMS: Marine Park Vessel Monitoring System

Pilot Test on Fish Restocking

- Proposed time of 1st round release:
April / May 2019
- Proposed species: Green Grouper,
Yellowfin Seabream, Black Seabream
- Size: ~10-15 cm each
- Quantity: ~9,000-12,000 fingerlings
- Underwater release and near the
existing artificial seawall within
HKIAAA

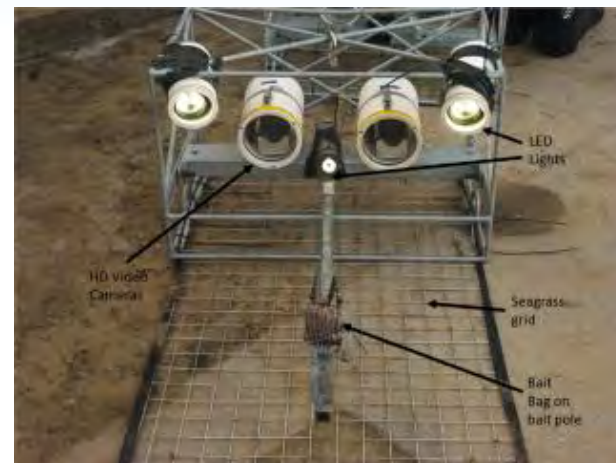


Fish Restocking at Artificial Seawall
(within HKIAAA)

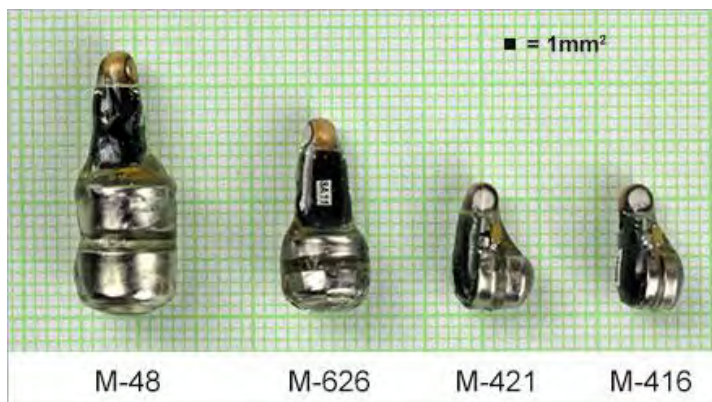


Monitoring for the Pilot Test on Fish Restocking

- Proposed monitoring methods including
 - Cage-trapping and Hand-lining
 - Baited Remote Underwater Video System (BRUVS)
 - Acoustic tags and monitoring
- Pre-release and post-release surveys to monitor effectiveness



Baited Remote Underwater Video System



Acoustic tags



Cage-trapping and hand-lining



3RS Marine Park Designation



Background of the Proposed Marine Park

December 2015

Submitted
Marine Park
Proposal to ACE

Present the preliminary location, layout, size and management plan of the proposed Marine Park

March 2016

Submitted
Marine Park
Proposal to DEP

DEP approved the Marine Park Proposal on 18 March 2016

Late 2016

Commenced
Marine Park
Detailed Study

Conduct stakeholder consultation since EIA Study to obtain views on the marine park design and preliminary management plan for the proposed Marine Park



Key Considerations of the Marine Park Design

1. Interconnectivity of the Marine Protected Areas

- Enhance CWD conservation and explore integrated management of marine parks

2. Habitats for CWD

- Enhance CWD conservation on major CWD habitats

3. Fisheries Resources

- Enhance fisheries resources and as prey resources for CWD

4. Size and Extent of the Marine Park

- Connect with SCLKCMP, BMP, Pearl River Estuary Chinese White Dolphin National Nature Reserve (PRECWDNNR); with size of ~2,400 ha in accordance with the EP

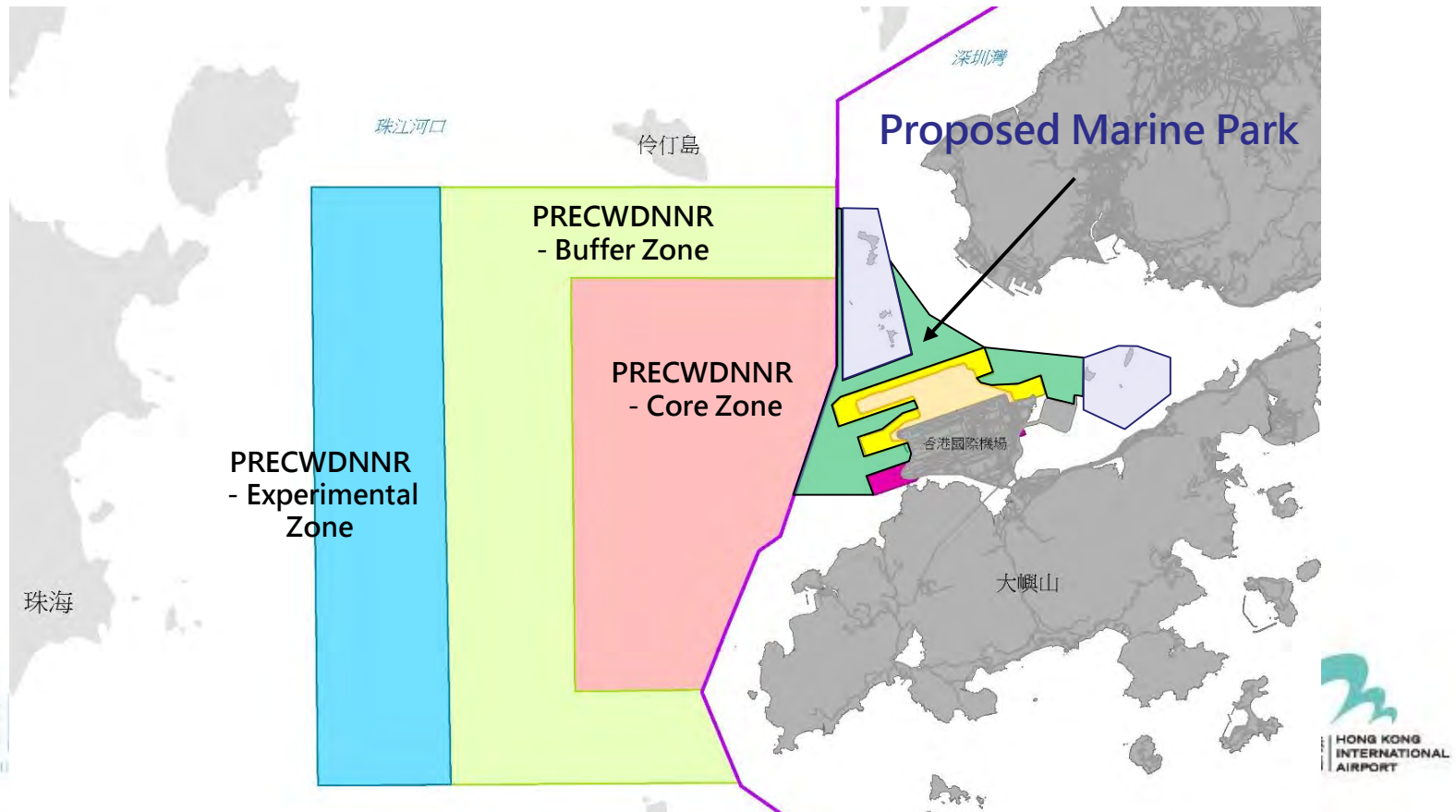
5. Compatibility with Existing and Planned/ Potential Marine Uses and Development

- Fairways, infrastructure developments, facilities & utilities, HKIAAA

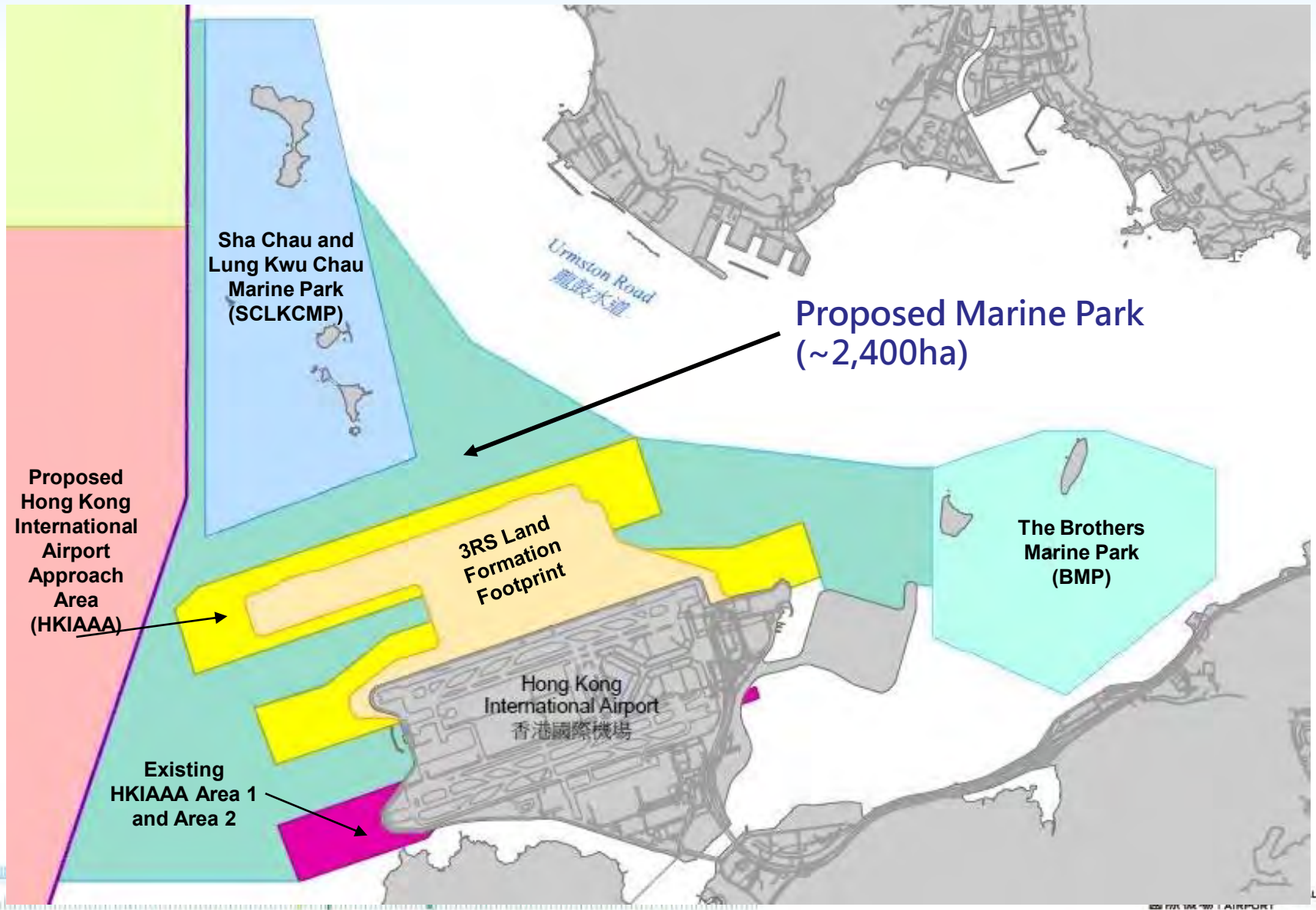


Proposed Marine Park Boundary (1)

- Connect with SCLKCMP, BMP, PRECWDNNR
- Compensation for the seabed habitat and open waters habitat loss associated with the land formation for the Project
- Aim to protect and conserve the marine environment around Hong Kong International Airport



Proposed Marine Park Boundary (2)



Goals and Management Targets

Goals – SMART (specific, measurable, achievable, results-focused, and time-bound)

- Goals related to CWD or marine habitats, in line with the objective of 3RS Marine Park

Management Targets

- Establish core areas to provide safety net for fisheries resources
- Undertake ecological and fisheries enhancement measures
- Undertake publicity programmes / activities for promotion of public awareness on marine conservation
- Undertake ecological and environmental monitoring to evaluate effectiveness of marine park



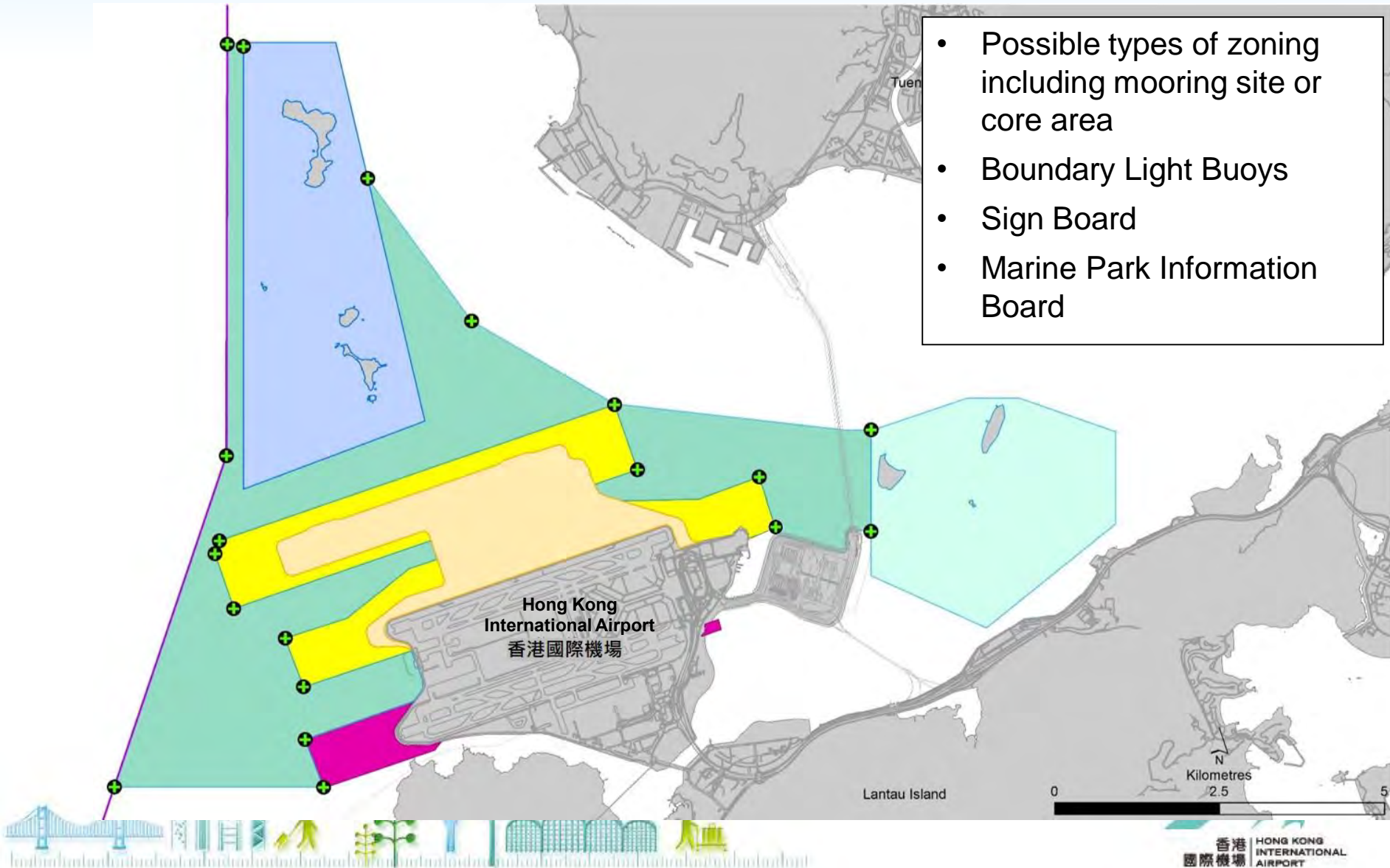
Management for the Proposed Marine Park

- The proposed Marine Park will be managed and controlled in accordance with the Marine Parks and Marine Reserves Regulation (Cap. 476A) for conservation, recreation, education and scientific research purposes
- Activities such as boating (within the 10 knots vessel speed restriction) and dolphin watching will be allowed
- The AFCD will be responsible for the operation and management of the proposed Marine Park after its designation under the Marine Parks Ordinance (Cap. 476)



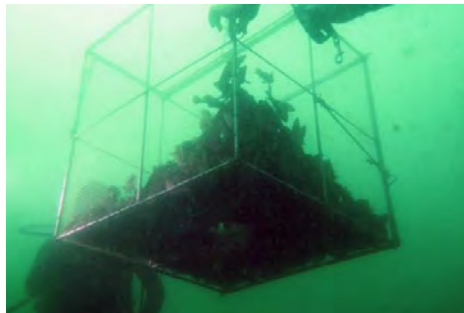
Zoning Scheme and Park Administration

- Possible types of zoning including mooring site or core area
- Boundary Light Buoys
- Sign Board
- Marine Park Information Board



Marine Ecological and Fisheries Enhancement Measures

- Conducted feasibility studies on artificial reef (AR) deployment and fish fry restocking to evaluate their enhancement value and suitability within the proposed 3RS Marine Park
- Progressing with preparatory works for pilot tests on AR design and fish restocking methods and arrangements to provide useful information for determining the potential value of AR and fish fry restocking
- Other enhancement measures will also be explored within the proposed 3RS Marine Park to enhance its ecological and conservation values in consultation with stakeholders



Fisheries Management Measures

Installation of CCTV

- Explore the feasibility in conducting trial for installation at Sha Chau (e.g. Aviation Fuel Receiving Facility)

Voluntary Surveillance

- Pilot test conducted between May and October 2018
- Automatic monitoring of AIS-equipped vessel activities and voluntary patrol



Public Uses and Education

- Public exhibition, school publicity and promotions
- Eco-tours, eco-guide training, other education and publicity programme will be encouraged



Ecological and Environmental Monitoring Programme

- CWD
- Fisheries resources and fishing operations
- Water quality



Way Forward



**Designation to tie in with
3RS full operation**



Thank You

