SHAPING OUR AIRPORT OUR FUTURE

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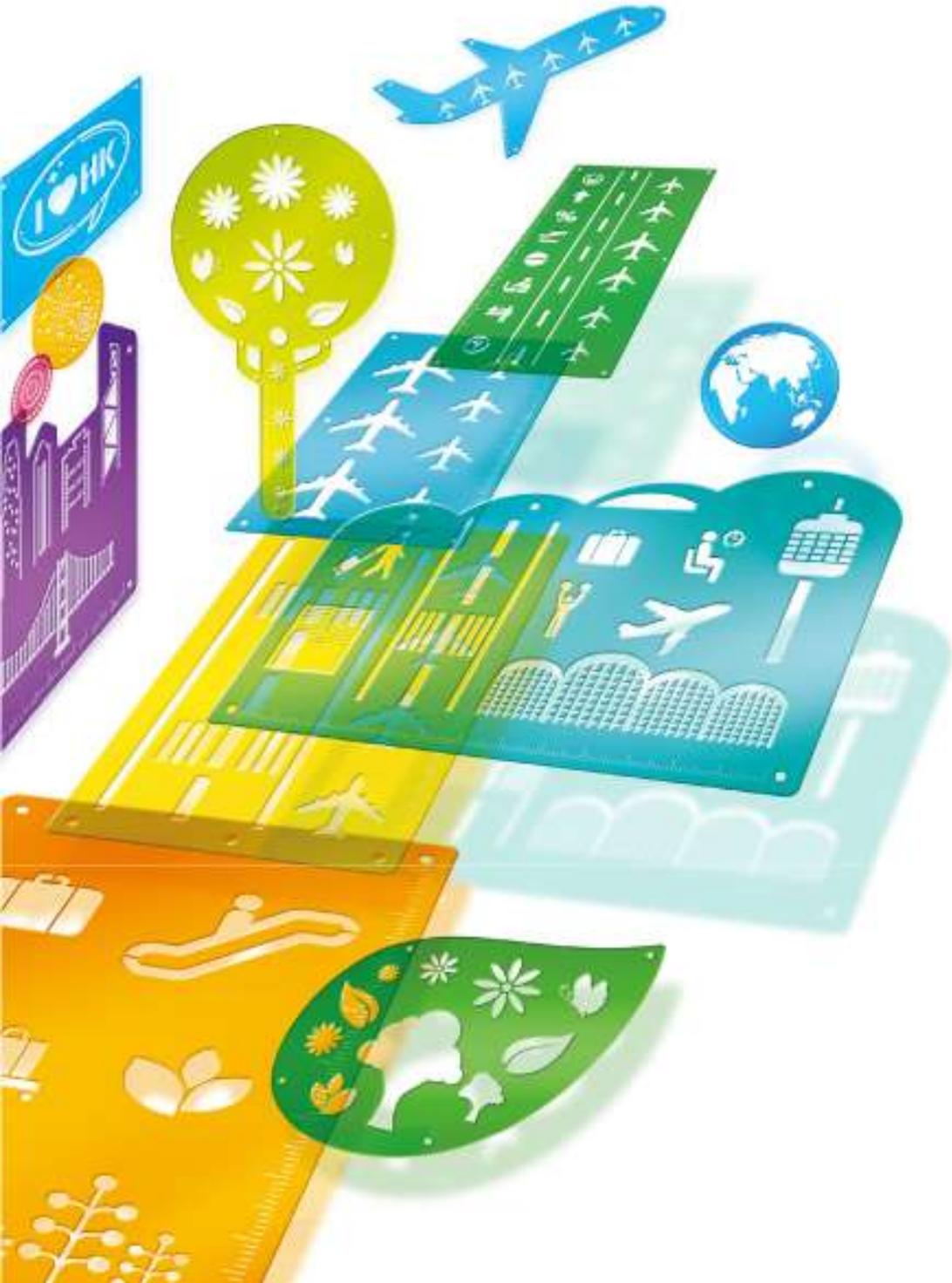


Expansion of Hong Kong International Airport into a Three-Runway System

3rd PLG Meeting
7 September 2016

Airport Authority Hong Kong

Agenda

1. Latest Progress of the 3RS Project

2. Route diversion for High Speed Ferries of SkyPier – Implementation, Monitoring & Update on Effectiveness

3. Baseline Monitoring Results and EM&A Event and Action Plan

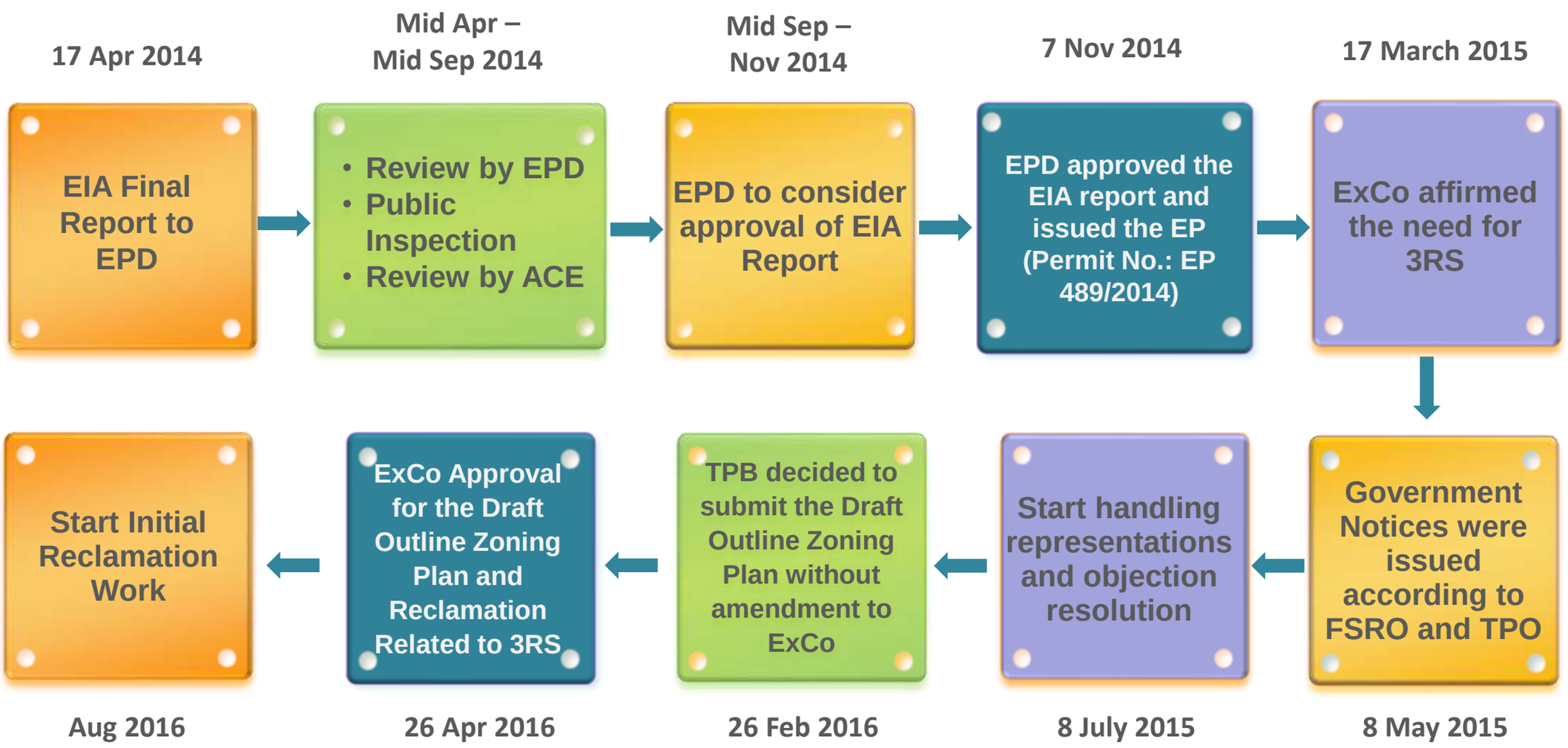
4. Coral Translocation Plan – Formulation, Implementation and Monitoring

5. Other EM&A Updates

6. Marine Ecology and Fisheries Enhancement Funds

Latest Progress of the 3RS Project

Statutory Approval Process



Airport Expansion
more than just a new runway

The whole three-runway system (3RS) is an infrastructure project which involves reclamation of approximately 650 hectares of land, a 3,800m-long new runway and related taxiways, a new passenger concourse and an apron with 57 parking positions, a 2.6km-long Automated People Mover system, a new high-speed Baggage Handling System, and the expansion of the existing Terminal 2, etc.

New Passenger Concourse and 57 parking positions

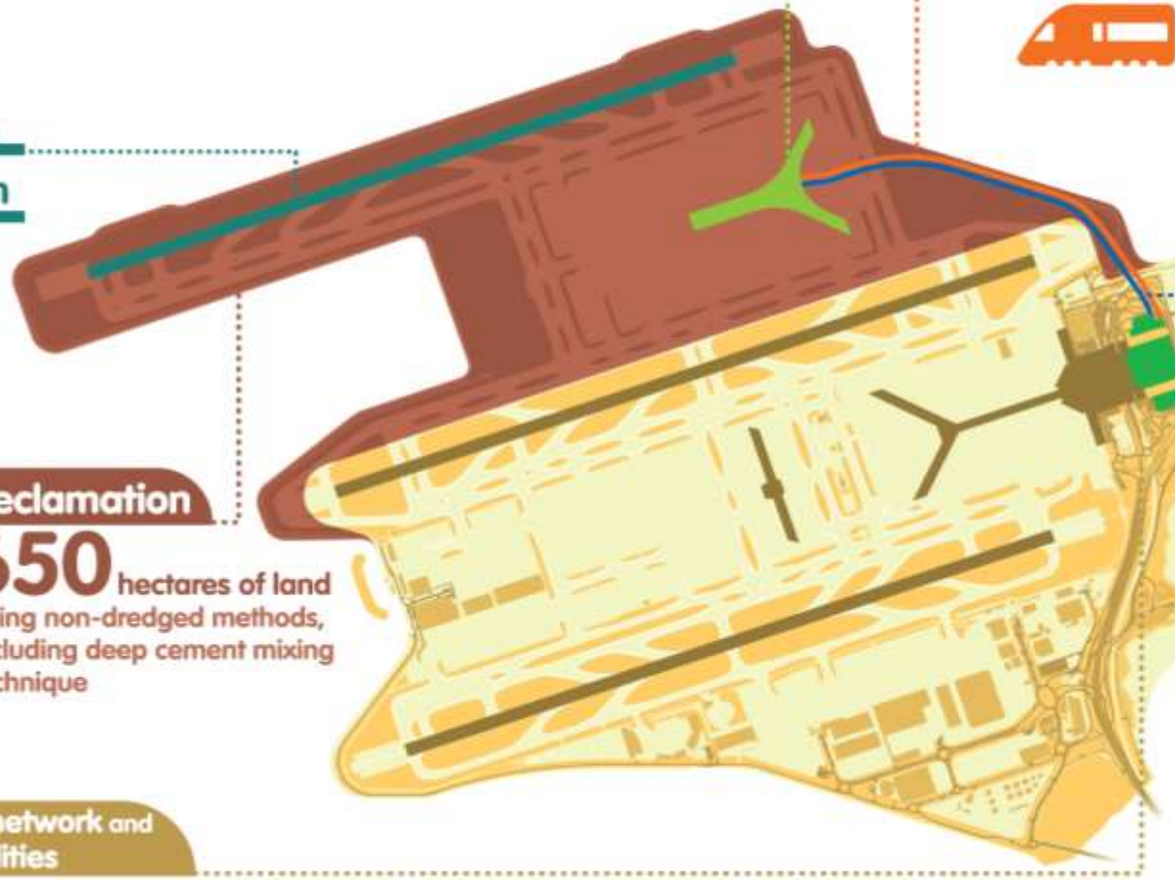
Floor area: **283,000** sq m

New Automated People Mover system

Top speed: **80** km/h

New runway

3,800m



New Baggage Handling System

Baggage transport speed: **25-36** km/h

Reclamation

650 hectares of land

Using non-dredged methods, including deep cement mixing technique

Expansion of Terminal 2

Providing arrivals, departures and full-fledged passenger services

Comprehensive road network and transportation facilities

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Construction Works Programme

3RS Phasing Programme	2016	2017	2018	2019	2020	2021	2022	2023	2024
Advanced Works									
Aviation Fuel Pipeline Diversion									
Power Cable Diversion									
Land Formation									
Mobilization									
Sand Blanket Laying									
Ground Improvement Works									
Construction of Seawall									
Marine Filling									
Land Filling									
Surcharge									
Works After Closure of Existing North Runway									
North Runway (New)									
Centre Runway Modification									
TRC/ Apron									
T2 Expansion (Advance Works)									
T2 Expansion (Main Works)									
Underground Tunnel (APM/ BHS)									
APM System									
BHS									
Operation Trials									

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Timeline for 3RS Construction

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Marine Works Activities (1)

- **Site Investigation**

Marine Works Activities (2)

- **Laying of Sand Blankets**

Marine Works Activities (3)

- **Ground Improvement Works by Deep Cement Mixing**

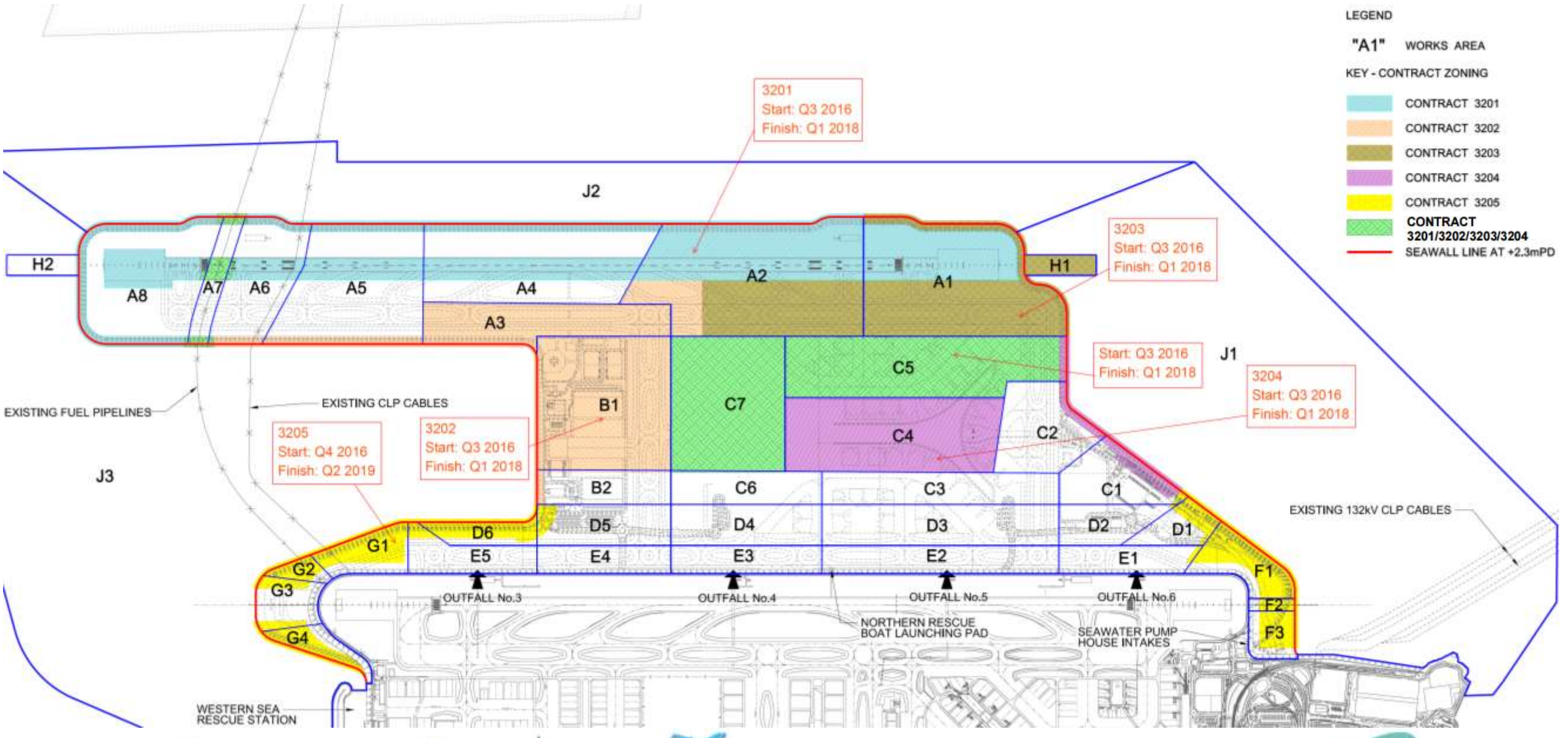
Single Rig

Low-headroom Rig

Multiple Rigs

Locations of Deep Cement Mixing Works

Five main DCM contracts covering six DCM contract areas
(in both CMP and non-CMP areas)



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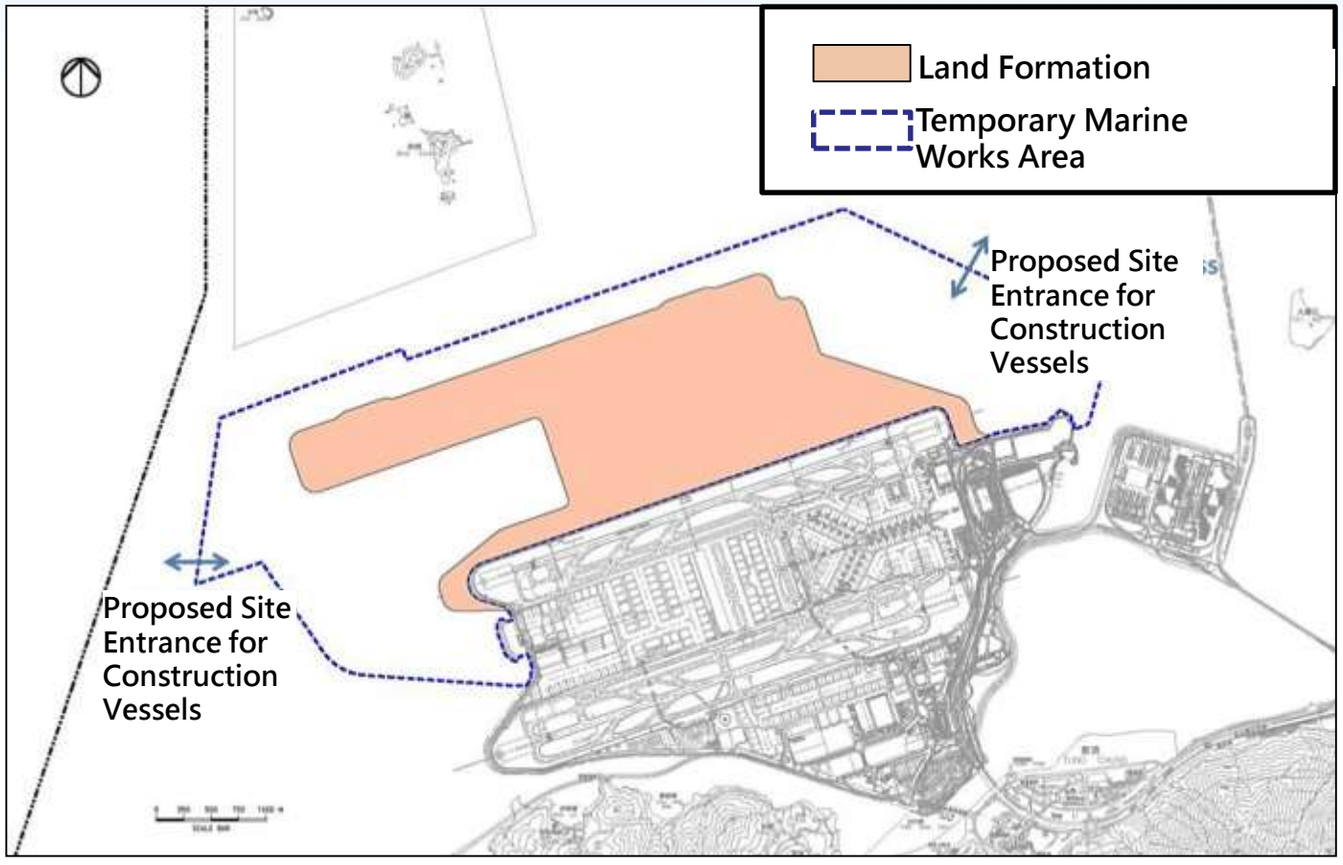
Temporary Marine Works Area and Marine Traffic Arrangement

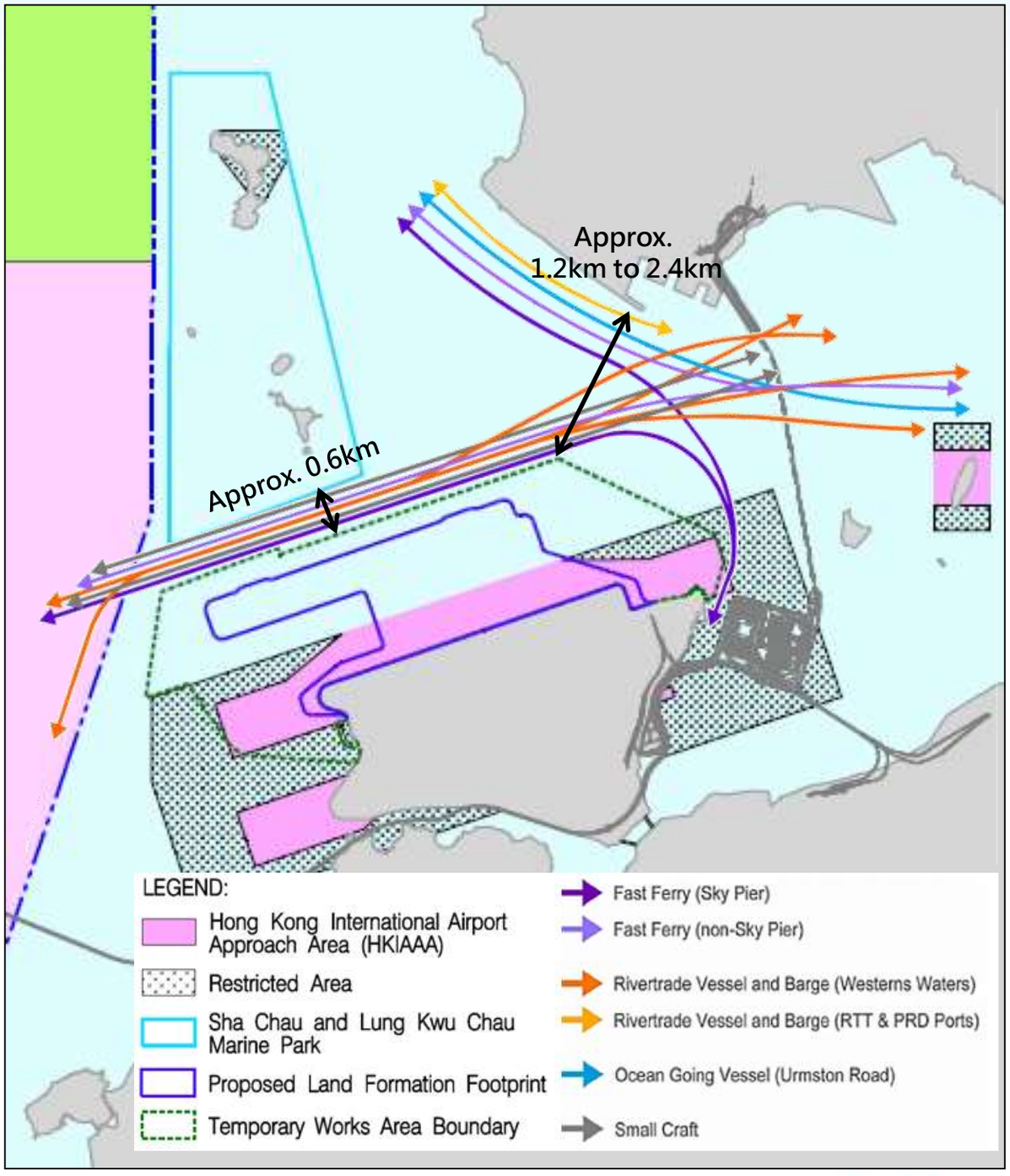
- **Set up of Temporary Marine Works Area**
  - **Set up buoys around the works area**
  - **Two designated site entrances for construction vessels**
  - **All construction vessels must adhere to the speed limit**
  - **All construction vessels must follow predefined and regular routes**



- **Set up of Marine Traffic Control Centre**
  - **All construction vessels must equip with tracking device**
  - **Implement marine traffic monitoring to ensure all construction vessels will work and anchor at designated locations**

Route Diversion for High Speed Ferries of SkyPier – Implementation, Monitoring & Update on Effectiveness

Background of SkyPier HSF Diversion During Construction

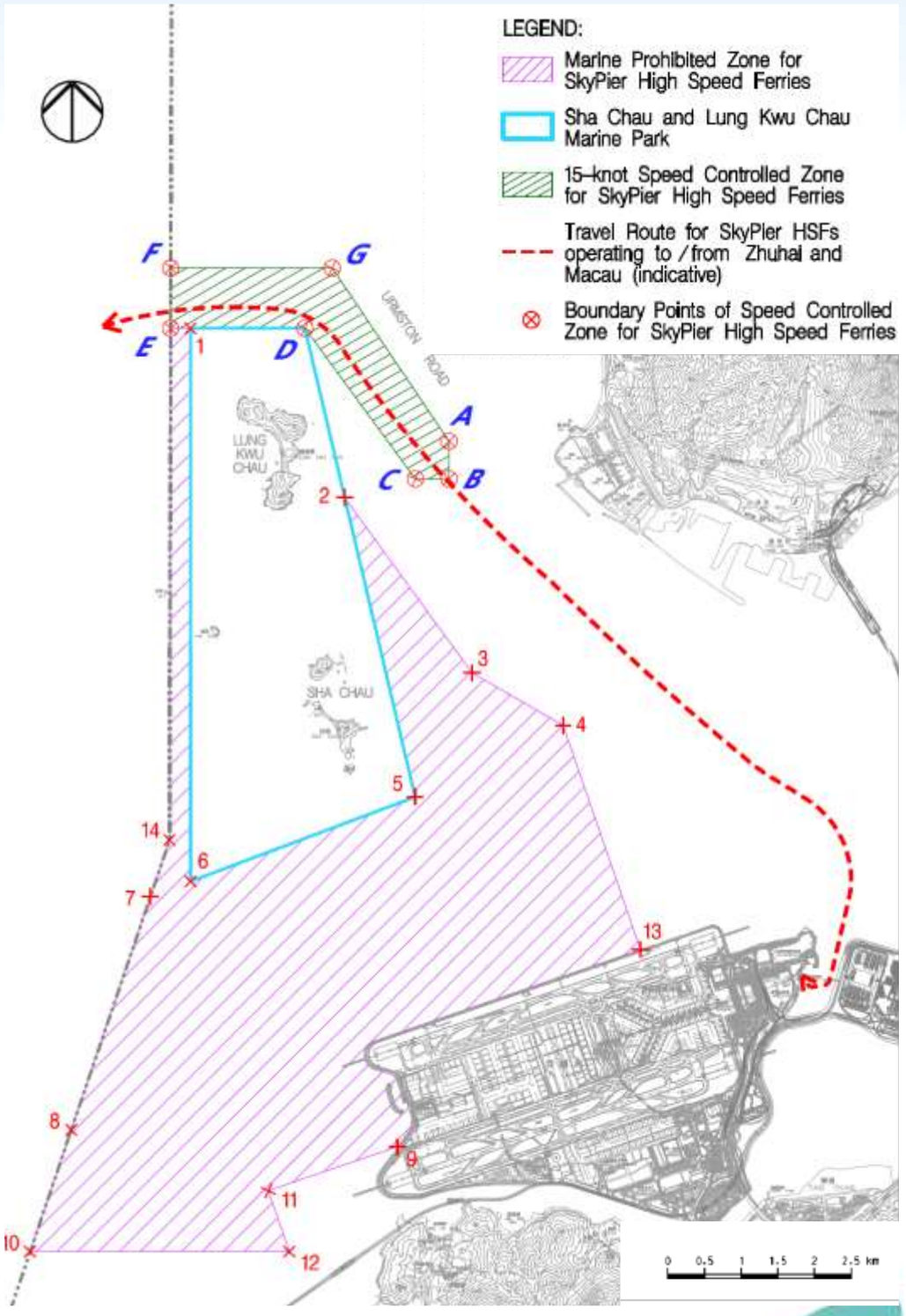


- Navigable waters along diverted route wider than existing airport north routing

- Diversion to the north reduces potential collision risk / noise disturbance to CWDs in travelling area

Key Requirements of SkyPier Plan

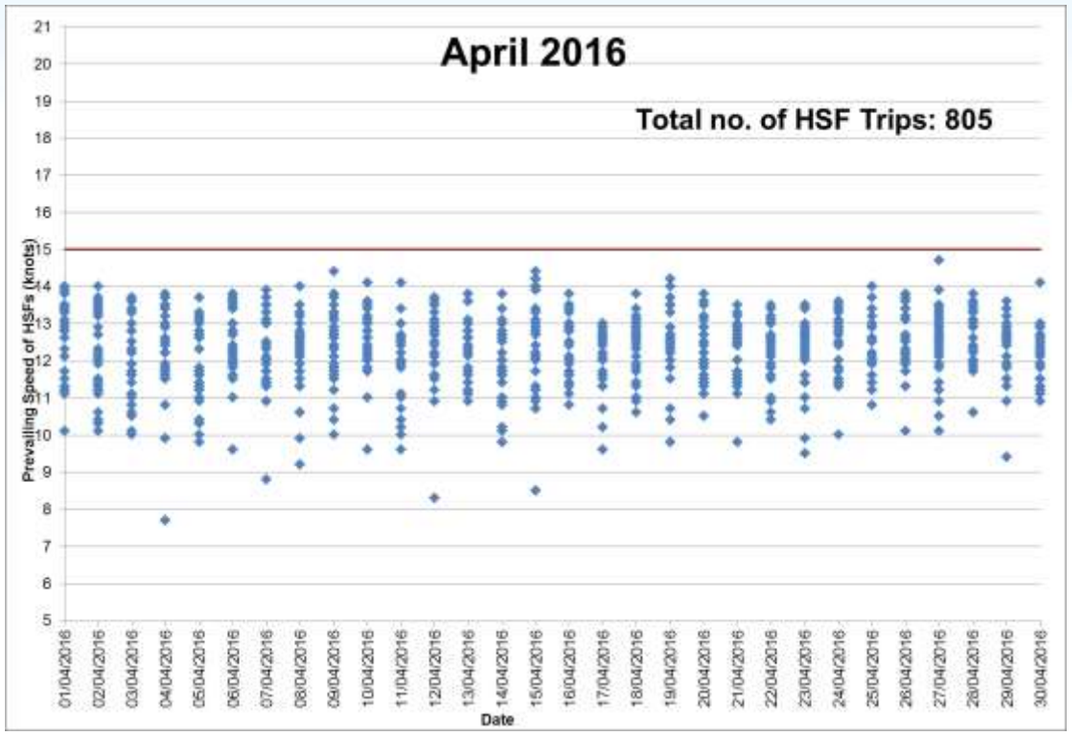
- Diverted Route
- 15-knot Speed Controlled Zone (SCZ)
- Marine Prohibited Zone
- Daily Cap (125) on HSF Movements
- Annual Daily Average (99) HSF Movements

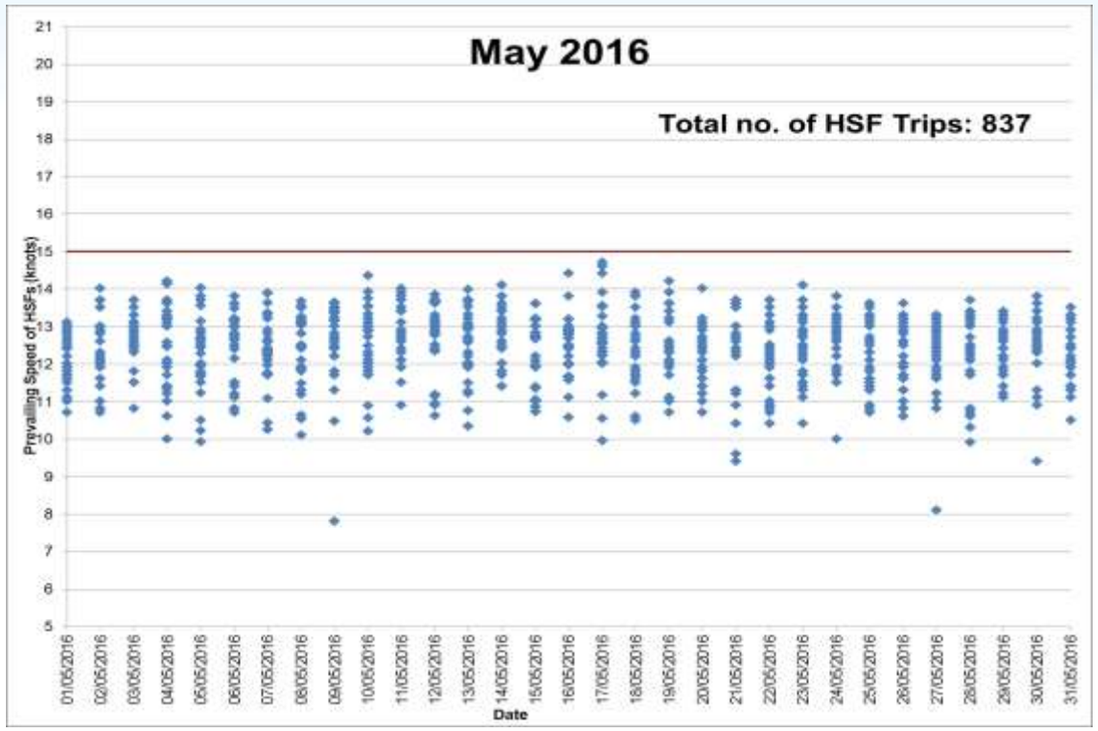


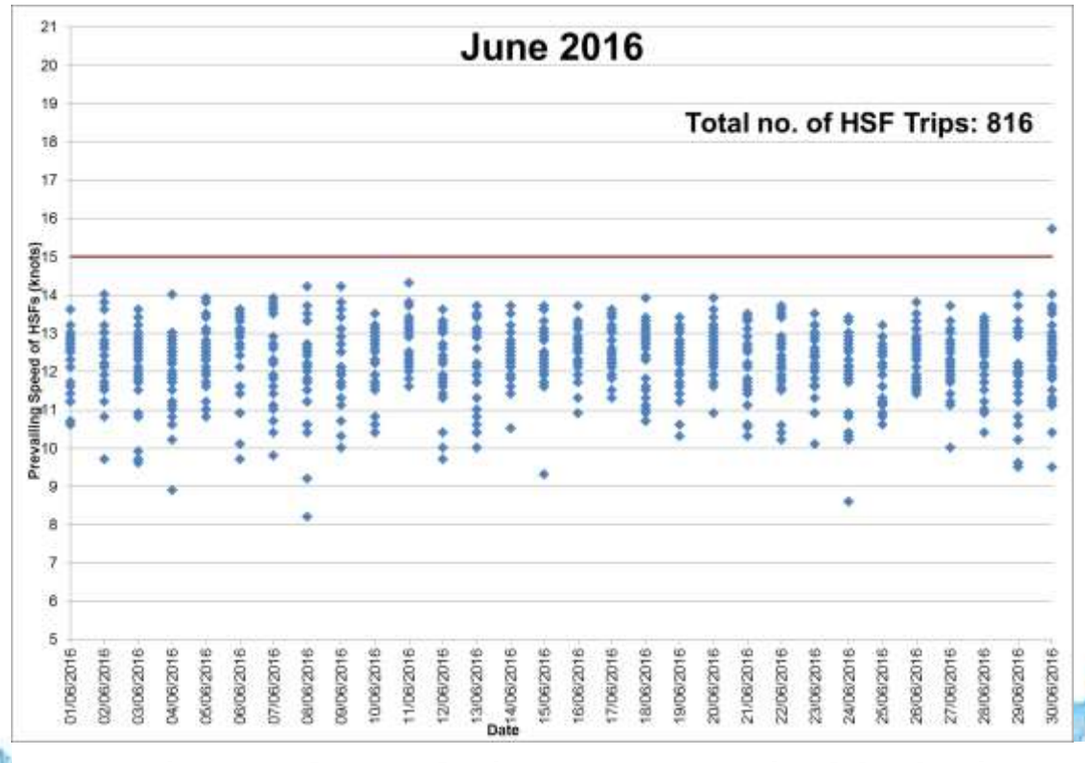
Approval and Implementation of SkyPier Plan

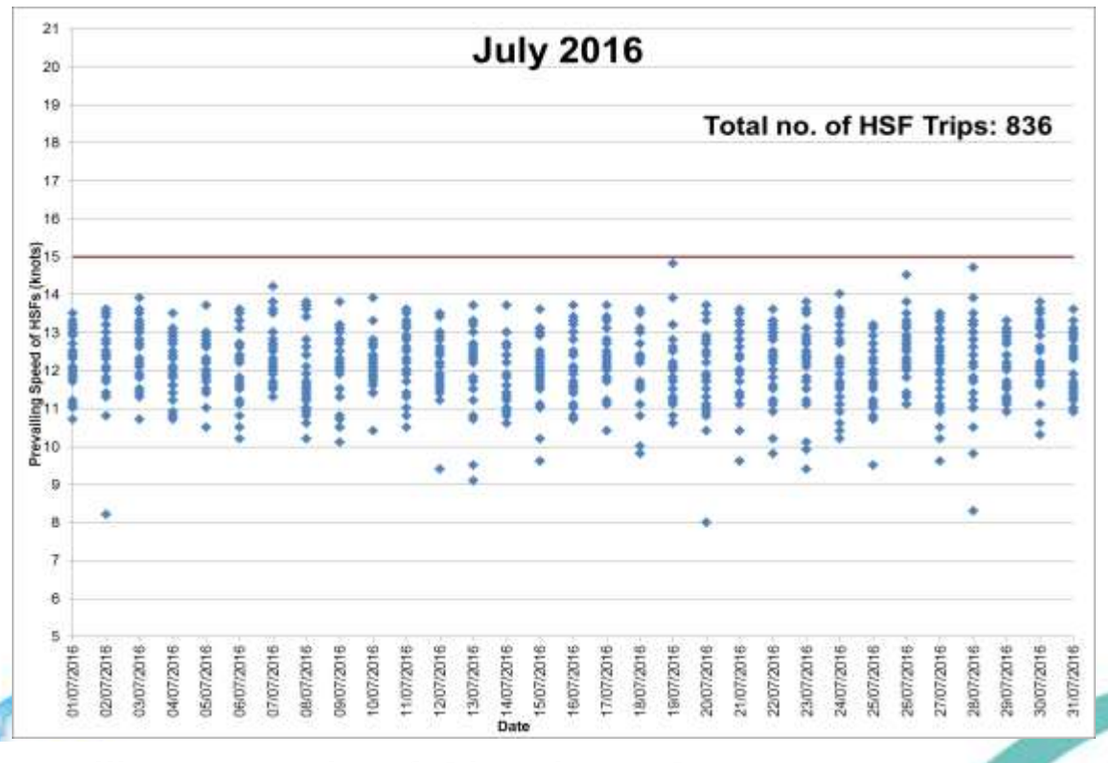
Date	Event
26 Jun 2015	Submission of SkyPier Plan to ACE for consultation
13 Jul 2015	ACE consultation
23 Jul 2015	ACE members visited SkyPier
7 Sep 2015	Submission of Supplementary information in responses to ACE comments
18 Sep 2015	Formal submission of SkyPier Plan to EPD
19 Nov 2015	Finalisation of SkyPier Plan to EPD
26 Nov 2015	Approval of SkyPier Plan by EPD
28 Dec 2015	AAHK started implementation of SkyPier Plan
20 May 2016	EIA sub-committee meeting on the SkyPier Plan

Prevailing Speeds of Diverted SkyPier HSFs within SCZ from April to July 2016 (average 25 – 31 trips/day)









Based on HSF AIS data up to July 2016, the prevailing speeds of SkyPier HSFs travelling within the SCZ were mostly in the range of 11 to 14 knots.

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CWD Survey Data

Data were collected during the initial 6 months after implementation of the SkyPier Plan, i.e. from Dec 2015 to Jun 2016:

Vessel transect surveys

- Even coverage entire survey area
- Estimates of density and abundance
- Data to evaluate small-scale (1X1 km) densities
- Allows for photo-ID data collection
- Limitation: behavior data subject to transect vessel disturbance

Land-based theodolite surveys

- Accurate tracking of dolphins, vessels, etc.
- Information on behavior (undisturbed by platform)
- Data on swim speeds, directions, reactions to vessels, etc.
- Limitations: no density information, only useful several km of station

Passive Acoustic Monitoring

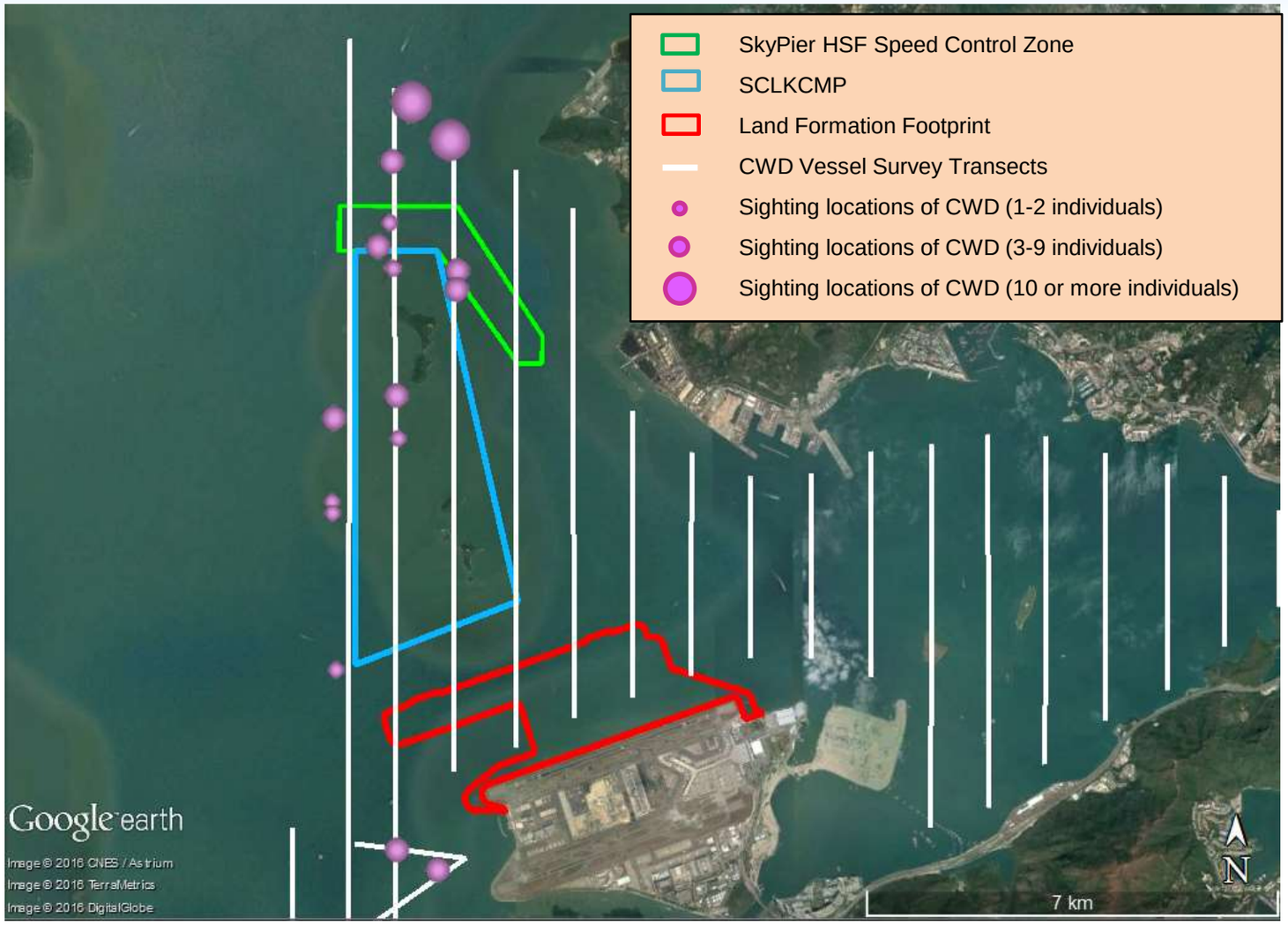
- Day/night-time and poor weather information
- Uninterrupted measure of dolphin presence, and ambient noise
- Limitations: dolphin sounds recorded within about 2 km of device, cannot currently derive dolphin numbers

Vessel Transect Survey Results (after Implementation of SkyPier Plan)

- Sightings of CWDs distributed around the Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP), north of Lung Kwu Chau, including waters close to the diverted SkyPier HSF route and within the 15-knots SCZ

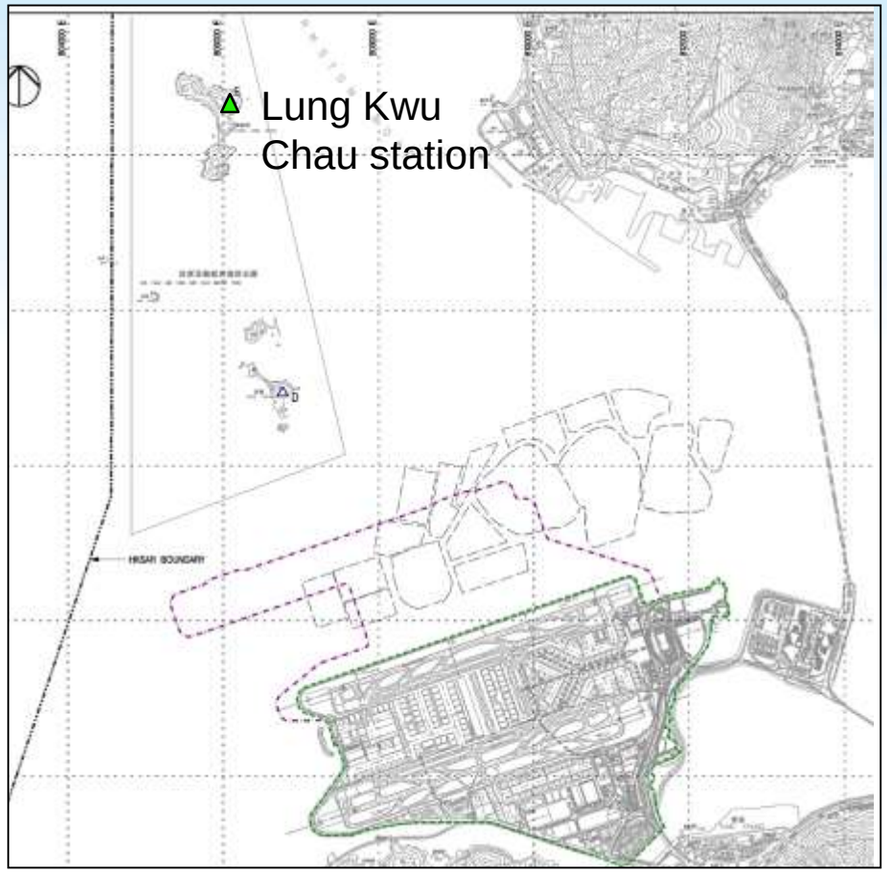
- Co-occurrence of CWDs with SkyPier HSFs travelling at < 15 knots within SCZ

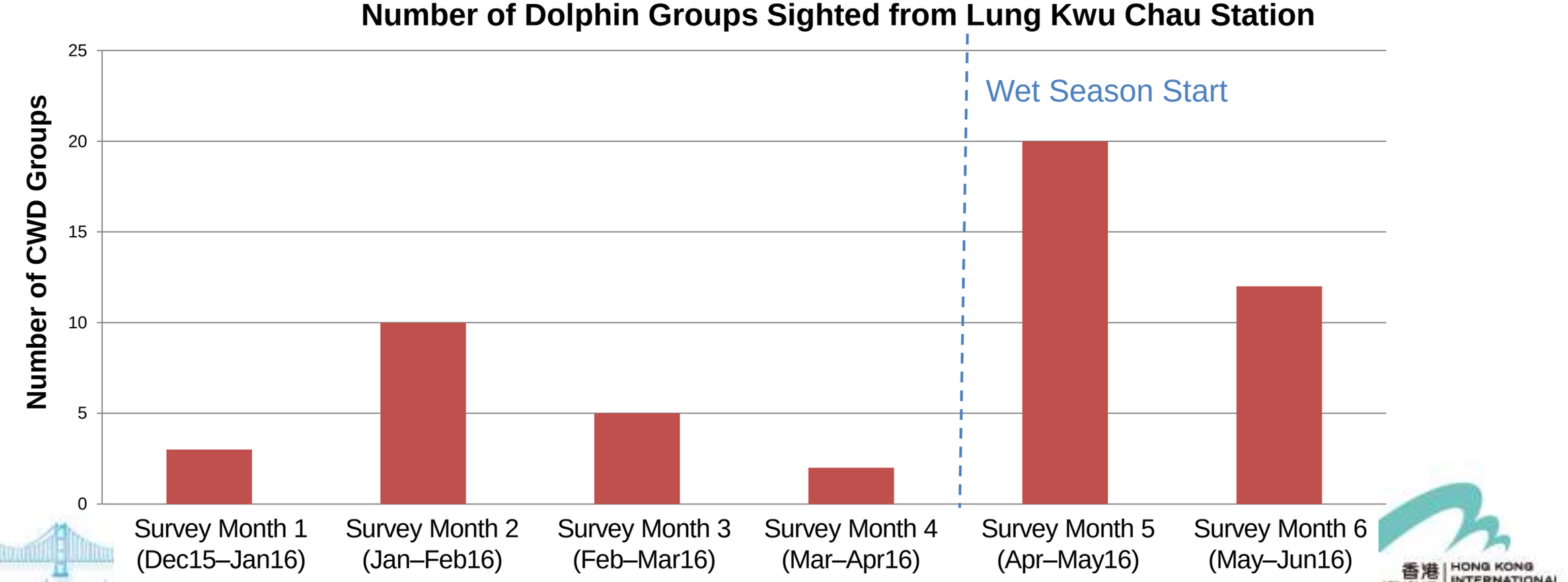
- Waters north of SCLKCMP including within the SCZ still being used by CWDs as important habitat after SkyPier Plan implementation



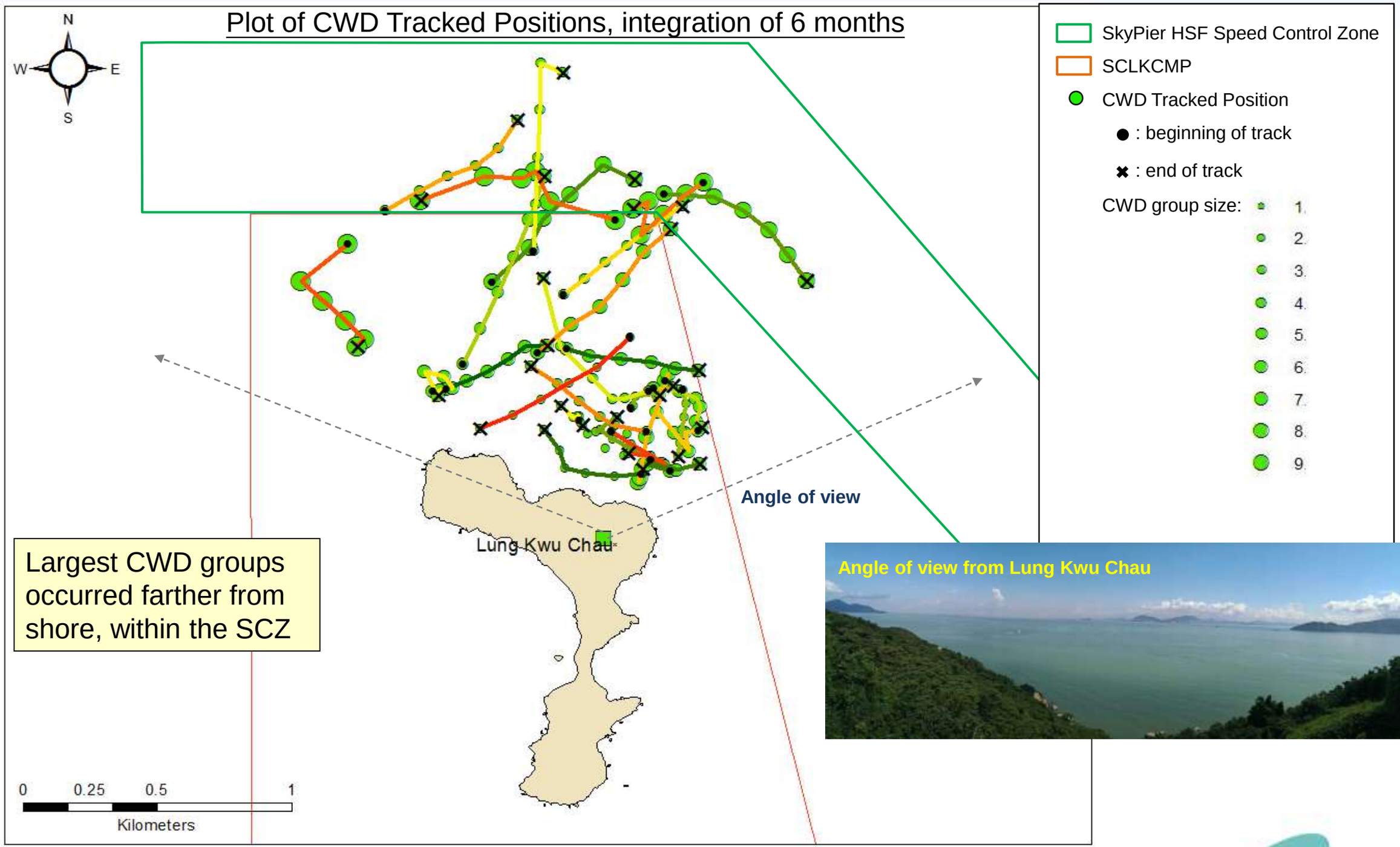
Land-based Survey Results (after Implementation of SkyPier Plan)

- 52 CWD groups were tracked from the Lung Kwu Chau (LKC) station
- Seasonal patterns congruent with previous knowledge (i.e., CWD abundance in area increases in wet season)

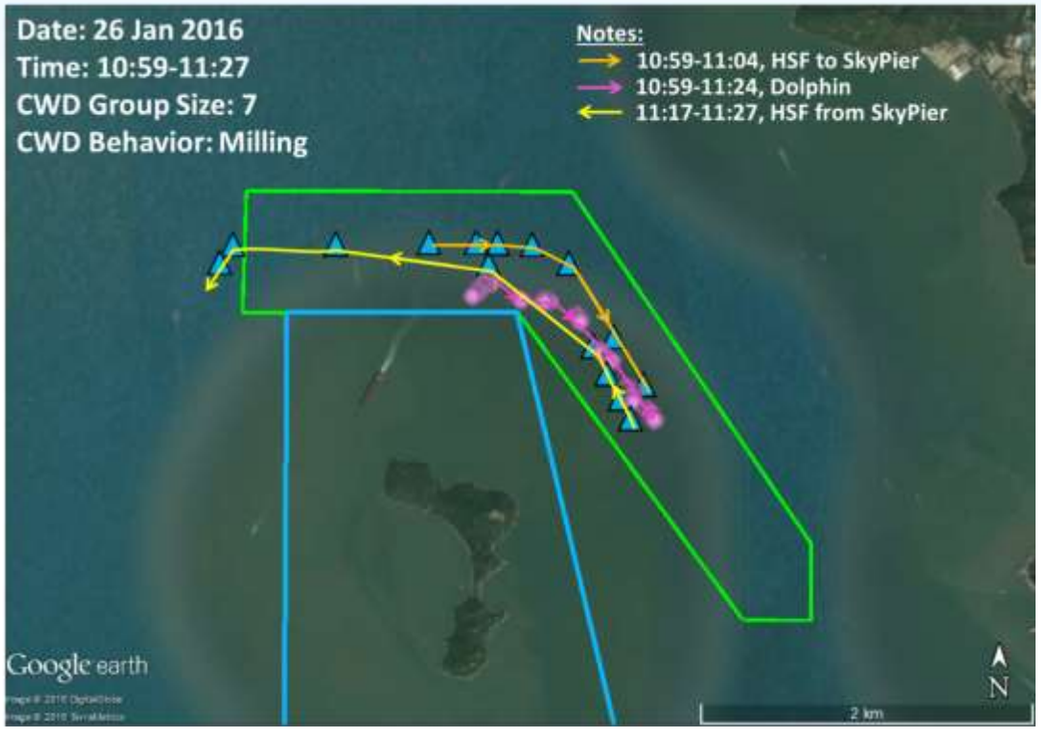


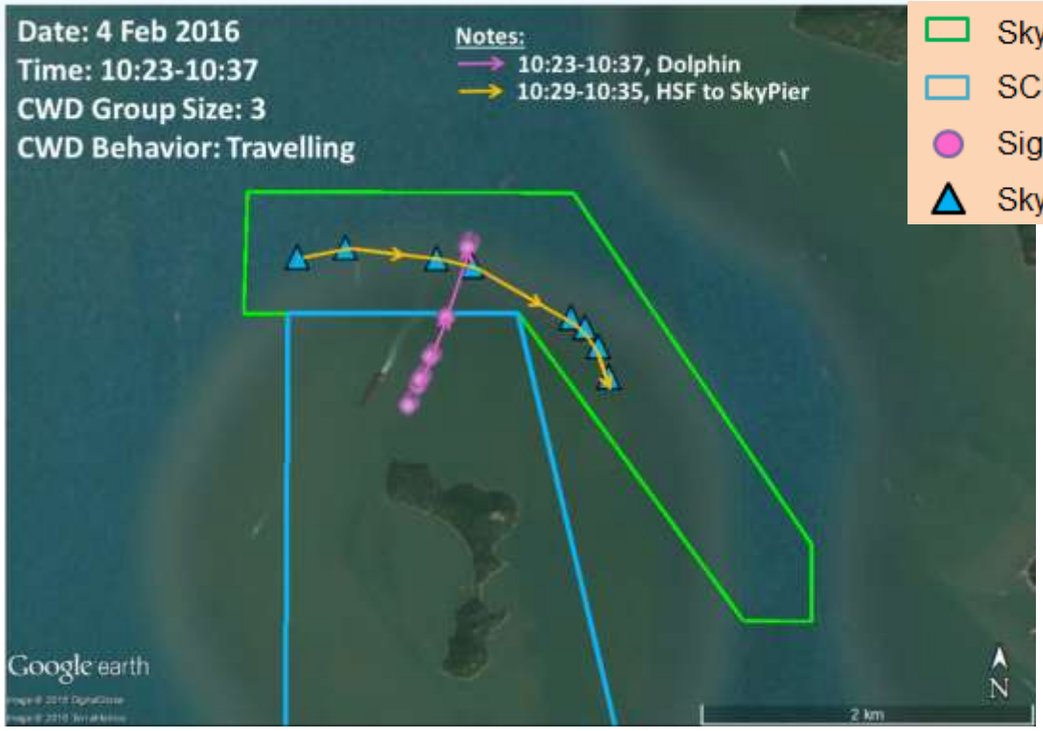


Land-based Survey Results
(after Implementation of SkyPier Plan)

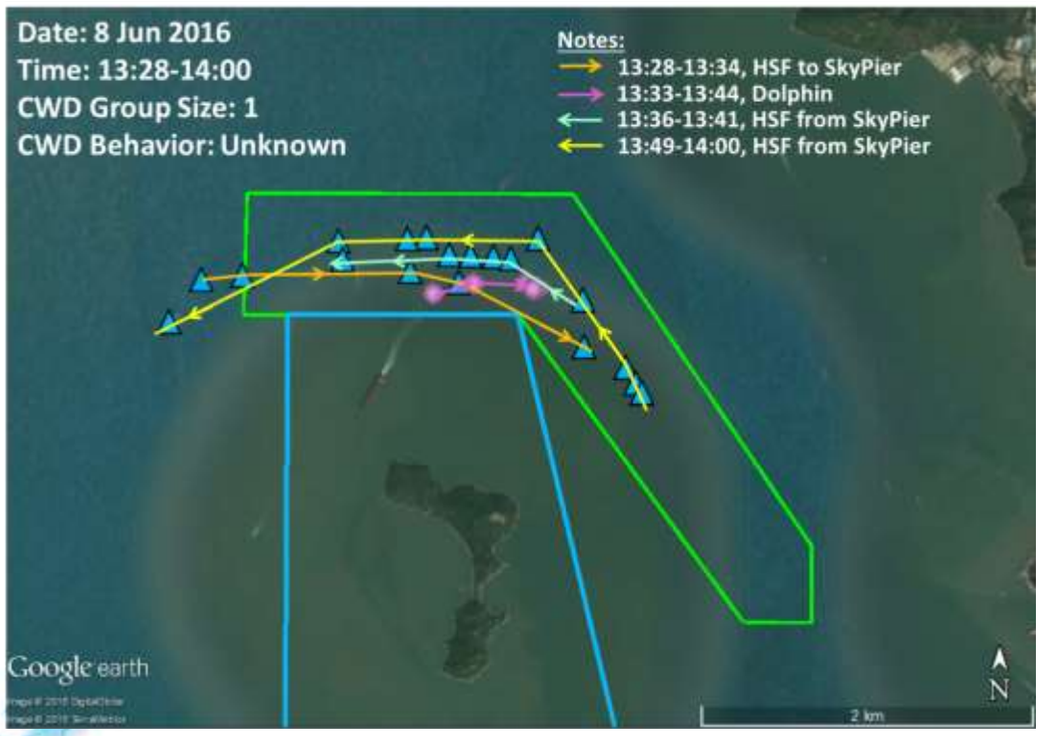


Co-occurrence of CWDs and Diverted SkyPier HSFs observed within SCZ during Land-based Surveys on different days





SkyPier HSF Speed Control Zone
SCLKCMP
Sighting locations of CWD
SkyPier HSF



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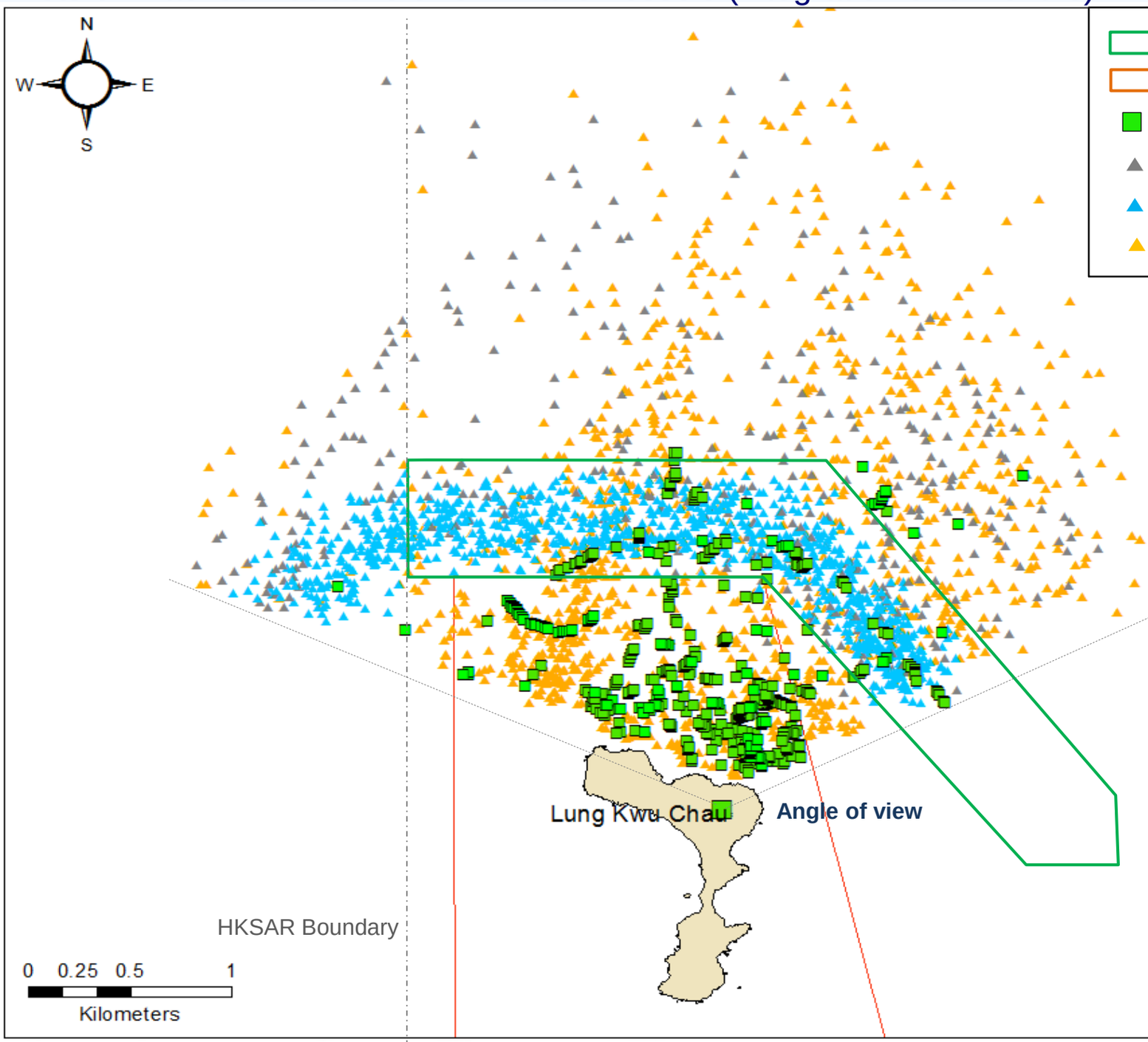
Land-based Survey Results (after Implementation of SkyPier Plan)

Plots of Tracked Positions of CWD and vessels (integration of 6 months)



Potential trend observed for CWDs:

- travel at higher speeds when within 500m of HSFs (>15 knots)
- travel at slower speeds when within 500m of HSFs (<15 knots)
- travel slowest when no vessels observed nearby

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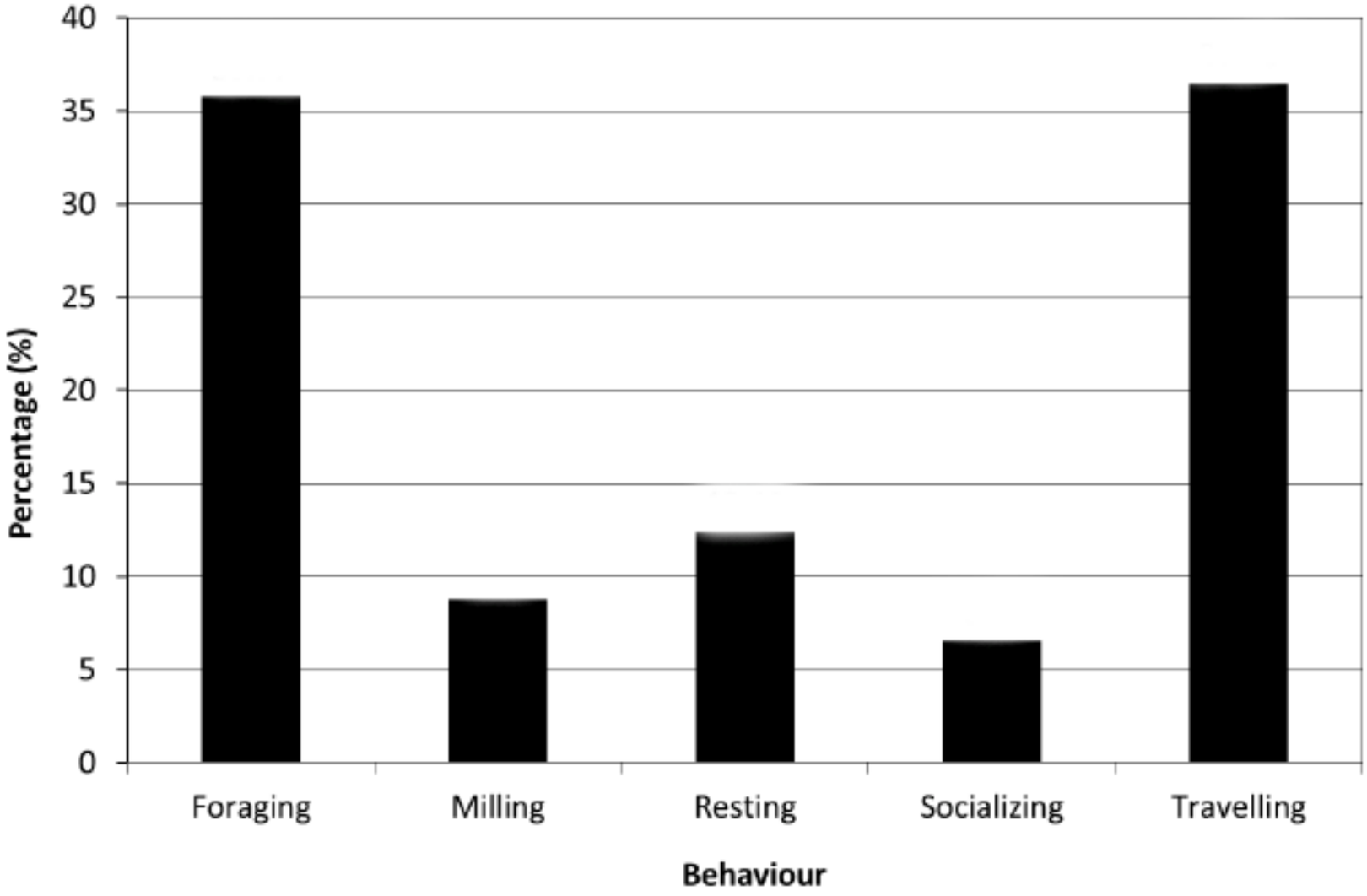
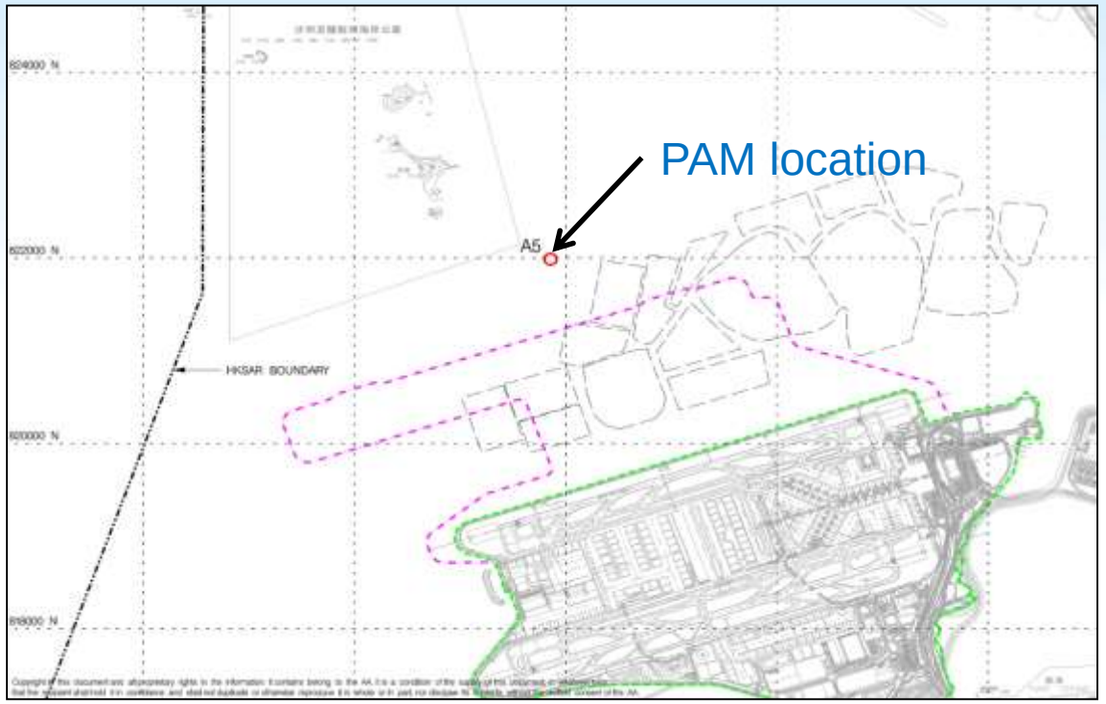
Land-based Survey Results
(after Implementation of SkyPier Plan)

Distribution of CWD's known behavioural states recorded in waters off Lung Kwu Chau

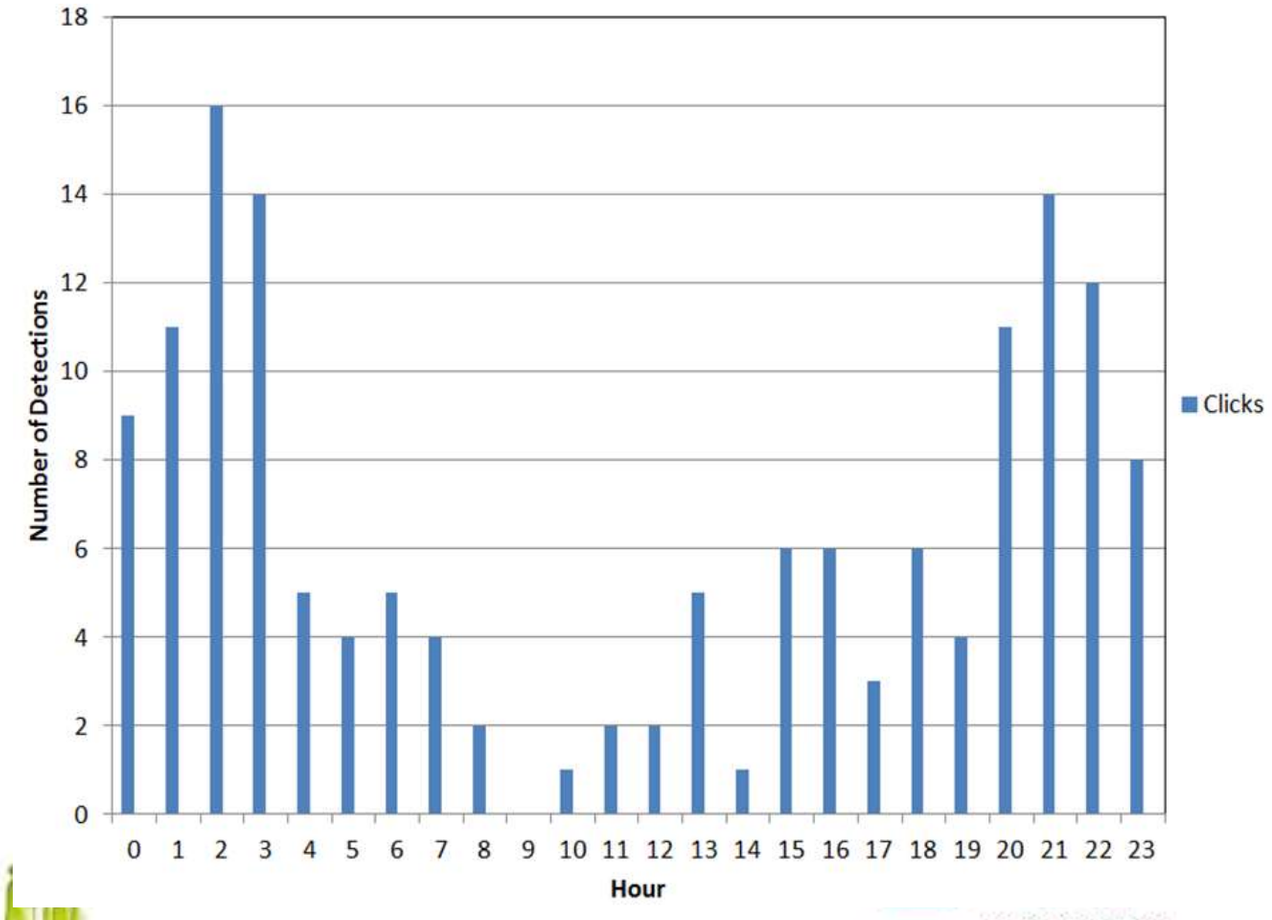


Observations confirm that the waters off Lung Kwu Chau remain an important foraging area for CWDs

Passive Acoustic Monitoring Results (after Implementation of SkyPier Plan)



- Diurnal detection of clicks showed a consistent pattern of higher levels at night compared with the day
- Peak detection hours between 0200-0300 and between 2100-2200
- Dolphins were detected on 49 of 80 (61%) days with recording effort (During the period of 8 January to 13 May 2016)
- Indicated more use of echolocation by dolphins during hours of darkness



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Concluding Remarks

- CWDs were observed in waters close to SkyPier HSFs travelling at below 15 knots in the SCZ
- The waters off Lung Kwu Chau remain an important foraging area for CWDs
- SkyPier HSFs, managed in accordance with SkyPier Plan commitments, based on current results, are not having obvious negative behavioural impacts on CWDs
- It is expected that with 3RS Project marine works, diverted SkyPier HSFs with speed control:
  - will help reduce CWD/HSF collision risks and CWD noise disturbance in the narrowing waters between the SCLKCMP and airport north; and
  - at the same time will not result in obvious negative behavioural impacts on CWDs along the diverted route

Follow Up

- Continue the CWD monitoring effort as part of on-going EM&A;
- Continue to monitor the effectiveness of SkyPier Plan; and
- With full year data, to review & compare relevant historic datasets (e.g. from AFCD) on CWD sightings & behaviours after implementation of SkyPier Plan.

Baseline Monitoring Results and EM&A Event and Action Plan

CWD Baseline Monitoring Results (Vessel)

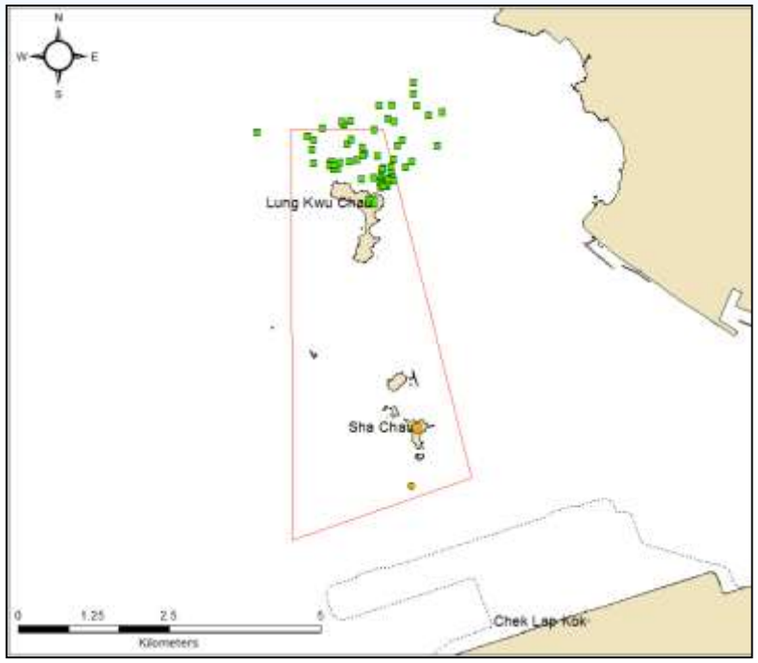
- 12 rounds of transect surveys covering NEL, NWL, AW, WL and SWL survey areas completed between 18 Dec 2015 to 17 Jun 2016.
- Over 2,800 km of survey effort collected (with over 90% conducted with Beaufort Sea State 3 or below)
- 71 groups of CWDs with 314 individuals were sighted (during on-effort survey with Beaufort Sea State 3 or below)
- CWD group size average was 4.42, ranged from 1 to 19 individuals
- A total of 96 CWD individuals were identified

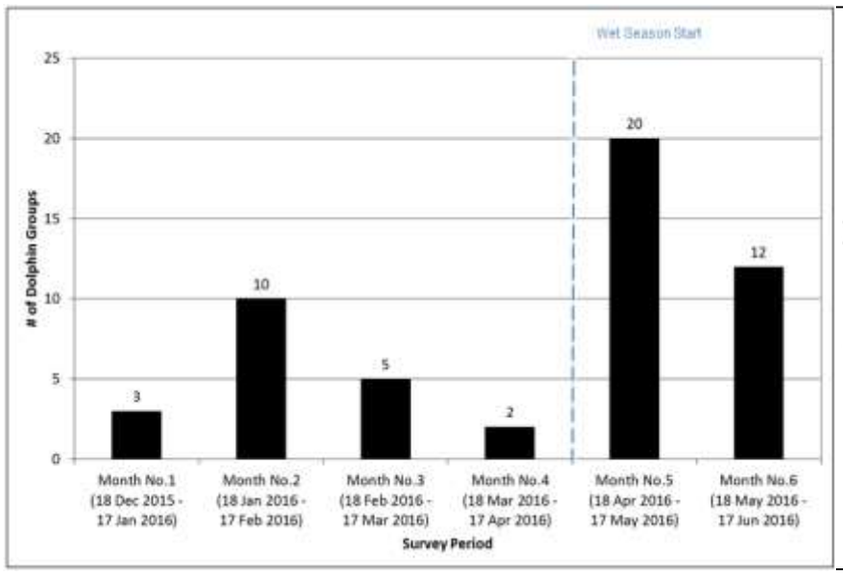
Sightings Distribution of CWDs (during on-effort survey with Beaufort Sea State 3 or below)

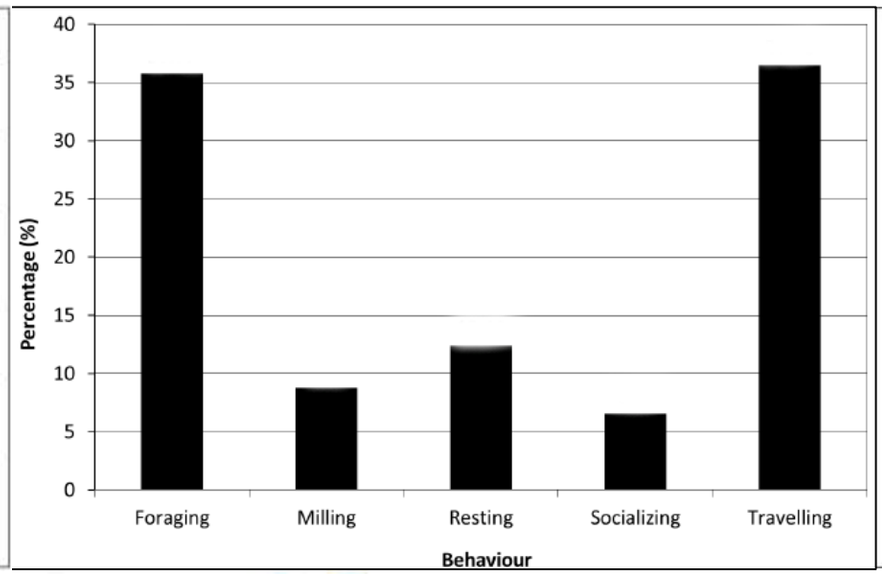
CWD Baseline Monitoring Results (Land-based)

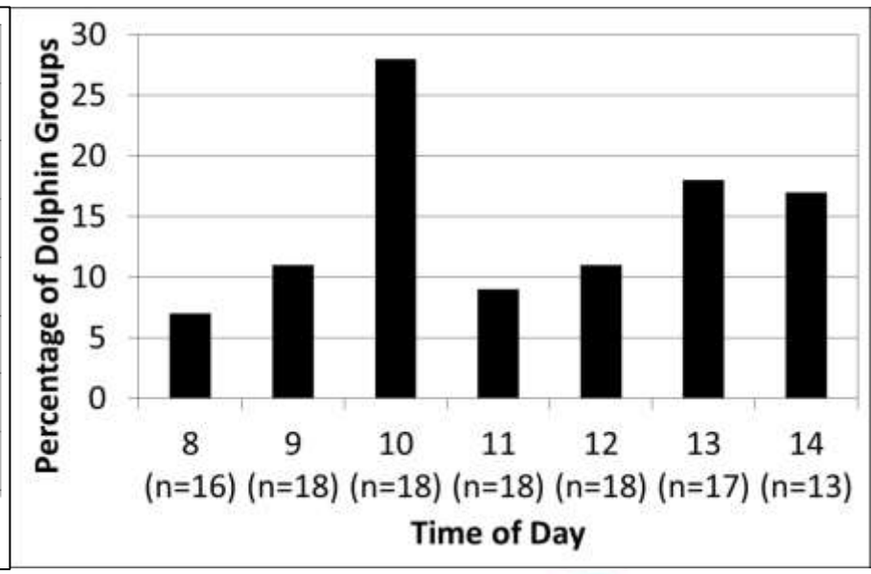
- Over 180 hours survey effort
- A total of 53 groups of CWDs were sighted
- Off LKC, CWD group size average was 3.54, ranged from 1 to 9 individuals
- Off LKC, the highest percentage of CWD groups were observed between 18 Apr 16 – 17 May 16
- Off LKC, foraging and travelling were the most frequently observed behaviours amongst the CWDs

Plots of First Sightings of All CWD Groups









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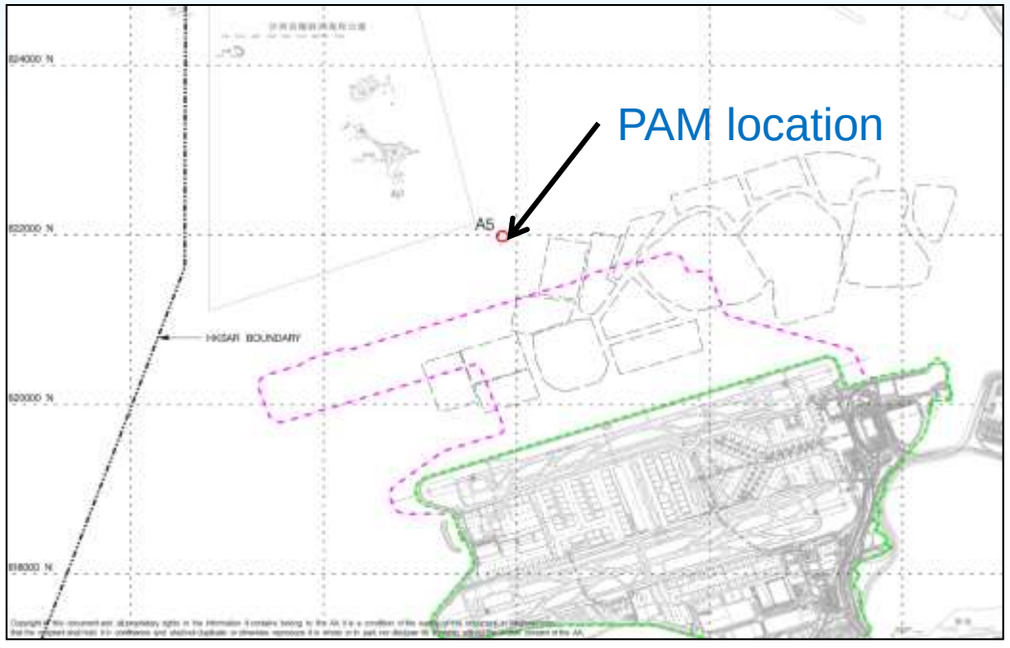
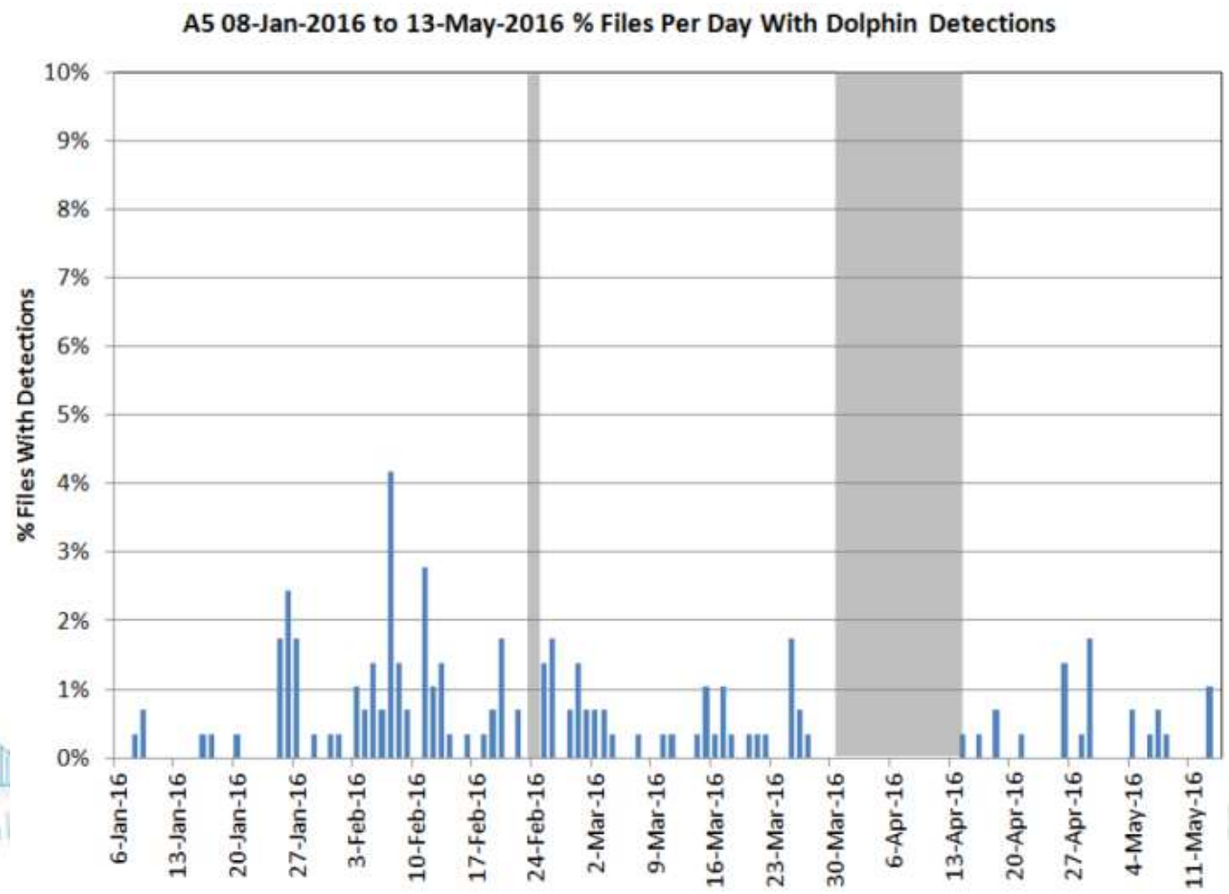
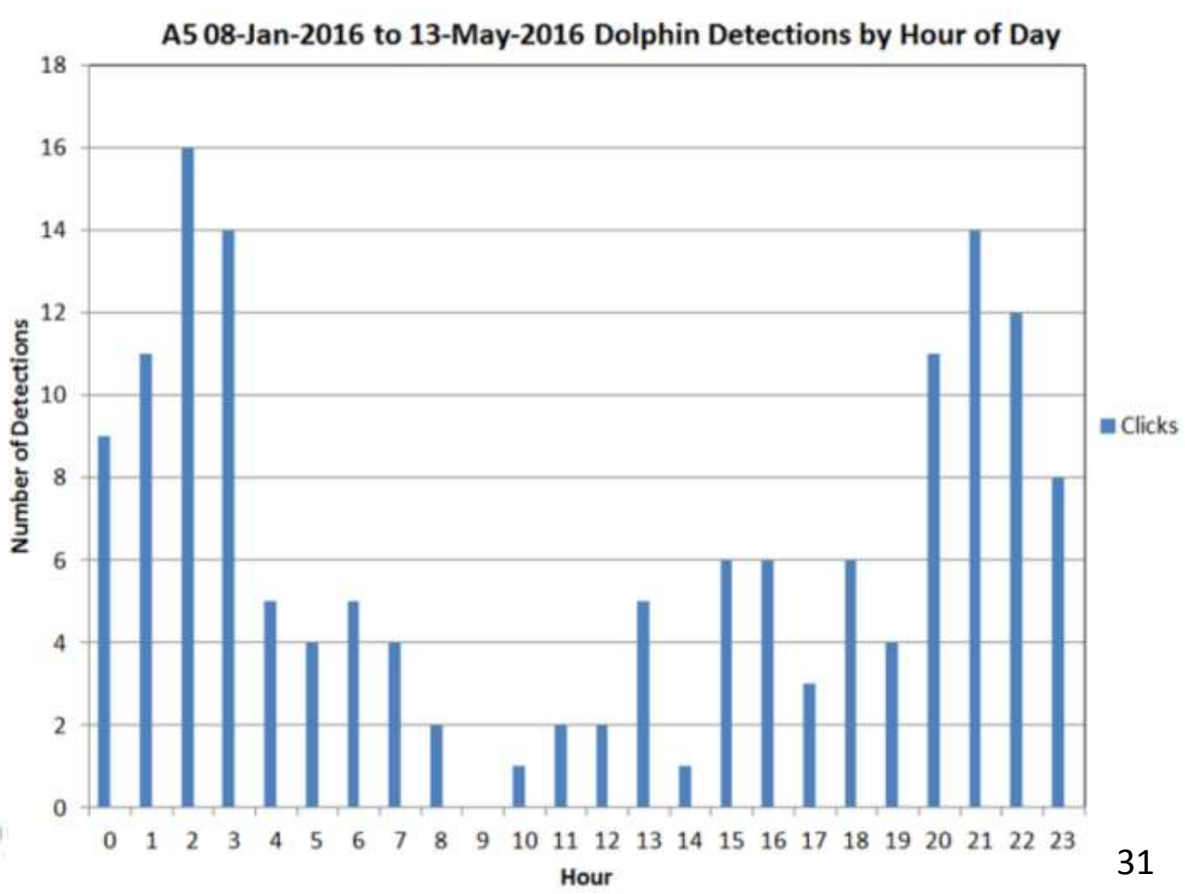
CWD Baseline Monitoring Results (PAM)

- From 8 Jan to 13 May 2016 CWDs were detected on 49 of 80 days (61% of days)
- Clicks were the only type of dolphin signal detected
- Detection rates were greater at night than during daytime







Event and Action Plan for CWD Monitoring

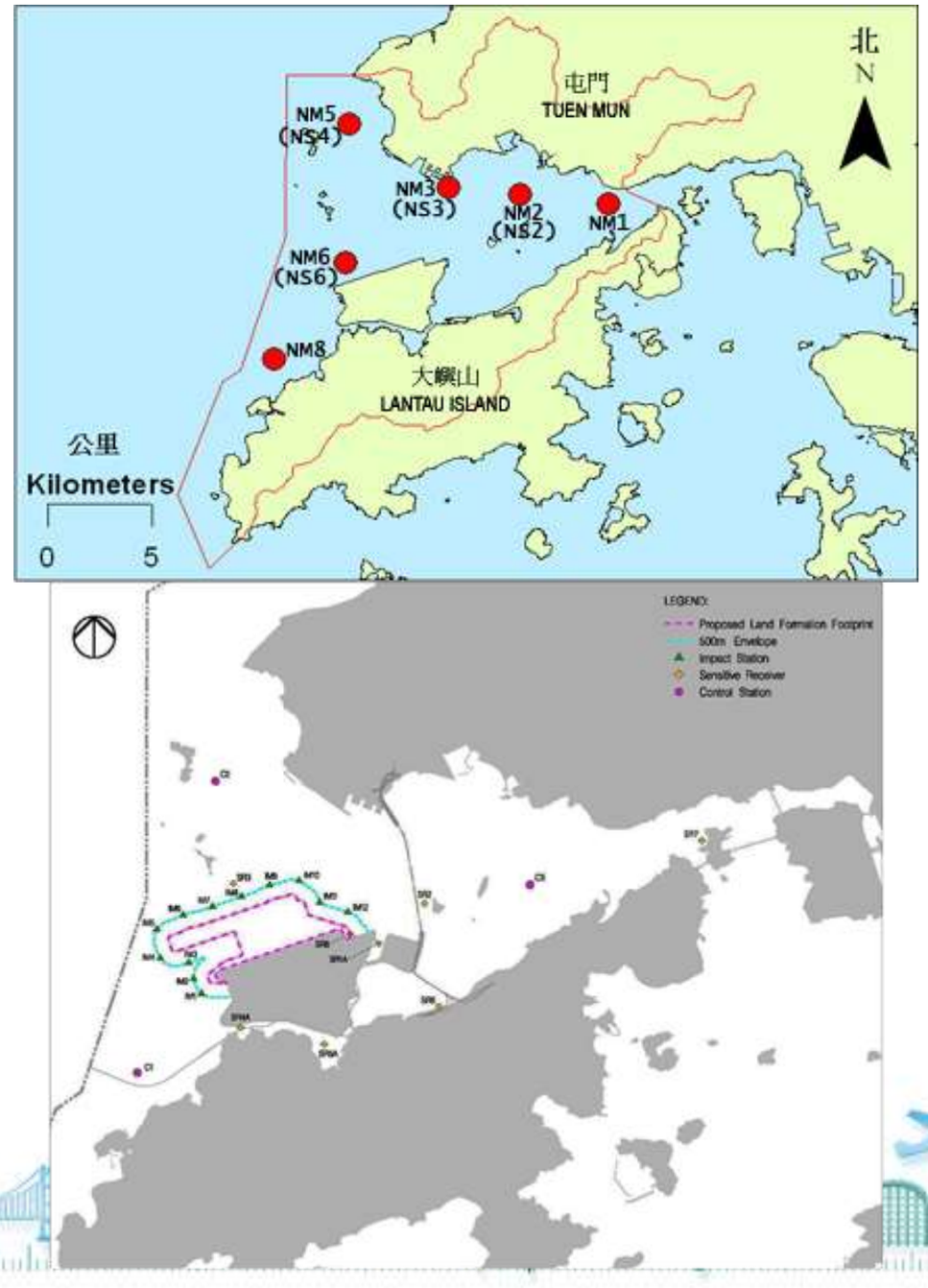
	3RS	Remarks
Action Level and Limit Level	Based on 6-month baseline data, derived from low season Running Quarterly Encounter Rates	Taking into account the seasonal variation
Survey Area	Entire waters around the Project area and Lantau (NEL, NWL, WL, AW & SWL)	CWD temporarily moving away from the 3RS works area has been considered
Compliance Checking	Review and report the Running Quarterly Encounter Rates STG & ANI for monthly compliance checking	Improvement from quarterly compliance checking practiced in other projects
Immediate Action	Increase in the DEZ area to be monitored from 250m to 500m for daytime works; Short term response to events that triggered the Action / Limit levels after review the monitoring data for each month	Enhanced action plan to immediately reduce potential further disturbance to CWD

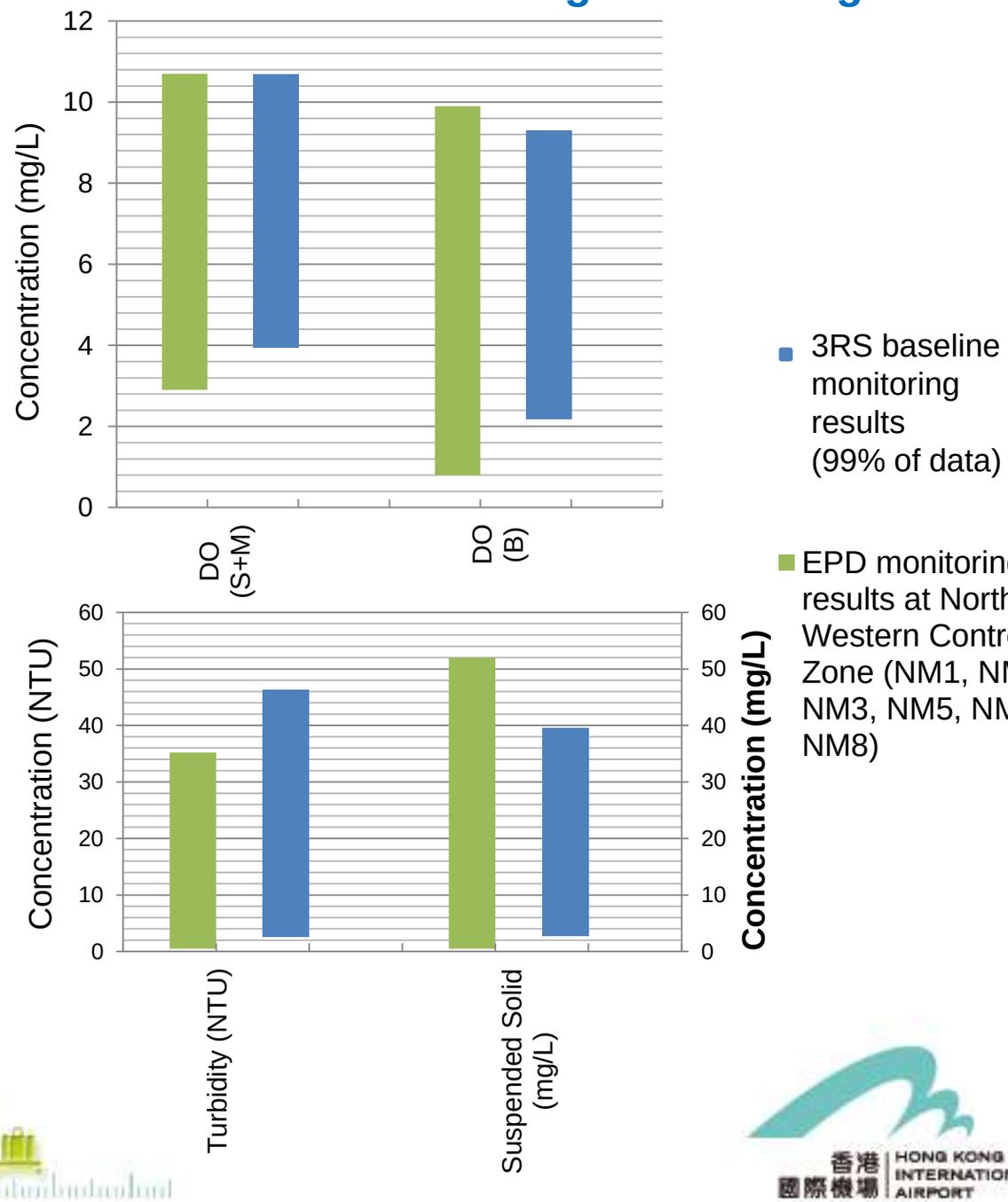
Water Quality Baseline Monitoring

General Water Quality Parameters

- 3RS baseline monitoring results are consistent with EPD's 3 years results range

EPD's 3 years (2013-2015) results range vs 3RS baseline monitoring results range





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Water Quality Baseline Monitoring

- Monitoring activities were conducted over 4 weeks in May and July 2016
- Monitoring parameters – Dissolved Oxygen, pH, Temperature, Salinity, Turbidity, Suspended Solid, Alkalinity, Heavy Metals, Nutrients
- Monitoring frequency – three times a week, each covering mid-ebb and mid-flood tides
- 3 Control Stations, 12 Impact Stations and 8 Sensitive Receiver Stations

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Water Quality Baseline Monitoring (Setting of Action Level & Limit Level) (1)

Parameters	Action Level	Limit Level
In-situ DO in mg/L (Surface and Middle)	Surface and Middle 5 percentile of baseline data for surface and middle layer	Surface and Middle 5 mg/L or 1 percentile of baseline data for surface and middle layer for Fish Culture Zone (SR7) 4 mg/L or 1 percentile of baseline data for surface and middle layer for other stations
In-situ DO in mg/L (Bottom)	Bottom 5 percentile of baseline data for bottom layer	Bottom 2 mg/L or 1 percentile of baseline data for bottom layer
In-situ Temperature in ˚C (for intensive DCM monitoring only)	1.8˚C above the temperature recorded at representative control stations at the same tide of the same day	2˚C above the temperature recorded at representative control stations at the same tide of the same day

Water Quality Baseline Monitoring (Setting of Action Level & Limit Level) (2)

Parameters	Action Level	Limit Level
In-situ Turbidity Total Alkalinity Suspended Solid (SS) **Nutrients** Ammonia (NH3) Unionised ammonia (NH3) Nitrite (NO2) Nitrate (NO3) TKN Total Phosphorus Reactive Phosphorus **Heavy Metals** Cadmium (Cd) Chromium (Cr) Copper (Cu) Nickel (Ni) Lead (Pb) Zinc (Zn) Arsenic (As) Silver (Ag) Mercury (Hg)	95 percentile of baseline data or 120% of upstream control station at the same tide of the same day, whichever is higher	99 percentile of baseline data or 130% of upstream control station at the same tide of the same day, whichever is higher

Water Quality Monitoring – Event and Action Plan

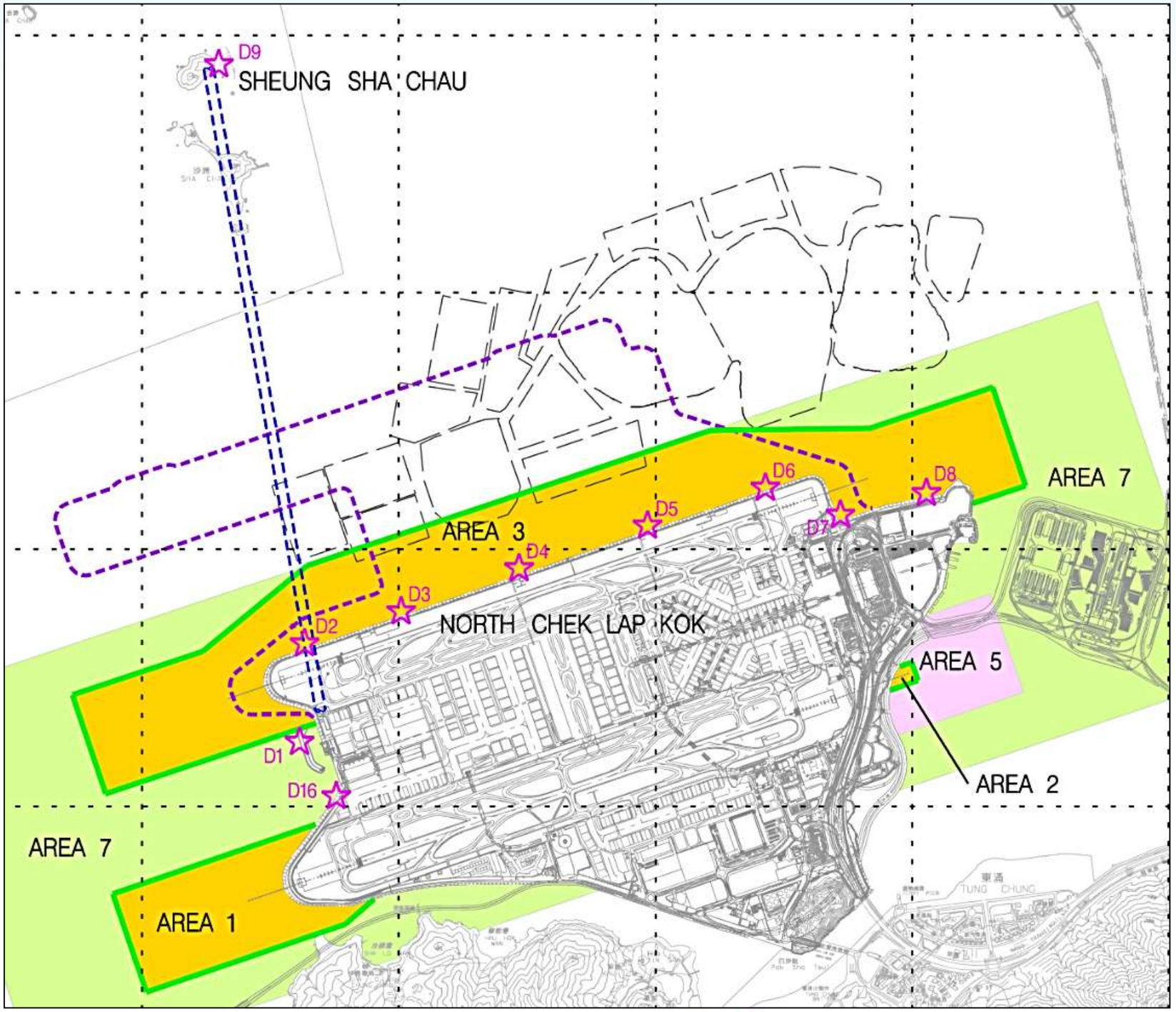
Water quality impact monitoring commenced in Aug 2016

When exceedance occurs:

Parties	Roles and Responsibilities
ET	• Repeat in-situ measurement • Identify reason for exceedance and sources of impact • Inform IEC, Contractor, EPD • Check monitoring data, all plant, equipment and Contractor's working methods • Discuss mitigation measures with IEC and Contractor • Repeat in-situ monitoring on the day after the exceedance
Contractor	• Inform AAHK and confirm receipt of ET's notification in writing • Check all plant and equipment and rectify unacceptable practice if necessary • Provide the status and condition of plant, equipment and mitigation measures • Consider changes of working methods and propose mitigation measures if necessary
IEC	• Discuss with ET and Contractor on the mitigation measures • Review proposals on mitigation measures and advise AAHK / PM • Assess the effectiveness of the implemented mitigation measures
AAHK	• Discuss with IEC on the proposed mitigation measures • Make agreement on the mitigation measures to be implemented • Assess the effectiveness of the implemented mitigation measures

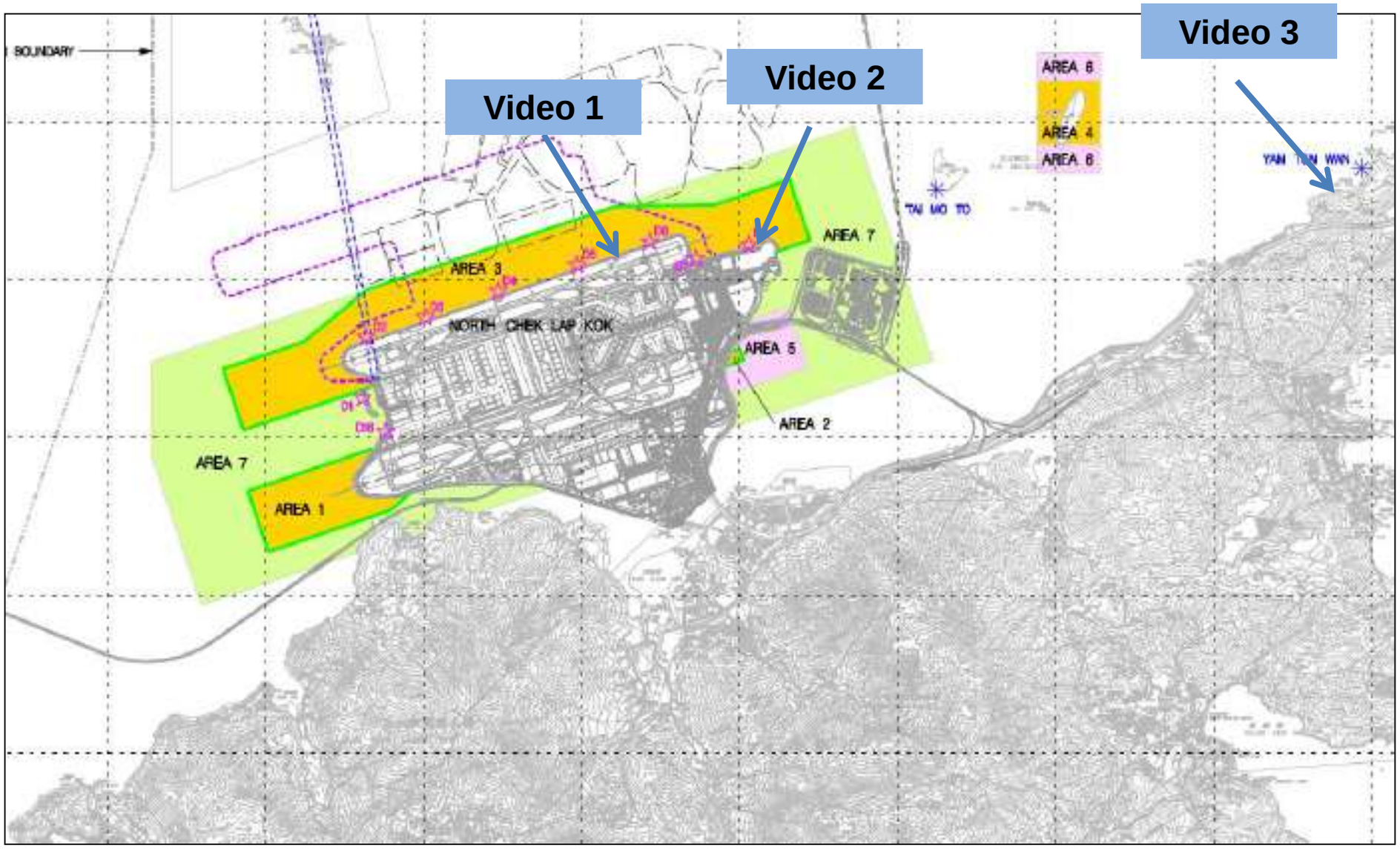
Coral Translocation Plan – Formulation, Implementation & Monitoring

Locations of Coral Survey



- Dive survey conducted on 29 Jan 2016 to further confirm the numbers and locations of corals that may be translocated

Videos at Coral Locations (Aug 2016)

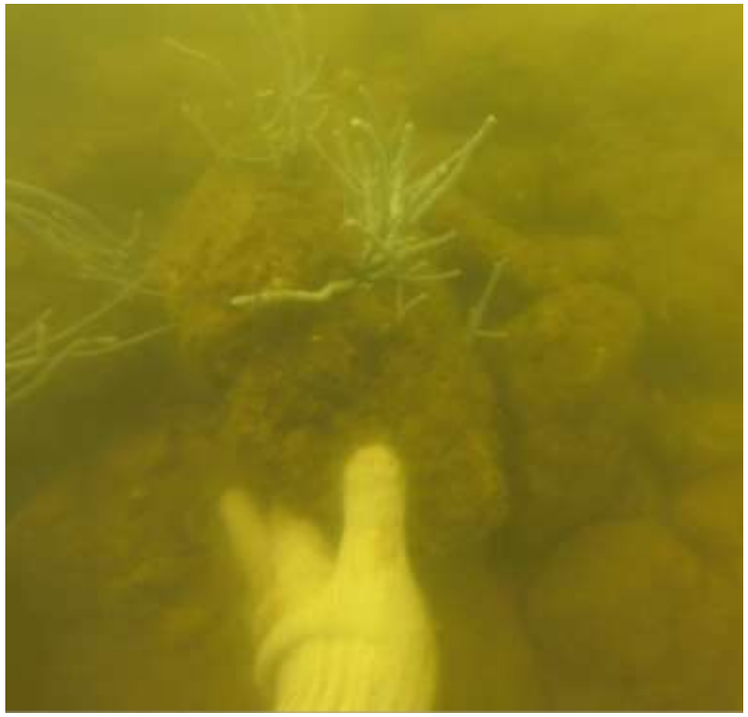


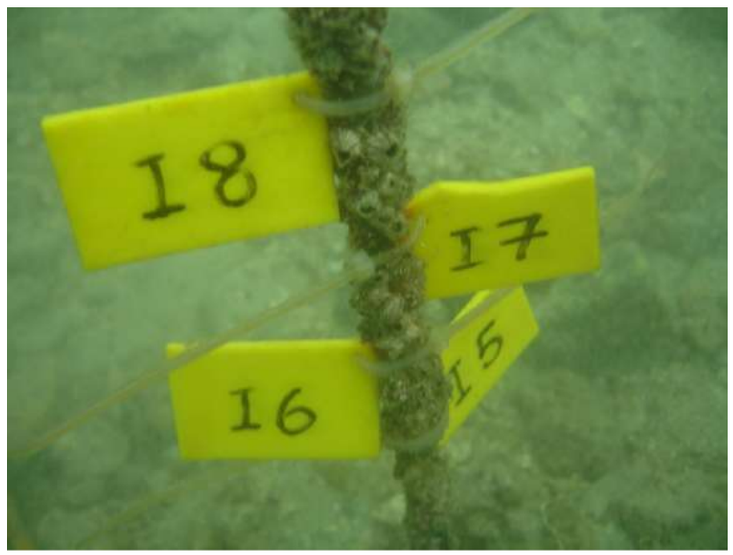
Coral Survey at Different Stages

	EIA Survey in 2012	Baseline Survey in 2016
Purpose	To obtain the general ecological profile of the potentially affected area for impact assessment	To further confirm the number and locations of coral colonies affected and to review the feasibility of coral translocation
Methodology	Dive survey at sub-tidal habitat areas to identify locations with coral communities	Dive survey at sub-tidal habitat areas with focus on areas identified with corals
Estimation of % Coral Coverage	Overall % coverage of surveyed area	% coverage at individual locations with corals

Translocation Procedure

1. Move those coral colonies together with their attached substratum (movable boulder <50cm) to the recipient site on the same day
2. Keep corals under water in suitable containers during the translocation
3. Tag the translocated coral colonies at the recipient site
4. Post-translocation coral monitoring programme for 15 months





Other EM&A Updates

Implementation Status of EM&A Programme

Tasks before 1 Aug 2016:

- Air and Noise Impact Monitoring (on-going)
- Conducted baseline monitoring for CWD and WQ & submitted baseline monitoring reports to EPD
- Submitted following Plans to EPD for approval
  - ➢Detailed Plan on Deep Cement Mixing
  - ➢Silt Curtain Deployment Plan
  - ➢Coral Translocation Plan
  - ➢Marine Mammal Watching Plan
  - ➢Egretry Survey Plan
  - ➢Marine Park Proposal
  - ➢Marine Ecology Conservation Plan
  - ➢Fisheries Management Plan

New tasks after 1 Aug 2016:

- Water Quality Impact Monitoring, incl general impact, initial intensive DCM & regular DCM monitoring
- CWD Impact Monitoring
- Implemented:
  - ➢Construction Vessels Management Plan
  - ➢Dolphin Exclusion Zone Plan
  - ➢Marine Mammal Watching Plan
  - ➢Silt Curtain Deployment Plan
  - ➢EP measures on marine works

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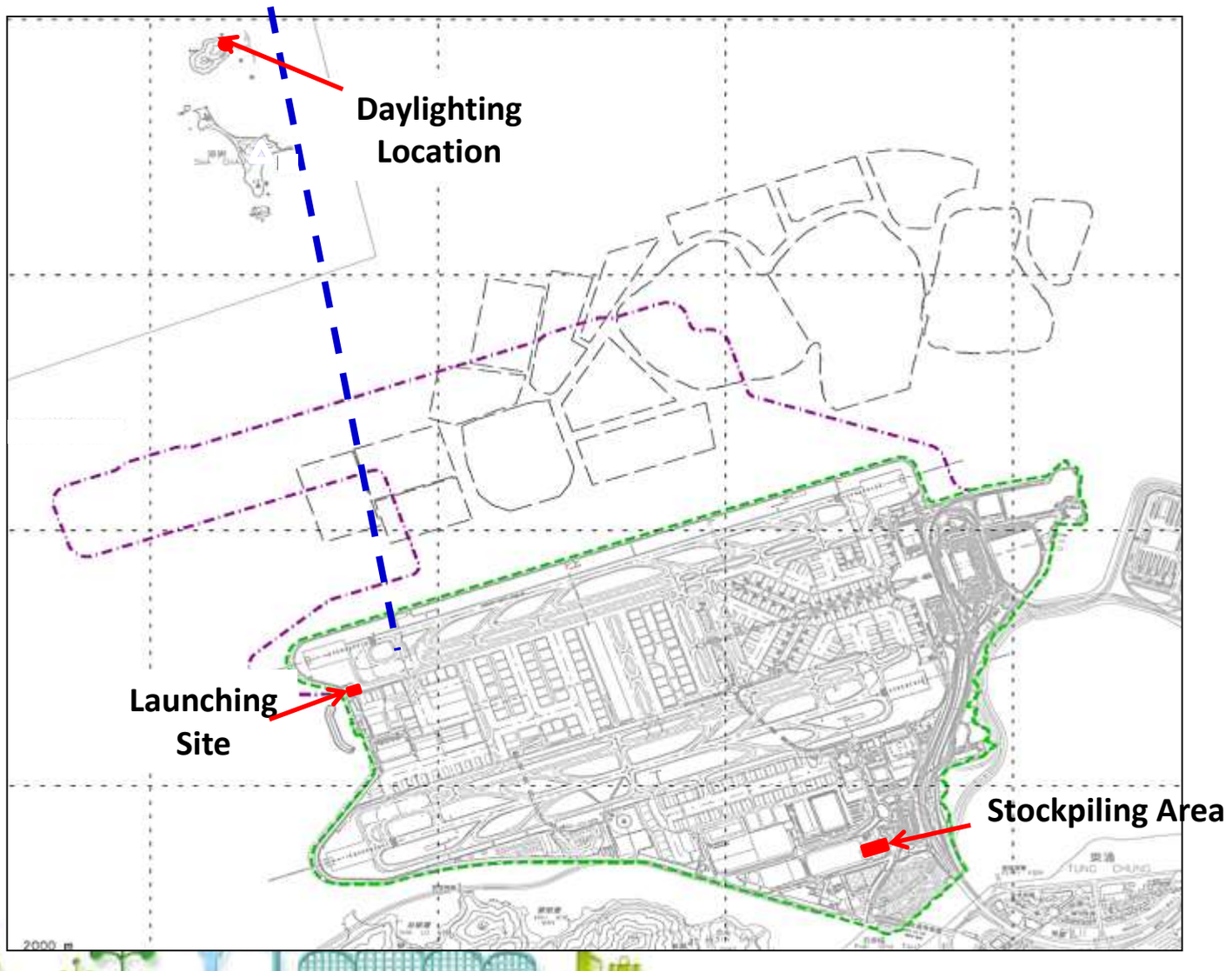
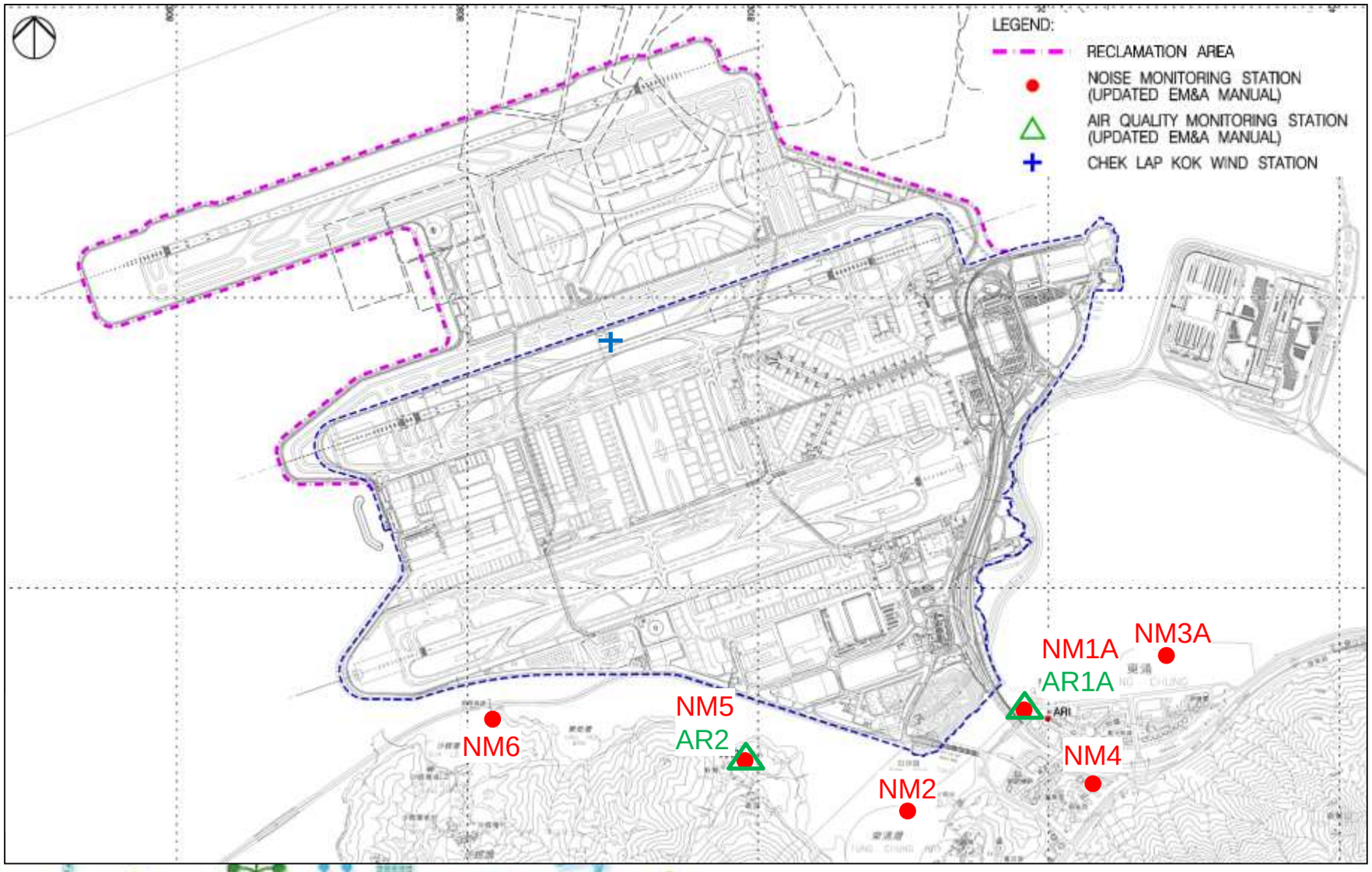
EM&A Monitoring Status (April to July 2016) (1)

- **Aviation Fuel Pipeline Diversion Works**
  - Continue pilot hole drilling from Airport Island side
  - Installation of horizontal directional drilling (HDD) casing
  - Stockpiling of excavated materials from HDD operation



EM&A Monitoring Status (April to July 2016) (2)

- **Air Quality (2 stations) & Noise Monitoring (5 stations)**
  - 138 air quality and 85 noise monitoring events.
  - No exceedance of project-related action/ limit levels was recorded



EM&A Monitoring Status (April to July 2016) (3)

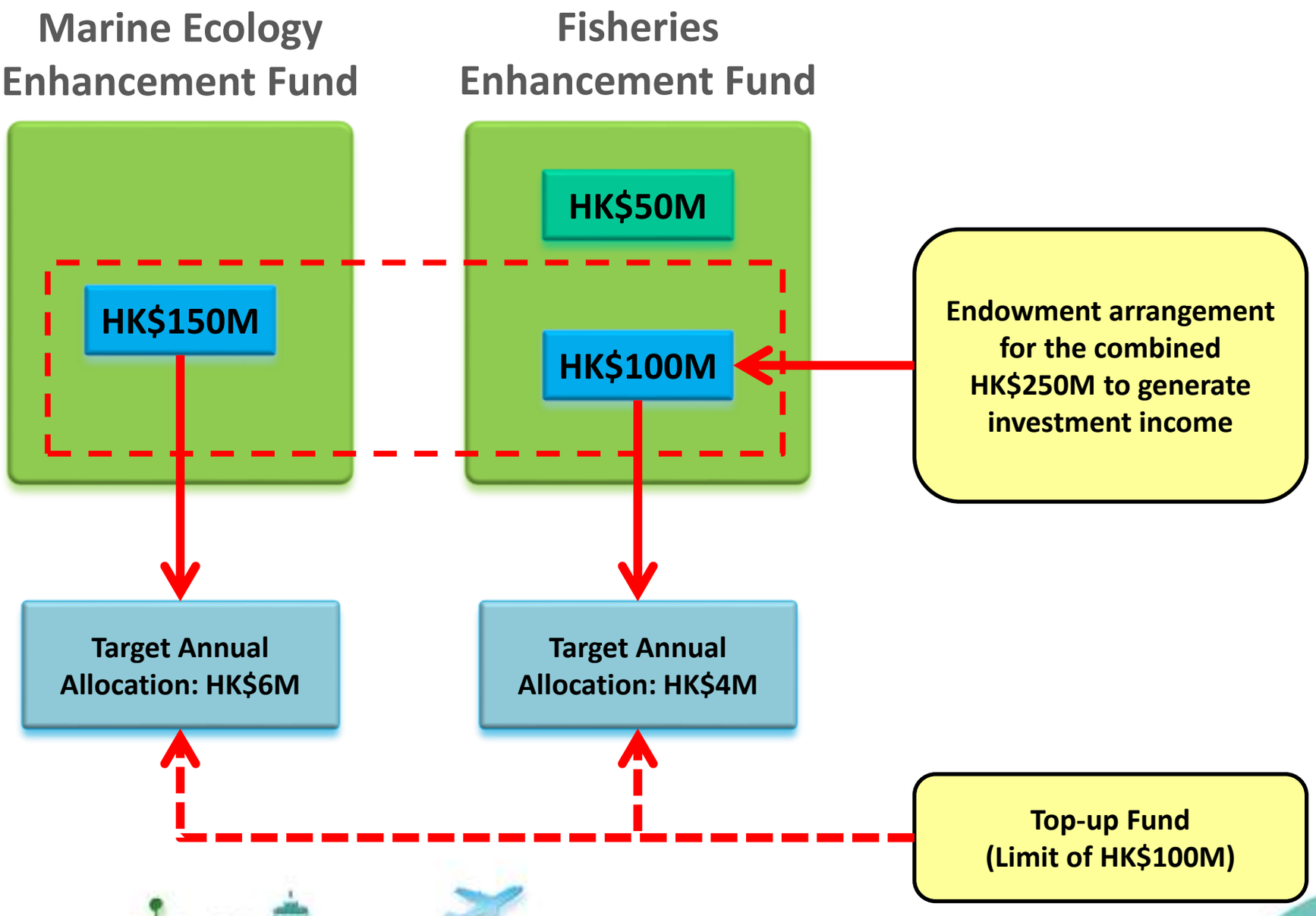
Weekly Environmental Site Inspection

- Major inspection items:
  - Waste statistics and records
  - Dust suppression measures
  - Improve the efficiency of water treatment facility
  - Proper storage and handling of chemical container
  - Proper handling of waste materials
  - Spill kits
- Other activities:
  - Oil spill drills
  - Instant monitoring of effluent discharge

Marine Ecology and Fisheries Enhancement Funds

Funding Arrangement

- To meet the conservation objectives in a long-term and sustainable manner



Fund Management Structure*

Steering Committee

Chair – AAHK

Members

- MEEF Management Committee Chairperson
- FEF Management Committee Chairperson
- Other non-AAHK members in the environmental management, engineering, investment or financial areas

(Committee size: 7)

MEEF Management Committee

Chair – (Non-AAHK)

Members

- Academic(s)
- Dolphin expert(s)
- Green group rep(s)
- Relevant stakeholder(s)
- AAHK member(s)

(Committee size: 11 - 13)

FEF Management Committee

Chair – (Non-AAHK)

Members

- Fishermen's Association rep(s)
- Fisheries expert(s)
- Relevant stakeholder(s)
- AAHK member(s)

(Committee size: 11 - 13)

Secretariat

AAHK

*** Details are available in MECP & FMP on the dedicated website.**

Timeline for the Enhancement Funds

Key Activities for Fund Preparation	Status
Application for recognition as approved charitable trusts	✓
Allocation of the Fund amount to separate bank account	✓
Preparation of Fund documentations (e.g. Operation Guidelines, Assessment Guidelines, Application Form and Guidance Note for applicants)	On-going
Invitation of MC and SC candidates / organisations	On-going

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Thank You

~ Discussion ~