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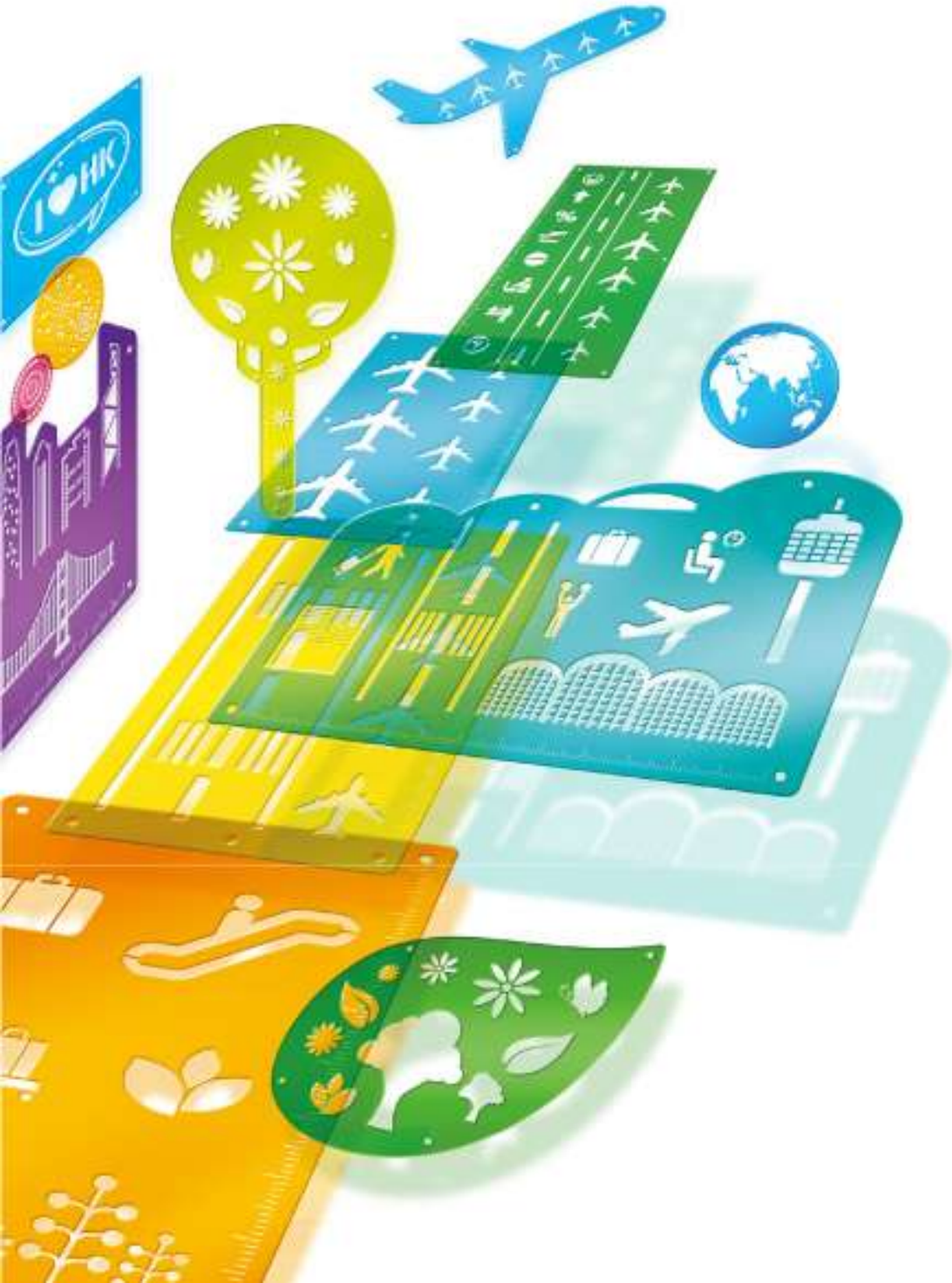

# Expansion of Hong Kong International Airport into a Three-Runway System

## 4th PLG Meeting
## 9 May 2017

Airport Authority Hong Kong

# Agenda

1. Latest Progress of the 3RS Project
2. Report on Marine Traffic Route and Management Plan for High Speed Ferries of SkyPier (SkyPier Plan)
3. Report on Coral Translocation Plan
4. Other EM&A Updates
5. Marine Ecology and Fisheries Enhancement Funds

# Latest Progress of the 3RS Project

- Reclamation related marine works commenced in August 2016
- Fulfilled all relevant EP conditions prior to the commencement of marine works, including relevant EP submissions and baseline water quality and CWD monitoring
- Established the Marine Traffic Control Centre in Q4 2016 to monitor and manage the 3RS project related marine traffic
- Currently undertaking ground improvement works, including sand blanket laying and deep cement mixing works, for seawall and CMP areas

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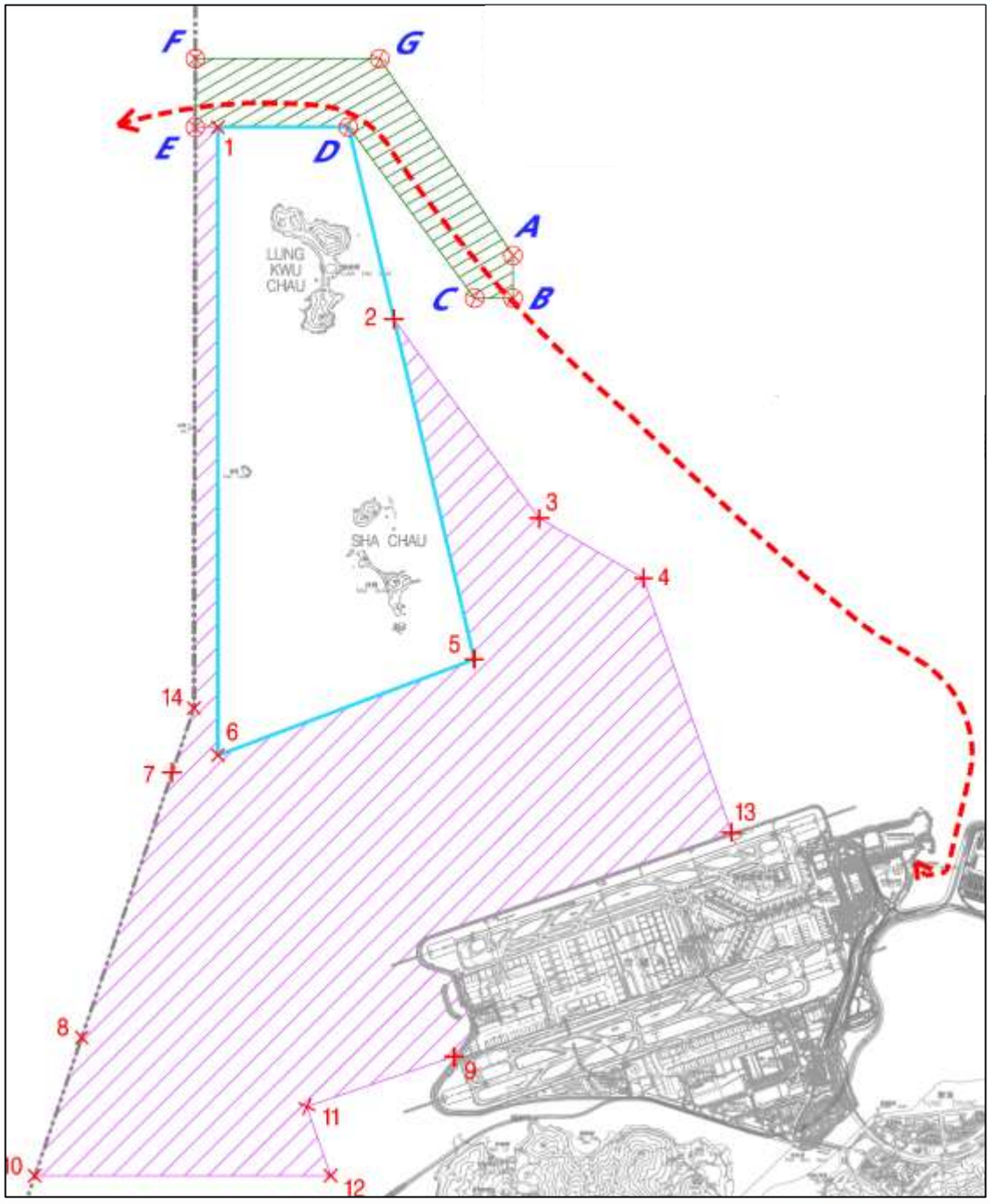
# Report on Marine Traffic Route and Management Plan for High Speed Ferries of SkyPier (SkyPier Plan)

# Diversion of SkyPier HSF to mitigate potential disturbance on CWDs

- Diverted route for HSFs to/from Zhuhai and Macau
- 15-knot* Speed Control Zone (SCZ)
- Marine Prohibited Zone
- Daily Cap (125) on HSF Movements
- Annual Daily Average (99) HSF Movements




* 15 knots is considered as the practicable speed limit for HSF. The average speeds of SkyPier HSFs travelling within the SCZ from March to December 2016 were mostly in the range of 11 to 14 knots.

If the speed limit was set below the above limit, there will be safety concerns associated with ferries operating at such a low speed and will create discomfort to passengers.

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# Summary of SkyPier Plan Implementation (March to December 2016)

- Total no. of diverted HSF trips from March to December 2016: 8,282
- 99.96% of the diverted HSF trips comply with the average speed within 15 knots (except 3 cases with marginal speed exceedances, e.g. skippers had to give way to other vessels in the SCZ)
- Average 27 diverted HSF trips per day
- Instantaneous speeding within SCZ all related to navigation or public safety reasons, e.g. due to strong waves and tidal currents or need to give way to other vessels, except 7 cases. Skipper re-trainings/meetings were held.
- Annual daily average of HSF movements (all routes): 91 (below the cap of 99)

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# CWD Monitoring Surveys

**Vessel Line-Transect Survey:**

- **Distribution**
- **Density/abundance**
- **Behaviour/movements (photo-ID, focal follows)**

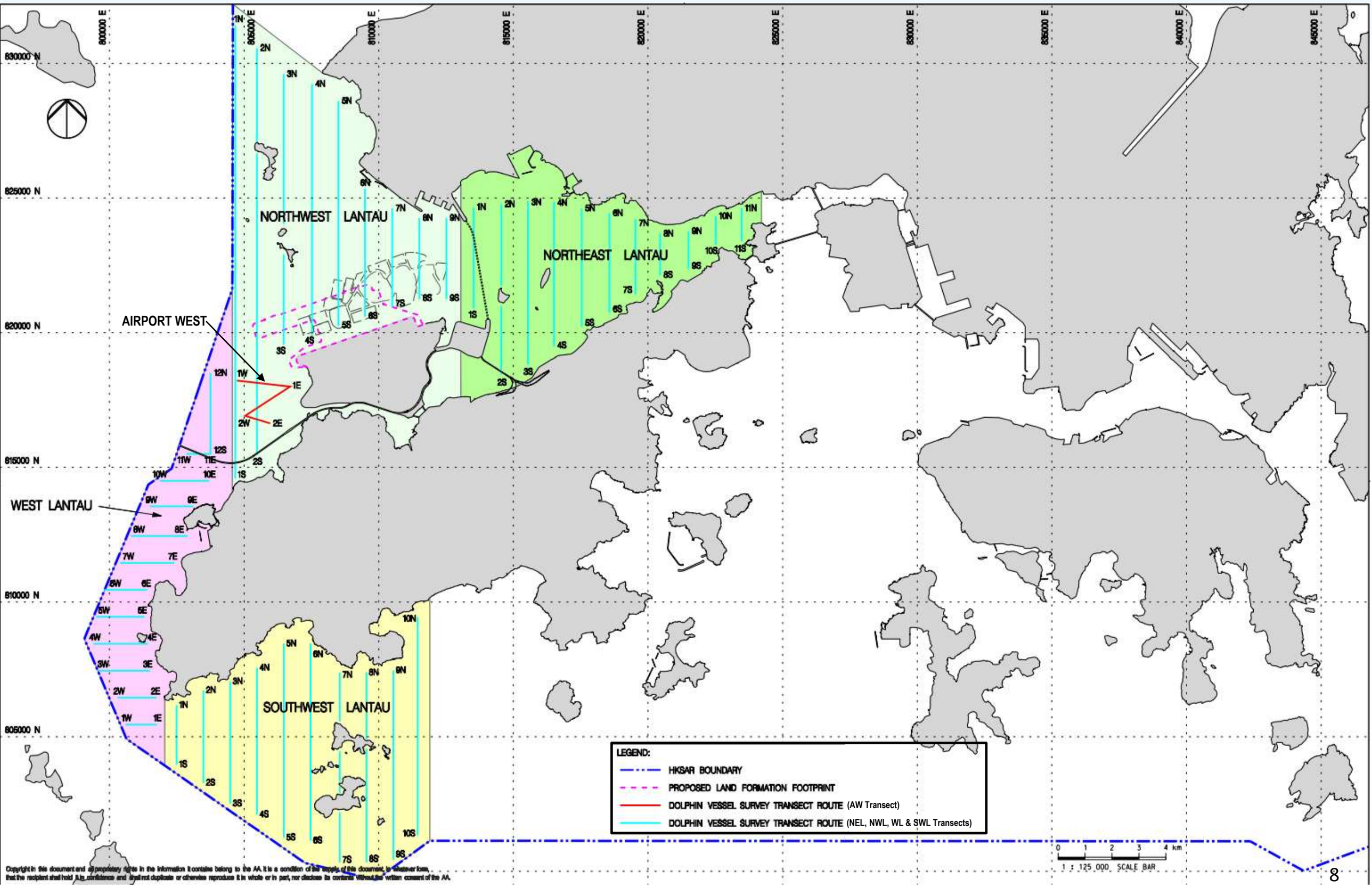
**Land-Based Theodolite Tracking:**

- **Behaviour/activities**
- **Vessel responses**
- **Travel patterns**

**Passive Acoustic Monitoring:**

- **Diurnal behavioural patterns**
- **Noise characteristics of environment**

# 12-month CWD Vessel Line-Transect Monitoring



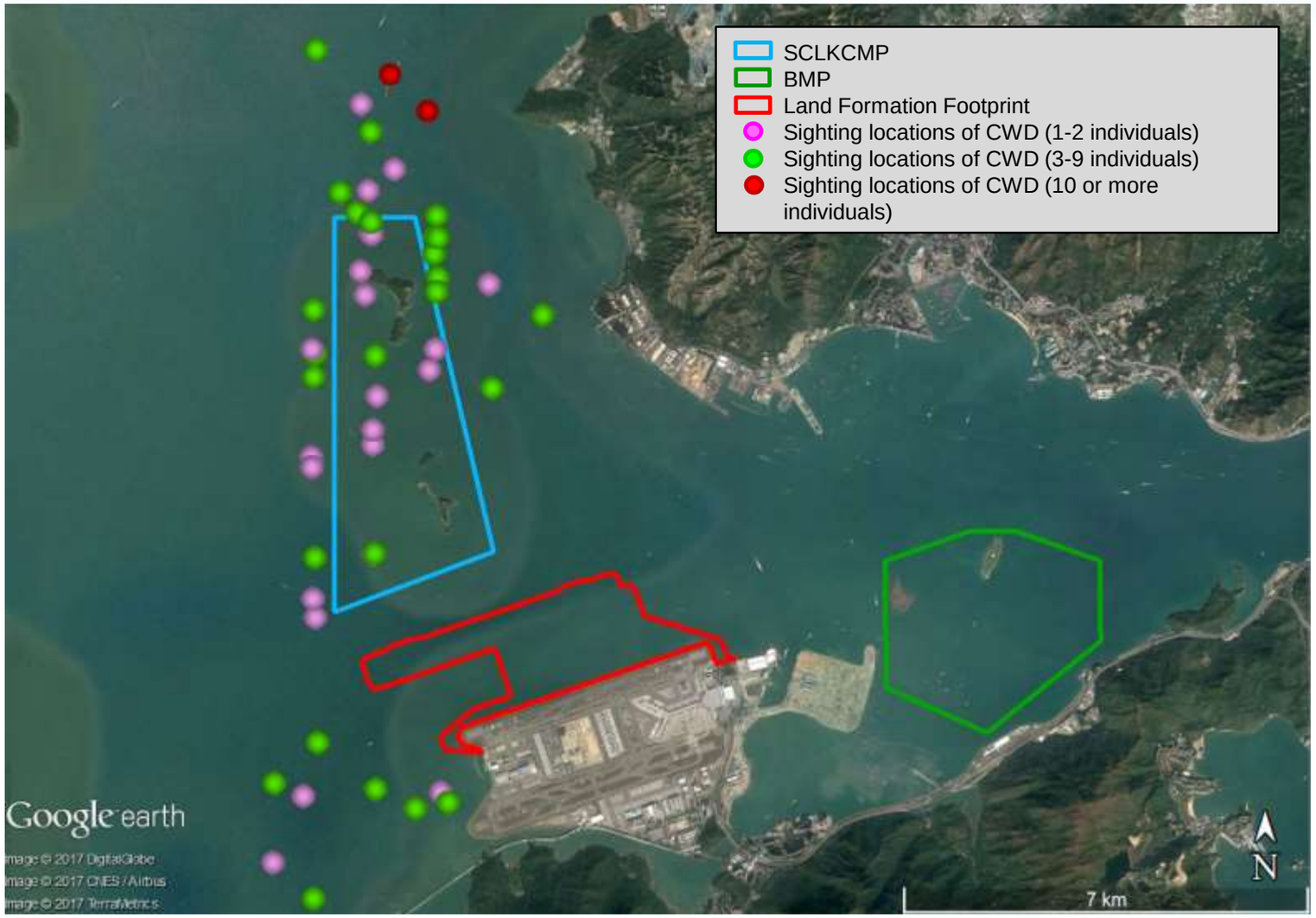
# CWD Monitoring Results (Vessel)

- 24 rounds of transect surveys covering NEL, NWL, AW, WL and SWL survey areas completed between 18 Dec 2015 to 23 Dec 2016.
- 208 groups of CWDs with 785 individuals were sighted (during on-effort survey with Beaufort Sea State 3 or below)
- CWD group size average was 3.77, ranged from 1 to 24 individuals

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

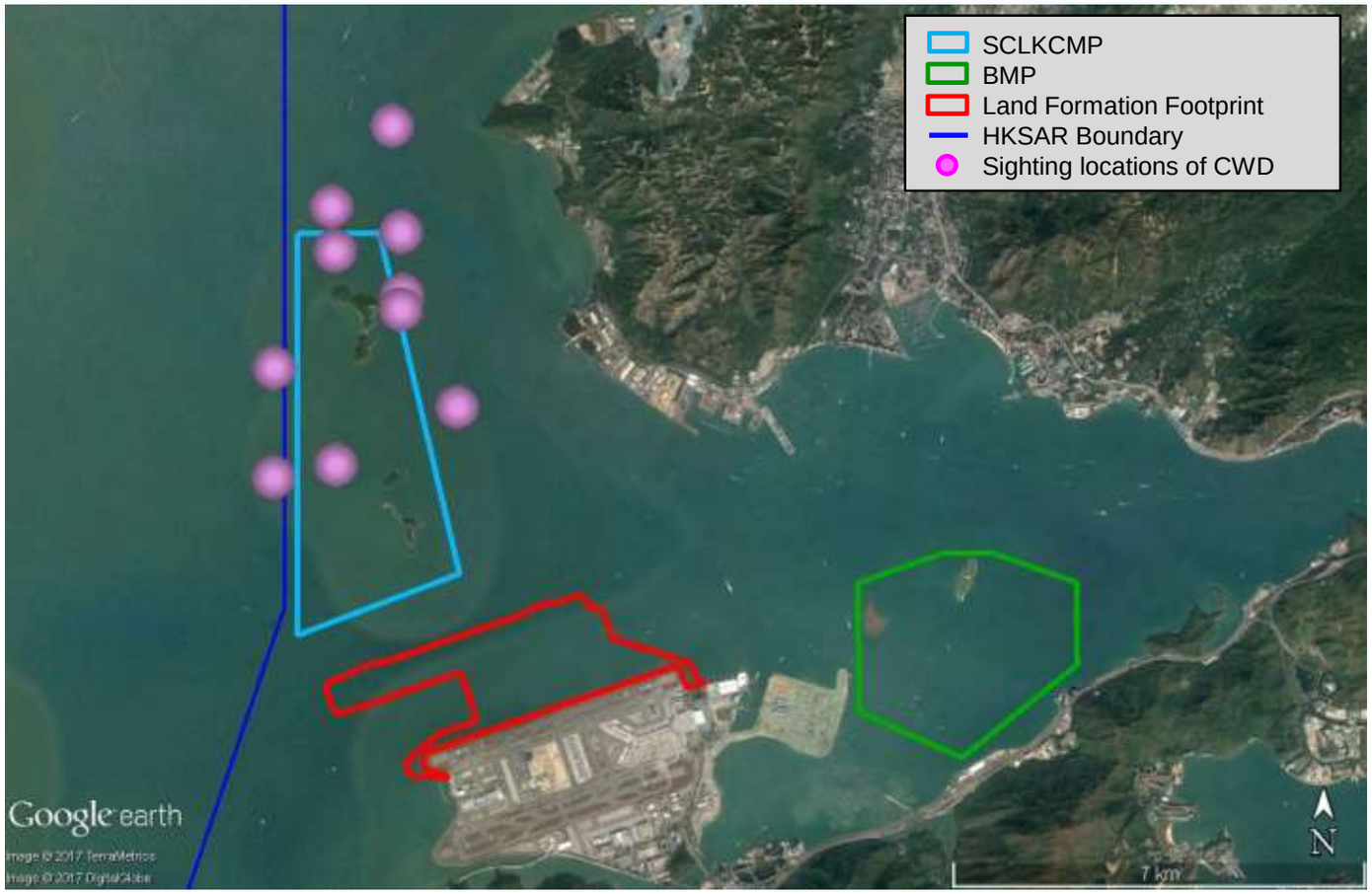
# CWD Monitoring Results (Vessel)

- Sightings of CWDs common 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
- Observed 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 SCZ implementation



# CWD Monitoring Results (Vessel)

- A total of 165 CWD individuals were identified by photo identification
- 16 identified individuals were re-sighted within/in close proximity to SCLKCMP
- *Case Study 1*- A mother-and-mottled pair (NLMM006 and NLMM013) used areas around SCLKCMP extensively for foraging, especially around Lung Kwu Chau

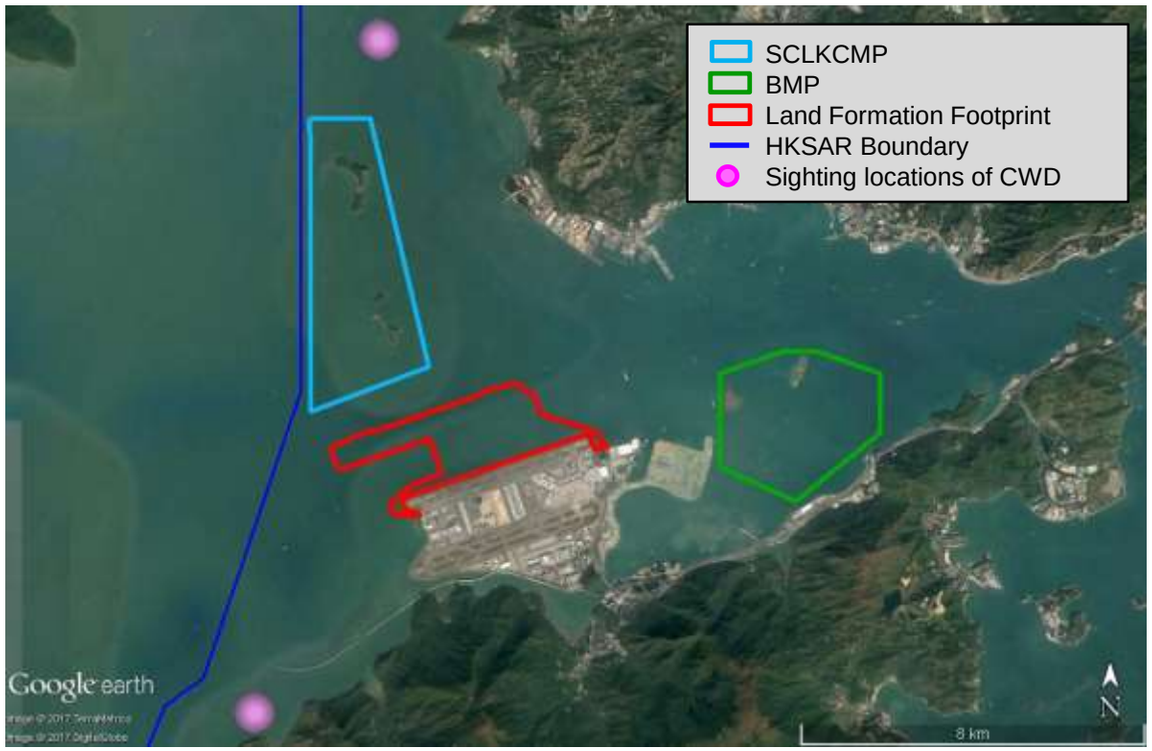



Sighting Locations of NLMM006 and NLMM013 from mid-Dec 2015 to Dec 2016

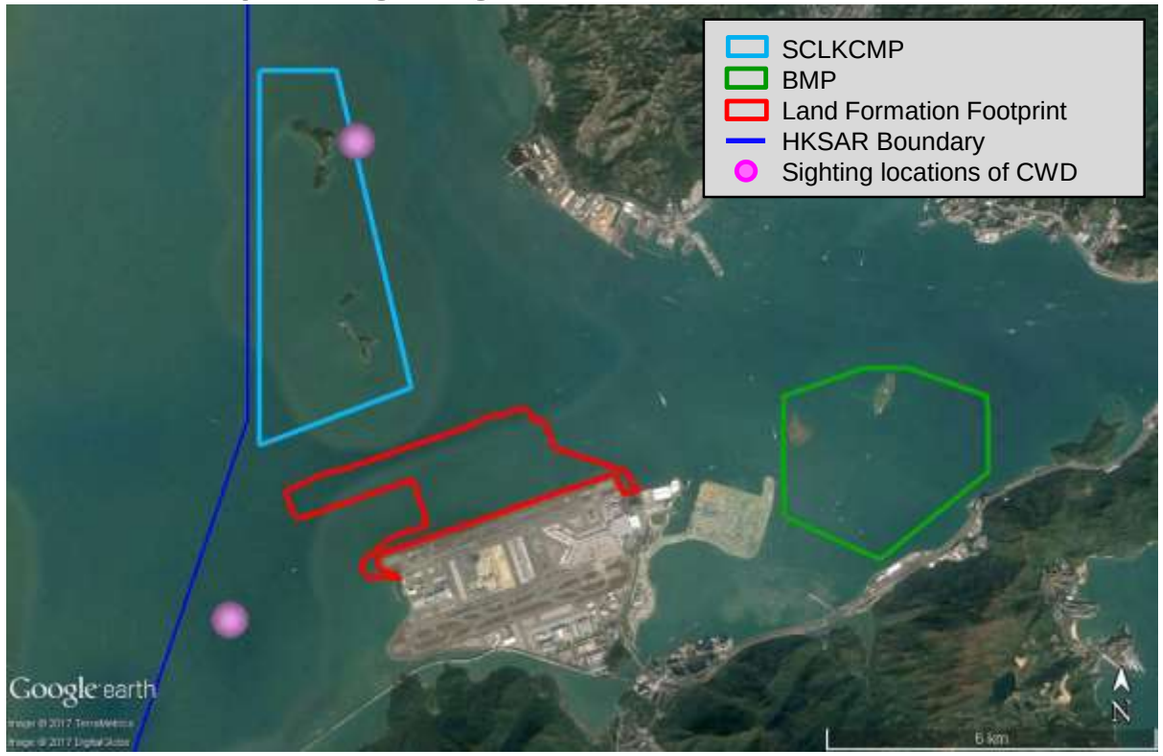
# CWD Monitoring Results (Vessel)

- Some photo-identified CWDs in the Lung Kwu Chau area also sighted in the western Lantau areas
- The results show that some CWDs inhabit NWL move between different transect areas including WL
- This is consistent with what has been determined from long-term AFCD monitoring data.

Case Study 2: Sighting Locations of NLMM008




Case Study 3: Sighting Locations of NLMM038

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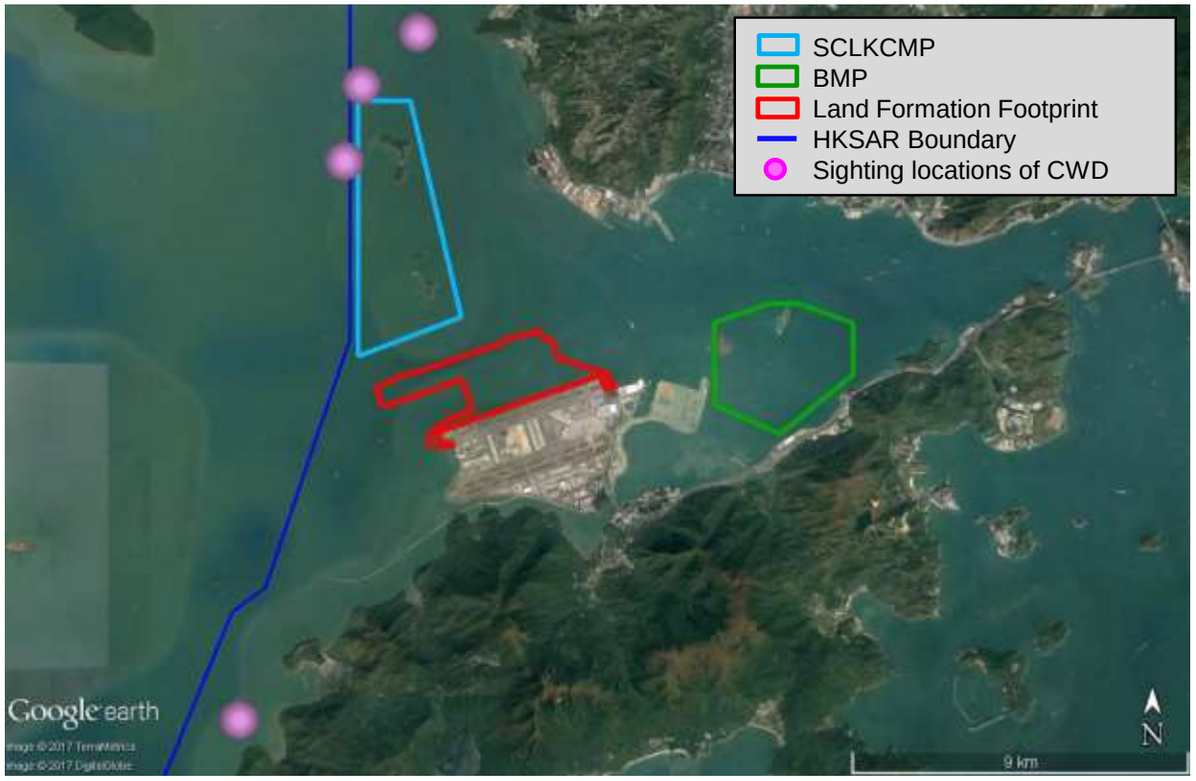
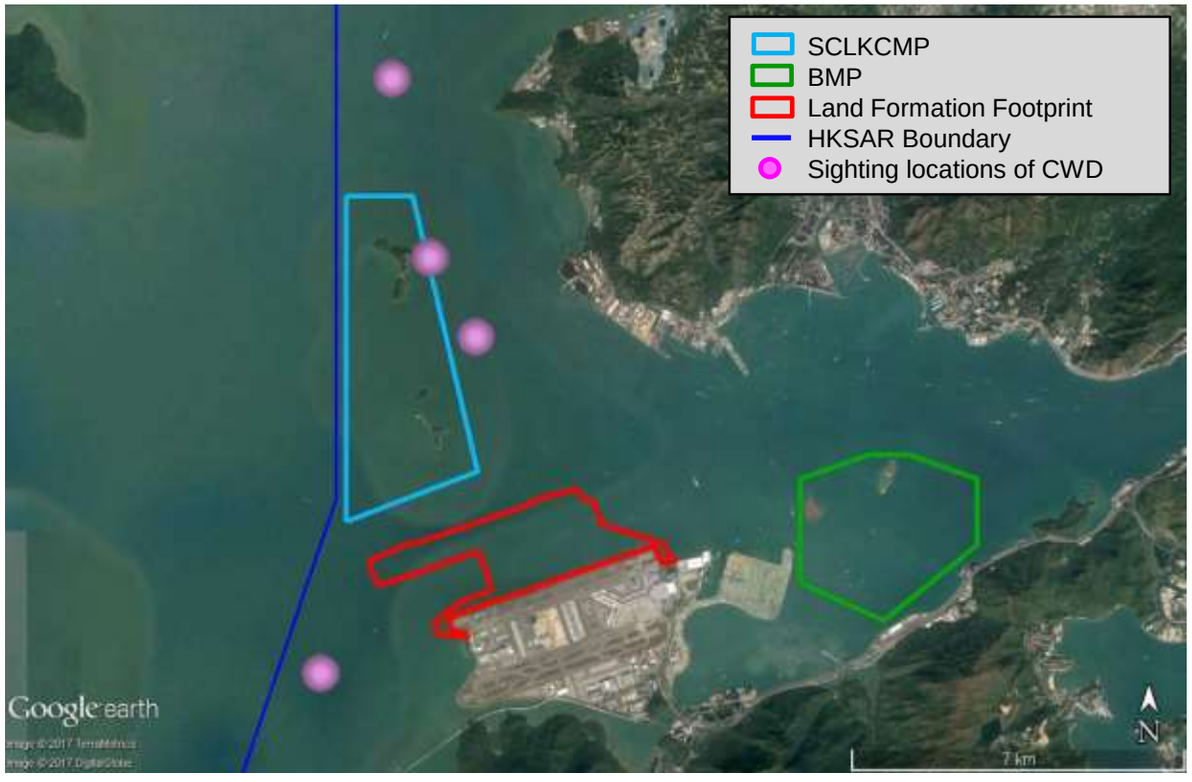
# CWD Monitoring Results (Vessel)

Case Study 4: Sighting Locations of NLMM012

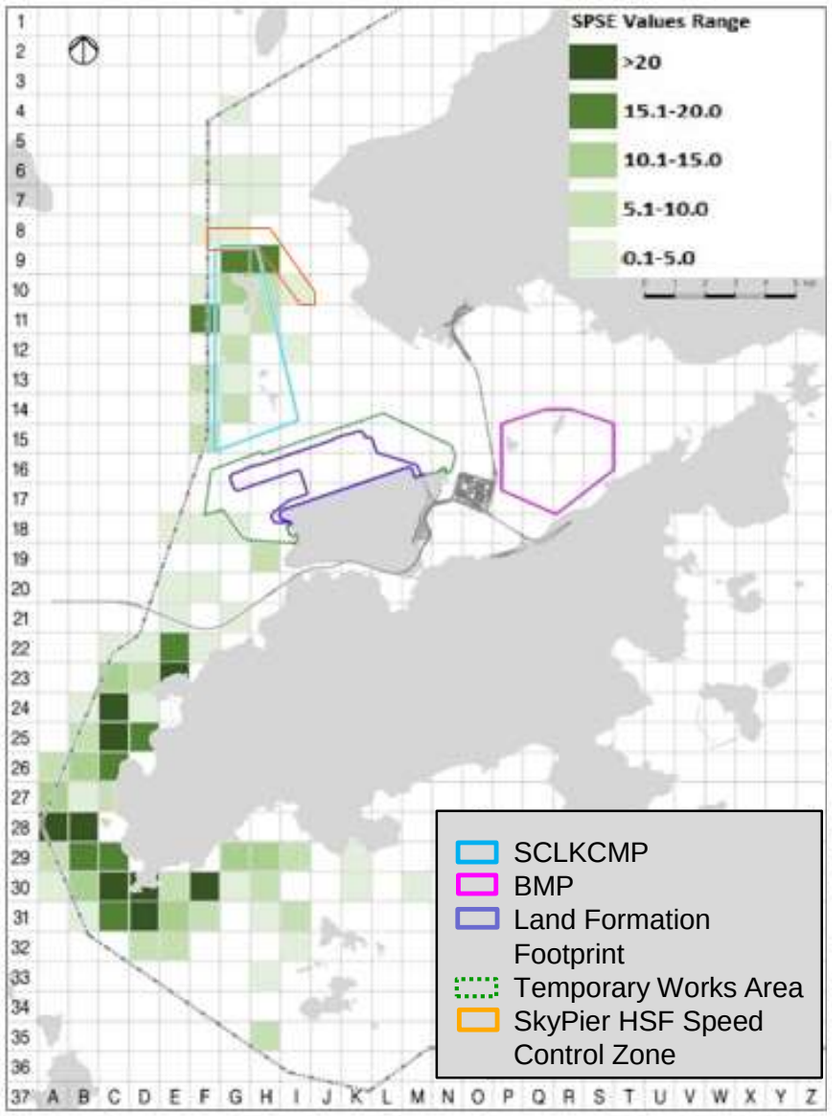



Case Study 5: Sighting Locations of NLMM028

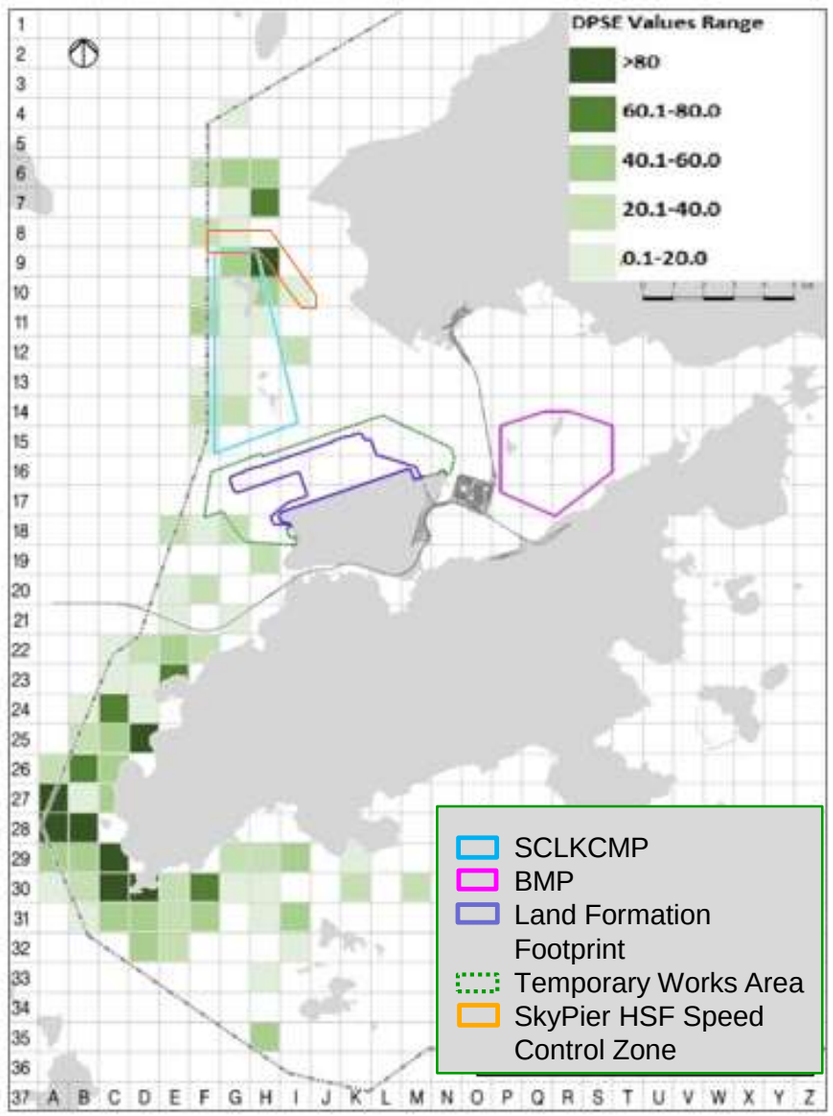


# CWD Monitoring Results (Vessel)

- Quantitative grid analysis on habitat use was conducted using the 3RS sighting data.
- Both sightings and dolphins per unit effort show same pattern.
- Shows both the waters to the north of Lung Kwu Chau and entire West Lantau area remain important habitats for CWDs in HK.

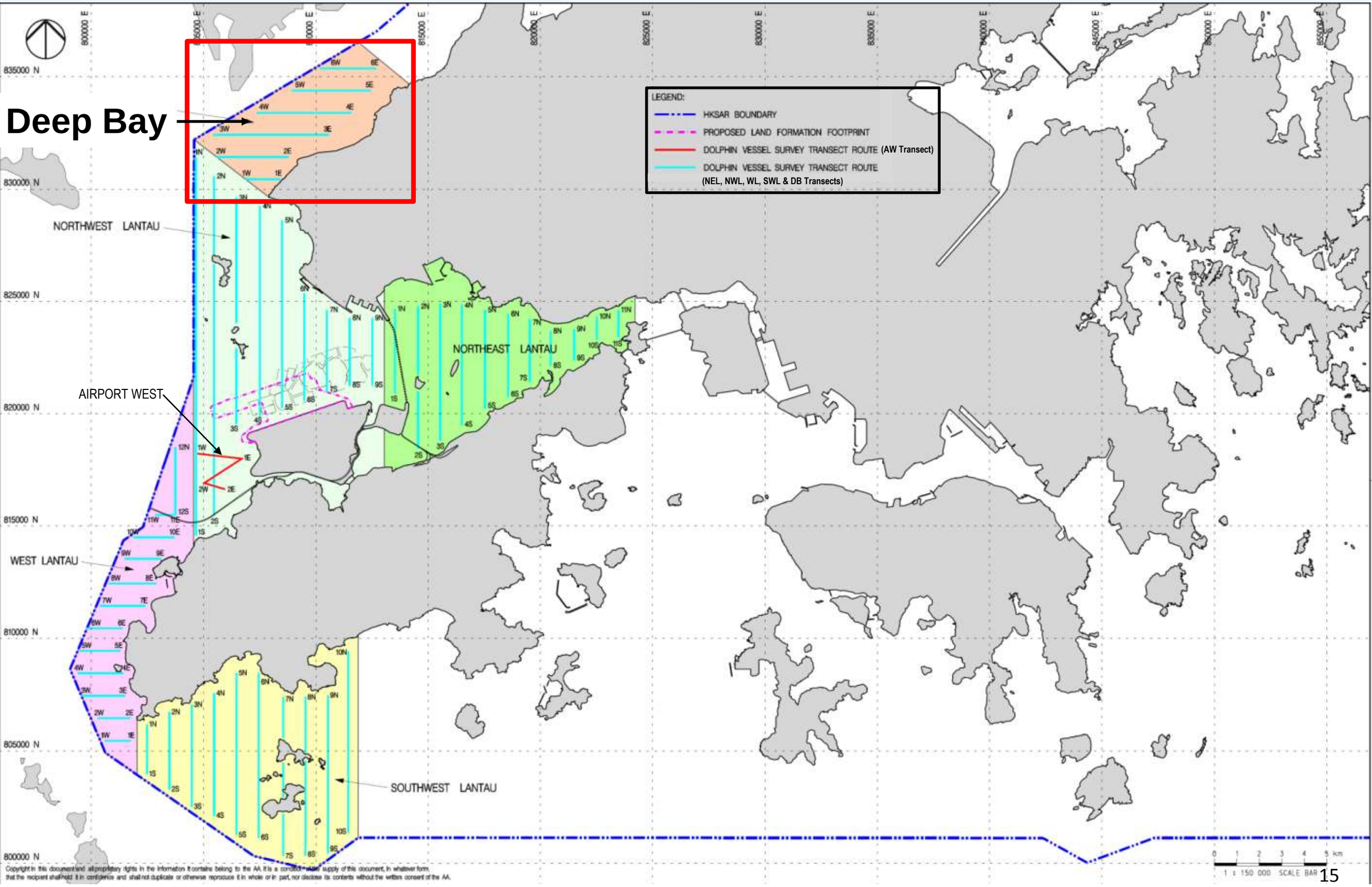



SPSE (no. of on-effort CWD sightings per 100 units of survey effort)



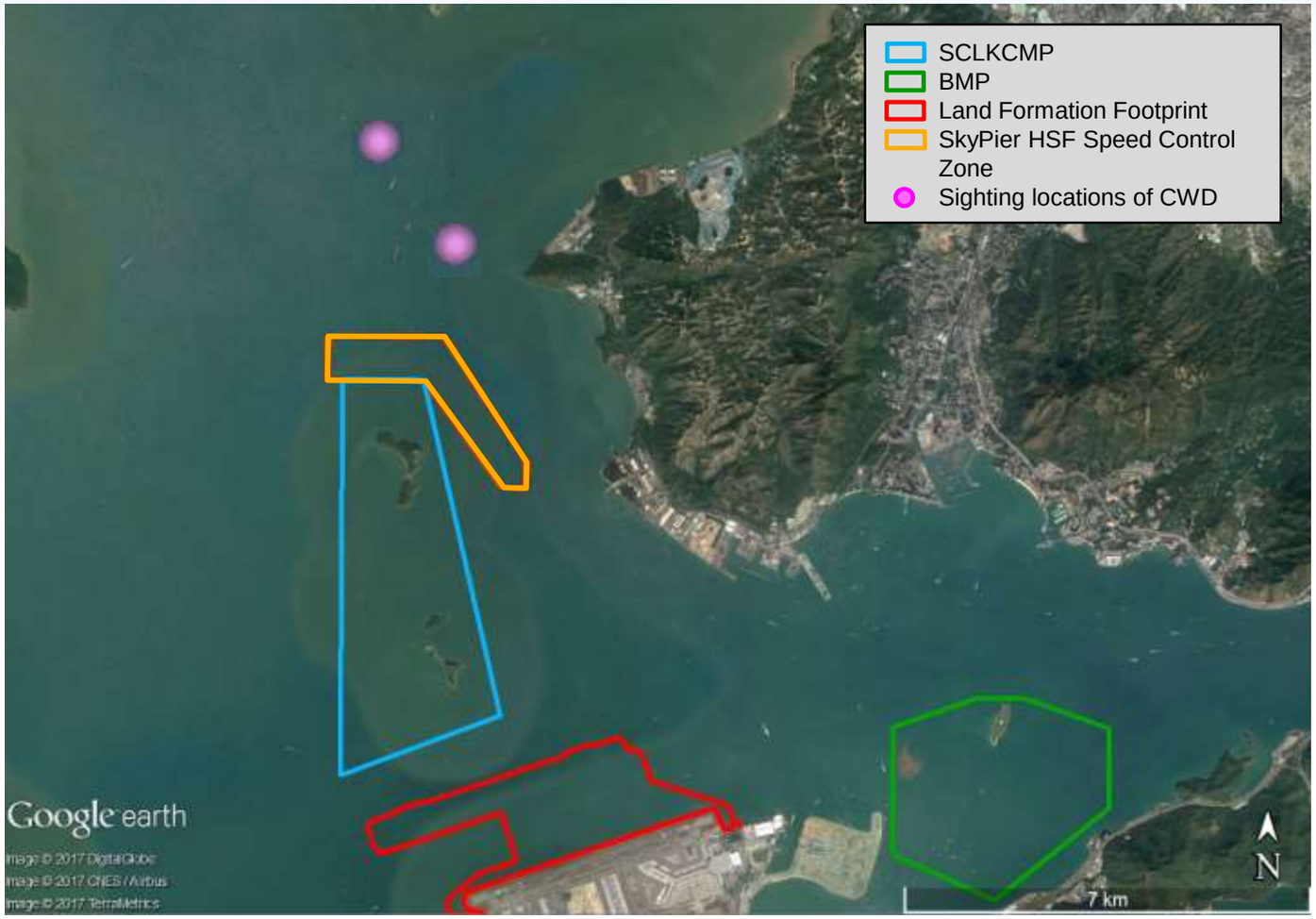

DPSE (no. of CWDs per 100 units of survey effort)

# Additional Voluntary Vessel Surveys in Deep Bay Area

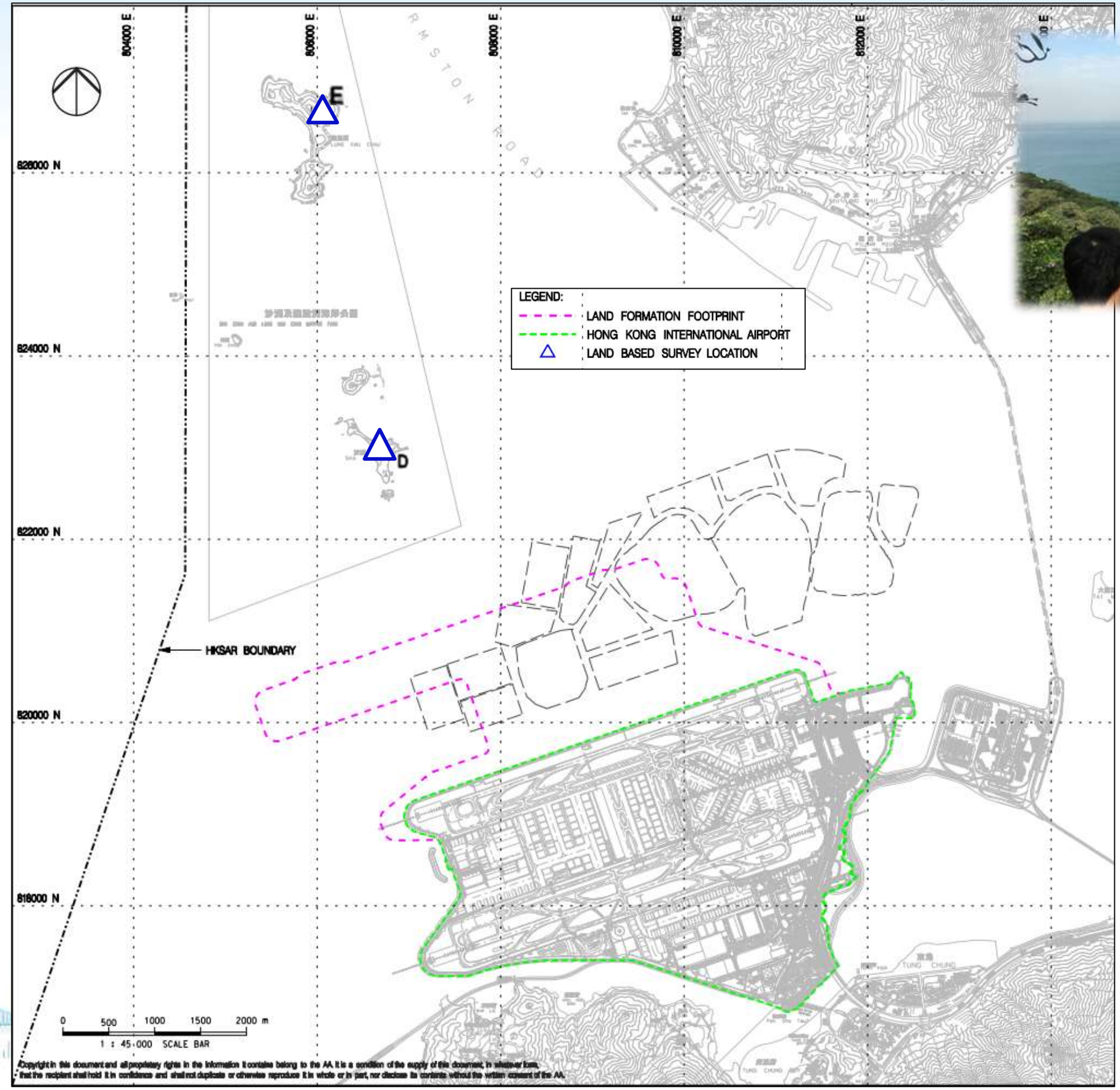


# Additional Voluntary Vessel Surveys in Deep Bay Area

- 24 surveys were conducted in Deep Bay to assess overall habitat use and help determine whether dolphins may also be shifting into the area.
- Two groups of CWDs were sighted on Deep Bay transects.
- The total abundance of CWDs in 2016 was estimated to be 59 in survey areas NWL, NEL, WL and SWL.
- With inclusion of Deep Bay survey data, the pooled abundance was estimated as 63.
- For comparison, the CWD abundance estimated by AFCD in 2015 was 65 (NWL, NEL, WL and SWL).



# 12-month CWD Land-based Theodolite Tracking Monitoring



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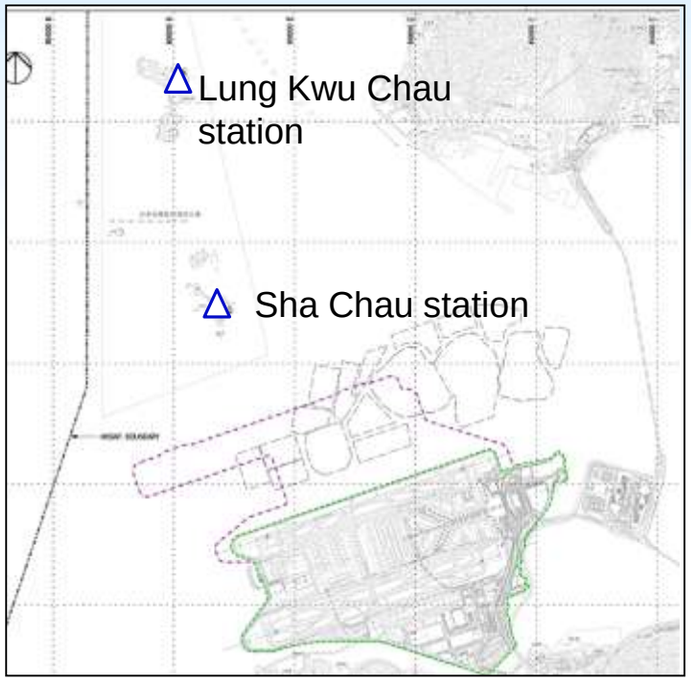
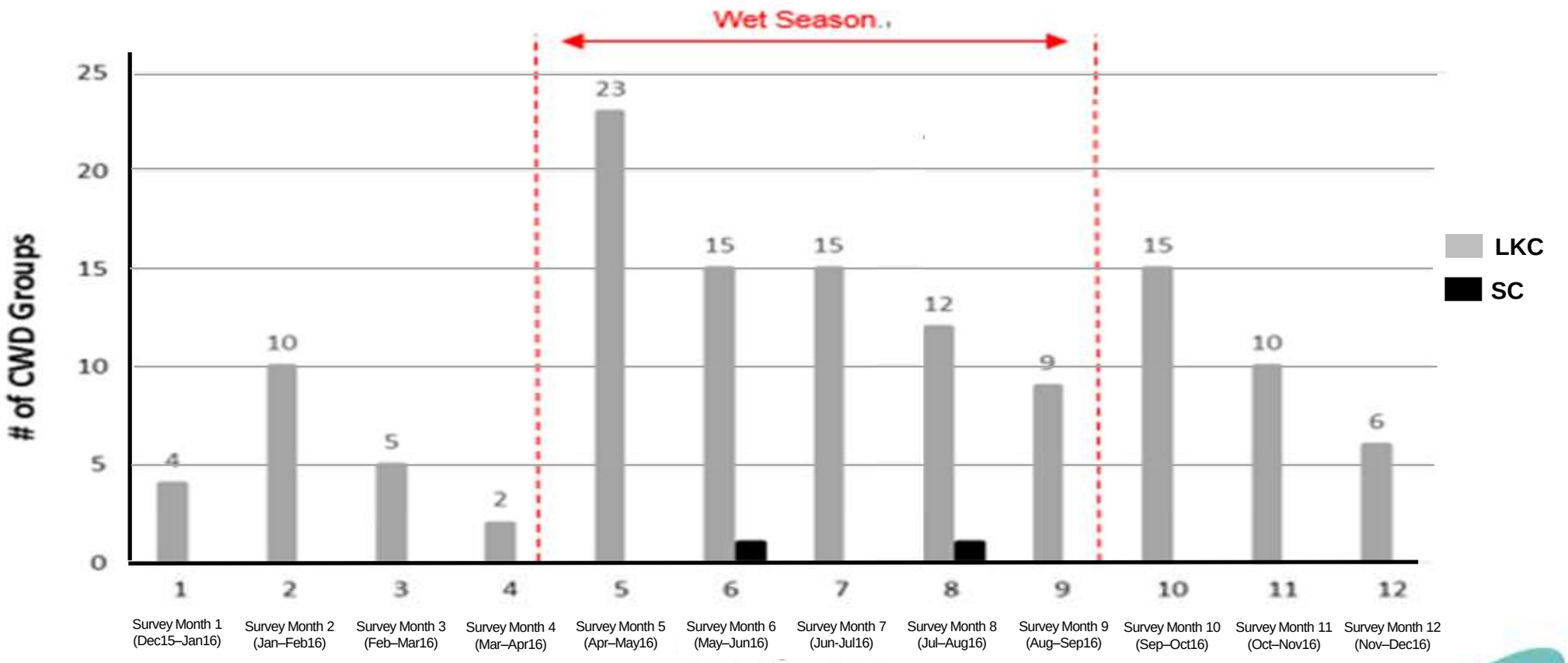
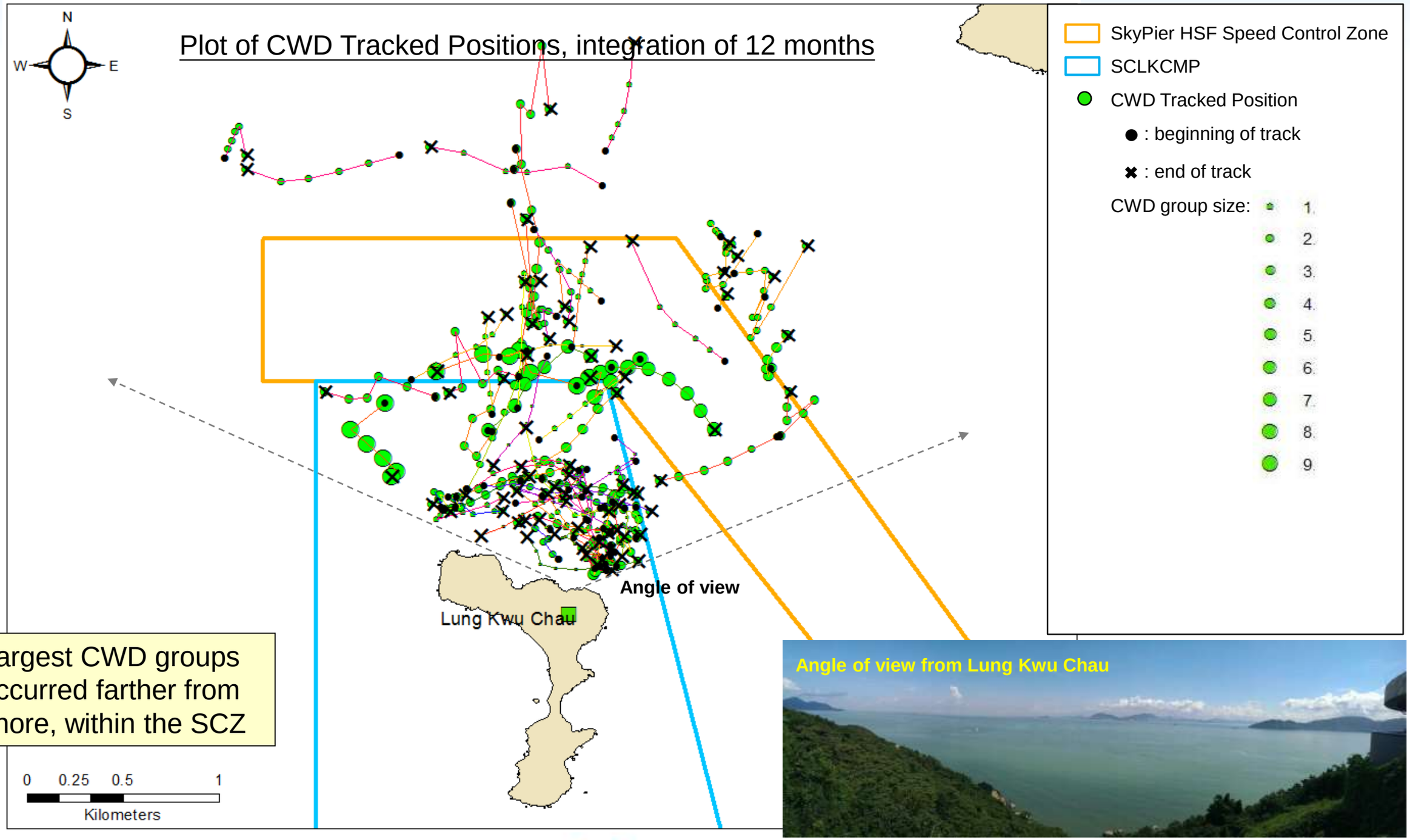
# Land-based Survey Results

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



# Land-based Survey Results




Largest CWD groups occurred farther from shore, within the SCZ

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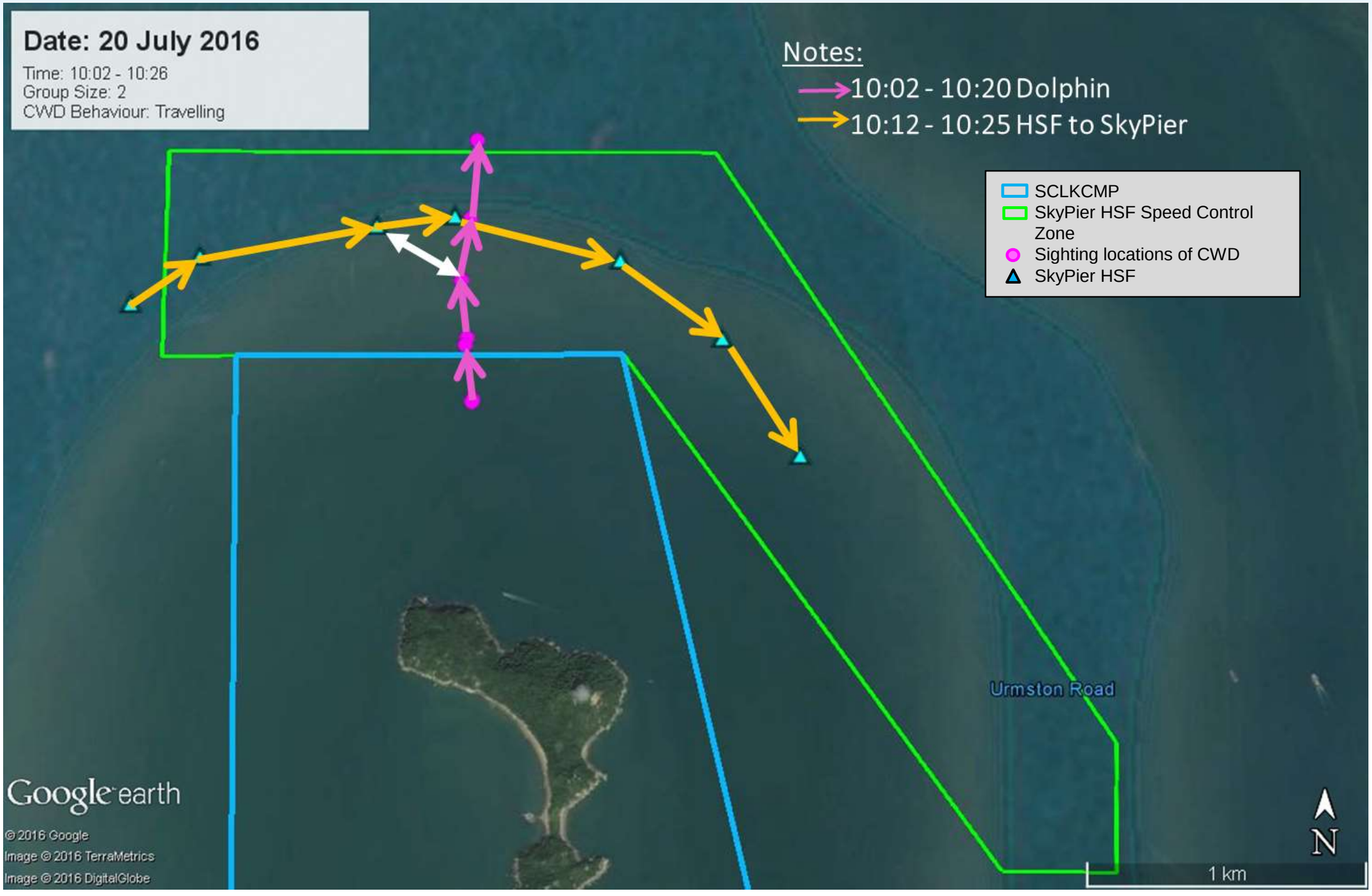
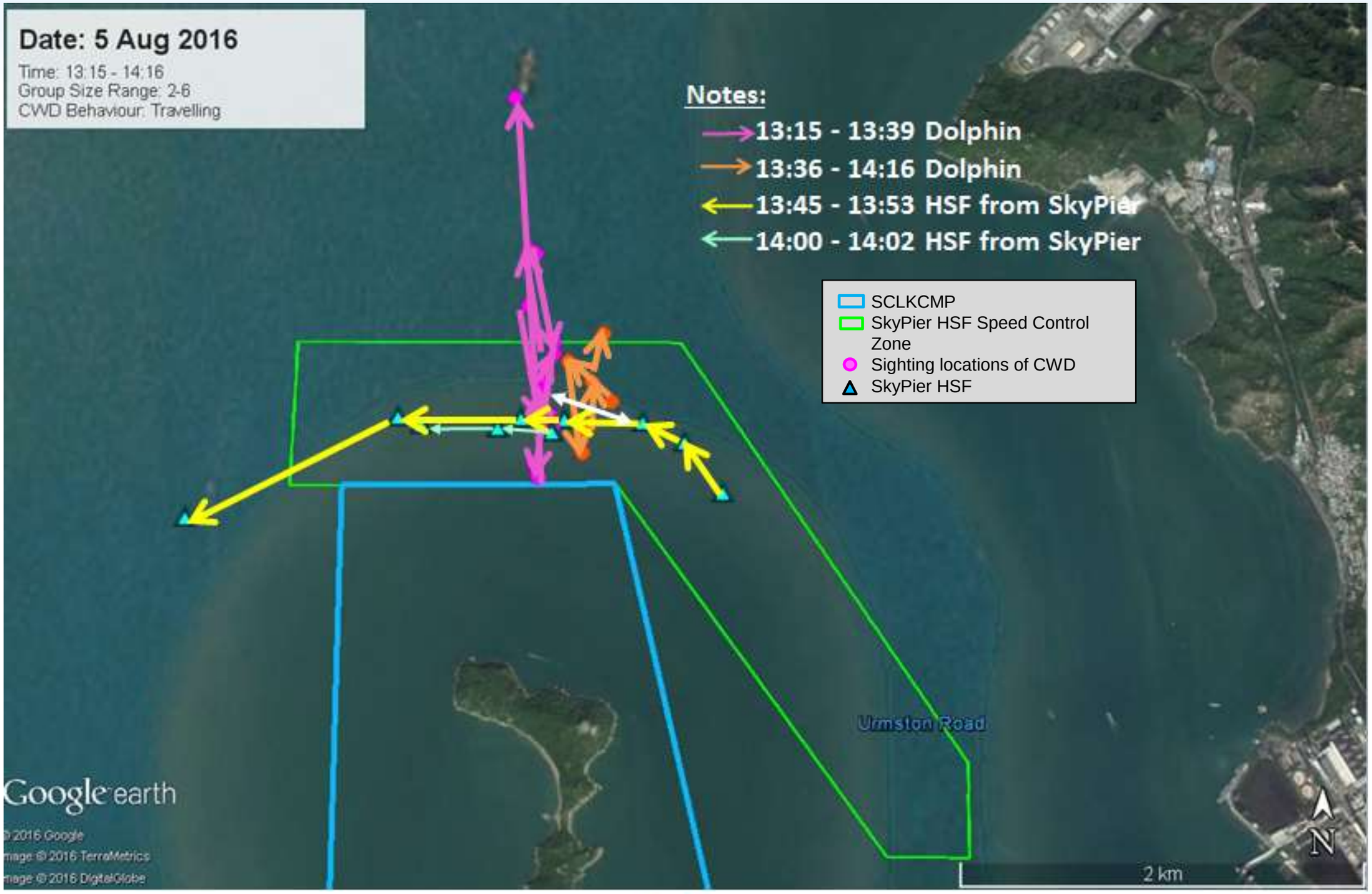
# Case Study 6: Co-occurrence of CWDs and Diverted SkyPier HSFs observed within SCZ during Land-based Surveys on different days

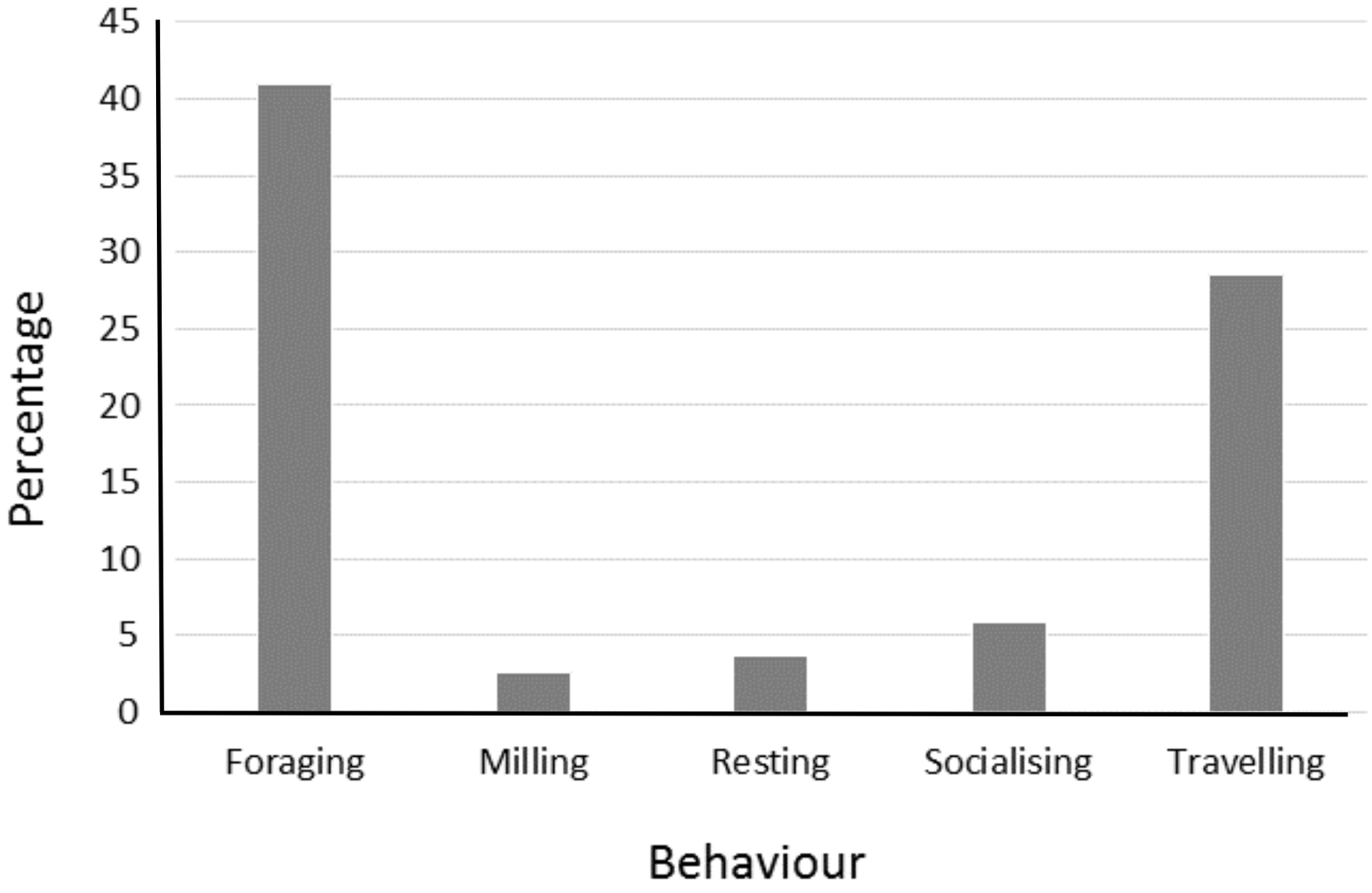


# Case Study 7: Co-occurrence of CWDs and Diverted SkyPier HSFs observed within SCZ during Land-based Surveys on different days



# Land-based Survey Results

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

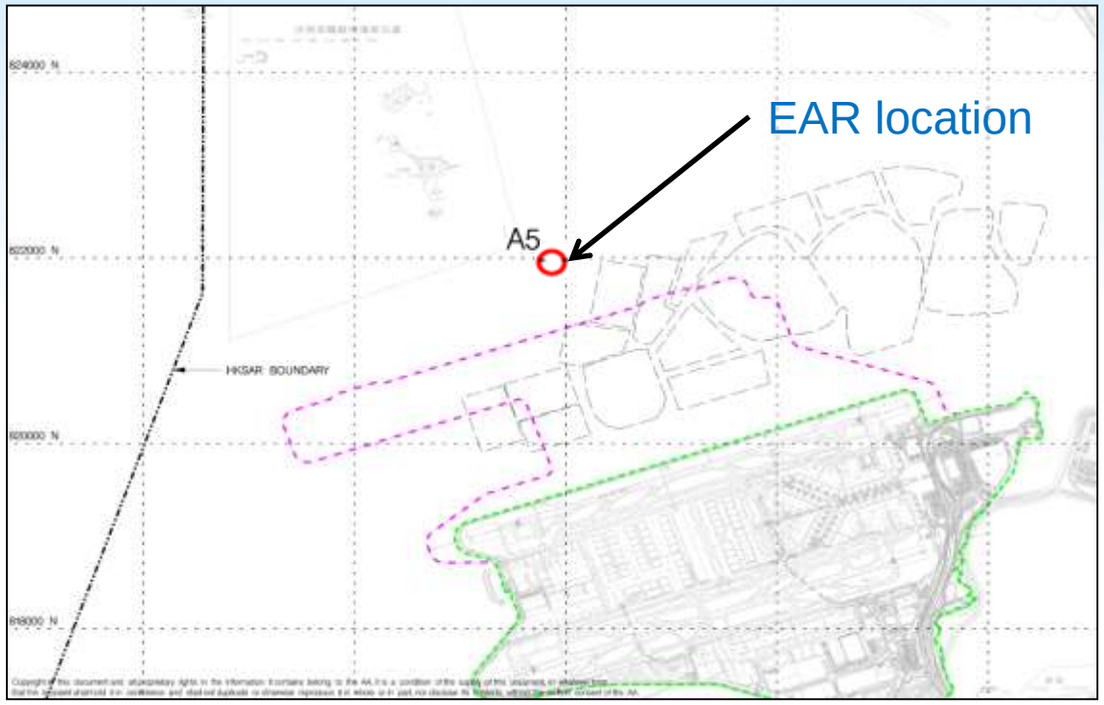


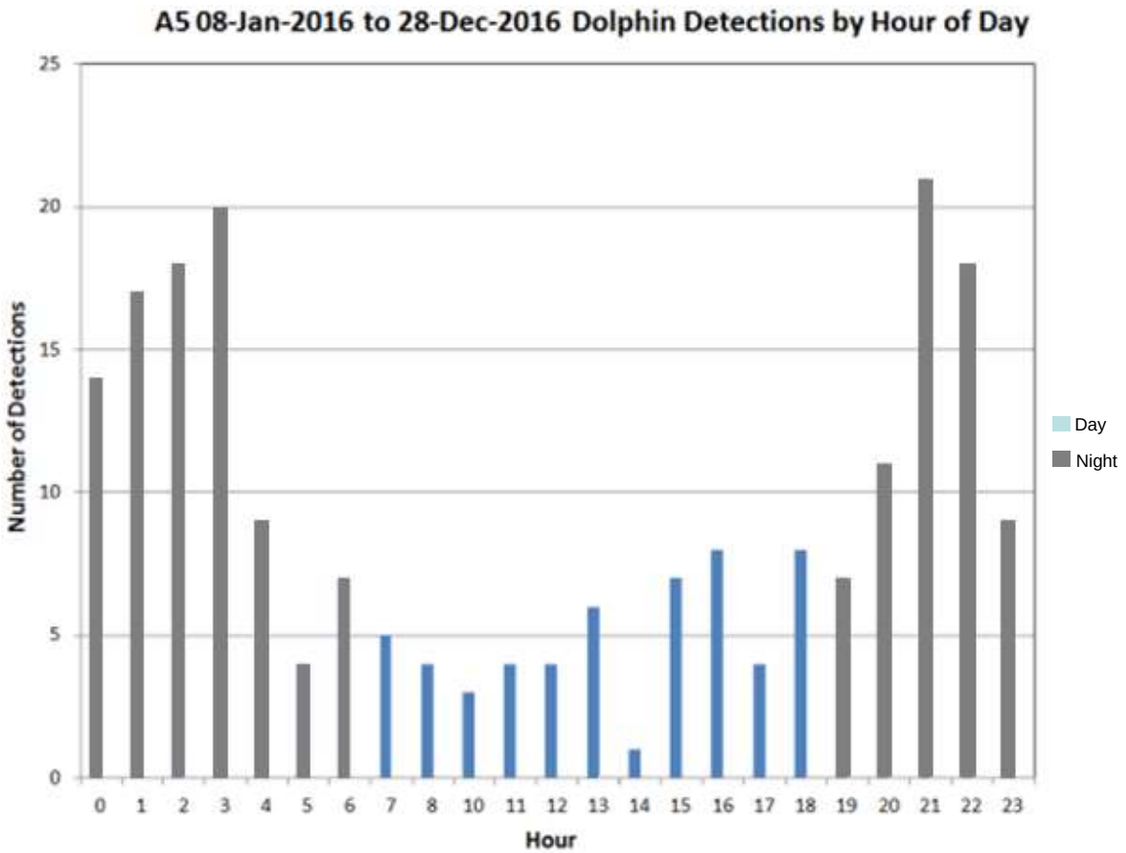

Observations confirm that the waters off Lung Kwu Chau remain an important foraging area for CWDs

*Remarks: The total percentage of the five known behaviours does not equal to 100% as some CWD groups were sighted with unidentified behaviours.*

# Passive Acoustic Monitoring Results

- Dolphins were detected on 104 of 261 (40%) days with recording effort (during the period of 8 Jan to 28 Dec 2016)
- Clicks (including burst pulses detected from Oct to Dec 2016) were the predominant type of dolphin signal detected (n = 209 detections)
- Dolphin detection rates were greatest during winter and spring months (Jan through May 2016)
- Diurnal detection of clicks showed a consistent pattern of higher levels at night compared with the day, but no seasonal differences in the diel pattern were evident
- Peak detection hours between 2100-2200 and 0200-0300
- Indicated more use of echolocation by dolphins during hours of darkness



# Concluding Remarks

- The waters off Lung Kwu Chau remain an important foraging area for CWDs.
- Photo identification shows several individuals used areas around SCLKCMP extensively for foraging.
- There is no evidence of a decline in dolphin use of the SkyPier HSF Speed Control Zone around Lung Kwu Chau since ferry re-routing.
- CWDs were observed in waters close to SkyPier HSFs travelling at below 15 knots.
- It is expected that diverted SkyPier HSFs with speed control:
  - will help reduce CWD/HSF collision risks and noise disturbance in the waters between the SCLKCMP and airport; and
  - will not result in apparent negative behavioural disturbance on CWDs along the diverted route.
- The SkyPier Plan will continue to be implemented to mitigate impacts on CWD.
- The Environmental Team will continue the CWD monitoring during the construction phase.

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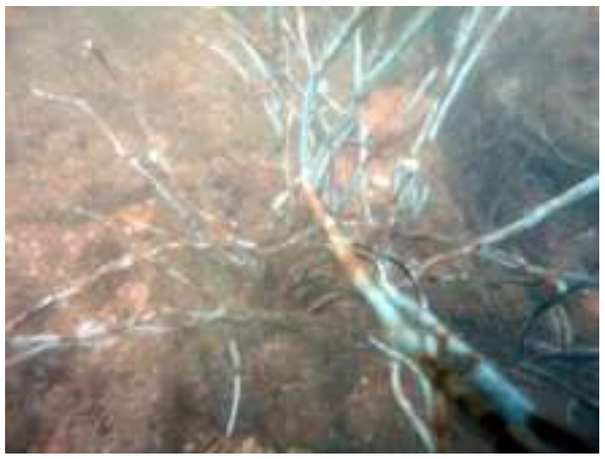
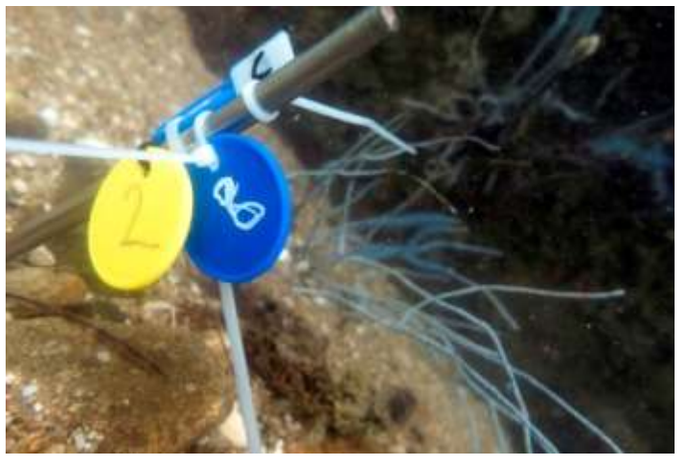
# Report on Coral Translocation Plan

# Coral Translocation

- A Coral Translocation Plan (CTP) was submitted to EPD and AFCD in May 2016
- Coral translocation works was conducted according to the CTP:
  - Moved those coral colonies together with their attached substratum (movable boulder <50cm) to the recipient site at Yam Tsai Wan
  - The translocated colonies were tagged for identification purposes
  - Translocation works completed in January 2017, post-translocation monitoring underway
- An enhanced post-translocation monitoring programme with 8 rounds of monitoring in 27 months (vs original plan of 6 rounds in 15 months) is implemented.



Translocated coral at Yam Tsai Wan



A tagged colony

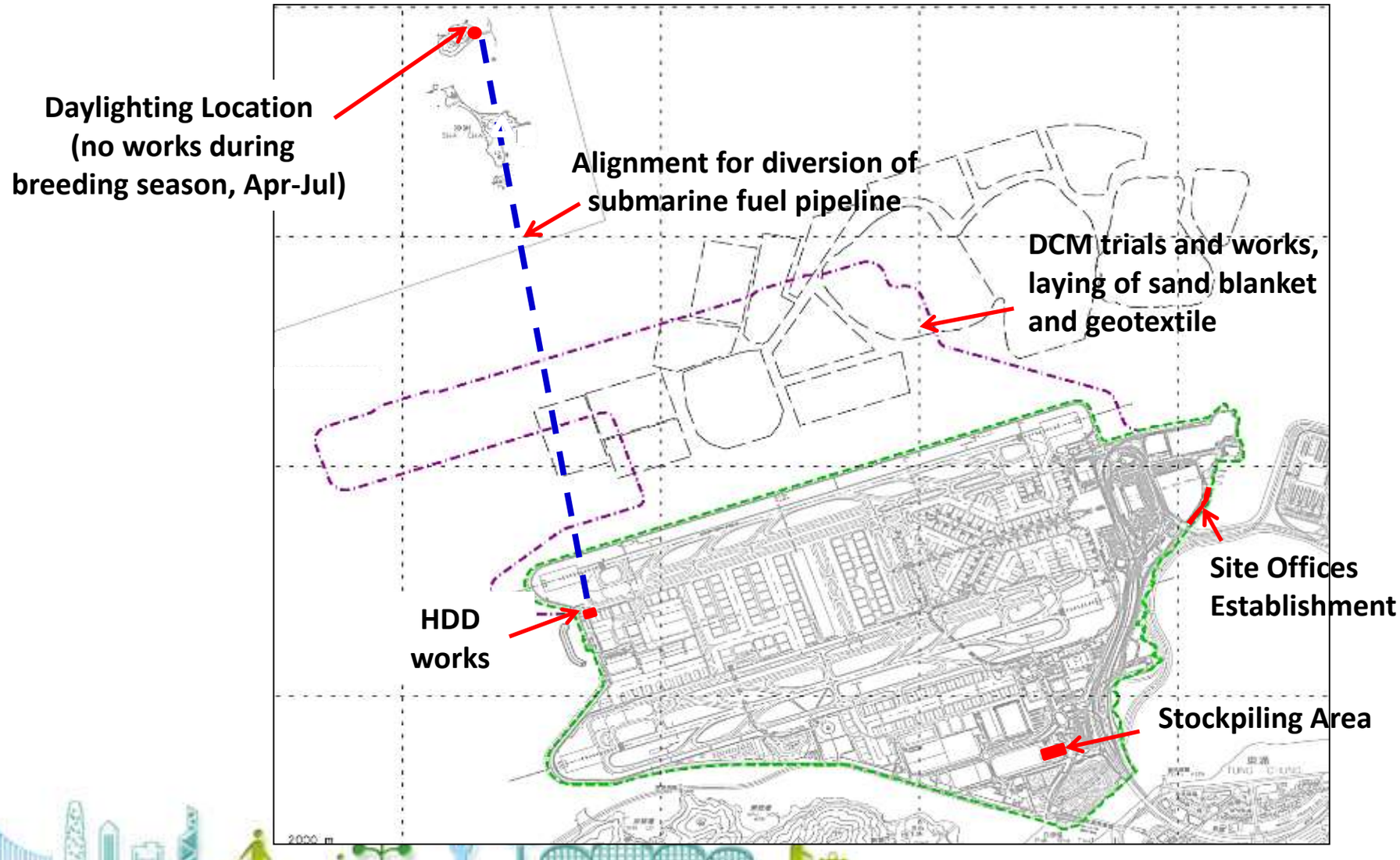
# Coral Transplantation Study

- Initiated to conduct a coral transplantation study to address the comments of the Advisory Council on the Environment (ACE)
- A local coral expert Dr. David Baker from the University of Hong Kong was engaged to lead the study
- Coral fragments were clipped and coral colonies were cut from big substrata and moved to the nursery and recipient site at Yam Tsai Wan
- Transplantation works completed in February 2017, post-transplantation monitoring underway
- Post-transplantation monitoring programme involves 9 rounds of monitoring within 39 months

# Other EM&A Updates

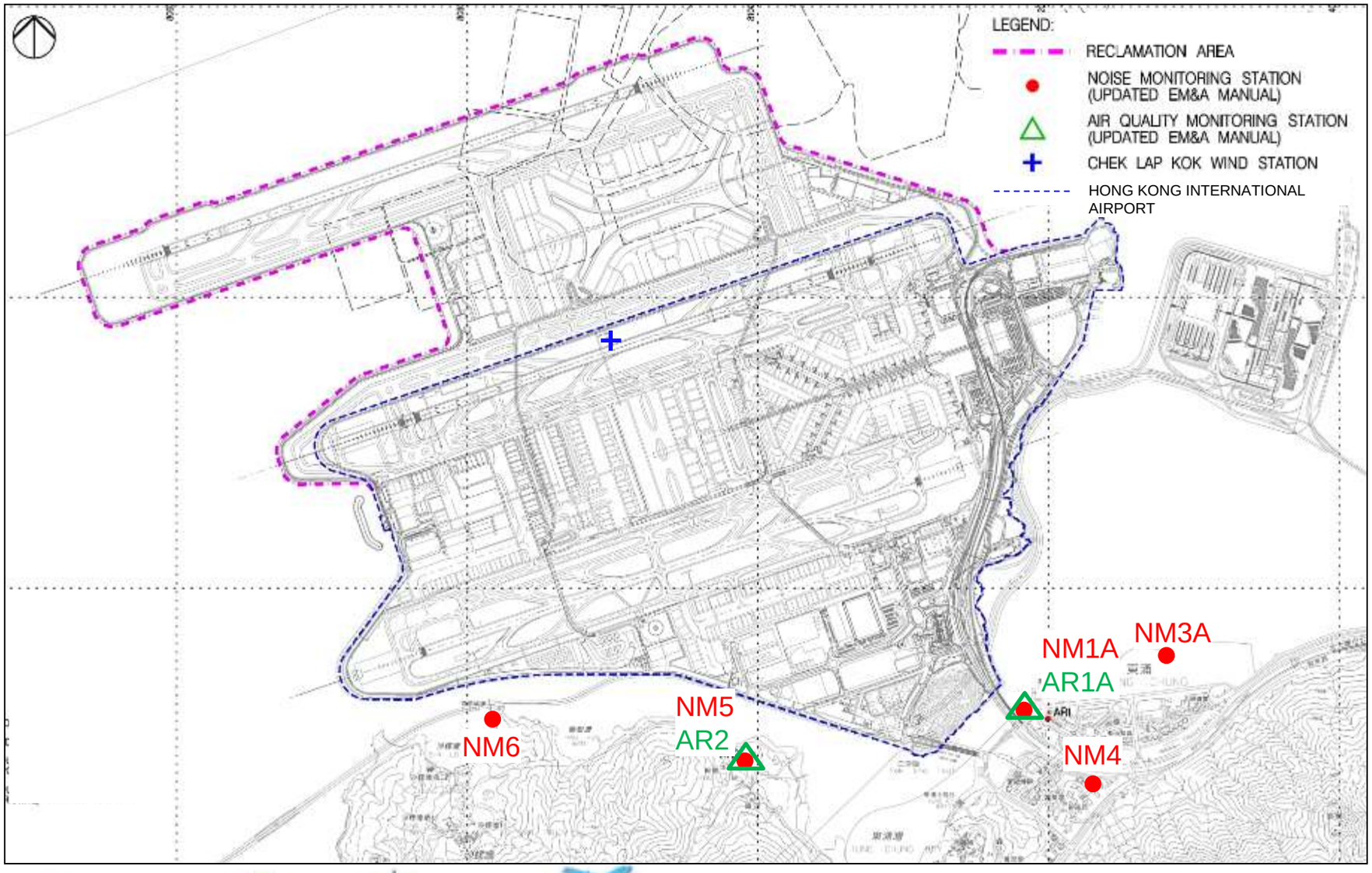
# EM&A Monitoring Status (August 2016 to March 2017) (1)

- Overall 3RS works
  - Continue pilot hole drilling from Airport Island side;
  - Installation of horizontal directional drilling (HDD) casing;
  - DCM trials and works, laying of sand blanket and geotextile; and
  - Establishment of site offices.



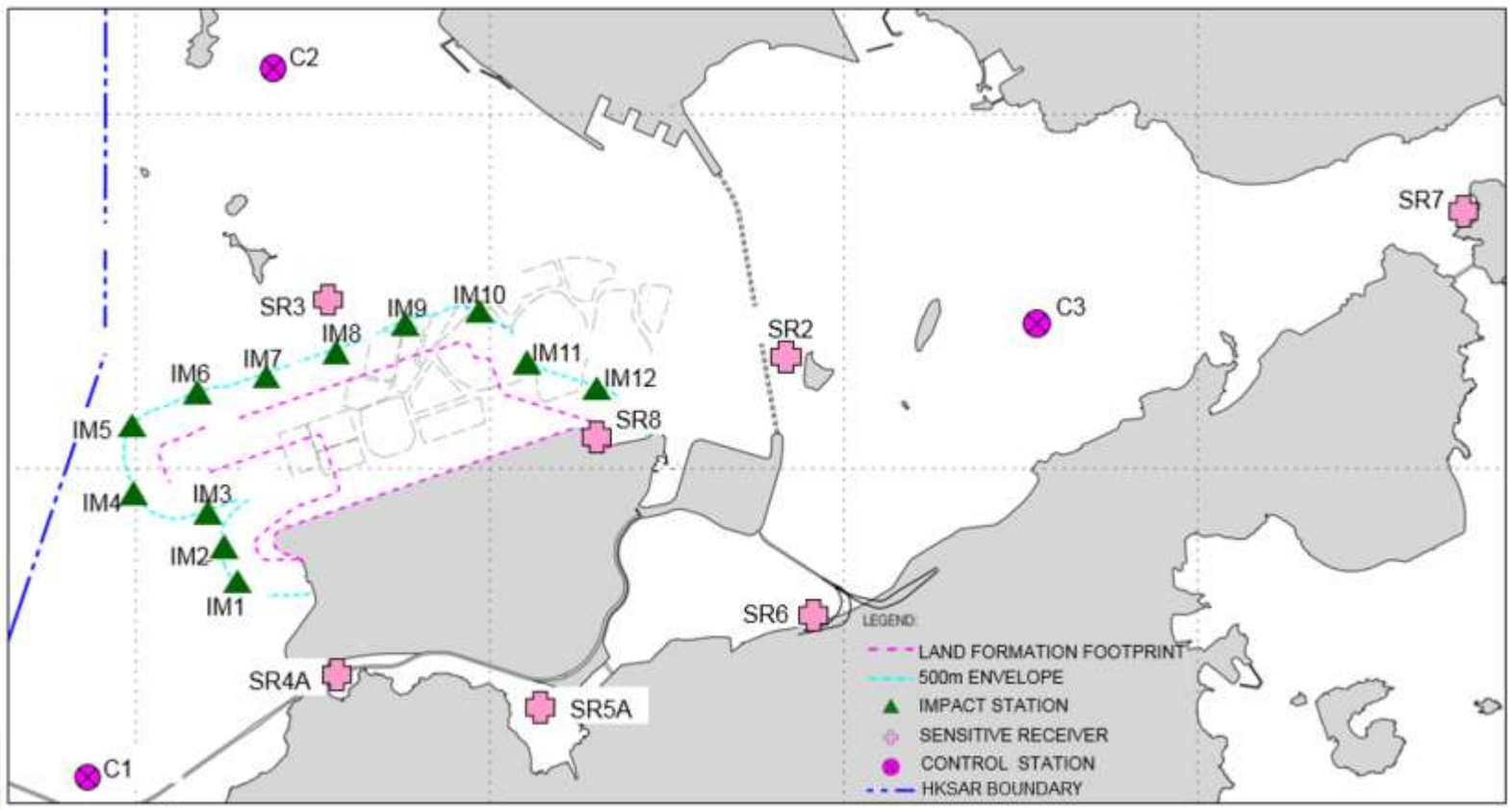
# EM&A Monitoring Status (August 2016 to March 2017) (2)

- Air Quality (2 stations) & Noise Monitoring (5 stations)
  - 264 air quality and 175 noise monitoring events.
  - No exceedance of project-related action/ limit levels was recorded.



# EM&A Monitoring Status (August 2016 to March 2017) (3)

- General Impact and Early Regular DCM Water Quality Monitoring (22 stations)
  - 12 impact stations, seven sensitive receiver stations and three control stations;
  - Three days per week, at mid-flood and mid-ebb tides;
  - Monitoring parameters including dissolved oxygen (DO), suspended solids (SS), turbidity, total alkalinity, chromium and nickel;
  - 102 monitoring events; and
  - No exceedance of project-related action/ limit levels was recorded.

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# EM&A Monitoring Status (August 2016 to March 2017) (4)

## Implementation Status

- Marine Mammal Watching Plan

  Silt curtains were in place by the contractors for sand blanket laying works and trained dolphin observers/ marine mammal watchers were deployed in accordance with the Plan.

- Dolphin Exclusion Zone (DEZ)

  Trained dolphin observers were deployed by the contractors for continuous monitoring of the DEZ for DCM works in accordance with the DEZ Plan.

- Dolphin Observer Training

  Trainings for the proposed dolphin observers/ marine mammal watchers were provided by the ET prior to the aforementioned works, with a cumulative total of 252 individuals being trained.

# EM&A Monitoring Status (August 2016 to March 2017) (5)

## Implementation Status

- Silt Curtain Deployment Plan
  Silt curtains have been deployed for all sand blanket laying activities in accordance with the Plan and are regularly checked and maintained.

- Marine Travel Routes and Management Plan for Construction and Associated Vessels (MTRMP-CAV)

ET has trained all the vessel skippers on the requirements of the MTRMP-CAV, with a cumulative total of 611 skippers being trained.

ET has conducted weekly audit to ensure the contractors have provided sufficient information to the MTCC and are fully complied with the requirements of the MTRMP-CAV.

# CWD Monitoring Status (January to March 2017)

- Six complete sets of vessel transect surveys and 15 sessions of land-based monitoring events were conducted between January and March 2017;
  on-going deployment of underwater PAM, for about 5 weeks per deployment
- No breach of action/ limit levels was recorded

**Vessel line-transect survey:**

- A total of 54 groups of CWDs with 185 individuals were sighted
- Group size of CWDs ranged from 1 to 14 individuals per group
- A total of 48 CWD individuals were identified by Photo Identification


**Land-based theodolite tracking:**

- A total of 40 CWD groups were tracked from the Lung Kwu Chau station;
  No record from Sha Chau station

**Passive Acoustic Monitoring (PAM):**

- On-going, data will be analysed on annual basis

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# Weekly Environmental Site Inspection (1)

- Air quality
  - Use of proper dust preventive measures
  - Avoidance of dark smoke emission

*Enclosure at cement connecting pipes to minimise dust dispersion*

*Checking of any dark smoke emissions from vessels*

# Weekly Environmental Site Inspection (2)

- Noise
  - Enclosure of noisy equipment
  - Use of quiet equipment


*Full enclosure of generator set/ compressor*


*Use of quiet equipment*

# Weekly Environmental Site Inspection (3)

- Water Quality
  - Proper deployment of Silt Curtain Deployment Plan
  - No direct discharge of contaminated water into the sea
  - Proper handling of wastewater

*Deployment of silt curtain for sand blanket laying*


*Checking of containment pit on Sheung Sha Chau for prevention of any effluent discharge to surrounding waters*

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# Weekly Environmental Site Inspection (4)

- Waste
  - Checking of waste data and records
  - Proper storage and handling of chemical containers
  - Provision of adequate sets of spill kits


*Three sets of spill kits on vessel to ensure proper response in case of accidental events*

*Recycling bins on vessel to encourage recycling*

# Weekly Environmental Site Inspection (5)

- Marine Ecology
  - Proper implementation of acoustic decoupling measures
  - Proper marine mammal watching for deployed silt curtains and implementation of Dolphin Exclusion Zone (DEZ)


*Isolation pads placed under noisy equipment to mitigate ecological impacts*

*Deployment of DEZ by qualified dolphin observers on DCM barge*

# Weekly Environmental Site Inspection (6)

- Marine Ecology (con’t)
  - Proper implementation of Marine Travel Routes and Management Plan for Construction and Associated Vessels (MTRMP-CAV)


*Auditing of MTCC and vessel data*

*Ensuring vessel skippers have been trained by ET on MTRMP-CAV*

# Public Enquiries and Complaints

- Under Complaint Management Plan
  - Complaints are received from :
    - Dedicated 3RS complaint hotline;
    - Dedicated 3RS email channel;
    - Other channels.
- Cumulative Statistics (Dec 2015 – Mar 2017)
  - Total number of enquiries/complaints: 19
    - Number of environment-related complaints: 2
    - Number of environment-related enquiries: 3
    - Number of non-environment-related enquiries: 29

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# Updates on Marine Ecology and Fisheries Enhancement Funds

# Timeline for the Enhancement Funds

| Q3-Q4 2016 | Nov 2016 | Dec 2016 | Q1-Q2 2017 | Early Jul 2017 |
|---|---|---|---|---|
| **Fund Preparation** | **Appointment of MC and SC** | **Call for Application** | **Application Assessment** | **Results Announcement on Website** |
| **A sum of HK$400M was injected into MEEF and FEF.** | **Inaugural Meetings for SC, MEEFMC and FEFMC were held in November 2016 to discuss operational arrangement.** | **MEEF: 18 applications received.**<br><br>**FEF: 6 applications received.** | **MEEFMC Meeting was held on 2 May 2017 to discuss funding priority.**<br><br>**FEFMC Meeting will be held on 15 May 2017 to discuss funding priority.** | |

# Details of the Funds are available in the 3RS Dedicated Website

http://env.threerunwaysystem.com/en/meef/index.html

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# Thank You

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

## 4th PLG Meeting
## Marine Traffic Control Centre (MTCC) Visit
## 9 May 2017

Airport Authority Hong Kong

# MTCC Key Purposes

## Designated Routes

Ensure all 3RS construction vessels to strictly follow the designated routes throughout the 3RS construction periods , including those under EP submissions

## Designated Entrances

Ensure all 3RS construction vessels to access/ depart works site via designated site entrance

## Speed Limits

Ensure all 3RS construction vessels to obey speed limits and any other navigation controls , including those under EP submissions

## Good Marine Practice

Ensure all 3RS construction vessels to have valid licenses, insurance, manning and required permits.

- **Monitor and Track**
- **Daily Coordination**
- **Check Compliance**
- **External Liaison**
- **Record, Report and Backup**

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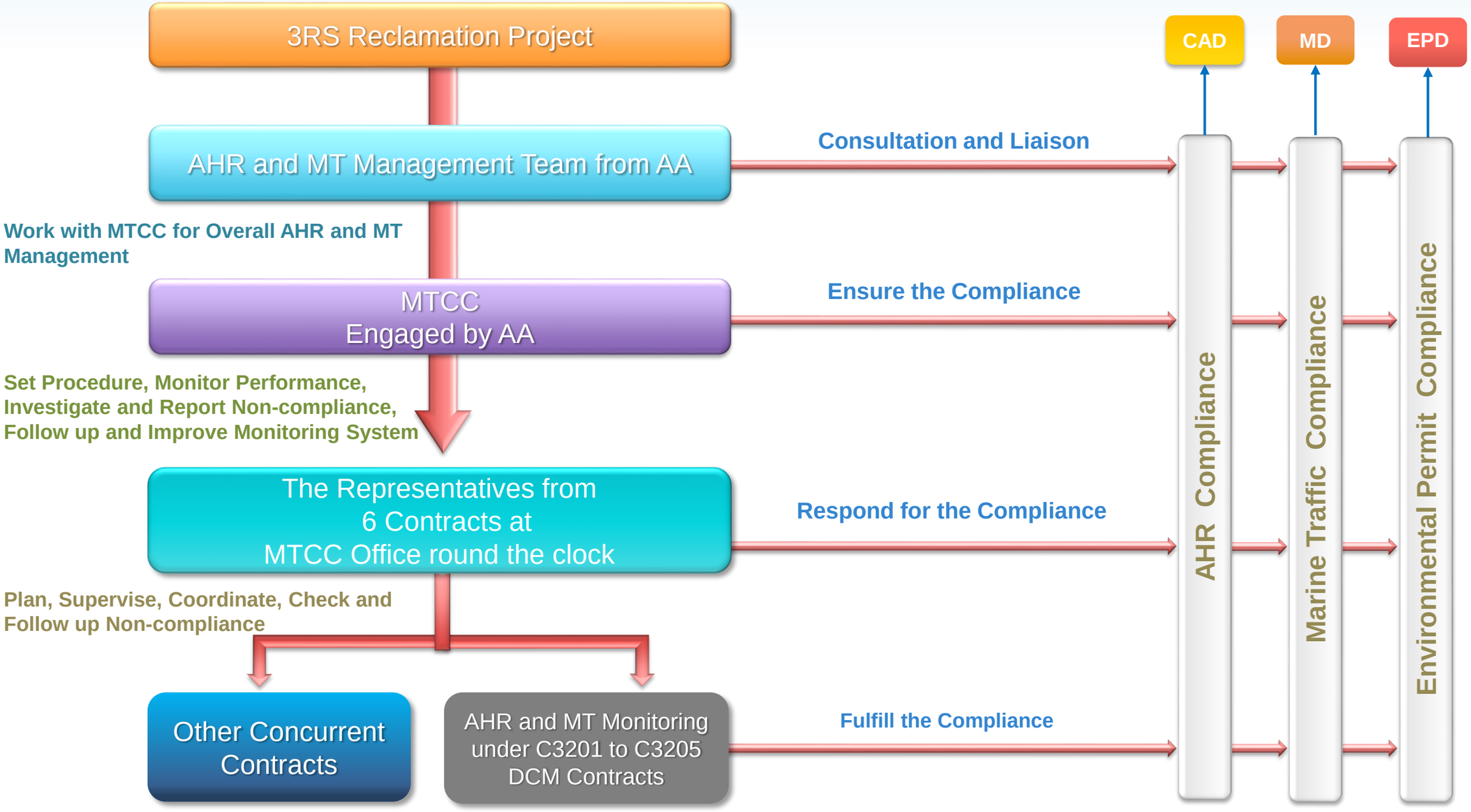
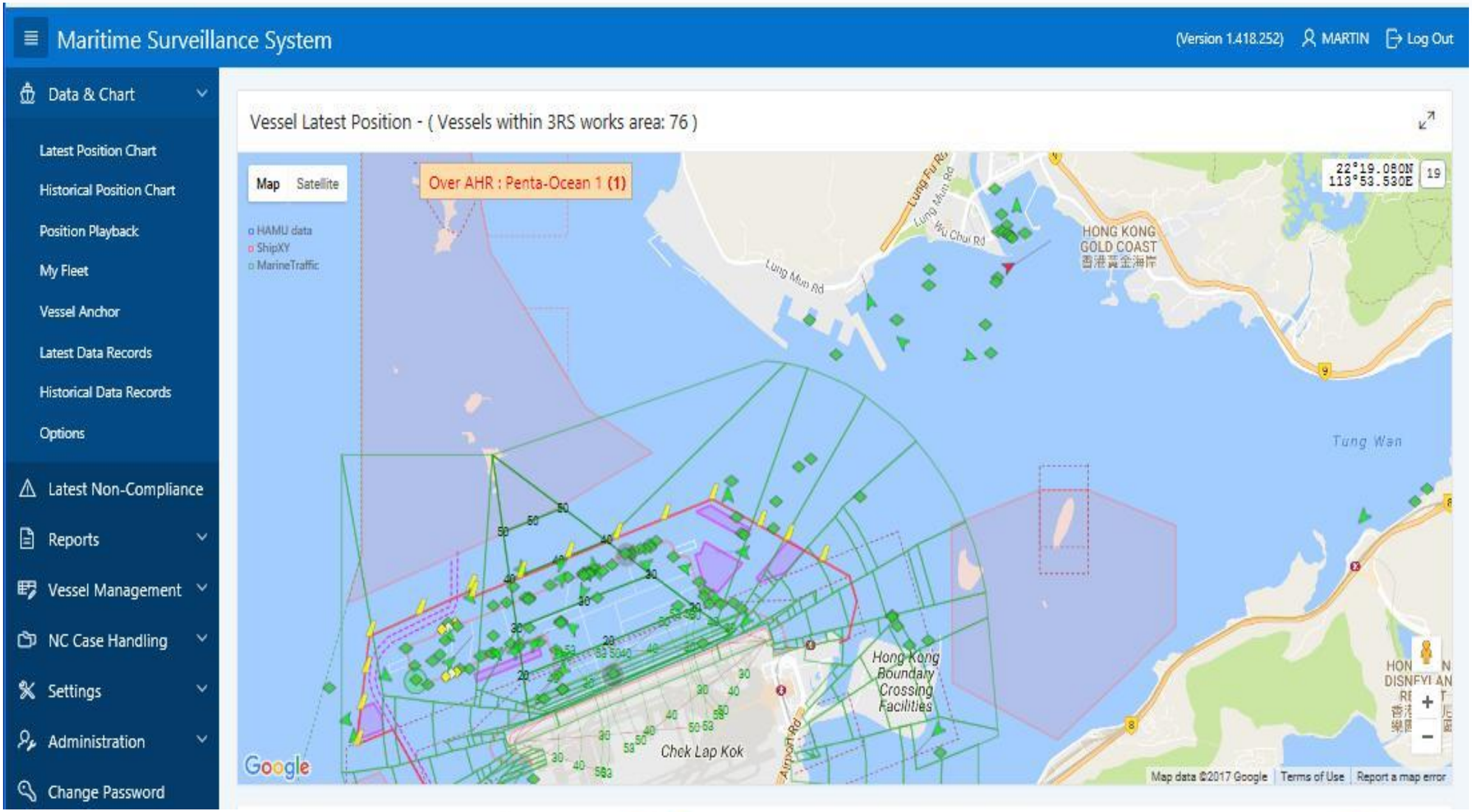
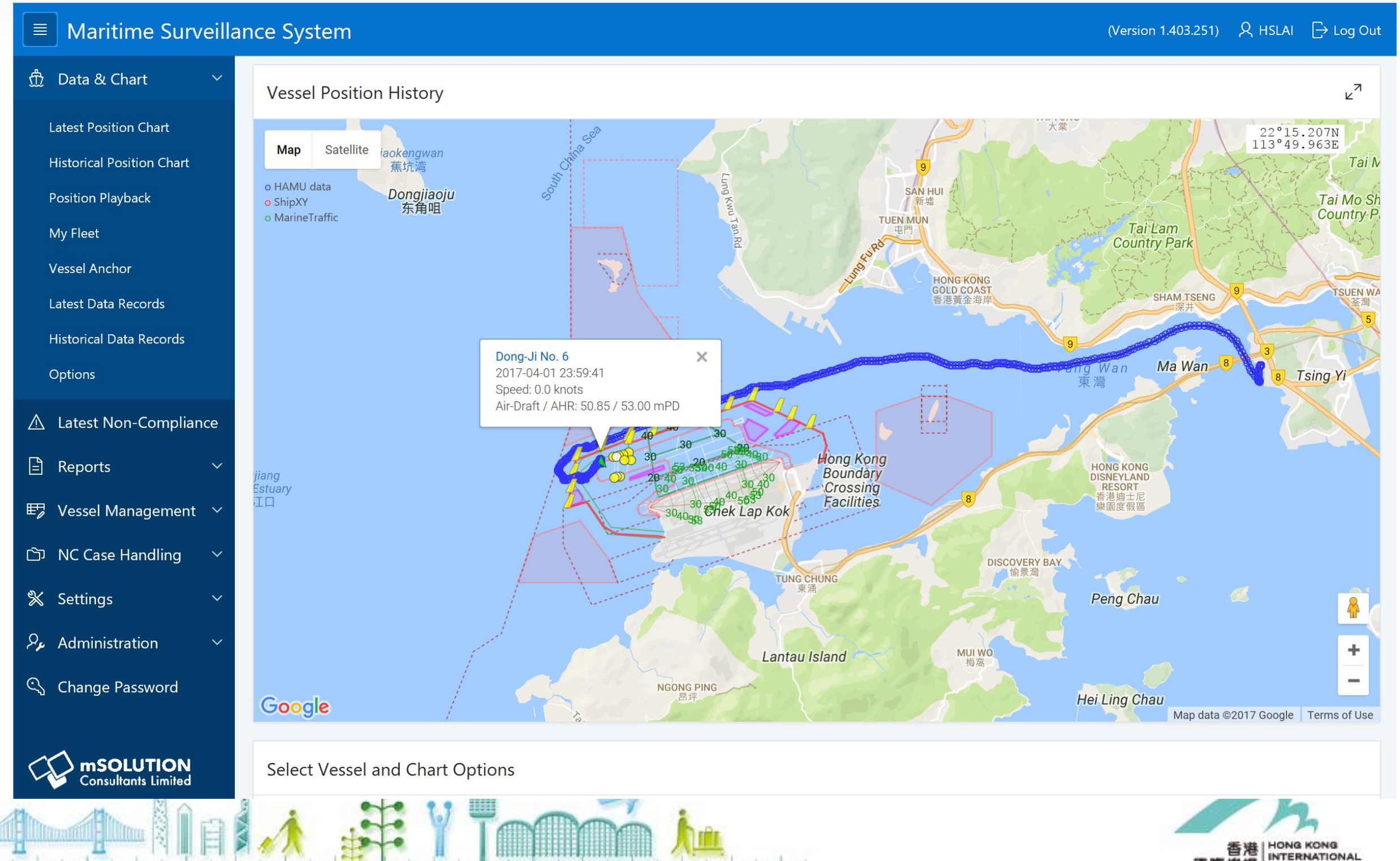
# The MTCC Set-up



# Maritime Surveillance System (MSS) Overview



# Vessel Movement & Tracking via Site Entrances

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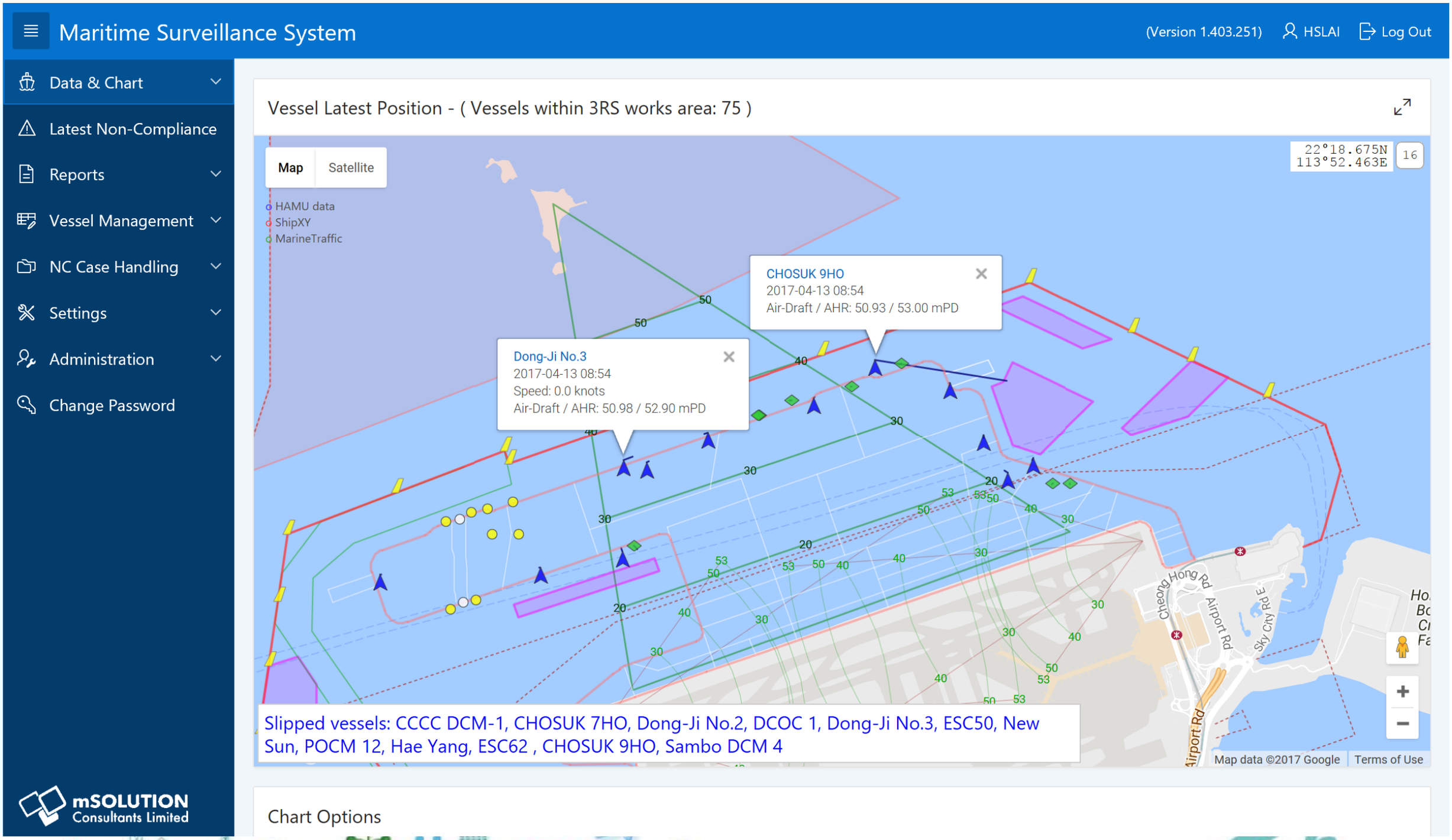
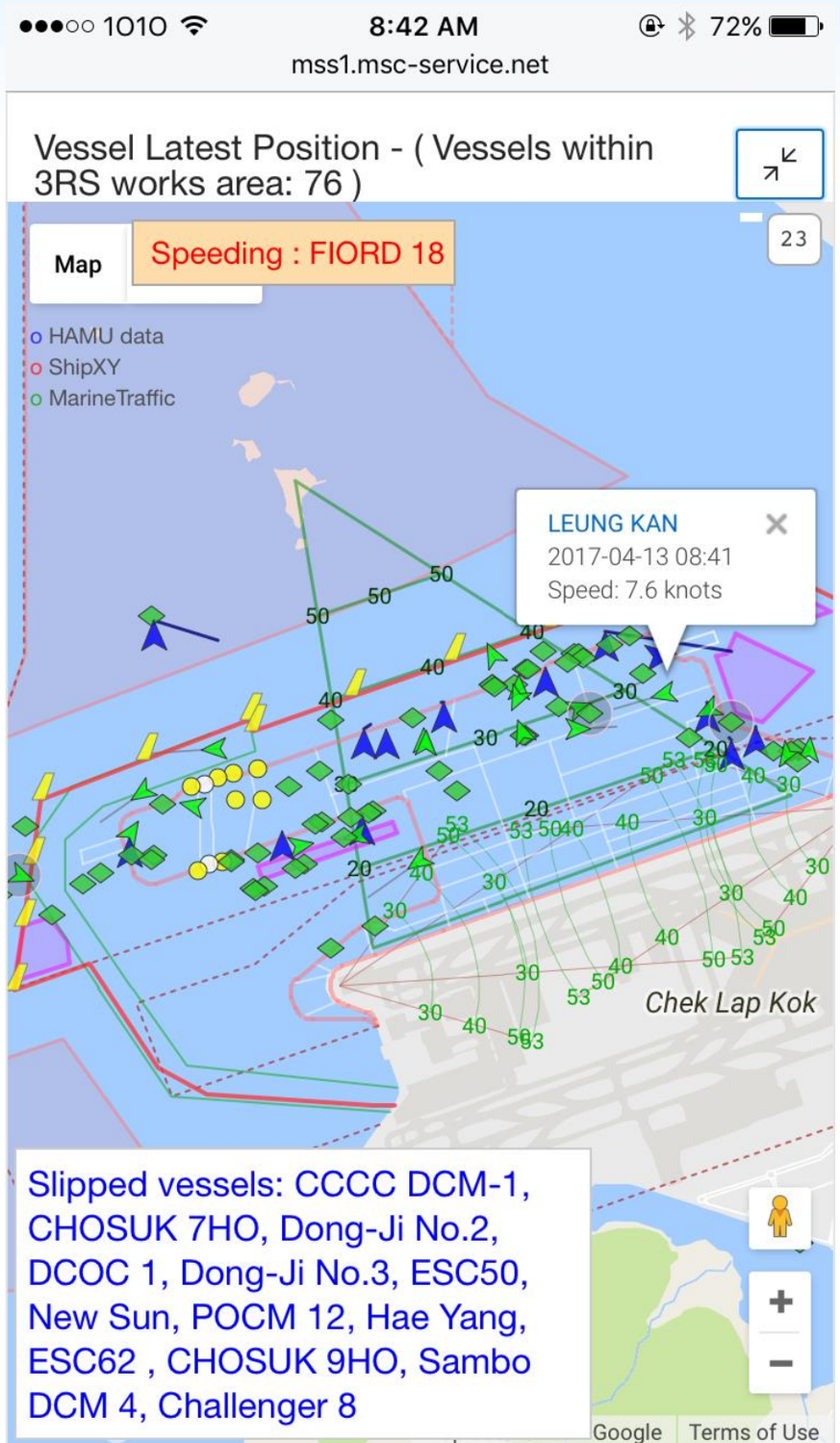
# Anchor Watch



# On-site monitoring

- MSS supports both desktop and mobile platforms.
- MTCC and other monitoring staff can conduct real-time monitoring on field using their smartphones or mobile tablets.
- MSS greatly improves the operation efficiency and mobility, hence faster response to incident handling.

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# Thanks

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