Expansion of Hong Kong International Airport into a Three-Runway System Report on the Effectiveness of SkyPier Plan on Chinese White Dolphins

This paper summarizes the findings on a 6-month review of the effectiveness of the implementation of the Marine Travel Routes and Management Plan for High Speed Ferries of SkyPier (SkyPier Plan) on Chinese White Dolphins (CWDs) since its implementation on 28 December 2015.

BACKGROUND

2. Pursuant to Condition 2.10 of the Environmental Permit (EP) (Permit No.: EP-489/2014) issued to Airport Authority Hong Kong (AAHK) for Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project), the SkyPier Plan had been submitted to the Advisory Council on the Environment (ACE) for comment and subsequently submitted to and approved by EPD in November 2015.

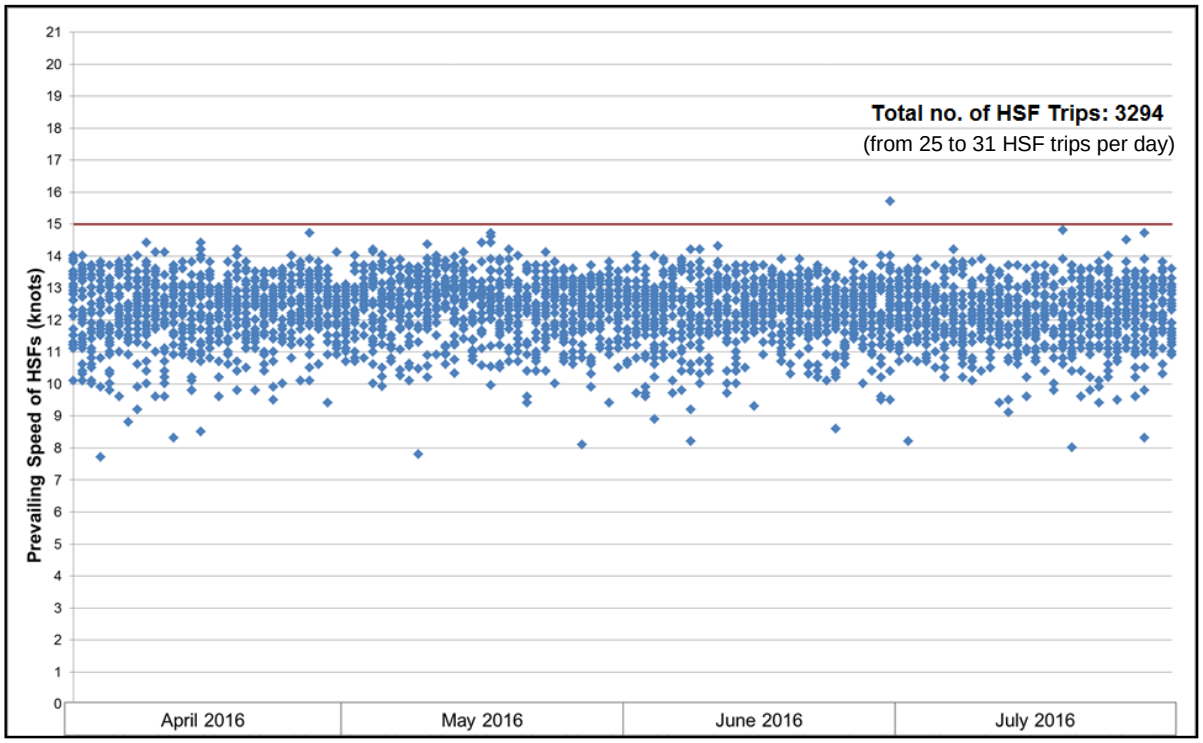
3. As detailed in the SkyPier Plan, AAHK has committed to implementing the CWD mitigation measure which requires the SkyPier high speed ferries (HSFs) travelling between Hong Kong International Airport (HKIA) and Zhuhai / Macau to divert their routes away from the narrower navigation corridor between the southern boundary of the Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP) and airport north during construction of the 3RS project to a route north of the SCLKCMP, together with an associated 15-knot speed control across an area with high CWD abundance along the diverted route (i.e. a Speed Control Zone (SCZ). The primary aim of the route diversion and 15-knot speed restriction in the SCZ is to mitigate the adverse impacts expected from SkyPier HSFs and other vessels using the narrowing navigation corridor between the south of SCLKCMP and the 3RS marine works area during the 3RS construction phase.

4. The route diversion and speed restriction within the SCZ have been implemented since 28 December 2015. Early implementation of this mitigation measure is intended to allow both the SkyPier HSF operators and CWDs time to familiarise and adapt to the diversion and speed control arrangements prior to the commencement of marine works. The implementation status of the SkyPier Plan together with the process of monitoring and auditing SkyPier HSFs (including compliance checking of diverted HSFs' prevailing speed within SCZ against the 15-knot speed limit) was presented in a meeting with ACE on 20 May 2016.

5. According to the real-time data collected from all the diverted SkyPier HSFs (Note that Automatic Identification System (AIS) is installed on all diverted HSFs) from April to July 2016, the prevailing speeds of all diverted HSFs (apart from one HSF trip in June 2016) within the SCZ complied with the 15-knot speed limit, with most of the prevailing speeds ranging from 11 to 14 knots, as summarized in **Figure 1**. For the one SkyPier HSF trip travelling above the 15-knot limit, its prevailing speed in the SCZ was 15.7 knots, only marginally exceeding the speed limit.

After investigation, it was found that this speeding case was due to safety reasons, i.e., the need to give way to two vessels encountered in the SCZ.

Figure 1 Prevailing Speeds of Diverted SkyPier HSF within the SCZ from April to July 2016

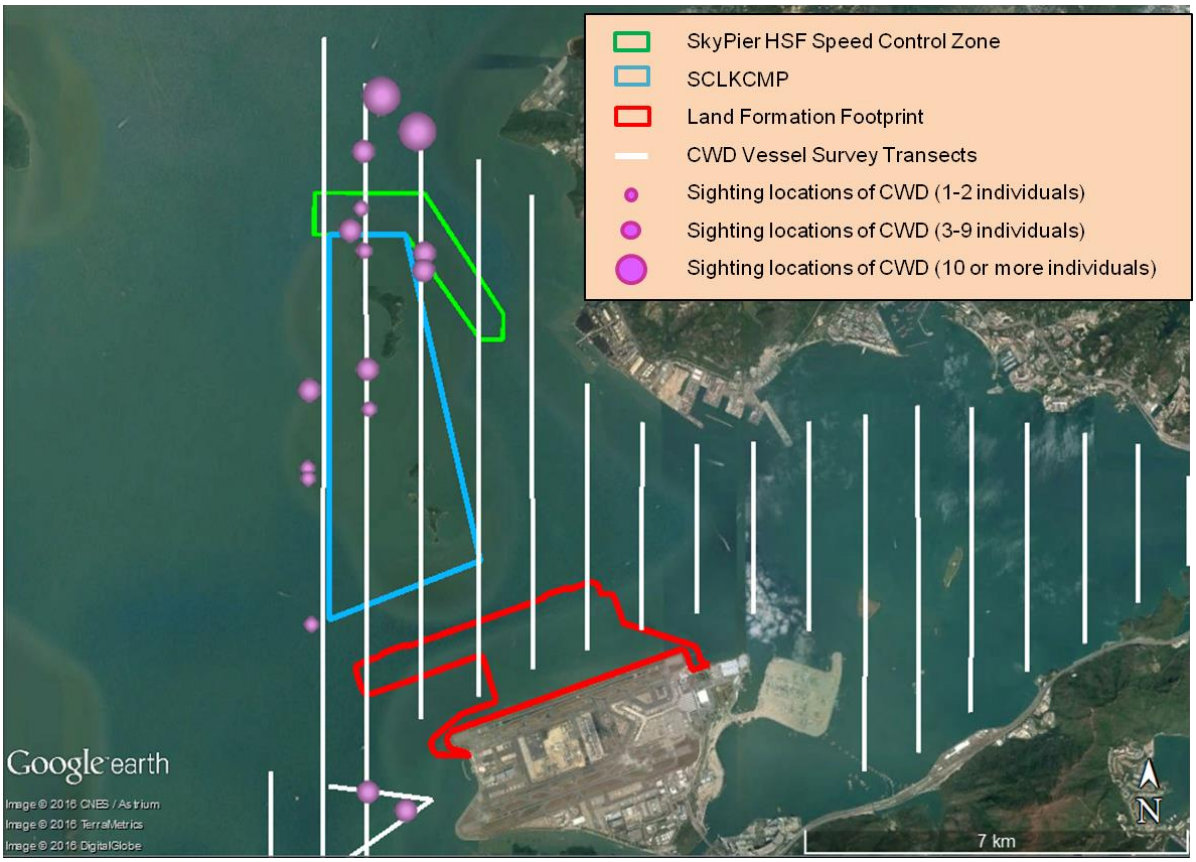


6. According to Section 4.3 of the SkyPier Plan, AAHK committed to reporting to ACE on the effectiveness of the CWD mitigation measures six months after implementation of the SkyPier Plan, by reviewing and analysing data collected from the CWD monitoring surveys carried out during the initial 6-month implementation period.

EFFECTIVENESS OF SKYPIER HSF ROUTE DIVERSION AND SPEED CONTROL

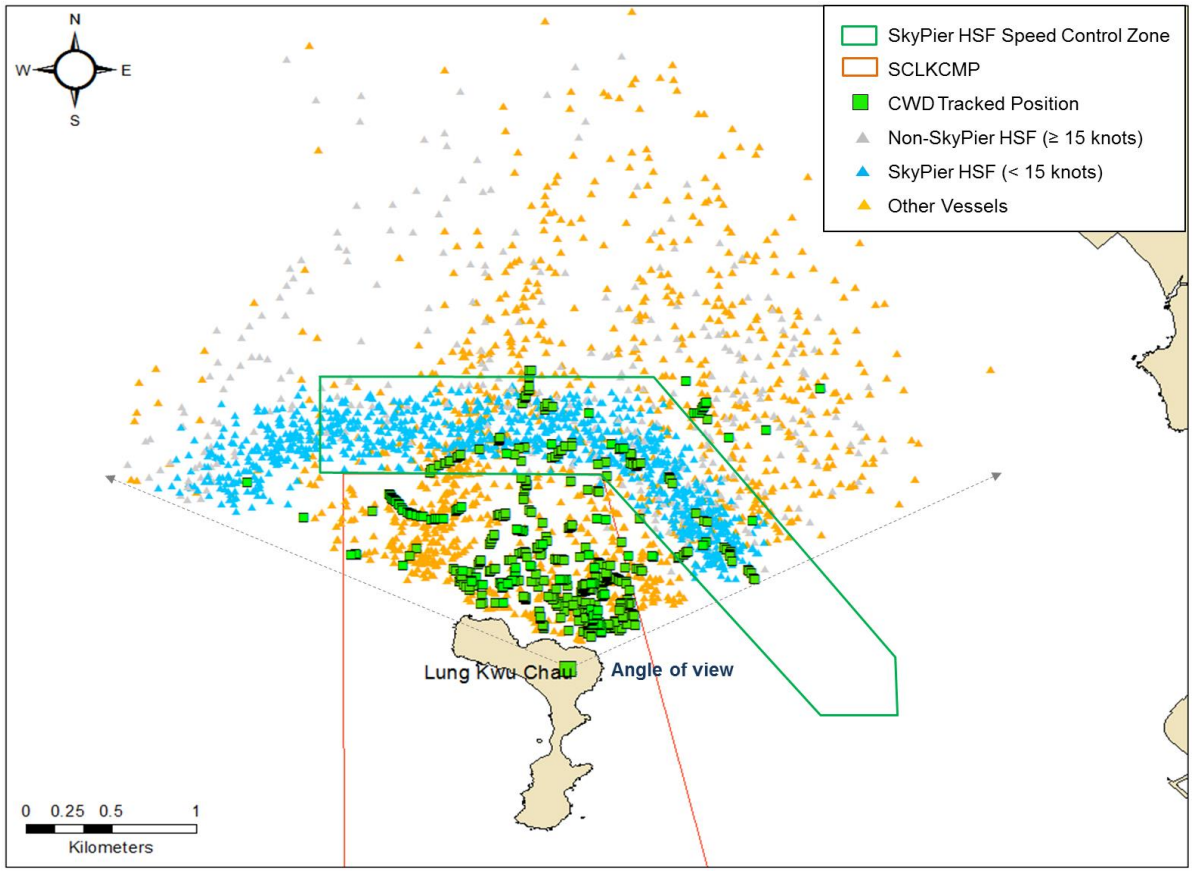
7. CWD monitoring data were collected by conducting vessel transect surveys in north Lantau waters between December 2015 and June 2016 for the 3RS project and CWD sighting results are summarized in **Figure 2**. The 6-month CWD sighting results indicate that waters to the north of SCLKCMP including the SCZ, especially waters to the north of Lung Kwu Chau and west of the Urmston Road channel, are still being used by CWDs as important habitats after the SkyPier Plan mitigation measures were implemented.

Figure 2 CWD Sightings Distribution in North Lantau Waters from Dec 2015 to Jun 2016 – after Implementation of the SkyPier Plan



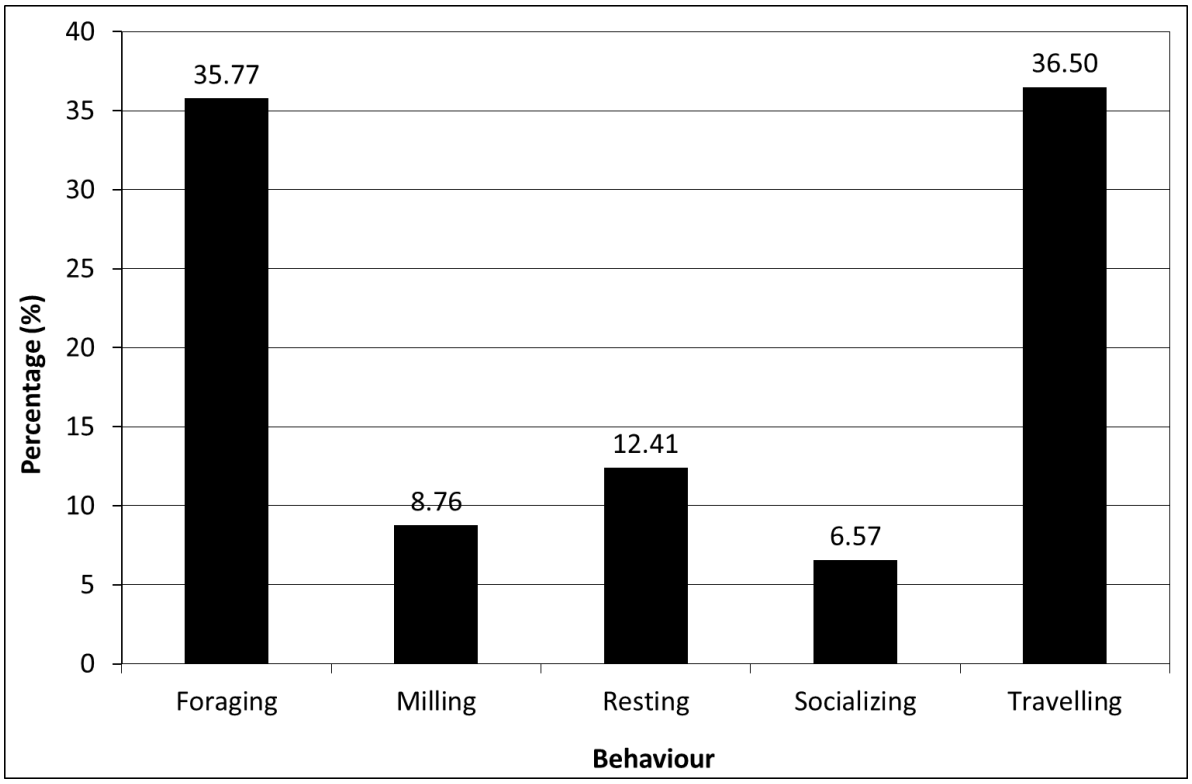
8. Land-based theodolite tracking of CWDs was carried out at the Lung Kwu Chau station for the 3RS Project during the 6-month period from December 2015 to June 2016. During the land-based CWD surveys, vessels travelling in the survey area, including diverted SkyPier HSFs travelling at below 15 knots within the SCZ, non-SkyPier HSFs travelling at their normal speeds and other types of vessels, were tracked. The plots of all the tracked CWD groups and vessels are summarized in **Figure 3**.

Figure 3 Plots of All Tracked CWDs and Vessel Positions obtained from Lung Kwu Chau Theodolite Station from Dec 2015 to Jun 2016 – after Implementation of the SkyPier Plan



9. Theodolite tracking records show that there was co-occurrence of CWDs with SkyPier HSFs travelling at below 15 knots within the SCZ during the monitoring effort. The group sizes of tracked CWDs were generally smaller closer to shore, with the largest groups occurring farther from shore, at times beyond the SCLKCMP boundary, including in waters within the SCZ. As summarized in **Figure 4**, the land-based survey data in the first 6-months of implementation of the SkyPier Plan confirms that the waters off Lung Kwu Chau remain an important foraging area for CWDs.

Figure 4 Distribution of CWDs' Known Behavioural States Recorded in Waters off Lung Kwu Chau from Dec 2015 to Jun 2016 – after Implementation of the SkyPier Plan



10. There was a potential trend observed for CWDs to travel at higher speeds when within 500m of HSFs travelling at or over 15 knots, to travel at slower speeds when within 500m of HSFs travelling below 15 knots, and to travel slowest when no vessels were within 500m of CWD groups. If this trend continues and is supported with further data, HSFs travelling at slower speeds may result in slower CWD travelling behavior in and near the HSF lanes used by the speed controlled HSFs, with even more "leisurely" CWD travel during instances with no associated boat activity nearby.

CONCLUSION

11. The initial 6-month CWD monitoring data collected between December 2015 and June 2016 have indicated co-occurrence of CWDs and SkyPier HSFs operating at below 15 knots in the SCZ. After the SkyPier Plan has been implemented, the survey results indicate that the waters in and near the SCZ, especially the areas around Lung Kwu Chau and the Urmston Road are still being used by CWD as their important habitats, and the waters off Lung Kwu Chau remain an important foraging area for CWDs. Therefore, it is considered that the SkyPier HSFs, managed in accordance with the controls and requirements stipulated in the SkyPier Plan, are not having obvious negative behavioural impacts on CWDs. As examined in the approved 3RS EIA, the continuation of SkyPier HSFs using the narrowed waters between the southern boundary of the SCLKCMP and airport north during construction of the 3RS project would contribute to the closer spacing of vessels and a reduced area for CWDs to surface leading to increasing risk of being hit by HSFs as well as disturbance from increased anthropogenic noise in the narrowed waters. Based on the findings of this review report, it is expected that upon commencement of the marine works for the 3RS Project the diverted SkyPier HSFs with speed control will help reduce the risk of CWD using the narrowing waters between south of SCLKCMP and airport north and at the same time would not result in apparent negative impacts on CWDs along the diverted route.

12. The Environmental Team (ET) will continue CWD monitoring as part of the on-going Environmental Monitoring and Audit (EM&A) programme for the 3RS Project.