

**Service Contract No. HMW
5/2025 (EP)
Post-construction Phase
Dolphin Monitoring for Hong
Kong-Zhuhai-Macao Bridge
Hong Kong Link Road Project**

Monthly EM&A Report (1st - 31st March 2026)

April 2026
Highways Department

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Mott MacDonald Restricted

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Attention: Mr. James Choi

Your Reference

**Service Contract No. HMW 5/2025 (EP)
Post-construction Phase Dolphin Monitoring for Hong Kong-Zhuhai-Macao
Bridge Hong Kong Link Road Project**

Our Reference

HW/GC/jt/601100865/
L013

Monthly EM&A Report for March 2026

3/F Manulife Place
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Hong Kong

31 March 2026

By Email

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Dear Sir,

In accordance with Section 16.3 of the Contract Specific EM&A Manual (Rev. 6) under Environmental Permit No. EP-352/2009/D covering the captioned assignment, we are pleased to submit the certified Monthly EM&A Report for March 2026 for your verification.

Should you have any queries, please do not hesitate to contact the undersigned or our John Tsang at 2828 5892.

Yours faithfully,
For and on behalf of the
Mott MacDonald Hong Kong Limited



Gary Chow
Environmental Team Leader
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Gary.Chow@mottmac.com

Encl.

cc.
Highways Department – Mr. Drake CHEUNG (By Email)



Highways Department
5th Floor, Ho Man Tin Government Offices
88 Chung Hau Street
Ho Man Tin
Kowloon

Your reference:

Our reference: HKHYD203/50/111123

Date: 2 April 2026

Attention: Mr Eric Wong

BY EMAIL & POST
(email: se3tmis.mw@hyd.gov.hk)

Dear Sirs

Agreement No. HMWSD 6/2022 (EP)
Environmental Project Office for the Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road, Hong Kong-Zhuhai-Macao Bridge Hong Kong
Boundary Crossing Facilities, & Tuen Mun-Chek Lap Kok Link – Investigation

Service Contract No. HMW 6/2025 (EP)
Post-construction / operational phase water quality and mudflat ecological monitoring
for Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Project
Verification of 3rd Monthly Environmental Monitoring & Audit Report (Dolphin Monitoring)

We refer to the email of 31 March 2026, attaching the 3rd Monthly Environmental Monitoring & Audit Report (Dolphin Monitoring) prepared by the Environmental Team (ET) of the captioned.

We have no comment and hereby verified the captioned report in accordance with Clause 4.4 of the Environmental Permit no. EP-352/2009/D.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Ricky Lau on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/csym

cc Highway Department – Mr Drake Cheung (email: drake.h.cheung@hyd.gov.hk)
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Mott MacDonald Hong Kong Limited – Ms John Tsang (email: john.tsang@mottmac.com)

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Executive summary

The Hong Kong-Zhuhai-Macao Bridge (HKZMB) Hong Kong Link Road (HKLR) is a designated project under the Environmental Impact Assessment Ordinance (EIAO). The relevant EIA Report (Register No.: AEIAR-144/2009), updated EM&A Manual (Version 1.0), and Environmental Permit (EP-352/2009/D, issued on 22 December 2014) govern the project.

The HZMB-HKLR construction consists of two work contracts namely Contract No. HY/2011/03 the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Section between Scenic Hill and Hong Kong Boundary (hereinafter referred as Contract 03), and Contract No. HY/2011/09 the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Section between HKSAR Boundary and Scenic Hill (hereafter referred as Contract 09). The dolphin monitoring in post-construction phase for Contract 09 was completed, while the current dolphin monitoring in post-construction phase is under Contract 03.

Mott MacDonald Hong Kong Limited was appointed by the Highways Department of HKSAR as the Environmental Team (ET) responsible for Service Contract No. HMW 5/2025 (EP) Post-Construction Phase Chinese White Dolphin Monitoring for the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Project (hereafter referred to as “the Assignment”) under Contract 03 for a total monitoring period of 24 months.

This is the Monthly EM&A Report for the 3rd month of the post-construction phase monitoring of the Assignment which summarises findings of the post-construction dolphin monitoring during the reporting period from 1 to 31 March 2026.

1 Introduction

The Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Link Road (HKLR) serves to connect the HZMB Main Bridge at the Hong Kong Special Administrative Region (HKSAR) Boundary and the HZMB Hong Kong Boundary Crossing Facilities (HKBCF) located at the northeastern waters of the Hong Kong International Airport (HKIA).

The HKLR project has been separated into two contracts. They are Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between Scenic Hill and Hong Kong Boundary Crossing Facilities and Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill.

In accordance with Section 10.7.1 of the Contract 03 EM&A Manual, the Environmental Team (ET) engaged by the contractor is required to undertake post-construction dolphin monitoring for a minimum duration of 24 months following the completion of construction. The contractor for Contract 03 has already completed both baseline and construction phase monitoring of Chinese White Dolphin (CWD) within the Northeast Lantau (NEL) and Northwest Lantau (NWL) waters (refer to **Figure 1**). As stipulated in the EM&A Manual and relevant contract specifications, the ET shall continue to carry out 24 months of CWD monitoring during the post-construction phase in these designated areas.

The main objective of the current Assignment commissioned by the Highways Department is to conduct Post-Construction Monitoring of CWD in NWL and NEL waters in compliance with the requirements stipulated in the EM&A Manual and the EP for the HZMB HKLR. The post-construction monitoring should be conducted twice a month for 24 months in both NEL and NWL survey areas upon the completion of construction phase EM&A in December 2025.

Mott MacDonald Hong Kong Limited (MMHK) has been appointed as the ET responsible for this Assignment (Service Contract No. HMW 5/2025 (EP) Post-construction Phase Dolphin Monitoring for Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Project) for 24 months. This is the Monthly EM&A Report for the 3rd month of the post-construction phase of the Project, summarising the findings of the post-construction CWD monitoring during the reporting period from 1 to 31 March 2026, and is submitted in accordance with Clause 5.3 of the Brief for this Assignment.

2 Monitoring Methodology

2.1 Vessel-based Line-transect Survey

According to the scope and EM&A Manual, the dolphin monitoring shall be conducted twice a month in each survey areas of NEL and NWL (see **Figure 1**), through the entire 24 months post-construction phase monitoring period. The co-ordinates of all transect lines are shown in **Table 2.1**. The coordinates of several starting and ending points have been revised due to the presence of a work zone to the north of the airport platform with intense construction activities in association with the construction of the third runway expansion for the Hong Kong International Airport. The EPD issued a memo and confirmed that they had no objection on the revised transect lines on 28 July 2017, and the revised coordinates are in red and marked with an asterisk in **Table 2.1**.

Table 2.1: Co-ordinates of transects in the NEL and NWL survey areas.

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	804671	815456	13	Start Point	816506	819480
1	End Point	804671	831404	13	End Point	816506	824859
2	Start Point	805476	820800*	14	Start Point	817537	820220
2	End Point	805476	826654	14	End Point	817537	824613
3	Start Point	806464	821150*	15	Start Point	818568	820735
3	End Point	806464	822911	15	End Point	818568	824433
4	Start Point	807518	821500*	16	Start Point	819532	821420
4	End Point	807518	829230	16	End Point	819532	824209
5	Start Point	808504	821850*	17	Start Point	820451	822125
5	End Point	808504	828602	17	End Point	820451	823671
6	Start Point	809490	822150*	18	Start Point	821504	822371
6	End Point	809490	825352	18	End Point	821504	823761
7	Start Point	810499	822000*	19	Start Point	822513	823268
7	End Point	810499	824613	19	End Point	822513	824321
8	Start Point	811508	821123	20	Start Point	823477	823402
8	End Point	811508	824254	20	End Point	823477	824613
9	Start Point	812516	821303	21	Start Point	805476	827081
9	End Point	812516	824254	21	End Point	805476	830562
10	Start Point	813425	821176	22	Start Point	806464	824033
10	End Point	813425	824657	22	End Point	806464	829598
11	Start Point	814556	818853	23	Start Point	814559	821739
11	End Point	814556	820992	23	End Point	814559	824768
12	Start Point	815542	818807	24	Start Point	805476*	815900*

12	End Point	815542	824882	24	End Point	805476*	819100*
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Note: Co-ordinates in red and marked with asterisk are revised co-ordinates of transect line.

The following monitoring protocol is consistent and completely compatible with the baseline and construction phase dolphin monitoring methodology and include the use of monitoring methodology of line-transect vessel survey method which complies with the requirements stipulated in EM&A Manual.

The MMHK survey team will use the standard vessel line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys and collect data on dolphin sightings, enabling the estimation of population density, abundance estimation and other assessments using distance-sampling techniques whenever necessary.

For both surveyed areas, there will be two types of transect lines:

- Primary transect lines: the parallel and zigzag transect lines; and
- Secondary transect lines: transect lines connecting between the primary transect lines and going around islands.

All data collected on both primary and secondary transect lines will be used for analysis of sighting distribution, group size, activities including association with fishing boat, and mother-calf pairs. Only on-effort data collected under favourable conditions of Beaufort 0-3 will be used for analysis of the CWD encounter rates.

A 15–20 metre vessel with a flying bridge observation platform positioned approximately 4 to 5 metres above water level and offering an unobstructed forward view will be deployed for the surveys. A team of three to four observers will undertake the survey. Two observers will be on search effort at all times whilst following the transect lines at a constant speed of 7 to 8 knots (i.e. 13 to 15 kilometres per hour), with one observer using 7 x 50 *Steiner* marine binoculars and the other using unaided eyes and recording data. Both observers will search the sea ahead of the vessel, between 270° and 90° (in relation to the bow, which is defined as 0°). A team of 3 experienced surveyors were available on each survey, in order to minimise fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and could identify all cetacean species usually found in Hong Kong waters.

During on-effort survey periods, the survey team will record effort data including time, position (waypoints), weather conditions (Beaufort sea state and visibility) and distance travelled in each series with assistance of a handheld GPS device. The GPS device also continuously and automatically logs data including time, position (latitude and longitude) and vessel speed throughout the entire survey.

When dolphins are sighted, the survey team will end the survey effort and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel will be diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line will later be calculated from the initial sighting distance and angle.

2.2 Photo Identification Work

When a group of Chinese White Dolphins are sighted during the line-transect survey, the survey team will then end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt will be made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.

One to two professional digital cameras (Sony and/or Canon), each equipped with long telephoto lenses (e.g 100-400 mm zoom), will be available on board for researchers to take sharp, close-up photographs of dolphins as they surface. The images will be shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

All digital images taken in the field will first be examined, and those containing potentially identifiable individuals will be sorted out. These photographs will then be examined in greater detail, and are carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by MMHK since 2015.

Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns can also be used as secondary identifying features (Jefferson 2000).

All photographs of each individual will then be compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

3 Monitoring Results

3.1 Line-transect Vessel Survey

Four sets of systematic line-transect vessel surveys were conducted on 4, 12, 17 and 18 March 2026, to cover all transect lines in NWL and NEL survey areas twice, respectively. The survey routes of every survey day are presented in Figures A1 to A4 of Appendix A.

A total of 242.8 km of survey effort was collected, with 100% of total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility), as detailed in Table A1 of Appendix A. Out of the 242.8 km of survey effort under favourable weather conditions, the survey effort conducted on primary lines was 199.6 km, while the effort on secondary lines was 43.2 km.

There were no CWDs sightings during the monitoring surveys of the reporting month. However, there is a sighting of a single dolphin near the HKLR at Sham Wat on 17th March while the vessel was conducting transect survey for another project before surveying NEL area under this Project. As this sighting is not collected under this Project, it is not included in maps or ANI/STG calculations.

4 Conclusion

Post-construction phase monitoring of CWD was conducted in accordance with the EM&A Manual during the reporting period.

In this month of post-construction monitoring of CWD in NWL and NEL waters, vessel surveys were conducted on 4, 12, 17 and 18 March 2026 covering all transect lines in NWL and NEL survey area twice respectively. A total of 242.8 km of survey effort was collected, with no CWDs sightings. The CWD sighting near HKLR at Sham Wat on 17 March from another project indicates that dolphins are within the vicinity of HKLR. During this month of post-construction phrase dolphin monitoring, no adverse impact on CWDs from the activities of this construction project and from special environmental conditions were noticeable from general observations.

In the following monitoring period in April, there will be four vessel surveys conducted to cover each of the transects (NEL and NWL) twice. The tentative survey schedule is illustrated in **Appendix B**.

5 References

Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.

Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. *Wildlife Monographs* 144: 1-65.

Figures

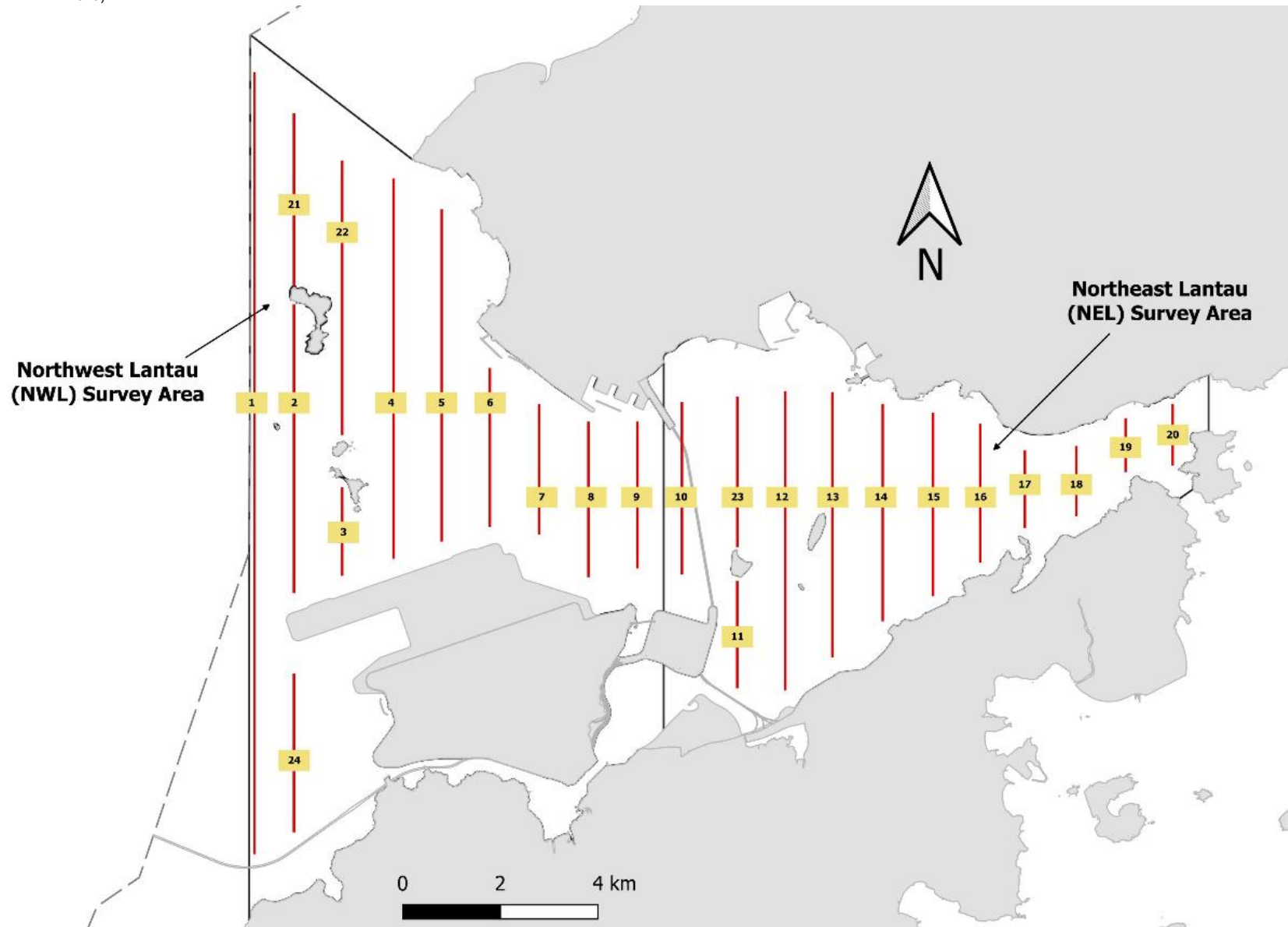


Figure 1: Map of Transects in the Survey Areas of Northwest Lantau (NWL) and Northeast Lantau (NEL)

Appendix A. Chinese White Dolphin Monitoring Results

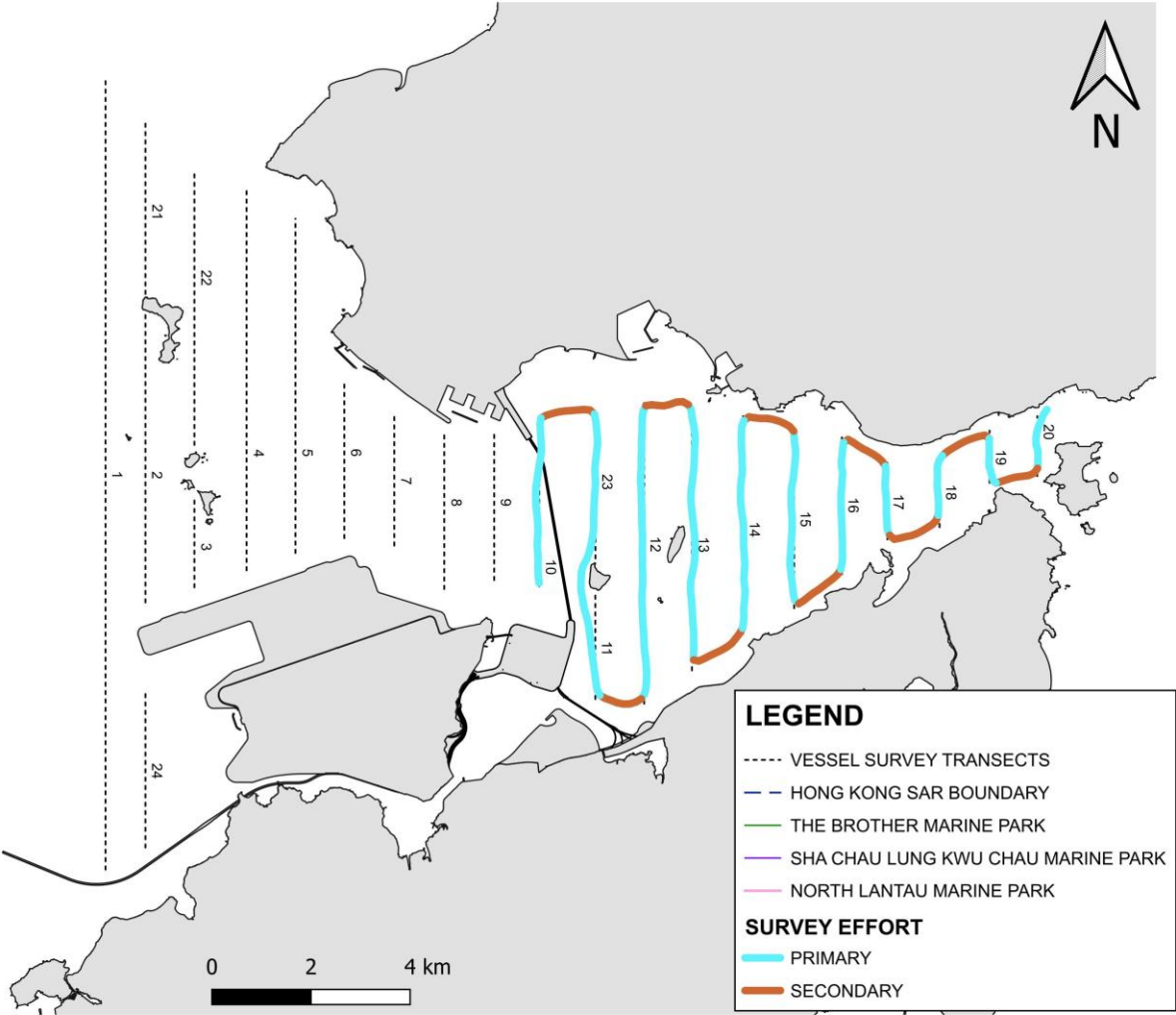


Figure A1 Survey Route on 4 March 2026 (NEL)

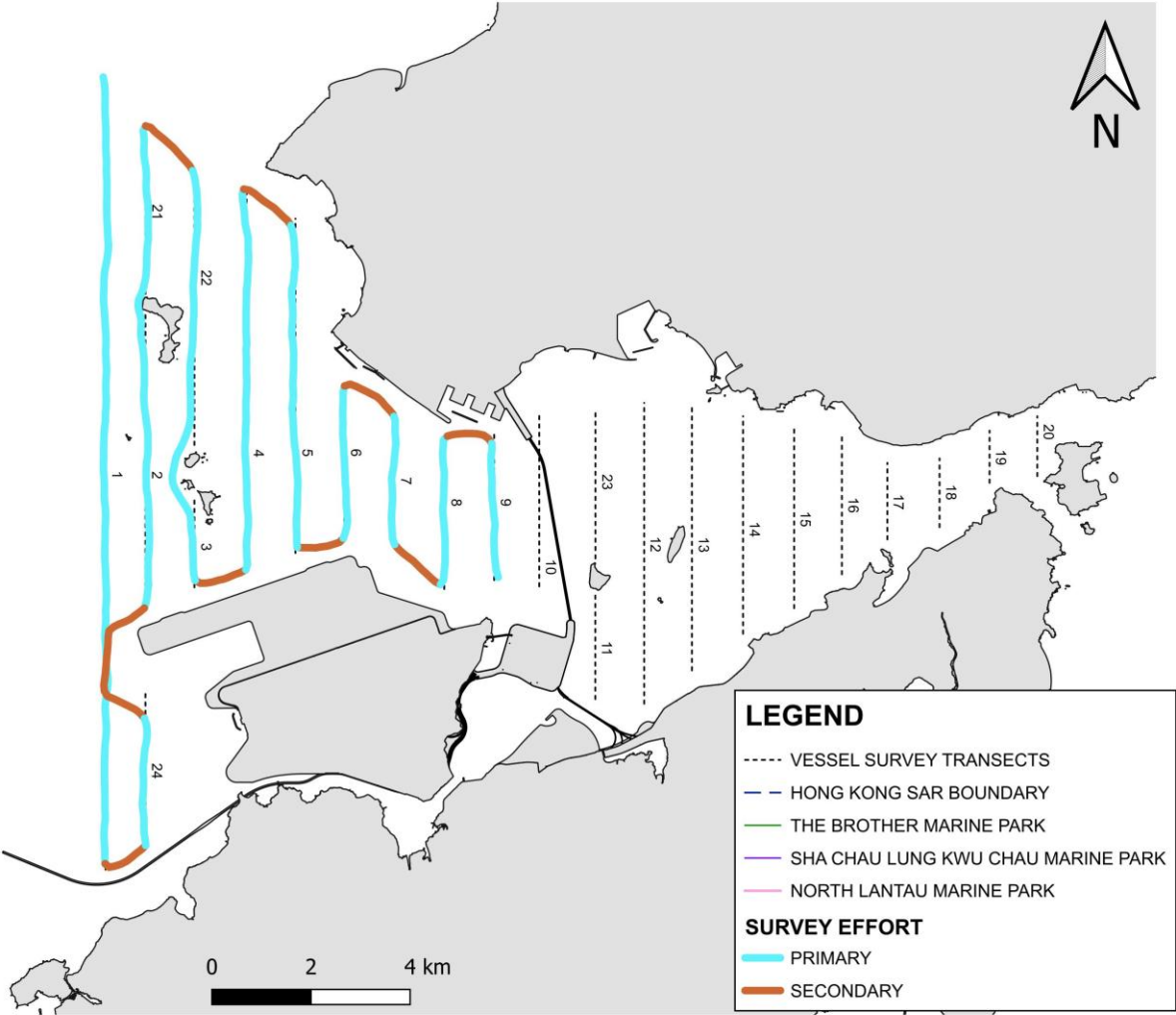


Figure A2 Survey Route on 12 March 2026 (NWL)

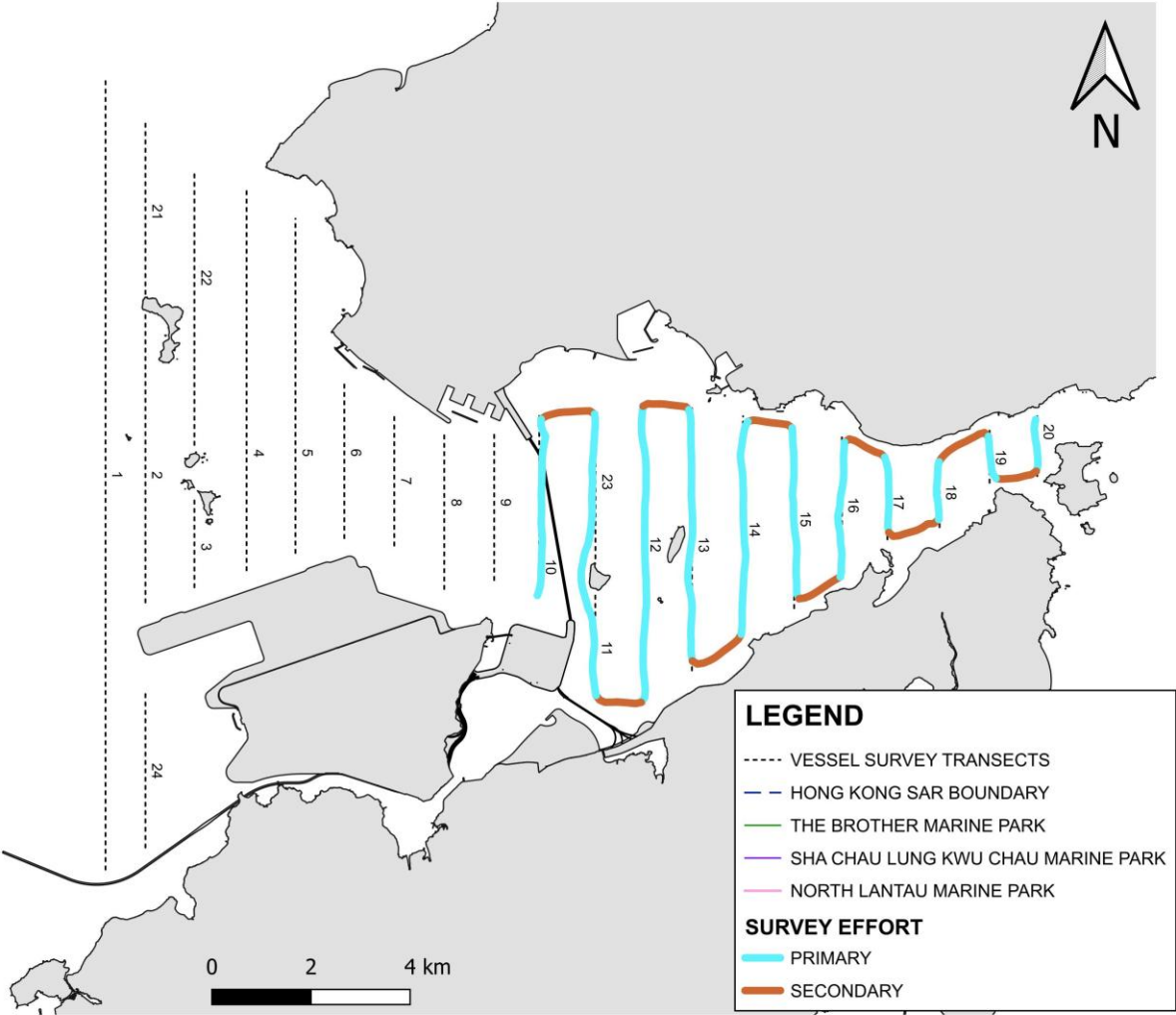


Figure A3 Survey Route on 17 March 2026 (NEL)

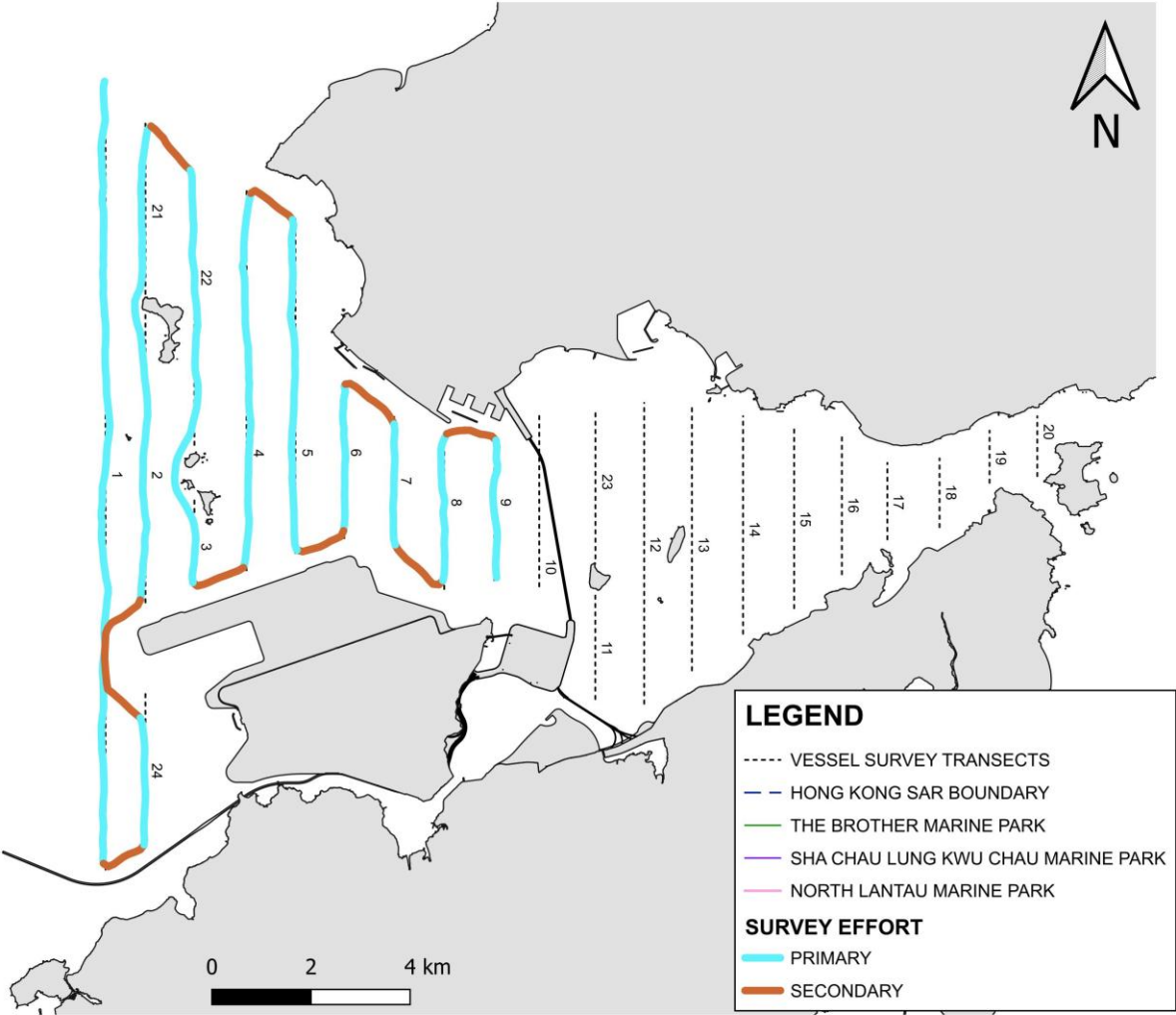


Figure A4 Survey Route on 18 March 2026 (NWL)

Table A1. Survey Effort Database for HZMB Post-construction Monitoring in Northeast and Northwest Lantau Waters

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
04-Mar-26	NEL	2	28.61	SPRING	32166	HKLR - POST	P
04-Mar-26	NEL	3	7.80	SPRING	32166	HKLR - POST	P
04-Mar-26	NEL	1	0.60	SPRING	32166	HKLR - POST	S
04-Mar-26	NEL	2	7.66	SPRING	32166	HKLR - POST	S
04-Mar-26	NEL	3	1.83	SPRING	32166	HKLR - POST	S
12-Mar-26	NWL	2	37.40	SPRING	32166	HKLR - POST	P
12-Mar-26	NWL	3	25.60	SPRING	32166	HKLR - POST	P
12-Mar-26	NWL	2	4.70	SPRING	32166	HKLR - POST	S
12-Mar-26	NWL	3	7.40	SPRING	32166	HKLR - POST	S
17-Mar-26	NEL	2	36.63	SPRING	32166	HKLR - POST	P
17-Mar-26	NEL	2	9.67	SPRING	32166	HKLR - POST	S
18-Mar-26	NWL	1	53.69	SPRING	32166	HKLR - POST	P
18-Mar-26	NWL	2	6.90	SPRING	32166	HKLR - POST	P
18-Mar-26	NWL	3	3.00	SPRING	32166	HKLR - POST	P
18-Mar-26	NWL	1	7.21	SPRING	32166	HKLR - POST	S
18-Mar-26	NWL	2	4.10	SPRING	32166	HKLR - POST	S

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

Appendix B. Monitoring Schedule

Post-construction Phase Dolphin Monitoring for HZMB HKLR Project in April 2026

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date			01-Apr	02-Apr	03-Apr	04-Apr	05-Apr
			Dolphin Monitoring	Dolphin Monitoring			
Date	06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr
Date	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr
	Dolphin Monitoring			Dolphin Monitoring			
Date	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr
Date	27-Apr	28-Apr	29-Apr	30-Apr			
Date							

*The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather condition, etc.)

