

Civil Engineering and Development Department

Agreement No. CE26/2025 (CE)

Study on Marina Development at the Expansion Area of Aberdeen Typhoon Shelter - Feasibility Study

Project Profile for Direct Application for Environmental Permit

Reference: 313577/REP/E2

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This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 313577

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1 Basic Information

1.1 Project Title

- 1.1.1.1 Marina Development at the Expansion Area of Aberdeen Typhoon Shelter (hereinafter named as the Project).

1.2 Purpose and Nature of the Project

- 1.2.1.1 The 2024 Policy Address identified yacht tourism as a strategic initiative to reinforce Hong Kong's status as a world-class tourism destination. The government plans to facilitate private sector investment in developing and operating marinas at three key locations. One of the locations is at the expansion area of Aberdeen Typhoon Shelter (ATS). This initiative was subsequently endorsed as a key priority in the Development Blueprint for Hong Kong's Tourism Industry 2.0 (December 2024), recognizing its potential to boost island tourism. The development of yacht tourism is expected to diversify Hong Kong's leisure offerings, attract high-value visitors, and stimulate growth in associated sectors including yacht brokerage, vessel repair and maintenance, docking facilities, and hospitality.
- 1.2.1.2 Island South has established itself as the premier yachting destination in Hong Kong, combining convenience with exclusivity for both domestic and international yacht owners. The area benefits from excellent accessibility to Central's business district (20 minutes by road), proximity to major attractions including Ocean Park and luxury hotel clusters, and exceptional natural assets such as the pristine beaches and clear waters of the Southern District. The locale is further enhanced by its panoramic views of Deep Water Bay and Repulse Bay, complemented by the presence of elite private clubs specializing in yachting and golf amenities.
- 1.2.1.3 The Project comprises the Proposed Seaside Development (includes a new marina), and the Proposed Landside Marina Facilities (includes a marina clubhouse and its associated facilities i.e. boat repair and maintenance workshop, dry berth) as shown in **Figure 1.1**. An EIA study has been conducted for the expansion of ATS and it was approved on 3 Jul 2025.
- 1.2.1.4 The Proposed Seaside Development will help addressing the shortfall by increasing the supply of berthing spaces and promoting yacht tourism as emphasized in the 2024 Policy Address. The proposed marina development in Island South is made possible by the expansion of ATS project, led by the Invigorating Island South Office (IISO) of Development Bureau (DEVB). This 24-hectare expansion involves constructing two new breakwaters and a floating breakwater, creating protected waters for vessels. The development plan of the expansion of ATS project allocates the western part of the expansion area for public mooring, while reserving the eastern part adjacent to Tai Shue Wan for marina development. Construction works for the expansion of ATS would begin in 2026 for completion by 2030.
- 1.2.1.5 According to the approved EIA Report of Expansion of Aberdeen Typhoon Shelter (the approved ATS EIA, AEIAR-267/2025), the expansion area of ATS was proposed to

provide additional sheltered space for the free berthing of pleasure vessels, with the aim of alleviating the strain on the limited berthing capacity in Hong Kong.

- 1.2.1.6 The current Project proposes to develop a marina for the berthing of pleasure vessels within eastern portion of the expansion area of ATS and is therefore similar in nature to the expansion of ATS. Under the current Project, this portion of the expansion area of ATS will be modified to provide designated berthing spaces for pleasure vessels in an orderly manner under the management of a private implementation agent, thereby improving the overall landscape and visual appearance of the expansion area.
- 1.2.1.7 From the approved ATS EIA, the maximum projected daily marine traffic flow entering and leaving the expansion area of ATS and the existing ATS was 483 vessel movements per day. A project specific Marina Traffic Impact Assessment (MTIA) has been conducted for the Project, and the predicted marine traffic is comparable to those predicted in the approved ATS EIA. There would be an increase by about 5% of daily marine traffic flow when compared with the approved ATS EIA, including additional movement of shuttle boat service within the ATS, with a maximum frequency of one round trip per hour (i.e. about 20 vessel movements per day).
- 1.2.1.8 The Proposed Seaside Development covers a waterbody of about 11 ha, including a 9.9 ha of designated berthing area at Tai Shue Wan, and a 1.1 ha of designated water space to the immediate north of the existing eastern breakwater while the Proposed Landside Marina Facilities comprise of 0.6 ha on land. The physical structure of the marina consists of piles, marina pontoon, landside connections and floating structures which the total floating area is about 1.25 ha (i.e. around 5% of the expansion area of ATS). Within this 1.25 ha floating area, the area covered by permanent structures under sea level including marine piles and reinforced concrete structures is about 0.1 ha only.
- 1.2.1.9 Preliminary estimates indicate that the designated berthing area could accommodate up to 200 berths for various vessel types up to 50m length overall. Proposed marina layout plan is shown in **Appendix 1.1**. On-shore power systems that allow yachts to connect to the local electrical grid instead of using auxiliary power units will also be provided for powering the electrical sockets on the vessels. The adjacent 1.1 ha designated water space will include construction of a multi-purpose waterfront area (i.e., berthing space for shuttle boat, temporary berthing for small vessels, etc.). In addition, proposed landing facilities will be constructed for connecting the marina to the land access constructed under the expansion of ATS.
- 1.2.1.10 The Proposed Landside Marina Facilities will occupy the premise built under the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area, who will be responsible for both the site formation and superstructure works. The Project involves mainly renovation, internal fixture and Electrical and Mechanical works (E&M works), which are minor in nature.
- 1.2.1.11 The key project elements for the Project include the following:
- Provision of berthing facilities;
 - Provision of land access;

- Provision of multi-purpose waterfront area for shuttle boat operations and/or temporary berthing of small vessels; and
- Provision of boat repair, maintenance workshop and dry berth.

1.2.1.12 The major construction works for the Project include the following:

- Installation of piles for the marina;
- Construction of landside connections (reinforced concrete decks and ramps);
- Installation of floating pontoons and gangways; and
- Mechanical, electrical and plumbing (MEP) installation.

1.3 Name of Project Proponent

1.3.1.1 The Project Proponent is the Special Duties (Works) Division, Civil Engineering and Development Department (CEDD) of the Government of the Hong Kong Special Administrative Region.

1.4 Location and History of the Site

1.4.1.1 The Project site is located at the Aberdeen Channel (refer to **Figure 1.1**). It is partially located at the existing ATS and the planned expansion area of ATS. The existing ATS was constructed in the 1960s, while the planned expansion of ATS will commence its construction by 2026 for completion in 2030. It is located at Tai Shue Wan, adjacent to Ocean Park Hong Kong in the east.

1.4.1.2 The Project comprises a marina development portion (i.e. Proposed Seaside Development and Proposed Landside Marina Facilities). The seaside development is at the eastern part of the expansion area of ATS, adjacent to Tai Shue Wan, within the Aberdeen Channel, and the immediate north of the existing eastern breakwater of ATS along the coast of Po Chong Wan Temporary Industrial Area and the landside marina facilities are at Po Chong Wan Temporary Industrial Area. This report covers the marina development only.

1.5 Number and Types of Designated Projects to Be Covered by the Project Profile

1.5.1.1 The following elements of the Project are classified as Designated Projects (DPs) under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499):

Table 1.1 List of Designated Projects

Item No.	Designated Project	Designated Project Element under the Project
O.2	A marina designed to provide moorings for more than 30 vessels used primarily for pleasure or recreation.	• The Project will accommodate more than 30 vessels primarily for pleasure or recreation.

1.5.1.2 Given the existing bathymetry, neither capital dredging nor maintenance dredging are required. In addition, there will be no proposed breakwater in this Project.

- 1.5.1.3 This Project Profile (PP) is prepared in accordance with Annex 1 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) to seek permission to apply directly for an Environmental Permit (EP) for the construction and operation of the Project under Section 5(1)(b) and 5(11) of the EIAO.

1.6 Name and Telephone Number of Contact Person

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2 Outline of Planning and Implementation Programme

2.1 Project Planning and Implementation

- 2.1.1.1 CEDD has appointed Ove Arup & Partners Hong Kong Limited under Agreement No. CE 26/2025 (CE) to provide consultancy services for the Study on Marina Development at the Expansion Area of ATS – Feasibility Study. The construction and operation of the Project will be carried out by the future implementation agent.

2.2 Project Programme

- 2.2.1.1 The construction phase of the Project would commence in 2028 and would be targeted for completion in 2032. The tentative phasing of major construction works are outline in the table below.

Table 2.1 Summary Works for the Project

Works Description	Tentative Construction Programme
Mobilization & pre-drilling works (Ground investigation (GI))	Q3-Q4/2028, Q1-Q2/2030
Installation of piles for the new marina	Q1/2029 to Q1/2030
Construction of landside connections	Q3/2030
Installation of the floating pontoons and gangway	Q1-Q2/2030, Q1-Q3/2031
MEP installation	Q2-Q3/2031
Testing and Commissioning	Q1-Q2/2032

2.3 Construction Methodology

- 2.3.1.1 The key construction methodology is given below:

- **Installation of marine piles by crane barges and tugboats** –Pile materials will be delivered to site by marine barges using tugboats. In addition, clearance of existing structures including the removal of existing platforms and columns or piles will also be carried out. Crane barges and piling barges will be deployed on site to install the piles. This will be carried out in the designated berthing area and designated water space.
- **Construction of landside connections, comprising fixed reinforced concrete deck, ramps and landings, by crane barges and tugboat** – The foundations of the landside connections will be constructed using the marine piling method described above. The superstructure will adopt a precast construction approach. Precast reinforced concrete elements will be fabricated off-site and transported to the site by marine barges towed by tugboats. Installation will be carried out using crane barges, which will lift and place the precast units to form the fixed reinforced concrete deck, ramps, and landings. In-situ stitching works will be undertaken to connect the precast elements at the pile head locations and ensure structural continuity. The adoption of precast construction significantly reduces

the extent of in-situ concreting required on site, thereby minimising marine-based construction activities and improving overall construction efficiency and quality control. This will be carried out in the designated berthing area.

- **Installation of the floating pontoon and gangway by crane barges and tugboat** – The floating pontoons will be fabricated off-site and delivered to the site by marine barges towed by tugboats. Upon arrival, the pontoons will be offloaded directly into the sea using crane barges and subsequently transported to their designated positions by workboats. The floating pontoons will be securely connected to the installed piles using bolted connections. Similarly, the gangways will be prefabricated off-site and transported to the site by barge and tugboat. Installation will be carried out using crane barges to lift the gangways into position, with one end supported on the landside landing structure and the other connected to the floating pontoon, thereby accommodating tidal fluctuations. This will be carried out in the designated berthing area and designated water space.
- **Installation, testing and commissioning of the MEP services on the floating pontoon** – Cable installation will commence from the landside progressing towards the seaside on the floating pontoons. Installation will be undertaken using suitable equipment and methods to ensure safe handling throughout the works. This will be carried out in the designated berthing area and designated water space.

2.4 Interactions with Other Projects

- 2.4.1.1 Based on the best available information at time of preparation of this Project Profile, the construction and operational phases of the Project would overlap with the following projects and are summarized in the table below. The locations of these projects are shown in **Figure 2.1**.

Table 2.2 Summary of Other Potential Projects Identified

Project	Tentative Construction Programme	Possible Cumulative Impacts
Expansion of ATS – Investigation, Design and Construction (AEIAR-267/2025, VEP-659/2026)	Q1 2026 to Q4 2029 ^[1,2]	Cumulative impact during construction and operational phase will be addressed in each aspect.
Rezoning application under the Proposed Amendments to the Approved Aberdeen and Ap Lei Chau Outline Zoning Plan (OZP) No. S/H15/34 (Proposed Landside Development at Po Chong Wan Temporary Industrial Area)	Q3/2028 to Q2/2031	Cumulative impact during construction and operational phase will be addressed in each aspect.
Ocean Park “Adventure Zone” Development	Q4 2026 to Q2 2028	No cumulative impact is anticipated during construction phase as the construction period will not overlap. Cumulative impact during operational phase will be addressed in each aspect.

Notes:

- [1] According to the information provided by the expansion of ATS, DCM will be conducted from Q1 2027 to Q2 2028. Dredging and sand blanket will be conducted between Q1 2027 to Q4 2027. Hence, after Q2 2028, heavy marine works under the expansion of ATS, including dredging, sand blanket and DCM, are not anticipated.
- [2] The construction will primarily involve marine based works using barges. Under the approved ATS EIA, the peak Deep Cement Mixing (DCM) construction period will require up to 24 vessels per day, with a minimum of 9 vessels required at any given time. Based on construction programme of the expansion of ATS, DCM works are scheduled for completion by mid-2028, followed by the precast caisson breakwater structure in the second half of 2028 — a phase requiring fewer vessels. During that same period, the GI and installation of piles for the Proposed Seaside Development are expected to proceed concurrently. Given that the GI and installation of piles will require additional vessels while the demand of the expansion of ATS falls, the total number of vessels deployed for both projects during the concurrent period is projected to remain near the established maximum of 24 per day.

2.5 Use of Previously Approved EIA Report

- 2.5.1.1 The following approved EIA Report is used as reference due to the location or the project nature.

Table 2.3 List of Relevant Applications under EIAO

Project Name	Date of Approval	Register No. of approved EIA	Relevant Environmental Aspect to the Project	Relevant Control Measures to the Project	Conclusion	Issuance of EP (EP No.)
Expansion of Aberdeen Typhoon Shelter	3 Jul 2025	AEIAR-267/2025	Air quality, noise, water quality, waste management implication, ecology, fishery, landscape and visual, and cultural heritage	Implementation of good site practices related to air quality, noise, water quality, waste management implication, ecology, fishery, landscape and visual, and cultural heritage	No unacceptable environmental impacts	4 July 2025 (EP-660/2025)

3 Major Elements of the Surrounding Environment

3.1 General

- 3.1.1.1 The major existing and planned sensitive receivers and sensitive parts of the natural environment relating to respective environmental aspects that may be affected by the Project are discussed below.

3.2 Air Quality

Air Sensitive Receivers (ASRs)

- 3.2.1.1 The ASRs within the 500 m Study Area of air quality assessment have been identified in accordance with Annex 12 of the EIAO-TM.
- 3.2.1.2 Representative ASRs within the boundary of the Study Area (i.e. 500m from the Project) have been identified. These ASRs include existing, committed and planned ASRs. The existing ASRs are identified by means of reviewing topographic maps, aerials photos, building plans, land status plans, verified by site inspections. Planned/ committed ASRs have also been identified by making reference to relevant OZPs, Outline Development Plans, Layout Plans and other published plans in the vicinity of the project. The identified ASRs are summarized in **Table 3.1** and shown in **Figure 3.1**.

Table 3.1 Representative Air Sensitive Receivers

ASR	Description	Uses	Building Height (mAG) ^[1]	Approximate Nearest Distance from the Project Site (m) ^[1]
Existing ASRs				
ASR1	Broadview Court	Residential	140	220
ASR2	Larvotto	Residential	140	270
ASR3	Canadian International School	Education	50	230
ASR4	Hong Kong Juvenile Care Centre Chan Nam Cheong Memorial School and Bradbury Hostel	Education / Residential	10	200
ASR5a	Shipyards and workshops	Industrial	10	210
ASR5b	Shipyards and workshops	Industrial	10	210
ASR6 ^[2]	Po Chong Wan Temporary Industrial Area	Industrial	10	Adjacent to Project Site
ASR7	Victoria Shanghai Academy	Education	50	110
ASR8	Water World Ocean Park Hong Kong	Other Specified Uses (Ocean Park)	20	70
ASR9	Ocean Park Hong Kong	Other Specified Uses (Ocean Park)	Ground Level	310
ASR10a	Fullerton Ocean Park Hotel	Hotel	50	30

ASR	Description	Uses	Building Height (mAG) ^[1]	Approximate Nearest Distance from the Project Site (m) ^[1]
ASR10b	Fullerton Ocean Park Hotel	Hotel	50	30
ASR11	Shipyards and Temporary Industrial Area	Industrial	10	Adjacent to Project Site
ASR12	Hospital Authority Shum Wan Laundry	Industrial	10	90
ASR13	Marine Police Aberdeen Base	Office	50	300
ASR14	Marycove The Mary Stanton Centre for Girls Good Shepherd Sisters	Education	20	300
ASR15	The Hong Kong Anti-cancer Society Jockey Club Cancer Rehabilitation Centre	Hospital	30	330
ASR16	Tung Wah Group of Hospitals Jockey Club Sunshine Complex for the Elderly	Residential	30	360
ASR17	The Aberdeen Marina Club	Institute/Office	20	390
ASR18	South Wave Court	Residential	140	440
ASR19	Shum Wan Temporary Industrial Area	Industrial	10	260
ASR20	Wong Chuk Hang Service Reservoir Rest Garden	Open Space	Ground Level	430
ASR21	Singapore International School	Education	50	490
ASR22	Nam Long Shan Road Rest Garden	Open Space	Ground Level	360
ASR23	Shipyards between the project site and HA Shum Wan Laundry	Industrial	10	10
Committed ASR				
CASR1 ^[3]	The Proposed Open Space at the Proposed Eastern Breakwater	Open Space	Ground Level	120
CASR2 ^[3]	The Proposed Open Space at the Proposed Eastern Breakwater	Open Space	Ground Level	120
CASR3 ^[3]	The Proposed Open Space at the Proposed Eastern Breakwater	Open Space	Ground Level	120
Planned ASR ^{[2][4]}				
PASR1	Air Intakes for Residential Clubhouse	Commercial	30	50
PASR2	Open Areas on the Podium	Open Space	30	Adjacent to Project Site
PASR3	Residential Towers	Residential	120	Within Project Site

ASR	Description	Uses	Building Height (mAG) ^[1]	Approximate Nearest Distance from the Project Site (m) ^[1]
PASR4	Air Intakes for Marina Clubhouse	Commercial	30	Within Project Site

Notes:

[1] Rounded to 10m.

[2] ASR6 is proposed to be developed as PASR3.

[3] CASR1, CASR2, CASR3 are proposed by the approved ATS EIA.

[4] Planned ASRs are indicative only. The planned ASRs will be built under the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area. According to the latest design, there are no seat/beach in the open space on the existing breakwater and hence there are no ASRs on the existing breakwater.

Existing Ambient Air Quality Conditions

- 3.2.1.3 The existing ambient air quality could be referred to the nearest Environmental Protection Department's (EPD) Southern Air Quality Monitoring Station (AQMS), the recent five years (2021 – 2025) averaged concentrations of air pollutants relevant to the Project are reviewed and presented in the table below.

Table 3.2 Air Quality Monitoring Data (Southern AQMS, 2021 – 2025)

Pollutant	Parameter	Concentrations, µg/m ³						AQO, µg/m ³ ^[4]
		2021	2022	2023	2024	2025	5-year Mean	
Respirable Suspended Particulates (RSP) ^[1]	10th Highest 24-hour	53	48	53	52	53	52	75 (9)
	Annual	26	24	25	26	23	25	30
Fine Suspended Particulates (FSP) ^[2]	19th Highest 24-hour	26	26	24	28	28	26	37.5 (18)
	Annual	13	12	12	14	13	13	15
Nitrogen Dioxide (NO ₂)	19th Highest 1-hour	123	105	114	101	109	110	200 (18)
	10th Highest 24-hour	56	48	55	48	52	52	120 (9)
	Annual	30	25	26	25	24	26	40
Sulphur Dioxide (SO ₂)	4th Highest 10-Min	36	40	31	27	45	36	500 (3)
	4th Highest 24-hour	8	6	8	9	10	8	40 (3)
Ozone (O ₃)	10th Highest 8-hour	155	174	160	160	160	162	160 (9)
	Peak season	97	98	103	107	103	102	100
Carbon Monoxide (CO)	1st Highest 1-hour	1230	1140	1150	1060	1000	1116	30000 (0)
	1st Highest 8-hour	1014	1073	1123	971	800	996	10000 (0)
	1st Highest 24-hour	913	933	945	894	700	877	4000 (0)

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Notes:

- [1] RSP means suspended particulates in air with a nominal aerodynamic diameter of 10 micrometres or smaller.
- [2] FSP means suspended particulates in air with a nominal aerodynamic diameter of 2.5 micrometres or smaller.
- [3] Monitoring results exceeding the AQO are **bolded**.
- [4] The historical monitoring data is compared with the prevailing AQOs which come into effect on April 2025. The 5-year mean is the average of the five yearly concentrations. Number of exceedance allowed under the AQO is shown in ().

3.2.1.4 As shown in the table above, all parameters comply with AQOs with the exception of O₃. The 10th highest 8-hour averaged O₃ concentrations in Year 2022 is 174µg/m³, which has exceeded the AQO of 160µg/m³. On the other hand, the peak season O₃ concentrations are 103, 107 and 103 µg/m³ in Year 2023, 2024 and 2025, exceeding the AQO of 100µg/m³. According to EPD's Air Quality in Hong Kong 2025 report, O₃ is not a pollutant directly emitted from man-made sources but formed by photochemical reactions of primary pollutants such as Nitrogen Oxides (NO_x) and volatile organic compounds (VOCs) under sunlight. As it takes several hours for these photochemical reactions to take place, O₃ recorded in one place could be attributed to VOC and NO_x emissions from places afar. Hence, O₃ is more a regional air pollution problem.

Future Background Air Quality

3.2.1.5 Whilst the existing ambient air quality conditions described in the above sections are based on the historical monitoring data, the future background air quality conditions are predicted by a regional air quality model named "Pollutants in the Atmosphere and their Transport over Hong Kong" (i.e. PATH) developed by EPD.

3.2.1.6 The Study Area of the Project for air quality assessment involves 8 grids in the latest PATH model (i.e. PATH v3.0). The PATH grids within the 500m Study Area are shown in **Figure 3.1**. As discussed in **Section 2.2**, the Project is tentatively scheduled to operate in 2032. The PATH v3.0 model results are available from EPD's website (<https://path.epd.gov.hk/download.html>). The future background concentrations of the key pollutants predicted by the PATH v3.0 for 2030 are summarised in **Table 3.3**. As shown in the table below, all parameters comply with AQOs, with the exception of O₃. However, as discussed above, O₃ is a regional air pollution problem.

Table 3.3 Future Background Air Quality of Concerned PATH Grids (2030)

Pollutant	Averaging Time	AQO (µg/m ³)	Data Summary	PATH v3.0 Grid in Year 2030							
				39,24	39,25	38,25	38,24	40,25	40,24	39,23	40,23
RSP	24-hour	75 (9)	10th	49.5	49.4	50.1	50.0	49.0	49.2	49.6	49.6
			Exceedance	0	0	0	0	0	0	0	0
	Annual	30	-	18.1	18.2	18.8	18.3	18.1	18.1	18.2	18.2
FSP	24-hour	37.5 (18)	19th	28.1	28.3	29.1	28.3	28.3	28.3	28.2	28.4
			Exceedance	1	1	4	1	1	1	1	1
	Annual	15	-	10.7	10.9	11.4	10.9	10.7	10.7	10.7	10.7
NO ₂	1-hour	200 (18)	19th	78.8	70.9	81.1	84.6	64.6	70.6	84.2	80.5
			Exceedance	0	0	0	0	0	0	0	0
	24-hour	120 (9)	10th	35.2	29.6	34.2	40.9	27.0	29.5	39.2	35.3

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Pollutant	Averaging Time	AQO ($\mu\text{g}/\text{m}^3$)	Data Summary	PATH v3.0 Grid in Year 2030							
				39,24	39,25	38,25	38,24	40,25	40,24	39,23	40,23
			Exceedance	0	0	0	0	0	0	0	0
	Annual	40	-	14.5	13.2	15.7	17.3	12.3	12.8	16.2	14.8
SO ₂	10-Min	500 (3)	4th	24.5	22.9	24.0	25.4	22.0	23.8	26.5	25.0
			Exceedance	0	0	0	0	0	0	0	0
	24-hour	40 (3)	4th	6.4	6.4	6.4	6.6	6.3	6.3	7.1	7.0
			Exceedance	0	0	0	0	0	0	0	0
O ₃	8-Hour	160 (9)	10th	170	170	170	169	169	169	170	171
			Exceedance	18	17	17	16	17	17	19	23
	Peak Season	100	-	122	120	118	120	120	121	122	123
CO	1-Hour	30000 (0)	1st	525	528	530	531	525	520	524	519
			Exceedance	0	0	0	0	0	0	0	0
	8-Hour	10000 (0)	1st	477	477	487	482	476	475	480	480
			Exceedance	0	0	0	0	0	0	0	0
	24-Hour	4000 (0)	1st	456	457	470	463	454	450	456	455
			Exceedance	0	0	0	0	0	0	0	0

Notes:

[1] Concentrations exceeding the AQO are **bolded**.

[2] L1 is referring to Level L1 (i.e. 0m to 17m) of PATH v3.0.

Emission Sources within Study Area

- 3.2.1.7 Based on the site visits conducted in early February 2026 and a review of the approved ATS EIA, the key air pollution sources in the vicinity of the Project that may influence the operational phase air quality mainly comprise vehicular emissions, marine emissions associated with landing facilities, marine emissions from vessels entering and leaving the ATS, nearby industrial emission sources, and potential VOCs generated from occasional vessel painting activity in the nearby existing shipyards.

3.3 Noise

Noise Sensitive Receivers

- 3.3.1.1 Noise Sensitive Receivers (NSRs) within the 300m Study Area for noise assessment have been identified in accordance with Annex 5 and Annex 13 of the EIAO-TM.
- 3.3.1.2 The representative NSRs identified within 300m Study Area of the Project are listed in the table below and indicated in **Figure 3.2**.

Table 3.4 Representative Noise Sensitive Receivers

NSR ^[1]	Description ^[1]	Uses	Approximate Nearest Distance from the Project Site (m) ^[2]
Existing NSRs			
N1	Broadview Court	Residential	220
N2	Larvotto	Residential	270
N3	Canadian International School	Education	230
N4	Hong Kong Juvenile Care Centre Chan Nam Cheong Memorial School and Bradbury Hostel	Education / Residential	200
N5	Victoria Shanghai Academy	Education	110
N6	Fullerton Ocean Park Hotel ^[3]	Hotel	30
Planned NSR			
PN1	Proposed Landside Development at Po Chong Wan Temporary Industrial Area	Residential / Commercial	Adjacent to Project Site

Notes:

[1] The assessment only includes NSRs which rely on opened windows for ventilation.

[2] Round to 10m.

[3] This NSR is provided with central air-conditioning and does not rely on opened windows for ventilation.

Baseline Conditions

3.3.1.3 The prevailing noise environment of the Study Area is contributed by:

- Marine traffic noise from vessels entering and exiting the ATS;
- Noise from shipyards along Ap Lei Chau Praya Road and Shum Wan Road;
- Noise from Po Chong Wan Temporary Industrial Area; and
- Road traffic noise from Ap Lei Chau Praya Road and Shum Wan Road.

3.4 Water Quality

Water Sensitive Receivers

3.4.1.1 Representative Water Sensitive Receivers (WSRs) within 500m Study Area have been identified in accordance with Annex 1 and Annex 14 of the EIAO-TM. Representative WSRs within the Study Area are listed in the table below and indicated in **Figure 3.3**.

Table 3.5 Representative Water Sensitive Receivers

WSR	Description	Approximate nearest distance from the Project Site (m)
Existing WSRs		
W01	Corals at Sham Shui Kok	500
W02	Corals at South of Tai Shue Wan	200
W03	Corals at Tai Shue Wan	Within the Project Site
W04	Seawater Intake for Brick Hill Salt Water Pumping Station	300
W05	Aberdeen South Typhoon Shelter	Partial area within Project Site
Planned WSR		
PW01	Expansion Area of Aberdeen Typhoon Shelter	Partial area within Project Site

Marine Water Quality

- 3.4.1.2 The Project is located within the Western Buffer Water Control Zone (WCZ), and in close proximity of Southern WCZ. According to the Annual Marine Water Quality Reports published by EPD, the Water Quality Objectives (WQOs) compliance rates in Year 2025 for Western Buffer and Southern WCZs are 67% and 69%, respectively. The compliance rates for both WCZs in the past five years (2021 – 2025) are summarised in the table below.

Table 3.6 Representative Compliance Rates of Southern and Western WCZs (2021 – 2025)

WCZ	2021	2022	2023	2024	2025
Western Buffer	100%	100%	100%	100%	67%
Southern	77%	69%	73%	69%	69%

- 3.4.1.3 The Western Buffer WCZ is situated in the Central Waters region of Hong Kong channels, containing important navigational channels and port areas. According to the Marine Water Quality in Hong Kong in 2025 published by EPD, the marine waters of Western Buffer WCZ have a full compliance in total inorganic nitrogen (TIN) and ammoniacal nitrogen (NH₃-N) WQOs. However, exceedance of the DO levels was recorded in 2025.
- 3.4.1.4 The Southern WCZ achieves a full compliance in NH₃-N and *E. coli* WQOs in the past ten years. However, exceedance of the TIN levels was recorded primarily due to the more stringent WQOs adopted in Southern WCZ than other WCZ.

3.5 Waste Management

- 3.5.1.1 In the approved ATS EIA, sediment samples were collected from 9 sampling locations in the vicinity of Aberdeen Channel in accordance with ETWB TCW No. 34/2002. Relevant testing results indicated that except 2 samples encountered at MDH5 belong to category M, all other samples are classified as category L. Details of the category M sediment encountered are summarised in **Table 3.7** below. Category L sediment would be disposed to marine disposal site for Type 1 – Open Sea Disposal subject to agreement with CEDD.

Table 3.7 Sediment Classification and Proposed Disposal Options for Category M sediment identified in the approved ATS EIA

Sample ID	Sampling Depth (mbgl)	Classification	Proposed Disposal Options
MDH5	Seabed surface, 1.5-1.95	Mp ^[1]	Type 1 – Open Sea Disposal (Dedicated Sites) at disposal site(s) allocated by CEDD

Notes:

[1] Mp refers to category M sediment passed biological screening.

3.6 Land Contamination

- 3.6.1.1 As mentioned in **Section 1.2.1.12**, the Proposed Landside Marina Facilities will occupy the premise built under the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area, who will be responsible for both the site formation and superstructure works. In the Proposed Landside Development, Po Chong Wan Temporary Industrial Area, which is located in the vicinity of the Project has been identified as potentially land contamination site.

3.7 Ecology

3.7.1 Sites of Conservation Importance

- 3.7.1.1 The Study Area for ecological assessment is defined as the area within 500m from the Proposed Seaside Development and Proposed Landside Marina Facilities. There are no recognized sites of conservation importance listed in the Annex 16 of the EIAO-TM within the Study Area for ecological assessment.

3.7.2 Marine Habitats

- 3.7.2.1 The Proposed Seaside Development is largely within the project boundary of the approved ATS EIA except for a strip of waterbody along the north of the eastern breakwater and to the west of the Po Chong Wan Temporary Industrial Area. Based on the findings of the approved ATS EIA, marine habitats within the Proposed Seaside Development and the Study Area for ecological assessment were rated as of either low or very low ecological value in the approved ATS EIA. Habitat evaluation results of the habitats identified in the approved ATS EIA are summarised in **Table 3.8**.

Table 3.8 Summary of Ecological Value of Marine Habitats in the Proposed Seaside Development and Study Area for Ecological Assessment

Habitat	Proposed Seaside Development	Study Area for Ecological Assessment	Evaluation in the approved ATS EIA
Artificial seawall	✓	✓	Very Low
Rocky shore		✓	Low
Sandy shore		✓	Very Low
Subtidal soft bottom habitat	✓	✓	Very Low
Subtidal hard bottom habitat	✓	✓	Low

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3.7.3 Marine Fauna

Corals

- 3.7.3.1 From the spot-check dives and Rapid Ecological Assessment (REA) previously conducted for the approved ATS EIA, hard and soft coral species have been identified within the Proposed Seaside Development and the Study Area for ecological assessment. Within the Proposed Seaside Development (C1, C2, REA 2) (**Figure 3.4** refers), locally common hard coral species *Bernardpora stutchburyi*, *Oulastrea crispata* and *Tubastraea* sp. were identified. These hard coral species, which are considered as species of conservation importance, were recorded at relatively low coverage (1-5%) within the Proposed Seaside Development and the Study Area for ecological assessment and are generally common in Hong Kong.

Benthic

- 3.7.3.2 From the benthic grab sampling surveys conducted for the approved ATS EIA, 40 benthos individuals of 7 species have been recorded within the Proposed Seaside Development (**Figure 3.4** refers). The evenness and diversity of benthic species is comparable with typical levels in the southern waters in Hong Kong¹. No species of conservation importance were recorded.

Intertidal

- 3.7.3.3 From the walk-through survey conducted for the approved ATS EIA, a total of 7 and 11 intertidal species were recorded within the Proposed Seaside Development (**Figure 3.4** refers), in the wet and dry seasons, respectively. Biodiversity was generally low, mainly composed of barnacles and algae. Within the Study Area for ecological assessment the overall intertidal species richness was generally low at all sampling locations. No species of conservation importance were recorded.

Marine Mammals

- 3.7.3.4 From AFCD's long-term marine mammal monitoring reports, sightings of Finless Porpoise near the Proposed Seaside Development were very rare². The key habitats of Chinese White Dolphin are on the western waters of Hong Kong, and no sightings were reported near the Proposed Seaside Development. Therefore, the waters around the Proposed Seaside Development and its vicinity is not considered as habitat supporting significant population of marine mammals in Hong Kong.

¹ AFCD (2002) Agreement No. CE69/2000 Consultancy Study on Marine Benthic Communities in Hong Kong. Prepared by Centre for Coastal Pollution and Conservation, CityU Professional Services Limited.

² Reports on Monitoring of Marine Mammals in Hong Kong. Available at: [Agriculture, Fisheries and Conservation Department - Conservation - Marine Conservation - Chinese White Dolphin](#)

3.7.4 Marine Verification Survey Results

- 3.7.4.1 A verification survey was conducted in Mar 2026 to verify the marine habitat conditions of the approved ATS EIA. The methodology and results are provided in **Appendix 3.1**. No significant change in habitat conditions of subtidal hard bottom, subtidal soft bottom and intertidal habitat was identified compared to the findings of the approved ATS EIA. Benthic communities including coral and other benthos, and intertidal communities, are similar to the approved ATS EIA in terms of distribution and abundance. Representative photos of the subtidal hard bottom habitat are presented in **Appendix 3.1**.

3.7.5 Terrestrial Habitat

- 3.7.5.1 The terrestrial habitat of the Proposed Landside Marina Facilities is a developed area with no natural habitat. The ecological value is negligible and no terrestrial ecological impact is expected.

3.8 Fisheries

3.8.1 Sites of Fisheries Importance

- 3.8.1.1 The Study Area for fisheries assessment is defined as the Western Buffer Water Control Zone (WCZ) and Southern WCZ. Based on the information available, there are no sites of fisheries importance, including Fish Culture Zones (FCZs), Artificial Reefs (ARs) and nursery area and spawning grounds of commercial fisheries resources within or in proximity to the Proposed Seaside Development.
- 3.8.1.2 The nearest FCZs and ARs are located in Sok Kwu Wan and Lo Tik Wan, which are approximately 4.3km and 3.9km away from the Proposed Seaside Development respectively. Other FCZs identified within the Western Buffer WCZ and Southern WCZ include Ma Wan FCZ, Po Toi FCZ and Cheung Sha Wan FCZ, all of which are located more than 10km away from the Proposed Seaside Development (**Figure 3.5** refers).
- 3.8.1.3 The nearest spawning ground and nursery area of commercial fisheries resources are located at about 3.0km and 1.3km away from the Proposed Seaside Development at South Lamma and Lamma Island respectively. Examples of major commercial species recorded included croaker (*Johnius belengeri*), prawn (*Metapenaeus affinis* and *Solenocera crassicornis*), mantis shrimp (*Oratosquilla* spp), and fry of Sciaenid and Serranid in Lamma Island and South Lamma (ERM, 1998)³.

3.8.2 Capture Fisheries

- 3.8.2.1 According to the Port Survey 2021 conducted by Agriculture, Fisheries and Conservation Department (AFCD)⁴, waters near and within the existing Aberdeen South Typhoon Shelter area supported moderate to high levels of overall fishing operation (>400-600 vessels), mainly dominated by sampans (>200-400 vessels). Other types of fishing vessels were recorded at low to moderate levels (>100-200 vessels). Overall fisheries production

³ Environmental Resources Management (ERM) (1998). Fisheries Resources and Fishing Operation in Hong Kong Waters. Prepared by ERM for Agriculture and Fisheries Department, HK SAR Government.

⁴ Port Survey 2021. https://www.afcd.gov.hk/english/fisheries/fish_cap/fish_cap_latest/files/common/PS2021Report_ENG.pdf

within and near the Proposed Seaside Development was recorded at moderate levels (>200-300 kg/ha). Of this, fisheries production by sampan was low (>50-100 kg/ha), while production by other types of fishing vessels was moderate (>200-300 kg/ha).

3.8.3 Culture Fisheries

- 3.8.3.1 No mariculture activities were identified within the Proposed Seaside Development. The two nearest FCZs were Sok Kwu Wan FCZ and Lo Tik Wan FCZ with approximately 4.3 km and 3.9 km from the Proposed Seaside Development respectively. Other FCZs identified within the Southern WCZ and Western Buffer WCZ include Ma Wan FCZ, Cheung Sha Wan FCZ and Po Toi FCZ, which were located at least 10 km away from the Proposed Seaside Development. According to the approved ATS EIA, the total licensed fish raft areas at Sok Kwu Wan FCZ and Lo Tik Wan FCZ were approximately 2.65 ha and 2.18 ha in 2021 respectively. As indicated in the approved ATS EIA, the types of common species produced by FCZs located within the Study Area for fisheries assessment in 2022 included pompano, red snapper, star snapper, black croaker, cobia and hybrid grouper.

3.9 Landscape and Visual

- 3.9.1.1 Reference is drawn from Annexes 10 and 18 of the EIAO-TM and EIAO GN No. 8/2023 – Preparation of Landscape and Visual Impact Assessment Under Environmental Impact Assessment Ordinance.

Potential Landscape Elements and Public Viewing Points

- 3.9.1.2 No country park, conservation area, wetland, natural river, historic landscapes, site of cultural heritage, nature reserves and SSSI nor any landscape with distinctive character/resources are identified within and in the vicinity of the Project. There is a coastal protection area located south of the Project Site.
- 3.9.1.3 The composition of existing landscape resources (LRs) and landscape character areas (LCAs) within and in the vicinity of the Project consists of LRs in Seawater body, Hillside Vegetation, Modified Watercourses and LCAs in Typhoon Shelter Landscape, Inshore Water Landscape, Theme Park Landscape etc.
- 3.9.1.4 The seaside portion of the Proposed Seaside Development is entirely on sea area, thus there is no existing tree. Meanwhile, a tree group survey was carried out to assess the general condition of existing trees within 100m from the Project Site, and the results are included in **Appendix 3.2**. No Registered OVT⁵ is identified within 100m from the project boundary.
- 3.9.1.5 The major visual resources enjoyed by the public within the Project mainly comprise the ridgelines from Bennet's Hill, Brick Hill and Yuk Kwai Shan and the seascape of Aberdeen Channel.

⁵ DEVB TC(W) No. 5/2020 – Registration and Preservation of Old and Valuable Trees.

- 3.9.1.6 Potential landscape elements and public viewing points that may be affected by the Project are identified as follows:

Landscape Elements

- Hillside Vegetation;
- Industrial Area;
- Natural Shoreline;
- Ocean Park Hong Kong
- Vegetation on Engineered Slopes;
- Modified Watercourses; and
- Seawater Body.

Public Viewing Points

- Footpath of Bennet's Hill;
- Highpoint of Yuk Kwai Shan;
- Ap Lei Chau Praya Road near Sham Wan Towers;
- Existing Eastern Breakwater;
- Pavilion near Brick Hill;
- Aberdeen Promenade;
- Future Proposed Eastern Breakwater; and
- Ocean Park.

3.10 Cultural Heritage

Terrestrial Archaeology

- 3.10.1.1 There is no Site of Archaeological Interest (SAI) identified in the vicinity of the Project. The nearest SAI is Luk Chau SAI, located more than 3km away from the Project Site.

Built Heritage

- 3.10.1.2 Neither declared monuments nor graded historic buildings are identified within 300m Study Area. The nearest built heritage, Holy Spirit Seminary, Old Block, is located more than 750 m away from the Project Site. It is classified as Grade 1 historic building by AAB.

Marine Archaeology

- 3.10.1.3 The Study Area for Marine Archaeological Investigation (MAI) is defined as the sea portion of the project boundary plus an additional 50m seaward buffer (see **Appendix 3.3**).
- 3.10.1.4 A baseline review of the history and archaeology of the Study Area has been conducted using desktop sources, including but not limited to, the following:
- archival and historic documents, including historic maps and charts of the Study Area;
 - UK Hydrographic Office (UKHO) shipwreck database; and
 - previous relevant MAIs.

Documented shipwrecks

- 3.10.1.5 No known shipwreck remains are recorded within the Study Area in the most recent publicly available version (July 2025) of the UKHO global database of shipwrecks.

Land-use changes

- 3.10.1.6 Over the past 50 years, Aberdeen Harbour's landscape has been significantly altered by construction and development. In 1963, the coastline remained largely natural, with limited human activity. Major changes began with the construction of the Aberdeen South Typhoon Shelter in 1968, which involved extensive dredging and breakwater installation extending into the Study Area. Subsequent developments in the late 1970s–1980s included reclamation, seawall construction, and industrial expansion at Po Chong Wan, as well as infrastructure works around Tai Shue Wan and Ocean Park. More recent projects required minimal dredging. While these works heavily disturbed nearshore seabed areas, deeper offshore zones likely remain relatively undisturbed with preserved buried deposits. The dredging footprints are shown in **Figure C of Appendix 3.3**.

Previous MAI Studies

- 3.10.1.7 Three projects have been conducted in proximity to the Study Area. These have resulted in two EIAs and two MAIs. The previous MAI Study Areas are shown in **Figure C of Appendix 3.3**.
- AEIAR 184/2014 Tai Shue Wan Development at Ocean Park (2014)
 - AEIAR 267/2025. Expansion of Aberdeen Typhoon Shelter (2025)
 - Agreement No. CE 11/2022 (CE). Deep Water Bay Pier and Tai Shue Wan Pier - Investigation, Design and Construction.
- 3.10.1.8 No further investigation or mitigation was considered necessary as concluded in the previous MAI.

Evaluation of archaeological potential

- 3.10.1.9 From the Aberdeen typhoon shelter MAI (AEIAR 267/2025), only those at risk from future dredging were subject to diver investigation. These are all located in the southern part of the Aberdeen Channel; those in the northern part close to the breakwaters have not been dived. Given the proximity of these anomalies to the breakwaters and the typhoon shelter entrance, it is likely that they are modern objects. A rapid assessment using raw or minimally processed geophysical data from the original 2022 survey, instead of the post-processed imagery and report employed was carried out to verify this.

Archaeological Review of Marine Geophysical Survey Data

- 3.10.1.10 For this Study, raw SBP data from the original 2022 geophysical survey were obtained for archaeological review.
- 3.10.1.11 This dataset and the related geophysical survey report (EGS 2022) have been assessed for marine archaeological potential with a particular focus on filling gaps not addressed by the previous MAIs. The archaeological potential has been currently assessed based on the best available data and the most up-to-date methodologies at the time of conducting this MAI. Nevertheless, the potential for unexpected archaeological discoveries cannot be completely ruled out. In case of unexpected discoveries made during the course of project-related work, all works should cease and the find be reported immediately to the AMO.
- 3.10.1.12 The impact of the modern use of the area is evidenced by seabed scars, possibly the result of anchoring in TSW by large construction vessels, and considerable amounts of modern debris including blocks, lines / cables, tyres and two small modern wrecks. This debris likely relates to extensive development and construction on the shoreline, intensive marine traffic and former use of the Aberdeen Channel as a spoil ground.
- 3.10.1.13 The Study Area is characterised by a gently sloping seabed comprised mainly of unconsolidated sediment, with rock outcrops at the shoreline. The majority of the shoreline is developed, either with a rock armour seawall or in the form of breakwaters.
- 3.10.1.14 Five SSS and six MAG contacts of unknown origin were documented previously by the expansion of ATS MAI but had not been subject to diver survey. These were re-assessed using the newly-available raw / minimally processed data. Classification of archaeological potential was based on a combination of the contact's signature on the geophysical data and the surrounding seabed context. Based on the re-assessment, all eleven anomalies are now considered to be modern objects of no or low archaeological potential.
- 3.10.1.15 No additional or previously undetected anomalies were identified from the raw / minimally processed SSS, MAG or SBP data. No further marine archaeological investigation is therefore recommended.

4 Possible Impacts on the Environment

4.1 General

4.1.1 Construction Phase

4.1.1.1 Potential sources of environmental impacts during construction phase includes the piling activities and general construction activities with the use of Powered Mechanical Equipment (PME). As discussed in **Section 1.2**, the major construction works for the Project include the following:

- Installation of piles for the marina;
- Construction of landside connections (reinforced concrete decks and ramps);
- Installation of floating pontoons and gangways; and
- Mechanical, electrical and plumbing (MEP) installation.

4.1.2 Operational Phase

4.1.2.1 Potential sources of environmental impacts due to the operation of the proposed marina include air and noise emission from the induced marine traffic and from the operation of the supporting facilities, potential discharge to the waterbody due to the operation of marina.

4.2 Air Quality

4.2.1 Construction Phase

4.2.1.1 As discussed in **Section 1.2.1**, the Proposed Landside Marina Facilities will occupy the premise of the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area where the site formation and superstructure works would be performed by another party. The Proposed Landside Marina Facilities will involve mainly renovation, internal fixture and Electrical and Mechanical works (E&M works) for fitting in the premise. These works are minor in nature and no adverse air quality impact is anticipated from Proposed Landside Marina Facilities during construction phase.

4.2.1.2 For the Proposed Seaside Development, as discussed in **Section 2.3**, the works are mainly marine based, involving the installation of marine piles, the removal of existing platforms, columns and piles, and the installation of floating pontoons and gangways using crane barges and tugboats. Only minor construction works are required, primarily involving the placement of precast concrete blocks by marine barges.

4.2.1.3 Approximately 10 vessels per day would be deployed during construction phase for various marine works, including construction of marine piles and construction of marine deck structures with fixed landing. About 4 trips of construction vessels per day would be required. Construction vessels (e.g. barges and workboats) to be utilized would emit NO_x, SO₂, RSP, and FSP. All these construction vessels are required to comply with the Air Pollution Control (Fuel for Vessels) Regulation, using marine fuel with a sulphur content

not exceeding 0.5% by weight during all operations within Hong Kong waters, whether sailing or berthing. Locally sourced marine light diesel for vessels should have a sulphur content not exceeding 0.05% by weight, as required by the Air Pollution Control (Marine Light Diesel) Regulation. Vessel routes will be planned to maintain separation from ASRs where practicable. Therefore, emissions from construction vessels are expected to have a minimal impact on the ASRs, and no adverse air quality impacts are anticipated with the implementation of good site practices.

- 4.2.1.4 The number of PME in operation will be tentatively about 30 at any one time. Fuel combustion from the use of PME during construction works could be the potential source of NO₂, SO₂, CO, RSP and FSP. Emissions from Non-Road Mobile Machinery (NRMMs) are regulated under the Air Pollution Control (NRMMs) (Emission) Regulation. Furthermore, use of NRMMs with exempted labels under the Air Pollution Control (NRMMs) (Emission) Regulation will be avoided where practicable, and equipment will be properly maintained to reduce emissions. Electrified NRMMs will be employed as far as practicable, which are unlikely to cause significant smoke and gaseous emissions.
- 4.2.1.5 The marine-based construction works will comprise the installation of marine piles, construction of floating pontoons and gangway, as well as the construction of piled deck and ramp structures. All marine-based construction activities will be undertaken under wet or submerged conditions. Given the high moisture content of the materials handled during these activities, the generation of dust emissions is expected to be negligible.

Cumulative Impact

- 4.2.1.6 As indicated in **Table 2.2**, three concurrent projects have been identified.
- 4.2.1.7 The Proposed Landside Marina Facilities would occupy after the site formation work and superstructure of the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area. Hence, there would be no adverse cumulative impacts. For the Proposed Seaside Development would mainly involve marine works and would not induce fugitive dust. Hence, the cumulative air quality impacts are not anticipated, provided that good site practices and the recommended mitigation measures are properly implemented.
- 4.2.1.8 As the Project will commence after the completion of the Ocean Park “Adventure Zone” Development, no overlapping construction activities with the Ocean Park “Adventure Zone” Development is anticipated.
- 4.2.1.9 As discussed in **Section 2.4**, constructions of the Project will commence after the heavy marine works under the expansion of ATS, including dredging, sand blanket and DCM. In addition, the total number of construction vessels will be maintained to the stated in the approved ATS EIA. Dust monitoring would be conducted in the expansion of ATS to ensure no adverse air quality impact during construction phase and the contractor shall closely liaise with relevant parties of the expansion of ATS. Together with the implementation of good site practices and proposed mitigation measures under the Project and the expansion of ATS, no adverse air quality cumulative impact is anticipated.

4.2.2 Operational Phase

- 4.2.2.1 Majority of the facilities for the Project are located within the expansion area of ATS. Hence, most of the Project area therefore falls within the project boundary of the approved ATS EIA, except for the proposed waterfront areas located north of the existing eastern breakwater and west of the Po Chong Wan Temporary Industrial Area. The waterfront area will consist of floating pontoons for the temporary berthing during occasional event only. As vessel engines would be switched off during berthing, no emission will be generated from vessel hoteling.
- 4.2.2.2 The ASRs identified in **Table 3.1** are the same as, or comparable to, those assessed in the approved ATS EIA. Cumulative air quality impacts arising from vehicular emissions from open roads and parking areas, industrial and marine emissions within the 500m Study Area, as well as background concentrations, have already been assessed in the approved ATS EIA for these ASRs.
- 4.2.2.3 Under the approved ATS EIA, vehicular emissions were assessed for the commencement year and up to 15 years thereafter (i.e. 2030, 2038 and 2045). Vehicular emissions were predicted to peak in Year 2030 were therefore adopted as the representative assessment year. The vehicular data has been presented in approved ATS EIA. Marine traffic growth of all vessel types was assumed to reach a peak in 2040. Under the worst-case marine emission scenario (i.e. year 2040), a maximum total of 483 vessel movements per day was adopted. The cumulative air quality assessment under the approved ATS EIA would therefore remain valid. According to the rezoning application under the Proposed Landside Development at Po Chong Wan Temporary Industrial Area, the associated vehicular emissions increase would be insignificant when compared with the overall emission inventory identified in the approved ATS EIA.

Changes in Number of Vessels trips

- 4.2.2.4 As the project is to offer designated berthing space for pleasure vessel, involving only minor re-arrangement on the berthing locations within the expansion area of ATS. Therefore, the maximum projected daily marine traffic flow passing in and out of the ATS and the existing typhoon shelter would be comparable to that under the approved ATS EIA.
- 4.2.2.5 Notwithstanding the above, a shuttle boat service is proposed under this Project, which would operate at a maximum of one round trip per hour. As advised by the Engineer, the shuttle boat would be considered as small craft, the route of the vessel is travelling to the south along the proposed marina. Assuming up to 10 operating hours per day, and conservatively assuming one operation per hour, about 20 vessel movements per day would be generated. As discussed in Section 1.2, the predicted marine traffic with the Project is of similar order as those predicted in the approved ATS EIA, with an overall increase about 5%. Such an increase is considered minor in terms of additional marine emission contributions as discussed in the following sections.

Changes in Routing of Vessels Trips

- 4.2.2.6 In the approved ATS EIA, a conservative routing assumption was adopted whereby all 483 vessel movements per day, including the vessels berthing in the expanded ATS, were assumed to pass through both the existing Aberdeen South Typhoon Shelter opening and the expanded ATS opening. The approved ATS EIA further assessed the worst-case scenarios by conservatively assuming that 100% of vessels would navigate along the eastern side of the proposed marine route (Figure 3.5c in the approved ATS EIA), and an additional 100% of vessels would navigate along the western side of the proposed marine route (Figure 3.5b in the approved ATS EIA). Under this assumption, all vessel routes in the expanded ATS were considered to be in close proximity to the representative ASRs, thereby representing a conservative worst-case assessment in the approved ATS EIA.
- 4.2.2.7 Vessels not berthing at the proposed marina would travel along the western boundary of the proposed marina, with routes located approximately 200 m from the shoreline adjacent to Ocean Park, corresponding broadly to the east-west width of the proposed marina (see the marina layout plans in **Appendix 1.1**). This routing arrangement is therefore further away from the representative ASRs at the eastern side of the ATS compared with the conservative assumptions adopted in the approved ATS EIA, where all vessel trips were assumed to travel at a distance of approximately 20 m from the shoreline adjacent to Ocean Park when entering and leaving the ATS (as shown in Figure 3.5c in the approved ATS EIA).
- 4.2.2.8 In addition, under the latest design (see the marina layout plans in **Appendix 1.1**), vessels berthing at the proposed marina would travel predominantly southwards and are unlikely to enter the existing ATS, thereby avoiding the conservative assumption in the approved ATS EIA, in which all vessel trips were assumed to pass through both the existing ATS opening and the expanded ATS opening.

Cumulative Impacts

- 4.2.2.9 The proposed marina in Proposed Seaside Development is intended to serve a function equivalent to that of a typhoon shelter and no additional industrial emissions would be introduced. The recently Proposed Landside Development at Po Chong Wan Temporary Industrial Area comprises a clubhouse with limited residential development and would therefore not give rise to additional air emission sources. Apart from the minor shuttle boat service described above, nearly all other assumptions and identified pollution sources under the approved ATS EIA are considered still applicable to this Project. Besides, according to the site survey in early February, the chimneys serving the water boilers at Tung Wah Group of Hospitals Jockey Club Sunshine Complex for the Elderly are identified. However, they are located at more than 400 m from the planned ASRs of the proposed development, which are well beyond the relevant HKPSG buffer-distance requirement for chimneys. Therefore, no adverse air quality impact from these chimneys is anticipated, and the approved ATS EIA is considered representative and remains applicable. As discussed in **Section 4.2.2**, the approved ATS EIA has already assessed the worst-case scenarios of both road traffic and marine traffic flows. Accordingly, the cumulative air pollutant concentrations predicted in the approved ATS EIA are considered representative and remain applicable to this Project.
- 4.2.2.10 According to the predictions in the approved ATS EIA, the cumulative concentrations of NO₂, RSP, FSP and SO₂ at all representative ASRs would comply with AQOs. As shown

in **Table 3.1**, with the exception of planned ASRs, the closest ASR is Fullerton Ocean Park Hotel (ASR10a and ASR10b), representing the most affected ASR from the Project.

- 4.2.2.11 As shown in the **Table 4.1**, the predicted cumulative air pollution concentration at Fullerton Ocean Park Hotel remains within the AQO criteria, with a sufficient margin of compliance.
- 4.2.2.12 For ASR10a, the 19th highest hourly, 10th highest daily, and annual average NO₂ concentrations are not more than 62%, 40%, and 52% of the relevant AQO requirement, respectively. The 10th highest daily and annual average RSP concentrations are not more than 67% and 61% of the relevant AQO requirement. The 10th highest daily and annual average FSP concentrations are not more than 75% and 73% of the relevant AQO requirement. The 4th highest 10-mins and 4th highest daily SO₂ concentrations are not more than 5% and 17% of the relevant AQO requirement. For ASR10b, the predicted pollutant concentrations are generally comparable to or lower than those at ASR10a, except of the annual NO₂ concentration, which is slightly higher but still does not exceed 59% to the AQO. Comparing to the approved ATS EIA, the Proposed Seaside Development will induce 5% increase in the marine traffic. Given the minor increase in the marine traffic flow, it is anticipated that the cumulative concentrations of NO₂, RSP, FSP and SO₂ at Fullerton Ocean Park Hotel would remain well within the AQO standard.
- 4.2.2.13 Another ASR that would be relatively more affected by the marine emissions is the Proposed Open Space at the Proposed Eastern Breakwater (CASR1, CASR2, and CASR3). Similar to the discussion for Fullerton Ocean Park Hotel, the predicted cumulative air pollutant concentrations at Proposed Open Space as shown in **Table 4.1**, even with the additional marine traffic, are anticipated to comply with the relevant AQOs for all assessed air pollutants.

Table 4.1 Predicted Concentrations at Most Affected ASR During the Operation Phase

Parameters		Pollution Concentration (µg/m ³) ^[1]								
		NO ₂			RSP		FSP		SO ₂	
		19th highest	10th highest	Annual Average	10th highest	Annual Average	19th highest	Annual Average	4th highest	4th highest
		1-h	24-hr		24-hr		24-hr		10-mins	24-hr
AQOs		200	120	40	75	30	37.5	15	500	40
PATH (2030) (39,24)		79 (40%)	35 (29%)	14 (35%)	49 (65%)	18 (60%)	28 (75%)	11 (73%)	25 (5%)	6 (15%)
Cumulative Concentration ^[2]										
ASR 10a	1.5 mAG	103.1 (52%)	46.5 (39%)	20.9 (52%)	49.9 (67%)	18.3 (61%)	28.3 (75%)	10.9 (73%)	25.2 (5%)	6.8 (17%)
	5 mAG	105.7 (53%)	46.5 (39%)	20.3 (51%)	49.9 (67%)	18.3 (61%)	28.3 (75%)	10.9 (73%)	26.3 (5%)	6.8 (17%)
	10 mAG	116.0 (58%)	46.8 (39%)	19.7 (49%)	50.0 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	26.9 (5%)	6.8 (17%)
	15 mAG	124.6 (62%)	47.8 (40%)	19.6 (49%)	50.0 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	26.5 (5%)	6.9 (17%)
	20 mAG	123.5 (62%)	46.9 (39%)	19.2 (48%)	50.0 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	25.7 (5%)	6.9 (17%)
	25 mAG	117.6 (59%)	45.5 (38%)	18.7 (47%)	50.0 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.7 (5%)	6.9 (17%)

Parameters		Pollution Concentration (µg/m ³) ^[1]								
		NO ₂			RSP		FSP		SO ₂	
		19th highest	10th highest	Annual Average	10th highest	Annual Average	19th highest	Annual Average	4th highest	4th highest
		1-h	24-hr		24-hr		24-hr		10-mins	24-hr
	30 mAG	109.8 (55%)	45.3 (38%)	18.3 (46%)	49.9 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.8 (5%)	6.9 (17%)
	35 mAG	100.6 (50%)	45.5 (38%)	18.1 (45%)	49.8 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.9 (5%)	6.9 (17%)
	40 mAG	94.7 (47%)	44.7 (37%)	17.9 (45%)	49.8 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	25.0 (5%)	6.9 (17%)
	45 mAG	90.5 (45%)	44.8 (37%)	17.8 (45%)	49.8 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	25.0 (5%)	6.9 (17%)
	50 mAG	88.2 (44%)	45.2 (38%)	17.7 (44%)	49.7 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	25.0 (5%)	6.9 (17%)
ASR 10b	1.5 mAG	108.8 (54%)	49.8 (42%)	23.6 (59%)	49.9 (67%)	18.4 (61%)	28.3 (75%)	11 (73%)	25.7 (5%)	6.8 (17%)
	5 mAG	112.5 (56%)	49.4 (41%)	22.4 (56%)	50 (67%)	18.4 (61%)	28.3 (75%)	11 (73%)	25.7 (5%)	6.8 (17%)
	10 mAG	119.6 (60%)	47.8 (40%)	20.7 (52%)	50.1 (67%)	18.4 (61%)	28.3 (75%)	11 (73%)	25.8 (5%)	6.8 (17%)
	15 mAG	120.6 (60%)	47.2 (39%)	19.8 (50%)	50.2 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	25.6 (5%)	6.8 (17%)
	20 mAG	117.3 (59%)	45.2 (38%)	19.1 (48%)	50.2 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	25.1 (5%)	6.9 (17%)
	25 mAG	104.7 (52%)	45.3 (38%)	18.6 (47%)	50.1 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.6 (5%)	6.9 (17%)
	30 mAG	100.7 (50%)	45.6 (38%)	18.2 (46%)	49.9 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.6 (5%)	6.9 (17%)
	35 mAG	94.5 (47%)	45.6 (38%)	18 (45%)	49.9 (67%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.7 (5%)	6.9 (17%)
	40 mAG	91 (46%)	45.4 (38%)	18 (45%)	49.8 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.7 (5%)	6.9 (17%)
	45 mAG	87.7 (44%)	45.2 (38%)	17.9 (45%)	49.8 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.7 (5%)	6.8 (17%)
	50 mAG	87.6 (44%)	45 (38%)	17.8 (45%)	49.7 (66%)	18.3 (61%)	28.2 (75%)	10.9 (73%)	24.8 (5%)	6.8 (17%)
CAS R1 ^[3]	1.5 mAG	114.4 (57%)	42.2 (35%)	-	49.6 (66%)	-	28.2 (75%)	-	26.8 (5%)	6.8 (17%)
	5 mAG	120 (60%)	42.5 (35%)	-	49.7 (66%)	-	28.3 (75%)	-	27.2 (5%)	6.8 (17%)
CAS R2 ^[3]	1.5 mAG	116.1 (58%)	41.9 (35%)	-	49.6 (66%)	-	28.2 (75%)	-	26.2 (5%)	6.8 (17%)
	5 mAG	128 (64%)	42.4 (35%)	-	49.7 (66%)	-	28.2 (75%)	-	26.6 (5%)	6.8 (17%)
CAS R3 ^[3]	1.5 mAG	122.5 (61%)	41.5 (35%)	-	49.6 (66%)	-	28.3 (75%)	-	25.8 (5%)	6.8 (17%)
	5 mAG	138.3 (69%)	42.4 (35%)	-	49.7 (66%)	-	28.3 (75%)	-	26.1 (5%)	6.9 (17%)

Notes:

- [1] () represents the percentage relative to the AQOs.
- [2] The cumulative concentrations at ASR10a, ASR10b, CASR1, CASR2, and CASR3 are extracted from the approved ATS EIA (A10a, A10b, PA01, PA02, and PA03).
- [3] Long-term AQOs (i.e., annual NO₂, annual RSP and annual FSP) are not applicable in consideration of short retention time at open spaces.

- 4.2.2.14 For other representative ASRs located further away from the Project, the cumulative air qualities are also predicted to comply with AQOs. As shown in Figure 3.6 to Figure 3.29 in the approved ATS EIA, which concluded that no air sensitive use shall be located within the exceedance zones identified in the Contour plots. Therefore, there should be no adverse air quality impact due to the Project. Moreover, to reduce emission during berthing, electricity pedestals will be installed to provide onshore power supply to vessels in case power is needed during berthing or mooring at these facilities. Besides, marine vessels will be required to turn off the engines when they are berthed or moored at these facilities.
- 4.2.2.15 According to the rezoning application under the Proposed Landside Development at Po Chong Wan Temporary Industrial Area, the predicted cumulative concentrations of NO₂, RSP, FSP and SO₂ at the planned representative ASRs comply with the respective AQOs, with sufficient margins. Comparing to the approved ATS EIA, the proposed marina will induce 5% increase in the marine traffic. Given the minor increase in the marine traffic flow, it is anticipated that the cumulative concentrations of NO₂, RSP, FSP and SO₂ at the planned representative ASRs would remain well within the AQO.
- 4.2.2.16 During occasional maintenance activities at the boat repair & maintenance workshop of the Proposed Landside Marina Facilities, toxic air pollutants (TAPs), mainly VOCs, may be generated from painting, solvents, and fuel handling. Given the small scale of the workshop (260 m²), no maintenance works will be carried out in sheltered area. Besides, with the limited scope of maintenance activities, including routine hull cleaning, polishing, antifouling paint application and minor mechanical repairs, and 1 boat to be under maintenance at one time, VOC emissions are expected to be limited. With full compliance of the Air Pollution Control (Volatile Organic Compounds) Regulation for paint, solvents, and fuel handling within the boat repair & maintenance workshop, the associated environmental and health impacts are anticipated to be insignificant.
- 4.2.2.17 Desludging services will be provided at the proposed berthing and mooring facilities. An in-slip pump-out system, consisting of a pump and associated piping, will be installed. A suction pipe will connect the pump to the vessels' sewage holding tanks. Collected sewage through the pump-out system will be properly treated at downstream available facilities. As the pump-out system will be fully enclosed, the impact of odour would be minimal.
- 4.2.2.18 As mentioned in **Section 1.5**, maintenance dredging is not required and hence no odour impact is anticipated.

4.3 Noise

4.3.1 Construction Phase

- 4.3.1.1 To ensure a better environment, the EIAO-TM promulgated under the EIAO has imposed criteria for daytime general construction works (excluding percussive piling) between the hours 0700 and 1900 on weekdays, i.e. non-restricted hours, is controlled under the EIAO.

The EIAO-TM stipulates criteria of 65 – 75dB(A) for daytime construction activities as shown in the table below.

Table 4.2 Noise Standards for Daytime Construction Activities

Uses	Noise Standards ^[1,2] , Leq (30min) dB(A) 0700 to 1900 hours on any day not being a Sunday or general holiday
- All domestic premises - Temporary housing accommodation - Hostels - Convalescent homes, and - Homes for the aged	75
- Places of public worship - Courts of law, and - Hospitals and medical clinics	70
Educational institutions (including kindergartens and nurseries)	70 65 (During examination)

Notes:

- [1] The above standards apply to uses which rely on opened windows for ventilation and are assessed at 1m from the external façade.
- [2] A Construction Noise Permit shall be required for carrying out relevant construction work during restricted hours under the NCO. In case the applicant would like to evaluate whether carrying out relevant construction works during restricted hours under the NCO is feasible or not in the context of programming construction works, reference should be made to relevant technical memoranda issued under the NCO.

- 4.3.1.2 The potential sources of noise impact during the construction of the Proposed Seaside Development would be the use of PME for various construction activities (e.g. pre-drilling works with minor site clearance, installation of piles for the marina, construction of landside connections, installation of floating pontoons and gangways, MEP installation) carried. The locations of workfronts are presented in **Figure 4.1**.
- 4.3.1.3 Based on the current layout, the nearest existing NSRs are N2 (i.e. Larvotto) and N5 (i.e. Victoria Shanghai Academy) located on the western side and the eastern side of ATS respectively. Since N5 (i.e. Victoria Shanghai Academy, 105m from the Project Site) is located closer to the project boundary compared to N2 (i.e. Larvotto, 270m from the Project Site), it is selected as the representative NSR for the quantitative assessment of construction noise impact. For the planned NSR PN1 (i.e. Proposed Landside Development at Po Chong Wan Temporary Industrial Area), the population intake would be after Q2 2031 and it would not be considered during the construction phase.
- 4.3.1.4 N5 (i.e. Victoria Shanghai Academy) is the nearest existing NSR located on the eastern side of ATS. As shown in **Figure 4.1**, it is located at ~225m from the workfront 1. For other remaining workfronts under the Projects, they are located at more than 300m from N5 (i.e. Victoria Shanghai Academy). For the construction work under the expansion of ATS, the nearest one would be modification of existing breakwater and the separation distance is about 335m. For the Ocean Park “Adventure Zone” Development, they are located at about 620m from N5 (i.e. Victoria Shanghai Academy). For the Proposed Landside Development at Po Chong Wan Temporary Industrial Area, it is also located within 85m from N5 (i.e. Victoria Shanghai Academy).
- 4.3.1.5 The inventory has been confirmed by the Engineer. Sound power levels (SWLs) for each PME would be established according to Technical Memorandum (TM) on Noise from

Construction Work other than Percussive Piling (GW-TM) and other relevant information as appropriate. **Appendix 4.1** presents the SWLs for each PME. As the detailed design of the Proposed Landside Development at Po Chong Wan Temporary Industrial Area is still under review, typical PMEs and noise mitigation measures for residential development are adopted for the construction noise calculation (see **Appendix 4.1**). The detailed construction programme has been presented in **Appendix 4.2**. The construction noise calculation has been presented in **Appendix 4.3** with the cumulative impact and result has been summarized in the table below.

Table 4.3 Construction Noise Impact Assessment Results for Representative NAP

NSR	NAP ID	Uses	Leq (30min), dB(A)			Comply [Y/N]
			Criterion ^[1]	Noise Level from the Project	Cumulative Noise Level	
N5	VSA-1	Educational Institution	70 (65)	64	65	Y

Notes:

[1] Values in parentheses indicate the noise criterion during examination period of educational institution.

- 4.3.1.6 Based on the construction noise assessment stated above, adverse construction noise impact is not anticipated.

Cumulative Impact

- 4.3.1.7 As mentioned above, the expansion of ATS and Ocean Park “Adventure Zone” Development, they are located beyond 300m from N5 (i.e. Victoria Shanghai Academy). For the Proposed Landside Development at Po Chong Wan Temporary Industrial Area, the cumulative construction impact has been addressed quantitatively. From the results above, no exceedance is found for N5 (i.e. Victoria Shanghai Academy). Hence, adverse cumulative construction noise impact from these concurrent projects is not anticipated.

4.3.2 Operational Phase

Fixed Noise Sources Impact

- 4.3.2.1 Noise assessments for fixed noise sources would normally be conducted in accordance with IND-TM under the NCO. The IND-TM lays down statutory Acceptable Noise Level (ANL). The EIAO-TM also states that all planned fixed noise sources should be so located and designed that when assessed in accordance with the IND-TM, the level of the intruding noise at the facade of the nearest sensitive use should be at least 5dB(A) below the appropriate ANL shown in Table 3 of the IND-TM or, in the case of the prevailing background being 5dB(A) lower than the ANL, should not be higher than the prevailing background.

Table 4.4 Fixed Noise Sources Impact Assessment Results for Representative NAPs

NSR	NAP ID	Influencing Factors (IFs)	Distance from Industrial Area	Proposed Area Sensitivity Ratings	ANL / ANL – 5, dB(A) ^[2]		Prevailing Noise level, dB(A) ^[3]
					Day and Evening Time	Nighttime	
N5	VSA-1	Industrial Area	~20m	C	70 / 65	— ^[1]	59
PN1	T2-1	Industrial Area	~80m	C	70 / 65	60 / 55	59

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Notes:

- [1] No nighttime operation for school.
- [2] ANL for cumulative fixed noise impact and ANL – 5 for planned noise sources.
- [3] As the future noise climate (i.e. surrounded by shipyards and typhoon shelter) at the Project Site would be similar to that of Larvotto, the prevailing background has made reference to that under Approved ATS EIA, which is 59dB(A).

- 4.3.2.2 Potential fixed sources during the operational phase would be maintenance activities from proposed dry berth and proposed boat repair and maintenance workshop and exhaust / intake louvers of ventilation system for the Proposed Landside Marina Facilities.
- 4.3.2.3 Based on the current layout, the proposed residential towers of the Proposed Landside Development at Po Chong Wan Temporary Industrial Area and Victoria Shanghai Academy are regarded as the nearest NSRs and 2 nearest NAPs are selected for fixed noise sources impact assessment as shown in **Figure 4.2**. For Larvotto, it is located more than 500m from the planned noise sources, hence, it is not included in the fixed noise sources impact assessment.
- 4.3.2.4 The configuration of the berthing areas and accesses would be properly designed to minimize the noise impact on the NSRs. Considering that the vessels will generally turn off their engines while berthed and moored, adverse noise impact is not expected. Desludging services will be provided at the proposed berthing and mooring facilities. As conservative assessment, it will assume to be operated at the outside dry berth and boat repair and maintenance workshop (i.e. shortest separation distance). The proposed marina is not intended for residential use and vessels will be required to turn off their engines while berthed and moored, no adverse fixed noise sources impact from proposed seaside development is anticipated.
- 4.3.2.5 There would be industrial activities from dry berth and proposed boat repair and maintenance workshop. As the proposed dry berth and boat repair and maintenance workshop are located beneath the podium of the future development at Po Chong Wan, most maintenance work will be shielded by the podium, with the exception of the travel lift. The travel lift will be deployed, if necessary, during lifting operations to hoist vessels and move them into the boat repair and maintenance workshop. No nighttime maintenance works were proposed. The detailed operation and the equipment required are presented in **Appendix 4.4**.
- 4.3.2.6 Fixed noise sources from the existing shipyard / industrial operation in the surrounding are considered in assessing the potential cumulative noise impact. Based on both the site visits and desktop review, most of the shipyard and industrial area at Po Chong Wan are enclosed. Works including hammering were observed with no heavy duty maintenance or repair work was observed. Noisy industrial operations and ship maintenance take place inside covered structures. Some areas with outdoor working spaces are situated further north of the Project site, so there is a potential for noise impact from the outdoor working spaces. No operation was observed during the nighttime. The existing shipyard operation and the equipment required are also presented in **Appendix 4.4**.
- 4.3.2.7 Results of the cumulative fixed noise sources impact assessment associated with the existing shipyard and proposed dry berth and boat repair and maintenance workshop at the representative NAPs are summarised in the table below. Details are presented in **Appendix 4.5**.

Table 4.5 Fixed Noise Sources Impact Assessment Results for Representative NAPs

NAP ID	Area Sensitivity Ratings	Criterion, dB(A) ^[1]		Max. Predicted Noise Level, dB(A) ^[1]		Mitigation Measures (Y/N)
		Planned fixed noise sources	Cumulative for all fixed noise sources	Planned fixed noise sources	Cumulative for all fixed noise sources	
VSA-1	C	59	70	44	70	N
T2-1	C	59	70	59	63	N

Notes:

[1] Day and evening time noise criterion only as there is no operation during nighttime.

- 4.3.2.8 By implementing the good practices / recommendation as mentioned in **Section 5.2.2**, no insurmountable impact from fixed noise sources is anticipated.

Marine Traffic Noise Impact

- 4.3.2.9 Referring to the approved ATS EIA, the cumulative marine traffic noise level is calculated by aggregating the $L_{eq(1hr)}$ of each type of vessels, including both small craft and domestic ferry. Appropriate distance and façade corrections have been taken into account for the assessment. Same methodology is also adopted in the approved ATS EIA and summarized in **Appendix 4.6**.
- 4.3.2.10 As advised by the Engineer, it is anticipated the pleasure vessels berthed within the proposed marina will only travel to the south (i.e. no additional pleasure vessels would enter / exit existing ATS). Referring to the “Plan of Passage Area in Aberdeen South Typhoon Shelter” published by the Marine Department (MD) in December 2022, part of the passage area within existing ATS falls within the 300m Study Area of the Project (refer to **Figure 4.3**). According to Section 7 of the Merchant Shipping (Local Vessels) (Typhoon Shelters) Regulation (Cap. 548E), a local vessel shall not take up any position or be berthed, moored, anchored or secured in a passage area. Due to lack of available information on the future marine route within the Study Area, worst-case scenario was assumed at shortest distance from edge of existing passage area. For the manoeuvring routes within the marina, the nearest routes with shortest distances from the residential towers were assumed for conservative assessment.
- 4.3.2.11 Only small crafts, which include pleasure vessel and shuttle boat, and domestic ferries are anticipated in the 300m Study Area. According to the approved ATS EIA, noise measurement for vessel noise source term was conducted at Shum Wan Road and the noise source terms (i.e. in term of Sound Exposure Level (SEL)) for the vessels are extracted in the table below.

Table 4.6 Summary of Noise Source Terms of Various Vessels

Vessel Type	Estimated Speed, knots/hr	SEL at 25m at reference speed of 5 knots/hr, dB(A)
Small Craft	5	82
Domestic Ferry	5	84

- 4.3.2.12 The maximum numbers of vessels for each vessel type for different routes, which includes the shuttle boat services, during peak hours and the total number of vessels per hour have been identified as worst-case assessment and shown in the table below.

Table 4.7 Summary of the Maximum Numbers of Vessels for Each Vessel Type

Route	Vessel Type	No. of Vessels per Hour	Speed, knots/hr
1	Small Craft	5 ^[1]	5
	Domestic Ferry	1 ^[2]	5
2	Small Craft	2 ^[3]	5
3	Small Craft	2 ^[3]	5
4	Small Craft	5 ^[3]	5
5	Small Craft	1 ^[3]	5
6	Small Craft	1 ^[3]	5
7	Small Craft	1 ^[3]	5
8	Small Craft	1 ^[3]	5
9	Small Craft	8 ^[3]	5
10	Small Craft	2 ^[3]	5
Total ^[4]		29	5

Notes:

- [1] The number of small craft within the existing ATS passage area has made reference to the approved ATS EIA. According to the approved ATS EIA, 3 no. of small craft is assumed. At most one round trip of shuttle boat service (i.e. two vessel movements) would be provided by the proposed marina development. Hence, total of 5 no. of small craft is assumed.
- [2] According to the approved ATS EIA, 1 no. of domestic ferry is assumed.
- [3] The number of vessels per hour is advised by the Engineer based on interpretation from the project-specific MTIA.
- [4] For a conservative assessment, the total number of vessels per hour was assumed to be the sum of vessel movements along Routes 1 to 10.

- 4.3.2.13 The predicted marine traffic noise levels at the representative NAPs are summarised in the table below and presented in **Appendix 4.7**.

Table 4.8 Summary of the Maximum Numbers of Vessels for Each Vessel Type

NSR	NAP ID	Prevailing Noise Level, dB(A)	Predicted Marine Traffic Noise Level (L_{eq} 1hr), dB(A)
N2	L1-1	59	49
PN1	T2-1		47

- 4.3.2.14 From the table above, the predicted marine traffic noise levels at all the representative NAPs would be well below the prevailing noise level of 59dB(A), hence, adverse marine traffic noise impact is not anticipated.
- 4.3.2.15 There would be no new/alterd road involved in the project. The number of visitors to the marina and the Proposed Landside Marina Facilities is expected to be limited, with public transport anticipated to serve as the main access mode. Hence, no adverse road traffic noise impact from proposed marina is anticipated.

4.4 Water Quality

4.4.1 Construction Phase

- 4.4.1.1 As discussed in **Section 1.2**, the Proposed Landside Marina Facilities will occupy the premise built under the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area, who will be responsible for both the site formation and superstructure works. The Project only involves mainly renovation, internal fixture and Electrical and Mechanical works (E&M works), which are minor in nature.
- 4.4.1.2 For the Proposed Seaside Development, construction of the floating pontoons for mooring and berthing facilities would involve construction of marine piles. The piles will be driven into the seabed or rockhead level by a piling machine set up on temporary platforms or barges. The key water quality issue is the seabed disturbance due to construction of marine piles and potential release of fines into the water environment.
- 4.4.1.3 Based on the proposed construction works, key sources of water pollution due to the construction phase of the Project include the following:
- Construction of marine piles;
 - Clearance of existing structures;
 - Construction site runoff and general construction activities;
 - Sewage due to construction workforce;
 - Accidental spillage of chemicals; and
 - Floating refuse and debris.

Construction of Marine Piles

- 4.4.1.4 Construction of marine piles would be required as part of the marine construction works. The water quality impacts arising from the piling works would include the release of suspended solids (SS) into the surrounding marine environment.
- 4.4.1.5 Marine piling works would involve excavation and infilling activities within pile shafts, which would be generally enclosed by steel casing during construction. With the containment provided by the casing, the release of fine sediments into the surrounding marine waters would be limited, and the potential water quality impacts on nearby WSRs are therefore anticipated to be insignificant. Nevertheless, to provide further protection against the dispersion of suspended sediments, a single layer silt curtain would be installed around the piling works area to confine any sediment plume.

Clearance of Existing Structures

- 4.4.1.6 As discussed in **Section 2.3**, the removal of existing platforms, columns and piles will be undertaken for the clearance of existing structures. Given the small scale of these structures along the seafront adjacent to the Po Chong Wan Temporary Industrial Area, the release of SS due to seabed disturbance during the removal works is expected to be

limited. With the implementation of a single-layer silt curtain around the marine works area, no adverse water quality impact is anticipated.

Construction Site Runoff and General Construction Activities

4.4.1.7 The Proposed Landside Marina Facilities will occupy the premise built under the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area. According to the rezoning application under the Proposed Landside Development at Po Chong Wan Temporary Industrial Area, no adverse water quality impact due to the construction of the proposed landside marina facilities. As the majority of the construction works would be marine-based, the generation of construction site runoff would be limited. Nevertheless, to ensure that no adverse water quality impacts would arise, the following good site practices, where applicable, should be implemented:

- Good site practices as specified in ProPECC PN 2/24 “Construction Site Drainage” should be followed as far as practicable; and
- All effluent discharged from the construction site should comply with the standards as stipulated in the Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems (DSS-TM).

Sewage due to Construction Workforce

4.4.1.8 Sewage will be generated by the sanitary facilities provided for the workforce on-site and on barges. Raw sewage characterized by high levels of biochemical oxygen demand (BOD), ammonia, *E. coli*, and oil / grease. Sewage generated should be properly managed to minimize the adverse impact of odour and potential health risks to the workforces, such as attracting pests and the spread of diseases. Advanced notification and approval should be made to authorities prior to sewerage connections, if any. However, given the proper implementation of good site practices recommended below, there would be no adverse water quality impacts:

- Provide adequate portable chemical toilets for the workforce to ensure all sewage is properly collected and disposed of in accordance with ProPECC PN 2/24;
- The chemical toilets should be properly maintained and sanitised; and
- Licensed collectors should be employed for the collection and disposal of sewage on a regular basis.

Accidental Spillage of Chemicals

4.4.1.9 Chemicals used during construction, such as fuel, oil, solvents, and lubricants from the maintenance of construction machinery and equipment, may cause pollution and trigger physicochemical effects in the nearby waterbodies if accidental spillage occurs. However, with the proper implementation of good site practices recommended in **Section 5.3**, there would be no adverse water quality impacts.

Floating Refuse and Debris

4.4.1.10 Floating refuse and debris may arise from littering by marine vessels and runoff from nearby coastal areas. Regular collection and removal of floating refuse would be carried

out on a daily basis. During the construction phase, the Contractor would be responsible for keeping the site area free from rubbish. Details of on-site waste management measures are provided in **Section 4.5**.

Cumulative Impact

- 4.4.1.11 As indicated in **Table 2.2**, three concurrent projects have been identified. The Project will commence after completion of the Ocean Park “Adventure Zone” Development and therefore no cumulative water quality impact is anticipated. Although the Proposed Landside Development at Po Chong Wan Temporary Industrial Area will overlap with the Project, its works are predominantly land-based while this Project mainly involves marine works. With the implementation of good site practices and the proposed mitigation measures, no adverse cumulative water quality impact is anticipated.
- 4.4.1.12 According to the latest programme for the expansion of ATS, the construction period of the Project will partially overlap with that of the expansion of ATS. However, the Project will commence only after the completion of the major marine works under the expansion of ATS, including dredging, sand blanket and DCM work. The primary marine works for the Project will involve marine piling. These works will be carried out within pile shafts that are generally enclosed by steel casings and surrounded by silt curtains, with excavation and backfilling confined within the shafts. As such, only limited sediment disturbance is expected and any water quality impact on nearby WSRs is anticipated to be insignificant. With the implementation of good site practices and the recommended mitigation measures, no adverse cumulative water quality impact is expected.

4.4.2 Operational Phase

- 4.4.2.1 Proposed elements of the Proposed Seaside Development such as proposed piles for berthing and mooring facilities, and waterfront area may cause changes in the hydrodynamic regime. The waterfront area immediately north of the existing eastern breakwater will comprise floating pontoons intended for temporary berthing during occasional events only. No secondary contact recreation activities are proposed in this area.
- 4.4.2.2 As mentioned in **Section 1.5.1.2**, no maintenance dredging is required. The key pollution sources / impacts during operational phase includes:
- Change in hydrodynamic regime due to the Project and potential water quality impact caused by the change of hydrodynamic regime;
 - Marine vessel discharges;
 - Potential Oil Spillage from Vessels;
 - Sewage from Marina Clubhouse;
 - Antifouling Paints; and
 - Floating refuse accumulation.

Change in Hydrodynamic Regime and associated Water Quality Impact

- 4.4.2.3 Given that the Proposed Seaside Development is situated within the expansion area of ATS, enclosed by both the existing breakwaters and those planned as part of the expansion of ATS, the total area occupied by the proposed marine piles (approximately 700 piles with a diameter of 800mm) would represent only about 0.3% of the sheltered area (24 ha of the extra sheltered area under expansion of ATS), which is considered negligible. Furthermore, based on the preliminary design, the majority of vessel berths are positioned just behind the breakwater and close to the shoreline, where hydrodynamic influence is inherently limited, so any potential for substantial hydrodynamic changes is expected to be minimal.
- 4.4.2.4 In addition, as shown in **Appendix 1.1**, a waterfront area for occasional events is proposed immediately north of the existing eastern breakwater. The area would be formed by piles and desking structures, comprising approximately 100 piles with a diameter of 800 mm each, and would be limited in extent. Therefore, it is not expected to substantially alter the overall footprint within the sheltered area.
- 4.4.2.5 As shown in the proposed marina layout (**Appendix 1.1**), the marina comprises discrete piles with floating structures rather than continuous solid structures, thereby minimising flow obstruction. Furthermore, as the marina is located behind the existing eastern breakwater, the Project would not alter the clearance width between the shortened breakwater and the marina area. As such, the existing tidal exchange pathways would be preserved.
- 4.4.2.6 Given the above, the hydrodynamic regime within the Study Area is expected to remain largely consistent with that assessed under the approved ATS EIA. The hydrodynamic modelling conducted in the approved ATS EIA had demonstrated that no adverse hydrodynamic or water quality impacts were predicted. Therefore, no cumulative hydrodynamic or water quality impacts are anticipated arising from the implementation of both projects.

Marine Vessel Discharges

- 4.4.2.7 The proposed marina is not intended for residential use and would serve for berthing and mooring purposes only. Therefore, as conclude in the approved ATS EIA, the impact due to marine vessel discharges is expected to be insignificant provided the recommended mitigation measures as stated in **Section 5.3.2.2** are properly implemented.
- 4.4.2.8 Besides, facilities for de-sludging blackwater tank will be provided for all bilge water, chemical waste and sewage from yachts. A pump-out system will be installed to collect the vessels' sewage and discharge to public sewerage system. In addition, the future implementation agent should set up housekeeping practices for the users to follow (See **Sections 5.3.2**).

Potential Oil Spillage from Vessels

- 4.4.2.9 The vessels near the marine facilities would reduce travel at slow speed. Spill response equipment, such as floating booms, will be kept on-site, and the future implementation agent should prepare a spill prevention and emergency response plan. The sheltered setting

would help contain any spill and support effective response. With these measures, adverse water quality impacts from vessel-related oil spills are unlikely.

Sewage from Marina Clubhouse

- 4.4.2.10 Additional sewage and wastewater generated from the marina clubhouse of the Proposed Landside Marina Facilities, as well as from the associated facilities, including the maintenance and repair workshop and dry berth, would be properly collected by sewage system and diverted to the public sewerage system. The requirements in Water Pollution Control Ordinance (WPCO) will be properly implemented. Therefore, no adverse water quality impact is anticipated.

Antifouling Paints

- 4.4.2.11 All vessels are required to comply with the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), which establishes international standards for preventing marine pollution. The discharge of prohibited substances, including polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), fumigants and pesticides, into coastal waters is strictly prohibited. Antifouling paints containing biocides are regulated under the Pesticides Ordinance (Cap. 133). Since 1 January 2017, the Merchant Shipping (Prevention and Control of Pollution) Ordinance (Cap. 413) has prohibited the use of organotin biocides in antifouling systems on all relevant ships in Hong Kong. In addition, cybutryne shall not be applied or reapplied as an antifouling substance on any ship. With compliance with these regulatory requirements and the implementation of good site practices, the potential environmental impact arising from the release of antifouling agents is expected to be low.

Floating Refuse Accumulation

- 4.4.2.12 The enclosed water body would reduce flow velocity, potentially causing floating refuse to accumulate near them and impacting marine aesthetics. Scavenging on a regular basis can mitigate these impacts. The future implementation agent should clean the shoreline and floating pontoon on a regular basis to prevent pollutant and refuse accumulation.

Cumulative Impact

- 4.4.2.13 As all concurrent projects other than the expansion of ATS are land-based development, no cumulative water quality impact is anticipated. Also, as discussed in the **Sections 4.4.2.3 to Sections 4.4.2.6**, no cumulative hydrodynamic or water quality impacts are anticipated from the implementation of both the expansion of ATS and this Project.

4.5 Waste Management

4.5.1 Construction Phase

- 4.5.1.1 Major works including site clearance, marine piling works, construction of landside connections, installation of floating pontoons and MEP installation would generate construction and demolition (C&D) materials, sediments, chemical waste, general refuse

and floating refuse. Good site practice shall be adopted to avoid or minimise potential environmental impact associated with handling, collection and disposal of wastes.

C&D Materials

- 4.5.1.2 The C&D materials generated mainly consist of inert C&D materials (i.e. excavated soil, rock and broken concrete etc.) and non-inert C&D materials (i.e. vegetation and timber etc.). Amount of C&D materials to be generated during construction phase is estimated based on latest available information. The quantities are the best estimates for reference only at this stage and subject to further review during the detailed design stage as necessary. Summary of estimated amount of C&D materials to be generated during construction phase is shown in the table below.

Table 4.9 Estimated Amount of C&D materials Generated during Construction Phase

Works Involved	Estimated In-situ Amount of C&D Material to be Generated (m ³)				
	Inert C&D Material ^[1]				Non-inert C&D Material ^[5]
	Soft Inert Material ^[2]	Rock	Mixed Ground ^[3]	AHM ^[4]	
Clearance of Existing Structures	0	0	0	25	120
Marine Piling	1,600	2,000	6,200	0	0
Installation of floating pontoons	0	0	0	0	125
Construction of reinforced concrete decks/ramps	0	0	0	0	5
MEP installations	0	0	0	0	125
Total	9,825				375

Notes:

- [1] “Inert C&D Material”, also known as public fill, includes debris, rubble, earth and concrete which is suitable for land reclamation and site formation.
- [2] “Soft Inert C&D Material” mainly refers to excavated soil, etc.
- [3] “Mixed Ground” refers to the transition zone between Grade III and IV granite.
- [4] “AHM (Artificial hard materials)” includes, but not limited to, broken concrete, asphalt, bitumen, granular materials, debris, and rubble, etc.
- [5] “Non-inert C&D Material” involved in the Project includes vegetation and timber etc. In contrast to public fill, non-inert waste subject to recovery of reusable/ recyclable items, is disposed of at landfills.

- 4.5.1.3 Opportunity will be taken to look into the feasibility for reusing inert C&D materials as fill materials subject to fill material requirements, before delivering to Public Fill Reception Facilities (PFRFs) as a last resort. Meanwhile, all non-inert C&D materials should be recycled whenever possible and be disposed of at the landfill as a last resort. For any timber anticipated to be generated during construction phase, it should be recycled at Y·PARK prior to landfill disposal.

Sediments

- 4.5.1.4 The Proposed Seaside Development is located at Aberdeen Channel, marine piles will be installed as part of the marine construction works. Based on the latest design, marine-based sediment would be generated from the marine piling works. It is preliminarily

estimated that there will be 4,100 m³ of marine-based sediment resulted from the marine piling works, subject to further review at later stage when more geotechnical and piling information is available.

- 4.5.1.5 The preliminary marina layout has been optimised to make use of existing water depths, avoiding the need for capital dredging and the generation of dredged sediments. This approach minimises the volume of marine sediment requiring handling, transport and disposal, thereby reducing construction waste generation and associated environmental impacts.
- 4.5.1.6 In the approved ATS EIA, sediment samples were collected from 9 sampling locations within Aberdeen Channel. Relevant testing results indicated that category L and M sediment were encountered, the respective result summary and proposed disposal options in accordance with ETWB TCW No. 34/2002 is provided in the table below.

Table 4.10 Sediment Result Summary and Proposed Disposal Options in the Approved ATS EIA

Sediment Classification	No. of Samples	Proposed Disposal Options
Category L	21	Type 1 – Open Sea Disposal
Category M passing biological screening test	2	Type 1 – Open Sea Disposal (Dedicated Site) at disposal site(s) allocated by MFC

- 4.5.1.7 Prior to the commencement of the construction, separate submissions including Sediment Sampling and Testing Plan (SSTP) would be submitted for EPD agreement in accordance with the Project Administration Handbook for Civil Engineering Works (PAH). Sediment sampling and testing based on the approved SSTP will be conducted to classify the sediment generated from piling works. Opportunities should be taken to look into the feasibility for beneficial reuse of the sediment before disposal. If reuse is not feasible, the sediment generated would be disposed at the designated disposal outlets subject to EPD/CEDD agreement on the application of marine dumping permit and the rationale for sediment disposal under Dumping at Sea Ordinance (DASO).

Chemical Waste

- 4.5.1.8 Materials classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. The major chemical waste types arising from the construction sites may include scrap batteries, spent hydraulic oil and waste fuel, spent lubrication oil and cleaning fluids from mechanical machinery and spent solvent from equipment cleaning activities. Chemical waste may pose toxic effects to workers, adverse impacts on water quality from spills and associated adverse impacts on freshwater biota or fire hazards if not stored and disposed of appropriately.
- 4.5.1.9 Subject to actual site constraints, it is anticipated that the quantity of chemical waste, such as scrap batteries is in the order of a few hundred kilograms per month, while lubricating oil and solvent produced from plant maintenance will be in the order of a few hundred cubic metres per month.
- 4.5.1.10 Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of

Chemical Wastes published by the EPD. Chemical waste should be collected by a licensed chemical waste collector and to be disposed of to the Chemical Waste Treatment Centre (CWTC) in Tsing Yi. Subject to actual engineering design, opportunities for the reuse and recycling of materials will be taken.

General Refuse

- 4.5.1.11 The construction workforce will generate refuse comprising food wastes, wastepaper, aluminium cans and plastic bottles during construction period. The storage of general refuse may give rise to adverse environmental impacts. These may include water quality, odour and visual impact in the form of windblown litter. The construction site may also attract pests and vermin if the storage areas are not well maintained and cleaned regularly. In addition, disposal of waste at sites other than the approved disposal facilities could also lead to similar adverse impacts on those sites.
- 4.5.1.12 The peak number of construction workforce to be employed is anticipated to be about 300 for the Project. Based on the generation rate of 0.65 kg/person/day, the total refuse generated per day at peak would be about 195 kg/day. Based on the construction period of about 4 years and assuming an average of 26 working days per month, it is estimated that approximately 243 tonnes of general refuse would be generated during construction phase. Recyclable materials would be sorted out for recycling subject to actual site conditions and the remaining general refuse would be disposed at landfill.

Floating Refuse

- 4.5.1.13 During construction phase, floating refuse may wash up along the floating pontoons through the effect of currents and wind, it will then be trapped and accumulated near the newly constructed floating pontoons during different construction phase.
- 4.5.1.14 With reference to the approved EIA for Expansion of Hong Kong International Airport into a Three-Runway System (AEIAR-185/2014), the estimated floating refuse to be collected along its newly constructed artificial seawall (approximately 13 km long) of the proposed Hong Kong International Airport extension area was 65 m³ every year. As the floating pontoons will be constructed progressively according to construction sequence, the floating refuse is anticipated to increase gradually. Considering the total length of floating pontoons is approximately 0.8 km long, it is anticipated that approximately 4 m³ of floating refuse per year at maximum might be accumulated during construction phase of the Project.
- 4.5.1.15 Proper waste management and training to workers will be implemented to avoid the generation of floating refuse (e.g. wastepaper and empty containers) during marine works. Refuse will be collected and the recyclable components will be separated from the collected floating refuse before disposal at landfill as appropriate.

4.5.2 Operational Phase

- 4.5.2.1 Potential waste types generated during operational phase would include Municipal Solid Waste (MSW) from future users and chemical waste from general maintenance activities of the Project. Floating refuse from future users or those unintentionally brought by wind and tide also tends to accumulate within the Project.

- 4.5.2.2 MSW will mainly arise from the households and commercial uses during operational phase. Storage and handling of MSW including food, paper, wood, plastic, office waste, metal containers, etc. may give rise to environmental impacts. An effective and efficient waste handling system is essential in order to minimise potential adverse environmental impacts during waste storage, collection and transport. Such impacts may include odour if waste is not collected frequently. The waste handling system may also facilitate materials recovery and recycling. Based on the planned population, the estimated number of staff and visitors are anticipated to be about 2102 at peak. With reference to the latest data from “Monitoring of Solid Waste in Hong Kong 2024” by EPD, the disposal rate for MSW was 1.40 kg/person/day and recovery rate for recycling was 34%. Hence, the waste generation rate and recycling rate were calculated as 2.12 kg/person/day and 0.72 kg/person/day respectively. The total amount of MSW requiring disposal would be around 2.9 tonnes per day.
- 4.5.2.3 Besides, chemical wastes such as lubricants, paints, used batteries, mineral oil, coolants, and solvents may be generated from possible maintenance activities from the established development. These wastes may pose significant environmental, health and safety hazard if they are not properly managed. Requirements as stipulated in the Waste Disposal (Chemical Waste) (General) Regulation and the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes should be strictly followed for the handling and disposal of chemical waste. Subject to actual site constraints, it is estimated that maximum quantity of chemical waste, such as scrap batteries is in the order of a few hundred kilograms per month, while lubricating oil and solvent produced from maintenance will be in the order of a few hundred litres per month.
- 4.5.2.4 According to **Section 4.5.1.14**, floating refuse to be accumulated within the project boundary is estimated at 4m³ per year during operation from the newly constructed floating pontoons. Floating refuse accumulated within the project boundary during operational phase will be collected and disposed to landfill accordingly. Inspection and collection of floating refuse will be conducted as needed. For any floating refuse trapped within the Project area, waste collection will be arranged and disposed of at landfill on an as-needed basis.
- 4.5.2.5 Regular collection of respective waste will be conducted by future implementation agent. With implementation of good site practices, no cumulative and adverse environmental impact from waste management is anticipated.

4.6 Land Contamination

- 4.6.1.1 As shown in **Figure 1.1**, the Project consists of both Proposed Seaside Development and Proposed Landside Marina Facilities. For the Proposed Seaside Development, it is currently open sea which would not encroach into any existing land with present and past land use in relation to possible land contamination. Therefore, there is no land contamination potential associated with the seaside development.
- 4.6.1.2 For the Proposed Landside Marina Facilities, it is located at southwestern portion of Po Chong Wan Temporary Industrial Area. Considering it will occupy the premise built under the Proposed Landside Development after site formation and superstructure works, land contamination impact is not expected.

4.7 Ecology

4.7.1 Construction Phase

Loss of Marine Habitat and Potential Direct Impact on Corals

- 4.7.1.1 During the construction phase of the Proposed Seaside Development, habitat loss is anticipated from the construction of pile structures and the landside connection. Pile structures supporting the floating pontoons and extending to the seabed from the floating pontoons will result in the permanent loss of about 0.1 ha subtidal habitats (total footprint on seabed of about 800 piles for the area to the south of the eastern breakwater and about 100 piles for the area to the north of the eastern breakwater, each with a diameter of up to 800 mm which is the upper size limit under the current design i.e., 600–800mm). The construction of landside connection will result in a loss of about 0.02 ha artificial seawall. As recorded in the approved ATS EIA and the verification survey, the habitats affected are considered to be of low to very low ecological value. Only three coral species of conservation importance were identified with low coverage within the Proposed Seaside Development, all of which are common in Hong Kong. Considering that only sparse coverage of locally common corals would be affected, no natural coastline would be affected, and the habitat loss would be of very low to low ecological value and relatively small compared with the construction works under the approved ATS EIA, the overall habitat loss and impact on corals would be minor.

Disturbance from Deterioration of Water Quality

- 4.7.1.2 The construction works may lead to deterioration of water quality due to increased suspended solids (SS) levels, accidental discharge, spills of oils and chemicals etc. Such changes in marine water quality may disturb corals and marine benthic communities. Low abundance and diversity of intertidal organisms and low coverage of hard corals were recorded within the Study Area for ecological assessment (**Table 3.8** refers). Standard construction site good practices and measures to control the release of SS (e.g. silt curtain) will be implemented during the construction phase. Given the marine works is expected to be minimal, the impact of water quality deterioration is anticipated to be minor.

Ecological Impact from Proposed Landside Marina Facilities

- 4.7.1.3 No ecological impact is anticipated from the development of the Proposed Landside Marina Facilities since the area is a developed area.

Cumulative Impact

- 4.7.1.4 With reference to the above, the cumulative ecological impact due to marine habitat loss and water quality is anticipated to be similar to the prediction as in the approved ATS EIA which concluded the cumulative impact to be minor.

4.7.2 Operational Phase

Permanent Loss of Marine Habitats

- 4.7.2.1 The permanent habitat loss would be the footprint of all the piles on the seabed (approx. 0.1 ha) and the landside connection (approx. 0.02 ha). No additional loss of habitat is

anticipated during the operational phase of the Project. Considering the habitats affected were identified with very low to low ecological value, and the area is insignificant compared with the overall footprint of the expansion area of ATS, additional impact and cumulative impact from the permanent marine habitat loss are anticipated to be insignificant as concluded in the approved ATS EIA, impact of permanent loss of marine habitats is minor.

Disturbance Impacts from Marine Traffic

- 4.7.2.2 By changing a portion of the expanded typhoon shelter to a marina, the number of vessels would remain similar. Similarly, the underwater noise generated by vessel docking in the marina should be similar to that generated by mooring and anchoring activities in the original typhoon shelter, and considerably lower than the noise generated from existing cruising marine traffic. The provision of permanent piles in the marina can reduce the mooring activities and hence the seabed disturbance. Considering the existing disturbance and operation of the expanded typhoon shelter, the operational phase disturbance impact would be minor.

Disturbance from Proposed Landside Marina Facilities

- 4.7.2.3 No ecological impact is anticipated since the Proposed Landside Marina Facilities is a developed area.

Cumulative Impact

- 4.7.2.4 With reference to the above, cumulative impact from the permanent marine habitat loss are anticipated to be minor as concluded in the approved ATS EIA. Since the number of vessels and marine traffic are not expected to change significantly during the operation of other projects, no significant cumulative ecological impact in terms of disturbance is anticipated.

4.8 Fisheries

- 4.8.1.1 The current Project is situated entirely within the assessment area of the approved ATS EIA. The Study Area adopted in the approved ATS EIA remains applicable to the present scope. No significant impact on fisheries is anticipated during the construction and operational phases.

4.8.2 Construction Phase

Potential Temporary Loss of Fishing Grounds and Fisheries Habitats

- 4.8.2.1 The marina will be constructed within the expansion area of ATS where the permanent and temporary loss of fishing grounds and fisheries habitats have already been identified and assessed as a minor impact in the approved ATS EIA. In the current study, the Proposed Seaside Development is confined within the expansion area of ATS, with a strip of marine area within the existing ATS, which is already used for berthing rather than as fishing ground or fisheries habitat. No fishing activities are anticipated within this area. As a result, since the proposed marina would be within the expanded ATS and the existing ATS (the strip bordering the breakwater), there would be no permanent or temporary loss of fishing grounds during the construction of the marina.

Fishing Vessel Movement

- 4.8.2.2 The Proposed Seaside Development is located to the south of the Aberdeen South Typhoon Shelter and would not affect fishing vessels (working vessels) mainly moving in and out of the Aberdeen West Typhoon Shelter where the entrance is at the opposite end⁶. Moreover, the expansion of ATS will shorten the eastern breakwater which can widen the navigation space. The impact on fishing vessel movements is **minor**.

Indirect Water Quality Impact

- 4.8.2.3 The construction works of the Proposed Seaside Development would involve pre-drilling (Ground investigation), installation of marine piles (about 800 marine piles for the area to the south of the eastern breakwater and about 100 marine piles for the area to the north of the eastern breakwater, ranging from 600–800 mm in diameter), construction of landside connections (deck and ramps), installation of floating pontoons and gangways, MEP installation. Given the limited marine works footprint and small scale of works for the Proposed Seaside Development, the total number of marine vessels deployed for both the expansion of ATS and the Proposed Seaside Development during the peak period will remain within the maximum of 24 vessels per day (i.e. approximately 10 vessels would be deployed for Project) as predicted in the approved ATS EIA (refer to **Section 2.4**). In the current project, no dredging of the seabed will be conducted, and the scale of construction is considerably smaller than the expansion of ATS. The Proposed Seaside Development is located at least 1.3 km and 3.0 km to the nursery area and spawning ground of commercial fisheries resources. Considering that all construction works will be confined to the expansion area of ATS and silt curtain will be installed around the piling work area, the impact on fisheries would be **minor**.

Cumulative Impact

- 4.8.2.4 As there would be no permanent or temporary loss of fishing grounds, and no significant impact to fishing vessel movement, no cumulative fisheries impact is anticipated during the construction phase. Due to large separation from sites of fisheries importance, cumulative fisheries impact due to water quality change would also be minor.

4.8.3 Operational Phase

Vessel Berthing Capacity

- 4.8.3.1 According to the assessment and forecast conducted by the Marine Department (MD)⁷, there has been a surplus in sheltered space for Classes I to III and Mainland Visiting Vessels in Hong Kong between 2014 and 2035. The proposed marina is intended for pleasure vessels, and would not reduce the existing availability of sheltered space for fishing vessels (Class III). As a result, impact on the berthing capacity for fishing vessels is not anticipated.

⁶ LVAC Paper No. 16/2022 – Assessment of Typhoon Shelter Space Requirements

⁷ Marine Department (2022) Assessment of Typhoon Shelter Space Requirements 2022-2035

Fishing Vessel Movement

- 4.8.3.2 The operation of the marina within the expansion area of ATS is expected to generate a similar level of marine traffic, with about 5% increase. As fishing vessels use the Aberdeen West Typhoon Shelter, the impact on fishing vessels would be **minor**.

Impact on Hydrodynamic Regime

- 4.8.3.3 The proposed marina is solely within the footprint of expansion of ATS where the hydrodynamics are mainly controlled by the proposed breakwaters. As a result, the impact on flow regime and flushing capacity should show no significant change from those assessed in the approved ATS EIA, and therefore adverse hydrodynamic impacts on fisheries are considered **minor**.

Cumulative Impact

- 4.8.3.4 Cumulative fisheries impact considered insignificant as fishing vessels mainly use the Aberdeen West Typhoon Shelter, the berthing capacity and vessel movements of fishing vessels are unlikely to be affected by other development projects.

4.9 Landscape and Visual

4.9.1 General

- 4.9.1.1 Potential impacts are expected within the Project Site due to the loss of existing landscape resources (LRs) and the change of landscape setting in the seawater body. The major landscape and visual impacts of the proposed works would be associated with the Proposed Seaside development.
- 4.9.1.2 No landscape with distinctive character/resources are identified within and in the vicinity of the Project, and no such landscape would be affected. The Proposed Seaside Development is entirely on sea area, thus no existing tree would be affected.

4.9.2 Construction Phase

- 4.9.2.1 During construction phase, landscape impacts would be anticipated from construction works, construction traffics, temporary works and storage of construction materials, etc. The main landscape resources are natural shore and seawater body, which would suffer from landscape impacts. It is anticipated that the potential landscape impact due to the associated piling structure and land access facilities of the marina development would cause the loss of natural shore as well as the seawater body. However, due to the limited extent and localized nature of the works, the overall landscape impact during the construction phase is slight to negligible.

4.9.3 Operational Phase

- 4.9.3.1 During operation phase, there would be landscape impacts due to the associated piling structure and land access facilities of the Proposed Seaside Development, as well as visual impacts due to the marina new structures.

4.9.3.2 The potential sources of landscape and visual impacts include the following:

- Permanent loss of LR/ LCAs (e.g. seawater body and inshore water landscape character). Due to the limited scale of the works, the residual landscape impact in operation stage is negligible.
- Permanent loss of visual amenity of the seawater body and surrounding natural environment resulting from the Proposed Seaside Development, which would affect selected public viewpoints (e.g. the footpath of Bennett's Hill, the existing eastern breakwater, and Ocean Park) through visual intrusion and obstruction of views. Due to the limited scale of the works, the significance thresholds of visual impact are slight to negligible in operation stage after implementation of mitigation measures, except for moderate visual impact on VP4 - Existing Eastern Breakwater due to a relatively short viewing distance.

Cumulative Impact

4.9.3.3 Cumulative landscape and visual impacts with the expansion of ATS were preliminarily assessed.

4.9.3.4 No significant cumulative landscape impacts are anticipated during the construction phase. As the construction activities associated with the concurrent project would be temporary, localized, and limited in scale, involving only minor modifications to the existing breakwaters and construction of new breakwaters. Such works would not result in any substantial loss of landscape resources and alteration of landscape character beyond those already assessed under the Project. During the operational phase, the concurrent project would involve only alterations to the existing breakwater and the newly constructed breakwaters. The proposed breakwater structures would remain low in profile and visually integrated with the surrounding marine facilities and established waterfront character. As such, they would not be readily noticeable to key public viewers nor introduce any incompatible visual elements into the receiving environment. Landscape resources, landscape character, and visual elements would remain generally compatible with the established maritime setting. Key visual resources, including the surrounding vegetated hillsides and ridgelines, natural coastline, and open sky views, would remain unaffected. The overall visual openness and character of the waterfront environment would therefore be preserved. After incorporating the mitigation measures such as minimizing permanent footprint and aesthetic design of marine structures to ameliorate the overall cumulative landscape and visual impacts, these measures are expected to ameliorate the perceived effects on the marina development under this Project and enhance the overall quality of life for future and existing communities.

4.10 Cultural Heritage

4.10.1 Construction Phase

4.10.1.1 Within the sea area north of the existing eastern breakwater, the proposed construction works involves installation of piles through the foundation of the existing eastern breakwater and existing seawall, for anchoring a proposed floating platform for the berthing of vessels. The piles will be installed in the vicinity of the dredging footprint of the existing breakwater and existing seawall. As this area is considered to be of low archaeological potential due to previous seabed disturbance from the dredging works,

impacts to archaeological resources are not anticipated from the proposed construction works.

4.10.1.2 Within the sea area south of the existing eastern breakwater, the proposed construction works involves installation of piles through the seabed. Upon a comprehensive archaeological review of the marine geophysical survey data, the area is considered to be of low archaeological potential and impacts to archaeological resources are not anticipated from the proposed construction works and impacts to archaeological resources are not anticipated from the proposed construction works.

4.10.1.3 During construction stage, ground investigation (GI) will be carried out before piling works. AMO will be informed immediately if there is a discovery of antiquities or supposed antiquities within the site during the GI works.

4.10.2 Operational Phase

4.10.2.1 No anchoring operations are anticipated during the operation phase as the future yachts will be moored to the floating pontoons. Therefore, impacts to archaeological resources are not anticipated during the operational phase.

5 Environmental Mitigation Measures to be Incorporated in the Design and Further Environmental Implications

5.1 Air Quality

5.1.1 Construction Phase

5.1.1.1 As the majority of the construction works would be marine-based, dust generation during the construction phase is expected to be limited. Nevertheless, where applicable, all relevant dust control measures as stipulated in the Air Pollution Control (Construction Dust) Regulation should be implemented to minimise any potential dust emissions. Typical dust suppression measures include, but are not limited to, the following:

- Water spraying on any dusty materials before loading and unloading, and on any dusty work areas or material handling activities, where applicable;
- Adoption of side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be used to aggregate fines;
- Provision of effective dust screens, sheeting or netting to enclose scaffolding or temporary structures, where required;
- Avoid placing dusty material storage piles near ASRs;
- Cover or shelter any stockpile of dusty materials; and
- Loading, unloading, transfer, handling, or storage of bulk cement or dry pulverised fuel ash shall be carried out in a totally enclosed system or facility, and any vent or exhaust shall be fitted with an effective fabric filter or equivalent air pollution control system.

5.1.1.2 Requirements stipulated in the Air Pollution Control (NRMMs) (Emission) Regulation and Air Pollution Control (Fuel Restriction) Regulations will also be followed to control potential emissions from NRMMs during construction phase where appropriate. To minimise the exhaust emissions from NRMMs and marine construction vessels, possible good site practices below shall be considered:

- Connect construction plant and equipment to mains electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable;
- Restrict the use of exempted NRMMs;
- Deploy electrified NRMMs as far as practicable;
- Control routing of marine construction vessels to optimise the separation distance from nearby ASRs as far as practicable;
- Minimise the number of trips of marine construction vessels;
- Vessel engine will be switched off during hotelling;

- Use clean fuel for marine construction vessels as far as practicable;
- Adopt on-shore power as far as practicable, etc; and
- Use Ultra-Low Sulfur Diesel (ULSD) for NRMMS, with a sulfur content not exceeding 0.001% by weight and a viscosity not exceeding 6 centistokes at 40°C.

5.1.2 Operational Phase

- 5.1.2.1 The boat repair & maintenance workshop shall use/handle paint/solvents and fuel that comply with the Air Pollution Control (Volatile Organic Compounds) Regulation, associated environmental and health impacts of the operation of workshop are anticipated to be insignificant.
- 5.1.2.2 Nevertheless, as enhancement measures to reduce emission during berthing, electricity pedestals will be installed to provide onshore power supply to vessels in case power is needed during berthing or mooring at these facilities. In addition, marine vessels will be required to turn off the engines when they are berthed or moored at these facilities.
- 5.1.2.3 Desludging services will be provided at the proposed berthing and mooring facilities, as discussed in **Section 4.2.2**. Fully enclosed pump-out will be installed to collect the vessels' sewage and properly treated at downstream available facilities. With the implementation of the above measures, the impact of odour would be minimal.

5.2 Noise

5.2.1 Construction Phase

- 5.2.1.1 As mentioned in **Section 4.3.1**, no adverse construction impact is anticipated due to large separation from the construction site. Good site practices are suggested to further minimise the noise nuisance.
- 5.2.1.2 The EPD's "Recommended Pollution Control Clauses for Construction Contracts" would need to be implemented in work sites as good practices where appropriate. Detailed descriptions of these good site practices are given in the following sections.

Good Site Management Practices

- 5.2.1.3 Good site practice and noise management techniques could considerably reduce the noise impact from construction site activities on nearby NSRs. The following measures should be practiced during each phase of construction:
- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;
 - Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
 - Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;

- Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;
- Mobile plant should be sited as far away from NSRs as possible and practicable; and
- Material stockpiles, site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.

5.2.1.4 The benefits of these techniques can vary according to specific site conditions and operations. The environmental noise climate would certainly be improved with these control practices, although the improvement can only be quantified during implementation when specific site parameters are known.

5.2.2 Operational Phase

5.2.2.1 As mentioned in **Section 4**, fixed noise sources are proposed under landside marina facilities, to further minimise noise nuisance to the nearby existing and proposed NSRs, the following good practices / recommendation are suggested for the proposed dry berth and proposed boat repair and maintenance workshop:

- Dry berth and boat repair and maintenance workshop will be fully decked;
- Mechanical plant (e.g. crane, water jets) will be enclosed inside the dry berth and boat repair and maintenance workshop; and
- Openings, ingress / egress should be located away from NSRs (i.e. facing toward the seaside).

5.2.2.2 In addition, pleasure vessels berthed within the proposed marina will only travel to the south, which is outside 300m from the nearest NSR. Hence, no adverse marine traffic noise is anticipated and no mitigation measures are required. In addition, shuttle boat would operate at a maximum of one round trip per hour. Given the infrequent service, adverse marine traffic noise impact from the shuttle boat service is not anticipated.

5.3 Water Quality

5.3.1 Construction Phase

5.3.1.1 The project design and mitigation measures to be deployed during construction phase are as follows:

Silt Curtain Deployment

5.3.1.2 A single layer silt curtain is recommended to surround the marine works. A silt curtain deployment plan should be submitted to EPD prior to marine construction.

General Mitigation Measures

5.3.1.3 General good site practices that should be undertaken during construction, including:

- Excess materials shall be cleared from the decks and exposed fittings of barges and hopper dredgers before the vessels are moved;
- All vessels must have a clean ballast system;
- Disposal vessels shall be fitted with tight bottom seals in order to prevent leakage of material during transport;
- Certain space should be reserved for each type of silt curtain to avoid disturbance of seabed under different tidal conditions;
- Bunding of machinery areas, such as provision of drip tray for generators, and availability of spill clean-up kits should be in place to prevent spillage or leakage of fuel/ chemical to reach the marine environment;
- Wastewater from acid cleaning and similar processes if any should be neutralised (pH 6–10) before discharge or removed off site for proper disposal;
- General refuse generated from work barges shall be collected and transferred to landside refuse bins or public refuse collection points. No rubbish shall be disposed to the sea;
- Excavation of sediment shall be carried out within the pile shafts;
- Regular collection and removal of floating refuse would be carried out on a daily basis; and
- All effluent discharges from the construction site should comply with the standards stipulated in the WPCO.

Construction Site Runoff and Drainage

5.3.1.4 As the majority of the construction works would be marine-based, construction site runoff is expected to be limited. Nevertheless, where applicable, the site practices outlined in ProPECC PN 2/24 should be followed as far as practicable:

- Design efficient silt removal facilities based on the guidelines in Appendix A1;
- Inspect and maintain all sediment control structures regularly to ensure proper and efficient operation at all times and particularly following rainstorms;
- Cover all construction materials at temporary storage area with tarpaulin or similar fabric during rainstorms and implementation of measures to prevent the washing away of construction materials, soil, silt or debris into the marine water;
- Take precautions at any time of year when rainstorms are likely. The actions to be taken based on the guidelines in Appendix A2; and
- Collect, handle and dispose construction solid waste, debris and rubbish on site to avoid water quality impacts.

Sewage Generated from Workforce

- 5.3.1.5 Temporary sanitary facilities, such as portable chemical toilets and sewage holding tanks should be provided for handling the sewage generated by the construction workforce. A licensed contractor should be employed for appropriate disposal of the sewage and maintenance of the sanitary facilities.
- 5.3.1.6 In addition, notices should be posted at conspicuous locations to remind the workforces not to discharge any sewage or wastewater into the nearby marine environment during the construction phase of the Project. Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. With proper implementation of required measures, adverse water quality impact is not anticipated due to sewage generation during the construction phase of the Project.

Accidental Spillage of Chemicals

- 5.3.1.7 The good site practices for avoiding accidental spillage of chemical are recommended as below:
- Proper implementation of best practices of chemical storage practices (i.e. storage under covered area, provision of secondary containment, and material safety data sheets etc.);
 - All chemical wastes should be disposed of in accordance with the guidelines stipulated in the Waste Disposal (Chemical Waste) (General) Regulation;
 - Provision of spill kits to handle accidental spillage;
 - Provide training on handling spillage events to the construction workforce; and
 - A spillage response plan will be developed, covering the emergency team, standard procedures, and contingency measures.

5.3.2 Operational Phase

Change in Hydrodynamic and Water Quality

- 5.3.2.1 As discussed in **Section 4.4.2**, there would be no adverse hydrodynamic and water quality impacts during the operational phase, hence mitigation measures are not required.

Environmental Management Plan for Proposed Seaside Development

- 5.3.2.2 An Environmental Management Plan (EMP) for Project will be developed by future implementation agent prior to the operation to control activities in the Proposed Seaside Development area. The future implementation agent should implement the EMP throughout the operational phase. The EMP shall require the marina users to adopt the following operational requirements:
- Vessels shall maintain adequate under-keel clearance under all tidal conditions to prevent sediment resuspension caused by vessel movement or propeller wash;

- No vessel maintenance, repair, or cleaning activities shall be undertaken within the Proposed Seaside Development area;
- Berthing, operation and maintenance activities shall not result in the discharge of foam, oil, grease, scum, litter, or other pollutants into surrounding waters;
- De-sludging blackwater tank or similar facilities shall be provided for the vessel, and all sewage and wastewater generated from vessels shall be collected and discharged to the public sewerage system properly;
- Vessel operators shall keep decks clean and free of contaminant;
- All vessels shall be equipped with clean ballast systems and managed in accordance with relevant requirements;
- Proper chemical and oil management measures, including bunding, drip trays in machinery areas, and readily available spill clean-up kits, will be implemented to prevent and minimise oil spillage releases into the marine environment;
- All vessels should follow the "International Convention for the Prevention of Pollution from Ships" (MARPOL 73/78) to prevent and minimise the release of water pollutants to the marine environment; and
- Spill response equipment, such as floating booms, shall be maintained on-site. A Spill Prevention and Emergency Response Plan shall be prepared and implemented by the future implementation agent, including procedures for prevention, reporting, containment, clean-up, notification of relevant authorities where necessary, designation of responsible personnel, and arrangements for recording spills, leaks, and near-miss incidents.

Sewage from Proposed Landside Marina Facilities

- 5.3.2.3 Sewage from Proposed Landside Marina Facilities shall be collected and discharged to the public sewerage system properly.

Antifouling Paints

- 5.3.2.4 With compliance with the regulatory requirements and the implementation of good site practices as mentioned in **Section 4.4.2**, further mitigation measures are not required.

Floating Refuse Accumulation

- 5.3.2.5 The implementation agent of the proposed berthing and mooring facilities will conduct regular maintenance and refuse collection in the Project area to address marine floating refuse issues.

5.4 Waste Management

5.4.1 Construction Phase

- 5.4.1.1 The Project will adhere to the relevant requirements for all waste to be generated, such as trip-ticket system for the disposal of C&D materials in accordance with DEVB TCW No.

6/2010, Chemical Waste Producer (CWP) registration, the Code of Practice on the Packaging, Labelling, and Storage of Chemical Wastes. The following general mitigation measures for construction phase will be implemented based on the waste management hierarchy principles to minimise waste generation and provide good control on waste management:

Good Site Practices

5.4.1.2 The following good site practices are recommended throughout the construction activities:

- Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;
- Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;
- Provision of sufficient waste disposal points and regular collection for disposal;
- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- Provision of wheel washing facilities at site exit before the trucks leave the works areas to minimize dust disturbance due to the trucks transportation to the public road network; and
- The Contractor should prepare a Waste Management Plan (WMP) in accordance with the *ETWB TC(W) No. 19/2005 "Environmental Management on Construction Sites"*. The WMP should be submitted to the Project Manager for approval under the EM&A Programme.

Waste Reduction Measures

5.4.1.3 Amount of waste generation can be significantly reduced through good management and control. Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction:

- Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Proper storage and good site practices to minimize the potential for damage and contamination of construction materials;
- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;
- Sort out demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); and

- Provide training to construction workforce on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.

Storage, Collection and Transportation of Waste

- 5.4.1.4 Handling, storage, collection and disposal of waste generated during construction phase should be in accordance with the requirements of the Waste Disposal Ordinance and the subsidiary legislation. Storage of waste on site may induce adverse environmental implications if not properly managed. The following recommendation should be implemented to minimise the impacts:
- Maintain and clean storage areas routinely;
 - Imported fill materials for reclamation works and non-inert C&D materials should be handled and stored well to ensure secure containment of the materials;
 - Different locations should be designated to stockpile each material to enhance reuse; and
 - Minimise disturbances to the soil in stockpiles.
- 5.4.1.5 The collection and transportation of waste from works areas to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following measures are recommended to minimise the impacts in the course of storage, collection and transportation of waste:
- Remove waste in timely manner;
 - Obtain relevant waste disposal permits from the appropriate authorities; and
 - Disposal of waste should be done at licensed waste disposal facilities.
- 5.4.1.6 All marine vessels engaged in the Project will be equipped with Global Positioning System (GPS) or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations to prohibit illegal dumping and landfilling of waste.

Sediment Handling and Management

- 5.4.1.7 For minimisation of sediment disposal, beneficial reuse of the sediments would be explored. For instance, onsite reuse as backfilling materials after mixing with cement may be considered, subject to actual site conditions. The following mitigation should be followed for cement mixing of sediment:
- In case of sediment with high water content, dewatering should be carried out before proceeding cement mixing process;
 - The loading, unloading, handling, transfer or storage of bulk cement should be carried out in an enclosed system;
 - Mixing process and other associated material handling activities should be properly scheduled to minimise potential noise impact and dust emission; and

- The mixing facilities should be sited as far apart as practicable from the nearby noise sensitive receivers and be sited under covers to minimise dust nuisance to the nearby receivers.

5.4.1.8 Other recommended mitigation measures to handle the contaminated/ uncontaminated sediment are summarised as follows:

- The sediments should be properly covered before cement mixing/disposal;
- All construction plant and equipment shall be designed and maintained to minimise the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location;
- All vessels shall be sized such that adequate draft is maintained between vessels and the seabed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;
- Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action; and
- Health and safety precautions shall be employed for all personnel working on site, including provision of all necessary Personal Protective Equipment (PPE). All workers shall wear appropriate PPE when handling sediment.

5.4.1.9 The Contractor shall monitor all vessels transporting the sediments to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the Project Manager. In case dumping is necessary, the Contractors shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance (DASO).

5.4.1.10 In general, the handling and disposal of these materials and wastes will require proper management in order not to cause environmental impacts and nuisance. It is anticipated that there would not be any insurmountable impacts provided good site practices and other appropriate mitigation measures are implemented.

5.4.2 Operational Phase

5.4.2.1 The following measures will be considered to minimise the potential impact during operational phase:

- A reputable waste collector should be employed to remove general refuse regularly to minimise odour, pest and litter impact. Arrangements should be made with the recycling companies to collect the recycle waste as required;
- The recyclable component of general refuse, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Recycling bins should be placed in prominent places to promote waste separation at-source;
- For those processes which generate chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type of less impact on environment, health and safety subject to actual engineering design and site condition;

- Chemical wastes (e.g. spent lubricant oil) should be collected and disposed of at appropriate facility like Chemical Waste Treatment Centre by licensed collectors;
- Displaying notice/poster to encourage staff and users on proper disposal of refuse to reduce number of floating refuse from the Project; and
- Regular inspection and monitoring of floating refuse shall be conducted. For any floating refuse trapped within the Project, waste collection and disposal shall be conducted.

5.4.2.2 With the implementation of the recommended mitigation measures for the handling, transportation and disposal of the identified waste, no insurmountable waste management implications is anticipated during operational phase.

5.5 Ecology

5.5.1 Construction Phase

5.5.1.1 No significant ecological impact is anticipated during the construction phase of the project. Measures as stated in **Section 5.3.1** shall be implemented to minimise indirect impact associated with potential water quality deterioration.

5.5.2 Operational Phase

5.5.2.1 No adverse ecological impact is anticipated during the operational phase; therefore, no mitigation measures will be required.

5.6 Fisheries

5.6.1 Construction Phase

5.6.1.1 No significant fisheries impact is anticipated during the construction phase of the project. Measures as stated in **Section 5.3.1** shall be implemented to minimise indirect impact associated with potential water quality deterioration.

5.6.2 Operational Phase

5.6.2.1 No adverse fisheries impact is anticipated during the operational phase, therefore no mitigation measures will be required.

5.7 Landscape and Visual

5.7.1 Mitigation Measures

5.7.1.1 Mitigation measures are proposed, as appropriate, to reduce potential landscape and visual impacts of the Project. Mitigation measures follow the principles of first avoiding impacts by all means feasible, then reducing any unavoidable impacts to as low as practically possible, and finally mitigating any remaining impacts.

5.7.2 Construction Phase

5.7.2.1 The following mitigation measures are recommended during the construction phase:

- Optimisation of construction area and minimisation of temporary works area;
- Screening of works area with hoardings with appropriate colours compatible with the surrounding area;
- Reinstatement of landscaped area and facilities disturbed by the construction works; and
- Ensuring no run-off into surrounding streetscape and seawater body.

5.7.3 Operational Phase

5.7.3.1 The following mitigation measures are recommended during the operation phase:

- Adoption of a sensitive design approach to minimise the permanent footprint and to provide appropriate aesthetic treatment of the marina structure;
- Provide aesthetic treatment of landside building structure with colours and finishes are designed to be visually unobtrusive, non-reflective, and compatible with the surrounding context; and
- Sensitive design on shoreline to be adopted on artificial seawall/ shoreline edge such as use of material and colours to improve the landscape and visual amenity.

5.8 Cultural Heritage

5.8.1 Construction Phase

5.8.1.1 No cultural heritage impact is anticipated during the construction phase. AMO will be informed immediately if there is a discovery of antiquities or supposed antiquities within the site during the construction works.

5.8.2 Operational Phase

5.8.2.1 No cultural heritage impact is anticipated during the operational phase, therefore no mitigation measures will be required.

5.9 Environmental Monitoring and Audit

5.9.1.1 There would be no adverse environmental impact and no dusty works would be involved, therefore specific environmental monitoring is not required. Nevertheless, weekly site inspection is recommended to ensure the proper implementation of mitigation measures during the construction phase.

5.9.1.2 The inspections will include within their scope, mechanisms to review and assess the Contractor(s)'s environmental performance, ensuring that the recommended mitigation measures have been properly implemented, and that the timely resolution of received complaints are managed and controlled.

- 5.9.1.3 Prior to Project operational commencement (i.e. the commencement of the operation of dry berth and proposed boat repair and maintenance workshop), the Contractor should conduct a noise audit for all fixed noise sources to demonstrate compliance of the noise levels with the stipulated noise standards in EIAO-TM and NCO. A fixed noise audit report will be submitted to EPD under the EM&A Programme.
- 5.9.1.4 An Environmental Team (ET) should be established before the commencement of construction of the Project. The ET should be led and managed by an ET Leader (ETL) or its representative. The ETL should possess at least 7 years of experience in EM&A and/or environmental management. The ET should monitor all of the mitigation measures as detailed in **Section 5** are properly implemented and maintained by the Contractor by weekly site inspection / audits to ensure the compliance with the intended aims of the measures. The ET should also be responsible for certifying the submissions recommended, such as Silt Curtain Deployment Plan. An Independent Environmental Checker (IEC) or its representative should also be employed before commencement of construction of the Project. The IEC is responsible for confirming full compliance of the measures and verifying the submissions. The IEC should advise the Permit Holder on environmental issues related to the Project. The IEC should possess at least 7 years of experience in EM&A and/or environmental management. The IEC should not be in any way an associated body of the ET and the Contractor of the Project. Both ETL and IEC will only be for the EM&A phase.

5.10 Severity, Distribution and Duration of Environmental Effects and Further Implications

- 5.10.1.1 In view of the nature of the Project, the associated environmental impacts would be small scale, localised and short-term. With the implementation of the recommended mitigation measures and good site practices, there would be no adverse residual impact. The possible severity, distribution and duration of environmental effects and further implications are summarized in the table below.

Table 5.1 Possible Severity, Distribution and Duration of Environmental Effects

Impact	Effects	Severity and Duration	Distribution	Estimated Duration
Air Quality	Air quality impact generated from construction works	Minimal and short	Project Site and ASRs	Q3/2028 to Q2 2031
Noise	Noise nuisance from construction	Minimal and short	Project Site only	
Water Quality	Floating refuse and debris	Minimal and short	Project Site only	
Waste Management	Handling and disposal of C&D materials, sediments, chemical waste, general refuse and floating refuse	Minimal and short	Project Site only	
Landscape and Visual	Loss of Landscape and Visual amenities	Minimal and permanent	Project Site and Public Viewpoints	Long term

Impact	Effects	Severity and Duration	Distribution	Estimated Duration
Cultural Heritage	Change in historic maritime landscape	Minimal and permanent	Project Site only	

6 Conclusion

- 6.1.1.1 The project proponent aims to further modify the expansion area of ATS to provide designated berthing areas for the fixed parking of vessels within the expansion area and to provide associated marina facilities on land. The construction and operation of the Project will be carried out by the future implementation agent.
- 6.1.1.2 The Proposed Seaside Development covers a waterbody of about 11 ha and a Proposed Landside Marina Facilities of 0.6 ha. The major waterbody (i.e. 9.9 ha of the Proposed Seaside Development) is within the boundary of the approved ATS EIA. The predicted marine traffic with the Project is of similar order as those predicted in the approved ATS EIA, with an overall increase about 5%, including additional movement of shuttle boat service within the ATS (i.e. about 20 vessel movements per day). The Proposed Landside Marina Facilities will occupy the premise built under the Proposed Landside Development at the Po Chong Wan Temporary Industrial Area, who will be responsible for both the site formation and superstructure works. The Project involves mainly renovation, internal fixture and E&M works, which are minor in nature.
- 6.1.1.3 No adverse air quality, noise, water quality, waste management, ecology, fisheries, landscape and visual and cultural heritage impact is anticipated during construction phase and operational phase with implementation of appropriate mitigation measures. It would be beyond doubt that the environmental impact of the Project falls well within the guidelines and criteria laid down in the EIAO-TM.

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Aberdeen South Typhoon Shelter

ABERDEEN SOUTH
TYPHOON SHELTER

香港仔南避風塘
Aberdeen South Typhoon Shelter

PO CHONG WAN

MODIFICATION OF
EXISTING EASTERN
BREAKWATER (BY OTHERS)

PO CHONG WAN
TEMPORARY
INDUSTRIAL AREA

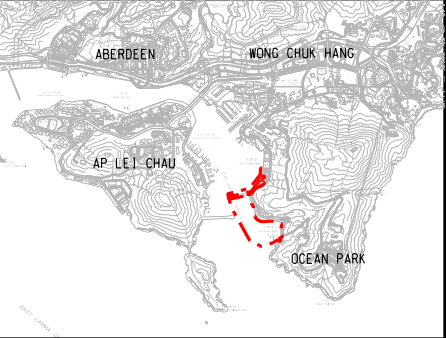
TAI SHUE WAN

PROPOSED LANDING
FACILITIES

ABERDEEN CHANNEL

香港仔海峽
ABERDEEN CHANNEL

OCEAN PARK HONG KONG



KEYPLAN

LEGEND

- PROPOSED SEASIDE DEVELOPMENT
- PROPOSED LANDSIDE MARINA FACILITIES

E	FIFTH ISSUE	GL	08/26
D	FOURTH ISSUE	GL	07/26
C	THIRD ISSUE	GL	06/26
B	SECOND ISSUE	GL	05/26
Rev	Description	By	Date

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Project Title
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Engineering Study for ATS Marina -
Feasibility Study

Drawing title
LOCATION OF THE PROJECT

Drawing no.	FIGURE 1.1		Rev.	E
Drawn	Date	Checked	Approved	
GL	08/26	EL	FC	
Scale	1:4000 @ A3		Status	PRELIMINARY

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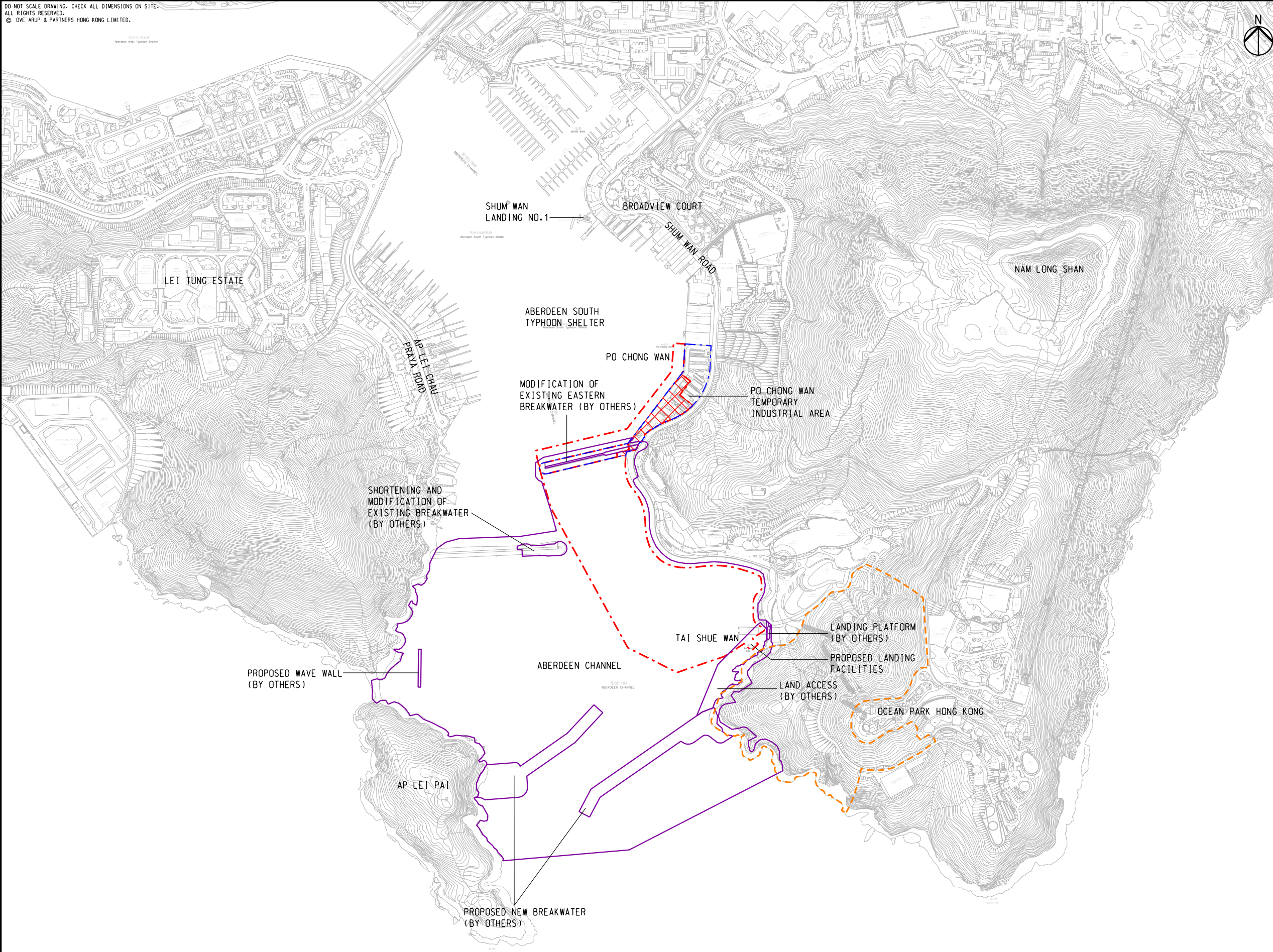
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- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES
 - PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
 - EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025) (BY OTHERS)
 - INDICATIVE AREA FOR OCEAN PARK "ADVENTURE ZONE" DEVELOPMENT



A	FIRST ISSUE	GL	08/26
Rev	Description	By	Date

Consultant

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Project Title

Agreement No. CE 26/2025 (CE)
Engineering Study for ATS Marina -
Feasibility Study

Drawing title

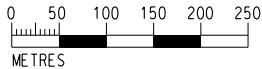
LOCATIONS OF POTENTIAL
CONCURRENT PROJECTS

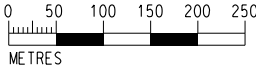
Drawing no.		Rev.	
FIGURE 2.1		A	
Drawn	Date	Checked	Approved
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Scale	Status		
1:8000 @ A3	PRELIMINARY		

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LEGEND

-  PROPOSED SEASIDE DEVELOPMENT
-  PROPOSED LANDSIDE MARINA FACILITIES
-  PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
-  EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025)
-  500m STUDY AREA
-  PATH GRID
-  REPRESENTATIVE AIR SENSITIVE RECEIVERS

Consultant

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Project Title

Agreement No. CE 26/2025 (CE)
Engineering Study for ATS Marina -
Feasibility Study

Drawing title

LOCATIONS OF REPRESENTATIVE
AIR SENSITIVE RECEIVERS


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AP LEI PAI
Aberdeen South Tphoon Shelter

LEI TUNG ESTATE

AP LEI CHAU
PRATA ROAD

SHUM WAN
LANDING NO.1

BROADVIEW COURT

SHUM WAN ROAD

ABERDEEN SOUTH
TYPHOON SHELTER

PO CHONG WAN

MODIFICATION OF
EXISTING EASTERN
BREAKWATER (BY OTHERS)

PO CHONG WAN
TEMPORARY
INDUSTRIAL AREA

SHORTENING AND
MODIFICATION OF
EXISTING BREAKWATER
(BY OTHERS)

PROPOSED WAVE WALL
(BY OTHERS)

ABERDEEN CHANNEL

TAI SHUE WAN

LANDING PLATFORM
(BY OTHERS)
PROPOSED LANDING
FACILITIES

LAND ACCESS
(BY OTHERS)

OCEAN PARK HONG KONG

AP LEI PAI

PROPOSED NEW BREAKWATER
(BY OTHERS)



- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES
 - PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
 - EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025) (BY OTHERS)
 - 300m STUDY AREA
 - REPRESENTATIVE EXISTING NOISE SENSITIVE RECEIVERS
 - REPRESENTATIVE PLANNED NOISE SENSITIVE RECEIVERS

D	FOURTH ISSUE	GL	08/26
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Project Title

Agreement No. CE 26/2025 (CE)
Engineering Study for ATS Marina -
Feasibility Study

Drawing title

LOCATIONS OF REPRESENTATIVE
NOISE SENSITIVE RECEIVERS

Drawing no.

FIGURE 3.2

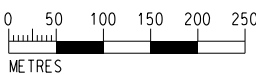
Rev.

D

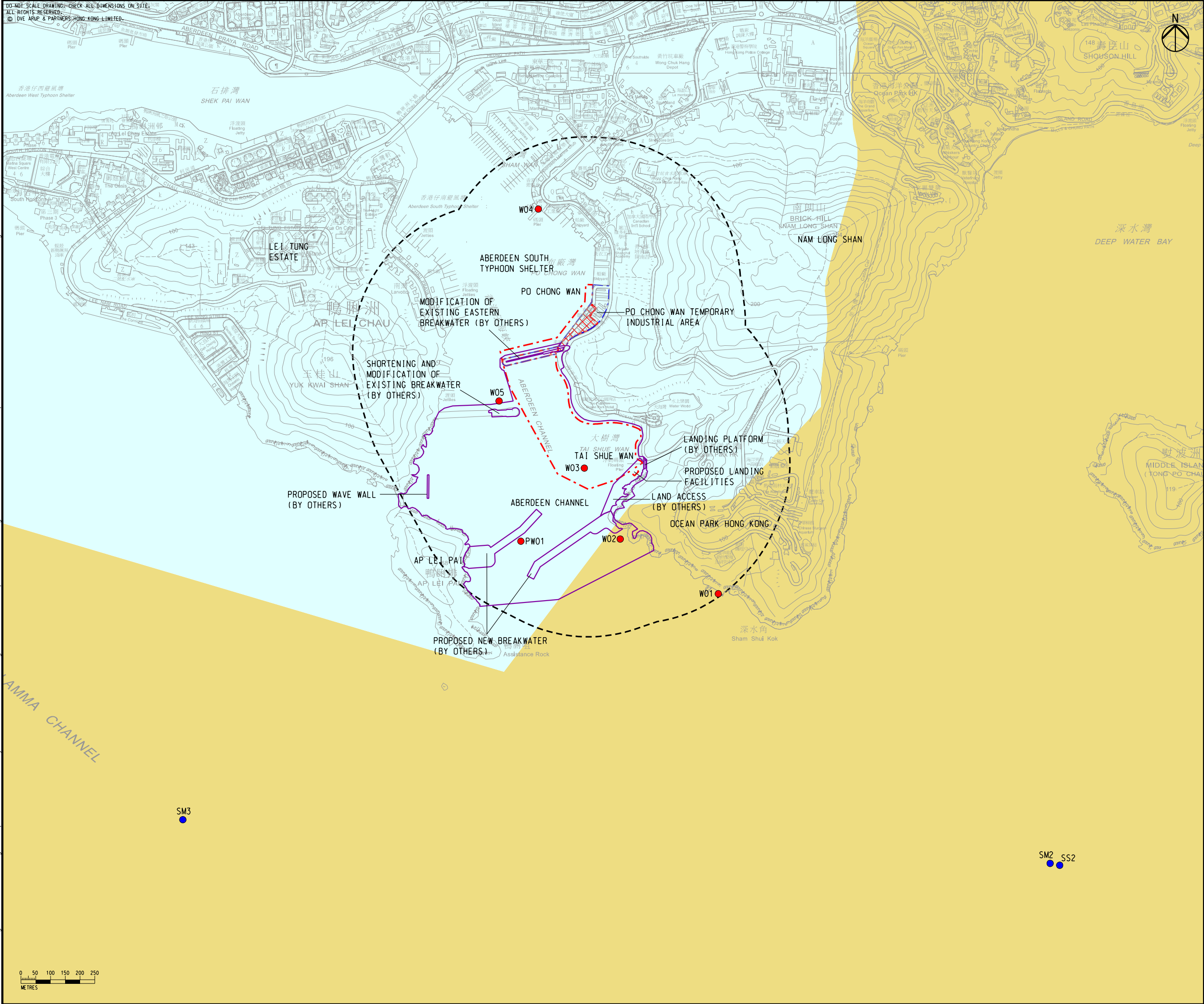
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Printed by : 18/8/2026
Filename : \\global\\East\\Asia\\hkg\\Group\\C\\ENV\\env\\Project\\313577\\13 Drawing Deliverables\\report\\02 DIR\\Figure 3.3 - Locations of Representative Water Sensitive Receivers.dgn



LEGEND

- PROPOSED SEASIDE DEVELOPMENT
- PROPOSED LANDSIDE MARINA FACILITIES
- PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
- EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025) (BY OTHERS)
- 500m STUDY AREA
- EPD MARINE WATER QUALITY MONITORING STATION/ SEDIMENT MONITORING STATION
- REPRESENTATIVE WATER SENSITIVE RECEIVERS

WATER CONTROL ZONES

- SOUTHERN
- WESTERN BUFFER

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Project Title

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Engineering Study for ATS Marina - Feasibility Study

Drawing title

LOCATIONS OF REPRESENTATIVE WATER SENSITIVE RECEIVERS

Drawing no.		Rev.	
FIGURE 3.3		D	
Drawn	Date	Checked	Approved
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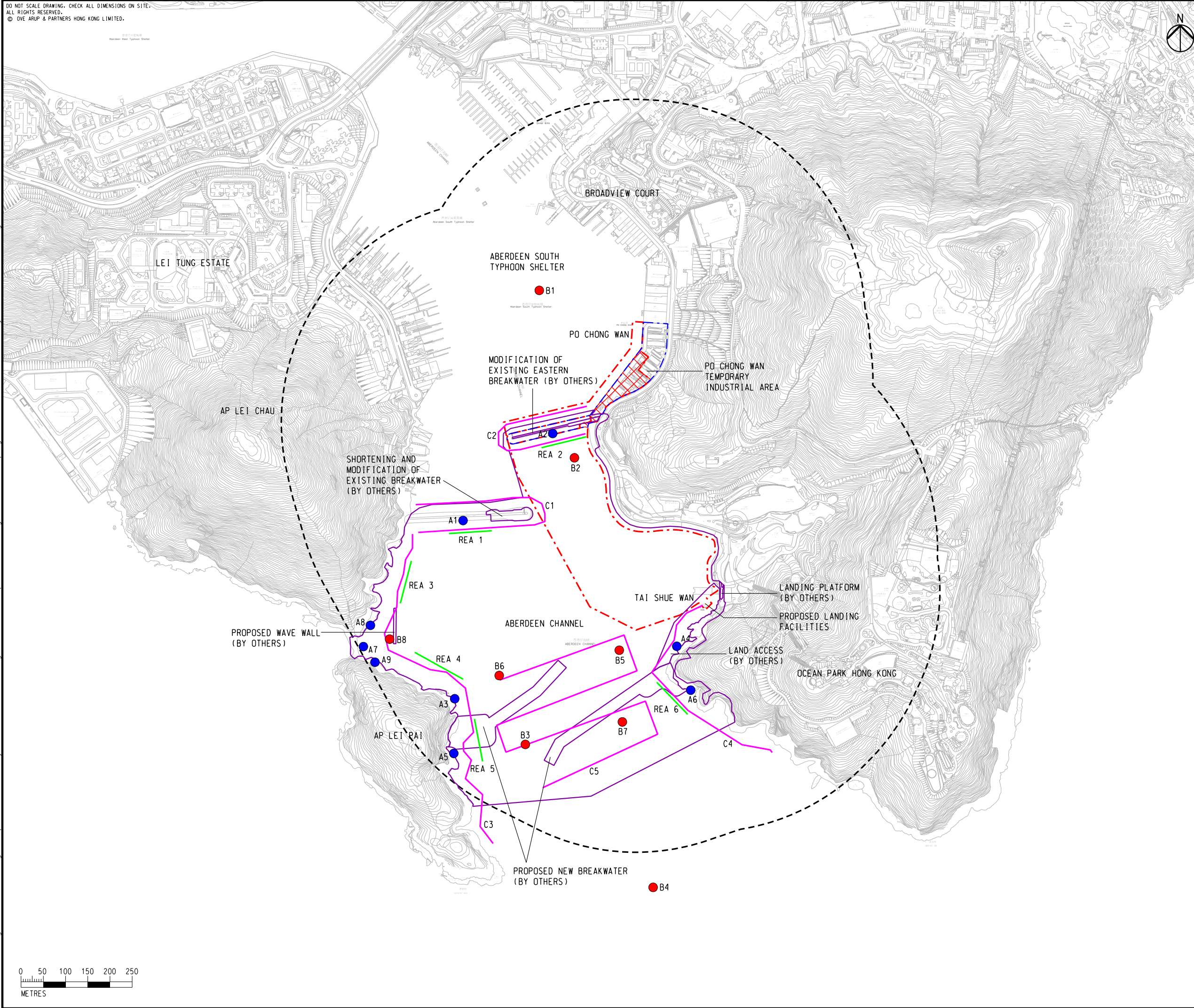
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- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES
 - PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
 - 500m STUDY AREA

- ECOLOGICAL SURVEY CONDUCTED IN AEIAR-267/2025
- EXPANSION OF ABERDEEN TYPHOON SHELTER (BY OTHERS)
 - SPOT CHECK DIVE TRANSECT
 - REA DIVE SURVEY TRANSECT
 - BENTHIC SURVEY SAMPLING POINTS
 - INTERTIDAL SURVEY SAMPLING POINTS



C	THIRD ISSUE	GL	08/26
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Rev	Description	By	Date

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Project Title

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Engineering Study for ATS Marina -
Feasibility Study

Drawing title

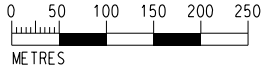
**SAMPLING LOCATION
OF PREVIOUS SURVEY
(AEIAR-267/2025)**

Drawing no.				Rev.	
FIGURE 3.4				C	
Drawn GL		Date 08/26	Checked EL	Approved FC	
Scale 1:8000 @ A3			Status PRELIMINARY		

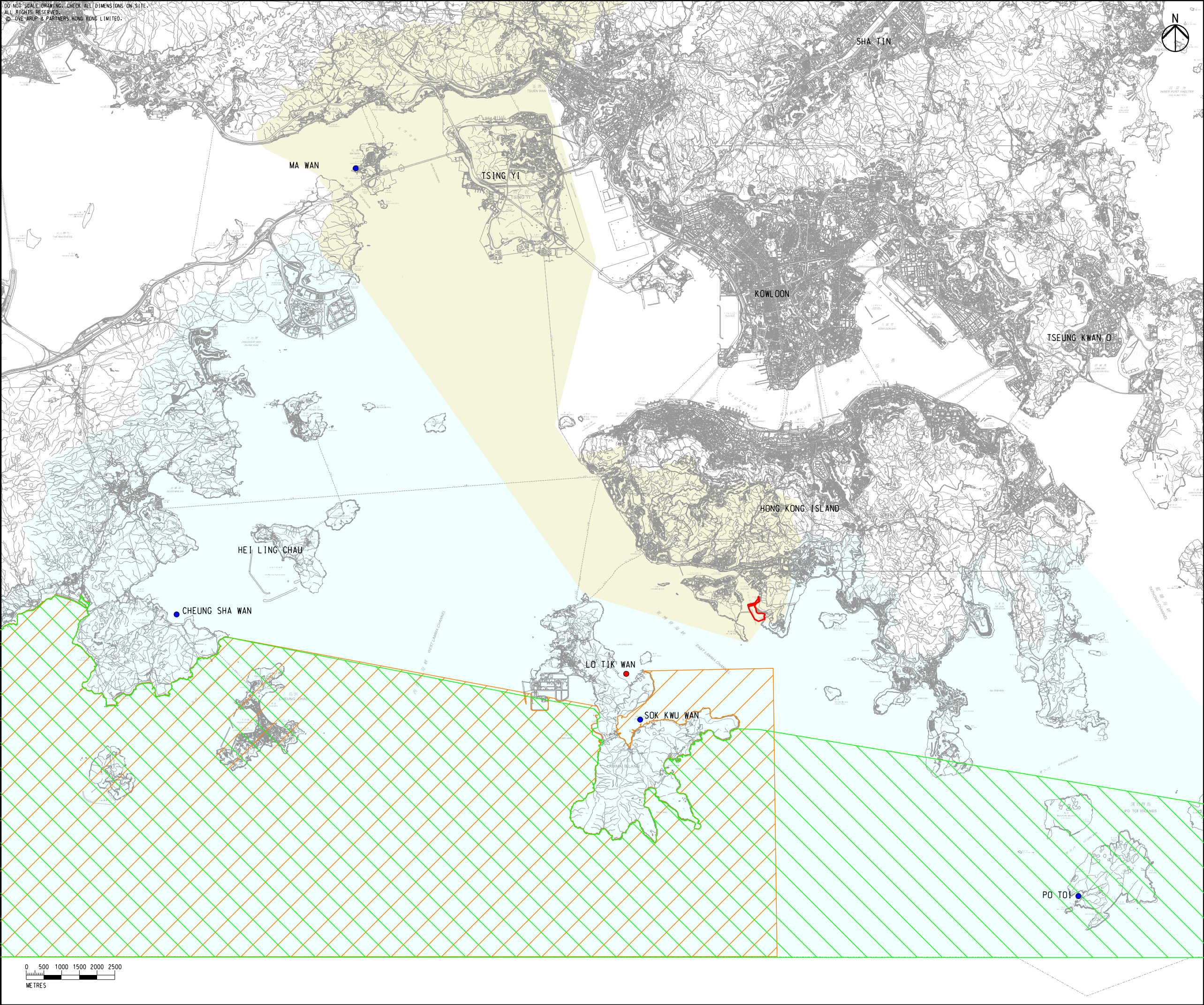
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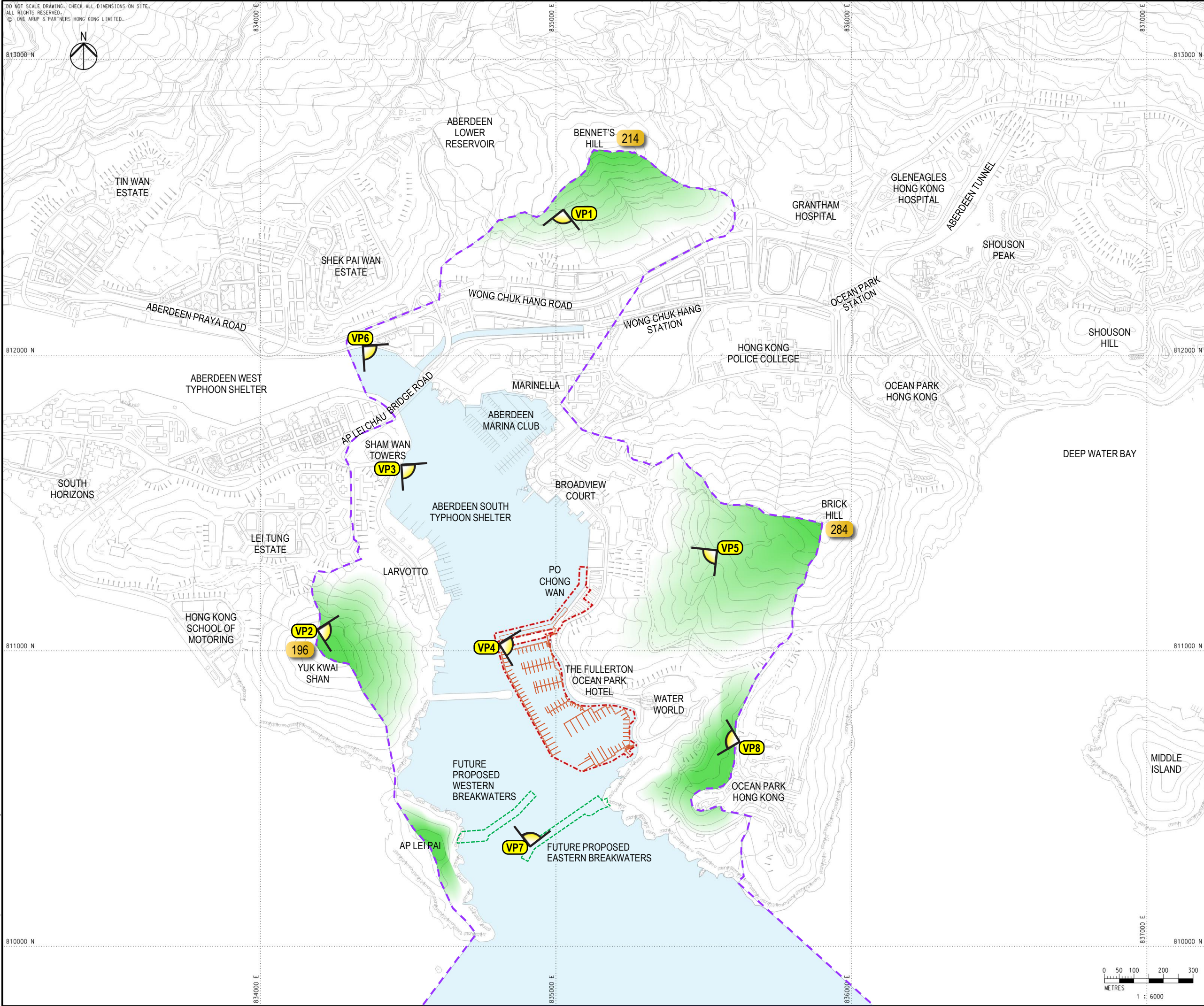


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- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - WESTERN BUFFER WATER CONTROL ZONE
 - SOUTHERN WATER CONTROL ZONE
 - SPAWNING GROUND OF COMMERCIAL FISHERIES RESOURCES
 - NURSERY AREA OF COMMERCIAL FISHERIES RESOURCES
 - FISH CULTURE ZONE
 - FISH CULTURE ZONE AND ARTIFICIAL REEFS

B		SECOND ISSUE	GL	07/26
A		FIRST ISSUE	GL	05/26
Rev	Description	By	Date	
Consultant				
ARUP				
Project Title				
Agreement No. CE 26/2025 (CE) Engineering Study for ATS Marina - Feasibility Study				
Drawing title				
KEY FISHERIES RESOURCES WITHIN THE STUDY AREA				
Drawing no.		FIGURE 3.5		Rev.
B				
Drawn	Date	Checked	Approved	
GL	07/26	EL	FC	
Scale	1:100k @ A3		Status	PRELIMINARY
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LEGEND

- PROJECT SITE
- VISUAL ENVELOPE
- VIEWING POINT LOCATION
- 100 HEIGHT IN +mPD
- YACHT PIERS
- EXPANSION OF ABERDEEN TYPHOON SHELTER PROPOSED BREAKWATERS UNDER SEPARATE STUDY

VP1 FOOTPATH OF BENNET'S HILL

VP2 HIGHPOINT OF YUK KWAI SHAN

VP3 AP LEI CHAU PRAYA ROAD NEAR SHAM WAN TOWERS

VP4 EXISTING EASTERN BREAKWATERS

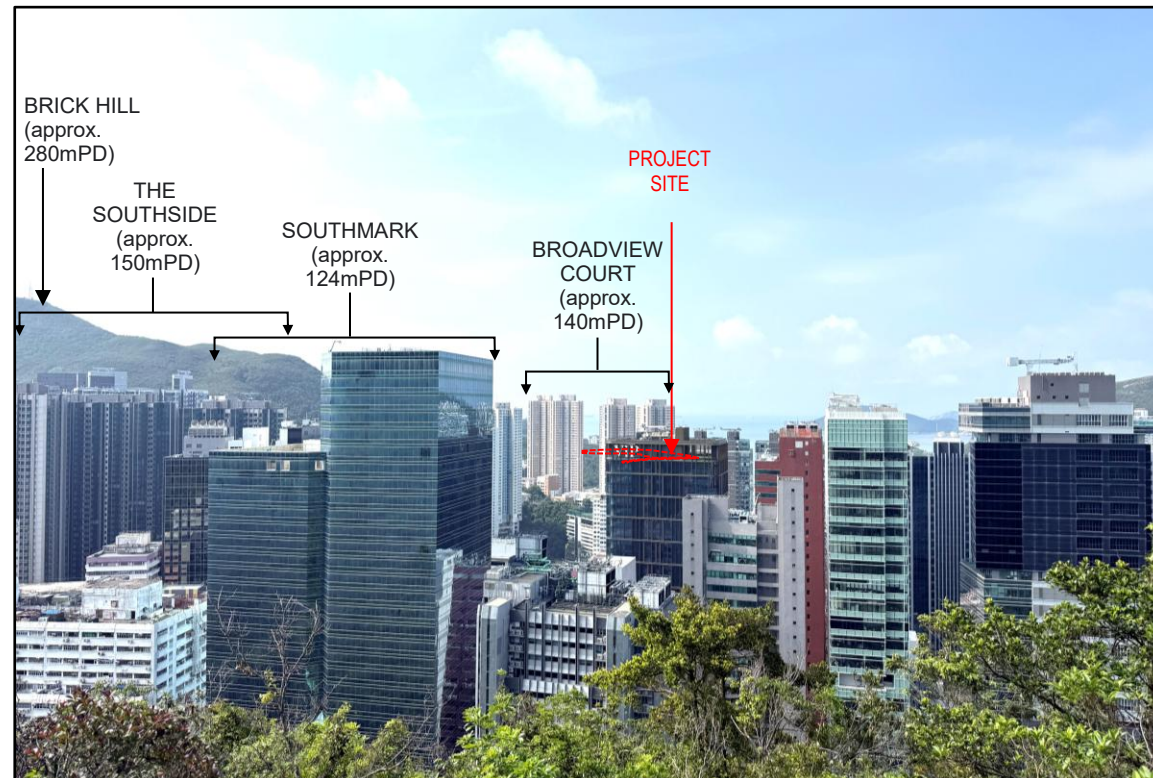
VP5 PAVILION NEAR BRICK HILL

VP6 ABERDEEN PROMENADE

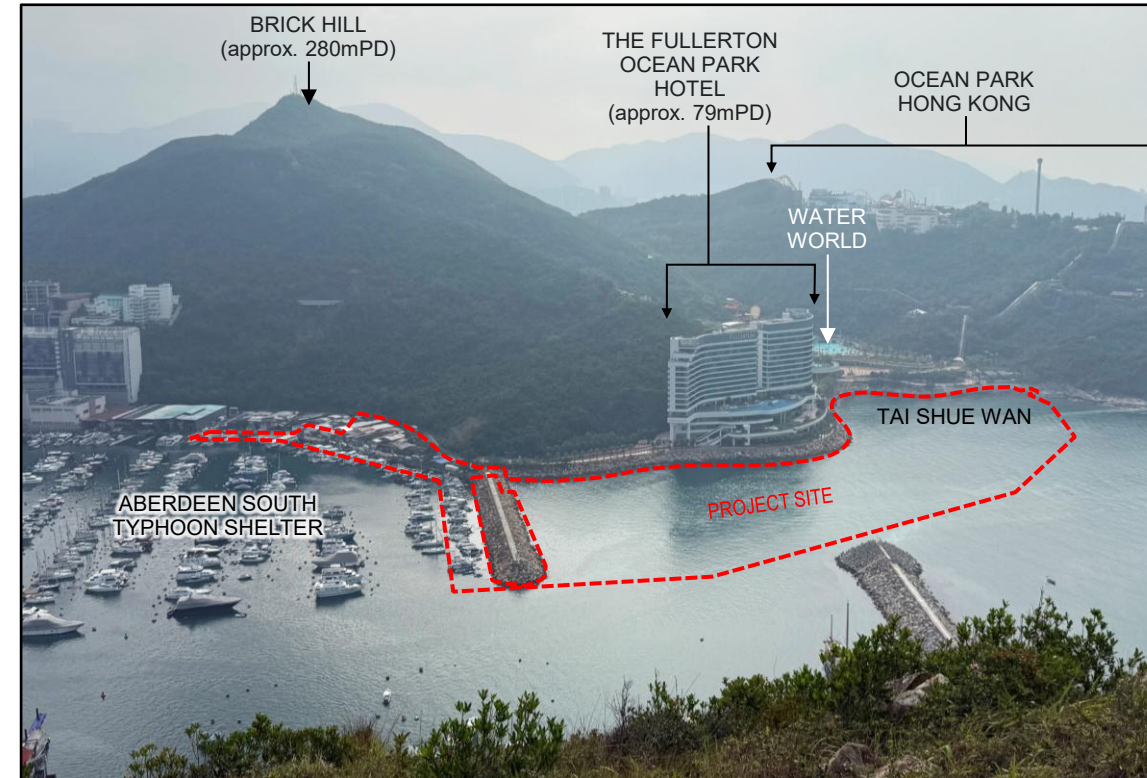
VP7 FUTURE PROPOSED EASTERN BREAKWATERS

VP8 OCEAN PARK

A	FIRST ISSUE	YPC	07/26
Rev	Description	By	Date
Consultant			
ARUP			
Project title			
Agreement No. CE26/2025 (CE) Study on Marina Development at the Expansion Area of Aberdeen Typhoon Shelter - Feasibility Study			
Drawing title			
VIEWING POINT LOCATION			
Drawing no.		Rev.	
FIGURE 3.6		A	
Drawn	Date	Checked	Approved
RY	01/26	BW	JS
Scale	Status		
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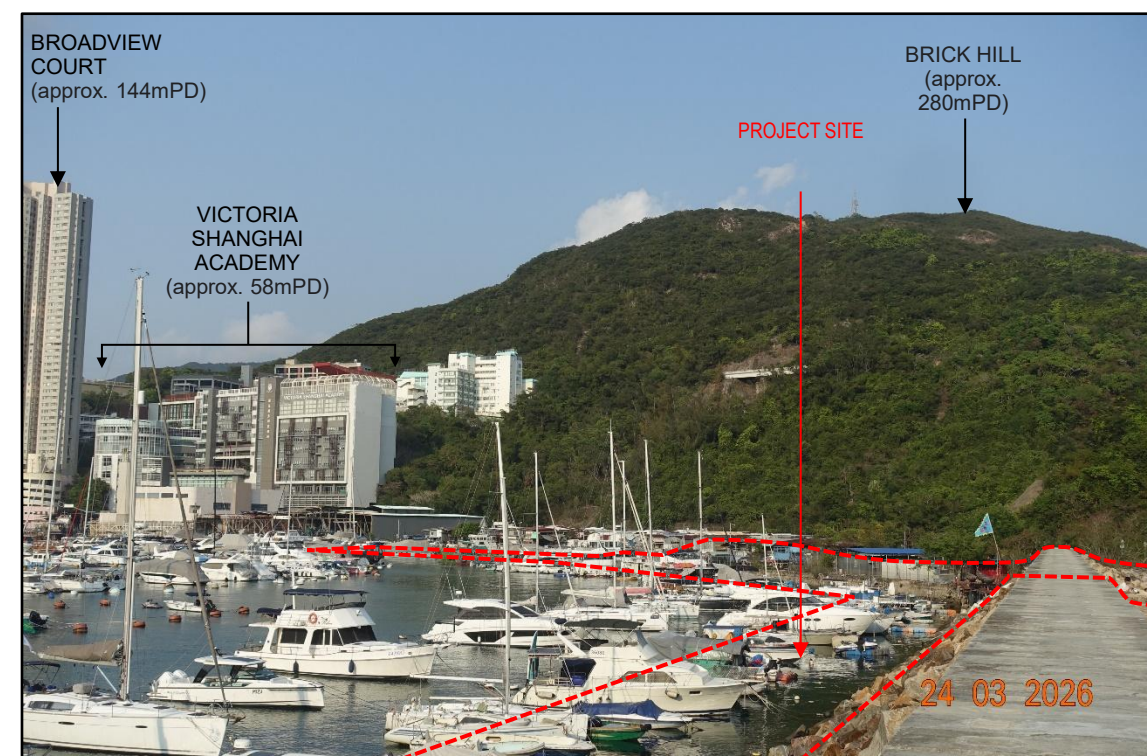
VP-1 FOOTPATH OF BENNET'S HILL



VP-2 HIGHPOINT OF YUK KWAI SHAN



VP-3 AP LEI CHAU PRAYA ROAD NEAR SHAM WAN TOWERS



VP-4 EXISTING EASTERN BREAKWATERS

A	FIRST ISSUE	SS	07/26
Rev	Description	By	Date

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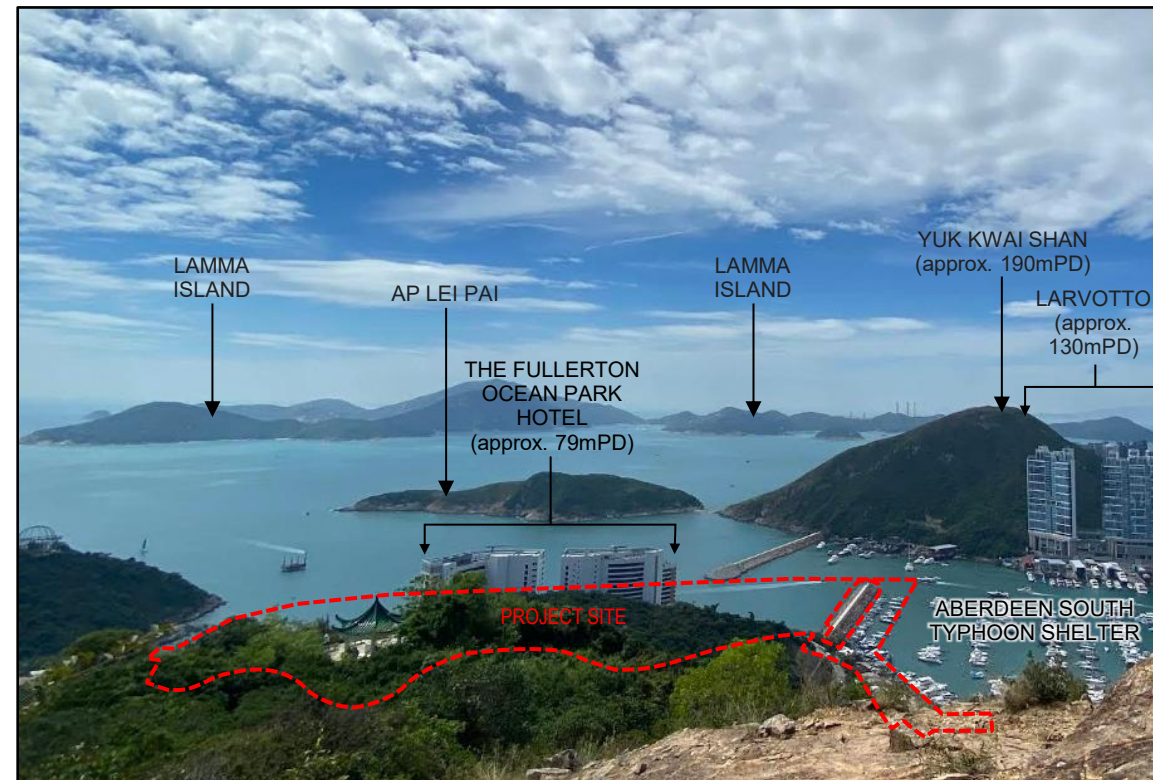
Project title
Agreement No. CE26/2025 (CE)
Study on Marina Development
at the Expansion Area of Aberdeen
Typhoon Shelter - Feasibility Study

Drawing title
**BASELINE PHOTO OF KEY
PUBLIC VIEWERS**

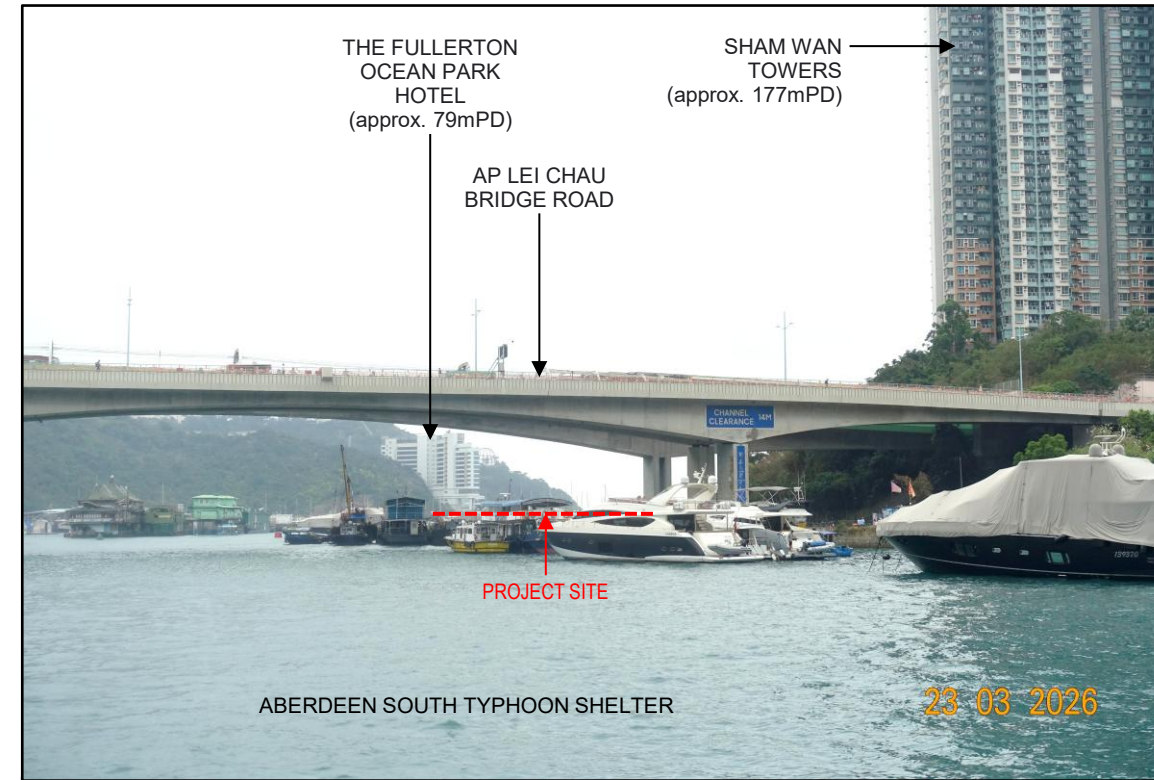
(SHEET 1)

Drawing no.		FIGURE 3.7		Rev.		A	
Drawn		Date		Checked		Approved	
SS		01/26		CW		BW	
Scale				Status			
-				PRELIMINARY			

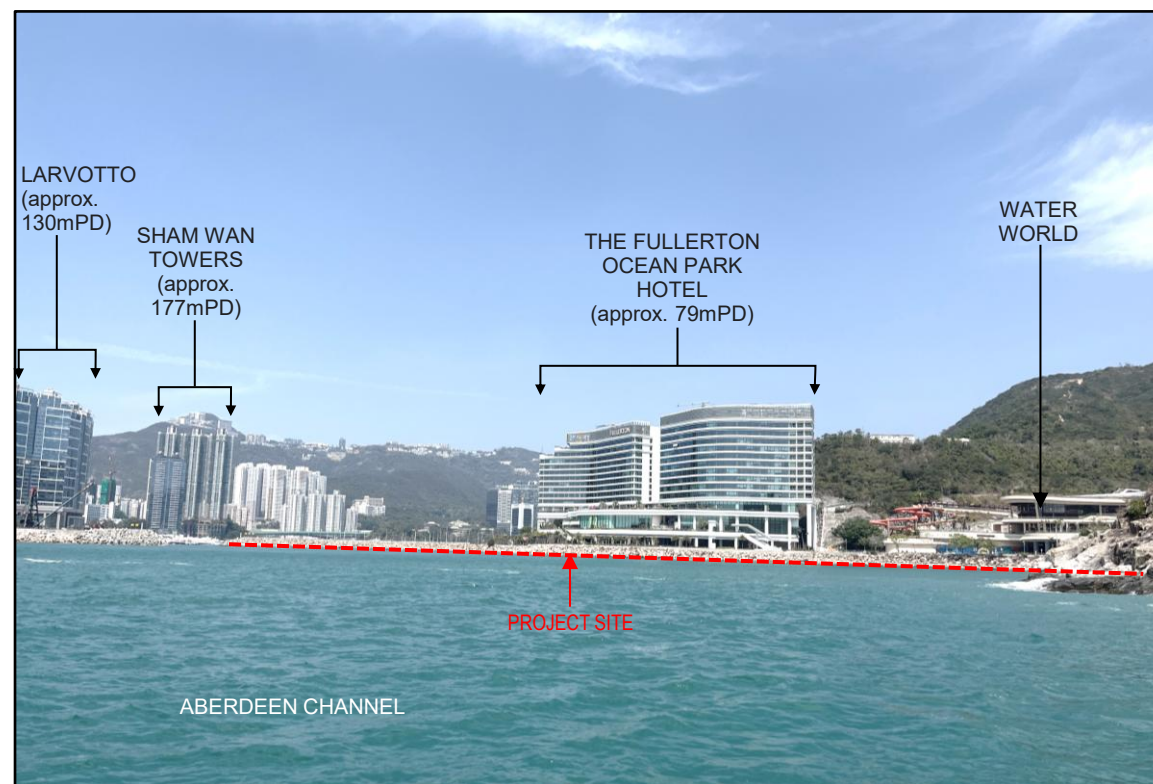
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VP-5 PAVILION NEAR BRICK HILL



VP-6 ABERDEEN PROMENADE



VP-7 FUTURE PROPOSED EASTERN BREAKWATERS



VP-8 OCEAN PARK

A	FIRST ISSUE	SS	01/26
Rev	Description	By	Date

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Project title
Agreement No. CE26/2025 (CE)
Study on Marina Development
at the Expansion Area of Aberdeen
Typhoon Shelter - Feasibility Study

Drawing title
**BASELINE PHOTO OF KEY
PUBLIC VIEWERS**

(SHEET 2)

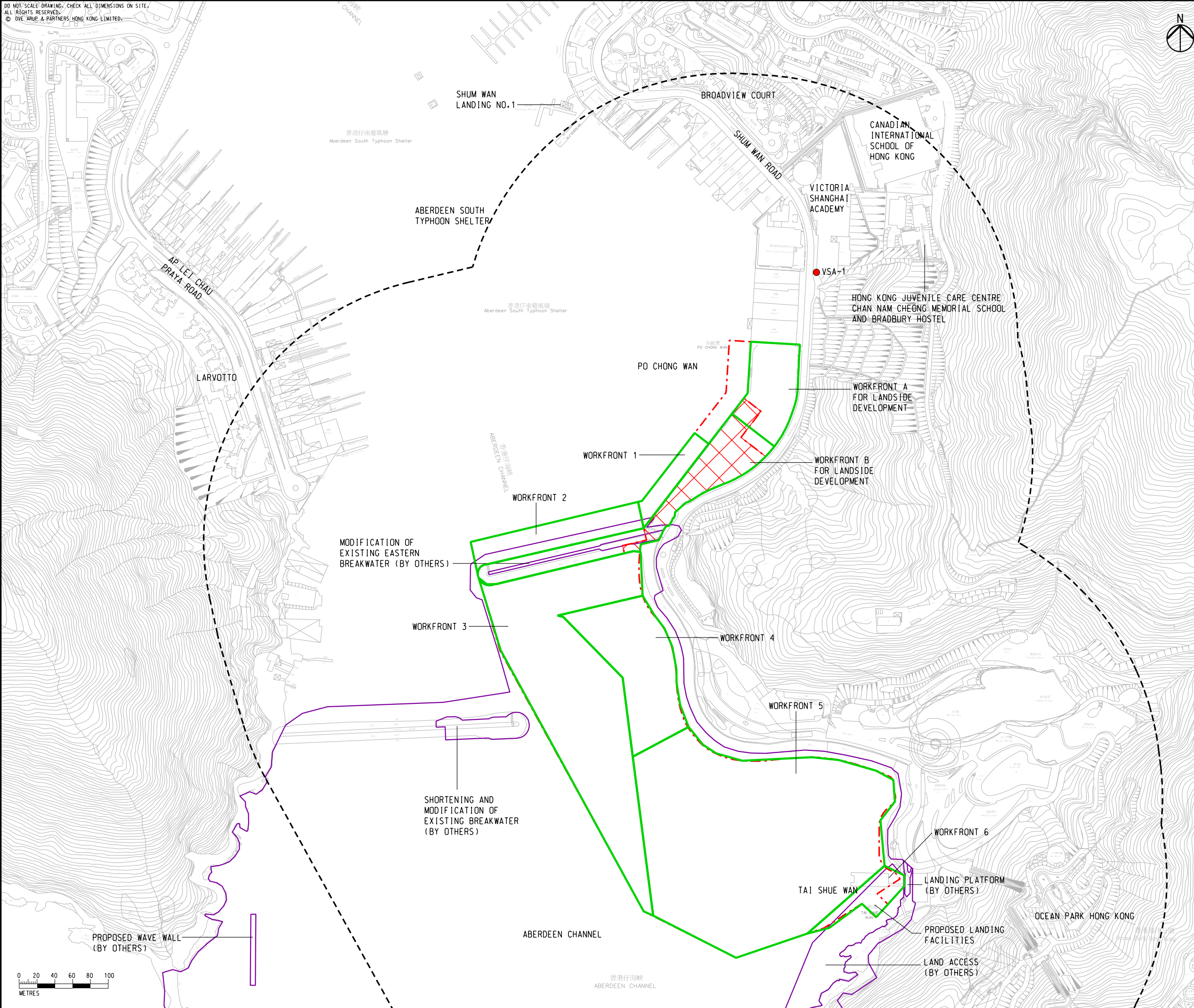
Drawing no.	FIGURE 3.8			Rev.	A
Drawn	SS	Date	01/26	Checked	CW
Scale	-	Status	PRELIMINARY	Approved	BW

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- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES
 - PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
 - EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025) (BY OTHERS)
 - 300m STUDY AREA
 - NOISE ASSESSMENT POINTS
 - WORKFRONT

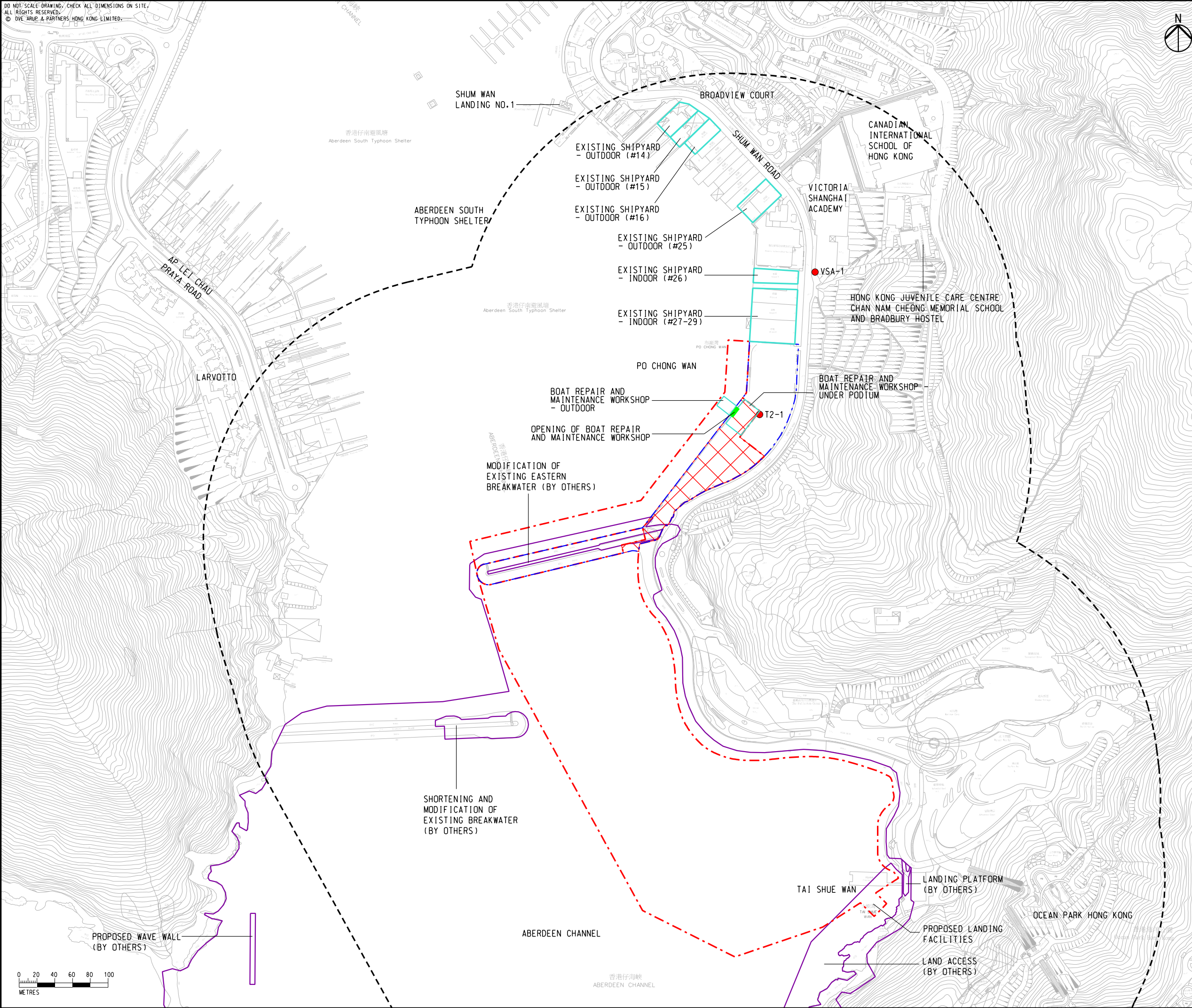


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Rev	Description	By	Date		
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Project Title					
Agreement No. CE 26/2025 (CE) Engineering Study for ATS Marina - Feasibility Study					
Drawing title					
LOCATION OF WORKFRONT FOR MARINA DIR					
Drawing no.				Rev.	
FIGURE 4.1				A	
Drawn	Date	Checked	Approved		
GL	09/26	EL	FC		
Scale	1:4000 @ A3		Status	PRELIMINARY	
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- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES
 - PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
 - EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025) (BY OTHERS)
 - 300m STUDY AREA
 - NOISE ASSESSMENT POINTS



Rev	Description	By	Date
B	SECOND ISSUE	GL	08/26
A	FIRST ISSUE	GL	07/26

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Agreement No. CE 26/2025 (CE)
Engineering Study for ATS Marina -
Feasibility Study

Drawing title

LOCATION OF NOISE
ASSESSMENT POINTS
FOR FIXED NOISE SOURCES

Drawing no.	FIGURE 4.2	Rev.	B
Drawn	Date	Checked	Approved
GL	08/26	EL	FC
Scale	1:4000 @ A3	Status	PRELIMINARY

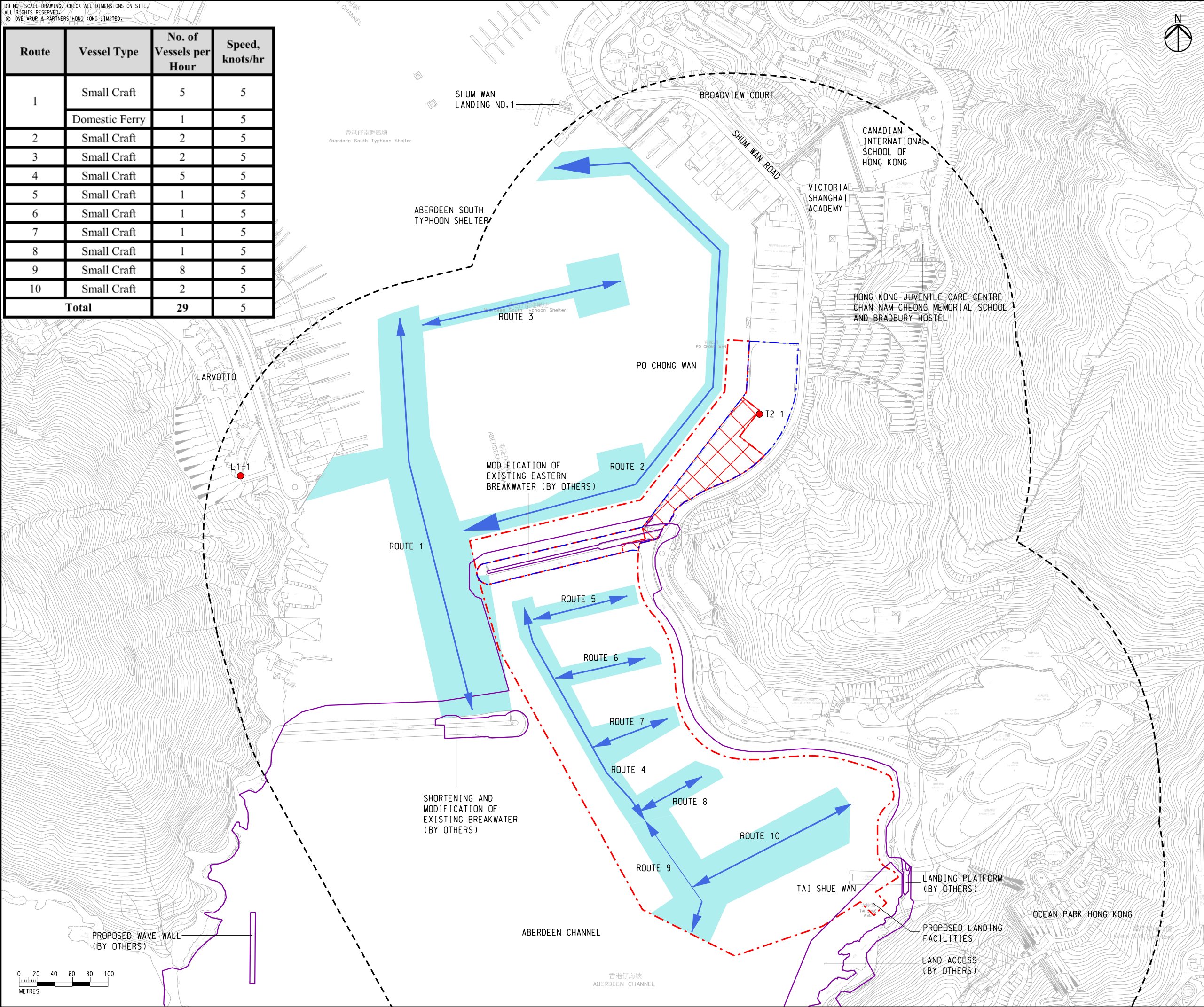
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Route	Vessel Type	No. of Vessels per Hour	Speed, knots/hr
1	Small Craft	5	5
	Domestic Ferry	1	5
2	Small Craft	2	5
3	Small Craft	2	5
4	Small Craft	5	5
5	Small Craft	1	5
6	Small Craft	1	5
7	Small Craft	1	5
8	Small Craft	1	5
9	Small Craft	8	5
10	Small Craft	2	5
Total		29	5



- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES
 - PROPOSED LANDSIDE DEVELOPMENT BOUNDARY (BY SEPARATE SUBMISSION)
 - EXPANSION OF ABERDEEN TYPHOON SHELTER (AEIAR-267/2025) (BY OTHERS)
 - 300m STUDY AREA
 - MARINE TRAFFIC ROUTE
 - NOISE ASSESSMENT POINTS

B	SECOND ISSUE	GL	08/26
A	FIRST ISSUE	GL	07/26
Rev	Description	By	Date

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Project Title

Agreement No. CE 26/2025 (CE)
Engineering Study for ATS Marina -
Feasibility Study

Drawing title

MARINE TRAFFIC ROUTE AND
NOISE ASSESSMENT POINTS

Drawing no.		Rev.	
FIGURE 4.3		B	
Drawn	Date	Checked	Approved
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Scale	1:4000 @ A3		
		Status	PRELIMINARY

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Appendix 1.1

Marina Layout Plans

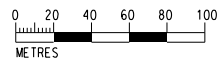
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香港仔南避風塘
Aberdeen South Typhoon Shelter
ABERDEEN SOUTH
TYPHOON SHELTER



- LEGEND
- PROPOSED SEASIDE DEVELOPMENT
 - PROPOSED LANDSIDE MARINA FACILITIES

Printed by : 7/7/2026
Filename : \\global\\East\\Asia\\HKG\\Group\\CI\\ENV\\env\\project\\313577\\13 Drawing Deliverables\\report\\02 DIR\\Appendix 1.1 - Marina Layout Plan.dgn



WATER FRONT AREA FOR
LEISURE ACTIVITIES

MODIFICATION OF
EXISTING EASTERN
BREAKWATER (BY OTHERS)

SHORTENING AND
MODIFICATION OF
EXISTING BREAKWATER
(BY OTHERS)

100m

ABERDEEN CHANNEL

PROPOSED WAVE WALL
(BY OTHERS)

NEW BREAKWATERS
(BY OTHERS)

NEW BREAKWATERS
(BY OTHERS)

香港仔海峽
ABERDEEN CHANNEL

LANDING PLATFORM
(BY OTHERS)

PROPOSED LANDING FACILITIES

LAND ACCESS
(BY OTHERS)

OCEAN PARK

C	THIRD ISSUE	GL	07/26
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A	FIRST ISSUE	GL	05/26
Rev	Description	By	Date

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Engineering Study for ATS Marina -
Feasibility Study

Drawing title
MARINA LAYOUT PLAN

Drawing no. APPENDIX 1.1			Rev. C
Drawn GL	Date 07/26	Checked EL	Approved FC
Scale 1:4000 @ A3		Status PRELIMINARY	

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Appendix 3.1

Verification of Ecological Habitat Conditions

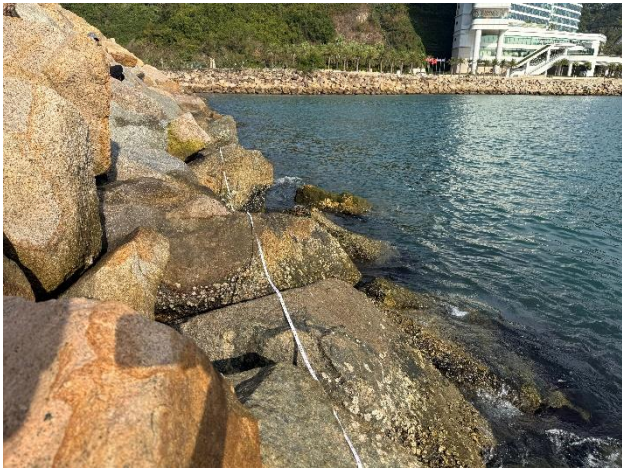
Habitat Verification Methodology	
Subtidal Hard Bottom Habitat: The verification was conducted in Mar 2026 at the selected spot check dive/REA locations as in the approved EIA for the Expansion of ATS (AEIAR-267/2025). The verification was conducted by spot check dive. Photos were taken to verify the habitat condition, existence of coral/organisms and any change in coverage of corals. Subtidal Soft Bottom Habitat: Marine soft bottom benthic habitat conditions were verified in Mar 2026 via grab sampling of seabed sediment at the same/similar locations as in AEIAR-267/2025. The benthic fauna communities in the samples were summarised qualitatively on the presence / absence of species of conservation importance and relative abundance of organisms. Intertidal Habitat: Intertidal habitat conditions were verified in Mar 2026 by walkthrough site visit. Representative photographs of intertidal habitats were taken at the intertidal sampling points of AEIAR-267/2025.	
Summary of verification survey	
The approved ATS EIA had evaluated the artificial seawall, rocky shore and subtidal (hard & soft) habitats within the EIA assessment area (which is applicable to the current Project) as of low/very low ecological values. Verification survey findings are summarised in the following. Various hard coral species were recorded within the current Study Area for ecological assessment, but all are locally common species. Intertidal habitats: The intertidal verification survey showed that the general species diversity in the intertidal habitats within the Study Area for ecological assessment and Proposed Seaside Development was low. More species were recorded on the rocky shore outside the Proposed Seaside Development than on the artificial seawall within the Proposed Seaside Development which concur with the findings in the approved ATS EIA. Marine snail (<i>Echinolittorina radiata</i>), barnacles (<i>Tetraclita japonica</i>, <i>Capitulum mitella</i>, and <i>Chthamalus malayensis</i>) dominated the intertidal habitat on the rocky shore. The habitat on the artificial seawall had a relatively higher abundance of barnacles (<i>Tetraclita japonica</i>). Both habitats also recorded algae, limpets, and bivalves, while some marine snails were only present on the rocky shore. No species of conservation importance were recorded. The results showed no significant changes on the intertidal habitat conditions to the approved ATS EIA. Subtidal hard-bottom habitats: Results from the verification survey of the subtidal hard-bottom habitat were similar to the REA from the previously approved ATS EIA. The coral cover at the artificial seawall and rocky shore was low (1–5%). Within the Proposed Seaside Development, two hermatypic hard coral species (<i>Coscinaraea</i> sp. and <i>Oulastrea crispata</i>) and one ahermatypic hard coral species (<i>Cladopsammia</i> sp.) were recorded which are all locally common. Three hermatypic hard coral species (<i>Coscinaraea</i> sp., <i>Cyphastrea serailia</i>, and <i>Oulastrea crispata</i>) and one ahermatypic hard coral species (<i>Balanophyllia</i> sp.) were recorded on the artificial seawall in the vicinity outside the Proposed Seaside Development. These species are all locally common. No octocoral was found within the Proposed Seaside Development. No black coral was recorded during the verification survey. Subtidal soft-bottom habitats (grab samples): The grab verification survey at the subtidal soft bottom habitat showed that Annelida was the most abundant phylum, with over 70% abundance at each survey point. Nine species were recorded within the Proposed Seaside Development and over 25 species were recorded outside the Study Area for ecological assessment. No species of conservation importance were recorded. The results of the verification survey showed no significant difference to the approved ATS EIA.	
Appendix: 3.1	
Verification of Ecological Habitat Conditions	Drawn by: various
	Checked by: IW
Marina Development at the Expansion Area of Aberdeen Typhoon Shelter	Rev.: 0
	Date: May 2026



Artificial seawall



Artificial seawall



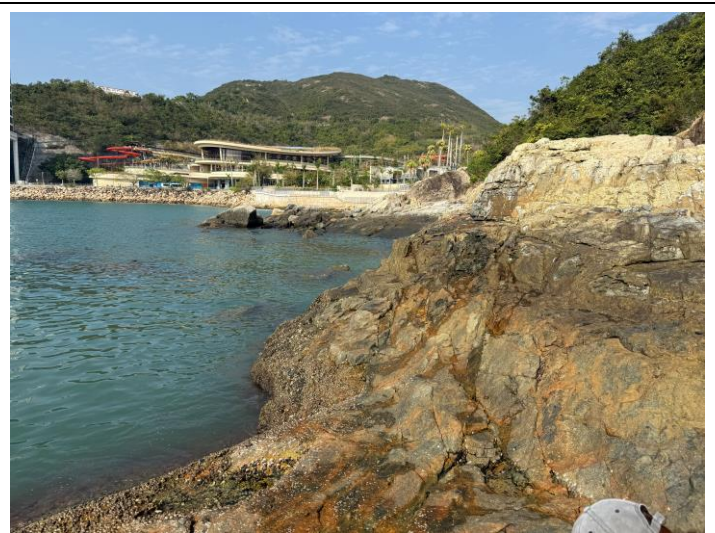
Artificial seawall



Artificial seawall



Rocky shore



Rocky shore

Appendix: 3.1 Verification of Ecological Habitat Conditions

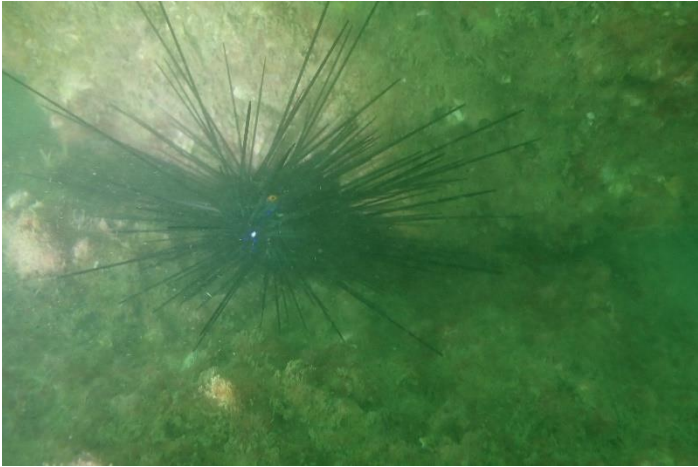
Marina Development at the Expansion Area of Aberdeen Typhoon Shelter

Drawn by: various

Checked by: IW

Rev.: 0

Date: May 2026

	
Rocky shore	Subtidal soft bottom
	
Subtidal hard bottom	<i>Diadema setosum</i>
	
<i>Echinomuricea</i> sp.	<i>Tubastraea</i> sp.
Appendix: 3.1	
Verification of Ecological Habitat Conditions	Drawn by: various
	Checked by: IW
	Rev.: 0
Marina Development at the Expansion Area of Aberdeen Typhoon Shelter	Date: May 2026

Appendix 3.2

Tree Group Survey

Tree Group No. 樹群編號	Representative Species 代表性品種		Conservation Status 保育狀況	Estimated Quantity per Species Within Group 群組內各品種的估計數量	Estimated Total Tree Quantity of Group 群組內樹木的估計總數	Typical Size			Amenity Value 觀賞價值 (High 高 (H) / Medium 中 (M) / Low 低 (L))	Form 形態 (Good 良好 (G) / Average 一般 (A) / Poor 差劣 (P))	Health 健康狀況 (Good 良好 (G) / Average 一般 (A) / Poor 差劣 (P))	Structural Condition 結構狀況 (good(G) / average(A) / poor(P))	Suitability for Transplanting 移植適宜度		Recommendation 建議處置方法			Maintenance Department to Provide Comments on TPRP 就樹木保育及移除建議提供意見的保養部門			Additional Remarks 附加備註
	Scientific Name 學名	Chinese Name 中文名				Height 高度 (m)	DBH 胸徑 (mm)	Crown Spread 冠幅 (m)					(High 高 (H) / Medium 中 (M) / Low 低 (L))	Remarks 備註	Retain 保留	Transplant 移植	Remove 移除	Department 部門	Current Land Category 現時土地類別	Remarks 備註	
TGV1	<i>Carica papaya</i>	番木瓜	-	20	50	2-8	100-300	1-3	L 低	P 差劣	A 一般	P 差劣	L 低	Low amenity value; Poor form & structure	0	0	50	N/A	Short term tenancies	Po Chong Wan Temporary Industrial Area	Fruit trees, ornamental trees and wild growth in industrial areas.
(Proposed Marina)	<i>Macaranga tanarius var. tomentosa</i>	血桐	-	8		4-7	150-250	3-6						觀賞價值低; 外形和結構較差				不適用	短期租約		工業區內的果樹、觀賞樹木和野生樹木
(擬建遊艇停泊設施)	<i>Artocarpus heterophyllus</i>	菠蘿蜜	-	6		5-8	150-350	2-6													All trees are to be removed.
	<i>Celtis sinensis</i>	朴樹	-	2		9-10	350-590	7-11													所有樹木將被移除
	<i>Averrhoa carambola</i>	楊桃	-	2		4-7	150-200	3-4													
	<i>Ficus microcarpa</i>	細葉榕	-	2		5-6	200-300	3-5													Also includes an estimated 25 nos. of common undesirable species (i.e. Leucaena leucocephala) in this tree group.
	<i>Ficus virens</i>	黃葛樹	-	2		5-7	300-880	2-6													樹群中也估計有約 25 棵銀合歡 (常見不良品種)
	<i>Araucaria columnaris</i>	柱狀南洋杉	-	1		8	250	5													
	<i>Dimocarpus longan</i>	龍眼	-	1		7	250	6													
	<i>Ficus benjamina</i>	垂葉榕	-	1		8	250	4													
	<i>Litsea glutinosa</i>	潺槁樹	-	1		4	100	2													
	<i>Mallotus paniculatus</i>	白楸	-	1		9	200	5													
	<i>Mangifera indica</i>	芒果	-	1		2	100	1													
	<i>Psidium guajava</i>	番石榴	-	1		5	100	4													
	<i>Sterculia lanceolata</i>	假蘋婆	-	1		4	100	1													

Tree Group Survey Summary (Proposed Marina)

樹群調查總結 (擬建遊艇停泊設施)

Total Estimated Nos. of Trees (Within Tree Groups): 樹群內估計樹木總數	50 nos. 棵
Total Estimated Nos. of Trees (Within Tree Groups) to be Retained: 樹群內估計保留樹木之數量	0 nos. 棵
Total Estimated Nos. of Trees (Within Tree Groups) to be Transplanted: 樹群內估計移植樹木之數量	0 nos. 棵
Total Estimated Nos. of Trees (Within Tree Groups) to be Removed: 樹群內估計移除樹木之數量	50 nos. 棵

Notes

(1) Unless otherwise stated, the number of trees within each tree group does not include common undesirable species (i.e. *Leucaena leucocephala*) of which TPRP is not required for removal in accordance with DEVB TCW No. 4/2020.

備註

(1) 除非另有說明，否則每個樹群內的樹木數量不包括常見不良品種 (例如銀合歡)。根據發展局工務技術通告第 4/2020 號，無需透過樹木保育及移除建議書移除這些品種。



Tree Group TGV1 (View 1)
樹群 TGV1 (視點 1)



Tree Group TGV1 (View 2)
樹群 TGV1 (視點 2)



Tree Group TGV1 (View 3)
樹群 TGV1 (視點 3)

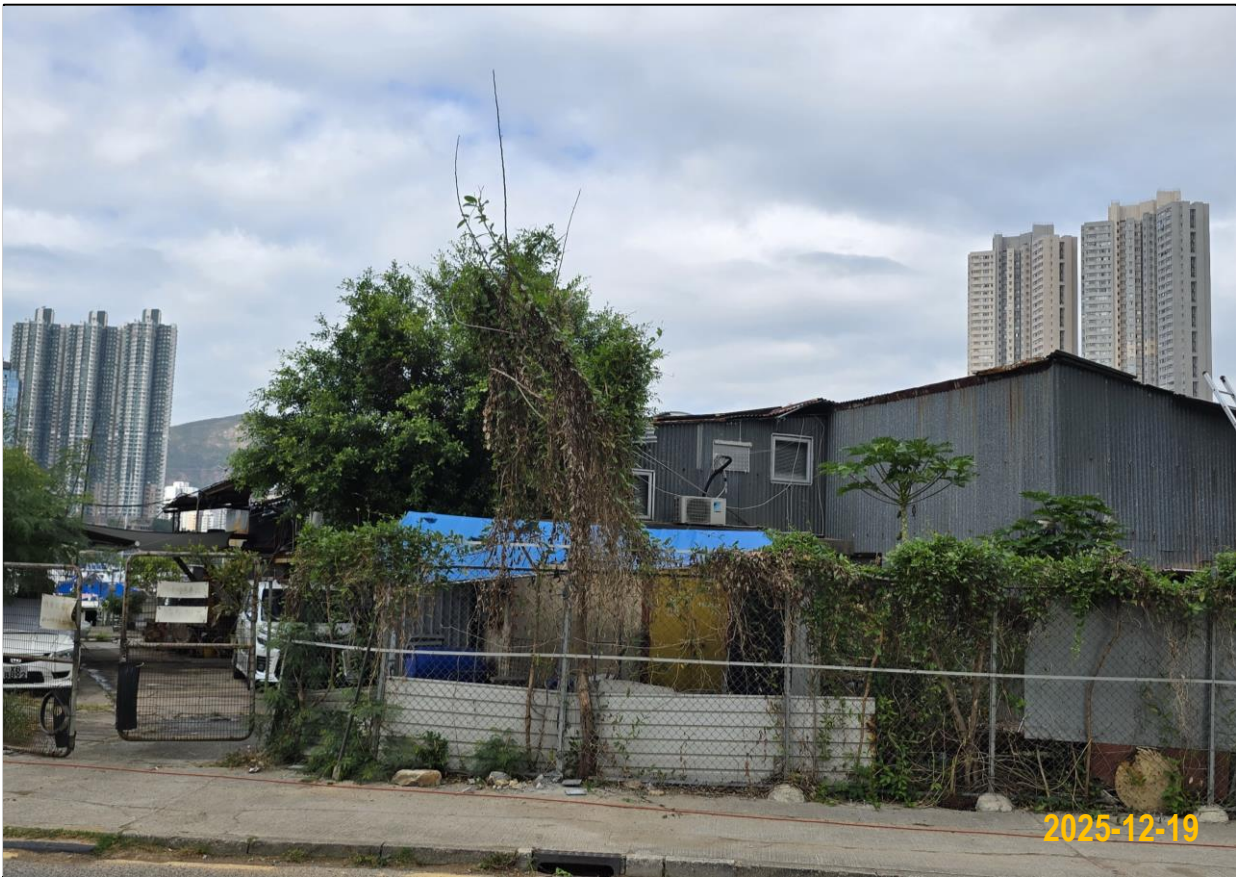


Tree Group TGV1 (View 4)
樹群 TGV1 (視點 4)

Rev	Description	By	Date
Consultant			
ARUP			
Project title			
AGREEMENT NO. CE26/2025 (CE) STUDY ON MARINA DEVELOPMENT AT THE EXPANSION AREA OF ABERDEEN TYPHOON SHELTER - FEASIBILITY STUDY			
合約編號 CE26/2025 (CE) 香港仔避風塘擴建部分發展遊艇停泊設施的研究 - 可行性研究			
Drawing title			
TREE GROUP PHOTOGRAPHS 樹群照片 (TGV1)			
Drawing no.		Rev.	
-		-	
Drawn	SS	Date	01/26
Checked	CW	Approved	BW
Scale	-	Status	PRELIMINARY



Tree Group TGV1 (View 5)
樹群 TGV1 (視點 5)



Tree Group TGV1 (View 6)
樹群 TGV1 (視點 6)



Tree Group TGV1 (View 7)
樹群 TGV1 (視點 7)

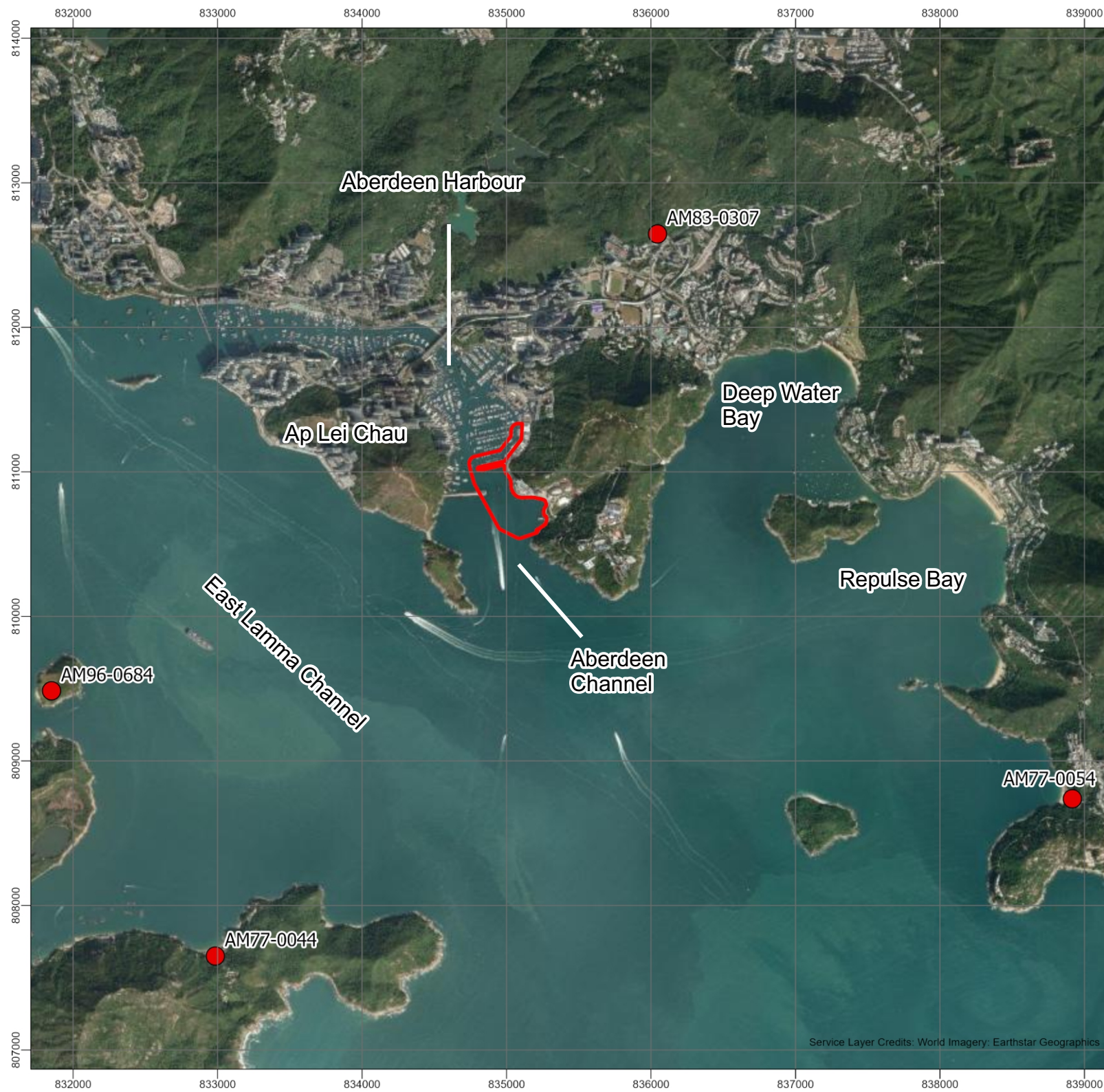


Tree Group TGV1 (View 8)
樹群 TGV1 (視點 8)

Rev	Description	By	Date
Consultant			
ARUP			
Project title			
AGREEMENT NO. CE26/2025 (CE) STUDY ON MARINA DEVELOPMENT AT THE EXPANSION AREA OF ABERDEEN TYPHOON SHELTER - FEASIBILITY STUDY			
合約編號 CE26/2025 (CE) 香港仔避風塘擴建部分發展遊艇停泊設施的研究 - 可行性研究			
Drawing title			
TREE GROUP PHOTOGRAPHS 樹群照片 (TGV1)			
Drawing no.		Rev.	
-		-	
Drawn	SS	Date	01/26
Checked	CW	Approved	BW
Scale	-	Status	PRELIMINARY

Appendix 3.3

Marine Archaeological Baseline Review



LEGEND:

-  Site of archaeological interest / Declared Monument
-  MAI assessment area (this project)

GEODETTIC INFORMATION:

0 2,000 Metres

Coordinate System: Hong Kong 1980 Grid
Projection: Transverse Mercator
Datum: Hong Kong 1980
False Easting: 836,694.0500
False Northing: 819,069.8000
Central Meridian: 114.1786
Scale Factor: 1.0000
Latitude Of Origin: 22.3121
Units: Meter



+44 (0) 1985 620430
enquiries@coracle.co.uk
www.coracle.co.uk

PROJECT TITLE:

Marina development - Aberdeen typhoon shelter

FIGURE TITLE:

Location of documented Sites of Archaeological Interest in proximity to the Study Area

DRAWN BY: KW
CHECKED BY: DG
APPROVED BY: MW

PROJECT NO.
250804

FIGURE NO.
A

Service Layer Credits: World Imagery: Earthstar Geographics



LEGEND:

- ▲ UKHO wrecks
- MAI assessment area (this project)

GEODETTIC INFORMATION:

0 400 Metres

Coordinate System: Hong Kong 1980 Grid
Projection: Transverse Mercator
Datum: Hong Kong 1980
False Easting: 836 694 0500
False Northing: 819 069 8000
Central Meridian: 114 1786
Scale Factor: 1.0000
Latitude Of Origin: 22 3121
Units: Meter



+44 (0) 1985 620430
enquiries@coracle.co.uk
www.coracle.co.uk

PROJECT TITLE:

Marina development - Aberdeen typhoon shelter

FIGURE TITLE:

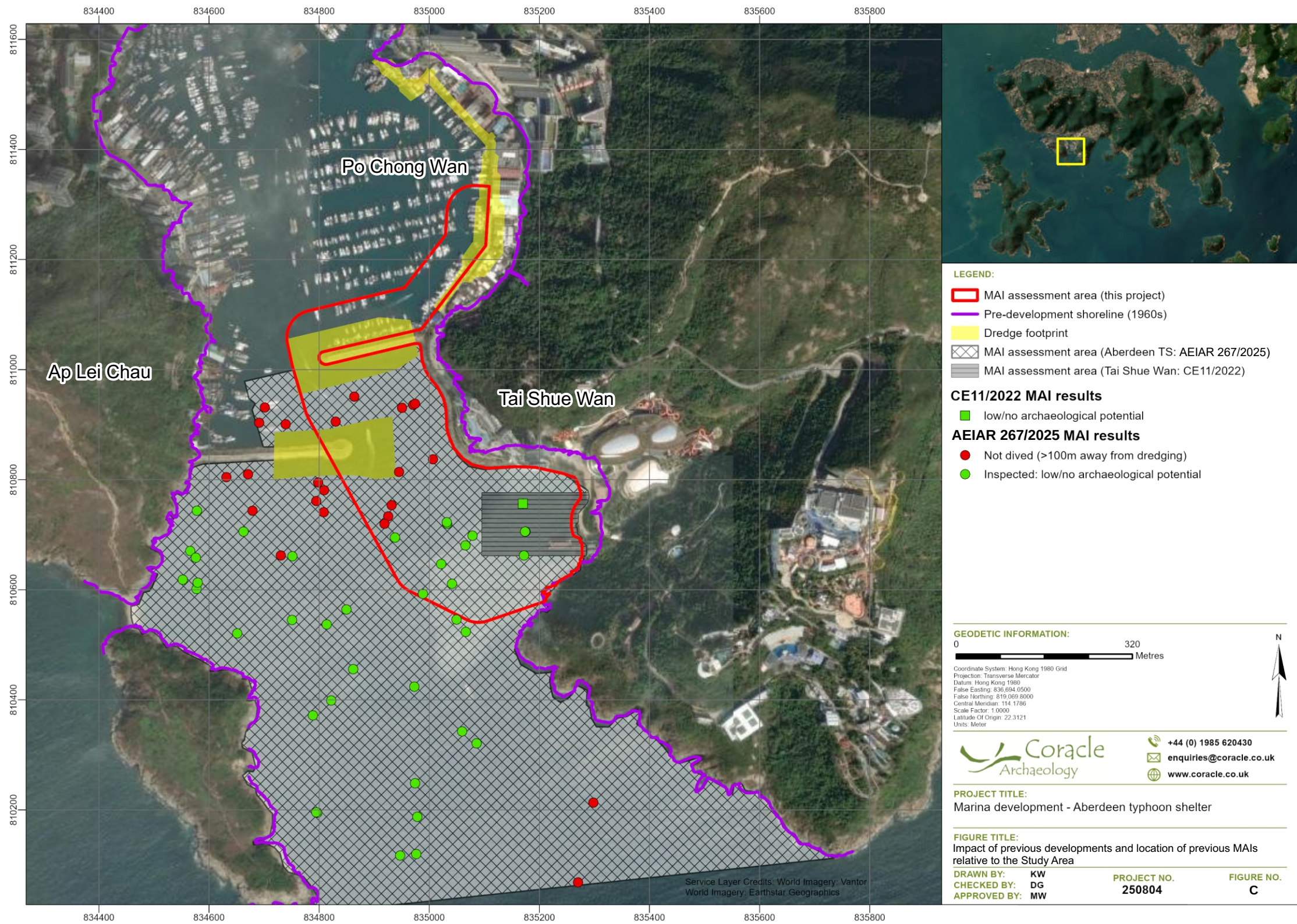
Location of wrecks recorded by the UKHO in proximity to the Study Area

DRAWN BY: KW
CHECKED BY: DG
APPROVED BY: MW

PROJECT NO.
250804

FIGURE NO.
B

Service Layer Credits: World Imagery: Vantor
World Imagery: Earthstar Geographics



Appendix 4.1

SWLs for PME

PME Inventory for Proposed Seaside Development

PME	Unmitigated SWLs			Quiet Plant			Mitigated Scenario				
	ID ^[1]	Description	PME SWL, dB(A)	ID	Description / Brand / Model	PME SWL, dB(A)	Silencer, dB(A)	Enclosure, dB(A)	Barrier, dB(A)	Total Reduction, dB(A)	Mitigated SWL, dB(A)
Air compressor, air flow > 10 m3/min and ≤ 30 m3/min	CNP 002	Air compressor, air flow > 10 m3/min and ≤ 30 m3/min	102								102
Crane, mobile/barge mounted (diesel)	CNP 048	Crane, mobile/barge mounted (diesel)	112								112
Derrick Barge	CNP 061	Derrick Barge	104								104
Generator, standard	CNP 101	Generator, standard	108								108
Piling, large diameter bored, oscillator	CNP 165	Piling, large diameter bored, oscillator	115								115
Tug boat	CNP 221	Tug boat	110								110
Saw/groover, concrete (petrol)	CNP 203	Saw/groover, concrete (petrol)	115								115
Drill rig, rotary type (diesel)	CPME#1	Drill rig, rotary type (diesel)	110								110
Grout mixer	CPME#2	Grout mixer	90								90
Grout pump	CPME#3	Grout pump	105								105

Note:
[1] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf

Seaside Marina Construction Pre-drilling Works					Unmitigated			Mitigated				
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference ^[2]	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)
Seaside Marina Construction Pre-drilling Works (Workfront 1)	Derrick Barge	80	-1	1	CNP 061	104	103				0	103
	Tug boat	80	-1	1	CNP 221	110	109				0	109
	Drill rig, rotary type (diesel)	80	-1	1	CPME#1	110	109				0	109
	Saw/groover, concrete (petrol)	80	-1	1	CNP 203	115	114				0	114
	Generator, standard	100	0	1	CNP 101	108	108				0	108
Total SWL							117				Total SWL	117

Note:
[1] Percentage on time within 30 minutes.
[2] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf

Seaside Marina Construction Installation of Piles					Unmitigated			Mitigated				
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference ^[2]	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)
Seaside Marina Construction Installation of Piles (Workfront 1)	Derrick Barge	50	-3	1	CNP 061	104	101				0	101
	Tug boat	50	-3	1	CNP 221	110	107				0	107
	Generator, standard	100	0	1	CNP 101	108	108				0	108
	Crane, mobile/barge mounted (diesel)	80	-1	1	CNP 048	112	111				0	111
	Piling, large diameter bored, oscillator	80	-1	1	CNP 165	115	114				0	114
	Air compressor, air flow > 10 m3/min and ≤ 30 m3/min	80	-1	1	CNP 002	102	101				0	101
	Grout mixer	50	-3	1	CPME#2	90	87				0	87
	Grout pump	50	-3	1	CPME#3	105	102				0	102
Total SWL							117				Total SWL	117

Note:
[1] Percentage on time within 30 minutes.
[2] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf

Project: Agreement No. CE26/2025 (CE) Study on Marina Development at the Expansion Area of Aberdeen Typhoon Shelter - Feasibility Study
Title: Plant Inventory of ATS Marina

Seaside Marina Construction Installation of floating pontoons and gangway					Unmitigated			Mitigated				
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)
Seaside Marina Construction Installation of floating pontoons and gangway (Workfront 1)	Derrick Barge	50	-3	1	CNP 061	104	101				0	101
	Tug boat	50	-3	1	CNP 221	110	107				0	107
	Generator, standard	80	-1	1	CNP 101	108	107				0	107
	Crane, mobile/barge mounted (diesel)	80	-1	1	CNP 048	112	111				0	111
Total SWL							114				Total SWL	114

Note:
[1] Percentage on time within 30 minutes.

Seaside Marina Construction MEP Installation					Unmitigated			Mitigated				
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)
Seaside Marina Construction MEP Installation (Workfront 1)	Derrick Barge	50	-3	1	CNP 061	104	101				0	101
	Tug boat	50	-3	1	CNP 221	110	107				0	107
	Generator, standard	100	0	1	CNP 101	108	108				0	108
	Crane, mobile/barge mounted (diesel)	100	0	1	CNP 048	112	112				0	112
Total SWL							115			Total SWL		115

Note:
[1] Percentage on time within 30 minutes.

PME Inventory for a Typical Residential Development

PME	Unmitigated SWLs			Quiet Plant			Mitigated Scenario				
	ID	Description	PME SWL, dB(A)	ID ^[1,2]	Description / Brand / Model	PME SWL, dB(A)	Silencer, dB(A)	Enclosure, dB(A)	Barrier, dB(A)	Total Reduction, dB(A)	Mitigated SWL, dB(A)
Bar bender and cutter (electric)	CNP 021	Bar bender and cutter (electric)	90						-10	-10	80
Concrete lorry mixer	CNP 044	Concrete lorry mixer	109	CPME#6	Concrete lorry mixer	103			-5	-5	98
Concrete pump, stationary/lorry mounted	CNP 047	Concrete pump, stationary/lorry mounted	109						-10	-10	99
Crane, tower	CNP 049	Crane, tower (electric)	95							0	95
Drill/grinder, hand-held (electric)	CNP 065	Drill/grinder, hand-held (electric)	98						-10	-10	88
Generator, standard	CNP 101	Generator, standard	108	EPD-13462	DENYO, DCA-300LSK	100			-10	-10	90
Hoist, passenger/material (electric)	CNP 122	Hoist, passenger/material (electric)	95							0	95
Lorry	CNP 141	Lorry	112	CPME#5	Lorry, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105			-5	-5	100
Poker, vibratory, hand-held	CNP 170	Poker, vibratory, hand-held	113	CPME#4	Poker, vibratory, hand-held (electric)	102			-10	-10	92

Note:
[1] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf
[2] PME with code "EPD-XXXXX" are quiet equipment with SWLs extracted from EPD's QPME inventory.

Landside Construction of Podium					Unmitigated			Mitigated				
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference ^{[2], [3]}	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)
Landside Construction of Podium (Workfront A)	Crane, tower	100	0	2	CNP 049	95	98				0	98
	Bar bender and cutter (electric)	100	0	2	CNP 021	90	93			Barrier	-10	83
	Concrete lorry mixer	50	-3	2	CNP 044	109	109	CPME#6	103	Barrier	-5	98
	Concrete pump, stationary/lorry mounted	50	-3	2	CNP 047	109	109			Barrier	-10	99
	Generator, standard	100	0	2	CNP 101	108	111	EPD-13462	100	Barrier	-10	93
	Poker, vibratory, hand-held	50	-3	2	CNP 170	113	113	CPME#4	102	Barrier	-10	92
	Lorry	50	-3	2	CNP 141	112	112	CPME#5	105	Barrier	-5	100
							Total SWL	118			Total SWL	105
Landside Construction of Podium (Workfront B)	Crane, tower	100	0	2	CNP 049	95	98				0	98
	Bar bender and cutter (electric)	100	0	2	CNP 021	90	93			Barrier	-10	83
	Concrete lorry mixer	50	-3	2	CNP 044	109	109	CPME#6	103	Barrier	-5	98
	Concrete pump, stationary/lorry mounted	50	-3	2	CNP 047	109	109			Barrier	-10	99
	Generator, standard	100	0	2	CNP 101	108	111	EPD-13462	100	Barrier	-10	93
	Poker, vibratory, hand-held	50	-3	2	CNP 170	113	113	CPME#4	102	Barrier	-10	92
	Lorry	50	-3	2	CNP 141	112	112	CPME#5	105	Barrier	-5	100
							Total SWL	118			Total SWL	105

Note:
[1] Percentage on time within 30 minutes.
[2] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf
[3] PME with code "EPD-XXXXX" are quiet equipment with SWLs extracted from EPD's QPME inventory.

Landside Construction of Superstructure					Unmitigated			Mitigated				
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference ^{[2], [3]}	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)
Landside Construction of Superstructure (Workfront A)	Crane, tower	100	0	1	CNP 049	95	95				0	95
	Bar bender and cutter (electric)	100	0	1	CNP 021	90	90			Barrier	-10	80
	Concrete lorry mixer	50	-3	1	CNP 044	109	106	CPME#6	103	Barrier	-5	95
	Concrete pump, stationary/lorry mounted	50	-3	1	CNP 047	109	106			Barrier	-10	96
	Generator, standard	100	0	1	CNP 101	108	108	EPD-13462	100	Barrier	-10	90
	Poker, vibratory, hand-held	50	-3	1	CNP 170	113	110	CPME#4	102	Barrier	-10	89
	Lorry	50	-3	1	CNP 141	112	109	CPME#5	105	Barrier	-5	97
	Hoist, passenger/material (electric)	100	0	1	CNP 122	95	95				0	95
Total SWL							115				Total SWL	103
Landside Construction of Superstructure (Workfront B)	Crane, tower	100	0	2	CNP 049	95	98				0	98
	Bar bender and cutter (electric)	100	0	2	CNP 021	90	93			Barrier	-10	83
	Concrete lorry mixer	50	-3	2	CNP 044	109	109	CPME#6	103	Barrier	-5	98
	Concrete pump, stationary/lorry mounted	50	-3	2	CNP 047	109	109			Barrier	-10	99
	Generator, standard	100	0	2	CNP 101	108	111	EPD-13462	100	Barrier	-10	93
	Poker, vibratory, hand-held	50	-3	2	CNP 170	113	113	CPME#4	102	Barrier	-10	92
	Lorry	50	-3	2	CNP 141	112	112	CPME#5	105	Barrier	-5	100
	Hoist, passenger/material (electric)	100	0	2	CNP 122	95	98				0	98
Total SWL							118				Total SWL	106

Note:
[1] Percentage on time within 30 minutes.
[2] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf
[3] PME with code "EPD-XXXXX" are quiet equipment with SWLs extracted from EPD's QPME inventory.

Landside Construction Fitting-out and MEP Installation					Unmitigated			Mitigated					
Activity (Workfront)	PME	% Operating Time ^[1]	Time Correction dB(A)	Units	PME Reference	Single Unit PME dB(A)	Total SWL dB(A)	QPME Reference ^{[2], [3]}	Single Unit QPME dB(A)	Mitigation Measures	Correction dB(A)	Total SWL dB(A)	
Landside Construction Fitting-out and MEP Installation (Workfront A)	Generator, standard	100	0	1	CNP 101	108	108	EPD-13462	100	Barrier	-10	90	
	Drill, hand-held (electric)	100	0	1	CNP 065	98	98			Barrier	-10	88	
	Grinder, hand-held (electric)	100	0	1	CNP 065	98	98			Barrier	-10	88	
	Lorry	50	-3	1	CNP 141	112	109	CPME#5	105	Barrier	-5	97	
	Hoist, passenger/material (electric)	100	0	1	CNP 122	95	95				0	95	
Total SWL							112			Total SWL			100
Landside Construction Fitting-out and MEP Installation (Workfront B)	Generator, standard	100	0	2	CNP 101	108	111	EPD-13462	100	Barrier	-10	93	
	Drill, hand-held (electric)	100	0	2	CNP 065	98	101			Barrier	-10	91	
	Grinder, hand-held (electric)	100	0	2	CNP 065	98	101			Barrier	-10	91	
	Lorry	50	-3	2	CNP 141	112	112	CPME#5	105	Barrier	-5	100	
	Hoist, passenger/material (electric)	100	0	2	CNP 122	95	98				0	98	
Total SWL							115			Total SWL			103

Note:
[1] Percentage on time within 30 minutes.
[2] The SWL of quiet plant with code "CPME#" are based on SWLs of other commonly used PME from https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf
[3] PME with code "EPD-XXXXX" are quiet equipment with SWLs extracted from EPD's QPME inventory.

Appendix 4.2

Construction Programme

	2030												2031											
Construction Activities	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Seaside Marina Construction Pre-drilling Works																								
Seaside Marina Construction Installation of Piles																								
Seaside Marina Construction Installation of floating pontoons and gangway																								
Seaside Marina Construction MEP Installation																								

Note:

1. As only workfront 1 located within 300m from N5 (i.e. Victoria Shanghai Academy), the construction programme for workfront 1 would be commenced in Q1 2030 and finished in Q4 2031. Hence, the quantitative construction noise impact assessment would be for these period. The construction work under Expansion of ATS and Ocean Park “Adventure Zone” Development would be completed in Q4 2029 and Q2 2028 respectively. Hence, cumulative impact from these projects is not anticipated. For the planned development at Po Chong Wan Temporary Industrial Area, it is anticipated that to be completed by Q2 2031, site formation and piling works are anticipated to be completed in before 2030. Only superstructure works (i.e. podium, residential towers), fitting our and MEP installation would be carried out during Q1 2030 – Q4 2031. Hence, cumulative impact from these concurrent construction activities under the planned development at Po Chong Wan Temporary Industrial Area would be assessed.

Appendix 4.3

Construction Noise Impact Assessment

Title : Construction Noise Calculation

Proposed Seaside Development	SWL	2030												2031											
	Max	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
<u>Seaside Marina Construction Pre-drilling Works</u>																									
Seaside Marina Construction Pre-drilling Works (Workfront 1)	117	117	117	117	117																				
<u>Seaside Marina Construction Installation of Piles</u>																									
Seaside Marina Construction Installation of Piles (Workfront 1)	117					117	117	117	117	117	117	117	117	117	117										
<u>Seaside Marina Construction Installation of floating pontoons and gangway</u>																									
Seaside Marina Construction Installation of floating pontoons and gangway (Workfront 1)	114																114	114	114						
<u>Seaside Marina Construction MEP Installation</u>																									
Seaside Marina Construction MEP Installation (Workfront 1)	115																		115	115	115	115	115	115	

Predicted Construction Noise from the Project, dB(A) ^[1]	SPL	2030												2031											
NSR (NAP)	MAX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
N5 (VSA-1)	64	63	63	63	63	64	64	64	64	64	64	64	64	64	64	64	60	60	64	61	61	61	61	61	

Proposed Landside Development at Po Chong Wan Temporary Industrial Area	SWL	2030												2031											
	Max	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
<u>Landside Construction of Podium</u>																									
Landside Construction of Podium (Workfront A)	105	105	105	105	105	105																			
Landside Construction of Podium (Workfront B)	105	105	105	105	105	105																			
<u>Landside Construction of Superstructure</u>																									
Landside Construction of Superstructure (Workfront A)	103						103	103	103	103	103	103	103	103	103	103	103								
Landside Construction of Superstructure (Workfront B)	106						106	106	106	106	106	106	106	106	106	106	106								
<u>Landside Construction Fitting-out and MEP Installation</u>																									
Landside Construction Fitting-out and MEP Installation (Workfront A)	100												100	100	100	100	100	100	100	100	100	100	100	100	
Landside Construction Fitting-out and MEP Installation (Workfront B)	103												103	103	103	103	103	103	103	103	103	103	103	103	

Predicted Construction Noise from Proposed Landside Development, dB(A) ^[1]	SPL	2030												2031											
NSR (NAP)	MAX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
N5 (VSA-1)	60	60	60	60	60	60	59	59	59	59	59	59	60	60	60	60	60	60	56	56	56	56	56	56	

Predicted Cumulative Construction Noise, dB(A)	SPL	2030												2031											
NSR (NAP)	MAX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
N5 (VSA-1)	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	63	64	62	62	62	62	62	

Note:
[1] Predicted Construction Noise Level (dB(A)) = SWL - 20log(Distance) - 8 + 3 (Façade Correction)

Proposed Seaside Development		
Workfront	Notional Distance Between VSA-1 and Workfront (m) ^[1]	Distance Attenuation, dB(A) ^[2]
Workfront 1	265	-56

Proposed Landside Development		
Workfront	Notional Distance Between VSA-1 and Workfront (m) ^[1]	Distance Attenuation, dB(A) ^[2]
Workfront A	115	-49
Workfront B	220	-55

Note:
[1] Refer to Section 2.7 of GW-TM for the distance between notional source position and receiver.
[2] Refer to Section 2.9 of GW-TM for the distance attenuation.

Appendix 4.4

Fixed Noise Source Plant Inventory

Existing Shipyard Operation - Outdoor / Indoor	Noisy Activities	Equipment	PME Reference	Single PME SWL, dB(A)	Operation Duration, min	Time Correction, dB(A)	Overall SWL, dB(A)
Cleaning of Oyster and Barnacles Shell	Ship Body Cleaning	Water jetting unit	[1]	94	30	0	94
						<u>Total SWL, dB(A)</u>	<u>94</u>
Ship Body Repair	Removing Damaged Section	Circular saw	CNP201	108	10	-5	103
	Drilling Holes	Electric drill	CNP065	98	10	-5	93
	Polishing	Electric grinder	CNP065	98	10	-5	93
	Caulking	Hammer	[2]	87	30	0	87
						<u>Total SWL, dB(A)</u>	<u>104</u>
Replacement of Ship Metal	Removing of Ship Metal	Electric grinder	CNP065	98	10	-5	93
	Cutting of Ship Metal	Circular saw	CNP201	108	30	0	108
	Mounting of Ship Metal	Welding machine	[3]	80	10	-5	75
						<u>Total SWL, dB(A)</u>	<u>108</u>
Replacement of Propeller shaft	Mounting of Screw	Hammer	[2]	87	10	-5	82
	Demounting of Screw	Hammer	[2]	87	10	-5	82
						<u>Total SWL, dB(A)</u>	<u>85</u>
Ship Deck Repair	Removing Damaged Section	Circular saw	CNP201	108	10	-5	103
	Drilling Holes	Electric drill	CNP065	98	10	-5	93
	Polishing	Electric grinder	CNP065	98	10	-5	93
						<u>Total SWL, dB(A)</u>	<u>104</u>
Fixing and Manufacturing of Spare Parts	Grinding of propeller	Electric grinder	CNP065	98	30	0	98
	Polishing	Electric grinder	CNP065	98	30	0	98
	Drilling	Electric drill	CNP065	98	30	0	98
	Lathing	Lathe	[4]	92	30	0	92
						<u>Total SWL, dB(A)</u>	<u>103</u>
						<u>Max SWL, dB(A) ^[5]</u>	<u>108</u>

Boat Repair and Maintenance Workshop Operation - Outdoor	Noisy Activities	Equipment	PME Reference	Single PME SWL, dB(A)	Operation Duration, min	Time Correction, dB(A)	Overall SWL, dB(A)
Lifting of ship	Travel Lift	Lifting crane	CNP049	95	15	-3	92
Desludging services	Pump-out system	Electric pump	CNP 281	88	30	0	88
						<u>Total SWL, dB(A)</u>	<u>93</u>
						<u>Max SWL, dB(A)</u>	<u>93</u>

Boat Repair and Maintenance Workshop Operation - Indoor	Noisy Activities	Equipment	PME Reference	Single PME SWL, dB(A)	Operation Duration, min	Time Correction, dB(A)	Overall SWL, dB(A)
Hull cleaning / washing	Ship Body Cleaning	Water jetting unit	[1]	94	30	0	94
						<u>Total SWL, dB(A)</u>	<u>94</u>
Replacement and Maintence of Ship	Removing of Ship Metal	Electric grinder	CNP065	98	10	-5	93
	Mounting of Ship Metal	Welding machine	[3]	80	10	-5	75
	Minor Metal Fabrication	Hammer	[2]	87	10	-5	82
						<u>Total SWL, dB(A)</u>	<u>94</u>
Plumbing and resupply	Plumbing	Electric pump	CNP281	88	30	0	88
						<u>Total SWL, dB(A)</u>	<u>88</u>
						<u>Max SWL, dB(A) ^[5]</u>	<u>94</u>

Notes:
[1] Refer to Water jetting unit (electric) under “Sound power levels of other commonly used PME”
(https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf)
[2] Refer to Hammering in Approved EIA for Development at San Hing Road and Hong Po Road, Tuen Mun (AEIAR-227/2020)
(https://www.epd.gov.hk/eia/files/applications/en/pp_299/eia_1916/progress/action_1729/EIA/04%20APPENDICES/App5.5_0.pdf)
[3] Refer to Welding machine under “Sound power levels of other commonly used PME”
(https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLs_eng.pdf)
[4] Refer to Wheel Lathe Machine (AB22) in Approved EIA for Siu Ho Wan Station and Siu Ho Wan Depot Replanning Works (AEIAR-214/2017)
(https://www.epd.gov.hk/eia/files/applications/en/pp_296/eia_1896/progress/action_1831/EIA/Appendices/04%20-%20Noise/Appendix%204.13%20Fixed%20plant%20noise%20measurement_r3.pdf)
[5] The operation will be conducted in sequence and will not happen at the same time. Therefore, the maximum SWL is adopted as a conservative assessment.

Appendix 4.5

Fixed Noise Sources Impact Assessment

NAP	Sources ^[1,2,3]	Max SWL, dB(A)	Horizontal Dist. to NAP, m	Correction, dB(A)			Predicted Noise Level, dB(A)	Predicted Noise Level for Planned Noise Sources, dB(A)	Noise Criteria for Planned Noise Sources, dB(A)	Cumulative Predicted Noise Level, dB(A)	Noise Criteria ^[4] , dB(A)	Compliance (Y/N)
				Distance	Screening	Façade						
VSA-1	Existing shipyard - Outdoor (#14)	108	220	-55	0	3	56	44	59	70	70	Y
	Existing shipyard - Outdoor (#15)	108	205	-54	0	3	57					
	Existing shipyard - Outdoor (#16)	108	190	-54	0	3	57					
	Existing shipyard - Outdoor (#25)	108	90	-47	0	3	64					
	Existing shipyard - Indoor (#26)	108	20	-34	-10	3	67					
	Existing shipyard - Indoor (#27-29) ^[5]	108	30	-38	-10	3	63					
	Boat Repair and Maintenance Workshop - Outdoor	93	175	-53	0	3	43					
	Boat Repair and Maintenance Workshop - Indoor	94	175	-53	-10	3	34					
T2-1	Existing shipyard - Outdoor (#14)	108	330	-58	0	3	- [6]	59	59	63	70	Y
	Existing shipyard - Outdoor (#15)	108	315	-58	0	3	- [6]					
	Existing shipyard - Outdoor (#16)	108	300	-58	0	3	53					
	Existing shipyard - Outdoor (#25)	108	215	-55	0	3	56					
	Existing shipyard - Indoor (#26)	108	150	-52	-10	3	49					
	Existing shipyard - Indoor (#27-29) ^[5]	108	80	-46	-10	3	55					
	Boat Repair and Maintenance Workshop - Outdoor	93	30	-38	0	3	58					
	Boat Repair and Maintenance Workshop - Indoor	94	25	-36	-10	3	51					

Note:

[1] According to the site visit, the shipyards located at 17 - 24 Shum Wan Road have been demolished.

[2] The shipyards do not operate simultaneously and their operations occur periodically. Considering that all shipyards are operating simultaneously as the worst-case scenario.

[3] (#xx) denotes the house number on Shum Wan Road.

[4] Day and evening time noise criterion only as there is no operation during nighttime.

[5] Hop Hing Sum Kee Shipyard Limited owns 27 - 29 Shum Wan Road, so it is regarded as a single shipyard.

[6] As the existing shipyard is located outside 300m assessment area of NAP, it would not be considered in the assessment.

Appendix 4.6

Marine Traffic Noise Methodology

Predicted Noise Levels

The 1-hour equivalent continuous noise levels ($L_{eq,1hr}$) for passby of vessels will be predicted at representative NSRs to assess the marine traffic noise. The predicted noise level at the NAP for each marine vessel based on acoustic principle is given by:

$$L_{eq,1hr} = SEL_{25m} + 10 \log_{10} N - 20 \log_{10} \left(\frac{d}{25} \right) - 10 \log_{10} T + FC$$

where,

$L_{eq,1hr}$ Predicted marine traffic noise, dB(A)

SEL_{25m} the SEL at 25m and reference speed of 5knots/hr, dB(A)

N number of marine vessel passby per hour

d the perpendicular distance between marine vessel along the notional vessel track and NAP, m

T time period under consideration, 1hr (i.e. 3600s)

FC façade correction, +3dB(A)

Appendix 4.7

Marine Traffic Noise Assessment

Project Name: Agreement No. CE26/2025 (CE) Study on Marina Development at the Expansion Area of Aberdeen Typhoon Shelter - Feasibility Study
Tilte: Marine Traffic Noise Calculation

NAP	Route	Vessel Category	No. of vessels	SEL at 25m, dB(A)	Separation Distance, m	Correction, dB(A)				Predicted L _{eq 1hr} for each route, dB(A)	Predicted Overall L _{eq 1hr} , dB(A)	Prevailing Noise Level, dB(A)
						No. of vessel	Distance	Time	Façade			
L1-1	1	Small Craft	5	82	65	7	-8	-36	3	48	49	59
		Domestic Ferry	1	84	65	0	-8	-36	3	43		
	2	Small Craft	2	82	250	3	-20	-36	3	32		
	3	Small Craft	2	82	260	3	-20	-36	3	32		
	4	Small Craft	5	82	335	7	-23	-36	3	- [1]		
	5	Small Craft	1	82	365	0	-23	-36	3	- [1]		
	6	Small Craft	1	82	420	0	-25	-36	3	- [1]		
	7	Small Craft	1	82	485	0	-26	-36	3	- [1]		
	8	Small Craft	1	82	575	0	-27	-36	3	- [1]		
	9	Small Craft	8	82	590	9	-27	-36	3	- [1]		
	10	Small Craft	2	82	680	3	-29	-36	3	- [1]		
T2-1	1	Small Craft	5	82	355	7	-23	-36	3	- [1]	47	59
		Domestic Ferry	1	84	355	0	-23	-36	3	- [1]		
	2	Small Craft	2	82	50	3	-6	-36	3	46		
	3	Small Craft	2	82	190	3	-18	-36	3	35		
	4	Small Craft	5	82	330	7	-22	-36	3	- [1]		
	5	Small Craft	1	82	240	0	-20	-36	3	30		
	6	Small Craft	1	82	290	0	-21	-36	3	28		
	7	Small Craft	1	82	340	0	-23	-36	3	- [1]		
	8	Small Craft	1	82	395	0	-24	-36	3	- [1]		
	9	Small Craft	8	82	460	9	-25	-36	3	- [1]		
	10	Small Craft	2	82	430	3	-25	-36	3	- [1]		

Note:
[1] As the vessel is located outside 300m assessment area of NAP, it would not be considered in the assessment.