Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Contract No. HY/2012/08

PLAN

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Document Title:

REGULAR MARINE TRAVEL ROUTES PLAN
with
Vessel Speed Limit and Restriction Specification

	PREPARED BY:	INTERNAL REVIEW:			INTERNAL APPROVAL
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SIGNATURE					
DATE	7 Oct 2013	7/10/13	7/10/2013	7/10/13	7/10/13

(I) DOCUMENT STATUS

Details of Revision:

Revision	Rev. Date	Sections	Amendment Source and/or Details
A	28 Aug 2013	All	Issued for Approval
B	23 Sep 2013	All	Revised for Approval
C	4 Oct 2013	2,3.5	2 – update figure 5 & 6, 3.5 – update part (vii) & (viii)

Status of Page Revision:

Rev. ⇨ Section ⇩	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	X	X																			
2	X	X	X																		
3	X	X																			
3.1	X	X																			
3.2	X	X																			
3.3	X	X																			
3.4	X	X																			
3.5	X	X	X																		
3.6	X	X																			
3.7	X	X																			
3.8	X	X																			

Rev. ⇨ Section ⇩	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Appendix A	X	X																			
Appendix B	X	X																			
Appendix C	X	X																			
Appendix D	X	X																			
Appendix E	X	X																			

(II) PROJECT DETAILS

Contract no.	:	HY/2012/08
Project Title	:	Tuen Mun – Chek Lap Kok Link, Northern Connection Sub-Sea Tunnel Section
Contract Period	:	From 31st July 2013 to 25th October 2018
The Client	:	Government of Hong Kong Special Administration Region – Highways Department
The Supervising Officer	:	AECOM Asia Company Limited
The Main Contractor	:	Dragages - Bouygues Joint Venture
Nature of Work	:	The design and/or construction for the section of TM-CLKL between Tuen Mun Area 40 and the HKBCF, include the following scope of work:

(i) Design and construction of sub-sea TBM tunnels (two tubes with cross passages) across the Urmston Road, connecting Tuen Mun Area 40 and HKBCF, of approximately 4 km in length with dual 2-lane carriageway;

(ii) Design and construction of cut-and-cover tunnels (two boxes with cross passages) at both the southern landfall and the northern landfall for construction of approach roads to the sub-sea TBM tunnels, of approximately 1.5km in length;

(iii) Construction of northern landfall reclamation of approximately 16.5 hectares and about 2.0km long seawalls;

(iv) Design and construction of ventilation buildings at the southern and northern landfalls;

(v) Design and construction of at-grade roads at the southern and northern landfalls;

(vi) Construction of extension of the existing 4-cell box culvert adjacent to RTT;

(vii) Provision of a temporary pontoon for the affected existing Government berths at RTT;

(viii) Design and construction for modification of a section of vertical seawall of approximately 220m in length at the southern landfall to sloping seawall;

(ix) Design and construction of associated civil, structural, building, geotechnical, marine, environmental protection, drainage and sewerage, waterworks and utility works;

(x) Design and construction of advance SEM provisions to facilitate installation of E&M, TCSS and other utilities including tunnel ventilation, tunnel lighting, tunnel fire services, mechanical ventilation & air- conditioning, high voltage power supply, low voltage power supply, fire services, plumbing & drainage, central monitoring & control system and implementation of an EM&A programme for the works under this Contract.

(III) SITE LAYOUT PLAN

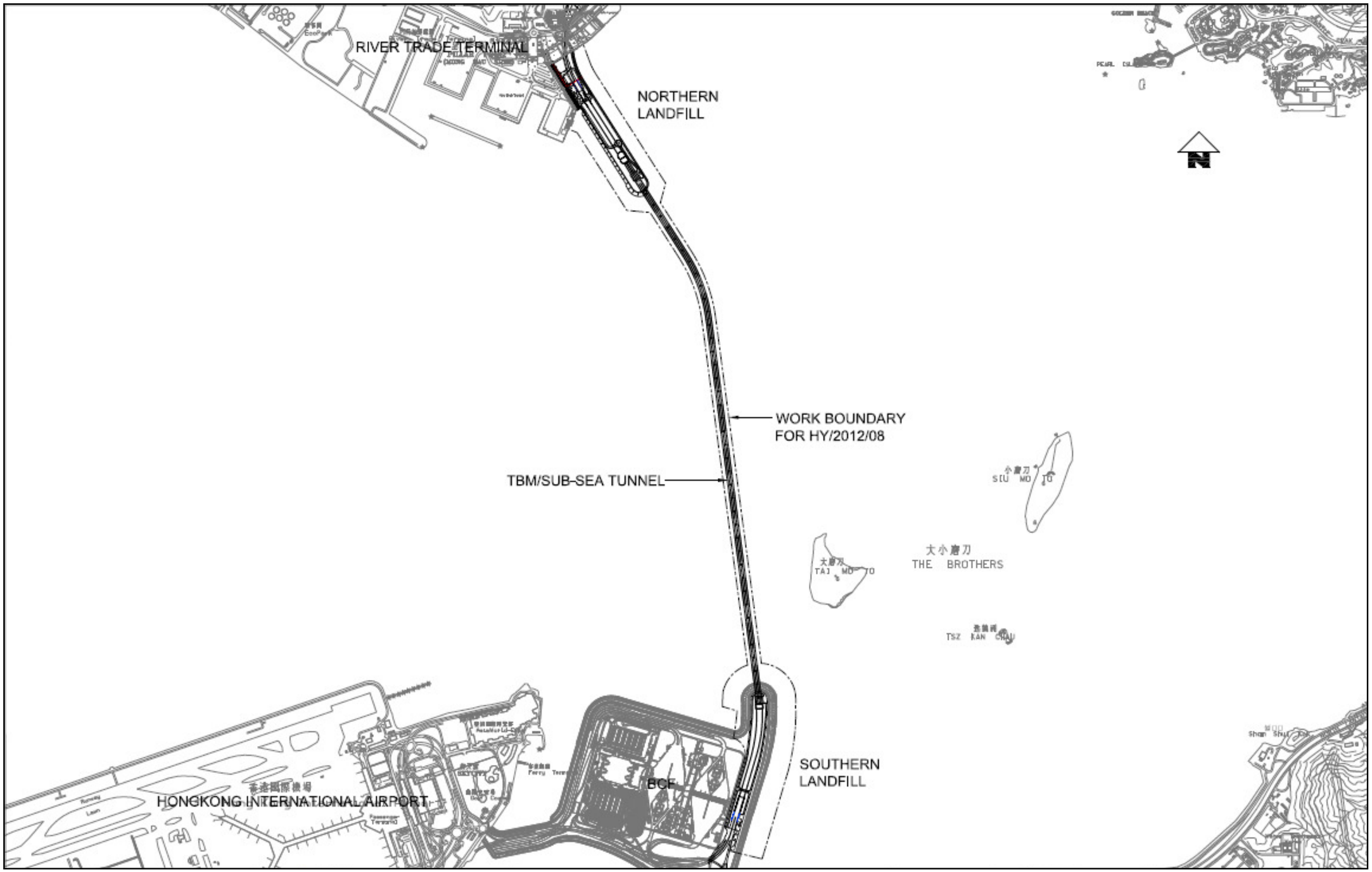

Figure 1 – HY/2012/08 Project Sites

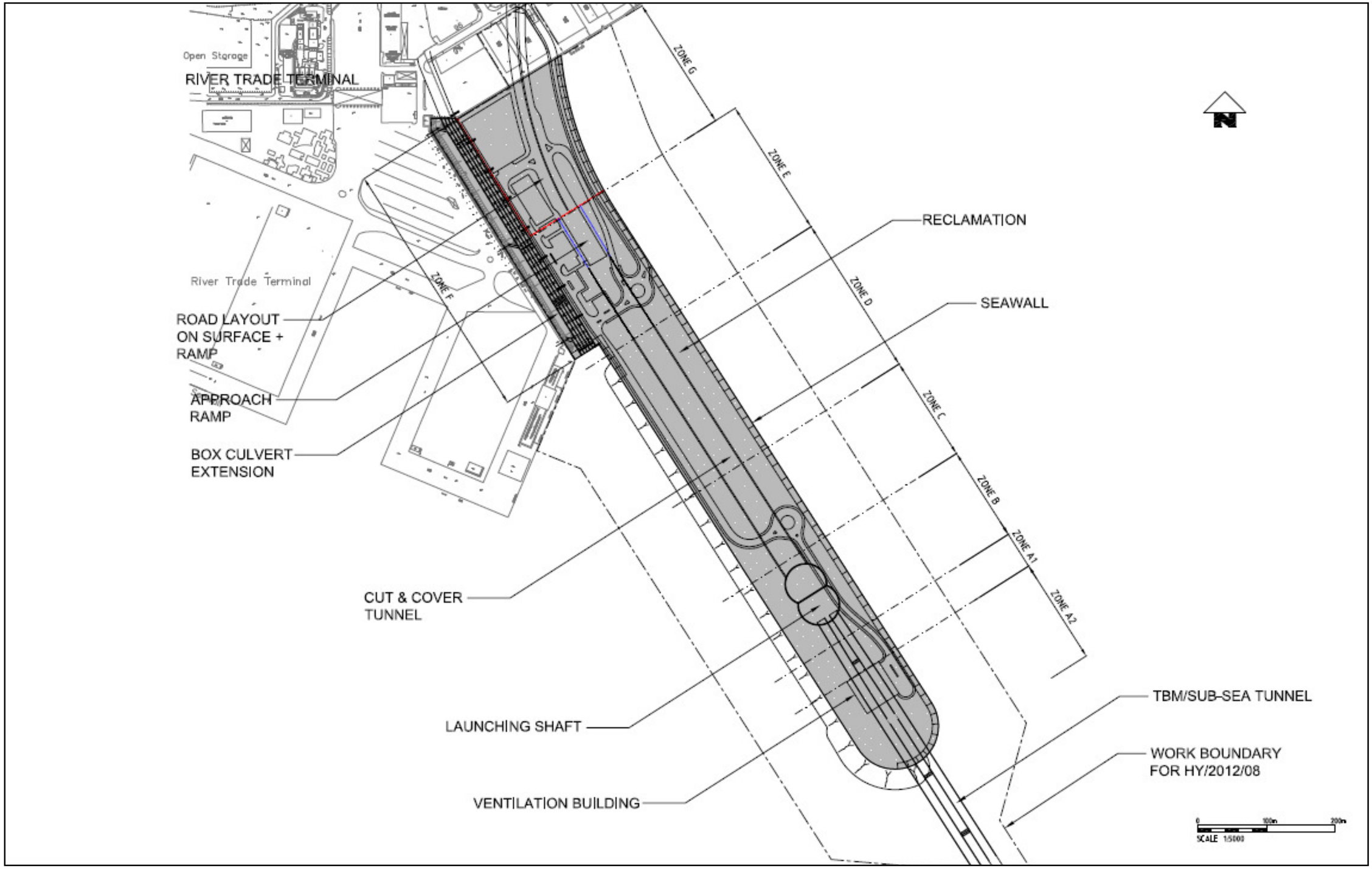

Figure 2 – Northern Landfall Site

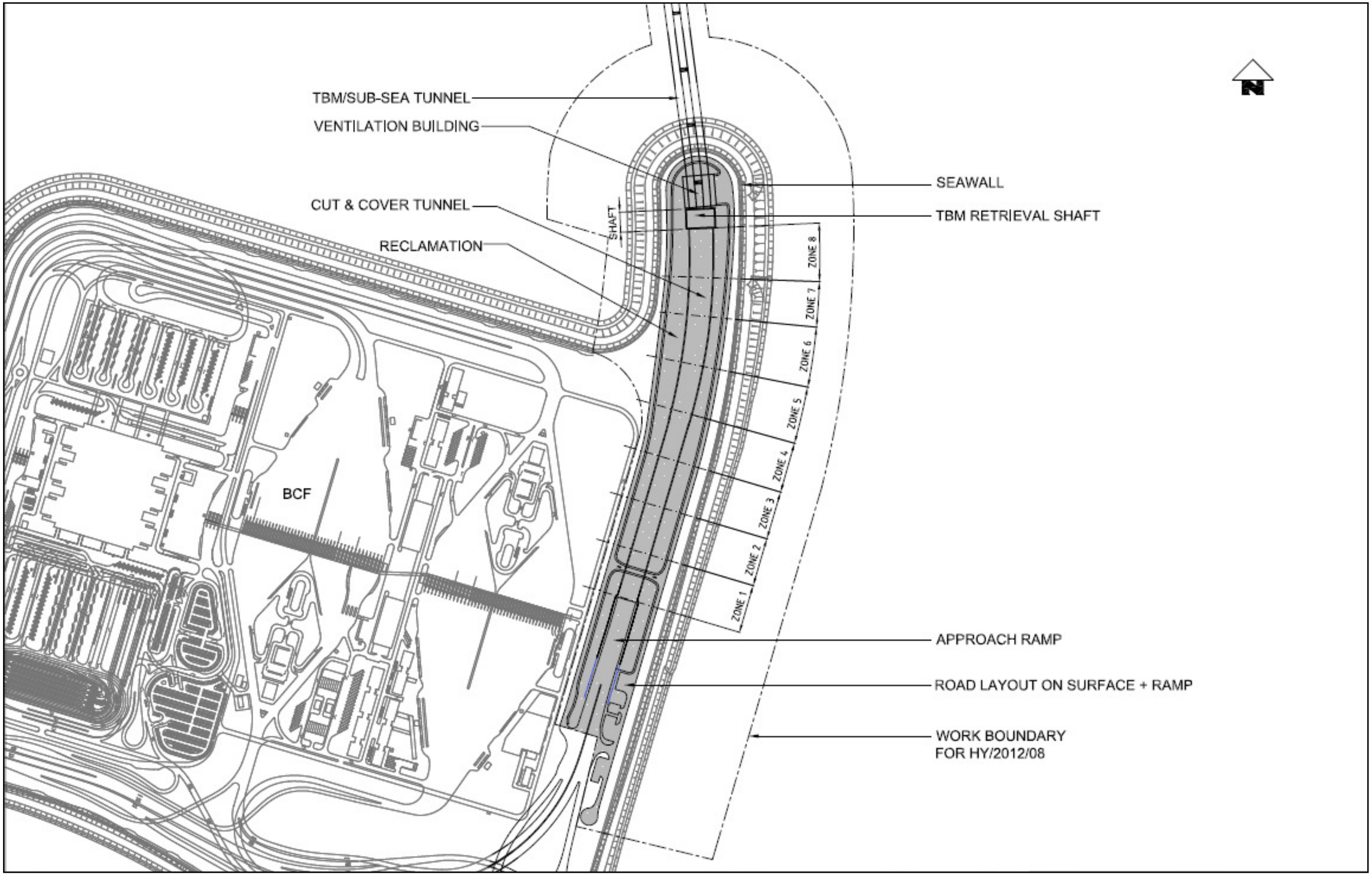

Figure 3 – Southern Landfall Site

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APPENDICES

FIGURES

1. INTRODUCTION

(i) The Tuen Mun – Chek Lap Kong Link serves to connect Tuen Mun with the Chek Lap Kok and the Hong Kong - Zhuhai - Macau Bridge.

(ii) Highways Department has awarded this Contract to Dragages – Bouygues Joint Venture. Project details are given in Section II above. The Contract scope is depicted in Figures 1, 2 and 3.

(iii) This plan is prepared in accordance with Condition 2.8 of the Environmental Permit (EP-354/2009/A), which requires the Permit Holder to submit to the Director of Environmental Protection a plan showing the regular marine travel routes of vessels moving to and from the Project Site.

(iv) Referring to the Environmental Impact Assessment (EIA) report, Clause 8.11.9.33, the TM-CLKL project area is heavily used by Chinese White Dolphins and that the nearby Brothers Islands/Sham Shui Kok areas are critical dolphin habitats (**Figure 4**). To minimize the chance of vessel collision and the disturbance of the Chinese White Dolphins, Condition 2.8 of the Environmental Permit EP-354/2009/A requires the Permit Holder to submit to the Director of Environmental Protection the design and implementation of a plan showing the regular marine travel routes of vessels moving to and from the Project site. Any subsequent changes to the regular routes shall be verified by the IEC as conforming to the requirements in the EIA Report and deposited with the Director of Environmental Protection.

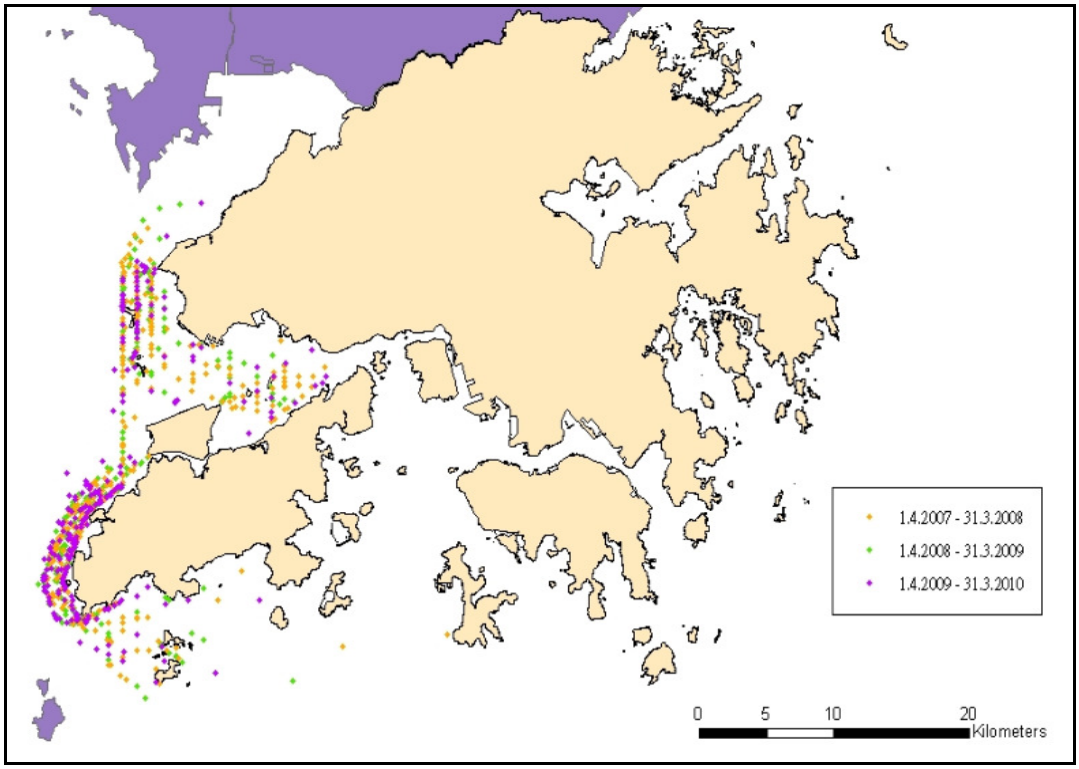


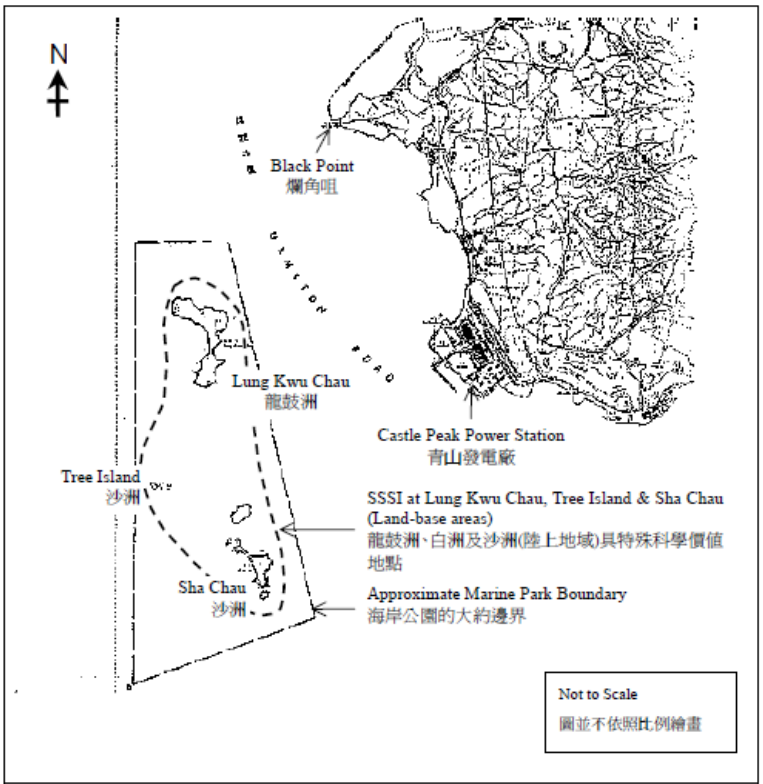
Figure 4 – Critical Habitat of CWD in Hong Kong (Extracted from AFCD website)
(http://www.afcd.gov.hk/english/conservation/con_mar/con_mar_chi/con_mar_chi_chi/con_mar_chi_chi.html)

2. MARINE PARKS AND EXCLUSION ZONES

(i) Under the Marine Park Ordinance, four marine parks and one marine reserve has been established in Hong Kong. They are:

- Hoi Ha Wan Marine Park, north of Sai Kung;
- Yan Chau Tong Marine Park, north-east of Hong Kong New Territories;
- Sha Chau and Lung Kwu Chau Marine Park, west of Tuen Mun across the Urmston Road navigation channel;
- Tung Ping Chau Marine Park, an island east of the east-most parts of Hong Kong;
- Cape D'Aguilar Marine Peserve to the South Eastern corner of Hong Kong Island.

(ii) The marine park closest to the TM-CLKL Project is the Sha Chau and Lung Kwu Chau Marine Park (**Figures 5 and 6**), west of Tuen Mun across the Urmston Road navigation channel. Three island groups lie within the 1200 hectares of marine park area. They are Lung Kwu Chau, Sha Chau and Pak Chau.



Location of the Sha Chau & Lung Kwu Chau Marine Park and the Site of Scientific Interest (SSSI) at Lung Kwu Chau, Tree Island & Sha Chau

沙洲及龍鼓洲海岸公園的位置圖及位於龍鼓洲、白洲及沙洲具特殊科學價值的地點

Figure 5 – Location of the Sha Chau and Lung Kwu Chau Marine Park, West of Tuen Mun (Extracted from EPD website http://www.epd.gov.hk/eia/register/study/latest/figures/esb054-f2.pdf**)**

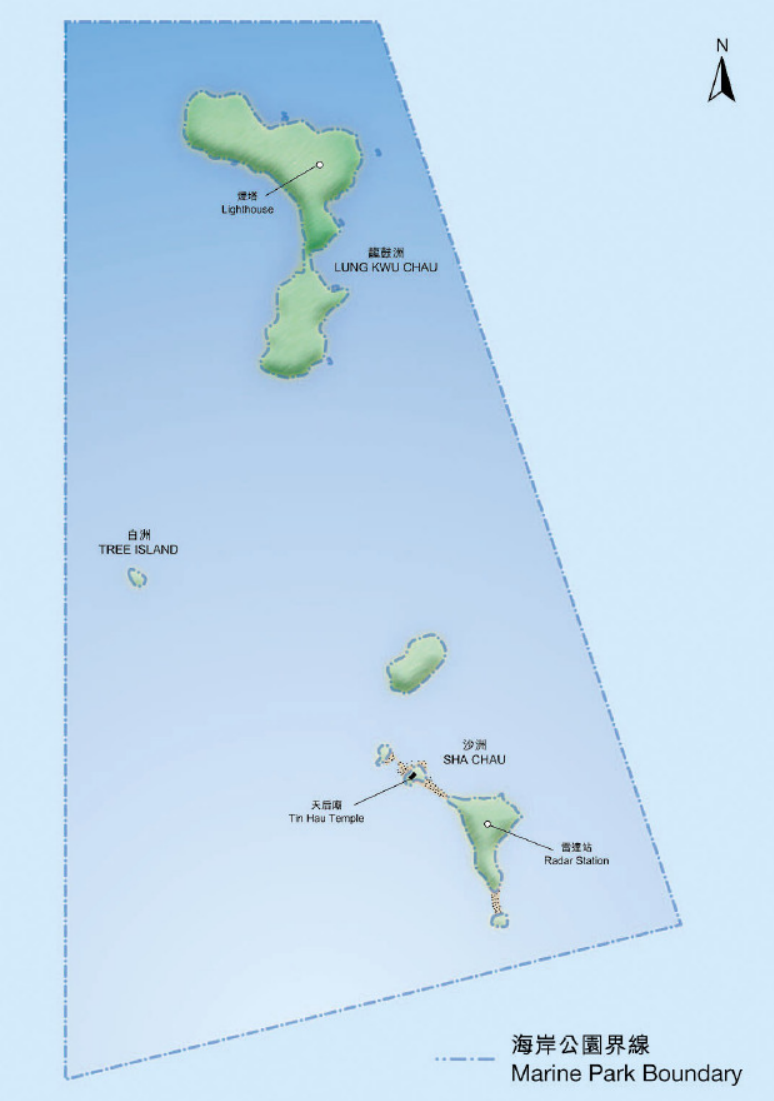


Figure 6 – Image of the Boundary of Sha Chau and Lung Kwu Chau Marine Park, West of Tuen Mun (Zoomed Up) (Extracted from AFCD website http://www.afcd.gov.hk/english/country/cou_vis/cou_vis_mar/cou_vis_mar_des/cou_vis_mar_des_sha.html**)**

(iii) The proposed marine park in the Brothers Islands (BIMP) (**Appendix C**) lies just east of the Southern Landfall (**Figures 1 and 3**). It lies in the path of marine traffic travelling to the waterways south of the Brothers, which includes the South of Brothers Mud Pit.

(iv) Latest available marine mammal monitoring data from Agricultural, Fisheries and Conservation Department will be used as reference information to align the marine travel routes of this Contract. The primary goal is to avoid dolphin hotspots such as the Brothers Islands as far as practicable. When it is not possible to avoid these sensitive areas, precautions shall be implemented, such as choosing the less impact route and travelling at further reduced speed.

3. DESIGN OF REGULAR MARINE TRAVEL ROUTES

3.1. Types of Working Vessels

(i) For the HY/2012/08 Contract, there will be no specialized marine vessels used. As the marine dredging and reclamation works are of relatively small scale compared with the other HZMB construction contracts, the equipment used are of generic types readily available for hire. In following other approved Regular Marine Travel Route Plan format, the vessels are classified into the following categories, with details given within these groupings:

a. Group A: Non-self-propelled Working Fleet in the vicinity of the Northern Landfall Site

The working fleets in this category include derrick barges and flat-top barges. The reclamation is too small to engage customized vessels. Tub boats and anchor boats will be used to tow and to assist the positioning and anchoring. As these work fleets will station mainly within the Northern Landfall site and the maneuvering or positioning will be carried out in slow speed, the potential impact to CWD will be low.

b. Group B: Self-propelled Working Fleet in the vicinity of the Northern Landfall Site

The working fleets in this category include tug boats, grab dredger, passenger boats, sampan and pelican barges. As the construction activities are mainly carried out in the vicinity of the Northern Landfall and since most of the working fleet will be slow moving (around 5 knots to 10 knots), traffic disturbance or collision risk to CWD will be low. Passenger boats, sampan and pelican barges are mainly for labour transportation, therefore, the impact to CWD is small.

c. Group C: Delivery of material to and from the Northern Landfall Site

The working fleets in this classification include tug boats, hopper barge and sand barge, which may or may not be directly carrying out construction works (e.g. engineering supervision vessels). Hopper barge and sand barge are used for the delivery of dredging materials in and out of the site. The frequency of transportation is intermittent. Thus, the traffic disturbance or collision risk to CWD will be low.

3.2. Details of Working Vessels

3.2.1. Derrick Barge

(i) Derrick barges (**Figure 7**) are barge mounted cranes, used for the lifting, moving and lowering of heavy objects such as large stones for rock armoring around the seawall (i.e. marine version of lorry cranes). Lighter lifting includes geotextile sheets, silt curtains, etc. They will primarily stay at the Northern Landfall (**Figure 2**) during the dredging and reclamation works, but will serve to transport materials between sites.

(ii) During the TBM tunneling construction period starting 2015, the majority of lifting will be carried out by land-based cranes, but some derrick barges will be used for the delivery and offloading of precast concrete segments to the Northern Landfall (**Figure 2**). Further details will be updated at least one month before TBM works start.

(iii) The Southern Landfall will be reclaimed by others. The completed reclamation has not yet been handed over to the HY/2013/08 Contract and will not be for a few years-time. When handed over, it is envisaged that there will be some rock armoring works and such, where derrick barges will be needed for the delivery and lifting of materials, likely from 2016 to 2018. Details will be updated at least one month before Southern Landfall (**Figure 3**) works start.

Vessel Details	Photo
Length Overall (LOA): 50m Breadth: 20m Air Draft: 38m	

Figure 7 – Derrick Barge Information

3.2.2. Tug Boat

(i) Tug boats (**Figure 8**) are used to tow and push barges and marine platforms that do not have the ability of self-propulsion. Some large barges with self-propulsion may not be able to negotiate tight waterways or to maneuver precisely. Tug boats will help to position such barges to exact GPS coordinates. For example, they are used for accompanying barges to marine sediment disposal facilities during the Northern Landfall reclamation works, which is planned to be completed before the end of 2014.

(ii) After the completion of the reclamation of the Northern Landfall, there will be no envisaged marine sediment disposal to marine disposal sites. Some tug boats may still be used for aiding large vessels maneuvering.

(iii) Tug boats are accompanying vessels for various activities. They do not have their own regular travel routes. They will use the existing fairways (**Appendix A**) when travelling to and from the site for work.

Vessel Details	Photo
Nominal 850 hp	

Figure 8 – Tug Boat Information

3.2.3. Hopper Barge

(i) Hopper barges (**Figure 9**) are used to carry loose materials such as sand, stone, rock, public fill, marine sediments and the like to and from the site. They may be self-propelled or not. Generally, they are accompanied by tug boats when making deliveries, especially when delivering marine sediments to allocated disposal sites.

(ii) Hopper barges are primarily used for the Northern Landfall dredging and reclamation phase of the works (**Figure 2**), for bringing fill materials for the reclamation site and removing marine sediments from the site. They are not envisaged to be used during the sub-sea TBM tunnel works or the Southern Landfall works, as they do not encompass dredging and reclamation works for the HY/2012/08 Contract.

(iii) As these vessels carry different materials from various sources and to various recipient sites, they travel different regular marine travel routes (**Appendix B**) depending on the type of load they are carrying at the time.

Vessel Details	Photo
Nominal 1000m^3 Capacity Length Overall (LOA):: 50 m Breadth: 13m Air Draft: Max. 12m	

Figure 9 – Hopper Barge Information

3.2.4. Flat Top Barge

(i) Flat top barges (**Figure 10**) are floating stationary working platforms. They may be self-propelled or not. Generally, they are assisted by tug boats when maneuvering to various GPS coordinates to carry out their works.

(ii) Since no land-site is available until the reclamation of the Northern Landfall (**Figure 2**) is completed in a year's time, these flat top barges are necessary for the placing and assembly of components. They will be used as working platforms for installation of concrete blocks, temporary seawall and the like.

(iii) Flat top barges are primarily used for the Northern Landfall dredging and reclamation phase of the works (**Figure 2**).

(iv) As these vessels will remain in the works area of the Northern Landfall (**Figure 2**), they do not have an associated regular marine travel route. Delivery of these vessels to site will be from the existing fairways. They will stay at the site for the period of their works and demobilized via the existing fairways.

Vessel Details	Photo
Length Overall (LOA): 49.64 m Breadth: 20.74m Air Draft: Max. 15m	

Figure 10 – Flat Top Barge Information

3.2.5. Grab Dredger

(i) Grab dredgers (**Figure 11**) are floating stationary working platforms. They may be self-propelled or not. Generally, they are assisted by tug boats when maneuvering to various GPS coordinates to carry out their works.

(ii) Grab dredgers are primarily used for the Northern Landfall (**Figure 2**) dredging and reclamation phase of the works.

(iii) There are no dredging and reclamation works for the sub-sea TBM tunnel (**Figure 1**) and the Southern Landfall (**Figure 3**), under Contract HY/2012/08. Grab dredgers will not be employed at these project sites.

(iv) As these vessels will remain in the works area of the Northern Landfall (**Figure 2**), they do not have an associated regular marine travel route. Delivery of these vessels to site will be from the existing fairways. They will stay at the site for the period of their works and demobilized via the existing fairways.

Vessel Details	Photo
Length Overall (LOA): 44.32 m Breadth: 18m	

Figure 11 – Grab Dredgers Information

3.2.6. Sand Barge

(i) Sand barges (**Figure 12**) are slow-moving barges for sand storage and transportation. Sand barges are primarily used for the Northern Landfall (**Figure 2**) dredging and reclamation phase of the works. They bring sand from the mainland to Hong Kong through the Urmston Road fairway. Generally, they will avoid the marine parks and dolphin habitats.

Vessel Details	Photo
Nominal 1000m^3 capacity	

Figure 12 – Sand Barges Information

3.2.7. Motor Sampan

(i) Motor sampans (**Figure 13**) are utility vehicles. They are motor boats for miscellaneous supporting works such as carrying supervision and workers to and from working vessels, Carrying supervision teams to conduct supervision and inspection works, carrying out water sampling for environmental purposes, carrying out surveying works, etc.

(ii) In travelling between construction sites (**Figures 1, 2 and 3**) and external locations, these vessels will take the existing fairways.

Vessel Details	Photo
Max. 7 Passengers	

Figure 13 – Motor Sampan Information

3.3. Safe Navigation

(i) The licensed captain is the person responsible for the safety of his ship, crew and passengers. As well he is responsible for the adherence of marine traffic rules, such as to ensure the safety of the crews and passengers of ships that may be affected by his vessel.

(ii) The captain has the obligation to vary the marine travel route to suit special situations such as poor visibility, adverse weather (e.g. Typhoon Signal 3 or above), special closures of routes due to fireworks and special events, avoidance of collisions with other vessels and dolphins, avoidance of shallow water and ship stranding, etc.

(iii) When merging with fast travelling traffic in routes such as the Urmston Road, the captain has the obligation to accelerate or avoid appropriately so as to avoid collision.

(iv) When slowing from a fast moving travel route to lower speed zones, the captain shall make sure that there is sufficient distance to do so and to take action to avoid collision.

3.4. Speed Limit and Restriction Specification

(i) Section 8.11.9.31 of the Environmental Impact Assessment Report for TM-CLKL expressed three aspects about the effect of vessel traffic on Chinese White Dolphins. These are:

a. High speed vessels (generally those over 20 – 25 knots) travelling through dolphin habitat can cause impact because small mammals are not always able to get out of the way.

b. Dolphins stay out of the paths of vessels. In other words, they tend to stay away from existing fairways (Appendix A).

c. Vessels deliberately following dolphins (e.g. observation vessels) will harass and disturb small dolphins, causing stress and ill health.

(ii) Section 8.11.9.34 of the EIA Report considers that construction vessels will be largely slow-moving barges, dredgers and crewed-boats not engaged as dolphin observation vessels. These vessels are not expected to have a serious impact on dolphin behaviors. Nevertheless, Section 8.11.9.34 of the EIA Report raises the concern of potential dolphin injury/mortality from construction phase vessel traffic.

(iii) Vessel speed limit and restriction specification is therefore needed, as expressed in Section 8.14.4.15 of the EIA Report. The temporary mitigation measures of vessel speed limits and predefined and regular routes are only proposed for construction vessels during the construction phase within the works areas. Its implementation should only be enforced by the Contractor and applied to their vessels engaged in the construction works under contract agreement.

(iv) Section 8.14.4.14 of the EIA Report requires that a speed limit of 10 knots be observed within the works area where Chinese White Dolphins (CWD) are likely to occur, namely

all areas north and west of Lantau Island. It considers that this speed limit within the boundaries of the Sha Chau and Lung Kwu Chau Marine Park appears to be effective in protecting the CWD from vessel collision and acoustic disturbance. Condition 3.4 of the Environmental Permit (EP-354/2009/A) goes on to specify that all vessels within the work areas shall not travel at a speed higher than 10 knots. Other than references to the EIA and EP specified limit, there are no other contract specific specification as to a more stringent speed limit is apparent, such that the 10 knots speed limit is the definitive speed limit for construction vessels inside construction works areas.

(v) The speed limit rules are listed below:

a. If dolphins are observed in the 250m exclusion zone (**Appendix E**) of the Northern Landfall (**Figure 2**), the relevant part of the works shall be delayed until they have left the area;

b. If dolphins are observed within the exclusion zone (**Appendix E**) during dredging, reclamation or sheet piling works (**Figure 2**), the relevant part of the works shall cease until the dolphins have left the site;

c. Adhere to traffic speed, rules and safe practices of existing fairways;

d. It is unavoidable to enter the edge of Marine Park when the vessels go through the Southern Landfall. During this situation, the vessels must keep a 5 knots speed limit within the edges of the proposed BIMP location (**Appendix C**), without compromising Rule c;

e. Keep a 5 knot maximum speed limit at all other HY/2012/08 marine work sites, without compromising Rules c and d; and

f. If any dolphins are sighted within 250m of a vessel outside works areas, then the vessel shall slow to a speed no greater than 5 knots for at least 3 minutes after the last sighting, but without compromising Rule 3;

3.5. Regular Marine Travel Routes

(i) The regular marine travel routes are presented in the following drawings:

- Appendix A: Existing Fairways
- Appendix B: Routes for Import of Reclamation Materials
- Appendix C: Export Routes to Marine Sediment Disposal Sites
- Appendix D: Working Vessels Anchorage Points During Typhoon Signal No., 3 or above

(ii) Section 8.11.9.31 of the Environmental Impact Assessment Report for TM-CLKL considers that dolphins stay away from paths of vessels. In other words, they tend to stay away from existing fairways (**Appendix A**), which includes Hung Hom Fairway, Central Fairway, Central Fairway, Northern Fairway, Ma Wan Fairway and Urmstron Road.

(iii) Section 8.11.9.32 of the EIA Report considers that construction vessels will be largely slow-moving barges, dredgers and crewed-boats not engaged as dolphin observation vessels. These vessels are not expected to have a serious impact on dolphin behaviors.

(iv) Condition 3.7(b) of the Environmental Permit (EP-354/2009/A) has limited the maximum daily marine sediment export by limiting the dredging to one grab dredger operating at a daily rate of 7,200m^3. Condition 3.7(c) of the Environmental Permit (EP-354/2009/A) has limited the daily reclamation material import rate by limiting filling barge trips to 16 trips per day, with a maximum filling rate of 16,000m^3. The above condition is only for the Northern Landfall.

(v) Given that the HY/2012/08 dredging and reclamation works is limited by EP conditions and to the Northern Landfall (**Figure 2**), the selected regular marine travel routes should have limited impact to the habitats of the Chinese White Dolphins (CWD). This is more so since existing fairways will be used and the trajectory will take the vessels to the easterly directions, away from the dolphin habitats north and west of Lantau Island and at around the proposed BIMP.

(vi) The construction of the sub-sea TBM tunnels will have similar travel routes, using existing fairways to the Northern Landfall (**Figure 2**). Therefore, there should minimal impact to the CWD.

(vii) The reclamation of the Southern Landfall (**Figure 3**) is carried out by others and not in the scope of this Contract. Therefore, the majority of the vessels for dredging and reclamation of the Northern Landfall will not be remobilized for the future finishing works around the Southern Landfall, which is expected in around 2016 to 2018. This plan will be updated and submitted for ET and IEC checking prior to submission to the DEP and relevant authorities at least one month before the start of the Southern Landfall works. Any marine traffic will take a northeasterly path away from the BIMP and into the established fairways, with an initial speed of no more than 10 knots.

(viii) Taking into account the above assessment, the routes are detailed below:

a. Existing fairways (**Appendix A**) such as Hung Hom Fairway, Central Fairway, Central Fairway, Northern Fairway, Ma Wan Fairway and Urmstron Road will be selected as the major marine travel route as far as practicable.

b. The Urmston Road is the deep channel through which large ships enter and leave Hong Kong's ports. It lies between Tuen Mun and the Sha Chau and Lung Kwu Chau Marine Park (**Figure 5**). Vessels from the HY/2012/08 worksite will not travel within the facility of the Sha Chau and Lung Kwu Chau Marine Park.

c. The import routes for sand, rock-fill, public fill source and seawall block are shown in **Appendix B**. The working vessels, i.e., derrick barge, tug boat, grab dredger and motor sampan, will mainly stay and work along the works area of the Northern Landfall (**Figure 2**). Only barges, with supporting tug boats if necessary, will travel these routes for import of reclamation materials. Precautionary measures will be conducted to avoid any disturbance to the Chinese White Dolphins.

d. Dredged marine deposits will be disposed at MFC allocated sites, in accordance with the conditions specified under the Permit to Dump Material at Sea. Three

dumping sites have been allocated by the Marine Fill Committee (MFC). Category L sediment will go to the marine disposal facility at East Sha Chau or South of Brothers. Category Mp sediments passing biological test will go to the Confined Marine Sediment Disposal Facility to the South of the Brothers or the Mud Pit of the Confined Marine Sediment Disposal Facility at East of Sha Chau. The corresponding travel routes are shown in **Appendix C**. When travelling across the edge of the Proposed South Brothers Marine Park, the barges and tug boats shall reduce speed to 5 knots when approaching the proposed Marine Park and travel with caution. The captain of the vessels shall avoid travelling paths of dolphins.

e. During Typhoon Signal No. 3 or above, the working vessels will be anchored at Tuen Mun Typhoon Shelter or Yau Ma Tei Typhoon Shelter. The travel routes are shown in **Appendix D**. As this plan shows the anchorage position in case of Typhoon 3 and above, travel routes are not depicted here. The travel routes for regular travel of off duty vessels will follow the existing fairways plan in **Appendix A**.

3.6. Implementation and Monitoring

(i) Supervision Staff:

The Project Director is ultimately responsible for the minimization of ecological impacts, including dolphin monitoring and marine travel control. The supervising staff including Project Manager, Construction Manager, Superintendent, Site Foreman and the representatives of subcontracts and specialists will assist the Project Director on site to implement all precautionary and mitigation measures approved by the Statutory Authority and the Engineer.

(ii) Method of Implementation and Monitoring:

The construction works are divided into onsite and offsite works. Onsite works include all construction activities in the vicinity of HY/2012/08 sites (**Figures 2 and 3**). The current work up to the end of 2014 will be at the Northern Landfall (**Figure 2**). The Southern Landfall reclamation is being carried out by others and the site not yet handed over to HY/2012/08. Land-works and seawall finishing works around this area will be about three years in the future.

Offsite works are mainly the delivery of material such as sand fill, rock fill and public fill from supply sites around Hong Kong and the mainland, and also the dumping of dredging materials. These vessels will travel through established fairways and will be monitored.

(iii) DBJV will maintain records of the use of the vessels under control. Such records will include date, time, details and purposes of journeys. The person using the works boats authorizing the journey will be required to sign his name and title against the entries. DBJV will present current log books for inspection by the SOR. The following monitoring measures will be adopted:

a. Barges for transporting public fill or sediment will be equipped with Automatic Identification System (AIS) for track logging of vessels;

b. Tug boats and hopper barges will be installed with GPS System for the purposes of recording the marine travel route during operation;

c. Non-self-propelled vessels and floating platforms such as derrick barges and flat top barges will be moved by tug boats which are installed with GPS. As such, their travel routes can be followed;

d. Precast concrete units entering Hong Kong from Pearl River Estuary will be equipped with GPS systems or course recorder system to record their travel routes;

e. Administrative control will be taken, one route will be monthly selected with AIS or GPS as possible.

(iv) The Contractor shall actively provide the travel route logs to the ETL, IEC/ENPO and SOR at monthly intervals. The track log shall include both coordinate points logging of individual track and graphical summary of tracks overlaid on the approved routes to clearly demonstrate compliance with the routes.

(v) The daily record of marine travel route of offsite working fleets will be collected and filed by the supervising staff for inspection and monitoring purposes. Records with graphical presentation/plots shall be submitted to the ETL, IEC/ENPO and SOR on a monthly basis. Warning will be noticed to the captain and his shipping company or material suppliers if vessel track log showed the approved marine travel route is not followed.

(vi) All vessels used for the construction of the marine works will comply with all the relevant regulations and requirements of the Marine Department, including:

a. The Shipping and Port Control Regulations (Cap. 313);

b. The Merchant Shipping (Miscellaneous Craft) Regulations (Cap. 313);

c. The Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations (Cap. 369);

d. The Merchant Shipping (Launches and Ferry Vessels) Regulations (Cap. 313E);

e. Merchant Shipping (Safety) Regulations (Cap. 369);

f. Merchant Shipping (Local Vessels) Ordinance (Cap. 548);

g. Merchant Shipping (Local Vessels) (Works) Regulation (Cap. 548); and

h. Shipping and Port Control (Works) Ordinance (Cap. 313X).

3.7. Precautionary Measures

(i) When carrying out the marine works for HY/2012/08, the Vessel Speed Limit and Restriction Specifications of this Regular Marine Travel Route Plan shall be followed.

(ii) This Regular Marine Travel Route Plan shall also be followed.

(iii) When implementing the works, site supervision and monitoring specifications of this plan shall be followed, with emphasis on statutory compliance and installation of tracking

equipment (e.g. GPS) onboard specified vessels. Extra care should be taken to ensure that the use of construction related vessels do not interfere with CWD in their habitat.

3.8. Training

(i) Captains of all working vessels should be required to use regular travel routes, in order to minimize the chance of vessel collision.

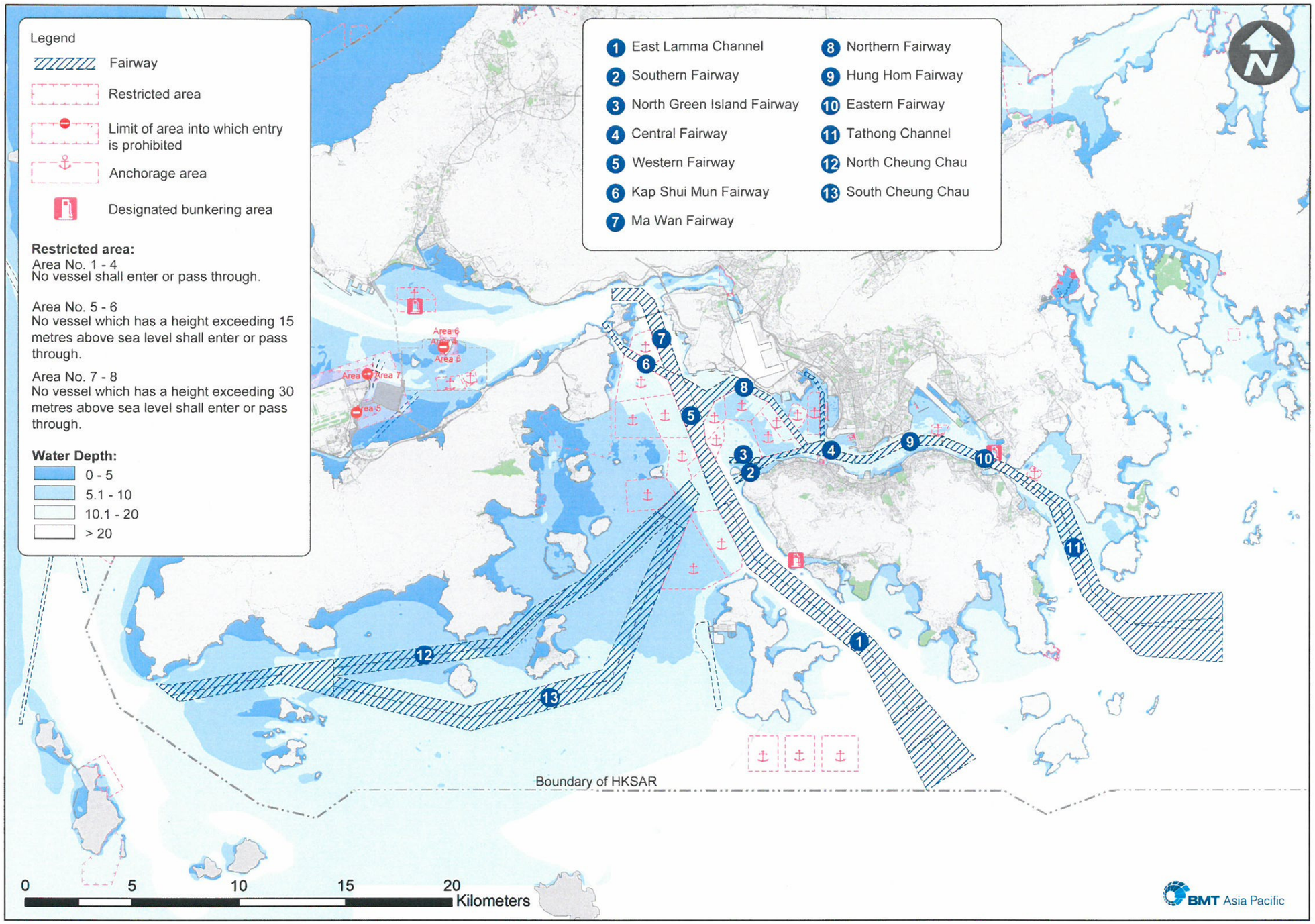
(ii) Captains of construction vessels working in the Tuen Mun dredging and reclamation areas should undergo training to learn about local dolphins and porpoises. They should be trained to be aware of the protocol for "dolphin friendly" vessel operation. Reference will be made to "Code of Conduct for Dolphin Watching Activities" available from Agriculture, Fisheries and Conservation Department. They will be trained on what to do and what not to do;

(iii) This training course will be provided to captains within three working days after start of work on site and refreshment courses will be provided in every quarter. The training will be provided by the Contractor's Environmental Officer or Environmental Supervisor, with support and input from the ET and the ET's on site representative. The EO/ES will be trained by dolphin specialist before giving the training to captains and other correspondence. The dolphin specialist is contracted under the ET and will take part as per contract specification. Aspects of dolphins, dolphin exclusion zones, spill responses and marine travel routes have been incorporated.

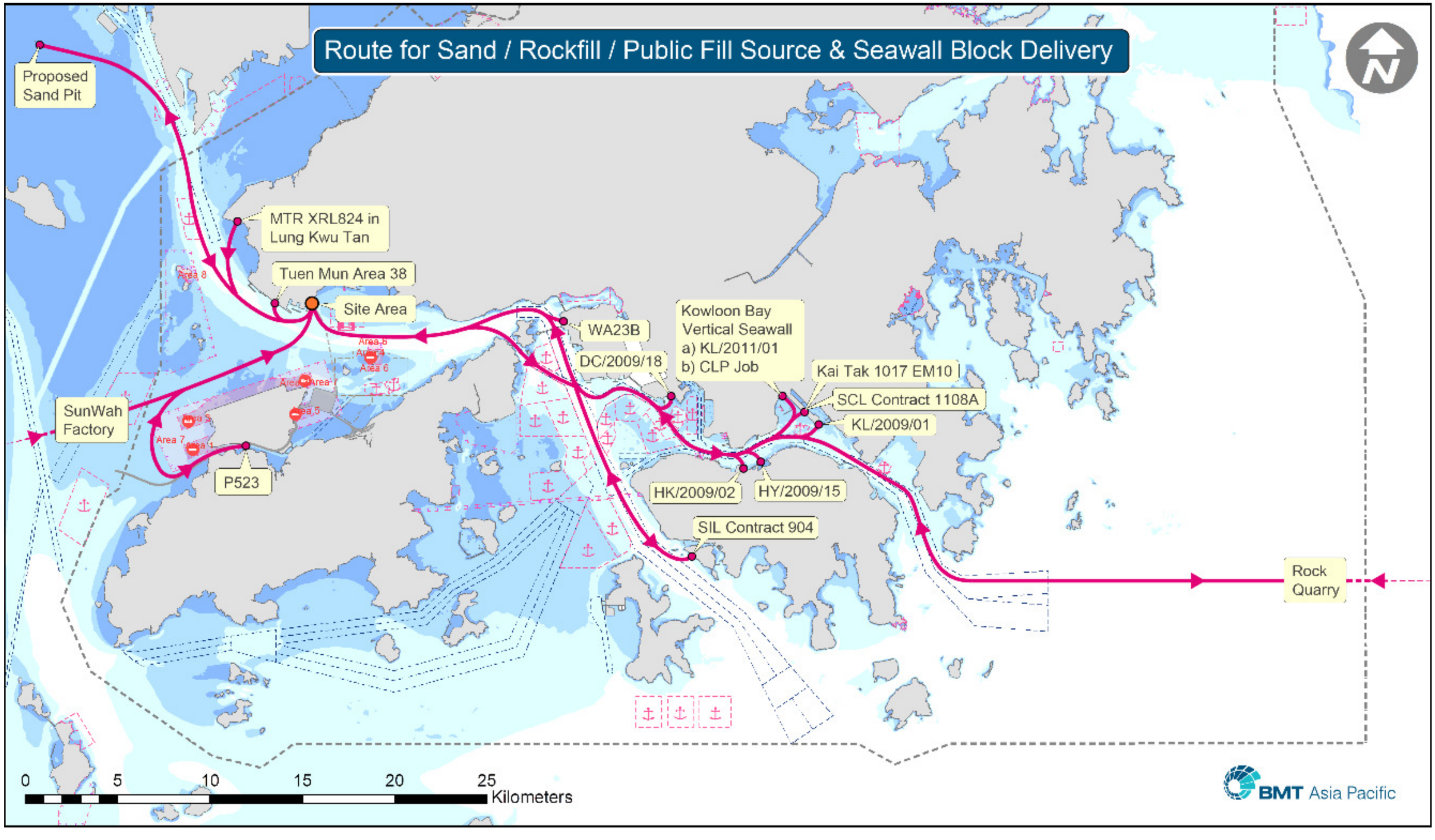
(iv) The training contents will be updated and expanded over time. All of the training material, schedule and records will be submitted to the ETL, IEC/ENPO and SOR on a regular basis.

END OF CONTENT

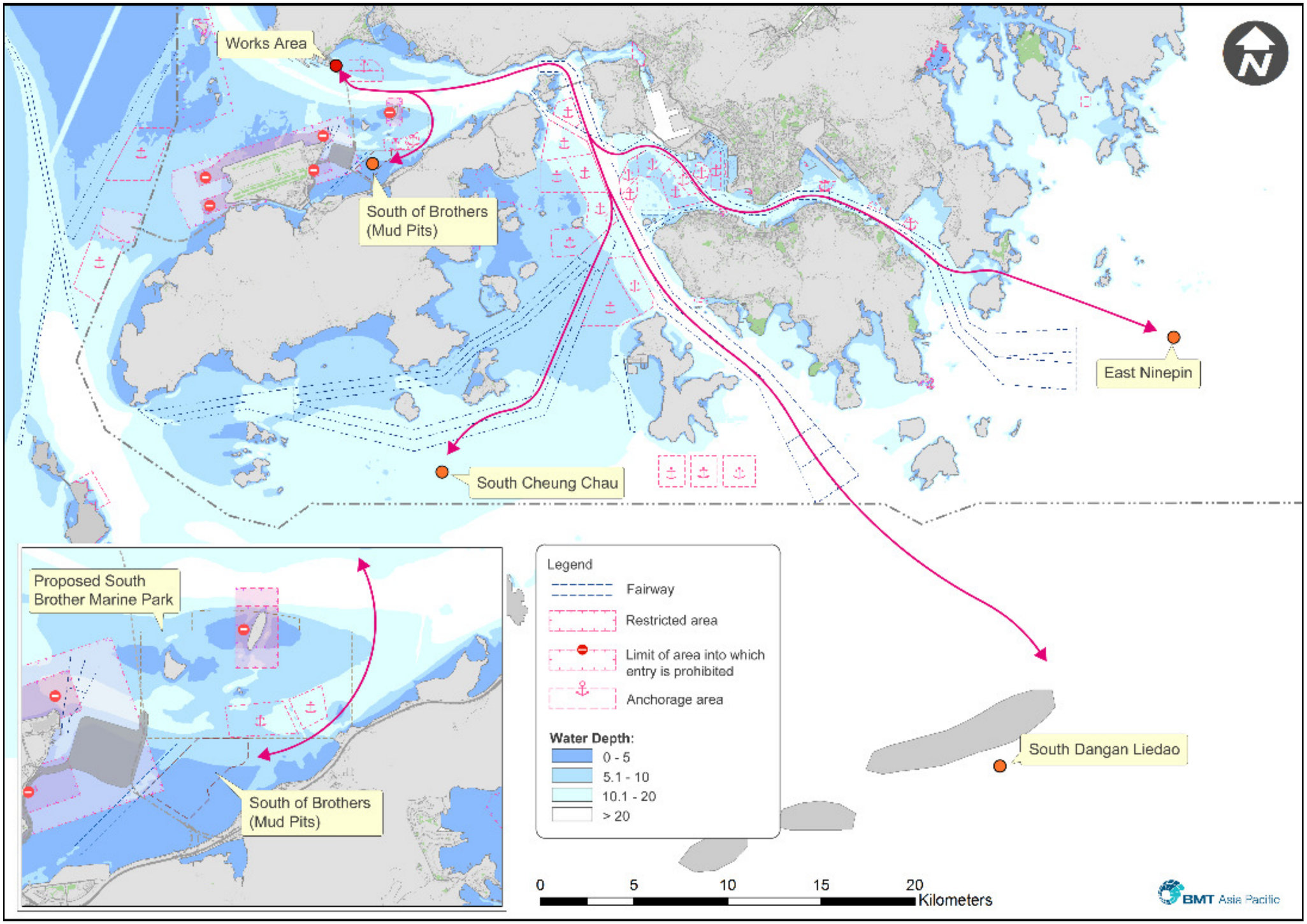
APPENDIX A: EXISTING FAIRWAYS



APPENDIX B: ROUTES FOR IMPORT OF RECLAMATION MATERIALS



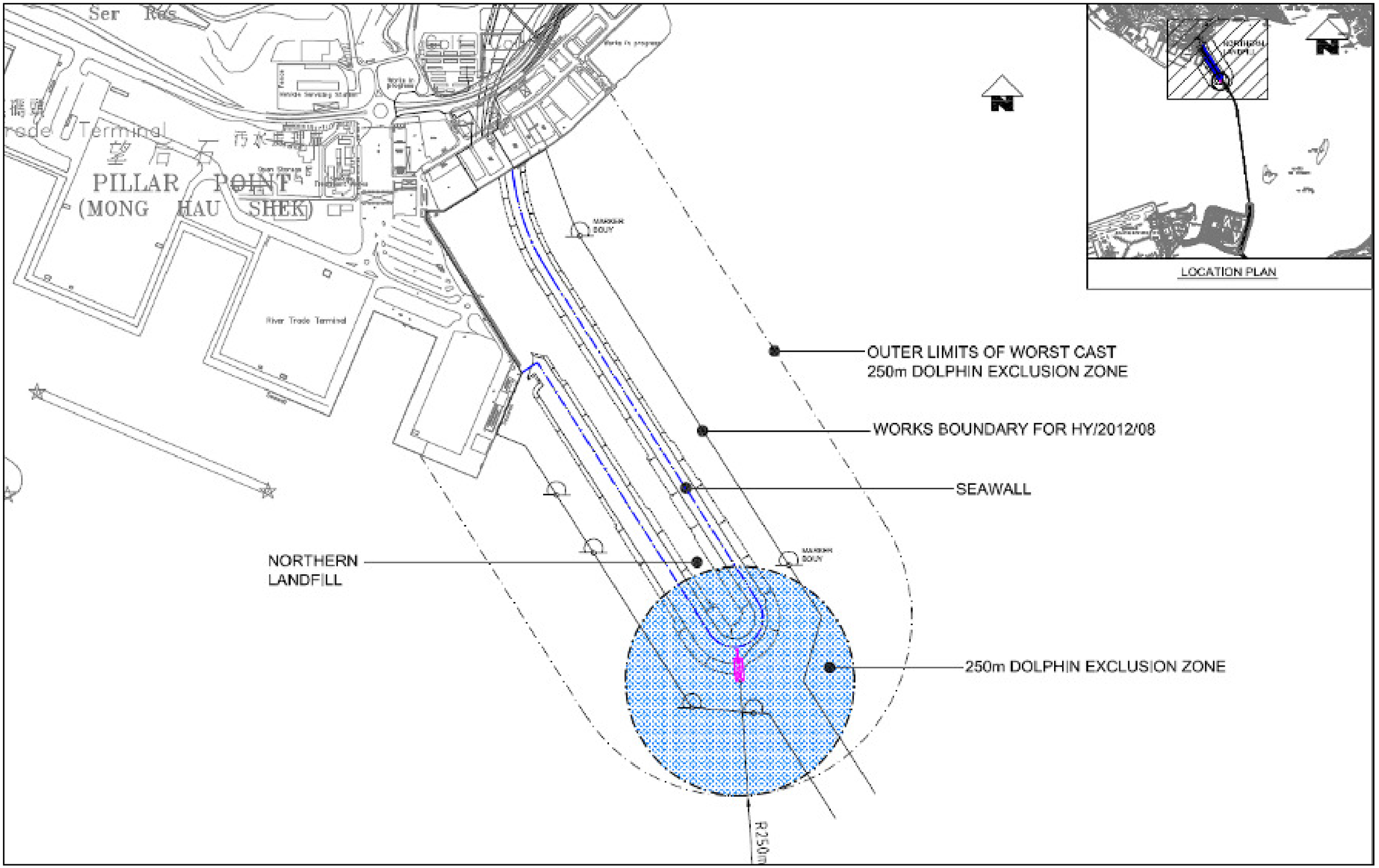
APPENDIX C: EXPORT ROUTES TO MARINE SEDIMENT DISPOSAL SITES



APPENDIX D: WORKING VESSELS ANCHORAGE POINTS DURING TYPHOON SIGNAL NO.3 OR ABOVE

Note: There will be no marine traffic during adverse weather conditions such as Typhoon Signal 3 or above. Vessels shall be anchored at safe shelters.

APPENDIX E: DOLPHIN EXCLUSION ZONE AT NORTHERN LANDFALL



Note: The area in pink colour is the vessel assumed placing at the site boundary