RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_6068L.17

11 December 2017

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
5 Ying Hei Road, Tung Chung, Lantau
Hong Kong

Attention: Mr. Michael Tovey

Dear Sir,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2013/01 – HZMB HKBCF – Passenger Clearance Building
Regular Marine Travel Routes Plan

Reference is made to the Environmental Team's submission of Regular Marine Travel Routes Plan certified by the ET Leader (ET's ref.: "5126871/17.20/OC109/KC/EK" dated 8 December 2017) and provided to us via e-mail on 11 December 2017.

We are pleased to inform you that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 2.8 of the Environmental Permit No. EP-353/2009/K.

Please be reminded that it is the Contractor's/ET's responsibility to ensure the plan is effectively implemented by all the relevant parties, monitored and appropriately recorded for on-going checking of the travel route(s) and vessel speed. To ensure proper implementation, all training to captain and supervising staff shall include but not limited to the standard operating procedures and the specific precautionary measures when passing through the Brothers Marine Park as per Sections 3.2 and 3.3 of the plan respectively.

Please also be reminded that any proposed changes to the marine travel route(s) should be documented in an updated plan and be deposited to EPD as required by the EP before the changes are implemented.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Environ Hong Kong Limited

Raymond Dai
Independent Environmental Checker

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	HyD	Ms. Lowell Chiu	(By Fax: 3188 6614)
	Atkins	Mr. Keith Chau	(By Fax: 2890 6343)
	LCWJV	Mr. Owen Leung	(By Fax: 3621 0180)

Internal: DY, YH, ENPO Site

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Your ref.
Our ref. 5126871/17.20/OC109/KC/EK

Date: 8 December 2017

By Post and e-mail (Stephen.Tsang@lcwjv.com)

Leighton – Chun Wo Joint Venture
39/F Sun Hung Kai Centre
30 Harbour Road
Hong Kong

Attn: Mr. Stephen Tsang

Dear Mr. Tsang,

Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Certification of Regular Marine Travel Routes Plan (Rev.10)

Atkins China Limited certifies, in the capacity of Environmental Team Leader, that the Regular Marine Travel Routes Plan (Rev 10) dated 7 December 2017 conforms the requirements provided in Condition 2.8 of the Environmental Permit No. EP-353/2009/K.

Yours faithfully
for and on behalf of
Atkins China Limited

Keith Chau
Environmental Team Leader

cc.
1. AECOM – Mr. Michael Tovey (By Fax.: 3468 2076)
2. IEC / ENPO – Mr. Raymond Dai & Mr. Y.H. Hui (By Fax: 3465 2899)

Leighton - Chun Wo Joint Venture

Contract No. HY/2013/01

Hong Kong – Zhuhai – Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Regular Marine Travel Routes Plan

(Rev.10)

Prepared by:

Stephen Tsang
Environmental Officer

Date: ***07 December 2017***

Approved by:

Iain Hubert
Project Director

Date: ***07 December 2017***

Certified by:

Keith Chau
Environmental Team Leader

Date: ***07 December 2017***

Contents

1 Introduction

1.1 *Purpose*

The purpose of this Regular Marine Travel Routes Plan is to detail the planning, implementation and monitoring method to be taken by Leighton Contractors (Asia) Limited and Chun Wo Construction & Co., Ltd Joint Venture (known as the JV) and its subcontractors and suppliers during construction of the Hong Kong Boundary Crossing Facilities – Passenger Clearance Building and associated works under Highways Department Contract number HY/2013/01 which is part of the Hong Kong – Zhuhai – Macao Bridge during the construction activities that involve using the marine travel routes within Hong Kong.

The purpose of this plan is to minimize the chance of vessel collision and the disturbance to the Chinese White Dolphins.

The preparation and implementation of this Regular Marine Travel Routes Plan is a mandatory requirement under section 2.8 of the Environmental Permit no. EP-353/2009/K.

1.2 *Scope*

This Regular Marine Travel Routes Plan applies to the activities of the JV during the construction of Contract HY/2013/01.

1.3 *Description of Works*

The works for HY/2013/01 comprise:

- Construction of Passenger Clearance Building (PCB) including architectural and builders works, structural steel roof and reinforced concrete frames, basement, piled foundations, aluminium roof, curtain wall facades, building services and electrical and mechanical works;
- Installation of District Cooling System including seawater cooling intake pumping station, seawater intake and discharge water pipelines work; Installation of Chilled water cooling pipelines system, heat exchanger and chilled pumping system;
- Construction of transport and associated facilities connecting to the PCB entailing the Emergency Vehicular Access, an at-grade mainland side drop-off area, an Hong Kong side elevated drop-off deck and 8 nos. of footbridge links;
- Construction of a public toilet, 6 nos. of C&ED observation booths, a generator set building and a refuse storage & material recovery chamber;
- Construction of a section of 70m common utilities enclosure and staff subway and civil provisions for associated electrical and mechanical works;
- Construction of drainage, sewerage, fresh water & flushing water supply and utilities & service works;
- Construction of civil provisions, including draw pits & ducting for Traffic Control and Surveillance System (TCSS) and Extra Low Voltage System (ELV);
- Construction of box culvert A;
- Construction of 2 nos. of vehicular bridge abutments at mainland side pickup area earthmound;
- Construction of geotechnical works including top up the existing earth mound from

+11.5mPD to the finished level as stated in the Contract, reinforced earth slope and fill slopes and special backdrop manhole at mainland side pickup area earthmound;

- Landscape hardworks and softworks;
- Delivery of steel roof segment by marine transportation; and
- Other works which are shown on the Drawings or specified in the Specification or which may be ordered in accordance with the Contract.

The site location plan is shown in **Appendix 1**.

2 Planning on Regular Marine Travel Routes

2.1 *Construction Works involves the Marine Travel Routes*

The work scope of this Contract is the construction of Passenger Clearance Building which is a land base one. The oversized construction materials such as steel roof segment were transported by vessel from August 2016 to April 2017 while other steel canopy components were transported from April to June 2017.

The oversize construction materials were transported from Zhuhai, Zhongshan or Machong. Please refer to **Appendix 2** for the marine routing when the oversize construction materials were transported from Zhuhai, Zhongshan or Machong in the past.

Seawater outfall construction involved the transfer of pre-casted construction material in the work area by crane barge from April to May 2017. Please refer to **Appendix 2** for the marine routing of crane barge from Yau Ma Tei anchorage point to the work area of seawater outfall in the past.

The marine travel route was only for the transportation of oversize materials to site and travelling of construction vessel for seawater outfall construction works, there was no transportation of construction waste or passenger or other general use using marine vessel in the past.

Due to land constraint, some oversize materials from the dismantling works at the loading and unloading point will be transported to work area 4 (WA4) at To Kau Wan or Hongkong United Dockyards (HUD) at Tsing Yi through barge. Please refer to **Appendix 3** for the marine travel routes of crane barge from Tuen Mun Typhoon Shelter to loading and unloading point of Passenger Clearance Building and from loading and unloading point to WA4 or HUD. It is anticipated to start in December 2017 and complete within three months. Additionally, there are two routes required to the Typhoon Shelter from the loading and unloading point in case of Typhoon occurrence. The two additional typhoon shelter locations are at Hei Ling Chau Typhoon Shelter and Tuen Mun Typhoon Shelter. Please refer to **Appendix 3** for the marine routes from the loading and unloading point to Hei Ling Chau Typhoon Shelter / Tuen Mun Typhoon Shelter.

Additionally, there will be backfilling of rocks at the loading and unloading point when the dismantling works are completed. The rocks will be delivered to site through barge from Zhuhai China. Please refer to **Appendix 3** for the marine travel route for the transportation of rocks from Zhuhai to the loading and unloading point.

The marine travel route is only for the transportation of oversize materials from site to WA4 or HUD and transportation of rocks from Zhuhai to site for backfilling. There will be no transportation of construction waste or passenger or other general use using marine vessel.

2.2 *Design Criteria of Regular Marine Travel Routes (RMTR)*

The design criteria of RMTR are summarized as follows:

2.2.1 Hotspots of Chinese White Dolphin in Brothers Island

Latest available data of monitoring of marine mammals in Hong Kong Waters collected under the Project and issued by Agriculture, Fisheries and Conservation Department will be used as reference information to align the marine travel routes of project related work fleets. The fundamental principle is that the routes will not go through the dolphin hotspots in Brothers Island.

2.2.2 Existing Navigation Channel and Marine Traffic

Existing Fairway Urmston Road Channel will be selected as the main travel route for delivery of material to HKBCF site. Please refer to **Appendix 4** for the Fairway Layout.

2.2.3 Practice of Navigation Safe

The licensed captain is the authorized person to control the working fleeting under safe marine operation. He will follow all safe navigation requirement and international practice with assistance from navigation aids as well as support from marine traffic control team of Marine Department.

The marine travel route will be adjusted locally to cater for any incident so as to ensure safe navigation channel and are very useful tool to assist capture to determine the proper travel routes under real situation and any unexpected incidents.

The navigation will also be affected by natural constraints such as wind, current, wave, etc. which may also affect the marine travel routes locally.

There will be no transportation of oversize materials under increment weather.

2.2.4 Restricted Areas and Height Restriction of Hong Kong International Airport

There are eight restricted areas in the vicinity of Hong Kong International Airport where working fleets are not allowed to pass through unless authorization is granted. Moreover, the airport height restriction limit will also govern the marine travel routes of working fleets for the delivery of prefabricated cellular structure from Mainland China to HKBCF site.

2.2.5 Types of Working Vessels

Various types of working vessels for oversize material transportation are list below. Please refer to **Appendix 5** for the photos of vessels.

- Flat Top Barge
- Tug boat
- Crane Barge

2.2.6 Other Site Constraints

Existing marine parks, anchorage areas in Sham Shui Kok and Tuen Mun and the like are also considered during designing the proper marine routes for this Project.

2.3 *Selected Regular Marine Travel Routes*

Based on the abovementioned designed criteria, the marine travel routes are proposed and presented in **Appendix 3**.

3 Design Criteria of Regular Marine Travel Routes (RMTR)

3.1 *Supervision Staff*

The Project Director is the ultimate person for minimizing ecological impacts from marine traffic. The supervising staff including Project Manager, Construction Manager, Superintendent, Site Forman and the representative of subcontractors and specialist will assist the Project Director onsite to implement all precautionary and mitigation measures approved by the Statutory Authority and the Engineer.

3.2 *Method of Implementation and Monitoring*

The construction works are divided into onsite and offsite works. Onsite works include all construction activities within HKBCF. As the working fleets are mainly on a land base, it is anticipated that there would be no impacts to the Chinese While Dolphins.

Offsite works are mainly the delivery of material such as segments, beams and platforms from Pearl River Estuary. As these working fleets will pass though Urmston Road Channel, marine parks and hotspots of CWD in North east and Northwest of Lantau Island, therefore tight marine travel routes control will be implemented as below:

- The vessel for transporting the materials will be installed GPS system or course recorder system for the purposes of recording the marine travel route.
- The daily record of marine travel route of offsite working fleets will be collected and filed by supervising staff for inspection and monitoring purposes. Warning will be noticed to the captain and his shipping company or material supplier if vessel track log showed the approved marine travel route is not followed.
- Graphical plots of all the vessel tracks overlaid on HK base map shall be provided at monthly interval to ER, ETL, IEC/ENPO to demonstrate the conformance of the vessel to the proposed route after the commencement of the delivery of oversize construction materials.

3.3 *Precautionary Measures*

3.3.1 Considerations of Operation Procedure

The main issue with the Chinese White Dolphin is a moving vessel striking and injuring an animal during the period of travel. Information regarding the locations of frequent sighting near the proposed vessel routes indicated that the following would also be needed to minimize the chance of a vessel striking a dolphin.

If any dolphins are sighted within 250m of a vessel, then the vessel will slow to a speed no greater than 5 knots for at least 3 minutes after the last sighting.

3.3.2 Training

A training section will be provided to barge operator to increase their awareness on the protocol for “dolphin friendly” vessel operation and minimize the chance of vessel collision.

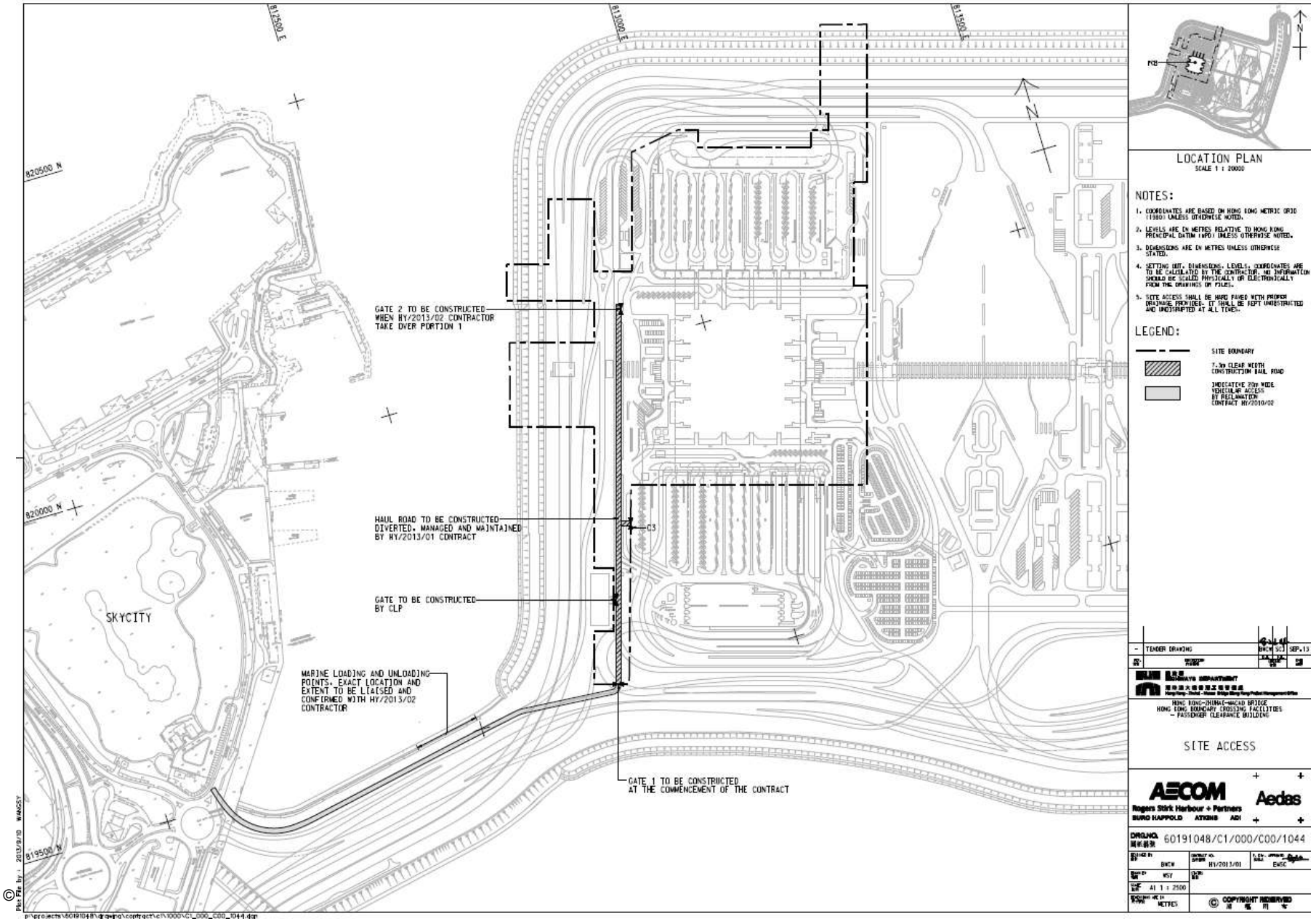
Trainers of JV are trained by a dolphin specialist approved by AFCD. The trainers will provide training section to barge operators before the commencement of the transportation of oversize

materials to construction site. Refreshment of the training will also be provided to barge operators on bi-monthly basis.

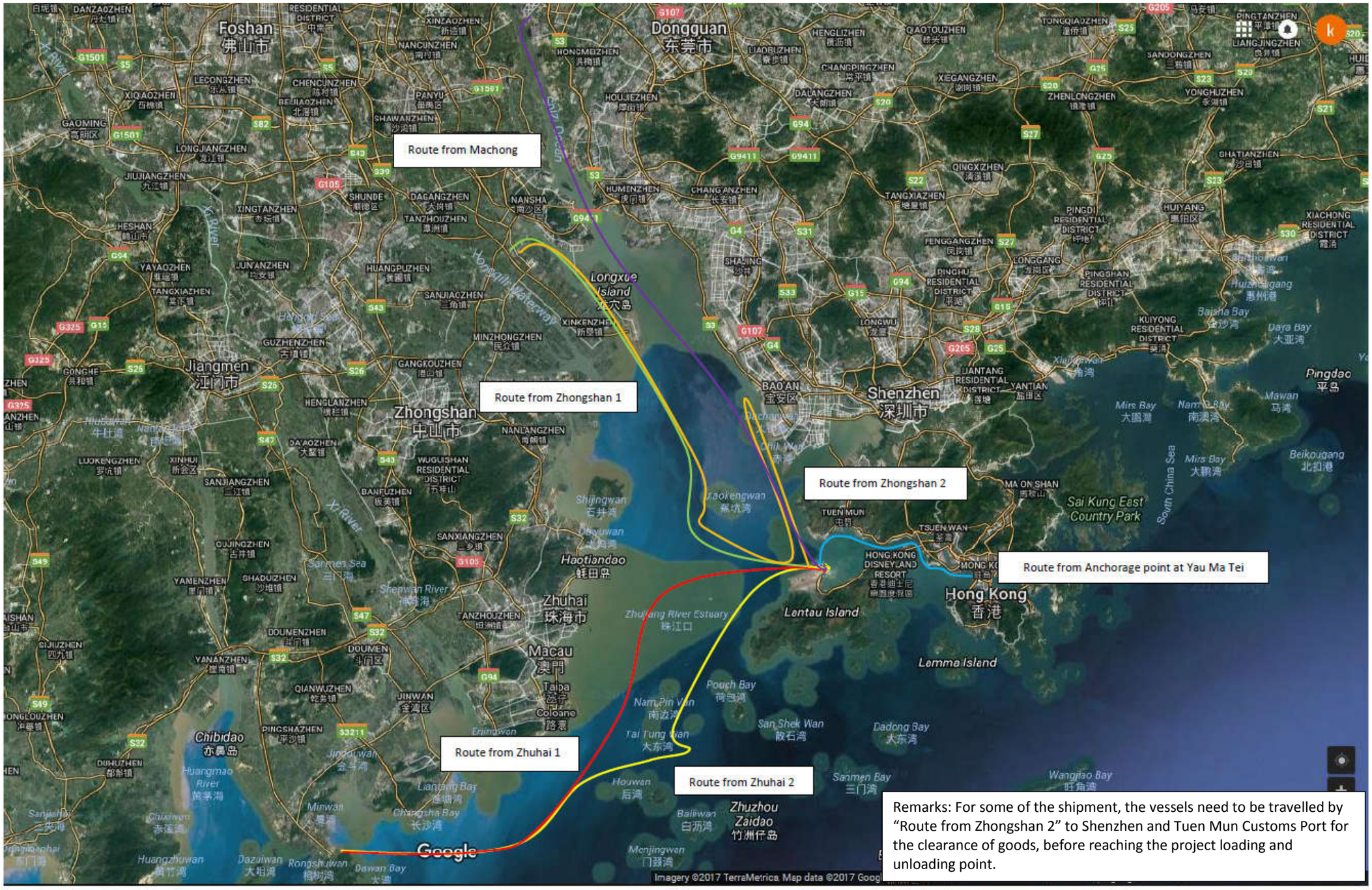
Appendix 1
Site Location Plan

Leighton – Chun Wo Joint Venture

Contract No. HY/2013/01 Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Regular Marine Travel Routes Plan

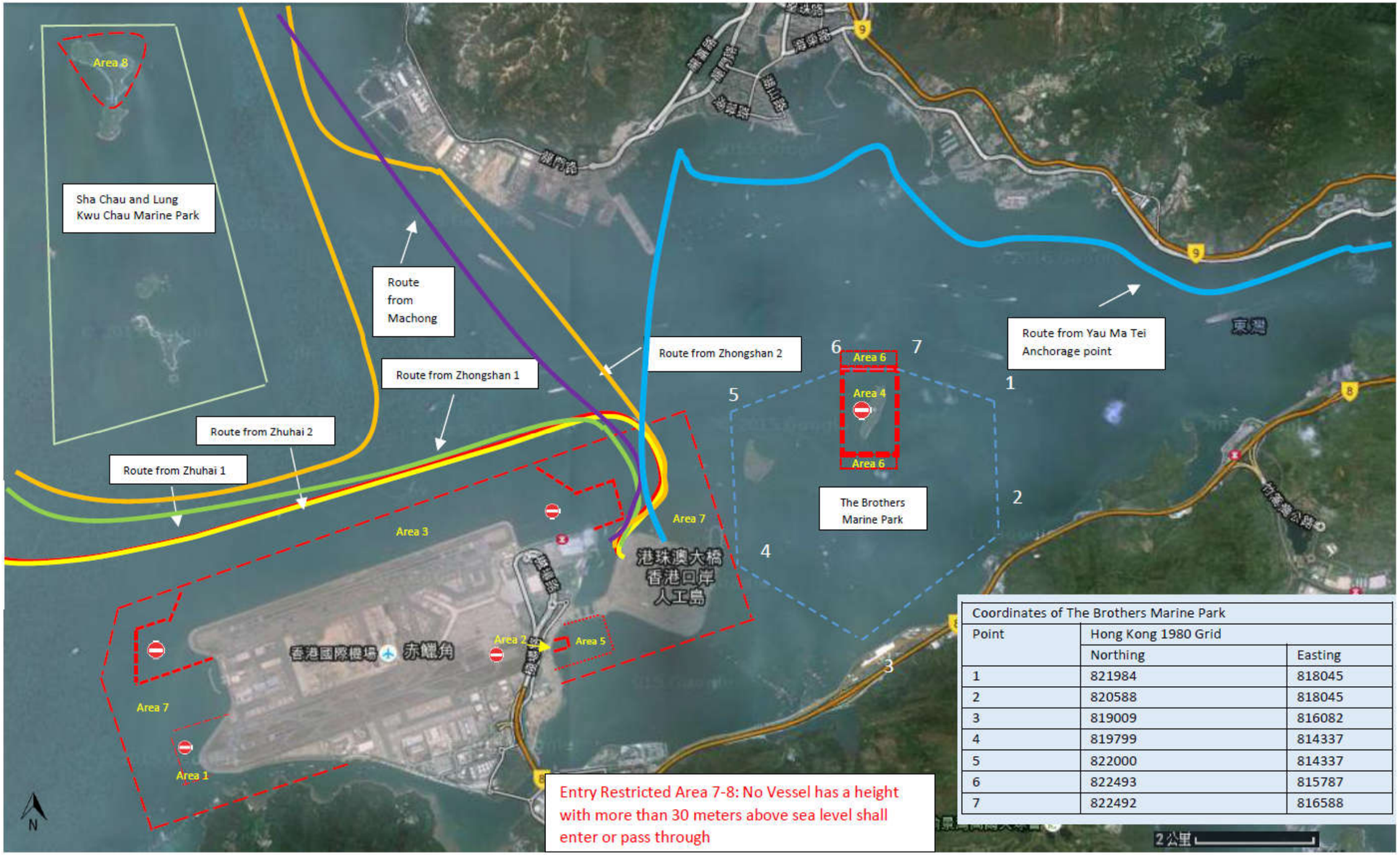


Appendix 2
Past Marine Travel Routes



Remarks: For some of the shipment, the vessels need to be travelled by "Route from Zhongshan 2" to Shenzhen and Tuen Mun Customs Port for the clearance of goods, before reaching the project loading and unloading point.

Appendix 2 Past Marine Travel Routes (Sheet 1 of 2)



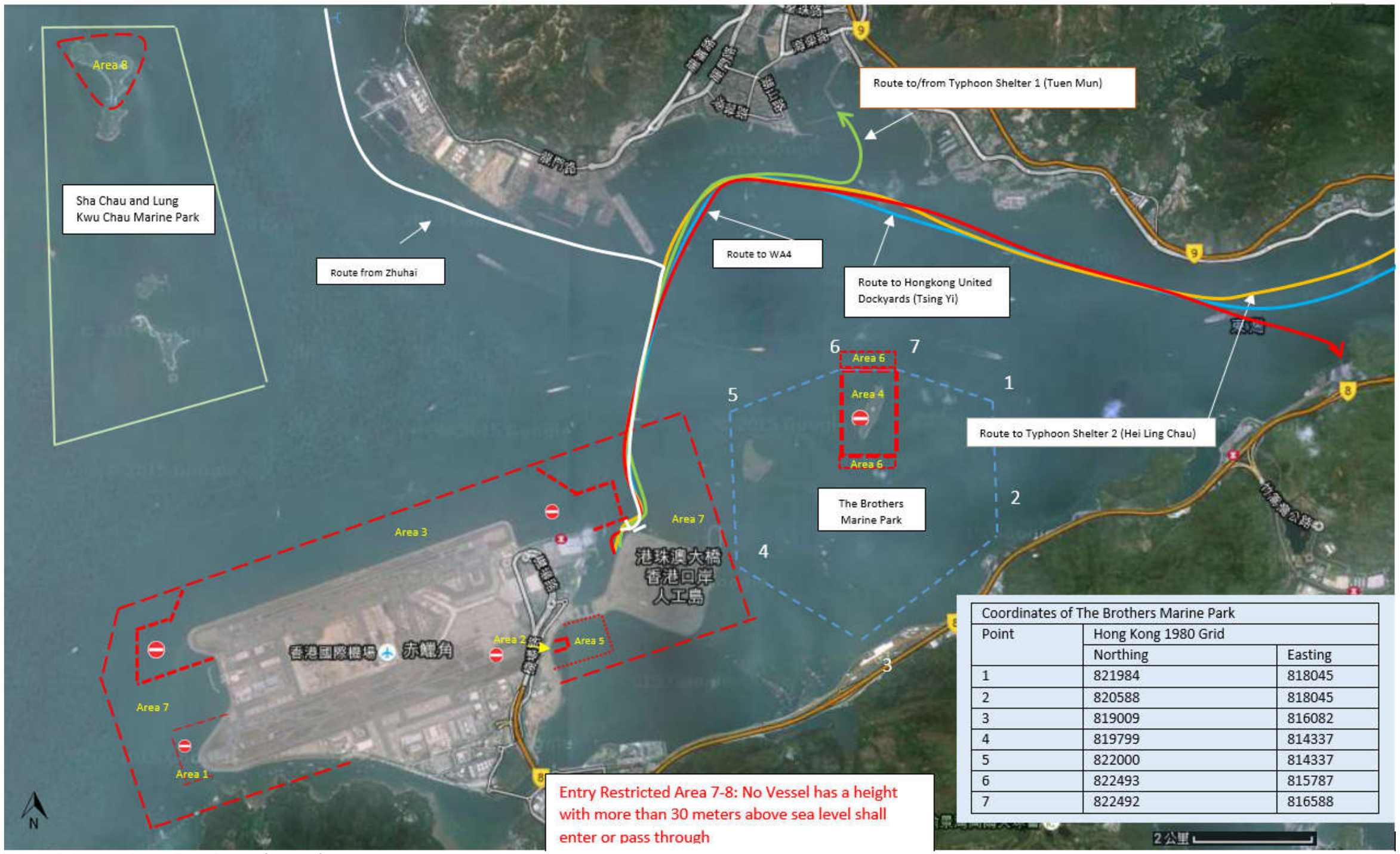
Coordinates of The Brothers Marine Park		
Point	Hong Kong 1980 Grid	
	Northing	Easting
1	821984	818045
2	820588	818045
3	819009	816082
4	819799	814337
5	822000	814337
6	822493	815787
7	822492	816588

Appendix 2

Appendix 2 Past Marine Travel Routes (Sheet 2 of 2)

Appendix 3
Proposed Marine Travel Routes

Appendix 3 Proposed Marine Travel Routes (Sheet 1 of 2)



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Appendix 3 Proposed Marine Travel Routes (Sheet 2 of 2)

Appendix 4
Fairway Layout

Appendix 4 Fiarway Layout (Sheet 1 of 1)

Appendix 5
Photos of Vessels

Tug Boat

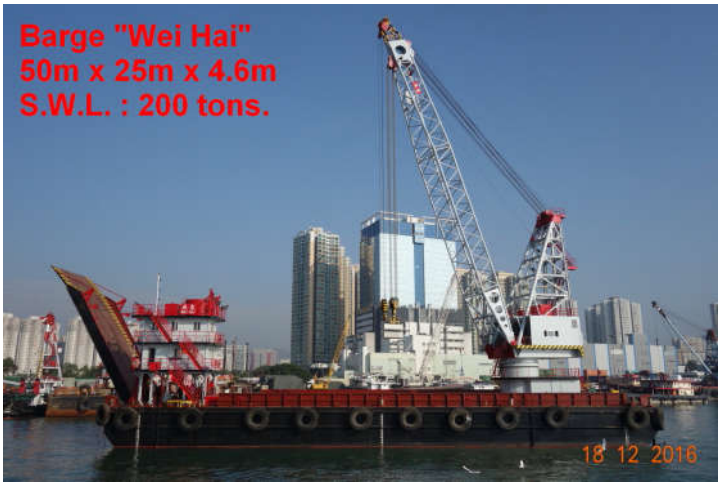
Information of Tug Boat to be used in transportation of construction materials

Vessel Name	Vessel Type	Vessel Dimension (L x B x D) (in meter)	Gross Tonnage	Engine Power
HAI TONG	Tug	36.80 x 10 x 4.4	432	4000 HP
HAI YOU	Tug	36.80 x 10 x 4.4	432	4000 HP
HAI LIAN	Tug	36.80 x 10 x 4.4	432	4000 HP
HAI TAI	Tug	36.80 x 10 x 4.4	432	4000 HP
HAI MIN	Tug	36.80 x 10 x 4.4	432	4000 HP
HAI FA	Tug	36.02 x 9.8 x 4.4	391	3200 HP
YOU DA	Tug	36.02 x 9.8 x 4.4	391	3200 HP
HAI QI	Tug	36.02 x 9.8 x 4.4	391	3200 HP

Flat Top Barge

Information of Flat Top Barge to be used in transportation of construction materials

Name	KIU CHI
Classification	II
Type of Ship	Dumb Lighter
Year Built	---
Where Built	---
Port of Registry	Hong Kong SAR
Navigation Area	Sea area in China
L.O.A	49.98m
Breadth Molded	18.3m
Depth Molded	4.56m
GRT	1334T
Net	400T
Light Draft	1.66m
Full Load Draft	3.83m
Dead Weight	---
Deck Loading	---
Deck Area	---
NRT	---
Propelled Power	No Propeller



Crane Barge

Information of Crane Barge to be used in transportation of construction materials and rock backfilling

Name	WEI HAI
Classification	II
Type of Ship	Dumb Lighter
Year Built	2010
Where Built	---
Port of Registry	Hong Kong SAR
Navigation Area	Sea area in China
L.O.A	49.63m
Breadth Molded	25.34m
Depth Molded	4.6m
GRT	1966T
Net	589T
Light Draft	1.66m
Full Load Draft	3.83m
Dead Weight	33716
Deck Loading	---
Deck Area	---
NRT	---
Propelled Power	---

Flat Top Barge

Information of Flat Top Barge to be used in transportation of construction materials

Name	Tung Jie
Classification	Container
Flag	China
Type of Ship	Container
Year Built	2000
Where Built	Qingyuan Guangdong
Port of Registry	Guang Zhou
Navigation Area	Sea area in China
L.O.A	49.9m
Breadth Molded	16m
Depth Molded	4
GRT	1220T
Net	683T
Light Draft	1.158m
Full Load Draft	3.2m
Dead Weight	2084T
Deck Loading	3t/m2
Deck Area	48m*16.5m
NRT	330m/h
Propelled Power	938HP

Flat Top Barge

Information of Flat Top Barge to be used in transportation of construction materials

Name	Yiang Ju 13
Classification	Container
Flag	China
Type of Ship	Container
Year Built	2012
Where Built	Lianyun Jiangsu
Port of Registry	Guang Zhou
Navigation Area	Sea area in China
L.O.A	72.2m
Breadth Molded	17.3m
Depth Molded	5.3
GRT	2947T
Net	1915
Light Draft	0.914m
Full Load Draft	3.953m
Dead Weight	4308T
Deck Loading	3T/m2
Deck Area	70m*17.8m
NRT	345m/h
Propelled Power	1153HP

Flat Top Barge

Information of Flat Top Barge to be used in transportation of construction materials

Name	Sui Hang 804
Classification	Multi Purpose Cargo Ship
Flag	China
Type of Ship	Multi purpose cargo ship
Year Built	1995
Where Built	Guang Zhou Guangdong
Port of Registry	Guang Zhou
Navigation Area	Sea Area in China
L.O.A	49.93m
Breadth Molded	16m
Depth Molded	4m
GRT	1095T
Net	613T
Light Draft	1.105m
Full Load Draft	2.55m
Dead Weight	1573.75T
Deck Loading	2T/m2
Deck Area	15m*16.3m
NRT	330m/h
Propelled Power	440HP