

Ref.: HYDHZMBEEM00\_0\_0004L.12

8 March 2012

Engineer's Representative  
Ove Arup & Partners  
Level 5, Festival Walk  
80 Tat Chee Avenue  
Kowloon Tong, Kowloon  
Hong Kong

By Fax (2268 3970) and By Post

Attention: Mr. Michael Lo

Dear Mr. Lo,

**Re: Contract No. HY/2010/02  
Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Facilities –  
Reclamation Work  
Dolphin Watching Plan**

Reference is made to the Environmental Team's submission of the Dolphin Watching Plan (letter ref. C/lhc12030829 dated 8 March 2012) copied to us by E-mail on 8 March 2012.

We are pleased to inform you that we have no adverse comments on the captioned Dolphin Watching Plan. We write to verify the captioned submission in accordance with Condition 3.1 of EP-353/2009/D and Condition 3.1 of EP-354/2009/A.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,

Raymond Dai  
Independent Environmental Checker

**ENVIRON**  
ENVIRON Hong Kong Limited

Project <u>HYDHZMBEEM00/0/0004</u>		
Exchange no: _____		
Circulation:	Read	Action
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_____	<input type="checkbox"/>	<input type="checkbox"/>

c.c. HyD – Mr. Matthew Fung (By Fax.: 3188 6614)  
AECOM – Ms. Echo Leong (By Fax: 2317 7609)  
CHEC – Mr. C M Wong (By Fax: 2578 0413)

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中國港灣工程有限責任公司

香港代表： 振華工程有限公司

CHINA HARBOUR ENGINEERING COMPANY LIMITED  
HONG KONG REPRESENTATIVE: ZHEN HUA ENGINEERING CO., LTD.

Date : 8<sup>th</sup> March 2012  
Our Ref. : CHEC/C273/10.04/000516

Environ Hong Kong Limited  
Room 2310, China Resources Building  
26 Harbour Road, Wan Chai, Hong Kong

By email and fax 3548 6988

**Attn.: Mr. David Yeung**

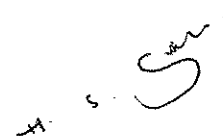
Dear Sir,

**Contract No. HY/2010/02**  
**Hong Kong Zhuhai Macao Bridge**  
**Hong Kong Boundary Crossing Facilities – Reclamation Works**  
**Submission of Dolphin Watching Plan (incorporated EPD's comments)**

We refer to EPD's letter with ref. ( ) in Ax (1) to EP2/G/A/146 (V) dated 5<sup>th</sup> March 2012, we are pleased to provide the Dolphin Watching Plan in which certified by ET (letter with ref. C/lchc12030829 dated 8<sup>th</sup> March 2012) as enclosed for your verification.

Thank you for your kind attention and please do not hesitate to contact our Mr. C.M. Wong at 9717 7986 should you have any further enquiries.

Yours faithfully,  
For and on behalf of  
China Harbour Engineering Company Limited

  
Shum Hong Sang  
Project Manager

Encl.

SHS/DC/WCM/sy  
*checking*

c.c.	Arup	Dr. K.K. Yin (The Engineer)
	Highways	Ms. Bill Chan Fax 3188 6614
	AECOM	Ms. Echo Leong Fax 2317 7609
	ER	Mr. Michael Lo Fax 2268 3970

香港北角英皇道 370-374 號振華大廈 19 樓

19/F., China Harbour Building, 370-374 King's Road, North Point, Hong Kong.  
Tel: (852) 2887 8118 Fax: (852) 2512 0427 Website: <http://www.checkk.com>

Your Ref:  
Our Ref: C/lhc12030829

**By Fax (2578 0413) and E-mail**

China Harbour Engineering Company Limited  
19/F., China Harbour Building,  
370-374 King's Road,  
North Point,  
Hong Kong.

Attn: Mr. SHUM Hong-sang

8 March 2012

Dear Sir,

**Contract No. HY/2010/02  
Hong Kong-Zhuhai-Macao Bridge  
Hong Kong Boundary Crossing Facilities – Reclamation Works**

**Certification of Dolphin Watching Plan**


Reference is made to the Dolphin Watching Plan submitted by you via e-mail dated 8 March 2012.

We hereby certify the captioned plan as in compliance with the condition 2.6 of Environmental Permits No. EP-353/2009/C, for your onward submission.

Should you require any further information, please do not hesitate to contact our Ms. Edith Ng at 3922 9407.

Yours faithfully,

For and on behalf of  
AECOM Asia Co. Ltd.



Echo Leong  
Environmental Team Leader

**Contract HY/2010/02**

**Hong Kong - Zhuhai - Macao Bridge**

**Hong Kong Boundary Crossing Facilities - Reclamation Works**

## **DOLPHIN WATCHING PLAN**

	<b>Name</b>	<b>Signature</b>
<b>Prepared By:</b>	<b>China Harbour Engineering Company Limited</b>	<i>Chu Hong</i>

## **1.0 Introduction**

CHEC (China Harbour Engineering Company Limited, hereafter CHEC) are the Main Contractor responsible for the execution of the reclamation works for the Hong Kong-Zhuhai-Macao Bridge (HKZMB) - Boundary Crossing Facilities (HKBCF) - Reclamation Works. These works primarily involve the forming of 150 hectares of land area.

The following Dolphin Watching Plan is required under and Sections 2.6 of Environmental Permit No. EP-353/2009/C. Noting: the Dolphin Watching Plan must be submitted to EPD one month prior to the commencement of marine works and specifically, the Dolphin Watch Plan must include;

*“..regular inspection of the silt curtains, visual inspection of waters surrounded by the curtains, and an action plan shall be devised to cope with any unprecedented incidents such as the case that Chinese white Dolphin is found within the waters surrounded by the silt curtains.”*

## **2.0 Site Characteristics**

The site area of the Hong Kong Boundary Crossing Facilities (HKBCF) - Reclamation Works is located in the eastern waters of the Hong Kong International Airport. The proposed location and layout is included in Appendix I for reference.

## **3.0 Dolphin Watching Plan**

The Dolphin Watching Plan (DWP) shall be implemented after the silt curtains are in place. The DWP monitoring shall include visual observations and be conducted by a team of trained marine mammal observers (MMOs). The MMO team shall be independent of the contractor and form part of the Environmental Team (ET). The MMOs shall receive specific training in this DWP. It is intended to use the same personnel for the DWP and any other dolphin monitoring activities to maintain consistency and establish familiarity with the works site. Additional training shall be provided for site staff and other relevant personnel. All training shall be conducted by an experienced dolphin specialist and shall consist of both theory and field-based training. Continuous assessment of MMO skills will take place. The dolphin specialist shall also be on site during construction operations, on a shift basis, and will be on call for situations which require specialist instruction, advice or intervention, such as unprecedented events such as dolphins trapped in works areas. A small vessel shall be available at all times to support dolphin monitoring and other related activities. The main observation platform shall be a dedicated barge with a 20m high viewing platform.

### **3.1 Silt Curtain Inspection for Dolphin Intrusion into the Enclosed Area**

Three trained Marine Mammal Observers (MMOs) will use naked eye and reticle/compass binoculars to scan the area around the works and silt curtain area. In addition, sufficient frontline staff of foremen, superintendents and engineers will be trained in the DWP protocol. This is to ensure that the area enclosed by the silt curtain can also be observed from the active works side therefore, increasing the overall ability of dolphin detection within the area. Prior to the start of works, the silt curtain boundary shall be patrolled by a small vessel (with sufficient space for additional observers and personnel) to visually inspect the integrity of the float line and the enclosed water area. The route should be updated as necessary in accordance with the progressing works. After the boat patrol, the area enclosed by the silt curtain will be scanned by three MMOs and all trained frontline staff. The MMOs will scan the area visually (naked eye/binoculars) from the viewing platform on the dolphin monitoring barge and frontline staff will observe from the works site. Scanning will occur for at least 30 minutes prior to works commencement.

During works, three trained Marine Mammal Observers (MMOs) will visually scan the area around the works and silt curtain area. They shall work 30 minute shifts and rotate with a second team of three MMOs. The area shall be viewed from the barge viewing platform and will provide a clear view of radius 500m-1000m around the platform (dependent upon weather conditions). All areas within a radius of 500m from the works will be surveyed continuously. All sightings and locations (using distance/angle/GPS information) will be noted and any dolphins sighted in the area will be tracked (distance and bearing data). If, at any time, the works has multiple active fronts, the number of observation teams can be increased, in discussion with EPD and relevant authorities.

Every day, prior to works cessation, a second silt net curtain inspection shall be made. A GPS track shall be stored and a log kept for both daily inspections.

In the event that a Chinese white dolphin (CWD) is observed within the area enclosed by the silt curtain, all works which are occurring in the water column within the silt curtain, e.g., dredging, reclamation, sheet piling, shall cease. MMOs on the dolphin monitoring barge will focus on tracking the enclosed dolphin(s) while the construction site personnel lower the float line of the silt curtain. The small dolphin monitoring vessel will be deployed with construction site personnel and an MMO. The boat will be guided by the MMOs on the 20m viewing tower as to the dolphin(s) movements so that the boat can be positioned behind the dolphin(s). The boat will slowly approach the dolphin(s) in such a manner as to guide them towards the now lowered section of the float line. The lowered part of the boom should be at least 5m below the water surface or as close as possible to the seabed if the depth is less than 5m depth. As large a length as possible, feasible and reasonable shall be lowered. Once the dolphin

(s) has cleared the net area, observations shall continue as the silt curtain float line is re-floated. Works will recommence when the dolphin(s) has been clear of the area for 15 minutes. This emergency action plan shall be practiced after the first silt curtain area is enclosed so that the procedure can be fine tuned and relevant staff familiar with their roles. The procedure will be practiced every second month for construction phase duration. Any changes to this emergency action plan shall be in consultation with the relevant management authorities.

The silt curtain extends from water surface to benthos, therefore, if CWD were to enter the enclosed silt curtain area, it would have to leap over the float line of the net. It may be possible a hole develops in the silt curtain itself, and this may provide another entry point for dolphins. Given what has been documented for CWD, it is unlikely that a dolphin would choose to leap over a floating boom line into a restricted area within which construction activities are occurring. In Hong Kong, CWD propelling their body in its entirety out of the water is an irregular occurrence and they tend to avoid construction works. If CWD do become enclosed in silt curtains regularly, then further action will be taken to deter such events. For example, the float line of the silt curtain could be made bulkier or have tall flags installed at regular intervals to make the float line more solid and barrier-like.

### **3.2 Silt Curtain Integrity Check**

For the silt curtain maintenance inspection itself, there will be independent maintenance team that shall conduct dive inspections on a monthly basis, other than the twice daily patrols conducted by the MMO and site staff teams. In the event of a typhoon, the silt curtain will remain deployed. Once all typhoon signals are lowered, an immediate inspection shall be made by the maintenance team to check and repair any damage that may have occurred. No works shall commence until this post typhoon inspection has been made.

### **3.3 In the event of injury or of live-stranded cetaceans**

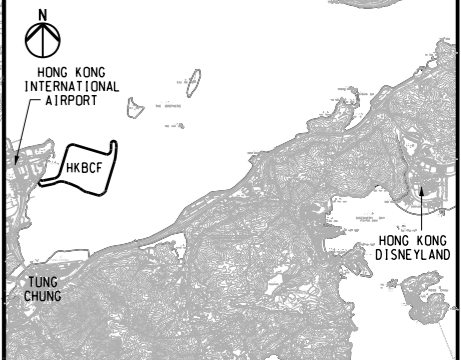
Currently, AFCD are collaborating with Ocean Park Conservation Foundation, Hong Kong (OPCF) to form an investigation and response team that handles and investigates all marine mammal strandings in Hong Kong. In the event that a CWD (or other cetacean) is found injured or dead, the Stranding Programme hotline will be called and existing AFCD/OPCF procedures put into place. Where possible, the MMOs shall assist and facilitate any required procedures. All MMO staff will be familiar with live and dead stranding protocols as this will be part of MMO training. In the event of a live stranding (of any cause) within the vicinity of construction works, equipment for safe transfer of live cetaceans will be available (cushioned supports/cover/ water). Such procedures will be practiced as part of the on site training and collaboration with OPCF will be sought if required by AFCD or management authorities.

# **APPENDIX I**

## **Detailed Site Plan**



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON-SITE.  
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KEY PLAN

- NOTES**
1. ALL COORDINATES ARE RELATED TO HONG KONG 1980 GRID.
  2. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM (mPD).
  3. REFER TO DRG NO. 211036/SL/1002 FOR THE DEFINITION OF SETTING OUT LINE (SOL) FOR THE HONG KONG BOUNDARY CROSSING FACILITIES (HKBCF) RECLAMATION SITE.
  4. REFER TO DRG NO. 211036/SL/1004 FOR DETAILS OF SITE BOUNDARY.
  5. FOR EXTENT OF SORTING FACILITIES AT FILL BANK AT TSEUNG KWAN O AREA 137 REFER TO DRG NO. 211036/SL/1015.

- LEGEND**
- - - - - SITE BOUNDARY
  - - - - - SETTING OUT LINE (SOL)
  - - - - - WORKS AREA BOUNDARY

Rev	Description	By	Date
-	FOR CONSTRUCTION	HYJL	11/11

Consultant

**ARUP** 奧雅納工程顧問  
Ove Arup & Partners Hong Kong Limited

Supported By :

- Ecosystems Ltd.
- EDA Marine Ltd.
- Geotechnical Consulting Group (Asia) Ltd.
- Hong Kong Cetacean Research Project
- IntelBuild Technyx Asia Limited
- Tony Gee and Partners LLP

Contract No. and Title:  
**Contract No. HY/2010/02**  
**Hong Kong-Zhuhai-Macao Bridge**  
**Hong Kong Boundary Crossing Facilities**  
**- Reclamation Works**

Drawing title  
**KEY PLAN**

Drawing no. <b>211036/SL/1001</b>		Rev. -	
Drawn RL	Date 11/09	Checked KKY	Approved DML
Scale 1:20000 @A1 1:40000 @A3		Status <b>WORKING</b>	

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**HIGHWAYS DEPARTMENT**  
 港珠澳大橋香港工程管理局  
 Hong Kong - Zhuhai - Macao Bridge  
 Hong Kong Project Management Office

Printed by : 12/17/2011  
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