



中國建築工程(香港)有限公司
CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.

Contract No. HY/2013/04
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities –
Infrastructure Works Stage II (Southern Portion)

CONTRACTOR SUBMISSION FORM (CSF)

To	Engineer's Representative	Attn.	Mr. Alfred Cheng
Ref. No.	CDG/CSF/EN02.05/2015/0561	CSF No.	CSF/00221/a
Subject	Submission of Monthly EM&A Report for August 2015		
Item	Description		
1	Pursuant to PS Clause 25.01A and Condition 5.4 of the Environmental Permit No. EP-353/2009/I, we would like to submit herewith a copy of Monthly EM&A Report certified by our ETL, Messrs. Mott MacDonald, for your onward submission to Environmental Protection Department.		

Remarks :

Purpose of Submission :

For Approval

For Information

For Record Purposes

Expected Reply Date :

From : Contractor's Representative

Name : Eddie Tang

Date : 8 September 2015

Signature :

Prepared by : GN

Responses to Further Comments on Monthly EM&A Report (August 2015)

No.	Item Reference	Comments Received	Responses
		ENPO (Ray Yan) by email dated 7 September 2015	
	Further Comment(s)		
1.	Section 4.1 (20 August 2015)	Please revise the last sentence to state the follow-up actions for outstanding observation will be checked in the upcoming site inspections and reported in the coming reporting period.	Noted and revised.

Our ref JFP/TK/bw/T355861/02/02/L029
T 2828 5757
E Terence.Kong@mottmac.com.hk
Your ref -

Ramboll Environ Hong Kong Limited
Room 2403, 24/F, Jubilee Centre
18 Fenwick Street
Wanchai, Hong Kong

8 September 2015
By Email

Attn: Mr. Raymond Dai – Independent Environmental Checker

Dear Sir,

**Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge (HZMB)
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)
Monthly EM&A Report for August 2015**

In accordance with Condition 5.4 of the Environmental Permit (EP-353/2009/I) covering the captioned contract, we are pleased to submit the certified Monthly EM&A Report for August 2015 for your verification.

Yours faithfully
For MOTT MACDONALD HONG KONG LIMITED



Terence Kong
Environmental Team Leader

Encl.

cc. AECOM – Mr. Alfred Cheng (By Email)
China State Construction Engineering (Hong Kong) Ltd. – Mr. Gary Ng (By Email)

Our ref JFP/TK/bw/T355861/02/02/L029
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Yours faithfully
For MOTT MACDONALD HONG KONG LIMITED



Terence Kong
Environmental Team Leader

Encl.

cc. AECOM – Mr. Alfred Cheng (By Email)
China State Construction Engineering (Hong Kong) Ltd. – Mr. Gary Ng (By Email)

8 September 2015

By Fax (3468 2076) and By Post

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

Attention: Mr. Alfred Cheng

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/2013/04 – HZMB HKBCF – Infrastructure Works Stage II
(Southern Portion)
Monthly Environmental Monitoring & Audit Report for August 2015**

Reference is made to the Environmental Team's submission of the Monthly Environmental Monitoring & Audit Report for August 2015 certified by the ET Leader (ET's ref.: "JFP/TK/bw/T355861/02/02/L029" dated 8 September 2015) and provided to us via e-mail on 8 September 2015.

We are pleased to inform you that we have no adverse comment on the captioned report. We write to verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-353/2009/I.

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

c.c.	HyD	Mr. Matthew Fung	(By Fax: 3188 6614)
	HyD	Mr. Horace Hong	(By Fax: 3188 6614)
	Mott MacDonald	Mr. Terence Kong	(By Fax: 2827 1823)
	CSCCE	Mr. Eddie Tang	(By Fax: 2459 4336)

Internal: DY, YH, LP, CL, ENPO Site

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工作程序	直接影響 危害	直接影響 人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用 品	監察及檢 討	剩餘		剩餘 風險分類	處理 次序	
												可能性	嚴重性			
機械移動	起重機械失 靈	所有工人	NA	3	2	高	<ul style="list-style-type: none"> - 起重機使用前須持有有效檢 驗證書 - 合資格人士定期檢查起重機 - 操作員每日施工前檢查起重 機械，如發現任何問題，應立 即通知當區管工及安全部 - 實施專人專機制度 - 圍封施工區域 - 實行人車分路措施 	工程師 總管 管工 機械操作員 訊號員	工具箱培訓	安全帽 反光衣 安全鞋 手套	安全經理 建造經理 安全主任	2	2	中	3	
	高處墮物	同上	同上	3	2	高	<ul style="list-style-type: none"> - 起重機械及起重裝置必須持有 有效證書 - 委任訊號員協助“睇位” - 委任吊運監督員監察吊運工序 - 實行色碼識別系統 - 由合資格人士使用前檢查起重 機械及起重裝置 - 吊運物加設尾繩 - 圍封吊運區域 	同上	同上	同上	同上	2	2	中	3	
	起重機械或 車輛動時碰 及工友	同上	同上	同上	3	2	高	<ul style="list-style-type: none"> - 實行專人專機制度 - 委任訊號員協助“睇位”及監察 機械動 - 委任吊運監督員監察吊運工序 - 實施色碼識別系統 - 圍封吊運區域 	同上	同上	同上	同上	2	2	中	3
	機械或車輛 翻側	同上	同上	同上	3	2	高	<ul style="list-style-type: none"> - 實行專人專機制度 - 委任訊號員協助“睇位”及監察 機械移動 - 移動前先計劃路徑及視察路面 情況 - 實施人車分路 - 惡劣天氣情況下停止施工 	同上	同上	同上	同上	2	2	中	3

工作程序	直接受影響 危害	直接受影響 人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用 品	監察及檢 討	剩餘		剩餘 風險分類	處理次序
												可能性	嚴重性		
機械移動	挖土機翻側	同上	同上	3	2	高	<ul style="list-style-type: none"> - 實行專人專機制度 - 委任訊號員協助“睇位”及監察機械移動 - 移動前先計劃路徑及視察路面情況 - 實施人車分路 - 惡劣天氣情況下停止施工 	同上	同上	同上	同上	2	2	中	3
							<ul style="list-style-type: none"> - 實行專人專機制度 - 圍封施工區域 - 委任訊號員協助“睇位”及監察移動 - 挖土機需裝設後視鏡 - 挖土機需裝設聲警告系統 								
運送物料到 地盤	高空墜物	同上	同上	3	2	高	<ul style="list-style-type: none"> - 起重機械及起重裝置必須持有有效證書 - 委任訊號員協助“睇位” - 委任吊運監督員監察吊運工序 	工程師 總管 管工 機械操作員 訊號員 運輸車司機	同上	同上	同上	2	2	中	3
							<ul style="list-style-type: none"> - 實行色碼識別系統 - 由合資格人士使用前檢查起重機械及起重裝置 - 吊運物加設導尾繩 - 手工具加設尾繩 - 圍封吊運區域 								
運輸車輛翻 側	運輸車輛翻 側	同上	同上	3	2	高	<ul style="list-style-type: none"> - 行車前先計劃路徑 - 行車前先視察地面情況 - 由訊號員指交通及帶領行車 - 惡劣天氣情況下暫停施工 	同上	同上	同上	同上	2	2	中	3
							<ul style="list-style-type: none"> - 實施人車分路措施 - 依照地盤現場交通指揮及使用指定行車道路 - 惡劣天氣情況下暫停施工 - 由訊號員指交通及帶領行車 								

工作程序	直接影響危害	直接影響人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用品	監察及檢討	剩餘		剩餘風險分類	處理次序		
												可能性	嚴重性				
	體力操作引致身體受傷	體力操作員	同上	3	2	高	<ul style="list-style-type: none"> - 提供體力操作培訓 - 採用正確身體姿勢進行人力操作 - 使用機械協助搬運 - 搬運物超過 16 公斤應由小組型式(兩人或以上)合力搬運或由機械協助搬運 - 拆細大型/較重物件, 以小件/較輕型式搬運 - 搬運前先檢查搬運路線, 確保沒有障礙物 	工程師 總管 管工 體力操作員	同上	同上	同上	同上	2	2	中	3	
	體力操作時絆倒	同上	同上	3	2	高	<ul style="list-style-type: none"> - 搬運物超過 16 公斤應由兩人合力搬運或由機械協助搬運 - 採用正確身體姿勢進行人力操作 - 搬運前先選定搬運路線 - 選定安全、平坦、合適搬運通道。 - 移走所有障礙物 	同上	同上	同上	同上	同上	2	2	中	3	
設立海泥存放區及攪拌設施	設立海泥存放區時體力操作引致身體受傷	同上	同上	3	2	高	<ul style="list-style-type: none"> - 提供體力操作培訓 - 使用機械協助搬運 - 採用正確身體姿勢進行人力操作 - 搬運物超過 16 公斤應由小組型式(兩人或以上)合力搬運或由機械協助搬運 - 拆細大型/較重物件, 以小件/較輕型式搬運 - 搬運前先檢查搬運路線, 確保沒有障礙物 - 配戴合適個人防護用品 	同上	同上	同上	同上	同上	2	2	中	3	
設立海泥攪拌設施	運輸車輛翻側	所有工人	同上	3	2	高	<ul style="list-style-type: none"> - 由訊號員指揮交通及帶領行車 - 移動前先計劃路徑及觀察路面情況 - 實施人車分路 - 惡劣天氣情況下停止施工 	工程師 總管 管工 運輸車司機	同上	同上	同上	同上	同上	2	2	中	3

工作程序	直接受影響 危害	直接受影響人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用品	監察及檢討	剩餘		剩餘風險分類	處理次序
												可能性	嚴重性		
	起重裝置失效	同上	同上	3	2	高	<ul style="list-style-type: none"> - 嚴格執行安全吊運工作程序 - 起重機械及起重裝置必須持有有效證書 - 由合資格人士使用前檢查起重機械及起重裝置 - 操作員每日使用前檢查，如發現任何問題應立即通知當區管工或安全部 - 實行專人專機制度 - 委任訊號員協助“睇位” - 委任吊運監督員監察吊運工序 - 實行色碼識別系統 - 吊運物加設尾繩 - 圍封施工區域 	工程師 總管 管工 起重機操作員 訊號員	同上	同上	同上	2	2	中	3
運輸儲存缸	吊運時高空墮物	同上	同上	3	2	高	<ul style="list-style-type: none"> - 起重機械及起重裝置必須持有有效證書 - 委任訊號員協助“睇位” - 委任吊運監督員監察吊運工序 - 實行色碼識別系統 - 由合資格人士使用前檢查起重機械及起重裝置 - 吊運物加設導尾繩 - 手工具加設尾繩 - 圍封吊運區域 	工程師 總管 管工 起重機操作員 訊號員 運輸車司機	同上	同上	同上	2	2	中	3
設立海泥淨化設施	海泥攪拌及淨化設施翻側	同上	同上	3	2	高	<ul style="list-style-type: none"> - 起重機使用前須持有有效檢驗證書 - 合資格人士定期檢查起重機械 - 操作員每日施工前檢查起重機械，如發現任何問題，應立即通知當區管工及安全部 - 實施專人專機制度 - 圍封施工區域 - 實行人車分路措施 	工程師 總管 管工 機械操作員 訊號員	同上	同上	同上	2	2	中	3

工作程序	直接受影響危害	直接受影響人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用品	監察及檢討	剩餘		剩餘風險分類	處理次序	
												可能性	嚴重性			
	挖掘機失靈	同上	同上	3	2	高	<ul style="list-style-type: none"> - 挖掘機須時時有效檢驗證書 - 挖掘前由工程師選定挖掘機施工坐機位置 - 實行專人專機制度 - 操作員每天開工前檢查挖掘機，如有發現任何問題，應暫停施工及通知當區管工及安全部 - 合資格人士定期檢查挖掘機 - 圍封施工區域 	同上	同上	同上	同上	同上	2	2	中	3
挖掘海泥	非指定操作員駕駛挖掘機	同上	同上	3	2	高	<ul style="list-style-type: none"> - 實行專人專機制度 - 指定挖掘機操作員離開駕駛室時必須關掉引擎及拔走啟動匙以杜絕非授權人士操作挖掘機 	同上	同上	同上	同上	同上	2	2	中	3
	使用不符標準手工工具	同上	同上	3	1	低	<ul style="list-style-type: none"> - 使用前檢查手工工具 - 管工定期檢查手工工具是否仍然可用 - 配戴合規格手套 	同上	同上	同上	同上	同上	2	1	極低	4
操作挖掘機	身體敏感/受刺激	同上	同上	3	1	低	<ul style="list-style-type: none"> - 配戴合規格防化手套，禁止使用棉手套 - 執行危險物質管制措施 - 配戴個人防護用品，例如保護衣物、護目鏡、安全鞋、呼吸器或合適口罩等 - 只有受訓工友才能進行相關工序 	同上	同上	同上	同上	同上	2	1	極低	4
							<ul style="list-style-type: none"> - 提供體力操作訓練予操作員 - 定期小休，離開駕駛室到地面做適量伸展運動 	同上	同上	同上	同上	同上	2	1	極低	4

工作程序	直接受影響危害	直接受影響人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用品	監察及檢討	剩餘		剩餘風險分類	處理次序
												可能性	嚴重性		
	噪音	同上	同上	3	1	低	<ul style="list-style-type: none"> - 使用合標準聽覺保護器 - 由合資格人士進行噪音估 - 使用優質機動設備類型機械 	同上	同上	同上	同上	2	1	極低	4
							<ul style="list-style-type: none"> - 提供清涼飲用水 - 提供清涼休息室/亭 - 制定“工作-休息-工作”時段 - 改變工作程序，避免正午時間施工 								
水泥穩定過 程及海泥回 填	直接接觸危 險物質/化學 品引致身體 敏感/受刺激	同上	同上	3	1	低	<ul style="list-style-type: none"> - 配戴合規格防化手套，禁止使用棉手套 - 執行危險物質管制措施 - 配戴個人防護用品，例如保護衣物、護目鏡、安全鞋、呼吸器或合適口罩等 - 只有受訓工友才能進行相關工序 	同上	同上	同上	同上	2	1	極低	4
Site traffic 地盤交通	地盤內發生 交通意外	同上	同上	3	2	高	<ul style="list-style-type: none"> - 實施人車分路措施 - 委任訊號員協助指揮地盤交通 - 設立交通警告標語及告示 - 倒車時須有訊號員協助“瞭位”及車輛須安裝有後視鏡及倒車聲響警告裝置 - 地盤內所有管理人員或必須穿著合標準反光衣 	同上	同上	同上	同上	2	2	中	3
							<ul style="list-style-type: none"> - 起重機械及起重裝置必須持有有效證書 - 委任訊號員協助“瞭位” - 委任吊運監督員監察吊運工序 - 實行色碼識別系統 - 由合資格人士使用前檢查起重機械及起重裝置 								
在主要道路 上進行吊運 工序	高空墮物	同上	同上	3	2	高		同上	同上	同上	同上	2	2	中	3

工作程序	直接受影響 危害	直接受影響 人員	現有措施	可能性	嚴重性	風險分類	控制措施	執行	培訓	個人防護用品	監察及檢討	剩餘		剩餘 風險分類	處理 次序	
												可能性	嚴重性			
							<ul style="list-style-type: none"> - 吊運物加設導尾繩 - 手工具加設尾繩 - 圍封吊運區域 - 實施臨時封路措施，由訊號員在封路兩端截停車輛 									

Remarks : 1. List out the standard of the safety equipment, for example EN ;

2. The assessment should be conducted by Project Manager or Engineer, General Foreman, Safety Officer, Representative of Subcontractor and worker .

Contract No. HY/2013/04 HZMB HKBCF –
Infrastructure Works Stage II (Southern Portion)

Monthly EM&A Report for August 2015

September 2015

China State Construction Engineering (Hong Kong) Limited

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- Appendix A. Location of Works Areas
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- Appendix C. Construction Programme
- Appendix D. Event and Action Plan
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- Appendix F. Environmental Licenses and Permits
- Appendix G. Implementation Schedule for Environmental Mitigation Measures (EMIS)
- Appendix H. Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions
- Appendix I. Environmental Site Inspection Schedule

Executive Summary

This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as “the Contractor”) and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of the “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities” (HZMB HKBCF) Project which is a “Designated Project” under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/I, was issued on 17 July 2015. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015.

Mott MacDonald Hong Kong Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and will be providing environmental team services for the Contract.

This is the 2nd Monthly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 to 31 August 2015 (the “reporting period”).

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2010/02 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works” and Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF”. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7A and noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2010/02 and HY/2011/03. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

The dates of site inspection during the reporting period are listed below:

- Environmental Site Inspection: 5, 13, 20 and 25 August 2015

Breaches of Action and Limit Levels

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

Complaint Log

There were no complaints received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during this reporting period.

Reporting Changes

There was no reporting change during the reporting period.

Future Key Issues

The future key issues to be undertaken in the upcoming month are:

- Preliminary Bored Piling at Abutment A1101; and
- Predrilling at Box Culvert D, Bridge D9a, D9b, D9c, D10, D11, D14a, D16 subject to actual site possession status.

1 Introduction

1.1 Background

On 13 March 2015, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by China State Construction Engineering (Hong Kong) Limited (also referred to as “the Contractor”) to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (“the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR).

The Contract is part of the “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities” (HZMB HKBCF) Project which is a “Designated Project” under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/I, was issued on 17 July 2015. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015. The works areas of the contract are shown in **Appendix A**.

This is the 2nd Monthly EM&A Report summarising the findings of EM&A activities conducted under the Contract from 1 to 31 August 2015 (the “reporting period”) and is submitted to fulfil Condition 5.4 of the EP.

1.2 Project Description

The Proposed works under this Contract comprise the following:

- Construction of vehicular bridge and at-grade roads at the southern portion of Hong Kong Boundary Crossing Facilities;
- Construction of associated street lighting, street furniture, road marking, road signage, box culverts and outfalls, drainage, sewerage, fresh water and flushing water supply, irrigation, landscape, electrical and mechanical (E&M), utilities and services works;
- Provisioning of civil engineering works and power supply for Traffic Control and Surveillance System (TCSS); and
- Other works in accordance with the Contract.

1.3 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Engineer or Engineer’s Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Alfred Cheng	3958 7471	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Y H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Ray Yan	5181 8165	3465 2899

Party	Position	Name	Telephone	Fax
Contractor	Site Agent	Eddie Tang	9863 7686	2459 4336
(China State Construction Engineering (Hong Kong) Limited)	Environmental Officer	Gary Ng	9475 6832	2459 4336
Environmental Team	Environmental Team Leader	Terence Kong	2828 5919	2827 1823
(Mott MacDonald Hong Kong Limited)				
24-hour Complaint Hotline	-	-	5236 7111	-

1.4 Construction Programme

The Construction Works Programme of the Project is provided in **Appendix C**.

1.5 Construction Works undertaken during the Reporting Period

A summary of the construction activities undertaken during this reporting period is shown below:

- 6 nos. predrilling holes completed on BCF Island;
- Contractor's temporary accommodation site formation and concrete base slab construction on BCF Island; and
- The bored piling works for Pile No. P2 was started on 28 August 2015.

2 Air Quality Monitoring

2.1 Monitoring Locations

The air quality monitoring works for the Contract are covered by Contract No. HY/2010/02 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works” and Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF”. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7A as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract No. HY/2010/02 and HY/2011/03. **Figure 1** shows the locations of air monitoring stations

Table 2.1: Construction Dust Monitoring Locations

Identification No.	Location Description
AMS6 ⁽¹⁾	Dragonair/CNAC (Group) Building
AMS7A ⁽¹⁾	Chu Kong Air-Sea Union Transportation Co. Ltd

Remarks:

- (1) The ET of this Contract should conduct impact air quality monitoring at the AMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.

2.2 Monitoring Requirements

The air quality monitoring works for the Contract are covered by Contract No. HY/2010/02 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works” and Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF”.

The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.2** and **Table 2.3** respectively.

Table 2.2: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	360	500
AMS7A –Chu Kong Air-Sea Union Transportation Co. Ltd.	370	500

Table 2.3: Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	173	260
AMS7A –Chu Kong Air-Sea Union Transportation Co. Ltd.	183	260

The event and action plan is provided in **Appendix D**.

If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

2.3 Monitoring Results

The monitoring results for AMS6 and AMS7A are reported in the monthly EM&A Reports prepared for Contract Nos. HY/2011/03 and HY/2010/02 respectively.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3 Noise Monitoring

3.1 Monitoring Locations

The noise monitoring works for the Contract are covered by Contract No. HY/2010/02 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works”. The ET of the Contract or another ET of the HZMB project is required to conduct noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2010/02. **Figure 2** shows the locations of noise monitoring stations.

Table 3.1: Construction Noise Monitoring Locations

Identification No.	Location Description
NMS2 ⁽¹⁾	Seaview Crescent
NMS3B ^{(1) (2)}	Site Boundary of Site Office Area at Works Area WA2

Remarks:

- (1) The ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
- (2) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

3.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology and monitoring schedule are detailed in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

The Action and Limit Levels for construction noise are defined in **Table 3.2**.

Table 3.2: Action and Limit Level for Construction Noise

Parameter	Action Level	Limit Level
07:00 – 19:00 hours on normal weekdays	When one documented complaint is received	75 dB(A)*

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination period.

3.3 Monitoring Results

The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports prepared for Contract No. HY/2010/02. No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2010/02 during the reporting period.

4 Environmental Site Inspection and Audit

4.1 Site Inspection

Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 5, 13, 20 and 25 August 2015.

Particular observations during the site inspections and corrective actions undertaken by the Contractor are described below.

30 July 2015

- a. Stagnant water pond following recent rainfall was observed at WA3. Subsequently, the stagnant water was reduced. The observation was closed on 5 August 2015.

5 August 2015

- a. No new observations were made.

13 August 2015

- a. Stagnant water was observed in a drip tray. Subsequently, the drip tray was removed. Also, tarpaulin sheet provided to prevent rain from entering the drip tray for a generator was not properly placed and should be improved. Subsequently, the tarpaulin sheet was rectified. The observation was closed on 20 August 2015.

20 August 2015

- a. Some dark smoke emission was observed from a drilling machine. The engine oil was replaced and no further dark smoke emission was observed. The observation was closed on 25 August 2015.
- b. Part of a haul road was observed to be dry. The Contractor was reminded to maintain the required frequency of water spraying at all times. Records of such water spraying should also be regularly maintained. Follow-up actions for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

25 August 2015

- a. No new observations were made.

4.2 Advice on the Solid and Liquid Waste Management Status

The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

There was no generation of C&D material during this reporting period. Also, there was no generation of excavated sediment for treatment during this reporting period. Excavated marine sediment will be treated using cement solidification/stabilization (Cement S/S) techniques and will be reused onsite for either backfilling or landscaping (e.g. berm material).

The monthly summary of waste flow table is detailed in **Appendix E**.

The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

4.3 Environmental Licenses and Permits

The valid environmental licenses and permits during the reporting period are summarized in **Appendix F**.

4.4 Implementation Status of Environmental Mitigation Measures

In response to the site audit findings, the Contractor carried out corrective actions.

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix G**. Most of the necessary mitigation measures were implemented properly.

4.5 Summary of Exceedance of the Environmental Quality Performance Limit

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.6 Summary of Complaints, Notification of Summons and Successful Prosecution

There were no complaints received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

No notification of summons or prosecutions was received during the reporting period.

Statistics on notifications of summons and successful prosecutions are summarized in **Appendix H**.

5 Future Key Issues

5.1 Construction Programme for the Coming Months

As informed by the Contractor, the major construction activities for September 2015 are summarized in Table 5.1.

Table 5.1: Construction Activities for September 2015

Site Area	Description of Activities
HKBCF	<ul style="list-style-type: none">• Preliminary Bored Piling at Abutment A1101; and• Predrilling at Box Culvert D, Bridge D9a, D9b, D9c, D10, D11, D14a, D16 subject to actual site possession status.

5.2 Environmental Site Inspection Schedule for the Coming Month

The tentative schedule for weekly site inspections for September 2015 is provided in **Appendix I**.

6 Conclusions

6.1 Conclusions

Commencement of the Contract took place on 13 March 2015 and the construction works of the Contract commenced on 13 July 2015.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

Environmental site inspections were carried out on 5, 13, 20 and 25 August 2015. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.

There were no complaints received in relation to the environmental impact during the reporting period.

There were no notifications of summons or prosecutions received during the reporting period.

Figures

Figure 1 Location of Air Quality Monitoring Stations

Plot File by: Mankyr 18/08/2013
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Project Management by: ais

Checked:

ISO A3 297mm x 420mm

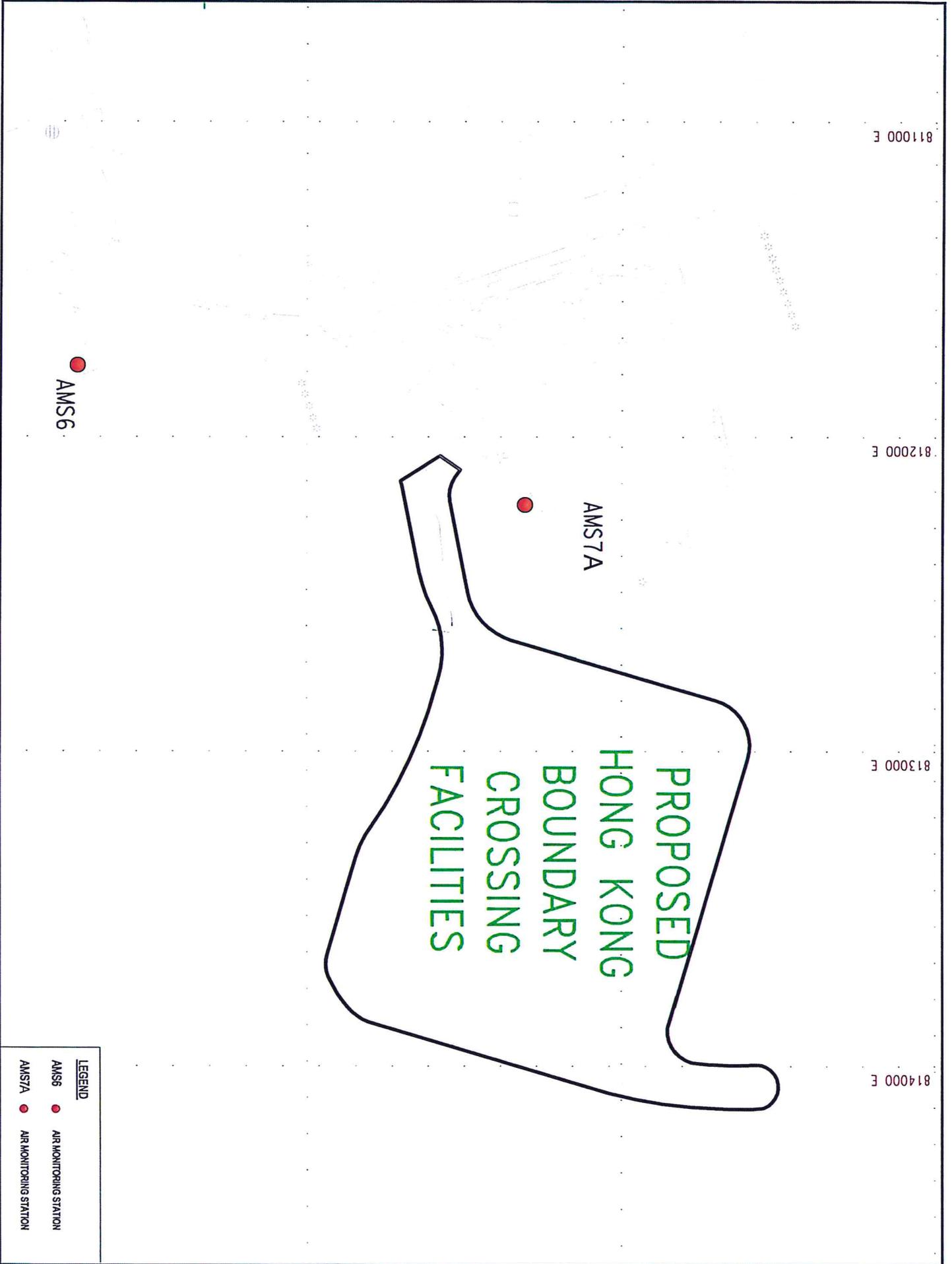
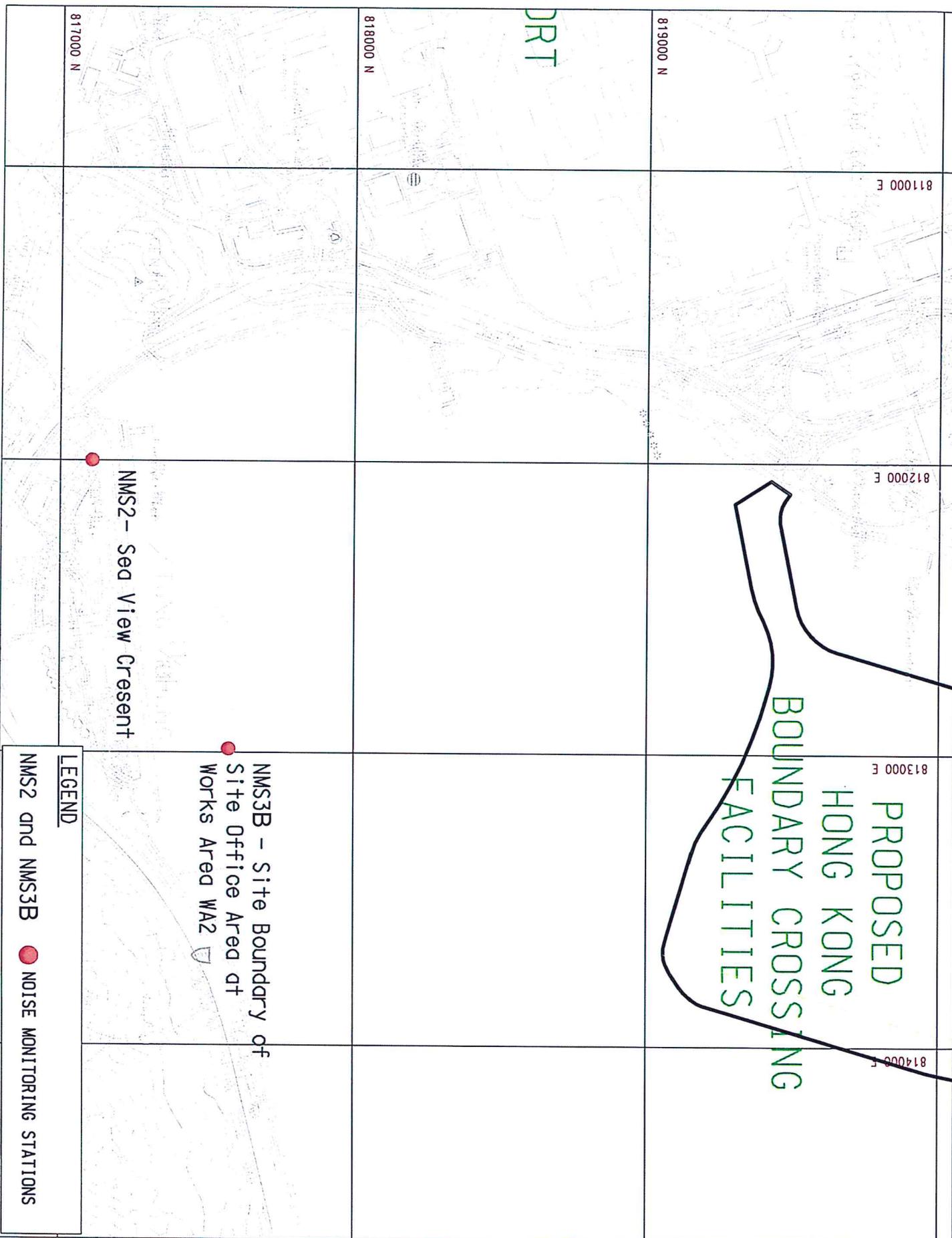


Figure 2 Location of Noise Quality Monitoring Stations

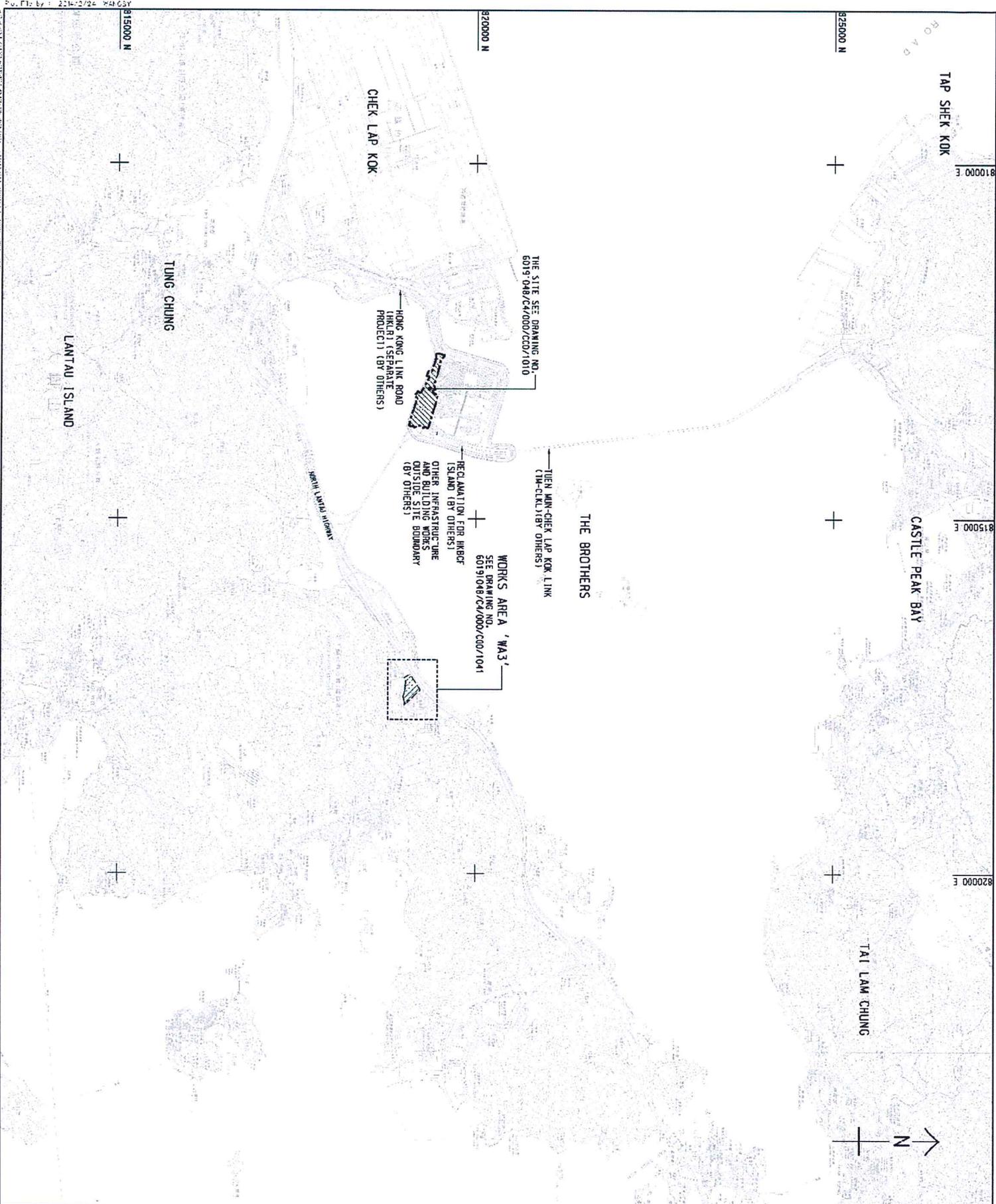
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Project Management Initials: Checked:

ISO A3 297mm x 420mm



Appendix A. Location of Works Areas



NOTES:

- COMPANIES ARE RELATED TO HONG KONG METRIC SCALE (1:500)
- DRAWINGS ARE IN MILLIMETER AND CALIBRE ARE IN METRES UNLESS OTHERWISE STATED.

LEGEND:

- SITE BOUNDARY
- WORKS AREA

NO.	REVISION	DATE	BY	CHKD
1	ISSUE FOR TENDER DRAWING	14 FEB 14	WY	WY

IR INFRASTRUCTURE DEPARTMENT
 香港政府工程處
 HONG KONG GOVERNMENT ENGINEERING DEPARTMENT
 HONG KONG GOVERNMENT ENGINEERING DEPARTMENT
 INFRASTRUCTURE WORKS STAGE (1) (PROVISION PARTITION)

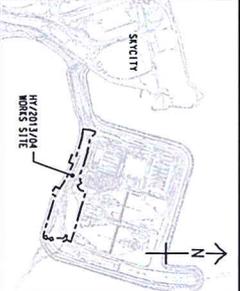
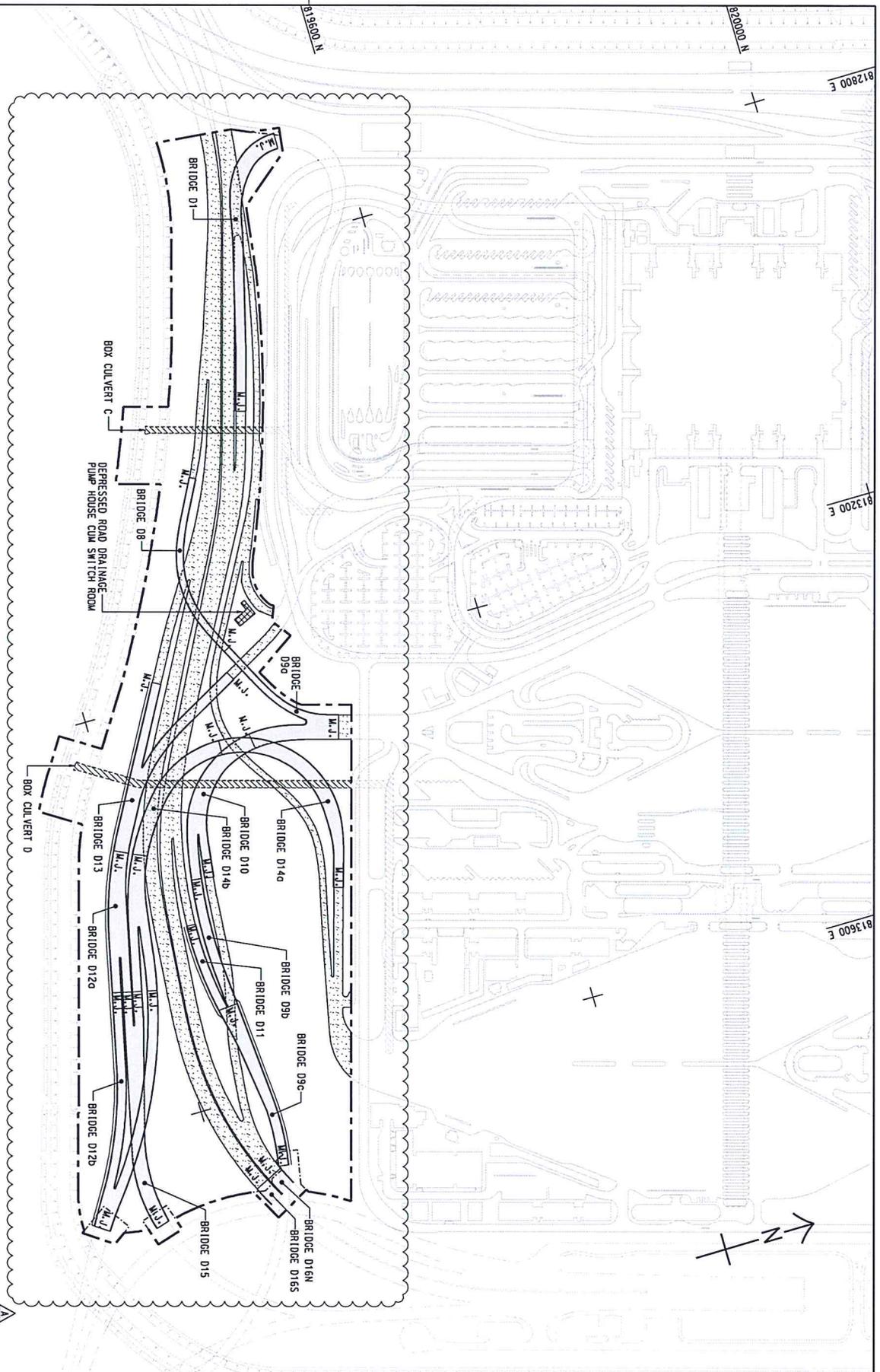
SITE LOCATION PLAN

AECOM + **Aedas**

Roberts Shik Harbour + Partners
 羅拔斯錫港有限公司

PROJECT NO.	6019 048/C4/000/CD0/1000
CLIENT	INFRASTRUCTURE DEPARTMENT
SCALE	1:1 = 25000
DATE	14 FEB 2014
DESIGNER	AECOM
CHECKER	WY
DATE	14 FEB 2014
APPROVED	WY
DATE	14 FEB 2014

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LEGEND:

- SITE BOUNDARY (dashed line)
- AT-GRADE WORKS LIMIT (dotted line)
- M.J. (solid line)
- JOINT (dashed line)
- BRIDGE (hatched pattern)
- BUILDING/FACILITIES (cross-hatched pattern)
- AT-GRADE ROAD (stippled pattern)
- BOX CULVERT (diagonal hatched pattern)

NO.	REVISION	DATE	BY	CHECKED
1	ISSUED FOR TENDER	14 FEB 14	WANGSY	WANGSY
2	FOR CONSTRUCTION	14 FEB 14	WANGSY	WANGSY

GENERAL ARRANGEMENT

AW 香港水務局
HONG KONG WATER SUPPLY AND SEWERAGE DEPARTMENT
HONG KONG CONSTRUCTION BRIDGE
HONG KONG BRIDGEWORKS CROSSING FACILITIES
- INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

AECOM + **Aedas**

Rogers Shirk Harbour + Partners
BUNO HARPOLD ATKINS ADI +

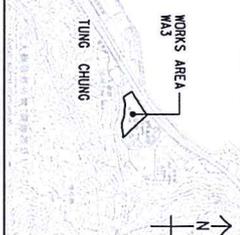
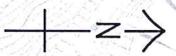
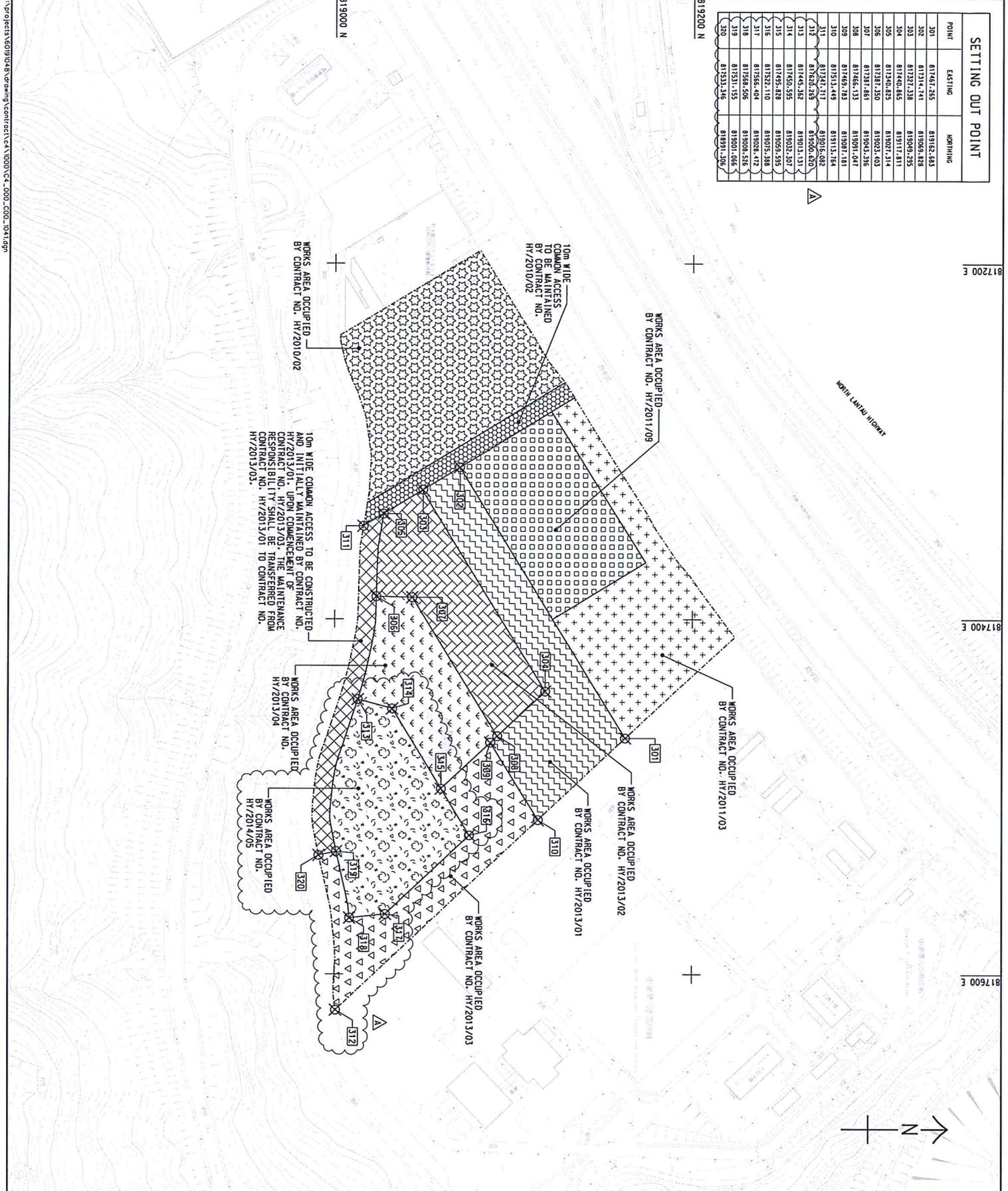
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圖號: 60191048/CA/000/CDD/1002B

DATE: 11.1.2008
日期: 11.1.2008

WORKING DRAWING

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POINT	EASTING	NORTHING
301	817467.265	819162.583
302	817314.141	819068.828
303	817327.338	819068.295
304	817440.825	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.361	819043.395
308	817465.131	819091.027
309	817469.783	819087.481
310	817513.449	819113.164
311	817427.312	819068.022
312	817328.283	819068.620
313	817449.382	819013.131
314	817450.595	819053.207
315	817495.878	819053.595
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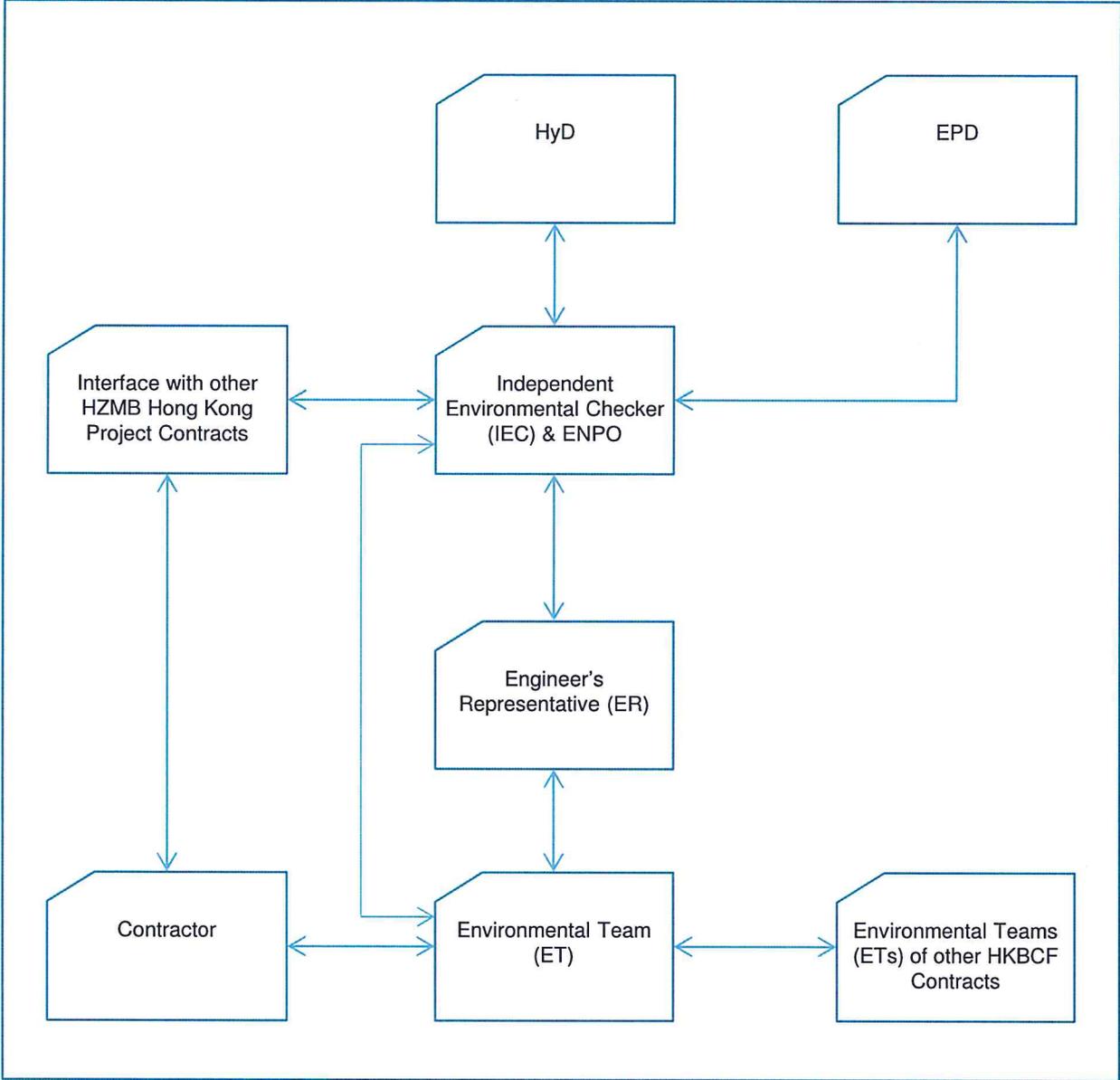


- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHANGE ARE IN METERS UNLESS OTHERWISE SHOWN.
- LEGEND:**
- WORKS AREA BOUNDARY
 - PORTION 3.1
 - PORTION 3.2
 - PORTION 3.3
 - PORTION 3.4
 - PORTION 3.5
 - PORTION 3.6
 - PORTION 3.7
 - PORTION 3.8
 - PORTION 3.9
 - PORTION 3.10

<p>AECOM + Aedas</p> <p>Rogers Stark Harbour + Partners BULO HARPOLO ATKINS ADI</p>		<p>MTR 地鐵工程局 MTR RAILWAY DEPARTMENT 香港鐵路有限公司 MTR RAILWAY DEPARTMENT 香港鐵路有限公司</p>													
<p>PROJECT NO: DRAGON 60191048/C4/000/C00/1041B</p> <p>SCALE: A1 1:1000</p>		<p>DATE: 11/1/2014</p> <p>PROJECT NO: HY2013/04</p>													
<p>WORKING DRAWING</p>		<p>WORKS AREA WA3</p>													
<p>REVISIONS:</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> <tr> <td>B</td> <td>WORKING DRAWING</td> <td>11/1/2014</td> </tr> <tr> <td>A</td> <td>REVISION APPROVAL NO. 2</td> <td>11/1/2014</td> </tr> <tr> <td>-</td> <td>REVISION DRAINING</td> <td>11/1/2014</td> </tr> </table>		NO.	DESCRIPTION	DATE	B	WORKING DRAWING	11/1/2014	A	REVISION APPROVAL NO. 2	11/1/2014	-	REVISION DRAINING	11/1/2014	<p>APPROVED BY: [Signature]</p> <p>DATE: 11/1/2014</p>	
NO.	DESCRIPTION	DATE													
B	WORKING DRAWING	11/1/2014													
A	REVISION APPROVAL NO. 2	11/1/2014													
-	REVISION DRAINING	11/1/2014													

Appendix B. Project Organization for Environmental Works

Project Organisation for Environmental Works



↔ Line of Communication

Appendix C. Construction Programme

Activity Name	Orig Dur	Early Start	Early Finish	Total Float	Contracted	Remarks
Hong Kong Boundary Crossing Facilities - Infrastructure Works Stage II (Southern Portion) WC						
Contract Key Dates						
CON.MD.005	Letter of Acceptance (LOA)	0	27-Feb-15*	0		CALL 1 - 7 day
CON.MD.0010	Commencement Date	0	13-May-15	0		CALL 1 - 7 day, 14 days from LOA
CON.MD.0020	Completion of the whole of the Works (1520)	0	10-May-19	0		CALL 1 - 7 day
Possession Dates						
CON.PD.1010	Site Possession of Portion A1 (61)	0	13-May-15*	0		CALL 1 - 7 day
CON.PD.1020	Site Possession of Portion A2 (61)	0	13-May-15*	0		CALL 1 - 7 day
CON.PD.1030	Site Possession of Portion A3 (476)	0	01-Jul-16*	0		CALL 1 - 7 day
CON.PD.1040	Site Possession of Portion A4 (627)	0	29-Nov-16*	0		CALL 1 - 7 day
CON.PD.1050	Site Possession of Portion A5 (61)	0	13-May-15*	0		CALL 1 - 7 day
CON.PD.1060	Site Possession of Portion A6 (61)	0	13-May-15*	0		CALL 1 - 7 day
CON.PD.1070	Site Possession of Portion B1 (92)	0	13-Jun-15*	0		CALL 1 - 7 day
CON.PD.1080	Site Possession of Portion B2 (123)	0	14-Jul-15*	0		CALL 1 - 7 day
CON.PD.1090	Site Possession of Portion B3 (476)	0	01-Jul-16*	0		CALL 1 - 7 day
CON.PD.1100	Site Possession of Portion B4 (627)	0	29-Nov-16*	0		CALL 1 - 7 day
CON.PD.1130	Site Possession of Portion B5 (123)	0	14-Jul-15*	0		CALL 1 - 7 day
CON.PD.1140	Site Possession of Portion C1 (184)	0	13-Sep-15*	0		CALL 1 - 7 day
CON.PD.1150	Site Possession of Portion C2 (184)	0	13-Sep-15*	0		CALL 1 - 7 day
CON.PD.1160	Site Possession of Portion D1 (183)	0	12-Sep-15*	0		CALL 1 - 7 day
CON.PD.1170	Site Possession of Portion D2 (488)	0	13-Jul-16*	0		CALL 1 - 7 day
CON.PD.1180	Site Possession of Portion D3 (183)	0	12-Sep-15*	0		CALL 1 - 7 day
Contractual Key Dates - Stage / Section Completion of the Works						
CON.FOT.KD01	KD01 - Achievement of Stage 1A (525)	0	18-Aug-16*	0		CALL 1 - 7 day
CON.FOT.KD02	KD02 - Achievement of Stage 1B (650)	0	21-Dec-16*	0		CALL 1 - 7 day
CON.FOT.KD03	KD03 - Achievement of Stage 2 (525)	0	18-Aug-16*	0		CALL 1 - 7 day
CON.FOT.KD04	KD04 - Achievement of Stage 3 (465)	0	19-Jun-16*	0		CALL 1 - 7 day
CON.FOT.KD05	KD05 - Achievement of Stage 4 (615)	0	16-Nov-16*	0		CALL 1 - 7 day
CON.FOT.KD06	KD06 - Achievement of Stage 5 (615)	0	16-Nov-16*	0		CALL 1 - 7 day
CON.FOT.KD07	KD07 - Achievement of Stage 6 (270)	0	07-Dec-15*	0		CALL 1 - 7 day
CON.FOT.KD08	KD08 - Completion of Section I of the Works (795)	0	15-May-17*	0		CALL 1 - 7 day
CON.FOT.KD09	KD09 - Completion of Section II of the Works (803)	0	23-May-17*	0		CALL 1 - 7 day
CON.FOT.KD10	KD10 - Completion of Section III of the Works (803)	0	23-May-17*	0		CALL 1 - 7 day
CON.FOT.KD11	KD11 - Completion of Section IV of the Works (565)	0	27-Sep-16*	0		CALL 1 - 7 day
CON.FOT.KD12	KD12 - Completion of Section V of the Works (803)	0	23-May-17*	0		CALL 1 - 7 day
CON.FOT.KD13	KD13 - Completion of Section VI of the Works (465)	0	19-Jun-16*	0		CALL 1 - 7 day
CON.FOT.KD14	KD14 - Completion of Section VII of the Works (1155)	0	10-May-18*	0		CALL 1 - 7 day
CON.FOT.KD15	KD15 - Completion of Section VIIIa of the Works (795)	0	15-May-17*	0		CALL 1 - 7 day
CON.FOT.KD16	KD16 - Completion of Section VIIIb of the Works (1155)	0	10-May-18*	0		CALL 1 - 7 day
CON.FOT.KD17	KD17 - Achievement of Stage 7 (718)	0	27-Feb-17*	0		CALL 1 - 7 day
CON.FOT.KD17A	KD17A - Completion of Section VIIIc of the Works (795)	0	15-May-17*	0		CALL 1 - 7 day
CON.FOT.KD18	KD18 - Completion of Section VIIId of the Works (1155)	0	10-May-18*	0		CALL 1 - 7 day

中國建築工程(香港)有限公司
CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.

◆ Current Milestone

◆ Critical Remaining Work

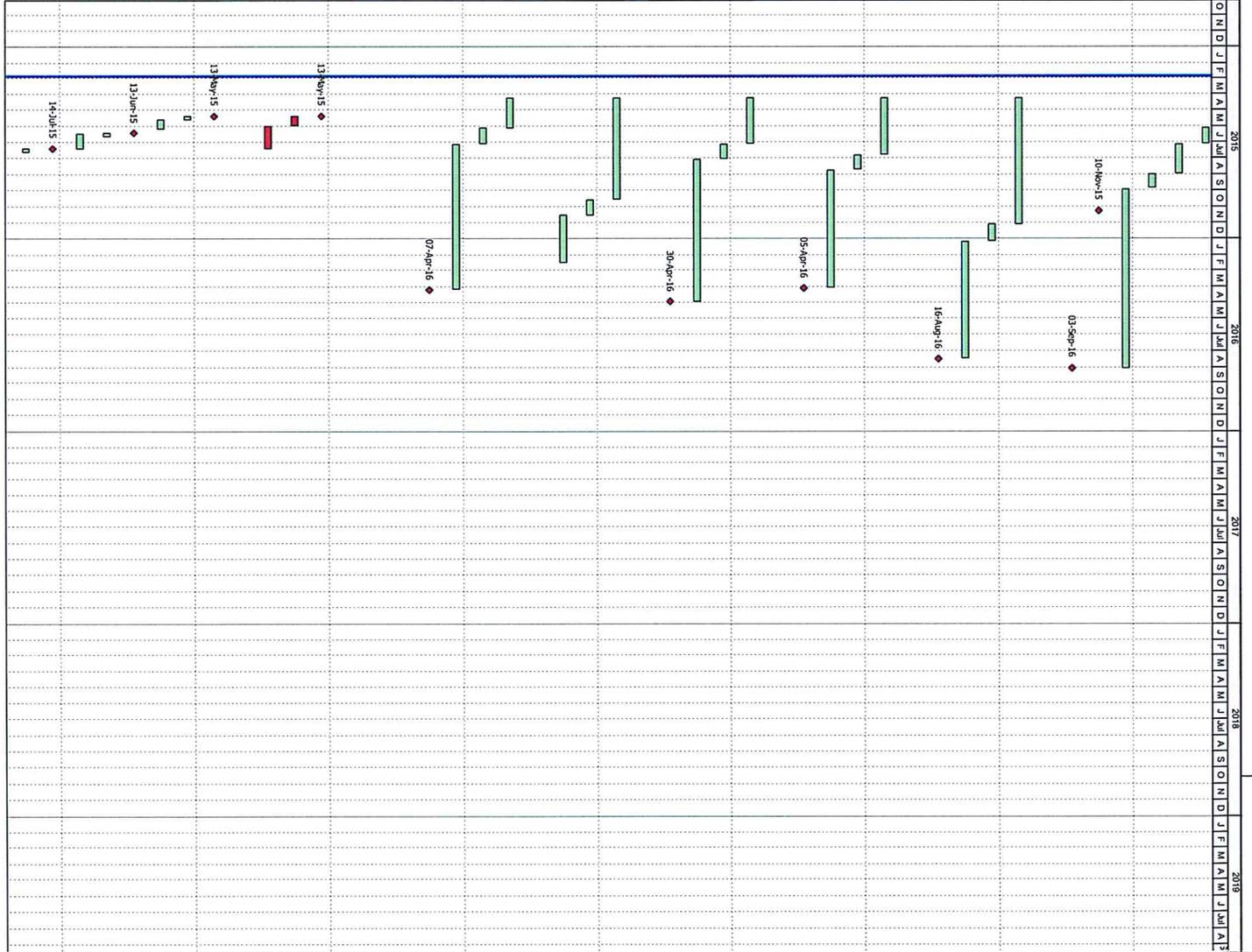
◆ Remaining Work

◆ R..

HY2013/04 - Initial Works Programme (Rev. 01)

Date	Revision	Checked	Approved
25-Nov-14	Baseline Programme (W/P)	DMLW/C	ET
22-Apr-15	Baseline Programme (W/P) Rev. 01	DMLW/C	ET

Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	Calendar	Remarks
PROJ.MA.1265	Engineer's Review / Approval	24	05-Jun-15	04-Jul-15	11	CAL 2 - 6 day	
PROJ.MA.1270	Mould Fabrication	48	06-Jul-15	29-Aug-15	11	CAL 2 - 6 day	
PROJ.MA.1280	Cast Prototype / Inspection and Approval	24	31-Aug-15	26-Sep-15	11	CAL 2 - 6 day	
PROJ.MA.2370	Production of Precast Segments (1101 nos @ 4 segments/ day)	276	29-Sep-15	02-Sep-16	11	CAL 2 - 6 day 1101 nos @ 4 segments / day	
PROJ.MA.2390	Materials Delivery (First Delivery)	0	10-Nov-15		11	CAL 2 - 6 day	
PROJ.MA.2650	Materials Delivery (Last Delivery)	0	03-Sep-16		25	CAL 2 - 6 day	
E&M Works and Building Services for Pump House and Switch Room (Design, Supply and Install)							
PROJ.SC.1285	Detailed Design and Material Equipment Submission & Statutory Approval (320/320)	200	08-Apr-15	04-Dec-15	83	CAL 2 - 6 day	
PROJ.SC.1287	Engineer's Review / Approval	24	05-Dec-15	05-Jan-16	83	CAL 2 - 6 day	
PROJ.SC.1290	Procurement and Manufacturing of Materials	180	06-Jan-16	15-Aug-16	83	CAL 2 - 6 day	
PROJ.SC.1300	Materials Delivery (first delivery)	0	16-Aug-16		83	CAL 2 - 6 day	
Steel Structures for Sign Gantry / High Mast Structure & Other Signages							
PROJ.MA.1990	Detailed Design / Material Submission	90	08-Apr-15	25-Jul-15	23	CAL 2 - 6 day	
PROJ.MA.1995	Engineer's Review / Approval	24	27-Jul-15	22-Aug-15	23	CAL 2 - 6 day	
PROJ.MA.2010	Manufacture of Steel Structures	180	24-Aug-15	02-Apr-16	23	CAL 2 - 6 day	
PROJ.MA.2020	Material Delivery (first delivery)	0	05-Apr-16		23	CAL 2 - 6 day	
Roads and Bridge Lighting							
PROJ.MA.2840	Lighting Arrangement Detailed Design / Material Submission and Approval (with 12 weeks)	72	08-Apr-15	04-Jul-15	139	CAL 2 - 6 day	
PROJ.MA.2845	Engineer's Review / Approval	24	06-Jul-15	01-Aug-15	139	CAL 2 - 6 day	
PROJ.MA.2850	Manufacture of Road and Bridge Lighting	220	03-Aug-15	29-Apr-16	139	CAL 2 - 6 day	
PROJ.MA.2860	Material Delivery (first delivery)	0	30-Apr-16		139	CAL 2 - 6 day	
Irrigation System							
PROJ.SC.1180	Detailed Design / Material Submission	160	08-Apr-15	17-Oct-15	98	CAL 2 - 6 day	
PROJ.SC.1185	Engineer's Review / Approval	24	19-Oct-15	16-Nov-15	98	CAL 2 - 6 day	
PROJ.SC.1190	Procurement and Shipment of Irrigation Material/Equipment	72	17-Nov-15	15-Feb-16	98	CAL 2 - 6 day	
Soft Landscaping							
PROJ.SC.2760	Propose Nursery for Landscape Materials	48	08-Apr-15	01-Jun-15	166	CAL 2 - 6 day	
PROJ.SC.2780	Joint Inspection and Engineer's approval	24	05-Jun-15	04-Jul-15	166	CAL 2 - 6 day	
PROJ.SC.2790	Landscape Materials Growing	224	06-Jul-15	06-Apr-16	166	CAL 2 - 6 day	
PROJ.SC.2810	Materials Delivery (first delivery)	0	07-Apr-16		166	CAL 2 - 6 day	
Construction / Installation							
Initial Works / Site Establishment & Maintenance Works							
Mobilisation and Site Establishment							
CONS.A1.0100	Site Possession / Access to Portion A1, A2, A3 & A4	0	13-May-15		0	CAL 2 - 6 day	
CONS.A1.0110	Mobilisation, Site Clearing and Site Setup	15	13-May-15	30-May-15	0	CAL 2 - 6 day	
CONS.A1.0120	Initial Temporary Facilities / Hygiene Facilities	36	01-Jun-15	14-Jun-15	0	CAL 2 - 6 day	
Gates and Haul Road Construction							
CONS.A1.1010	Site Possession / Access to Portion A1	0	13-May-15		18	CAL 2 - 6 day	
CONS.A1.1020	Survey/ Setting Out	6	13-May-15	19-May-15	18	CAL 2 - 6 day	
CONS.A1.1030	Construct Gate 1 at Haul Road	14	20-May-15	05-Jun-15	18	CAL 2 - 6 day	
CONS.B1.1010	Site Possession / Access to Portion B1	0	13-Jun-15		12	CAL 2 - 6 day	
CONS.B1.1020	Mobilisation, Site Survey and Setting Out	6	13-Jun-15	19-Jun-15	12	CAL 2 - 6 day	
CONS.B1.1030	Construct Gate 3 and Temporary Haul Road	22	16-Jun-15	13-Jul-15	12	CAL 2 - 6 day	
CONS.B2.1010	Site Possession / Access to Portion B2 & B5	0	14-Jul-15		6	CAL 2 - 6 day	
CONS.B2.1020	Site Survey / Setting out	6	14-Jul-15	20-Jul-15	6	CAL 2 - 6 day	



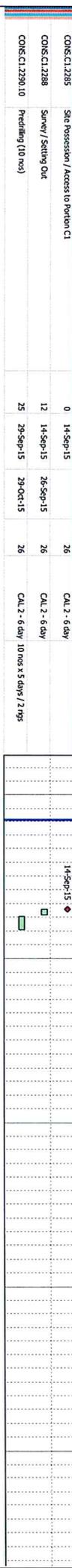
Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	Calendar	Remarks
CONS.C1.1100	Construct Box Culvert & Drainage Connection (5 bays)	72	07-Nov-16	04-Jan-16	0	CA.L 2 - 6 day	75m or 5 bays
CONS.C1.1110	Backfill	72	08-Apr-16	05-Jul-16	0	CA.L 2 - 6 day	
Box Culvert C - Bay 1-3 and Outfall							
CONS.C1.1120	Demol / Shift Haul Road to North	14	11-Feb-16	26-Feb-16	2	CA.L 2 - 6 day	
CONS.C1.1150	Remove Rock Armour	18	27-Feb-16	18-Mar-16	2	CA.L 2 - 6 day	
CONS.C1.1160	Construct Piling Platform	14	19-Mar-16	08-Apr-16	2	CA.L 2 - 6 day	
CONS.C1.1170.10	Predrilling (36 nos)	45	09-Apr-16	02-Jun-16	2	CA.L 2 - 6 day	36 nos x 5 days / 4 rps
CONS.C1.1170.20	GI Report and Verification / Agreement to Founding Level	45	23-Apr-16	17-Jun-16	2	CA.L 2 - 6 day	
CONS.C1.1180	Piling Drilling Works - (Open H-Pile (36 nos))	30	27-May-16	02-Jul-16	2	CA.L 2 - 6 day	36 nos x 2.5 days / 3 rps
CONS.C1.1880	Commence Box Culvert C Outfall	0	06-Jul-16		0	CA.L 2 - 6 day	
CONS.C1.1885	Demol / Shift Haul Road to North (on top of completed box culvert)	10	06-Jul-16	16-Jul-16	0	CA.L 2 - 6 day	
CONS.C1.1890	Remove Piling Platform	12	18-Jul-16	30-Jul-16	0	CA.L 2 - 6 day	
CONS.C1.1895	Seawall Back Installation near Seawall	18	01-Aug-16	20-Aug-16	0	CA.L 2 - 6 day	
CONS.C1.8510	General Fill	12	22-Aug-16	03-Sep-16	0	CA.L 2 - 6 day	
CONS.C1.8530	Sheet Piling	14	05-Sep-16	22-Sep-16	0	CA.L 2 - 6 day	
CONS.C1.8540	De-watering Works + Pump Test	24	23-Sep-16	22-Oct-16	0	CA.L 2 - 6 day	
CONS.C1.8550	ELS Works (2 bays of Strud)	36	24-Oct-16	03-Dec-16	0	CA.L 2 - 6 day	
CONS.C1.8570	Pile Trimming and Construction of Pile Caps (9 Pilecaps)	32	05-Dec-16	13-Jan-17	0	CA.L 2 - 6 day	9 Pile caps x 8 days / 2 WF
CONS.C1.8580	Construct Box Culvert + Outfall & Drainage Connection (38m or 3 bays)	60	14-Jan-17	28-Mar-17	0	CA.L 2 - 6 day	3 bays
CONS.C1.8590	Backfill & Remove Sea Wall Blocks and Re-state Rock Armour	35	29-Mar-17	15-May-17	0	CA.L 2 - 6 day	
CONS.C1.8590	Complete Box Culvert C	0		15-May-17	0	CA.L 2 - 6 day	

Bridge D1 in Portion C1, D1 and D3 (Interface with Contract HY/2013/03)

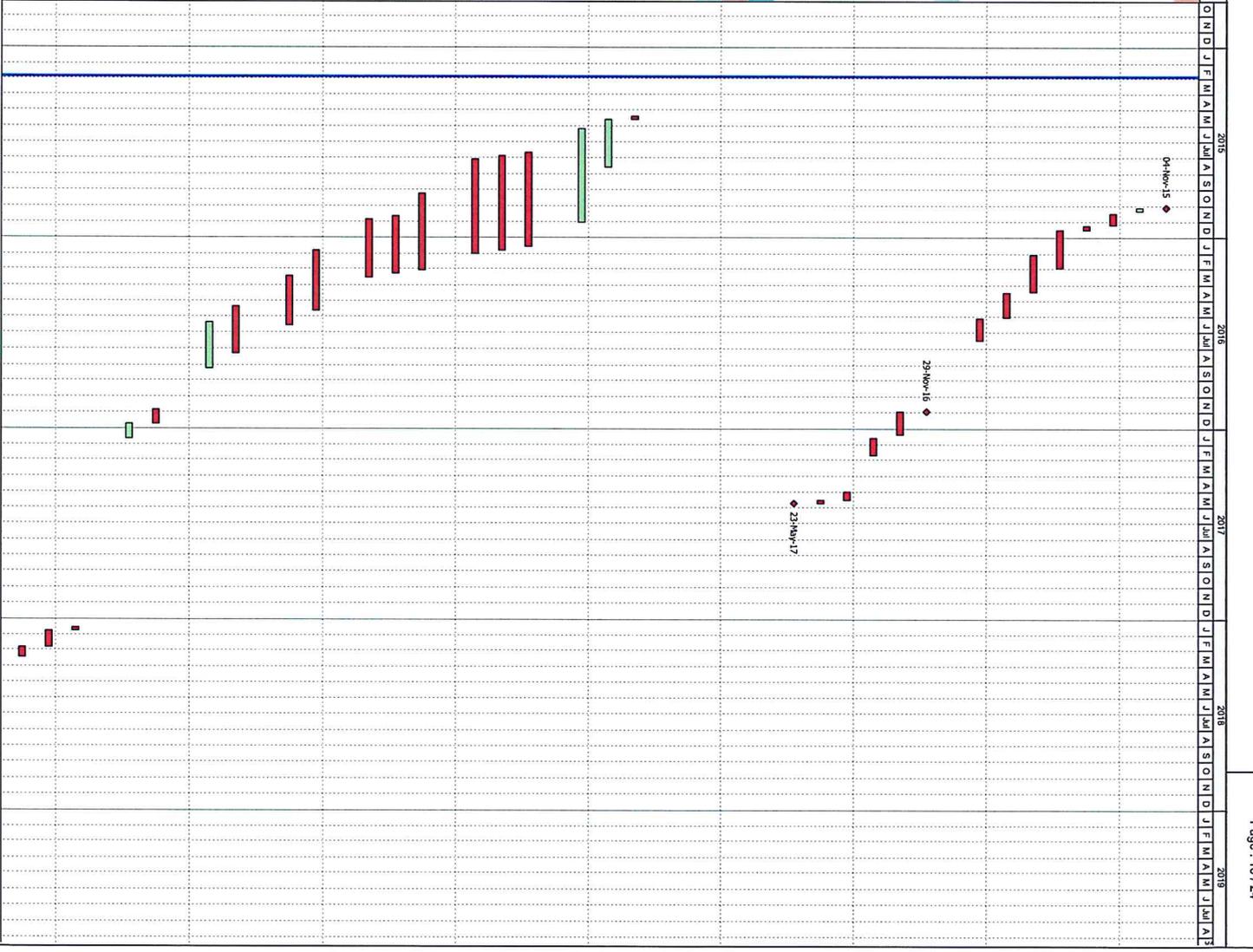
CONS.C1.1130	Access to Portion C1, D1 & D3	0	14-Sep-15		9	CA.L 2 - 6 day	
CONS.C1.1140	Survey / Setting Out	6	14-Sep-15	19-Sep-15	9	CA.L 2 - 6 day	
CONS.C1.1200.10	Predrilling (17 nos)	30	26-Sep-15	03-Nov-15	4	CA.L 2 - 6 day	17 nos x 5 days / 3 rps
CONS.C1.1200.20	GI Report and Verification / Agreement to Founding Level	8	04-Nov-15	12-Nov-15	16	CA.L 2 - 6 day	
CONS.C1.1210	D1 Bored Piling (17 nos: 1800/2000mm dia x 53m) / (2 nos + 0.8m Rock Socket)	62	02-Dec-15	18-Feb-16	0	CA.L 2 - 6 day	2 x 18 days and 15 nos x 14 days / 4 rps
CONS.C1.1215	Pile Testing	62	05-Jan-16	19-Mar-16	0	CA.L 2 - 6 day	
CONS.C1.1220	Pile Trimming + Pile Caps (6 nos)	58	02-Feb-16	16-Apr-16	0	CA.L 2 - 6 day	2 nos x 12 days + 4 nos x 8 days + 1 x 10 days + Trimming
CONS.C1.1225.10	Construct Pier 508 (Column + Pier Head & Bearings) (KCP)	24	23-Feb-16	21-Mar-16	0	CA.L 2 - 6 day	1 nos x 12 days
CONS.C1.1225.20	Per P508 Curing	24	22-Mar-16	22-Apr-16	0	CA.L 2 - 6 day	
CONS.C1.1225.30	Bearing Installation, Final Inspection and Handover	40	23-Apr-16	11-Jun-16	0	CA.L 2 - 6 day	
CONS.C1.1226	Advachement of KCP (KAS)	0		11-Jun-16	0	CA.L 2 - 6 day	
CONS.C1.1230	Construct Abutment A106	30	09-May-16	16-Apr-16	0	CA.L 2 - 6 day	1 no
CONS.C1.1240	Pier Columns + Pier Head & Bearings P101-P105	60	22-Feb-16	06-May-16	0	CA.L 2 - 6 day	5 nos x 12 days
CONS.C1.1250	Bridge D1 - Erect Precast Segments + Streching + Stressing (6 spans)	48	23-Apr-16	21-Jul-16	0	CA.L 2 - 6 day	6 segments, 6 spans x 8 days / span
CONS.C1.1260	Bridge D1 - Bridge Ancillary - Parapet/TCS, Railing, M, Drainage & Bridge Lighting	48	22-Jun-16	17-Aug-16	1	CA.L 2 - 6 day	288m / 3 modules @ 5 days cycle
CONS.C1.1265	Bridge D1 - Bridge Ancillary - Parapet + Railing, M, Drainage, Bridge Lighting, Signages	48	11-Oct-16	05-Dec-16	21	CA.L 2 - 6 day	288m / 4 modules @ 5 days cycle / 10m bay
CONS.C1.1270	D1 Final Asphalt Paving + Road Markings	12	13-Apr-17	29-Apr-17	0	CA.L 2 - 6 day	
CONS.C1.1280	Completion of Bridge D1	0		29-Apr-17	11	CA.L 2 - 6 day	

Bridge D8

CONS.C1.1285	Site Possession / Access to Portion C1	0	14-Sep-15		26	CA.L 2 - 6 day	
CONS.C1.1288	Survey / Setting Out	12	14-Sep-15	26-Sep-15	26	CA.L 2 - 6 day	
CONS.C1.1290.10	Predrilling (10 nos)	25	29-Sep-15	29-Oct-15	26	CA.L 2 - 6 day	10 nos x 5 days / 2 rps



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	Calendar	Remarks
Bridge D165 and D16N and Abutment A1601 in Portion A6							
CONS.A4.2230	Commence Works for Abutment A1601	0	04-Nov-15		4	CA.L2 - 6 day	
CONS.A4.2240	Survey / Site Setting Out	6	04-Nov-15	10-Nov-15	4	CA.L2 - 6 day	
CONS.A4.2250.10	Preliminary (1 nos)	20	16-Nov-15	06-Dec-15	0	CA.L2 - 6 day 4 nos x 5 @ 1.19	
CONS.A4.2250.20	CI Report and Verification / Agreement for Founding Level	8	09-Dec-15	17-Dec-15	0	CA.L2 - 6 day	
CONS.A4.2260	D16N/S Road Paving (4 nos x 1800mm dia)	56	18-Dec-15	27-Feb-16	0	CA.L2 - 6 day 4 nos x 14 day / 1.19	
CONS.A4.2265	Pre-Testing	56	02-Feb-16	14-Apr-16	0	CA.L2 - 6 day	
CONS.A4.2270	Pre-Trimming + Pre-Caps	40	15-Apr-16	02-Jun-16	0	CA.L2 - 6 day	
CONS.A4.2280	Construct Abutment A1601	36	03-Jun-16	16-Jul-16	0	CA.L2 - 6 day	
Bridge D165 and D16N in Portion A4							
CONS.A4.2285	Site Possession / Site Access to Portion A4	0	29-Nov-16		0	CA.L2 - 6 day	
CONS.A4.2290	Bridge D165 & D16N - Construct Deck (cont. 9+10)	36	29-Nov-16	12-Jan-17	0	CA.L2 - 6 day 1 span cast in-situ 36 days	
CONS.A4.2300	D16N & D16S Bridge Abutment - Formwork, (N) Drainage, Bridge Lighting, TCS & Signages	26	18-Jan-17	20-Feb-17	0	CA.L2 - 6 day 3nos / 1 steel roads @ 5 days cycle / 10m bay	
CONS.A4.2310	Final Asphalt Paving, Road Markings and Signages	12	02-May-17	16-May-17	0	CA.L2 - 6 day	
CONS.A4.2320	Inspection and Handover of Bridge D16	6	17-May-17	23-May-17	0	CA.L2 - 6 day	
CONS.A4.2330	Completion of Bridge D16N and D16S	0		23-May-17	0	CA.L2 - 6 day	
Road Works, Drainage and U/G Utilities							
Road Works (East of Box Culvert D)							
Road Formation and Drainage System							
Road SOL 101 / 109 / 114							
Road Formation and Drainage System							
CONS.RW.1010	Survey/ Road Setting Out	6	13-May-15	19-May-15	0	CA.L2 - 6 day	
CONS.RW.1020	Road Formation to Sub-grade (CAL & EP)	75	20-May-15	18-Aug-15	7	CA.L2 - 6 day	
CONS.RW.1030	Excavate to level and install Drainage System (Drain Pipes & Catchpits/Manholes) + "Testing & Interference Connection"	150	06-Jun-15	03-Dec-15	12	CA.L2 - 6 day	
Installation of Underground Utilities							
CONS.RW.1060	Excavate and Install Fresh Water Pipes & Valves & fittings + Testing, Cleaning & Flushing and Interference Connection	150	21-Jul-15	18-Jan-16	0	CA.L2 - 6 day	
CONS.RW.1070	Excavate and Install Common Telecom Ducting and "Telecom Ducting by Others"	150	28-Jul-15	25-Jan-16	0	CA.L2 - 6 day	
CONS.RW.1080	Excavate and Install EHV / LV Ducting and Pole Box for TCS and Road Lighting	150	04-Aug-15	01-Feb-16	0	CA.L2 - 6 day	
Kerbing and Footings for Railings, Fencing, Signages and Road Lighting							
CONS.RW.1090	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages	120	08-Dec-15	03-Mar-16	0	CA.L2 - 6 day	
CONS.RW.1100	Road Formation to Sub-base	90	20-Nov-15	10-Mar-16	0	CA.L2 - 6 day	
CONS.RW.1110	Construct Precast Road Kerbings	90	27-Nov-15	17-Mar-16	0	CA.L2 - 6 day	
Road Works to Road Base and Base Course							
CONS.RW.2140	Road Formation to Road Base	90	26-Jan-16	19-May-16	0	CA.L2 - 6 day	
CONS.RW.2150	Road Formation to Base Course	75	15-Mar-16	17-Jun-16	2	CA.L2 - 6 day	
Installation of Railing and Fencing + Road Lighting and Signages							
CONS.RW.2210	Install Road Railing and Fencing	75	12-May-16	10-Aug-16	2	CA.L2 - 6 day	
CONS.RW.2330	Install Road Lighting and Signages	75	11-Jun-16	07-Sep-16	7	CA.L2 - 6 day	
Final Paving and Road Markings							
CONS.RW.2690	Final Road Paving (Wearing Course)	24	25-Nov-16	22-Dec-16	1	CA.L2 - 6 day	
CONS.RW.2720	Road Markings and Road Signages	22	23-Dec-16	20-Jan-17	13	CA.L2 - 6 day	
Portion A6 - Final Paving and Road Markings							
CONS.RW.2930	Road Clearing	6	17-Jan-18	23-Jan-18	0	CA.L2 - 6 day	
CONS.RW.2970	Final Road Paving (Wearing Course)	24	24-Jan-18	23-Feb-18	0	CA.L2 - 6 day	Note: Late Final Paving due to Site Logistics related to
CONS.RW.2980	Road Markings and Road Signages	16	24-Feb-18	14-Mar-18	0	CA.L2 - 6 day	



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	Calendar	Remarks
Final Paving and Road Markings							
CONSRW/2710	Final Road Paving (Weaving Course)	20	21-Jan-17	16-Feb-17	1	CAL 2 - 6 day	
CONSRW/2740	Road Markings and Road Signages	16	17-Feb-17	07-Mar-17	11	CAL 2 - 6 day	
Road SOL 108 / 106							
Adjacent to Road SOL 108 / 106 and Abutment 4901							
CONSRW/2200	Excavate and Install Common Telecom Ducting and Telecom Ducting by Open Trenching	53	12-Apr-16	15-Jun-16	0	CAL 2 - 6 day	
CONSRW/2160	Road Formation to Sub-grade + Drainage System	10	12-Apr-16	22-Apr-16	0	CAL 2 - 6 day	
CONSRW/2190	Install TCS/SLV/ELV Ducting	10	23-Apr-16	05-May-16	0	CAL 2 - 6 day	
CONSRW/2230	Excavate and Construct Footing for Railing and Road Lighting	8	06-May-16	16-May-16	0	CAL 2 - 6 day	
CONSRW/2250	Road formation to Sub-base	6	17-May-16	23-May-16	0	CAL 2 - 6 day	
CONSRW/2370	Construct Precast Road Kerbsteps	6	24-May-16	30-May-16	0	CAL 2 - 6 day	
CONSRW/2280	Road formation to Road base and Base course	8	31-May-16	08-Jun-16	0	CAL 2 - 6 day	
CONSRW/2290	Install Road Lighting, Railing and Signages	4	10-Jun-16	14-Jun-16	0	CAL 2 - 6 day	
CONSRW/2400	Final Road Paving and Road markings (RD13 - Completion of Section VI)	4	15-Jun-16	18-Jun-16	0	CAL 2 - 6 day	
Road Works (West of Box Culvert D)							
Road Formation and Drainage System							
Road SOL 101 / 105							
Road Formation and Drainage System							
CONSRW/2270	Survey/ Road Setting Out	6	14-Sep-15	19-Sep-15	0	CAL 2 - 6 day	
CONSRW/2280	Road Formation to Sub-grade (CAL & FII)	75	21-Sep-15	19-Dec-15	2	CAL 2 - 6 day	
CONSRW/2290	Excavate to level level and install drainage system (Open pipes & Catchpits/basins) - Testing & Interference Connection	150	09-Oct-15	13-Apr-16	2	CAL 2 - 6 day	
Installation of Underground Utilities							
CONSRW/2295	Excavate and install HV Cable ducting on Carriageway	66	18-Sep-15	07-Dec-15	0	CAL 2 - 6 day	
CONSRW/2300	Handover area to CLR for HV Cable Laying	0	07-Dec-15	07-Dec-15	0	CAL 2 - 6 day	
CONSRW/2310	Excavate and Install Fresh Water / Values & fittings + Testing, Cleaning & Flushing and Interference Connection	150	17-Nov-15	23-May-16	0	CAL 2 - 6 day	
CONSRW/2320	Excavate and Install Common Telecom Ducting and Telecom Ducting by Others	150	24-Nov-15	30-May-16	0	CAL 2 - 6 day	
CONSRW/2330	Excavate and install ELV/ LV Ducting and Man Box for TCS	150	01-Dec-15	06-Jun-16	0	CAL 2 - 6 day	
Kerbing and Footings for Railing, Fencing, Signages and Road Lighting							
CONSRW/2340	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages	120	05-Feb-16	06-Jul-16	0	CAL 2 - 6 day	
CONSRW/2350	Road Formation to Sub-base	90	22-May-16	13-Jul-16	0	CAL 2 - 6 day	
CONSRW/2360	Construct Precast Road Kerbsteps	90	01-Apr-16	20-Jul-16	0	CAL 2 - 6 day	
Road Works to Road Base and Base Course							
CONSRW/2370	Road formation to Road Base	90	31-May-16	14-Sep-16	2	CAL 2 - 6 day	
CONSRW/2380	Road formation to Base Course	75	18-Jul-16	17-Oct-16	2	CAL 2 - 6 day	
Installation of Railing and Fencing + Road Lighting and Signages							
CONSRW/2630	Install Road Railing and Fencing	90	27-Aug-16	14-Dec-16	0	CAL 2 - 6 day	
CONSRW/2660	Install Road Lighting and Signages	75	19-Oct-16	17-Jan-17	0	CAL 2 - 6 day	
Final Paving and Road Markings							
CONSRW/2660	Final Road Paving (Weaving Course)	24	18-Feb-17	17-Mar-17	0	CAL 2 - 6 day	
CONSRW/2750	Road Markings and Road Signages	18	18-Mar-17	08-Apr-17	2	CAL 2 - 6 day	
CONSRW/2790	Cleaning and Rectification Works	12	10-Apr-17	26-Apr-17	14	CAL 2 - 6 day	
Road SOL 102 /106/111							
Road Formation and Drainage System							
CONSRW/2410	Survey/ Road Setting Out	6	21-Sep-15	26-Sep-15	0	CAL 2 - 6 day	
CONSRW/2420	Road Formation to Sub-grade (CAL & FII)	48	29-Sep-15	25-Nov-15	0	CAL 2 - 6 day	



Activity ID	Activity Name	Orig Dur	Early Start	Early Finish	Total Float	Calendar	Remarks
CONS.C1.5160	Construct Walk and Stair to Upper Basement	24	04-Aug-16	31-Aug-16	0		CALL 2 - 6 day
CONS.C1.5170	Construct Walk and Stair to Ground Level	24	01-Sep-16	30-Sep-16	0		CALL 2 - 6 day
CONS.C1.5200	Construct Walk and Roof Slab	24	03-Oct-16	31-Oct-16	0		CALL 2 - 6 day Linked to K26
CONS.C1.5205	ABWF & Building Services Works to Pump House / Switch Room	14	01-Nov-16	16-Nov-16	0		CALL 2 - 6 day
CONS.C1.5210	Achievement of Stage 5 (K05) / Interface with C3	0		16-Nov-16	0		CALL 2 - 6 day
CONS.C1.5215	Building Services Installation	75	17-Nov-16	18-Feb-17	7		CALL 2 - 6 day
CONS.C1.5220	MSP Installation for Pump House/Switch Room (B/C3)	75	17-Nov-16	18-Feb-17	7		CALL 2 - 6 day
CONS.C1.5235	ABWF Works + External Works	75	17-Nov-16	18-Feb-17	7		CALL 2 - 6 day
CONS.C1.5240	T&C and Statutory Permits/Coordination (FS, BD)	60	20-Feb-17	06-May-17	7		CALL 2 - 6 day
Sign Gantry							
Preliminary Driven H Piles and Load Testing							
CONS.C1.0510	Commence Preliminary Driven H Pile for Sign Gantry	0	13-Sep-15		0		CALL 1 - 7 day
CONS.C1.0520	Mobalise Pile + Set-up Support	12	13-Sep-15	24-Sep-15	0		CALL 1 - 7 day
CONS.C1.0530.10	Pre-drilling (2 nos)	10	25-Sep-15	08-Oct-15	0		CALL 2 - 6 day 2 nos x 5 days
CONS.C1.0530.20	GI Report and Verification / Agreement to Founding Level	8	09-Oct-15	17-Oct-15	0		CALL 2 - 6 day
CONS.C1.0540	Preliminary Driven H Pile (2 nos)	5	18-Oct-15	22-Oct-15	0		CALL 1 - 7 day 2 nos x 2.5 days / Pile - 1rg
CONS.C1.0550	Pile Load Testing and Summary Report	28	23-Oct-15	19-Nov-15	0		CALL 1 - 7 day
Sign Gantry Footings at Grade in Portion A1							
D5303 (Driven H Pile)							
CONS.A1.4360	Commence Foundation / Footing for Sign Gantry	0	20-Nov-15		10		CALL 2 - 6 day
CONS.A1.4370	Mobalise Pile + Survey / Setting Out	6	20-Nov-15	26-Nov-15	10		CALL 2 - 6 day
CONS.A1.4380.10	Pre-drilling (12 nos)	30	27-Nov-15	04-Jan-16	10		CALL 2 - 6 day 12 nos x 5 days / 2 rgs
CONS.A1.4380.20	GI Report and Verification / Agreement to Founding Level	30	11-Dec-15	18-Jan-16	10		CALL 2 - 6 day
CONS.A1.4390	Piling Works - Driven H Pile (12 nos)	30	07-Jan-16	13-Feb-16	2		CALL 2 - 6 day 12 nos x 2.5 d / Driven H Pile
CONS.A1.4410	Excavation, Pile Trimming + Cast Pile Caps (3 nos)	30	15-Feb-16	19-Mar-16	20		CALL 2 - 6 day
CONS.A1.4420	Backfill Foundation	12	21-Mar-16	07-Apr-16	20		CALL 2 - 6 day
Sign Gantry Footing at Grade in Portion C1 & Portion D1							
D5302 (610mm dia, Prebored H Pile)							
CONS.D1.3380	Commence Foundation / Footing for Sign Gantry	0	12-Sep-15		14		CALL 2 - 6 day
CONS.D1.3390	Mobalise / Survey / Setting Out	10	12-Sep-15	23-Sep-15	14		CALL 2 - 6 day
CONS.D1.3400.10	Pre-drilling for Prebored H Pile (8 nos)	20	24-Sep-15	19-Oct-15	14		CALL 2 - 6 day 8 nos x 5 days / 2 rgs
CONS.D1.3400.20	GI Report and Verification / Agreement to Founding Level	8	20-Oct-15	29-Oct-15	36		CALL 2 - 6 day
CONS.D1.3410	Pre-bored Socket H Pile (8 nos)	48	30-Oct-15	24-Dec-15	36		CALL 2 - 6 day 8 nos x 6 days / Pile - 1rg
CONS.D1.3420	Pile Testing	48	02-Dec-15	29-Jan-16	36		CALL 2 - 6 day
CONS.D1.3430	Excavation, Pile Trimming + Pile Caps (2 nos)	24	30-Jan-16	01-Mar-16	36		CALL 2 - 6 day
CONS.D1.3440	Backfill Foundation	12	02-Mar-16	15-Mar-16	36		CALL 2 - 6 day
GT408 (Driven H Pile)							
CONS.C1.4010	Commence Foundation / Footing for Sign Gantry	0	06-Nov-15		0		CALL 2 - 6 day
CONS.C1.4020	Survey / Setting Out	2	06-Nov-15	07-Nov-15	0		CALL 2 - 6 day
CONS.C1.4030.10	Pre-drilling (8 nos)	20	09-Nov-15	01-Dec-15	0		CALL 2 - 6 day 8 nos x 5 days / 2 rgs
CONS.C1.4030.20	GI Report and Verification / Agreement to Founding Level	8	02-Dec-15	10-Dec-15	0		CALL 2 - 6 day
CONS.C1.4040	Piling Works - Driven H Pile (8 nos)	20	11-Dec-15	06-Jan-16	0		CALL 2 - 6 day 8 nos x 2.5 days
CONS.C1.4060	Excavation, Pile Trimming + Cast Pile Caps (2 nos)	20	07-Jan-16	29-Jan-16	66		CALL 2 - 6 day
CONS.C1.4070	Backfill Foundation	6	30-Jan-16	05-Feb-16	66		CALL 2 - 6 day



Agency ID	Activity Name	Orig Dur	Entry Start	Entry Finish	Total Foot	Calendar	Remarks
CONS.A1.3410	Cast Base & Wall Stem 2 bays (ribbed finish to 1m below F.G.L)	24	19-Oct-15	16-Nov-15	11		CA.2 - 6 day 2 bays x 12 days
CONS.A1.3420	Bedfill to final ground level	12	17-Nov-15	30-Nov-15	11		CA.2 - 6 day
RW16N (15m / 1 bay)							
CONS.A1.3440	Commence RW16n Retaining Wall (29m / 2 bays)	0	18-Jul-16		0		CA.2 - 6 day
CONS.A1.3450	Survey/ Setting Out	4	18-Jul-16	21-Jul-16	0		CA.2 - 6 day
CONS.A1.3460	Excavate to formation level (open cut / slope)	12	22-Jul-16	04-Aug-16	0		CA.2 - 6 day
CONS.A1.3470	Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L)	20	05-Aug-16	27-Aug-16	0		CA.2 - 6 day 1 bay x 18 days
CONS.A1.3480	Install U/G Utilities - TCSS, EIV & LV Ducting	14	29-Aug-16	13-Sep-16	0		CA.2 - 6 day
CONS.A1.3490	Bedfill to final ground level	12	14-Sep-16	29-Sep-16	0		CA.2 - 6 day
RW16S (15m / 1 bay)							
CONS.A1.3500	Commence RW16s Retaining Wall (29m / 2 bays)	0	14-Sep-16		0		CA.2 - 6 day
CONS.A1.3510	Survey/ Setting Out	4	14-Sep-16	20-Sep-16	0		CA.2 - 6 day
CONS.A1.3520	Excavate to formation level (open cut / slope)	12	20-Sep-16	04-Oct-16	0		CA.2 - 6 day
CONS.A1.3530	Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L)	20	05-Oct-16	28-Oct-16	0		CA.2 - 6 day 1 bay x 12 days
CONS.A1.3540	Install U/G Utilities - TCSS, EIV & LV Ducting & Draw Pit	14	29-Oct-16	14-Nov-16	0		CA.2 - 6 day
CONS.A1.3550	Bedfill to final ground level	12	15-Nov-16	28-Nov-16	0		CA.2 - 6 day
Retaining Walls in Portion C1							
RW1 (51m / 4 bays)							
CONS.C2.3140	Commence RW1 Retaining Wall	0	17-Jun-16		32		CA.2 - 6 day
CONS.C2.3150	Survey/ Setting Out	6	17-Jun-16	23-Jun-16	32		CA.2 - 6 day
CONS.C2.3160	Excavate to formation level (open cut / slope)	20	24-Jun-16	18-Jul-16	80		CA.2 - 6 day
CONS.C2.3170	Cast Base & Wall Stem 4 bays (ribbed finish to 1m below F.G.L)	48	09-Jul-16	07-Sep-16	80		CA.2 - 6 day 4 bays x 12 days
CONS.C2.3180	Bedfill to final ground level and Reversible Roads	30	03-Sep-16	12-Oct-16	80		CA.2 - 6 day
RW1a (16m / 11 bays)							
CONS.C2.3200	Commence RW1a Retaining Wall	0	06-Jul-16		23		CA.2 - 6 day
CONS.C2.3210	Survey/ Setting Out	6	06-Jul-16	12-Jul-16	23		CA.2 - 6 day
CONS.C2.3220	Excavate to formation level (open cut / slope)	60	13-Jul-16	22-Sep-16	23		CA.2 - 6 day
CONS.C2.3230	Cast Base & Wall Stem (ribbed finish to 1m below F.G.L)	72	10-Aug-16	06-Nov-16	23		CA.2 - 6 day 11 bays x 12 days / 2 WF
CONS.C2.3240	Bedfill to final ground level and Reversible Roads	72	23-Sep-16	17-Dec-16	23		CA.2 - 6 day
CONS.C2.3250	Install Railing for RW1 and RW1a	24	19-Dec-16	18-Jan-17	23		CA.2 - 6 day
RW8 (35m / 3 bays)							
CONS.C2.3320	Commence RW8 Retaining Wall	0	16-Oct-15		7		CA.2 - 6 day
CONS.C2.3330	Survey/ Setting Out	5	16-Oct-15	22-Oct-15	7		CA.2 - 6 day
CONS.C2.3340	Excavate to formation level (open cut / slope)	12	23-Oct-15	05-Nov-15	7		CA.2 - 6 day
CONS.C2.3350	Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L)	36	06-Nov-15	17-Dec-15	7		CA.2 - 6 day 3 bays x 12 days
CONS.C2.3360	Bedfill to final ground level & Reversible Road	16	18-Dec-15	08-Jan-16	40		CA.2 - 6 day
RW13 (40m / 3 bays)							
CONS.C2.3260	Commence RW13 Retaining Wall	0	18-Dec-15		7		CA.2 - 6 day
CONS.C2.3270	Survey/ Setting Out	3	18-Dec-15	21-Dec-15	7		CA.2 - 6 day
CONS.C2.3280	Excavate to formation level (open cut / slope)	10	22-Dec-15	05-Jan-16	7		CA.2 - 6 day
CONS.C2.3290	Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L)	36	06-Jan-16	19-Feb-16	7		CA.2 - 6 day 3 bays x 12 days
CONS.C2.3300	Bedfill to final ground level and Reversible Road	12	20-Feb-16	04-Mar-16	7		CA.2 - 6 day



Zone AC4	Landscaping and Irrigation System	Landscaping - Water Meter W04
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RT12/US10/4 - RONG RONG BOUNDARY CROSSING FACILITIES INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

Activity ID	Activity Name	Orig Dur	Entry Start	Entry Finish	Total Point	Calendar	Remarks
Road Works - West of Box Culvert D							
RDW/ES.2010	Road Works West of Box Culvert D - Road Formation + Drainage	428	25-Nov-16	10-May-18	0	CAL.2 - 6 day	
RDW/ES.2020	Road Works West of Box Culvert D - U/G Utilities	228	14-Sep-15	23-Jun-16	11	CAL.2 - 6 day	
RDW/ES.2030	Road Works West of Box Culvert D - Road Formation to Sub-base + Kerbing	212	17-Nov-15	05-Aug-16	11	CAL.2 - 6 day	
RDW/ES.2040	Road Works West of Box Culvert D - Road Formation to Base Course	148	22-May-16	21-Sep-16	48	CAL.2 - 6 day	
RDW/ES.2050	Road Works West of Box Culvert D - Final Paving + Road Marking & Signages	154	31-May-16	02-Dec-16	24	CAL.2 - 6 day	
Sign Gantry							
SGW/ES.1010	Sign Gantry - Open Frame	213	14-Sep-15	04-Jun-16	0	CAL.2 - 6 day	
SGW/ES.1020	Sign Gantry - Pole caps	140	07-Jan-16	29-Jun-16	0	CAL.2 - 6 day	
SGW/ES.1030	Sign Gantry - Erection of Sign Gantry	90	03-May-16	18-Aug-16	0	CAL.2 - 6 day	
Retaining Walls							
Retaining Walls in Portion A (East)							
RWW/ES.1040	Retaining Walls in Portion A - Excavation	358	22-Jun-15	04-Oct-16	0	CAL.2 - 6 day	
RWW/ES.1050	Retaining Walls in Portion A - Construct Base + Wall Stem	354	19-Aug-15	28-Oct-16	0	CAL.2 - 6 day	
RWW/ES.1060	Retaining Walls in Portion A - Backfill and Reinforce Road	356	16-Sep-15	28-Nov-16	0	CAL.2 - 6 day	
Retaining Walls in Portion C (West)							
RWW/ES.1010	Retaining Walls in Portion C - Excavation	81	17-Jun-16	22-Sep-16	23	CAL.2 - 6 day	
RWW/ES.1020	Retaining Walls in Portion C - Construct Base + Wall Stem	99	09-Jul-16	05-Nov-16	23	CAL.2 - 6 day	
RWW/ES.1030	Retaining Walls in Portion C - Backfill and Reinforce Road	87	03-Sep-16	17-Dec-16	23	CAL.2 - 6 day	
Irrigation and Landscape							
Landscape Works - Water Meter O4							
LSW/ES.1010	Irrigation & Landscape Works WMO4 - Top Soil	397	22-Nov-16	23-Jul-17	0	CAL.2 - 6 day	
LSW/ES.1020	Irrigation & Landscape Works WMO4 - Install Irrigation Lines (Main & Lateral)	459	17-Jun-16	02-Jun-18	0	CAL.2 - 6 day	
LSW/ES.1030	Irrigation & Landscape Works WMO4 - Soil Landscaping Works (FC1 to FC4)	453	27-Oct-16	10-May-18	0	CAL.2 - 6 day	
Landscape Works - Water Meter O2							
LSW/ES.2010	Irrigation & Landscape Works WMO2 - Top Soil	130	21-Jul-16	23-Dec-16	0	CAL.2 - 6 day	
LSW/ES.2020	Irrigation & Landscape Works WMO2 - Install Irrigation Lines (Main & Lateral)	179	12-Aug-16	20-Mar-17	0	CAL.2 - 6 day	
LSW/ES.2030	Irrigation & Landscape Works WMO2 - Soil Landscaping Works (BC1 to FC4)	126	06-Dec-16	15-May-17	0	CAL.2 - 6 day	



Activity ID	Activity Name	Orig Dur	Entry Start	Entry Finish	Total Float	Calendar	Remarks	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
								2015												2016												2017												2018												2019														
Zone FC4																																																																						
CONS.CL.810	Commence Landscape Works	0	15-Nov-16		76		CAL 2 - 6 day Area 1,800 m2																																																															
CONS.CL.820	Top Soil to Landscaped Areas	12	15-Nov-16	28-Nov-16	76		CAL 2 - 6 day 1080 m3 / 100 m3 / day																																																															
CONS.CL.830	Install Irrigation Main Line	24	29-Nov-16	28-Dec-16	76		CAL 2 - 6 day																																																															
CONS.CL.840	Install Lateral Irrigation Pipes / Sprinklers	12	29-Dec-16	12-Jan-17	76		CAL 2 - 6 day																																																															
CONS.CL.850	Irrigation Coverage Test	2	13-Jan-17	14-Jan-17	76		CAL 2 - 6 day																																																															
CONS.CL.860	Soft Landscaping - Struts Planting / Ground Cover	18	22-Apr-17	15-May-17	0		CAL 2 - 6 day 1800 m2 / 10 m2 / 10 workers																																																															
CONS.CL.870	Complete Landscape Works in Zone FC4 W02	0		15-May-17	0		CAL 2 - 6 day																																																															
Irrigation Water Tanks and Booster Pumps																																																																						
CONS.CL.8790	Identify and Agree location with Engineer	12	21-Jun-16	03-Aug-16	4		CAL 2 - 6 day																																																															
CONS.CL.8800	Construct Irrigation Water Tanks and Booster Pump Chamber	48	04-Aug-16	30-Sep-16	4		CAL 2 - 6 day																																																															
CONS.CL.8810	MFP Works - Electrical and Mechanical Installation + TBC	35	03-Oct-16	14-Nov-16	4		CAL 2 - 6 day																																																															
Establishment Period (1 Year)																																																																						
CONS.CL.8190	Establishment of Landscape Works	365	16-May-17	15-May-18	0		CAL 1 - 7 day																																																															
Executive Summary																																																																						
Box Culverts																																																																						
Box Culvert D																																																																						
BCDES.1010	Box Culvert D - Borod Piling, Testing + Pie caps (Bay 1-15)	122	18-Jun-15	13-Jan-16	0		CAL 2 - 6 day																																																															
BCDES.1020	Box Culvert D - RC Box Structure + Bedding (Bay 1-15)	126	06-Nov-15	12-Apr-16	1		CAL 2 - 6 day																																																															
BCDES.1030	Box Culvert D - Borod Piling + Pie Testing (Bay 1-3)	89	21-Dec-15	13-Apr-16	0		CAL 2 - 6 day																																																															
BCDES.1040	Box Culvert D - Cofferdam + BS (Bay 1,3 + Outflow)	140	14-Apr-16	30-Sep-16	0		CAL 2 - 6 day																																																															
BCDES.1050	Box Culvert D - Pie Caps + RC Box Structure (Bay 1,3 + Outflow)	180	03-Oct-16	15-May-17	0		CAL 2 - 6 day																																																															
Box Culvert C																																																																						
BCDES.2010	Box Culvert C - Dampen Hi Pie + Pie caps (Bay 4-9)	146	06-Nov-15	06-May-16	0		CAL 2 - 6 day																																																															
BCDES.2020	Box Culvert C - Construct RC Box Structure (Bay 4-9)	96	07-Nov-16	05-Jul-16	0		CAL 2 - 6 day																																																															
BCDES.2030	Box Culvert C - Dampen Hi Pie + Load Testing (Bay 1-3)	69	09-Apr-16	02-Jul-16	2		CAL 2 - 6 day																																																															
BCDES.2040	Box Culvert C - Cofferdam + BS (Bay 1,3 + Outflow)	126	06-Jul-16	03-Dec-16	0		CAL 2 - 6 day																																																															
BCDES.2050	Box Culvert C - Piecaps + RC Box Structure (Bay 1,3 + Outflow)	127	05-Dec-16	15-May-17	0		CAL 2 - 6 day																																																															
Bridges Works																																																																						
Bridges in Portion A & B																																																																						
BRGES.1010	Bridges in Portion A & B - Borod Piling + Piecaps	309	20-May-15	03-Jun-16	0		CAL 2 - 6 day																																																															
BRGES.1020	Bridges in Portion A & B - Column / Pier Head + Bearings	227	24-Oct-15	30-Jul-16	10		CAL 2 - 6 day																																																															
BRGES.1030	Bridges in Portion A & B - Decking / Segments Erection + Sitching	309	30-Nov-15	14-Dec-16	25		CAL 2 - 6 day																																																															
BRGES.1040	Bridges in Portion A & B - Formset + Ancillary Works	224	01-Nov-16	03-Feb-17	19		CAL 2 - 6 day																																																															
Bridges in Portion C & D																																																																						
BRGES.2010	Bridges in Portion C & D - Borod Piling + Piecaps	122	26-Sep-15	28-Apr-16	0		CAL 2 - 6 day																																																															
BRGES.2020	Bridges in Portion C & D - Column, Pier Head + Bearings	77	23-Feb-16	28-May-16	0		CAL 2 - 6 day																																																															
BRGES.2030	Bridges in Portion C & D - Decking / Segments Erection + Sitching	79	23-Apr-16	28-Jul-16	0		CAL 2 - 6 day																																																															
BRGES.2040	Bridges in Portion C & D - Formset + Ancillary Works	218	22-Jun-16	15-May-17	11		CAL 2 - 6 day																																																															
Road Works																																																																						
Road Works - East of Box Culvert D																																																																						
RODES.1010	Road Works East of Box Culvert D - Road Formation + Drainage	275	20-May-15	22-Apr-16	0		CAL 2 - 6 day																																																															
RODES.1020	Road Works East of Box Culvert D - U/G Utilities	235	21-Jul-15	05-May-16	0		CAL 2 - 6 day																																																															
RODES.1030	Road Works East of Box Culvert D - Road Formation to Sub-base + Kerbing	147	26-Nov-15	23-May-16	0		CAL 2 - 6 day																																																															
RODES.1040	Road Works East of Box Culvert D - Road Formation to Base Course	107	26-Jan-16	08-Jun-16	0		CAL 2 - 6 day																																																															

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Appendix D. Event and Action Plan

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5 Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.



Appendix E. Waste Flow Table

Monthly Summary Waste Flow Table for 2015 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated (in '000m ³)	Hard Rock and Large Broken Concrete (in '000m ³)	Reused in the Contract (in '000m ³)	Reused in other Projects (in '000m ³)	Disposed as Public Fill (in '000m ³)	Imported Fill (in '000m ³)	Metals (in '000kg)	Paper/ cardboard packaging (in '000kg)	Plastics (Note 1) (in '000kg)	Chemical Waste (in '000kg)	Others, e.g. general refuses (in '000m ³)	
Jan												
Feb												
Mar												
Apr												
May												
Jun												
Sub-total	0	0	0	0	0	0	0	0	0	0	0	
Jul	0	0	0	0	0	0	0	0	0	0	0	
Aug	0	0	0	0	0	0	0	0	0	0	0	
Sep												
Oct												
Nov												
Dec												
Total	0	0	0	0	0	0	0	0	0	0	0	

Note: (1) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Appendix F. Environmental Licenses and Permits

Environmental Licenses and Permits

Item No.	Type of Permit / Licence	Reference No.	Application Date	Date of Issue	Date of Expiry	Remark
1	Environmental Permit under EIAO	EP-353/2009/I	30 Jun 2015	17 Jul 2015	N/A	Issued
2	Construction Dust Notification (HKBCF Southern Portion)	387156	26 Mar 2015	1 Apr 2015	N/A	Notified
3	Construction Waste Disposal Account	7022038	16 Mar 2015	1 Apr 2015	N/A	Account approved
4	Registration as a Chemical Waste Producer (HKBCF Southern Portion)	Waste Producer Number (WPN): 5213-951-C3952-01	27 Mar 2015	27 Apr 2015	N/A	Registration completed
5	Discharge Licence under WPCO (Works Area WA3)	WT00022316-2015	1 Jun 2015	14 Aug 2015	31 Aug 2020	Issued
6	Construction Noise Permit	GW-RS0874-15	24 Jul 2015	7 Aug 2015	1 Feb 2016	Issued

Appendix G. Implementation Schedule for Environmental Mitigation Measures (EMIS)

Appendix G – Implementation Schedule of Environmental Mitigation Measures (EMIS)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Air Quality				
S5.5.6.1	A1	1) The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; 	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides 	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and 	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 		
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the Contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected representative dust monitoring station	N/A
S5.5.7.1	A6	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:</p> <ul style="list-style-type: none"> Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; The materials which may generate airborne dusty emissions should be wetted by water spray system; All receiving hoppers should be enclosed on three sides up to 3m above unloading point; All conveyor transfer points should be totally enclosed; All access and route roads within the premises should be paved and wetted; and Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body. 	Selected representative dust monitoring station	N/A
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> All road surface within the barging facilities will be paved; Dust enclosures will be provided for the loading ramp; Vehicles will be required to pass through designated wheels wash facilities; and Continuous water spray at the loading points. 	All construction sites	N/A
Construction Noise (Air borne)				
S6.4.10	N1	<p>1) Use of good site practices to limit noise emissions by considering the following:</p> <ul style="list-style-type: none"> 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 	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		and practicable; <ul style="list-style-type: none"> • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 		
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	All construction sites	N/A
S6.4.12	N3	3) Install movable noise barriers (typically density @14kg/m ²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	For plant items listed in Appendix 6D of the EIA report at all construction sites	N/A
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	For plant items listed in Appendix 6D of the EIA report at all construction sites	V
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	All construction sites where practicable	V
	N6	6) Implement a noise monitoring under EM&A programme.	Selected representative noise monitoring station	N/A
Sediment				
S7.3	S1	1) The requirements as recommended in ETWB TC(W) 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	All construction sites	V
Waste Management (Construction Noise)				
S8.3.8	WM1	<u>Construction and Demolition Material</u> The following mitigation measures should be implemented in handling the waste: <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWB TC(W) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation. 	All construction sites	V
S8.3.9- S8.3.11	WM2	<u>C&D Waste</u> <ul style="list-style-type: none"> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering 	All construction sites	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>and wastage.</p> <ul style="list-style-type: none"> The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. 		
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD. 	All construction sites	N/A
S8.3.16	WM4	<p><u>Sewage</u></p> <ul style="list-style-type: none"> Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly. 	All construction sites	V
S8.3.17	WM5	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided. Training should be provided to workers about the concepts of site 	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.		
Water Quality (Construction Phase)				
S9.11.1.7	W2	<p data-bbox="437 407 544 436"><u>Land Works</u></p> <p data-bbox="437 443 1023 521">General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul data-bbox="437 533 1023 2027" style="list-style-type: none"> <li data-bbox="437 533 1023 589">• wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; <li data-bbox="437 600 1023 701">• sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the W PCO or collected for disposal offsite. The use of soakaways shall be avoided; <li data-bbox="437 712 1023 880">• storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; <li data-bbox="437 891 1023 969">• silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; <li data-bbox="437 981 1023 1037">• temporary access roads should be surfaced with crushed stone or gravel; <li data-bbox="437 1048 1023 1104">• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; <li data-bbox="437 1115 1023 1171">• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; <li data-bbox="437 1182 1023 1261">• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; <li data-bbox="437 1272 1023 1373">• manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; <li data-bbox="437 1384 1023 1462">• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; <li data-bbox="437 1473 1023 1574">• all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; <li data-bbox="437 1585 1023 1641">• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; <li data-bbox="437 1653 1023 1731">• the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; <li data-bbox="437 1742 1023 1821">• wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; <li data-bbox="437 1832 1023 1977">• vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the W PCO or collected for off site disposal; <li data-bbox="437 1989 1023 2027">• the Contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up 	Land-based works areas	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>immediately;</p> <ul style="list-style-type: none"> • waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; • all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 		
Ecology (Construction Phase)				
S10.7	E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Land-based works areas	V
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Land-based works areas	V
S10.7	E8	<ul style="list-style-type: none"> • Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brother Islands. 	Marine Traffic	N/A
Fisheries				
S11.7	F4	<ul style="list-style-type: none"> • Maritime Oil Spill Response Plan (MOSRP); • Contingency plan. 	HKBCF	V
Landscape & Visual (Detailed Design Phase)				
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> • Roadside planting and planting along the edge of the HKBCF Island is proposed; • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline; • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF. 	HKBCF	V
Landscape & Visual (Construction Phase)				
S14.3.3.3	LV2	<p><u>Mitigate both Landscape and Visual Impacts</u></p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p>	HKBCF	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;</p> <p>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.</p> <p>G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.</p>		
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <p>V1.Minimize time for construction activities during construction period.</p> <p>V2.Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.</p>		N/A
EM&A				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	All construction sites	V
S15.5 - S15.6	EM2	<p>1) An Environmental Team needs to be employed as per the EM&A Manual.</p> <p>2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.</p> <p>3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.</p>	All construction sites	V

Legend: V = implemented; x = not implemented; N/A = not applicable

Appendix H. Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	0	0	0
From commencement date of construction to end of reporting month	1	0	0

Appendix I. Environmental Site Inspection Schedule

Environmental Site Inspection Schedule for August 2015

Aug-15						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5 Weekly Audit	6	7	8
9	10	11	12	13 Weekly Audit	14	15
16	17	18	19	20 Weekly Audit	21	22
23	24	25 Weekly Audit	26	27	28	29
30	31					

Tentative Environmental Site Inspection Schedule for September 2015

Sep-15						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2 Weekly Audit	3 Public Holiday	4	5
6	7	8	9	10 Weekly Audit	11	12
13	14	15	16	17 Weekly Audit	18	19
20	21	22	23	24 Weekly Audit	25	26
27	28 Public Holiday	29	30 Weekly Audit			