A large, solid pink geometric graphic on the left side of the page. It features a large triangle at the top pointing right, and a large rectangle below it. The right side of the rectangle is slanted, creating a trapezoidal shape. The top-left corner of the rectangle is cut off by a diagonal line, creating a smaller triangle. The overall shape is a complex polygon with several sharp angles.

# **Agreement No. SP 05/2012 Environmental Audit for Sewerage Works at Pik Shui Sun Tsuen**

Final Report

November 2017

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# Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	November 2017	Roy Hung	Gary Chow	Eric Ching	Submission to Client / EPD

## Information class: Standard

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# Executive summary

On 3 May 2013, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by the Drainage Services Department (DSD) under Agreement No. SP 05/2012 to undertake the Independent Checker (IC) services for the Sewerage Works at Pik Shui Sun Tsuen (The Project).

The Environmental Permit (EP) No. EP- 435/2011 for the “Sewerage Works at Pik Shui Sun Tsuen” was granted by the Environmental Protection Department (EPD) on 20 December 2011. The construction works was carried out by Welcome Construction Co Ltd. (the Contractor), commenced on 26 August 2013.

When construction of the sewerage works at Pik Shui Sun Tsuen commenced, objections from the local residents were encountered. Therefore, the sewerage works were temporarily suspended. DSD arranged meetings with the local residents and tried to resolve the objections. However, there were still a majority of the local residents expressed their objections to the proposed works in a meeting held on 18 January 2014. In March 2014, DSD and the client office, SIG of EPD, decided to curtail the proposed sewerage works at Pik Shui Sun Tsuen from the construction contract.

Regarding the sewerage work on University Road, some sewer alignments were revised to suit actual site condition. Therefore, DSD submitted the application for variation of environmental permit for the sewerage works at Pik Shui Sun Tsuen to EPD on 16 July 2014 and the amended Environmental Permit (No. EP-435/2011/A) was issued by EPD to DSD on 29 July 2014.

The Final Report of Environmental Audit summarizes the works carried out during the construction phase and presents a summary of the environmental monitoring and audit works, list of activities, and mitigation measures implemented during 26 August 2013 to 31 May 2017 (the reporting period).

## Implementation of Mitigation Measures

Monthly site audit was carried out during the reporting period to confirm the Contractor's implementation of mitigation measures listed in the Project Profile (Register No. PP-454/2011). Potential environmental impact due to construction activities, including air quality, noise, water quality from site runoff, waste management and landscape and visual were monitored or reviewed.

## Record of complaint

There was no record of complaint received in the reporting period.

## Record of Notification of Summon and Successful Prosecution

There was no record of notification of summon and successful prosecution in the reporting period.



# 1 Environmental Status during the reporting period

## 1.1 Construction Programme

The construction work programme of the Project is provided in [Appendix A](#). A layout plan of the Project is provided in **Figure 1.1**.

## 1.2 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](#).

## 1.3 Work Undertaken During Construction Phase

- Sewerage construction works (including construction of sewerage manholes and pipe laying works) at the verge of the footpath of University Road.



## 2 Environmental Audit Requirements

### 2.1 Summary of Environmental Audit Requirements

The Environmental Audit requires site inspection for relevant parameters as specific in the approved Project Profile at follow:

- Air quality,
- Noise,
- Water quality from site runoff,
- Waste management,
- Landscape and visual

### 2.2 Implementation Status of Environmental Protection and Pollution Control/ Mitigation Measures

The Contractor was required to implement Specific Conditions listed in the valid EP (EP-435/2011/A) and Mitigation Measures listed in Project Profile (PP-454/2011), The implementation status of the environmental mitigation measures is provided in [Appendix C](#).

### 2.3 Status of Environmental Submissions, Licenses and Permits

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period is summarised in **Table 2-1**.

**Table 2-1: Status of Environmental Submissions, Licenses and Permits**

Statutory Reference	Description	Permit /Reference No.	Status
EIAO	Environmental Permit	EP- 435/2011/A	Valid
APCO	Notification of Construction Work under APCO	355015	Valid
WPCO	Discharge License	WT00016437-2013	Valid
	Discharge License	WT00016957-2013	Valid
WDO	Bill Account for disposal	7016760	Valid

Legend: EIAO – Environmental Impact Assessment Ordinance  
APCO – Air Pollution Control Ordinance  
WPCO – Water Pollution Control Ordinance  
WDO – Waste Disposal Ordinance

### 2.4 Advice on the Solid and Liquid Waste Management Status

The construction and demolition (C&D) material and general refuse generated by the subject works of the Project in the reporting period are shown in [Appendix D](#). Wastes were handled and disposed from site in accordance with the Project Profile and all relevant legislation and regulations.

## 3 Comments and Recommendations

### 3.1 Record on Environmental Complaints Received

No environmental complaint was received this reporting period. The cumulative statistics on complaints were provided in [Appendix E](#).

### 3.2 Record on Notifications of Summons and Successful Prosecution

No notifications of summons or successful prosecution were received this reporting period. The cumulative statistics on notifications of summons and successful prosecutions were provided in [Appendix E](#).

### 3.3 Review of Monitoring Methodology

Monthly site audit was conducted by qualified person of the Engineer or Engineer's Representatives to ensure implementation of all mitigation measures recommended in the Project Profile and to confirm full compliance through monthly report to the EPD during the reporting period.

### 3.4 Review of Practicality and Effectiveness of the Environmental Audit

The environmental monitoring results indicated that the construction activities were generally in compliance with the relevant environmental requirements and were environmentally acceptable. The monthly site inspections were carried out to ensure that all the mitigation measures recommended in the Project Profile were implemented. Therefore, the effectiveness of the of the mitigation measures were considered high for most of the time.

### 3.5 Recommendation

Improvements in the implementation of mitigation measures were recommended based on the deficiencies identified during environmental site audits in the reporting period. No further recommendations were made based on the monitoring and audit findings.





## 4 Conclusions

The construction phase Environmental Audit programme for the subject works was performed from 26 August 2013 to 31 May 2017. All monitoring and audit results and findings in the reporting period were checked and reviewed.

During the site audits, any deficiencies were identified and recommendations on remedial actions were given to the Contractor.

Wastes were handled and disposed from site in accordance with Project Profile and all relevant legislation and regulations.

No environmental complaint, notification of summon of successful prosecution were received or made against the subject works of the Project during the reporting period.

All construction works under the scope of this report were confirmed as completed during the reporting period.



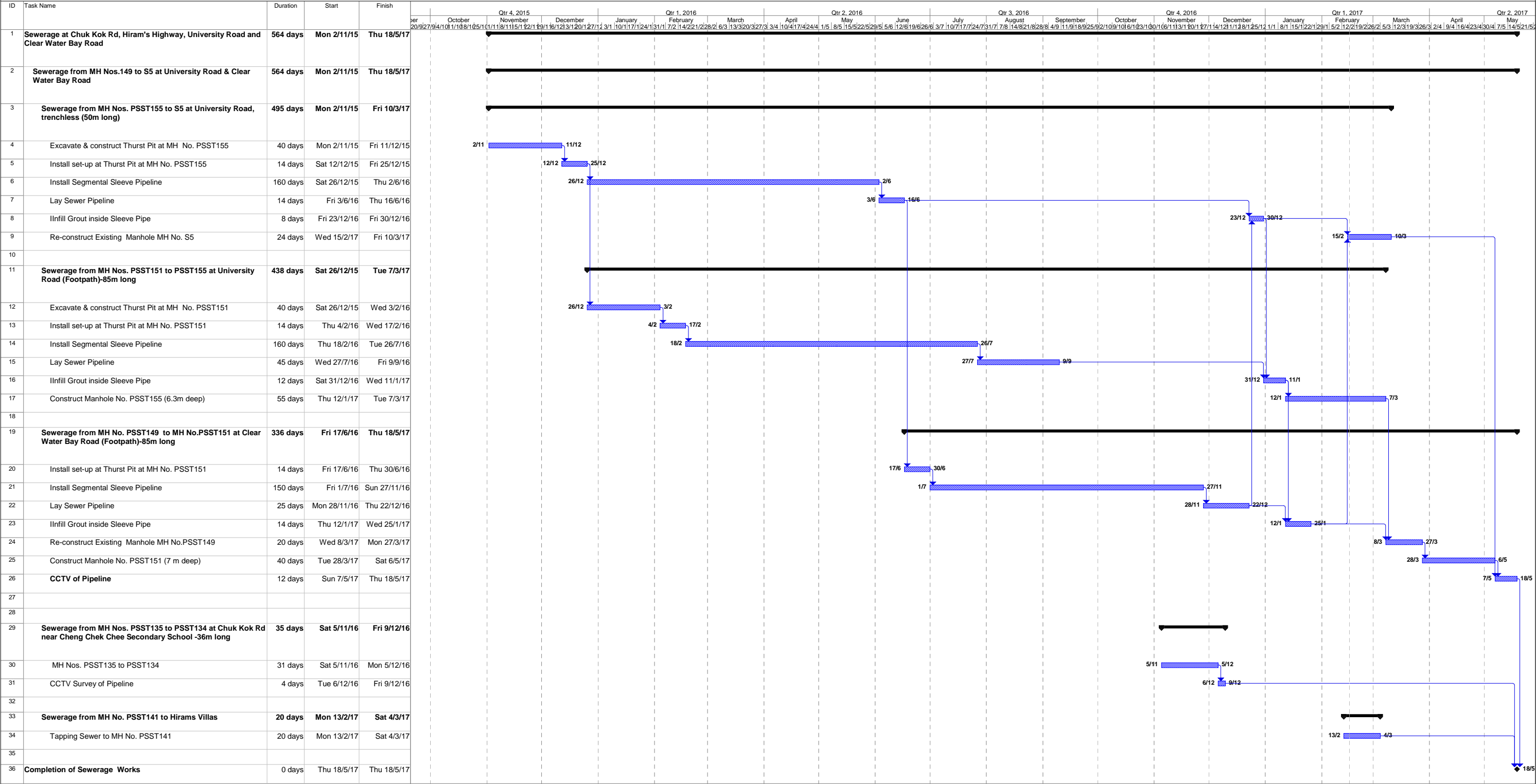
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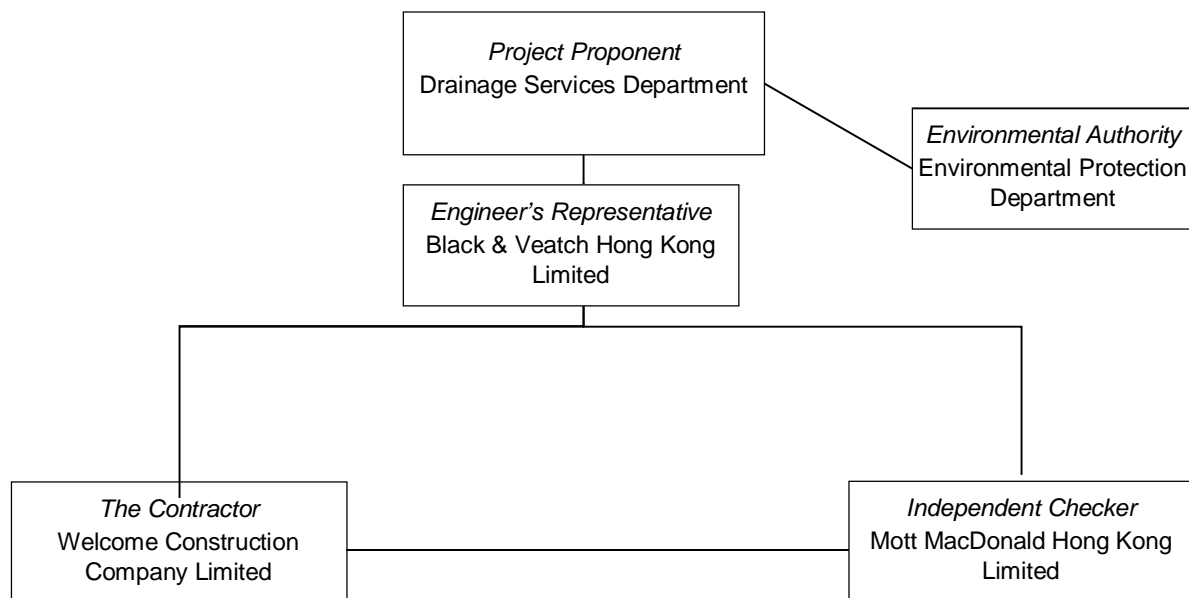


## A. Tentative Construction Programme





## B. Project Organization



Company / Department	Position	Name	Telephone / mobile
Drainage Services Department	Project Proponent	Mr Justin Wan	2594 7581
Black & Veatch Hong Kong Limited	Engineer's Representative	Mr Eugene Chan	6075 8606
Mott MacDonald Hong Kong Ltd.	Independent Checker	Mr Gary Chow	2828 5874
Welcome Construction Company Limited	Site Agent	Mr Frankie Lui	6021 7973



## C. Environmental Mitigation Measures – Implementation Status

**Table C1: Construction Noise – Recommended Mitigation Measures**

* PP / ^ EP ref:	Recommended measures	Implementation Status
*5.2.6	<ul style="list-style-type: none"> <li>Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.</li> </ul>	ü
	<ul style="list-style-type: none"> <li>Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.</li> </ul>	ü
	<ul style="list-style-type: none"> <li>Plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from nearby NSRs.</li> </ul>	ü
	<ul style="list-style-type: none"> <li>Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction works.</li> </ul>	ü
	<ul style="list-style-type: none"> <li>Mobile plant should be sited as far away from NSRs as possible.</li> </ul>	ü
*5.2.2, 5.2.6	<ul style="list-style-type: none"> <li>Use of temporary noise barrier, mobile barrier</li> </ul>	N/A
*5.2.6	<ul style="list-style-type: none"> <li>Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities</li> </ul>	ü
*5.2.6	<ul style="list-style-type: none"> <li>Noisy construction activities such as road breaking, should be scheduled to less sensitive hours during the day</li> </ul>	N/A
*5.2.6	<ul style="list-style-type: none"> <li>Liaise with the affected noise sensitive receivers on the anticipated construction activities, possible impacts, expected duration and communication channel with the project office.</li> </ul>	N/A
*5.2.1,*Table 6.1	<ul style="list-style-type: none"> <li>Adoption of quiet powered mechanical equipment (QPME) during construction</li> </ul>	ü
*5.2.4, ^2.3	<ul style="list-style-type: none"> <li>For the sewer works located less than 15 m away from Cheng Chek Chee Secondary School, construction works can only be conducted after school hours or during school breaks. For the sewer works located between 15 m – 30 m away from the School, the contractor should liaise with the school and/or the Examination Authority to ascertain the exact dates and times of all examination periods and to avoid noisy construction activities during these periods.</li> </ul>	N/A

**Table C2: Air Quality – Recommended Mitigation Measures**

* PP / ^ EP ref:	Recommended measures	Implementation Status
*5.2.8, ^1.2	<ul style="list-style-type: none"> <li>Comply with the control measures in the Air Pollution Control (Construction dust) Ordinance.</li> </ul>	ü
*5.2.8	<ul style="list-style-type: none"> <li>Excavated dusty materials should be covered by impervious sheeting or sprayed with water to keep the entire surface wet.</li> </ul>	ü
*5.2.8	<ul style="list-style-type: none"> <li>Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> </ul>	ü



**Table C3: Water Quality – Recommended Mitigation Measures**

* PP / ^ EP ref:	Recommended measures	Implementation Status
*5.2.10,	<ul style="list-style-type: none"> <li>Follow the guidelines in ProPECC PN 1/94 “Construction Site Drainage”.</li> </ul>	ü
* Table 6.1	<ul style="list-style-type: none"> <li>Silt removal facilities should be provided according to the guidelines stipulated in EPD’s ProPECC PN 1/94.</li> <li>Cover open stockpiles of construction materials with tarpaulin or similar fabric during rainstorms.</li> </ul>	ü
ProPECC PN 1/94	<ul style="list-style-type: none"> <li>Water to be pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.</li> </ul>	ü
ProPECC PN 1/94	<ul style="list-style-type: none"> <li>Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure efficiency of process.</li> </ul>	ü
ProPECC PN 1/94	<ul style="list-style-type: none"> <li>Oils and fuels should be stored in designated areas, and the fuel tanks and storage areas should have locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank.</li> </ul>	ü

**Table C4: Waste Management – Recommended Mitigation Measures**

* PP / ^ EP ref:	Recommended measures	Implementation Status
*5.2.12,	<ul style="list-style-type: none"> <li>Sort all C&amp;D materials and waste into different categories for reuse on site, recycling and disposal at designated public fill reception facilities or landfills.</li> </ul>	ü
*Table 6.1	<ul style="list-style-type: none"> <li>C&amp;D material and excavated materials should be reused on-site as fill material as far as possible.</li> <li>Disposal of C&amp;D materials should be managed through the trip ticket system for disposal of C&amp;D materials.</li> </ul>	ü
*5.2.12	<ul style="list-style-type: none"> <li>All Chemical waste should be handled, stored and disposed of in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>	ü

**Table C5: Landscape and Visual Impact – Recommended Mitigation Measures**

* PP / ^ EP ref:	Recommended measures	Implementation Status
*5.2.14,	<ul style="list-style-type: none"> <li>Retain and protect existing trees near works site.</li> </ul>	ü
*Table 6.2	<ul style="list-style-type: none"> <li>Erect site hoarding compatible with the surrounding environment for the pumping station works area</li> <li>Maintain site cleanliness and tidiness in accordance with the requirements stipulated in DEVB TCW No. 8/2010.</li> <li>Properly manage construction waste in the works area.</li> <li>Minimize the number and size of temporary works area.</li> <li>Promptly reinstate each section of the trench upon completion of the sewer works.</li> <li>Control of night-time security lightning to minimize night-time glare to nearby village.</li> </ul>	ü
		N/A
		N/A



**Table C6: Others**

* PP / ^ EP ref:	Recommended measures	Implementation Status
^1.5	<ul style="list-style-type: none"> <li>A copy of the valid Environmental Permit shall be displayed conspicuously on the Project site(s) at all vehicular site entrances/exits or at a convenient location for public information at all times. The most updated information about the Permit, including any amended Permit, shall be displayed at such locations. If the Permit Holder surrenders a part or whole of the Permit, the notice he send to the Director shall also be displayed at the same locations as the original Permit. The suspended, varied or cancelled Permit shall be removed from display at the Project site(s).</li> </ul>	Ü
n/a	<ul style="list-style-type: none"> <li>The required licenses should be obtained by the Contractor (including CNP (if any), WPCO license, etc.)</li> </ul>	Ü
Legend:	<ul style="list-style-type: none"> <li>Ü Implemented</li> <li>x Not implemented</li> <li>P Partially implemented</li> <li>N/A Not applicable</li> <li>N/O Not observed</li> </ul>	





# D. Waste Flow Table

Contract No.: DC/ 2012/06

### Summary Waste Flow Table for Reporting Period

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Yr 2013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Yr 2014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Yr 2015	0.032	0.000	0.000	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000
Yr 2016	0.657	0.000	0.000	0.000	0.657	0.000	0.000	0.000	0.000	0.000	0.012
Yr 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
total	0.689	0.000	0.000	0.000	0.689	0.000	0.000	0.000	0.000	0.000	0.017

## E. Cumulative Statistics on Complaints, Notifications, of Summons and Successful Prosecutions

Cumulative statistics for complaints, notifications of summons and successful prosecutions for the Project account for period starting from the date of commencement of construction works (i.e. 26 August 2013) to the end of the reporting period and are summarized in the **Table E1** below.

**Table E1: Statistics for complaints, notifications of summons and successful prosecutions**

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
From 26 August 2013 to 31 May 2017	0	0	0

