MTR Corporation Limited

Siu Ho Wan Station and Siu Ho Wan Depot Replanning Works

Waste Management Plan

(December 2021)

Verified by: ______ James Choi

Position: Independent Environmental Checker

Date: _____ 16 December 2021

MTR Corporation Limited

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Waste Management Plan

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Position: _____Environmental Team Leader

Date: _____16 December 2021



MTR Corporation Limited

Consultancy Agreement No. NEX/1062

Siu Ho Wan Station and Siu Ho Wan Depot Replanning Works

Waste Management Plan for Advance Works

December 2021

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Prepared & Checked:	Vanessa Ao	Ao
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Version:	А	Date:	16 December 2021
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1. INTRODUCTION

1.1 Background

- 1.1.1 MTR Corporation Limited (MTRCL) had commenced a study to formulate a technically feasible development scheme for the Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot (hereinafter referred to the "SHD Topside Development") to optimise housing supply. To facilitate the construction of the SHD Topside Development, railway related works would be required. The existing Siu Ho Wan Depot (SHD) will undergo replanning works to make room for the phased construction of the SHD Topside Development, while maintenance and supporting services to the existing Tung Chung Line (TCL), Airport Express Line (AEL) and Disneyland Resort Line (DRL) should be maintained without causing disruption to the normal operation. A new Siu Ho Wan Station (SHO) has also been proposed along the TCL tracks to meet transport needs of the SHD Topside Development and enable building of a sustainable community. Scope of the Project is shown in Figure No. NEX1062/S/SHD/ACM/Z10/101.
- 1.1.2 The Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-214/2017) for the SHO and SHD Replanning Works (hereafter referred to as the "Project") was approved on 29 November 2017 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 22 March 2021 (EP No: EP-588/2021) for the construction and operation of the Project.
- 1.1.3 Pursuant to EP Condition 2.13, the Permit Holder shall, no later than one month before the commencement of construction of the Project, deposit with the Director 4 hard copies and 1 electronic copy of a Waste Management Plan (WMP). The WMP shall describe the comprehensive separation of the Construction and Demolition (C&D) materials, and also the arrangements for avoidance, minimization, recovery, recycling, reuse, storage, collection, treatment and disposal of different categories of waste to be generated from the construction and operation activities. The WMP shall also describe the tracking system to avoid illegal dumping or landfilling of C&D materials as required in Condition 2.16¹ of EP-588/2021. The WMP shall include an implementation schedule in table form to clearly list out the amount and disposal outlet for the different types of waste arising, mitigation measures to be implemented, and the implementation party, location, timing, and environmental performance required for implementation of the mitigation measures. All mitigation measures recommended and requirements specified in the WMP and the implementation schedule shall be fully implemented.
- 1.1.4 Since the construction of the Project would be taken in stages, the WMP(s) under EP Condition 2.13 would be prepared and submitted to DEP for approval no later than one month before the commencement of each stage of the Project.
- 1.1.5 This WMP covers the advance works of the Project only. Location of advance construction works boundary is shown in **Figure No. NEX1062/S/SHD/ACM/Z10/401** and advance construction works sites would be located within this works boundary. The advance works will be conducted under three works contracts and the corresponding tentative construction programme is detailed in **Table 1.1**.

¹ Pursuant to EP Condition 2.16, all dump trucks for C&D materials transportation and disposal shall be equipped with Global Positioning System (GPS) or equivalent automatic identification system (AIS) for real time tracking and monitoring of their travel routings and parking locations in order to avoid illegal dumping or landfilling of C&D materials. The data collected by GPS or equivalent AIS relating to travel routings and parking locations of all dump trucks shall be recorded properly for checking and auditing by ET and IEC. The audit findings shall be reported in the Monthly EM&A Report.

Contract No.	Description of Construction Works	Tentative Construction Programme		
NO.		From	То	
1731	Trial Piling for SHD Phase 1	Q2 2022	Q3 2022	
1732	 Construction of cable bridges and associated civil works for cable diversion 	Q4 2021	Q4 2022	
1733	 Construction of vehicular access bridge Demolition of paint shop Construction of engineering vehicle (EV) stabling tracks 	Q2 2022	Q2 2023	

Table 1.1 Tentative Works Programme of Advance Works



2. WASTE MANAGEMENT HIERARCHY AND APPROACH

2.1 Key Source of Waste Generation from the Project

- 2.1.1 The key types of waste arising from the advance works would include C&D materials comprising both inert and non-inert components, land-based sediments, chemical waste and general refuse.
- 2.1.2 The estimated quantities of waste arising from the advance works are summarised in **Table 2.1**, which will be subject to review and update as part of the detailed design.

Waste Type	Construction Activities	Estimated Approx. Quantity
Inert C&D Materials	 Site clearance & Hoarding/UU/Cable Trenches Excavation and backfilling work H-Piling Paint Shop Demolition Substructure (i.e. footings, pile caps, columns) and superstructure (i.e. cable bridges, vehicular bridge spans) EV Tracks - Formation and Track Installation 	8,090 m ³
Non-inert C&D Materials	 Site clearance & Hoarding/UU/Cable Trenches Substructure (i.e. footings, pile caps, columns) and superstructure (i.e. cable bridges, vehicular bridge spans) EV Tracks - Formation and Track Installation 	6,680 m ³
Land-Based Sediments	Deep excavation work	A few hundred cubic metre ⁽¹⁾
Chemical Waste	 Use of cleansing fluids, solvent, lubricating oil, waste fuel, etc., from the operation and maintenance of construction plant and equipment 	Small to a few hundred litres per month
General Refuse	Generation of containers and wastepaper from the daily activities of construction workforce	195 kg/day

 Table 2.1
 Estimation of Waste Arising during Construction Phase

Note:

(1) The land-based sediments, if any, arising from the advance works will be quantified in Sediment Quality Report which will be submitted under Dumping at Sea Ordinance (DASO). Any excavated sediment will be reused on site as far as practicable and will follow the DASO requirements for off-site disposal if required.

2.2 Waste Management Approach

- 2.2.1 The Project has adopted a series of key waste management principles, including avoidance, minimization, recovery, recycling, reuse. Waste reduction measures will be introduced at the planning and detailed design stage and carried through the construction activities, whenever possible, by careful purchasing control, reuse/ recycling of materials and good site management.
- 2.2.2 The design consultant and contractor should adopt the hierarchy of waste management and incorporate the waste management approach as summarised in **Table 2.2**.



Management Principles	Design Aspect / Project Component	Waste Management Approach
Avoidance and Minimization	 Construction of vehicular access bridge and EV stabling tracks Construction of cable bridges and associated civil works for cable diversion 	 The construction programme has been carefully planned and effective structural design and scheming have also been developed to: avoid the overestimation of materials needed; minimise generation of C&D materials; and minimise the extent of excavation. With the above approach, the quantity of surplus C&D materials needed to be disposed off-site will be minimised. The impact associated with collection and transportation will also be minimised.
Recovery and Recycling	General refuse produced by the workforce daily	Collect and store the waste according to their materials. The recyclable waste will be recycled by the reputable waste collector.
Reuse	 Demolition of paint shop Construction of vehicular access bridge and EV stabling tracks Site clearance 	Through the carefully planned construction schedule and waste management programme, the C&D materials generated comprising broken rock and building debris, will be reused on site as much as possible.

Table 2.2 Hierarchy of Waste Management

- 2.2.3 The different areas of the work site should be designated for waste segregation and separation. The C&D materials should be sorted on-site, with the inert portion to be stored in different containers, skips or stockpiles to re-use on-site as far as possible, to minimise the net amount of C&D material generated from the Project. Non-inert C&D materials should also be sorted on-site into recyclables and non-recyclable components. The contractor should employ a reputable waste collector to remove the general refuse, separately from other waste.
- 2.2.4 Chemical waste should be stored on-site with suitably designed containers and collected by licensed companies.
- 2.2.5 A disposal programme is proposed for the handling of non-recyclable waste. The surplus C&D materials will be disposed off-site. The surplus comprises soft inert C&D material, rock, artificial hard material (e.g. broken concrete) and non-inert waste. The disposal outlet for different materials generated are detailed in **Table 2.3**.

Material Type	Materials Generated	Disposal Arrangement and Outlet ⁽¹⁾
C&D Material	Inert C&D materials: Rocks, Soft Materials and Artificial Hard Materials	Tuen Mun Area 38 Fill Bank by dump trucks through North Lantau Highway
	Non-inert C&D materials: Vegetation, Timber, Papers and Plastics	West New Territories (WENT) Landfill by dump trucks through North Lantau Highway

Table 2.3 Disposal Arrangement and Outlet for Different Waste Types



Material Type	Materials Generated	Disposal Arrangement and Outlet ⁽¹⁾
Land-Based Sediments	Category L Sediment, Category M Sediment (passed Tier II – biological screening), Category H Sediment (does not required the Tier III biological screening)	On-site reuse as far as practicable Open Sea Disposal, final disposal site to be determined by Marine Fill Committee (MFC)
Chemical Waste	Oil and grease, hydraulic fluids, paints, solvents, cleaners etc.	Chemical Waste Treatment Centre or other licensed waste recycling/ treatment facilities by reputable waste collector
General Refuse	Food waste, plastic, aluminium cans, waste papers etc.	Recyclable materials: on-site sorting and off-site recycling; collect by reputable waste collector Non-recyclable refuse: WENT Landfill by dump trucks through North Lantau Highway

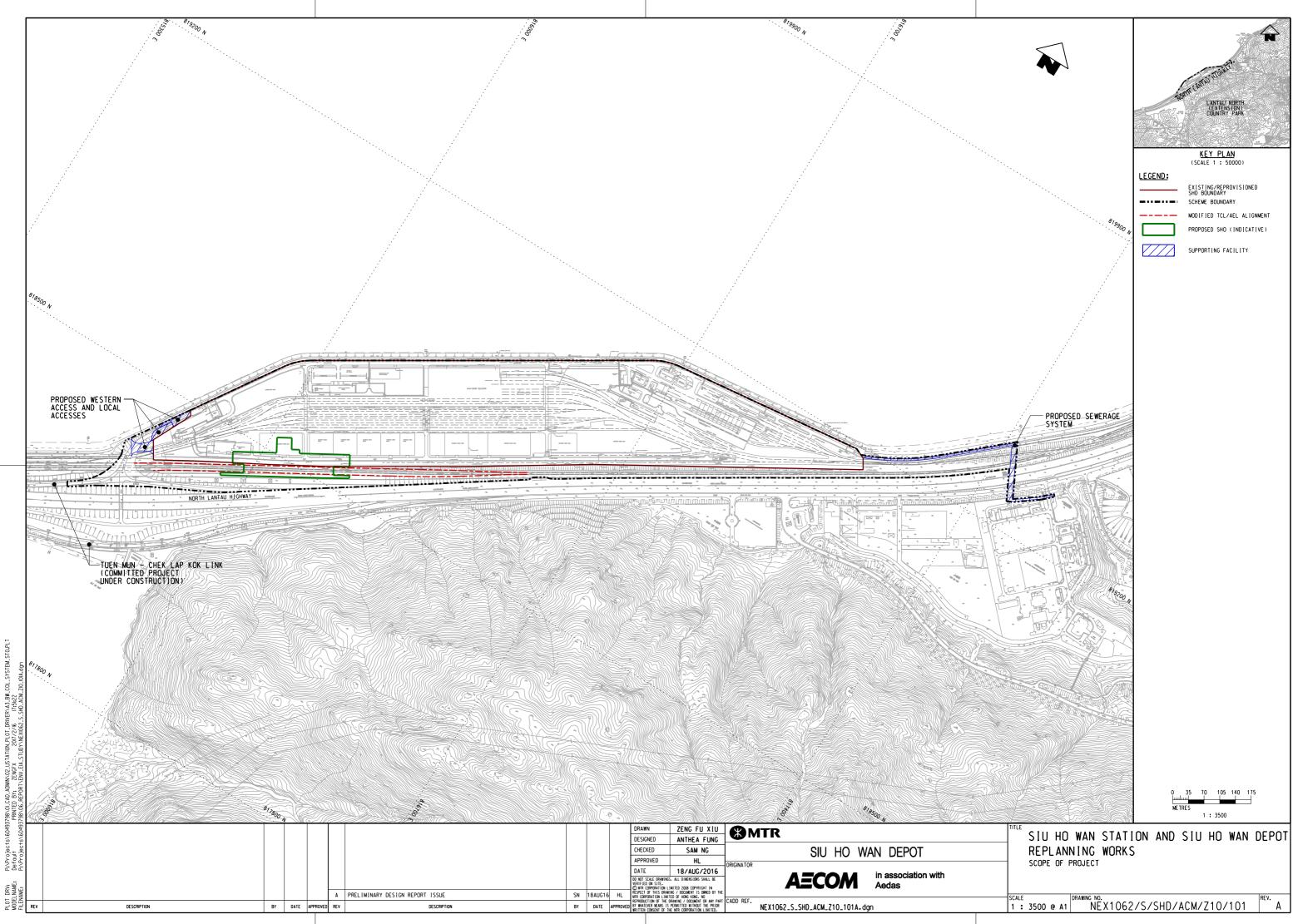
Note:

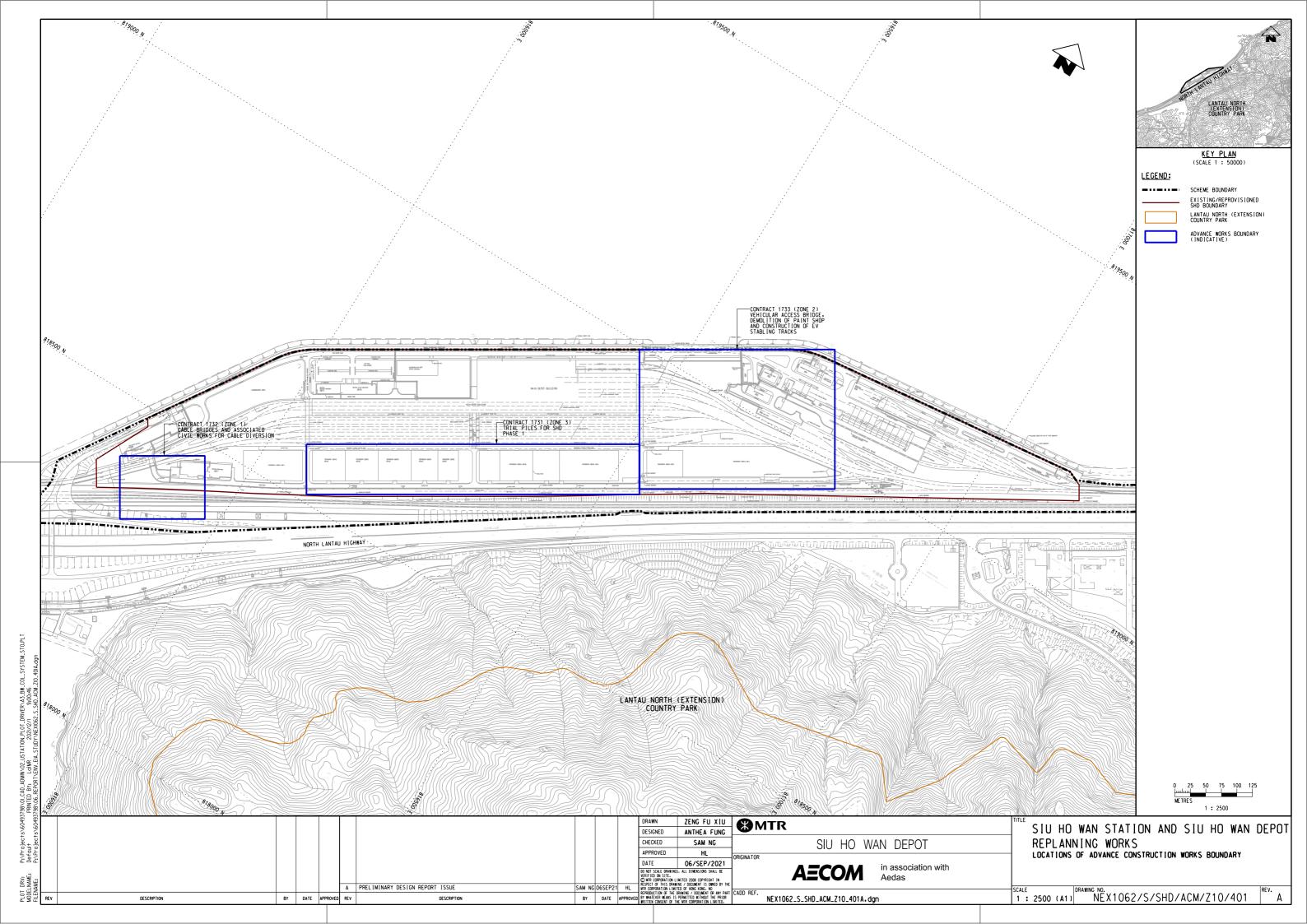
(1) Disposal outlet subject to the arrangement of Contractors.

2.3 Recommended Mitigation Measures

- 2.3.1 A tracking system will be adopted to avoid illegal dumping or landfilling of C&D materials for off-site disposal. All the dump trucks for C&D materials transportation and disposal shall be equipped with Global Positioning System (GPS) or equivalent automatic identification system (AIS) for real time tracking and monitoring of their travel routings and parking locations. This specific requirement has been included in the Tender Specification for the contractor to implement throughout the construction of advance works.
- 2.3.2 The data collected by GPS or equivalent AIS relating to travel routings and parking locations of all dump trucks shall be recorded properly for checking and auditing by ET and IEC. The audit findings shall be reported in the Monthly EM&A Report.
- 2.3.3 Mitigation measures required for handling different types of wastes have also been developed and are presented in **Appendix 2.1**. With proper implementation of waste management practices and mitigation measures detailed in **Appendix 2.1**, it is anticipated that the secondary environmental impacts from the collection and handling of different types of waste would be minimal.

FIGURE





APPENDIX 2.1

Implementation Schedule of Waste Management Approach

Appendix 2.1 Implementation Schedule of Recommended Mitigation Measures

Recommended Mitigation Measures	Location and Timing of Recommended Measures	Performance Requirements	Responsibility of Different Parties
Overall			
 Nomination of approved personnel, such as a site manager, to be responsible for implementation of good site practices, arrangements for waste collection and effective disposal to an appropriate facility. Good site practices include: Training of site personnel in site cleanliness, concepts of waste reduction, reuse and recycling, proper waste management and chemical waste handling procedures; Provision of sufficient waste reception/ disposal points, and regular collection of waste; Proper storage to minimise the potential for damage or contamination of construction materials; Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites); Appropriate measures to minimise windblown dust during transportation of waste by either covering trucks by tarpaulin/ similar material or by transporting waste in enclosed containers; Stockpiles of C&D materials should be kept covered by impervious sheets to avoid wind-blown dust; All dusty materials including C&D materials should be sprayed with water immediately prior to any loading transfer operation to keep the dusty material wet during material handling at the stockpile areas; and C&D materials to be delivered to and from the project site should be kept wet or covered to avoid wind-blown dust. 	All areas / During construction	Waste Disposal Ordinance (WDO), Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)	 Contractor(s) should implement the recommended measures. ET should conduct regular site audit to check the implementation status, review the effectiveness of the implemented measures, and inspect all relevant document(s)/record(s). IEC should audit all relevant document(s) and conduct site visit to confirm all the recommended measures are properly implemented by the contractor.

Recommended Mitigation Measures	Location and Timing of Recommended Measures	Performance Requirements	Responsibility of Different Parties
Training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse, and recycling. Posters and leaflets advising the use of bins shall also be provide in the sites as reminders.	All areas / At the commencement of construction work		
Carry out monthly audits during the construction phase to determine if wastes are being manages in accordance with the recommended practice and measures. The audit will include all aspects of waste management to prevent any malpractice of waste disposal.	All areas / During construction	EIAO	
To avoid or minimize dust emissions during transport of wastes within the site, each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials. The speed of the trucks including dump trucks carrying wastes	All areas / During construction	Waste Disposal Ordinance (WDO), Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)	
within the site should be controlled to about 10km/hour to reduce adverse dust impact and secure the safe environment around the site.			
C&D Materials			
Inert and non-inert C&D materials should be handled and stored separately to avoid mixing the two types of materials. Any recyclable materials (e.g. metal) should be segregated from the non-inert C&D materials.	All areas / During construction	WDO	Contractor(s) should implement the recommended measures and maintain a comprehensive register filing system of the transmitting disposal records, including vehicle
Use of steel or aluminium formworks and falseworks for temporary works as far as practicable.	All areas / During construction	WDO	info and waste record from the trip ticket system, which should be made available throughout the construction
A tracking system will be adopted to avoid illegal dumping or landfilling of C&D materials for off-site disposal. All the dump	All areas / During construction	WDO	period and 1 year after the construction for auditing. The GPS system should record routing details



Recommended Mitigation Measures	Location and Timing of Recommended Measures	Performance Requirements	Responsibility of Different Parties
trucks for C&D materials transportation and disposal shall be equipped with Global Positioning System (GPS) or equivalent automatic identification system (AIS) for real time tracking and monitoring of their travel routings and parking locations. The data collected by GPS or equivalent AIS relating to travel routings and parking locations of all dump trucks shall be recorded properly for checking and auditing.			 of the vehicle and should automatically and immediately alert the Contractor(s) of any abnormality (e.g. deviation of the designated areas). Upon receiving the system alert, Contractor(s) shall immediately notify ETL and IEC at the earliest possible and take necessary actions. ET should conduct regular site audit to check the implementation status, review the effectiveness of the implemented measures, and inspect the transmitting disposal records including the travel routings and parking locations of dump trucks. IEC should audit all relevant document(s)/record(s) including the travel routings and parking locations of dump trucks and conduct site visit to confirm all the recommended measures are properly implemented by the contractor.
Land-Based Sediments			
The sediments, if any, should be excavated, handled, transported, and disposed of in a manner that would minimize adverse environmental impacts. For minimization of sediment disposal, beneficial reuse will be considered onsite as far as practicable during the construction stage before the disposal of excavated sediment, if any.	All areas / During construction	APCO, WDO	 Contractor(s) should implement the recommended measures. ET should conduct regular site audit to check the implementation status, review the effectiveness of the implemented measures, and inspect



Recommended Mitigation Measures	Location and Timing of Recommended Measures	Performance Requirements	Responsibility of Different Parties
In order to minimise the exposure to contaminated materials, if any, workers shall wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities shall also be provided on site.	All areas / During construction	WDO	 all relevant document(s)/record(s), if any. IEC should audit all relevant document(s)/record(s), if any and conduct site visit to confirm all the recommended measures are properly implemented by the contractor.
Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sandbags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiles should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).	All areas / During construction	WDO, WPCO	
In order to minimise the potential odour/ dust emissions during excavation and transportation of the sediment, if any, the excavated sediments shall be wetted during excavation/ material handling and shall be properly covered when placed on trucks.	All areas / During construction	WDO, APCO	
Chemical Waste		-	<u> </u>
If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	All areas / During construction	WDO	Contractor(s) should implement the recommended measures and engage Licensed Chemical Waste Collector to



Recommended Mitigation Measures	Location and Timing of Recommended Measures	Performance Requirements	Responsibility of Different Parties
Appropriate containers with proper labels should be used for storage of chemical wastes. Chemical wastes should be collected and delivered to designated outlet by a licensed collector. Any unused chemicals or those with remaining functional capacity should be collected for reuse as far as possible.	All areas / During construction All areas / During construction	WDO WDO	 collect and dispose the chemical wastes. ET should conduct regular site audit to check the implementation status, review the effectiveness of the implemented measures, and inspect all relevant document(s)/record(s). IEC should audit all relevant document(s)/record(s) and conduct site visit to confirm all the recommended measures are properly implemented by the contractor.
General Refuse			
General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light materials.	All areas / During construction	WDO	 Contractor(s) should implement the recommended measures and engage reputable waste collector to collect and dispose the general refuse. ET should conduct regular site audit to check the implementation status, review the effectiveness of the implemented measures, and inspect
The recyclable component of general refuse, such as aluminium cans, paper and cleansed plastic containers shall be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste shall be set up by the Contractor. The Contractor shall also be responsible for arranging recycling companies to collect these materials.	All areas / During construction	WDO	 all relevant document(s)/record(s). IEC should audit all relevant document(s)/record(s) and conduct site visit to confirm all the recommended measures are properly implemented by the contractor.