





**CRBC – KADEN Joint Venture**

**WASTE MANAGEMENT PLAN**

**For Contract No. HY/2013/12**

**Tuen Mun – Chek Lap Kok Link –  
Northern Connection Toll Plaza and Associated Works**

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## **1.0 Introduction**

This Waste Management Plan (WMP) sets out in detail the approaches CRBC – KADEN JV should adopt in the management of waste generated from the various different construction activities. It also sets out the procedures for the waste management activities and requirements during the construction.

To demonstrate the Project Team's commitment on the continual improvement of our waste management performance, the project waste management policy has been established as below:



## CRBC – KADEN JOINT VENTURE

中國路橋 – 基利聯營體

### WASTE MANAGEMENT POLICY

The waste management policy of CRBC – Kaden Joint Venture has involved the necessary conditions which comply with the legislation as set out in the waste management for the improvement of site environment and hygiene conditions. The policy is applicable to anytime and the whole areas in this project. CRBC – Kaden Joint Venture has established the Integrated Management System (IMS) to ensure the implementation and adherence of the policy for all relevant statutory environmental requirements, ISO14001 requirements and other relevant requirements.

CRBC – Kaden Joint Venture is dedicated to:

1. Avoiding or minimizing the waste generation through design optimization in the process of project planning;
2. Avoiding or minimizing the waste generation through appropriate measures of the construction method or sequence in the construction stage;
3. Adopting proper management practices on site to reduce cross contamination and to promote waste disposal in segregation, sorting and reduction procedures;
4. Reusing or recycling waste materials if it is possible during the construction activities;
5. Delivery of waste generated by the sites or to public dumps for beneficial use if applicable;
6. Installing appropriate facilities for segregation of various typed wastes; and
7. Arranging and facilitating collection of wastes by the appropriate waste recyclers as far as possible.

The Waste Management Plan (WMP) will be reviewed periodically by the Project Team and revised if necessary for continual improvement. The requirement of this WMP will be communicated to all the project staffs who are supposed to diligently perform the duties for further understanding and acceptance of waste management policy to the subcontractors, suppliers and service providers.

  
Wang Yan Hua – Director Deputy General Manager  
China Road and Bridge Corporation

  
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## **2.0 Environmental Legislation and Standards**

### **2.1 Statutory Requirements**

The following legislation relates to the handling, treatment and disposal of wastes in Hong Kong, and should be observed with regard to all wastes generated and requiring disposal due to the construction, where applicable:

- Waste Disposal Ordinance (Cap 354)
- Waste Disposal (Chemical Waste) (General) Regulation (Cap 354)
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354)
- Land (Miscellaneous Provisions) Ordinance (Cap 28)
- Public health and Municipal Services Ordinance (Cap 132) – Public Cleansing and Prevention of Nuisances (Urban Council) and (Regional Council) By-Laws

The Waste Disposal Ordinance (WDO) prohibits the unauthorized disposal of wastes. The illegal tipping or flytipping of wastes on unauthorized sites is also controlled under the WDO. Under the Waste Disposal (Construction Waste Disposal Charging Scheme) Regulation, project team should apply for a billing account from EPD for disposal of construction wastes generated from the project. The regulation prescribes the requirements of handling of construction wastes on site and the construction waste disposal-charging scheme.

Under the Waste Disposal (Chemical Waste) (General) Regulation all producers of chemical wastes (including asbestos) must register with EPD and treat their wastes either utilizing on-site plant licensed by EPD, or arranging for a licensed collector to take the wastes to a licensed facility. The regulation also prescribes the storage facilities to be provided on site, including labeling warning signs, and requires the preparation of written procedures and training to deal with emergencies such as spillages, leakages or accidents arising from the storage of chemical wastes.

Construction wastes that are wholly inert would be taken to public dumps. Public dumps usually form part of land reclamation schemes operated by the Civil Engineering and Development Department (CEDD). The Land (Miscellaneous Provisions) Ordinance requires that individuals or companies who deliver suitable construction wastes to public dumps obtain dumping licenses. CEDD issues the licenses under delegated powers from the Director of Lands.

The Public Cleansing and Prevention of Nuisances By-Laws provide further controls on the illegal tipping of wastes on unauthorized (unlicensed) sites.

The project team should obtain all necessary permits and licenses under these ordinances including, but not limited to:

- Chemical waste permits/ licenses under the Waste Disposal Ordinance (Cap 354)

- Billing Account for construction waste disposal-charging scheme (Cap 354)

## **2.2 Non-statutory Requirements**

The following guidelines related to waste management and disposal would be adhered to during construction of the project:

- Waste Disposal Plan for Hong Kong (1989), Planning, Environmental and Lands Branch, Hong Kong Government Secretariat
- Environmental Guidelines for Planning in Hong Kong. Hong Kong Planning Standards and Guidelines (1990)
- New Disposal Arrangements for Construction Waste. EPD and CED (1992)
- Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes (2002), Environmental Protection Department
- Code of Practice on the Handling Transportation and Disposal of Asbestos Waste, Environmental Protection Department
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste
- Code of Practice for Demolition of Buildings 2004
- Works Branch Technical Circular No. 12/00, Fill Management
- Works Branch Technical Circular No. 32/92, The Use of Tropical Hard Wood on Construction Site
- Works Branch Technical Circular No. 2/93, Public Dumps
- Works Branch Technical Circular No. 16/96, Wet Soil in Public Dumps
- Works Bureau Technical Circular No. 4/98, Use of Public Fill in Reclamation & Earth Filling Projects
- Works Branch Technical Circular No. 5/98, On-site Sorting of Construction Waste on Demolition Site
- Works Branch Technical Circular No. 29/00, Waste Management Plan
- Works Branch Technical Circular No. 25/99, 25/99A and 25/99 Incorporation of Information on Construction and Demolition Material Management in Public Works Sub-committee Papers
- Environmental, Transport and Works Branch Technical Circular No. 33/02, Management of Construction and Demolition Material Including Rocks
- Works Branch Technical Circular No. 6/02 and 6/02A, Enhanced Specification for Site Cleanliness and Tidiness
- Works Bureau Technical Circular No. 31/04 Trip Ticket System for Disposal of Construction & Demolition Materials
- Works Bureau Technical Circular No. 15/03, Waste Management on Construction Sites
- Works Bureau Technical Circular No. 22/03, Additional Measures to Improve Site Cleanliness and Control Mosquito Breeding on Construction Site
- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environmental and Lands Bureau, Government Secretariat, 5 November 1998
- A Guide to the Registration of Chemical Waste Producers

- A Guide to the Chemical Waste Control Scheme
- Practice Notes for Authorized Persons and Registered Structural Engineers (PNAP) 71
- Code of Practice: Safety and Health at Work with Asbestos
- Code of Practice: Control of Asbestos at Work
- Code of Practice for Demolition of Building 2004
- Code of Practice on the Handling, Transport and Disposal of Asbestos Waste
- Factories and Industrial Undertakings (Asbestos) (Approval of Respiratory Protective Equipment) Notice
- Air Pollution Control Ordinance
- The Protection of Workers' Health Series – Asbestos
- Construction Sites (Safety) Regulations



### **3.0 Waste Management**

#### **3.1 Project Organization**

**Appendix A** of this WMP contains a Project Organization Chart showing the reporting channels and functional relationships of the various personnel currently employed and to be employed in the future on this project.

##### **3.1.1 Responsibilities of Key Personnel**

All personnel of contractor team are required to implement waste management and measures within their work area. A summary of the responsibilities of key personnel:

##### **The Engineer**

The Engineer is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contractual requirements. The duties and responsibilities of the Engineer with respect to EM&A may include:

- Supervise the Contractor's activities and ensure that the requirements in relevant regulation and terms are fully complied with.
- Inform the Contractor when action is required to reduce environmental impacts in accordance with the Event and Action Plans;
- Participate in joint site inspections and audits; and
- Adhere to the procedures for carrying out complaint investigations.

##### **Environmental Project Office**

The independent Environmental Project Office (ENPO) is set up by the Client. The purpose of the ENPO is to oversee the cumulative environmental impacts arising from this Contract and other concurrent projects in the adjoining area and to liaise closely with the mainland project teams for the HZMB Main Bridge.

##### **Contractor**

The Contractor (JV) shall:

- Ensure compliance with the procedures and recommendations set out in this WMP;
- Work within the scope of the construction contract and other tender documents;
- Participate in the site inspections undertaken by the Environmental Team as required and undertake any corrective actions instructed by the Engineer; and

- Take responsibility and strictly adhere to the guidelines of the **EM&A** programme and complementary protocols developed by their staffs.

The key personnel for environmental matters include the Project Manager, Environmental Team Leader, Environmental Officer and Environmental Supervisor. Their responsibilities are listed below:

#### **Project Manager**

He is the Management Representative of the JV. His overall responsibilities on environmental issues of the Project include:

- Oversee the implementation of the WMP; and
- Assign adequate resources for the implementation of the WMP.

#### **Site Agent**

His/ Her responsibilities include:

- Supervise & co-ordinate project team and sub-contractors for construction works to meet the quality, safety & environmental and schedule requirements
- Implement and adherence to statutory environmental requirement
- Ensure design, work methods and practices take due consideration of environmental requirements
- Release / accept work which complies with contract / specification requirements
- Ensure that all project personnel are adequately trained and experienced
- Ensure all necessary statutory permits and license being applied
- Ensure all environmental mitigation equipment and installations are well maintained
- Ensure the recommendations and instruction from Engineer and Environmental Officer are implemented to improve the environmental practice and carry out immediate action to rectify the non-compliance of environmental requirements
- In the event of unwillingness of site workers (including sub-contractors) to follow correct procedures, carry out necessary actions to rectify the situation. Necessary actions include but not limited to administrative charges, issue warning letter, expel from site and immediate termination of the sub-contract.
- Carry out monthly environmental management performance review with project team and review the overall environmental performance on a quarterly basis. Report environmental performance in Project Monthly Review Report
- Report any warning / advises received from Government Authorities (e.g. EPD or Labour Department)
- Maintain relevant environmental records

#### **Environmental Team (ET) Leader**

The leader of the Environmental Team shall be an independent party from the Contractor and have relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval of the Engineer and the EPD. The duties of ETL are:

- Identify the potential hazardous waste whenever possible and take proactive actions before problems arise
- Provide briefing to the contractor's project team as necessary on the waste management requirements.

### **Environmental Team (ET)**

The ET Leader and the ET shall be employed to conduct the EM&A programme and ensure the Contractor's compliance with the project's environmental performance requirements during the Contract. The duties are:

- Environmental site surveillance;
- Audit of compliance with environmental protection, and pollution prevention and control regulations;
- Monitor the implementation of environmental mitigation measures;
- Monitor compliance with the environmental protection clauses/specifications in the Contract;
- Adhere to the procedures for carrying out complaint investigation, evaluation and identification of corrective measures;
- Liaison with Independent Checker (Environment) on all environmental performance matters, and timely submission of all relevant EM&A preform for IEC's approval;
- Advice to the Contractor on environmental improvement, awareness, enhancement matters, etc., on site;
- Timely submission of the EM&A report to the Project Proponent and the Director of Environmental Protection.
- Regularly check the waste chit record to ensure the procedure observing the relative environmental regulations.
- Ensure the Contractor has implemented the mitigation measures as stated in the EM&A Manual.

### **Environmental Officer**

An Environmental Officer will be present full time on site for inspection, supervision and monitoring of the environmental performance, including waste management of the Contract. The duties of Environmental Officer in the area of waste management will include:

- Assist the Q&E Manager in preparation, implement and update the Waste Management Plan;

- Carry out inspections of the Site and attend the weekly environmental walk for checking and identifying any waste management practice on site not complying with this Plan and/ or relevant environmental regulations in Hong Kong;
- Assist the Q&E Manager on the implementation of site practice to meet the requirement on waste avoidance or waste reduction;
- Advise the Q&E Manager on the opportunities for reuse/ recycling of C&D materials generated on site;
- Properly keep the records of the waste reuse, recycle or disposal for inspection by the Engineer;
- Maintain a database to trace the C&D materials and waste to be generated from the project;
- Report and rectify any environmental mal-practice on site to avoid the generation of unnecessary C&D materials or waste from the project;
- Carry out training to the JV staff to promote the environmental awareness.

#### **Environmental Supervisor(s)**

The Environmental Supervisor is an assistant to the EO in environmental matters. He shall assist the EO in his day-to-day management of on-site environmental issues and act on behalf of the EO during his absence.

#### **Site Engineer(s)/ Foreman(s)**

The Site Engineers / Foremen appointed by the JV are responsible for the following duties in relation to environmental control:

- Assist the project management team to implement in the Contract all environmental related plans, including but not limit to Environmental Management Plan, Waste Management Plan, Spoil Disposal Plan and etc.;
- Control the Contract to fulfill the requirement of waste management as detailed in this Plan;
- Ensure the disposal of C&D materials and waste was directed to designated areas as approved by The Engineer;
- Report to the Environmental Officer on the non-compliance of the frontline operatives or the sub-contractors on handling of the C&D materials and the waste as according to this Plan;
- Implement remedial actions or mitigation measures on the non-compliance regarding the waste management on site;
- Conduct environmental tool box talks to the labourers and workers to make them aware of environmental practice;
- Collaborate with the Environmental Officer in the implementation of waste management measures;
- Assist the Environmental Officer in arranging the necessary workforce for carrying

out corrective actions.

### **Sub-contractor**

All subcontractors and other employees have the duty to carry out agreed waste management practices as instructed by the Contract management. Every employee will report promptly to project management any non-compliance of environmental protection and mitigation measures. They will actively participate in and co-operate with the Contract management to achieve the environmental objectives.

### **3.1.2 Regular Information Flow**

Effective 2-way communications will be developed to initiate the flow of environmental information among different parties. The communication is mainly achieved through the environmental correspondence, environmental report, SSEMC & SSEC meeting, environmental briefing and training, site inspection, etc. and environmental awareness promotion activities between the JV and site works and sub-contractors.

***Table 3.1 - Means of Communications on Environmental Issues***

<b>Means</b>	<b>Frequency</b>	<b>Purpose/Action</b>	<b>Responsible Party</b>
Environmental correspondence	As required	Written communication among the ET, JV and the Engineer	ET, JV and Engineer Representative
Monthly Environmental report	Monthly	Report on monitoring and audit results for the Project	EO
Notice of exceedance, non-compliance, complaint	As required	Written notification to different members of the JV requesting appropriate actions	JV, ET, Engineer Representative. Action according to procedures given in Sections 7.0.
licenses and permits	As required	On receipt of a license or permit, the original shall be kept at the site office and a copy shall be sent to AECOM	EO
SSEMC & SSEC meeting	Monthly	Face-to-face communications between the ET and other disciplines	ET Leader, EO, ES, Sub-contractors, Worker's Representative
Weekly Environmental Walk	Weekly	Face-to-face communications between the EO and the ET	EO, ES, Engineer

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Means	Frequency	Purpose/Action	Responsible Party
		Leader during the site inspection	
Induction training	Contractual requirement for new workers and sub-contractors	Promote awareness of environmental procedures among workers and sub-contractors	EO, ES
Tool Box Talk	Contractual requirement	Promote on-going awareness of environmental procedures among workers and sub-contractors	EO, ES
Site inspection	Continually	Promote awareness of environmental procedures among workers and sub-contractors via routine and specific talks	ET Leader, EO, ES
Environmental records (i.e. Monthly Summary of WFT and Summary table on the use of timber)	Continually	Records of training, permits, communications, etc., refer to Section 6	EO, to be kept at site office

Note:

1. The follow-up actions on environmental issues in the SSEMC meetings and SSEC meetings will be carried out ASAP and reported in the forthcoming meetings. The EO/ES shall monitor the progress of the follow-up actions.
2. The environmental records such as permits and licenses will be checked by EO regularly to ensure that those records are valid and comply with the ordinances.

## 4.0 Waste Generation and Disposal

### 4.1 Sources of Waste and Disposal Location

Construction and Demolition (C&D) materials include public fill (inert material) and C&D wastes (non-inert material). Public fill should comprise broken concrete, brick and aggregates, etc. C&D wastes should comprise unwanted materials generated during construction, including rejected structures and materials, materials which have been over ordered or are surplus to requirement and materials, which have been used and discarded.

The following types of waste would be generated from the construction activities:

- Excavated material
- C&D material containing inert and non-inert materials
- Chemical waste
- General refuse
- Sewage

The disposal sites for the wastes generated from the project as shown in the following table.

**Table 4.1 - Sources and Waste and Corresponding Disposal Site**

Waste Type	Examples	Disposal Site	Estimate Volume Generated	Estimate Volume Reused on/off-site	Estimate Volume Disposed off-site
Excavated material	<ul style="list-style-type: none"> <li>• Rock</li> <li>• Rubble</li> <li>• Boulder</li> <li>• Soil</li> <li>• Sand</li> </ul>	<ul style="list-style-type: none"> <li>• Tuen Mun Area 38 Fill Bank– for inert construction waste excluding slurry and bentonite;</li> </ul>	452660 m <sup>3</sup>	112490 m <sup>3</sup>	340170 m <sup>3</sup>
C&D material – public fill (inert)	<ul style="list-style-type: none"> <li>• Broken concrete</li> <li>• Brick</li> <li>• Aggregate</li> <li>• Asphalt</li> <li>• Tile</li> <li>• Masonry</li> <li>• Used bentonite</li> </ul>	<ul style="list-style-type: none"> <li>• Tseung Kwan O Area 137 Fill Bank – for slurry and bentonite</li> </ul>	3000 m <sup>3</sup>	1000 m <sup>3</sup>	2000 m <sup>3</sup>

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C&D material – C&D waste (non-inert)	<ul style="list-style-type: none"> <li>• Wood</li> <li>• Bamboo</li> <li>• Plastic</li> </ul>	<ul style="list-style-type: none"> <li>• West New Territories (WENT) Landfill or other disposal outlets as approved by the Engineer Representative</li> </ul>	4800 m <sup>3</sup>	400 m <sup>3</sup>	4400 m <sup>3</sup>
Chemical waste	<ul style="list-style-type: none"> <li>• Used oil</li> <li>• Spent solvent</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical Waste Treatment Facility at Tsing Yi</li> <li>• Other approved facility</li> </ul>	30 m <sup>3</sup>	N/A	30 m <sup>3</sup>
Chemical waste (Asbestos)	<ul style="list-style-type: none"> <li>• Asbestos Cement pipe</li> </ul>	<ul style="list-style-type: none"> <li>• Landfill or other disposal outlets as approved by the Engineer</li> </ul>	0	N/A	0
General Refuse	<ul style="list-style-type: none"> <li>• Packaging waste</li> <li>• Office waste</li> </ul>	<ul style="list-style-type: none"> <li>• West New Territories (WENT) Landfill or other disposal outlets as approved by the Engineer</li> </ul>	2400 m <sup>3</sup>	N/A	2400 m <sup>3</sup>
Sewage	<ul style="list-style-type: none"> <li>• Chemical toilet</li> <li>• Site office toilet</li> </ul>	<ul style="list-style-type: none"> <li>• Licensed contractor</li> <li>• Discharge to existing sewer</li> </ul>	30 m <sup>3</sup> /d 20 m <sup>3</sup> /d	N/A	30 m <sup>3</sup> /d 20 m <sup>3</sup> /d

#### 4.2 Alternative Disposal Grounds

In order to make use of C&D materials generated by the Site, JV will identify and use recycling facilities or other construction sites where such materials can be used before obtaining the written approval of the Engineer. Relevant information should be submitted to the Engineer as following:

- (a) A detailed description of the alternative disposal ground, including location, lot number (where appropriate), location plan and photographs of the proposed alternative disposal grounds showing the surrounding environment and land use;
- (b) where the alternative disposal ground is a private construction site, a letter from each of the relevant authorities, such as Agriculture, Fisheries and Conservation



Department, Lands Department and Planning Department, to comment on suitability of the site under their respective purview, and a letter from the Authorized Person of the development to confirm:-

- 1) The C&D materials for use in the development is acceptable;
  - 2) The land/pond filling in the proposed alternative disposal ground and the use of land so formed by the C&D materials are in conformity with the statutory town plan/lease condition; and
  - 3) The Engineer's staffs are allowed to enter the alternative ground to conduct inspections where necessary.
- (c) where the alternative disposal is a private recycling facility, it is on the recyclers' list for C&D materials recognized by EPD, as well as a letter from the operator to confirm the Engineer's staff are allowed to enter the recycling facility to conduct inspections where necessary;
- (d) where the alternative disposal ground is a construction site of Government (other than a government contract quarry), Hong Kong Housing Authority or Mass Transit Railway Corporation, a written consent from the project office of the alternative disposal ground to use the C&D materials generated from the Site;
- (e) where the alternative disposal ground is a government contract quarry, a written consent from the Mines Division of Civil Engineering and Development Department to import the C&D materials generated from the Site;
- (f) the estimated quantity and type of C&D materials to be used/processed in the alternative disposal ground and the approximate delivery programme, together with the name, post and specimen signature of the competent person to sign the Disposal Delivery Form (DDF); and
- (g) a system for transmitting disposal records from the alternative disposal ground to the Engineer's Representative.

## **5.0 Construction and Demolition Waste Management, Mitigation Measures and Protocols**

### **5.1 Introduction**

The purpose of this section is to describe the proposed mitigation measures considered to ensure that all wastes generated during the construction and demolition are well-managed on-site, transported and disposed of in a manner that is both environmentally acceptable and in full compliance with statutory and contractual requirements. A Site Layout Plan indicated the area for the waste management such as temporary storage area, waste sorting area and disposal area as presented in **Appendix B**.

### **5.2 Mitigation Measures**

#### **5.2.1 Avoidance / Minimization Measures**

- Design and programme excavation works so that the materials excavated can be re-used as back-fill material to balance cut and fill and hence reduce the generation of excavated materials.
- Right amount of raw materials should be ordered at the right time with proper control and documentation on material flow to minimize over-ordering. Raw materials should be fully utilized to avoid wastage
- Surplus materials should be returned to stock in centralized area with suitable protective measures. If possible, surplus materials should be exchange with other sites, to minimize material wastage
- Careful design and planning and good site management should be maintained to minimize over ordering and generation of waste materials such as concrete, mortars and cement grouts
- Sequence of demolition should be planned to allow the separation and sorting of building materials.
- Avoid, reduce or minimize the use of timber in temporary works construction as far as possible. Procedures of using timber should be established guiding the use of timber on site, in order to reduce or minimize the use of timber. The design of formwork should maximize the use of standard wooden panels so that high level of reuse can be achieved
- Steel false work should be used as much as possible to reduce the amount of waste timber generated from the project

- Current operation procedures including any waste reduction measures should be reviewed, especially during installation and cutting, to avoid unnecessary use
- Broken items or offcuts should be used when sections of small lengths are required

#### **5.2.2 Reuse and Recycle**

- If cut and fill could not be balanced on-site, suitable excavated materials should be sorted on site to recover the inert portions (e.g. soil and broken rock) for reuse on site before the remaining materials are disposed off site or disposal to designated Public Filling Facility
- Carefully plan/program excavation and backfilling activities so that excavated materials can be used for backfilling within the site
- Excavated material should be reused as close to the point of excavation and as soon after excavation as possible and directly transferred to the area of deposition, if practicable.
- The inert C&D materials generated from the toll plaza cut slopes will be used for construction of the raised platform for the toll plaza where possible.
- All C&D materials arising from or in connection with demolition work should be sorted on-site and be separated into different groups for disposal at landfills, public filling facilities or recycling appropriate
- Identify and list out all work processes or activities that should generate reusable/recyclable materials during construction and demolition
- For those suitable inert C&D materials (e.g. broken concrete from demolition or road improvement works) should be properly sorted for recycling into aggregates and recover the materials for on -site usage
- Demolition debris from demolition works should be sorted to recover on site broken concrete, reinforcement bars, mechanical and electrical fittings as well as other building services fittings / materials that have established recycling outlets
- Procedures of the handling of reusable/ recyclable materials should be established
- Recycle suitable C&D materials by transporting the materials to designated C&D materials recycling facilities for processing
- All materials should be reused on site as far as practicable, including formwork plywood, hoardings, scaffolding, trench supports, topsoil and excavated materials.
- Where necessary, alternatives such as metal scaffolding, steel formwork or plastic

facing should be considered to increase the potential for reuse.

- Suitable materials, such as metal should be recovered on site for collection by recycling contractors
- All cardboard and paper packaging (for plant, equipment and materials) should be recovered on site, properly stockpiled in dry condition and covered to prevent cross contamination by other C&D materials
- Reputable recycling contractors with valid licenses and fulfilling all the legislative requirements should be employed to facilitate that recyclable materials sorted from the site are collected with reasonable care
- The quantities of all the recyclable materials should be recorded before removal off site

### **5.2.3 Storage**

The materials stockpiled on-site should be managed in order to prevent any potential impacts. Following measures should be considered in order to properly manage the stockpiled materials:

- Identify and provide sufficient space for temporary storage of C&D materials to facilitate collection and/ or sorting on site
- Stockpiled materials should be sited away from any stream courses so as to avoid releasing materials into the water bodies
- Demolished debris should not be accumulated on the floors unless the debris accumulation is justified by engineering calculations
- No stockpile of construction materials, debris, formworks, or other forms of obstructions is allowed to block the accesses throughout the entire construction period
- Location to minimize visual impacts and nuisance related to noise and air quality (dust) to any sensitive receivers
  - Storage of material on site should be kept to a minimum to avoid nuisance to local residents
  - Keeping the movement of stockpiled material to a minimum
  - Stockpiled materials should be covered by tarpaulins and/or watered as appropriate to prevent windblown dust and/or surface run-off.

- Measures such as providing sand bag barriers should be provided to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Any washout of construction or excavated materials should be diverted to the drainage system via sediment traps

#### **5.2.4 Disposal Methods**

- All surplus excavated material generated from the project should be disposed of at the designated Public Filling Facility
- According to the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N), Construction Waste Disposal Charging Scheme mentioned in Section 5.10 in this WMP should be implemented during the construction.
- The acceptance criteria for Public Filling Facility and Landfill should be followed
- All inert C&D materials generated from this contract should be disposed of at the designated Public Filling Facility. Such materials should be free from marine mud, household refuse, plastic, metal, industrial and chemical waste, animal and vegetable matter and other matter considered unsuitable by Filling Supervisor
- All dump trucks used for delivery of public fill to public filling facilities should have valid Dumping Licenses issued by CEDD. The inert C&D materials delivered to the public filling facilities should be in accordance with the conditions in the dumping license
- All non-inert portions of C&D material (C&D waste) generated from the project should be disposed of at the designated landfill and/ or other disposal outlet as directed by the Engineer. Should provide EPD with one week's advance notice before starting to deliver the C&D waste to the landfills and should inform EPD of any subsequent changes to the disposal programme during the contract period
- Trees and vegetation should be stripped prior to site clearance, chopped and compacted using suitable mobile compactors to reduce the volume of material to be transported and disposed of
- Should not permit any sewage, wastewater or effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the site onto any adjoining land or allow any waste matter or refuse which is not part of the final product from waste processing plants to be deposited anywhere within the site or onto any adjoining land
- In order to minimize the impacts of demolition works, the wastes should be cleared as quickly as possible after demolition

- When any components of a structure or water mains to be demolished and are suspected to be consisting of asbestos, the project team should inform the ER. Any work which involves the use or handling of asbestos containing materials must strictly follow the following procedure:
  - employ a registered asbestos consultant to conduct an asbestos investigation and prepare an asbestos investigation report and an asbestos abatement plan;
  - 
  - submit the asbestos investigation report and the asbestos abatement plan to the Environmental Protection Department at least 28 days before start work on the asbestos containing materials;
  - 
  - notify the Environmental Protection Department of the date of commencement of work on asbestos containing materials at least 28 days in advance;
  - 
  - employ a registered asbestos contractor to carry out the asbestos work in accordance with the asbestos abatement plan;
  - 
  - employ a registered asbestos consultant to supervise the implementation of the asbestos abatement plan and the work of the registered asbestos contractor; and
- employ a registered asbestos laboratory to conduct sampling and analysis for the asbestos work.

#### **5.2.5 Good Site Practices**

- Responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site
- Training of site personnel in proper waste management and chemical waste handling procedures
- Provision of sufficient waste disposal points and regular collection for disposal
- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors
- A recording system for the amount of wastes generated, recycled and disposed of

(including the disposal sites).

#### **5.2.6 Trip Ticket System**

A trip ticket system (TTS) for the removal of construction and demolition (C&D) materials from the Site to the designated disposal ground or alternative disposal ground will be implemented as according to the Particular Specification. The system will be developed and presented in the Waste Management Plan to be prepared for the project.

JV will inform the Engineer of the account number of the billing account for disposal of construction waste under the Waste Disposal (Designated Waste Disposal Facility) Regulation (Cap. 354L). This is to enable the Engineer to check the disposal records posted at the Environmental Protection Department's website. The Engineer will provide the account number to the Civil Engineering and Development Department for overall monitoring of the trip ticket system, detecting and taking action to deal with malpractice such as overloading of dump trucks and improper covering of load, and compiling statistics as well as counting eligible trips for mechanical dump truck covers under the pay for safety and environment scheme / pay for safety scheme.

#### Site Management Plan for Trip Ticket Implementation

A Site Management Plan (The Plan) will be prepared which includes the implementation of TTS. The Plan should include site organization and staff duties, disposal programme, site procedures for duly completed of CHIT/DDF, as presented in **Appendix E** and **Appendix F** etc.

A comprehensive register of the disposal delivery for recording the disposal of C&D materials and waste will be established. The register will also cover the recyclable materials removed by the recycling contractors off the Site. The quantity (ton) of the C&D material shall be recorded in the register.

#### Record Keeping

For the management of CHIT/DDF, the following procedures and record keep will be implemented to all dumping activities.

- (a) For each truckload of C&D materials leaving the Site, the truck driver must bear a duly completed CHIT/ DDF;

- (b) A daily record of disposal, as presented in **Appendix D**, of C&D materials from the Site including CHIT/ DDF numbers, vehicle registration marks, drivers' particulars, approximate volume, C&D materials type, designated disposal ground, departure time from the Site, actual disposal ground and arrival time at disposal ground should be maintained. Part 1 of the DRS completed by JV in duplicate and inform the Engineer's staff before departure of the vehicle. The Engineer's staff shall sign Part 1 of the DRS before departure of the trucks, or to suit site operations at other time to be agreed between the Engineer's Representative and JV;
- (c) The truck shall proceed to the disposal ground as stipulated in the designated disposal ground. The truck driver shall present the CHIT/ DDF to the operator of the disposal ground. For a prescribed facility, if the C&D materials accord with the acceptance criteria, disposal of the materials will be permitted and the facility operator will give the driver a Transaction Record Slip and stamp the CHIT.
- (d) For disposal ground other than prescribed facilities, the DDF should be signed off by a competent person as agreed by the Engineer at the disposal ground to confirm completion of each trip. A daily record with details of each disposal trip from the Site to the disposal ground will be maintained. The completed Part 2 of the DRS form should be submitted to the Engineer.



## **6.0 Chemical Waste Management, Mitigation Measures and Protocols**

Chemical waste, as defined under the Waste Disposal (Chemical Waste) (General) Regulation, includes any substance being scrap material, or unwanted substances specified under Schedule 1 of the Regulation. Substances likely to be generated by construction activities arise from the maintenance of construction plant and equipment. These include, but not limited to the following:

- Scrap batteries or spent acid/alkali from their maintenance;
- Used engine oils, hydraulic fluids and waste fuel;
- Spent mineral oils/cleaning fluids from mechanical machinery; and
- Spent solvents/solution, some of which may be halogenated, from equipment cleaning activities.

It is anticipated that the quantity of chemical waste, such as lubricating oil and solvent produced from plant maintenance, should be small for this project.

### **6.1 Chemical Waste Storage, Handling and Disposal**

#### **6.1.1 Chemical Waste**

Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labeling and Storage of Chemical Waste published by EPD.

General:

- No maintenance activities which may generate chemical wastes should be undertaken directly on the ground;
- Stored volume shall not be kept more than 450 litres unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition or fence that is at least 2m height or height of tallest container with adequate ventilation and space;
- Any unused chemicals or those with remaining functional capacity shall be recycled;

Containers used for the storage of chemical wastes:

- 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 litre unless the specifications have been approved by EPD
- Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulation

*Labeling:*

- Every container of chemical waste should bear an appropriate label containing the particular details of the chemical waste it contained. The waste producer should ensure that the information contained on the label is accurate and sufficient so as to enable proper and safe handling, storage and transport of the chemical waste

*Storage area:*

- Be clearly labeled and used solely for the storage of chemical waste
- Be enclosed on at least 3 sides
- Have an impermeable floor and bounding 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
- Be covered to prevent rainfall entering
- Be arranged so that incompatible materials are adequately separated

*Disposal:*

- Be via a licensed waste collector
- To a licensed disposal facility, such as Chemical Waste Treatment Centre

*Spillage:*

- Contact immediately the Contracts Manager and/or Foreman and report the spillage
- Establish source of spill or discharge and determine nature of material
- Where possible halt discharge
- Commencing at the source of the spill, establish all current and potential impacted areas following the flow/drainage/infiltration paths to limit of spill and project future path
- Establish priority order for containment of spill based on assessment above
- Commence containment of spill using bunds made from available materials and ground water cut-off trenches where necessary
- After spill is contained remove material (including contaminated soil where necessary) using pumps and/or absorbent materials
- Dispose of the materials, including the contaminated soil as chemical waste

## **7.0 General Refuse**

The presence of a construction site with large numbers of workers and site offices should result in general refuse requiring disposal. This should mainly consist of food waste, aluminium cans and waste paper.

### **7.1 Mitigation Measures for General Refuse**

- Temporary storage areas should be identify and provided for the temporary storage of general refuse to facilitate collection
- General refuse generated on-site should be stored in enclosed bins or compaction units separate from construction and chemical wastes
- Temporary storage areas for general refuse should be enclosed to avoid environmental impacts. Sufficient dustbins should be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances Ordinance (Regional Council) By-laws
- General refuse should be cleared daily and should be disposed of to the nearest licensed landfill or refuse transfer station
- Separate labelled bins should be provided to segregate the waste generated by workforce. Waste recycle collector should be employed to collect the segregated waste
- Cardboard and paper packaging (for plant, equipment and materials) should be recovered on site, properly stockpiled in dry condition and covered to prevent cross contamination by other C&D materials
- Office waste should be minimized through using papers on both sides. Communication by electronic means should be used as far as possible
- Open burning of refuse on-site is prohibited by law and should not be undertaken
- Toilet wastewater should be transported by a licensed contractor to a Government Sewage Treatment Works for disposal in accordance with the Sanitation and Conservancy (Regional Council) By-laws

## **8.0 Sewage System**

### **8.1 Provision of sewage system for site office**

- In temporary stage, sewer from toilet and domestic wastewater from other source like hand and cup washing should be discharged into holding tank and collect by license collector. Application of “Discharging Waste Water into Existing Sewage Manhole” was submitted to DSD for approval.

In permanent stage, sewer and domestic wastewater will be discharged to existing sewer, subject to DSD approval. Estimated volume of sewage flow was shown in Table 4.1.

### **8.2 Provision of sewage system for remote works locations**

- Wastewater from the chemical toilet should be emptied by licensed collector regularly.

## **9.0 Site Cleanliness**

To maintain the site in a clean and tidy condition during the construction, the following general measures should be implemented on site at all times. Regular site inspections should be undertaken by the site team to ensure that the following general measures are observed on site:

### **9.1 Daily Cleaning**

Daily cleaning should be performed daily after work within the site and the public areas immediately next to the site. It covers:

- Clear passageways, common accesses and public areas, keep them free from obstruction
- All access routes, including public access, staff access, loading/ unloading access of vehicles, emergency access and emergency vehicular access should be kept tidy, safe and convenient
- Storing and stacking materials properly. Clearing stockpile and wastes
- Sorting, storage and/or disposal of waste materials in accordance with the WMP
- Securing hoarding, barriers, guarding, lighting, and signing of works properly
- Removal and prevention of any water ponds and flooding

### **9.2 Weekly Tidying**

Weekly tidying should be performed weekly within the site as well as the public areas immediately next to the site. It covers:

- Thorough cleaning of passageways, common accesses and public areas
- Re-organize storage of materials for better utilization of storage spaces and safe stacking
- Maintenance, re-conditioning and cleaning of plants, tools and equipment
- Collect and remove waste off site in accordance with the Waste Management Plan
- Clean, re-condition and/or replace the hoarding, barriers, guarding, lighting and signage of works to good working condition

- Clear drains and channels to prevent flooding

### **9.3 Control of Rodents**

To control the rodent problem, the Site shall be maintained in a tidy state at all times to discourage rodent harbourage and detect rodents at an early stage. Refuse and food must be kept in containers with well-fitted covers/rodent proof store rooms to deprive rodents of food. The Contractor shall not attempt to disinfect rodents by themselves but shall appoint a pest control services contractor for rodent control services or contact district pest control offices or the Pest Control Advisory Section of the Food and Environmental Hygiene Department for rodent control advice.

## **10.0 Training**

In order to enhance the awareness of the workers including those of the sub-contractors' on waste management on site, site-specific induction training and regular toolbox talks topic related but not limited to site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling should be provided to all site staff.

Environmental Officer should identify the need and arrange relative trainings for all employee and the sub-contractors' workers involved in the works.

The training should cover the waste management policy, targets, measures for on-site sorting of C&D materials and measurement on waste management performance on the site.

An auditable record should be maintained for all environmental training undertaken.

## 11.0 Waste Management Inspection and Monitoring

### 11.1 Site Environmental Inspection

Site environmental inspection should be conducted in a monthly basis. The Environmental Officer or Site Administrator and the Engineer or his delegate should attend the inspection, in order to evaluate the overall performance of the implementation of the WMP and ensure the appropriate control measures are properly implemented. The inspection should also cover waste sorting, storage and disposal.

The aims and objectives of waste management inspection are:

- To ensure that the waste arising from works are handled, stored, collected, transported and disposed of in an environmentally acceptable manner;
- To ensure that the handling, storage, collection and disposal of waste arising from the works comply with the relevant requirements under the Waste Disposal Ordinance and its regulations;
- To encourage the reuse and recycling of materials.

Project team should take immediate action to rectify the deficiencies identified from the inspection and report the status of rectification actions in the Monthly Environmental Report.

**Table 11.1 - Event Action Plan for Non-compliance**

Step	Day	Action	Contractor	ER
1	1	Create a new non-compliance record within 1 working day after making an observation during a site audit. The project team should send a Notice of Non-Compliance (NNC) to the ER. The NNC should include the observations and the reasons for non-compliance.	*	
2	2	Propose corrective actions within 1 working day after the issue of the NNC.	*	+
3	2	Review and agree the proposed corrective actions and make additional recommendations as required.		* +
4	2	Implement the proposed corrective actions once they have been agreed.	*	
5	-	Check the implementation of the corrective actions at the next site audit. Close the non-compliance record if the implementation of the corrective actions is satisfactory.	* +	
6	-	Propose preventive actions within 3 working days after the closure of the non-compliance record.	*	+



CRBC-KADEN Joint Venture  
Waste Management Plan

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Note:

- \* Action party
- + Comments on the non-compliance record where applicable
- ER Engineer's Representative

The EO shall check whether GCL has followed the relevant contract specifications and the procedures specified under the laws of Hong Kong. In addition to the site inspections, the ET shall review the documentation procedures prepared by the GCL once a week to ensure proper records are being maintained and procedures undertaken in accordance with the Waste Management Plan. The checklist is given in below Table 11.2:

**Table 11.2 – Waste Management Checklist**

Activities	Timing	Monitoring Frequency	If non-compliance, Action Required
All necessary waste disposal permits or licenses have been obtained	Before the commencement of demolition works	Once	Apply for the necessary permits/licences prior to disposal of the waste. The ET shall ensure that corrective action has been taken.
Only licensed waste haulier are used for waste collection.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall instruct the Contractor to use a licensed waste haulier. The Contractor shall temporarily suspend waste collection of that particular waste until a licensed waste haulier is used. Corrective action shall be undertaken within 48 hours.
Records of quantities of wastes generated, recycled and disposed are properly kept. For demolition material/waste, the number of loads for each day shall be recorded (quantity of waste can then be estimated based on average truck load. Should landfill charging be implemented, the receipts of the charge could be used for estimating the quantity).	Throughout the works	Weekly	The Contractor shall estimate the missing data based on previous records and the activities carried out. The ET shall audit the results and forward to the ER and IEC for approval.

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Waste Management Plan

Activities	Timing	Monitoring Frequency	If non-compliance, Action Required
Wastes are removed from site in a timely manner. General refuse is collected on a daily basis.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall instruct the Contractor to remove waste accordingly.
Waste storage areas are properly cleaned and do not cause windblown litter and dust nuisance.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall instruct the Contractor to clean the storage area and/or cover the waste.
Different types of waste are segregated in different containers or skip to enhance recycling of material and proper disposal of waste.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall instruct the Contractor to provide separate skips/ containers. The Contractor shall ensure the workers place the waste in the appropriate containers.
Chemical wastes are stored, handled and disposed of in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes, published by the EPD.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall instruct the Contractor to rectify the problems immediately. Warning shall be given to the Contractor if corrective actions are not taken within 24 hrs and the Waste Control Group of the EPD shall be identified.
Demolition material/waste in dump trucks are properly covered before leaving the site.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall instruct the Contractor to comply. The Contractor shall prevent trucks shall leaving the site until the waste are properly covered.
Wastes are disposal of at licensed sites.	Throughout the works	Weekly	Inform the ER of the noncompliance. The ER shall warn the Contractor and instruct the

Activities	Timing	Monitoring Frequency	If non-compliance, Action Required
			Contractor to ensure the wastes are disposed of at the licensed sites. Should it involve chemical waste, the Waste Control Group of EPD shall be notified.

### 11.2 Performance Monitoring

- To facilitate monitoring and control over the site performance on waste management, the following items should be discussed at internal meeting, such as SSEC and SSEM meeting, or other established channels for performance monitoring:
- Review the WMP including the quantities and types of C&D materials generated, reused and disposed of off-site; the amount of fill materials exported from/imported to the site and quantity of timber used in temporary works construction, sample as presented in **Appendix C** for each process/ activity.
- Review the implementation of the Construction Waste Disposal Charging Scheme, and identify areas for improvement
- Monitoring the achievement of the WMP to assess its effectiveness
- Discuss and review on the results of the regular Waste Management Inspection
- Review the records on the inspection checklist of the Daily Cleaning and Weekly Tidying
- Review incidents of non-compliance and discuss the necessary follow-up action identified
- Monitor the follow-up action on defects and deficiencies identified

## **12.0 Recording System**

### **12.1 Mechanism for Recording C&D Materials Removed off Site**

#### **12.1.1 Construction Waste Disposal Charging Scheme**

- Contracts Manager should ensure the implementation of Construction Waste Disposal Charging Scheme for recording the C&D materials being removed off site. The site procedures for implementation are as follows:
- Contracts Manager should, within 21 days after being awarded the contract, make an application for a billing account solely in respect of that contract, using the form “EPD-211 Form 1 - Application for a Billing Account (Construction Work Contract with Value of \$1 million or Above)”
- Project Manager should assign competent personnel for the arrangement for disposal of construction wastes
- Before the construction wastes being removed off site, the dump truck drivers should inform the delegated personnel for the “Chit”
- The delegated personnel should fill in a “Chit” for that particular dump truck, issue the Part B & C of “Chit” to the dump truck driver and retain Part A of the “Chit” for record
- The dump truck driver should present Part B & C of “Chit” to operator of designated waste disposal facilities, including the public filling facility, public sorting facility and landfill, when using the disposal service
- If the materials accords with the acceptance criteria, the facilities operator should give Part B of “Chit” and a transaction receipt to the truck driver after completion of the disposal
- The truck drivers should give Part B of “Chit” and the transaction receipt back to the delegated personnel for record
- The delegated personnel should properly record all construction wastes being removed off site and check all relevant records to ensure no illegal dumping
- The delegated personnel should update the status of “Chits”. Enough number of chits should be available for disposal of construction waste. If additional “Chits” required, the delegated personnel should fill in the form “EPD-214 Application for Issuance of Chits for Disposal of Construction Waste for Existing Account-holder” and submit it to EPD

- If the “Chits” have been lost/ stolen, Project Manager should report to EPD in writing immediately
- A monthly notice of demand and construction waste transaction information of the specific project should be received from EPD. Project Manager should pay the specified prescribed charge within 45 days from the date of the notice and in the manner specified in the notice
- Contracts Manager should regularly review the monthly notice and counter-check with all relevant disposal records to ensure that the billing account is solely used for payment any prescribed charge payable in respect of construction waste generated from his/ her project
- Training on the site procedures for implementation of charging scheme should be provided to all site staff, including the supervisory staff, all truck drivers and those employed by subcontractors.
- All truck drivers must bear a valid Dumping License.

#### **12.1.2 Data Recording and Filing System**

A Filing System should be developed for the easy filing and effective retrieval of quality records. The environmental related records should be filed and indexed as per the filing system that should permit easy identification and access on a frequent basis.

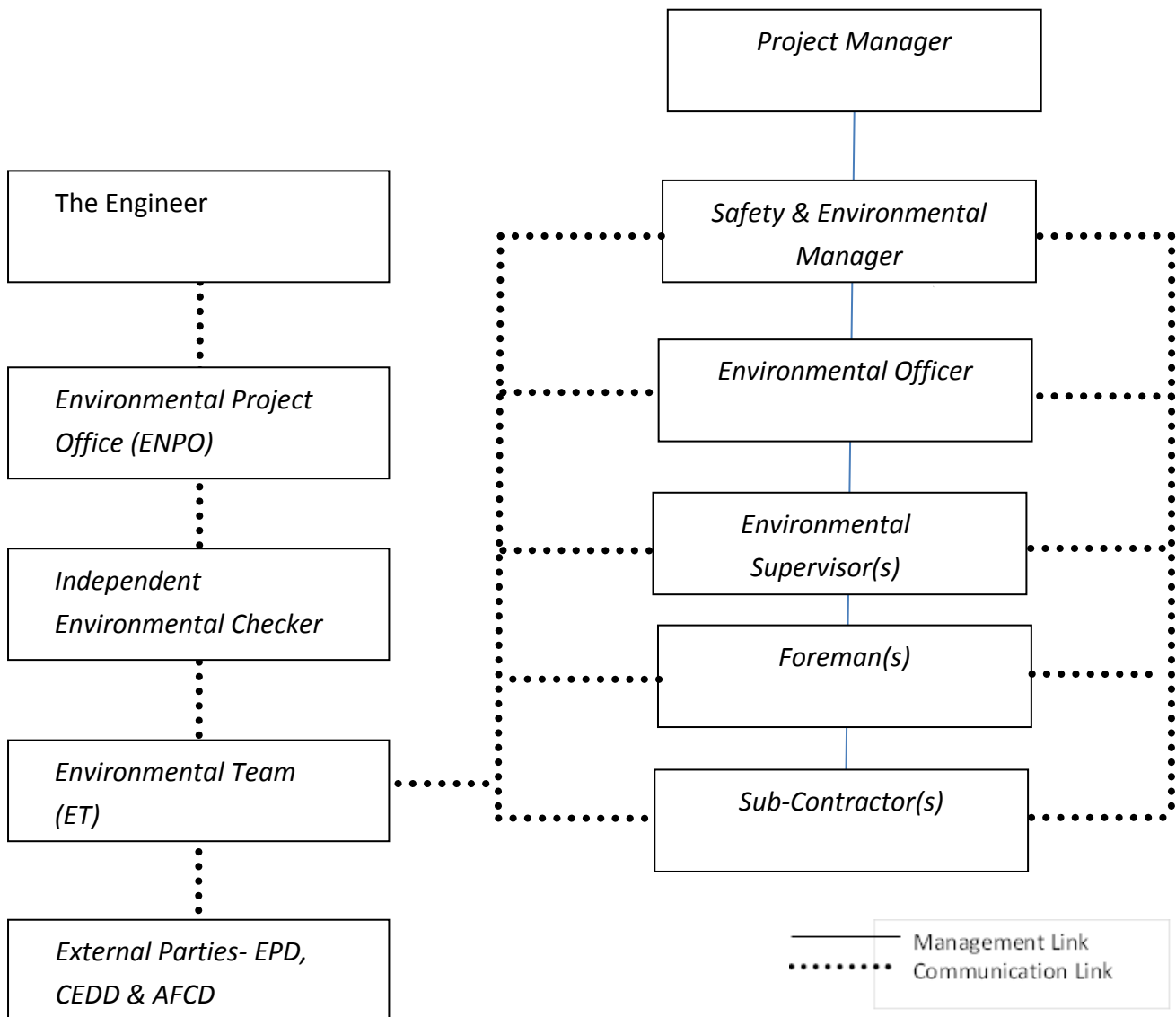
All records, such as permits, site inspection checklists & reports, etc., relating to the implementation of the WMP, should be kept adequately and be properly recorded. The records should include, but not limited, to the followings:

- Environmental Permit
- Training Records
- Inspection Checklists and Records
- Records of Trip-tickets system
- Any other related records

**Appendix A**  
**Project Environmental Organization Chart**

CRBC-KADEN Joint Venture  
Waste Management Plan

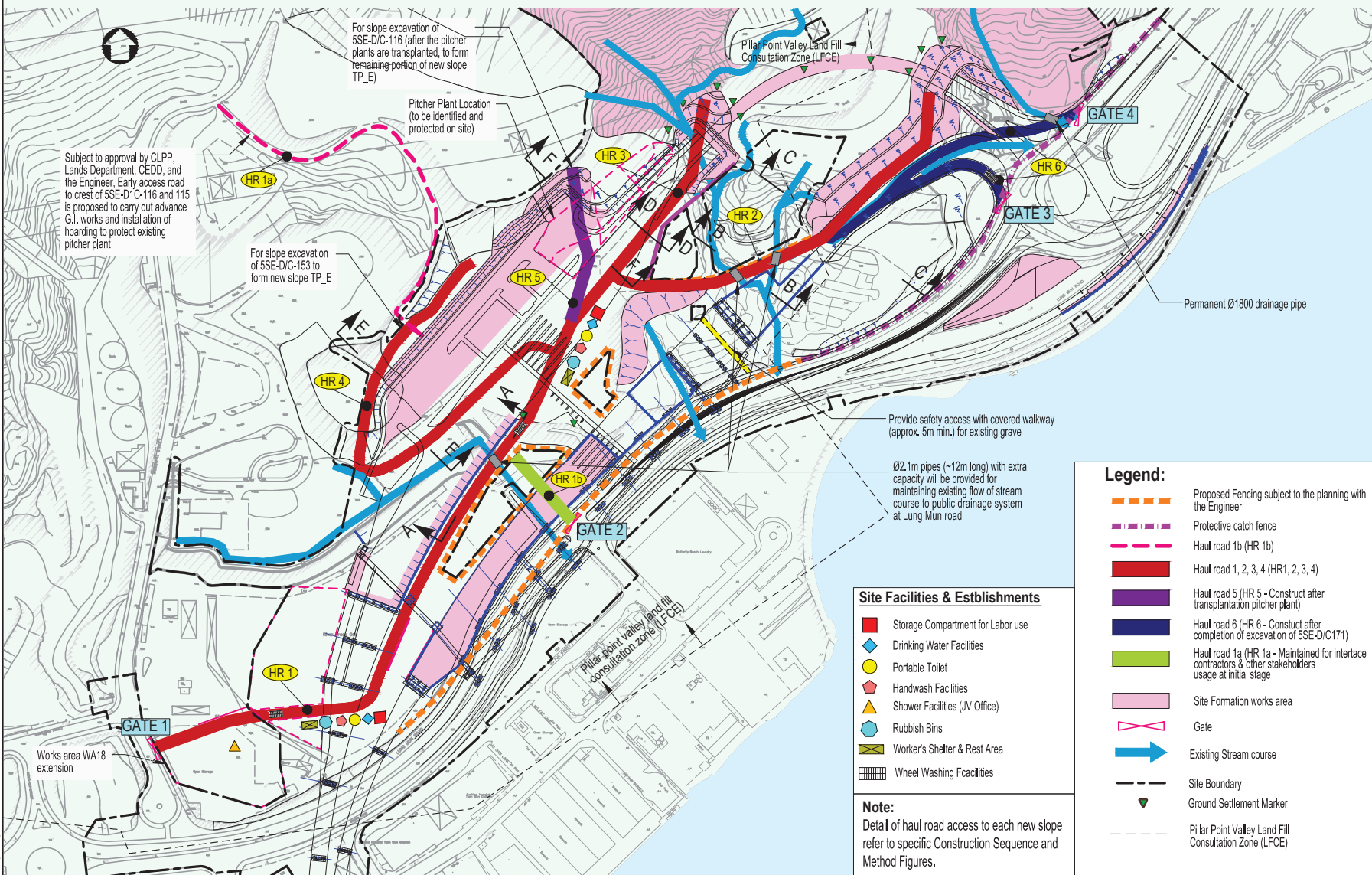
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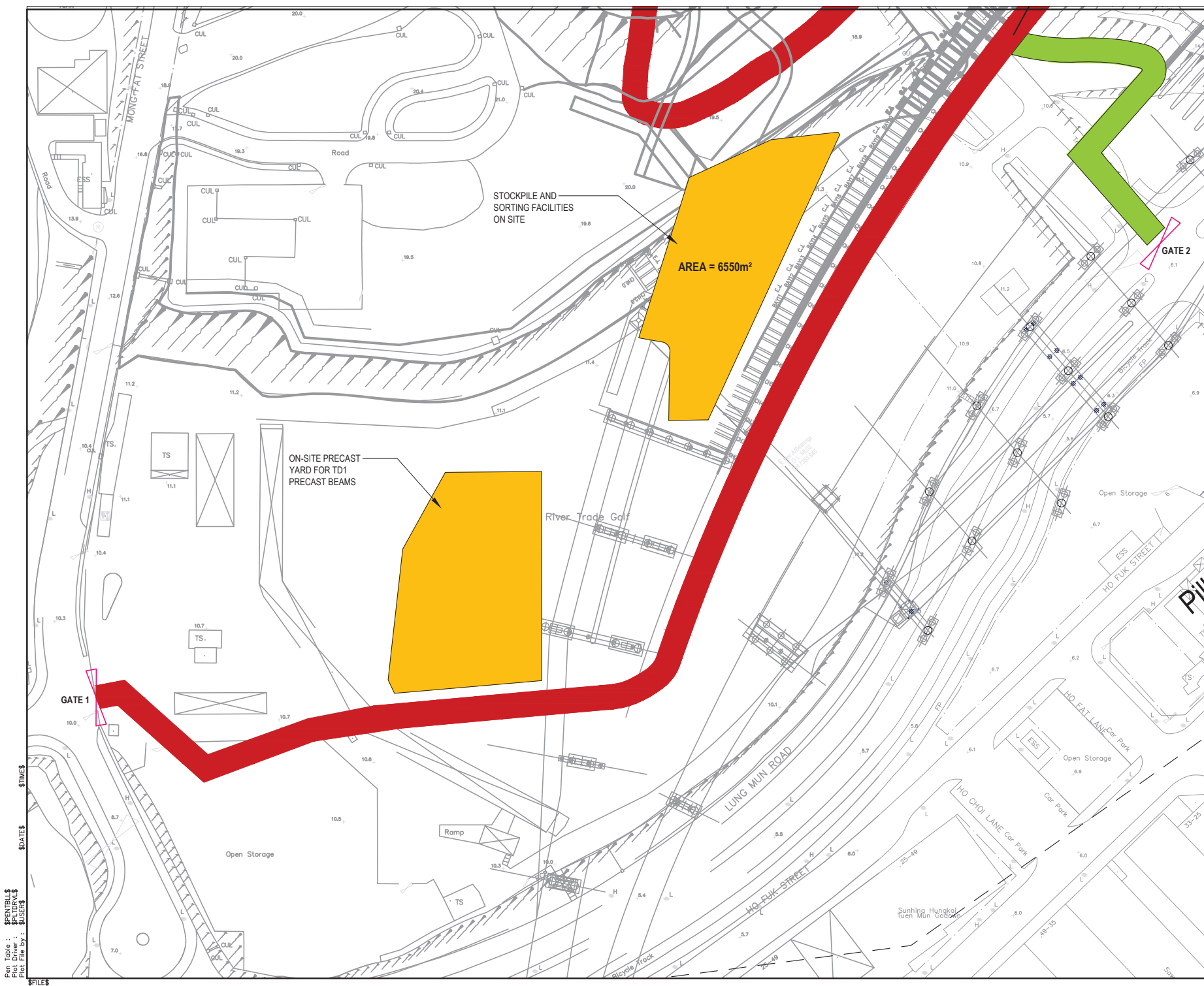
**Appendix B**  
**Site Layout Plan**



# Site Access for Plant & Material Delivery to Work Front and Storage





Rev	Amendment	By	Chk.	App.	Date
Client					
Contractor					
Detailed Design By					
Project					
CONTRACT HY/2013/12 TUEN MUN - CHEK LAP KOK LINK NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS					



Pen Table : \$PENBLL\$  
Plot Driver : \$PLTDRL\$  
Plot File By : \$PLTFR\$

\$TIME\$  
\$DATE\$

\$FILE\$

Rev	Amendment			By	Chk.	App.	Date		
Client	 <b>路政處</b> <b>HIGHWAYS DEPARTMENT</b> 香港路政處工程管理部 Hong Kong - Zhuhai - Hengmen Bridge Hong Kong Project Management Office								
Contractor	CRBC-KADEN Joint Venture 中國路政-沃利聯營體								
Detailed Design By	 <b>MEINHARDT</b> Meinhardt Infrastructure and Environment Limited 漢達基建築工程顧問有限公司								
Project	CONTRACT HY/2013/12 TUEN MUN – CHEK LAP KOK LINK NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS								
Title	STOCKPILE AND STORAGE AREA								
Status	DETAILED DESIGN								
Drawn	WYT	Checked	CC	Approved		SM			
Scale	1:750		CAD File No.	FILE\$		Date			
First issued			Drawing No.	AD Figure 2.6					Rev
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**Appendix C**

**Summary Table for Work Processes or Activities Requiring Timber for Temporary Works**

**Summary Table for Work Processes or Activities Requiring Timber for Temporary Works**

Contract No.: \_\_\_\_\_

Contract Title: \_\_\_\_\_

Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m <sup>3</sup> )	Actual Quantities used (m <sup>3</sup> )	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
Total Estimated Quantity of Timber Used					

- Notes:
- (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.
  - (b) The summary table shall be submitted to the \*Architect/Engineer's Representative monthly together with the Waste Flow Table for review and monitoring

**Appendix D**  
**Sample of Daily Record Summary**

**PS APPENDIX 25.6**

**SAMPLE OF DAILY RECORD SUMMARY**

**(PS Clause 25.25(6)(a)(ii))**

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**PS Appendix 25.6**  
**(PS Clause 25.25(6)(a)(ii))**

**“Daily Record Summary” to record daily disposal of construction & demolition (C&D) materials from the \*Site**

“每日運載記錄摘要”記錄每日由\*地盤所傾卸的拆建物料

- (1) Contract no. & title 合約編號及名稱: \_\_\_\_\_
- (2) Date of disposal 傾卸日期: \_\_\_\_\_
- (3) Disposal ground (s) designated in the Contract or directed by the Architect/Engineer 合約指定或建築師/工程師指示接收設施: (a) \_\_\_\_\_  
(b) Others 其它 \_\_\_\_\_
- (4) Approved alternative disposal grounds 另可接受的接收設施 \_\_\_\_\_

CHIT/ DDF no. 載運入帳 票/ 拆建 物料運載 記錄票編 號	Vehicle registration mark 車輛登記號 碼	Approx. vol (e.g. Full/Three Quarter/Half/One quarter) 大約承載量 (例如全、 3/4、半、1/4)	C&D materials type (e.g. inert or non-inert) 建築廢料種類 (例如惰性 或非惰性)	Disposal ground 接收設施	Signature & Name of the Contractor's Designated person before departure 於離開地盤 前，承建商 的指定人仕 姓名及簽名	Departure time from *Site 離開地盤時 間	Signature & name of the Architect/Engineer's supervisory staff before departure or other time as agreed between the Architect/Engineer's Representative and the Contractor <sup>1</sup> 於離開地盤前或其它經承建商與建 築師/工程師代表同意的時間，建築師 /工程師監管人員姓名及簽名	Actual disposal ground 真正接收設 施	Arrival time at disposal ground 抵達接收設 施時間	Remarks 備註:

Part 1<sup>2</sup> 甲部

Part 2<sup>3</sup> 乙部

Submitted by 呈交: \_\_\_\_\_

[Name of Contractor's Designated Person  
承建商的指定人仕姓名]

Signature 簽名: \_\_\_\_\_

Date 日期: \_\_\_\_\_

Received by 接收: \_\_\_\_\_

[Name and signature of the  
Architect/Engineer's staff]  
建築師/工程師監管人員姓名及簽名

Post 職位: \_\_\_\_\_

Date & Time 日期及時間: \_\_\_\_\_

<sup>1</sup> For term contract, if there are no full time site supervisory staff, the Architect/Engineer's supervisory staff should spot check and then sign as appropriate in accordance with paragraph 25 of DEVB TC(W) 6/2010 定期合約，如沒有全職地盤監管人員，應根據 DEVB TC(W) 6/2010 的第 25 段進行定點檢查及簽署

<sup>2</sup> Part 1 甲部- The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's/ Engineer's Representative. 承建商填寫甲部兩份，副本由建築師/工程師代表持有

<sup>3</sup> Part 2 乙部- The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD web-site. 承建商填寫乙部及將整份運載記錄摘要於記錄上載在環境保護署網頁後 1 個工作天內呈交給建築師/工程師代表

\*Delete "Site" and substitute "Sites" for term contracts. 定期合約將 "Site" 刪去及以 "Sites" 代替



Contract No. HY/2013/12

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**Appendix E**  
**Sample of CHIT**

**PS Appendix 25.7**

**CHIT**

**(PS Clause 25.25(6)(a)(iii))**

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**PS Appendix 25.7**  
**CHIT**  
**(PS Clause 25.25(6)(a)(iii))**

**A sample of "CHIT" to be used for disposal of construction & demolition (C&D) materials at a prescribed facility**

Contract No. HY/2013/12

入帳票編號: Chit No.:		入帳票編號: Chit No.:		香港法例第354章廢物處置條例 廢物處置(建築廢物處置收費)規例 Waste Disposal Ordinance (Chapter 354) Waste Disposal (Charges for Disposal of Construction Waste) Regulation	
選擇「✓」一個預明設施: Tick (✓) One Prescribed Facility:		選擇「✓」一個預明設施: Tick (✓) One Prescribed Facility:		載運入帳票 <b>CHIT</b>	
<input type="checkbox"/> 堆填區 Landfills	<input type="checkbox"/> 篩選分類設施 Sorting Facilities	<input type="checkbox"/> 堆填區 Landfills	<input type="checkbox"/> 篩選分類設施 Sorting Facilities		
<input type="checkbox"/> 公眾填料接收設施 Public Fill Reception Facilities		<input type="checkbox"/> 公眾填料接收設施 Public Fill Reception Facilities		車牌號碼: Vehicle Registration Mark:	
<input type="checkbox"/> 離島廢物轉運設施 Outlying Islands Transfer Facilities		<input type="checkbox"/> 離島廢物轉運設施 Outlying Islands Transfer Facilities			
車牌號碼 Vehicle Registration Mark:		車牌號碼 Vehicle Registration Mark:		車牌號碼: Vehicle Registration Mark:	
使用日期: Date of Use:		使用日期: Date of Use:		有效期至: Valid Until:	
簽發人: Issued by:		簽發人: Issued by:		建築廢物產生地點: Construction Waste Generated Site:	
建築廢物產生地點: Construction Waste Generated Site:		帳戶名稱: Name of the Account-holder:		帳戶名稱: Name of the Account-holder:	
帳戶編號: Account No.:		帳戶編號: Account No.:		帳戶名稱: Name of the Account-holder:	
甲部份: 由帳戶主保留 Part A: retained by Account-holder		乙部份: 由廢物運輸商保留 Part B: retained by Waste Hauler		丙部份: 由政府保留 Part C: retained by Government	

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**Appendix F**  
**Disposal Delivery Form (DDF)**

**PS Appendix 25.8**

**Sample of Disposal Delivery Form**

**(PS Clause 25.25(6)(a)(iii))**



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**PS Appendix 25.8**  
**(PS Clause 25.25(6)(a)(iii))**

Contract **Sample of the Disposal Delivery Form (DDF) for Disposal of C&D Materials at Disposal Grounds (Other than Prescribed Facilities) as Designated in the Contract or as Directed by the Architect/Engineer, or Alternative Disposal Grounds Proposed by the Contractor and Approved by the Architect/Engineer**

<p><b>Serial No. 0012345678</b></p>  <p>Date of Use: 使用日期: _____</p> <p>Disposal Ground : 接收設施: _____</p> <p>Vehicle Registration Mark. : 車牌號碼: _____</p> <p>Issued By: 簽發: _____</p> <p><i>(This part retained by Disposal Ground)</i> <i>(此部分由接收設施保留)</i></p>  <p>Chop of Disposal Ground 接收設施蓋印</p>	<p style="text-align: right;"><b>Serial No. 0012345678</b></p>  <p style="text-align: center;"><b>Construction and Demolition Materials</b> <b>Disposal Delivery Form</b> 拆建物料運載記錄票</p> <p>Contract No: _____ Contract Title: _____</p> <p>合約編號: _____ 合約名稱: _____</p> <p>Date of Use: _____ Time of departure from site: _____ Vehicle Registration Mark: _____          使用日期: _____ 離開地盤時間: _____ 車牌號碼: _____</p> <p>Disposal Ground: 接收設施: _____</p>  <p>Arrival Time/Date: 抵達日期/時間: _____  <i>(This part retained by Contract/Driver)</i>  <i>(此部分由承建商/司機保留)</i></p>  <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Chop of Disposal Ground Representative 接收設施蓋印</p> </div> <div style="width: 45%;"> <p>Chop of Engineer's/Architect's 工程師 / 建築師代表蓋印</p> </div> </div>
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Contract No. HY/2013/12

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**Appendix G**  
**Notice to Truck Driver**

## 泥頭車司機指引

所有於本地盤工作之泥頭車司機請遵守以下規則：

- 一、 泥頭車嚴禁超載。
- 二、 司機需持有有效的傾倒執照。
- 三、 離開地盆前確保車上的機動蓋掩已經蓋上。
- 四、 確保車身及車輪已經徹底清洗乾淨。
- 五、 必須持有一張已填寫及經 中國路橋- 基利聯營 操作員簽名之拆建物料運載記錄票。
- 六、 到達指定檢查點才可打開機動蓋掩。
- 七、 任何在非指定地點傾倒或非法傾倒的泥頭車司機，其傾瀉牌照，將會被公眾填土區之委員撤銷。

中國路橋- 基利聯營

**Appendix H**  
**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

**Agreement No. CE 52/2007 (HY)**  
**TUEN MUN – CHEK LAP KOK LINK**  
**INVESTIGATION**

**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		n/a
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		n/a
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		n/a
12.6	8.1	Training shall be provided to workers	Contract Mobilisation	Contractor	TMEIA		Y		n/a

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

**Agreement No. CE 52/2007 (HY)**  
**TUEN MUN – CHEK LAP KOK LINK**  
**INVESTIGATION**

**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
		about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling							
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Inert C&D materials from the toll plaza cut slopes shall be reused for construction of the raised platform for the toll plaza where possible.	Tol Plaza / toll plaza construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	C&D materials generated by construction of cut slopes along NLH at North Lantau shall be reused in reclamation works where possible.	NLH slope works / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	The surplus surcharge should be transferred to a fill bank	Reclamation areas / after surcharge works	Contractor	TMEIA		Y		n/a
12.6	8.1	Rock armour from the existing seawall should be reused on the new sloping seawall as far as possible	All areas / throughout construction period	Contractor	TMEIA		Y		n/a

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**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
12.6	8.1	TMB generated alluvium and CDG material should be treated at a slurry treatment plant prior to transfer to a fill bank.	TMB works area / during TBM works	Contractor	TMEIA		Y		n/a
12.6	8.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	No waste shall be burnt on site.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Provisions to be made in contract documents to allow and promote the use of recycled aggregates where appropriate.	Detailed Design	Design Consultant	TMEIA	Y			n/a
12.6	8.1	The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a

Legend: D=Design, C=Construction, O=Operation

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**INVESTIGATION**

**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Seas Ordinance.	Reclamation areas / throughout dredging works	Contractor	TMEIA		Y		n/a
12.6	8.1	Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D	All areas / throughout construction period	Contractor	TMEIA		Y		n/a

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**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
		waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities.							
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: <ul style="list-style-type: none"> <li>▪ suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed;</li> <li>▪ Having a capacity of &lt;450L unless the specifications have been approved by the EPD; and</li> </ul>	All areas / throughout construction period	Contractor	TMEIA		Y		n/a

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**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
		<ul style="list-style-type: none"> <li>▪ Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations.</li> <li>▪ Clearly labelled and used solely for the storage of chemical wastes;</li> <li>▪ Enclosed with at least 3 sides;</li> <li>▪ Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest;</li> <li>▪ Adequate ventilation;</li> <li>▪ Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and</li> <li>▪ Incompatible materials are adequately separated.</li> </ul>							
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Adequate numbers of portable toilets should be provided for on-site workers.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a

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**INVESTIGATION**

**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

**Waste**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
		Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them.							
12.6	8.1	Night soil should be regularly collected by licensed collectors.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		n/a
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		n/a

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**ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE**

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Maintenance Agency
						D	C	O	
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		n/a
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		n/a

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**Appendix I**  
**Waste Flow Table**

### Monthly Summary Waste Flow Table for 2014 (year)

[illegible]



Contract No. HY/2013/12 – TMCLK Link

Northern Connection Toll Plaza and Associated Works

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Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract										
Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / cardboard packaging	Plastics (see note 2)	Chemical Waste	Others (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 '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )

Notes:

- (1) The waste flow table shall also include C&D materials that are specified in the contract to be imported for use at the Site.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.

**Appendix J**  
**Control Procedure on off-site disposal of C&D materials**

## CONTROL PROCEDURES ON OFF-SITE DISPOSAL OF C&D MATERIALS

