



**KOWLOON SOUTHERN LINK  
Contractor's Submission Form**

**Contract:** KDB300 – Tunnels – Jordan Road to Yau Ma Tei Ventilation Building

**For KCRC Internal Use Only**

EDMS No.: (Receipt of Submission)

**To:** Construction Manager-Mr. Kenny Kong

**Title of Submission:** Waste Management Plan

**Submission Ref. No.:** KDB300/CSF/ENV/150001/C

**Description of Contents:** (for materials submissions, include information of suppliers, brand, type, and location of application)

- Please refer to attachment**
 **See Below**

Following the EPD's transmittal ref. f(14) in Ax(1) to EP2/G/A/121 Pt. 5 dated 13 April 2006, replying no further comment on the submitted WMP, we herewith submit the consolidated document of the titled for your relaying to EPD per condition 2.6 of Further Environmental Permit No. FEP-02/215/2005/A and FEP-03/215/2005/A for construction

**Purpose of Submission:** For Construction

- For Review**
 **For Information**
 **For Record Purposes**

**From: Contractor's Representative**

Name: John Wong                      Signature:  
Title: Project Manager  
Date: 7<sup>th</sup> July 2006



**China State Construction  
Engineering (Hong Kong) Ltd.**

**Remarks:**

**No. of copies included in this submission:**

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**Specification/Drawing Reference (if applicable):**  
G8.1(2)

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COI Number 126012*

10 July 2006

**By Post and Fax (2865 5939)**

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5/F Canton Road Government Office  
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Tsim Sha Tsui  
Hong Kong

**Your Ref:**

**Our Ref:** 1273-09/E06-35854

Attention: Mr Brian Kam, Environmental Manager

Dear Sirs

**Kowloon Southern Link – KDB300 & KDB400  
Waste Management Plan**

I have no comment on the revised Waste Management Plan (dated 7 July 2006) and hereby certify the document.

Yours faithfully,

**Coleman Ng  
Environmental Team Leader  
HYDER CONSULTING LIMITED**

CN/AL



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

## KCRC Kowloon Southern Link

KDB300 Tunnels – Jordan Road to Yau Ma Tei Ventilation Building  
KDB400 Tunnels – Yau Ma Tei Ventilation Building to Nam Cheong Overrun

## WASTE MANAGEMENT PLAN

KDB300/CSF/ENV/150001/C	7 <sup>th</sup> July 2006
KDB300/CSF/ENV/150001/B	25 <sup>th</sup> October 2005
Submission Reference	Date

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## **1. INTRODUCTION**

### **1.1 Background**

Kowloon Canton Railway Corporation (KCRC) proposed to construct and operate a 3.8km (approx.) new underground railway line (hereinafter called “Kowloon Southern Link” or KSL) that will connect the new KCRC East TST Station to the current West Rail (WR) Nam Cheong (NAC) Station, with its alignment running under Salisbury Road, Canton Road and the West Kowloon Reclamation area. Upon completion of the railway construction and its commencement, the accessibility to Tsim Sha Tsui (TST) and West Kowloon districts will be greatly improved by linking up the KCRC West Rails and East Rails.

For the construction of KSL, KCRC has prepared three civil engineering contracts of design-build nature, namely KDB200, KDB300 and KDB400 and China State Construction Engineering (Hong Kong) Limited (CSCE) was awarded with the KDB300 & KDB400 which both commenced on 1<sup>st</sup> August 2005. It is planned that all construction works would be completed by end of 2008 and it will take another 8 months for testing & commissioning and necessary statutory inspections that the contracts would be substantially completed by early August 2009. Drawing No. KDB300/HA/Y0001 and KDB400/HA/Y0001 in Appendix A give the site layout of KDB300 & KDB400 respectively.

### **1.2 Purpose of the Waste Management Plan**

This Waste Management Plan (WMP) is prepared in pursuant to the Condition 2.6 of the FEP-02/215/2005/A and FEP-03/215/2005/A, which sets out procedures in managing the waste generated from various construction activities of the Contracts No. KDB300 Tunnels – Jordan Road to Yau Ma Tei Ventilation Building and KDB400 Tunnels – Yau Ma Tei Ventilation Building to Nam Cheong Overrun. The strategy for management and disposal of all wastes arising from this Contract will be based on the principle of segregation, salvage for reuse or recycle on or off site wherever practicable followed by disposal to public filling facilities or landfill as appropriate. In particular, CSCE will ensure compliance with all relevant statutory and contractual requirements and be responsible for all environmental matters within the boundary of the construction site.

The major objective of the WMP shall include:

- To provide details of all relevant statutory and contractual obligations and requirements;
- To set out the Contractor’s waste management policy for the Contract;
- To establish the organization for the implementation of WMP;
- To identify spatially and temporally the waste generation during the Contract;
- To formulate specific waste management measures;
- To frame the logistic arrangement for the waste management;
- To set out the audit and monitoring regimes; and
- To identify the need of training.

## **2. WASTE MANAGEMENT POLICY**

CSCE has been implementing the policy of waste management aiming to:

- (a) Avoidance and minimisation, i.e., not generating unnecessary waste through changing or improving processes;
- (b) Reuse, recovery and recycle of materials, thus avoiding disposal; and

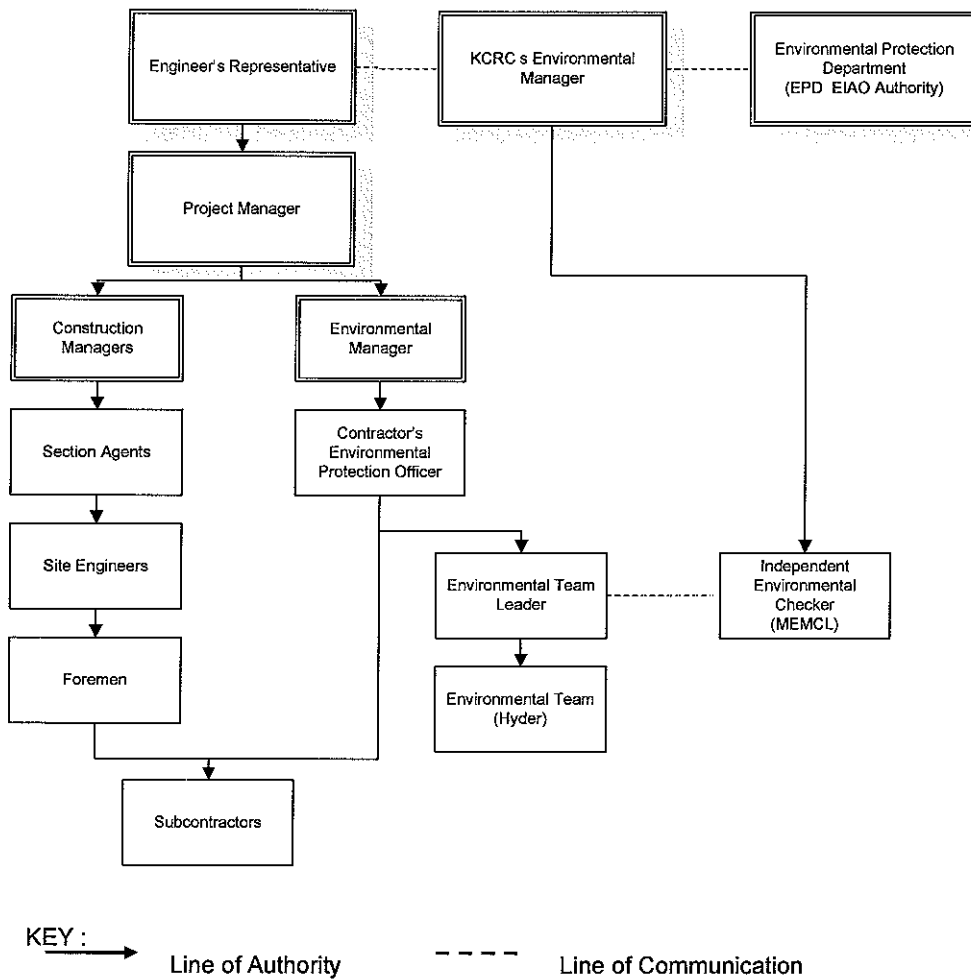
(c) disposal, according to relevant laws, guidelines and good practices.

This policy statement was signed by the Company's senior management that CSCE is committed to providing sufficient resources and facilities for the implementation on waste management. For continual improvement, the policy statement would be reviewed every 2 years. A copy of the policy statement for waste management is given in Appendix B.

**3. ORGANIZATION AND RESPONSIBILITIES FOR WASTE MANAGEMENT**

**3.1 Organisation Structure**

CSCE will deploy adequate manpower resources for the implementation of the WMP. The Project Manager will have the overall responsibility to ensure that the requirements of the WMP are properly implemented. The organization and the responsibilities of key site staff for the management of the WMP are given below and their contact details are in Appendix C:



### **3.2 Responsibilities of Key Personnel**

- a) The **Engineer's Representative** (ER) will be responsible for;
- monitoring CSCE's environmental compliance with the contract specifications and statutory requirements;
  - inspecting and approving the waste management measures; and
  - instructing CSCE to follow the agreed protocols in the event of waste related incidents and complaints
- b) The **KCRC's Environmental Manager** will be responsible for;
- Liaising among the project stakeholders, including the Environmental Protection Department as the Authority, the IEC and the KDB200, 300 & 400 Contractors via the ER;
  - Overseeing, with aid of the residential engineers from ER, the implementation of mitigation measures per the EP and EIA recommendation; and
  - Ensuring the KSL project to be proceeded in full compliance with the EIAO and relevant statutory requirements.
- c) The **Project Manager** (PM) will be responsible for;
- approving the WMP;
  - maintaining the overall control of the Contract and oversee the implementation of the WMP;
  - ensuring that adequate resources are provided for the efficient implementation of WMP;
  - reporting to Senior Management of Company on all environmental matters whenever necessary; and
  - ensuring compliance of all relevant waste management legislation throughout the duration of the Contract.
- d) The **Environmental Manager** (EnvM) will be responsible for;
- the day-to-day overview of site practices in relation to waste management on site;
  - applying all necessary licences in relation to waste management;
  - reporting to the PM;
  - coordinating with the Construction Manager to ensure proper implementation of mitigation measures on waste management;
  - conducting meetings/ briefings/ inductions/ tool-box talks with all sub-contractors, direct contractors, specialist contractors, utility undertakers and employees to enhance understanding of aims and contents of WMP; and
  - preparing and submitting the Monthly Summary Waste Flow Table (WFT), Yearly Summary WFT and Summary Table for Work Processes or Activities Requiring Timber for Temporary Works.
  - Updating the Waste Management Plan
- e) The **Construction Manager** (CM) will be responsible for;
- the day-to-day overview of site practices in relation to waste management;
  - directing Section Agents, General Foremen and Foremen as appropriate in supervising and enforcing the on-site mitigation measures;
  - reporting to the PM; and



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- ensuring all waste records be promptly available to the EnvM for record and/or action as necessary
- f) **Section Agents (SA)** will be responsible for;
  - working closely with the CM to assist in the management of the waste issues arising from the construction activities; and
  - ensuring that the measures set out in this WMP are implemented on site efficiently and effectively.
- g) The **Contractor's Environmental Protection Officer (Contractor's EPO)** will be responsible for;
  - assisting EnvM to disseminate information and requirement to the site operative in connection with the implementation of the waste management on-site;
  - monitoring the WMP implementation, carrying out site surveillance;
  - keeping environmental related documents as well as assisting on training staff at different levels;
  - assisting in the review and update of the WMP, the Waste Flow Tables (WFT) and the summary table for the use of timber during temporary works construction; and
  - working closely with Site Engineers to ensure the Contract is carried out in compliance with all waste related contractual and legal requirements.
- h) **Site Engineers (SEngr)** will be responsible for;
  - coordinating waste management on site, gather data about waste and keep updated record of waste movement on and off site;
  - obtaining a list of potential buyers or collectors of waste to be reused or recycled; and
  - investigating potential re-use and recycle opportunities of waste.
- i) **General Foremen and Foremen** will be responsible for;
  - assisting EnvM in all aspects of required waste management on site;
  - supervising and monitoring the works of workers including subcontractors in relation to waste management; and
  - ensuring all waste containers and storage areas are properly labelled.
- j) **Sub-Contractors** will be responsible for;
  - observing and implementing the measures set out by this WMP;
  - following all environmental related instructions given by the management staff of CSCE;
  - reporting any non-compliance of the waste management measures; and
  - conducting the rectifying actions as required in a timely and efficient manner.
- k) **Environmental Team Leader (ETL)** will be responsible for;
  - providing assistance and guidance to the Contractor in the implementation of the waste management plan;
  - identifying the potential hazardous waste whenever possible and take proactive actions before problems arise;
  - submitting monitoring results to the Contractor and the Engineer;
  - providing briefing to the project team as necessary on the waste management requirements; and

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- carrying out Waste Management Audits (e.g. weekly site inspections and monthly waste audits)
- l) The **Environmental Team (ET)** will be responsible for;
  - maintaining overall control of the monitoring and professional services;
  - reporting directly to the EnvM;
  - providing assistance and guidance to the Contractor in the implementation of WMP;
  - identifying the potential hazardous waste whenever possible and take proactive actions before problems arise;
  - providing briefing to the project team as necessary on the waste management requirements; and
  - carrying out Waste Management Audit
- m) The **Independent Environmental Checker (IEC)** will be responsible for;
  - reviewing and auditing all waste management aspects;
  - conducting monthly or ad-hoc waste audits to verify the satisfactory implementation of the waste management measures;
  - assisting the ER on complaint investigation and recommending and / or instructing mitigation measures as appropriate; and
  - liaising with the ER on the CR's performance of waste management

#### **4. STATUTORY REQUIREMENTS**

##### **4.1 Waste Management Legislation and Standards**

CSCE will comply with all of the current legislation and regulations which shall include, but not be limited, to the following:

- Environmental Impact Assessment Ordinance (Cap 499);
- Waste Disposal Ordinance (Cap 354) and related regulations;
- Dumping at Sea Ordinance (Cap 466) and related regulations;
- Land (Miscellaneous Provisions) Ordinance (Cap 28);
- Public Health and Municipal Services Ordinance (Cap 132) and its by-laws;
- ETWB TCPS No. 12/2000, Fill Management;
- ETWB TCW No. 15/2003, Waste Management on Construction Sites;
- ETWB TCW No. 06/2002 and 2002A, Enhanced Specification for Site Cleanliness & Tidiness;
- ETWB TCW 31/2004, Trip Ticket System for Disposal of Construction & Demolition Materials;
- ETWB TCW No. 33/2002, Management of Construction & Demolition Materials Including Rock;
- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat, 5 November 1998;
- 2001 Review of the Waste Reduction Framework Plan, Waste Reduction Committee;
- Site Practice for Waste Reduction in Construction Industry (2001), Environmental Protection Department;
- Environmental Guidelines for Planning in Hong Kong (1990), Hong Kong Planning and Standards Guidelines, Hong Kong Government;
- New Disposal Arrangements for Construction Waste (1992), Environmental Protection

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- Department & Civil Engineering Department;
- A Guide to the Registration of Chemical Waste Producers (2001), Environmental Protection Department;
  - Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992), Environmental Protection Department; and
  - A Guide to the Control on Import and Export of Waste (1999), Environmental Protection Department.

#### **4.2 Licence Applications**

Relevant to the KDB300 & KDB400 Contracts, licenses in respect of the following will be applied:

- Chemical Waste Producer Registration (under the Waste Disposal (Chemical Waste) (General Regulation)); and
- Dumping Permits under Cap 466 Dumping at Sea Ordinance required for the disposal of public fill as capping materials of the contaminated mud pit and for excavated marine deposits.

### **5. WASTE ANALYSIS AND MANAGEMENT PERFORMANCE**

#### **5.1 Waste Management Performance Target**

Waste management performance targets have been set for the Contracts to facilitate assessment of the effective of waste management measures. Performance targets set for both KDB300 and KDB400 are as follows.

- (1) All excavated materials should be sorted to recover the inert portions (e.g. soil and broken rock) for reuse on site or disposal to designated outlets (e.g. public filling areas);
- (2) All metal should be recovered on site for collection by recycling contractors;
- (3) 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;
- (4) All 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; and
- (5) There should be zero prosecutions by the Authority in regard of complying with the respective statutory requirements.

#### **5.2 Analysis of Waste Generation**

Throughout the Contracts KDB300 & 400, there will be different categories of wastes generated from every construction process in connection with either temporary or permanent works. The major construction and demolition (C&D) materials generation will include:

- Excavated fills– soil and rock from excavations along the tunnel alignment earthworks;
- Inert C&D materials – broken concrete from culvert diversion/ demolition, surplus cement grouting from jet grouting treatment and bituminous material from road reconstruction;

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- Excavated marine materials – alluvium and contaminated marine deposits encountered during excavations for the tunnel alignment;
- Metals – site hoarding and reinforcement offcuts;
- Paper/cardboard – packaging, printed papers and cartons;
- Plastics – foam/plastic material packaging and plastic bottles/containers;
- Chemical waste – engine oils, hydraulic fluids, cleaning fluids, used oil filters and car batteries etc, and
- General refuse – generated from on site work force.

Tables 5-1 & 5-2 in Appendix D give each summary of quantities of predicted waste generation in relation of work processes/activities, the respective timing and management measures for the KDB300 and 400 respectively.

## **6. WASTE MANAGEMENT MEASURES**

### **6.1 *General Approach***

The strategy for management and disposal of all C&D materials arising from the contract will be based on the principle of avoidance, minimizing, segregation, salvage for reuse or recycle on or off-site wherever practicable followed by the last resort of disposal to public/private filling facilities or landfill as appropriate.

CSCE will carefully design and properly plan the temporary and permanent works to be carried out in such a way to avoid, reduce or minimize the generation of C&D materials in particular metallic waste, timber, paper/ cardboard packaging and chemical waste. We will employ measures to ensure proper planning of works, good site management such as minimizing over-ordering, avoiding cross contamination of reusable and/ or recyclable materials collected, optimizing the use of metal formwork or other process to reduce or minimize the use of timber in temporary works construction and maximizing the reuse of excavated inert C&D materials within the sites (e.g. backfilling).

On-site sorting of C&D materials will be adopted so that inert materials can be reused or recycled on or off-site as far as practicable before disposed of at public filling areas, and the remaining C&D waste disposed of at designated landfills.

Such sorting would ensure the quality of the inert C&D material for backfilling and compliance with the general condition of dumping licenses for public filling areas that the materials to be disposed thereof must comprise only soil, building debris, broken rock and concrete less than 250mm in size. Such materials shall be free from marine mud, general refuse, plastic, metal, industrial and chemical waste, animal and vegetable matter and other matter considered unsuitable by the public fills operator. Whereas the material unsuitably disposed of at public filling areas has to go to a designated landfill. The contract specific disposal outlets and associated authority's allocations/ licensing requirements are summarised in the Appendix E.

CSCE will remove off site as soon as practicable all C&D materials not reusable on site and arrange recycling contractors to promptly collect all sorted and/ or processed recyclable materials from the site on a regular basis. There will be a barging point set up at the West Kowloon area for the entire KSL project. Under the current contractual arrangement, the KDB200 Contractor will operate the barging point that will incept and dispose of all C&D materials from the KSL via marine transportation. The routes of waste disposal are given in (Drawing No. KDB300/HD/Y0001) in Appendix F.

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During the course of handling, sorting and disposing of C&D materials, the associated impacts in terms of various environmental aspects, though less significant, would be a concern. The following table summarises the likely environmental impacts associated and the respective mitigation measures to be taken.

**Summary of Mitigation Measures for the Associated Environmental Impacts arising from  
Waste Management Activities**

Activity/ Process	Mitigation Measures
Management of Excavated Fills and C&D Materials	<ul style="list-style-type: none"> <li>• Opportunity for re-using of fill material for back filling should be optimized.</li> <li>• Excavated materials that cannot be recycled should be transported to public filling areas.</li> <li>• Careful design, planning and good site management can minimise over-ordering and waste materials such as concrete, mortars and cement grouts. The design of formwork should maximise the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork or plastic fencing should be considered to increase the potential for reuse.</li> <li>• The contractor should recycle as much as possible of the construction waste on-site. Proper segregation of wastes on site will increase the feasibility of recycling certain components of the waste stream by recycling contractors. Concrete and masonry can be used as general fill and steel reinforcement bars can be used by scrap steel mills. Different areas should be designated for such segregation and storage wherever site conditions permit.</li> <li>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.</li> <li>• For cut-&amp;-cover tunnel section, stockpile excavated C&amp;D material adjacent to its source for immediate backfill once the tunnel section is completed.</li> <li>• Surplus artificial hard materials should be delivered to CEDD designated public fills area with recycling plant facilities or its successor for recycling into subsequent useful products.</li> <li>• Existing bituminous pavement should be used for paving construction access and temporary holding / parking areas.</li> <li>• On-site sorting and segregation facility of all type of wastes is considered as one of the best practice in waste management and hence, should be implemented in all projects generating construction waste. The sorted public fill and construction &amp; demolition (C&amp;D) waste should be disposed to public filling areas and landfills, respectively.</li> <li>• Disposal of C&amp;D materials onto any sensitive locations such as agricultural lands, etc. is restricted. Disposal of at sites/ areas other than the allocated tipping point should be proposed to ER/ KCRC and approved before implementation.</li> </ul>
Management of Excavated Marine Deposits	<ul style="list-style-type: none"> <li>• Non-contaminated alluvial and marine deposits will be transported by leach proof trucks to ensure that any water will not be leaked during the transportation to the barging facility for open sea disposal. The trucks should also be covered with impervious sheeting to prevent any dust emissions.</li> <li>• Contaminated marine deposit shall be disposed in confined mud pits. Possible mitigation measures to handle the contaminated / uncontaminated alluvial / marine sediment are summarized as follows: <ul style="list-style-type: none"> <li>- All construction plants and equipment shall be designed and maintained to minimise the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location.</li> <li>- All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.</li> <li>- Before moving the vessels which are used for transporting dredged material, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations.</li> <li>- Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.</li> <li>- The barge operator shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The barge operator shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the ER.</li> <li>- The barge operator shall comply with the conditions in the dumping licence.</li> <li>- All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material.</li> <li>- The material shall be placed into the disposal pit by bottom dumping.</li> <li>- Contaminated marine mud shall be transported by split barge of not less than 750m<sup>3</sup> capacity and capable of rapid opening and discharge at the disposal site.</li> <li>- Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.</li> </ul> </li> </ul>
Management of Chemical Wastes	<ul style="list-style-type: none"> <li>• Handle and dispose of the chemical waste in accordance with the Waste Disposal (Chemical Waste) (General) Regulation and Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</li> </ul>

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Management of General Refuses	<ul style="list-style-type: none"> <li>Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.</li> <li>Implement the measures as proposed in the WMP.</li> </ul>
Sorting & Stockpiling of C&D Materials	<ul style="list-style-type: none"> <li>Water sprays on the activity spot to suppress dust generation from loading/ unloading of C&amp;D materials</li> <li>Haul road to be wetted by manual water spraying/ water truck to suppress dust generation</li> <li>Cover the dusty truck load with a tarpaulin sheeting to avoid the dust release</li> <li>Cover the stockpile with a tarpaulin sheeting to avoid fugitive dust generation and rain percolation leading to silty runoff</li> </ul>

## 6.2 **Management of Excavated Fills**

A substantial volume of excavated fills will come from tunnel construction employing cut-and-cover & mining method. CSCE plans to reuse this material for backfilling wherever practicable, and the strategy of management of such material to fulfil this purpose will be as follows:-

1. Sorting and selection of inert C&D material will be carried out at source to collect suitable fill material as much as possible. The selected suitable fill material will be transported to temporary stockpiling areas for later filling use.
2. During excavation, non-inert waste materials encountered such as rebar, timber, paper, plastics, general refuse, and etc. will be sorted out by the excavator or backhoe. The rebars and the other waste materials will be placed aside in separate heaps for collection by recycling contractors and for delivery to designated landfill respectively.

During excavation, boulder or rock of suitable quality will be sorted out by the excavator and loaded into dump truck for delivery to temporary storage area for further processing if necessary, where rock of suitable size will be selected or large boulder/ rock will be broken down to Grade 200 rockfill material to form the rubble mound under the tunnel structure.

The total amount of excavated fills and the surplus will be estimated together with a breakdown of the quantities in respect of inert C&D material, rock, C&D waste, etc. Such estimates will be prepared upon commencement of the Contract and updated half-yearly.

The Public Fill Committee will be consulted through the ER to confirm the availability of the public filling facilities. The surplus C&D material sent to the public filling area or the designated outlet will be free of non-inert materials and any oversized rock or concrete will be broken down to less than 250mm in size so as to facilitate its use by the public filling facilities or the filling/ reclamation projects.

## 6.3 **Management of Inert Construction and Demolition Material**

CSCE will practise necessary design, proper planning and good site management to minimize wastage of materials such as concrete debris, mortars, cement grouts and reinforcing bars as follows: -

**Bituminous material** from road reconstruction or improvement will be broken down and sorted at source, and delivered to recycling contractors for recycling if available in HK or used for temporary paving or access on site or in other projects. Surplus material will be mixed with soil as backfill material or disposed of at public filling facilities.

**Broken concrete** from road reconstruction or improvement and culverts diversion/ reconstruction works that is identified as suitable for recycling into aggregates will be sorted at source and disposed of at the designated outlet.

**Granular subbase material** from the road reconstruction or improvement works will be sorted at source and stockpiled for reuse in the construction of the works (such as new road subbase layer) and surplus be delivered to other projects for such use or to the designated outlet.

**Reinforcement rebars** from culverts diversion/ reconstruction works will be sorted on site and recovered for collection by recycling contractors.

The design of formwork should maximize the use of standard metal / wooden panels so that high reuse levels can be achieved. Metal panels will be given the first priority except for small quantity of **timber** to be used for some activities.

CSCE will as far as possible detail the rebar in such a way as to minimize and standardize offcuts which in turn to maximize the planned reuse thereof. Bar benders will be required to label both the bundles of bent bars and the bundles of **reinforcement offcuts** which will be logged for use in other parts of the works in accordance with the bar bending schedules.

CSCE will arrange to reuse or recycle as much as possible the **general construction waste** with recyclable values such as steel mesh, reinforcement bars as described above, railings, banisters, wooden planks, tires, etc. Where practicable, these wastes would be segregated on site. Different areas shall be designated for such segregation and storage. These wastes would either be reused on site or collected by outside licensed waste recycling agents. If feasible, an inert and a non-inert construction waste storage skips should be set up on site:

- inert (e.g. sand, rubble) – for reuse, recycle, or disposal at public filling facilities
- non-inert (e.g. wood, plastics) – for disposal at licensed landfills

The storage, collection and transport of construction waste should follow the key measures below as far as practicable:

- a trip ticket system shall be adopted for the disposal of construction and demolition wastes to any designated landfill;
- only permitted waste hauliers shall be used to collect and transport wastes to licensed disposal points. A list of licensed waste collectors will be obtained from the EPD;
- wastes shall be stored and handled properly in designated storage points;
- wastes shall be removed in a timely manner.

#### **6.4 Management of Excavated Marine Materials**

On 20<sup>th</sup> May 2003, Environmental Protection Department endorsed a sediment quality report<sup>1</sup> that details the location and quantity of marine deposits found along the Kowloon Southern Link alignment. Where the chainage section recorded to have marine materials, open-cut excavation would not be adopted. Instead, the use of sheet piles and pipe piles shall aim at minimizing the extent of excavation into marine materials and the need for their dispose of. It is however certain volume of alluvial materials and marine deposits would require sea disposal. As the project proponent, KCRC will apply to Marine Fill Committee for the allocation of sediment disposal site and the KDB200 Contractor obtain where necessary dumping licenses from EPD for the disposal operation.

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<sup>1</sup> Lam Geotechnics Ltd, (Apr 2003), “KCRC Contract No. KAW820 Ground Investigation Works (Stage 1) of Kowloon Southern Link – Sediment Quality Report” and their subsequent clarifications via letters ref. J174/MC, J174/MC/L04 & J174/MC/L05 dated 2<sup>nd</sup>, 12<sup>th</sup> & 16<sup>th</sup> May 2003.

## **6.5 Management of Chemical Waste**

Repair and maintenance of plant and vehicles on site are not encouraged but minimized as far as practicable to reduce generation of chemical waste on site. Plant in poor condition will not be deployed on site.

Chemical wastes expected from the Contract include engine oils, hydraulic fluids, waste fuel, spent solvent, spent cleaning fluids, spent lubricating oil, contaminated sawdust/sandbags, paint residual, and used oil filters. CSCE will register with EPD as a Chemical Waste Producer.

All chemical waste generated by the construction works shall be properly labeled, packaged, and temporarily stored at designated chemical waste storage areas (Appendix F) within the construction site in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* issued by EPD. .

Chemical waste containers should:

- be suitable for the substance they are holding, resistant to corrosion, maintained in good condition, securely closed;
- have a capacity of less than 450 L; and
- display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste)(General) Regulation.

Chemical waste storage areas should:

- be clearly labeled and used solely for the storage of chemical waste;
- be enclosed on at least three sides;
- have an impermeable floor and bunding of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greater;
- have adequate ventilation;
- be covered to prevent rainfall entering (water collected within the bund must be disposed of as chemical waste if necessary); and
- be arranged to separate incompatible materials.

Chemical waste disposal should be via licensed waste collectors to licensed chemical waste disposal facilities. A list licensed chemical waste collectors/disposal facilities shall be obtained from the EPD.

CSCE will develop a full response plan for the event of chemicals/ chemical wastes spillage. The proposed contingency response plan is given in Appendix G.

## **6.6 Management of General Refuse**

Enclosed bins separate from construction and chemical wastes shall be provided at convenient locations within the site for the collection of general refuse from the work force. The bins and storage areas shall be cleaned regularly. Refuse should be removed from site by a reputable waste haulier at least twice a week. Burning of refuse on site is strictly prohibited.



Three separate bins will be provided to collect and segregate aluminum cans, plastic bottles and paper waste on site for subsequent collection by outside waste recycling companies if volumes are large enough to warrant such collection.

#### **6.7 *Management of Packaging Materials***

Construction materials will be ordered as far as practicable in bulk quantity or container that requires the least packaging or wrapping. For materials delivered to Site, reusable and recyclable cardboard, packaging materials and pallets will be re-used, recycled or returned to the supplier. Suppliers who accept the return of pallets and reusable and recyclable cardboard and packaging materials shall be identified and given priority for business.

Sufficient space will be provided for proper stockpile of such recovered materials in dry condition and with cover to prevent cross contamination by other C&D materials. The recovered materials will be arranged to be collected by or delivered to recycling contractors on a regular basis.

#### **6.8 *Management of Temporary Works to Minimize Timber Usage***

To avoid/minimize the use of timber for temporary works construction, the following measures will be adopted:

- Design structural or concrete members (such as viaduct segments, reinforced earth wall panels, seawall blocks, crash barriers, channels, kerbs, etc) to be constructed by pre-cast method that optimized the repeated use of metal formwork;
- Use metal system or panel formwork for cast-in-situ members as far as practicable;
- Corrugated sheets and structural steel members or steel angle sections shall be used to construct site hoardings;
- Steel tubular scaffolds, props or I-beams shall be used as falsework with steel I-beams or channels as horizontal runner beams to support formwork; and
- Steel planking or sheet-piles with horizontal steel beams and struts will be proposed as support to excavation when necessary.

Appendix H gives the summary table for processes or activities requiring timber for temporary works.

#### **6.9 *Temporary Stockpiling Areas and On-site Sorting***

Sufficient space will be identified and provided for the temporary stockpiling of C&D materials to facilitate collection and/or sorting on the Site. The space provided should be commensurate with the estimated quantity for each type of C&D materials generated on the Site. However, sorting will be carried out at source to avoid double handling. In any case to minimize transport distance, the stockpiling area will be set up in close proximity of the sorting ground. The temporary sorting and stockpiling areas are tentatively designated on the layout plan (Drawing No. KDB300/HD/Y0001) in Appendix F.

CSCE intends to retain all excavated fills and those inert C&D materials at the designated stockpiling areas until they would be reused for backfilling. Only on a circumstance that the space of stockpiling areas depletes and backfilling programme cannot fit, the surplus fills will then be removed off site in order to optimize the use of the on-site storage space.

#### **6.10 *Collection of Recyclable Materials by Recycling Contractors***

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CSCE will make arrangements with potential recycling contractors to facilitate that recyclable materials sorted from the Site are collected with reasonable care. The quantities of all the recyclable materials will be recorded before removal off sites by the recycling contractors and the details included in the WFT for submission to the ER.

### **6.11 Other Proposed Measures**

With regard to the sub-contractor management, CSCE will further implement the following waste management measures:

- Establish penalty & merit systems for any waste mishandling and outstanding performance respectively by sub-contractors;
- Promoting the awareness of site operatives by conveying necessary information in regard of good waste management via notice boards, posters, ad-hoc meetings, toolbox talks, etc.
- Hold regular meetings with sub-contractors to discuss new and additional ways of improving waste minimisation;
- Nominate responsible foremen to ensure the correct use of recycling skips; and
- Set up a patrol team to regularly inspect and clear up the site area of any waste accumulation spots.

## **7. WASTE AUDIT AND PERFORMANCE MONITORING**

### **7.1 Trip Ticket System**

A trip-ticket system similar to that stipulated in ETWB TCW No. 31/2004 will be established to record the disposal of C&D materials. A Construction and Demolition Material Disposal Delivery Form (DDF) will be used to control each and every vehicular trip of transporting C&D materials off site. A sample of DDF is given in Appendix I.

Each vehicle load of public fill or C&D waste transported off-site will be accompanied by a duly completed DDF. The DDF will be completed leaving the Time of Departure blank. Prior to the vehicle leaving the Site, CSCE's foreman will present the duly completed form to the Engineer's representative who will insert the Time of Departure. The base portion of the DDF will be retained by the Engineer and the remainder portion detached and returned to the dump truck driver. The DDF will be carried on the vehicle at all times throughout the journey. For each vehicular trip, the dump truck driver will obtain from the operators of the disposal facility (either the designated public filling area or landfill) a stamp on the DDF and the respective disposal record will be uploaded to the CEDD/ EPD website by the disposal facility to prove that the public fill/ C&D waste respectively has been delivered to the facility. CSCE will submit the DDF with stamp of the disposal site operator to the ER. The ER may wish to countercheck on the CEDD/ EPD website to verify the receipt of the public fill/ C&D waste. The flow of operation can be summarized in the chart in Appendix J.

### **7.2 Inspection Programme**

EnvM/ Contractor's EPO, ET and ER will carry out weekly environmental site inspections which the IEC may join on an as-need basis. The weekly inspection purposes to audit the site performance on implementing the WMP with due regards to the followings:

- inert C&D materials suitable for recycling into aggregates are recovered and delivered to the designated outlet per Public Fills Committee's (PFC) allocation;
- the remaining non-recyclable inert C&D materials are delivered to the designated outlet per PFC's allocation;

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- if the Contract involves demolition works, appropriate sequential demolition has to be employed to facilitate recovering as much as possible reusable and recyclable materials;
- the trip-ticket system is operating satisfactorily for recording C&D materials removed from the Site;
- on-site sorting of C&D materials is properly carried out to recover inert C&D materials and reusable and/or recyclable materials before disposal;
- paper/cardboard packaging, and metals including aluminum cans are recovered and collected by recycling contractors; and
- plastic bottles/containers or plastic sheets/foam from packaging are collected as far as possible for recycling.

A proposed inspection checklist in Appendix K to be agreed with the ER will be used during the weekly inspection. The completed checklist would be filed and available for the IEC's inspection. The defects or deficiencies identified during the weekly inspection on waste management together with their respective locations and the corresponding due dates for rectification as set by the ER should be entered in a summary table of follow-up actions. CSCE shall take prompt action to rectify the deficiencies identified and shall report the status of action taken before the forthcoming weekly inspection. The following event and action plan is proposed for non-compliance observed during the site inspection and for receiving the complaint.

The Event and Action Plan for Non-Compliances and Complaints

Event	Action By			
	The Contractor	ER	ETL	IEC
Non-compliance	<ol style="list-style-type: none"> <li>1. Stop the non-compliance activity/ process/ procedure</li> <li>2. Propose remedial/ preventive action In consultation with the ETL</li> <li>3. Implement the agreed remedial action before the agreed due date</li> <li>4. Report the status of action taken to the ER and IEC within one week</li> <li>5. Conduct follow-up inspection</li> <li>6. Propose further remedial action if necessary</li> <li>7. Close out NC and keep in record</li> </ol>	<ol style="list-style-type: none"> <li>1. Request the Contractor for the proposal of remedial/ preventive action</li> <li>2. Comment on the proposed remedial/ preventive action</li> <li>3. Consider advices from the IEC</li> <li>4. Agree on/ accept the Contractor's proposal of remedial action</li> <li>5. Instruct the Contractor of further remedial action where necessary.</li> </ol>	<ol style="list-style-type: none"> <li>1. Log/ Record the non-compliance event</li> <li>2. Assist the Contractor of formulating the remedial action.</li> <li>3. Review the success/ effectiveness of the remedial action taken</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with the Contractor/ ETL on the remedial action</li> <li>2. Verify the Contractor's proposal of remedial action</li> <li>3. Check on the success/ effectiveness of the remedial action taken</li> </ol>
Complaint	<ol style="list-style-type: none"> <li>1. Propose remedial/ preventive action In consultation with the ETL where the complaint is valid</li> <li>2. Implement the remedial action upon agreement with the ER &amp; IEC</li> <li>3. Report the status of action taken to the ER and IEC within one week</li> <li>4. Conduct follow-up</li> </ol>	<ol style="list-style-type: none"> <li>1. Request the Contractor for the proposal of remedial/ preventive action</li> <li>2. Comment on the proposed remedial/ preventive action</li> <li>3. Consider advices from the IEC</li> <li>4. Agree on/ accept the Contractor's proposal of remedial action</li> </ol>	<ol style="list-style-type: none"> <li>1. Investigate validity of complaint and to assess whether the source of problem is due to site activity.</li> <li>2. Log the complaint if valid</li> <li>3. Assist the Contractor of formulating the remedial action</li> <li>4. Review the success/ effectiveness of the remedial action taken</li> </ol>	<ol style="list-style-type: none"> <li>1. Assist ER on complaint investigation</li> <li>2. Carry out additional site audits if necessary</li> <li>3. Discuss with the Contractor/ ETL on the remedial action</li> <li>4. Verify the Contractor's proposal of remedial action</li> <li>5. Check on the success/</li> </ol>

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	inspection 5. Propose further remedial action if necessary 6. Communicate with the complainant via the ER 7. Close out complaint case and keep in record	5. Instruct the Contractor of further remedial action where necessary 6. Reply to the complainant		effectiveness of the remedial action taken
--	---	--	--	--

**7.3 Performance Monitoring**

Monitoring of the proper implementation of on-site sorting of C&D materials (i.e. no observable inert materials for disposal to landfill and no observable non-inert materials for disposal to public fills) will be based on visual inspections in the weekly environmental site inspections.

The site performance of waste management will be reviewed in the monthly Environmental meeting attended by EnvM/ Contractor's EPO, ET's representative, the IEC and the ER. The agenda of the meeting shall include to :

- i) review the WMP including the quantities and types of C&D materials generated, reused and disposal of off-site; the amount of fill materials imported to the site and quantity of timber used in temporary works for each construction process/ activity;
- ii) Monitor the achievement of the WMP to assess its effectiveness;
- iii) Monitor the follow-up action on defects and deficiencies identified; and
- iv) Invite comments from meeting members for new and additional ways of improving waste minimisation.

**8. RECORD KEEPING AND REPORTING**

**8.1 General Records**

CSCE will keep the following records for inspection and reporting as necessary by the Engineer's Representative:

- Waste disposal permits or licenses;
- Record of trip tickets for C&D materials delivered to the designated outlets;
- Record of trip tickets for chemical waste disposed off-site;
- Complaints regarding waste management;
- Record of training;
- Record for waste audits;
- Record of non-compliance of the WMP; and
- Record of corrective action taken to rectify any non-compliance.

**8.2 Waste Flow Tables**

CSCE has predicted the yearly waste generation in form of Waste Flow Table (WFT) in Appendix L . The actual waste generation will be also recorded in monthly and yearly summaries (Appendix M & N). The summary WFTs that contain the quantity of C&D

materials generation by categories in terms of time of generation, will be submitted in time for the ER's inspection.

## **9. TRAINING**

The EnvM/ Contractor's EPO will give appropriate training and briefing to all site staff including all sub-contractor's staff before the commencement of the Works. The scope of training will include the following:

- Concepts of site cleanliness.
- The steps/requirements of the WMP stipulated in the Contract.
- Classification of different waste types in accordance with the WMP.
- Proper segregation, handling and storage of different types of waste in accordance with the WMP.
- Procedures and measures for waste minimisation, reuse and recycling.
- Locations of designated storage areas for different waste types in accordance with the WMP.

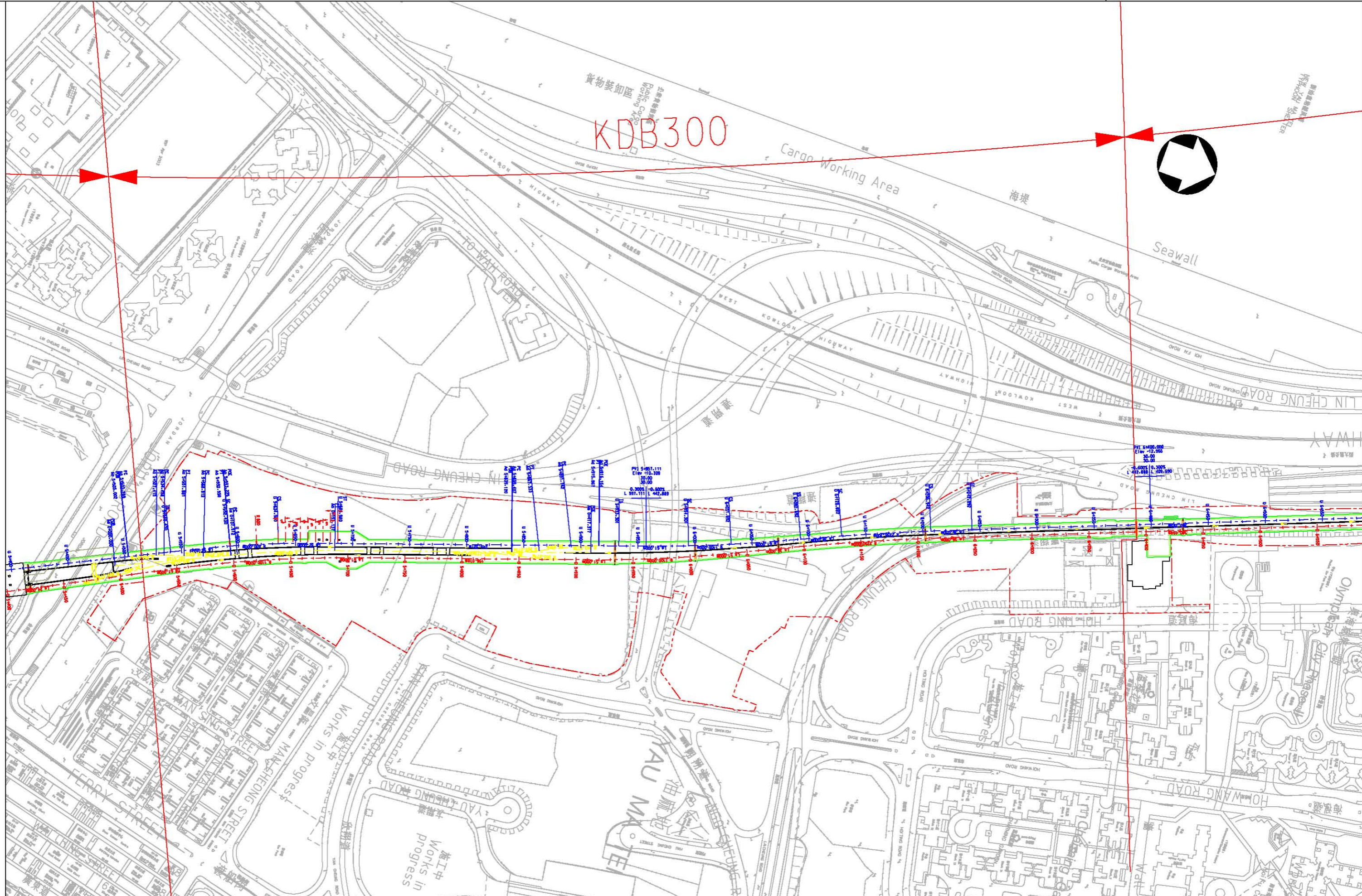
All records of training will be in form of a table as proposed in Appendix O.

## **APPENDIX A**

KDB300



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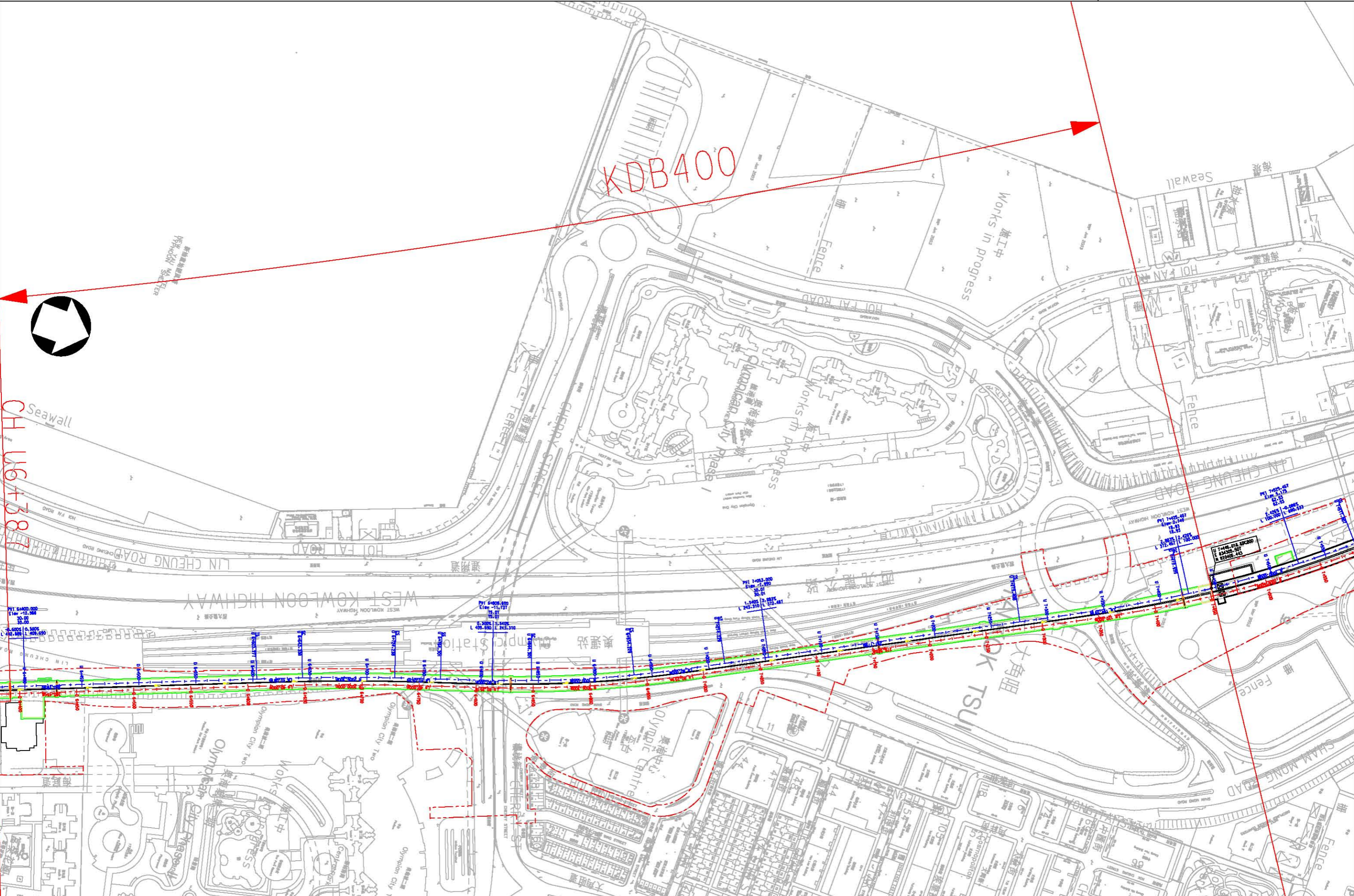
**KCR** 九龍南線  
 Kowloon Southern Link  
**中國建築工程(香港)有限公司**  
 CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.

TITLE  
 KDB300 & 400 TUNNEL  
 JORDAN ROAD TO NAM CHEONG OVERRUN  
 Site Layout for  
 KDB 300

SCALE	1 : 1500 @ A1		
ORIGINATOR	ORIGINATOR REFERENCE		
CSHK	KDB300-HA-Y0001A.dgn		
DRAWING NUMBER	KDB300 /HA/Y0001	REV	A
RAILWAY	LOCATTON	STAGE	SHEET NO
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**KCR** 九龍南線  
**Kowloon Southern Link**  
**中國建築工程(香港)有限公司**  
**CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.**

TITLE  
**KDB300 & 400 TUNNEL**  
**JORDAN ROAD TO NAM CHEONG OVERRUN**  
 Site layout for  
 KDB400

SCALE			
1 : 1500 @ A1			
ORIGINATOR CSK#	ORIGINATOR REFERENCE KDB400-HA-Y0001A.dgn		
DRAWING NUMBER KDB400 /HA/ Y0001	REV A		
RAILWAY KSL	LOCATION ---	STAGE D	SHEET NO 1

FULL SIZE A1



## **APPENDIX B**



# China State Construction Engineering (HK) Ltd

## WASTE MANAGEMENT POLICY

It is the policy of the Company that it will implement its projects in such a manner that reduces and minimizes as far as is reasonably practicable the generation of construction and demolition materials in execution of the Works. The strategy for this will be based on the principle of avoidance, minimizing, segregation, salvage for reuse or recycle wherever practicable followed by disposal to designated outlets. The Company targets to recover the inert portions of all excavated materials for reuse or disposal to designated outlets, all metal for collection by recycling contractor, all cardboard and packaging, and all demolition debris constituents by means of sorting as appropriate.

In order to implement this policy and achieve these targets, the Company shall establish and maintain an effective and efficient waste management system planned and developed in conjunction with other management functions. The determination of conformity of work will be based on contractual and regulatory requirements.

The waste management system will be part of the Environmental Management System of the Company that is based upon the requirements of **ISO 14001 : 2004** and its in-house system.

The Company is committed to providing sufficient resources and facilities for the implementation on waste management. The Company shall arrange and provide appropriate training on waste management to all site personnel and workers involved in the Works. The Company shall continuously improve the waste management system in attempts to improve its overall performance.

This policy will be covered in the site induction and its refresher training for all persons employed by the Company or its subcontractor on the Works and posted on notice board both in English and in Chinese so as to make them aware of the same.

For and on behalf of

**China State Construction Engineering (Hong Kong) Limited**

**CHONG Wai Sun**  
**Project Director**

Date : 3rd October 2005



## **APPENDIX C**

## Contact List of the Key Personnel for Waste Management

Name	Position	Contact Phone No.
<i>Kowloon-Canton Railway Corporation</i>		
Mr. Richard Kwan	KCRC's Environmental Manager	2688 1179
<i>Engineer's Representative</i>		
Ms. Lisa Poon	Resident Engineer I (Environmental)	3575 5653
Miss Natalie Ip	Resident Engineer II (Environmental)	3575 5655
<i>The Contractor (China State Construction Engineering (HK) Ltd.)</i>		
Mr. John Wong	Project Manager	9094 9900
Mr. Andrew Leung	Construction Manager (KDB300)	9195 4637
Mr. Anselm Chan	Construction Manager (KDB400)	9473 0923
Mr. Brian Kam	Environmental Manager	9456 9541
Mr. Leo Chung	Contractor's Environmental Protection Officer	6190 8058
<i>Environmental Team (Hyder Consulting Ltd.)</i>		
Mr. Coleman Ng	Environmental Team Leader	2911 2719
<i>Independent Environmental Checker (Maunsell Environmental Management Consultants Ltd.)</i>		
Mr. YT Tang	Independent Environmental Checker	3105 8537

## **APPENDIX D**

**Table 5-1 Predicted Waste Generation for KDB300**

Work Processes/ Activities	Chainage of the Work Area	Timing	Estimated waste quantities								
			Surplus Inert C&D Materials		C&D Wastes (construction debris, general refuses and others) (in tonnes)	Chemical wastes (in tonnes)	Marine Deposit (in m <sup>3</sup> –in-situ)		Recyclables		
			Broken asphalt/ concrete (in m <sup>3</sup> )	Excavated materials (in m <sup>3</sup> )			Contaminated	Uncontaminated	Paper/ cardboard (in tonnes)	Plastic (in tonnes)	Metals (in tonnes)
Site Office Installation, Operation & Demobilization	U5+500 to U5+700, U6+200 to U6+400	Sep 05 – Dec 08	1,500	--	1.0	--	--	--	3	0.2	15
Site Clearance & Housekeeping	All areas	Entire Contract Period	500	--	3.0	0.1	--	--	--	0.1	--
Drainage diversion/ Culvert Modification	U5+500 to U5+850	Dec 05 – Nov 06	10,000	--	0.2	0.3	--	--	--	--	2
Ground Treatment (Jet Grouting)	U6+150 to U6+400	Jan 06 – Dec 06	--	--	0.2	1	--	--	--	--	--
Traffic Diversion	U6+200 to U6+400	Nov 05 – Jul 07	4,500	--	0.2	0.2	--	--	--	--	--
Pedestrian Tunnel	U6+300 to U6+400	Dec 05 – Sep 06	2,000	--	0.2	0.1	--	--	--	Trace	3
Utility Diversion	U5+500 to U5+850, U5+950 to U6+000, U6+150 to U6+400	Dec 05 – Aug 07	5,000	--	0.2	0.3	--	--	0.5	Trace	--
Cofferdam Construction (Sheet and Pipe Piling)	All areas	Nov 05 – Feb 07	1,500	--	0.5	2	--	--	--	--	5
Open Excavation & Lateral Support	All areas	Nov 05 – Jul 07	--	226,370	0.5	3	2,900	38,830	--	--	--
Additional Tunnel Support	U5+600 to U5+950, U6+000 to U6+050	Dec 05 – May 07	--	--	0.2	--	--	--	--	--	--
Dewatering/ Recharge Wells System	All areas	Nov 05 – Apr 07	--	1,500	0.2	--	--	--	--	Trace	--
Steel Deck Structure	U5+500 to U5+650	Jan 06 – Mar 06	--	--	0.1	--	--	--	--	--	15
Tunnel Box Construction	All areas	Jan 06 – Sep 07	1,500	--	0.2	0.5	--	--	--	Trace	5
Backfilling & Reinstatement	All areas	Feb 06 – Dec 08	--	--	0.2	0.5	--	--	--	--	--
Tunnel E&M and Fitting-Out Works	Entire Alignment	Feb 08 – Aug 09	--	--	0.7	--	--	--	1.5	0.2	--
<b>Predicted Total Quantity</b>			<b>26,500</b>	<b>227,870</b>	<b>7.6</b>	<b>8.0</b>	<b>2,900</b>	<b>38,830</b>	<b>5</b>	<b>0.5</b>	<b>45</b>
<b>Waste Management Strategy</b>			Reused as backfills, surplus to dispose	Reused as backfills, surplus to dispose	Land disposal	Collection & Treatment	Sea disposal		To recycle	To recycle	To recycle
<b>Mode and Route of Disposal</b>			Road transport by truck	Road transport by truck for TM38 and marine transport by barge for the rest	Road transport by truck	Road transport by licensed trucks	Road transport by truck to the barging point, then marine transport by barge		Road transport by truck		
<b>Disposal Site, where applicable</b>			TKO137	TM38 for first 6 months and E. Sha Chau CMP as capping materials thereafter	SENT	CWTC at Tsing Yi	E. Sha Chau CMP per MFC's allocation	S. Cheung Chau MBA or Nine Pins per MFC's allocation	--	--	--

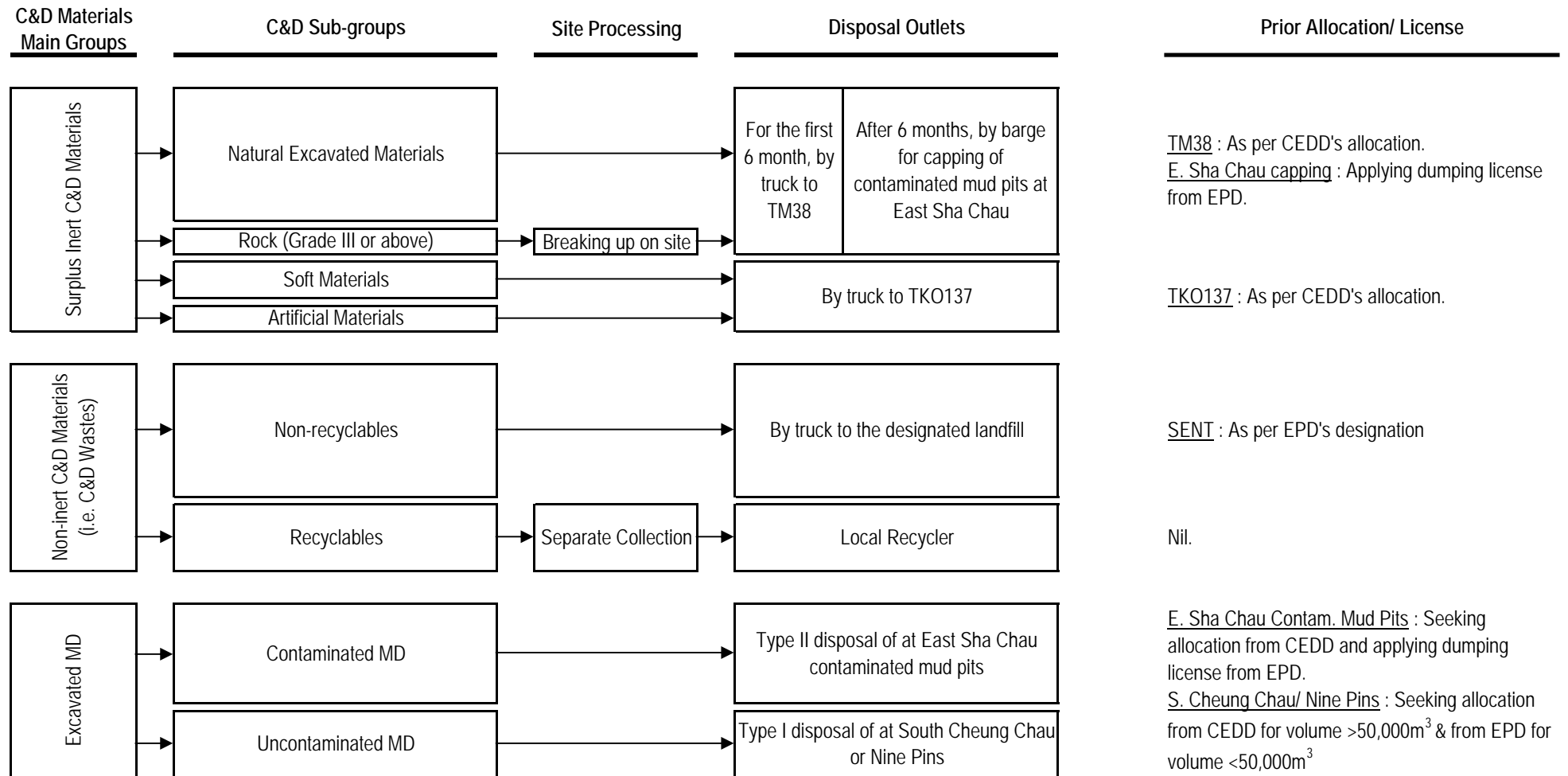
**Table 5-2 Predicted Waste Generation for KDB400**

Work Processes/ Activities	Chainage of The Work Area	Timing	Estimated waste quantities								
			Surplus Inert C&D Materials		C&D Wastes (construction debris, general refuses and others) (in tonnes)	Chemical wastes (in tonnes)	Marine Deposit (in m <sup>3</sup> -in-situ)		Recyclables		
			Broken asphalt/ concrete (in m <sup>3</sup> )	Excavated materials (in m <sup>3</sup> )			Contaminated	Uncontaminated	Paper/ cardboard (in tonnes)	Plastic (in tonnes)	Metals (in tonnes)
Site Office Installation, Operation & Demobilization	U6+200 to U6+400 U7+400 to U7+450	Sep 05 – Dec 08	500	--	2.0	--	--	--	25	0.5	20
Site Clearance & Housekeeping	All areas	Entire Contract Period	500	--	8.0	0.1	--	--	5	0.2	--
Traffic Diversion	Entire Alignment	Nov 05 – Sep 06	2,000	--	4.0	0.2	--	--	5	1	25
Utility Diversion	U6+400 to U6+510, U6+700 to U7+080	Nov 05 – Mar 06	2,940	--	0.2	0.2	--	--	5	Trace	--
Ground Freezing Treatment	U6+800 to U6+850	Jul 06 – Oct 06	--	--	4.0	0.2	--	--	--	0.3	--
Mined Tunnel	U6+700 to U6+850	Jul 06 – Oct 07	300	15,000	3.0	2.0	--	--	--	--	--
Sewage Subway	U6+300 to U6+400	Dec 05 – Sep 06	2,500	--	5.0	0.1	--	--	--	Trace	10
Cofferdam Construction (Bore and Pipe Piling)	All areas	Nov 05 – Feb 07	300	--	1.0	1.5	--	--	14	--	30
Open Excavation & Lateral Support	All areas	Nov 05 – Jul 07	--	118,930	2.0	3.0	6,600	12,700	--	--	--
Underpinning Support	U5+600 to U5+950, U6+000 to U6+050	Dec 05 – May 07	--	--	2.0	--	--	--	--	0.5	--
Dewatering/ Recharge Wells System	All areas	Nov 05 – Apr 07	--	1,500	1.0	--	--	--	5.5	Trace	--
Steel Deck Structure	U5+500 to U5+650	Jan 06 – Mar 06	--	--	0.1	--	--	--	--	5	90
Tunnel Box Construction	All areas	Jan 06 – Sep 07	1,500	--	1.0	1.5	--	--	--	Trace	10.5
Backfilling & Reinstatement	All areas	Feb 06 – Dec 08	--	--	0.5	2.5	--	--	--	--	--
Tunnel E&M and Fitting-Out Works	Entire Alignment	Feb 08 – Aug 09	--	--	6.0	--	--	--	20	5	--
<b>Predicted Total Quantity</b>			<b>10,540</b>	<b>135,430</b>	<b>39.8</b>	<b>11.3</b>	<b>6,600</b>	<b>12,700</b>	<b>79.5</b>	<b>12.5</b>	<b>185.5</b>
<b>Waste Management Strategy</b>			Reused as backfills, surplus to dispose	Reused as backfills, surplus to dispose	Land disposal	Collection & Treatment	Sea disposal		To recycle	To recycle	To recycle
<b>Mode and Route of Disposal</b>			Road transport by truck	Road transport by truck for TM38 and marine transport by barge for the rest	Road transport by truck	Road transport by licensed trucks	Road transport by truck to the barging point, then marine transport by barge		Road transport by truck		
<b>Disposal Site, where applicable</b>			TKO137	TM38 for first 6 months and E. Sha Chau CMP as capping materials thereafter	SENT	CWTC at Tsing Yi	E. Sha Chau CMP per MFC's allocation	S. Cheung Chau MBA or Nine Pins per MFC's allocation	--	--	--

## **APPENDIX E**

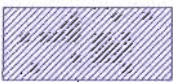




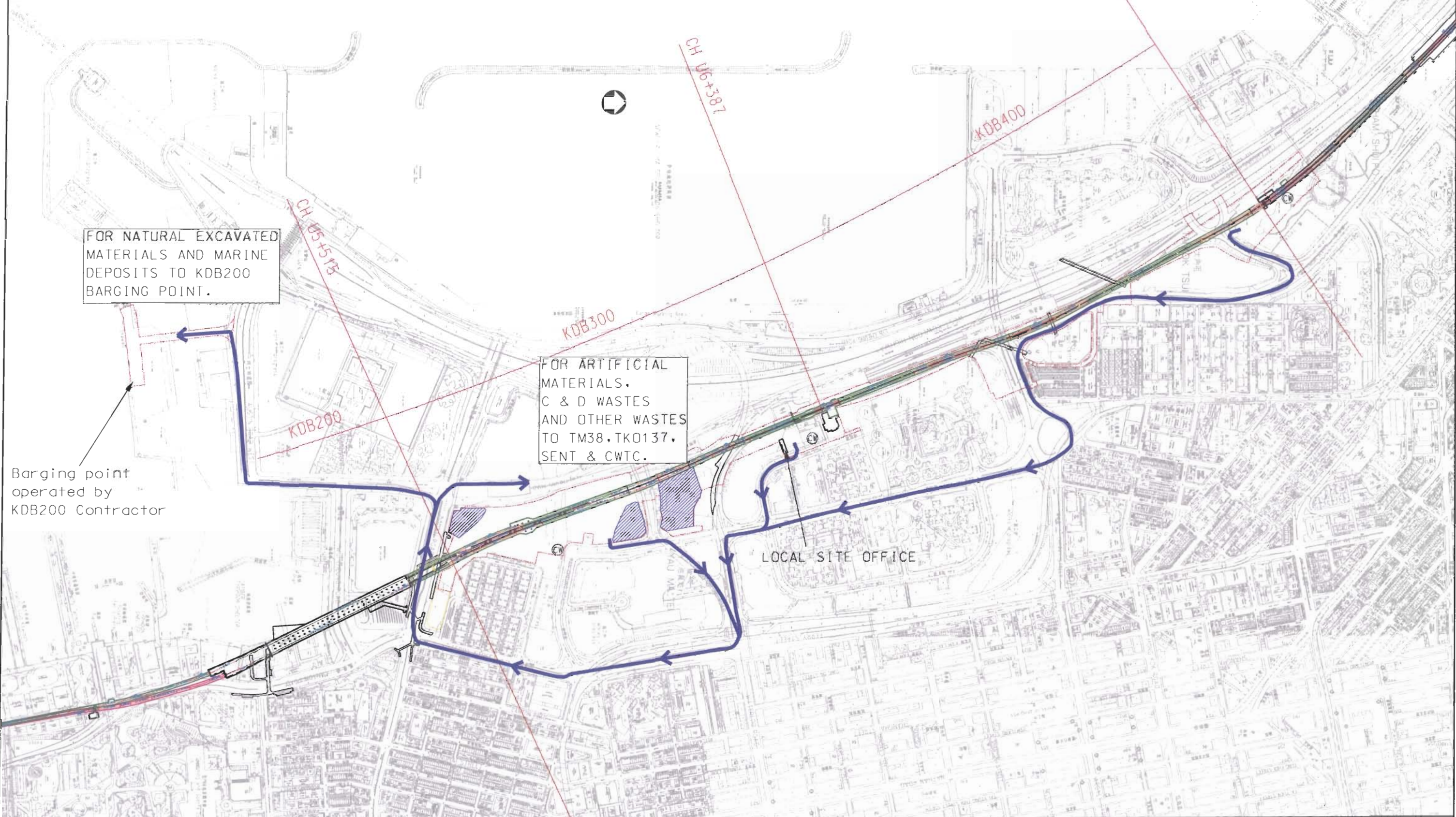
## SUMMARY OF C&D MATERIALS DISPOSAL OUTLETS



## **APPENDIX F**

**Legend:**

-  Proposed Sorting & Temporary Stockpiling Area
-  Routes of waste Disposal
-  Chemical Waste Storage



FOR ARTIFICIAL MATERIALS, C & D WASTES AND OTHER WASTES TO TM38, TK0137, SENT & CWTC.

Barging point operated by KDB200 Contractor

LOCAL SITE OFFICE

User Workspace C:\Program Files\Bentley\Workspace\user\untitled.dwg, UserRef: C:\Program Files\Bentley\Workspace\projects\untitled.dwg  
 FILENAME: I:\Brlin\km\2006\KDB300-HD-Y0001\KDB300-HD-Y0001.dgn  
 PLOT DRIVERS: C:\Program Files\Bentley\Workspace\System\plotdrv\plot.vbprt  
 PRINTED BY: tw.fong, 2006-03-20 6:07:17  
 MODEL NAME: 300 and 400

Maps reproduced with permission of The Director of Lands. (C) Hong Kong Government.

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY	BK
DRAWN BY	W01
CHECKED BY	BK
IN CHARGE	MY
DATE	100CT2005



**KCR** 九龍南線  
Kowloon Southern Link



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

TITLE

**KDB300 & 400 TUNNEL**  
**JORDAN ROAD TO NAM CHEONG OVERRUN**  
Proposed Sorting & Temporary Stockpiling Area

SCALE	1 : 4000 @ A1
ORIGINATOR	ORIGINATOR REFERENCE
CSHK	#00300-HD-Y0001B.dgn
DRAWING NUMBER	REV
<b>KDB300 /HD/Y0001</b>	<b>C</b>
RAILWAY LOCATION	STAGE
KSL	0
	SHEET NO
	1

## **APPENDIX G**

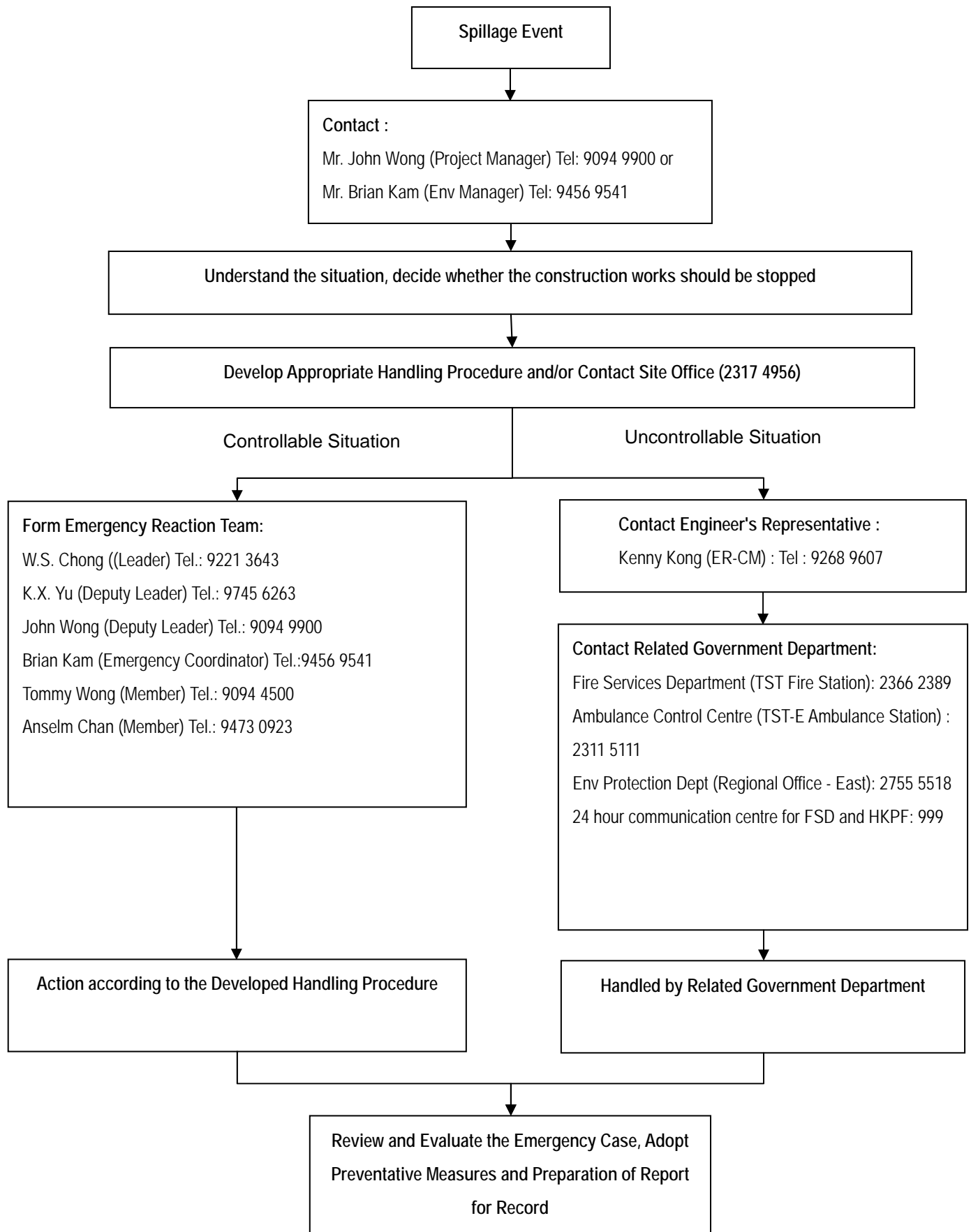
## **1. INTRODUCTION**

This response plan stipulates contingency procedures in case of the spillage event happened during the construction of the Contract. Not only that the plan defines the organization structure for its implementation, it also provides the flow of procedures should there be an emergency spillage event on the site.

## **2. ORGANIZATION, RESPONSIBILITY AND AUTHORITY OF INSPECTION PERSONNEL**

Should there be any spillage events, an Emergency Reaction Team has been formed to deal with spillage events where Site Manager, Site Agent, Safety Officer and Environmental Manager/ Environmental Protection Officer will coordinate the immediate cleanup action. A procedure flow chart with organisation structure is given as follows.

**Procedure Flow Chart for Spillage of Oil, Fuel or Chemicals**



**KOWLOON SOUTHERN LINK  
KDB300 & 400 – Tunnels, Jordan Rd. to YMT Vent Bldg. & YMT Vent Bldg. TO NAC Overrun  
CONTINGENCY PLAN IN CASE OF CHEMICAL / CHEMICAL WASTES SPILLAGE**

---

Notes for the Procedure Flow Chart

1. Duties and Responsibilities of each member of Emergency Reaction Team (ERT)
  - a) Site Agent – Overall management in the handling of emergency procedure to meet the requirements of EPD and other Government Departments
  - b) Environmental Manager / Environmental Protection Officer – Advise on clean-up procedure, co-ordinate and manage the implementation of appropriate handling procedure in case of environmental emergency
  - c) Leader of ERT – Management of all resources on-site for the implementation of the handling procedure in case of environmental emergency
  - d) Deputy Leader of ERT – Assist the Leader of ERT for carrying out his duties in case of spillage event
  - e) Emergency Arrangement Person – Advise on clean-up procedure, also responsible for all emergency arrangement on-site to ensure the implementation of handling procedure satisfy all safety requirements
  - f) Other Member of ERT – Assist the Leader and Deputy Leader of ERT during the implementation of handling procedure (such as emergency evacuation and crowd control)
  
2. Main Government Departments to be contacted in case of emergency
  - a) Fire – 24 hour communication centre for FSD and HKPF: 999
  - b) Chemicals spillage/leakage of toxic substances – Environmental Protection Department and Fire Services Department (for major land-based incidents)
  
3. Contact Telephone Numbers of Government Department
  - a) Fire Services Department (TST Tsui Fire Station): 2366 2389
  - b) Ambulance Control Centre (TST-E Ambulance Station) : 2311 5111
  - c) Environmental Protection Department (Regional Office – East) : 2755 5518
  - d) 24 hour communication centre for FSD and HKPF: 999

**KOWLOON SOUTHERN LINK  
KDB300 & 400 – Tunnels, Jordan Rd. to YMT Vent Bldg. & YMT Vent Bldg. TO NAC Overrun  
CONTINGENCY PLAN IN CASE OF CHEMICAL / CHEMICAL WASTES SPILLAGE**

**3. GUIDELINES AND PROCEDURES**

Item	Description	Action by	Remark
<b><i>Training Needs</i></b>			
1	Instruct untrained personnel (site workers) to keep at a safe distance well away from the spillage area.	Environmental Manager/ Environmental Protection Officer to provide training to the Site Agent, General Foreman, Foreman and workers. In general, site instruction will be from General Foreman and Foreman who are supervising the works undertaken by sub-contractors on-site.	
<b><i>Notification of Spillage Incidents</i></b>			
2	Anyone that has discovered spillage/leakage should inform the Site Manager/Emergency Team Leader, Site Agent and Environmental Manager/ Environmental Protection Officer immediately, report the location of spillage/leakage. General Foreman/Foreman responsible for the supervision of the works should stay at a location, relatively safe, (i.e. main access to the location where spillage/leakage is discovered) to prevent people from accessing the area.	Environmental Manager/ Environmental Protection Officer to issue notice to all site staff regarding the need to inform the responsible parties in case of emergency	
<b><i>Spillage Handling Procedures</i></b>			
3	Visit the spillage/leakage location and decide whether the construction works should be stopped.	Emergency Reaction Team Leader, Site Agent, Environmental Manager/ Environmental Protection Officer, General Foreman, Foreman and Safety	



**KOWLOON SOUTHERN LINK  
KDB300 & 400 – Tunnels, Jordan Rd. to YMT Vent Bldg. & YMT Vent Bldg. TO NAC Overrun  
CONTINGENCY PLAN IN CASE OF CHEMICAL / CHEMICAL WASTES SPILLAGE**

Item	Description	Action by	Remark
		Officer.	
4.	Determine if the spillage event can be handled by the site	Site Agent and Environmental Manager/ Environmental Protection Officer	
	<u>In Controllable Situation</u>		
5.1	If necessary, open windows, provide forced ventilation and close the door/doors of the room where the spillage/leakage take place for non-toxic, non-volatile and non-hazardous substances (indoor emergency situation).	Site Staff who discovers the event of spillage/leakage	
5.2	If the spillage/leakage involves highly toxic, volatile or hazardous substances, initiate emergency evacuation and call the emergency service (for indoor emergency situation and spillage/leakage within site area).	Emergency Reaction Team	
5.3	Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the spillage/leakage area.	Environmental Manager/ Environmental Protection Officer to co-ordinate, in case the situation is uncontrollable, the clean-up and associated measures should be handled by related Government Departments	
5.4	Areas that have been contaminated by oil, fuel or chemicals should be completely cleaned up. While water is a suitable solvent for aqueous chemicals and water-soluble organic liquid, kerosene or turpentine should be used for organic chemical substances that are not soluble in water. The waste generated from the cleanup operation should be handled,	Cleaning will be undertaken by trained site workers co-ordinated by Environmental Manager/ Environmental Protection Officer. Chemical waste generated from the clean-up operation will be handled by licensed chemical waste collector and	Refers the list of licensed chemical waste collectors in EPD website

**KOWLOON SOUTHERN LINK  
KDB300 & 400 – Tunnels, Jordan Rd. to YMT Vent Bldg. & YMT Vent Bldg. TO NAC Overrun  
CONTINGENCY PLAN IN CASE OF CHEMICAL / CHEMICAL WASTES SPILLAGE**

Item	Description	Action by	Remark
	collected, transported, stored and disposed of properly in accordance to all relevant legislation, in particular the <i>Waste Disposal Ordinance</i> and <i>Waste Disposal (Chemical Waste)(General) Regulation</i> .	specialist contractor	
5.4(a)	<u>Spillage/leakage of oil, fuel or chemicals at storage area (non-toxic chemicals)</u> Where the spillage/leakage is contained in the enclosed storage area, the oil, fuel or chemicals can be transferred back into suitable containers by suitable handheld equipment, such as tissue paper, dry soft sand or vermiculite. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal.	Environmental Manager/ Environmental Protection Officer to co-ordinate, in case the situation is uncontrollable, the clean-up and associated measures should be handled by related Government Departments	
5.4(b)	<u>Spillage/leakage at other areas within the site (non-toxic chemicals)</u> For spillage/leakage in other areas, immediate action is required to contain the spillage/leakage. Suitable liquid absorbing materials such as tissue paper, dry soft sand or vermiculite should be used to cover the spill. The resultant slurry should be treated as chemical waste and transferred into containers for proper disposal.	Environmental Manager/ Environmental Protection Officer to co-ordinate, in case the situation is uncontrollable, the clean-up and associated measures should be handled by related Government Departments	Jump to item 7 for Event Reporting
	<u>In uncontrollable emergency situation. (e.g. spillage/leakage of any toxic chemicals and serious incident)</u>		
6.1	Co-ordinate aids from with related Government Departments to handle	Environmental Manager/ Environmental Protection Officer	
<b>Reporting of the Spillage Event</b>			
7	The Engineer's Representative, and Environmental Protection Department	Environmental Manager/ Environmental Protection	

**KOWLOON SOUTHERN LINK****KDB300 & 400 – Tunnels, Jordan Rd. to YMT Vent Bldg. & YMT Vent Bldg. TO NAC Overrun****CONTINGENCY PLAN IN CASE OF CHEMICAL / CHEMICAL WASTES SPILLAGE**

<b>Item</b>	<b>Description</b>	<b>Action by</b>	<b>Remark</b>
	(EPD) should be informed of all spillage of oil, fuel and chemicals regardless whether the spills are controllable or not. After the cleanup works, site inspection should be undertaken to confirm that no further action is required. The spillage incidents and all actions taken should be reported in the Monthly EM&A reports.	Officer to communicate with the Engineer's Representative and EPD, and ensure the spillage incidents, all actions and preventive measures taken are reported in the Monthly EM&A reports.	
<b>8.</b>	In incidents where the spillage/leakage may result in significant contamination of an area or risk of pollution, the Environmental Protection Department should be informed immediately.	Site Manager, Site Agent and Environmental Manager/ Environmental Protection Officer	

## **APPENDIX H**

# Summary Table for Processes or Activities Requiring Timber for Temporary Works ( Year \_\_\_\_\_ )



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

<b>Contract No. &amp; Name</b>	KDB300 : Tunnels - Jordan Road to Yau Ma Tei Ventilation Building	<b>Date of Preparation</b>		<b>Form No.</b>	ST-TIMBER
	KDB400 : Tunnels - Yau Ma Tei Ventilation Building to Nam Cheong Overrun				


Item No.	Description of Works Process or Activity [Note 1]	Justifications for Using Timber in Temporary Construction Works [Note 2]	Quantities of Timber Used (m3)		Remarks
			Estimated	Actual	
Total					

- Notes : **1 - Type of Work Process or Activity**
- Access/ Gangway
  - Covering/ Protecting openings or existing finishes/ fixtures
  - Falsework
  - Formwork
  - Temporary shed/ structure
  - Trench shoring
  - Working platform
  - Others (to be specified)

- 2 - Justificatio for Using Timber**
- Cost consideration
  - Flexibility for works
  - Recycled/ Reused/ Old materials from other activities
  - Safety consideration
  - Site/ Engineering constraint
  - Others (to be specified)

## **APPENDIX I**

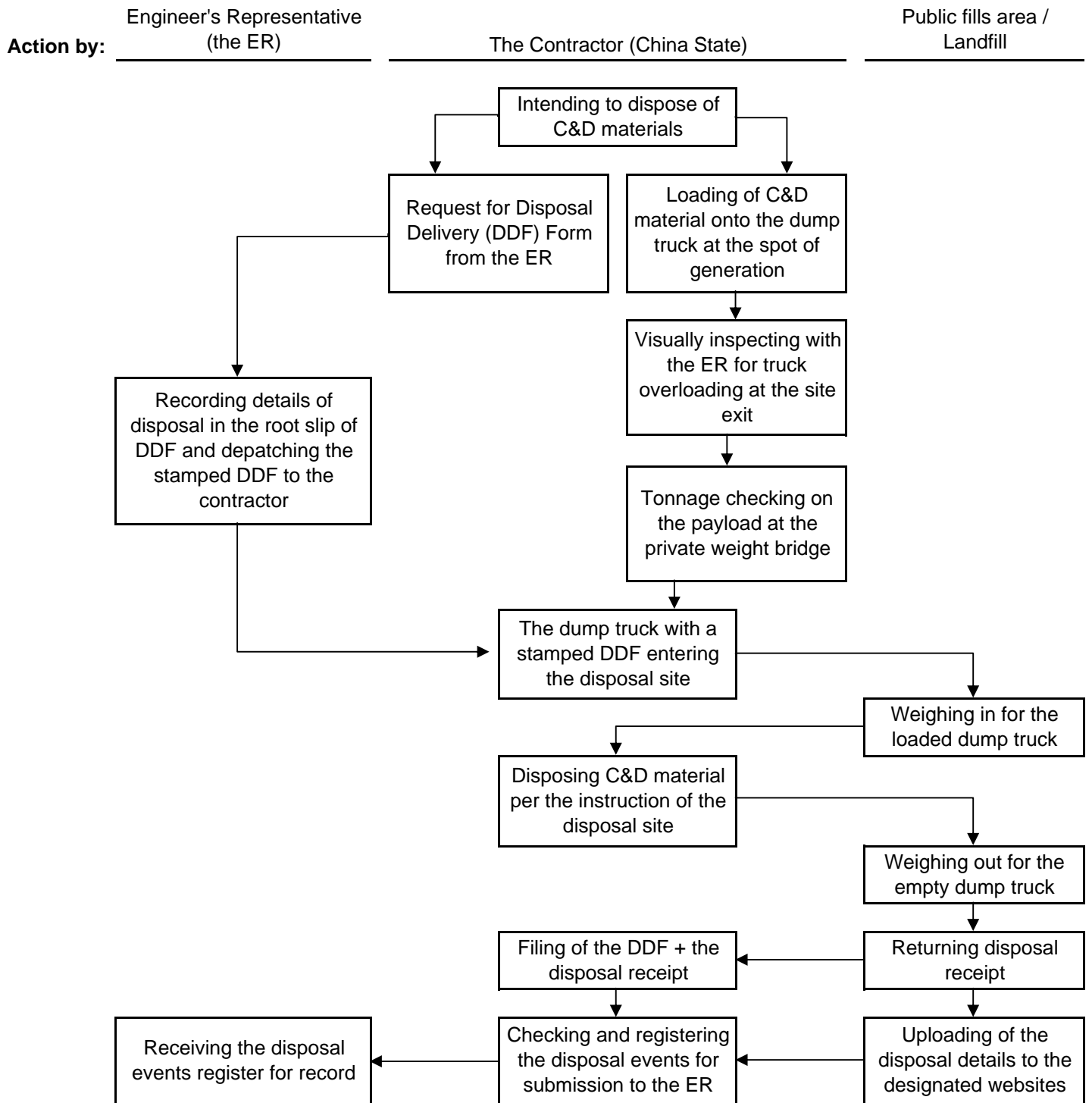
**Sample Construction and Demolition Materials Disposal Delivery Form**  
**(Extracted From ETWB TCW No. 31/2004)**

<p>Serial No. 0012345678</p>  <p>Date: 日期: _____</p> <p>Designated PFF/Landfill : 指定公眾填土設施 / 堆填區: _____</p> <p>Vehicle Licence Plate Number. : 車牌號碼 _____</p> <p>Issued By: 簽發: _____</p> <p>Approximate Load : 大約承載量: <input type="checkbox"/> 1/4   <input type="checkbox"/> 1/2   <input type="checkbox"/> 3/4   <input type="checkbox"/> Full 滿</p> <p>Remark: 備註: _____</p> <p><i>(This part retained by issuing office)</i>          (此部分由簽發部門保留)          CEDD(CEO)84</p>	<p>Serial No. 0012345678</p> <p>Date: 日期: _____</p> <p>Designated PFF/Landfill : 指定公眾填土設施 / 堆填區: _____</p> <p>Vehicle Licence Plate Number. : 車牌號碼: _____</p> <p>Issued By: 簽發: _____</p> <p>Chop of Designated Public Filling Facility/ Landfill 公眾填土設施 / 堆填區蓋印</p>	<p align="center"><b>Construction and Demolition Materials Disposal Delivery Form</b>  <b>拆建物料運載記錄票</b></p> <p align="center"><i>(Information contained in this form may be displayed on Internet 此表格所載資料可被上載於互聯網)</i></p> <p>Date: _____ Time of departure from site: _____ Vehicle Licence Plate Number: _____          日期: _____ 離開地盤時間: _____ 車牌號碼: _____</p> <p>Designated Public Filling Facility/Landfill: _____ Location of Site: _____          指定公眾填土設施 / 堆填區: _____ 地盤位置: _____</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> Central &amp; Western 中西區</td> <td><input type="checkbox"/> Wanchai 灣仔</td> <td><input type="checkbox"/> Eastern 東區</td> <td><input type="checkbox"/> Southern 南區</td> <td><input type="checkbox"/> Sai Kung 西貢</td> </tr> <tr> <td><input type="checkbox"/> Yau, Tsim, Mong 油尖旺</td> <td><input type="checkbox"/> Shamshuipo 深水?</td> <td><input type="checkbox"/> Kowloon City 九龍城</td> <td><input type="checkbox"/> Wong Tai Sin 黃大仙</td> <td><input type="checkbox"/> Outlying Islands 離島</td> </tr> <tr> <td><input type="checkbox"/> Kwun Tong 觀塘</td> <td><input type="checkbox"/> Kwai Tsing 葵青</td> <td><input type="checkbox"/> Tsuen Wan 荃灣</td> <td><input type="checkbox"/> Tuen Mun 屯門</td> <td><input type="checkbox"/> Shatin 沙田</td> </tr> <tr> <td><input type="checkbox"/> Yuen Long 元朗</td> <td><input type="checkbox"/> North 北區</td> <td><input type="checkbox"/> Tai Po 大埔</td> <td colspan="2"></td> </tr> </table> <p>Approximate Load : <input type="checkbox"/> 1/4   <input type="checkbox"/> 1/2   <input type="checkbox"/> 3/4   <input type="checkbox"/> Full 滿          大約承載量:</p> <p align="right">Please stick contract no. barcode above 請在上方貼上合約編號條碼</p> <p align="center">Chop of Designated Public Filling Facility/Landfill 公眾填土設施 / 堆填區蓋印</p> <p align="center">Chop of Engineer' s/Architect' s Representative 工程師 / 建築師代表蓋印</p>	<input type="checkbox"/> Central & Western 中西區	<input type="checkbox"/> Wanchai 灣仔	<input type="checkbox"/> Eastern 東區	<input type="checkbox"/> Southern 南區	<input type="checkbox"/> Sai Kung 西貢	<input type="checkbox"/> Yau, Tsim, Mong 油尖旺	<input type="checkbox"/> Shamshuipo 深水?	<input type="checkbox"/> Kowloon City 九龍城	<input type="checkbox"/> Wong Tai Sin 黃大仙	<input type="checkbox"/> Outlying Islands 離島	<input type="checkbox"/> Kwun Tong 觀塘	<input type="checkbox"/> Kwai Tsing 葵青	<input type="checkbox"/> Tsuen Wan 荃灣	<input type="checkbox"/> Tuen Mun 屯門	<input type="checkbox"/> Shatin 沙田	<input type="checkbox"/> Yuen Long 元朗	<input type="checkbox"/> North 北區	<input type="checkbox"/> Tai Po 大埔		
<input type="checkbox"/> Central & Western 中西區	<input type="checkbox"/> Wanchai 灣仔	<input type="checkbox"/> Eastern 東區	<input type="checkbox"/> Southern 南區	<input type="checkbox"/> Sai Kung 西貢																		
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<input type="checkbox"/> Yuen Long 元朗	<input type="checkbox"/> North 北區	<input type="checkbox"/> Tai Po 大埔																				


## **APPENDIX J**



## Flow of Operation for the Disposal of C&D Materials



## **APPENDIX K**

ENVIRONMENTAL SITE INSPECTION CHECKLIST		 <b>中國建築工程(香港)有限公司</b> <b>CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.</b>			
<b>Contract No. &amp; Name</b>	KDB300 : Tunnels - Jordan Road to Yau Ma Tei Vent Bldg	<b>Ref. No.</b>	WEW -	<b>Form No.</b>	ESIC
	KDB400 : Tunnels – Yau Ma Tei Vent Bldg to NAC Overrun				

#### PARTICULARS

<b>Date of Inspection :</b>		<b>Time :</b>	
<b>Attendants :</b>	(ER-KCRC) :		
	(IEC) :		
	(ET) :		
	(CSCE) :		
<b>Site(s) Inspected :</b>	KDB300 / KDB400		
<b>Weather Condition :</b>	Sunny/ Fine/ Overcast/ Drizzle/ Rain/ Storm	<b>Wind :</b>	Calm/ Light/ Breeze/ Strong
<b>Temperature :</b>	°C	<b>Humidity :</b>	High/ Moderate/ Low

#### RESULTS OF INSPECTION

Item	Observed Issues	Measure Implemented			Location	Corrective Actions Recommended or Remarks
		Yes	No	N/A		
<i>1. Licenses and permits</i>						
1.1	Updated EP copy be displayed on notice boards/ vehicular site entrance?					
1.2	Valid CNP, if any be posted on notice boards/ vehicular site entrance?					
1.3	The licences/ permits available for inspection? <ul style="list-style-type: none"> <li>• Effluent Discharge Licence</li> <li>• Chemical Waste Producer Registration</li> <li>• Disposal Trip Ticket for Chemical Waste</li> <li>• Dumping Licence under DASO</li> </ul>					
<i>2. Noise Pollution Control</i>						
2.1	Temporary hoarding of 2.4m high installed at site boundaries section directly facing the NSR?					
2.2	Movable barrier installed to shelter the operation of concrete lorry mixer, concrete pump truck, dump truck/ lorry and hydraulic breaker facing Man King Building (at about chainage U5+500 to U5+700) and Olympic City Phase 3 (at about chainage U7+200 to U7+300)?					
2.3	The 100 tunnel section in front of Man King Building be constructed in 2 sub-section, each about 50m?					
2.4	Sequential site operation, where applicable to avoid excessive plants working at the same time?					
2.5	Site plants be orientated so that the noise is directed away from NSRs?					
2.6	Material stockpiles and container site offices be situated at strategic location serving to screen noise from construction activities?					
2.7	Site plants not being used switched off or throttled down?					
2.8	Built-in noise minimisation features (e.g. acoustic shield) used for all powered mechanical equipment?					
2.9	All fire doors and non-essential openings kept closed at all times to prevent a reduction in the acoustic performance of the enclosure? (i.e. power generator or air compressor require door kept closed)					
2.10	The silenced equipment used where practicable? (i.e. noise label for air compressors, and well maintenance)					
<i>3. Air Pollution Control</i>						
3.1	Exposed spoil areas of KDB300 & KDB400 be watered at least twice a day?					
3.2	Hoarding of not less than 2.4 m high from ground level provided along the entire length except for a site entrance or exit where a site boundary adjoins a road, streets or other area accessible to the public?					
3.3	Vehicle-washing facilities provided and well maintained at designated vehicle exit points?					
3.4	All vehicles washed to remove any dusty materials from their body and wheels before leaving the site?					

Item	Observed Issues	Measure Implemented			Location	Corrective Actions Recommended or Remarks
		Yes	No	N/A		
3.5	All vehicles carrying dusty loads sheeted over prior to leaving the site?					
3.6	The portion of road leading to construction site within 30m of vehicle entrance or exit kept clear of dusty materials?					
3.7	Every main haul road kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet?					
3.8	Excavated dusty materials or stockpile of dusty materials covered entirely by impervious sheeting, or sprayed with water so as to minimise dust impact, or other measures such as hydroseeding?					
3.9	Every stock more than 20 bags of cement covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides?					
3.10	No stockpile of dusty materials extending beyond the pedestrian barriers, fencing or traffic cones?					
3.11	All dusty materials sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet?					
3.12	The vehicle speed within the worksite limited to 10 kph, except for properly formed and maintained access roads?					
3.13	The working area of excavation sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet?					
3.14	Site plant sand equipment well maintained? (i.e. without black smoke from powered plant)					
3.15	No open burning observed on site?					
<b>4. Water Pollution Control</b>						
4.1	Surface run-off from the construction sites directed into storm drains via adequately designed wastewater treatment facilities such as sand traps, silt traps and sediment basins to where stormwater properly directed via channels, earth bunds or sand bag barriers on site?					
4.2	Silt removal facilities, channels and manholes properly maintained? (i.e. the deposited silt and grit removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times)					
4.3	All exposed soil areas or open stockpiles minimised to reduce the potential for increased siltation, sediment runoff, and erosion? And, if unavoidable, exposed soil surface and open stockpiles temporarily covered?					
4.4	Manholes adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system?					
4.5	All vehicles and plants cleaned before leaving the construction site to ensure that no earth, mud or debris is deposited by them on roads?					
4.6	Any chemical toilets provided on-site be properly maintained and their sewage be tankered away regularly?					
4.7	Are surface run-off control measures in place and are they adequate maintained? (i.e. Channels, earth bunds or sand bag barriers shall be provided on site to properly direct stormwater to silt removal facilities such as sand traps, silt traps and sediment basins).					
4.8	Water pumped out from trenches or foundation excavations discharged via silt removal facilities?					
4.9	Adequate provision of chemical toilet and sewage holding tanks for handling the construction sewage generated by the workforce and sewage be collected by a licensed collector for disposal?					
4.10	Have the extent of baseline groundwater contamination along the tunnel alignment been updated?					

Item	Observed Issues	Measure Implemented			Location	Corrective Actions Recommended or Remarks
		Yes	No	N/A		
4.11	Groundwater recharge wells be selected at places where groundwater quality will not be affected by the recharge operation.					
4.12	Groundwater monitoring wells be installed to monitor the effectiveness of the recharge operation and the groundwater level at the monitoring well be monitored during the recharge period to ensure that there is no likelihood of locally risen groundwater level thus no transfer of pollutants beyond the site boundary?					
4.13	Contaminated groundwater recharged back into the ground via recharge wells?					
4.14	Free product encountered be removed prior to recharge?					
4.15	The groundwater be treated appropriately prior to recharging should the pollutants of recharging groundwater exceed the baseline limit					
<b>5. Waste/ Chemicals Management</b>						
5.1	The worksite free from general waste? (i.e. debris and rubbish accumulation avoided?)					
5.2	Provision of sufficient waste disposal points/ receptacles and regular collection for disposal?					
5.3	Fuel tanks and chemical wastes properly stored in accordance with the statutory requirements (i.e. on a hardstanding, within a bund with a capacity equal to 110% of the largest drum volume, enclosed and locked area which is labelled)?					
5.4	Sorting of C&D materials on-site to recover the inert portions for reuse or disposal to designated outlet?					
5.5	No observable non-inert materials mixed with inert C&D materials?					
5.6	Wood, steel and other metals separated for re-use and / or recycling to minimise the quantity of waste to be disposed?					
5.7	Cardboard and paper packaging recovered on site whenever possible?					
5.8	Proper management of temporary storage areas to facilitate collection and/ or sorting of waste on-site?					
5.9	Disposal of C&D materials strictly followed the trip ticket system?					
5.10	Chemical wastes including asbestos-containing materials separated for special handling and collected by a licensed chemical waste collector?					
5.11	Record of quantities of waste generated, recycled and disposed properly kept and easily retrieved for inspection?					
5.12	Uncontaminated alluvial/ marine deposits and contaminated marine deposits be separately excavated as per the approved sediment quality report?					
5.13	The trucks for transporting the marine deposits be leach proof and be covered the load with impervious sheeting to prevent the watery content from leaking and splashing during the voyage to the barging facility?					
5.14	Excess material be cleaned from the decks and exposed fittings of the transportation vessel before moving out and the excess materials not dumped into the sea except at the approved locations?					
5.15	Adequate freeboard be maintained on barge to ensure that decks are not washed by wave action?					
5.16	The bottom of the dumping vessel be fitted with tight fittings seals to its bottom openings to prevent material leakage during the voyage?					
5.17	Contaminated marine deposits be transported by split barge of not less than 750m3 capacity and capable of rapid opening and discharge at the disposal site?					
5.18	Dumping license obtained from EPD and conditions of the license complied at all times?					

Item	Observed Issues	Measure Implemented			Location	Corrective Actions Recommended or Remarks
		Yes	No	N/A		
<i>6. Mitigation of Landscape &amp; Visual Impacts</i>						
6.1	The stockpile be covered with visually unobtrusive sheeting in subdued 'camouflage' colour tone to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance?					
6.2	Security lighting directed downward into the work sites/ areas to prevent glare to the surrounding receivers?					
6.3	Cleanliness and tidiness of the hoardings be maintained?					
6.4	The noise barrier be designed so as to minimize adverse visual impacts on adjacent receivers.					

**Remarks / Conclusion / Observations/ List of Actions:**

**Signatures**

ET's Rep.

Contractor's Rep.

IEC's Rep.

ER's Rep (KCRC)

\_\_\_\_\_  
Name :

\_\_\_\_\_  
Name :

\_\_\_\_\_  
Name :

\_\_\_\_\_  
Name :

## **APPENDIX L**

# Predicted Yearly Summary Waste Flow Table



中國建築工程(香港)有限公司

CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.

**Contract No. & Name**  
 KDB300 : Tunnels - Jordan Road to Yau Ma Tei Ventilation Building  
 KDB400 : Tunnels - Yau Ma Tei Ventilation Building to Nam Cheong Overrun

**Date of Preparation**

30-Sep-05

**Form No.**

PY-WFT

Year	Quantity of Inert C&D Materials Generated									Quantity of Excavated Marine Deposit (MD) <sup>5</sup>				Quantity of Non-inert C&D Materials (i.e. C&D Wastes) Generated						
	Public Fills						Artificial Materials <sup>4</sup>			Contam.		Uncontam.		Metals	Paper/ cardboard packaging	Plastic <sup>7</sup>	Chemical Waste	Timber	Contamin. Soil	General Refuse
	Natural Excavated Materials <sup>1</sup>	Soft Materials <sup>2</sup>	Rocks <sup>3</sup>	Total Generation	To re-use on site	To dispose of as Public Fills	Total Generation	To re-use on site	To dispose of as Public Fills	In-situ	Bulked <sup>6</sup>	In-situ	Bulked							
Unit	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	
2005	0.4			0.4		0.4	1.5		1.5											0.3
2006	307.5			307.5	80	227.5	0.3		0.3	1.45	1.89	25.89	33.66		2	0.2	3			2.1
2007	80			80	80	0				1.45	1.89	12.94	16.82	30	2	0.2	3			2.15
2008							24.7		24.7					15	1	0.1	2			1.8
2009																				1.2
2010																				
<b>TOTAL</b>	<b>387.9</b>			<b>387.9</b>	<b>160</b>	<b>227.9</b>	<b>26.5</b>		<b>26.5</b>	<b>2.9</b>	<b>3.77</b>	<b>38.8</b>	<b>50.48</b>	<b>45</b>	<b>5</b>	<b>0.5</b>	<b>8</b>			<b>7.55</b>

- Notes :
- 1 - "Natural Excavated Materials" of size < 200mm include marine sand fill and Grade IV&V rocks
  - 2 - "Soft Materials" include spent bentonite and the likes
  - 3 - "Rocks" of Grade III or above
  - 4 - "Artificial Materials" include broken bituminous/ concrete materials
  - 5 - Quantity of MD shall refer to the approved sediment quality report
  - 6 - Assuming bulking factor of 1.3
  - 7 - Plastic refers to plastic bottles/ containers, plastic sheets/ foam from packaging material



# Predicted Yearly Summary Waste Flow Table



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


**Contract No. & Name**  
 KDB300 : Tunnels – Jordan Road to Yau Ma Tei Ventilation Building  
 KDB400 : Tunnels - Yau Ma Tei Ventilation Building to Nam Cheong Overrun

**Date of Preparation** 30-Sep-05 **Form No.** PY-WFT

Year	Quantity of Inert C&D Materials Generated									Quantity of Excavated Marine Deposit (MD) <sup>5</sup>				Quantity of Non-inert C&D Materials (i.e. C&D Wastes) Generated						
	Public Fills						Artificial Materials <sup>4</sup>			Contam.		Uncontam.		Metals	Paper/ cardboard packaging	Plastic <sup>7</sup>	Chemical Waste	Timber	Contamin. Soil	General Refuse
	Natural Excavated Materials <sup>1</sup>	Soft Materials <sup>2</sup>	Rocks <sup>3</sup>	Total Generation	To re-use on site	To dispose of as Public Fills	Total Generation	To re-use on site	To dispose of as Public Fills	In-situ	Bulked <sup>6</sup>	In-situ	Bulked							
Unit	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )		('000m <sup>3</sup> )		('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)
2005	6.2			6.2		6.2	0.8		0.8					2	0.5	0.5	1.3			2
2006	151.4	1.1		152.5	58	94.5	11.6	1.86	9.74	5.08	6.60	9.47	12.31	69.5	35	8.2	4.6			13.1
2007	65			65	30.3	34.7				1.52	1.98	3.23	4.20	94	43	3.73	3.4			22.9
2008														20	1	0.1	2			1
2009																				0.8
2010																				
<b>TOTAL</b>	<b>222.6</b>	<b>1.1</b>		<b>223.7</b>	<b>88.3</b>	<b>135.4</b>	<b>12.4</b>	<b>1.86</b>	<b>10.54</b>	<b>6.6</b>	<b>8.58</b>	<b>12.7</b>	<b>16.51</b>	<b>185.5</b>	<b>79.5</b>	<b>12.53</b>	<b>11.3</b>			<b>39.8</b>

- Notes :
- 1 - "Natural Excavated Materials" of size < 200mm include marine sand fill and Grade IV&V rocks
  - 2 - "Soft Materials" include spent bentonite and the likes
  - 3 - "Rocks" of Grade III or above
  - 4 - "Artificial Materials" include broken bituminous/ concrete materials
  - 5 - Quantity of MD shall refer to the approved sediment quality report
  - 6 - Assuming bulking factor of 1.3
  - 7 - Plastic refers to plastic bottles/ containers, plastic sheets/ foam from packaging material


## **APPENDIX M**

<b>Actual Monthly Summary Waste Flow Table for _____ (Year)</b>			<b>中國建築工程(香港)有限公司</b>		
<b>Contract No. &amp; Name</b>			<b>CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.</b>		
KDB300 : Tunnels - Jordan Road to Yau Ma Tei Ventilation Building		<b>Date of Preparation</b>		<b>Form No.</b>	AM-WFT
KDB400 : Tunnels - Yau Ma Tei Ventilation Building to Nam Cheong Overrun					

Month	Quantity of Inert C&D Materials Generated									Quantity of Excavated Marine Deposit (MD) <sup>5</sup>				Quantity of Non-inert C&D Materials (i.e. C&D Wastes) Generated						
	Public Fills						Artificial Materials <sup>4</sup>			Contam.		Uncontam.		Metals	Paper/ cardboard packaging	Plastic <sup>7</sup>	Chemical Waste	Timber	Contamin. Soil	General Refuse
	Natural Excavated Materials <sup>1</sup>	Soft Materials <sup>2</sup>	Rocks <sup>3</sup>	Total Generation	To re-use on site	To dispose of as Public Fills	Total Generation	To re-use on site	To dispose of as Public Fills	In-situ	Bulked <sup>6</sup>	In-situ	Bulked							
Unit	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	
Jan																				
Feb																				
Mar																				
Apr																				
May																				
Jun																				
<b>SUB-TOTAL</b>																				
Jul																				
Aug																				
Sep																				
Oct																				
Nov																				
Dec																				
<b>TOTAL</b>																				

- Notes :
- 1 - "Natural Excavated Materials" of size < 200mm include marine sand fill and Grade IV&V rocks
  - 2 - "Soft Materials" include spent bentonite and the likes
  - 3 - "Rocks" of Grade III or above
  - 4 - "Artificial Materials" include broken bituminous/ concrete materials
  - 5 - Quantity of MD shall refer to the approved sediment quality report
  - 6 - Assuming bulking factor of 1.3
  - 7 - Plastic refers to plastic bottles/ containers, plastic sheets/ foam from packaging material

## **APPENDIX N**

<b>Actual Yearly Summary Waste Flow Table</b>		 <b>中國建築工程(香港)有限公司</b> <b>CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.</b>			
<b>Contract No. &amp; Name</b>	KDB300 : Tunnels - Jordan Road to Yau Ma Tei Ventilation Building		<b>Date of Preparation</b>	<b>Form No.</b>	AY-WFT
	KDB400 : Tunnels - Yau Ma Tei Ventilation Building to Nam Cheong Overrun				

Year	Quantity of Inert C&D Materials Generated									Quantity of Excavated Marine Deposit (MD) <sup>5</sup>				Quantity of Non-inert C&D Materials (i.e. C&D Wastes) Generated						
	Public Fills						Artificial Materials <sup>4</sup>			Contam.		Uncontam.		Metals	Paper/ cardboard packaging	Plastic <sup>7</sup>	Chemical Waste	Timber	Contamin. Soil	General Refuse
	Natural Excavated Materials <sup>1</sup>	Soft Materials <sup>2</sup>	Rocks <sup>3</sup>	Total Generation	To re-use on site	To dispose of as Public Fills	Total Generation	To re-use on site	To dispose of as Public Fills	In-situ	Bulked <sup>6</sup>	In-situ	Bulked							
<b>Unit</b>	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	
2005																				
2006																				
2007																				
2008																				
2009																				
2010																				
<b>TOTAL</b>																				

- Notes :
- 1 - "Natural Excavated Materials" of size < 200mm include marine sand fill and Grade IV&V rocks
  - 2 - "Soft Materials" include spent bentonite and the likes
  - 3 - "Rocks" of Grade III or above
  - 4 - "Artificial Materials" include broken bituminous/ concrete materials
  - 5 - Quantity of MD shall refer to the approved sediment quality report
  - 6 - Assuming bulking factor of 1.3
  - 7 - Plastic refers to plastic bottles/ containers, plastic sheets/ foam from packaging material

## **APPENDIX O**

