

<p>Project:</p> <p>CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT</p> <p>CONTRACT NO. NE/2014/02 – Liantang / Heung Yuen Wai</p> <p>Boundary Control Point Site Formation and Infrastructure Works –</p> <p>Contract 4</p>	<p>Confidentiality Level</p> <p>Division</p> <p>Mobility</p> <p>Issuing Business Unit</p> <p>Mobility Management</p>
<p>Submittal Title:</p> <p>Waste Management Plan (Rev D)</p>	
<p>Submittal No.:</p> <p>NE2014/01/13/OUT/0408-D</p>	

<p>Released (Authorised), Division, Tel., Signature :</p>  <p>Wallace Chiu, MO MM, 2652 1570</p>	<p>Location and Date:</p> <p>Hong Kong, Date: 30 June 2017</p>
<p>Checked (Reviewed), Division, Tel., Signature :</p>  <p>Ken So, MO MM, 26521570</p>	<p>Location and Date:</p> <p>Hong Kong, Date: 30 June 2017</p>
<p>Prepared by, Division, Tel., Signature :</p>  <p>Michael Leung (EO), MO MM, 98447741</p>	<p>Location and Date:</p> <p>Hong Kong, Date: 30 June 2017</p>

Revision Summary

Rev	Description	Revised Date
A	First Issue	16 March 2017
B	Revised according to ET comment	9 May 2017
C	Revised according to IEC comment	22 May 2017
D	Revised according to EPD comment	30 June 2017

Table of Contents

Chapter 1	General
1.1	Particulars of the Project
1.2	Purpose of the Waste Management Plan
1.3	Organizational Structure for Waste Management
1.3.1	Organization Chart on Waste Management
1.3.2	Internal Communication of Waste Management Issues
1.3.3	External Communication of Waste Management Issues
1.3.4	Duties of the Site Agent
1.3.5	Duties of the Environmental Officer
1.3.6	Duties of the Site Agent / G. Foreman / Construction Manager
1.3.7	Duties of the Assistant Environmental Officer
1.3.8	Duties of the Environmental Supervisor
1.4	Waste Management Training
1.5	Promotion of Waste Management Awareness
Chapter 2	Waste Targets and Waste Mitigation Measures
2.1	Legislation, Standards, Guidelines & Contractual Requirements for Waste Management
2.2	Waste Targets
2.3	Waste Mitigation Measures & Their Implementation
Chapter 3	Waste Generation and Management Procedures
3.1	Types of Waste
3.2	Sources and Segregation of Waste Materials
3.2.1	Inert Demolition Waste
3.2.2	Non-inert Demolition Waste
3.2.3	General Refuse
3.2.4	Recyclable Metal Waste
3.2.5	Waste Nuisance Control
3.2.6	Chemical Waste
3.2.7	On-site Sorting of Waste
3.2.8	Waste Packing and Storage before Disposal

Chapter 4	Waste Disposal Arrangements
4.1	Hierarchy of Waste Management Practices
4.2	Waste Disposal Location
4.3	Trip Ticket System
Chapter 5	Control of Waste Disposal
5.1	Waste Management Review
5.2	Control System
Chapter 6	Recording System
Chapter 7	Environmental Monitoring & Audit for Waste
Appendix	
Appendix 1	Environmental Policy
Appendix 2	Site Layout Plan
Appendix 3	Waste Flow Table
Appendix 4	Daily Record Summary

Chapter 1 General

1.1. Particulars of the Project

Siemens Ltd. (Siemens) is commissioned to undertaking the project of Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 4 and this project intends to comply requirements of Environmental Permit No. EP-404/2011/D. The commencement date of the project on July 2016 and the commencement date of construction work is scheduled on 2 May 2017 and completion on Early 2021.

Siemens responsible for the traffic control and surveillance system design and installation works. The works mainly include design, supply, delivery, installation, testing and commissioning of a traffic control and surveillance system for the connecting road linking up the Liantang/Heung Yuen Wai Boundary Control Point and the existing Fanling Highway. The system will mainly consist of computer systems, communication facilities, variable message signs and other traffic field equipment.

No foundation or superstructure construction works will be carried out by Siemens, so dewatering of and disposal of spoil is not applicable to this contract.

Environmental protection is part and parcel of daily operation of our company. We shall initiate all appropriate actions in order to minimize the environmental impact arising from the demolition activities of this project.

1.2. Purpose of the Waste Management Plan

This Waste Management Plan has been prepared in response to the requirement of Condition 3.2 of EP-404/2011/D. The purpose of the Waste Management Plan (WMP) is to identify activities that will generate waste; to propose measures for avoidance, reuse, recovery and recycling, storage, collection, treatment including dewatering of spoil and disposal of different categories of waste to be generated from the construction activities and shall indicate the disposal locations(s) of all surplus excavated spoil and other waste; and to comply with the relevant legal and contractual requirements. It focuses on the mitigation and management of the waste impacts arising from the demolition works. A trip ticket system will be included in the WMP.

The Plan consists of the mitigation measures, which shall be implemented by the Siemens and subcontractors, to minimize the waste impacts during the execution of the project.

Components of this plan include review of ordinances, regulations, code of practice as well as contractual obligations that are applicable to wastes arising from the works, monitoring and auditing proposal for ensuring the requirements of WMP are properly implemented.

Environmental policy of Siemens is attached in Appendix 1.

1.3. Organizational Structure for Waste Management

1.3.1. Organization Chart on Waste Management

An organization chart on waste management is shown in Figure 1.

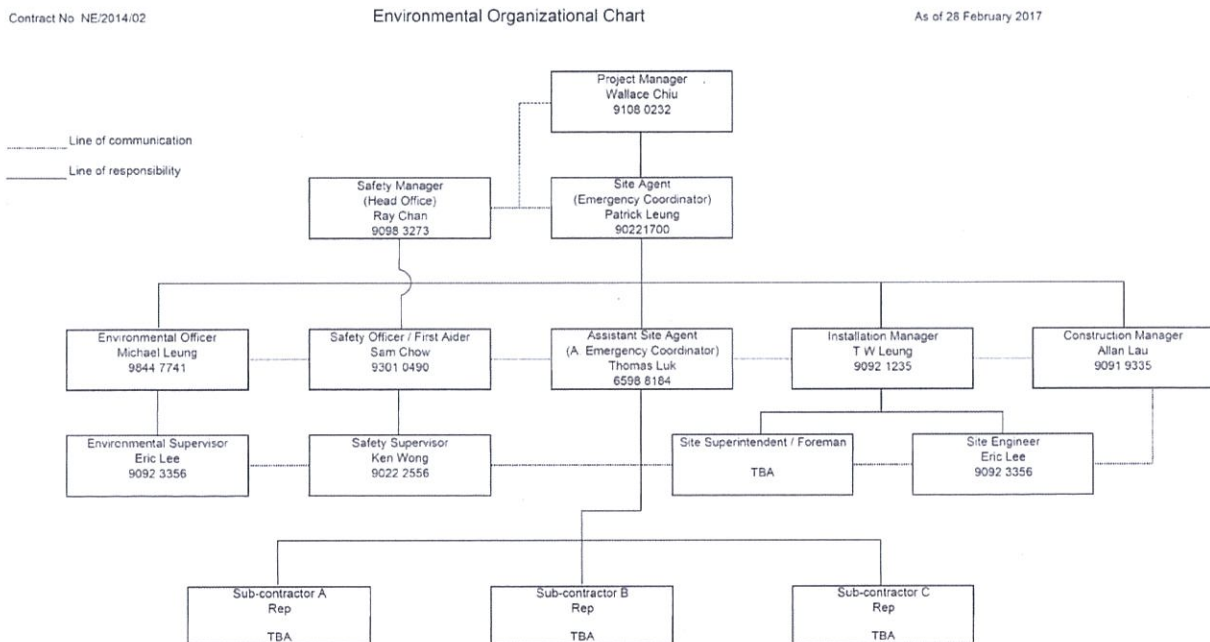


Figure 1. Organization Chart on Waste Management

1.3.2 Internal Communication of Waste Management Issues

The Environmental Officer (EO) shall communicate environmental issues directly to the Site Agent (SA). The EO will also be responsible for communicating waste information to site staff. This shall include mitigation measures, work procedures, on-the job training plans, emergency procedures and any new activities or procedures required.

The EO shall also be responsible for ensuring that general waste management information is communicated to all employees through notice boards, e-mails and internal circulars.

The EO shall maintain a standardized system by which employees can communicate their suggestions or questions and complaints about the WMP. Staff shall be encouraged to communicate their ideas directly to their

supervisors who shall compile these ideas and pass them to the EO. The EO shall consider these comments and provide written or verbal response as appropriate.

As the Chairman of the Site Safety & Environmental Committee (SSEC), the SA shall chair the SSEC meeting regularly to discuss the recent site environmental issues, WMP, EMP, etc. The minutes of this meeting shall be taken, recorded and issued to the staff members who shall attend the meeting. The meeting agenda should include organization, review of WMP, inspection items, waste control measures and comments by Engineer.

Staff members are encouraged to report environmental issues or to recommend methods for protecting the environment to the SSEC. The EO and SA shall explain the legal & contractual requirements, environmental issues and mitigation measures in the SSEC meetings.

Any internal communications from staff, which require preventive and remedial action, are controlled by the relevant procedures stated in the WMP.

1.3.3 External Communication of Waste Management Issues

External communication forms should include, but not be limited to, the name, address, telephone number, date, time and contents of communication.

The Environmental Officer (EO) will be responsible for keeping copies of any correspondence arising from the communication and for keeping records of all waste management communications.

All external communications shall be responded to within one week in writing wherever possible. If any delay is necessary, a phone call or other contact shall be made to the external party to explain the delay.

The EO shall be responsible for keeping records of meetings, site visits & telephone conversations, and file them in a register of communications. The EO shall communicate with the regulatory authorities and ensure that copies of correspondence are kept on file.

The EO/SA shall report the site environmental issues to the representatives of the Engineer during the monthly Site Safety & Environmental Management Committee (SSEMC) meeting. The representatives of the Engineer shall inform Siemens of the site environmental deficiencies and approve Siemens's preventive and remedial measures for the environmental deficiencies during the SSEMC meeting. The meeting shall discuss the environmental issues, environmental deficiencies, public complaints, etc., and their preventive & remedial measures.

Any communications, including waste management complaints, requiring preventive and remedial action will be dealt with in accordance with the WMP.

In the event of widespread public concern / interest, the EO and representatives of the Engineer will arrange a site visit to check whether the mitigation measures are implemented.

1.3.4 Duties of the Site Agent

The Site Agent (SA) is the management representative of the Contractor. He takes the overall responsibilities for the waste management issues of the project, including:

- (1) Oversee the implementation of the WMP; and
- (2) Provide resources and facilities for the implementation of the WMP.

1.3.5 Duties of the Environmental Officer

The Environmental Officer (EO) shall be present on site and manage the environmental issues of the project with responsibilities as follows:

- (1) Prepare, implement and update the Waste Management Plan;
- (2) Advise on measures to be taken to comply with legislative and contractual obligations under environmental protection, waste management and site hygiene and implement such measures;
- (3) Liaise on all matters relating to environmental and site hygiene monitoring;

- (4) Conduct periodic inspections of the Site for identifying potential hazards to the environment and deficiencies in site hygiene, and recommend corrective actions as necessary;
- (5) Attend to enforcement actions taken by the Environmental Protection Department, Food and Environmental Hygiene Department, and other enforcing departments on matters relating to site environment and hygiene;
- (6) Attend to public complaints and coordinate remedial actions;
- (7) Oversee all the environmental performance on the Site and ensure that any polluting or potentially polluting situation is promptly rectified;
- (8) Organize and attend Environmental Management and Site Hygiene meetings;
- (9) Compile monthly environmental report for submission to the Engineer at least five working days before such meetings and produce monitoring records, in prescribed format where applicable;
- (10) Advise on the implementation of an environmental management system; waste disposal, trip ticketing and other enhancement measures;
- (11) Arrange and provide environmental training including site specific induction training and toolbox talks for all Site Personnel, and organize environmental promotional activities;
- (12) Prepare the documentation to support submissions under the Housing Authority's incentive schemes in respect of environmental and site hygiene items;
- (13) Monitor the maintenance of cleanliness and tidiness on the Site

1.3.6 Duties of the Environmental Supervisor

The duties of the Environmental Supervisor shall include:

- (1) Assist the EO in carrying out his duties;
- (2) Carry out routine inspections of the Site for identifying potential hazards to the environment and deficiencies in site hygiene, report findings with recommendations for corrective actions; and ensure that follow-up action is taken promptly to rectify defects;
- (3) Supervise and monitor all the environmental performance on the Site; check and ensure that any polluting or potentially polluting situation is promptly rectified and assist EO in preparing the monitoring records, in prescribed format to meet BEAM Plus standards where applicable;

- (4) Advise EO on the up-keeping of environmental performance and hygiene standards of the Site;
 - (5) Supervise and promote the execution of environmental protection and hygiene works by workers on the Site;
 - (6) Organize site-based environmental protection and hygiene promotion awards and promotional activities as prescribed under the Pay for Safety and Environment Scheme.
-

1.4 Waste Management Training

As necessary, the EO shall provide or arrange waste management training for site staff from time to time, especially for new employees, which shall deal with major waste management issues on site. The waste management training about the major topics below will be included in the environmental management training (see the Environmental Management Plan):

- (1) *Waste Disposal Ordinance* and its subsidiary legislation;
- (2) *Waste Disposal (Chemical Waste) (General) Regulation*;
- (3) *Public Health and Municipal Services Ordinance*;
- (4) *Summary Offences Ordinance*;
- (5) *Code of Practice on the Packaging, Labelling & Storage of Chemical Wastes*;
and
- (6) Waste control / mitigation measures.

1.5 Promotion of Waste Management Awareness

The Site Agent (SA) shall ensure that all key site staff is made aware of the relevant waste management requirements as stipulated in the WMP, waste management legislation and the Contract. To achieve this, the Construction Manager shall distribute / circulate to the key site staff, including newly joined key staff members, copies of the relevant environmental documents, such as:

- (1) Environmental Policy of Siemens;
- (2) Waste Management Plan;
- (3) Environmental legislation relevant to site waste issues; and
- (4) Contractual requirements of the present project.

The Contractor shall adopt the following procedures to promote waste management awareness among the staff and subcontractors:

- (1) The Contractor shall display the Environmental Policy Statement of Siemens at the conspicuous location of the site office.
- (2) The EO shall be resident on site to communicate with the workers and promote environmental awareness among all workers.
- (3) The EO shall conduct site inspections regularly to ensure that all workers and sub-contractors comply with the provisions of the WMP.
- (4) The Contractor shall monitor the environmental performance of all subcontractors, and take appropriate preventive & remedial actions as necessary.

Chapter 2 Waste Targets and Waste Mitigation Measures

2.1 Legislation, Standards, Guidelines & Contractual Requirements for Waste Management

The following legislation is related to the handling, treatment and disposal of waste arising from demolition activities:

- (1) *Waste Disposal Ordinance;*
- (2) *Waste Disposal (Chemical Waste) (General) Regulation;*
- (3) *Waste Disposal (Charges for Disposal of Construction Waste) Regulation;*
- (4) *Public Health and Municipal Services Ordinance;*
- (5) *Summary Offences Ordinance;*

The standards and guidelines for the project are as follows:

- (1) *Buildings Department Practice Note for Authorized Person and Registered Structure Engineers 243;*
- (2) *Code of Practice on the Packaging, Labelling & Storage of Chemical Wastes;*
- (3) *Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste;*
- (4) *Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005, Environmental Management on Construction Sites;*
- (5) *Works Bureau Technical Circular No. 21/2002, Trip-ticket System for Disposal of Construction and Demolition Material;*
- (6) *Environment, Transport and Works Bureau Technical Circular (Works) No. 31/2004, Trip-ticket System for Disposal of Construction & Demolition Material;*
- (7) *Buildings Department Practice Notes for Registered Contractors 17.*
- (8) *Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005 from 16 January 2006.*

Under the Waste Disposal (Chemical Waste) (General) Regulation (Cap 354 C), producers of chemical wastes (including asbestos) must register with the EPD. There will be waste oils from construction plant and other materials used in the construction. Accordingly Siemens will register as a waste producer for the project.

All the dump trucks should have valid dumping licence. Dumping licences are issued by Fill Management Division of Civil Engineering and Development Department to dump truck owners for delivering public fill material to public filling facilities or landfills. Dumping labels should be displayed on the window-screen of the dump trucks.

The CHIT account should be opened with 21 days after contract awarded. The Trip-ticket System should be followed according to the Waste Disposal (Charge for Disposal of Construction Waste) Regulation.

2.2 Waste target

The record of amount of wastes avoidance, reuse, recovery and recycling, storage, collection, treatment including dewatering of spoil and disposal and following waste targets should be adopted.

- (1) Waste should be avoidance in the beginning of purchase and delivery.
- (2) All metallic waste to be reused and recovered for collection by recycling contractors;
- (3) All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
- (4) C&D materials will be classify on site, sufficient inert C&D materials will be stockpile for backfill, remaining portion will be delivery to government public fill or landfill facilities;
- (5) All debris to be sorted to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fittings/materials that have established recycling outlets; and
- (6) No spoil will be produce in ATC & E&M installation works.

2.3 Waste Mitigation Measures & Their Implementation

As the implementation agent, the Siemens shall implement the abatement or mitigation measures for the waste management impacts arising from the works during the demolition stage as listed in Table 1.

Table 1. Environmental Mitigation Implementation Schedule for Waste Management

Mitigation measure	Implementation location	Implementation time
Construction waste		
(1) Clean works areas to remove general refuse	All works areas	Throughout construction
(2) Store general refuse in a container on site before disposal at designated waste facilities	Waste containers / storage areas	Throughout construction
(3) Regularly and properly dispose of general refuse	Waste containers / storage areas	Throughout construction
(4) Maintain the waste containers in good condition and clean them regularly	Waste containers	Throughout construction
(5) Reuse and recycle demolition waste	All works areas	Throughout construction
(6) Replace timber with metal for site hoarding, formwork and scaffolding	All works areas	Throughout construction
(7) Apply for a billing account for disposal of waste under the <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation</i>	All works areas	Within 21 days of the award of the Contract
Chemical waste		
(8) Register as a chemical waste producer with the Environmental Protection Department under the <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	All works areas	Before producing chemical waste
(9) Minimize generation of chemical waste on site	All works areas	Throughout construction
(10) Properly store chemical waste in a designated container / storage area	Waste containers / storage areas	Throughout construction

Mitigation measure	Implementation location	Implementation time
(11) Label chemical waste container / storage area in both English and Chinese	Waste containers / storage areas	Throughout construction
(12) Employ a licensed chemical waste collector to collect and dispose of chemical waste	All works areas	Throughout construction
Paper, Plastic and Metal		
(13) Paper, plastic and metal materials will be classified and collected by recycling companies.	All works areas	Throughout construction

Chapter 3 Waste Generation and Management Procedures

3.1 Types of Waste

The waste materials generated on site shall include the following types:

- (1) Inert waste, will be generated throughout the construction works;
- (2) Non-inert waste, including general refuse, paper, plastic, recyclable metal waste and chemical waste will arise throughout the demolition works

The estimated quantities of total waste generated are listed in Table 2.

Table 2. Estimated quantities of waste materials generated

Type of Waste	Estimated Quantity (in tonnes)
Inert Construction Waste	100
General Refuse	100
Recyclable Metal Waste	0.2
Paper	0.1
Plastic	0.1
Chemical Waste	0.1

3.2 Sources and Segregation of Waste Material

3.2.1 Inert Waste

Inert waste mainly includes soil, rock, bricks, rubbles and broken concrete from works. The inert materials shall be sorted on-site and be separated into different groups. The identified material shall be delivered to the recycling facilities as approved by the Engineer.

3.2.2 Non-inert Demolition Waste

Non-inert waste shall include bamboo, packaging waste, paper, tarpaulin waste, plastic waste, and other organic materials. Non-inert waste shall arise from temporary works, from site clearance, unwrapping of packages (packaging paper, packaging plastics, etc.).

3.2.3 General Refuse

General refuse shall be produced by the site workforce and composed of office waste, paper waste, food waste and packaging waste.

General refuse shall be collected and temporarily stored on site before disposal of at landfills. Office waste can be reduced through the recycling of paper. Three-colour recycling bins shall be provided for waste paper, aluminium cans and plastic bottles.

3.2.4 Recyclable Metal Waste

Metal wastes shall be generated from the demolition works, such as reinforcement bars, metals from mechanical & electrical fittings, and other building services fittings. These metal wastes are recyclable and shall be sold to recycling companies.

3.2.5 Waste Nuisance Control

Sewage from site toilet will be collected by tank and tankering away to DSD sewage treatment works for disposal.

Wastewater or effluent containing sand, cement, silt or any other suspended or dissolved material shall be treated by sedimentation tank or wastewater treatment facilities provided by the main contractor.

3.2.6 Chemical Waste

Chemical waste such as engine oil or battery with heavy metal which may be produce from site activities, as defined by Schedule 1 to the *Waste Disposal (Chemical Waste) (General) Regulation*, is divided. Solid chemical waste shall include empty chemical cans and soil accidentally contaminated with oil. Necessary mitigation measures shall be implemented to avoid generation of liquid chemical waste on site.

Chemical waste shall be handled in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* as follows:

Packaging. Chemical waste should be packed and held in containers of suitable design and demolition so as to prevent leakage, spillage or escape of the contents under normal conditions of handling, storage and transport.

Containers used for the storage of chemical wastes should:

- (1) Be suitable for the chemical waste (resistant to corrosion), maintained in a good condition, and securely closed;
- (2) Have a capacity of less than 450L unless the specifications have been approved by EPD; and
- (3) Display a label in English and Chinese in accordance with Schedule 2 to the Regulation.

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

Any site plant which is likely to leak oil will be placed on secondary containment. A licensed chemical waste collector shall be appointed to collect solid and liquid chemical waste and dispose to EPD designated treatment facilities.

3.2.7 On-site Sorting of Waste

A waste sorting system shall be set up on site to segregate the wastes into different types as mentioned previously for reuse, recycle and disposal at different waste facilities. Waste sorting and storage areas shall be provided on site as shown on the Site Layout Plan (see Appendix 2). Separated wastes shall be temporarily stored in the waste sorting and storage areas before disposal or recycling off site.

3.2.8 Waste Packing and Storage before Disposal

All general and non-inert waste will be neatly packed and tightly tied in impermeable plastic bags and temporarily stored at the fenced “Non-Inert Waste Storage Area” before disposal. Inert waste shall properly be stored at the isolated “Inert Waste Storage Area” before disposal. All non-inert waste shall be covered with impermeable tarpaulin sheets at the temporary storage area before disposal.

Chapter 4 Waste Disposal Arrangements

4.1 Hierarchy of Waste Management Practices

The various waste management options can be categorized in terms of preference from an environmental point of view. The more preferable options are to minimize the impacts on the environment and are more suitable in a long-term context. Hence, the hierarchy of waste management practices is developed as follows:

- (1) Change or improve the practices and designs to avoid or minimize generation of waste.
- (2) Reuse and recycle the waste to avoid or minimize waste disposal.
- (3) Treat and disposal of waste in accordance with the relevant legal and contractual requirements.

The hierarchy shall be used to evaluate waste management options, thus allowing waste minimization as well as cost reduction.

Prevention and Reduction

The highest rank of the hierarchy in waste management is source prevention, waste should not be produced in the first place, if waste production is unavoidable, the quantities should be minimized.

Instruction should be given to Purchase Department and sub-contractor that prior to purchase the products with essential package and longer useful life to achieve waste reduction.

Prior the commencement of work, works procedure should be well organized by project team to achieve the goal of no amendment in the project. This can minimize the generation of extra C&D debris.

Front-line supervisor should provide supervision and training for unskilled workers. They may be still not competent in their skills. Waste is arisen as the unskilled workers making a test sample on site.

Reuse, Recovery and Recycling

Waste materials should be collected and separated at source daily before completion of work.

On-site Sorting System for C&D material should be developed for separating inert and non-inert portion at source as it is a lower and most appropriate technological level and avoid the need for subsequent sorting.

Obviously, inert material should be reused on-site where possible. Prior to disposal of C&D waste, it is recommended that wood, steel and other metals should be separated for re-use and / or recycling to minimize the quantity of waste to be disposed of to landfill.

Temporary storage area has been designated at the material depot; partition has been set-up for the storage of inert and non-inert materials separately. Reusable materials such as steel bar, timber and surplus concrete should be sorted and stored properly. Recycling contractors with valid licences will collect the sorted reusable material in a regular basis.

Storage and Collection

Waste materials should be properly storage at designated area and collect by licensed dump truck, recycle or treatment facilities.

Different type of C&D waste and materials, reuse portion of materials, recycle metal and chemical substance, etc. should be storage separately. Proper labelling, covering and classification should be conducted on site and collection to designated location when the compartment was full.

Disposal

If it is not possible to recover, recycle or re-use the waste materials. In the waste management hierarchy, landfill is the final disposal option in all treatment methods and this is unavoidable.

Trip-ticket system for the transportation & disposal of C&D waste should be strictly implemented. It is used for transporting inert waste to designated public fill facilities and non-inert waste to landfill site.

The hierarchy should be used to evaluate waste management options, thus allowing maximum waste reduction as well as the cost reduction.

All of the materials should be removed off site when the stockpile area was full or enough to full load a dump truck. The Foreman is responsible to monitoring the stockpile area at least in weekly basis and arrange a dump truck to disposal. EO & ES is responsible to check the recycle & chemical waste storage area at least in weekly basis and arrange recycle or chemical waste collector when the storage area is nearly full.

Those disposal and recycle performance will be monitoring by Site Agent and EO during the weekly environmental walk.

4.2 Waste Disposal Location

The waste identified in section 3.1 will be properly handled and stored at designated temporary collection points before being removed from the site. The Siemens has obtained a Billing Account No. for disposal of waste from the Environmental Protection Department under the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation* and the *Waste Disposal (Chemical Waste) (General) Regulation*. Chemical wastes are to be collected by a licensed collector and disposed at the designated chemical waste treatment centre in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*. Different types of waste shall be disposed of at different disposal grounds as shown in Table 3.

Table 3. Disposal Grounds for Different Types of Waste

Types of waste	Disposal ground	Estimated Collection Frequency
Inert C&D waste	Recycled on other sites or dumped at Tuen Mun Area 38 Fill Bank	Weekly
Non-inert C&D waste (other than metal waste and chemical waste)	Disposed of at NENT Landfill at Ta Kwu Ling	Weekly
Paper & Plastic	Sold to recycling companies	Monthly
Recyclable metal waste	Sold to recycling companies	Monthly
Chemical waste	Collected by licensed collector and disposed at licensed chemical waste treatment centre	Quarterly
Spoil (Not Applicable)	No civil works will be carried out by Siemens, so no spoil will be produced under this contract	Not Required

4.3 Trip Ticket System

A trip ticket system shall be implemented to control and manage the removal of demolition waste from the site to the designated disposal grounds pursuant to *ETWB Technical Circular (Works) No. 31/2004* or *DEVB Technical Circular (Works) No. 6/2010*. The inert waste shall be disposed of at the Tuen Mun Area 38 Fill Bank or at other disposal outlets as directed by the Engineer. The non-inert waste shall be disposed of at the NENT Landfill or at other disposal outlets as directed by the Engineer. Slurry shall be disposed to TKO 137 but will not produce in ATC & E&M installation works.

System for waste disposal is established based on legislative requirements. Basic system for billing account and CHIT tickets system was shown in Appendix 3.

Site agent is appointed to overseeing the implementation and operation of Trip Ticket System.

Chapter 5 Control of Waste Disposal

5.1 Waste Management Review

Waste management review shall provide a direct means to ensure the compliance with the waste management procedures as stipulated in the relevant legislation and contract documents. The Environmental Officer is responsible for the formulation of the site review to evaluate the effectiveness and efficiencies of the existing waste management and to find out the room for improvement.

The Environmental Officer shall schedule the review programme and take into account the following when conducting a review on monthly basis:

- (1) Ensure that the waste arising from works are handled, stored, collected, transferred and disposed of in an environmentally-acceptable manner.
- (2) Ensure that the handling, storage, collection and disposal of waste, arising from the demolition works, fully comply with the legal and contractual requirements.
- (3) Encourage the reuse and recycle of materials.

5.2 Control System

Weekly environmental inspections and other site inspections shall be conducted by the representative of the Engineer and of the Siemens, to inspect the site, checking that the waste management performance of the site is satisfactory and in compliance with the requirements under the Contract and WMP. The places to be inspected shall be determined by the Engineer.

A control system is established within the site and at any alternative disposal ground to check that the disposal activities comply with the legal and contractual requirements. This control system is described as follows:

- (1) Siemens shall ensure that the dump truck is not overloaded before leaving the site. Siemens shall properly estimate the volume of C&D waste that can be carried by different dump trucks according to the permitted gross vehicle weight of the dump trucks and the properties of the C&D waste, e.g. the bulk density with reference to the composition, moisture content and past data

return, etc., in order to establish effective control measures to prevent overloading the dump trucks. They include:

- Height limit of the skip of the dump truck with consideration of its plan area and arrangement of measuring scale from the bottom of the skip; and/or
- Maximum number of grabs of the C&D waste loaded with the excavator onto the dump truck with consideration of the grab capacity of the excavator.

At the initial stage and any significant change of properties in C&D waste, trial runs should be conducted with margin to avoid overloading in order to establish reference parameters for effective control of overloading. Whenever necessary, these control measures should be reviewed promptly to suit the prevailing site conditions.

A qualified foreman shall check each truckload before issuing a chit to the dump truck driver to ensure the above control measures are implemented.

- (2) For each vehicular trip, a chit and a transaction record / receipt shall be returned by the operator of the waste disposal facility and kept on site for further verification. The quantity of waste (inert and non-inert waste) shall be counter-checked against the transaction record of EPD. The total amount of waste disposed of in the reporting month shall be recorded in the Waste Flow Table in Appendix 3.
- (3) Where an irregularity is observed under special circumstances (e.g. a chit has been issued but there is no disposal record at the designated waste disposal facility), follow-up action shall be taken to trace back the transaction record / receipt by interviewing the dump truck driver / responsible site personnel and by contacting the operator of the waste disposal facility.
- (4) Site inspections shall be conducted by the Environmental Officer at random so as to ensure that the disposal activities meet the legal and contractual requirements.

- (5) The Environmental Officer shall double-check the chit and transaction record against the EPD and CEDD data to verify the information on the chit and transaction record / receipt.
- (6) Under normal conditions, late return or no return of the chit and transaction record is not allowed. The following measures shall prevent late return or no return:
- Appoint an extra staff member to assist the Environmental Supervisor in keeping chits and transaction records during the peak period of waste disposal;
 - Record the contact phone number of every dump truck driver in the back of the photocopied chit for reference / traceability;
 - Reject the dump truck without a dumping licence;
 - Register all dump trucks and keep these records in Siemens's site office.

Chapter 6 Recording System

Siemens shall maintain a comprehensive register of the chits issued and keep it in the site office. The waste disposal records, including chits and transaction records, will be collected from the subcontractors and counter-checked against the information from EPD’s demolition waste transaction records. Record forms “Waste Flow Table” in Appendix 3 and “Daily Record Summary of Disposal of Waste from the Site” in Appendix 4 will be updated daily and monthly respectively.

Chapter 7 Environmental Monitoring & Audit for Waste

Environmental monitoring for waste management shall be conducted pursuant to the requirements of the EM&A Manual. Inspections for environmental audit include the daily site inspection, the weekly environmental walk, and monthly meeting.

The Environmental Officer or her representative shall analyze the waste management audit data in the Monthly Environmental Report and submit it to the Engineer.

Appendix 1.

Environmental Policy

SIEMENS

1 October 2016

Environmental Health Safety and Quality Policy

Siemens is a global powerhouse in electronics and electrical engineering offering a wide range of solutions and services in Hong Kong. We are committed to the principles of environmental protection, health management, safety and quality management in providing customers with reliable and high quality products and services. We will not be satisfied until our workplaces are safe from hazards, our employees are injury free, our products and services are qualified, and protection of the environment are unmatched.

We will spare no effort to fulfil customer requirements and comply with local environmental and occupational health and safety legislations as well as other applicable rules. We will minimize the environmental impacts caused by our activities through driving pollutants in operating processes to the lowest achievable level, and conserving natural resources in the design, use and disposal of products and delivery of services.

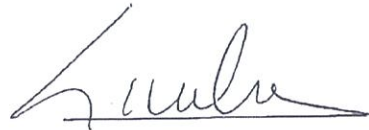
We will also eliminate all employee injuries by making the workplace free from hazards and unsafe actions. We strive to provide and maintain a healthy and safe working environment and appropriate protection for our employees, customers, subcontractors and people who may be affected by our works. We will put safety and environmental considerations in new product development and investment decisions, and in our dealings with contractors and suppliers. We will achieve the above through the implementation of an integrated management system in compliance with ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.

This policy will be communicated to all employees, contractors and suppliers. In the meantime, we will provide adequate resources and training to all employees to ensure that policy is understood and effectively implemented. We will also review the policy and management system regularly to ensure that environmental, health, safety and quality objectives will be achieved.

In all of the above, we seek and expect the involvement and contribution of our employees, and strive for continual improvement.



Eric Chong
Siemens Ltd.
President & CEO

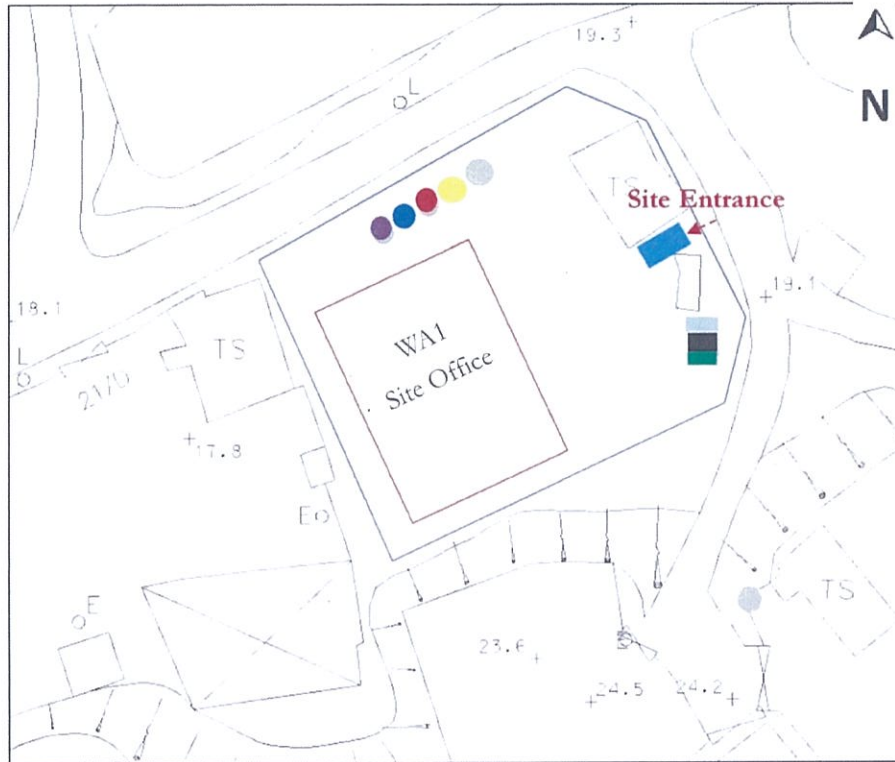


Shawn Shen
Siemens Ltd.
Chief Financial Officer









Appendix 2.

Site Layout Plan

Environmental Facilities Layout Plan (WA1 Site Office)



Legend:

-  WA1 Site Office
-  Paper Recycle Bin
-  Plastics Recycle Bin
-  Metals Recycle Bin
-  Chemical Waste Storage Area
-  Recycle materials Storage Area
-  Non-inert C&D waste Storage Area
-  Inert C&D waste Storage Area
-  Wheel Washing



Key Plan
WA1 Site Office
Kwan Tei North Tsuen

Appendix 3.

Waste Flow Table

Name of Department CEDD

Contract No. NE_2014_02

Monthly Summary Waste Flow Table for 2017

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper, cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300kg)	(m ³ 300kg)	(m ³ 300kg)	(m ³ 300kg)	(m ³ 300m ³)
2014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jan-17	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Feb-17	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mar-17											
Apr-17											
May-17											
Jun-17											
Jul-16											
Aug-17											
Sep-17											
Oct-17											
Nov-17											
Dec-17											
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper, cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300m ³)	(m ³ 300kg)	(m ³ 300kg)	(m ³ 300kg)	(m ³ 300kg)	(m ³ 300m ³)
0.500	0.000	0.000	0.000	0.500	0.000	0.500	0.200	0.000	0.000	0.200

- Notes:
- (1) The performance targets are given in PS Clause 1.84.14)
 - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Sites
 - (3) Plastics refer to plastic bottles, containers, plastic sheets from packaging materials
 - (4) Estimate 6.5m³ capacity per dump truck

Appendix 4.

Daily Record Summary

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the "Site"
 "每日記錄摘要" 記錄每日由"地點"所積存的建築物料

- (1) Contract no. & title: 合約編號及名稱: _____
 (2) Date of disposal: 日期: _____
 (3) Disposal ground (s) designated in the Contract or directed by the Architect/Engineer: 合約指定或建築師/工程師指示收廢處: (a) _____
 (b) Others: 其他: _____

(4) Approved alternative disposal grounds: 另可接受的收廢處: _____

CHIT/ DDF no. 車牌/廢物車牌號碼	Vehicle registration mark 車輛登記號碼	Approx. vol (e.g. Full/Three Quarter/Full/One quarter) 大約承載量 (例如全、3/4、半、1/4)	C&D materials Type (e.g. inert or non-inert) 建築物料種類 (例如惰性或非惰性)	Disposal ground 收廢處	Signature & Name of the Contractor's Designated person before departure 於離開時簽名、承辦商的指定人姓名及簽名	Departure time from "Site" 離開地點時間	Signature & name of the Architect/Engineer's supervisory staff before departure or other times as agreed between the Architect/Engineer's Representative and the Contractor 建築師/工程師代表與承辦商之間所協定之簽名及姓名	Actual disposal ground 真正收廢處	Arrival time at disposal ground 抵達收廢處時間	Remarks 備註

← Part 1 甲部 → ← Part 2 乙部 →

Submitted by 提交: _____
 Signature 簽名: _____
 Date 日期: _____
 Received by 接收: _____
 Post 職位: _____
 Date & Time 日期及時間: _____

Name of Contractor's Designated Person
承辦商的指定人姓名: _____

Name and signature of the Architect/Engineer's staff
建築師/工程師簽名及姓名: _____

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

2 Part 1 甲部 The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect/Engineer's Representative. 承辦商應以甲部兩份，正本由建築師/工程師代表持有

3 Part 2 乙部 The Contractor shall complete Part 2 and submit the whole Summary to the Architect/Engineer's Representative within 1 working day after the records are posted at the EPD web-site. 承辦商須以乙部及將整份摘要送交建築師/工程師代表，在記錄張貼於 EPD 網頁後 1 個工作天內提交給建築師/工程師代表

*Delete "Site" and substitute "Site" for term contracts 定期合約刪去"地點" 刪去及以"地點"代替