

**PARTICULAR SPECIFICATION PS.G03**

**Environmental Management**

## **Particular Specification for Environmental Management**

### **1. General**

- (1) The Contractor shall prepare an Environmental Management Plan (EMP) in accordance with this Particular Specification (PS) for implementation on the Site to reduce environmental nuisances and construction and demolition (C&D) materials arising from Works, throughout the construction period. Irrespective of the measures proposed by the Contractor in the EMP, the Contractor shall not be absolved from his liability to satisfy in full all statutory requirements and requirements in this PS on Environmental Management.
- (2) Organization
  - (a) The Contractor shall assign a person as the Environmental Officer for overseeing all the environmental matters of the Works. The minimum qualification of this person shall be -
    - (i) a corporate member of a professional institution (e.g. the Hong Kong Institution of Engineers (HKIE) and from a construction related discipline; the Hong Kong Institute of Architects; or the Hong Kong Institute of Surveyors etc.); or
    - (ii) an associate member of the HKIE in the Environmental Discipline or equivalent; or
    - (iii) a person in possession of a diploma or above in environmental studies or environmental engineering awarded by a local or overseas tertiary educational institution with 3 years of experience in environmental management; or
    - (iv) a staff of the Contractor having at least 2 years of construction site experience and completed the Environmental Officer Course run by the Construction Industry Council Training Academy (CICTA) or the Hong Kong Institute of Vocational Education, or the Environmental Protection, Safety and Health Course run by the School of Professional Education and Development (SPEED) of the Hong Kong Polytechnic University, or an equivalent certificate course on environmental studies or environmental engineering run by a tertiary educational institution as agreed by the Architect. For the purpose of this Contract, a person who is attending or has applied to attend the Environmental Officer Course mentioned above shall be deemed to have fulfilled the requirement of this sub-clause.

The Environmental Officer shall be present full time on the Site but not necessarily be working solely on environmental duties. Such person can be a Safety Officer if the Contract has employed more than one Safety Officer. Details and curriculum vitae of the person to be nominated as the Environmental Officer for the Contract shall be submitted to the Architect for approval.

- (b) In addition, the Contractor shall appoint at least one additional site staff ('Environmental Supervisor') to assist the Environmental Officer pursuant to clause 1(2)(a) above for the inspection, supervision and monitoring of the environmental performance of the Works. Where the number of the workers employed on the Works, whether in the employment of the Contractor or his sub-contractors, exceeds 50 in aggregate, the number of Environmental Supervisor shall be increased by one for every additional 50 persons or part thereof. The Environmental Supervisor and the Safety Supervisors pursuant to Particular Specification PS.G08 Part 1 Clause 6 can be the same person provided that he/they have attended or has been arranged to attend the training courses pursuant to clause 1(4)(b) below.
- (c) The duties of the Environmental Officer shall, for the purpose of environmental management under the Contract, include but without limitation to the followings:
- (i) Prepare, implement and update the Environmental Management Plan;
  - (ii) Advise on measures to be taken in the interest of environmental protection, and implement such measures;
  - (iii) Liaise on all matters relating to environmental monitoring and auditing;
  - (iv) Carry out inspections of the Site for identifying potential hazards to the environment, and to report findings with recommendations for corrective actions;
  - (v) Participate in the weekly environmental walks (whether this is combined with the weekly safety walk or otherwise) with the nominated site staff of the Architect, and to supervise and monitor the environmental performance on the Site;
  - (vi) Check and ensure that any polluting or potentially polluting situation is promptly rectified;
  - (vii) Attend Site Safety and Environmental Management Committee (SSEMC) meetings and Site Safety and Environmental Committee (SSEC) meetings;
  - (viii) Compile the monthly environmental report for submission to the Architect at least five working days before the SSEMC meetings;
  - (ix) Arrange and provide the environmental training including the site specific induction training and toolbox talks for the staff and workers on the Site, and to organize environmental promotional activities; and
  - (x) Advise the Contractor on the implementation of an environmental management system.

- (d) The duties of the Environmental Supervisor shall, for the purpose of environmental management under the Contract, include but without limitation to the following:
  - (i) Assist the Environmental Officer carrying out his duties;
  - (ii) Carry out daily site environmental inspections based on a checklist approved by the Architect's Representative, and to ensure that follow-up action have been taken promptly against defects and deficiencies identified;
  - (iii) Advise the Environmental Officer on the upkeeping of environmental performance and standards of the Site;
  - (iv) Attend the weekly environmental walk if required;
  - (v) Supervise and promote the execution of environmental work by the workers on the Site;
  - (vi) Attend SSEMC meetings and SSEC meetings; and
  - (vii) Conduct toolbox talks as assigned by the Contractor's Agent after acquiring the necessary qualifications.
  
- (3) Performance Monitoring
  - (a) The Contractor shall arrange weekly environmental walk to be attended by the Environmental Officer, the Contractor's Agent, and the Architect or his delegate to inspect the Site, checking that the environmental performance of the Site is satisfactory and in compliance with the requirements under the Contract and EMP. The places to be inspected in the weekly environmental walk shall be determined by the Architect or his delegate.
  - (b) The Contractor may arrange the weekly environmental walk to be carried out along with the weekly safety walk or other site inspections subject to the agreement of the Architect. The weekly environmental walks conducted under this clause are entirely without prejudice to and do not relieve any of the Contractor's responsibility to carry out regular inspections to upkeep the environmental performance of the Site as required by the statute or any other clauses under this Contract.
  - (c) The Contractor shall prepare and agree with the Architect a comprehensive checklist for use in weekly environmental walk. The checklist will form the basis for assessing the satisfactory environmental performance of the Contractor on the Site. Any defects or deficiencies identified in the weekly environmental walk shall be duly recorded in a summary table, a proforma of which is attached at Annex 1. More than one table shall be used for recording the defects or deficiencies if the weekly environmental walk for the week is carried out by more than one inspection team.
  - (d) Immediately after the weekly environmental walk, the summary table shall be agreed and signed by the Contractor's representative and the Architect or his delegate attending the weekly environmental walk, and a copy should be kept by the Architect. The Contractor shall take prompt action to rectify the deficiencies identified and shall report the status of rectification actions in the forthcoming weekly environmental walk or the Site Safety and Environmental Management Committee meeting whichever comes first.

- (e) The following items should be included in the agenda for discussion at every SSEMC meeting and SSEC meeting, or other established channels for performance monitoring as agreed by the Architect:
  - (i) Review the sufficiency of the measures in the EMP and proposals for improvement;
  - (ii) Monitor the Contractor's environmental performance and achievement with reference to EMP;
  - (iii) Assess the effectiveness of EMP taking into account the Contractor's environmental performance and achievement; and
  - (iv) Monitor the follow-up action by the Contractor on the defects and deficiencies identified in weekly inspections.
  
- (4) Environmental Training
  - (a) The Contractor shall ensure that all site management staff in his employment on the Works shall have attended and completed the "Environmental Management Course for Construction Managers" run by CICTA or similar training institutions as agreed by the Architect. For the purpose of this sub-clause, site management staff include the Contractor's Agent, project managers etc. If any one of the site management has not attend the course, the Contractor shall arrange such staff to attend the required environmental course within 14 days from the date of employment of such staff on the Site, and to complete the training within six months from the said date.
  
  - (b) The Contractor shall ensure that the Environmental Supervisor pursuant to clause 1(2)(b) shall have attended and completed the "Environmental Protection Course for Environmental Supervisors" or equivalent organized by CICTA or similar training institutions as agreed by the Architect. If any person who has not attended the course, the Contractor shall arrange such staff to attend the required environmental training within 14 days from the date of employment of such staff on the Site, and to complete the training within six months from the said date. If the Environmental Supervisor had completed the "Environmental Protection Course for Construction Supervisors" previously organized by CICTA, the person shall deem to have fulfilled the requirement of this sub-clause.
  
  - (c) Pursuant to Particular Specification PS.G08 Part 1 Clause 8, the Contractor shall ensure that the site specific induction training cover environmental management in addition to safety for all staff and workers employed for the Works or in connection with the Contract, whether in the employment of the Contractor or his sub-contractors. The environmental part of the induction training shall be delivered by the Environmental Officer or Environmental Supervisor or the Assigned Person, as applicable. The training content should cover subjects such as organization structure, duties and responsibilities, measures, targets, in-house rules and regulations etc. The duration of the site specific induction training under Particular Specification PS.G08 Part 1 Clause 8 shall be extended by at least 15 minutes to cover the necessary subjects on environmental management.

- (d) Pursuant to Particular Specification PS.G08 Part 1 Clause 8, the Contractor shall provide toolbox talks for workers on environmental nuisance abatement and waste management in addition to safety and health. The frequency of training and the contents of the tool box training shall be subject to the approval of the Architect as in Particular Specification PS.G08 Part 1 Clause 8.

(5) Reporting

The Contractor shall submit a monthly report on environmental management for discussion in the SSEMC meeting. The monthly report shall be prepared by the Environmental Officer as mentioned in clause 1(2)(a) and duly endorsed by the Contractor's Agent containing the following information:

- (a) A summary of pollution incidents and remedies comprising:
  - (i) complaints
  - (ii) abatement notices issued by EPD
  - (iii) offences spotted by EPD during inspections
  - (iv) summonses of environmental offences
- (b) A list of major forthcoming activities in the next two months which will likely have environmental impacts and nuisances to the surroundings and the control measures in mitigation;
- (c) The training programme for the next month and the records of training arranged/conducted in the previous month pursuant to clause 1(4) above;
- (d) The updated organization chart on environmental management;
- (e) A summary of defects and deficiencies identified during inspections and weekly environmental walks and the follow-up actions and remedies taken to prevent recurrence.

## **2. Air Pollution Abatement**

- (1) The Contractor shall ensure that dusty materials, including excavated materials, building debris and construction materials which are dusty by their nature, are properly covered by tarpaulin or other approved means. When dusty construction activities such as demolition work, drilling work, excavation in rock or artificial hard materials etc. are carried out in close proximity to the public, the Contractor shall provide dust abatement measures to the satisfaction of the Architect. Such measures shall include where appropriate screens or enclosures, water spraying system or the fitting of vacuum cleaning devices to pneumatic or power driven drilling, cutting and polishing machines, etc.
- (2) Where the public will be affected by exhaust fumes or smoke emission from any Constructional Plant or construction activities (e.g. welding) in the Site, such Constructional Plant or construction activities shall be shielded by a screen. Such screen shall be at least 1.8m in height, incombustible and shall be approved by the Architect.
- (3) The Contractor shall provide wheel washing system at all exit points of the Site, comprising high-pressure water jets, heavy duty metal grating capable for supporting the heaviest vehicles and a trough for collecting wastewater etc., in accordance with the specification given in Part A, Annex 2 to this PS.
- (4) All dump trucks entering or leaving the Site shall be provided with mechanical covers in good service condition in accordance with the specification given in Part B, Annex 2 to this PS.
- (5) For Constructional Plant driven by internal combustion engines, the Contractor shall ensure that the smoke emission from the plant shall not exceed Shade 1 on the Ringelmann Chart continuously for 30 seconds at any time.
- (6) Ultra-low-sulphur diesel (ULSD) (defined as diesel fuel containing not more than 0.005% by weight of sulphur) shall be used in all diesel-operated Constructional Plant on the Site pursuant to SCC Clause SCC98. The Contractor shall demonstrate his compliance by maintaining a summary record of ULSD pursuant to SCC clause SCC98. A proforma of the summary record is attached at Annex 3 to this PS.
- (7) Where there is practical difficulty in implementing any air pollution abatement measures specified above, the Contractor shall submit alternative proposals for the approval of the Architect before the work commences. The Architect or his Representative shall have the power to order the removal of any person who, or Constructional Plant or equipment which, fails to comply with the requirements under this PS clause off Site.

## **3. Noise Pollution Abatement**

- (1) The Contractor shall adopt the following noise abatement practices:
  - (a) Use non-percussive pile driving methods such as hydraulic hammer, vibration or jacking method for installing or extracting sheet piles;
  - (b) Use non-percussive equipment such as hydraulic crusher, sawing, coring machines etc. for demolition and concrete breaking work;
  - (c) Close all hoods, cover panels and inspection hatches of powered mechanical plant such as generators, air compressors etc. during operation;

- (d) Provide noise dampening materials inside and outside refuse chutes during building construction; and
  - (e) Fit mufflers or silencers, and dampening layer with steel collars to hand held pneumatic breakers.
- (2) Where percussive breakers are used, the Contractor shall enclose/wrap the breaker tip with sound insulating material to reduce the noise. This requirement is not applicable to works under emergency, or with prior agreement from the Architect that the provision of such is not necessary or not practicable under a given site condition.
- (3) Where the noise level measured at the noise sensitive receivers (NSR) exceeds 75 dB(A) (Leq 30 min) for domestic premises, and 70 dB(A) (Leq 30 min) for schools or 65 dB(A) during school examinations, the Contractor shall provide an acoustic screen or enclosure to shield the public or NSR from the noisy activity at source or adopt quiet process/plant, except for works under emergency or with the prior agreement of the Architect that the provision of such is not necessary. The acoustic screen or enclosure shall be made of incombustible, sound insulating material with performance such that the noise level measured at the NSR do not exceed the limits as mentioned in this sub-clause. The detailed information including the size and form of the screen or enclosure shall be proposed by the Contractor and submitted to the Architect for approval before the work commences. The acoustic screen or enclosure shall be securely fixed at the base to avoid overturning. Notwithstanding any approval given, the Contractor shall be fully liable for his design in all respects.

#### **4. Wastewater Pollution Abatement**

- (1) The Contractor shall minimize the generation of wastewater from the Site through the following means:
- (a) Prevent surface run-off from washing across the Site and spilling over to areas outside of the Site;
  - (b) Minimize the exposure of soil on the Site after excavation and backfilling where applicable and prevent the washout of soil or similar materials from the Site;
  - (c) Minimize water consumption;
- (2) The Contractor shall also provide on Site an effective drainage system for proper control of surface run-off, and cover all exposed surfaces of soil slopes to prevent soil erosion.

#### **5. Waste Management**

- (1) All C&D materials arising from or in connection with the Works shall be sorted on the Site to recover reusable and/or recyclable materials. For the avoidance of doubt, C&D materials means both inert and non-inert materials generated from construction and demolition activities. The inert portion of the C&D materials includes soil, building debris, broken rock, concrete, etc., and the non-inert portion comprises timber, paper, plastics, general refuse, etc..

- (2) Unless otherwise stated, all surplus C&D materials arising from or in connection with the Works shall become the property of the Contractor when it is removed from the Site. The Contractor shall promptly remove all sorted and processed surplus materials arising from or in connection with the Works from the Site to minimise temporary stockpiling on the Site.
- (3) On-site Sorting of C&D Materials
- (a) The Contractor shall devise a system for on-site sorting of C&D materials. The system shall include the identification of the source of generation, estimated quantity, arrangement for on-site sorting and/or collection, temporary storage areas, frequency of collection by recycling contractors or frequency of removal off the Site, etc..
- (b) The Contractor shall sort the materials at source into:
- (i) hard rock and large broken concrete suitable for reuse on the Site or recycling at a designated location (see sub-clause(c) below);
  - (ii) metals;
  - (iii) paper and plastics;
  - (iv) chemical waste;
  - (v) materials suitable for disposal at public fill reception facilities, sorting facilities and landfills/outlying islands transfer facilities. Disposal at the sorting facilities should first be approved by the Architect; and
  - (vi) bituminous material for separate disposal in accordance with the Contract.
- (c) The Contractor shall pay particular attention to hard rock and large broken concrete generated from demolition or road improvement works and deliver the materials to Tuen Mun Area 38 Fill Bank or a location as notified by the Architect.
- (d) Equipment and material packaging (i.e. paper and cardboard) shall be recovered, properly stockpiled in dry and covered condition to prevent cross contamination by other C&D materials. The Contractor shall pay particular attention to avoid cross contamination in the course of collecting paper for recycling.
- (e) The Contractor shall ensure the materials disposed of at public fill reception facilities, sorting facilities, and landfills/outlying islands transfer facilities, comply with their respective requirements under Schedule 6 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354) and be fully liable for all non-compliance. The Contractor shall also ensure that any bituminous material to be cleared away or disposed of shall be separated from other C&D materials at source and are separately delivered to and disposed of at the public fill reception facility specified in the Contract or as directed by the Architect.
- (f) The Contractor shall identify and provide sufficient space for temporary storage of C&D materials to facilitate collection and/or sorting on the Site. The space provided shall commensurate with the estimated quantity for each type of C&D materials generated on the Site.
- (g) Except for those inert C&D materials to be reused on the Site, the Contractor shall remove all other C&D materials off the Site as soon as practicable in order to optimize the use of the on-site storage space.

- (h) The Contractor shall make arrangements with potential recycling contractors to facilitate that recyclable materials sorted from the Site are collected with reasonable care.
  - (i) The Contractor shall establish a system for proper handling and storage of chemical waste generated from the Site, and arrange collection and disposal of such chemical waste by specialist contractors.
  - (j) The Contractor shall carry out thorough sorting of C&D materials generated from demolition works for recovering of broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fittings/materials that have established recycling outlets.
- (4) Waste Flow Table (WFT )
- (a) The Contractor shall establish a mechanism to record the quantities of C&D materials generated each month, using the **monthly** summary “Waste Flow Table” (WFT) as given at Annex 4 attached. The Contractor shall complete the monthly summary WFT, and submit it to the Architect’s Representative together with the updated sections of EMP (if any) by not later than the 15<sup>th</sup> day of each month following the month reported on, or if it is a General Holiday, the day following the General Holiday.
- (5) Control the Use of Timbers
- (a) The Contractor shall avoid, reduce or minimize the use of timber in Temporary Works construction as far as possible. Where the Contractor has to use timber for a Temporary Works construction process/activity with an estimated quantity exceeding 300m<sup>3</sup>, he should submit a method statement to the Architect for agreement prior to commencement of the relevant Temporary Works.
  - (b) The method statement should include the justification for and the measures taken to minimize the use of timber in the said Temporary Works. In addition, the Contractor shall provide a summary table containing the description, justification and the estimated quantity for every work process/activity requiring the use of timber for Temporary Works construction irrespective of the quantity of timber used. A proforma of the summary table is shown in Annex 5 attached.
  - (c) The Contractor shall update the summary table on the use of timber for Temporary Works construction, and submit it to the Architect’s Representative together with the monthly summary WFT for monitoring and review by not later than the 15<sup>th</sup> day of each month, or if it is a General Holiday, the day following the General Holiday. The Contractor shall draw the attention of the Architect’s Representative to those work processes/activities for which the estimated quantities have been revised.
- (6) Recording
- (a) The Contractor shall record the quantities of all the recyclable materials before removal off the Site by the recycling contractors, and include the details in the WFT for submission to the Architect's Representative pursuant to clause 5(4)(a).

- (b) The Contractor shall establish a comprehensive register of the Disposal Delivery Form pursuant to Particular Specification PS.G02 Clause 1.5.1 for recording the disposal of C&D materials. The register shall also cover the recyclable materials removed by the recycling contractors off the Site.

## **6. Environmental Management Plan**

The Contractor shall submit the EMP for the Contract to the Architect in accordance with the SCC clauses SCC70(2) and SCC70(4). The EMP shall be signed before submission by both the Contractor's Agent and the Environmental Officer. The EMP shall include the following details categorised into four parts namely, general, nuisance abatement, waste management and records:

### PART A – GENERAL

#### (1) Environmental Management Policy

A policy statement setting out the management's approach, commitments, targets and measures for environmental and waste management of the Contract; it shall -

- (a) be signed by the managing director of the Contractor, or where the Contractor is a joint venture (where incorporated or unincorporated) the managing director of each participant of the joint venture;
- (b) state the Contractor's policy and strategy in promoting and implementing the Contractor's environmental management including waste management on the Site;
- (c) commit to provide sufficient resources and facilities for the implementation on environmental nuisance abatement and waste management;
- (d) commit to obtain and renew the necessary environmental licences, registrations and permits, and comply with the relevant statutory requirements and licensing standards.
- (e) commit to prevent pollution;
- (f) state the targets (if any) to be achieved in reducing or minimizing environmental nuisances and generation of C&D materials;
- (g) be communicated to all levels of persons involved in the Works; and
- (h) be dated and reviewed periodically for continuous improvements.

(2) Organizational Structure for Environmental Management

The organizational structure shall be illustrative graphically, showing the manpower resources to implement the EMP; it shall include:

- (a) The Environmental Officer appointed pursuant to clause 1(2)(a) above;
- (b) The Environmental Supervisor appointed pursuant to clause 1(2)(b) above;
- (c) The line of communication on environmental management matters;
- (d) The name of the person (if different from the Environmental Officer in sub-clause (a) above) to be responsible for updating the EMP, the monthly summary WFT under PS clause 5(4), and the summary table for using timber in Temporary Works construction under PS clause 5(5); and
- (e) The names and telephone numbers of persons (including sub-contractors and workers' representatives if appropriate) together with their trade for each specific area of the Works which they are responsible for the supervision in implementation of EMP on the Site.

(3) Duties and Responsibilities

The duties and responsibilities of individuals and/or different levels of staff (including sub-contractors) involved in the implementation of EMP; it shall -

- (a) define clearly who shall be responsible for the provision of resources and facilities for the implementation of EMP;
- (b) define clearly the responsibilities among individuals and different levels of staff on environmental management; and
- (c) state the powers vested in the Environmental Officer to enable him to discharge his/her duties in the proper implementation of EMP on the Site.

(4) Environmental Training

- (a) The requirements and arrangements for training on environmental and waste management for all staff covering:
  - (i) site managerial staff;
  - (ii) site supervisory staff; and
  - (iii) workers.
- (b) The training materials on environmental and waste management to be included in the site-specific induction training and its refresher pursuant to PS clause 1(4)(c).
- (c) The topics of toolbox training to be provided to workers on environmental nuisance abatement and waste management.

(5) In-house Rules and Regulations

- (a) The in-house rules and regulations on environmental nuisance abatement and waste management including those specific rules and regulations laid down by the existing occupiers of the premises (in case of alteration works) for the Works to be carried out in areas that are occupied, partially occupied and/or controlled by the occupiers.
- (b) The arrangements made by the Contractor to ensure compliance with the in-house rules and regulations on environmental nuisance abatement and waste management are to be documented, reviewed, amended and communicated to all levels of staff working on the Site.
- (c) The means and disciplinary action to ensure implementation and enforcement of the in-house rules and regulations on environmental nuisance abatement and waste management.

(6) Committees

The arrangement for follow-up actions on environmental issues in the SSEMC meetings and SSEC meetings.

(7) Performance Monitoring

The arrangement to establish procedures for monitoring the environmental performance on the Site including identification, recording and reporting of non-compliance with the EMP and their rectification; they shall include:

- (a) Planning and review of the frequency, coverage and extent of inspections conducted by different levels of site management and supervisory staff, and senior management from the headquarters;
- (b) Development of comprehensive checklists for use in the inspections, and a system for reporting of non-compliance identified and monitoring of the corrective actions taken by the appropriate staff; and
- (c) Compliance with all self-monitoring requirements in the contract including licenses or permits.

(8) Promotion

The methods of promoting and maintaining the awareness on environmental nuisance abatement and waste management amongst all persons on the Site; they shall include:

- (a) Display of the company's environmental policy, non-compliance statistics, posters and signs at prominent locations;
- (b) Talks and campaigns, and distribution of safety bulletins or newsletters drawing attention to the particular environmental issues; and
- (c) Procedure for recognition and commending those site personnel, teams or sub-contractors with good performance on environmental nuisance abatement and waste management.

- (9) Review of Requirements
- (a) Arrangement for identification of potential environmental nuisance and review on the performance on environmental nuisance abatement and waste management measures;
  - (b) Location plan and inventory of nearby sensitive receivers or features (including residents, watercourse and natural environment) likely to be affected by the construction activities;
  - (c) Location plan and inventory of nearby major environmental protection fixtures/pollutant discharge points and environmental monitoring stations; and
  - (d) Emergency response plan of environmental incidents.

PART B – ENVIRONMENTAL NUISANCE ABATEMENT

(10) Air pollution abatement

Arrangement and details of the air pollution abatement measures; it shall include:

- (a) List of activities on the Site that will cause air pollution;
- (b) Specification and technical details of air pollution abatement measures pursuant to sub-clause (a) above for covering the activities as specified in PS clause 2 where appropriate;
- (c) Construction details of the dust/smoke screen to be provided for the Works where the public will be affected, pursuant to PS clause 2;
- (d) System for monitoring the effectiveness and efficiency of the air pollution abatement measures implemented on the Site; and
- (e) System for recording and controlling the use of ULSD for all diesel-operated Construction Plants on the Site.

(11) Noise pollution abatement

Arrangement and details of the noise pollution abatement measures; it shall include:

- (a) List of activities on the Site that will cause noise pollution;
- (b) Specification and technical details of the noise pollution abatement measures for each activity pursuant to sub-clause (a) above;
- (c) Arrangement for regular monitoring of noise levels at noise sensitive receivers;
- (d) Construction details of the acoustic screens or enclosures to be provided for the Works where the public will be affected pursuant to PS clause 3 where appropriate;
- (e) Mounting details of sound insulating material for percussion breakers of excavators pursuant to the PS clause 3 where appropriate;
- (f) System for monitoring the effectiveness and efficiency of the noise pollution abatement measures implemented on the Site; and
- (g) Inventory of noise emission labels for QPME (if any) used on the Site.

(12) Wastewater pollution abatement

Arrangements and details of the wastewater pollution abatement measures; they shall include:

- (a) Means to prevent surface run-off from washing across the Site and egress of surface run-off from the Site where applicable;
- (b) Layout plan for collection of surface run-off and, where applicable, the provision for its treatment before discharge;
- (c) Arrangement to minimize the exposure of soil on the Site after excavation and backfilling where applicable and prevent the washout of soil or similar materials from the Site;
- (d) Method of disposal of sewage effluent from the Site.

PART C – WASTE MANAGEMENT

(13) Waste Reduction Measures

Arrangement and details of the waste reduction measures; it shall include:

- (a) List of work processes or activities that will generate C&D materials during the Works;
- (b) Measures to reduce/minimize the generation of C&D materials for the Contract through proper planning of works and good site management such as minimizing over-ordering, avoiding cross contamination to reusable and/or recyclable materials collected, and forward planning for removal, storage and collection of disposal materials;
- (c) System for proper control of using timbers in Temporary Works construction; and
- (d) Pre-identification of reusable/recyclable materials, such as hard rocks, broken concrete, metallic waste, timber, paper/cardboard packaging etc., to facilitate on-site sorting of the materials.

(14) Waste Targets

- (a) The targets set for the Contract, which should cover the followings:
  - (i) All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
  - (ii) All metallic waste to be recovered for collection by recycling contractors;
  - (iii) All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
  - (iv) All chemical wastes to be collected and properly disposed of by specialist contractors; and
  - (v) All demolition 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.
- (b) The target set for reducing and controlling the use of timbers in the Temporary Works.

- (15) On-site sorting of C&D Materials
- (a) The system devised for on-site sorting for each type of C&D materials arising from or in connection with the Works, and the resources and facilities to be provided for effective implementation of the system on the Site pursuant to PS clause 5(3);
  - (b) The layout plan showing the temporary storage of C&D materials on the Site; and
  - (c) The arrangement for collection of recyclable materials by recycling contractors where appropriate.
- (16) Waste Flow
- (a) The arrangement for verifying the quantities of C&D materials reused, recycled and/or removed from the Site for the preparation of the monthly summary WFT at Annex 4, pursuant to PS clause 5(4).

PART D – RECORDS

(17) Sample Proforma for Recording

Sample proforma shall be provided for the following:

- (a) Inventory of licences, registration particulars and permits;
- (b) Inspection reports for weekly environmental walks;
- (c) Inventory of complaints, inspections by enforcement authorities, abatement notices, environmental offences and convictions;
- (d) Summary record of non-compliance of air, noise and wastewater pollution incidents;
- (e) Summary record of delivery notes for ordering of ULSD from oil companies and the replenishment of such fuel to individual diesel-operated construction plant and equipment on the Site;
- (f) Monthly Summary of Waste Flow Table;
- (g) Summary record of chemical waste disposal;
- (h) Summary record of trip ticket system;
- (i) Records of environmental training;
- (j) Records of timber usage;
- (k) Summary record of quality powered mechanical equipment (QPME) used on the Site including their servicing period.

**Weekly Environmental Walk Inspection Report**

**Summary of Follow-up Actions**

**Part I:**

Contract No. SS T320 Contract Title Construction of Local Open Space at Chung Yee Street, Kowloon City District

Date of Inspection \_\_\_\_\_ Time \_\_\_\_\_

Persons making the inspection:

	<u>Name in Block Letters</u>	<u>Designation</u>	<u>Signature</u>
1.		Contractor's Agent (or his representative if agreed by A)	
2.		Environmental Officer (or Environmental Supervisor if agreed by A)	
3.		Architect's nominated site representative	
4.			

Item No.	Location	Situation requiring follow up action	Agreed Due Date for Completion	Date Completed	Remarks
1.					
2.					
3.					
4.					
5.					
6.					

**To be signed at the end of inspection:**

**The Contractor's performance on nuisance abatement and waste management \*is/is not to the satisfaction of the Architect's nominated site representative at the time of inspection. (\* delete as appropriate)**

Architect's nominated site representative \_\_\_\_\_ Contractor's Agent or his representative \_\_\_\_\_

**Part II:** (To be countersigned after ALL actions are completed)

Contractor's Environmental Officer \_\_\_\_\_ Architect's Representative \_\_\_\_\_  
 Date \_\_\_\_\_ Date \_\_\_\_\_

(Note: No payment will be made for the item of "Weekly Environmental Walk" under the PFSES if the Contractor's site environmental and waste management performance is not satisfactory, or any one of the follow up actions is not completed on or before the "Agreed Due Date for Completion".)

**PART A - PARTICULAR SPECIFICATION FOR WHEEL WASHING SYSTEM**

1. Wheel washing system with facilities as detailed below, shall be provided at all exit points where vehicles will be leaving the Site.
2. The facilities shall have the following characteristics:
  - (a) A space for the vehicle to stop where the washing is being done, with heavy duty metal grating capable of taking the heaviest vehicles envisaged for the Site, with a trough below for collecting wastewater, etc.;
  - (b) A system of high pressure jets by which the water is sprayed on to all exposed parts of each of all the wheels of the vehicle simultaneously;
  - (c) A pump to increase the water pressure so that the water impinges on the wheels at a reasonable force;
  - (d) Collection of wastewater in the vicinity of the washing facility to the wastewater treatment facilities of the Site, if any.
  - (e) Use of recycled water from the Site for the washing facilities.
3. The result of washing shall be to the satisfaction of the Architect or his Representative. The Contractor shall submit the design of the facilities to the Architect for information prior to its set up on the Site, and shall maintain the facilities to satisfy the requirements in this specification.

**PART B - PARTICULAR SPECIFICATION FOR THE MECHANICAL DUMP TRUCK COVERS**

1. (a) All dump trucks (i.e. goods vehicles of gross vehicle weight equal to or more than 16 tonnes, fitted with a dump bed) leaving the Site carrying dusty materials shall be fitted with a mechanical cover in good service condition which covers the dump bed. Such dump truck covers shall comply with the following:
  - (i) The cover should be constructed of durable materials and suitable components in good condition. The covering materials should be effective in preventing dust emissions. The cover should be power-operated with manual backup. Except in the manual backup mode, the cover should only be operable inside the driving cabin, if applicable.
  - (ii) The cover system shall incorporate controls to ensure safety in operation. The cover shall be inoperable unless the vehicle has come to a standstill, and after the hand brake is on. A warning system, consisting of flashing amber lights and audible alarm, shall be activated automatically when the cover is being operated inside the driving cabin. The warning system shall be visible and audible from both inside (by a indicator light or the like if necessary) and outside the driving cabin. A locking system shall be in place to prevent accidental opening of the cover, if applicable.
  - (iii) The cover shall be able to withstand strong winds under normal circumstances. After the cover to the dump bed is closed, any gap left on the system of enclosure shall be less than 25 mm wide measured in a direction across the gap as far as practicable. Any remaining gap shall be sealed up tightly with suitable materials of sufficient length to bridge across the gap as far as practicable. In addition, the cover shall not accumulate any significant amount of dust or debris which may obstruct its operation. The gross vehicle weight and maximum dimensions of the truck after fitted with the cover and associated accessories shall comply with the relevant legislation.
- (b) The Contractor shall be responsible for selecting the design of mechanical cover satisfying the above requirements.
- (c) The Architect or his Representative shall have the power to: -
  - (i) refuse entry into the Site any dump truck that fails to meet this specification; and
  - (ii) require any loaded dump truck to unload its contents before leaving the Site if its dump bed and cover is found not to comply with the above requirements after loading.

Provided always that approval for leaving the Site of a loaded dump truck by the Architect or his site supervisory staff shall not relieve the Contractor of his obligation to comply with the relevant legislation, and the Employer shall not be liable for any loss or damage sustained by the Contractor or the truck drivers or truck owners arising from or in connection with any offence committed by the Contractor or the truck drivers or truck owners in relation to transportation of the C&D materials from the Site.

2. Vehicles other than 'dump trucks' carrying dusty materials away from the Site may use means other than mechanical covers to cover their dusty materials, provided that the vehicle shall have properly fitted side boards and tailboards, with the dusty materials loaded to a height not exceeding the height of side boards and tailboards, and covered by a tarpaulin or suitably impervious covering materials (as approved by the Architect or his Representative) in good condition. The covering shall be properly secured and extended at least 300 mm over the side boards and tailboards before leaving the Site.



Name of Department: ArchSD

Contract No.: \_\_\_\_\_ SS T320 \_\_\_\_\_

## Monthly Summary Waste Flow Table for \_\_\_\_\_ (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Bituminous Materials	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan												
Feb												
Mar												
Apr												
May												
June												
Sub-total												
July												
Aug												
Sept												
Oct												
Nov												
Dec												
Total												

- Notes:
- (1) The performance targets are given in PS Clause 6(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 Site.
  - (3) Please refer to plastic bottles / containers, plastic sheets / foam from packing materials.

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

Contract No.: SS T320

Contract Title: Construction of Local Open Space at Chung Yee Street, Kowloon City District

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

- Notes: (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.
- (b) The summary table shall be submitted to the Architect's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with the PS sub-clause 5(5).

- end -