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Dragages-China Habour-VSL Joint Venture
Site Office: Tung Chung Waterfront Road,
adjacent to Tung Chung New Development Pier,
New Territories, Hong Kong

By Mail
20 November 2013

Attn.: Mr. Chan Man (Project Director)

Dear Sir,

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

- **Waste Management Plan**

I refer to the revised waste management plan (Document Ref. No.: HKLR9 / DCV / ENV / 00119 / H) submitted via email dated 18 November 2013 for the captioned project.

I am pleased to inform you that I have no further comment on your proposal and agree to certify the above document in accordance with the EP (No. EP-352/2009/C), Condition 1.9 and 2.12.

Should you have any queries, please contact the undersigned at 2151 2088.

Yours faithfully,
Cinotech Consultants Ltd.

Dr. H.F. Chan
Environmental Team Leader

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

Technical Document

Document Ref. No.:

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Project Code						Issuer Code				Doc. Code				Sequential Number						Rev.

Document Title:

Waste Management Plan
(Version H)

	PREPARED BY:		INTERNAL REVIEW:		INTERNAL APPROVAL
COMPANY	DCVJV	DCVJV	DCVJV	DCVJV	DCVJV
NAME	Ashley AU	CHU Chung Sing	MA Chi Sing	WK POON	CHAN Man
POSITION	Assistant Environmental Officer	Environmental Officer	QSE Manager	Deputy Project Director	Project Director
SIGNATURE					
DATE	21/11/2013	21.11.2013	21/11/2013	21.11.2013	21.11.13

1.0 CONTENT

CONTENT

APPENDICES

2.0 DOCUMENT STATUS

2.1 **Details of Revision:**

Rev.	Rev. Date	Sections	Amendment Source and/or Details
A	21/9/2012	All	For the first submission to the SOR.
B	15/10/2012	Related text	Amended to incorporate the comments from SOR/IEC/ENPO via the email dated 12 October 2012.
C	23/11/2012	Appendix E	Amended to incorporate the comments from EPD. A summary table of estimated volume generated, reuse on- or off-site and the proposed disposal outlets is added.
D	11/12/2012	Appendix E	The proposed disposal outlet for Marine Pile Cap Excavation was updated EPD dated 29 November 2012.
E	7/1/2013	Sections 7.0 and 8.1 Section 8.5 & Appendix E	Amended to incorporate bentonite generated from piling works and its disposal option. Amended to incorporate the comments from the IEC via SOR's email on 21 December 2012.
F	19/7/2013	Section 8.5 & Appendix H, J & N	The Appendices were amended to reflect the actual situation.
G	18/9/2013	Section 3.1, 7.0, 9.3, Appendix E & J	Amended to incorporate the comments from SOR via the email dated 5 September 2013.
H	**18/11/2013**	**Section 8.5, 9.3 to 9.5, Appendix O, P, Q & R**	**Amended the text to reflect the current situation and to respond to the SOR comments via (214487/(HY/2011/09)/M25/160.00119/B 03409 dated 21 Oct 2013.**

3.0 INTRODUCTION

3.1 Purpose

The Waste Management Plan (WMP) has been developed in accordance with Condition 2.12 of the Environmental Permit (EP-352/2009/C) for the Highways Department Contract namely Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill.

The WMP shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and shall include the recommended mitigation measures on waste management in the EIA Report and associated contractual requirements. The WMP also describes the associated policy, organization, operating procedures and works instructions to be followed while our staff and sub-contractors / suppliers performing their duties.

3.2 Project Description

Highways Department commissioned the project "Hong Kong Link Road- Section between HKSAR Boundary and Scenic Hill" (hereinafter called the Project) with Contract No: HY/2011/09. Dragages -China Harbour-VSL Joint Venture (DCVJV) is awarded the Contract to undertake this Project. The scope of the Project works comprises the following major item:

(i) a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary (connecting with the HZMB Main Bridge) to the Scenic Hill (connecting with the tunnel under separate Contract No. HY/2011/03), of approximately 9.4km in length with a hard shoulder for each bound of carriageway and a utilities trough on the outer edge of each bound of viaducts;

(ii) a grade-separated turnaround facility located near San Shek Wan, composed of slip roads in the form of viaduct with single-lane carriageway bifurcated from the HKLR mainline with an elevated junction above the mainline;

(iii) provision of ancillary facilities including, but not limited to, meteorological enhancement measures including the provisioning of anemometers and modification of the wind profiler station at hillside of Sha Lo Wan, provisioning of a compensatory marine radar, and provisioning of security systems; and

(iv) associated civil, structural, geotechnical, marine, environmental protection, landscaping, drainage and highways electrical and mechanical (E&M) works, street lightings, traffic aids and sign gantries, marine navigational aids, ship impact protection system, water mains and fire hydrants, lightning protection system, structural health monitoring and maintenance management system (SHM&MMS), supervisory control and data acquisition (SCADA) system, as well as operation and maintenance provisions of viaducts, provisioning of facilities for installation of traffic control and surveillance system (TCSS), provisioning of facilities for installation of telecommunication cables/equipments and re provisioning works of affected existing facilities/utilities.

Cinotech Consultants Limited was commissioned by the DCVJV to undertake the EM&A works for the project and was appointed as the Environmental Team (ET). DCVJV applied to EPD at the contract commencement (31st May 2012) a billing account for C&D materials disposal and now an account 7015341 was assigned for the Project.

4.0 WASTE RELEVANT LEGAL GUIDELINES

The following environmental ordinances and regulations are relevant to waste management on the Site:

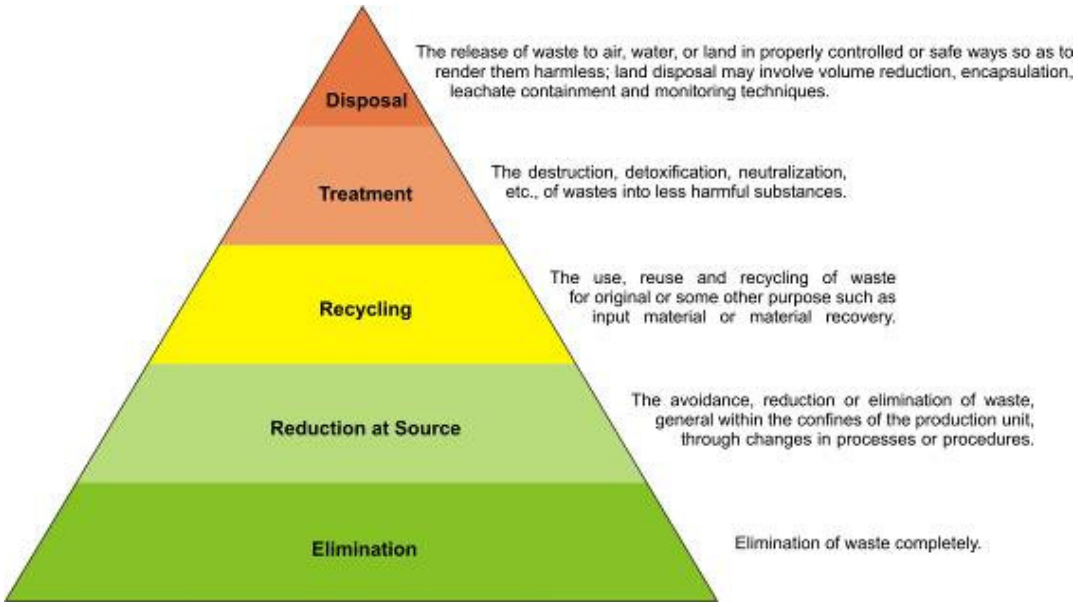
- Waste Disposal Ordinance, Cap. 354
- Waste Disposal (Chemical Waste)(General)Regulation
- Waste Disposal (Charge of Disposal of Construction Waste) Regulation
- Dumping at Sea Ordinance, Cap. 466
- Land (Miscellaneous Provisions) Ordinance, Cap. 28
- Public Health and Municipal Services Ordinance, Cap. 132
- Public Cleansing and Prevention of Nuisances Regulation

Other guideline documents include:

- Waste Disposal Plan for Hong Kong (December 1989)
- Chapter 9 Environment (1999), Hong Kong Planning Standards and Guidelines
- New Disposal Arrangements for Construction Waste (1992)
- Code of Practice on the Packaging, Labeling and Storage of Chemical Wastes (1992)
- Works Branch Technical Circular (WBTC) No. 32/92, The Use of Tropical Hard Wood on Construction Site
- WBTC No. 2/93, Public Dumps
- WBTC No. 2/93B, Public Filling Facilities
- WBTC No. 16/96, Wet Soil in Public Dumps
- WBTC No. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Projects
- Waste Reduction Framework Plan, 1998 to 2007
- WBTC No. 25/99, 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Subcommittee Papers
- WBTC No. 12/2000, Fill Management
- WBTC No. 19/2001, Metallic Site Hoardings and Signboards
- WBTC No. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness
- WBTC No. 11/2002, Control of Site Crusher
- WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates
- ETWBTC No. 33/2002, Management of C&D Material Including Rock
- ETWBTC No. 34/2002, Management of Dredged / Excavated Sediment
- ETWBTC No. 31/2004, Trip Ticket System for Disposal of C&D Materials
- ETWBTC No. 19/2005, Environmental Management of Construction Site
- DEVBTC No. 6/2010, Trip Ticket System for Disposal of C&D Materials

5.0 WASTE MANAGEMENT HIERARCHY

DCVJV will adopt a surplus material management hierarchy throughout the Works. The management options can be categorized in terms of preference from an environmental viewpoint. The options considered preferable will have the least impacts and are more sustainable in the long term. The hierarchy is illustrated below. It attempts to evaluate surplus material management practices and selects the best practical option since conceptually it makes sense to avoid producing C&D material rather than developing extensive treatment schemes. Good planning and site management practices also help minimizing over ordering or misuse of concrete, mortars and cement grout. The overall objective is to reduce and minimize the amount of surplus generated, hence reducing the costs of material handling and disposal.



6.0 SITE ORGANIZATION AND STAFF DUTIES

6.1 Organization Structure

The organisation structure for waste management is outlined in **Appendix A**. This chart gives the overall site management in relation to waste management issues. Details on the roles and duties of staffs responsible for implementation are outlined in the below section, which identifies the key parties with specific responsibilities.

The names and telephone numbers of persons responsible for the implementation and supervision of the Site Management Plan (SMP) are also listed in **Appendix A**. The information in the list will be updated continuously in line with the Project progress.

6.2 Roles and Responsibilities

Pursuant to Part 14 – Construction Specification, Section 25.25S(6)(a), DCVJV has appointed the Environmental Officer as the senior staff member fully responsible for implementing and overseeing the operation of the Trip Ticket System (TTS). The site agents and foremen are appointed to fill in and sign the Daily Record Summary (DRS) (**Appendix B**) properly before departure of dump trucks. In addition, there will be a skilled labour to man each exit from the Site for the purpose of ensuring that every truck carrying C&D materials leaving the Site bears a duly completed and signed chit or disposal delivery form (DDF) (**Appendix C**).

6.2.1 Project Director

He reports to the DCVJV Management Board for the overall undertaking of the Project and must ensure that sufficient resources are allocated for the TTS implementation.

6.2.2 Quality, Safety & Environmental (QSE) Manager

Reporting to the DCVJV senior managements on the environmental aspect, he will

- Develop the site environmental management system,
- Advise to the senior managements timely on waste management matters and the latest developments as well as prevailing legislative changes,
- Supervise the works of the environmental officer and his team,
- Attend site safety and environmental committee (SSEC) meetings, site safety and environmental management committee (SSEMC) meetings and independent audits,
- Review designs of site environmental facilities in method statements in relation to waste management.

6.2.3 Environmental Officer

The Environmental Officer works full-time on Site and he is assigned to oversee all waste management matters of the Works.

The duties of the Environmental Officer include the followings:

- Prepare, implement and update the SMP
- Advise on measures to be taken in the interest of waste management, and implement such measures
- Liaise on all matters relating to environmental monitoring and auditing
- Carry out inspections of the Site for identifying potential hazards to the environment, and to report findings with recommendations for corrective actions
- Participate in the weekly environmental walks with the nominated site staff of the Supervising Officer, and to supervise and monitor the waste management performance on the Site
- Check and ensure that any polluting or potentially polluting situation is promptly rectified
- Attend Site Safety and Environmental Management Committee (SSEMC) meetings and Site Safety and Environmental Committee (SSEC) meetings

- 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
- Establish a record system to register dispatching and returning of chits,
- Complete and submit the updated monthly summary "Waste Flow Table" together with the updated sections of EMP (if any) to the Supervising Officer by not later than the 15th day of each month,
- Submit the summary table for using timber in the construction of Temporary Works together with the updated sections of Environmental Management Plan (EMP) (if any) to the Supervising Officer by not later than the 15th day of each month.

The Environmental Officer is vested with the authority to act to ensure compliance with the statutory requirements. Where necessary, he will issue stop work order if he considers the work activity is causing pollution to the environment; and to remove any worker, who blatantly violates rules on environmental nuisance abatement, from the Site. Any order to stop work for reasons of environmental protection will be supported by a follow-up report to the Deputy Project Director / Project Director.

6.2.4 Assistant Environmental Officer

Assistant Environmental Officers will assist to the Environmental Officer to implement the TTS on site and ensure the effectiveness of site waste management.

The duties of the Assistant Environmental Officer, for the purpose of waste management and TTS implementation, include:

- Assist the Environmental Officer carrying out his duties,
- Carry out daily site environmental inspections to rectify defects and deficiencies identified,
- Advise the Environmental Officer on the up-keeping of waste management performance and standards of the Site,
- conduct toolbox talks,
- Supervise and maintain the internal record systems of chits and daily record summaries,
- Regularly retrieve disposal data from websites of EPD & CEDD,
- Attend SSEMC meetings and SSEC meetings.

6.2.5 Site Agent

A site agent is responsible for the following environmental duties:

- Undertake daily operation to implement the SMP,
- Ensure all waste is sorted, segregated, recycled or reused when applicable,
- Sign the chits and daily record summary sheets,
- Conduct environmental toolbox talks to raise waste disposal awareness amongst workers,
- Collaborate with the Assistant Environmental Officer in the implementation of TTS,
- Check the C&D material again to ensure the quality
- Ensure that each truck carrying C&D materials leaving the Site bears duly completed, signed/stamped CHIT/DDF,
- Record the CHIT/DDF no., the vehicle registration mark and the departure time of every truck leaving site carrying C&D materials.
- Ensure each truck driver wash their wheels and close the mechanical cover before leaving the Site.

6.2.6 General Foreman / Foreman

A general foreman / foreman is responsible for the following environmental duties:

- Report to the his supervisor, Assistant Environmental Officer or Environment Officer, as appropriate, any non-compliance of TTS,
- Carry out remedial works to rectify the non-compliance,

- Supervise and monitor the loading process,
- Ensure the quality of C&D material loaded onto the truck and make sure no overloading,
- Pass the duly competed, signed/stamped DDF/CHIT to the truck drivers,

6.2.7 Subcontractors

Subcontractors and their employees have a duty to carry out agreed waste management practices as instructed by the DCVJV. Every employee shall report promptly to project management any non-compliance of waste management and TTS. They must actively participate in and be in compliance with the DCVJV waste policy and TTS.

6.2.8 Environmental Team

The DCVJV has employed an independent Environmental Team (ET) to undertake environmental monitoring and audit during the construction of the Works. According to the EM&A Manual prepared by the ET, the responsibilities of the ET on the waste management and the TTS implementation are as follows:

- Conduct regular site environmental inspections to ensure site practices of waste handling in compliance of legislations and guidelines,
- Review the documentation procedures to ensure proper records being maintained and the procedure in compliance with the SMP.

The ET may also take the following duties in term of waste management on site:

- Liaise with other government departments or external parties, including IEC, EPD, regarding any environmental issues arising from the project
- Monitor various environmental parameters as required in the EM&A Manual
- Prepare reports, as specified in the EM&A Manual, in a timely manner and ensure the proper disposal records on site,
- investigate public complaints about waste management,
- Ensure the Event/Action Plan as stated in the EM&A report is implemented
- Advise on suitable mitigation measures in case of waste management deficiencies identified,
- Provide advice on any waste control or reduction measures, if necessary.

7.0 WASTE PRODUCING ACTIVITIES

The following table generally shows the work activities C&D materials / waste will be generated from the following site activities (though not exhaustive) during the Works: -

Work activities	**C&D materials / Waste to be generated**	
	Non-inert materials	**Inert materials**
Site clearance	Domestic rubbish, vegetation	Top soil
Site formation	Vegetation	Top soil, rock
Slope stabilization	Vegetation	Top soil, rocks, boulders
Bored pile construction (land section)	Vegetation	Top soil, rocks, boulders
Bored pile construction (marine section)	Marine sediment	Alluvium, spent bentonite
Broken or abandoned precast segments	Used re-bars	Broken concrete
Domestic activities on site	Domestic rubbish, batteries, spent papers, sewage	-

Sewage generated in the site offices will be diverted into public sewers and therefore there is no management issue. Portable toilets will be used for discrete and remote working areas, which are regularly replaced by our supplies.

8.0 DISPOSAL PROGRAMME

8.1 Prescribed Disposal Facilities

EPD has assigned the West New Territories (WENT) Landfill and Outlying Islands Transfer Facilities for the DCVJV to dispose of non-inert construction materials. The EPD letter to designate the prescribed disposal grounds is attached in **Appendix D**. DCVJV plans to go to WENT in most occasions. Among the Outlying Islands Transfer Facilities, Mui Wo Transfer Facility is the currently preferred disposal ground due to its close vicinity. Chits will be used for each disposal trip of non-inert C&D materials in WENT and the Outlying Islands Transfer Facilities.

For disposal of inert materials such as soil, rocks, boulders, alluvium and spent bentonite, DCVJV will deliver the materials to the neighbouring sites of Contracts HY/2010/02 HKBCF Reclamation and HY/2011/03 HZMB Section from Scenic Hill to HKBCF for filling purposes, as the preferred disposal grounds as stipulated in the Contract. DCVJV will liaise to the concerned parties through the Public Fill Coordination Committee that has been established under Contract No. HY/2010/02 to dispose the surplus of the inert C&D materials to Contract No. HY/2011/03 and / or Contract No. HY/2010/02 for the reuses of suitable C&D materials on their sites. For the disposal, DDF will be used for the inert materials disposal at these sites.

Under circumstances that the sites of Contract No. HY/2011/03 and Contract No. HY/2010/02 are unable to receive the inert materials for the filling purpose, DCVJV will apply to CEDD for the public fill reception facilities (PFRF) as a back-up option. The disposing materials including alluvium and bentonite will meet the PFRF requirements on material properties such as water content.

8.2 Monthly Disposal Programme

A monthly quantities of excavated materials to be generated during works has been estimated and the figures are shown in **Appendix E**. A table summarizing the estimated volume generated, reuse on- or off-site and the proposed disposal outlets is also presented in **Appendix E**. The estimated quantities, types of the C&D materials and corresponding disposal grounds will be updated monthly and indicated in the monthly programme for disposal of C&D materials, which will be reported to the SOR via submissions of monthly waste flow tables.

8.3 Internal Disposal and Control Measures to Track Movement of Materials

In cases of C&D materials generated in a site working area to be used in another area under the same Project, the types, quantities and purposes will be recorded by site agents and engineers on site and SOR will be informed of the details including the locations of work areas and transportation time to allow for the SOR's inspection. Internal tickets exclusively for such uses will be distributed to dump truck drivers, and duly completed and signed by foremen or site agents. The format of the internal transfer ticket is shown in **Appendix F**. The monthly quantities of the internal disposal will be recorded in waste flow tables and be submitted to SOR.

8.4 Alternative Disposal Ground

In order to make use of C&D materials generated by the Site, DCVJV will use the best endeavours to identify recycling facilities or other construction sites where such material can be used. Where DCVJV identifies such as recycling facility or a construction sites which can be used as an alternative disposal ground, we will obtain the written approval of the SOR, who will process the request expeditiously. In support of the request for approval, the following information will be provided:

- A detailed description of the alternative disposal ground, including location, lot number (where appropriate), location plan and photographs of the proposed alternative disposal grounds showing the surrounding environment and land use,
- Where the alternative disposal ground is a private construction site, a letter from each of the relevant authorities, such as AFCD, LandD and PlanD, to comment on suitability of the site under their respective purview, and a letter from the Authorized Person of the development to confirm:
  - The C&D materials for use in the development is acceptable,

- The land/pond filling in the proposed alternative disposal ground and the use of land so formed by the C&D materials are in conformity with the statutory town plan/lease conditions, and
- The SOR staff are allowed to enter the alternative ground to conduct inspections where necessary.

- Where the alternative disposal is a private recycling facility, it is on the recyclers' list for C&D materials recognized by EPD, as well as a letter from the operator to confirm the SOR's staff to enter the recycling facility to conduct inspections where necessary,
- where the alternative disposal ground is a construction site of Government (other than a government contract quarry), Hong Kong Housing Authority or Mass Transit Railway Corporation, a written consent from the project office of the alternative disposal ground to use the C&D materials generated from the Site,
- where the alternative disposal ground is a government contract quarry, a written consent from the Mines Division of Civil Engineering and Development Department to import the C&D materials generated from the Site,
- the estimated quantity and type of C&D materials to be used/processed in the alternative disposal ground and the approximate delivery programme, together with the name, post and specimen signature of the competent person to sign disposal tickets; and
- a system for transmitting disposal records from the alternative disposal ground to the SOR.

DCVJV will establish a surveillance system within the Site (as described in the following section) and at any alternative disposal grounds to check the disposal activities comply with requirements.

8.5 Disposal Grounds of Marine Sediment

The amount of marine sediments excavated from the Works shall be minimised as far as practicable e.g. only from the excavation of the foundation and the associated substructures such as the piles, pile caps and piers. In events that dredging/excavation of marine sediment are unavoidable, the Contractor shall handle/process such marine sediment in accordance with the procedures given in ETWB TCW No. 34/2002 (and the associated amendment versions).

The marine sediment to be generated from piling works will be undergone laboratory analysis during the GI stage to determine the categories in accordance with the *ETWBTC No. 34/2002, Management of Dredged / Excavated Sediment*. The contaminated sediment (Categories M and H) will be disposed of at the confined marine disposal facility at South of the Brothers - CMP 1. The uncontaminated sediment to be capped at East of Sha Chau – Pit IVc or Va and South of the Brothers - CMP 1, as indicated by the CEDD. DCVJV will contact the related authorities such as EPD and CEDD to request for the disposal allocations.

In cases that off-site disposal of marine sediment in Hong Kong Water required, DCVJV shall apply for the allocation of a sediment disposal site in the name of Highways Department of the HKSAR, and marine dumping permits under Dumping at Sea Ordinance (Cap. 466) (DASO) for the disposal of marine sediment at the designated disposal facilities in Hong Kong.

DCVJV will apply to the EPD for all valid permits and licences in accordance with only dispose of the marine sediment at the designated disposal facilities as directed by the Director of Environmental Protection and/or the Marine Fill Committee (MFC) unless otherwise agreed or ordered in writing by the Supervising Officer.

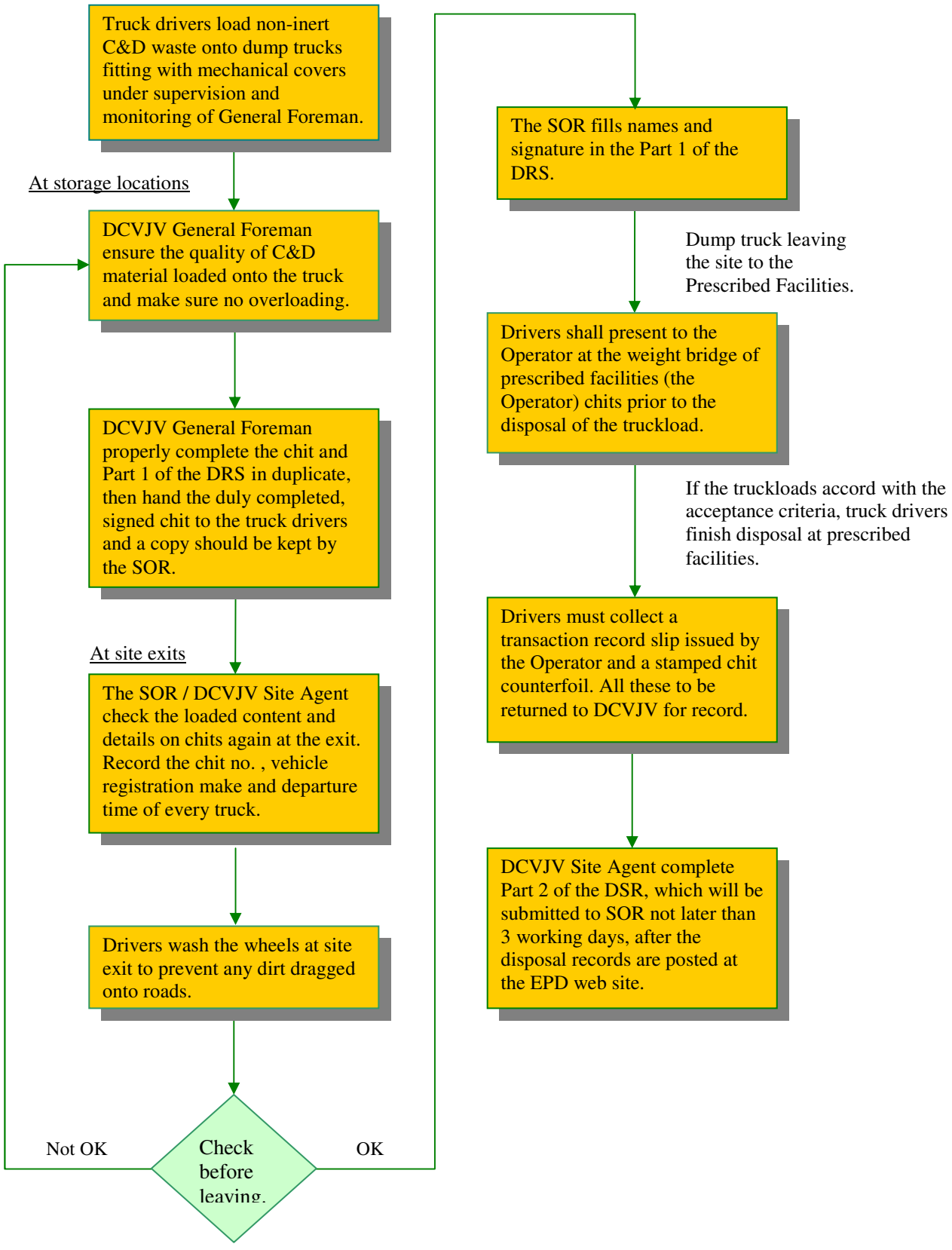
9.0 SITE PROCEDURES FOR TRIP TICKETS SYSTEM

A site procedure will be developed to ensure that each truck load of C&D materials leaving the site will bear a duly completed chit or disposal delivery form (DDF), and that Part of the DRS has been filled in and signed properly before its departure. The following two flow charts illustrate site procedures to handle C&D materials disposal with chits and DDFs to be implemented in the DCVJV site, and they will be modified to suit the actual site condition, after agreed with the SOR.

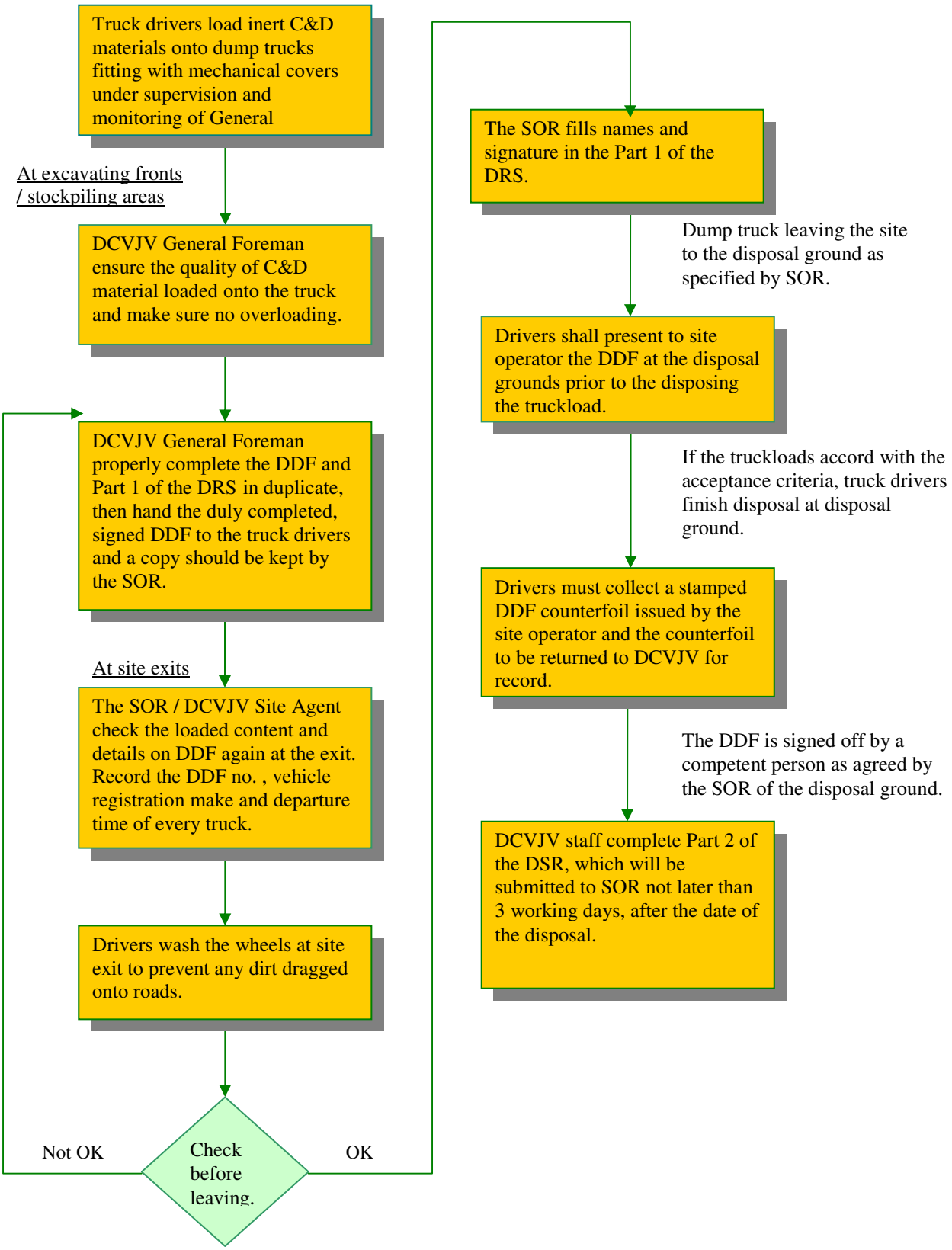
Where irregularity is observed or where requested by the SOR under special circumstances, DCVJV will submit to the SOR within 5 working days after the recorded date of disposal the supporting evidence such as duly

stamped chits / DDF, and/or the transaction record slip to confirm proper completion of the delivery trips in questions, or within 2 working days after the SOR has requested for such evidence, whichever is later.

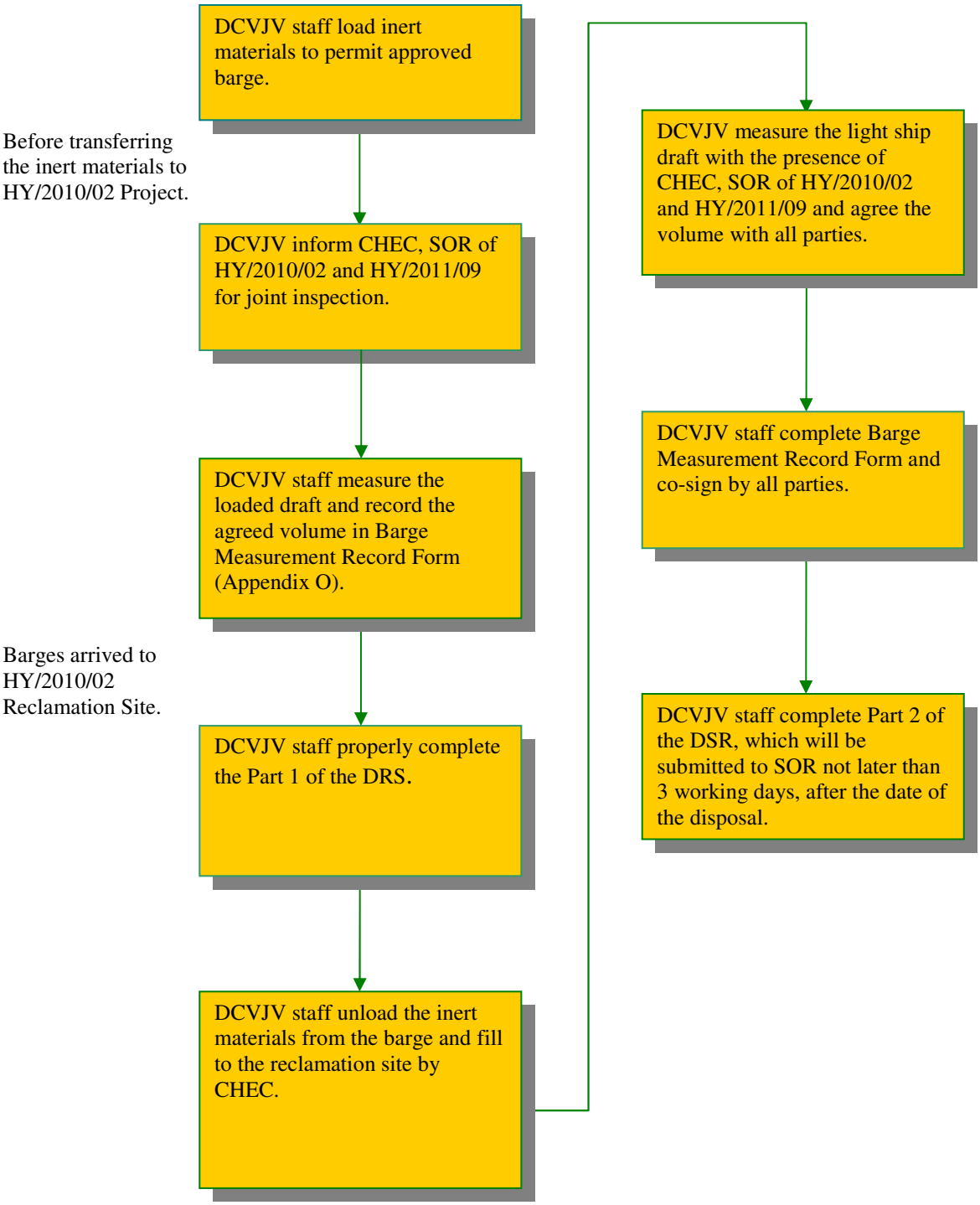
9.1 Site Procedure to Handle Non-inert Materials Using Chits



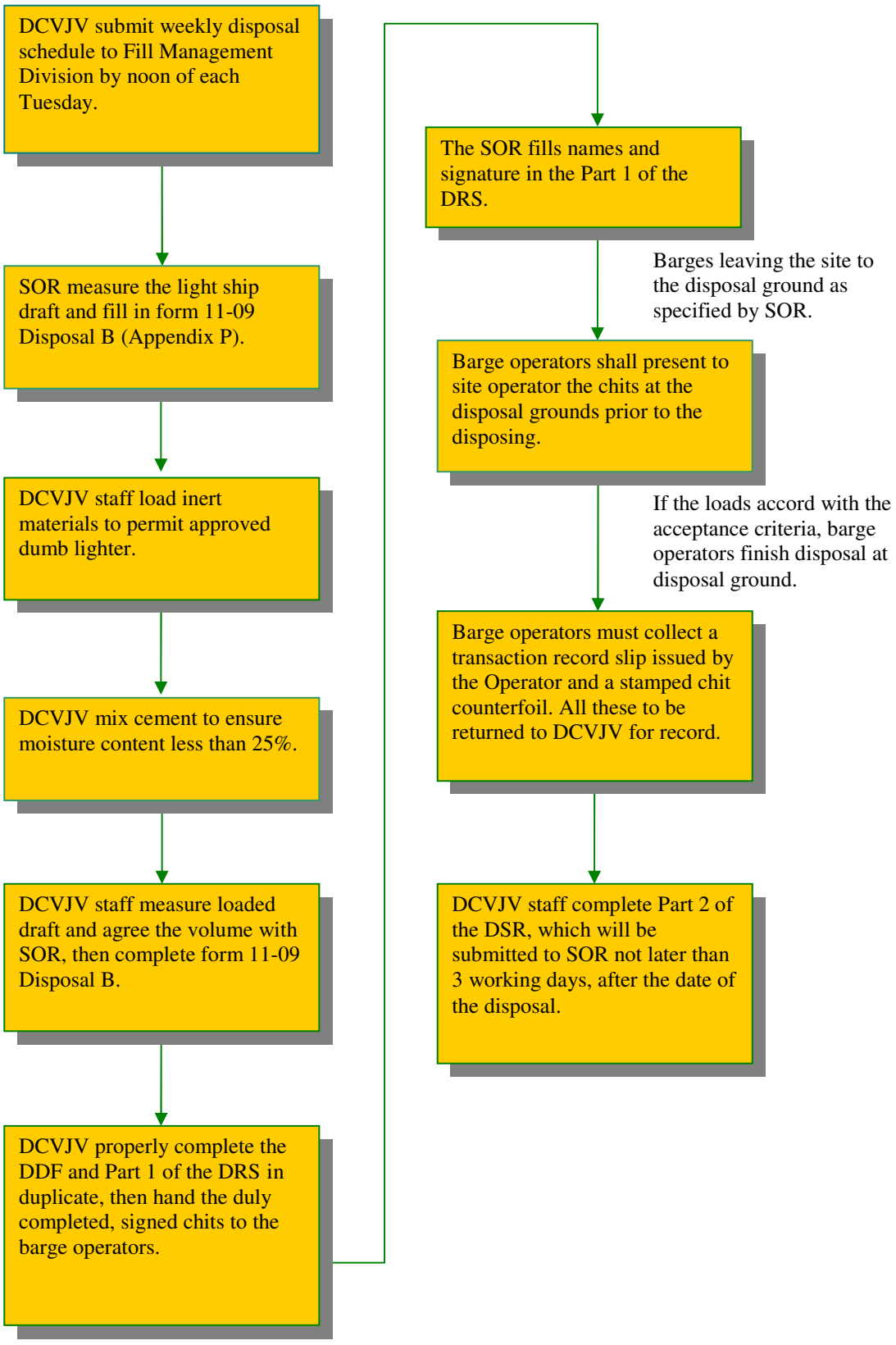
9.2 Site Procedure to Handle Inert Materials Using Disposal Delivery Form (DDF) by Trucks



9.3 Site Procedure to Disposal of Inert Materials to HY/2010/02 Project by Vessels

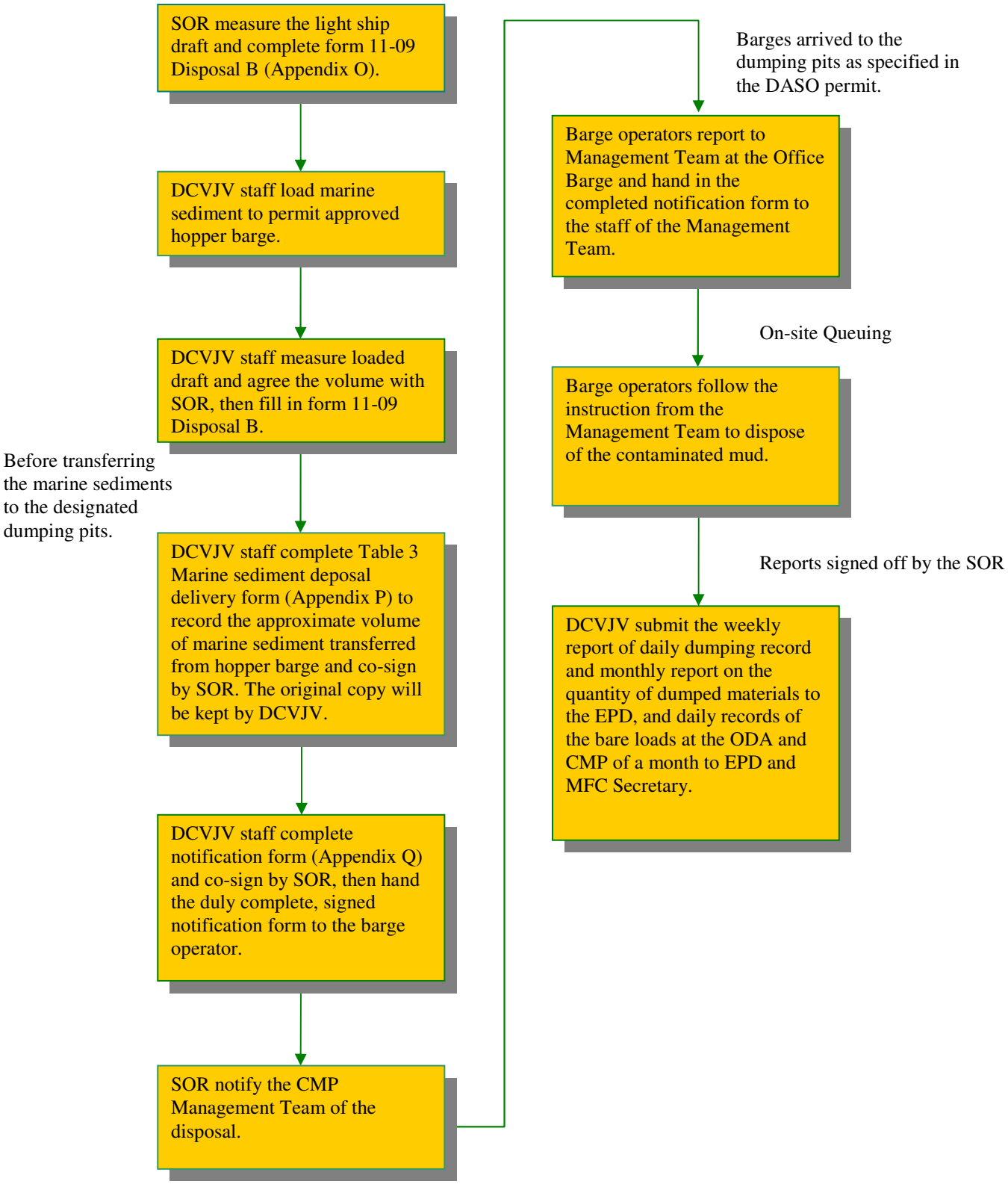


9.4 Site Procedure to Handle Inert Materials Using Chits by Vessels



*The disposal of inert C&D materials at Tuen Mun Area 38 is subject to SOR's approval.

9.5 Site Procedure to Handle Marine Sediment by Vessels



10.0 RECORDING SYSTEM

The Environmental Officer, with assistance of the Assistant Environmental Officers, will develop and maintain a comprehensive register of the chits and DDF issued, and make it available for inspection by Supervising Officer's Representative upon request. This register will record each disposal trip in terms of disposal date, time, C&D material source locations, disposal sites, vehicle numbers, types of truckloads and all necessary information to facilitate timely retrieval of chit / DDF details, where irregularities are observed.

11.0 RECYCABLE MATERIALS

Control measures would be devised to ensure that the recyclable materials are delivered to a proper recycling outlet for processing, and to avoid such materials being considered as C&D materials for the purposes of the Contract. TTS is not applicable to recyclable materials. However, the invoice, receipt or disposal records will form parts of the comprehensive register as described in the previous section to ensure integrity of disposal records. The monthly quantities of the recyclable materials removed off site will be recorded in the waste flow table for monthly submission to the SOR.

Specific measures will be implemented to reduce the generation of waste materials, and thus minimize the amount of waste disposal to landfills. The measures will include:

- sort all excavated materials and recover the inert portion of C&D materials, such as hard rock, soil and broken concrete, for reuse on the Site or, if cannot be used on the Site, disposal to designated outlets for reuse;
- recover all metallic waste for recycling;
- recover all cardboard and paper packaging, and properly stockpile them in dry and covered condition to prevent cross contamination;
- sort all demolition debris to recover reinforcement bars, mechanical and electrical fittings, hardware and all other fittings / materials that have established recycling outlets;
- tree debris will be delivered to tree debris recycler whenever available.

Material packaging (i.e. paper and cardboard) will be recovered, properly stockpiled in dry and covered environment to prevent cross contamination by other C&D materials. Attention will also be paid to avoid cross contamination during the course of paper collection for recycling. Arrangements will be made with recycling contractors to ensure that the recyclable materials sorted from the Site are handled with reasonable care. In addition, DCVJV has made agreements with certain suppliers for the collection of packaging wastes to further enhance the management of these materials on site.

12.0 CHEMICAL WASTES

DCVJV has applied to EPD for a Register of Chemical Waste Producer. Chemical wastes generated during works will be temporarily stored in Site before being delivered to designated chemical waste treatment facilility. A location is tentatively assigned for the storage of chemical wastes (**Appendix H**) and it will be reviewed after the commencement of work. The handling and storage of chemical wastes must comply with the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

Containers for the storage of chemical wastes shall –

- Have a capacity of less than 450 litres unless approved by EPD
- Be suitable for the substance they are holding
- Be resistant to corrosion
- Be maintained in a good condition
- Be securely closed
- Properly labelled in accordance with the instructions prescribed in Schedule 2 of the Waste Disposal (Chemical Waste)(General) Regulation

The storage area for chemical wastes shall –

- Be enclosed at 3 sides

- Be used solely for the storage of chemical wastes
- Be clearly and legibly labelled
- Have an impermeable floor and bund
- Have a capacity enough to accommodate 110% of the volume of the largest container or 20% by volume of the chemical wastes stored in that area
- Have adequate ventilation
- Be sheltered from rain (rainwater collected in the bund must be tested or disposed of as chemical wastes)
- Be provided with facilities for separate storage of incompatible materials

Arrangements will be made for regular collection and disposal of chemical wastes. Disposal of chemical wastes shall –

- Be via a licensed waste collector, and
- Be disposed in the Chemical Waste Treatment Facility in Tsing Yi.

Again the monthly quantities of the chemical waste removed off site will be recorded in the waste flow table for monthly submission to the SOR.

13.0 VIDEO RECORDING SYSTEM

13.1 Requirements of Video Recording System

DCVJV will agree with the SOR on methods to provide, operate and maintain a video recording system at each vehicular exit/entrance with gate(s) installed with the following essential features to record all trucks leaving the Site. DCVJV will provide details of the video recording system including the equipment type and a layout plan to show locations where the equipment are to be installed. The video cameras used in the system shall be of high resolution, lowlight and colour type; power backup shall be provided to cater for accidental breakdown of the power supply to the system; videos captured by the system shall be recorded continuously without break except with the agreement of the Supervising Officer, or in the month during which there is no disposal of C&D materials off the Site for the entire month; videos shall be captured in a format acceptable to the Supervising Officer; the registration mark of each vehicle leaving the site shall be recorded; and the loading conditions of dump trucks including empty trucks shall be captured. The video cameras will be securely protected from being damaged or blocked.

13.2 Video Records Keeping

DCVJV will provide the software and hardware for capturing the vehicle registration mark, and the time and date for the Supervising Officer's immediate taking and viewing of photographs of every truck leaving the Site and viewing the recorded videos. The videos record will be kept for at least 60 days and the photographs are kept such time as instructed by the Supervising Officer. DCVJV will post sufficient notices at conspicuous positions to notify the workers, drivers and staff about the purpose of the video recording system in accordance with data protection principles set out in the Personal Data (Privacy) Ordinance.

14.0 NOTIFICATION TO TRUCK DRIVERS

The DCVJV will write to all truck drivers engaged for removal of C&D materials from the Site and draw their attention to the following particular points:

- Each truck carrying C&D materials leaving the Site for a disposal ground must bear a duly completed CHIT / DDF, irrespective of the location and nature of the disposal ground; and
- The C&D materials must be disposed of at the disposal grounds stipulated in the Contract or directed by the Supervising Officer or alternative disposal grounds approved by the Supervising Officer.

DCVJV has established a guiding protocol for truck drivers being engaged and give all of them a copy for their information. Where necessary, a tool box talk relating to the protocol will be given to all engaged driver. The protocol is shown in **Appendix G**.

14.1 Overloading Prevention

In order to prevent overloading, DCVJV will request subcontractors to deploy those dump trucks fitting with weight gauges. Marking of preset weight limit should be clearly visible on gauge for inspection. The dump truck will not be allowed to leave the site only if the reading of the weight gauge is lower than the preset level.

In addition, DCVJV will –
- conduct tool box talks to new drivers or those drivers who committed overloading case, and
- deploy a coordinator at the site exit to control and ensure implementing the good practices.

Surprise checks will be made by tracing the route of the dump trucks to ensure that the transport of excavated materials fully complies with the requirements of this Plan.

15.0 WASTE REDUCTION MEASURES

15.1 Reduction through Design

DCVJV accords the highest priority to managing surplus materials through reduction at source. To this end, relevant environmental aspects have been duly considered in the design and planning stage such as –
- Use of precast segments and bridge piers,
- Closed loop water recycling process for GI drilling as well as excavation,
- Possibility of utilizing excavated granite for concrete to be used on Site.

DCVJV will also seek to use prefabricated and modular elements of precast segments, where practicable, to minimize material wastage from in-situ fabrication. The amount of surplus materials produced will be reduced by specifying accurately the volumes and dimensions of materials to be used.

15.2 Use of Timber in Temporary Works

The use of timber in temporary works construction will be avoided, reduced or minimized; and alternatively reusable steel/concrete shutters will as far as reasonably practicable be used for formwork and falsework. Metal fencing or building panels will also be used for site fencing. In the circumstances where the use of timber is unavoidable and the estimated quantities exceed $5m^3$, we shall submit a method statement with justifications to the Supervising Officer for agreement prior to the commencement of the relevant temporary works. In any case, the timber will be reused before being discarded as wastes.

16.0 WASTE TARGETS

Before major construction works commence, DCVJV will set waste targets to cover
i) Excavated materials to be sorted to recover the inert portion of C&D materials, e.g. hard rock, soil and broken concrete, for reuse on site or disposal to designed 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) The use of timber quantities in temporary works.

17.0 ON-SITE SORTING OF C&D MATERIALS

C&D materials refer to both inert and non-inert surplus materials generated from construction and demolition activities. The inert portion of the C&D materials include soil, rocks, broken concrete, etc., and non-inert portion comprises of timber, paper, plastic, general refuse and the like.

All C&D materials will be sorted on Site to recover reusable and/or recyclable materials and DCVJV will assign an area for this purpose. A layout plan showing the temporary storage area is in **Appendix N**. All sorted and processed surplus materials will be removed to reduce temporary stockpiling on the Site. A system will be established for on-site sorting of C&D materials. It encompasses the identification of the source of generation,

estimated quantities, arrangement for on-site sorting and/or collection, temporary storage areas, frequency of collection by recycling contractors and frequency of removal off the Site, etc. The following materials will be sorted on the Site:

- Metal
- Timber
- Paper
- Plastics
- Chemical waste
- Materials suitable for disposal at public fill reception facilities, sorting facilities and outlying islands transfer facilities. (Disposal at the sorting facilities shall be approved by the Supervising Officer)

The materials to be disposed of at public fill reception facilities, sorting facilities and landfills/transfer facilities must comply with the respective requirement laid under Schedule 6 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, Cap. 354.

DCVJV will provide sufficient space for temporary storage of C&D materials to facilitate collection and/or sorting on the Site. Location plan will be provided after the detail planning of site layout. Nevertheless, on-site sorting will not generate potential nuisances to the public. Except for those inert C&D materials to be reused on the Site, all other C&D materials will be removed off Site as soon as practicable to optimize the use of the on-site storage space.

To reduce concrete wastage, DCVJV will return all surplus wet concrete to batching plant, where aggregates and sand will be recovered for reuse.

18.0 SURPLUS MATERIAL MANAGEMENT AUDIT

Site inspections provide a direct means to trigger and enforce the specified environmental protection and pollution control measures. Site inspections will be undertaken weekly by the SOR and Site Agent to inspect the Site to ensure satisfactory performance on compliance with this Plan.

18.1 Weekly Site Inspections

Regular inspections on the implementation of the TTS will be under the EM&A programme which includes weekly site inspections on waste management. A sample of comprehensive checklist for the use of weekly inspection on the waste management is shown in **Appendix I**. This checklist will be modified according to the construction activities on site after the commencement of work. Immediately after the weekly inspection, the summary table of follow-up actions will be agreed and signed by both the Contractor's Representative and Supervising Officer's Representative. The Company will take prompt action to rectify the deficiencies identified and will report the status of action taken before the forthcoming weekly inspection.

18.2 Surveillance at Alternative Disposal Site

DCVJV will establish a surveillance system such as site visits at any alternative disposal grounds to check that the disposal activities comply with the requirements set out in this Construction Specification.

19.0 RECORD KEEPPING

The Environmental Officer and his team are responsible for keeping surplus material/ waste management records on site. These records include, but not limited to, the following:

- relevant licences and permits, including dumping licences and registration as chemical waste producer,
- approval documents by the SOR in respect of disposal locations in Mainland China and HKSAR,
- records of quantities of surplus materials/ wastes generated, recycled and disposed of (including the disposal sites),
- records for chits or DDFs issued out for collection, delivery and removal of wastes and surplus materials,
- disposal recording register (**Appendix L**) of vehicular and vessel trips of transporting C&D materials and its mechanism for collection of returned forms and receipts,

- method for estimation of load for surplus materials, metals, papers/cardboard or other C&D wastes
- training records,
- video and photographs for the loading dump truck leaving site gates.

Waste Flow Table – Monthly

A mechanism to record the quantities of surplus materials and wastes generated each month, using the Monthly Summary Waste Flow Table (WFT) in **Appendix J**. The monthly summary WFT will be prepared and submitted to the SOR not later than the 15th day of each month; or if it is a general holiday, the day following the General Holiday.

Summary Table – Timber Usage

A method statement will be submitted to the SOR if the use of timber for temporary works construction for one process / activity with an estimated quantity exceeding 5 m^3.

A timber usage summary table (**Appendix K**) which contains the description, justification and the estimated quantity for every work process / activity requiring the use of timbers for temporary works construction irrespective of the quantity of timber used will be updated and submitted to the SOR together with the monthly summary WFT for monitoring and review.

20.0 STAFF TRAINING

DCVJV will provide training on surplus material management in the site-specific environmental training and its refresher training for all the Company staff and the subcontractors. The training will cover the surplus material management policy, targets, measures for waste reduction, reuse & recycling, on-site sorting of C&D materials and performance measurement on the Site.

DCVJV will develop and provide toolbox talks for the topic on on-site sorting of surplus materials to promote workers' awareness on handling, sorting, reuse and recycling of surplus materials.

Training materials will be available for the inspection of Supervising Officer's Representative. If further required by the Supervising Officer's Representative, trainings organized by training institutes or organizations as considered appropriate will be arranged.

21.0 TTS PERFORMANCE MONITORING

The following items shall be included in the agenda for discussion at the monthly Site Safety and Environmental Management Committee meeting, and Site Safety and Environmental Committee meeting, or other established channels for performance monitoring as agreed by the Supervising Officer's Representative:

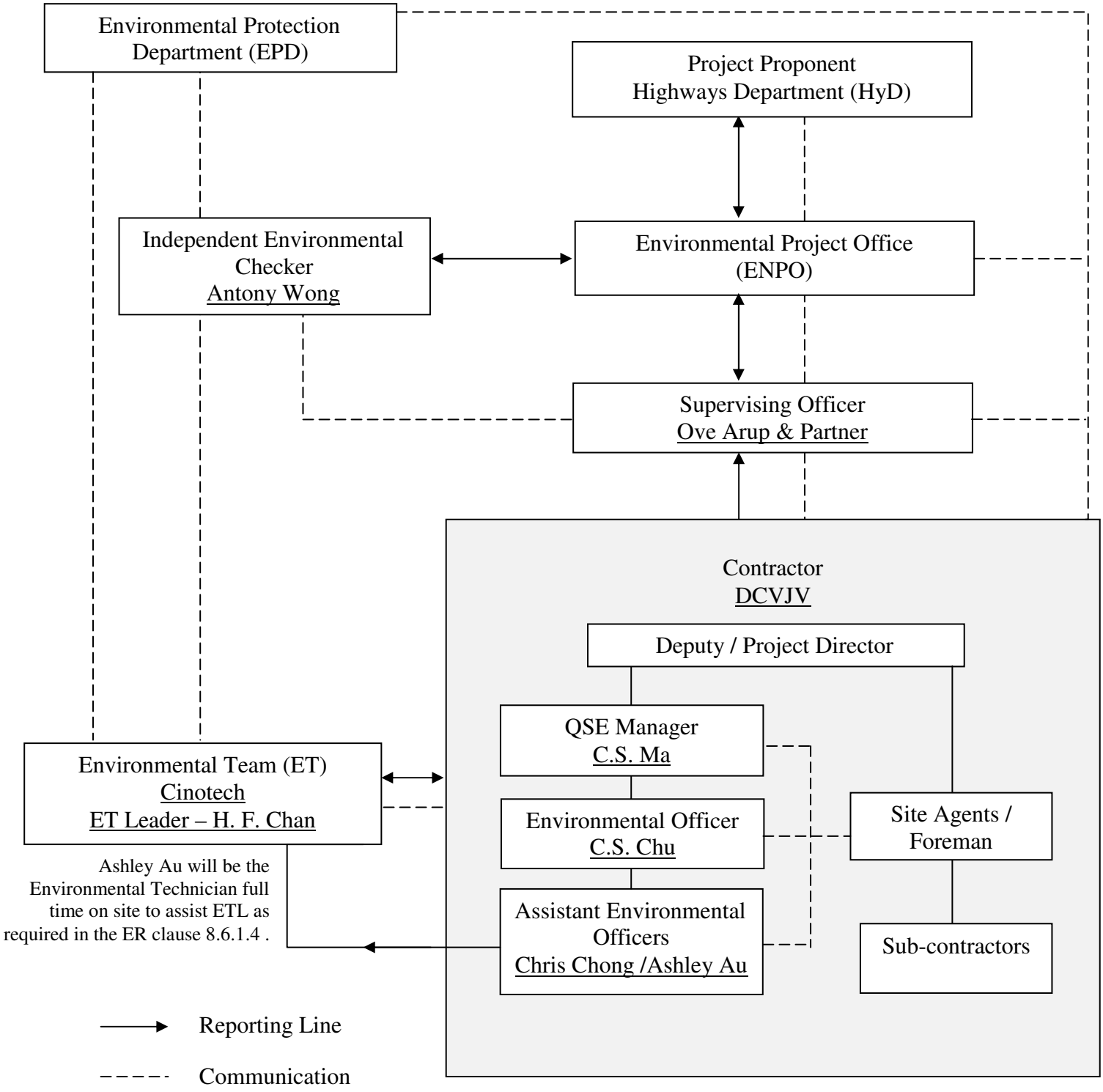
- review the site management plan and implementation of the TTS, and identify areas for improvement,
- audit the quantity of C&D materials removed from the Site (based on the DRS and survey records) against the quantities of C&D materials delivered to the disposal ground designated in the Contract (e.g. based on EPD website) and directed or approved by the Supervising Officer,
- review incidents of non-compliance and discuss the necessary follow-up actions; and
- Monitor the follow-up action on defects and deficiencies identified.

22.0 MITIGATION MEASURES IN EIA

The Section 8.3 of the EIA Report gives recommendations on mitigation measures of waste management. The recommendations were extracted to form an implementation schedule particularly for waste management during construction phase and the schedule is shown in **Appendix M**.

END OF TEXT

Appendix A - Organisation Chart for Waste Management on Site



Manpower resources to implement the SMP include

1. QSE Manager – 1;
2. Environmental Officer – 1 (Full-time);
3. Assistant Environmental Officer – 2 (Full-time)

Telephone Numbers of Persons Responsible for Implementing of WMP

		Telephone	Fax
DCVJV - Project Office		**2511 4261**	**2468 2855**
Project Director	**CHAN Man**	**9464 1468**	**Ditto**
Deputy Project Director	**W.K. POON**	**9461 8397**	**Ditto**
Construction Manager	**Y.S. Li**	**5188 3051**	**Ditto**
Site Agent	**WONG C. Y.**	**9303 1266**	**Ditto**
Foreman	**KEUNG Hoi**	**9345 4251**	**Ditto**
Quality Safety Environmental Manager	**MA C. S.**	**9627 6217**	**Ditto**
Environmental Officer	**CHU C. S.**	**6871 1634**	**Ditto**
Assistant Environmental Officer	**Ashley AU**	**9762 9126**	**Ditto**
Assistant Environmental Officer	**Chris CHONG**	**9581 1021**	**Ditto**
Environmental Team Leader	**CHAN H. F.**	**2151 2088**	**3107 1388**
Deputy Environmental Team Leader	**Priscilla CHOY**	**2151 2089**	**Ditto**
Environmental Team Representative	**Ivy Tam**	**2151 2090**	**Ditto**

Appendix B – Daily Record Summary to Record Daily Disposal of C&D Materials from the Site

(1) Contract no. & title 合約編號及名稱: HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

(2) Date of disposal 傾卸日期: _____

(3) Designated disposal ground(s) 合約指定或建築師/ 工程師指示接收設施: (a) _____ (b) _____ Others _____

(4) Approved alternative disposal grounds 另可接受的接收設施: _____

CHIT/DDF no. 載運人帳票 / 運載記錄票編號	Vehicle reg. mark 車輛登記號碼	Approx. vol (e.g. Full / ¾ / ½ / ¼) 大約承載量 (例如全、3/4、半、1/4)	C&D material type (e.g. inert or non-inert 建築廢料種類 (例如惰性或非惰性)	Disposal Ground 接收設施	Signature & Name of the Contractor's Designated person before departure (於離開地盤前，承建商的指定人仕姓名及簽名)	Departure time from* Site 離開地盤時間	Signature & Name of the Supervising Officer before departure or other time as agreed between Supervising Officer and the Contractor[1] 於離開地盤前或其它經承建商與工程師代表同意的時間，工程師監管人員姓名及簽名[1]	Actual disposal ground 真正接收設施	Arrival time at disposal ground 抵達接收設施時間	Remarks 備註

← Part1[2] 甲部 → ← Part 2[3] 乙部 →

Prepared by 呈交: _____ *[Name of Contractor's Designated Person]* *承建商的指定人仕姓名*

Signature 簽名: _____

Date 日期 : _____

Received by 接收: _____ *[Name and signature of the Architect / Engineer's staff]* *建築師/工程監管人員姓名及簽名*

Post 職位: _____

Date & Time 日期及時間: _____

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段進行定點檢查及簽署
2. Part 1 – The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's / Engineer's Representative 承建商填寫甲部兩份，副本由建築師/工程師代表持有
3. Part 2 – 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 website 承建商填寫乙部及將整份運載記錄撮要於記錄上載在環境保護署網頁後1個工作天內呈交給建築師/工程代表

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

Appendix C – Chit and DDF Samples

Chit

Chit No.: 09108864

Tick (✓) One Prescribed Facility:

Landfills

Sorting Facilities

Public Fill Reception Facilities

Outlying Islands Transfer Facilities

Vehicle Registration Mark:

Date of Use:

Issued by:

Construction Waste Generated Site:
SECTION BETWEEN HKSAR BOUNDARY & SCENIC HILL

Account No.: 7015341

Part A: retained by Account-holder

Chit No.: 09108864

Tick (✓) One Prescribed Facility:

Landfills

Sorting Facilities

Public Fill Reception Facilities

Outlying Islands Transfer Facilities

Vehicle Registration Mark:

Date of Use:

Issued by:

Name of the Account-holder:
DRAGAGES H.K. LTD, CHINA HARBOUR ENG CO LTD, VSL H.K. LTD TRADING AS DRAGAGES-CHINA HARBOUR-VSL JV

Account No.: 7015341

Part B: retained by Waste Haulier

Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票
CHIT

Vehicle Registration Mark:

0 9 1 0 8 8 6 4

Valid Until: Not Applicable

Construction Waste Generated Site:
SECTION BETWEEN HKSAR BOUNDARY & SCENIC HILL

Name of the Account-holder:
DRAGAGES H.K. LTD, CHINA HARBOUR ENG CO LTD, VSL H.K. LTD TRADING AS DRAGAGES-CHINA HARBOUR-VSL JV

7 0 1 5 3 4 1

Part C: retained by Government

K 602794

Disposal Delivery Form

Serial No. 0012345678

Date of Use:
使用日期:_____

Disposal Ground :
接收設施:

_____

Vehicle Registration Mark. :
車牌號碼:

_____

Issued By:
簽發:

_____

(This part retained by Disposal Ground)
(此部分由接收設施保留)

_____
Chop of Disposal Ground 接收設施蓋印

Serial No. 0012345678

Construction and Demolition Materials
Disposal Delivery Form
拆建物料運載記錄票

Contract No: _____ Contract Title: _____

合約編號: _____ 合約名稱: _____

Date of Use: 使用日期: _____ Time of departure from site: 離開地盤時間 : _____ Vehicle Registration Mark: 車牌號碼: _____

Disposal Ground:
接收設施: _____

Arrival Time/Date:
抵達日期/時間: _____
(This part retained by Contract/Driver)
(此部分由承建商/司機保留)

_____ _____
Chop of Disposal Ground Representative 接收設施蓋印 | Chop of Engineer's/Architect's 工程師 / 建築師代表蓋印

Appendix D – EPD letter to designate prescribed disposal grounds

本署檔號
OUR REF.: EP195/01/24/2098/2011
來函檔號
YOUR REF : 214487/4.12/SK/TMK/AL/CL/0510
電話
TEL. NO.: 2872 1642
圖文傳真
FAX NO.: 2872 0376
網址
HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Environmental Infrastructure Division
88 Victoria Road,
Kennedy Town,
Hong Kong.

環境保護署
環境基建科
香港西環
堅尼地城
域多利道88號

By Fax
(Fax No.: 2268 3955)

Level 5, Festival Walk,
80 Tat Chee Avenue,
Kowloon Tong, Kowloon,
Hong Kong
(Attn.: Mr. Samuel KWAN)

17 October 2011

Dear Sir,

DEVB Technical Circular (Works) No. 6/2010
Trip Ticket System for Disposal of Construction and Demolition Materials

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road
Section between HKSAR Boundary and Scenic Hill

I refer to your letter dated 12 October 2011 regarding the subject.

I am pleased to advise that the West New Territories (WENT) Landfill and Outlying Islands Transfer Facilities are hereby designated to receive construction waste (1,500 m^3, excluding contaminated materials) generated from the above contract under the trip-ticket system. For disposal of C&D waste at Outlying Islands Transfer Facilities, please note the condition of disposal of the various facilities in the Appendix.

As a general policy to conserve landfill resources, mixed construction waste should be sorted at source. Construction waste consisting entirely of inert construction waste (or commonly termed as public fill) including rock, rubble, boulder, earth, soil, sand, concrete, asphalt, brick, tile, masonry or used bentonite should be delivered to public fill reception facilities. For a truck load of construction waste to be accepted at the landfill, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle. With effect from 29 December 2010, a truck load of construction waste satisfying the following new criteria will also be accepted at the landfill: (a) the depth of the waste is greater than 1 meter for goods vehicle with demountable skip and 1.5 meters for other types of vehicle regardless of the weight of the waste; or (b) the truck load of construction waste consists entirely of bamboo, timber or plywood regardless of the weight and the depth of the waste.

The construction waste delivered for landfill disposal shall further contain no free water and the liquid content shall not exceed 70% by weight.

/For...

For better control and enforcement of the trip ticket system, please provide us, with two weeks' advance notice, with the contact details of the Architect's/Engineer's Representative and the contractor before starting to deliver the waste to the landfill. Please also keep us informed of any subsequent changes to your tender and disposal programme.

Each waste hauler should present a valid "Chit" when disposing of construction waste at a waste disposal facility under the Construction Waste Disposal Charging Scheme.

Yours faithfully,

(CHAN King-lun)
Waste Facilities Group
for Director of Environmental Protection

Encl.

c.c. Internal - E[WF]11
WENT Site Office
MWTF Site Office

Outlying Islands Transfer Facilities

Conditions of Use for Disposal of Construction Waste

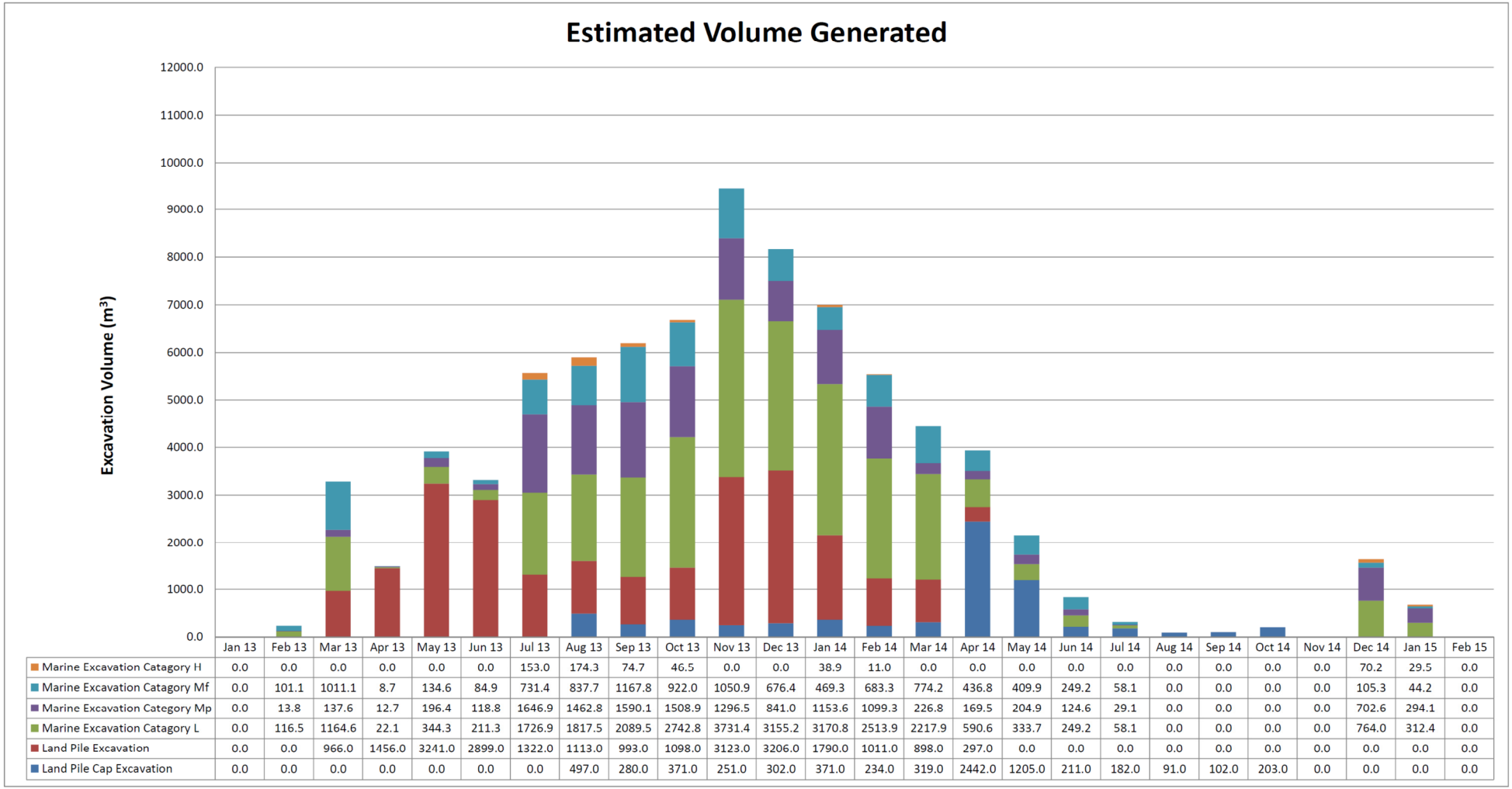
1. Delivery of waste is by road vehicles only. All waste loads have to be weighed at the weighbridge. The sizes of waste delivery vehicles shall not exceed the capacities and dimensions of the weighbridges as detailed below-

	Capacity (Tonnes)	Dimensions (m)
Mui Wo Transfer Facility	16	4.88(L) x 2.59(W)
Cheung Chau Transfer Facility	10	4.88(L) x 2.44(W)
Peng Chau Transfer Facility	10	4.88(L) x 2.44(W)
Hei Ling Chau Transfer Facility	10	4.88(L) x 2.44(W)
Yung Shue Wan Transfer Facility	10	4.87(L) x 2.44(W)
Sok Kwu Wan Transfer Facility	4	2.75(L) x 2.14(W)
Ma Wan Transfer Facility	16	5.08(L) x 2.59(W)

2. **Daily disposal rate** shall not exceed -
   - 20 tonnes (Mui Wo Transfer Facility)
   - 20 tonnes (Cheung Chau Transfer Facility)
   - 10 tonnes (Peng Chau Transfer Facility)
   - 10 tonnes (Hei Ling Chau Transfer Facility)
   - 20 tonnes (Yung Shue Wan Transfer Facility)
   - 4 tonnes (Sok Kwu Wan Transfer Facility)
   - 10 tonnes (Ma Wan Transfer Facility)

3. Contaminated waste or hazardous waste shall NOT be accepted.

Appendix E – Monthly Forecast of Excavation Materials



	Jan 13	Feb 13	Mar 13	Apr 13	May 13	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15	Feb 15
Marine Excavation Catagory H	0.0	0.0	0.0	0.0	0.0	0.0	153.0	174.3	74.7	46.5	0.0	0.0	38.9	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.2	29.5	0.0
Marine Excavation Catagory Mf	0.0	101.1	1011.1	8.7	134.6	84.9	731.4	837.7	1167.8	922.0	1050.9	676.4	469.3	683.3	774.2	436.8	409.9	249.2	58.1	0.0	0.0	0.0	0.0	105.3	44.2	0.0
Marine Excavation Category Mp	0.0	13.8	137.6	12.7	196.4	118.8	1646.9	1462.8	1590.1	1508.9	1296.5	841.0	1153.6	1099.3	226.8	169.5	204.9	124.6	29.1	0.0	0.0	0.0	0.0	702.6	294.1	0.0
Marine Excavation Catagory L	0.0	116.5	1164.6	22.1	344.3	211.3	1726.9	1817.5	2089.5	2742.8	3731.4	3155.2	3170.8	2513.9	2217.9	590.6	333.7	249.2	58.1	0.0	0.0	0.0	0.0	764.0	312.4	0.0
Land Pile Excavation	0.0	0.0	966.0	1456.0	3241.0	2899.0	1322.0	1113.0	993.0	1098.0	3123.0	3206.0	1790.0	1011.0	898.0	297.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land Pile Cap Excavation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	497.0	280.0	371.0	251.0	302.0	371.0	234.0	319.0	2442.0	1205.0	211.0	182.0	91.0	102.0	203.0	0.0	0.0	0.0	0.0

A summary table of estimated volume generated, reuse on- or off-site and the proposed disposal outlets.

Types of wastes	Estimated volume generated (cum)	Amount reuse on-site (cum)	Amount reuse off-site (cum)	Proposed outlet
Land Pile Cap Excavation	7,061	0	7,061	Neighbouring sites of Contracts HY/2010/02 HKBCF Reclamation and HY/2011/03 HZMB Section from Scenic Hill to HKBCF for reclamation filling work.*
Land Pile Excavation (mainly inert C&D materials such as soil and rocks)	23,413	0	23,413	Neighbouring sites of Contracts HY/2010/02 HKBCF Reclamation and HY/2011/03 HZMB Section from Scenic Hill to HKBCF for reclamation filling work.*
Marine Excavation (Category L Sediment)	27,332.7	0	27,332.7	An area within the East Sha Chau Contaminated Mud Disposal Site – Pit IVc or Va and South of the Brothers Contaminated Mud Disposal Site – CMP 1 to be capped as directed by the Management Team of the CEDD.
Marine Excavation (Category M_p Sediment)	12,830	0	12,830	An area within the South of The Brothers Contaminated Mud Disposal Site – CMP 1 as directed by the Management Team of the CEDD. The deposited materials to be kept at 8 m below the chart datum.
Marine Excavation (Category M_f Sediment)	9,956.9	0	9,956.9	An area within the South of The Brothers Contaminated Mud Disposal Site – CMP 1 as directed by the Management Team of the CEDD. The deposited materials to be kept at 8 m below the chart datum.
Marine Excavation (Category H Sediment)	598.1	0	598.1	An area within the South of The Brothers Contaminated Mud Disposal Site – CMP 1 as directed by the Management Team of the CEDD. The deposited materials to be kept at 8 m below the chart datum.

**Remarks:*
The materials will be disposed of at CEDD PFRF if the neighbouring sites are not able to receive fill.

Appendix F – Internal Transfer Ticket

Contract No. HY/2011/09
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road –
Section between HKSAR Boundary and Scenic Hill

Internal C&D Material Transfer Ticket
建築物料內運票據

Date: 日期	
Departure Time : 離開時間	
Truck No. 車牌	
Arrival Time : 到達時間	
Approximate Load : 大約承載量 :	滿載 / ¾ 載 / 半載
Routine: 運輸路線:	From: : 由:　　To: 去:
Reference No. 參考編號 :	
DCVJV Representative : 寶嘉－中國港灣－威勝利 代表:	

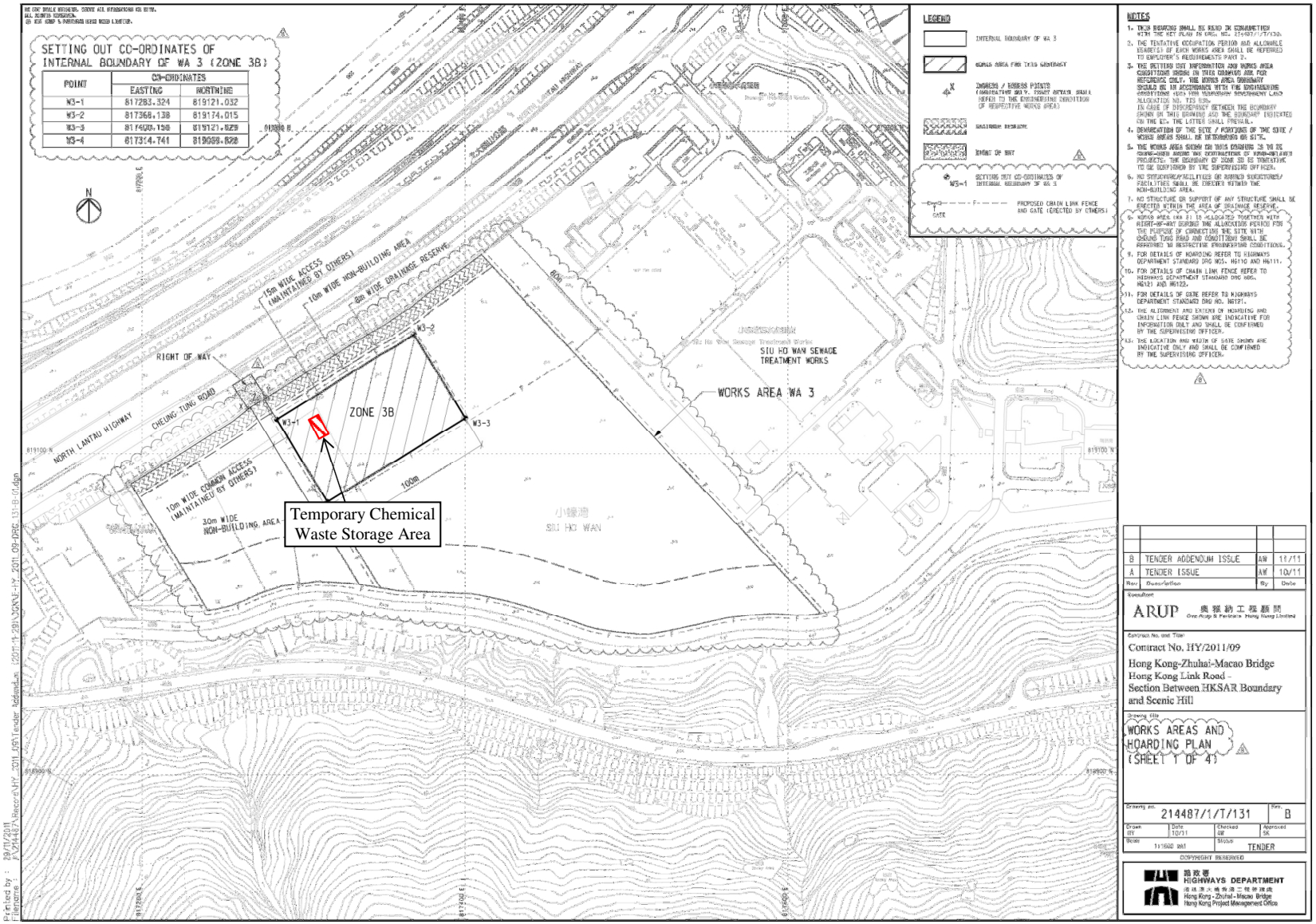
Appendix G – Notification to Dump Truck Drivers

寶嘉 – 中國港灣 – 威勝利聯營

運泥車於離開地盆前，運泥車司機需注意檢查：

1) 運泥車車上建築廢物已經篩選分類；
2) 檢查車上磅錶，確保運泥車沒有超載；
3) 已填寫條碼運載記錄票上所有資料包括離開時間；
4) 已徹底清洗車轆，泥斗；
5) 機動蓋掩已完全蓋上；
6) 並將條碼運載記錄票上的第一聯交給駐地盆監工人仕，方可離開。

Appendix H – Location Plan for Temporary Chemical Waste Storage Area



Appendix I – Weekly Checklist showing the Waste Management Section

HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill

Weekly Environmental Team
Site Audit Checklist
(Revision A)

Inspection Date: 29 June 2012

C	Waste/Chemical Management	Reference	N/A	Yes	No / Deficiencies	Remarks
	Chemical waste, waste oil	WDO Chem Waste Reg				
C1	Are chemical waste containers stored properly and securely closed, sealed and no chemical waste adheres to the external surface of the container?	Section 10(1)(b)	✓			
C2	Is the storage area only used for storing chem waste only?	Section 13(2)(a)	✓			
C3	Is the storage area enclosed on at least 3 sides, not < 2m or the height of the tallest container (or stack) whichever is less?	Section 13(2)(b)	✓			
C4	Is the storage area NOT connected to any surface water drains?	Section13(2)(d)	✓			
C5	Is the storage area provided with a roof or similar covering?	Section13(2)(g)	✓			
C6	Is the storage area kept clean and dry?	Section13(2)(h)	✓			
C7	Do the storage areas have impermeable floor or surface?	Section14(1)(a)	✓			
C8	Do the storage areas have a retention capacity equal to the contents of the largest container or 20% by volume of the chem waste whichever is greater?	Section14(1)(b)	✓			
C9	Do the panels have bold legible red English words and Chinese characters not less than 6 cm in height on a white background? (CHEMICAL WASTE)	Section18(1)(a)	✓			
C10	Are the panels securely attached to or marked on a vertical plane of the storage structure?	Section18(1)(b)	✓			
C11	Are the panels durable, weather resistance and rigid?	Section18(1)(c)	✓			
C12	Are the panels keep clean and free from obstruction?	Section18(1)(d)	✓			
C13	Are chemical waste spillage/leakage procedures in place and being followed?	CoP, CSSH	✓			
	Chemical/fuel storage area					
C14	Are all generators, fuel and oil storage within bunded areas?	CoP, CSSH	✓			
C15	Are drainage from the bunded areas connected to storm drains via a petrol interceptor?		✓			

Inspection Date: 29 June 2012

C	Waste/Chemical Management (cont)	Reference	N/A	Yes	No / Deficiencies	Description/Remark
C16	Are machines/vehicles/plants well maintained and no oil leakages are observed?		✔			
C17	Is paint taken from the store ready for application?		✔			
	General refuse					
C18	Are all waste or superfluous material on the site including rubbish, cement bags, disused formwork, debris, illegal dumping and the like irrespective of their nature and source cleared away and disposed?	ER Section 8.8.5(b)	✔			
C19	Are suitable facilities, receptacles and transport for the temporary storage, disposal and removal of different types of waste provided?	PS Clause	✔			
	Construction Waste					
C20	Are different types of wastes segregated on-site and stored in different containers, skips or stockpiles?	ER Section 8.8.5(a)	✔			
C21	Is reuse and recycling of waste (paper/cardboard, timber and metal etc.) practiced as far as possible?	ER Section 8.8.5(a)	✔			
C22	Are Construction and Demolition (C&D) materials properly disposed?	ER Section 8.8.5(b)	✔			
C23	Are house keeping, general tidiness, cleanliness works carried out properly? Is Waste disposed of at least once per week?	GS	✔			
C24	Are all surplus materials, rubbish etc. removed from site on completion of works?	GS	✔			
C25	Is a trip ticket system (TTS) properly implemented for removal of C&D materials from the site to the designated disposal ground?	ETWBTC 31/2004 (App. A) WBTC 21/2004 (App.A)	✔			
C26	Are vehicle trips for C&D waste disposed recorded through the C&D material disposal delivery form (DDF) and daily record summary (DRS) are maintained?	ETWBTC 31/2004 (App. A) WBTC 21/2004 (App.A)	✔			
C27	Does the Contractor have a vaild billing account in EPD to pay for the construction waste disposal charge?	WDO Cap. 354N	✔			

Appendix J: Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No.: HY/2011/09

Monthly Summary Waste Flow Table for 2013 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated[11]	Hard Rock and Large Broken Concrete[6]	Reused in the Contract[8,9]	Reused in other Projects[5,8,9]	Disposed as Public Fill[7]	Imported Fill[6,7,8,9]	Metals	Paper/ cardboard packaging	Plastics[3]	Chemical Waste	Others, e.g. general refuse[8,9]
	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
Jan											
Feb											
Mar											
Apr											
May											
Jun											
Sub-Total											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
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 [10]										
Total Quantity Generated[11]	Hard Rock and Large Broken Concrete[6]	Reused in the Contract[8,9]	Reused in other Projects[5,8,9]	Disposed as Public Fill[7]	Imported Fill[6,7,8,9]	Metals	Paper/ cardboard packaging	Plastics[3]	Chemical Waste	Others, e.g. general refuse[8,9]
(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
24.000	121.054	0.000	121.054	2.000	22.000	0.000	9.681	0.000	64.224	2.940

Notes:

(1) The performance targets are given in ER Appendix 8J Clause 14 and the EM&A Manual.

(2) The waste flow table shall also include C&D materials to be imported for use at the Site.

(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3. (ER Part 8 Clause 8.8.5 (d) (ii) refers).

(5) The materials reused in other Project shall not be treated as waste under the Waste Disposal Ordinance (CAP354).

(6) According to the EIA Appendix 8B, the density of rock (bulked) is 2.0 tonnes/m^3.

(7) According to the EIA Appendix 8B, the density of soil (bulked) is 1.8 tonnes/m^3.

(8) Assuming the loading quantities of a 30-tonne truck is 8.0m^3.

(9) Assuming the loading quantities of a 24-tonne truck is 6.5m^3.

(10) The forcast of C&D materials to be generated from the Contract is sourced from the works program in September 2013.

(11) The volume of Total Quantity Generated means the volume of Hard Rock and Large Broken Concrete+Disposed as Public Fill+Imported Fill-Reused in the Contract-Reused in other Projects

Appendix K – Summary Table Timber Usage for Temporary Works

Contract No. : _____

Contract Title : _____

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

Notes: (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.

(b) The summary table shall be submitted to the Supervising Officer's Representative monthly together with the Waste Flow Table for review and monitoring in accordance with ER Clause 8.8.5(d).

Appendix L – Format of DCVJV Register of Chits / DDFs

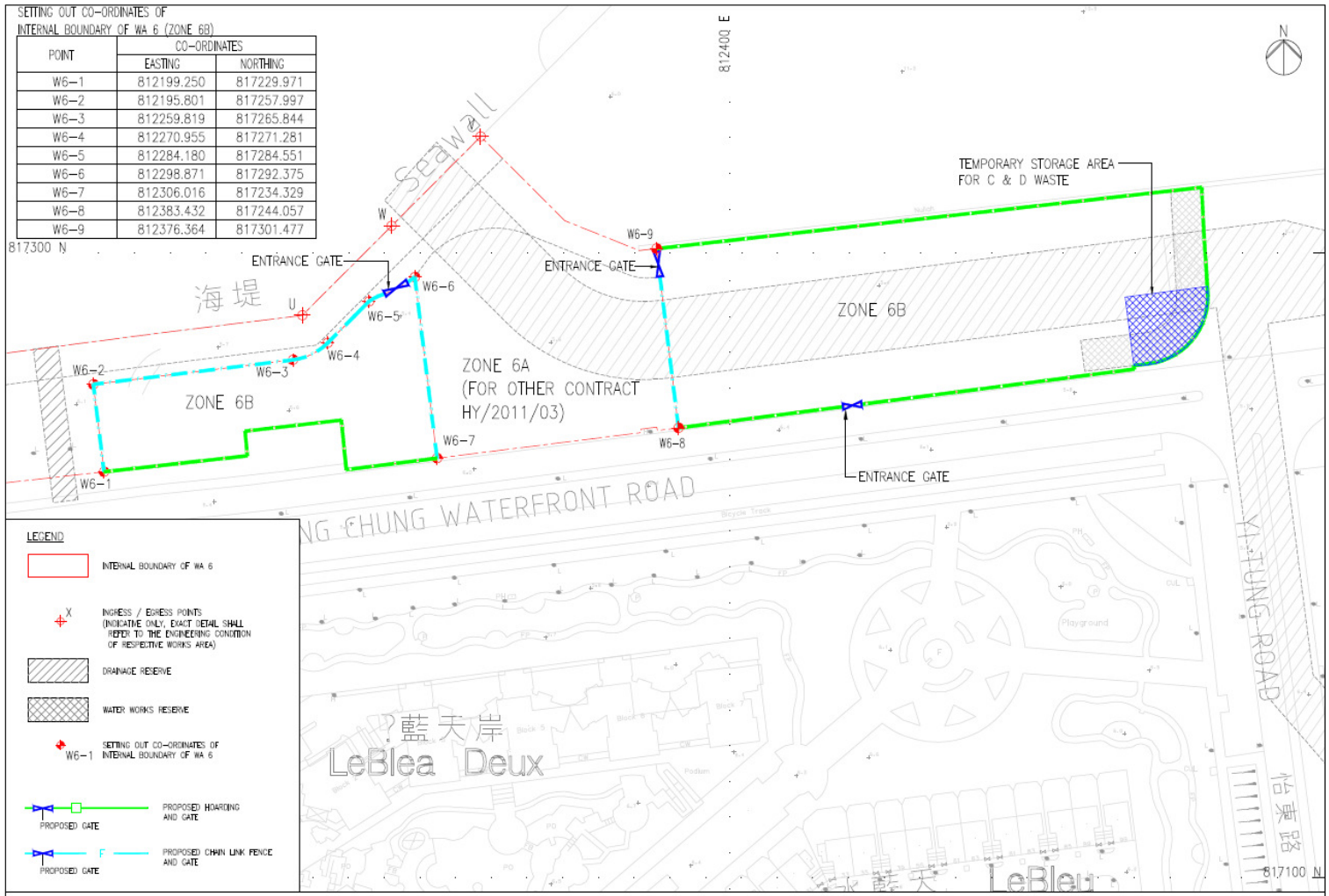
Disposal Facility / Ground 卸置設施	Date of Disposal 卸置日期	Vehicle No. 車牌號碼	Account No. 帳戶編號	Chit / DDF No. 入帳票/運載記錄票編號	Time-in 進入時間	Time-out 離開時間	Waste depth (meter) 廢物深度(米)	Weight-in (tonne) 入閘重量(公噸)	Weight-out (tonne) 出閘重量(公噸)	Net weight (tonne) 淨重量(公噸)	Source of Material 物料來源地	Type of Material (inert/nonert/recyclable) 物料類別	Remarks 備註	Staff to issue chit/DDF	Issue date

Appendix M – Environmental Mitigation Implementation Schedule for Waste Management

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
Waste Management (Construction Waste)							
S8.3.8	WM1	*Construction and Demolition Material* The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC 19/2005
S8.3.9 - S8.3.11	WM2	*C&D Waste* • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC 19/2005
S8.2.12 - S8.3.15	WM3	*Chemical Waste* • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?
		• Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.					on the Packaging, Labelling and Storage of Chemical Waste
S8.3.16	WM4	*Sewage* • 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.	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance
S8.3.17	WM5	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance

Appendix N – Layout Plan showing Temporary Storage Area for C&D Materials



LOCATION PLAN FOR TEMPORARY STORAGE IN WA 6B

Appendix O – Barge Measurement Record

Appendix A

Ref. No.

Hong Kong - Zhuhai - Macao Baridge
Hong KongBoundary Crossing Facilities - Reclamation Works

BARGE MEASUREMENT RECORD SHEET AT SOURCE PROJECT

Source Project : _____ **Contract No.:** _____

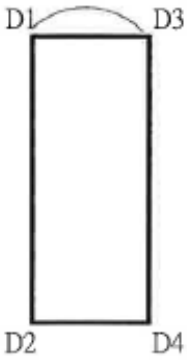
Name & License of Barge: _____ **Type of Material:** _____

Date: _____ **Height of the Barge:** _____ (m)

Departure Time: _____

Unit: m	D1	D2	D3	D4	AVERAGE (A1)
FULL LOADING					A1=(D1+D2+D3+D4) / 4

Unit: m	D1	D2	D3	D4	AVERAGE (A2)
EMPTY					A2=(D1+D2+D3+D4) / 4



Height of the Barge	-	(A1)	=	(ton)
			=	(m)
Height of the Barge	-	(A2)	=	(ton)
			=	(m)

Weight in Empty (ton)	-	Weight in Full Loading (ton)	TOTAL
	-		

Record By: _____
(Contactor of Source)

Date: _____

Record By:
(CHEC) _____

Date: _____

Agree By: _____
(The Engineer/Cilent of Source)

Date: _____

Agree By: _____
(Arup)

Date: _____

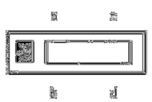
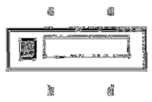
Appendix P – Blank form of 11-09 Disposal B

Contract No.HY/2011/09
Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road Section Between HKSAR Boundary and Scenic Hill

Form 11-09 Disposal Rev. B

Date: ___/___/___ Loading Time ________ Departure Time: ________ Phase: ________ Destination : ☐ East Sha Chau ☐ South Cheung Chau ☐ TM38

Name of Barge: ________ Type of Material : ________

	a (m)	b (m)	c (m)	d (m)	Average Height h=(a+b+c+d)/4 (m)	Barge Depth (m)	Ship Draft (m)	Sea Water Displacement (tonne)
Light Ship Draft 								
Loaded Ship Draft 								
							Net Loading (tonne)	
							Bulk Volume =Net Loading /1.8 (m3)	

Note:1) Sea Water Density 1,025kg/m3

2) Bulked Soil Density 1,800kg/m3

Sub-Contractor Supervisor: ________ Contractor Supervisor: ________ RSS : ________

Date : ________ Date : ________ Date : ________

Appendix Q – Table 3 – Marine Sediment Disposal Delivery Form

Date of use :
使用日期: _____

Disposal Ground:
接收設施:

_____

Licence number of vessels:
船隻號碼:

_____

Issued By:
簽發:

_____

(This part retained by SOR)
(此部分由監督人員保留)

_____
Checked by DCVJV
聯營公司代表簽名

Marine Sediment Disposal Delivery Form
海洋沉積物運載記錄票

Contract No: HY/2011/09 Contract Title: HKZM Bridge Hong Kong Link Road - Section between HKSAR Boundary and
合約編號: HY/2011/09 合約名稱: 港珠澳大橋- 香港接線 - 香港邊界至觀景山段

Date of use: _____ Time of Departure: _____ Licence number of vessels: _____
使用日期: _____ 離開地盤時間: _____ 船隻號碼: _____

Source of Marine Sediment:
海洋沉積物產生地方:

_____

Disposal Ground 接收設施:
☐ South Cheung Chau 長洲南
☐ East Sha Chau 東沙洲
☐ South of the Brothers 大小磨刀洲

Type of sediment:
沉積物種類:
☐ Type 1O 第一類 開放式海洋卸置
☐ Type 1D 第一類 開放式(指定區)海洋卸置
☐ Type 2 第二類 密封式海洋卸置
☐ Capping of mud pit 污染泥料卸置坑覆蓋層

Arrival Time / Date:
抵達日期/ 時間: _____

(This part retained by DCVJV)
此部份由聯營公司保留

Approximate volume:
大約承載量:
☐ Full 全
☐ Three Quarter 3/4
☐ Half 半
☐ One Quarter 1/4

_____
Checked by DCVJV
聯營公司代表簽名

_____
Signature of Supervisory Officer's Representative
監督人員代表簽署

Appendix R – Notification Form

Notification of dDumping of Contaminated Mud at the South of The Brothers

From:
Contract No.: _____
Contract Title: _____
_____
Contract Tel. No.: _____ Fax No. _____

To: Management Team/South of The Brothers

EPD Dumping Permit No. (Allocation Volume m^3)	Dredging Location	Tug Boat Name/No.	Hopper Barge Name/No.	Quantity[1] (m^3)	Time leaving dredging site	Accumulated Quantity (m^3)	Anticipated arrival time at the South of The Brothers

Official Use
Arrival date/time
Remarks

Signature of Resident Engineer/Aauthorized sSupervisor: _____
Name of Resident Engineer /aAuthorized sSupervisor (in block letters): _____ *(post:*)
(contact tel[2]:)
Date/Time: _____

Note: -
1. The quantity entered shall have allowed for bulking after dredging.
2. The permit holder shall provide contact telephone number for verification/providing details when the barge arrived at the South of The Brothers.
3. This form shall be submitted to the Management tTeam by fax (2714 0113) within the period between 1 and 3 hours before anticipated arrival time for TSHDs.
4. The permit holder shall notify the Management Team by phone before the barge leavesing the site.
5 The representative of the barge shall submit a copy of Dumping Permit to the Management Team when requested.