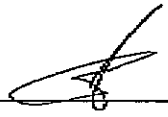
MTR Corporation Limited

West Island Line Project

Contract 704
SYP & HKU Stations and SYP to KET Tunnels

Waste Management Plan (Rev. C)

Verified by: 

Position: Independent Environmental Checker

Date: 17 May 2012

MTR Corporation Limited

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Position: Environmental Team Leader

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1 INTRODUCTION

1.1 Requirement for an WMP

This WMP has been prepared in response to the requirements of General Specification for Civil Engineering Works Section 5 – Environmental Requirements and Appendix D – MTR Corporation's Environmental Policy Statement, Appendix I – Environmental Requirement, Environmental Permit, Environmental Impact Assessment Report and Environmental Monitoring and Audit Manual of West Island Line. The document aims at presenting the following information:

– identify the quantity of waste generation from construction;
– assess the environmental impacts that may occur;
– propose options for mitigating the impacts of waste disposal, and
– set out procedures for implementation of the plan.

1.2 Project Description

The West Island Line (WIL) will extend the full Island Line service to Kennedy Town via Sai Ying Pun (SYP) and Hong Kong University (HKU), adding approximately 3.3km of underground route length to the Island Line. West of Sheung Wan (SHW), the WIL alignment runs in a westerly direction along the railway reserve until Des Voeux Road West where it swings to run in a south-westerly direction towards SYP. A new tunnel between SHW and SYP will be constructed to form the eastbound tunnel, while the existing overrun tunnel west of SHW will be modified to form the westbound tunnel. To meet the predicted construction programme for drill and blast activities throughout the WIL excavation works, a temporary explosives magazine will be constructed at the western flank of Mount Davis passing underneath Victoria Road. The location plan for the MTRC WIL 704 contract is shown in **Figure 1**.

The works to be executed under this Contract include the following major items:

- Construction of SYP and HKU Stations and associated SYP Entrances (B1/B2, B3, C) and HKU Entrances (A, B1, B2, C1 and C2) including the connecting passenger and ventilation adits and ventilation Shaft VS-Z4 and Chiller Plant Building)
- Up and Down Track tunnels connecting the stations between SYP and HKU and HKU and KET and the relevant temporary construction adits from the Praya and Hill Road Access Shafts;
- Demolition and re-provisioning works to facilitate the construction of some of the Entrances;
- Four footbridges will be erected linking HKU Entrances A and C1 to the buildings of HKU;
- Operation of the explosives magazine;
- Temporary barging point for spoil removal; and
- ABWF, landscaping, finishing and reinstatement works.

The programme for the project is 52 months which commenced in Mar 2010 and will end in Jun 2014. For details of the Works Programme refer to submission document **Appendix A**.

Environmental protection and sustainable development are part and parcel of the daily operations of the Gammon Nishimatsu WIL Joint Venture (GNWILJV). GNWILJV will initiate appropriate actions in order to minimize, and where possible eliminate, the environmental impact arising from the construction of this Project.

2 Environmental Legislation and Guidelines

This Waste Management Plan (WMP) is prepared in view of the current environmental legislation related to construction activities and specific contractual requirements and expectations relevant to waste management as described in contract documents. This WMP addresses the potential impacts and necessary mitigation measures in light of GNWILJV's proposed construction methodology and programme.

GNWILJV will comply with all current relevant legislation, regulations and guidelines, which include, but not limited to, the following sections.

2.1 Statutory Obligations

2.1.1 Environmental Impact Assessment (EIA) Ordinance (Cap 499)

The ordinance requires MTRC, the permit holder of the Environmental Permit EP-313/2008/D, under Condition 2.12, to prepare and deposit the Waste Management Plan to the Environmental Protection Department.

All measures recommended in the WMP shall be fully and properly implemented by the contractor and any person working on the project throughout the construction period.

2.1.2 Waste Disposal Ordinance (Cap 354)

This ordinance prohibits any person from using any land or premises for the disposal of waste unless one has been authorized by or has obtained a license from the waste disposal authority, the Environmental Protection Department.

2.1.3 Waste Disposal (Chemical Waste) (General) Regulation, Enacted Under Waste Disposal Ordinance

This regulation has provisions to require any person who produces chemical waste to register with the Environmental Protection Department as well as to control the processing, storage, collection, transport and disposal of chemical waste. In additional, the regulation also provides for the licensing of waste collection, transport and disposal activities.

Chemical waste includes any scrap materials, or unwanted substances specified under Schedule 1 of this Regulation, if such a substance or chemical occurs in such a form, quantity or concentration that causes pollution or constitutes a danger to health or risk of pollution to the environment.

A person shall not produce, or cause to be produced, chemical wastes unless he is registered with EPD. Any person who contravenes this requirement commits an

offence and is liable to a fine and/or imprisonment. Chemical wastes must be treated, utilising on-site plant licensed by EPD or have a licensed collector to transport the wastes to a licensed facility. For each consignment of wastes, the waste producer, collector and disposer of the wastes must sign all relevant parts of a computerised trip ticket. The system is designed to trace wastes from production to disposal.

This regulation also prescribes the storage facilities to be provided on site including labelling and warning sign. To minimise the risks of pollution and danger to human health or life, the waste producer is required to prepare and make available written emergency procedures for spillage, leakage or accidents arising from storage of chemical wastes, and provide employees with training for such procedures.

2.1.4 Waste Disposal (Charges for Disposal of Construction Waste) Regulation

Construction waste means any substance, matter or thing that is generated from construction work and abandoned, whether or not it has been processed or stockpiled before being abandoned, but does not include any sludge, screenings or matter removed in or generated from any desludging, desilting or dredging works.

Construction waste producers, such as construction contractors, renovation contractors or premises owners, prior to using government waste disposal facilities, need to open a billing account with the Environmental Protection Department and pay for the construction waste disposal charge.

Through the Charging Scheme, construction waste producers are encouraged to reduce, sort and recycle construction waste so that their disposal costs can be minimised and the valuable landfill space can be preserved.

2.1.5 Land (Miscellaneous Provisions) Ordinance (Cap 28)

Inert construction waste may be taken to public dumps. The Land (Miscellaneous Provisions) Ordinance requires that a dumping licence be obtained by individuals, or companies, who deliver suitable construction waste to a public filling facility. The licence is issued by the Civil Engineering Development Department. When public dumping of such material is required, GNWILJV shall apply for the licence prior to disposal.

2.1.6 Public Health and Municipal Services Ordinance (Cap 132) - Public Cleansing and Prevention of Nuisances Regulation

This ordinance has provisions on the control of the discharge of hazardous material to sewers and for the control of littering. The ordinance prohibits placing or throwing any solid matter, mud or waste into public sewers or drains and also placing those substances in a location where they may fall into public sewers and drains. The ordinance also has provisions to require the owner or occupier of the land adjoining any street or place that is situated near a public sewer to exercise measures to prevent obstruction of sewers and drains caused by soil and waste.

2.2 Additional References and Guidelines

This Waste Management Plan has been prepared with reference to:

- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat (5 November 1998);
- 2001 Review of the Waste Reduction Framework Plan, Waste Reduction Committee;
- Site Practice for Waste Reduction in Construction Industry (2001), Environmental Protection Department;
- Environmental Guidelines for Planning in Hong Kong (1990), Hong Kong Planning and Standards Guidelines, Hong Kong Government;
- New Disposal Arrangements for Construction Waste (1992), Environmental Protection Department & Civil Engineering Department;
- A Guide to Chemical Waste Control Scheme and A Guide to the Registration of Chemical Waste Producer, Environmental Protection Department;
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992), Environmental Protection Department;
- A Guide to the Control on Import and Export of Waste (1999), Environmental Protection Department;
- Works Branch Technical Circular 32/92, The Use of tropical Hard Wood on Construction Sites, Works Branch;
- Works Bureau Technical Circular No. 2/93, Public Dumps, Works Bureau;
- Works Bureau Technical Circular No. 2/93B, Public Filling Facilities, Works Bureau;
- Works Bureau Technical Circular No. 16/96, Wet Soil in Public Dumps, Works Bureau;
- Works Bureau Technical Circular No. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Projects, Works Bureau;
- Works Bureau Technical Circular No. 25/99, 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Sub-committee Papers, Works Bureau;
- Works Bureau Technical Circular No 12/00, Fill Management; Works Bureau;
- Works Bureau Technical Circular No 19/01, Metallic Site Hoardings and Signboards, Works Bureau;
- Works Bureau Technical Circular No 6/02 and 6/02A, Enhancement Specification for Site Cleanliness and Tidiness, Works Bureau;
- Works Bureau Technical Circular No 12/2002, Specification Facilitating the Use of Recycled Aggregates, Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 33/2002, Management of Construction and Demolition Material including Rock, Environment, Transport and Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 15/2003, Waste Management on Construction Sites, Environment, Transport and Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 31/2004, Trip Ticket System for Disposal of Construction & Demolition Materials, Environment, Transport and Works Bureau;
- Memo Ref. (15) in FM PF/GEN/18.01 Pt.4 dated 22 December 2004 on "Enhancement of Trip Ticket System for Disposal of Construction and Demolition Materials – Commencement of Implementation of Using Bar-coded

Disposal Delivery Form (DDF) on 15.1.2005", Secretary, Public Fill Committee, Civil Engineering & Development Department;

- Civil Engineering and Development Department Technical Circular No 05/2005, Management of Construction and Demolition Materials, Environment, Civil Engineering and Development Department;
- West Island Line, Environmental Impact Assessment Report, Oct 2008;
- Environmental Permit No. EP-313/2008, Environmental Protection Department

2.3 Environmental Permits and Licenses

The permits and licenses for different wastes are presented in the following table:

Table 2.1 Permits and Licenses relating to Waste Management

Licence / Permit	Ref. No.	Issue Date
Application for a Billing Account for Disposal of Construction Waste	Acct no.: 7010555	8/4/2010
Application for a Billing Account for Disposal of Construction Waste (By Vessel)	Acct no.: 7011159	10/9/2010
Chemical Waste Producer (Sai See St Office)	WPN: 5214-111-G2260-03	2/6/2010
Chemical Waste Producer (Praya Shaft)	WPN: 5213-116-G2260-04	12/11/2010
Chemical Waste Producer (David Trench Rehabilitation Centre)	WPN: 5213-112-G2525-02	25/11/2010
Chemical Waste Producer (PCWA)	WPN: 5213-111-G2525-01	26/11/2010
Chemical Waste Producer (KGV)	WPN: 5213-112-G2525-04	20/09/2011
Chemical Waste Producer (Centre Street Market)	WPN: 5213-112-G2525-03	21/05/2011

3 ENVIRONMENTAL POLICY

3.1 Principles

The management of GNWILJV is committed to the planning, implementation and maintenance of an effective environmental management system. In this regard, GNWILJV will implement an Environmental Management System in accordance with ISO 14001 standards.

GNWILJV is committed to high standards of environmental management and the highest practicable priority will be given to environmental protection during the implementation of the Works. The Health, Safety and Environmental Policy of GNWILJV is presented in **Appendix B**.

4 ORGANISATION FOR WASTE MANAGEMENT

The project organisation with respect to waste management works is outlined in the following section. The organisational structure for waste management is presented in **Appendix C**, which shows the arrangement for the organization and lines of communication for waste-management issues. Contacts of key waste management personnel are listed in Table 4.1.

Table 4.1 Contacts of Key Waste Management Personnel

Name	Position	Organization	Telephone	Facsimile	E-mail
John Secker	Project Director	GNWILJV	3559 9001	2818 7077	john.secker@gammonconstruction.com
CC Hau	Deputy Project Director	GNWILJV	3559 9003	2818 7077	chichiu.Hau@gammonconstruction.com
Satoshi Endo	Project Manager (Underground)	GNWILJV	3559 9007	2818 7077	s-endo@nishimatsu.com.hk
Eddie Tse	Environmental Manager *	GNWILJV	3559 9078	2818 7077	Eddie.Tse@gammonconstruction.com

* Contact for environmental protection issues

5 INDIVIDUAL RESPONSIBILITIES

5.1 Project Director

The Project Director has the following duties in relation to waste management control:

- be responsible for overall project management and shall have the day-to-day authority and responsibility for time, cost, safety, environmental and quality management;
- be responsible for the provision of sufficient resources and facilities for the implementation of the Waste Management Plan.
- Monitor and control the works including those of subcontractors to ensure compliance of WMP;
- Report to the Project manager regarding non-compliance of any waste management issues;
- Ensure the remedial actions or mitigation measures are carried out as planned; and
- Supervise and arrange the maintenance of waste management facilities.

5.2 Deputy Project Director / Project Manager

The Project Manager is responsible to the Project Director for overall planning, site operations, appoint of committee members for waste management, staff supervision control co-ordination and external liaison. He is ultimately responsible for all aspects of waste management issues within the Project, which they achieve by implementation of the WMP.

He is also responsible for provision of necessary support to the environmental engineer for the preparation and review of WMP and arrangement of site staff to attend environmental training with regard to waste management organised by other bodies or the environmental engineer.

He shall ensure the recommendations from the Client, Independent Environmental Consultant (IEC), Engineer, Environmental Team (ET), environmental engineer or GNWILJV's internal audit team are implemented to improve the waste management practices and carry out immediate action to rectify the non-compliance of waste management requirements. The Project Manager has the following responsibilities in relation to waste management:

(a) Keep abreast of the requirements of the statutory regulations in relation to waste management;
(b) Ensure works are executed in accordance with the WMP;
(c) Arrange routine joint site inspection with environmental engineer and review environmental inspection report submitted by the environmental engineer;
(d) Ensure works are undertaken in accordance with the recommendations made by the Client, IEC, Engineer, ET and environmental engineer;
(e) Monitor and control the works including those of subcontractors to ensure compliance with specified requirements;
(f) Ensure appropriate waste management mitigation measures are properly implemented;
(g) Ensure follow up actions are properly undertaken in the event of non-compliance of the WMP;
(h) Review method statement to ensure appropriate mitigation measures are implemented prior to execution of work;
(i) Liaise with Client, IEC, Engineer, ET and environmental engineer on waste management issues;
(j) Monitor records of all trained personnel in the site offices; and
(k) Monitor the following documents.
    - any statutory required waste management permits/licenses including dumping licence, chemical waste producer, admission ticket and etc.;
    - C&D material disposal delivery record; and
    - waste reuse / recycle / disposal summary.

5.3 Site Agent /Superintendent/ Engineer/ Foreman/Administrator & Survey Team

They are responsible for the following duties in relation to environmental control:

(a) Assist the Project Manager in implementing the WMP;
(b) Control the works including those of subcontractors to fulfil the requirement of waste management issues;
(c) Report to the Project Manager any non-compliance of any waste management issues;
(d) Maintain the on-site waste management facilities including sorting area, temporary storage area, general refuse bins, recycling bins and etc;
(e) Carry out remedial actions or mitigation measures to rectify the non-compliance;
(f) Conduct environmental toolbox talks with respect to waste management to labourers and workers regularly; and
(g) Carry out routine maintenance of waste management facilities. Maintenance records shall be kept in site office.

5.4 Subcontractors and other Employees

Every employee and subcontractor has the duty to carry out agreed waste management practices as instructed by the Site Agent/Superintendent/Engineer /Foreman /Administration & Survey Team.

Every employee and subcontractor shall report promptly to the Site Agent/Superintendent/Engineer/Supervisor/Administration & Survey Team any non-compliance of waste management issues.

On-site supervisor of each subcontractor shall conduct environmental toolbox talks with respect to waste management to their labourers and workers on a regular basis.

5.5 Environmental Manager

The environmental manager shall be responsible for:

(a) Preparing and revising the WMP during the construction stage;
(b) Reviewing works programmes, method statements, licence application and other relevant documentation so as to ensure the best practice would be implemented to generate no unacceptable impacts with respect to waste management to the established guidelines/standards;
(c) Identifying any potential unanticipated or greater than expected waste impacts;
(d) Formulating any necessary preventative or remedial measures to be taken for these potential impacts;
(e) Liaising with the Engineer, IEC, ET and Contractors on waste management both regularly and as necessary;
(f) Carrying out complaint investigation, evaluation and identification of preventive and corrective actions
(g) Assisting ET in undertaking regular and ad hoc environmental site inspection and audit, including waste management issues, and supplying the IEC with Corrective Action Reports for any deficiencies after completion of the inspection or audit;
(h) Liaising and consulting with all relevant parties during the implementation of the WMP;
(i) Preparing training material for environmental toolbox talks with regard to waste management and provide dissemination of guidance notes to operatives; and
(j) Assist the Project Manager in preparing waste flow table and monthly summary of the implementation of WMP.

5.6 Environmental Team

The ET shall not be in any way an associated body of the Contractor and it should be managed by the ET leader. The ET leader shall be a person who has at least 7 years' experience in EM&A and has relevant professional qualification. The appointment of ET Leader should be subject to approval of EPD. The ET should:

(a) Review the EIA Report and the detailed designs to ensure that the EIA recommendations and any other measures identified during the reviews are incorporated into the designs;
(b) Review works programmes, method statements, licence application and other relevant documentation so as to ensure the best practice would be implemented to generate no unacceptable impacts with respect to waste management to the established guidelines/standards;

(c) Identify any potential unanticipated or greater than expected waste impacts; (d) Formulate any necessary preventative or remedial measures to be taken for these potential impacts;
(d) Liaise with the Engineer and Contractor on waste management both regularly and as necessary;
(e) Carry out complaint investigation, evaluation and identification of preventive and corrective actions
(f) Undertake weekly environmental site inspection and audit with respect to waste management both regularly and on ad hoc basis at a frequency appropriate to the intensity of the works;
(g) Liaise and consult with all relevant parties during the implementation of the WMP;
(h) Address waste management issues in the EM&A Report for submission to the – Engineer and EPD; and
(i) Report the findings of the site inspections and other environmental performance reviews to the ER, IEC and Contractor.

5.7 Independent Environmental Checker (IEC)

The IEC shall advise the Engineer on environmental issues related to the project. The role of the IEC shall be independent from the management of construction works; but the IEC shall be empowered to audit the environmental performance of construction.

The main duties of the IEC include the followings:

(a) Audit the overall waste management programme including the implementation of all waste management mitigation measures and submissions relating to WMP;
(b) Conduct random site inspection;
(c) Report the findings of the site inspections and other environmental performance reviews to the Engineer; and
(d) Review and verify the monthly EM&A reports.

6 WASTE MANAGEMENT

6.1 Potential Sources of Impact

The Works will involve the following activities that may potentially give rise to waste issues on the Site:

- Construction and Demolition Materials generated from construction activities;
- Chemical wastes arising from maintenance of plants;
- General refuse from workers and site office;
- Asbestos containing material from David Trench Rehabilitation Centre; and
- Contaminated soil from fuel tank storage area in David Trench Rehabilitation Centre.

The predicted master forecast of different categories of waste is summarised in the Disposal Schedule in **Appendix D**. The Disposal Schedule shall be reviewed monthly, by taking into account of the permanent work design and site work planning/programme/progress to reflect actual quantity of waste materials arising.

6.1.1 Construction and Demolition Materials

Construction and Demolition (C&D) materials refer to both inert and non-inert materials generated from construction activities of the Works. The inert portion of the C&D materials include materials such as soil, building debris, broken rock, concrete, and the non-inert portion comprises tree debris, vegetation, timber, paper, plastics, general refuse and the like.

6.1.2 Chemical Waste

Chemical waste, as defined under the *Waste Disposal (Chemical Waste) (General) Regulation*, includes any substance being scrap material, or unwanted substances specified under Schedule 1 of the Regulation. A complete list of such substances is provided under the Regulation, however substances likely to be generated by construction activities include, but need not be limited to the following:

- Scrap batteries or spent acid/alkali from maintenance;
- Used paint, engine oils, hydraulic fluids and waste fuel;
- Spent material oils/cleaning fluids from mechanical machinery; and,
- Spend solvents/solutions.

6.1.3 Packaging Waste

Many types of material and components are delivered to site in cardboard, plastic or timber packaging. It is encouraged to reuse these materials as much as possible, for example, reuse cardboard packaging boxes for storage. Cardboard and paper packaging recovered from site shall be properly stockpiled in dry condition and covered. Packaging materials will be recycled to supplier.

6.1.4 General Refuse

The presence of a construction site with large numbers of workers and site office will result in the generation of a variety of general refuse requiring disposal. General refuse will mainly consist of food wastes, aluminium cans and waste paper.

6.1.5 Contaminated Soil

The project has identified potential soil contamination at the location of the existing fuel oil storage tank area, which is to be removed as part of the demolition works at David Trench Rehabilitation Centre. The oil tank will be emptied and reused in other facility/premises.

Site appraisal was conducted and it was observed that the oil tank is located in a concrete structure with 8 inches thick wall and 6 inches reinforced concrete slab plus 2 inches blinding layer and no sign of oil spillage at ground surface was spotted. An indicative sampling and testing was conducted in accordance with EPD's Guidance Note for Contaminated Land Assessment and Remediation and Risk-based remediation goals (RBRGs). The analytical results indicate that no remediation is required. The waste concrete contaminated with diesel oil, in any, will be identified as chemical waste and will be handled in full compliance with the Waste Disposal

Ordinance, Waste Disposal (Chemical Waste) (General) Regulation and the Water Pollution Ordinance.

6.2 Waste Reduction Measures

6.2.1 Waste Reduction through proper planning and good site management

As presented in the Waste Management Hierarchy, GNWILJV accords the highest priority to managing waste through reduction at source. To this end, the following measures shall be implemented.

- Management of construction materials such that over-ordering, poor storage and maintenance, mishandling as well as improper operation procedures shall be avoided;
- Restriction on use of hardwood such that softwood, metal props and/or proprietary steel system shall be considered for false work and the shoring of trenches and pits;
- The formwork shall be designed to maximize the use of standard wooden panels so that high reuse levels can be achieved. More durable alternatives such as steel formwork or plastic facing shall be considered for repetitive areas to increase the potential for reuse;
- C&D materials shall be, as much as possible and practicable, separated into reusable items and materials to be disposed of or recycled. It shall be conducted at the immediate working area to avoid loss/leakage and cross contamination during handling;
- All C&D materials arising from or in connection with the construction and demolition work shall be sorted on-site and be separated into different categories for disposal at landfills, public filling areas, or reuse and recycling as appropriate. The sorting area may be revised from time to time in order to suit the construction activities;
- Useful materials such as timber, rubble and steel/metal shall be segregated for reuse. For example formwork and timber shall be cleaned for reuse, off-cuts of reinforcement shall be sorted into usable lengths and short off cuts stacked for scrap metal. Where it is no longer reusable, scrap steel and metal items will be collected by recycling companies;
- Segregated materials shall be temporarily stored at designated areas for reuse on site. Steel will be stored at the reinforcement yards, timber at the formwork yard and rubble in a stockpile (either covered or sprayed to control dust). Cardboard and paper packaging recovered from site shall be properly stockpiled in dry condition and covered;
- The remaining non-reusable C&D materials shall be sorted on-site into the inert portion (e.g. rock, brick, bituminous material, concrete and soil, etc.) as the “public fill” and the non-inert portion (e.g. timber, vegetation and paper, etc.) as the “C&D waste”. All inert C&D materials shall be broken down according to the Dumping License conditions prior to disposal to government approved public filling outlets. The hard inert construction and demolition (C&D) materials, such as broken rock and concrete which can be recycled into aggregates for reuse in construction works, shall be delivered to the C&D material dumping facility at Tuen Mun Area 38. The non-recyclable portion of C&D waste (containing no more than 30% by weight of inert content) shall be tipped at the landfill such as

SENT Landfill. Recycling companies will be arranged to collect the recyclable portion of C&D waste;

- In order to avoid over-order of concrete, accurate calculation shall be made prior to concrete pouring. Close supervision shall also be arranged during concrete pouring to avoid over-cast; and
- Surplus concrete shall be used for paving of temporary road or cast of concrete blocks for bunding etc. as far as practicable. In case immediate use of surplus concrete cannot be identified, the surplus concrete will be temporarily poured into designated surplus concrete pouring areas on site for further disposal to Public Fill Reception Facilities..

6.2.2 Reuse of C&D Material Generated

Some of the C&D materials may be stockpiled at the PCWA site and reused on site as backfill material. It is estimated that 16,900 m3 of rock will be reused as backfill material. Concrete debris will not be used as an on-site backfill material due to its relatively large size and also difficulty to control the quality of compaction using concrete debris as fill.

6.3 Handling of Surplus C&D Materials

To handle and dispose of the large quantity of surplus C&D materials off site from the work areas with least environmental impacts to the local community, barging points will be set up at the Western PCWA site. There will be three approaches in handling and disposal of surplus C&D materials:

(a) Surplus rock material generated could be reused as rock fill by other projects, either in the HKSAR, mainland China or Macau.

(b) Disposal of surplus inert C&D materials to Mainland via the Government of the HKSAR under the “Waste Disposal (Charges for Disposal of Construction Waste) Regulation”.

(c) The remaining C&D materials will be disposed of at the Government’s Public Fill Reception Facilities (PFRFs).

6.3.1 Surplus Rock Material Reused as Rock Fill by Other Projects

As stated in Section 7.15 of the approved WIL EIA Report, it is the Government’s advice that disposal of material to public reception facilities should be considered as the last resort with the preferred approach to reuse the material within the Project or in other projects.

To materialize this approach, the following changes on waste handling facilities at PCWA were made when compared with that in the Approved WIL EIA Report as listed in Table 6.1 and the relevant environmental review due to the changes was evaluated in Environmental Review Report for PCWA Barging Facilities and Rock Crushers (April 2012) (ERR) as enclosed in **Appendix K**.

Table 6.1 Details of Changes on Waste Handling in PCWA

Parameter	Approved WIL EIA Report	Change on Waste Handling in PCWA
1. Quantities and Locations of Rock Crushers	Two above-ground rock crushers located at Kennedy Town Abattoir Site and Western PCWA Site (Section 11.12 & 11.24)	Two underground rock crushers located inside tunnel near the future HKU Station
2. Maximum Handling Capacity of Rock Crushers	Total: 194 tonnes/hr 85 tonnes/hr at Kennedy Town Abattoir Site; and 109 tonnes/hr at Western PCWA Site (Table 11.9 & 11.11)	Maximum handling capacity of rock crushers: 650 tonnes/hr (i.e. two underground rock crushers with maximum handling capacity of 325 tonnes/hr each) Normal handling capacity of rock crushers:300 tonnes/hr in total (Actual handling rate will be restricted by the capacity of barges and stockpile areas)
3. Operation Hour of Rock Crushers	12 hours/day (Table 11.9 & 11.11)	Maximum16 hours/day
4. Setting of the Stockpile Area at the Barging Facilities at the Western PCWA Site	One stockpile area at the Western PCWA Site with a total area of 364m^2 without any enclosing structure (Section 11.24 & Appendix 11.1)	One stockpile area of 1428m^2 at the Western PCWA Site with enclosure (enclosed three sides and the top) with rubber curtain at the seafront opening. When compared with the open stockpiled area as indicated in the approved WIL EIA Report, the location of this enclosed stockpile area was slightly shifted to the area where the rock crushers with enclosure would be in the approved WIL EIA report.
5. Usage of Stockpile Area	The crushed rock materials would be transported to the stockpile (without any enclosing structure) for temporary storage via an enclosed conveyor belt system (Section 11.25)	The rock materials would be transported to the stockpile area which forms part of the conveyor system and serves as a buffer for C&D material management, by both enclosed conveyor belt and dump trucks
6. Number of truck trips per day at the Western PCWA Site	Maximum 160 truck trips per day (Table 11.11)	Maximum 272 truck trips per day in total from WIL and SIL(E) projects

Parameter	Approved WIL EIA Report	Change on Waste Handling in PCWA
7.Use of the barging facilities at the Western PCWA Site	The WIL project would use the barging facilities at the Western PCWA Site (Section 11.11)	Co-use of the barging facilities by WIL and SIL(E) projects. The disposal arrangement of SIL(E) has been carefully considered such that the peak period would not overlap with that of WIL (refers to Section 2.8.3 of SIL(E) EIA Report). The total handling capacity of the barging facilities would not exceed the 272 truck trips per day as stated in item 6

To make efficient use of the existing facilities, as proposed by MTR, the barging facilities in Western PCWA will be co-used by WIL and South Island Line (East) (SIL(E)) projects. This arrangement would greatly reduce number of traffic crossing harbour tunnels as well as travelling long distance from Hong Kong Island to Fill Bank at Tuen Mun Area 38, thus, improving air quality by reducing emission. Also, co-use of the barging facilities could eliminate the need for a separate barging point for SIL(E) project on the north shore of Hong Kong Island and associated potential environmental impacts and nuisances arising from a separate barging point.

In order to mitigate the dust impact in Western PCWA site, water sprinklers are installed inside the semi noise enclosure, at the barging point and at the roadsides. All haul roads and conveyor belts are dampened regularly by water spraying as well as using the misting system. Regular water spraying and misting is located at all material drop points to minimise dust generation. When trucks entering PCWA site, before unloading in the semi-noise enclosure, the C&D material will be wetted down by automatic water spray at the weight-bridge as a precaution measure to further suppress the dust generation. Additional environmental mitigation measures due to the changes on waste handling facilities on PCWA are included in the ERR.

With the changes in the waste handling facilities in Western PCWA site, majority of the inert C&D materials will be transported by dump trucks from the underground excavation areas for HKU and SYP Stations to the two underground crushers. These screened and crushed materials would then be loaded to the underground conveyor belt system to be transferred to a stockpile area located at Western PCWA site via Praya Shaft. For various construction sites for station entrance, the C&D material generated will mainly be transported by trucks to Western PCWA barging points directly or the stockpile area located at PCWA via the following routing tentatively further handling. The trucks will be tentatively undertaking a routing in the following directions to the barging point at Western PCWA:

Route to barging point at Western PCWA:

- Starting from various construction sites
- Shing Sai Road
- Finishing at barging point at Western PCWA

A stockpile area within a semi enclosure will be provided at the Western PCWA site. This stockpile area forms part of the conveyor system as a buffer to support for C&D material reuse by alternative disposal grounds and to allow for situations where

barge disposal is disrupted such as adverse weather conditions or problems at receptor sites. The C&D material in it will further be transferred to the barging points by the conveyor/trucks for transportation to alternative disposal grounds by vessels.

Major Alternative disposal grounds which have been approved by the Engineer are listed below:

1. Central Wan Chai Bypass
2. Kai Tak
3. Central Reclamation Phase III

Other alternative disposal grounds may also be explored to ensure reuse of the inert C&D materials to the fullest extent but prior approval from the Engineer will be sought before any disposal at alternative locations. GNWILJV also operates a Web-based Spoil Exchange Database whereby the projects can check on the availability of fill within Gammon Group. The aim is to seek a balance between cut and fill volumes across projects and thereby provide a sustainable solution to fill disposal.

6.3.2 Disposal of Surplus Inert C&D materials to Mainland

The disposal of surplus inert C&D materials to the Taishan outlet, Mainland China shall be carried out via CEDD/EPD and coordinated by MTRC under the "Waste Disposal (Charges for Disposal of Construction Waste) Regulation".

6.3.3 Disposal of C&D Materials at Public Fill Reception Facilities (PFRFs)

The disposal of material to PFRFs will be considered as one of the alternatives other than main sources listed in **Appendix I** – Tentative Disposal Plan.

Prior to disposal of the C&D materials to PFRFs, the Fill Management Committee of CEDD will be approached in respect of achieving the necessary approvals. After the award of the contract GNWILJV has applied for the account for payment of the construction waste disposal charges and will operate a chit management system in respect of disposal of C&D materials in accordance with the requirements of CEDD/EPD.

Before transporting the surplus C&D materials to the Western PCWA site, C&D materials will be sorted on site; inert C&D material, oversized C&D material, reusable and recyclable material will be separated out. Oversized material will be crushed or broken into a size less than 250mm or other sizes as agreed with the secretary of the Public Fill Committee..C&D materials will be directly unloaded from the trucks/conveyor belt into the vessel and will be subsequently transported to the designated PFRFs at Tuen Mun Area 38 and/or Tseung Kwan O Area 137 if Tuen Mun Area 38 is not available and this disposal is allowed by CEDD.

Route to Tuen Mun Area 38 Fill Bank, by vessels (GNJV will dispose to TM38 mainly by barge after the barging point is in operation):

- Starting from various construction sites
- Shing Sai Road
- Barging point at Western PCWA
- Finishing at Tuen Mun Area Fill Bank by Sea

Route to Tseung Kwan O Area 137, by vessels (GNJV will dispose to TKO137 mainly by barge after the barging point is in operation):

- Starting from various construction sites
- Shing Sai Road
- Barging point at Western PCWA
- Finishing at Tseung Kwan O Area 137 by Sea

Small amount of C&D material will be disposed to Tuen Mun Area 38 Fill Bank by trucks for contingency to allow for situations where disposal by vessels is disrupted such as adverse weather conditions or problems at receptor sites or at the barging points.

Route to Tuen Mun Area 38 Fill Bank, by trucks:

- Starting from various construction sites
- Connaught Road West & Connaught Road Central
- Harcourt Road
- Gloucester Road
- Cross Harbour Tunnel
- Hong Chong Road
- West Kowloon Expressway
- Cheung Tsing Tunnel
- Tuen Mun Road
- Lung Mun Road
- Finishing at Tuen Mun Area 38 Fill Bank

The above routing is only indicative and shall be subject to change according to traffic conditions.

6.3.4 On-site Sorting of Construction and Demolition Materials

All Construction and Demolition (C&D) materials arising from or in connection with the Works will be sorted on the Site to recover reusable and/or recyclable materials such as using as backfilling materials and for landscaping works for other WIL contracts as far as possible. All sorted and processed surplus materials arising from or in connection with the Works from the Site will be promptly removed to minimise temporary stockpiling on the Site.

A system will be devised for on-site sorting of C&D materials. The system will 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.

GNWILJV will sort the materials at source into the following categories:

- hard rock and large broken concrete suitable for reuse on the Site or recycling at a designated location;
- metals;
- paper and plastics;
- chemical waste; and
- materials suitable for disposal at public fill reception facilities and landfills.

Sufficient space for temporary storage of C&D materials will be identified and provided to facilitate collection and/or sorting on the Site. Except for those inert C&D

materials to be reused on the Site, all other C&D materials off the Site will be removed as soon as practicable to optimise the use of the on-site storage space.

Bituminous material will be sorted out where practicable and feasible, and separately disposed to Tseung Kwan O Area 137 / Tuen Mun Area 38.

A system for proper handling and storage of chemical waste generated from the Site will be established in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation* and *the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Arrangements will be made with specialist contractors for the collection and disposal of chemical waste.

The temporary on site sorting facilities for C&D materials is presented in **Figure 2**.

6.3.5 Recycling

To minimise the amount of waste disposal to landfills, the general refuse or C&D waste shall be reused and recycled as much as practical. Waste sorting and segregation shall be carried out in accordance with the following categories for recycling:

- Plastic (i.e. plastic bag, plastic bottle, plastic packaging, etc.)
- Rubber;
- Paper;
- Wood/ timber;
- Glass;
- Textile; and
- Metal (i.e. aluminium can, steel metal, ferrous metal, and non-ferrous metal).

Equipment and material packaging (ie paper and cardboard) will be recovered, properly stockpiled in dry and covered condition to prevent cross contamination by other C&D materials. Particular attention will be paid to avoid cross contamination in the course of collecting paper for recycling. Arrangements will be made with recycling contractors to ensure that recyclable materials sorted from the Site are collected with reasonable care.

GNWILJV shall employ waste recycling collector - Confidential Materials Destruction Service Ltd or Fok Woo Group to collect the recyclable material which include paper, metal and plastic waste. The volume of collected recyclable will be reported in the quarterly waste flow table.

The location for collection of recyclable materials is presented in **Figure 2**.

6.3.6 Disposal of Artificial Hard Materials

Artificial Hard Materials (AHMs) will mainly be generated during demolition of the existing structure comprising concrete debris. The estimated quantity of AHMs is 5,623 m^3. All AHMs will be delivered to other projects for reuse, or to TKO Area 137 recycling plant or similar facilities for recycling where feasible and practicable. If no reuse/recycling outlets can be identified, AHMs will be delivered to PFRFs.

6.3.7 Disposal of C&D Waste

The non-inert portion of the C&D materials that are not recyclable, classified as C&D Waste, will be transported by trucks and disposed of at SENT Landfill.

6.4 Management of Chemical Waste

Containers used for the storage of chemical waste will:

- 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 litres unless the specification have been approved by the EPD; and
- display a label in English and Chinese in accordance with instruction prescribed in *Schedule 2* of the Waste Disposal (Chemical Waste)(General) Regulation.

The storage area for chemical wastes will:

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

No chemical waste will be stored at construction sites. All chemical wastes generated will be delivered to the centralized Chemical Waste Storage Area at Works Area B.

The location of the chemical waste store is presented in **Figure 2**.

Disposal of chemical waste will:

- be via a licensed waste collector; and
- be to an off site facility licensed to receive chemical waste, such as a recycling facility located in Yuen Long Industrial Estate or the Chemical Waste Treatment Facility located in Tsing Yi; or
- to be a reuser of the waste, under the approval from the EPD.

When a chemical spill has been discovered one shall take the following actions:

- Alert all persons in the vicinity and inform the person in-charge of the site.
- Assess the situation and if the spill is serious which will cause danger to nearby people, water bodies, natural habitats, etc., the Fire Service Department shall be informed and the affected area shall be fenced off.

- All personnel shall evacuate from the area and wait for the Fire Services Department to arrive.
- The work area supervisor shall be present at the scene to provide the details of the chemical used and the occurrence of the incident.
- If safe to do so, take the following actions:

  (i) Where available, follow the emergency procedure as stipulated in the label on the container,
  (ii) Put on personal protective equipment;
  (iii) Stop the spillage;
  (iv) Confine the spill with earth barriers;
  (v) Contain the spill inside the work area and prevent it from entering water ways and drainage systems, etc.;
  (vi) Switch off all heat and ignitable sources.

6.5 Management of General Refuse

General refuse generated on site will be stored in enclosed bins separate from construction and chemical wastes. A reputable waste collector will be employed by the contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts. The burning of refuse on construction site is prohibited by law.

Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible, so separate, labelled bins for their deposit will be provided if feasible.

Office wastes will be reduced through the recycling of paper. Participation in a local collection scheme will be considered if one is available. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided.

The location of the general refuse collection bins is presented in **Figure 2**.

6.6 Asbestos Containing Materials

Different types of asbestos waste shall be kept from each other and from other construction and demolition wastes. While conducting demolition activities, the working area shall be fully enclosed and all Asbestos-containing materials (ACMs) have to be removed prior to any demolition activities. The designated sub-contractor, under the supervision of the Main Contractor and the Engineer, will be responsible for removal of ACM. The following EPD's Codes of Practice on Asbestos Control shall be followed in handling ACMs:-

- Code of Practice on Asbestos Control - Preparation of Asbestos Investigation Report, Asbestos Management Plan and Asbestos Abatement Plan
- Code of Practice on Asbestos Control - Asbestos Work Using Full Containment or Mini Containment Method
- Code of Practice on Asbestos Control - Asbestos Work Using Glove bag Method
- Code of Practice on Asbestos Control - Safe Handling of Low Risk Asbestos Containing Material

- Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste

Loading and unloading of asbestos waste

- Bags shall not be thrown or dropped;
- Workers shall wear approved face masks, heavy duty rubber gloves, overalls and working safety shoes.

Storage of Asbestos waste

All storage of asbestos waste shall be carried out properly in a secure place isolated from other substances so as to prevent any possible release of asbestos fibres into the atmosphere and contamination of other substances. Type 1 waste shall not be stored together with Type 2 and 3 wastes so as to avoid damage to the plastic bags of Type 2 and 3 wastes, unless the bags are packed in boxes or drums for additional protection. Bagged asbestos waste shall not be stacked more than 3 bags high in order to avoid damage to the bottom bag. The storage shall be isolated from other working areas and bear warning panels to alert people of the presence of asbestos waste.

Transport Asbestos waste to the disposal site

Type 2 and 3 asbestos wastes contained in plastic bags must be transported in enclosed skips which meet the following specifications:

- Dedicated skips must be exclusively used to transport asbestos waste;
- Skips must be constructed of steel and possess sealable drain outlet;
- Skips must be fully enclosed and be of the walk-in type with double lockable door at the rear end. The doors and joints of the skips must be rubber sealed, and the doors must be locked during transport;
- The capacity of the skips will normally be 9 or 15 m3, and the skips must not be overloaded;
- Loading and unloading of the bagged waste must be conducted by hand whilst the skip is on the ground;
- The bagged asbestos waste shall not be stacked indiscriminately resulting in damage to the bottom bag due to the weight at top;
- Contaminated skips must be washed down at the disposal sites where wash water may be drained into reception trenches; and
- Proper warning panels must be placed on the skip to indicate the carriage of asbestos waste.

6.7 Estimated Quantities and Disposal of Waste by Type

The estimated quantities of C&D materials requiring disposal are presented in **Appendix D**.

Table 6.2 provides a summary of the various waste types likely to be generated during the construction activities for the Project, together with the handling and disposal methods.

Table 6.2 Summary of Waste Handling Procedures and Disposal Routes

Waste Material Type	Generated from works item	Total Quantity Generated	Quantity to be disposed off-site	Disposal	Handling
Inert C&D Material	Construction of HKU and SYP Stations and associated tunnel	435,347m^3	418,447 m^3 (Re-use on site 16900 m^3)	Surplus inert C&D material to be reused in other projects or in Mainland, or delivered to PFRFs for beneficial uses. TKO Area 137 recycling plant or similar facilities for recycling.	Segregate rock to avoid contamination from other wastes. Trucks to transfer inert C&D material barging point at Western PCWA. Barge to transfer C&D material to/from Tuen Mun Area 38 Fill Bank, or other projects or Mainland. Trucks to transfer Artificial Hard Materials to TKO Area 137 recycling plant or similar facilities for recycling.
	Demolition Works (Artificial Hard Materials)	5623 m^3	5623 m^3		
C&D Waste	Site clearance at works areas	150 m^3	150 m^3	To be disposed of to the designated landfill site	Trucks to transfer non-inert C&D material to Landfill
General Refuse	Waste paper, discarded containers, etc. generated from workforce	626 m^3	626 m^3	Refuse transfer station for compaction and containerisation and then to landfill or transported by trucks and disposed of at Landfill	Provide on-site refuse collection points.
Recyclables	From daily site housekeeping	157 m^3	157 m^3	Recycling Centre	Collected by recyclers
Chemical Waste	Cleansing fluids, solvent, lubrication oil and fuel from construction plant and equipment	10400 L (liquid)	10400 L (liquid)	Chemical Waste Treatment Centre / SENT Landfill	Recycle and collect by licensed collector. Stored on-site within suitably designed containers
Asbestos Containing Material (ACM)	asbestos waste from demolition works	asbestos waste to be confirmed by AIR/AAP (solid)	asbestos waste to be confirmed by AIR/AAP (solid)	SENT Landfill	Proper packaging, labelling and storage onsite in accordance with S6.6 and relevant EPD codes of

Waste Material Type	Generated from works item	Total Quantity Generated	Quantity to be disposed off-site	Disposal	Handling
					practice
Diesel Contaminated Concrete	Contaminated materials at the bottom of underground oil storage tank	20 m^3	20 m^3	Chemical Waste Treatment Centre / SENT Landfill	Recycle and collect by licensed collector. Stored on-site within suitably designed containers

Remarks: The spoil handling capacities of the ramp is approximately 2500 tonnes per day and that for the conveyor belt is about 800 tonnes per hour.

6.7.1 Recording the quantities of Reused, Recycled and Disposed Construction and Demolition Materials

For the purpose of facilitating the Employer's Sustainability Reporting, the quantities of wastes reused, recycled and disposed relating to construction activities will be submitted on a monthly basis. The example of monthly summary for waste flow table (WFT) is shown in **Appendix E**.

6.8 Procedure for Chit System Implementation

GNWILJV shall provide a Construction and Demolition Material Disposal Delivery Form (refer to **Appendix F** for an example of the chit to be used) for each and every vehicular / vessel trip transporting construction-and-demolition material, ie, public fill or construction-and-demolition waste, off site. GNWILJV shall complete all relevant details on the form in duplicate except for the time of departure.

Prior to the vehicle leaving the site, GNWILJV shall present the completed Form to the Engineer's Representative. The Engineer's Representative shall insert the Time of Departure and stamp the Form. The Engineer's Representative shall retain a copy of the Form and return the original to GNWILJV. The form shall be carried on board the vehicle / vessel at all times throughout the vehicular / vessel trip.

For each vehicular / vessel trip, GNWILJV shall present to the operator of the designated public filling facility/landfill (the operator) the stamped form prior to the disposal of the construction-and-demolition material. The operator shall stamp and return the form to GNWILJV together with a computer print-out receipt to acknowledge the disposal of public fill/construction and demolition waste. GNWILJV shall keep record of the stamped form and the original receipt for inspection by the Engineer's Representative within two working days of the vehicular /vessel trip.

GNWILJV shall maintain a daily record of disposal of C&D materials from the Site including details of the C&D materials, the truck/barge number, departure time, etc, using the Daily Record Summary (DRS), a sample of which is given in **Appendix G**.

For each trip of off-site disposal of chemical waste, trip tickets issued for every chemical waste collection made by the licensed waste collector shall be copied to the Engineer and the original be maintained on site for future references.

6.9 Site Tidiness

The site shall be kept in a tidy manner at all times. The site establishment shall be planned with areas allocated for containers, plant, storage of material and waste skips. Direct and subcontract labour shall be responsible for making sure that the site is kept in a tidy manner. All labour involved on the site shall be responsible for making sure that tools are cleaned and put away, equipment is stored away after use, and un-used material is neatly stacked or stored in areas provided. All areas of the site shall be kept clean and tidy, access/egress points shall be swept, and passageways shall be kept free from material and plant or equipment. Waste material shall be stored in the receptacles provided, which shall be emptied regularly.

7 SURVILLANCE SYSTEM

The Contractor shall establish a surveillance system within the Site and at any alternative disposal grounds to check that the disposal activities comply with the requirements.

7.1 By Truck

GNWILJV will write to all truck drivers whom he has 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 and stamped chit, irrespective of the location and nature of the disposal ground;
- The C&D materials must be disposed of at the disposal grounds as stipulated in the chit;
- Any loaded dump truck, which is rejected by the disposal grounds as stipulated in the chit (i.e either Public Fill Reception Facility or Landfill), The truck drivers should deliver the unacceptable mixed waste back to the site for further sorting;
- Each truck carrying a load from the construction site should not be overloaded;
- Each truck should be covered with an impervious sheet when carrying dusty materials off-site;
- What constitutes an improper disposal where the Public Fill Committee (PFC) will consider revoking the Dumping Licence from the holder of the offending trucks; and
- Truck drivers must bear a valid Dumping Licence which he can apply from the Civil Engineering and Development Department (CEDD).

7.2 By Barge

- The site staff at barging point will also inspect to ensure no any unsuitable material type;
- A designated Disposal Delivery Form (For Barge), agreed by Contractor will be issued for each barge load;
- The barging point coordinator/barge operator shall ensure all necessary information on the DDF is completed before leaving from the barging point;

- In case of any unsuitable material loaded into the barge, the unsuitable material will be set aside and brought back to the barging point in latter stage. Any unsuitable material loaded into the barge will not be disposed at the facilities. Any non-compliance with unsuitable material shall be reported to MTR Engineer's Representatives.
- Stop delivering when a typhoon or rainstorm is imminent or forecast.
- Check the deck level against the permissible 'mark' on the barge body to avoid overloading.
- Upon the arrival at reception site, the respective management team will be notified. The loaded barge shall follow the instructions of the management team at the reception site for unloading.

7.3 Enhanced Measures

The following measures will be implemented continuously to improve C&D waste materials sorting on-site.

Training

Ongoing training sessions on waste handling, sorting and disposal, in the form of induction training and tool box talk, is continued to provide to the frontline workers, project team members, subcontractor and dump truck subcontractor's representative to enhance their awareness. The persons who carry out the training shall be the Environmental Manager, the Environmental Officer or persons trained by them and considered competent to carry out the work.

Waste Facilities

Waste facilities to facilitate on-site sorting, collection and temporary storage of waste materials is continued to maintain. The waste facilities including the following:

1. Designated area for temporary storage of Inert C&D Material
2. Designated area for temporary storage of non-inert C&D Material
3. Recycling area for collection of waste metal, plastic and paper.
4. Recycling bins for collection of waste papers, cans and plastic bottles
5. Designated storage area for chemical waste

Administrative Control

To ensure there is no waste to be disposed to sorting facility in future, we have mandated any loaded dump truck, which is rejected by either Public Fill Reception Facility or Landfill, to deliver the unacceptable mixed waste back to the site for further sorting.

GNWILJV will closely monitor the efficiency and effectiveness of on site sorting and ensure that no waste is allowed to dispose to the sorting facility and are obliged to fully comply with the chit system and the requirements as stipulated in the Employer's Requirement.

7.4 Routine Inspection and Audit

The environmental engineer shall be responsible for auditing of the waste management practice during the weekly site inspection in order to ensure that appropriate control measures are properly implemented.

Should deficiency of waste control measures are identified during the site inspection, the environmental engineer shall discuss with the Project Manager for formulation of remedial measures and the Project Manager shall implement the remedial measures promptly to rectify the situation. If deficiency persists, alternatives and/or addition control measures shall be proposed. The environmental engineer shall also assist the ET in undertaking regular and ad hoc environmental site inspection and audit, including waste management issues, and supplying the IEC with Corrective Action Reports for any deficiencies after completion of the inspection or audit.

In addition to the weekly site inspection, actual quantities of waste produced and disposed of shall be determined on a monthly basis and recorded on the Waste Flow Table. A sample of the form to be used is included as **Appendix E**. The table shall be submitted to the Engineer no later than the 15th day of each month.

7.5 Record System

GNWILJV shall keep adequate and proper records such as delivery dockets, records and reports relating to the implementation of WMP. The records shall include chits, completed inspection checklists and training records.

For disposal at government disposal facilities which is managed by CEDD or landfills which is managed by EPD, GNWILJV will check the information recorded in the Daily Record Summary (DRS) against available information including our own records and data from the following websites and make it available for inspection by the Engineer‘s Representative upon request.

CEDD’s website (For Inert Materials)
www.cedd.gov.hk/eng/services/tripticket/index.html

EPD’s website (For Non-inert Waste)
www.epd.gov.hk/epd/misc/cdm/trip.htm

7.6 Performance Monitoring

The following item will be discussed at every Site Safety and Environmental Management Committee meeting, and Site Safety and Environmental Committee meeting or other established channels as agreed:

1. review the waste management plan; including the quantities and types of construction and demolition material generated, re-used and disposed off-site;
2. review incidents of non-compliance and discuss the necessary follow-up actions; and
3. monitor the follow-up action on defects and deficiencies identified.

Figure 1

Site Boundary

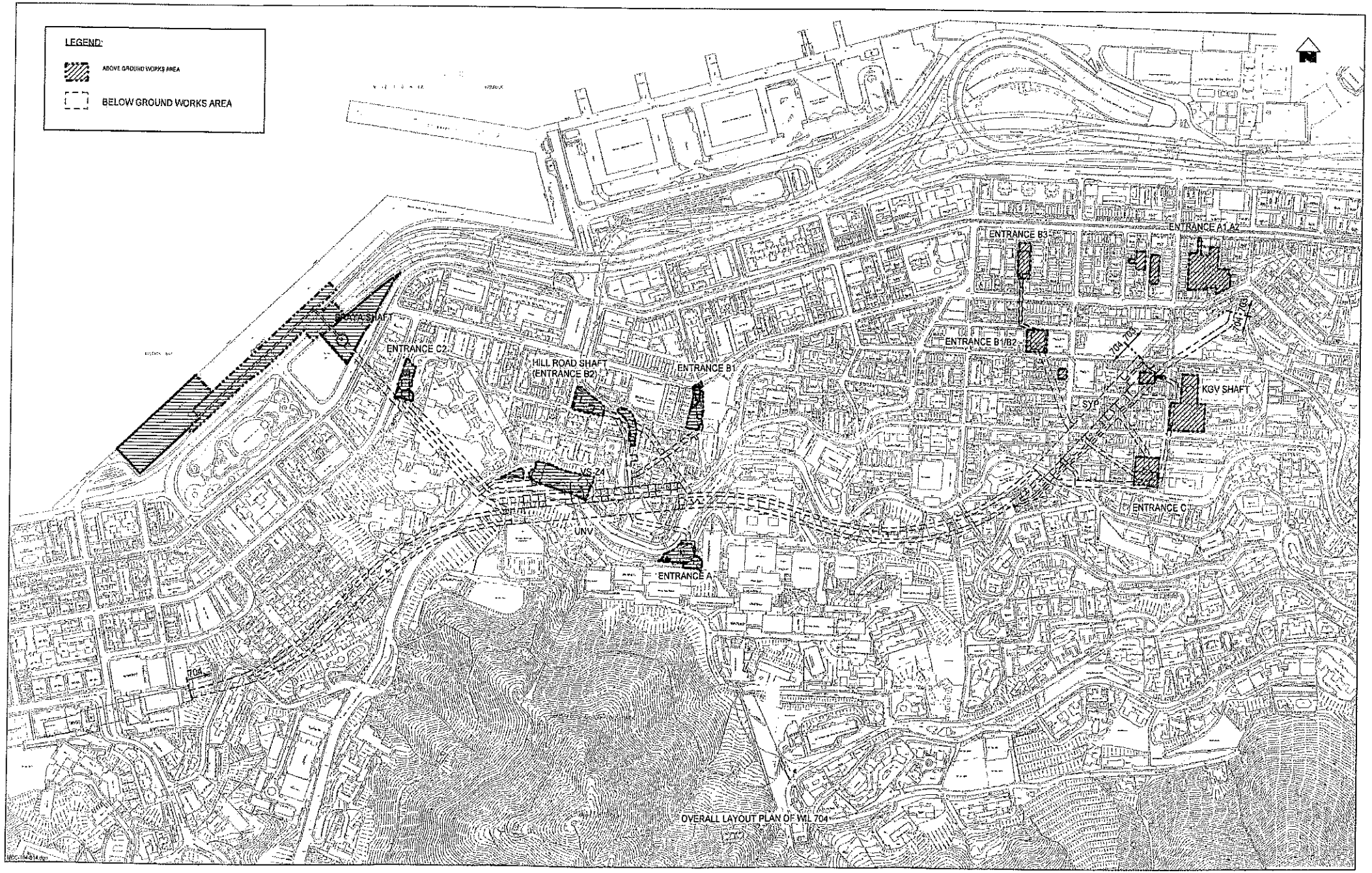
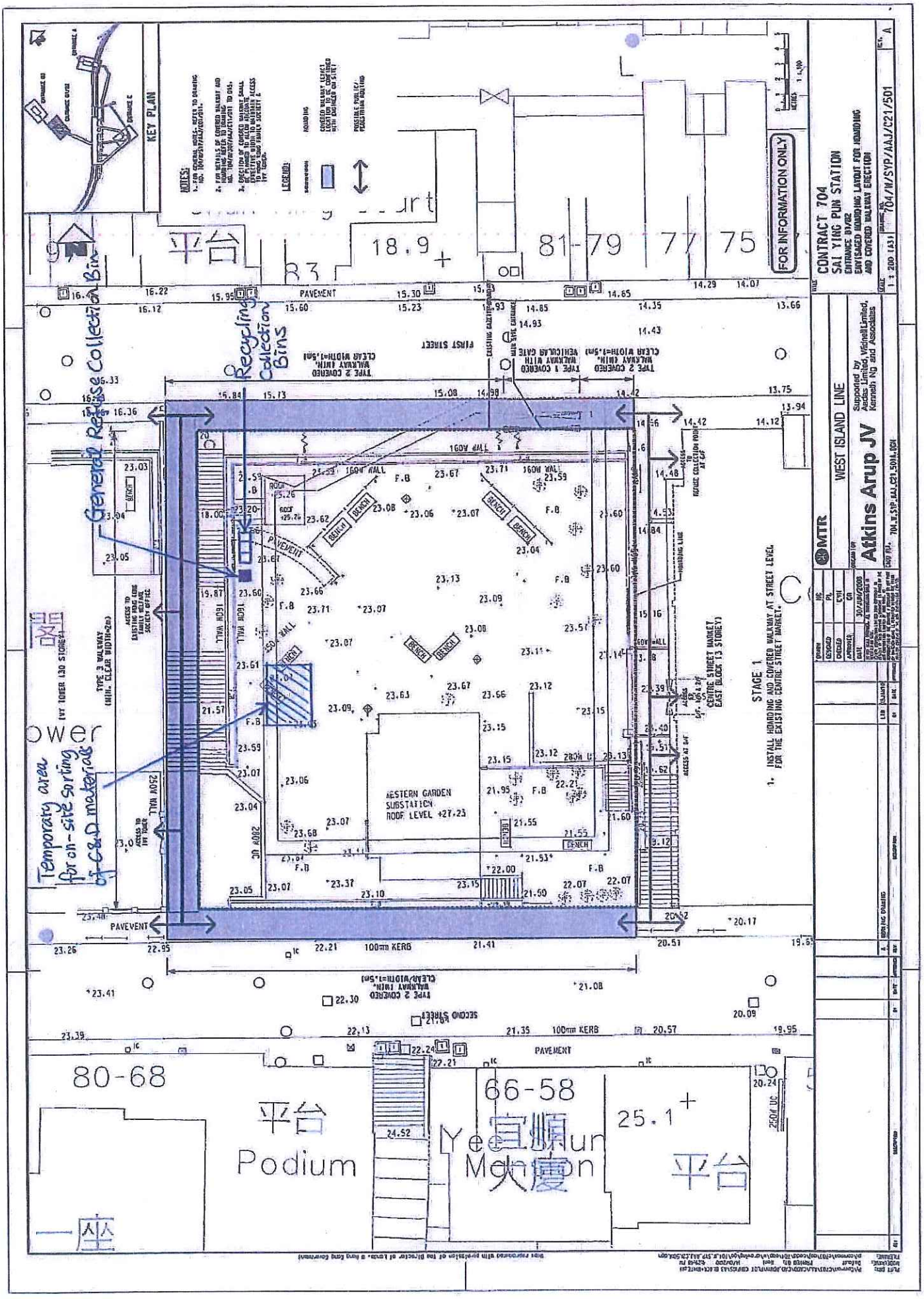

LEGEND:
ABOVE GROUND WORKS AREA
BELOW GROUND WORKS AREA
ENTRANCE B3
ENTRANCE A1,A2
ENTRANCE B1/B2
ENTRANCE C2
HILL ROAD SHAFT (ENTRANCE B2)
ENTRANCE B1
KGV SHAFT
VS-Z4
UNV
ENTRANCE C
ENTRANCE A
704
OVERALL LAYOUT PLAN OF WIL 704

Figure 2

Temporary On-site Waste Sorting Facilities


KEY PLAN
NOTES:
LEGEND:
FOR INFORMATION ONLY
CONTRACT 704
SAI YING PUN STATION
ENTRANCE B1/B2
ENTRANCE C
ENTRANCE D
ENTRANCE E
ENTRANCE G
ENTRANCE H
ENTRANCE J
ENTRANCE K
ENTRANCE L
ENTRANCE M
ENTRANCE N
ENTRANCE P
ENTRANCE Q
ENTRANCE R
ENTRANCE S
ENTRANCE T
ENTRANCE U
ENTRANCE V
ENTRANCE W
ENTRANCE X
ENTRANCE Y
ENTRANCE Z
ENTRANCE AA
ENTRANCE AB
ENTRANCE AC
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ENTRANCE AX
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ENTRANCE BC
ENTRANCE BD
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ENTRANCE BH
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ENTRANCE BM
ENTRANCE BN
ENTRANCE BO
ENTRANCE BP
ENTRANCE BQ
ENTRANCE BR
ENTRANCE BS
ENTRANCE BT
ENTRANCE BU
ENTRANCE BV
ENTRANCE BW
ENTRANCE BX
ENTRANCE BY
ENTRANCE BZ
ENTRANCE CA
ENTRANCE CB
ENTRANCE CC
ENTRANCE CD
ENTRANCE CE
ENTRANCE CF
ENTRANCE CG
ENTRANCE CH
ENTRANCE CI
ENTRANCE CJ
ENTRANCE CK
ENTRANCE CL
ENTRANCE CM
ENTRANCE CN
ENTRANCE CO
ENTRANCE CP
ENTRANCE CQ
ENTRANCE CR
ENTRANCE CS
ENTRANCE CT
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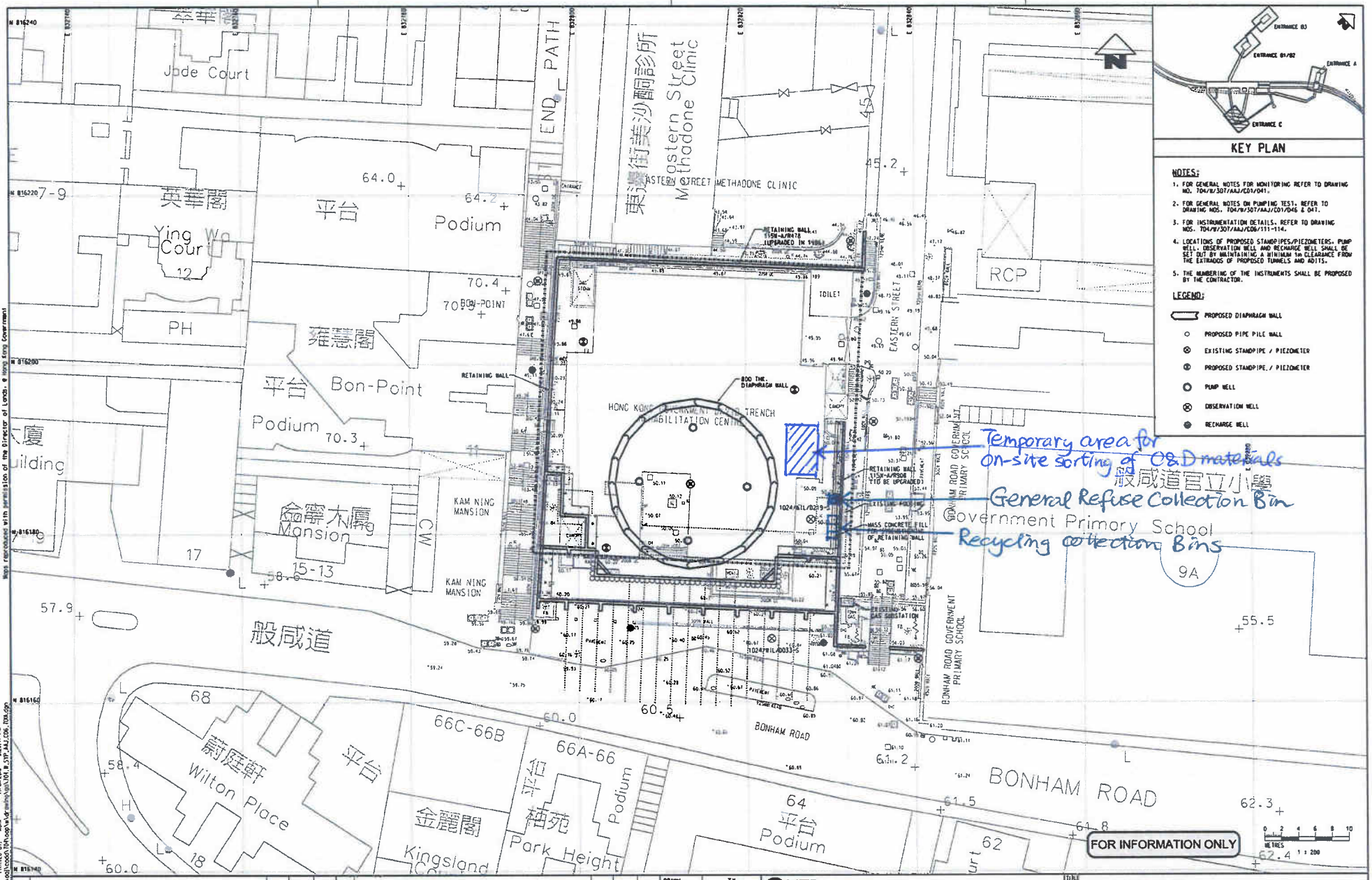
ENTRANCE ZZ
WEST ISLAND LINE
Supported by
Aedas Limited, Widnell Limited,
Kenneth Ng and Associates
Atkins Arup JV
MTR
General Refuse Collection Bin
Recycling Collection Bins
Temporary area for on-site sorting of C&D materials
STAGE 1
1. INSTALL HOARDING AND COVERED WALKWAY AT STREET LEVEL FOR THE EXISTING CENTRE STREET MARKET.
WESTERN GARDEN SUBSTATION ROOF LEVEL +27.23
CENTRE STREET MARKET EAST BLOCK (3 STOREY)
IVY TOWER (30 STOREY)
PAVEMENT
100mm KERB
FIRST STREET
SECOND STREET
80-68
66-58
25.1
Podium
Yee Shun Mansion
宜順大廈
平台



DRAWN	TY
DESIGNED	EL
CHECKED	MS
APPROVED	GR
DATE	07/MAY/2008

MTR

WEST ISLAND LINE

ORIGINATOR: Atkins Arup JV

Supported by Aedas Limited, Wilnell Limited, Kenneth Ng and Associates

CADD REF. 704_W_SYP_AAJ_C06_701A.DGN

TITLE: CONTRACT 704
SAI YING PUN STATION
ENTRANCE C
PUMPING TEST LAYOUT PLAN

SCALE: 1 : 200 (A1)

DRAWING NO. 704/W/SYP/AAJ/C06/701

REV. A

REV	DESCRIPTION	BY	DATE	APPROVED
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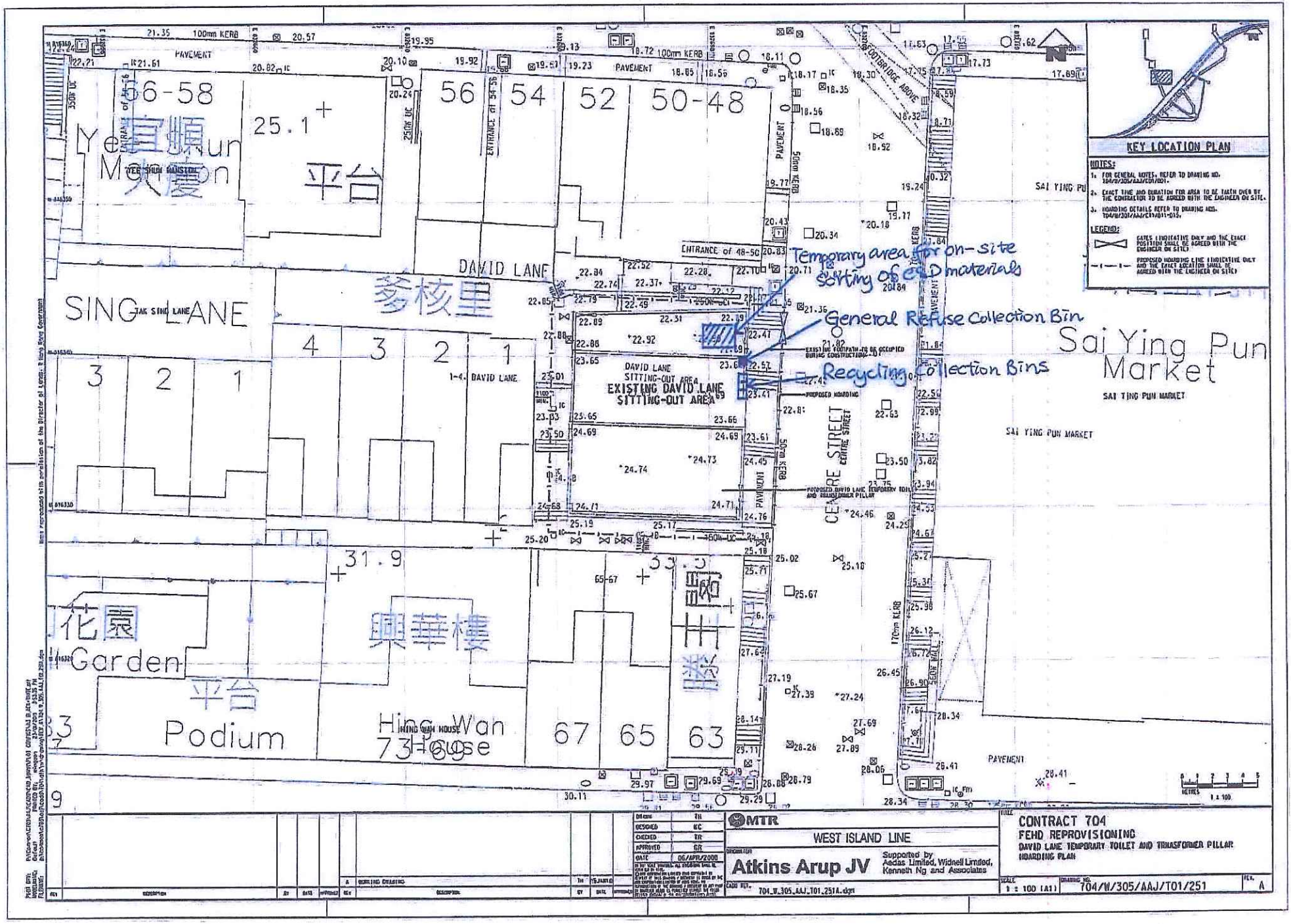
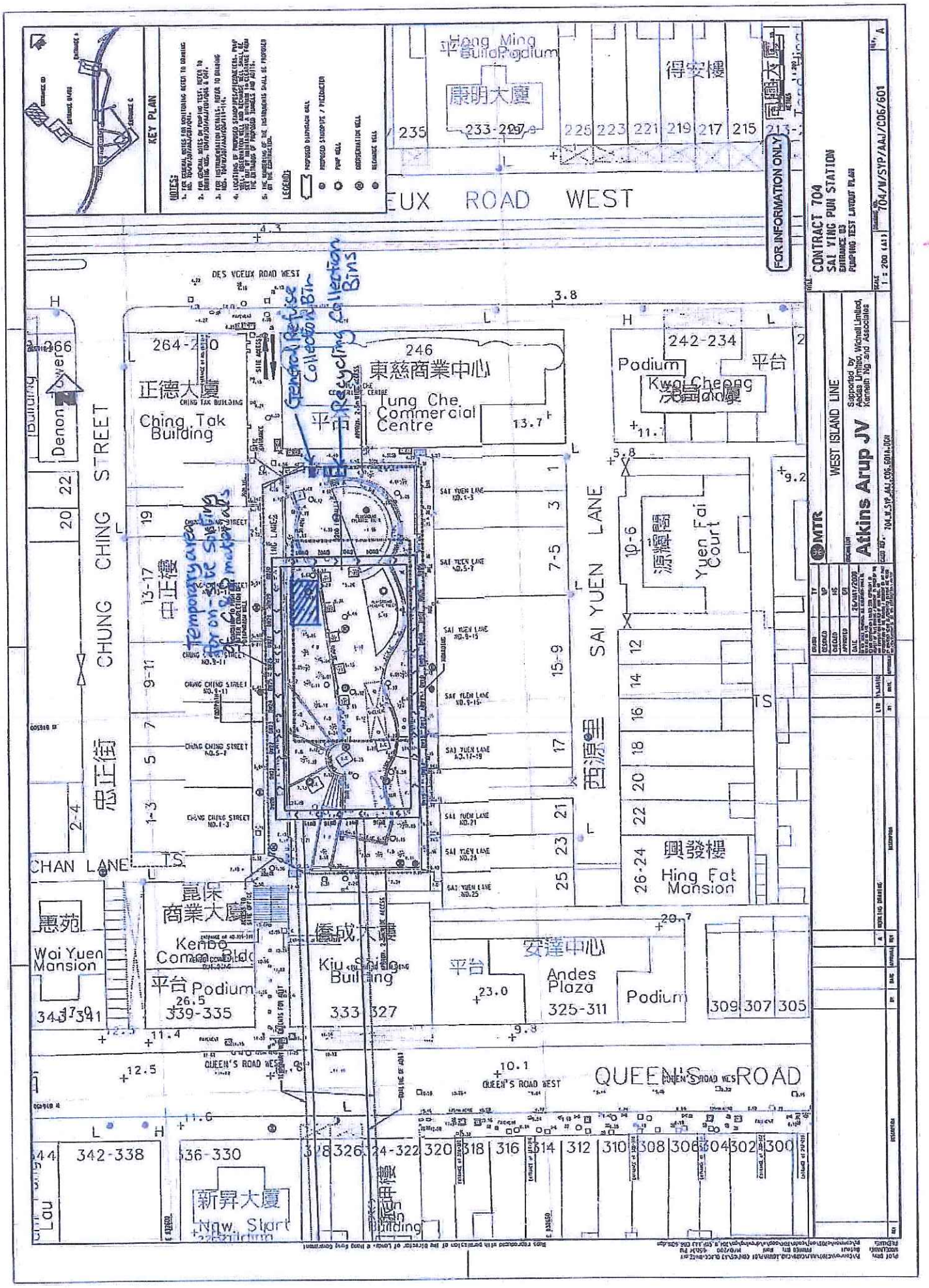

Temporary area for on-site sorting of C&D materials
General Refuse Collection Bin
Recycling Collection Bins
DAVID LANE
SING TAK SING LANE
DAVID LANE SITTING-OUT AREA
EXISTING DAVID LANE SITTING-OUT AREA
CENTRE STREET
Sai Ying Pun Market
SAI YING PUN MARKET
Podium
Hing Wan House
KEY LOCATION PLAN
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING NO. 704/W/305/AAJ/GN01/001.
2. EXACT TIME AND DURATION FOR AREA TO BE TAKEN OVER BY THE CONTRACTOR TO BE AGREED WITH THE ENGINEER ON SITE.
3. HOARDING DETAILS REFER TO DRAWING NOS. 704/W/305/AAJ/CE19/011-013.
LEGEND:
GATES (INDICATIVE ONLY AND THE EXACT POSITION SHALL BE AGREED WITH THE ENGINEER ON SITE)
PROPOSED HOARDING LINE (INDICATIVE ONLY AND THE EXACT LOCATION SHALL BE AGREED WITH THE ENGINEER ON SITE)
MTR
WEST ISLAND LINE
Atkins Arup JV
Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates
CONTRACT 704
FEHD REPROVISIONING
DAVID LANE TEMPORARY TOILET AND TRANSFORMER PILLAR HOARDING PLAN
704_W_305_AAJ_T01_251A.dgn
1 : 100 (A1)
704/W/305/AAJ/T01/251
A


KEY PLAN
NOTES:
LEGEND:
FOR INFORMATION ONLY
CONTRACT 704
SAI YING PUN STATION
EXTENSION TO
PUMPING TEST LAYOUT PLAN
WEST ISLAND LINE
MTR
Atkins Arup JV
Supported by
Ackles Limited, Wichnell Limited,
Kenneth Ng and Associates
704/W/SYP/AAJ/C06/601
DES VOEUX ROAD WEST
CHUNG CHING STREET
SAI YUEN LANE
CHAN LANE
QUEEN'S ROAD WEST
QUEEN'S ROAD
General Refuse Collection Bin
Recycling Collection Bins
Temporary area for on-site sorting of C&D materials
Ching Tak Building
正德大廈
Tung Che Commercial Centre
東慈商業中心
Podium
平台
Kwai Cheong Building
Yuen Fai Court
源輝閣
Hing Fat Mansion
興發樓
Wai Yuen Mansion
惠苑
Kenbo Commercial Building
Kiu Cheung Building
Andes Plaza
安達中心
Hang Ming Building
康明大廈
New Start Building
新昇大廈
Denon Tower
264-260
246
242-234
233-207
339-335
333-327
325-311
342-338
336-330
324-322
309
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305
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302
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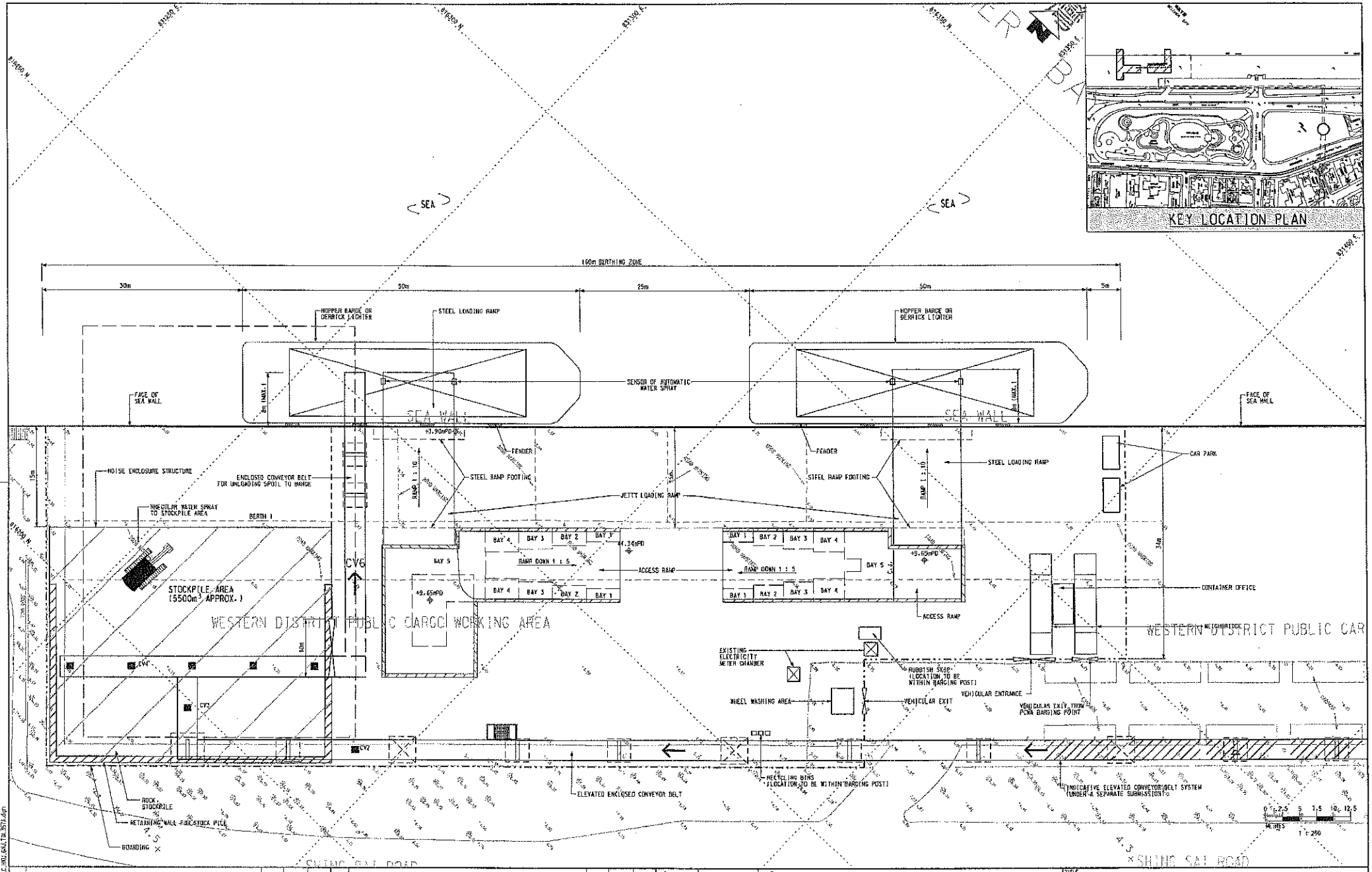

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST SUBMISSION	TYC	17MAR11	

DRAWN	MLL
DESIGNED	-
CHECKED	TYC
APPROVED	CCH
DATE	17/MAR/2011

MTR

WEST ISLAND LINE

CONTRACTOR: Gammon Nishimatsu WIL Joint Venture

CADD REF. 704_C_HKU_GNJ_T01_357A.dgn

TITLE

CONTRACT 704
HONG KONG UNIVERSITY STATION
BARGE LOADING POINT
BARGE LOADING RAMP
LAYOUT PLAN

SCALE	DRAWING NO.	REV.
1 : 250 (A1)	704/C/HKU/GNJ/T01/357	A

PLOT DRIV: C:\Program Files\Bentley\WorkSpace\Projects\WI-STD-C-15.pltt
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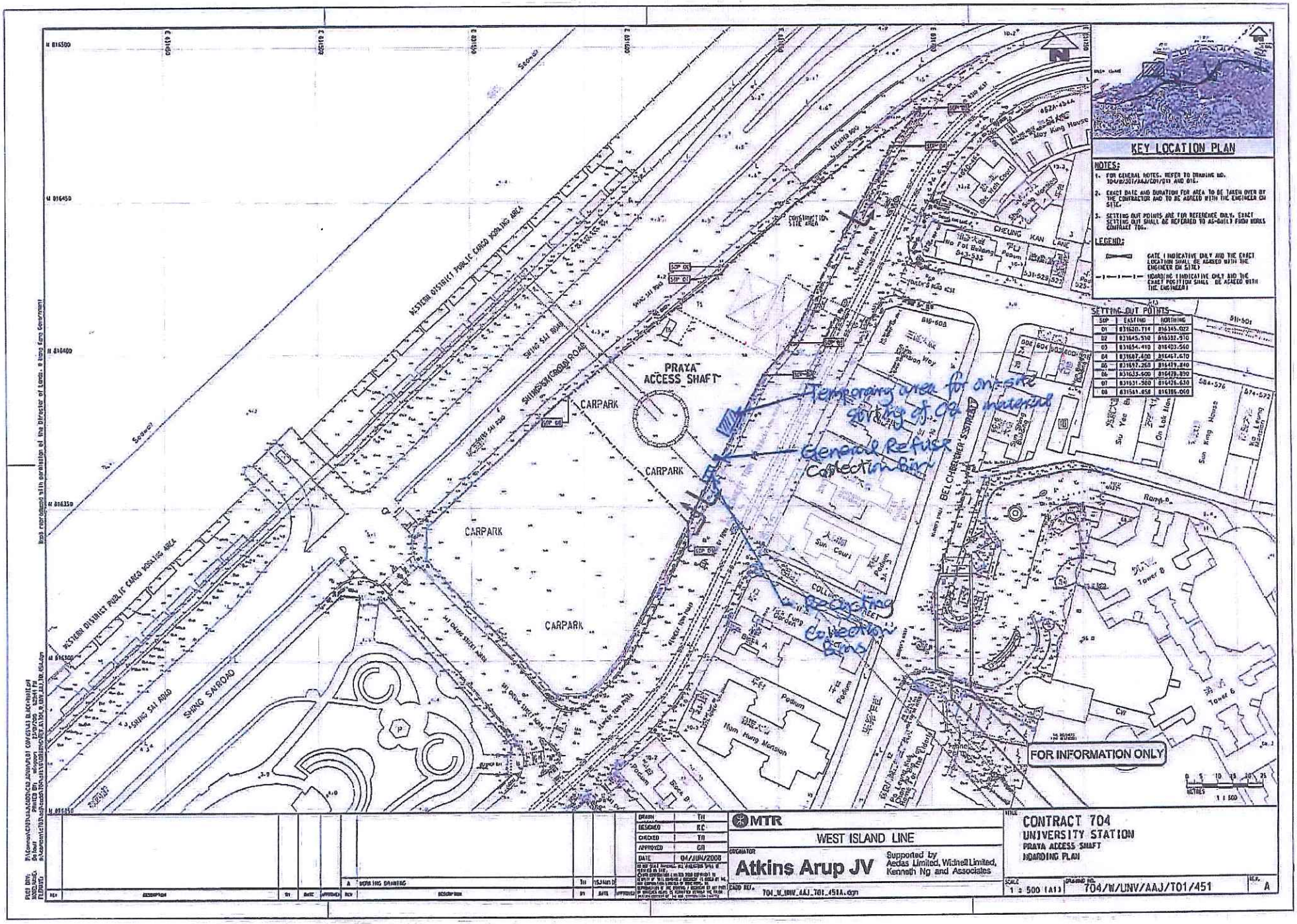
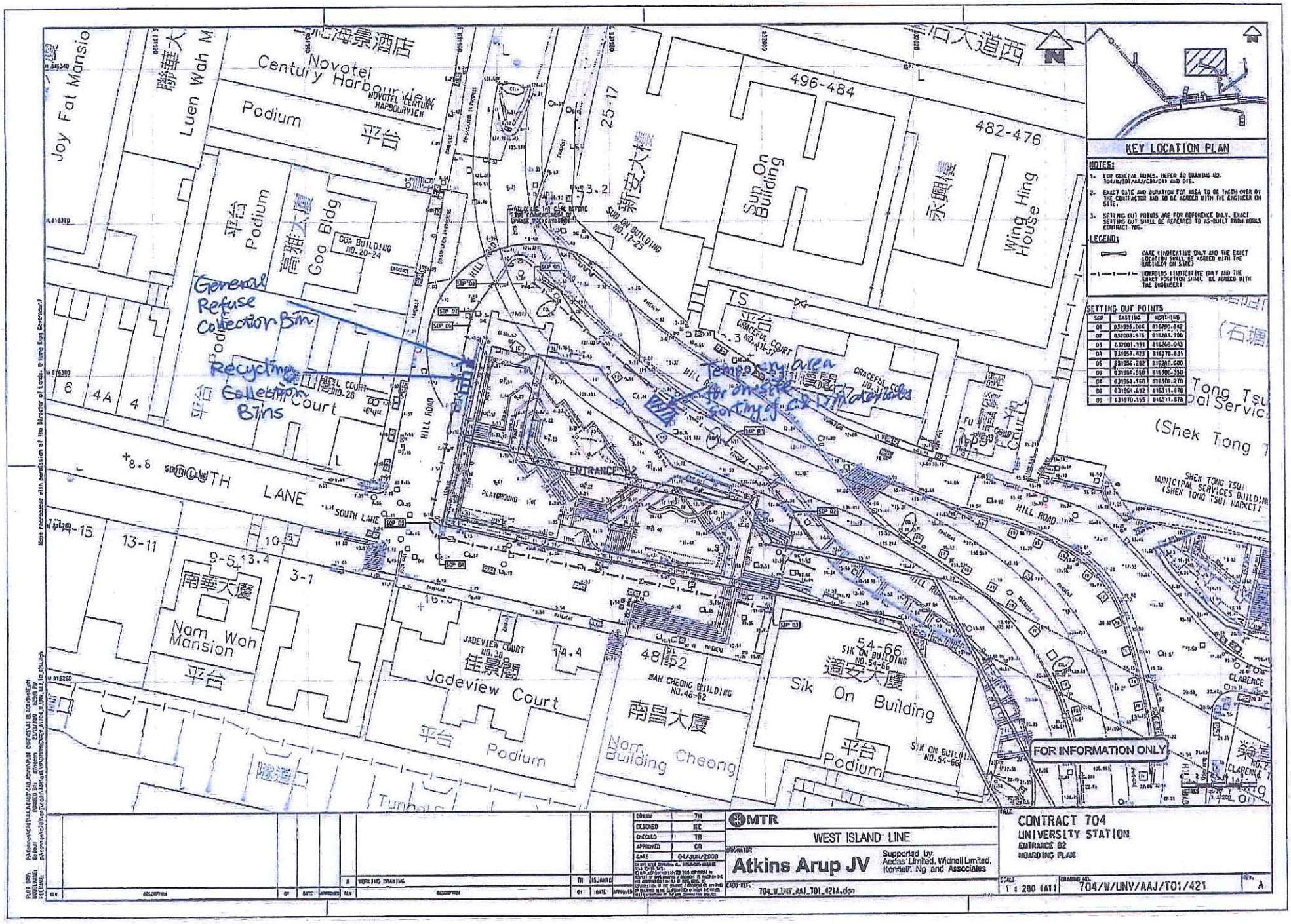
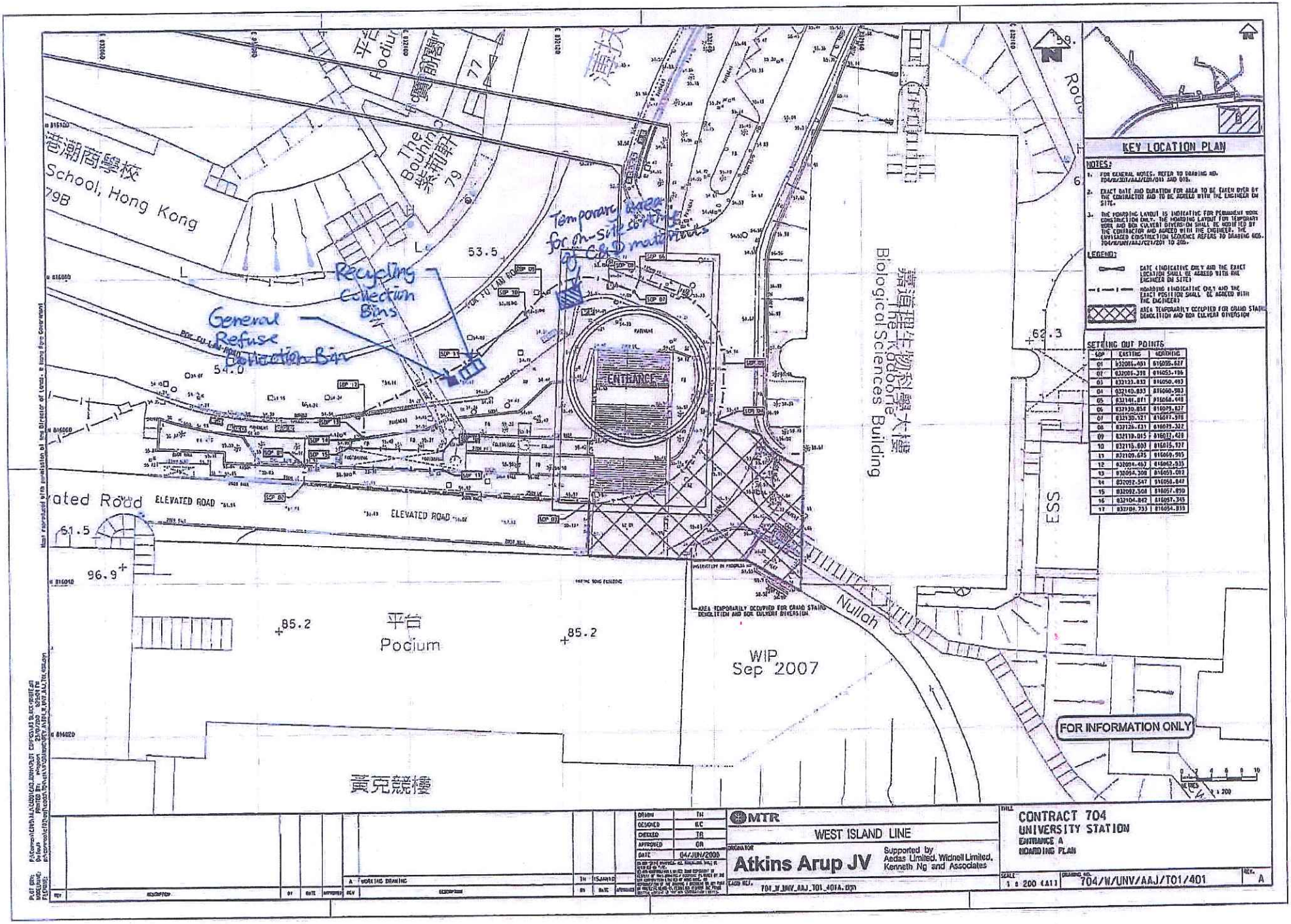
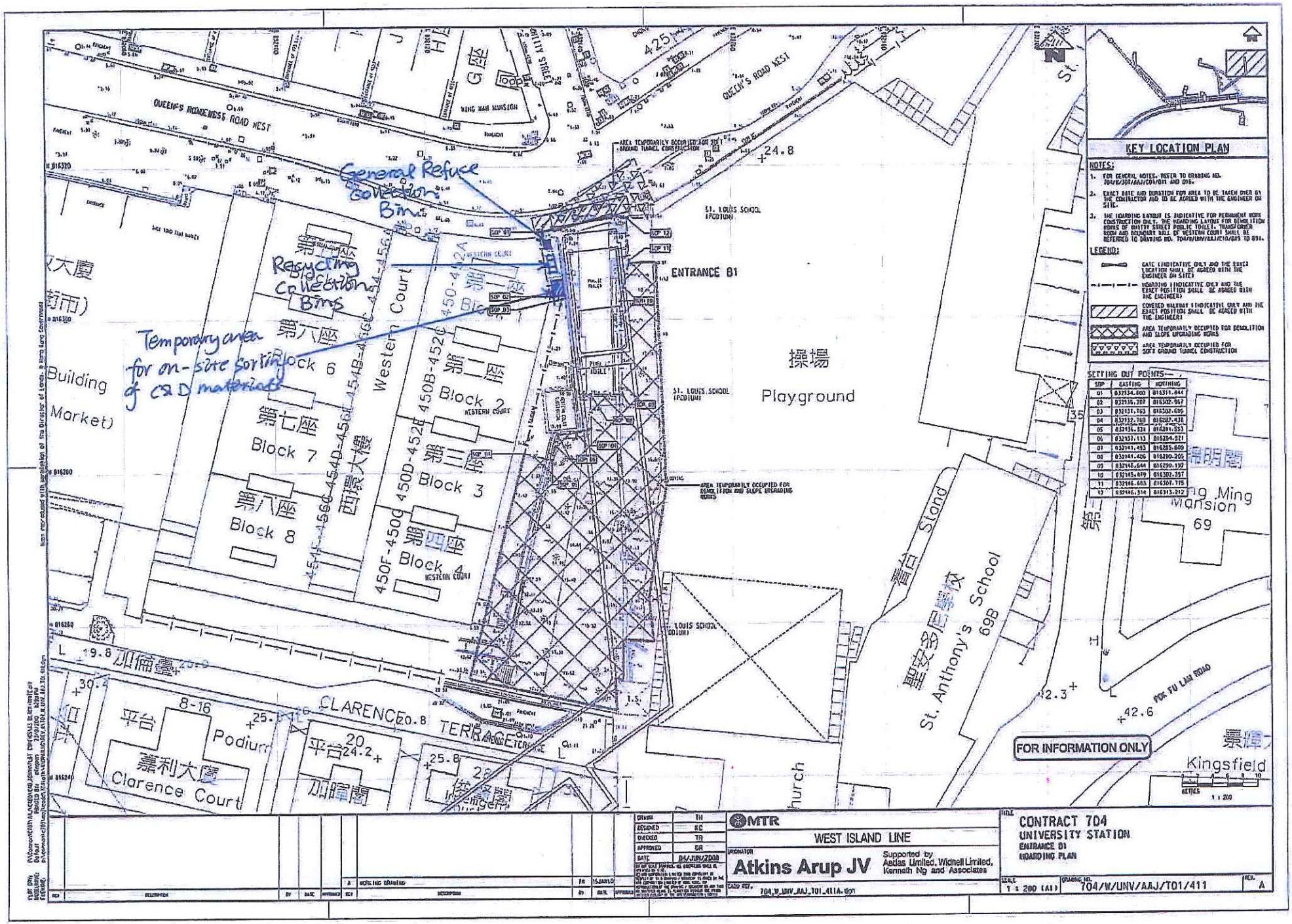
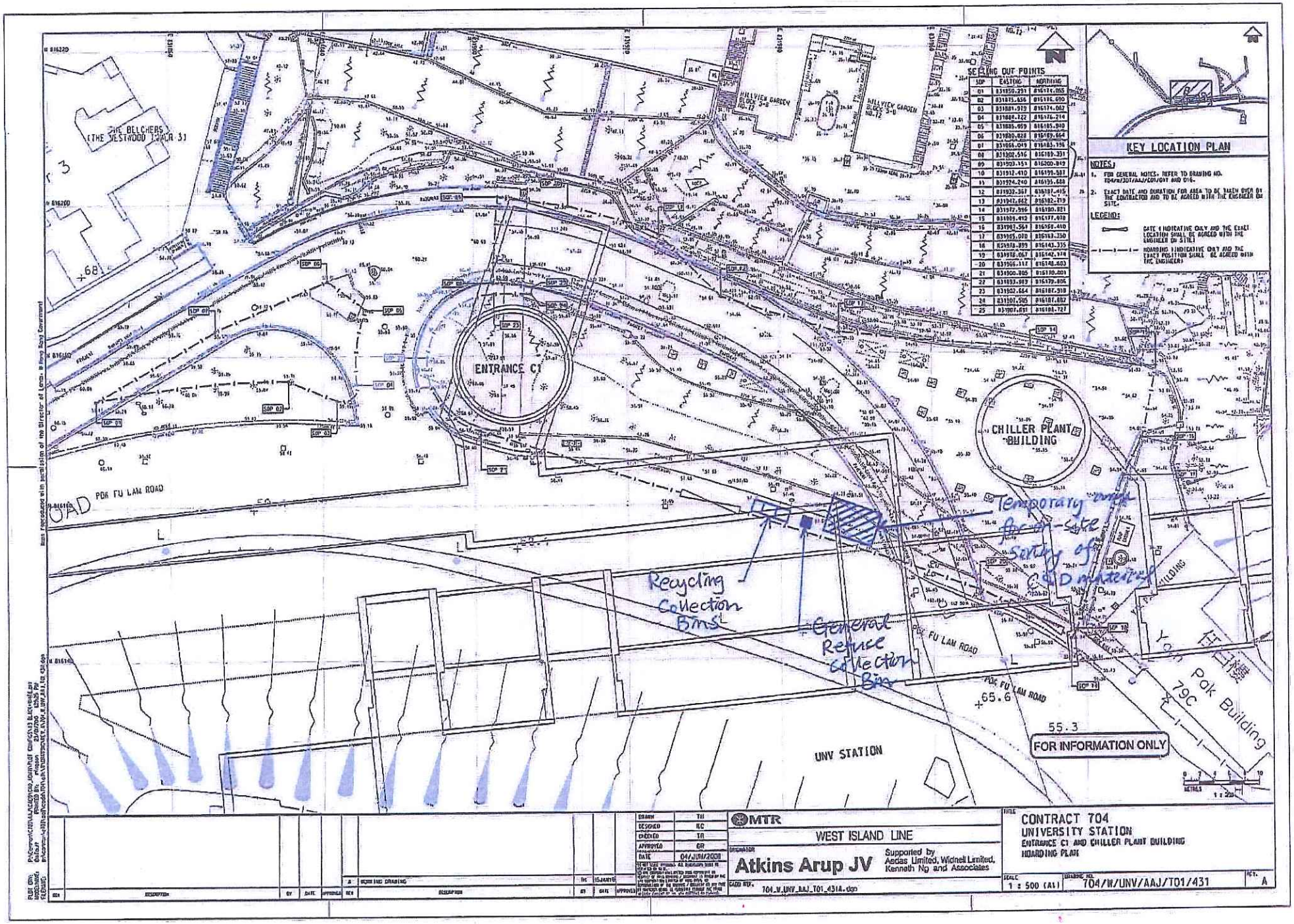
MODEL NAME: D:\WIL\C\T04\T04_C_HKU_GNJ_T01_357A.dgn
PLOTTING: 16/3/2011

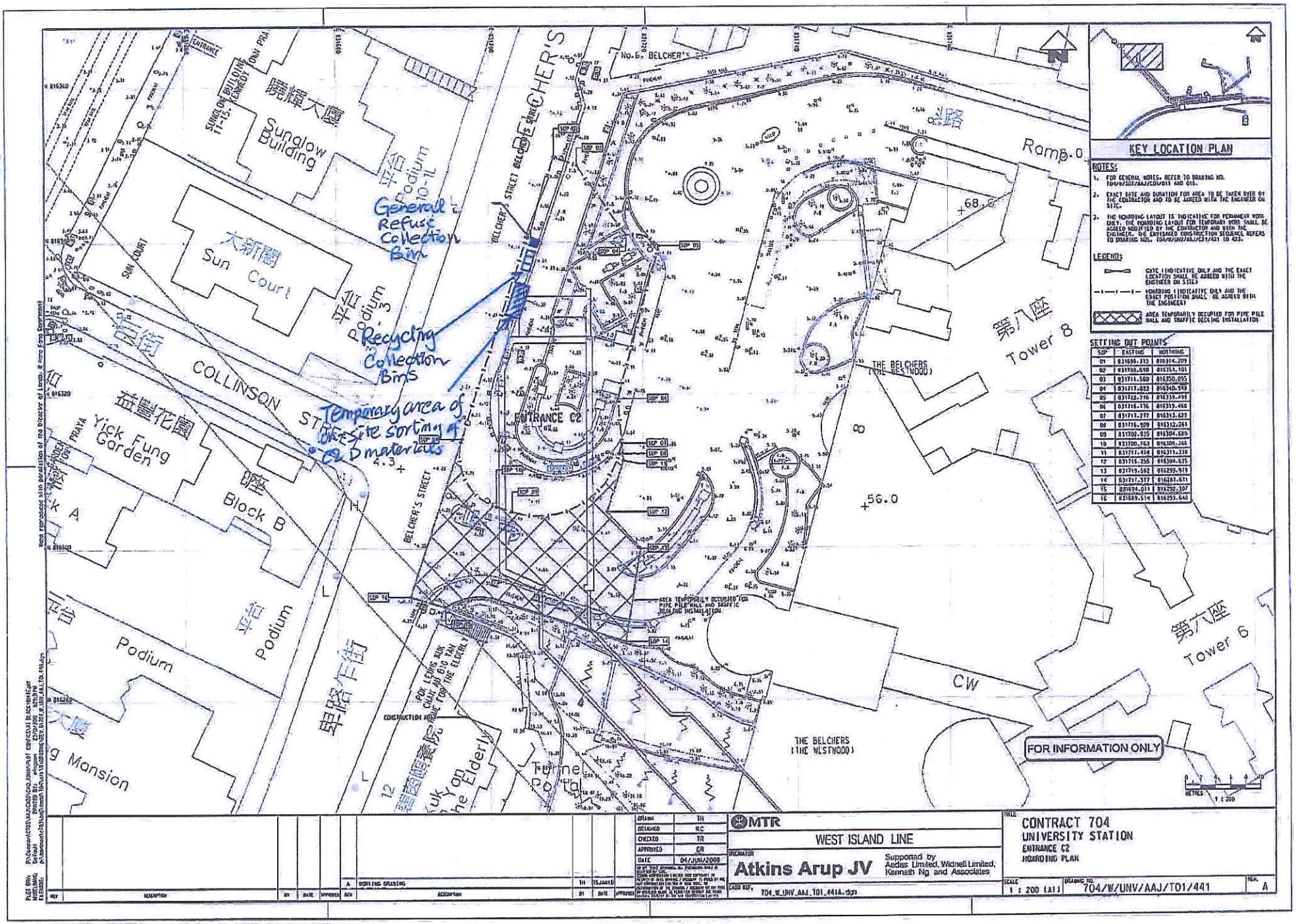

KEY LOCATION PLAN
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING NO. 704/D/301/AAJ/C01/D11 AND D12.
2. EXACT DATE AND DURATION FOR AREA TO BE TAKEN OVER BY THE CONTRACTOR AND TO BE AGREED WITH THE ENGINEER ON SITE.
3. SETTING OUT POINTS ARE FOR REFERENCE ONLY. EXACT SETTING OUT SHALL BE REFERRED TO AS-BUILT FROM WORKS CONTRACT 706.
LEGEND:
GATE (INDICATIVE ONLY AND THE EXACT LOCATION SHALL BE AGREED WITH THE ENGINEER ON SITE)
HOARDING (INDICATIVE ONLY AND THE EXACT POSITION SHALL BE AGREED WITH THE ENGINEER)
SETTING OUT POINTS
SOP | EASTING | NORTHING
SOP 01 | 836610.714 | 816345.022
SOP 02 | 836645.510 | 816382.916
SOP 03 | 836654.410 | 816403.560
SOP 04 | 836587.400 | 816467.670
SOP 05 | 836497.260 | 816419.840
SOP 06 | 836633.600 | 816478.850
SOP 07 | 836631.360 | 816426.630
SOP 08 | 836561.858 | 816386.060
PRAYA ACCESS SHAFT
CARPARK
CARPARK
CARPARK
CARPARK
WESTERN DISTRICT PUBLIC CARGO WORKING AREA
WESTERN DISTRICT PUBLIC CARGO WORKING AREA
SHING SAI ROAD
SHING SAI ROAD
SHING SAI ROAD
SHING SAI ROAD
BELCHER'S STREET
CHEUNG KAN LANE
Temporary area for on-site sorting of GC material
General Refuse Collection Bin
Recycling Collection Bins
FOR INFORMATION ONLY
MTR
WEST ISLAND LINE
ORIGINATOR
Atkins Arup JV
Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates
CADD REF. 704_W_UNV_AAJ_T01_451A.dgn
DRAWN TH
DESIGNED KC
CHECKED TH
APPROVED GH
DATE 04/JUN/2008
A WORKING DRAWING TH 15JAN08
CONTRACT 704
UNIVERSITY STATION
PRAYA ACCESS SHAFT
HOARDING PLAN
SCALE 1 : 500 (A1)
DRAWING NO. 704/W/UNV/AAJ/T01/451
REV. A

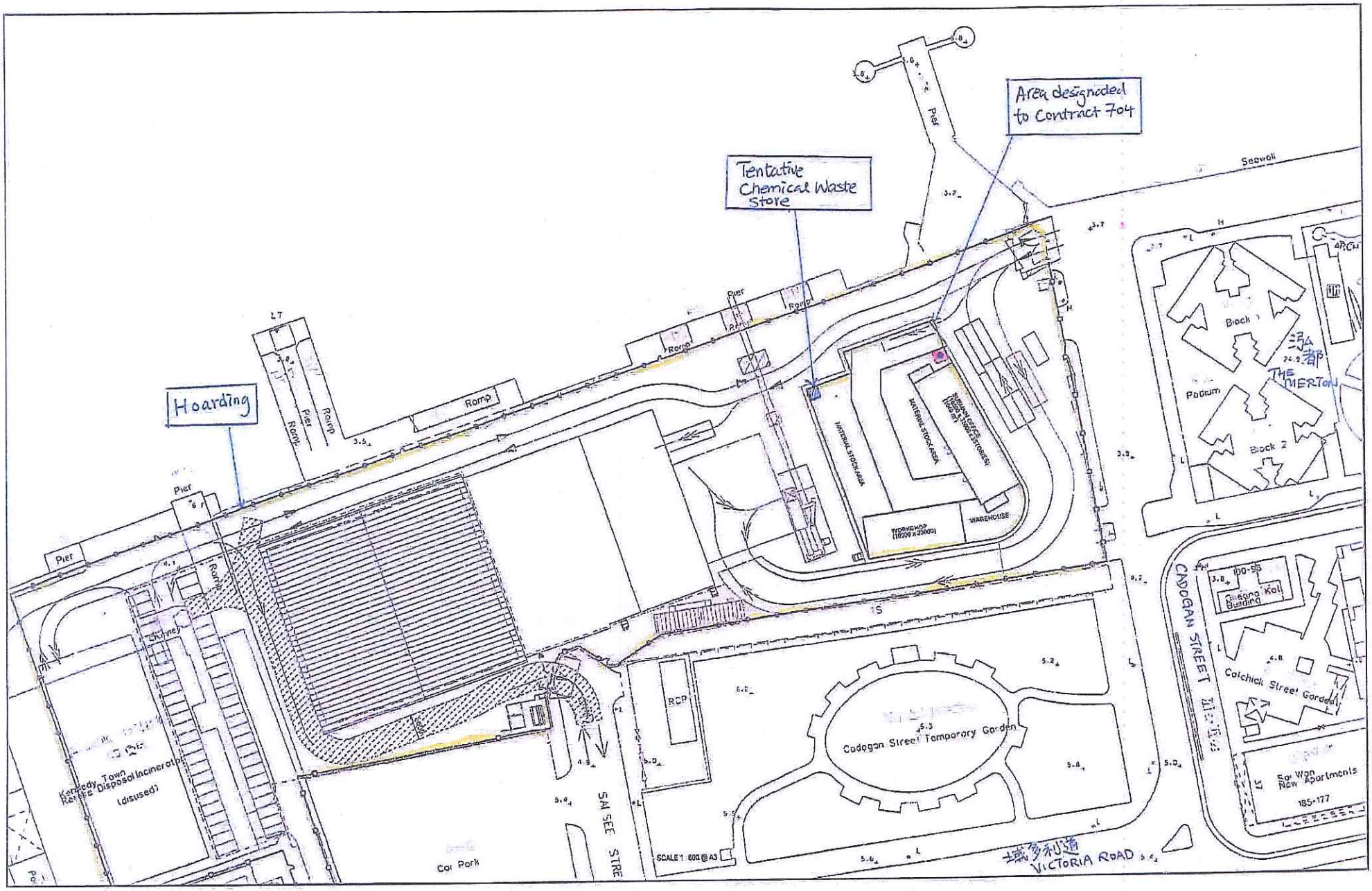

Joy Fat Mansion
Luen Wah Mansion
聯華大廈
Novotel Century Harbourview
Podium
平台
Goo Building
高雅大廈
CGA BUILDING NO.20-24
Podium
平台
General Refuse Collection Bin
Recycling Collection Bins
GRACEFUL COURT NO.26
Graceful Court
496-484
482-476
Sun On Building
新安大廈
SUN ON BUILDING NO.17-25
永興樓
Wing Hing House
TS
GRACEFUL COURT NO.3
Temporary area for onsite storing of construction materials
Fu Hing Court
HILL ROAD
ENTRANCE 02
PLAYGROUND
SOUTH LANE
6
4A
4
13-11
9-5
3-1
南華大廈
Nam Wah Mansion
平台
JADEVIEW COURT NO.30
佳景閣
Jadeview Court
平台 Podium
48
2P2
NAM CHEONG BUILDING NO.48-52
南昌大廈
Nam Cheong Building
54-66
SIK ON BUILDING NO.54-66
適安大廈
Sik On Building
平台 Podium
SHEK TONG TSUI MUNICIPAL SERVICES BUILDING (SHEK TONG TSUI MARKET)
CLARENCE
FOR INFORMATION ONLY
KEY LOCATION PLAN
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING NO. 704/W/UNV/AAJ/CDL/011 AND 015.
2. EXACT SIZE AND DURATION FOR AREA TO BE TAKEN OVER BY THE CONTRACTOR HAD TO BE AGREED WITH THE ENGINEER ON SITE.
3. SETTING OUT POINTS ARE FOR REFERENCE ONLY. EXACT SETTING OUT SHALL BE REFERRED TO AS-BUILT FROM WORKS CONTRACT 706.
LEGEND:
GATE (INDICATIVE ONLY AND THE EXACT LOCATION SHALL BE AGREED WITH THE ENGINEER ON SITE)
HOARDING (INDICATIVE ONLY AND THE EXACT POSITION SHALL BE AGREED WITH THE ENGINEER)
SETTING OUT POINTS
SOP | EASTING | NORTHING
SOP 01 | 839395.065 | 816790.842
SOP 02 | 839003.976 | 816781.795
SOP 03 | 839001.191 | 816565.043
SOP 04 | 839957.423 | 816278.831
SOP 05 | 839556.282 | 816280.600
SOP 06 | 839567.560 | 816306.359
SOP 07 | 839562.160 | 816358.276
SOP 08 | 839564.492 | 816311.678
SOP 09 | 839570.155 | 816311.878
MTR
WEST ISLAND LINE
Atkins Arup JV
Supported by Aedas Limited, Wilhelm Limited, Kenneth Ng and Associates
CONTRACT 704
UNIVERSITY STATION
ENTRANCE 02
HOARDING PLAN
704_W_UNV_AAJ_T01_421A.dgn
1 : 200 (A1)
704/W/UNV/AAJ/T01/421
A
DRAWN TH
DESIGNED RC
CHECKED TR
APPROVED CR
DATE 04/JUN/2009
A HOARDING DRAWING TH 15JAN10


KEY LOCATION PLAN
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING NO. 704/W/UNV/AAJ/GEN/010 AND 015.
2. EXACT DATE AND DURATION FOR AREA TO BE TAKEN OVER BY THE CONTRACTOR AND TO BE AGREED WITH THE ENGINEER ON SITE.
3. THE HOARDING LAYOUT IS INDICATING FOR PERMANENT WORK CONSTRUCTION ONLY. THE HOARDING LAYOUT FOR TEMPORARY WORK AND BOX CULVERT DIVERSION SHALL BE MODIFIED BY THE CONTRACTOR AND AGREED WITH THE ENGINEER. THE ENLARGED CONSTRUCTION LEGENDS REFERS TO DRAWING NOS. 704/W/UNV/AAJ/C21/201 TO 205.
LEGEND:
DATE (INDICATIVE ONLY AND THE EXACT LOCATION SHALL BE AGREED WITH THE ENGINEER ON SITE)
HOARDING (INDICATIVE ONLY AND THE EXACT POSITION SHALL BE AGREED WITH THE ENGINEER)
AREA TEMPORARILY OCCUPIED FOR GRAND STAIRS DEMOLITION AND BOX CULVERT DIVERSION
SETTING OUT POINTS
SOP | EASTING | NORTHING
01 | 832001.401 | 816035.627
02 | 832006.398 | 816053.186
03 | 832123.833 | 816050.493
04 | 832140.883 | 816060.983
05 | 832161.811 | 816068.648
06 | 832130.858 | 816079.837
07 | 832130.121 | 816077.918
08 | 832126.431 | 816079.322
09 | 832119.015 | 816072.428
10 | 832115.807 | 816015.927
11 | 832109.675 | 816069.965
12 | 832094.462 | 816062.935
13 | 832094.208 | 816059.093
14 | 832092.547 | 816058.847
15 | 832082.568 | 816057.890
16 | 832104.842 | 816057.345
17 | 832104.733 | 816054.859
Temporary area for on-site C&D materials
Recycling collection Bins
General Refuse Collection Bin
ENTRANCE A
ELEVATED ROAD
Biological Sciences Building
生物科學大樓
Nullah
WIP Sep 2007
平台 Podium
香港商學校 School, Hong Kong
The Bauhinia 紫荊軒
FOR INFORMATION ONLY
MTR
WEST ISLAND LINE
Atkins Arup JV
Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates
CONTRACT 704
UNIVERSITY STATION
ENTRANCE A
BOARDING PLAN
704/W/UNV/AAJ/T01/401
A


General Refuse Collection Bins
Recycling Bin Collection Bins
Temporary area for on-site sorting of C&D materials
ENTRANCE B1
Playground
操場
Block 6
Block 7
Block 8
Block 2
Block 3
Block 4
Western Court
Building
Market)
CLARENCE TERRACE
Clarence Court
嘉利大廈
Podium
平台
St. Anthony's School
聖安多尼學校
Kingsfield
FOR INFORMATION ONLY
KEY LOCATION PLAN
NOTES:
LEGEND:
SETTING OUT POINTS
CONTRACT 704
UNIVERSITY STATION
ENTRANCE B1
HOARDING PLAN
WEST ISLAND LINE
Atkins Arup JV
Supported by Aedas Limited, Wilnell Limited, Kenneth Ng and Associates
704/W/UNV/AAJ/T01/411
1 : 200 (A1)


SETTING OUT POINTS
KEY LOCATION PLAN
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING NO. 704/W/UNV/AAJ/GEN/001 AND 016.
2. EXACT DATE AND DURATION FOR AREA TO BE TAKEN OVER BY THE CONTRACTOR AND TO BE AGREED WITH THE ENGINEER ON SITE.
LEGEND:
GATE (INDICATIVE ONLY AND THE EXACT LOCATION SHALL BE AGREED WITH THE ENGINEER ON SITE)
HOARDING (INDICATIVE ONLY AND THE EXACT POSITION SHALL BE AGREED WITH THE ENGINEER)
ENTRANCE C1
CHILLER PLANT BUILDING
POK FU LAM ROAD
FU LAM ROAD
HILLVIEW GARDEN BLOCK 5-8
HILLVIEW GARDEN BLOCK 9-12
THE BELCHERS (THE WESTWOOD) (HCR 3)
UNV STATION
Temporary waste for on-site sorting of C&D material
Recycling Collection Bins
General Refuse Collection Bin
FOR INFORMATION ONLY
MTR
WEST ISLAND LINE
Atkins Arup JV
Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates
CONTRACT 704
UNIVERSITY STATION
ENTRANCE C1 AND CHILLER PLANT BUILDING
HOARDING PLAN
704/W/UNV/AAJ/T01/431
A


BELCHER'S STREET
NO.6, BELCHER'S ST.
Sunglow Building
Sun Court
COLLINSON ST
Yick Fung Garden
Block B
Podium
Ramp
Tower 8
Tower 6
THE BELCHERS (THE WESTWOOD)
ENTRANCE C2
General Refuse Collection Bin
Recycling Collection Bins
Temporary area of on-site sorting of C&D materials
CONSTRUCTION AREA
AREA TEMPORARILY OCCUPIED FOR PIPE PILE WALL AND TRAFFIC DIVERTING INSTALLATION
FOR INFORMATION ONLY
KEY LOCATION PLAN
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING NO. 704/W/UNV/AAJ/CON/001 AND 010.
2. EXACT SIZE AND DURATION FOR AREA TO BE TAKEN OVER BY THE CONTRACTOR AND TO BE AGREED WITH THE ENGINEER ON SITE.
3. THE HOARDING LAYOUT IS INDICATIVE FOR PERMANENT WORK ONLY. THE HOARDING LAYOUT FOR TEMPORARY WORK SHALL BE AGREED MODIFIED BY THE CONTRACTOR AND WITH THE ENGINEER. THE ENTISAGED CONSTRUCTION SEQUENCE REFERS TO DRAWING NOS. 704/W/UNV/AAJ/C21/421 TO 423.
LEGEND:
GATE (INDICATIVE ONLY AND THE EXACT LOCATION SHALL BE AGREED WITH THE ENGINEER ON SITE)
HOARDING (INDICATIVE ONLY AND THE EXACT POSITION SHALL BE AGREED WITH THE ENGINEER)
AREA TEMPORARILY OCCUPIED FOR PIPE PILE WALL AND TRAFFIC DIVERTING INSTALLATION
SETTING OUT POINTS
SOP | EASTING | NORTHING
01 | 831658.313 | 816314.209
02 | 831700.618 | 816258.101
03 | 831714.560 | 816250.095
04 | 831717.853 | 816240.948
05 | 831722.776 | 816239.491
06 | 831316.176 | 816319.460
07 | 831717.217 | 816313.623
08 | 831776.929 | 816312.261
09 | 831702.935 | 816304.630
10 | 831700.763 | 816305.164
11 | 831717.414 | 816311.339
12 | 831715.255 | 816304.635
13 | 831719.562 | 816299.919
14 | 831717.317 | 816287.611
15 | 831694.011 | 816292.307
16 | 831689.514 | 816293.640
DRAWN TH
DESIGNED KC
CHECKED TR
APPROVED CR
DATE 04/JUN/2008
A WORKING DRAWING TH 15.JAN.08
MTR
WEST ISLAND LINE
Atkins Arup JV
Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates
CAD REF. 704_W_UNV_AAJ_T01_441A.dgn
CONTRACT 704
UNIVERSITY STATION
ENTRANCE C2
HOARDING PLAN
SCALE 1 : 200 (A1)
DRAWING NO. 704/W/UNV/AAJ/T01/441
REV. A

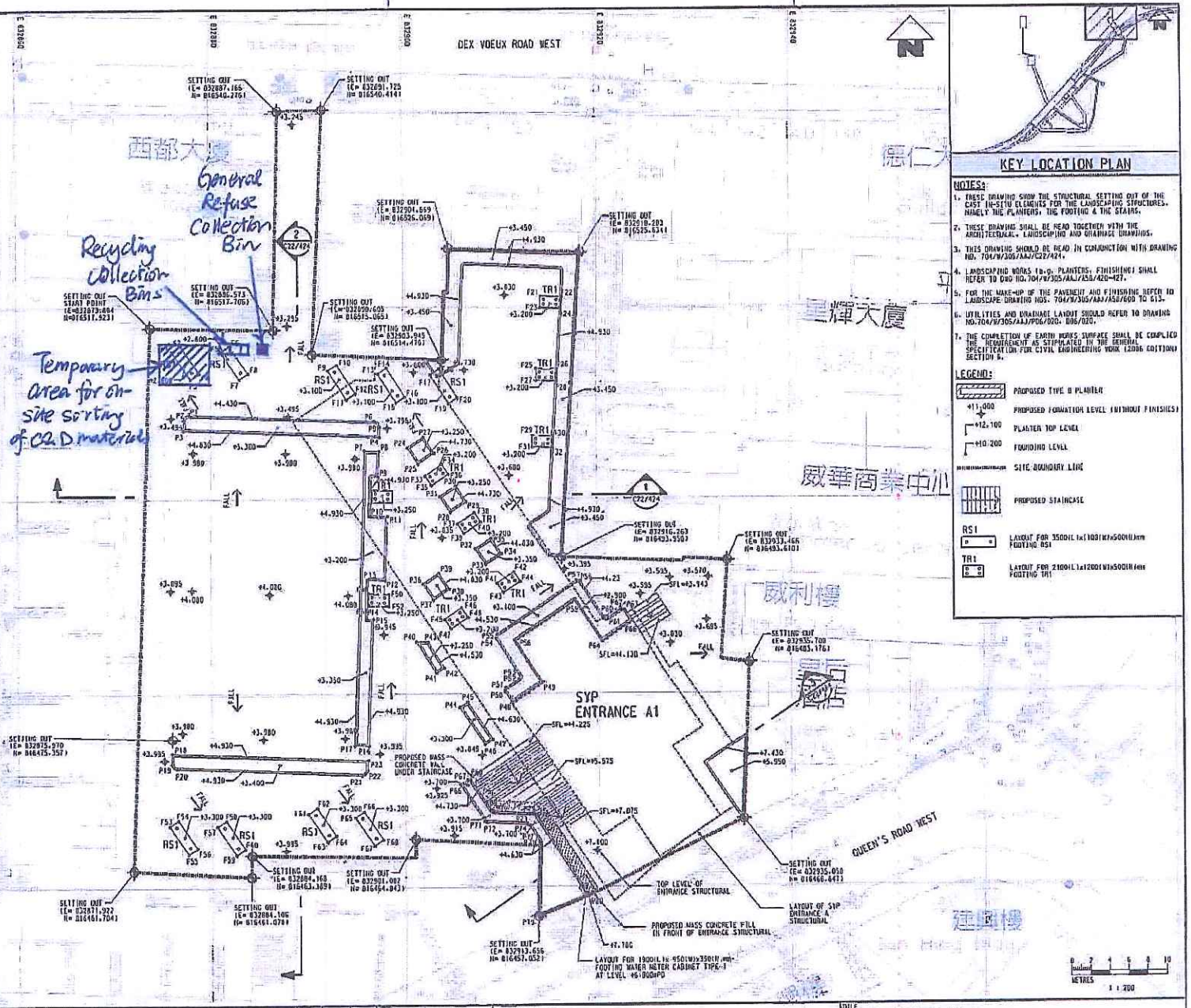

Area designated to Contract 704
Tentative Chemical Waste Store
Hoarding
Pier
Ramp
Seawall
Kennedy Town Refuse Disposal Incinerator (disused)
Chimney
Car Park
SAI SEE STREET
RCP
Cadogan Street Temporary Garden
SCALE 1:600 @ A3
CADOGAN STREET
VICTORIA ROAD
Block 1
Block 2
Podium
THE MERTON
Catchick Street Garden
Sai Wan New Apartments
185-177
MATERIAL STOCK AREA
WAREHOUSE

SETTING OUT OF PLANTER WALL

POINT	EASTERN	NORTHERN
P1	832877.846	816508.824
P2	832877.223	816508.247
P3	832877.203	816507.153
P4	832897.467	816506.381
P5	832897.509	816507.474
P6	832896.932	816508.096
P7	832895.941	816504.959
P8	832897.410	816504.902
P9	832897.307	816502.331
P10	832896.469	816498.345
P11	832898.257	816498.291
P12	832898.000	816491.865
P13	832896.213	816491.625
P14	832896.061	816487.620
P15	832896.750	816487.607
P16	832896.255	816474.735
P17	832894.755	816474.642
P18	832875.913	816473.869
P19	832875.072	816492.704
P20	832876.451	816492.734
P21	832895.537	816491.886
P22	832896.156	816491.993
P23	832896.197	816493.086
P24	832900.387	816505.269
P25	832901.398	816503.713
P26	832903.160	816504.716
P27	832902.050	816506.379
P28	832904.820	816498.615
P29	832906.491	816499.725
P30	832905.301	816501.389
P31	832903.718	816500.279
P32	832907.353	816494.030
P33	832908.463	816493.166
P34	832910.127	816494.277
P35	832909.017	816495.940
P36	832907.819	816497.205
P37	832903.030	816489.539
P38	832904.693	816490.650
P39	832903.883	816492.313
P40	832901.220	816405.310
P41	832903.305	815402.167
P42	832904.136	815402.742
P43	832902.441	816485.283
P44	832905.696	816478.804
P45	832906.526	816479.159
P46	832908.304	816474.697
P47	832905.030	816475.350
P48	832911.074	816479.108
P49	832914.248	816481.208
P50	832910.350	816480.190
P51	832910.434	816480.606
P52	832911.780	816481.504
P53	832911.863	816481.920
P54	832909.414	816485.588
P55	832909.497	816486.005
P56	832911.467	816485.395
P57	832917.750	816491.518
P58	832918.174	816491.435
P59	832917.504	816489.465
P60	832920.670	816487.763
P61	832921.036	816487.680
P62	832922.385	816488.582
P63	832922.801	816488.499
P64	832920.344	816485.291
P65	832923.572	816487.498
P66	832905.652	816470.522
P67	832906.439	816471.847
P68	832906.742	816470.991
P69	832908.843	816467.843
P70	832909.016	816467.700
P71	832908.872	816466.678
P72	832908.406	816466.543
P73	832912.576	816466.312
P74	832912.014	816466.175
P75	832913.256	816467.476
P76	832913.491	816467.339
P77	832913.827	816464.600
P78	832913.815	816464.428
P79	832913.656	816457.053
P80	832918.917	816459.120

SETTING OUT OF FOOTING

POINT	EASTERN	NORTHERN
F1	832876.124	816515.394
F2	832877.045	816515.994
F3	832878.035	816512.461
F4	832878.956	816513.062
F5	832881.104	816515.337
F6	832882.014	816515.957
F7	832883.075	816512.445
F8	832883.884	816513.054
F9	832892.204	816513.330
F10	832893.126	816513.931
F11	832894.115	816510.398
F12	832895.037	816510.999
F13	832897.358	816512.950
F14	832898.280	816513.580
F15	832899.270	816510.057
F16	832900.191	816510.658
F17	832902.746	816512.865
F18	832903.668	816513.466
F19	832904.657	816509.933
F20	832905.578	816510.534
F21	832914.246	816521.156
F22	832915.344	816521.076
F23	832914.200	816519.557
F24	832915.299	816519.477
F25	832913.777	816513.441
F26	832915.863	816513.361
F27	832913.725	816512.242
F28	832915.824	816512.162
F29	832913.342	816506.503
F30	832915.441	816506.423
F31	832913.297	816505.304
F32	832915.395	816505.224
F33	832902.233	816502.443
F34	832903.979	816503.579
F35	832902.899	816504.415
F36	832904.645	816507.581
F37	832903.554	816497.439
F38	832907.301	816498.601
F39	832906.220	816498.437
F40	832907.962	816497.603
F41	832909.614	816496.239
F42	832911.361	816422.405
F43	832910.280	816430.241
F44	832912.027	816496.407
F45	832904.171	816497.607
F46	832905.018	816488.773
F47	832904.037	816486.608
F48	832906.584	816487.774
F49	832905.260	816450.222
F50	832898.358	816450.142
F51	832896.214	816449.023
F52	832898.313	816448.543
F53	832875.648	816448.248
F54	832876.547	816466.869
F55	832877.618	816463.268
F56	832878.526	816463.988
F57	832880.592	816466.163
F58	832881.499	816466.784
F59	832882.570	816463.275
F60	832883.477	816463.897
F61	832885.580	816462.489
F62	832898.087	816468.111
F63	832891.958	816464.602
F64	832892.865	816465.223
F65	832894.837	816467.106
F66	832895.744	816467.728
F67	832896.815	816464.219
F68	832897.722	816464.841



KEY LOCATION PLAN

NOTES:

1. THESE DRAWING SHOW THE STRUCTURAL SETTING OUT OF THE CAST IN-SITU ELEMENTS FOR THE LANDSCAPING STRUCTURES, NAMELY THE PLANTERS, THE FOOTING & THE STAIRS.
2. THESE DRAWING SHALL BE READ TOGETHER WITH THE ARCHITECTURAL, LANDSCAPING AND DRAINAGE DRAWINGS.
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWING NO. 704/W/305/AAJ/C22/424.
4. LANDSCAPING WORKS (e.g. PLANTERS, FINISHINGS) SHALL REFER TO DWG NO. 704/W/305/AAJ/A50/420~427.
5. FOR THE MAKE-UP OF THE PAVEMENT AND FINISHING REFER TO LANDSCAPE DRAWING NOS. 704/W/305/AAJ/A50/600 TO 613.
6. UTILITIES AND DRAINAGE LAYOUT SHOULD REFER TO DRAWING NO.704/W/305/AAJ/P06/020, B06/020.
7. THE COMPLETION OF EARTH WORKS SURFACE SHALL BE COMPLIED THE REQUIREMENT AS STIPULATED IN THE GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORK (2006 EDITION) SECTION 6.

LEGEND:

- PROPOSED TYPE B PLANTER
- +11.000 PROPOSED FORMATION LEVEL (WITHOUT FINISHES)
- +12.100 PLANTER TOP LEVEL
- +10.200 FOUNDING LEVEL
- SITE BOUNDARY LINE
- PROPOSED STAIRCASE
- RS1 LAYOUT FOR 350(L)x1200(W)x500(H)mm FOOTING RS1
- TR1 LAYOUT FOR 2100(L)x1200(W)x500(H)mm FOOTING TR1

METRES 0 2 4 6 8 10

1 : 200

REV	DESCRIPTION	BY	DATE	APPROVED
A	WORKING DRAWING	TH	15JAN10	

DRAWN	TH
DESIGNED	AL
CHECKED	ST
APPROVED	GR
DATE	31/JUL/2009

MTR

WEST ISLAND LINE

ORIGINATOR: Atkins Arup JV

Supported by Aedas Limited, Widnall Limited, Kenneth Ng and Associates

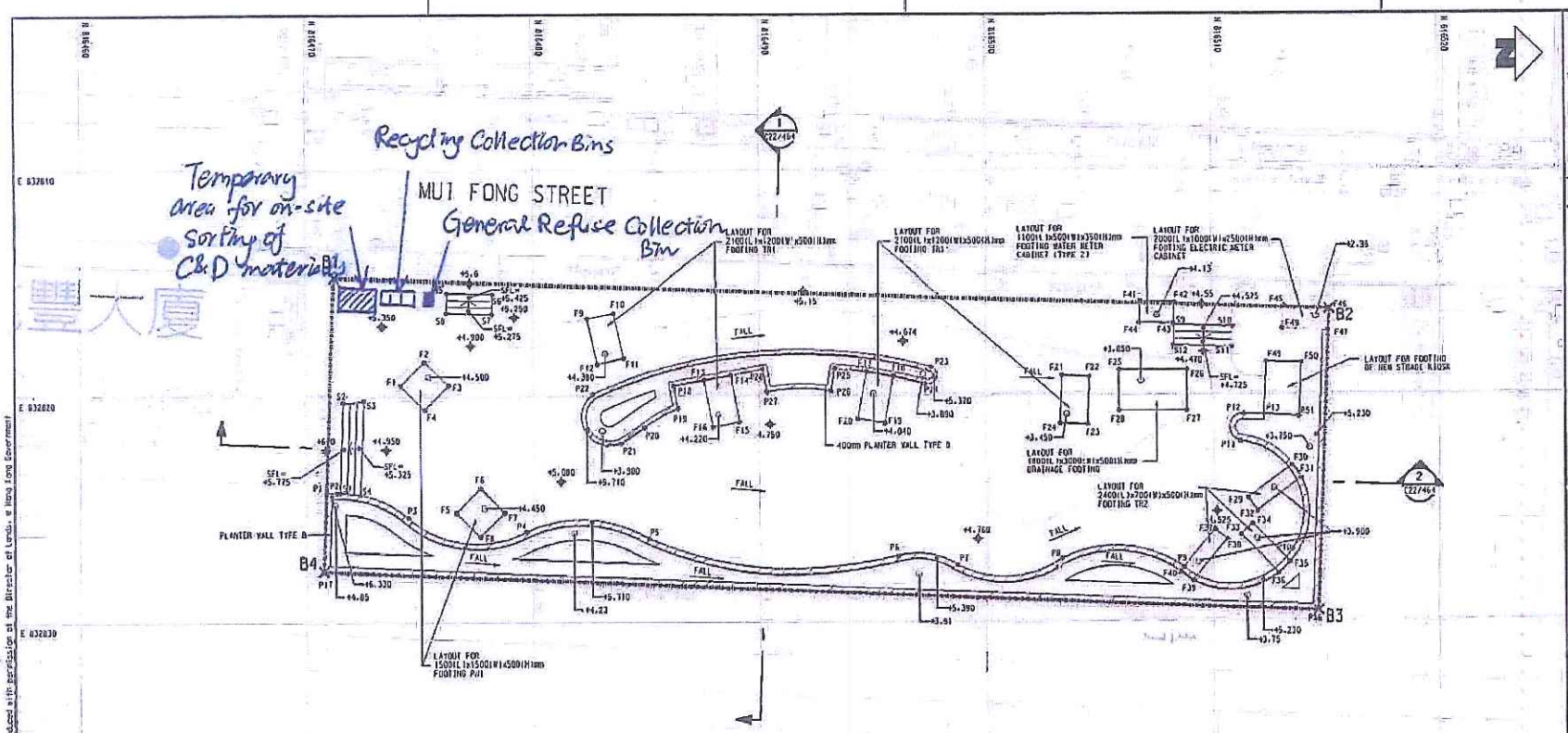
CAD REF. 704_W_305_AAJ_C22_423A.dgn

TITLE: CONTRACT 704
SYP & UNV STATIONS
SAI YING PUN STATION
SAI WOO LANE
EXTERNAL CIVIL WORKS PLAN

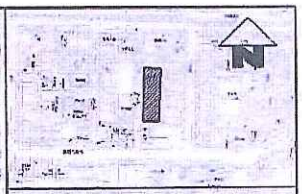
SCALE 1 : 200 (A1)

DRAWING NO. 704/W/305/AAJ/C22/423

REV. A



KEY LOCATION PLAN



NOTES:

1. THESE DRAWING SHOW THE STRUCTURAL SETTING OUT OF THE CAST IN-SITU ELEMENTS FOR THE LANDSCAPING STRUCTURES, NAMELY THE PLANTERS, THE FOOTING & THE STAIRS.
2. THESE DRAWING SHALL BE READ TOGETHER WITH THE ARCHITECTURAL, LANDSCAPING AND DRAINAGE DRAWINGS.
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWING NO. 704/W/305/AAJ/C22/464.
4. LANDSCAPING WORKS (e.g. PLANTERS, FINISHING) SHALL REFER TO DWG NO.704/W/305/AAJ/A50/460-467.
5. FOR THE MAKE-UP OF THE PAVEMENT AND FINISHING REFER TO LANDSCAPE DRAWING NOS. 704/W/305/AAJ/A50/600 TO 613.
6. UTILITIES AND DRAINAGE LAYOUT SHOULD REFER TO DRAWING NO.704/W/305/AAJ/P06/040 & 045, 006/040.
7. THE COMPLETION OF EARTH WORKS SURFACE SHALL BE COMPLIED THE AGREEMENT AS STIPULATED IN THE GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORK (2006 EDITION) SECTION 6.

LEGEND:

- PROPOSED PLANTER
- +11.000 PROPOSED FORMATION LEVEL (STRUCTURAL LEVEL)
- +11.000 EXISTING GROUND LEVEL TO BE RETAINED
- +12.100 PLANTER TOP LEVEL
- +10.200 FOOTING LEVEL
- SITE BOUNDARY LINE
- PROPOSED STAIRCASE

SETTING OUT POINT OF SITE BOUNDARY

POINT	EASTING	NORTHING
B1	832814.670	816471.250
B2	832816.143	816515.172
B3	832829.508	816514.657
B4	832827.727	816470.771

SETTING OUT POINT FOR PLANTER WALL

POINT	EASTING	NORTHING	
P1	832824.234	816470.899	STRAIGHT
P2	832824.291	816471.360	R=4702
P3	832825.329	816474.495	R=4513
P4	832825.960	816478.690	R=5708
P5	832826.280	816485.122	R=15433
P6	832827.100	816495.076	R=3234
P7	832827.501	816499.713	R=4495
P8	832827.238	816503.346	R=5122
P9	832827.650	816508.721	R=3212
P10	832826.850	816513.537	R=3158
P11	832827.054	816511.223	R=405
P12	832820.860	816511.364	STRAIGHT
P13	832820.804	816512.280	STRAIGHT
~~P14~~	~~832819.220~~	~~816512.250~~	STRAIGHT
~~P15~~	~~832819.201~~	~~816511.992~~	STRAIGHT
P16	832829.508	816514.656	STRAIGHT
P17	832827.727	816470.771	STRAIGHT

P18	832818.556	816486.218	STRAIGHT
P19	832820.539	816486.402	R=376
P20	832821.384	816484.927	R=4844
P21	832822.070	816483.900	R=1250
P22	832815.923	816482.849	R=22063
P23	832818.720	816497.556	R=386
P24	832819.484	816497.208	R=21215
P25	832818.797	816493.327	STRAIGHT
P26	832815.791	816493.155	R=1503
P27	832815.833	816490.344	STRAIGHT
P28	832818.922	816490.150	STRAIGHT

SETTING OUT POINT FOR FOOTING

POINT	EASTING	NORTHING	POINT	EASTING	NORTHING	POINT	EASTING	NORTHING	POINT	EASTING	NORTHING
F1	832819.521	816474.164	F17	832818.939	816494.721	F33	832826.165	816511.251	F49	832818.538	816502.384
F2	832818.462	816475.224	F18	832819.153	816495.801	F34	832825.685	816511.760	F50	832818.589	816503.928
F3	832819.519	816476.285	F19	832821.218	816495.527	F35	832827.432	816513.406	F51	832820.971	816513.021
F4	832820.584	816475.229	F20	832821.005	816494.347	F36	832827.912	816512.856			
F5	832825.115	816476.616	F21	832819.138	816503.372	F37	832825.935	816510.108			
F6	832824.059	816477.673	F22	832819.183	816504.571	F38	832826.300	816510.649			
F7	832825.107	816478.738	F23	832821.201	816504.492	F39	832828.234	816509.124			
F8	832816.591	816482.341	F24	832821.236	816503.293	F40	832827.847	816508.567			
F9	832815.736	816482.245	F25	832818.809	816505.891	F41	832815.760	816508.812			
F10	832816.257	816483.585	F26	832819.089	816509.891	F42	832815.805	816508.315			
F11	832818.310	816484.028	F27	832820.689	816508.891	F43	832816.796	816508.206			
F12	832818.563	816482.055	F28	832820.689	816505.091	F44	832816.751	816506.783			
F13	832819.304	816487.566	F29	832824.570	816504.569	F45	832816.016	816513.176			
F14	832819.084	816488.746	F30	832823.153	816503.506	F46	832816.143	816515.402			
F15	832821.149	816489.131	F31	832823.718	816513.520	F47	832817.141	816515.189			
F16	832821.369	816487.959	F32	832825.135	816511.983	F48	832817.014	816513.113			

SETTING OUT POINT FOR STAIRCASE

POINT	EASTING	NORTHING
S1	832824.247	816471.499
S2	832820.276	816471.645
S3	832820.197	816472.549
S4	832824.336	816472.397
S5	832815.326	816476.231
S6	832815.283	816478.230
S7	832816.283	816478.206
S8	832816.225	816476.204
S9	832818.851	816500.269
S10	832816.927	816510.097
S11	832817.855	816510.859
S12	832817.779	816500.276

0 1 2 3 4 5 METRES
1 : 100

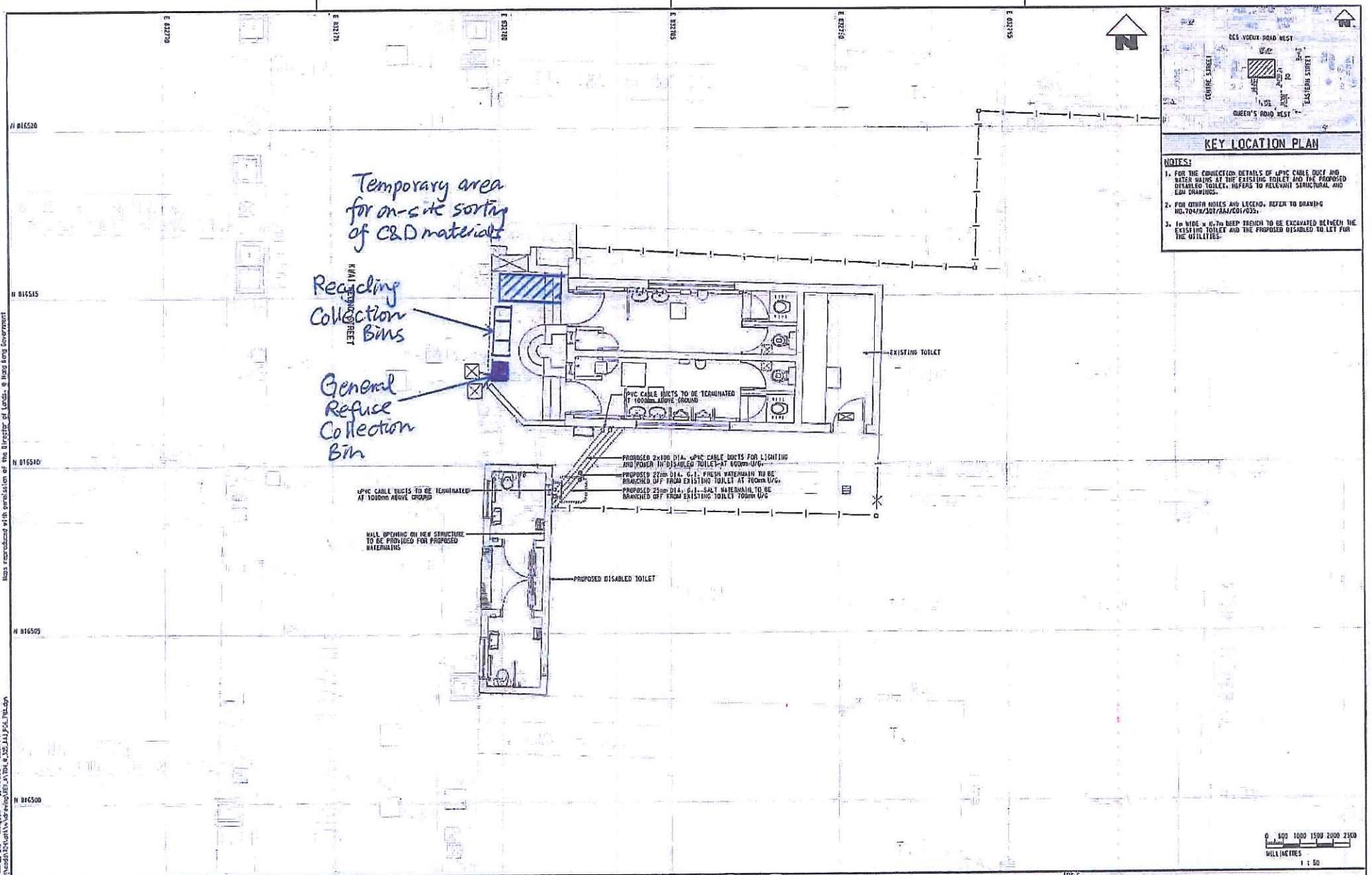
REV	DESCRIPTION	BY	DATE	APPROVED
A	WORKING DRAWING	TH	31/JUL/09	

DRAWN	TH
DESIGNED	KL
CHECKED	ST
APPROVED	GB
DATE	31/JUL/2009

MTR
WEST ISLAND LINE
ORIGINATOR: Atkins Arup JV
Supported by Acdas Limited, Widnell Limited, Kenneth Ng and Associates
CADD REF. 704_W_305_AAJ_C22_463A.dgn

TITLE
CONTRACT 704
SYP & UNV STATIONS
SAI TING PUN STATION
MUI FONG STREET CHILDREN'S PLAYGROUND
EXTERNAL CIVIL WORKS PLAN

SCALE 1 : 100 (A1)
DRAWING NO. 704/W/305/AAJ/C22/463
REV. A



KEY LOCATION PLAN

NOTES:

1. FOR THE CONNECTION DETAILS OF uPVC CABLE DUCT AND WATER MAINS AT THE EXISTING TOILET AND THE PROPOSED DISABLED TOILET, REFERS TO RELEVANT STRUCTURAL AND E&M DRAWINGS.
2. FOR OTHER NOTES AND LEGEND, REFER TO DRAWING NO.704/W/301/AAJ/E01/035.
3. 1m WIDE x 0.7m DEEP TRENCH TO BE EXCAVATED BETWEEN THE EXISTING TOILET AND THE PROPOSED DISABLED TO LET FOR THE UTILITIES.

REV	DESCRIPTION	BY	DATE	APPROVED
A	WORKING DRAWING	TH	15JAN'10	

DRAWN	TH
DESIGNED	RTL
CHECKED	ST
APPROVED	GR
DATE	25/OCT/2009

MTR

WEST ISLAND LINE

ORIGINATOR: Atkins Arup JV

Supported by Aedas Limited, Wilonell Limited, Kenneth Ng and Associates

LOAD REF. 704_W_305_AAJ_P06_741A.dgn

TITLE: CONTRACT 704
FEHD REPROVISIONING
PROPOSED WATERMAINS AND LIGHTING CONDUIT FOR DISABLED TOILET NEXT TO MUI FONG STREET PUBLIC TOILET

SCALE: 1 : 50 (A1)

DRAWING NO.: 704/W/305/AAJ/P06/741

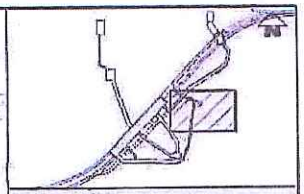
REV. A

SETTING OUT POINT FOR PLANTER WALL

POINT	EASTING	NORTHING
P1	832862.240	816293.913
P2	832854.340	816281.213
P3	832854.110	816265.025
P4	832856.303	816260.052
P5	832864.489	816252.923
P6	832892.452	816329.350
P7	832864.017	816264.044
P8	832867.562	816257.734
P9	832868.070	816253.203
P10	832880.610	816252.950
P11	832880.261	816252.302
P12	832880.100	816250.550
P13	832886.189	816282.903
P14	832882.183	816280.202
P15	832877.906	816281.479
P16	832871.058	816283.731
P17	832879.459	816285.101
P18	832873.368	816289.948
P19	832872.636	816287.012
P20	832869.303	816287.049
P21	832861.371	816285.243
P22	832883.057	816273.678
P23	832891.232	816261.664
P24	832892.479	816261.220
P25	832892.038	816261.405
P26	832890.122	816263.798
P27	832890.933	816264.337
P28	832887.040	816269.726
P29	832886.448	816269.693
P30	832883.080	816272.949
P31	832884.029	816271.213
P32	832882.151	816271.119
P33	832889.303	816262.293
P34	832888.589	816260.099
P35	832860.457	816259.073
P36	832860.052	816260.141
P37	832862.881	816267.234
P38	832866.492	816267.467
P39	832872.369	816266.033

SETTING OUT POINT FOR FOOTING

POINT	EASTING	NORTHING
F1	832868.009	816293.807
F2	832868.048	816295.667
F3	832872.746	816295.505
F4	832872.708	816293.706
F5	832871.944	816288.643
F6	832873.467	816290.625
F7	832880.207	816285.446
F8	832878.684	816283.464
F9	832868.546	816269.686
F10	832869.545	816269.703
F11	832868.507	816268.703
F12	832886.507	816266.686
F13	832889.734	816268.920
F14	832890.323	816270.737
F15	832892.749	816268.972
F16	832892.160	816268.163
F17	832892.307	816268.099
F18	832892.795	816267.226
F19	832889.176	816265.763
F20	832889.686	816266.636



KEY LOCATION PLAN

NOTES:

1. THESE DRAWING SHOW THE STRUCTURAL SETTING OUT OF THE CAST IN-SITU ELEMENTS FOR THE LANDSCAPING STRUCTURES; NAMELY THE PLANTERS, THE FOOTING & THE STAIRS.
2. THESE DRAWING SHALL BE READ TOGETHER WITH THE ARCHITECTURAL, LANDSCAPING AND DRAINAGE DRAWINGS.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 704/W/305/AAJ/C22/401.
4. LANDSCAPING WORKS (e.g. PLANTERS, FINISHING) SHALL REFER TO DWG NO.704/W/305/AAJ/A58/400~406.
5. FOR THE MAKE-UP OF THE PAVEMENT AND FINISHING REFER TO LANDSCAPE DRAWING NOS. 704/W/305/AAA/A58/600 TO 613.
6. UTILITIES AND DRAINAGE LAYOUT SHOULD REFER TO DRAWING NO.704/W/305/AAJ/P58/080 A~086/001.
7. THE COMPLETION OF EARTH WORKS SURFACE SHALL BE COMPLIED THE REQUIREMENT AS STIPULATED IN THE GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORK (2006 EDITION) SECTION 6.

LEGEND:

- PROPOSED TYPE D PLANTER
- +11.000 PROPOSED FORMATION LEVEL (WITHOUT FINISHES)
- +11.000 EXISTING GROUND LEVEL TO BE RETAINED
- +12.150 PLANTER TOP LEVEL
- +10.200 FOUNDING LEVEL
- PROPOSED STAIRCASE
- SITE BOUNDARY LINE
- EXISTING TREE TO BE RETAINED.

香港佐治五世紀念

足球場

香港保護兒童會
譚雅士日託幼兒園

高雅閣

平台

General Refuse Collection Bin

Recycling Collection Bins

Temporary area for on-site Sorting of C & D materials.

AREA TO BE RETAINED

EXISTING KIOSK A PLANTER WALL TO BE RETAINED

EXISTING FEATURE WALL & PLANTER WALL TO BE RETAINED

EXISTING TOILET TO BE RETAINED

EXISTING KIOSK TO BE RETAINED AND PROTECTED

EXISTING RETAINING WALL TO BE RETAINED AND PROTECTED

LAYOUT FOR 4700(L)x1800(W)x500(H)mm FOOTING RS2 AT LEVEL +37.150mPD

LAYOUT FOR 8500(L)x2500(W)x500(H)mm FOOTING RS1 AT LEVEL +38.710mPD

LAYOUT FOR 3000(L)x1000(W)x500(H)mm FOOTING PW2 AT LEVEL +38.930mPD

0 2 4 6 8 10 METRES 1:200

DRAWN	TH
DESIGNED	AL
CHECKED	ST
APPROVED	GR
DATE	31/AUG/2009

MTR

WEST ISLAND LINE

DESIGNER: Atkins Arup JV

Supported by Aedas Limited, Widnell Limited, Kenneth Ng and Associates

CAD REF. 704_W_305_AAJ_C22_403A.dgn

TITLE: CONTRACT 704
SYP & UNV STATIONS
SAI YING PUN STATION
KING GEORGE MEMORIAL PARK
EXTERNAL CIVIL WORKS PLAN

SCALE: 1 : 200 (A1)

DRAWING NO. 704/W/305/AAJ/C22/403

REV. A

REV	DESCRIPTION	BY	DATE	APPROVED
A	WORKING DRAWING	TH	15/AUG/09	

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PLOT BY: Administrator(ADMIN-PC)
PLOTTED ON: 27/AUG/2009 14:56:56 PM
Default
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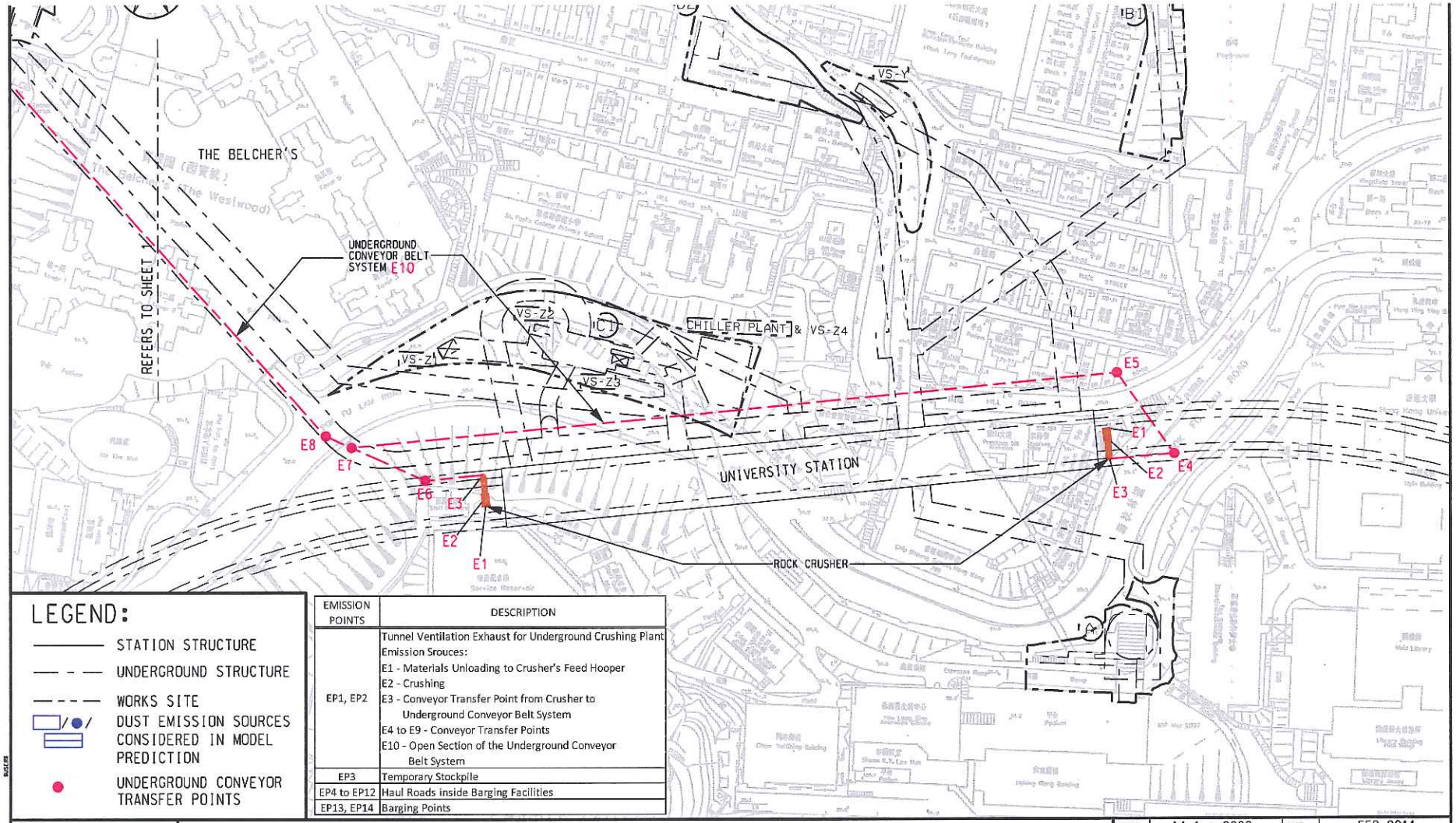


LEGEND:

- STATION STRUCTURE
- UNDERGROUND STRUCTURE
- WORKS SITE
- DUST EMISSION SOURCES CONSIDERED IN MODEL PREDICTION
- UNDERGROUND CONVEYOR TRANSFER POINTS

EMISSION POINTS	DESCRIPTION
EP1, EP2	Tunnel Ventilation Exhaust for Underground Crushing Plant Emission Srouces: E1 - Materials Unloading to Crusher's Feed Hooper E2 - Crushing E3 - Conveyor Transfer Point from Crusher to Underground Conveyor Belt System E4 to E9 - Conveyor Transfer Points E10 - Open Section of the Underground Conveyor Belt System
EP3	Temporary Stockpile
EP4 to EP12	Haul Roads inside Barging Facilities
EP13, EP14	Barging Points

AECOM

MTR WEST ISLAND LINE PROJECT

BLOCK PLAN FOR THE PROPOSED CRUSHING PLANT

SHEET 1 OF 2

SCALE	A4 1 : 2000	DATE	FEB 2011
CHECK	--	DRAWN	--
JOB No.	60158856	DRAWING No.	FIGURE 2.1a
		REV	--

Plotting By: KOATE's

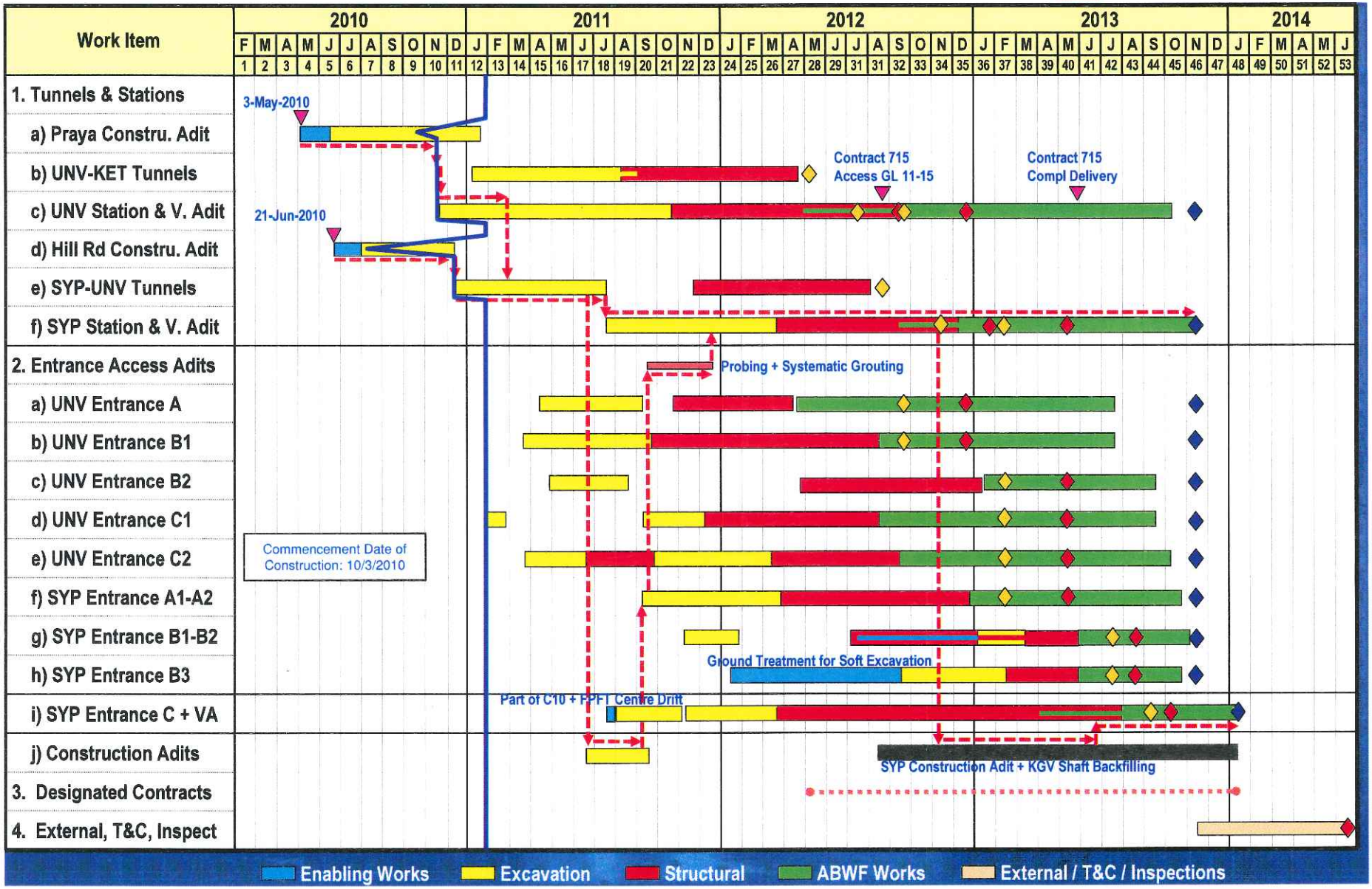
APPENDIX A

Construction Programme

Underground Works - Summary

MTR 港鐵

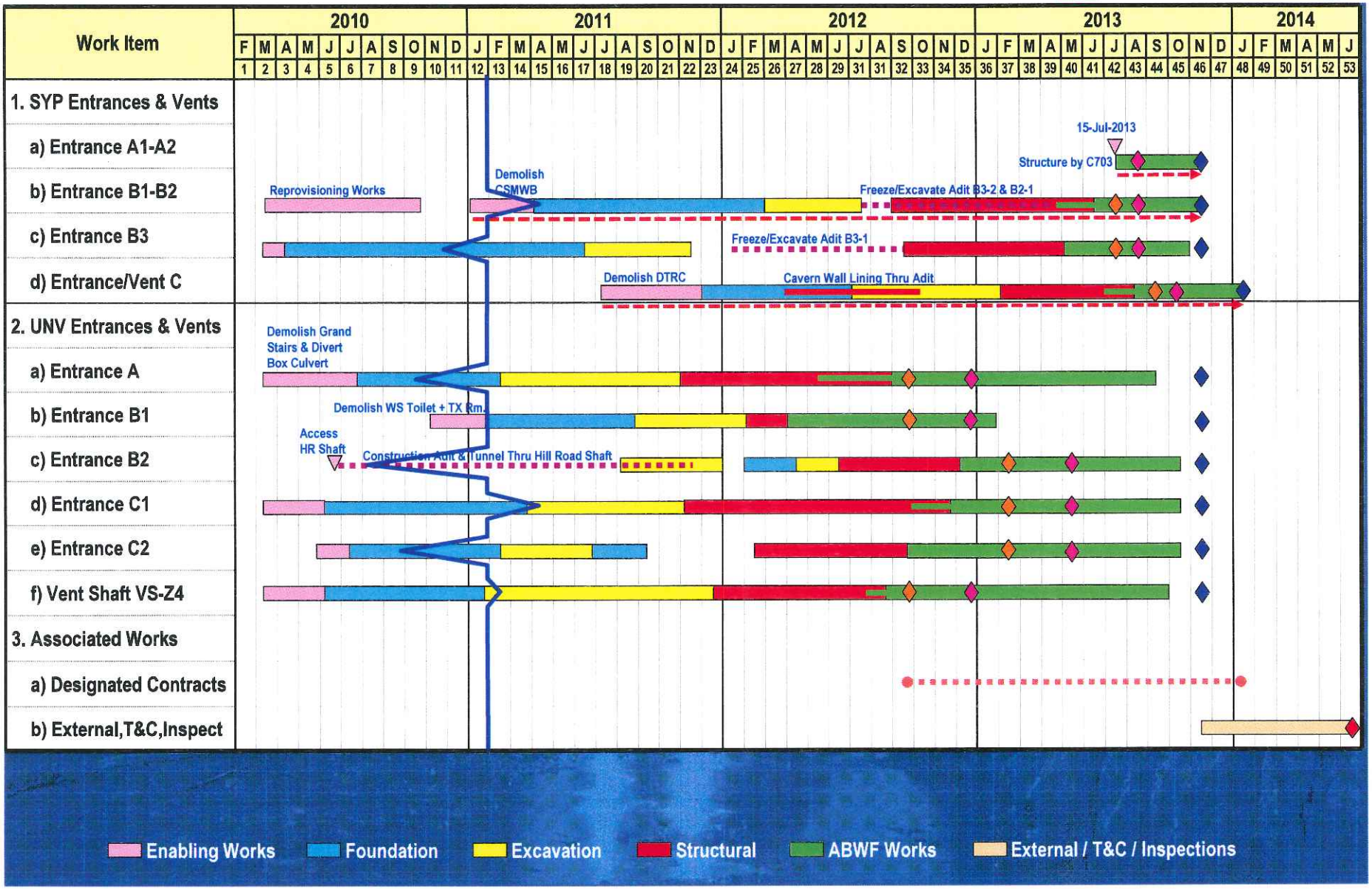
Gammon Nishimatsu
WIL Joint Venture



Entrances - Summary

MTR 港鐵

Gammon Nishimatsu
WIL Joint Venture



APPENDIX B

The GNWILJV's Health, Safety and Environmental Policy

Gammon Nishimatsu
WIL Joint Venture

健康、安全及環保政策

環保、健康、安全，以及員工、公眾以至受我們業務運作影響人士的福祉，都是金門西松最優先關注的事項。

我們完全認同，識別和降低風險以及妥善處理因建造過程可能引起的影響極爲重要，而且沒有任何工作比優先處理健康、安全、環保及社群福祉的事項更爲緊急和重要。

因爲我們確信，只有在健康、安全和環保工作方面表現出色，將可持續發展的原則融入工作，以及與持份者積極互動，才是金門西松的成功關鍵。

我們致力成爲一家對健康、安全及環保盡責和積極服務社群的公司，並矢志要在二零一二年達致「零傷害」，及在健康和安全方面達致世界級水平。

爲實踐此承諾，我們在安全、健康和環境保護的政策是：

- 視健康和安全爲比任何業務更要的優先事項；
- 要求所有經理爲員工建立最高準則的健康及安全領導，並確保所有工程遵守有效的管理程序；
- 以遵從法律及合約條款爲金門西松的最基本要求，從而達致卓越的健康、安全及環保成效；
- 投放足夠資源推行一套達致健康、安全和環保目標的管理系統；
- 爲員工和業務夥伴提供有關法例和良好作業守則的資訊、培訓、指導和監督，從而提升對健康、安全、環保的關注，以及金門西松對持續發展的承諾；
- 追求創新及持續複檢建造設計和方法，從而消除風險和加強保障員工的健康和安全，預防污染，或更有效地保護環境；
- 與建造行業融合及透過不斷提升健康、安全和環保的表現挑戰自己；
- 繼續與本地社群合作，爲可能受我們業務運作影響的人士尋求改善方案或提升生活質素的方法；以及
- 定期跟進工作表現，檢討及訂定具挑戰性的目標，持續改進，精益求精。

每一位員工都有責任推行零傷害和環保目標及以上所有政策，因爲它們關乎您的福祉、您的機構和您的社群。讓我們一起視「安全爲己任」！

John Secker
Project Director
Gammon Nishimatsu WIL Joint Venture

May 2012 (Rev. A)

Gammon Nishimatsu
WIL Joint Venture

Policy on health, Safety and the Environment

The environment, health & safety and well being of everyone employed on the Gammon-Nishimatsu WIL Joint Venture projects, members of the public, and those who may be affected by our activities are afforded the highest concern.

We fully recognise the importance of identifying and minimizing the risks and impacts that may arise from our activities and believe that no task is so important or urgent as to exclude the prior consideration of health, safety, environmental and community concerns in our decision-making.

We regard excellence in health, safety & environmental performance, the incorporation of sustainability principles and positive engagement with our stakeholders as critical to our success.

We are fully committed to being a company that is Environmentally Responsible and Community Engaged. Further, we commit to demonstrate we are "World Class in Health and Safety" by achieving "Zero Harm" by 2012.

In this regard it is GNWILJV's policy to:

- Place health and safety as our number one priority over all other Business considerations;
- Require the highest standards of health, safety and environmental leadership from all our managers who should ensure that effective systems of control are in place for all operations;
- Treat compliance with legislation and contractual requirements as a fundamental minimum requirement in delivering Health, Safety and Environmental excellence;
- Allocate sufficient resources to implement a managed system of controls which will deliver our health, safety and environmental objectives;
- Raise the awareness of health, safety, the environment and GNWILJV's commitment to sustainable development by providing information, training, instruction and supervision to our employees and business partners:
- Pursue innovation and constantly re-examine our design and construction approach so as to remove risk and enhance the health and safety of our workers, prevent pollution and afford better protection to the environment;
- Engage with our industry and challenge ourselves to continually "raise the bar" by improving standards for health, safety and environmental performance;
- Frequently engage with local communities to find ways in which we can minimize impacts and add value to the quality of life of those affected by our operations;
- Seek continual improvement through regular performance monitoring, systematic audits and reviews, and by setting challenging objectives and targets.

The responsibility and accountability for implementing this policy and achieving our "Zero Harm" and Environmental Objectives rests with each and every employee. At stake is your future will-being, your company and your community. Please join us, and lets all "**Make Safety Personal**".

John Secker
Project Director
Gammon Nishimatsu WIL Joint Venture

May 2012 (Rev. A)

APPENDIX C

Organisation Structure for Environmental Management

GNWILJV MTRC Contract C704
Organization Chart

Organization Chart
Sheet 1 of 6
(Rev.28)
Issue Date : May 2012

Gammon Nishimatsu WIL
Joint Venture Board

Project Director
John Secker

Site Executive
Committee Board

Secretary
Carli Tsang

Site Safety Issues

Deputy Project Director
C C Hau

Engineering & Risk Manager
Phil Gunning

Chief Geotechnical Engineer
Derek Williams

Technical Manager
T Saito

Principal Geologist
Tam Chi Kan

Design Manager DSC Review Leader
Martin Panfilo Jr.

Quality Manager
Ruel M Batilo

Programme + Interface Manager
Gerald Keim

Planning + Site Liaison Manager
Steve Wong

See O Chart Sheet 6 of 6 for details

Senior Commercial Manager
Shaun O'Hanlon

Commercial Manager
Shirley Hong

Senior QS (2)
Yeung Wing Tat
Andy Yeung

Senior Cost Controller
T Kobayashi

AC Manager
Desmond Chung

Purchase Officer
Ken Mui
Daniel Gutierrez

See O Chart Sheet 5 of 6 for details

Project Manager Underground
S Endo

Project Manager Entrances / Shafts / ABWF
C C Hau

Construction Manager

Construction Manager

Site Technical Team Const. Manager
O Iwata

Plant Manager
O Hasegawa

HKU
Stephen Lee

Site Production Team General CM (Deputy UG PM)
N Murakawa

Disposal / Logistic Manager
Michael Wong

SYP
Michael Wong

Construction Managers
M. Baba
N. Kamiyama

Chief Surveyor
Philip Lo

ABWF
Eddie Lau

Chief Blasting Engineer
Li Shu Tak

Demolition Supervisor (2)
Thomas Wong (YSK2)

Asbesto Specislist
Sublet

Senior Site Magazine Manager
Jobic Chung

SYP Ent B1/B2 Footbridge & Reprovisioning
Alex Yui

Site Magazine Manager
Tse Bing Lung
Ip Ka Lung

See O Chart Sheet 2 of 6 to 4 of 6 for details

Environmental Manager
Eddie Tse

Assistant Environmental Manager
Michelle Tang

Environmental Engineer
Gabriel Wong

Environmental Supervisor
Ng Wing Kam

Env Consultant
AECOM
Wilson Acoustic Limited

Administration Manager
TBA

PR Officer
Cissy Yiu

PR Consultant
AWTC

Personal Officer
TBA

Labour Controller
Crystal Hung

Clerk
Amy Wong

Office Controller
Portia Li

Assist. Admin. Officer
Moon Li

IT Engineer
Alex Ng

Clerk (1)
TBA

Amah (6)
TBA

Driver (4)
TBA

Clerk (1)
TBA

Amah for Eng (6)
TBA

Driver for Eng (4)
TBA

Survey Ass for Eng (12)
TBA

Site Security Team
TBA

H & Safety Manager
S K Lam

Safety Officer Entrances
Simon Cheng

Safety Supervisors
Leo Ng
Kathy Cheng
Dickson Chiu

Safety Officer HKU Cavern
Leo Wong

Safety Supervisors
Ray Chan
Frederick Li

Safety Officer SYP Cavern
Johnny Yeung

Safety Supervisors
Lai Yui Hong

Safety Officer (Night Shift)
Wilson Chu

Safety Training Officer
Simon Cheng

Site Clerk
Sin Wong

Site Nurse
Lee Sze Ho

First Aiders

Tagging System Technician
Cyrus Cheung

Changes as highlighted

APPENDIX D

Predicted Waste Quantities from the Project

MTR CORPORATION WEST ISLAND LINE
WORKS CONTRACT NO. 704 - SYP & HKU STATIONS AND SYP TO KET TUNNELS
Predicted Waste Disposal Schedule

Construction Activity	Waste generation period	Waste Generating Operation	Estimated Quantities of Inert C&D Materials[1] and Control Measure		Estimated Quantities of C&D Waste[2] and Control Measure						Estimated Quantities of Contaminated Material[6]	
			Public fill / Reclaimed asphalt pavement (RAP)		Recyclables[3]		Chemical Waste[4]		Others, e.g. general refuse[5]			
			Qty (cu m)	Control Measure	Qty (cu m)	Control Measure	Qty (litres)	Control Measure	Qty (cu m)	Control Measure	Qty (cu m)	Control Measure
Site Preparation Work	Mar 10 to Apr 11	Establishment of site office and hoarding/fencing erection							150	Disposal to SENT Landfill		
Underground Excavation Works	Jun 10 to Jan 13	Caverns / Tunnels / Adits	321,248 (16,900 to be re-used on-site)	Reuse onsite / offsite / disposal to PFRFs								
	Nov 10 to Dec 12	Entrances	114,099	Reuse onsite / offsite / disposal to PFRFs								
Demolition Works	Jan 11 to Apr 11	Demolition of Existing CSMWB	1,215	Reuse onsite / offsite / disposal to PFRFs								
	Jul 11 to Dec 11	Demolition of Existing DTRC	3,751	Reuse onsite / offsite / disposal to PFRFs			TBC	Asbestos waste to be disposed to SENT Landfill			TBC	Treatment/disposal of contaminated materials to be determined by Land Contamination Study (i.e. CAP/CAR/RAP)
	Mar 10 to Jul 10	Demonlish grandstairs to Haking Wong Building	293	Reuse onsite / offsite / disposal to PFRFs								
	Jan 12 to Feb 12	Demolish existing Western Court Substation	23	Reuse onsite / offsite / disposal to PFRFs								
	Nov 10 to Jan 11	Demolition of Whitty Street Public Toilet	341	Reuse onsite / offsite / disposal to PFRFs								
Site Housekeeping[7]	Mar 10 to Jun 14	Daily operation on site			157	Collected by recyclers			626	Disposal to SENT Landfill		
Plant & Equipment Maintenance[8]	Mar 10 to Jun 14	Maintenance of plant and equipment					10400	Collected by licensed collector				

Note:

(1) Inert Construction & Demolition (C&D) materials are mainly public fills such as broken concrete, excavation soil, excess concrete

(2) Construction & Demolition (C&D) Wastes are non-inert waste materials such as metal, timber, vegetation, packaging material, organic material and all recyclables and non-recyclables arising from various construction activities.

(3) Recyclables are mainly steel, metals, paper/cardboard packaging and plastics (where plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

(4) Chemical wastes are spent lubricating oil and oil contaminated materials arising from plant maintenance activities and asbestos-containing material arising from David Trench Rehabilitation Centre.

(5) General Refuses include food wastes, non- recyclable materials (including waste paper/cardboard packaging, plastics and timber) and other debris arising from various construction activities, site workforce and site housekeeping.

(6) Quantity of contaminated material generated from underground fuel tank at David Trench Rehabilitation Centre to be determined by contamination assessment study.

(7) According to WIL/EIA, the generation rate of 0.65kg/worker/day is used to predict the general refuse. Maximum daily generation of 995 kg, 1574 working days and refuse density of 2000kg/m^3 are used to estimate housekeeping waste. 20% of recycling of housekeeping wastes is assumed.

(8) Based on previous similar scale of project, a generation rate of 200L/month and 52 months of work are used to predict the quantity of liquid chemical waste.

APPENDIX E

Waste Flow Table (WFT)

West Island Line Sai Ying Pun and Hong Kong University Stations, and Sai Ying Pun to Kennedy Town Tunnels

Contract No. : 704

Monthly Summary Waste Flow Table for 2012 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract (see Note 8)	Reused in other Projects (see Note 7)	Disposed as Public Fill	Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste (see Note 6)	Others, e.g. general refuse
	(in '000m³/ tonne)	(in '000m³/ tonne)	(in '000m³/ tonne)	(in '000m³/ tonne)	(in '000m³ / tonne)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / L)	(in '000m³/ kg)
Jan										
Feb										
Mar										
Apr										
May										
June										
Sub-total										
July										
Aug										
Sept										
Oct										
Nov										
Dec										
Total										

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

APPENDIX F

Chit

本署檔號
OUR REF: EP 197/02/02
來函檔號
YOUR REF:
電話
TEL. NO.: 2872 1737
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,
Western District, 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

(郵寄及電郵)

港九及新界夾斗車商會
香港廢物處理業協會
香港泥頭車司機協會
汽車交通運輸業總工會
香港九龍的士貨車商會有限公司
環保工程商會
香港地產建設商會
香港建造商會
香港建築業承建商聯會
承建商授權簽署人協會有限公司
香港建造業分包商聯會

各會代表：

建築廢物處置收費計劃
三方工作小組 - 諮詢會議

多謝 貴會出席於二零零九年四月二十三日舉行的諮詢會議。發展局工務科在會上展示有關合併運載記錄票制度及載運入帳票制度的草擬方案簡介，現隨函附上該簡介供 貴會參考。

環境保護署署長

(環境保護主任吳漢榮 吳漢榮 代行)

附件: 演示文稿一份

副本送: 發展局工務科 (經辦人:鄧滿堯先生)
副本送: 土木工程拓展署 (經辦人:陳振成先生)
內部: 高級政務主任(廢物管理政策科) (經辦人:易志宏先生)
內部: 高級工程師(廢物管理政策科) (經辦人:袁煥國先生)

二零零九年四月二十四日

拆建物料運載記錄票
Disposal Delivery Form (DDF)

附件

Serial No. 0000569404

Date:
日期：

Designated PFF/Landfill:
指定公眾填土設施／堆填區：

Vehicle Licence Plate Number:
車牌號碼：

Issued By:
簽發：

Approximate Load:
大約承載量：
☐ 1/4 ☐ 1/2 ☐ 3/4 ☐ Full 滿

Remark:
備註：

(This part retained by issuing office)
(此部分由簽發部門保留)
CEDD CEO/84
[Revision 01/2005]

Serial No. 0000569404

Date:
日期：

Designated PFF/Landfill:
指定公眾填土設施／堆填區：

Vehicle Licence Plate Number:
車牌號碼：

Issued By:
簽發：

Chop of Designated Public Filling Facility/ Landfill 公眾填土設施/堆填區蓋印

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

Serial No. 0000569404

(Information contained in this form may be displayed on Internet 此表格所載資料可被上載於互聯網)

Date:
日期：

Time of departure from site:
離開地盤時間：

Vehicle Licence Plate Number:
車牌號碼：

Designated Public Filling Facility/Landfill:
指定公眾填土設施／堆填區：

Location of Site:
地盤位置：

☐ Central & Western 中西區	☐ Wanchai 灣仔	☐ Eastern 東區	☐ Southern 南區	☐ Sai Kung 西貢
☐ Yau, Tsim, Mong 油尖旺	☐ Shamshuipo 深水埗	☐ Kowloon City 九龍城	☐ Wong Tai Sin 黃大仙	☐ Outlying Islands 離島
☐ Kwun Tong 觀塘	☐ Kwai Tsing 葵青	☐ Tsuen Wan 荃灣	☐ Tuen Mun 屯門	☐ Shatin 沙田
☐ Yuen Long 元朗	☐ North 北區	☐ Tai Po 大埔		

Approximate Load: ☐ 1/4 ☐ 1/2 ☐ 3/4 ☐ Full 滿
大約承載量：

Please stick contract no. barcode above
請在上方貼上合約編號條碼

Chop of Designated Public Filling Facility/Landfill 公眾填土設施／堆填區蓋印

Chop of Engineer's/Architect's Representative
工程師／建築師代表蓋印

載運入帳票
CHIT

入帳票編號:
Chit No.:_____

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills ☐ 篩選分類設施 Sorting Facilities

☐ 公眾填料接收設施 Public Fill Reception Facilities

☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

_____

使用日期:
Date of Use:_____

簽發人:
Issued by:_____

建築廢物產生地點:
Construction Waste Generated Site:

帳戶編號:
Account No.:_____

甲部份: 由帳戶戶主保留
Part A: retained by Account-holder

入帳票編號:
Chit No.:_____

選擇「✓」一個訂明設施:
Tick (✓) One Prescribed Facility:

☐ 堆填區 Landfills ☐ 篩選分類設施 Sorting Facilities

☐ 公眾填料接收設施 Public Fill Reception Facilities

☐ 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark:

_____

使用日期:
Date of Use:_____

簽發人:
Issued by:_____

帳戶名稱:
Name of the Account-holder:

帳戶編號:
Account No.:_____

乙部份: 由廢物運輸商保留
Part B: retained by Waste Hauler

香港法例第354章廢物處置條例
廢物處置(建築廢物處置收費)規例
Waste Disposal Ordinance (Chapter 354)
Waste Disposal (Charges for Disposal of Construction Waste) Regulation

載運入帳票
CHIT

車牌號碼:
Vehicle Registration Mark:

_____

有效期至:
Valid Until:_____

建築廢物產生地點:
Construction Waste Generated Site:

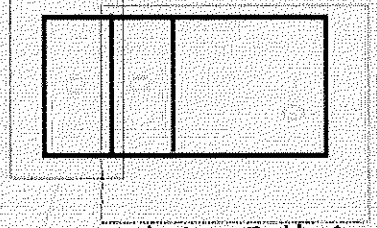
帳戶名稱:
Name of the Account-holder:

丙部份: 由政府保留
Part C: retained by Government

E 199279

現在的流程

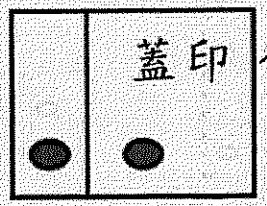
運載記錄票（DDF）



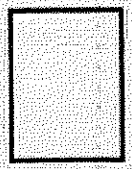
工務部門蓋印簽發

工務部門 ▸ 承建商 ⟶ 司機 ▸ 接收設施

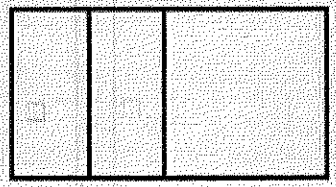
接收設施



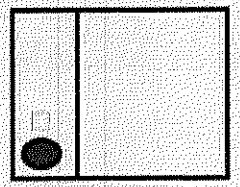
司機 ▲ ▼ 電腦接收記錄票



載運入賬票（CHIT）



承建商 ⟶ 司機 ▸

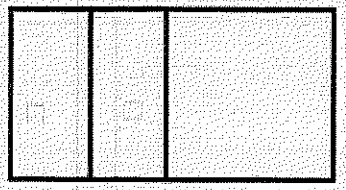


▸ 接收設施
入電腦
存檔

司機

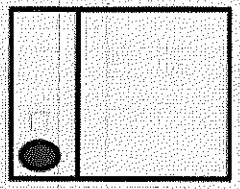
建議的流程

載運入賬票（CHIT）



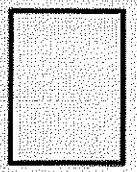
司機

司機



接收設施
入電腦
存檔

司機



電腦接收記錄票

承建商

車輛每日
出入記錄

工程部門核對

A sample of "Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the Site

(1) Contract no. & title: _____

(2) Date of disposal: _____

(3) Designated disposal ground(s): (a)

(b)

(c)

others _____

(4) Approved alternative disposal grounds: _____

DDF Serial no.	Vehicle registration no.	Departure time from site	Approx. vol (e.g. Full/Three Quarter/Half/One quarter)	C&D material type (e.g. inert or non-inert)	Actual disposal ground	Arrival time at disposal ground	Remarks

Part 1[1] Part 2[2]

Submitted by : _____ *[Name of Contractor's Designated Person]*
Signature : _____
Date : _____
Received by : _____ *[Name and signature of the officer]*
Post : _____
Date & Time : _____

Submitted by : _____ *[Name of Contractor's Designated Person]*
Signature : _____
Date : _____
Received by : _____ *[Name and signature of the officer]*
Post : _____
Date & Time : _____

[1] Part 1 - The Contractor shall complete Part 1 and submit it to the Architect's/Engineer's Representative by 1:00 pm of the following working day of the disposal trip.
[2] Part 2 - The Contractor shall complete Part 2 and submit it to the Architect's/Engineer's Representative within 3 working days of the disposal trip.

Annex 2 to Appendix A

"Daily Record Summary" to record daily disposal of construction & demolition (C&D) materials from the *Site
"運載記錄撮要" 記錄每日由*地盤所傾卸的拆建物料

(1) Contract no. & title 合約編號及名稱 _____

(2) Date of disposal 傾卸日期 _____

(3) Designated disposal ground(s) 指定接收設施 (a)

(b)

Others 其它

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

DDF no. 拆建物料運載記錄冊編號	Vehicle registration no. 車輛登記號碼	Approx. vol (e.g. Full/Three Quarter/Half/One quarter) 大約承載量 (例如全、3/4、半、1/4)	C&D materials type (e.g. inert or non-inert) 建築廢料種類 (例如惰性或非惰性)	Designated disposal ground 指定接收設施	Signature & Name of the Contractor's Designated person before departure 於離開地盤前，承包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 Contract Manager's staff before departure or other time as agreed between the Contract Manger's Representative and the Contractor[1] 於離開地盤前或其它經承包商與合約經理代表同意的時間，合約經理部屬姓名及簽名	Actual disposal Ground 真正接收設施	Arrival time at disposal ground 抵達接收設施時間	Remarks 備註

Part 1[2] 甲部 ←→ Part 2[3] 乙部

Submitted by 呈交：

Signature 簽名：

Date 日期：

Received by 接收：

Post 職位：

Date & Time 日期及時間：

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

[Name and signature of the Contract Manager's staff 合約經理部屬姓名及簽名]

---

[1] For term contract, if there are no full time site supervisory staff, the Contract Manger's staff should spot check and then sign as appropriate in accordance with paragraph 20 of ETWB TC(W) 31/2004.定期合約，如沒有全職地盤監管人員，合約經理部屬應根據 ETWB TC(W) 31/2004 的第 20 段進行定點檢查及簽署

[2] Part 1 甲部- The Contractor shall complete Part 1 in duplicate and a copy should be kept by the Architect's/Engineer's Representative. 承包商填寫甲部兩份，副本由合約經理代表持有

[3] Part 2 乙部- The Contractor shall complete Part 2 and submit the whole Summary to the Contract Manger's Representative within 3 working days of the disposal trip. 承包商填寫乙部及將整份運載記錄撮要於傾卸後三個工作天內呈交給合約經理代表

*Delete "Site" and substitute "Sites" for term contracts. 將" 地盤" 刪去及以定期合約代替

主頁
建築廢物的定義
建築廢物管理
建築廢物處置收費計劃
建築廢物統計數字
減廢指引
回收再造公司名錄
建築廢物的再用
個案研究
參考資料
連接至
常見問題
網頁地圖

建築廢物處置收費計劃

5 天工作周 Five-day week in the Government

請按右圖查閱由二零零六年七月一日起的新辦公時間。

新辦公時間

收費計劃

立法會已通過建築廢物處置收費計劃的法例，有關法例的生效日期已刊登於 2005 年 9 月16 日的政府憲報。

建築廢物指建造工程所產生並已被丟棄(不論在被丟棄之前是否經處理或進存)的物質、物體或東西，但不包括從任何污泥、排放或疏浚工程中移去的或該等工程所產生的任何污泥、隔障物或物體。

建築廢物產生者，例如建造工程承判商、裝修工程承判商或處所擁有人，在使用政府的廢物處置設施前，須先向環境保護署開立帳戶，並須繳過帳戶開立費用。

政府透過此收費計劃鼓勵建築廢物產生者減少產生廢物，以及將廢物篩選分類、再用及循環再造，從而節省成本和善用堆填區。

回上

政府建築廢物處置設施
Government waste disposal facilities

公眾填料接收設施 Public fill reception facilities	CW-PFBP	柴灣臨時公眾填土船轉運站 Temporary Public Filling Barging Point at Chai Wan
	MW--PFRF	梅窩臨時公眾填料接收設施 Mui Wo Temporary Public Fill Reception Facility
	QB--PFBP	鰂魚涌臨時公眾填土船轉運站 Temporary Public Filling Barging Point at Quarry Bay
	TKO137FB	將軍澳第１３７區填料庫 Fill Bank at Tseung Kwan O Area 137
	TM38--FB	屯門第38區填料庫 Fill Bank at Tuen Mun Area 38
篩選分類設施 Sorting facilities	TKO137SF	將軍澳第１３７區篩選分類設施 Sorting Facilities at Tseung Kwan O Area 137
	TM38--SF	屯門第38區篩選分類設施 Sorting Facilities at Tuen Mun Area 38
堆填區 Landfill	NENT	新界東北堆填區 North East New Territories Landfill
	SENT	新界東南堆填區 South East New Territories Landfill
	WENT	新界西堆填區 West New Territories Landfill
離島廢物轉運設施 Outlying Islands Transfer Facilites (OITF)	CC	長洲站 Cheung Chau Station
	HLC	喜靈洲站 Hei Ling Chau Station
	MaW	馬灣站 Ma Wan Station
	MW	梅窩站 Mui Wo Station
	PC	坪洲站 Peng Chau Station
	SKW	索罟灣站 Sok Kwu Wan Station
	YSW	榕樹灣站 Yung Shue Wan Statopm

Disposal Records of Construction Waste

建築廢物棄置記錄

Facility 設施	Date of transaction 交易日期	Vehicle No. 車牌號碼	Account No. 帳戶編號	Chit No. 入帳票編號	Time-in 進入時間	Time-out 離開時間	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)
TKO137FB	07/04/09	NS6*00	7007322	04350024	8:03	8:09	29.64	14.44	15.20
TKO137FB	07/04/09	JD3*80	7007322	04350025	8:03	8:09	23.42	13.02	10.40
TKO137FB	07/04/09	CV8*69	7007322	04350026	8:07	8:12	23.54	12.30	11.24
TKO137FB	07/04/09	NG3*25	7007322	04350027	8:08	8:14	23.56	12.67	10.89
TKO137FB	07/04/09	DN4*83	7007322	04350028	8:08	8:13	23.56	13.15	10.41
TKO137FB	07/04/09	JJ7*32	7007322	04350029	8:12	8:17	23.53	13.21	10.32
TKO137FB	07/04/09	HT3*66	7007322	04350030	8:13	8:18	23.51	12.90	10.61
TKO137FB	07/04/09	DW8*33	7004054	04169368	8:16	8:36	23.19	14.70	8.49
TKO137FB	07/04/09	NS3*58	7007322	04350031	8:18	8:23	23.44	12.50	10.94
TKO137FB	07/04/09	MY6*45	7007322	04350032	8:18	8:23	23.48	12.85	10.63
TKO137FB	07/04/09	EN6*33	7007322	04350033	8:19	8:25	23.46	12.89	10.57
TKO137FB	07/04/09	MC9*18	7007322	04350034	8:19	8:24	23.50	12.97	10.53
TKO137FB	07/04/09	NR4*26	7007322	04350035	8:21	8:26	29.55	13.91	15.64
TKO137FB	07/04/09	KG8*66	7007322	04350036	8:22	8:31	23.55	12.77	10.78
TKO137FB	07/04/09	LW8*79	7007322	04350037	8:26	8:32	23.42	12.48	10.94
TKO137FB	07/04/09	FJ9*68	7007322	04350039	8:27	8:33	29.45	14.31	15.14
TKO137FB	07/04/09	FD3*80	7007322	04350038	8:29	8:38	23.50	12.46	11.04
TKO137FB	07/04/09	LS2*26	7007322	04350040	8:30	8:37	23.52	12.93	10.59
TKO137FB	07/04/09	NM2*52	7007322	04350041	8:34	8:40	29.56	14.29	15.27
TKO137FB	07/04/09	LV4*46	7007330	03535596	8:34	8:41	24.83	12.53	12.30
TKO137FB	07/04/09	NJ9*99	7007322	04350042	8:35	8:41	29.56	14.94	14.62
TKO137FB	07/04/09	EM1*76	7007322	04350043	8:35	8:40	23.63	12.76	10.87
TKO137FB	07/04/09	BX3*6	7007292	04250226	8:39	8:47	23.77	15.26	8.51
TKO137FB	07/04/09	GS6*23	7007322	04350044	8:39	8:45	23.47	12.26	11.21
TKO137FB	07/04/09	KS6*70	7008522	04389189	8:43	8:49	31.24	14.91	16.33
TKO137FB	07/04/09	NG5*49	7008127	04134237	8:43	8:55	28.11	14.11	14.00
TKO137FB	07/04/09	LJ6*11	7007322	04350048	8:43	8:48	23.41	12.67	10.74
TKO137FB	07/04/09	GT8*80	7007322	04350046	8:44	8:51	29.41	14.63	14.78
TKO137FB	07/04/09	MB5*26	7008245	04268727	8:45	8:58	28.99	15.28	13.71
TKO137FB	07/04/09	ME8*96	7007322	04350045	8:45	8:51	23.40	13.17	10.23

APPENDIX G

Daily Record Summary

MTR CORPORATION
WEST ISLAND LINE
WORKS CONTRACT NO. 704 - SYP & UNV STATIONS AND SYP TO KET TUNNELS
DAILY RECORD SUMMARY (INERT C & D MATERIAL)

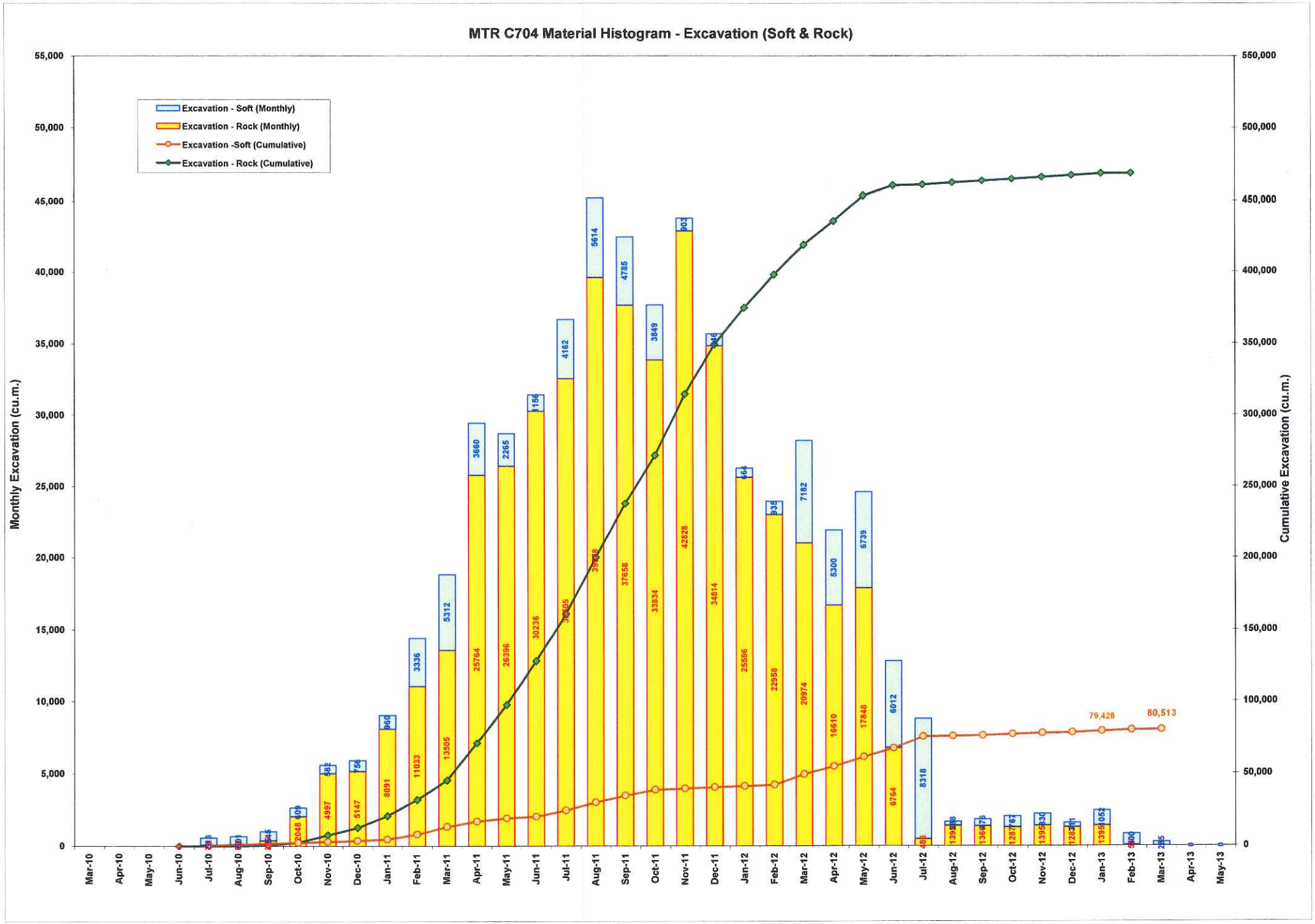
Contract No 合約編號	DDF Serial No 運載記錄票編號	Transaction Ref No 交收備考號碼	Disposal Date 卸置日期	Time In 進入時間	Time Out 離開時間	Vehicle No 車輛登記號碼	GVW 車輛總重	Source of Material 物料來源地	Type of Material 物料類別	Weight In (tonne) 入載重量（公噸）	Net Vehicle Load (tonne) 物料淨重量（公噸）	Remarks 備註

MTR CORPORATION
WEST ISLAND LINE
WORKS CONTRACT NO. 704 - SYP & UNV STATIONS AND SYP TO KET TUNNELS
DAILY RECORD SUMMARY (NON-INERT C & D MATERIAL)

Contract No. 合約編號	Date of transaction 交易日期	Vehicle No. 車牌號碼	Time-in 進入時間	Time-out 離開時間	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)	Transaction No. 交收號碼	CHIT/DDF Serial No. 運載記錄票編號

APPENDIX H

Schedule of Spoil Disposal


MTR C704 Material Histogram - Excavation (Soft & Rock)
Excavation - Soft (Monthly)
Excavation - Rock (Monthly)
Excavation -Soft (Cumulative)
Excavation - Rock (Cumulative)
Monthly Excavation (cu.m.)
Cumulative Excavation (cu.m.)
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
550,000
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Mar-10
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May-13
79,428
80,513

APPENDIX I

Tentative Disposal Plan

Tentative Disposal Plan for C704 in Year 2012 (Jan - Jun)

Potential Disposal Grounds

Items	Disposal Site	Type of Disposal Source	Period	Disposal Method	Type of Materials Required	Approx. Quantity Required (m3)	Agreement Status	Jan	Feb	Mar	Apr	May	Jun	Remarks
1	Central Wanchai Bypass - Tunnel (Causeway Bay Typhoon Shelter Section)	Highway Local Project	1 Jan 2011 to 13 Dec 2013	By Barge	Rock	209,000	Preliminary agreement subject to final agreement of Clients (Approx)							Major Source
2	Central Wanchai Bypass - Tunnel (Causeway Bay Typhoon Shelter Section)	Highway Local Project	Mar to May 2011	By Barge	General Fill	297,000	Preliminary agreement subject to final agreement of Clients (Approx)							Major Source
3	Central Wanchai Bypass (HKCEC)	Highway Local Project	Dec 2010 to Jun 2012	By Barge	General Fill & Rock	130,000	Preliminary agreement subject to final agreement of Clients (Approx)							Major Source
4	Central Wanchai Bypass (Wan Chai East)	CEDD Local Project	Oct 2011 to Feb 2012	By Barge	General Fill & Rock	100,000	Preliminary agreement subject to final agreement of Clients (Approx)							Major Source
5	West Kowloon Water Main		Sep 2011 to Jun 2012	By Barge	General Fill & Rock		Preliminary agreement subject to final agreement of Clients (Approx)							Major Source
6	China Designated Disposal Ground in Dongguanshi	Private China Source	Nov 2010 to May 2013	By Barge	General Fill & Rock	300,000	Agreed							Major Source
7	China Designated Disposal in Xhuhai City (Hung Wan Quarry)	Private China Source	Nov 2010 to May 2013	By Barge	General Fill & Rock	300,000	Agreed							Alternative (No Monthly Limit)
8	China Designed Disposal Ground in Zhuhai City (Hung Wan Quarry)	Private China Source	Nov 2010 to May 2013	By Barge	General Fill & Rock	200,000 ~ 300,000	Agreed							Alternative (No Monthly Limit)

APPENDIX J

Responses to Comments

WEST ISLAND LINE
CONTRACT NO. 704 – SYP and HKU Stations, and SYP to KET Tunnels

SUBMISSION REVIEW FORM

CONTRACTOR : GNJV DELIVERABLE : Waste Management Plan REVISION : ISSUE DATE : May 2012

TYPE : DOC ERF No.: PAGE : 1 of 1

ITEM NO.	REVIEWER	DOCUMENT REFERENCE	REVIEWER'S COMMENT	CONTRACTOR'S RESPONSE	CLOSE DATE
1.	EPD	Section 2.2.1	The Environmental Permit No. should be "EP-313/2008/D"	Noted. The correct EP no. has been included	
2.	EPD	Section 6.7	S.6.7 of the WMP specified the route for transporting C&D material to TM 38 Fill Bank by trucks. Please justify and if this alternative transportation method is considered necessary, please recommend mitigation measures to minimise environmental impacts to the local community	Noted. The information will be provided in the revised WMP accordingly. Mitigation measures is described in S.7.1	
3.	EPD	Section 6.7	As TKO 137 is another possible PFRFs specified in the WMP and the approved EIA report, please also provide the route to this PFRF by vessels in S.6.7 of the WMP	Noted. The routing will be provided in the revised WMP accordingly.	
4.	EPD	Section 6.7	It is noted that the estimated quantities of C&D material and the capacity of the ramp and conveyor belt are provided in S.6.7 of the WMP. Please also specify the capacity of the 2 underground rock crushers in this section.	Noted. The information has been included in Table 6.1	
5.	EPD	Letter dated 8 May 2012	Please finalize the ERR to incorporate the FI and use it as a supporting document for the upcoming submission of the WMP for this part of the WIL Project (Contract 704)	The finalized ERR is included in the WMP Appendix K	

APPENDIX K

Environmental Review Report for PCWA Barging Facilities and Rock Crushers

AECOM

Gammon-Nishimatsu West Island Line Joint Venture (GNWILJV)

West Island Line Contract No. 704

SYP & HKU Stations and SYP to KET Tunnels

Environmental Review Report for PCWA Barging Facilities and Rock Crushers

May 2012

	Name	Signature
Prepared & Checked:	Edith Ng	
Reviewed & Approved:	Y T Tang	

Version: E	Date: 3 May 2012

Disclaimer

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1 INTRODUCTION

1.1 Background

1.1.1 An Environmental Impact Assessment (EIA) study for West Island Line ("WIL", hereinafter known as "the Project") was conducted in accordance with EIA Study Brief No. ESB-254/2005 based on the available information obtained during preliminary design stage. The EIA study concluded that the Project would be environmentally acceptable with the implementation of recommended mitigation measures.

1.1.2 The WIL EIA Report (Register No.: AEIAR-126/2008) was approved on 23 December 2008 under the *Environmental Impact Assessment Ordinance (EIAO).* Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 12 January 2009 (EP No: EP-313/2008) for the construction and operation of the Project. Subsequently, four variation of environmental permit applications have been submitted and approved with that latest Environmental Permit (EP No: EP-313/2008/D) issued by Director of Environmental Protection (DEP) on 19 January 2011.

1.1.3 Gammon-Nishimatsu West Island Line Joint Venture (GNWILJV) has been appointed by the MTR Corporation Ltd (MTR Corporation) to undertake the construction of West Island Line Works Contract No. 704 – Sai Ying Pun Station (SYP), University Station (HKU) and Sai Ying Pun to Kennedy Town (KET) Tunnels.

1.1.4 In the approved WIL EIA Report, it was originally assumed that the rock crushers would be located at the Kennedy Town Abattoir (KTA) Site and the Western Public Cargo Working Area (PCWA). The WIL project would use the barging facilities at Western PCWA site.

1.1.5 MTR Corporation and GNWILJV have proposed the following main changes to the PCWA Barging Facilities and rock crushers for the WIL project for the reasons as shown below:

(a) To relocate the 2 crushers from KTA and PCWA to the tunnels at University Station to better crush the rocks and excavated C&D materials at source and to enable more efficient transport of the crushed materials.
(b) To replace the PCWA stockpile for emergency use as envisaged in the WIL EIA report by a stockpile for regular use in order to maximize the re-use of C&D materials by nearby concurrent projects, such as Central-Wan Chai Bypass (CWB) and Wan Chai Development Phase II (WDII), etc.
(c) To modify and adopt the enclosure originally intended for the PCWA crusher to house the regular-use stockpile in order to minimize any potential impacts from the operation of the stockpile.
(d) To co-use the PCWA barging points between WIL and SIL(E) projects in order to eliminate the need for a separate barging point for SIL(E) project on the north shore of Hong Kong Island, thus eliminating the potential impacts and nuisances associated with such a separate barging point.

Details of the changes and their justifications are presented in Section 2 of this environmental review.

1.1.6 The proposed changes do not alter the scope of designated project obtained in the EP No. EP-313/2008. Additionally, they would not involve any elements that are classified as designated projects under Schedules 2 and 3 of EIAO. Therefore, the proposed changes do not necessitate a new Environmental Permit. In this regard, Environmental Review Report should be prepared to address the proposed changes and its implication of environmental impacts as compared with the approved WIL EIA Report.

1.1.7 Since these changes are different from the information presented in the approved WIL EIA Report, the implications of such changes would need to be reviewed from the perspective of the Environmental Impact Assessment Ordinance (EIAO).

1.1.8 AECOM Asia Co. Ltd (AECOM) has been commissioned by GNWILJV to provide a supplementary review/assessment of potential environmental impacts arising from the proposed changes.

1.2 Objectives of this Review

1.2.1 This ERR is prepared to assess the likely environmental issues pertinent to the changes in comparison with that in the approved WIL EIA Report in order to review whether the proposed changes would require a variation to the existing Environmental Permit (EP No: EP-313/2008/D); and whether the proposed changes constitute a material change to the environmental impacts of the project. This ERR serves the purpose of summarizing and identifying any additional environmental mitigation measures that may be required for compliance with environmental standards.

1.3 Content of this Report

1.3.1 The remainder of the report is organized as follows:

- Section 2 describes the details of the proposed changes in comparison with the approved WIL EIA Report with justification of such changes, and associated key environmental issues.
- Section 3 presents the evaluation of potential impacts on the environment due to the proposed changes, and proposes additional mitigation measures (if required) for compliance with the requirements in the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).
- Section 4 concludes the findings of this environmental review.

2 PROPOSED CHANGES AND JUSTIFICATIONS AND ASSOICATED KEY ENVIRONMENTAL ISSUES

2.1 Proposed Changes in comparison with the Approved WIL EIA Report and Justifications

2.1.1 MTR Corporation and GNWILJV propose to locate the two rock crushers underground inside the tunnel of future HKU Station section of WIL construction and co-use of the barging facilities by WIL and SIL(E) projects. The revised locations of the underground rock crushing facilities for WIL Contract No. 704 are shown in **Figure 2.1**. Details and justification of the proposed changes of the two rock crushers and associated facilities, and the co-use of the barging facilities by WIL and SIL(E) are given in the **Table 2.1** below:

Table 2.1 Details and Justification of the Proposed Changes

Parameter	Approved WIL EIA Report	Proposed Change in this ERR	Justification
1. Quantities and Locations of Rock Crushers	Two above-ground rock crushers located at Kennedy Town Abattoir Site and Western PCWA Site (Section 11.12 & 11.24)	Two underground rock crushers located inside tunnel near the future HKU Station	The relocation of the rock crushers is essential to minimize the rock size at source so as to facilitate the transportation. Nuisance to the neighbourhood could be reduced by placing the rock crushers to underground
2. Maximum Handling Capacity of Rock Crushers	Total: 194 tonnes/hr 85 tonnes/hr at Kennedy Town Abattoir Site; and 109 tonnes/hr at Western PCWA Site (Table 11.9 & 11.11)	Maximum handling capacity of rock crushers: 650 tonnes/hr (i.e. two underground rock crushers with maximum handling capacity of 325 tonnes/hr each) Normal handling capacity of rock crushers:300 tonnes/hr in total (Actual handling rate will be restricted by the capacity of barges and stockpile areas)	The rock crushers are selected subject to market availability with consideration of the capacity to cater for the actual need for C&D material management including recycling
3. Operation Hour of Rock Crushers	12 hours/day (Table 11.9 & 11.11)	Maximum16 hours/day	The increase in operation hour of rock crushers is to cater for the actual need for C&D material management including recycling

Parameter	Approved WIL EIA Report	Proposed Change in this ERR	Justification
4. Setting of the Stockpile Area at the Barging Facilities at the Western PCWA Site	One stockpile area at the Western PCWA Site with a total area of 364m^2 without any enclosing structure (Section 11.24 & Appendix 11.1)	One stockpile area of 1428m^2 at the Western PCWA Site with enclosure (enclosed three sides and the top) with rubber curtain at the seafront opening. When compared with the open stockpiled area as indicated in the approved WIL EIA Report, the location of this enclosed stockpile area was slightly shifted to the area where the rock crushers with enclosure would be in the approved WIL EIA report.	As stated in Section 7.15 of the approved WIL EIA report, it is the Government's advice that disposal of material to public reception facilities should be considered as the last resort with the preferred approach to reuse the material within the Project or in other projects. To materialise this, temporary stockpile areas would serve as a buffer to support for material reuse. Stockpile area is therefore proposed in the PCWA so that the surplus C&D material can be temporarily stored and transported by barge for reuse by other concurrent projects, such as CWB, WDII, etc. An enclosure which was originally planned for covering the aboveground crushers would be retained for covering the stockpile area, which is slightly shifted when compared with that in the approved WIL EIA Report, to alleviate any dust and noise impacts associated with the stockpile area.
5. Usage of Stockpile Area	The crushed rock materials would be transported to the stockpile (without any enclosing structure) for temporary storage via an enclosed conveyor belt system (Section 11.25)	The rock materials would be transported to the stockpile area which forms part of the conveyor system and serves as a buffer for C&D material management, by both enclosed conveyor belt and dump trucks	
6. Number of truck trips per day at the Western PCWA Site	Maximum 160 truck trips per day (Table 11.11)	Maximum 272 truck trips per day in total from WIL and SIL(E) projects	The increase in truck trips per day, as approved under the application of Specified Process Licence, is to cater for the actual need for C&D material management.

Parameter	Approved WIL EIA Report	Proposed Change in this ERR	Justification
7.Use of the barging facilities at the Western PCWA Site	The WIL project would use the barging facilities at the Western PCWA Site (Section 11.11)	Co-use of the barging facilities by WIL and SIL(E) projects. The disposal arrangement of SIL(E) has been carefully considered such that the peak period would not overlap with that of WIL (refers to Section 2.8.3 of SIL(E) EIA Report). The total handling capacity of the barging facilities would not exceed the 272 truck trips per day as stated in item 6	The co-use of the barging facilities by WIL and SIL(E) projects makes efficient use of the existing facilities in the vicinity that would greatly reduce number of traffic crossing harbour tunnels as well as travelling long distance from Hong Kong Island to Fill Bank at Tuen Mun Area 38, thus, improving air quality by reducing emission. Also, co-use of the barging facilities could eliminate the need for a separate barging point for SIL(E) project on the north shore of Hong Kong Island and all the associated potential environmental impacts, nuisances arising from such a separate barging point.

2.2 Key Environmental Issues Associated with the Proposed Changes

2.2.1 For the proposed changes for rock crushers and associated facilities mentioned in **Section 2.1** (excluding the co-use of barging facilities), the potential air quality and noise impacts arising from the construction activities could be different from those presented in the approved WIL EIA Report. Regarding the enclosure for the proposed stockpile area at the barging facilities, an enclosure was initially designed for the above ground rock crushing facility which would be located in Western PCWA site as stated in Figure 11.5 of the approved WIL EIA Report, the enclosure was planned for shielding the rock crushing facility to alleviate the environmental impacts. As one of the proposed changes in the design, the crushing facility would be relocated from the surface to the tunnel to suit the latest construction arrangement and minimize environmental impacts associated with its operation. As a result of the relocation, the enclosure could be deleted. Nevertheless, GNWILJV intend to keep this enclosure in the design by modifying it and slightly shifting its location to house the stockpile area for regular use. With this revised arrangement, the enclosure can further help alleviate the environmental impacts (e.g. dust, noise and nuisances), if any, that may be brought about from the regular-use stockpile operation. Details of the air quality and noise assessment are evaluated in Section 3 of this ERR.

2.2.2 Comparing with the approved WIL EIA Report, the proposed rock crushers and associated facilities would be of larger capacity and be operated for longer hours. However, there is no change in the tunnel alignment, the total amount of the excavated rock materials and the handling rate of barging facilities are the same as that assumed in the approved WIL EIA Report. The findings and proposed mitigation measures as stated in the waste management section in the approved WIL EIA Report are still valid. The waste management aspects as approved in this ERR are to be updated in the Waste Management Plan to be submitted separately. Regarding the co-use of barging facilities by both WIL and SIL(E) projects, the handling rate of the barging facilities would not exceed the assumptions in the WIL EIA Report, therefore, no additional waste management impact would be expected.

The findings and proposed mitigation measures as stated in the approved WIL EIA Report are considered valid. **Table 2.2** identifies the potential environmental impacts associated with the proposed changes and details of the assessment will be presented in Section 3 of this ERR.

Table 2.2 Potential Environmental Impacts

Type of Potential Impact	Potential Impacts Arising from the Proposed Changes
Airborne Noise	√
Ground-borne Noise	√
Landscape and Visual	X*
Cultural Heritage	x
Waste Management	x
Land contamination	x
Water Quality	x
Hazard to life	x
Air Quality	√

Note:
√ - Possible
X – not expected

* In the WIL EIA report, the PCWA site where the changes are proposed in this ERR was identified as a works area. The rock crushing plant, stockpiling of excavated materials, temporary noise mitigation measures (e.g. enclosures), contractor's temporary works areas and aboveground barging facilities were identified as sources of temporary landscape and visual impacts (Section 5.117 of WIL EIA report refers). The changes proposed in this ERR that would have potential landscape and visual issues would include relocation of rock crushers from a works areas at surface to underground and slight shifting of the stockpile area covered by an enclosure which was originally designed for the aboveground rock crusher. Nevertheless, these changes would not affect the validity of the conclusions of the landscape and visual impact assessment in the WIL EIA given: (1) the changes would not introduce new sources of landscape and visual impacts (2) relocating the rock crushers to underground would help alleviate visual intrusion (3) The shifting of stockpile area would be minor, and would remain within the PCWA works area identified in the EIA report. It would also help maximize the opportunity of reusing the excavated materials by other concurrent projects (4) The enclosure that was originally designed for covering the rock crusher would be retained for covering the stockpile area to alleviate any dust and noise impacts. The overall setting of the enclosure would be in line with that indicated in Figure 8.11 of the EIA report. The cladding material of the enclosure would also be similar to that for the conveyor belt system. It is therefore envisaged that these changes would not result in any change in the landscape and visual impacts identified in the WIL EIA report. The landscape and visual impacts associated with these changes would remain comparable to those identified in the WIL EIA report.

3 POSSIBLE IMPACT ON THE ENVIRONMENT AND MITIGATION MEASURES

3.1 Airborne Construction Noise Impact

Representative Noise Sensitive Receivers

3.1.1 As described in **Section 2**, the proposed underground crushers are located at the tunnel level of the future HKU Station. According to the latest engineering information provided by the Contractor of WIL Contract No. 704, GNWILJV, two construction shafts, namely Praya Shaft and Hill Road Shaft, would be connected to the underground crushers when the proposed underground crushers are in operation. In addition, there would be an increase in truck trips per day at the Western PCWA Site to cater for the actual need for C&D material management.

3.1.2 Representative noise sensitive receivers (NSRs) in the vicinity of the two construction shafts and the Western PCWA Site have been identified. **Table 3.1** below presents details of the identified NSRs and their locations are shown in **Figure 3.1**.

Table 3.1 Representative Airborne Noise Sensitive Receivers

EIA NSR ID	Description	Land Use	Existing / Planned NSR	No of Storey	Separation Distance, m	EIAO-TM Criteria, dB(A)
Hill Road Shaft (Works Area J as present in the approved EIA Report)						
UNI 11	Sik On Building	Residential	Existing	9	150*	75
UNI 12	Hill Court	Residential	Existing	23	185*	75
UNI 13	Graceful Court	Residential	Existing	24	185*	75
Praya Shaft (Works Area G as present in the approved EIA Report)						
UNI 15	Yick Fung Garden (Block A)	Residential	Existing	30	310*	75
UNI 16	Sunglow Building	Residential	Existing	24	320*	75
Western PCWA (Works Area E&F as present in the approved EIA Report)						
UNI 18	Wah Po Building	Residential	Existing	24	62.1^	75
UNI 19	Jade Court (Block A)	Residential	Existing	25	141^	75

Note:* Separation distance refers to the horizontal separation distance between the closest proposed underground crusher and the NSR.
^ Separation distance refers to the slant distance between the Western PCWA and the NSR. (Identical to that in WIL EIA Report).

Sources of Impact

3.1.3 The potential noise sources of the proposed changes are associated with the use of powered mechanical equipments (PMEs) during the construction phase of the WIL. The PMEs involved would include the two underground rock crushers as described in **Section 2** and the increase in number of dump trucks at the Western PCWA Site.

Evaluation of Impact

3.1.4 With the substantial horizontal separation distances between the NSRs and the proposed underground crushers of over 150m and deckings have been provided at Works Area G (Praya Shaft) and Works Area J (Hill Road) in accordance with the EP condition 2.10.1 to shield the construction shafts from NSRs to mitigate potential construction noise impact, insignificant contribution of noise levels from the proposed crushers is anticipated. No adverse noise impact from the proposed underground crushers to NSR near Hill Road Shaft and Praya Shaft is anticipated.

3.1.5 Although there would be an increase in the number of dump trucks to deliver C&D material at Western PCWA Site, one above-ground rock crusher at this Western PCWA Site assumed in approved WIL EIA report will be relocated to underground near the future HKU Station.

Table 3.2A and **Table 3.2B** show the plant inventory and the overall sound power levels at Western PCWA Site in approved WIL EIA report and that for the proposed changes respectively.

Table 3.2A Plant Inventory and Overall Sound Power Level at Western PCWA (EIA Stage)

Powered Mechanical Equipment (PME)	TM Ref./ other Ref.	No. of Items	SWL/ Item dB(A)	On-time %	Noise Mitigation Measure	Noise Barrier Reduction	Total SWL dB(A)
Conveyor belts	CNP041	1	90	100%			90
Barge	CNP061	1	104	100%			104
Trucks	BS C9/39	3	103	100%			108
Crusher	EIA Ref.	1	118	100%	Enclosure	10	108
Front end loader	BS C3/97	1	105	60%			103
Mobile crane	BS C7/114	1	101	80%			100
						Total	**113**

Table 3.2B Plant Inventory and Overall Sound Power Level at Western PCWA (for the Proposed Changes)

Powered Mechanical Equipment (PME)	TM Ref./ other Ref.	No. of Items	SWL/ Item dB(A)	On-time %	Noise Mitigation Measure	Noise Barrier Reduction	Total SWL dB(A)
Conveyor belts	CNP041	3	90	100%			96
Barge	CNP061	1	104	100%			104
Trucks	BS C9/39	6	103	100%			111
Crusher	EIA Ref.	0*	118	100%			0
Front end loader	BS C3/97	1	105	60%			103
Mobile crane	BS C7/114	1	101	80%			100
						Total	**113**

Note: * The crusher will be relocated to underground near future HKU Station.

3.1.6 The overall sound power level of the plants at Western PCWA for the proposed changes would be the same as that in the EIA stage, the construction noise impact at the NSRs in Kennedy Town near the PCWA predicted in the approved EIA report is still considered valid.

3.1.7 Furthermore, with the replacement of the aboveground rock crusher assumed in the WIL EIA Report by the proposed underground rock crushers, the NSRs in near the Kennedy Town Abattoir Site works areas are anticipated to experience reduced construction noise impact.

Environmental Monitoring and Audit

3.1.8 With no additional airborne construction noise impacts anticipated, the current EM&A requirements are considered adequate. EM&A requirements documented in the approved EM&A Manual of the WIL are considered to remain valid.

3.2 Ground-borne Construction Noise Impact

3.2.1 Potential ground-borne noise impacts on ground-borne noise levels at the identified NSRs (GBNSRs) during the construction phase will arise mainly from drill & blast and TBM, as well

as PMEs for rock breaking/drilling including breakers, drill rigs and pile rigs. The operation of such PMEs will impact directly to the rock generating vibration and transfer thorough the foundation of the nearby NSR. The vibration at the structural element of the NSR will cause ground borne noise to the environment.

3.2.2 Rock crusher is a PME to break down large rock to small rubbles using a mechanical crusher. The operation of rock crusher was not identified as a vibration generating PME in the EIA report because there was no direct impact to the geology underground during its operation. As shown in **Figure 3.2**, the crusher is supported by metal frame with six supports on ground. There are vibration isolation pads installed between the supports and ground. Therefore most vibration transfer from the PMEs to the hard ground is isolated and the impact is minimal.

3.2.3 Based on the crusher operation phenomenon with the installation of isolation pads, it is anticipated that the ground borne noise generated by the rock crusher is much lower than the breaker at the same location and not be noticeable at the NSR.

3.2.4 With the implementation of vibration isolation measures to the rock crusher, there is no change in the ground-borne noise levels as evaluated in the WIL EIA report.

3.3 Air Quality Impact

Environmental Legislation, Standards and Guidelines

3.3.1 The Air Pollution Control Ordinance (APCO) provides the statutory authority for controlling air pollutants from a variety of sources. The Hong Kong Air Quality Objectives (AQOs) stipulate the maximum allowable concentrations for typical pollutants, of which total suspended particulates (TSP) is relevant to this assessment. The relevant AQOs are listed in **Table 3.3**.

Table 3.3 Hong Kong Air Quality Objectives

Pollutant	Maximum Average Concentration (μgm^{-3}) (1)		
	1-Hour	24-Hour (2)	Annual (3)
TSP	-	260	80

Note:
1. Measured at 298 K and 101.325 kPa.
2. Not to be exceeded more than once per year.
3. Arithmetic mean.

3.3.2 The EIAO-TM stipulates that the hourly TSP level should not exceed 500 μgm^{-3} (measured at 25^{o}C and one atmosphere) for construction dust impact assessment.

3.3.3 Operation of Stone Crushing Plant in which the processing capacity exceeds 5000 tonnes per annum and in which stones are subjected to any size reduction or grading by a process giving rise to dust, is classified as Specified Process (SP) under the APCO.

Background Air Quality

3.3.4 The background concentration of air pollutants in the EIA Report was based on the five-year average from 2000 – 2006 (except Year 2001 and 2002) monitoring data recorded in EPD Central/Western Air Quality Monitoring station. The latest five-year (2006 – 2010) average monitoring data recorded at Central/Western monitoring station considered as the background air pollutant concentrations of the study area are summarized in **Table 3.4**.

Table 3.4 Background Air Pollutant Concentrations adopted in this Assessment

Pollutant	Background Concentration (μg/m^3)	
	EIA Study	Environment Review
Total Suspended Particulates (TSP)	78	76

Representative Air Sensitive Receivers

3.3.5 The study area of Western PCWA site and Praya shaft contains a mixture of existing residential buildings, GIC and recreational facilities. Details of the identified air sensitive receivers (ASRs) located in the vicinity of these sites are summarized in **Table 3.4**. Locations of the ASRs are shown in **Figure 3.3**.

Table 3.5 Representative Air Sensitive Receivers

ASR	Description	Land Use	Distance between ASR and closest work boundary(m)
U8	The Belcher's, Tower 8	Residential	26
U9	Sun Court	Residential	34
U10	Belcher Bay Park	Open Space	46
U11	New Fortune House, Block A	Residential	59

Sources of Impact

The Schematic Flow of Operation Process

(a)Underground Crushing Plant and Underground Works

3.3.6 The crushing facility would be located inside the underground tunnel of the HKU Station section of West Island Line. The facility would include two crushers with the same handling capacity and similar operation. The raw materials (mainly rock) are delivered from the excavation areas inside the tunnel directly to the underground crushing plant by the dump trucks. The dump trucks would unload the raw materials to the feed hopper of the crusher directly (E1). It should be noted that the actual production throughput of the rock crushers would be constrained by the handling capacity of the barging points and stockpiles.

3.3.7 The raw materials will then pass to the screening unit which is in the enclosed chamber. Materials less than 120mm in size will pass through the sieve and go directly to enclosed conveyor belt for discharge. Materials larger than that size will go through the enclosed crusher for breaking down to around 125mm in size (E2) before transferring to the same enclosed conveyor belt for discharge. The screened and crushed materials will be dropped at the end of crusher's conveyor belt onto the conveyor belt system from a height of approximately 2m (E3). The conveyor belt system will transfer all the materials from the crusher to the Praya shaft. This underground system is an open system and involves six conveyor transfer points, which are fugitive dust emission sources inside the tunnel (E4 to E9 – conveyor transfer points & E10 – emission from the open section of the underground conveyor belt system). From the Praya shaft, the materials will be transferred to the barging facilities at the Western District PCWA via the above-ground enclosed conveyor belt system for further processing.

3.3.8 The crusher is self-operating using electricity which is connected to the main supply, hence, other than particulates, no other air pollutant emission is expected.

3.3.9 The air ventilation serving the underground tunnel has two exhaust points at the Praya shaft. The emission from the crushing plant (E1 to E10), together with the emission from other underground excavation areas (considered as cumulative emissions from the exhaust points) will be ventilated to that two exhaust points. The exhaust points will be installed with a number of air filters to minimize the dust impact. According to the engineering design, the maximum underground excavation areas would be around 2400m^2. Inside the tunnel, 2 numbers of tunnel dust collectors will be placed close to the two crushers. According to the specification of the dust collector, the removal efficiency is higher than 99.9%.

(b)Above-ground Barging Facilities

3.3.10 One stockpile with three-side and top enclosure with rubber curtain at the opening (facing Victoria Harbour) will be available at the barging facilities at Western District PCWA. It is

used to store the screened and crushed rock materials from the conveyor belt system and the excavated soft and rock materials generated from shaft construction by dump trucks. These materials at the stockpile would be stored temporarily before unloading them to the barges using enclosed conveyor belt. An excavator will be deployed and operated within the enclosed stockpile area for loading of materials to conveyor belt, if necessary. As dump trucks are one of the means to transfer the materials to the barging facilities, haul road will be available within the PCWA site.

3.3.11 Two barging points will be available at the Western District PCWA barging facilities. The rock materials are transferred to the barges by enclosed conveyor belt (rock materials from WIL sites), or by unloading directly from dump trucks (rock materials from WIL sites and SIL(E) sites) at the tipping halls.

3.3.12 The schematic flow process for the underground crushing plant and the barging facilities is shown in **Figure 3.4**.

Potential Emission Sources

(a)Crushing Plant and Barging Facilities

3.3.13 The crushing plant will use electricity as the power supply for its operation, no diesel generator will be installed on site for the rock crusher. The screening process and crushing process would be conducted in the enclosed system of the plant. As the potential dust emissions from the underground crushing plant will be ventilated to the two exhaust points above ground, the major potential air pollutant emissions arising from operation of the crusher and its corresponding barging facilities are summarized as follows.

(i) Emissions from the two tunnel exhaust points of the air ventilation system serving the underground tunnel including excavation areas, the crushers and its corresponding underground conveyor belt system are as follows:
- Dust emission due to unloading of raw materials from the dump truck to the crusher;
- Dust emission from the crushing process of the crushing plant;
- Dust emission from the crusher's conveyor belt to the underground conveyor belt system;
- Dust emission from the open section of the underground conveyor belt system; and
- Dust emission from the conveyor transfer points of the underground conveyor belt system.

(ii) Dust emissions from the material handling and storage piles of the stockpile at the barging facilities.

(iii) Paved haul roads inside the barging facilities.

(iv) Dust emissions from the unloading of rock materials from enclosed conveyor system and dump trucks at the two barging points.

3.3.14 In order to minimize the dust emission from the above processes, except the dust emission from the underground conveyor belt system, water spraying would be provided for the dust emission sources as mentioned in **Section 3.3.13**. A number of air filters would also be deployed at the tunnel exhaust for removing the dust from underground crushers and excavation areas. With reference to the approved WIL EIA Report, flexible curtain would also be installed at the tipping halls of the two barging points. Also, three-side with top enclosure will be installed at the stockpile area with rubber curtain at the opening (facing to Victoria Harbour) and watering to keep the rock materials in wet condition to minimize the dust impact. Description of the emission points and the corresponding pollutants and control measures for the proposed changes are described in **Table 3.5**. Locations of the above-ground emission points are shown in **Figure 3.3**.

Table 3.6 Pollutant Emission Points for the Proposed Underground Crushing Plant and Corresponding Barging Facilities

Facility	Approved WIL EIA Report	Proposed Change/Design in this ERR	Potential Dust Impact from Proposed Change/Design comparing with EIA Report
Rock Crushers	Two above-ground rock crushers located at Kennedy Town Abattoir Site and Western PCWA Site Maximum handling capacity of rock crushers: 194 tonnes/hr in total Operation hour: 12 hours/day Control measures: Water spraying at the crusher loading point, crushing and screening process in the shelters with 80% dust removal efficiency	Two underground rock crushers located inside tunnel near the future HKU Station. Maximum handling capacity of rock crushers: 650 tonnes/hr in total Normal handling capacity of rock crushers: 300 tonnes/hr in total Actual handling rate would be restricted by the capacity of barges and stockpile areas. Maximum operation hour: 16 hours/day Control measures: – Crushing and screening processes in enclosed system/ chamber of the plant – Water sprays are installed for all the crusher's emission sources. Water will spray all the time during the operation by sprinklers automatically. – Water sprays are installed at all the conveyor transfer points of the underground conveyor belt system to suppress dust emission as well as to keep the rock materials on conveyor belt in wet condition. – Watering for all the underground excavation areas inside the tunnel to keep wet condition. – Inside the tunnel, 2 numbers of tunnel dust collectors with dust removal efficiency of 99.9% will be placed close to the two crushers – Air filters (68.14% dust removal efficiency) are installed at the exhaust to remove dust from underground crushers and excavation areas	No dust emission from crushing and screening processes of the proposed changes in this ERR (in enclosed system/chamber of the plant) comparing with the design as assumed in the EIA Report as . 2 numbers of tunnel dust collectors with dust removal efficiency of 99.9% to be installed close to the underground rock crushers. In addition to the installation of the air filters with 68.14% dust removal efficiency at the tunnel exhaust points, the dust removal efficiency on the emissions from rock crushing process in this new design would not be lower than that in the EIA Report.

Facility	Approved WIL EIA Report	Proposed Change/Design in this ERR	Potential Dust Impact from Proposed Change/Design comparing with EIA Report
		The following emissions from underground rock crushers and associated facilities would be emitted from tunnel exhaust points (EP1 and EP2) at Praya shaft: 1) Unloading of raw materials from trucks to crusher; 2) Crushing process; 3) Conveyor transfer point from crusher's conveyor belt to the underground conveyor belt system; 4) Open section of the underground conveyor belt system; 5) Conveyor transfer points of the underground conveyor belt system.	
Stockpile Area at Barging Facilities at the Western PCWA Site	One stockpile area with a total area of 364m^2 without any enclosing structure Control measures: Watering four times a day	One stockpile area (EP3) of 1428m^2 serving as a temporarily store for the materials from the enclosed conveyor belt system and from dump trucks Control measures: – The temporary stockpile would be enclosed on the top and the three-side – The entrance would be fully covered by flexible curtain – The stockpile inside would be sprayed with water to maintain the entire surface wet	The size of the stockpile area has been increased comparing with that indicated in the EIA Study. However, the area would be enclosed. The potential dust impact from the proposed design in this ERR would not be worse than the EIA prediction.
Haul Road - Number of Truck Trips per day at the Western PCWA Site	Paved Haul Road - Maximum 160 truck trips per day Control measures: Keeping the paved haul roads in wet condition	Paved Haul Road (EP4 to EP12) - Maximum 272 truck trips per day Control measures: – The paved haul roads shall be maintained wet at all time to prevent fugitive dust emission generated by moving traffic – The incoming trucks would be wetted by water spraying facility provided at the entrance of the work site – Vehicle washing facilities, including but not limited to a high pressure water jet, shall be provided at the exit of	On top of the mitigation measures recommended in the EIA report, additional dust mitigation measures will be implemented. Potential dust impacts from the proposed change in this ERR would not be worse than the EIA prediction.

Facility	Approved WIL EIA Report	Proposed Change/Design in this ERR	Potential Dust Impact from Proposed Change/Design comparing with EIA Report
		work site for removal of mud – Immediately before leaving the work site, every vehicle shall be washed thoroughly to remove any dusty materials from its body and wheels – Only dump trucks equipped with mechanical cover shall be used for transporting rocks and aggregates – Vehicles, other than dump trucks with mechanical cover, carrying dusty materials shall have their loads entirely covered with impervious sheeting except during unloading of rocks and aggregates – The area within 30m of the vehicle entrance and exit of the work site shall be kept clear of dusty materials	
Barging Points at the Western PCWA Site	Two barging points – unloading of the spoils from conveyor/dump trucks to the barges Handling capacity per barging point: 2743 Mg/day Control measures: Installation of flexible curtain at the tipping halls and provision of water spray at discharge point	Barging Points 1 & 2 (EP 13 and EP14) – unloading of the spoils from conveyor/dump trucks to the barges. Handling capacity per barging point: not more than 2743 Mg/day Control measures: Water sprays, mist system are installed at the tipping halls and water will spray during the unloading process. Flexible curtains are installed at the tipping halls for dust suppression.	The potential dust impacts from the proposed design in this ERR would be similar to that in the EIA Report.

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Evaluation of Impact

3.3.15 As mentioned in the EIA Study, the operation of rock crushing plant which is considered as Specified Process (SP) shall be under the control of Air Pollution Control Ordinance (APCO). A licence is required for the operation of this process under Part IV of the APCO.

3.3.16 Application for this SP licence with Air Pollution Control Plan (APCP) for relocation of rock crushers to the underground tunnel of the HKU Station section was submitted to EPD in January 2011 and EPD granted the SP Licence on 26 May 2011 as the application can fulfil the environmental standards to avoid causing air pollution and the potential dust impacts from the operation of the rock crushing plant and associated facilities (including barging facilities) at the nearest representative ASRs would comply with the respective AQOs.

3.3.17 A variation application of SP Licence for the latest arrangement was submitted to EPD in January 2012. The submitted APCP has demonstrated that the potential dust impacts due to these changes in the rock crushing plant and associated facilities and barging facilities at the nearby ASRs would still comply with the respective AQOs. EPD has no objection on this application and has informed GNWILJV to prepare the advertisement for public inspection on 29 March 2012.

3.3.18 In fact, the dust impacts from the operation of rock crushing plant and associated facilities including barging facilities are monitored by the environmental monitoring and audit mechanism as proposed in the EIA Report. In addition, a set of conditions and air quality monitoring requirements in the SP Licence are also imposed on the operation of the rock crushing plant and associated facilities to ensure the adequate prevention of the discharge of air pollutant emissions. Therefore, no adverse air quality impacts would be expected at the ASRs in the vicinity of the rock crushing plant and associated facilities and barging facilities.

3.3.19 Overall, mitigation measures in addition to those recommended in the EIA report will be implemented (refer to **Table 3.5**). With the additional mitigation measures to be taken into effect during the construction, no adverse air quality impact would be expected from the proposed changes. Dust impacts due to the proposed changes would remain comparable to EIA predictions.

Recommendation of Air Quality Mitigation Measures

3.3.20 Dust control measures have been incorporated into the engineering design as presented in **Table 3.6**. For rock crushing plants, the requirements and mitigation measures stipulated in the Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plants) BPM 11/1 should be followed and implemented. In addition, implementation of dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices should be carried out to further minimize construction dust impact. In particular to the trucks leaving site, measures should include but not limited to:-

- Covering of all dusty vehicle loads transported to, from and between site locations.
- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.

Environmental Monitoring and Audit

3.3.21 The environmental monitoring and audit requirements will follow the approved EM&A Manual in the EIA Study. In addition, process monitoring and ambient monitoring as required in the SP Licence for the Crushing Plant will also be conducted.

4 CONCLUSIONS

4.1.1 An environmental review has been carried out to assess the potential environmental impacts arising from the new proposed changes on the rock crushers and associated facilities and the co-use of the barging facilities by WIL and SIL(E) projects.

4.1.2 Potential environmental issues arising from the proposed changes were identified. They include airborne noise, ground-borne noise and air quality and thus the ERR was making focus on these three aspects.

4.1.3 Based on the assessment in this ERR, it was concluded that:-

- For airborne construction noise, no adverse impacts were anticipated for the proposed changes.
- With the implementation of suitable vibration measures, there is no change in the ground-borne noise levels as evaluated in the WIL EIA report.
- No adverse air quality impact would be expected due to the proposed changes.

4.1.4 The proposed changes do not alter the scope of designated project obtained in the EP No. EP-313/2008. Additionally, they would not involve any elements that are classified as designated projects under Schedules 2 and 3 of EIAO.

4.1.5 To sum up, the assessment indicates that no adverse environmental impacts are anticipated from the proposed changes and the environmental performance requirements set out in the WIL EIA report will not be exceeded. The proposed changes covered in this review would not constitute a material change to environmental impacts of the WIL Project.

4.1.6 The conditions of the latest Environmental Permit of WIL project (EP No: EP-313/2008/D) have been reviewed. It is considered that the conditions of the WIL EP would remain unaffected and variation of its conditions would not be necessary.

Figures

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PRAYA SHAFT

HILL ROAD SHAFT (ENCLOSED)

CONNAUGHT ROAD WEST

DES VOEUX ROAD WEST

HILL ROAD (ELEVATED)

SAI CHEUNG STREET NORTH

SHING SAI ROAD

KENNEDY TOWN PRAYA

BELCHER'S STREET

UNDERGROUND CONVEYOR BELT SYSTEM

THE BELCHER'S

UNIVERSITY STATION

ROCK CRUSHER

VS-Y

VS-Z

VS-Z1

VS-Z2

VS-Z3

VS-Z4

CHILLER PLANT

B1

B2

BELCHER BAY

LEGEND:

- STATION STRUCTURE
- UNDERGROUND STRUCTURE
- WORKS SITE
- (A) STATION ENTRANCE
- VS-Y VENT SHAFT

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Plotting By: $DATE$

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AECOM

WEST ISLAND LINE CONTRACT NO. C704 SYP & UNV STATIONS AND SYP TO KET TUNNELS
ENVIRONMENTAL REVIEW REPORT FOR UNDERGROUND CRUSHERS

LOCATIONS OF THE UNDERGROUND ROCK CRUSHING FACILITIES

SCALE	A3 1:3000	DATE	MAR.2012
CHECK	–	DRAWN	AYCY
JOB No.	60158856	DRAWING No.	FIGURE 2.1
		REV	-

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PRAYA SHAFT

HILL ROAD SHAFT (ENCLOSED)

CONNAUGHT ROAD WEST

DES VOEUX ROAD WEST

HILL ROAD (ELEVATED)

SHING SAI ROAD

SAI CHEUNG STREET NORTH

KENNEDY TOWN PRAYA

BELCHER'S STREET

THE BELCHER'S

UNDERGROUND CONVEYOR BELT SYSTEM

UNIVERSITY STATION

ROCK CRUSHER

UNI11

UNI12

UNI13

UNI15

UNI16

UNI18

UNI19

VS-1

VS-2

VS-3

VS-4

CHILLER PLANT

BELCHER BAY

LEGEND:

- STATION STRUCTURE
- UNDERGROUND STRUCTURE
- WORKS SITE
- NOISE ASSESSMENT POINT
- (A) STATION ENTRANCE
- VS-Y VENT SHAFT

AECOM

WEST ISLAND LINE CONTRACT NO. C704 SYP & UNV STATIONS AND SYP TO KET TUNNELS
ENVIRONMENTAL REVIEW REPORT FOR UNDERGROUND CRUSHERS

LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

SCALE	A3 1:3000	DATE	MAR.2012
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JOB No.	60158856	DRAWING No.	FIGURE 3.1
		REV	-

Plotting By: $DATE$

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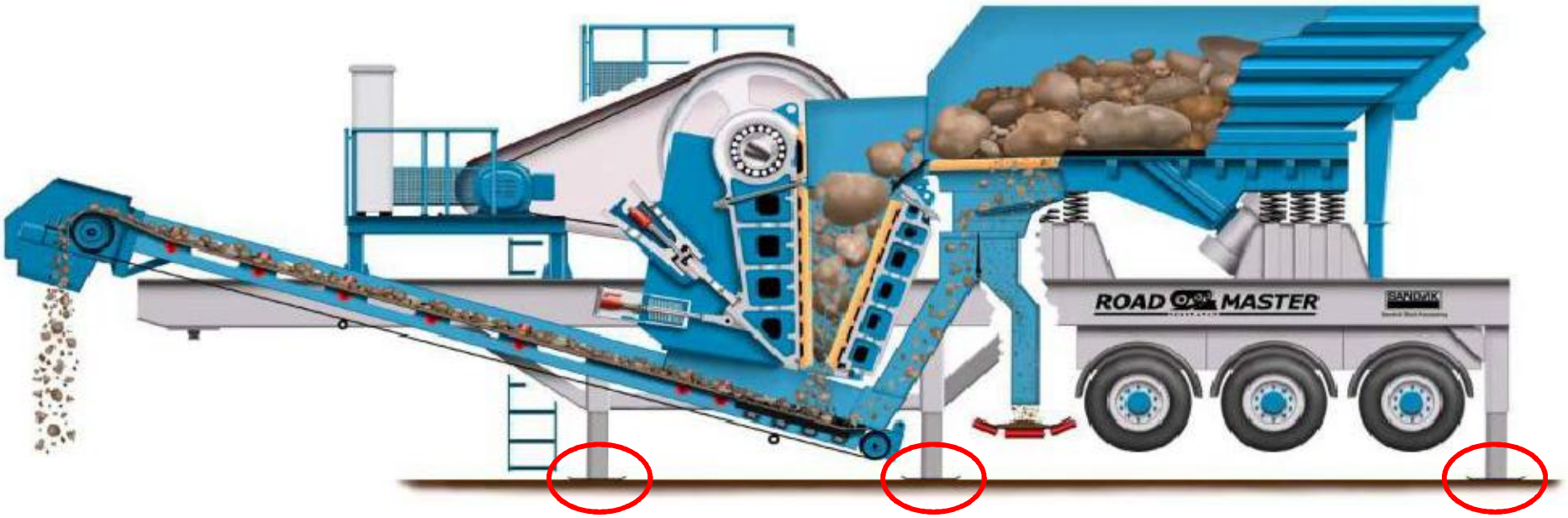
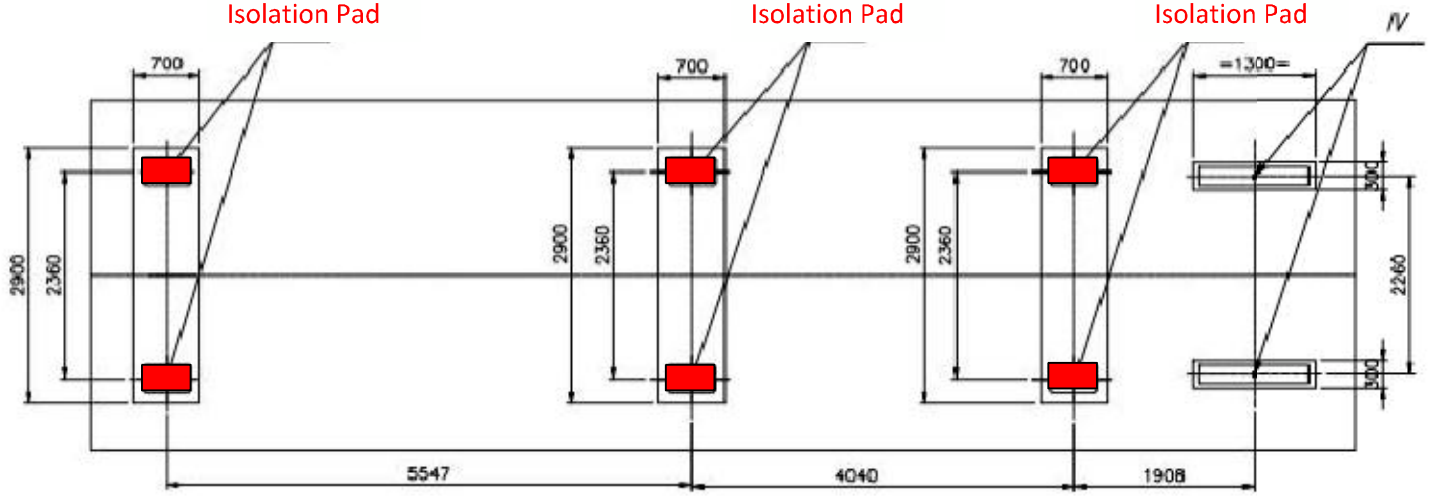


Isolation Pad Isolation Pad Isolation Pad



AECOM	West Island Line Contract No. C704 - SYP & UNV Stations and SYP to KET Tunnel Environment Review Report for Underground Crushers **Location of Isolation Pads under Supports of Crusher Unit**	SCALE	N.T.S.	DATE	Jul-11
		CHECK		DRAWN	
		JOB NO.	60158856	DRAWING NO. FIGURE 3.2	REV -

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TEMPORARY OVERHEAD CONVEYOR BELT SYSTEM

PRAYA SHAFT (ENCLOSED)

ELEVATED AND ENCLOSED CONVEYOR BELT SYSTEM

BELCHER BAY

EP1
EP2
EP3
EP4
EP5
EP6
EP7
EP8
EP9
EP10
EP11
EP12
EP13
EP14

BARGES

RAMPS

SAI CHEUNG STREET NORTH

SHING SAI ROAD

KENNEDY TOWN PRAYA

BELCHER'S STREET

UNDERGROUND CONVEYOR BELT SYSTEM E10

THE BELCHER'S

U8
U9
U10
U11

CONNAUGHT ROAD WEST

DES VOEUX ROAD WEST

HILL ROAD (ELEVATED)

QUEEN'S ROAD WEST

CHILLER PLANT & VS-Z4

VS-Z1
VS-Z2
VS-Z3
VS-Z4
VS-Y

UNIVERSITY STATION

E1
E2
E3
E4
E5
E6
E7
E8

ROCK CRUSHER

LEGEND:

- STATION STRUCTURE
- UNDERGROUND STRUCTURE
- WORKS SITE
- DUST EMISSION SOURCES CONSIDERED IN MODEL PREDICTION
- UNDERGROUND CONVEYOR TRANSFER POINTS
- REPRESENTATIVE AIR SENSITIVE RECEIVERS

AECOM

WEST ISLAND LINE CONTRACT NO. C704 SYP & UNV STATIONS AND SYP TO KET TUNNELS
ENVIRONMENTAL REVIEW REPORT FOR UNDERGROUND CRUSHERS

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS AND POTENTIAL ABOVE-GROUND DUST EMISSION SOURCES

SCALE	A3 1:3000	DATE	MAR.2012
CHECK	–	DRAWN	VCYL
JOB No.	60158856	DRAWING No.	FIGURE 3.3
		REV	

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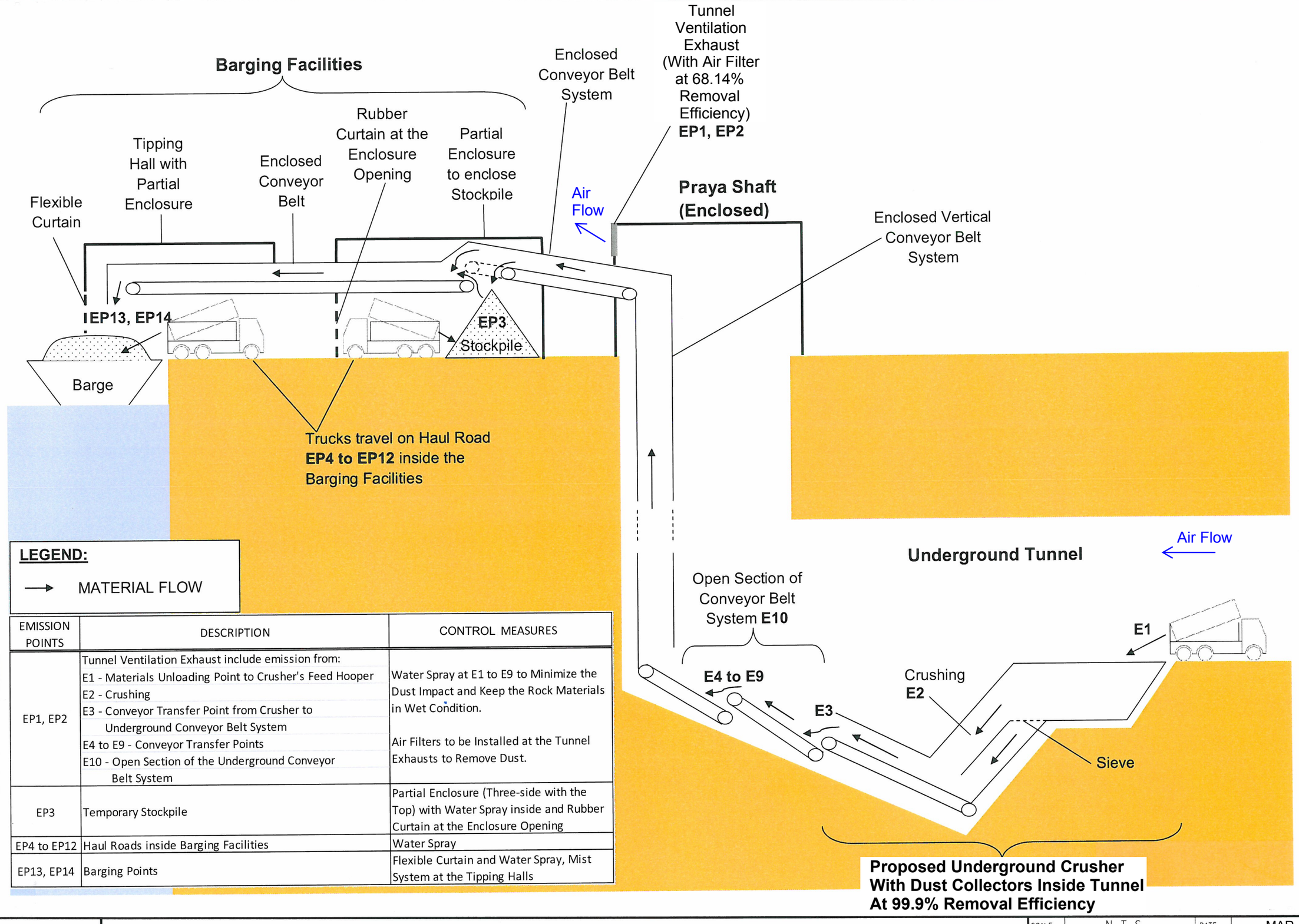

LEGEND:

→ MATERIAL FLOW

EMISSION POINTS	DESCRIPTION	CONTROL MEASURES
EP1, EP2	Tunnel Ventilation Exhaust include emission from: E1 - Materials Unloading Point to Crusher's Feed Hooper E2 - Crushing E3 - Conveyor Transfer Point from Crusher to Underground Conveyor Belt System E4 to E9 - Conveyor Transfer Points E10 - Open Section of the Underground Conveyor Belt System	Water Spray at E1 to E9 to Minimize the Dust Impact and Keep the Rock Materials in Wet Condition. Air Filters to be Installed at the Tunnel Exhausts to Remove Dust.
EP3	Temporary Stockpile	Partial Enclosure (Three-side with the Top) with Water Spray inside and Rubber Curtain at the Enclosure Opening
EP4 to EP12	Haul Roads inside Barging Facilities	Water Spray
EP13, EP14	Barging Points	Flexible Curtain and Water Spray, Mist System at the Tipping Halls

AECOM

MTR WEST ISLAND LINE PROJECT

SCHEMATIC FLOW DIAGRAM FOR THE PROPOSED CRUSHING PLANT

SCALE	N.T.S.	DATE	MAR . 2012
CHECK	--	DRAWN	--
JOB No.	60158856	DRAWING No.	FIGURE 3.4
		REV	--

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