MTR Corporation Limited

West Island Line Project

Waste Management Plan

Contract No. 706A
Slope Upgrading and Natural Terrain Mitigation Works

Verified by: _____

Position: Independent Environmental Checker

Date: 20 January 2010

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Contract No. 706A
Slope Upgrading and Natural Terrain Mitigation Works

Certified by: Glenn Flommes

Position: Environmental Team Leader

Date: 20 January 2010

Content

REVISION HISTORY

Revision No.	Revision Date	Section/Page	Amendment

SECTION 1 GENERAL

1.1 Introduction

This Waste Management Plan (WMP) shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities at the four registered features near the Ex-Police Quarters, Kennedy Town..

1.2 Purpose

This Waste Management Plan provides details of the measures; procedures and initiatives to be employed by the Contractor, Paul Y. Construction Company Ltd. (Hereafter PYC) to control and manage waste related environmental issues that may arise during the construction works of the project. This WMP includes detail information such as estimated volume of different types of waste, e.g. construction and demolition (C&D) material and general refuse, generated from construction activities at various works areas of the Project at different times during the construction programme, as well as the proper transportation, storage, and disposal methods and the final disposal sites for different wastes. All measures recommended in the deposited.

The main purpose of this Waste Management Plan is to:

(i) Make reference to statutory and contractual environmental management requirements and obligations;
(ii) Clarify responsibilities;
(iii) Describe committed mitigation measures;
(iv) Provide details of preventive actions to be taken;
(v) Provide details relating to environmental licensing requirements;
(vi) Inform PYC’s SHE Team Members and sub-contractors of PYC's management measures, systems and obligations.

Description of the Works

The project mainly involves slope upgrading and natural terrain mitigation works to four slope features and one Natural Terrain Area namely 11SW-A/C257, 11SW-A/F257, 11SW-A/FR140, 11SW-A/C261 and Natural Terrain Area above the Ex-Police Quarters, Kennedy Town. This report describes the works at the four registered features. The WIL EP (EP-313/2008/C) only covers the four registered slopes of this work.

The works at Feature no. 11SW-A/C257 (Figure 1) generally comprise the installation of soil nails and raking drains, skin wall, drainage and landscaping works.

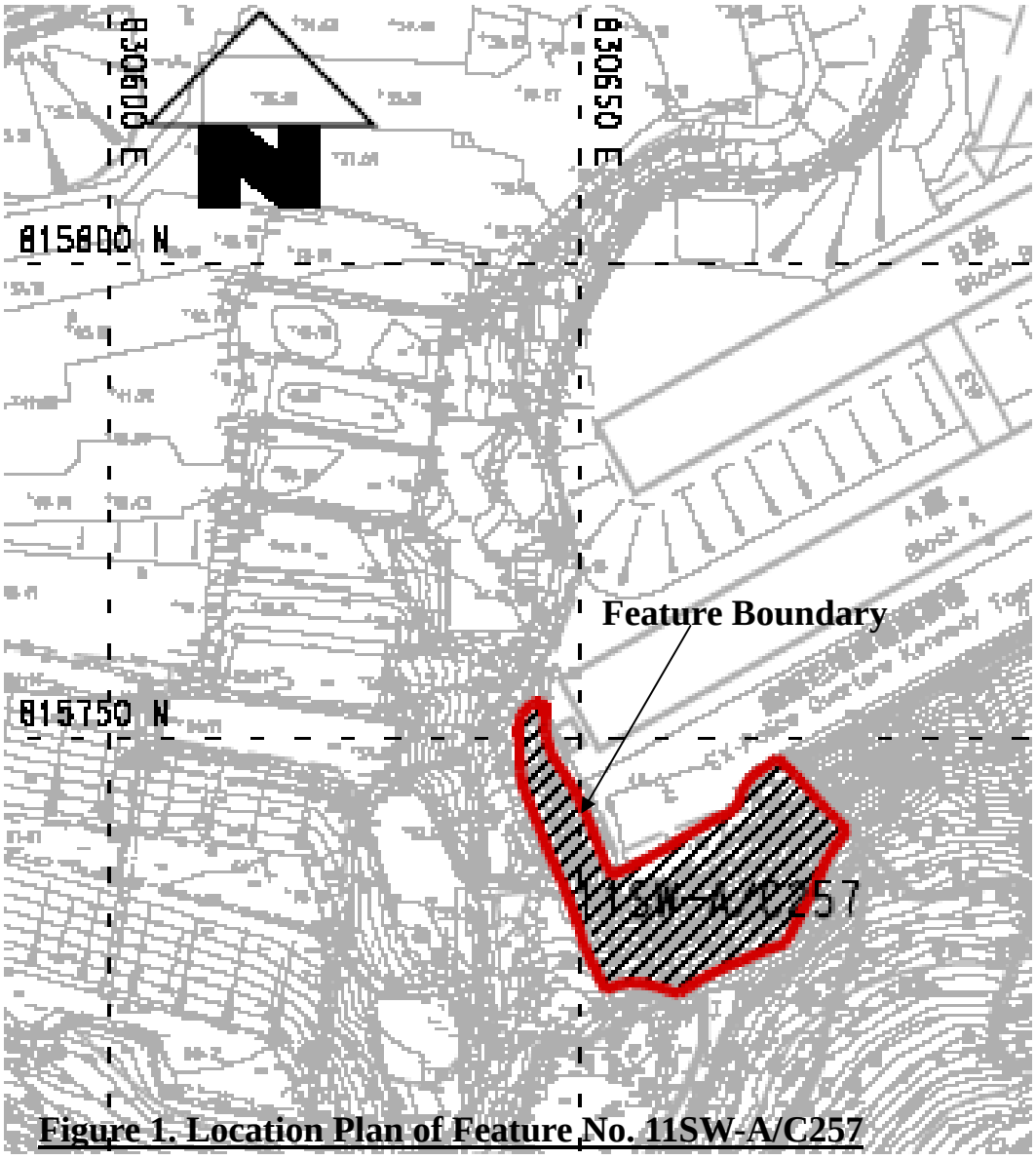


Figure 1. Location Plan of Feature No. 11SW-A/C257

The works at Feature no. 11SW-A/F257 (Figure 2) generally comprise the excavation/trimming for fill replacement, backfilling of soil-cement fill, drainage, landscaping works and repair/precautionary measures for Slope Monitoring and Risk Management (SMRM).

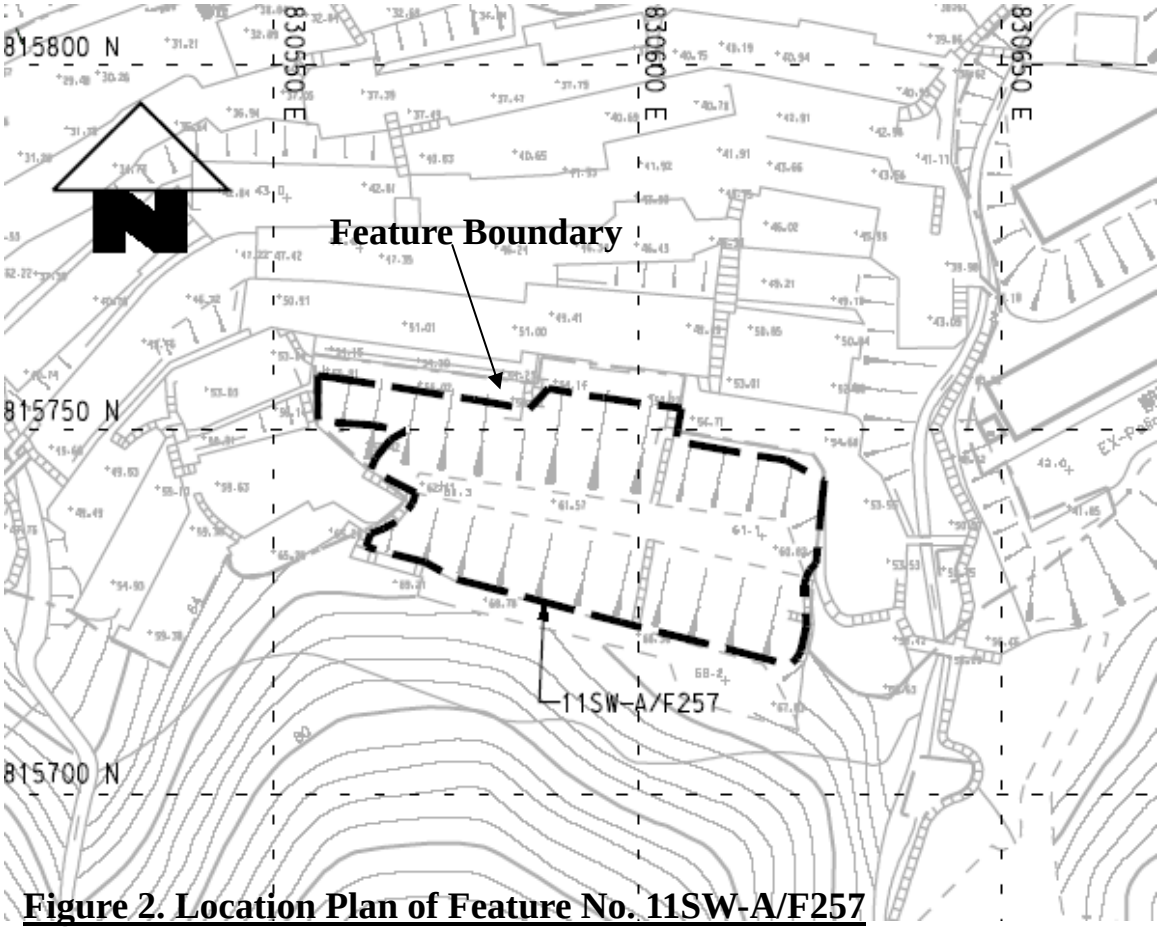


Figure 2. Location Plan of Feature No. 11SW-A/F257

The works at Feature no. 11SW-A/F140 (Figure 3) generally comprise the excavation/trimming for fill replacement, backfilling of soil-cement fill, drainage, thickening of existing retaining wall and landscaping works.

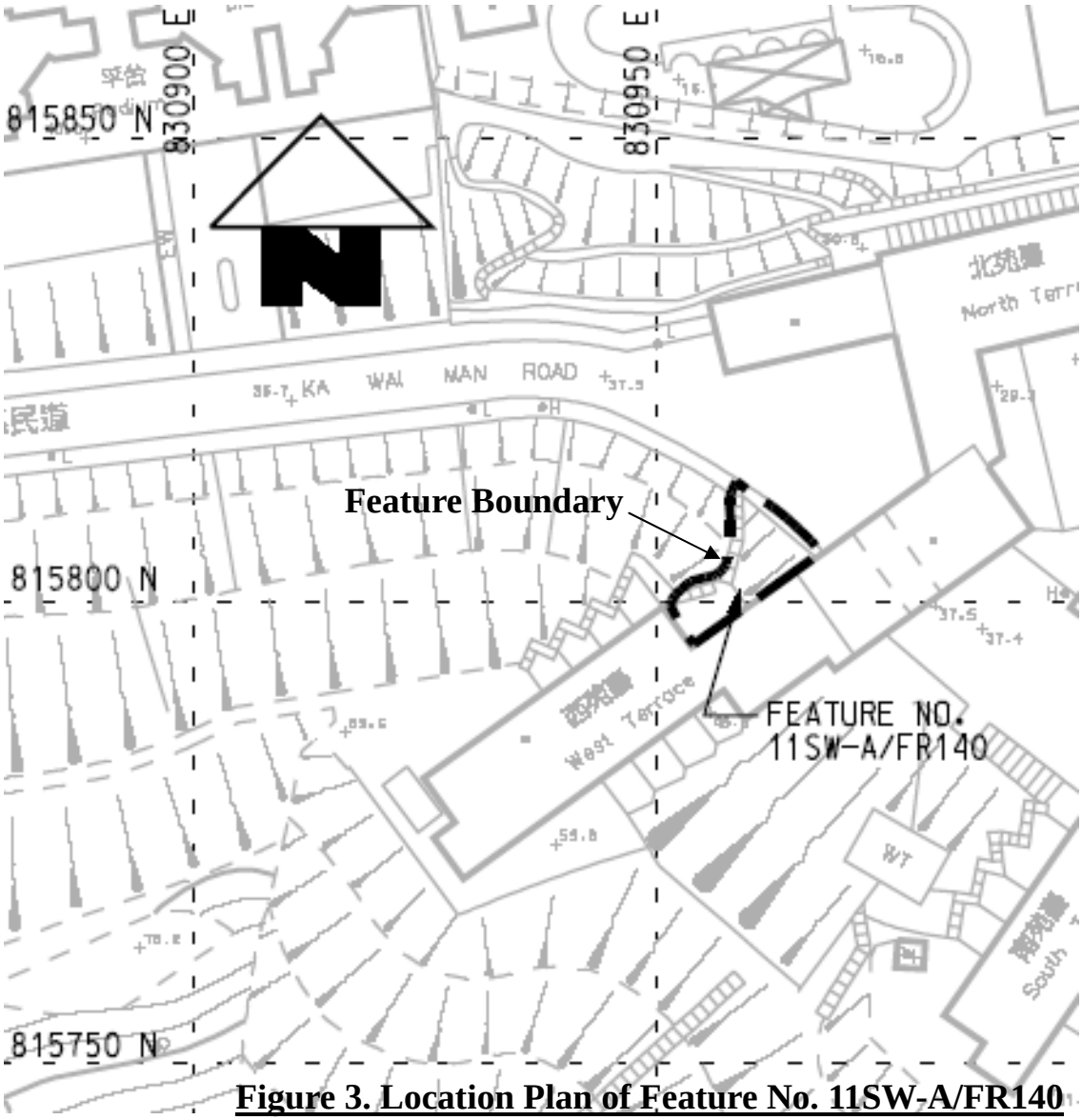


Figure 3. Location Plan of Feature No. 11SW-A/FR140

The works at Feature no. 11SW-A/C261 generally comprise the installation of soil nails and raking drains, excavation/trimming for fill replacement, backfilling of soil-cement fill, drainage and masonry facing.

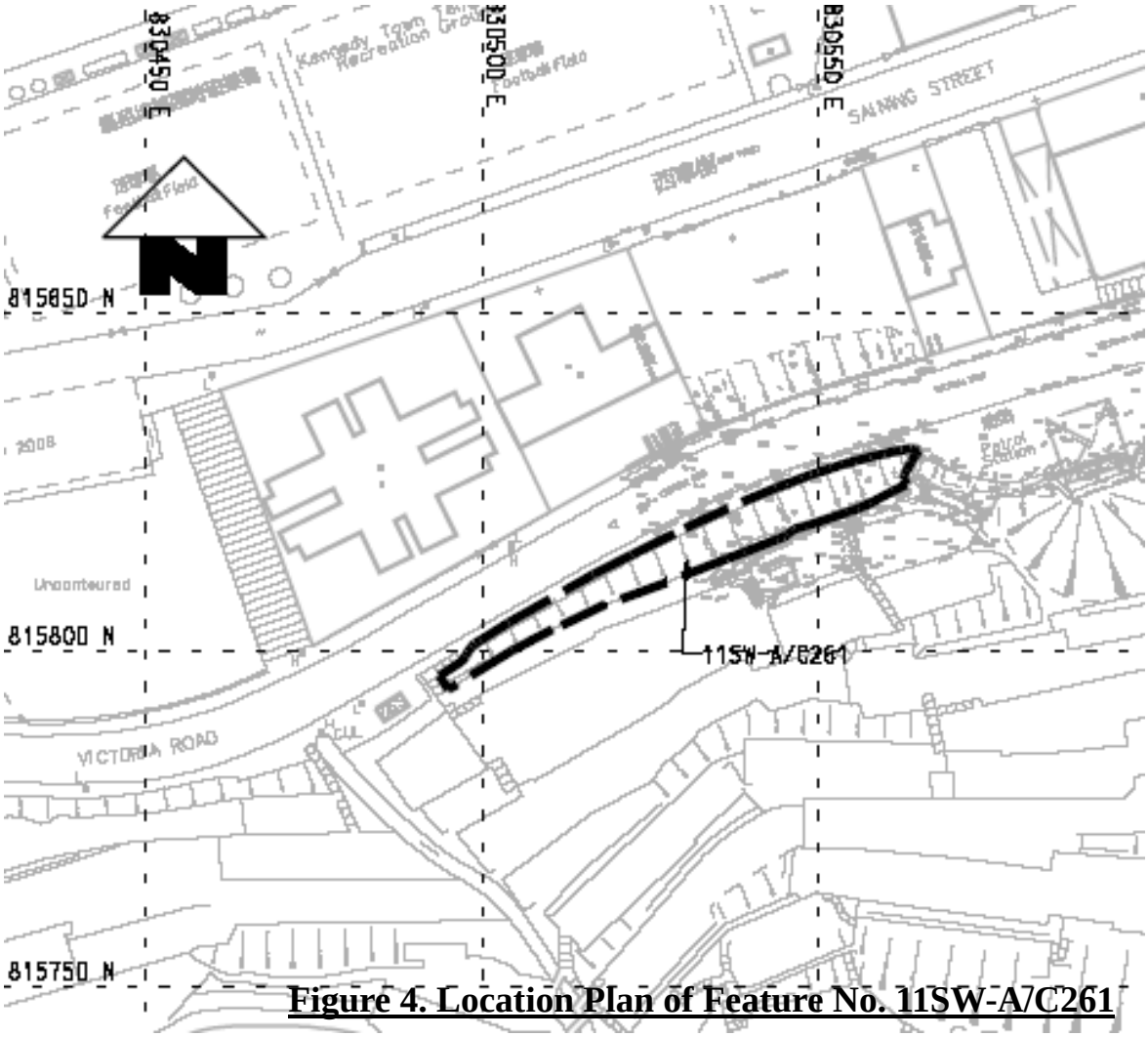


Figure 4. Location Plan of Feature No. 11SW-A/C261

1.3 Works Programme

According to the submitted Master Programme for the Works, the works have been commenced as schedule. However, it is advised to refer the current Programme in the Monthly Progress Report for the latest and most updating information. A copy of Master Programme is enclosed in **Attachment A**.

Key Dates of the Works are as followings:-

Contract Award Date: 6 November 2009
Target Completion Date: 20 December 2010
Construction Period: 14 months Approx.

1.4 Environmental Policy

PAUL Y. CONSTRUCTION COMPANY, LTD.

SAFETY, HEALTH, ENVIRONMENT & QUALITY POLICY STATEMENT

The core business of Paul Y. Construction Company, Limited includes project management, design, construction and maintenance of civil engineering works; construction of site formation, roads and drainage, waterworks and portworks; project management, design and construction of foundation and piling works; piling works including large diameter bored piles (with bell-out), barrette pile, steel H-pile, rock-socketed steel H-pile in prebored hole, minipile, handdug caisson; construction of landslip preventive and remedial works to slopes and retaining walls; project management, design and construction of building works; building activities to keep, restore and improve the facilities of buildings and surroundings; provision of decoration and fitting out works; demolition with demolition design of buildings and structures; carry out ground investigation field works; design and construction of trenchless works; construction of noise barrier; reinforced earth retaining structure and slope works; A&A works; and, construction of structural steel work. The Company recognizes that safety, health, environmental protection and quality is a matter of great social concern. Accordingly, it is the Company policy to put safety, health, environmental protection and quality as our top priority. We are committed to strictly comply with statutory requirements and contractual obligations. We are also committed taking all reasonably practicable measures to provide and maintain the workplace at higher safe and healthy standard to protect the safety and health of employees and others who may be affected and keep continuously improvement to prevent pollution, which may arise from work activities. The measures are:

- Providing adequate and appropriate resources to implement this policy;
- Promoting this policy it's understanding, implementation and maintenance at all levels;
- Providing appropriate training to employees at all levels ensuring they are competent to discharge their duties and responsibilities;
- Reviewing this policy annually to ensure its compliance, continuous suitability and effectiveness.

It is hereby stressed that management of safety, health, environment and quality is one of the prime duties and responsibilities of line management, from the most senior executive to the front-line supervisor. The Contracts Manager is assigned to overall coordinate and implement this policy. He shall clearly define the safety, health, environmental protection and quality responsibility of his subordinates, subcontractors, suppliers and workers. They are accountable for the safety, health, environmental and quality performance of their controlled areas and the implementation of this policy. At the Company Safety, Health, Environment and Quality Management Committee meeting, top management shall monitor and review the Company's safety, health, environment and quality management systems and performance as well as the safety, health, environment and quality objectives and targets as set below:

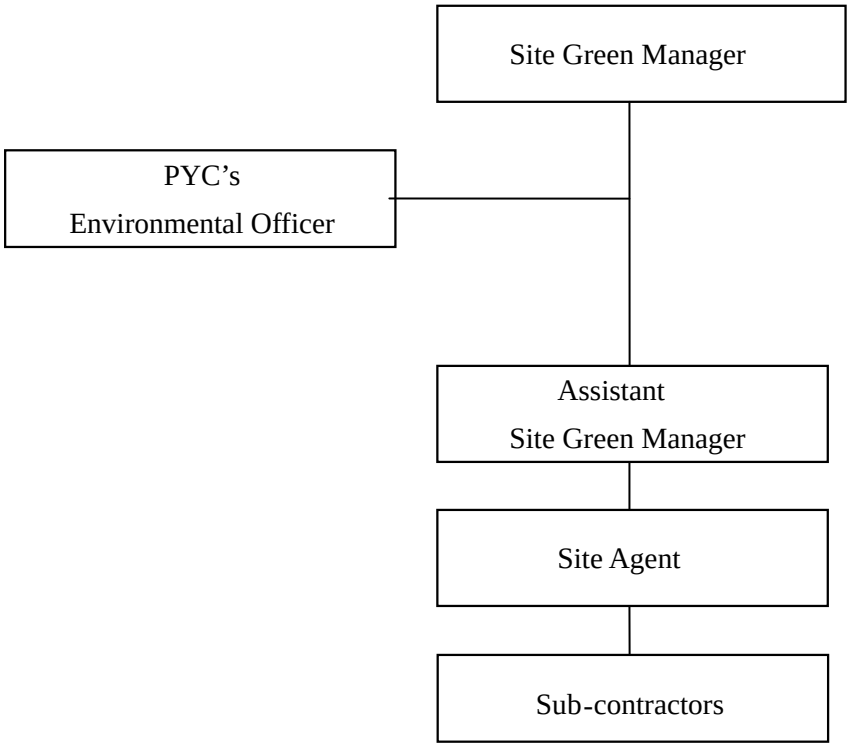
SAFETY	- accident rate <11 per 1000 workers per year (equivalent to accident frequency rate (AFR) <0.31 per 100,000 man-hours worked)
	- average internal and external audit scores >80%
ENVIRONMENT	- minimizing material wastage and reducing generation of construction waste
QUALITY	- enhancing business operation efficiency and effectiveness

For and on behalf of Paul Y. Construction Company, Ltd.
Name: YING Tsie Cheong
Title: Director
Signature:

Issuing Date: 5 May 2009

Document Number: SHEQ-2009-PYC-E Revision A

1.5 Safety, Health and Environment (SHE) Committee Organisation Structure



1.6 Function Descriptions and Responsibilities

PYC is the main contractor for this project and has the overall responsibility for the construction works including the implementation of this section. The Project Management will assemble relevant personnel to undertake waste management issues associated with this contract.

1.7.1 The Site Green Manager (SGM) is the Project Manager who is responsible for maintaining overall control of the project and implementation of waste management system. The SGM shall be responsible for ensuring that adequate resources are provided for the implementation and over viewing the site practices related to the awareness of waste control. He shall authorise Assistant Site Green Manager (ASGM) to assist him to enforce the implementation on a day-to-day basis.

1.7.2 PYC Environmental Officer shall oversee all environmental matters for the project and liaise with the Engineer during the full duration of the contract. He is responsible

for ensuring that the Waste Management Plan is properly implemented. The Environmental Officer is responsible for preparing, handling, updating and upkeeping the environmental documentation such as environmental submission, permit administration, test recording, water sample test result, trip tickets and etc. of which shall be readily available for inspection within short notice.

1.7.3 The responsibility of ASGM, the Site Agent, is to ensure that the relevant personnel with respect to waste management are carrying out their duties diligently. Due to site activities that the works are proceeded in different locations, he shall assign Sub-Agents to assist him to enforce the waste controls.

1.7.4 Each Sub-Agent is responsible for the day-to-day overview of site practices in his assigned location in relation to waste controls. He shall assign a Project Environmental Co-ordinator and a Registered Safety Officer to assist him in the day-to-day supervision on the Sub-Contractor’s daily activities.

1.7.5 The Sub-contractors in different trades shall be responsible for ensuring that their workers are aware of the work activities which might affect the surrounding environment with waste controls. Under PYC’s instructions, the Sub-contractors shall provide waste controls with a full co-operative manner with Engineer Representative. The Sub-contractors are also responsible for preparing their own plans which are consistent with conditions of the contract.

SECTION 2 LEGISLATIVE REQUIREMENTS

The following legislation either covers or has some bearing upon the handling, treatment and disposal of wastes in the Hong Kong SAR and will also be considered in the Plan:

(i) Waste Disposal Ordinance (Cap 354)
(ii) Waste Disposal (Chemical Waste)(General) Regulation (Cap 354)
(iii) Land (Miscellaneous Provisions) Ordinance (Cap 28)
(iv) Public Health and Municipal Services Ordinance (Cap 132) (includes mosquito control)
(v) Environmental Impact Assessment Ordinance (Cap 499)
(vi) Waste Disposal (Amendment) Ordinance 2004
(vii) Waste Disposal (Designated Waste Disposal Facility)(Amendment) Regulation 2004
(viii) Waste Disposal (Charges for Disposal of Construction Waste) Regulation

Other guideline documents that detail how the construction work should comply with the regulations include:

(i) Environment (Ch. 9), Hong Kong Planning Standards and Guidelines (2003), Hong Kong Government
(ii) Code of Practice on the Packing, Labelling and Storage of Chemical Wastes (1999), Environmental Protection Department
(iii) Works Branch Technical Circular No. 12/2000, Fill Management
(iv) ETWB/TCW6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness
(v) Works Branch Technical Circular No. 21/2002, Trip-ticket System for Disposal of Construction and Demolition Material
(vi) ETWB/TCW15/2003, Waste Management on Construction Sites
(vii) Environment, Transport and Works Bureau Technical Circular (Works) No. 33/2002, Management of Construction and Demolition Material Including Rock
(viii) A Guide to the Registration of Chemical Waste Producers by EPD
(ix) A Guide to the Chemical Waste Control Scheme by EPD
(x) ETWB/TCW19/2005, Environmental Management on Construction Sites
(xi) PNAP 71, Demolition Works Measures for Public Safety
(xii) Implementation Schedule Table 14.1 of West Island Line Environmental Impacts Assessment Final EIA Report
(xiii) Section 5.6.1 General Specification for Civil Engineering Works

SECTION 3 SITE WASTE MANAGEMENT

3.1 Waste Policy Principles (Waste Management Hierarchy)

The Implementation Schedule included in the WIL EIA provides guidance on the extent and timing of mitigation measures. All mitigation measures would be made in accordance with the Implementation Schedule of the WIL EIA Report or when superseded by the condition as specified in the WIL Environmental Permit. This WMP follows the waste management hierarchy and the requirements as specified in the EIA Report.

Waste management options can be categorised in terms of preference from an environmental viewpoint, whereby the more preferable options have the least impacts and provide for enhanced sustainability. A Waste Management Hierarchy shall be applied on site as follows:

↑ Highest Priority ↓ Lowest Priority	Avoidance & Elimination	Complete elimination of waste where possible through improving practices and design.
	Reduction at source	The avoidance, reduction or elimination of wastes, generally within the confines of the production unit, through changes in processes or procedures
	Recycling	The use, reuse and recycling of wastes for original or some other purpose such as input material or materials recovery.
	Treatment	The destruction, detoxification, neutralization, etc, of wastes into less harmful substances.
	Disposal	The release of wastes to air, water, or land in properly controlled or safe ways so as to render them harmless; land disposal may involve volume reduction, encapsulation, leachate containment and monitoring techniques.

3.2 Construction Waste Management

Waste material may include any excavation spoil, sewage, waste water or effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the site onto any

adjoining land, storm drain, sanitary sewer. Waste material also includes any waste matter or refuse to be deposited anywhere within the site or onto any adjoining land (e.g. Concrete waste or used formwork etc.). Formwork will be reused/recovered/recycled as far as possible before disposal to designated area.

When handling the waste material, the following measures shall be undertaken:

(i) The strategy for management and disposal of all wastes arising from the project will be based on the principle of segregation and re-use/recover/recycle on site followed by disposal to landfill or designated outlet as appropriate;

(ii) Disposal of other inert construction wastes is governed by the Environmental Protection Department policy on the disposal of construction waste. The principles established maximise re-use/recovery/recycling of materials on site and segregation of Wastes to ensure that the minimum quantities are disposed of to landfill and that the maximum is directed for disposal to reclamation. All construction waste shall necessarily be sorted on site into inert and non-inert materials whenever practicable;

(iii) Non-inert materials such as wood and other materials including glass, plastics, steel and metals shall be disposed of to landfill. Inert materials like soil, sand, rubble, shall be separated from non-inert material and suitably disposed of;

(iv) In addition, quantities of site fencing, scaffolding and timber for the building work shall be reused/recovered/recycled where possible. Those materials that cannot be reused/recovered/recycled will require disposal at landfill;

(v) All vehicles carrying waste shall have properly fitting Side and Tail Boards, and the materials being transported shall be securely covered;

(vi) PYC shall record the amount of wastes generated, recycled and disposed of (including the disposal site);

(vii) PYC shall make use of a trip ticket system for the disposal of Construction and Demolition (C&D) Materials to any designated public filling facility and/or landfill.

3.3 Inert C&D Wastes

Inert C&D waste generated during the contract will be reused on-site at priority as considered at the project planning stage, excess inert C&D wastes will be disposed off site or transferred to the temporary storage areas where possible. It is recommended that the excavated topsoil shall be stored separately from fills and treated accordingly to avoid degradation.

In the project, the estimated total quantity of inert C&D wastes for disposal is about **10,110 ton** and the designated disposal grounds for inert C&D wastes would be on **Temporary**

Public Filling Barging Point at Chai Wan. The disposal of inert C&D wastes in this project is solely by land-based transport to Designated Waste Disposal Facilities. The transport routes plan is shown on **Attachment D.**

3.4 Non-inert C&D Wastes

The following principles shall be adopted for Non-inert C&D Waste:

(i) All works areas shall be cleaned of general litter and refuse daily.

(ii) General refuse and litter shall be stored in enclosed bins or compaction units separate from construction or chemical wastes. A suitable waste collector shall be used to remove general waste and litter off site for disposal. The estimated volume of generation is about **220 ton**.

(iii) Refuse shall not be burned at any Construction Area.

(iv) General refuse may be generated by food service activities on site, so reusable rather than disposable dishware shall be used if feasible.

(v) Separately labelled bins shall be provided where practicable, to allow segregation of recyclable material generated by individual site staff (e.g. aluminium cans) such that recycling collectors could be assessed.

(vi) Office wastes shall be reduced through recycling of paper. If volumes are large enough to warrant collection, participation in a local collection scheme shall be considered, if available.

(vii) Where connection to the existing foul sewer main is not possible PYC will employ a licensed contractor to provide sufficient number of portable chemical toilets for handling of sewage from the construction workforce. The licensed contractor will be responsible for collecting the toilet sewage for regular disposal. An adequate number of chemical toilets will be provided in accordance with the number of staff on site.

PYC will maintain disposal records for the general waste, which will be available for inspection by the Engineer at any time. The disposal records shall contain the basic information such as; date, time, quantity, and location of dumping, name of vehicle, authorised signature, etc. The detailed information of disposed excavated materials shall be included in the latest revision of WMP.

3.5 Waste Handling Procedure and Disposal Routes

Waste Material Type	Generated from works item	Disposal	Handling
Inert C&D Waste	Open cut for Rigid Barriers construction, removal of boulders, excavation for soil-cement replacement and stripping of existing hard slope surface.	Delivered to PFRFs for beneficial uses.	Trucks to transfer inert C&D material to barging point at Chai Wan Public Fill Barging Point
Non-inert C&D Waste	Debris, rubbish, grasses, topsoil, waste paper, material waste etc. generated from site clearance and workforce.	Refuse transfer station for compaction and Containerization and then to landfill.	Provide on-site refuse collection points and send to Sent Landfill by lorry.
Chemical Waste	Cleansing fluids, solvent, lubrication oil and fuel from construction plant and equipment.	Chemical Waste Treatment Centre	Recycle by licensed collectors by lorry. Stored on-site within suitably designed containers.

All the grab-mounted trucks working for public works contracts should have been installed with suitable cover which can be operated safely and prevent the release of dust during transportation of construction wastes. The following two suitable covers are accepted by the Development Bureau and Environmental Protection Department:

1. **Modified butterfly type mechanical cover**
2. **Magnetic type cover**

3.6 Minimisation of C&D Materials Generation (Measures to Reduce/ Minimize Generation of C&D Materials)

The generation of C&D materials should be avoided and minimised and this can be achieved through:-

(i) Balance cut and fill

(ii) Lean Construction

(iii) Low waste technology

(iv) Use of pre-casting and pre-fabrication standardises construction activities

(v) Use of tailor-made building fixtures and fittings

(vi) Use more durable material

(vii) Better site management as well as improved material storage and handling on site

(viii) Research and implement new building materials and technology

If C&D materials generation is unavoidable, reuse and recycle should be maximised. Sorting is a good means to facilitate material reuse and recycle.

3.7 Identification of Temporary Storage Areas

In the contract commencement stage, PYC shall identify and provide sufficient space for the temporary storage of C&D materials to facilitate collection and sorting on site (see Attachment B for temporary storage area). The provided space shall be commensurate with the estimated quantity for each type of C&D materials generated. In order to optimise the storage space, except the recover/ reuse C&D materials, all other C&D materials shall be removed from site as far as practicable.

3.8 Arrangement of Recyclable Materials

PYC shall sort out the recyclable materials from C&D materials during excavation and demolition.

3.9 Recommended Mitigation Measures

The mitigation measures stated in the Implementation Schedule of the WIL EIA Report are listed in the following table:-

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	EIA Requirements
Waste Management Implications (Construction Phase)							
S7.30	S 6.5	Good site practices -Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site -Training of site personnel in proper waste management and chemical handling procedures -Provision of sufficient waste disposal points and regular collection of waste -Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers -Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. -Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre.	To reduce waste management impacts	MTRC / Contractor	All works areas	Construction phase	Practice Note for Authorized Person and Registered Structural Engineers, Building Department Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), Land (Miscellaneous Provision) Ordinance (Cap 28); Waste Disposal Ordinance (Cap354)
S7.31 & S7.32	S 6.6 – S 6.7	Waste reduction measures -Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals	To achieve waste reduction	MTRC / Contractor	All works areas	Construction phase	Practice Note for Authorized Person and Registered Structural

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	EIA Requirements
		-Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal -Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force -Proper storage and site practices to minimise the potential for damage or contamination of construction materials -Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. -A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed -Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. -A Waste Management Plan shall be prepared by the Contractor prior to the commencement of construction work to provide an overall framework for waste management and reduction.					Engineers, Building Department Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), Land (Miscellaneous Provision) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	EIA Requirements
S7.34 & S7.35	S 6.9 & S6.10	C&D Waste -In order to minimise impacts resulting from collection and transportation of C&D Waste for off-site disposal, the excavated materials arising from station and tunnel construction shall be reused on-site as backfilling material and for landscaping works as far as practicable. -Surplus rock generated from the tunnelling works, shafts/adits construction and the stations cavern construction should be reused in reclamation and site formation projects either in the Mainland or Macau, or disposed of at a PFRF, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. -C&D waste generated site clearance from the proposed works areas would require disposal to the designated landfill site. -In order to monitor the disposal of inert C&D material and C&D waste at PFRFs and landfills, respectively, and to control fly-tipping, a trip-ticket system shall be established in accordance with ETWB TCW No. 31/2004. -Material delivered to PFRFs should be of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee.	To minimize environmental impacts during the handling, transportation and disposal of C&D Waste	MTRC / Contractor	All works areas	Construction phase	ETWB TCW No. 31/2004 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005
S7.36	S 6.11	Non-inert C&D Waste -General refuse shall be stored in enclosed bins or compaction units separate from C&D material and chemical wastes.	To minimize environmental impacts during the handling, transportation and disposal of general	MTRC / Contractor	All works areas	Construction phase	Public Health and Municipal Services Ordinance (Cap. 132)

EIA Ref.	EM& A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Locatio n of the measure	When to implement the measure?	EIA Requirements
		-A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material and chemical wastes. Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material.	refuse				
S7.37	S 6.12	Chemical waste -Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. -Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals shall be stored separately. -Appropriate labels shall be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. -The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, either to the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.	To minimize environmental impacts during the handling, transportation and disposal of chemical refuse	MTRC / Contractor	All works areas	Construction phase	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

SECTION 4 "CHIT" SYSTEM

4.1 The "CHIT" System

PYC as main contractor of construction work with value of $1 million of above, will open a billing account solely for this project. This billing account shall be applied within 21 days after the contract is awarded.

Once the application is accepted, "CWCS" of EPD will issue CHITs for using the prescribed disposal facilities. Each CHIT is made up of three parts that Part A will be retained by Main Contractor, while Part B by Waste Hauler and Part C by Prescribed Facility.

4.2 Prescribed Facilities

There are four prescribed facilities rendering disposal service, landfills, sorting facilities, public fill reception facilities and outlying islands transfer facilities. Except the outlying islands transfer facilities, the other facilities able to receive the construction wastes from this project. Where should the wastes dispose under the required condition is subjected to the table below:

Designated Waste Disposal Facility	Type of Construction Waste Accepted	Criteria to be adopted
Landfills	Construction waste containing not more than 50% by weight of inert construction waste	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must not be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle.
Sorting Facilities	Construction waste containing more than 50% by weight of inert construction waste	For a load of construction waste delivered by a vehicle, the weight of the waste divided by the permitted gross vehicle weight of the vehicle must be greater than 0.25 for goods vehicle with demountable skip and 0.2 for other types of vehicle.
Public Fill Reception	Construction waste consisting	-

Facilities	entirely of inert construction waste	
Outlaying Islands Transfer Facilities	Construction waste containing any percentage of inert construction waste	-

4.3 Inert and Non-inert Waste

By Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Schedule 5), the definition of inert construction waste is any object that make-up with "Rock, rubble, boulder, earth, soil, concrete, asphalt, brick, tile, masonry or used bentonite" wholly or in mixture.

4.4 Alternative Disposal Grounds Proposed by Contractor and Approval Procedures

In order to make use of C&D materials generated by the Site, PYC shall use his best endeavours to identify other construction projects where such materials can be used. Where PYC has identified such a project which can be used as an alternative disposal ground, he shall obtain the written approval of the Engineer, who will process PYC's request expeditiously. In support of the request for such approval PYC shall provide relevant information including:

(i) A detailed description of the alternative disposal ground, including location, lot number (where appropriate) and location plan;

(ii) Where the alternative disposal ground is a private construction project, submit a letter from the Authorised Person of the development (as defined under the Buildings Ordinance) to confirm that:

  (a) The C&D materials for use in the development is acceptable;

  (b) The use of land so formed by the C&D materials is in conformity with the statutory town plan/ lease conditions;

  (c) The Engineer's staff are allowed to enter the alternative ground to conduct inspections where necessary; and

  (d) The estimated quantity and type of C&D materials to be used in the construction works and the approximate delivery programmed, together with the name, post and specimen signature of the competent person to sign the Disposal Delivery Form.

(iii) Where the alternative disposal ground is a private land but not a construction site, submit a letter from the relevant authorities, such as the Lands Department and Planning Department, to confirm the suitability of the alternative disposal ground in

receiving the proposed amount of C&D materials for use, and a written consent from the landowner.

(iv) Where the alternative disposal ground is a government construction project, submit written consent from the project office of the alternative disposal ground to use the C&D materials generated from the Site, and to confirm the estimated quantity and type of C&D materials required and the approximate delivery programme.

(v) A system for transmitting disposal records from the alternative disposal ground to the Engineer's Representative.

(vi) Where the disposal ground is proposed by PYC and has been approved by the Engineer. PYC shall also maintain a daily record with details of each disposal trip from the Site to the disposal ground.

4.5 Implementation

PYC shall prepare a site management plan for implementation of the CHIT system (CS):

Recording System and Transaction Records

PYC shall maintain a comprehensive register of the CHIT issued, and make it available for inspection by Engineer's Representative upon requests whenever practicable. With due consideration to the overall surveillance efficiency, the transaction records can be viewed 24 hours after using disposal services at EPD's website.

【http://www.epd.gov.hk/epd/misc/cdm/scheme.htm#i】.

SECTION 5 MEASURES FOR GOOD SITE MANAGEMENT

5.1 Training & Communication of this Plan

PYC shall review relevant statutory regulations and waste management practice and identify training needs for different levels of staff as well as subcontractors. Relevant contractual requirements shall also be discussed during the training.

PYC shall conduct orientation and specific training for workers about the concepts of waste management and appropriate waste control procedures including waste reduction, handling and sorting, reuse and recycling of C&D materials, as well as site cleanliness and housekeeping, by the Environmental Engineer/ Registered Safety Officer.

At regular intervals, PYC shall provide tool-box training to all workers or labours at regular intervals to promote environmental awareness and to communicate updated issues regarding waste management practices. All Foremen and subcontractor's representatives shall obtain the information and technique through in-house training organised by PYC's Environmental Department.

5.2 Avoidance/ Minimisation to use Timber for Temporary Works

Reasonably practicable steps shall be planned for works so as to change or improve design and practices through liaison, planning and site management including but not limited to:

(i) Precast concrete units produced at a casting yard with high degree of quality control;

(ii) Standard wooden panels for high reuse level if timber formworks are unavoidable;

(iii) Purchase materials in a manner that minimises waste and unnecessary costs with consideration such as matching size of materials purchased with the dimensions of structure to avoid excessive cut offs;

(iv) Check consistency of drawings and specifications to avoid unnecessary hacking-off of concrete or unwanted work;

(v) Avoid use of 'sensitive material' such as use of hardwood for shuttering and strutting;

(vi) Implement measures to minimise over-ordering and then wastage of materials such as concrete, mortars and cement grouts;

(vii) Maximise potentials reuse, namely durable, reusable hoarding to replace timber hoarding and use of metal in place of wood for formwork;

(viii) Minimise total quantities required, such as use of gondola in place of bamboo scaffold;

(ix) Whenever possible, consider alternative processes that reduce or preferably avoid

entirely C&D waste generation.

Nevertheless, the use of sensitive resources such as timber may be not totally eliminated but certainly it can be reduced significantly. Whenever there is an use of timber over $5m^3$ for any activity, a method statement should be submitted for the justification. A summary of use shall be prepared and submitted monthly.

5.3 Raw Material Storage to Avoid Unneeded Wastage

Apart from good intention to avoid and minimise the waste at the stages of design and work execution, however, in the process between two these stages the handling and treatment of raw material storage is another potential area able to reduce the wastage as well by way of site tidiness and cleanliness.

PYC shall adopt the guidelines to properly handle the raw material storage with suitable protective measures on site as listed in below (Extracted from Ciria, 1997, Waste Minimisation in Construction: Site Guide):

Material	Store under cover	Store in secure area	Store in pallets	Store material bound	Special Requirements
Sand, gravel, rock, crushed concrete					Store on hard standing base to reduce wastage. Store in bays if large quantities
Plaster, cement	✓		✓		Avoid material getting damp
Concrete, paviors				✓	Store material in original packaging until used, and protect from vehicle movements
Bricks			✓	✓	Store material in original packaging until used, and protect from vehicle movements
Clay pipes, concrete pipes			✓	✓	Use stoppers and spacers to prevent rolling, and store in original packaging until used
Wood	✓	✓		✓	Protect all types of wood from rain
Metals	✓	✓			Store in original packaging until used
Any internal fittings	✓	✓			Store in original packing until used
Cladding	✓	✓			Wrap in polythene to prevent scratches

Material	Store under cover	Store in secure area	Store in pallets	Store material bound	Special Requirements
Sheet glass, glazing units		✓	✓		Protect glass from breakage due to bad handling or vehicle movements
Paints	✓	✓		✓	Protect from theft. Store in bounded area with adequate capacity and secure
Bituminous felts	✓	✓			Usually store in rolls and protect with polythene
Insulating material	✓	✓			Store under polythene
Ceramic tiles	✓	✓		✓	Store in original packaging until required
Glass fibre	✓			✓	
Iron mongery	✓	✓			
Oils	✓	✓		✓	Store in bowsers, tanks or cans according to quantity - protect container from damage to reduce likelihood of spillage - use a bund
Kerbstones				✓	Protect from vehicle movements & tar spraying to reduce damage
Clay & slate tiles		✓	✓	✓	Keep in original packaging until use
Topsoil, subsoil					Store on hardstanding base to reduce wastage and keep segregated from potential contaminants
Precast concrete units					Store in original packaging, away from vehicular movements

5.4 Sorting Facilities

Waste sorting shall be implemented in the following manner:-

(i) The site shall designate area(s) for temporary waste storage and subsequent segregation for ease of handling.

(ii) The storage and sorting area(s) for waste and recyclable materials shall be clearly marked and labelled.

(iii) The checking of C&D waste generation shall be incorporated into the daily inspection programme to ensure that they are not mixed into the general refuse area but are stored in a designated area for collection by subcontractors for recycling as appropriate.

5.5 Chemical Waste Control

Chemical wastes are likely to be generated during maintenance of plant and equipment and these may include spent filter cartridges containing heavy metals, asbestos waste, spent batteries, used mechanical oil, cleaning fluid, spent solvents, lubricating oil and paints and paint containers. The estimated volume of chemical produced is about 150L. Whenever possible alternative processes shall be considered that reduce or preferably avoid entirely chemical waste generation. Chemical waste shall be identified through following steps:-

(i) Examine the MSDS (Material Safety Data Sheet) of the chemical(s) to be in the used process/activity,

(ii) Check the MSDS against Schedule 1 of Waste Disposal Ordinance to determine whether the material(s) in question is/are chemical waste.

A Waste Producer License shall be applied for and the guidelines stated in the "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" shall be followed.

Disposal of chemical waste shall be regulated to involve :

(i) Communication with Environmental Protection Department prior to waste generation; in case of Part A chemical waste under Section 17 of the Waste Disposal Ordinance, notification to Environmental Protection Department shall be made before at least 10 working days ;

(ii) Use of a licensed waste collector;

(iii) Disposal to a facility licensed to receive chemical wastes, such as the Chemical Waste Treatment Centre or other approved facility (which offers both collection service and supply of suitable storage containers);

Any non-conformance identified by the Engineer, will follow an additional action reporting procedures if required by the Representative. In case of emergency such as chemical spill, the flowchart procedure is described in Chemical Spillage Handling Method.

5.6 Site Cleaning and Tidying, Control of Mosquitoes

The Safety Officer shall ensure that strict cleaning and tidying of the site is carried out on a daily basis. Standing water shall be cleared as soon as practicable, or be treated with approved oil at least once per week. The Safety Officer shall ensure that the anti-mosquito measures

outlined in Site Safety Plan are implemented on site. All the control measures are properly enforced including disposal of any surplus water holding containers, checking that no possible breeding areas for mosquitoes exist. The notice including "Cover any water tanks and remove any stagnant water containers, fill ends of bamboo scaffolding or fill them with holes, drain away accumulated water to rainwater drains after sedimentation" shall be prominently displayed on site and workers are briefed in toolbox talks on the importance of anti-mosquito measures. Effective mosquito control and removal of stagnant water shall be addressed during all Site Safety Committee Meetings. Spraying of pesticide or lavicidal oil to kill adult mosquitoes and prevent breeding should only be employed as the last resort where removal of stagnant water would be impossible or the drainage cannot be done effectively.

5.7 Records and Updating of the WMP

The PEC shall ensure that proper and adequate records are maintained on site in relation to the requirements of this plan. This shall include records such as; delivery tickets, photographs, measurement records, cleaning checklists, truck visit records and etc. These shall be submitted to the Engineer every month.

(i) Records associated with the Chit System.

(ii) Quantities of different types of waste generated and their disposal method (see Attachment C – Monthly Waste Flow Table).

This Waste Management Plan will be reviewed on time required for internal reference only and shall take into consideration any audit or other findings. The Project Environmental Co-ordinator is responsible for ensuring that this review is carried out regularly. Any findings will be communicated to the site team in accordance with Training & Communication principles outlined.

5.8 Inspection Programme (Waste Monitoring and Audit)

The Site Green Manager shall ensure that the ASGM/ Sub-Agents always monitor the generation and disposition of wastes throughout the construction period and the Sub-contractors always properly handle and dispose the wastes in conforming with this WMP. This shall be achieved by routine checking to ensure a satisfactory performance on compliance with this WMP.

5.9 Corrective Actions in Response to Non-conformance

The efficiency of site practices to minimise construction waste associated impacts will be

assessed and any deficiencies or areas requiring improvement will be reported to PYC's Environmental Engineer. PYC's SHE Team will advise on additional waste minimisation and management procedures as necessary.

Any incidents of illegal dumping of construction wastes, emergency such as chemical spill or any major Non-conformance will be reported immediately to the Environmental Engineer and Engineer. Further, where called upon, the SGM and Environmental Engineer will advise on any required remedial works.

The PEC shall undertake regular site inspections to determine that the requirements of the WMP are met. The Project Environmental Management will also undertake regular six monthly site audits under their Environmental Site Audit programme. In the event that any non-compliance of environmental management procedures is identified by any party, an Environmental Action Note (EAN) shall be completed by any observer and notify the SGM and Environmental Engineer immediately.

On receipt of the EAN, the Assistant Site Green Manager shall review the observations and submit to the Site Green Manager who shall:

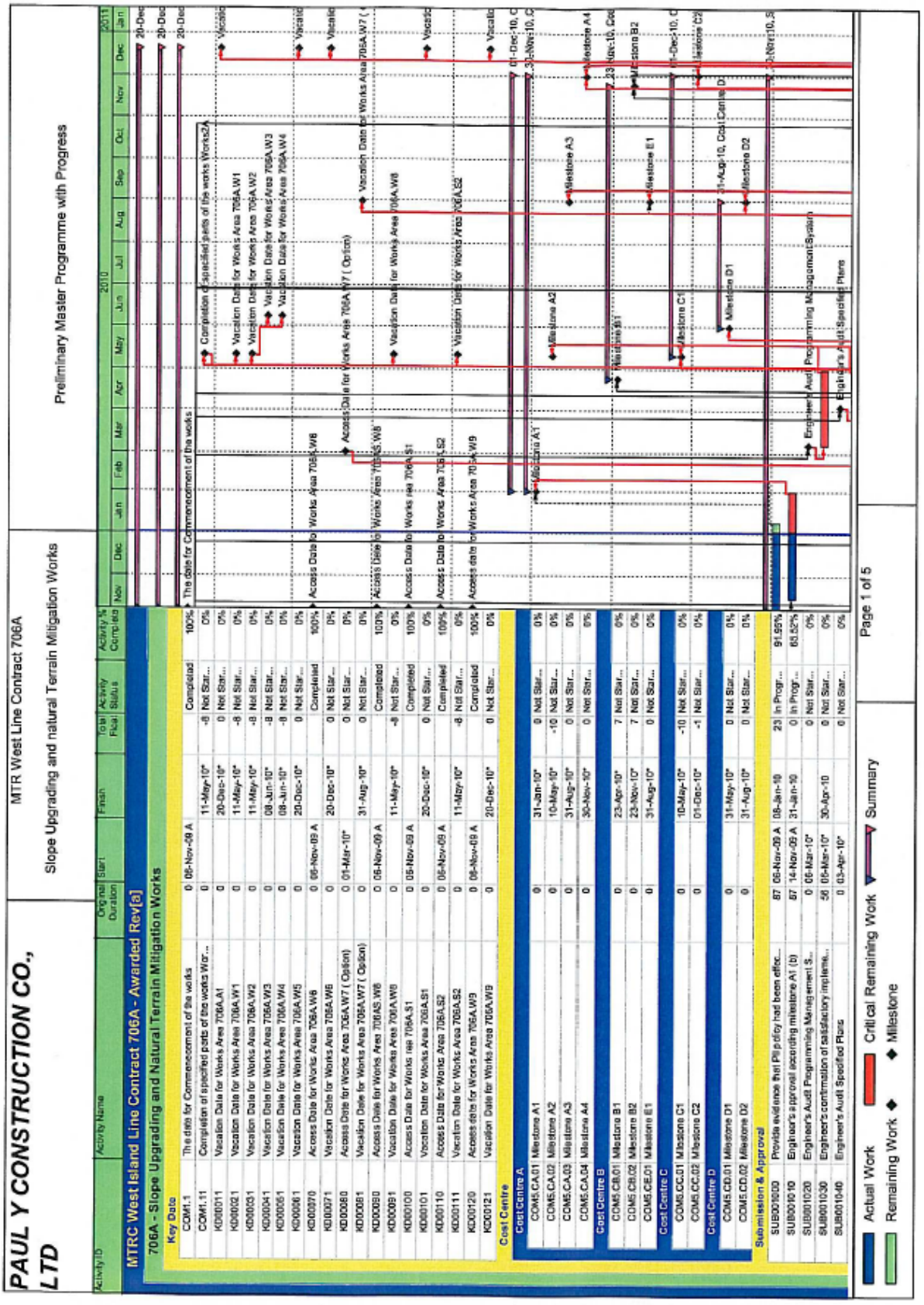
(i) Investigate the cause of the non-conformance;
(ii) Recommend the appropriate corrective action and/or preventative actions;
(iii) Estimate the time needed to implement the measures; and
(iv) Complete the EAN and file for record.

On completion of the corrective or preventative action the Environmental Engineer shall complete the EAN and record all necessary details in the logbook for corrective and preventative action.

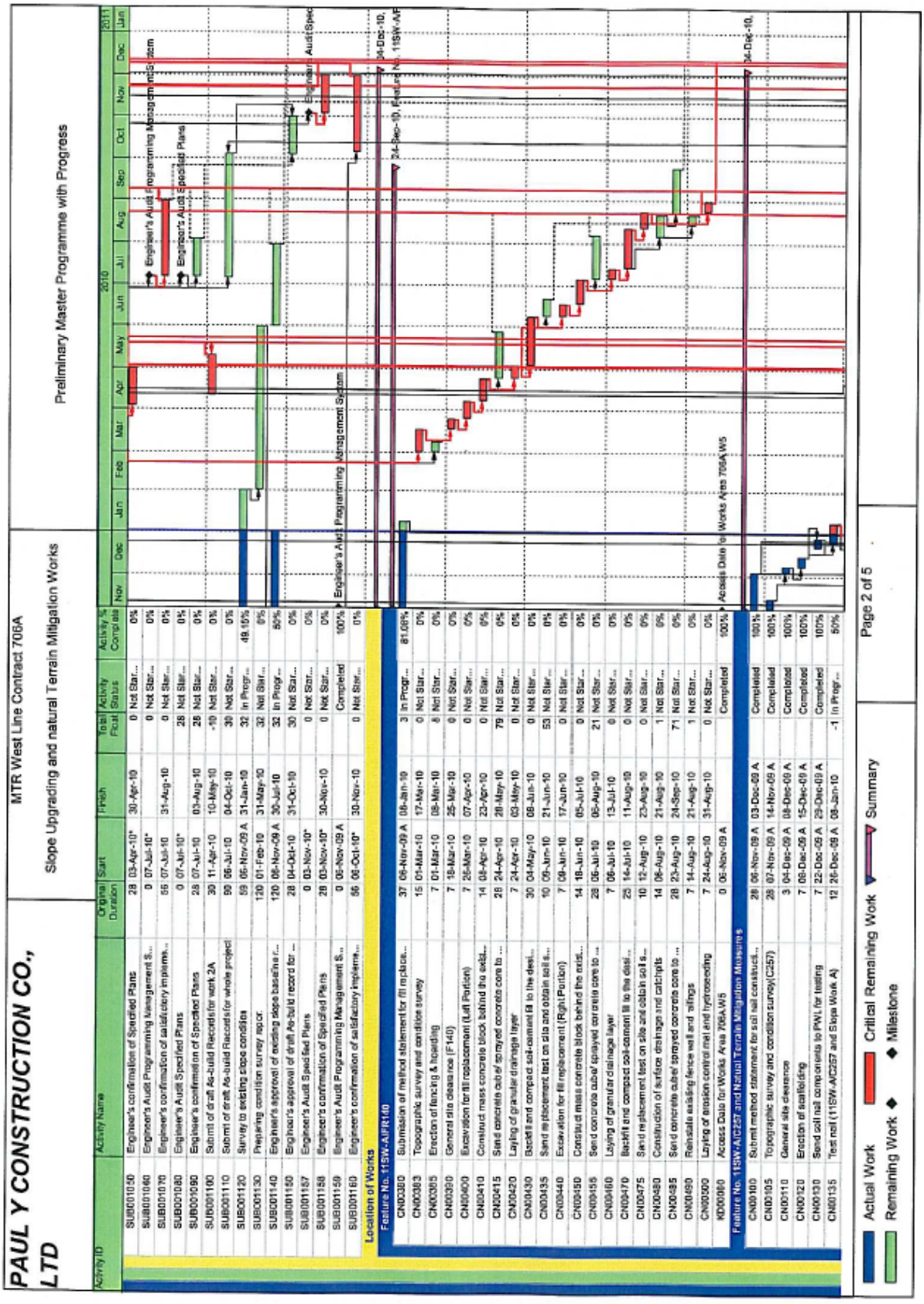
ATTACHMENT A

Master Programme

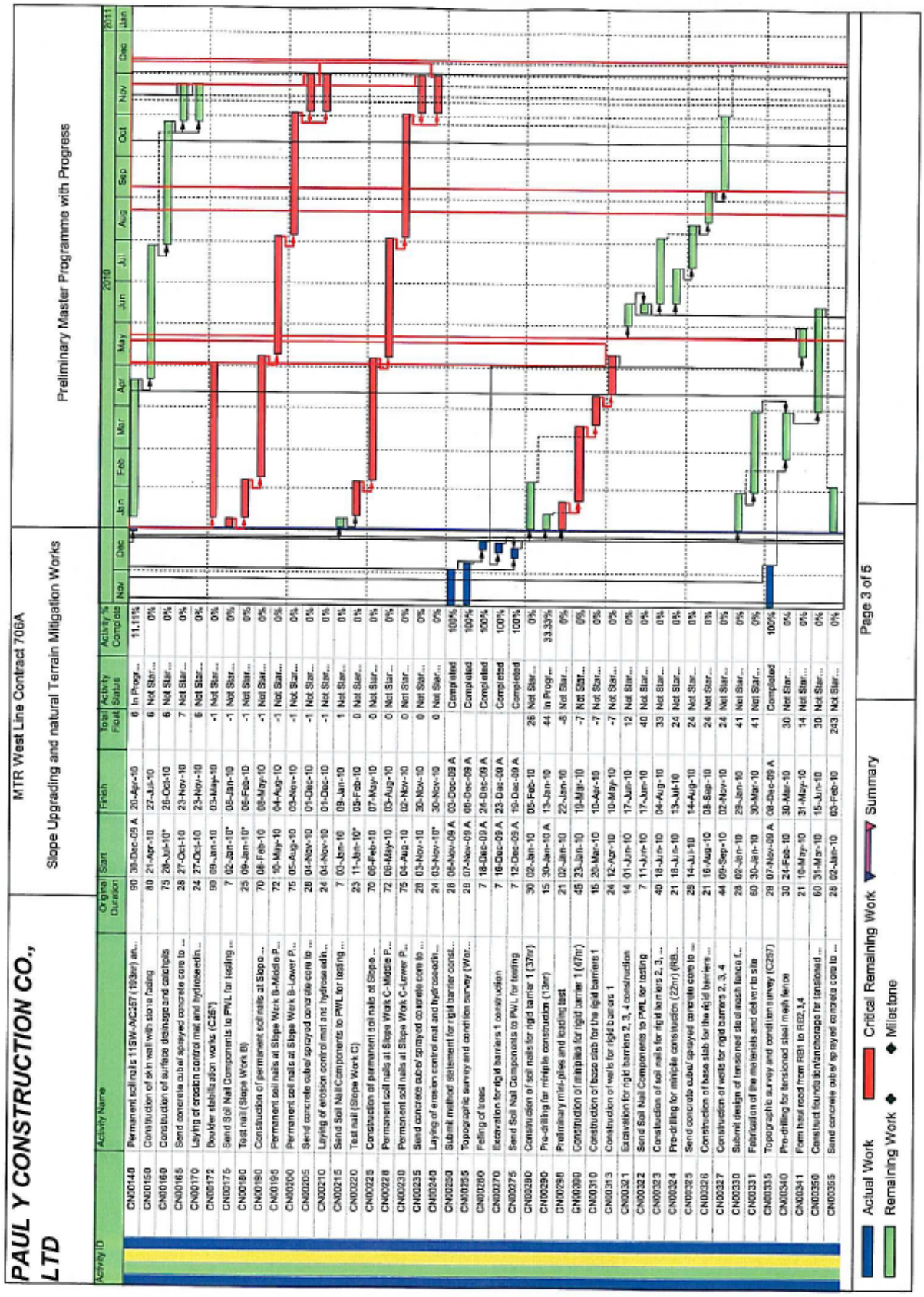
WASTE MANAGEMENT PLAN



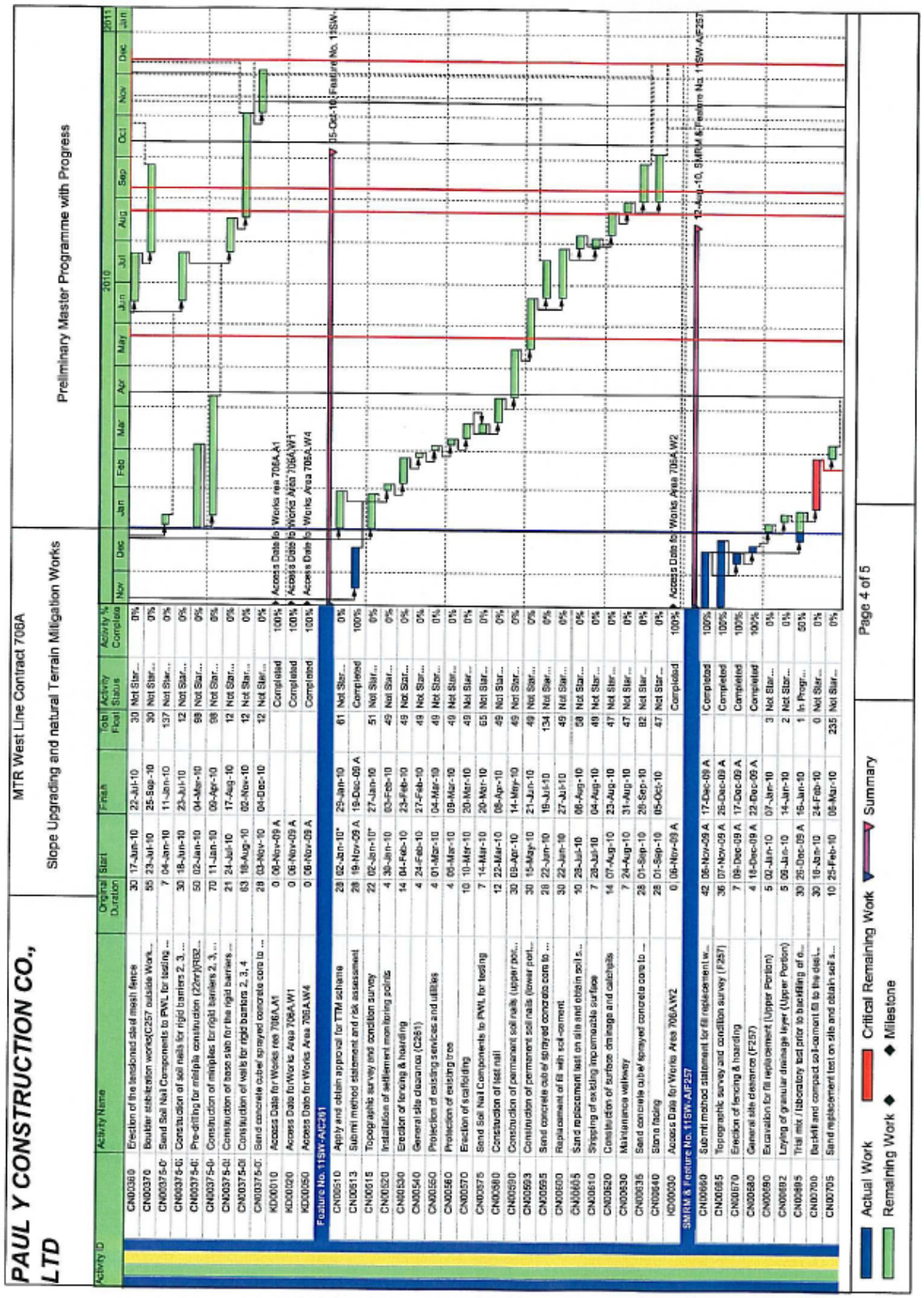
WASTE MANAGEMENT PLAN



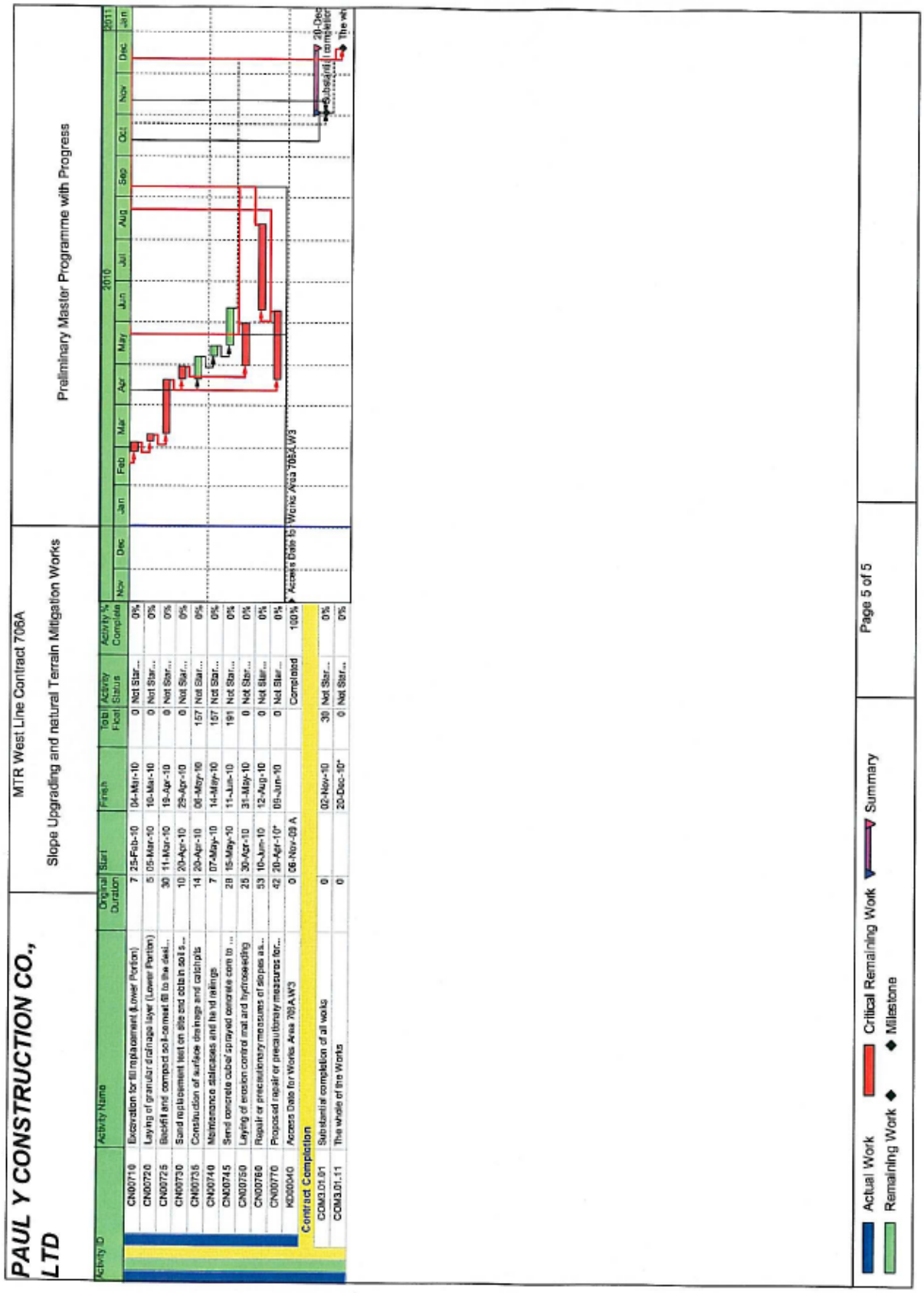
WASTE MANAGEMENT PLAN



WASTE MANAGEMENT PLAN



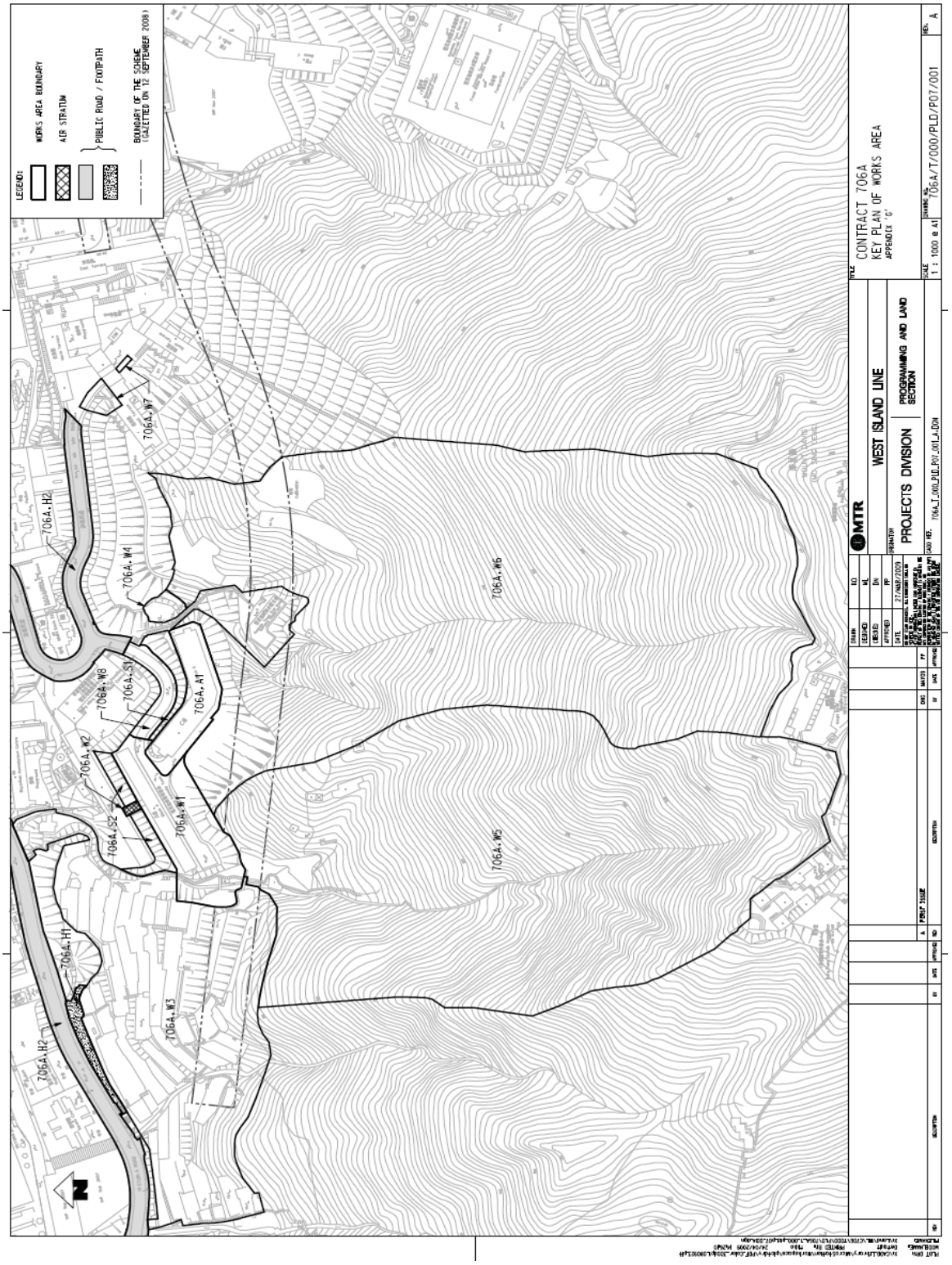
WASTE MANAGEMENT PLAN



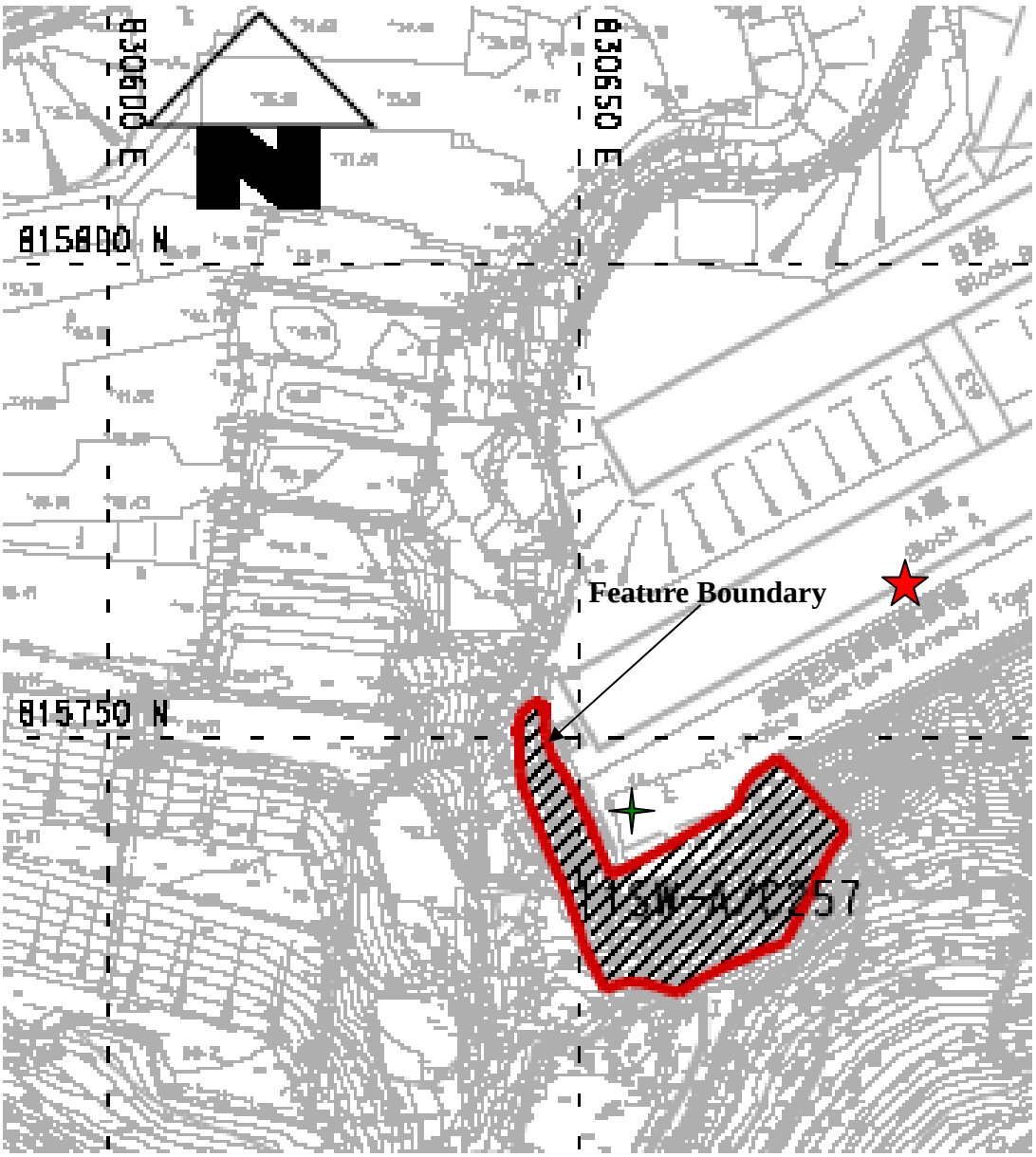
ATTACHMENT B

LOCATION PLAN OF TEMPORARY

WASTE STORAGE AREA



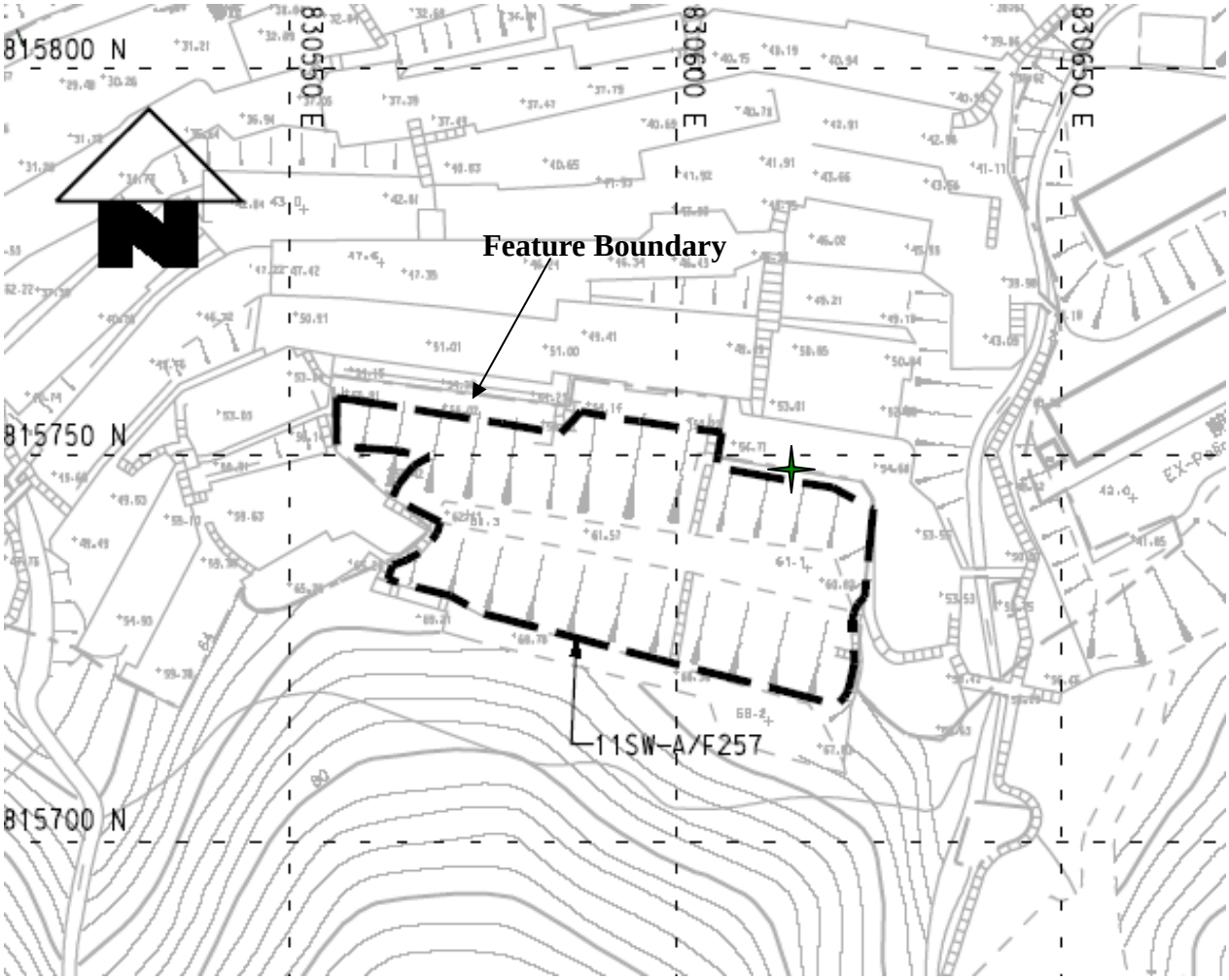
The Site is divided into Works Areas 706A.A1, 706A.W1, 706A.W2, 706A.W3, 706A.W4, 706A.W5, 706A.W6, 706A.W7, 706A.W8, 706A.H1, 706A.H2, 706A.S1 and 706A.S2



Note:

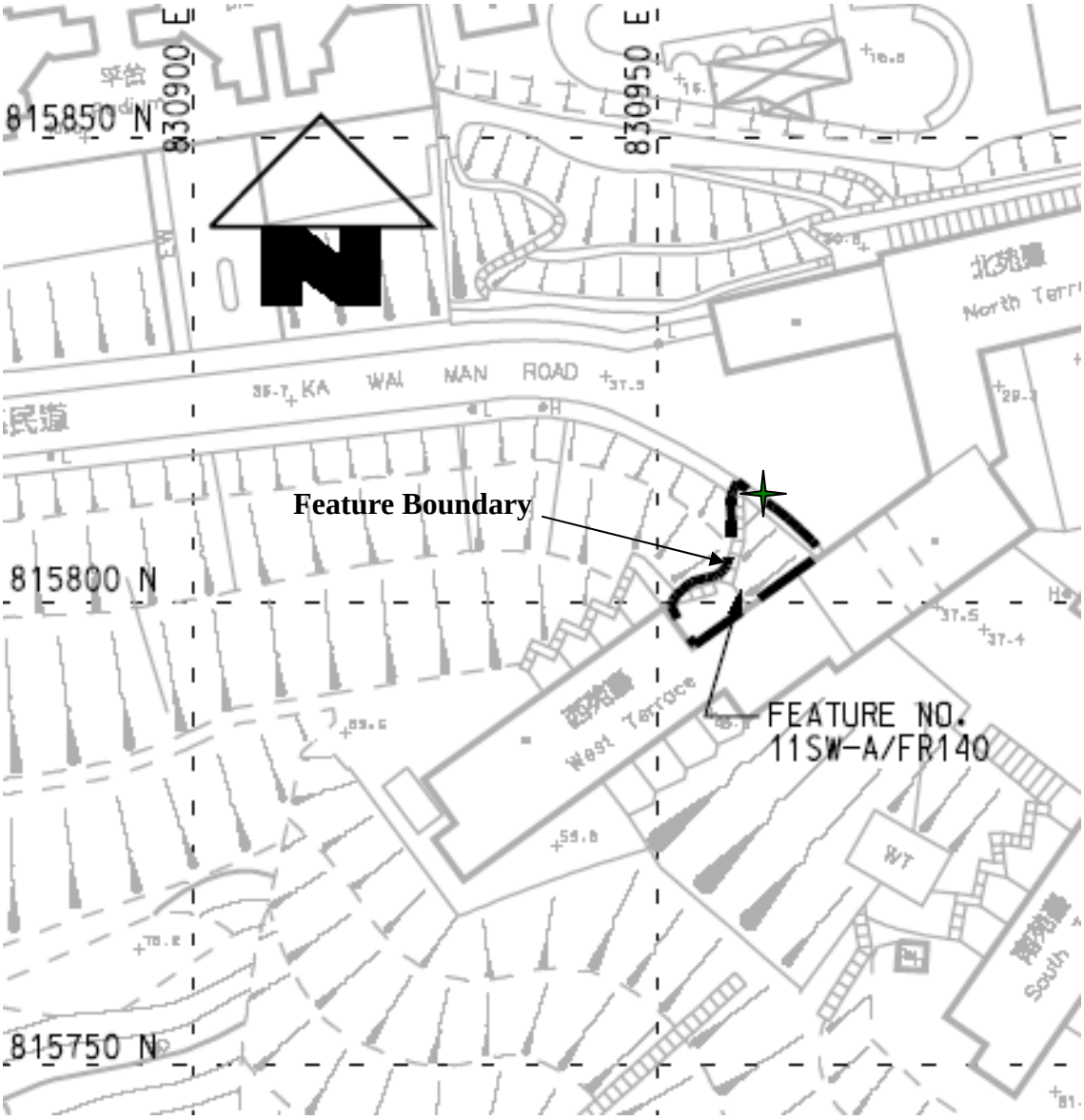
– Location of C&D waste storage and sorting area [size: 2m(W)x 4m(L)] for Feature No. 11SW-A/C257 within Works Area 706A.W1

– Location of chemical waste storage area [size: 2m(W)x 2m(L)] for all features within Works Area 706A.W1



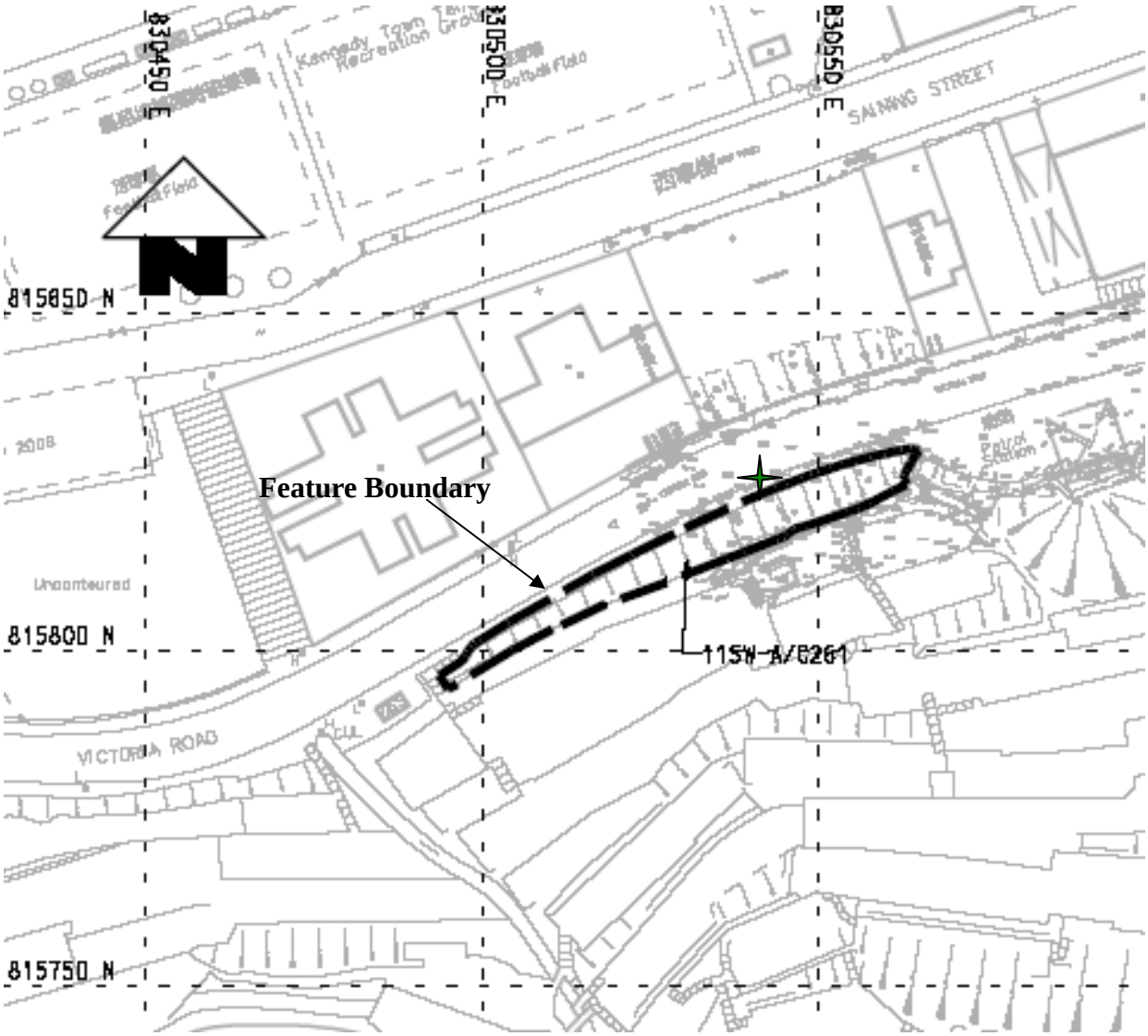
Note:

✦ – Location of C&D waste storage and sorting area [size: 3m(W)x 5m(L)] for Feature No. 11SW-A/F257 within Works Area 706A.W3



Note:

✦ – Location of C&D waste storage and sorting area [size: 2m(W)x 4m(L)] fro Feature No. 11SW-A/FR140 within Works Area 706A.W7



Note:

✦ – Location of C&D waste storage and sorting area [size: 1.5m(W)x 4m(L)] for Feature No. 11SW-A/C261 within Works Area 706A.H1

ATTACHMENT C

Monthly Waste Flow Table

Project Title: West Island Line Contract 706A Slope Upgrading and Natural Terrain Mitigation Works
(Registered Features)
Estimated Volume of Monthly Waste Flow Table for 2009 and 2010

Month	Estimated Quantities of Inert C&D Materials Generated Monthly					Estimated Quantities of C&D Materials Generated Monthly				
	(a)=(b)+(C)+(d)+(e) Total Quantity Generated	(b) Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed in Public Fill	(f) Metals	(g) Papercardboard packaging	(h) Plastics	(i) Chemical Waste	(j) Others, e.g. general refuse disposal at Landfill
	ton	ton	ton	ton	ton	ton	ton	ton	L	ton
Nov	10	0	0	0	10	0	0	0	0	0
Dec	50	0	0	0	50	0	0	0	0	10
Sub-total	60	0	0	0	60	0	0	0	0	10
Jan	1800	0	1700	0	100	0	0	0	0	10
Feb	1950	0	1800	0	150	0	0	0	0	20
Mar	2000	0	1800	0	200	0	0	0	40	30
Apr	2100	0	1900	0	200	0	0	0	0	30
May	1150	0	1000	0	150	0	0	0	0	20
Jun	350	0	200	0	150	0	0	0	40	10
Jul	300	0	200	0	100	0	0	0	0	20
Aug	200	0	100	0	100	0	0	0	0	30
Sep	50	0	0	0	50	0	0	0	40	10
Oct	50	0	0	0	50	0	0	0	0	10
Nov	50	0	0	0	50	0	0	0	0	10
Dec	50	0	0	0	50	0	0	0	30	10
Sub-total	10050	0	8700	0	1350	0	0	0	150	210
Total	10110	0	8700	0	1410	0	0	0	150	220

ATTACHMENT D

Transport Route Plan

Transport Route between A (Chai Wan Public Fill Barging Point) and B (Features 11SW-A/C257 and 11SW-A/F257)

Transport Route between A (Chai Wan Public Fill Barging Point) and B (Feature 11SW-A/C261)

Transport Route between A (Chai Wan Public Fill Barging Point) and B (Feature 11SW-A/FR140)

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(15)

The EIA Ordinance Register Office,
27th Floor, Southorn Centre,
130 Hennessy Road,
Wanchai,
Hong Kong

Attention: Mr. Victor Yeung

Your ref :

Our ref: C747-COR-HSD-ENV-010160

23 March, 2010

BY FAX & POST
2591-0558

Dear Mr. Yeung,

MTR West Island Line
Environmental Permit No. EP-313/2008C
EP Condition 2.12: Waste Management Plan for Contract No. 706A – Slope Upgrading and Natural Terrain Mitigation Works

I refer to your letter dated 22 February 2010 on the above subject, I would like to provide further information and clarification on your comment as follows:-

(a) I would like to clarify that site clearance work for the slope No. 11SW-A/F257 commenced in December 2009 and slope work commenced in January 2010 as shown in page 4 of 5 of the Master Programme attached in Appendix A

Please find attached the amended pages (Page 14 and 15 of 27) and the updated Monthly Waste Flow Table in Attachment C according to the actual amount of C&D waste and refuse generated to date.

Yours sincerely,

Glenn Frommer

Dr. Glenn Frommer
Head of Sustainability Development

Encl.

GF/EL/bl

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adjoining land, storm drain, sanitary sewer. Waste material also includes any waste matter or refuse to be deposited anywhere within the site or onto any adjoining land (e.g. Concrete waste or used formwork etc.). Formwork will be reused/recovered/recycled as far as possible before disposal to designated area.

When handling the waste material, the following measures shall be undertaken:

(i) The strategy for management and disposal of all wastes arising from the project will be based on the principle of segregation and re-use/recover/recycle on site followed by disposal to landfill or designated outlet as appropriate;

(ii) Disposal of other inert construction wastes is governed by the Environmental Protection Department policy on the disposal of construction waste. The principles established maximise re-use/recovery/recycling of materials on site and segregation of Wastes to ensure that the minimum quantities are disposed of to landfill and that the maximum is directed for disposal to reclamation. All construction waste shall necessarily be sorted on site into inert and non-inert materials whenever practicable;

(iii) Non-inert materials such as wood and other materials including glass, plastics, steel and metals shall be disposed of to landfill. Inert materials like soil, sand, rubble, shall be separated from non-inert material and suitably disposed of;

(iv) In addition, quantities of site fencing, scaffolding and timber for the building work shall be reused/recovered/recycled where possible. Those materials that cannot be reused/recovered/recycled will require disposal at landfill;

(v) All vehicles carrying waste shall have properly fitting Side and Tail Boards, and the materials being transported shall be securely covered;

(vi) PYC shall record the amount of wastes generated, recycled and disposed of (including the disposal site);

(vii) PYC shall make use of a trip ticket system for the disposal of Construction and Demolition (C&D) Materials to any designated public filling facility and/or landfill.

3.3 Inert C&D Wastes

Inert C&D waste generated during the contract will be reused on-site at priority as considered at the project planning stage, excess inert C&D wastes will be disposed off site or transferred to the temporary storage areas where possible. It is recommended that the excavated topsoil shall be stored separately from fills and treated accordingly to avoid degradation.

In the project, the estimated total quantity of inert C&D wastes for disposal is about **16,444.34 ton** and the designated disposal grounds for inert C&D wastes would be on

Temporary Public Filling Barging Point at Chai Wan. The disposal of inert C&D wastes in this project is solely by land-based transport to Designated Waste Disposal Facilities. The transport routes plan is shown on **Attachment D.**

3.4 Non-inert C&D Wastes

The following principles shall be adopted for Non-inert C&D Waste:

(i) All works areas shall be cleaned of general litter and refuse daily.

(ii) General refuse and litter shall be stored in enclosed bins or compaction units separate from construction or chemical wastes. A suitable waste collector shall be used to remove general waste and litter off site for disposal. The estimated volume of generation is about **422.24 ton.**

(iii) Refuse shall not be burned at any Construction Area.

(iv) General refuse may be generated by food service activities on site, so reusable rather than disposable dishware shall be used if feasible.

(v) Separately labelled bins shall be provided where practicable, to allow segregation of recyclable material generated by individual site staff (e.g. aluminium cans) such that recycling collectors could be assessed.

(vi) Office wastes shall be reduced through recycling of paper. If volumes are large enough to warrant collection, participation in a local collection scheme shall be considered, if available.

(vii) Where connection to the existing foul sewer main is not possible PYC will employ a licensed contractor to provide sufficient number of portable chemical toilets for handling of sewage from the construction workforce. The licensed contractor will be responsible for collecting the toilet sewage for regular disposal. An adequate number of chemical toilets will be provided in accordance with the number of staff on site.

PYC will maintain disposal records for the general waste, which will be available for inspection by the Engineer at any time. The disposal records shall contain the basic information such as; date, time, quantity, and location of dumping, name of vehicle, authorised signature, etc. The detailed information of disposed excavated materials shall be included in the latest revision of WMP.

Appendix E

Contract No.: WIL706A
Contract Title: Slope Upgrading & Natural Terrain Mitigation Measures
Prepared by: Chung Kam Wah (Environmental Officer)
Monthly : *Estimated* Volume of Monthly Summary Waste Flow Table for 2009 and 2010
Summary disposal record of inert/non-inert C&D materials

Month	Actual Quantities of Inert C&D Materials General Monthly					Actual Quantities of C&D Materials General Monthly				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Broken	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed in Public Fill	(f) Metals	(g) Paper cardboard packaging	(h) Plastics	(i) Chemical Waste	(j) Others, e.g. general refuse disposed at Landfill
	ton	ton	ton	ton	ton	ton	ton	ton	ton	ton
Nov	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	6.79
Sub total	0	0	0	0	0	0	0	0	0	6.79
Jan	2495.14	0	0	0	2495.14	0	0	0	0	11.52
Feb	7354.34	0	0	0	4859.2	0	0	0	0	5.35
Mar	10754.34	0	0	0	3400	0	0	0	30	55
Apr	13354.34	0	0	0	2600	0	0	0	0	50
May	13754.34	0	0	0	400	0	0	0	0	15
Jun	14054.34	0	0	0	300	0	0	0	30	20
Jul	14134.34	0	0	0	80	0	0	0	0	40
Aug	14214.34	0	0	0	80	0	0	0	0	45
Sep	14844.34	0	0	0	630	0	0	0	30	35
Oct	15944.34	0	0	0	1100	0	0	0	0	20
Nov	16444.34	0	0	0	500	0	0	0	0	15
Dec	0	0	0	0	0	0	0	0	0	15
Sub total	16444.34	0	0	0	16444.34	0	0	0	90	325.45
Total	16444.34	0	0	0	16444.34	0	0	0	90	422.24

Remark : The inert C&D waste arising form this project will be disposed at public filling facility at Chai Wan Public Fill Barging point or other disposal outlets as directed by the Enginee
The non-inert C&D waste arising from project will be disposed at SENT landfills or other disposal outlets as directed by the Engineer.