

**Leighton - Kumagai
Joint Venture**

By Hand

23 November 2004

Our Ref: H2226/C1/RB/KH/ic/05137

Your Ref.: ENT/(HY/2003/02)/M45/600/0064/554674

The Engineer's Representative
Maunsell Hyder Joint Venture
8/F Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Sha Tin, New Territories
Hong Kong SAR

Attention: Mr Peter Poon, CRE

Dear Sirs,

**Route 8 - Eagle's Nest Tunnel & Associated Works
Contract HY/2003/02
Updated Waste Management Plan Revision F incorporating
the Environmental Team Leader's comments**

Further to our receipt of your letter dated 13 November 2004, please find attached our Waste Management Plan that has the following further 7 amendments.

1. Cover revised to December 2004;
2. Page 3, point 3, VEP application number amended to VEP-09/2003;
3. Page 16; add reference to authority to use WENT;
4. Page 19, section 4.3, table heading Dangerous Good stores, NP expanded to North Portal;
5. Page 22, section 4.8, added references to relevant appendices;
6. Appendix F, added chemical waste store location; and
7. Appendix J; revised format to latest form with 'material type' field;

Yours faithfully,
Leighton-Kumagai Joint Venture

Ray Brewster
Project director

Encl - Revised Waste Management Plan

cc MHJV - Conrad Ng

*1 OUT (4137)

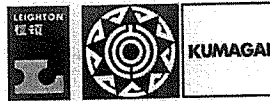
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PLANT		
SAFETY		
SURVEY		

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Leighton - Kumagai
Joint Venture

LEIGHTON-KUMAGAI JOINT VENTURE

HIGHWAYS DEPARTMENT CONTRACT HY/2003/02
EAGLE'S NEST TUNNELS AND ASSOCIATED WORKS

Waste Management Plan

Revision F

December 2004

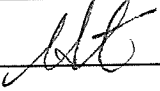
LEIGHTON-KUMAGAI JOINT VENTURE

HIGHWAYS DEPARTMENT CONTRACT HY/2003/02
EAGLE'S NEST TUNNELS AND ASSOCIATED WORKS

WASTE MANAGEMENT PLAN

REVISION F

DECEMBER 2004

Approved by: <u>RAY BREWSTER</u>
Signed: <u></u>
Position: <u>Project Director</u>
Date: <u>23 NOVEMBER 2004</u>

This document conforms to the findings and recommendations of:

- 1) 1998 EIA Report (Register No. EIA-135/BC);
- 2) 1999 EIA Report (Register No. AEIAR-022/1999);
- 3) Application VEP-098/2003;
- 4) EP-103/2001/A;
- 5) ETWB TCW No. 15/2003.

Certified by:

Signed: _____

Position: Environmental Team Leader

Date: _____

Verified by: _____

Signed: _____

Position: Independent Environmental Checker

Date: _____

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1.0 INTRODUCTION

1.1 Introduction

The Leighton-Kumagai Joint Venture has been selected by the Highways Department as the contractor for the Route 8 (previously known as Route 9) – Eagle's Nest Tunnel and Associated Works project, Contract HY/2003/02. The project was proposed under the 1998 Environmental Impact Assessment Report EIA-135/BC and the Environmental Impact Assessment Report EIA-020/1999 using Scott Wilson / Parson Brinkerhoff / ERM Hong Kong / MVA Asia dated 23 August 1999 and was approved by the Environmental Protection Department with conditions on 5 November 1999. The original Environmental Permit for this project (EP-103/2001) was granted to the Highways Department on 17 September 2001 and an amendment (EP-103/2001/A) was granted by the Environmental Protection Department on 20 May 2003. The nature and scope of the works are indicated on the site layout plan given in Appendix A and are described below.

The works include the following major items:

- a) Construction of a 0.5km long at-grade tunnel approach and associated earthworks and drainage works (including box culvert and open channel) within Butterfly Valley;
- b) Construction of the 2.1km long Eagle's Nest Tunnel;
- c) Construction of a 0.4km long ventilation adit between Eagle's Nest Tunnel and the Ventilation Building;
- d) Construction of four associated tunnel buildings including the North and South Portal Buildings of Eagle's Nest Tunnel, the Ventilation Building at Tai Po Road and the Administration Building at the Toll Plaza;
- e) Construction of footbridge and associated canopy at the Toll Plaza;
- f) Construction of a toll collector passageway at the Toll Plaza;
- g) Construction of all other road works and finishing works at the Toll Plaza (site formation works to be completed by others);
- h) Construction of all building works and building services works to the four buildings mentioned in d) above, the two portal buildings of Shatin Heights Tunnel; and the two E&M switchrooms of the R.C. Full Enclosure of Contract ST89/02 and T3 Underpass of ST79/02 respectively;
- i) Installation of all E&M systems including MVAC, electrical installation, fire services, plumbing and drainage, lift installation, toll collection system, lighting system, Central Monitoring and Control System (CMCS) and ventilation system. These also include E&M works at the site of Contract ST89/02 and Contract ST79/02;
- j) Associated drainage and sewerage works;
- k) Associated landscape works;
- l) Associated waterworks;
- m) Associated civil engineering works for subsequent TCSS works to be carried out by others; and
- n) Provision of necessary assistance to and coordination of Environmental Monitoring and Audit (EM&A) works to undertaken by others throughout the contract period.

1.2 Scope and Objectives of this WMP

This Waste Management Plan (WMP) provides details of the measures, procedures and actions to be employed by LKJV to control and manage waste management issues that may arise during the construction works. Certain actions and measures will be necessary to maintain environmental conditions within acceptable levels during the construction of the Project. In particular, LKJV shall ensure compliance with all relevant statutory and contractual requirements and be responsible for all environmental matters within the boundary of the construction site.

It is a requirement under section 2.5 of the Environmental Permit that the Permit Holder shall submit the Waste Management Plan (for the construction stage of the project) to the Director of the Environmental Protection Department. A further requirement of the EP is that prior to submission to the Director, the WMP shall be certified by the ET Leader and verified by the IEC as conforming to the EIA Reports (1998 & 1999) and Application

The main objectives of the WMP are as follows:

- to provide details of all relevant statutory and contractual obligations and requirements;
- to provide details of the expected environmental impacts and associated mitigation measures;
- to provide details of preventive actions and procedures to be followed in the event of unacceptable environmental impact(s);
- to clarify responsibilities of key staff and lines of communication;
- to provide a declaration demonstrating the Contractor's commitment to observing and pursuing the goals of the WMP; and
- to outline the auditing requirements and protocols for environmental site inspections.

2.0 WASTE MANAGEMENT ORGANISATION

2.1 Waste Management Policy

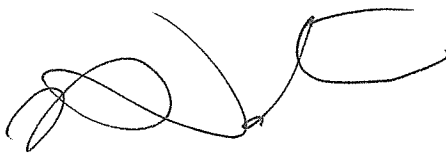
Leighton-Kumagai Joint Venture recognise that Hong Kong is facing significant waste generation and handling problems and support the Government's initiatives to improve management of waste. Therefore, we shall carry out our operations using an ISO14001:1996 certified Integrated Management System and adopt a Waste Management Plan that considers the latest requirements from the Environment, Transport & Works Bureau Technical Circulars.

Leighton-Kumagai Joint Venture are committed to providing sufficient resources and facilities to enable implementation of our Waste Management Plan.

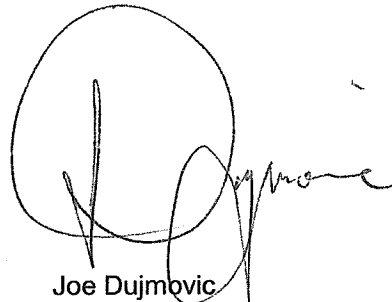
Leighton-Kumagai Joint Venture shall ensure the significant impacts on the environment caused by our operations are identified, assessed and managed to prevent environmental prosecution.

Leighton-Kumagai Joint Venture shall set measurable targets for minimising waste generation and disposal and make performance results available

Compliance with the requirements in our Waste Management Plan is mandatory for all our employees. All staff are encouraged to contribute to the continuing improvement of our Waste Management Plan.



Hiroyuki Watanabe
General Manager
Kumagai Gumi Co., Ltd.

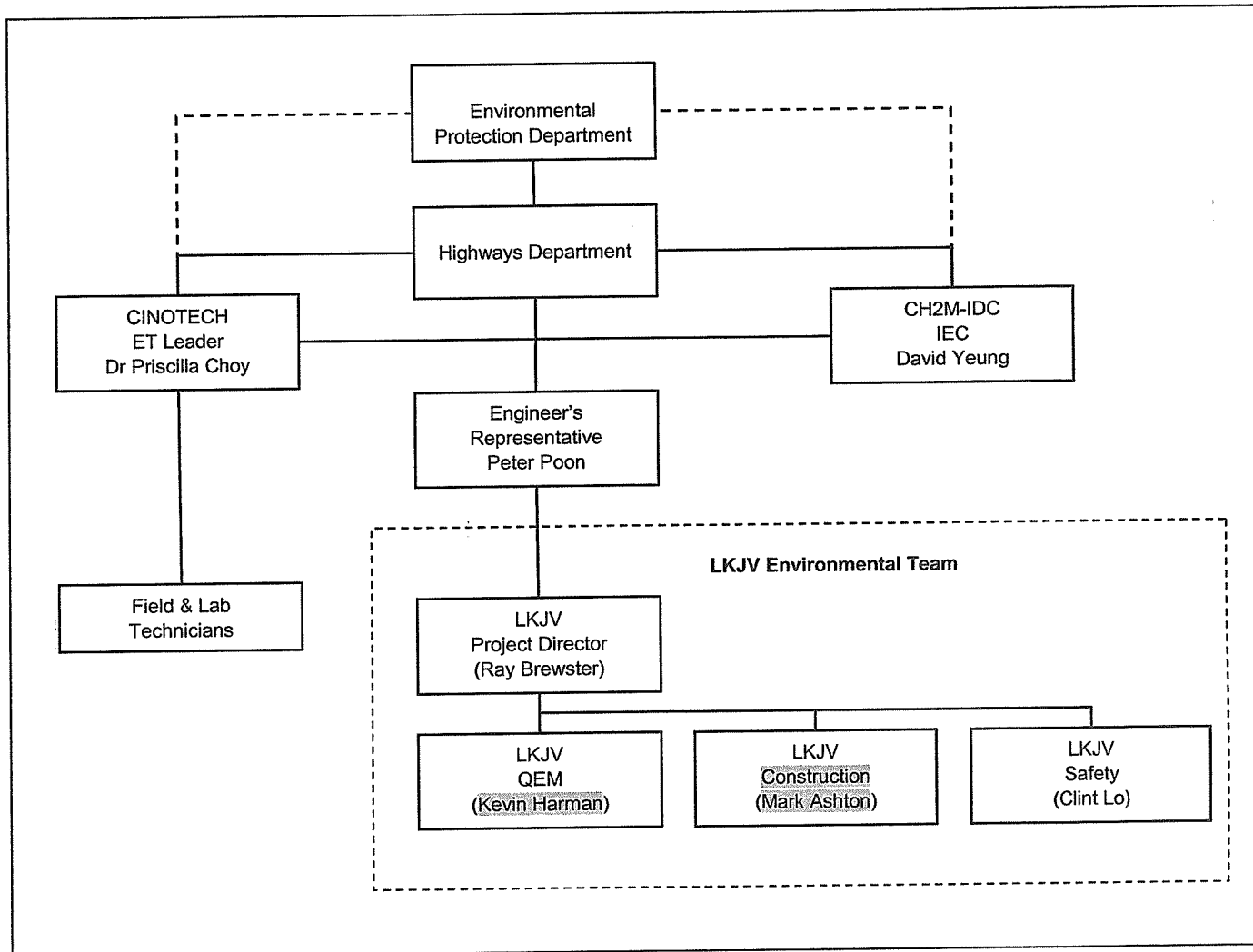


Joe Dujmovic
General Manager
Leighton Contractors (Asia) Limited

2.2 Waste Management Staff Organisational Structure

The organisational structure and principal lines of communication for the environmental management of Contract HY/2003/02 are presented in *Figure 1*. Further details of staff operating within the identified parties are provided in *Section 2.3* overleaf.

Figure 1 - Environmental Reporting and Organisation – Eagle's Nest Tunnel



2.3 Roles and Responsibilities of Key Waste Management Staff

2.3.1 MAIN CONTRACTOR

LKJV shall directly manage the construction of the Highway's Contract HY/2003/02. LKJV will have overall responsibility for the construction works including the implementation of this WMP. LKJV has designated a Quality & Environmental Manager (QEM) to undertake the necessary waste management tasks associated with the contract.

Project Director

The Project Director shall maintain overall control of all aspects of the project's administration and site construction activities and will oversee the implementation of this WMP. He is also responsible for ensuring that there are adequate resources available for the implementation of the WMP. The Project Director will be responsible for:

1. maintaining proper liaison and formal communication with the Engineer's Representative and Environmental Team Leader and other parties;
2. ensuring the requirements stated in the Waste Management Plan are satisfactorily implemented;
3. in the event of non-compliance, LKJV's Project Director shall, if the situation warrants, be empowered to stop the Works. If the Project Director is unavailable, such responsibility shall be transferred to the Construction Manager;
4. ensuring that all employees, consultants and subcontractors are directly responsible to LKJV for achieving and maintaining the WMP plan; and
5. ensuring the proper allocation of responsibilities and duties are clearly defined.

The Project Director is responsible to the LKJV Board and reports to the Engineer's Representative on all environmental matters. The Project Director's contact details are outlined in *Table 1*.

Table 1 Contact Details for the Project Director

Name	Title	Telephone No.	Fax No.
Ray Brewster	Project Director	(852) 3552 2452	2743 1600

Quality & Environmental Manager (QEM)

LKJV's Quality & Environmental Manager (QEM) shall oversee all environmental matters for Contract HY/2003/02 and will be responsible for ensuring compliance with the environmental procedures and objectives defined within this WMP. The QEM is responsible for:

1. conducting WMP training and ensuring that the environmental requirements stated in the WMP are complied with;
2. ensuring compliance with all relevant contractual and statutory requirements;
3. scheduling, co-ordinating and assisting in conjunction with other interested parties the monthly environmental site inspections;
4. ensuring that an environmental non-compliance report is issued by the appropriate personnel or party in the event of a non-compliance;

5. ensuring that the appropriate corrective and preventative action is taken in the event of an environmental non-compliance notification being issued by the Engineer or upon receipt of a complaint;
6. maintaining the required environmental records and ensuring responsible parties within the Contractor's organisation apply for all required permits and licenses, as follows:
 - statutorily required environmental permits/licenses including dumping permits, chemical waste producer licenses;
 - all correspondence with EPD and complaints; and
 - overseeing training programme requirements for the Contractor and Sub-contractors;
7. overseeing training programme requirements for the Contractor and Subcontractors;
8. arranging public access to LKJV's environmental policy;
9. undertaking waste management site inspection and audit both regularly and on an ad-hoc basis at frequencies appropriate to the intensity of the works;
10. maintaining the daily diary with respect to waste management issues;
11. preparation of waste management reports;
12. liaise with government officers and guide them to verify compliance with waste related legislation and regulations; and
13. advise on specific mitigation measures for waste related impacts as they arise and update this waste management plan.

The QEM reports to the Project Director and acts as LKJV's principal point of contact in relation to environmental matters. The QEM's contact details are outlined in *Table 2*.

Table 2 Contact Details for the Contractor's Quality & Environmental Manager

Name	Title	Telephone No.	Fax No.
Kevin Harman	Quality & Environmental Manager	(852) 3552 2128	2743 1600

Construction Manager

The Construction Manager is responsible for the day-to-day management of the site. He has overall control of the site practices in relation to environmental control and mitigation. He shall assign staff to assist him in the day-to-day supervision and in enforcing the on-site mitigation measures. The Construction Manager is responsible for:

1. ensuring that the works are executed in accordance with the WMP;
2. reviewing the environmental performance of the sub-contractors, to ensure that they comply with all the relevant contractual and statutory requirements;
3. ensuring that all relevant parties are notified following receipt of a documented complaint, and for undertaking a thorough investigation to verify the source of the complaint to the Environmental Team Leader (with copy to the Engineer's Representative), QEM and Project Director;

4. ensuring that the remedial actions and/or mitigation measures are implemented immediately in the event of non-compliances, and that a report of the findings is issued to the Engineer's Representative, QEM and Project Director; and
5. maintaining the required records and applying for all relevant permits and licenses, as follows:
 - any statutory required environmental permits/licenses including construction noise permits, noise labels for compressors and hand held percussive breakers, effluent discharge licenses, dumping permits, chemical waste producer licenses; and
 - site logs including maintenance of sedimentation tanks and silt traps, perimeter drainage etc.

The Construction Manager shall report to the Project Director and keep him fully informed of the status of the work in relation to progress, resource allocation and future commitments in his area of responsibility. The Construction Manager's contact details are outlined in *Table 3*.

Table 3 Contact Details for the Construction Manager

Name	Title	Telephone No.	Fax No.
Mark Ashton	Construction Manager	(852) 3552 2161	2743 1600

LKJV's Safety Manager

The Safety Manager and his staff have the authority to instruct employees of the joint venture, or its Subcontractors of any level, to cease operations and take immediate and appropriate action to make safe the site, and prevent unsafe working practices or other infringements of the Safety Plan. The Safety Manager reports to the Project Director.

With regard to environmental protection, the Safety Manager has the following responsibilities:

1. Maintain a list of PME on-site; and
2. Maintain the dangerous goods records.

The Safety Manager's contact details are outlined in *Table 4*.

Table 4 Contact Details for the Safety Manager

Name	Title	Telephone No.	Fax No.
Clint Lo	Safety Manager	(852) 3552 2124	2743 1600

LKJV Sub-Contractors

LKJV may employ subcontractors to undertake parts of the construction works. Those managing these subcontractors are responsible for ensuring that their site personnel implement the environmental mitigation measures relevant to their subcontracted works to the satisfaction of LKJV and the Engineer's Representative. Subcontractors shall fully co-operate with LKJV in dealing with all environmental matters.

Subcontractor Site Agents will be responsible for the day-to-day compliance with licenses, along with the overview of site practices in relation to environmental control and mitigation. Subcontractors shall assign a Foreman (in each of their sub-areas) to assist them in the day-to-day supervision and in enforcing the on-site mitigation measures. Each Subcontractor's Site Agent shall liaise with project staff on compliance with WMP requirements, initiating adverse weather procedures, maintaining WMP records, the procurement of permits, maintaining permits on hoardings, recording

site accidents, maintaining wheel washing facilities, maintaining sediment tanks, managing pumps, etc.

Subcontractor's management staff shall be issued with the latest revision of this Waste Management Plan and all appropriate Method Statements. This shall be followed up with on-site supervision by the Construction Manager and by the monthly auditing process. LKJV will provide training to the subcontractor's management staff of its subcontractors and records of such training will be maintained.

2.3.2 HIGHWAYS DEPARTMENT ENVIRONMENTAL TEAM Independent Environmental Checker

The Independent Environmental Checker shall audit the environmental monitoring programme. He shall also be responsible for reviewing and verification of the environmental deliverables as required under the Environmental Permit. The Independent Environmental Checker's contact details are outlined in Table 5.

Table 5 Contact Details for the Independent Environmental Checker

Name	Title	Telephone No.	Fax No.
David Yeung	Independent Environmental Checker	2872 2934	2507 2293

Environmental Team Leader (ETL)

The Environmental Team Leader is responsible ensuring the Contractor's compliance with the environmental requirements of the Environmental Permit and this WMP. The Environmental Team Leader shall liaise with the Independent Environmental Checker. Duties of the Environmental Team Leader include:

1. attending and witnessing LKJV site inspections;
2. dealing with the event of complaints; and
3. reporting on the environmental monitoring and audit results.

The Environmental Team Leader's contact details are outlined in Table 6.

Table 6 Contact Details for the Environmental Team Leader

Name	Title	Telephone No.	Fax No.
Dr. Priscilla Choy	Environmental Team Leader	2151 2083	3107 1388

2.4 Communication Procedures

2.4.1 Formal Communications

All formal communications shall be made in writing and notes of formal meetings will comply with quality assurance procedures for document control set up in respect of the Contract. Where previously agreed between the parties concerned communications of a less formal nature may also be made using electronic mail.

2.4.2 Promotion of Information Flow

In addition to formal communications there will be a need to promote information pertinent to the environmental management of the Project. For example, the following approaches may be adopted:

- Documented circulation of reports and notices to identified staff;
- Site meetings;
- notice boards; and
- Leighton Asia Document Management System Library module.

2.4.3 Communication Procedures in the Event of Complaints and Non-compliance

All LKJV site staff have a duty to report complaints made to them by the general public. In the event of non-compliance's and complaints, immediate action will be required to address the issue(s), with reference to the Event Contingency criteria given in table 7. In order to minimise response time, communications must be clear and rapid. In such cases the communication requirements in *Table 7* shall be followed whenever a complaint is received. In the first instance communication shall be by telephone to expedite the process. Formal correspondence will be documented within 24 hours of receiving the complaint or if non-compliance is identified.

Table 7 Communication Chart in the Event of Complaint

Step	Event	Action	Agent	Period
1	Complaint received or non-compliance identified by LKJV, on waste related issues.	LKJV staff member in receipt of complaint or evidence of non-compliance shall directly notify the QEM.	Any LKJV member of staff	Within 20 hours of receipt of complaint
2	QEM receives notification and refers to Event Contingency Plan requirements.	QEM implements Event Contingency Plan requirements and shall notify RMS (Responsible Member of Staff) to ensure adverse impact is mitigated.	QEM	Within 30 hours of receipt of initial complaint.
3	QEM documents known data and issues notification.	QEM notifies Engineer's Representative with copy to the ETL of situation.	QEM	Within 48 hours of receipt of initial complaint.
4	RMS notifies QEM of corrective action taken.	QEM notifies Engineer's Representative with copy to the ETL of corrective action taken.	QEM	Within 72 hours of receipt of initial complaint.
5	ETL receives notification of actions taken.	ETL notifies Engineer's Representative with copy to LKJV's QEM of any follow-up actions necessary (e.g. communications with complainant).	ETL	Within 96 hours of receipt of initial complaint.

LKJV has established a 24 hour complaint and enquiry telephone line (telephone number 3552-2380) and procedure as required by the contract particular specification. Please refer to our project specific procedure PSP-007 "Public Complaints and Enquiries". Waste related complaints from public will follow the procedure PSP-007 and comply with the follow up period performance identified in table 7 above.

3.0 STATUTORY REQUIREMENTS

3.1 Waste Management Legislation and Standards

LKJV and its Subcontractors shall be required to comply with all of the current legislation and regulations, which shall include, but not be limited to the following:

- Waste Disposal Ordinance (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354);
- Land (Miscellaneous Provisions) Ordinance (Cap 132);
- Public Health & Municipal Services Ordinance (Cap. 132) – Public Cleansing and Prevention of Nuisances (Urban Council) and (Regional Council) By-Laws;
- Dumping at Sea Ordinance (Cap. 466) and related regulations;
- WBTC No. 06/2002&2002A - Enhanced Specification for Site Cleanliness & Tidiness;
- WBTC No. 21/2002 - Trip Ticket System for Disposal of C&D Material;
- ETWB TCW No. 33/2002 - Management of C&D Materials including rock; and
- ETWB TCW No. 15/2003 – Waste Management on Construction Sites.

3.2 Licence Applications

The Contractor or Subcontractor, as applicable, shall apply for licences (if required) in respect of the following:

- Chemical Waste Producer Licence (under the Waste Disposal (Chemical Waste) (General) Regulation); and
- Dumping Licence.

4.0 WASTE IMPACTS & MITIGATION

4.1 Key Issues

Potential sources of waste during the construction phase include site clearance waste, general refuse and construction waste, excess excavated material/spoil and chemical waste.

In particular, current estimates indicate over 697,000m³ of tunnel spoil (primarily rock fill) will be excavated.

An estimate of the quantities of waste that will be produced during the course of the project is given in Appendix B (table showing monthly summary of waste flow) and Appendix C (table showing yearly summary of waste flow).

4.2 Mitigation Measures

The waste arising during the construction phase of the works has the potential to create environmental impacts unless steps are taken to control and properly manage waste generation. Training will be provided to workers at morning briefings regarding the concepts of site cleanliness. Appropriate waste management procedures will be prepared including waste reduction, reuse and recycling. The following measures shall be incorporated into the on-site waste management practices as appropriate guidelines to minimising adverse impacts:

Storage, Collection and Disposal of Waste

- Handle and store waste in a manner which ensures that it is held securely without loss or leakage, thereby minimising the potential for pollution;

- Use waste hauliers authorised or licensed to collect the specific category of waste;
- Remove waste in a timely manner;
- Maintain and clean waste storage areas regularly;
- Minimise windblown litter and dust during transportation by either covering trucks or transporting waste in enclosed containers;
- Obtain the necessary waste disposal permits from the appropriate authorities, if they are required, in accordance with the *Waste Disposal Ordinance* (Cap 354), *Waste Disposal (Chemical Waste) (General) Regulation* (Cap 354), the *Land (Miscellaneous Provisions) Ordinance* (Cap 28), *Dumping At Sea Ordinance* (Cap 466) and *Works Branch Technical Circular No. 22/92, Marine Disposal of Dredged Mud*;
- Dispose of waste to the following designated locations:
 - (i) Construction and demolition material shall be re-used on site or delivered to Public Filling Facility at **West New Territories (WENT)**¹, or Lam Tei Quarry (if minimum Grade II granite rock);
 - (ii) Surplus excavated rock material of Grade III or IV granite and excavated artificial hard material shall be delivered to the designated stockpile area at Tsing Yi;
 - (iii) Construction and demolition waste (which includes less than 30% inert material) shall be delivered to West New Territories (WENT) Landfill or North East New Territories (NENT) Landfill;
 - (iv) General waste from offices, etc., shall be delivered to WENT or NENT Landfills; and
 - (v) Chemical waste shall be disposed of through an EPD registered waste collection company;
- A “trip ticket system” has been implemented to facilitate tracking of loads, particularly for C&D material and chemical waste to ensure that illegal disposal of waste does not occur. Although chemical waste is generated on an occasional basis and volume is relatively small, a licensed chemical waste collector will be employed to manage the handling and disposal of this waste to the Chemical Waste Treatment Facility at Tsing Yi, **and**
- Maintain records of the quantities of waste generated, recycled and disposed.

General Refuse and Construction Waste

General refuse generated on-site shall be stored in enclosed bins or compaction units separate from construction and chemical waste. A reputable waste collector shall be employed by the Contractor to remove general refuse from the site, separately from construction and chemical waste, on a regular basis to minimise odour, pest and litter impacts. Law prohibits the burning of refuse on construction sites.

As a guideline principle, and subject to practicable limitations and market constraints, the Contractor shall implement a recycling scheme for office and construction waste. Proper segregation of waste on site will increase the feasibility of recycling certain components of the waste stream. Different areas should be designated for such segregation and storage wherever site conditions permit (see Appendix E for proposed segregation/sorting area at **the** South Portal area).

General construction waste with more than 30% (by weight) inert material should not be disposed of at landfills. It is considered good practice to segregate waste at construction sites before disposing of the inert materials (concrete, soil, cement/bentonite, etc) at public filling areas and the degradable waste (wood, paper, plastic, etc) at landfills.

Vegetation waste will then be loaded onto trucks for transportation off-site and disposal to landfill. Disposal procedures will be same as for general refuse.

¹ On 1 June 2004, the Secretary of the Public Fill Committee Civil Engineering Department issued memo ref. (1) in PWPF/GEN/01 Pt. 34 stating that because of operational reasons and high disposal rates from contract HY/2003/02, the contract HY/2003/02 is reassigned to deliver soft public fill to the West New Territories (WENT) Landfill with effect from 2 June 2004.

Excess Excavated Material

Tunnel rock spoil of suitable quality shall be made available for reuse on-site or by a third party for crushing and gravel production. Given the linear nature of the site works, immediate on site reuse may not be feasible. However, it is possible that a good portion of tunnel spoil could be made available to a third party, processed and reused in the site construction works. Excavated material removed at night from the tunnel which cannot be disposed of off site should be stockpiled at a convenient location near the portals for disposal in the daytime (see Appendix E for Site Sorting & Storage Layout Plan for South Portal, Appendix F for North Portal and Appendix G for Adit Tunnel area).

Surplus excavated material from the Butterfly Valley cut and fill activities and the trench excavated material may have to be temporarily stockpiled on-site. Control measures will be taken at the stockpiling areas to prevent the generation of dust and pollution of stormwater channels. To eliminate the risk of excavated materials falling into the existing streams and blocking the main drainage channel in Butterfly Valley during the wet season, stockpiled materials will be properly compacted and covered to prevent water erosion and located at least 10m away from the nullah or stream. Key control measures will include the installation of silt traps for the surface water drainage system and the covering of stockpiled material with tarpaulins during heavy rainstorm periods.

In addition, careful design, planning and good site management can minimise over-ordering and waste of materials such as concrete, mortars and cement grouts.

Chemical Waste

Storage, handling, transport and disposal of chemical waste shall be arranged in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* published by the EPD. A licensed chemical waste collector will be employed by the company to collect, handle and manage disposal of chemical waste at a licensed facility.

For those processes, which generate chemical waste, it may be possible to find alternatives, which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste.

Chemical waste that is produced, as defined by *Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation*, should be handled in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* as follows:

Containers used for the storage of chemical waste shall:

- 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 specifications have been approved by the EPD; and
- Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

Three storage areas for chemical waste shall be set-up, one at the South Portal (see Appendix E) and one at the North Portal (see Appendix F) and one at the Ventilation Adit (see Appendix G). The chemical waste stores shall:

- Be clearly labelled and used solely for the storage of chemical waste;

- Be enclosed on at least 3 sides;
- Have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest;
- Have adequate ventilation;
- 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.

Disposal of chemical waste shall:

- Be via a licensed waste collector; and
- Be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers; or
- Be to a re-user of the waste, under approval from the EPD.

Types of chemical waste that will be produced are spent oil, spilled fuel, spent solid state batteries. The Centre for Environmental Technology operates a Waste Exchange Scheme, which can assist in finding receivers or buyers for the chemical waste.

WASTE SEGREGATION

As far as practicable, given the constraints of the relatively small and restricted site, the Contractor shall segregate construction waste according to the following:

- *Inert Material* - contains only inert materials such as concrete and rock must contain no organic, chemical or biodegradable components. Inert material shall be reused on-site wherever feasible. In the event that reuse on-site is not possible inert material shall be disposed of to public dump.
- *Predominantly Non-Inert Material* - contains inert material mixed with organic material that cannot be easily segregated. Such material shall be disposed of to public landfill, provided the inert content is less than 30% by weight.
- *Chemical Waste* - as defined under Schedule 1 of the Waste Regulations (Chemical) 1992 all chemical waste shall be stored and disposed of in accordance with approved methods defined in the Regulations.

The three principal waste streams identified above shall, as far as practicable, be physically segregated on-site at all times. Where practicable, each waste stream shall have a uniquely and clearly identified area assigned for its storage. All storage areas shall comply with contractual and statutory requirements. The QEM shall ensure that all LKJV staff responsible for handling waste are fully aware of the segregation policy and the identified temporary storage locations.

4.3 Hazardous Substances

Dangerous Goods Licence Requirements

Handling of Dangerous Goods is governed by legislative requirements as described in the following sections.

Dangerous Goods Ordinance

The *Dangerous Goods Ordinance (DGO)* states that no person should manufacture, store, convey or use any dangerous goods, except when in accordance with a licence granted under the DGO¹. This means that the any use or storage of dangerous goods in excess of the exempted quantity on the construction sites should be licensed by the Director of Fire Services. This should also be accompanied by properly designed, well-equipped licensed dangerous goods stores.

Dangerous Goods Regulations

Enacted under the DGO, the *Dangerous Goods (General) Regulations* specify the requirements controlling the use and storage of different categories of dangerous goods. Different categories of dangerous goods are defined as follows:

Category 1	Explosives and blasting agents
Category 2	Compressed gases
Category 3	Corrosive substances
Category 4	Poisonous substances
Category 5	Substances giving off inflammable vapour
Category 6	Substances which become dangerous by interaction with water
Category 7	Strong supporters of combustion
Category 8	Readily combustible substances
Category 9	Substances liable to spontaneous combustion
Category 9A	Combustible goods exempted from Section 6 to 11 of the DGO
Category 10	Other dangerous substances

Storage of Dangerous Goods

It is envisaged that two types of dangerous goods will be stored for use on the construction sites for the Contract, as shown below.

Types of Dangerous Goods	Dangerous Goods Stores
Acetylene gas cylinders (Cat.2, C1.3) Oxygen Cylinders (Cat.2, C1.1)	North Portal has 2 DG stores. 1 DG store for acetylene and 1 DG store for oxygen. Refer to DG licenses for capacity details.

LKJV shall apply for Dangerous Goods Store licences from the Fire Services Department (FSD) before establishing the stores. The design and layout of the dangerous goods stores should be in accordance with the guidance and advice from the FSD and be constructed by registered contractors.

The dangerous goods stores will be sited, labelled and equipped in accordance with the requirements of the DGO. A log of the DG inventories and consumption should be maintained by LKJV.

(1) ¹ Dangerous Goods are defined by DGO as "All explosives, compressed gases, petroleum and other substances gives off inflammable vapours, substances giving off poisonous gas or vapour, corrosive substances, substances which become dangerous by interaction with water or air, substances liable to spontaneous combustion or of a combustible nature").

Dangerous Goods Handling Procedures

Detailed handling procedures and requirements of the dangerous goods on the construction site should be in accordance with the Dangerous Goods (General) Regulations. In general, the Foremen should ensure that the procedures set out below are adopted.

General Requirements
No smoking at or near the DG stores is allowed
All the DG stores are locked
Exposure to any naked light should be prohibited
While the dangerous stores are open, reasonable precautions should be taken to ensure that no person smokes or exposed any naked light in the immediate vicinity of the stores
No repairs should be carried out in the stores unless all explosives (if any) have been removed
Adequate security should be maintained
Proper precautions should be taken to prevent unauthorised persons gaining access to the stores
All diesel tanks should be located away from any flammable sources or naked light
Requirements for Gas Cylinders
Secured against falling over
Stored away from direct or localised heat, or flammable sources
Valves of empty gas cylinders closed
Valve cap is securely in place when storing or moving cylinders. Gas cylinders should not be lifted by the valve cap
Employ hand trucks for transporting gas cylinders to and from the storage areas

Management of chemicals is governed by the Factories and Industrial Undertakings Ordinance (Cap.59). The Ordinance has provisions for the assurance of safe use and handling of chemicals in, amongst others, construction sites.

4.4 Chemicals

Chemical Inventory

It will be necessary for oils and lubricants to be stored inside site workshops for the on-site maintenance and repair of construction equipment. LKJV's subcontractor(s) shall be responsible to ensure that the quantities of these materials are minimised and are kept to volumes sufficient only to service the construction equipment operating at that time. LKJV shall maintain and regularly update an on-site inventory of chemicals stored and used on-site.

Chemical Handling Procedures

In general, the Foremen should ensure that the following procedures on handling of chemicals are adopted:

- Avoid smoking in or near areas in which chemicals are used or stored;
- Chemicals should be used in accordance with the instructions given in the Material Safety Data Sheets (MSDS); and
- Personal protective equipment and clothing must be worn while dispensing or using chemicals.

Chemical Storage

Storage of chemicals will be in accordance with Factories and Industrial Undertakings Ordinance. In general, the guidelines for the storage of chemicals shown below should be adopted.

Storage locations should be properly marked or identified
Chemical storage areas should be well lit and ventilated
No open flame, smoking or any type of localised heat is permitted near the chemical storage area
Mixing of chemicals is done outside of the storage area
Large bottles and containers should be stored on shelves no higher than two feet from the floor

Containers of chemicals should be kept below eye level
Enough space should be given to avoid overcrowding
Storage containers should be inspected regularly for rust, corrosion or leakage
Any incompatible chemicals should be physically separated from each other
All empty bottles should be removed from stock room shelves
A log of chemicals should be maintained

4.5 Environmental Emergency Procedures

In the event that accidental leakage or spillage of diesel/chemicals/chemical waste takes place, the following response procedures shall be followed immediately by LKJV.

- The person who has identified the leakage/spillage shall immediately check if anyone is injured and shall then inform the Foreman.
- Foremen shall ensure any injured persons are treated and assess what has spilled/leaked.
- Foremen shall arrange maintenance staff with appropriate protective clothing to clean up the chemicals/chemical waste. This may be achieved through soaking with sawdust (if the quantity of spillage/leakage is small), or sand bags (if the quantity is large); and/or using a shovel to remove the topsoil (if the spillage/leakage occurs on bare ground).
- Depending on the nature and extent of the chemical spill, evacuation of the site may be necessary.

The spilled chemicals must not be flushed to the surface drainage system. Instead, sawdust or sandbags used for clean-up and removed contaminated soil shall be disposed off by following the procedures for chemical waste handling and disposal already described.

Foremen shall prepare a report on the incident detailing the accident, clean up actions taken, any pollution problems and suggested measures to prevent similar accidents from happening again in the future. The incident report shall then be submitted to the QEM. The QEM shall ensure that all site staff members are aware of the above emergency response procedures. LKJV emergency drills are carried out on site and described in the Safety Plan. Safety Plan related records are available on site.

4.6 Site Waste Collection & Sorting Areas - Details

LKJV shall allocate designated areas for sorting materials on site. The site layout plans showing designated work sites is given in appendix A and the individual site sorting areas and collection points are shown appendices E, F and G.

4.7 Trip Ticket System

LKJV has prepared a "Construction & Demolition Material Disposal Delivery Form" (see Appendix J) for use. One set of form shall contain an original, a yellow copy and a blue copy. The original shall be passed to the truck driver and finally returned to LKJV with a receipt issued by the Public Filling Facility or the Landfill. Loads of soil delivered to other construction sites shall be acknowledged by either a formal receipt or chopping on the form by the recipients. The yellow copy and blue copy of the form shall be kept by LKJV and the ER for record purposes.

Before issue of the form for vehicle trips, the Forms shall be submitted to the ER's Site Office for signature and chop.

For each and every vehicle trip transporting C&D material, i.e.: public fill or C&D waste, off site, LKJV or LKJV's subcontractor shall complete the Form.

The original Form shall be given to the truck driver for presentation to the Public Filling Facility, Landfill or other construction sites. The blue copy of the form shall be submitted to the ER on a regular basis. The yellow copy of the Form shall be kept by LKJV.

For each vehicular trip, LKJV's subcontractor shall obtain a receipt from the operator of the public filling facility or the landfill. However, if it is a delivery to another construction site, the disposal of this load shall be acknowledged by either a formal receipt or chopping on the form. The project name of the disposal site and the company receiving this load shall be indicated on the form.

LKJV shall submit the original forms with receipts, if applicable, to the ER with a summary report on a regular basis.

LKJV shall permit the ER to request and obtain information from the operator of the Designated Disposal Tip verifying the receipt and accuracy of the information on that receipt.

All C&D material shall become the property of the Contractor when it is removed from the site.

4.8 Recycling

Recycling will be planned using the following forms:

- a) Waste Flow Table Format – Monthly (see specimen in appendix B);
- b) Waste Flow Table Format – Yearly (see specimen in appendix C);
- c) Works Processes using Timber in Temporary Works (see specimen in appendix D); and
- d) Waste Disposal Record (see specimen in appendix J).

Using these forms will enable a clear picture about the status of material recycling during the project. Samples of these forms are shown in the Appendices.

4.9 Housekeeping

Foremen shall ensure that the following general measures are observed on-site at all times:

- common areas to which site staff have access such as lockers, toilets, mess rooms and wash rooms are maintained in a clean and sanitary condition at all times;
- the site is kept free from litter and general refuse at all times and LKJV shall provide waste skips and garbage bins with suitable covers at designated locations. Such locations shall include, but not be limited to office areas, workshop areas and works areas. All waste disposal points shall be maintained and cleaned regularly;
- all staircases, passageways, corridors and emergency escape routes are kept clear at all times;
- no materials, finished products, aggregates, plant and construction materials block emergency exits or other means of escape at any time;
- trade waste is promptly removed from site on completion of the pertinent tasks;
- all lighting and ventilation facilities remain unobstructed at all times;
- pest control shall be implemented for site offices and workshops as soon as evidence becomes apparent that such action is necessary and LKJV shall retain a specialist pest control company to undertake pest control measures on a quarterly basis, or on such occasion that a particular problem is identified;

- all floors in workshops or other works areas shall be kept clean and non-slip;
- provide pairs of welfare rubbish bins on site, in pairs at a ratio of 1 pair per 20 workers. One bin will be for collection of aluminium cans and the other for collection of plastic bottles.

4.10 Training of Staff, Subcontractors and Workforce

Environmental induction training shall be given to all LKJV staff. Subcontractors' Site Agents shall be trained in the requirements of the Environmental Management Plan and WMP. Front line workers shall receive training using tool-box talks that focuses on how to collect, segregate and store waste materials for reuse or recycling.

5 SITE ENVIRONMENTAL AUDIT & SITE INSPECTION

5.1 Environmental Site Inspection

LKJV shall do a regular weekly waste management site inspection. The QEM or his nominated representative shall undertake the inspections in conjunction with the Engineer's representative, the ET Leader (ETL) or her representative and the IEC or his nominated representative. The Contractor shall accommodate Highways Department or EPD if they elect to participate in the site inspection process.

A comprehensive waste management site inspection checklist will be used to ensure the Contractor's compliance with statutory and contractual obligations. The weekly checklist (see Appendix H) shall be prepared in accordance with *the General Specification for Contract HY/2003/02*. The Contractor, ETL, IEC, Engineer's site staff and the EPD may use the checklist during site inspections.

The Contractor shall diligently respond to any actions deemed necessary by the Engineer or EPD.

5.2 Compliance with Legal and Contractual Requirements

The performance of all mitigation measures will be demonstrated through the following means:

- Results of regular site inspections;
- The absence or presence of any complaints; ~~and~~
- Results of the environmental monitoring programme (e.g. with respect to measured noise levels, effluent discharge concentrations, measured dust levels).

In the event that mitigation measures have been demonstrated not to perform as required, the QEM shall instruct the responsible member of the Contractor's staff to implement appropriate repairs, design modifications or redeployment with immediate effect. For preventative purposes the QEM shall instruct appropriate site staff to undertake maintenance checks of all mitigation measures on a regular basis.

6.0 REPORTING

6.1 Monthly Waste Management Report

A monthly waste management report on the implementation of the WMP shall be prepared by the QEM or his representative and submitted to the Engineer. The Engineer will forward the report to the ET and IEC. The monthly report shall be prepared in compliance with, but not limited to, the requirements of the Specification. The report shall be submitted in conjunction with the Contractor's Monthly Progress Report. The report shall include the following information:

- Copies of dumping licences, if any;
- Register of notifications, licences and permits obtained from EPD in connection with the works, e.g. registration as a chemical waste producer;
- Register of complaints received during the month by the Contractor, in respect of waste management, and the action taken/close-out details; and
- Summary record of the disposal of waste material from the project.

6.2 Final Project Waste Report

A final waste management report shall be prepared by the QEM or his representative at the end of the project which details as a minimum:

- the actual C&D material/waste disposal quantities recorded, compared against the quantities estimated at the start of the project;
- statistics on the different types of C&D material generated and their disposal method; and
- reasons for any significant difference between the estimated and actual quantities recorded.

This report will be submitted to the Engineer who will arrange for copies to be sent to the ET and IEC for review.

6.3 Records to be Maintained

Environmental Documentation to be Maintained

Category	Record
General	<ul style="list-style-type: none">• Environmental Permit• Environmental training records (e.g. attendance records for environmental awareness training)• Site diary and site inspection records• Construction programme• Equipment maintenance/repair records• Correspondence with EPD, HD, Subcontractors in relation to environmental matters• Meeting minutes• Environmental complaints*
Waste Management	<ul style="list-style-type: none">• Chemical waste producer registration record• Trip tickets for chemical waste collection and disposal• Trip tickets for C&D material disposal• Public dumping licence• Copies of relevant valid licences as provided by the employed waste hauliers and waste collectors• Records of quantities of reused and recycled waste• Records of quantities of inert waste transferred to other construction sites for fill purposes• Records of quantity of material sent for public filling• Asbestos waste disposal notification and records

Category	Record
Dangerous Goods Storage	<ul style="list-style-type: none"> • Licences for DG stores • Drawings of DG stores • Log of DG inventories and consumption
Chemical Storage	<ul style="list-style-type: none"> • Drawings of chemical storage facilities • Material Safety Data Sheets (MSDS) for all chemical used and stored • Log of chemical inventories and consumption
Environmental Emergency	<ul style="list-style-type: none"> • Emergency incident reports
Corrective and Preventative Action	<ul style="list-style-type: none"> • Corrective and preventative action requests • Register of Corrective and preventative action requests log book

* includes records of environmental complaints, exceedances and non-compliance

6.4 Document Control

The QEM shall ensure that records and documents are kept up to date and that current versions are available for reference at all times. Such documents shall include, but not be limited to:

- Waste Management Plan;
- Environmental Permit;
- Event Contingency Plans; and
- Applicable environmental legislation.

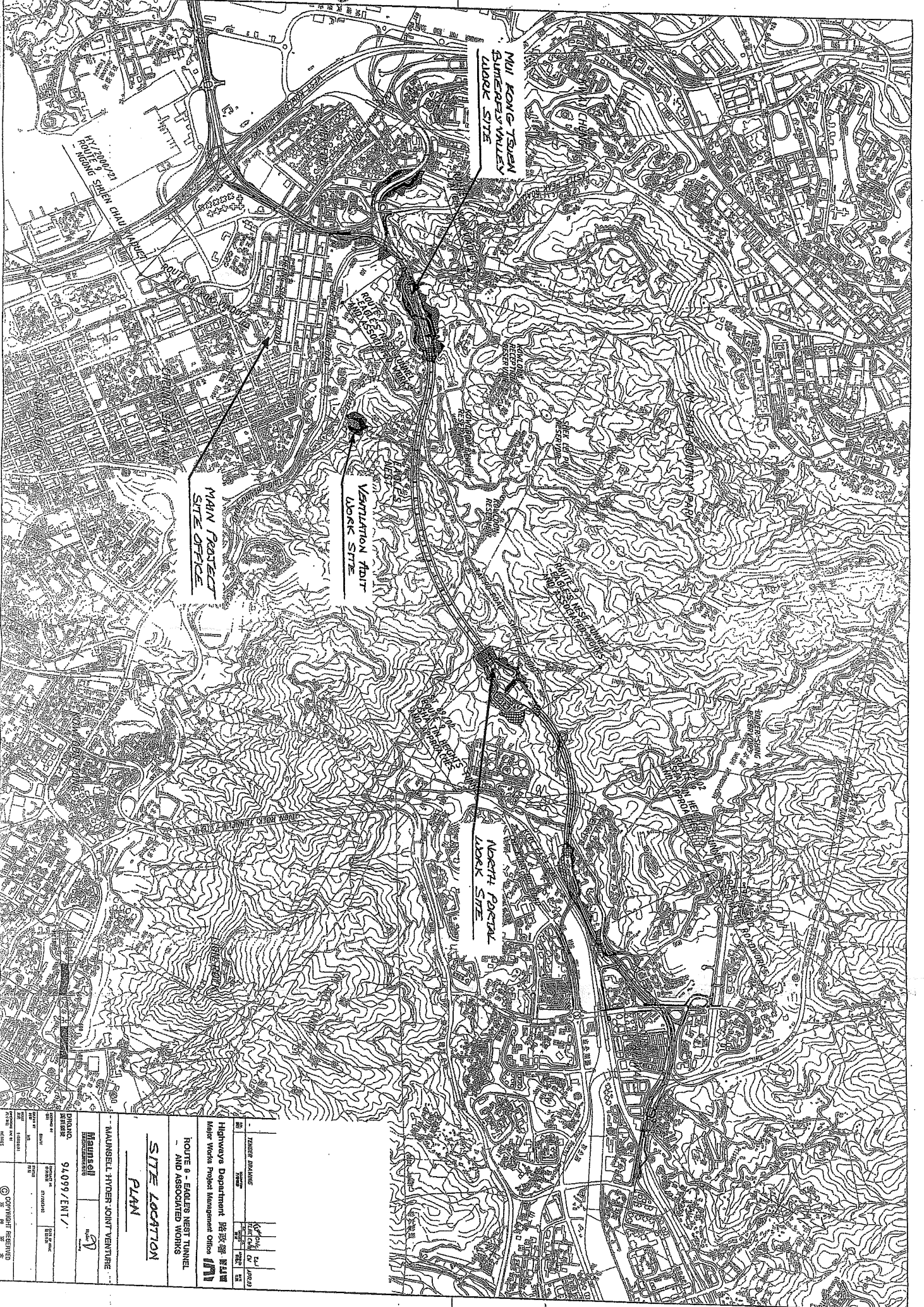
(Outdated versions should be stamped superseded and /or removed from the site)

Type of Record	Responsible Party
Environmental Permit, discharge licences	QEM
Training Records	QEM
Site Diary	LKJV Site Engineers
Inspection Records	QEM
Construction Programme	LKJV Plan Manager
Equipment Maintenance	Construction Manager
Correspondence	LKJV Document Control
Meeting Minutes	LKJV Document Control
Notifications Issued To EPD	QEM
Construction Noise Permit	QEM
Noise Testing Results (for CNP applications)	QEM
List of PME on-site	Safety Manager
All EM&A Data & Environmental Complaints	QEM
Dangerous Goods Records	Safety Manager

< END >

APPENDIX A : SITE LAYOUT PLAN

See attached drawing



NO.	REVISION	DATE	BY	CHKD.
1	ISSUED FOR PERMITTING	12/10/03	W. H. CHAN	W. H. CHAN
2	ISSUED FOR CONSTRUCTION	03/04/04	W. H. CHAN	W. H. CHAN

Highways Department 路政署
 Major Works Project Management Office 大型工程项目管理办公室

ROUTE 9 - SOLEIL NEST TUNNEL
 AND ASSOCIATED WORKS

SITE LOCATION PLAN

MAUNSELL HYDER JOINT VENTURE
 Maunsel
 Hyder

DRAWN BY: 94099/EWT/
 CHECKED BY: W. H. CHAN

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APPENDIX B: SUMMARY WASTE FLOW TABLE – MONTHLY ESTIMATED QUANTITIES

Disposal of C&D Materials & Waste, General Waste and Chemical Waste

Estimated Quantities - Monthly Totals

Disposal Point		Tuen Mun Area 38/WENT*1	Tsing Yi Stockpile	Lam Tei Quarry	Re-use on Site	WENT/NENT Landfill	Chem. Waste Collector		SENT Landfill
Waste Type		C&D Material				General	Spent Oil	Battery	Asbestos
Units		m3	m3	m3	m3	m3	(200 Ltr)	(200 kg)	m3
Year	Month								
2003	Dec.	0	0	0	0	0	0	0	
2004	Jan.	0	0	0	18500	696	0	0	15
	Feb.	0	0	0	18500	928	0	0	18
	Mar.	4907	290	0	18500	1972	4	2	
	Apr.	5949	285	0	18500	2237	0	0	
	May	12665	3951	0	18500	2249	4	2	
	Jun.	10290	5843	4414	18500	2249	0	0	
	Jul.	7202	8102	54783	18500	2249	4	2	
	Aug.	7021	12208	54268	18500	2249	0	0	
	Sep.	7021	8882	85892	18500	2249	4	2	
	Oct.	7021	18843	86077	18500	2249	0	0	
	Nov.	669	9356	90441	18500	2249	4	2	
	Dec.	665	6428	62397	18500	2249	0	0	
2003/4 Subtotals		63410	74188	438272	222000	23825	20	10	33
2005	Jan.	665	3789	48496	18500	2249	4	2	
	Feb.	665	3709	52602	18500	2249	0	0	
	Mar.	665	6946	51934	18500	2273	4	2	
	Apr.	668	5627	17537	18500	2273	0	0	
	May	244	155	1283	18000	2273	4	2	
	Jun.	244	155	1283	0	216	0	0	
	Jul.	244	155	1283	0	192	4	2	
	Aug.	244	155	751	0	192	0	0	
	Sep.	244	155	211	0	192	4	2	
	Oct.	244	155	211	0	192	0	0	
	Nov.	244	155	211	0	192	4	2	
	Dec.	244	155	211	0	192	0	0	
2005 Subtotals		4615	21311	176013	92000	12685	24	12	0
2006	Jan.	244	155	211	0	150	4	2	
	Feb.	244	155	211	0	150	0	0	
	Mar.	244	155	211	0	150	4	2	
	Apr.	248	160	212	0	150	0	0	
	May	0	0	0	0	0	0	0	
2006 Subtotals		980	625	845	0	600	8	4	0
Total		69005	96124	615130	314000	37110	52	26	33

Note: Material quantities re-used in Butterfly Valley cut and fill earthworks marked thus 18500

Notes: 1) Tuen Mun Area 38 changed to WENT on 9 June 2004

APPENDIX C: SUMMARY WASTE FLOW TABLE – YEARLY ESTIMATED QUANTITIES

Disposal of C&D Materials & Waste, General Waste and Chemical Waste

Estimated Quantities - Yearly Totals

ITEM	WASTE TYPE	DISPOSAL POINT	EST. YEARLY AMOUNTS			ESTIMATED TOTALS	
			2003/4	2005	2006	Quantity	Units
1	C&D Waste General & Office Vegetation	Landfill - Went/Nent	23825	12685	600	37110	m ³
		Landfill - Went/Nent					
2	C&D Material Spoil & Hard Material Rock Type III or IV Rock Type I or II	Tuen Mun Area 38/Went*1	63410	4615	980	69005	m ³
		Tsing Yi Stockpile	74188	21311	625		
		Lam Tei Quarry	438272	176013	845		
3	C&D Material Re-used Spoil & Hard Material	Butterfly Valley - Cut & Fill	222000	92000	0	314000	m ³
4	Special Waste Asbestos Waste	SENT Landfill	33	0	0	33	m ³
5	Chemical Waste Spent Oil Batteries, etc.					52	200 Ltr Drums
		Chem. Waste Collector	20	24	8		
		Chem. Waste Collector	10	12	4		
					26	200 Kg Drums	

Note: 1) Tuen Mun Area 38 changed to WENT on the 9 June 2004

APPENDIX D: SUMMARY TABLE FOR WORK PROCESSES OR ACTIVITIES USING TIMBER IN TEMPORARY WORKS

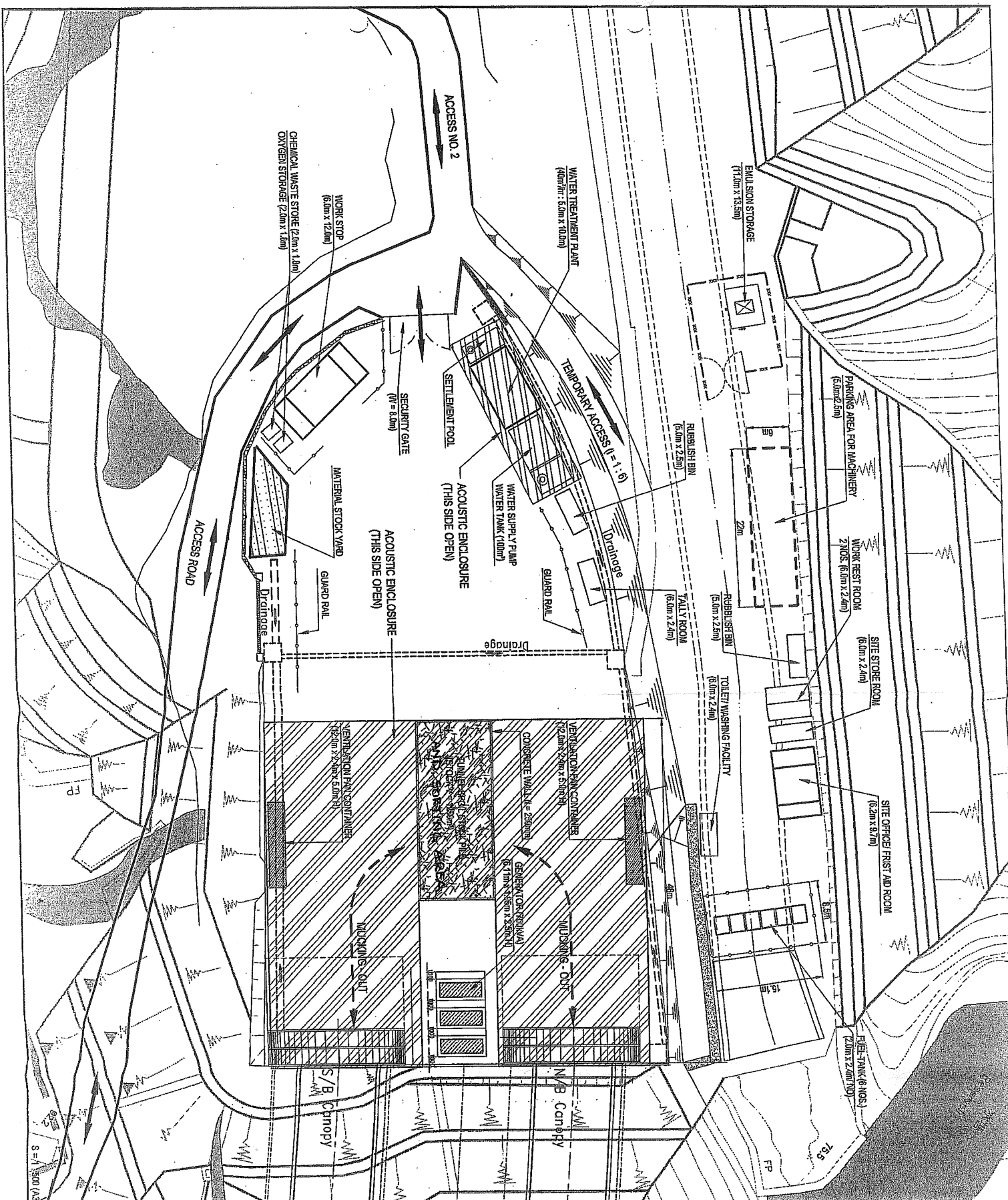
Works Processes using Timber in Temporary Works				
Item No.	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works [see note (b) & (c) below]	Estimated Quantity of Timber to be used (in m ³)	Suggestions for consideration in the future
1	A	kljfkdf	23.0	
2	B	lskif	23.0	
3	C	lksdjfs	23.0	
4	D	ksdjfsad	5.0	
5	E	ksdjfs	6.0	
6	F	kdjksf	8.0	
7	H	addf	5.0	
8	G	kdjksf	3.0	
9	I	ksdjksdf	3.0	
10	J	kdjksf	4.0	
11	K	kadf	67.0	
12	L	kadf	6.0	
Total Estimated Quantity of Timber to be Used			176.0	

- Notes:
- (a) The Contractor shall list out the work items requiring timber for use in temporary construction works.
 - (b) Where the temporary works use 50m³ or more of timber in construction, the Contractor shall advise what other alternatives methods of construction have been considered to avoid/minimise the use of timber.
 - (c) Wherever there is a significant change in the estimated quantities (e.g.: > 15%) or inclusion of an additional new item, the summary table shall be submitted to the Architect/Engineer's Representative for comments before the works commence.

FORMAT EXAMPLE

APPENDIX E : SITE SORTING & STORAGE LAYOUT PLAN-SOUTH PORTAL

See attached drawing



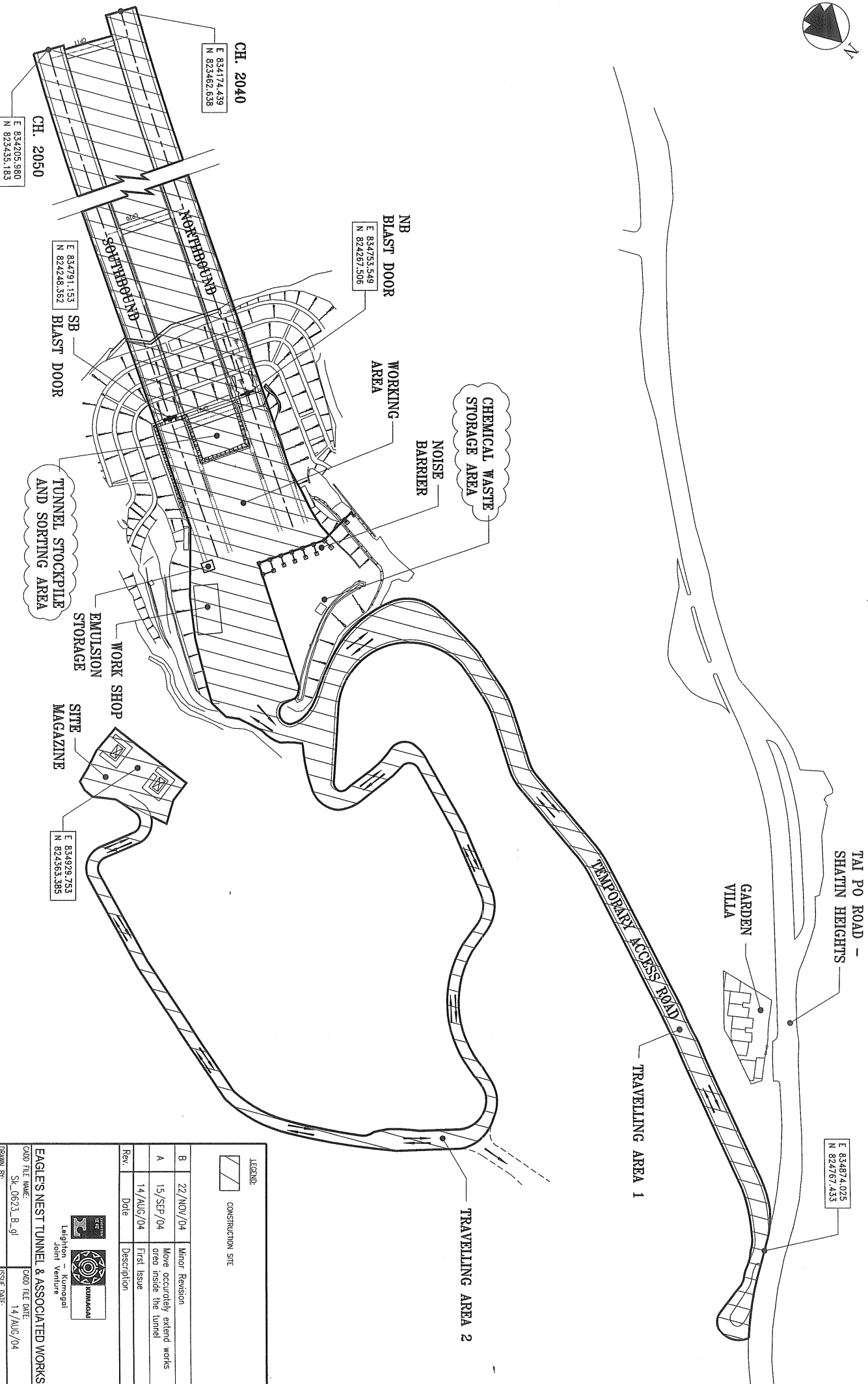
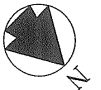
Rev.	Date	Description
20/AUG/04	20/AUG/04	FIRST ISSUE

EALES NEST TUNNEL & ASSOCIATED WOF
 CAD FILE NAME: SK_0638_0_dc
 DRAWN BY: DC
 ISSUE DATE: 20/AUG/04
 SOUTHPORTAL ACQUISITION ENCLOSURE LAYOUT

SHEET NUMBER: SK0638
 SOUTHPORTAL ACQUISITION ENCLOSURE LAYOUT

APPENDIX F : TEMPORARY STORAGE AREA FOR EXCAVATED MATERIAL – NORTH PORTAL

See attached drawing



SCALE (M.T.S.)

Rev	Date	Description
B	22/NOV/04	Minor Revision
A	15/SEP/04	Have occurency extend works area inside the tunnel
	14/AUG/04	First Issue



 Kumagai Gumi Co., Ltd.

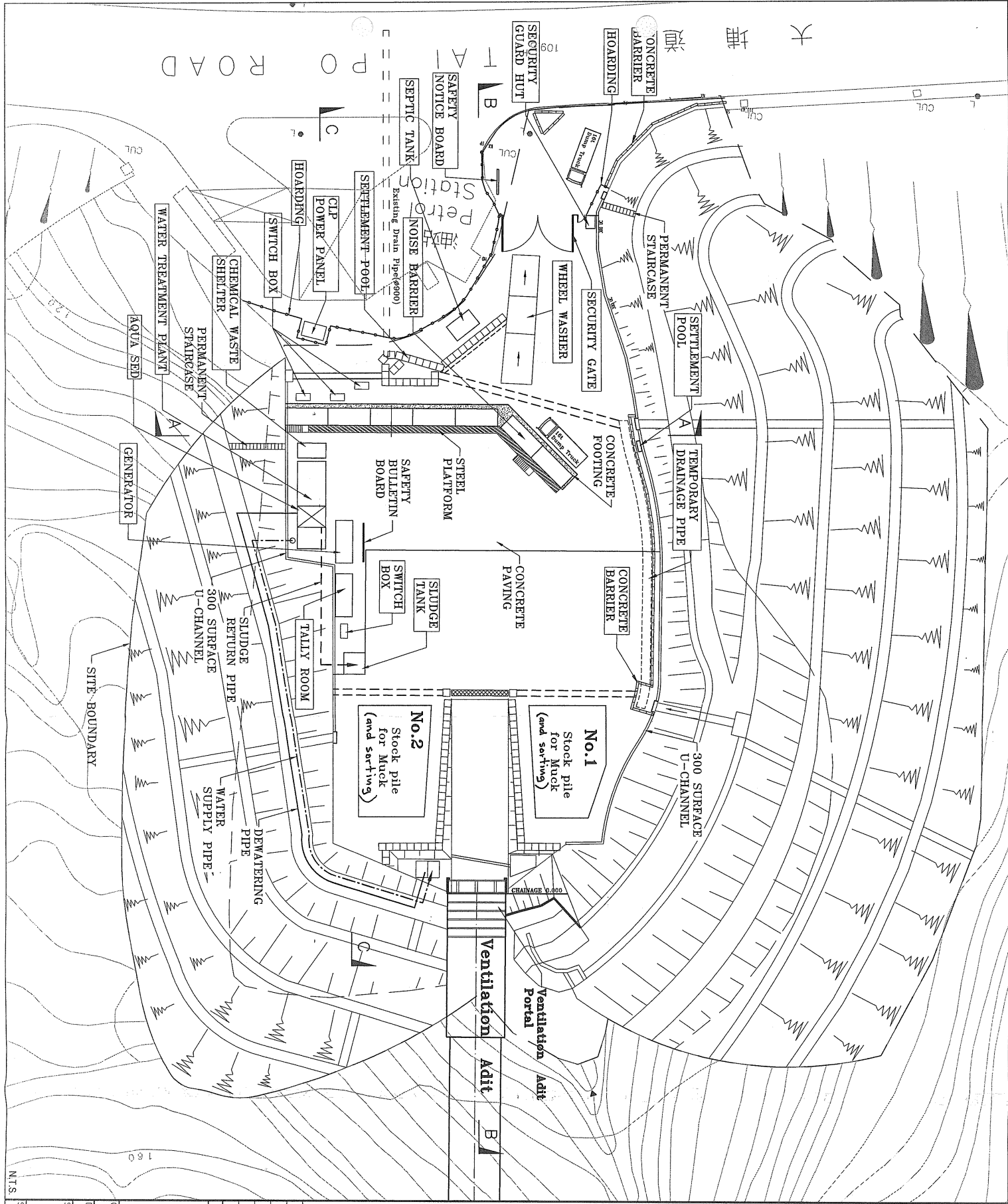


 Kumagai Construction Co., Ltd.

Kumagai Construction Co., Ltd.

EAGLES NEST TUNNEL & ASSOCIATED WORKS
 CADD FILE NAME: SK_0623_B.gi
 CADD FILE DATE: 14/AUG/04
 DRAWN BY: CL
 ISSUE DATE: 14/AUG/04

WORK AREA FOR O&P APPLICATION AT NORTH PORTAL
 SHEET NUMBER: SK0623 B



Rev.	Date	Description
D	09/SEP/04	MINOR CHANGE
C	02/AUG/04	AMENDMENT
B	16/JUN/04	MINOR AMENDMENT
A	19/APR/04	SOUNDPROOF
	21/FEB/04	First Issue

EAGLE'S NEST TUNNEL & ASSOCIATED WORKS	
CAD FILE NAME: SK_0100_D.dc	CAD FILE DATE: 09/SEP/04
DRAWN BY: DC	ISSUE DATE: 21/FEB/04
SKETCH TITLE: LAYOUT OF SITE FACILITIES FOR VENTILATION ADIT WORKS AREA	
SKETCH NUMBER: SK0100 D	

APPENDIX G : VENTILATION ADIT WORK SITE AREA

See attached drawings

APPENDIX H : WASTE MANAGEMENT WEEKLY SITE INSPECTION CHECKLIST

WMP Inspection No. _____ Date: _____ Site: _____

Waste Management Weekly Site Inspection:

Weather Conditions during site inspection: _____

Item	Mitigation Measure	Implemented			Remarks/ NC no.
		Yes	No	N/A	
1	General Housekeeping				
1.1	Is the site kept clean and tidy?				
1.2	Has equipment been properly stored when not in use?				
2	General Waste				
2.1	Are the worksites free from general waste?				
2.2	Are wastes securely stored?				
2.3	Are there central collection points for general litter?				
2.4	Are wastes regularly removed?				
2.5	Is waste suitably segregated?				
2.6	Is construction waste recycled?				
2.7	Are waste hauliers appropriately authorised or licensed to collect the specific category of waste?				
2.8	Is recycling of office wastes promoted and used?				
2.9	Are packing materials being sorted and recycled?				
2.10	Are waste workflow tables being updated accurately and timely?				
2.11	Is trip ticket system effectively implemented?				
3	Chemical Waste and Storage				
3.1	Are chemicals and chemical wastes properly stored in accordance with the statutory requirements (i.e. on a hardstanding, within a bunded, enclosed and locked area)?				
3.2	Is smoking prohibited near the DG Store?				
3.3	Is chemical waste properly stored in corrosion resistant containers, which are maintained in a good condition and securely closed?				
3.4	Is chemical waste properly labelled in English and Chinese?				
3.5	Is chemical waste disposed of by licensed chemical waste contractor?				
3.6	Are appropriate safety measures in place (sand buckets, fire extinguishers etc)?				
3.7	Are Gas cylinders stored away from localised heat and flammable sources and secured against falling over?				
4	Documentation				
4.1	Are the following licences / permits available and up-to-date?				
	• Environmental Permit				
	• Chemical Waste Producer Licence				
	• Dangerous Goods License				
	• Trip tickets for chemical waste				
	• Waste haulier and waste collector licences				
	• Trip Tickets for C&D Waste				
4.2	Has WMP had monthly review & update, where necessary?				
4.3	Does the Contractor have an up to date copy of the WMP?				

Prepared by: _____ **Date:** _____

Checked by: _____ **Date:** _____


Comments: Environmental Inspection Checklist datedrecords the overall environmental performance results.

Inspection Checklist Rev. C, 03 February 04

APPENDIX I : WASTE DISPOSAL RECORD REGISTER

LEIGHTON - KUMAGAI JOINT VENTURE.											
Route 9 - Eagle's Nest Tunnel & Associated Works											
Waste Disposal Record Register											
Date	Time (leave)	Vehicle number	Trip ticket reference	Trip ticket received (Yes or No)	Removal materials Description	Dumped destination	Amount(m3)	Accumulated (m3)	Remarks (Source)		
9/5/2003	18:11	JN 4508	0416519	Yes	Soil	TM Area 38	5.5	5.5	SP		
10/5/2003	16:02	JN 4508	0417278	Yes	Rock	TM Area 38	5.5	11	SP		
24/5/2003	14:02	JN 4508	0429281	Yes	Soil	TM Area 38	5.5	16.5	SP		
21/5/2003	18:24	JN 4508	0426987	Yes	Soil	TM Area 38	5.5	22	SP		
13/5/2003	17:34	CX 4268	0419179	Yes	Rock	Lam Tei	5.5	82.5	SP		
24/5/2003	17:59	CW 6369	100831	Yes	Soil	W. Landfill	5.5	27.5	SP		
24/5/2003	10:55	CW 6369	100311	Yes	Soil	W. Landfill	5.5	33	SP		
5/5/2003	15:47	DY 760	0413438	Yes	Soil	TM Area 38	5.5	38.5	SP		
21/5/2003	10:23	DY 760	0426223	Yes	Concrete	TM Area 38	5.5	44	SP		
22/5/2003	17:14	DY 760	0421717	Yes	Soil	TM Area 38	5.5	49.5	SP		
22/5/2003	10:57	GT 724	0421717	Yes	Soil	TM Area 38	5.5	55	SP		
20/5/2003	17:39	GT 724U	0425952	Yes	Rock	Lam Tei	5.5	60.5	SP		
16/5/2003	10:57	GT 7240	0421824	Yes	Soil	TM Area 38	5.5	66	SP		
16/5/2003	9:22	GT 7240	0421617	Yes	Soil	TM Area 38	5.5	71.5	SP		
13/5/2003	13:19	CX 4268	0418770	Yes	Debris	W. Landfill	5.5	77	W2		
12/5/2003	17:36	CX 4268	0418224	Yes	Debris	W. Landfill	5.5	88	SP		
7/5/2003	11:47	CX 4268	0414795	Yes	Concrete	TM Area 38	5.5	93.5	SP		
3/5/2003	14:25	CX 4268	0412696	Yes	Debris	W. Landfill	5.5	99	SP		
16/5/2003	13:48	CX 4268	0422061	Yes	Concrete	TM Area 38	5.5	104.5	SP		
21/5/2003	8:45	CX 4268	0426090	Yes	Debris	TM Area 38	5.5	110	W2		
29/5/2003	10:55	FU 3826	0432363	Yes	Soil	TM Area 38	5.5	115.5	SP		
29/5/2003	9:43	FU 3826	0432278	Yes	Soil	TM Area 38	5.5	121	SP		
10/5/2003	14:25	GR 5974	0417122	Yes	Concrete	TM Area 38	5.5	126.5	SP		
20/5/2003	16:21	JN 4508	0425760	Yes	Rock	TM Area 38	5.5	132	SP		
22/5/2003	16:36	JN 4508	0427870	Yes	Concrete	TM Area 38	5.5	137.5	SP		

APPENDIX J : CONSTRUCTION & DEMOLATION MATERIAL DISPOSAL DELIVERY FORM

 <p>Leighton-Kumagai Joint Venture</p>		<p>CONSTRUCTION & DEMOLITION MATERIAL DISPOSAL DELIVERY FORM</p>	
		<p>Serial No.: H2226/C&D/ 035520</p>	
Department :	HIGHWAYS	Contract No. :	HY/2003/02
Contractor :	LEIGHTON – KUMAGAI JOINT VENTURE		
Contract Title :	ROUTE 8 – EAGLE’S NEST TUNNEL AND ASSOCIATED WORKS		
Site Location :		
Location of Public Filling Facility*/ Landfill* :		
Vehicle Registration No.:	Date :
Approximate Load :	Full */ three quarter */ half */ one quarter *		
Remarks :		
.....		
.....		
Time of Departure :		
		<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; align-items: center; justify-content: center;"> <p>Authorized Chop of Engineer's Representative</p> </div>	
<p>* Delete as appropriate Distribution: White & Pink - (Engineer's Representative), Yellow & Blue -- (Contractor) </p>			
		<p>Disposal Delivery Form; Rev.1; 8 August. 04</p>	

MATERIAL TYPE
 CHOP APPLIED
 HERE