

LEIGHTON



H2104 - Permanent Aviation Fuel Facility Waste Management Plan

Prepared:

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Project environmental coordinator

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Boyd Merrett, Project Manager

Contents

Preface.....	6
1. Introduction.....	7
1.1 Purpose	7
1.2 Scope	7
1.3 Description of Works.....	7
2. Waste Management Policy and Objectives	9
2.1 Waste Management Policy	9
2.2 Waste Management Objectives and Targets.....	9
3. Organizational Structure for Waste Management.....	11
3.1 Contractors Details	11
3.2 Organigram.....	13
3.3 Responsibility and Level of Authority of Leighton Contractors (Asia) Limited Management and Supervisory Staff	13
3.4 Responsibility and Duties of Subcontractors, Workforce and other Parties	18
4. Environmental Management System Documentation.....	21
4.1 Management Procedures.....	21
4.2 Good Practice Guidelines	22
4.3 Company and Project Forms.....	22
4.4 Other In-house Rules.....	22
5. Waste Management Training and Awareness	23
5.1 General Requirements.....	23
5.2 Leighton Contractors (Asia) Limited Employees and Subcontractors	23
5.3 Training Programme	23
5.4 Training Records.....	24
6. Legal and Other Requirements, Environmental Licences and Permits.....	25
6.1 General Requirements.....	25
6.2 Ordinances and Regulations.....	25
6.3 Technical Circulars and Codes of Practice.....	25
6.4 Project-specific Constraints.....	27
6.5 Environmental Licences and Permits	27
7. General Communications and Promotion	29
7.1 General Communications.....	29
7.2 Waste Management Publicity.....	30

7.3	Waste Management Promotion	30
8.	Performance Monitoring	31
8.1	General Requirements	31
8.2	Site Inspections.....	31
8.3	Environmental Monitoring	31
8.4	Waste Management.....	31
8.5	Complaints.....	31
8.6	Performance against Environmental Objectives	32
9.	Waste Management Reporting	33
9.1	Waste Management Reporting.....	33
10.	Performance Review	34
10.1	General.....	34
10.2	Auditing.....	34
11.	General Requirements for Nuisance Abatement and Pollution Control.....	36
11.1	Waste Management Aspects and Impacts	36
11.2	Method Statements	36
11.3	Activities Causing Pollution	36
11.4	General Housekeeping	37
12.	Waste Management	39
12.1	Waste Reduction Strategy.....	39
12.2	Identification of Potential Waste	40
12.3	Designated Disposal Outlets	41
12.4	Estimated Quantities of Waste by Type.....	42
12.5	Waste Performance Targets	43
12.6	Segregation and Sorting.....	43
12.7	Recycling	44
12.8	Timber in Temporary Works.....	44
12.9	Waste-mitigation Measures.....	45
12.10	Disposal of Waste	48
12.11	Site Tidiness	49
12.12	Corrective Action.....	49
12.13	Preventive Action	50
13.	Chemical Waste Management	51
13.1	Chemical Management	51

13.2	Chemical Waste Management	51
14.	Waste Management Records	53
14.1	General Requirements	53
14.2	Licences and Permits	54
14.3	Staff and Workforce Training Records.....	55
14.4	Correspondence with Authorities.....	55
14.5	Monitoring, Test and Audit Records	55
14.6	Waste Management Complaints	55
14.7	Corrective Action.....	55
14.8	Trip Tickets/Waste Disposal Chits.....	55
15.	Glossary of Terms	57

	Page
List of Figures	
Figure 2.1	Environmental Policy 9
Figure 3.1	Project Organigram 13
Figure 12.1	Waste Management Methodology 39
Figure 14.1	Example Waste Disposal Chit issued under Waste Disposal (Charges for 56
List of Tables	
Table 2.1	Leighton Environmental Objectives and Targets 10
Table 3.1	Leighton Personnel Details 11
Table 3.2	Subcontractors Details and Environmental Protection Representative 12
Table 4.1	Environmental Management System Documentation 21
Table 4.2	Applicable Good Practice Guidelines 22
Table 4.3	Applicable Company and Project Forms 22
Table 5.1	Training and Awareness Programme 22
Table 6.1	Project Specific Constraints 23
Table 6.2	Applicable Licences and Permits for Waste Management 27
Table 11.1	Summary of Activities with Potential to Cause Pollution 36
Table 12.1	Summary of Activities Producing Waste 40
Table 12.2	Designated Disposal/Reuse/Recycling Outlets 41
Table 12.3	Estimated Waste Generation 42
Table 12.4	Segregation and Sorting of Waste 44
Table 12.5	Waste-management Corrective Action 49
Table 12.6	Waste-management Preventive Actions 50
Table 14.1	Environmental Filing System 53
Table 14.2	Waste Management Training Records Maintenance 55
List of Appendices	
Appendix 1	Environmental Management Organigram 61
Appendix 2	Environmental Control Plan (ECP 5) for Waste Management 63
Appendix 3	Routine Environmental Monitoring and Inspection Checklist and Report 71
Appendix 4	Monthly Summary Waste Flow Table 79
Appendix 5	Work Processes or Activities Requiring Timber for Temporary Works 81
Appendix 6	Daily/Weekly Site Tidiness Checklist 83

Preface

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The project environmental coordinator is responsible for updating and maintaining this plan. The original hard-copy of the document should be signed to indicate approval and filed in the project filing system.

If you have any enquiry relating to this plan, please contact the project environmental coordinator in the first instance.

Revision	Date	Section/Description	Authorized by
0	05.01.2006	Issued for Review	BG
1	10.02.2006	Issued for Construction. Revised contents, section 4, section 5, Appendix A to E	BG
2	03.04.2006	Revised contents, section 4, section 5, table 5.1, table 5.3, Appendix A	BG
3	06.09.2006	Revised contents, section 4, section 5, table 5.1, table 5.2, table 5.3, Figure 5.1, Appendix A	BG
4	17.07.2007	Major revision into company format	BG
5	22.04.2008	Reformatted to suit corporate identity requirements. Revised contents, section 2 waste management policy format, table 2.1, section 3 table 3.1 & 3.2, section 6 table 6.1, section 10, section 12 table 12.2 & 12.3, clause 12.9.3 & 12.9.4 and Appendix 4	BM

1. Introduction

1.1 Purpose

The purpose of this Waste Management Plan is to assemble and detail in one coordinated document the specific practices, resources and activities to be implemented during activities associated with the construction of the Design and Construction of Permanent Aviation Fuel Facility, to achieve the stated environmental and waste-management policies, objectives and targets and meet the requirements of the ECO Aviation Fuel Development Limited as detailed in the Contract Documents and those detailed in the approved Environmental Impact Assessment Report and Environmental Permit. This plan will be submitted to the ECO Aviation Fuel Development Limited's Representative for review.

The plan will be certified by the environmental team leader and verified by the independent environmental checker as conforming to the information contained in the approved Environmental Impact Assessment Report, if submitted to the Environmental Protection Department as required under the Environmental Permit.

1.2 Scope

This Waste Management Plan applies to the activities, products and services of Leighton Contractors (Asia) Limited and others that are working on Leighton Contractors (Asia) Limited's behalf at the Design and Construction of Permanent Aviation Fuel Facility.

The plan details the type of waste to be generated and disposal, for example:

- generation and disposal of construction and demolition material arising from the works;
- general refuse and food remnant generated from site operatives, and
- chemical waste arising from maintenance of plant and equipment and spill clean-up.

It also covers:

- waste minimization;
- re-usable and recyclable material;
- segregation and sorting methods, and
- disposal methodology.

Environmental protection other than waste management is addressed separately by the Leighton Contractors (Asia) Limited Environmental Management Plan.

1.3 Description of Works

1.3.1 Nature of Works

A Permanent Aviation Fuel Facility (PAFF) is required to ensure a secure means to supply aviation fuel during the operational lifeline of the Hong Kong International Airport (HKIA). The PAFF will replace the existing temporary Aviation Fuel Receiving Facility adjacent to Sha Chau, as the existing facility does not have sufficient capacity. The PAFF must meet the capacity demand for the 2040 planning horizon of the airport and must be able to provide for strategic storage. The Airport Authority Hong Kong (AAHK) is committed to provide a replacement facility, after which the Sha Chau facility will be used for emergency backup purposes only.

1.3.2 Scope of Works

The Airport Authority has awarded a franchise to ECO Aviation Fuel Development Ltd. to build and operate the Permanent Aviation Fuel Facility (PAFF) to provide fuel for Hong Kong International Airport at Chek Lap Kok.

The PAFF works to be executed shall include the design, construction, and commissioning, of the following major items:

- Marine Receipt Facility jetty including foundations/piling, berthing and mooring dolphins, loading platforms, bollards, fenders, loading arms, pipework, and electrical and mechanical services and associated fire protection;
- Tank farm including fuel tanks and ancillary pipework, foundations, earthworks, containment bunds, paving, drainage, fencing, mechanical and electrical services; and associated fire protection;
- Under seabed twin piggable fuel pipelines from jetty to tank farm and from tank farm to the Existing Aviation Fuel System with connection to the existing submarine pipeline including cathodic protection, leak detection system and pig traps at the tank farm;
- Modify seawalls and shore protection;
- Utility services, including permanent and temporary storm water drainage systems, foul sewerage systems, water mains and ancillary water works, electrical supply, lighting systems, lighting masts, fire hydrant systems, fire-protection systems, pumping and filtering systems etc.;
- Landscape works;
- Buildings, including offices, transformer room, toilet, control room, workshop, pump room, switchboard room, laboratory and store;
- Foundations, including piling as necessary, and
- Obtaining all licences and approvals necessary for the construction and operation of the Facility

2. Waste Management Policy and Objectives

2.1 Waste Management Policy

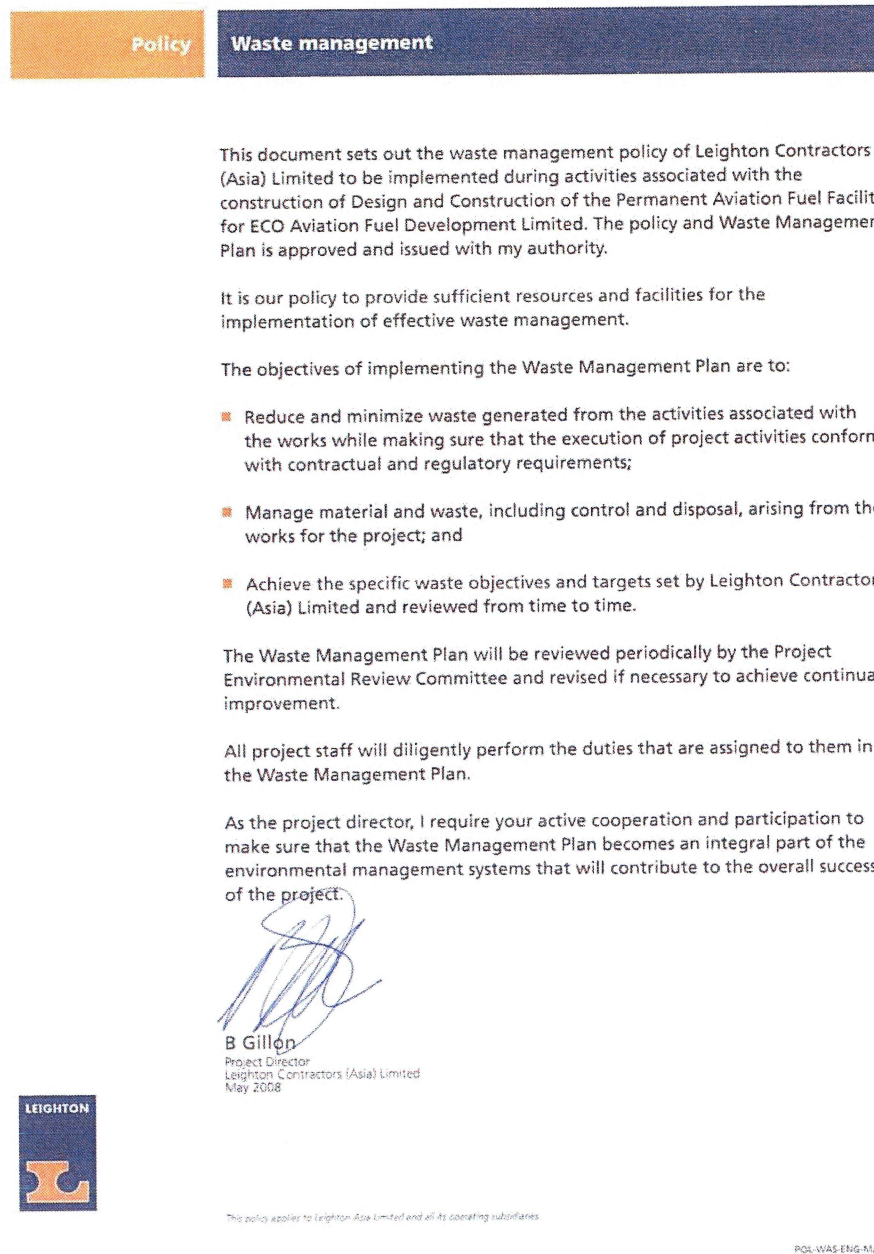


Figure 2.1: Waste Management Policy

2.2 Waste Management Objectives and Targets

The Leighton Contractors (Asia) Limited environmental objectives and associated performance targets including those covering waste management, are linked to Leighton Contractors (Asia) Limited policies and are shown in Table 2-1.

Those objectives have been prepared taking account of corporate objectives of Leighton Asia Limited.

Those corporate objectives are supplemented by a project-specific objective. An action plan to achieve those objectives shall be prepared by the project environmental coordinator and approved by the project director.

Table 2-1 Environmental Objectives and Targets

Objective	Performance Indicator	Target
Comply with all Hong Kong SAR environmental regulations and laws	Number of breaches resulting in a conviction	Zero
Improve the environmental awareness of Leighton employees whose activities may have a significant impact on the environment	Conduct periodic awareness survey via questionnaire to all staff	>85%
Educate and train the workforce (eg, subcontractors and direct labour) in environmental matters to raise their awareness	Percentage of direct labour and subcontractors' employees to have attended an environmental induction before starting work on site	100% attendance
Reduce the quantity of construction waste that is produced and disposed	Percentage of construction waste ⁽²⁾ recycled or re-used	>5%
Reduce concrete wastage on construction projects	Quantity of waste concrete ⁽³⁾ expressed as a percentage of total quantity delivered	<4%
Increase recycling of paper	Quantity of paper recycled (kg) as a percentage of total used (kg)	Project office >15%
To reduce the total volume of water used in the hydro testing of the tanks for disposal	The volume of water being recycled or reused on site	20-30%

Explanatory Notes:

- 1) Personnel required to have environmental continual professional development includes production staff from site-engineer grade upwards.
- 2) Construction waste for this indicator means waste that would normally be disposed at either the landfill or a sorting facility under the Construction Waste Charging Scheme.
- 3) Waste concrete is defined as any concrete that is not used for permanent works or planned temporary works (eg, temporary concrete hardstand).

3. Organizational Structure for Waste Management

3.1 Contractors Details

Details of personnel that have specific duties and responsibilities under this Waste Management Plan are described in this section.

3.1.1 Leighton Contractors (Asia) Limited

Details of personnel with responsibilities and duties under this Waste Management Plan are provided in Table 3-1, which contains key company personnel. Those tables will be updated from time-to-time as significant changes occur. For current details and the complete listing of Leighton Contractors (Asia) Limited staff, refer to the project directory, held and maintained by the project secretary.

The project environmental coordinator shall be the main point of contact for waste management issues at Design and Construction of Permanent Aviation Fuel Facility and has a direct line of communication to the project director.

Table 3-1 Leighton Contractors (Asia) Limited Personnel Details

Name	Position	Telephone	Facsimile	E-mail
Brian Gillon	Project Director	2404 8900		brian.gillon@leightonasia.com
David Holden	Project Environmental Coordinator	2404 8900	2404 0081	david.holden@leightonasia.com
Boyd Merritt	Project Manager	2404 8900	2404 0081	boyd.merritt@leightonasia.com
Lewis Cheng	Safety Manager	2404 8900	2404 0081	lewis.cheng@leightonasia.com
S K Tsang	Area Manager	2404 8900	2404 0081	sk.tsang@leightonasia.com
Dan Lam	Area Manager	2404 8900	2404 0081	dan.lam@leightonasia.com
Mole Tam	Engineer	2404 8900	2404 0081	mole.tam@leightonasia.com
Edmond Chung	Engineer	2404 8900	2404 0081	edmond.chung@leightonasia.com
Timothy Tse	Engineer	2404 8900	2404 0081	timothy.tse@leightonasia.com
Billy Chan	Site Supervisor	2404 8900	2404 0081	
KH Choi	Site Supervisor	2404 8900	2404 0081	
Simon Bennett	Administration Manager	2404 8900	2404 0081	simon.bennett@leightonasia.com
Jason Yu	Quantity Surveyor	2404 8900	2404 0081	jason.yu@leightonasia.com
Tony Hoffman	Superintendent	2404 8900	2404 0081	tony.hoffmen@leightonasia.com
Edward Lam	Document Controller	2404 8900	2404 0081	edward.lam@leightonasia.com
Joerg Steffen	Welding Engineer	2404 8900	2404 0081	joerg.steffen@leightonasia.com
Scott Hollworth	Area Manager	2404 8900	2404 0081	scott.hollworth@leightonasia.com
YN Wong	Site Agent	2404 8900	2404 0081	yn.wong@leightonasia.com
Gary Chan	Engineer	2404 8900	2404 0081	gary.chan@leightonasia.com
Carl Roberts	Site Agent	2404 8900	2404 0081	carl.roberts@leightonasia.com
Gary Chu	Senior Engineer	2404 8900	2404 0081	gary.chu@leightonasia.com
KM Yeung	Sub Agent	2404 8900	2404 0081	km.yeung@leightonasia.com
KK Chau	Engineer	2404 8900	2404 0081	kk.chau@leightonasia.com
Peter Ho	Engineer	2404 8900	2404 0081	peter.ho@leightonasia.com
Steven Ho	Engineer	2404 8900	2404 0081	steven.ho@leightonasia.com
John Payne	Planning Manager	2404 8900	2404 0081	john.payne@leightonasia.com
Dicky Yick	Safety Officer	2404 8900	2404 0081	dicky.yick@leightonasia.com

Name	Position	Telephone	Facsimile	E-mail
Alex Cheung	Safety Officer	2404 8900	2404 0081	alex.cheung@leightonasia.com
Carrie Yeung	Project Quantity Surveyor	2404 8900	2404 0081	carrie.yeung@leightonasia.com

*Main contact for waste management issues

3.1.2 Subcontractors

Details of subcontractors with responsibilities and duties under this Waste Management Plan are provided in Table 3-2, which contains names of the subcontractor, trade and contact person for environmental and waste-management issues. Those tables will be updated from time-to-time as significant changes occur.

Table 3-2 Subcontractor Details and Environmental Protection Representative

Organization	Trade	Name	Telephone	Facsimile	E-mail
Hong Kong River Engineering Company Limited	Marine piling	Stanley Chow Ben Li	94805496 60771869	3150 8332	yuming007@vip.163.com
Union Construction Limited	Concrete works, drainage, operations building	Ho Wa Kin Yu Cheuk Tat	90354578 96403861	2452 0988	howaon@i-cable.com
Krueger Engineering(Asia) Ltd	Electrical and instrumentation	Keith Lau	92237385	2866 7132	
A.M.S.(HK) Scaffolding Services Ltd	Scaffolding	Michael Mounsey	61451654		
Tai Lee Machinery Engineering Limited	Earth works, fire services, seawall, concrete works	Yip Kwok Kwong Chan Wai Sun	62283006 94866391	2455 7195	
Wai Kong Fire Engineering Co., Ltd	Fire services	Law Cheong Chun	98110293	2795 1267	
Hang Yue Engineering Limited	Tank fabrication and erection	Cheung Chi Wai	64486611	2191 3972	
Freyssinet H.K. Ltd	Rock anchors	Chan Siu Hung	9329 0108	2338 3264	freysnt@freysinet.com.hk
Hong Ki Engineering Ltd.	Windows, doors and louvres	Lau Siu Hin	2742 8580	2742 8201	hongki@biznetvigator.com
Asphalt Surfaces (International) Ltd.	Bitumen sand layer	Julian Lee	2744 8223	2310 9791	julian@asphaltsurfaces.com
G and E Company Ltd	Membrane	Gary Ng	2508 0028	2570 0089	
Toyo Greenland Co. Ltd.	Landscaping	Daniel TP Ho	2639 9312	2377 2150	danielho@toyogreen.com
Wai Tai Engineering Company Ltd.	Blockwork, painting, plastering and tiling	Kwok King Po	6097 3488	2677 0792	
Method Building & Engineering Works Ltd.	Tank painting	Joe Cheng	2410 0030	3561 4653	mbew@mbew.hk

Organization	Trade	Name	Telephone	Facsimile	E-mail
UDL Dredging Ltd.	Dredging	YL Cheung	9267 4503	2753 7911	

3.2 Organigram

Figure 3.1 shows the positions, lines of responsibility, authority and internal communications for environmental management and protection within Leighton Contractors (Asia) Limited.

For further details of the names of personnel, please refer to the project organigram and project details listing. The arrangement for Leighton Contractors (Asia) Limited, environmental team and communication channels to the independent environmental checker and the Environmental Protection Department is included as Appendix 1.

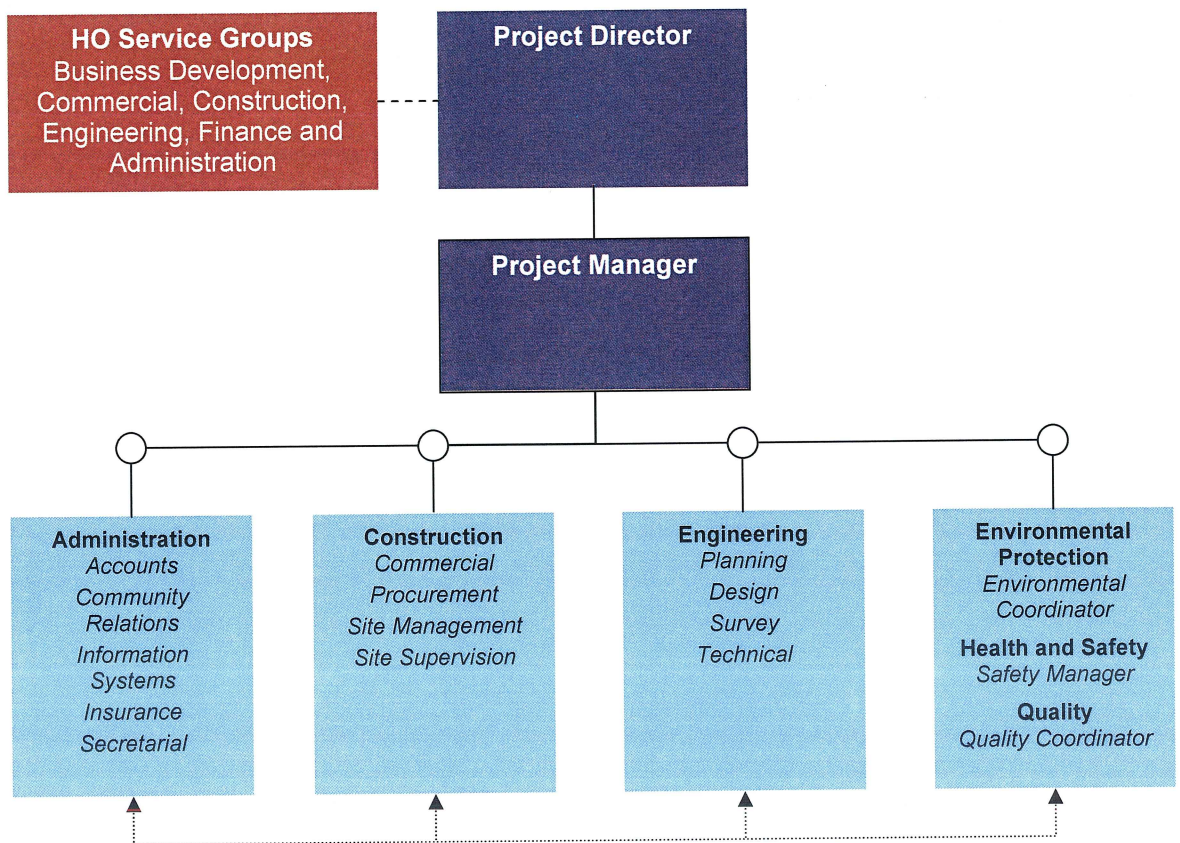


Figure 3.1: Project Organigram

3.3 Responsibility and Level of Authority of Leighton Contractors (Asia) Limited Management and Supervisory Staff

The responsibilities and authorities of staff with respect to waste management are set out in the following subsections.

For details of the responsibilities and authorities of the environmental team leader and environmental team, please refer to the approved Environmental Monitoring & Audit Manual.

3.3.1 Project Director/Project Manager

The project director shall report to Leighton Contractors (Asia) Limited board and be responsible for the overall management of the project. He shall have responsibility for making sure that sufficient resources are made available for implementing this Waste Management Plan. He shall have day-to-day authority and responsibility for time, cost, safety, environmental and quality management. The project director shall:

- determine and actively support Leighton Contractors (Asia) Limited policy regarding waste management for the project;
- determine and actively promote the waste management objectives for the project;
- approve the Waste Management Plan and associated documentation for issue;
- liaise with the ECO Aviation Fuel Development Ltd. and the Environmental Protection Department regarding overall performance on waste management;
- make sure that the Leighton Contractors (Asia) Limited activities comply with all statutory and contractual waste management requirements;
- make sure that subcontractors are made aware of their obligations with respect to waste management, and
- provides the necessary resources and facilities for effective waste management.

3.3.2 Project Environmental Coordinator

The main duties of the project environmental coordinator are:

Authority:

- the project environmental coordinator has the specific authority to implement the approved Waste Management Plan.

Accountability:

- the project environmental coordinator is directly accountable to the project director for the implementation and maintenance of the Waste Management Plan and for overseeing the monitoring of environmental performance and waste management.

Responsibilities:

- initiating and coordinating the initial planning, documentation and maintenance of the Waste Management Plan and maintaining and updating that plan during the project;
- making sure that all waste management requirements are communicated to Leighton Contractors (Asia) Limited staff, subcontractors and the workforce;
- advising on measures to be taken in the interest of waste management, and implementing such measures;
- liaising with the environmental team to make sure that the environmental monitoring and audit programme is implemented;
- liaising with the ECO Aviation Fuel Development Ltd's site supervision staff, environmental staff and representatives of the Environmental Protection Department on waste management-related issues;
- making sure that procedures set out in the Waste Management Plan are fully implemented;
- monitoring licence and permit applications and their issue to make sure that they are prepared and received in a timely manner to prevent delays to the works;

- monitoring of the waste management system on a day-to-day basis to make sure that the requirements of the Waste Management Plan are operational and effective;
- monitoring waste management performance in accordance with the Waste Management Plan;
- collating waste management performance data and assessing performance against waste management objectives and targets;
- participating in the weekly environmental walks (whether this is combined with the weekly safety walk or otherwise) with the nominated site staff of the Employers Representative, and supervising and monitoring waste management performance on the site, if required;
- checking and making sure that any polluting or potentially-polluting situation is promptly rectified;
- compiling monthly environmental reports for submission to the manager, Group Systems, at Leighton Contractors (Asia) Limited head office within seven days of the end of the reporting period and, if specified, to the Employers Representative;
- arranging and providing waste management training, including site-specific induction training and tool-box talks for the staff and workers on the site, and organizing waste management promotional activities, and

3.3.3 Assistant Environmental Engineer

The assistant environmental engineer shall:

- assist the project environmental coordinator in carrying out his duties, including preparation of the weekly environmental checklist and monthly environmental reports;
- assist the project environmental coordinator in the implementation of the Waste Management Plan;
- monitor and control the works, including those of subcontractors, to make sure that the works are in compliance with contractual and statutory requirements;
- attend the weekly environmental site walk, if required;
- supervise and promote the execution of waste management-related work by workers on site;
- report any non-compliance to the project environmental coordinator and recommend remedial action;
- investigate and verify complaints and report to the project environmental coordinator;
- make sure that remedial actions or mitigation measures are carried out as planned;
- carry out inspections of the waste management facilities for which he is responsible, and make sure that follow-up actions have been taken promptly against identified defects and deficiencies
- advise the project environmental coordinator on the maintenance of site waste management performance standards;
- carry out tool-box talks (as assigned by the project director or project environmental coordinator).

3.3.4 Safety Manager/Safety Officer

The safety manager/safety officer shall:

- issue personal protective equipment to operatives, staff and site visitors against environmental aspects such as dust and noise;

- make sure that suitable storage facilities are maintained for dangerous goods;
- make sure that the site is checked on a regular basis for mosquito breeding areas and those records are kept of larvicidal oil application;
- erect notices and posters on site regarding environmental/safety issues, including rodent control and the dangers of allowing water to accumulate and mosquitoes to breed;
- make sure that the handling of dangerous goods complies with statutory requirements;
- maintain an inventory of Material Safety Data Sheets and make sure that those sheets are available to staff and subcontractors for any hazardous material/chemical used on site;
- make sure that all operatives have attended safety and environmental site induction training before starting work, and
- implement the project waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives.

3.3.5 Area Manager/ Site Agent/Superintendent

The area manager/site agent/superintendent shall:

- identify and investigate methods for waste minimization and waste management during planning;
- provide information on waste production and resource use to the project environmental coordinator for compilation of reports;
- make sure that requirements for waste management are identified and included in method statements;
- make sure that during the construction phase activities comply with the requirements of the Waste Management Plan;
- monitor the performance of the Waste Management Plan during construction;
- make sure that subcontractors and suppliers under their control are made aware of, and comply with, the requirements of the Waste Management Plan, and
- organize labour, material and equipment to undertake the actions required in the Waste Management Plan.

3.3.6 Senior Engineer

The senior engineer shall:

- make sure that all method statements take account of the constraints imposed by local environmental issues and permit and licensing requirements;
- make sure that planning activities take due account of constraints imposed by environmental issues and permit and licensing requirements;
- make sure that all relevant environmental aspects are considered during design works, and
- implement the project waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives.

3.3.7 Senior Contract Administrator/Quantity Surveyor

The contract administrator/quantity surveyor shall:

- coordinate with the project environmental coordinator to make sure that all appropriate environmental issues, including waste management, are included in subcontracts and purchase orders;
- make sure that waste management requirements are fully addressed in procurement documentation, including the requirements of relevant environmental licences and permits;
- make sure that prospective subcontractors are made aware of all the waste management issues relating to the project during negotiations prior to subcontract award, and
- implement the project waste management policy and participate and contribute towards achievement of Leighton Contractors (Asia) Limited environmental objectives and targets.

3.3.8 Site Supervisors

The site supervisors shall:

- make sure that planned mitigation measures relating to waste management for each activity under their specific responsibility are implemented and that working practices of personnel do not cause adverse impacts;
- make sure that relevant Material Safety Data Sheets are available at the place of work and that workers are made aware of the requirements of those sheets;
- carry out any necessary remedial work to correct deficiencies identified during weekly inspections, and
- implement the project waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives and targets.

3.3.9 Engineer

The engineer shall:

- make sure that the planned methodology adopted for each activity is fully implemented and that working practices of personnel do not cause adverse impacts;
- make sure that any relevant waste management issues are fully considered in preparing work method statements;
- carry out any necessary remedial work to correct deficiencies identified during weekly inspections, and
- implement the project waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives and targets.

3.3.10 Senior Foreman/Foreman

The senior foreman/foreman shall:

- make sure that planned mitigation measures relating to waste management for each activity are implemented and that working practices of personnel do not cause adverse impacts;

- be responsible for the day-to-day supervision of the works and make sure that activities are carried out in accordance with environmental control plans;
- monitor rectification of any identified deficiencies and make sure that they are progressed expeditiously, and
- implement the project waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives and targets.

3.3.11 Design Manager

The design manager shall:

- coordinate with the project environmental coordinator to make sure that all appropriate environmental requirements from the contract documents are included in the design;
- consider sustainable building practices and use of materials during the design stage, and
- consider the method of construction and the re-use of formwork and falsework.

3.3.12 Planning and Controls Manager

The planning and controls manager shall:

- coordinate with the project environmental coordinator to make sure that the implementation of all appropriate environmental mitigation measures are included in the programme, and
- coordinate with the project environmental coordinator to make sure that all environmental licences and permit applications are identified and allowed for in programming of the works.

3.4 Responsibility and Duties of Subcontractors, Workforce and other Parties

3.4.1 Subcontractors

Subcontractors shall:

- comply with environmental related licenses and permits regarding waste management;
- make sure that they carry out their works in accordance with the subcontract agreement;
- comply with site waste management rules set by the project director;
- attend Site Safety and Environmental Committee meetings, as required;
- report any pollution incident or nuisance to Leighton Contractors (Asia) Limited supervisor as soon practicable;
- carry out their work in accordance with the waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives and targets
- comply with requirements of relevant method statement and with particular regard to waste management issues, such as mitigation measures and operating practice;
- make sure that all their subcontractor workforce attends environmental induction training, and
- attend tool-box meetings relating to waste management.

3.4.2 Direct Labour

Direct labour shall:

- comply with site waste management rules set by the project director;
- follow instructions with respect to waste management as provided by the supervisor;
- report any pollution incident or nuisance to the supervisor as soon practicable, and
- carry out their work in accordance with the waste management policy and participate and contribute towards the achievement of Leighton Contractors (Asia) Limited environmental objectives and targets.

3.4.3 Environmental Team Leader/Environmental Team

An environmental team and team leader shall be required under the Environmental Permit for the project. Typical responsibilities will include:

- review the Environmental Impact Assessment Report and the detailed designs to ensure that the Environmental Impact Assessment recommendations and any other measures identified during the reviews are incorporated into the designs;
- review works programmes, method statements, licence application and other relevant documentation so as to ensure the best practice would be implemented to generate no unacceptable impacts with respect to waste management to the established guidelines/standards;
- identify any potential unanticipated or greater than expected waste impacts;
- formulate any necessary preventative or remedial measures to be taken for these potential impacts;
- liaise with Leighton Contractors (Asia) Limited on waste management regularly and as necessary carry out complaint investigation, evaluation and identification of preventive and corrective actions;
- undertake environmental site inspection and audit with respect to waste management both regularly and on ad hoc basis at a frequency appropriate to the intensity of the works;
- liaise and consult with all relevant parties during the implementation of the Waste Management Plan;
- address waste management issues in the Environmental Monitoring and Audit Report for submission to the Director of Environmental Protection, and
- report the findings of the site inspections and other environmental performance reviews to the independent environmental checker and Leighton Contractors (Asia) Limited.

3.4.4 Independent Environmental Checker

The independent environmental checker shall advise the Environmental Permit holder on environmental issues related to the project. The role shall be independent from the management of construction works but empowered to audit the environmental performance of construction.

The main duties of the independent environmental checker include:

- audit the overall waste management programme including the implementation of all waste management mitigation measures and submissions relating to the Waste Management Plan;
- conduct random site inspections;
- report the findings of the site inspections and other environmental performance reviews to the Employers Representative, environmental team leader and Environmental Protection Department, and
- review and verify the monthly Environmental Monitoring and Audit reports.

4. Environmental Management System Documentation

4.1 Management Procedures

Leighton Contractors (Asia) Limited Waste Management Plan has been prepared specifically for Design and Construction of Permanent Aviation Fuel Facility.

The preparation and implementation of the Waste Management Plan is a mandatory requirement of the environmental management system adopted by Leighton Contractors (Asia) Limited. The management procedures applicable to the Waste Management System are detailed in Table 4-1.

Table 4-1 Environmental Management System Documentation

Number	Title	Remarks
MP-001	Policy Manual	Includes Environmental Policy
MP-004	Project Mobilization	Includes planning for waste management
MP-005	Risk Management	This procedure provides details of our overall risk assessment for determining preventive action
MP-006	In-house Design Requirements	Covers waste management aspects
MP-007	Procurement (Subcontracting)	Includes requirements for waste management
MP-008	Procurement (Purchasing)	Includes requirements for waste management
MP-009	Procurement (Plant and Equipment Hire)	Includes requirements for waste management
MP-010	Defective Works Control	Not used for environmental non-conformance (refer to MP-029)
MP-011	Project Close Out	Includes close out of environment-related licences and permits
MP-012	Employee Recruitment	
MP-013	Employees' Training and Development	Includes waste management related training
MP-014	Performance Review	Includes waste management review
MP-015	Complaint Control	Includes waste management-related complaints
MP-016	Company Management Review	Includes management review of environmental management system
MP-017	Performance and Service Improvement	Refers to continual improvement through the implementation of corporate objectives and targets
MP-018	Company Suggestion Scheme	
MP-019	Corrective Action	This procedure provides details of identification and correction for adverse environmental impacts
MP-020	Auditing	Includes requirements for internal environmental auditing
MP-021	Document Control Requirements	Sets out policy requirements for document control, details are included in our Project Management Plan
MP-022	Records Control Requirements	Sets out policy requirements for records control, details are included in our Project Management Plan
MP-023	Archiving Records	Sets out requirements for waste management records
MP-026	Identification, Evaluation and Management of Environmental Aspects	Sets out techniques for identifying waste management aspects and assessing significance
MP-027	Legal and Other Requirements	Focuses on identification of environmental legal and statutory requirements
MP-028	Promotional Activities	<i>[Not yet issued]</i>
MP-029	Environmental Monitoring and Measurement	Covers in-house monitoring and measurement

Number	Title	Remarks
G195	Register of Environmental Legislation and Other Requirements	List of requirements affecting Leighton Contractors (Asia) Limited (referenced in MP-027)
G201	Leighton Environmental Aspects List	Database of environmental aspects affecting Leighton Contractors (Asia) Limited (referenced in MP-026)

4.2 Good Practice Guidelines

Leighton Contractors (Asia) Limited Good Practice Guidelines to be used in implementing this Waste Management Plan are detailed in Table 4-2.

Document	Details	Remarks
GPG-506	Control and Management of Construction Waste	

4.3 Company and Project Forms

Details of selected Company and project forms that are required specifically for the execution of this plan are included in Table 4-3. For details of other forms in use, refer to the project environmental coordinator.

Form	Details	Remarks
H2104/F501	Routine Environmental Monitoring and Inspection Checklist and Report	
H2104/F503	Monthly Summary Waste Flow Table	
H2104/F504	Summary Table for Work Processes or Activities Requiring Timber for Temporary Works	
H2104/F507	Daily/weekly Site Tidiness Checklist	

4.4 Other In-house Rules

Project environmental rules will be developed and established by the project director in conjunction with the project environmental coordinator over the duration of the project as necessary. Those rules will be communicated to personnel in accordance with Section 7 of the Waste Management Plan.

5. Waste Management Training and Awareness

5.1 General Requirements

It is Leighton Contractors (Asia) Limited policy to increase the awareness of project personnel with respect to waste management. To achieve those objectives, the Leighton Contractors (Asia) Limited shall implement a training and awareness programme in accordance with this section.

General training material for site induction, which will be provided by the Group Systems Section at Leighton Contractors (Asia) Limited head office, shall be supplemented with project-specific requirements prepared by the project environmental coordinator or nominee.

5.2 Leighton Contractors (Asia) Limited Employees and Subcontractors

5.2.1 Training and Awareness

As part of Leighton Contractors (Asia) Limited Environmental Management System, training to address waste-management issues shall be conducted for all Leighton Contractors (Asia) Limited staff, subcontractors and the general workforce. That training may take the form of environmental induction training, tool-box meetings (see below) or similar and shall be carried out in accordance with the requirements of the Environmental Management Plan. In addition, waste-management coordination meetings shall be held as necessary. The environmental training programme for the Design and Construction of Permanent Aviation Fuel Facility is shown below in table 5.1.

5.2.2 Tool-box Meetings

Regular tool-box meetings shall be held on environmental nuisance-abatement and waste-management subjects throughout the course of the project. Subjects shall be appropriate to the programme of works and environmental aspects prevailing at that time. The project environmental coordinator shall maintain a list of tool-box meetings to be held and prepare and issue tool-box-meeting material. Examples of subjects covered include:

- sorting and segregation;
- spoil disposal, and
- chemical-waste management.

Attendance records from those tool-box talks shall be maintained.

5.3 Training Programme

Leighton Contractors (Asia) Limited outline training and awareness programme for environmental protection is detailed in Table 5-1. That outline shall be supplemented by more detailed supplementary programmes maintained by the project environmental coordinator, when necessary.

Table 5-1 Training and Awareness Programme

Details of Training	Training Recipient	Trainer/ Presenter	Target Date	Frequency
Detailed review of Waste Management Plan , and associated procedures	Project environmental coordinator	Manager, Group Systems, or nominee	Within one month of Contract start	Once, and then annually
Introduction to Waste Management Plan , overview of policy and documentation	All Leighton Contractors (Asia) Limited project staff	Manager, Group Systems, or nominee	Within one month of Contract start	Once, refresher training provided on a needs basis
General Environmental Awareness Training, including project's significant environmental	All Leighton Contractors (Asia) Limited project staff	Project environmental coordinator/ manager, Group	Within one month of Contract start and ongoing	Periodic, as needs dictate

Details of Training	Training Recipient	Trainer/ Presenter	Target Date	Frequency
aspects		Systems		
Specific training in operation of Waste Management Plan and environmental mitigation controls	Appropriate staff	Project environmental coordinator	As required	Depending on identified training needs
Induction to waste management issues relevant to workforce	All workforce (direct and subcontract)	Project environmental coordinator/ safety officer	Before starting work onsite	Once
Tool-box talks introducing different waste management issues	All workforce (direct and subcontract)	Project environmental coordinator	Ongoing	Monthly basis

5.4 Training Records

Training records for training covered by this section shall be maintained by the project environmental coordinator or nominee in the project filing system. They shall be copied to the head offices of Leighton Contractors (Asia) Limited if required.

Further details are provided in Section 14 of this Waste Management Plan.

6. Legal and Other Requirements, Environmental Licences and Permits

6.1 General Requirements

Legal, statutory and other requirements that impose constraints on the activities of Leighton Contractors (Asia) Limited are detailed in Guideline G195, which is an attachment to procedure MP-027 and is available on the Leighton Asia Document Management System and the Leighton intranet. That guideline lists all relevant documents and provides details of how it affects Leighton Contractors (Asia) Limited activities. In addition to those overall legal and regulatory requirements, project-specific requirements are also relevant as detailed in Table 6-1.

6.2 Ordinances and Regulations

Ordinances and regulations specific to waste management on the Design and Construction of Permanent Aviation Fuel Facility operations are detailed below:

- Land (Miscellaneous Provisions) Ordinance (Cap 28);
- Public Health and Municipal Services Ordinance (Cap 132);
- Summary Offences Ordinance (Cap 123);
- Waste Disposal Ordinance (Cap 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap 354);
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354);
- Dumping at Sea Ordinance (Cap 466);
- Permanent Aviation Fuel Facility – Environmental Impact Assessment Report;
- Permanent Aviation Fuel Facility – Environmental Monitoring and Audit Manual, and
- Permanent Aviation Fuel Facility – Environmental Permit EP-262/2007/B

For the full version of legislation and regulations, refer to <http://www.doj.gov.hk/>

6.3 Technical Circulars and Codes of Practice

This Waste Management Plan has been prepared with reference to:

- Waste Reduction Framework Plan, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat (5 November 1998);
- 2001 Review of the Waste Reduction Framework Plan, Waste Reduction Committee;
- Site Practice for Waste Reduction in Construction Industry (2001), Environmental Protection Department;
- Environmental Guidelines for Planning in Hong Kong (1990), Hong Kong Planning and Standards Guidelines, Hong Kong Government;
- New Disposal Arrangements for Construction Waste (1992), Environmental Protection Department & Civil Engineering Department;

- A Guide to the Control on Import and Export of Waste (1999), Environmental Protection Department;
- Works Bureau Technical Circular No. 10/92, Provision of Refuse Containment Booms in Reclamation Contracts Involving Public Dumping, Works Bureau;
- Works Branch Technical Circular 32/92, The Use of tropical Hard Wood on Construction Sites, Works Branch;
- Works Bureau Technical Circular No. 25/99, 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Sub-committee Papers, Works Bureau;
- Works Bureau Technical Circular No 6/02 and 6/02A, Enhancement Specification for Site Cleanliness and Tidiness, Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) No 34/2002, Management of Dredged/Excavated Sediment, Environment, Transport and Works Bureau;
- Memo Ref. (15) in FM PF/GEN/18.01 Pt.4 dated 22 December 2004 on “Enhancement of Trip Ticket System for Disposal of Construction and Demolition Materials – Commencement of Implementation of Using Bar-coded Disposal Delivery Form (DDF) on 15.1.2005”, Secretary, Public Fill Committee, Civil Engineering & Development Department.
- Civil Engineering and Development Department Technical Circular No 05/2005, Management of Construction and Demolition Materials, Environment, Civil Engineering and Development Department.
- Works Branch Technical Circular 2/93, Public Dumps, Works Branch;
- Works Branch Technical Circular 2/93B, Public Filling Facilities, Works Branch;
- Works Branch Technical Circular 16/96, Wet Soil in Public Dumps, Works Branch;
- Works Bureau Technical Circulars 4/98 & 4/98A, Use of Public Fill in Reclamation and Earth Filling Projects, Works Bureau;
- Works Bureau Technical Circular 12/2000, Fill Management, Works Bureau;
- Works Bureau Technical Circular 19/2001, Metallic Site Hoardings and Signboards, Works Bureau;
- Works Bureau Technical Circular 12/2002, Specifications Facilitating the Use of Recycled Aggregates, Works Bureau;
- Environment, Transport and Works Bureau Technical Circular 31/2004, Trip-ticket System for Disposal of Construction and Demolition Material, Environment, Transport and Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) 19/2005, Environmental Management on Construction Site, Environment, Transport and Works Bureau;
- Environment, Transport and Works Bureau Technical Circular (Works) 33/2002, Management of Construction and Demolition Material Including Rock, Environment, Transport and Works Bureau;

- A Guide to Chemical Waste Control Scheme and A Guide to the Registration of Chemical Waste Producer, Environmental Protection Department, and
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Environmental Protection Department.

6.4 Project-specific Constraints

Further specific constraints relating to Design and Construction of Permanent Aviation Fuel Facility are provided in Table 6-1 and those requirements further embellished in the relevant section on nuisance abatement and pollution control.

Table 6-1 Project-specific Constraints

Applicable Document	Constraint	Remarks
Permanent Aviation Fuel Facility – Final Environmental Impact Assessment Report – AEIAR-107/2007	All relevant mitigation controls to be followed	
Permanent Aviation Fuel Facility – Environmental Monitoring and Audit Manual	All relevant mitigation controls to be followed	
Permanent Aviation Fuel Facility – Environmental Permit EP-262/2007/B	All relevant mitigation controls to be followed	
Contract Documents	All relevant mitigation controls to be followed	

6.5 Environmental Licences and Permits

Leighton Contractors (Asia) Limited shall obtained a billing account from the Environmental Protection Department as soon as practicable following the award of the contract to enable Chits to be obtained so that waste can be disposed of.

Subcontractors or vehicle operators shall apply for and obtain a Dumping License and a Dumping Label from the Civil Engineering and Development Department for all trucks transporting inert construction and demolition material to a public filling facility.

The project environmental coordinator shall apply for and obtain a Chemical Waste Producer Licence from the Environmental Protection Department Regional Control Office for the production of chemical waste, including spent lubricating oils and contaminated soil.

Details of licences, permits and notifications, together with application requirements and validity periods and renewal frequencies are provided in Table 6-2.

The inventory of licences and permits shall be maintained as a separate register, which shall be maintained by the project environmental coordinator if the number of licences and permits requires close monitoring.

All of the application forms, guidance notes for completion and schedules of fees are provided by the Environmental Protection Department on its website unless noted otherwise.

Table 6-2 Applicable Licences and Permits for Waste Management

Applicable License/Permit	Application Method	Timing/Renewal Frequency
Dumping at Sea Ordinance		
Marine Dumping Permit	Apply for Permit to Dump Material at sea under Dumping at Sea Ordinance using EPD114A	Environmental Protection Department aim to respond within 18 days

Applicable License/Permit	Application Method	Timing/Renewal Frequency
Waste Disposal Control Ordinance		
Application for registration as a (chemical) waste producer	Determine major types of chemical waste produced (eg, spent lubricating oils and contaminated sand from spill clean-up) and complete application form (EPD 129). Submit completed form to Environmental Protection Department Local Office Refer to Environmental Protection Department publication Code of Practice on the Packaging Labelling and Storage of Chemical Wastes	Once, prior to production of chemical waste
Application for billing account for disposal of construction waste (value >HK\$1 million under Waste Disposal (Charges for Disposal of Construction Waste) Regulations	Application Guide Form 1 to Environmental Protection Department Head Office, Southorn Centre or any regional office Minimum deposit of HK\$15,000 for 200 Chits is required in the first instant	Once, within 21 days It is recommended to apply on day 1 and to request Chits at same time so waste may be removed from site
Lands (Miscellaneous Provisions) Ordinance		
Application for Dumping Licence and Permits for trucks disposing C&D Material to Public Filling Facilities	Ensure that Subcontractors employed for Design and Construction of Permanent Aviation Fuel Facility have obtained Dumping Licence and Permit	Before disposal of materials

7. General Communications and Promotion

7.1 General Communications

The general procedures for communication within the project team and externally are set out in the Project Management Plan and other project procedures. Specific requirements for environment-related issues are described in the Environmental Management Plan.

7.1.1 Formal Written Communication

A formal letter shall be used to communicate the requirements of environmental licences and permits held by Leighton Contractors (Asia) Limited to relevant subcontractors, including any changes to the documents already held, throughout the duration of Design and Construction of Permanent Aviation Fuel Facility.

Corrective-action requests that are raised as a result of a subcontractor's or supplier's non-conformance with waste-management requirements shall be recorded and sent to that subcontractor or supplier under cover of letter or transmittal or recorded in minutes of meeting for necessary action.

7.1.2 Oral Communications

Oral communications relating to waste-management issues that are significant to environmental performance shall be recorded and kept in the project filing system. Examples of such communications include oral communications with representatives from authorities such as the Environmental Protection Department when they visit the site.

7.1.3 Meetings

A "kick-off" meeting shall be held with each subcontractor to reinforce legal and project-specific requirements for waste management prior to starting work.

Regular environmental meetings (as part of the Site Safety and Environmental Committee meetings) shall be held with subcontractors and chaired by the project director (or nominee) to discuss current environmental issues, including the communication of new project requirements on environmental pollution control, nuisance-abatement and waste-management issues, review of performance and follow-up actions to any environmental non-conformance. Minutes shall be prepared and issued to participants.

7.1.4 Method Statements

Each construction method statement shall include a specific section on environmental protection, including any relevant waste-management issue. Method statements shall distil the significant environmental aspects relating to the activity or process and provide specific details over and above this plan when considered necessary.

7.1.5 Other Communication Methods

To enhance communication with the local community, a Community Liaison Group shall be set up comprising relevant stakeholders to advise on and monitor the proper design, construction and operation of the Project. The Advisory Council on the Environment (ACE) and the Environmental Protection Department shall be notified in writing the membership and terms of reference of the Community Liaison Group and shall take into account ACE's views. As required by the Environmental Permit all minutes of meetings, the relevant documents and the associated papers of the Community Liaison Group shall be placed on the project website, within one month of the day of the meetings. The manager of the community liaison group shall contact stakeholders as necessary to keep them informed of:

- implementation programme of the works;
- planned construction activities that will be involved;

- possible impacts to the affected communities;
- measures to avoid or mitigate any adverse impacts;
- monitoring programme to check the efficiency of the measures, and
- communication channels between the local communities and the project office for better understanding the efficiency of the measures taken and the necessity for enhancement of the measures.

7.2 Waste Management Publicity

Posters and notices shall be used as appropriate to communicate waste-management issues, such as Leighton Contractors (Asia) Limited environmental policy, environmental objectives, site-layout plans, and good and bad environmental practices to the workforce and interested parties.

Notice boards shall be established at strategic locations within the site and at the boundary where it interfaces with the general public.

The project environmental coordinator or nominee shall be responsible for maintaining up-to-date information on the notice boards.

A regular safety and environmental newsletter *On Chuen*, published by Leighton, shall also be used for the promotion of safety and environmental issues to staff and workers.

7.3 Waste Management Promotion

Incentive schemes shall be implemented to reward good waste-management performance by individuals and subcontractors. Those schemes shall be developed and finalized over the duration of the project.

8. Performance Monitoring

8.1 General Requirements

General principles for environmental monitoring and measurement are provided in Management Procedure MP-029. For performance monitoring against our environmental objectives and targets, the principles set out in Management Procedure MP-017 are used.

8.2 Site Inspections

8.2.1 Weekly Site Environmental Inspection

The project environmental coordinator shall carry out a formal weekly site environmental walk with the site agent or nominee and the Employers Representative or his delegate (if specified) to inspect the site, checking that waste-management performance is maintained satisfactorily in compliance with the requirements of the Contract and the Waste Management Plan.

A comprehensive Routine Environmental Monitoring and Inspection Checklist and Report (Form H2104/F501 – attached as Appendix 3) shall be used taking account of all the significant requirements detailed in this Waste Management Plan. The checklist shall then be agreed with the Employers Representative for use in the weekly site environmental walk. The checklist shall form the basis for assessing the satisfactory waste management performance, of Leighton Contractors (Asia) Limited on the site. Any defects or deficiencies identified in the weekly site environmental walk shall be duly recorded in a summary table.

The summary table shall be agreed and signed by Leighton Contractors (Asia) Limited representative and the Employers Representative or his delegate (if specified) and a copy shall be kept in the project filing system. Leighton Contractors (Asia) Limited shall take prompt action to rectify any deficiencies identified and shall report the status of rectification actions.

Any non-conformance identified and recorded on the summary table shall be either corrected immediately, as soon as practicable after identification or be subject to formal corrective action in accordance with Leighton Contractors (Asia) Limited management procedure, MP-019.

When necessary, the checklist shall be distributed to supervision/production staff for action. The completed checklist shall be filed in the appropriate section of the project filing system.

8.3 Environmental Monitoring

8.3.1 Environmental Monitoring and Audit Programme

Environmental monitoring and audit required under any Environmental Permit shall be conducted strictly in accordance with the approved Environmental Monitoring & Audit Manual. To avoid duplication and potential errors, the specific requirements of that Environmental Monitoring & Audit Manual are not included in this Waste Management Plan.

8.4 Waste Management

Quantities of material produced, recycled, re-used and disposed shall be maintained by the project environmental coordinator or nominee. Those records shall be consolidated on the appropriate Waste Flow Table for the monitoring of waste-management efforts and reporting.

8.5 Complaints

Leighton Contractors (Asia) Limited shall operate a complaint database at the project for the logging and tracking of all complaints, including environment, safety, commercial and progress. Key personnel shall be provided with access to the collaborative database to maximize

communication and facilitate prompt response to issues relating to environmental protection and waste management. That system is described in more detail in the Project Management Plan.

The specific communication procedures for complaint handling via the Environmental Permit are detailed in the Environmental Monitoring & Audit Manual.

8.6 Performance against Environmental Objectives

Performance against environmental objectives and targets relating to waste management shall be continually monitored in accordance with the approved action plan. Appropriate capture tables shall be used to manage that data for reporting and review.

9. Waste Management Reporting

9.1 Waste Management Reporting

Reporting on waste management issues by the project team shall be carried out in accordance with the requirements of this section.

9.1.1 Monthly Environmental Reporting

The Monthly Environmental Report shall provide details of environmental performance and shall include details of any incident, complaint received, resource and energy use, quantities of waste disposed from site and quantities of recycled material.

The Monthly Environmental Report shall be prepared by the project environmental coordinator in conjunction with the project team.

The report shall be approved by the project director.

The report shall be distributed as a minimum to the members of Leighton Contractors (Asia) Limited board, general manager and manager, Group Systems. The report shall be issued within seven days of the end of the reporting period to facilitate onward reporting to Leighton Contractors (Asia) Limited.

When contractually required, the report shall be distributed to the Employers Representative, (see 9.1.2).

9.1.2 Contractual Reporting

Contractual reports shall be combined with Leighton Contractors (Asia) Limited Environmental Monthly Report whenever practicable, and shall include, as necessary:

- a summary of pollution incidents and remedies comprising:
 - complaints;
 - abatement notices issued by Environmental Protection Department;
 - offences spotted by Environmental Protection Department during inspections, and
 - summonses of environmental offences;
- a list of major forthcoming activities in the next two months that will likely have environmental impacts and nuisances to the surroundings and the control measures in mitigation;
- the training programme for the next month and the records of training arranged/conducted in the previous month;
- the updated organigram on environmental management (if changes have been made), and
- a summary of defects and deficiencies identified during inspections and weekly environmental walks and the follow-up actions and remedies taken to prevent re-occurrence.

Issues relating to the monthly report shall be discussed in the Project Environmental Review Committee (see section 10).

9.1.3 Environmental Monitoring and Audit Programme Reporting

The reporting requirements under Leighton Contractors (Asia) Limited environmental monitoring and audit programme are provided in the Environmental Monitoring & Audit Manual and the Environmental Permit.

10. Performance Review

10.1 General

Waste management issues shall be given the highest priority by Leighton Contractors (Asia) Limited during the activities associated with the design and construction of Permanent Aviation Fuel Facility.

To facilitate the management of waste issues and concerns during the execution of design and construction of Permanent Aviation Fuel Facility, and to promote communication among management, supervisory staff and subcontractors, the project director shall establish a Project Environmental Review Committee that shall meet every six months throughout the duration of the design and construction of Permanent Aviation Fuel Facility. The Project Environmental Review Committee shall as a minimum carry out the following:

- reviewing the sufficiency of the measures in the Waste Management Plan and proposals for improvement;
- monitoring environmental performance and achievement with reference to the Waste Management Plans including the quantities and types of construction and demolition material generated;
- assessing the effectiveness of the Environmental and Waste Management Plans taking into account environmental performance and achievement;
- monitoring follow-up actions on defects and deficiencies identified in weekly inspections;
- results of audits;
- complaints received from stakeholders;
- project activities and any required changes to environment aspects and impacts that relate to the project;
- required waste mitigation measures and environmental operating controls, and
- emergency preparedness and response.

Minutes of the Project Environmental Review Committee shall be taken and any actions recorded. Any key issues arising from the Project Environmental Review Committee meeting shall be included in the subsequent Monthly Environmental Report.

In addition, regular inspections and audits shall be carried out to monitor and review performance and provide performance feedback to management as appropriate.

10.2 Auditing

10.2.1 Internal Environmental Auditing

Environmental management system auditing of the project shall be carried out by qualified environmental auditors from Leighton Contractors (Asia) Limited head office. Audits shall be conducted and reported in accordance with Leighton Contractors (Asia) Limited procedures.

10.2.2 Environmental Management Committee Audits

In addition to the formal environmental audits described above, the project shall also be subject to Environmental Management Committee Audits carried out by senior managers, including directors from Leighton Contractors (Asia) Limited, approximately every two months.

11. General Requirements for Nuisance Abatement and Pollution Control

11.1 Waste Management Aspects and Impacts

Waste management aspects relevant to design and construction of Permanent Aviation Fuel Facility shall be identified and managed. The aspects shall be evaluated and, when significant, appropriate mitigation measures and operational controls shall be determined and implemented. From the identification of those significant aspects, a waste management control plan shall be developed to set out the project-specific requirements to be adopted. This plan is included as Appendix 2.

11.2 Method Statements

Each construction method statement prepared by Leighton Contractors (Asia) Limited shall include a section on environmental protection requirements applicable to that activity. Any relevant requirements stated in this Waste Management Plan shall be expanded on in the context of how each of the mitigation measures is implemented for that activity. When necessary, those requirements shall be communicated to supervision staff and the workforce through meetings and tool-box talks.

11.3 Activities Causing Pollution

Table 11-1 provides a summary of the activities that shall take place during the design and construction of Permanent Aviation Fuel Facility together with potential significant environmental impacts that may occur if the impact is not properly mitigated and managed. Details of the mitigation measures and operational controls to be implemented by Leighton Contractors (Asia) Limited and subcontractors to avoid/control those potential impacts are described in the Leighton Contractors (Asia) Limited environmental control plan, which is appended to this Waste Management Plan. Further project-specific details are described in this part of the Waste Management Plan.

Table 11-1 Summary of Activities with Potential to Cause Pollution

Work Process/Activity	Nuisance/Pollution Type											
	Construction Dust	Exhaust Emission/ Dark Smoke	Fumes and Odour	Noise Nuisance (Airborne)	Noise Nuisance (Ground-Borne)	Waste Water	Surface Run-off	Sewerage	Marine	Waste		
Site clearance	✓									✓		
Site establishment	✓									✓		
Demolition	✓		✓	✓						✓		
Site formation	✓			✓	✓	✓	✓			✓		
Use of plant and equipment		✓		✓						✓		
Underground drainage				✓			✓			✓		
Concrete works	✓			✓						✓		
Piling and foundations	✓			✓	✓					✓		
Dredging				✓			✓			✓		
Site facilities			✓			✓		✓		✓		

Work Process/Activity	Nuisance/Pollution Type											
	Construction Dust	Exhaust Emission/ Dark Smoke	Fumes and Odour	Noise Nuisance (Airborne)	Noise Nuisance (Ground-Borne)	Waste Water	Surface Run-off	Sewerage	Marine	Waste		
Emergency – rain storm						✓	✓		✓			

11.4 General Housekeeping

General housekeeping is addressed by Leighton Contractors (Asia) Limited Safety and Environmental Management Systems.

11.4.1 Site Layout Plans

In order to record the location of environmental facilities used for the project and to keep that information up-to-date, a site layout plan shall be prepared and maintained by the project environmental coordinator or nominee. That plan shall include the location of fixed and mobile facilities, and may include:

- wheel wash;
- high-pressure water hoses;
- chemical-waste store(s);
- fixed dust-suppression sprays;
- waste segregation and sorting areas;
- general-refuse bins;
- waste skips, and
- spill-containment kits.

11.4.2 Tropical Hardwood

Alternatives to tropical hardwood such as metals or softwood from sustainable sources shall be used for the following applications:

- Hoardings, both for the framing and the panelling;
- Falsework;
- Trench support;
- Strutting and propping used to support temporary openings below surface ground level;
- Formwork, and
- project sign board.

11.4.3 Pest Control

11.4.3.1 Mosquito Breeding

Leighton Contractors (Asia) Limited Safety Management System addresses the control of mosquito breeding on site. Regular inspection to prevent the accumulation of standing water shall be carried out. Site foremen shall arrange the spraying of standing water with larvicidal oil in accordance with agreed schedules to suit the associated risks.

11.4.3.2 Rodent Control

Rodent breeding shall be prevented by the adoption of good-housekeeping practices. In particular, subcontractors and workers shall be required to place all waste food and containers in appropriate refuse bins. Refuse bins shall be regularly emptied. If necessary, a pest-control contractor shall be appointed to control pests at the site.

11.4.4 Site Cleanliness

Adequate numbers of waste bins shall be provided to maintain the site in a clean condition.

The subcontractor and Leighton Contractors (Asia) Limited direct labour shall participate daily in keeping the site clean. Each working area shall be inspected daily and weekly by Leighton Contractors (Asia) Limited foreman.

Routine monitoring of the site and perimeter shall be conducted weekly by the project environmental coordinator. Any adverse conditions identified during those inspections shall be corrected immediately or on the same day whenever practicable. If necessary, a formal corrective action request shall be generated and implemented to correct any outstanding non-conformance.

The measures listed below for the improvement of site cleanliness and to control mosquito breeding on construction sites shall be implemented.

- the project environmental coordinator shall be responsible for the overall coordination, monitoring and overseeing of the performance of the site on cleanliness;
- litter and debris on the site, including that dumped into the site from outside by the public, shall be removed;
- debris and rubbish not within the site shall be removed if the debris and rubbish are in connection with the works or have been disposed of by persons working on the site;
- excavation material shall be removed promptly or, when stockpiled, material shall be covered with tarpaulins for all excavation works;
- the site shall be cleaned daily;
- traffic cones, traffic signs, and barriers, where used, shall be kept clean;
- haul roads, access roads and open exposed areas shall be wetted;
- materials and equipment shall be stored neatly;
- hoardings and/or steel barriers shall be regularly cleaned and refurbished, repainted and/or repaired half yearly, and
- passageways shall be kept clear and free of dirt, waste and timber.

12. Waste Management

12.1 Waste Reduction Strategy

12.1.1 Overall waste strategy

Leighton Contractors (Asia) Limited will adopt an “inverted cone” waste management methodology, as illustrated in Figure 12.1 and used in Leighton Contractors (Asia) Limited training material.

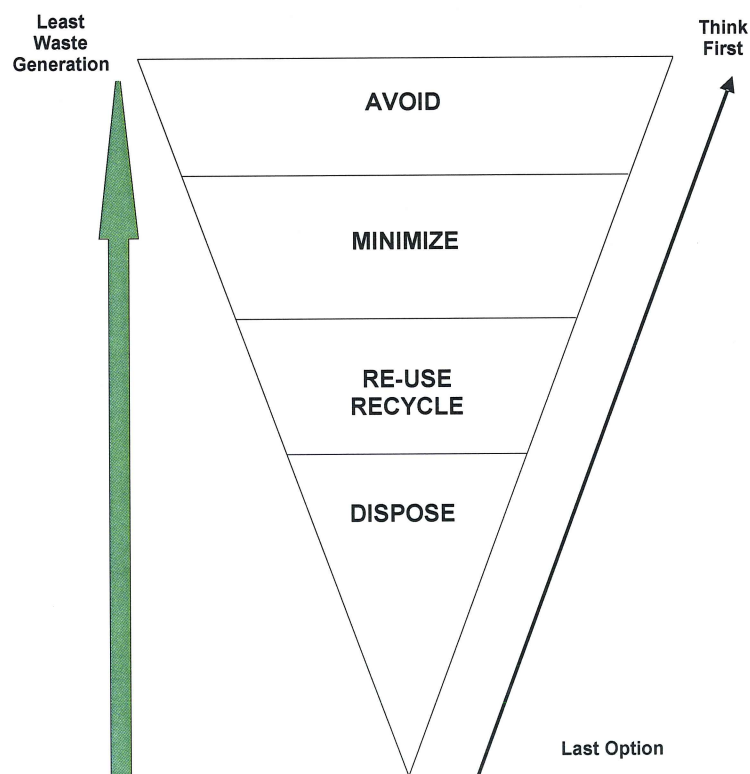


Figure 12.1: Waste-management Methodology

12.1.2 Waste-reduction Measures

The types of works involved in the project - excavation, concrete works, steel erection, pipe laying, electrical and mechanical installation and ABFW works will all generate a certain amount of waste. The opportunities to reduce the amount of waste shall be limited due to site constraints (size and use of the site) and the types of waste materials generated. The waste reduction measures are presented in section 12.9. However, re-use and recycling shall be maximized.

12.1.3 Re-use and Recycling Opportunities

The most significant waste aspect will result from the excavated material arising from the tank excavation works. As opportunities for the avoidance or reduction of waste will be limited, the waste-management strategy shall be to maximize the re-use and recycling of surplus material. Confirmation shall be sought from the Public Fill Committee and the Environmental Protection Department regarding the availability of public filling facilities and landfill, respectively, for inert construction and demolition waste and non-inert construction and demolition waste, respectively.

In order to maximize quantities that can be re-used or recycled in that way, each type of material shall be carefully segregated and sorted to avoid contamination and to maintain the quality of the

product. It is expected that limited space for that segregation process shall be available at the work site.

12.2 Identification of Potential Waste

The waste types described in Table 12.1 may be generated from activities carried out on the Design and Construction of the Permanent Aviation Fuel Facility. The identification of those work processes and activities enables waste reduction, re-use and recycling opportunities to be identified and maximized. Improper handling and disposal of those wastes may cause adverse impacts from pollution and nuisance.

Measures to mitigate adverse impacts are described in the following sections.

Table 12-1 Summary of Activities Producing Waste

Work Process/Activity	Waste Group									
	Inert C&D Material	Metals	Plastic	Packaging/Paper	Timber	Bamboo Scaffolding	General Refuse	Vegetation	Chemical Waste	
Site clearance	✓						✓	✓		
Demolition	✓	✓	✓		✓	✓	✓			
Earthworks	✓									
Maintenance of plant and equipment									✓	
Underground drainage	✓	✓	✓							
Formwork		✓	✓		✓					
Concrete works	✓									
Pre-cast concrete		✓	✓		✓					
Piling and foundations	✓									
Road works	✓									
Hard landscape	✓									
Soft landscape								✓		
Finishing works		✓	✓	✓	✓	✓	✓		✓	
Mechanical-ventilation and air-conditioning		✓	✓	✓	✓				✓	
Electrical works		✓	✓	✓	✓				✓	
Material handling and storage	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Repair and rework	✓	✓	✓	✓	✓	✓	✓	✓	✓	
General welfare							✓			

12.3 Designated Disposal Outlets

The designated disposal outlets and identified recycling companies for Design and Construction of the Permanent Aviation Fuel Facility are detailed in Table 12-2.

Table 12-2 Designated Disposal/Re-use/Recycling Outlets

Waste Stream	Details of Outlet	Contact Telephone	Contact Name	Disposal/Recycle/Re-use
Public fill (inert construction waste)	Area 38, Tuen Mun or other contracts	Not applicable	Not applicable	Recycle/re-use
Landfill (construction waste)	WENT	Not applicable	Not applicable	Disposal
Marine sediment	South Cheung Chau Spoil Disposal Area or East Sha Chau Contaminated Mud Disposal Site	Not applicable	Not applicable	Disposal
Temporary construction-waste sorting facility	Area 38, Tuen Mun	Not applicable	Not applicable	Recycling
Liquid chemical waste	Tsing Yi Chemical Waste Treatment Centre	Not applicable	Not applicable	Disposal
Solid chemical waste	Dunwell Environmental Management Co Ltd	Not applicable	Not applicable	Disposal
Rock	Area 38, Tuen Mun, reused on site or other contracts	To be determined	To be determined	Re-use
Metal	Wai Hung Metals Ltd	2349-0301	Mr Kwan	Recycle
Waste tyres	Man Lee Hang Tyre and Battery Co Ltd	2477-1579	Mr Man	Recycle
Packaging material	To be determined	To be determined	To be determined	Recycle
Used batteries (6 V for flashing light)	Man Lee Hang Tyre and Battery Co Ltd	2477-1579	Mr Man	Recycle
Holding tank waste	Dunwell Environmental Management Co Ltd			Disposal
Used oil filter, used batteries (for vehicles), oily rags, etc	Kam Ming EP Eng Co Ltd	2407-3377	Miss Chan	Disposal
Confidential papers	Confidential Materials Destruction Service Ltd	2676-8800	-	Recycle
Timber, paper, plastic and aluminium cans	Chan Kee Reclamation Co Ltd	2623-9688, 2719-1103 (fax)	Kit Lam	Recycle

12.4 Estimated Quantities of Waste by Type

It is the Leighton Contractors (Asia) Limited policy that all contracts maintain a detailed Waste Flow Table to monitor waste-management performance. The project environmental coordinator or nominee shall be responsible for maintaining that table. Estimated quantities are also shown below in Table 12-3.

Table 12-3 Estimated Waste Generation

Waste Category	Waste Type	Estimated Quantity	Disposal Location	Generation Period
Inert construction and demolition material for disposal	Excavated materials, such as fill, concrete, stone and paving material	102,857 m ³	Tuen Mun Area 38 or other contracts	July 07 – April 10
	Marine deposit Type 1	253,844 m ³	South Cheung Chau Spoil Disposal Area	Nov 07 – Oct 08
	Marine deposit Type 1d and Type 2	86,156 m ³	East Sha Chau Contaminated Mud Disposal Site	Nov 07 – Oct 08
Non-inert construction material for disposal	Site clearance material (e.g., trees and vegetation)	700 m ³	WENT Landfill	July 07– April 08
	General refuse	13,000 m ³	WENT Landfill	July 07 – April 10
	Packaging, Plastic	4,600 kg	WENT Landfill	July 07 – April 10
Inert construction and demolition material to be re-used or recycled	Natural Excavated Material, such as fill and rock	5,000m ³	On site	July 07 – April 10
	Sand surcharge material	1255 m ³	On site	Completed
	G200 Recycled Aggregate	5,807 m ³	On site	July 07 – April 10
	Sand surcharge material	25,948 m ³	Off site to other contracts via WillPak Engineering Ltd.	Completed
Non-inert construction and demolition waste to be recycled/ reused	Recyclables: Metal / Paper/ Packaging/Timber	320,000 kg	Paper: Lau Choi Kee Papers co. Other materials to recycling company appointed as necessary	July 07 – April 10
	Site clearance material (e.g., top soil)	15,000 m ³	On site	July 07 – April 10
Special waste requiring licensed disposal	Liquid chemical waste (spent lubricant oil and others)	5,000 ℓ	Tsing Yi Chemical Waste Treatment Centre	July 07 – April 10
	Solid chemical waste (contaminated soil from spillages)	50 m ³	Dunwell Environmental Management Co Ltd	July 07 – April 10
	Waste tyres	20	Man Lee Hang Tyre and Battery Co Ltd	July 07 – April 10
	Used batteries (6 V for flashing light)	1,000 kg		July 07 – April 10
	Holding tank waste	8,000 m ³	Dunwell Environmental Management Co Ltd	July 07 – April 10

Waste Category	Waste Type	Estimated Quantity	Disposal Location	Generation Period
	Used oil filter, used batteries (for vehicles), oily rags, etc	150 kg	Kam Ming EP Eng Co Ltd	July 07 – April 10
Non-inert construction and demolition material to be recycled	Metal (eg, reinforcing steel and pile off cuts)	50 t	Wai Hung Metals Ltd	July 07 – April 10
	Aluminium cans	500 kg	Chan Kee Reclamation Co Ltd	July 07 – April 10
	Timber	5,000 kg		July 07 – April 10
	Plastic bottles	100 kg		July 07 – April 10
	Paper & cardboard	2,000 kg		July 07 – April 10
	Packaging material (plastic)	1,000 kg	[To be determined]	July 07 – April 10
Confidential papers	Paper	100 kg	Confidential Materials Destruction Service Ltd	July 07 – April 10

12.4.1 Monthly Waste Flow

The quantities of construction and demolition material generated each month shall be recorded using the Monthly Summary Waste Flow Table (H2104/F503) included in Appendix 4. That table shall be completed and submitted, if specified, to the ECO Aviation Fuel Development's Representative together with the updated sections of the Waste Management Plan (if any). It shall also be submitted to the manager, Group Systems, at Leighton Contractors (Asia) Limited head office by the seventh day of each month as part of the Monthly Environmental Report.

12.5 Waste Performance Targets

To facilitate assessment of the effectiveness of the waste-management measures, the following performance targets shall be adopted in addition to the Company targets set out in 2.2:

- all excavated material shall be sorted to recover inert portions (eg, soil and broken rock) for re-use on site or re-use and recycling at designated outlets;
- all metal shall be recovered on site for collection by a recycling contractor, and
- all cardboard and paper packaging, if any, (from plant, equipment and material) shall be recovered on site, properly stockpiled in dry conditions and covered to prevent cross contamination by other construction and demolition material.

12.6 Segregation and Sorting

An area of the project site shall be allocated for storage, sorting and segregation purposes. The segregation and sorting area shall be shown on the general site services layout plan.

The segregation and sorting areas shall be clearly defined on the site-layout plan and shall be regularly reviewed and amended to suit site constraints as work proceeds. The space provided shall be commensurate with the estimated quantity for each type of material generated on site, as indicated in the waste flow table. The physical location of each segregation and sorting area shall be clearly marked on site by signs, barriers or similar such that they are easily identified.

Table 12-4 shows the overall strategy for sorting and segregation of construction and demolition material, which includes the material type, approximate relative quantities, responsibility for initial sorting and Leighton Contractors (Asia) Limited supervision responsibilities.

Table 12-4 Segregation and Sorting of Waste

Material Type	Relative Quantity	Methods (see main sections for further details)	Responsible Company or Person	Leighton Responsible Staff
Rock	High	Re-use on or off site Recycle on or off site	Foreman	Foreman
Vegetation	Medium	Direct segregation from soil and disposal to landfill	Foreman	Foreman
Soft excavated material	Medium	Direct segregation from work face and removal to public fill Quantities shall be maximized to retain on site for ongoing works when timing is appropriate	Foreman	Foreman
Broken concrete	Low	On-site segregation Re-use as hardcore	Subcontractor	Foreman
Metal	Low	Segregate and recycle	Subcontractor	Foreman
Paper	Low	Separate bins for reuse and disposal	Secretary/ subcontractors	Secretary
Plastics	Low	Separate bins	Amah	
Aluminium Cans	Low	Separate bins	Amah	
Timber	Low	Separate bins	Subcontractor	Foreman
Chemical waste	Medium	Collect and place in chemical waste store	Mechanic	Foreman/ project environmental coordinator
Chemical-waste containers	Low	Segregate and collect in separate bin	Mechanic	Foreman/ project environmental coordinator
Packaging material	Low	Covered segregated area	All	Foreman

Surplus construction-and-demolition material shall be sorted on site into inert and non-inert material. Inert construction-and-demolition material shall be sorted further, when necessary, by the use of plant into hard and soft material and other re-usable components. Those separate material streams shall be taken to the most-appropriate outlet for re-use as necessary.

As far as practicable, general refuse shall be segregated at source by the use of bins for different types of material.

12.7 Recycling

Arrangements shall be made with recycling contractors so that recyclable material sorted from the site is collected with reasonable care. Temporary storage and protection conditions shall maintain the quality of the recyclable material such as providing tarpaulin over packaging material to keep it dry. The quantities of recyclable material shall be recorded by the project environmental coordinator or nominee before removal off-site by the designated recycling contractor and details shall be included in the waste flow table.

12.8 Timber in Temporary Works

Leighton Contractors (Asia) Limited strategy is to avoid, reduce or minimize the use of timber in temporary works as far as practicable. When timber has to be used for temporary-works construction, it will be carefully sorted and stacked so that it may be re-used.

12.9 Waste-mitigation Measures

Construction activities shall be conducted in accordance with relevant legislation, including the Air Pollution Control (Construction Dust) Regulation, Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance, Public Health and Municipal Services Ordinance, Waste Disposal (Chemical Waste) (General) Regulation and the Dumping at Sea Ordinance. The proposed mitigation measures to avoid or minimize the quantity of construction and demolition material generated during the project are described in this subsection.

Details of our proposed mitigation measures and operating controls with respect to waste management derived from our environmental aspects database are provided in the Environmental Control Plan - Waste Management included as Appendix 2.

12.9.1 Site Clearance

Site clearance will take place during the execution of activities associated with Permanent Aviation Fuel Facility. Surplus vegetation and organic matter generated shall be stockpiled and used as mulch on the landscape bunds. During site clearance, the relevant requirements of the Construction Dust Regulations shall be adopted.

12.9.2 Demolition Material

It is envisaged that the amount of demolition material arising from site-clearance operations will be minor and shall be segregated at source to maximize possible re-use and recycling. Bituminous material arising from the excavation of existing pavements may be re-used on-site for paving. Inert construction and demolition material may be re-used on site or disposed to public filling Tuen Mun Area 38 fill bank. All reinforced-concrete waste shall be inspected and the extruded reinforcement shall be cut off in order to fulfil the acceptance criteria of public fill reception facilities. Other material such as steel shall be recycled as far as practicable.

Leighton Contractors (Asia) Limited has established the arrangement with CEDD to use recycled construction and demolition material (e.g. from the construction-and-demolition material recycling facility at Tuen Mun Area 38) on the site taking account of the latest available information and the requirements of Works Bureau Technical Circular 12/2002, Specifications Facilitating the Use of Recycled Aggregates.

12.9.3 Surplus Excavated Material

Substantial amount of surplus excavated material will arise from activities associated with Permanent Aviation Fuel Facility. About 107,857 cubic metres of surplus excavated natural material, such as fill material and rock shall be generated during the excavation works. About 5,000 m³ of this material shall be reused on site in landscape bunds and 102,857 m³ disposed of off-site.

Concrete waste excavated on site shall be sorted and used as armour stone over the pipe line where suitable material is recovered (if approved).

Excavated material shall be segregated from other waste to avoid possible contamination, therefore allowing re-use on site or at other sites that can utilize the material.

12.9.4 Marine Sediment

An estimated 253,824 m³ of Type I and 86,156 m³ of Type 1D and Type II marine deposits generated will be disposed of in designated disposal areas, in accordance with the Particular Specification.

Dumping permits shall be obtained for the disposal of Type I and Type II sediment at the open sea and dedicated disposal facilities.

12.9.5 Concrete and Other Cementitious Material

Concrete for temporary and permanent works shall be delivered to the site in mixer trucks. Depending on access arrangements, the concrete shall either be discharged directly from the truck chute or by pump/crane and skip. Concrete delivery shall be controlled to prevent spillage of the concrete. Cleaning out of the truck chute shall be into a designated waste skip or onto plastic sheeting. Washing out of the mixer drum shall be prohibited on the site – water shall be added to the mixer and the truck shall be driven back to the batching plant for final wash out. Waste concrete shall be allowed to harden and then shall be removed from the site.

To minimize waste arising from the use of concrete and other cementitious material, construction activities shall be carefully planned to make sure that resources are used efficiently and that material is not over ordered. Pre-cast elements shall be considered to minimize concrete wastage. When practicable, alternative uses for excess concrete shall also be identified, such as slope protection. When disposal is unavoidable, material shall be collected and stored to avoid contamination such that it can be disposed of to a public-filling facility or other approved waste-disposal outlet.

A target of less than 4 % of the quantity of concrete waste expressed as a percentage of total quantity delivered have been set for this project to reduce concrete wastage.

12.9.5 Timber

The use of timber in temporary works shall be avoided, reduced or minimized as far as practicable. The design of formwork shall maximize the use of standard panels so that high re-use levels can be achieved. The use of pre-cast elements will also reduce the quantity of timber required. Alternatives such as steel formwork shall also be considered to increase the potential for re-use. Activities where timber may be used shall be identified and the activity and quantity of timber shall be recorded on the Work Processes or Activities Requiring Timber for Temporary Works (H2104/F504) (see Appendix 5 to this Waste Management Plan).

Timber formwork shall be carefully dismantled to prevent damage. The timber shall be de-nailed, cleaned and stacked neatly for re-use. Timber hoarding shall not be used; metal or plastic hoarding panels shall be used instead. Wooden pallets for material delivery may be returned to the supplier for re-use. The use of plastic re-usable pallets shall be encouraged by Leighton Contractors (Asia) Limited with its suppliers.

12.9.6 Steel and Other Metallic Waste

Surplus steel material usually comes from the following main sources:

- reinforcing steel;
- steel from temporary works;
- miscellaneous metalwork, such as steel handrails, pipes;
- steel pile off cuts (Pipe and sheet), and
- off cuts from the storage tank construction

All steel deliveries shall be offloaded using a crane truck. Steel material shall be lifted correctly, stored on timbers and stacked to prevent damage.

Reinforcing steel shall be cut and bent to the approved bar-bending schedules. Every effort shall be made to use the complete 12-metre length of reinforcing steel bar to minimize off-cuts. Checks shall be made to make sure that the reinforcing steel is cut and bent correctly to prevent errors and the need to scrap incorrectly-bent steel. Off-cuts shall be used to support rebar cages. All surplus steel shall be placed in a dedicated skip for recycling.

Steel piles shall be handled correctly to prevent damage. The driving of a pile shall be controlled to ensure maximum utilization of the entire length of the pile. Pile off-cuts shall be re-used as much as practicable. Scrap piles shall be stacked neatly on timber.

The steel storage tanks contain approximately 4,400 tonne of plate and structural steel, to minimize wastage of steel plate, cutting sheets will be prepared to match the available plate sizes of the supply mill.

Plate steel will be cut and prepared off site where possible. Structural steel for the roof trusses and walkways will be fabricated off site and fixed together on site. Plate steel will be delivered to site by barge or truck to minimize handling.

Piping isometrics and cutting sheets will be prepared to minimize the amount of waste pipe.

Other steel and metal items shall be handled correctly to prevent damage. They shall be re-used as much as practicable and, when not in use, shall be stored neatly on timber to prevent damage. Other metallic waste shall, once identified, be segregated and stored in a dedicated skip, and recycling companies shall be sought when the quantity and quality of waste makes recycling practicable and cost effective.

12.9.7 General Material

Good housekeeping measures shall be adopted on site to minimize the quantity of waste that requires disposal. Those measures shall include the allocation of designated storage areas and making sure that material is handled carefully by operatives to prevent damage.

Material, such as timber, metals, plastics and packaging, shall be sorted into different waste streams at source whenever practicable and space allows. Packaging material shall be stored in areas that do not pose a fire risk. Subcontracts shall include requirements for subcontractors to sort and segregate their waste at source. In addition, labour shall be provided to carry out that sorting function in common areas.

12.9.8 Bamboo Scaffolding

The use of bamboo shall be avoided for all significant temporary-access requirements. Metal scaffold shall be used instead. The use of bamboo for minor access solutions shall only be used when permitted by the project director.

12.9.9 Packaging Material and Other Plastics

Only minor quantities of packaging material will be produced. The methods of packaging goods and material shall be examined with suppliers when placing orders to minimize potential future waste.

Packaging material may be returned to the supplier when that service is offered. Alternatively, efforts shall be made to identify and utilize companies that are prepared to accept packaging material of the quality and quantity produced by the site for recycling purposes. That material shall be segregated, kept dry and removed from site regularly to avoid any fire risk.

Separate segregation bins shall be used for smaller items of plastic waste. Empty plastic drink bottles shall be placed into the appropriate bins and collected regularly for recycling purposes by the site amah.

12.9.10 General Refuse

General refuse generated on-site shall be stored in bins or skips separate from construction and chemical wastes. Separate bins shall be provided for aluminium cans, plastic bottles and paper to facilitate segregation of those waste streams for recycling. A reputable waste collector shall be engaged to remove general refuse from the site separately from inert construction and demolition

material and chemical waste. General refuse shall be removed frequently to minimize odour, pest and litter impacts and shall be disposed to strategic landfill. Refuse shall not be burned on site.

12.10 Disposal of Waste

12.10.1 Disposal of Public Fill

Inert portion of construction and demolition material (public fill) shall be managed in the following order:

- surplus public fill shall be delivered and re-used at Leighton Contractors (Asia) Limited own outlets;
- public fill that can be re-used and/or recycled shall be re-used at location outlets to be agreed with the Employers Representative, and
- surplus public fill that cannot be re-used and recycled, such as unsuitable material, shall be delivered to a public-fill reception facility. The public-fill reception facility to be used for this contract is Tuen Mun Area 38.

The surplus public fill from the excavation works shall be transported by truck to Tuen Mun Area 38.

A Waste Chit shall be prepared and used for each truckload of material disposed to a public-fill reception facility.

12.10.2 Disposal of Construction and Demolition Waste to Landfill/Sorting Facility

When construction waste cannot be segregated and sorted for re-use or recycling, such as vegetation, it shall be disposed at a landfill site. Leighton Contractors (Asia) Limited target shall be to make sure that all inert material is segregated out of the construction-waste stream to minimize the inert portion so that the remaining construction waste can be disposed directly to landfill and not taken to a sorting facility, thus freeing that facility to other users.

12.10.3 Procedure for Construction Waste Disposal Charging Scheme

The procedure for the Construction Waste Disposal Charging Scheme is:

- 1) Leighton Contractors (Asia) Limited shall apply for an account and obtain Chits (refer to Section 14, Waste Management Records, for an example of a Chit) from the Environmental Protection Department for the disposal of construction waste at a waste disposal facility. Leighton Contractors (Asia) Limited shall complete all relevant details on the Chit.
- 2) Following checks of the load and prior to the vehicle leaving the site, Leighton Contractors (Asia) Limited shall present the completed Chit to the waste haulier and retain Part A of the Chit for record. The Chit (Parts B and C) shall be carried on board the waste-haulier's vehicle at all times throughout the vehicular trip.
- 3) For each vehicular trip, the waste haulier shall present to the operator of the designated public-fill reception facility/landfill/sorting facility (the operator) the completed Chit prior to the disposal of the construction-and-demolition material. The operator shall scan the barcode on the Chit and return Part B of the Chit to the waste haulier together with a computer print-out receipt to acknowledge the disposal of the construction waste. Leighton Contractors (Asia) Limited shall retain the original receipt and the copy of Part A of the Chit, which will be retained for inspection by the Drainage Services Department's Representative, if required.

- 4) Leighton Contractors (Asia) Limited shall check the Environmental Protection Department website on a regular basis to verify that deliveries from the project have been recorded. The return of the Chit and receipt shall be a condition of payment to the subcontractor or company transporting the waste to the waste-disposal facility.

12.11 Site Tidiness

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

To help foremen and supervisors, a Daily/Weekly Site Tidiness Checklist shall be developed. That checklist shall be used as an *aide memoir* and signed off on a daily basis by the foremen after they complete their checks at the end of the day to make sure that the site is clean and tidy. The Daily/Weekly Site Tidiness Checklist is also signed off at the end of the week after the major site tidy up operation. The Daily/Weekly Site Tidiness Checklist forms part of the Site Tidiness Report submitted each week. (Form H2104/F507 see Appendix 6)

12.12 Corrective Action

Corrective action arising from an exceedance of prescribed parameters, as detailed in the Environmental Monitoring & Audit Manual, shall be carried out in accordance with the relevant Environmental Monitoring & Audit Event Action Plans.

Corrective action shall be required when a condition has been identified that has caused a non-conforming incident or even, such as an adverse environmental impact or improper working practice. Such conditions may be identified through day-to-day supervision of the works, during formal routine environmental monitoring activities, following audit or via complaints from stakeholders. Ideally, corrective action shall be taken immediately following the identification of a non-conformance. Table 12-5 gives guidance on the types of corrective action to be taken.

Table 12-5 Waste-management Corrective Action

Non-conformance Identified	Example Condition	Action to be Taken	Record (when appropriate)
During day-to-day supervision activities	Litter found on ground in vicinity of waste bin	If possible, correct condition immediately It is not necessary to formally record action taken. However, project environmental coordinator should be advised if this is a repetitive problem	Advise project environmental coordinator if necessary
	Insufficient bins for waste segregation	Report condition to production manager/project environmental coordinator to investigate and instigate corrective action in accordance with MP-019	Form F003
During formal routine environmental monitoring and inspection	Waste skip found to be full	If possible, correct condition immediately and review collection frequency	Make remark on checklist detailing what action was taken
	Chemical-waste drums not suitable for waste	Obtain containers from chemical waste collector, carry out formal corrective action	Form F003

Non-conformance Identified	Example Condition	Action to be Taken	Record (when appropriate)
	produced	in accordance with MP-019 if necessary	
Following complaint	Food remnants found on floor	Record in complaints register, correct condition, raise corrective action request if necessary	Entry in complaint register Form F003
During internal audit	-	Carry out formal corrective action in accordance with procedure MP-020	Audit report

12.13 Preventive Action

The need for preventive action shall be identified and action determined by using a number of different methods, including risk assessment, day-to-day supervision of the works and formal routine environmental monitoring and audit activities. When a condition has been identified that requires documented preventive action not already covered by the items in Table 12-6 or in the relevant environmental control plan, a formal corrective action request (Form F003) shall be generated and implemented (for preventive actions, impact classification is marked NA).

Table 12-6 Waste-management Preventive Action

Item No.	Preventive Action	Method
1	Monitor effectiveness of ongoing mitigation measures identified and check waste-management facilities and general housekeeping	Visual monitoring in accordance with checklist
2	Minimize timber waste by careful design of formwork	Maximize re-use or consider alternative material
3	Minimize paper use and waste	Implement Leighton Asia Document Management System, provide dedicated trays on photocopier for recycled paper
4	Minimize waste sent to landfill	Sort and segregate demolition material into waste streams and recycle when practicable

13. Chemical Waste Management

13.1 Chemical Management

The handling and use of chemicals is generally managed under Leighton Contractors (Asia) Limited site-safety system. However, environmental aspects that may arise from those processes are addressed below.

13.1.1 Chemical Inventory

An inventory of Material Safety Data Sheets for each chemical and other hazardous material shall be held on site. The contents of those sheets with respect to environmental concerns shall be examined to identify environmental handling and disposal risks. Copies of Material Safety Data Sheets shall be available at stores.

13.1.2 Handling Procedures

Chemicals shall be handled in accordance with the requirements of the appropriate Material Safety Data Sheet. Only sufficient quantities of material shall be used at any time to minimize the risk of spillage.

Particular care shall be taken when refuelling plant to prevent surplus fuel being spilled onto the ground. Precautionary measures to be taken shall include using drip trays or buckets to catch surplus fuel. Care shall be taken in positioning drip trays so that there is sufficient space to contain accidental spillage from refuelling operations.

13.1.3 Storage

Bulk supplies of liquid chemicals shall be stored on drip trays. When small drums are moved to their place of use, they shall be handled with care and returned to the drip tray after use.

Large chemical containers shall be stored at ground level and adequate handling space shall be provided around all containers.

All storage containers shall be correctly labelled and only compatible chemicals shall be stored together. Suitable warning notices, emergency response plans, contact numbers shall be posted around the site including storage areas.

The storage areas and containers shall be inspected regularly for signs of leaks or defective containers.

To prevent overflow of drip trays, particularly during the wet-season, the following mitigation is recommended:

- cover the drip tray to prevent water ingress, either completely or by fixing a skirt between the drums and the lip of the drip tray;
- increase the frequency of emptying the drip tray, and
- provide a cover to the open front of the chemical-waste store.

13.2 Chemical Waste Management

Chemical waste shall be disposed in accordance with statutory requirements. The project environmental coordinator shall register the project as a chemical-waste producer with the Environmental Protection Department and shall establish suitable temporary storage facilities for that waste at the site. Those facilities and methods of storage shall comply with the Code of

Practice on the Packaging, Labelling and Storage of Chemical Wastes. Chemical waste shall be disposed via a licensed waste collector to either:

- a facility licensed to receive chemical waste, or
- a company re-using the waste under approval from the Environmental Protection Department.

Waste-producer's copies of trip tickets for collection/disposal shall be retained by the project environmental coordinator and maintained in the project system.

Other hazardous material used on site shall be stored to minimize the risk of land contamination or water pollution. Measures shall typically include the use of bunded areas for bulk storage and drip trays or impermeable sheeting covered by absorbent material to collect accidental spillage.

14. Waste Management Records

14.1 General Requirements

Under the Leighton Contractors (Asia) Limited Management System, all records shall be carefully generated, checked, maintained and finally archived on completion of Design and Construction of Permanent Aviation Fuel Facility. The principles to be followed are set out in management procedure MP-022, General Requirements for Records Control. Among those requirements, a project filing list shall be prepared that will include a section for environment- and waste-related records.

14.1.1 Project Filing List

The filing system for environmental management will form part of our overall management system filing system. The basic requirement for the filing system is detailed in Table 14-1. Other records such as correspondence will be included in other areas of the project filing system.

Table 14-1 Environmental Filing System

Main File Group	Section	Subsection
Quality and Environmental Management System	Project Plans (Original)	Project Management Plan
		Construction Plan
		Design Plan
		Waste Management Plan
		Environmental Management Plan
		Environmental Monitoring and Audit Manual
	Superseded Project Plans	
	System Documentation	Project Procedures
		Project Forms
	Reports	Quality
		Environment
		Environmental Monitoring and Audit
	Internal and External Audit Reports and Follow-up	Quality Assurance
		Environment
	Combined Quality and Environmental Review Committee Meeting	
	Corrective Action Requests	
	Non-conformance Reports	
	Objectives and Targets	
	Training Materials	Quality Assurance
		Environment
		Technical
	Quality Documentation by Others	
	Document Transmittals	
	Document Registers	Drawings
		Inspection and Test Plan
		Method Statement

Main File Group	Section	Subsection
		Specification
	Inspection, Measuring and Testing Equipment	
	Onsite/Offsite Subcontractor/Supplier Monitoring	
	Environmental Legislation, Codes of Practice and Guidance Notes	
	Environmental Licences, Permits and registrations	
Environment Implementation and Monitoring	Routine Environmental Monitoring Checklist	
	Routine Water Quality Monitoring Checklist	
	Waste Monitoring Weekly Monitoring Checklist	
	Waste Flow Table/Concrete Waste Register	
	Energy Usage	
	Waste Disposal Records, Chits and Trip Tickets	
	Waste Recycling Records	
	Environmental Monitoring and Audit	Site Inspection
		Notifications of Environmental Quality Limit Exceedance
		Impact Monitoring

14.1.2 Control of Records

Environmental records shall be checked and verified by the project environmental coordinator or nominee prior to storage in the filing system to make sure that the record shows that performance meets our requirements. If the record indicates that there is a non-conformance, details shall be investigated and corrective action taken as necessary.

14.1.3 Filing

Records shall be progressively filed by the project environmental coordinator and project secretary into the central file. A second copy shall be maintained as an electronic copy. Whenever practicable, the electronic copy shall be accessed if there is a need to review the record.

14.1.4 Archiving

Records shall be archived at the end of Design and Construction of Permanent Aviation Fuel Facility (or before if required by the person in charge of the contract). Environmental records will be archived for a period of time required by the Contract or Leighton Contractors (Asia) Limited guidelines, whichever is longer.

14.2 Licences and Permits

Waste Management-related licences and permits shall be maintained by the project environmental coordinator within the project filing system. Where necessary, a separate register shall be maintained to monitor validity and expiry date. The documents shall be displayed on site as required by legislation. For example, Construction Noise Permits and the Environmental Permit shall be displayed prominently outside the site on the hoarding.

In addition, the content and conditions specified in the licences and permits shall be actively communicated to staff, subcontractors and the workforce via correspondence, training or prominent posting on site.

14.3 Staff and Workforce Training Records

Records shall be maintained for all training conducted by the project. The type of training record and the persons responsible for maintaining those records are detailed in Table 14-2.

Table 14-2 Waste Management Training Records Maintenance

Training Record Description	Record Type (Typical)	Person Responsible
Leighton Contractors (Asia) Limited employees' employment records	Résumés Details of education and qualifications held Professional qualifications	Personnel Department, head office
Environmental training records for site staff	Training record Form F101 and attachments	Project environmental coordinator/Personnel Department (copy)
Induction training – workforce	Training records	Safety officer/project environmental coordinator
Environmental tool-box meetings	Training records	Safety officer/project environmental coordinator

14.4 Correspondence with Authorities

All correspondence with authorities, particularly the Environmental Protection Department, shall be maintained within the project filing system. When an oral communication has taken place that is significant to the project, it shall be confirmed either in writing or a record kept using a standard record of conversation (Form F515) or similar.

14.5 Monitoring, Test and Audit Records

All monitoring and test records compiled by, or on behalf of, Leighton Contractors (Asia) Limited shall be checked and verified on receipt by the project environmental coordinator or nominee and maintained and filed in the project filing system. Those records include:

- completed weekly environmental site walk checklist;
- waste flow tables, and
- trip tickets of waste disposal.

Audit records, both internal and by Leighton Contractors (Asia) Limited Environmental Management Committee, shall be kept by the project environmental coordinator in the project filing system.

14.6 Waste Management Complaints

Any written environmental complaints relating to waste issues received directly by Leighton Contractors (Asia) Limited shall be logged using a complaints database and responded to promptly. An initial response shall preferably be provided within 72 hours giving the complainant the time-frame for investigation and formal reply.

14.7 Corrective Action

Records of corrective action shall be registered and maintained in the project filing system by the project environmental coordinator or nominee.

14.8 Trip Tickets/Waste Disposal Chits

14.8.1 Construction and Demolition Material

The Trip Ticket Implementation for the proper disposal/removal of construction and demolition material to disposal facilities shall be maintained and monitored as described in section 12.10.3.

Before the construction waste can be transported off site, a Chit shall be issued to the vehicle operator by Leighton Contractors (Asia) Limited. An example of a Chit used for disposal is shown in Figure 14.1.

入帳票編號: 00000688
Chit No.: 00000688

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

堆填區 Landfills 篩選分類設施 Sorting Facilities
 公眾填料接收設施 Public Fill Reception Facilities
 離島廢物轉運設施 Outlying Islands Transfer Facilities

車牌號碼 Vehicle Registration Mark: AB1234

使用日期: 28/06/2005
Date of Use: 28/06/2005

簽發人: HONG
Issued by: HONG

建築廢物產生地點: 88 Victoria Road, Kennedy Town, Hong Kong
Construction Waste Generated Site: 88 Victoria Road, Kennedy Town, Hong Kong

帳戶編號: 5000025
Account No.: 5000025

甲部份: 由帳戶主保留 Part A: retained by Account-holder
乙部份: 由廢物運輸商保留 Part B: retained by Waste Handler

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

載運入帳票
CHIT

車牌號碼: 00000688
Vehicle Registration Mark: AB1234

有效期至: XX/XX/XXXX
Valid Until: XX/XX/XXXX

建築廢物產生地點: 88 Victoria Road, Kennedy Town, Hong Kong
Construction Waste Generated Site: 88 Victoria Road, Kennedy Town, Hong Kong

帳戶名稱: ABC Construction Company
Name of the Account-holder: ABC Construction Company

帳戶編號: 5000025
Account No.: 5000025

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

Figure 14.1: Example Waste Disposal Chit issued under Waste Disposal (Charges for Disposal of Construction Waste) Regulation

Leighton Contractors (Asia) Limited shall also use separate trip tickets for Design and Construction of Permanent Aviation Fuel Facility to record the re-use, recycling and transfer of material between contracts and other outlets.

A comprehensive register of the Disposal Delivery Form (trip-ticket system) shall be established for recording the disposal of construction and demolition material. The register shall also cover the recyclable material removed off the site by the recycling contractor. The Leighton Asia Document Management System may be used for this purpose, where necessary.

14.8.2 Chemical Waste

A monitoring system for the proper disposal/removal of chemical waste to disposal facilities shall be maintained. The chemical waste trip-tickets shall be provided by the authorized collector and a copy kept in the project filing system.

15. Glossary of Terms

activities

Includes the operation of plant and equipment, site establishment, construction processes and other miscellaneous activities involved with carrying out the works at the project site.

audit

Verification activities to measure compliance levels with system requirements or achievement of product quality as appropriate.

checklist

Documented list of items to be inspected checked or verified by signature as work proceeds.

chemical waste

Any substance or thing being scrap material, effluent or an unwanted substance or by-product arising from the application of or in the course of producing any substance or chemical specified in Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation if such substance or chemical occurs in such form, quantity and concentration so as to cause pollution or constitute a danger to health or risk of pollution to the environment.

Client

ECO Aviation Fuel Development Limited

Client's Representative

The person authorized by the ECO Aviation Fuel Development Limited to represent ECO Aviation Fuel Development Limited

construction and demolition (C&D) material

Definition used in environmental impact assessment reports but now superseded to a large extent by the new charging-scheme definitions Construction and demolition material for disposal that contains a mixture of inert and non-inert material. The inert portion is known as public fill and comprises excavated earth, asphalt, building debris, broken rock and concrete.

construction waste

Any substance, matter or thing that is generated from construction work and abandoned or stockpiled before being abandoned, but does not include any sludge, screenings or matter removed in or generated from any de-sludging, de-silting or dredging works.

controlled copy

An issue of a document or item that has its details of issue, revision and document type recorded and registered.

corrective action

The proposed method of rectifying or remedying conditions that have caused a non-conformance or are adverse to project delivery and service provision. The corrective action is documented by issuing a Corrective Action Report.

Disposal Delivery Form

This form is used to record the removal, transfer or delivery of construction and demolition material and waste between locations. It is used in addition to the Chit issued under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation.

environmental aspect

Element of the project's activities, products or services that can interact with the environment.

Facilities Management Group

The Facilities Management Group, operated under the Waste Facilities Division, has the responsibility to manage waste disposal, including three strategic landfills, refuse-transfer stations and programmes to reduce waste.

Good Practice Guideline (GPG)

Good practice guidelines are used to provide instruction on how to carry out a specific task or process relating to the management system, for example, monitoring of water quality.

inert construction waste

Material accepted for disposal at public-fill reception facilities. That material includes rock, rubble, boulder, earth, soil, sand, concrete, asphalt, brick, tile, masonry or used bentonite.

landfill

Landfills accept mixed construction waste (containing not more than 50 per cent by mass of inert construction waste) and they are managed by the Environmental Protection Department and include:

- North-east New Territories Landfill;
- South-east New Territories Landfill, and
- West New Territories Landfill.

Management Procedure (MP)

Company management procedures established by Leighton Contractors (Asia) Limited, and adopted by the project, that make up the management systems and that comply with ISO 9001 : 2000 and ISO 14001 : 2004.

method statement

Documents outlining the planned approach for executing a work activity that also contains sections on environmental protection.

non-conformance

Failure to achieve a specified requirement. For an environmental non-conformance, the non-conformance is documented by issuing a Corrective Action Request.

non-inert construction waste

Material that is not accepted for disposal at public-fill reception facilities. That material may include marine mud, household refuse, plastic, metal, timber, chemical waste, vegetable material and other unsuitable material.

project director

The generic term for the person in charge of the project. The actual position title will vary depending on the scale of the project, for example, project director, project manager or senior site agent.

preventive action

Action taken to avoid occurrence of an anticipated non-conformance – risk-management techniques are used for this purpose.

project

Design and Construction of Permanent Aviation Fuel Facility

project environmental coordinator (PEC)

The generic term for the project representative responsible for environmental management matters at a project.

project instructions/procedures

Procedures developed for use on the project by the project team to manage aspects that are not adequately covered by existing procedures.

project network

The local area network established at the project office(s) to enable information to be shared electronically. The network is also linked to Leighton Contractors (Asia) Limited head office to enable electronic communication between the project and support functions.

public-fill reception facility

Public-fill reception facilities accept entirely inert construction waste, are managed by the Civil Engineering and Development Department and include:

- Tseung Kwan O Area 137 Fill Bank;
- Tuen Mun Area 38 Fill Bank;
- Quarry Bay Temporary Public Filling Barging Point, and
- Mui Wo Temporary Public Fill Reception Facility.

public-fill barging point

A strategically-located public-fill reception facility that utilizes barge transportation to transfer public fill from road vehicles to marine-based public-filling areas.

public-fill stockpile area

A newly-reclaimed land area where public fill is stockpiled as surcharging material to accelerate the settlement process. It also may be used to stockpile material for re-processing and re-use (eg, as recycled aggregate).

Public Fill Committee

The Public Fill Committee has the responsibility to implement measures to promote avoidance, minimization, re-use and recycling of construction and demolition material. It also oversees the management of public-filling operations and facilities and the use of land-based fill reserves. In addition, the Public Fill Committee produces and circulates the Public Filling Programme and designates the public-filling facilities for public-works projects.

quality powered mechanical equipment

Construction equipment certified to European Council Directive 2000/14/EC or equipment issued with a Low Noise or Super Low Noise Emission Label by the Japanese Ministry of Land, Infrastructure and Transport.

sorting facility

Sorting facilities accept mixed construction waste (containing more than 50 per cent by mass of inert construction waste), are managed by the Civil Engineering and Development Department and include:

- Tseung Kwan O Area 137 Temporary Construction Waste Sorting Facility, and
- Tuen Mun Area 38 Temporary Construction Waste Sorting Facility.

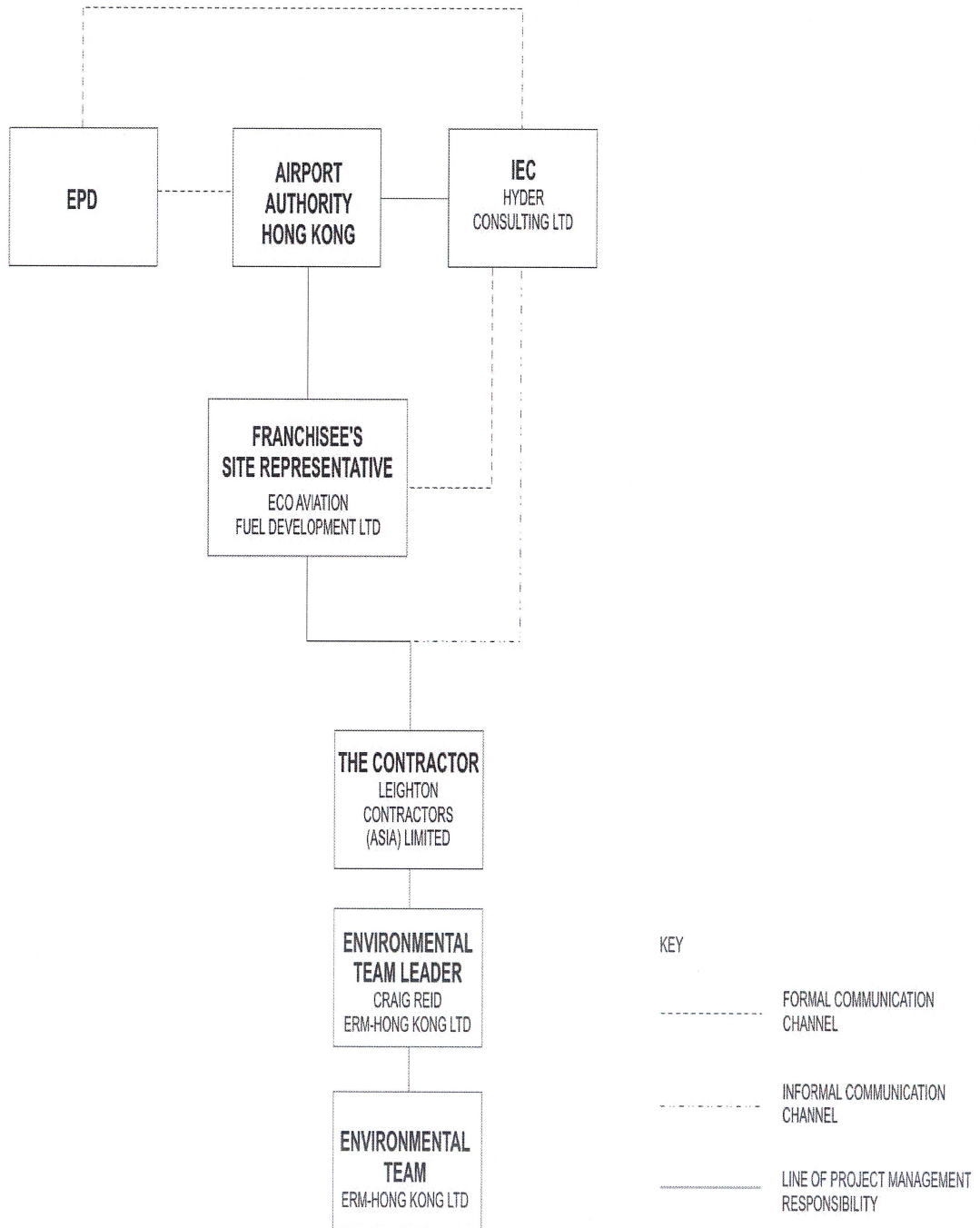
stakeholder

A stakeholder is any person, organization or group that is directly influenced by or benefits from the project, eg, local community or ECO Aviation Fuel Development Limited

Waste Disposal Chit

Delivery docket used for waste disposed to a Waste Disposal Facility under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation.

Appendix 1
**Design and Construction of Permanent Aviation Fuel Facility Environmental
Management Organigram**



**Appendix 2
Environmental Control Plan
ECP 5 – Waste Management**

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Contract No: H2104			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Action party(s)
1	Production of inert construction-and-demolition material requiring disposal	<ol style="list-style-type: none"> 1 Reduce amount of construction-and-demolition material generated by careful planning and procurement. 2 Properly sort construction-and-demolition material and re-use on-site as backfilling material and for landscaping works as far as practicable. 3 Re-use volcanic rock generated from the tunnelling works for reclamation or rock fill by other projects either in the Hong Kong SAR or elsewhere. 4 Dispose of suitable inert construction-and-demolition material to public-fill facility. 5 Make sure Chit and a trip ticket are prepared for each load taken to public-fill facility. 6 Consider selling demolition material. 7 Implement site management plan for trip tickets. 	<p>Engineer/ superintendent/ supervisor/foremen</p> <p>Additional Control/monitoring and measurement procedures/methods (if necessary)</p> <p>Routine Environmental Monitoring Checklist or equivalent Waste Disposal Chit and Disposal Delivery Form endorsed by Contractor and Employers Representative Database printout of deliveries to facility</p>
2	Inert construction-and-demolition material has contamination (eg, vegetation, rebar, timber or plastic) making it unsuitable for disposal at public fill	<ol style="list-style-type: none"> 1 Sort and segregate material to remove contamination so that it can be accepted as public fill 2 Make sure Chit and a Disposal Delivery Form are prepared for each load taken to appropriate waste-disposal facility. 3 Check that no contamination of chemical waste is present that may cause rejection. 4 Sign Disposal Delivery Form to verify compliance. 5 Security staff at site exit to check load. 6 Implement site management plan for trip tickets. 	<p>Engineer/ superintendent/ supervisor/foremen/ subcontractor/truck driver</p> <p>Routine Environmental Monitoring Checklist or equivalent Waste Disposal Chit and Disposal Delivery Form endorsed by Contractor and Employers Representative Database printout of deliveries to facility</p>
3	Production of construction and demolition material requiring disposal	<ol style="list-style-type: none"> 1 Reduce amount of construction-and-demolition material generated by careful planning and procurement. 2 Properly sort construction-and-demolition material and recycle for use in construction. 3 Dispose of construction-and-demolition waste to landfill 4 Make sure Chit and Disposal Delivery Form are prepared for each load taken to landfill. 	<p>Project environmental coordinator/ engineer/ superintendent/ supervisor/foremen</p> <p>Routine Environmental Monitoring Checklist or equivalent Waste Disposal Chit and Disposal Delivery Form endorsed by Contractor and</p>

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Environmental Aspect: Waste Management			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Action party(s)
		5 Consider selling demolition material. 6 Implement site management plan for trip tickets.	Additional Control/monitoring and measurement procedures/methods (if necessary) Employers Representative Database printout of deliveries to facility
4	Incorrect disposal of waste fuels, oils and solvents (ie, chemical waste)	1 Register as chemical-waste producer. 2 Incorporate trip-ticket system in Environmental Management Plan. 3 Only engage licensed waste collectors. 4 Establish chemical-waste storage facility on site.	Project environmental coordinator/superintendent/supervisor/foremen Routine Environmental Monitoring Checklist or equivalent
5	Accumulation of general refuse causing potential rodent/pest infestation	1 Erect and maintain awareness publications (eg, posters) regarding dangers of allowing pests and breeding. 2 Provide awareness training. 3 Make sure adequate number of waste skips are provided and are changed in timorously.	Safety offices/superintendent/supervisor/foremen Routine Environmental Monitoring Checklist or equivalent

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Environmental Aspect: Waste Management			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Action party(s) Additional Control/monitoring and measurement procedures/methods (if necessary)
6	Poor handling of material causing loss or damage resulting in waste	<ol style="list-style-type: none"> 1 Provide training on material handling. 2 Supervise material handling. 	Monthly Material Storage Inspection Checklist (F173)
7	Poor storage of material causing loss or damage resulting in waste	<ol style="list-style-type: none"> 1 Make sure material is stored in proper manner (eg, stacked properly to prevent damage). 2 Minimize stockpile on site. 	Routine Environmental Monitoring Checklist or equivalent
8	Poor workmanship causing demolition and rework	Improve awareness of site supervision staff.	Nil

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Contract No: H2104			
Environmental Aspect: Waste Management			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Additional Control/monitoring and measurement procedures/methods (if necessary)
9	Production of waste: general material and packaging	<ol style="list-style-type: none"> 1 Recycle usable material and packaging (eg, cardboard boxes) 2 Investigate opportunity to return packaging to supplier. 	Routine Environmental Monitoring Checklist or equivalent
10	Disposal of surplus material as result of over-ordering	<ol style="list-style-type: none"> 1 Make sure estimation is correct during procurement stage. 2 Continue monitoring of quantity of site stockpile. 	Nil
11	Disposal of packaging material (eg, cardboard, polystyrene)	Recycle usable material and packaging (eg, cardboard boxes)	Routine Environmental Monitoring Checklist or equivalent
12	Disposal of brake linings and oily rags	<ol style="list-style-type: none"> 1 Make sure brake linings containing asbestos are disposed in accordance with Environmental Protection Department's Code of Practice on the handling, transportation and disposal of asbestos waste. 2 Make sure oily rags are collected for proper disposal. 	Nil
13	Disposal of spent batteries	<ol style="list-style-type: none"> 1 Use generator/permanent power source, when practicable. 2 Use rechargeable batteries. 3 Use licensed collector. 4 Use trip-ticket system. 	Trip-ticket System

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Environmental Aspect: Waste Management			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Additional Control/monitoring and measurement procedures/methods (if necessary)
14	Disposal of unusable tyres	<ol style="list-style-type: none"> 1 Try to source recycling company for tyres. 2 Collect unusable tyres for recycling purposes. 	<p>Receipt</p>
15	Paper use and disposal (office)	<ol style="list-style-type: none"> 1 Improve awareness of staff by including procedure to minimize paper usage in environmental induction training. 2 Re-use paper (double-sided printing), recycle disposed material. 	<p>Project environmental coordinator/all staff</p>
16	Mobile-phone batteries	<ol style="list-style-type: none"> 1 Improve awareness of staff by including procedure of recycling mobile phone batteries in environmental induction training. 2 Dispose batteries in government collection bins. 	<p>Project environmental coordinator/all staff</p>
17	Concrete spillage during washing out of truck mixer disposed as hardened-concrete waste to public-fill reception facility	<ol style="list-style-type: none"> 1 Make sure all concrete trucks are directed to wash-out area before spraying with water. 2 Reduce magnitude of impact by providing designated wash-out bins/skips. Re-use or dispose of to public-fill reception facility. 	<p>Routine Environmental Monitoring Checklist or equivalent</p>

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Environmental Aspect: Waste Management			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Additional Control/monitoring procedures/methods (if necessary)
18	Production and disposal of general refuse causing litter nuisance (includes newspaper, food boxes, cans)	<ol style="list-style-type: none"> 1 Provide separate bins for recycling (eg, paper, aluminium cans, plastic bottles) if in area where recycling is feasible. 2 Include issues in site induction. 3 Provide posters/notices to increase awareness. 4 Store general refuse in enclosed bins or compaction units separate from construction-and-demolition material. 5 Employ a reputable waste collector to remove general refuse from the site, separately from construction-and-demolition material. 6 Provide an enclosed and covered area to reduce the occurrence of 'wind blown' light material. 	Waste Management Plan
19	Production and disposal of sludge/waste from holding tank or similar	<ol style="list-style-type: none"> 1 Appoint authorized waste collector. 2 Periodically clean holding tank or similar by waste collector. 	Cleaning Records
20	Loss of semi-liquid/solid waste from vehicles in transit (eg, mud on road, leakage of fluid from tail gate)	<ol style="list-style-type: none"> 1 Make sure vehicles are covered properly before leaving site (e.g. cover skip by tarpaulin). 2 Make sure tail gates are sealed when transporting semi-liquid waste. 	Routine Environmental Monitoring Checklist or equivalent
21	Use and disposal of plant, site accommodation and other surplus equipment	<ol style="list-style-type: none"> 1 Re-use plant/parts of plant, when practicable. 2 Re-use surplus equipment/parts of surplus equipment, when practicable. 3 Send to Plant Department/storage facilities for storage. 	Nil

Environmental Control Plan

Contract Name: Permanent Aviation Fuel Facility		Plan No:	ECP 5
Environmental Aspect: Waste Management			
ID No	Environmental Aspect (and impact where necessary)	Actions Required	Action party(s) Additional Control/monitoring and measurement procedures/methods (if necessary)
		4 Sell to old-parts collectors.	
22	Disposal of residual cleaning material from painting (using acrylic, water-based paints)	<ol style="list-style-type: none"> 1 Do not dispose of waste water used for cleaning purposes into surface-water drains. 2 Place any residual material into drum containing sand. When full, place material into chemical waste store. 3 Dispose of via licensed collector. 	Project environmental coordinator/superintendent/supervisor/foremen Nil
23	Controlled disposal of empty tins that have previously contained chemical material	<ol style="list-style-type: none"> 1 Make sure there is no residue in tin that is potentially reactive. 2 Segregate from main waste skip. 3 Engage chemical-waste collector. 	Project environmental coordinator/superintendent/supervisor/foremen Nil
24	Bad site practices causing waste nuisance	<ol style="list-style-type: none"> 1 Nominate an approved person, such as a site manager to responsible for good site practices, arrangement for collection and effective disposal of all wastes generated at the site to an appropriate facility. 2 Train site personnel in proper waste management and chemical handling procedures. 3 Provide sufficient waste disposal points and regular collection of waste. 4 Cover trucks or transport waste in enclosed containers to minimise windblown litter and dust transportation of waste. 5 Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. 	Project Manager/Project environmental coordinator/superintendent/supervisor/foremen Nil

**Appendix 3
Routine Environmental Monitoring and Inspection Checklist and Report**

Routine Environmental Monitoring and Inspection Checklist and Report

Items to Check

1 Legal compliance

Have any summons been received from authorities since the last audit?

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.....

2 Public display of environmental notices

Company Environmental Policy (Chi/Eng)?	<input type="checkbox"/>	Spill team names and contact details?	<input type="checkbox"/>
Objectives and Targets?	<input type="checkbox"/>	Project environmental coordinator name/contact?	<input type="checkbox"/>
Objectives and targets action plan?	<input type="checkbox"/>	Permits and licences?	<input type="checkbox"/>
Environmental emergency response procedure?	<input type="checkbox"/>	Good/bad example photographs posted?	<input type="checkbox"/>

.....

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3 Noise and vibration

Plant and Mechanical Items Fitted With:		Shut down if not required for long period?	<input type="checkbox"/>
Effective silencers?	<input type="checkbox"/>	Noise barriers in position?	<input type="checkbox"/>
Noise Emission Label/QPME Label clearly displayed on plant?	<input type="checkbox"/>	Noise enclosures in use and effective?	<input type="checkbox"/>
Plant maintained in good condition	<input type="checkbox"/>	Breaker tip wrapped with sound insulating material?	<input type="checkbox"/>
Engine compartment doors closed?	<input type="checkbox"/>		

.....

.....

4 Emissions to air

Plant exhaust clean? (No visible black smoke except during plant start up)	<input type="checkbox"/>	Asbestos handled as per EPD Code of Practice?	<input type="checkbox"/>
Fixed generators operated in accordance with EPD Certificate of Approval?	<input type="checkbox"/>	Ultra-low-sulphur diesel in use (when specified)?	<input type="checkbox"/>
		Dust/smoke screen in position?	<input type="checkbox"/>

.....

.....

5 Construction dust – 1

2.4-m high hoardings erected (where site boundary adjoins a road, street, service lane or other area accessible to the public)?	<input type="checkbox"/>	Wheel-wash effective (no mud trails on road)?	<input type="checkbox"/>
Hoardings clean and in good condition?	<input type="checkbox"/>	Exits between the wheel wash and public roads hard paved to avoid recontamination?	<input type="checkbox"/>
Material hoists screened?	<input type="checkbox"/>	All main/haul/access roads watered or hard paved to avoid dust impacts?	<input type="checkbox"/>
Scaffolding screened?	<input type="checkbox"/>	Speed limit signs prominently displayed (8 km/hr)	<input type="checkbox"/>
Wheel-wash facility set up and in operation?	<input type="checkbox"/>	Speed limit effectively enforced?	<input type="checkbox"/>
High-pressure hose available?	<input type="checkbox"/>		

.....

.....

Legend: ✓ Yes/Satisfactory X Deficiency N Not applicable

Routine Environmental Monitoring and Inspection Checklist and Report

Items to Check

6 Construction dust – 2

Stockpiles of Dusty material Watered, Covered, Compacted, Seeded or Sheltered, as Appropriate, to Prevent Dust:
 Debris?
 Cement >20 bags?
 Bulk cement/dry pulverized fuel ash?
 Earth/sand?

Surcharges?
 Trucks carrying dusty material properly covered before leaving the site?
 Belt conveyor system for transfer of dusty material is enclosed (e.g., conveyor, transfer points)?

7 Construction dust – 3

Activities Damped Down, Covered or Dust Extraction Equipment Used as Appropriate to Prevent Dust:
 During excavation?
 Demolition works?
 Material handling and transfer?

Pneumatic or power-driven drilling?
 Blasting?
 Site clearance?
 Batching and Concrete Production:
 Debagging of cement enclosed?
 Compressed air not used for cleaning?

8 Temporary drainage and treatment facilities

Temporary site-drainage system designed?
 System installed as per design?
 Concrete wash-out facilities available?
 Water-treatment facilities available?

Facilities regularly maintained?
 Water discharge quality complies with legal limits?

9 Surface-water management

Water prevented entering site?
 Hoarding sealed at base?
 Entry/exit to site protected (eg, drainage, bund)?

Contaminated water treated before leaving site?
 Exposed slopes covered in wet season?
 Crest of batters protected (by ditch or berm)?

10 Marine works (eg, dredging and reclamation)

Silt curtains in place and effective?
 Close-fitted grab in use?
 ASMD operational on barges?

Barge decks cleaned before moving?
 Dredged material disposed to approved dumping grounds?

Legend: ✓ Yes/Satisfactory X Deficiency N Not applicable

Routine Environmental Monitoring and Inspection Checklist and Report

Items to Check

11 Toilets, canteen and workshops

- | | | | |
|---|--------------------------|---------------------------------------|--------------------------|
| Toilets: | | Canteens: | |
| Either discharged to: | | Grease trap installed and in use? | <input type="checkbox"/> |
| Sewer, with DSD approval? | <input type="checkbox"/> | Workshop/Service Areas: | |
| Holding tank/chemical toilets? | <input type="checkbox"/> | Oil interceptor installed and in use? | <input type="checkbox"/> |
| EPD-approved septic tank or proprietary | | Works area covered? | <input type="checkbox"/> |
| sewage-treatment plant? | <input type="checkbox"/> | Bund to retain contaminated wash off? | <input type="checkbox"/> |

12 Use of resources (general)

- | | | | |
|--|--------------------------|--|--------------------------|
| Water | | Energy | |
| Water resources saving notices displayed? | <input type="checkbox"/> | Energy saving notices displayed? | <input type="checkbox"/> |
| Recycling systems in use? | <input type="checkbox"/> | Waste | |
| No water leakage from supply/pipe/hoses/taps)? | <input type="checkbox"/> | Good housekeeping of material storage areas? | <input type="checkbox"/> |

13 Chemical waste

- | | | | |
|--|--------------------------|--|--|
| Compliance with Environmental Protection Department Code of Practice requirements | | Only chemical waste in the store? | |
| Store Design: | | Containers are properly labelled? | |
| Roofed enclosure with 3 walls of height >3 m and sealed floor? | <input type="checkbox"/> | Store is generally clean, no spilt material? | |
| Adequate working space, ventilation and storage capacity of tray for potential leakage? | <input type="checkbox"/> | No mixing of waste types? | |
| Location accessible and isolated from drainage? | <input type="checkbox"/> | Fire extinguisher available? | |
| Chemical Store: | | Other Issues: | |
| Warning sign properly posted? | <input type="checkbox"/> | Empty tins segregated for disposal? | |
| | | General waste skip checked for chemicals? | |
| | | Licensed collector engaged? | |
| | | Trip tickets maintained? | |

14 Waste facilities and segregation

- | | | | |
|--|--------------------------|--|--|
| Waste Collection (General Refuse): | | Plastics? | |
| Are sufficient rubbish bins available? | <input type="checkbox"/> | Paper-based packaging? | |
| Is rubbish being placed in the bins? | <input type="checkbox"/> | Waste Segregation Effective With No Contamination: | |
| Recycle waste bins available (eg, yellow, brown, Blue "wheelie" bins)? | <input type="checkbox"/> | Inert construction and demolition material? | |
| Construction Waste Segregation Area Defined: | | Reinforcing and other steel material/offcuts? | |
| Inert construction and demolition material? | <input type="checkbox"/> | Timber, pallets and formwork? | |
| Reinforcing and other steel material/offcuts? | <input type="checkbox"/> | Plastics? | |
| Timber, pallets and formwork? | <input type="checkbox"/> | Paper-based packaging? | |

Legend: ✓ Yes/Satisfactory X Deficiency N Not applicable

Routine Environmental Monitoring and Inspection Checklist and Report

Items to Check

15 Waste disposal

Trip Ticket System/Charging Scheme Implemented and Effective For:
 Inert material (ie, inert C&D material) Waste to landfill?
 Mixed waste to sorting facility?
 Other material off site for re-use/recycling?

-
-
-
-

Chemical waste?
 Other Requirements:
 Licensed collector engaged to collect specific category of waste?
 Truck displaying dumping license?

-
-
-

16 Contamination

Bulk storage of oils, fuel and chemicals stored in drip trays or bunds?
 Drip trays protected from rain in wet season?
 Drip trays generally clean?

-
-
-

Plant and equipment maintained so that there is no oil leakage?
 Drip trays/buckets at refuelling points?
 No ground contamination at refuelling points?
 Spill-cleanup equipment available?

-
-
-
-

17 Protecting flora and fauna

Flora/fauna to be retained is cordoned off?
 Flora replanted when necessary?

-
-

Trees protected (including crown)?

-

18 General housekeeping

Site clean and tidy?
 Equipment stored properly when not in use?

-
-

Material stored properly?

-

19 Inspection, monitoring and audit

Required actions promptly taken?
 Water monitoring at each discharge point up to date?
 Compliant for pH, TSS, COD as specified?
 Waste-flow tables up to date?

-
-
-
-

Environmental Monitoring and Audit:
 Noise compliance?
 Air compliance?
 Water compliance?
 Environmental Permit submissions up to date?

-
-
-
-

Legend: ✓ Yes/Satisfactory X Deficiency N Not applicable

Routine Environmental Monitoring and Inspection Checklist and Report

Items to Check

20 Performance against objectives and targets

- | | | | |
|---|--------------------------|---|--------------------------|
| <i>Performance Meets/Exceeds Targets:</i> | | <i>Objective 6 – Reduce Concrete Waste?</i> | <input type="checkbox"/> |
| <i>Objective 1 – Legal Compliance?</i> | <input type="checkbox"/> | <i>Objective 7 – Increase Paper Recycling?</i> | <input type="checkbox"/> |
| <i>Objective 4 – Adverse Environmental Impacts?</i> | <input type="checkbox"/> | <i>Objective 9 – Project Objective/Target?</i> | <input type="checkbox"/> |
| <i>Objective 5 – Reduce Construction Waste?</i> | <input type="checkbox"/> | <i>Corrective actions taken when necessary?</i> | <input type="checkbox"/> |

.....

21 Complaints from stakeholders since last inspection and complaint management

- | | | | |
|--|--------------------------|--|--------------------------|
| <i>How many valid complaints since last inspection?</i> | <input type="checkbox"/> | <i>Are all valid complaints closed out within a reasonable time?</i> | <input type="checkbox"/> |
| <i>No repetitive valid complaints?</i> | <input type="checkbox"/> | | |
| <i>Is complaint advised (verbally) of action to be taken (if any) within 72 hours?</i> | <input type="checkbox"/> | | |

.....

Legend: ✓ Yes/Satisfactory X Deficiency N Not applicable

**Appendix 4
Monthly Summary Waste Flow Table**

Waste Flow Table for Environmental Objective 5

Contract:

Contract No:

Year

Permanent Aviation Fuel Facility

H2104

Month	Actual Quantities of Inert Construction Waste Reused/Recycled				Actual Quantities of Construction Waste Recycled ¹				Actual Quantities of Disposed Material					
	Broken Concrete ² Recycled (tonnes)	Re-used in Project (tonnes)	Re-used in Other Projects ³ (tonnes)	Metals Recycled (kg)	Paper Recycled (kg)	Cardboard Packaging Recycled (kg)	Plastic ⁴ Recycled (kg)	Dredged Marine Sediments		Chemical Waste ⁶ to Licensed Facilities		Inert Construction Waste to Public Fill (tonnes)	Construction Waste to Landfill (tonnes)	
								Type 1 (Kg)	Type 1d & Type 2 (kg)	Liquid (litres)	Solid (kg)			
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	
Feb	0	0	0	0	0	0	0	0	0	0	0	0	0	
Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	
Q1 total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	
May	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	
Q2 total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	
Q3 total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	
Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	
Q4 total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	

Note / Definition:

1. Provide further breakdown in Part D2 of Monthly Environmental Report.
2. Broken concrete for recycling into aggregates (eg Tuen Mun Area 38).
3. Other projects include third-parties (eg quarries).

4. Plastic refers to plastic bottles/containers, plastic sheets/foam from packaging material.

5. Examples of other waste recycled may include tyres and computer equipment

6. Chemical waste is split into 2 components: liquid waste (eg spent lubricating oil) and solid waste (eg spent batteries). Provide further breakdown in Part D1 of Monthly Environmental Report.

7. Inert construction waste is also known as public fill. It includes, for example, concrete, rubble, earth, boulder, sand, tile, masonry and used bentonite.

**Appendix 5
Work Processes or Activities Requiring Timber for Temporary Work**

Work Processes or Activities Requiring Timber for Temporary Works

Contract Name: Permanent Aviation Fuel Facility		Contract No: H2104			
Name of Department:					
Item	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Estimated Quantities (m ³)	Actual Quantities used (m ³)	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
Total Estimated Quantity of Timber Used (m ³)					

Notes: a) Works items requiring timber for use in temporary construction works. Several minor work items can be combined for ease of updating.
 b) The summary table shall be submitted monthly to the FSR for review and monitoring.

**Appendix 6
Daily/Weekly Site Tidiness Checklist**

