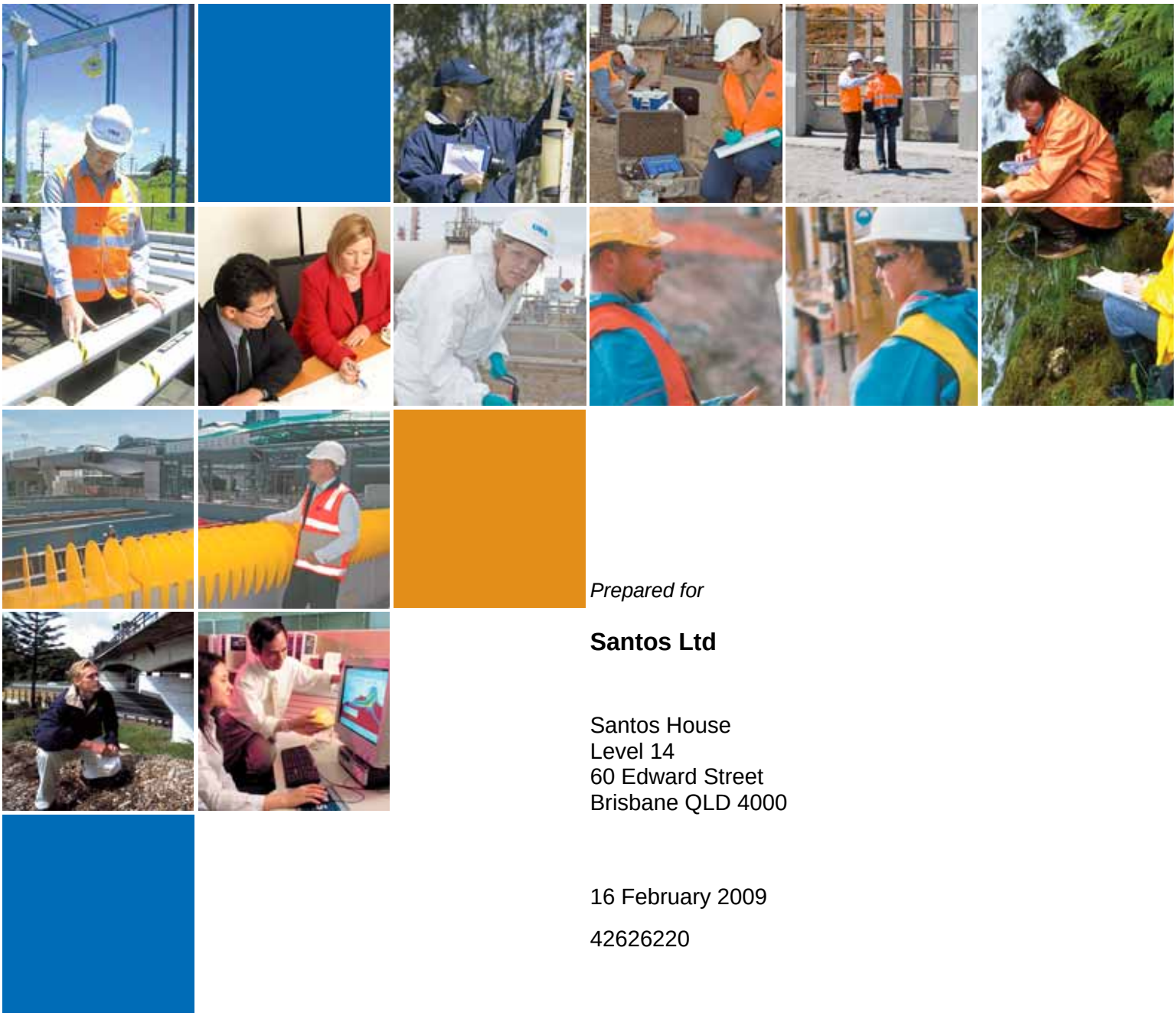
FINAL REPORT

GLNG Environmental Impact Statement - Waste Management Plan



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Date: 16 February 2009
Reference: Appendix K – Waste Management

Status: Final

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Section 1 Introduction

1.1 Scope

This Waste Management Plan (WMP) covers waste management aspects, practices, and procedures associated with construction, operation, and decommissioning of the GLNG project including the CSG fields, gas transmission pipeline, and the LNG facility.

The WMP incorporates waste management strategies from waste generation through to the treatment, handling, storage and disposal process, taking into account the scale of the operations, legislative guidelines and environmental impacts.

1.2 Purpose/Objectives

The purpose of this WMP is to provide a framework to ensure that waste related activities conducted for the GLNG project are in line with Santos' Eastern Queensland Gas Waste Management Plan (EQG WMP) and applicable legislation as discussed in Section 2.1. Key goals for the GLNG project are to:

- Continually maintain high standards of due diligence;
- Maintain proper housekeeping activities for every component of the project;
- Keep detailed records to ensure all wastes are properly handled, stored, treated, and disposed of from each site effectively; and
- Continually improve waste management policies, procedures, and practices.

The objective of the WMP is to provide tools for addressing relevant aspects of waste management including waste minimisation, recycling and reporting for waste streams generated directly and indirectly from GLNG activities. The WMP will also ensure that all GLNG activities comply with policy, license/authority and other relevant legislative conditions.

In general, the WMP strives to improve efficiency, minimise waste streams and improve overall environmental values in the GLNG project area.

1.2.1 Targets

Waste management targets will be established as part of the GLNG project's environmental objectives and targets. The objectives and targets will be derived using the following guidelines:

- **High priority initiatives**: These shall be implemented to treat high level risks or to take advantage of significant financial benefit opportunities and shall be implemented as soon as reasonably practicable.
- **Medium priority initiatives**: These shall be implemented to treat moderate level risks and thus incur financial costs commensurate with the level of risk. It also includes initiatives that provide operational improvements but marginal financial benefits and/or provide less tangible benefits i.e. improved environmental, community or public relations outcomes.
- **Low priority initiatives**: These should be implemented over the longer term to treat low-level risks and should be considered on a cost benefit basis that shall include the less tangible benefits i.e. improved environmental, community or public relations outcomes.

Section 2 Background

2.1 Legislation, Policy and Regulations

2.1.1 Legislation (Queensland)

Environmental Protection Act 1994

The Queensland *Environmental Protection Act 1994* (EP Act) and its regulations and policies were developed to protect Queensland's environment, while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The EP Act is administered by the Environmental Protection Agency (EPA).

The EP Act utilises a number of mechanisms to achieve its objective including:

- Environmental Protection Regulation which includes licensing and approval of all Environmentally Relevant Activities (ERAs);
- Establishing a general environmental duty;
- Process to prepare Environmental Management Plans (EMPs); and
- Issuing environmental protection policies.

The EP Act establishes a duty of care for all persons to take reasonable and practicable measures to prevent and minimise environmental harm.

The EP Act allows for the establishment of Environmental Protection Policies (EPPs) which allow for the Queensland Government to declare and implement its aims and objectives for environmental protection. In regards to waste management; waste generators, transporters and receivers must comply with the following policy and regulations:

- *Environmental Protection (Waste Management) Policy 2000 (EPP Waste); and*
- *Environmental Protection (Waste Management) Regulation 2000 (EP Waste Regulation).*

The EPP (Waste) combined with the EP Waste Regulation aim to co-ordinate and clarify waste management practices in Queensland and to provide a framework for improved environmental safeguards (EPA, 2005).

Environmental Protection Regulation 1998

The *Environmental Protection Regulation 1998* (EP Regulation) defines regulated waste and waste disposal management.

A list of all regulated wastes defined in the EP Regulation is outline in Appendix E.

Note the *Environmental Protection Regulation 1998* will be replaced on the 1st January 2009 by the *Environmental Protection Regulation 2008.* Changes to the regulation are not likely to impact on this WMP.

Section 2 Background

Environmental Protection (Waste Management) Policy 2000

The EPP (Waste) co-ordinates and defines waste management practices in Queensland and provides improved environmental safeguards to achieve "ecologically sustainable development". It does this by establishing a preferred waste management hierarchy and various management principles as the basis for waste management. The principles are:

- "Polluter pays principle" – all costs associated with waste management should, where possible, be borne by the waste generator;
- "User pay principle" – all costs associated with the use of a resource should, where possible, be included in the price of goods and services developed from the resource; and
- "Product stewardship principle" – the producer or importer of a product should take all reasonable steps to minimise environmental harm from the production, use and disposal of the product.

The above three principles form a hierarchy and provide a basis for waste management programs under ERAs. The waste management hierarchy includes the following management principles (in order of priority) (EPA, 2005):

- Waste avoidance;
- Waste re-use;
- Waste recycling;
- Energy recovery; and
- Waste disposal.

Environmental Protection (Waste Management) Regulation 2000

The Environmental Protection (Waste Management) Regulation 2000 sets specific requirements for the management of regulated waste, waste disposal facilities, waste management by local government, and littler control such as:

- Offences for littering, waste dumping, unlawful disposal of hypodermic needles and unlawful activities at waste facilities;
- A waste tracking system within Queensland and interstate;
- Requirements for premises generating clinical and related waste;
- A framework for managing polychlorinated biphenyls;
- A procedure for approval of wastes for beneficial reuse;
- Approval processes for beneficial use of wastes; and
- Design rules for waste equipment.

Section 2 Background

2.1.2 Legislation (Commonwealth)

National Environmental Protection (Movement of Controlled Waste between States and Territories) Measure

The National Environment Protection (Movement of Controlled Waste between States and Territories) Measure (NEPM) aims to ensure that controlled wastes which are moved between States and Territories are properly identified, transported and handled in an environmentally sound manner, and that they reach licensed or approved facilities for treatment, recycling, storage and/or disposal. The NEPM provides a framework for developing and integrating systems for the movement of controlled waste between States and Territories which includes:

- Tracking systems, which provide information to assist agencies and emergency services and ensure that controlled wastes are directed to appropriate facilities;
- Prior notification systems, which provide participating States and Territories with access to information to assess the appropriateness of proposed movements of controlled wastes in terms of transportation and facility selection;
- Systems for licensing transporters and the regulating of generators and facilities so that tracking and notification functions are compatible between States and Territories; and
- Provision for mutual recognition by States and Territories of each other's transport licences.

2.1.3 Waste Definitions

Under the EP Act "waste" is defined as anything that is:

- Left over, or an unwanted by-product, from an industrial, commercial, domestic or other activity; or
- Surplus to the industrial, commercial, domestic or other activity generating wastes.

The EP Regulation defines "general waste" as waste other than regulated waste. Regulated wastes are defined in Schedule 9 of the EP Regulation as 'non-domestic' waste. A list of all defined regulated wastes is outlined in Schedule 7 of the EP Regulation. Appendix A provides a glossary of additional definitions relevant to this WMP.

2.1.4 Licenses

GLNG license requirements regarding waste management are incorporated within this WMP. All regulated wastes are to be disposed of to licensed waste disposal facilities or recycling facilities and transported by authorised persons.

A record is to be kept of information regarding Regulated Waste (defined under the EP Regulation) removed from the site. For trackable wastes, this condition is met by implementing waste tracking procedures under the EP Waste Regulation, part of which is to complete the Waste Transport Certificate (refer Section 5.2 and Appendix E).

Section 3 Personnel

3.1 Responsibilities

The personnel in Table 3-1 are responsible for waste management under the GLNG WMP.

Table 3-1 Personnel Responsibilities

Position	Responsibilities within GLNG gas operations
GLNG Environment Committee.	Overall stewardship of waste management within the CSG fields, gas transmission pipeline and the LNG facility.
EQ Gas Field Superintendent.	Implementation of the EQG WMP within the CSG field. Maintaining the EQG WMP.
GLNG Superintendent.	Implementation and maintenance of the GLNG WMP within the gas transmission pipeline and the LNG facility.
Site Supervisor for: • CSG fields; • Gas transmission pipeline; and • LNG facility.	Providing an on-site contact point for operational issues. Ensuring adequate maintenance of Santos infrastructure and equipment provided, in accordance with any waste management contracts. Convening regular meetings with waste management contractor(s).
Environmental Advisor for: • CSG fields; • Gas transmission pipeline; and • LNG facility.	Scheduling and conducting audits to assess compliance with this WMP, and the EQG EMP and legislative requirements. Liaising with relevant authorities regarding renewal of licenses and the alteration of license conditions as required. Liaising with relevant authorities to determine appropriate disposal procedures for specific wastes and obtaining the necessary legal approval where required. Providing specialist advice as required regarding environmental matters. Provision of training in waste management.
Heath and Safety Officer.	Providing advice to waste management contractor(s) on safe handling techniques for chemicals and other hazardous substances deposited in the waste storage areas.
Waste Management Contractor(s).	Provision of the waste management services specified in the contracts. Ensuring staff have been trained to an acceptable level (as defined in the contracts).
Site Personnel.	Ensuring that recyclable wastes are appropriately cleaned, segregated and placed in the correct locations. Ensuring Regulated wastes and dangerous goods are not disposed of in general waste bins. Ensuring general wastes are disposed of in the general waste bins and not littering. Advising/liaising with the field Superintendents/ Site Supervisors regarding wastes to ensure, that appropriate management plans can be implemented.
Third Party Contractor(s).	Inclusion of waste management in their HSE plans (including waste reduction programs). Appropriate management of the wastes that they generate. Meeting Santos requirements (where applicable) for acceptance of wastes into the Santos Waste Management System.

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4.1 Waste Management Processes

Waste management throughout the GLNG project operations must be conducted in accordance with the requirements and processes provided in the legislation detailed in Section 2.1. The flowchart in Appendix C provides an overview of those requirements and processes and the table in Appendix D lists the management requirements for the wastes generated by the GLNG operations.

The waste management processes proposed for the project will be considered from the concept and planning stages through to design, construction, operation and decommissioning stages.

During the construction and operational stages of the GLNG project, waste minimisation will be of the highest priority. Waste minimisation on-site will aim to avoid waste before it is produced or (where this is not possible or practicable) reduce its quantity and toxicity. Waste prevention will be the primary goal, followed by reuse, recycling, treatment and appropriate disposal.

All site personnel and contractors must implement the EPP (Waste), waste hierarchy when undertaking activities on site in the following order of priority:

1) The generation of waste can be prevented or reduced by substituting inputs for those that generate waste, increase efficiency in the use of raw materials, energy, water or land, redesign processes or products, and improve maintenance and operation of equipment. Some techniques to reduce the amount of waste generated and treatment of waste generated required include:
   - Ensuring that waste oils do not mix with waste halogenated organic compounds;
   - Ensuring that oily layers do not form in oily waste water ponds;
   - Minimising the storage time and volumes for liquid and solid waste on-site; and
   - Minimising the open burning of on-site vegetation to prevent health inhalation issues.
2) Re-use of waste can be achieved by recovering solvents, metals or oil and re-using them for secondary purposes;
3) Where practical personnel should segregate wastes for recycling into new products. Wastes that can be recycled include glass, cardboard, paper, plastics, aluminium, batteries, oil, drums and rubber.
4) Recovering and using energy generated from waste where possible; and
5) Disposing of waste, or treating and disposing of waste, in a way that causes the least harm to the environment.

To ensure sound environmental management of wastes:

- Ensure site staff and contractors follow waste management procedures and policies;
- Contract only licensed contractors with high quality standards of work procedures, policies, and transport equipment; and
- Undertake periodic in-house waste audits to review performance against policies and procedures.

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4.2 Waste Generation

Waste will be generated throughout the construction, operation and decommissioning phases of the GLNG project for all three components (the CSG fields, gas transmission pipeline and the LNG facility).

4.2.1 CSG fields

The CSG fields will supply feed gas for the LNG facility located on Curtis Island, near Gladstone. CSG field construction and operational activities will generate a variety of waste streams which are outlined below.

4.2.1.1 Construction waste

Likely waste streams generated during the construction phase of the CSG field include:

- Associated water from appraisal wells ;
- Drilling fluids and muds;
- Putrescible waste;
- General waste;
- Recyclable waste such as paper, cardboard, plastics, glass and aluminium;
- Scrap metal;
- Sanitary waste;
- Vegetation waste; and
- Waste oils.

4.2.1.2 Operational waste

Operation in the field will also generate waste in relation to specific field operations such as:

- Associated water from production wells ;
- Batteries (used);
- Localised contaminated soil from spills;
- Drilling fluids;
- Electrical and electronic equipment;
- First-aid station waste;
- Putrescible waste;
- General waste;
- Recyclable waste such as paper, cardboard, plastics, glass and aluminium;
- Saline effluent or residues from evaporation ponds
- Sanitary waste;
- Scrap metal;
- Steel chemical containers;

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- Toners and cartridges;
- Tyres (used)
- Vegetation waste;
- Waste oils and lubricants (further details provided in Table 4-1); and
- Waste solvents and chemicals (further details provided in Table 4-1);

On-site waste treatment and disposal operations are required to contain regulated waste streams such as oil sludges, chemical sludges generated through operations in the field. Table 4-1 below summarises the waste oils and chemicals that could potentially be generated as part of operation in the field, with the nature and composition and potential sources of the waste identified, Appendix D outlines disposal methods.

Table 4-1 Summary of waste oils and chemicals

Waste chemical category	Nature and composition	CSG field sources
Waste oils.	Derived from petroleum or hydrocarbon fuels or oils.	Used or offspec petroleum fuels; used lube oils; used hydraulic oils; used cutting oils; used mineral oils; contaminated greases.
Acids.	Low pH; moderately to highly corrosive; highly reactive.	Acid cleaning of components; Well Acidizing activities; Alkali neutralization.
Alkalis.	High pH; moderately to highly corrosive; highly reactive.	Caustic cleaning of components; Acid neutralization.
Oxidising agents.	Peroxide, hypochlorite, permanganate and other chemical solutions.	Used for cleaning or in well development or injection operations.
Triethylene Glycol (TEG).	Hydrocarbon based; Hydrophilic.	Dehydration of natural gas at CSG compressor facilities.
Antiscalants.	High solubility for cations, anions, and metals; may be corrosive.	Used in aqueous solution to prevent scale buildup in piping and heat exchange tube bundles.
Biocides.	Typically hydrocarbon based; primary property is biological toxicity.	Used in aqueous solution to prevent biofouling in pipelines, cooling towers, and geologic formations.
Anticorrosives.	Typically hydrocarbon based; may have oily properties.	Used in aqueous solution to prevent corrosion of metal surfaces in piping or other equipment.
De-emulsifiers.	Typically hydrocarbon based; surfactant or detergent properties.	Used in oily emulsions to break the emulsion and separate free oil.
Non-halogenated Solvents.	Typically hydrocarbon based without halogen groups.	Used as general solvents and to remove oils from metal surfaces.
Pesticides & Herbicides.	Typically hydrocarbon based; toxicity to fauna and flora.	Used for pest control and weed control around developed facilities.
Surfactants & Detergents.	Typically hydrocarbon based; may have hydrophilic or hydrophobic properties; may contain phosphates.	Used to clean metal or non-metal surfaces; used for general washing of equipment, clothing, etc.
Paint Residues.	Typically hydrocarbon based but may be water based; residues from paint pigments.	Used to paint metal and non-metal surfaces at most CSG facilities.

Sourced: Santos. Santos Fairview EMP (2007)

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Other classes of regulated wastes not categorised as oils or chemicals include those summarised in Table 4-2. Refer to the Waste Transport Certificate procedure in Appendix E if required for transport of the waste.

Table 4-2 Other Regulated waste generated from CSG field activities

Waste Chemical Category	Nature and Composition	CSG Project Sources
Saline effluents or residues.	Contain sodium chloride, fluoride, boron, and other common or exotic salts.	Treatment of associated water by Reverse Osmosis with brine reject stream.
Used Batteries.	Lead/acid or other types of batteries; plastic battery cases.	Vehicle or other uses at CSG facilities.
Used Tyres.	Tyres composed of rubber compounds.	Vehicle uses at CSG facilities.
Spent halogen/ mercury lamps.	Halogen gases or mercury vapour from sealed lamps.	Outdoor lighting fixtures at CSG facilities.
Tank sludges.	Typically hydrocarbon based; oily content.	Residues from settlement of petroleum fuels and other oils or chemicals in tanks.
Treatment tank sludges.	Typically tank bottom residues from treatment of oily or chemical wastes; associated water pretreatment sludge.	Generated in treatment or waste storage tanks by settling of suspended or precipitated solids.
Chemically-Saturated Activated Carbon.	Organic chemicals adsorbed to activated carbon during treatment.	Potential treatment of vapour or liquid streams at CSG facilities.
Night soil (Sewage Sludge).	Fecal matter mixed with other disposed sanitary waste.	Generated at worker accommodation areas and administration buildings from human activities.
Contaminated Soil.	Soil contaminated by spills or drips of oils or chemicals.	Most likely to be generated by inadvertent spills or drips at fuel tanks or waste tanks; condensate drips.

4.2.1.3 Decommissioning waste

Decommissioning of the CSG field infrastructure will be decided at the time of decommissioning, in accordance with accepted industry practices and regulatory requirements.

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4.2.2 Gas transmission pipeline

The gas transmission pipeline will feed CSG from the CSG fields through to the LNG facility on Curtis Island.

4.2.2.1 Construction waste

Gas transmission pipeline construction is a lineal process that comprises a number of stages including access track construction, right-of-way clearing and grading, trenching, pipe laying, trench backfilling and right-of-way reprofiling /restoration. These activities will require significant earthworks and result in the generation of waste.

Likely waste streams associated with the construction phase of the gas transmission pipeline include:

- First-aid station waste;
- Putrescible waste;
- General waste;
- Recyclable waste such as paper, cardboard, plastics, glass and aluminium;
- Scrap metal;
- Sanitary waste;
- Vegetation waste; and
- Waste oils.

During the commissioning stage of the gas transmission pipeline the integrity of the pipeline is verified by undertaking a hydrostatic testing. The testing water would potentially be treated with chemicals such a biocide, oxygen scavengers and corrosion inhibitors, depending on such factors as the water quality of test water and the length of pipe tested. Use of any chemical on site should be minimised and carefully controlled to avoid contamination of local water sources.

Once the gas transmission pipeline has been constructed the surrounding affected area (within the gas transmission pipeline right-of-way) will be re-established with topsoil cover, returning land to pre-construction use. As part of this process natural drainage patterns will be reinstatement, disturbed vegetation will be rehabilitated and where necessary erosion controls will be implemented.

4.2.2.2 Operational waste

It is not anticipated that significant quantities of waste will be generated during gas transmission pipeline operations, other than fugitive emissions released into the atmosphere. However there will still be waste generated from worker accommodation areas such as putrescible waste, general waste, recyclable wastes (including paper, cardboard, plastics, glass and aluminium) and sanitary waste.

4.2.2.3 Decommissioning waste

At the time of decommissioning a decision will be made regarding the opportunities for future use of the gas transmission pipeline. If no longer required, the gas transmission pipeline will be purged of gas and below ground facilities allowed to gradually degrade in-situ. However, if it is considered that the gas transmission pipeline may offer some future benefits, it will be filled with an inert material and the cathodic protection system maintained to prevent corrosion. All above ground facilities will be removed when it is decided that the gas transmission pipeline is no longer required.

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4.2.3 LNG Facility

The LNG facility will be located on Curtis Island and is anticipated to export up to approximately 10 million tonne per annum (mtpa) of LNG.

4.2.3.1 Construction waste

The construction of the LNG facility will be a major undertaking spanning approximately eight to ten years of construction and is likely to generate various types of waste throughout all stages of construction, such as:

- Batteries;
- Concrete and oven bricks;
- First-aid station waste;
- Putrescible waste;
- General waste;
- Lubricants;
- Office waste including paper and printer cartridges;
- Packing materials;
- Paint residues;
- Plastic conduit and pipework;
- Recyclable waste such as paper, cardboard, plastics, glass and aluminium;
- Sanitary waste;
- Scrap metal;
- Timber waste;
- Vegetation waste; and
- Waste oils.

4.2.3.2 Operational waste

Sources of solid and liquid wastes from the operation of the LNG facility include administration and office buildings, plant area, amine and dehydration units, sewage treatment plant, demineralisation unit, CPI separator, hot-oil system and mercury removal catalyst units.

- Chemical (waste);
- Electrical and electronic waste;
- First-aid station waste;
- Fluorescent tubes;
- Garden waste;
- General waste;
- Neutralised regeneration wastewater;

- Office waste including paper, toner and printer cartridges;
- Oil filters, oily absorbents, oily rags and oily sludges;
- Plastic chemical containers;
- Process wastewater;
- Putrescible waste;
- Recyclable waste including paper, plastics, cardboard, aluminium cans and glass;
- Sanitary waste;
- Steel chemical containers;
- Steel drums; and
- Wood general and pallets.

4.2.3.3 Decommissioning waste

It is likely that the LNG facility and its associated infrastructure easements/corridors will be valuable either as a package or as individual elements to other industrial users. Prior to any decommissioning works a decommissioning plan will be developed in consultation with the relevant stakeholders and regulatory requirements.

Section 5 Waste Transport and Disposal

5.1 Disposal Options

Disposal options for wastes generated by the GLNG project depend on the characteristics of the waste.

- Electrical and electronic equipment will be ultimately disposed off-site for recycling;
- General wastes (i.e. domestic waste) will be disposed of in licensed landfills;
- Recyclable waste will be disposed of at licensed recycling facilities which are often located within the landfill facility;
- Regulated Wastes must be disposed of to waste disposal facilities licensed to receive Regulated Wastes under the EP Regulation – ERA 75 (b); and
- Some wastes (such as batteries, oils, drums and tyres) should be recycled at licensed facilities.

CSG fields

Each construction or operational site within the CSG fields will be managed on a site by site basis in line with the EQG WMP. However (in the case of Roma, Wallumbilla and Fairview) on-site storage will be available for waste within the Santos' compound.

General and recyclable waste is transported to local landfills and recycling facilities. For Roma and Wallumbilla, any regulated waste is collected by an authorised, licensed contactor for off-site disposal. In Wallumbilla there is a waste collection service available within the town limits only.

The acceptance criteria for the local landfills are summarised in Table 5-1.

Table 5-1 Local landfill and recycling facilities

Location	Local landfill criteria	Recycling facilities
Roma	• Will accept general waste and construction wastes; and • Waste oil and tyres can both be disposed of in designated areas.	• Recycling facilities for cardboard, scrap metal, glass, paper, and aluminium; and • Wood can be stored in a designated area for re-sale.
Wallumbilla	• General waste including glass, plastic, or paper	• Recycling facilities for scrap metal, stockpile wood and re-use concrete and demolition wastes
Fairview	• All general recyclables such as glass, paper, and plastic are disposed of in general landfill; and • Scrap metal and septic wastes can both be disposed of in designated areas.	• The landfill can recycle waste oils.

To ensure efficient and effective disposal options are followed, the following procedures will be adhered to by Santos:

- Contracts will be held with only licensed regulated waste vendors for off site disposal;
- Disposal of non regulated waste will occur to general landfills or recycling facility where possible;
- Sanitary biosolids or sludge will be stored and transported off site to a licensed facility for disposal; and
- Regulated waste will be collected and transported off site by a licensed transporter to a licensed facility.

Section 5 Waste Transport and Disposal

Each aspect of the GLNG project (construction, operation, decommissioning) for the CSG field, gas transmission pipeline and LNG facility will create both general and regulated waste streams. For details of specific waste streams see Appendix B (Waste Inventory Register (WIR)). Appendices D and E identify waste disposal requirements for general, recyclable and Regulated Wastes.

5.2 Waste handling, storage and treatment

To ensure proper handling, storage and treatment of all wastes generated from the project the following procedures will be adhered to:

- Store waste in appropriate and regulated containers at designated waste storage areas to prevent leaks to the environment. All containment devices shall be of a good order, with primary storage in bins, tanks, dams, and designated containers. Incompatible wastes will be stored separately (to minimise the risk of cross-contamination) and appropriately bunded (if required) in accordance with accepted industry practice and regulatory requirements.
- Store putrescibles solid waste in appropriate containers (of good state, condition and cleanliness) to prevent odours and health issues;
- Sanitary sludge from main worker accommodation locations with sewage treatment operations will be managed as treatment sludge or as a non regulated waste depending on waste characteristics, therefore will be disposed at an appropriate off site licensed facility or licensed for discharge;
- Waste oils will be stored on-site (in a covered area) within appropriate containers in a manner that prevents the leakage of oil to soil and into water; and
- Waste chemicals that are not completely consumed will be stored on-site (in a covered area), preferably in the original container, labelled and stored in the proper manner.

5.3 Waste reporting

The National Environmental Protection Council (NEPC) has endorsed a National Environment Protection Measure (NEPM) in the form of a National Pollutant Inventory (NPI).

The NPI is a database designed to provide the community, industry and government with information on the types and amounts of certain substances being emitted to land, air and water.

Reporting of these emissions under the NPI commenced in July 1998, and will be required for the GLNG project. All NPI information is publicly available through the NPI website (http://www.npi.gov.au/).

The main objectives of the NPI are to:

- Promote waste minimisation, cleaner production and efficient energy and resource use;
- Provide information to industry and government to assist in environmental planning and management; and
- Satisfy community demand for assessable information on pollutant emissions to the environment.

The NPI sets out the requirements for reporting, including how a facility triggers a reporting obligation and what substances are on the reporting list.

Section 5 Waste Transport and Disposal

5.4 Transport and Tracking

Under the EP (Waste) Regulation, the transport of Trackable Wastes is to be recorded on Waste Transport Certificates. Waste tracking ensures that all parties involved in the management of the waste take responsibility for its transportation and disposal to prevent environmental harm. Records are required to be kept by each 'waste handler' (i.e. generators, transporters, and receivers) for subsequent auditing by the EPA if required to ensure that the volume of trackable waste generated is the same as the volume received at the authorised disposal point. To prevent any illegal waste activities, ensure that all site personnel and contractors follow all regulations.

The waste tracking provisions **do not** apply in the following circumstances:

- If waste is transported in a pipeline; or
- If given an exemption by the EPA; or
- If it involves the non-commercial transportation of less than 250kg of Trackable Waste; or
- If it involves the transportation of Trackable Waste in a container if:
  - The amount of Trackable Waste is not more than 5% of the capacity of the container; and
  - The container is being transported to a place to be refilled with the same substance as the waste, without first undergoing any process other than the refilling.
- If waste is being transported to a farm for use as a soil conditioner or fertiliser; or
- If waste is being transported to a registered laboratory for analysis; or
- If a contaminant is being released to sewer or to stormwater drainage.

Wastes anticipated to be generated by the GLNG project are listed in Appendix D. If the waste is trackable, a Waste Transportation Certificate (as detailed in Appendix E) is required to be completed. Responsibilities of individuals for waste tracking are also detailed in Appendix E.

If the waste is regulated and is listed as trackable under the EP (Waste) Regulation 2000, all 'waste handlers' (generators, transporters and receivers) need to complete their respective section of a Waste Transport Certificate. The purpose of the document is to provide reference information for the EPA. With this document, the EPA can track the waste from the point of origin, transportation route and final destination. The waste properties and characteristic will be documented to ensure the waste has been appropriately handled, treated, stored, transported and disposed of correctly by authorised, licensed personnel and facilities.

The Waste Transport Certificate is available from EPA offices. A copy of the certificate will accompany the waste shipment from the point of origin (loading point), throughout the delivery stage, and to the final destination (i.e. disposal facility). Each document is numbered. The document number then becomes the waste load reference number. Two versions of the Waste Transport Certificate are available, one for intrastate waste transport and one for interstate waste transport. See Appendix E for procedure for completing a Waste Transport Certificate.

If the waste is regulated but not trackable than only the following needs to be documented:

- Date of transport;
- Type and quantity of waste;
- Waste Transport Certificate Number (if required);
- Transporters company name;
- Selected route of transport;

Section 5 Waste Transport and Disposal

- Final destination/facility;
- Accepted by (transporters signature); and
- Records of any incidents that may have occurred *en route.*

Section 6 Records/Reporting

6.1 Records

The relevant Santos Site Supervisor will keep a record of the information required by the waste tracking procedures in the EP Waste Regulation and also information for movement of other Regulated Waste (Appendix E). Waste contractors will also provide the Santos site supervisor with monthly reports, which outline different waste types produced, their disposal methods and tracking documentation.

The EPA's waste tracking system will be used to report to the EPA on the quantities of Trackable Waste leaving the GLNG construction and operational sites for treatment and disposal. The EP (Waste) Regulation requires that documents generated as part of the waste tracking system are kept for at least six years. The waste tracking records will be maintained on-site by the Site Supervisor for a period of six months after wastes have been transported off-site to enable the completion of six-monthly reports. After this time period, a copy of the reports will be forwarded to the Environmental Group for storage in the Brisbane office and archived after two years. Any asbestos related documentation will be kept for a period of 40 years.

6.2 Audits

Audits of the waste management system will be conducted internally or by third parties acting on behalf of Santos. These audits will be scheduled and managed in accordance with the requirements of Santos' Environmental Health and Safety Management System (EHSMS). Audits will be conducted periodically for routine inspections of facilities by a Site Supervisor, and annually for compliance with the Eastern Queensland Gas Waste Management Plan (EQG WMP) by a third party or Site Supervisor. Annual reports prepared by the Field Superintendent/Environmental Group should be maintained for a period of five years. The EPA may also audit any aspect of the EQG WMP at any time.

6.3 Non-Compliance

Incidents related to waste management will be handled in accordance with the EHSMS. Where appropriate, recommendations made through this system will be incorporated into the EQG WMP and individual project WMPs (i.e. GLNG WMP).

Non-compliance with the Queensland waste management requirements result in potential penalties under the EP (Waste) Regulation.

6.4 Review

The performance of the GLNG WMP will be reviewed along with the EQG WMP by the EQ Gas Environmental Committee annually based on the results of the audits described above. Reviews and changes to this GLNG WMP will be listed at the front of this document.

Section 7 Relevant Documentation

The following documents are relevant to waste management for the GLNG project. Please refer to them where necessary for additional information.

7.1 Procedures

- EQG WMP; and
- EHS04 Waste Management.

7.2 Other Santos Documents

- Santos Environmental Health and Safety Management System; and
- Santos Environmental Vision, Commitment and Policy.
- Santos GLNG Environmental Policy

7.3 Legislation and Policy

- *Environmental Protection Act 1994* (QLD);
- *Environmental Protection Regulation 2008* (QLD) (Enforced 1st January 2009);
- *Environmental Protection (Waste Management) Regulation 2000* (QLD);
- *Environmental Protection (Waste Management) Policy 2000* (QLD);
- Environmental Protection Agency (EPA) (2006) Waste Management Strategy for Queensland, Queensland Government;
- National Environmental Protection (Movement of Controlled Waste between States and Territories) Measure (Cth);
- Australian Code for the Transport of Dangerous Goods Code by Road and Rail (6th Ed.) (Cth); and
- Santos Environmental and Integrated Authorities for operations at Roma, Wallumbilla and Fairview.

Section 8 Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Santos and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the proposal dated 4th October 2007.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigation that information contained in this report as provided to URS was false.

This report was prepared from September to December 2008 and is based on information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

Section 9 References

Environmental Protection Act 1994 (EP Act)

Environmental Protection Amendment Bill 2007

Environmental Protection (Waste Management) Policy 2000

Environmental Protection Regulation 1998

Environmental Protection (Waste Management) Regulation 2000

Fairview EMP

Bechtel, Santos GLNG Project: Pre-FEED Study. Emissions and Discharges. Santos CTR No. 24. 23 June 2008.

The National Environment Protection (Movement of Controlled Waste between States and Territories) Measure (NEPM)

Enertrade, 2006. Central Queensland Gas Pipeline. Environmental Impact Statement.

Appendix A Glossary

Appendix A Glossary

Term	Description
Bunds	Earth or concrete walls used to contain liquids.
Codes of Environmental Practice	A code of environmental practice is a set of objectives setting environmental standards, as required by legislation.
Controlled waste	As defined in the NEPM for Controlled Waste Movement: means any waste in List 1 provided that the waste possesses one or more of the characteristics in List 2. Unless otherwise demonstrated to the satisfaction of the nominated agency in the jurisdiction of destination, wastes in List 1 are considered to possess one or more characteristics in List 2.
Dangerous Goods	Goods specified as Dangerous Goods in the Australian Dangerous Goods Code (6th addition) as reflected in the Qld *Dangerous Goods Safety Management Act 2001.*
ENSMS	Santos Environmental Health and Safety Management System.
Environmental procedures	Environmental procedures describe the methods used to achieve the objectives stated in the code of environmental practice. Procedures are not legally binding and may be modified if a better way of achieving environmental objectives can be devised.
General wastes	Wastes other than Regulated wastes as defined in the *Environmental Protection (Waste Management) Regulation 2000*.
General, Non-recyclable Wastes (GNW)	These wastes are not regulated or practicably recyclable; therefore they are to be landfilled on-site. They include but are not limited to, food and food contaminated wastes, broken pallets, garden wastes, concrete and construction wastes. There are two types of General, Non-recyclable Wastes; Putrescible wastes that easily decompose (and become putrid) - examples include food and beverage wastes; and. Non-putrescible wastes that do not easily decompose - examples include concrete and wood.
General, Recyclable Wastes (GRW)	General Recyclable wastes are not regulated but are practicably recyclable. They are to be transported off-site for recycling - they do not need to be transported in a licensed waste transport vehicle. They include but are not limited to, paper and cardboard, plastics, glass containers, tin cans, aluminium cans and printer toner cartridges.
Landfill	A site used for the controlled deposition of solid wastes into a specifically excavated pit.
Leachate	Liquid that percolates through the landfill and contains decomposed waste, bacteria and/or other contaminants.
Medical wastes	Wastes consisting of: A needle, syringe with needle, surgical instrument or other article that is discarded in the course of medical practice that has a sharp edge or point capable of inflicting a penetrating injury on a person who comes into contact with it; or Any other article or matter that is discarded in the course of medical practice that poses a significant risk to the health of a person who comes into contact with it.
National Environment Protection Measure (NEPM)	A policy made by the National Environment Protection Council with the objective of protecting Australia's environment from inappropriate management practices.
PPE (Personal Protective Equipment)	Personal safety equipment such as steel cap boots, hard hats, masks, ear protection etc.

Appendix A Glossary

Term	Description
Putrescible wastes	Wastes that can be readily decomposed through the action of micro-organisms, such as food wastes.
Recyclable wastes	Wastes that can practicably be recycled.
Recycling	The use or reuse of wastes as a substitute for a commercial product or to reduce the use of new/raw materials in the manufacture of the same or similar product. Includes the reclamation of useful constituent fractions within a waste stream or the removal of contaminants from a waste to allow it to be reused.
Regulated wastes	Regulated wastes are defined in Schedule 9 of the EP Regulation as 'non-domestic' waste; a list of all defined regulated wastes is outlined in Schedule 7 of the EP Regulation. Regulated waste within the meaning of the *Environmental Protection (Waste Management) Regulation 2000* that have specific handling and disposal requirements in order to manage hazards associated with them.
Regulated, Non-recyclable Wastes (RNW)	Regulated, Non-recyclable wastes must be transported off-site for treatment and / or disposal in an appropriately licensed vehicle. Their volume is dominated by the Santos Process Wastes, such as filter elements and activated carbon, but they also include camp wastes such as used aerosol cans and household batteries.
Regulated, Recyclable Wastes (RRW)	Some Regulated wastes may be practicably recyclable, therefore they are to be transported off-site for recycling in an appropriately licensed vehicle. These Regulated, Recyclable Wastes include but are not limited to lead-acid batteries and some oil sludges.
Santos Production and Process Wastes	Wastes generated during the production of gas and oil. They include but are not limited to wastes such as hydrocarbon sludges, oily soil, and used filter elements.
SAEMS	The Santos Australian Environmental Management System.
Third party waste	Industrial and construction wastes generated by contractors working at Santos facilities. May also include wastes from pastoralists, tourists and other petroleum explorers.
Trackable waste	Certain Regulated wastes as specified under Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000.*
Waste	"waste" is defined in the Waste Management and Pollution Control act to mean a solid, a liquid or a gas; or a mixture of such substances, that is or are left over, surplus or an unwanted by-product from any activity (whether or not the substance is of value) and includes a prescribed substance or class of substances.
Waste facility	A facility for the recycling, reprocessing, treatment, storage, incineration, conversion to energy or disposal of waste.
Waste generator	The person(s) from whom trackable waste is transported (whether the person produced the waste or received it from someone else).
Waste management Areas	A Waste storage area is an on-site location for the reception, storage, treatment and/or disposal of waste.
Waste Management Plan	A waste management plan which outlines how waste should be treated and disposed of from site.
Waste receiver	The person(s) to whom trackable waste is transported to for treatment or disposal.
Waste storage areas	Areas designated for the storage of waste – both on-site and within the Waste Management Areas.

Appendix A Glossary

Term	Description
Worker Accommodation wastes	Worker accommodation wastes are the domestic and commercial wastes produced at the worker accommodation areas and the wastes produced in the administration buildings and offices that are cleaned as part of the camp management. They include but are not limited to food scraps and containers, office paper and newspaper.

Appendix B Waste Inventory Register

Appendix B Waste Inventory Register

Waste Type	Solid	Liquid	Gas	Estimated Quantity per CSG field[1]		Estimated Quantity for the Gas Transmission Pipeline[2]		Estimated Quantity for the LNG facility (3 mtpa)[3], [4]	
				Construction	Operation	Construction	Operation	Construction	Operation
Air emissions (Dust, SO_2, and NO_x).			✓	Primarily dust related, with some minor sources of combustion pollutants such as NO_x due to diesel and petrol vehicles operation on site.	NO_x emission rate is estimated to be 0.461 g/s per compressor unit. This emission rate is equal to 166 mg/m^3 per compressor. Refer to Section 6.8 for further information.	Same as construction for CSG field.	Minor quantities.	Same as construction for CSG field.	See section 8.8.3.1 for detailed air emissions of SO_2, NO_x, CO and CH_4.

[1] Estimated quantities for operation waste per CSG field is based on information obtained from 2002 Scotia Waste Audit.

[2] Estimated quantities for the construction and operation wastes for the gas transmission pipeline are sourced from Enertrade, 2006.

[3] Estimated quantities for construction wastes for the LNG facility based on the LNG Plant Pre-FEED studies

[4] Estimated quantities for operational wastes for the LNG facility are sourced from URS, 2008.

Appendix B Waste Inventory Register

Waste Type	Solid	Liquid	Gas	Estimated Quantity per CSG field[1]		Estimated Quantity for the Gas Transmission Pipeline[2]		Estimated Quantity for the LNG facility (3 mtpa)[3], [4]	
				Construction	Operation	Construction	Operation	Construction	Operation
Associated water.		✓		The quantity of associated water produced will vary throughout the CSG fields because of variations in geological formations and field development activities. See section 6.7.3 for further details.	Not applicable.				
Batteries.	✓			Minor quantities.		Minor quantities.		Minor quantities.	
Dredge material.	✓			Not applicable.		Not applicable.		8,000,000 m3 (in-situ) for Laird Point.	
Electrical, electronics and batteries.	✓			Minor quantities.	0.9 m^3/yr.	Minor quantities.		60 batteries each year.	Minor quantities.
General waste (including putrescible waste).	✓			Minor quantities.	120 m^3/yr.	Minor quantities.		12,500 m^3/yr.	52,000 m^3/yr.
Glass –general.	✓			Minor quantities.	4 m^3/yr.	Minor quantities.		Minor quantities.	
Hydrotest water.		✓		The volume and quality of water and location of disposal areas will be determined once final front end engineering design (FEED) studies are completed		Not applicable.		Not applicable.	

Appendix B Waste Inventory Register

Waste Type	Solid	Liquid	Gas	Estimated Quantity per CSG field[1]		Estimated Quantity for the Gas Transmission Pipeline[2]		Estimated Quantity for the LNG facility (3 mtpa)[3], [4]	
				Construction	Operation	Construction	Operation	Construction	Operation
Paper and cardboard.	✓			Minor quantities.	40 m^3/yr.	260 m^3/yr.	Minor quantities.	Minor quantities.	4,000 m^3/yr.
Plastic oil containers.	✓			Minor quantities.	40 m^3/yr.	Minor quantities.		Minor quantities.	1,650 m^3/yr.
Rubber and tyres.	✓			Minor quantities.	10 m^3/yr.	Minor quantities.		Minor quantities.	36 m^3/yr.
Scrap metal including steel drums (good and damaged condition), aerosol and aluminium cans.	✓			Minor quantities.	100 m^3/yr.	Minor quantities.		Minor quantities.	2,500 m^3/yr.
Timber waste.	✓			Minor quantities.	35 m^3/yr	Minor quantities.		11,000 m^3/yr.	Minor quantities.
Waste chemicals (including drilling fluids).	✓	✓		Minor quantities.	3 L/yr.	Minor quantities.		Minor quantities.	200 L/yr.
Waste oils		✓		Minor quantities.	108,060 L/yr.	Minor quantities.		Minor quantities.	50,100 L/yr.
Wood	✓			Minor quantities.	35 m^3/yr.	Minor quantities.		10,000 m^3/yr.	Minor quantities.

Appendix C GLNG Waste Flowchart

Client

Project

GLADSTONE LNG PROJECT
WASTE MANAGEMENT

Drawn: CA | Approved: JB | Date: 03-02-2009

Job No.: 42626220 | File No. 42626220-g-588.cdr

Title

CSG FIELD
WASTES FOR CONSTRUCTION, OPERATION AND DECOMMISSIONING

Figure: C 1 | Rev. B | A4

Note: Flowcharts will be developed for other CSG Fields before they enter the project phase.

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright

SOLIDS

Wood (general, pallets)
- Roma Wallumbilla
- Fairview
- Re-use timber or return pallets directly to supplier where possible.
- Place pallets and timber in designated area/stockpile at local landfill.
- Dispose of timber/pallets at local landfill.

Paper, Cardboard, Food Waste (packaging, waste, containers)
- Roma
- Fairview Wallumbilla
- Store food waste/paper packaging as general waste.
- Store paper and cardboard separately from general waste.
- Re-use paper and cardboard where possible.
- Dispose of food waste/packaging at Roma Town Council Landfill.
- Recycle paper and cardboard at Roma Town Council Landfill.
- Dispose of paper, cardboard and food waste/packaging at local landfill.

Glass (general, windows, lighting)
- Roma
- Fairview Wallumbilla
- Re-use where possible
- Store separately from general waste.
- Store along with general waste.
- Recycle at Roma Town Council Landfill.
- Dispose at local landfill.

Plastics (packaging, storage containers)
- Roma Fairview Wallumbilla
- Re-use drums/containers or return to supplier where possible.
- Dispose at local landfill.

Electrical, Electronics, Batteries (spent batteries, equipment)
- Roma Fairview Wallumbilla
- Store separately from other wastes.
- Return electronic and electrical equipment to Brisbane.
- Return batteries and cartriges to supplier or recycle where possible.
- Recycle
- Contact local council for disposal requirements and arrange for disposal at local landfill or licensed facility.

Rubber/Tyres (tyres, seals, gaskets, pigs)
- Roma Fairview Wallumbilla
- Re-use or return to supplier where possible
- Dispose at local landfill.

General, Non-Recyclable Wastes (filters, asbestos materials)
- Roma Fairview Wallumbilla
- For SMF, activated carbon filters and asbestos, contact Site Environmental Advisor for collection, transport and disposal requirements.
- Store litter/large items of domestic rubish and air, dust and paper filters separately from recyclable wastes.
- Arrange for collection by licensed contractor.
- Dispose of litter /large items of domestic rubbish in local landfill.
- Disposal by contractor at licensed facility.

Metals (drums, cans, scrap, containers, nails, screws)
- Roma Fairview Wallumbilla
- Return directly to supplier wherever possible, re-use or re-sell.
- Store remaining metal separate from general waste are empty.
- Place in scrap metal/aluminium can recycling area at local landfill.

LIQUIDS

Oils / Oil contaminated wastes (contaminated soil, waste oil, rags, sludges, traps)
- Roma Wallumbilla
- Fairview
- Arrange collection by licensed contractor for recycling where possible
- Store oils/ oil-contaminated waste separately from other waste and contain to avoid leakage.
- Oil-Contaminated Soil
- Store oils/ oil-contaminated waste separately from other waste and contain to avoid leakage.
- Contact local council and arrange for disposal at local landfill.
- Contact Site Environmental Advisor for collection, transport and disposal requirements.
- Recyle waste oils at Injune landfil.l
- Arrange for collection and disposal by licensed contractor at licensed facility.

Chemicals (cleaners, process, additives, herbicides, pesticides, degreasers)
- Roma Fairview Wallumbilla
- Contaminated Soil
- Chemicals - Miscellaneous
- Return to supplier where possible.
- Contact Environmental Advisor for advice on collection, disposal and/or remediation.
- Arrange for collection by licensed contractor and disposal at a licensed facility.

GAS

Air Emissions (Nox, Cox, Sox, dust)
- Roma Fairview Wallumbilla
- Release to atmosphere.

Client

Project

GLADSTONE LNG PROJECT
WASTE MANAGEMENT

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright

SOLIDS

Wood (general, pallets)

- Gas Transmission Pipeline
  - Re-use timber or return pallets directly to supplier where possible.
  - Place pallets and timber in designated area/stockpile at local landfill.

Paper, Cardboard, Food Waste (packaging, waste, containers)

- Gas Transmission Pipeline
  - Store food waste/paper packaging as general waste. → Dispose of food waste/packaging at local landfill.
  - Store paper and cardboard separately from general waste. → Recycle paper and cardboard at local landfill.
  - Re-use paper and cardboard where possible.

Glass (general, windows, lighting)

- Gas Transmission Pipeline
  - Store separately from general waste. → Recycle at local landfill.
  - Re-use where possible.
  - Store along with general waste. → Dispose at local landfill.

Plastics (packaging, storage containers)

- Gas Transmission Pipeline
  - Re-use drums/containers or return to supplier where possible.
  - Dispose at local landfill.

Electrical, Electronics, Batteries (spent batteries, equipment)

- Gas Transmission Pipeline
  - Store separately from other wastes.
    - Return electronic and electrical equipment to Brisbane. → Recycle.
    - Return batteries and cartridges to supplier or recycle where possible.
    - Contact local council for disposal requirements and arrange for disposal at local landfill or licensed facility.

Rubber/Tyres (tyres, seals, gaskets, pigs)

- Gas Transmission Pipeline
  - Re-use or return to supplier where possible.
  - Dispose at local landfill.

General, Non-Recyclable Wastes (filters, asbestos materials)

- Gas Transmission Pipeline
  - For SMF, activated carbon filters and asbestos, contact Site Environmental Advisor for collection, transport and disposal requirements. → Arrange for collection by licensed contractor. → Disposal by contractor at licensed facility.
  - Store litter/large items of domestic rubish and air, dust and paper filters separately from recyclable wastes. → Dispose of litter /large items of domestic rubbish in local landfill.

Metals (drums, cans, scrap, containers, nails, screws)

- Gas Transmission Pipeline
  - Return directly to supplier wherever possible, re-use or re-sell.
  - Store remaining metal separate from general waste are empty.
  - Place in scrap metal/aluminium can recycling area at local landfill.

LIQUIDS

Oils / Oil contaminated wastes (contaminated soil, waste oil, rags, sludges, traps)

- Gas Transmission Pipeline
  - Store oils/ oil-contaminated waste separately from other waste and contain to avoid leakage.
    - Arrange collection by licensed contractor for recycling where possible.
    - Contact local council and arrange for disposal at local landfill.
    - Recyle waste oils at Injune landfill.
  - Oil-Contaminated Soil → Contact Site Environmental Advisor for collection, transport and disposal requirements. → Arrange for collection and disposal by licensed contractor at licensed facility.

Chemicals (cleaners, process, additives, herbicides, pesticides, degreasers)

- Gas Transmission Pipeline
  - Contaminated Soil → Contact Environmental Advisor for advice on collection, disposal and/or remediation.
  - Chemicals - Miscellaneous
    - Return to supplier where possible.
    - Arrange for collection by licensed contractor and disposal at a licensed facility.

GAS

Air Emissions (Nox, Cox, Sox, dust)

- Gas Transmission Pipeline
  - Release to atmosphere.

Title

GAS TRANSMISSION PIPELINE
WASTES FOR CONSTRUCTION, OPERATION AND DECOMMISSIONING

Drawn: CA
Approved: JB
Date: 03-02-2009
Job No.: 42626220
File No. 42626220-g-591.cdr
Figure: C 2
Rev. B
A4

Client

Project

GLADSTONE LNG PROJECT
WASTE MANAGEMENT

Title

LNG FACILITY
WASTES FOR CONSTRUCTION
OPERATION AND DECOMMISSIONING

Figure: C 3

Rev. B

A4

Drawn: CA

Approved: JB

Date: 03-02-2009

Job No.: 4262 6220

File No. 42626220-g-594.cdr

SOLIDS

Wood (general, pallets)

- LNG Facility
  - Re-use timber or return pallets directly to supplier where possible.
  - Place pallets and timber in designated area/stockpile at local landfill.

Paper, Cardboard, Food Waste (packaging, waste, containers)

- LNG Facility
  - Store food waste/paper packaging as general waste.
    - Dispose of food waste/packaging at local landfill.
  - Store paper and cardboard separately from general waste.
    - Recycle paper and cardboard at local landfill.
  - Re-use paper and cardboard where possible.

Glass (general, windows, lighting)

- LNG Facility
  - Store separately from general waste.
    - Recycle at local landfill.
  - Re-use where possible.
  - Store along with general waste.
    - Dispose at local landfill.

Plastics (packaging, storage containers)

- LNG Facility
  - Re-use drums/containers or return to supplier where possible.
  - Dispose at local landfill.

Electrical, Electronics, Batteries (spent batteries, equipment)

- LNG Facility
  - Store separately from other wastes.
    - Return electronic and electrical equipment to Brisbane.
      - Recycle
    - Contact local council for disposal requirements and arrange for disposal at local landfill or licensed facility.
  - Return batteries and cartridges to supplier or recycle where possible.

Rubber/Tyres (tyres, seals, gaskets, pigs)

- LNG Facility
  - Dispose at local landfill.
  - Re-use or return to supplier where possible.

General, Non-Recyclable Wastes (filters, asbestos materials)

- LNG Facility
  - For SMF, activated carbon filters and asbestos, contact Site Environmental Advisor for collection, transport and disposal requirements.
    - Arrange for collection by licensed contractor.
      - Disposal by contractor at licensed facility.
  - Store litter/large items of domestic rubish and air, dust and paper filters separately from recyclable wastes.
    - Dispose of litter /large items of domestic rubbish in local landfill.

Metals (drums, cans, scrap, containers, nails, screws)

- LNG Facility
  - Return directly to supplier wherever possible, re-use or re-sell.
  - Store remaining metal separate from general waste are empty.
  - Place in scrap metal/aluminium can recycling area at local landfill.

LIQUIDS

Oils / Oil contaminated wastes (contaminated soil, waste oil, rags, sludges, traps)

- LNG Facility
  - Arrange collection by licensed contractor for recycling where possible.
  - Store oils/ oil-contaminated waste separately from other waste and contain to avoid leakage.
    - Contact local council and arrange for disposal at local landfill.
    - Recycle waste oils at Injune landfill.
  - Oil-Contaminated Soil
    - Contact Site Environmental Advisor for collection, transport and disposal requirements.
      - Arrange for collection and disposal by licensed contractor at licensed facility.

Chemicals (cleaners, process, additives, herbicides, pesticides, degreasers)

- LNG Facility
  - Contaminated Soil
    - Contact Environment Advisor for advice on collection, disposal and/or remediation.
  - Chemicals - Miscellaneous
    - Return to supplier where possible.
    - Arrange for collection by licensed contractor and disposal at a licensed facility.

GAS

Air Emissions (Nox, Cox, Sox, dust)

- LNG Facility
  - Release to atmosphere.

Appendix D Waste Management Table

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Metals								
Aerosol Cans.	Used aerosol cans that have contained material such as paints, solvents and deodorants.	Regulated.	Ensure that the cans are empty. Do not crush. Stored as recyclable materials in the Waste Storage Area on site, until off-site transport for recycling.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill.	Due to the pressurised nature of aerosol cans, care should be taken to prevent damage to the can.
Aluminium Cans.	Aluminium cans used to contain beverages.	Recyclable.	Aluminium cans may be crushed and are to be empty of fluids or other contents. Stored as recyclable materials in the Waste Storage Area on site, until off-site transport for recycling.	To be collected by a licensed recycler.	-	Sell for recycling.	Dispose to landfill when there are no recycling facilities available and no contractor to sell to.	Sharp edges may be present if the cans are broken or split.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Steel Chemical Containers.	Used chemical containers, steel spray cans 4L.	Regulated.	Ensure containers are empty and clearly labelled. Store in a manner that prevents the leakage of chemicals to the soil, surface water and groundwater in the Waste Storage Area.	Transport with bungs in place. Containers that have previously contained hazardous material should be collected by licensed contractor where possible.	Return to supplier where possible.	Recycle where possible.	Dispose to landfill when no re-use or recycling facilities are available.	Care should be taken to avoid chemical leakage or spills.
Copper and Aluminium (other than cans)	Copper and aluminium materials which are not cans.	Recyclable	Stored as recyclable materials in the Waste Storage Area on site , until off-site transport for recycling	To be collected by a licensed recycler.	Re-use on site where possible.	Recycle where possible. Deposit at scrap metal storage area at landfill.	Dispose to landfill when no re-use or recycling facilities are available.	Sharp edges may be present if the cans are broken or split.
Steel Drums (Damaged).	Drums which are no longer usable.	Regulated	Ensure drums are empty. Store with other metal waste for recycling in a manner that prevents the leakage of any residual product to the soil, surface water and groundwater in the Waste Storage Area.	Containers that have previously contained hazardous material should be collected by licensed contractor where possible. Otherwise, drums should be collected by a recycler.	-	Recycle where possible or sell to scrap dealer.	Dispose to landfill when no re-use or recycling facilities are available.	Possible issues associated with original drum contents (refer to Material Safety Data Sheets (MSDS)).

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Steel Drums (Good Condition).	Drums which are re-usable.	Regulated	Ensure drums are empty. Store with other metal waste for recycling in a manner that prevents the leakage of any residual product to the soil, surface water and groundwater in the Waste Storage Area.	Containers that have previously contained hazardous material should be collected by licensed contractor where possible. Otherwise, drums should be collected by a recycler.	Re-use on site or return to supplier.	Recycle where possible or sell to scrap dealer.	Dispose to landfill when no re-use or recycling facilities are available.	Care should be taken to avoid oil leakage, spills or contamination.
Scrap Steel.	Used steel material such as steel cans, bolt, gasket, scraps, sling, chains, pipes, wires, steel strapping.	Recyclable.	Store with other metal waste for recycling in the Waste Storage Area.	Scrap steel should be collected by a recycler.	If possible re-use on site.	Recycle where possible or sell to scrap dealer / recycler.	Dispose to landfill when no re-use or recycling facilities are available.	Sharp edges may be present if the materials are broken or split.
Electrical and Electronic Equipment								
Batteries (Dry).	Used batteries such as household batteries, NiCad batteries, lithium batteries, dry cell batteries.	Regulated.	Store dry cell batteries separately on-site in a manner that prevents the leakage of any material to the soil, surface water and groundwater within the Waste Storage Area, until off-site	Where possible to be collected by a licensed contractor or otherwise dropped off at the closest licensed facility for appropriate disposal.	For lithium and NiCad batteries, return to supplier where possible.	Recycle where possible.	Dispose to landfill when no re-use or recycling facilities are available. Contact the local council for disposal requirements.	Batteries should be segregated from the general waste for recycling or disposal in a secure landfill.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
			disposal.					
Batteries (Wet, Car, lead acid).	Used wet cell batteries, lead acid batteries such as car batteries.	Regulated.	Store batteries in a manner that prevents the leakage of any material to the soil, surface water and groundwater within the Waste Storage Area, until off-site disposal.	Where possible to be collected by a licensed contractor or otherwise dropped off at the closest licensed facility for appropriate disposal.	Return to supplier where possible.	Recycle at licensed facility.	Dispose to landfill when no re-use or recycling facilities are available. Contact the local council for disposal requirements.	Acid is corrosive and appropriate handling is required from a safety viewpoint. The batteries should be segregated from the general waste for recycling due to the lead content.
Toner and Printer Cartridges.	Used printer ink cartridges which are unusable.	Recyclable.	Stored separately on-site until off-site transport for recycling.	To be collected by supplier or a licensed contractor.	Return to supplier where possible.	Recycle where possible.	Dispose to landfill when no re-use or recycling facilities are available. Contact the local council for disposal requirements.	Sharp edges may be present if the materials are broken or split.
Electronic and electrical equipment.	Broken electrical and electronic equipment such as computers, phones.	Recyclable and Non-Recyclable.	Store separately on-site.	Return all electronic and electrical equipment to Brisbane.	-	Recycle.	-	Sharp edges may be present if the materials are broken or split.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Chemicals								
Chemicals (Miscellaneous).	Includes corrosion inhibitors, emulsion breakers, mica, potassium chloride, solvents, cleaning solutions, paints, glycol/amine.	Regulated	Store separately on-site. Contact the Environmental Adviser regarding testing (if required) and collection and disposal of the material.	To be collected by a licensed contractor.	-	To be returned or collected by supplier or a licensed contractor for disposal at a licensed facility.	-	Varies with chemical, refer to individual MSDS. Care should be taken to avoid contact with the contaminants.
Chemically contaminated soils.	Soil can be contaminated with a variety of chemicals such as mercury or paint.	Contaminated soils	Store separately on-site. Contact the Environmental Adviser regarding testing (if required) and collection and disposal of the material.	Require Disposal Permit under S424 of EP Act.	-	-	Where possible could be remediated on-site. Otherwise to be disposed of at a licensed facility.	Varies with chemical, refer to individual MSDS. Care should be taken to avoid contact with the contaminants.
Glass								
Glass (General).	Broken glass panes, windscreens, bottles, jars and containers.	Recyclable.	Rinse glass if dirty. Place in a container for recycling.	To be collected by a licensed contractor.	Re-use glass panes, bottles etc where possible.	Recycle where possible.	Dispose to landfill when no re-use or recycling facilities are available. Contact the local council for disposal requirements.	Correct handling and PPE to avoid cuts. The glass does not need to be smashed for transport as this leads to increased risk of cuts.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Fluorescent Tubes.	Used fluorescent light tubes.	Recyclable.	Store separately from glass for collection.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill when no re-use or recycling facilities are available. Contact the local council for disposal requirements.	Care should be taken when the tubes are broken or contain Pyrex.
Oils/Oil Contaminated Water								
Oil – Contaminated Soil.	Soil contaminated through oil spills.	Contaminated soil.	Store separately on-site in a manner that prevents the leakage of oil into soil, surface water and groundwater. Could potentially be treated on-site.	Require Disposal Permit under S424 of EP Act.	-	-	Contact the local council for disposal requirements.	Care should be taken to avoid contact with the contaminants.
Oil Filters.	Used oil filters.	Regulated.	Store separately on-site in a manner that prevents the leakage of oil into soil, surface water and groundwater.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill when there are no recycling facilities available. Contact the local council for disposal requirements.	Storage and handling to prevent oil loss and local ground contamination.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Waste Oil.	Used engine oil.	Regulated.	Store separately on-site in a manner that prevents the leakage of oil into soil, surface water and groundwater.	To be collected by a licensed contractor.	Reuse or return to the supplier.	Recycle where possible.	Contact the local council for disposal requirements.	Care should be taken to avoid oil leakage, spills or contamination.
Oily Absorbents	Oily absorbent materials.	Regulated.	Store separately on-site in a manner that prevents the leakage of oil into soil, surface water and groundwater.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill when there are no recycling facilities available. Contact the local council for disposal requirements.	Care should be taken to avoid contact with the contaminants.
Oily Rags.	Oil contaminated rags.	Regulated.	Store separately on-site in a manner that prevents the leakage of oil into soil, surface water and groundwater.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill when there are no recycling facilities available. Contact the local council for disposal requirements.	Care should be taken to avoid contact with the contaminants.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Oily sludges.	Hydrocarbon (oily) sludge, slops.	Regulated.	Store separately on-site in a manner that prevents the leakage of oil into soil, surface water and groundwater.	To be collected by a licensed contractor.	-	Recycle where possible.	Contact the local council for disposal requirements.	These sludges do not contain elevated levels of mercury.
Sump wastes/ grease trap wastes.	Liquid, sludge in kitchen grease traps.	Regulated.	Store separately on-site in a manner that prevents the leakage of oil into soil.	To be collected by a licensed contractor.	-	Recycle where possible.	Contact the local council for disposal requirements.	Care should be taken to avoid oil leakage, spills or contamination.
Rubber								
Tyres and Tubes.	Tyres and inner tubes which are unusable.	Regulated.	Store separately on site.	To be collected by a licensed contractor.	-	Recycle where possible.	Contact the local council for disposal requirements.	-
Rubber without voids (other than tyres).	Unusable o-rings, pigs, brake pads, hose.	Recyclable.	Store on site with recyclable material.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill when there are no recycling facilities available. Contact the local council for disposal requirements.	-

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Plastics								
Plastic Packaging.	Used plastic packaging from workshops or kitchen (which are not food contaminated).	Recyclable.	Store on site with recyclable material.	To be collected by a licensed contractor.	-	Recycle where possible.	Dispose to landfill when there are no recycling facilities available. Contact the local council for disposal requirements.	-
Plastic chemical containers / drums.	Empty plastic containers and drums (mostly from non-hazardous products).	Regulated.	Ensure drums are empty and clearly labelled. Store in a manner that prevents the leakage of any residual chemicals to the soil, surface water and groundwater.	Drums that have previously contained hazardous material should be collected by licensed contractors.	Reuse or return to supplier where possible.	-	Dispose to landfill when site is not able to reuse or return the empty containers. Contact the local council for disposal requirements.	Care should be taken to avoid chemical leakage or spills.
Food Waste, Paper and Cardboard.								
Paper.	Newspaper and white office paper.	Recyclable.	Store separately on site.	To be collected by a recycling contractor, or dropped off at a local recycling facility.	Reuse where possible.	Recycle where possible.	Dispose to landfill when no recycling facilities are available.	-

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Cardboard.	Packaging materials, cardboard boxes.	Recyclable.	Store separately on site.	To be collected by a recycling contractor, or dropped off at a local recycling facility.	Reuse where possible.	Recycle where possible.	Dispose to landfill when no recycling facilities are available.	-
Paper Food Packaging.	Paper food packaging, wrappers.	General waste.	Place in general waste area.	To be collected by a licensed contractor.	-	-	Dispose to a local landfill.	Keep on-site general waste bins clean to avoid pests and disease.
Putrescible Waste.	Food scraps.	General waste.	Place in general waste area.	To be collected by a licensed contractor.	-	-	Dispose to a local landfill.	Keep on-site general waste bins clean to avoid pests and disease.
Wood / Garden Waste								
Garden Waste.	Waste plant material from gardening (i.e. branches and weeds).	General waste.	Store separately on-site until disposal.	To be collected by a licensed contractor.	-	-	Dispose to a local landfill.	Wear PPE to avoid bites and scratches.
Wood (General).	Used / broken lumber and timber.	General waste.	Store separately on-site until disposal.	To be collected by a licensed contractor.	Reuse / resell where possible.	-	Dispose to landfill when no recycling facilities are available.	Care should be taken if breaking up wood due to nails and splitters.

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
Wood (Pallets).	Timber pallets that can be reused.	Recyclable.	Store separately on-site until disposal.	To be collected by a licensed contractor.	Return wooden pallets to supplier where possible or reuse.	-	Dispose to landfill when no recycling facilities are available.	Care should be taken when handling pallets due to nails and splinters. Care should be taken when lifting pallets.
General Non Recyclable Wastes								
Synthetic mineral Fibre (SMF) insulation.	Waste insulation.	Regulated.	Ensure SMF is contained in appropriate bags or containers. Containers should be stored away from other wastes. Contact the Environmental Advisor to advice on collection / disposal of the material.	To be collected by a licensed contractor.	-	-	Dispose to landfill when no recycling facilities are available.	Respiratory protection, clothing and gloves as defined by the MSDS.
Filters (Activated carbon).	Carbon potentially contaminated with hydrocarbon.	Regulated.	Store separately on site. Contact the Environmental Advisor to advice on collection / disposal of the material.	To be collected by a licensed contractor.	-	-	Treat in a licensed facility.	Extreme care is required in handling this material due to the potential for mercury, vanadium and phenol exposure. Waste activated carbon may be

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
								pyrophoric and requires special handling from the time of collection to the time of treatment / disposal.
Filters (Air, Dust, Paper).	Used air filters from vehicles and air-conditioning systems, and used paper and dust filters.	General waste.	Bag and place in the general waste bin.	To be collected by a licensed contractor.	-	-	Dispose to landfill.	General respiratory protection. Extreme care should be taken when dust filters may be contaminated with mercury.
Asbestos and asbestos containing materials.	Asbestos may be found in materials such as lagging, insulation, gaskets and brake pads.	Regulated.	Store separately on site. Contact the Environmental Advisor to advice on collection / disposal of the material.	To be collected by a licensed contractor.	-	-	Dispose to landfill.	Asbestos materials must be handled in accordance with relevant safety guidelines. PPE includes respiratory protection, clothing and gloves as defined in relevant MSDS.
Litter / Large items of domestic	General waste.	General waste.	Place directly into the general waste bin.	To be collected by a licensed contractor.	-	-	Dispose to landfill.	-

Appendix D Waste Management Table

Waste Name	Waste Description	Waste Group	On-site Collection and Storage	Off-site Transport	Off-site disposal (in order of preference)			HSE Issues
					Reuse	Recycle	Landfill	
rubbish.								
Other								
Textiles.	Used mattresses, rags and ropes which are unusable.	General waste.	If unable to reuse, place directly into general waste bin.	To be collected by a licensed contractor.	Reuse where possible.	Recycle where possible.	Dispose to landfill if unable to reuse and recycle.	-
White Goods.	Broken white goods.	General waste.	Store separately on site. Fridges and air-conditioning units need to be degassed.	To be collected by a licensed contractor.		Recycle where possible.	Dispose to landfill if unable to reuse and recycle.	Sharp edges may be present if the materials are broken.
Concrete and ceramics.	Concrete and ceramic from demolition and kitchen breakages.	General waste.	Place ceramics into the general waste bins. Concrete / demolished building materials should be stored in a separate area prior to disposal.	To be collected by a licensed contractor.		Recycle where possible.	Dispose to landfill when no recycling facilities are available. Contact the local council for disposal requirements.	Lifting and back stress.
Septic Waste.	Septic sludges.	Regulated.	Contact the Environmental Advisor to arrange for collection and disposal of all material.	To be collected by a licensed contractor.	-	-	Disposal at a licensed facility.	Care should be taken to avoid spills.

Appendix E Waste Tracking

Appendix E Waste Tracking

E.1 Regulated wastes

The following types of wastes are Regulated Wastes relevant to the GLNG project (excerpt from Schedule 7 *Environmental Protection (Waste Management)Regulation 2000*).

Table E-1: Regulated wastes from Schedule 7

acids and acid solutions
adhesives (other than solid inert polymeric materials)
alkalis and alkaline solutions
antimony
arsenic
asbestos (all chemical forms)
barium
batteries
beryllium
biocides
boron
cadmium
caustic solutions
chlorates
chromium
copper compounds
detergents
distillation residues
electroplating effluent and residues
filter backwash waters
filter cake sludges and residues
grease interceptor trap effluent and residues
halogen compounds (other than solid inert polymeric materials)
heat treatment salts
heterocyclic organic compounds containing oxygen, nitrogen or sulphur
hydrocarbons (oxygen, nitrogen or sulphur)
industrial plant wash down waters
inorganic cyanides and cyanide complexes
inorganic sulphur compounds

isocyanate compounds (other than solid inert polymeric materials)
lead
lime neutralised sludges
lime sludges
mercaptans
metal finishing effluent and residues
methacrylate compounds (other than solid inert polymeric materials)
nickel
oil interceptor sludges
oils
oil water emulsions and mixtures
organic solvents
oxidising agents
ozone depleting substances
perchlorates
pesticides
petroleum tank sludges
phenolic compounds (other than solid inert polymeric materials)
phosphorus
polychlorinated biphenyls and related substances and anything containing polychlorinated biphenyls or related substances
polymeric lattices
reactive chemicals
reducing agents
related waste
resins (other than solid inert polymeric materials)
saline effluent and residues
selenium

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silver compounds
solvent recovery residues
surfactants
tars and tarry residues
tellurium
thallium
treatment tank sludges and residues (including sewage tank sludges and residues)
tyres
vanadium
vegetable oils
vehicle wash down waters
zinc compounds

Some Regulated Wastes are trackable and referred to as Trackable Wastes (see Section E2 below). For Regulated Wastes that are not trackable, the following information should be recorded for the wastes when transported and records kept on-site:

- Date of waste transport;
- Type of waste/waste stream removed and transported;
- Quantity (L, kg or m^3);
- Container numbers;
- Waste Transport Certificate Number (if required);
- Transporters name (company name);
- Route selected for transport of waste;
- Intended destination;
- Receiver name (if known);
- Accepted by (transporters signature); and
- Records of any incidents that may have occurred *en route*.

Appendix E Waste Tracking

E.2 Trackable wastes

Under the *Environmental Protection (Waste Management) Regulation 2000*, the transportation of Trackable Waste requires all 'waste handlers' involved (waste generators, transporters and receivers) to record prescribed information about the waste and, in the case of generators and receivers, provide or arrange for the prescribed information to be provided to the Environmental Protection Agency (EPA). By matching the information sent by the waste generator and the receiver, the EPA can track the waste's journey and identify which wastes have been disposed of inappropriately. The EPA can also check that the transporter and receiving facility are licensed. Where a person has more than one waste handling role, the person must comply with each of the responsibilities as applicable.

A Waste Transport Certificate (the Certificate) is used to records waste tracking information and is available from EPA offices as a five copy docket. The Certificate travels with the waste from its point of generation to the site of storage, recycling, treatment or disposal. The Certificate records proof of actions of all persons involved in the handling of the waste. Certificates are individually and uniquely numbered. These numbers become the load number for each waste load. Relevant copies of each form are to be provided to the EPA within seven days of the waste transaction. Two versions of the form are available, one for intrastate waste transfers and one for interstate waste transfers.

E.3 Trackable waste list and codes

Movement of Trackable Waste requires a Certificate to be completed. Table E-2 below contains a list of Trackable Wastes and the codes required for completing the 'waste code' component of the Certificate (also below). Table E-3 below contains the list of codes that are required for completing the 'waste origin' component of the Certificate. Tables E-4 and E-5 below contains the list of codes that are required for completing the 'treatment/disposal types' component of the Certificate.

Table E-2: Trackable wastes and waste codes

Waste Description	Waste Code
Acidic solutions or acids in solid form	B100
Antimony; antimony compounds	D170
Arsenic; arsenic compounds	D130
Asbestos	N220
Barium compounds (excluding barium sulphate)	D290
Basic (alkaline) solutions or bases (alkalis) in solid form	C100
Beryllium; beryllium compounds	D160
Boron compounds	D310
Cadmium; cadmium compounds	D150
Chlorates	D350
Chromium compounds (hexavalent and trivalent)	D140
Copper compounds	D190

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Waste Description	Waste Code
Cyanides (inorganic)	A130
Cyanides (organic)	M210
Encapsulated, chemically-fixed, solidified or polymerised wastes	N160*
Ethers	G100
Filter cake	N190
Fire debris and fire washwaters	N140*
Grease trap waste	K110
Halogenated organic solvents	G150
Highly odorous organic chemicals (including mercaptans and acrylates)	M260
Inorganic fluorine compounds other than calcium fluoride	D110
Inorganic sulphides	D330
Isocyanate compounds	M220
Lead; lead compounds	D220
Material containing polychlorinated biphenyls ((PCB's), polychlorinated napthalenes (PCN's), polychlorinated terphenyls (PCT's) and/or polybrominated biphenyls (PBB's)	M100
Mercury; mercury compounds	D120
Metal carbonyls	D100
Mineral oils	J100
Nickel compounds	D210
Non toxic salts	D300
Oil and water mixtures or emulsions, or hydrocarbons and water mixtures or emulsions	J120
Organic phosphorous compounds	H110
Organic solvents other than halogenated solvents	G110
Organohalogen compounds - other than another substancs referred to in this table	M160
Perchlorates	D340
Phenols, phenol compounds including chlorophenols	M150
Phosphorus compounds other than mineral phosphates	D360
Polychlorinated dibenzo-furan (any congener)	M170
Polychlorinated dibenzo-p-dioxin (any congener)	M180
Residues from industrial waste treatment/disposal operations	N205
Selenium; selenium compounds	D240
Sewage sludge and residues including nightsoil and septic tank sludge	K130
Surface active agents (surfactants), containing principally organic constituents and which may contain metals and inorganic materials	M250
Tarry residues arising from refining, distillation, and any pyrolytic treatment	J160

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Waste Description	Waste Code
Tellurium; tellurium compounds	D250
Thallium; thallium compounds	D180
Triethylamine catalysts for setting foundry sands	M230
Tyres	T140
Vanadium compounds	D270
Waste containing peroxides other than hydrogen peroxide	E100
Waste from heat treatment and tempering operations that uses cyanides	A110
Waste from the production, formulation and use of organic solvents	G160
Waste of an explosive nature other than an explosive within the meaning of the *Explosives Act 1999*	E120
Zinc compounds	D230

* If a substance falls under more than 1 item in the above list, and one of the items is marked with an asterisk, the code for the substance is the code for the item marked with an asterisk.

Table E-3 below outlines disposable codes for operations which do not lead to the possibility of resource recovery, recycling, reclamation, direct re-use or alternative uses.

Table E-3: Disposable codes

Description	Disposal Type
Landfill	D1
Land farming	D2
Surface impoundment	D4
Biological treatment (not otherwise specified)	D8
Immobilisation/Solidification	D9A
Other Physico/Chemical treatment	D9B
Incineration	D10
Permanent storage	D12
Blending or mixing prior to submission to any of the above operations	D13
Repackaging prior to submission to any of the above operations	D14
Storage pending any of the above operations	D15

Appendix E Waste Tracking

Table E-4 below outlines treatment codes for operations which may lead to resource recovery, recycling, reclamation, direct reuse or alternative uses

Table E-4: Treatment codes

Description	Disposal Type
Use as a fuel (other than direct incineration)	R1
Solvent and other organic substance reclamation/regeneration	R2
Recycling/reclamation of organic substances which are not used as solvents	R3
Recycling/reclamation of metals and metal compounds	R4
Recycling/reclamation of other inorganic materials	R5
Regeneration of acids or base	R6
Recovery of components used for pollution abatement	R7
Recovery of components from catalysts	R8
Used oil refining or other re-uses of previously used oil	R9
Use of residual materials obtained from any of the operations numbered R1-R9	R11
Accumulation of material intended for any of the operations numbered R1-R12	R13
Recycling/reconditioning/laundering of drums	R14

Appendix E Waste Tracking

E.4 Waste Transport Certificate

The Waste Transport Certificate has a main section with three parts (1, 2 and 3). It comes in five copies: white, pink, green, yellow and blue. The Certificate (all parts and copies) is progressively completed by the generator, transporter and receiver for each waste load, or in the case of mixed loads, for each component of the load which is transported within Queensland. The waste generator and waste receiver are each required to provide a copy of the certificate to the EPA.

E.4.1 Part 1

Part 1 of the Certificate (reproduced in Table E-5 below) is to be completed correctly by the waste generator. The individual completing the form must be familiar with the waste and its hazards and be authorised to complete the document on behalf of the waste generator.

Once Part 1 of the certificate has been completed, the waste generator must detach the green and pink copies of the document and give the remaining white (original), yellow and blue copies to the waste transporter to accompany the waste to the site of receipt. The receiving facility must be nominated. The green copy is kept by the generator in their records for five years. The pink copy is sent to the EPA within seven days of completion of Part 1.

Table E-5: Certificate Layout - Part 1

Question	Details
Name of waste generator	The person/company/partnership/body corporate generating the waste - if applicable the name under which the environmental authority is held or generator ID number
Address/Postcode	Site address where waste is held
Name of emergency contact/phone	Refers to an authorised representative of the generator
Environmental Authority No	Environmental Authority number (if held)
Nominated receiving facility	Name of facility specified to the transporter as the receiver of waste
Description of waste	General description of the waste
Waste code:	See ‘Waste Codes’ (Table D-2 above)
Contaminant	‘Waste code’ of any notable contaminants of the waste
Waste origin:	See ‘Waste Origin Code’ (Table D-3 above)
UN Number	From Australian Dangerous Goods Code (where applicable)
UN Class	From Australian Dangerous Goods Code (where applicable)
Packaging Group	From Australian Dangerous Goods Code (where applicable)
Bulk/No of packages	Whether the waste is transported in bulk or number of packages
Amount of waste:	This specifies the amount of waste in kilograms or litres
Name and position /Signature	Refers to an authorised representative of the generator

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Question	Details
/Date	

E.4.2 Part 2

Part 2 of the Certificate is to be completed correctly by the waste transporter. The person completing the document must be familiar with the waste and its hazards, and be authorised by the transportation firm to complete the document. This person is usually the driver. Regulated waste can only be transported to an appropriate receiving facility as nominated by the waste generator in Part 1. Once the waste receiving facility has completed Part 3 of the document, the waste transporter detaches the blue copy of the document and gives the remaining white (original) and yellow copies to the person representing the waste receiving facility. The blue copy of the document is kept by the transporter in their records for five years. The transporter must, as soon as practicable after becoming aware of a discrepancy in information received from the generator, give written notice of the discrepancy to the EPA.

E.4.3 Part 3

Part 3 of the Certificate is to be completed correctly by the waste receiver. The yellow copy is detached by the waste receiver (with Parts 1, 2 and 3 now completed) and is kept in their records for five years. The original/white copy is sent to the EPA within seven days of receiving the waste. The receiver must, as soon as practicable after becoming aware of a discrepancy in information received from the transporter, give written notice of the discrepancy to the EPA.

An Example Waste Transport Certificate is provided below.

Appendix E Waste Tracking

Waste Transport Certificate

Certificate No. 1037101

PART 1 This section to be completed by the Producer or Storer of waste

1. Name, Description and Chemical Composition of the Waste

2. U.N. Class | Subsid Risk | U.N. Number
Packaging Group | Bulk/ No of Packages | Type of Packaging
Amount of Waste: kg OR cubic metres OR Litres
Waste Code No. | Contaminant | Waste Origin

Queensland Government
Environmental Protection Agency
Environmental Operations
P.O. BOX 155
BRISBANE ALBERT STREET
QLD 4002

3. Name of Waste Producer
Address
Local Gov. Area | Postcode
Contact Name | Phone
Environmental Authority No. | Approval/Consignment No.

4. Nominated Disposal/Treatment/Storage Facility

I declare that to the best of my knowledge and belief the above information is true and correct.
Name and Position (in block letters)
Signature | Date

PART 2 To be completed by the Waste Transporter.

5. Name of Transporter
Address
Mode of Transport: Road ☐ Rail ☐ Air ☐ Sea ☐
Vehicle No. 1 Reg. No. | Environmental Authority No.
Vehicle No. 2 Reg. No. | Environmental Authority No.

I acknowledge receipt of the waste described in part 1.
Name (in block letters)
Signature | Date

PART 3 To be completed by the Facility Receiving Waste.

6. Name of Receiving Facility | Environmental Authority No.
Address
Type of Treatment
Intended Disposal: Recycling ☐ Landfill ☐ Chem/Phys. Treatment ☐
Storage ☐ Incineration ☐ Immobilisation ☐ Biodegradation ☐ Other ☐ Specify

I acknowledge receipt of the waste described in part 1.
Name (in block letters) | Discrepancy Y/N Description
Signature | Date

WHITE COPY - TO BE FORWARDED TO REGULATORY AUTHORITY IN STATE OF DESTINATION BY DISPOSER/STORER.
PINK COPY - TO BE FORWARDED TO REGULATORY AUTHORITY IN THE STATE OF ORIGIN, WITH PARTS 1 & 2 COMPLETED, BY THE PERSON/COMPANY WHO COMPLETED PART 1
GREEN COPY - TO BE RETAINED BY THE PERSON/COMPANY WHO COMPLETED PART 1
YELLOW COPY - TO BE RETAINED BY THE PERSON/COMPANY WHO COMPLETED PART 3
BLUE COPY - TO BE RETAINED BY THE WASTE TRANSPORTER

VERSION 2 - August 2000

Appendix F

Santos' Eastern Queensland Gas Waste Management Plan

Eastern Queensland Gas Waste Management Plan

Prepared for

Santos

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17 April 2007

42625584/R001

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Date: 17th April 2007
Reference: 42625584R001
Status: Final Report

Revision No.	Date	Section	Description of Changes Made	Approval
1			Draft for review	
2			Final	

It is proposed that the Waste Management Plan is a living document, which can be revised on an ongoing basis. It is proposed that the entire document is reviewed and updated annually as a minimum.

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Glossary

Camp Waste	Camp wastes are the domestic and commercial wastes produced at camp facilities and wastes produced in the administration buildings and offices. They include but are not limited to food scraps and containers, office paper and newspaper.
Controlled Waste	Waste types listed in the Commonwealth *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure*, where wastes in List 1 possess one or more of the charateristics in List 2.
Dangerous Goods	Goods specified as Dangerous Goods under the Australian Dangerous Goods Code (6th addition) as reflected in the Qld *Dangerous Goods Safety Management Act 2001.*
EHSMS	Santos Environment Health and Safety Management System.
General Waste	Wastes other than Regulated Wastes as defined in the Qld *Environmental Protection (Waste Management) Regulation 2000.*
Hazardous Waste	Waste that contains significant quantities of any substance which is toxic, poisonous, infectious, explosive, flammable, corrosive, and highly reactive or oxidising which may pose a threat to human health or the environment when improperly treated, stored, disposed of or otherwise managed.
National Environment Protection Measure (NEPM)	A policy made by the National Environment Protection Council with the objective of protecting Australia's environment from inappropiate management practices.
Putrescible Waste	Wastes that can be readily decomposed through the action of micro-organisms, such as food wastes.
Recyclable Waste	Wastes that can practicably be recycled.
Recycling	The use or reuse of wastes as a substitute for a commercial product or to reduce the use of new/raw materials. Includes the reclamation of useful constituent fractions within a waste stream or the removal of contaminants from a waste to allow it to be reused.
Regulated Waste	Regulated Waste within the meaning of the Qld *Environment Protection Regulation 1998* that have specific handling and disposal requirements in order to manage hazards associated with them.
Santos Production and Process Wastes	Wastes generated during the production of gas and oil. They include but are not limited to wastes such as hydrocarbon sludges, oily soil, and used filter elements.
Third Party Waste	Industrial and construction wastes generated by contractors working at Santos facilities. May also include wastes from pastoralists, tourists and other petroleum explorers.
Trackable Waste	Certain Regulated Wastes as specified under Schedule 1 of the Qld *Environmental Protection (Waste Management) Regulation 2000.*
Waste	Comprises any gas, liquid, solid or energy or a combination of wastes that is surplus to, or unwanted from, any industrial, commercial, domestic or other activity, whether or not of value.
Waste Generator	The person(s) from whom Trackable Waste is transported (whether the person produced the waste or received it from someone else).
Waste Transporter	The person(s) who transports Trackable Waste from the generator to the receiver.
Waste Receiver	The person(s) to whom Trackable Waste is transported for treatment or disposal.
Waste Facility	A facility for the recycling, reprocessing, treatment, storage, incineration, conversion to energy or disposal of waste.
WMP	Waste Management Plan.

1.1 Scope

This waste management plan (herein referred to as the Eastern Queensland Gas Waste Management Plan - EQG WMP) is the overall coordination document for waste management in Santos' Eastern Queensland (EQ) gas operations and comprises one component of the EQ Field Operating Procedures.

The scope of the EQG WMP encompasses the management of wastes from the time of generation to the time of ultimate treatment and/or disposal, and identifies the types of waste generated, waste transport and disposal requirements, reporting requirements, record keeping, and procedures for non-conformance with the EQG WMP requirements. The EQG WMP provides for waste management at Roma, Wallumbilla, Scotia and Fairview.

1.2 Purpose/Objectives

Santos operations generate waste from petroleum production and processing activities, gas extraction, and domestic waste from residential camps and facilities. Site-based waste management plans have been developed to minimise waste volumes, improve operational efficiency and improve environmental performance.

The objectives of the EQG WMP are to:

- Provide a framework for addressing relevant aspects of waste management including waste minimisation, waste management, and recycling, reporting; and
- Ensure waste management practices are supportive of sustainable development and comply with Santos policies, industry standards, legislative obligations and licence conditions.

1.3 Definitions

Waste is generally defined as comprising '*any gas, liquid, solid or energy or a combination of wastes that is surplus to, or unwanted from, any industrial, commercial, domestic or other activity, whether or not of value*' (EPA, 2006). The Glossary above provides additional definitions relevant to this EQG WMP.

2.1 Legislation, Policy and Regulations

2.1.1 Queensland

Environmental Protection Act 1994

In Queensland, the *Environmental Protection Act 1994* (EP Act), the *Environmental Protection (Waste Management) Regulation 2000* (EP Waste Regulation) and the *Environmental Protection (Waste Management) Policy 2000* (EP Waste Policy) provide for waste management practices and environmental safeguards. Regulated Waste is defined in the *Environmental Protection Regulation 1998* (EP Regulation).

EP Act

The objective of the EP Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The protection of Queensland's environment is achieved by an integrated management program that is consistent with ecologically sustainable development. The program involves developing effective environmental strategies for waste management, including waste prevention and minimisation. Specific provisions for waste management are found primarily in the EP Waste Regulation and EP Waste Policy.

EP Waste Regulation

The object of the EP Waste Regulation is to protect the environment by minimising the impact of waste on the environment, and establishing an integrated framework for minimising and managing waste under the principles of ecologically sustainable development. The EP Waste Regulation provides:

- Offences for littering, waste dumping, unlawful disposal of hypodermic needles and unlawful activities at waste facilities;
- A waste tracking system that tracks the movement of specific wastes to ensure correct disposal;
- Requirements for clinical and related waste management planning including segregation, storage and disposal;
- Requirements for managing polychlorinated biphenyls; and
- Design rules for waste equipment.

EP Waste Policy

The EP Waste Policy outlines the preferred waste management hierarchy and principles for achieving good waste management. These hierarchy and principles provide the basis for the development of waste management plans. The waste hierarchy moves from the most preferred to the least preferred management option:

1. Waste avoidance;
2. Waste re-use;
3. Waste recycling;
4. Energy recovery; and
5. Waste disposal.

The principles for achieving good waste management are:

- The 'polluter-pays principle' - all costs associated with waste management should, where possible, be borne by the waste generator;
- The 'user-pays principle' - all costs associated with the use of a resource should, where possible, be included in the price of goods and services developed from that resource; and
- The 'product stewardship principle' - the producer or importer of a product should take all reasonable steps to minimise environmental harm from the production, use and disposal of the product.

The requirements of the EP Waste Policy and EP Waste Regulation relevant to the EQG WMP are detailed in the following sections.

Dangerous Goods Safety Management Act 2001

The Queensland *Dangerous Goods Safety Management Act 2001* (DG Act) applies to the storage and handling of hazardous materials, particularly dangerous goods and combustible liquids. The DG Act only applies to wastes where they are also classified as Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail (6th Ed). Wastes that are Dangerous Goods (e.g. flammable liquids/solids, corrosives, oxides, acute poisonous and toxic materials) will need to be labelled, stored, and handled in accordance with the DG Act.

2.1.2 Commonwealth

National Environment Protection (Movement of Controlled Waste between States and Territories) Measure.

The National Environment Protection (Movement of Controlled Waste between States and Territories) Measure (NEPM) aims to ensure that controlled wastes which are moved between States and Territories

are properly identified, transported and handled in an environmentally sound manner, and that they reach licensed or approved facilities for treatment, recycling, storage and/or disposal. The NEPM provides a framework for developing and integrating systems for the movement of controlled waste between States and Territories which includes:

- Tracking systems, which provide information to assist agencies and emergency services and ensure that controlled wastes are directed to appropriate facilities;
- Prior notification systems, which provide participating States and Territories with access to information to assess the appropriateness of proposed movements of controlled wastes in terms of transportation and facility selection;
- Systems for licensing transporters and the regulating generators and facilities so that tracking and notification functions are compatible between States and Territories; and
- Provision for mutual recognition by States and Territories of each other's transport licences.

Australian Code for the Transport of Dangerous Goods by Road and Rail (6th Ed)

The Australian Code for the Transport of Dangerous Goods Code by Road and Rail (6th Ed.) sets out technical requirements and guidelines for the transport of dangerous goods by road and rail and is implemented for roads in Queensland by the *Transport Operations (Road Use Management - Dangerous Goods) Regulation 1998.* The requirements of the Code do not apply to waste products and other environmentally hazardous substances unless those products or substances are also Dangerous Goods within the meaning of the Code. Where wastes that constitute Dangerous Goods (e.g. flammable liquids/solids, corrosives, oxides, acute poisonous and toxic materials) are to be transported from site, the transporter must comply with all the requirements of the Code and Regulation, including the requirements for placarding.

2.2 Santos Context

Waste from Santos' operations is generated from two sources: operational waste from petroleum production and processing activities and gas extraction (such as hydrocarbon sludges); and waste from support activities (such as residential camps and facilities). These wastes may or may not be recyclable depending on their characteristics. This EQG WMP has been developed to meet the requirements of the Santos Environment Health and Safety Management System (EHSMS). The EHSMS provides the framework within which all aspects of the Santos' environmental, health and safety responsibilities are managed.

2.2.1 Licenses

Santos license requirements regarding waste management are incorporated within this EQG WMP. All Regulated Waste is disposed of to licensed waste disposal facilities or recycling facilities and transported by authorised persons. A record is to be kept of information on Regulated Waste (defined under the EP

Regulation) to be removed from site. For Trackable Wastes, this condition is met by implementing waste tracking procedures under the EP Waste Regulation, part of which is to complete the Waste Tracking Certificate (refer Section 5 below and Appendix C).

3.1 Responsibilities

The personnel in Table 3.1 are responsible for waste management under the EQG WMP.

Table 3.1 Personnel Responsibilities

Position	Responsibilities within EQ Gas Operations
EQ Gas Field Environment Committee	Overall stewardship of waste management in EQ gas.
EQ Gas Field Superintendent	Implementation of the EQG WMP within the field. Maintaining the EQG WMP.
Site Supervisor	Inspection of fire safety equipment, eyewash and shower stations at waste storage areas and facilities, and documenting the results of these inspections. Providing an on-site contact point for operational issues. Ensuring adequate maintenance of Santos infrastructure and equipment provided, in accordance with any waste management contracts. Overseeing/reviewing any waste management contracts. Convening regular meetings with waste management contractor(s).
Environmental Adviser	Scheduling and conducting audits to assess compliance with this EQG WMP and legislative requirements. Liaising with relevant authorities regarding renewal of licenses and the alteration of license conditions as required. Liaising with relevant authorities to determine appropriate disposal procedures for specific wastes and obtaining the necessary legal approval where required. Providing specialist advice as required regarding environmental matters. Provision of training in waste management.
Health and Safety Officer	Providing advice to waste management contractor(s) on safe handling techniques for chemicals and other hazardous substances deposited in the waste storage areas.
Waste Management Contractor(s)	Provision of the waste management services specified in the contracts. Ensuring staff have been trained to an acceptable level (as defined in the contracts).
Site Personnel	Ensuring that recyclable wastes are appropriately cleaned, segregated and placed in the correct locations. Ensuring Regulated Wastes and dangerous goods are not disposed of in general waste bins. Ensuring general wastes are disposed of in the general waste bins and not littering. Advising/liaising with the Field Superintendent/Site Supervisor regarding special wastes to ensure, where possible, that appropriate management plans can be implemented.
Third Party Contractor(s)	Inclusion of waste management in their HSE plans (including waste reduction programs). Appropriate management of the wastes that they generate. Meeting Santos requirements (where applicable) for acceptance of wastes into the Santos Waste Management System.

3.2 Contact List

Site supervisor contacts for waste management at the sites covered by this EQG WMP are provided in Table 3.2.

Table 3.2 Site Supervisor Contacts

Site	Name	Phone Number
Roma	Supervisor-Roma	07 4624 2129
Roma Stores	Material Controller	07 4624 2135
Wallumbilla	Supervisor- Wallumbilla	07 4623 4222
Scotia	Supervisor- Scotia	07 4627 4271
Fairview	Supervisor- Fairview	07 4626 3736

4.1 Waste Management Processes

Waste management at the Santos EQ gas operations must be conducted in accordance with the requirements and processes provided for in the legislation discussed in Section 2.1 above. The flowchart in Appendix A provides an overview of those requirements and processes and the table in Appendix B lists the management requirements for the wastes generated by the EQ gas operations.

All site personnel and contractors must implement the EP Waste Policy waste hierarchy when undertaking activities on site in the following order of priority:

1. The generation of waste can be prevented or reduced by substituting inputs for those that generate waste, increase efficiency in the use of raw materials, energy, water or land, redesign processes or products, and improve maintenance and operation of equipment.
2. Re-use of waste can be achieved by recovering solvents, metals or oil and re-using them for a secondary purpose.
3. Where practical (i.e. adequate volumes, storage space) personnel should segregate wastes for recycling into new products. Wastes that can be recycled include glass, cardboard, paper, plastics, aluminium, batteries, oil, drums and rubber.
4. Recovering and using energy generated from waste where possible.
5. Disposing of waste, or treating and disposing of waste, in a way that causes the least harm to the environment can be achieved by employing a bio-treatment to degrade material into a compound or mixture, blending or mixing waste to obtain a compound or mixture, storing or repackaging waste, and disposal to a landfill.

4.2 Existing Waste Facilities

4.2.1 Roma

Wastes requiring on-site storage are placed within the Santos compound at Roma. General and recyclable waste is transported to the Roma Town landfill and recycling facility. Regulated Waste is collected by licensed contractors for off-site disposal. The Roma Town landfill receives general waste including construction wastes. The landfill has recycling facilities for cardboard, white paper, aluminium, scrap metal and glass. Timber is stored in a designated area and resold by contractors. The landfill has a waste oil disposal facility and separate pit for the disposal of tyres.

Historically, the Roma landfill has accepted some Regulated Wastes including septic wastes, oily water (deposited in evaporation waste pits) and grease trap wastes. The authorised disposal of these Regulated Wastes at the Roma landfill is currently under review by the EPA. The Council operates a general waste

collection service and there is also an industrial waste collection provided by a private contractor (Roma Town Council, Pers. Comm. 17.08.06)

4.2.2 Wallumbilla

Wastes requiring on-site storage are placed within the Santos compound at Wallumbilla. General and recyclable waste is transported to the Wallumbilla landfill and recycling facility. Regulated Waste is collected by licensed contractors for off-site disposal. The landfill has the capacity to recycle scrap steel, stockpile timber and re-use concrete and demolition waste, although no facilities exist for recycling of domestic materials such as glass, plastic or paper. There is a waste collection service within the town but no collection points outside of the town limits (Bendemere Shire Council, Pers. Comm. 17.08.06).

4.2.3 Scotia

Wastes requiring on-site storage are placed within the Santos compound at Scotia. General and recyclable waste is transported to the Taroom landfill. Regulated Waste is collected by licensed contractors for off-site disposal. All recyclable wastes are disposed of in the landfill, along with general wastes and limited volumes of Regulated Waste. There are no other recycling facilities in the shire and Council waste collection services are limited to the towns of Taroom and Wandoan only (Taroom Shire Council, Pers. Comm. 17.08.06).

4.2.4 Fairview

Wastes requiring on-site storage are placed within the Santos compound at Fairview. General and recyclable wastes are transported to the Injune landfill and recycling facility. Regulated Waste is collected by licensed contractors for off-site disposal. Injune landfill can recycle oils. All other recyclable wastes (such as glass, paper and plastic) are disposed of into the general landfill. Scrap metal and septic wastes are disposed of in separate pits to the general wastes (Bungil Shire Council, Pers. Comm. 18.08.06).

5.1 Disposal Options

Disposal options for wastes generated by Santos' EQ gas operations depend on the characteristics of the waste. General waste (e.g. domestic waste) can be disposed of in general waste disposal facilities or landfills. Regulated Waste must be disposed of in waste disposal facilities licensed to receive Regulated Waste under the EP Regulation - Environmentally Relevant Activity (ERA) 75(b). Recyclable wastes should be disposed of at recycling facilities which are often located along side landfills. Some wastes (such as batteries, oils, drums, and tyres) should be recycled at licensed facilities, although this may not be possible for certain sites. Appendices B and C identify waste disposal requirements for general, recyclable and Regulated Wastes.

5.2 Transport and Tracking

Under the EP Waste Regulation, the transport of Trackable Wastes is to be recorded via Waste Transport Certificates. Waste tracking ensures that all parties involved in the management of the waste take responsibility for its transportation and disposal to prevent environmental harm. Records are required to be kept by each 'waste handler' (i.e. generators, transporters, and receivers) for subsequent auditing by the EPA if required.

The waste tracking provisions do not apply in the following circumstances:

- If waste is transported in a pipeline; or
- If given an exemption given by the EPA; or
- The non-commercial transportation of less than 250 kg of Trackable Waste; or
- The transportation of Trackable Waste in a container if-
  - The amount of Trackable Waste is not more than 5% of the capacity of the container; and
  - The container is being transported to a place to be refilled with the same substance as the waste, without first undergoing any process other than the refilling; or
- If waste is being transported to a farm for use as a soil conditioner or fertiliser; or
- If waste is being transported to a registered laboratory for analysis; or
- If a contaminant is being released to sewer or to stormwater drainage.

Wastes generated by the EQ gas operations are listed in Appendix B. If the waste is trackable, a Waste Transport Certificate in Appendix C is required to be completed. Responsibilities of individuals for waste tracking are also detailed in Appendix C.

6.1 Records

The Site Supervisor will keep a record of the information required by the waste tracking procedures in the EP Waste Regulation and also information for movement of other Regulated Waste (Appendix C).

The EPA's waste tracking system will be used to report to the EPA on the quantities of Trackable Waste leaving the EQ gas operational sites for treatment and disposal. The EP Waste Regulation requires that documents generated as part of the waste tracking system are kept for at least 5 years. The waste tracking records will be maintained on-site by the Site Supervisor for a period of 6 months after wastes have been transported off-site to enable the completion of six-monthly reports. After this time period, a copy of the reports will be forwarded to the Environmental Group for storage in the Brisbane office and archived after 2 years. Any asbestos–related documentation will be kept for a period of 40 years.

Santos will liaise with the local Council(s) regarding Shire/Regional Waste Management Plans and the opportunities for synergy with Santos' waste management procedures.

6.2 Audits

Audits of the waste management system will be conducted by Santos personnel or by third parties acting on behalf of Santos. These audits will be scheduled and managed through the EHSMS. Audits will be conducted six-monthly for routine inspections of facilities by a Site Supervisor, and annually for compliance with the EQG WMP by a third party or Site Supervisor. Annual reports prepared by the Field Superintendent/ Environmental Group should be maintained for a period of 5 years. The EPA may also audit any aspect of the EQG WMP at any time.

6.3 Non-Compliance

Incidents related to waste management will be handled in accordance with the EHSMS. Where appropriate, recommendations made through this system will be incorporated into the EQG WMP.

Non-compliance with the Queensland waste management requirements are penalised under the EP Waste Regulation. The EP Waste Regulation allows for penalties of up to 20 penalty units ($1,500) to be imposed if waste tracking information is not recorded or provided to the EPA as required. Penalties can be imposed through on-the-spot fines or may involve prosecution. More significant penalties are involved of up to 165 penalty units ($12,375) if Trackable Waste is given to a non-licensed transporter.

In addition, the EP Waste Regulation makes it an offence to litter where a person is littering if they:

- Throw, drop or otherwise put the litter or waste on the place; or
- Leave the litter or waste at the place; or
- Deal with the litter or waste in a way that causes or allows it to fall, blow, wash or otherwise escape onto the place.

There is a maximum 20 penalty unit ($1,500) fine for unlawfully disposing of litter. The EP Waste Regulation also contains a penalty of up to $3,000 for a person unlawfully disposing of more than 20 L of waste at a place, or up to $12,375 for unlawfully disposing of more than 200 L of waste at a place.

6.4 Review

The performance of the EQG WMP will be reviewed by the EQ Gas Environmental Committee annually, based on the results of the audits described above. Reviews and changes to the EQG WMP will be listed at the front of this document.

The following documents are relevant to waste management at Santos' EQ gas operations. Please refer to them where necessary for additional information on waste management.

7.1 Procedures

- EHS04 Waste Management

7.2 Other Santos Documents

- Contract No. 800236 between Santos and Collex Pty Ltd
- Santos Environment Health and Safety Management System
- Santos Environmental Vision, Commitment and Policy

7.3 Legislation and Policy

- *Environment Protection Act 1993* (Qld)
- *Environmental Protection Regulation 1998* (Qld)
- *Environmental Protection (Waste Management) Regulation 2000* (Qld)
- *Environmental Protection (Waste Management) Policy 2000* (Qld)
- Environmental Protection Agency (EPA) (2006) Waste Management Strategy for Queensland. Queensland Government.
- *Dangerous Goods Safety Management Act 2001* (Qld)
- National Environment Protection (Movement of Controlled Waste between States and Territories) Measure (Cth)
- Australian Code for the Transport of Dangerous Goods Code by Road and Rail (6th Ed.) (Cth)
- Santos Environmental and Integrated Authorities for operations at Roma, Wallumbilla, Scotia and Fairview.
- Shire Council Waste Management Plans

Limitations

SECTION 8

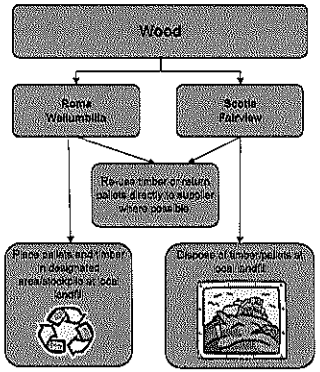
URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Santos and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Variation Request dated 21 July 2006.

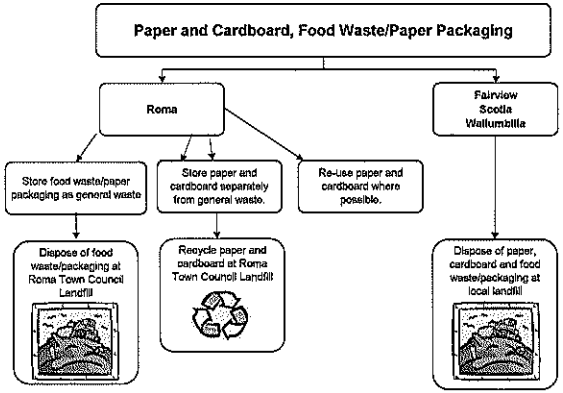
The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

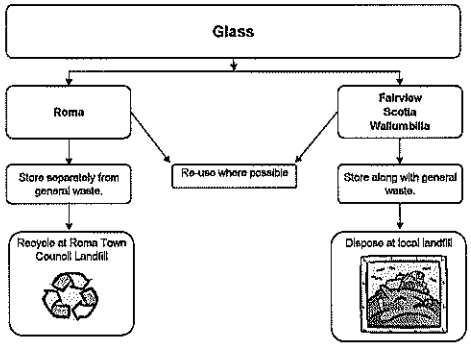
This report was prepared in August 2006 and is based on the information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

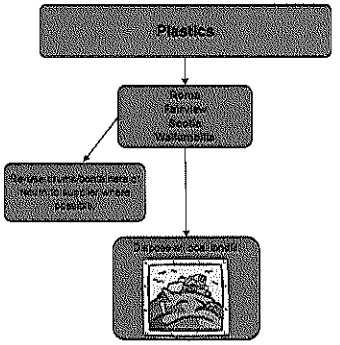
This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

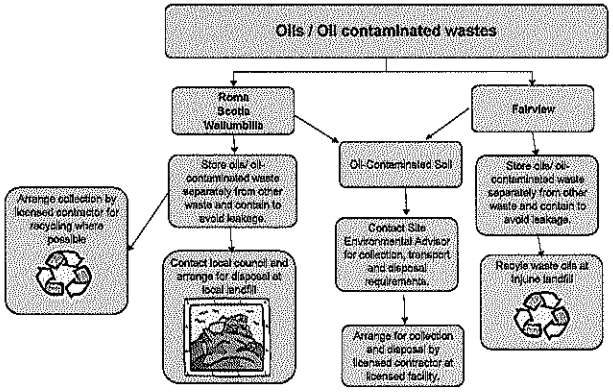
EQ Gas Waste Flowchart

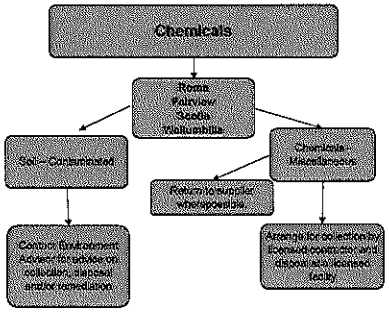


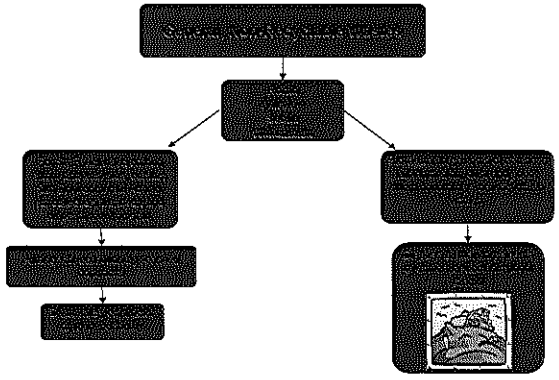


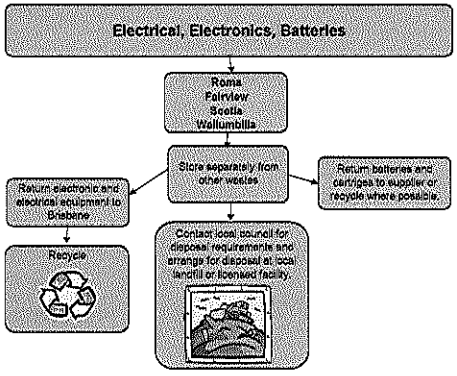


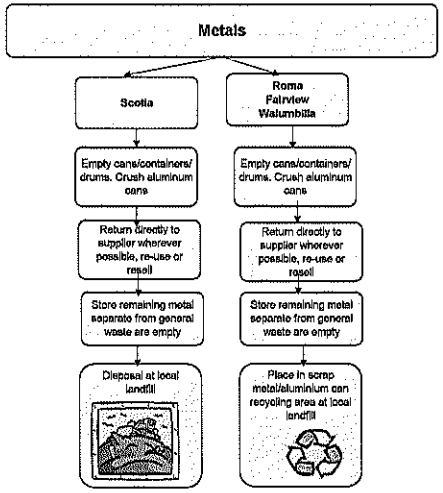


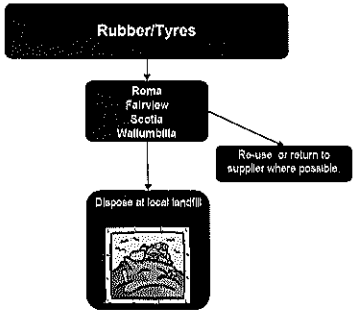












Waste Name	Regulated/ Trackable	On-Site Collection and Storage	Transport Off-Site	Off-Site Disposal (in order of preference)			HSE Issues	Examples
				1. Re-Use	2. Recycle	3. Landfill		
Metals								
Aerosol Cans		Ensure that the cans are empty. Do not crush. Store empty cans with other metal waste for recycling.	Site personnel to transport. Contractor to collect from Roma Gas Facility.		Recycle where possible.	Dispose in designated area of landfill.	Due to the pressurised nature of aerosol cans, care should be taken to prevent damage to the can.	Spray cans/used aerosol cans that have contained material such as paints, solvents and deodorants.
Aluminium Cans		Ensure cans are emply and crush. Store separately for recycling.	Site personnel to transport. Contractor to collect from Roma Gas Facility.		Sell for recycling.	Dispose at landfill where no recycling facility available and no contractor to sell to.	Sharp edges may be present if the cans are broken/split.	Aluminium cans used to contain beverages.
Steel Chemical Containers		Ensure containers are emply and clearly labelled. Prior to dispoal, store on site in a manner that prevents the leakage of chemicals to the soil.	Transport with bungs in place. Containers that have previously contained hazardous material should be collected by licensed contractor where possible. Otherwise, site personnel to transport and contractor to collect from Roma Gas Facility.	Return to supplier where possible.	Recycle where possible.	Dispose at landfill where no re-use or recycling facility available.	Care should be taken to avoid chemical leakage or spills.	Used chemical containers, steel spray cans 4L
Copper and Aluminium (other than cans)	Yes	Store with other metal waste for recycling.	Site personnel to transport. Contractor to collect from Roma Gas Facility.	Re-use on site where possible.	Recycle where possible/Deposit at scrap metal storage area at landfill.	Dispose at landfill where no re-use or recycling facility available.	Sharp edges may be present if the materials are broken/split.	Copper and aluminium materials which are not cans
Steel Drums - Damaged		Ensure drums are empty. Store with other metal waste for recycling in a manner that prevents the leakage of any residual product to the soil.	Containers that have previously contained hazardous material should be collected by licensed contractor where possible. Otherwise, site personnel to transport and contractor to collect from Roma Gas Facilility		Recycle where possible or sell to scrap dealer.	Dispose at landfill where no recycling facility available.	Possible issues associated with original drum contents (refer to MSDS).	Drums which are no longer usable.
Steel Drums - Good Condition		Ensure drums are empty. Store with other metal waste for re-use or recycling in a manner that prevents the leakage of any residual product to the soil.	Containers that have previously contained hazardous material should be collected by licensed contractor where possible. Otherwise, site personnel to transport and contractor to collect from Roma Gas Facility.	Re-use on site or return to supplier.	Recycle where possible at local landfill or sell to scrap dealer.	Dispose at landfill where no re-use or recycling facility available.	Care should be taken to avoid oil leakage, spills or contamination	Drums which are re-usable
Scrap Steel		Store with other metal waste for recycling.	Site personnel to transport. Contractor to collect from Roma Gas Facility.		Recycle where possibleor sell to scrap dealer.	Dispose at landfill where no recycling facility available and no contractor to sell to.	Sharp edges may be present if the materials are broken/split.	Used steel material such as steel cans, bolts, gaskets, scraps, slings, chains, pipes, wires (steel strapping).
Electrical and Electronic								

Waste Name	Regulated/ Trackable	On-Site Collection and Storage	Transport Off-Site	Off-Site Disposal (in order of preference)			HSE Issues	Examples
				1. Re-Use	2. Recycle	3. Landfill		
Batteries - Dry	Yes	Store dry cell batteries separately on-site until disposal.	Site personnel to transport. Contractor to collect from Roma Gas Facility.	For lithium and NiCad batteries, return to supplier where possible.	Recycle where possible.	Contact the local council for disposal requirements. Dispose of at designated part of landfill.		Used batteries such as household batteries, NiCad batteries, lithium batteries, dry cell batteries.
Batteries - Wet, CAR, Lead Acid	Yes	Store batteries in a manner that prevents the loss of lead and acid to the soil.	Site personnel to transport. Contractor to collect from Roma Gas Facility.	Return to supplier where possible.	Recycle at licensed facility.	Contact the local council for disposal requirements.	Acid is corrosive and appropriate handling is required from a safety viewpoint,	Used wet cell batteries, lead acid batteries such as car batteries.
Toner and Printer Cartridges		Stored separately on-site until off-site transport for recycling.	Site personnel to transport. Contractor to collect from Roma Gas Facility.	Return to supplier where possible.	Recycle where possible.	Dispose at landfill where no recycling facility available.	Sharp edges may be present if the materials are broken/split.	Used printer ink cartridges
Electronic and Electrical Equipment		Store separately on-site.	Return all electronic and electrical equipment to Brisbane.		Recycle		Sharp edges may be present if the materials are broken/split.	Broken electrical and electronic equipment such as computers, phones.
Chemicals								
Chemicals - Miscellaneous	Yes	Contact the Site Environmental Adviser regarding testing (if required) and collection/disposal of the material.	Dependent on chemical.	Dependent on chemical, returned to supplier or collected by licensed contractor.			Varies with chemical - refer to individual MSDSs. Care should be taken to avoid contact with the contaminants.	Includes corrosion inhibitors, emulsion breakers, mica, potassium chloride, solvents, cleaning solutions, paints, glycol/amine.
Chemically Contaminated Soil		Obtain advice from Site Environment Advisor for remediation and/or disposal requirements.	Dependent on chemical and possible remediation options.	Dependent on chemical and remediation/disposal requirements.			Varies with chemical - refer to individual MSDSs. Care should be taken to avoid contact with the contaminants.	Soil can be contaminated with a variety of chemicals such as mercury or paint.
Glass								
Glass - General		Rinse glass if dirty. Place in a container for recycling.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.	Re-use glass panes, bottles etc where possible.	Recycle where possible.	Dispose at landfill where no recycling facility available.	Correct handling and PPE to avoid cuts. The glass does not need to be smashed for transport as this leads to increased risk of cuts.	Broken glass panes, windscreens, bottles, jars and containers.
Fluorescent Tubes		Store with general glass for recycling.	Site personnel to transport. Contractor to collect from Roma Gas Facility.		Recycle where possible.	Dispose at landfill where no recycling facility available.	Care should be taken when the tubes are broken or contain Pyrex.	Used fluorescent light tubes
Oils/Oil Contaminated Wastes								
Oil-Contaminated Soil		Obtain advice from Site Environment Advisor for remediation and/or disposal requirements.	Dependent on remediation options.			Contact the local council for disposal requirements.	Care should be taken to avoid contact with the contaminants.	Soil contaminated through oil spills etc.

Waste Name	Regulated/ Trackable	On-Site Collection and Storage	Transport Off-Site	Off-Site Disposal (in order of preference)			HSE Issues	Examples
				1. Re-Use	2. Recycle	3. Landfill		
Oil Filters		Store separately on-site in a manner that prevents the leakage of oil into soil.	Off-site transport by licensed contractor for recycling where possible or transport by site personnel to landfill.		Recycle where possible.	Dispose at designated part of the landfill where no recycling facility available.	Storage and handling to prevent oil loss and local ground contamination.	Used oil filters.
Waste Oil	Yes	Store separately on-site in a manner that prevents the leakage of oil into soil.	Off-site transport by licensed contractor for recycling where possible.	Re-use or return to supplier.	Recycle where possible.	Contact local council for disposal requirements/ conditions and dispose of at designated area at landfill.	Care should be taken to avoid oil leakage, spills or contamination.	Used engine oil.
Oily Absorbents		Store separately on-site in a manner that prevents the leakage of oil into soil.	Off-site transport by licensed contractor for recycling where possible or transport by site personnel to landfill.		Recycle where possible.	Dispose at designated area at landfill where no recycling facility available.	Care should be taken to avoid contact with the contaminants.	NA
Oily Rags		Store separately on-site in a manner that prevents the leakage of oil into soil.	Off-site transport by licensed contractor for recycling where possible or transport by site personnel to landfill.		Recycle where possible.	Dispose at designated area at landfill where no recycling facility available.	Care should be taken to avoid contact with the contaminants	Oil-contaminated rags
Oily Sludges	Yes	Ensure that sludge is effectively contained.	Off-site transport by licensed contractor for recycling where possible or transport by site personnel to landfill.		Recycle where possible.	Dispose at designated area at landfill where no recycling facility available.	These sludges do not contain elevated levels of mercury.	Hydrocarbon (oily) sludge, slops.
Sump Wastes/Grease Trap Wastes	Yes	Ensure that waste is effectively contained.	Off-site transport by licensed contractor where possible or transport by site personnel to landfill.			Contact local council for disposal requirements/ conditions and dispose at designated part of the landfill.	Care should be taken to avoid oil leakage, spills or contamination	Liquid/sludge in kitchen grease traps.
Rubber								
Tyres and Tubes	Yes	Store separately on-site prior to disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.		Recycle where possible (or return to supplier).	Dispose at designated area at landfill where no recycling facility available.	NA	Tyres and inner tubes which are unusable.
Rubber without Voids (oher than tyres)		Store with recyclable material on-site where recycling is possible otherwise store with general waste prior to disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.		Recycle where possible.	Dispose at designated part of the landfill where no recycling facility available.	NA	Unusable o-rings, pigs, brake pads, hose.
Plastics								
Plastic Packaging		Store on-site with other general recyclable wastes where recycling is possible.	Site personnel to transport. Contractor to collect from Roma Gas Facility.		Recycle where possible.	Dispose at general landfill where no recycling facility available.	NA	Used plastic packaging from workshops or kitchen (which are not food contaminated)

Waste Name	Regulated/ Trackable	On-Site Collection and Storage	Transport Off-Site	Off-Site Disposal (in order of preference)			HSE Issues	Examples
				1. Re-Use	2. Recycle	3. Landfill		
Plastic Chemical Containers/Drums (20L, 200L and 1000 L)		Ensure drums are empty and clearly labelled. Store in a manner that prevents the leakage of any residual chemicals to the soil.	Drums that have previously contained hazardous material should be collected by licensed contractor. Otherwise, site personnel to transport and contractor to collect from Roma Gas Facility or licensed other local facility.	Re-use or return to supplier where possible.		Dispose at designated area at landfill where no possible re-use.	Care should be taken to avoid chemical leakage or spills.	Empty plastic containers and drums (mostly from non-hazardous products)
Food Waste, Paper and Cardboard								
Paper		Place paper into a separate bin for recycling.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.	Re-use where possible.	Recycle where possible.	Dispose at general landfill where no recycling facility available.	NA	Newspaper and white office paper
Cardboard		Place cardboard into a separate bin for recycling.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.	Re-use where possble.	Recycle where possible.	Dispose at general landfill where no recycling facility available.	NA	Packaging materials, cardboard boxes
Paper Food Packaging		Place in general waste bin.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.			Dispose of at general landfill.	Keep on-site general waste bins clean to avoid pests and disease.	Paper food packaging, wrappers.
Food Waste		Place in general waste bin.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.			Dispose of at general landfill.	Keep on-site general waste bins clean to avoid pests and disease.	Food scraps.
Wood/Garden Waste								
Garden Waste		Store separately on-site until disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.			Dispose of in designated area of landfill.	Wear PPE to avoid bites and scratches.	Waste plant material from gardening (e.g. bracnches, weeds).
Wood - General		Store separetly on site until disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.	Re-use/resell where possible.		Dispose of in designated area of landfill.	Care should be taken if breaking up wood due to nails and splinters.	Used/broken lumber and timber.
Wood - Pallets		Store separetly on site until disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.	Return wooden pallets to supplier where possible or re-use.		Dispose of in designated area of landfill.	Care should be taken when handling pallets due to nails and splinters. Care should taken when lifting pallets.	Timber pallets that can be re-used.
General Non-Recyclabe Wastes								

Waste Name	Regulated/ Trackable	On-Site Collection and Storage	Transport Off-Site	Off-Site Disposal (in order of preference)			HSE Issues	Examples
				1. Re-Use	2. Recycle	3. Landfill		
Synthetic Mineral Fibre Insulation	Yes	Contact the Site Environmental Advisor to advise on collection/disposal of the material. Ensure SMF is contained in appropriate bags/containers. Containers should be stored separately from other waste.	Licensed contractor collection.			Disposal to licenced facility. Contact Site Environmental Adviser regarding disposal requirements.	Respiratory protection, clothing and gloves as defined in MSDS.	Waste insulation, rock wool.
Filters - Activated carbon	Yes	Contact the Site Environmental Advisor to advise on collection/disposal of the material.	Licensed contractor collection.			Disposal to licenced facility.	Extreme care is required in handling this material due to the potential for mercury, vanadium and phenol exposure. Waste activated carbon may be pyrophoric and requires special handling from the time of collection to the time of treatment / disposal.	Carbon black.
Filters - Air, Dust, Paper		Bag and place in general waste bin.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.			Dispose of at general landfill.	General respiratoy protection. Extreme care should be taken when dust filters may be contaminated with mercury.	Used air filters from vehicles and air-conditioning systems, and used paper and dust filters.
Asbestos / Asbestos-Containing Materials	Yes	Contact the Site Environmental Advisor to arrange for collection/disposal of the material.	Licensed contractor collection.			Disposal to licenced facility.	Asbestos materials must be handled in accordance with relevant safety guidelines. PPE includes respiratory protection, clothing and gloves as defined in relevant MSDSs.	Asbestos can be found in materials such as lagging, insulation, gaskets and brake pads. Types comprise Blue Asbestos (crocidolite), Brown Asbestos (amosite, mysorite), White Asbestos (chrysotile, actinolite, anthophylite, tremolite).
Litter / Large Items of Domestic Rubbish		Place directly into general bin on-site.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.			Dispose of in general area of landfill.	NA	General Waste
Other								

Waste Name	Regulated/ Trackable	On-Site Collection and Storage	Transport Off-Site	Off-Site Disposal (in order of preference)			HSE Issues	Examples
				1. Re-Use	2. Recycle	3. Landfill		
Textiles		Place in general bin when it is not possible to recycle. Store larger items on-site for disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.	Re-use where possible	Recycle where possible	Dispose of in general area of landfill.	NA	Used mattresses, rags and rope which cannot be reused.
White Goods		Store on-site until disposal. Fridges and air-conditioning units need to be degassed.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.		Recycle where possible	Contact local council for disposal requirements/ conditions and dispose at designated part of the landfill.	Sharp edges may be present if the materials are broken/split.	Broken white goods.
Concrete and Ceramics		Place ceramics into general bin. Concrete/demolished building materials should be stored in a separate area prior to disposal.	Site personnel to transport to local facility or Roma Gas Facility. Contractor to collect from Roma Gas Facility.		Recycle concrete etc where possible	Dispose of ceramics in general area of landfill and concreate in designated area (if there is one).	Lifting and back stress.	Concrete and ceramic from demolition and kitchen breakages.
Septic Waste	Yes	Contact the Site Environmental Advisor to arrange for collection/disposal of the material.	Licensed contractor collection.			Disposal to licenced facility.		
*** See Appendix C of the EQG WMP for requirements for disposal of Regulated and Trackable Wastes.**								

Appendix C Waste Recording and Tracking

1. Regulated Wastes

The following types of wastes are Regulated Wastes relevant to EQ Operations (excerpt from Schedule 7 *Environmental Protection Regulation 1998*).

acids and acid solutions
adhesives (other than solid inert polymeric materials)
alkalis and alkaline solutions
antimony
arsenic
asbestos (all chemical forms)
barium
batteries
beryllium
biocides
boron
cadmium
caustic solutions
chlorates
chromium
copper compounds
detergents
distillation residues
electroplating effluent and residues
filter backwash waters
filter cake sludges and residues
grease interceptor trap effluent and residues
halogen compounds (other than solid inert polymeric materials)
heat treatment salts
heterocyclic organic compounds containing oxygen, nitrogen or sulphur
hydrocarbons (oxygen, nitrogen or sulphur)
industrial plant wash down waters
inorganic cyanides and cyanide complexes
inorganic sulphur compounds
isocyanate compounds (other than solid inert polymeric materials)
lead
lime neutralised sludges
lime sludges
mercaptans
metal finishing effluent and residues
methacrylate compounds (other than solid inert polymeric materials)
nickel
oil interceptor sludges
oils
oil water emulsions and mixtures
organic solvents
oxidising agents
ozone depleting substances
perchlorates
pesticides
petroleum tank sludges
phenolic compounds (other than solid inert polymeric materials)
phosphorus
polychlorinated biphenyls and related substances and anything containing polychlorinated biphenyls or related substances
polymeric lattices
reactive chemicals
reducing agents
related waste
resins (other than solid inert polymeric materials)
saline effluent and residues
selenium
silver compounds
solvent recovery residues
surfactants
tars and tarry residues
tellurium
thallium
treatment tank sludges and residues (including sewage tank sludges and residues)
tyres
vanadium
vegetable oils
vehicle wash down waters
zinc compounds

Some Regulated Wastes are trackable and referred to as Trackable Wastes (see Section 2 below). For Regulated Wastes that are not trackable, the following information should be recorded for the wastes when transported and records kept on-site:

- Date of waste transport;
- Type of waste/waste stream removed and transported;
- Quantity (L, kg or m^3);
- Container numbers;
- Waste Transport Certificate Number (if required);
- Transporters name (company name);
- Route selected for transport of waste;
- Intended destination;
- Receiver name (if known);
- Accepted by (transporters signature); and
- Records of any incidents that may have occurred *en route*.

2. Trackable Wastes

Under the *Environmental Protection (Waste Management) Regulation 2000*, the transportation of Trackable Waste requires all 'waste handlers' involved (waste generators, transporters and receivers) to record prescribed information about the waste and, in the case of generators and receivers, provide or arrange for the prescribed information to be provided to the Environmental Protection Agency (EPA). By matching the information sent by the waste generator and the receiver, the EPA can track the waste's journey and identify which wastes have been disposed of inappropriately. The EPA can also check that the transporter and receival facility are licensed. Where a person has more than one waste handling role, the person must comply with each of the responsibilities as applicable.

A Waste Transport Certificate (the Certificate) is used to records waste tracking information and is available from EPA offices as a five copy docket. The Certificate travels with the waste from its point of generation to the site of storage, recycling, treatment or disposal. The Certificate records proof of actions of all persons involved in the handling of the waste. Certificates are individually and uniquely numbered. These numbers become the load number for each waste load. Relevant copies of each form are to be provided to the EPA within 7 days of the waste transaction. Two versions of the form are available, one for intrastate waste transfers and one for interstate waste transfers.

2.1 Trackable Waste List and Codes

Movement of Trackable Waste requires a Certificate to be completed. Table 1 below contains a list of Trackable Wastes and the codes required for completing the 'waste code' component of the Certificate (also below). Table 2 below contains the list of codes that are required for completing the 'waste origin' component of the Certificate. Table 3 below contains the list of codes that are required for completing the 'treatment/disposal types' component of the Certificate.

Table 1 Trackable Wastes and Waste Codes

Waste Description	Waste Code
Acidic solutions or acids in solid form	B100
Antimony; antimony compounds	D170
Arsenic; arsenic compounds	D130
Asbestos	N220
Barium compounds (excluding barium sulphate)	D290
Basic (alkaline) solutions or bases (alkalis) in solid form	C100
Beryllium; beryllium compounds	D160
Boron compounds	D310
Cadmium; cadmium compounds	D150
Chlorates	D350
Chromium compounds (hexavalent and trivalent)	D140
Copper compounds	D190
Cyanides (inorganic)	A130
Cyanides (organic)	M210
Encapsulated, chemically-fixed, solidified or polymerised wastes	N160*
Ethers	G100
Filter cake	N190
Fire debris and fire washwaters	N140*
Grease trap waste	K110
Halogenated organic solvents	G150
Highly odorous organic chemicals (including mercaptans and acrylates)	M260
Inorganic fluorine compounds other than calcium fluoride	D110
Inorganic sulphides	D330
Isocyanate compounds	M220
Lead; lead compounds	D220
Material containing polychlorinated biphenyls ((PCB's), polychlorinated napthalenes (PCN's), polychlorinated terphenyls (PCT's) and/or polybrominated biphenyls (PBB's)	M100
Mercury; mercury compounds	D120
Metal carbonyls	D100
Mineral oils	J100
Nickel compounds	D210
Non toxic salts	D300
Oil and water mixtures or emulsions, or hydrocarbons and water mixtures or emulsions	J120
Organic phosphorous compounds	H110
Organic solvents other than halogenated solvents	G110
Organohalogen compounds - other than another substancs referred to in this table	M160
Perchlorates	D340
Phenols, phenol compounds including chlorophenols	M150
Phosphorus compounds other than mineral phosphates	D360
Polychlorinated dibenzo-furan (any congener)	M170
Polychlorinated dibenzo-p-dioxin (any congener)	M180
Residues from industrial waste treatment/disposal operations	N205
Selenium; selenium compounds	D240
Sewage sludge and residues including nightsoil and septic tank sludge	K130
Surface active agents (surfactants), containing principally organic constituents and which may contain metals and inorganic materials	M250
Tarry residues arising from refining, distillation, and any pyrolytic treatment	J160
Tellurium; tellurium compounds	D250
Thallium; thallium compounds	D180
Triethylamine catalysts for setting foundry sands	M230
Tyres	T140
Vanadium compounds	D270
Waste containing peroxides other than hydrogen peroxide	E100
Waste from heat treatment and tempering operations that uses cyanides	A110
Waste from the production, formulation and use of organic solvents	G160
Waste of an explosive nature other than an explosive within the meaning of the *Explosives Act 1999*	E120
Zinc compounds	D230

* If a substance falls under more than 1 item in the above list, and one of the items is marked with an asterisk, the code for the substance is the code for the item marked with an asterisk.

Table 2 Waste Origin Code

A Agriculture, Forestry and Fishing
01 Agriculture
011 Horticulture and Fruit Growing
012 Grain, Sheep and Beef Cattle Farming
013 Dairy Cattle Farming
014 Poultry Farming
015 Other Livestock Farming
016 Other Crop Growing
02 Services to Agriculture; Hunting and Trapping
021 Services to Agriculture
022 Hunting and Trapping
03 Forestry and Logging
030 Forestry and Logging
04 Commercial Fishing
041 Marine Fishing
042 Aquaculture
B Mining
11 Coal Mining
110 Coal Mining
12 Oil and Gas Extraction
120 Oil and Gas Extraction
13 Metal Ore Mining
131 Metal Ore Mining
14 Other Mining
141 Construction Material Mining
142 Other Mining
15 Services to Mining
151 Exploration
152 Other Mining Services
C Manufacturing
21 Food, Beverage and Tobacco Manufacturing
211 Meat and Meat Product Manufacturing
212 Dairy Product Manufacturing
213 Fruit and Vegetable Processing
214 Oil and Fat Manufacturing
215 Flour Mill and Cereal Food Manufacturing
216 Bakery Product Manufacturing
217 Other Food Manufacturing
218 Beverage and Malt Manufacturing
219 Tobacco Product Manufacturing
22 Textile, Clothing, Footwear and Leather Manufacturing
221 Textile Fibre, Yam and Woven Fabric Manufacturing
222 Textile Product Manufacturing
223 Knitting Mills
224 Clothing Manufacturing
225 Footwear Manufacturing
226 Leather and Leather Product Manufacturing
23 Wood and Paper Product Manufacturing
231 Log Sawmilling and Timber Dressing
232 Other Wood Product Manufacturing
233 Paper and Paper Product Manufacturing
24 Printing, Publishing and Recorded Media
241 Printing and Services to Printing
242 Publishing
243 Recorded Media Manufacturing and Publishing
25 Petroleum, Coal, Chemical and Associated Product Manufacturing
251 Petroleum Refining
252 Petroleum and Coal Product Manufacturing n.e.c.
253 Basic Chemical Manufacturing
254 Other Chemical Product Manufacturing
255 Rubber Product Manufacturing
256 Plastic Product Manufacturing
26 Non-Metallic Mineral Product Manufacturing
261 Glass and Glass Product Manufacturing
262 Ceramic Product Manufacturing
263 Cement, Lime, Plaster and Concrete Product Manufacturing
264 Non-Metallic Mineral Product Manufacturing n.e.c.
27 Metal Product Manufacturing
271 Iron and Steel Manufacturing
272 Basic Non-Ferrous Metal Manufacturing
273 Non-Ferrous Basic Metal Product Manufacturing
274 Structural Metal Product Manufacturing
275 Sheet Metal Product Manufacturing
276 Fabricated Metal Product Manufacturing
28 Machinery and Equipment Manufacturing
281 Motor Vehicle and Part Manufacturing
282 Other Transport Equipment Manufacturing
283 Photographic and Scientific Equipment Manufacturing
284 Electronic Equipment Manufacturing
285 Electrical Equipment and Appliance Manufacturing
286 Industrial Machinery and Equipment Manufacturing
29 Other Manufacturing
291 Prefabricated Building Manufacturing
292 Furniture Manufacturing
294 Other Manufacturing

D Electricity, Gas and Water Supply
36 Electricity and Gas Supply
361 Electricity Supply
362 Gas Supply
37 Water Supply, Sewerage and Drainage Services
370 Water Supply, Sewerage and Drainage Services
E Construction
41 General Construction
411 Building Construction
412 Non-Building Construction
42 Construction Trade Services
421 Site Preparation Services
422 Building Structure Services
423 Installation Trade Services
424 Building Completion Services
425 Other Construction Services
F Wholesale Trade
45 Basic Material Wholesaling
451 Farm Produce Wholesaling
452 Mineral, Metal and Chemical Wholesaling
453 Builders Supplies Wholesaling
46 Machinery and Motor Vehicle Wholesaling
461 Machinery and Equipment Wholesaling
462 Motor Vehicle Wholesaling
47 Personal and Household Good Wholesaling
471 Food, Drink and Tobacco Wholesaling
472 Textile, Clothing and Footwear Wholesaling
473 Household Good Wholesaling
479 Other Wholesaling
G Retail Trade
51 Food Retailing
511 Supermarket and Grocery Stores
512 Specialised Food Retailing
52 Personal and Household Good Retailing
521 Department Stores
522 Clothing and Soft Good Retailing
523 Furniture, Houseware and Appliance Retailing
524 Recreational Good Retailing
525 Other Personal and Household Good Retailing
526 Household Equipment Repair Services
53 Motor Vehicle Retailing and Services
531 Motor Vehicle Retailing
532 Motor Vehicle Services

H Accommodation, Cafes and Restaurants
57 Accommodation, Cafes and Restaurants
571 Accommodation
572 Pubs, Taverns and Bars
573 Cafes and Restaurants
574 Clubs (Hospitality)
I Transport and Storage
61 Road Transport
611 Road Freight Transport
612 Road Passenger Transport
62 Rail Transport.
620 Rail Transport
63 Water Transport
630 Water Transport
64 Air and Space Transport
640 Air and Space Transport
65 Other Transport
650 Other Transport
66 Services to Transport
661 Services to Road Transport
662 Services to Water Transport
663 Services to Air Transport
664 Other Services to Transport
67 Storage
670 Storage
J Communication Services
71 Communication Services
711 Postal and Courier Services
712 Telecommunication Services
K Finance and Insurance
73 Finance
731 Central Bank
732 Deposit Taking Financiers
733 Other Financiers
734 Financial Asset Investors
74 Insurance
741 Life Insurance and Superannuation Funds
742 Other Insurance
75 Services to Finance and Insurance
751 Services to Finance and Investment
752 Services to Insurance

L Property and Business Services	
77 Property Services	
771 Property Operators and Developers	
772 Real Estate Agents	
773 Non-Financial Asset Investors	
774 Machinery and Equipment Hiring and Leasing	
78 Business Services	
781 Scientific Research	
782 Technical Services	
783 Computer Services	
784 Legal and Accounting Services	
785 Marketing and Business Management Services	
786 Other Business Services	
M Government Administration and Defence	
81	Government Administration
	811 Government Administration
	812 Justice
	813 Foreign Government Representation
82	Defence
	820 Defence
N	Education
84	Education
	841 Preschool Education
	842 School Education
	843 Post School Education
	844 Other Education
0	**Health and Community Services**
86	Health Services
	861 Hospitals and Nursing Homes
	862 Medical and Dental Services
	863 Other Health Services
	864 Veterinary Services
87	Community Services
	871 Child Care Services
	872 Community Care Services
P	**Cultural and Recreational Services**
91	Motion Picture, Radio and Television Services
	911 Film and Video Services
	912 Radio and Television Services
92	Libraries, Museums and the Arts
	921 Libraries
	922 Museums
	923 Parks and Gardens
	924 Arts
	925 Services to the Arts
93	Sport and Recreation
	931 Sport
	932 Gambling Services
	933 Other Recreation Services
Q	**Personal and Other Services**
95 Personal Services	
	951 Personal and Household Goods Hiring
	952 Other Personal Services
96	Other Services
	961 Religious Organisations
	962 Interest Groups
	963 Public Order and Safety Services
97	Private Households Employing Staff
	970 Private Households Employing Staff

Table 3 Type of Treatment

Disposable Codes - Operations which do not lead to the possibility of resource recovery, recycling, reclamation, direct re-use or alternative uses.

Description	Disposal Type
Landfill	D1
Land farming	D2
Surface impoundment	D4
Biological treatment (not otherwise specified)	D8
Immobilisation/Solidification	D9A
Other Physico/Chemical treatment	D9B
Incineration	D10
Permanent storage	D12
Blending or mixing prior to submission to any of the above operations	D13
Repackaging prior to submission to any of the above operations	D14
Storage pending any of the above operations	D15

Treatment Codes - Operations which may lead to resource recovery, recycling, reclamation, direct reuse or alternative uses

Description	Disposal Type
Use as a fuel (other than direct incineration)	R1
Solvent and other organic substance reclamation/regeneration	R2
Recycling/reclamation of organic substances which are not used as solvents	R3
Recycling/reclamation of metals and metal compounds	R4
Recycling/reclamation of other inorganic materials	R5
Regeneration of acids or base	R6
Recovery of components used for pollution abatement	R7
Recovery of components from catalysts	R8
Used oil refining or other re-uses of previously used oil	R9
Use of residual materials obtained from any of the operations numbered R1-R9	R11
Accumulation of material intended for any of the operations numbered R1-R12	R13
Recycling/reconditioning/laundering of drums	R14

2.2 Completing a Waste Transport Certificate

The Waste Transport Certificate has a main section with three parts (1, 2 and 3). It comes in five copies: white, pink, green, yellow and blue. The Certificate (all parts and copies) is progressively completed by the generator, transporter and receiver for each waste load, or in the case of mixed loads, for each component of the load which is transported within Queensland. The waste generator and waste receiver are each required to provide a copy of the certificate to the EPA.

Part 1 of the Certificate (reproduced in Table 4 below) is to be completed correctly by the waste generator. The individual completing the form must be familiar with the waste and its hazards and be authorised to complete the document on behalf of the waste generator.

Once Part 1 of the certificate has been completed, the waste generator must detach the green and pink copies of the document and give the remaining white (original), yellow and blue copies to the waste transporter to accompany the waste to the site of receipt. The receiving

facility must be nominated. The green copy is kept by the generator in their records for 5 years. The pink copy is sent to the EPA within seven days of completion of Part 1.

Table 4 Certificate Layout - Part 1

Question	Details
Name of waste generator	The person/company/partnership/body corporate generating the waste - if applicable the name under which the environmental authority is held or generator ID number
Address/Postcode	Site address where waste is held
Name of emergency contact/phone	Refers to an authorised representative of the generator
Environmental Authority No	Environmental Authority number (if held)
Nominated receiving facility	Name of facility specified to the transporter as the receiver of waste
Description of waste	General description of the waste
Waste code:	See 'Waste Codes' (Table 1 above)
Contaminant	'Waste code' of any notable contaminants of the waste
Waste origin:	See 'Waste Origin Code' (Table 2 above)
UN Number	From Australian Dangerous Goods Code (where applicable)
UN Class	From Australian Dangerous Goods Code (where applicable)
Packaging Group	From Australian Dangerous Goods Code (where applicable)
Bulk/No of packages	Whether the waste is transported in bulk or number of packages
Amount of waste:	This specifies the amount of waste in kilograms or litres
Name and position /Signature /Date	Refers to an authorised representative of the generator

Part 2 of the Certificate (reproduced in Table 5 below) is to be completed correctly by the waste transporter. The person completing the document must be familiar with the waste and its hazards, and be authorised by the transportation firm to complete the document. This person is usually the driver. Regulated waste can only be transported to an appropriate receiving facility as nominated by the waste generator in Part 1. Once the waste receiving facility has completed Part 3 of the document, the waste transporter detaches the blue copy of the document and gives the remaining white (original) and yellow copies to the person representing the waste receiving facility. The blue copy of the document is kept by the transporter in their records for 5 years. The transporter must, as soon as practicable after becoming aware of a discrepancy in information received from the generator, give written notice of the discrepancy to the EPA.

Table 5 Certificate Layout - Part 2

Question	Details
Name of transporter	The person/company/partnership/body corporate transporting the waste - preferably the name under which the environmental authority to transport regulated waste is held
Address	Registered business address is preferred
Mode of transport	Road/Rail/Air/Sea
Vehicle Registration Number	From 'Certificate of Registration of Motor Vehicle'
Environmental Authority No	Environmental Authority number under which the transporter is licensed to transport the waste specified in part A.
Name/Signature/Date	This refers to the 'driver' of the vehicle in which the waste is being transported

Part 3 (reproduced in Table 6 below) of the Certificate is to be completed correctly by the waste receiver. The person completing the document must be familiar with the waste and its hazards and be authorised to complete the form on behalf of the receiving facility. The yellow

copy is detached by the waste receiver (with Parts 1, 2 and 3 now completed) and is kept in their records for 5 years. The original/white copy is sent to the EPA within seven days of receiving the waste. The receiver must, as soon as practicable after becoming aware of a discrepancy in information received from the transporter, give written notice of the discrepancy to the EPA.

Table 6 Certificate Layout - Part 3

Question	Details
Name of receiving facility	The person/company/partnership/body corporate receiving the waste - the name under which the environmental authority is held
Address	Site address
Environmental Authority No	Environmental Authority number under which the receiver is authorised to receive the waste specified in section A.
Intended disposal	Proposed waste management type eg. disposal, recycling
Type of treatment:	See 'Treatment/Disposal Codes' (Table 3 above)
Name/Signature/Date	Refers to an authorised representative of the receiver
Discrepancy:	Details of any discrepancy between the waste described in Part 1 of the Certificate and the waste being received.

An Example Waste Transport Certificate is provided below.

Waste Transport Certificate

Certificate No. 1037101

Queensland Government
Environmental Protection Agency
Environmental Operations
PO BOX 155
BRISBANE ALBERT STREET
QLD 4002

PART 1
This section to be completed by the Producer or Storer of waste

1. Name, Description and Chemical Composition of the Waste

2. U.N. Class | Subsid Risk | U.N. Number
Packaging Group | Body/ No of Packages | Type of Packaging
Amount of Waste: kg OR cubic metres OR Litres
Waste Code No. | Contaminant | Waste Origin

3. Name of Waste Producer
Address
Local Gov. Area | Postcode
Contact Name | Phone
Environmental Authority No. | Approval/Consignment No.

4. Nominated Disposal/Treatment/Storage Facility

I declare that to the best of my knowledge and belief the above information is true and correct.
Name and Position (in block letters)
Signature | Date

PART 2
To be completed by the Waste Transporter.

5. Name of Transporter
Address
Mode of Transport: Road ☐ Rail ☐ Air ☐ Sea ☐
Vehicle No. 1 Reg. No. | Environmental Authority No. | Vehicle No. 2 Reg. No. | Environmental Authority No.

I acknowledge receipt of the waste described in part 1.
Name (in block letters)
Signature | Date

PART 3
To be completed by the Facility Receiving Waste.

6. Name of Receiving Facility | Environmental Authority No.
Address
Type of Treatment
Intended Disposal: Recycling ☐ Landfill ☐ Chem/Phys. Treatment ☐
Storage ☐ Incineration ☐ Immobilisation ☐ Biodegradation ☐ Other ☐ Specify

I acknowledge receipt of the waste described in part 1
Name (in block letters) | Discrepancy Y/N Description
Signature | Date

WHITE COPY - TO BE FORWARDED TO REGULATORY AUTHORITY IN STATE OF DESTINATION BY DISPOSER/STORER.
PINK COPY - TO BE FORWARDED TO REGULATORY AUTHORITY IN THE STATE OF ORIGIN, WITH PARTS 1 & 2 COMPLETED BY THE PERSON/COMPANY WHO COMPLETED PART 1
GREEN COPY - TO BE RETAINED BY THE PERSON/COMPANY WHO COMPLETED PART 1
YELLOW COPY - TO BE RETAINED BY THE PERSON/COMPANY WHO COMPLETED PART 3
BLUE COPY - TO BE RETAINED BY THE WASTE TRANSPORTER

VERSION 2 - August 2000