




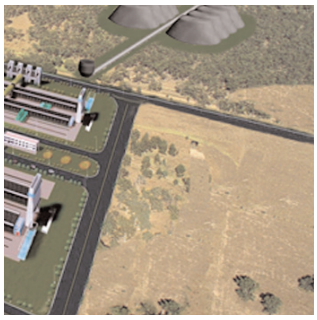

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QUEENSLAND COKE & ENERGY

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Summary

This section identifies health and safety risks that the Queensland Coke and Power Plant Project (the Project) presents to the community and workforce along with the proposed management strategies that will be implemented to ensure risks are at acceptable levels. The section focuses primarily on health and safety risks from hazard events or abnormal events as opposed to normal operating conditions. The health risks from construction and normal operations potentially impacting quality of life factors such as air emissions, odour, dust, traffic, noise and vibration, waste and waste water are dealt with in the relevant sections of the EIS.

A preliminary hazard identification study covering the operation of both the Coke Plant and Power Plant has been performed in accordance with the requirements of the Australian/New Zealand Standard (AS) for Risk Management AS4360:2004. This identifies risks assuming planned control mechanisms are in place.

As detailed design of the Coke Plant and Power Plant proceeds there will be subsequent hazard analyses which will identify detailed steps to be taken during construction and operations such as procedures and maintenance of controls.

Detailed construction safety studies and hazard identification processes will be performed by the proponents for their respective plants prior to the commencement of site works leading to the development of plant specific site safety plans. The plan will be based on best practice hazard management principles. Prior to the commencement of Project operations a safety, health and environment system will be implemented at each plant. All staff, suppliers, contractors and subcontractors will be required to comply with these systems. The systems will ensure that the safety and occupational health performance of the plants meet industry best practice standards. An integral component of these systems will be compliance with all requirements of the *Workplace Health and Safety Act 1995* and associated regulations.

15.1 Hazard Analysis

15.1.1 Purpose and Scope

A preliminary hazard identification study was carried out with experts familiar with the Project, coke oven operations, power plant activities and hazard risk assessments. The study focussed primarily on operational hazards related to the Project as insufficient detail regarding construction methods and requirements was available to allow the development of meaningful findings. These will be covered prior to construction in detailed analysis programs that will result in the development of task specific controls. Generic consideration of potential construction hazards has been applied to the Project outside the operational hazard identification process and is presented as general discussion in Section 15.2.3.

The purpose of the study was to identify the nature and scale of hazards that might occur during the operation of the proposed Coke Plant and Power Plant. The study examined the potential for release of

gaseous or particulate pollutants or other hazardous materials used, produced or stored on site. The study considered relevant legislation, standards and codes of practice, including:

- *Dangerous Goods and Safety Management Act 2001* (Qld);
- AS1940:2004 Storage and Handling of Flammable and Combustible Liquids; and
- AS3780:1994 Storage and Handling of Corrosive Substances.

In accordance with State Planning Policy 1/03 - "Mitigating the Adverse Impacts of Floods, Bushfire and Landslide" (Department of Emergency Services and Department of Local Government and Planning (DLGP) 2003) the study also included the potential effects of natural events such as cyclones, earthquakes, bushfires and flooding. The potential for these hazards to have offsite effects was also evaluated to determine the possible effects on the nearby Stanwell Power Station (SPS), Stanwell community and rural residents in the area.

The study included the entire Coke Plant and Power Plant and was divided into the following broad areas for consideration:

- Coal handling at the Stanwell Energy Park (SEP) and Fisherman's Landing (unloading, stockpiling, blending and crushing);
- Coke ovens;
- Coke quenching and screening;
- Loading operations at the project site and Fisherman's Landing;
- Utilities;
- Heat recovery and vent stacks;
- Steam turbine, generator and cooling towers; and
- Site wide issues.

Preliminary plans were available for the study and the hazard identification relied on the expert knowledge and past experience of the hazard identification study participants. Due to the relatively small volumes of hazardous materials to be stored or handled on site, the facility is not a "Major Hazard Facility" when assessed in accordance with the *Dangerous Goods Safety Management Act 2001* and the quantities prescribed under the *Dangerous Goods Safety Management Regulation 2001*.

15.1.2 Methodology

The preliminary hazard identification process was carried out in a workshop forum by a team of multi-disciplinary personnel. The procedure followed systematically generated questions about the operational hazards of the particular system or component under review. This is a comprehensive hazard

identification tool, however, it cannot provide complete assurance that all hazards will be identified. As the Project develops with improved design details, further hazard identification workshops will take place.

By using guidewords that are carefully chosen to promote creative thought on potential hazards the aim was to search an operational process systematically, section by section, to identify deviations from normal operations. For each guideword the team considers whether there are realistic causes for that guideword and whether the consequences are potentially significant with planned controls in place. The team then considers the likely safeguards that would be required and make recommendations for corrective action or further study as appropriate. The workshop participants are presented in Table 15.1.

Table 15.1 Key Workshop Participants

Name	Company	Position and expertise
David Cork	Corky's Carbon and Combustion	Coke operations expert
Sharon O'Rourke	Hatch	Environmental engineer, coke operations expert
Fiona Mckenzie	Barlow Jonker	Senior consultant, chemical engineer, Queensland Coke and Power Plant Feasibility Study team member
Ross Grainger	Connell Wagner PPI	Associate, conceptual design study leader for Power Plant
Samantha McKensie	Qest GHD	HAZID facilitator, principal risk and safety engineer, chemical engineer
James MacDermott	URS Australia	Principal engineer, EIS project manager

A qualitative risk analysis and hazard ranking exercise was used to highlight the level of attention each hazard required. Each hazard was assigned a frequency of occurrence and a consequence severity. Using these frequency and severity rankings, the risk was determined on a simple matrix (Appendix M) and a risk level of Low, Medium, High or Extreme was assigned. The hazard identification process minimises risk of the Project by the early identification of critical hazards, allowing the subsequent design to effectively consider the management of them. It also assists in highlighting the key safety and operations aspects to the design team.

The guidewords that were used in the study are listed in Table 15.2. The "category" was used as the hazard under consideration and the guidewords were used as examples to prompt the workshop group into considering the possible causes of each hazard.

Table 15.2 Hazard Categories and Guidewords

Category	Guideword
Fire and Explosion Hazards	Stored flammables Sources of ignition Equipment layout Fire protection and response Operator Protection
Process Hazards	Inventory Release of Inventory Over pressure Over / under temperature Excess / zero level Wrong composition/ phase
Utility Systems	Firewater Fuel Gas Heating Medium Diesel Fuel Power Supply, Lighting Steam Drains Inert Gas/Instrument Air Waste Storage/Treatment Chemical / Fuel Storage Potable Water Sewerage
Maintenance Hazards	Access Requirements Commonality of Equipment Heavy Lifting Requirements Transport
Natural and Environmental Hazards	Climate Extremes Lightning Earthquakes Erosion Subsidence
Effect of the Surroundings on the Facility	Geographical – Infrastructure Proximity to Population Adjacent Land Use Proximity to Transport Corridors Environmental Issues Social Issues
Environmental Damage	Continuous Plant Discharges to Air Continuous Plant Discharges to Water Continuous Plant Discharges to Soil Emergency / Upset Discharges Facility Impact Waste Disposal Options Timing of Construction
Created (man made) Hazards	Security Hazards Terrorist Activity

All the guidewords were considered and discussed amongst the team during the course of the workshop. Records of discussion were maintained where:

- The consequences of a hazard were considered significant, therefore requiring further consideration during the detailed design phase of the Project; and
- The team identified opportunity to further reduce risk by applying additional controls to those controls already planned.

Where discussion determined hazards related to a guideword were insignificant when considering planned controls and there existed no opportunity to further reduce potential risk through additional controls, records of discussion were generally not maintained. This practice of recording "by exception" is an accepted method for hazard identification studies.

15.1.3 Hazard Identification Findings

A total of 46 items were recorded during the initial hazard identification study workshop. Matrix risk assessment of the 46 hazards resulted in 5 high risks, 16 medium risks, 21 low risks and 4 that did not require rating. The nature of the site operational activities are such that none of the risks identified were assessed to result in significant offsite consequences negating the need for further, more detailed risk assessment (involving quantitative modelling). As such, no risk contours for offsite impacts resulting from onsite incidents were developed. In particular, the relatively minor quantities of dangerous materials and a negative pressure network of piping for combusted gases in the coking process characterises the low level of risk from incidents the Project presents to the surrounding community. It should be noted however, that, should natural gas not be feasible for the pre-heating of the coke ovens, diesel may be investigated as a fuel source. This would require the installation of storage tanks not considered in this risk assessment. Should this element of the project eventuate, a further risk assessment and environmental evaluation would be undertaken. The effects of the Project on sensitive locations such as SPS, Stanwell township and rural residences resulting from issues such as noise, air emissions (including dust), odour, traffic, waste and water use are presented in the relevant specific sections of this EIS.

A report of the hazard identification study is presented in Appendix M. A summary of the high and medium risk hazards identified is presented in Table 15.3. Initial planned controls are presented and as conceptual designs move towards detailed design, results of the preliminary hazard identification study will be incorporated and additional control measures will be developed to reduce risks. A number of potential additional control recommendations were developed during the workshop and are presented in Appendix M for consideration in the progressive development of the Project's detailed design.

An occupational health and safety risk assessment will be completed by the proponents during the detailed design phase of the Project. The risk assessment will include on-site risks and consideration of potential cumulative risks resulting from interactions with SPS operations.

An additional HAZID workshop was conducted for the Power Plant by SCL to further consider potential hazards. Appendix M3 also presents the findings of this workshop.

Table 15.3 Summary of Hazard Identification Issues

Item	Project Area	Hazard	Planned Controls (at Time of Risk Assessment)	Initial Risk	Risk Type
2	Coal Handling	High coal moisture causing poor coal flow, higher emissions during charging process and potential damage to refractory materials.		High	Commercial (financial) loss
5	Coal Handling	Fine coal storage leading to the potential for explosion of fines / dust.	Explosion relief is designed into fine coal storage bins / hoppers. All electrical equipment will be appropriately rated for area (taking into account dust levels).	High	On-site release contained
9	Coke Ovens	Failure of pressure control causing non-uniform combustion and potential refractory damage, release of not fully combusted products, lower coke yield and exposure of workers.	Maintenance of equipment and operating procedures to control/optimise operation of coke ovens. Training of operators	High	Commercial, on-site release, worker health
11	Coke Ovens	Poor oven condition (oven deterioration) leading to release of combustion products to atmosphere, lower coke yield, exposure to operators to charging emissions.	Maintenance and operating procedures to optimise operations of coke ovens. Monitoring of dust emissions. Detection of oven condition from monitoring.	Medium	Commercial, onsite release, worker health
12	Coke Ovens	Poor temperature management in oven leading to production of under-cooked (green coke) and potential release of not fully combusted products.	Interlocks on opening oven before push cart is present or before oven is ready.	High	Commercial, onsite release
13	Coke Ovens	Charging of ovens leading to emissions of uncombusted gases.	Charging process is designed to contain emissions (capture / control releases) during oven charging. Includes partially opening door instead of full door.	High	Worker health, on-site release
14	Coke Ovens	Poor charging schedule leading to process interruptions, poor coke quality and unstable operation of coke ovens.	Development of block pushing patterns to enable delays to be recovered - to account for maintenance, shift change, and unexpected breakdowns.	Medium	Commercial
16	Coke Ovens	Exposure of maintenance personnel to crystalline dust (from insulation material in suits) potential health effects.	Appropriate PPE for operators, and appropriate disposal procedure for the safe disposal of used suits.	Medium	Worker health
18	Quenching / Screening	Quenching operations emissions causing odour nuisance to surrounding area.	Odour unit monitoring and compliance with relevant standards / guidelines for combustion products.	Medium	On-site and community concern
21	Quenching /	Attempting to put out fire in coke stockpile with water	Development of specific procedures governing the	Medium	On-site release

Item	Project Area	Hazard	Planned Controls (at Time of Risk Assessment)	Initial Risk	Risk Type
	Screening	leading to secondary hydrogen explosion.	response to a coke stockpile fire.		
22	Quenching / Screening	Coal grit (dust) and emissions in quenching water emissions leading to visual impact, community concern.	Quench tower design and location will include appropriate controls to minimise grit and other emissions.	Medium	Community concern
23	Quenching / Screening	High temperature of quench water leading to potential for operators to sustain burns / injury.	Appropriate guarding and training for operational personnel.	Medium	Worker health and safety
24	Quenching / Screening	High salinity of quench water impacting coke quality.	Analysis of coke to ensure that sodium levels meet customer specification.	Medium	Commercial
25	Quenching / Screening	Generation of coke dust from screening / transfer points for onsite personnel and potentially offsite.	PPE requirements for onsite personnel and dust control on transfer points.	Medium	Worker health and community concern
29	Heat Recovery	Sulphur dioxide emissions potential exposure to community.	Stack height and design to minimise emissions.	Medium	Community concern
32	Heat Recovery	Build up of particulate in heat recovery boilers causing potential blockage / fouling of boiler piping and damage.	Regular cleaning regime and selection of appropriate materials of construction.	Medium	Commercial
35	Heat Recovery	Particulates from flue gas causing potential emission / pollution issues.	Particulate emission not expected to be a problem with predicted coal blend, baghouses and monitoring.	Medium	Community concern
36*	Steam Turbine	Cooling tower left unused for a period of time causing potential for cooling tower fire as it dries out.	Fire fighting equipment available to control / extinguish fires.	Medium	Commercial. On-site contained
38*	Steam Turbine	Hydrogen used for cooling turbines leading to a potential explosive atmosphere.	Hydrogen use is monitored to ensure losses are within tolerances. Fire detection and suppression systems in turbine enclosure.	Medium	On-site contained. Worker safety. Commercial
39*	Steam Turbine	Oil used for lubrication and transformers – potential for oil fire / explosion (eg transformer failure).	Appropriate fire detection and suppression systems will be provided on site.	Medium	On-site contained. Worker safety. Commercial
40*	Steam turbine	High voltage power connection from turbine to grid – potential electrocution of personnel.	Appropriate clearances, procedures, standards will be adhered to in site layout and design.	Medium	Worker safety.

Note: The coke product loading and handling issues at Stanwell and Gladstone were considered to be similar to the coal handling items at Stanwell.

* Assessment of the Steam Turbine has been further assessed by SCL (refer Appendix M3).

To provide initial generic consideration of some of the potential construction hazards and potential controls the assessment below has been conducted outside the scope of the hazard identification process. Plant area specific hazard assessment will be conducted on finalisation of detailed project design.

Hazard: General Construction Hazards - Site Wide.

Causes: Unsafe conditions and or work practices.

Potential Consequences: Injury or death to site personnel, business interruption.

Initial Controls to be Adopted: Develop and implement contractor selection process; Clear delineation of the construction site; Clear delineation of specific construction areas within the construction site; Site security and access control; Site accountabilities including appointment of principal contractor; Safety Plan development and implementation by principal contractor and sub contractors; Auditing of Safety Plan implementation; Appropriately qualified and competent workforce; Appropriate construction equipment and materials; Site specific training and induction programs; Construction site incident and emergency management plan.

The nature of construction activities is such that no significant off-site impacts are expected to occur, therefore, qualitative modelling will not be required. Detailed hazard analysis will be conducted as project designs are finalised.

15.2 Safety Management System and Emergency Planning

Under the Queensland *Workplace Health and Safety Act 1995*, an employer must ensure the health and safety of employees and contractors during every phase of site development and production. The proponents will comply with all requirements of the Act to protect the health and safety of its employees and contractors. The proponents will perform a construction safety study prior to the commencement of site works which will lead to the development of a safety management plan for the construction phase. Individual plans for the Coke Plant and the Power Plant will be prepared. The purpose of the plans is to provide a structured framework for the proactive identification of occupational health and safety risk associated with the execution of construction activities. The intent of the plans is to eliminate such risk or to manage it to an acceptable level. The principal construction contractors for both the Coke Plant and Power Plant will be required to prepare Construction Workplace Safety Plans which will apply to all construction personnel.

Prior to the commencement of operations for the Coke Plant and the Power Plant Safety, Health and Environment (SH&E) Management Systems will be implemented at each site which will ensure that the safety and occupational health of workers meets industry best standards. The health and safety component of the systems will adhere to relevant Australian Standards and other recognised standards, applicable codes of practice and relevant statutory provisions, particularly, the *Workplace Health and Safety Act 1995*. The health and safety component of the management system will:

- Present a concise philosophy and policy on health and safety;

- Clearly identify potential health and safety hazards;
- Assess risks resulting from the hazards identified;
- Decide on control measures that prevent, or minimise the level of the risk;
- Implement corrective measures to control or remove hazards and associated risk; and
- Monitor and review the effectiveness of any corrective action.

Contractors working on the project site will be required to adhere to the SH&E Management System as well as develop, implement and maintain safety management plans which address specific workplace hazards that could be encountered during the contractor's work.

15.2.1 Workplace Hazards

The initial potential workplace hazards were identified as below.

Dust and Air Emissions

Operations within and supporting the Project will include the handling of significant amounts of bulk materials which may have the potential to generate dust, particularly in relation to the operational phase of the Coke Plant. It is not anticipated that the Power Plant will generate excessive levels of dust during operation. The primary method of reducing airborne dust levels to acceptable levels will be through:

- watering stockpiles in periods of windy and dry conditions;
- Regular watering of high traffic areas; and
- installing filter baghouses at strategic locations throughout the Coke Plant.

The proponents and construction contractors will maintain a strong commitment to workplace housekeeping during all phases of the Project. This will ensure that spillage of solid materials capable of generating airborne dust will be promptly and systematically removed to minimise the probability of dust generation from such sources.

In areas prone to dust, and depending on workplace monitoring to be performed in the early stages of construction and operation, personal protective equipment will be required to meet acceptable ambient levels, additional controls will be implemented is off-site impacts are likely.

Air emissions from specific areas of the Coke Plant (charging and pushing) may be the source of low levels of potentially toxic compounds. The Air section of the EIS (Section 7) provides an estimate of the amount of these compounds potentially emitted annually and the environmental control strategies. The design of the oven doors and methods of loading and pushing have been selected such that these emissions will be minimised. The vast majority of these compounds are destroyed in the total combustion process. The concentrations of these materials that may come from the ovens in a workplace environment

will be low, variable and intermittent. Workplace monitoring during the early stages of the coke plant operations will be carried out to ensure that acceptable health levels are not exceeded.

Noise

The Project will be designed to ensure that noise levels in the general workplace comply with workplace, health and safety and Environmental Protection Agency (EPA) requirements through adoption of best practice technology and sound engineering design.

In some instances, due to the nature of the equipment required in some unit operations, the noise levels adjacent to such equipment may exceed the 85 dB(A) average daily exposure level standard set by Worksafe Australia. Where such circumstances exist, measures will be taken to minimise exposure of personnel to the source of the noise by, for example, erecting sound containing structures such that the noise is contained and not allowed to invade surrounding operating areas.

In some circumstances it is not practical to contain noise sources. The extremities of operating areas containing such sources will be signposted (in accordance with AS1319) to advise personnel entering the area that appropriate hearing protection is required. Personnel working in these areas will be provided with appropriate hearing protection that complies with AS1270 and management systems will be put in place to ensure that plant personnel conform with hearing protection requirements.

Heat

At both the Coke Plant and Power Plant, heat stress situations may arise when work is close to ovens ,heat recovery units, heat venting systems, in outdoor situations, or when working in confined spaces where there may be a reduced air circulation.

Plant management will undertake a formal hazard assessment of all assigned areas to identify work practices and environments that have the potential to cause heat stress. Having identified such hazards, the workforce shall be isolated from exposure through the use of appropriate insulation and barriers, and other engineering practices. Where physical isolation of the heat source is not practical, appropriate signage will be installed (in accordance with AS1319) and employees will be issued with personal protective equipment.

Other

The other safety hazards that could be present on the project operations include:

- Confined spaces;
- Electrical systems;
- Working at heights;
- Mechanical plant;

- Lifting loads;
- Steam delivery systems;
- Chemical handling and use; and
- Vehicle movements.

These will be subject to the development of the more detailed SH&E Management System prior to operations commencing.

15.2.2 Personal Protective Equipment

The basic personal protective equipment (PPE) requirements for the Coke Plant and Power Plant will be:

- Hard hat, safety boots and glasses appropriate to Australian Standards;
- Long sleeve cotton shirt;
- Long cotton plants; and
- Other PPE requirements prescribed on specific occasions such as hearing protection for specific activities and gloves which will be worn when there is potential for hand injury or when specified for certain tasks.

Protection of Sight

The following PPE will be provided for protection of sight:

- Safety glasses will be compulsory in all areas of the site, except administration areas and change rooms;
- Normal clear safety glasses will be worn inside work areas; and
- Tinted safety glasses will be available for outside use to provide protection from Ultra Violet (UV) radiation.

Protection of Hearing

The following management procedures will be adopted at the plants for hearing protection:

- The attenuation provided by PPE must be sufficient to provide sound levels at the ear of less than 85 dB(A);
- Assessment of workplace noise levels will be carried out where exposure may exceed acceptable limits;

- Based on these assessments special hearing protection may be required in specific areas;
- Wherever possible, noise will be controlled through designed engineering measures;
- Training shall be provided during induction to all employees who work in areas with potential exposure to noise in excess of the exposure limits; and
- Audiometry testing shall be part of the pre-placement medical examination followed by additional testing required from time to time.

Personal protective equipment and appropriate training will be provided to operational workers and will be provided by contractors to their staff depending on the type of hazard a worker may be exposed to.

15.2.3 Safety and Health Management System

The Coke Plant and the Power Plant proponents will develop the safety and health components of SH&E Management Systems structured around the following management system components:

- Policy;
- Objectives;
- Organisation and responsibility;
- Hazard analysis;
- Mechanical integrity;
- Management of change;
- Incident investigation and reporting;
- Pre-commissioning safety review;
- Operating procedures;
- Safe work practices;
- Training and competency
- Hazardous materials storage and handling (in compliance with AS1940: 2004 and AS3780:1994);
- Emergency planning and response;
- Contractor safety management;
- Health management (including first aid delegations and training);

- Security (including the potential for acts of terrorism); and
- Audit and review.

The principle of continual improvement in heath and safety performance will be a key theme of the design and implementation of the system at each plant.

15.2.4 Emergency Response

As an integral part of the overall SH&E Management System, an emergency response plan and related procedures for both the Coke Plant and Power Plant will be developed prior to the commencement of site activities. The emergency response plan will be developed in consultation with regional emergency service providers including Queensland Fire and Rescue Service, Queensland Police and Department of Emergency Services. This emergency response plan will include the following details:

- Organisation and responsibilities;
- Site Evacuation procedures;
- Notification and communications;
- Mobilisation and response;
- Training;
- Facilities and equipment;
- Layout plans and evacuation plans;
- Release management;
- Public affairs and media; and
- Investigation and follow up.

Emergency response capabilities will be developed based on detailed risk assessment outcomes and will include the following scenarios:

- Bushfire;
- Plant/Facility fire;
- Security breaches and terrorism;
- Site evacuation;
- Hydrocarbon/chemical spillage;

- Gas/vapour leaks;
- Natural disasters; and
- Road accidents.

The emergency response system will be developed in conjunction with relevant local authorities and SPS. In developing the plan with SPS consideration will be given to integration of common response scenarios and cross boundary issues within each site's plans to optimise emergency response resources. During the development of the emergency response system consideration will also be given to the potential for site emergency response resources to be included in regional counter disaster response programs.

The management of fire risks will include collaboration with SPS and working in conjunction with the SPS fire crew in reducing the fire hazard risk in areas adjacent to the site. The maintenance of fuel reduced zones around the site of a minimum 10 m in width will be a key aspect in reducing the impact of bush and grass fires. Such zones will also provide access points for fire fighting equipment should a fire occur.

The fire protection system for the Coke Plant will include a ring main and fire hydrants, portable extinguishers and a centralised fire alarm system for the permanent buildings. A detailed fire risk assessment will be undertaken during the detailed design phase and will identify the needs for preventative measures.

The design of the Power Plant incorporates fire water tanks, pumps and a fire protection system as fire response equipment. The fire protection system is likely to include a ring main with fire hydrants, deluge sprays for the generator step up transformer and cooling towers, spray water system for components of the turbine lubricating oil system, VESDA and inert gas suppression in the electrical/I&C annexes, portable extinguishers and central fire alarm systems. The detail of the fire suppression systems for the Power Plant will be the subject of further risk assessment and insurer's requirements developed during the detailed facility design.

Emergency services available from Rockhampton include 2 on-duty crews trained in hazardous materials. If required, State Emergency Services (SES) are also available to provide assistance.

15.2.5 Construction Phase Health and Safety

The construction phases of the Coke Plant and the Power Plant will involve health and safety hazards including those listed below:

- Heat;
- Dust;
- Noise;
- Confined spaces, including ovens, pipes and trenches;

- Welding;
- Oven brick laying;
- Electrical systems;
- Working at heights;
- Falling objects;
- Mechanical plant;
- Lifting loads; and
- Vehicle movements.

Each of these will be analysed by the proponents and main contractors retained for performing the construction work. A Construction Workplace Safety Plan will be developed for each of the Coke Plant and Power Plant construction phases which will apply to all construction personnel. A specific health and safety plan will be developed to deal with the presence of workforce accommodation in Gracemere. This health and safety plan will be prepared in consultation with Fitzroy Shire Council, Queensland Health and the Department of Emergency Services.

15.2.6 Security and Access

Strategies for site security and access for the construction and operational phases of the Project will be developed during the detailed design study phase. For the construction phase, the Coke Plant and Power Plant's principal contractor/s will be required to establish security and access procedures and policies, which shall apply to all personnel visiting the site up to the date of practical completion. A number of policies will be communicated to the contractors by the proponent team including:

- Behaviour code criteria on site and in workers accommodation in Gracemere;
- No smoking within completed buildings, enclosed spaces, or enclosed areas;
- Exposure to UV light;
- Dress code;
- No domestic animals on the construction site;
- No alcohol and drugs; and
- The right of the contractors to exclude any person from any organisation found to be in breach of procedures or policies.

Following practical completion of the Coke Plant the security and access procedure will be under the control of QCE and its designated contractors. Once the Power Plant has been constructed similarly the security and access procedure will be managed by SCL. As a minimum security measure, each site (during construction and operation) will have fencing and a gate house as a singular site access point.

15.2.7 Mosquito Management

During construction and operation of the Project some areas will be used for surface water storage. The objective will be to minimise the number of potential mosquito breeding sites created on-site by preventing water from ponding. Strategies to minimise the potential impacts from mosquitoes will be based on "Guidelines to Minimise Mosquito and Biting Midge Problems in New Development Areas" (Queensland Health, 2002) and include the following:

- Ground surface preparation and earthworks will prevent the ponding of water;
- Pools of stagnant water will be drained and/or the areas filled;
- Storage containers capable of ponding water will be either discarded after use or stored in an inverted position (care will be taken to ensure that ponding does not occur in rubbish storage areas);
- All sedimentation dams, ponds and on-site excavations filled with water will be inspected for the presence of mosquito larvae on a regular basis;
- Erosion and washdown practices will be controlled to prevent sediment and debris forming standing water pools in natural water courses adjacent to the site. (Mosquitoes will not breed in flowing water); and
- If larvae are detected in large numbers, the SH&E representative will contact the Rockhampton office of Queensland Health and Fitzroy Shire Council for assistance in selecting and implementing suitable control methods.