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ES1 Project Synopsis

ES1.1 Project Proponents

The Queensland Coke and Power Plant Project (the Project) is a venture involving two proponents, Queensland Coke and Energy Pty Ltd (QCE) and Stanwell Corporation Limited (SCL).

QCE is wholly owned by Macarthur Coal Limited (MCC), a Queensland based coal mining company listed on the Australian Stock Exchange with a market capitalisation of over \$600 million. The company operates Coppabella and Moorvale coal mines with an annual production of approximately 6.2 million tonnes of low volatile metallurgical coal and thermal coal. MCC holds 73.3% of the Coppabella and Moorvale operations with the balance held by a number of Japanese and Chinese joint venture partners. MCC is committed to effective environmental management and has a proven track record of profitability. MCC proposes to supply a portion of the coal for the Coke Plant.

SCL is a Queensland Government owned company established under the *Government Owned Corporations Act (1993)* (Qld) and is registered under the *Corporations Act 2001* (Cth). SCL is one of Australia's leading generators (1,643 MW) of environmentally responsible electricity with an extensive portfolio of coal-fired, gas-fired, wind, hydro, and bio-energy power generation facilities. SCL is committed to providing low cost, reliable electricity and to leading the market in asset and environmental performance, while pursuing a balanced portfolio that gains strength from investments in diverse energy technologies at sites nationwide. Its most significant presence is in Queensland where SCL contributes nearly 20% of the electricity generated in the State. As at 30 June 2005, SCL had total assets of \$1,653 million and total liabilities of \$637 million.

Contact details for the Project proponents are as follows:

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ES1.2 Project Objectives and Description

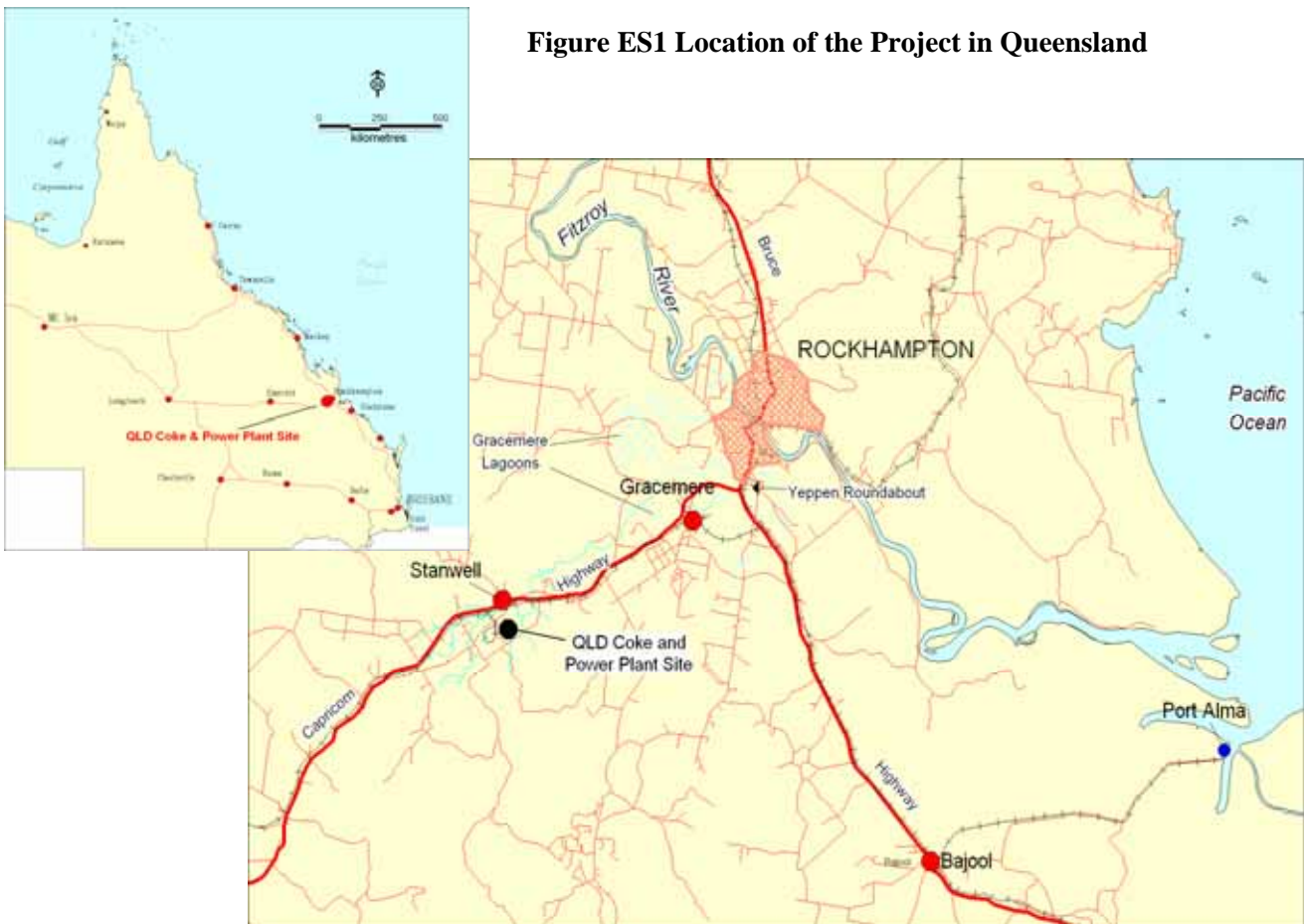
Objectives

The objective of the Project is to produce a superior quality blast furnace coke for the export market on a successful commercial basis. In doing so the Project aims to produce high quality coke using modern heat recovery coke-making technology, in a cost effective and socially responsible manner, with significantly less environmental impacts than conventional coke making technology. In addition, the Project aims to generate “low-emission” electricity through the use of excess heat from the coking process.

Description

QCE and SCL are proposing to construct and operate a Coke Plant and a Power Plant within the Stanwell Energy Park (SEP) at Stanwell, located approximately 25 km south-west of Rockhampton in Central Queensland. The project site is situated adjacent to the existing Stanwell Power Station (SPS) (Figure ES1).

Figure ES1 Location of the Project in Queensland



Coke Plant

The Coke Plant is proposed to be constructed to an ultimate capacity of up to 3.2 million tonnes per annum (Mtpa). Initially, a two-stage construction process (of 1.6 Mtpa per stage) was anticipated, however, an initial stage of 800,000 tpa is currently being considered. For the purposes of the EIS, a two stage process, each of 1.6 Mtpa, has been assessed as this represents a maximum impact scenario with respect to environmental impacts arising from a more intensive construction period. It is envisaged that the Coke Plant, after completion of Stage 2, will comprise approximately 640 coke ovens and the overall Project will require an area in the order of 106 hectares (ha) at Stanwell.

QCE proposes that at full production approximately 5 Mtpa of wet coal would be delivered to the Coke Plant via the existing SPS rail loop and coal unloading system. Coal will be transferred from stockpiles to the Coke Plant. The Coke Plant coke ovens will be charged with between 55 and 60 tonnes (t) of coal that has been crushed and stamp charged. The coal charge in the coke oven absorbs heat from the refractory bricks and combustible volatile matter is liberated. The coal carbonisation process will maintain the operating temperature of the coke ovens at approximately 1,200 °C. The volatile matter (gas) is combusted in an environmentally “smart” way so as to produce the heat to make the coke. Excess heat is produced in the process and this will be used to generate steam using Heat Recovery Steam Generators (HRSGs) to supply to the associated Power Plant. The hot coke from the coke ovens will be quenched by rapid cooling with water.

Support infrastructure for the Coke Plant will include permanent administration buildings and ancillary facilities such as workshops, materials storage areas, water and waste management structures and drainage, laydown areas and other minor operational buildings. The operational phase of the Coke Plant will involve some 81 full-time equivalent workers and 116 full-time equivalent workers for full production in Stage 1 (1.6 Mtpa) and Stage 2 (3.2 Mtpa) respectively.

Power Plant

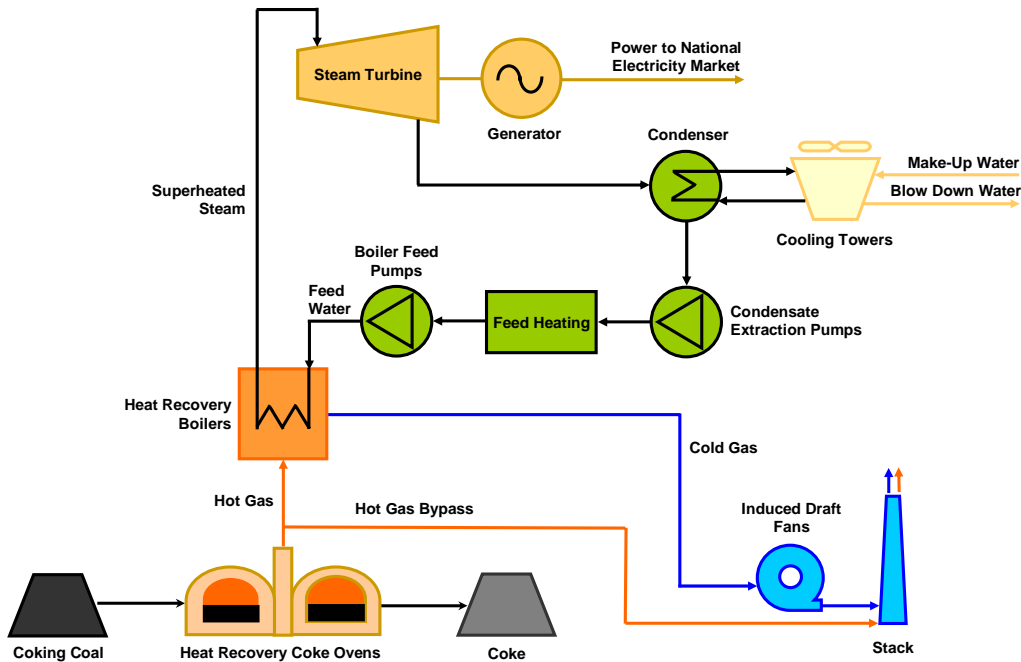
The Power Plant will be a stand-alone facility which will have a nominal generation capacity of up to 350 Megawatts (MW). The electricity produced will be supplied to the Queensland electricity grid and the Coke Plant, as well as being used for Power Plant process and electrical requirements. The high pressure super-heated steam produced from the Coke Plant’s HRSGs will be ducted to the Power Plant and used to drive the steam turbine generator. The steam turbine cycle involves high pressure super heated steam being expanded through a turbine and exhausted into a water-cooled condenser where condensate (cooled steam) will be pumped to the feedwater system. The feedwater will be heated and directed to boiler feed pumps where the water pressure is increased to high pressure. The feedwater is then returned to the Coke plant’s HRSGs for re-use.

The operational phase of the Power Plant will involve some 15 full-time equivalent workers and 23 full-time equivalent workers for full production in Stages 1 and 2 respectively.

The Coke Plant and Power Plant processes are represented in Figure ES2.

Figure ES2 Representation of the Coke Plant and Power Plant Process

Power Plant Block Diagram



Materials Storage and Handling

Coal will be delivered to the project site via the existing SPS rail loop which is connected to the main Blackwater Rail System by a dedicated spur line, approximately 1 km long. The rail loop will need to be modified for the Project to enable trains of coke product to leave the SPS site, heading east to a proposed port facility at Fisherman’s Landing, Port of Gladstone. Coal delivered to the existing SPS unloading hopper would be transferred to a new conveyor taking coal to an elevated stacking conveyor for discharging on to individual stockpiles. Coal will then be reclaimed by front-end loaders from the stockpiles into hoppers. A blended feed would then be conveyed to a surge bin, which would be the interface with the coke plant coal charging system.

Materials handling during Project operation will involve approximately 4 full-time equivalent workers and 6 full-time equivalent workers for full production in Stages 1 and 2 respectively.

Product Transport, Port Handling and Shipping

It is proposed that coke product would be railed 129 km to a new wharf facility at Fisherman’s Landing. Coke produced at the project site will be crushed, screened to remove fines, and loaded into standard Blackwater trains with capacity of approximately 4,200 t. Coke fines generated at the Project may be recycled back into the coke oven charge and/or directed to the SPS for use. The coke train will exit the existing SPS rail loop in an easterly direction towards Fisherman’s Landing, Gladstone. Once at

Fisherman's Landing, the coke will be discharged from trains via a new rail unloader to be constructed within the existing Cement Australia rail loop. A coke stockyard and reclaim facility will be constructed adjacent to the rail loop on land controlled by the Central Queensland Ports Authority.

The coke will be conveyed to the new wharf and ship loader at Berth 3 (after being screened to remove fines), at a rate of 2,000 t/hr. The shiploader will be designed to load Panamax and Post Panamax vessels that have a loading capacity of 45,000 t. For Stage 1 operations it is anticipated that 35 ships per year or approximately 3 ships per month would be required for the export of 1.6 Mtpa of coke. Stage 2 coke export will require approximately 70 ships/year or 6 ships/month. The Project will require the employment of approximately 12 people at Fisherman's Landing.

Construction

Construction activities around the Coke Plant are expected to commence in 2006 and take up to four years to complete. The timing of the construction of the Power Plant will be determined by the expected availability of waste heat to enable the efficient operation of the Power Plant. A shortage of potential labour in the region may result in the construction period being extended to five years, with a reduced construction workforce. Construction hours will ultimately be determined by the principal contactors selected to build the Project. It is anticipated that typical construction hours will be from 6.00 am to 6.00 pm, Monday to Saturday. The Project construction workforce for the maximum construction rate will comprise an approximate average of 1,180 people for an 18 month period, with a peak construction workforce for limited periods of time of 1,650 people. At the reduced construction rate, an average 800 construction workers and a peak of 1,000 will be required over a five year construction schedule. A conceptual representation of the Project at the SEP is presented in Figure ES3.

Figure ES3 Conceptual Representation of the Project, with SPS in the Background



ES1.3 Project Benefits

The Project will generate a significant number of benefits on a local, regional and global scale. The benefits include those associated with using the SEP and Fisherman's Landing, value-adding to Queensland's natural resources, and promoting the principles of industrial ecology.

The Project location in the SEP has the following benefits:

- It is an ideal location between the coal resources in the Bowen Basin coal fields (from where the coal for the coking process will be sourced) and the export port at Gladstone;
- It is in close proximity to the electricity grid supplied by the adjacent SPS, providing an opportunity for a power generation alliance with SCL for the efficient use of surplus heat from the coke making processes;
- It is in close proximity to the major regional centre of Rockhampton, providing access to a labour pool at Rockhampton and the surrounding region;
- It provides an opportunity to share existing infrastructure such as water services, roads and power transmission facilities, thereby reducing the environmental impact of new facilities. This includes access to high capacity rail transport infrastructure to Fisherman's Landing for the export of the coke product; and
- There is sufficient land for the planned size of the Project which has already been allocated for industrial use and which has already been substantially prepared for the former Australian Magnesium Corporation (AMC) project.

Using Fisherman's Landing as the export port for the coke product has the following benefits:

- Improved use of common infrastructure, including that for rail transport and docking;
- Existing reclaimed land will be used for stockpiling, thereby reducing any environmental impact; and
- The existing shipping strengths of Gladstone can be capitalised upon.

Queensland will benefit through value-adding to its natural resources as each tonne of coal mined and converted to coke by the Project will substantially increase the employment and income opportunities in the region. In addition, the Project will produce excellent quality coke from lower quality coal.

The Project also promotes the principles of industrial ecology, whereby industrial processes/technologies are advanced, thereby helping to improve the global environment. This is achieved by:

- Replacing environmentally unacceptable and less efficient processes used around the world with cleaner processes;
- Using less energy to transport coke than an equal volume of coal due to its reduced density; and

- Allowing resources (heat/energy) that would otherwise be wasted to be inputs for other processes.

In addition, the sourcing of coke from Australia by steel producers overseas offers security of supply from a politically stable country with abundant coking coal resources, and savings on capital. The coke making technology proposed for the Project will enable the use of weaker or non-traditional coking coals thereby increasing resource security overall. There are also logistical advantages for overseas buyers with fewer tonnes of coke being required relative to coal.

Further social, economic and environmental benefits of the Project are discussed in the relevant summaries of potential impacts on environmental values below.

ES1.4 Legal Framework and EIS Process

Both the Queensland and Commonwealth Governments have jurisdiction over the environmental assessment of the Project. The Environmental Impact Statement (EIS) has been prepared in accordance with the requirements of the Queensland *State Development and Public Works Organisation Act (1971)* (SDPWO Act). The Project was declared to be a “significant project” under Section 26 of the SDPWO Act by the Coordinator-General (CoG) on 23 December 2004. The declaration initiated the statutory environmental impact assessment procedure under Part 4 of the SDPWO Act, which required the proponents to prepare the EIS.

The first step in the impact assessment process was the development of Terms of Reference (ToR) for the preparation of the EIS. The process involved the formulation of draft ToR which were made available for public and government agency comment. The CoG had regard to all comments received on the draft ToR in finalising the ToR. The Project EIS has been prepared in accordance with the requirements of the final ToR, released by the CoG on 10 May 2005. QCE is managing the preparation of the EIS on behalf of the proponents.

The EIS presents the results of impact assessment undertaken to determine whether the Project will potentially impact on environmental values, such as air quality, water resources etc. It also presents the mitigation measures that will be implemented, where potential impacts have been identified. The results of the impact assessment are presented in the EIS in the form of sections/chapters on each environmental value examined. The EIS also aims to:

- Provide a source of information from which people may gain an understanding of the Project, the need for the Project, the alternatives, the environmental values that it would affect, the impacts that may occur and the measures taken to minimise those impacts;
- Set out acceptable standards and levels of impacts (both beneficial and adverse) on environmental values;
- Demonstrate how environmental impacts can be managed through the protection and enhancement of the environmental values; and
- Provide a basis for public consultation and informed comment on the project.

The proponents may be required to prepare a Supplementary Report/Addendum to the EIS to address specific matters raised in submissions on the EIS.

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act), developments require assessment if they have the potential to affect matters of National Environmental Significance. A referral under the EPBC Act was submitted to the Commonwealth Department of Environment and Heritage in February 2005. A decision was made on 7 March 2005 that the Project does not constitute a Controlled Action under the EPBC Act. In addition, a number of approvals and permits may be required for the Project under other State legislation, as will be determined closer to the time of construction.

ES1.5 Consultation

The consultation process for the Project aims to promote clear, transparent, two-way communication between the proponents and stakeholders, including advisory agencies and community members, to ensure the Project is acceptable and balances economic, social and environmental considerations. The consultation process provides an opportunity for the proponents to impart information to stakeholders and the community regarding the Project and obtain valuable local knowledge from these groups. It also provides people with an opportunity to express their views about the Project and be involved in the EIS process.

A comprehensive consultation program was implemented in February 2005, and conducted throughout the Project impact assessment and EIS compilation phase. A variety of communication tools have been used to inform and receive feedback from stakeholders including: public release of key documents; meetings/briefings; newsletters; advertising; media briefings/releases; updates of the QCE and SCL websites; an enquiry and feedback system comprising a free-call telephone number, a facsimile number, email address and reply-paid feedback form; fact sheets; community workshops; and public information sessions.

The groups that have been consulted broadly comprise: Rockhampton, Gracemere, Stanwell and Gladstone communities and businesses; local councils; Indigenous groups and traditional owners; State government agencies; Federal and State elected representatives; environmental and community groups; regional business; development, industry and training organisations; and the media. The issues identified in, and outcomes of, the consultation have been recorded and fed back into the EIS process. Mitigation and management measures have been proposed to specifically address issues identified by stakeholders.

ES2 Environmental Values and Management of Potential Impacts

ES2.1 Land Characteristics

Geology, Soils and Contaminated Land

An assessment of the topography, soil, geology and contaminated land was undertaken for the project site and involved a field investigation and a desk-based study. In addition, information on soils and geology were reviewed for Fisherman's Landing.

Stanwell Project Site

Areas of topographical significance include Flagstaff Hill and Neerkol and Quarry Creeks. Ten terrain units were identified in the project area. Geological regimes present comprise Quaternary alluvium, Early Cretaceous Stanwell Coal Measures and Jurassic Precipice Sandstone. Key features of the site's soils are summarised below:

- Approximately 73% of the soils at the project site have a moderate to high erosion potential, indicating that erosion control will be necessary;
- Approximately 53% of the project area comprises soils that have dispersive layers. The balance of the site (47%) consists of soils that are either non-dispersive or only very slightly dispersive soil layers. Drainage and erosion control measures will be implemented to minimise erosion potential due to the occurrence of dispersive soils;
- The site's ground surface elevations, together with the geological regimes and the generally well-drained nature of the project site, are not conducive to the formation or occurrence of Acid Sulphate Soils (ASS); and
- Useable topsoil resources are mainly confined to the surficial (A) horizon materials (0.2 m thick) and the upper part of the subsurface (B1) horizons (0.4-0.5 m thick). Topsoil in areas that will be disturbed by project activities will be stripped separately and either used directly on rehabilitating areas or stockpiled for later use in site rehabilitation.

None of the land that forms part of the project site is listed on the Environmental Protection Agency's (EPA) Contaminated Land Register or Environmental Management Register. Several settlement ponds adjacent to the project site on SPS land could be a potential source of contamination that may impact the project site. Should these ponds be earmarked for decommissioning or removal, an investigation will be carried out on the soil at the base of the ponds to determine the presence of any potential contaminants.

Fisherman's Landing

Four terrain mapping units were identified in the Fisherman's Landing area. Soils associated with Quaternary Holocene Estuarine/Marine Unconsolidated Sediments, under natural undisturbed conditions, provide an environment for the occurrence of ASS, particularly where the elevation of the natural surface

lies below about 3 to 5 m AHD. As a result, these soils were considered unsuitable for use as a topsoil resource. The soils associated with the Quaternary Residual Soil and colluvial deposits may contain dispersive clayey subsoils and are considered to be marginal for use as a topsoil resource.

Land Use and Tenure

The Project will be developed on freehold land owned by SCL (Lot 1/SP140242 and Lots 1 and 44/SP140243, County of Livingstone, Parish of Stanwell). The rail spur re-alignment is proposed to run through unallocated State land, SCL-owned and privately owned freehold to the immediate north of the project site before merging with the existing east-west rail line. The Fisherman's Landing site is predominantly freehold with a small amount of leasehold held by the Central Queensland Ports Authority (CQPA).

The predominant land use in the Fitzroy Shire is agriculture. The project site within the SEP was significantly cleared for the former AMC project. The industrial area associated with SPS and railway loop infrastructure represent the dominant land use in the immediate area surrounding the site, with the wooded Flagstaff Hill and Stanwell Nature Refuge to the immediate east and south respectively.

Approximately 1 km north of the project site is the village of Stanwell which comprises approximately 40 dwellings. A number of rural residences occur in the vicinity of the project site, particularly to the north (approximately 500 m) and west/south-west (approximately 1.3 km). There are no private dwellings in the close vicinity of the Fisherman's Landing wharf, with the nearest residence being located approximately 1.8 km to the south. The Fisherman's Landing facility will be established on reclaimed land between the Cement Australia and Comalco wharves, and on disturbed land associated with the Cement Australia rail loop.

The SEP is designated as a Special Industry Precinct I in the Gracemere-Stanwell Zone under the Fitzroy Shire Planning Scheme (Fitzroy Shire Council, 2005), and is recognised as a significant regional opportunity for large scale industry which has some synergy with the SPS. The Fisherman's Landing development is compatible with the Local Authority and Port Authority development plans for the locality and the Port of Gladstone.

The project site at Stanwell is within the boundaries of the registered Darumbal Native Title Claim QC97/21 and the Fisherman's Landing area is subject to the Port Curtis Coral Coast Native Title Claim QC01/29. However, the land at Stanwell required for the Project is freehold land and that required for the wharf facility is freehold and leasehold land. Therefore, native title should not be an issue for the Coke and Power Plant infrastructure. The land required for the rail spur comprises both freehold and state land. Depending on the final route of the rail spur, native title may have to be dealt with by the provider of the rail infrastructure.

In terms of agricultural capability, the land proposed for the Project at Stanwell is of agricultural capability Classes B (Limited crop land), C (Pasture land) and D (Non-agricultural land). The areas to be impacted approximate 26 ha (12.7%), 23.5 ha (17.8%) and 56.8 ha (19.7%) of Classes B, C and D land respectively. The Class B land is primarily that owned by SCL and not currently being used for agriculture. However, a small area of this land held in private freehold is being used for cropping.

The project footprint has been designed to fit as closely as possible into the area previously cleared under the AMC project and as closely as practicable to the existing SPS to reduce potential impacts and to minimise development costs. The Project will impose limited constraints on the future use of land in the Stanwell area. The post-operational land use for the Stanwell site cannot be definitively determined at this stage, however, since the Project will be located in an industrial area, it is likely that the hardstand would remain to allow for future development should the project infrastructure eventually be removed. The area at Fisherman's Landing is located within an existing port facility. Constraints on the future use of this area as a result of the Project will restrict the use of the area targeted for the coke handling facilities for other industries, although the development is in line with the intended use of the port facility.

Sensitive Environmental Areas

Stanwell Project Site

There are no National Parks, Conservation Parks, State Forests or other reserves in the immediate vicinity of the project site. Locally, the gazetted Stanwell Nature Refuge lies to the south of the site in a zone designated as Open Space. Approximately 1 km to the south of the site is an area of Essential Habitat for the plant *Cycas megacarpa*, with a number of other protected species occurring in the area. The project site is not located within or near a Ramsar Wetland.

Fisherman's Landing

There are a number of protected areas and areas of national estate near Fisherman's Landing, however, most of these areas are located well away from the port facility. Port Curtis (including Fisherman's Landing) lies outside the Joint Coastal Marine Park and the Great Barrier Reef Marine Park. However, all of the Port waters below mean low water mark lie within the Great Barrier Reef World Heritage Area. No construction within the Great Barrier Reef World Heritage Area will be undertaken as part of the Project. A number of Habitat Protection Zones are located near Port Curtis and Port Curtis is listed in the Directory of Important Wetlands in Australia.

The activities at the wharf will be conducted in accordance with CQPA's Environmental Authority which authorises a number of activities including stockpiling, loading or unloading goods in bulk at, and regulated waste transport from and to, Fisherman's Landing. It is anticipated that compliance with the Environmental Authority conditions and implementation of surface water and dust mitigation measures will result in minimal impact of the Project on the nearby sensitive environmental areas.

Visual Amenity and Scenic Values

A visual assessment of the proposed Coke Plant and Power Plant, including the coal and coke stockpiles and conveyors and associated structures has been undertaken. The study reviewed the landscape in which the Project is to be located and assessed the potential visual impact of the Project on this landscape.

The Project is expected to have low to negligible potential visual impact on surrounding areas including Stanwell village and the Capricorn Highway. Views of the Project from surrounding areas are generally

screened by existing trees, earth mounding and natural landforms. The Project would only be directly visible from Power Station Road at one location, which is near the entrance to the SPS. However, this view is partly screened by existing vegetation and landform. Power Station Road carries relatively low traffic flows and is mainly used for access to SPS and consequently a very low number of viewers would potentially see the Project.

The existing SPS is a large scale industrial complex. The concrete cooling towers (120 m above ground level) and main stack (200 m above ground level) of the SPS are dominant visual elements which are visible above tree canopies from surrounding areas, including locations along the Capricorn Highway. The project structures will be substantially lower in height than those at the SPS, with the main stacks of the Coke Plant being 90 m above ground level, the proposed Power Plant turbine hall being 32 m above ground level, and the cooling towers being 12 m above ground level. The upper portions of a number of the main stacks in the proposed Coke Plant would be visible from a limited number of locations along the Capricorn Highway. The extent of these visible portions of stacks varies from about 15 m to 40 m. However, they will generally be visible above tree canopies and seen together with the upper 140 m portions of the SPS stack and upper 50 m of the associated cooling towers.

Proposed mitigation measures include roadside tree and shrub planting to provide additional visual screening to the project structures from the section of Power Station Road near the entrance to SPS. Lighting associated with the Project will be designed to avoid light spill on to Brickworks Road and to prevent direct views of lights on those portions of the stacks that may be visible from the Capricorn Highway. Screen planting is proposed alongside the southern edge of Brickworks Road to block potential views of the coke stockpiles, including the emergency stockpile at the northern end of the Coke Plant.

Decommissioning

The project evaluation has been based on a life of 40 years, however, it is probable that the facility will remain in operation well beyond this period. The use of the site once the Project has been decommissioned has not yet been determined, however, numerous planning and environmental issues will be considered before a final decision is made. The process of preparing the decommissioning and rehabilitation plan will be extensive and will involve consultation with all authorities responsible for the applicable legislation, and potential post-project land users. It is likely that the project site and its associated infrastructure (including that at Fisherman's Landing) will be valuable either as a package or as individual elements to other industrial users.

ES2.2 Climate

A sub-tropical humid climate is characteristic of both Fitzroy Shire (where the project site is located) and Gladstone, with wet summer periods occurring generally between December and March, and dry winters generally between June and September. The long-term monthly temperature averages range between 27°C during summer and 16°C in the winter. Mean annual rainfall for Rockhampton Airport (as an indicator of that in Stanwell), is 805.2 mm. Mean monthly rainfall at Gladstone Radar (as an indicator of that at Fisherman's Landing), is 918.4 mm. Wind around the Stanwell area blows in a dominant east-west

direction. Southerly winds, which have the potential to transport emissions from the Coke Plant to closest residential areas of the Stanwell township, occur less than 5% of the time.

On average, an impact from a tropical cyclone occurs about once in every four years in the Rockhampton region. On a long-term average, approximately 1.4 cyclones pass within 500 km of Gladstone each year. In the event of a cyclone, the area at Fisherman's Landing is likely to be somewhat protected from storm tide due to the position of Curtis and Facing Islands. The risk to inland areas, such as Stanwell, when a cyclone crosses land is usually due to flooding. Preliminary modelling of the flood risk at the project site suggest that during a 100-year Average Recurrence Interval (ARI) flood and a 50-year ARI flood, Neerkol Creek would reach a respective height of approximately 44.5 m AHD and 43 m AHD adjacent to the project site. Both the Coke Plant and Power Plant will be located above these levels at approximately 51 m AHD on raised ground and will be at very low risk of flooding. A small floodplain, located to the west of the project site, could be an important storage area in the event of major flooding.

The entire Central Coastal region is currently a declared drought area. To manage the impact of drought, the Project will be designed to ensure sufficient water infrastructure, including storage, is available to meet the Project water supply requirements in times of drought. Options for water re-use and recycling will be incorporated into the design of the Project.

The immediate area around Stanwell is a medium bush fire hazard due the extent of surrounding vegetation. The Project would be at a greater risk of bushfire than grassfire, particularly from north-westerly, westerly or south-westerly directions. The proponents will collaborate with SPS and work in conjunction with the SPS fire crew in reducing the fire hazard risk in areas adjacent to the project site. Fuel reduced zones of a minimum 10 m in width will be maintained around the site. Such zones also provide access points for fire brigades should a fire occur. Calliope Shire, where Fisherman's Landing wharf is located, has a high potential grass fire risk. The greater area around Fisherman's Landing is categorised as having a medium bushfire hazard.

ES2.3 Water Resources

Surface Water

Potential surface water impacts have been considered both for the project site and the wharf at Fisherman's Landing. Information used in the assessment included meteorological, topographical, hydrological and water quality data and independent reports and observations made during an inspection of the project site.

The project site at Stanwell is within the Neerkol Creek catchment, an ephemeral creek system influenced by agricultural and industrial practices. The SPS currently discharges combined power station blowdown and stormwater into Quarry Creek, a tributary of Neerkol Creek, on a continuous basis. This has led to more consistent overall flow conditions. Knowledge of the flood risk within the catchment is limited but a significant flood event is known to have occurred in 2003. Water chemistry is variable and biological indicators suggest that water quality is generally poor, characterised by high salinity and some nutrient enrichment. However, the creek does support some local ecosystems and there are a number of licensed

abstractions, largely for agricultural purposes. The Curtis Coast area (where Fisherman's Landing is located) is a significant marine environment with importance to the Great Barrier Reef lagoon. Fisherman's Landing is currently used by a number of industries for import/export and water quality is generally relatively unpolluted.

During construction, potential impacts are likely to arise from the mobilisation of sediments into surface water bodies. These will be addressed by utilising the existing drainage infrastructure and implementing additional environmental management practices in accordance with industry standards. No natural surface water bodies are present on site and only minor amounts of potential pollutants such as fuel oil will be required during project construction. During operations, the stockpiling of coal and coke at both Stanwell and Fisherman's Landing has the potential to introduce particulates into local water bodies. Dust suppression and water management structures will be implemented at both sites to limit the generation and mobilisation of these potential pollutants. The volume of waste water will be limited through good environmental management, including bunding of chemical storage areas to contain contaminant spillage, and the separation of clean stormwater runoff from potentially dirty water runoff.

The Project will require a substantial water supply, largely for Power Plant cooling and coke quenching purposes. This water is proposed to be sourced from some of the available resource in the Fitzroy Basin either through existing or new water allocations.

The sustainability of water use will be addressed through water re-use options as far as possible. The maximum annual water use for Stage 2 production with the Power Plant fully operational would be approximately 10,740ML/year. Some minor impacts on the flow regime and water quality of local creeks may be caused under certain plant scenarios due to releases of water from the project site. The design strategy for surface water management at the Project focuses on minimising the amount of potential contaminants present in runoff (e.g. coke and coal dust, oil, chemicals) and installation of infrastructure to contain and treat this runoff.

Groundwater

The groundwater regime in the project area comprises alluvial aquifers associated with local creeks and coal and sandstone formations. The alluvial aquifer has numerous licensed bore extractions within a nominal 5 km radius. Local groundwater is primarily used for livestock watering and irrigation purposes and is not considered potable, owing to the moderately high salinity levels. There are no alluvial or coal seam aquifer groundwater users in the immediate vicinity of, or within the boundaries of, the project site. The low yield (due to very low permeability) and poor water quality of the coal seam aquifers preclude interest in utilising these aquifers for water supply purposes.

Groundwater removal to assist in foundation excavation is not anticipated during the project construction phase. There will be no abstraction of groundwater during the operational phase of the Project and the effect of covering the area with impermeable concrete surfaces will not impact on the recharge of the underlying aquifers. Hence there will be no interference with the existing groundwater resources and no direct impact on the local groundwater flow regime. The proposed surface water containment system will be lined with low-permeability material and the system will be designed and managed only to discharge during extreme rainfall events where natural dilution will be substantial. Therefore, no detrimental effects

on the groundwater by surface water originating from the Project are expected. Groundwater monitoring bores will be installed, and the monitoring of existing bores within the area will be undertaken to verify that no detrimental effects occur as a result of project activities.

ES2.4 Nature Conservation

Terrestrial Flora

A terrestrial flora study has been undertaken to identify the current extent of vegetation communities within the project area, to determine the conservation values of the flora of the site, to assess the potential impacts from the project and develop appropriate management strategies for the mitigation of potential impacts. A desktop review of existing information was conducted, and previous vegetation mapping for the site was updated. A field investigation was also undertaken to examine the current distribution of species of conservation significance.

These investigations identified a total of 233 plant species, representing 170 genera and 68 families of vascular plants in the broader area of the project site. Fifty-seven exotic or introduced plant species were recorded for the site, nine of which are currently “declared species” and are identified as being of management concern. Ten primary vegetation communities were described and mapped for the broader study area on the basis of aerial photograph interpretation and field survey results. *Eucalyptus raveretiana* (Black Ironbox) was identified by the flora survey and is listed as ‘Vulnerable’ under both State and Commonwealth legislation. However, the impact on this riparian species is likely to be minimal as it occurs primarily along creek systems, only a small area of which will be disturbed for the construction of the rail spur.

Three vegetation communities found within the broader site were identified as holding conservation status under the Queensland *Vegetation Management Act 1999*, one of which is also listed as ‘Endangered’ under the EPBC Act. These comprise *Eucalyptus populnea* /*E. crebra* open forest woodland on alluvial soils (Regional Ecosystem (RE) 11.3.4), (*Eucalyptus populnea* /*E. tereticornis* / *Corymbia tessellaris* /*E. crebra* open forest on alluvial soils (RE 11.3.2) and Semi-evergreen vine thicket hill crests on coarse grained metamorphosed rocks (RE 11.11.18).

An area of approximately 37 ha will potentially be affected by proposed vegetation removal. A relatively small area of two ‘Of concern’ regional ecosystems (approximately 19 ha), in the context of the bioregion, would be potentially affected by vegetation removal. Approximately 0.6 ha of remnant vegetation at Fisherman’s Landing will require clearing for the construction of the western section of the rail load out to shipping berth conveyor system. It is considered that the vegetation removal proposed for the Project will not have any significant impact upon flora species, vegetation communities or habitat connectivity on a regional scale, or the ecosystem function of the integral vegetation communities found on-site. Management measures are outlined for the mitigation of potential impacts on vegetation communities, significant species, control of weed species and air emissions impacts.

Based on conservative emissions modelling, the combined impacts from the Project and SPS may exceed the *Environmental Protection (Air) Policy 1997* guidelines for biological integrity for sulphur dioxide

(SO₂) and nitrogen dioxide (NO₂) at some locations. However, the vegetation at these locations is not considered to be particularly sensitive to SO₂ and NO₂, and the predicted number and low level of guideline exceedences suggest that any impacts will be minimal.

Terrestrial Fauna

A terrestrial vertebrate fauna survey of the project area was conducted. The survey results supplemented information obtained in previous surveys of the area.

The natural habitat areas remaining on the project site are small and have been degraded through burning and clearing. Parts of the site have also been highly modified through perimeter fencing, construction of water storage dams, vehicle tracks and dumping of topsoil and vegetation. The remaining areas are not representative of significant fauna habitats. The principle habitat for fauna in the region is open woodland, which is relatively common. Areas surrounding the project site are extensively modified through agricultural activities. Therefore, the project site is not considered to be important for wildlife conservation. The loss of approximately 0.6 ha of remnant vegetation at Fisherman's Landing is not considered significant as it is within the rail loop and offers limited habitat value. The expected disturbance is in the order of 3% of the total area of remnant vegetation within the rail loop.

A total of 96 native and 3 introduced terrestrial vertebrate species were recorded during the 2005 field survey, including 8 amphibian, 16 reptile, 57 bird and 18 mammal species. A complete list of species known from the site includes a total of 13 amphibian, 44 reptile, 133 bird and 38 mammal species, however, many of these species have only been reported from the general area of the project site.

One 'Threatened' species was observed during the 2005 surveys, the Squatter Pigeon (*Geophaps scripta scripta*), which listed as 'Vulnerable' under both the *Nature Conservation (Wildlife) Regulation 1994* and the EPBC Act. Queensland populations of this species appear to be stable. The Powerful Owl (*Ninox strenua*) which is 'Vulnerable' under the *Nature Conservation Act 1992* has been recorded previously from the area but was not recorded during the 2005 survey.

Three 'Threatened' reptile species which have been previously recorded in the Rockhampton area could potentially be present on the project site: Brigalow Scalyfoot (*Paradelma orientalis*); a small species of Limbless Skink (*Anomalopus brevicollis*) which has been recorded within the project site by the Queensland Museum; and the Ornamental Snake (*Denisonia maculata*). Four bird species recorded in the area (*Ardea alba*, *Ardea ibis*, *Haliaeetus leucogaster* and *Merops ornatus*) are listed as migratory under the EPBC Act.

Populations of kangaroos that may be trapped on-site during project construction will be removed from the project site prior to commencement of construction. Advice from EPA will be sought before this aspect of the Project is undertaken.

Aquatic Biology

An aquatic ecology survey of the project area was undertaken to update survey results from 1998 and gather information on the physical environment, water quality, aquatic plants, macroinvertebrates, fishes and waterfowl.

The main stream of Neerkol Creek passes the project site at its closest point about 350 m to the north. There are no natural aquatic environments draining the site itself. The main creek draining south from the project site is the naturally ephemeral Quarry Creek. It is artificially charged by blowdown water from the SPS, resulting in a constant flow which provides permanent habitat for native aquatic species and has also led to promotion of weed growth. The creeks have also been modified through the clearing of riparian habitats, degradation by cattle, chemical application and water extraction. Water quality is generally poor.

A total of 29 aquatic macroinvertebrate families, representing 10 orders were recorded during the 2005 survey. Diversity indices were relatively low. All sites were highly disturbed, and generally inhabited by macroinvertebrate groups which are adaptable to poor conditions. Surveys of Neerkol and Quarry Creeks upstream and downstream of the project site found a total of 12 species of freshwater fish. All of the fish species recorded from the Neerkol Creek system are generally common across eastern and northern Australia.

Krefft's Turtle (*Emydura kreffti*) was abundant and other semi-aquatic reptiles found included the Eastern Water Dragon (*Physignathus lesuerii*) and Eastern Water Skink (*Eulamprus quoyii*). The Water Rat (*Hydromys chrysogaster*) has been recorded from a site along Quarry Creek. A total of 22 aquatic plant species have been recorded within the Neerkol and Quarry Creek systems near the project site. Several of these species are introduced, the most prolific and invasive of which is Para Grass.

In the event that the Coke Plant cannot use the blowdown waters from the Power Plant for quenching, discharge of blowdown water into Quarry Creek could lead to an increase in creek flow of between approximately 675 ML/year (Stage 1) and 1,350 ML/year (Stage 2) (approximately 37-75 % increase during dry periods, considerably less of an increase during wet periods). This may result in minor changes to depths in the larger pools, with the possibility of greater species diversity due to increased habitat diversity. It may also lead to a widening of the Quarry Creek channel. Due to the existing high densities of aquatic plants (both native and introduced) in the system, erosion and increased water velocities are not considered to be significant issues. A reduction of flow to the system (should 10% of SPS's stormwater and blowdown discharge be reused for coke quenching) may result in reduced weed infestation and in-stream habitat diversity, which would be most prominent in the upper parts of Quarry Creek.

Given the highly artificial nature of the current flow regime, the lack of significant aquatic fauna in the area, and the predominance of aquatic weeds, variations in flows such as those described are not expected to significantly change the existing values of the aquatic environment. It is proposed to continue monitoring selected sites for changes in aquatic ecology on an annual basis during both the construction and operational phases of the Project.

ES2.5 Air

The Coke Plant will release emissions to the air from stacks and low-level sources at the Stanwell site. The project activities at Fisherman's Landing may generate low levels of dust. However due to the screening of the coke at Stanwell, the coarse grained nature of the coke and the distance to receptors these activities are not considered to be the source of significant impact.

Ambient air quality monitoring has been undertaken in the Stanwell area for six years. Baseline meteorological and air quality measurements for the Project have been derived from monitoring station data collected by SCL over the period 1997 - 2003. The Stanwell area has one existing industrial source of air pollutants, the SPS. In addition to existing monitoring data, modelling of the predicted emissions from SPS at the licence limit coal quality conditions, maximum load and 100% plant availability (i.e. worst case scenario), has been undertaken to provide upper limits on the background air quality for SO₂, nitrogen dioxide (NO₂) and particulate matter (PM₁₀).

Sources of air pollutants in the production of coke are the coal handling operations, the charging, coking process, pushing and quenching operations, and the coke handling operations. The pollutants expected to be emitted from the Coke Plant are SO₂, NO₂, PM₁₀, carbon monoxide (CO), volatile organic compounds (VOCs), poly aromatic hydrocarbons (PAHs) and metals. The emissions of these pollutants have been estimated using coal quality specifications that represent the required criteria for the coking process and Stage 2 production scenario (3.2 Mtpa), as this represents the worst case scenario in terms of project emissions. The design of the Coke Plant incorporates features that will minimise air quality impacts, such as the use of stamp charging to reduce emissions during charging and pushing and operation of the coke ovens under negative pressure to substantially reduce fugitive air emissions from the ovens.

Dispersion modelling was conducted to determine the Project's compliance with ambient air quality guidelines for human health. It should be noted that the Power Plant will have no air emissions other than water spray drift from the two cooling towers. The predicted pollutant ground level concentrations from the operation of the Coke Plant in isolation will satisfy air quality guidelines for human health for NO₂, PM₁₀, CO, VOC, PAH and metals.

The predicted ground level concentrations of SO₂ from the two main emitters in the Stanwell airshed (the Coke Plant and the SPS), indicated that under maximum impact scenario conditions one exceedance (above an allowable eight exceedances) of the 10-minute air quality guideline may occur over the course of a year. The modelling also found that the 1-hour and annual average SO₂ guidelines should be met at existing residential locations. The modelling for the SPS was based on the operation of the SPS at licence limit conditions for coal quality, maximum capacity and 100% plant availability which is a theoretical worst case situation and is not the typical operational scenario. Therefore, the estimated emissions of SO₂ are significantly (in the order of 45%) higher than the typical operation of SPS, and thus the modelling outputs are very conservative and represent the worst case combined impact scenario. The Stanwell airshed appears to have sufficient tolerance to accommodate the Project. This assessment is based on the modelling of emission sources and the review of ambient monitoring data.

Photochemical smog impacts are not currently a problem for the Stanwell region. The operation of the Project will add marginally to the existing situation but will not reach or exceed recognised guideline levels.

ES2.6 Greenhouse Gas Emissions

The Coke Plant will emit greenhouse gases (GHGs) during the processing of coal into the coke product. For operational Stages 1 and 2 combined within the project boundary, the calculated GHG emissions for the Project will average over 40 years, 342,650 tonnes of carbon dioxide equivalent per year (t CO₂e/yr), based on the upper production estimate of 3.2 Mtpa of coke. This annual emissions estimate includes an offset amount of 2,458,901 t CO₂e/yr (post year two), from the re-use of the heat generated by the Coke Plant for power generation. This amount represents approximately 0.24% of Queensland's total annual GHG emissions (145 Mt in 2002) and approximately 0.06% of Australia's annual emissions (550 Mt in 2002). In addition, transport related GHG emissions from the Project in Australia and internationally, will be reduced through the 30% reduction in weight of coal to coke. This transport offset represents 2,200 t CO₂e/yr associated with rail inside Australia, and 38,574 t CO₂e/yr associated with shipping.

SCL is currently a member of the Greenhouse Challenge program with a Greenhouse Challenge Plus agreement and is a participant in national Generator Efficiency Standards. QCE commits to join the Australian Greenhouse Office Greenhouse Challenge Plus program and report performance annually.

ES2.7 Noise and Vibration

Potential noise impacts were assessed for Project construction and operation, including transport noise. In terms of background creep (where background noise levels progressively creep higher over time with the establishment of new developments in an area), the calculated noise levels comply with the specific noise level criteria at the closest residential area to the Project.

Noise contours under adverse conditions show that the 31 dB(A) night criterion is exceeded at two residences located at the north-eastern corner of the project site. The noise level at these locations is up to 36 dB(A), which is up to 5 dB(A) higher than at the residential area to the north of Neerkol Creek. Using the EPA Ecoaccess Guidelines for noise and treating these receivers as residential land uses in an area dominated by light industry, the calculated noise levels comply with the relevant criteria.

On occasions it is possible that noise levels may be higher than predicted due to plant start-up or upset conditions, including the commissioning of the Power Plant. These events are transient in nature and are not considered to impact the long-term background noise level. Any predictable exceedances will be planned and the community will be advised of these in advance.

In terms of sleep disturbance, noise levels from the operation of heavy equipment may be up to 43 dB(A) if multiple pieces of equipment are operating at maximum load conditions under adverse meteorological conditions. Sleep disturbance goals are met at all noise sensitive receptors within Stanwell and in the surrounding rural community, with proposed attenuation measures applied. The calculated noise level readily complies with the low frequency noise criterion at the closest residences within Stanwell and in the surrounding rural community, with proposed attenuation measures applied.

Increases in road traffic noise would be acceptable with only minor increases in noise levels along Power Station Road. Increases in rail traffic on the main east-west line are acceptable with only minor increases in noise levels expected. On the rail loop, based on an expectation of four train movements per night, the allowable sleep disturbance criterion is approximately 56 dB(A). The predicted noise level of 47 dB(A), at residences to the west of the rail loop, complies with this sleep disturbance criterion. The predicted noise level at the nearest residences to the west and south-west of the rail loop due to shunting, is 38 dB(A). This noise level will be easily audible, as would be the existing shunting operations, however, it is not likely to cause sleep disturbance, and is therefore considered acceptable. The noise sources at the Fisherman's Landing facility are relatively minor compared with other manufacturing facilities in the area. The closest residences are located approximately 1.8 km to the south. Therefore, it was not considered necessary to further investigate noise impacts of this aspect of the Project.

The Project will not be a source of vibration to the surrounding community, with operation and construction activities being limited to vibration sources that will produce only localised impacts. The combined effect of minimal vibration sources, relatively soft soils and the considerable distance to potential receivers results in the conclusion that vibration will not cause any significant impact.

ES2.8 Waste Impacts

Solid wastes produced by the Coke Plant will include coal and coke fines, coal ash and scrap metal. Liquid wastes will include stormwater runoff and oily wastes. Domestic waste will be produced on site at the office/administration buildings and off site at the temporary accommodation village. For the Power Plant, solid wastes will include scrap metal and general waste (generated primarily from routine maintenance operations). Liquid wastes will include blowdown from the cooling water system, effluent from the demineralisation plant, stormwater runoff from process areas, waste oil from plant and equipment, and sewage. The major solid waste streams likely to be generated during project construction include numerous bulky construction materials such as timber, scrap steel, concrete, insulation, oven bricks, plastic conduit and pipework, packing materials, paint residues, batteries, etc. General office wastes will also be generated during the construction phase.

As a generator of waste, the proponents will comply with the *Environmental Protection Act 1994*, *Environmental Protection (Waste Management) Policy 2000* and the *Environmental Protection (Waste Management) Regulation 2000* when designing the Project. The proponents will develop a Waste Management Plan in accordance with the relevant legislation prior to commencement of operations.

Any discharges of power plant blowdown will be released to Quarry Creek in the vicinity of where the SPS currently discharges its blowdown water, or it will be directed to ponds and re-used as quench water for the Coke Plant. Waste water from the demineralisation plant will be saline due to concentration of salts removed from the water during the demineralisation process. Its pH will be corrected and it will be discharged into the settlement/evaporation ponds and evaporated or re-used in on-site processes amenable to lower quality water. Quench water which does not evaporate during the quenching process will contain some fine coke material and will be directed from the quench tower to site storage dams. There, the fine coke particles will be settled out and the water decanted back into the quenching system. Alternatively, this water will be used for other on-site activities such as dust suppression.

During operations, the Project may utilise the existing SPS sewerage system, or a stand-alone sewage treatment facility may be constructed to cater for the operational workforce. The SPS sewage treatment system is not sufficient to deal with the sewage volumes associated with the construction workforce. Therefore, temporary toilet facilities will be provided. All waste produced in the temporary facilities will be removed off-site for disposal.

Stormwater runoff from the Project will be managed through the implementation of a stormwater management system. The system will include settlement/evaporation ponds to contain runoff from various areas of disturbance associated with the Project and the options for evaporation, re-use and discharge of the various stormwater waste streams. All runoff from project areas that may be contaminated with oil will be treated via oil/water separators, which will be collected by road tanker for recycling off-site. The water will be either reused as cooling water makeup or discharged to the ponds depending on quality.

Where possible, construction wastes will be segregated to maximise potential re-use and recycling opportunities. General and domestic waste will, where possible, be segregated at source and recycled or disposed of at Gracemere Landfill. Coal ash from Coke Plant operations would be washed into the quench waste water and transferred to a series of settlement/evaporation ponds. From the ponds, the ash would be recovered periodically and disposed of off-site or under a co-disposal arrangement with SPS. Coke breeze (fines) will be removed from the product coke during the quenching process where it will end up in the quench water system. The remaining breeze will be removed during the coke sizing and screening process and stored in stockpiles for re-use or sold to the local briquetting industry.

ES2.9 Cultural Heritage

The assessment of Aboriginal cultural heritage for the Project involved an investigation of the cultural heritage values of the project site with a field survey undertaken by the Aboriginal Party for the area (Darumbal People). In compliance with the *Aboriginal Cultural Heritage Act 2003*, the proponents are developing an approved Cultural Heritage Management Plan (CHMP) in negotiation with the Darumbal People. The CHMP will provide for the management of cultural heritage matters on the project site. Areas identified as containing Aboriginal cultural heritage in previous cultural heritage surveys were inspected in the recent investigation. In some cases, artefacts previously recorded as being present were observed in the current inspection. No additional sites, other than those found in previous cultural heritage surveys, were found. Areas around the project site were surveyed for evidence of cultural heritage, however, no new sites containing cultural heritage were located.

Wherever possible, objects of Aboriginal cultural heritage identified in the survey, or found during construction activities will be conserved *in situ* and where necessary, the controlled collection, removal and storage of cultural objects in acceptable locations will be undertaken in consultation with the Darumbal People. Where necessary, mitigation measures will be adopted to prevent erosion of cultural heritage sites. Darumbal representatives will monitor any construction earth works or clearing that is proposed to be carried out in areas where there is potential for subsurface cultural heritage material or undiscovered sites.

An assessment of non-indigenous cultural heritage was carried out through examination of the local and regional history and heritage registers and a brief site visit. While there are no listings with the Register of National Estate or State Heritage Register within the project area, the National Trust lists St Joseph's Orphanage at Neerkol, located within SCL land holdings some distance to the north-east of the project site. Gracemere Homestead located in Gracemere is listed on the Register of National Estate, Queensland Heritage Register and National Trust. The National Trust also lists the Church in Stanwell. No site or place of historical heritage is located within the current study area and there will be no impact of the Project on known non-indigenous cultural heritage. As the Fisherman's Landing facilities are to be located on essentially reclaimed land, there are no non-indigenous cultural heritage values associated with this area.

ES2.10 Social Environment

The social impact assessment has analysed the potential impact of the Project on existing and future social factors and community infrastructure, including on employment, housing, public realm, community services and facilities in Local Government Areas (LGAs) in close proximity to the project site. Social impacts on the Gladstone region were mostly excluded from the impact assessment due to the limited development proposed and the extent of the large industrial developments already in existence. Potential impacts of the Project on air quality, water resources, noise, visual amenity and land values as may affect the community directly were also addressed in the social impact assessment.

Community Consultation

Consultation with advisory agencies, members of the public and other stakeholders has formed an integral part of the EIS process. The community consultation process for the project aims to ensure clear, transparent, two-way communication between the proponents and stakeholders (including advisory agencies and community members) through listening, recording and responding to issues relating to the project as they arise. The consultation process provides the proponents with opportunities to impart information to the stakeholders regarding the project and obtain valuable local knowledge. It also provides stakeholders with an opportunity to express their views about the project and be actively involved in the EIS process.

A comprehensive consultation program was planned in the early stages of the project approval process from February 2005, and has been conducted throughout the impact assessment and EIS compilation phase. A variety of communication tools were identified as appropriate and have been adopted by the proponents throughout the planning stages of the project to inform, and receive feedback from, stakeholders. These tools included meetings, newsletters, advertisements and media releases, website updates, workshops, public displays and a public enquiry system using a freecall telephone number, facsimile number, e-mail and reply paid system. Up to July 2005, there have been:

- 374 responses to stakeholder enquiries;
- 198 attendees at workshops and information sessions;

- Approximately 40,000 newsletters delivered to the local area and Rockhampton, and made available online through the Internet.

Feedback from the consultation process has been incorporated in the project's development where applicable.

The program for regular community consultation as implemented in the early stages of the EIS, will continue throughout the life of the Project, to keep the local community informed. It will also aim to monitor community perception, address social matters and other community issues relating to the Project in a timely manner.

Employment and Skill Shortage

While demand for labouring-type positions is generally being met in the Fitzroy region, there is a lack of available semi-skilled and skilled labour in the region and a state-wide shortage of carpenters, bricklayers, plumbers, electricians, skilled metal workers and fitters due to the current high level of economic activity. The skill shortage across Queensland is also particularly evident for civil engineers experienced in water, roads and structural engineering. Consequently, the proponents aim to recruit up to 40% of the overall staffing requirements through local sources, although this may only be achieved by paying higher wages and attracting workers from existing jobs. A flow-on effect is that the project construction and development may increase local wage levels and exacerbate existing skill shortages. To offset this, potentially 60% of the workforce may need to be recruited from outside the region.

The social assessment has taken 33% as the likely level of local recruitment for the purposes of the EIS. The proportion of local involvement in project construction may be lower than 33% should the labour market remain very tight, but could be higher if the construction period is extended to as much as five years. In either case, the flow-on effects will mean that a large proportion of locals gaining employment will need to be replaced, generating a population influx into the region. Assuming that there would be replacement effects for all workers apart from labourers, the expected number of replacement workers at a 33% local take-up rate would be 277 persons. Due to the existing skills shortage in the region, the direct impacts of the Project during operations are expected to be positive. Approximately 60% of operational workers are expected to locate in Rockhampton, 15% in Gracemere, 15% at the Capricorn Coast and the remainder in the wider region. There is likely to be longer-term demographic impacts resulting from the upstream and downstream economic development.

Accommodation/Housing

A number of local authorities indicated that there is more than enough land available for people moving to the project area to build homes, however, there is a shortage of available rental properties. A possible impact of population growth due to the Project would be an increase in rental prices as the rental market tightens further, resulting in low income families being forced out of the private rental market. This would be compounded by both the shortage of public housing and the movement of people to Rockhampton because of its availability of low rental housing.

Additional demands on the housing market to increase rental and house prices can also have some beneficial effects in terms of increasing wealth and stimulating investment back into the housing market. The direct demands on housing in the Rockhampton region from the Project are anticipated to be 350 rental and sale houses needed for the construction stage and 200 sale or new houses needed for operation of the Project. If the total construction period extends beyond a consecutive two years (Stage 1 only), then a higher proportion of construction workers are expected to settle in the Rockhampton area, which will generate a greater demographic and economic impact.

Non-residential construction workers are expected to be housed in a suitably located accommodation village at Gracemere. An advantage of this arrangement is that impacts created by demands for housing in the region can be minimised. A disadvantage is that a grouped accommodation arrangement tends to limit the economic impact of those workers on the local economy. There will be some direct stimulus for businesses providing food and cleaning services, but most disposable income will flow back to the area of residence. Where possible, the proponents will provide input into any housing plans or initiatives by the Local or State Government to assist in developing solutions to housing shortages in the region affected by the Project.

ES2.11 Economic Environment

The likely direct and indirect economic impact of the construction and operation of the Project was measured on the local (the Rockhampton Region), regional (the Fitzroy Statistical Division) and State (Queensland) levels. Overall, the direct and indirect economic impacts of both the construction and operational stages of the Project will be large and positive at the local, regional and state level, reflecting the opportunities available to the relevant communities and economies to generate flow-on effects. There will also be further positive impacts on national and international economies.

The direct economic impacts of the construction stage of the project at the local, regional and state level will be large and positive due to the: level of capital expenditure involved (\$1.77 billion); number of construction jobs created (an average of 1,200 jobs in the first year of construction); length of the construction period (four years); and demand for supplies and services from local businesses. The direct economic impacts of the operating stage of the project at the local, regional and state level will be large and positive, due to the: level of annual revenue involved (approximately \$798 million per annum); level of annual operating expenditure involved (\$493 million per annum); number of operating jobs created (up to 145 new positions); and payment of taxes, dividends and profits.

The direct impact of the project will also stimulate a range of flow-on effects in the local, regional and state economies. These were estimated using Input-Output Analysis to predict the full range of initial, direct, indirect and induced economic impacts from the Project on resource sectors, to provide an assessment of the total economic impacts. In the first (and largest) year of construction, the total impact in the Fitzroy region is expected to be \$1,403 million of output, \$171 million of income, and an additional 4,256 jobs created. At the state level, the total impacts of the first year of construction are expected to be \$1,903 million of output, \$377 million of income, and an additional 7,216 jobs created. When the Project is operational, the total impact for the Rockhampton region is expected to be \$994 million of output per year, \$55 million of income per year, and 1,143 jobs. The total impact on the Fitzroy region is expected to

be \$1,678 million in output per year, \$160 million in income per year, and an additional 2,739 jobs. The total impact on Queensland is expected to be \$1,974 million in output per year, \$235 million in income per year and an additional 4,639 jobs.

ES2.12 Transport Infrastructure

Road

The Project will primarily generate private vehicle traffic relating to operation and construction, with low volumes of heavy vehicle traffic during the operational stages of the facility. All vehicle access to the project site will be via Power Station Road. Project traffic generation has been conservatively estimated. Light vehicle traffic has been assumed to be proportional to anticipated staff numbers at the Project and has been distributed and assigned to the network in accordance to the probable residence of employees during construction and operation. Construction is proposed to proceed from 6:00 am to 6:00 pm, six days a week, and therefore, the planned transport of construction workers by bus to and from the site is unlikely to coincide with the operation of school bus services.

The Gladstone Road/Port Curtis Road/Lower Dawson Road intersection in Rockhampton will exceed the desirable Degree of Saturation (DOS) under background growth with or without the Project. The Project will not add traffic to the critical movement at the intersection. The addition of project-related traffic to the roundabout located at the intersection of the Bruce Highway and Capricorn Highway (Yeppen Roundabout) will cause an increase in the DOS of the intersection. Additional project traffic will bring forward the year at which the intersection would exceed the desirable DOS.

In terms of pavement impact, the Project will increase the annual Equivalent Standard Axle (ESA) loading on a number of links between Power Station Road and the Bruce Highway. The increase in heavy vehicle traffic is attributed to the transport of materials for the construction of Stage 1 and Stage 2 of the Project. During the operational phase, heavy vehicle traffic will decrease significantly from the construction phases, although the operational ESA loading will be greater than 5%. As such, significant pavement impacts on the road network will occur during construction, with low impact during operation.

Rail

Stage 1 of the Coke Plant will produce up to 1.6 Mtpa of coke for export, requiring approximately 2.5 Mtpa of coking coal, assumed to be sourced from the Bowen Basin coal fields. Stage 2 of the Project will produce up to 3.2 Mtpa of coke for export, requiring approximately 5 Mtpa of wet Bowen Basin coking coal. This coal is proposed to be railed from mines within the Blackwater Rail System to the SPS rail loop. The transport of approximately 2.5 Mtpa (Stage 1) of coking coal to the unloading facility at the project site will result in an additional eight coal trains per week operating on the Blackwater rail corridor. A new eastern angle connection from the SPS rail loop to the central Blackwater line is proposed to be constructed. This connection will allow the transportation of approximately 1.6 Mtpa of product coke from the loading facility on the SPS rail loop to the Fisherman's Landing unloading facility and is estimated to require approximately eight loaded trains per week or 16 train movements. It is anticipated that for both stages of operation, mainline rail infrastructure enhancements will be required to

provide rail infrastructure capacity in the Blackwater system for the required tonnages to be transported to Stanwell and also for product to be transported to Fisherman's Landing. Duplication of some sections of the existing rail loops at Stanwell and Fisherman's Landing is expected to be required for Stage 2 operations. This will enable simultaneous usage by QCE and adjacent facilities.

Port Facility

A coke unloader will be constructed on a second spur line of the Cement Australia rail loop to unload the coke railed from the project site at Stanwell. Coke will be discharged from trains and conveyed to a stockpile area, or will report directly to a ship if docked. Berth 3 at Fisherman's Landing will be developed for outloading coke and the elevated wharf conveyor will direct coke to a shiploader, designed to load Panamax and Post Panamax vessels (with loading capacity of 45,000 t). For Stage 1 operations it is anticipated that 35 ships per year, or approximately 3 ships per month, would be required for the export of 1.6 Mtpa of coke to export markets. Stage 2 coke export will require approximately 70 ships per year or 6 ships per month.

ES2.13 Health and Safety

The health and safety risks that 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, were examined. The focus was primarily on health and safety risks from hazard events or abnormal events as opposed to normal operating conditions. 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 Project 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. A detailed construction safety study and hazard identification process will be performed prior to the commencement of site works leading to the development of a site safety plan. 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 Coke Plant and Power Plant 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.

ES2.14 Environmental Management Plan

Potential environmental issues requiring management and monitoring have been identified during the environmental impact assessment process. The draft Environmental Management Plan (EMP) integrates the environmental management commitments made throughout the EIS. The EMP relates to the construction and operational phases of the Project and will be used as the basis for preparation of the final EMPs prior to commencement of these phases. The EMP will be a dynamic document that will be

amended as necessary, including incorporating conditions imposed as part of any relevant approvals or permits under environmental legislation.

The purpose of the EMP is to identify potential environmental issues and mitigation measures together with corrective actions if an undesirable impact or unforeseen level of impact occurs. Performance against the EMP will be assessed by way of regular environmental audits during construction and operations. Performance against licence and permit conditions will be audited upon the receipt of monitoring results.

The project Environmental Representatives and Site Managers will be responsible for the day-to-day implementation of the EMP and for ensuring that all principal contractors prepare and implement construction phase EMPs based on the strategic management plans outlined in this EIS. During construction, the Environmental Representatives will prepare regular reports detailing performance against the EMP and provide them to the Site Managers and project management teams. The progress of all environmental activities will be detailed and the results of inspections and monitoring presented. The reports will also detail any corrective actions that are required and report on the results of those that have been implemented. During operations, the Environmental Representatives and Site Managers will be responsible for the overall implementation of the operational phase EMP. The Environmental Representatives will prepare a monthly management report detailing performance against the EMP. Reporting to regulatory authorities will be conducted as required by development licences and permits.

The EMPs will be reviewed and periodically updated, if necessary, to reflect knowledge gained during the detailed design process, construction and the course of operations. Changes to the EMP will be implemented in consultation with the relevant authorities where necessary.

ES3 Conclusion

QCE and SCL will work together for a stronger Central Queensland by value-adding with processes that are environmentally superior on a global basis. The Project will meet its objectives by employing modern technology to produce a high quality coke product, in a cost effective, socially responsible and environmentally friendly manner.

Producing coke at the Project, rather than exporting coal for production of coke outside Australia results in significant economic and social benefits at the local, regional, State and national levels. In addition, it value-adds to Queensland's natural resources sector. The Project also benefits the environment by: offsetting greenhouse gas emissions through the generation of electricity from waste energy and reducing energy required for transport; employing processes that reduce air emissions and allow for water re-use/recycling; and reducing the reliance on environmentally unacceptable technologies used in other parts of the world. Minimal environmental impacts of the project are expected and the proponents will implement mitigation measures through project design, operation and management to avoid or minimise these where possible.

Overall, the Project proceeding is justifiable taking into account potential economic, social and environmental impacts. Should the Project not proceed, the substantial benefits within the region as discussed above would not be realised.