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# Executive Summary

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## **Introduction**

Aldoga Aluminium Smelter Pty Ltd (AAS) proposes to establish the world's most modern greenfield aluminium smelter within the Aldoga Precinct, in the Gladstone State Development Area (GSDA) in Central Queensland. The smelter will produce approximately 560,000 tonnes per year or 2% of world production for export. The GSDA Development Scheme produced by the Department of State Development (DSD) identified the suitability of the Aldoga Precinct within the GSDA for the siting of an aluminium smelter.

This Environmental Impact Statement (EIS) has been prepared for the proposal pursuant to Section 32 of the (Queensland) *State Development and Public Works Organisation (SDPWO) Act 1971*. The project has been declared by the Coordinator-General as a significant project pursuant to Section 26 of the SDPWO Act. The project has been accorded major project facilitation status by the Commonwealth Government.

The EIS has also been prepared to satisfy the requirements of the (Commonwealth) *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* as the project is a controlled action within the EPBC Act. The controlling provisions are Sections 12 and 15A (World Heritage). Pursuant to Section 87 of the EPBC Act, the assessment of the project for the purposes of the EPBC Act will follow the EIS process of the SDPWO as accredited by the Commonwealth Minister for the Environment and Heritage.

Terms of Reference for the EIS were issued by DSD in May 2001.

The EIS was prepared by Connell Wagner with the assistance of sub-consultants specialising in noise, air quality, cultural heritage, risk assessment and social impact.

## **Title of the Project**

The project title is the Aldoga Aluminium Smelter.

## **Name and Address of Proponent**

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## **Need for the Project**

The development of the smelter at the GSDA is a project of national significance. It will make a major contribution to Australia's balance of payments and once operational, the smelter will expand the present output capacity of Australia's aluminium industry by 29%. The annual export value of the smelter's production will be \$1.5 billion at current world aluminium prices. It will directly employ approximately 900 people in operation. Construction of the smelter is expected to cost AUS\$3.8 billion.

A study undertaken for the Australian Aluminium Council (ACIL 2000) shows that 'the aluminium industry as a whole makes a major contribution to the Australian economy in terms of value added production, employment and business opportunities for other Australian firms. Its contribution to regional economies in Australia is very pronounced. There is considerable potential for the industry to grow further in the future in response to growing metals demand in the Asian region and global growth in the demand for aluminium'. The Aluminium Industry Investment Brief (Minerals Taskforce 2000) predicts that aluminium demand will increase at the rate of 2-3 percent per year. The increase in aluminium demand in South East Asia is forecast to be higher at 5 percent per year. At these rates, demand for primary aluminium will increase at approximately 350kt per year.

The Gladstone area is well suited for the location of an aluminium smelter, as the area is a recognised 'global hub' for the aluminium based industry. It currently hosts the world's largest alumina refinery (QAL) and the world's 4<sup>th</sup> largest smelter (Boyne Smelter) (GEIDB 2000). Gladstone is an excellent location for the smelter as it has:

- world class port facilities, the Port handles \$3 billion of export revenue per year at present;
- access to energy from local power stations, gas via existing/proposed pipelines and coal;
- a proactive and united community that supports industrial development;
- well planned infrastructure;
- a work force with strong skills base and proven performance;
- land set aside for major industrial development by the Queensland Government;
- an existing industry which provides advantages in logistics;
- competitively priced electrical energy and the ability to enter into long term supply contracts;
- access to high quality alumina;
- good access to the growing markets in South East Asia;
- competitive capital and operating costs; and
- skilled labour that has demonstrated an ability to operate, maintain and improve the sophisticated processes and equipment required by modern large industry.

### **The Proposed Development**

AAS proposes to construct a greenfield aluminium smelter producing approximately 560,000 tonnes per year on a 288ha site located on land owned by the Minister for Industrial Development of Queensland in the Aldoga Precinct of the GSDA, within the boundaries of Calliope Shire Council. With an investment of around \$3.8 billion the project represents one of the largest industrial developments undertaken in Queensland. The proposed smelter will consist of the following principal components:

- Raw materials and products loading and unloading infrastructure;
- Raw materials and products transportation;
- Raw materials storage;
- Carbon anode production facilities;
- Transformers;
- Aluminium reduction cells; and
- Metal casting facilities.

New port infrastructure will be provided by the Gladstone Port Authority (GPA) at Fishermans Landing Wharf and Auckland Point to enable the import of raw products such as alumina and petroleum coke, and the export of aluminium ingots. The provision of a sewage treatment plant infrastructure to service the GSDA, including the smelter, will be facilitated by the DSD. Environmental investigations relating to the development of these facilities/infrastructure will be conducted outside this EIS process.

Preferred transport of materials will be via rail. It is proposed that rail infrastructure will be provided to the site.

Power transmission to the site will be provided by Powerlink Queensland, which has planned and designed a power grid for the GSDA. The EIS for this transmission line has been approved.

It is anticipated that construction of the smelter will commence within the 1<sup>st</sup> Quarter 2003 with a peak construction workforce of 3,350 people. Construction will be progressive with first metal produced by 2<sup>nd</sup> Quarter 2004 and full operational capacity achieved by 1<sup>st</sup> Quarter 2007. Once fully operational, the smelter will produce aluminium with an annual export value of \$1.5 billion and will directly employ 900 people.

The life expectancy of the smelter is envisaged to be 30 years. Strict environmental safeguards and standards of operation have been considered throughout all stages of the project development.

When fully operational, the main inputs to the smelter will be:

Alumina	1,081,811t/yr
Petroleum coke	207,634t/yr
Coal tar pitch	57,141t/yr

Other inputs include aluminium fluoride, cathode blocks, refractory bricks, collector bars and cryolite.

The plant will produce 560,185 tonnes per annum of aluminium in the form of ingots.

Suppliers of world's best technology with a proven track record in the aluminium smelting industry have been selected to provide major components for the proposed smelter. These include:

- VAMI, the Russian National Aluminium-Magnesium Institute (the Russian equivalent to CSIRO) founded in 1931, has extensive expertise in the research, development and engineering of projects in the light metals industry. Over 40 industrial facilities worldwide utilising VAMI technology are currently operational. The reduction cell technology will be supplied by VAMI.
- ALSTOM Power Norway (incorporating Flakt) is the world technology leader for air pollution control and fluoride recovery systems for the aluminium industry, having designed, constructed and installed over 100 dry fume treatment plants. ALSTOM Power Norway will supply air pollution control technology for the reduction cells and anode baking facility.

The project proponent, AAS places prime importance on the environmental and social aspects of the project. The project will utilise world's best practice in technology, design and equipment to set new benchmarks for production efficiency and environmental performance.

AAS will partner with government agencies, local authorities, training and service providers and community groups to deliver major initiatives in education and training, local industry policy, ecologically sustainable development, indigenous business, employment and training, research and development and accommodation.

AAS has initiated the following plans and policies:

- Ecological Sustainable Development Plan;
- Indigenous Community Partnership;
- Human Resource Management Strategy;

- Greenhouse Offset Plan;
- Community Consultation Strategy
- Accommodation Strategy; and
- Australian Industry Participation Plan and the Queensland Industry Participants Plan.

The Central Queensland University's PELM Centre and AAS are working towards arrangements for training and education, international technology transfer and research and development opportunities.

### **Project Site**

The proposed smelter will be located on a 288ha site on the Aldoga Precinct within the GSDA, 20km by road from Gladstone. The site is located with access to water, electricity and transport corridors. The availability of land, the deep water port, the existing infrastructure and access to raw materials were all key factors in selection of the site.

The GSDA was declared a State Development Area (SDA) under the SDPWO in December 1997. The site is in freehold tenure and is currently owned by the Minister for Industrial Development of Queensland.

The site topography varies with site levels ranging from RL 50m to RL 90m AHD. The geology of the area consists of sedimentary rocks and alluvium with good engineering properties. The site is within the upper catchment of Larcom Creek.

The site contains a variety of vegetation types which are typically found throughout the region. No plant species listed as "Endangered, Vulnerable or Rare" under Commonwealth or State legislation are present onsite.

The site is well located in relation to existing and proposed road, rail, water and energy infrastructure.

### **Project Alternatives**

Project alternatives considered during the feasibility studies and design phases of the project included:

- Locations for the smelter, including sites in Indonesia and New South Wales;
- Technology suppliers for major process components, for example reduction cells and air emissions treatment technology;
- Transportation and materials handling, including utilising rail, road and conveyors to transport raw materials to the site; and
- Layout of site buildings.

The alternatives were assessed on a range of criteria during the pre-feasibility studies. The preferred options were selected on the basis of environmental impacts, support of the community and government, access to guaranteed electricity supply and perceived economic advantage.

### **EIS Findings**

The findings of the EIS are:

- The aluminium smelter is an appropriate use for the land, being located within the GSDA which is specifically dedicated for a major national industry of this type and scale;
- The site is suitable for the proposal from a geotechnical aspect. Extensive earthworks are required to develop the site and erosion and sedimentation control measures will need to be carefully employed to ensure that erosion is minimised;

- The impact of the smelter on flooding outside of the development site can be mitigated. The nominal ground level for the smelter is above 100 year ARI flood levels within the site. Stormwater runoff from the site will be detained during construction and operation to ensure that downstream flooding is not worsened. A diversion channel will be constructed around the northern corner of the smelter to maintain flowpaths with vegetation preserved where possible;
- The construction and operational impacts of the proposed development on surface water quality will be minimal due to the implementation of appropriate sediment and erosion control, treatment and design of materials handling and storage facilities. The impact on water quality from process waters will be minimal as the majority of water will be reused onsite in evaporative cooling systems;
- The proposed design level of the development at 65m AHD is not anticipated to intersect with permanent aquifers and no impacts are anticipated on up gradient or down gradient groundwater users. The project will not extract groundwater from the aquifer;
- The impact on the freshwater, estuarine and marine receiving environments from stormwater discharges from the smelter site will be minimal due to the implementation of appropriate onsite stormwater treatment systems and storage facilities;
- The construction of the smelter will result in the clearing of 100.6ha of vegetation. A small area (approximately 2ha) of *Eucalyptus tereticornis* Open Forest Woodland with Grassland Understorey is listed "Of Concern" under the *Vegetation Management Act 1999*. However no significant flora species are located on site. The main impact on fauna is the removal of habitat, however the majority of the fauna species found on site are common and widespread within the region;
- The impact of the proposal on the local aquatic environment both onsite and downstream will be minimal. Measures to protect water quality, including the use of a constructed wetland to treat stormwater, will further reduce the risk of adverse impacts on aquatic biota;
- The smelter site is located in the upper catchment of Larcom Creek, approximately 77km upstream of Port Curtis. Negligible impacts on the natural and heritage values of the Great Barrier Reef World Heritage Area are predicted;
- The proposal is unlikely to have any major impacts on local or regional air quality or to adversely affect human health or status of pollution-sensitive vegetation, either locally or on nearby terrain. Monitoring and management procedures should be capable of identifying and addressing any unforeseen consequences;
- It is anticipated that compliance with noise criteria can be achieved through appropriate noise attenuation measures for residences in the vicinity of the GSDA and those nearest to port facilities at Fishermans Landing and Auckland Point;

- The estimated workforce accommodation requirements for the peak construction and initial operations period will not be met by the existing available accommodation supply. An Accommodation Strategy is proposed to house some 1,200-1,700 employees. The Accommodation Strategy, together with the successful implementation of an outsourcing strategy for manufacturing plant components during construction will ensure the maintenance of an adequate housing supply to meet likely demands;
- Due to the size and scale of the project, visual impacts will be significant but will be reduced by a 150m wide buffer along the Port Curtis Road Way frontage;
- The major economic impacts which will accrue to Queensland from the three year construction period will be an increase in value added of \$926 million and approximately 6,467 full time jobs. The economic impacts over the 30 year operational life of the smelter are significant with value added increases on an annual basis of \$588 million and direct and flow on employment of approximately 5,360 full time jobs;
- Cultural heritage investigations for the GSDA and this project have confirmed that the potential exists for archaeological sites to be present. The existing Agreement and the Protocols between Traditional Owner Land Claimant Groups, and the Minister for Industrial Development of Queensland and the Gladstone Economic and Industry Development Board provide for cultural heritage management within the site;
- The capacity of existing and planned road, rail, water, gas and energy infrastructure is generally adequate for the project. New control treatments will be required at a small number of key intersections to safely cater for additional movements. Transportation of dangerous goods will meet legislative requirements to minimise potential impacts. Rail transport for goods is the preferred mode;
- The smelter has been designed with waste minimisation, reuse and cleaner production principles and philosophies in mind. As a result, the smelter will reuse wastes where possible or seek to engage waste management contractors which will reuse, reprocess and/or recycle wastes generated. Significant quantities of spent cell lining are not expected to be generated for four to five years, during which time technology options will be investigated for the preferred method of treatment; and
- The preliminary risk assessment of the smelter has identified no hazardous events which would project damaging energies outside of the plant boundary. Events identified for offsite facilities are estimated to occur at extremely low incident frequencies and/or not to significant levels of consequence. Management of hazardous event scenarios and risks in general can be adequately managed to acceptable levels.

### **Conclusion**

With the effective implementation of the Environmental Management Plan during detailed design, construction planning, construction and operation, the project can proceed with manageable environmental impacts, given the location of the plant within the GSDA.

Community impacts are anticipated to be minimised and the project will generate significant economic benefits for the Gladstone district, the Central Queensland region, the State of Queensland and Australia.