1.0 Introduction

1.1 Overview

The proponent for this project is Alcan Gove Pty Limited (Alcan Gove), the operator of the bauxite mine and alumina refinery at Gove. Alcan Gove is wholly owned by Alcan Inc (Alcan).

The operations are located on the Gove Peninsula in the north-east of Arnhem Land. Detailed exploration of the area began in 1965 and a joint venture agreement was signed in 1969. Alumina production commenced in 1972. Since then, over 147 million tonnes (Mt) of bauxite have been mined and 37 Mt of alumina have been produced and exported. The operations currently employ approximately 1,100 people who live in Nhulunbuy, a town with a population of 3,800 which was built to support the project and is mainly populated by company personnel.

Alcan is planning to expand the existing alumina refinery at Gove in the Northern Territory. This Draft Environmental Impact Statement (EIS) has been prepared to outline how the impact on the environment of the construction and operation of the expanded refinery will be managed.

The current Alcan Gove operations consist of a bauxite mine and a refinery which extracts alumina from the bauxite. Alumina is an intermediate product in the manufacture of aluminium. The alumina from Gove is exported from the refinery to aluminium smelters around the world.

The refinery's current production of alumina is 1.9 million tonnes per year (Mt/y). An optimisation program is currently being undertaken which will increase its production to 2.0 Mt/y by improving the efficiency of existing equipment and technology improvement programs. Production is achieved through two parallel refining process trains termed Stages 1 and 2. The proposed $1.5 billion expansion will add a third parallel process stage (Third Stage Expansion). This will increase the refinery's capacity from 2.0 Mt/y to approximately 3.5 Mt/y by mid 2007, with potential for further optimisation to reach 3.8 Mt/y in the future.

The primary project objective is to maximise value from the Gove bauxite resource on an environmentally sustainable basis. This will be achieved within a framework of providing a significant contribution to the economic development of the Northern Territory and Australia. Specific objectives include:

- Providing a timely response to market conditions and increasing global demand for alumina;
- Securing a competitive and sustainable future for the Alcan Gove operation through economies of scale;
- Improving the environmental performance of the Alcan Gove operation through increased efficiencies achieved by upgraded processing and operational practices; and
- Providing additional benefits to the community through direct and indirect employment and training and business opportunities including actively developing sustainable indigenous business and investment.

The expansion project will include the installation of new plant and equipment to increase the refinery's existing capacity and to improve the efficiency of some existing facilities. This will take place within the existing plant boundaries.

1.2 EIS Objective

The principal objective of the Draft EIS is to identify and assess the environmental and related impacts that could occur as a result of the construction of the third stage expansion and the operation of the expanded refinery. Impacts

are considered for relevant aspects of the natural, social, and economic environment. The Draft EIS also outlines how these impacts will be managed.

The Draft EIS has been prepared to provide:

- A source of information from which individuals and groups may gain an understanding of the proposal, the need for the project, the alternatives, the environment that it would affect, the impacts that may occur, and the measures taken to minimise those impacts;
- A basis for public consultation and informed comment on the project; and
- A framework against which decision-makers can assess the environmental aspects of the project and have input to the environmental management and monitoring programs.

1.3 Proponent Details

The proponent for this project is Alcan Gove Pty Limited which is wholly owned by Alcan Inc (Alcan).

Alcan is a multinational, market-driven company and global leader in aluminium and speciality packaging. Aluminium is often described as the 'sustainable metal' due to its light weight, high strength to weight ratio, resistance to corrosion and ease of recycling.

Alcan's recent acquisition of Pechiney reinforces Alcan's position as a world-leading aluminium company and a global leader in packaging. As one of the largest aluminium companies in the world, Alcan operates in 63 countries and employs more than 88,000 people.

Alcan's shares are traded internationally and are listed on the New York, Toronto, London, Paris, Frankfurt and Swiss stock exchanges. Further details can be obtained from the Alcan website www.alcan.com or the Alcan Gove website www.alcangove.com.au

Australia forms an important part of Alcan's business where the focus is on bauxite, alumina and aluminium production. Table 1.3.1 summarises Alcan's Australian assets.

Table 1.3.1
Alcan's Australian Assets

Asset	Total Capacity	% Shareholding
Gove and North Queensland bauxite resources	>900 million tonnes	100%
Gove alumina refinery	2.0 Mt alumina/year	100%
QAL alumina refinery	3.7 Mt alumina/year	41.4%
Tomago aluminium smelter	0.475 Mt aluminium/year	51.55%

In recent years, Alcan has strengthened its investment in Australia. This has included an increased shareholding in Gove, QAL and the Tomago smelter. Since 2000, Alcan's Australian operations have moved from fourth position to first position for supply of alumina within Alcan.

All Alcan sites, including Alcan Gove, operate under an environment, health and safety system called EHS First which requires excellence in environmental, health and safety performance through continual improvement of awareness, understanding and performance.

Alcan has a lengthy history of working alongside stakeholders in pursuit of common goals. From product stewardship and employee health and safety to improving systems and living in harmony with neighbours and the environment, Alcan is committed to sustainable, profitable growth.

For general enquiries regarding this EIS contact ph 1800 199 283. Other contacts are as follows:

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1.4 Project

The title of the project is Alcan Gove Expansion Project.

1.4.1 Current Operations

The current operations consist of the following main components:

- Mine and overland conveyor;
- Refinery;
- Residue disposal; and
- Port.

Bauxite is mined by a truck and loader operation from a laterite deposit. At the mine the bauxite is crushed and conveyed to the refinery.

At the refinery some of the unprocessed bauxite is delivered to export ships but most of it is processed in the refinery. Some of the refinery's production is hydrated alumina but the majority of the production is calcined to produce alumina.

Refinery wastes consisting mainly of alkaline bauxite residue are disposed of in a dedicated disposal area.

A port operation supports the entire Alcan Gove site having unloading facilities to receive bulk materials to support the mine and refinery operations. The major imports are fuel oil and caustic soda. The major materials despatched from the port are bauxite and alumina. The majority of all product shipped is exported to overseas ports.

Accommodation is provided in Nhulunbuy township for the workforce. Most people movement into and out of Nhulunbuy is by commercial aircraft that use Gove Airport. During the dry season, Nhulunbuy may also be accessed by road via Katherine.

1.4.2 Proposed Expanded Operations

The Alcan Gove expansion project includes the following:

- Third Stage Expansion. Installation of additional plant and equipment to increase refinery capacity. Mine, residue disposal, port and infrastructure services will be augmented to meet the demands of the additional refinery capacity.

- Liquor Purification. Caustic soda is one of the key raw materials used in the refining of bauxite to alumina. Liquor is caustic soda in solution. Liquor purification is a process that purifies liquor to allow greater recovery of caustic soda for reuse.
- Waste Water Inventory Reduction Project. The volume of waste water stored at the residue disposal area will be reduced to:
  - prevent overflow; and
  - increase the residue storage capacity of the existing disposal area.

  This project encompasses a range of operational controls and improvements to existing processes. This will include increasing the rate of waste water treatment by neutralisation with seawater enabling discharge to the marine environment.
- Gas Conversion. Alcan has entered into a Heads of Agreement for the supply of natural gas to the refinery. The gas field development and pipeline is the subject of a separate EIS. In the event that supply of gas is delayed, the refinery will use fuel oil in the interim and implement a strategy to switch to lower sulfur fuel oil to minimise any potential impact during times when winds blow in the direction of populated areas

All new refinery plant and equipment will be located within the footprint of the existing operations and there will be no requirement to use any land outside the existing lease areas.

The expanded refinery will have a nominal period of operation of 50 years.

Alcan has a continuous improvement program that will enable further increases in production efficiencies and environmental improvements. Over the years this may result in the total refinery production increasing to 3.8 Mt/y. This Draft EIS has assessed the environmental impacts of the potential refinery capacity of 3.8 Mt/y.

1.5 Project Schedule

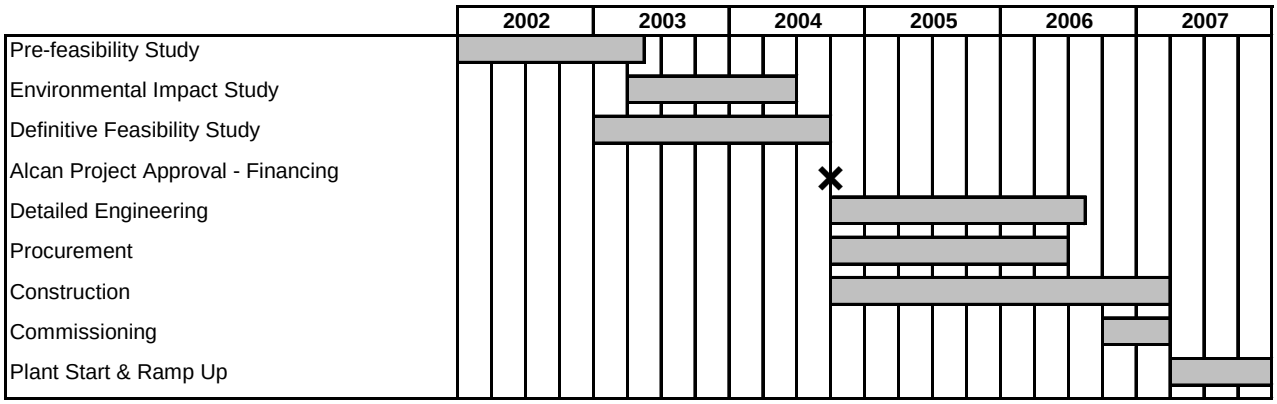
In 2001-2002, Alcan undertook a pre-feasibility study to examine the potential to expand the refinery and to obtain an initial indication of the nature of the expansion and its likely cost. Based on the positive results from the pre-feasibility study, Alcan then commenced a Definitive Feasibility Study in 2003. The objective of this study is to confirm the project's feasibility and to obtain a capital cost estimate of +/- 10%. This study is due for completion in June 2004 at which time the project will be submitted to the Alcan Board for approval.

The project's EIS process is running in parallel with the Definitive Feasibility Study with the objective of having the environmental approval issues resolved by the time the project is submitted to the Alcan Board for approval in mid 2004.

Following approval by the Alcan Board, the detailed engineering and procurement phases will commence. Construction could commence in the second half of 2004. It is scheduled to commission the expanded refinery in mid 2007.

An overview of the project schedule is given in Figure 1.5.1

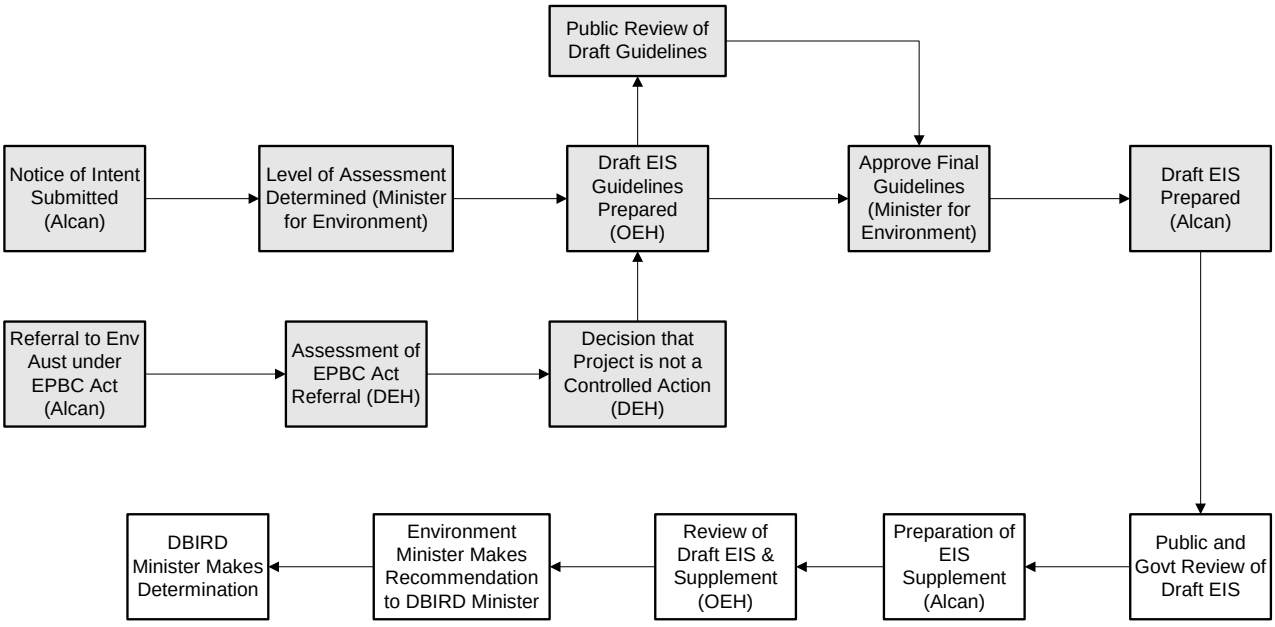
Figure 1.5.1
Project Schedule



1.6 EIS Approval Process

The EIS approval process that applies to this project is summarised in Figure 1.6.1.

Figure 1.6.1
EIS Process



= *Tasks completed to date*

Note:
OEH – Northern Territory Office of Environment and Heritage
DEH – Commonwealth Government's Department of Environment and Heritage
DBIRD – Northern Territory Department of Business Industry and Resource Development

In accordance with the requirements of the *Environmental Assessment Act (1982),* Alcan Gove prepared a Notice of Intent (NOI) to advise the Northern Territory Government of its planning to undertake the expansion. The NOI was submitted to the Northern Territory's Office of Environment and Heritage (OEH) in March 2003. Based on the NOI which provided an overview of the proposed project, the OEH determined that the project required the preparation of an EIS and consequently draft EIS Guidelines were prepared. The NOI and the draft Guidelines were then advertised and made available for public comment. Following the public review period, the OEH prepared the final EIS Guidelines which, after ministerial approval, were issued to Alcan in May 2003.

This Draft EIS has been prepared in accordance with the final Guidelines, a copy of which is given in Appendix A.1.

The Draft EIS has now been released for review to enable the public and government agencies to comment on the Alcan Gove proposal. Notification of the display centres, submission procedures and purchasing details have been advertised in local newspapers.

Any submissions received by the close of the public review period will be addressed in an EIS Supplement which will be prepared by Alcan Gove and submitted to the OEH. The Draft EIS together with the Supplement will constitute the Final EIS which will be reviewed by the OEH. Following this review, the Minister for Environment will make a recommendation to the Minister for Business, Industry and Resource Development regarding the project's environmental acceptability and its compliance with the requirements of the *Environmental Assessment Act (1982).* Because the project is a mining related activity, approval for the expansion is given by the Minister for Business, Industry and Resource Development under the requirements of the *Mining Management Act (2001).*

In accordance with the requirements of the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act (1999),* a referral for the project was submitted by Alcan Gove to Environment Australia in May 2003. In June 2003, Environment Australia advised that the project is not a controlled action under the Act. Consequently, final approval of the EIS is the sole responsibility of the Northern Territory Government. A copy of the Commonwealth Government's decision is given in Appendix A.2.

1.7 Planning Issues and Statutory Requirements

1.7.1 Statutory Requirements

The main statutory requirements for the Alcan Gove operations are discussed below.

1.7.1.1 Mining (Gove Peninsula Nabalco Agreement) Act (1968)

This legislation enabled the Gove Operations to be established and is the instrument by which Alcan currently pays about $9 million per year in royalties. The Special Minerals and Special Purpose Leases were granted pursuant to this Agreement.

1.7.1.2 Special Minerals and Special Purpose Leases

Operations at Gove take place on a Special Minerals Lease (SML 11) and several Special Purpose Leases (SPLs) administered by the Northern Territory Government. Each lease has its own set of conditions. Further details of these leases are given in Section 3.2.

1.7.1.3 Mining Management Act and Regulations (2001)

The *Mining Management Act (2001)* came into force on 1 January 2002 and applies to this project. Alcan Gove achieves compliance with this legislation through an ongoing integrated approach to all business management activities (including further development and integration of Environment, Health and Safety Systems), a commitment to integrated mine management planning, transparent communications with stakeholders, and continuous improvement in all of these areas. An Authorisation to Operate the mine and refinery has been received in accordance with the requirements of the *Mining Management Act (2001).* This Authorisation requires Alcan Gove to operate in accordance with an approved Mining Management Plan that is reviewed and updated on an annual basis or when significant changes are proposed to existing approved operations.

Approval for the proposed refinery expansion will be sought under this Act and, if granted, a revised Authorisation to Operate will be issued. Approval will be granted after consideration of a recommendation from the Minister for the Environment under the provisions of the *Environmental Assessment Act (1982).*

1.7.1.4 Water Act (1992)

A Water Extraction Licence under the provisions of the *Water Act* applies to the use of groundwater as a water supply. The licence requires triennial reporting of aquifer status.

A Waste Water Discharge Licence under the provisions of the *Water Act* was first issued on 31 March 1998, after the declaration of Beneficial Uses for Melville Bay on 17 March 1998. These Beneficial Uses are "Protection of Aquatic Ecosystems and Recreation and Aesthetics". The licence is administered by the Department of Infrastructure Planning and Environment.

The Licence for the Gove Operations was renewed in 1999, and in June 2003. The licence specifies monitoring and reporting requirements as a basis for determining the impact of discharges on the marine environment.

1.7.1.5 Waste Management and Pollution Control Act (WMPC)

The *Waste Management and Pollution Control Act* came into force on 1 February 1999. Measures to ensure compliance with this Act are incorporated into Alcan Gove's EHS management system.

1.7.1.6 Environmental Assessment Act (1982)

The *Environmental Assessment Act (1982)* and the *Environmental Assessment Administrative Procedures (1984),* under which the Act is implemented, form the basis of the Northern Territory environmental assessment process. The primary purpose of the assessment process is to provide for appropriate examination of proposed new projects and significant changes to existing projects that may cause significant environmental impact.

This EIS has been prepared in accordance with the requirements of this Act.

1.7.2 Non-Statutory Commitments

1.7.2.1 Alcan's Environmental Commitment

Alcan's approach to environmental management is governed by an overriding global focus on sustainability which includes:

- Improving performance

  - increasing the social and economic benefits, reducing the environmental impacts of activities, and becoming a more profitable and competitive organisation.

- Strengthening relationships and partnerships
  - recognising and working closely with stakeholders.
- Demonstrating integrity and commitment
  - maintaining high standards and values in day-to-day operations.

Alcan Gove has adopted a number of initiatives to support the global sustainability commitment. These are:

- An Environmental, Health and Safety (EHS) policy that advocates excellence in environmental performance through continuous improvement of awareness, understanding and performance. This policy is the cornerstone of Alcan's global EHS management system known as EHS First.
- Certification to ISO14001, an internationally recognised standard for environmental management systems (currently awaiting official notification following a successful certification audit).
- Compliance with a company-wide initiative for reduction in greenhouse gas emissions (known as the TARGET program).
- Being a signatory to the Australian Government's Greenhouse Challenge Program and submission of annual reports to the Australian Greenhouse Office on performance against emission management targets.
- Continuous improvement principles that are rooted in process improvements and extend into the environmental area.
- Annual public reporting on the environmental, health and safety performance of its operations through its Environment, Health, Safety and Community Report.

1.7.2.2 Australian Minerals Industry Environmental Code of Management

Alcan Gove is a signatory to the Minerals Industry Code for Environmental Management. Key components of the Code include a requirement to publish an environmental report each year, to report annually on compliance to the Code, and to conduct three-yearly independent audits on compliance to the Code. Alcan Gove has met all of these key requirements since signing on to the Code and continues to work towards achieving a high standard for all Code requirements.

1.8 Report Structure

This EIS has the following structure:

VOLUME 1

Executive Summary

Executive Summary	A brief overview of the project, its potential environmental and social effects, and the proposed mitigation strategies

Introduction

Section 1	Introduction to the report outlining its objectives, the proposed project and proponent, and the EIS process
Section 2	Background to the alumina industry and an outline of the project need and benefits

Project Information	
Section 3	Provides details of the current operations
Section 4	Provides details of the proposed expansion project
Section 5	Outlines the project's utility and infrastructure requirements
Section 6	Discusses the alternatives considered
Waste Management	
Section 7	Characterises the refinery's waste streams and discusses their treatment and disposal
Environmental Impacts and Management	
Section 8	Assesses the project's air quality effects and management strategies
Section 9	Assesses the project's greenhouse gas effects and management strategies
Section 10	Assesses the project's noise effects and management strategies
Section 11	Assesses the project's surface water effects and management strategies
Section 12	Assesses the project's groundwater effects and management strategies
Section 13	Assesses the project's marine water effects and management strategies
Section 14	Assesses the project's marine biology effects and management strategies
Section 15	Assesses the project's terrestrial biology effects and management strategies
Section 16	Assesses the project's terrain and soils effects and management strategies
Section 17	Assesses the project's aesthetics effects and management strategies
Section 18	Assesses the project's lighting effects and management strategies
Section 19	Assesses the project's effects on the site's rehabilitation and decommissioning plans
Cultural and Social Impacts and Management	
Section 20	Assesses the project's effects on the area's cultural heritage values
Section 21	Assesses the project's social effects and management strategies
Section 22	Assesses the project's economic effects and management strategies
Section 23	Details the community consultation activities undertaken and summarises the results
Risk Management	
Section 24	Details the project's risk assessment and the proposed risk management strategies
Environmental Management Plan	
Section 25	Outlines the project's strategic environmental management plan
VOLUME 2	
Appendices	Provide additional technical details which support the assessments given in Volume 1