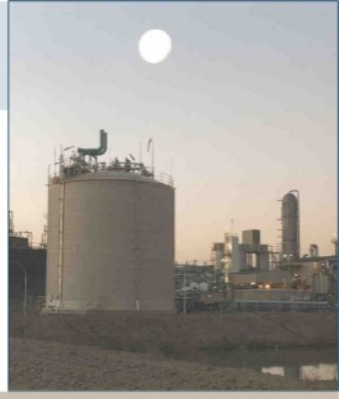
DYNO
Dyno Nobel

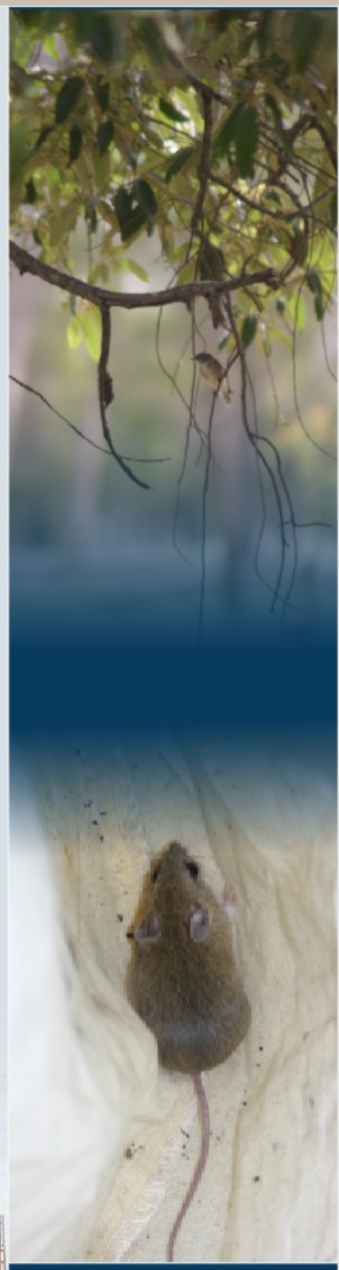
Dyno Nobel Asia Pacific Limited



Moranbah Ammonium Nitrate Plant

Environmental Impact Statement

Volume 2 of 2
Appendices



GHD

August 2006

Queensland Government

The Coordinator-General

Moranbah Ammonium Nitrate Project

Dyno Nobel Asia Pacific Pty Ltd

TERMS OF REFERENCE
FOR AN
ENVIRONMENTAL IMPACT STATEMENT

UNDER PART 4 OF THE QUEENSLAND

STATE DEVELOPMENT AND PUBLIC WORKS ORGANISATION ACT 1971

6 July 2006

Preamble

Project Proponent

The Dyno Nobel Group (DN) is a leading global producer of Ammonium Nitrate (AN) with six plants in North America. DN produces and markets explosives and detonation devices for coal, metals quarry, tunneling, construction and seismic industries. DN's strategy combines growth through incremental expansion of existing operations with acquisitions and the development, commercialisation and marketing of new products.

A consortium of investors led by Macquarie Bank acquired DN's Australasian and North American operations in 2005 for $US1.7 billion. DN was listed on the Australian Stock Exchange on 7 April 2006. DN has over 3,500 employees and 33 manufacturing facilities in the United States, Australia, Canada and Mexico, which have a combined capacity of over a million tons of AN.

DN, together with its joint venture partner CSBP Limited, a subsidiary of Wesfarmers Limited, operate an AN plant at the existing Queensland Nitrates (QNP) production facility at Moura, Queensland.

Project Summary

DN currently provides explosives for many of the mining operations in Central Queensland. To support the provision of explosives, DN is proposing to develop an AN plant in Moranbah. This plant will provide permanent employment for 70 staff for the operation of the facility and, during construction, a peak of up to 400 construction personnel.

DN is seeking to construct and operate an ammonia plant, a nitric acid plant, an AN plant and an emulsion manufacturing plant in the Moranbah area. The combined plant would service the rapidly expanding demand for AN from mining in Queensland and NSW. The current concept is to construct a 350,000 tonnes per annum plant making AN prill (solid) and AN emulsion (viscous liquid). The Project will also include a 15 megawatt electricity generation facility (comprised of several, small, air-cooled, gas-fired generators), located on the main Dyno Nobel site, which will be potentially owned and operated by an independent third party. The generation facility will provide a fully embedded electricity supply (not grid connected).

The Project provides a significant value-adding downstream processing opportunity for the significant coal seam gas reserves in the Moranbah region. With a total capital investment in excess of approximately $500 million, the Project will create significant benefits for the local and regional economy**.**

Further details of the Project are available in the Initial Advice Statement (IAS), a copy of which can be downloaded from the Coordinator-General website at:

www.coordinatorgeneral.qld.gov.au/major_projects/current.shtm

ADMINISTRATIVE DETAILS FOR THESE TERMS OF REFERENCE

The Legislative Framework

The Project was declared to be a "significant project" under Section 26(1)(a) of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act) by the Coordinator-General (CG) on 31 March 2006. Matters considered by the CG in making this declaration included information in an IAS prepared by DN, the level of investment necessary for the Project, employment opportunities provided by the Project, potential impact on the environment, potential effects on relevant infrastructure and the significance of the Project to the region and State. The declaration initiates the statutory environmental impact assessment procedure of Part 4 of this Act, which requires the Proponent to prepare an Environmental Impact Statement (EIS) for the Project.

The CG is responsible for managing the environmental impact assessment process. The CG has invited relevant State and Local Government representatives and authorities to participate in the process as Advisory Agencies. The first step in the impact assessment process is the development of a Terms of Reference (ToR) for the preparation of an EIS. The process involves the formulation of a draft ToR which is made available for public and government agency comment. The CG has regard to all comments received on the Draft ToR in finalising the ToR, which will be presented to DN. This document represents the final version after all comments have been taken into consideration.

This Project is unlikely to trigger the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) unless threatened or endangered fauna species are identified within the Project area. If the Project requires referral under this legislation, the process will be for the specific matter triggered and will go through the 'Assessment on Preliminary Documentation' process under the EPBC Act.

DN will prepare a draft EIS to address the ToR. Once the EIS has been prepared to the satisfaction of the CG, a public notice is advertised in relevant newspapers circulating in the district and the State. The notice will state: where copies of the EIS are available for inspection and how it can be purchased; that submissions may be made to the CG about the EIS; and the submission period. DN may be required to prepare a Supplementary Report to the EIS to address specific matters raised in submissions on the EIS.

At the completion of the EIS phase, the CG will prepare a report evaluating the EIS and other related material, pursuant to Section 35 of SDPWO Act. The CG Report will include an evaluation of the environmental effects of the proposed Project and any related matters. The Report will reach a conclusion about the environmental effects and any associated mitigation measures, taking into account all of the relevant material including: the EIS; all properly made submissions and other submissions accepted by the CG; and any other material the CG considers is relevant to the Project, such as a Supplementary Report to the EIS, comments and advice from Advisory Agencies, technical reports on specific components of the Project and legal advice.

The Project involves development that would require an application for development approval for material change of use and may require an impact assessment under the *Integrated Planning Act 1997* (IPA).[1] Consequently, the CG Report may, under Section 39 of SDPWO Act, state for the assessment manager one or more of the following:

- the conditions that must attach to the development approval;

[1] DLGPSR

- that the development approval must be for part only of the development;
- that the approval must be preliminary approval only.

Alternatively, the CG Report must state for the assessment manager that:

- there are no conditions or requirements for the Project; or
- the application for development approval be refused.

Further, the CG Report must:

- give reasons for the statements (above); and
- be given by the CG to the assessment manager for the application.

Further to the above IPA approvals, other approvals likely to be required include: the *Environmental Protection Act 1994* (EP Act), *Vegetation Management Act 1999* (VMA), *Aboriginal Cultural Heritage Act 2003*, *Dangerous Goods Safety Management Act 2001* (DGSM Act) and the *Transport Infrastructure Act 1994.*

Results of Consultation on these Terms of Reference

Advertisements were placed in the 'Mackay Daily Mercury' and the 'Courier Mail' newspapers on Saturday 29 April 2006 and 'The Central Queensland News' (Emerald) on Wednesday 3 May 2006, inviting public comment on the draft ToR for the Moranbah AN Project. A similar notice was placed on the CG internet site. Hard copies of the draft ToR were also available for viewing from Moranbah Shire Council office.

The period for receipt of submissions closed on 29 May 2006, however late submissions were accepted until 8 June 2006. A total of 21 written submissions were received, including fourteen (14) from Government agencies. Copies of these have been forwarded to DN.

The content of all submissions has been reviewed and considered by CG in finalising the ToR. Amendments to the draft ToR, which have arisen from recommendations made in submissions, are referenced in this document as footnotes.

The following is a list of responses received:

No.	Agency/Individual	Date	Abbreviation used in footnotes
1	Department of Emergency Services	12/05/06	DES
2	BHP Billiton Mitsubishi Alliance	24/05/06	BMA
3	Department of Main Roads	26/05/06	DMR
4	Queensland Health*	29/05/06	QH
5	Department of Local Government, Planning, Sport and Recreation	29/05/06	DLGPSR
6	Environmental Protection Agency	29/05/06	EPA
7	Department of Primary Industries and Fisheries	29/05/06	DPIF
8	Industry Capability Network	29/05/06	ICN

9	Department of Natural Resources, Mines and Water	29/05/06	NRMW
10	Department of Communities	30/05/06	DOC
11	Enertrade	29/05/06	E
12	Department of Housing*	29/05/06	DOH
13	Department of Aboriginal and Torres Strait Islander Policy	31/05/06	DATSIP
14	Anglo Coal	30/05/06	AC
15	Department of Energy	24/05/06	DOE
16	Queensland Transport	02/06/06	QT
17	Belyando Shire Council	04/06/06	BSC
18	Queensland Treasury*	02/06/06	QTreasury
19	Department of Employment and Training	08/06/06	DET
20	GHD	25/05/06	GHD
21	Ms Mallise – local resident	04/06/2006	n/a

* Note: these government agencies indicated that they did not have any comments as an Advisory Agency for the EIS.

For further information about the EIS for this Project, please contact:

Project Manager
Moranbah Ammonium Nitrate Project
Major Projects
The Coordinator-General
PO Box 15009
BRISBANE CITY EAST QLD 4002
Tel: (07) 3225 8770 Fax: (07) 3225 8028
Email: Matthew.Grant@coordinatorgeneral.qld.gov.au

Contents

Abbreviations

The following abbreviations have been used in this document:

ACH Act	*Aboriginal Cultural Heritage Act 2003 (Qld)*
AN	Ammonium Nitrate
CG	The Coordinator-General of the State of Queensland
CHMP	Cultural Heritage Management Plan
DATSIP	Department of Aboriginal and Torres Straight Inlander Policy
DEH	Commonwealth Department of the Environment and Heritage
DET	Department of Employment and Training
DGSM Act	*Dangerous Goods Safety Management Act 2001 (Qld)*
DMR	Queensland Department of Main Roads
DN	Dyno Nobel
DPIF	Queensland Department of Primary Industries and Fisheries
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP Act	*Environmental Protection Act 1994 (Qld)*
EPA	Queensland Environmental Protection Agency
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*
EPPs	Environmental Protection Policies
EPP Air	Environmental Protection (Air) Policy, 1997 Qld
EPP Noise	Environmental Protection (Noise) Policy, 1997 Qld
EPP Waste	Environmental Protection (Waste Management) Policy (2000)
EPP Water	Environmental Protection (Water) Policy, 1997 Qld
GQAL	Good Quality Agricultural Land
HIPAP	Hazardous Industry Planning Advisory Paper
IAS	Initial Advice Statement as defined by Part 4 of the *State Development and Public Works Organisation Act 1971 (Qld)*
IPA	*Integrated Planning Act 1997 (Qld)*
MGMG	Moranbah Growth Management Group
NCA	*Nature Conservation Act 1992 (Qld)*

NEPM	National Environmental Protection Measures
NOx	oxide of nitrogen
NRMW	Queensland Department of Natural Resources, Mines and Water
QHA	*Queensland Heritage Act 1992*
RUMP	Road Use Management Plan
SDPWO Act	*State Development and Public Works Organisation Act 1971 (Qld)*
SOx	oxide of sulphur
ToR	Terms of Reference
UN number	Four digit numbers that identify hazardous substances and products
VMA	*Vegetation Management Act 1999 (Qld)*

Part A: INFORMATION AND ADVICE ON PREPARATION OF THE EIS

1.1 Introduction

This Terms of Reference (ToR) is for an Environmental Impact Statement (EIS) for Dyno Nobel's (DN's) Moranbah Ammonium Nitrate (AN) Project. The ToR has been prepared in accordance with the requirements of Sections 29 and 30 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

The objective of the ToR is to identify those matters that should be addressed in the EIS for the Project.

The State Government and Belyando Shire Council, from which DN requires approvals, may request the ToR to be revised as required to address issues that emerge during the EIS process. The Coordinator-General (CG) has ultimate responsibility for decisions on matters of interpretation of the requirements of the ToR and all subsequent changes.

Reference to any culturally sensitive confidential information should be indicative only and disclosure of any such information must be negotiated with traditional custodians; other confidential information supplied by or to the Proponent must be clearly identified and placed in discrete attachment to the main report.

An executive summary should be prepared and included in the EIS. It should be a separable document that can be made available to the public.

1.2 EIS Objectives

The objective of the EIS is to identify potential environmental, social and economic impacts (both beneficial and adverse) and to ensure that adverse impacts are avoided where possible. Unavoidable impacts (direct, indirect and cumulative) must be examined in full and addressed, so that the development of the Project, including the selection of the preferred sites for each of the Project elements, is based on sound environmental protection and management criteria. Consistent with this objective, the EIS should be a self-contained and comprehensive document containing sufficient information to make an informed decision on the potential impacts. This document should provide:

- For interested bodies and persons: a basis for understanding the Project, alternatives and preferred solutions, the existing environment that would be affected (both on and off the site) the impacts that may occur, and the measures to be taken to mitigate all adverse impacts.
- For groups or persons with rights or interests in land: an outline of the effects of the proposed Project on that land including access arrangements.
- For the CG and other Government decision-makers: a framework against which decision-makers are able to consider the environmental aspects of the proposed Project in view of legislative and policy provisions and decide whether the Project can proceed or not, set conditions for approval to ensure environmentally sound development and, where required by legislation, recommend an environmental management and monitoring program.
- For the Proponent: a definitive statement of measures or actions to be undertaken to minimise any adverse impacts during and following the implementation of the proposed Project. A draft Environmental Management Plan (EMP) that describes acceptable impacts and environmental management strategies to agreed performances criteria is the recommended means of achieving this objective.

Completion of the EIS to the final ToR does not mean that the Project will necessarily be approved.

1.3 General EIS Guidelines

There should be sufficient detail presented in the EIS to enable readers to judge the impact of the Project on the natural and built environment.

It should be acknowledged that readers are likely to include representatives of State and Local Governments, special interest groups and the general public.

The EIS should relate to the entire life of the Project including construction, operation, maintenance, and decommissioning (including rehabilitation) of all Project-related sites. The EIS should enable reasonable economic and technically achievable conditions to be developed to ensure that the impact of the Project is reduced to acceptable levels.

The EIS should state the following information about any material presented in the EIS:

- the source of the material (with appropriate references);
- how recent the material is;
- how the reliability of the material was tested; and
- any uncertainties in the material.

The EIS should state the criteria adopted in assessing the proposed Project and its impacts, such as compliance with relevant legislation, policies, standards, community acceptance and maximisation of environmental benefits and minimisation of risks.

The level of analysis and detail in the EIS should reflect the level of significance of the expected impacts on the environment.

Any prudent and feasible alternatives should be discussed and treated in sufficient detail, and reasons for selection of the preferred option should be clearly identified.

Where possible, information provided in the EIS should be clear, logical, objective and concise, so that non-technical persons may easily understand it. Where appropriate, text should be supported by maps and diagrams. Factual information contained in the document should be referenced wherever possible. Where applicable, aerial photography and/or digital information (e.g. of Project sites, pipeline corridors etc) should be presented.

The terms “detail” and “discuss” should be taken to include both quantitative and qualitative matters as practicable and meaningful. Similarly, adverse and beneficial effects should be presented in quantitative and/or qualitative terms as appropriate. Should DN or other Project stakeholders require any information in the EIS to remain confidential, this should be clearly indicated, and separate information should be prepared on these matters.

The term “Project” includes all activities undertaken on lands covered by the proposed AN plant, any right-of-way (ROW) necessary for construction purposes, and supporting gas, water, wastewater, electricity, accommodation, road and/or rail infrastructure.

Copies of the prepared EIS should be lodged with the CG for distribution to Advisory Agencies for comment and review during the public review period. A quantity of EIS documents should also be prepared for distribution to relevant interstate and intrastate libraries and other relevant Government offices. In addition, an electronic version of the EIS will be made publicly available on the CG’s website. While there is a preference for documents to be made available in CD-ROM format, a quantity of hard copy documents should also be produced.

While every attempt has been made to ensure the ToR addresses all the major issues associated with this Project, it is not necessarily exhaustive and should not be interpreted as excluding from consideration matters deemed to be significant but not incorporated in it or matters (currently unforeseen) that emerge as important or significant during the completion of scientific studies, from public consultation, or otherwise, during the course of preparation of the EIS.

1.4 Stakeholder Consultation

The Proponent is strongly encouraged to regularly consult with Advisory Agencies and other appropriate stakeholders throughout the EIS process. It is the responsibility of the Proponent, in consultation with Advisory Agencies, to identify legislation, policies and methodologies relevant to the EIS process and to determine appropriate sections of the community, community bodies or individual people who should be consulted during the EIS preparation stage. It is recommended that an open community consultation process be carried out in addition to the legislated environmental impact assessment process. Copies of the EIS will be provided to all Advisory Agencies and, on request, to relevant individuals and peak groups with an interest in the Project.

1.5 General EIS Format

The EIS should be in written format in the form of the ToR or include (preferably as an appendix) guidelines on how the EIS responds to the ToR.

The EIS documentation is to include appendices containing:

- a copy of the final ToR;
- a list of persons, interest groups and agencies consulted during the EIS;
- a list of Advisory Agencies consulted (with an appropriate contact); and
- the names of, and work done by, all personnel involved in the preparation of the EIS.

Maps, diagrams and other illustrative material should be included in the EIS to assist in the interpretation of the information.

The EIS should be produced on A4 size paper capable of being photocopied, with maps and diagrams on A4 or A3 size. The EIS should also be produced on CD-ROM. CD-ROM copies should be in Adobe® PDF format for placement on the internet. All compression must be down-sampled to 72 dpi. The executive summary should be supplied in HTML 3.2 format with *.jpg graphics files. Text size and graphics files included in the PDF document should be of sufficient resolution to facilitate reading and enable legible printing. Where possible, individual PDF documents should be no larger 2MB.

Part B: SPECIFIC REQUIREMENTS – CONTENTS OF THE EIS

Executive Summary

The EIS must include an Executive Summary of the matters discussed in the main body of the document to facilitate a quick and clear understanding of the Project and, accounting for the proposed counter-measures, the net effect of the major environmental implications. The structure of the Executive Summary should follow that of the EIS and focus strongly on the key issues and conclusions.

The Executive Summary should include:

- the title of the Project;
- the name and contact details of the Proponent, and a discussion of previous projects and commercial activities undertaken by the Proponent or associated entities;
- a concise statement of the aims and objectives of the Project;
- the legal framework, decision-making authorities and Advisory Agencies involved;
- an outline of the background to and need for the Project, including the consequences of not proceeding with the Project;
- an outline of the alternative options considered and reasons for the selection of the proposed development option;
- a brief description of the Project (pre-construction, construction and operational activities including transport routes and transport operations) and the existing environment; [2] and
- an outline of the principal environmental impacts predicted and the proposed environmental management strategies to mitigate those impacts.

Glossary of Terms

A glossary of technical terms and acronyms used within the EIS should be provided.

[2] DMR

1. Introduction

The function of the introduction is to explain why the EIS has been prepared and what it sets out to achieve. The introduction should define the level of detail required to meet the information requirements for the various approvals being sought for the Project, and provide an overview of the structure of the document.

1.1 Project Proponent

This part of the EIS should provide detail regarding the Project Proponent (DN), including postal address and key contact details for the relevant staff and any Project consultants.

1.2 Project Description

This section should include a brief description of the key elements of the Project, including any associated infrastructure requirements. The location of the Project and its infrastructure requirements should be described and mapped.

Given likely temporal and physical overlap (including potential synergies and conflicts) between the Moranbah AN Project and Transfield's neighbouring Moranbah and Nebo Power Stations Project, this section should highlight any AN Project elements that may interact with the Power Stations Project.

A brief description should be provided of studies or surveys that have been undertaken for the purposes of developing the Project and preparing the EIS. This should include reference to relevant studies or investigations undertaken previously in the Project area.

1.3 Project Objectives and Scope

This section should provide a statement of the objectives that have led to the development of the proposal, the size and type of the operation, the nature of the processes and the products, by-products and wastes produced, the anticipated level of performance in meeting required environmental standards and cleaner production principles, and the staging and timing of the Project.

1.4 The EIS Process

1.4.1 Methodology of the EIS

Describe the impact assessment process steps, timing and decisions to be made for relevant stages of the Project.

Outline the process to integrate other components of the impact assessment, including the stages, timing and mechanisms for public input and participation.

1.4.2 Objectives of the EIS

A statement should be made of the EIS objectives. The structure of the EIS should be outlined as an explanation of how the EIS will meet its objectives, including how it will provide the necessary information to decision-makers considering approvals for the Project.

1.4.3 Submissions

Interested and affected persons should be made aware of how submissions on the EIS will be addressed and taken into account in the decision-making process. The EIS should describe how to make submissions and when submissions must be made to gain standing for any appeal process.

1.5 Public Consultation Process

This section should outline the methodology that will be adopted to identify and mitigate social and socio-economic impacts of the Project. The aim of the community consultation process is to:

- develop an awareness and understanding of the Project (objectives, the nature and extent of proposed works) and the EIS process within the Moranbah community;
- target specific community stakeholders to assist in identifying social impacts and developing appropriate mitigation and management measures; and
- seek community input into the EIS process for the Project.

This section should provide information about the consultation that has already taken place and the results of such consultation.

1.6 Project Approvals

1.6.1 Relevant legislation and policy requirements

This section should explain the legislation and policies controlling the approvals process, with reference to all relevant State legislation.

Describe all local Government planning controls, local laws and policies applying to the development.

Prepare a list of the approvals required for the Project and the expected program for approval of applications.

Describe the public notification processes and appeal rights that will be available in the anticipated approval processes. Relevant legislation and policies covered within the EIS will include:

IPA

DGSM Act

Environmental Protection (Waste Management) Policy (2000)

Environmental Protection (Water) Policy, 1997 Qld

Environmental Protection (Air) Policy, 1997 Qld

Environmental Protection (Noise) Policy, 1997 Qld

EP Act

SDPWO Act

Nature Conservation Act 1992 (Qld)

VMA

Aboriginal Cultural Heritage Act 2003 (Qld)[3]

[3] EPA

Water Act 2000[4]

The EIS should describe the approvals process resulting from the gazettal of the Project as a 'significant project' pursuant to the SDPWO Act and outline the linkage to other relevant State and Commonwealth legislation. The EIS should indicate the level of approvals anticipated by the Proponents for each Project element, including enabling legislation such as the *Transport Infrastructure Act 1994,* in order for approval agencies to be able to determine the completeness of the information presented and the scope to generate the anticipated approvals.[5]

In addition, local government planning controls, local laws, and policies applying to the Project should be described and a list of the approvals required for the Project provided. A description of the Environmentally Relevant Activities (as defined in the Environmental Protection Regulation 1998) necessary for each aspect of the Project should be given.

1.6.2 Planning Processes and Standards

This section should discuss consistency with existing land uses or the long-term policy framework for the area. The information provided should refer to all state and regional planning policies, Including:

- Belyando Shire Transitional Planning Scheme;
- State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide**;**
- State Planning Policy 1/92: Development and the Conservation of Agricultural Land; and
- Codes for the Clearing of Vegetation.

[4] NRMW

[5] DMR

2. Project Need and Alternatives

2.1 Project Justification

The rationale and justification for the Project should be explained in relation to current issues in the AN industry and any relevant policy or regulatory framework, Australian or overseas market requirements and expected local, regional, State or national benefits. Justification for the Project should be described with particular reference to the environmental, economic and social costs and benefits, including employment and spin-off business development, which the Project may provide.

The interdependencies of the Project components should be explained, particularly in regard to how each of any industrial developments, or various combinations of industrial developments, and any infrastructure requirements relate to the viability of the proposal. Should water supply, power, transport and/or storage infrastructure be included as an element of the proposal, this section should include a description of, and rationale for, such infrastructure. Similarly, the allocation of limited natural resources (e.g. water) to this Project, rather than to alternative projects (e.g. coal mines), should be justified.[6]

2.2 Alternatives to Project

The EIS should describe any prudent and feasible conceptual, technological and locality alternatives to the Project, or specific elements of the Project. The consequences of not proceeding with the Project must be discussed. Alternatives should be discussed in sufficient detail to support the preferred option, including the net effects of all alternatives as justification for the ultimate selection of the preferred option. Compliance with government policy and with the principles and objectives of ecologically sustainable development should be included in this discussion.

[6] AC

3. Description of the Project

3.1 Location

This section should include a detailed description of the proposed sites, including plans of the area in relation to the surrounding features and land uses. Mapping should include details of:

- the location of the facilities in a regional and local context;
- land tenures;
- present land uses and Planning Scheme zonings;
- surrounding industries and other land uses;
- features of State and National environmental significance;
- proposed buffer zones;
- locations and layout of new structures;
- photo images at appropriate scales;
- the Project in the context of the sub-regional transport system, identifying and labelling major transport routes impacted by the construction and operation of the project for existing local government and State-controlled roads;[7] [8]
- the Project in relation to adjacent infrastructure such as rail and road that illustrate access arrangements;
- all waterways including ephemeral streams potentially affected by any discharge from the Project;[9]
- area of land required for the Project;
- legal dedicated access to the proposed site;
- mining leases;
- key resource areas;
- mineral development licences;
- petroleum leases; and
- pipeline licences.[10]

The EIS should provide details about adjacent areas that could be affected by the Project and existing infrastructure facilities available on, and adjacent to, the site.

3.2 Construction

This section should describe the type and methods of construction, the construction equipment to be used, the items of plant to be transported onto the construction site and methods of transport.[11] This section should also describe the numbers (over time) of construction personnel, proposals for their accommodation (with reference to Section 3.5.5), and hours of construction.

[7] DMR

[8] DMR

[9] EPA

[10] NRMW

[11] QT

A timeline for construction should also be included.[12]

3.3 Operations

The location and nature of the processes to be used should be illustrated with maps and diagrams, and described in the text.

Concept and layout plans should be provided highlighting proposed buildings, structures, plant and equipment associated with the processing operation. This section should describe the nature, sources, location and quantities of all materials to be handled, including the storage and stockpiling of raw materials.

Indicative process flow-sheets should be provided showing material balances for the processing plant, and the anticipated rates of inputs, along with similar data on products, wastes and recycle streams. The location of the Project and its infrastructure requirements should be described and mapped.

The size of the workforce should be detailed, with a full description of proposed arrangements for its accommodation. The hours of operation, expected life of the operation and the likely timing and probability of any future expansions should be described.

3.4 Product handling

This section of the EIS should be directly related to Section 3.3 (Operations) and provide details of the types, sources, quantities, storage and methods of transportation of all materials involved in the AN plant. This information should include a brief outline of transport requirements such as proposed routes and methods. Transport requirements are covered in more detail in Section 3.5.1.

The EIS should include details on the nature, sources, location and quantities of all materials to be handled, stored or stockpiled on site, which will be used during modification, construction, installation or operation of the new equipment.

The EIS should document procedures for loading and unloading materials, including contingency plans for spillages. Details of any Project-related hazardous materials to be stored, handled or used in all aspects of the Project should be given. This information should include:

- the name of the material and sufficient information to clearly identify it, including the chemical name, the UN number and any trade names;
- the classification of the material according to the relevant 'Australian Dangerous Goods Codes';
- the maximum quantity of the material to be stored on site at any one time;
- the maximum quantity of the material within the process at any one time;
- measures to be employed to minimise the risk of spill and to contain spills; and
- a plan showing the location of the material within buildings and on the site.

3.5 Infrastructure Requirements

3.5.1 Transport Infrastructure

This section should describe arrangements for the transportation of plant, equipment, products, wastes and personnel during both the construction and operational phases of the Project.

[12] BSC

Information should be provided on road transportation requirements on public roads for both construction and operations phases, including:

- the volume, composition (types and quantities), origin and destination of goods to be moved, including construction materials, plant, raw materials, wastes, hazardous materials, and especially, AN prill and emulsion products;
- the volume of traffic generated by workforce personnel, visitors and service vehicles;
- method of movement (including vehicle types and number of vehicles likely to be used);
- anticipated times at which movements may occur;
- details of vehicle traffic and transport of heavy and oversize indivisible loads;
- the proposed transport routes, including impacts on State-controlled roads, including the Peak Downs Highway downstream from its intersection with Moranbah Access Road[13]; and
- any anticipated need for increased road maintenance and upgrading of key transport infrastructure elements, especially around the entrance to the AN plant and access points onto the Peak Downs Highway.[14]

The EIS should discuss the feasibility of delivering product by rail to customers as an alternative to road transportation.[15] Any proposal to transport product by rail should be developed in close consultation with Queensland Transport.[16]

3.5.2 Energy

This section should describe all energy requirements and/or generation proposals, including electricity, natural gas, and/or solid and liquid fuel requirements and/or generation for the construction and operation of the proposal.

Electricity inputs and outputs and natural gas demands for the facility should include:

- maximum demand/production;
- annual consumption and production;
- load fluctuations; and
- source.

The EIS should detail integrated processing design, co-generation of power and by-product reuse as shown in a material flow analysis.

The EIS should outline any impacts the development may have on surrounding energy infrastructure including gas pipelines, high voltage transmission lines and power lines.

The EIS should address the impact on the reliability of electricity supply to Moranbah.[17]

Any energy interactions with Transfield's proposed neighbouring Power Stations Project should also be described here.

For any electricity generation facility developed specifically for this project, the EIS should provide details of any proposal to sell electricity into the local grid and/or any reliance on external electricity supply during times that on-site generation is not operating. The type of cooling system of the

[13] DMR

[14] DMR

[15] DMR

[16] QT

[17] BSC

electricity generation facility and specific water demands of the proposed cooling system should also be described.

3.5.3 Water Supply and Management

The availability of the water supply is a key component of the EIS as there is no spare capacity within the Moranbah town water supply system.

The following details on daily, seasonal and/or peak operational requirements should be provided:

- quality of water required, including strategies to prevent contamination;
- maximum hourly demand;
- maximum daily demand;
- mean day maximum monthly demand;
- total annual consumption;
- any additional water supply infrastructure; and
- requirements for fire-fighting or other emergency services.

The EIS should provide information on proposed water usage by the Project, including the source, the quality and quantity of all water supplied to the site. In particular, the proposed and optional sources of water supply should be described. The EIS should provide the details of any use of recycled water from on site or off site activities to reduce water demand and to minimise discharges.[18] The EIS should demonstrate that adequate water resources for the Project are in place and the supply is readily accessible. The EIS should demonstrate that a guaranteed water supply would be available throughout the life of the plant.

Other water supply requirements to be addressed include:

- estimated rates of supply from each source (average and maximum rates);
- determination of potable water demand, including the temporary demands during the construction period;
- water storage and treatment on site;
- any interaction between water supply for this Project and Moranbah town water supply, especially in the context of the Moranbah domestic water needs analysis currently being undertaken by the Belyando Shire Council and several Queensland Government agencies;
- contingency plans for planned and non-planned supply failures; and
- projected dates for increased raw and treated water supplies.

The EIS should also provide details of any wastewater management at the site and how this waste stream will be managed or reused off site. Any intentions to manage water or wastewater jointly with Transfield's proposed neighbouring Power Stations Project should be detailed.

The proposed management of wastewater for the site should make reference to the 'Queensland Water Recycling Guidelines' and the 'Queensland Water Recycling Strategy'.

[18] EPA

The EIS should describe the site layout plans for all aspects of the Project that incorporate requirements for, and conceptual plans of, stormwater management structures, including descriptions of any discharge requirements for both the construction and operational stages. This should include proposals for drainage structures and dams, and an overall site water balance. The topography of the site and adjacent areas should be discussed if any run-off is expected to leave the site.

The EIS should provide volume estimates of industrial and domestic effluent that will be produced and the proposed method of disposal. Physical and chemical characteristics of the effluent should be described. Note: No existing sewage system is accessible for effluent or wastewater. [19]

3.5.4 Telecommunications

The EIS should:

- identify the owners of any existing infrastructure;
- provide details of telecommunication requirements, sources and methods; and
- describe any impacts on existing telecommunications infrastructure (such as optical cables, microwave towers, etc).

3.5.5 Workforce, Accommodation and Other Infrastructure

The EIS should provide information on the number of personnel to be employed and the sources (local, regional and overseas) of the workforce during the construction and operational phases of the Project. This information should include an estimate of the anticipated numbers of workers who will be accompanied by dependents, as well as those who will be unaccompanied (i.e. single workers). Estimates should be provided according to skilled and semi-skilled worker categories and expected dates when the workforce requirements will fluctuate for each stage of the Project. Information should include requirements for any off-site workforce and the expected indirect or flow-on effects to be generated.

Details of the construction workforce should be given, with particular reference to the source of skilled tradespeople. An outline of recruitment schedules and policies for recruitment of workers (addressing recruitment of local and non-local workers) should be included. The information should show anticipated peaks in worker numbers during the construction period.

An accommodation strategy for the construction workforce should be included which addresses the estimated housing needs of both single and accompanied construction workers. This should include details of the size, location and management of any temporary worker accommodation that will be required either on site or off site. Maps should be included as necessary to illustrate the site and should include the location of any proposed construction workers' accommodation on site or in the vicinity of the Project.

Information provided on workforce camps should include details of facilities provided for food preparation and food storage, ablution facilities, and disease vector or pest management activities.[20]

With reference to the Moranbah Growth Management Group (MGMG), accommodation requirements should be addressed, including a strategy for housing the operational workforce.[21]

[19] GHD

[20] GHD

[21] BMA

3.6 Rehabilitation and Decommissioning

This section of the EIS should present strategies for final decommissioning of the AN plant and rehabilitation of the environment disturbed by the Project.

Final rehabilitation of the AN plant site should be discussed in terms of removal of equipment and structures, revegetation, residual land use suitability, management of contaminated land and other land management issues.

4. Environmental Values and Management of Impacts

This section of the EIS should:

- describe the existing environmental values of the area affected by the proposal through reference to background information and studies;
- describe the potential adverse and beneficial impacts of the proposal on the identified environmental values, including analysis of any cumulative impacts on the environment;
- present environmental protection objectives, standards and measurable indicators; and
- examine viable alternative strategies for managing impacts based on objectives and standards to be achieved through discussion of available techniques and best practice.

The EIS should detail environmental protection measures that are to be incorporated in the planning, construction, operations, decommissioning and associated works for the Project. Measures proposed in the EIS should aim to minimise environmental harm and maximise socio-economic and environmental benefits of the proposal.

Particular attention should be given to strategies for the protection of environmentally sensitive areas or areas of a high conservation value and the requirements of any Commonwealth strategies, State planning policies, local authority planning schemes, environmental protection policies under the EP Act and any catchment management plans prepared by local water boards or land care groups.

4.1 Land

This section describes the existing environment values of the land area that may be affected by the Project in the context of environmental values as defined by the EP Act and Environmental Protection Policies (EPPs). It should also define and describe the objectives and practical measures for protecting or enhancing environmental values, describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.1.1 Description of Environmental Values

4.1.1.1 Land Use and Tenure

The EIS should provide a description of current land tenures and land uses, including native title status. The location and owner/custodians of native title in the area and details of native title claims should be shown.

This section should describe the level of compliance of the Project with the Belyando Shire Transitional Planning Scheme, State Planning Policies and the Whitsunday Hinterland and Mackay Regional Plan.[22]

Maps should be provided for the entire Project area showing:

- the proposed AN plant location;
- existing land uses and tenures;
- the location of existing dwellings;

[22] DLGPSR

- any land classified as Good Quality Agricultural Land (GQAL) in the Department of Natural Resources Mines and Water (NRMW) land classification system; and
- the zoning of all affected lands according to the Belyando Shire Planning Scheme.

Any potential environmental harm caused by the Project on adjacent areas currently used for agriculture, urban development, recreation, tourism or other business, and the implications of the proposal for future developments in the impact area, including constraints on surrounding land uses, should be described.

4.1.1.2 Topography

The topography of the proposal site should be detailed with contours at suitable increments, shown with respect to Australian Height Datum.

4.1.1.3 Geology and Soils

A description should be provided of the geology and geomorphology of the Project area in a regional context. This description should include:

- any physical or chemical properties of the surface or subsurface materials that may influence ground stability, occupational health and safety, rehabilitation programs, or the quality of wastewater leaving any Project areas; and
- coal resources or other known mineral deposits underlying the Project, including any potential 'sterilising' of 'minable' coal, and any ground subsidence risks to the Project area resulting from underground mining of nearby coal reserves.

Landform descriptions and full soil profiles should be mapped at 1:10000 scale and described according to 'Planning Guidelines: The Identification of Good Quality Agricultural Land' (Queensland Department of Local Government and Planning, 1993), the *Australian Soil and Land Survey Field Handbook* (McDonald et al, 1990) and *Australian Soil Classification* (Isbell, 1996), and must include horizon differentiation, nomenclature and depths, field texture, color, mottles, soil structure, segregations, chloride, exchangeable cations, exchangeable sodium percentage, rating, pH and electrical conductivity. Engineering and structural properties of the soils including erosion hazard, dispersibility, permeability and adsorption capacity (especially in relation to nitrogen mobility) must be assessed and described. Profiles, which are representative of the different soil types and are sampled for chemical and physical analysis, must be accurately located.[23] The location of each borehole should be accurately presented and boreholes should equitably represent the different soil types present.

An Agricultural Land Suitability Assessment based on the soils mapping should be undertaken according to the 'Guidelines for Agricultural Land Evaluation in Queensland' (QDPI Land Resources Branch, 1990). Land uses assessed should include those on, but not limited to, the study area and surrounding lands of a similar land type.[24]

4.1.1.4 Sensitive Environmental Areas

The EIS should identify areas in proximity to the Project that are environmentally sensitive. Environmentally sensitive areas should also include areas classified as having national, state, regional or local biodiversity significance, or flagged as important for their integrated biodiversity values.

[23] NRMW

[24] NRMW

4.1.1.5 Visual Amenity

An assessment should be made of the existing visual quality/landscape character of the Project site and the surrounding area and its local or regional prominence. The visual amenity and scenic value (as it relates to the surrounding landscape) should be described in terms of the view from places of residence, work, and recreation, and from roads, from the air and other known vantage points during the day and night.

4.1.1.6 Infrastructure

The location and owner/custodians of all tenures, reserves, roads and road reserves, railways and rail reserves, stock routes and the like, gas and water pipelines, power lines and the like covering the affected land should be described and shown on maps.[25] [26]

4.1.1.7 Contaminated Land

A search of the Contaminated Land Register and the Environmental Management Register should be undertaken to assess potential contamination at the site. Where activities are identified that have caused contamination at the site (e.g. notifiable activities), an investigation of the potential contamination will be undertaken including an investigation consistent with the requirements under the 'Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland' published by the Environmental Protection Agency (EPA). Any results from such an investigation should be summarised within the EIS and provided in detail in an appendix.

4.1.2 Potential Impacts and Mitigation Measures

This section of the EIS defines and describes the objectives and practical measures for protecting or enhancing land resource environmental values, describes how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

4.1.2.1 Land Use Suitability

This section should identify any land units requiring specific management measures.

The compatibility of the proposal with surrounding land uses (e.g. mining) should be addressed. All incompatible land uses adjacent to all Project sites should be identified. Measures to mitigate any unacceptable impacts on essential or priority adjacent land uses should be described.

Details should be provided on how the impacts of planned nearby mining activities (e.g. ground vibration) will affect the safety and operation of the proposed AN Project. Details should be provided on what impact (if any) the proposed plant will have on the operation of the Moranbah Gas Key Resource Area.[27]

Drawing on the Agricultural Land Suitability Assessment from Section 4.1.1.3, determine the Agricultural Land Classes and GQAL for the Project area. If appropriate, discuss any differences from GQAL presented in the local authority Strategic Plan which is based on broad scale assessments undertaken by the NRMW. With respect to State Planning Policy 1/92: Development and Conservation of Agricultural Land, discuss any "overriding need" for this Project where it encroaches on GQAL.[28]

[25] DMR

[26] DMR

[27] NRMW

[28] NRMW

4.1.2.2 Land Contamination

The EIS should describe the possible contamination of land resulting from aspects the Project, including waste, reject product, and spills at chemical manufacturing, treatment and storage areas and fuel storage areas. The means of preventing land contamination (within the meaning of the EP Act) should be addressed, and methods proposed for preventing, monitoring, recording, containing and remediating any contaminated land outlined. It is noted that "chemical manufacture" is a notifiable activity under Schedule 2 of the EP Act.[29] [30]

4.1.2.3 Land Disturbance & Soil Erosion

This section of the EIS should provide information on land disturbance management methods to be used for the Project including backfilling, covering, re-contouring, topsoil handling and revegetation, including:

- topsoil management such as transport, storage, re-use on disturbed areas and storage;
- consideration of the use of threatened plant species during any landscaping and revegetation; and
- erosion and sediment control.

These should be considered in terms of the different characteristics and requirements of the soil types identified in the soil mapping.[31]

Where dams, roads and other infrastructure are to be constructed, proposals for the management of these structures after the completion of the proposal should be given. A contour map of the area should be provided and the final drainage and seepage control systems and any long-term monitoring plans described.

Methods used and release limits for any suspended solids must be based on implementation of best practice erosion and sediment control guidelines, in particular, 'Soil Erosion and Sediment Control - Engineering Guidelines for Queensland Construction Sites'.

4.1.2.4 Visual Amenity and Scenic Values

This section should provide an outline of the resulting visual quality/landscape character of the Project area and its local prominence. The visual impact, in terms of the extent and significance of the changed skyline as viewed from places of residence, work, and recreation, from roads, from the air and other known public vantage points day and night, during all stages of the Project as it relates to the surrounding landscape is to be analysed and discussed.

4.1.2.5 Lighting

An assessment of all potential impacts of lighting of the Project, during all stages of construction and operation, is to be provided, with particular reference to:

- the visual impact at night;
- night operations/maintenance and effects of lighting on fauna, flora and residents;
- the potential impact of increased vehicular traffic;
- affected industry and businesses; and
- changed habitat conditions for nocturnal fauna and associated impacts.

[29] EPA

[30] EPA

[31] NRMW

4.1.2.6 Decommissioning

The strategies and methods for the rehabilitation of the environment disturbed by the Project and related activities should be described in the context of the expected final landform and potential final land uses.

The means of decommissioning the Project, in terms of removal of plant, equipment, concrete footings and foundations, hardstand areas, storage tanks, (including any potential for reuse of these facilities) and buildings should be described. The methods proposed for the stabilisation of the affected areas should be given. Final rehabilitation of the plant site should be discussed in terms of ongoing land use suitability, management of any residual contaminated land and other land management issues.[32] Where dams are to be constructed, proposals for the management of these structures after the completion of the Project should be given. The final drainage and seepage control systems and long-term monitoring plans for these dams should be described.

4.2 Climate

This section should describe the rainfall patterns (including magnitude and seasonal variability of rainfall), air temperatures, humidity, wind (direction and speed) and any other special factors (e.g. temperature inversions) that may affect air quality within the environs of the Project. Extremes of climate (droughts, floods, cyclones, etc) should also be discussed with particular reference to water management at the Project sites. The vulnerability of the area to natural or induced hazards, such as floods and bushfires, should also be addressed. The relative frequency, magnitude and risk of these events should be considered.

4.3 Water Resources

4.3.1 Existing Conditions

4.3.1.1 Surface Water

The EIS should provide a description of the physical, chemical and biological parameters of nearby watercourses and their existing water quality and quantity. The description should include existing surface drainage patterns, flows in major streams and wetlands. The likelihood of the site to be flooded should also be included. The flood study should comment on the extent, levels and frequency of flood events. It should also include a description of present and potential water uses downstream of the areas affected by the proposal. Also, the study should include a range of exceedance probabilities for affected waterways, including historically high water levels where data permits.

Environmental values of the affected area should be described:

- as identified in the EPP Water;
- the physical integrity, fluvial processes and morphology, including riparian zone vegetation; and
- sustainability, including quality and quantity.[33]

Should nearby ephemeral Grosvenor Creek be flowing during the EIS period, then an assessment is required of the water quality in that creek. The basis for this assessment should be a sampling program upstream and downstream of the proposed AN plant at three-day intervals during any flow event. If water is not running in Grosvenor Creek during the EIS period, then DN will be required to undertake a water quality assessment of that creek during the next available flow event.

[32] GHD

[33] NRMW

4.3.1.2 Groundwater

The EIS should review the quality, quantity and significance of groundwater in the Project area, together with groundwater use in neighbouring areas. As this Project is unlikely to either access groundwater to supply the AN plant or impact upon any existing scarce local groundwater resource around the AN plant, assuming best-practice management of a potential evaporation pond, this review can be confined to a desktop analysis of existing data. The review should include a survey of existing groundwater supply facilities (bores, wells, or excavations) and include:

- location;
- pumping parameters;
- draw down and recharge at normal pumping rates; and
- seasonal variations (if records exist) of groundwater levels.

Any available data on major ionic species present in the groundwater, pH, electrical conductivity and total dissolved solids should be reported.

Where existing data are available, the EIS should provide a description of groundwater resources in terms of:

- geology/stratigraphy;
- aquifer type - such as confined, unconfined;
- depth to and thickness of the aquifers;
- depth to water level;
- groundwater flow directions (defined from water level contours);
- interaction with surface water;
- possible sources of recharge; and
- vulnerability to pollution.

4.3.2 Potential Impacts and Mitigation Measures

This section is to define and describe the objectives and practical measures for protecting or enhancing water resource environmental values and describe how nominated quantitative standards and indicators may be achieved and how the achievement of the objectives will be monitored, audited and managed. The EIS should describe the possible environmental harm caused by the proposal to environmental values for water as expressed in the EPP Water.

Water management controls should be described, addressing surface and groundwater quality, quantity, drainage patterns and sediment movements. The beneficial (environmental, production and recreational) uses of nearby surface and groundwater should also be described.

Monitoring programs should be described which will assess the effectiveness of management strategies for protecting water quality during the construction, operation and decommissioning of the proposal.

Key water management strategy objectives include:

- protection of important local aquifers and protection of their waters; and
- maintenance of sufficient quantity and quality of surface waters to protect existing beneficial downstream uses of those waters (including maintenance of in-stream biota).

Consider the risks of uncontrolled emissions to water due to system or catastrophic failure and describe the strategies to prevent, minimise and contain impacts.[34]

4.3.2.1 Surface Water

In relation to water supply and usage, and wastewater disposal, the EIS should discuss:

- measures to avoid or minimise any proposed release;[35]
- anticipated flows of water to and from the proposal area;
- the effects of predictable climatic extremes (droughts, floods) upon the structural integrity of containment walls where dams or ponds are proposed;
- quality of water contained in dams;
- flows and quality of water discharged;
- whether any water supplies will be sourced via water trading or taking of unallocated water as identified in the 'Fitzroy Basin Resource Operations Plan' (January 2004);
- proposed arrangements for the supply of water to the Project from the Burdekin to Moranbah water pipeline currently being constructed; and
- the need or otherwise for licensing of any dams under the *Water Act 2000*.

Stormwater management should address:

- nominated stormwater discharge points and discharge criteria;
- design criteria, diversions, volume and capacity of any retention ponds, process tanks or bunded areas, as well as those reasonable and practicable measures proposed to prevent the likely release of contaminated stormwater to any drain or waters;
- potential impacts during extreme rainfall events;
- details of contaminants in controlled discharges of wastewater and stormwater (e.g. chemical composition, particulates, metals, effluent temperature and pH), proposed management systems and impacts of discharges on all potential receiving waters;
- effects of stormwater releases on the downstream environment; and
- information on the collection, treatment and disposal of contaminated stormwater runoff from the AN plant.

Particular emphasis should be focused on water quality characteristics of any waste or discharge water at the point of entering natural surface waters and the potential impacts to flora and fauna.[36]

Evaluating potential effects of any discharges should be in accordance with the Australian and New Zealand Environment and Conservation Council's 'National Water Quality Management Strategy, Australian Water Quality Guidelines for Fresh and Marine Waters' (November 1992) and EPP Water.

Mitigation measures should be discussed with particular reference to nitrogen concentrations, sediment, acidity, salinity and other emissions of a hazardous or toxic nature to human health, flora or fauna.[37] Reference should be made to the properties of process wastes at the AN plant and the

[34] NRMW

[35] EPA

[36] GHD

[37] GHD

techniques to be employed to ensure that contaminated water is contained and successfully treated on site.

The EIS should include the results of a risk assessment for uncontrolled releases from the AN plant to water due to system or catastrophic failure, implications of such emissions for human health and natural ecosystems, and list strategies to prevent, minimise and contain impacts.

Management strategies should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained to nominated water quality objectives.

Monitoring programs, which will assess the effectiveness of management strategies for protecting water quality during the construction and operation of the Project, should be provided in the EMP.

4.3.2.2 Groundwater

The EIS should discuss the potential environmental impacts to local groundwater resources caused by the Project.

An assessment of the potential to contaminate groundwater resources and measures to prevent, mitigate and remediate such contamination should be discussed.

The EIS should also address the feasibility of installing and monitoring groundwater around the AN site.[38]

4.4 Air Quality

4.4.1 Existing Conditions

The EIS should provide a description of the existing air shed environment, including particulates, gaseous and odorous compounds. Sensitive receptors to the site should be identified and described.

Sources of suspended particulates (including particulate matter below 10 microns diameter), oxides of sulphur and nitrogen (SOx and NOx), and greenhouse gases should be discussed. An assessment should be provided of how local meteorological conditions may affect air quality from the operation of the proposed facility. Sufficient data on local meteorology and ambient levels of pollutants should be gathered to provide a baseline for later studies or for the modeling of air quality environmental within the air shed. Parameters should include air temperature, wind speed and direction, atmospheric stability, mixing depth and other parameters necessary for input to the models.

The environmental values of the air shed for the affected area should be described in terms of the EPP Air, and 'National Environmental Protection Council (Ambient Air Quality) Measure'.

4.4.2 Potential Impacts and Mitigation Measures

This section of the EIS should describe how nominated quantitative standards and indicators may be achieved, and how the achievement of the objectives will be monitored, audited and managed.

Proposed and/or modeled levels of air emissions should be compared with the current draft National Environmental Protection Measures (NEPM) 1997 for ambient air quality, the National Health Medical Research Council 'National Guidelines for Control of Emissions from Stationary Sources' 1985, and the EPP Air. This assessment should consider the toxic and/or persistent nature of any emissions identified.

If air-shed modeling is deemed to be appropriate, such models should predict average ground level concentrations in nearby areas. These models should consider any cumulative and/or interactive

[38] NRMW

impacts arising from this Project and the neighbouring Moranbah and Nebo Power Stations Project and surrounding coal mining operations and interactions between air emissions arising from the Project's electricity generation components and other Project components.

This section should identify features of the proposal designed to suppress or minimise emissions.

The EIS should include an impact assessment with relevant inputs of emissions and local meteorology to an air dispersion model to provide estimates of the likely impacts on the surrounding environment. The model inputs should be as detailed as possible, reflecting any variation of emissions with time and including at least a full year of representative hourly meteorological data. Ground level concentration at the nearest sensitive receptor(s) based on 1-hour average for maximum (99.9 percentile) and 99.5 percentile values should be estimated. Results of the dispersion modeling must be presented as concentration contour plots and frequency contour plots.

Any model input parameters must be based on the actual stack conditions proposed by the Proponent for the Development Approval conditions. DN must provide stack parameters such as diameter, temperature, exit velocity and volume flow rate.

The EIS should identify "worst case" emissions that may occur at start-up, shut-down or during other ""upset" operating conditions of the various AN plant components.

As AN plants do not usually generate any significant odour, no special odour assessment is required for the AN plant component of the Project, but potential for odour impacts from electricity generation should be described in the EIS.

The averaging period for ground level concentrations of pollutants that are modelled should be consistent with the relevant averaging periods for air quality indicators and goals in the EPP Air and the NEPM.

Modelled concentration levels at the "most exposed existing or likely future sensitive receptors" must be compared with the appropriate national and international ambient air quality standards.

The EIS should describe proposed back-up measures in the event of failure of primary measures to minimise the likelihood of plant upsets and adverse air impacts.

The assessment of the Project's impact on air quality should consider:

- the extent to which NOx emissions from the Project and existing emission sources within the region will contribute to the generation of photochemical smog;[39]
- the human health risk associated with emissions from the facility;
- the potential for the Project to generate a dust nuisance during and after construction;
- the potential for the Project to generate a dust nuisance during the operational phase of the Project;
- Project technology and Project emission control systems designed to suppress or minimise emissions, including dusts, gases and odours;
- air quality aspects for forecast emissions derived from other similar projects;
- AN particulates;[40] and
- the extent to which air emissions could impact on water quality following deposition locally.

Where there is no single atmospheric dispersion model that is able to handle the different atmospheric dispersion characteristics exhibited in the proposal area, a combination of acceptable models will need

[39] GHD

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to be applied. The limitations and accuracy of the dispersion models used for calculating ground level concentrations and a sensitivity analysis of each model to variations in the input parameters should be discussed.

4.5 Waste

4.5.1 Existing Conditions

This section of the EIS should identify existing environmental values that waste streams associated with the proposal may impact.

4.5.2 Potential Impacts and Mitigation Measures

The EIS should identify all possible waste streams created by the proposed facility.

The EIS should provide details of waste management methods which demonstrate that waste minimisation and cleaner production techniques and designs are in keeping with international best practice environmental management and have been implemented through the selection of processes, equipment and facilities to prevent or minimise environmental impacts. This information should include:

- an inventory of all solid and liquid (including wastewater and sewage) wastes generated by each stage of the Project through construction, operational and maintenance stages, including the characteristics and expected generation rates of each waste;
- descriptions of processes, equipment and facilities to be incorporated into the Project specifically for the purpose of avoiding waste generation, reusing or recycling wastes, or treating wastes to lessen their effect on the natural environment;
- operational handling and fate of all wastes, including storage, having regard for international best practice waste management strategies and the EPP Waste;
- on site treatment methods proposed for the wastes;
- market demand for recyclable waste (where appropriate);
- proposed means for management of wastes produced under circumstances other than as a result of normal Project development, including wastes generated during modification (run-off, chemical cleaning before commissioning), unusual conditions when the facilities are operating (start-up, maintenance, shut-down) and domestic sewage and refuse;
- details on natural resource use efficiency (e.g. energy and water); and
- methods to prevent seepage and contamination of groundwater from stockpiles or dams.

Where solid (or liquid) wastes are to be disposed of off site, the following details should be provided:

- the name and location of the facility to which each waste will be sent for disposal;
- confirmation from each facility that it will accept the type, concentration and quantity of the nominated wastes;
- an assessment that the proposed facilities are capable of accepting this waste without creating an adverse environmental impact; and
- that the transport of the wastes from the AN plant to the disposal facility will comply with all requirements of the relevant acts governing the transport of hazardous wastes.

The EIS should present the methods to avoid stormwater contamination by raw materials, wastes or products and present the means of containing, recycling, reusing, treating and disposing of

stormwater, having regard for the requirements of the EPP Water. Where no-release water systems are to be used, measures to minimise any accidental release or the likelihood of such a release should be described and the fate of salts and particulates in release water should be discussed.

4.6 Noise and Vibration

4.6.1 Existing Conditions

The EIS should describe the existing environmental values that may be affected by noise and vibration from Project activities.

Baseline monitoring, consisting of short term attended monitoring, should be undertaken at a selection of noise sensitive sites (identified on a map at a suitable scale) affected by the Project.

The results of any baseline monitoring of noise in the proposed vicinity of the proposal should be described and compared with rural background noise levels for the area.

Monitoring methods should adhere to relevant EPA Guidelines and 'AS1055-1997 – Acoustics – Description and Measurement of Environmental Noise', and any relevant requirements of the EPP Noise.

Comment should be provided on any current activities near the Project area that may cause a background level of noise and ground vibration in the vicinity of the AN plant (e.g. the Enertrade gas compressor station and the railway and heavy vehicle traffic on the Goonyella Road).

Any potential attenuation (or cumulative impact) of noise resulting from the construction and operation of both the AN plant and the Transfield Power Station with respect to sensitive receptors to the south-east should be addressed.

4.6.2 Potential Impacts and Mitigation Measures

The EIS should identify likely noise and vibration levels during construction and operation of the Project (including transport movements along Goonyella Road through Moranbah). A description of noise emissions should be provided and include principal noise sources, any noise abatement measures and expected noise emission levels, including those for routine operations and any atypical circumstances (e.g. descriptions of sound pressure levels at reference distances or sound power levels). The EIS should identify the location of noise emission sources and in particular those that are steady, transient and of low frequency.

Acoustic modelling should be undertaken using monitoring data to predict and map noise contours arising from the proposed plant. Predicted noise levels should include the boundary of the site and nearest sensitive receptors. Predicted noise levels should be discussed with reference to the EPA Guideline, 'Planning for Noise Control', and should comply with:

- EPP Noise*;*
- Australian Standard AS 1055.2 – 1997 Acoustics-Description and Measurement of Environmental Noise Part 2: Application to Specific Situations**;**
- Department of Main Roads' (DMR) 'Road Traffic Noise Management: Code of Practice'; and
- World Health Organisation Guidelines for Community Noise (including sleep disturbance criteria).

This section of the EIS should also provide comment, with reference to international standards, on the potential of Project construction and operation vibrations to impact on adjacent infrastructure (e.g. the proposed adjacent power station).

Proposals to reduce or minimise noise and vibration effects, including details of any screening, buffers, insulation, or enclosures, or special speed zones or transport schedules, should be provided where required.

4.7 Nature Conservation

4.7.1 Existing Conditions

This section of the EIS should describe the existing environmental values for nature conservation that may be affected by the proposal in the context of environmental values as defined by the EP Act and EPPs, the VMA, the NCA, and the EPBC Act.

This section should describe the occurrence and significance of any rare or threatened flora or fauna species and habitat for these species within the area affected by the construction and operation of the facility.

The environmental values of nature conservation for the affected area should be described in terms of:

- integrity of ecological processes, including habitats of rare and threatened species;
- conservation of resources;
- biological diversity, including habitats of rare and threatened species;
- integrity of landscapes and places including wilderness and similar natural places; and
- aquatic and terrestrial ecosystems.

The EIS should provide detail on:

- flora and fauna communities which are rare or threatened and environmentally sensitive localities, including, waterways, riparian, zones, and habitat corridors;
- the conservation status of regional ecosystems; and
- maps of any remnant vegetation.

Key flora and fauna indicators should be identified for future ongoing monitoring.

4.7.1.1 Flora

Terrestrial vegetation mapping at a suitable scale should be provided, with descriptions of the units mapped. Vegetation maps should be 'ground truthed' and indicate:

- the location and extent of vegetation types using the EPA's regional ecosystem type descriptions in accordance with *The Conservation Status of Queensland's Bioregional Ecosystems* (Sattler P.S., & Williams R.D., 1997) and EPA's web site listing the conservation status of regional ecosystems;
- the location of vegetation types of conservation significance based on EPA's regional ecosystem types and occurrence of species listed as Protected Plants under the Nature Conservation (Wildlife) Regulation 1994 and subsequent amendments, as well as remnant vegetation subject to the VMA;
- the current extent (bioregional and catchment) of protected vegetation types of conservation significance within the protected area estate (national parks, conservation parks, resource reserves, nature refuges etc) if any of these exist in the Moranbah area; and
- the location and abundance of any exotic or weed species.

Sensitive or important vegetation communities (including any riparian vegetation) should be highlighted, including their value as habitat for fauna and conservation of specific rare floral and faunal assemblages or community types.

The existence of rare or threatened species should be specifically addressed in the EIS.

Vegetation survey data should include species structure, assemblage, diversity and abundance.

Within each defined vegetation community, at least one site should be surveyed for plant species, as follows:

- site data should be recorded in a form compatible with the Queensland Herbarium;
- the minimum survey plot size should be 10 by 50 metres;
- a complete list of species present at each site should be recorded;
- the relative abundance of plant species present should be recorded;
- any plant species of conservation, cultural, commercial or recreational significance should be identified; and
- any unidentified specimens are to be submitted to the Queensland Herbarium for identification and entry into the HERBRECS database.

Existing information on plant species may be used instead of new survey work provided that data are derived from surveys consistent with the above methodology. Methodology used for flora surveys should be specified in the appendices to the report.

If ground truthing of remnant vegetation discovers errors in the EPA's Regional Ecosystem maps, map modification requests should be submitted to the Queensland Herbarium in order to have the remnant maps altered.[41]

4.7.1.2 Fauna

The terrestrial and riparian fauna occurring in the areas affected by the Project should be described, noting the broad distribution patterns in relation to vegetation, topography and substrate. The description of the fauna present or likely to be present in the area should include:

- species diversity (i.e. a species list) and abundance of animals, including amphibians, birds, reptiles, mammals and bats;
- any species that are poorly known but suspected of being rare or threatened;
- habitat requirements and sensitivity to changes, including movement corridors and barriers to movement;
- the existence of feral or exotic animals;
- existence of any listed rare, threatened or otherwise noteworthy species/communities in the study area, including a discussion of range, habitat, breeding, recruitment, feeding and movement requirements, and current level of protection (e.g. any requirements of Protected Area Management Plans); and
- use of the area by migratory birds, nomadic birds and terrestrial fauna.

The EIS should indicate how well any affected communities are represented and protected elsewhere in the province where the Project site occurs.

The aquatic biology of Grosvenor Creek, immediately south of the AN plant site should be described.

[41] NRMW

4.7.2 Potential Impacts and Mitigation

This should define and describe the objectives and practical measures for protecting or enhancing nature conservation environmental values, how nominated quantitative standards and indicators may be achieved for nature conservation management and how the achievement of the objectives will be monitored, audited and managed.

The discussion should cover all likely direct and indirect environmental harm to flora and fauna, particularly sensitive species and communities including:

- important habitats of species listed under the NCA and/or EPBC Act as presumed extinct, endangered, vulnerable or rare;
- regional ecosystems recognised by the EPA as 'endangered' or 'of concern' and/or ‘not of concern’ regional ecosystems;
- sites containing near threatened or bio-regionally significant species or essential, viable habitat for near threatened or bio-regionally significant species;
- sites containing common species which represent a distributional limit and are of scientific value or which contain feeding, breeding, resting areas for species of special cultural significance (e.g. echidna, koala, platypus);
- sites containing high biodiversity that are of a suitable size or with connectivity to corridors/protected areas to ensure survival in the longer term;
- sites containing other special ecological values, for example, high habitat diversity and areas of high endemism; and
- areas of major interest, or critical habitat declared under the NCA or high nature conservation value areas or areas vulnerable to land degradation under the VMA.

Strategies for protecting any listed rare or threatened species should be described, and any obligations imposed by State or Commonwealth legislation should be discussed.

The EIS should identify if vegetation clearing applications are required under Section 22 of the VMA. Also identify the relevant Regional Vegetation Management Codes applicable to any application.[42]

The potential environmental harm to the ecological values of the area arising from the construction, operation and decommissioning of the Project including clearing, salvaging or removal of vegetation should be described, and the indirect effects on remaining vegetation should be discussed. Short-term and long-term effects should be considered with comment on whether the effects are reversible or irreversible. This information should be presented separately for each regional ecosystem.[43] Mitigation measures and/or offsets should be proposed for adverse impacts.[44]

Weed control and feral animal management strategies aimed at containing existing weed or pest species (e.g. parthenium and other noxious weeds) and ensuring no new invasive weeds or animal pests are introduced to the area should be described. Reference should be made to the Belyando Shire Council’s Pest Management Plan when determining control strategies.

Rehabilitation of disturbed areas should incorporate provision of nest hollows and ground litter, where appropriate.

Species lists for revegetation should be provided.[45]

[42] NRMW

[43] NRMW

[44] GHD

[45] NRMW

4.8 Cultural Heritage

4.8.1 Existing Conditions

This section should identify any existing cultural heritage that may be affected by the proposed facility. A description should be given of the environmental values of the cultural landscapes of the affected area in terms of the physical and cultural integrity of the landforms.

Reference should also be made to the requirements and expectations of the ACH Act for Indigenous cultural heritage and the *Queensland Heritage Act 1992* (QHA) (for non-Indigenous cultural heritage) and the recommendations of any previous cultural heritage investigations.

The study should include:

- consultation of:
  - the Register of the National Estate (maintained by the Australian Heritage Commission);
  - the Queensland Heritage Register (maintained by the EPA);
  - the Aboriginal and Torres Strait Islander Database (maintained by the NRMW);
  - any local government heritage register; and
  - any existing literature relating to the affected areas;
- liaison, in accordance with the requirements of the ACH Act, with the Aboriginal party for the area concerning:
  - places of significance (including archaeological sites, natural sites, story sites etc); and
  - appropriate involvement in field surveys;
- a systematic survey of the proposed development area to locate and record Aboriginal cultural heritage and non-Indigenous cultural heritage places; and
- a report of work done, which includes background research, relevant environmental data and methodology, as well as results of field surveys, and recommendations (having due regard for any confidentiality requirements specified by community representatives).

The EIS should identify all Native Title claims and associated issues within the Project area.

4.8.2 Cultural Heritage – Potential Impacts and Mitigation Measures

All reasonable and practicable measures must be undertaken to ensure that Aboriginal cultural heritage is not harmed. In order to demonstrate compliance with the ACH Act and the QHA, a cultural heritage survey should be undertaken over any proposed development areas.

Any studies should be undertaken in consultation with relevant Indigenous groups. The Project should be managed under a Cultural Heritage Management Plan (CHMP) developed specifically for the Project in accordance with the ACH Act.

The EIS should describe potential impacts on Native Title rights and interests in relation to the Project.

4.9 Social

4.9.1 Existing Conditions

This section should describe the existing social values that may be affected by the Project.

The amenity and use of the Project area and adjacent areas for rural, agricultural, forestry, recreational, industrial, educational or residential purposes should be described through consideration of:

- community infrastructure and services, access and mobility;
- population and demographics of the affected Indigenous and non-Indigenous community (including size, age structure, gender composition, education level, residency, labour force and unemployment rates);[46]
- local community values, vitality and lifestyles;
- recreational, cultural, leisure and sporting facilities and activities in relation to the affected area;
- health, emergency services and educational facilities;
- on-farm activities near the proposed activities;
- current property values;
- number of properties directly affected by the Project; and
- number of families directly affected by the Project, including families of workers either living on the property or workers where the property is their primary employment.

The social values for the affected area should be described in terms of:

- the integrity of social conditions, including amenity and 'liveability', sense of community, access to recreation, and access to social and community services and infrastructure;
- traditional owner use of the Project area;[47] and
- public health and safety (refer to Section 4.12).

Information should also be provided on the existing housing market, with an emphasis on:

- the size of the private rental market in the area;
- the vacancy rate of rental accommodation, including assessment of seasonal fluctuations;
- typical rents for the area;
- the availability and typical cost of housing for purchase in the area;
- the level of social housing in the area; and
- constraints and opportunities for new housing construction in the area, including the capacity of the local land development and housing construction industries to provide new housing, especially in relation to initiatives currently being managed by the recently convened MGMG.

4.9.2 Potential Impacts and Mitigation Measures

This section aims to define and describe the objectives for protecting or enhancing social values, and how the achievement of the objectives will be monitored, audited and managed.

A social impact assessment of the Project should consider the information gathered in the community consultation program and the analysis of the existing socio-economic environment, and describe the Project's impact, both beneficial and adverse, on the local community and other stakeholders for both the construction and operation phases.

[46] DATSIP

[47] DATSIP

The nature and extent of the community consultation program are to be described and a summary of the results incorporated in the EIS.

The assessment of impacts should describe the likely response of affected communities and identify possible beneficial and adverse impacts (both immediate and cumulative). These impacts should be considered both at the regional and local level.

The assessment should include consideration of the Project's impacts on:

- demographic, social, cultural and economic profiles;
- local residents, current land uses and existing lifestyles and enterprises;
- the potential demand for health care services and providers (public and private) in the region;
- community services and community cohesion resulting from the construction and operational workforces;
- household income and jobs likely to flow to existing communities in Moranbah and the surrounding the region;
- the demand for places in child care, local primary, secondary schools and regional tertiary education facilities;[48] and
- the ability of people to participate in regional and local employment assistance and training opportunities.

An assessment of the predicted impacts of the Proponent's activities (including activities by any sub-contractors) on the local and regional housing markets should also be undertaken. The assessment should refer to the projected accommodation needs for the employees and the likely family members that will be accompanying the workers in both the construction and operational phases, and estimate:[49]

- the capacity of local and regional housing markets to meet the accommodation needs of the Project, including the potential displacement of low-income residents from affordable rental accommodation and diminished availability of accommodation;
- any possible cumulative impacts on the local and regional housing market due to the presence of other existing or proposed major projects in the area (especially existing coal mine expansions and Transfield's proposed Moranbah and Nebo Power Stations Project), and any seasonal employment factors; and
- the impact of the construction phase of the proposal on the local and regional residential development and housing construction industry, with particular reference to the demand for local contractors.

Any potential impact on the amenity of nearby areas used for grazing, recreation, industry, or residential purposes should be discussed in relation to impacts on social values. The implications of the Project for future developments in the local area including constraints on surrounding land uses should be described.

For identified impacts on social values, proposed mitigation and enhancement strategies should be described, and approaches to facilitate community acceptance of these strategies identified. Practical monitoring regimes should also be discussed.

[48] DoC

[49] DoC

4.10 Economic Environment

4.10.1 Description of Environmental Values

This section should describe the existing economic environment that may be affected by the proposal. The character and basis of the local and regional economies should be described including:

- current local and regional economic activity;
- existing labour force and unemployment statistics;
- types and numbers of businesses; and
- availability and prices of goods and services.

4.10.2 Potential Impacts & Mitigation Measures

This section of the EIS should define and describe the objectives for protecting or enhancing economic values, and how the achievement of the objectives will be monitored, audited and managed.

The effect on local and regional labour markets should be discussed with regard to the source of the workforce. This information should be presented according to skilled and semi-skilled worker categories and occupational groupings, with special attention drawn to those groups for which skill shortages are anticipated. Clarification should be provided about whether DN or contractors are likely to employ locally or through other means and whether there are initiatives for local employment opportunities.

The EIS should investigate the potential impacts on the Central Queensland regional labour pool and possible mitigation strategies including:

- any proposals to access alternative labour-pool sources outside of the northern Bowen Basin;
- the inclusion, training, sourcing, and occupational identification of apprentices for the construction site, with potential for employment in the production phase and 'up-skilling' of the current available workforce in advance of the construction phase; and
- development of support strategies to assist current regional employers with backfilling skilled shortages caused by employees moving to the Project.

The general economic costs and benefits of the Project should be described in terms of:[50]

- the relative significance of this proposal in the local and regional economic context;
- the short and long-term beneficial (e.g. job creation) and any potential adverse (e.g. skills and materials shortages) impacts that may arise;
- the need for any additional regional infrastructure triggered by the additional economic development (but not specifically required for the Project);
- implications for future development in the region (including constraints on surrounding land uses and existing industry);
- the extent to which local and other Australian goods and services will be used; and
- impacts on local property values.

The proponent is encouraged to discuss with traditional owners, opportunities for employment on the Project. The proponent should consult with DET and DATSIP on these discussions.[51]

[50] GHD

[51] DET

The EIS should also report the results of consultation with Industry Capability Network on local industry participation.[52]

Specific discussion is required on whether the proposed site for the Project will impact on any of the Key Resource Areas, Mineral Development Licences, Mining Leases or pipeline leases in the vicinity of the proposed site.[53]

4.11 Transport Infrastructure

4.11.1 Description of Environmental Values

This section should describe environmental values of existing transport infrastructure facilities within and adjacent to the Project area (previously described in Section 4.1.1.6). Transport infrastructure also includes the transport operations that utilise that infrastructure.

4.11.2 Potential Impacts & Mitigation Measures

This section of the EIS should detail impacts of the Project on existing roads, railways, port facilities, powerlines, pipelines, telecommunication lines and other built infrastructure in relation to the transportation requirements outlined in Section 3.4. Reference should be made to the *Transport Infrastructure Act 1994*, the *Transport Planning and Coordination Act 1994*, and the *Transport Operations (Road Use Management) Act 1995* when considering the impacts and mitigation measures for transport infrastructure and operations.[54] This evaluation should include any potential requirements to reschedule existing infrastructure construction, rehabilitation and maintenance programs.

All impacts resulting from the transport of plant, equipment, product,[55] raw materials, wastes and personnel during the construction and operational of the Project should be described. The description should address the capacity of existing facilities to support the requirements and any additional requirements for the construction, upgrading or relocation of any transport related infrastructure required by the Project directly and as a result of potential cumulative impacts. The analysis should also address any requirements for new or changed services in road or rail[56] reserves.

Special reference should be made to any relationship between Project road works and works proposed for Belyando Shire roads and the current Roads Implementation Program of the DMR. Road infrastructure should be described and assessed according to DMR 'Guidelines for Assessment of Road Impacts of Development (2006)'.[57] The EIS should discuss the results of consultation with DMR officers in the Central Highlands, Mackay and Central Queensland Districts (located in Emerald, Mackay and Rockhampton respectively) and the Belyando Shire regarding the potential impacts of the Project on the road network.[58]

This section should address how transport elements and impacts of the Project, taking into account future demand growth, relate to Queensland Transport, Queensland Rail, port corporations[59] and the

[52] ICN

[53] NRMW

[54] DMR

[55] QT

[56] QT

[57] DMR

[58] DMR

[59] QT

DMR's existing transport strategies for the Central and North Queensland, and the future infrastructure needs of this area as presented in State Government documents, including: 'Statements of Intent for Road Link Development'.

Reference should also be made in this assessment to the Belyando Shire Planning Scheme. If rail transport of AN is being considered, the assessment should also specifically address the potential for any inter-modal interface between road and rail haulage, taking into account any potential constraints in rail capacity because of coal haulage.

Specific safety and security measures of the transportation of AN product should be addressed in the draft road use management plan (RUMP).[60] This section should outline the proposed strategy to minimise driver fatigue for the transport of product from the plant.[61]

Detail on product spill management for transport infrastructure should be addressed in other relevant sections of the EIS.

4.11.2.1 Traffic

This section of the EIS should address the impact of traffic generated by the Project on both the local government and State-controlled road network in terms of adverse road impacts, including pavement and structures degradation, intersection performance, tonnages, origin/destination details for haulage on each major road link and road network performance, road safety, access requirements, noise impact, air quality and existing drainage near roads.[62] The traffic and transport impacts on local residents and business operations should also be addressed including during peak times (e.g. shift change overs).[63] [64]

This section should also examine any similar impacts on rail traffic.[65]

Strategies for managing all road impacts of the Project, including road safety, should be presented.

The impacts of any increased traffic (due to construction activities and/or on-going operations) on existing school bus routes and services should be discussed. Necessary measures to eliminate or minimise the impact on the operation of these services and any infrastructure proposed (such as bus pull-off areas) to maintain current safety standards should be presented.

A comparison of the traffic situation and road conditions with and without the Project should be shown. These analyses should outline the traffic assumptions related to other projects in the area so that the cumulative impacts of this Project on the Goonyella Road and Peak Downs Highway can be assessed.[66] The EIS should include traffic management measures as part of a draft RUMP that deals with mitigating the impacts of both the construction and operational phases of the Project on the road network. The draft RUMP should cover issues related to traffic, operational performance, safety, and other aspects using a minimum time horizon for the assessment of 10 years after the completion of the Project and any associated infrastructure.[67] The final version of the RUMP will form part of the EMP (or plans) as proposed in Section 5.

[60] DMR

[61] BMA

[62] DMR

[63] DMR

[64] BMA

[65] QT

[66] DMR

[67] DMR

4.12 Health and Safety

4.12.1 Existing Conditions

This section should describe the existing community values for health and safety that may be affected by the proposal.

4.12.2 Potential Impacts and Mitigation Measures

This section should describe how nominated quantitative standards and indicators may be achieved for social impacts management, and how the achievement of the objectives will be monitored, audited and managed.

The need for risk assessment, including production of risk contours for the facility is required. The risks that the proposed neighbouring Power Station may pose to the AN plant and vice versa should be included in this assessment.[68]

Any impacts on the health and safety of the community, workforce, suppliers and other stakeholders should be discussed in terms of health, safety, quality of life from factors such as air emissions, odour, traffic, dust, waste and product handling and noise. This includes health and safety matters associated with on-site and off-site workforce accommodation. It should include details of:

- compliance with relevant Health and Safety legislation;
- details of on-site emergency response capabilities for both the construction and operational phases of the Project;
- the risk assessment conclusions reached and the level of off-site risk from the proposed developments; and
- the location and nature of sensitive sites including, but not limited to, residences and schools, within the surrounding 10 kilometre radius. [69]

General safety management strategies and control measures to be used to minimise the risks of incidents on site under known operating conditions should be included in the EIS. This information should include:

- the handling of reworked or recycled material;
- the prevention and handling of fires on site;
- the segregation of incompatible products and ingredients;
- the containment of hazardous materials;
- the collection, treatment and disposal of any spillage of hazardous materials and wastes (provide details of the design, volume and capacity of any retention ponds, process tanks, waste holding tanks or bunded areas);
- the application of safety distances to the various activities on site to minimise consequences of incident;
- quality control of products and raw materials on site, including handling of non-conforming material; and
- any special health and safety considerations with respect to the interaction of this AN Project with Transfield's neighbouring Power Stations Project.

[68] DES

[69] GHD

In regard to fires, the EIS should address the following:

- building fire safety measures;
- on-site fire fighting equipment provided; and
- detailed maps showing the plant outline, hazardous material store, incident control points, fire fighting equipment, etc.

An assessment should be made of any areas where mosquitos may breed (e.g. areas with poor drainage or where water ponds) and mitigation measures developed to prevent the harbourage and breeding of mosquitoes and other pests of public health significance. The EIS should consider planning, management, mitigation and monitoring of potential pest impacts.[70] This section should draw on the information in Queensland Health's 'Guidelines to Minimise Mosquito and Biting Midge Problems in New Development Areas' (March 2002).

Emergency planning and response procedures are to be coordinated with the proposed Power Station Project so that an appropriate response is made to an emergency at either of the facilities.[71]

4.12.2.1 Hazard Analysis

The EIS should identify all legislation, standards and codes of practice in relation to the storage and handling of hazardous materials. The EIS should provide an inventory for each class of substances listed in the 'Australian Dangerous Goods Codes' to be held on site.

A hazard identification exercise should be conducted in order to identify the nature and scale of all hazards which might occur during the Project, such as the potential for release of gaseous or particulate pollutants or any other hazardous material used, produced or stored on the site. This should include the impact on the Project of any natural events such as bushfires or local flooding. Any identified impact on the Project should also be extended to determine the resultant impact on the surrounding area and community. The hazard identification exercise must include a risk assessment consistent with 'Australian / New Zealand Standard for Risk Management 4360:2004'.

The risk analysis is to address the potential impacts that may occur on the normal on-site day-to-day activities during the construction of the facilities. The Proponent must also assess the associated risk impact on adjacent facilities. The risk contours are to be prepared in accordance with the protocol used in *Industrial/Residential Interface Buffer Arrangements, Wynnum* (Peter J Turnbull Pty Ltd & UniQuest Ltd, April 1999). Any special operating or storage procedures adopted to reduce the possibility of accidents occurring, or reduce the severity of the events, are to be identified and adopted where appropriate. A set of representative incident scenarios should be selected. This set should initially include worst case scenarios (e.g. a catastrophic failure of a storage vessel or processing unit).

A preliminary analysis of the consequences of these incidents on people, property and the biophysical environment should be conducted to identify potential impacts.

If this preliminary analysis predicts significant off-site impacts, a risk analysis should be performed. This will require an evaluation of the likelihood of each scenario occurring in order to calculate the level of risk in surrounding areas due to the presence of the facility. Risk contours should be presented on a suitably scaled location map.

The acceptability of the risk to surrounding land uses should be assessed by referring to nationally adopted risk criteria presented in the New South Wales Department of Urban Affairs and Planning's 'Hazardous Industry Planning Advisory Paper No. 4 - Risk Criteria for Land Use Safety Planning' (HIPAP No. 4).

[70] GHD

[71] DES

Details of the methodology and results of each step described above should be presented in the EIS.

The EIS should refer to State Planning Policy 1/03 – 'Mitigating the Adverse Impacts of Floods, Bushfire and Landslide' in relation to mitigation measures.

4.12.2.2 Safety Systems and Emergency Planning

Details of the design and operation of proposed safety systems, including fire prevention and protection, leak detection and minimisation, and emergency shutdown systems and procedures, should be presented. The contingency procedures to respond to an emergency, equipment failure or other malfunction that results in the release of contaminants should be discussed.

The Proponent should develop an integrated risk management plan for the whole of the life of the Project including construction, operation and decommissioning phases. The plan should include a preliminary hazard analysis to such a standard as that set by the HIPAP No. 4.[72]

4.13 Greenhouse Gas Emissions

Greenhouse gas emissions should be described in the context of relevant protocols and agreements including:

- an inventory of projected future annual emissions for each greenhouse gas, both on site and off site, attributable to the Project, and for each component of the Project expressed as total mass CO_2 equivalents per annum and, if possible, as a percentage of Queensland and Australia's annual greenhouse gas emissions;
- the intended measures to avoid, minimise or offset greenhouse emissions, including any sink-enhancement activities;
- an analysis of comparable technologies, processes and equipment to demonstrate the degree to which the selected option minimises emissions and/or may facilitate the future use of carbon capture and storage technologies;[73] and
- intended audit and critical review procedures.

4.14 Cross Reference with Terms of Reference

This section provides a cross reference of the findings of the relevant sections of the EIS, where the potential impacts and mitigation measures associated with the Project are described, with the corresponding sections of the ToR.

[72] GHD

[73] QT

5. Environmental Management Plan

5.1 Outline of the EMP

An outline of any EMPs for the Project should be presented, together with reference to best-practice standards for EMPs. All EMPs should be prepared in accordance with the EPA Guideline, 'Preparing Environmental Management Plans'.

This section of the EIS should consolidate all relevant information mentioned in the text and provide a clear statement of specific commitments that DN will make. The EMPs must contain sufficient information to allow an objective assessment of proposed countermeasures.

A construction EMP should refer to relevant construction standards, techniques and reference material.

5.2 Environmental Safeguards to Manage Impacts

Safeguards to avoid and mitigate effects on the environment should be presented in the form of draft EMPs. The EMPs should contain measures which aim to:

- control erosion and unnecessary soil disturbance including preventing soil loss in order to maintain land capability/suitability, reducing wind-generated dust concentrations and preventing significant degradation of local waterways by suspended solids;
- manage foreseeable accidents and emergencies, which are described in sufficient detail, to permit an informed assessment of the likely effectiveness of the contingency plans;
- minimise vegetation disturbance;
- minimise changes to groundwater and flooding;
- minimise adverse impacts on quality and flows in receiving waters;
- manage the stormwater releases from the facility;
- prevent accidental gaseous emissions likely to impact on air quality;
- control noise;
- control dust;
- minimise air emissions (including consideration of sink enhancement measures to offset emissions);
- prevent or minimise impacts on terrestrial fauna and fauna habitat and prevent impacts on terrestrial species listed as Endangered, Vulnerable or Rare in the Wildlife Regulations, and on migratory birds of conservation significance;
- minimise and mitigate impacts on the existing cultural heritage values of any cultural heritage items or places located at the site or adjacent to the site through the preparation of a draft CHMP;
- prevent pollution from solid and liquid waste including options for reuse and recycling;
- minimise any deleterious effects on economic, social, recreational, conservation, cultural, and community activities and resources;
- minimise the impact of driver fatigue on construction workforce who travel to and from Mackay and other centres driving long distances before or after a work period;[74]

[74] DMR

- incorporate environmental protection into the design, siting, layout and landscaping of facilities and associated works;
- educate employees and construction managers in relation to their environmental protection obligations (e.g. through the incorporation of appropriate clauses in construction contracts);
- management measures to control and prevent the spread of declared plants on and off the site including protocols for the washing and inspection of machinery coming onto the Project site for the first time and moving within and outside the Project site; and
- minimise the adverse impacts of construction traffic and operational traffic on the transport network by the preparation of a RUMP for the construction and operation of the development.[75]

The EMP should include:

- an outline of an erosion-monitoring program, including rehabilitation measures for erosion problems identified during monitoring;
- monitoring programs, which will assess the effectiveness of management strategies for protecting water quality during the construction and operation of the Project; and
- an outline of emission management options to minimise greenhouse gas emissions, including a process for continuous improvement, benchmarking, a review of technologies and any relevant broader initiatives (e.g. National Greenhouse Strategy) and the extent to which it may become feasible to make the plant design ready for the future adoption of carbon capture and storage technologies.[76]

5.3 Structure of the EMP

The EMP should nominate for each significant environmental issue:

- the objective of target, i.e. what is intended to be achieved;
- the management strategy, i.e. the overall approach to accomplish the objective or target;
- the tasks or actions to implement the management strategy, including any necessary approval applications, consultations and monitoring;
- the performance indicators to measure the effectiveness of the tasks or actions;
- the person or organisation responsible for each task or action; and
- the auditing requirements to demonstrate implementation of agreed construction and operation environmental management strategies and compliance with agreed performance criteria.

5.4 Reporting

The EMP should outline the means for reporting the effectiveness of the environmental control strategies, with reference to the reporting requirements of the EP Act.

5.5 Monitoring Programs and Procedures

Proposed locations for monitoring, typical parameters to be monitored and frequency of monitoring during the construction and operating stages of the Project should be clearly indicated.

Any requirements for baseline surveys should be identified. In the event that there is a failure to achieve monitoring objectives, contingency measures need to be described.

[75] DMR

[76] QT

Evidence that the monitoring protocols will detect any impact before long-term damage is created by the facility should be supplied.

Environmental monitoring programs should be clearly documented and should include a reference to known or newly identified contaminants and risks to human health. The criteria used to measure impacts should be detailed.

Those responsible for monitoring programs should be identified.

There should also be a statement of the audit procedures established for monitoring program reporting.

6. References

All references used in the preparation of the EIS should be presented in a recognised format such as the Harvard standard (refer to the Style Guide, Australian Government Publishing Service). This standard lists references by presenting in the following order: author (date of publication) title, publisher and place of publication.

7. Recommended Appendices

7.1 Final Terms of Reference

The finalised ToR should be included as an Appendix to the EIS.

7.2 Development Approvals

A list of the development approvals required by the Project should be provided.

7.3 Consultation Report

A list of Advisory Agencies should be provided in a summary consultation report, which should also list the State and Local government agencies consulted, and the individuals and groups of stakeholders consulted. A summary of the issues raised by these groups, and the means by which the issues have been addressed, should be provided in the text of the EIS.

The EIS should summarise the results of the community consultation program, providing a summary of the groups and individuals consulted, the issues raised, and the means by which the issues were addressed. The discussion should include the methodology used in the community consultation program, including criteria for identifying stakeholders and the communication methods used.

The EIS should include a summary report on consultation to date on the proposed site with registered native title claimants, Native Title Representative Bodies and relevant Indigenous corporations.[77]

Information about identifying interested and/or affected persons (as defined by the EP Act) should be included.

7.4 Study Team

The qualifications and experience of the study team and specialist sub-consultants should be provided.

7.5 Specialist Studies

Relevant supporting data and information generated from specialist studies undertaken as part of the EIS are to be included as appendices. These may include:

- geology;
- soil survey and land suitability studies;
- waterway hydrology;
- groundwater;
- flora and fauna studies;
- road impact assessment study of the construction and operational traffic;[78]
- economic studies; and
- hazard and risk studies.

[77] DATSIP

[78] DMR

7.6 List of Proponent Commitments

A list of all commitments made by DN in the EIS should be provided, together with a reference to the relevant section in the EIS.