

Ammonia and Urea Plants, Burrup Peninsula

Change to Split Statement 614 into Two Separate Statements

Dampier Ammonia Pty Ltd

Dampier Urea Pty Ltd

**Section 46 Report and Recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
Bulletin 1201
October 2005**

Section 46 Report Timelines

Date	Actions
13/9/05	Section 46(1) report request from Minister
17/10/05	Advertised by EPA
27/10/05	Section 46(1) report to Minister
31/10/05	EPA bulletin released
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Summary and Recommendations

AMMONIA AND UREA PLANTS, BURRUP PENINSULA – S46 REPORT (ASSESSMENT NOS. 1602 & 1603)

1. Introduction

On 13 September 2005, the Minister requested the Environmental Protection Authority (EPA) to inquire into the amendment of the conditions of statement 614 (dated 6 December 2002) resulting from the splitting of the proposal for an Ammonia-Urea Plant on the Burrup Peninsula. The inquiry was necessitated by the proponent, Dampier Nitrogen Pty Ltd, wishing to split the original proposal into two proposals, an ammonia plant and a urea plant. The approval to split the proposal was granted as a change to the proposal on 12 October 2005 under section 45C of the *Environmental Protection Act, 1986*.

The split of the proposal is based on commercial grounds and there are no changes to the capacities or other operational characteristics of the proposal as originally approved. Figure 1 (in each Appendix) shows the location of the Ammonia and Urea Plants. The split of the proposal will result in each plant being on its own land as a sublease, and each plant will be constructed and operated independently. The Ammonia Plant sublease is 58.67ha and the Urea Plant sublease is 8.09ha. Figure 2 (in the respective Appendix) shows the proposed sublease boundaries of each proposal.

The proponent also wishes to nominate a separate proponent for each proposal and, therefore, statement 614 will need to be replaced by two new statements and a proponent nominated for each proposal. Legal advice has confirmed that sections 45C and 46 are correct processes under the Environmental Protection Act to enact the split of the original proposal into two proposals and to issue separate statements for each proposal.

2. Discussion

In assessing the change to the original proposal, being the split of the proposal into two proposals, the EPA considered that there were no additional or different environmental effects to those of the original proposal. In assessing the replacement of statement 614, the EPA was careful to ensure that the environmental factors and matters addressed in statement 614 were adequately transferred across to the two new statements.

The original and new proponents have assisted by jointly agreeing on a correct description of each proposal (incorporated into schedule 1 of each statement), and which specific conditions and commitments in statement 614 they consider applies to which plant.

Considering statement 614 is now 3 years old, the EPA has taken the opportunity to recommend an upgrade of some conditions to a contemporary format and to segregate the commitments that will be audited by the Department of Environment from management actions that will be the responsibility of other agencies, such as hazardous materials and risk, which is the legislative responsibility of the Department of Industry and Resources. The transfer or update of each condition, procedure and commitment is discussed below.

Conditions in statement 614

Of the 12 conditions in statement 614, nine conditions are transferred to the new statement for the urea plant proposal and ten conditions are transferred to the new statement for the ammonia plant proposal. The conditions which are administrative in nature are common to each new statement. The condition on Work Practices was not transferred to either new statement as discussed below, and two conditions, Brine and Wastewater Discharge and Greenhouse Gas Abatement, were not transferred to the new statement for the Urea Plant, as discussed below.

Statement 614 is appended and the following discussion refers to the fate of each condition and commitment.

Conditions 1-2 and 1-3 (Implementation and Changes) have been removed because section 45C of the amended *Environmental Protection Act, 1986* provides the process for changes to proposals.

Condition 2-2 (Proponent Commitments) has been removed because section 46 of the amended *Environmental Protection Act, 1986* is the correct process for amending conditions and commitments in statements.

Condition 3-2 (Proponent Nomination and Contact Details) has been updated to specify the process under section 38(6a) of the amended *Environmental Protection Act, 1986* for the transfer of proponent responsibilities.

Condition 4 (Time Limit of Approval) has been amended to specify the remaining time limit of approval of the proposals (6 December 2007) which is 5 years from the date of the issue of statement 614 (6 December 2002). **The**

Condition 5-1 (Compliance Audit) has been updated to set up a compliance reporting schedule. The proponent is responsible for implementing an audit program to provide the information for the compliance reports.

Condition 6-1 (Decommissioning) has been updated to specify more practicable requirements for a Preliminary Decommissioning Plan for that stage of the implementation of the proposal.

Condition 7 (Greenhouse Gas Emissions) is included only in the new statement for the Ammonia Plant, and not in the new statement for the urea plant since it has a very low level of greenhouse gas emissions, both in absolute terms and in comparison with the Ammonia Plant, which will have the Power Generation Facility. The condition has been updated to reflect the guidelines in EPA Guidance No.12, Minimising Greenhouse Gas Emissions.

Condition 8 (Gaseous and Particulate Emissions) is included in each new statement and updated to specifically reflect the gaseous and particulate emissions from each plant that may impact on the surrounding environment. The Urea Plant is the major emitter of ammonia gas and urea particulates, which can be damaging to soil condition, vegetation, petroglyphs, rock-pools and mangrove communities, and the concentration levels that may cause damage need to be determined. The gaseous and particulate emissions from the Ammonia Plant, and Power Generation Facility, are principally nitrous oxides, sulphur dioxide and carbon dioxide. The predicted emission levels are not considered to have a significant potential to affect the surrounding environment as do ammonia and urea, and the condition on the Ammonia Plant does not require the same monitoring and investigative studies to protect soil condition, vegetation, petroglyphs, rock-pools and mangrove communities.

Condition 9 (Brine and Wastewater Discharge) is specific to the Ammonia Plant proposal only and has been updated to a more auditable format.

Condition 10 (Noise) is included in each new statement and has been updated to a more auditable format.

Condition 11 (Urea Storage Shed Site) is specific to the Urea Plant proposal only and has been updated to a more auditable format.

Condition 12 (Work Practices) has not been transferred to the new statements because it does not have a defined outcome or measure of achievement. The condition requires work practices to a level of international best practice. The proponent has committed to a management strategy to strive for this goal in the Consultative Environmental Review (Plenty River Corporation, 2002) and supplementary documentation.

The 'Procedures' in statement 614 are more appropriately included as 'Notes' because they are administrative in nature and do not have the same purpose as the conditions in requiring the proponent to take actions to protect the environment.

Commitments in statement 614

Of the 35 commitments in statement 614, 7 have been incorporated into each new statement. The other commitments are either duplicated by conditions or legislation administered by other agencies, or are management actions and strategies that the proponent has committed to do as part of normal environmental management, or are duplicated for the implementation phases of construction and operations. Each commitment in statement 614 is discussed below.

Commitments 1 & 13 (Environmental management) are management actions which list the plans required by other commitments, conditions or legislation for the construction and operations phases respectively and, therefore, they have been removed from the new statements.

Commitments 2, 3, 4, 5, 6, 8 & 19 have been rewritten into a contemporary format and incorporated into each new statement. The commitments do not need to be separated into the two phases of implementation, construction and operations, under the contemporary format.

Commitments 7, 10, 11, 12, 20, 21, 22, 23, 24, 28, 29, 30 & 31 are management actions related to safety, risk, public health, waste management, hazardous materials, amenity and good environmental management, some of which are

duplicated for the phases of construction and operations. These matters are managed by legislation administered by other agencies, or under Part V of the *Environmental Protection Act, 1986*. It is not necessary for the Environmental Audit Section of the Department of Environment to formally monitor these matters.

Commitments 9 & 27 are about noise management and commitment 25 is about air emissions and these are duplicated by conditions in each new statement.

Commitments 14, 16, 17 & 18 duplicate commitments 2, 4, 5 & 6 for the operations phase, which is no longer necessary under the contemporary format.

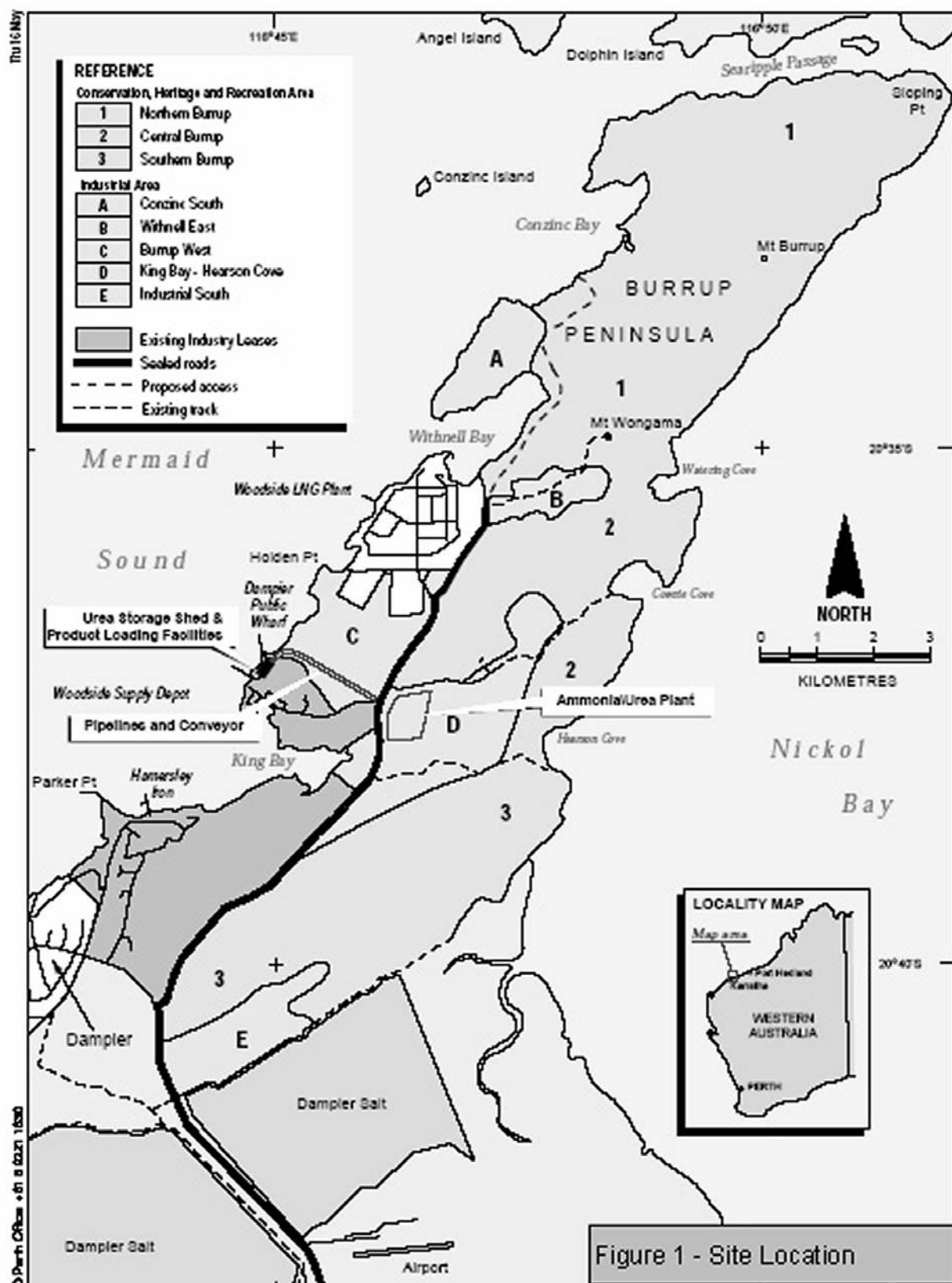
Commitment 15 is a management action for a Landscaping Plan for the plant, and addresses good environmental management, and it is not necessary for the Environmental Audit Section of the Department of Environment to formally monitor this matter.

Commitment 26 is about greenhouse gas management and is duplicated by a condition in the new statement for the ammonia plant, but has been removed from the new statement for the urea plant because of the very low level of greenhouse gases emitted by this plant both in absolute terms and in comparison with the ammonia plant, which will have the power generation facility.

3. Recommendations

The EPA has concluded that there are no additional or different environmental effects that result from the split of the original proposal into two separate proposals. Therefore, the EPA considers that statement 614 can be adequately separated into two new statements for the two proposals as discussed above.

The recommended environmental conditions and procedures for the two proposals are enclosed in Appendix 1 and 2 for the Ammonia Plant and Urea Plant, respectively, along with the original statement 614 in Appendix 3.



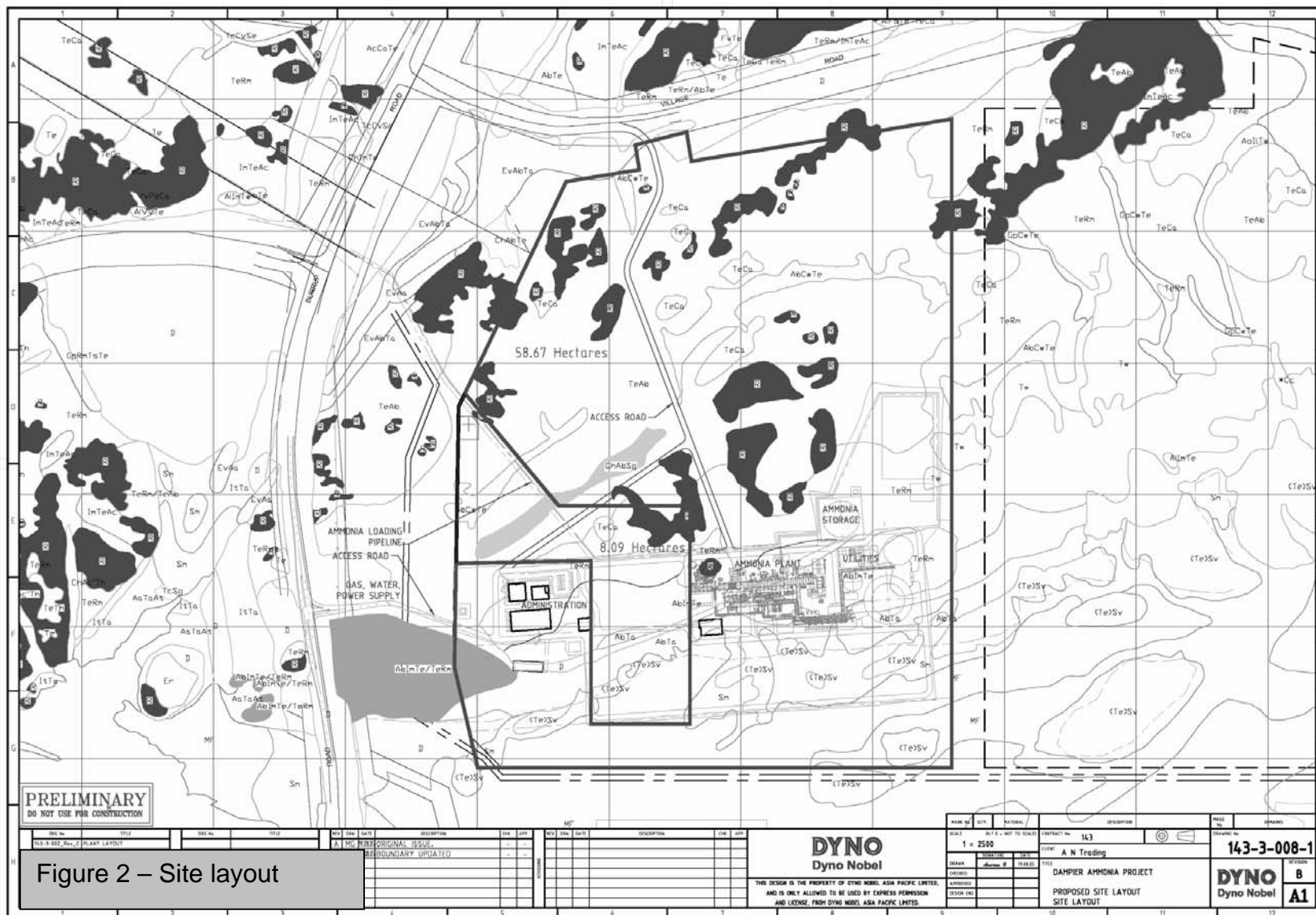


Figure 2 – Site layout

APPENDIX 1

Recommended Environmental Conditions and Proponent's Consolidated Commitments for the Ammonia Plant

RECOMMENDED STATEMENT OF CONDITIONS AND PROCEDURES

**STATEMENT TO AMEND
CONDITIONS AND PROCEDURES APPLYING TO A PROPOSAL
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

AMMONIA PLANT, BURRUP PENINSULA

Proposal: The construction and operation of an ammonia plant of 2300 tonnes per day nominal capacity on the Burrup Peninsula, utilising Krupp-Udhe technology, as documented in schedule 1 of this statement.

The plant will utilise North-West Shelf Gas both for energy and as feedstock for the process. The proposal includes an on-site desalination plant.

Proponent: Dampier Ammonia Pty Ltd

Proponent Address: C/- Dyno Nobel Asia Pacific Ltd
Locked Bag 2113, NORTH SYDNEY NSW 2059

Assessment Number: 1602

Previous Assessment Number: 1178

Report of the Environmental Protection Authority: Bulletin 1201

Previous Report of the Environmental Protection Authority: Bulletin 1065

Previous Statement Number: 614 (published 6 December 2002)

The proposal referred to in the latest report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures, which replace all previous conditions and procedures in Statement No. 614 that were applicable to the ammonia plant:

1 Implementation

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions and procedures of this statement.

Published on

2 Proponent Commitments

- 2-1 The proponent shall fulfil the environmental management commitments contained in schedule 2 of this statement.

3 Proponent Nomination and Contact Details

- 3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.
- 3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent under section 38(6a) and provide the name and address of the person who will assume responsibility for the proposal, together with a letter from that person, which states that the proposal will be carried out in accordance with the conditions and procedures, and documentation on the capability of that person to implement the proposal and fulfil the conditions and procedures.
- 3-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

- 4-1 The proponent shall provide evidence to the Minister for the Environment by 6 December 2007 that the proposal has been substantially commenced or the approval granted in the statement of 6 December 2002 shall lapse and be void.
- 4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond 6 December 2007 to the Minister for the Environment prior to this date. The application shall demonstrate that:
1. the environmental factors of the proposal in Bulletins 1065 and 1201 have not changed significantly;
 2. new, significant, environmental issues have not arisen; and
 3. all relevant government authorities and stakeholders have been consulted.

5 Compliance Reporting and Performance Review

- 5-1 The proponent shall submit compliance reports to the Department of Environment, in accordance with a schedule approved by the Department of Environment. The compliance reports shall:
1. describe or update the state of implementation of the proposal;
 2. provide verifiable evidence of compliance with the conditions, procedures and commitments; and

3. review the performance of the environmental management plans and programs.
- 5-2 The proponent shall submit a Performance Review every five years after the start of production, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:
1. the major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those objectives;
 2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;
 3. significant improvements gained in environmental management, including the use of external peer reviews;
 4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
 5. the proposed environmental objectives over the next five years, including improvements in technology and management processes.

6 Decommissioning Plan

- 6-1 Prior to ground-disturbing activities, the proponent shall prepare a Preliminary Decommissioning Plan, which describes the framework to ensure that the site is left in an environmentally acceptable condition, and provides:
1. the rationale for the siting and design of plant and infrastructure as relevant to environmental protection;
 2. a conceptual description of the final landform at closure;
 3. a plan for a care and maintenance phase; and
 4. initial plans for the management of noxious materials.
- 6-2 At least six months prior to the anticipated date of closure, or at a time approved by the Environmental Protection Authority, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Final Decommissioning Plan shall address:

1. removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;
 2. rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s); and
 3. identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.
- 6-3 The proponent shall implement the Final Decommissioning Plan required by condition 6-2 until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning responsibilities are complete.

6-4 The proponent shall make the Final Decommissioning Plan required by condition 6-2 publicly available in a manner approved by the Department of Environment.

7 Greenhouse Gas Abatement

7-1 Prior to commencement of ground-disturbing activities, the proponent shall submit a Greenhouse Gas Abatement Programme prepared to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, to:

- ensure that the plant is designed and operated in a manner which achieves reductions in “greenhouse gas” emissions as far as practicable;
- provide for ongoing “greenhouse gas” emissions reductions over time;
- ensure that through the use of best practice, the total net “greenhouse gas” emissions and/or “greenhouse gas” emissions per unit of product from the project are minimised; and
- manage “greenhouse gas” emissions in accordance with the *Framework Convention on Climate Change 1992*, and consistent with the National Greenhouse Strategy.

This Programme shall include:

- 1 calculation of the “greenhouse gas” emissions associated with the proposal, as advised by the Environmental Protection Authority;

Note: The current requirements of the Environmental Protection Authority are set out in: *Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No. 12* published by the Environmental Protection Authority (October 2002), though this document may be updated or replaced from time to time.

- 2 specific measures to minimise the total net “greenhouse gas” emissions and/or the “greenhouse gas” emissions per unit of product associated with the proposal using a combination of “no regrets” and “beyond no regrets” measures;

Note: The following definitions apply:

1. “no regrets” measures are those which can be implemented by a proponent and which are effectively cost-neutral.
2. “beyond no regrets” measures are those which can be implemented by a proponent and which involve additional costs that are not expected to be recovered.

- 3 consideration of the implementation of “greenhouse gas” offset strategies;
- 4 estimation of the “greenhouse gas” efficiency of the project (per unit of product and/or other agreed performance indicators) and comparison with the efficiencies of other comparable projects producing a similar product, both within Australia and overseas;

- 5 implementation of thermal efficiency design and operating goals consistent with the Australian Greenhouse Office Technical Efficiency guidelines in design and operational management;
 - 6 actions for the monitoring, regular auditing and annual reporting of “greenhouse gas” emissions and emission reduction strategies;
 - 7 a target set by the proponent for the progressive reduction of total net “greenhouse gas” emissions and/or “greenhouse gas” emissions per unit of product and as a percentage of total emissions over time, and annual reporting of progress made in achieving this target. Consideration should be given to the use of renewable energy sources such as solar, wind or hydro power;
 - 8 a program to achieve reduction in “greenhouse gas” emissions, consistent with the target referred to in (7) above;
 - 9 entry, whether on a project-specific basis, company-wide arrangement or within an industrial grouping, as appropriate, into the Commonwealth Government’s “Greenhouse Challenge” voluntary cooperative agreement program, which include:
 1. an inventory of emissions;
 2. opportunities for abating “greenhouse gas” emissions in the organisation;
 3. a “greenhouse gas” mitigation action plan;
 4. regular monitoring and reporting of performance; and
 5. independent performance verification.
 - 10 Review of practices and available technology; and
 - 11 “Continuous improvement approach” so that advances in technology and potential operational improvements of plant performance are adopted.
- 7-2 The proponent shall implement the Greenhouse Gas Abatement Programme required by condition 7-1.
- 7-3 Prior to the commencement of ground-disturbing activities, the proponent shall make the Greenhouse Gas Abatement Programme required by condition 7-1 publicly available in a manner approved by the Department of Environment.

8 Gaseous and Particulate Emissions

- 8-1 Prior to submitting a Works Approval application, the proponent shall provide a report to the Department of Environment that:
- 1 confirms the engineering design details for the emission of gaseous pollutants, including stack heights, stack diameters, exit temperatures and exit velocities;
 - 2 estimates the concentration of oxides of nitrogen, and other major gaseous pollutants, under normal and worst-case conditions, including start-up and upset emissions;

- 3 demonstrates that oxides of nitrogen emissions from gas turbines will meet the Environmental Protection Authority's guideline value of 0.07 grams per cubic metre as stated in its Guidance Statement No. 15 "Emissions of Oxides of Nitrogen from Gas Turbines," May 2000; or, if a NO_x concentration higher than the Environmental Protection Authority's guideline value for gas turbines (0.07 grams per cubic metre) is proposed, provide a comprehensive report (by, or audited by, a mutually agreed independent expert) to demonstrate that:
 - all feasible options (process/technology improvement and NO_x control measures) to minimise NO_x emissions have been considered (including an evaluation of the expected reduction in emissions of NO_x and efficiencies for each option); and
 - the proposed options to minimise NO_x are consistent with the best practicable technology and current industry standards for similar operations with other combined cycle gas turbine systems in developed countries; and
- 4 remodel the oxides of nitrogen emissions to determine building wake effects.

Note: The Environmental Protection Authority requires stack heights to be such that the downwash of emissions in the lee of buildings or other structures is minimised or preferably avoided.

9 Brine and Wastewater Discharge

- 9-1 Prior to submitting a Works Approval application, the proponent shall provide a report to the Department of Environment that:
 1. characterises the physico-chemical composition and flow rates of all wastewater streams within the site, including the desalination plant;
 2. determines, for all non-negligible contaminants and nutrients, the total annual loads of contaminants and nutrients in the combined brine and wastewater discharge exiting the site; and
 3. determines, for normal and worst-case conditions, the concentrations of contaminants and nutrients (for agreed averaging periods) in the combined brine and wastewater discharge exiting the site.
- 9-2 Prior to submitting a Works Approval application, the proponent shall provide a report to the Department of Environment that demonstrates that the brine and wastewater discharge will meet best practicable technology and waste minimisation principles for contaminants and nutrients.
- 9-3 Following completion of design, and at least three months prior to submitting a Works Approval application, the proponent shall present to the Department of Environment its preferred option for Boiler Feedwater Conditioning, together with a detailed rationale for its selection and use, and shall demonstrate waste minimisation and best practicable technology.
- 9-4 Prior to submitting a Works Approval application, the proponent shall design, and subsequently operate plant and equipment on the site such that:

1. the contaminant concentrations in the combined brine and wastewater effluent from the site, just prior to entry to the multi-user brine and wastewater discharge system, meet (in order of preference):
 - the ANZECC/ARMCANZ (2000) 99% species protection level; or
 - the ANZECC/ARMCANZ (2000) 99% species protection level at the edge of the approved mixing zone (currently 0.01 square kilometre), without any subsidy or pre-dilution from the main brine return line; or
 - other acceptable limits, if the Environmental Protection Authority determines the regional background concentration of a given contaminant in seawater to be significant;
2. mass balances and inventories of toxicants (i.e. catalysts and process chemicals) can be maintained throughout the life of the plant so that their fate can be traced; and
3. the load of nutrients causes no resultant detectable change beyond natural variation in the diversity of the species and biological communities and abundance/biomass of marine life, beyond the designated mixing zone.

Note: ANZECC/ARMCANZ (2000) = Australian and New Zealand Environment and Conservation Council/Australian Resource Management Council of Australia and New Zealand, Guidelines for Fresh and Marine Water Quality, 2000.

- 9-5 Prior to submitting a Works Approval application, the proponent shall provide a report to the Department of Environment either on the results of whole-of-effluent toxicological studies on a simulated effluent, including treatment chemicals, or on a risk assessment of the effect of the effluent on the receiving environment. The toxicological studies shall be conducted in a manner consistent with ANZECC/ARMCANZ (2000) requirements.
- 9-6 Within three months following the commencement of the use of the effluent pipeline to Water Corporation, the proponent shall provide a report to the Department of Environment that demonstrates that the effluent's physico-chemical properties are substantially consistent with the properties characterized and reported under the requirements of condition 9-1.
- 9-7 In the event that effluent physico-chemical properties are not substantially consistent with the predicted properties, the proponent shall conduct toxicological studies on the effluent, or provide acceptable alternative information such as risk assessment, and shall provide a report to the Department of Environment. These studies and information shall be consistent with ANZECC/ARMCANZ (2000) requirements.

10 Noise

- 10-1 The proponent shall not commence ground-disturbing activities except in accordance with a Noise Management Plan approved by the Department of Environment, which shall include:
1. an acoustical model of the plant;
 2. best practicable measures to minimise noise levels at Hearson Cove;
 3. operating procedures to be adopted for selected routine activities which minimise noise impacts on public amenity at Hearson Cove;

4. a noise monitoring program; and
5. a complaint management procedure.

10-2 The proponent shall make the Noise Management Plan required by condition 10-1 publicly available in a manner approved by the Department of Environment.

10-3 Prior to ground-disturbance, the proponent shall provide a report to the Department of Environment from a mutually-agreed, independent, acoustical engineer that demonstrates that the design of the plant and the noise mitigation measures in the Noise Management Plan incorporate best-practicable measures to minimise noise at Hearson Cove.

Notes

1. Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environment for the preparation of written notice to the proponent.
2. The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.
3. The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.
4. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.

Schedule 1

The Proposal (Assessment No. 1602)

The proposal is to construct and operate an ammonia plant on the Burrup Peninsula, approximately 1300 kilometres north of Perth. The location of the complex is in the King Bay-Hearson Cove Industrial Area, as shown in Figure 1 (attached). The project lease has an area of approximately 67 hectares of which approximately 11 hectares will be cleared for the plant, as shown in Figure 2 (attached).

The ammonia plant will comprise of an ammonia plant producing 2300 (nominal) tonnes per day of ammonia. Krupp-Udhe technology will be utilized.

The plant also includes:

- a seawater desalination plant;
- seawater treatment and storage;
- internal power generation and distribution;
- product storage facilities for ammonia (on-site);
- pipelines for ammonia export from the site to the wharf; and
- ship-loading facilities for load-out of anhydrous (liquid) ammonia.

All pipelines will be situated in multi-user corridors which have not been assessed as part of this proposal.

Seawater supply and return will be undertaken by the Water Corporation and assessment of this has not been undertaken as part of this proposal.

The main characteristics of the proposal are summarised in Table 1 below.

Table 1 - Key Proposal Characteristics (Assessment No. 1602)

Characteristic	Description
Plants on site: Ammonia Plant Desalination Plant	Outputs: 2,300 tpd nominal capacity, using Krupp-Uhde technology. 2.4 ML/d from desalination of seawater.
Plant Area Total Area disturbed	Approximately 11 hectares. Approximately 13 hectares.
Storage: Ammonia	40,000 tonnes capacity on plant site, in double-walled double-integrity refrigerated tank.
Inputs: Natural Gas Sea Water for Cooling: - Process Plant - Desalination plant Cooling Tower	Max. 82 TJ/day from gas Plant. 2,300-3,000 kL/hour from the Water Corporation (to be drawn from Mermaid Sound) ³ 500 kL/hour from the Water Corporation to incorporate measures to reduce mist to 0.01% of flow
Power Supply	Internal generation, with some export. Supplied by two co-generation 15MW gas turbines, steam boiler and emergency generators (to be specified).
Energy efficiency	Approximately 33 (±10%) GJ/t ammonia.
Materials Transport: Natural Gas Pipeline Ammonia Pipeline Ammonia Vapour Return Line	3 km length, 200mm diameter, 4.2 to 4.8 MPag pressure, buried. 2.5 km length, 400 mm diameter, above ground, insulated for refrigerated ammonia transfer. To be emptied of liquid when not in use for ammonia transfer and fitted with automatic isolation valves at each end. 2.5 km length, 200 mm diameter, above ground, fitted with automatic isolation valves at each end.
Shipping	Export of ammonia approximately 7 times per year.
Gaseous Emissions: Oxides of nitrogen (NO _x) (as NO ₂) Carbon dioxide (CO ₂) vented to atmosphere ¹ Sulphur dioxide (SO ₂) Hydrogen (H ₂) Methane (CH ₄) ²	717 tpa approximately. To be achieved with low NO _x burners on reformer, gas turbines and steam boiler. Total CO ₂ generated approximately 1,710,000 tpa of which approximately 886,000 tpa used in urea manufacture. CO ₂ emission to atmosphere approximately 824,600 tpa. 8.4 tpa approximately. All process gas to be desulphurised. 750 tpa approximately, to be flared Traces, to be flared

Methanol	5 to 20 tpa ³ approximately
Liquid Effluent Discharges: Flow: – Process Plant – Desalination Plant – Demineralisation Unit - Stormwater Characteristics: Temperature Salinity Nitrogen Toxicants	1,700 to 2,200 kL/h ³ approximately 420 kL/h approximately < 20 kL/h approximately Uncontaminated stormwater to be diverted around plant and discharged to natural watercourses at appropriate velocity. First flush potentially contaminated stormwater to be retained on site for treatment and reuse and/or discharge to ocean outfall. 2 to 5 degrees above ambient temperature 53,000 mg/L 43 kg/d, with target to reduce to 20 kg/d during detailed engineering design. Effluent quality ≤ ANZECC 99% species protection guidelines for marine waters, exiting the site, except for ammonia and metals, which already occur at concentrations above the ANZECC trigger levels in the intake water and recognising the concentrating effect of evaporative seawater cooling. For ammonia the 99% species protection criterion to be met at edge of toxicant mixing zone.
Noise	< 35 dB(A) at nearest noise-sensitive premises ≤ 65 dB(A) at lease boundary Estimated 40-44 dB(A) at Hearson Cove, to be minimised as practicable during detailed engineering design.
Risk	< 1 death/million/year at nearest residence. < 50 deaths/million/year at plant boundary.
Roads	Access roads to and on site, to be decided in consultation with relevant authorities.

Notes:

- 1 CO₂ ‘total generated’ defines the total amount of CO₂ generated in an integrated ammonia-urea plant, while CO₂ ‘vented from process’ describes the amount of excess CO₂ to be vented to atmosphere. In an integrated ammonia-urea plant, the remainder of the CO₂ generated is used in the manufacture of urea. In the event the urea plant is not operating or for a stand-alone ammonia plant, the CO₂ that would otherwise be sequestered in the urea product is required to be released to atmosphere – in this scenario, the total CO₂ emissions are anticipated to be 1,710,000 tpa. The proponent cannot mitigate or influence the emissions from the product once sold.
- 2 CH₄ to be flared.
- 3 Range to be confirmed during detailed engineering.

Abbreviations:

tpd – tonnes per day

Tj – terajoules

LNG – Liquefied Natural Gas

ML/d – Megalitres per day

KL/h – Kilotres per hour

Mpag – Megapascals (gauge)

tpa – tonnes per annum

mg/L – milligrams per litre

kg/d – kilograms per day

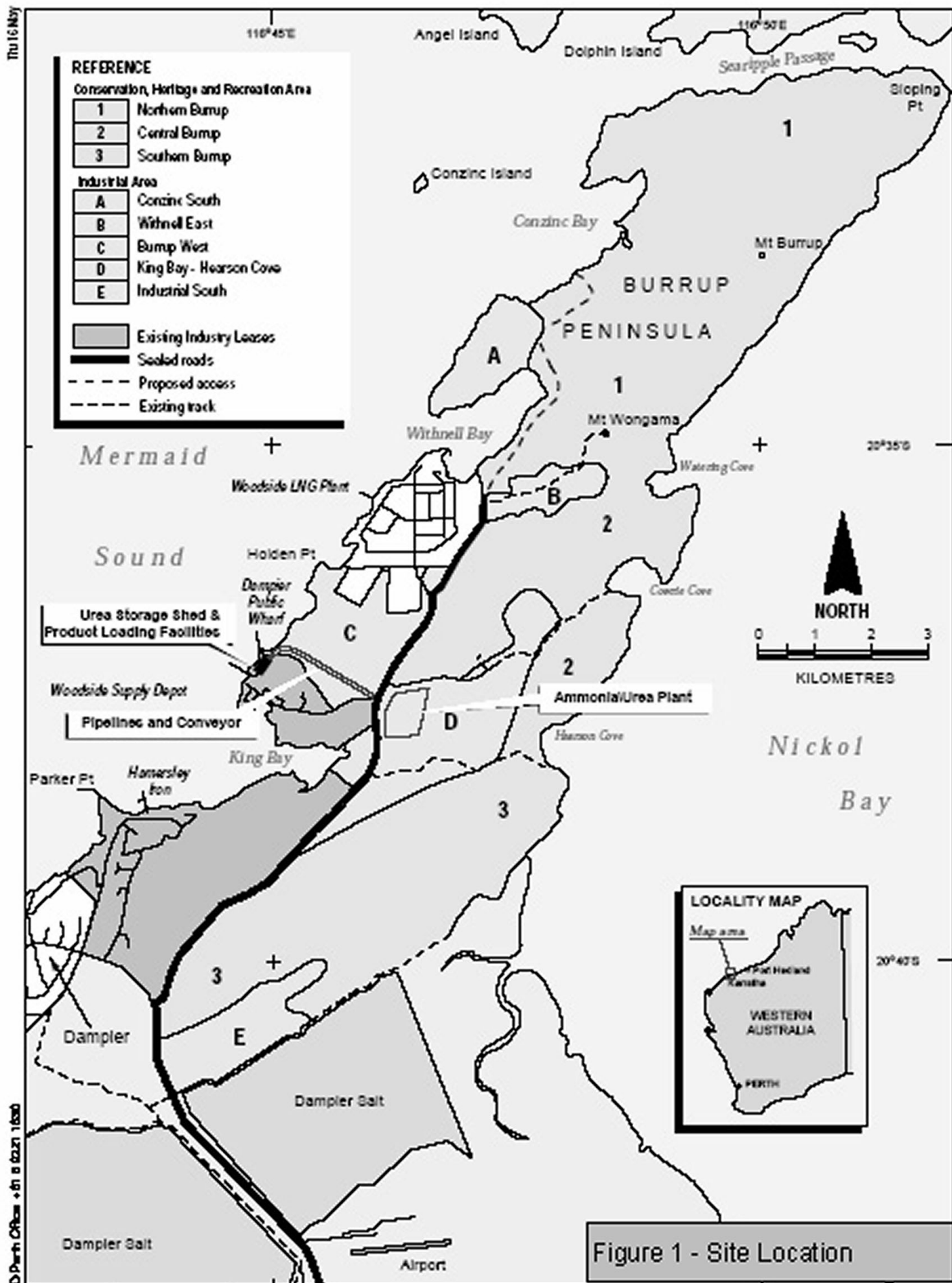
dB (A) – decibels ‘A’ weighted

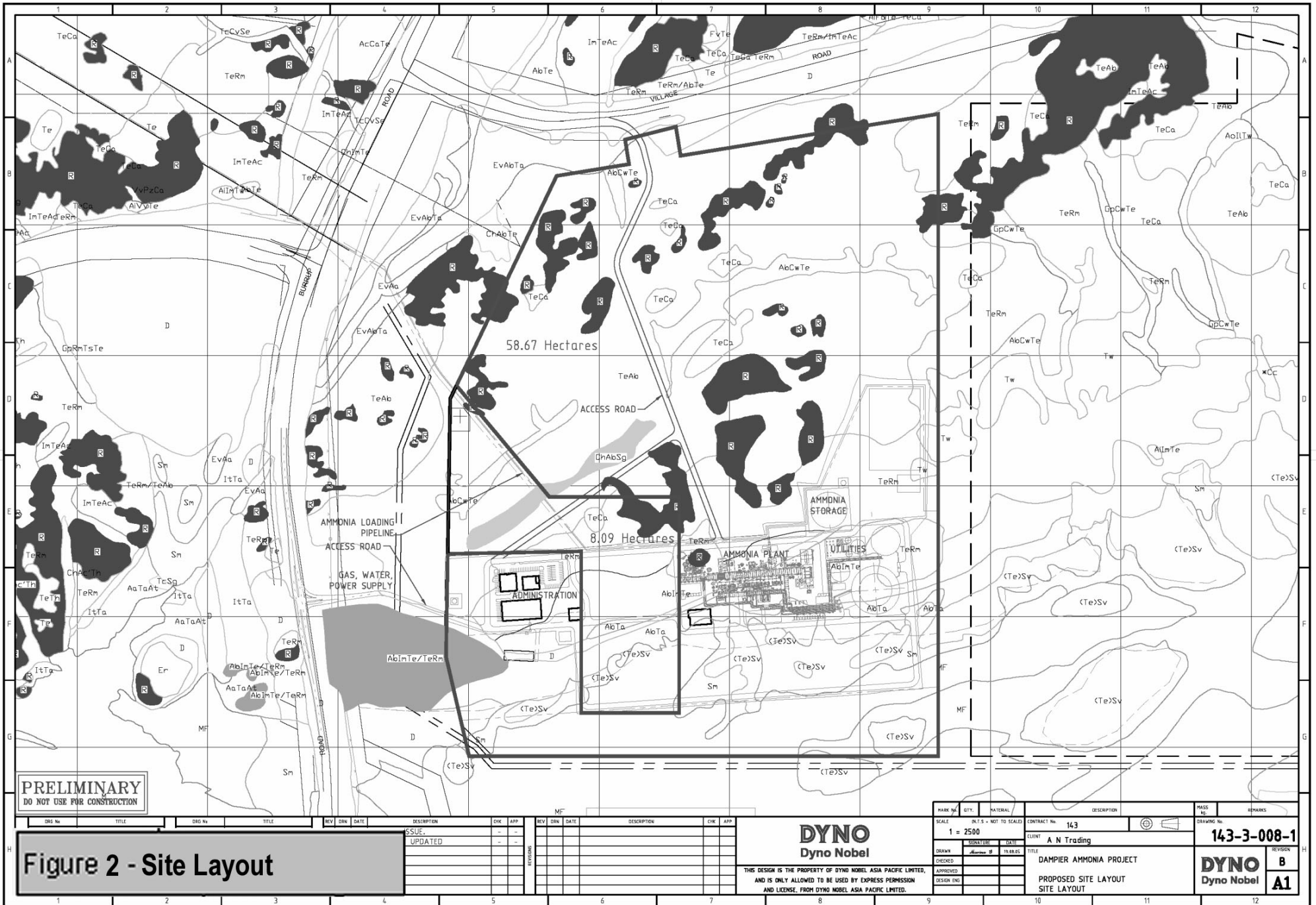
ANZECC – Australia and New Zealand Environment and Conservation Council.

Figures (attached)

Figure 1 - Site location

Figure 2 - Site layout





PRELIMINARY
DO NOT USE FOR CONSTRUCTION

Figure 2 - Site Layout

REV	DATE	DESCRIPTION	CHK	APP	REV	DATE	DESCRIPTION	CHK	APP
1		ISSUE							
2		UPDATED							

DYNO
Dyno Nobel

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SCALE	1 = 2500	CONTRACT No.	163	DRAWING No.	143-3-008-1
CLIENT	A N Trading		TITLE	DAMPER AMMONIA PROJECT	
DESIGN	PROPOSED SITE LAYOUT		REVISION	B	
DESIGN	SITE LAYOUT		REVISION	A1	

Proponent's Environmental Management Commitments

October 2005

**AMMONIA PLANT
BURRUP PENINSULA
(Assessment No. 1602)**

DAMPIER AMMONIA PTY LTD

Proponent Environmental Management Commitments – Ammonia Project, Burrup Peninsula (Assessment No. 1602) October 2005

No.	Topic	Commitment	Objective	Advice
1	Terrestrial plants	<p>The proponent shall not commence ground disturbance except in accordance with a Terrestrial Flora Management Plan addressing:</p> <ul style="list-style-type: none"> • locations of vegetation communities and identify areas not to be disturbed through optimisation of plant layout; • site clearance procedures; • procedures for rehabilitating areas of temporary disturbance; • results of an additional vegetation/flora survey at an optimal time following wet season rains; • support for a regional survey of samphire vegetation communities within the King Bay-Hearson Cove valley with other prospective industries. • seed collection of any prominent flora species present, including Priority Flora species, to ensure the availability of species for rehabilitation; • germination trials prior to and following construction, with a particular focus on the Priority 1 species <i>Terminalia supranitfolia</i>; • during the rehabilitation process, attempts will be made to restore any Priority Flora species disturbed by the project. 	<p>Maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities.</p> <p>Minimise disturbance to vegetation communities during construction.</p> <p>Manage construction impacts on flora, in particular Priority flora.</p>	CALM
2	Weed management	<p>The proponent shall not commence ground disturbance except in accordance with a Weed Management Plan which will include obtaining fill from a weed-free source and identifying best practice weed management procedures in consultation with CALM.</p>	<p>To prevent the spread of weeds and the introduction of new weed species.</p>	CALM, Dept Ag
3	Terrestrial animals	<p>The proponent shall not commence ground disturbance except in accordance with a Terrestrial Fauna Management Plan which includes:</p> <ul style="list-style-type: none"> • ensuring physical disturbance is kept within designated areas; • progressive rehabilitation of disturbed sites to maximise fauna habitat; • results of an additional survey to further investigate the occurrence of Priority Fauna species prior to construction (which, if required, will be updated on a regular basis); • establishment of procedures, monitoring requirements, workforce training and responsibilities to minimise disturbance of significant terrestrial fauna; • support for collaborative research programmes investigating the presence of the Pilbara Olive Python (<i>Liasis olivacea barroni</i>) on the Burrup Peninsula. 	<p>Maintain the abundance, species diversity and geographical distribution of terrestrial fauna.</p> <p>Protect Specially Protected (Threatened) Fauna, consistent with the provisions of the <i>Wildlife Conservation Act 1950</i>.</p> <p>Protect fauna listed on the Schedules of the <i>Environment Protection Biodiversity Conservation Act</i>.</p>	CALM

No.	Topic	Commitment	Objective	Advice
4	Culture and Heritage	<p>The proponent shall not commence ground disturbance except in accordance with an Aboriginal Heritage Management Plan which will encompass:</p> <ul style="list-style-type: none"> • provision of cultural awareness training for construction and operations workforces; • results of outstanding ethnographic and archaeological surveys and ongoing consultation; • a heritage monitoring programme during initial site preparation; • procedures for handling any newly discovered sites which may be uncovered; • ensuring that archaeological sites in the vicinity of the Project are marked and protected from potential disturbance during construction; • contribution towards preserving the Burrup's cultural heritage values, as well as indigenous training, employment and contracting opportunities consistent with agreements with Native Title parties. 	<p>To preserve Aboriginal heritage sites located within the Project area, and ensure that the proposal does not adversely affect cultural associations of the Project lease.</p>	<p>DIA Native Title Claimant Groups</p>
5	Surface Water Management	<p>The proponent shall not commence ground disturbance except in accordance with a Surface Water Management Plan which will manage water discharge from the site. This will address:</p> <ul style="list-style-type: none"> • avoidance of disturbance to natural drainage lines, where possible; • interception of stormwater from the plant site by a drainage system, and use of sediment retention basin; • erosion control practices to be employed; • minimal disturbance to surface soils through restricted clearing and progressive rehabilitation of temporary disturbance areas; • monitoring and reporting requirements; • minimise disturbance to Ab Im Te / Te Rm vegetation community, and locate stormwater ponds to avoid the community. 	<p>Maintain the integrity, functions and environmental values of natural surface water drainage. Maintain the integrity, function and environmental values of watercourses and sheet flow.</p>	<p>CSLC</p>
6	Dust Management	<p>The proponent shall not commence ground disturbance except in accordance with a Dust Management Plan, which will address:</p> <ul style="list-style-type: none"> • the use of water sprays to wet the site during dry windy conditions; • speed limits to minimise dust generated by vehicle movements; • the use of minimum drop heights when loading and unloading soils and other excavated material; and • minimising areas of disturbed, exposed soils. 	<p>To ensure that dust generated during construction does not cause any environmental or human health problem or significantly impact on amenity.</p>	
7	Marine water quality	<p>The proponent shall not commence return of water or export activities at the port except in accordance with a Marine Water Quality Management Plan which includes:</p> <ul style="list-style-type: none"> • Procedures for managing and monitoring return water to the WAWC to ensure that acceptance criteria are met, as set in licence conditions; 	<p>Maintain marine ecological integrity and biodiversity and minimise impact of shipping on the marine environment.</p>	<p>WAWC, DPA, AQIS</p>

No.	Topic	Commitment	Objective	Advice
		<ul style="list-style-type: none"> • Adoption of AQIS guidelines, and environmental management requirements of the DPA; • Contribute to a coordinated management response with the WAWC and other system users to reduce inputs if ambient monitoring shows an elevated risk of environmental quality objectives not being met for King Bay; • Research into alternative treatment chemicals and toxicological impacts on local marine fauna; and • Monitoring protocols in the event of ammonia spill. 		

Abbreviations

DeptAg	Department of Agriculture Western Australia	FESA	Fire and Emergency Services Authority
AQIS	Australian Quarantine & Inspection Service	DOIR	Department of Industry and Resources
CALM	Department of Conservation and Land Management	MRWA	Main Roads Western Australia
CSLC	Commissioner of Soil and Land Conservation	OMP	Office of Major Projects
		PDC	Pilbara Development Commission
DIA	Department of Indigenous Affairs	SoR	Shire of Roebourne
DPA	Dampier Port Authority	WAWC	Water Corporation

APPENDIX 2

Recommended Environmental Conditions and Proponent's Consolidated Commitments for the Urea Plant

RECOMMENDED STATEMENT OF CONDITIONS AND PROCEDURES

**STATEMENT TO AMEND
CONDITIONS AND PROCEDURES APPLYING TO A PROPOSAL
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

UREA PLANT, BURRUP PENINSULA

Proposal: The construction and operation of a urea plant of 3500 tonnes per day nominal capacity on the Burrup Peninsula, utilising Krupp-Udhe technology, as documented in schedule 1 of this statement.

The urea plant will utilise North-West Shelf Gas as feedstock for its process.

Proponent: Dampier Urea Pty Ltd

Proponent Address: Level 2, 616 St. Kilda Road
MELBOURNE VIC 3004

Assessment Number: 1603

Previous Assessment Number: 1178

Report of the Environmental Protection Authority: Bulletin 1201

Previous Report of the Environmental Protection Authority: Bulletin 1065

Previous Statement Number: 614 (published 6 December 2002)

The proposal referred to in the latest report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures, which replace all previous conditions and procedures in Statement No. 614 that were applicable to the urea plant:

1 Implementation

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions and procedures of this statement.

Published on

2 Proponent Commitments

- 2-1 The proponent shall fulfil the environmental management commitments documented in schedule 2 of this statement.

3 Proponent Nomination and Contact Details

- 3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.
- 3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent under section 38(6a) and provide the name and address of the person who will assume responsibility for the proposal, together with a letter from that person, which states that the proposal will be carried out in accordance with the conditions and procedures, and documentation on the capability of that person to implement the proposal and fulfil the conditions and procedures.
- 3-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

- 4-1 The proponent shall provide evidence to the Minister for the Environment by 6 December 2007 that the proposal has been substantially commenced or the approval granted in the statement of 6 December 2002 shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the proposal has been substantially commenced.

- 4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond 6 December 2007 to the Minister for the Environment prior to this date. The application shall demonstrate that:
1. the environmental factors of the proposal in Bulletins 1065 and 1201 have not changed significantly;
 2. new, significant, environmental issues have not arisen; and
 3. all relevant government authorities and stakeholders have been consulted.

5 Compliance Reporting and Performance Review

- 5-1 The proponent shall submit compliance reports to the Department of Environment, in accordance with a schedule approved by the Department of Environment. The compliance reports shall:

1. describe or update the state of implementation of the proposal;
 2. provide verifiable evidence of compliance with the conditions, procedures and commitments; and
 3. review the performance of the environmental management plans and programs.
- 5-2 The proponent shall submit a performance review report every five years after the start of production, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:
1. the major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those objectives;
 2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;
 3. significant improvements gained in environmental management, including the use of external peer reviews;
 4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
 5. the proposed environmental objectives over the next five years, including improvements in technology and management processes.

6 Decommissioning Plan

- 6-1 Prior to ground-disturbing activities, the proponent shall prepare a Preliminary Decommissioning Plan, which describes the framework to ensure that the site is left in an environmentally acceptable condition, and provides:
1. the rationale for the siting and design of plant and infrastructure as relevant to environmental protection;
 2. a conceptual description of the final landform at closure;
 3. a plan for a care and maintenance phase; and
 4. initial plans for the management of noxious materials.
- 6-2 At least six months prior to the anticipated date of closure, or at a time agreed with the Environmental Protection Authority, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Final Decommissioning Plan shall address:

1. removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;
2. rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s); and
3. identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

- 6-3 The proponent shall implement the Final Decommissioning Plan required by condition 6-2 until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning responsibilities are complete.
- 6-4 The proponent shall make the Final Decommissioning Plan required by condition 6-2 publicly available in a manner approved by the Department of Environment.

7 Particulate and Gaseous Emissions

- 7-1 Prior to submitting a Works Approval application, the proponent shall provide a report to the Department of Environment that:
1. demonstrates that urea emissions meet current industry standards for similar operations (maximum 35 mg/m³ per monthly average?), or justifying why these standards cannot be met in these circumstances;
 2. reviews urea emission reduction technologies and pollution control devices, and the results achievable on application of these; and
 3. outlines the reasons for the final selection of an emissions control system and demonstrating that this is the best practicable system.
- 7-2 The proponent shall not commence ground-disturbing activities except in accordance with an Ammonia and Urea Emissions Monitoring Program, approved by the Department of Environment, which sets out findings, processes and measures that:
1. identify and/or quantify the preliminary warning indicators and trigger levels that indicate the potential for sub-lethal to toxic impacts of ammonia and urea on natural systems, including soil condition, petroglyphs, rock-pools, vegetation and mangrove communities;
 2. define baseline conditions; and
 3. identify practicable management and/or contingency measures that can be implemented, both at the urea plant and/or in conjunction with other industries on the Burrup Peninsula, in the event that the trigger levels are exceeded.
- 7-3 In the event that monitoring of urea emissions undertaken as part of the monitoring program prepared in accordance with condition 7-2 indicates that fugitive urea dust is being emitted from the urea conveyor so as to cause an adverse environmental impact, or is found to be unreasonably interfering with the health, welfare, convenience, comfort or amenity of any person, the proponent shall investigate options, including enclosure of the conveyor, for additional urea dust control measures and report to the Department of Environment within a timeframe to be notified.
- 7-4 The proponent shall implement additional urea dust control measures arising from the options referred to in condition 7-3 as soon as practicable to prevent adverse environmental impacts and/or unreasonable interference with the health, welfare, convenience, comfort or amenity of any person.

- 7-5 Prior to submitting a Works Approval application, the proponent shall provide a report to the Department of Environment:
1. demonstrating that ammonia emissions meet current industry standards for similar operations, or justifying why these standards cannot be met in these circumstances;
 2. reviewing ammonia emission reduction technologies and pollution control devices, and the results achievable on application of these; and
 3. outlining the reasons for the final selection of an emissions control system and demonstrating that this is the best practicable system,

8 Noise

- 8-1 The proponent shall not commence ground-disturbing activities except in accordance with a Noise Management Plan approved by the Department of Environment, which shall include:
1. an acoustical model of the plant;
 2. best practicable measures to minimise noise levels at Hearson Cove;
 3. operating procedures to be adopted for selected routine activities which minimise noise impacts on public amenity at Hearson Cove;
 4. a noise monitoring program; and
 5. a complaint management procedure.
- 8-2 The proponent shall make the Noise Management Plan required by condition 8-1 publicly available in a manner approved by the Department of Environment.
- 8-3 Prior to ground-disturbance, the proponent shall provide a report to the Department of Environment from a mutually-agreed, independent, acoustical engineer that demonstrates that the design of the plant and the noise mitigation measures in the Noise Management Plan incorporate best-practicable measures to minimise noise at Hearson Cove.

9 Urea Storage Shed Site

- 9-1 If the Option 1 site (See Table 1) is reasonably available to the proponent for the construction of the Urea Storage Shed, the proponent shall utilize the Option 1 site in preference to the Option 2 site.
- 9-2 In the event that the Option 1 site is not reasonably available to the proponent, prior to ground-disturbing activities at the Option 2 site, the proponent shall provide a report for the approval of the Department of Environment which:
1. investigates all other feasible site options for a urea storage shed, and compares these sites with the Option 2 site in terms of practicability of use;
 2. provides the design and positioning of the Storage Shed that minimises the damage to significant vegetation on the site; and
 3. describes the measures to conserve other areas of vegetation or offset the significant vegetation that will be removed.

Notes

1. Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environment for the preparation of written notice to the proponent.
2. The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.
3. The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.
4. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.

Schedule 1

The Proposal (Assessment No. 1603)

The proposal is to construct and operate a urea plant on the Burrup Peninsula, approximately 1300 kilometres north of Perth. The location of the complex is in the King Bay-Hearson Cove Industrial Area, as shown in Figure 1 (attached). The project lease has an area of approximately 67 hectares of which approximately 1.7 hectares will be cleared for the urea plant, as shown in Figure 2 (attached).

The urea plant will comprise of a urea plant producing 3500 (nominal) tonnes per day of urea. Krupp-Udhe technology will be utilized.

The urea plant also includes:

- product storage facilities for urea (on-site and near wharf);
- urea formaldehyde storage on site;
- transfer conveyor systems; and
- ship load-out facilities for bulk granular urea.

The urea plant will utilise common facilities and utilities with the ammonia plant, including access roads, seawater desalination system, power generation, administration and other utilities. Management responsibility of shared infrastructure has been allocated to the proponent of the ammonia plant.

All conveyors will be situated in multi-user corridors which have not been assessed as part of this proposal.

Seawater supply and return will be undertaken by the Water Corporation and assessment of this has not been undertaken as part of this proposal.

The main characteristics of the proposal are summarised in Table 1 below.

Table 1 - Key Proposal Characteristics (Assessment No. 1603)

Characteristic	Description
Plants on site: Urea Plant	Outputs: 3,500 tpd nominal capacity, granulated product.
Plant Area Total Area disturbed	Approx 1.3 hectares. Approx. 1.7 hectares.
Storage: Urea (port site) Urea (plant site)	160,000 tonnes capacity, fully enclosed shed. Two options for the location of the shed given, of which Option 1 is preferred over Option 2. 4,000 tonnes capacity fully enclosed surge bin.
Inputs: Natural Gas Urea formaldehyde Sea Water for Cooling	Max. 11 TJ/day from ammonia plant. 11 000tpa approximately. To be trucked in. To be sourced from ammonia plant allocation
Power Supply	To be sourced from ammonia plant allocation
Energy efficiency	Approximately 6.0 ($\pm 10\%$) GJ/t urea.
Materials Transport: Natural Gas Pipeline Urea Conveyor Urea Shiploading System	To be sourced from ammonia plant allocation 3.0 km length, mainly above ground. To be covered and fully enclosed over roadways and water. To be fitted with baghouses at appropriate points. Travelling, conveyor-fed, cantilever arm loader with direct discharge to ship hold via chute.
Shipping	Export of urea approximately 30 to 35 times per year.
Gaseous and Particulate Emissions: Urea Dust Ammonia	300 tpa maximum, to be minimised as practicable during detailed engineering design. To include double demisters. Approximately 800 tpa maximum, to be minimised as practicable during detailed engineering design.
Liquid Effluent Discharges:	To be sourced from ammonia plant allocation
Noise	< 35 dB(A) at nearest noise-sensitive premises \leq 65 dB(A) at lease boundary estimated 40-44 dB(A) at Hearson Cove, to be minimised as practicable during detailed engineering design.

Risk	< 1 death/million/year at nearest residence. < 50 deaths/million/year at plant boundary.
Roads	Access roads to and on site, to be decided in consultation with relevant authorities.

Abbreviations:

tpd – tonnes per day

Tj – terajoules

LNG – Liquefied Natural Gas

ML/d – Megalitres per day

KL/h – Kilolitres per hour

Mpag – Megapascals (gauge)

tpa – tonnes per annum

mg/L – milligrams per litre

kg/d – kilograms per day

dB (A) – decibels ‘A’ weighted

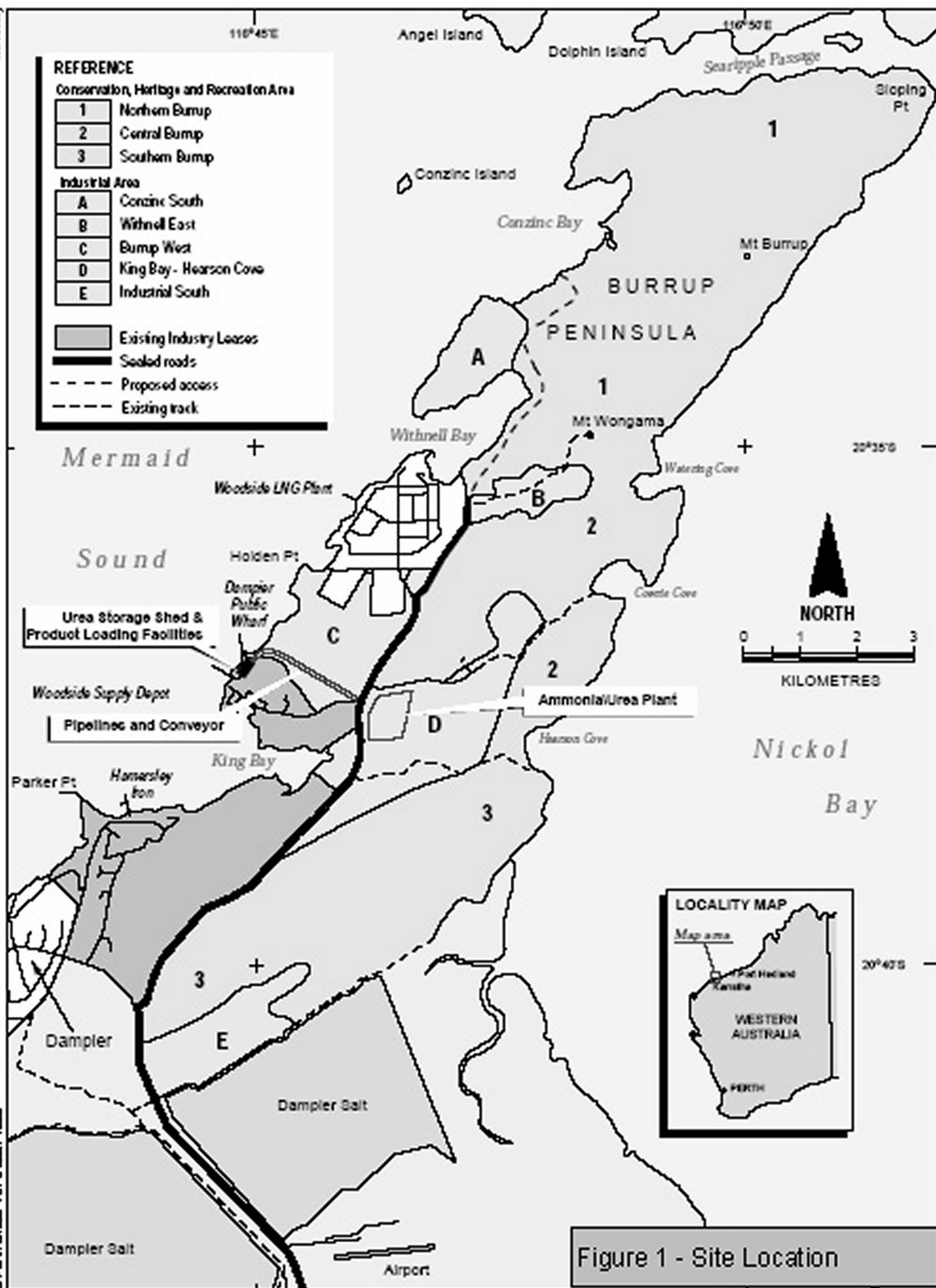
ANZECC – Australia and New Zealand Environment and Conservation Council.

Figures (attached)

Figure 1 - Site location

Figure 2 - Site layout

Figure 3 - Storage shed site options





PRELIMINARY
DO NOT USE FOR CONSTRUCTION

DSG No	TITLE	REV	DSN	DATE	DESCRIPTION	CHK	APP	REV	DSN	DATE	DESCRIPTION	CHK	APP
					ISSUE	-	-						
					UPDATED	-	-						

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SCALE	1 = 2500	CONTRACT No.	143
CLIENT	A N Trading		
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CHECKED			
APPROVED			
DESIGN ENG			

DRAWING No. **143-3-008-2**

REVISION **B**

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Figure 2 - Site Layout

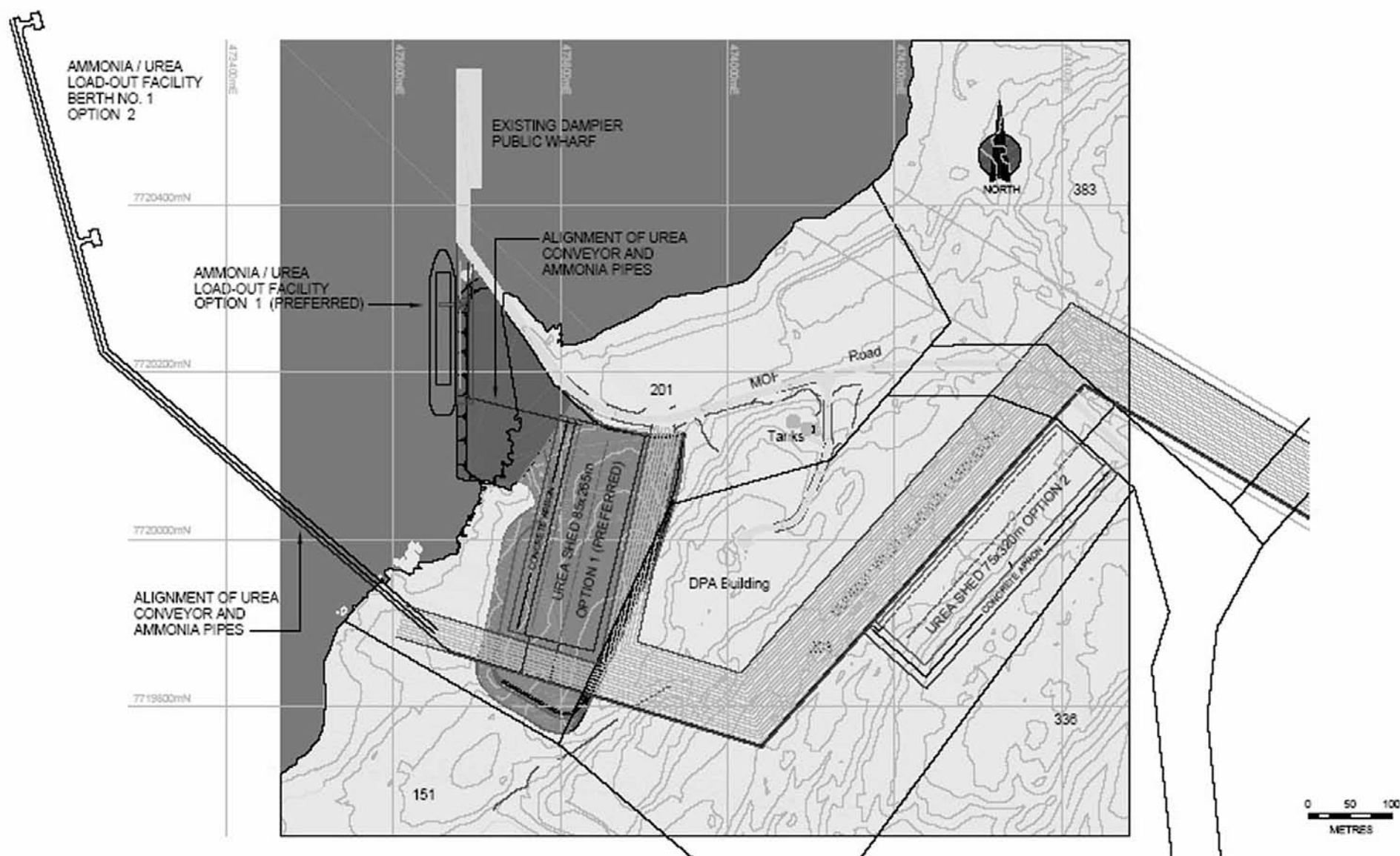


Figure 3 - Storage Shed Options

Proponent's Environmental Management Commitments

October 2005

**UREA PLANT
BURRUP PENINSULA
(Assessment No. 1603)**

DAMPIER UREA PTY LTD

Proponent Environmental Management Commitments – Urea Project, Burrup Peninsula (Assessment No. 1603) October 2005

No.	Topic	Commitment	Objective	Advisory agency
1	Terrestrial plants	<p>The proponent shall not commence ground-disturbance except in accordance with a Terrestrial Flora Management Plan addressing:</p> <ul style="list-style-type: none"> • locations of vegetation communities and identify areas not to be disturbed through optimisation of plant layout; • site clearance procedures; • procedures for rehabilitating areas of temporary disturbance; • results of an additional vegetation/flora survey at an optimal time following wet season rains; • support for a regional survey of samphire vegetation communities within the King Bay-Hearson Cove valley with other prospective industries. • seed collection of any prominent flora species present, including Priority Flora species, to ensure the availability of species for rehabilitation; • germination trials prior to and following construction, with a particular focus on the Priority 1 species <i>Terminalia supranitifolia</i>; • during the rehabilitation process, attempts will be made to restore any Priority Flora species disturbed by the project. 	<p>Maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities.</p> <p>Minimise disturbance to vegetation communities.</p> <p>Manage impacts on flora, in particular Priority flora.</p>	CALM
2	Weed Management	<p>The proponent shall not commence ground-disturbance except in accordance with a Weed Management Plan which will include obtaining fill from a weed-free source and identifying best practice weed management procedures in consultation with CALM.</p>	<p>To prevent the spread of weeds and the introduction of new weed species.</p>	CALM, Dept Ag
3	Terrestrial animals	<p>The proponent shall not commence ground disturbance except in accordance with a Terrestrial Fauna Management Plan which includes:</p> <ul style="list-style-type: none"> • ensuring physical disturbance is kept within designated areas; • progressive rehabilitation of disturbed sites to maximise fauna habitat; • results of an additional survey to further investigate the occurrence of Priority Fauna species prior to construction (which, if required, will be updated on a regular basis)*; • establishment of procedures, monitoring requirements, workforce training and responsibilities to minimise disturbance of significant terrestrial fauna; • support for collaborative research programmes investigating the presence of the Pilbara Olive Python (<i>Liasis olivacea barroni</i>) on 	<p>Maintain the abundance, species diversity and geographical distribution of terrestrial fauna.</p> <p>Protect Specially Protected (Threatened) Fauna, consistent with the provisions of the <i>Wildlife Conservation Act 1950</i>.</p> <p>Protect fauna listed on the Schedules of the <i>Environment Protection Biodiversity Conservation Act</i>.</p>	CALM

No.	Topic	Commitment	Objective	Advisory agency
		the Burrup Peninsula.		
4	Culture and Heritage	<p>The proponent shall not commence ground disturbance except in accordance with an Aboriginal Heritage Management Plan which will encompass:</p> <ul style="list-style-type: none"> • provision of cultural awareness training for construction and operations workforces; • results of outstanding ethnographic and archaeological surveys and ongoing consultation; • a heritage monitoring programme during initial site preparation; • procedures for handling any newly discovered sites which may be uncovered; • ensuring that archaeological sites in the vicinity of the Project are marked and protected from potential disturbance during construction; • contribution towards preserving the Burrup's cultural heritage values, as well as indigenous training, employment and contracting opportunities consistent with agreements with Native Title parties. 	To preserve Aboriginal heritage sites located within the Project area, and ensure that the proposal does not adversely affect cultural associations of the Project lease.	DIA Native Title Claimant Groups
5	Surface Water Management	<p>The proponent shall not commence ground disturbance except in accordance with a Surface Water Management Plan which will manage water discharge from the site. This will address:</p> <ul style="list-style-type: none"> • avoidance of disturbance to natural drainage lines, where possible; • interception of stormwater from the plant site by a drainage system, and use of sediment retention basin; • erosion control practices to be employed; • minimal disturbance to surface soils through restricted clearing and progressive rehabilitation of temporary disturbance areas; • monitoring and reporting requirements; • minimise disturbance to Ab Im Te / Te Rm vegetation community, and locate stormwater ponds to avoid the community. 	<p>Maintain the integrity, functions and environmental values of natural surface water drainage.</p> <p>Maintain the integrity, function and environmental values of watercourses and sheet flow.</p>	CSLC
6	Dust Management	<p>The proponent shall not commence ground disturbance except in accordance with a Dust Management Plan, which will address:</p> <ul style="list-style-type: none"> • the use of water sprays to wet the site during dry windy conditions; • speed limits to minimise dust generated by vehicle movements; • the use of minimum drop heights when loading and unloading soils and other excavated material; and • minimising areas of disturbed, exposed soils. 	To ensure that dust generated during construction does not cause any environmental or human health problem or significantly impact on amenity.	
7	Marine water quality	<p>The proponent shall not commence return of water or export activities at the port except in accordance with a Marine Water Quality Management Plan which includes:</p> <ul style="list-style-type: none"> • Procedures for managing and monitoring return water to the WAWC to ensure that acceptance criteria are met, as set in licence conditions; • Adoption of AQIS guidelines, and environmental management 	Maintain marine ecological integrity and biodiversity and minimise impact of shipping on the marine environment.	WAWC, DPA, AQIS

No.	Topic	Commitment	Objective	Advisory agency
		requirements of the DPA; <ul style="list-style-type: none"> • Contribute to a coordinated management response with the WAWC and other system users to reduce inputs if ambient monitoring shows an elevated risk of environmental quality objectives not being met for King Bay; • Research into alternative treatment chemicals and toxicological impacts on local marine fauna; and • Monitoring protocols in the event of urea spill. 		

Abbreviations

DeptAg	Department of Agriculture Western Australia	FESA	Fire and Emergency Services Authority
AQIS	Australian Quarantine & Inspection Service	DOIR	Department of Industry and Resources
CALM	Department of Conservation and Land Management	MRWA	Main Roads Western Australia
CSLC	Commissioner of Soil and Land Conservation	OMP	Office of Major Projects
		PDC	Pilbara Development Commission
DIA	Department of Indigenous Affairs	SoR	Shire of Roebourne
DPA	Dampier Port Authority	WAWC	Water Corporation

APPENDIX 3

Statement 614

Ammonia and Urea Plants, Burrup Peninsula



MINISTER FOR THE ENVIRONMENT AND HERITAGE

Statement No.

000614

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)

AMMONIA-UREA PLANT, BURRUP PENINSULA

Proposal: The construction and operation of an ammonia plant of 2300 tonnes per day nominal capacity and a urea plant of 3500 tonnes per day nominal capacity on the Burrup Peninsula, utilising Krupp-Udhe technology, as documented in schedule 1 of this statement.

The plants will utilise North-West Shelf Gas both for energy and as feedstock for the process. The proposal includes an on-site desalination plant.

Proponent: Dampier Nitrogen Pty Ltd

Proponent Address: Level 13, St George's Square,
225 St George's Terrace, PERTH WA 6000

Assessment Number: 1178

Report of the Environmental Protection Authority: Bulletin 1065

The proposal referred to above may be implemented subject to the following conditions and procedures:

Procedural conditions

1 Implementation and Changes

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions of this statement.

Published on

- 6 DEC 2002

- 1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.
- 1-3 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of written advice.

2 Proponent Commitments

- 2-1 The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.
- 2-2 The proponent shall implement subsequent environmental management commitments which the proponent makes as part of the fulfilment of the conditions in this statement.

3 Proponent Nomination and Contact Details

- 3-1 The proponent for the time being nominated by the Minister for the Environment and Heritage under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment and Heritage has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.
- 3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.
- 3-3 The nominated proponent shall notify the Department of Environmental Protection of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

- 4-1 The proponent shall provide evidence to the Minister for the Environment and Heritage within five years of the date of this statement that the proposal has been substantially commenced or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment and Heritage will determine any dispute as to whether the proposal has been substantially commenced.

- 4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment and Heritage, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

1. the environmental factors of the proposal have not changed significantly;
2. new, significant, environmental issues have not arisen; and
3. all relevant government authorities have been consulted.

Note: The Minister for the Environment and Heritage may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

Environmental conditions

5 Compliance Audit and Performance Review

- 5-1 The proponent shall prepare an audit program in consultation with and submit compliance reports to the Department of Environmental Protection which address:

1. the implementation of the proposal as defined in schedule 1 of this statement;
2. evidence of compliance with the conditions and commitments; and
3. the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environmental Protection is empowered to audit the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

Usually, the Department of Environmental Protection prepares an audit table which can be utilised by the proponent, if required, to prepare an audit program to ensure that the proposal is implemented as required. The Chief Executive Officer is responsible for the preparation of written advice to the proponent, which is signed off by either the Minister or, under an endorsed condition clearance process, a delegate within the Environmental Protection Authority or the Department of Environmental Protection that the requirements have been met.

5-2 The proponent shall submit a performance review report every five years after the start of the operations phase, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority, which addresses:

1. the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;
2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;
3. significant improvements gained in environmental management, including the use of external peer reviews;
4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
5. the proposed environmental targets over the next five years, including improvements in technology and management processes.

6 Decommissioning Plans

6-1 Prior to construction, the proponent shall prepare, and subsequently implement, a Preliminary Decommissioning Plan, which provides the framework to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The Preliminary Decommissioning Plan shall address:

1. rationale for the siting and design of plant and infrastructure as relevant to environmental protection, and conceptual plans for the removal or, if appropriate, retention of plant and infrastructure;
2. a conceptual rehabilitation plan for all disturbed areas and a description of a process to agree on the end land use(s) with all stakeholders;
3. a conceptual plan for a care and maintenance phase; and
4. management of noxious materials to avoid the creation of contaminated areas.

6-2 At least six months prior to the anticipated date of closure, or at a time agreed with the Environmental Protection Authority, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The Final Decommissioning Plan shall address:

1. removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;
2. rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s); and
3. identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

6-3 The proponent shall implement the Final Decommissioning Plan required by condition 6-2 until such time as the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning responsibilities are complete.

6-4 The proponent shall make the Final Decommissioning Plan required by condition 6-2 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

7 Greenhouse Gas Emissions

7-1 Prior to commencement of construction of the plant, the proponent shall prepare a Greenhouse Gas Emissions Management Plan to:

- ensure that "greenhouse gas" emissions from the project are adequately addressed and best available efficient technologies are used to minimise total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product; and
- mitigate "greenhouse gas" emissions in accordance with the Framework Convention on Climate Change 1992, and consistent with the National Greenhouse Strategy;

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

This Plan shall include:

- 1 calculation of the "greenhouse gas" emissions associated with the proposal, as indicated in "Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No. 12" published by the Environmental Protection Authority.

The following are to be included as part of annual reporting on environmental performance:

- an estimate of "greenhouse gas" emissions (broken down by species and in carbon dioxide equivalents) from the production of ammonia and urea;
 - an estimate of the downstream (ie post-production) "greenhouse gas" emissions (broken down by species and in carbon dioxide equivalents) from the ammonia and urea, noting that this is a source of emissions which the proponent does not and cannot control; and
 - an account of the methodology used in making the estimates.
- 2 specific measures to minimise the total net "greenhouse gas" emissions and/or the "greenhouse gas" emissions per unit of product associated with the proposal;
 - 3 monitoring of "greenhouse gas" emissions;
 - 4 estimation of the "greenhouse gas" efficiency of the project (per unit of product and/or other agreed performance indicators) and comparison with the efficiencies of other comparable projects producing a similar product;
 - 5 analysis of the extent to which the proposal meets the requirements of the National Greenhouse Strategy using a combination of:
 - "no regrets" measures;
 - "beyond no regrets" measures;
 - land use change or forestry offsets; and
 - international flexibility mechanisms.
 - 6 a target set by the proponent for the reduction of total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product over time, and annual reporting of progress made in achieving this target.

Note: In part 5 above, the following definitions apply:

- (1) "no regrets" measures are those that can be implemented by a proponent which are effectively cost-neutral and provide the proponent with returns in savings which offset the initial capital expenditure that may be incurred; and
- (2) "beyond no regrets" measures are those that can be implemented by a proponent which involve some additional cost that is not expected to be recovered.

7-2 The proponent shall implement the Greenhouse Gas Emissions Management Plan required by condition 7-1 to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

7-3 The proponent shall make the Greenhouse Gas Emissions Management Plan required by condition 7-1 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

8 Gaseous Emissions

8-1 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall:

- 1 confirm the engineering design details for the emission of gaseous pollutants, including stack heights, stack diameters, exit temperatures and exit velocities;
- 2 estimate the concentration of oxides of nitrogen, and other major gaseous pollutants, under normal and worst-case conditions, including start-up and upset emissions;
- 3 demonstrate that oxides of nitrogen emissions from gas turbines will meet the Environmental Protection Authority's guideline value of 0.07 grams per cubic metre as stated in its Guidance Statement No. 15 "Emissions of Oxides of Nitrogen from Gas Turbines," May 2000; or

if a NO_x concentration higher than the Environmental Protection Authority's guideline value for gas turbines (0.07 grams per cubic metre) is proposed, provide a comprehensive report (by or audited by a mutually agreed independent expert) to demonstrate that:

- all feasible options (process/technology improvement and NO_x control measures) to minimise NO_x emissions have been considered (including an evaluation of the expected reduction in emissions of NO_x and efficiencies for each option); and
- the proposed options to minimise NO_x are consistent with the best practicable technology and current industry standards for similar operations with other combined cycle gas turbine systems in developed countries; and

- 4 remodel the oxides of nitrogen emissions to determine building wake effects,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: The Environmental Protection Authority requires stack heights to be such that the downwash of emissions in the lee of buildings or other structures is minimised or preferably avoided.

8-2 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall provide a report to the Environmental Protection Authority:

- 1) demonstrating that ammonia and urea emissions meet current industry standards for similar operations, or justifying why these standards cannot be met in these circumstances;
- 2) reviewing ammonia and urea emission reduction technologies and pollution control devices, and the results achievable on application of these; and
- 3) outlining the reasons for the final selection of an emissions control system and demonstrating that this is the best practicable system,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

8-3 At least three months prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall design, and subsequently implement, a monitoring program to identify the impacts of ammonia and urea emissions on the surrounding areas, to include:

- 1) Identification of preliminary warning indicators and "trigger levels" to indicate impacts of ammonia and urea on natural systems, including soil condition, rockpools, vegetation and mangal communities;
- 2) Design and implementation of a monitoring programme to establish baseline conditions prior to commissioning of the plant; and
- 3) Identification of practicable management or contingency measures, as it relates to this proposal, to be implemented in the event that the "trigger levels" (point one above) are exceeded,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

8-4 In the event that monitoring of urea emissions undertaken as part of the monitoring program prepared in accordance with condition 8-3 indicates that fugitive urea dust is being emitted from the urea conveyor so as to cause an adverse environmental impact or is found to be unreasonably interfering with the health, welfare, convenience, comfort or amenity of any person, the proponent shall, investigate options, including enclosure of the conveyor, and subsequently implement additional urea dust control measures as soon as practicable to prevent further fugitive urea dust emission, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9 Brine and Wastewater Discharge

9-1 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall:

1. characterise the physico-chemical composition and flow rates of all wastewater streams within the site, including the desalination plant;
2. determine, for all non-negligible contaminants and nutrients, the total annual loads of contaminants and nutrients in the combined brine and wastewater discharge exiting the site; and
3. determine, for normal and worst-case conditions, the concentrations of contaminants and nutrients (for agreed averaging periods) in the combined brine and wastewater discharge exiting the site,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9-2 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall demonstrate that the brine and wastewater discharge will meet best practicable technology and waste minimisation principles for contaminants and nutrients, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9-3 Following completion of design, and at least three months prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall present to the Environmental Protection Authority its preferred option for Boiler Feedwater Conditioning, together with a detailed rationale for its selection and use, and shall demonstrate waste minimisation and best practicable technology, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

9-4 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall design, and subsequently operate plant and equipment on the site such that:

1. the contaminant concentrations in the combined brine and wastewater effluent from the site, just prior to entry to the multi-user brine and wastewater discharge system, meet (in order of preference):
 - the ANZECC/ARMCANZ (2000) 99% species protection level; or
 - the ANZECC/ARMCANZ (2000) 99% species protection level at the edge of the approved mixing zone (currently 0.01 square kilometre), without any subsidy or pre-dilution from the main brine return line; or
 - other acceptable limits, if the Environmental Protection Authority determines the regional background concentration of a given contaminant in seawater to be significant;

2. mass balances and inventories of toxicants (i.e. catalysts and process chemicals) can be maintained throughout the life of the plant so that their fate can be traced; and
3. the load of nutrients causes no resultant detectable change beyond natural variation in the diversity of the species and biological communities and abundance/biomass of marine life, beyond the designated mixing zone,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

- 9-5 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall conduct "whole-of-effluent" toxicological studies on a *simulated effluent*, including treatment chemicals, or provide acceptable alternative information such as risk assessment, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

These studies shall be consistent with ANZECC requirements.

- 9-6 Within three months following commissioning and stabilizing of the plant operations, the proponent shall conduct an analysis demonstrating that effluent properties are substantially consistent with predictions, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.
- 9-7 In the event that effluent properties are not substantially consistent with predictions, the proponent shall conduct toxicological studies on the *actual effluent*, or provide acceptable alternative information such as risk assessment, to the timing and other requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

These studies and/or information shall be consistent with ANZECC requirements.

10 Noise

- 10-1 Prior to submitting a Works Approval application for the ammonia-urea plant, the proponent shall prepare a Noise Management Plan to minimise the impacts on the amenity of Hearson Cove from noise resulting from activities associated with the proposal, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

This Plan shall include:

1. an acoustical model of the plant;
2. best practicable measures to minimise noise levels at Hearson Cove;
3. operating procedures to be adopted for particular routine activities to minimise noise impacts on amenity at Hearson Cove;
4. noise monitoring; and
5. complaint management procedure.

10-2 The proponent shall implement the Noise Management Plan required by condition 10-1 to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

10-3 The proponent shall make the Noise Management Plan required by condition 10-1 publicly available to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

10-4 Prior to construction, the proponent shall employ a mutually agreed independent acoustical engineer to:

- 1 review the design of the plant;
- 2 review the Noise Management Plan, required by condition 10-1; and
- 3 demonstrate that the design and Plan incorporate best practicable measures to minimise noise at Hearson Cove,

to the requirements of the Minister for the Environment and Heritage on advice of Environmental Protection Authority.

11 Urea Storage Shed Site

11-1 If the Option 1 site (See Table 1) is reasonably available to the proponent for the construction of the Urea Storage Shed, the proponent shall utilize the Option 1 site in preference to the Option 2 site.

11-2 In the event that the Option 1 site is not reasonably available to the proponent, prior to utilizing the Option 2 site, the proponent shall demonstrate in report form that:

- 1 all other feasible site options have been investigated and there is no other reasonable and practicable site available;
- 2 every practicable effort has been made to minimise the damage to significant vegetation on the site by the design and positioning of the Storage Shed; and
- 3 measures to conserve other areas of vegetation or replace significant vegetation that will be removed have been considered and adopted as far as practicable,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

12 Work Practices

12-1 Prior to commencement of construction, the proponent shall submit a written prescription for contractor work practices covering plant and pipeline construction and operation, to ensure that work practices are carried out at the level of international best practice, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

12-2 The proponent shall ensure that the prescription of work practices required by condition 12-1 is implemented to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Procedures

- 1 Where a condition states "to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority", the Chief Executive Officer of the Department of Environmental Protection will obtain that advice for the preparation of written advice to the proponent.
- 2 The Environmental Protection Authority may seek advice from other agencies, as required, in order to provide its advice to the Chief Executive Officer of the Department of Environmental Protection.

Notes

- 1 The Minister for the Environment and Heritage will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environmental Protection over the fulfilment of the requirements of the conditions.
- 2 The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.
- 3 Following final technology decisions, the proponent will be in a position to meet the requirements of conditions 8 (gaseous emissions) and 9 (brine and wastewater discharge).

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT AND HERITAGE

- 6 DEC 2002

Schedule 1

The Proposal (Assessment No. 1178)

The proposal is to construct and operate an ammonia-urea plant on the Burrup Peninsula, approximately 1300 kilometres north of Perth. The location of the complex is in the King Bay-Hearson Cove Industrial Area, as shown in Figure 1 (attached). The project lease has an area of approximately 67 hectares of which approximately 12 hectares will be cleared for the plant, as shown in Figure 2 (attached).

The ammonia-urea plant will comprise of an ammonia plant producing 2300 (nominal) tonnes per day of ammonia and a urea plant producing 3500 (nominal) tonnes per day of urea. Krupp-Udhe technology will be utilized.

The plant also includes:

- a seawater desalination plant;
- seawater treatment and storage;
- internal power generation and distribution;
- product storage facilities for ammonia (on-site) and urea (on-site and near wharf);
- pipelines for ammonia export from the site to the wharf;
- urea formaldehyde storage on site;
- transfer conveyor systems;
- ship load-out facilities for bulk granular urea; and
- ship-loading facilities for load-out of anhydrous (liquid) ammonia.

All pipelines and conveyors will be situated in multi-user corridors which have not been assessed as part of this proposal.

Seawater supply and return will be undertaken by the Water Corporation and assessment of this has not been undertaken as part of this proposal.

The main characteristics of the proposal are summarised in Table 1 below.

Table 1 - Key Proposal Characteristics (1178)

Characteristic	Description
Plants on site: Ammonia Plant Urea Plant Desalination Plant	Outputs: 2,300 tpd nominal capacity, using Krupp-Uhde technology. 3,500 tpd nominal capacity, granulated product. 2.4 ML/d from desalination of seawater.
Plant Area Total Area disturbed	Approx 12 hectares. 12 to 15 hectares.
Storage: Ammonia Urea (port site) Urea (plant site)	40,000 tonnes capacity on plant site, in double-walled double-integrity refrigerated tank. 160,000 tonnes capacity, fully enclosed shed. Two options for the location of the shed given, of which Option 1 is preferred over Option 2. 4,000 tonnes capacity fully enclosed surge bin.
Inputs: Natural Gas Urea formaldehyde Sea Water for Cooling: - Process Plant - Desalination plant Cooling Tower	Max. 93 TJ/day from LNG Plant. 11 000tpa approximately. To be trucked in. 2,300-3,000 kL/h from the Water Corporation (to be drawn from Mermaid Sound) ³ 500 kL/h from the Water Corporation to incorporate measures to reduce mist to 0.01% of flow
Power Supply	Internal generation, with some export. Supplied by two co-generation 15MW gas turbines, steam boiler and emergency generators (to be specified).
Energy efficiency	Approximately 30GJ/t ammonia. 5.5 to 6.0GJ/t urea.
Materials Transport: Natural Gas Pipeline Ammonia Pipeline Ammonia Vapour Return Line Urea Conveyor Urea Shiploading System	3 km length, 200mm diameter, 4.2 to 4.8 MPag pressure, buried. 2.5 km length, 400 mm diameter, above ground, insulated for refrigerated ammonia transfer. To be emptied of liquid when not in use for ammonia transfer and fitted with automatic isolation valves at each end. 2.5 km length, 200 mm diameter, above ground, fitted with automatic isolation valves at each end. 3.0 km length, mainly above ground. To be covered and fully enclosed over roadways and water. To be fitted with baghouses at appropriate points. Travelling, conveyor-fed, cantilever arm loader with direct discharge to ship hold via chute.

Shipping	Export of ammonia approximately 7 times per year; urea 30 to 35 times per year.
Gaseous Emissions:	
Oxides of nitrogen (NOx) (as NO ₂)	717 tpa approximately. To be achieved with low NOx burners on reformer, gas turbines and steam boiler.
Carbon dioxide (CO ₂) vented to atmosphere ¹	824,600 tpa approximately. Total CO ₂ generated approximately 1,710,000 tpa of which approximately 886,000 tpa used in urea manufacture.
Sulphur dioxide (SO ₂)	8.4 tpa approximately. All process gas to be desulphurised.
Hydrogen (H ₂)	750 tpa approximately, to be flared
Methane (CH ₄) ²	Traces, to be flared
Ammonia (NH ₃)	800 tpa maximum, to be minimised as practicable during detailed engineering design
Urea Dust	300 tpa maximum, to be minimised as practicable during detailed engineering design. To include double demisters
Methanol	5 to 20 tpa ³ approximately
Liquid Effluent Discharges:	
Flow:	
– Process Plant	1,700 to 2,200 kL/h ³ approximately
– Desalination Plant	420 kL/h approximately
– Demineralisation Unit	< 20 kL/h approximately
- Stormwater	Uncontaminated stormwater to be diverted around plant and discharged to natural watercourses at appropriate velocity. First flush potentially contaminated stormwater to be retained on site for treatment and reuse and/or discharge to ocean outfall.
Characteristics:	
Temperature	2 to 5 degrees above ambient temperature
Salinity	53,000 mg/L
Nitrogen	43 kg/d, with target to reduce to 20 kg/d during detailed engineering design.
Toxicants	≤ANZECC 99% species protection guidelines for marine waters, exiting the site, except for ammonia and metals which already occur at concentrations above the ANZECC trigger levels in the intake water and recognising the concentrating effect of evaporative seawater cooling. For ammonia the 99% species protection criterion to be met at edge of toxicant mixing zone.

Noise	< 35 dB(A) at nearest noise-sensitive premises ≤65 dB(A) at plant boundary estimated 40-44 dB(A) at Hearson Cove, to be minimised as practicable during detailed engineering design.
Risk	< 1 death/million/year at nearest residence. < 50 deaths/million/year at plant boundary.
Roads	Access roads to and on site, to be decided in consultation with relevant authorities.

Notes:

- 1 CO₂ 'total generated' defines the total amount of CO₂ generated in the ammonia-urea plant, while CO₂ 'vented from process' describes the amount of excess CO₂ to be vented to atmosphere. The remainder of the CO₂ generated is used in the manufacture of urea. The proponent cannot mitigate or influence the emissions from the product once sold.
- 2 CH₄ to be flared.
- 3 Range to be confirmed during detailed engineering.

Abbreviations:

tpd – tonnes per day
Tj – terajoules
LNG – Liquefied Natural Gas
ML/d – Megalitres per day
KL/h – Kilolitres per hour
Mpag – Megapascals (gauge)
tpa – tonnes per annum
mg/L – milligrams per litre
kg/d – kilograms per day
dB (A) – decibels 'A' weighted
ANZECC – Australia and New Zealand Environment and Conservation Council.

Figures (attached)

- Figure 1 - Site location
Figure 2 - Site layout
Figure 3 - Storage shed site options

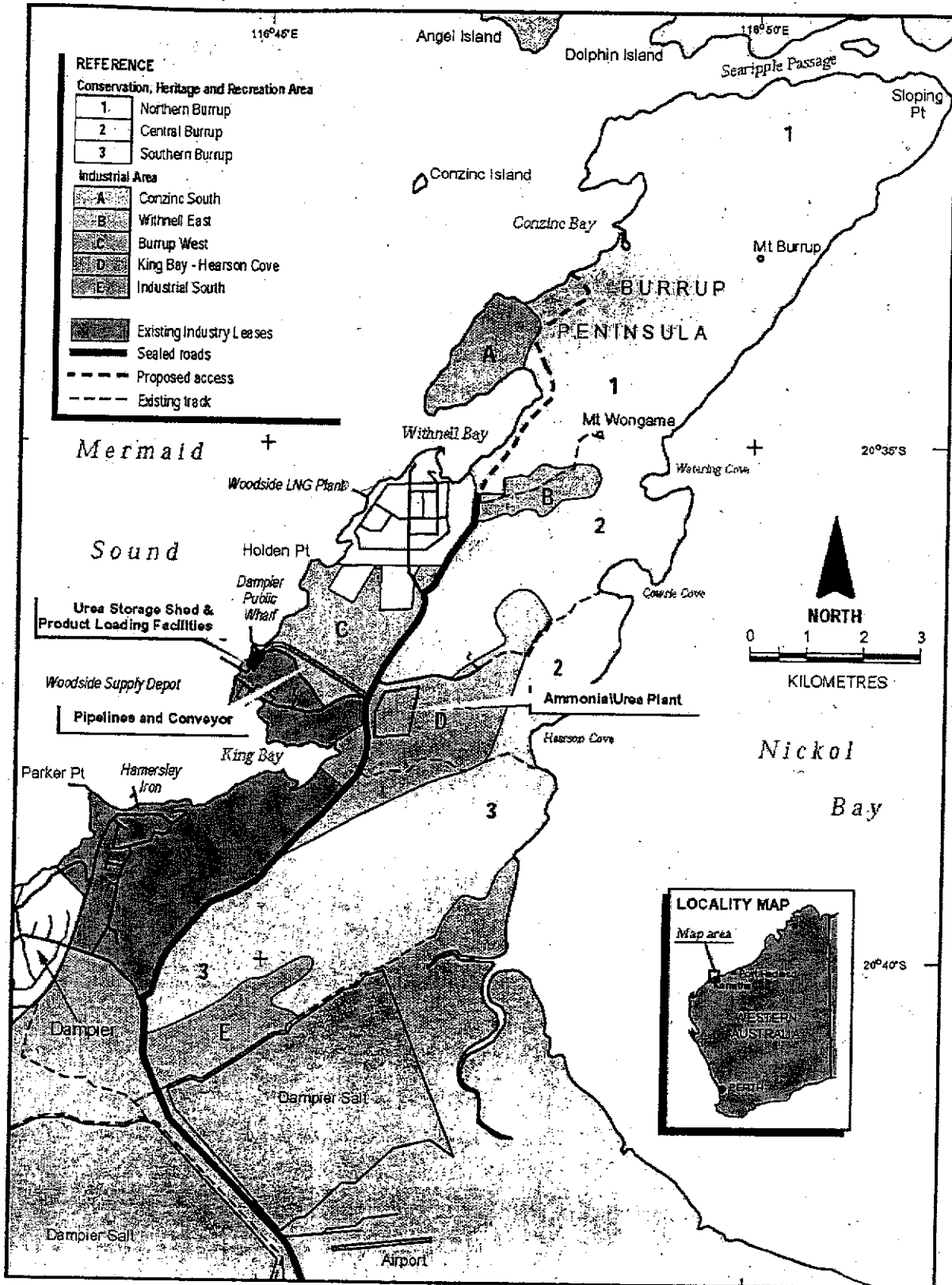


Figure 1: Site Location

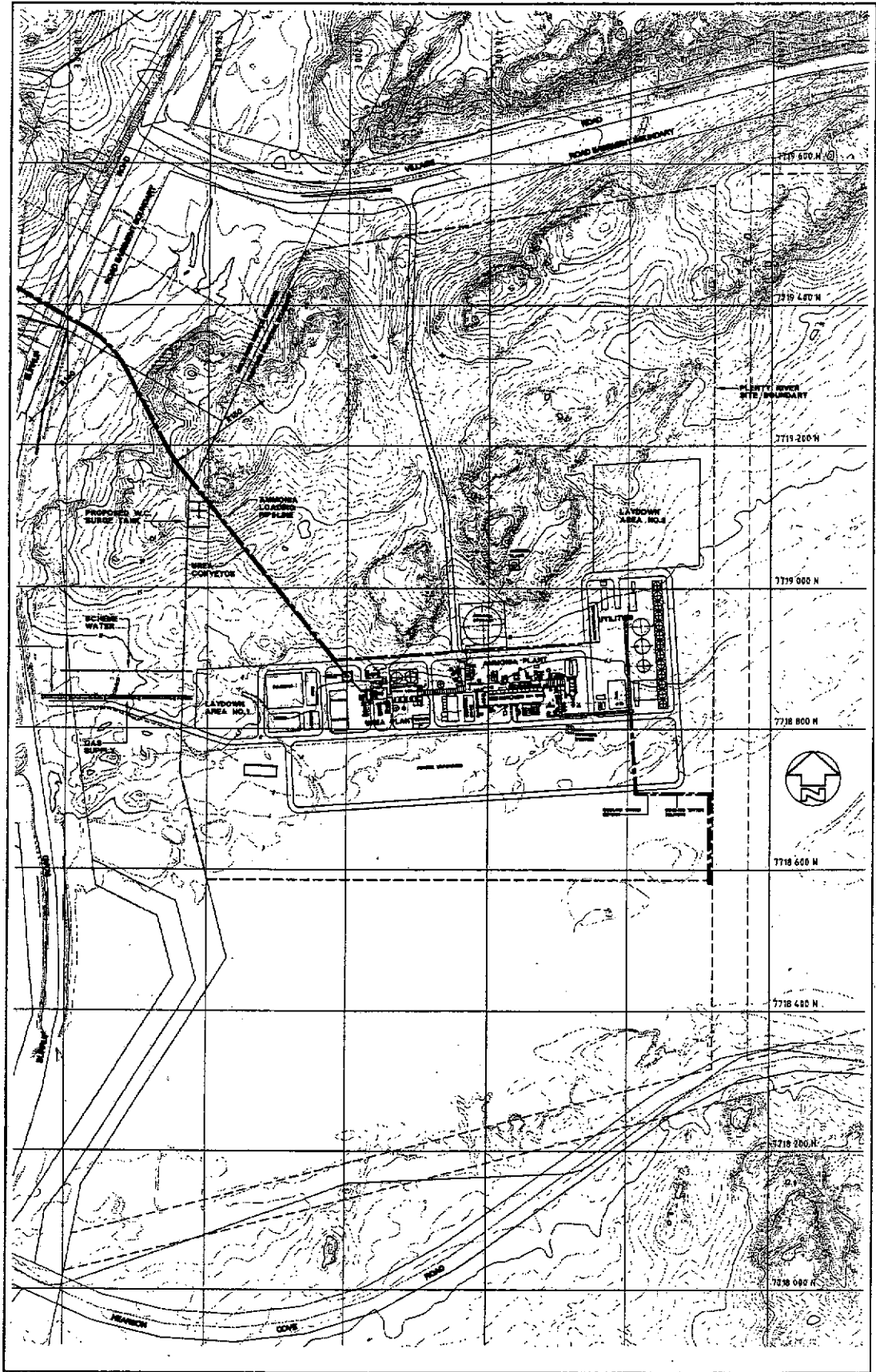


Figure 2: Site Layout

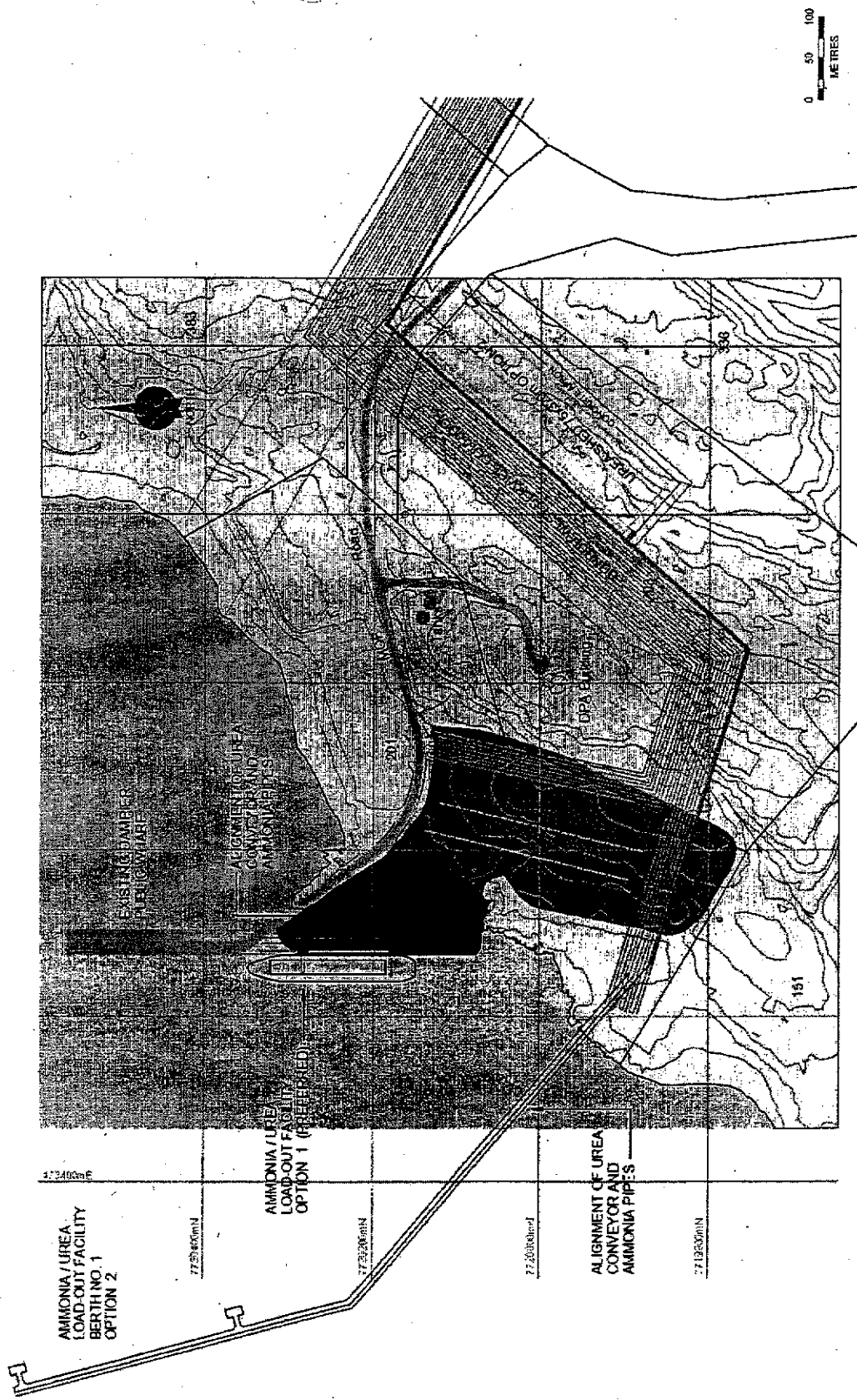


Figure 3: Storage Shed Site Options

Proponent's Environmental Management Commitments

December 2002

**AMMONIA-UREA PLANT
BURRUP PENINSULA
(Assessment No. 1178)**

DAMPIER NITROGEN PTY LTD

Proponent's Consolidated Environmental Management Commitments – Ammonia/Urea Project, Burrup Peninsula (Assessment No. 1178) December 2002

No.	Topic	Action	Objective	Timing	Advice
Construction Environmental Management					
1	Environmental Management	<p>1) Prepare a Construction Environmental Management Programme (EMP) for the construction of the Plant and infrastructure. The EMP will outline responsibilities and obligations, and will incorporate the following plans and commitments:</p> <ul style="list-style-type: none"> • Terrestrial flora and vegetation (see commitment 2); • Weeds (see commitment 3); • Fauna Management (see commitment 4); • Culture and Heritage (see commitment 5); • Hydrology and Surface Water (see commitment 6); • Traffic Management (see commitment 7); • Dust Management (see commitment 8); • Noise Management (see commitment 9); • Liquid and Solid Waste Management (see commitment 10); • Hazardous Materials Management (see commitment 11); • Fire Management (see commitment 12). <p>2) Implement the Construction EMP.</p>	To manage all relevant environmental factors associated with the construction phase of the Project.	Prior to commencement of construction.	
2	Terrestrial flora management	<p>1) Prepare a Terrestrial Flora Management Plan addressing:</p> <ul style="list-style-type: none"> • locations of vegetation communities and identify areas not to be disturbed through optimisation of plant layout; • site clearance procedures; • procedures for rehabilitating areas of temporary disturbance; • results of an additional vegetation/flora survey at an optimal time following wet season rains; • support for a regional survey of samphire vegetation communities within the King Bay-Hearson Cove valley with other prospective industries. • seed collection of any prominent flora species present, including Priority Flora species, to ensure the availability of species for rehabilitation; • germination trials prior to and following construction, with a particular focus on the Priority 1 species <i>Terminalia supranitifolia</i>; • during the rehabilitation process, attempts will be made to restore any Priority Flora species disturbed by the project. 	Maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities. Minimise disturbance to vegetation communities during construction. Manage construction impacts on flora, in particular Priority flora.	Pre-construction.	CALM

No.	Topic	Action	Objective	Timing	Advice
		2) Implement the Terrestrial Flora Management Plan.		During Construction	
3	Weed Management	1) Prepare a Weed Management Plan which will include obtaining fill from a weed-free source and identifying best practice weed management procedures in consultation with CALM. 2) Implement the Weed Management Plan.	To prevent the spread of weeds and the introduction of new weed species.	Pre-construction. During construction	CALM, Dept Ag
4	Terrestrial Fauna	1) Prepare a Terrestrial Fauna Management Plan which includes: <ul style="list-style-type: none"> ensuring physical disturbance is kept within designated areas; progressive rehabilitation of disturbed sites to maximise fauna habitat; results of an additional survey to further investigate the occurrence of Priority Fauna species prior to construction (which, if required, will be updated on a regular basis)*; establishment of procedures, monitoring requirements, workforce training and responsibilities to minimise disturbance of significant terrestrial fauna; support for collaborative research programmes investigating the presence of the Pilbara Olive Python (<i>Liasis olivacea barroni</i>) on the Burrup Peninsula.** 2) Implement the Terrestrial Fauna Management Plan.	Maintain the abundance, species diversity and geographical distribution of terrestrial fauna. Protect Specially Protected (Threatened) Fauna, consistent with the provisions of the <i>Wildlife Conservation Act 1950</i> . Protect fauna listed on the Schedules of the <i>Environment Protection Biodiversity Conservation Act</i> .	Pre-construction and ongoing. * on-going if required ** ongoing	CALM
5	Culture and Heritage	1) Prepare an Aboriginal Heritage Management Plan which will encompass: <ul style="list-style-type: none"> provision of cultural awareness training for construction and operations workforces*; results of outstanding ethnographic and archaeological surveys and ongoing consultation; a heritage monitoring programme during initial site preparation; procedures for handling any newly discovered sites which may be uncovered; ensuring that archaeological sites in the vicinity of the Project are marked and protected from potential disturbance during construction; contribution towards preserving the Burrup's cultural heritage values, as well as indigenous training, employment and contracting opportunities consistent with agreements with Native Title parties.** 2) Implement the Aboriginal Heritage Management Plan.	To preserve Aboriginal heritage sites located within the Project area, and ensure that the proposal does not adversely affect cultural associations of the Project lease.	Pre-construction. * ongoing ** on-going	DIA Native Title Claimant Groups
				During construction and ongoing	

No.	Topic	Action	Objective	Timing	Advice
6	Surface Water Management and Hydrology	<p>1) Prepare a Surface Water Management Plan which will manage water discharge from the site. This will address:</p> <ul style="list-style-type: none"> • avoidance of disturbance to natural drainage lines, where possible; • interception of stormwater from the plant site by a drainage system, and use of sediment retention basin; • erosion control practices to be employed; • minimal disturbance to surface soils through restricted clearing and progressive rehabilitation of temporary disturbance areas; • monitoring and reporting requirements; • minimise disturbance to Ab Im Te / Te Rm vegetation community, and locate stormwater ponds to avoid the community. <p>2) Implement the Surface Water Management Plan.</p>	<p>Maintain the integrity, functions and environmental values of natural surface water drainage.</p> <p>Maintain the integrity, function and environmental values of watercourses and sheet flow.</p>	<p>Pre-construction and ongoing.</p> <p>During construction and ongoing</p>	<p>CSLC</p> <p>MRWA, FESA</p>
7	Construction Traffic Management	<p>1) Prepare a Traffic Management Plan so as to minimise disruption of traffic from heavy vehicle movements during construction, maintain public safety and restrict vehicle access to designated routes.</p> <p>2) Implement the Traffic Management Plan.</p>	<p>To ensure minimum disruption of traffic and maintain safety of public during construction.</p>	<p>Pre-construction</p> <p>Construction</p>	<p>SoR, MRWA, FESA</p>
8	Dust Management	<p>1) Prepare a Dust Management Plan for the construction phase of the project, which will address:</p> <ul style="list-style-type: none"> • the use of water sprays to wet the site during dry windy conditions; • speed limits to minimise dust generated by vehicle movements; • the use of minimum drop heights when loading and unloading soils and other excavated material; and • minimising areas of disturbed, exposed soils. <p>2) Implement the Dust Management Plan.</p>	<p>To ensure that dust generated during construction does not cause any environmental or human health problem or significantly impact on amenity.</p>	<p>Pre-construction</p> <p>Construction</p>	
9	Noise Management	<p>1) Prepare a Noise Management Plan for construction activities to ensure suitable work practices are adopted to minimise noise generation, including:</p> <ul style="list-style-type: none"> • the use of low noise equipment where practicable; • use of silencers where necessary; • use of exhaust mufflers; • noise monitoring and reporting. <p>2) Implement the Noise Management Plan</p>	<p>Ensure that construction noise emissions comply with Noise Regulations and meet EPA objectives to protect amenity at Hearson Cove.</p>	<p>Pre-construction</p> <p>Construction</p>	
10	Liquid and Solid Waste Management	<p>1) Prepare a Waste Management Plan based on a waste management hierarchy. This will include established procedures for monitoring, recording, disposing and reporting of waste quantities during</p>	<p>To minimise waste and potential for groundwater and surface water contamination or risk to public health.</p>	<p>Pre-construction</p>	<p>SoR</p>

No.	Topic	Action	Objective	Timing	Advice
		construction. 2) Implement the Waste Management Plan.		Construction	
11	Hazardous Materials Management	1) Prepare a Hazardous Materials Management Plan to ensure that hazardous materials are properly handled, segregated, transported, treated and disposed. 2) Implement the Hazardous Materials Management Plan.	To minimise waste and potential for groundwater and surface water contamination or risk to public health.	Pre-construction	
12	Fire Management	1) There will be no demands made on managers of adjacent lands to extinguish any wildfires. 2) In designing the plant layout, the document 'Planning for Bushfire Protection' Dec 2001, FESA & WA Planning Commission will be consulted and incorporated.	Manage bushfires in accordance with CALM requirements commensurate with the protection of life and property.	Construction Pre-construction and ongoing	FESA
Operations Environmental Management					
13	Environmental Management	1) Prepare an Operations Environmental Management Programme (EMP) for the operation of the Plant and infrastructure. The EMP will outline responsibilities and obligations, and will incorporate the following plans and commitments: <ul style="list-style-type: none"> • Terrestrial flora and vegetation (see commitment 14 & 15); • Fauna Management (see commitment 16); • Culture and Heritage (see commitment 17); • Hydrology and Surface Water (see commitment 18); • Marine Environment (see commitment 19); • Public Health and Safety ((see commitment 20); • Risk (see commitment 21); • Liquid and Solid Waste Management (see commitment 22 & 23); • Hazardous Materials Management (see commitment 24); • Atmospheric Emissions Management (see commitment 25); • Greenhouse Gas Management (see commitment 26); • Noise Management (see commitment 27); • Lighting (see commitment 28); • Visual Amenity (see commitment 29); • Regional Environmental Management (see commitment 30); and • Strategic Planning (see commitment 31). 2) Implement the Operations EMP.	To manage all relevant environmental factors associated with the operation phase of the Project.	Prior to commissioning	
				Commissioning and ongoing	

No.	Topic	Action	Objective	Timing	Advice
14	Terrestrial flora management	<p>1) Prepare a Terrestrial Flora Management Plan addressing details of management of terrestrial flora, vegetation and weeds.</p> <p>2) Implement the Terrestrial Flora Management Plan.</p>	Maintain species abundance and minimise operation impacts on vegetation and flora.	Pre-commissioning	CALM
15	Terrestrial flora management	<p>1) Prepare a Landscaping Plan addressing details of management of landscaped areas within the Project area.</p> <p>2) Implement the Landscaping Plan.</p>	Maintain species abundance and minimise operation impacts on vegetation and flora.	Commissioning and ongoing	CALM
16	Terrestrial fauna	<p>1) Prepare a Terrestrial Fauna Management Plan addressing details of management of terrestrial fauna, including fauna observation, handling and translocating procedures.</p> <p>2) Implement the Terrestrial Fauna Management Plan.</p>	Maintain species abundance and minimise operation impacts on terrestrial fauna.	Pre-commissioning	CALM
17	Culture and Heritage	<p>1) Prepare an Indigenous Heritage Management Plan addressing details of management to minimise disturbance to areas of cultural significance and promote employee awareness.</p> <p>2) Implement the Indigenous Heritage Management Plan.</p>	To preserve Aboriginal heritage sites located within the Project area, and ensure that the proposal does not adversely affect cultural associations of the Project lease.	Commissioning and ongoing	DIA
18	Hydrology and Surface Water	<p>1) Prepare a Surface Water Management Plan to ensure management of non-contaminated stormwater and potentially contaminated site run off. Establish procedures for testing, monitoring and reporting the quality of site run off, and treatment prior to discharge if required.</p> <p>2) Implement the Plan.</p>	Maintain the integrity, functions and environmental values of natural surface water drainage.	Pre-commissioning	WRC
19	Marine Environment	<p>1) Prepare a Marine Water Quality Management Plan which includes:</p> <ul style="list-style-type: none"> • Procedures for managing and monitoring return water to the WAWC to ensure that acceptance criteria are met, as set in licence conditions; • Adoption of AQIS guidelines, and environmental management requirements of the DPA; • Contribute to a coordinated management response with the WAWC and other system users to reduce inputs if ambient monitoring shows an elevated risk of environmental quality objectives not being met for King Bay; • Monitoring protocols in the event of ammonia spill. <p>2) Implement the Plan.</p>	Maintain marine ecological integrity and biodiversity and minimise impact of shipping on the marine environment.	Commissioning and ongoing	WAWC, DPA, AQIS
				Commissioning and ongoing.	WAWC, DPA, AQIS

No.	Topic	Action	Objective	Timing	Advice
20	Public health and safety	<p>3) If proposed treatment chemicals pose an unacceptable impact or risk to the environment, develop a plan with the DEP (Marine Branch) to mitigate or more completely research this impact. This may include consideration of alternative treatment chemicals and/or a toxicological study on local marine fauna.</p> <p>1) Prepare a Safety Management Plan, together with an Emergency Response Plan to enable a rapid response at the plant and product export facilities. The Project will incorporate a range of safety features to minimise risk, including:</p> <ul style="list-style-type: none"> • nitrogen purge facilities; • blow down systems; • firefighting facilities; • a safety trip and interlock system; • Emergency Shutdown System to initiate automatic shutdown of the plant; and • development of a safety policy and comprehensive training of all operations personnel in all aspects of plant operation including emergency procedures. <p>2) Implement the Plan.</p>	<p>To ensure that the risk to the public is as low as reasonably practicable (ALARP) and complies with acceptable standards.</p>	<p>Prior to Works Approval</p> <p>Pre-commissioning</p>	<p>WAWC, DPA</p> <p>MPR, FESA</p>
21	Risk	<p>1) Undertake a Quantitative Risk Assessment (QRA) and final HAZOP study during detailed design.</p> <p>2) Prepare an Emergency Response Plan.</p> <p>3) Contribute to the development of a Burrup Industrial Integrated Emergency Response Plan (BIERP) with other industries within the King Bay-Hearson Cove Industrial Estate.</p> <p>4) For the ammonia pipelines, design and operations risk reduction and response procedures will be developed during the design stage, including the development of plant operating procedures.</p> <p>5) Contribute cooperatively with LandCorp and MPR to the development of an integrated emergency response plan for the multi-user service corridor.</p>	<p>To ensure that the risk to the public is as low as reasonably practicable (ALARP) and complies with acceptable standards.</p> <p>To ensure cooperative measures are in place to integrate emergency response procedures with neighbouring industries to minimise public risk, especially at Hearson Cove.</p> <p>To integrate emergency response procedures and minimise public risk.</p>	<p>Commissioning and ongoing</p> <p>Prior to Works Approval</p> <p>Pre-commissioning</p> <p>During operation</p> <p>Pre-commissioning</p> <p>Pre-construction and ongoing</p>	<p>MPR, FESA LandCorp</p>
22	Liquid Waste Management	<p>1) Prepare a Liquid Waste Management Plan which details the management of liquid waste disposal streams, including treatment, monitoring and reporting of wastewater to be returned to the WAWC brine return system.</p>	<p>To minimise waste and potential for groundwater, surface water and seawater contamination or risk to public health.</p>	<p>Pre-commissioning</p>	<p>WAWC</p>

No.	Topic	Action	Objective	Timing	Advice
		2) Implement the Liquid Waste Management Plan.		Commissioning and ongoing	
23	Solid Waste Management	1) Prepare a Solid Waste Management Plan based on a waste management hierarchy. This will include established procedures for monitoring, recording, disposing and reporting of solid waste quantities during operation. 2) Implement the Waste Management Plan.	To minimise waste and potential for groundwater and surface water contamination or risk to public health.	Pre-commissioning Commissioning and ongoing	SoR
24	Hazardous Management Materials	1) Prepare a Hazardous Materials Management Plan to ensure that hazardous materials are properly handled, segregated, transported, treated and disposed, and appropriate response strategies are in place. 2) Implement the Hazardous Materials Management Plan.	To minimise waste and potential for groundwater and surface water contamination or risk to public health.	Pre-commissioning	
25	Atmospheric Management Emissions	1) Undertake a program of stack emission monitoring to verify current emission estimates, and determine compliance monitoring and reporting requirements in consultation with the DEP (Air Quality Branch). 2) Urea emissions will be no more than 35 mg/m ³ . 1) Join the <i>Greenhouse Challenge</i> Program.	To minimise the discharge of atmospheric emissions where practicable and maintain compliance with regulatory guidelines.	Commissioning and ongoing Operation	CALM
26	Greenhouse Gas Management	2) Develop a Greenhouse Gas Emissions Management Plan to identify <i>further</i> 'No Regrets' and 'Beyond No Regrets' opportunities to reduce and offset GHG emissions over the life of the Project, in accordance with the <i>Greenhouse Challenge</i> Programme. 3) Implement the Plan. 4) Conduct <i>further</i> investigations of possible 'Beyond No Regrets' measures and their respective greenhouse and efficiency gains in consultation with the AGO. 5) Investigate developing greenhouse gas offsets in Western Australia including: • purchase of pastoral leasehold businesses and destocking; • establishment of oil mallee plantations; • establishment of maritime pine and sawlog plantations; and • establishment of commercial Tasmanian bluegum plantations.	To promote continuous improvement in greenhouse emissions management over the life of the Project.	Pre-commissioning Pre-commissioning Ongoing Pre-construction	AGO AGO
27	Noise Management	Further investigate practicable noise reduction measures during the detailed engineering design phase when more definitive plant noise power levels are available, utilising the advice of a mutually acceptable acoustic engineer.	Ensure that operational noise emissions comply with Noise Regulations and minimise the noise impacts on the amenity at Hearson Cove.	Prior to Works Approval	

No.	Topic	Action	Objective	Timing	Advice
28	Lighting	<p>1) Light overspill will be kept to a minimum, using AS 4282 as a guide, consistent with site safety and security requirements.</p> <p>2) Light sources will be oriented to minimise overspill, whilst providing the required degree of illumination within the plant boundary. Overspill reduction measures such as directional beams and shrouding of the sides and rears of light sources will be employed where practicable.</p>	Manage potential impacts from plant light overspill to visitors at Hearson Cove, and offshore fauna if applicable.	Pre-commissioning	CALM
29	Visual amenity	<p>1) Adopt appropriate paint colour schemes (colour-matching) for the plant infrastructure and urea conveyor system so as to blend into surrounding terrain subject to process requirements. Preserve elevated rocky terrain which will maintain a natural backdrop and minimise visual intrusion on the skyline.</p> <p>2) Maintain an excellent standard of general "housekeeping" of the plant and associated infrastructure over the life of the Project.</p>	To minimise potential impacts on visual amenity.	Pre-commissioning	OMP
30	Regional environmental management	<p>1) Participate in a future King Bay-Hearson Cove industry group to develop a long-term monitoring/management plan for the King Bay-Hearson Cove industrial area including a cooperative ambient air monitoring programme which may be established with the WA Government.</p> <p>2) Contribute to cooperative research or baseline monitoring programmes on investigating potential cumulative impacts on molluscan fauna, aboriginal petroglyphs or vegetation.</p>	Minimise the impacts of strategic industrial development on the environmental attributes of the King Bay-Hearson Cove valley.	Ongoing. Pre-commissioning and ongoing.	OMP, CALM
31	Strategic Planning	<p>1) Consult with other prospective industries and OMP where practicable to ensure efficient use of infrastructure corridor space.</p> <p>2) Liaise with OMP and MRWA to promote the option for alternative road access alignments within the Project lease with the best overall environmental outcome.</p>	To ensure strategic planning and infrastructure development is undertaken in a coordinated manner.	Pre-construction and Ongoing. Pre-construction	OMP OMP, MRWA

Abbreviations

AGO	Australian Greenhouse Office	EPA	Environmental Protection Authority
DeptAg	Department of Agriculture Western Australia	FESA	Fire and Emergency Services Authority
AQIS	Australian Quarantine & Inspection Service	MPR	Department of Mineral and Petroleum Resources
CALM	Department of Conservation and Land Management	MRWA	Main Roads Western Australia
CSLC	Commissioner of Soil and Land Conservation	OMP	Office of Major Projects
DEP	Department of Environmental Protection	PDC	Pilbara Development Commission
DIA	Department of Indigenous Affairs	SoR	Shire of Roebourne
DPA	Dampier Port Authority	WAWC	Water Corporation
		WRC	Water and Rivers Commission