



Executive Summary

The Proposal

Perdaman Chemicals and Fertilisers (PCF) proposes to construct a leading edge technology urea production plant, using coal as feedstock, in the proposed Shotts Industrial Park, located 7.5 km east of Collie in south-west Western Australia. This project will transport urea via rail for shipment from Berth 5 at the Bunbury Port. The proposed plant has a nominal daily production capacity of 6,200 tonnes per day (tpd), equating to 2.0 million tonnes per annum (Mtpa). Included in the proposal is provision for construction of a new water supply pipeline adjacent to an existing water pipeline, from Wellington Dam to the project site, a new wastewater pipeline from the project site to the Collie power station (from where it will be discharged to the Verve ocean outfall pipeline) and the construction of a 8 km coal conveyor within an existing electricity powerline corridor to the Muja coal mine.

Project Assessment

Preliminary details of this project were referred to the Environmental Protection Authority (EPA) in March 2009 through the submission of a completed Section 38 referral. On April 13th 2009, the Proposal was assigned a Public Environmental Review (PER) level of assessment by the EPA under the provisions of Part IV of the *Environmental Protection Act 1986* (EP Act).

An Environmental Scoping Document was prepared by PCF and approved by the EPA on 29th July 2009 as an acceptable basis for preparation of the PER document.

This PER has been prepared in accordance with the document '*Guidelines for preparing a Public Environmental Review/Environmental Management Programme*', Version 5, 2008 and specifically to address Section 6.3 of the *Environmental Impact Assessment (Part IV Division I) Administrative Procedures 2002*.

This Public Environmental Review seeks approval to:

- » Construct a 6,200 tpd urea plant;
- » Disturb approximately 99 hectares at the Shotts Industrial Park;
- » Construct a water supply pipeline from Wellington Dam to the urea plant;
- » Construct a wastewater pipeline from the Shotts Industrial Park to the Collie power station where it will discharge to the Verve Energy ocean outfall pipeline east of Collie;
- » Construct a coal conveyor from Griffin Muja coal mine stockpile to the urea plant; and
- » Export urea from Berth 5 at the Bunbury Port.

The purpose of the PER is to:

- » Place the proposal in the context of the natural and socio-economic local and regional environments;
- » Adequately describe all components of the proposal such that the Minister for the Environment has the required advice to review and consider a well defined project;
- » Communicate the proposal to stakeholders such that the EPA can be advised as to the major issues and concerns held by the community;



- » Describe and illustrate the proponent's environmental management programme, outlining how each of the identified environmental impacts are minimised and will be managed; and
- » Provide the justification and rationale required to demonstrate that this proposal should be judged environmentally acceptable by the Minister and the EPA (EPA 2008).

Once a draft PER is prepared, the process for submission and assessment is outlined in the following steps:

- » The PER is submitted as a draft to the EPA for review;
- » The EPA, subsequent to the review of the Draft PER, authorises the PER for release as a public document;
- » The PER is finalised based on the EPA's comments and then released for public review for the period determined by the EPA;
- » The EPA receive and collate all submissions made on the PER during the review period and provide the Proponent a copy of the submissions or a summary of the issues raised;
- » The proponent responds to the submissions and issues raised;
- » The EPA undertakes an assessment of the PER, the submissions received and the Proponents response to the issues;
- » The response to the issues are presented and recommendations are prepared and presented to the Minister for the Environment;
- » The Minister publishes the EPA's Report and Recommendations for a two week period during which appeals can be lodged;
- » The appeals are considered by the Appeals Committee and a report is prepared for the Minister's consideration;
- » The Minister announces a decision as to whether or not, and in what manner, the proposal may be implemented;
- » The Minister issues a Statement on the Project; and
- » Environmental Management Plans are prepared, if required.

The Proponent

The proponent of this project is:

Perdaman Chemicals and Fertilisers
Level 4, 172 St Georges Tce
PERTH WA 6000

Perdaman Chemicals and Fertilisers, originally North West Chemicals and Fertilisers, is a wholly owned subsidiary of Perdaman Industries, a company formed in 2006 by Founding Chairman Vikas Rambal. The Company is a West Australian based multinational group with a current focus on urea production, primarily intended for international markets.



Need for the Project

Plants require nitrogen to grow their roots, stalks and vines and urea comprises 46 % nitrogen. Nitrogen must be available continuously to feed the development of grains, fruits, nuts and vegetables that are essential to human nutrition. In a very real sense, nitrogen is necessary for all forms of plant and animal life.

Urea is one of the most effective and popular fertilisers in the world. More than 90 % of the world's urea production is used for fertiliser.

Demand for urea is expected to increase as global population continues to rise and more food is required. Fertiliser industry organisations, including the International Fertiliser Industry Association, estimate the future need for this product will be in excess of 150 million tonnes per annum. Limited supply of urea to the local market is anticipated, but the majority of urea produced at this plant will be exported, probably to India. India is one of the world's biggest users of nitrogen fertiliser, consuming approximately 21 % of world production in 2007.

Benefits of the Project

The construction of the PCF Collie Urea Plant will establish a significant value-added processing industry for the primary resource, coal.

The construction and operation of the proposed urea plant will generate substantial economic revenue for the state, the town of Collie and surrounding districts. Capital investment for this project is estimated at AUD \$3.5 billion of which approximately AUD \$2.0 billion is anticipated to be spent in Australia during construction. The project will generate \$850 million per year when operating, will create employment for 1200 - 1500 persons during construction and will directly employ 200 mainly skilled persons thereafter during operations.

The Collie Urea plant will incorporate the latest commercially available process and equipment designs and technology to minimise environmental impacts. The management plans and strategies that are developed as a result of this PER will form the basis of all reporting and longer term environmental management.

Project Description

The Project involves conveying coal from the nearby Griffin coal mine to the Shotts Industrial Park, converting this to urea and transporting the final product by rail to the Bunbury Port for export. Some urea may also be supplied by road to the local market.

The project comprises the following:

- » Urea manufacturing plant which includes;
 - Coal Preparation;
 - Gasification;
 - Gas adjustment;
 - Acid gas cleanup;
 - Ammonia synthesis;
 - Urea Synthesis; and
 - Urea granulation.



- » Urea storage and ship loading facilities at Bunbury Port; and
- » Support infrastructure including
 - Rail sidings at Collie and Bunbury Port;
 - Coal conveyor from Griffin Muja coal mine to the Plant;
 - Wastewater pipeline from the Plant to the Collie power station from where it will discharge to the Verve Ocean Outfall Pipeline; and
 - Water supply pipeline from Wellington Dam to the Plant.

Flora and Fauna

Flora

Collie Urea Plant

Vegetation within the western half of the Site has been previously cleared and has poor regeneration. Patches of vegetation along the Northern boundary of the Site have been selectively cleared, however these patches remain largely intact. Remaining vegetation on the site is generally in Very Good condition.

No Threatened Ecological Communities, Declared Rare Flora or Priority Flora were identified on the site. Considering much of survey area has experienced a moderate to high level of disturbance, the remaining area of bushland is considered to have high species diversity, though it is relatively similar to local native vegetation occurring in the surrounding region and well represented locally and regionally.

The proposed Plant Site will occupy up to 80% of the total lease area of 124 hectares. This will necessitate the clearing of approximately 99 ha of vegetation. A band of Wetlands/Damplands to the south of the site will be retained and rehabilitation will be undertaken on an adjacent cleared area to improve environmental values.

The final layout of the Plant will not be determined until later in the engineering design process but is expected to occupy around 45% of the available land. The other 45% is either occupied by existing infrastructure or will be required for 'laydown' of materials and equipment during construction and coal stockpiling thereafter.

Bunbury Port

No native vegetation will need to be cleared at Bunbury Port. Minimum clearing is expected along the water supply pipeline, wastewater pipeline and conveyor alignments as these will be using existing, predominantly cleared easements.

Water Supply Pipeline

The water supply pipeline will be constructed in previously cleared land and so vegetation impact as a result of this infrastructure will be minimal. Any clearing required will be regrowth. A spring flora survey to assess vegetation in the required easement area will refine the pipeline route.

Fauna

Collie Urea Plant

The survey found five significant fauna species within the survey area. These species are:

- » Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*);



- » Baudin's Black Cockatoo (*Calyptorhynchus baudinii*);
- » Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*);
- » Chuditch (*Dasyurus geoffroii*); and
- » Western Brush Wallaby (*Macropus irma*).

The potential impacts of the clearing and construction of the plant on fauna and their habitats include:

- » Habitat fragmentation due to vegetation clearing
- » Habitat loss and damage
- » Death or harm to fauna species
- » Weed introduction and invasion

The fauna and fauna habitat value of the proposed Plant Site and its surrounds is mostly attributable to the extensive area of State Forest rather than the intrinsic value of the development site. This habitat is well represented both locally and regionally. While the site clearing will displace fauna using the Plant Site as a habitat linkage, the extensive area of State Forest that will remain intact will provide habitat and feeding refuges.

The consequential reduction of habitat as a result of clearance of the plant site and associated construction areas is not significant and will be reduced by selective preservation of habitat where possible.

Bunbury Port

There are no expected fauna impacts from construction at Bunbury Port.

Water Supply Pipeline

Construction of a new pipeline adjacent to an existing Western Power owned pipeline from Wellington Dam, is proposed should PCF be unable to access the existing pipeline. Potential fauna impacts in relation to the construction of a new pipeline include habitat fragmentation as a result of vegetation clearing and restriction of fauna movement due to barrier effects. Given the current level of fragmentation throughout the majority of the water pipeline route and the presence of an existing pipeline easement, further fragmentation is considered to represent a minor impact.

A large diameter pipe will prevent fauna from crossing over the pipe. Inclusion of fauna crossings in the design and ensuring adequate elevation to allow small fauna to cross under the pipeline will result in only minor impacts. Provision of crossings over the existing pipeline should enhance fauna movement over the existing situation.

Aquatic fauna

Potential impacts on aquatic ecology as a result of construction and operation of the water supply pipeline can result from the following:

- » Construction impacts from the proposed pump station to be located at Wellington Dam;
- » Construction impacts associated with installation of a suspended structure over major waterways;
- » Construction impacts from waterway crossings of the water supply pipeline; and



- » Construction impacts associated with the discharge of waters during dewatering and hydrostatic testing.

Given works are to be undertaken within an area previously used for an identical purpose, impacts on the aquatic environment are expected to be minor given appropriate environmental management during construction.

Air Quality

Dust

Dust emissions will arise during construction of the Collie Urea Plant, the export facilities at Bunbury Port and the water supply pipeline. The following construction activities involve the movement and placement of soil and rocks, and these can be the source of dust emissions:

- » *Mechanical disturbance*: dust emissions resulting from the operation of construction equipment and vehicles; and
- » *Wind erosion*: dust emissions from exposed and disturbed soil surfaces under high wind speeds during construction.

Collie Urea Plant

Based on the isolated nature of the Collie Urea Plant site and surrounding land uses, construction dust emissions are not considered significant.

Bunbury Port

As the extent of earthworks at the export facility will be relatively minor, dust emissions at this site are not considered to be significant.

Water Supply Pipeline

Sensitive receptors in proximity to the alignment are primarily restricted to residential properties to the north of Allanson and Collie. Air quality directly adjacent to pipeline construction may be temporarily impacted during the construction phase as a result of vehicle emissions and dust generation due to earthworks required for levelling of the pipeline alignment, road and other infrastructure crossings and restoration works. Dust will be managed through the implementation of a construction Environmental Management Plan.

Air Pollutants

Cumulative airshed modelling of emissions from the Collie Urea Plant, existing approved (under construction) and other approved (but yet to commence construction) emission sources was conducted using The Air Pollution Model (TAPM). Modelled outcomes were compared against national and Western Australian air quality standards.

The results of dispersion modelling show:

- » The Collie Urea Plant contributes very little to Collie airshed emissions, approximately < 1% SO_x, 1% NO_x and 3% particulates;
- » There are predicted exceedences of the Air NEPM standards predicted at sensitive receptors within the Collie airshed for 1-hour SO₂, 24-hour PM₁₀ and 24-hour PM_{2.5} as a result of the combined emission sources;



- » There are exceedences of the Kwinana Environmental Protection Policy (1999) (EPP) standard predicted at sensitive receptors within the Collie airshed for 1-hour SO₂ as a result of the combined emission sources; and
- » In each case, emissions from Muja power station are the main contributor to predicted concentrations.

Waste

Solid and liquid wastes of a domestic and construction nature will be generated during construction at the Plant site. The greater majority of waste generated will be construction materials.

A Waste Management Plan will be prepared and implemented for the construction phase of the project, employing the waste hierarchy principles of resource conservation.

Hazardous solid wastes will not be generated during construction.

During the operation of the Plant, small quantities of the following industrial chemicals will be stored on site:

- » Sulphuric acid, caustic and chlorine for water treatment;
- » UF 85 (urea formaldehyde solution) used in the granulation process; and
- » Natural gas / diesel for back up fuel.

All wastes generated during construction and plant operations will be collected and disposed by a licensed waste contractor and disposed of in an appropriate licensed recycling or landfill facility.

Noise

Collie Urea Plant

Noise modelling of Perdaman's urea plant indicates that noise can be managed from this site.

Noise levels are predicted to exceed the Regulations by 9 dB at the Stockton Pool caretaker's cottage. It is understood that this cottage is presently used for residential accommodation, and therefore is considered noise sensitive. Perdaman's may need to consider acoustic treatment of this cottage or the provision of alternative accommodation for the caretaker.

There are also some surrounding premises where future residential development could potentially be constrained. It is recommended that this issue be addressed through the Shotts Industrial Park buffer study and that suitable protections be put in place to ensure that residential encroachment does not compromise either the viability of the proposed industrial development or future residential amenity. It is expected that resolution of this issue will require ongoing negotiation between Perdaman, the State Government, the Shire and affected landholders.

Noise levels at all other receiver locations are predicted to comply with the Regulations.

Noise levels are currently predicted to comply with Perdaman's noise target of 65 dB(A) at the plant boundaries. A continued focus on noise amelioration is required during the detailed engineering design phase of this project to ensure that the boundary target is achieved. Any further reduction in plant noise at the boundary will assist in reducing noise emissions to surrounding residential receivers.

Bunbury Port

Background noise monitoring of locations around Bunbury Port was undertaken to allow assessment of potential cumulative noise impacts from the operation of the urea export facility at the port. Key noise



sources from the proposed PCF export facilities will include locomotives, wagon unloading, conveyors and extraction fans.

Intrusive noises are predicted to be dominated by the conveyor, with maximum noise levels created by the train wagon dump gate. Noise from the wagons shunting together as the locomotive stops and starts would be considered to be a high impact at noise sensitive premises. Daytime operations are expected to be shielded by traffic noise and other port operations. Noise from the locomotive idling is predicted to be close to the existing background noise level and is unlikely to result in a significant impact.

A 7 dB noise reduction is proposed to the LA_{10} noise level so as to meet regulated noise targets. A combination of engineering design features and continuously rail car unloading practices will be employed to minimise noise emissions from the project.

Transportation of Urea to Bunbury Port

Current forecasts anticipate a significant increase in train traffic along the existing railway, irrespective of the development of the Collie Urea Project. As a result, L_{Aeq} noise levels are expected to increase overall by between 1.7 and 4.8 dB, depending on the section of track.

However, transport of urea is predicted to contribute only a small proportion to this overall increase in transport noise levels. The increase in L_{Aeq} noise levels generated by the Collie Urea Project alone is predicted to be between 0.1 and 0.4 dB. This is considered to be negligible, relative to the predicted change overall.

Pipeline Construction

The equipment used for pipeline construction is typical of that used in an urban environment for general infrastructure construction. Residential areas in proximity to the alignment will experience some daytime noise impact but this will be temporary and spread out over a short period. Overall, noise impacts from construction of the pipeline are expected to be low.

Traffic

Collie Urea Plant

Traffic volume data for 2008 on the Coalfields Road show average counts of around 4,000 to 5,000 vehicles per day. Acceptable service levels are achievable with traffic volumes of up to 12,000 vehicles per day on this road. Traffic volumes in relation to the project will not exceed this level. Notwithstanding this, as possible impact will be greatest during shift change times, PCF will implement management strategies such as coordinating with other industries to stagger shift change times, supporting buses or car pooling for workers, placing curfews on heavy vehicle movements during shift times and driver road safety awareness. PCF has joined and contributed funding to the Industry Road Safety Alliance, which involves a number of key stakeholders such as Main Roads WA, WA Police, the Shire of Collie and industries in the Collie region.

Existing traffic volumes on the Collie Kings Lake Road are significantly lower. The potential increase in traffic volume as a result of construction activity will similarly not affect the level of service for this road.

Bunbury Port

Construction activity at the Bunbury Port is expected to only require a relatively small workforce which will not generate any significant additional traffic volumes. The majority of construction materials can be brought to site using standard transport.



Air Toxics Risk

A preliminary risk assessment was conducted to determine off-site individual risk and the results compared with prescribed Individual Risk criteria, set by EPA, for developments in populated areas. The risk assessment determined that the dominant hazard from the proposed plant would be large or continuous emissions from the ammonia storage area and associated plant. No other significant offsite hazards were identified.

The risk assessment considered three characteristic storage tank hazards and assessed their consolidated impacts and risks using comprehensive dispersion modelling and the quantification of three separate offsite risk measures.

All risk measures indicate that the Shotts Industrial Park location is a suitable site with respect to offsite hazards and risks.

Amenity

Collie Urea Plant

Potential impacts on amenity could result from increased traffic movements through Collie during construction and operation of the Plant, noise, emissions and dust impacts and visual impacts are likely to add to the effects already being experienced in Collie from other industrial projects in the area.

Visual impacts associated with the plant are considered to be minor as it is to be located between two working coal mines that are existing stark features in the landscape. The plant will occupy a much smaller footprint than the mines and will therefore be visually less dominant.

Light spill likewise will be minimised by the undulating topography and vegetation, but is likely to be less localised, and a small number of residences in the area may experience minor impacts. It is noted that contemporary lighting technology such as that to be installed at the Urea plant greatly reduces light spill.

Bunbury Port

Development of the PCF facilities at the port will include a large (60 - 100,000 tonne capacity) storage shed and a ship-loader at Berth 5, on the south-west side of the Inner Harbour. The storage shed is expected to be approximately 285 m long and 27 m high. In comparison to the current woodchip pile, the shed will be similar in height and will therefore be partly visible from Koombana Drive and from the public open space and residences across the Leschenault Inlet. These structures are consistent with the types of existing port structures, visual impacts associated with the port infrastructure are considered to be minor.

Water Supply Pipeline

As the pipeline will run next to the existing water pipeline, amenity impacts will not significantly change as a duplicated pipeline does not represent a new visual element in the landscape and does not significantly alter the scale of impact over that of the existing pipeline. Visual obtrusiveness will be minimised. Visual impacts from pipeline structures are considered to be minor.

Heritage

Collie Urea Plant

An Aboriginal Heritage survey was undertaken of the Urea Plant site in June 2009 to determine if there were any sites of significance to the Nyungar people which may be affected by the project.



As a result of this survey and consultation held with 11 members of the Gnaala Karla Booja WC98/058 Native Title Claim group as determined by the South West Aboriginal Land and Sea Council, no sites of significance as defined by Section 5 of the Western Australian *Aboriginal Heritage Act* (1972) were identified to be located within the area proposed for development.

Bunbury Port

There are no heritage impacts associated with the development of storage and loading facilities at Berth 5.

Water Supply Pipeline

A search of the on-line Aboriginal Heritage Enquiry System (Western Australian Department of Indigenous Affairs, July 2009) was undertaken to identify any known Aboriginal heritage sites along the proposed alignment.

The alignment crosses the Collie River (Site ID 16713) which is a mythological site.

The alignment passes in the vicinity of Old Aboriginal Reserve (Site 4604) and Harris River Road (site 17286) to the west of Collie. Both sites were camp sites.

To the east of Collie, the alignment passes in the vicinity of Eight Mile Pool (Site 4690) which is a ceremonial and mythological site and an artefact scatter on Griffin Coal mine (Site 5304).

The alignment of the pipeline will be reviewed in light of the Aboriginal heritage survey to be conducted on the corridor subject to detailed design. Given the alignment is following the existing pipeline, it is expected that the easement has already been subject to significant disturbance and the urea plant water pipeline construction is considered to present a low risk of disturbing specific sites.

Greenhouse Gas

The major Greenhouse Gas (GHG) relevant to the PCF project is carbon dioxide (CO₂). The PER considered both carbon dioxide and methane and emissions have been estimated. Other GHG emissions, such as perfluorocarbons, sulphur hexafluoride, and nitrous oxide have not been estimated as there will be no usage or only negligible emissions of these gases respectively.

The proposed PCF facilities will produce approximately 3.3 Mtpa of greenhouse gas in its operational phase. The Gas Clean-up and Power Island areas are by far the largest emitters of carbon dioxide emissions, accounting for approx 95% of the total estimated GHG emissions:

- » The CO₂ from the process unit is 99.5% pure CO₂ and is sequester ready for either geo-sequestration or chemical sequestration when a commercial scale facility or combination of facilities is available.
- » The CO₂ emissions from the power plant within the facility will be from a fully integrated power and steam generation system. These emissions will be lower than an equivalently sized non integrated facility but will not be sequester ready.

Overall, Australia emits about 1% of the total global greenhouse gas emissions (Western Australian Taskforce 2004). Western Australia accounts for about 12.8% of the total greenhouse gas emissions in Australia (597.2 Mtpa in 2007). The PCF project thus represents approximately 0.61% of the total GHG emissions in Australia in 2007.



Community Consultation

The consultation strategy for this PER process has encompassed a range of opportunities for public commentary, including:

- » The distribution of Frequently Asked Question Sheets;
- » Media advertorials printed in the local 'Collie Mail' newspaper;
- » Public information evening and community workshop held in Collie on June 15th, 2009;
- » Technology briefing held in Collie on July 20th, 2009; and
- » The formal PER public comment period, an eight week period where the public and decision-making agencies have the opportunity to present formal submissions regarding the proposed development and associated environmental management strategies.

Further to the required public comment period, PCF intend to hold an additional community forum where the public will have the opportunity to respond to the recommendations of the PER to PCF's Directorate and Senior Managers. The public workshop will be advertised in the local media and stakeholders will be directly emailed.

In addition to the June 15th community workshop and the July 20th technology briefing, GHD has completed a number of interviews with key stakeholders to ascertain opinions on the project and the environmental issues associated with the proposal.

A number of issues were common to the majority of groups and individuals most notably:

- » Air quality emissions and the cumulative impact to the Collie air shed;
- » Water supply options and water source protection;
- » The scope and commitment to local employment and business development opportunities;
- » Traffic congestion through Collie; and
- » Greenhouse Gas emissions.

Other issues raised were particular to interest groups, in particular:

- » Cumulative noise impact at Bunbury Port;
- » Risk management and emergency response strategies developed for possible bushfire risk, industrial accidents and chemical spills; and
- » Potential tourism impacts at Stockton Lake.

Social Issues

The PER has identified a number of potential social issues and management strategies. The following provides a summary of key areas that will be attended to by PCF.

- » **Realising opportunities for employment, training and small business** – PCF will build partnerships with Collie Chamber of Commerce and Industry CCCI, South West Development Commission (SWDC), Department of Education and Training (DET) and local suppliers and contractors; engage stakeholders early and develop a presence in the SWDC/Collie CCI office so that information about job opportunities is made accessible; work closely with groups such as the Nulang Boodja to develop training initiatives for indigenous youth.



- » **Diversifying housing and accommodation options** – PCF will carefully locate and develop new workers accommodation to prevent impacts on current housing capacity and affordability and minimise additional road traffic between Collie and Bunbury; continue to consult with relevant stakeholders to prepare for changes.
- » **Enhancing community services and facilities** – PCF will maintain strong communication lines with relevant government agencies and non-government service providers to prepare for increased pressures on services; contribute to recreation and community development initiatives.
- » **Managing amenity, health and safety impacts** – PCF will provide regular reporting of monitoring and management outcomes to communities in Collie and Bunbury regarding dust, noise, emissions and traffic; respond to concerns raised quickly; participate actively in the Collie Industry Road Safety Alliance.

Effective management of impacts will require that strategies are developed in close consultation with key stakeholders such as the Shire of Collie, industry partners, government agencies and community groups. PCF will establish a community reference group for the project with diverse membership and transparent processes to help to enable this consultation.

Management Commitments

The following table summarises the Management Commitments for this proposal.

Table i Environmental Impact and Management Commitments

Section	Commitment	Objective	Timing	Advising Agency
Environmental Management				
7.0	PCF will prepare an Environmental Management Plan for the construction and operational phases of the plant.	To detail all responsibilities and obligations. Ensure compliance with regulator requirements.	The Construction Management Plan will be prepared prior to construction. The Operation Management Plan will be prepared prior to the operation phase.	EPA
7.0	PCF will prepare an Environmental Management System for the proposed Collie Urea Plant.	Manage all environmental factors. Minimise environmental impacts Maintain continuous improvement in environmental performance. Comply with legal responsibilities and	Within six months of project approval	DEC



Section	Commitment	Objective	Timing	Advising Agency
		requirements.		
Flora – Shotts Industrial Park				
7.1.1	A Flora Management Plan will be prepared to finalise the clearing plan.	Vegetation with high ecological value is retained. Vegetation adjacent to Priority Flora is retained. Vegetation with high habitat value is retained.	Prior to construction	EPA
	A Weed Management plan will be prepared prior to clearing	To minimise the spread of exotic weeds, particularly in to areas nearby to Priority Flora.	Prepared prior to clearing	EPA
	A Dieback Management Plan will be prepared prior to clearing.	To minimise the spread of <i>P.cinnamomi</i> through retained vegetation patches. Minimise the spread of <i>P.cinnamomi</i> through vegetation that lies outside the proposed Plant site.	Prepared prior to clearing	EPA
Flora – Water Supply Pipeline				
7.1.1.	A spring flora survey will be conducted along the proposed new route for the water pipeline from Wellington Dam to the Shotts Industrial Park	To map any Priority Flora that may be established along the pipeline including <i>Hemigenia ramosissima</i> .	Prepared during design phase of the pipeline	DEC/EPA
	A Flora Management Plan will be prepared prior to construction of the Pipeline.	To protect priority flora that may occur along the pipeline. To minimise the impact of clearing of existing vegetation. Once the specific alignments are confirmed, an assessment of clearing requirements, including breeding trees, will be undertaken as part of the proposed Flora	Prepared prior to construction	EPA



Section	Commitment	Objective	Timing	Advising Agency
		Management Plan		
	A Weed Management Plan will be prepared prior to clearing for construction.	To minimise the spread of exotic weeds along the length of the pipeline.	Prepared prior to construction	EPA
Fauna - Shotts Industrial Park				
7.1.2	A Fauna Management Plan is prepared prior to construction.	To minimise the impact on existing fauna and fauna habitat. To prevent mortality of ground-dwelling animals.	Prepared prior to clearing	EPA
7.1.2	The Clearing Plan will include opportunities for habitat linkages with State Forest land that is adjacent to the Park.	To maximise the opportunity for fauna to have connection with the State Forest. To maximise the retention of existing habitats including tree hollows.	Prepared prior to clearing	EPA
7.1.2	A Waste Management Plan will be prepared prior to construction and operation.	To minimise the risk of injury to fauna as a result of waste such as wire, small packages and metal off-cuts.	Prior to construction and reviewed prior to operation.	EPA
7.1.2	Traffic movement across the Shotts Industrial Park will occur on designated tracks and not venture into retained vegetation patches.	To minimise damage to retained habitat areas and linkages.	Prepared prior to clearing Reviewed prior to construction. Reviewed and updated prior to Plant Operation.	EPA
7.1.2	The Proponent will, where practicable, retain large stages with hollows.	To minimise the impact of clearing on this particular habitat.	To occur during clearing.	DEC
7.1.2	Where hollows are to be removed, these will be salvaged and donated to Cockatoo Care groups.	To offset the impact of clearing of these hollows.	To occur during clearing.	DEC
7.1.2	The Proponent will plant in vegetation buffer areas, desirable feeding species for Cockatoos.	To maximise the habitat area suitable for cockatoo breeding and to sustain existing	To occur during the construction phase and maintained during the operational	DEC



Section	Commitment	Objective	Timing	Advising Agency
		populations.	phase of the Plant.	
Fauna – Water Supply Pipeline				
7.1.2.	A Fauna Management Plan will be prepared prior to clearing for the new water supply pipeline.	<p>To minimise the loss of habitat trees.</p> <p>To prevent mortality of ground-dwelling animals.</p> <p>To minimise barrier effects.</p>	Prepared during design phase of the pipeline	DEC/EPA
7.1.2	The final design of the pipeline will allow for fauna movement at reasonably regular intervals (eg 500 m) along the pipeline.	To enable larger fauna (eg kangaroos and emus) to move over or under the pipe.	Prepared during design phase of the pipeline	DEC/EPA
7.1.2	A Weed Management Strategy will be prepared.	To minimise the risk of the spread of exotic weeds during construction of the pipeline.	Prepared prior to construction	DEC/EPA
7.1.2	A Waterways Management Strategy will be prepared.	<p>To minimise the impact of aquatic species impacted by pumps.</p> <p>To protect fish species potentially isolated by pump barriers.</p> <p>To minimise sedimentation and erosion of water crossings.</p>	Prepared prior to construction	DEC/EPA
7.1.2.	A Risk Management Strategy will be prepared.	<p>To minimise the risk of contamination and spillage of contaminants into waterways.</p> <p>To ensure that refueling areas are located away from waterways and drainage lines.</p> <p>To bund fuel and chemical storage sites.</p>	Prepared prior to construction	EPA DoH DMP Worksafe



Section	Commitment	Objective	Timing	Advising Agency
Air Quality – Shotts Industrial Park				
7.2.1	The Proponent will ensure there is an adequate supply of water at all times for dust suppression.	To minimise the likelihood of excessive dust particularly where there are strong prevailing winds.	Ongoing	DEC
	The Proponent will restrict vehicle speeds within the Site.	To minimise the generation of dust.	Ongoing	EPA
	The Proponent will seal entry and exit roads. These will be swept as required.	To minimise the generation of dust and remove any accumulation of dust.	Ongoing	EPA
	The Proponent will monitor stockpiles and maintain water to the stockpile faces as required. Dust suppressants will be used as required.	To minimise the generation of dust from stockpiles.	Ongoing	DEC
	The Proponent will proactively monitor wind events where high winds are predicted or where dust generation is visible.	To enact contingency dust plans wherever required.	Ongoing	DEC
Solid Waste – Shotts Industrial Park				
7.3.1	Solid Waste Management Plan will be prepared.	To maximise opportunities for waste avoidance, reuse and recycling. To ensure waste is managed appropriately and as required.	Prepared prior to construction.	DEC/EPA
Solid Waste – Bunbury Port				
7.3.1	Urea that may be lost during loading will be swept and removed at the completion of loading.	To minimise the risk of urea contaminating water at the Bunbury Port.	Ongoing	BPA
	Urea loading system will be enclosed to prevent weather ingress and contain urea			BPA\DEC



Section	Commitment	Objective	Timing	Advising Agency
Liquid Waste – Shotts Industrial Park				
7.3.1	An Erosion Management Plan will be prepared to protect wetlands.	To minimise the impact of sedimentation and possible contamination of neighbouring wetlands.	Prepared prior to construction.	EPA DEC
	The Proponent will bund or provide other containment such as drainage trenching at the southern boundary of the Site.	To minimise the risk of sedimentation entering the wetlands during clearing and construction.	Completed prior to clearing	DEC
	The Proponent will prepare a Storm Water Management Plan to comply with <i>Water Quality Protection Notes 55</i> .	To minimise the risk of erosion of the Site as a result of runoff. To minimise the risk of contaminated water leaving the Site and entering nearby waterways.	Prepared prior to construction	DoW/DEC
	The Proponent will bund and seal all infrastructure that could potentially leak contaminated substances.	To minimise the risk of contamination of soil and nearby water ways.	Prior to construction	DEC
	The Proponent will install sediment traps at the outlet of diversion drains.	To minimise erosion and attenuate flows.		DEC
	The Proponent will install and monitor sediment basins to collect storm water at the construction Site.	The Basins will be designed to manage the rate and volume of flow. To minimise the risk of contamination. To ensure all waste is disposed according to its required classification.		DEC
	The Proponent will monitor liquid waste conveyed to the Verve Pipeline to ensure compliance with discharge license conditions.	To maintain compliance with License conditions for discharge from the Verve Pipeline.	Ongoing	DEC



Section	Commitment	Objective	Timing	Advising Agency
Liquid Waste – Bunbury Port				
	The Proponent will prepare a Stormwater Management Plan for Bunbury Port.	To minimise the risk of contaminated washdown water and stormwater from entering the Port	Prepared prior to construction at Berth 5.	EPA DoW DEC
Transport - Shotts Industrial Park				
7.5.4	The Proponent will coordinate with Main Roads WA and the WA Police regarding the transport of pre-assembled modules.	To maximise the safety of drivers using the roads at the same as large modules are transported. To minimise inconvenience to drivers/	Prepared prior to clearing. Reviewed prior to construction. Reviewed and updated prior to plant operations.	MRWA
7.5.4	The Proponent will provide road safety training as part of the compulsory induction for all employees.	To maximise road safety awareness. To encourage car pooling and shared driver responsibilities.	Prepared prior to clearing. Reviewed prior to construction. Reviewed and updated prior to plant operations.	MRWA
Transport – Water Supply Pipeline				
7.5.4	A Traffic Management Plan will be prepared in accordance with AS 1742.3 and Main Roads Traffic Management for Works on Roads Code of Practice.	To facilitate the diversion of traffic and cyclists around works occurring on or nearby to roads.	Prepared prior to clearing. Reviewed prior to construction. Reviewed and updated prior to plant operations.	MRWA
	The Proponent will ensure that all relevant permits will be prepared where road closures are required.	To ensure compliance with Main Roads regulations.	Prepared as required.	MRWA
	The Proponent will coordinate with Main Roads WA and Westnet where crossings occur at Coalfields Road and the Collie to Bunbury Rail Line.	To minimise the risk of disruption of transport services. To maximise road and rail safety. To ensure compliance with associated	Prepared as required.	MRWA



Section	Commitment	Objective	Timing	Advising Agency
Transport Regulations.				
Amenity – Shotts Industrial Park				
7.6.4	The Proponent will use fully enclosed rail cars when transporting urea from the Shotts Industrial Park to Bunbury Port.	To minimise dust generation during the rail movement through the Collie township.	Ongoing	DEC
	The Proponent will design lighting at the Plant to minimise light spill.	To minimise the impact of light on residences, recreational users of Stockton Lake and traffic using adjacent roads.	Undertaken during design phase	EPA
Amenity – Bunbury Port Authority				
7.6.4	The Proponent will store urea intended for export in a fully enclosed shed.	To minimise the risk of dust generation.	Planned prior to construction.	DEC
	The Proponent will employ lighting design to reduce light spill from the storage shed and loading facilities.	To minimise the impact of excessive lighting on residences nearby to the Port.	Undertaken during design phase	EPA
	The Proponent will include a continuous unloading facility to unload rail wagons.	To minimise the noise generated from unloading processes often associated with rail car shunting.	Planned in negotiation with Logistics contractor.	EPA
	The Proponent will consider colour and design solutions of the enclosed shed.	To minimise the visual amenity impact of a large shed to residences on the southern side of the Port.	Undertaken during design phase	EPA
Amenity – Water Supply Pipeline				
7.6.4	The Proponent will maintain existing native vegetation wherever possible around the pump station and other infrastructure associated with the Wellington Dam.	To minimise the potential loss of local provenance species. To maximise native vegetation populations in the local environment.	Ongoing	DEC
	The Proponent will minimise the clearing width of the pipeline as	To minimise the visual amenity impact of the pipeline to nearby	Prepared during the engineering	DEC



Section	Commitment	Objective	Timing	Advising Agency
	much as possible and practicable.	residences and land users.	phase.	
	The Proponent will maintain the native vegetation screening the pipeline from established residences.	To minimise the visual amenity impact of the pipeline to nearby residences and land users.	Planned during the design phase.	DEC
	The Proponent will remove construction equipment as soon as practical following completion of works.	To minimise the visual amenity impact of the pipeline to nearby residences and land users.	Ongoing	EPA
	The Proponent will commence rehabilitation along the pipeline as soon as possible following construction.	To minimise the visual amenity impact of the pipeline to nearby residences and land users.	Planned during design phase. Ongoing	DEC
	The Proponent will ensure that appropriate Bed and Bank Permits are acquired from the Department of Water where water crossings occur.	To ensure compliance with the DoW.	Prepared prior to construction.	DoW
	The Proponent will ensure that all environmental conditions required by relevant organisations including Main Roads are acquired prior to any bridge construction occurring.	To ensure environmental compliance where construction occurs over waterways.	Prepared prior to construction.	DEC MRWA

Noise Emissions – Shotts Industrial Park

8.3	The Proponent will enclose all transfer drives on the conveyor.	To ensure noise emissions do not exceed 85 dB(A).	Planned prior to construction.	DEC
	The Proponent will investigate noise amelioration options during the engineering design phase.	Engineering design will aim to achieve a noise target of 65 dB(A).	Engineering design phase.	DEC
	The Proponent will investigate acoustic treatment of the Caretakers Cottage at	To minimise noise operational impacts at night	Engineering design phase.	DEC



Section	Commitment	Objective	Timing	Advising Agency
Stockton Lake				
Noise Emissions – Bunbury Port Authority				
8.3.2	The Proponent will investigate installing balanced and machined idlers on the conveyor.	To ensure conveyor speed does not exceed 4 m/s	Planned with logistics contractor.	DEC BPA
	The Proponent will, where practicable place dehumidifiers and extraction fans below the stockpiling shed roof level on the façade facing the wharf area.	To minimise the impact of noise sources on nearby residences.	Planned during design phase.	DEC BPA
	The Proponent will design with spur line through the unloader on a slight upward grade.	To maintain wagon tension throughout the unloading phase.	Planned during design phase.	DEC BPA
Greenhouse Gas				
8.5.3	The Proponent will continue to assess opportunities for energy efficiency at the PCF Urea Plant.	To maximise the opportunities for Best Practice Technologies to be applied.	Ongoing	DEC
	The Proponent will undertake an assessment of opportunities for biomass co-generation technology for use in coal gasification.	To maximise the use of renewable sources for energy production.	Ongoing	DEC
	The Proponent will undertake a regional synergy study to assess the potential attract new industries in close proximity to the Plant to utilise high purity CO ₂ .		Ongoing	DEC
	The Proponent will continue to invest in the investigation of the viability of geosequestration of GHG emissions.	To maximise the options available for sequestration of high purity CO ₂ generation at the plant.	Ongoing	DEC



Section	Commitment	Objective	Timing	Advising Agency
Hazardous Waste – Shotts Industrial Park				
8.21.2	The Proponent will prepare a Hazardous Waste Management Plan.	To minimise the risk of contamination of the surrounding social and biophysical environment from hazardous waste.	Prepared prior to operational phase	DEC DoH
	The Proponent will store all hazardous materials in compliance with their Material Safety Data Sheet.	To ensure compliance with regulations for the storage and handling of Hazardous materials.	Prepared prior to the operational phase	DEC EPA
	The Proponent will ensure that all hazardous material is fully banded and sealed to contain any spills.	To minimise the risk of contamination of the surrounding environment. To ensure a safe workplace for PCF employees and contractors.	Prepared prior to the operational phase	DEC
	The Proponent will store ammonia in a double skin tank.	To provide additional risk management in the unlikely event of an ammonia spill.	Ongoing	DEC
	The Proponent will install instrumentation to detect possible failure of the inner tank	To ensure compliance with safety regulations and risk management for the storage and handling of ammonia.	Ongoing	DEC
	The Proponent will ensure that all stored sulfinol is banded and managed according to the requirements of the Hazardous Material Data Sheet and Regulatory requirements.		Ongoing	DEC
Water - Shotts Industrial Park				
9.00	The Proponent will prepare a Local Water Management Strategy.	To minimise the risk of contamination of nearby water sources. To maximise opportunities for water use efficiency including reuse.	Prepared prior to construction	DoW.



Section	Commitment	Objective	Timing	Advising Agency
	The Proponent will continue to assess water use and reuse technologies.	To ensure the Plant maintains maximum water use efficiency for the duration of its operation.	Ongoing	DoW