



## 12. Environmental Impacts and Management Commitments

The proposed Collie Urea Plant will have the capacity to produce a nominal 6,200 tonnes per day (2.1 million tonnes per annum) of urea. Griffin Coal has a contract to supply the 2.6 million tonnes of coal per annum required to produce this anticipated volume of urea. Urea will be railed to Bunbury Port for export from Berth 5.

This project realises a number of benefits including:

- » A new supply source for the sale of urea to international markets;
- » A long term contract for the supply of coal;
- » Local employment and business development opportunities;
- » Export revenues; and
- » Community development opportunities.

The Collie Urea plant will incorporate Shell's gasification and gas treatment technology, Haldor Topsoe ammonia synthesis technology and Stamicarbon urea melt and granulation technologies.

Additional to the investment in leading technology, PCF will also commit to a number of management strategies that impact the surrounding biophysical and socio-economic environments. A summary of the main commitments is shown in Table 86.



**Table 86 Environmental Impact and Management Commitments**

Section	Commitment	Objective	Timing	Advising Agency
<b>Environmental Management</b>				
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 requirements.	Within six months of project approval	DEC
<b>Flora – Shotts Industrial Park</b>				
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	To minimise the spread of <i>P.cinnamomi</i> through retained vegetation	Prepared prior to clearing	EPA



clearing.

patches.

Minimise the spread of *P.cinnamomi* through vegetation that lies outside the proposed Plant site.

### 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
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A Flora Management Plan will be prepared prior to construction of the Pipeline.

To protect priority flora that may occur along the pipeline.

Prepared prior to construction

EPA

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 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
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7.1.2	The Clearing Plan will include opportunities for habitat linkages with State Forest land that is	To maximise the opportunity for fauna to have connection with the State Forest.	Prepared prior to clearing	EPA
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	adjacent to the Park.	To maximise the retention of existing habitats including tree hollows.		
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 populations.	To occur during the construction phase and maintained during the operational phase of the Plant.	DEC
<b>Fauna – Water Supply Pipeline</b>				
7.1.2.	A Fauna Management Plan will be prepared prior to clearing for the new water supply pipeline.	To minimise the loss of habitat trees. To prevent mortality of ground-dwelling animals. To minimise barrier effects.	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.	To minimise the impact of aquatic species impacted by pumps.  To protect fish species potentially isolated by pump barriers.  To minimise sedimentation and erosion of water crossings.	Prepared prior to construction	DEC/EPA
7.1.2.	A Risk Management Strategy will be prepared.	To minimise the risk of contamination and spillage of contaminants into waterways.  To ensure that refueling areas are located away from waterways and drainage lines.  To bund fuel and chemical storage sites.	Prepared prior to construction	EPA DoH DMP Worksafe

#### 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	To minimise the generation of dust	Ongoing	DEC



	stockpile faces as required. Dust suppressants will be used as required.	from stockpiles.		
	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
<b>Solid Waste – Shotts Industrial Park</b>				
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
<b>Solid Waste – Bunbury Port</b>				
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
<b>Liquid Waste – Shotts Industrial Park</b>				
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</i>	To minimise the risk of erosion of the Site as a result of runoff.	Prepared prior to construction	DoW/DEC



	<i>Quality Protection Notes 55.</i>	To minimise the risk of contaminated water leaving the Site and entering nearby waterways.		
	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
<b>Liquid Waste – Bunbury Port</b>				
	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
<b>Transport - Shotts Industrial Park</b>				
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	Prepared prior to clearing.  Reviewed prior to construction.  Reviewed and updated prior to plant operations.	MRWA



		drivers/		
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 Raids 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 Transport Regulations.	Prepared as required.	MRWA

### 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



<b>Amenity – Bunbury Port Authority</b>				
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
<b>Amenity – Water Supply Pipeline</b>				
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 much as possible and practicable.	To minimise the visual amenity impact of the pipeline to nearby residences and land users.	Prepared during the engineering phase.	DEC
	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	To minimise the visual amenity impact of the pipeline	Planned during design phase.	DEC



	pipeline as soon as possible following construction.	to nearby residences and land users.	Ongoing	
	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 Stockton Lake	To minimise noise operational impacts at night	Engineering design phase.	DEC

#### 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	To maintain wagon tension throughout the unloading phase.	Planned during design phase.	DEC BPA



a slight upward grade.

**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 <sub>2</sub> .		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 <sub>2</sub> generation at the plant.	Ongoing	DEC

**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	Prepared prior to the operational phase	DEC



		contractors.		
	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
<b>Water - Shotts Industrial Park</b>				
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.
	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



## 13. Conclusions

Perdaman Chemicals and Fertilisers (PCF), as proponent for the Collie Urea Plant, consider that the construction and operation of the proposal is a timely and important contribution to the economic development of Western Australia and in particular the Collie Coal Industry. This proposal is based on leading edge and proven technology where the use and reuse of the resources is maximised and any environmental impacts are minimised.

PCF is strategically located. The proposed plant at the Shotts Industrial Park is immediately adjacent to Griffin Coal's open cut mine, the source of the coal intending to supply this project. Nearby to the Plant is established infrastructure including road, rail and power.

PCF require 12 GL per annum of water for Plant operations. This water will be supplied by way of a new pipeline from Wellington Dam.

A number of studies have been commissioned and completed to inform this PER. As a result, all the potential environmental impacts are well understood and the proposed management actions are based on these understandings.

The proposal as described in this PER has been developed to avoid, minimise, manage and mitigate environmental impacts. Some decisions made early in the project planning have contributed to these aspects of environmental management. These include:

- » Locating the Plant in the Shotts Industrial Park and within 2km of the Collie coal proposed to supply this Project;
- » Locating the Plant close to existing and accessible infrastructure;
- » Exporting the granulated urea from Berth 5, an established multi loading Berth at Bunbury Port; and
- » Investing in leading edge technology for the conversion of coal to urea.

The key environmental factors identified by Perdaman Chemicals and Fertilisers, Government Agencies and the community in relation to this proposal are:

- » Terrestrial Flora and Fauna;
- » Air emissions;
- » Water supply;
- » Wastewater discharge;
- » Greenhouse Gas emissions; and
- » Noise emissions.

This PER describes the impacts of the proposal and for each factor discusses;

- » The EPA objective for each factor;
- » A description of each factor



- » The potential impact;
- » The management of impacts; and
- » The predicted environmental outcome.

The assessment of the key factors is discussed in detail in Chapters 7 and 8. The predicted social impact is detailed in Chapter 9.

As described in the Environmental Scoping Document (Appendix A), the following factors were considered to require full assessment.

### **13.1.1 Terrestrial Flora and Fauna**

The proposal will require about 99 ha of the 124 ha Site to be developed for the Plant's operations. PCF has designed the plant layout to maximise the area of high value vegetation retained, particularly the area in the south east corner nearby to known Priority Flora. Habitat linkages will be planned in the proposed clearing plan. Detailed flora and fauna studies have informed the management commitments required by this proposal to minimise the impact on high value terrestrial flora and fauna.

Key factors particular to the Shotts environment including the management of dieback, *P.cinnamomi*, and exotic weeds will be managed by way of specifically prepared management plans.

### **13.1.2 Air Emissions**

The EPA required the PCF undertake air modelling to account for all emissions from the Collie Air Shed such that a cumulative assessment of the impact of the predicted air emissions generated from this proposal could be made.

- » Emission sources from vehicles on site during construction are not considered to represent a significant source of emissions. PCF will undertake to maintain all heavy equipment machinery to ensure they operate efficiently with minimal particulate loss.
- » Cumulative air quality modelling found that the Collie Urea Plant is a source of ammonia, hydrogen sulphide, volatile organic compounds, heavy metals and urea in the Collie airshed, with predicted concentrations compliant with relevant criteria and that Plant operations is predicted to increase deposition of nitrogen in the form of urea and nitrogen dioxide, with total deposited nitrogen complying with relevant criteria.

The overall results of the cumulative modeling showed that the impact of the operations of PCF's plant is minimal in comparison to air quality impacts from nearby coal based industries including Muja A and B and Bluewaters.

### **13.1.3 Water Supply**

The Plant requires 12 GL of water per annum, mostly for cooling purposes. It is proposed that this water will be piped from Wellington dam. A new pipeline will be constructed to supply this water. This PER has completed additional ecological investigations to assess the impact of this pipeline. Ecological impact is anticipated to be minimal as PCF propose to construct the majority of this pipeline in the existing easement that occurs along the length of an existing water supply pipeline already supplying cooling water from Wellington Dam to Muja.



PCF will complete, as part of their environmental commitment a Stormwater Management Plan to minimise runoff of any contaminated wastewater that may be generated from hardstand surfaces and roof areas.

#### **13.1.4 Wastewater Discharge**

This proposal found that wastewater will be generated continuously at the site during urea manufacturing operations. The wastewater sources include, but are not limited to, the following:

- » Effluent generated from the treatment of water supply sources;
- » Effluent generated from the processing plant; and
- » Greywater and blackwater generated from the offices and other business operations.

The estimated volume of water that may be generated from stormwater run-off is in the order of 0.45 GL/a. Stormwater in Western Australia is primarily only available in winter, and there is a significant shortfall in the water required to meet the demand of the plant. This water supply option should therefore be considered a supplementary water source.

Some of the wastewater streams produced by the process plant will be reused or internally pre-treated and recycled for use within the process plant. The remaining wastewater streams will be collected for treatment on-site in a Wastewater Treatment Plant prior to disposal. It is proposed then that this wastewater will be disposed via the Verve Energy pipeline which runs to the coast from the Verve Energy saline WTP and discharges to the ocean approximately 800 m offshore north of the Leschenault Estuary.

Discharge of wastewater from the Perdaman site will comply with the EPA marine discharge licence conditions for the Verve Energy pipeline (EPA 1177, January 2005). The current capacity and licence condition for quality of the brine discharged through the Verve Energy pipeline will define the required water quality and quantity (and final treatment requirements) of the final discharge from the Perdaman site. The wastewater will therefore be treated as necessary within the on-site Wastewater Treatment Plant in order to comply with the licence conditions, and to satisfy the requirements of the EPA.

Should disposal of wastewater via the Verve Energy ocean outfall pipeline not be feasible, Perdaman propose to concentrate the brine wastewater stream using a brine concentrator and waste heat from the Perdaman plant. The concentrate from the concentrator would be mixed with flyash that would be imported by road from nearby power stations, if required, to absorb further excess water. Cement would then be added to 'solidify' the mix and render any waste contaminants immobile, in accordance with Australian Standard Leachate Protocols. The fixated concentrate waste will be disposed of using road transport to a suitably licensed landfill operated by third parties.

#### **13.1.5 Greenhouse Gas Emissions**

The main GHG emissions related to the construction of the plant will be generated mainly as direct emissions from the transportation of goods and materials to and from the site and operation of the heavy construction vehicles and machines on-site. Indirect emissions during the construction phase will be associated with the manufacture of the construction materials. A small amount of emissions will be generated during this phase from the removal of vegetation on the site, electricity from construction buildings and fuel usage in light vehicles.



It is noted that the GHG emissions from the construction of the PCF Project will be very small compared to the operational GHG emissions. Therefore, priority has been given to the study of operational emissions from the plant. The EMP will include measures to minimise the GHG emissions from the construction of the plant where possible and practical.

The major GHG relevant to the Project is carbon dioxide. The proposed Project facilities will produce approximately 3.3 Mtpa of greenhouse gas in its operational phase.

Greenhouse gas modelling estimates that:

- » The CO<sub>2</sub> from the process unit (approx 75% of total GHG emissions for the plant) is 99.5% pure CO<sub>2</sub> with a modest pressure and is sequester ready for either geo-sequestration or chemical sequestration when a commercial scale facility or combination of facilities is available. This is key advance of the proposed Project.
- » The CO<sub>2</sub> emissions from the power plant within the facility will be from a fully integrated power and steam generation system, but these will not be sequester ready given their lower CO<sub>2</sub> concentration. These emissions (0.87 t/MWh) will be lower than an equivalently sized non integrated power facility.

The major contribution to the carbon footprint of the proposed Project will be from the operation of the plant, and predominantly from the gas clean up process and power island.

Perdaman's approach to minimise its GHG emissions will be managed by the following two strategies:

- » *Carbon reduction:* Overall, the proposed Project will utilise proven, best in class technologies to transform coal into urea. Furthermore, the proponent is committed to applying the principles of continuous improvement throughout the life of the project to strive to further increase energy efficiencies and reduce greenhouse gas emissions.
- » *Potential offsets:* Perdaman is evaluating various options which in the future are likely to enable a reduction of the CO<sub>2</sub> emissions from the Urea plant. Biomass co-feeding, geo-sequestration, and mineralisation have not developed yet to a commercial maturity that is suitable for inclusion in the Project basis, however it is expected that over time the feasibility of these options will become clearer. Commercial maturity implies a combination of technical, economic and risk criteria to ensure that the option is indeed a positive and not negative contribution to the Project.

### 13.1.6 Noise Emissions

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*

Noise levels at Bunbury Port are dominated by the conveyors and to a lesser extent, the conveyor transfer points and the stockpiling operations inside of the shed. The predicted noise levels assume that mechanical plant such as the dehumidifiers and extraction fans are placed below the shed roof level on the facade of the shed facing towards the wharf area.

Noise assessment at the Port found that there are no noise sources that are considered to be modulating or impulsive in nature.

Noise from the locomotive idling is predicted to be  $L_{Aeq}$  43 dB at one location (see Appendix J). This is close to the existing background noise level and is unlikely to result in a significant impact. In addition, assuming two trains being unloaded (one train at night and one during the day) the noise would comply with the 'target' criteria of the State Planning Policy *Road and Rail Transport Noise and Freight Considerations in Land Use Planning*.

From the background noise level measurements, night-time noise levels are currently above the assigned levels and this is likely to be a result of existing Port operations. The noise from the proposed Perdaman operations is therefore considered to be a "contributing source" and would need to be 5 dB below the assigned levels.

PCF propose to manage noise sources at the Bunbury Port by investigating options to

- » Use machined and balanced idlers where conveyor speed may be kept below 4 m/s (if possible) and 1 mm thick sheet steel to enclose the conveyor;
- » Ensure all joints in the Storage shed are well fitting with minimal gaps;
- » That, where possible, dehumidifiers and extraction fans, are placed below the stockpiling shed roof level on the facade of the shed facing towards the wharf area;
- » Where there is not possible PCF will consider acoustically enclosing any air grills facing towards the residences;

The noise from wagon shunting would be considered significant to nearby residences. The proposed unloading is for the locomotive to constantly pull the wagons at slow speed with the bottom dumping mechanism opening and closing automatically, which should eliminate the wagon shunt. To reduce the probability of the wagons shunting PCF will investigate the option of unloading spur line through the unloader, and to construct the spur on a slight upward grade to ensure the wagon tension is maintained at all times.

#### *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.

### **13.1.7 Other Factors**

This PER also considers socio-economic and cultural factors, transport impacts and risk management. These investigations found:

#### *Social*

The employment and business development benefits this proposal will bring to Collie are significant. With a proposed construction workforce exceeding 1500 people and a permanent operational workforce in excess of 200 people, coupled with the business and contract opportunities, the economic gains and benefits to the Collie community are predicted to be long term and well received

#### *Cultural*

The Heritage surveys commissioned for this study found that there this proposal will not impact Heritage values at the proposed Plant site.

#### *Transport*

The proposed increased workforce and the increased rail loading on the existing Collie to Bunbury railine are predicted to be significant but manageable. Negotiations with Main Roads WA, WA Traffic Police and Westnet Rail will be required to ensure the safe transport of employees and other motorists, especially where large modules are transported to Site and to avoid congestion of the rail line.

PCF will undertake these negotiations and planning to ensure that worker safety and the safety of motorists is adhered.

#### *Risk*

A full risk assessment has been completed for the Plant site. PCF will undertake to ensure that all hazardous material stored on site will comply with all storage and handling regulations to minimise the risk of environmental harm and maximise the safety of all workers and contractors.

For all factors assessed, it is considered that with appropriate management and mitigation (see Chapters 7, 8, 9 and 12) that the EPA's objectives can be met. Perdaman Chemicals and Fertilisers full list of its Environmental commitments that aim to achieve this outcome may become legally binding as Ministerial conditions under the EP Act.