



PERDAMAN  
CHEMICALS & FERTILISERS

# Collie Urea Project

The Public Environmental Review has now been released for public comment with submissions being accepted by the Environmental Protection Authority until 24 November. For further information on the submission process please visit our website [www.perdaman.com](http://www.perdaman.com) and follow the link on the homepage to the Public Environmental Review.

We have worked closely with GHD to develop a report that takes into consideration all environmental concerns including water, noise, flora and fauna and emissions. As promised at the launch of the project in March 2009, Perdaman is committed to ensuring the community is aware of our management plans in relation to environmental concerns. We are currently going through a public review period in order to gain feedback from the community.

Environmental approval is only one of the permitting and approval processes that Perdaman must complete before construction and

operation of the plant can begin. Other permitting and approval processes involve the Shire of Collie and other State Government agencies and departments. Perdaman will comply with all required regulations, permitting requirements and approval processes. We will listen to, and keep the community informed as the project development process progresses.

Interested members of the community are encouraged to register on our website at [www.perdaman.com](http://www.perdaman.com) to receive regular updates via email.

## Frequently asked questions

### How will the Perdaman Collie Urea Plant benefit Collie?

The construction of the Perdaman Collie Urea Plant will establish a significant value-added processing industry for the local resource – coal. The Urea plant will introduce a new use for Collie coal, offering a more stable future for the coalfields and people employed in coal mining and associated industries.

The construction and operation of the urea plant will generate substantial economic revenue for the town of Collie and surrounding districts. The project will generate \$850 million per year and will create opportunities for employment, training and small businesses. It will also enhance community services and facilities.

### Why were overseas companies chosen as the technology and engineering suppliers?

International companies were chosen as the engineering, construction and technology suppliers due to their specific expertise and experience in the execution of projects of this size.

Shell, the recognised world leader in gasification, will provide the technology allowing coal to be converted into gas. Haldor Topsoe will provide the ammonia technology. Stamicarbon will provide their world leading technology for urea synthesis and granulation. All providers supply technology which is proven and minimises the impact on the environment.

The key design features of the technology selected include:

- The selection of urea granulation which results in substantially less dust and stronger particles for transport than traditional prilling technology.
- The recovery of waste heat which improves efficiency and reduces coal energy input, leading to a reduction in CO<sub>2</sub> emissions.
- The recovery of nearly all sulphur from coal to a saleable product. Coal ash is largely converted to non-leaching slag.

# Frequently asked questions

## Perdaman has said they will support Australian businesses during construction – in particular local South West businesses – how do they intend to do that?

We are facilitating introductions between our EPC contractors and local companies. We will provide all pertinent information which we receive to our main EPC contractor (Samsung), who will be hiring local subcontractors for the work. We are currently still in early stages in terms of the construction of the plant. We are committed to building relationships with local contractors in order to follow through on our promise to support the local community where possible.

## How will Perdaman's water allocation be used?

Our water is used in three different areas. The process uses water in the shift reaction to maximise hydrogen production which is needed for ammonia.

Water will be required for heat removal during the process of turning ammonia from a gas into a liquid, which works best with low temperatures.

Water is required in the generation of steam which will be used to capture waste heat and convert to steam for various parts of the production process. Steam is used for process heat and compressor drives. This approach results in a higher capital requirement, and also has a higher thermal efficiency.

## Why has Perdaman selected Cooling Water over other technologies such as Dry Cooling?

The Perdaman Collie Urea Plant will utilise cooling water technology as it results in greater process stability for an ammonia/urea complex. It is also highly effective in condensing ammonia along with recovering waste heat which results in steam generation. Cooling water technology has been selected due to the significant increase in power demand (by approximately 30 MW) by dry cooling along with the associated increase in related emissions, CO<sub>2</sub> emissions (more than a 200,000 tons/year addition) and noise due to the addition of multiple large fan driven coolers.

## What strategies are Perdaman putting in place to conserve their water use?

In order to conserve as much water as possible, Perdaman has identified other areas in which to recycle water. It is re-using steam condensate and site storm water as well as desalinating raw water from Wellington Dam, helping to achieve the long term regional goal of increasing the potability of Wellington Dam water.

Perdaman will adopt the use of a combined cycle gas turbine, which results in a 40% reduction in water consumption when compared to a conventional boiler based power plant.

## What level of emissions will be contributed to the Collie Air Shed?

The environmental review has confirmed that the Perdaman Collie Urea Plant will contribute very little to the Collie airshed emissions, approximately < 1% SO<sub>x</sub>, 1% NO<sub>x</sub> and 3% particulates. The CO<sub>2</sub> emissions of the plant are approximately 40% lower than a comparable sized coal fired power station and are better than a comparably sized natural gas fired open cycle gas turbines. This is because one third of the total CO<sub>2</sub> is sequestered in the urea product and gasification is more thermally efficient than boiler technology.

## What is Perdaman doing to minimise its Greenhouse Gas Emissions?

Perdaman's approach to minimising its Greenhouse Gas emissions are covered through using proven, best in class technology to minimise the amount of carbon emitted.

It is noted that prudent use of urea to biomass production results in net carbon removal from the atmosphere. This can include fertilisation of plantation and reforestation. We are also evaluating various options which are likely to enable a reduction of the CO<sub>2</sub> emissions from the Perdaman Collie Urea Plant in the future. These include:

- Geo-sequestration – involves the deposit of pressurised CO<sub>2</sub> in a sandstone or saline formation underground. We are a member of the Carbon Sequestration taskforce which is co-funded by government and industry to ascertain the potential suitability of the Lower Lesueur sandstone formation in the Southern Perth basin for CO<sub>2</sub> storage.
- Bio-sequestration – involves capturing and storing CO<sub>2</sub> in living organisms such as trees, plants and algae.
- Mineralisation – involves capture of CO<sub>2</sub> by reaction of Ca/Na/Mg to insoluble carbonate, as is currently being done by Alcoa Alumina in Kwinana.
- CO<sub>2</sub> supply to other industries – involves using CO<sub>2</sub> for industrial purposes. This is successfully being used by other ammonia plants such as CSBP and Incitec Pivot.
- Renewable Energy – Perdaman is pursuing the development of renewable energy facilities to offset against the Greenhouse Gas emissions from the Urea plant. These include the establishment of a non-edible bio-diesel facility and investigations into power generation from wind turbines in India.
- Waste biomass from gasification, which Shell has demonstrated in the Netherlands.

While the investigations are ongoing, we are committed to meeting the expected CO<sub>2</sub> permit obligations as for the Carbon Pollution Reduction Scheme (CPRS), pursuing annual improvements/offsets to reduce the carbon footprint of the facility, and providing support to evaluate those options which are technically viable.

## How is Perdaman planning to manage the impact on the flora and fauna at the proposed Shotts Industrial Park?

No threatened ecological communities, declared rare fauna or priority flora were identified on the site. Any reduction of habitat as a result of clearance of the plant site is managed by the extensive area of State Forest which will remain intact and will provide habitat and feeding refuges. A band of Wetlands/Damplands to the south of the site will also be retained and rehabilitation will be undertaken on an adjacent cleared area to improve environmental values. The vegetation surrounding the proposed site is well represented, and as it is within a Country Area Water Supply Catchment (CAW), it will be subject to strict clearing guidelines.

Please visit our website [www.perdaman.com](http://www.perdaman.com) where you can also register for regular e-mail updates on the Collie Urea Project.