

# FACTSHEET - GLADSTONE COAL-GASIFICATION PROJECT - Vs 4 – 15 June 2019

## 'ENVIRONMENTAL AND ECONOMIC IMPACTS'

Australian Future Energy Pty Ltd (AFE) has lodged an 'Initial Advice Statement' (IAS) with the Queensland Coordinator General to develop and operate the Gladstone Energy and Ammonia Project (GEAP).<sup>1</sup> This project is based on gasification of low-value coal from the Callide Coal Mines. During gasification, coal is blown through with oxygen and steam under pressure to produce a mixture of gasses, which are then processed into a range of commercial products. The processes also produce a number of waste products, many of which are environmentally damaging or toxic.<sup>2</sup>

### The proposed Gladstone Energy and Ammonia Project

GEAP uses SES Gasification Technology provided by Synthesis Energy Systems (SES), an American Company<sup>3</sup> with a questionable reputation. The project will use 1.5 million tonnes per annum of coal to be converted into Synthetic Natural Gas (SNG) which consists of mainly CO + CO<sub>2</sub> + H<sub>2</sub> + CH<sub>4</sub>. This is to be the base-stock for production of Ammonia (330,000 tonnes/y) and SNG (6 Peta-Joules/y) while also generating Electrical Power (nett 24 MW) using conventional state of the art technology. The product mix may vary depending on markets. However, a viable commercial production can only be achieved at huge environmental risks and costs as shown below.

### Aspects of concern

#### Greenhouse gasses

CO<sub>2</sub> *The AIS states that 1.8 million tonnes of CO<sub>2</sub> will be separated annually ... as high pure carbon dioxide which can be captured, sequestered or sold.*

This is most unlikely to happen and the statement is not supported elsewhere in the AIS. There is no provision for separating or capturing any CO<sub>2</sub>, no information about its potential storage and transport, nothing about a buyer or a potential market. That is all left to third parties and is extremely unlikely to happen. Carbon capture is an uncertain and costly technology, while carbon storage 'in perpetuity' is no longer credible. Ultimately all 2 million tonnes of CO<sub>2</sub> will be emitted.

*The IAS states that the project will generate ... Nitrogen Oxide, (NO<sub>x</sub>), Sulfur Oxide (SO<sub>x</sub>), Hydrogen Sulphide (H<sub>2</sub>S) and Methane (CH<sub>4</sub>) in unknown or unstated quantities.*

Observations: The use of low Nitrogen Oxide burners minimises but not eliminates emitting NO<sub>x</sub> into the atmosphere. How much of these are likely to be emitted is not stated. The 3% of not-recovered sulphur is also emitted into the atmosphere as SO<sub>x</sub> or H<sub>2</sub>S. These are three of the four priority pollutants in the Gladstone area that have exceeded the NEPM Air Quality Standards.

The SO<sub>2</sub> standards have been exceeded with highs as much as 650% for the 1/h standard, and 16% for the 24hr average. (*IAS, page 45, table 7.*)

CH<sub>4</sub> is 84 times worse as a green-house gas than CO<sub>2</sub>. The IAS has no information on how that will be managed. It and other green-house gasses will be emitted through scheduled flares and fugitive emissions from pipelines, process plants, effluents, storm-drainage and sewerage systems. Any such emission will make the nett greenhouse effect of the project worse than burning coal conventionally.

#### Fines, bottom-ash and fly-ash handling

*The AIS states that the coal feedstock is 30% ash coal and ... high quality bottom ash ... re-used as a saleable product ... an area for storage of ash has been allocated.*

Observations: Coal ash particles can range in size from very small (particulates - invisible bits) to dust (just visible) to larger bits. It can contain arsenic, mercury, lead, and many other heavy metals.

The IAS states that smaller particles (fly ash) will be captured but not how, how much or its disposal.

<sup>1</sup> <https://www.statedevelopment.qld.gov.au/assessments-and-approvals/gladstone-energy-and-ammonia-project.html>

<sup>2</sup> [https://en.wikipedia.org/wiki/Coal\\_gasification](https://en.wikipedia.org/wiki/Coal_gasification).

<sup>3</sup> <http://www.synthesisenergy.com/#about-ses>

There is no plausible provision for dealing with the huge quantity of bottom ash produced, leaving many open questions around transport, stockpiling, disposal, etc. An explanatory video claims that the technology produces 'briquettes' rather than ash, but the IAS is not clear on this.

Selling bottom ash in large quantities is very doubtful. Bottom ash is not useful in concrete. Use for structural fill and road-base material has high risk of leaking heavy metals into groundwater. There is no mention of how it will be transported, how to protect it from wind and rain, or where it will be stored in perpetuity should it not be sold. The IAS recognises this problem but does not provide a solution. Without an acceptable solution, approval of the project will expose the Gladstone community to a huge future risk of uncontrollable toxic waste for the community. The plant will produce 400,000 tonnes/year. Over a 30+ year lifetime, this will form a permanent huge mountain or pond. The area is prone to heavy rain and wind which can dislodge huge volumes of material quickly and widely through wind and run-off.

#### Marketing and transport

Ammonia. *The IAS states that the ammonia will be delivered by pipeline to a producer of ammonia products and fertilizers located near the site.*

Observations: Assuming the Orica Yarwun site is the nearby site, that site produces an ammonium nitrate grade for explosives that cannot be used for fertilizers. Moreover, the IAS claims that NH<sub>3</sub> is to be produced at a lower cost than from natural gas. Even if correct, this will not benefit the local explosives industry as it will be sold against market prices - only GEAP will reap the benefits.

There is no mention of other possible customers or, if they exist, how 330,000 tonnes of ammonia (= 480,000m<sup>3</sup>) will be transported: pipe, rail or road. Unless customers are nearby, using a pipeline is not viable. Road transport would form another heavy burden on the local roads.

H<sub>2</sub>S. There is no provision for, nor any information about, the technology to convert H<sub>2</sub>S into either sulphur or sulphuric acid, their potential buyers or the transport to those buyers.

#### Economic and employment aspects

Jobs. *The IAS states that .... Flow-on employment will extend to supply businesses across Central Queensland ... .*

Observations. The multiplier to assess any flow-on employment used in the IAS is based on an outdated and no longer recognised model. In addition, GEAP will tap into existing, highly automated and under-utilised infrastructure. It will add little to existing demand for these services.

Many other services used by mining companies are based in Brisbane, interstate (accounting, legal, PR), or overseas (equipment and machinery). 200 new jobs will not create 1,040 additional jobs. The number of additional jobs will barely register in a town with a population of 34,000.

#### Ecological aspects

*The IAS states that scrubbers and other process blowdowns contain small quantities of Cyanides.*

Observations. No concentrations or volumes are given. Cyanide is extremely toxic to aquatic life even in very low doses. Low doses can be very difficult to detect.

*The IAS states that paving and spill protection will be implemented ... but also that ... ammonia could potentially enter groundwater through spills. Chemical spill leak detection will be implemented.*

Such equipment works for large spills, not for small ones which accumulate. No details of detection equipment are provided. The nearby natural basins down-streams of the site are very rich in birdlife. The water will eventually flow into the nearby Great Barrier Reef.

#### Summary.

The IAS does not include provisions for, nor information about, treatment and/or storage and transport of large volumes of many mostly toxic and environmentally dangerous waste products. Much of this is either ignored or left to unnamed third parties. This will expose the Gladstone community to potentially serious environmental risks and/or huge cost of remediations.

This project should not be approved until these issues have been adequately addressed.

*Gladstone Conservation Council: a strong independent voice for the environment*

*<http://gladstoneconservationcouncil.com.au/web/>*