

APPENDIX 2

Construction Activities

Appendix 2 - Primary Energy - Kwinana Ethanol Project

Construction Narrative

Bulk Earthworks – This will be the first construction activity to commence on site, starting in the first quarter of 2007. The works will take approximately 10 weeks and will require the use of earthmoving equipment such as scrapers, dozers, loaders and associated trucks. The main environmental issues will be associated with traffic management, noise and dust and rain water run-off control. Well tried and proven methods to control these potential issues will be implemented to minimise any impact.

Civil Works – The civil works will overlap the earthworks and will follow in areas where earthworks are completed. Commencing second quarter 2007, with a duration of approximately 30 weeks, the main items of plant involved will be excavators, cranes up to 50 tonne capacity, boom pumps and small trucks. The key environmental issues will be noise, dust suppression, waste management and traffic management on and off the site.

Mechanical & Structural

Utilities – Site Utilities will be the first mechanical and structural item to be started and it will be the last item to be completed – this is due to utilities accounting for all of the common services (air, water, steam, etc.) that are required to feed the various processes across the site. Commencing during the second quarter of 2007, the utilities have a duration of approximately 48 weeks – the major construction plant items involved during this phase of works will be 1 x 200 tonne crane, 1 x 50 tonne crane and 1 x 20 tonne crane. The 200 and 50 tonne cranes will only be required for a relatively short duration (approximately eight weeks) to assist with the erection of the structures and the installation of any associated major plant items (boilers, compressors, tanks, etc) – while the 20 tonne cranes will be employed for the duration of the works. The works are scheduled to progressively ramp up later in the year as more mechanical process equipment becomes available for installation.

The main environmental concerns during these works will be noise (grinding, plant operation), traffic management across the site, module installation (skid units are available for steam production/metering, compressed air, water softening, pumps, etc), operation of small plant (welding machines, boom lift, generators) and erection activities.

Ethanol Plant – Construction of the Ethanol Plant will commence during the second quarter of 2007 approximately six weeks after the commencement of the civil works and has a duration of approximately 45 weeks. The main plant items will be 1 No. 200 Tonne crane, 1 No. 50 Tonne crane and 1 No. 20 Tonne crane. The 200 Tonne crane will not be required for the full construction duration and should be on site for around 20 weeks.

The main environmental concerns to be mitigated will include – noise (grinding, plant operation), traffic management, operation of small plant (welding machines, boom lift, generators) and erection activities.

Fertiliser Plant – Construction of the Fertiliser Plant will commence in the second half of 2007 with a construction duration of approximately 30 weeks. The main plant items will be 1 x 200 tonne crane, 1 x 50 tonne crane and 1 x 20 tonne crane. The 200 tonne crane will be required for the full duration of the construction activities.

The main environmental concerns to be mitigated will include noise (grinding, plant operation), traffic management, operation of small plant (welding machines, boom lift, generators) and erection activities.

Digester Plant & Tankage – Construction of the Digester Plant will commence in the third quarter of 2007 and continue for around 27 weeks.

The main plant items will be 1 x 200 tonne crane, 1 x 50 tonne crane and 1 x 20 tonne crane. The 200 tonne crane will not be required for the full duration of the construction activities and will only be utilised for some 13 weeks.

The main environmental concerns to be mitigated will include noise (grinding, plant operation), traffic management, operation of small plant (welding machines, boom lift, generators) and erection activities.

Power Plant – Construction of the Power Plant will commence during the third quarter 2007 and has a duration of approximately 13 weeks. The main plant items will be 1 x 200 tonne crane, 1 x 50 tonne crane and 1 x 20 tonne crane. The 200 tonne crane will be required for eight weeks. The main environmental concerns for this area of the works will be noise (grinding, plant operation), traffic management, operation of small plant (welding machines, boom lift, generators) and erection activities.

Electrical – Site Wide – The site wide electrical works will commence in third quarter 2007 and will run for approximately 42 weeks. This phase of the works will require co-ordination with all areas of the site. The major plant items involved will be 2 x 20 tonne cranes for the movement of cable drums and major electrical items.

The main environmental concerns to be managed include traffic management and control and waste management.

Environmental Considerations/Measures

Whilst the plant will be designed to operate within set parameters, it is recognised that construction activities will present a number of different circumstances that are not contemplated by the operational conditions set out for the plant. To address these possible outcomes, potential issues and corrective measures have been identified to minimise potential impacts.

- 1. Early Installation of Noise Reduction Screens** – Noise coming from the construction site will be an issue from commencement of works on the site. With this in mind one of the very first construction activities will be to erect noise barriers to the south of the existing CBH Grain Terminal. This will help minimise the impact that noise from construction activities will have on the adjacent Caravan Park and the local community in Rockingham.
- 2. Designated Working Hours** – The designated construction working hours for the site will be 06:00 – 18:00 Monday – Friday and 08:00 – 16:00 Saturday and Sunday. No noise generating activities will be undertaken prior to 7.00 am. Whilst Saturday and Sunday working will be minimised, it will be necessary to work a proportion of these days in order to resolve logistical issues such as tie-ins to shut down plant and equipment and optimise the overall site construction duration. Night shift work is not currently envisaged.

3. Traffic Management:

- a) **Defined On Site Routes** – The definition of an effective traffic routing system on site will assist in minimising congestion both on the site and also on the roads adjacent to the site.
- b) **Defined On Site Parking** – The definition of on site parking areas will minimise the amount of congestion experienced at the entry to the site.
- c) **Route into & out of Site** – It is envisaged that a peak of approximately 300 personnel will be employed on the project. This could present problems regarding access to and from the site at the start and finish of the day, if not properly managed. It is proposed to minimise the effects of this by restricting access to the site to Kwinana Beach Road. This will minimise the impact on traffic in the residential areas around Rockingham. Start/finish times may be staggered to further mitigate congestion.
- d) **Designated Delivery Times** – Given the location of the Construction Site there may be periods of peak traffic congestion. To minimise the Project adding to this issue a system of designated delivery times outside peak periods can be implemented.

4. **Construction Program** – The construction program has been designed to progress on as many work fronts as practical, thus achieving minimum time on site and limiting periods of local disruption.

5. **Modularisation/Minimisation of On Site Fabrication** – The on site fabrication and assembly activities for the tanks, pipe work and steelwork will be minimised as far as practicable. This will be achieved by developing a constructability review program and ensuring a close link between the design function and the fabricators during all stages of the design and fabrication. Key considerations will include:

- a) Ensuring tanks are (where practicable) designed so as to maximise off-site fabrication within the limits of the approved transport corridor; thereby reducing site.
- b) Modularise process units and pipe work assemblies wherever possible. This will involve construction review.
- c) Engage local sub contractors to facilitate use of local facilities and support the prefabrication and modularisation concepts outline above.

6. On Site Equipment:

- a) **Cranes** – The mobilisation of cranes to site will be reduced through a system of crane pooling through major contractors. All cranes will undergo rigorous pre-start checks to ensure they comply with OH&S requirements and are operating in accordance with manufacturers recommendations.
- b) **Welding Machines, Generators & Compressors** – The use of this type of diesel powered site equipment is not likely to cause problems though steps will be taken to connect to the existing western power grid as soon as practicable.

7. **Dust Suppression** – A water truck will be engaged to wet the site and minimise and eliminate any dust that may be generated. The sandy nature of the site will minimise the potential for dust generation.

8. **Waste Management** – A waste management plan will be developed to ensure controls and measures are put in place to reduce the impact to the environment. Measures to manage this include: provision of recycle waste skips and bins across the site for steel, wood, cardboard and other recyclables; routine and daily clean up of work areas to ensure no loose waste; and on going monitoring of the plan by project staff to ensure compliance.

- 9. Hazardous Materials Storage & Spillage Containment** – Hazardous materials containers will be employed for the storage of all hazardous materials on an area by area basis. These containers will have limited access and will be monitored by a storeman who will be fully trained and aware of the risks, preventative measures and emergency measures appropriate to the goods contained. Trained spillage containment personnel will be employed across the site, MSDS information will be held on file, issued and appropriate procedures will be in place for materials that are to be used on site.
- 10. Materials Storage** - The storage of all materials on site will be in designated lay down areas only. Wherever possible deliveries to site will be lifted straight from transport and into their as constructed position.
- 11. Erection Activities** - General Construction activities consisting of excavation, concrete pouring, steel work erection, equipment installation through to paint touch-up will be undertaken on the Site. These phases of construction will be managed to minimise any impact they may have on the surrounding area and local community. This will be done by developing and implementing a detailed construction management plan and schedule to ensure all contractors engaged on site are aware of local conditions prior to commencing work.

Whilst all of the above items are designed to help minimise the impact the project will have on the local community, a community relations strategy that establishes lines of communication with the local community, keeps the community informed and provides feedback on any issues will be developed to ensure issues are addressed as quickly as possible.