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Combined Performance and Compliance Report in Accordance with Ministerial Statement 000729 - Wagerup

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1. Executive Summary

This report is a combined performance and compliance report for the period 1 October 2007 to 1 October 2009 in accordance with Clauses 4 and 5 of the Ministerial Statement 00729.

During this period there were no non-compliance issues recorded and Alinta Cogeneration (Wagerup) Pty Ltd has complied with the conditions, procedures, commitments and actions within the Environmental Management Plans as described in Ministerial Statement 000729 pertaining to:-

1. The Greenhouse Gas Abatement Plan (WP03100-EV-PL-0004) Final Rev1 issued October 2006
2. The Stack Emissions Management Plan (WP03100-EV-PL-0006) Final Rev1 issued October 2006
3. The Alinta Wagerup Noise Management Plan (Rpt05 – 07250-RevC 25/03/2008)
4. Key Proposal Characteristic – Yearly Operating Hours
5. Key Proposal Characteristic – Thermal Efficiency

In summary it was noted that the following events had an impact on the operational of the asset:-

1. Alinta Cogeneration (Wagerup) Pty Ltd responded positively to the Varanus Island Outage which reduced the State's gas supply by 30%. During this period Alinta obtained approval to increase operating hours using distillate as a fuel source to compensate for the loss of gas.
2. In July 2009 approval was given to increase supply from 350 MW to 352 MW without any issue regarding the Ministerial approval given in statement 000729.
3. The maximum energy inputs during the reporting period peaked at 2.02 PJ per year (see graph 5.5). The conditions of the Ministerial Statement have been written based energy inputs of approximately 3.8 PJ of energy per year.

This report confirms that all parameters detailed in Ministerial Statement 000729 have been met.

Details of the above Environmental Management Plans and Environmental Compliance Reports are publicly available on the Alinta Energy – Wagerup Web site:-

<http://www.alintaenergy.com/about-us/sustainability/environment.aspx>

2. Introduction

On 27 September 2006, the Minister for the Environment approved a proposal by Alinta Cogeneration (Wagerup) Ltd Pty (Alinta) for the construction, operation and maintenance of a cogeneration facility of 350 megawatt (MW) electrical output and 460 tonnes of steam output at Wagerup.

The Minister's approval was subject to Alinta meeting certain conditions, which were set out in Ministerial Statement 000729. One of these conditions was that Alinta submit annually an audit compliance report and biannually a performance report to the Department of Environment and Conservation (the Department).

This report is the combined compliance report and the biannual performance report submitted by Alinta, and covers the period from 1 October 2007 to 1 October 2009 as agreed with the Department on 18 August 2009.

The Wagerup power station is located 130 kilometres south of Perth. It has been designed in two stages. Stage 1 provides for the installation of a peaking power station, where as Stage 2 allows for the future development of a cogeneration power station producing both electricity and steam. Stage 1 has two gas-fired open cycle gas turbines adjacent to Alcoa's Wagerup refinery. These have a nominal electrical output of 350 MW. Stage 2 of the project will enable the plant to deliver 460 tonnes per hour of steam to the adjacent Alcoa refinery; this stage has been deferred indefinitely. Alcoa is contracted by Alinta to operate and maintain the power station.

The plant consists of two Alstom 13E2 Single Cycle Gas Turbines. Each Gas Turbine unit has dual fuel (gas and distillate) capability rated at a nominal 175MW. Gas is supplied through the Dampier Bunbury Natural Gas Pipeline (DBNGP). Distillate is stored on site. Stage 1 is designed as peaking plant to support the South West Interconnected System (SWIS) as and when required. A future addition of heat exchangers to produce steam from exhaust gas is planned for the Stage 2 development.

Alinta contracted engineering consultants Sinclair Knight Merz (SKM) to manage the Engineering, Procurement, Construction and Commissioning activities for Stage 1 of the project.

Stages 1 and 2 construction activities were included in the Environmental Management Plan devised by SKM. SKM management were responsible for developing and implementing the Environmental Management Plan during the Stage 1 construction phase.

The plant was constructed under Works Approval No. W4219 and subject to the Environmental Ministerial Statement 000729 dated 27 September 2006.

The construction of Stage 1 was completed and commissioned in October 2007. At this time the plant was tested for environmental compliance regarding air and noise emissions. An environmental licence was granted to Alcoa of Australia Ltd T/A Alcoa World Alumina Australia dated 29 November 2007 by the Department of Environment and Conservation (DEC), Swan Region, Licence No L8174/2007/1.

3. Current Status

Operating as peaking generation plant, the Wagerup power station may be called upon to operate at any time of the day, 7 days a week, 365 days a year. The power station is connected to the South West Interconnected System (SWIS). The plant is operated as directed or requested by Western Power's System Management at times of peak demand or shortage of generation capacity on the SWIS.

The plant operates under the environmental conditions stated in the environmental licence and Environmental Ministerial Statement (EMS) including; air quality management, noise management and greenhouse gas abatement.

During the Stage 1 construction phase, SKM developed an environmental management plan which identified additional environmental aspects for the purposes of construction. These were; flora and fauna management, solid waste management, liquid waste management, hydrocarbon and hazardous materials management and water management. On completion of Stage 1 construction these aspects have been transferred into the general business systems under Alcoa's management control.

In July 2009, the Ministerial Statement was reviewed by ENVIRON Australia Pty Ltd in order to provide independent advice that Alinta could increase the power generation capacity of Alinta's Wagerup Cogeneration Plant from 350 MW to 352 MW without any issue with regard to the plant's Ministerial approval. ENVIRON was under the opinion that Alinta was able to increase the power generation capacity from 350 MW to 352 MW without any issues with regard to the plant's Ministerial approval. (see Appendix 1). The following report confirms this conclusion.

4. Compliance

As agreed with Department of the Environmental Conservation, this report will combine the requirement performance review and compliance report.

This performance and compliance audit period is taken from 1 October 2007 until 1 October 2009 as agreed with the Department. As this is a compliance and performance audit, reference has been made to relevant environmental aspects and impacts identified during the commissioning and construction stage of the project and the overall performance of the plant.

The audit extends the work carried out in the previous compliance report from 1 October 2007 to 30 April 2009 and provides evidence for the performance review for the two year period from 1 October 2007 to 1 October 2009. It considers the following performance and compliance aspects set out in the Ministerial Statement:-

1. Condition 6.0 - Greenhouse Gas Abatement Programme
2. Condition 7.0 – Stack Emissions
3. Condition 8.0 - Noise Emission
4. Key Proposal Characteristic - Yearly Operating Hours
5. Key Proposal Characteristic - Thermal Efficiency

This report shows evidence of compliance to Ministerial Statement 000729 and demonstrates that the performance of Stage 1 of the Wagerup power station has met expectations within the specified environmental design parameters and has met the requirements of the Environmental Ministerial Statement 000729.

4.1 Environmental Ministerial Statement Condition 6.0 - Greenhouse Gas Abatement Programme

The Environmental Ministerial Statement Condition 6.1(1) specifies that Alinta is required to calculate Greenhouse Gas Emissions using the relevant National Greenhouse Gas Inventory (NGGI) workbook. As such, the Australian Greenhouse Office (AGO) factors and Methods Workbook (AGO 2005) for emissions calculations (Section 1.1 – Stationary energy emissions section) was used in calculating the emissions for the project.

The AGO full fuel cycle methodology uses the following factors:

- 1GJ of energy used = 60.0 kg CO₂ equivalent for natural gas; and
- 1GJ of energy used = 81.4 kg CO₂ equivalent for distillate fuel.

The above is used in calculating the greenhouse intensity associated with electricity generation presenting this as tCO₂e / GWh of the project. The greenhouse intensity for the project is also used as a basis to satisfy condition 6.1 (4).

Table 5.1.1 shows the expected greenhouse intensity for Stage 1 of the Wagerup power station.

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Environmental Ministerial Statement Condition 6-1(2) included *specific measures to minimise the total net “greenhouse gas” emissions*. By its very nature natural gas has the lowest carbon intensity compared with fossil fuel alternatives such as distillate or coal. Alinta’s commitment to minimise greenhouse gas emissions is demonstrated through the use of natural gas as the predominant fuel source. Licence requirements restrict distillate fuel use to 100 hours per unit per annum or less.

Environmental Ministerial Statement Condition 6-1(3) *specifies the ongoing review of offset strategies for greenhouse gas*. Stage 1 (peaking generation plant) and Stage 2 (full cogeneration production) is considered by the EPA to represent best practice technology in meeting load demand. As such this does not require greenhouse offset, however the transition stage between Stages 1 and 2 is not considered best practice and will require greenhouse gas offset strategies. The transitional stage is not envisaged for some time. This compliance and performance report is focused on Stage 1 parameters.

4.1.1 tCO₂e Emitted Between October 2007 and October 2009

Analysis of the yearly trends of tCO₂e (tonne equivalent of carbon dioxide) emission data, for the audit period, shows that all requirements of the Environmental Ministerial Statement have been met.

The graph in Table 5.2.2 shows the emission of tCO₂e increases as the plant ramps up from the start of commissioning in October 2007 to a peak in October 2008. At this stage, the yearly trend of tCO₂e trends down due to reduced operation of the plant. The yearly rolling average shows a reduction from 135,000 tonnes to 37,000 tonnes per annum over the period from October 2008 to October 2009. This is in line with the expectation of the design for the open cycle (peaking plant) in Stage 1, and well below the 225,000 tonnes per annum target set in the Key Proposal Characteristic (Stage1) Schedule 1 of the Environmental Ministerial Statement (see Table 5.5). This is mainly due to the actual energy consumption per annum being below the anticipated 3.8 PJ (3.4 PJ - gas, 0.4 PJ - distillate) identified in the Environmental Ministerial Statement.

The plant peaked at 2.02 PJ of energy from October 2007 to October 2009. Based on this amount of energy, it was calculated that the plant would generate 124,550 tonnes of tCO₂e. The actual tCO₂e emitted was 135,000 tonnes, see trend in Table 5.1.2. This was 8% higher than calculate but within an acceptable range due to the following reasons.

1. The Varanus Island Outage required the Wagerup power station to burn excess amounts of distillate. This fuel produces 35% more tCO₂e per GJ than gas.
2. The predicted figures used in table 5.1.1 were for optimal conditions which were not reflected during the commissioning or the Varanus Island Outage.

Subsequent emission levels of tCO₂e emitted after the Varanus Island Outage have reduced. The amount of distillate used also reduced to zero in April 2009 indicating that the cleaner energy input from gas produced less tCO₂e per GJ of energy.

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Note that current reporting requirements for tCO₂e detailed in the *National Greenhouse Energy Reporting (NGER) Act 2007* and its associate measurement determination indicate that a lower emission criteria for tCO₂e than the AGO. (see below)

Item	Fuel combusted	Energy content factor (GJ/m ³ unless otherwise indicated)	Emission factor kg CO ₂ -e/GJ (relevant oxidation factors incorporated)		
			CO ₂	CH ₄	N ₂ O
17	Natural gas distributed in a pipeline	39.3 × 10 ⁻³	51.2	0.1	0.03

Instead of 60 kg CO₂ for natural gas, the NGERs Measurement Determination 2008 (part 2 page 203) indicates a lower figure of 51.33 kg CO₂. This is 15% lower than used in the calculation based on AGO. It would be reasonable to assume that in future the NGERs figure should be used to rationalise tCO₂e calculation. Therefore at 53% utilisation the figures of indicate the tCO₂e will be less than the 225,000 tonnes per annum limit set out in the Ministerial Statement 00279.

4.2 Environmental Ministerial Statement Condition 7.0 – Stack Emissions

4.2.1 Air Quality Modelling

An air quality assessment (WP03100-EV-RP-0003-1 Final Rev 2 – May 2006) was undertaken by SKM/Alinta to predict the emissions from the Wagerup Cogeneration Unit and predict ambient ground level concentration of the emissions at sensitive receptors. The predicted results were used to assess the health risk posed by the air emissions of the proposal. The scope of work and assessment methodology was developed by SKM in consultation with Alcoa and Alinta. Key elements of the assessment included:

- Health Risk Assessments (Benchmark Toxicology and ENVIRON Australia)
- Air Quality Summary Report (ENVIRON Australia)
- Expert Review – Air modelling studies (Katestone Environmental)
- Expert Review – Health Assessment International Health Consultants)

The assessment methodology for the air quality model was submitted to EPA Services Branch of the Department of the Environment (DoE) which subsequently advised that the methodology was adequate, enabling the project to proceed.

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The conclusions of the air modelling study showed that the proposed Alinta power plant in both final cogeneration mode and in interim open cycle (peaking plant) operation, would not cause significant increases to air quality impacts of relevant criteria pollutants. In particular ground level concentrations were calculated to be well below relevant air quality standards.

There were no exceedances at any receptors for the primary pollutants (SO₂, NO_x, CO and PM₁₀) for which maximum ambient levels have been defined in the NEPM Standard. The acute hazard indices remain below 1 for all receptors and all operational modes. It was therefore concluded that the potential health risk from air quality impacts are negligible.

4.2.2 Gas Turbine Stack Emission Testing

During commissioning of the plant, Alstom (the original equipment supplier and site contractor) performed tests to prove the guaranteed emission levels of the Gas Turbines. Unit #1 was tested on the 4 December 2007 and Unit #2 was tested on the 23 November 2007. (See tables 5.2.1 and 5.2.2)

The conclusion was that the test demonstrated that the emissions of Unit #1 and Unit #2 were in compliance with the guaranteed limits.

In addition an independent test was undertaken by NewEQ to NATA Standards to independently verify the results obtained from the commissioning team responsible for installing the Alstom Gas Turbines. (See Tables 5.2.3 and 5.2.4)

The tests conducted by NewEQ concluded that the average measured values, for all criteria, are less than those stipulated in Works Approval 4219 and those assumed during the Environmental Impact Assessment process.

4.2.3 N Ox Emission between October 2007 and October 2009

The graph in Table 5.2.5 shows the emission of NO_x (Oxides of Nitrogen) increases as the plant ramps up from the start of commissioning in October 2007 to a peak in October 2008. At this stage the yearly trend of NO_x trends down due to reduced operation of the plant. The yearly rolling average shows a reduction from 432 tonnes to 100 tonnes per annum over the period from October 2008 to October 2009. This is in line with the expectation of the design for the open cycle (peaking plant) in Stage 1, well below the 1,331 tonnes per annum target set in the Key Proposal Characteristic (Stage1) Schedule 1 of the Environmental Ministerial Statement (see Table 5.5). This is mainly due to the actual energy consumption per annum being below the anticipated 3.8 PJ (3.4 PJ - gas, 0.4 PJ - distillate) identified in the Environmental Ministerial Statement.

The plant peaked at 2.02 PJ of energy from October 2007 to October 2009. Based on this amount of energy it was calculated that the plant would generate 397 tonnes of NO_x. The actual NO_x emitted was 432 tonnes, see trend in Table 5.2.5. This was higher than calculate but within an acceptable range due to the following reasons.

1. The Varanus Island Outage required the plant to burn excess amounts of distillate. This fuel produces 2.7 times more N Ox per GJ than gas.

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2. The predicted figures used in table 5.1.1 were for optimal conditions which were not reflected during the commissioning or the Varanus Island Outage.

4.3 Environmental Ministerial Statement Condition 8.0 - Noise Emission

During Stage 1 a noise report was undertaken by Alinta who commissioned SVT Engineering Consultants in accordance with the Noise Report Test Procedure (Rpt01-0725RevA-03 Sep 07).

The Noise Report (Rpt02-07250-Rev3, 26 November 2007) indicated that ambient noise logging was conducted at the nearest noise sensitive premises to Wagerup power station some 500 metres to the SSE for a period of 4 weeks before the commissioning. These results showed that typical ambient L_{A90} noise levels were between 40 dB(A) and 45 dB(A) and the lowest noise levels (L_{90} of L_{A90}) were approximately 37 dB(A).

Consequently it would be expected that the noise from the Wagerup power station would be inaudible at this location. This was supported by observations recorded during several site visits which SVT personnel were unable to hear the power station at this location. Noise logging during commissioning showed that it was impossible to determine the noise from the power station as the noise was dominated by Alcoa refinery operations and on some occasions wind noise. The report concluded that sound power levels of both gas turbines Unit #1 and Unit #2 are within the limits required to demonstrate compliance with the Environmental Protection (Noise) Regulations 1997.

Alcoa operate an ISO 14,001 certified environmental management system which requires all noise complaints to be formally recorded and actioned as appropriate.

As part of the Ministerial Performance review, all reported noise complaints were examined for the period October 2007 to October 2009. None were found to breach the conditions of the Ministerial Statement 000729.

4.4 Yearly Operating Hours

During the period 29 November 2007 to 29 November 2009 monitoring of the yearly operating hours was performed in accordance with the Environmental licence requirements for Wagerup stated in licence L8174/2007/1. Both units ran on gas and distillate fuel. On the 3 June 2008, the Varanus Island gas pipeline suffered catastrophic failure. The Varanus Island Gas Outage resulted in a 30% reduction of gas supply to the state of Western Australia.

In order to produce additional power from distillate, dispensation was given by the Department of Environment and Conservation (see Appendix 1). Unit #1 ran for an additional 41:04:57 hrs on distillate, and Unit #2 ran an additional 9:01:10 hrs on distillate (See Table 5.3 for details). This was ceased in December 2008 and the conditions of the Environmental Ministerial Statement 000729 re commenced.

Operating hours for the period from 29 November 2008 to 29 November 2009 indicate that both distillate and gas operating hours are in compliance with Key Proposal Characteristic (Stage1) Schedule 1 of the Environmental Ministerial Statement (see Table 5.5).

4.5 Thermal efficiency

Trends in thermal efficiency were plotted from commissioning the power station in 1 October 2007 until 1 October 2009. The graph in Table 5.4 shows average of the actual thermal efficiency was 32%. This correlated closely with the expectation of a 30% efficiency target.

5. Environmental Monitoring

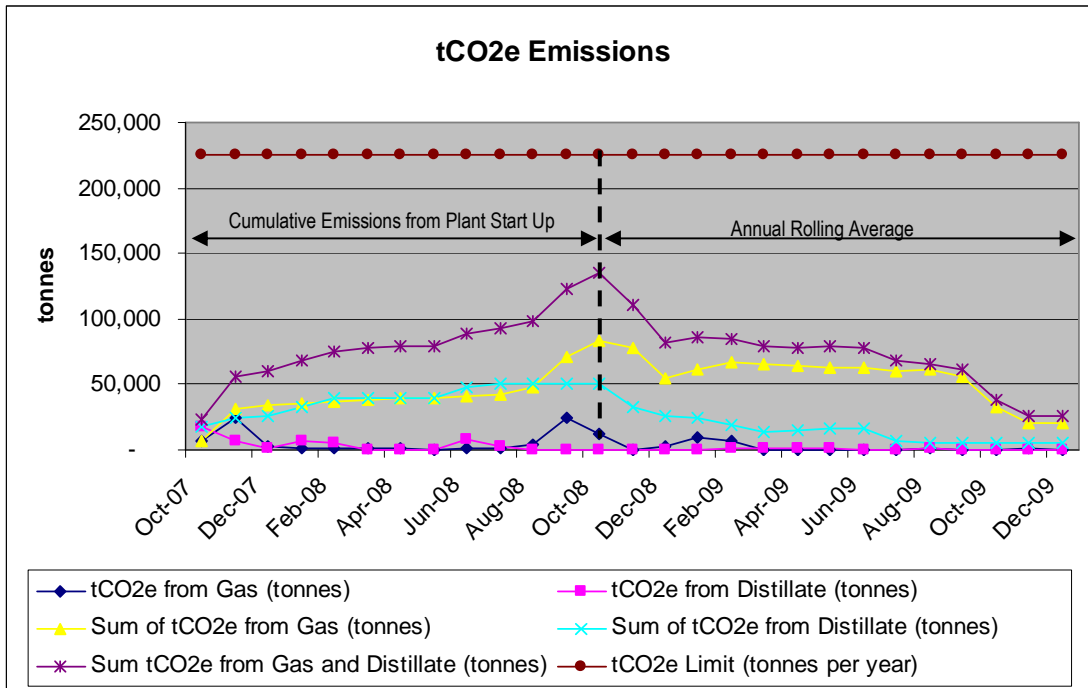
5.1 Greenhouse Gas Emissions

5.1.1 Predicted Annual Greenhouse Gas Emissions

- Table 2 Predicted Annual Greenhouse Gas Emissions using AGO Full Fuel Cycle Emission Factors

Description	Fuel	Quantity used (GJ)	Emission factor (kg CO _{2-e} / GJ)	CO _{2-e} Emissions (tonnes)
Stage One				
Peaking (900 hours)	Natural Gas	3.393 x 10 ⁶	60.0	203,600
Peaking (100 hours)	Distillate	0.3910 x 10 ⁶	81.4	31,830
				235,430
Transition Phase				
Averaged over three years (6,167 hours)	Natural Gas	21.91 x 10 ⁶	60.0	1,315,000
Stage Two				
Baseload (8,760 hours)	Natural Gas	31.77 x 10 ⁶	60.0	1,906,000

5.2.2 Actual Annual Greenhouse Gas Emissions



5.2 Air Emission Reports

5.2.1 Alstom Pollutant Test Results - Unit #1

Exhaust Gas Emissions dry at 15% O ₂		Natural Gas Fuel	Distillate Fuel Oil
Oxides of Nitrogen NO _x	mg/Nm ³	51*	86*
Carbon Monoxide CO	mg/Nm ³	28*	20*
Particulates TSP	mg/Nm ³	5*	13*
Unburned Hydrocarbons UHC	mg/Nm ³	2*	2*

* applicable for: Ambient Temperature 41°C / 18°C; Ambient Pressure 1013 mbar; Relative Humidity 40% / 70%

5.2.2 Alstom Pollutant Test Results – Unit #2

Exhaust Gas Emissions dry at 15% O ₂		Natural Gas Fuel	Distillate Fuel Oil
Oxides of Nitrogen NO _x	mg/Nm ³	51*	86*
Carbon Monoxide CO	mg/Nm ³	28*	20*
Particulates TSP	mg/Nm ³	5*	13*
Unburned Hydrocarbons UHC	mg/Nm ³	2*	2*

* applicable for: Ambient Temperature 41°C / 18°C; Ambient Pressure 1013 mbar; Relative Humidity 40% / 70%

5.2.3 NewEQ Pollutant Test Results – Unit #1

Table 1: GT01 Pollutant Test Results – 65% Load - Distillate

Pollutant	Unit of Measure	Oxygen Reference	65% Load - Distillate				License
			Measure 1	Measure 2	Measure 3	Average	
Nitrogen oxides (NOx)	mg/Nm ³	15%	73	77	73	74	NC
Nitrogen oxides (NOx)	ppm v/v	-	35	38	35	36	NC

Table 2: GT01 Pollutant Test Results – 100% Load - Distillate

Pollutant	Unit of Measure	Oxygen Reference	100% Load - Distillate				License	Model Parameter
			Measure 1	Measure 2	Measure 3	Average		
Total volatile organic compounds	µg/Nm ³	stack	ND	ND	ND	ND	NC	NA
Benzene	µg/Nm ³	stack	ND	ND	ND	ND	NC	NA
Toluene	µg/Nm ³	stack	ND	ND	ND	ND	NC	NA
m&p- Xylene	µg/Nm ³	stack	ND	ND	ND	ND	NC	NA
o- Xylene	µg/Nm ³	stack	ND	ND	ND	ND	NC	NA
Sulphur dioxide	mg/Nm ³	15%	1.8	1.4	3.9	2.4	NC	NA
Sulphur dioxide	g/s	-	0.83	0.60	1.81	1.1	NC	1.3
Nitrogen oxides (NOx)	mg/Nm ³	15%	85	73	74	77	NC	NA
Nitrogen oxides (NOx)	ppm v/v	-	43	36	38	39	42	NA
Formaldehyde	mg/Nm ³	stack	ND	ND	ND	ND	NC	NA
Acetaldehyde	mg/Nm ³	stack	ND	ND	ND	ND	NC	NA
PM10	mg/Nm ³	stack	1.6	1.3	NA	1.5	NC	NA
PM10	g/s	-	1.6	1.2	NA	1.4	NC	6.1
CO	g/s	-	3.7	2.4	2.5	2.7	NC	8.8

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5.2.4 NewEQ Pollutant Test Results – Unit #2

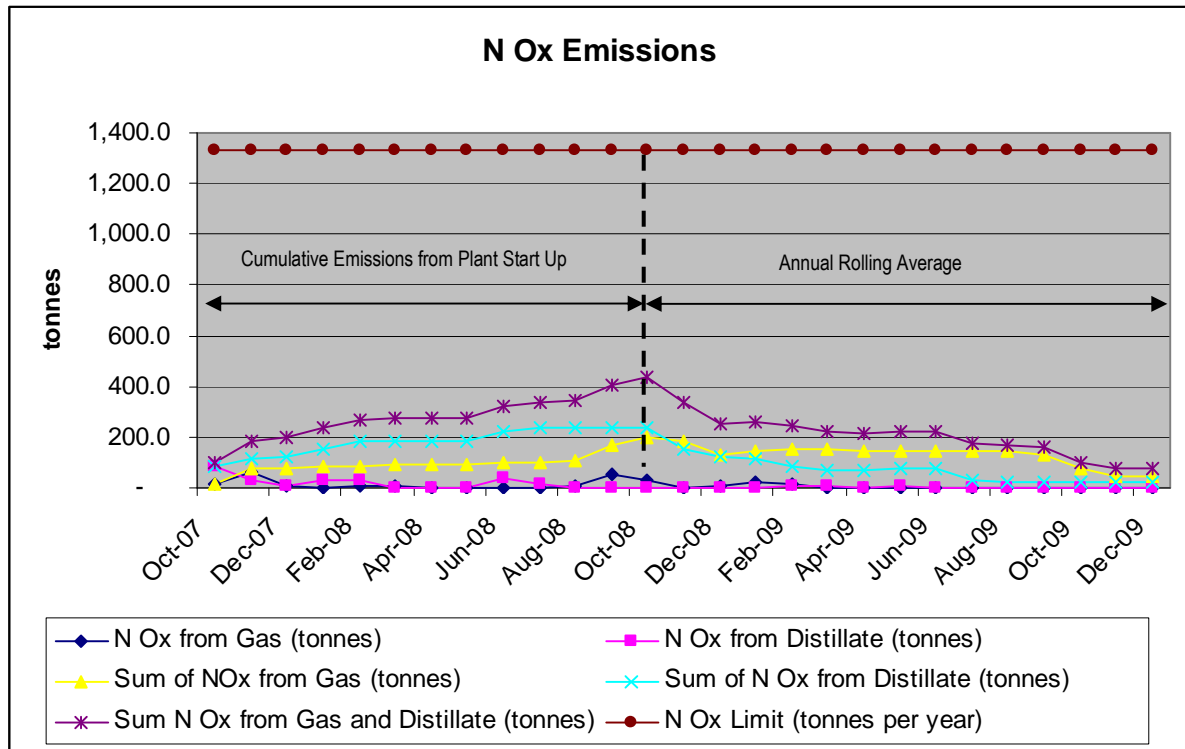
Table 4: GT02 Pollutant Test Results – 65% Load - Gas

Pollutant/ Parameter	Unit of Measure	Oxygen Reference	65% Load - Gas				License
			Measure 1	Measure 2	Measure 3	Average	
Nitrogen oxides (NOx)	mg/Nm3	15%	54	50	41	48	NC
Nitrogen oxides (NOx)	ppm v/v	-	26	23	19	23	25

Table 5: GT02 Pollutant Test Results – 100% Load - Gas

Pollutant/ Parameter	Unit of Measure	Oxygen Reference	100% Load - Gas				License	Model Parameter
			Measure 1	Measure 2	Measure 3	Average		
Total volatile organic compounds	µg/Nm3	stack	ND	ND	ND	ND	NC	NA
Benzene	µg/Nm3	stack	ND	ND	ND	ND	NC	NA
Toluene	µg/Nm3	stack	6.0	ND	ND	ND	NC	NA
m&p- Xylene	µg/Nm3	stack	ND	ND	ND	ND	NC	NA
o- Xylene	µg/Nm3	stack	ND	ND	ND	ND	NC	NA
Sulphur dioxide	mg/Nm3	15%	ND	ND	ND	ND	NC	NA
Sulphur dioxide	g/s	-	ND	ND	ND	ND	NC	0.6
Nitrogen oxides (NOx)	mg/Nm3	15%	26	30	29	28	NC	NA
Nitrogen oxides (NOx)	ppm v/v	-	14	15	15	15	42	NA
Formaldehyde	µg/Nm3	stack	0.51	0.036	0.13	0.23	NC	NA
Acetaldehyde	µg/Nm3	stack	0.21	ND	ND	0.070	NC	NA
PM10	mg/Nm3	stack	ND	ND	NA	ND	NC	NA
PM10	g/s	-	0.23	0.090	NA	0.2	NC	2.1
CO	g/s	-	0.46	0.93	0.93	0.81	NC	16.1

5.2.5 Actual Annual N O_x (Oxides of Nitrogen) Emissions



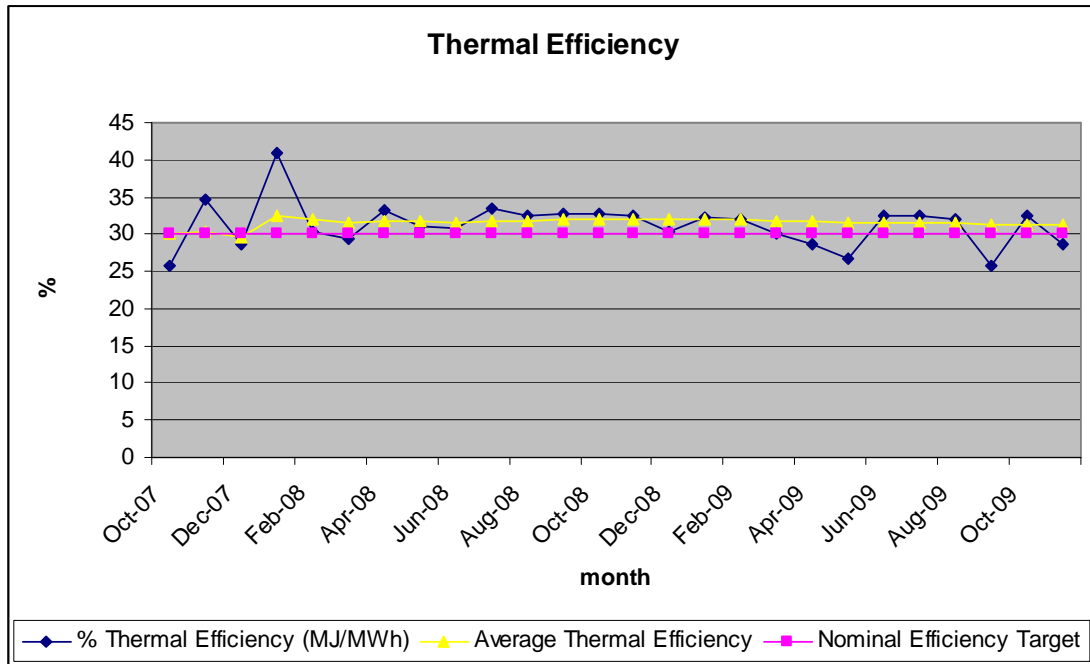
* N Ox emission estimate techniques used as per Table 14 taken from "emission Factors for Combustion in a stationary Gas Turbine: Natural gas and Distillate. (Gas factor 1.4 E +05 Kg/PJ Distillate 3.8 E+05 Kg/PJ)

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5.3 Running Hours

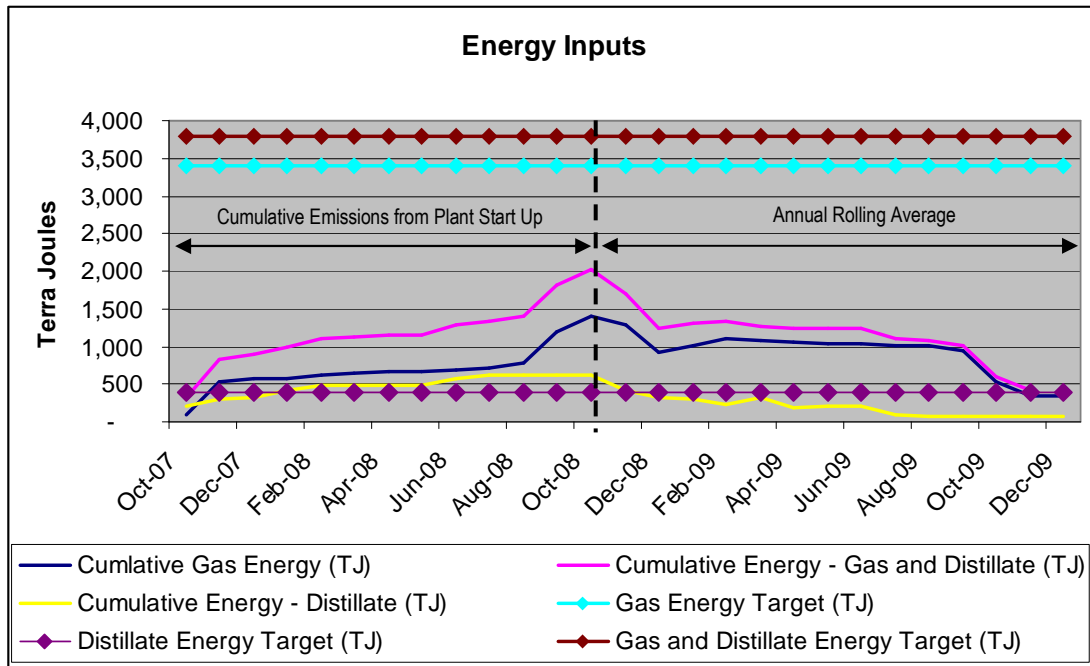
	6 Monthly 29 Nov 07 - 29 May 08	6 Monthly 29 May 08 - 29 Nov 08	Yearly Total 29 Nov 07 - 29 Nov 08	6 Monthly 29 Nov 08 - 29 April 09	6 Monthly 29 April 09 - 29 Nov 09	Yearly Total 29 Nov 08 - 29 Nov 09
#1 Gas hours Distillate Hours	77:04:16 91:55:57	188:16:00 49:09:00	265:20:16 141:04:57	29:38:00 13:50:30	4:24:30 4:49:00	34:02:30 18:39:30
#2 Gas Hours Distillate Hours	37:57:17 52:28:10	260:13:00 56:33:00	298:10:17 109:01:10	153:16:00 23:57:30	49:56:30 5:56:30	203:12:30 29:54:00

5.4 Thermal efficiency



5.5 Profile of Energy Inputs

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5.6 Key Proposal Characteristics (Stage 1)

Stage 1: Open-cycle peak load power station

Purpose: To supply electricity to the South West Interconnected System (SWIS)

Life of project: Approximately 25 years

Table 1 – Key Proposal Characteristics (Stage 1)

Element	Description
Power Generation Output	350 megawatts (nominal)
Plant Facilities Gas turbine specifications Number of stacks Height of stacks	2 × gas turbine of 175 megawatts nominal generating capacity fitted with dry low NO _x burners two 35 metres
Thermal Efficiency (based on net higher heating value at 41 degrees Celsius and 40% relative humidity)	approximately 30%
Operating Hours Total per unit (gas and distillate) Distillate	up to 1000 hours a year up to 100 hours a year
Inputs Natural Gas Distillate	approximately 3.4 petajoules per annum approximately 0.4 petajoules per annum
Air Emissions Carbon dioxide equivalent (CO _{2e}) Oxides of nitrogen (NO _x)	225 000 tonnes per annum 1331 tonnes per annum

6. Tables

6.1 Ministerial Statement Audit Table

Number	Issue	Action	How	Objective	Evidence	Phase	When/Where	Satisfy	Advice	Status
729:G						Overall				
729:M1.1	Proposal Description	The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the conditions of this statement.	As documented and described in schedule 1 of Statement 729 and subject to conditions of Statement 729	To avoid any unforeseen impacts	Annual Compliance Report (CR)	Overall		Min for Env		Satisfactory during this period
729:M2.1	Proponent Nomination and Contact Details	The proponent for the time being nominated by the Minister for the Environment under section 38(6) of the <i>Environmental Protection Act 1986</i> is responsible for the implementation of the proposal.		To ensure legal responsibility for the project rests with the nominated proponent.		Overall		Min for Env		Satisfactory during this period
729:M2.2	Proponent Nomination and Contact Details	The proponent shall notify the Chief Executive Officer of the Department of Environment and Conservation (CEO) of any change of the name and address for the serving of notices or other correspondence within 30 days of such change.	In a letter provide details of the name and address of the new proponent	To ensure the DEC is able to maintain contact with the proponent	Notification of change of proponent contact name and/or address	Overall	Within 30 days of such a change.	DEC		Not required at this stage
729:M3.1	Time Limit of Authorisation	The authorisation to implement the proposal provided for in this statement shall lapse and be void within five years after the date of this statement if the proposal to which this statement refers is not substantially commenced.		To ensure the proposal is limited to a defined period	CR	Overall	Prior to 27 September 2011	Min for Env		Greenhouse gas abatement program accepted by DEC
729:M3.2	Time Limit of Authorisation	The proponent shall provide the CEO with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.	Provide written evidence through the lodgement of the first compliance report to the DEC that the project has substantially commenced.	To ensure that the project is implemented within the defined period, using most recent information and technology available.	Compliance Report, contract documentation, photos and other related evidence.	Overall	Prior to 27 September 2011	DEC		This report provides documented evidence of project start
729:M4.1	Compliance Reporting	The proponent shall submit annually an audit compliance report, for the previous twelve-month period.	The audit compliance report shall: 1. be endorsed by the proponent's General Manager or a person, approved in writing by the Department of Environment and Conservation, delegated to sign on the proponent's General Managers behalf; 2. include a statement as to whether the proponent has complied with the conditions, procedures, commitments and actions within the Environmental Management Plans; 3. identify all non-compliances and describe the related corrective and preventative actions taken; 4. review the effectiveness of all corrective and preventative actions taken; 5. provide verifiable evidence of compliance with the conditions, procedures and commitments; 6. describe the state of implementation of the proposal; and 7. be prepared in accordance with an audit program and in a format acceptable to the Department of Environment and Conservation.	To provide verifiable evidence that the proposal is being implemented as approved, and the relevant conditions and commitments are being met.	CR, Annually, unless required to report more frequently by the CEO	Overall	Annually, By 27 September each year	Min for Env		Ministerial Compliance Statement submitted – May 2009
729:M4.2	Compliance Reporting	The proponent shall make the audit compliance report publicly available in a manner approved by the CEO, Department of Environment and	Carry out the following: 1. Advertise the availability of the document in the 'Public Notices Section' of the local community newspaper. 2. Provide copies of the documentation to the DEC library (1 hard copy, 1	To ensure the Public is kept informed	Compliance report posted on intranet	Overall		DEC		Provision for compliance report to be posted on

Number	Issue	Action	How	Objective	Evidence	Phase	When/Where	Satisfy	Advice	Status
		Conservation.	CD copy), local government public library (2 copies), JS Battye library (2 copies). 3. Post the document on the proponent's website.							ALINTA ENERGY intranet.
729:M5.1	Performance Review	The proponent shall submit a Performance Review report every two years after the start of production to the CEO	Performance Review report should address 1. the major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those objectives; 2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable; 3. significant improvements gained in environmental management, including the use of external peer reviews; 4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and 5. the proposed environmental objectives over the next two years, including improvements in technology and management processes.	To provide evidence that the proposal is being implemented as approved, and the relevant conditions and commitments are being met.	Performance Review	Overall	Every 2 years after the start of production, First PER to be submitted Before 1 October 2009	DEC		Not required at this stage – note that the first performance audit due in Oct 2009
729:M6.1:1	Greenhouse Gas Abatement	Prior to commencement of construction, the proponent shall develop a Greenhouse Gas Abatement Program	The Program shall: 1. ensure that the plant is designed and operated in a manner which achieves reductions in "greenhouse gas" emissions as far as practicable; 2. provide for ongoing "greenhouse gas" emissions reductions over time; 3. ensure that through the use of best practice, the total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product from the project are minimised; and 4. manage "greenhouse gas" emissions in accordance with the Framework Convention on Climate Change 1992, and consistent with the National Greenhouse Strategy; to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.	To Monitor and minimise greenhouse gas emissions	Greenhouse Gas Abatement Program	Design	Prior to commencement of construction	Min for Env	EPA	Complete: Greenhouse gas abatement program accepted by DEC. Satisfactory management as per para 4.1 of this report
729:M6.1:2	Greenhouse Gas Abatement	Prepare a Greenhouse Gas Abatement Program. Note: The current requirements of the Environmental Protection Authority are set out in: Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No. 12 published by the Environmental Protection Authority (October 2002). This document may be updated or replaced from time to time. Note: The following definitions apply: 1. "no regrets" measures are those which can be implemented by a proponent and which are effectively cost-neutral. 2. "beyond no regrets" measures are those which can be implemented by a proponent and which involve additional costs which are not expected to be recovered.	The program shall include: 1. calculation of the "greenhouse gas" emissions associated with the proposal, as advised by the Environmental Protection Authority; 2. specific measures to minimise the total net "greenhouse gas" emissions and/or the "greenhouse gas" emissions per unit of product associated with the proposal using a combination of "no regrets" and "beyond no regrets" measures; 3. the implementation and ongoing review of "greenhouse gas" offset strategies with such offsets to remain in place for the life of the proposal; 4. estimation of the "greenhouse gas" efficiency of the project (per unit of product and/or other agreed performance indicators) and comparison with the efficiencies of other comparable projects producing a similar product, both within Australia and overseas; 5. implementation of thermal efficiency design and operating goals consistent with the Australian Greenhouse Office Technical Efficiency guidelines in design and operational management; 6. actions for the monitoring, regular auditing and annual reporting of "greenhouse gas" emissions and emission reduction strategies; 7. target set by the proponent for the progressive reduction or abatement of total net "greenhouse gas" emissions or "greenhouse gas" emissions per unit of product, through the implementation of on-site or off-site offsets and/or the use of renewable energy sources such as solar, wind or hydro power and annual reporting of progress made in achieving this target; 8. a program to achieve a reduction or abatement in "greenhouse gas" emissions, consistent with the target referred to in (7) above; 9. entry, whether on a project-specific basis, company-wide arrangement	To Monitor and minimise greenhouse gas emissions	Greenhouse Gas Abatement Program	Design		Min of Env		Satisfactory during this period as per para 4.1 of this report

Number	Issue	Action	How	Objective	Evidence	Phase	When/Where	Satisfy	Advice	Status
			or within an industrial grouping, as appropriate, into the Commonwealth Government's "Greenhouse Challenge" voluntary cooperative agreement program. Components of the agreement program include: a. an inventory of emissions; b. opportunities for abating "greenhouse gas" emissions in the organisation; c. a "greenhouse gas" mitigation action plan; d. regular monitoring and reporting of performance; and e. independent performance verification. 10. Review of practices and available technology; and 11. "Continuous improvement approach" so that advances in technology and potential operational improvements of plant performance are adopted							
729:M6.2	Greenhouse Gas Abatement	The proponent shall implement the Greenhouse Gas Abatement Program required by condition 6-1.		To ensure appropriate management actions are taken to minimise greenhouse gas emissions	CR	Overall		Min of Env		Satisfactory during this period as per para 4.1 of this report
729:M6.3	Greenhouse Gas Abatement	Prior to commencement of construction, the proponent shall make the Greenhouse Gas Abatement Program required by condition 6-1 publicly available in a manner approved by the CEO, Department of Environment and Conservation.	Carry out the following: 1. Advertise the availability of the document in the 'Public Notices Section' of the local community newspaper. 2. Provide copies of the documentation to the DEC library (1 hard copy, 1 CD copy), 3. Post the document on the proponent's website.	To ensure the Public is kept informed	Letter to the DEC that the compliance report has been advertised	Overall	Prior to commencement of construction.	DEC		Satisfactory during this period as per para 4.1 of this report
729:M7.1:1	Stack Emissions	Prior to construction of the co-generation facility, the proponent shall prepare a Stack Emissions Management Plan, to ensure that best available practicable and efficient technologies are used to minimise total air emissions from the co-generation facility; to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.	Develop Plan to ensure best available practice and efficient technologies are used.	To minimise total air emissions	Stack Emissions Management Plan	Design	Prior to construction of the co-generation facility	Min for Env	EPA	Complete: Stack emission management plan accepted by EPA. Satisfactory management as per para 4.2 of this report
729:M7.1:2	Stack Emissions	Prepare a Stack Emissions Management Plan	The Stack Emissions Management Plan shall address: 1. specific measures to minimise total air emissions from the co-generation facility to meet emission limits consistent with best practicable technology and current industry standards; 2. stack testing during commissioning of both Stage 1 and Stage 2 to fully characterise all constituents listed in the plan, including minor emissions such as formaldehyde, acetaldehyde, toluene and benzene; 3. on going monitoring of key air emissions identified in the stack testing required by point 2; and 4. public reporting of air emissions and any complaints about air emissions.	To ensure that best available practicable and efficient technologies are used to minimise and monitor air emissions form the power station.	Stack Emissions Management Plan	Design		Min of Env		Items 4-3 Complete as per para 4.2 of this report Item 4: In Progress Air emission report to be made publicly available
729:M7.2	Stack Emissions	The proponent shall implement the Stack Emissions Management Plan required by condition 7-1.	In accordance with the Stack Emissions Management Plan	To ensure that best available practicable and efficient technologies are used to minimise and monitor air emissions form the power station.	CR	Overall		Min of Env		Satisfactory management as per para 4.2 of this report

Number	Issue	Action	How	Objective	Evidence	Phase	When/Where	Satisfy	Advice	Status
729:M7.3	Stack Emissions	The proponent shall make the Stack Emissions Management Plan, required by condition 7-1 publicly available in a manner approved by the CEO, Department of Environment and Conservation.	Carry out the following: 1. Advertise the availability of the document in the 'Public Notices Section' of the local community newspaper. 2. Provide copies of the documentation to the DEC library (1 hard copy, 1 CD copy), local government public library (2 copies), JS Battye library (2 copies). 3. Post the document on the proponent's website.	To ensure the Public is kept informed	Letter to the DEC that the compliance report has been advertised	Overall		DEC		Satisfactory during this period as per para 4.1 of this report
729:M8.1	Noise	Prior to construction of Stage 1, the proponent shall prepare a Noise Management Plan, to ensure that the proposal will not increase noise impact, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.		To Manage noise associated with the cogeneration plant.	Noise Management Plan.	Overall	Prior to construction of Stage 2	Min of Env	EPA	Complete: Noise management plan accepted by EPA. Satisfactory management as per para 4.3 of this report
729:M8.2	Noise	The proponent shall implement the Noise Management Plan required by condition 8-1.	In accordance with the Noise Management Plan	To ensure that noise associated with the cogeneration plant will not increase noise impact		Overall		Min of Env		Satisfactory management as per para 4.3 of this report
729:M8.3	Noise	The proponent shall make the Noise Management Plan required by condition 8-1 publicly available in a manner approved by the CEO, Department of Environment and Conservation.	Carry out the following: 1. Advertise the availability of the document in the 'Public Notices Section' of the local community newspaper. 2. Provide copies of the documentation to the DEC library (1 hard copy, 1 CD copy), local government public library (2 copies), JS Battye library (2 copies). 3. Post the document on the proponent's website.	To ensure the Public is kept informed	Letter to the DEC that the compliance report has been advertised	Overall		DEC		Satisfactory during this period as per para 4.1 of this report

7. Appendix 1- Letter re increased capacity from 370 to 372 MWh

ENVIRON

31 July 2009

Independent Market Operator
Level 3, Governor Stirling Tower
197 St Georges Terrace
PERTH WA 6000

Attention: Ben Williams

Dear Mr Williams,

RE: Alinta Sales Pty Ltd – Wagerup Gas Turbines Power Generation

ENVIRON Australia Pty Ltd (ENVIRON) has been engaged by the Alinta Sales Pty Ltd (Alinta) to provide independent advice that Alinta can increase the power generation capacity of Alinta's Wagerup Cogeneration Plant from 350 MW to 352 MW without any issue with regards to the plant's Ministerial approval or Environmental Licence.

ENVIRON has reviewed:

1. The Ministerial Statement for the Wagerup Cogeneration Project (Statement number 000729);
2. The current environmental licence for the Wagerup Cogeneration Plant – Stage 1 issued on 27 November 2008 (licence number 8174/2007/2); and
3. Environmental Ministerial Compliance Report – Wagerup produced by Alinta and issued to the Department of Environment and Conservation on 11 June 2009.

Schedule 1 of the Ministerial approval for Stage 1 of the Wagerup Cogeneration Project states that the Power Generation Output is 350 MW (nominal). ENVIRON is on the opinion that an output of 352 MW (or and increase of approximately 0.6% over the nominal output) would easily fall within what would be considered the nominal capacity approved for the Wagerup Cogeneration Project. "Nominal" is not defined under the *Environmental Protection Act, 1986*, but a Webster Dictionary definition is "of, being, or relating to a designated or theoretical size that may vary from the actual: approximate".

ENVIRON's understanding is that the environmental performance of the Wagerup Cogeneration Project gas turbines will not be affected by this very small increase in generating capacity output and based on information presented in the Environmental Ministerial Compliance Report, it will remain well below the requirements specified in Schedule 1 of the Ministerial Approval.

Based on a review of these documents, ENVIRON is of the opinion that Alinta will be able to increase the power generation capacity of the Wagerup Cogeneration Plant from 350 MW to 352 MW without any issue with regards to the plant's Ministerial approval or Environmental Licence.

If you have any further queries, please do not hesitate to contact the undersigned on 08-9225 5199.

Yours sincerely



Brian Bell
Principal

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Level 2,
200 Adelaide Terrace
East Perth, Western Australia, 6004
www.vironcorp.com

Telephone: +61 8 9225 5199
Facsimile: +61 8 9225 5155

8. Appendix 2 - Authorisation for excess of 100 hours of liquid fuel use



Environmental Protection Authority

The Atrium,
Level 8, 168 St Georges Terrace,
Perth, Western Australia 6000.
Telephone: (08) 6364 6300.
Facsimile: (08) 6467 5557.
Postal Address: Locked Bag 33,
Cloisters Square, Perth, Western Australia 6850.
Website: www.epa.wa.gov.au

Mr Victor Browner
Acting General Manager Alinta
Alinta Sales Pty Ltd
PO Box 8348
PERTH WA 6849

Our Ref: DEC7054
Enquiries: Richard Sutherland 64675446
Email: Richard.sutherland@dec.wa.gov.au

Dear Mr Browner

PROPOSED CHANGE TO PROPOSAL – WAGERUP COGENERATION PROJECT (STATEMENT 729): – LIQUID FUEL USE

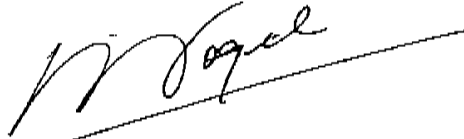
Thank you for your letter of 16 June 2008 requesting a modification to your Wagerup Cogeneration project (Statement 729). As you may be aware, under section 45C of the *Environmental Protection Act 1986* I, under delegation from the Minister for the Environment, am able to approve changes to a proposal without a revised proposal being submitted to the Environmental Protection Authority (EPA) when it is considered that the changes will not have a significant detrimental environmental effect in addition to, or different from, the effect of the original proposal.

I have now considered your request for a change to the Wagerup Cogeneration project (Assessment Number 1643) approved under Statement 729. Alinta has requested removal of the limitation to the number of hours of operation on liquid fuel which is currently 200 hours per annum for the 2008 year. I understand that the need for the temporary increase in liquid fuel use results from extenuating circumstances relating to a state-wide critical shortage natural gas which is beyond Alinta's control.

It is acknowledged that the proposed change does not alter/increase the assessed air emission rates for the project. Consequently, the proposed modification could be implemented in accordance with the existing environmental management controls that are drawn from the current conditions of Statement 729. Therefore I consider that the proposed change to the proposal will not result in significant detrimental environmental effect in addition to, or different from, the effect of the original proposal.

Approval is therefore granted under section 45C of the *Environmental Protection Act 1986* for the requested change detailed in your letter as specified in Attachment 2 (enclosed). You are reminded that this approval relates to environmental requirements in Statement 729 and does not replace any responsibilities you may have for seeking approvals from other government agencies to implement the proposed change to the approved proposal.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Dr Paul Vogel', is written over a horizontal line.

Dr Paul Vogel
CHAIRMAN

18 June 2008

Encl. Attachment 2 to Statement no. 729

Attachment to Statement 729

Change to Description of Proposal

PROPOSAL: WAGERUP COGENERATION PROJECT - the construction, operation and maintenance of a cogeneration facility of 350 Megawatts electrical output and 460 tonnes per hour of steam output at Wagerup, as documented in Schedule 1 of statement 729.

PROPONENT: ALINTA COGENERATION (WAGERUP) PTY LTD.

ASSESSMENT NO: 1643

CHANGE: IN STATEMENT 729, SCHEDULE 1, TABLE 1 - KEY PROPOSAL CHARACTERISTICS (STAGE 1) - an increase in the allowable 'operating hours - distillate use' for the 2008 year.

FEATURES OF CURRENT PROPOSAL:

Element	Quantities/Description
Operating hours – distillate use	<ul style="list-style-type: none">• up to 100 hours per year.

FEATURES OF MODIFIED PROPOSAL:

Element	Quantities/Description
Operating hours– distillate use	<ul style="list-style-type: none">• unlimited hours for the 2008 year.• up to 100 hours per year for the 2009 year onward.

Approved under delegation
from Minister for the Environment:


EPA Chairman

Approval Date: 18.6.08