

## PUBLIC REPORT TEMPLATE 2010

*Please consult the explanatory document when completing this template*

### Controlling Corporation

BP Regional Australasia Holdings Pty Ltd

### Period to which this report relates

Start 1 July 2006

End 30 June 2010

(eg. for a Corporate Group with the trigger-year 2005-06, the report will cover the period 1.7.2006-30.6.2010)

### Part 1 – Information on assessments completed to date

#### Table 1.1 – Description of the way in which the Corporate Group (or part of it) has carried out its assessments

The Energy Efficiency Opportunities (EEO) Act requires the BP Corporate Group to undertake EEO Assessments at all BP sites that consume more than 0.5PJ of energy per annum. BP has two sites meeting the criterion, the Bulwer Island and Kwinana Refineries. EEO formalises the ongoing energy assessment program that has been used to improve energy efficiency performance at the Bulwer Island and Kwinana Refineries for many years.

Assessments were carried out on process units at both Refineries during the second reporting period from July 2008 to June 2009. These assessments have been conducted through an energy opportunity identification procedure, which involves a detailed energy evaluation process (refer to Table 1.2 for process units assessed) and have generally been undertaken in accordance with BP's approved Assessment and Reporting Schedule (ARS). The ARS details the assessment procedure which meets the intent and key requirements of the Energy Efficiency Opportunities Act. The first stage of this process has involved staff from across the business, at multiple levels, using appropriate energy data to identify EEOs. Subsequent stages involved investigations by both engineers and business analysts, ensuring energy savings and technical feasibility of each opportunity are well understood.

The energy opportunities identified in the assessments to date have been incorporated into the long term energy and carbon strategies at each refinery. Each opportunity has been and will continue to be evaluated on its merits and prioritised with the many other competing business requirements each refinery is faced with. Ultimate execution of an opportunity will be dependant on this prioritisation process as all businesses are managed with limits on resources.

The details presented in this report are outcomes from the energy assessment undertaken between April 2006 and June 2010. The detailed energy assessments have involved 86% of Bulwer Island's and 91% of Kwinana's energy use. This represents a total assessment of 80% of the corporation energy use.

**Part 1 – Information on assessments completed to date (continued)**

<b>Table 1.2 – Energy use assessed</b>	<b>Group member and/or business unit and/or key activity and/or site (or part thereof) that has had an assessment completed by 30 June 2010 (Include all assessments completed to date for the current 5 year cycle).</b>	<b>Period over which assessment was undertaken<sup>1</sup></b>	<b>Energy use for the period 1.7.2009 to 30 June 2010 of the assessed entity (or part thereof) expressed in GJ<sup>2</sup></b>
	Bulwer Island Refinery - Crude Distillation Unit 1	October 2006 - December 2007	1,689,337 <sup>3</sup>
	Bulwer Island Refinery - Vacuum Distillation Unit 1	October 2006 - December 2007	129,925
	Bulwer Island Refinery - Residue Catalytic Cracking Unit	April 2006 - March 2007	2,692,976
	Bulwer Island Refinery - Alkylation Unit	April 2006 - March 2007	190,366
	Bulwer Island Refinery - Hydrocracking unit	January 2008 - March 2009	2,022,232
	Bulwer Island Refinery - Hydrogen Generation unit	January 2008 - March 2009	5,572,696
	Bulwer Island Refinery - Reformer / Naphta Splitter / BSU	February 2010 - June 2010	1,569,080 <sup>3</sup>
	Kwinana Refinery – Residue Cracking Unit	January 2009 – June 2009	3,291,159
	Kwinana Refinery – Catalytic Reformer Unit 3	January 2009 – June 2009	2,648,517
	Kwinana Refinery – Crude Distillation Unit 1	January 2009 – June 2009	1,620,302
	Kwinana Refinery – Crude Distillation Unit 2	January 2010 – June 2010	1,307,571
	Kwinana Refinery – Vacuum Distillation Unit 2	January 2010 – June 2010	517,726
	Kwinana Refinery – Hydrofiner 3	January 2010 – June 2010	309,038
	<b>Total energy use of assessed entities (or part thereof)</b>		<b>23,560,925</b>
	<b>Total energy use of the whole corporate group in the period 1.7.2009 to 30 June 2010</b>		<b>29,447,312</b>
	<b>Total energy use of assessed entities (or part thereof) for the period 1.7.2009 to 30.6.2010 expressed as a percentage of total energy use for the period 1.7.2009 to 30.6.2010</b>		<b>80%</b>

1. The total energy use of the group incorporates the energy use of B Bulwer Refinery, BP Kwinana Refinery, Solar Business Unit, Logistics Business Unit, Retail Business Unit, Bitumen Business Unit, and Office, as detailed in Assessment and Reporting Schedule for BP Regional Australasia Holdings Pty Ltd. It should be noted, that the energy use of the Shipping Business Unit is not included as per dictated by the National Greenhouse and Energy Reporting Act.

2. It should be noted that the Energy Use calculated for the Solar Business Unit, Logistics Business Unit, Retail Business Unit, Bitumen Business Unit and Office is consistent with the energy use as reported under the National Greenhouse and Energy Reporting Act. However the energy use for BP Refinery Bulwer and BP Refinery Kwinana has been calculated using the methodology as recommended in the EEO Industry Guidelines or the Net Energy Use. This is significantly different to the Gross Energy Use or black box approach as required and reported under the National Greenhouse and Energy Reporting Act.

3. Energy use for the Naphta splitter is recorded with Crude Distillation Unit 1, in line with existing refinery energy use databases.

**Table 1.3 – Accuracy of energy use assessed data**

Entity	% achieved	Reasons for not achieving data accuracy to within ±5%
Bulwer Island Refinery	+/- 5%	
Kwinana Refinery	+/- 5%	

## Part 2 - Energy Efficiency Opportunities that have been identified and evaluated

### Part 2A - New assessments completed or not reported since your last Public Report

Name of Group member or business unit or key activity or site:      Bulwer Island (Reformer/ Naphtha Splitter/ BSU)     

Total energy use for the period 1.7.2009 to 30.6.2010 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

1,569,080	GJ
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**Table 2.1A – Opportunities assessed to an accuracy of better than or equal to (<=) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
		0 – < 2 years		2 – 5 4 years		> 4 years		
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Under Investigation	1	2039				2039	
	To be Implemented	1				1	6116	
	Implementation Commenced							
	Implemented	1	2095				2095	
	Not to be Implemented	1				1	15613	
Outcomes of assessment	Total Identified	4	2	4134		2	21729	25862

Name of Group member or business unit or key activity or site:            Kwinana (Crude Distillation Unit 2, Hydrofiner 3, Vacuum Distillation Unit 2)           

Total energy use for the period 1.7.2009 to 30.6.2010 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

2,134,335	GJ
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**Table 2.1B – Opportunities assessed to an accuracy of better than or equal to (<=) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
		0 – < 2 years		2 – ≤ 4 years		> 4 years		
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Under Investigation	2	12,182	0	0	0	0	12,182
	To be Implemented	0	0	0	0	0	0	0
	Implementation Commenced	0	0	0	0	0	0	0
	Implemented	0	0	0	0	0	0	0
	Not to be Implemented	0	0	0	0	0	0	0
Outcomes of assessment	Total Identified	2	12,182	0	0	0	0	12,182

**Part 2A - New assessments completed during the reporting period (continued)**

Name of Group member or business unit or key activity or site: Bulwer Island (Reformer/ Naphtha Splitter/ BSU)

Total energy use for the period 1.7.2009 to 30.6.2010 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

1,569,080	GJ
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**Table 2.2A – Opportunities assessed to an accuracy of worse than (>) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
		0 - < 2 years		2 - ≤ 4 years		> 4 years		
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Under Investigation	0	0	0	0	0	0	0
	To be Implemented	0	0	0	0	0	0	0
	Implementation Commenced	0	0	0	0	0	0	0
	Implemented	0	0	0	0	0	0	0
	Not to be Implemented	2	0	0	0	2	10,906	10,906
Outcomes of assessment	Total Identified	2	0	0	0	2	10,906	10,906

Name of Group member or business unit or key activity or site: Kwinana (Crude Distillation Unit 2, Hydrotrefiner3, Vacuum Distillation Unit 2) \_\_\_\_\_

Total energy use for the period 1.7.2009 to 30.6.2010 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

2,134,335	GJ
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**Table 2.2B – Opportunities assessed to an accuracy of worse than (>) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)	
		0 – < 2 years		2 – ≤ 4 years		> 4 years			
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ		
Business Response	Under Investigation	8	1	7,884	0	0	7	68,124	76,008
	To be Implemented	0	0	0	0	0	0	0	0
	Implementation Commenced	0	0	0	0	0	0	0	0
	Implemented	2	1	6,167	0	0	1	2,920	9,087
	Not to be Implemented	2	0	0	0	0	2	7,254	7,254
Outcomes of assessment	Total Identified	12	2	14,051	0	0	10	78,298	92,349

## Part 2 - Energy Efficiency Opportunities that have been identified and evaluated

### Part 2B - Update of assessments reported in previous Public Reports

Name of Group member or business unit or key activity or site: Bulwer Island Refinery (Crude Distillation Unit 1, Vacuum Distillation Unit 1, Residue Catalytic Cracking Unit, Alkylation Unit, Hydrocracking Unit, Hydrogen Generation Unit)

Total energy use for the period 1.7.2006 to 30.6.2009 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

12,297,532	GJ
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**Table 2.3A – Opportunities assessed to an accuracy of better than or equal to ( $\leq$ )  $\pm 30\%$**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
		0 – < 2 years		2 – $\leq$ 4 years		> 4 years		
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Under Investigation	3	56,765	0	0	2	114,370	171,135
	To be Implemented	1	0	0	0	1	15,760	15,760
	Implementation Commenced	1	0	0	0	1	79,366	79,366
	Implemented	7	148,726	0	0	2	1,814	150,540
	Not to be Implemented	4	65,760	0	0	3	74,721	140,481
Outcomes of assessment	Total Identified	16	271,251	0	0	9	286,031	557,282

Name of Group member or business unit or key activity or site: Kwinana Refinery (Residue Cracking Unit, Catalytic Reformer Unit 3, Crude Distillation Unit 1)

Total energy use for the period 1.7.2006 to 30.6.2009 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

7,559,978	GJ
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**Table 2.3B – Opportunities assessed to an accuracy of better than or equal to (<=) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
		0 – < 2 years		2 – ≤ 4 years		> 4 years		
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Under Investigation	3	15,500	0	0	0	0	15,500
	To be Implemented	3	56,500	0	0	1	3,000	59,500
	Implementation Commenced	3	18,000	1	46,000	1	120,960	184,960
	Implemented	0	0	0	0	0	0	0
	Not to be Implemented	3	0	0	0	3	6,000	6,000
Outcomes of assessment	Total Identified	12	90,000	1	46,000	5	129,960	265,960

**Note:** BP's 08/09 report showed 9 opportunities identified at <30% for the Residue Cracking Unit, Catalytic Reformer Unit and Crude Distillation Unit 1. Further Investigation of opportunities considered to be >30% undertaken since this report have determined that 3 of these opportunities are now considered to be <30% and have been transferred from Table 2.4B to Table 2.3B.

**Part 2B - Update of assessments originally reported in previous Public Reports (continued)**

Name of Group member or business unit or key activity or site: Bulwer Island Refinery (Crude Distillation Unit 1, Vacuum Distillation Unit 1, Residue Catalytic Cracking Unit, Alkylation Unit, Hydrocracking Unit, Hydrogen Generation Unit).

Total energy use for the period 1.7.2006 to 30.6.2009 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

12,297,532	GJ
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**Table 2.4A – Opportunities assessed to an accuracy of worse than (>) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
		0 – < 2 years		2 – ≤ 4 years		> 4 years		
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Under Investigation	0	0	0	0	0	0	0
	To be Implemented	0	0	0	0	0	0	0
	Implementation Commenced	0	0	0	0	0	0	0
	Implemented	1	0	1	31,800	0	0	31,800
	Not to be Implemented	13	334,014	1	4,800	5	196,580	535,394
Outcomes of assessment	Total Identified	14	334,014	2	36,600	5	196,580	567,194

Name of Group member or business unit or key activity or site: Kwinana Refinery (Residue Cracking Unit, Catalytic Reformer Unit 3, Crude Distillation Unit 1).

Total energy use for the period 1.7.2006 to 30.6.2009 of the assessed entity (or part thereof) from which the opportunities identified below were generated (and is reported in Table 1.2).

7,559,978	GJ
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**Table 2.4B – Opportunities assessed to an accuracy of worse than (>) ±30%**

Status of opportunities identified	Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)	
		0 – < 2 years		2 – ≤ 4 years		> 4 years			
		No of Opps	GJ	No of Opps	GJ	No of Opps	GJ		
Business Response	Under Investigation	12	3	31,000	1	18,000	8	487,400	536,400
	To be Implemented	0	0	0	0	0	0	0	0
	Implementation Commenced	0	0	0	0	0	0	0	0
	Implemented	0	0	0	0	0	0	0	0
	Not to be Implemented	2	0	0	0	0	2	8,200	8,200
Outcomes of assessment	Total Identified	14	3	31,000	1	18,000	10	495,600	544,600

**Note:** BP's 08/09 report showed 17 opportunities identified at >30% for the Residue Cracking Unit, Catalytic Reformer Unit and Crude Distillation Unit 1. Further investigation of these opportunities undertaken since this report have determined that 3 of these opportunities are now considered to be <30% and have been transferred to Table 2.3B.

## Part 2 - Energy Efficiency Opportunities that have been identified and evaluated

### Part 2C - Details of at least three significant opportunities found through EEO assessments

**Table 2.5 – Description of 3 significant opportunities**

<p><b>Opportunity 1</b></p> <p>Assessment of the Reformer at the Bulwer Refinery has identified a key opportunity to reduce the amount of energy used to heat process fluid in a fired heater by preheating the entering processes stream. This practice was already occurring on the Unit but it was identified that adding additional automation to the existing heat integration would allow this setup to be optimized and would deliver a 6,116 GJ/yr saving from a reduction in fuel usage in the fired heaters. This opportunity is then an enabler to allow Bulwer's advanced control team to create an overarching energy reduction control scheme to reduce fired heater energy consumption by a further 2039 GJ/yr on the reformer.</p>
<p><b>Opportunity 2</b></p> <p>Assessment of the No. 2 Crude Unit at the Kwinana Refinery has shown that by installing additional heat exchangers on the crude preheat train will allow the flexibility of taking a set of exchangers out for cleaning without interrupting the capability of the process. This will also allow the exchangers to be taken out for cleaning in a safer manner as the process temperature will be lower than when taking a hot exchanger out for cleaning.</p> <p>Investigation into the opportunity has shown that the cleaning work can be carried out with less risk while maintaining capacity. The benefit expected is an energy saving of 31,500 GJ/yr (at a payback of greater than 6 years).</p>
<p><b>Opportunity 3</b></p> <p>Assessment of the usual feed stream to the Vacuum Distillation Unit (VDU2) at the Kwinana Refinery has shown that the amount of preheat in the feed could be increased by reviewing the way the feed stream is handled in the upstream unit. The outcome of the increase in preheat is a reduction in furnace fuel gas firing (lower duty). The benefit expected is an energy saving of 7,900 GJ/yr (at a payback of greater than 4 years).</p>
<p><b>Opportunity 4</b></p>

## Part 3 - Voluntary Contextual Information

**Table 3.1 – Contextual Information**

Both Bulwer Island and Kwinana Refineries continued to improve on energy efficiency performance throughout 2009/10. This is demonstrated in the decrease of the benchmarking indicator through this period. The key benchmarking indicator used by the refineries in an energy efficiency index. This figure is then compared against other refineries within the BP network and then against refineries across the globe external to BP.

**Table 3.2 – Energy use expressed in Greenhouse Gas emissions and as an energy use indicator**

Period of energy use	to		Energy use pa (GJ)	Energy use pa (GGE)	Energy use as an indicator*
Name of group member/ business unit/ key activity/site					
<b>Total</b>					

**Table 3.3 - Opportunities assessed to an accuracy of better than or equal to (<=) ±30% (\$ value)**

Status of opportunities identified	Number of opportunities	Estimated energy savings per annum by payback period (\$)			Total estimated energy savings per annum (\$)
		0 - < 2 years	2 - ≤ 4 years	> 4 years	
Business Response*	Under Investigation				
	To be Implemented				
	Implementation Commenced				
	Implemented				
	Not to be Implemented				
Outcomes of assessment*	Total Identified				


### Part 3 - Voluntary Contextual Information (continued)

**Table 3.4 – Changes in energy use as an indicator**

Name of group member/ business unit/ key activity/site	Current energy use as an indicator	Previous energy use as an indicator	Reasons for change
<b>Total</b>			

### Part 4 - Declaration

**Table 4.1 - Declaration of accuracy and compliance (mandatory information)**

<p>The information included in this report has been reviewed and noted by the board of directors and is to the best of my knowledge, correct and in accordance with the <i>Energy Efficiency Opportunities Act 2006</i> and <i>Energy Efficiency Opportunities Regulations 2006</i>.</p>	
	<p>Mark Sturges (Acting CEO – BP Regional Australasia Holdings Pty Ltd) Date 22 December 2010</p>