# PUBLIC REPORT TEMPLATE 2011

Please note that this template has been updated based on feedback from a number of Corporations during the recent review of regulations. It is not compulsory for you to use this Public Report template. You may wish to continue to use the previous template, or you may report in another format of your choice. Either is acceptable provided you report all the information required by the EEO Act and Regulations.

There is an explanatory document at pages 5-14 of this template that fully explains how to complete it. There is also some targeted guidance on the template itself.

## Part 1 - Corporation Details

### Controlling Corporation

### Period to which this report relates

Insert the name of the Controlling Corporation exactly as it is registered with the EEO Program. The period to which the report relates is the total period of participation up to 30 June prior to when the report is due.

| Coogee Chemicals Pty Ltd | From | 1 July 2006 | To | 30 June 2011 |
|---|---|---|---|---|

### Table 1.1 - Major Changes to Corporate Group Structure or Operations

| Table 1.1 – Major Changes to Corporate Group Structure or Operations |
|---|
| There have been no major changes to group structure. Energy use at the Coogee Energy facility has reduced due to a drop in production of methanol. Energy use at the Kwinana Chlor-alkali facility has increased due to an increase in production of chlorine following commissioning of a major expansion of the plant in 2010. |

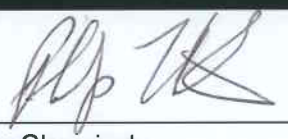
### Table 1.2 – Aggregate energy assessed covered in this report

| | | |
|---|---|---|
| **Total energy use covered by all assessments in this report** | **954,500** | **GJ** |
| **Total energy assessed as percentage of total energy use of the corporate group*#** | **85** | **%** |

* If this report covers only part of the corporate group, than the percentage should be computed on the total energy use for that part of the group covered in this report

# Please note that corporations are required to assess 80% or more of their energy use in the first five-year assessment cycle and 90% or more in subsequent five-year assessment cycles. Accordingly, for those corporations with a 2005-06 trigger year (i.e. those corporations at the end of their first-five year assessment cycle), the value in "Percentage of corporation's energy use assessed" above, must be more than 80%.

## Declaration

| Declaration of accuracy and compliance | |
|---|---|
| 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 *Energy Efficiency Opportunities Act 2006* and *Energy Efficiency Opportunities Regulations 2006*. |  <br>CEO, Coogee Chemicals<br>**Date** 23 / 12 / 11 |

# Part 2 - Assessment Outcomes

## Table 2.1 – Assessment Details

It is compulsory to complete a separate table for each group member, business unit, or key activity that has been assessed

| **Name of group member or business unit or key activity** | Coogee Energy Pty Ltd | |
|---|---|---|
| **Total energy use in the last financial year** | 408,300 | GJ |
| **Energy use assessed in this entity as a percentage of total entity energy use*** | 100 | % |
| **Energy use assessed in this entity as a percentage of total corporate energy use** | 36 | % |
| **Accuracy of above estimates related to energy use assessed - only required if not ±5% or better** | < ±5% | % |

| **Period over which assessment was undertaken** | | 1/6/2008 | | 30/6/2009 |
|---|---|---|---|---|

**Description of the way in which the entity carried out its assessment**

Coogee Chemicals Pty Ltd undertook an Energy Efficiency Opportunities assessment of the Coogee Energy Pty Ltd facility (Laverton North, Victoria) commencing in June 2008 and finishing in June 2009.

A detailed review of energy consumption data from 2006/07 and 2007/08 to >95% accuracy was compiled and used as the basis of the opportunity brainstorming workshop. The workshop participants were drawn from a cross section of the entire site workforce and 2 independent persons including the facilitator. 24 opportunities were identified as requiring further evaluation. Based on the detailed evaluation 9 opportunities have been implemented and 15 opportunities have not been implemented due to a variety of reasons including safety, technical feasibility and payback.

Regular progress updates are communicated both formally to the Coogee Chemicals board and via regular newsletter and general meeting presentations to the remainder of the employee workforce.

The Coogee Energy facility assessment has complied with the intent and key requirements of the EEO legislation.

* Please note that, for individual sites that use more that 0.5PJ of energy, all energy use must be assessed (less a small proportion for non integral energy use).

## Table 2.2 - Energy efficiency opportunities identified in the assessment

## Coogee Energy Pty Ltd

| Table 2.2 – Energy efficiency opportunities identified in the assessment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Status of opportunities identified to an accuracy of better than or equal to ±30% | | 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 | Implemented | 4 | 2 | 89 | 1 | 41 | 1 | 71 | 201 |
| | Implementation Commenced | 0 | | | | | | | 0 |
| | To be Implemented | 0 | | | | | | | 0 |
| | Under Investigation | 0 | | | | | | | 0 |
| | Not to be Implemented | 7 | 0 | 0 | 1 | 154 | 6 | 6,653 | 6,807 |
| Outcomes of assessment | Total Identified | 11 | 2 | 89 | 2 | 195 | 7 | 6,724 | 7,008 |
| **Status of opportunities identified to an accuracy of worse than ±30%** | | | | | | | | | |
| Business Response | Implemented | 5 | | | | | 5 | 10,000 | 10,000 |
| | Implementation Commenced | 0 | | | | | | | 0 |
| | To be Implemented | 0 | | | | | | | 0 |
| | Under Investigation | 0 | | | | | | | 0 |
| | Not to be Implemented | 8 | | | | | 8 | 0 | 0 |
| Outcomes of assessment | Total Identified | 13 | 0 | 0 | 0 | 0 | 13 | 10,000 | 10,000 |

Please note that Corporate Groups **are not required** to report opportunities with a payback greater than 4 years. Reporting this data is voluntary.

## Table 2.1 – Assessment Details

It is compulsory to complete a separate table for each group member, business unit, or key activity that has been assessed

| **Name of group member or business unit or key activity** | Kemerton Chlor-alkali Facility |
|---|---|

| | | |
|---|---|---|
| **Total energy use in the last financial year** | 215,000 | GJ |
| **Energy use assessed in this entity as a percentage of total entity energy use*** | 100 | % |
| **Energy use assessed in this entity as a percentage of total corporate energy use** | 19 | % |
| **Accuracy of above estimates related to energy use assessed - only required if not ±5% or better** | < ±5% | % |

| | | | | |
|---|---|---|---|---|
| **Period over which assessment was undertaken** | | 1/12/2008 | | 30/6/2010 |

**Description of the way in which the entity carried out its assessment**

Coogee Chemicals Pty Ltd undertook an Energy Efficiency Opportunities assessment of the Kemerton Chlor-alkali Facility in Kemerton WA, commencing in December 2008 and finishing in June 2010.

Coogee Chemicals operates 2 essentially identical chlorine manufacturing facilities in WA, at Kemerton & Kwinana. The assessment has focussed on the Kemerton facility and the findings were applied to the Kwinana facility by the representative assessment process.

A detailed review of energy consumption data from 2007 & 2008 calendar years to >95% accuracy was compiled of both facilities and used as the basis for an opportunity brainstorming workshop in May 2009. The workshop participants were drawn from a cross section of the entire Kemerton facility, the Kwinana facility Management team and 2 independent persons including the facilitator.

13 opportunities relating to the Kemerton facility were identified and evaluated further. Based on the detailed evaluation 2 opportunities have been approved for implementation and 11 have been decided not for implementation based on a variety of technical feasibility and payback considerations.

The Kemerton Chlor-alkali facility assessment complied with the intent and key requirements of the EEO legislation and was completed in June 2010.

Regular progress updates are communicated both formally to the Coogee Chemicals board and via regular newsletter and general meeting presentations to the remainder of the employee workforce.

* Please note that, for individual sites that use more that 0.5PJ of energy, all energy use must be assessed (less a small proportion for non integral energy use).

## Table 2.2 - Energy efficiency opportunities identified in the assessment

### Kemerton Chlor-alkali Facility

| Table 2.2 – Energy efficiency opportunities identified in the assessment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Status of opportunities identified to an accuracy of better than or equal to ±30% | | 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 | Implemented | 1 | 1 | 371 | | | | | 371 |
| | Implementation Commenced | 0 | | | | | | | 0 |
| | To be Implemented | 1 | | | 1 | 70 | | | 70 |
| | Under Investigation | 0 | | | | | | | 0 |
| | Not to be Implemented | 10 | | | 1 | 1,597 | 9 | 9,023 | 10,620 |
| Outcomes of assessment | Total Identified | 12 | 1 | 371 | 2 | 1,667 | 9 | 9,023 | 11,061 |
| **Status of opportunities identified to an accuracy of worse than ±30%** | | | | | | | | | |
| Business Response | Implemented | 0 | | | | | | | 0 |
| | Implementation Commenced | 0 | | | | | | | 0 |
| | To be Implemented | 0 | | | | | | | 0 |
| | Under Investigation | 0 | | | | | | | 0 |
| | Not to be Implemented | 1 | | | | | 1 | 28,512 | 28,512 |
| Outcomes of assessment | Total Identified | 1 | 0 | 0 | 0 | 0 | 1 | 28,512 | 28,512 |

Please note that Corporate Groups **are not required** to report opportunities with a payback greater than 4 years. Reporting this data is voluntary.

## Table 2.1 – Assessment Details

It is compulsory to complete a separate table for each group member, business unit, or key activity that has been assessed

| **Name of group member or business unit or key activity** | Kwinana Chlor-alkali Facility | |
|---|---|---|
| **Total energy use in the last financial year** | 331,200 | GJ |
| **Energy use assessed in this entity as a percentage of total entity energy use*** | 100 | % |
| **Energy use assessed in this entity as a percentage of total corporate energy use** | 30 | % |
| **Accuracy of above estimates related to energy use assessed - only required if not ±5% or better** | < ±5% | % |

| **Period over which assessment was undertaken** | 1/12/2008 | 30/6/2011 |
|---|---|---|

**Description of the way in which the entity carried out its assessment**

Coogee Chemicals Pty Ltd undertook an Energy Efficiency Opportunities assessment of the Kwinana Chlor-alkali Facility in Kwinana WA, commencing in December 2008 and finishing in June 2011.

Coogee Chemicals operates 2 essentially identical chlorine manufacturing facilities in WA, at Kemerton & Kwinana. A representative assessment has been applied to the Kwinana Facility on the basis of the Kemerton Facility assessment.

To ensure that the representative assessment process was valid a detailed review of energy consumption data from 2007 & 2008 calendar years to >95% accuracy was compiled of both facilities and used as the basis for an opportunity brainstorming workshop in May 2009. The workshop participants were drawn from a cross section of the entire Kemerton facility, the Kwinana facility Management team and 2 independent persons including the facilitator. 13 opportunities relating to the Kwinana facility were identified. Based on the detailed evaluation 2 opportunities have been approved for implementation and 11 have been decided not for implementation based on a variety of technical feasibility and payback considerations.

The Kwinana Chlor-alkali facility representation assessment had complied with the intent and key requirements of the EEO legislation and has fully met these requirements at the conclusion of the assessment in June 2011.

* Please note that, for individual sites that use more that 0.5PJ of energy, all energy use must be assessed (less a small proportion for non integral energy use).

## Table 2.2 - Energy efficiency opportunities identified in the assessment

Kwinana Chlor-alkali Facility

| Table 2.2 – Energy efficiency opportunities identified in the assessment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Status of opportunities identified to an accuracy of better than or equal to ±30%** | | **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 | Implemented | 0 | | | | | | | 0 |
| | Implementation Commenced | 1 | 1 | 1,482 | | | | | 1,482 |
| | To be Implemented | 1 | 1 | 371 | | | | | 371 |
| | Under Investigation | 0 | | | | | | | 0 |
| | Not to be Implemented | 10 | | | 2 | 1,667 | 8 | 8,979 | 10,646 |
| Outcomes of assessment | Total Identified | 12 | 2 | 1853 | 2 | 1,667 | 8 | 8,979 | 12,499 |
| **Status of opportunities identified to an accuracy of worse than ±30%** | | | | | | | | | |
| Business Response | Implemented | 0 | | | | | | | 0 |
| | Implementation Commenced | 0 | | | | | | | 0 |
| | To be Implemented | 0 | | | | | | | 0 |
| | Under Investigation | 0 | | | | | | | 0 |
| | Not to be Implemented | 1 | | | | | 1 | 28,512 | 28,512 |
| Outcomes of assessment | Total Identified | 1 | 0 | 0 | 0 | 0 | 1 | 28,512 | 28,512 |

Please note that Corporate Groups **are not required** to report opportunities with a payback greater than 4 years. Reporting this data is voluntary.

## Table 2.3 - Details of significant opportunities identified in the assessment

Corporate Groups are required to provide at least 3 examples of significant opportunities for improving the energy efficiency of the group that have been identified in assessments.

| Description of Opportunity - Coogee Energy – Refining Column Packing | Voluntary Information | |
|---|---|---|
| The design of the Coogee Energy Methanol Process enables it to be used in floating marine platform environments due to the compact nature. Accordingly the distillation section of the plant uses packed columns rather than ordinary tray column design. The flow characteristics and cleanliness of the packing affects the column efficiency and so impacts on energy consumption (ie steam).<br><br>Whilst it was possible to remove the existing packing, clean it, and then re-install, Coogee has elected to install a new and improved packing design.<br><br>This was the first time that this packing design has been used in a methanol plant and it was expected to improve mass transfer characteristics leading to increased column efficiency through the elimination of additional steam use in distillation. Accordingly less energy would be required for the same amount of product made.<br><br>Monitoring following implementation identified that the packing provided an initial improved mass transfer characteristics but this has reduce over the longer term. An initial 10,000 GJ was saved in the first year but the ongoing performance has not translated to ongoing savings. | Business Response | Implemented |
| | Energy saved (GJ) | 10,000 |
| | Greenhouse gas abated (CO2-e) | |
| | $s saved | |
| | Payback period | |

| Description of Opportunity – Coogee Energy – Baffled Gas Heated Reformer | Voluntary Information | |
|---|---|---|
| The Coogee Energy Methanol Plant is the only methanol plant in the world that utilizes a combined Gas Heated Reformer (GHR) and Auto-thermal Reactor to generate synthesis gas. The GHR is a key part of the process design and is an area of opportunity where small efficiency gains can lead to significant reductions in overall energy consumption.<br><br>As part of Coogee's commitment to innovation and process development, an improved internal design of GHR was installed in December 2008.<br><br>The baffled design is the first of its kind in operation at a methanol plant world-wide and it is expected to lead to an increase in overall energy efficiency as heat transfer should remain over a longer period of time (ie. A reduced fouling rate). The new design allows the reactor to operate at lower steam ratios, which directly reduces energy consumption across the entire process. | Business Response | Implemented |
| | Energy saved (GJ) | |
| | Greenhouse gas abated (CO2-e) | |
| | $s saved | |
| | Payback period | |

| Description of Opportunity – Fuel Cells to use Un-utilised Hydrogen | Voluntary Information | |
|---|---|---|
| Hydrogen gas is produced as a by-product of the chlorine manufacture process and is used as either a fuel source for steam raising or to produce hydrochloric acid. Plant safety interlocks also remove a small amount of hydrogen from the process under vacuum and this is burnt for safety purposes.<br><br>It was identified as an Energy Efficiency Opportunity that the hydrogen can be utilised in either fuel cells to generate electricity.<br><br>Fuel Cell Power Generation has a potential payback of about 5 years on the basis of ballpark engineering investigation, but there significant uncertainties in costs and technical scope, and significant potential safety risks in the application to thechlorine process. Although Fuel Cells are an Emerging Technology with great potential gains, it remains unproven technology in the Chlor-Alkali industry and therefore neither practical nor commercially viable at this stage. | Business Response | Not to be Implemented |
| | Energy saved (GJ) | |
| | Greenhouse gas abated (CO2-e) | |
| | $s saved | |
| | Payback period | |

Please note that the "Description of the Opportunity" above should include information on the specific nature and type of opportunity, as well as information on the type of equipment and/or process involved.