



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.

Orica Limited 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

In July 2010, Orica divested part of the business known as DuluxGroup. DuluxGroup constituted less than 1% of Orica's total energy use and no DuluxGroup operations were subject to an Energy Efficiency Opportunities (EEO) assessment.

In 2011, the Ammonia Plant at Kooragang Island was shut down to allow a 25% increase in capacity. This project will incorporate energy efficiency improvements identified following the EEO assessment and a plant efficiency gain of 4% is expected. However as ammonia production is an energy intensive process, this will lead to an increase in energy consumption. This is expected to be in the order of 10% for Orica's Australian operations.



Table 1.2 – Aggregate energy assessed covered in this report

Total energy use covered by all assessments in this report	15,184,425	GJ
Total energy assessed as percentage of total energy use of the corporate group*#	94.5	%

* 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	
<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>Dr Ian Gilmour Corporate Safety Health and Environment and Manufacturing Manager</p>
	<p>Date 24/01/2012</p>

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

Orica Limited (Australia)

Total energy use in the last financial year

16,069,407

GJ

Energy use assessed in this entity as a percentage of total corporate energy use (this is 3 sites)

94.5

%

Accuracy of above estimates related to energy use assessed - only required if not ±5% or better

-

%

Period over which assessment was undertaken

July 2006

June 2011

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

This is a summary of the overall Corporate approach the EEO Assessment Process and covers the common elements across all sites. Where individual sites have differed, these approaches are explain under the individual sites in this section

Leadership

Orica aspires to become an organisation that does no harm to people and the environment. For Orica, this means becoming carbon and water neutral, generating zero waste and having environmentally friendly operations, products and services, all in a commercially responsible way. Progress towards this vision is driven through strategy development, business level implementation plans and corporate targets.

A broader set of sustainability targets replaced Orica's traditional "Challenge" series of metrics in 2011. Greenhouse gas and water reductions form part of the new corporate targets, including a target to reduce greenhouse gas emissions by 50% per tonne of production from the 2010 baseline.

Approximately 130 Orica sites and vehicle fleets around the world report energy consumption, energy production and greenhouse gas emissions into a centralised Environmental Performance Management System. Orica's energy intensity in 2011 was 4.15 GJ per tonne of production. This represents a 13 percent decrease compared to 2010. The Company's net greenhouse gas emissions for 2011 were 2,552,000 tonnes of carbon dioxide equivalent (tCO₂e), a reduction of 10 percent compared to 2010.

The Energy Efficiency Opportunities Assessment (EEOA) programme has been completed at Orica's Kooragang Island (NSW), Yarwun (Qld) sites and at Botany (NSW). The assessment process undertaken at each of the sites involved Orica's corporate sustainability team advising the site management team of the programme framework and expectations. The site teams then allocated resources, both financial and personnel, to carry out the assessment using a method approved by the Sustainability Team. Kooragang Island was part of an EEOA trial assessment programme in 2006.

All sites had a Sustainability Champion in place to lead the teams through the EEOA process.

People

Orica facilities covered by EEOA have complex chemical manufacturing processes. At all plants, process experts formed part of the assessment team. In addition, teams included reliability and plant engineers, sustainability specialists, site managers, representatives from manufacturing teams and an external Energy Management Consultant, who worked with the Federal Government's EEOA team in developing the guidelines for the programme.

The purpose of these teams is to collaborate and demonstrate alternative perspectives and practices with a view to further innovation at each plant, through conscious business case analysis to capture and enhance energy efficient opportunities

Information and Data Analysis

This is discussed in detail for each site in their individual summary sections. The approach taken was similar at all sites and was consistent with EEO methodology. The slight differences are due to the different levels of energy use and business structures at each site

Corporate Summary

Orica requires all large and medium sites to report energy consumption, greenhouse gas emissions, water consumption, waste generation and production into an internal database on a monthly basis. All small sites must report quarterly. The Company reports both gross and intensity (i.e. per tonne of production) figures to the Board on a monthly basis and to the community and stakeholders through the annual Orica Sustainability Report which is available on-line at www.orica.com/sustainability.

At Yarwun individual plants are sub-metered for natural gas and steam use, Kooragang Island has extensive natural gas and electricity sub-metering and the larger energy users at Botany have sub-metering for steam, natural gas and electricity.

For the EEOA, the Energy Management Consultant analysed this data using various techniques including regression analysis and rolling 12 month plots to develop relationships between energy use and production, and generate internal benchmarks prior to the workshops. These were discussed in detail with relevant plant experts prior to workshops and at the workshops.

Plant experts have developed energy and mass balances with support from the Energy Management Consultant where required.



Opportunity Identification and Evaluation

This is discussed in detail for each site in their individual summary sections. The approach taken was similar at all sites and was consistent with EEO methodology. The slight differences are due to the different levels of energy use and business structures at each site

The results of each assessment is shown under Table 2.2 for each site

With the Clean Energy Future Act Orica will re-evaluate all opportunities not already implemented to take into account changes in gas and electricity prices in the next two years. In addition the Company will investigate potential funding support under the Clean Technology Funding Program.

Decision Making

This is discussed in detail for each site in their individual summary sections. The approach taken was similar at all sites and was consistent with EEO methodology. The slight differences are due to the different levels of energy use and business structures at each site

Communication

Orica communicates sustainability information to employees in a variety of manners including online newsletters, email notifications, presentations and reports.

The Orica Update is a newsletter produced by the Company on a monthly basis which details many forms of Company news, including sustainability-related projects and updates. The Orica Update is translated into 12 languages besides English.

Orica has a sustainability website accessible through the Company's intranet. This website details Orica's sustainability strategy, updates on events and relevant information.

Orica Sustainability publishes a quarterly newsletter "Towards No Harm" that details activities underway within Orica that are progressing the organisation towards its sustainability vision. This newsletter is sent directly to a group of Sustainability Champions and is made available through the Company intranet.

The CEO and Board Safety, Health and Environment (SH&E) Committee were presented with Orica's Australian energy use and cost relative to operating cost and profit. They will communicate the outcomes of the EEOA assessments to site personnel involved in the assessments in the first quarter of 2011.

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

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

Kooragang Island

Total energy use in the last financial year

11,604,332

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

72.2

%

Accuracy of above estimates related to energy use assessed - only required if not ±5% or better

%

Period over which assessment was undertaken

April 2006

December 2006

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

Leadership and People (Additional Detail)

Resources were allocated for carrying out the Assessment, which has been used as a Case Study by the EEO program. As an energy intensive site energy efficiency KPI's are included in all relevant managers performance targets

A Sustainability Steering Committee, which includes the Site Manager, Ammonia Plant Manager, Nitrates Plant Manager, Raw Materials Manager and Environmental Manager, was established to oversee the implementation of these projects and also to review energy use and costs.

As Orica's most energy intensive site, the impact of energy use and cost on operating cost and profit is regularly reviewed by this Team. In addition, these matters are discussed with the broader Site Management Team on a regular basis.

Information and Data Analysis

The site has two main production areas and detailed analysis energy use against production was carried out for both areas prior to the Opportunity Identification Workshop. This used various analytical techniques, including use per tonne scatter and rolling 12 month total graphs. This analysis did identify the need for additional electricity sub-metering which has been installed over the last 5 years.

Natural gas use which accounts for over 95% of site energy use and over 80% of the cost is continuously monitored and daily reports produced. Over 96% of the gas use is used in the ammonia plant and gas use efficiency is a key target that is



constantly displayed to the Ammonia Control Room Operator, who is expected to ensure the plant runs to target.

Electricity use from the main site and major sub meters is collected by the site distributed control system. Monthly reports are produced which analyses consumption of electricity against budgets.

As a continuous chemical manufacturing facility detailed energy balances existed for all site gas use and mass balances existed for ammonia and nitrates area manufacturing processes. The ammonia plant also had a detailed steam balance. As part of the EEO assessment, a site electricity balance was produced as well as a nitrates steam balance. This steam balance did indicate significant opportunities in steam savings across the site.

The Ammonia Plant capacity was expanded in June 2011 and the steam and gas balance have been updated. There is a major expansion planned over the next 4 years in the Nitrates area. Following completion of this project all site energy and mass balances will be updated prior to the next assessment workshop.

Orica participates in a global ammonia manufacturing benchmarking study which identified the Kooragang Island Ammonia Plant as one of the most efficient plants of its size and technology in the world.

Opportunity Identification and Evaluation

The assessment of opportunities was undertaken using a workshop approach, with representatives from technical, operations, reliability, sustainability and external experts to initially identify 71 potential opportunities in 2006. Evaluation by the site team and external consultant initially found that 14 of the 71 opportunities identified were both technically feasible and have a payback of less than four years.

Between 2006 and 2010 changes in plant operations, energy price increases and regular review of energy opportunities identified a further 7 opportunities.

Following the introduction of a carbon price combined with significant increases in energy prices over the last two years required the site to review the list of opportunities in Q3 2011. An additional 11 opportunities originally evaluated to have paybacks of well over 4 years are now potentially viable.

In light of the major site expansion of the site, with increases in ammonia, nitric acid and ammonium nitrate production, it is not sensible to carry out the next EEO assessment until after these are complete. Therefore EEO assessment activities will focus on evaluating these additional 11 opportunities to +/- 30%

Improved energy efficiency is a critical success factor in the expansion projects with the Ammonia Plant phase of the expansion project expected to result in a 4% improvement in gas efficiency (GJ/t). The improvement in gas efficiency is equivalent to saving 400,000GJ/yr of natural gas and 20,000t/yr of CO₂.

Electricity imported from the grid is expected to decrease by approximately 8% following completion of the Ammonia Plant and Nitrates Plant expansion.



Decision Making

Opportunities that were technically feasible and that meet the Orica investment criteria have been incorporated into existing systems onsite to manage implementation, with projects incorporated into the capital or operational plans.

Management with responsibility for decision making are presented with site energy use and cost, relative to site operating costs and profit as per the EEO assessment guidelines.

Communication

In addition to Corporate activities, the Energy Steering Team will develop communication packages to raise awareness of site energy issues of site employees including long-term contractors. In addition, specific energy training will be given to key managers and employees who can particularly impact on energy use. For example lighting energy efficiency for Electrical Engineers and Supervisors.

* Please note that, for individual sites that use more than 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

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

Table 2.2 – Energy efficiency opportunities identified in the assessment									
Status of opportunities identified to an accuracy of better than or equal to $\pm 30\%$		Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
			0 – < 2 years		2 – \leq 4 years		> 4 years		
			No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Implemented	13	9	133,001	3	34,406	1	101	167,508
	Implementation Commenced	4	2	30,522	2	94,274			124,796
	To be Implemented	2	2	158,513					158,513
	Under Investigation	1	1	14,206					14,206
	Not to be Implemented	1			1	15			15
Outcomes of assessment	Total Identified	21	14	336,241	6	128,695	1	101	465,037
Status of opportunities identified to an accuracy of worse than $\pm 30\%$									
Business Response	Implemented	-							0
	Implementation Commenced	-							0
	To be Implemented	-							0
	Under Investigation	11	0		4	15,815	7	4,080	19,895
	Not to be Implemented	-							0
Outcomes of assessment	Total Identified	11	-	-	4	15,815	7	4,080	19,895

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

Yarwun

Total energy use in the last financial year

2,916,534

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

18.1

%

Accuracy of above estimates related to energy use assessed - only required if not ±5% or better

%

Period over which assessment was undertaken

August 2007

December 2008

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

Opportunity Identification and Evaluation

The assessment undertaken at Yarwun used a similar workshop approach to the one used at Kooragang Island, and was completed in 2009. A more detailed process based on Orica's Hazard Study process was used at Yarwun, which built on a review of the effectiveness of the methodology used previously at Kooragang Island. This expanded approach was used as the site has doubled in size in the last three years and the team wanted to ensure that all sustainability-related opportunities were identified (which included water and waste minimisation). Orica found the EEOA methodology to be both effective and transferable to water and waste minimisation.

The initial workshop identified 147 energy-related opportunities. Rationalising several related opportunities into a single opportunity and carrying out initial feasibility studies has identified that some 40 opportunities are both technically feasible and potentially have a payback of less than four years.

It should be noted that one opportunity under investigation has moved from evaluated to an accuracy of under 30% to over 30% following changes to the Nitrates area compressed air system.

Decision Making

Opportunities were assessed to determine technical feasibility and whether the payback criteria could be met. The group assessing the projects prioritised the list based on potential savings, initial capital outlay, timeframe for payback and ease of implementation. A number of projects were completed within the period of identification and decision making. Other viable



projects within the EEOA guidelines will be incorporated into the existing project management systems onsite to co-ordinate the implementation in a timeframe appropriate to each individual project. This process will allow future reviews of those projects currently deemed to meet the requirements, whilst allowing a review of those which do not presently meet these requirements.

* Please note that, for individual sites that use more than 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

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

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	21	17	65,787	2	2,430	2	165	68,382
	Implementation Commenced	-	0	-	-	-	0	0	0
	To be Implemented	4	2	7,140	2	5,655	0	0	12,795
	Under Investigation	3			1	2,700	2	460,814	463,514
	Not to be Implemented	4					4	46,576	46,576
Outcomes of assessment	Total Identified	32	19	72,927	5	10,785	8	507,555	591,267
Status of opportunities identified to an accuracy of worse than ±30%									
Business Response	Implemented	6	2	2,989	1	920	3	168	4,077
	Implementation Commenced	-							0
	To be Implemented	-							0
	Under Investigation	1	1	1500					1,500
	Not to be Implemented	1					1	140	140
Outcomes of assessment	Total Identified	8	3	4,489	1	920	4	308	5,717

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

Botany Site

Total energy use in the last financial year

663,559

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

4.1

%

Accuracy of above estimates related to energy use assessed - only required if not ±5% or better

%

Period over which assessment was undertaken

January 2009

June 11

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

Opportunity Identification and Evaluation

The assessment at Botany followed similar processes to Kooragang Island and Yarwun. The facilities at Botany (including Orica’s Chloralkali manufacturing facility and Groundwater Treatment Plant) are for the most part under six years old and incorporate modern, energy efficient equipment. A total of 21 opportunities were identified as practicable for investigation. With current energy costs, 15 have paybacks less than four years. There are some additional innovative opportunities that require significant investigation into new technology to confirm viability.

Decision Making

Orica’s Botany site is split into two very distinct operations, but for the assessment the operation teams from the two plants came together for a workshop run by Orica’s Sustainability Team. This workshop identified potential opportunities in both plants as well as where synergies between the plants existed. These opportunities were then further evaluated by the separate operations teams for practicality and likely payback periods. For the Chloralkali Plant, the decision making process has been completed. Opportunities under a four year payback period have been reviewed by management responsible for decision making and decisions have been made. There are some potential opportunities at the Groundwater Treatment Plant (GTP) which require extensive investigation, including discussions with statutory authorities, to identify their viability

* Please note that, for individual sites that use more than 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

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

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	5	5	20,755					20,755
	Implementation Commenced	-							0
	To be Implemented	5	5	7,145					7,145
	Under Investigation	6			5	9,307	1	2,449	11,756
	Not to be Implemented	2			1	23	1	1,512	1,535
Outcomes of assessment	Total Identified	18	10	27,901	6	9,330	2	3,961	41,192
Status of opportunities identified to an accuracy of worse than ±30%									
Business Response	Implemented	-							0
	Implementation Commenced	-							0
	To be Implemented	-							0
	Under Investigation	3					3	34,670	34,670
	Not to be Implemented	-							0
Outcomes of assessment	Total Identified	3	-	-	-	-	3	34,670	34,670

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	Voluntary Information	
Yarwun Trim Cooling Water Booster Pump Impellers The cooling water booster pumps on Nitric Acid Plant are oversized and their output was restricted with in line restrictors. The impellers are to be machined down to give less pressure and consequently reduce electricity use	Business Response	To be Implemented
	Energy saved (GJ)	7,000
	Greenhouse gas abated (CO2-e)	1,960
	Payback period	0.2

Description of Opportunity	Voluntary Information	
Botany Steam Insulation There were a number of steam pipes with missing insulation. This insulation was installed in 2011	Business Response	Implemented
	Energy saved (GJ)	2,260
	Greenhouse gas abated (CO2-e)	269
	Payback period	1.2

Description of Opportunity	Voluntary Information	
Botany New Air Compressors Changes to the process have resulted in significantly reduced air demand The existing compressors and air treatment are oversized for this new. This is wasting energy and there is significant maintenance expenditure with this oversized equipment. Installing new efficient VSD compressor is being investigated	Business Response	Under Investigation
	Energy saved (GJ)	3,600
	Greenhouse gas abated (CO2-e)	850
	Payback period	2.5

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.