

## FIRST PUBLIC REPORT TEMPLATE

### Controlling Corporation

**Westfield Holdings Limited**

### Period to which this report relates

(See sub-section 22(2) of the Act and Regulation 7.1 of the *Energy Efficiency Opportunities Regulations (the Regulations) 2006*)

Start **1<sup>st</sup> January 2007**

End **31<sup>st</sup> December 2007**

### Part 1 - Summary of assessments conducted thus far

**Table 1.1 - Description of the way in which the corporation has carried out its assessments and over what period was each assessment taken. A statement saying that the intent and key requirements of the Energy Efficiency Opportunities legislation have been met must be made.**

(See sub-section 22(3)(a) of the Act)

**During 2007 Westfield continued to make noteworthy improvements in the way it manages its environmental impact. The approach in this area has become more integrated with the core business of the Group, leading to greater efficiency and better outcomes for the environment.**

#### **Assessment process:**

**Energy Efficiency Opportunity assessments were conducted for the calendar year 2007, the broad objectives of which was to :**

- Determine an energy mass balance for each centre**
- Identify energy efficiency opportunities**
- Create a cost benefit analysis for identified energy efficiency opportunities**
- Develop an implementation plan for assessed opportunities**

**Energy audits were conducted at all but 3 Westfield shopping centres which were under development. The audits were conducted in accordance with level 2 audit requirement of AS/NZS 3598:2000 and involved:**

- Site visits and inspection of plant and equipment and systems installed and operating**
- Analysis of energy usage, time based analysis and tracking to determine when and how energy is used**
- Listing of identified potential energy saving opportunities with estimated capital investment cost and savings assessed**
- Technical system analysis of load/capacity, life cycle and housekeeping management**
- Considering ongoing energy management and medium to long term plans.**

**Assessment results:**

The audit analysis collated the following information:

- Energy use profile for each centre audited
- Identifying and categorising Energy Efficiency Opportunities. Categories include:
  - Heating, ventilation and air conditioning systems (HVAC)
    - Consisting of the central chilled water and cooling tower systems, packaged units, air handling and ventilation equipment
  - Energy Management Control Systems (EMCS)
    - Controls upgrade to the HVAC systems to provide operational efficiency and systems controls within best practice guidelines
  - Electrical load management
    - Provisions for power factor and demand management equipment
  - Lighting systems
    - Retrofit and upgrade of existing lighting fixtures and systems including daylighting controls

**Implementation plan**

Coupled with Westfield's current capital budget, environmental and sustainability initiatives, energy efficiency opportunities identified have been incorporated into medium to long term delivery plan. The opportunities include:

- Life cycle asset management
- Financial analysis
- Staff resources to drive the sustainability mandate
- Communication and ongoing education

Westfield Holdings Limited has conducted the Energy Efficiency Opportunity assessment and reporting requirements to satisfy the key intent and requirements of the Energy Efficiency Opportunity Legislation. Westfield is committed to further develop its operating and energy procedures and management processes to deliver optimum energy and financial management.

Table 1.2 - Group member/business unit/key activity/site that have been assessed	Energy use per annum in the year the assessment is completed *	Energy data accuracy (if not within $\pm 5\%$ ) **	Reasons for not achieving data accuracy to within $\pm 5\%$ **
Westfield Shopping Centre Management Co. Pty Limited	737,233 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	53.8%	N/A	N/A
Westfield Shopping Centre Management Co. (VIC) Pty Limited	135,558 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	9.9%	N/A	N/A
Westfield Shopping Centre Management Co. (QLD) Pty. Limited	209,394 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	15.3%	N/A	N/A
Westfield Shoppingtown Carousel Pty Ltd	96,682 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	7.1%	N/A	N/A
Westfield Shopping Centre Management Co. (SA) Pty. Limited	115,718 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	8.4%	N/A	N/A
Westfield Shopping Centre Management Co. (ACT) Pty. Limited	54,020 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	3.9%	N/A	N/A
Westfield Limited	22,072 GJ	N/A	N/A
Total as a percentage of total energy use of the group covered by this report	1.6%	N/A	N/A
Westfield Holdings Limited	1,370,676	N/A	N/A

<b>Total as a percentage of total energy use of the group covered by this report</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

\* Energy Bandwidth may only be used if approved in the Assessment and Reporting Schedule

\*\* Data accuracy not within  $\pm 5\%$  can only be included if approved in the Assessment and Reporting Schedule

## Part 2a - Outcomes of and business response to opportunities that have been identified and evaluated for each group member, business unit, key activity or site assessed

(See paragraphs 3-6 of Schedule 4 and Schedule 6 of the Regulations)

Group member/business unit/key activity/site >0.5 PJ name: [Westfield Shopping Centre Management Co. Pty Limited](#)

Table 1.3 Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	*Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%) <b>Heating, ventilation and air conditioning systems (HVAC)</b>	10	5,415	5,667	11,082	10-30%
	Identified (accuracy ≤ ±30%) <b>Energy Management Control Systems (EMCS)upgrade</b>	16	12,707	143,269	155,976	10-30%
	Identified (accuracy ≤ ±30%) <b>Electrical load management</b>	3	0	0	0	10-30%
	Identified (accuracy ≤ ±30%) <b>Lighting systems upgrade</b>	32	7,513	5,858	13,371	10-30%
	Identified (accuracy > ±30%)	0	0	0	0	N/A
	<b>**Total Identified</b>	<b>61</b>	<b>25,635</b>	<b>154,794</b>	<b>180,429</b>	<b>10-30%</b>
***Business Response	Under Investigation	61	25,635	154,794	180,429	10-30%
	To be Implemented	Nil	Nil	Nil	Nil	Nil
	Implementation Commenced	Nil	Nil	Nil	Nil	Nil
	Implemented	Nil	Nil	Nil	Nil	Nil
	Not to be Implemented	Nil	Nil	Nil	Nil	Nil

\*The accuracy range for projected or actual costs, benefits and energy savings.

\*\*You must ensure that this row is the sum of the two rows above it.

\*\*\* The data contained in each row of the business response area must total to the data contained in the 'Total Identified' row.

**Note:** An opportunity is any potential change to a system, activity or piece of equipment that:

- is identified during an EEO assessment;
- is consistent with legal requirements such as OHS, and
- may result in energy savings projects with payback periods of 4 years or less.

## Part 2b - Outcomes of and business response to opportunities that have been identified and evaluated for each group member, business unit, key activity or site assessed

(See paragraphs 3-6 of Schedule 4 and Schedule 6 of the Regulations)

Group member/business unit/key activity/site >0.5 PJ name: [Westfield Shopping Centre Management Co. \(ACT\) Pty Limited](#)

Table 1.3 Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	*Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%) <b>Heating, ventilation and air conditioning systems (HVAC)</b>	1	0	453	453	10-30%
	Identified (accuracy ≤ ±30%) <b>Energy Management Control Systems (EMCS)upgrade</b>	1	0	6,397	6,397	10-30%
	Identified (accuracy ≤ ±30%) <b>Lighting systems upgrade</b>	1	294	0	294	10-30%
	Identified (accuracy > ±30%)	0	0	0	0	N/A
	**Total Identified	3	294	6,850	7,144	10-30%
***Business Response	Under Investigation	3	294	6,850	7,144	10-30%
	To be Implemented	Nil	Nil	Nil	Nil	Nil
	Implementation Commenced	Nil	Nil	Nil	Nil	Nil
	Implemented	Nil	Nil	Nil	Nil	Nil
	Not to be Implemented	Nil	Nil	Nil	Nil	Nil

\*The accuracy range for projected or actual costs, benefits and energy savings.

\*\*You must ensure that this row is the sum of the two rows above it.

\*\*\* The data contained in each row of the business response area must total to the data contained in the 'Total Identified' row.

**Note:** An opportunity is any potential change to a system, activity or piece of equipment that:

- is identified during an EEO assessment;
- is consistent with legal requirements such as OHS, and
- may result in energy savings projects with payback periods of 4 years or less.

## Part 2c - Outcomes of and business response to opportunities that have been identified and evaluated for each group member, business unit, key activity or site assessed

(See paragraphs 3-6 of Schedule 4 and Schedule 6 of the Regulations)

Group member/business unit/key activity/site >0.5 PJ name: [Westfield Shopping Centre Management Co. \(VIC\) Pty. Limited](#)

Table 1.3 Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	*Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%) <b>Heating, ventilation and air conditioning systems (HVAC)</b>	2	3,086	439	3,525	10-30%
	Identified (accuracy ≤ ±30%) <b>Energy Management Control Systems (EMCS)upgrade</b>	1	0	14,642	14,642	10-30%
	Identified (accuracy ≤ ±30%) <b>Electrical load management</b>	1	0	0	0	10-30%
	Identified (accuracy ≤ ±30%) <b>Lighting systems upgrade</b>	3	402	342	744	10-30%
	Identified (accuracy > ±30%)	0	0	0	0	N/A
	<b>**Total Identified</b>	<b>7</b>	<b>3,488</b>	<b>15,423</b>	<b>18,911</b>	<b>10-30%</b>
***Business Response	Under Investigation	7	3,488	15,423	18,911	10-30%
	To be Implemented	Nil	Nil	Nil	Nil	Nil
	Implementation Commenced	Nil	Nil	Nil	Nil	Nil
	Implemented	Nil	Nil	Nil	Nil	Nil
	Not to be Implemented	Nil	Nil	Nil	Nil	Nil

\*The accuracy range for projected or actual costs, benefits and energy savings.

\*\*You must ensure that this row is the sum of the two rows above it.

\*\*\* The data contained in each row of the business response area must total to the data contained in the 'Total Identified' row.

**Note:** An opportunity is any potential change to a system, activity or piece of equipment that:

- is identified during an EEO assessment;
- is consistent with legal requirements such as OHS, and
- may result in energy savings projects with payback periods of 4 years or less.

## Part 2d - Outcomes of and business response to opportunities that have been identified and evaluated for each group member, business unit, key activity or site assessed

(See paragraphs 3-6 of Schedule 4 and Schedule 6 of the Regulations)

Group member/business unit/key activity/site >0.5 PJ name: [Westfield Shopping Centre Management Co. \(QLD\) Pty. Limited](#)

Table 1.3 Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	*Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%) <b>Heating, ventilation and air conditioning systems (HVAC)</b>	1	0	680	680	10-30%
	Identified (accuracy ≤ ±30%) <b>Energy Management Control Systems (EMCS)upgrade</b>	4	13,793	21,638	35,431	10-30%
	Identified (accuracy ≤ ±30%) <b>Lighting systems upgrade</b>	10	636	1,398	2,033	10-30%
	Identified (accuracy > ±30%)	0	0	0	0	N/A
	**Total Identified	15	14,429	23,716	38,144	10-30%
***Business Response	Under Investigation	15	14,429	23,716	38,144	10-30%
	To be Implemented	Nil	Nil	Nil	Nil	Nil
	Implementation Commenced	Nil	Nil	Nil	Nil	Nil
	Implemented	Nil	Nil	Nil	Nil	Nil
	Not to be Implemented	Nil	Nil	Nil	Nil	Nil

\*The accuracy range for projected or actual costs, benefits and energy savings.

\*\*You must ensure that this row is the sum of the two rows above it.

\*\*\* The data contained in each row of the business response area must total to the data contained in the 'Total Identified' row.

**Note:** An opportunity is any potential change to a system, activity or piece of equipment that:

- is identified during an EEO assessment;
- is consistent with legal requirements such as OHS, and
- may result in energy savings projects with payback periods of 4 years or less.

## Part 2e - Outcomes of and business response to opportunities that have been identified and evaluated for each group member, business unit, key activity or site assessed

(See paragraphs 3-6 of Schedule 4 and Schedule 6 of the Regulations)

Group member/business unit/key activity/site >0.5 PJ name: [Westfield Shopping Centre Management Co. \(SA\) Pty. Limited](#)

Table 1.3 Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	*Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%) <b>Energy Management Control Systems (EMCS)upgrade</b>	2	0	17,800	17,800	10-30%
	Identified (accuracy ≤ ±30%) <b>Lighting systems upgrade</b>	5	5,553	1,193	6,746	10-30%
	Identified (accuracy > ±30%)	0	0	0	0	N/A
	<b>**Total Identified</b>	<b>7</b>	<b>5,553</b>	<b>18,993</b>	<b>24,546</b>	<b>10-30%</b>
***Business Response	Under Investigation	7	5,553	18,993	24,546	10-30%
	To be Implemented	Nil	Nil	Nil	Nil	Nil
	Implementation Commenced	Nil	Nil	Nil	Nil	Nil
	Implemented	Nil	Nil	Nil	Nil	Nil
	Not to be Implemented	Nil	Nil	Nil	Nil	Nil

\*The accuracy range for projected or actual costs, benefits and energy savings.

\*\*You must ensure that this row is the sum of the two rows above it.

\*\*\* The data contained in each row of the business response area must total to the data contained in the 'Total Identified' row.

**Note:** An opportunity is any potential change to a system, activity or piece of equipment that:

- is identified during an EEO assessment;
- is consistent with legal requirements such as OHS, and
- may result in energy savings projects with payback periods of 4 years or less.

## Part 2f - Outcomes of and business response to opportunities that have been identified and evaluated for each group member, business unit, key activity or site assessed

(See paragraphs 3-6 of Schedule 4 and Schedule 6 of the Regulations)

Group member/business unit/key activity/site >0.5 PJ name: [Westfield Shoppingtown Carousel Pty Ltd](#)

Table 1.3 Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	*Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%) <b>Energy Management Control Systems (EMCS)upgrade</b>	1	0	6,260	6,260	10-30%
	Identified (accuracy ≤ ±30%) <b>Lighting systems upgrade</b>	6	250	2,373	2,623	10-30%
	Identified (accuracy > ±30%)	0	0	0	0	N/A
	<b>**Total Identified</b>	<b>7</b>	<b>250</b>	<b>8,633</b>	<b>8,883</b>	<b>10-30%</b>
***Business Response	Under Investigation	7	250	8,633	8,883	10-30%
	To be Implemented	Nil	Nil	Nil	Nil	Nil
	Implementation Commenced	Nil	Nil	Nil	Nil	Nil
	Implemented	Nil	Nil	Nil	Nil	Nil
	Not to be Implemented	Nil	Nil	Nil	Nil	Nil

\*The accuracy range for projected or actual costs, benefits and energy savings.

\*\*You must ensure that this row is the sum of the two rows above it.

\*\*\* The data contained in each row of the business response area must total to the data contained in the 'Total Identified' row.

**Note:** An opportunity is any potential change to a system, activity or piece of equipment that:

- is identified during an EEO assessment;
- is consistent with legal requirements such as OHS, and
- may result in energy savings projects with payback periods of 4 years or less.

## Details of at least three significant opportunities found through EEO assessments

(See paragraph 7 of Schedule 4 of the Regulations)

Details must include a brief description of the opportunity and may optionally include details of the costs of implementation, energy/dollar savings and any other benefits (such as greenhouse reductions).

**Table 1.4**

### Opportunity 1

**Subsidiary:** Westfield Shopping Centre Management Co. Pty Limited

**Centre:** Chatswood, NSW

**Opportunity category:**

Energy Management and Controls System (EMCS) Optimization

**Opportunity description:**

The energy saving opportunity would involve the upgrade of the existing building management and control systems (BMCS). The EMCS component of the BMCS provides for monitoring, control and optimization of a number of key components of the heating, ventilation and air conditioning (HVAC) system. The upgrade would provide the following functionalities:

1. Chiller optimal control to include:
  - a. Chilled water temperature reset
  - b. Condenser temperature optimal control
  - c. Optimal chiller selection and loading
2. Pumps variable speed drives (VSDs)
3. Air handling unit fan VSDs
4. Enthalpy based economizer cycle
5. Demand management

The total HVAC energy usage is currently 58%. If the opportunity was implemented, it has been estimated that the potential annual energy saving would be 2,832,621 kWh or 10,197 GJ.

In addition, a potential benefit of 20.94% reduction in annual energy usage and resulting reduction of 2,918 tCO<sub>2-e</sub> GHG emissions has been estimated.

The estimated cost of upgrading the BMCS is \$944,845; this upgrade could be implemented over a 2 year period.

### Opportunity 2 \*

**Subsidiary:** Westfield Shopping Centre Management Co. (QLD) Pty Limited

**Centre:** Chermside, QLD

**Opportunity category:**

Lighting upgrade – Replacement of 250 Dichroic down lights.

**Opportunity description:**

The replacement of the less efficient 35W – 70W dichroic down lights with the recommended 11W compact fluorescent down lights would if implemented significantly reduce the energy used. Estimated potential reduction in energy use is 80%.

The total lighting energy usage is currently 24%. If the opportunity was implemented the estimated potential annual energy saving is 65,963 kWh or 237 GJ.

In addition, a potential benefit of 0.37% reduction in annual energy usage and resulting reduction of 69 tCO<sub>2-e</sub> GHG emissions has been estimated.

Estimated cost of replacing lighting fixtures is \$8,300; this opportunity could be implemented over a 3 month period.

**Opportunity 3 \***

**Subsidiary:** Westfield Shopping Centre Management Co. Pty. Limited

**Centre:** Hornsby, NSW

**Opportunity category:**

HVAC system installation of variable speed drives (VSDs) on Carpark and Kitchen/Toilet exhaust fans.

**Opportunity description:**

The energy saving opportunity would involve the installation of new VSDs on the existing 7-off carpark exhaust fans, 9-off exhaust fans with integrated control to carbon monoxide (CO) sensors and kitchen timer schedules interlinked to control speed of fans. The installation would include:

1. Assessment of systems to comply with radio frequency emission of new VSD drives.
2. Installation of VSDs and speed controls algorithm for fans.
3. Controls and schedule of kitchen exhaust systems.
4. Upgrade of relevant BMCS component and CO sensors.

The total ventilation energy usage is currently 10%. If the opportunity was implemented the estimated potential annual energy saving is 517,980 kWh or 1,865 GJ. The estimated potential reduction in energy use is 45%.

In addition, a potential benefit of 3.67% reduction in annual energy usage and resulting reduction of 553 tCO<sub>2-e</sub> GHG emissions has been estimated.

The estimated cost in upgrading VSD controls on designated fans is \$155,227; this opportunity could be implemented over a 6 month period.

\*If there are less than three significant opportunities, provide details of those identified.

\*\*If no significant opportunities have been identified in the assessment, a statement to this effect.

### Part 3 - Voluntary Contextual Information

Reporting corporations may supply additional information that provides more context to the public report. Such information may include:

**NOT USED**

### Part 4 - Declaration

(See paragraph 8 of Schedule 4 of the Regulations and paragraph 22(4)(c) of the Act)

The information included in this report is to the best of my knowledge, correct and in accordance with the *Energy Efficiency Opportunities Act 2006* and *Energy Efficiency Opportunities Regulations 2006*.



**Robert Jordan - Managing Director Australia/NZ**