



Environmental Assessment Report

Prepared for



Level 7 / 160 Queen Street, Melbourne, VIC 3000

Based on the assessment performed on

16th April 2008

Environmental Assessment Report produced using



DATE	VERSION	COPY
16 April 08	Final	Client

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1 Introduction

This Environmental Assessment Report for the Carbon Association of Australasia Pty. Ltd (The Carbon Association) provides an indicative understanding of the carbon and water footprint for the organisation. This report offers key recommendations towards minimising environmental impact by analysing energy and water use, in terms of category, locations and individual device consumption. Organisations must first calculate baseline energy and water consumption in order to formulate effective action plans towards carbon and water reduction. By linking the results of the report to environmental Key Performance Indicators (KPI's), Carbon Association is committing the organisation to a process of ongoing environmental impact reduction.

2 Executive Summary

Sustainable Footprint conducted an environmental assessment for Carbon Association on Tuesday 16th April, 2008. The purpose of the assessment was to assess the Carbon Association's energy, gas, transport and water usage. The building characteristics were also documented. Table 1 below displays the summary of findings from the audit. The total greenhouse gas (GHG) emissions at Carbon Association was 20,118kg per annum, costing the organisation \$1,916

KPI's indicators are metrics used to define an organisations progress towards achieving measurable goals. Below are four sustainable KPI's nominated by Carbon Association to be set as goals and achieved over the next 12 months:

- Energy reduction of 7.5% below audit results
- Environmental Training covering 100% of full time staff

The proposed overall reduction targets have been listed in Table 1 and are linked to the recommended KPI's, based on the water and energy consumption information provided during the audit process. Reduction targets that have been set incorporate:

- device retrofit procedures
- other appliance recommendations

In addition to these recommendations, behavioural changes can further reduce energy consumption, GHG emissions, water consumption and the overall cost to the business.

GHG emissions (energy and transport) at the Carbon Association are 20,118 kg per annum. With a reduction of 43% over all GHG emitting sectors, Carbon Association can reduce total GHG emissions by 8,641kg. The Carbon Association's total expenditure on energy, water and transport is \$1,916 per annum (Table 1). Table 1 also indicates a proposed cost savings to Carbon Association of \$833 per annum assuming the recommended retrofit and installation changes are implemented.

Table 1. Summary of The Carbon Association's Energy Consumption

Energy Estimate	Current Consumption	Proposed Consumption	Reduction	Proposed Net Savings
Total Energy (kWh)	14,739	8,329	43%	6,410
Total GHG (kg)	20,118	11,476	43%	8,641
Total Cost p.a. (\$)	1,916	1,083	43%	833

The sources of the Carbon Association's GHG emissions are displayed in Table 2. Table 2 provides an outline of the Carbon Association's GHG emissions according to the energy consuming sectors: Electrical Appliances, Lighting Devices, Heating & Cooling Appliances, IT Equipment, Gas Appliances and Transport.

The Carbon Association's largest GHG emitter is Lighting Devices, producing 11961kg of GHG and costing \$1139 per annum as shown in Table 3 and Figure 1. IT Equipment usage represents the second highest emitter of GHG, producing 7629kg of GHG and costing \$727 and per annum.

Table 2. GHG Emission by GHG Emitting Sector of The Carbon Association as a cost to Business

GHG Emitting Sector	kWh	Cost (\$)	GHG (kg p.a.)	Percentage GHG Emissions (%)
Lighting Devices	8,763	1,139	11,961	59.5%
IT Equipment	5,589	727	7,629	37.9%
Heating & Cooling Appliances	350	45	478	2.4%
Electrical Appliances	37	5	50	0.2%
Transport	N/A	N/A	N/A	N/A
Gas Appliances	N/A	N/A	N/A	N/A
Total	14,739	1,916	20,118	100

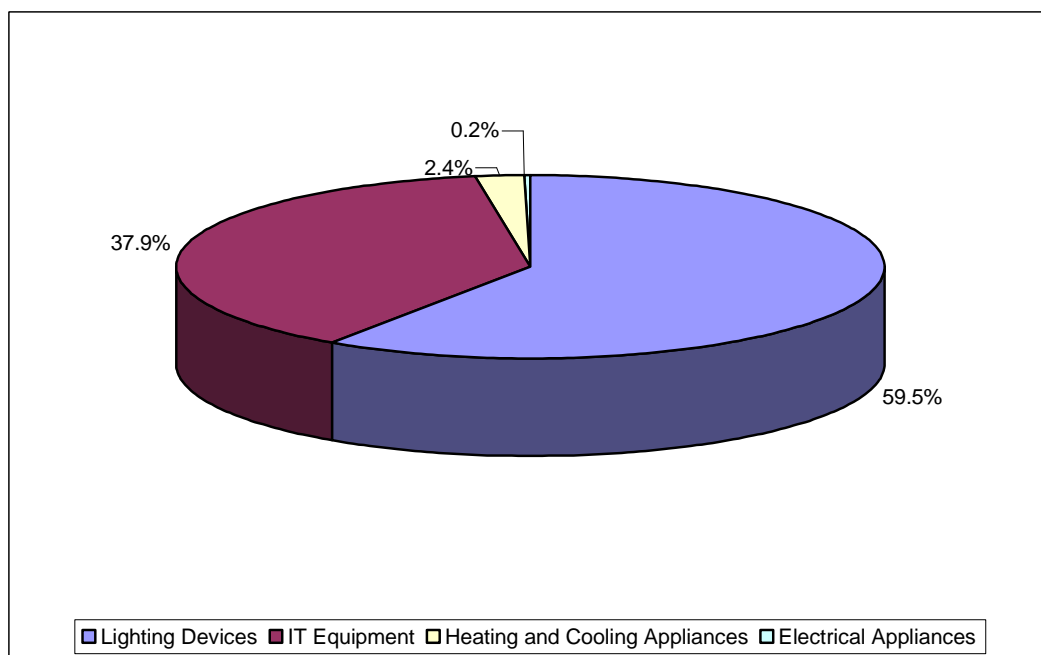


Figure 1. Sources of Greenhouse Gas Emissions

To accurately monitor an organisation's growth compared to its carbon and water footprint, total GHG emissions and water consumption must be measured against the number of FTE staff at the time of the audit. This allows organisations to monitor the effectiveness of energy and water efficiency initiatives.

At the time of the audit the largest GHG contributor by FTE is Lighting with 1,994kg of GHG produced per FTE per annum (Table 3). The second highest GHG emitter per FTE is the IT Equipment, with 1,272kg of GHG produced per FTE per annum.

Table 3. GHG production per FTE employee

Energy	GHG emissions per FTE (kg p.a.)
Lighting Devices	1,994
IT Equipment	1,272
Heating & Cooling Appliances	80
Electrical Appliances	8
Gas Appliances	N/A
Transport	N/A
TOTAL	3,354

Water	Consumption per FTE (kL p.a.)
Water Appliances	N/A
TOTAL	N/A

The Sustainable Footprint Roadmap explains the steps recommended by Sustainable Footprint to achieve the most effective possible outcomes in terms of sustainability (Figure 2).

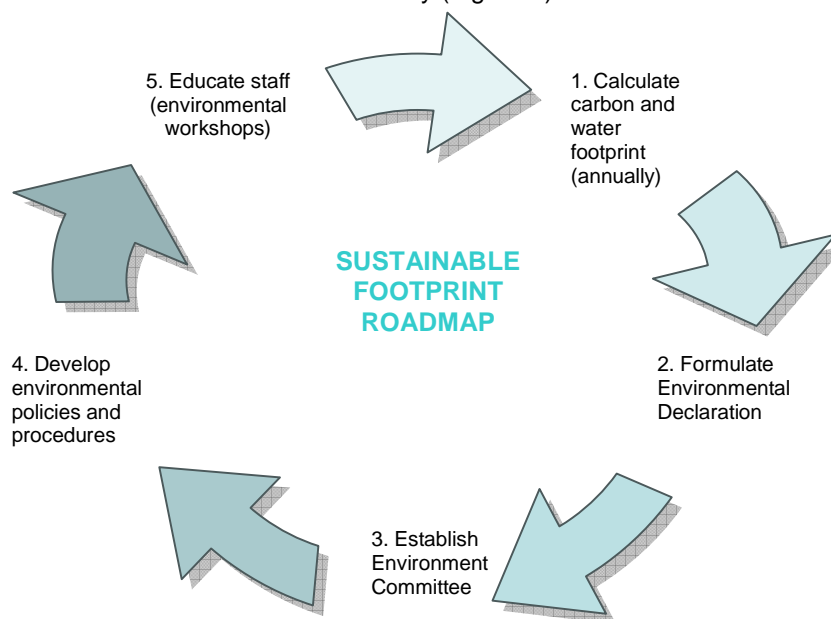


Figure 2. Sustainable Footprint Roadmap

All information pertaining to this report is accessible through Carbon Association’s designated and secure login at www.offsetgo.com/clientlogin (Appendix 1)

3 Methodology

The methodology outlined below explains the procedure used to conduct this environmental audit. The audit calculates an organisations carbon footprint based on Scope 1 and Scope 2 emissions, as outlined in the National Greenhouse Accounts (NGA) Factors¹.

'Scope 1 covers direct GHG emissions from sources within the boundary of an organisation such as fuel combustion and manufacturing processes.'

'Scope 2 covers indirect GHG emissions from the consumption of purchased electricity, steam or heat produced by another organisation.'

The audit is performed in accordance with the Australian/New Zealand Standard – Energy Audits (AS/NZS 3598:2000)². In this standard a Level 2 audit is described as follows:

'A Level 2 audit identifies the sources of energy to a site, the amount of energy supplied, and what the energy is used for. It also identifies areas where savings may be made, recommends measures to be taken, and provides a statement of costs and potential savings. A Level 2 audit is an energy use survey, which is expected to provide a preliminary assessment of costs and savings. Accuracy of figures would generally be within ± 20%.'

The information collected at the pre-audit and audit stages allow Sustainable Footprint to calculate an organisation's environmental footprint and GHG emissions using OffsetGo - Carbon Emission Reduction Software.

The information collected to produce this report includes:

- Audit area (m²) of the organisation
- Specific locations within the organisation
- Number of current full time equivalent (FTE) employees
- Operating hours of the organisation
- Quantity and consumption values of all energy and water consuming devices associated with the site
- Operating hours of all devices
- Annual expenditure on energy and water, using verifiable information from utility bills from up to the previous two years of organisation operation
- Transport data for both motor vehicles and flights

Calculations and assumptions

1. Greenhouse Gas calculations are based on the factors outlined in the National Greenhouse Accounts (NGA) Factors¹.
2. In some instances, gas consumption is converted from mega joules (MJ) to kilowatt-hours (kWh) per annum, for consistency of reporting.
3. Gas will be included in energy calculations throughout this report.
4. Energy and water costs have been derived from utility bills supplied.
5. Motor vehicle transport costs have been calculated using the Australian Tax Office guidelines on vehicle cost per kilometre.
6. Air travel GHG emissions have been calculated using the World Resource Institute³.
7. Individual devices may be represented in two categories as a particular device may consume more than one type of energy or input. As such, individual devices may appear in more than one section of the report.
8. The information in this report is accurate, based upon the reliability of the data provided to the assessors at the time the audit was conducted.
9. Waste will not be assessed as part of this report. For further detail about dealing with waste, please use your log in as outlined in Appendix 1 to gain access to the latest information on dealing with waste issues in terms of sustainability.

4 Site Details

Contact Details	Mr. Lyn Price
Title	Director/Founder
Organisation	The Carbon Association Australasia Limited
Address	Level 7, 160 Queen Street, Melbourne, Victoria, 3000
Phone Number	0400 404 445
Email Address	Lynprice1@bigpond.com
Audit Area (m²)	150m ²
Site Location	Level 7, 160 Queen Street, Melbourne, Victoria, 3000
Industry Type	Membership Association
Member of a Body Corporate	Yes
Full Time Equivalent Employees	6
Percentage Green Energy Purchased	0%
Percentage Carbon Offset Purchased	0%

Building Envelope

The building envelope is an integral component of any building. The building envelope protects the occupants and plays a vital role in regulating the internal environment contained within the building. It is made up of the building's roof, walls, floors, doors and windows. The building envelope controls the flow of energy between the interior and exterior of the building. The effectiveness of the building envelope as a barrier to the external temperature is directly related to the energy consumption required to manage the internal environment. The building envelope is a vital consideration when focusing on implementing energy reduction strategies.

Building Type	Multi Level Office
Construction Material	Masonry
Natural Lighting	Average
Skylights Present	No
Types of Window Glazing	Standard Glass
External shading to glazing:	
• Structure	External buildings
• Natural i.e. trees	None
• Blinds	Internal
Area of Glazing:	
• North Facing	4m ²
• South Facing	12m ²
• East Facing	Nil
• West Facing	8m ²
Assumed Insulation Levels:	
• Ceiling	Good
• Walls	Average
Potential Future Improvements:	
• Photovoltaic Cells	Consult with Building Management
• Insulation Retrofit / Upgrade	
• Solar Hot Water	
• Rainwater Capture	
Draught Sealing Present	Good

* These estimates are indicative percentages.

5 Energy

The total energy used by the Carbon Association includes all energy consumed on-site using electricity and gas.

The Carbon Association's energy consumption over a 12 month period is represented in Table 4 and Figure 3. During this period the Carbon Association consumed 14,869kWh of electricity, costing \$2,002 per annum. 21/05/07 – 21/06/07 was the Carbon Association's highest electrical consuming period using 1,650kWh of electricity and costing \$224 (Table 5). 31/12/07 – 18/01/07 was the Carbon Association's lowest electrical consuming period using 1,089kWh and costing \$148.

Table 4. Monthly Gas and Electrical Utility Cost

Period	Electricity Consumed (kWh)	Electricity Cost (\$)
22/11/06 – 18/12/06	1,250	167
31/12/06 – 18/01/07	1,089	148
18/01/07 - 20/02/07	1,440	194
21/02/07 – 21/03/07	1,350	182
21/03/07 – 18/04/07	1,320	177
18/04/07 – 21/05/07	1,540	207
21/05/07 – 21/06/07	1,650	224
21/06/07 – 19/07/07	1,640	220
21/08/07 – 19/09/07	1,280	172
19/09/07 – 18/10/07	1,210	163
18/10/07 – 21/11/07	1,100	148
TOTAL	14,869	2,002

Figure 3 assists the Carbon Association in developing carbon reduction strategies that reflect seasonal variance and peak operating times.

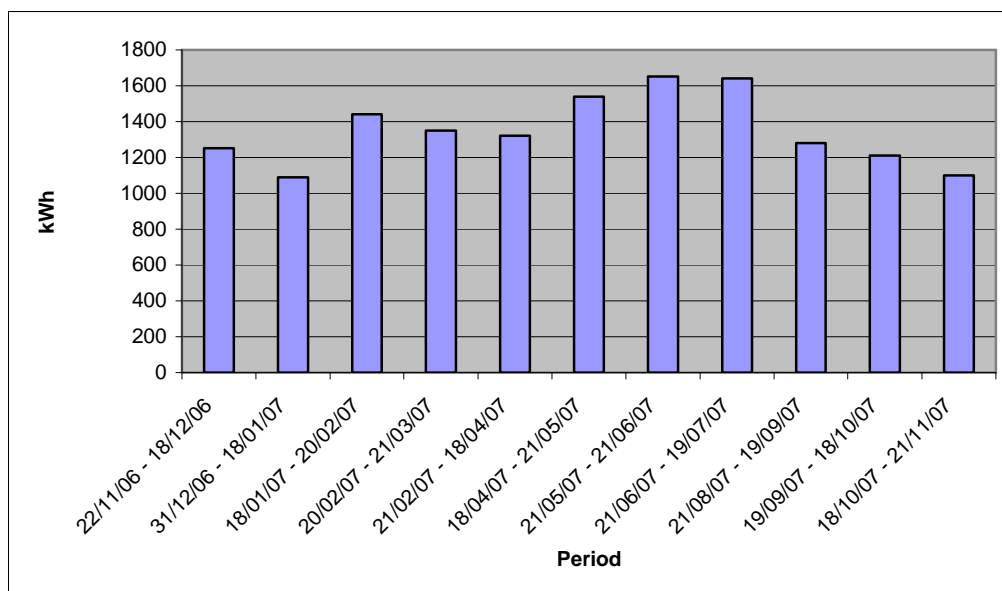


Figure 3. Monthly Energy Consumption

Using the above utility information, the energy consumed by the Carbon Association is categorised into five energy using sectors:

1. Electrical Appliances
2. Lighting Devices
3. Heating & Cooling Appliances
4. IT Equipment
5. Gas Appliances

Energy consumption, GHG emissions and cost by each energy consuming sector is displayed in Table 5 and Figure 4. The Carbon Association consumed 14,738 kWh of energy, produced a total of 20,117kg of GHG per annum, costing \$1,916. Lighting Devices are the highest individual category contributing 11,961kg of GHG per annum. The second highest contributor is the IT Equipment contributing 7,629kg per annum.

Table 5. Energy consumption, GHG Emission and Cost according to each Energy consuming sector category

GHG Emitting Sector	kWh	Cost (\$)	GHG (kg p.a.)	Percentage GHG Emissions (%)
Lighting Devices	8,763	1,139	11,961	59.5%
IT Equipment	5,589	727	7,629	37.9%
Heating & Cooling Appliances	350	45	478	2.4%
Electrical Appliances	37	5	50	0.2%
Transport	N/A	N/A	N/A	N/A
Gas Appliances	N/A	N/A	N/A	N/A
Total	14,739	1,916	20,118	100

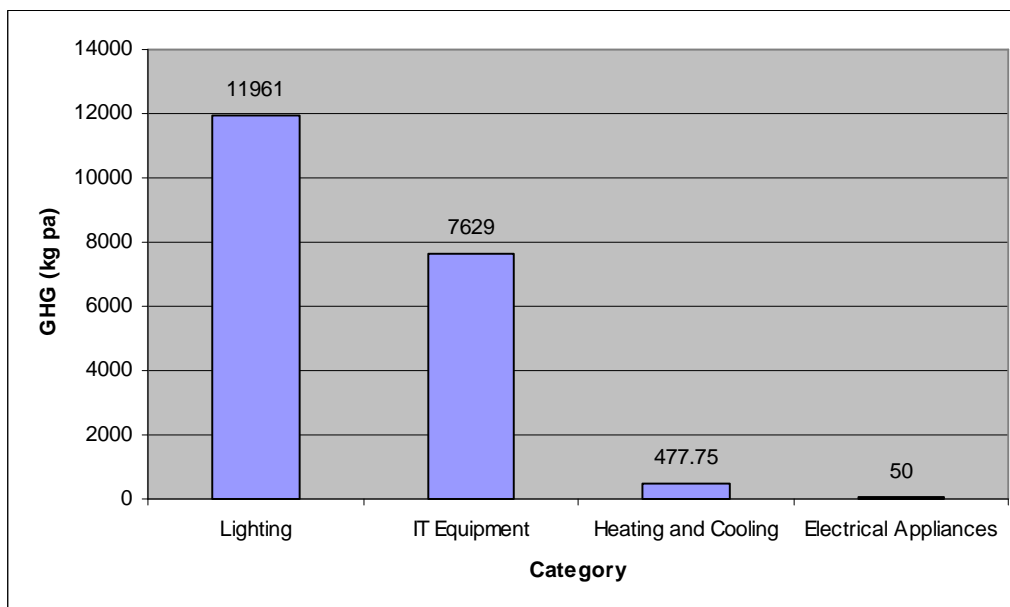


Figure 4. Total GHG emitted in each energy consuming category

Location specific GHG emissions are displayed in Figure 5. The Office/Open is the highest contributor to the Carbon Association’s GHG emissions, producing 5,990kg of GHG; representing 31% of the Carbon Association’s total energy GHG. The Server room is the second highest contributor of GHG emissions, producing 3,254kg which represents 16% of the Carbon Association’s total energy GHG emissions.

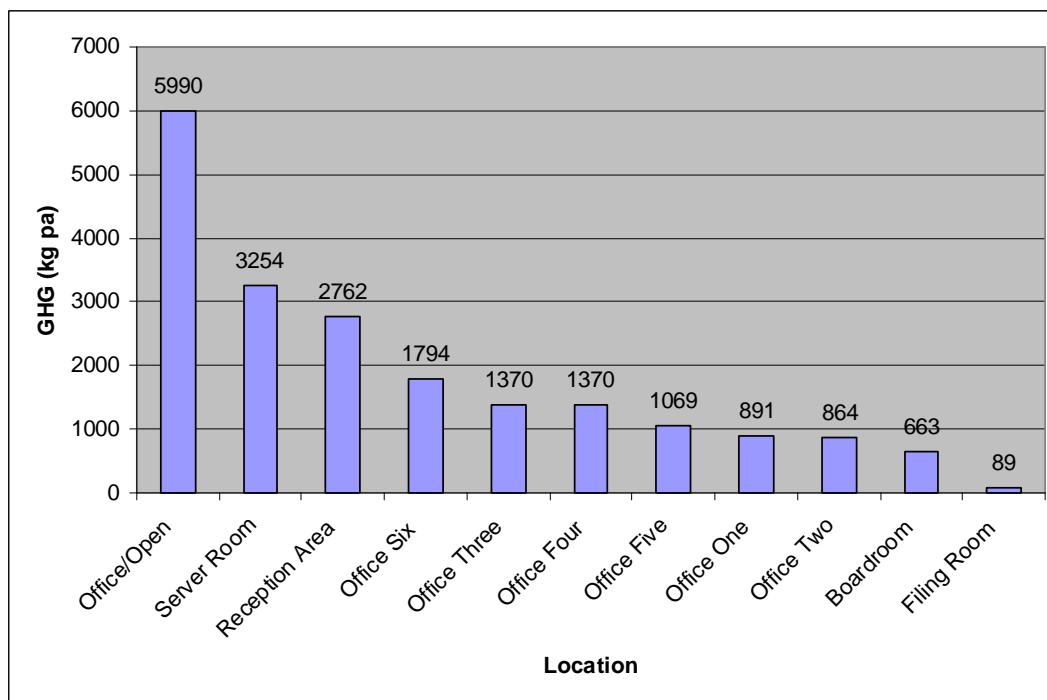


Figure 5. Total GHG Emissions in each location at the Carbon Association

Table 6 below shows a list of energy reduction and Carbon Offset initiatives that can make a positive impact on the total overall energy consumption of an organisation.

Table 6. Overall Energy Impact Reduction Strategies

Reduction category	Recommendations
Green Power	Investigate and purchase 100% accredited green power. Your organisation will be driving demand for electricity made from renewable sources such as solar, wind and organic matter (biomass). This option also allows your organisation to demonstrate its commitment to the environment.
Carbon Offsets	<p>A carbon offset is a financial instrument representing a reduction in greenhouse gas emissions. Although there are six primary categories of greenhouse gases, carbon offsets are measured in metric tons of carbon dioxide-equivalent (CO₂e). One carbon offset represents the reduction of one metric ton of carbon dioxide, or its equivalent in other greenhouse gases. Carbon Offsets are a voluntary market mechanism to encourage the reduction of Greenhouse gas emissions. A carbon offset is an emission reduction credit from another organisation's project that results in less greenhouse gases in the atmosphere than would otherwise occur. There are many different activities that can generate carbon offsets. including renewable energy projects such as solar, hydro, geothermal and biomass energy, or other projects that range from methane capture from landfills or livestock through to reforestation projects.</p> <p>In choosing a carbon offset scheme, it is important for organisations to choose a scheme that is a 100% accredited carbon offset provider.</p>

5.1 Electrical Appliances

Electrical Appliances include all devices such as telephones, faxes, refrigerators, electric hot water services and kitchen appliances. The Carbon Association’s Electrical Appliances consumed 37kWh of energy, producing 50kg of GHG and costing \$4.80 per annum (Table 2).

The largest emitter of GHG in this sector is the Paper Shredder - Large, consuming 33.8kWh of energy, producing 46kg of GHG per annum and costing \$4.40 (Appendix 2 and Figure 6). The Tele-conference Console represents the second highest emitter of GHG, consuming 3.12kWh of energy, producing 4.25kg of GHG per annum and costing \$0.40.

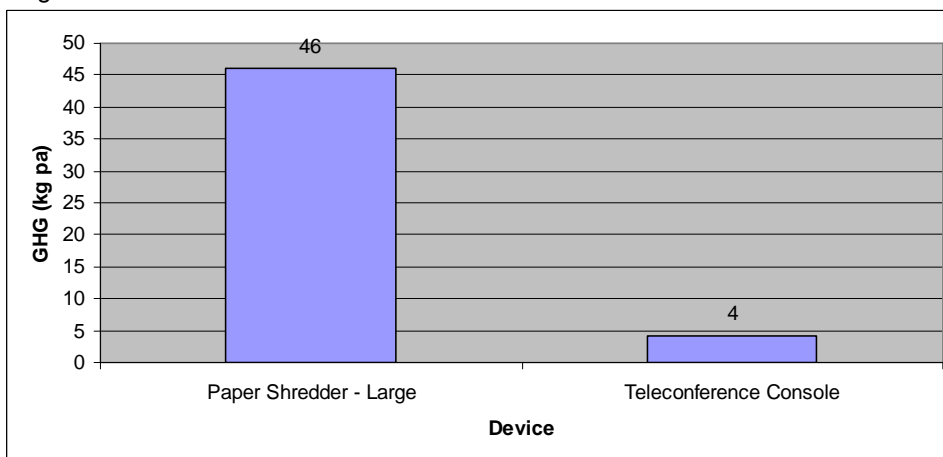


Figure 6. Highest consuming Electrical Appliances by GHG emissions

Electrical Appliance usage at each location within the Carbon Association is displayed in Figure 7. The Server Room has the highest GHG emissions per annum. The second highest contributor to GHG emissions is the Boardroom.

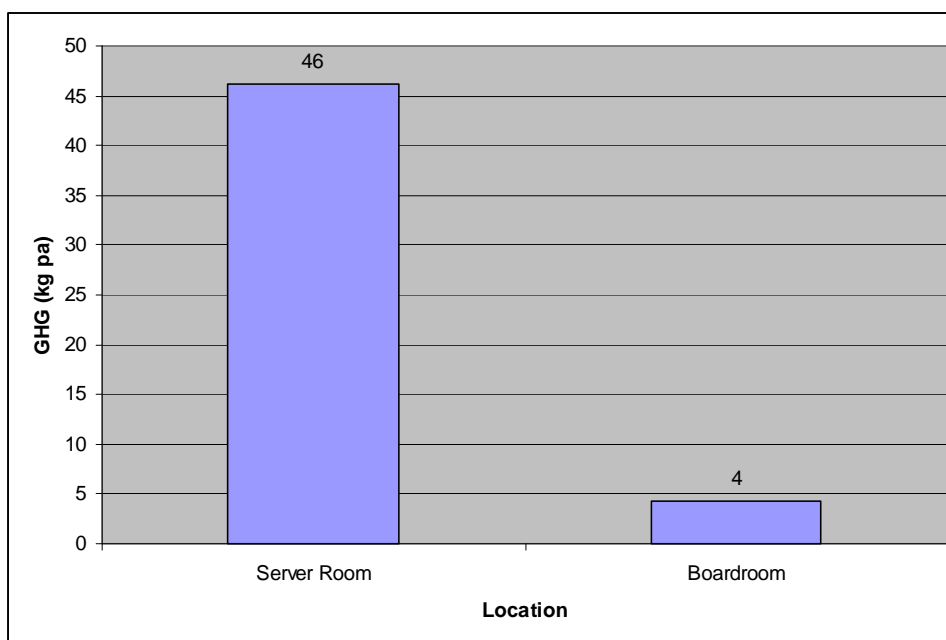


Figure 7. Electrical Appliance usage at each location at Carbon Association

Tables 7 illustrates the recommended actions that can be initiated to generate a range of cost benefits to the Carbon Association. The recommendations are listed in order of greatest cost benefits or ease of implementation.

Table 7. Behavioural Recommendations for Electrical Appliances

Electrical Appliance	Recommendations
General Appliances	<p>Turning equipment off when it is not in use. For example: out-of-hours operations times represents an immediate means of saving energy. All energy powered office equipment uses energy when it is switched on at the power point (relatively small but significant amounts). The control circuits and transformers use energy just to be ready to start up immediately as they are needed.</p> <p>An additional solution is to install a Standby Power Switch which automatically deactivate devices connected to it. The Standby Power switch can be located in a convenient location as it uses wireless technology so that devices with standby power consumption can be easily switched off from one convenient location.</p>

5.2 Lighting Devices

Lighting Devices include devices such as fluorescent tubes, halogen lights, compact fluorescent lights and incandescent globes, with a range of energy consumptions. The Carbon Association's Lighting Devices consumed 8,763kWh of energy, producing 11,961kg of GHG and costing \$1,139 per annum. (Table 2).

The largest contributor of GHG emissions in this sector are the Fluorescent Tubes T8 36W, consuming 6,918kWh of energy, producing 9,443kg of GHG and costing \$899 per annum (Appendix 2 and Figure 8). Halogen lights 50W represent the second highest emitter of GHG consuming 1,815kWh of energy, producing 2,478kg of GHG and costing \$236 per annum.

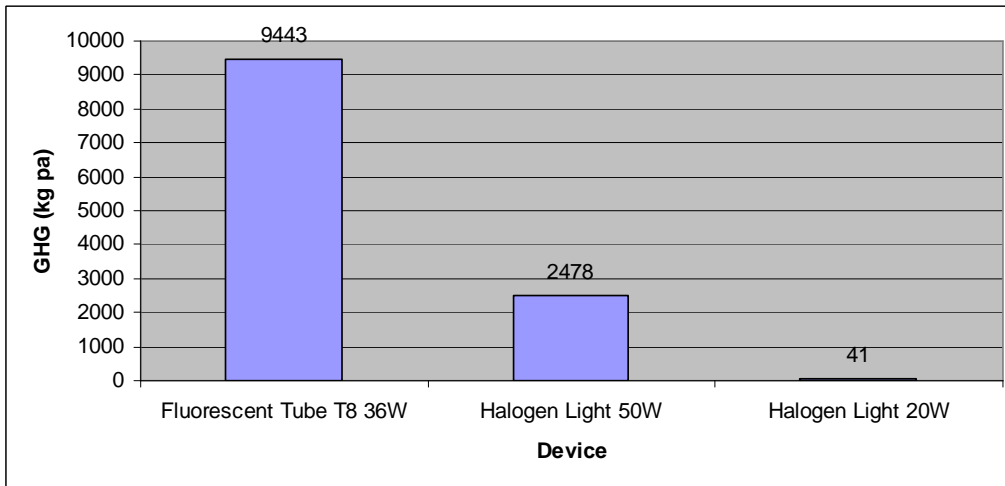


Figure 8. Highest Consuming Lighting Devices by GHG Emissions

Lighting Device usage at each location within the Carbon Association is displayed in Figure 9. This shows that the Office/Open has the highest GHG emissions per annum, the second highest contributor is the Reception Area.

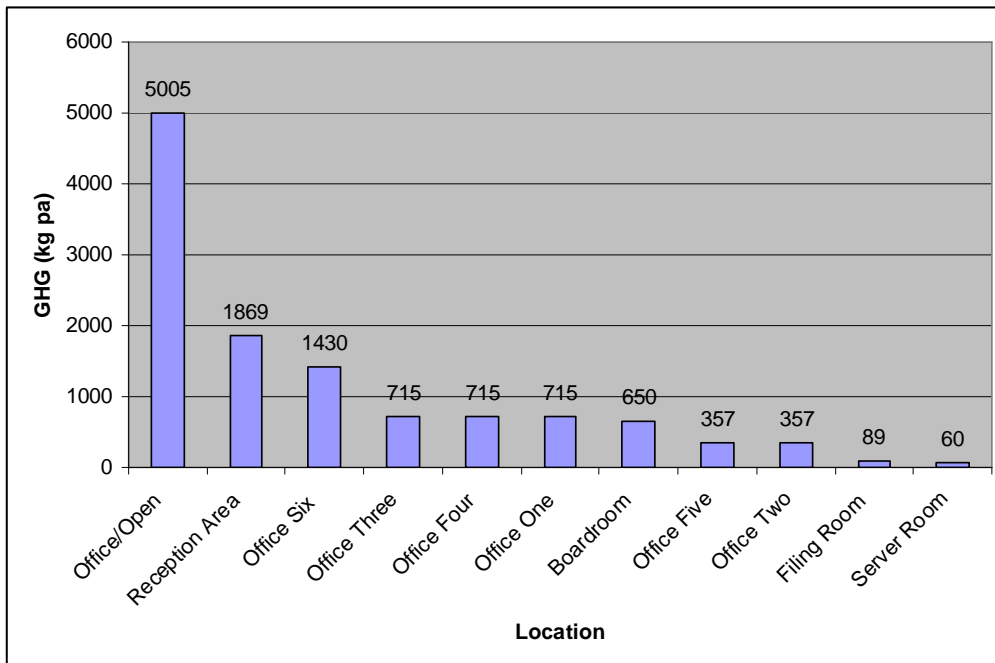


Figure 9. Lighting Device usage at each location at Carbon Association

Lighting is often overlooked as a contributor to GHG emissions. One of the procedures undertaken in the Sustainable Footprint audit process is the use of a Lux meter to determine if there is adequate illumination levels in an organisation. Table 9 shows the Lux level readings (which represent the indicative illumination levels at the time of the audit) at the Carbon Association and the comparative recommended Australian Standard Lux Levels⁴.

Table 8. Lux Levels at the Carbon Association and Recommended Lux levels

Location	Carbon Association	Recommended Lux Level ³
Boardroom	270	320
Reception Area	270	320
Filing Room	300	80
Office/Open	350	320
Office One	370	320
Office Two	370	320
Office Three	370	320
Office Four	370	320
Office Five	370	320
Office Six	370	320
Server Room	370	320

As noted in Table 8, there are areas for improvement which can be made at the Carbon Association in terms of current illumination arrangements. Several areas are over illuminated and changes can be made to reduce the over-illumination and energy consumption, whilst remaining within the Australian Standards.

Tabulated below are the key Lighting Devices in use at the Carbon Association. Illustrated are the possible cost benefits that can be achieved as a result of implementing the suggested recommendations.

Table 9. Retrofit and Installation Recommendations for Lighting Device

Lighting Device	Recommendations	Reduction
Fluorescent Tubes T8 36W	<i>Option One:</i> Consider retrofitting your organisations current 36W T8 fluorescent tubes with 18W LED tubes. These lighting devices have a number of advantages over conventional fluorescent lighting including, significantly less power consumption, increased lifespan, non-mercury based manufacture and no flicker or hum.	GHG: 5,580 kg Cost Saving: \$531
Fluorescent Tubes T8 36W	<i>Option Two:</i> Typical fluorescent lighting installations are commonly 36 watt T8 tubes, these are now considered obsolete. A new range of Tri Phosphor T5 tubes are now available. T5 tubes are around 25% cheaper to operate and have a greater lumen output making it possible to reduce the number of lamps	GHG: 4,121 kg Cost Saving: \$392
Halogen Lights 50W	Halogen lighting is commonly known as low voltage, this however does not mean low consumption. Typically halogen lamps have a transformer associated with each installation these consume approx 10 watts of power so a 50watt halogen lamp is consuming a total of 60 watts. Installing 20 watt halogen lamps will reduce the energy consumption without compromising the available light.	GHG: 1,239 kg Cost Saving: \$118

Table 10. Retrofit and Installation Recommendations for Lighting Device

Lighting Device	Recommendations
General Lighting	<p>Consider placing stickers next to switches encouraging staff to turn lights off when leaving a room or the office at the end of the day.</p> <p>Utilise the banks of lights in the main office to make the most use of natural light.</p> <p>Consider the installation of movement sensors that will switch lighting off in areas that are not occupied for long periods.</p> <p>Paint rooms in light colours, as this aids reflection of available light.</p> <p>Use desk or standard lamps where most light is needed, so less lighting is required in the rest of the room.</p> <p>Clean lamps and fittings – over time, dirt build up reduces light output.</p> <p>For security lighting, install time, motion or light sensing switches.</p>

5.3 Heating & Cooling Appliances

Heating & Cooling includes devices such as air conditioners, radiant heaters, Heating Ventilation and Air Conditioning (HVAC) systems and gas space heaters. The Carbon Association’s Heating & Cooling Appliances consumed 350kWh of energy, produces 478kg of GHG and costing \$45 per annum (Table 2).

The largest contributor of GHG emissions in this sector is the Radiant Heater – Small consuming 350kWh of energy, producing 478kg of GHG and costing \$45 per annum (Appendix 2 and Figure 10).

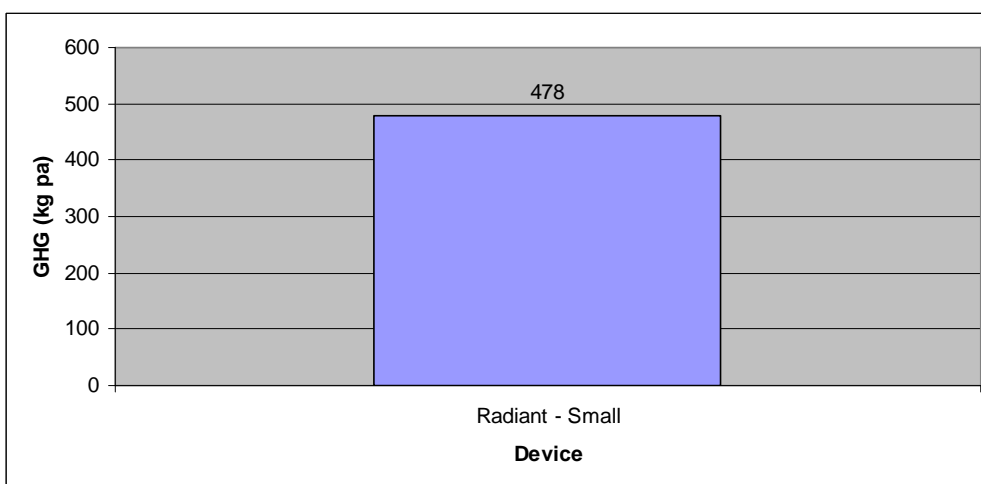


Figure 10. Highest consuming Heating & Cooling Appliances

Heating & Cooling Appliance usage at each location within the Carbon Association is displayed in Figure 11. The Reception Area is the highest contributor to GHG emissions. The second highest contributor to GHG emissions is Office Five.

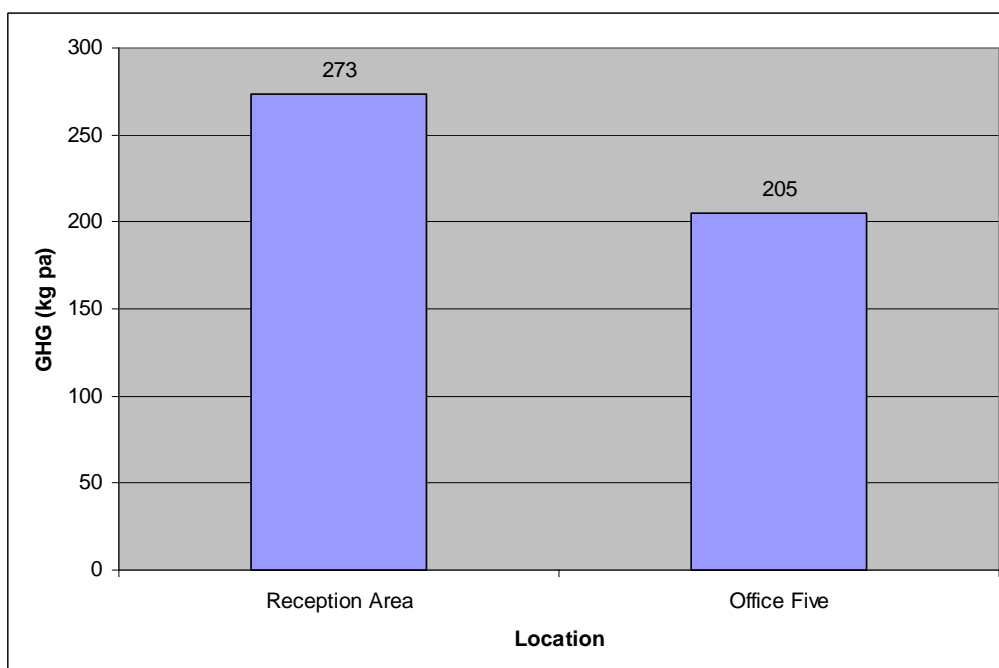


Figure 11. Heating & Cooling usage in each location

The recommendations and cost benefits shown in Table 11 offer organisations the ability to be able to implement efficiencies to reduce overall energy consumption, GHG emissions and costs in this category.

Table 11. Retrofit and Behavioural Recommendations for Heating & Cooling Appliances

Heating & Cooling Appliance	Recommendations
General Heating and Cooling	<p>At Carbon Association there are approximately 4 m2 of glass to the north 8 m2 to the west and 12 m2 to the south, to give you some understanding of the heat load this places on your organization the north and west glazing equates to having around 12 x 1000 watt radiant heaters on in summer.</p> <p>During the assessment it was noted that some internal shade blinds have been installed, however these are not proving to be effective against the heat gain, and Pelmetts with curtains/blinds that trap a layer of air against the window should be installed. External shading is the most effective, however due to body corporate requirements this may not be possible.</p> <p>Installing a metallic sun control film to the internal surface of windows would be the best option for your offices. Some companies are claiming up to 70% heat reduction after windows have had a sun control film installed; explore this option with building management or your body corporate.</p> <p>The Carbon Association should create an after hours and weekend thermostat setting. If you know your employees aren't going to be in the office, create a setting that conserves more energy during these hours. Be sure to allow an override function so that it can be changed if someone decides to come in to work.</p>
HVAC Unit	<p>The Heating, Ventilating And Cooling system (HVAC) at the Carbon Association would be working extremely hard to cope with the internal heat load during summer, the north and west glazing to the building envelope is allowing massive heat intrusion, this in turn is adding a considerable cost to annual energy expenditure and GHG output. Discussions with building management about sun control options should be explored.</p>

5.4 Information Technology Equipment (IT Equipment)

IT Equipment includes devices such as desktop computers, servers, printers, monitors and laptops. The Carbon Association's IT Equipment consumed 5,589kWh of energy, produced 7,629kg of GHG and costing \$727 per annum. (Table 2).

The largest contributor to GHG emissions in this sector are the Desktop Boxes, consuming 2,592kWh of energy, producing 3,538kg of GHG and costing \$337 per annum (Appendix 2 and Figure 12). The UPS represents the second highest emitter of GHG, consuming 745kWh of energy, producing 1016kg of GHG and costing \$97 per annum.

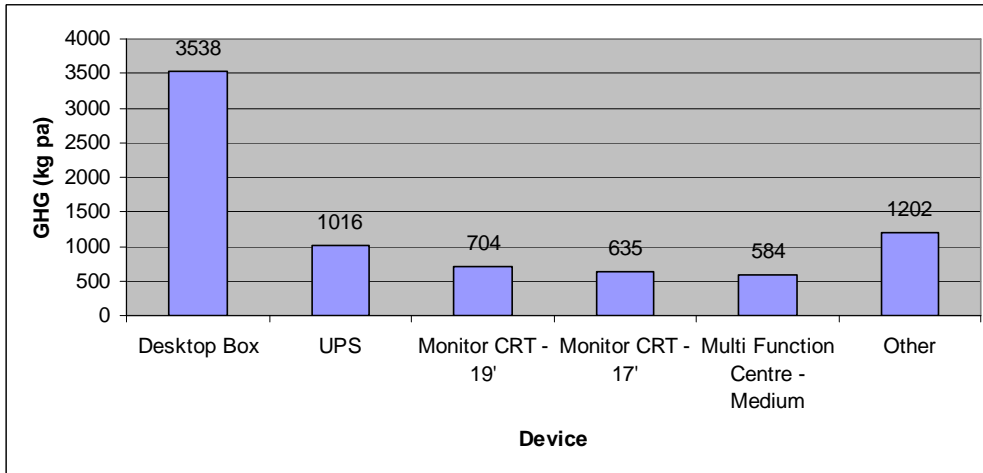


Figure 12. Highest Energy Consuming IT Equipment at Carbon Association

IT Equipment use at each location within the Carbon Association is displayed in Figure 13. The Server Room has the highest GHG emissions, the second highest contributor is Office Open.

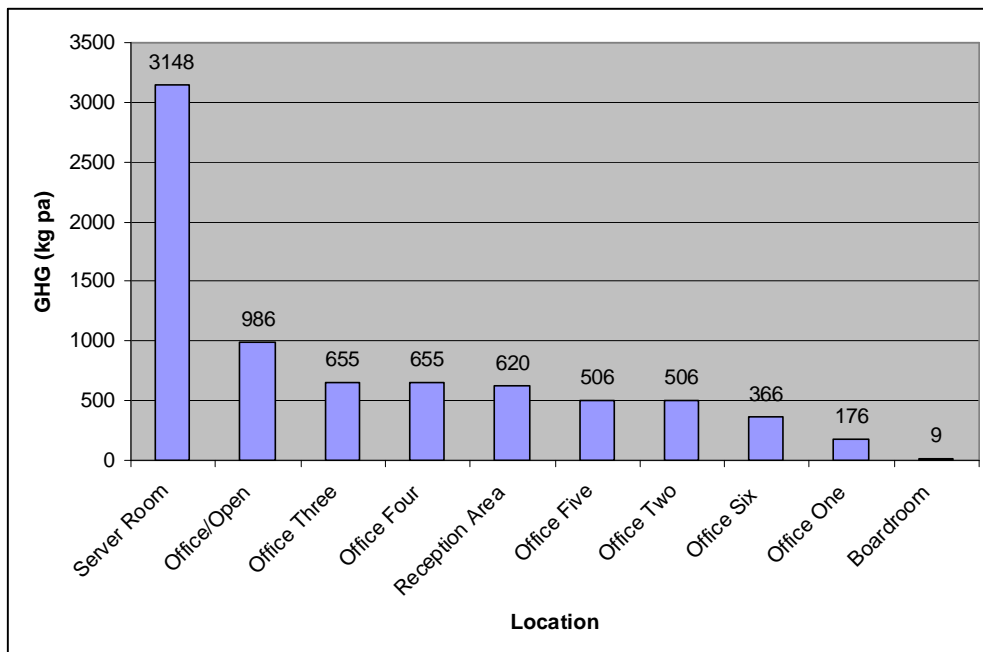


Figure 13. IT Equipment Usage at each location at Carbon Association

IT Equipment is an area of increasing concern to organisations in terms of overall energy consumption. Whilst most IT Equipment manufacturers are becoming increasingly conscious of the environmental impact generated

by the equipment they manufacture, organisations are relying on storing more and more data. This leads to an overall increase in costs of energy consumption.

Table 12. Retrofit and Installation Recommendations for IT Equipment

IT Equipment	Recommendations	Reduction
Desktop Computers	<p><i>Option One:</i> When looking to update your organisations desktop computers consider purchasing laptops instead.</p> <p>Even the most energy-hungry laptop will be relatively modest in its demands, compared to a desktop. The need to conserve battery power means that virtually every component in a laptop computer is designed to run on less energy. If you want the benefits of a large monitor, a full-sized keyboard, and a mouse, all of these can be added to any modern laptop.</p>	<p>GHG: 923kg Cost Saving: \$87</p>
Desktop Computers	<p><i>Option Two:</i> When updating your desktop computers, consider the energy rating of the appliance as well as the cost and functionality. There are models available that use up to 25% less energy than your current desktop computers.</p>	<p>GHG: 138 kg Cost Saving: \$13</p>
Monitor CRT 19'	<p>LCD Monitors use considerably more energy then CRT Monitors.</p> <p>Consider retrofitting your organisations current 19' CRT Monitors with more energy efficient 17' LCD monitors.</p>	<p>GHG: 514 kg Cost Saving: \$49</p>
Monitor CRT 17'	<p>LCD Monitors use considerably more energy then CRT Monitors.</p> <p>Consider retrofitting your organisations current 17' CRT Monitors with more energy efficient 17' LCD monitors.</p>	<p>GHG: 217 kg Cost Saving: \$21</p>
Multi Function Centre	<p>The Multi-function centre is currently on prolonged periods of standby power. Consider installing a standby switch to turn off the printers when not in use. This option should be done in consultation with your printer manufacturer to make sure that network functions are not jeopardised.</p>	<p>GHG: 129kg Cost Saving: \$13</p>
Scanner	<p>The scanner is running in standby mode for the majority of the time. Consider turning off this appliance when not in use or purchase a standby switch to ensure it is not left on at the end of the day or during weekends and holidays.</p>	<p>GHG: 39kg Cost Saving: \$3.70</p>

Table 13. Behavioural Change Recommendations for IT Equipment

IT Equipment	Recommendations
Desktop computers	<p>Encourage staff to turn devices off when not in use. Additionally the standby power consumption associated with computers should be reduced by turning the devices off at night and at week ends.</p> <p>Make sure that employees know screen savers won't save energy. They eat up lighting and processing energy. Instead, set screen savers to "none" or "blank screen."</p> <p>As the monitor attached to the server is used sporadically, consider switching it off completely when not being used. The monitor itself is not needed for the majority of the time the server is running.</p>

	<p>Heat can cause equipment failure. With power management features activated, your equipment generates less heat, so it may last longer. And, components that cycle, such as hard drives and microprocessors, are more reliable when power management is used.</p> <p>If leasing computer equipment check to see if the leasing company has a policy for careful disposal of end-of-lease items.</p> <p>Make sure all your office equipment: faxes, computers, printers etc. have the 'Energy Star' function and it is enabled. For more information please see www.energystar.gov.au</p> <p>If you need to buy a new computer, consider what you can salvage from it. Chances are the monitor, keyboard and mouse are still OK and be retained. Additionally, consider buying computers that can be easily upgraded to avoid having to purchase entire new systems as technologies advance.</p> <p>Use a take back scheme for your old PC. The following manufacturers are starting to recycle their products: Dell www.dell.com.au/recycle IBM www-03.ibm.com/financing/au/gar/recycle Hewlett-Packard www.hp.com.au/recycle/supplies</p> <p>Even at the end of its useful life, most technology can be recycled and used to create new products. Planet Ark maintains a long list of computer recyclers in every Victorian municipality at www.recyclingnearyou.com.au</p> <p>Optimise electronic storage and distribution of files rather than printing</p>
<p>Multi Function Centre</p>	<p>Many photocopiers, printers and computers have 'stand by' modes, which reduces power to a minimum level, so that equipment is ready to start with only a slight delay. Even in 'stand by mode' all machines use a small amount of electricity. If you are unlikely to use your equipment for any length of time, consider, where practicable, to turn equipment off and switch off at the power point. A quick check at the end of each day, especially at weekends, should be done to make sure that equipment has been turned off. It's a good idea to have a staff member dedicated to this task. Multi-function centres are now available with a Seven day clock inbuilt. You can then set the times of operation based on the occupancy of your offices.</p> <p>If possible, dedicate one paper tray in your multifunction centre to feed paper that is already printed on one side. This tray can be utilised for non-professional printing jobs.</p> <p>To reduce the consumption of paper set printers to print "duplex ". If possible, set this as a default setting.</p> <p>Setting all printers to print in black & white by default will create savings in toner consumption. Additionally consider purchasing recycled or refilled toner cartridges.</p> <p>Recycle computer toner cartridges and purchase re-manufactured toner cartridges.</p> <p>Buy recycled Australian paper. For information on types and makes of the preferred sorts visit www.acfonline.org.au</p> <p>Printing using vegetable / soy based inks, reduces solvent usage, which reduces waste and greenhouse gas emissions.</p> <p>Choose a printer that has developed environmental policies and practices, and even participates in the ISO 14001-2004 certification and compliance.</p>

6 Conclusion

In accepting this environmental assessment report as a point in time assessment of the Carbon Association, the next step is to establish environmental policies and action plans in order to encourage the usage of resources in a more sustainable manner.

The environmental assessment report is the first stage towards developing an annual reporting process for the Carbon Association. It presents the findings of the assessment and has calculated the Carbon Association's current carbon and water footprint. The findings of the report can be used as an integral tool towards becoming a sustainable organisation. It is now the Carbon Association's responsibility to act upon the findings of the audit. Sustainable Footprint recommends implementing the following key initiatives:

- Environmental Declaration and KPI's
- Formation of an Environmental Committee
- Establishment of an Environmental Policies & Procedures
- Delivery of Environmental Education Workshops

The environmental assessment report summarises the findings of Sustainable Footprint's assessment conducted for The Carbon Association. The report recommends changes to save energy and water and reduce it's carbon and water footprint.

Energy efficiency can have a dramatic effect on the operating cost of any organisation. The process of engaging Sustainable Footprint to assess the Carbon Association's energy, water and transport consumption is the first step towards initiating a Sustainable Roadmap for the organisation.

Current global market conditions dictate that there is now a greater awareness of climate change. Organisations, clients and individuals are making it a prerequisite to do business with organisations that possess sustainable credentials. In fact, there is an even greater emphasis on organisations to become responsible corporate citizens and act upon issues of climate change that are within their control. This will require a process of implementing changes to current business practices to ultimately reduce the Carbon Association's utility charges, carbon and water footprint and their Triple Bottom Line. From a Triple Bottom Line perspective, the cost benefit analysis performed as a result of this audit, has shown the Carbon Association can generate savings from a financial, environmental and economic perspective.

The assessment conducted on 16th April 2008 is represented as data gathered in this report including an estimate of potential revenue savings for the Carbon Association. If all key recommendations and behavioural changes are implemented, an estimated \$833 in charges and 8,641kg in GHG reductions can be achieved by the Carbon Association per annum. In summary, the exercise of implementing the recommended sustainable measures will result in numerous positive outcomes for the Carbon Association.

Specific highlights from the report focuses on areas where changes can be implemented includes:

The next steps for the Carbon Association to take is to implement the following actions:

- **Implement behavioural changes**
- **Retrofit appliances**
- **Develop an Environmental policy**
- **Undertake Sustainable Footprint Environmental training**

Once these key initiatives have been implemented, a review and follow up assessment can be performed to determine the effectiveness of the recommendations and behavioural changes that have been recommended in this report.

Sustainable Footprint recommends annual follow up assessments and education workshops are conducted to maintain and improve the sustainable implementation process.

7 References

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8 Appendices

8.1 Appendix 1 – Client Login Access Details

To access your designated and confidential Sustainable Footprint audit results, please use the following login details via the following URL : www.sustainable-footprint.com/clientlogin

Client: Carbon Association

Client Login: TBA

Password: TBA

8.2 Appendix 2 – Summary of Highest Consuming Devices and Vehicles

Highest consuming Electrical Appliances at the Carbon Association

Device name	No Units	Energy (kWh pa)	Emissions GHG (kg pa)	Percentage of total GHG (%)	Cost (\$ pa)
Paper Shredder - Large	1	33.8	46.13	0.2%	\$4.40
Teleconference Unit	1	3.1	4.3	0.02%	\$0.40

Highest Consuming Lighting Devices at the Carbon Association

Device name	No Units	Energy (kWh pa)	Emissions GHG (kg pa)	Percentage of total GHG (%)	Cost (\$ pa)
Fluorescent Tube T8 36W	98	6,918	9,443	46.9%	\$899.40
Halogen Light 50W	18	1,815	2,478	12.3%	\$236.00
Halogen Light 20W	1	30	41	0.2%	\$3.90

Highest Consuming Heating & Cooling Appliances at the Carbon Association

Device name	No Units	Energy (kWh pa)	Emissions GHG (kg pa)	Percentage of total GHG (%)	Cost (\$ pa)
Radiant Heater	2	350	478	2.4%	\$45.50

Highest Consuming IT Equipment at the Carbon Association

Device name	No Units	Energy (kWh pa)	Emissions GHG (kg pa)	Percentage of total GHG (%)	Cost (\$ pa)
Desktop Box	8	2,592	3,538	17.6%	\$337.00
UPS	1	745	1,016	5.1%	\$96.80
Monitor CRT 19'	2	516	704	3.5%	\$67.05
Monitor CRT 17'	1	465	635	3.2%	\$60.50
Multi Function Centre - Medium	1	428	584	2.9%	\$55.60