



Carbon footprint and findings for the Carbon Smart® Blue Certification

Best Garden Ltd

December 2012



Contents

1	Introduction and background	3
2	Carbon Smart Certification features	4
3	Carbon footprint findings	5
3.1	Carbon footprint by resource	6
3.2	Carbon footprint facts	6
4	Visualising your carbon footprint	7
5	Observations and action plan	8
6	Carbon footprint reduction target	9
7	Potential carbon reduction actions	10
7.1	Lighting	10
7.2	Office equipment	12
7.3	Waste	13

7.4	Paper	15
7.5	Heating	16
7.6	Cooling	20
7.7	Fleet	24
7.8	Water	26
7.9	Procurement	26
8	Appendix	27
8.1	Carbon footprint methodology	27
8.2	Scope, boundary and data collected	27
8.3	Data Quality Criteria and Guidance	27
8.4	Terminology	30



Best Garden Ltd:

Carbon footprint and findings

- **Introduction and background**

The Carbon Smart Certification recognises and promotes organisations of all types and sizes that have taken clear practical action to reduce their impact on the environment. Achieving the certification standard will help 0 to take comprehensive, effective action to reduce its carbon footprint, integrate carbon and energy management into the organisation and communicate this positive work to staff and stakeholders.

The report provides the following information:

- Quantification of your carbon footprint and identification of the major sources of emissions
- Visualisation of your carbon footprint and potential cost savings from taking action
- Overview of potential carbon reduction actions
- Carbon footprint methodology

The report is a supporting document to your:

- Action plan - identifying carbon reduction actions
- Environmental policy - stating your environmental commitment and ambitions.

Carbon Smart will review your action plan and environmental policy and upon approval, your organisation will be certified as Carbon Smart Blue.

Organisation name	Best Garden Ltd
Organisation address	62 Fife Road Canning Town E16 1QB
Number of staff	2
Total treated floor area (m²)	20m ²

Table 1: Organisation details

- **Carbon Smart Certification features**

Carbon Smart certification recognises the practical actions and decisions that an organisation has taken to reduce its impact on the environment. Carbon Smart certified organisations have a strong clear message to communicate – they have taken the right steps to tackle their carbon footprint. There are three levels to Carbon Smart Certification: Carbon Smart® Blue, Carbon Smart® Silver, and Carbon Smart® Gold. Each level has differing levels of commitment and action. The table below summarises their individual features:



Table 2: Carbon Smart certification features

This report is for the Carbon Smart Blue Certification.

- **Carbon footprint findings**

The carbon footprint for Best Garden Ltd was calculated as 3.3 tonnes CO₂e for the reporting period from 13/11/11 to 12/11/12. Table 3 shows the total emissions broken down by resource.

	Resource	Tonnes CO ₂ e	% of total	Data quality
Scope 1	Natural gas	0.6	17	Red
	Fleet	0.3	9	Yellow
Scope 2	Electricity	0.6	17	Red
Scope 3	Waste	1.8	57	Green
	Paper	0	0	Yellow
	Water	0	0	Red
	Total	3.3	100	

Table 3: Total emissions broken down by resource

Included in the table is a data quality rating based on the accuracy of the data supplied. The rating system works on a three tiered traffic light system with green representing good quality data, orange representing average quality data and red representing poor quality data. The quality of your data is very important as you cannot manage what you cannot properly measure. Higher quality data provides a more accurate carbon footprint and so we encourage all our clients to improve their data quality as they work through the Carbon Smart Certification Programme. Table 4 shows the data quality rating system.

	Good quality data Primary data sources have been used. Data completeness and accuracy is high
	Average data quality Mixed primary and secondary data sources. Limited extrapolation with average completeness and accuracy
	Poor data quality High levels of estimation and benchmarking. Poor completeness and accuracy

Table 4: Data quality rating system

- **Carbon footprint by resource**

Chart 1 shows the CO₂e emissions of Best Garden Ltd by resource. Best Garden Ltd should focus their effort on the largest segments of the pie which contribute the most to their carbon footprint.

Year 1: Best Garden Ltd CO₂e emissions (%) by resource

Chart 1: CO₂e emissions (tonnes) by resource

- **Carbon footprint facts**

Below are some facts and figures from your carbon footprint calculation.

Carbon footprint activity	Units consumed	Equivalent measure
Electricity	1,080 kWh consumed	 100W bulb burning for 1.2 years
Waste	6,500 kg consumed	 The equivalent weight as 34.2 photocopiers

Table 5: Some facts and figures about your carbon footprint calculations

- **Visualising your carbon footprint**

It is often difficult to visualise what your environmental impact looks like, especially since a carbon footprint is expressed in tonnes of CO₂e. To help you understand your environmental impact better it is useful to think of your carbon footprint as a volume. For example, one tonne of CO₂ expressed as a volume would fill the cube illustrated below.

Visualising your carbon footprint will help you target reductions - as for every tonne of CO₂ reduced, you are adding one less of these cubes to the atmosphere.



Picture 1: One tonne of CO₂ as a volume

In terms of your carbon footprint of 3.3 tonnes, your annual emissions would fill a double-deck bus 18 times per year.



Picture 2: Your carbon footprint as a bus

In addition, on average each staff member at Best Garden Ltd contributes 1.65 tonnes of CO₂e per year to your carbon footprint. The average UK employee contributes approximately 4 tonnes of CO₂e emissions whilst at work.

- **Observations and action plan**

During the site survey at your premises, Carbon Smart identified a number of energy and

resource inefficiencies. Below are the priority observations that Carbon Smart would advise you to focus on. These are based on the main activities that result in the largest components of your carbon footprint and the significance of the environmental impacts identified. Appended to this report is your tailored draft action plan which highlights the potential solutions which can be adopted to improve your environmental performance. Please use the solutions guide at the back of this report to choose the solutions that are best suited for your organisation given your resource and financial constraints.

Activity	Observation
General information	Best Garden Ltd was established in 2010 and provides integrated landscape solutions for commercial and private properties. The business consists of 20 m ² and is based in an estate building where the director uses one room of his flat as an office. The annual turnover has been estimated at £25,000. The business employs 2 people and operates Monday to Friday from 8am to 6pm. The office is used by the director 3 hours per day and the remaining 7 hours are spent on clients' site. The business will move to a new premises in 6 months time.
Lighting	Energy efficient lights are used in the office.
IT equipment	In the office there is 1 laptop and 1 printer. The printer is energy star rated.
Heating systems	The heating system works effectively and timing/temperature settings are used correctly. Windows are double glazed and doors are draft-free.
Water	No water saving devices are in place.
Waste	There is no recycling scheme in place. The majority of waste that is sent to landfill consists of garden waste. The business will implement a new waste disposal policy for customers, giving them the opportunity to send the waste produced from their garden to composting facilities.
Vehicles	The business uses a diesel van and is looking for grants in order to improve type of fuel/vehicle used. There isn't a monitoring tool in place for fuel consumption.

Table 6 – Key observations and findings made during the site survey

● **Carbon footprint reduction target**

Setting a carbon reduction target is important as it will give Best Garden Ltd something to aim for over the coming year. The target should reflect what is feasible for the organisation given financial and resource constraints. Since organisations are constantly changing depending on external factors such as economic climate and staff turnover it is likely that your carbon footprint will fluctuate. To make your target robust, Carbon Smart suggests you take the following steps:

- **Use a relative measure for your carbon footprint target:** To ensure you take into account business fluctuations in economic activity and staff numbers, you can divide

your carbon footprint by staff numbers or by revenue to get a relative figure (i.e. you may want to reduce your carbon footprint by 0.5 tonne per staff member or 1 tonne per £50,000 turnover)

- **Choose a target that is ambitious yet achievable:** Carbon Smart benchmark targets are 5-8% in the first year, 15% by the third year based on relative figures

- **Potential carbon reduction actions**

During the site survey at your premises, Carbon Smart identified a number of energy and resource inefficiencies. Below are the priority actions that Carbon Smart would advise you to focus on based on the main activities that result in the largest components of your carbon footprint and the significance of the inefficiencies identified. Your action plan should reflect the solutions that are best suited for your organisation given your resource and financial constraints.

- **Lighting**

- **Reduce the amount of light**

Significance rating	Solution	What to do	When to use it
	Delamp and fit reflectors, and maximise use of natural light - Removing unnecessary light from spaces that are over lit and enhancing the use of natural light will save you money.	<ul style="list-style-type: none"> • Identify areas where either: unnecessary lighting is present (e.g. Above cupboards), spaces are over lit (e.g. Lots of artificial luminance), or natural lighting is consistently good (e.g. Near large south facing windows). • Reduce light levels by removing a bulb or two. • Fitting a reflector can boost the light output. 	Best to delamp when the aesthetics of the light fitting are not important and the space is obviously over lit. Note: delamping fluorescent tubes can cause the whole series to go out.

- **Improve the lighting efficiency**

Significance rating	Solution	What to do	When to use it
	Replace lamps with more efficient technology - removing old inefficient lights for efficient alternatives is a great way to save money and maintenance costs on your lighting.	<ul style="list-style-type: none"> • Emphasis should be on replacing halogen and incandescent lights for CFLs, and large diameter fluorescents (T12) for thinner alternatives (T8 or T5) • To ensure best savings only replace lights with alternatives as they blow. 	Energy efficient lights should always be the preferred option. However, in certain cases it may be more complex than a simple switch out as fittings can differ. Consult an electrician if this is the case.

- **Reduce the period lights are on**

Significance rating	Solution	What to do	When to use it
	Run a switch off campaign to engage staff and ancillary staff	<ul style="list-style-type: none"> Design and implement posters and stickers to promote switching off Monthly email reminders will help maintain momentum Train and instruct cleaning or security staff to ensure lighting is switched off 	Should be used in any space where staff have access to lighting controls
	Install sensors for automatic shutdown - there are many different types of light and occupancy sensors available on the market. Identifying which space would benefit from this technology is paramount	<ul style="list-style-type: none"> Consult an electrician for a free quote on where and how light or occupancy sensors can be installed 	Sensors should only be used in areas where light output is higher than 50W/m ² .
	Fit timer switches - timer switches can vary from simple switches to turn lights off 5 minutes after they are turned on (useful in toilets, stairwells, corridors) to comprehensive systems controlling all the lighting in a building	<ul style="list-style-type: none"> Identify areas that would benefit from timers Contact your electrician for a quote 	Building system timers are most useful in areas where lighting is required over long consistent periods
	Improve controls through labelling and if necessary zone lighting	<ul style="list-style-type: none"> Complex lighting controls (i.e. More than 4 switches on a panel) should be labeled to ensure staff do not turn on unnecessary lights Single light switches that turn on many dispersed lights should be rewired and zoned to improve lighting control For re-wiring contact your electrician 	Complex lighting panels (more than 4 switches) Single light switches which control many lighting zones

- Office equipment

- Reduce the amount of equipment

Significance rating	Solution	What to do	When to use it
	Remove redundant equipment and centralise where possible - it is common to have too much equipment. This often occurs when new equipment has been bought and the old equipment has not been removed (particularly printers)	<ul style="list-style-type: none"> Identify where redundant equipment is being used Can other equipment be centralised so redundant equipment can be removed? In certain cases it may be economical to rent a Multi-functional device which can photocopy, print, fax and scan. 	Rule of thumb: 1x printer should be sufficient for at least 10 staff member equipment older than 5 years should be considered for replacement

- Reduce the period of power on

Significance rating	Solution	What to do	When to use it
---------------------	----------	------------	----------------

	Run a switch off campaign to engage staff and ancillary staff	<ul style="list-style-type: none"> Design and implement posters and stickers to promote switching off Monthly email reminders will help maintain momentum Train and instruct cleaning or security staff to ensure IT equipment (printers, monitors, PCs) is switched off 	Should always be encouraged
	Install automatic power-down features - getting equipment to power down automatically can be done through enabling energy star features or installing power down technology.	<ul style="list-style-type: none"> As an initial measure ensure energy star power down features are enabled on PCs and printers These features can be enabled from the desktop properties of PCs or on the power save features on printers Install 7-day timers for printers and other equipment (e.g. coffee machines) If you have many PCs you may want to invest in power management technology. Examples include Bye Bye Standby (www.byebyestandby.com) which can be installed at an individual or corporate level, and Carbonwise (www.livinglifegreen.co.uk) which is ideal if you have a central server controlling IT equipment 	Energy star features should be enabled on all equipment. Bye Bye Standby should be installed if you have many pieces of local equipment (PC, printer, telephone, charger) that you want to shut-down at the end of a button. Carbonwise should be installed if you have a central server controlling over 20 PCs.

• **Improve the equipment efficiency**

Significance rating	Solution	What to do	When to use it
	Remove old equipment and replace with efficient alternatives - modern equipment is significantly more energy efficient than older equipment. Switching out will result in a reduction in operating costs as well as an increase in operation productivity	<ul style="list-style-type: none"> Key equipment to replace are old CRT monitors for LCDs and old printers for efficient devices Ensure old equipment is recycled correctly under the WEEE Directive Check energy rating of new equipment to ensure that it is energy efficient 	Equipment older than 5 years should be considered for replacement

• **Waste**

• **Improve recycling rate**

Significance rating	Solution	When to use it	What to do
	Expand recycling scheme to include a wider variety of recyclable goods	Recycling opportunities should be explored at all times	<ul style="list-style-type: none"> Identify which additional waste products can be recycled (examples include: cans, tins, glass, plastic bottles, batteries, fluorescent tubes, toner cartridges, cardboard, newspaper, paper, food waste, electrical equipment, food waste composting) Contact your local council for more information and guidance If you are based in London, contact Paper Round (www.paper-round.co.uk) who provide full recycling services

	<p>Improve recycling scheme by removing personal bins and centralising waste and recycling bins. Improve labelling of recycling bins</p>	<p>Should be used in offices with more than 10 staff</p>	<ul style="list-style-type: none"> • Investigate if staff would support removal of personal bins - be sure to explain the benefits and the alternative centralised waste and recycling scheme that will be put in place • Purchase high visibility waste and recycling bins - label bins clearly with information directing staff members to the relevant purposes • Remove personal bins - it is always good to measure and feedback to show the success of the system
---	---	--	--

• **Minimise the amount of waste generated**

Significance rating	Solution	When to use it	What to do
	<p>Procure products when only necessary</p>	<p>Potential to reduce waste should always be considered</p>	<ul style="list-style-type: none"> • Ensure responsible member of staff takes a monthly stock check for business goods
	<p>Engage suppliers to reduce packaging requirements</p>	<p>Potential to reduce waste should always be considered</p>	<ul style="list-style-type: none"> • Engage suppliers to check if unnecessary packaging can be reduced - in some instances it may be possible to return packaging to the supplier for reuse or reuse the packaging for internal purposes • Develop green procurement policy
	<p>Adopt a zero-to-landfill policy - waste-to-energy is a great way to negate landfill tax as well as helps generate energy from your waste products</p>	<p>When you're producing at least a 1100L bin of waste a week</p>	<ul style="list-style-type: none"> • Investigate if you have a waste-to-energy provider in your area that specialises in Waste-to-Energy services • If you are based inside the M25 London recycling company Paper Round (www.paper-round.co.uk) provides a full waste management service

- Paper

- Reduce the amount of use

Significance rating	Solution	When to use it	What to do
	<p>Improve printer management habits - a number of good print habits can help you cut your paper consumption by up to 30%</p>	<p>Efforts to improve printer management should be constantly explored</p>	<ul style="list-style-type: none"> • The following good printer management habits should be in place • All printers should be set to default double-side print (if your printer does not have this option you may want to invest in a duplexing tray) • Set-up a scrap paper printer or tray on an internal printer and scrap paper boxes on all desks for note taking • Remind staff to not print unnecessary documents • Investigate if printed documents can be switched for electronic versions (e.g. paper invoices, catalogues etc.) • If you have lots of staff printing significant amounts then you may want to invest in follow me printing technology

- Improve type of paper

Significance rating	Solution	When to use it	What to do
	<p>Switch non-recycled or part recycled paper to 100% recycled content paper - 100% recycled paper is less energy intensive to produce and does not deplete virgin wood stock</p>	<p>Some printers may not operate efficiently with 100% recycled paper - contact the manufacturer if this is the case</p>	<ul style="list-style-type: none"> • Investigate choices of 100% recycled paper that will meet current needs at a cost competitive price.

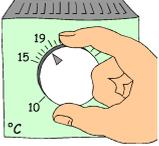
- Heating

- Improve the use of personal heaters

Significance rating	Solution	When to use it	What to do

	<p>Minimise the use of personal heaters - individual heaters are typically quite costly to run</p>	<p>Whenever too many personal heaters are being used on an individual basis</p>	<ul style="list-style-type: none"> Remove unnecessary individual heaters Emphasis should be on improving the efficiency of the central heating system, making individual heaters redundant
	<p>Maximise their efficiency when used - individual heaters are an inefficient way of heating an area</p>	<p>As a last resort or when zoned areas are not centrally heated sufficiently</p>	<ul style="list-style-type: none"> Whenever used, ensure that individual heaters are not left on unnecessarily – adjust the temperature thermostat and time accordingly Position individual heaters to benefit several people at a time

• **Avoid over heating (temperature or time)**

Significance rating	Solution	When to use it	What to do
	<p>Maintain optimum temperature and timing settings</p>	<p>Should be adopted in all temperature controlled areas</p> <p>Some zoned spaces may require different temperature and timing settings depending on occupancy</p>	<ul style="list-style-type: none"> Temperature control: make sure your heating system does not operate above 20C Avoid simultaneous heating and cooling - ensure there is a sufficient time gap between the heating and cooling cycles with temperature settings of at least 4 hours Avoid heating the space when unoccupied (e.g. during evenings and weekends) Set simple time controls – don't over complicate things. Allow adequate pre-heat time to let the building reach temperature just before occupancy Use seven day timers to allow for variable occupancy levels throughout the week Site thermostats carefully – ensure they are situated away from draughts, direct sunlight and heat sources such as radiators and office equipment

• **Improve the efficiency of the heating system**

Significance rating	Solution	When to use it	What to do
---------------------	----------	----------------	------------

 	<p>Maintain gas boilers - heating can account for up to 60% of a building's energy costs</p>	<p>All boilers should be serviced once a year</p>	<ul style="list-style-type: none"> • Consider replacing old boilers (>20 years old) with condensing boilers • Ensure boilers are properly maintained and serviced by a qualified engineer at least once a year – a poorly maintained boiler can use over 10% more energy than a boiler in good condition • Conventional radiators – excess air stops radiators from warming up. Bleed them once a year to expel excess air. Thermostatic Radiator Valves (TRVs) are useful for maintaining consistent comfortable temperatures in areas suffering from under or over-heating. (Note: they should not be used as on/off switches. Avoid using the max-min settings) • Convactor radiators – clean internal filters and external grilles bi-monthly to ensure a good air flow. Bleed air from the heater element.
	<p>Utilise more efficient technology</p>	<p>Optimum start control systems are generally recommended for heating systems of over 30kW capacity but energy savings can be made for any size system. Suitable for wet radiator and electric storage heaters.</p> <p>An air source heat pump is compact in size. Ideal for replacing or supplementing an electricity heat system such as storage heaters but can also heat water to feed directly into your central heating.</p>	<ul style="list-style-type: none"> • Install Optimum Start controls- these automatically adjust heating start up times based on outside air temperature • Install an air source heat pump – these absorb heat from the outside air. This heat can then be used to warm water for radiators or under floor heating systems, or to warm the air in your rooms.
	<p>Ensure adequate insulation exists</p>	<p>All un-lagged pipes should be insulated to minimise heat loss</p>	<ul style="list-style-type: none"> • Ensure all pipes and connectors are adequately insulated.

• **Avoid the need for surplus heating**

Significance rating	Solution	When to use it	What to do
---------------------	----------	----------------	------------

	<p>Reduce heat loss through poorly draught-proofed doors and windows – around 25% of a building’s heat is typically lost through windows and doors</p>	<p>Consistently during cold weather periods</p>	<ul style="list-style-type: none"> • Draught proof all gaps around doors and windows • Ensure all doors between zone heating areas are kept closed • Ensure windows are kept closed during cold weather • Install trickle vents in the window frame for background ventilation if required
---	---	---	--

• **Improve the distribution of heat (including zoning)**

Significance rating	Solution	When to use it	What to do
	<p>Ensure zoned areas are set up to satisfy individual heating requirements</p>	<p>Zoning required when a space is broken into different areas with different usage requirements</p>	<ul style="list-style-type: none"> • Reconfigure the placement of heating units within each zone • Improve heating controls within each zone area • Ensure heat settings meet the requirements of each zone’s occupancy profiles • Conduct a survey of temperature profiles in different zones to better understand the requirements • Place thermometers in each zone to monitor whether preferred temperatures are being maintained
	<p>Maximise heat distribution within each zone</p>	<p>Radiator Heat Distributors (with telescopic design) can be easily adjusted to fit on most conventional radiators. (adjustable length: 430-730mm)</p>	<ul style="list-style-type: none"> • Fit radiator heat distributors (RHD) – a device that maximizes heat output by speeding up heat distribution, minimizing heat loss through walls

- **Cooling**

- **Improve the efficiency of the cooling system**

Significance rating	Solution	When to use it	What to do
	<p>Regularly maintain air conditioning units - air conditioning can increase a building's energy consumption and associated carbon emissions by up to 100%</p>	<p>Air conditioning units should be serviced at least once a year.</p>	<ul style="list-style-type: none"> • Ensure regular maintenance of your air conditioning system by an accredited Energy Assessor. Poorly maintained systems can use up to 60% more energy (Note: there is a statutory obligation for all air-conditioning systems with an effective rated output of more than 10kW must be regularly inspected by an Energy Assessor. The inspections must be at a maximum of five years apart)
	<p>Enhance the air cooling system with more efficient technology - air conditioning can increase a building's energy consumption and associated carbon emissions by up to 100%</p>	<p>When a space/building is not fully occupied the volume of air provided by the air handling unit can be reduced by using a VSD.</p> <p>Free cooling systems can be used when there is a mechanical cooling system in place.</p>	<ul style="list-style-type: none"> • Fit a Variable Speed Drive (VSD) - these can vary the output of your air conditioning system to meet your needs throughout the day. • Fit a 'free cooling' coil system - a system for the cooling of spaces using the outside air when the external air temperature is colder than the internal air temperature. Free cooling will predominate in the winter and the mechanical cooling in the summer

-

- **Improve the use of personal coolers**

Significance rating	Solution	When to use it	What to do
---------------------	----------	----------------	------------

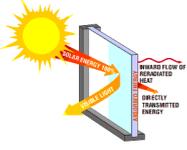
	<p>Minimise the use of personal coolers - individual coolers such as portable air conditioning units consume lots of energy</p>	<p>As a last resort or when zoned areas are not centrally cooled sufficiently</p>	<ul style="list-style-type: none"> Remove unnecessary individual coolers Emphasis should be on improving the central cooling system, making individual coolers redundant
	<p>Maximise their efficiency when used - individual coolers such as portable air conditioning units consume lots of energy</p>		<ul style="list-style-type: none"> Maximise the use of natural ventilation via a through-draft (applicable when a central cooling system is not operating) Whenever used, ensure that individual coolers are not left on unnecessarily – particularly in unoccupied spaces Position individual coolers to benefit several people at a time

• **Improve the distribution of cooling (including zoning)**

Significance rating	Solution	When to use it	What to do
	<p>Ensure zoned areas are set up to satisfy individual cooling requirements and maximise cooling distribution within each zone</p>	<p>Zoning required when a space is broken into different areas with different usage requirements</p>	<ul style="list-style-type: none"> Reconfigure the placement of cooling units within each zone Improve cooling controls within each zone area Ensure cooling settings meet the requirements of each zone's occupancy profiles Conduct a survey of temperature profiles in different zones to better understand the requirements Place thermometers in each zone to monitor whether preferred temperatures are being maintained Consider ceiling fans to help spread the cooled air more effectively throughout your office without greatly increasing your power use.

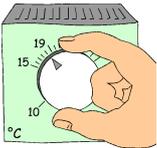
• **Avoid the need for surplus cooling**

Significance rating	Solution	When to use it	What to do
---------------------	----------	----------------	------------

	<p>Keep heat gain to a minimum and utilise lower external air temperatures</p>	<p>Particularly in areas affected by high solar gain</p>	<ul style="list-style-type: none"> • Reduce solar gain through the use of blinds or window film • Night cooling: cool the building at night and forcing the cool night air through the building • Utilise natural ventilation when the cooling system is not operating - open doors and windows to encourage cooling draught • Shade air-conditioning units by planting trees or shrubs, but make sure you do not block the airflow. A unit operating in the shade uses up to 50% less electricity than one operating in the sun. • Close shades or blinds on east, south, and west-facing windows during the hours when the sun's intensity is at its peak. Open blinds and window shades during early morning and overnight hours when the air outside the house is cooler.
---	---	--	--

• **Avoid over cooling (temperature or time)**

Significance rating	Solution	When to use it	What to do
---------------------	----------	----------------	------------

	<p>Maintain optimum temperature and timing settings - air conditioning can increase a building's energy consumption and associated carbon emissions by up to 100%</p>	<p>Should be adopted in all cooling controlled areas Some zoned spaces may require different temperature and timing settings depending on occupancy</p>	<ul style="list-style-type: none"> • Temperature control: make sure your air cooling system does not operate below 24C • Avoid simultaneous heating and cooling - ensure there is a sufficient gap between the heating and cooling temperature settings of at least 4C • Avoid cooling the space when unoccupied (e.g. during evenings and weekends) • Set simple time controls – don't over complicate things. Allow adequate pre-cooling time to let the building reach temperature just before occupancy • Use seven day timers to allow for variable occupancy levels throughout the week • Site thermostats carefully – ensure they are situated away from draughts, direct sunlight and heat sources such as radiators and office equipment • During summer months: turn the conditioning unit off or turn it up to 24C and adopt a flexible summer default code • Don't reduce your thermostat setting to a colder temperature than normal when you turn on your air conditioner. This will not cool your space any faster and could result in excessive cooling and unnecessary expense. • Set the fan speed on high, except in humid weather. When it's humid, set the fan speed on low.
---	--	---	--



- Fleet

- Optimise fleet journeys

Significance rating	Solution	What to do	When to use it
	Basic route planning - Planning your routes or deliveries can result in significant fuel savings. Zoning geographic areas and assigning these zones to particular routes is an efficient and cheap way to plan deliveries. You may want to use Google map when planning your routes.	<ul style="list-style-type: none"> • Google map has advanced options that will help you with your route planning • See: Google map (http://maps.google.co.uk/) 	Routes should be planned
	Invest in Sat Navigation systems for your vehicles - Satellite navigation will help prevent drivers getting lost and consuming unnecessary fuel.	<ul style="list-style-type: none"> • Decide which vehicles or routes would benefit from satellite navigation • Visit your nearest electronic retail store for prices • Online options are usually cheaper 	Sat nav should be used when routes are more complex or unfamiliar

- Optimise driver efficiency

Significance rating	Solution	What to do	When to use it
	Ensure drivers maintain vehicles regularly	<ul style="list-style-type: none"> • A rota should be drawn up to ensure drivers regularly inspect tyre pressures and tread conditions as well as carry out bonnet checks to top-up with oil/water/anti-freeze 	This should be conducted at least once a month
	Implement green fleet management policy and ensure driver is familiar with principles - A fleet management policy should help you strategically define how you want to run your fleet from the routes you drive, the drivers you employ, the vehicles you purchase and the duty of care for both driver and vehicle	<ul style="list-style-type: none"> • See Carbon Smart 'Guide to writing environmentally focused policy documents' 	If you operate a fleet you should have a fleet management policy
	Conduct driver safety and efficiency training - Training drivers will reduce road safety risks, lower insurance costs and improve overall fleet performance.	<ul style="list-style-type: none"> • Emphasis should be on careful driving which avoids harsh acceleration and heavy braking and promotes better anticipation of the road ahead • See SAFED for details of how your drivers can be properly trained: http://www.safed.org.uk/ 	If you operate a fleet all drivers should have basic safety and efficiency training

- Improve vehicle efficiency

Significance rating	Solution	What to do	When to use it
	Invest in Telematics systems - Telematics is the use of highly sophisticated technology to transmit information to and from a vehicle. This information is then processed to enhance the vehicles performance and monitor its location	<ul style="list-style-type: none"> • Decide which telematics system would be suitable for your company by contacting suppliers • See UK telematics site with general information on vehicle telematics: www.uktelematics.co.uk 	Should be used if operations office needs to be in touch with drivers constantly and fleet is larger than 5 vehicles

	<p>Ensure vehicle is properly maintained - Service, maintenance and repair should happen at least annually. The vehicle should have an up-to-date service record. This will ensure that the vehicle is running efficiently and safely.</p>	<ul style="list-style-type: none"> • Check is all vehicle service records are up-to-date • Schedule appointments for each vehicle • Take corrective action to improve efficiency of vehicles 	<p>At a minimum maintenance should be conducted on an annual basis</p>
	<p>Improve type of fuel used - There are many different types of fuel available. If you are using diesel you should consider introducing a biodiesel mix. Alternatively in petrol vehicles you could retrofit LPG.</p>	<ul style="list-style-type: none"> • Biodiesel in the UK can be found at the following outlets: http://www.biodieselfillingstations.co.uk/outlets.htm. • Alternatively, contact your local council to see if there are suppliers in your area. LPG can be retrofitted at most automobile service stations. 	<p>Biodiesel may invalidate your vehicle guarantee (Check with your vehicle manufacturer. Also, biodiesel is best used when you have your own diesel bunker for fuel storage. LPG requires a larger space and access to filling stations</p>
	<p>Improve choice of vehicle</p>	<ul style="list-style-type: none"> • When purchasing new vehicles ensure that whole-life costs including fuel are taken into account. • The emissions profile, fuel consumption and engine efficiency should be considered. • The Government's Vehicle Certification Agency (VCA) publishes a booklet of virtually all models on sale in the UK twice a year. It lists the official fuel consumption, emissions and pollutants of each vehicle. 	<p>At point of purchase</p>

- **Water**

- **Reduce the amount of water consumed**

Significance rating	Solution	What to do	When to use it
	<p>Install water saving devices in toilets and taps - water saving devices are cheap and easy to install and can reduce water consumption by 50%</p>	<ul style="list-style-type: none"> • Water displacement devices should be placed in toilets that do not have a dual flush mechanism. • These can be acquired free from most local councils. • Flow restrictors can be purchased at your local DIY store and retrofitted to tap fittings 	<p>Conserving water should be promoted at all times</p>

- **Procurement**

- **Source environmentally robust products/services**

Significance rating	Solution	What to do	When to use it
---------------------	----------	------------	----------------

	<p>Develop and implement green procurement policy with a supporting environmental product checklist</p>	<ul style="list-style-type: none"> • Develop and implement a green procurement policy using Carbon Smart policy guidelines • Develop an environmental product checklist that considers at a minimum the following environmental attributes: design, recyclable content, reusability, disposal 	<p>If you already have an environmental policy then a green procurement policy would be a complementary management document</p>
---	--	---	---

- **Appendix**

- **Carbon footprint methodology**

Carbon Smart follows the Green House Gas ([GHG Protocol](#)) produced by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). This methodology provides detailed guidance on emissions reporting.

This assessment was based on the ‘operational boundary’ principle, i.e. the emissions associated with operations directly influenced by your company.

The classification method used to group GHG emissions, by the level of control an organisation has over them are categorised into three main types of GHG classes:

- **Direct emissions, scope 1:** Are those which result from fossil fuels burned directly by the business, such as boiler gas, A/C refrigerant gas, or fuel in company vehicles/fleets.
- **Indirect emissions, scope 2:** These are from imported electricity i.e. power stations to run heating, lighting, electrical equipment within the building.
- **Other indirect emissions, scope 3:** Are from products and services such as the emissions from the consumption of water, waste, business travel, paper etc. The boundaries of this scope are agreed with the organisation and the general rule is to include what a business can quantify, monitor and influence.

- **Scope, boundary and data collected**

The operational boundary was set for the activities carried out at your business.

Where possible and relevant the following activities have been included:

- Scope 1: Natural gas, fleet
- Scope 2: Electricity
- Scope 3: Waste, paper stationery

The following were excluded from the carbon footprint calculation:

- Staff commute travel
- Non paper stationery
- Off-site staff / partner events

- **Data Quality Criteria and Guidance**

Data quality is an important part of the carbon footprint calculation process. The higher quality the data submitted, the more accurate and meaningful carbon footprint calculations can become. It is also true that resource use that cannot accurately be measured, cannot accurately be managed, so collecting robust data is very important. This is probably quite an obvious statement, but a lot of organisations do not currently collect or monitor their energy and resource consumption at all.

There are three important aspects to data quality that we take into account when we calculate your operational carbon emissions.

- **Source** – the consumption figures you have been able to supply and where they came from e.g.
 - kWh consumption of electricity from meter readings
 - Spend on fuel from receipts for a company car.
- **Completeness** – the time period your data considers and the coverage within the business, e.g.
 - Natural gas data for one whole year, for two floors of a two storey building
 - Natural gas data for three months for one floor.
- **Accuracy** – the confidence you have in your data i.e. are these figures 100% accurate, estimates, or unknown?

Carbon Smart rates each individual piece of information you provide to us for the calculation of your carbon footprint following the three tier traffic light system.

All pieces of data will be categorised by source (as primary, secondary or spend) and by completeness, as per the definitions below:

- Primary – actual consumption of fuel / energy / or product with the appropriate units
- Secondary – a figure we can convert into fuel / energy / product consumption simply i.e. mileage, bags of waste etc
- Spend – data that we can approximate to consumption through a series of assumptions but will include a number of other factors i.e VAT, levies and other

taxes.

The matrix we use to assess your data is in the table below. Each piece of data you submit will fit into this grid accordingly:

	Actual & complete (90% or more of data)	Partially complete (greater than 50% of property / asset)	Incomplete (less than 50% of property / asset)
Primary (e.g. litreage)			
Secondary (e.g. mileage)			
Spend			

NB: Estimated, extrapolated, pro-rated or benchmarked (no information available) data are automatically incomplete, 'red' data quality.

To illustrate some real life examples of data quality, we have provided some examples below:

Example 1: Green Data Quality

Example 2: Orange Data Quality

Example 3: Red Data Quality

In order to show true carbon reduction and accurately compare year-on-year performance, your overall data quality rating must meet and maintain the Carbon Smart green criteria. This will allow your organisation to retrieve the highest value from environmental reporting and achieve greater environmental and financial rewards.

- **Terminology**

Carbon dioxide (or CO₂) - is a [gas](#). Carbon Dioxide is just one of the [greenhouse gases](#) which impact on our climate and the weather patterns of the planet, and has been found to contribute to global warming

CO₂e - There are six main greenhouse gases which cause climate change and each one of these has a different global warming potential. For simplicity of reporting, the mass of each gas emitted is commonly translated into a carbon dioxide equivalent (CO₂e) amount so that

the total impact from all sources can be summed to one figure.

Greenhouse gases - Greenhouse gases occur naturally in the [Earth's](#) atmosphere and create a layer around the earth which keeps the planet warm. However if too many gases are released, as with CO₂, the increased concentration levels prevent heat loss from the planet and cause higher temperatures. The name for this is the [greenhouse effect](#). Carbon is the most prevalent greenhouse gas. Other greenhouse gases include methane (which is produced from the landfill or agriculture activities), and Nitrous oxide (as a result of transport and industrial processes). Greenhouse gases are natural and without them the earth could be 15-30°C colder.

World Resources Institute (WRI) - WRI published the Greenhouse Gas Protocol for Project Accounting in 2005. The protocol takes the approach of identifying emissions by 'scope' (setting out Scope 1, 2 and 3) and is widely accepted as the leading protocol for carbon footprint calculation. WRI is an environmental think tank that goes beyond research to find practical ways to protect the earth and improve people's lives. WRI have recognised climate change as a critical threat to people's lives and to the environment.



www.carbonsmart.co.uk

www.carbonsmartcertified.co.uk

Carbon Smart
52 Lant Street
London
SE1 1RB

