

# Carbon Footprint Audit & Monitoring

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## 1 INTRODUCTION

### Impracticality

- 1.1 Our initial intention was to audit three month's figures for Jan – Mar 2010 for staff travel on business and project them for 12 months, using Defra's methods. This proved to be too time-consuming. Instead we switched to using the Carbon Trust's footprint calculator and [co2balance.co.uk](http://co2balance.co.uk)'s calculator for train mileages (which represents the bulk of RATC's journeys besides the commute of two staff members). National Rail's track length tables were completely impractical for the task.

## 2 METHOD

- 2.1 We have used the Carbon Trust's online carbon footprint calculator (CTCFC). Though Defra's conversion factor tables are available, they provide a bewildering range which would have taken too long to fathom. The Carbon Trust's calculator has selected conversion factors for each type of emission based on Defra's 2008 tables. The CTCFC requires selection of a time period and start month. Not all our data corresponds to the period January 2009 – January 2010.
- 2.2 Office electricity consumption data is based on meter readings from a 34 month period to 18 May 2010. The estimated annual consumption is 3,714 Kwh = 1.99 tonnes CO<sub>2</sub>.
- 2.3 Office gas consumption for heating are projected from an 11 month period from 31/12/2008 to 1/12/2009, but therefore underestimate by a winter month. This was further complicated by a change of meter, when the gas supplier confused the domestic household meter with the office meter over some months. The estimated annual consumption is 5,214.345 Kwh = 0.96 tonnes CO<sub>2</sub>.
- 2.4 Staff travel makes up the bulk of RATC's carbon footprint. Defra suggests online access of National Rail's tables which give track mileages between stations. These tables are not organised in any intuitive manner, requiring cross referencing with a station index and list. As a journey can follow a choice of tracks between some stations, the mileages do not correspond for the same journey. No other online travel planner gives mileages corresponding to National Rail's track mileages, despite being restricted to rail journey planning. We settled on [co2balance.co.uk](http://co2balance.co.uk)'s calculator because it has start and destination boxes that are filled from a list of stations, and because its results were close to National Rail results. Nevertheless, this was time-consuming.
- 2.5 We have assumed that buses used were diesel, and that this was also true of taxis. Some coach mileage is in the figure for buses.
- 2.6 We have not included figures for Underground or Light Rail journeys. These are minimal.

- 2.7 We have not included ferry mileage. This was minimal.
- 2.8 We have not included air mileage. This was minimal.
- 2.9 Our total estimated carbon footprint for a 12-month period is therefore roughly estimated to be 11.62 tonnes.

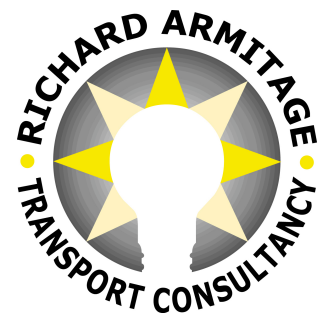
### **3 ON-GOING CARBON MONITORING**

- 3.1 It was our original intention to facilitate travel carbon emission monitoring on an on-going basis. This would have to combine:
- an off-the-peg iPhone application for recording mileages (not including their calculation) which could export them in Excel format by means of synchronisation;
  - an off-the-peg iPhone GPS recording application to ascertain mileages as they are travelled (taxis, buses);
  - Google maps;
  - co2balance.co.uk's online train mileage 'estimator';
  - private or hire car odometer readings;
  - and an additional worksheet in our MS Excel staff timesheet which would pre-select Defra conversion factors according to the indicated travel mode.
- 3.2 Our conclusion at present is that this process is time-consuming and not geared up to helping small organisations in an efficient or practical manner.
- 3.3 It is unlikely to be taken up by many SMEs, especially ones for whom sustainability was not part of their primary purpose.
- 3.4 We have not concluded how we are going to monitor our carbon over the next year, but in May 2011 we intend to do a second audit of our carbon emissions to see whether we have been able to reduce them further.

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# Carbon footprint calculator



## Basic carbon footprint summary

### Footprint details

<u>Footprint name</u>	RATC2
<u>Organisation</u>	Richard Armitage Transport Consultancy
<u>Sector</u>	Not yet selected
<u>Sub sector</u>	Not yet selected
<u>Start year</u>	2009
<u>Start month</u>	January
<u>Boundary type</u>	Single Site
<u>Boundary name</u>	Oxford House
<u>Include subsidiaries</u>	
<u>Excluded subsidiaries</u>	
<u>Employee numbers within the boundary</u>	5
<u>Turnover within the boundary (£/yr):</u>	0.00 - Not known

**Emissions Factors:** This footprint was calculated using emissions factors published by Defra in April 2008

<b>Your estimated carbon footprint</b> (based on the data you have provided)	<b>11.62</b>
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### Quantified emissions breakdown over one year

Scope 1 - direct emissions	CO2e (tonnes)	kWh
Fossil fuel use on-site	0.96	5,214.35

Scope 2 - indirect emissions 'electricity and imports'	CO2e (tonnes)	kWh
Electricity	1.99	3,714.00

Scope 3 - other indirect emissions	CO2e (tonnes)	kWh
Employee travel - road	5.61	23,360.22
Employee travel - rail/tube	3.06	n/a

<b>Total</b>	<b>11.62</b>	<b>32,288.56</b>
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## Basic carbon footprint summary

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### Potential unquantified emissions

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The following emissions have not been quantified. There may, in addition, be other emission sources that have not been covered in this calculation.

#### Scope 1 - direct emissions

#### Scope 2 - indirect emissions (electricity and import).

Emissions from generation of imported heat or steam

#### Scope 3 - other indirect emissions

Emissions from your supply chain and logistics

Emissions resulting from waste you create

Employee commuting

Employee travel by air

#### Disclaimer:

*The data presented in this calculator represents an estimate of the basic carbon footprint of your site(s)/organisation, covering major greenhouse gas emissions sources for which data were provided. Emissions have been quantified based on the data provided. No guarantee is given as to the accuracy or completeness of the calculations and no verification of the source data has been undertaken. This estimated basic carbon footprint is not compliant with the full requirements of ISO14064 or with the GHG Protocol for Corporate Emissions Reporting developed*

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## Basic carbon footprint summary

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### Direct emissions (Scope 1)

#### Fuel usage

Are fossil fuels used on-site?	Yes
Are road vehicles owned by the organisation?	No
Are airplanes or ships owned by the organisation?	No

#### Are any of the following undertaken?

Mineral products manufacturing	No
Chemicals manufacturing	No
Metal production	No
Energy industry - fuel production	No

#### Are any of the following undertaken?

Halocarbon production	No
Halocarbons and SF6 use	No
Organic waste management	No

## Basic carbon footprint summary

### Fossil Fuel usage - on-site

<u>Fuel Name</u>	<u>Description</u>	<u>Units</u>	<u>Amount</u>	<u>tCO2e</u>	<u>kWh</u>
Gas (natural)	Heating	kWh	5,214.35	0.96	5,214.35
			<b>Total</b>	<b>0.96</b>	<b>5,214.35</b>

### Indirect electricity emissions (Scope 2)

Do you buy electricity from an energy supplier?	Yes
Do you import heat or steam?	No

### Electricity consumption

	<u>kWh</u>	<u>tCO2e</u>
Grid	3,714.00	1.99
Renewables	0.00	0.00
CHP	0.00	0.00
<b>Total</b>	<b>3,714.00</b>	<b>1.99</b>

### Other indirect emissions (Scope 3)

Do your employees travel in vehicles not owned by the company for work e.g. buses, taxis, hire cars etc?	Yes
Do your employees travel by air for work?	Yes - data unavailable
Do your employees travel by train or tube for work?	Yes

### Employee transport - road

<u>Fuel type</u>	<u>Vehicle type</u>	<u>Units</u>	<u>Amount</u>	<u>tCO2e</u>	<u>kWh</u>
Diesel	Bus	Total Miles	449.00	0.08	310.07
Diesel	Medium Car 1.7 - 2ltr (diesel)	Total Miles	168.96	0.05	204.58
Petrol	Medium Car 1.4 - 2ltr (petrol)	Total Miles	759.36	0.26	1,089.05
Petrol	Small Car <1.4ltr (petrol)	Total Miles	11,748.00	3.42	14,254.24
Petrol	Small Car <1.4ltr (petrol)	Total Miles	6,183.20	1.80	7,502.28
			<b>Total</b>	<b>5.61</b>	<b>23,360.22</b>

### Employee transport - rail, tube

<u>Rail type</u>	<u>Description</u>	<u>Total Distance</u>	<u>tCO2e</u>
National	12 month estimate	50,794.11	3.06
		<b>Total</b>	<b>3.06</b>

## Total emissions tCO2e/yr

