

**ROYAL SOCIETY OF EDINBURGH**

**OUR CONTRIBUTION TO ENVIRONMENTAL  
SUSTAINABILITY**



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## 1. Our Policy

The Royal Society of Edinburgh (RSE) is a charitable organisation which exists to advance learning and useful knowledge in Scotland and beyond.

Within that broader context its Council recognises the sustainability issues related to waste, water, energy management and travel associated with RSE activities, is committed to taking all reasonably practicable measures to contribute to a sustainable environment and will comply with all current environmental regulations, legislation and approved codes of practice. In meeting this commitment the RSE will:

- Work to reduce the amount of waste it produces
- Strive to ensure that all of its office wastes are handled, stored and disposed of as required not only by legislation, but as examples of best practice
- Investigate and implement measures which reduce its consumption of raw materials
- Strive to continually minimise the risk of pollutant disposal to water, land and air;
- Strive to reduce the impact of its business travel by considering alternatives and effective travel planning
- Endeavour to increase environmental awareness and understanding of its employees and others to meet the above aims.
- Provide appropriate training to its employees to enable them to implement this environmental policy
- Establish objectives and targets to support this policy and review them regularly to ensure it continually improves its environmental performance.

## 2. Our Benchmarks and Targets

Our benchmark period is 12 months over 2009/10. During this period our consumption / production and carbon emissions were:

### Core Benchmarks

These cover consumption / production and emissions generated by our core business activities

	Consumption / Production	Carbon Emissions <sup>1</sup> (tonnes)
Electricity	196,144 kWh <sup>2</sup>	252.4
Gas	466,920 kWh <sup>3</sup>	95.1
Travel by Fellows and Staff <sup>4</sup>	207,500 km <sup>5</sup>	23.3
General Waste	9.8 tonnes <sup>6</sup>	26.6
Water	1315m3 per annum	-
	Total	397.4

The above benchmarks are attributable to the building space occupied by us and exclude that occupied by our tenants.

### Programme Benchmarks

These cover travel generated by our programmes of activity. Without stopping or considerably restricting these programmes the scope for us to reduce emissions is very limited. For that reason we have separated these benchmarks from our core ones. We will, however, endeavour to reduce emissions generated by our programmes of activity and section d) sets out what we propose to do.

	Travel (Km)	Carbon Emissions <sup>7</sup> (tonnes)
Others <sup>8</sup>	577,600	72
Awardees <sup>9</sup>	1,933, 900	241.2
Total	2,511,500	313.2

<sup>1</sup> Calculated using figures published by DEFRA (September 2009)

<sup>2</sup> Conversion factor 0.54055 Kg/kWh (grid rolling average figures)

<sup>3</sup> Conversion factor 0.20374 Kg/kWh

<sup>4</sup> For the purposes of RSE business e.g. attending meetings, external events etc

<sup>5</sup> Kg/Km conversion factors: 0.12716 Kg/Km (Air); 0.21280 (Car); 0.05774 (Rail)

<sup>6</sup> Kg/m3 conversion factors: 260 (mixed); 200 (food); 100 (card); 30 (blue paper)

<sup>7</sup> Calculated using figures published by DEFRA (September 2009)

<sup>8</sup> Travel to and from RSE events by speakers, volunteers and Fellows receiving grants (see footnote 5)

<sup>9</sup> Research / Enterprise Fellows and International Exchanges

## How do we Compare ?

The multi functionality of the RSE building, which serves as a standard office space, a conference venue, and a retail space, makes it difficult to directly compare our buildings performance with elsewhere. However, using guidance<sup>10</sup> which places buildings in typical categories, we have established that for the building space occupied by us, suggests we have room for improvement in comparison to good practice and typical usage benchmarks in relation to annual gas and electricity consumption for our total floor space of 2654 sq m (which does not include space occupied by our tenants).

## Our Target

We are committed to setting and achieving an overall reduction in our benchmark emissions.

Many different targets exist and have been adopted by groups and organisations in relation to carbon emissions. Our target aligns with that set by the Scottish Government in Part 1 of the Climate Change (Scotland) Act, which creates the statutory framework for greenhouse gas emissions reductions in Scotland and sets an interim 42% reduction, from 1990 levels, for 2020.

From the latest figures available in 2010<sup>11</sup>, Scotland in 2007 had achieved a 19.2% reduction from the 1990 baseline (adjusted for trading in the EU emissions trading scheme), reducing from 70.01 MtCe in 1990 to 56.6 Mt CO<sub>2</sub>e in 2007. The 42% of 1990 baseline figure for Scotland is 40.6 Mt CO<sub>2</sub>e by 2020. Taking the 2007 56.6 MtCO<sub>2</sub>e figure as the new baseline, Scotland now needs to reduce this figure by 28.26% by 2020 to reach 40.6 MtCo<sub>2</sub>e.

**Based on these figures our target is a 25% - 30% reduction in our core benchmark emissions by 2020.**

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<sup>10</sup> Produced by the Carbon Trust

<sup>11</sup> <http://www.scotland.gov.uk/Publications/2010/06/29093219/0>

### **3. Our Actions**

This section sets out specific actions to meet our targets. These actions are not intended to be exhaustive and further practical actions will be taken if and when they arise. The section does not discuss how the actions will be implemented in practice. This will be progressed by the RSE Directors Group, supported by its “Green Team”, which comprises volunteer staff.

#### **a) Water**

##### **i) Cisterns**

We will reduce the capacity of our cisterns by 1.5 litres, which regulations permit us to do, and will install controls that enable this. Doing so should reduce our annual water consumption by 58m<sup>3</sup> and should also save us c. £115 per year. The investment cost depends on the controls installed, but is estimated to be < £500.

##### **ii) Urinals**

Many of our installations do not have controls and so flush continuously, and often at a higher rate than specified by regulations. An uncontrolled system can use as much as 315 m<sup>3</sup> per annum and we have 5 systems on the site. We will install controls which should reduce our annual water consumption by 1,180 m<sup>3</sup> and should also save us c. £2,300 per year. The investment cost depends on the controls installed, but is estimated to be < £1000.

##### **iii) Taps**

A flow rate of 5 to 6 litres per minute has been found to be adequate for hand-washing; our flow rates are 10 litres per minute. We will install controls which should reduce our annual water consumption by 34m<sup>3</sup> and should also save us c. £67 per year. The investment cost depends on the controls installed, but is estimated to be < £100.

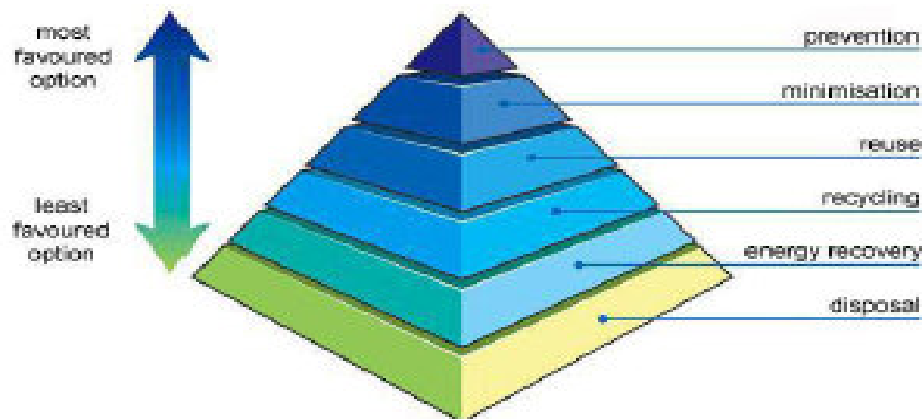
##### **iv) Monitoring**

We will take monthly meter readings to obtain accurate consumption figures, to establish and address the causes of any consumption peaks and troughs, and to take any further action needed. Doing so will also help us to measure the impact of the actions above and to calculate the associated cost savings.

## b) Waste

We currently recycle paper, cartridges, glass and plastics and also generate general waste (9.8 tonnes per year) comprising food waste, cardboard, blue paper handtowels and mixed waste (mixed plastics, food packaging, other packaging, cleaning waste). It costs us c. £1400 each year to dispose of this general waste through an external collection service.

We will realise maximum cost and environmental benefits by adopting the following Waste Hierarchy.



We will take actions to prevent waste from being created in the first place; to minimise unavoidable waste, to reuse as many materials as possible, to recycle what cannot be reused and to only dispose of waste to landfill as a last resort.

Waste disposal costs are likely to increase significantly in the future, partly due to planned increases in landfill tax. Landfill tax was introduced as a fiscal incentive to encourage waste to be diverted from disposal in landfill sites, stimulate the growth of recycling and to encourage greater emphasis on the minimisation and reuse of materials. The 2010/11 landfill tax rate is £48/tonne, this is set to increase by £8/tonne each year until it reaches £80/tonne in 2014. The current and future rises in landfill charges mean it is increasingly important for us financially to divert waste from landfill.

### i) Reducing Waste

When purchasing goods we will:

- Investigate with the supplier if they can deliver goods in reusable packaging (e.g. crates) to reduce the volume of packaging to be disposed, or through a closed loop system, which allows the packaging to be returned. Where suppliers will not provide reusable packaging or a closed loop system we will consider using other suppliers
- Examine the specification of purchased goods and determine if a lower specification / cheaper alternative can be used
- Buy in bulk where possible to reduce purchasing costs and the amount of packaging created

We will reduce the amount of paper we generate by:

- Reducing, by at least 30%, the volume of paper we purchase over a year (using the amount produced in 2009/10 as the baseline – 490 reams of A4 including letter headed paper; and 5000 sheets of A3). A 30% reduction would save us c. £540 (benchmark £1800) per year. There is also a potential reduction in internal printing and postage, but we cannot meaningfully quantify this as any reduction to be achieved is dependant on what is printed and posted in practice.
- Reducing, by at least 30%, the volume of paper created by externally printed documents we produce over a year (using the amount produced in 2009/10 as the baseline – 2300 reams of A4). A 30% reduction on 2300 reams would, theoretically, save us c. £1800 (benchmark £6000) per year, but we cannot meaningfully quantify this, and the associated printing / postage costs, as actual costs are informed by the size of the print job and size / number of documents actually posted.
- Encouraging staff to print documents, proofs etc double-sided and to reuse single-sided printed paper for note books etc; and not to print out emails unless absolutely necessary.
- Ensuring our fax machines are set so they do not produce unwanted header or report sheets; and reduce the amount of junk mail sent fax by registering with the Fax Preference Service (FPS). Registration to which is free.

We produce blue paper towel waste from the toilets throughout the building. These cost £1,000 per year. We will replace these with roller towel units, which would cost us c. £765 per year including all laundry costs. It will also reduce the amount of biodegradable waste we send to landfill by 0.3 tonnes, and in turn reduce our waste bill by c. £200 each year

## **ii) Reusing Waste**

Where reusable packaging is not possible, we will endeavour to reuse excess packaging, for example cardboard boxes, within the organisation, perhaps for storage. This will help reduce disposal.

We will donate waste furniture and textiles to local charities or reuse organisations.

## **iii) Recycling Waste**

We will enhance our existing recycling arrangements to make these a fabric of our day to day business and to encourage staff to adopt a recycling ethos. This will include the purchase (< £300) and siting of proper recycling units around the building and the promotion amongst staff, and others, of how these should be used in practice.

We produce 1.1 tonnes of cardboard waste each year, costing us £436 in waste disposal. Enhancing our recycling arrangements will mean that in the future this waste will be collected for recycling, rather than it being part of the general waste collected.

As part of the enhancement we will ensure food waste is kept separate from all other waste and will investigate the uplift of this by a licensed contractor. The waste (including meat products) is collected from the premises in bins and is discharged into skips at a special waste transfer station. It is then uplifted and processed in a compliant in-vessel composting system. A suitable number and size of wheelie bins are provided for this purpose. Removing our food waste from the general waste stream in this way would divert 1.1 tonnes of biodegradable waste from landfill. Depending on the cost of the service it may result in increased costs for us and we will factor this into our consideration of what can reasonably be achieved.



**iv) General Waste Disposal**

We will sign up for the City of Edinburgh Council's scheme which offers a discount to charities in the area of one free weekly uplift of a 360 litre wheeled bin or, in our case of RSE, 200 sacks for free per year. This will reduce the cost of our general waste disposal by c. £300

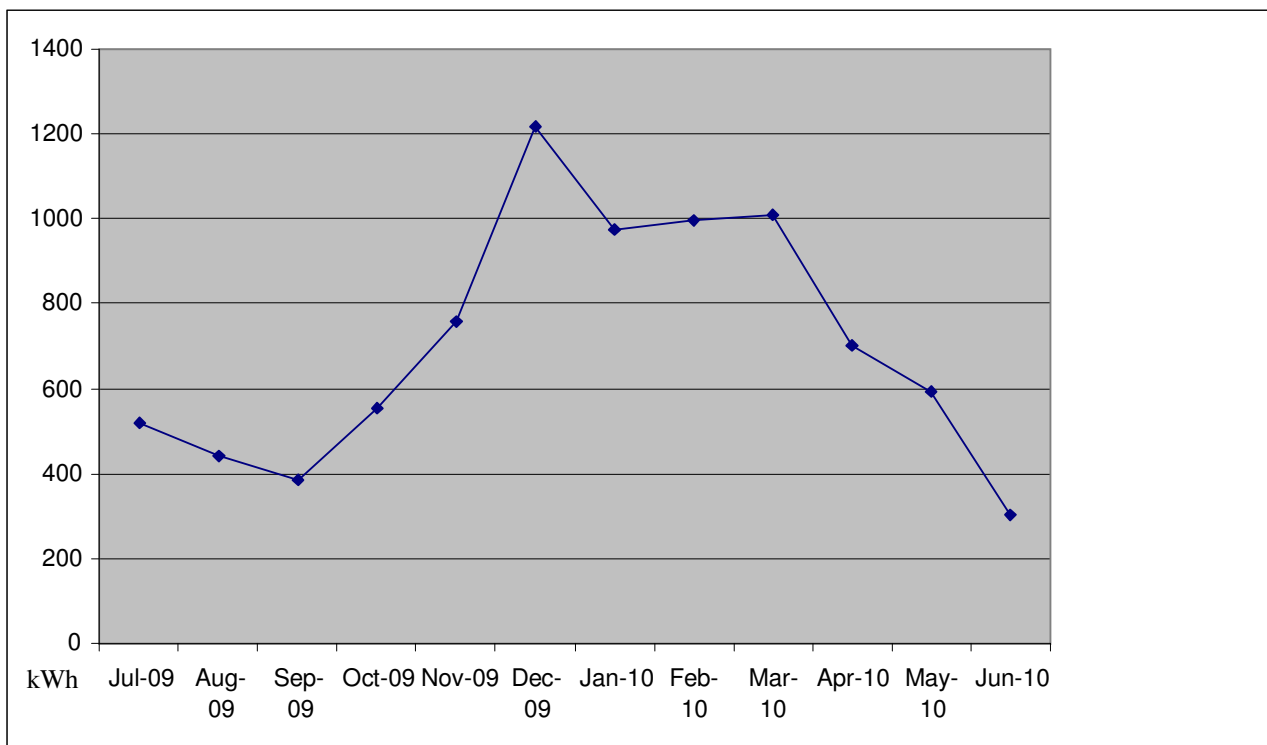
c) **Energy**

i) **Gas & Electricity**

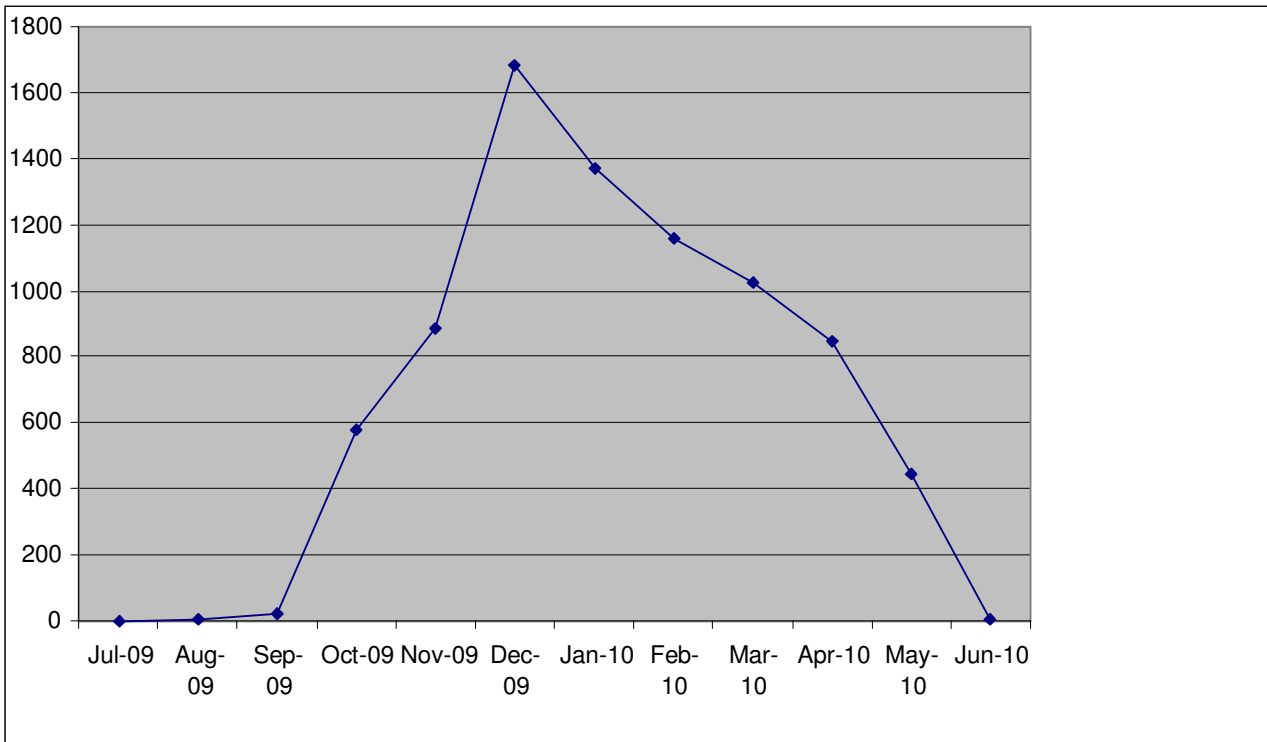
The actions discussed in ii) – iv) below are intended to reduce our annual benchmark consumption of 466,910 kWh for gas and 196,144 kWh for electricity. Over and above this we will encourage and more actively police good house-keeping by staff and others (cleaners, caterers etc), for example, in relation to use of lighting, switching off equipment such as computers when not in use, and heating.

We will also closely monitor and plot consumption levels on a monthly basis with a view to identifying any patterns or inconsistencies and, if appropriate, address these. The graphs below show our consumption patterns over the benchmark period.

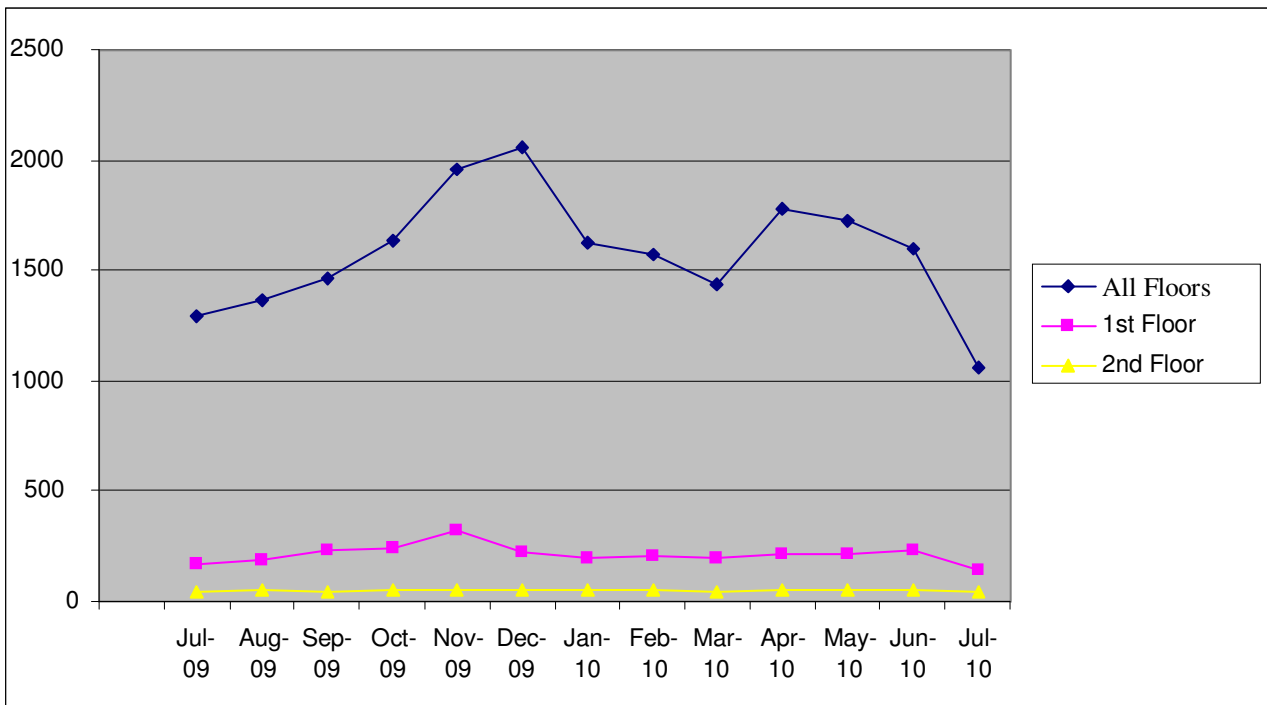
**Gas Meter 1 (22-24 George Street - all consumption applicable and charged to RSE)**



**Gas Meter 2 (26 George Street - 55% applicable and charged to RSE; remainder to tenants – Universities Scotland)**



**Electricity Meter (all consumption applicable and charged to RSE)**



## ii) Lighting

Our building is principally lit by 40 watt incandescent bulbs mounted on chandeliers and other wall fittings. Around 300 lamps are used. The estimated cost to us of this form of lighting is £1,750 per year and it is responsible for the emission of 8.6 tonnes of CO<sub>2</sub>.

The UK government announced in 2007 that energy inefficient incandescent bulbs would be phased out by 2011. This is applicable to all EU Member States and incandescent light bulbs have been phased out of the EU market since 2009. The initial Europe wide ban only applies to 'non-directional' light bulbs, so does not affect any bulbs with reflective surfaces (e.g. spotlights or halogen down lighters). Bulbs will be banned in a phased approach. The first types of bulbs to be banned are non-clear (frosted), which were phased out completely in September 2009. Also from September 2009 clear bulbs over 100W were required to be made of more efficient types. This limit is being moved down to lower wattages, and the efficiency levels raised by the end of 2012. **We must and will therefore progress replacement of bulbs which do not comply.** In doing so we will ensure, as far as we reasonably can, that health & safety is not comprised through lighting levels. Our ability to achieve this will be determined by the quality of bulbs available for purchase. Advice we have received recommends we replace the existing 40 watt candle shaped lamps with 7 watt energy efficient lamps of the same shape, with an equivalent output of 40 watts. Doing so will save us c. £1,450 per year and reduce our CO<sub>2</sub> emissions by 7.1 tonnes. The lamps cost c. £2 each. Therefore the total investment would be c. £600.

## iii) Pipe-work

Our boiler rooms (2) are very warm and the pipe-work in them is un-sufficiently lagged. This is inefficient both environmentally and economically. **We will therefore invest in insulation as a priority.** The savings achieved will depend on the total surface area of pipe-work and the insulation system applied, which will determine the extent of future heat loss and boiler room temperature. In progressing this we will investigate potential tax relief as pipe-work insulation is available on the Enhanced Capital Allowance (ECA) Energy Technology List and as such is subject to this. We will also investigate interest free loans from either the Carbon Trust or the Energy Saving Trust. Both the ECA and a loan would reduce the capital expenditure of this initiative.

## iv) Solar Energy

We will investigate the installation of solar photovoltaic and/ or thermal solar panels on our roof top. These generate electricity and hot water respectively. Cost benefit and planning permission will be key factors in what can be achieved.

#### d) Travel

Our benchmark exercise divided travel into three separate groups:

- Travel undertaken by RSE Fellows and staff in relation to our business, for example, attending committee meetings and participating in activities out-with the George Street building
- Travel to and from RSE events by speakers, volunteers and Fellows receiving grants
- Travel undertaken by non-Fellows who receive grants or awards through our activity programmes, for example, Research / Enterprise Fellows, International Exchanges and Fellows grants

The air, car, rail travel and CO2 emissions for these groups over the benchmark period were:

Group	Air (Km)	Car (Km)	Rail (Km)	Total (Km)	CO2 <sup>12</sup> (tonnes)
Fellows / Staff	112,600	22,500	72,400	207,500	23.3
Others	539,000	8,000	30,600	577,600	72
Awardees	1,811,700	24,100	98,100	1,933,900	241.2
<b>Total</b>	<b>2,463,300</b>	<b>54,600</b>	<b>201,100</b>	<b>2,719,000</b>	<b>(336.5)</b>

Air travel created by our programmes of activity is major contributor to our carbon emissions, with almost half of the awardee miles made by those who received an international exchange grant. By its very nature, the scope for reducing emissions in relation to the international grant programme and other programmes which create air travel appears very limited, but we will do all we can to achieve a reduction and will ask the RSE Committees responsible for programmes which create air travel to consider how their programmes might be adapted, or what might be done to enable them to contribute to us achieving a reduction.

Over and above this we will produce and implement a travel plan which promotes amongst Fellows, staff, others and awardees, the use of sustainable forms of transport which will help us contribute to reducing our carbon emissions overall. The plan will also promote the use of such transport on a personal basis

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<sup>12</sup> Kg/Km conversion factors: 0.12716 Kg/Km (Air); 0.21280 (Car); 0.05774 (Rail)

#### **4. Carbon Offsetting**

Offsetting is an additional way for us to indirectly cut our emissions with carbon offsets generated from projects that reduce the amount of greenhouse gases entering the atmosphere. Using offsets can be an easy way to address carbon footprint in the short term, but this is only as good as the offsets acquired for those purposes and incurs additional costs with no financial return on investment. Addressing our carbon emissions through the actions proposed above and elsewhere in this paper will therefore be our approach. If, however, we fail to meet our intended targets we will reconsider adopting an offsetting approach to ensure that we do.

## **5. Progressing & Communicating Our Goals and Actions**

- i)** Our Deputy Chief Executive will be our 'Environmental Champion'. He / she will, with the support of the RSE Directors Group and the Green Team, manage resource efficiency as a whole, coordinate and facilitate reduction, re-usage and recycling actions, and act as the key focal point for communications, resources, action, programmes and training to create conditions for success.
- ii)** A lead person will be identified for individual actions and will progress those for which he / she is responsible.
- iii)** We will maintain and monitor information, for example in relation to energy consumption, paper usage and travel, on an ongoing basis throughout each year. This will enable comparison with previous years and will demonstrate, or otherwise, progress made.
- iv)** Our policy, actions and progress will be communicated externally, through the web-site and the RSE Newsletter, and communicated internally through the Fellows monthly bulletin, the weekly staff bulletin and monthly staff meetings.
- v)** We will create, on our Staff Intranet, a section dedicated to what we are doing and how we are progressing. This will contain a range of information, particularly in relation to progress so staff can see what has been achieved and assess their own contributions. This section will also serve as the source of information to be communicated externally and internally in the other ways mentioned above.
- vi)** Within our overall annual training plan we will build in relevant training activities for our staff
- vii)** We will engage with our tenants to encourage sustainable actions by them.
- viii)** We will report annually to our Trustees on progress made.