Twickenham Stadium

Carbon Footprint Calculation

17th June 2016

Document Reference:	Carbon Footprint
Prepared By:	Dru Morton
Issue Date:	17th June 2016
Status:	Issued
Issue Number:	2

Version	Date	Editor	Comment
1	21/03/16	D. Morton	Original draft
2	17/06/16	D. Morton	Updated to include Monster Jam

Exec Summary

Introduction and context

As part of the RFU's on-going commitment to environmental management we have calculated our carbon footprint. This carbon footprint has been developed for three different perspectives as follows:

1. The organisational footprint, encompassing all the activities if the RFU at Twickenham. This has been calculated for the CRC reporting year 2014/15.
2. A match day footprint, including those activities which are directly associated with match activities at Twickenham. This has been calculated for a typical match in the stadium as operated 2014/15.
3. A projected footprint for the proposed Monster Jam® event, this has been calculated according to the proposed event activities.

The footprints have been compiled in line with the greenhouse gas protocol initiative's corporate standard and utilising the DEFRA/DECC 2015 conversion factors for company reporting.

Results

RFU Total Annual Footprint 2014/15

The total organisational footprint for the RFU 2014/15 has been calculated as 17,694 tonnes CO_2e this can be broken down as follows:

Scope 1 emissions: 2,322 tonnes CO_2e – 13%
Scope 2 emissions: 6,982 tonnes CO_2e – 40%
Scope 3 emissions: 8,389 tonnes CO_2e –47%

This represents an 18% reduction from 2011 when our recorded footprint was 24,485 tonnes CO_2e, this represents the overall trend in our focus on environmental improvement. This reduction is therefore the result of improvements to our scope1 and 2 emissions, reducing gas and electrical consumption within the stadium.

The split by emission source is show in figure 1.

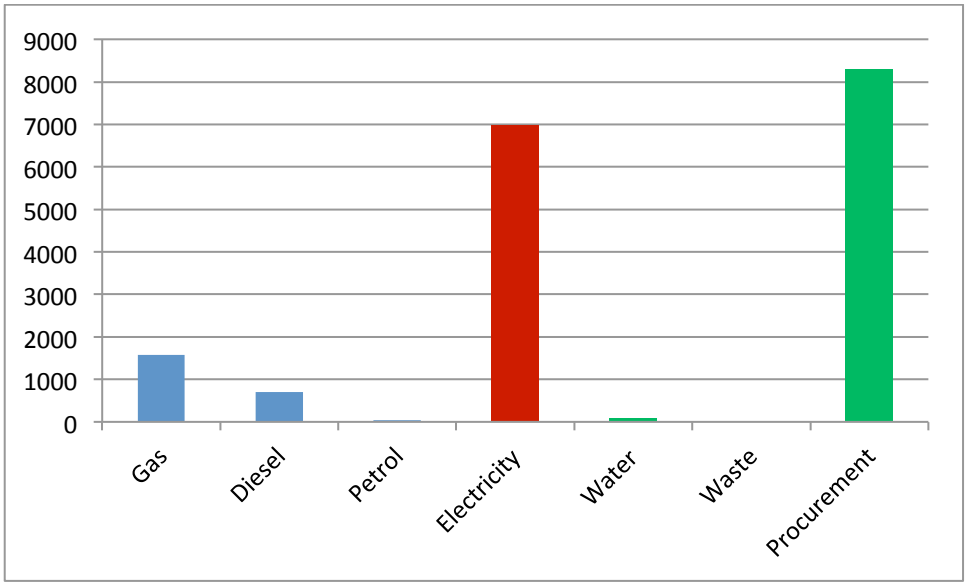

Figure 1 – RFU Carbon Footprint emissions sources 2014/15

RFU event footprint

The total footprint for a typical match day 2014/15 has been calculated as 218 tonnes CO_2e or 2.65 kg/ CO_2e per fan (based on a crowd size of 82,000)

A breakdown of this footprint by emissions source is shown in figure 2.

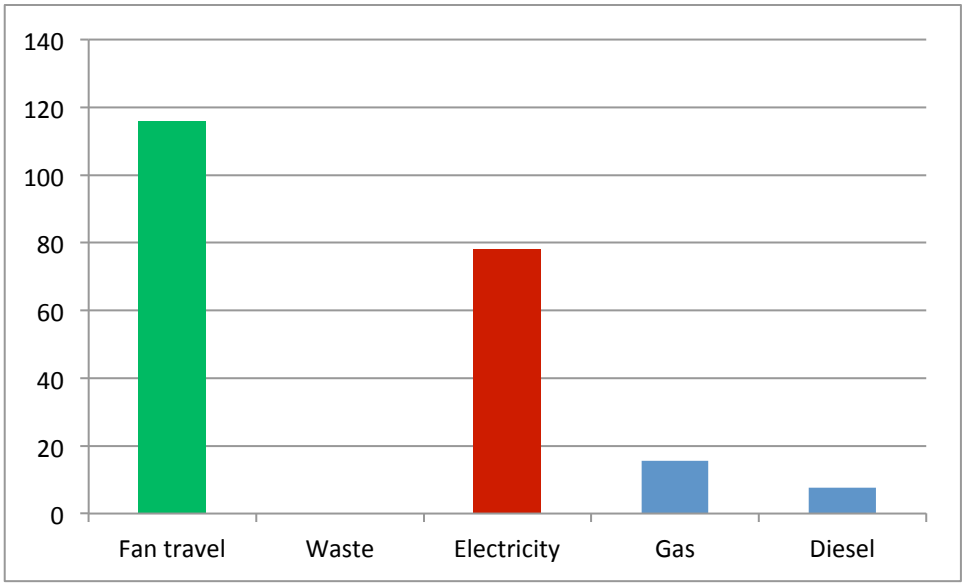

Figure 2 – Breakdown of RFU match day footprint by source 2014/15

Monster Jam forecast

The forecast footprint for the proposed Monster Jam event has been calculated as 185 tonnes CO_2e or 2.64 kg/ CO_2e per fan (Based on a crowd size of 70,000). A breakdown of this footprint by emissions source is shown in Figure 3.

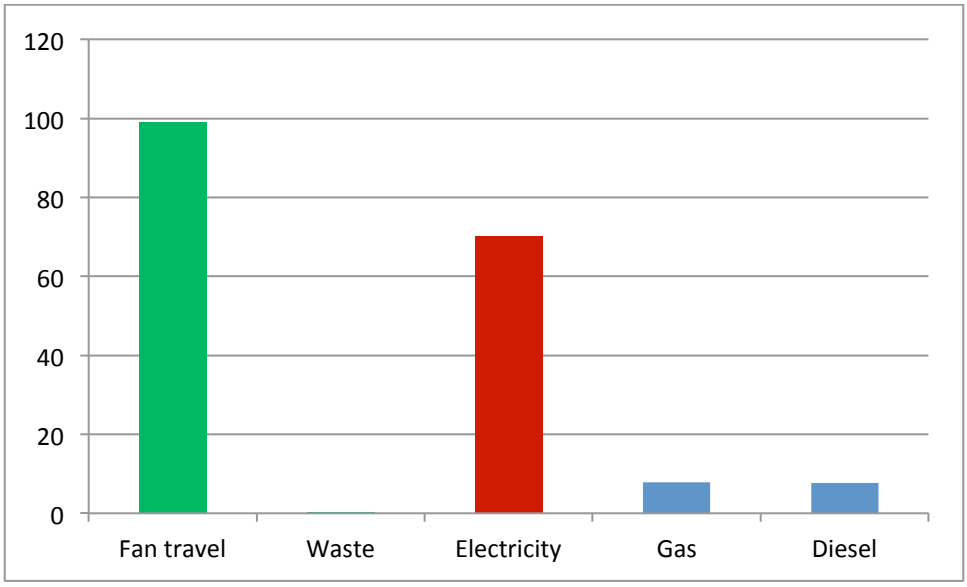

Figure 3 – Breakdown of proposed Monster Jam footprint by source

Overall the carbon footprint for the Monster Jam event is likely to be lower than for a typical RFU event and if delivered, would represent less than 1% of the total carbon footprint and is far outweighed by the overall carbon savings that have been achieved by the RFU over the last 5 years.

The RFU has taken a number of proactive steps to reduce its environmental impact and carbon footprint. Stadium Upgrade projects have improved the system efficiencies of many of the stadium's core services and ongoing optimisation of heating, cooling, lighting and IT systems have further driven reductions in the Stadium's scope 1 and 2 emissions.

The RFU has a "green" funding scheme for community rugby clubs which has invested over £250,000 in energy efficiency and renewable generation and will continue to fund projects of this nature as RFU moves towards effectively offsetting its emissions with the savings made by the sport as a whole.

The RFU are also involved in the UK government's CRC scheme which requires major consumers to report their scope 1 and 2 emissions and cover their emissions by purchasing allowances to cover their operations. Last year compliance with this scheme cost the RFU £158,571.

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1. Introduction

1.1 Scope of calculations

This report aims to calculate the RFU's carbon footprint utilising known data and qualified assumptions. Carbon footprints have been calculated for 3 different scopes, total organisational footprint, typical events and the proposed monster jam event. The scopes are as follows:

1. ***An organisational carbon footprint***, encompassing all the RFU's activities. For ease of calculation and data availability this has been calculated for the tax year April 2014 – March 2015 and includes the following aspects of RFU activity:
    - Purchased electricity
    - Gas consumption
    - Fleet fuel use
    - Diesel use
    - Petrol use
    - LPG Use
    - Fuel Oil use
    - Procurement of products and services
    - Waste disposal
    - Water use

Due to data availability, business travel has not been included in this footprint calculations.

2. ***A match day footprint***, including those activities which are directly associated with match activities at Twickenham. This has been calculated for a typical match during 2014/15 and includes the following aspects:
    - Purchased Electricity
    - Gas consumption
    - Diesel use
    - Waste disposal
    - Fan travel

Due to limitations in the availability of data, the following has had to be excluded from this calculation:

- Match day procurement
- Team Travel to Matches
- Water consumption

3. ***A forecast footprint for the proposed Monster Jam event***. This has been calculated utilising a the data for a typical match day and adjusted for the proposed crowd size. As such the same data limitations apply to this footprint as to the match day footprint.

The calculation of these footprints will be in line with internationally recognised standards, and will provide it with a robust baseline against which we can monitor future emissions impacts.

1.2 Report Structure

This report sets out the RFU's approach to calculating carbon footprints and provides a detailed breakdown of the results.

The remainder of the report is set out in the following sections:

Section 2: Methodology

Section3: RFU Footprints

2. Carbon Footprint Methodology

2.1 The Greenhouse Gas Protocol

The RFU's carbon footprint has been calculated in line with the Greenhouse Gas Protocol Initiative Corporate Standard. This standard categorises emissions under different scopes, reflecting the both the level of impact and control the organisation has over these emissions.

Table 1 - Definition of Scope 1, 2 and 3

Scope	Definition
Scope 1	Direct greenhouse gas emissions arising from sources that are owned or controlled by the company. For example, this may include emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc. or emissions from chemical production in owned or controlled process equipment.
Scope 2	Greenhouse gas emissions arising from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.
Scope 3	An optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Examples of Scope 3 activities include employee business travel, the extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

2.2 Data Collection

Table 2 - Types and sources of data used to calculate the Carbon Footprints

Data Type	Data Source	Emissions scope
Gas Consumption	Invoice and Metering Data	1
Diesel Consumption	Invoice Data	1
Petrol Consumption	Invoice Data	1
Fuel Oil Consumption	Invoice Data	1
Purchased Electricity Use	Half Hourly Meter Data	2

Generated Electricity Use	Half Hourly Meter Data	1
Supply Chain Emissions	RFU Procurement Records	3
Water Consumption	Water invoices	3
Waste Disposal	Waste Transfer notes	3
Fleet Vehicles	RFU Fuel Cards	1
Fan Travel	Calculations based on RFU travel Plan	3

2.3 footprint calculation

Emissions are a bi-product of the use of fuels and so in this case are those specifically related to the burning of fossil fuels, Carbon Dioxide (CO2) is the largest contributing gas but methane (CH4) and Nitrous Oxide (N2O) are also significant. To provide a uniform figure for carbon foot printing all emitted particulates are normalised by calculating their 'Global Warming Potential' and stating all emissions in terms of the equivalent quantity of CO2. This quantity is quoted in units of Kilograms carbon dioxide equivalent (kg CO_2e).

In calculating the RFU's carbon footprints 2015 greenhouse gas emission factors produced by the UK government have been applied. These are shown in appendix1.

2.3.1 Assumptions and exclusions

In calculating a footprint it is necessary to make a number of assumptions. The key assumptions that we have made for the footprints calculated for the RFU are as follows.

2.3.1.1 Organisational Footprint

Supply Chain – In order to calculate these emissions, we have utilised a dataset provided by RFU finance, detailing expenditure on goods and services during 2014/15. In using this data set, we have removed sources of expenditure which are accounted for elsewhere in the footprint calculation and would therefore result in double counting, for example utility use or fuel. Purchase descriptions have been matched as closely as possible to DEFRA's emission factors for goods and services to provide a demonstrative footprint for these activities.

Business Travel – Business travel was excluded from the report as the available data was of poor quality and could not be normalised to produce coherent results.

2.3.1.2 Match day footprint

Crowd Size – In calculating the match day footprint we have assumed a full capacity crowd size of 82,000.

Fan Travel – We have made assumptions about the distance travelled by fans to a typical match based upon a match day travel questionnaire previously issued by the RFU and contained within the stadium travel plan. Using this data we have taken average information on fan travel from three fixtures detailed to provide a guideline for typical emissions.

Energy Consumption – Energy consumption was averaged from 10 capacity events in the 2014/15 season, data was taken from metering onsite.

Waste – Waste volumes were calculated from an average of 10 capacity events in the 2014/15 season and based on waste transfer notes presented for the events.

Match Day Procurement – Match day procurement footprints are being investigated but currently the data available does not represent the actual emissions impact. Therefore to avoid misrepresentation this has been excluded from the report.

Team Travel – No data was available for team travel at the time of reporting so this has been excluded from the reported footprint.

2.3.1.3 Monster Jam Footprint

Crowd size – In calculating the Monster Jam footprint we have assumed a capacity of 70,000 and have therefore scaled down projected services accordingly.

Fan Travel – Assumed to follow a similar profile to regular match day fan travel and proportioned according to the estimated crowd size.

Energy Consumption – Electricity consumption will be largely similar to a regular match day as many of the same services will be in use, a small reduction would be expected due to the reduced use of services but this will be minimal. Gas consumption is assumed to be significantly reduced due to both the time of year and the different hospitality expectations for the event.

Waste – Waste generation was assumed to be in line with regular match day operations.

Performance Emissions – Consideration for the performance emissions of the monster trucks was considered but Monster Jam confirmed that all their vehicles ran on biofuels and so were discounted from this footprint.

3. Carbon Footprints

This section sets out the results of each footprint and assesses the major emissions sources. This is split into the organisational footprint, match day footprint and monster jam footprint.

3.1 Organisational carbon footprint

This section contains the results of the RFU organisational carbon footprint calculation 2014/15.

The total organisational footprint was calculated as 17,694 tonnes CO_2e. This represents a 18% improvement on the 2011 footprint as calculated by Ricardo AEA. Significant areas of improvement include reduced gas consumption and reduced electrical consumption as a result of the stadium upgrade projects.

Figure 4 below shows the breakdown of this footprint by emissions source.

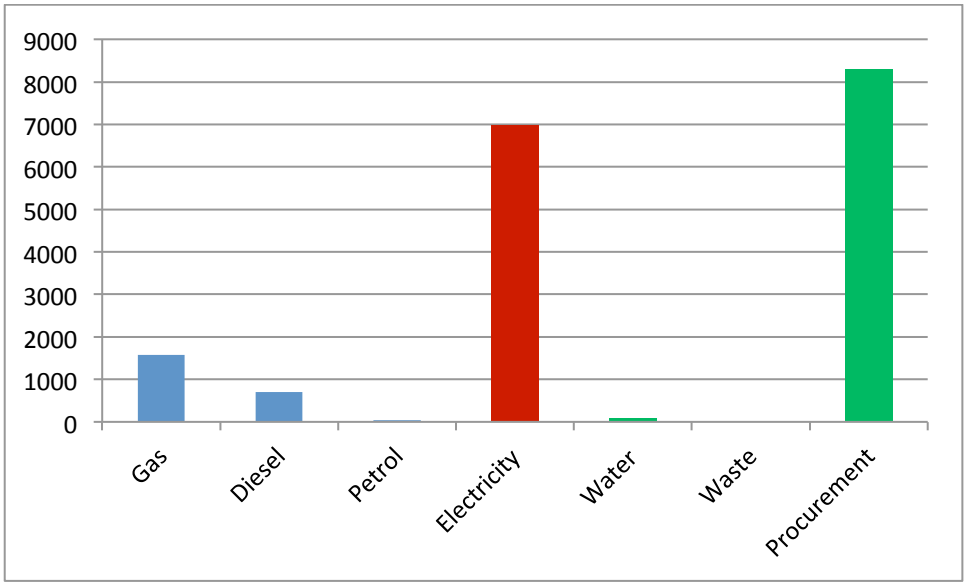

Figure 4 – Breakdown of RFU organisational footprint by emissions source

Figure 4 shows that the largest emissions source continues to be our procurement activities however, further investigations into this area are needed to identify the real footprint of our activities as this figure is based on national standards rather than bespoke figures. RFU procurement have been engaged to improve reporting in this area by engaging new and existing suppliers on emission reduction issues.

Electricity still accounts for a significant proportion of the footprint and represents a significant area of opportunity for reduction by implementing energy reduction measures.

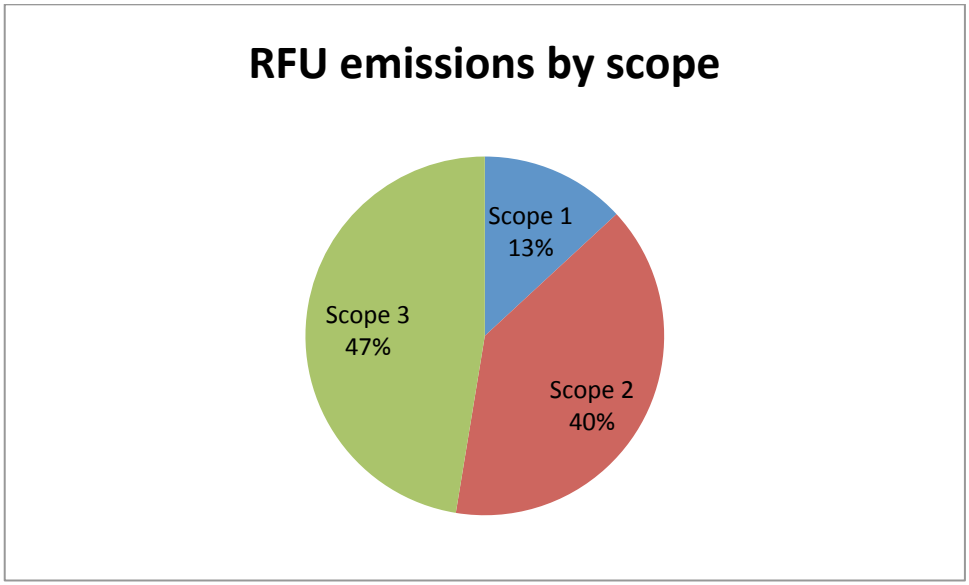

Figure 5 – RFU emissions by emissions scope

As you would expect from figure 4, figure 5 shows that scope 3 emissions represent the largest contribution to the RFU's footprint with 47%, this is predominantly due to the significant level of procurement associated emissions.

3.1.1 Emissions by scope

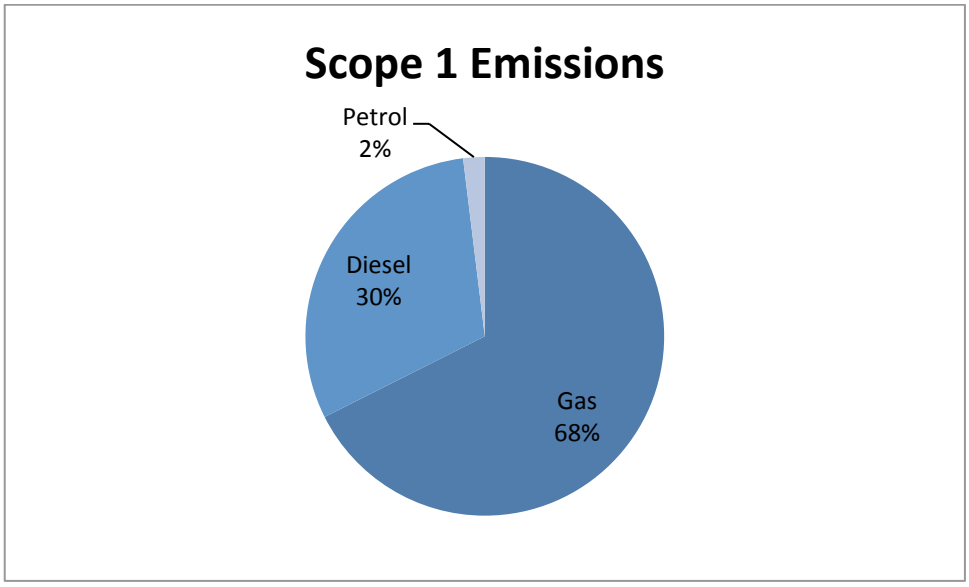

Figure 6 – Breakdown of scope 1 emissions

Scope 1 emissions are those which the RFU directly influences. Although they represent the smallest proportion of the overall footprint, they are often one of the most straightforward areas to influence and make reductions. In 2014/15 Gas consumption is still the most significant factor in this area, though RFU fleet travel also has a large impact in this area.

Scope 2 emissions arise solely from purchased electricity and represent 40% of the overall carbon footprint.

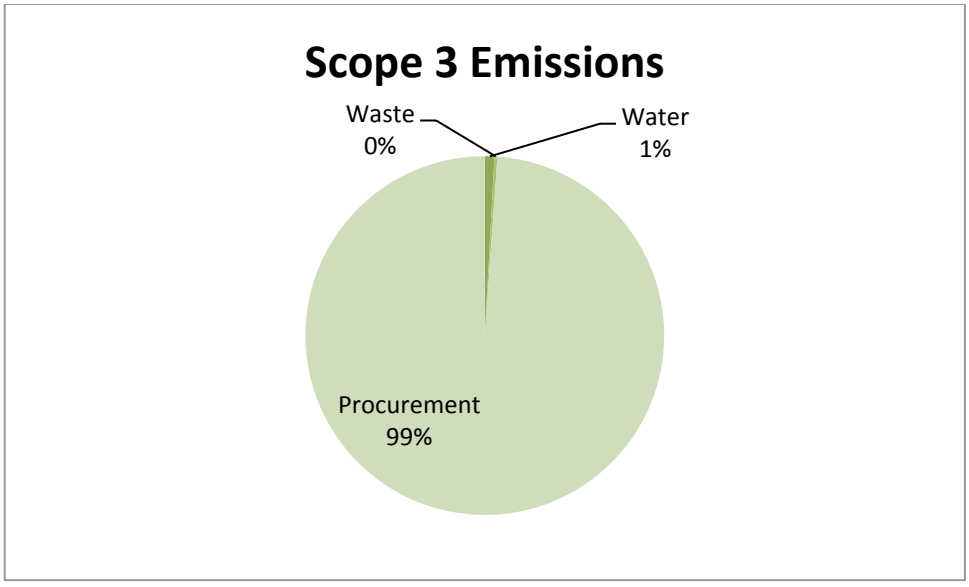

Figure 7 – Breakdown of scope 3 emissions

Scope 3 emissions represented 47% of the RFU's organisational carbon footprint in 2014/15 these are largely attributable to procurement. The contribution of Waste and Water to scope 3 emissions is just over 1% due to improvements in waste management since 2011.

3.2Match day Footprint

This section contains the results of the RFU match day carbon footprint calculation for 2014/15. The carbon footprint of a typical match at Twickenham stadium in 2014/15 has been calculated as 217Tonnes CO_2e. This is based on a typical event profile and crowd size of 82,000.

Figure 8 shows the split of emissions sources contributing to the match day footprint. It shows that fan travel was the main contributing factor to the footprint.

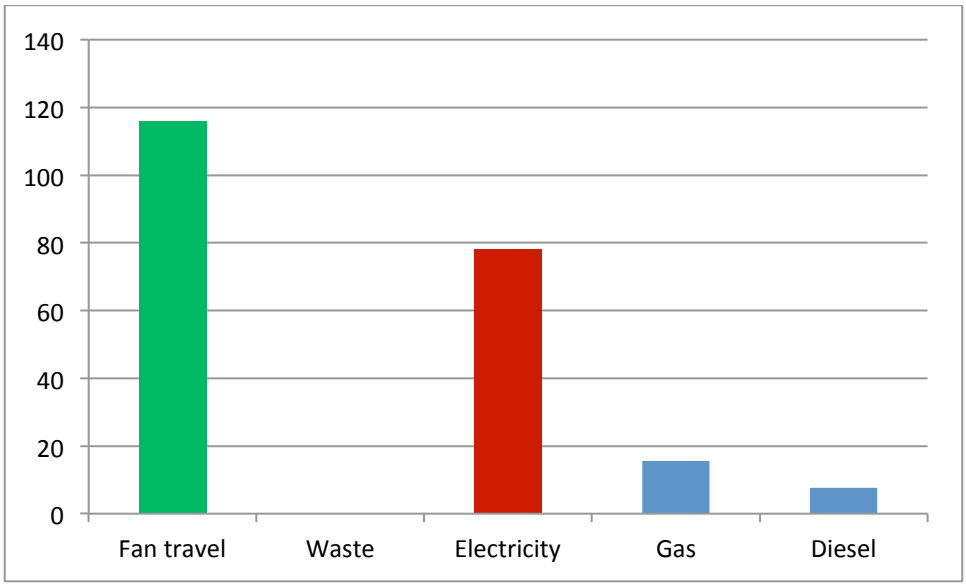

Figure 8 – Split of emissions sources for match day operations

3.2.1 Emissions by scope

Figure 9 below shows the carbon footprint breakdown for a typical match day at Twickenham split by the emissions scope.

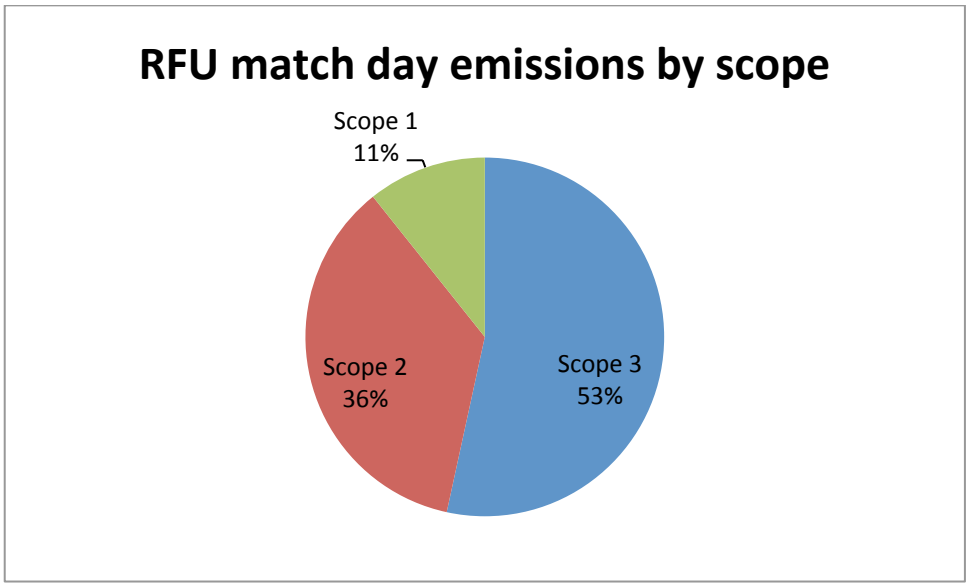

Figure 9 – break down of match day emissions by scope

Scope 3 emissions are by far the most significant contributor to the RFU's event day footprint. These represent 53% of the total event footprint and are made up of fan travel and waste disposal. Figure 10 shows that fan travel makes up over 99% of these emissions and is therefore the most significant impact on the overall footprint of an event at Twickenham. Waste has a minimal impact as significant work has been undertaken by the stadium to ensure that recycling and energy from waste have been prioritised and the stadium is now zero to landfill for all it's operations.

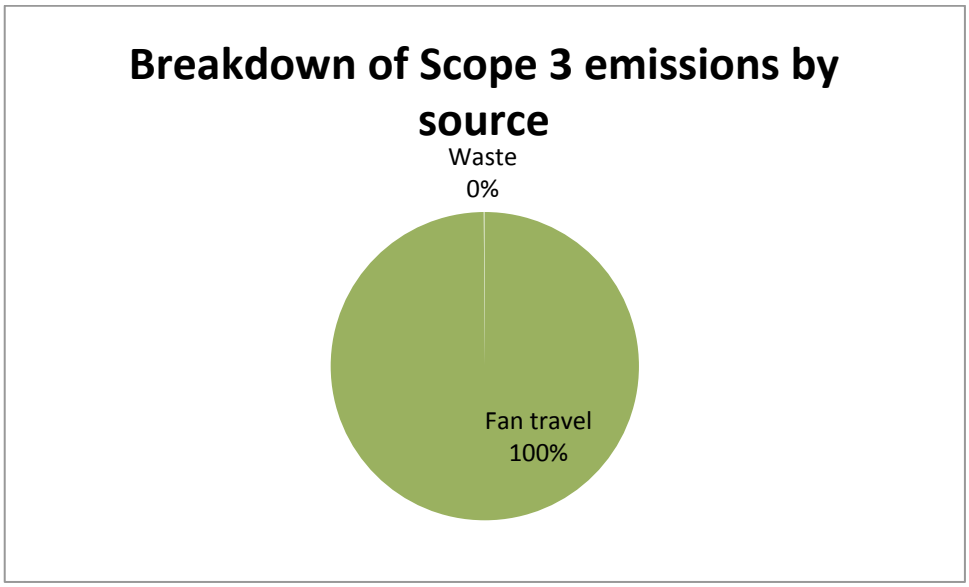

Figure 10 – breakdown of scope 3 emissions for a match day at Twickenham

Scope 2 emissions arise solely from purchased electricity and represent 36% of the overall carbon footprint.

Scope 1 emissions are those which the RFU directly influences. Although they represent a small proportion of the overall footprint (11%) they are often the areas most simple to impact and reduce. The main contributions to scope 1 emissions for match days at Twickenham are natural gas as used in heating, hot water and cooking at the stadium and diesel use for the generators on site which power the floodlights and other essential services on a match day. A breakdown of Scope1 emissions is shown below in figure 11.

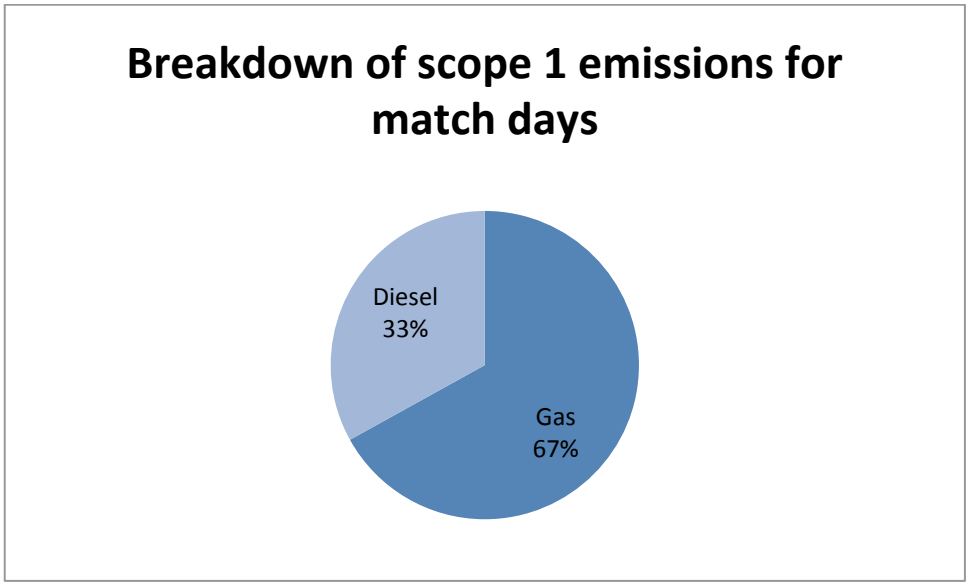

Figure 11 – Breakdown of scope 1 emissions at match days at Twickenham

3.3 Monster Jam Footprint

This section contains the calculated carbon footprint for the proposed Monster Jam event. Working from the proposed crowd size and event profile we have calculated that we expect Monster Jam 's footprint to be roughly 184Tonnes CO_2e.

Figure 12 shows the split of emissions sources contributing to the Monster Jam footprint. It shows that fan travel is again the main contributing factor to the footprint.

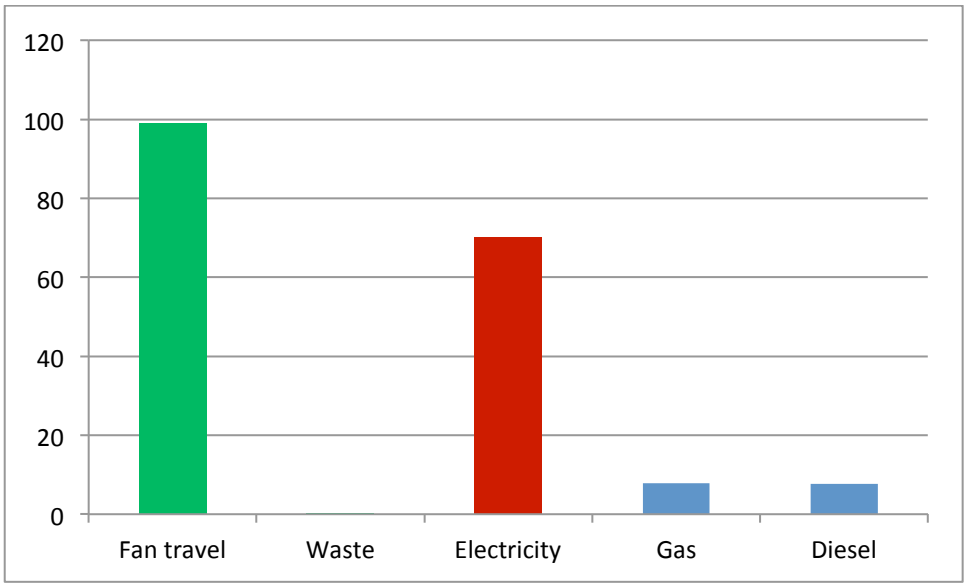

Figure 12 – Breakdown of carbon footprint for proposed Monster Jam event.

Whilst still significant, the reduced capacity for the event will reduce the environmental impact of our operations for the proposed event. Scope 1 and 2 emissions which are most within the control of the RFU make up just 46% of the overall footprint and will be optimised to best fit the event plan. Electrical consumption has been conservatively calculated to demonstrate a minimal reduction but altered hospitality arrangements and reduced

operational hours could still produce a greater reduction in scope 2 emissions. Gas consumption has been estimated as a large reduction both due to the different hospitality programme as well as the time of year the event is being held in. Figure 13 shows the most significant aspect of our carbon footprint is going to be fan travel which is outside the RFU's direct control but this could still be improved with greater focus on public transport solutions.

3.3.1 Emissions by scope

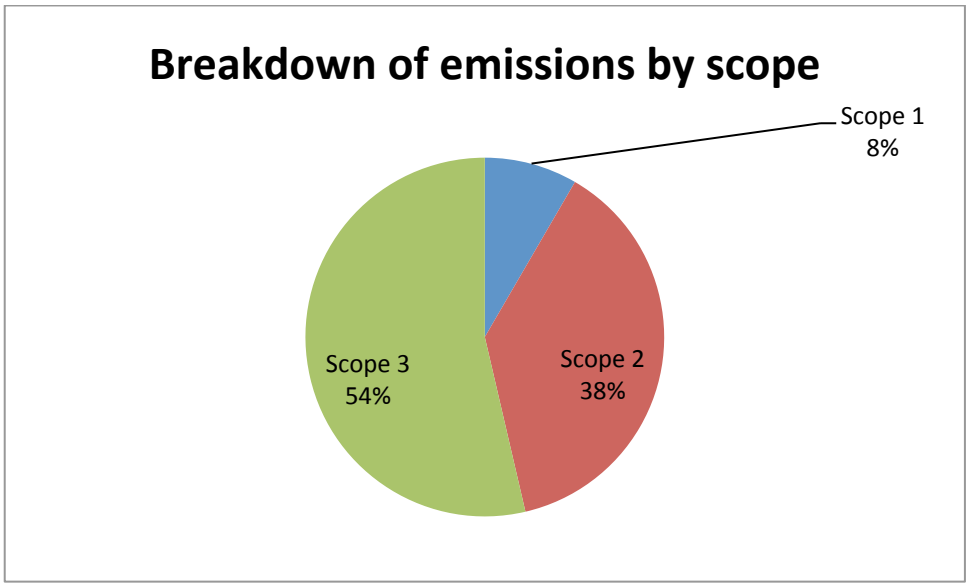

Figure 13 – Breakdown of emissions by scope for proposed Monster Jam event

Scope 3 emissions will again be the most significant aspect of the event footprint accounting for 54% of the emissions. The following sections will give a breakdown of the emissions scopes, their makeup and the actions that will be taken to minimise our impacts.

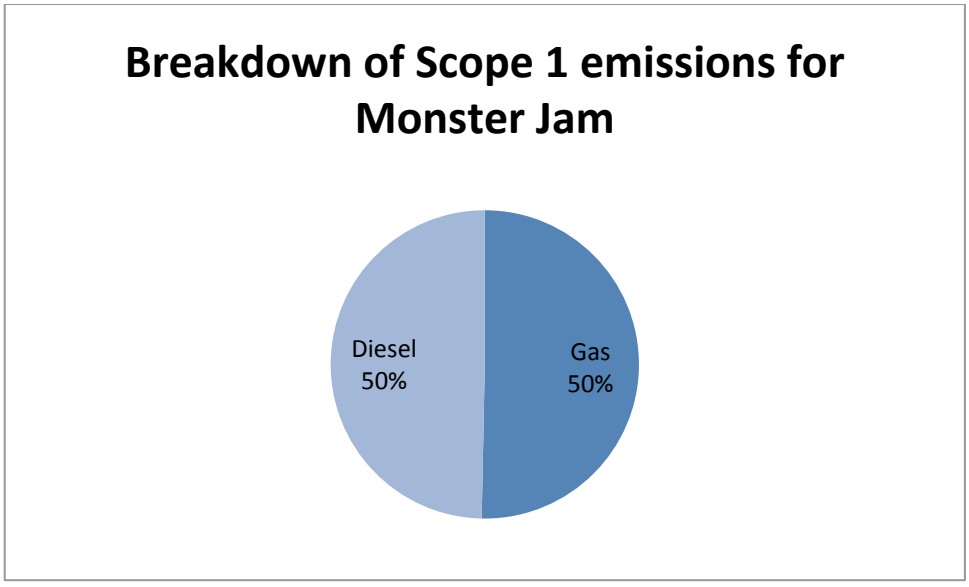

Figure 14 – Breakdown of scope 1 emissions for the proposed monster jam event

Scope 1 emissions are projected to be lower for this event than for other sporting events Twickenham holds, this is because much like a concert the hospitality offering for the event is likely to be different and the requirements for catering and climate control reduced. Diesel generators will still be in use to provide resilience for critical event day consumption. Scope 1 emissions only make up 8% of the proposed event's footprint but the RFU will ensure that generator run times are optimised to minimise consumption and gas building services will be scheduled tightly to ensure minimal gas consumption.

Scope 2 emissions arise solely from purchased electricity and represent 38% of the overall carbon footprint. For the purposes of this calculation we have minimally reduced scope 2 emissions from purchased electricity, however due to the changes in hospitality arrangements we are likely to see a more significant energy reduction for the actual event. Figure 15 shows the energy consumption profile for a concert against the profile for a sporting event and the large peak through the middle of the day at a sports event is due to the extra demands of corporate hospitality. This will be significantly lower for the proposed monster jam event and therefore could eventually show a reduction in scope 2 emissions.

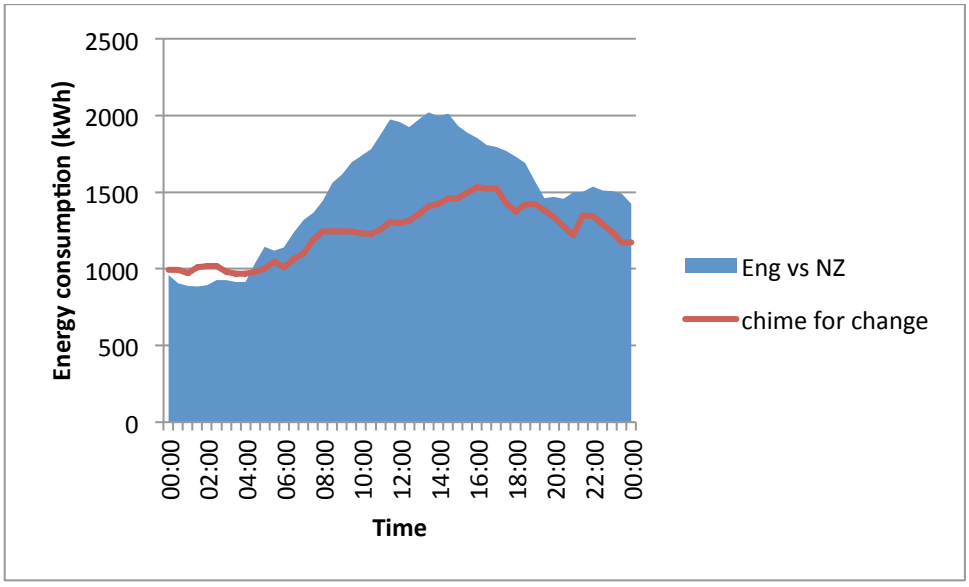

Figure 15 – Comparison of energy profiles for a rugby match and concert.

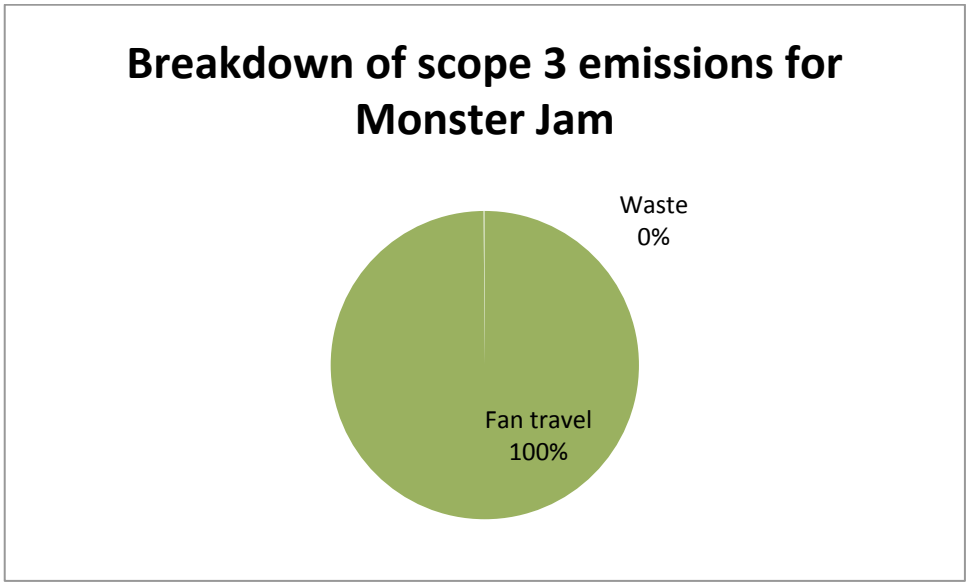

Figure 16 – Breakdown of scope 3 emissions for the proposed monster jam event.

Scope 3 emissions have been calculated as the most significant impact area in the proposed event's carbon footprint. Scope 3 emissions are emissions which are due to the activity or event holder's event but outside of their direct control. Fan travel is the most significant aspect of this as shown in Figure 16. It is therefore recognised that further consultation will be required for the Monster Jam event dates when known. Once dates have been confirmed the RFU will contact stakeholders to ensure that there are suitable transport and management conditions in place to manage the impact of the event as per the Transport supporting statement.

Overall the carbon footprint for the Monster Jam event is likely to be lower than for a typical RFU event and if delivered would represent an increase in our overall footprint of less than 1%.

4. Mitigation

The RFU has taken a number of proactive steps to reduce its environmental impact and carbon footprint. Stadium Upgrade projects have improved the system efficiencies of many of the stadium's core services and ongoing optimisation of heating, cooling, lighting and IT systems have further driven reductions in the Stadium's scope 1 and 2 emissions.

The RFU does not have an arrangement in place to offset it's emissions formally, however the RFU does have a "green" funding scheme for community rugby clubs which has invested over £250,000 in energy efficiency and renewable generation. Whilst we have not tracked the carbon savings from these activities they will have been significant and as we continue to fund projects of this type we move towards effectively offsetting our emissions with the savings made by the sport as a whole.

The RFU are also involved in the UK government's CRC scheme which requires major consumers to report their scope 1 and 2 emissions and cover their emissions by purchasing0 allowances to cover their operations. Last year compliance with this scheme cost the RFU £158,57

Appendix 1 – Emission Factors

Activity	Units	Emission Factor kgCO2e
Fan Travel (Scope 3)	Km	Average petrol car: 0.04096 Average diesel Car: 0.03726 London Bus: 0.01742 Coach: 0.00597 Rail: 0.00964 Underground: 0.00964 International Flight: 0.02247 Short Haul Flight: 0.01964
Energy (Scope 1 & 2)	kWh	Electricity: 0.46219 Natural Gas: 0.18445 Diesel: 0.24435 Petrol: 2.2423 LPG: 1.5326 Gas Oil: 3.0213
Water (Scope 2)	m3	Water Treatment: 0.7085 Water Supply: 0.3441
Procurement (Scope 3)	Per £	Phone Charges: 0.41 Food and Drink: 0.97 Hotels: 0.49 Apparel: 0.29 Printing and publishing: 0.36 Office equipment: 0.53 Post: 0.41 Road transport: 0.95 Machinery rental: 0.32 Legal advice: 0.17 Printing ink: 0.5 Distribution: 0.38 Healthcare: 0.34 Pharmaceutical : 0.43 Other business services: 0.13 Insurance :0.28 Computer Service: 0.2 Other business activities: 0.17 Banking and finance : 0.15 Real Estate: 0.12 Cleaning: 0.33 TV Services: 0.48
Waste (scope 3)	Per Tonne	Non- landfill: 21

Appendix 2 –Fan Travel

The table below details the assumptions applied to the calculation of emissions associated with fan travel to matches. Information on distance and area has been taken from a travel survey carried out by RFU.

Distance	Area	Prem Final	Assumptions		Eng v Aus	Assumptions		Eng v Ita	Assumptions	
<2km	Twick, Hounslow	492	75% walk, 25% bus	SCOPE 3	1148	75% walk, 25% bus	SCOPE 3	1066	75% walk, 25% bus	SCOPE 3
		369	WALK	0	861	WALK	0	799.5	WALK	0
		123	BUS	2.145366	287	BUS	9.99908	266.5	BUS	9.28486
2-5km	Richmond & Hounslow	656	70% train, 10% underground, 20%walk. Average distance travelled 3.5km	DIRECT	1148	80% train, 20%walk. Average distance travelled 3.5km	DIRECT	1558	80% train, 20%walk. Average distance travelled 3.5km	DIRECT
		459.2	TRAIN	14.416584	803.6	TRAIN	25.229022	1090.6	TRAIN	73.370115
		131.2	WALK	0	229.6	WALK	0	311.6	WALK	0
		65.6	UNDERGROUND	0.2213344	114.8	UNDERGROUND	3.873352	155.8	UNDERGROUND	5.256692
5-10km	West London	984	80% train, 10% private car, 10% bus. Average distance travelled 7.5km	DIRECT	4346	80% train, 10% private car, 10% bus. Average distance travelled 7.5km	DIRECT	4018	80% train, 10% private car, 10% bus. Average distance travelled 7.5km	DIRECT
		787.2	TRAIN	52.95888	3476.8	TRAIN	233.90172	3214.4	TRAIN	216.24876
		49.2	PRIVATE CAR - PETROL	15.11424	217.3	PRIVATE CAR - PETROL	66.75456	200.9	PRIVATE CAR - PETROL	61.71648
		49.2	PRIVATE CAR - DIESEL	13.74894	217.3	PRIVATE CAR - DIESEL	60.724485	200.9	PRIVATE CAR - DIESEL	56.141505
		98.4	BUS	12.85596	434.6	BUS	56.78049	401.8	BUS	52.49517
10-50km	Greater London, South East	16072	50% train, 20% underground, 30% private car. Average distance travelled: 30km.	DIRECT	34440	50% train, 20% underground, 30% private car. Average distance travelled: 30km.	DIRECT	31898	70% train, 30% private car. Average distance travelled: 30km.	DIRECT
		8036	TRAIN	2162.4876	17220	TRAIN	4633.902	15949	TRAIN	4291.8759
		3214.4	UNDERGROUND	929.60448	6888	UNDERGROUND	1992.0096	6379.6	UNDERGROUND	1844.98032
		2410.8	CAR - DIESEL	2694.79224	5166	CAR - DIESEL	5774.5548	4784.7	CAR - DIESEL	5348.33766
		2410.8	CAR - PETROL	2962.39104	5166	CAR - PETROL	6347.9808	4784.7	CAR - PETROL	5879.43936
50-100km	Southern England, S Midlands	19680	70% train, 20% private car, 10% coach. Average distance travelled 75km.	DIRECT	16564	70% train, 20% private car, 10% coach. Average distance travelled 75km.	DIRECT	18532	70% train, 20% private car, 10% coach. Average distance travelled 75km.	DIRECT
		13776	TRAIN	9267.804	11594.8	TRAIN	7800.4017	12972.4	TRAIN	8727.1821
		1968	CAR - DIESEL	5499.576	1656.4	CAR - DIESEL	4628.8098	1853.2	CAR - DIESEL	517.87674
		1968	CAR - PETROL	6045.696	1656.4	CAR - PETROL	5088.4608	1853.2	CAR - PETROL	5693.0304
		1968	Coach	881.172	1656.4	Coach	741.6531	1853.2	Coach	829.7703
100-200km	Midlands, East Anglia	35588	70% train, 20% private car, 10% coach. Average distance travelled: 150km.	DIRECT	15908	70% train, 20% private car, 10% coach. Average distance travelled: 150km.	DIRECT	15088	70% train, 20% private car, 10% coach. Average distance travelled: 150km.	DIRECT
		24911.6	TRAIN	33518.5578	11135.6	TRAIN	14982.9498	10561.6	TRAIN	14210.6328
		3558.8	CAR - DIESEL	19890.1332	1590.8	CAR - DIESEL	8890.9812	1508.8	CAR - DIESEL	8432.6832
		3558.8	CAR - PETROL	21865.2672	1590.8	CAR - PETROL	9773.8752	1508.8	CAR - PETROL	9270.0672
		3558.8	Coach	3186.9054	1590.8	Coach	1424.5614	1508.8	Coach	1351.1304
200-300km	South West, North West, Yorkshire	6642	80% train, 20% coach. Average distance travelled: 250km.	DIRECT	6232	80% train, 20% coach. Average distance travelled: 250km.	DIRECT	7298	80% train, 20% coach. Average distance travelled: 250km.	DIRECT
		5313.6	TRAIN	11915.748	4985.6	TRAIN	11180.208	5838.4	TRAIN	13092.612
		1328.4	COACH	1982.637	1246.4	COACH	1860.252	1459.6	COACH	2178.453
300-400km	North East	1804	80% train, 10% coach, 10% private car. Average distance travelled: 450km.	DIRECT	1804	80% train, 10% coach, 10% private car. Average distance travelled: 450km.	DIRECT	2214	80% train, 10% coach, 10% private car. Average distance travelled: 450km.	DIRECT
		1443.2	TRAIN	5825.4768	1443.2	TRAIN	5825.4768	1771.2	TRAIN	7149.4488
		180.4	COACH	48.46446	180.4	COACH	484.6446	221.4	COACH	594.7911
		180.4	CAR - DIESEL	3024.7668	180.4	CAR - DIESEL	3024.7668	221.4	CAR - DIESEL	3712.2138
		180.4	CAR - PETROL	3325.1328	180.4	CAR - PETROL	3325.1328	221.4	CAR - PETROL	4080.8448

400-500km	**Southern Scotland**	0	100% train, average distance travelled 450km	DIRECT	328	95% train, 5% long haul flight Flight:17000km, rail: 450km	DIRECT	328	Short haul flight, 1000km	DIRECT
		0	TRAIN	0	311.6	TRAIN	1257.7734	328	FLIGHT	6441.92
					16.4	FLIGHT	6264.636			
Total	**UK**	100%			100%			100%		
			TOTAL:	135138.0741		TOTAL:	105760.2933		TOTAL:	104121.8035