Carbon Footprint Appraisal Report

Assessment Period:
1st January 2017 – 31st December 2017

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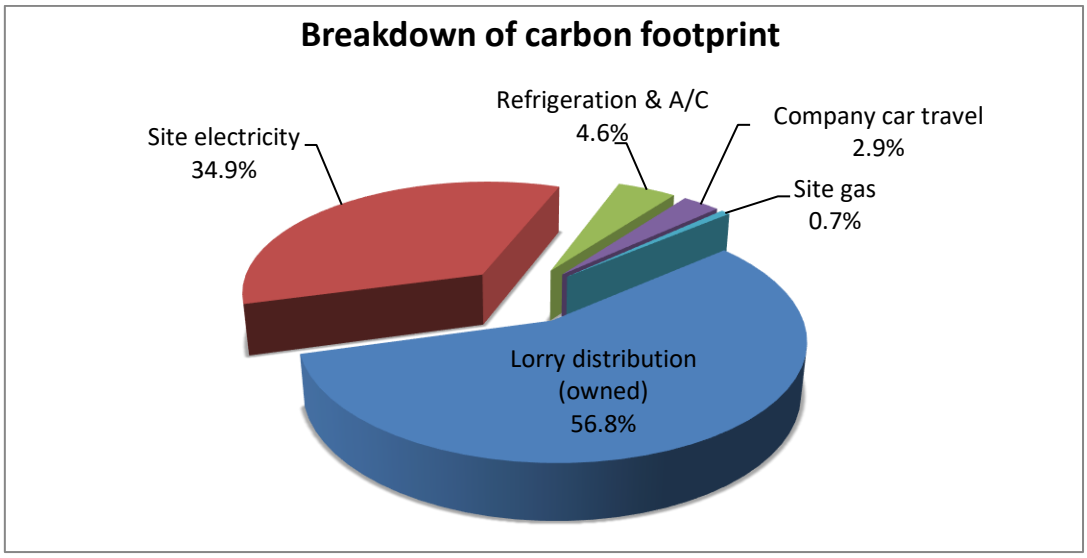
Executive Summary

Carbon Footprint Ltd has assessed the greenhouse gas (GHG) emissions of Hopwells Ltd (Hopwells) from 1st January 2017 to 31st December 2017 based on a dataset provided by the company. The chart below shows the sources of emissions with lorry distribution accounting for 56.8% of the total GHG emissions.



The table below demonstrates historical emissions compared to this year's results showing:

- An increase in absolute emissions by 3.0% compared to the previous year (2016), however this is 6.8% lower than the baseline year.
- A decrease in emissions per employee by 4.4% compared to the previous year and by 15.0% since the baseline year.

	2013	2016	2017	% change from baseline year	% change from previous year
Total tonnes of CO_2e	4,755.36	4,304.86	4,434.20	-6.8%	+3.0%
tCO_2e per employee	17.81	15.83	15.13	-15.0%	-4.4%
tCO_2e per £M turnover	74.55	65.24	66.28	-11.1%	+3.2%

The increase in Hopwells's carbon footprint, since the previous year, is due to the increase in emissions from lorry distribution (as more fuel has been consumed this year) and refrigerants. A large refrigerant replenishment was required at Ormskirk which uses R404A, a refrigerant gas with a high global warming potential. Sheffield and Darlington depots achieved a reduction in electricity consumption, whereas the other sites maintained or increased their consumption. Kimbolton in particular had a significant (23.4%) increase in electricity consumption, approximately 133,000 kWh.

Key Recommendations:

- Investigate switching to alternative fuels, such as diesel with a higher biofuel blend (preferably derived from waste oil rather than crops).
- Use the new telematics system to analyse different styles of driving and discuss results with employees to encourage engagement. E.g. ask a group of volunteers to reduce their max. speed to 50mph (for the lorry drivers) for a trial period and analyse the quantitative and qualitative data.
- Consider the options available to enable Ormskirk to use a refrigerant gas with lower GWP.
- Regularly check the half-hourly electricity data to ensure potential anomalies are identified quickly.

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Quality Control

Report issue number:	1.0
Date:	27 November 2018
Calculations completed by:	Georgina Whitlock
Calculations reviewed by:	Iain Forsyth
Report produced by:	Georgina Whitlock
Report reviewed by:	Iain Forsyth
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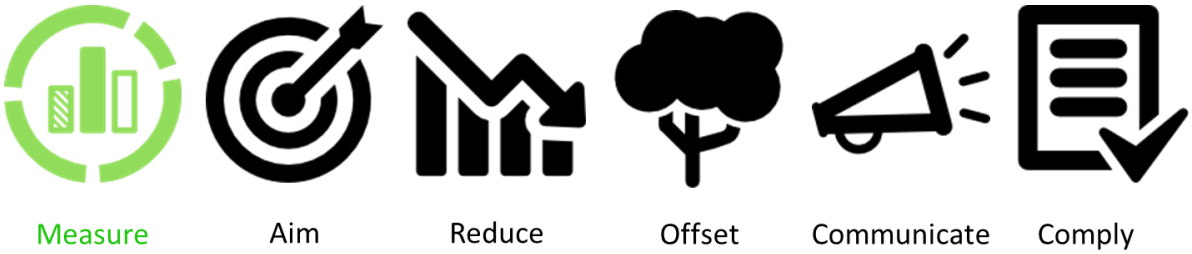
1. Introduction

1.1. Hopwells Ltd's carbon management journey

Carbon Footprint provides a simple six step annual journey to enhance your sustainability credentials whilst complying to best practice and differentiating your brand. Hopwells has completed the first step of its carbon management journey.



The purpose of this report is to:

- Summarise the results of your carbon footprint assessment.
- Recommend realistic aims for your carbon reduction target.
- Provide practical recommendations to enhance your sustainability programme and reduce your emissions.
- Communicate your carbon management performance internally and externally.

1.2. What is a carbon footprint?

A carbon footprint is a measure of the impact our activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide equivalents (CO_2e). A carbon footprint is made up of two parts, direct and indirect emissions.

1. **Direct emissions:**
   Direct emissions are produced by sources which are owned or controlled by the reporting organisation and include electricity use, burning oil or gas for heating, and fuel consumption as a result of business travel or distribution. Direct emissions correspond to elements within scopes 1, 2 and 3 of the World Resources Institute GHG Protocol, as indicated in Table 1.

Table 1: Direct emissions sources

Footprint	Activity	Scope
Direct	Electricity, heat or steam generated on-site	1
	Natural gas, gas oil, LPG or coal use attributable to company owned facilities	1
	Company owned vehicle travel	1
	Production of any of the six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs and SF_6)	1
	Consumption of purchased electricity, heat steam and cooling	2
	Employee business travel (using transport not owned by the company)	3

2. **Indirect emissions:**
   Indirect emissions result from a company's upstream and downstream activities. These are typically from outsourced/contract manufacturing, and products and the services offered by the organisation. Indirect emissions correspond to scope 3 of the World Resources Institute GHG Protocol excluding employee business travel as indicated in Table 2.

Table 2: Indirect emissions sources

Footprint	Activity	Scope
Indirect	Employee commuting	3
	Transportation of an organisation's products, materials or waste by another organisation	3
	Outsourced activities, contract manufacturing and franchises	3
	GHG emissions from waste generated by the organisation but managed by another organisation	3
	GHG emissions from the use and end of life phases of the organisation's products and services	3
	GHG emissions arising from the production and distribution of energy products, other than electricity, steam and heat, consumed by the organisation	3
	GHG emissions from the production of purchased raw or primary materials	3
	GHG emissions arising from the transmission and distribution of purchased electricity	3

For businesses, the assessment focuses on direct emissions, as these lie under the control of the organisation. However, we ask companies to recognise that there is an indirect emissions footprint and select suppliers based on their environmental credentials alongside price and performance.

1.3. Why is it important?

Over the past two decades the effects of climate change have accelerated. Considerable evidence exists proving climate change has been exacerbated by human activity. Changes in our post-industrial lifestyles have altered the chemical composition of the atmosphere, generating a build-up of greenhouse gases – primarily carbon dioxide, methane, and nitrous oxide levels – raising the average global temperature.

The consequences of inaction will be disasterous. Sea level will continue to rise and local climate conditions to be altered causing an increase in extreme weather events, affecting forests, crop yields, and water supplies. It will also affect human health, accelerate species extinction, and disrupt many ecosystems.

Climate change is a global threat which will impact the lives of everyone on the planet. Hence, it is vital that all individuals, businesses, organisations and governments work towards the common goal of reducing greenhouse gas emissions. This carbon footprint assessment will enable Hopwells to continue doing their bit by monitoring, reducing and offsetting their emissions.

1.4. BS ISO 14064-1:2006

This GHG report has been prepared in accordance with Part 1 of BS ISO 14064: 2006. The GHG inventory, report, or assertion has not been verified.

1.5. Calculation methodology

The carbon footprint appraisal is derived from a combination of client data collection and data computation by Carbon Footprint's analysts.

Carbon Footprint's analysts have calculated Hopwells Ltd's carbon footprint using the 2017 conversion factors developed by the UK Department for Environment, Food and Rural Affairs (Defra) and the Department for Business, Energy & Industrial Strategy (BEIS). These factors are multiplied with the company's GHG activity data. Carbon Footprint has selected this preferred method of calculation as a government recognised approach and uses data which is realistically available from the client, particularly when direct monitoring is either unavailable or prohibitively expensive.

Additional methodology information is presented in Annex A

1.6. Data supplied for the carbon footprint appraisal

A summary of the data supplied by Hopwells for the appraisal is presented in Annex B.

1.7. Abbreviations

A/C	Air Conditioning
BEIS	Department for Business Energy & Industrial Strategy
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
FGAS	Fluorinated Gas
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFO	Hydrofluoro-olefin
HGV	Heavy Goods Vehicle
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
MPG	Miles per gallon
PR	Public Relations
UN	United Nations

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from 1st January 2017 to 31st December 2017 resulting from the energy consumption at Hopwells Ltd's facilities and its business transport activities.

2.2. Organisational & operational boundaries

The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has financial control. The assessment covers the following operational boundaries:

Figure 1: Assessment boundary

Scope 1 Direct Emissions	Scope 2 Energy Indirect	Scope 3 Other Indirect
Fuel combustion **Natural gas**	Consumption of purchased electricity, heat steam and cooling **Electricity**	Purchased materials and fuels **None**
Owned Transport **Company car travel and lorry distribution**		Transmission and distribution of energy **Electricity**
Process emissions **None**		Leased assets outsourcing and franchising **None**
Fugitive emissions **Refrigeration & A/C**		Transport related activities **None**
		Sold goods and services **None**
		Waste Disposal **Residual & Recyclable**

Key:

Within the assessment boundary	Not included within assessment boundary

Indirect GHG sources that are outside the assessment boundary have been excluded from quantification as it is not technically feasible or cost effective, to include these in the GHG assessment.

2.3. Calculation accuracy & materiality

The result of a carbon footprint calculation varies in accuracy depending on the data set provided. The more accurate the data supplied, the more accurate the final result which will subsequently allow for better targeting of areas where improvements can be made. Materiality is determined by the percentage contribution of each element to the overall footprint. The data provided for this assessment has been derived from accurate and reliable sources such as energy bills, invoices and service records (Table 3).

Table 3: Assessment accuracy & materiality

Dataset	Source of data and comments	Accuracy	Materiality
Lorry distribution (owned)	Distance travelled is sourced from the Group Fleet Manager's data records. Fuel is delivered to the depots (excluding Darlington) and held on-site in bunded tanks. Biofuel content is unknown so have assumed 'pure' diesel for all sites except Darlington where 'retail-grade' is used as fuel is purchased from fuel station forecourts. Annual fuel consumed per vehicle is unknown so it is estimated based on the annual distance travelled and average MPG.	Very Good	Very High (40% +)
Site electricity	Utility bills and energy tracking data (half-hourly meters).	Excellent	High (20% - <40%)
Refrigeration & A/C	FGAS register and refrigeration contractor.	Excellent	Low (1% - <5%)
Company car travel	Data obtained from Group Fleet Manager and data sheets. Vehicles fill up with fuel from on-site tanks (except at Darlington). Biofuel content is unknown so have assumed 'pure' diesel for all vehicles except Darlington-based vehicles. Vehicle MPG is taken from vehicle specifications.	Very Good	Low (1% - <5%)
Site gas	Utility bills and energy tracking data.	Excellent	Very Low (<1%)

3. Carbon Footprint Results

3.1. Summary of results

The total carbon footprint for Hopwells for the period ending 31st December 2017 was 4,434.20 tonnes CO_2e. The following table and graphs summarise the results by scope and source activity.

Table 4: Results of Hopwells's carbon footprint assessment by scope and source activity

Scope	Activity	Tonnes CO_2e
Scope 1	Lorry distribution (owned)	2,519.96
	Refrigeration & A/C	204.14
	Company car travel	130.19
	Site gas	32.25
Scope 1 Sub Total		**2,886.54**
Scope 2	Electricity generation	1,415.33
Scope 2 Sub Total		**1,415.33**
Scope 3	Electricity transmission & distribution	132.33
Scope 3 Sub Total		**132.33**
Total GHG Emissions (tonnes of CO_2e)		**4,434.20**
Emissions per £M turnover (tCO_2e)		**66.28**
Emissions per employee (tCO_2e)		**15.13**

Lorry distribution is Hopwells's most significant emission source (Figure 2), accounting for 56.8% of the total GHG emissions produced by the organisation (Figure 3). The second highest emission source is electricity consumption, contributing 34.9% to the total emissions. Hopwells should continue to focus on reducing the emissions associated with these two sources as that is where the most gains are achievable (e.g. through higher efficiencies, alternative fuels etc.).

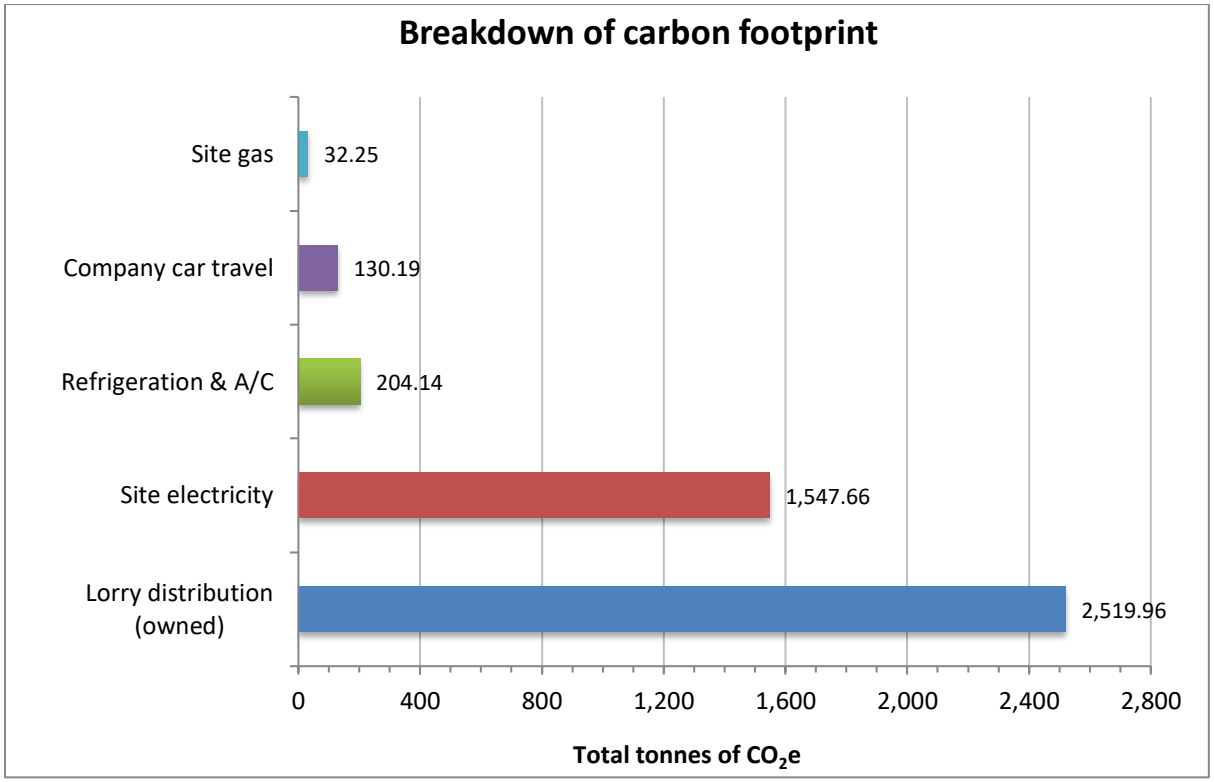


Figure 2: Contribution in tonnes of CO_2e of each element of Hopwells's carbon footprint

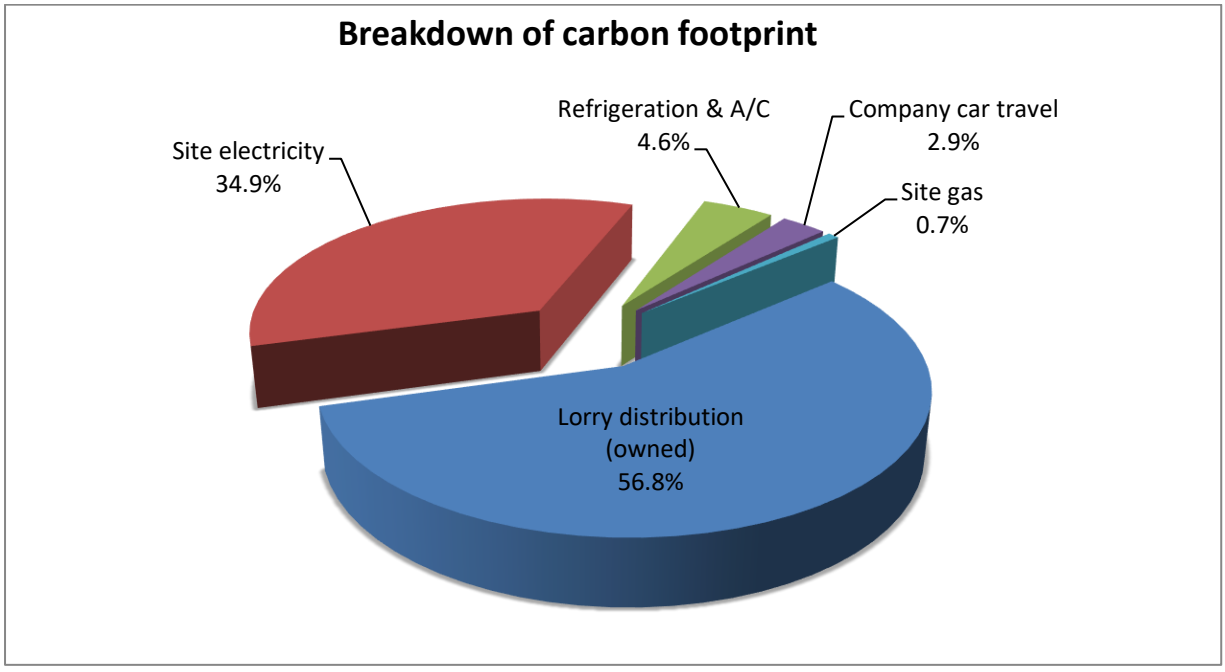


Figure 3: Percentage contribution of each element of Hopwells's carbon footprint

3.2. Emissions from energy usage at site facilities

Electricity is the dominant source of on-site energy consumption across Hopwells's depots (Table 5 & Figure 4) as it is used for lighting, office equipment, refrigeration equipment and air-conditioning. Depots which do not have air-conditioning in the office areas are heated by natural gas. Sheffield produces the most GHG emissions (from on-site energy consumption) per employee (Table 5) as it is the hub depot with the largest cold store and therefore it consumes more electricity than the other sites.

Table 5: CO_2e emissions as a result of on-site energy consumption

Site	Number of employees	Electricity (tCO_2e)	Natural Gas (tCO_2e)	Total emissions (tCO_2e)	tCO_2e per employee
Sheffield	52	408.77	12.31	421.08	8.10
Ormskirk	42	315.28	0.00	315.28	7.51
Kimbolton	37	269.09	0.00	269.09	7.27
Nottingham	78	245.48	13.81	259.29	3.32
Brownhills	44	234.72	0.00	234.72	5.33
Darlington	40	74.31	6.14	80.45	2.01
Total	**293**	**1,547.66**	**32.25**	**1,579.91**	**5.39**

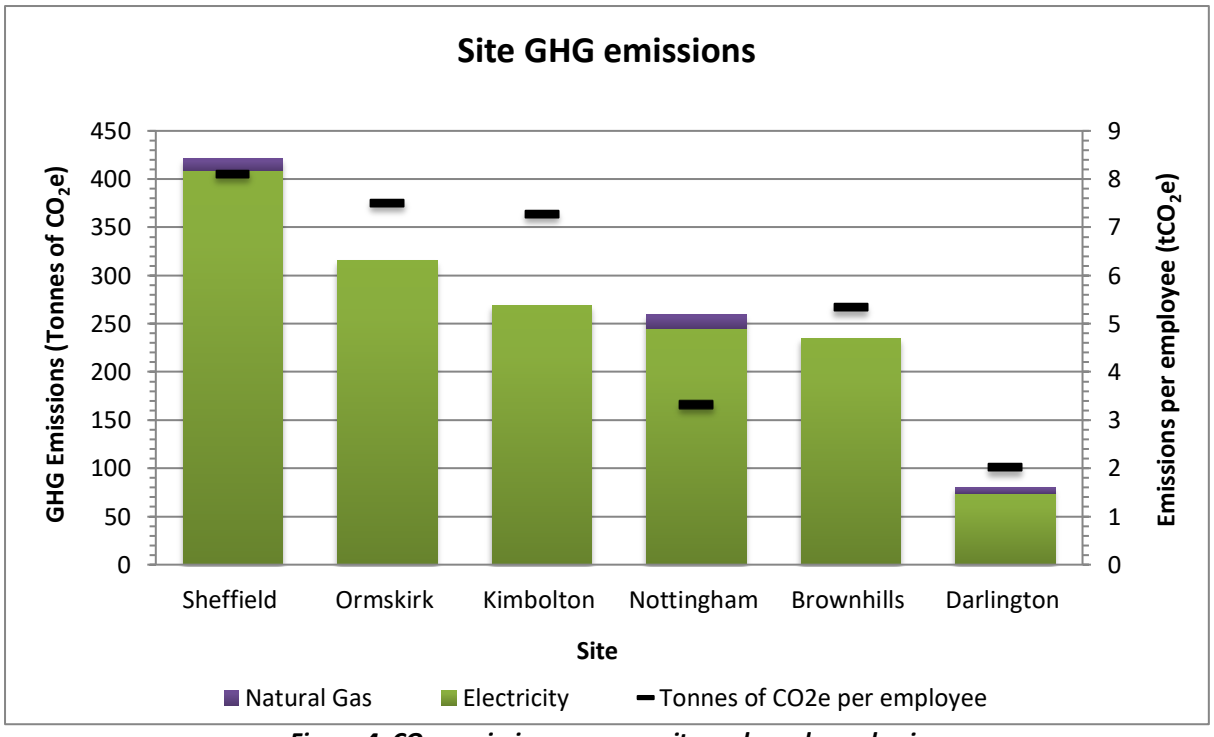


Figure 4: CO_2e emissions on a per site and employee basis

3.3. Emissions from refrigerants

The Fluorinated Greenhouse Gases Regulations 2015 (and subsequent amendments) puts prohibitions on certain fluorinated gases (F-Gases), in favour of refrigerants with lower GWPs. One of the key prohibitions is:

From 1st January 2020, the use of F-Gases with a GWP of 2500 or more, to service or maintain refrigeration equipment with a charge size of 40 tonnes of CO_2e or more, shall be prohibited.

Hopwells has a planned replacement and maintenance schedule for its plants. The refrigerant gases that Hopwells are currently or have previously been using that will be affected by the service and maintenance ban from January 2020 include: **R404A, R422D and R507**. From this date, up until 2030, only reclaimed or recycled gas (if available) will be able to be used for servicing and maintenance systems which exceed the charge size threshold (40 tonnes of CO_2e). Though it is expected that the availability of these reclaimed/recycled gases will be limited and prices may be higher to reflect that. Table 6 gives examples of potential retrofit alternatives for these F-Gases

The refrigeration plants at Darlington and Nottingham were replaced in 2016 with systems that can support refrigerants with lower global warming potential (GWP). During 2017, two sites required refrigerant top ups, including a significant amount at Ormskirk which is currently using R404A with a large GWP (Table 7). If the Ormskirk system were using a lower GWP retrofit gas such as R407F, an equivalent leak would produce 53% less GHG emissions, saving approximately 100 tonnes of CO_2e (Table 6).

Table 6: Possible retrofit alternatives to F-Gases affected by the service and maintenance bans

Refrigerant gas impacted by ban and GWP	Potential retrofit alternatives and GWP
R404A (3922)	R407A (2107) R442A (1888) R407F (1825) R449A (1397) Other HFO blends
R422D (2729)	R438A (2265) R427A (2138)
R507 (3985)	R407A (2107) R442A (1888) R407F (1825)

Table 7: CO_2e emissions as a result of on-site refrigerant gas replenishment

Location	Amount refilled (kg)	Refrigerant type	GWP ($kgCO_2e$)	GHG emissions (tCO_2e)
Nottingham	13	R407F	1825	23.73
Ormskirk	46	R404A	3922	180.41
Total	**59**			**204.14**

To comply with the regulation, there are three options to consider:

- **Continue** to use the existing equipment and gas until 2020, and then use reclaimed or recycled gas, if available, until 2030.
- **Convert** the equipment to run on a retrofit refrigerant gas with GWP less than 2500.

- **Replace** the refrigeration equipment with new, higher efficiency equipment that will also benefit from using lower GWP refrigerants.

Useful links:

- https://www.gov.uk/guidance/f-gas-in-refrigeration-air-conditioning-and-fire-protection-systems
- https://www.boconline.co.uk/internet.lg.lg.gbr/en/images/Guide-to-updated-EU-f-gas-regulation410_168659.pdf?v=2.0

3.4. Emissions from travel

Figure 5 and Table 8 shows the GHG emissions resulting from business travel. It can be seen that the largest contributor is lorry travel (used for distributing products between depots and to customers), accounting for 95.1% of the total transport emissions. In comparison, the amount of CO_2e caused by company car travel is very low at 4.9%.

Telematics have been introduced in 2018 (approximately covering 60% of the fleet at present), which should give more accurate data for analysis in the future.

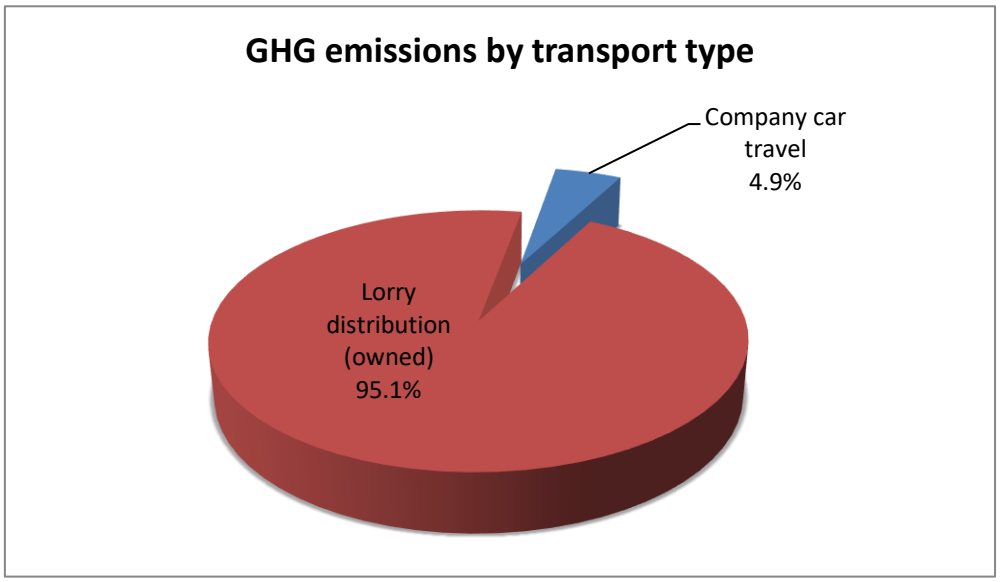


Figure 5: Percentage contribution of each element to transportation emissions

Table 8: CO_2e emissions due to transportation

Type of Travel / Transport	Tonnes of CO_2e
Lorry distribution (owned)	2,519.96
Company car travel	130.19
Total	**2,650.15**

The detailed results are given in Annex B.

4. Comparison and Benchmarking

4.1. Comparison to base year and previous year emissions

This is the fifth carbon footprint assessment Hopwells has carried out. The first assessment was completed for the 2013 data period and serves as the baseline year to which this assessment is compared against.

The following table and graphs show Hopwells's historical emissions per activity, as well as total carbon footprint, tonnes of CO_2e per employee and tonnes of CO_2e per £M turnover.

Table 9: Hopwells's carbon footprint comparison and percentage change

Tonnes of CO_2e for footprint year:							
Element	**2013**	**2014**	**2015**	**2016**	**2017**	**% change on baseline year (2013)**	**% change on previous year**
Lorry distribution (owned)	2,241.36	2,147.02	2,330.22	2,336.23	2,519.96	+12.4%	+7.9%
Site electricity	1,760.15	1,948.66	1,890.65	1,699.23	1,547.66	-12.1%	-8.9%
Refrigerants	492.90	319.21	327.81	112.91	204.14	-58.6%	+80.8%
Company car travel	228.61	140.61	128.25	125.04	130.19	-43.1%	+4.1%
Site gas	32.33	33.61	35.00	31.45	32.25	-0.3%	+2.6%
Total GHG Emissions (tCO_2e)	**4,755.36**	**4,589.11**	**4,711.94**	**4,304.86**	**4,434.20**	**-6.8%**	**+3.0%**
Emissions per £M turnover (tCO_2e)[1]	**74.55**	**72.35**	**71.88**	**64.21**	**66.28**	**-11.1%**	**+3.2%**
Emissions per employee (tCO_2e)	**17.81**	**17.19**	**17.39**	**15.83**	**15.13**	**-15.0%**	**-4.4%**

Hopwells has decreased its total carbon footprint by 6.8% between this period and the baseline year, though when compared to the previous year it has increased by 3.0% (approximately 129 tonnes of CO_2e) (Table 9 & Figure 6).

The increase from 2016 is mainly from lorry distribution and refrigerants (together equating to a 275 tCO_2e increase). Due to business growth, Hopwells added five trucks to its fleet this year, leading to more fuel usage. I recommend that Hopwells reviews the type of fuel used and consider opting for blends with a higher biofuel content (preferably derived from waste oil rather than crop). The refrigerant emissions increased due to a large gas replenishment that was required at Ormskirk, but also because the site still uses R404A which has a high GWP of 3922. Nevertheless, when compared to the baseline year (2013), the refrigerant emissions are 58.6% lower due to Hopwells's ongoing programme of servicing, retro-fitting and replacement of existing plant.

[1] Adjusted for inflation

Emissions from electricity consumption have decreased by 8.9% from the previous year. However, this has been caused by the de-carbonisation of the national energy grid[2], rather than a decrease in total kWh consumed. Only two out of the six depot sites achieved an actual reduction in terms of kWh. These were Sheffield and Darlington, which both reduced to their respective 2015 level of consumption (despite Darlington being expanded during 2016). Overall, across the whole company, the amount of electricity consumed increased by 6.5% (approximately 244,082 kWh). Kimbolton accounted for 54% of this, as it increased by 132,867 kWh (23.4%) since 2016. Analysis of Jan-Dec 2017 half-hourly data for Kimbolton shows that for January and February the average monthly consumption was 45,700 kWh, whereas March to December it was 60,800 kWh. This indicates that something may have occurred mid-February 2017 that increased the baseload consumption. I'd advise further investigation as to the cause of this large increase and comparison with 2016 and 2018 half-hourly data. Understanding the increase will allow you to identify ways to manage and reduce it in future.

Both carbon intensity metrics are significantly lower than in the baseline year (Figure 7). The emissions per employee has also reduced compared to the previous year due to the workforce growing at a faster rate than absolute emissions. However, the increase in emissions was larger than the increase in £M turnover for 2017, hence this metric shows an increase compared with the previous year.

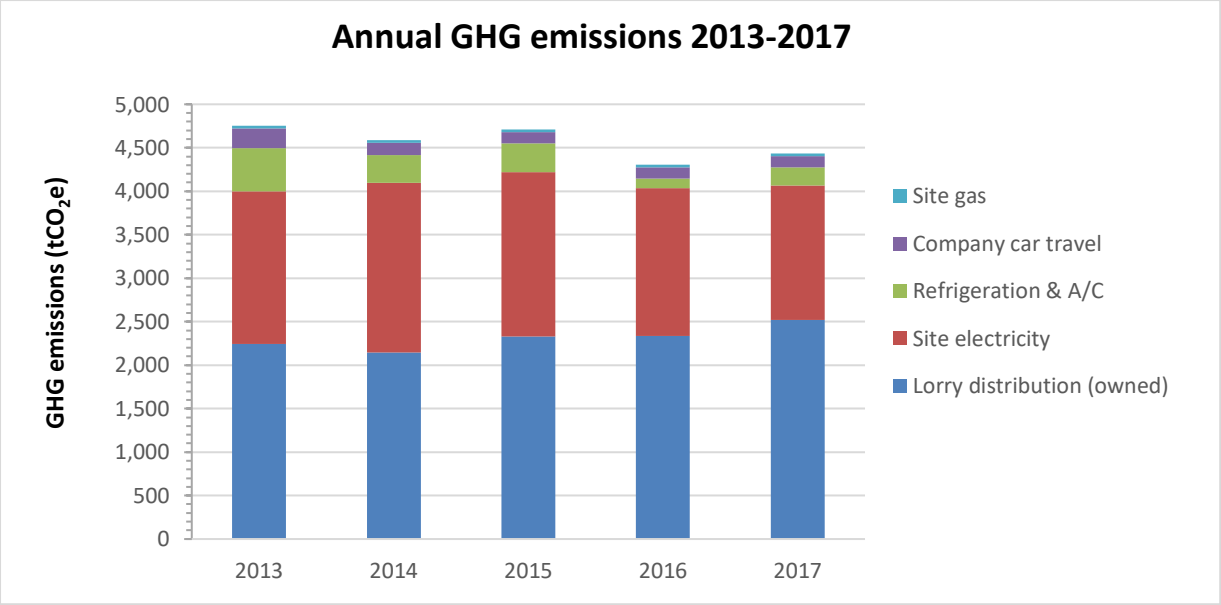


Figure 6: Detailed emissions comparison for Hopwells

[2] Between 2016 and 2017, the UK average grid factor for electricity reduced by 14.4% due to an increase in the amount of renewable and low carbon energy supplying the national grid.

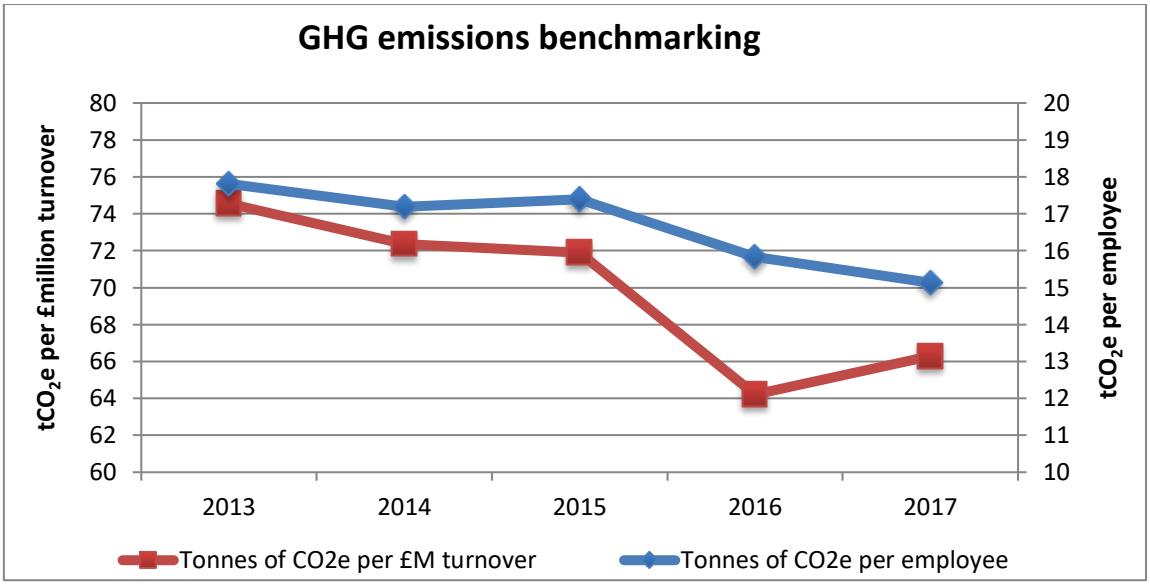


Figure 7: Carbon footprint of Hopwells for internal benchmarks

Carbon Footprint recommends that organisations use the base-year GHG inventory as a benchmark to measure against. When using the base-year GHG inventory as a benchmark, organisations can set realistic reduction targets and measure their progress year on year. This can also provide excellent marketing opportunities, where real figures can demonstrate your commitment towards helping fight climate change.

4.2. Comparison between sites

The following table and graphs show how each site contributes to Hopwells's overall carbon footprint. The Sheffield site contributes the largest amount of emissions (21.2%), which is expected as it is the hub depot with the largest cold store. However, this year Ormskirk has had a significant increase in emissions due to refrigerants, making it on par with Sheffield at 21.1% of the total emissions (Figure 8).

Table 10: Breakdown of Hopwells's 2017 carbon footprint by site

Site name	Lorry (tCO_2e)	Electricity (tCO_2e)	Refrigerants (tCO_2e)	Company car (tCO_2e)	Gas (tCO_2e)	Total emissions (tCO_2e)
Sheffield	507.06	408.77	0.00	12.15	12.31	940.30
Ormskirk	419.74	315.28	180.41	18.38	0.00	933.81
Kimbolton	376.39	269.09	0.00	14.78	0.00	660.26
Nottingham	300.36	245.48	23.73	44.95	13.81	628.31
Brownhills	307.70	234.72	0.00	25.23	0.00	567.64
Darlington	307.21	74.31	0.00	14.71	6.14	402.37
Ilkeston	301.51	0.00	0.00	0.00	0.00	301.51
Total	**2,519.96**	**1,547.66**	**204.14**	**130.19**	**32.25**	**4,434.20**

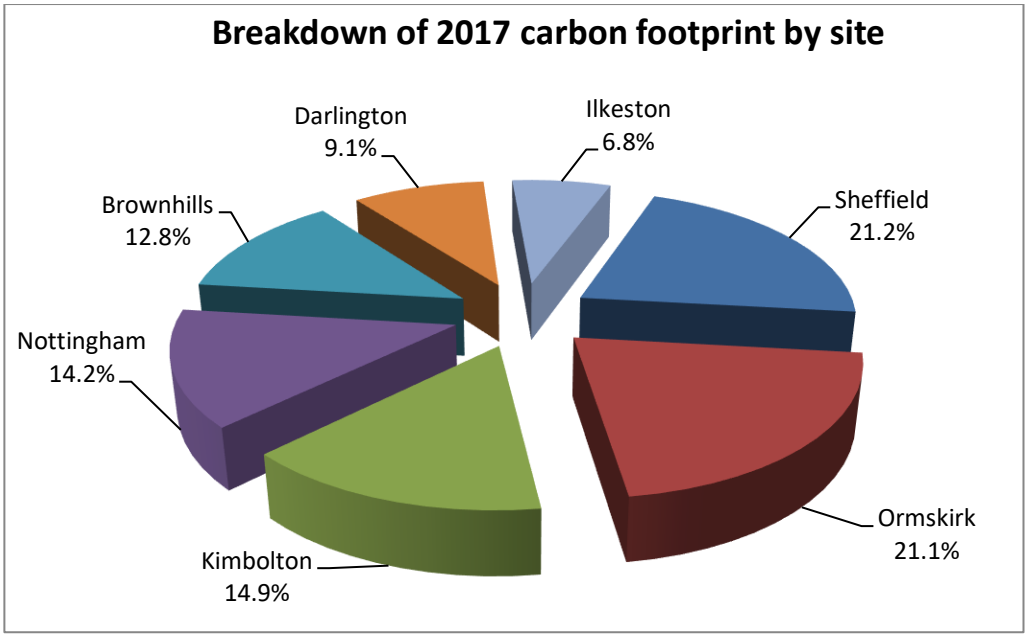


Figure 8: Breakdown of Hopwells's 2017 carbon footprint by site

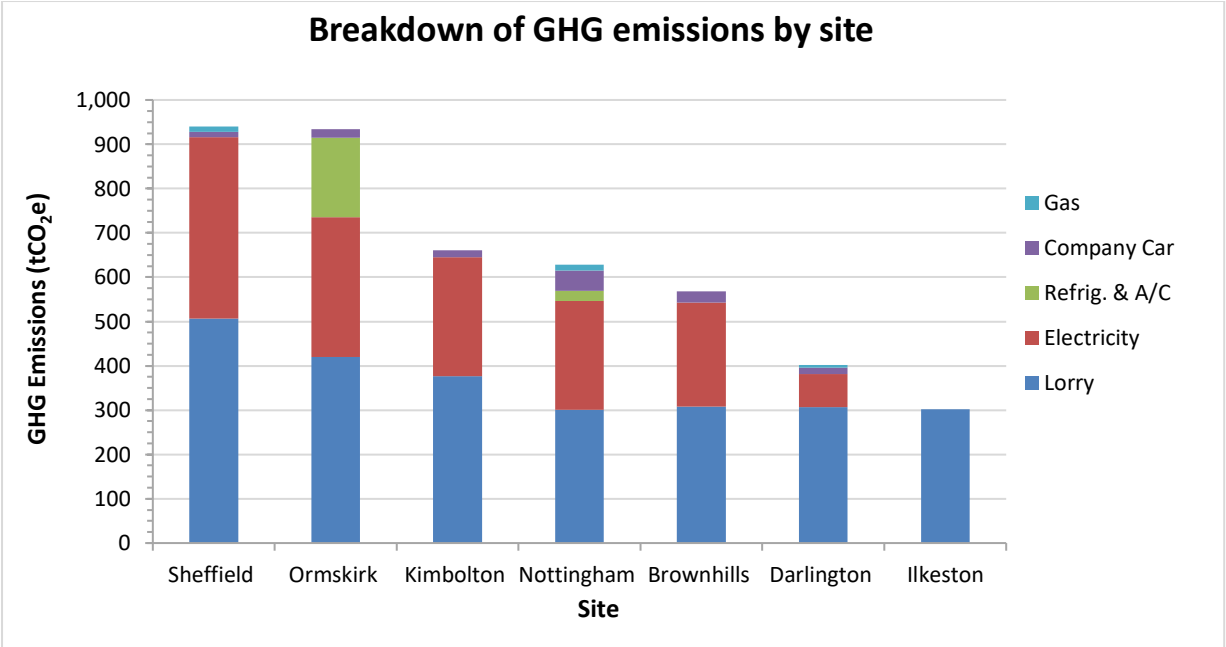


Figure 9: Breakdown of Hopwells's 2017 GHG emissions by site

This year, the majority of sites were relatively similar to the previous year or had a reduction (Figure 10). The exceptions, being Ormskirk and Ilkeston, which showed significant increases. Ilkeston represents emissions from lorry fleet that are used as and when needed (e.g. whilst the normal vehicle is undergoing repair/servicing), therefore is not really comparable to the other sites. Ormskirk's increase has primarily been due to the refrigerant gas replenishment. As part of Hopwells's ongoing programme, Ormskirk's plant is expected to be either replaced or retrofitted to enable using a lower GWP gas in 2019. This should bring the refrigerant emissions levels down and more in line with the other sites.

Table 11: Percentage change of Hopwells's emissions compared to previous year

Site Name	Percentage change from previous year (2016)					
	Electricity	Lorry	Refrigerants	Company Car	Gas	Total Emissions
Sheffield	-15.6%	+10.9%	-100%	+3.0%	-9.3%	**-6.9%**
Kimbolton	+5.6%	+3.7%	n/a	-13.9%	n/a	**+4.0%**
Ormskirk	-7.9%	+12.0%	n/a	+17.2%	n/a	**+27.4%**
Nottingham	-6.7%	-2.0%	-53.5%	+7.8%	+25.7%	**-6.7%**
Brownhills	-11.4%	-21.8%	n/a	+4.9%	n/a	**-16.8%**
Darlington	-17.1%	+13.8%	-100%	+0.3%	-11.0%	**+0.7%**
Ilkeston	n/a	+75.6%	n/a	n/a	n/a	**+75.6%**
Total change	**-8.9%**	**+7.9%**	**+80.8%**	**+4.1%**	**+2.6%**	**+3.0%**

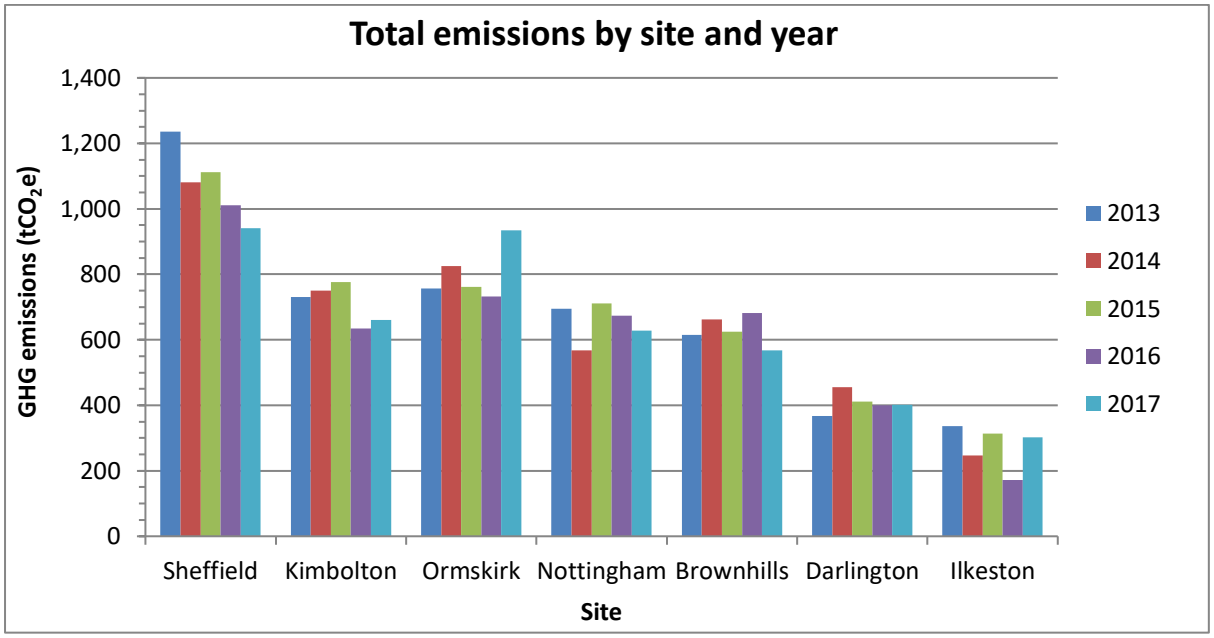


Figure 10: Hopwells's annual GHG emissions by site

4.3. External benchmarking

The following table summarises your results to enable you to compare your performance with other organisations.

Table 12: Hopwells's benchmarked GHG emissions

Year/Element	2017
Turnover in £million	66.90
Total number of employees	293
Tonnes of CO_2e	4,434.20
Tonnes of CO_2e per £ million	66.28
Tonnes of CO_2e per employee	15.13
Scope 1 & 2 Emissions	
Scope 1 & 2 tonnes CO_2e	4,301.87
Scope 1 & 2 tonnes CO_2e per £ million	64.30
Scope 1 & 2 tonnes CO_2e per employee	14.68

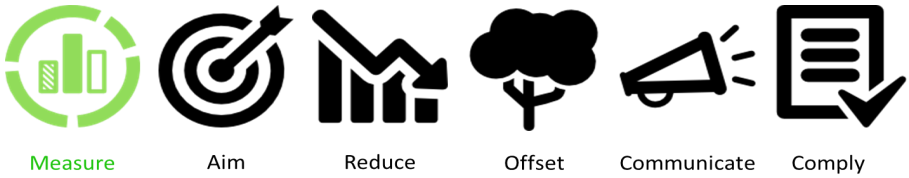
The following table (Table 13) is a summary of scope 1 and 2 emissions for selected companies who operate in your sector. The data is derived from publicly disclosed annual reports. This enables you to compare your performance with respect to these specific organisations in your market sector.

Table 13: Comparison of Scope 1 & 2 emissions per employee and per £M turnover with similar companies

Company Name	Emissions per employee (tCO_2e)	Emissions per £M turnover (tCO_2e)
Hopwells Ltd	14.68	64.30
Wincanton plc	20.71	315.00

5. Key Recommendations

The following recommendations are designed to help you build upon the results of the appraisal and your carbon management over the coming year.



5.1. Improving the accuracy of future carbon footprint assessments

To improve the accuracy of the calculations and analysis, I recommend that Hopwells provides primary evidence where able, such as sample copies of gas utility bills. I also recommend that the outputs of the new telematics system are analysed to determine what useful data can be obtained for future analysis.

5.2. Reducing emissions

The following are recommendations on how to reduce your emissions by source:

Travel emissions

- Investigate alternative fuels for your fleet. This could simply be choosing to purchase diesel with a higher biofuel blend (e.g. distillate diesel is 0% biodiesel, B2 is 2% biodiesel, B20 is 20% biodiesel). Research and discuss with your fleet's service engineer, the level of biofuel content that can be used in your trucks/company cars without costing performance. You should undertake a cost-benefit analysis, taking into account implications on maintenance costs and fuel costs. **N.B. in terms of the environment, biofuel derived from waste oil is preferred to biofuel derived from crops.**

- Use your new telematics system to analyse different styles of driving and discuss the results with your drivers to encourage engagement and show the link between their actions and the environment/the company's bottom line. For example, you could ask for a group of volunteers to reduce their max. speed to 50mph (or 60 mph for cars) for a trial period (e.g. 1-2 weeks), then analyse the data from the telematics (e.g. fuel consumption, MPG), obtain qualitative feedback from the volunteers and then present and discuss the results with them in a focus group session. Reducing the top speed of a HGV lorry from 56mph to 50 mph is expected to save more than 5% of fuel usage and hence costs and GHG emissions.

- Encourage employees to opt for tele-/video-conferencing (e.g. via skype) or public transport over car travel. If employees do not like choosing these over car travel, find out why in order to find ways to encourage them effectively. Focus groups/workshops could also be used to obtain opinions from staff and generate ideas on how to make travel more efficient and maximise the use of lower carbon alternatives such as remote meetings and public transport.

Refrigerant emissions

- Reduce the risk of refrigerant leaks by installing leak detection systems and carrying out regular checks. Also upgrade equipment when necessary.
- Reduce the amount of refrigerant required within the system by using more efficient equipment.
- Reduce the GWP of the refrigerant used so that if there is a leak, it has less of an impact. Opt for using the lowest GWP refrigerant that will meet your needs and is compatible with your system.

Electricity & gas emissions

- Review the results of the Energy Savings Opportunity Scheme (ESOS) assessment that is required for compliance in Phase 2 (deadline December 2019).
- Conduct regular checks of electricity consumption using half-hourly data and comparisons to the previous week and the same period the previous year. This will allow you to identify and rectify issues quickly.

5.2.1. Setting carbon reduction budgets based on emissions

Having an agreed and defined system for investing in future carbon reduction activities helps drive carbon reduction and cost savings in a business. Many leading organisations are doing this through setting an "Internal Carbon Tax" or an "Internal Carbon Price" within their organisation (for more information see http://www.carbonfootprint.com/internal_carbon_pricing.html).

We suggest starting by setting a price of £20-25 per tonne of CO_2e, as this typically relates to 1-6% of the cost of causing emissions (as shown in the table below). You may wish to collect the "taxation" by each functional group (depending on their emissions), or simply account for this at the top-level company budgeting.

Table 14: Carbon price compared to energy and travel costs

Emissions Source	Electricity	Natural Gas	Car Miles	Flights
1 tonne CO_2e is equivalent to	2400 kWh	5500 kWh	3300 miles	5200 km
Cost to produce 1 tonne CO_2e	£335	£220	£1485*	£400
£20 carbon price represents	6%	9%	1%	5%

**assumes a rate of 45p per mile*

We recommend allocating this defined budget to help both internal and external carbon reduction activities. For example, it could be split:

- 75% on internal carbon reduction measures

- 25% on external carbon offsetting activities

Investments in internal carbon reduction activities should be made based on the level of carbon savings and the associated cost savings. Good carbon reduction investments usually pay for themselves and give a return on investment to the business within 3 years. Carbon offsetting return on investment is primarily measured through access to tenders, brand enhancement and PR (use marketing return on investment techniques).

5.3. Carbon offsetting

Carbon offsetting is a great way to compensate for the emissions that you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere.

I recommend that Hopwells continues to use verified carbon offsetting to complement its environmental management.

The carbon footprint assessment identifies key areas to focus your time and financial resources in order to make the most difference. For Hopwells, the most material emission source is lorry travel. Hopwells should focus on reducing its emissions as much as it can, but there are emissions which are unavoidable due to business needs. This is where carbon offsetting comes in to complement your reduction activities and offset your residual (unavoidable) emissions.

There are many international carbon offset projects available to support. The majority are focused on the development of renewable energy in developing countries, but there are others which have a larger focus on social and community benefits, in addition to the environmental benefits. These may also have good synergy with your business and CSR goals.

Over the past four years, Hopwells has been operating a carbon neutral lorry fleet by supporting verified carbon offset projects. In total, Hopwells has sponsored the planting of 800 trees (600 in Kenya and 200 in the UK) and has offset 9,055 tonnes of CO_2e.

Further detail on the type and specific projects that we currently have in our portfolio can be provided on request or be found at: http://www.carbonfootprint.com/carbonoffsetprojects.html.

Sample Carbon Offsetting Projects:

Tree Planting in Kenya

Avoided Deforestation in the Brazilian Amazon

Clean Water in Rwanda

5.4. Carbon Footprint Standard

5.4.1. Brand endorsement

Hopwells Ltd, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and shown a reduction of 11.1% based on its turnover against the baseline year. By achieving this Hopwells has qualified to use the Carbon Footprint Standard branding. This can be used on all marketing materials, including website and customer tender documents, to demonstrate your carbon management achievements.

The Carbon Footprint Standard is recognition of your organisation's commitment to carbon management. The text to the right-hand side of the logo demonstrates what level you have achieved in line with international best practice.

5.4.2. Communicate

Make sure you communicate your actions and achievements effectively, both within your organisation, to help develop your culture, and externally to help improve your brand image.

When promoting be sure to utilise all marketing channels available to you, such as website, newsletters, brochures, press releases, conferences/events and social media etc.

You should:

- Explain why climate change matters to you (for more information visit: www.carbonfootprint.com/warming.html)
- Tell the story of where you have come from, the progress you have made and what your commitment is for the future (e.g. targets).
- Be clear and accurate about what you have achieved – take care not to exaggerate.
- Use the Carbon Footprint Standard branding, certificates, images of offset projects you are supporting and graphs of your carbon performance to help communicate your point in a clear and enticing manner.

6. References

1. BEIS GHG Conversion Factors for Company Reporting (August 2017)
2. Guidelines to Defra's Greenhouse Gas (GHG) Conversion Factors for Company Reporting – annexes (June 2013)
3. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (March 2004)
4. Wincanton plc, 2018. *Annual Report and Accounts 2018.* [pdf] Available at: <https://www.wincanton.co.uk/media/2078/wincanton-ara-2018-interactive.pdf>

A. Annex A – Calculation Methodology (Additional Notes)

A.1 How is the carbon footprint calculated?

Carbon Footprint confirms that the methodology used to quantify the carbon footprint meets the following principles:

a) The subject and its boundaries have been clearly identified and documented.
b) The carbon footprint has been based on primary activity data unless the entity could not demonstrate that it was not practicable to do so, in which case an authoritative source of secondary data relevant to the subject was used.
c) The methodology employed minimised uncertainty and yielded accurate, consistent and reproducible results.
d) Emission factors used are germane to the activity concerned and current at the time of quantification.
e) Conversion of non-CO_2 greenhouse gases to CO_2e has been based upon the 100-year Global Warming Potential figures published by the IPCC or national (Government) publication.
f) Carbon footprint calculations have been made exclusive of any purchases of carbon offsets.
g) All carbon footprints have been expressed as an absolute amount in tCO_2e.

A.2 Biomass

There are no CO_2 emissions from the combustion of biomass to be considered within this report.

A.3 Greenhouse gas removals

Within the calculation of Hopwells Ltd's carbon footprint, there are no business processes resulting in the reduction of greenhouse gases from the atmosphere to be deducted from the calculation.

B. Annex B – Supplied Data and Emissions Breakdown

Please refer to accompanying document.