Carbon Footprint Appraisal Report

Assessment Period:
1st January 2018 – 31st December 2018

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Executive Summary

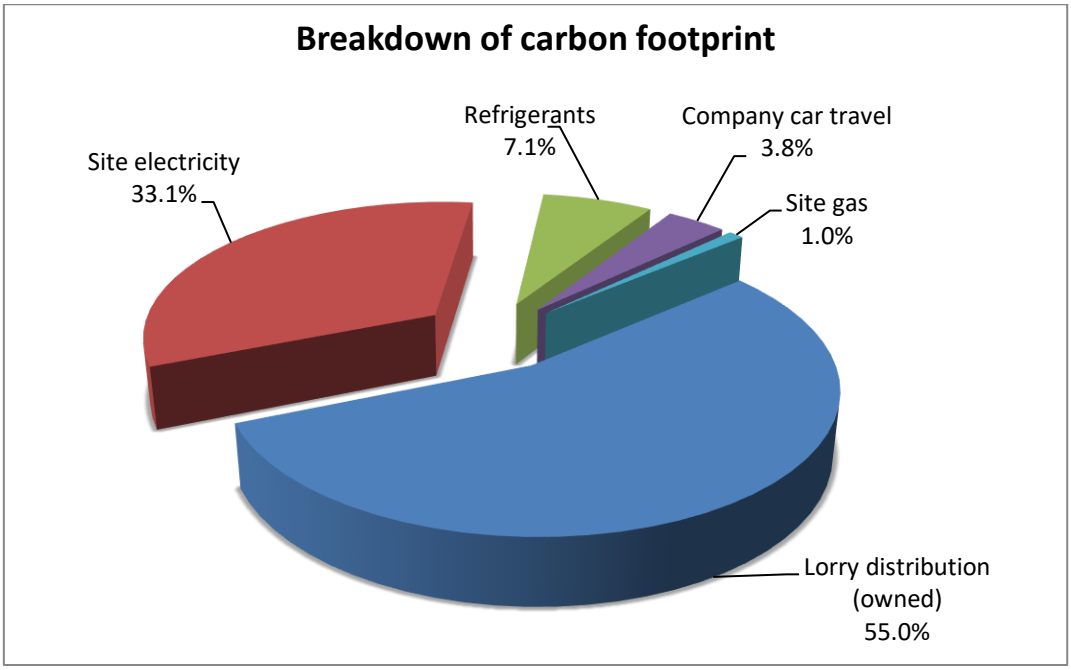
Carbon Footprint Ltd has assessed the greenhouse gas (GHG) emissions of Hopwells Ltd (Hopwells) from 1st January 2018 to 31st December 2018 based on a dataset provided by the company.

Current Performance

- → Total GHG emissions have decreased by 13.5% (606 tonnes of CO_2e) since the previous year.
- → Lorry distribution accounts for 55% of Hopwells's carbon footprint.
- → Since the baseline year, emissions have decreased in all elements of Hopwells's footprint, with the exception of gas consumption.

Recommendations

- → Continue to focus on reducing emissions from lorry transport and electricity consumption.
- → Expand scope by including employee commuting within the carbon footprint assessment which will provide additional marketing and PR opportunities.
- → Utilise telematic systems to improve data collection and enhance data analysis.
- → Review and implement recommendations from the ESOS Phase 2 assessment.



	2013	2017	2018	% change from baseline year (2013)	% change from previous year
Total tonnes of CO_2e	4,755.36	4,477.30	3,871.29	-18.6%	-13.5%
tCO_2e per employee	17.81	15.28	13.78	-22.6%	-9.8%
tCO_2e per £M turnover	74.55	65.16	57.65	-22.7%	-11.5%

The 13.5% decrease in absolute emissions compared to the previous year has been achieved through reduction in fuel used for lorry distribution due to less overall mileage travelled this year, as well as decarbonisation of the UK's national electricity grid due to a larger proportion of the mix being generated from renewables and low carbon sources.

For the past five years, Hopwells has been offsetting the emissions associated with its lorry transport, and has therefore been operating a carbon neutral lorry fleet. We recommend that Hopwells extends its offsetting to its total GHG emissions in order to become a carbon neutral organisation. There are many benefits to offsetting, such as contributing to combating climate change, providing marketing benefits and multiple corporate and social responsibility opportunities.

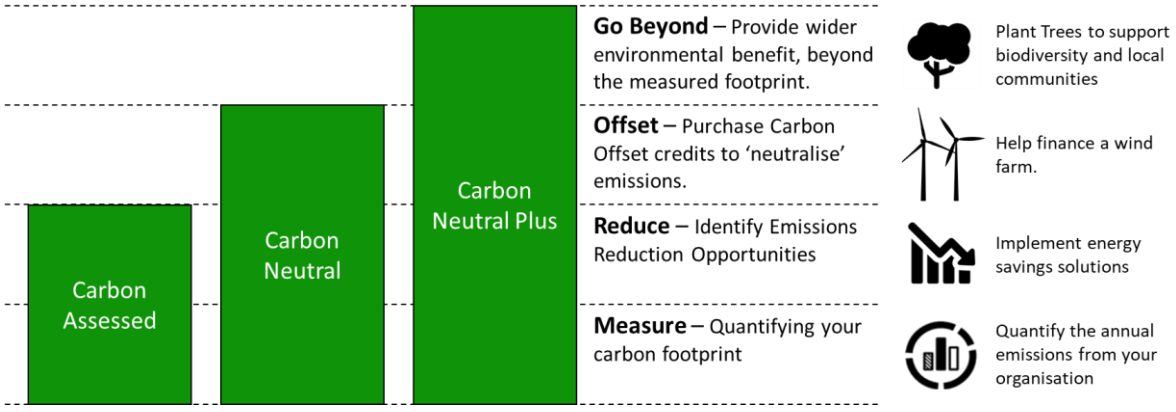


Table of Contents

Quality Control

Report issue number:	1.0
Date:	20 December 2019
Calculations completed by:	Georgina Whitlock
Calculations reviewed by:	Hayley Maynard
Report produced by:	Jenny Webb & Georgina Whitlock
Report reviewed by:	Hayley Maynard
Director approval:	John Buckley

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 Ltd has completed the first step of its carbon management journey.

The purpose of this report is to:

- Summarise the results of the carbon footprint assessment.
- Recommend realistic aims for carbon reduction targets.
- Provide practical recommendations to enhance Hopwells's sustainability programme and reduce its emissions.

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 Ltd to continue doing its bit by monitoring, reducing and offsetting its 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 footprint using the 2018 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 Ltd for the appraisal is presented in a separate spreadsheet named "2019_12 Hopwells Ltd – 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
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
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 2018 to 31st December 2018 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. **Note: this assessment does not include Ilkeston and Haydn Road site data as these are part of T.P. Hopwell (Birmingham) Ltd & t.i.m. UK Motors Ltd.**

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 **Not included**
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 **Refrigerants**		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 is derived from half-hourly (HH) meter data, utility bills, internal records and other data collected by Hopwells (Table 3).

Table 3: Assessment accuracy & materiality

Dataset	Source of data and comments	Accuracy	Materiality
Lorry distribution (owned)	Data was sourced from the company's Group Fleet Manager. Fuel is delivered to the depots (excluding Darlington) and held on-site in bunded tanks. Biofuel content is unknown so for the calculations 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.	Good	Very High (40%+)
Site electricity	Utility bills and HH metering data.	Excellent	High (20% - <40%)
Refrigerants	FGAS register & refrigeration contractor.	Excellent	Medium (5% - <20%)
Company car travel	Data is obtained from Group Fleet Manager. 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.	Average	Low (1% - <5%)
Site gas	Utility bills.	Excellent	Low (1% - <5%)

3. Carbon Footprint Results

3.1. Summary of results

The total carbon footprint for Hopwells Ltd for the period ending 31st December 2018 was 3,871.29 tonnes CO_2e. Table 4 provides a summary of results for Hopwells's carbon footprint calculation by scope and source activity.

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

Scope	Activity	Tonnes CO_2e
Scope 1	Lorry distribution (owned)	2,128.21
	Refrigerants	275.97
	Company car travel	148.94
	Site gas	38.02
Scope 1 Sub Total		**2,591.13**
Scope 2	Electricity generation	1,179.61
Scope 2 Sub Total		**1,179.61**
Scope 3	Electricity transmission & distribution	100.55
Scope 3 Sub Total		**100.55**
Total GHG emissions (tonnes of CO_2e)		**3,871.29**
Emissions per employee (tCO_2e)		**13.78**
Emissions per £M turnover (tCO_2e)		**57.65**

Figures 2 and 3 show the breakdown of the total GHG emissions produced by Hopwells. It can be seen that 55% of the total emissions is produced through lorry distribution (Figure 3). The second most significant emission source is electricity consumption, contributing 33.1% to the total emissions. As a result, Hopwells should continue to focus on reducing these two emission sources going forward, as it is where the most gains are achievable.

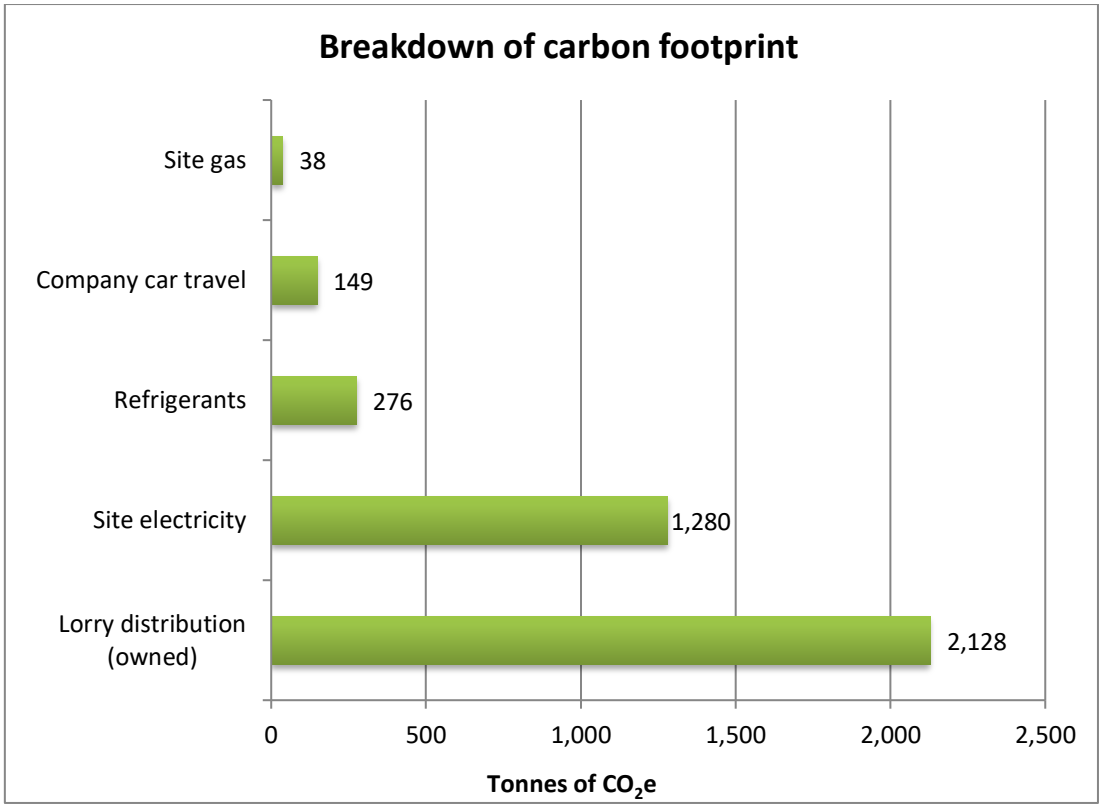


Figure 2: Contribution in tonnes of CO_2e of each element of Hopwells Ltd's carbon footprint

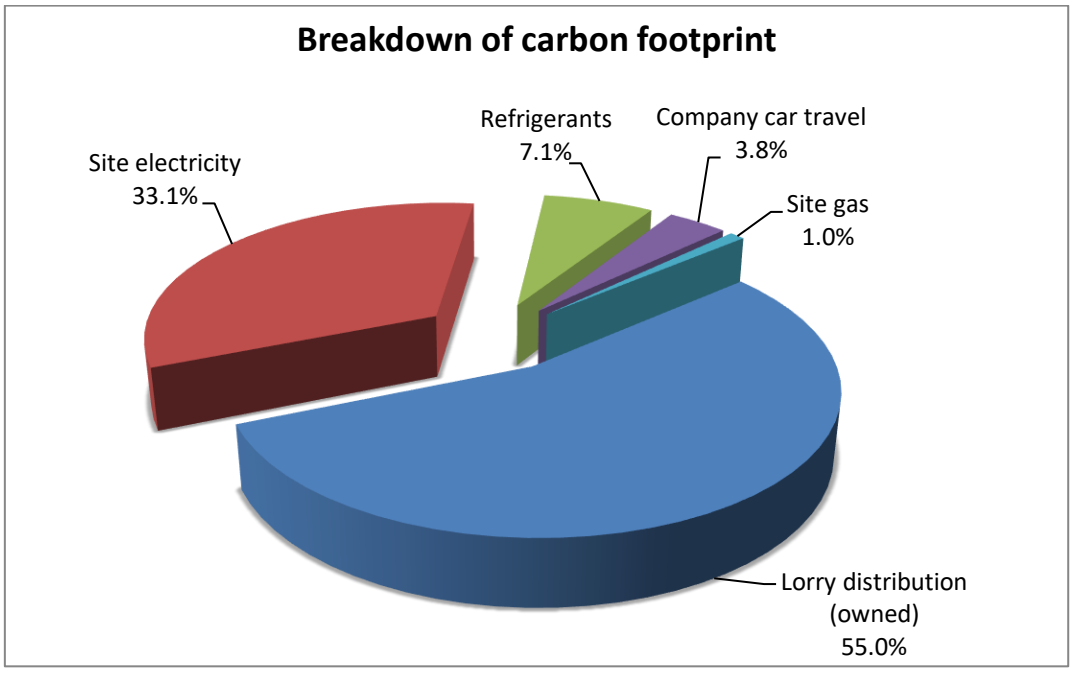


Figure 3: Percentage contribution of each element of Hopwells Ltd's carbon footprint

3.2. Emissions from energy usage at site facilities

Hopwells has multiple sites in the UK, employing a total number of 281 people. Electricity is the dominant source of energy across the sites as it is used for refrigeration, lighting, office equipment and air-conditioning. Depots which do not have air-conditioning in the office areas are heated by natural gas.

As with previous years, the Sheffield site produces the most GHG emissions associated with on-site energy consumption (Table 5 & Figure 4). This is to be expected as it is the hub depot with the largest cold store of all the sites.

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

Site	Number of employees	Electricity (tCO_2e)	Gas (tCO_2e)	Total emissions (tCO_2e)	tCO_2e per employee
Sheffield	50	346.56	14.29	360.85	7.22
Ormskirk	43	244.48	-	244.48	5.69
Kimbolton	33	211.86	-	211.86	6.42
Nottingham	76	193.38	15.01	208.38	2.74
Brownhills	40	189.83	-	189.83	4.75
Darlington - Unit H1 & H2	39	94.05	8.73	102.77	2.64
Total	**281**	**1,280.16**	**38.02**	**1,318.18**	**4.69**

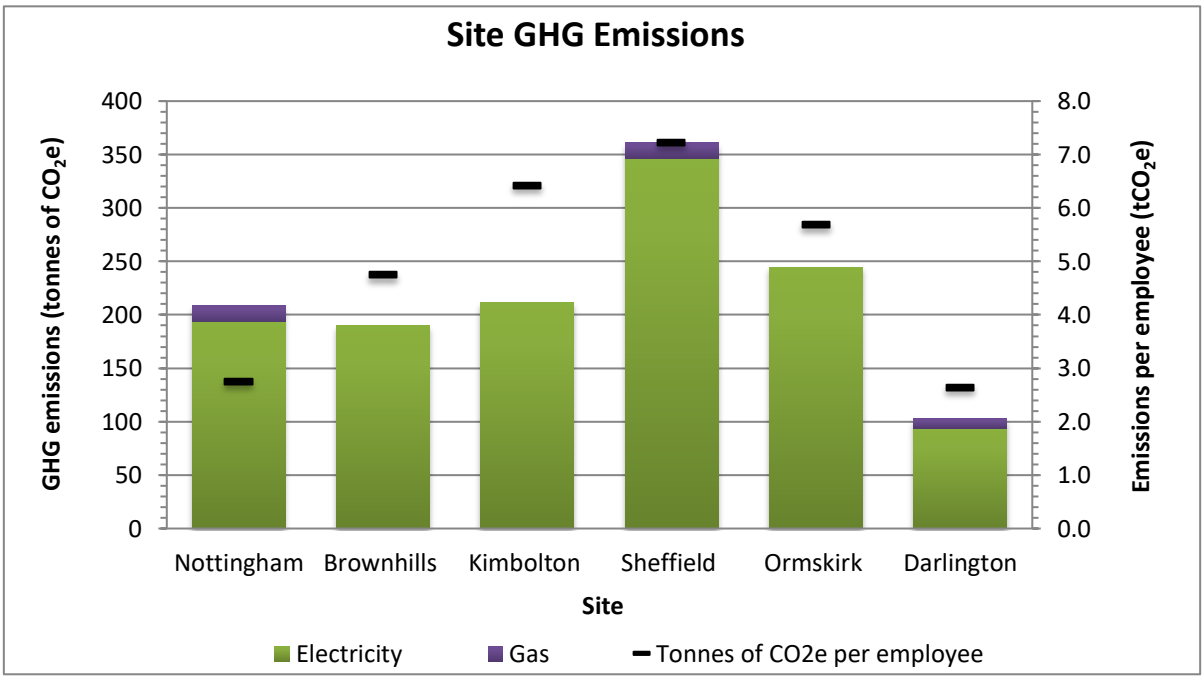


Figure 4: CO_2e emissions on a per site and per energy type basis

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 Global Warming Potentials (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.*

The refrigerant gases currently or previously used by Hopwells that will be affected by the **service and maintenance ban** as of January 2020 include: **R404A, R422D and R507**. After January 2020, until 2030, only reclaimed or recycled gas (if available) will be able to be used for servicing and maintenance of systems which exceed the charge size threshold of 40 tonnes of CO_2e. It is expected that the availability of the gases will be limited, therefore **prices may rise** as a consequence. Table 6 below shows alternative gases to those affected by the ban.

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 R442A R407F R449A Other HFO blends	(2107) (1888) (1825) (1397)
R422D	(2729)	R438A R427A	(2265) (2138)
R507	(3985)	R407A R442A R407F	(2107) (1888) (1825)

Compared to the previous year, the quantity of refrigerant re-filled across all sites is 76% larger, consequently increasing the associated emissions from this source by 35%. The Sheffield site required the largest refill quantity during this assessment period of 51kg of R407F. Though this accounts for 49% of the refrigerant refills in terms of weight (kg), it only accounted for 33.7% of the total GHG emissions from refrigerants due to it having the lowest GWP. The second largest refill amount was carried out at the Ormskirk site and was for a refrigerant with one of the highest GWP (Table 7). If the Ormskirk system had been using an alternative gas with a lower GWP, such as R407F, an equivalent sized leak would have resulted in 53% less emissions, saving 46 tonnes of CO_2e.

The Ormskirk site also required a refill in the previous year. I recommend that a thorough leak test/investigation is carried out.

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

Location	Amount Refilled (kg)	Refrigerant type	GWP ($kgCO_2e$)	Emissions (tCO_2e)
Sheffield	51	R407F	1,825	93.08
Ormskirk	22	R404A	3,922	86.28
Brownhills	18	R422D	2,729	49.12
Kimbolton	11	R507	3,985	43.84
Darlington	2	R407F	1,825	3.65
Total	**104**			**275.97**

3.4. Emissions from travel

The largest contributor to travel emissions is lorry distribution, accounting for 93.5% of the total transport emissions (Figure 5 and Table 8). In comparison, the GHG emissions caused by company car travel is significantly lower at about 6.5%.

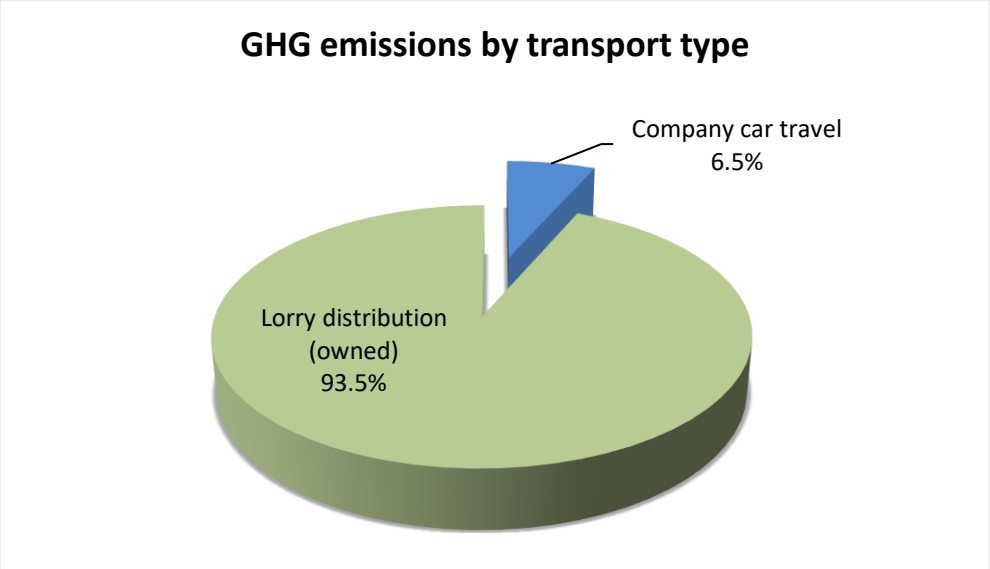


Figure 5: Percentage contribution of each element to transportation emissions

Table 8: CO_2e emissions due to transportation

Type of Travel / Transport	Tonnes of CO_2e
Lorry distribution (owned)	2,128.21
Company car travel	148.94
Total	**2,277.14**

The detailed results are given in Annex B.

4. Comparison and Benchmarking

4.1. Comparison to base year emissions

This is the sixth carbon footprint assessment Hopwells Ltd 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. For the baseline year emission data please refer to the 2013 report. 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 Ltd's carbon footprint comparison and percentage change

Element	Tonnes of CO_2e for footprint year:							
	2013	2014	2015	2016	2017	2018	% 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	2,128.21	-5.0%	-15.5%
Site electricity	1,760.15	1,948.66	1,890.65	1,699.23	1,590.76	1,280.16	-27.3%	-19.5%
Refrigerants	492.90	319.21	327.81	112.91	204.14	275.97	-44.0%	+35.2%
Company car travel	228.61	140.61	128.25	125.04	130.19	148.94	-34.9%	+14.4%
Site gas	32.33	33.61	35.00	31.45	32.25	38.02	+17.6%	+17.9%
Total tonnes of CO_2e	**4,755.36**	**4,589.11**	**4,711.94**	**4,304.86**	**4,477.30**	**3,871.29**	**-18.6%**	**-13.5%**
tCO_2e per employee	**17.81**	**17.19**	**17.39**	**15.83**	**15.28**	**13.78**	**-22.6%**	**-9.8%**
tCO_2e per £M turnover	**74.55**	**72.35**	**71.88**	**64.21**	**65.16**	**57.65**	**-22.7%**	**-11.5%**

Hopwells has decreased its total carbon footprint by 18.6% between this period and the baseline year, and by 13.5% since the previous year. This reduction is due to decreased emissions from lorry distribution and electricity consumption.

The total annual distance travelled by the lorries was 8% lower than the previous year and associated fuel use has decreased further. This has caused a 15.5% reduction in associated emissions compared with 2017. Hopwells has plans to implement fuel tagging to individual trucks which will allow further analysis to be made to track performance and determine where potential savings can be made.

GHG emissions from electricity reduced by 19.5% since the previous year, however there was actually a 0.7% (29,226 kWh) increase in total electricity consumed. The decrease in emissions is primarily a consequence of the UK's national electricity grid de-carbonising as the proportion of energy generated from renewable and low carbon technology increases. However, Nottingham, Kimbolton and Ormskirk did achieve savings in electricity consumption compared with the previous year. Sheffield's electricity consumption increased by 6.1% (64,813 kWh) compared with 2017. I recommend that the reason for this is investigated and actions put in place to bring back down to 2016/2017 levels.

The largest emissions increase since the previous year is from refrigerants. The largest refrigerant re-fills were required at Sheffield, Ormskirk and Brownhills. I recommend that leak tests/investigations are carried out at these sites to identify the cause and prevent further loss of refrigerant gas.

Hopwells's carbon intensity has been steadily decreasing since 2013 due to reductions in absolute emissions combined with increase in number of employees and annual turnover (Table 9 & Figure 7).

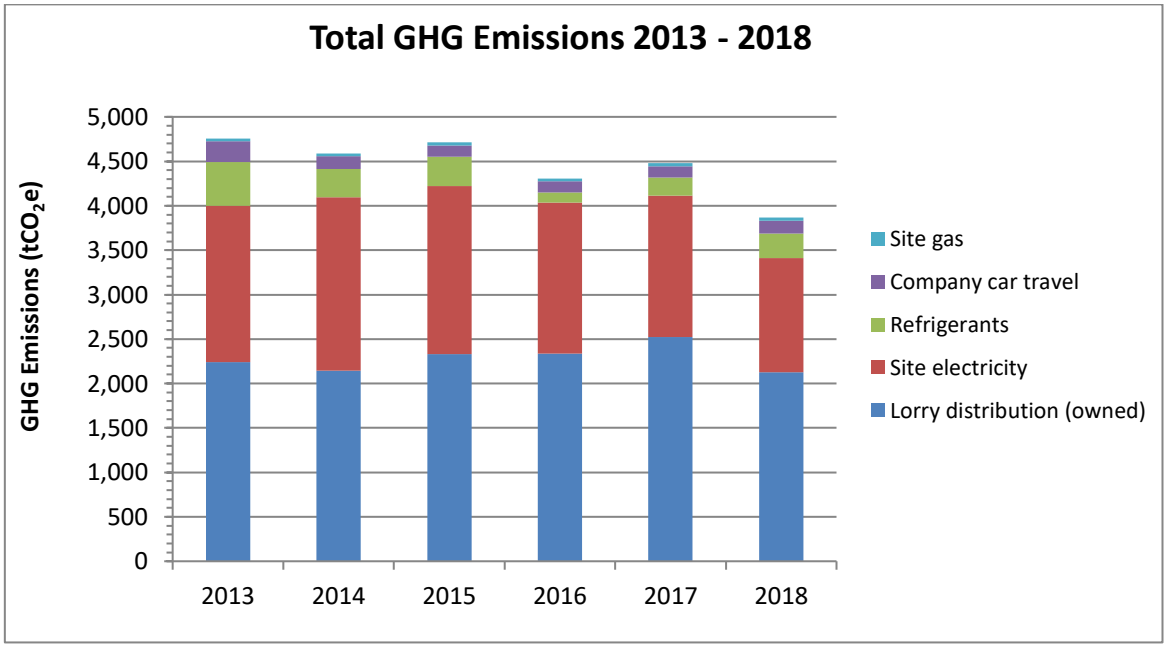


Figure 6: Detailed emissions comparison for the various aspects of Hopwells's emissions

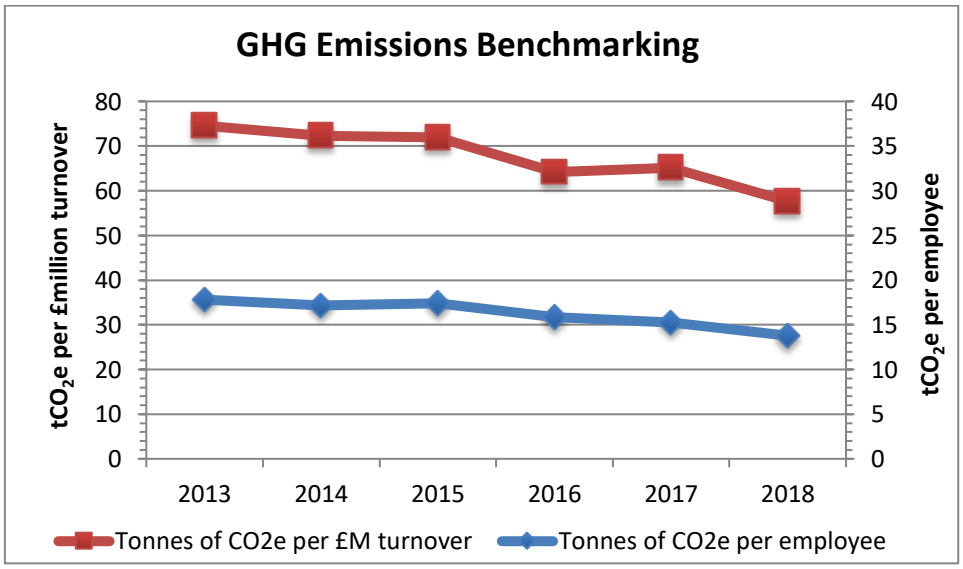


Figure 7: Carbon footprint of Hopwells Ltd for internal benchmarks

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 much each site contributes to the overall carbon footprint of the company. In line with the previous year, the Sheffield site continues to account for the highest proportion of emissions (23.8%) due to it having the largest cold store, although emissions at this site have decreased overall since the previous assessment. The majority of the remaining sites are fairly equal, except Darlington and Ilkeston[1] which contribute the least amount to the total emissions (Figure 9).

Table 10: Breakdown of Hopwells's 2018 carbon footprint by site

Site name	Employees	Lorry (tCO_2e)	Electricity (tCO_2e	Refrigerants (tCO_2e)	Company car (tCO_2e)	Gas (tCO_2e)	Total GHG emissions (tCO_2e)
Sheffield	50	450.26	346.56	93.08	15.47	14.29	919.66
Ormskirk	43	227.61	244.48	86.28	13.49	0.00	571.87
Kimbolton	33	285.52	211.86	43.84	23.53	0.00	564.75
Brownhills	40	295.71	189.83	49.12	29.20	0.00	563.86
Nottingham	76	265.54	193.38	0.00	53.70	15.01	527.63
Darlington	39	276.04	94.05	3.65	13.54	8.73	396.00
Ilkeston	0	327.53	0.00	0.00	0.00	0.00	327.53
Totals	**281**	**2,128.21**	**1,280.16**	**275.97**	**148.94**	**38.02**	**3,871.29**

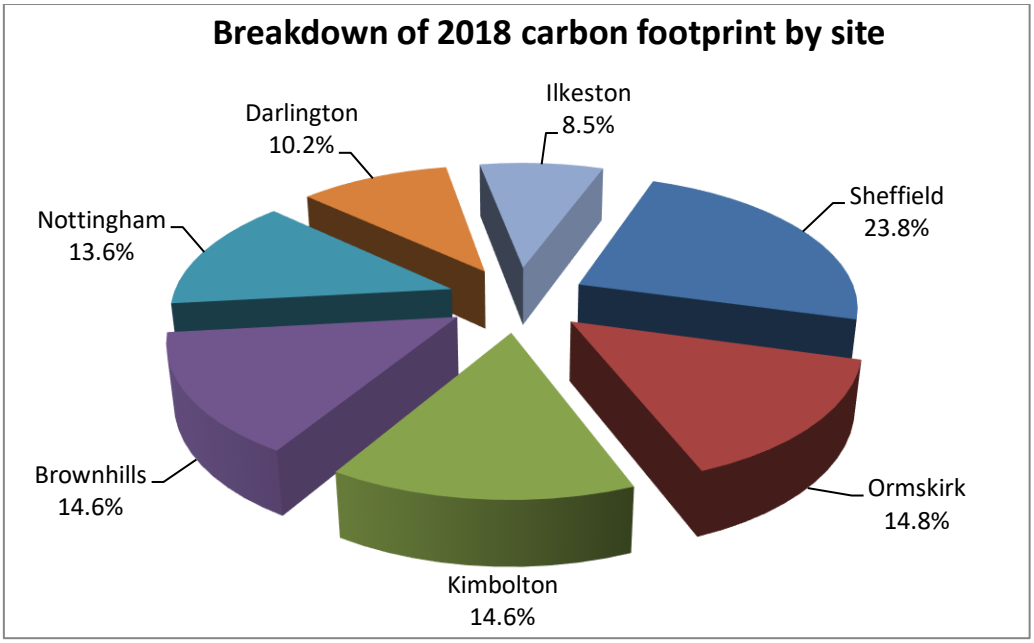


Figure 8: Breakdown of Hopwells's carbon footprint by site

[1] There is no on-site depot at Ilkeston. The emissions are from lorries based here.

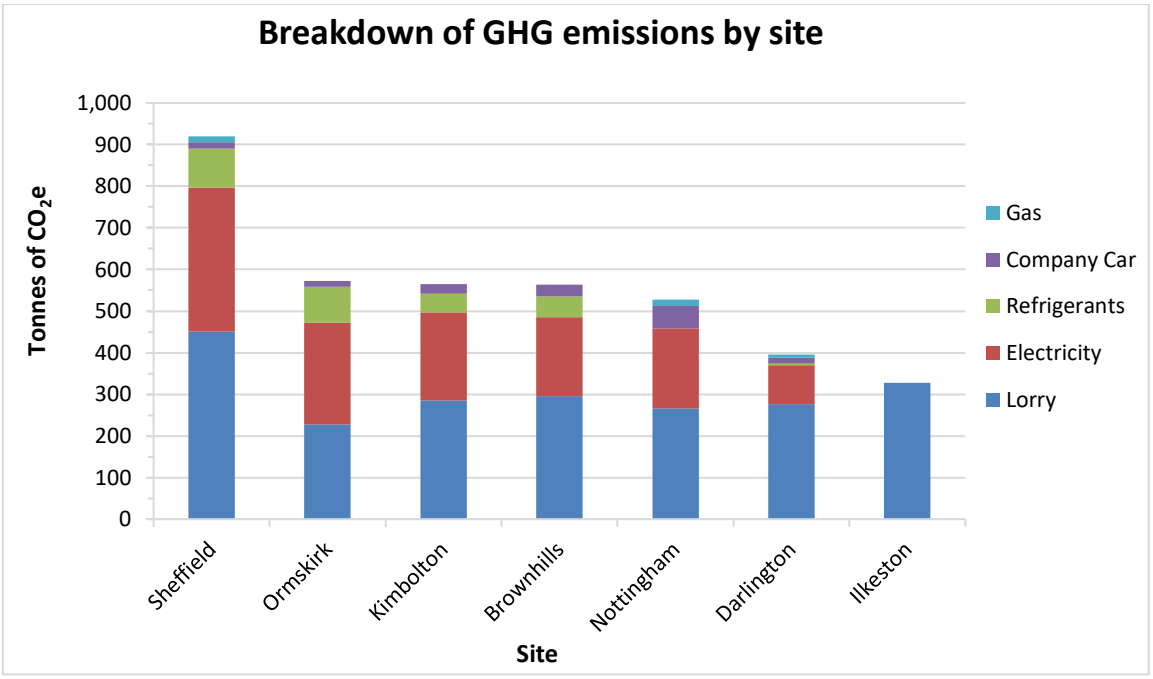


Figure 9: Breakdown of Hopwells's 2018 GHG emissions by site

This year, all sites achieved a reduction in emissions compared with the previous year, except Ilkeston (Table 11). Ilkeston represents emissions from lorry fleet that are used as and when needed (e.g. whilst the normal vehicle is undergoing repair/servicing), and is therefore not comparable to the other sites and can vary considerably year on year.

Ormskirk and Nottingham were the sites with the largest total emission reductions since 2017, reducing emissions by 38.8% and 16.0% respectively (Table 11). Since the baseline year, most of the sites have seen a decline in emissions, with the exception of Darlington which was expanded during 2016 (Figure 10).

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

Site Name	Percentage change in GHG emissions (2017 vs. 2018)					
	Lorry	Electricity	Refrigerants	Company Car	Gas	Total GHG emissions
Sheffield	-11.2%	-15.2%	n/a	+27.3%	+16.0%	**-2.2%**
Ormskirk	-45.8%	-22.5%	-52.2%	-26.6%	n/a	**-38.8%**
Kimbolton	-24.1%	-21.3%	n/a	+59.2%	n/a	**-14.5%**
Brownhills	-3.9%	-19.1%	n/a	+15.7%	n/a	**-0.7%**
Nottingham	-11.6%	-21.2%	-100.0%	+19.5%	+8.7%	**-16.0%**
Darlington	-10.1%	+19.9%	n/a	-8.0%	+42.2%	**-11.1%**
Ilkeston	+8.6%	n/a	n/a	n/a	n/a	**+8.6%**
Totals	**-15.5%**	**-19.5%**	**+35.2%**	**+14.4%**	**+17.9%**	**-13.5%**

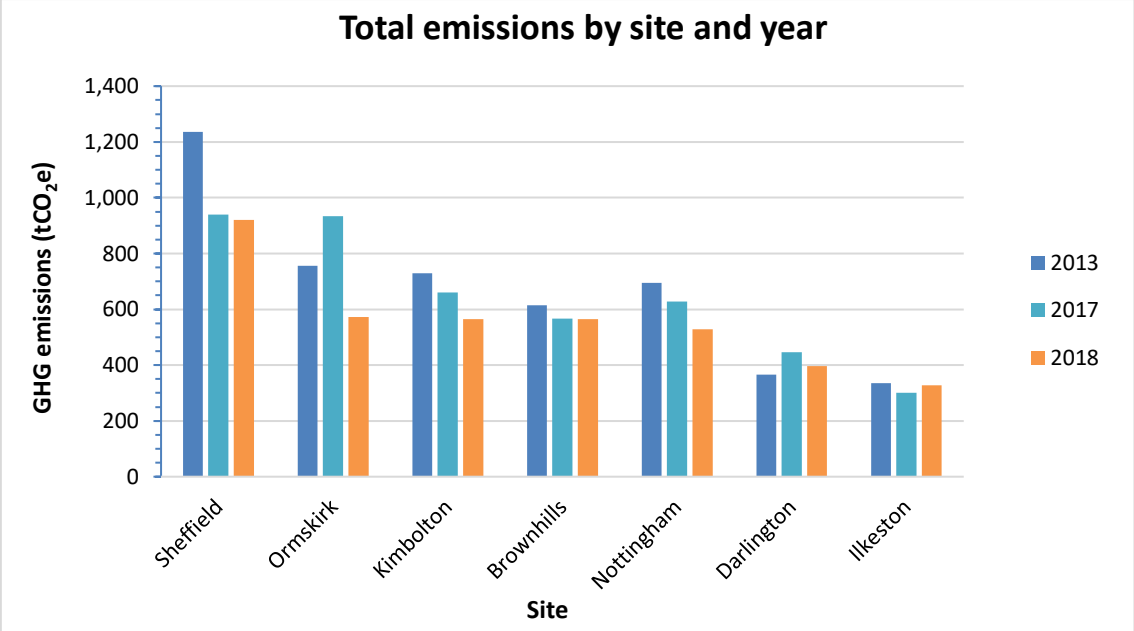


Figure 10: Hopwells's annual GHG emissions by site

4.3. External benchmarking

Table 12 below summarises the results of Hopwells's 2018 assessment to enable comparison against other organisations.

Table 12: Hopwells Ltd's benchmarked GHG emissions

Year/Element	2018
Turnover in £million	67.15
Total number of employees	281
Tonnes of CO_2e	3,871.29
Tonnes of CO_2e per £ million	57.65
Tonnes of CO_2e per employee	13.78
Scope 1 & 2 Emissions	
Scope 1 & 2 tonnes CO_2e	3,770.74
Scope 1 & 2 tonnes CO_2e per employee	13.42
Scope 1 & 2 tonnes CO_2e per £ million	56.15

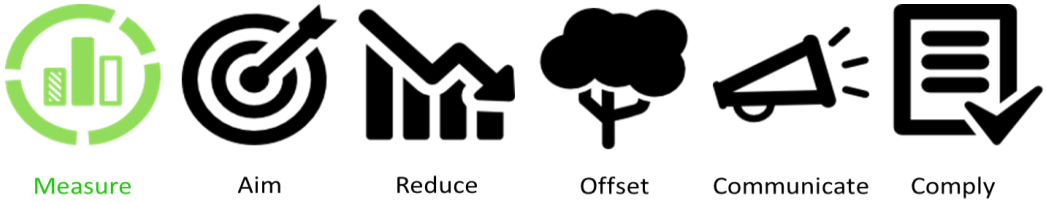
The following table provides a summary of the scope 1 & 2 carbon intensity metrics of similar companies within Hopwells's market sector to enable comparison of performance. The data is derived from publicly disclosed annual reports.

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	13.42	56.15
Wincanton plc	19.09	295.00

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 future assessments, we recommend the following:

- Consider expanding the scope to include emissions from employee commuting.
- Ensure facilities are in place to enable recording of business travel via rail or bus (i.e. via expenses).

5.2. Reducing emissions

Travel emissions:

- Consider adding a minimum percentage biofuel content to the fuel purchasing criteria. **(N.B. biofuel derived from waste oil is preferred to biofuel derived from crops).**
- Encourage employees to use tele-/video-conferencing to prevent any unnecessary travel.
- If travel is necessary, encourage staff to use public transport as an alternative to car travel.
- Analyse data from the telematics system to identify poor driving styles (e.g. excessive idling, harsh braking and acceleration). Drivers with poor driving styles can be targeted and educated with a 'green' driving course and workshops can provide driving tips to improve fuel efficiency.

Refrigerant emissions:

- Conduct a thorough leak test/investigation at each site to determine why refrigerant gas is being lost from the system and implement measures to prevent future losses (e.g. Ormskirk required refilling in 2017 and 2018).
- Consider installing automatic leak detection systems to identify refrigerant leaks quickly.
- Review the refrigerants currently used and consider switching to alternatives with lower GWP.

Electricity and gas emissions:

- Monitor half-hourly meter consumption data regularly (e.g. compare against previous week, same month in previous year etc.) to identify any potential issues/abnormalities that may be causing unnecessary consumption. Understanding the base-load consumption at each site can also allow for reduction measures to be put into place.
- Investigate the causes behind the increase in Sheffield's electricity consumption and implement corrective and preventative actions.

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 (see http://www.carbonfootprint.com/internal_carbon_pricing.html for more information).

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

Since 2013, Hopwells has been operating a carbon neutral lorry fleet by supporting verified carbon offset projects. Over the past five years, Hopwells has sponsored the planting of 1000 trees (800 in Kenya and 200 in the UK) and has offset 11,575 tonnes of CO_2e through various verified offset projects (e.g. India wind power, India solar power, reduced deforestation in Brazilian Amazon).

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

As Hopwells operates a fleet of vehicles, its carbon and environmental impact will be very visible to customers and other stakeholders. Hopwells should aim to reduce emissions from transport as much as possible as this dominates the company's overall footprint, however some emissions will be

unavoidable due to the nature of the business. This is where carbon offsetting can complement your reduction activities by funding projects elsewhere to fight climate change.

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 greater focus on social and community benefits, in addition to the environmental benefits.

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.

Examples of Carbon Offsetting Projects:

Tree Planting in UK Schools

Avoided Deforestation in the Brazilian Amazon

Clean Water in Rwanda

5.4. Carbon Footprint Standard

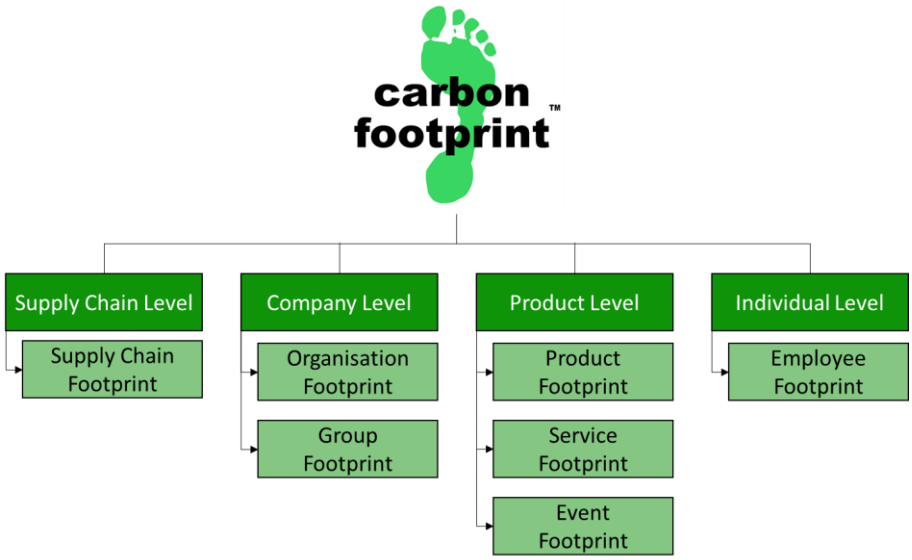
5.4.1. Brand endorsement

Hopwells, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and shown a reduction of 18.6% based on its absolute emissions 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.

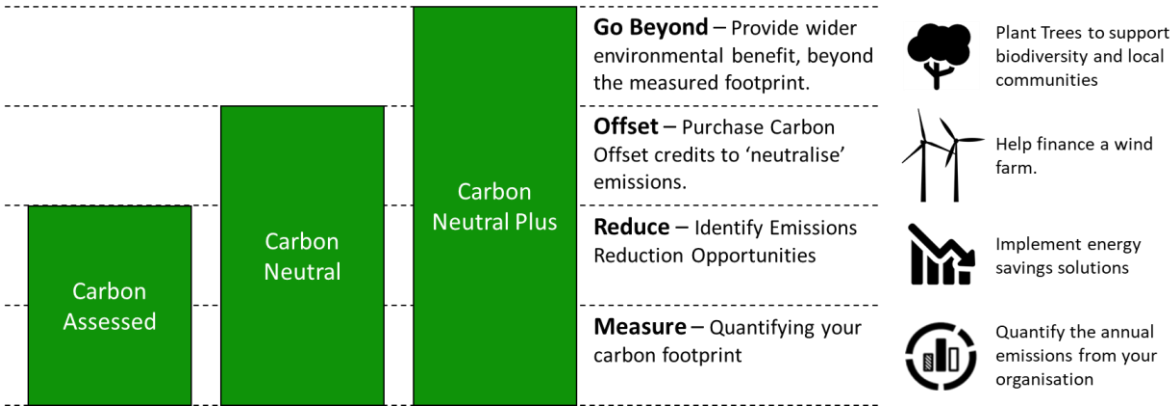
5.4.2. Scope

As you are at the beginning of your Carbon Footprint Journey, you have decided to focus on the carbon footprint at the organisational level. This is a great start. Over time, you can progress your carbon footprinting to increase the scope and encompass your products, supply chain and your employees. By doing so you will be able to receive the Carbon Footprint Standard for these categories, thus standing out amongst your competitors and truly driving the sustainability or your brand.



Once the scope has been identified, the Carbon Footprint Standard will allow Hopwells to develop from a novice to an exemplar in the market. You can progress from a "Carbon Assessed" organisation to a "Carbon Neutral" or a "Carbon Neutral Plus" organisation by supporting a range of environmental projects that come with wider CSR and PR opportunities.

Alongside the sustainability rationale, this will allow you to leverage the Carbon Footprint Standard to truly stand out in your market. Progressing will resonate with like-minded customers and will help your business grow.



5.4.3. 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 your actions, 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 2018)
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, 2019. Annual Report and Accounts 2019. [pdf]. Available at: https://www.wincanton.co.uk/media/2297/wincanton_ar2019_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 spreadsheet "2019_12 Hopwells Ltd – Annex B".