GHG Emissions Report

2016/17

Turley

Foreword

We hope that the disclosure of our data will encourage other consultancies, in the planning and other sectors, to do the same.

As a responsible business, managing our environmental impacts is important to us, and to our clients, who as a minimum expect us to maintain our ISO 14001 certification. At the other end of the spectrum, a number of our clients are increasingly interested in their upstream impacts, and the greenhouse gas (GHG) emissions associated with our consultancy services are of relevance in understanding and reporting on their own Scope 3 emissions.

For this reason, we have this year published our GHG emissions per £m turnover, which will allow any of our clients to assess the emissions associated with our consultancy services based on the amount they spend with us.

We recognise that this data is of limited value or use if we are the only consultants to publish this information, so we hope that the disclosure of our data will encourage other consultancies, in the planning and other sectors, to do the same. The more data that is published, the better our collective understanding of the wider impacts of the built environment will be, driving greater awareness and change.

This document has been produced to support our disclosures; it provides detailed summaries of the data obtained and explanations of our processes. This is published alongside our headline figures to allow users of this information to make informed decisions on how our data can be used and what it represents.

If you have any comments, queries or questions, please get in touch.

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Data & Performance

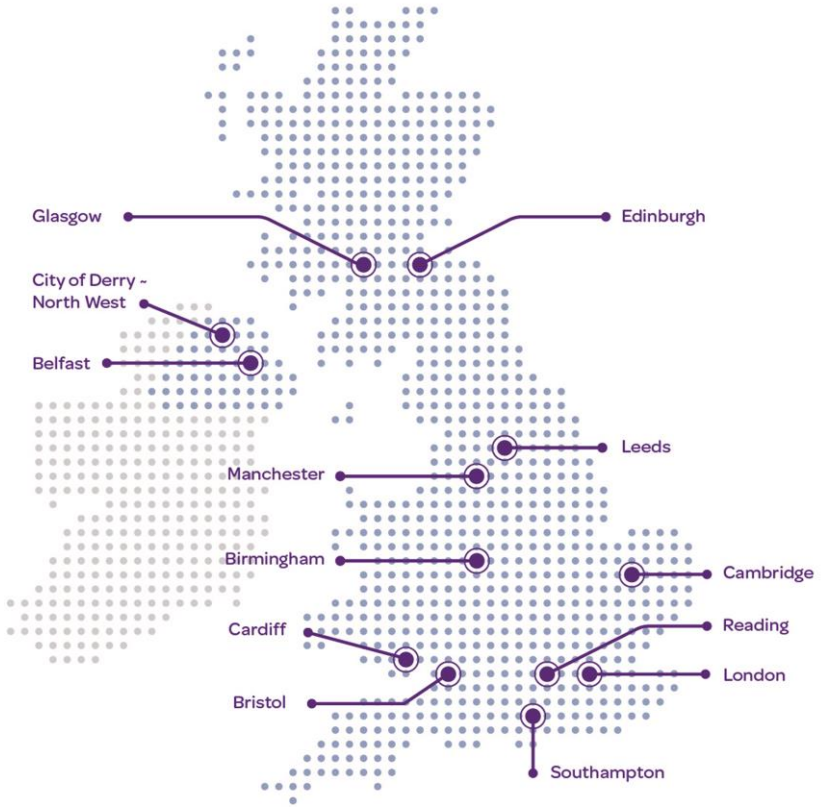
As described in our methodology section, we have now adopted the GHG Protocol to allow us to monitor performance and improve the accuracy of our reporting. Our primary impacts are those over which we have operational control and we are actively engaging with our managing agents to obtain consumption data that can be used to allow us to set KPIs and understand our usage so it can be better managed; where possible, this has also been obtained or estimated for 2015/16 retrospectively.

The availability and frequency of data collection across our offices varies depending on our managing agent; by requesting our data, we are providing an indicator to our managing agents that as tenants, this information is important to us, which in turn we hope will help to drive their internal investment in energy reporting and improve the quality of data over time.

Context

Turley currently operates across 13 offices across the UK, in a range of building types that include historic conversions and high-rise city centre towers (although this report does not include our Cambridge and Derry offices, which opened during the 2017/18 reporting period). We employ circa 220 people and our head office is based in Manchester.

This section sets out our data and performance at each of our locations, as well as our overall absolute emissions and KPIs.



Absolute Emissions

Our absolute emissions are our total emissions and do not take into account the size of our organisation, our turnover, or the area of office space we occupy.

Table 1: Absolute GHG Emissions

Emission Scope	GHG Emissions [tonnes CO_2e]		% Change
	2016-17	2015-16	
Scope 1	6.13	6.16	-0%
Scope 2	167.47	190.51	-12%
Scope 3	129.42	142.57	-9%
TOTAL	303.02	339.24	-11%

Our Scope 1 emissions are estimated based on the daily consumption for 2016/17; the small reduction in emissions is as a result of a small reduction in the gas emission factor and the fact that 2015/16 was a leap year.

Our electricity consumption reduced by a modest 1.4% in 2016/17 compared with 2015/16, but as a result of grid decarbonisation, the associated emissions have reduced by 12%.

Our total Scope 3 emissions, which currently include emissions associated with business travel (66%), upstream emissions associated with our fuel and energy use (30%) and office paper consumption (4%), have reduced by 9%, predominantly as a result of lower emission factors associated with transport fuels, although a significant reduction in paper consumption has been achieved in the reporting year.

[1] https://www.gov.uk/guidance/gas-meter-readings-and-bill-calculation

[2] Electricity for the Belfast office is procured directly and supplied by SSE Airtricity. The SSE Airtricity fuel mix results in emissions of 6.05 $kgCO_2$ for 2016/17 [2015/16: 7.11].

Scope 1 Emissions: Gas

We only have operational control over a single gas supply, in our Glasgow office; all other supplies are communal and managed by our managing agents.

Data for 2015/16 has been estimated based on 2016/17 consumption, but no adjustment has been made for weather, although this would clearly affect heating demand and fuel consumption.

Data for 2016/17 is based on meter reads provided by the managing agent and the use of a calorific value of 39.5 MJ/m^3; this is the average of the range in which gas transporters are required to maintain to avoid causing problems with gas burning appliances[1] and is applied in lieu of data from the gas supplier.

Table 2: Scope 1 Fuel Use (Gas)

Gas	2016-17		2015-16	
	kWh	tCO_2e	kWh	tCO_2e
Glasgow	33,291	6.13	33,382	6.16
TOTAL	33,291	6.13	33,382	6.16

Scope 2 Emissions: Electricity

We have operational control over office electricity supplies, but our Belfast office is the only location where we procure our electricity supply directly. We are supplied by SSE Airtricty, who report their annual fuel-mix and CO_2 emissions in accordance with the Electricity (Fuel Mix Disclosure) Regulations 2005. This reporting is not directly comparable with the BEIS emission factors used elsewhere, which include the impacts of other GHG emissions sources and are reported in CO_2e; however, in 2015/16 emissions were 33% lower and in 2016/17, 25% lower than through using location-based data.

At our other locations, we are reliant on data provided by our managing agents, which varies in terms of quality and frequency of collection.

In some cases, we have had to estimate consumption for both 2015/16 and 2016/17. Where some data is available for the supply, this has been applied to other periods, but where no data is available, we have estimated on based on the average consumption per square meter of our other assets for the reporting year and applied this figure to the office area.

Table 3: Scope 2 Use of Purchased Electricity

Electricity	2016-17		2015-16	
	kWh	tCO_2e	kWh	tCO_2e
Belfast[2]	19,581	8.07	23,015	10.64
Birmingham	35,250	14.52	39,914	18.45
Bristol	30,778	12.68	35,272	16.30
Cardiff	9,724	4.01	10,531	4.87
Edinburgh	17,429	7.18	18,875	8.72
Glasgow	6,471	2.67	6,531	3.02
Leeds	22,705	9.36	22,814	10.54
London	81,729	33.68	72,043	33.30
Manchester	141,048	58.12	142,340	65.79
Reading	16,750	6.90	18,140	8.38
Southampton	24,969	10.29	22,710	10.50
TOTAL	406,434	167.47	412,184	190.51

Scope 3 Emissions: Fuel & Energy Related Emissions

Based on our gas and electricity consumption reported under Scope 1 and Scope 2, the upstream well-to tank (WTT) and transport and distribution (T&D) emissions are reported in Table 4.

Our FERA emissions currently emit the energy used in communal areas of our offices as we have insufficient data at present to report this information.

Despite a small reduction in consumption, there is a slight increase in emissions in 2016/17; this is due to increases in the WTT and T&D emission factors for electricity.

Table 4: Scope 3 FERA Emissions

Gas & Electricity	2016-17		2015-16	
	kWh	tCO_2e	kWh	tCO_2e
Offices	445,385	37.83	439,725	38.82
TOTAL	445,385	37.83	439,725	38.82

Scope 3 Emissions: Business Travel

Our business travel emissions are calculated by obtaining data from expense claims and from our travel booking agents. This data excludes distances travelled by foot or by cycle, both of which would have zero emissions.

In 2016/17, 69% of the distance we have recorded, excluding journeys by foot and cycle, was by rail.

Although the distance travelled by air has increased in 2016/17, a smaller proportion of these trips are domestic flights, with higher emissions than the average short-haul non-domestic destination. Combined with lower emission factors associated with all flights in 2016/17, this has resulted in an overall emissions reduction.

Overall, we have seen a 12% reduction in emissions associated with business travel, as a result of slightly lower distance travelled and reducing emission factors for most travel modes.

Table 5: Scope 3 Business Travel

Transport Mode	2016-17		2015-16	
	km	tCO_2e	km	tCO_2e
Rail	684,288	32.01	795,027	38.84
Air	62,649	11.38	47,237	12.90
Taxi	6,986	1.72	7,767	1.98
Car	231,831	40.05	246,945	43.46
Ferry	0	0	32	0.003
Bus/ Coach	4,196	0.51	4,196	0.51
TOTAL	989,950	85.66	990,710	97.30

Scope 3 Emissions: Resource Use

Paper consumption is based on the quantity of paper of each size and weight ordered by each office. Table 6 reports the quantity of paper consumed and emissions associated with the production of that paper based on average production methods and recycled content.

In 2016/17, there was a 36% reduction in paper consumed compared with 2015/16; this is mainly attributable to the highly successful roll-out of PIN printing across all of our offices in August 2016.

Table 6: Scope 3 Resource Use (paper)

Gas	2016-17		2015-16	
	kg	tCO_2e	kg	tCO_2e
Offices	5,263	4.94	7,921	7.44
TOTAL	5,263	4.94	7,921	7.44

Scope 1 + 2 Emissions

174 tCO_2e

[2015 – 16: 197 tCO_2e]

Scope 3 Emissions

129 tCO_2e

[2015 – 16: 143 tCO_2e]

Intensity Metrics & KPIs

Intensity metrics allow us to monitor our emissions based on the size of our organisation, the area our offices occupy and our turnover.

The area we occupy and the number of employees help us internally to compare the performance of our locations, target improvement and learn from our better performing offices.

For example, whilst the energy intensity of our offices will vary depending on factors such as age of fit-out and occupancy, we expect them to be within a given range. A review of consumption per m^2 allows us to identify outliers and raise outliers which could relate to errors in the recording of meter readings.

Our emissions per £m of turnover can be used by our clients to estimate their Scope 3 emissions associated with the procurement of our services.

There are movements in every business, and between the two reporting years, some of our offices have moved to new locations, and we have seen a small net reduction in the number of employees overall; similarly, our turnover has increased over the two periods. These changes are set out in Table 7.

The intensity of our emissions will form the basis of our KPIs going forward and will be used to monitor our future performance.

Table 7: Intensity Metrics

Emission Scope	2016 -17	2015 - 16
Area [m^2]	3,397	3,433
Employees [no.]	218	229
Turnover [£m]	21,882,585	19,464,216

KPIs

Scope 1 & 2 Emissions

Emissions per £m turnover
7,933 $kgCO_2e$
[2015 – 16: 10,104 tCO_2e]

Emissions per m^2 office space
51 $kgCO_2e$
[2015 – 16: 57 tCO_2e]

Emissions per employee
796 $kgCO_2e$
[2015 – 16: 859 tCO_2e]

Energy Intensity
129 kWh
[2015 – 16: 130 kWh]

Scope 3 Emissions

Emissions per £m turnover
5,914 $kgCO_2e$
[2015 – 16: 7,325 tCO_2e]

Emissions per m^2 office space
38 $kgCO_2e$
[2015 – 16: 42 tCO_2e]

Emissions per £m turnover
594 $kgCO_2e$
[2015 – 16: 623 tCO_2e]

Data Quality & Uncertainty

We have assessed the uncertainty of calculated Scope 1 and Scope 2 emissions at an individual supply level, at an office level, and at a scope level.

The uncertainty of our Scope 1 emissions has improved significantly, as consumption is now provided on a monthly basis rather than being estimated, as was the case in 2015/16.

Whilst across the majority of our offices, our electricity data has improved in quality, the quality of data received for our head office in Manchester has reduced; as this is one of largest electricity supplies it has a more significant impact on our results than other supplies which have experienced improvements in data quality over the period.

We are billed monthly for our office electricity use in the Manchester office, but consumption data is only occasionally supplied alongside our invoice; our accounts department have now agreed not to process any future payment without this information, so we should see a marked improvement in uncertainty in 2017/18.

At this time, we have not estimated the uncertainty associated with our Scope 3 emissions data.

Table 8: Parametric Uncertainty

Emission Scope	% Uncertainty	
	2016-17	2015-16
Scope 1	+/- 20.62%	+/- 11.32%
Scope 2	+/- 4.89%	+/- 5.60%
Scope 1 + 2	+/- 4.78%	+/- 5.41%

Combined Uncertainty

+/- 5.41%

[2015 – 16: + / - 4.78%]

Methodology

Our Approach

To improve the transparency and consistency of our reporting, and to allow comparison with data from other organisations, we have applied the *Greenhouse Gas (GHG) Protocol* Corporate *Standard* and have adopted an 'operational control' approach.

Our relevant upstream and downstream emissions are assessed using *GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.*

GHG Protocol

Emissions Scopes & Sources

We have applied an operational control approach and the following descriptions explain what this means and how it applies to Turley.

Scope 1: Direct GHG emissions relate to the combustion of fuel or other release of gases (e.g. fugitive emissions from air-conditioning plant) that occur from sources within our operational control.

Scope 2: Electricity indirect GHG emissions relate to purchased electricity consumed in uses over which we have operational control

Scope 3: Other indirect GHG emissions is an optional reporting category that covers all other indirect emissions. The categories of emissions most material to Turley include:

- Business travel
- Fuel & energy related emissions (FERA)
- Purchased goods and services (paper)
- Waste generated in operations

Activity Data

Emissions are calculated based on activity data, which relates to the quantity of fuel burned, fugitive emissions, or electricity purchased in carrying out the activity that result in emissions.

Scope 1 Fuel Consumption

Fuel is consumed in stationary or mobile plant and equipment that we are operationally responsible for. For the most part, our offices are served by communal boilers over which our managing agents have control; this is with the exception of our Glasgow office where we have an independent gas supply to the boiler which is within our demise. We do not own or operate any vehicles directly, and emissions associated with our business transport are instead captured under 'business travel'. The emissions associated with heat consumption through communal boiler use are categorised under 'fuel and energy related emissions'.

Scope 1 Fugitive Emissions

Fugitive emissions are as a result of the unintentional release of gases, and in buildings include the release of HFC emissions during the use of air-conditioning equipment. We are responsible for the operation and maintenance of air-conditioning units in our Belfast and Edinburgh offices; maintenance reports show that no refrigerant top-ups were made in 2015/16 or 2016/17, so it assumed that refrigerant leakage for these reporting years is zero.

Scope 2 Use of Purchased Electricity

Electricity for use in our office areas is under our direct operational control but purchased on our behalf by managing agents in all of our offices, with the exception of Belfast, where a direct contract with the supplier is in place. In most cases, our supply is either directly metered or sub-metered, and we are able to request our consumption data. As we are reliant on third-parties for this information, we have limited control over their processes and the frequency we receive this data can vary significantly.

We also contribute towards a proportion of the communal supplies to our buildings. As we have no operational control over these supplies, these are considered under 'fuel and energy related emissions'.

Scope 3 Business Travel

Emissions associated with business travel are calculated based on the distance travelled by each mode of transport. This data is obtained via either expenses claims or our various travel agents.

Due to how this data is currently aggregated, we are unable to carry out sense checks easily on this information, so will be looking at how we can improve this reporting in future years. This would also enable us to carry out further analysis on the distances travelled by each mode.

We do not currently record the distance travelled on foot or by cycling. This would not affect our absolute emissions as both of these modes have zero emissions associated with them, but it would lower the intensity of our emissions (e.g. CO_2e/km travelled).

Scope 3 Fuel and Energy Related Emissions

FERA emissions include all emissions that relate to our energy consumption that fall outside of our Scope 1 and Scope 2 reporting.

This includes emissions that occur downstream of our gas and electricity consumption, either through losses in transport and distribution (T&D), or through the processing of energy before it reaches the point of use (well-to-tank or WTT). In order to calculate these emissions, emission factors for these activities are applied to the activity data recorded under Scopes 1 and 2 and no further data needs to be collected.

It also includes the emissions associated with our energy use that falls outside our operational control; this relates to our share of the communal energy used in our offices, which is under the control of our landlords. At this point in time, we have limited data to allow us to report on this consumption, although we have asked for this information and would like to report on this in the future.

Scope 3 Purchased Goods and Services

Due to the nature of our business, our paper consumption is the most significant resource we consume after energy. We record the quantity of paper we consume in kg; following a successful trial in our Bristol office, PIN printing was rolled out across all of our offices in August 2016 and as a result we have seen a marked reduction in paper consumption.

Scope 3 Waste Generation

Across our offices, the majority of our waste is paper, packaging and food waste. We have put in place procedures across all of our offices to segregate our general waste, recycling, and where applicable, food waste for collection, but we do not have the ability to measure the quantity of waste we generate ourselves.

In most of our offices, waste is collected via our managing agents, and although we do receive some data on quantities of waste and recycling rates for certain locations, this is at the moment inconsistent and is not reported on as part of our corporate emissions (although where data is available, it has been included in the data section of this report).

Emission Factors

There are different types of emission factor available depending on the activity and fuel; for the most part, we have applied figures from BEIS produced for the purpose of company reporting. These figures are national averages and reflect 'location-based' emissions.

For electricity, in accordance with the GHG Protocol Scope 2 Guidance, companies should also report on 'market-based' emissions where these are available. Market-based emissions take into account the combinations of sources that different suppliers use to generate electricity, which can result in emission factors that vary significantly from the national average; this allows us to take into account the procurement of greener supplies. However, as we only procure one electricity supply directly, we have chosen not to report this metric at this time (although we state where this is the case and recognise the difference in emissions in our Data and Performance section).

The emissions factors applied in our reporting are as shown in Tables 9 and 10.

Table 9: Fuel Related Emission Factors

Activity/ Fuel	2016 -17		2015 -16	
	Unit	$kgCO_2e$	Unit	$kgCO_2e$
Natural Gas	kWh	0.18416	kWh	0.18400
Grid Electricity	kWh	0.35156	kWh	0.41205
WTT Natural Gas	kWh	0.02785	kWh	0.02499
WTT Electricity	kWh	0.06129	kWh	0.06748
T&D Electricity	kWh	0.03287	kWh	0.03727

Table 10: Other Emission Factors

Activity/ Fuel	2016 -17		2015 -16	
	Unit	$kgCO_2e$	Unit	$kgCO_2e$
Rail: National	km	0.04678	km	0.04885
Rail: Light & Tram	km	0.04446	km	0.05363
Rail: International	km	0.01225	km	0.01214
Rail: LUG	km	0.04674	km	0.05789
Air: Domestic	km	0.26744	km	0.27867
Air: Short-haul	km	0.16103	km	0.16844
Air Long-haul	km	0.19754	km	0..19162
Ferry: Car	km	0.13325	km	0.13319
Ferry: Foot	km	0.01928	km	0.01927
Taxi: Regular	km	0.21863	km	0.2280
Taxi: Black cab	km	0.32006	km	0.32826
Bus: London	km	0.0727	km	0.0738
Bus: Local (other)	km	0.12259	km	0.11986
Coach	km	0.0278	km	0.02867
Car: Small	km	0.1450	km	0.14675
Car: Medium	km	0.17380	km	0.17741
Car: Large	km	0.21834	km	0.22473
Car: Unknown	km	0.17887	km	0.18307
Paper production	kg	0.9286	kg	0.9390

Data Quality & Uncertainty

As set out in the previous section, we have undertaken an assessment of the quality of our Scope 1 and Scope 2; this is in accordance with the *GHG Protocol guidance on uncertainty assessment in GHG inventories and calculating statistical parameter uncertainty.*

Parametric Uncertainty

To provide an indicator of the quality of our estimates, we have carried out an analysis of parametric uncertainty in accordance with GHG Protocol guidance. The quality of our activity and emission factor data is ranked to assess the likely level of uncertainty in our reported emissions.

Table 11 provides a description of the types of activity data we collect and their assigned interval of accuracy as a percentage of the assumed mean value. This assessment is based on our interpretation of the data accuracy levels described in the GHG guidance and their respective confidence intervals expressed as a +/- percentage of mean value. The same process is applied to emissions factor data, with the descriptions in Table 12 applied.

There are many types of energy meter, all of which record information in a slightly different way, and in our experience, common errors in recording this data include the incorrect placing of decimal places, the reading of a single component of consumption rather than the total, and the recording of the wrong units (such as the kVa total instead of kWh).

Good practice would be for somebody with a thorough understanding of the data to carry out an annual spot check of each meter, or for the individuals taking readings to take clear photographs of the meters and meter reads so that they can be verified at a later date if a potential error is highlighted. By taking regular readings, errors can often be identified by reviewing consumption patterns.

Table 11: Uncertainty Intervals for Activity Data

Activity Data	Description	Interval
Electricity Use	Electricity use is based on meter reads/ automated data	+/-5%
Electricity Use	Electricity use is apportioned based on two actual meter reads < 3 months apart	+/-10%
Electricity Use	Electricity use is apportioned based on two actual meter reads > 3 months apart	+/-15%
Electricity Use	Electricity use is apportioned based on one actual and one estimated meter read	+/-20%
Electricity Use	Electricity use is estimated based on average use of supply within 6 month period	+/-15%
Electricity Use	Electricity use is estimated based on average use of supply over > 6 month period	+/-20%
Electricity Use	Electricity use is estimated based on average use of similar supplies	+/-25%
Electricity Use	Electricity use is not metered and must be estimated from equipment and time of use	+/-30%
Electricity Use	Electricity use is estimated by the supplier	+/-30%
Electricity Use	Electricity use is not metered and must be estimated from benchmark data	+/-40%
Gas Use	Gas use is based on metered data and accurate calorific value	+/-5%
Gas Use	Gas use is based on metered data and estimated calorific value	+/-10%
Gas Use	Gas use is apportioned based on two actual meter reads < 3 months apart	+/-10%
Gas Use	Gas use is apportioned based on two actual meter reads > 3 months apart	+/-15%
Gas Use	Gas use is apportioned based on one actual and one estimated meter read	+/-20%
Gas Use	Gas use is estimated based on average use of supply within 6 month period	+/-15%
Gas Use	Gas use is estimated based on average use of supply over > 6 month period	+/-20%
Gas Use	Gas use is estimated based on average use of similar supplies	+/-25%
Gas Use	Gas use is not metered and must be estimated from equipment and time of use	+/-30%
Gas Use	Gas use is estimated by the supplier	+/-30%
Gas Use	Gas use is not metered and must be estimated from benchmark data	+/-40%

In addition, the majority of our data is obtained from our managing agents, who may or may not have processes in place to ensure the accuracy of the data collected. We have limited control over this, but carry out reasonableness checks which include a review of consumption per day, and a review of consumption per m^2 of floor area.

Where regular (i.e. monthly) readings are provided, an assessment of daily consumption provides an indication of the accuracy of individual readings; if in one month daily consumption is significantly higher or lower than in previous months, this either highlights a spike or reduction in consumption (which should be investigated), or an erroneous reading that we would highlight to our managing agent to check.

Parametric Uncertainty

For each piece of data, the following formula is applied to assess the quality of that data:

GHG Emissions, $F = A \times C$

Uncertainty of calculated emissions, $E = \sqrt{(B^2 + D^2)}$

Where:

A = *Activity Data*

B = *Confidence interval for activity data (from Table 11)*

C = *GHG Emission Factor (from Table 9)*

D = *Confidence interval for emission factor (from Table 12)*

A greater number of data points results in an assumed lower level of uncertainty, demonstrating the importance of regular data collection.

Overall uncertainty is then assessed by applying the formula below:

Cumulated Uncertainty, $H = \frac{\sqrt{\sum(F \times G)^2}}{\sum F}$

Table 12: Uncertainty Intervals for Activity Data

Activity Data	Description	Interval
Electricity Use	Single fuel used for generation (e.g. quantity from on-site generation)	+/-5%
Electricity Use	Annual average for a specific supplier, taking into account their fuel mix	+/-10%
Electricity Use	Annual average for a grid with multiple fuel sources	+/-15%

Further Information

This report was produced in-house by Turley Sustainability to support our 2016 -17 CSR Report.

In October 2017, Government launched a consultation to extend mandatory greenhouse gas reporting to non-listed entities. Depending on the compliance threshold selected, this will result in between 4,000 and 9,100 individual organisations having to report under a simplified energy and carbon reporting framework by 2019.

Measurement and reporting stimulates better energy management practices, and with savings of £2 billion per year on business energy bills estimated through the implementation of cost effective measures in buildings and business processes, the argument for developing robust processes and understanding your data is strong.

If you think you might become a mandatory participant in the new reporting regime, we can support you in developing a bespoke approach that suits your needs and allows you to extract the greatest value from the process.

Related Services

Some of our other related services include:

- Reporting and application of reporting frameworks
- Corporate sustainability and social responsibility strategies
- Materiality assessments
- Gap reports
- Carbon management plans
- Social value strategies and assessments
- Internal policy and procedure development
- External benchmarking support
- Behaviour change initiatives
- Standalone research

Please get in touch if you would like further information about the content of this report, or any of the services we provide.

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