EVERYBODY PLAYS A PART

Climate change and energy efficiency

Willmott Dixon Group

Energy and Carbon Management Strategy 2015-2020

November 2015

WILLMOTT DIXON

SINCE 1852

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Climate change and energy efficiency

Contents

Executive summary

At Willmott Dixon we have a long standing set of company values[1] which underpin our operation and success. Sustainability is a key driver for us within these values.

Our Group Sustainable Development Strategy 'Transforming Tomorrow'[2] was published in 2013 with the headline aim of being a leader in sustainable development. 'Tackling Climate Change and Energy Efficiency' is one of our Strategy's four key themes. Our objectives under this theme are to:

- Reduce our carbon footprint
- Maintain carbon neutrality
- Work towards de-coupling carbon emissions from business growth

Our target is to reduce our carbon intensity by 50% by the end of 2020 compared to 2010 levels.

This Energy and Carbon Management Strategy sets out how we will work towards the target and these objectives.

Between 2010 and 2014, using our Carbon Management Plan, we reduced our carbon intensity by 30%, surpassing our previous target of a 15% reduction over the period and putting us in a strong position achieve this new target.

We have identified a number of interventions though which we can further reduce our carbon footprint (see table opposite).

These interventions will improve the Group's carbon efficiency. However, it will not be possible to entirely eliminate all emissions, at least in the short to medium term. So since 2012 we have been offsetting our emissions by purchasing carbon credits from approved projects that will save an equivalent amount of carbon to that which we have emitted. This means that we are a carbon neutral company. The projects support a range of clean technology and community investment programmes in less privileged parts of the world.

We report on our carbon emissions and progress against our targets annually as part of our Annual Report and Accounts as well as our annual Sustainble Development Review. We are also committed to reviewing this strategy annually and will updating it at least every three years.

Summary of the interventions identified in this Strategy

Carbon Source	Intervention
Business and commute travel	Vehicle improvements & limiting carbon emissions (company cars only)
	Green bonus payment
	Phase out fuel cards
	Encourage commuting by public transport
	Car-sharing payment
	One hour commute guidance
	Homeworking
	Sustainable travel plans
	SafeDriver training
	Eco driver training
	Virtual meetings
	Green Fleet Review
	Mileage capture
	Cycle mileage payments
	Cycle Scheme
	Cycle training
Commercial Fleet	Telemetry systems and fleet management
	Driver league tables
	Vehicle improvements and selection
	Engine management systems and vehicle set up
	In-cab/eco-driver training
Sites	Load profiling and power planning
	Further replace site diesel with grid connections
	Site shut off & cabin zoning
	Application of batteries with generators
	LED site lighting
	Improve site cabin performance
	Temporary solar PV on cabins
	Use heat pumps on site cabins
Offices	Decouple energy bills from base rent
	Office audits

1. http://www.willmottdixongroup.co.uk/about-us/what-we-value
2. http://www.willmottdixongroup.co.uk/sustainability/strategy

1 Introduction

1.1 Background

Willmott Dixon Group is one of the UK's largest privately-owned construction, housing and property companies. Founded in 1852, the company has grown to become one of the country's most recognisable brands for the built environment.

Our Group Sustainable Development Strategy 'Transforming Tomorrow'[3] was published in 2013 with the headline aim of being a leader in sustainable development. The Strategy lays out how we will continue to reduce the negative impact of our own operations, while setting out how our company can use its influence and example to become an even greater force for good within the wider society. The strategy sets out nine ambitions under four themes of 'Putting People First', 'Responsible Business', 'Smarter Use of Natural Resources' and 'Tackling Climate Change and Energy Efficiency'.

Our objectives under 'Tackling Climate Change and Energy Efficiency' are to:

- *Reduce our carbon footprint*
- *Maintain carbon neutrality*
- *Work towards de-coupling carbon emissions from business growth*

We are committed to reducing emissions of greenhouse gases, from our own operations, our supply chain, and the buildings we construct, refurbish and maintain.

Between 2010 and 2014, using our Carbon Management Plan, we reduced our carbon intensity by 30%, surpassing our previous target of a 15% reduction over the period.

This Energy and Carbon Management Strategy lays out the interventions we will take to deliver our new headline target to reduce our carbon intensity by 50% by the end of 2020 compared to 2010 levels.

Please note that this strategy will be reviewed annually and updated at least every three years.

3. http://www.willmottdixongroup.co.uk/sustainability/strategy

1.2 Global challenge

We believe that climate change is the single biggest threat to our planet and that we must all play a part in tackling it. The evidence that human activity is contributing to changes in the earth's climate is overwhelming. It is leading to rising average global temperatures and unpredictable weather patterns, including increased frequency and intensity of drought, flooding and severe storm events. Climate change poses a significant risk to us as a business, our clients and our supply chain.

The Intergovernmental Panel on Climate Change (IPCC) provides an authoritative scientific understanding of climate change. The IPCC's Fifth Assessment Report (AR5), published in September 2013, concluded that there is a 95% probability that human action is the dominant cause of climate change. The report also states that:

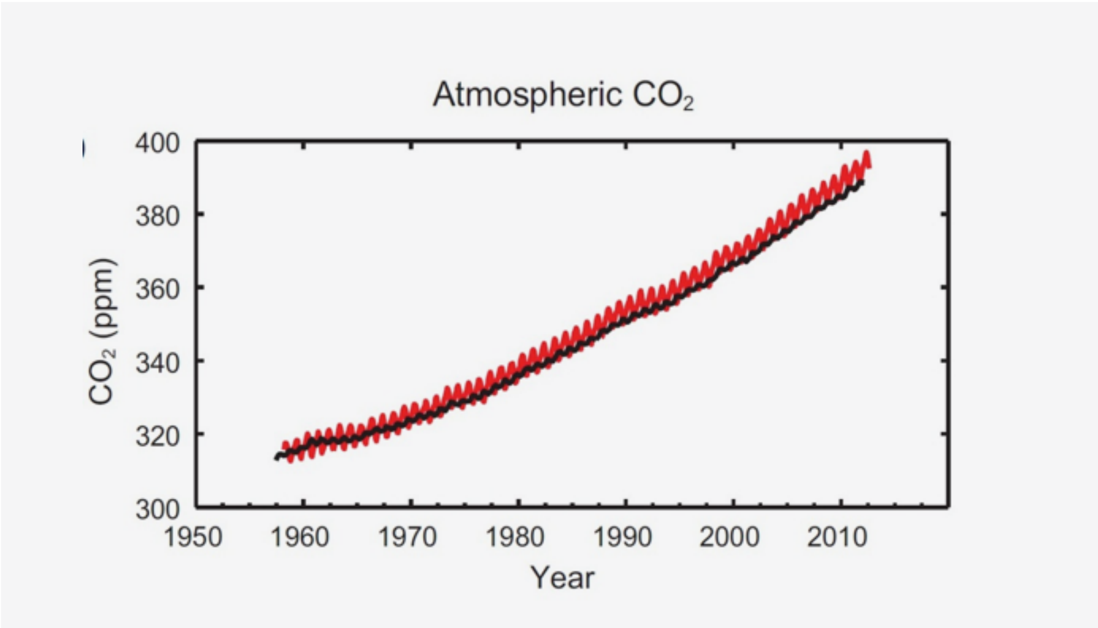
"Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia."

"It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century."

Atmospheric carbon dioxide concentrations continue to rise. The US National Oceanic and Atmospheric Administration (NOAA) has declared that Global carbon dioxide concentrations reached a new monthly record high of 400ppm in April 2015. Weather patterns are also shifting; Met Office figures for 2014 showed it to be the UK's warmest and fourth wettest year since 1910. This year's record means that eight of the UK's top ten warmest years have occurred since 2002[4].

If current emission trends continue (see Figure 1.1), warming is likely to exceed 2˚C, and could possibly exceed 4˚C by 2100. This will result in large scale changes to most natural cycles. Over the next 100 years rainfall is likely to increase in wet regions and decrease in dry regions, further exacerbating floods and droughts. The ocean will continue to warm and expand, raising sea levels, melting the polar icecaps and weakening the Gulf Stream. A complete collapse of the Gulf Stream beyond the 21st century cannot be excluded, this would radically affect the climate of the Northern hemisphere, chiefly Europe and North America.

Figure 1.1 IPCC (Annual Report 5) atmospheric concentrations of carbon dioxide from Mauna Loa, Hawaii (red) and South Pole (black) since 1958.



4. http://www.metoffice.gov.uk/news/releases/archive/2015/Record-UK-temps-2014

1.3 International response

The Kyoto Protocol was adopted in December 1997, and into force in February 2005. The first commitment period started in 2008 and ended in 2012. In Qatar on 8 December 2012, the 'Doha Amendment to the Kyoto Protocol' was adopted, which included new commitments and reporting requirements from 2013 to 2020. Since the Doha amendment, successive UN climate change conferences have built momentum toward long-term national pledges.

1.3.1 Climate change and the EU

EU leaders have committed to transforming Europe into a highly energy efficient, low carbon economy. For 2020, the EU has committed to cutting its emissions to 20% below 1990 levels. This commitment is one of the headline targets of the Europe 2020 growth strategy[5] and is being implemented through the '2020 Climate and Energy Package'[6]; a package of binding legislation which includes the Energy Efficiency Directive[7].

1.3.2 The UK

In 2010, the UK was the world's 10th greatest producer of man-made carbon emissions[8], producing around 1.8% of the global total generated from fossil fuel combustion. In the last decade the UK has demonstrated considerable leadership within the international community accepting its share of responsibility for reducing global emissions:

- The UK Climate Change Act 2008[9] introduced the world's first long-term legally binding framework to reduce emissions and is aimed at tackling the dangers of climate change, improving carbon management and aiding the transition towards a low-carbon economy.
- The UK Government has set targets for reductions in UK CO_2 emissions of 34% by 2020 and 80% by 2050 against a 1990 baseline.
- To support this policy, the Government introduced the Carbon Reduction Commitment (CRC) and more recently the Energy Efficiency Scheme[10] in 2010. The latter implements article 8 of the EU Energy Efficiency Directive requiring organisations to audit their energy consumption and identify measures to improve their energy efficiency.

5. http://ec.europa.eu/europe2020/index_en.htm
6. http://ec.europa.eu/clima/policies/package/index_en.htm
7. http://ec.europa.eu/energy/efficiency/eed/eed_en.htm
8. http://mdgs.un.org/unsd/mdg/SeriesDetail.aspx?srid=749&crid=
9. http://www.legislation.gov.uk/ukpga/2008/27/contents
10. http://www.legislation.gov.uk/uksi/2014/1643/contents/made

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2 Measuring our carbon footprint

2.1 Willmott Dixon's carbon footprint

As a business, measuring our performance is essential; we cannot manage something we cannot measure. So it is very important to define our methodology and scope for calculating our carbon footprint, to ensure consistent measurement.

In 2012 we engaged with the Carbon Trust to develop and substantiate our understanding of our carbon emissions reporting boundaries. The resulting scope and reporting boundaries are illustrated below.

Our approach to measuring our carbon footprint is based on the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol) and the ENCORD Construction CO_2e Measurement Protocol. We have adopted the financial control approach defined within the GHG Protocol to determine the emissions sources included in our scope.

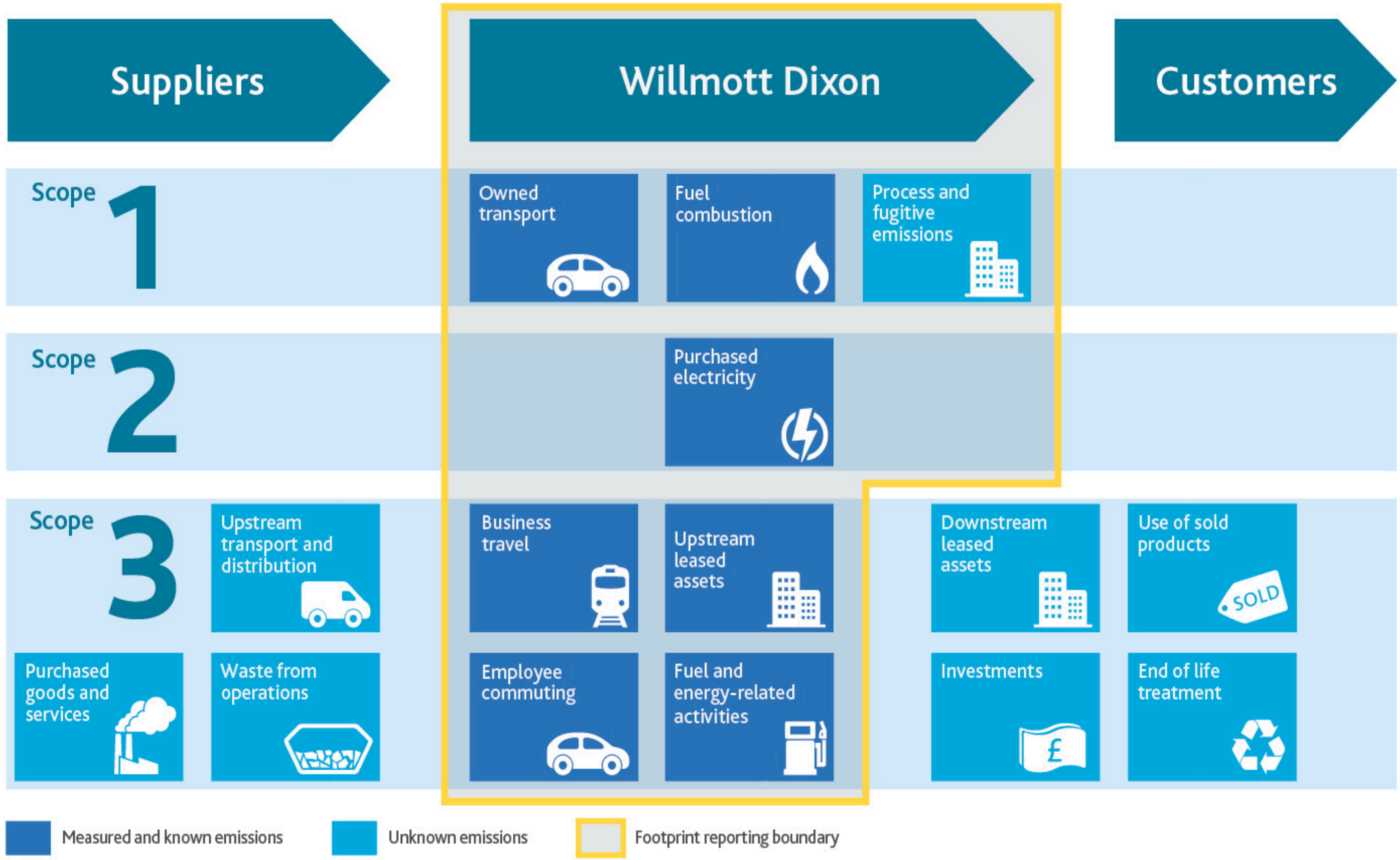


Figure 2.1 Willmott Dixon carbon footprint boundary.

2.1.1 Scope 1 emissions

Scope 1 emissions are those directly emitted by us. They include the fuel we burn in our commercial vehicles and the fuel we use on-site.

2.1.2 Scope 2 emissions

Scope 2 emissions are those associated with the electricity we purchase and use to power our offices and sites. To determine the greenhouse gases released in the production of this electricity we use a carbon conversion factors provided by Defra that represents the current mix of energy sources supplying the national grid.

2.1.3 Scope 3 emissions

Scope 3 emissions cover all indirect emissions related to our activities. A number of Scope 3 sources are not currently included within our carbon footprint reporting. As specified within the GHG Protocol, companies have discretion over which Scope 3 categories they choose to report, in order to focus on accounting and reporting for activities that are relevant to their business, and to avoid double-counting of emissions between companies.

Currently we report Scope 3 emissions from business travel via grey fleet, employee commuting by car and our leased offices as part of our carbon footprint (see Figure 2.1).

Broadening the range of the Scope 3 emission sources that we include within this boundary remains a challenge, primarily because of the difficulties in gathering reliable data. However, we recognise that increasing the number of Scope 3 emission sources included within our reporting boundary is necessary to better understand and reduce the impacts of our operations as well as those of our supply chain.

To better understand and ultimately control these Scope 3 emissions, we have set timescales for the inclusion of the following key sources. Our approach to each one is discussed below.

Scope 3 Source	Set Baseline	Report	Set reduction targets
Water	2015	2016	2016
Waste	2015	2016	2016
Train travel[11]	2015	2016	2016
Supply Chain	2017	2018	2019

Figure 2.2 Timescales for inclusion of further Scope 3 emissions.

2.1.3.1 Waste & water

We will be enhancing the collection of site environmental data as part of the rollout of MiProject (see section 7.2.6.1) across our contracting divisions. This coupled with improved quality assurance protocols will provide a baseline for both our waste production and water use more accurately. Once these baselines have been established we will be able to set informed targets and report against them to manage and reduce the carbon emissions associated with waste and water management.

2.1.3.2 Train travel

As part of our long-term commitment to achieve certification against the Carbon Trust's Carbon Standard we will be collecting and reporting business travel via trains within our carbon footprint from 2016 onwards.

Planned updates to the Group's expenses systems will facilitate this by allowing us to better capture and understand our train travel patterns. It will also allow us to more accurately benchmark distances associated with these journeys.

2.1.3.3 Supply chain

We have signed up as a pathfinder to the Carbon Trust's new Supply Chain Standard. The Standard aims to measure, manage and reduce greenhouse gases in the 'upstream supply chain'. The timeline summarised in the table reflects the Carbon Trust's approach to achieving its key requirements as outlined in Figure 2.3.

Figure 2.3 Carbon Trust Supply Chain Standard requirements.

11. Willmott Dixon currently report business travel undertaken by grey fleet, company cars and commercial fleet vehicles only.

3 Willmott Dixon business case

Sustainability makes good business sense; measuring and understanding our carbon emissions means we can better manage our business operations. Setting challenging carbon reduction targets makes us a more efficient and effective organisation.

3.1 Stern Review

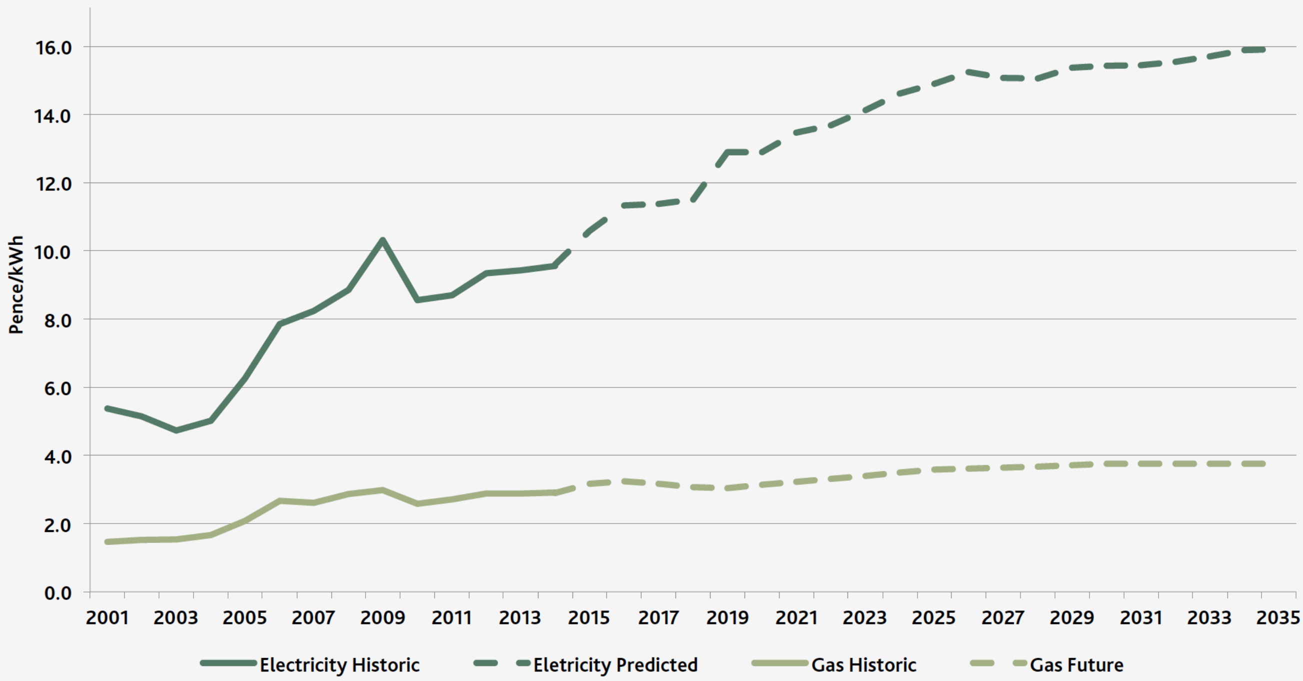
The Stern Review of the economics of climate change published in 2006 made it clear that tackling climate change is a matter of urgency and the cost of doing so will be far less than dealing with its effects in future years.

The more recent New Climate Change Economy published in 2014, co-authored by Lord Stern, reiterated that without urgent action, warming could exceed 4ºC by the end of the century, with extreme and potentially irreversible impacts. However the potential for long-term sustainable growth is there and if pursued, a low carbon economy has the ability to yield greater economic prosperity than the existing carbon intensive equivalent.

3.2 Energy scarcity

Over the last 25 years awareness of the financial risks of not managing energy consumption and carbon emissions have become increasingly apparent. Energy prices have been a key part of this with the cost of electricity increasing by over 75% since 2001. Government predictions suggest that prices will continue to rise.

Figure 3.1 DECC Updated Energy & Emissions Projections – September 2014



3.3 Actual vs. predicted savings

The construction sector is particularly exposed to changes in energy costs as it is an energy intensive industry consuming large amounts of elecricity and fuel.

It is also a major consumer of materials and the cost of production, processing, manufacture and delivery of materials is linked to energy costs.

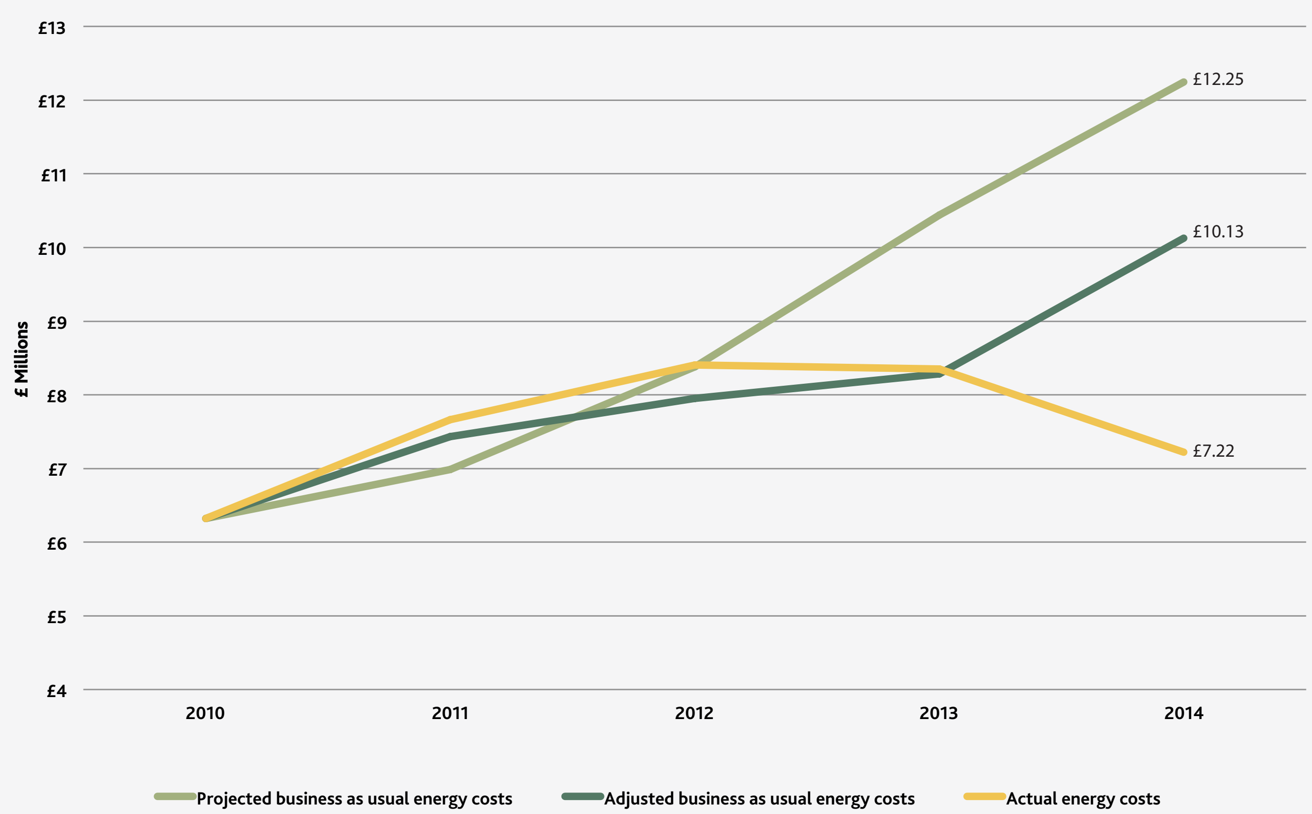
When setting our previous carbon intensity reduction target (15% reduction between 2011 and 2014) we predicted the Group's 'business as usual' emissions over the 3 year period and then identified interventions. These primarily focused on Scope 1 and 2 sources including site energy, company cars and offices.

Willmott Dixon's energy costs were predicted to increase from £6.32m in our 2010 baseline year to £12.25m by the end of 2014, allowing for projected business growth and energy price rises. By investing in these carbon interventions, we projected that energy costs could be reduced to £10.13m by 2014. It is important to note that the economic down turn during this period meant we over-estimated our rate of growth in 2012. Even so, we have significantly exceeded these projections: in 2014 our energy costs were £7.22m.

The graph below (Figure 3.2) shows the:

- Projected Business As Usual energy costs - These predictions were made in 2010 based on forecasted company growth as well as predicted unit costs of energy between 2011 – 2014. The term Business As Usual is used to represent what would happen if no interventions were put in place to reduce energy costs.
- Adjusted Business As Usual energy costs – Actual turnover and actual industry average unit costs for energy have been used to adjust the projected Business As Usual scenario described above. This is a more accurate representation of the likely annual energy costs if no interventions were put in place to reduce energy costs (between 2011 – 2014).
- Actual energy costs – Willmott Dixon's recorded annual spend on energy.

Figure 3.2 2010 – 2014 Projected and Observed Energy Costs



4 Group headline target

Our Group vision is to:

"Build on our history and reputation by undertaking our activities in a sustainable and responsible manner that contributes to society as a whole."

In line with this is the headline aim of our Sustainable Development Strategy,

"to be a leader in sustainable development."

In support of this we have set a target to:

Reduce our carbon intensity by 50% by the end of 2020 compared to 2010 levels.

4.1 Baseline

Our previous Group carbon target adopted 2010 as the reference year; retaining the 2010 baseline means that we are able to clearly demonstrate long-term reductions on a continuing basis.

4.2 Time period

The Group's current Sustainable Development Strategy "Transforming Tomorrow" runs until 2020. Aligning our carbon intensity target with this end date provides a 5 year period in which to align our efforts and achieve the reduction. Interim targets will be set each year to clearly communicate our trajectory and support the headline target.

4.3 Level of reduction

Our first headline carbon target was for a 15% reduction by the end of 2014 (against the 2010 baseline).

The new headline target from 2015 is for the Group to deliver a total reduction of 50% by 2020.

We know this is a challenging target but we believe it will help drive innovation across the Group, improve our business and help maintain Willmott Dixon's position as a leader in sustainable development.

4.4 Divisional, company & local targets

The headline target has been broken down into divisional and local office targets based on size and nature of operations. This allows meaningful targets to be set for all parts of the Group and ensures that early adopters will not be penalised.

5 Our performance so far (2010-2014)

5.1 Performance timeline

Our carbon footprint in absolute tonnes and intensity between 2010 and 2014, along with the breakdown by scope, is shown below

Figure 5.1 Absolute carbon emissions by scope and emissions relative to turnover over the period 2010-2014

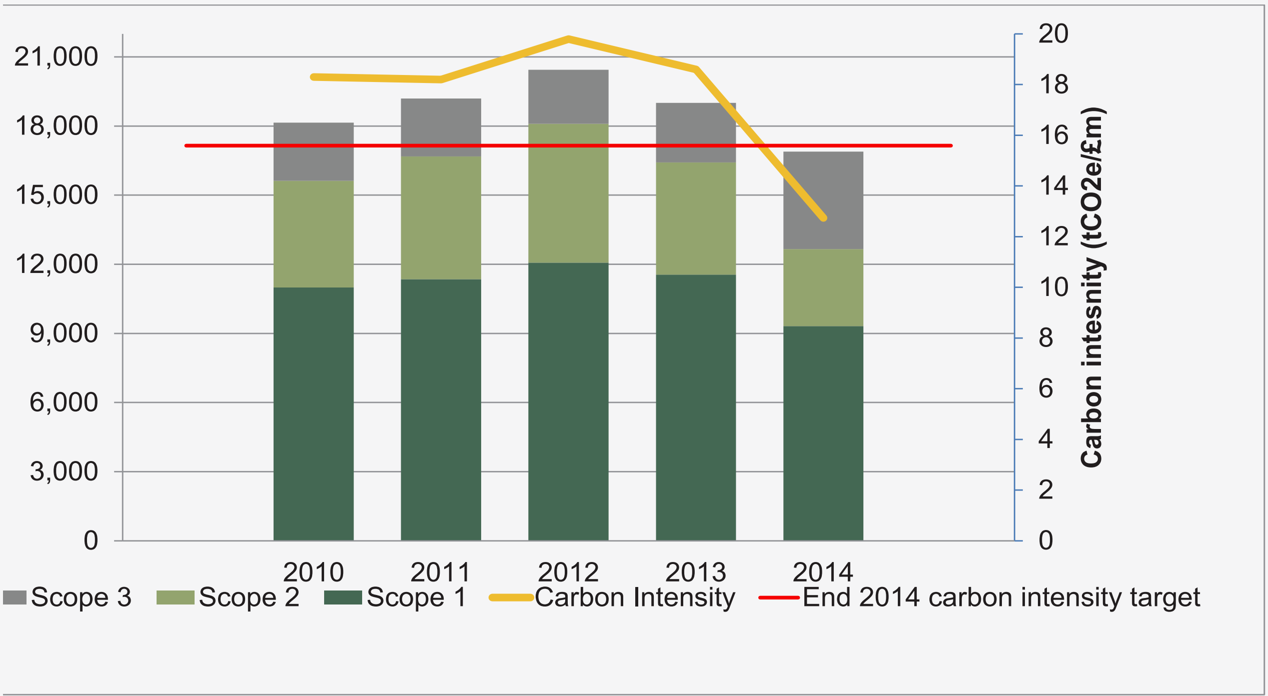


Figure 5.2 Our absolute emissions (tCO_2e)

Scope	Notes	2010	2011	2012	2013	2014	reduction 2010/2014	% reduction
Scope 1	1	10,998	11,351	12,067	11,557	10,730	268	2.4%
Scope 1 & 2	2	4,622	5,327	6,032	4,861	3,339	1,283	27.8%
Total Scope 1 & 2		15,620	16,678	18,100	16,419	14,069	1,551	9.9%
Scope 3	3	2,530	2,515	2,341	2,585	2,819	-289	-11.4%
Total Willmott Dixon emissions		18,150	19,193	20,442	19,004	16,888	1,262	7.0%

Figure 5.3 Our emissions relative to turnover (tCO_2e/£m)

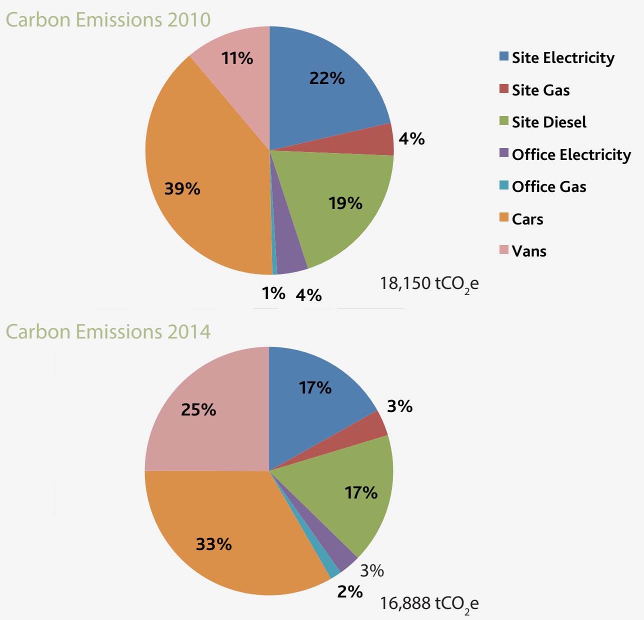
	2010	2011	2012	2013	2014	reduction 2010/2014	% reduction
Total Scope 1 & 2 emissions intensity	15.8	17.5	15.9	15.8	10.6	5.2	33.0%
Total Group emissions intensity	18.3	18.2	19.8	18.6	12.7	5.6	30.8%

Notes
1. Emissions from a.) Company vehicles where fuel is purchased/remunerated by Willmott Dixon. b.) Direct fuel combustion by Willmott Dixon, for example, gas in offices and diesel in generators. 2. Emissions associated with consumption of purchased electricity. 3. Primarily emissions from business travel and commuting in private vehicles – see footprint boundary opposite.

5.2 Breakdown of carbon emissions

Some of the changes that have occurred as our business has evolved over the last 5 years are reflected by the contribution each of our emission sources makes to our total carbon footprint (see below for our 2010 and 2014 figures). Most notable is the change in proportion of our carbon that is attributable to our van fleet which is a direct reflection of the rapid growth and expansion of our Partnerships division.

Figure 5.4 Absolute carbon emissions 2010 and 2014



5.3 2014 Observed vs. predicted reductions

The graph below (Figure 5.5) shows both the predicted and actual reduction in carbon intensity between 2010 and 2014. Note that negative numbers represent an increase in intensity over time

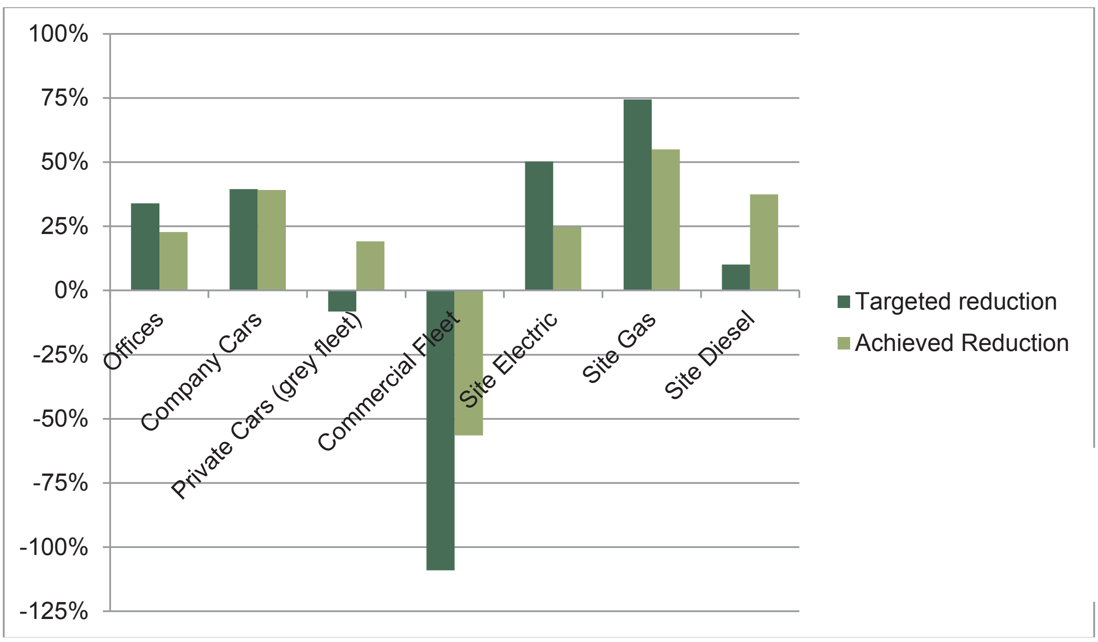
We have not achieved all the predicted reductions, but across the sources we have achieved a 30% reduction in carbon intensity.

The size of our commercial fleet was predicted to increase significantly as a result of the rapid growth forecast in our Partnerships business. In light of this we set a target to limit the increase in carbon intensity to less than 110%. Whilst we did observe an increase in the carbon intensity, it was approximately half what was predicted. This is partly because the economic down-turn meant we didn't achieve predicted growth, but it is also due to the significant achievements of Partnerships' Carbon Focus Group in reducing their emissions.

5.4 Effect of changing weather patterns

Fourteen of the fifteen warmest years on record occurred since 2000 with 2014 being the hottest year on record. This trend for warmer weather affects our emissions as the hotter it is the less need there is to heat our offices and site cabins. To understand relationship better and quantify its impact on our carbon performance we have used Met Office Heating Degree Day Data (HDD) to adjust our reported annual carbon emissions.

Figure 5.5 Achieved savings vs prediction by area of use



5.4.1 Heating degree days

The HDD analysis is a form of weather data evaluation designed to reflect the heating requirements of buildings. Whilst there are limitations to its use, HDD data does provide a direct comparison with ambient temperature, which is one of the key factors dictating heating demand across our offices and site cabins.

HDDs are calculated based on the difference between a baseline and the daily average outdoor temperature. In the UK the accepted baseline for measuring HDDs is 15.5ºC.

5.4.1.1 Weather correction factors

HDD data can be used to create weather correction factors that can then be used to adjust carbon data based on whether more or fewer HDDs occurred in a given year, compared to the specified reference period.

A Weather Correction Factor (WCF) is determined for each year between 2010 and 2014 using the previous 10 years as a reference period. The WCF is calculated using the equation below:

$$\text{WCF} = \frac{\text{Average Annual HDDs (2000 – 2009)}}{\text{Sum of HDDs in Reporting Year}}$$

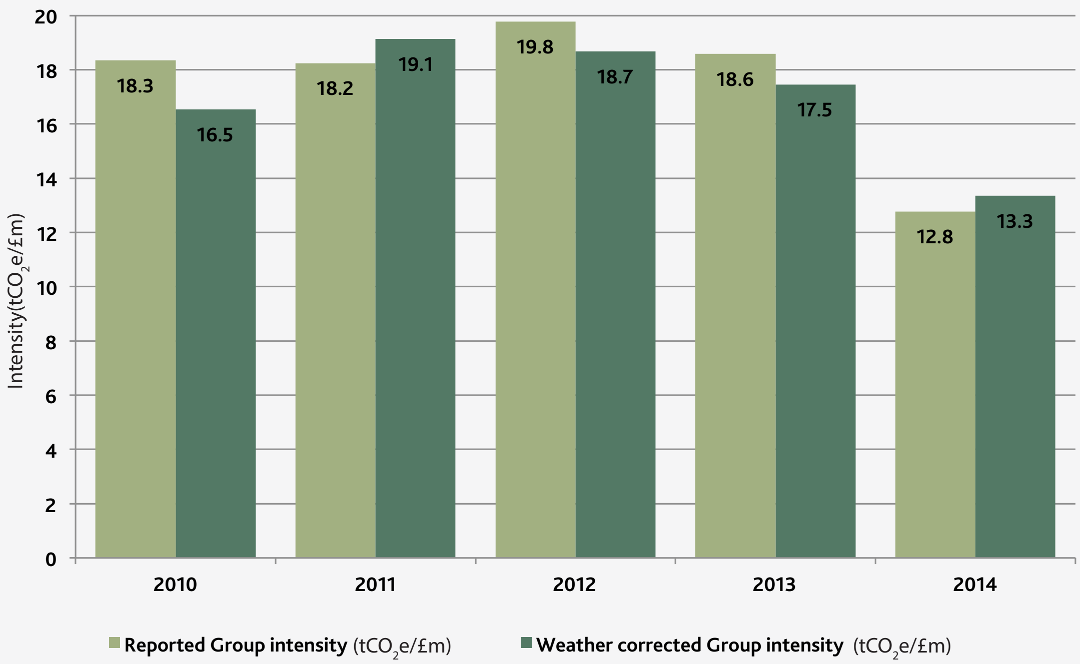
The subsequent WCFs reflect the difference in heating demand between the reporting year and the average of the past 10 years.

The WCFs have been used to adjust those aspects of the Group's emissions that are affected by variation in heating demand. The adjusted emissions are then added to the remainder and used to calculate a 'weather corrected carbon intensity' for each year.

5.4.2 Adjusted performance

The graph below (Figure 5.6) shows the observed 30% reduction in carbon intensity between 2010 and 2014 whilst the weather corrected data shows a reduction of 19.4% over the same period. This means that approximately one third of the reported carbon reductions can be attributed to the warmer weather during 2014.

Figure 5.6 Reported and weather corrected carbon intensity (2010-2014)



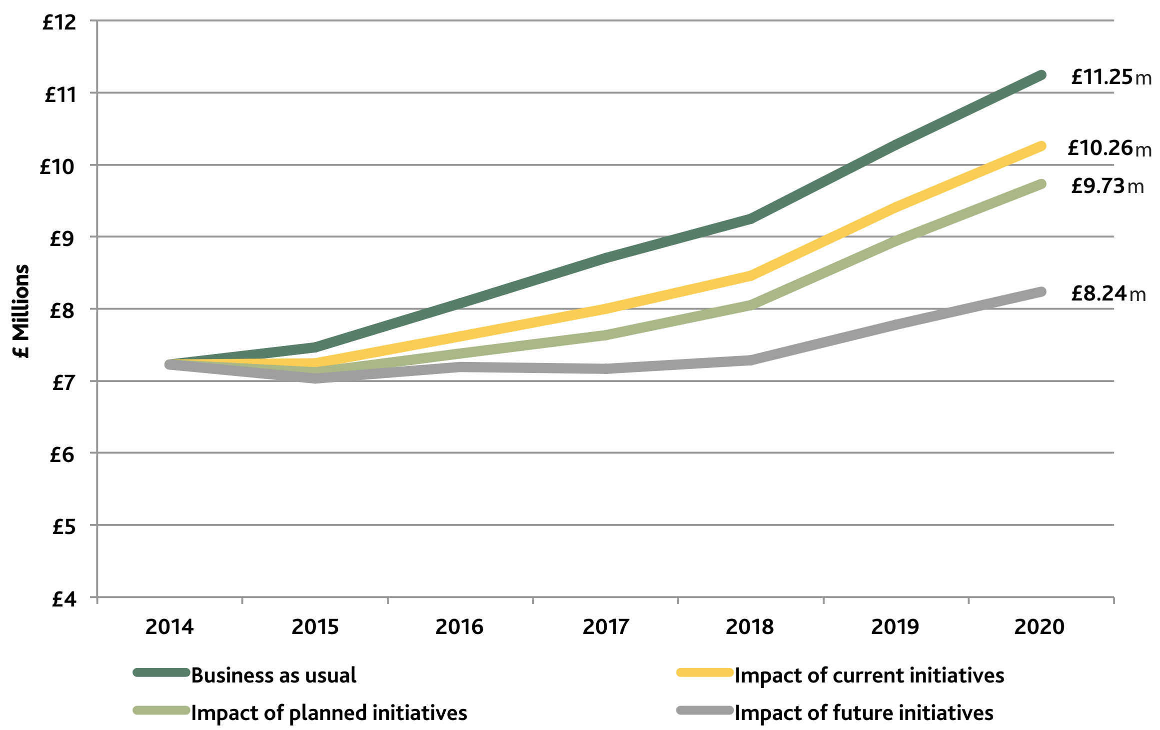
5.4.3 Looking forward (2015-2020)

Despite the short term reductions observed in 2014 and 2015, fuel prices are likely to increase as world's oil reserves are only sufficient to maintain current global production for another 53 years[12]. In addition to this, climatic trends and weather patterns are likely to continue to shift resulting in greater extremes of temperature and precipitation which will in turn affect our energy consumption and business operations.

Recent amendments to the GHG protocol Scope 2 guidance allows electricity deemed 'low carbon' to be assigned more favourable carbon conversion factors. As this takes effect it will allow energy providers to differentiate their products in the market and help remove some of the carbon accounting barriers to the adoption of green energy supplies. We will look to increase the proportion of our electricity purchased from renewable sources.

We believe that effective carbon and energy management will remain an important part of our operations and will continue to improve our business efficiency and resilience.

Figure 5.7 2014 – 2020 predicted energy costs



12. BP Statistical review of World Energy (June 2014) p7. http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf

6 Governance

6.1 Structure, roles & responsibilities

Clear leadership and collective responsibility is key to achieving our emissions targets. The Willmott Dixon Group's Holdings Board retains overall responsibility for sustainable development including carbon management. The Holdings Board considers the Strategic Sustainable Development Risk Matrix[13] annually, which identifies the internal and external key risks and opportunities under 'Tackling Climate Change and Energy Efficiency'.

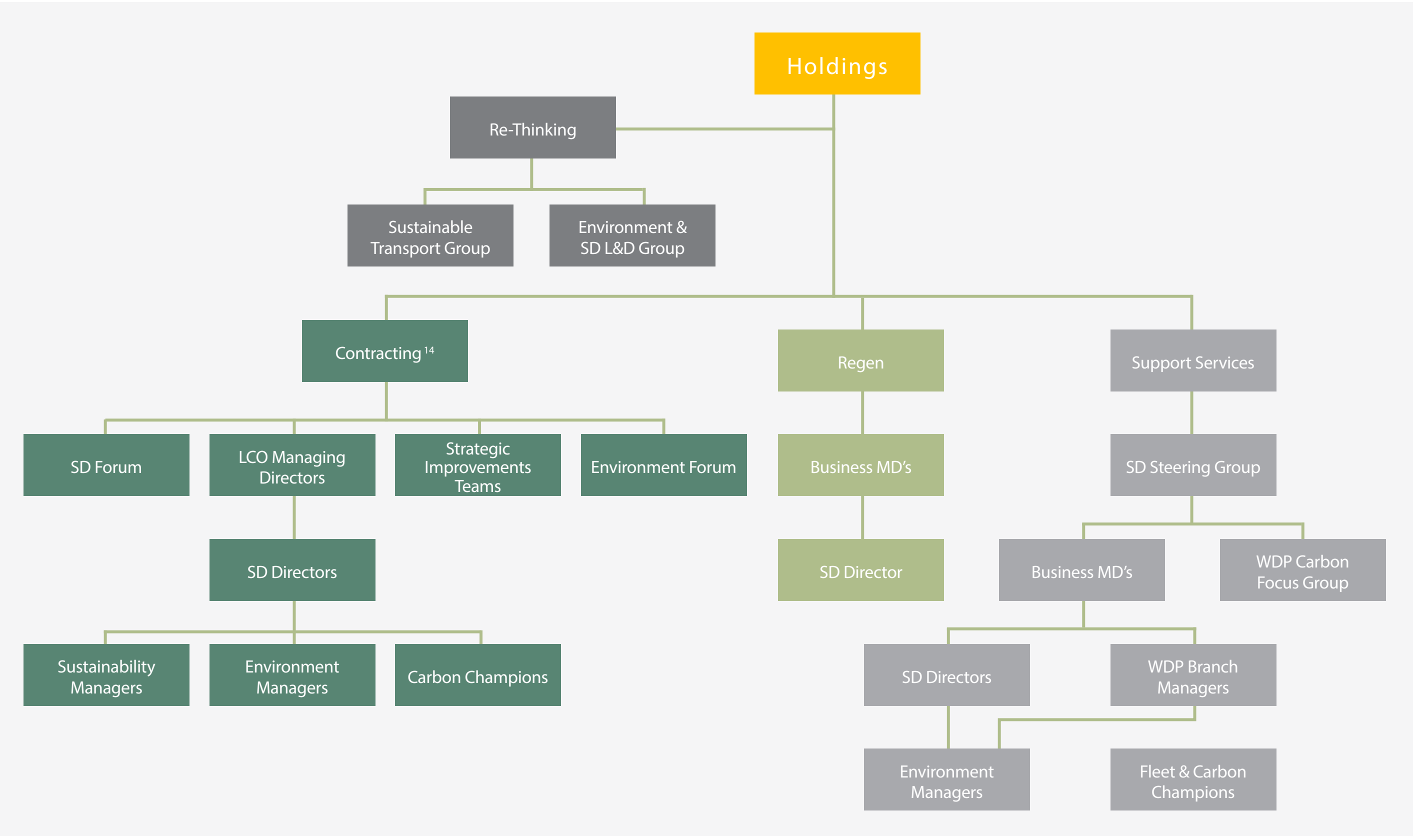
However, everyone in the company is responsible for achieving our carbon reduction targets and ambitions. Accountability is assigned to individuals at all reporting levels. This gives local offices and individual projects the flexibility to meet our targets in a way that suits them best.

Paul Smith, as Group Director with responsibility for sustainable development, holds ultimate responsibility for carbon emissions performance. He also chairs the WD Re-Thinking Board. The Re-Thinking Board is responsible for reviewing and approving Group-wide carbon management programmes and initiatives, with escalation to the main Holdings Board where necessary. The Re-Thinking team is responsible for the administration of the Energy and Carbon Management Strategy, coordinating initiatives, communicating best practice case studies, and monitoring and reporting performance across the Group.

Each division has a structure for the development of divisional programme initiatives, and local responsibility for the implementation of these. Divisional boards and the Support Services Sustainable Development Steering Group review and approve carbon management plans and coordinate the development and delivery of initiatives by strategic teams, functional units and local operational management teams.

Managing Directors, through their nominated Sustainable Development Director, are responsible for local implementation of Group and Divisional programmes. They review, approve and ensure the delivery of local initiatives. Sustainable Development Directors, Branch General Managers, Branch SD Champions and Carbon Champions all work with their businesses to develop and coordinate local carbon management projects, and monitor and report performance against targets through monthly Board reports.

Figure 6.1 Carbon management reporting structure across the Willmott Dixon Holdings Group



13. http://www.willmottdixongroup.co.uk/sustainability/responsible-business/risk-and-opportunities
14. Our contracting divisions are Construction, Interiors and Housing

6.2 Data & reporting

Willmott Dixon has focussed on enhancing sustainability reporting systems in recent years. We use data collected from across the business to report against a number of Key Performance Indicators (KPIs), helping us gauge the company's long-term performance. We report our emissions and carbon footprint each calendar year in line with Willmott Dixon's financial reporting period.

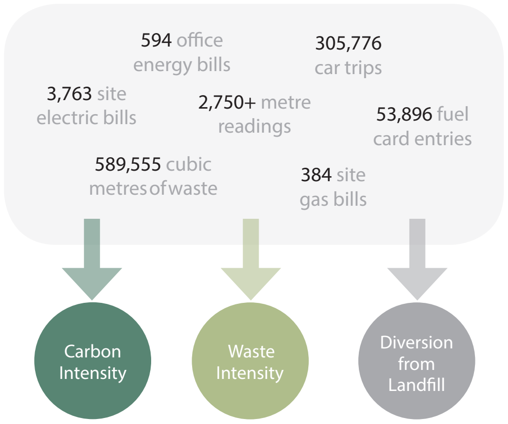


Figure 6.2 Illustration of the typical annual volume of data processed to determine Group performance.

This data is collected and reported via our in-house information systems as well as third party systems including:

- Arval: Company fuel cards (currently being phased out for company car users)
- TMC: Business and commute mileage capture

Figure 6.2 illustrates the annual volume of data that is used to determine these KPIs. We report total carbon emissions for the Group as well as carbon intensity.

6.2.1 Group level

As a business we report monthly performance figures within the company via our Sustainable Development dashboard. These are reviewed on a monthly basis by the Holdings Board, and on a more detailed level at the bi-monthly Re-Thinking Board.

In a move towards integrated reporting, sustainable development has formed part of our Annual report and Accounts since 2009. We also report Group carbon emissions publicly through our annual Sustainable Development Reviews which are published on our website site.

We contribute our data to the Green Construction Board who regularly assess the sector's progress in achieving its carbon emissions reduction targets. We are working with other BuildUK members to develop a reporting mechanism which will more clearly communicate and benchmark energy consumption and emissions across the construction industry.

6.2.2 Divisional & Company level

Monthly performance figures are also reported at Divisional and Company level by the Re-Thinking team and are received by Boards at each level. At Local Company Office(LCO) level, the Sustainible Development (SD) Director uses the data reported to compile a monthly SD Board report. This enables the local Board to manage performance against targets and monitor progress against implementation plans and targets.

6.2.3 Project and branch level

Our in-house data collection and reporting software is used across all our Construction, Housing and Interiors projects to record electricity and gas meter readings as well as diesel consumed on site. Requirements to record this information are specified within our Environmental Management System. Regional environmental managers then verify the data as part of their regular site audit process. This data is used to gauge performance against the 10 Point Plan.

6.2.3.1 10 Point Plan

The Willmott Dixon 10 Point Plan is how we deliver sustainability on our projects. First launched in 2010, the Plan has specific project targets for a range of sustainable development issues including carbon intensity. The 10 Point Plan, which was re-launched at the end of 2014, sets challenging annual carbon targets for each of the Construction, Housing, Interiors and Energy Services divisions. See below for a summary of all 10 Point Plan criteria.

Whilst the majority of the points do not directly measure carbon, a number of them address issues that impact our wider Scope 3 carbon footprint such as procurement, waste, water and building performance.

The targets and actions set out under each point are reviewed annually.

	Criteria	Division	2015	2016	2017
1	Sustainability Action Plan	Construction, Energy Services, Housing & Interiors	Yes	Yes	Yes
2	Customer Focus	Construction, Energy Services, Housing & Interiors	Yes	Yes	Yes
3	Life Cycle Costing (LCC)	Construction, Energy Services, Housing & Interiors	Yes	Yes	Yes
4	Responsible Sourcing (Project Procurement Plan)	Construction, Energy Services, Housing & Interiors	45%	50%	55%
5	Community Investment (£/£m)	Construction, Energy Services, Housing & Interiors	£250 - £500 per £1m turnover	£250 - £500 per £1m turnover	£250 - £500 per £1m turnover
6	Considerate Constructors Scheme	Construction & Housing	40	41	42
		Energy Services	38	39	40
		Interiors	37	38	39
7	Carbon Emissions (during construction)	Construction, Energy Services & Interiors	1,060kgCO_2e/£100k	1,025kgCO_2e/£100k	1,004kgCO_2e/£100k
		Housing	1,472kgCO_2e/£100k	1,419kgCO_2e/£100k	1,379 kgCO_2e/£100k
8	Waste (volume of construction waste)	Construction & Interiors	8.5m^3/£100k	8.5m^3/£100k	8.5m^3/£100k
		Housing	11.8m^3/£100k	11.2m^3/£100k	10.63m^3/£100k
		Energy Services	9.5m^3/£100k	9m^3/£100k	8.5m^3/£100k
9	Waste % Diversion (includes CD&E)	Construction, Energy Services & Housing	95%	95%	95%
		Interiors	93%	94%	95%
10	Water use (during construction)	Construction & Interiors	8.7m^3/£100k	8.3m^3/£100k	7.9m^3/£100k
		Energy Services	6m^3/£100k	5.7m^3/£100k	5.5m^3/£100k
		Housing	9.5m^3/£100k	9.0 m^3/£100k	8.6m^3/£100k

Greater thank of equal to

Figure 6.4 Partnerships' SD Framework

PARTNERSHIPS' SUSTAINABLE DEVELOPMENT FRAMEWORK MEASURES - 2015			
KPI Ref	Target	Measure	2015 Target
SUSTAINABLE DEVELOPMENT			
Client workshops	100%	SD is an agenda item on Client Partnering Group meetings	100%
CARBON MANAGEMENT			
Van fuel consumption	100%	Average fuel consumption (MPG) for the van fleet	27 MPG
WASTE MANAGEMENT			
Waste Management Plan	100%	Production of reliable waste intensity and diversion data using Branch Waste Management Plan	100%
COMMUNITY INVESTMENT			
Branch targets	100%	Better 2014 community investment in Partnerships	100%

6.2.3.2 Partnerships' Sustainable Development Framework

Our Partnerships business developed and adopted its Sustainable Development Framework (SDF) in 2014. The SDF covers 4 primary issues including carbon management. It sets improvement targets allowing comparison across the Partnerships' Branches.

6.2.4 Conversion factors

Willmott Dixon applies the Defra greenhouse gas conversion factors[15] to calculate carbon and fugitive emissions. Our carbon footprint is reported in tonnes of carbon dioxide equivalence (CO_2e). The Kyoto Protocol specifies six prominent greenhouse gases with varying global warming potential (GWP): carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). Reporting CO_2e allows emissions of these gases to be reported on a like-for-like basis relative to one unit of CO_2.

6.3 Assurance & verification

Since 2012 Willmott Dixon has engaged an independent third party, Bureau Veritas (BV), to verify annual energy consumption and carbon emissions data. BV review the Group's systems and processes to provide assurance that the declared company emissions are a reliable reflection of progress against key performance indicators and to allow inclusion in the Annual Reports and Accounts.

We have made a commitment to target annual certification and verification to the Carbon Trust Standard. The Standard requires an organisation to measure and report its carbon emissions and to demonstrate an on-going commitment, through investment and the implementation of projects and plans, to achieving a reduction in emissions over defined periods.

We have also been part of the Energy Savings Trusts' Motorvate Accreditation scheme for several years. We undergo a regular audit of our reporting processes and of the emissions from our fleet. From that we receive advice and guidance on how to improve our performance further.

CARBON TRUST STANDARD

REDUCING CO2 YEAR ON YEAR

15. www.defra.gov.uk/environment/economy/business-efficiency/reporting/

7 Carbon management & reduction

The following section describes the suite of measures we have identified to enable our business to meet our carbon reduction target. Some have already been implemented and are delivering on-going benefits whilst others are new and will require rolling out in phases across the Group.

The table below summarises the interventions discussed in this section as well as highlighting the department or working group responsible for leading each intervention.

Figure 7.1 Summary of Carbon Management Interventions

Carbon Source	Intervention	Effect	Company lead	Predicted % improvement
Business and commute travel	Vehicle improvements & Limiting carbon emissions (company cars only)	Improved fuel efficiency	Finance Team	2-5%
	Green bonus payment	Further incentivise better fuel economy	Sustainable Transport Group	
	Phase out fuel cards	Remove private mileage from expenses	Finance Team	
	Encourage commuting by public transport	Reduced carbon footprint and encourage modal shift	Sustainable Transport Group	
	Car-sharing payment	Incentivise car sharing	Sustainable Transport Group	
	One hour commute guidance	Reduce time on road and fuel consumption	Human Resources	
	Homeworking	Reduced mileage	Human Resources	
	Sustainable travel plans	Promote alternative travel	Re-Thinking	
	SafeDriver training	More efficient driving	Human Resources	
	Eco-driver training	More efficient driving	Re-Thinking	
	Virtual meetings	Reduced business miles	IT Dept	
	Green fleet review	Identify future policy actions	Re-Thinking	
	Mileage capture	Accurate mileage logging	Finance Team	1-2%
	Cycle mileage payments	Greater incentives to avoid car travel	Sustainable Transport Group	<1%
	Cycle scheme		Human Resources	
	Cycle training		Sustainable Transport Group	
Commercial Fleet	Telemetry systems and fleet management	Improved data collection and reduced time on road	Partnerships Carbon Focus Group	2-3%
	Driver league tables	Improved fuel efficiency	Partnerships Carbon Focus Group	
	Vehicle improvements and selection	Improved fleet efficiency	Partnerships Fleet Manager	1-2%
	Engine management systems and vehicle set up	Improved fuel efficiency	Partnerships Carbon Focus Group	
	In cab/eco-driver training	Improved fuel efficiency and driver skill	Partnerships Carbon Focus Group	2-3%
Sites	Load profiling and power planning	More accurate sizing of electricity supplies and on site generators	Re-Thinking	2-3%
	Further replace site diesel with grid connections	'Cleaner' energy source	Re-Thinking	
	Site shut off & cabin zoning	Reduce energy wastage	LCO Commercial Managers	
	Application of batteries with generators	Improve efficiency of on-site generation	LCO Commercial Managers	
	LED site lighting	Reduce energy demand on site	LCO Commercial Managers	
	Improve site cabin performance	Reduce energy demand on site	Re-Thinking	1-2%
	Temporary solar PV on cabins	Reduced grid electricity consumption	Re-Thinking	
	Use heat pumps on site cabins	Improved coefficient of performance	Re-Thinking	
Offices	Decouple energy bills from base rent	Improved data & control	Re-Thinking	<1%
	Office audits	Identification of efficiency measures	LCO Managing Directors	<1%

7.1 Transport & travel

Emissions from transport account for more than 50% of our carbon footprint. Improving our performance in this area is therefore paramount to achieving our targeted emissions reduction levels.

7.1.1 Business & commute travel

The majority of our staff must be mobile to visit sites, clients and other offices. Whilst the use of public transport is encouraged, a large proportion of our travel will always be by car.

The company has developed a number of key policies in relation to car travel to help staff travel sustainably and cut emissions. The majority of these are captured within the Vehicle and Driver Policy and our Expenses Policy documents. The key commitments are detailed below.

7.1.1.1 Policies

7.1.1.1.1 Company car lists

The Company Car list is reviewed annually to ensure the most appropriate and efficient vehicles are included. As part of this we have been reducing our emission thresholds for all vehicles on the company car list:

Pre July 2009:	210g/km of CO_2
July 2009:	160 g/km of CO_2
July 2010:	150 g/km of CO_2
July 2011:	140 g/km of CO_2
July 2012:	130 g/km of CO_2
From July 2013:	120 g/km of CO_2

Since Q4 2013 we have specified the fitting of eco-tyres to all of company cars.

7.1.1.1.2 Green bonus

We have a 'green bonus' scheme in place to reward employees for selecting low-emission vehicles. Since 2008, over £400,000 in green bonuses has been paid to Willmott Dixon employees resulting in a more efficient fleet, both in terms of emissions and running costs.

In 2013 the 'green bonus' was doubled for employees selecting low-emitting (<90gCO2/km from July 2013) vehicles as their company car selection, or private vehicle purchase/lease. From August 2015, to reflect the inclusion of electric cars on the company car list for the first time, the green bonus payment was increased to £1,250 for electric cars.

The thresholds and payment level of the Green Bonus are reviewed annually.

7.1.1.1.3 Fuel cards for company car users

Fuel cards for company car users are currently being phased out of the business with all staff moving to mileage reimbursement once their fuel cards have been relinquished.

7.1.1.1.4 Commuting via public transport

In August 2015 we adapted the current travel allowances and expenses provisions in place for staff with the aim of reducing single car occupancy for commuting and promoting sustainable travel choices.

7.1.1.1.5 Car sharing reimbursement

We have also introduced a scheme to reimburse employees sharing journeys for commuting and business purposes. Since the beginning of 2012 we have reimbursed over 1,200,000 car share miles through this scheme. The levels of reimbursement for car sharing are reviewed annually.

7.1.1.1.6 One hour commute guidance

We recommend that local offices consider the location of employees when deploying them to a site based project. Wherever possible, people are allocated to projects within a 1 hour commute. This reduces the need for long journeys as well as helping to protect our employees' work-life balance.

7.1.1.1.7 Homeworking policy

All employees with company laptops have VPN software preinstalled so they can work flexibly from a more convenient office base, home or elsewhere and access the company intranet securely. Willmott Dixon Homeworking Policy encourages homeworking where this is compatible with operational requirements, taking into account the need for client contact, visible leadership, programme requirements and the type of role performed.

7.1.1.1.8 Sustainable travel plans

We have developed a strategic approach to the implementation of Sustainable Travel Plans, in-line with the Group Sustainable Transport Policy. These are mandatory for every office and site.

7.1.1.1.9 Cycle scheme

Willmott Dixon operates a Cycle scheme scheme for staff. Under the scheme employees can use their own bicycle or one purchased through the Cycle Purchase Assistance scheme for business journeys, and can claim reimbursement. More than 150 employees have participated in a Cycle scheme to date.

7.1.1.1.10 Bicycle mileage reimbursement

Employees have been able to claim business and commute mileage on bicycles, for several years. In 2014 we reimbursed over 18,200 cycle miles. Currently cycle mileage reimbursement is only available to those who receive a travel allowance. Based on the success so far, we are looking to make it available to all staff.

7.1.1.1.11 Cycle training

To encourage the uptake of cycling we will be looking to make cycle training available to all staff as part of our portfolio of employee benefits.

7.1.1.1.12 Further policy improvements

Through our Group Sustainable Transport Group we will periodically review our suite of policies and procedures to make sure that they are helping to deliver the mileage and carbon reductions that we seek.

7.1.1.2 Driver training

7.1.1.2.1 SafeDriver programme

In 2010 we introduced our SafeDriver programme; a comprehensive system for checking licences and risk-assessing employees (and their vehicles) who drive on company business. All nominated (non-company) drivers on company cars are also included in the programme. All new employees undertake the SafeDriver process within a month of joining, and their driving licences are always checked prior to their starting date. Those employees identified as high risk through the risk assessment process are required to undertake a training programme comprising on-line and on-the-road modules to encourage safer, more efficient driving.

7.1.1.2.3 Eco-driver training

The company has developed an 'eco-driver' course to help drivers improve their driving style and save them money. The e-learning course was launched in 2015 and has been rolled out across the Group. A toolbox talk version of the course has also been launched across Partnerships for our commercial fleet drivers.

7.1.1.3 Virtual meetings

The use of communication technology has the potential to significantly reduce our carbon footprint by allowing people to 'meet' without physically travelling to an office or site. The business has adopted MS Lync providing webinars, conference calls, file sharing and virtual desktop viewing capability. All LCO offices have meeting rooms with Lync capability and individual licences are available to those that need them. We are also looking at increasing the use of video-conferencing on our sites. Where video-conferencing is not available we encourage the use of telephone conference calling.

7.1.1.4 Green Fleet Review

During 2009 the Group engaged with the Energy Saving Trust (EST) to undertake a Green Fleet Review. The EST assessed the Group's approaches to transport and gave recommendations on our:

- Company car policy
- Fuel management
- Grey fleet management
- Data management
- Mileage reductions

In 2015 we will be working with the EST to undertake a second Review to identify additional measures which will enhance efficiency and empower our staff to reduce carbon emissions.

7.1.1.5 Measurement and performance

TMC (The Mileage Company) captures all business and expensed commute mileage, along with the carbon emissions of each vehicle being used, for both company and grey fleet vehicles. This data is reviewed on a monthly basis by the Re-Thinking team. In addition, each LCO monitors their top mileage drivers and uses the data to help allocate staff to sites to reduce distances travelled. Total mileage, miles per driver and carbon emissions data is also published via the Sustainability Dashboard on a monthly basis.

To improve the accuracy a smart phone 'app' has also been made available to staff to record journeys whilst on the move and to save them having to upload journey details each time. Based on the impacts of this new approach we will be reviewing other technologies and process improvements to increase efficiency and accuracy of data capture.

7.1.2 Fleet

7.1.2.1 Telemetry systems

Our commercial vehicles (vans) are equipped with real-time vehicle tracking systems which enables us to monitor vehicle usage, idling time and driver behaviour as well as helping us allocate tradespeople based on proximity. The system also integrates directly with the job allocation system used on the majority of our Partnerships' clients.

7.1.2.2 Business process optimisation

Much of our van fleet mileage is determined by contractual agreements with our clients. Within our tender responses and as part of our regular client reviews we will explore and highlight opportunities to deliver excellent service whilst minimising our emissions through mechanisms such as:

- contractor-side call centres (to enable workforce utilisation and route optimisation)
- planned preventative maintenance instead of 100% responsive repairs
- mechanisms to reduce missed appointments and wasted journeys
- relaxation of first time fix-rate targets and the standardisation of spares to reduce van payloads.

7.1.2.3 Driver league tables

Using data from the vehicle tracking system (JUCE) installed in our commercial vehicles and the fuel consumed by each vehicle (supplied via our fuel card provider), our Partnerships business produces driver league tables for each branch showing miles per gallon.

7.1.2.4 Fleet vehicle selection

All of our commercial vehicles are provided through our fleet management provider. As part of our periodic reviews of contracting arrangement we will review our fleet with respect to vehicle sizes, alternative manufacturers and fuel efficiencies to make sure that we are aware of market developments and taking advantage of them.

All our commercial vehicles are leased on a three to four year cycle. This allows us to maintain a modern, high performance fleet by taking advantage of the most recent fuel saving technologies.

We are now planning to use business performance information to inform our procurement criteria and the allocation of vehicles across the trades in our workforce.

7.1.2.4.1 Alternative fuels

In 2015 we engaged in an electric van trial with Nissan. The current constraints of electric vehicles (EVs) (limited range and storage space) mean that they are not suitable for all employees or situations.

However, using our JUCE system we are able to isolate vehicles whose operational profile fit the capabilities. If the trial proves effective for some areas and roles, we will work with our leasing partners to explore cost effective leasing models.

We are part of the Advisory Committee on a three-year programme, led by Intelligent Energy Ltd and supported by funding from APC (Advanced Propulsion Centre), to develop a new class of range-extended electric vehicle using hydrogen fuel cell technology.

Following on from trials in 2011/12 we are also continuing to review the viability of operating a gas-powered commercial fleet.

7.1.2.4.2 Plugged in Fleet initiative

We are partnering with The Energy Saving Trust to review Partnerships' commercial vehicle fleet in order to identify opportunities for electric and low emission vehicles.

7.1.2.5 Engine management and vehicle set-up

Through their Carbon Focus Group our Partnerships business engages with the wider automotive industry and identifies innovative approaches to fuel efficiency. During 2014 we piloted engine mapping systems on a number of commercial vehicles. Over a 12 month period the trial demonstrated relatively small fuel savings so has not been adopted further. However, we continue to work collaboratively with our supply chain and trial new technology.

In addition to this, since Q4 2013, we have specified eco-tyres across all commercial vehicles and have fitted them with speed limiters so that their maximum speed is no more than 70mph.

7.1.2.6 In-cab driver training

In addition to the SafeDriver Programme, in-cab driver training will to be piloted by Partnerships, commercial vehicle drivers.

7.1.2.7 Measurement and performance

A Partnerships Fleet Carbon Report is produced each month highlighting the performance across all Branches. The leagues tables mentioned in section 7.1.2.3 are reviewed basis by the Partnerships Carbon Focus Group and progress is reported to the Support Services SD Steering Group. Branch managers also review performance locally to understand trends across vehicle types and trades.

7.1.3 Other business travel

Employees are expected to use the most reasonable and convenient method of transportation available having regard for cost, sustainability, loss of time, time of day, weight of luggage and personal safety. As such public transport is encouraged whenever appropriate.

7.1.3.1 Measurement and performance

Other forms of business travel (trains, taxis, flights etc.) fall outside our currently reported footprint but are Scope 3 emissions related to our business (see section 2.1.3). Previous calculations based on cost have shown that train travel constitutes approximately 1% of our current total footprint (with other modes of public transport being significantly less). The Group will be putting in-place new data capture systems during 2015 to record this data on a monthly basis in-line with the Carbon Trust Standard's reaccreditation requirements.

7.2 Construction sites

7.2.1 Electricity supplies

7.2.1.1 Load profiling

Accurately predicting the energy load of a construction project over the course of its lifetime will enable our pre-construction teams to gain a better understanding of how to best supply our sites.

Over-estimation can result in temporary building electric supplies being rejected by the network operator or over-sized and carbon-intensive diesel generators being required.

Over the course of 2015 we will be trialling load tracking technology on plant and equipment to better understand the load profiles of our sites.

7.2.1.2 Early grid connections

Energy supplied to site through grid electricity is approximately 50% more carbon efficient than through a fuel-oil powered generators. All projects apply for a temporary builder's electricity supply as a priority action once a new project has been secured. More information has been made available to staff on when and how to do this during 2014 as it is a critical action that opens up a number of other measures which can only be implemented on sites that are grid connected (see below).

7.2.2 Zoning electrical supplies

Investigations and trials have taken place aiming to reduce the extent of out-of-hours energy use within site accommodation, by introducing three timed zones within our cabin set up:

1. on permanently,
2. only on during working hours and
3. drying room.

This requires the installation of seven-day digital timers for each zone within the mains distribution board. This will reduce energy consumption by allowing the site team to programme each zone to suit working hours and out-of-hours demand, and override where necessary. The aim is for these systems to be implemented on all new site installations that are connected to the grid. Whilst a large number of sites are doing this, not all are routinely adopting a zoning strategy.

7.2.3 Hybrid generators

Sometimes, where grid connections are not available or are delayed a project will have to operate via generators. We are currently conducting trials of hybrid generators in our Housing and Construction divisions. These include battery units which can significantly increase efficiency by storing energy when the generator is not running at capacity and then turning off the generator when the site's load can be supplied by the battery alone – for example, at night, or when less plant is required on site.

7.2.4 LED site lighting

LED lighting can be up to 68% more efficient than fluorescent alternatives[16] and a number of effective temporary lighting products are now available. Application of LED lighting can reduce lifecycle costs due to lower energy costs and repairs and maintenance requirements. We are encouraging all sites to engage with their supply chain to secure the most efficient lighting options available.

7.2.5 Improved cabin efficiency

7.2.5.1 Eco-cabins

Since October 2011, in order to reduce the impact of our site accommodation, projects have been required to specify Eco-cabins or cabins with an equivalent specification. Calculations show that Eco-cabins are 50% more energy efficient, by design, than a standard unit. However, developments in the market place mean that further efficiency improvements could be made yielding greater savings. We will be engaging with our supply chain to establish the most appropriate solution. Technologies such as those below will be considered as part of this.

7.2.5.2 Temporary photovoltaics

Periodically we review the viability of installing temporary Photovoltaic (PV) panels on our construction sites. Recent investigations suggest the return on investment is too long (>8 years) to be suitable for construction sites. However, panels could, in the future, be integrated into site cabin roofs or linked to generator battery units (see section 7.2.3). We will continue to engage with our site cabin supplier on the viability of the integrating PV panels into cabin roofs.

7.2.5.3 Air source heat pumps

Site cabins with integrated air source heat pumps are now available in the market. Whilst not suitable for all projects, they have the potential to significantly reduce cabin carbon emissions. We will continue to review their application as part of its long term ambition to decouple carbon emissions from growth.

7.2.6 Measurement and performance

7.2.6.1 EDS and MiProject

We have an online Environmental Data System (EDS) in place to capture and record data to allow the environmental impact of our projects to be reported (see section 6.2). The EDS enables:

1. collection of energy consumption data (electricity, gas, diesel) including that used by subcontractors and during commissioning activities;
2. inclusion of conversion factors to calculate carbon emissions;
3. collection of project value data for KPI reporting purposes;
4. reporting at project, regional and Divisional and Group level;
5. specification of total operational carbon emissions targets for projects.

All data is recorded at a project-level, with data verification undertaken by regional Environmental Managers. This data is reviewed at a project level as well as a regional level to understand performance and drive performance.

Data captured via EDS provides a detail account of site operations and allows comparison across sites, regions and project phases.

The roll-out of a new project performance reporting system, MiProject, is planned for our Construction, Housing and Interiors businesses during late 2015. The system will reflect the functionality of EDS whilst also enhancing both quality assurance and reporting.

The data described above is used to judge performance against the 10 Point Plan criteria on a project by project basis.

7.2.6.2 Billed energy

Billed energy (cost and kWh) is also collected and inputted to the Group accounts system. This data is used to create carbon footprints which are reported at LCO, Re-Thinking and Holdings Board levels.

16. http://www.osram.co.uk/osram_uk/news-and-knowledge/led-lamps-from-osram---the-big-product-push/led-tubes-as-an-energy-efficient-replacement-for-conventional-t8-fluorescent-tubes/index.jsp

7.3 Offices & depots

7.3.1 Office audits

Since 2011 we have been carrying out detailed sustainability and energy audits of some of our office premises to assess existing building fabric, building services and other operational factors that could influence energy performance. In 2011 a range of potential cost-efficient energy improvement measures were identified for retrofitting in each office. These were approved by the Willmott Dixon Holdings Board at an estimated cost of £239k, and implemented in 2013. The measures represent a 55 tCO_2e/yr reduction in total carbon emissions and associated savings in energy bills. The completed measures represent 31% of the planned carbon emission savings, and a 6% reduction in total emissions, across the 15 major offices included in the programme.

This programme of office auditing was followed by an audit of two new Partnerships Branch office premises in 2014. A further audit of the new Hitchin office was completed in 2015.

7.3.2 Landlord premises agreements

Given the growth of the company in recent years and the increasing number of fixed offices and additional space taken within existing office locations, future leases or extensions to existing leases will take the impact of carbon emissions into account in line with our Green Memorandum of Understanding. This will impact on the procurement process of any new buildings and also the refurbishment of the existing buildings that we occupy.

7.3.3 Measurement and performance

As mentioned in section 7.2.6.2, energy bill data is included within the company's carbon footprint with an increasing number of offices paying directly for the energy they consume. It should be noted that we do not report on energy usage when we are using a client's supply and we are not billed for it.

7.4 Scope 3 emissions

As described in section 2.1.3, we are improving our measurement and understanding of our Scope 3 emissions in a number of ways. In tandem with this we are also looking to reduce these emissions where possible.

7.4.1 Emissions from Scope 3 travel

See section 7.1.3 Other business travel and 2.1.3.2 train travel.

7.4.2 Emissions from waste

Willmott Dixon is working with other Build UK members to calculate carbon (both emissions and embodied) from waste based on WRAP conversion factors. This will, in part, require engagement with our waste management contractors to better understand the final disposal of our waste streams.

7.4.2.1 PAS 402:2013

To obtain a more detailed understanding of carbon from waste, we will be engaging with our waste management contractors.

PAS 402 or the Waste Resource Management Specification for Performance Reporting was funded by the Welsh Government. The specification provides the framework for the demonstration of performance against key areas of delivery, including landfill diversion and materials recovery, assuring potential and existing customers of the service they are procuring.

We will be promoting the adoption of the PAS 402 framework and reporting specification across our waste management partners to gain better information and facilitate informed decisions on waste disposal.

7.4.3 Emissions from water

Water is a key resource for all our construction activities and we have been reporting our consumption since 2009. We are also actively involved with our Build UK partners to promote the adoption of water conservation measures and the sharing of data.

7.4.4 Supply chain emissions

Emissions from the activities of our subcontractors on our sites vary depending on the nature of the contract and the degree to which we have separated the procurement of materials and labour. Where our sub-contractors are responsible for supplying their own energy (usually via diesel generators) we capture this via our environmental data collection system.

As described in section 2.1.3, we are working as a pathfinder with the Carbon Trust on their new Supply Chain Standard to help us better understand the emissions associated with our supply chain.

7.4.5 Sustainable procurement

Our Sustainable Procurement Policy[17] covers the responsible sourcing of goods and services. It outlines how we will influence the right choices in order to reduce the consumption of primary resources, and use materials with fewer negative impacts on the environment.

7.4.6 Products and services

7.4.6.1 Design using Building Information Modelling (BIM)

BIM enables virtual construction of a building prior to its actual physical construction, in order to improve safety, work out problems, and simulate and analyse potential impacts, reducing uncertainty. It helps to coordinate the significant disciplines such as architectural, structural and mechanical electrical and plumbing designs. The computer model visually highlights to the team where parts of the building, such as the structural frame and building services pipes or ducts, may wrongly intersect, so that clashes can be detected at an early stage. The database behind the visualisation means that quantities and shared properties of materials can be extracted easily. This enables specifications to be rationalised and avoids waste (through inaccurate ordering). It also allows other information such as whole life assessment and the embodied carbon of a building to be calculated using tools such as the BRE's Green Guide.

7.4.6.2 Whole life assessment of buildings

We have worked with partners, including BRE, as part of the BIS Technology Strategy Board Programme (now known as Innovate UK), to develop IMPACT[18] which is a specification and database for software developers to integrate into the Building Information Modelling. It enables consistent calculation of embodied carbon, Life Cycle Assessment (LCA) and Life Cycle Costing (LCC).

7.4.6.3 Post-occupancy evaluation

A full post-occupancy evaluation (POE) is typically carried out 12-18 months after occupation to answer the question "Is the building operating as intended?" from a design/functionality and energy performance standpoint. The evaluation uses a simple and standardised methodology, and allows lessons to be identified so that they can be addressed in future projects.

As part of the re-launched 10 Point Plan we created a new 2-tier POE process to increase take-up across the business, gather core information from across all our sectors and embed lessons learnt in the business. LCOs are now required to carry out a basic POE study on all projects and complete at least one in-depth POE on an annual basis.

7.4.6.4 Sunesis

Sunesis is a standardised building design developed by Willmott Dixon and Scape. It uses off-the-shelf designs to reduce costs and construction time. Compared to traditional design and build, standardised designs can be built for up to 30% less. Procurement time and fees are reduced. This faster and leaner construction method in-turn results in reduced carbon emissions during construction and lower embodied carbon as well.

7.5 Energy utilities

At the end of 2013 we appointed Energy Cost Advisors to provide strategic advice, guidance and services for cost-efficient energy procurement for our sites and to our offices,. Whilst this does not directly reduce our carbon emissions it gives the business greater control over its energy procurement and reduces costs. In addition it has improved data quality, ensuring that supply contracts are terminated in a timely manner on project completion. The installation and removal of meters is also made simpler. This helps to ensure that energy does not continue to be supplied to sites once they have been handed over to our clients.

17. http://www.willmottdixon.co.uk/how-we-do-it/policies
18. http://www.impactwba.com/

8 Carbon neutral

8.1 Why offset?

The overriding aim of this Strategy is to reduce the energy use and carbon emissions of our operations. However, it may never be possible to eliminate these entirely. We wish to mitigate the impact of unavoidable emissions. So since 2012 we have fulfilled our 2008 commitment to be carbon neutral. We achieve this by purchasing carbon credits in approved projects which will save an equivalent amount of carbon to that which we have emitted. Minimising our emissions and offsetting those that are unavoidable allows us to declare carbon neutrality in-line with a recognised standard.

8.2 Offsetting standards

8.2.1 Offset certification

Carbon offset credits can be purchased from compliance schemes or voluntary programmes. We are not subject to carbon compliance schemes, and therefore purchases credits from the voluntary offset market.

Within the voluntary offset market a number of standards exist, providing certified emissions reductions to projects. The most widely-recognised and robust carbon offset certification schemes are: Gold Standard; Verified Carbon Standard (VCS) and Verified Emission Reduction Standard (VER+).

Gold Standard credits are widely regarded as the highest quality – due to additional CSR project requirements - and this is reflected in the premium costs attached to these credits. Additional 'social' certification can also be attached to VCS and VER+ projects able to demonstrate social and environmental benefits beyond carbon reduction. The two most widely-recognised social certification schemes are Social Carbon and The Climate, Community & Biodiversity Alliance Standards (CCBS).

Again, these projects typically attract additional costs. However, selecting an offset portfolio to include projects with social certification provides the added benefit of being able to ensure alignment with our company values objectives. We choose offset projects which align with the Willmott Dixon Foundation's theme of tackling anti-social behaviour and social exclusion, through the purchase of Gold Standard credits or those which are certified as including community investment.

8.2.2 Certifying carbon neutrality

PAS 2060 is a specification standard detailing how to demonstrate carbon neutrality, produced and published by the British Standards Institution (BSI). Companies can self-certify to PAS 2060 or seek third-party verification. PAS 2060 was developed by BSI (and other organisations such as Defra and the Carbon Trust) to specify requirements for companies seeking to demonstrate carbon neutrality through the quantification, reduction and offsetting of greenhouse gas (GHG) emissions. It came into effect in April 2010. PAS 2060 is not regarded as a British Standard but in due course may be considered for further development into a British Standard or another equivalent European Standard. We self-certify carbon neutrality in accordance with PAS 2060. Our statement of compliance can be found on our website.

8.2.3 Assurance

There is no current requirement under PAS 2060 for companies to obtain any level of assurance over carbon data reported. However companies may choose to obtain assurance around their carbon disclosures, thereby increasing stakeholder confidence in its quality, and also reduce scepticism from clients and competitors. Since 2012 our carbon emissions data has been verified by an independent third party as part of the Annual Reports and Accounts auditing processes. This substantiates the quantity of carbon credits we need to purchase to offset our emissions.

Figure 8.1 Meru and Nanyuki community reforestation project

8.3 Offsetting projects

8.3.1 Project selection

The projects in which we invested were selected to reflect Willmott Dixon's values, what we do as a business, and to align with the Willmott Dixon Foundation's aims of addressing social exclusion and anti-social behaviour. All of these projects have undergone rigorous investigation to certify that they achieve real, measurable and permanent emissions reductions.

8.3.2 Our portfolio

8.3.2.1 2014 offsetting projects

The projects we invested in to offset our emissions for 2014 were:

8.3.2.1.1 Bandeira e Capelli

A fuel switch project (VCS and Social Carbon certified), for two building products factories in Brazil. The project has enabled the factories to use renewable biomass fuels sourced from locally managed forests, in place of fossil fuels and non-renewable native firewood. The project is also providing employees and the surrounding communities with improved access to training and education.

8.3.2.1.2 Meru and Nanyuki Community Reforestation Project

This VCS, Gold Standard and Climate Community & Biodiversity Alliance Standard certified project in Kenya enables small-hold farmers to plant and grow trees on their land, helping to keep agricultural land productive while providing jobs and training. The project improves access to food and creates additional sources of income for the local community.

8.3.2.1.3 Ugandan Cookstoves

This Gold Standard certified project subsidises the sale of fuel-efficient biomass and charcoal cookstoves across Uganda by offering microcredit to help rural and peri-urban households and institutions, such as schools, which are unable to afford upfront costs. The cookstoves reduce fuel use by 36% compared to traditional cooking methods and save families money by being more efficient. Household health and well-being is significantly improved through reduced exposure to indoor air pollution; there are fewer accounts of irritation to the eyes, coughing and burn accidents.

Figure 8.2 Ghanaian cookstoves project

8.3.2.2 2013 offsetting projects

The projects we invested in through The Carbon Neutral Company to offset our emissions for 2013 were:

8.3.2.2.1 Bandeira e Capelli

The fuel switch project described above.

8.3.2.2.2 Meru and Nanyuki Community Reforestation Project

The reforestation project described above.

8.3.2.2.3 Ghanaian Cookstoves

This Gold Standard certified project manufactures and distributes cookstoves to replace inefficient and dirty traditional stoves in some of Ghana's most populated regions. The stoves are more efficient saving families money. They also produce less pollution, and so are helping to improve the health of families and reduce the number of premature deaths.

8.3.2.3 2012 offsetting projects

The projects we invested in through ClimateCare to offset our emissions for 2012 were:

8.3.2.3.1 Bandeira e Capelli

The fuel switch project described above.

8.3.2.3.2 Wayang Windu

A geothermal power project in Indonesia (VCS certified), where clean, renewable energy is harnessed to displace fossil fuel power generation. The project has a comprehensive social programme, funding various economic and social development projects including, supporting basic and advanced education for local school children and providing bursaries and scholarships for students.

8.3.2.3.3 LifeStraw

A Kenyan project (Gold Standard and VER certified), providing safe drinking water to 4.5 million people. The project improves public health and reduces water-borne diseases, as well as removing carbon emissions resulting from boiling water. The project is also increases ppportunities for education. The impacts are particularly felt by women and children, who are less exposed to indoor air pollution and spend less time collecting firewood, with the children being able to devote time to education.

9 Skills and training

We understand the importance of empowering our staff to make the right decisions. To do this we must ensure they have the skills and the knowledge they need. We have developed an Environmental and Sustainable Development training framework which identifies the specific skills required as well as the appropriate training to develop these skills.

The framework identifies skills, level of expertise and training requirements for individuals based on business role, responsibility level and department. Within an individual's identified set of training requirements topics are broken down into:

- Induction – completed by all during the induction process when joining the company
- Mandatory – completed by all.
- Essential – Completed within 6 months of joining the company.
- Recommended – optional further training once induction and mandatory training is complete.

The training is a mix of internally and externally courses and modules that focus on embedding the appropriate level of technical understanding and engaging staff in the Willmott Dixon approach of 'Everybody Plays a Part'.

10 Communication

As an industry leader in low carbon buildings and sustainable development, it is important that we are seen to practice what we preach, and that we make the most of our considerable carbon management achievements to increase our reputation. We also want to raise standards within our sectors, and lobby for policy change that will reduce national carbon emissions, improve our energy security and address fuel poverty.

10.1 Internal

10.1.1 Staff engagement

Our 2014 staff survey showed that most employees understand the importance of sustainability, but far fewer understand the role they must play in delivering it. So our internal communications will provide clarity to employees across the business, on the practical measures that they should personally be taking.

We will launch this strategy via an all staff email from the Group's Chief Executive, Rick. Individual policy changes such as changes to company car emission limits will be communicated to staff at the appropriate time by the lead department.

We work with our sustainability teams across our LCOs to ensure that they have the knowledge and expertise to help our clients improve their EPC and DEC ratings and achieve their carbon and fuel poverty reduction targets (Re-Thinking also provide expert advice directly to clients where complex energy solutions are required).

We ensure that our successes are accurately represented in bids and tenders by keeping our bid teams up to date on our achievements, and so help us win new work.

10.1.2 Changing behaviours

We keep carbon front of mind by reporting regularly on Group progress, and associated cost savings to the business.

Carbon emissions considerations now form part of the incentive scheme for Construction, Interiors and Housing, and most divisions have a plan to reduce carbon.

While, rightly, the business concentrates on the 'big ticket' items such as sites and transport, it is important that employees see our Energy and Carbon Management Strategy as part of a sustainability culture, supporting our Group Strategic Vision Statement and Group Values which means that Re-Thinking will also be running campaigns periodically to encourage behaviour change – switching off lights and appliances, for example, or getting people to walk or cycle to work – all under the 'Everybody plays a part' banner.

10.2 External

Transparency of reporting is essential if we are to sustain and enhance our position as an industry leader in this area, so we will continue to report performance through our website and through our Sustainable Development Reviews.

We will raise our profile by entering awards and benchmarks, and publicising our achievements and successes.

10.2.1 Our sectors

Through our membership and leadership of industry groups, we will continue to raise awareness of the importance of low carbon building, development and retrofit, and to raise standards across our sector. Groups we work with include Build UK, Green Construction Board, Considerate Constructors and the Passivhaus Trust. We are a founder member of the Supply Chain Sustainability School which helps up-skill our shared supply chain so that they are able to deliver on the industry's low-carbon agenda, and we will continue to play an active role in delivering on the group's agenda.

10.2.2 Our role in policy and legislation

We will continue to actively seek to influence policy in favour of a sustainable low-carbon economy, through our involvement with groups such as the Aldersgate Group, the UK Green Building Council and Business in the Community (BITC), and by supporting campaigns such as the Energy Bill Revolution.

11 Glossary and acronyms

Absolute emissions	The total (GHG) emissions generated over a given time period e.g. by a company over a year. Usually emissions reductions are considered either regarding absolute emissions or relative emissions. Emissions can be reduced relative to another measurement such as turnover while still growing in absolute terms (see also "Intensity, Carbon").
As-Built Performance	The actual as-built energy performance of a building, prior to occupation by tenants or users compared to the predicted energy performance from the design.
Buildings Research Establishment (BRE)	The BRE Trust is the largest UK charity dedicated specifically to research and education in the built environment. The Trust commissions research into the challenges faced by the built environment and publishes project findings which act as authoritative guidance to the construction industry. Through its activities, the Trust aims to achieve: • A higher quality built environment • Built facilities that offer improved functionality and value for money • A more efficient and sustainable construction sector with a higher level of innovative practice.
Carbon (C)	The term carbon is used throughout this document as shorthand for the carbon dioxide equivalent of all greenhouse gases – see Section 7.2. It is quantified as "tonnes of carbon dioxide equivalent" (tCO2e)
Carbon Dioxide (CO_2)	Carbon dioxide (CO_2) is a natural gas, essential for all life on earth. It is absorbed by plants as they grow, and emitted by all life forms when they respire and is produced when fossil fuels such as wood, oil or gas are burnt. Other than water vapour, Carbon dioxide is the most common 'greenhouse gas'.
Carbon Dioxide Equivalent (CO_2e)	There are many more GHGs than carbon dioxide (see "Greenhouse Gases"). Since CO_2 is the most common, other gases are measured by the amount of equivalent CO_2 it would take to have the same Global Warming Potential (GWP) as that gas. In other words, CO_2 is the US Dollar to other GHGs' world currencies.
Carbon Management	The monitoring and adjustment of how much carbon dioxide equivalent is generated from operations.
Carbon Neutral	Having a net zero carbon footprint by offsetting a measured amount of carbon released by purchasing credits in projects which reduce carbon by an equivalent amount. Projects must be based in countries that were not signatories to the Kyoto Protocol to make up the difference. A carbon neutral company or product may not necessarily be low-carbon and a sustainable business will try to reduce its emissions before offsetting. Willmott Dixon became a carbon neutral company in 2012.
Carbon Reduction Commitment (CRC)	The CRC Energy Efficiency Scheme (formerly the Carbon Reduction Commitment) is a mandatory carbon emissions reduction scheme in the United Kingdom that applies to large non-energy-intensive organisations in the public and private sectors.
Carbon Trust Standard	A standard developed by the not-for-dividend company Carbon Trust designed to be awarded to companies which reduce their emissions year-on-year.
Decoupling	The process of unlinking two trends. This is often used in terms of decoupling GHG/CO_2 from economic growth: as an economy or company grows, the amount of GHGs it emits decreases.
Energy	In context outside the academic sciences, energy often refers to: electricity, heat and fuel (for transport/ generators).
Energy Efficiency	Technologies or processes that reduce the amount of energy required for equivalent performance e.g. a new boiler should consume less gas to heat water than an old boiler because it loses less heat in the process.
Environmental Management Systems (EMS)	A set of processes and practices that enable an organisation to reduce its environmental impacts and increase its operating efficiency. There are various standards that provide frameworks for designing an EMS, most notably the ISO 14001 standard.
Footprint, Carbon	The total sets of greenhouse gas emissions caused or emitted by an organisation, event, product or person
Global Warming Potential	Global-warming potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide. A GWP is calculated over a specific time interval, commonly 20, 100 or 500 years. GWP is expressed as a factor of carbon dioxide (whose GWP is standardised to 1). For example, the 20 year GWP of methane is 86, which means that if the same mass of methane and carbon dioxide were introduced into the atmosphere, that methane will trap 86 times more heat than the carbon dioxide over the next 20 years.
Fugitive Emissions	Fugitive emissions are unintended or irregular releases of gases such as leaks in air-conditioning units.

Greenhouse Gases (GHG)	Greenhouse gases (GHG) – including carbon gases like carbon dioxide and methane- are vital in the Earth's atmosphere in certain quantities because they help trap and retain some of the sun's heat (the 'greenhouse effect'). This makes life as we know it possible on Earth – without it the world would be mostly frozen. But the currently high quantities of GHG are trapping too much heat which is causing the atmosphere and the planet to heat up – sometimes referred to as "Climate Change" or "Global Warming". • Carbon Dioxide (CO2) – See "Carbon Dioxide" • Methane (NH4) – Has eight times the potential warming effect of CO2 • Nitrous Oxide (N2O) – Has 153 times the potential warming effect of CO2 • Hydrofluorocarbons (HFCs) - Have 124-14,800 times the potential warming effect of CO2 • Perfluorocarbons (PFCs) - Have 7,390-17,700 the potential warming effect of CO2 • Sulfur Hexaflouride (SF6) - Has 23,900 times the potential warming effect of CO2
Greenhouse Gas (GHG) Protocol Corporate Standard	The Greenhouse Gas Protocol (GHG Protocol) is the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions. The GHG Protocol, a decade-long partnership between the World Resources Institute and the World Business Council for Sustainable Development, is working with businesses, governments, and environmental groups around the world to build a new generation of credible and effective programs for tackling climate change. It provides the accounting framework for nearly every GHG standard and program in the world - from the International Standards Organisation to The Climate Registry - as well as hundreds of GHG inventories prepared by individual companies.
Intensity, Carbon	This is a way of measuring carbon emissions linked to a particular business activity such as turnover, or number of products manufactured. These measurements capture a company's carbon reduction work more meaningfully because it takes into account a business's growth.
Life Cycle Assessment (LCA)	LCA is a method to measure and evaluate the environmental burdens associated with a product, system or activity, by describing and assessing the energy and materials used and released to the environment over the life cycle of the product, system or activity.
Life Cycle Costing (LCC)	The financial cost of the entire life of a product e.g. how much it costs to obtain the materials needed to make it as well as what costs associated with on-going use/maintenance and then disposal.
Local Company Office (LCO)	Regional Willmott Dixon Construction or Housing office, or Willmott Dixon Partnerships Branch.
Low-Carbon Economy	An economy that has a minimal output of greenhouse gas (GHG) emissions
Offsetting, Carbon	A carbon offset is a reduction in emissions of carbon dioxide or greenhouse gases made in order to compensate for emissions made elsewhere.
PAS 2060	A publically available specification published by the British Standards Institution that details how to demonstrate carbon neutrality (see "Carbon Neutral").
Parts Per Million, ppm	Simply the number of something per million of something else. In the case of carbon dioxide, the Figure of 350 parts per million of atmosphere is the level required to avert dangerous climate change. In 2013, we passed 400ppm for the first time in millions of years.
Renewable Energy	Renewable energy is that which comes from resources which are naturally replenished on a human timescale such as sunlight, wind, rain, tides, waves and geothermal heat.
Supply Chain	A system of organisations, people and activities involved in helping deliver our activities. It includes the designers, manufacturers and subcontractors we employ.
Scope 1, 2, 3	Scope 1 - Direct GHG emissions from sources that are owned or controlled by the company. Scope 2 - Emissions resulting from the generation of purchased electricity. Scope 3 - Optional reporting categories. Emissions as a consequence of the activities of the company, but occur from sources not owned or controlled by the company.
Innovate UK (formerly Technology Strategy Board)	Innovate UK is the UK's innovation agency. Its role is to stimulate innovation, working with business and other partners, in order to accelerate economic growth. Innovate UK was established by the Government and operates at arm's length as a business-led executive non-departmental public body (NDPB). It is sponsored and funded by the Department for Business, Innovation and Skills (BIS).
United Nations Framework Convention on Climate Change (UNFCCC)	An international treaty negotiated at the United Nations Conference on Environment and Development, the Earth Summit, in Rio de Janeiro 1992. The treaty aims to prevent dangerous global warming by stabilising GHGs in the atmosphere. It does this by providing a framework for further negotiations on protocols and agreements with more specific targets e.g. the Kyoto Protocol and Cancun Agreement. The UNFCCC is also the name of the United Nations Secretariat supporting the operation of the framework.
Waste Management	The term given to managing the minimisation, generation, prevention, monitoring, handling, reuse and residual disposal of waste materials
Whole Life Costing	Whole Life Costing is an economic assessment considering all agreed projected significant and relevant cost flows over a period of analysis expressed in monetary value.
Waste and Resources Action Plan (WRAP)	WRAP is a not for profit company limited by guarantee, set up in 2000, with an independent board to promote resource efficiency. It is funded by an increasing number of governments and other (not quasi) public sector organisations.

12 Review and document update

We will review this strategy annually and update it at least every 3 years.

Version	Date	Author	Reviewed	Updated	Change description
1.0	13/07/15	M.Cross	N/A	N/A	First Issue

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WILLMOTT DIXON

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