Public Health England

Protecting and improving the nation's health

Sustainability and carbon management in Public Health England 2015

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Foreword

I am very pleased to introduce PHE's second annual report on sustainability, describing the work we have undertaken over the last year.

We continue to make gains in reducing our carbon impact across the PHE estate, with a number of projects helping to reduce our gas and electricity usage. There has been an increase in the amount of sub-metering being installed at our larger sites, allowing the site team to identify excess energy usage and introduce reduction measures.

Our business travel has risen over the last year and continues to be an area where we need to focus our attention; we have upgraded our videoconferencing facilities across the estate and are rolling out a new commercial version Skype™ which is replacing the Lync system we currently use. It is hoped that this new technology, which is available for all staff, will help reduce our need to travel for face-to-face meetings.

When we must travel on business, we should endeavour to use public transport wherever possible, instead of defaulting to using our own cars. We continue to encourage staff to cycle and walk to work, where possible, through a number of health and wellbeing initiatives. This work helps staff understand the associated health benefits that this activity can bring.

Our work continues on providing the scientific evidence base on the health impacts of climate change and extreme events, for local and national government. Providing local authorities with data about how to improve their housing stock so that it can be retrofitted to make it warmer in the winter months and cooler in summer is just one aspect of this work. This work is known to have helped save lives, providing vital health advice to those who are most in need. We also continue to advise other countries on the health impacts of devastating natural disasters.

We have an active sustainable development communication programme, with a number of guidance documents being written to help improve the sustainable development of the organisation and fellow health professionals. Also, in the last year we have produced a blogosphere for staff where we hope to help them realise what the benefits are from a healthy environment.

Dr Paul Cosford
PHE National Executive Lead for Sustainability

Executive summary

This is PHE's second year of operation and sustainability has continued to be an important part of our work going forward. Our Sustainable Development Management Plan has helped to embed sustainability into the organisation's policies and strategy and will further develop over time.

We believe it is important to lead by example and this report gives an in-depth analysis of our carbon footprint – particularly in relation to the use of energy and water, the production and management of waste, and the business travel we undertake. It also highlights the progress we are making on sustainability internally, with some of our partner organisations, and by some of our specialist teams.

Our total carbon emissions for 2014/15 were 25,896 tCO_2e compared to emissions in our baseline year of 2013/14 of 26,161 tCO_2e. This represents a small reduction of 1.4% overall. PHE's carbon footprint comprises scope 1, 2 and 3 carbon emissions, as defined by government. It comprises data relating to our reportable (owned) estate and our non-reportable sites (that is, those facilities where PHE is a tenant and emissions are reported separately by a landlord). We continue to report on our carbon emissions to the Department of Health on a quarterly basis, in line with the Greening Government Commitment.

The reduction in our carbon footprint would have been larger had it not been for an increase in the government conversion factor for the emissions associated with electricity usage. This meant that our emissions from electricity increased during the year, despite our actual consumption falling significantly. Had the conversion factor for electricity remained unchanged, the overall reduction in carbon emissions for 2014/15 would have been more than 6% compared to the previous year.

The major impact on the environment from PHE's activities comes from electricity and gas consumption on its main sites at Colindale, Porton and Chilton. Electricity consumption across the whole organisation has fallen by more than 2.5 million kWh during 2014/15. This represents a reduction of almost 8% in actual electricity consumption, reflecting PHE's work over the last year to minimise its energy usage.

The reportable usage of water for the PHE estate was 177,528 m^3, with a further estimated 17,067 m^3 being used by non-reportable sites. Overall, this represents a small rise in consumption of 2.3% compared to last year. PHE-owned sites continue to have a mixture of office and non-office facilities, making it difficult to differentiate their water usage into any meaningful datasets. A number of sub-meters were fitted in the last year to help monitor usage in specific areas.

PHE has set a total waste reduction target of 2% annually to March 2020, in line with the Greening Government initiative. However, data indicate an 11% increase in total waste over the last year from 941 tonnes to 1,018 tonnes. Waste sent to landfill increased by only two tonnes over the year, with a 31% rise in the amount of waste being recycled. A total of 35 tonnes of ICT waste was processed in this manner in 2014/15, more than double the previous year. A significant proportion of the increase in ICT waste (20 tonnes) was due to the corporate roll-out of new ICT equipment, replacing old desktop computers with laptops and CRT monitors with flat screen monitors.

In 2014/15, PHE used 27,097 reams of A4 paper, a reduction of 5% on the previous year's figure.

In order to facilitate a comparison of travel emissions across the various parts of the organisation, PHE uses the measure of tCO_2e per whole time equivalent (wte) staff. The key changes to our travel footprint were:

- emissions per wte from UK (domestic) flights are up by 15.4%
- emissions per wte from international flights are up by 5.5%
- emissions per wte train use per wte are up by 22%
- emissions per wte from personal car use are up by 34%
- emissions per wte from taxi use are up by 54%
- emissions (tCO_2e) from use of PHE owned/leased vehicles are up by 5%

We accept that our staff sometimes need to travel to deliver the business objectives of the organisation. However, to meet our travel commitments, members of staff are encouraged to travel only when necessary and, when they must travel, to use the most sustainable modes of transport. Despite this, business travel rose by 14% during 2014/15. This coincided with an increase in the overall workforce, although the impact of this is difficult to discern. A further factor was PHE's response to the Ebola crisis in West Africa, with large numbers of staff engaged across the UK and others travelling overseas.

PHE's drive to reduce travel to meetings was supported by the installation of Microsoft Lync on all corporate laptops to encourage more video conferencing. The organisation recognises that less business travel will benefit public health by preventing air pollution, support PHE's plans to reduce carbon and save money.

Sustainability is a hugely important part of all of our purchases. Our procurement category managers ensure that all of our tender documents contain relevant questions to confirm that the successful suppliers adhere to given environmental and sustainability standards.

To help staff understand their obligations concerning sustainability, and the necessity to reduce our carbon impact, we have revamped our sustainability e-learning training course over the last year to include modules setting out the work being undertaken by colleagues in health and wellbeing and those working on climate change and extreme events.

A sustainable health system recognises that unhealthy behaviours can cause more damage to the environment than healthier ones. Driving versus walking or cycling, eating carbon-intensive processed foods and cold homes can all have adverse health effects. We work with other health-related bodies to inform the community about effective, practical actions that can be taken on a range of social determinants of health that are relevant to sustainability.

The Sustainable Development Unit (SDU) for the NHS, public health and social care is jointly funded by, and accountable to, PHE and NHS England. The SDU co-ordinates the ‘cross system group’ for sustainable development across the health and care system. It helps PHE to co-ordinate its sustainable development strategy, bring together the various sustainable development activities and identify any additional synergies.

Introduction

PHE is committed to sustainable development in all its activities. The Sustainable Development Management Plan sets out the organisation's aims for future work to help it to operate in more sustainable ways. It includes a section on carbon reduction and gives guidance on how staff can help to embed sustainability into their work.

PHE continues to embed sustainability into its contracts, which has helped to highlight risks to the organisation arising from its procurement activities. PHE also continues to utilise the tools developed by the Government Procurement Service, ensuring we maintain a robust approach to sustainability throughout the supply chain.

PHE engages its staff through a mandatory sustainable development e-learning programme, which has recently been updated to include sections on climate change and its health impacts, and on sustainability in relation to health and wellbeing. This training provides staff with a good understanding of sustainable development and encourages them to act in a sustainable manner, taking account of their impact on the environment.

This report illustrates the work that PHE has undertaken on sustainable development over the last year. It includes details of our ongoing commitment to reduce our carbon footprint as well as other activities where sustainability is a key driver, such as climate change and extreme events.

As this is our second year of operation, we are able to compare our carbon performance across Scope 1, 2 and 3 emission sources with our baseline year of 2013/14. This allows us to focus on areas where our energy use or other carbon emissions may have changed and identify where improvements can be made.

We continue to report our carbon emissions to the Department of Health on a quarterly basis, in line with the Greening Government Commitment. This has helped us to develop policies and strategy.

The greening government commitment initially ran until 2014/15, but as a holding position, it was agreed reporting would continue on the same basis during 2015/16.

DEFRA has now indicated that a 'targets framework' will continue throughout the current parliament and that the same target areas will remain in place. PHE will therefore continue to report on its greening government targets in the same way for the present. It is anticipated that new targets may be defined by the end of the year.

PHE is also introducing a new work stream to strengthen its work on ‘sustainability for public health benefits’. Following initial scoping, this will collate information on current activities and explore what we might do to add value in these areas. In doing this, we will work with stakeholders to develop sustainability across the range of PHE’s activities and key priorities.

Our carbon footprint

PHE has set a target to reduce carbon emissions by 3% annually for the period to March 2020, compared to the baseline year of 2013/14, which is in line with the Greening Government Commitment.

To achieve this, PHE has agreed a number of carbon-related reduction targets for its estate, which include utility use, business travel, water consumption and total waste. During 2014/15, monitoring and measuring processes were implemented to allow management teams to evaluate and develop reduction strategies to meet and, where possible, exceed our committed targets.

We are pleased to report another year where we have seen our overall carbon footprint fall. This has been achieved against a backdrop of organisational restructuring and the formation of a new National Infections Service. Some parts of the agency have increased in size, whereas others have seen consolidation. This is particularly the case with the rationalisation of our physical estate.

PHE's total carbon emissions for 2014/15 were 25,896 tCO_2e, compared to 26,274 tCO_2e for 2013/14, representing a reduction of 1.4% overall. This figure includes the carbon emissions from business travel as well as water usage and waste water disposal from PHE's reportable and non-reportable sites. (Non-reportable sites are those offices or laboratories that are being reported separately by the premises landlord.)

The reduction in our carbon footprint would have been larger had it not been for an increase in the government conversion factor for the emissions associated with electricity usage. This meant that our emissions from electricity increased during the year, despite our actual consumption falling significantly. Had the conversion factor for electricity remained unchanged, our carbon emissions for 2014/15 would have been over 6% lower than the previous year.

Several capital projects to improve the efficiency of energy usage have begun at PHE-owned sites, with sub-metering of utility supplies being introduced to facilitate greater local control.

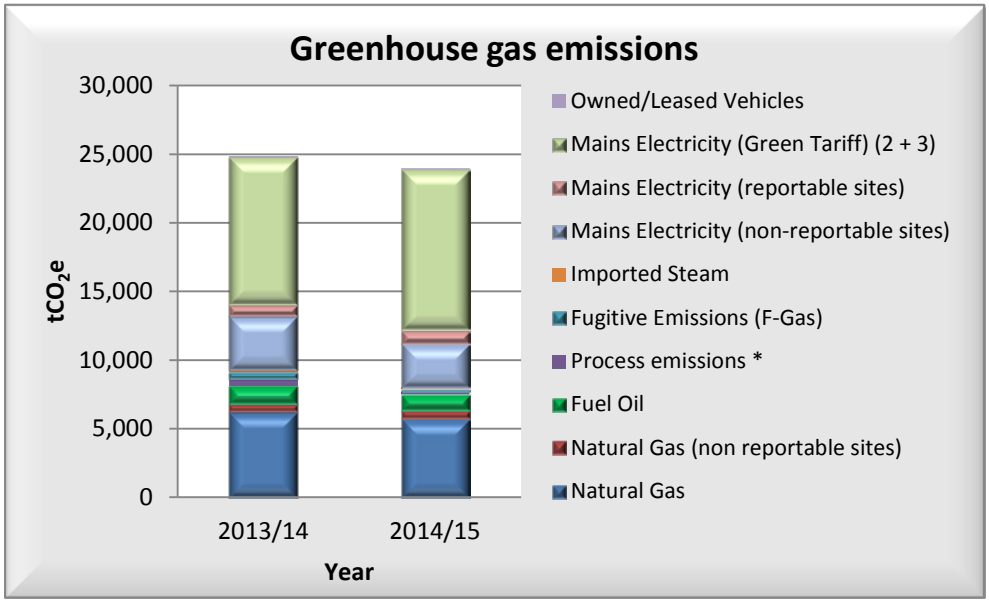
PHE owns six of its premises and has a direct relationship with the utility provider at a further four. It also has shared facilities embedded in government-owned property (including hospitals) and in other tenanted accommodation. There is no direct relationship with the utility provider in these premises and no sub-metering has been undertaken. To avoid double accounting of carbon emissions from these properties,

they have been identified separately for reporting purposes. PHE has no properties within SSSI or AONB boundaries.

A further factor affecting emissions relates to a small increase in business travel by staff, due in part to an additional 372 staff joining PHE over the last year, and in part to PHE's contribution to the response to the Ebola outbreak in West Africa.

Greenhouse gas emissions

The major impact on the environment from PHE's activities comes from electricity and gas consumption on its main sites at Colindale, Porton and Chilton. Carbon emissions from electricity usage have been affected by the increase in the conversion factor published by DEFRA by 11% for emissions related to electricity. This has led to an apparent increase in carbon emissions whereas in reality, electricity consumption across the organisation has fallen by more than 2.5 million kWh. This represents a reduction of almost 8% in actual electricity consumption, reflecting PHE's work to minimise its energy usage. Our total greenhouse gas emissions are summarised below.



GREENHOUSE GAS EMISSIONS		2013/14	2014/15
SCOPE 1 + 2			
Non-financial indicators (tCO_2)	Natural gas	6,229	5,757
	Natural gas (non-reportable sites)	577	603
	Fuel oil	1,290	1,131
	Process emissions *	342	362
	Fugitive emissions (F-Gas)	504	192
	Imported steam	161	140
	Mains electricity (non-reportable sites)	3,924	3,215
	Mains electricity (reportable sites)	847	966
	Mains electricity (green tariff) (2 + 3)	10,723	11,670
	Owned/leased vehicles	92	88
Related energy consumption (kWh)	Natural gas	34,087,464	31,122,541
	Natural gas (non-reportable sites)	3,133,382	3,301,240
	Fuel oil	4,747,646	5,758,424
	Process emissions *	1,858,695	1,967,390
	Imported steam	874,444	756,667
	Electricity (non-reportable sites)	7,790,559	5,768,624
	Electricity (reportable sites non green tariff)	2,075,589	2,010,903
	Electricity (green tariff)	22,174,537	21,712,905
Related consumption (kg)	Fugitive emissions (F-Gas)	504,038	192,424
Related Scope 1 travel (km)	Owned/leased vehicles	433,108	442,976
Financial indicators (£)	Natural gas	1,353,637	1,332,346
	Fuel oil	326,155	305,699
	Owned/lease vehicles (fuel/*i*-expenses)	18,551	18,271
	Fugitive emissions (F-Gas) **	32,682	2,669
	Imported steam	70,124	51,057
	Mains electricity (reportable)	2,576,149	2,642,677
Total Emissions Scope 1 + 2 (tCO_2)		20,188	20,305
Total gross emissions from non-reportable sites Scope 1 + 2 (tCO_2)		4,501	3,818

* Process emissions from the Porton incinerator waste (kWh x 0.184 conversion factor)

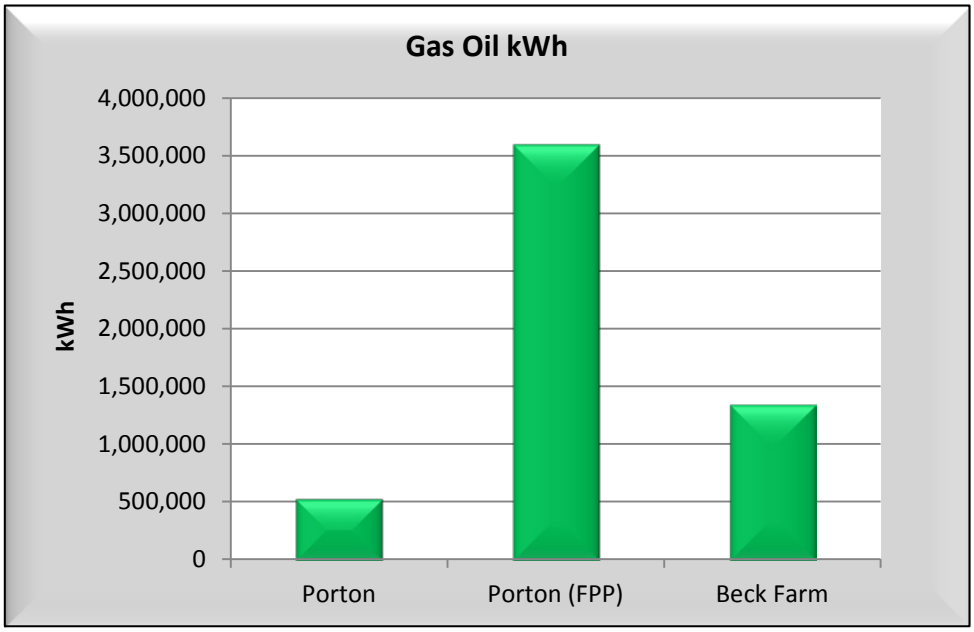
** F-Gas costs from PHE campus sites are absorbed as part of the service contract.

Energy consumption

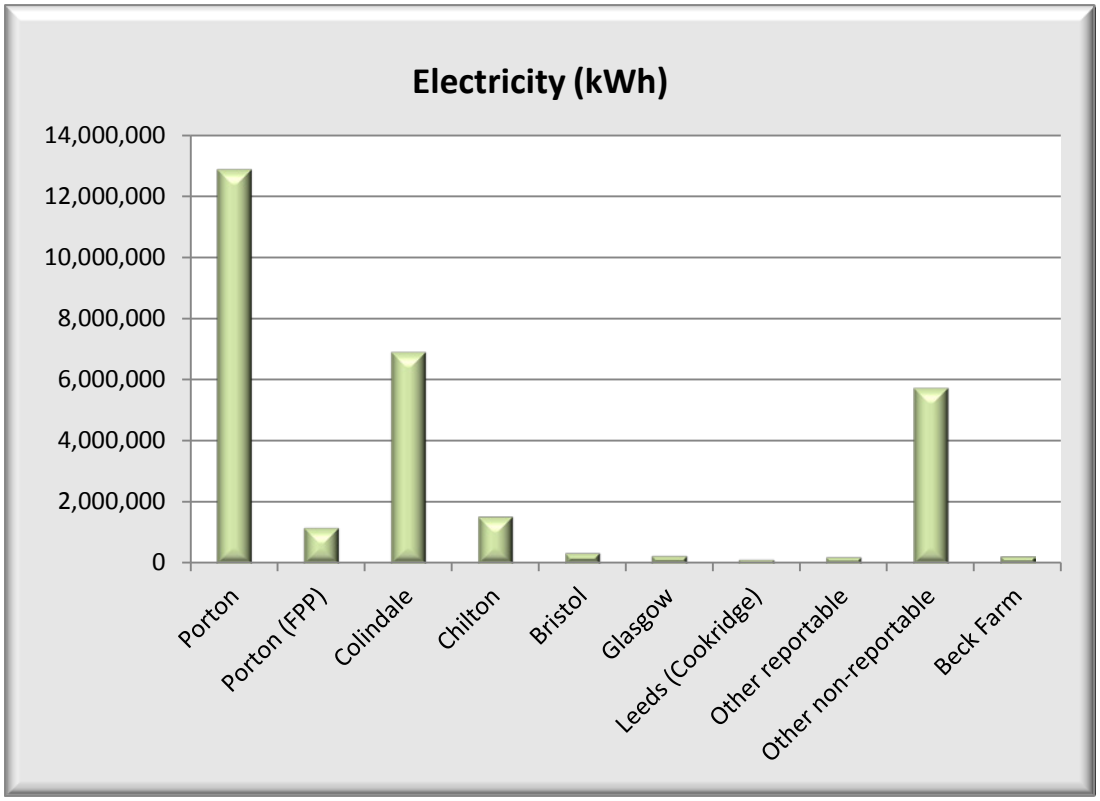
PHE's energy consumption, for our owned estate, is given below.

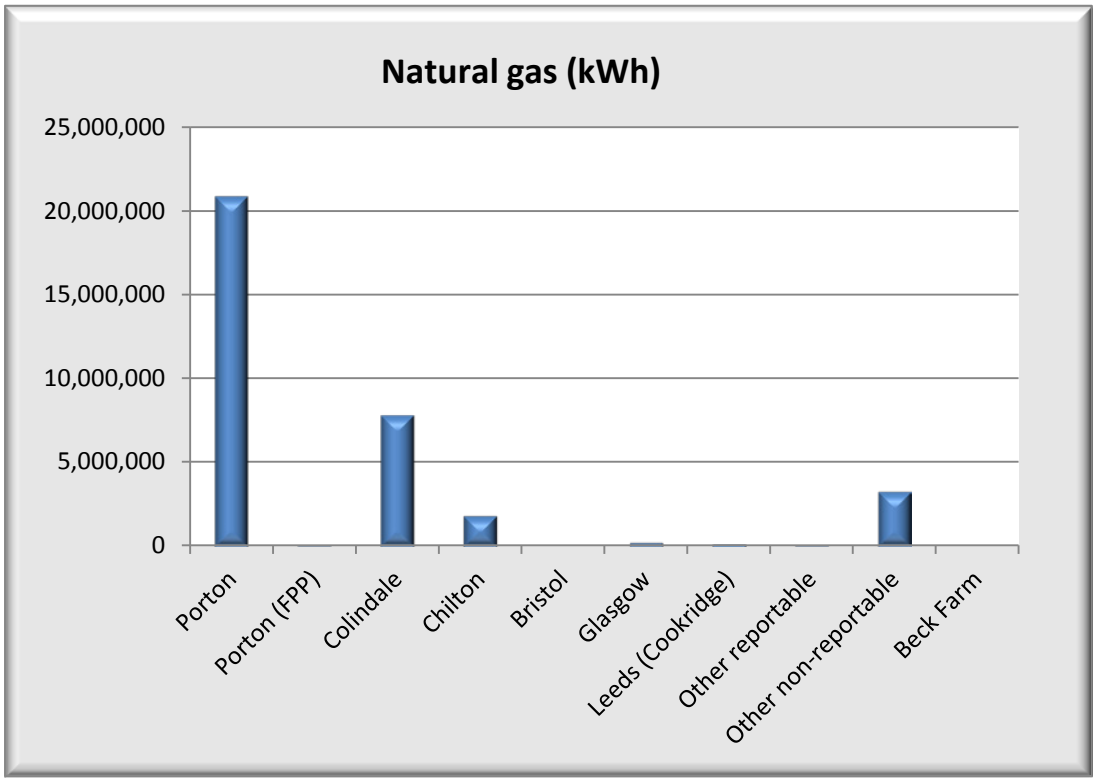
	Electricity kWh	Natural gas kWh	Gas oil kWh
Porton	12,891,667	20,930,235	535,168
Porton (FPP)	1,176,729	40,186	3,600,311
Colindale	6,928,253	7,898,922	0
Chilton	1,542,144	1,846,533	873
Bristol	350,841	245	0
Glasgow	253,387	236,834	0
Leeds (Cookridge)	124,025	134,626	0
Other reportable	213,492	34,960	0
Other non-reportable	5,768,624	3,301,240	0
Beck Farm	243,250	0	1,352,687
TOTAL	29,492,412	34,423,781	5,489,039

This is illustrated by resource, in the following graphs.



FPP = Fermentation Process Plant


Electricity (kWh)
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Porton
Porton (FPP)
Colindale
Chilton
Bristol
Glasgow
Leeds (Cookridge)
Other reportable
Other non-reportable
Beck Farm


Natural gas (kWh)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Porton
Porton (FPP)
Colindale
Chilton
Bristol
Glasgow
Leeds (Cookridge)
Other reportable
Other non-reportable
Beck Farm

Carbon emissions, Chief Operating Officer directorate

Chief Operating Officer directorate		Porton (Main)	Porton (FPP)	Beck Farm	Colindale	Bristol	Exeter
Emissions	**Emissions Source**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**
Emissions from our properties and the operations carried out therein	Natural gas	3,871.530	7.430	0.000	1,461.090	0.050	2.600
	Gas oil	145.600	979.700	368.100	0.000	0.000	0.000
	Emissions from purchase of electricity (S2)	6,055.200	515.700	111.000	3,016.300	157.200	8.270
	Emissions from transmission and loss (S3)	517.740	44.090	9.490	257.900	13.440	0.710
	Emissions from import of heat or steam	0.000	0.000	0.000	0.000	140.000	0.000
	Process emissions (refrigeration)	548.700	0.000	0.000	0.000	0.000	0.000
	Water supply	30.070	16.560	0.460	10.650	0.580	0.030
	Water (waste)	58.825	32.385	0.895	20.832	1.130	0.054
	Sub total	**11,227.665**	**1,595.865**	**489.945**	**4,766.772**	**312.400**	**11.664**

Chief Operating Officer directorate		Fareham	Letchworth	Sheffield	Other[1]	Wellington House	Total
Emissions	**Emissions Source**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**
Emissions from our properties and the operations carried out therein	Natural gas	5.110	5.200	4.050	380.390	43.890	**5,781.340**
	Gas oil	0.000	0.000	0.000	0.000	0.000	**1,493.400**
	Emissions from purchase of electricity (S2)	4.480	16.540	12.887	1,672.870	154.750	**11,725.197**
	Emissions from transmission and loss (S3)	0.380	1.410	1.102	146.280	13.530	**1,006.072**
	Emissions from import of heat or steam	0.000	0.000	0.000	0.000	0.000	**140.000**
	Process emissions (refrigeration)	0.000	0.000	0.000	0.000	0.000	**548.700**
	Water supply	0.020	0.030	0.016	4.700	0.400	**63.516**
	Water (waste)	0.041	0.051	0.031	9.194	0.787	**124.225**
	Sub Total	**10.031**	**23.231**	**18.086**	**2,213.434**	**213.357**	**20,882.45**

1 Includes PHE's facilities at Buckingham Palace Road, Victoria, London

Carbon emissions, Chief Knowledge Officer directorate and Health & Wellbeing directorate

		Chief Knowledge Officer					Health and Wellbeing			
		Oxford	Salisbury	York	Other[3]	Total	Battle	Skipton House	Other	Total
Emissions Type	**Emissions Source**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**
Emissions from our properties and the operations carried out therein	Natural gas	13.600	6.670	5.850	73.420	**99.540**	2.440	28.820	49.180	**80.440**
	Gas oil	0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000	**0.000**
	Emissions from purchase of electricity (S2)	47.960	23.530	20.624	342.390	**434.504**	8.600	101.600	256.930	**367.130**
	Emissions from transmission and loss (S3)	4.190	2.060	1.803	29.950	**38.003**	0.750	8.880	22.470	**32.100**
	Emissions from import of heat or steam	0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000	**0.000**
	Process emissions (refrigeration)	0.000	0.000	0.000	0.000	**0.000**	0.000	0.000	0.000	**0.000**
	Water supply	0.010	0.040	0.041	0.521	**0.612**	0.020	0.130	0.400	**0.550**
	Water (waste)	0.204	0.079	0.080	1.103	**1.466**	0.031	0.252	0.775	**1.058**
	Sub Total	**65.964**	**32.379**	**28.398**	**447.384**	**574.125**	**11.841**	**139.682**	**329.755**	**481.278**

Carbon emissions, Health Protection & Medical directorate

Health Protection & Medical directorate		Chilton	Glasgow	Leeds	Other[2]	Total
Emissions	**Emissions Source**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO_2e**
Emissions from our properties and the operations carried out therein	Natural gas	341.559	43.808	24.902	37.460	**447.729**
	Gas oil	0.200	0.000	0.000	0.000	**0.200**
	Emissions from purchase of electricity (S2)	762.220	125.239	61.310	132.098	**1080.868**
	Emissions from transmission and loss (S3)	66.651	10.951	5.361	11.551	**94.515**
	Emissions from import of heat or steam	0.000	0.000	0.000	0.000	**0.000**
	Process emissions (refrigeration)	1.070	0.000	0.000	0.000	**1.070**
	Water supply	2.190	0.170	0.220	0.050	**2.630**
	Water (waste)	3.700	0.330	0.440	0.096	**4.566**
	Sub Total	**1177.590**	**180.498**	**92.234**	**181.255**	**1631.578**

Water consumption

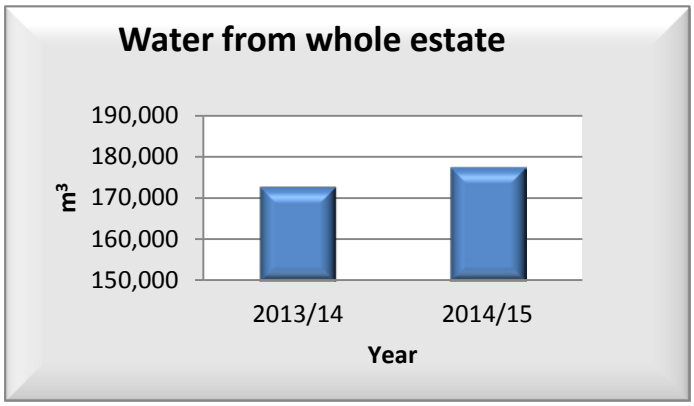
Most water consumption occurs at PHE's owned sites at Colindale, Porton (including its Fermentation Process Plant (FPP)), and Chilton, where there are a large number of laboratories and a manufacturing facility. We have set a target to reduce water consumption by 2% annually to 2020, in line with the Greening Government initiative, but this has been difficult to achieve over the past year. It is believed that this is due, at least in part, to an increase in manufacturing activity over the last year.

Water		2013/14	2014/15
SCOPE 3 (Water)			
Non-financial indicators (m^3)	Water from office estate (reportable)	684	572
	Water from office estate (non-reportable)*	6,971	8,431
	Water from whole estate (reportable)	172,757	177,528
	Water from whole estate (non-reportable)*	17,318	17,067
	TOTALS	197,730	203,598
Financial indicators (£)	Water supply costs**	169,947	164,156

* Estimated usage

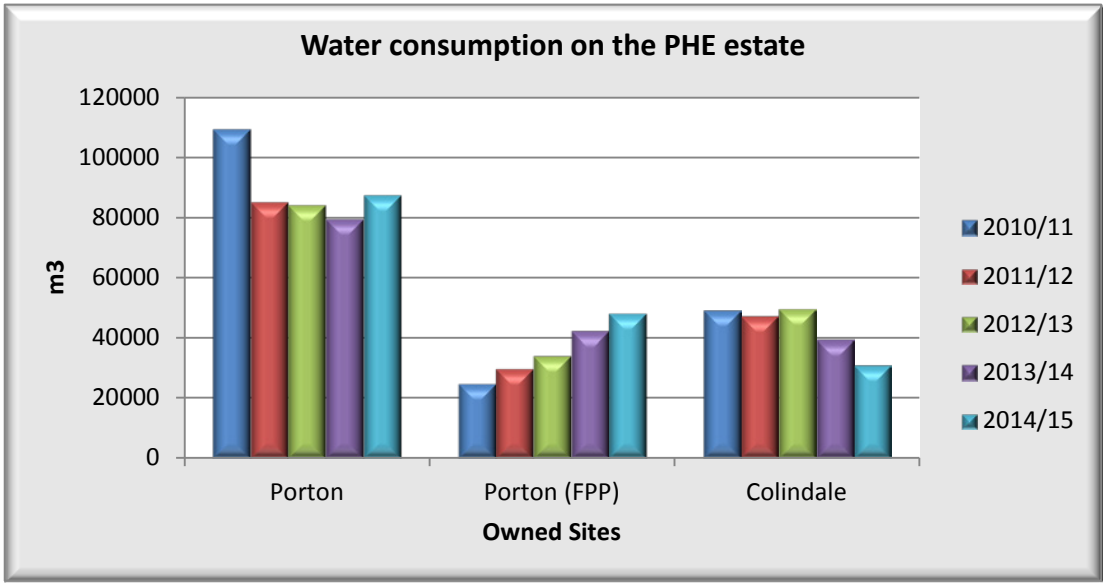
** The financial cost shown in the table relates to the water that was directly supplied to those sites that were within the reporting boundary

The reportable usage of water for the PHE estate was 177,528 m^3, with a further estimated 17,067 m^3 being used by non-reportable sites. Overall, this represents a 2.3% rise in consumption from last year. PHE-owned sites continue to have a mixture of office and non-office facilities, making it difficult to differentiate their water usage into any meaningful datasets. A number of projects have been identified to reduce water consumption.

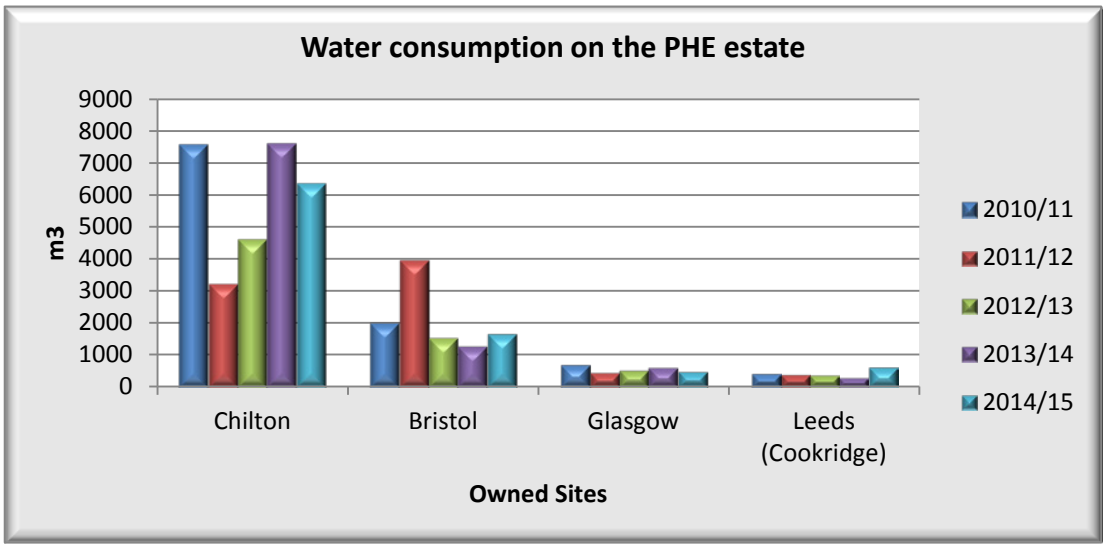


Water that was consumed at offices and laboratories embedded in tenanted, non-reportable accommodation was estimated using a recognised benchmarking algorithm.

Because the water supply to PHE's major owned sites at Colindale, Porton (including its FPP), and Chilton was monitored and measured, the pattern of daily usage was known. A number of sub-meters were fitted in the last year to help monitor usage in specific areas. Facilities managers can now use this information to develop strategies for reducing water usage. Water consumption on our owned estate is illustrated below.



FPP = Fermentation process plant



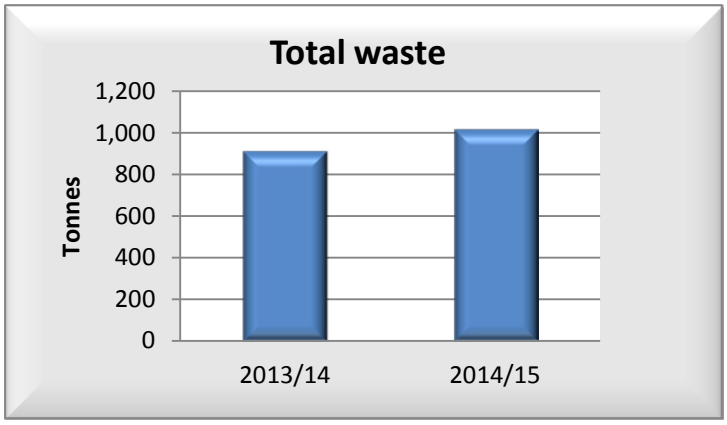
Waste

PHE has set a total waste reduction target of 2% annually to March 2020, in line with the Greening Government initiative. However, data indicate an 11% increase in total waste over the last year, as shown in the breakdown below.

Waste	2013/14	2014/15
SCOPE 3 (Waste)		
Non-financial indicators (tonnes)		
Waste recycled externally (non-ICT equipment)	254	332
Waste reused externally (non-ICT equipment)	0	4
Waste recycled externally (ICT equipment)	8	17
Waste reused externally (ICT equipment)	8	16
Waste composted or sent to anaerobic digestion	17	34
Waste incinerated with energy recovery	252	220
Waste incinerated without energy recovery (clinical waste)	329	314
Total ICT waste	15	35
Total waste not to landfill	867	937
Total waste sent to landfill	45	47
Total waste	941	1,018
Total landfill waste deemed hazardous (including clinical waste)	29	36
Financial indicators (£)		
Waste recycled externally (non-ICT equipment)	55,939	54,304
Waste reused externally (non-ICT equipment)	0	250
Waste recycled externally (ICT equipment)	7,504	11,624
Waste reused externally (ICT equipment)	*0	16,827
Waste composted or sent to anaerobic digestion	2,175	2,836
Waste incinerated with energy recovery	50,957	50,012
Waste incinerated without energy recovery (clinical waste)	446,758	356,377
Total waste sent to landfill	9,761	22,494
Total waste	617,691	534,858
Total landfill waste deemed hazardous (including clinical waste)	44,598	20,134

*Data not available

PHE's total waste figure for 2014/15 was 1,018 tonnes compared to 912 tonnes the year before.



Waste sent to landfill increased by only two tonnes over the year, with a 31% rise in the amount of waste being recycled. A third-party provider has been engaged to recycle and reuse, wherever possible, all redundant ICT equipment. This method of disposal is effective and in line with government policy. A total of 35 tonnes of ICT waste was processed in this manner in the last financial year, more than double the previous year. A significant proportion of the increase in ICT waste (20 tonnes) was due to the corporate roll-out of new ICT equipment, replacing old desktop computers with laptops and CRT monitors with flat screen monitors.

Exceptionally, in Q2 of 2014/15, an additional 62 tonnes of non-ICT waste was sent for recycling from our site at Porton. This resulted from a reduction in waste holding facilities on the site, and the disposal of various stockpiles of redundant electrical equipment.

Due to the nature of the work carried out at a number of our sites, a significant quantity of hazardous waste is produced and controls have been put in place to manage this. The majority of this waste was sent for incineration, in compliance with government guidelines.

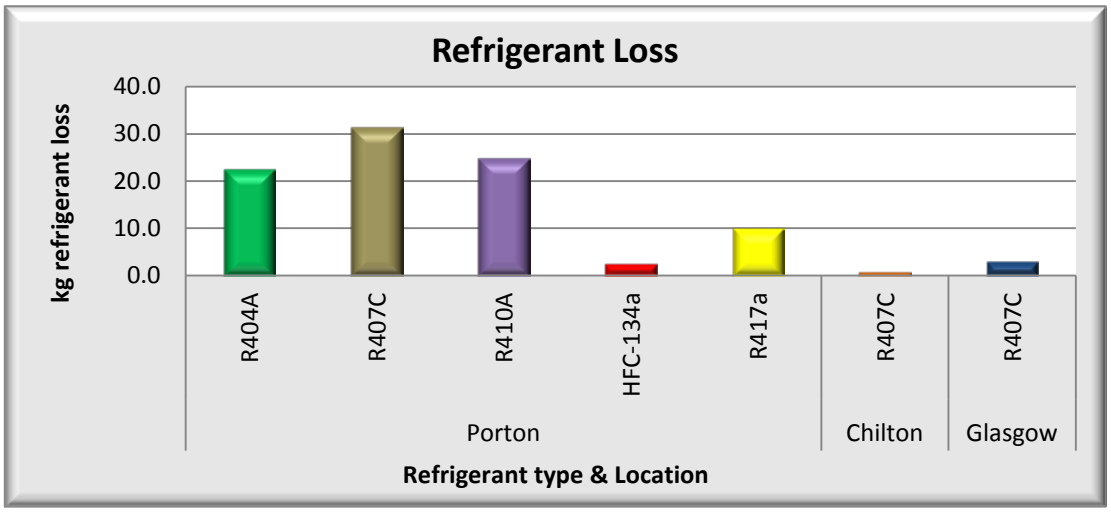
A number of initiatives have been introduced to minimise waste at all locations, covering both offices and laboratories. Contractors working at PHE sites are constantly reminded about their obligation to reduce their waste wherever possible, in line with PHE's waste policy and the associated management arrangements.

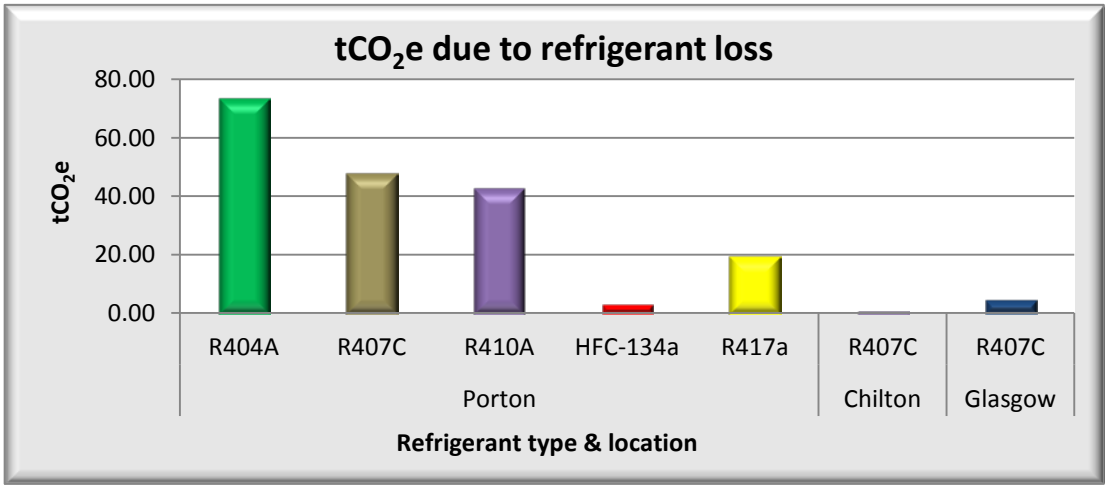
PHE continues to pursue an aggressive programme to reduce its total waste, especially to landfill, and to increase the level of recycling wherever practicable.

Refrigerant losses

The loss of refrigerant and the associated carbon footprint are illustrated below, by major owned site. The Colindale site reported zero losses.

Facility / source description	Type of Refrigerant	Refrigerant Loss	GWP of refrigerant	CO_2 emissions
		kg	CO_2e	tCO_2e
Porton	R404A	22.6	3,260	73.68
	R407C	31.4	1,526	47.90
	R410A	24.9	1,725	42.95
	HFC-134a	2.4	1,300	3.12
	R417a	10.0	1,938	19.38
Chilton	R407C	0.7	1,526	1.07
Glasgow	R407C	3.0	1,526	4.58





Paper usage

PHE has an active programme to reduce paper usage, in line with government targets. The government's closed-loop recycling system[1] (operated via Banner) was introduced at several PHE-owned sites, and this has already led to savings. We are pleased to report that almost 85% of paper used by PHE in 2014/15 was closed-loop recycled paper.

The closed-loop system, which is compliant with the standard DIN 6738, uses far less water in the manufacturing process than paper made from pulped wood. It requires less energy in the manufacturing process and creates approximately 70% less air pollution. It also reduces demand on landfill, where much of our waste would eventually be buried if it was not recycled.

In 2014/15, PHE used 27,097 reams of A4 paper, 479 reams of A3 paper and 180 reams of A5 paper – reductions of 5%, 4% and 27%, respectively, on the previous year. It is anticipated that as the closed-loop recycling scheme is rolled out across the remainder of PHE, the uptake for this type of paper will increase.

Our paper usage compared to the previous year is shown below.

Year	A5 (reams)	A4 (reams)	A3 (reams)
2013/14	247	28,660	501
2014/15	180	27,097	479
Reduction (%)	27%	5%	4%

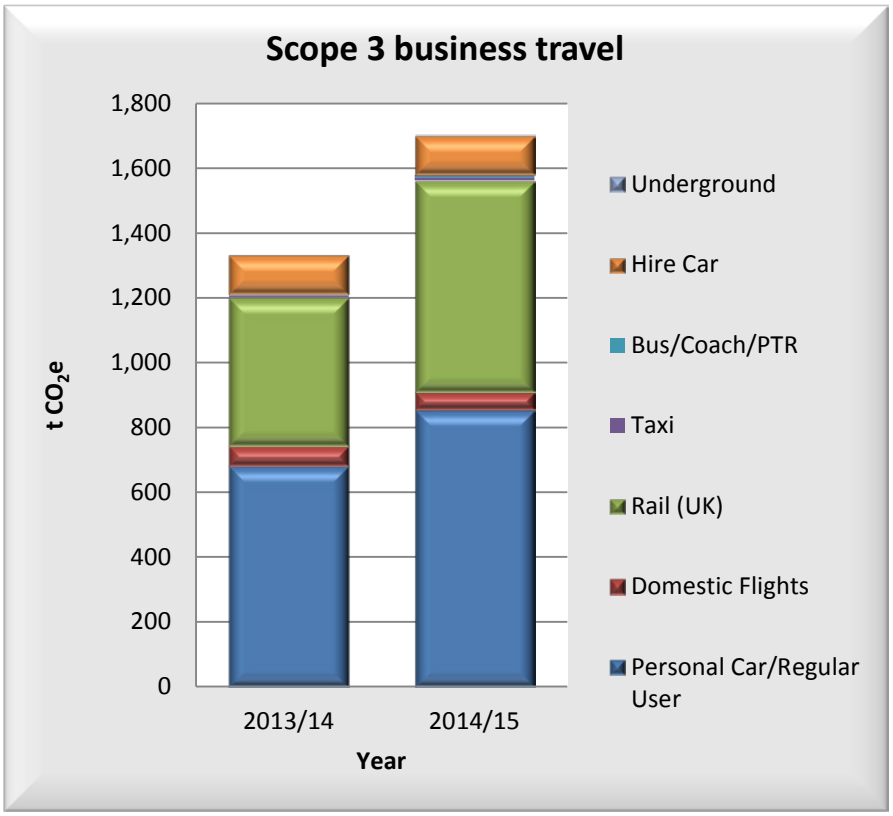
The move to multi-function devices for printing continues across the business and 'follow me' printing is being introduced on an increasing number of our sites, including in central London. Paper usage is being further reduced through improved signage and messages about minimising printing.

1 'Closed loop forms part of the Government Office Supplies Contract (GOSC) which is managed by HM Revenue & Customs on behalf of the CCS. It is government policy for central government departments to use this contract and closed loop'. See: http://ccs-agreements.cabinetoffice.gov.uk/sites/default/files/attachments/CL%20specification%20for%20FM%20V2%20-%20CCS%20website%20Mar14.pdf

Our travel footprint

PHE set a target to reduce business travel by at least 2% annually, relative to our baseline year of 2013/14, to March 2020. Staff are encouraged to limit journeys wherever possible and when they must travel, to use the most sustainable modes of transport.

Despite this, business travel rose by 14% during 2014/15. This coincided with an increase in the overall workforce, although the impact of this is difficult to discern. A further factor was PHE's response to the Ebola crisis in West Africa, with large numbers of staff engaged across the UK and others travelling overseas, in particular, to Sierra Leone. For example, our staff made 69 flights to Freetown in 2014/15, at a carbon cost of 70 tCO_2e.



PHE's drive to reduce travel to meetings was supported by the installation of Microsoft Lync on all corporate laptops to encourage more video conferencing. The organisation recognises that less business travel will benefit health by preventing air pollution, support PHE's plans to reduce carbon and save money. Further initiatives have therefore been introduced to monitor business travel locally. The importance of travelling in a sustainable manner is also highlighted in PHE's sustainability e-learning package.

A breakdown of the impact of the various types of business travel is given below.

Business Travel		2013/14	2014/15
SCOPE 3			
Non-financial indicators (tCO_2)	Personal car/regular user	681	854
	Domestic flights	120	56
	Rail (UK)	458	652
	Taxi	5	10
	Bus/coach/PTR	4	7
	Hire car	122	121
	Underground	1	1
	Total	1,392	1,702
Related Scope 3 travel (km)	Personal car/regular user	3,580,880	4,510,395
	Domestic flights	366,392	361,677
	Rail (UK)	9,346,189	13,759,549
	Taxi*	36,830	55,507
	Bus/coach*/PTR	39,822	65,791
	Hire car*	641,065	640,602
	Underground*	7,962	16,063
	Total	14,019,139	19,409,584
Financial indicators (£)	Personal car/regular user	1,022,687	1,264,866
	Domestic flights	66,494	75,084
	Rail (UK)	2,970,871	3,705,995
	Taxi	79,901	123,353
	Bus/coach/PTR	19,739	17,552
	Hire car	87,639	88,216
	Underground	45,625	74,365
	Total	4,292,956	5,349,431
Other business travel (km)	Short-haul international average	1,918,087	1,962,413
	Long-haul international average	4,370,326	5,215,474
	Rail: Eurostar	113,679	95,444
Total	Total Gross Emissions Scope 3 Business Travel	1,392	1,702
	Total Financial Cost Scope 3 Business Travel	4,292,956	5,349,431
	Total Other Financial Cost	497,078	636,887

*Figures calculated using our own conversion table

PHE's carbon emissions per head for all business travel during 2014/15 have increased by 14% over the previous year, explained in part by a combination of increased staff numbers and the response to the Ebola crisis in West Africa.

In order to facilitate comparison across the various parts of the organisation, PHE uses the measure of tCO_2e per whole time equivalent (wte) staff. The key changes to our travel footprint are:

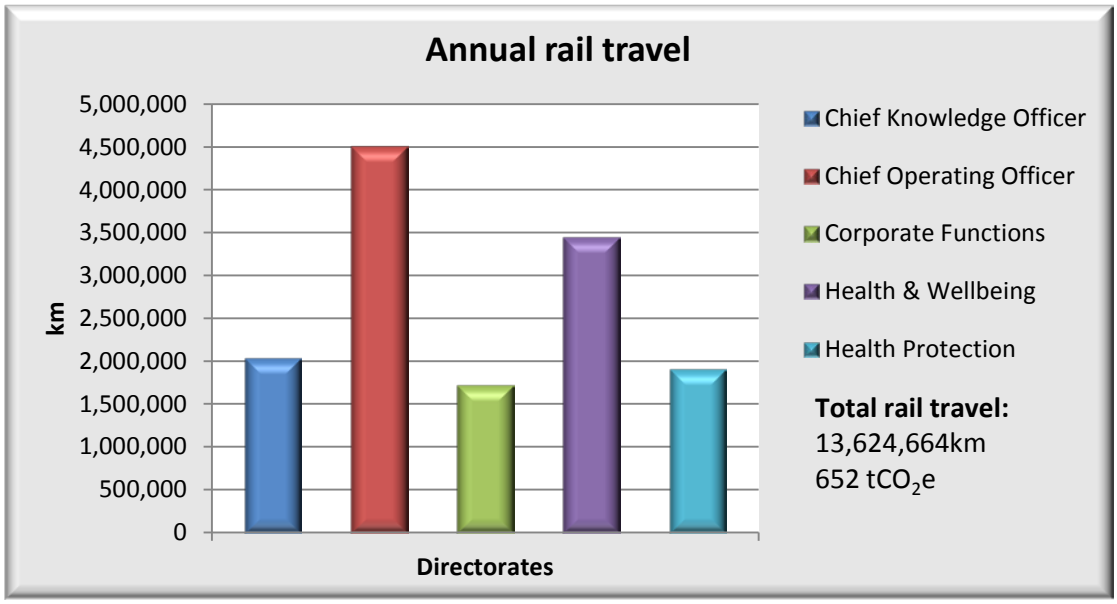
- emissions per wte from UK (domestic) flights are up by 15.4%
- emissions per wte from international flights are up by 5.5%
- emissions per wte train use per wte are up by 22%
- emissions per wte from personal car use are up by 34%
- emissions per wte from taxi use are up by 54%
- emissions (tCO_2e) from use of PHE owned/leased vehicles are up by 5%

Rail travel

During 2014/15, PHE staff travelled 13,759,548 kilometres on the train, representing a 47% increase on last year. The Chief Operating Officer's directorate undertook the most travel by rail, travelling more than 4.5 million km. Total carbon emissions from rail travel amounted to 652 tCO_2e (including data from i-expenses). The following table summarises PHE's carbon footprint due to rail travel.

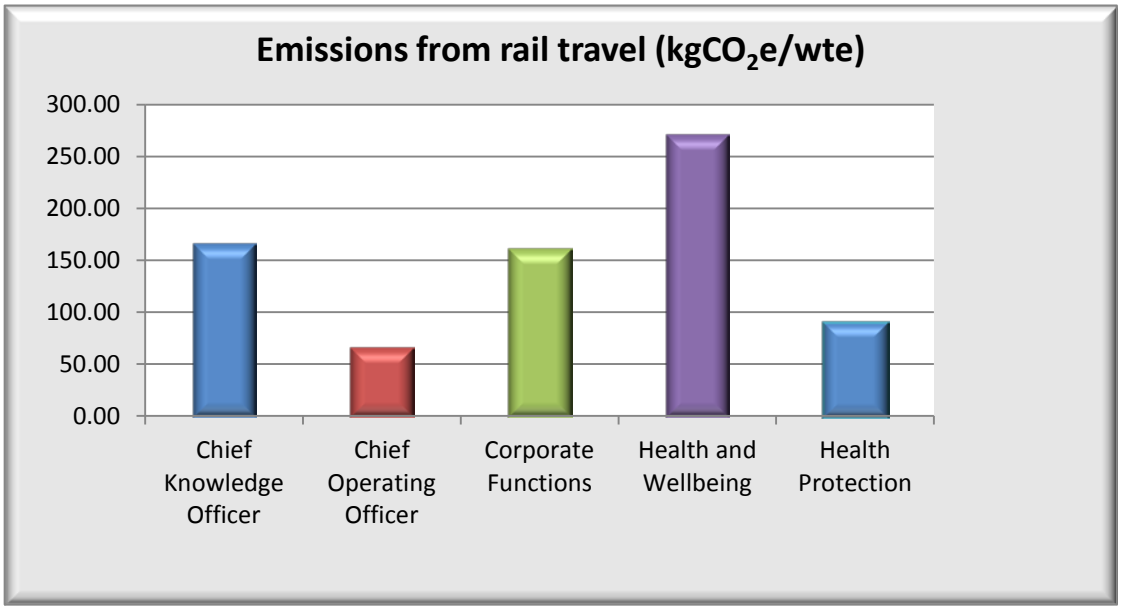
Directorate	Staff wte	tCO_2e	$kgCO_2e$ / wte
Chief Knowledge Officer	571.4	96.37	169
Chief Operating Officer	3,176.2	214.12	67
Corporate functions	498.5	81.48	163
Health and Wellbeing	595.4	163.40	274
Health Protection & Medical	991.5	90.17	91
TOTAL	5,833	645.54	111

An additional 6.4 tCO_2e is attributed to staff using our i-expenses system, taking the annual figure for rail travel to 652 tCO_2e, illustrated by directorate in the following graphs.



Note: the term 'corporate functions' is used collectively for all areas not listed individually, including support functions such as HR, finance, etc.

To facilitate comparison across PHE directorates the emissions due to rail travel are expressed as $kgCO_2e$ per wte. This gives the following distribution.



The annual cost to the organisation for rail travel in the UK amounted to £3,706,428, whilst the impact on the environment was 652 tonnes of carbon. Staff in the health and wellbeing directorate generated highest emissions per person (274 $kgCO_2e$/wte) as a result of rail travel. This compares with staff in the Chief Operating Officer's directorate, who generated 67 $kgCO_2e$/wte.

Air travel

Air travel is one of the most polluting means of travel and where there are alternatives, these should always be considered. Moreover, domestic air travel is a specific government target for reduction and while PHE does have offices which are widely geographically distributed, much of our travel could be undertaken by more carbon-efficient means, such as by train.

PHE acknowledges that some journeys may require air travel. We have a duty to minimise our domestic air travel wherever possible and this can also include western Europe. Our air travel in 2014/15 is summarised below, expressed as $kgCO_2e$ per wte to facilitate comparison.

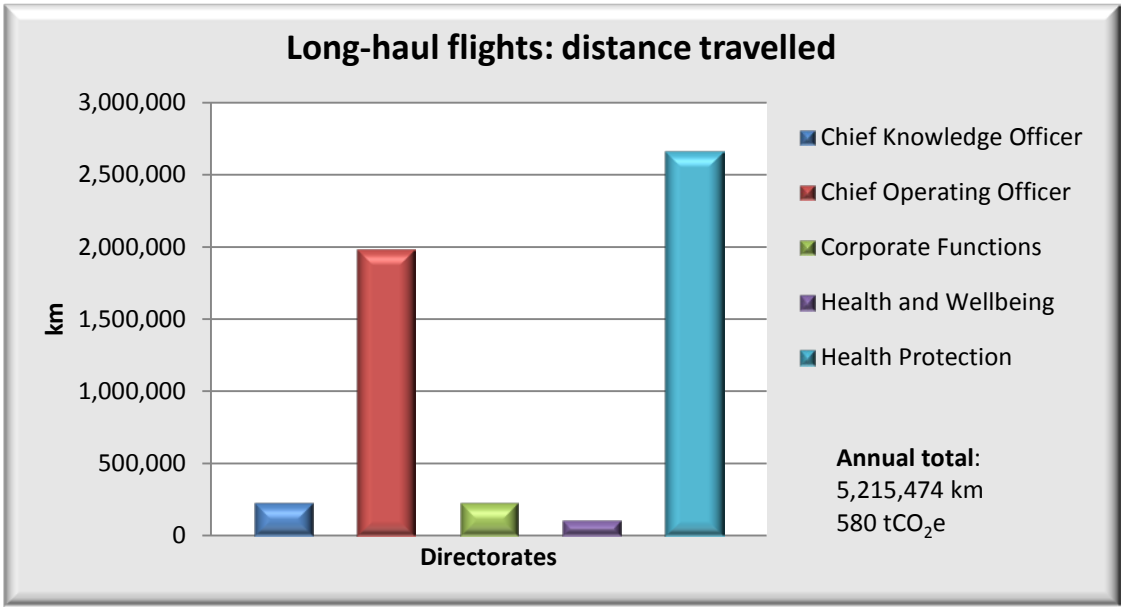
Directorate	Staff wte	$kgCO_2e$/wte		
		Domestic	Short-haul	Long-haul
Chief Knowledge Officer	571.4	4.3	11.1	44.4
Chief Operating Officer	3,176.2	4.2	18.5	69.3
Corporate functions	498.5	11.1	5.4	50.9
Health and Wellbeing	595.4	26.1	53.6	20.5
Health Protection & Medical	991.5	19.3	73.4	298.5
TOTAL	5,833	-	-	-

Total distances travelled by air are shown in the following table, by quarter.

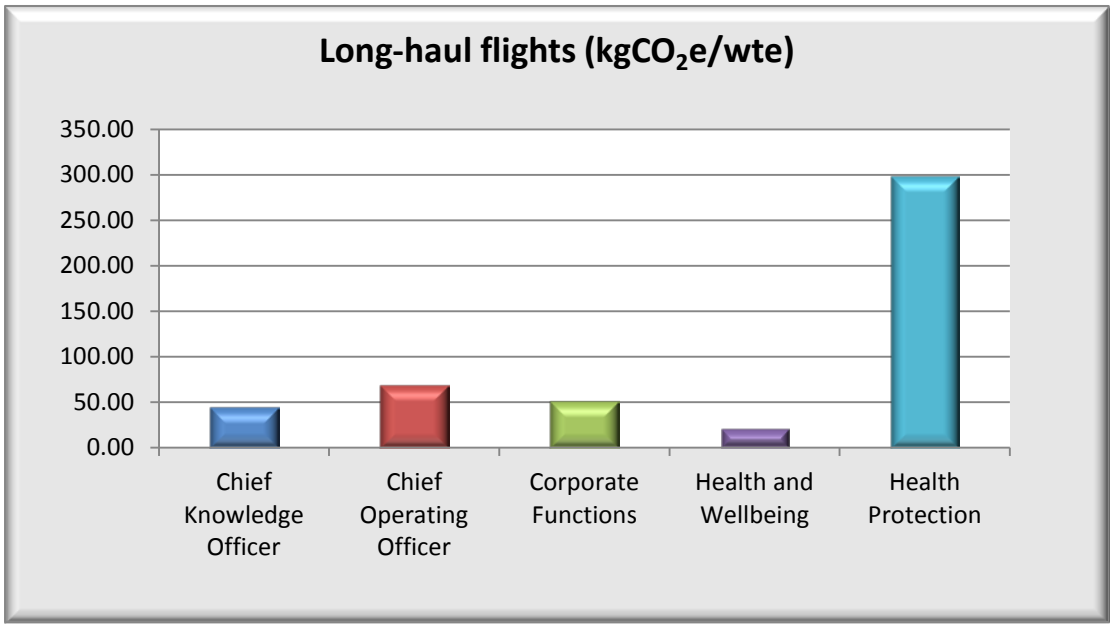
Directorate	Distance travelled (km)				
	Q1	Q2	Q3	Q4	Annual total (km)
Domestic flights (<500 km)					
Chief Knowledge Officer	3,291	2,972	2,631	6,815	15,709
Chief Operating Officer	22,926	14,574	25,074	24,227	86,801
Corporate functions	6,691	8,950	11,545	8,369	35,555
Health and Wellbeing	12,523	17,452	30,786	39,624	100,385
Health Protection & Medical	27,872	22,421	27,715	45,218	123,226
Total domestic flights	**73,303**	**66,369**	**97,751**	**124,253**	**361,676**
Short-haul flights (500-3,700 km)					
Chief Knowledge Officer	35,311	10,259	16,601	9,798	71,969
Chief Operating Officer	251,591	138,866	178,708	99,532	668,697
Corporate functions	13,329	6,331	10,906	0	30,566
Health and Wellbeing	31,599	12,447	56,194	262,699	362,939
Health Protection & Medical	277,604	207,977	337,235	5,426	828,242
Total short-haul flights	**609,434**	**375,880**	**599,644**	**377,455**	**1,962,413**
Long-haul flights (>3,700 km)					
Chief Knowledge Officer	132,480	17,161	78,657	0	228,298
Chief Operating Officer	461,796	413,411	789,974	317,783	1,982,965
Corporate Functions	116,306	0	68,586	43,530	228,422
Health and Wellbeing	24,668	11,713	34,016	39,506	109,903
Health Protection & Medical	596,888	631,038	666,595	771,365	2,665,886
Total long-haul flights	**1,332,138**	**1,073,323**	**1,637,828**	**1,172,184**	**5,215,474**
TOTAL ALL FLIGHTS	**1,051,919**	**1,936,988**	**2,098,748**	**1,567,148**	**7,539,563**

Long-haul flights

The Health Protection and Medical directorate and the Chief Operating Officer directorate were the greatest users of long-haul flights. The majority of those involved in the Ebola response were drawn from these divisions.

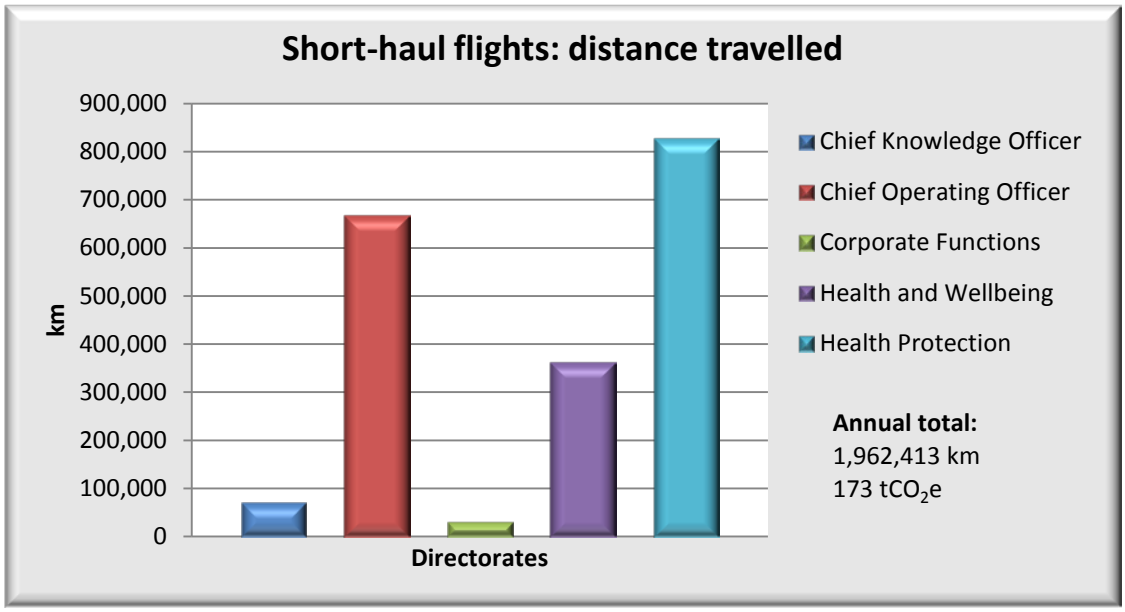


To facilitate comparison across PHE directorates the emissions due to long-haul air travel are expressed as $kgCO_2e$ per wte. This gives the following distribution.

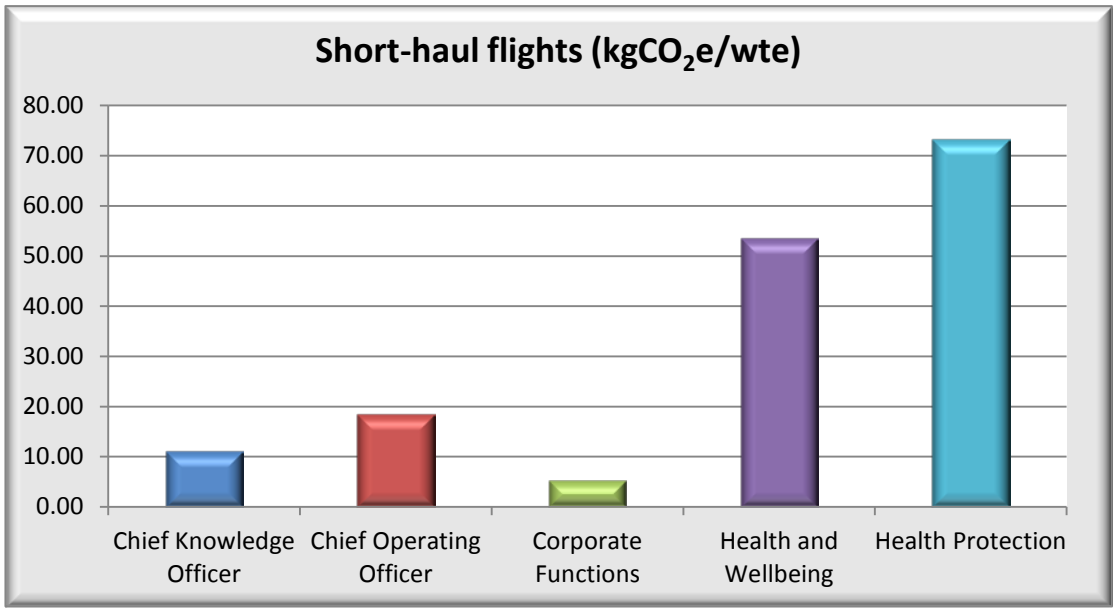


Short-haul flights

The Health Protection and Medical directorate, the Chief Operating Officer directorate and the Health and Wellbeing directorate were the heaviest users of short-haul air travel.

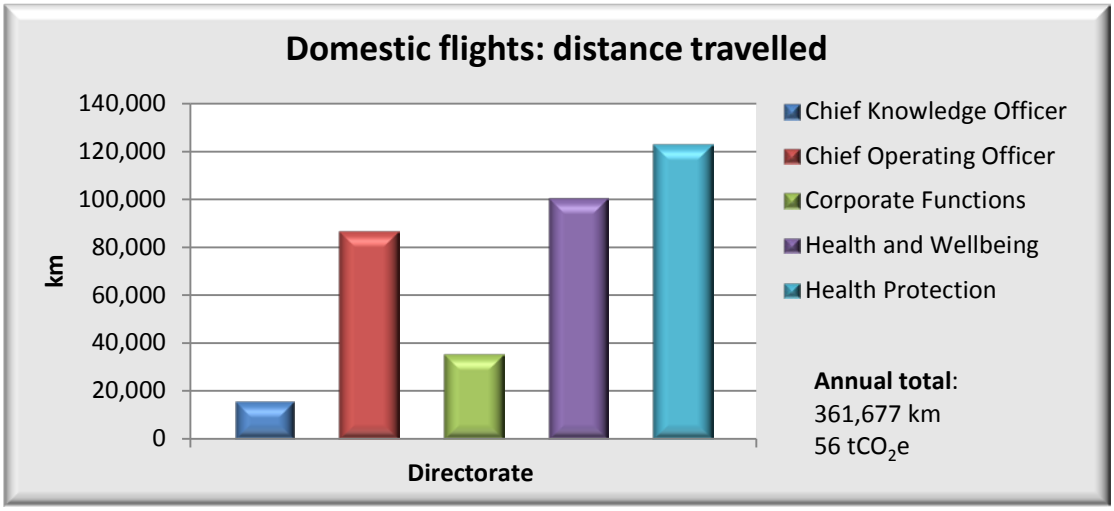


To facilitate comparison across PHE directorates the emissions due to short-haul air travel are expressed as kgCO_2e per wte. This gives the following distribution.

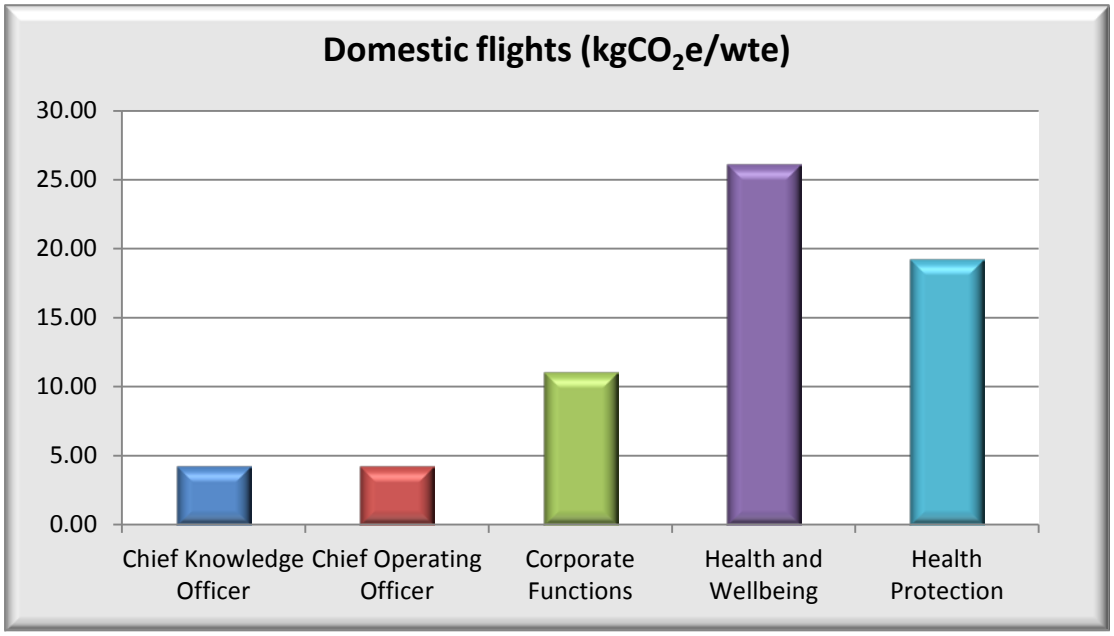


Domestic flights

Government has indicated that air travel within the UK in particular should reduce significantly, with the target of reducing it to zero. PHE achieved a 13% reduction in UK air travel from the previous year, despite the increase in staff numbers.



To facilitate comparison across PHE directorates the emissions due to domestic air travel are expressed as $kgCO_2e$ per wte. This gives the following distribution.



Car use for business travel

PHE undertakes significant business travel by car, much of it in personal cars. Personal cars usually have a higher cost than hire cars for journeys above 64 miles (data from Enterprise Car Hire Ltd). This is because hire cars are normally recent models with the latest fuel emission technology, producing less carbon than many privately owned vehicles. Personal car use by directorate (with associated cost) is shown below.

Directorate	Distance travelled (km)				Total (km)	Cost (£)
	Q1	Q2	Q3	Q4		
CKO	52,848	62,859	70,599	76,513	262,819	73,893
COO	502,999	589,307	665,626	725,800	2,483,732	946,919
Corporate Functions	119,384	125,027	125,706	134,835	504,952	139,508
Health & Wellbeing	174,987	197,953	235,014	216,768	824,722	234,176
Health Protection & Medical	88,918	103,595	111,653	122,615	426,781	120,816
TOTAL	939,137	1,078,741	1,208,598	1,276,531	4,503,007	1,515,312

Hire car versus personal car use

PHE has an ongoing contract to book hire cars through Enterprise Car Hire Limited. However, there is no single method for booking hire cars across PHE; some sites have a dedicated service to book hire cars on behalf of staff, other locations require individuals to make their own arrangements. It is hoped that a single method can be introduced in future whereby staff who wish to book a hire car can do so online, similar to booking a rail ticket.

PHE policy is to reduce business travel by staff in their own cars, with travelling via public transport or rail being the first choice. However, if the journey arises out-of-hours or at short notice, then using a privately owned vehicle might be deemed more acceptable. PHE has produced a simple tool to help staff work out when it is more viable to hire a car than use their own vehicle, depending on the distances involved.

PHE staff using hire cars travelled a total of 640,602 km, at a cost of £94,171 (ie 14.7p/km).

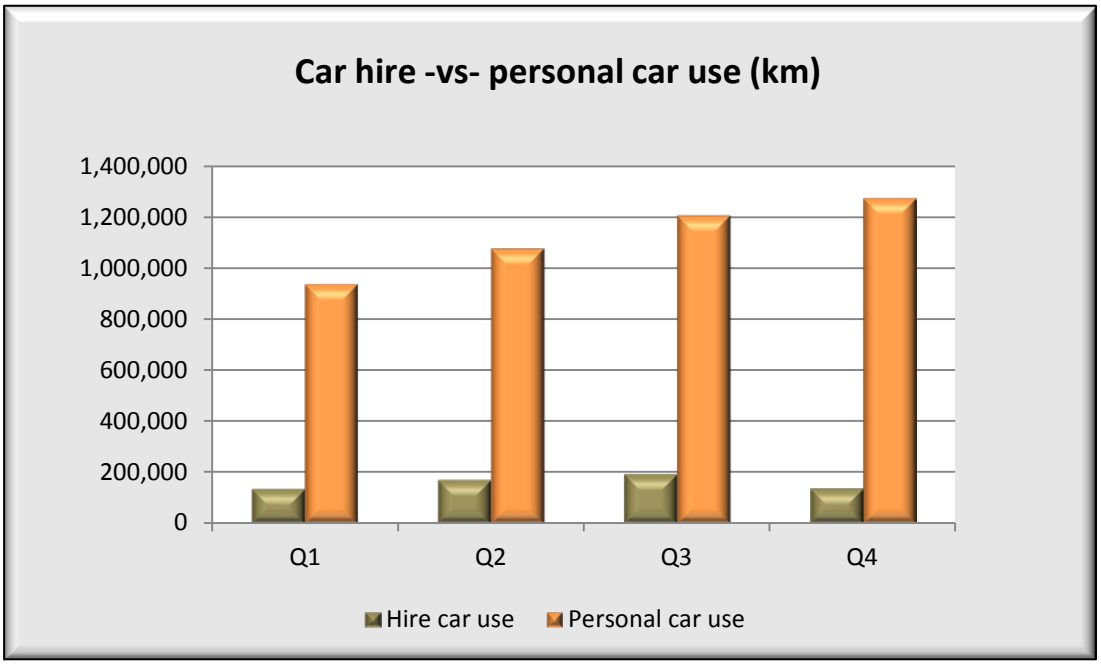
Those travelling in personal cars travelled a total of 4,503,007 km, at a cost to the organisation of £1,262,779 (ie 28p/km).

It is estimated that had all car travel been undertaken in hire cars, PHE could have travelled an additional 4.1 million km for the same total cost. Conversely, PHE could have saved £600,837 on car travel.

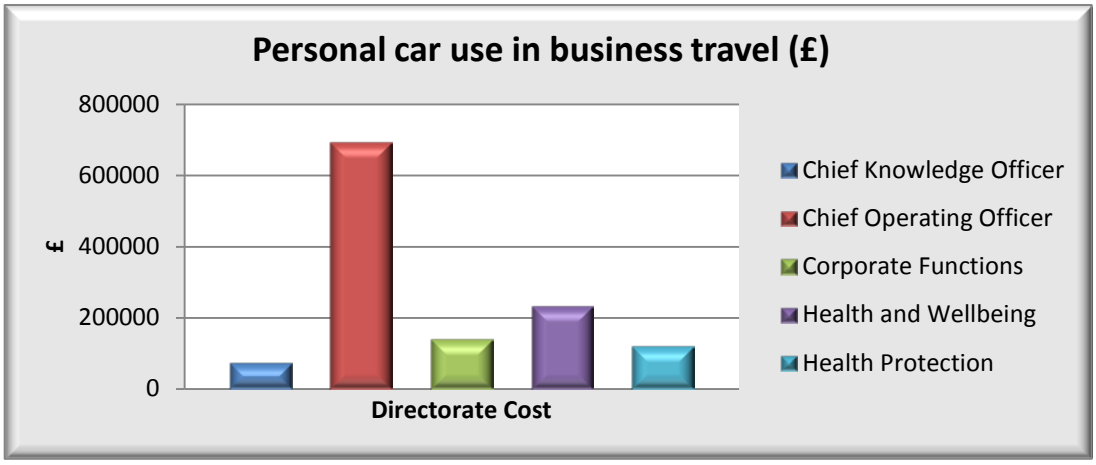
The principal cost difference is due to the higher cost per km travelled by staff in personal cars, as the reimbursement rate set by government is significantly higher than the cost of using a hire car.

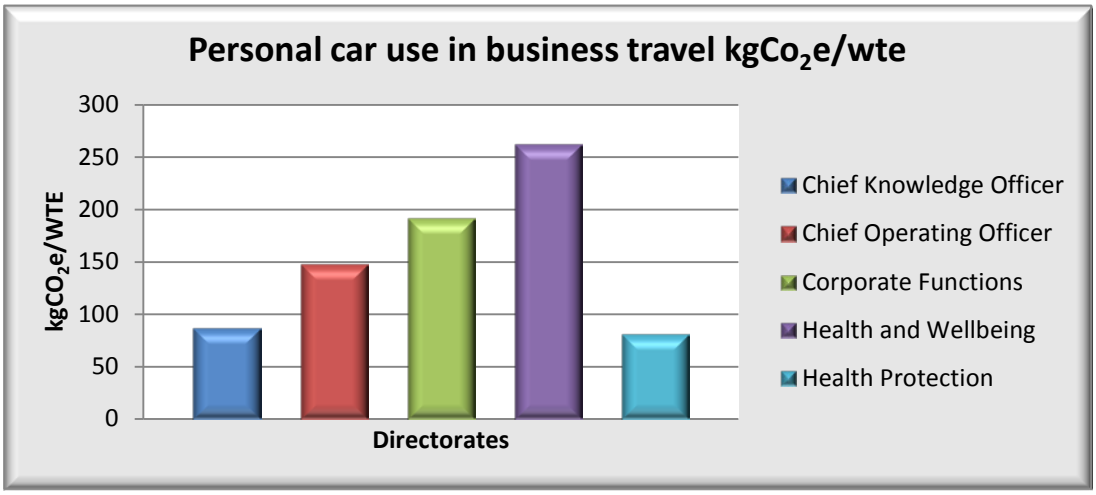
In addition to financial considerations, hire cars tend to be more recent models which are generally more carbon efficient than older cars.

The trend for travel by personal car (compared to hire car) over the last year has increased and this is illustrated below.



The travel on business by PHE staff in 2014/15 using personal cars is shown below.



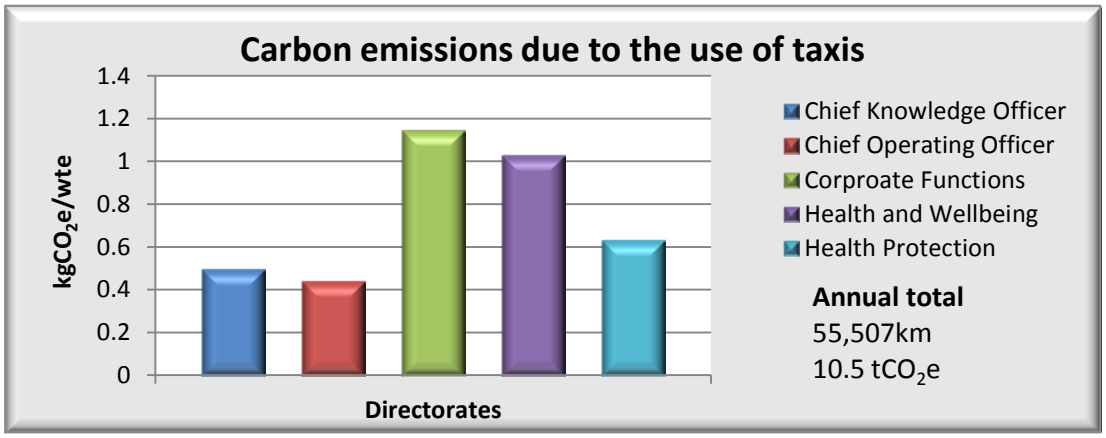


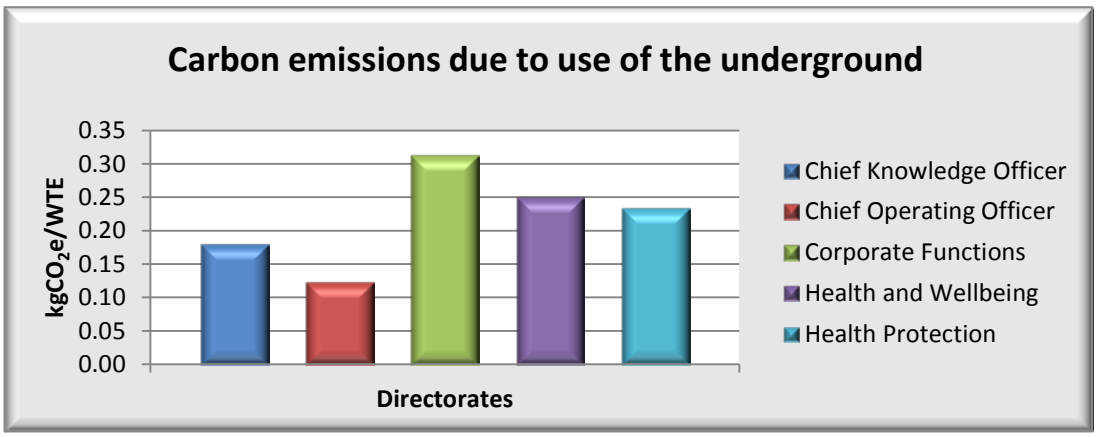
Underground and taxi travel

Wherever possible, PHE encourages its staff to use public transport if they need to travel for work. Generally, this is more cost effective and far more carbon efficient. PHE gathers travel data through expense claims and ticket purchases. However, it is currently difficult to distinguish between journeys in London by bus and underground; these can be made by using either an Oyster or rail travel card, in addition to the purchase of specific tickets.

For journeys specifically identified as being by bus or underground, the data are presented below, but for the above reasons, this is deemed to be an estimate in terms of how it is apportioned. Emissions from our use of taxis have increased by 94% over the previous year, to 10.5 tCO_2e. The cost has increased by 54%, from £79,901 in 2013/14, to £123,354 in 2014/15.

PHE's carbon footprint due to travel by taxi and on the London underground is shown below, by directorate.





Green procurement in PHE

The procurement department within PHE is divided into categories with specialised managers to ensure that the most cost effective and sustainable items and services are purchased.

Sustainability is a hugely important part of all of our purchases. The category managers ensure that all of our tender documents contain relevant questions to confirm that the successful suppliers adhere to given environmental and sustainability standards.

Our tendering is managed through e-tendering and our documentation is stored electronically. There is an environmental section in our tender documents which asks specific questions about a company's environmental management system. This includes elements relating to their impact on energy and water for production, and their disposal of waste and the sourcing of raw materials.

The tender document can be adapted to include specific questions relevant to a particular tender. This will then be scored to ensure that the companies that take account of the importance of sustainability and environmental issues are recognised for their contribution to this important area.

Office supplies and equipment

Hardware, software and telecommunications

The vast majority of our hardware, software and telecommunications equipment is sourced through suppliers working under government procurement frameworks. These frameworks are the result of tenders undertaken by government and include sustainability considerations appropriate to the ICT category.

Paper

Paper is obtained through the governments closed-loop recycling scheme, of which details are given elsewhere in this report.

Toner cartridges

In the procurement guidance on the intranet we make specific reference to the printer toner cartridge recycling scheme run by XMA to encourage its use.

Furniture

We try to reuse and recycle furniture as far as possible. All tenders include a statement informing suppliers that PHE fully supports the UK government's commitment to sustainable development. Contracted suppliers are expected to support PHE in achieving its goals of continuously improving its environmental and sustainability performance.

Equipment

When our suppliers tender we ask them to provide details of the energy efficient features of their equipment. We also ask about end-of-life schemes and disposal mechanisms.

Construction and facilities management

Many facilities management contracts are awarded under Crown Commercial Services (CCS) frameworks. Sustainability issues have therefore been included in the CCS tender process. However, our 'further competition' process includes the same environmental questions that are required for all other tenders. This section requires suppliers to have an environmental management system externally certified to ISO 14,001 in order to achieve a maximum score. If no such system is in place suppliers are required to answer a set of questions covering the steps taken to minimise environmental impacts in terms of raw materials, energy and water use, transport and waste.

Waste

The appropriate removal and disposal of waste is included in the specification of many facilities management projects. The use of environmentally friendly products is specified wherever possible.

Travel procurement

Staff are encouraged to use public transport solutions wherever possible. All PHE business travel must be booked through Redfern Travel, an approved government supplier which is certified to ISO 9001 and committed to a better environment. Redfern provides us with significant holistic data, including cost information and carbon data for all journeys.

Conferences and events

The majority of conferences, events and external meeting rooms are booked through Calders World of Travel.

Calders currently offsets its CO_2 footprint by planting trees in association with the Yorkshire Dales Millennium Trust and is committed to reducing its water consumption and total waste output by increasing recycling. The company also aims to achieve ‘zero waste to landfill’ through energy recovery mechanisms. It has outlined its commitment to sustainability in its corporate and social responsibility plan and its duty of care documents.

Biodiversity and wellbeing

PHE fully recognises the importance of biodiversity and the role it plays in our everyday lives. Though none of our estate is located on land classified as being a Site of Special Scientific Interest (SSSI) or Area of Outstanding Natural Beauty (AONB) we have still undertaken a number of biodiversity projects, especially in our sites in rural settings, that have embodied the local environment. To a degree, this is limited by the nature of the PHE estate, which does not involve large amounts of undeveloped land.

These projects have included a set-aside area at our Porton site where wild flowers and grasses have been encouraged to grow, with a dedicated pathway being constructed so staff can enjoy the local scenery. We have continued work on developing allotments using compost made from organic matter from the kitchens (particularly at Colindale in north west London), and we produce honey from our bee hives at Colindale. Please find more information in the relevant site reports, below.

Guided walks and cycling events are promoted across the estate. We also have an active programme related to ‘healthy people, healthy places’, with a number of health and wellbeing groups to inform staff about the benefits of active lifestyles and healthy diets and the health problems associated with smoking and excess alcohol.

Sustainable Development Unit for the NHS, public health and social care

The Sustainable Development Unit (SDU) is funded by, and accountable to, PHE and NHS England. The unit reports to the PHE executive lead for sustainability.

The work of the unit is underpinned by the sustainable development strategy for the NHS, public health and social care system 2014–2020 in England. The strategy sets out the vision for a sustainable health system and was produced by the SDU and developed in partnership with PHE. Launched in 2014, it sets out three goals to aim for by 2020:

- a healthier environment, including reducing carbon emissions
- communities and services are ready and resilient for changing times and climates
- every opportunity contributes to healthy lives, healthy communities and healthy environments

New modules to support the sustainable development strategy

In January 2015, the SDU published three new modules to support the sustainable development strategy. Developed through consultation with the system, they cover metrics, social value and innovation, technology and research and development. The modules are supported by implementation notes and steering groups who will push forward the areas of focus.

Cross-system approach

The sustainable development strategy adopts a system-wide approach, which is underpinned by the national cross-system group (CGS) for sustainable development across the health and care system.

The SDU co-ordinates the CSG who meet biannually to provide ambition, leadership, vision and cross-system support to the agenda. The group includes high-level representation from 26 organisations including PHE, NHS England, NICE, NHS Confederation, the Royal College of Nursing and the Department of Health.

The SDU co-ordinated a joint statement from leading organisations in health and care, expressing their commitment to tackle climate change, which was issued to the United Nations Climate Summit in New York on 23 September 2014. The CSG joint

statement is the first example of one country's health sector committing to combat climate change together. A filmed message from Duncan Selbie, PHE's Chief Executive, was produced by the SDU and submitted to the UN alongside the written statement.

Adaptation reporting power

The SDU co-ordinated the adaptation reporting function on behalf of system in response to the invitation from the Department for Environment, Food and Rural Affairs (DEFRA) to produce an adaptation report for the health sector as, outlined under the Climate Change Act 2008.

With the support of a small working group, the SDU produced a project plan based on wide engagement and identified a process for production seeking stakeholder support. The SDU managed this process of engagement and production and the report was submitted to DEFRA in March 2015; it is currently awaiting publication.

The SDU monitors and reports on system progress in sustainable development. It collects data for the public health outcomes framework indicator 3.06 – NHS organisations with a boardapproved sustainable development management plan. The SDU also produces maps of sustainability indicators which are made available online and circulated to regional leads.

The SDU runs regular engagement programmes including biannual national route map events. This year's events were used to consult on development of publications, increase understanding of system progress and barriers to success, and share best practice.

Alongside this, the SDU has established networks focusing on specific areas which have continued to grow. The coalition for sustainable pharmaceuticals and medical devices has held workshops with industry and public bodies to develop mechanisms and tools to enable the carbon foot printing of care pathways.

The metrics steering group has met regularly to ensure the ongoing development of an approach to measurement for sustainable development. This includes looking at improvements of sustainability impact assessments and how data capture may evolve in response to and with the support of technology.

The SDU has also supported the development of four regional networks working across PHE and the NHS to promote sustainable development in health at a local level.

Support for health and wellbeing boards

The SDU has helped local authorities and their health and wellbeing boards (HWBs) embed the principles and benefits of sustainable development within local systems. The unit produced and published a local implementation toolkit for HWBs, which provides guidance and signposts case studies and support across a number of themes.

Corporate approach

The SDU is co-funded by PHE to lead the implementation of the strategy within organisations and across systems. In the last year, the SDU has supported PHE in developing a sustainability plan that brings together the many related strands of work across the organisation.

Through this plan, PHE seeks to build and communicate authoritative evidence and advice relating to links between health and sustainability, as well as be seen as an exemplar organisation in relation to its own sustainability practice.

In 2015/16, PHE will be developing a longer-term vision for sustainability and aligning this to the cross-system sustainable development strategy.

Climate change and extreme events

Wider role of PHE in sustainability and resilience

The Climate Change Act (2008) requires government to "report on how they assessed the risks of climate change to their work, and what they are doing to address these risks". Under this obligation a Climate Change Risk Assessment (CCRA 2012) was required to understand the level of risk in the UK, including health, and set out the main priorities for adaptation. PHE contributed significantly to the development on the UK CCRA, and has submitted evidence for the next risk assessment in 2017.

National adaptation programme

The National Adaptation Programme (NAP) was published in July 2013, as a response to the UK CCRA, and outlines the role of society in adaptation and the vision of developing communities and individuals resilient to the effects of climate change. It identifies risks and opportunities related to climate change and objectives, policies and proposals to address how government, business and society can be more climate-ready. Chapter 4 of the NAP focuses on health and wellbeing and contains two high level objectives for the health and social care system:

- Objective 11 – To reduce the risk of death and illness associated with severe weather events and climate change and increase preparedness and resilience to the impacts on public health

- Objective 12 – To promote climate resilience within the NHS, public health and social care system to ensure continuity of services and resilient assets/estates including the ability to deal with the increased demand for services associated with severe weather related events

The Department of Health (DH) convenes a NAP health and care system steering group, to which PHE is an active contributor. This aims to co-ordinate partners at the national level that support local climate change adaptation planning through the provision of tools and guidance.

The Adaptation Sub-committee of the UK Climate Change Committee provides independent advice on preparing for climate change in England. It has recently published its assessment of progress with the NAP for all sectors. PHE will be considering their recommendations for reducing health vulnerabilities in relation to climate change with its partners in the health sector and wider government.

The health and care system has undertaken its own assessment of how the sector is adapting to climate change, under the Adaptation Reporting Power component of the Climate Change Act (2008). This report is expected to be published in summer 2015 and has been co-ordinated by the Sustainable Development Unit with the support of PHE, NHS England and further organisations relevant to the health and care system.

The UK CCRA identified the health impacts from heat and floods as among the most significant. PHE co-ordinates the cross-system Heatwave Plan for England and Cold Weather Plan for England. These plans aim to prevent the major avoidable effects on health during periods of hot and cold weather in England, respectively, by alerting people to the negative health effects of adverse temperatures, and enabling them to prepare and respond appropriately year-round.

Actions to reduce the harm from adverse temperatures such as home insulation and promoting urban green space can have wider benefits on helping to reduce carbon emissions and improving physical and mental health. Guidance on minimum home temperature thresholds in winter has been revised following a review of published literature and stakeholder consultation in order to protect the health of vulnerable individuals in winter, whilst reducing carbon emissions and avoiding unnecessary expenditure on fuel. Increasing the energy efficiency is also important, however there is increasing acknowledgement of the potential risks of overheating in summer, if homes are not adequately ventilated and windows insufficiently shaded to avoid solar gain. PHE has been working with ZeroCarbon Hub and cross-governmental partners to assess the evidence regarding the experience and impacts of overheating in homes. Concerns have also been raised that a substantial proportion of the hospital estate may be at risk of overheating. PHE has worked with colleagues from DH and Cambridge University to revise the ‘Making Energy Work in Health Care (HTM 07-02)’ technical guidance to include advice around passive cooling and protecting vulnerable patients.

National flood emergency framework

The National Flood Emergency Framework sets out the government’s strategic approach to flood emergency planning, bringing together information, guidance and policies. PHE provided content for a chapter on the specific health consequences of flooding and worked with the Environment Agency to produce a communications annex and guidance on preparing, responding and recovering from floods. This was updated in 2014 as a result of experiences following the winter floods of 2013/14. PHE is undertaking a prospective cohort study to determine the medium to long-term effects of flooding on mental health, and expects to provide a first report in the autumn of 2015. The findings are expected to help better quantify the health impact

of flood events and help establish the amount of unmet need for mental health services following flooding.

Climate change

PHE has developed a research programme to assess the Health Effects of Climate Change in the UK. Recent publications include assessment of the mortality impacts of hot and cold weather in the UK and in other countries as well as modelling of the urban heat island effect. There are a number of active collaborations between PHE and UK universities, involving joint PhD student supervision, teaching and active research projects. Research topics range from Climate Change Adaptation, the Urban Heat Island effect, and calculations of health burdens from air pollution due to future emissions scenarios. International work includes the establishment of an International Consortium for Urban Environmental Health and Sustainability (Healthy-Polis) (www.healthy-polis.org), which held its first workshop in Manchester in March 2014. A report from this workshop is due to be published shortly.

In partnership with PHE, the London School of Hygiene & Tropical Medicine is leading a National Institute for Health Research ‘Health Protection Research Unit’ in environmental change and health. One focus of their research will consider the prevention of adverse health effects of extreme weather and the evidence gathered will aim to support decision makers to ensure that the health of the UK population is not adversely affected by climate change. Another work stream, led by PHE, is focusing on healthy sustainable cities, with a number of research projects to address how the built environment affects health, and considering the health benefits of sustainable housing and urban planning. The third work stream focuses on the health effects of green spaces, airborne exposures, such as pollen, and the ecology of infectious diseases.

Air pollution

PHE regularly reviews the scientific evidence on the health effects of air pollution and supports the Committee on the Medical Effects of Air Pollutants. In 2014, PHE published a report estimating local mortality burdens associated with particulate air pollution in all UK regions. In addition, a research programme is being developed to evaluate air pollution control measures and potential climate change effects on multiple pollutant health burdens across the UK. The effect of severe weather and air pollution episodes on GP consultations and ambulance response times is being studied using syndromic surveillance data. PHE is currently developing a programme in support of national and local government to reduce the mortality burden of air pollution in England.

Public health outcomes framework indicators

PHE provides a number of indicators relevant to sustainability and climate change adaptation to the Public Health Outcome Framework for England. These include indicators on fraction of mortality attributable to particulate air pollution, excess winter deaths, proportion of NHS organisations with a board approved sustainable development management plan, and utilisation of outdoor space.

NHS England and PHE are collaborating in a series of Regional Sustainability Network workshops bringing together NHS, public health and social care leaders to discuss and share best practice that will deliver the vision and goals of the Sustainable Development Strategy.

Reports from our main sites

Sustainability in the regions

The Specialist Microbiology Services (SMS) comprises a network of laboratories located at strategic sites within England. These sites comprise front line clinical and food water and environmental microbiology laboratories as well as additional specialist laboratory services. There is one exclusively SMS managed site at Myrtle Road in Bristol with the remainder of the laboratories hosted at either NHS, other publicly funded sites, or at PHE Colindale and Porton.

Within SMS, environmental sustainability is managed by an Environmental Sustainability Group, which co-ordinates best practice through sustainability champions who promote PHE policies by raising awareness of mandatory training and e-learning, advocating fuel-efficient travel and the switching off of electrical appliances when not in use, and learning from environmental incidents.

Work continues to introduce environmental considerations into procurement, including the transport and logistics of samples submitted to the laboratories. Transport provision was retendered in 2015 and work is ongoing to minimise overall mileage and reduce transport costs as well as overall carbon usage. Investment has taken place in all regional laboratories for video conferencing as well as ‘Lync’ software to facilitate virtual meetings.

Due to its construction, the Myrtle Road site in Bristol does not benefit from modern energy efficiencies or utility management, and is coming to the end of its expected life. However, short-term investments such as installing thermostatic radiator valves, insulating pipework, using lower energy fluorescent tubes, monitoring utility usage and improving the steam delivery system have been made.

Transport of samples at Bristol PHL has now been outsourced to City Sprint, reducing direct carbon usage for PHE.

Sustainable development in the Health and Wellbeing directorate

Estates

In addition to the movement sensors fitted within all the offices, PHE has rolled out ‘follow me’ printing to reduce paper waste, which will reduce the amount that is recycled. We maintain a high level of recycling across the sites, with recycling points in all kitchens and around the floors over each site.

PHE’s Health and Wellbeing directorate is located mostly in Wellington House and Skipton House. Health and Wellbeing occupy 0.31% of Wellington House and 11.47% of Skipton House. The greenhouse gas profile for the Health and Wellbeing directorate in its London locations is illustrated below.

	Skipton House	Wellington House
Electricity consumption (kWh)*	428392.46	7070.38
Gas consumption (kWh)*	176651.42	2980.71

* Data relate to the 11 months from April 2014 to February 2015

Travel

The national director’s office scrutinises all international travel and approves or rejects as appropriate to ensure suitability and business requirement. Staff are encouraged to walk to meetings wherever possible, or to use public transport for longer journeys. Staff are also encouraged to take advantage of the cycle to work scheme.

Following an internal review of travel, the health and wellbeing senior management team have made a commitment to reduce travel as far as possible, ensuring all staff use the approved suppliers (Redfern Travel) and consider other options for meetings rather than staff always having to travel domestically.

Meetings

A considerable amount of the health and wellbeing directorate's travel is for internal meetings. Senior management has requested that all staff consider location, and technological options before arranging face-to-face meetings that involve domestic travel. Options available to staff are video conferencing, teleconferences and Lync meetings. The roll-out of Lync has enabled cross-site working and increased flexibility for staff.

Catering

Health and Wellbeing has produced catering guidance on behalf of the government that offers practical advice on how to make catering affordable, healthier and more sustainable. This has been updated to reflect changes in that advice. In addition to the guidance, a range of supporting information has been produced, including a toolkit for serving food to older people in residential care, 'Government Buying Food and Catering Services'[2] a nutrition criteria checker tool, information for commissioners, and dietary reference value tool for developing menus. This encourages the use of locally produced ingredients.

The Health and Wellbeing directorate is committed to protecting and improving the nation's health and wellbeing. It is important that we provide healthy catering at our meetings and events, for both staff and stakeholders, which follows our nutrition recommendations. We are therefore rolling out new guidance across PHE and the wider government organisations.

Procurement

All staff in Health and Wellbeing must comply with the procurement guidelines, such as using Calders for accommodation, Redfern for travel, and suppliers which are centrally co-ordinated.

Training and staff

Staff are aware of PHE's mandatory sustainability training, renewable every three years, and this forms part of the training programme offered to staff. Staff are encouraged through our engagement agents to make suggestions on new initiatives. Staff make regular commitments to sustainability, for example by turning off monitors and other IT equipment when not in use.

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[2] See: https://www.gov.uk/government/publications/healthier-and-more-sustainable-catering-a-toolkit-for-serving-food-to-adults

The Health and Wellbeing directorate is represented on PHE's sustainable development programme board and is currently reviewing a range of sustainable developments and their potential wider health benefits, including active travel.

Sustainability in CRCE

The Centre for Radiation, Chemicals and Environmental Hazards (CRCE) has continued to improve in key areas of environmental sustainability despite a challenging year in which budgetary constraints required a major restructure of the centre and the loss of 10% of the workforce (around 40 posts).

Paper use in CRCE

CRCE has been reducing paper usage since 2009/10, in line with greening government targets. The 2013/14 figures are for CRCE Chilton and represent paper bought through the central purchasing function provide by CRCE's facilities section. Focusing provision through the facilities section has further reduced paper usage by 14% for 2014/15 compared to the previous year.

Financial Year	Total reams ordered*	Percentage reduction from previous year
2010/11**	4,500	3
2011/12	4,080	9
2012/13	3,315	19
2013/14	2,910	14
2014/15	2,500	14

* Figures may vary if CRCE UK-wide needs are locally met rather than through Chilton Facilities Section
** Estimated

CRCE maintains a single type of paper for in-house, multi-functional devices and CRCE local printers used by the staff. Paper from the Banner closed-system is 100% recycled and when combined with the closed-loop shredding service offers a comprehensive secure and sustainable provision.

Investment in premises and vehicles

CRCE continued its ongoing investment in high efficiency lighting installation in 2014/15 and energy efficiency will be considered specifically in all refurbishment work undertaken in 2015/16 and beyond. Prioritising Chilton as the largest energy user within CRCE; photovoltaic (PV) electricity capture and solar hot water heating continue to be promoted for capital investment and will be proposed for installation in 2016.

The aforementioned investment in lighting throughout CRCE maintained sites continues and assessment of some LED lighting products has been useful in identifying that some products could introduce health risks, but careful selection of the right products can provide long-term savings. CRCE continues to review the potential health risks from these developing technologies on behalf of other PHE centres as and when their use is being considered.

The Royal Institute of Chartered Surveyors' SKA environmental assessment method to provide benchmark and standard for non-domestic fit-outs has continued to be used to support and guide CRCE laboratory and office refurbishments. The minimum standard achieved is 'silver' with some facilities exceeding this and achieving 'gold' ratings. CRCE awaits RICS' further development of this system for laboratory refurbishments (following representations made by CRCE at the 2014 National S-Labs Conference).

During 2014/15, CRCE also undertook construction work to increase the occupancy footprint of the Thames Valley PHE Centre within the existing Chilton building.

Environmental aspects and impacts

Following a major review in 2011/2012, further improvements in the environmental aspects and impacts recording process were implemented. A further review of environmental aspects and impacts registers will be considered once CRCE has fully implemented the results of the organisation's strategic review.

Training

Environmental training remains a priority and is actively monitored and reported to the CRCE management team. Staff are encouraged to undertake the training through quarterly reports to heads of departments/sections and on 31 March 2015, a total of 279 out of 393 staff had undertaken PHE's sustainability e-learning.

Transport

CRCE continues to monitor travel, by car, public transport and air, on a departmental level. This allows us to challenge expenditure and CO_2 emissions, with the result that both were reduced in 2014/15.

	Cost		Mileage		kg CO_2	
	2013/14	2014/15	2013/14	2014/15	2013/14	2014/15
UK Rail	143,580	124,039	309,343	306,911	28,842	28,543
Domestic Air	19,170	17,518	58,448	50,053	15,699	13,444
Personal Car	72,668	47,768	156,122	103,506	78,675	52,160

Staff are encouraged to make maximum use of video- and teleconferencing options, and training in the use of Lync software has been carried out through CRCE's sustainability champions.

CRCE Glasgow

The former department at CRCE Scotland has been reorganised and the site is now operated between the Operational Services Department and the Radiation Hazards and Emergencies Department. The site will maintain its established environmental management system (EMS) and its ISO 14001 accreditation, and work is underway to ensure adequate control is maintained over the EMS within the new structure.

Sustainability at Porton

PHE Porton is a large operational site with a variety of complex and resource intensive activities. In the last year, both operational and organisational changes have taken place on the site. In mid-2014, the site became heavily involved in PHE's response to the Ebola outbreak. This included the installation of a new training facility to prepare those travelling to West Africa to support the response.

In April 2015, the pharmaceutical manufacturing department on site separated from PHE to become Porton Biopharma Limited (PBL). Although now a separate company, PBL's staff and facilities remain based on the PHE Porton site and supported by PHE. Over the next few years, PHE Porton's operations department

will continue to assist in the design and build of additional facilities to support the expansion of PBL at the site.

The following summary identifies the work and projects that have both progressed and been completed at the Porton site in the last year with the aim of delivering improvements towards PHE's sustainability objectives.

Reducing greenhouse gas emissions from utility usage

In September 2014, work was carried out on the incoming electricity supply to the site, which appears to have damaged the automatic half-hourly meter. Despite several visits and attempted repairs from the representatives of both the supply and network operators, the issue has not yet been resolved. Therefore, since September 2014, PHE Porton has had to estimate its electrical consumption based on previous years. We are currently seeking the possibility of receiving meter readings from the Distribution Network Operator that will represent our supply since September 2014, so the estimates can be reconciled.

Savings programme

Porton's site operations department has developed a programme of energy saving projects that they will investigate, cost and where possible implement over the next five years. Progress on the programme is monitored through monthly progress meetings chaired by the site's environmental manager. Energy saving initiatives that are currently being investigated for trial projects include:

- zero investment PV farm on site
- recycling waste heat from sterilisation processes' effluent discharge to pre-heat effluent to be sterilised
- temperature settings on ultra-low temperature freezers
- night-time laboratory temperature set-back
- chiller coil treatment

Sub-metering

To gain an improved understanding of the electricity usage patterns across the site, between June 2014 and January 2015 more than 50 sub-meters were installed across the site, supported by software to access, analyse and report on the data collected. Once the sub-metering project is fully operational, the information provided (via a 'workplace footprint tracker') will help us to prioritise our energy saving initiatives, measure improvements and apportion utility usage between PHE and PBL.

Voltage adjustment

The site's engineering team has been monitoring the voltage levels on the electricity distributed across the site, and has identified an opportunity to reduce those voltages. In an effort to reduce the energy consumption on site, we have undertaken a pilot project to adjust the voltage down on one transformer by 2.5%. Although the exact saving is difficult to quantify due to the balance of resistive to inductive loads, it should demonstrate a saving on the site's energy usage. The team are now developing a programme to roll out the adjustment across all distribution sub-stations on site.

LED lighting replacement

PHE Porton is rolling out a lighting replacement programme; replacing traditional fittings for LED lighting. In 2014, the lecture theatres, reception areas and a number of communal and office areas were fitted with LED lighting. The savings from these installations will be reported when we have completed our present phase of replacements. Additional monies have been set aside in the 2015/16 capital plan to roll out this project to more areas on site.

District heating feasibility project

PHE Porton works closely with its fellow campus partners, Wiltshire Council and local stakeholders to maximise the benefits of PHE's work in the region. We are pleased to be involved in a Department of Energy & Climate Change-funded project led by Wiltshire Council to assess the feasibility of district heating at the Porton Down campus. PHE Porton has provided information on its heat generation and demand and is awaiting feedback on the results of the study.

Reducing total waste arisings

Site waste management procedures

In June 2014, a new waste management procedure was launched to improve the segregation of waste on site by staff and to ensure compliance with the site's environmental permit for the operation of its onsite incinerator. More than 700 staff on site have been trained since its launch and both segregation and compliance have improved. Improvements to on-site management of waste are expected to continue throughout 2015 with the introduction of a new waste contractor and the exploration of further options for re-use of unwanted equipment.

Reducing water consumption

Water meter installation

To improve information about water usage, we installed 11 additional water meters across the main site. These will help us to establish the priority areas for investigating consumption. The installation of the meters was completed at the end of May 2015 and they are now being linked to our building management system.

Replacement of pipework

Funding has been set aside in the capital programme to replace the main site's ring main and install a water storage tank to provide resilience of our supply (2016/17). Plans have been drawn up to replace/repair much of the steam pipework to mitigate steam leaks. This will reduce our water consumption and save on the energy required to generate steam (ongoing). This work will be combined with an improved planned preventive maintenance regime for steam pipework, which will further reduce leakage volumes. As an example of the potential savings in consumption, a recent steam leak led to the loss of 10 m^3 of water per day.

Recognising sustainability action

In November 2014, PHE Porton's sustainability efforts were acknowledged with a runner-up certificate at the Public Sector Sustainability Awards in the 'green office' category.

Sustainability at Colindale

Investment at PHE Colindale during the past few years has led to reductions in energy use (and cost) and greenhouse gas emissions. To maintain progress, and make savings at the same time as delivering services, we have continued to research government-approved suppliers to provide improved, sustainable services for less cost and with a reduced impact on the environment.

The highlight of the year was being runner-up in the category of the 'most sustainable public sector organisation in health' in the Public Sector Sustainability Awards 2014.

Progress against UK government targets

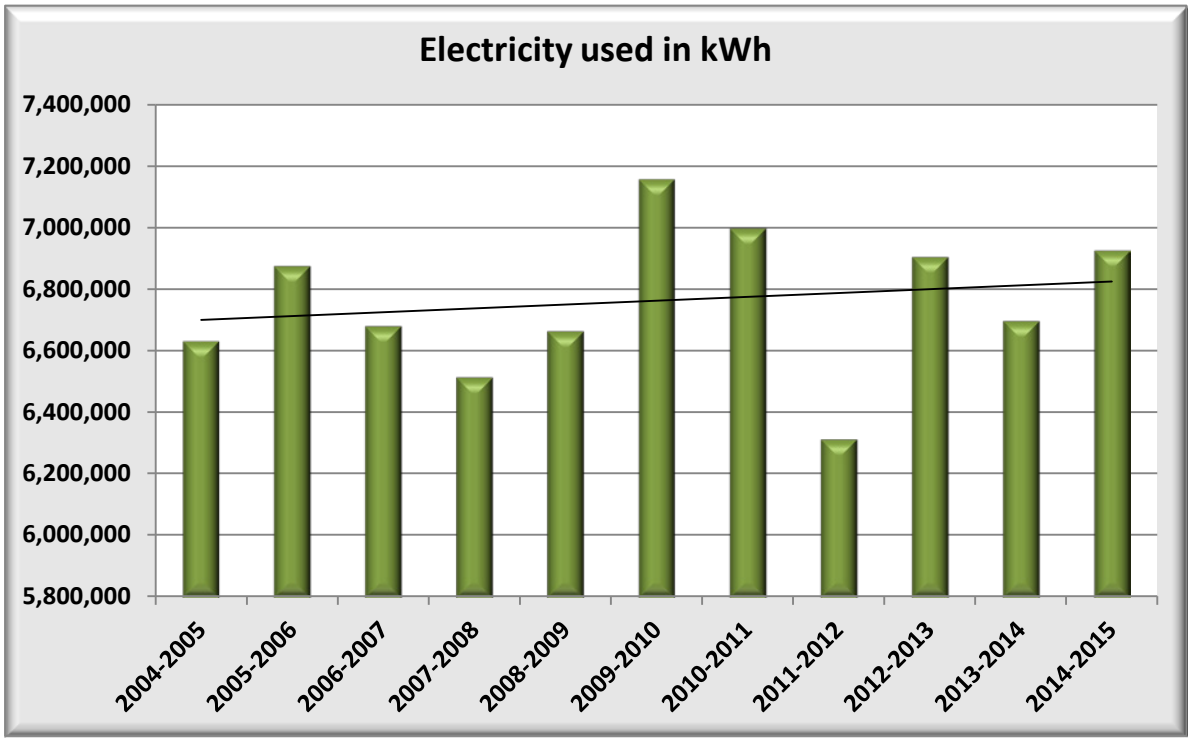
Energy

Target 1: Reduce greenhouse gas emissions from utility usage by 2% on 2013/14

Electrical energy

Energy usage was expected to rise sharply during the year as a new 'controlled environment facility' (CEF) was installed at Colindale towards the end of 2013/14, in order to cool a new data centre. This programme is expected to result in a 27% increase in demand for electrical energy.

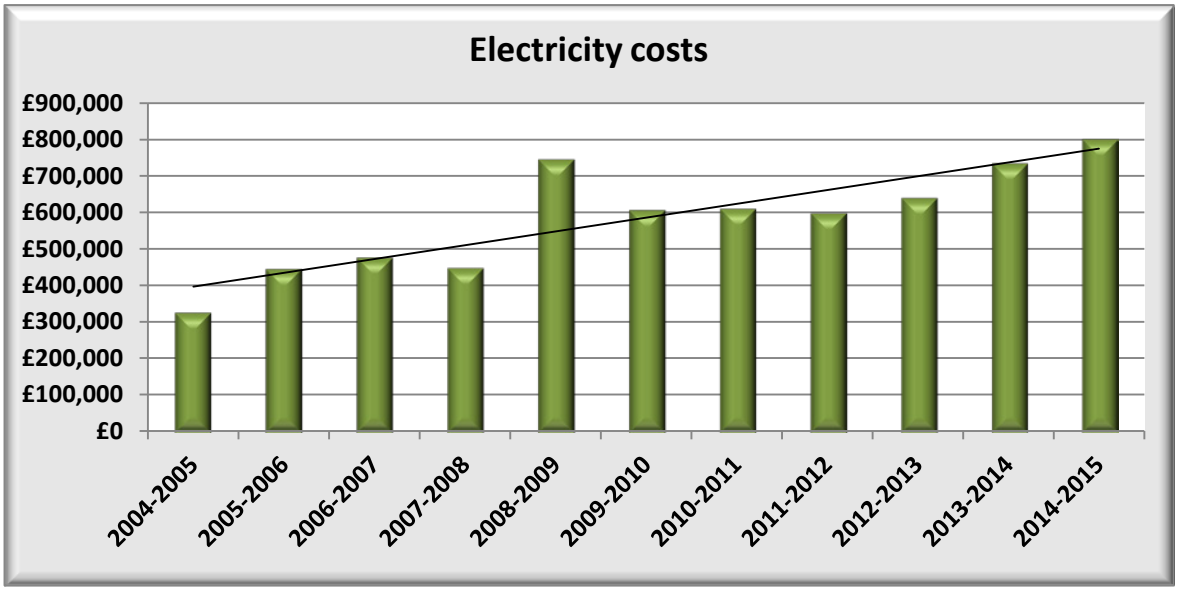
The graph below shows electricity used over the past ten years compared to the government's baseline year of 2009/10 for government targets.



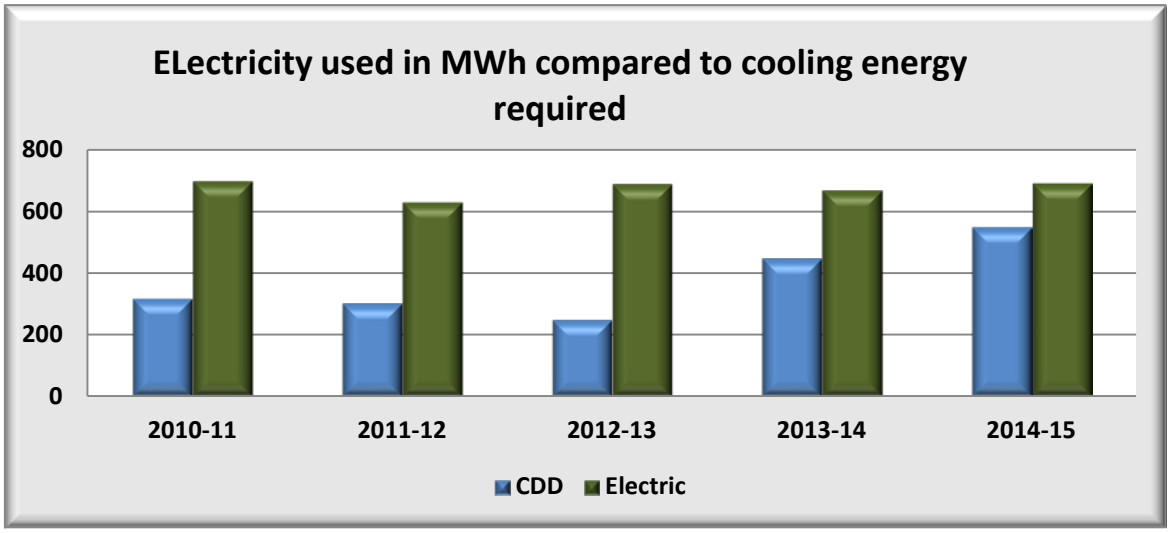
Our electricity use increased by 3.4% between 2013/14 and 2014/15, with an 8.4% increase in cost. Lighting projects to reduce energy usage at Colindale had a substantial impact by offsetting at least 10% of the additional energy used by the CEF. Since 2009/10, the use of electrical energy has decreased by 3.3% although the cost has increased by 24%.

Projects to reduce our use of energy include investment in LED lighting during refurbishments. However, we recognise that an integrated approach is required to sustainability, so business cases include social, environmental and economic impacts in addition to carbon considerations.

The cost of electricity has increased disproportionately over the last ten years, as shown below. Approximately 20% of these charges are due to distribution losses.



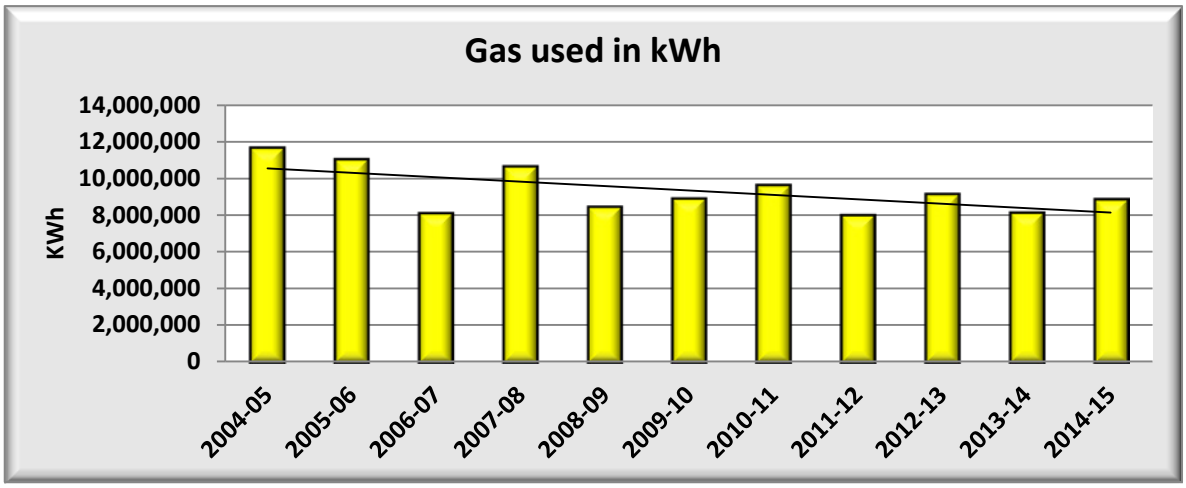
The graph below shows the number of cooling degree days (CDD) measured for NW London by the Meteorological Office, compared to the electricity used in MWh at Colindale.



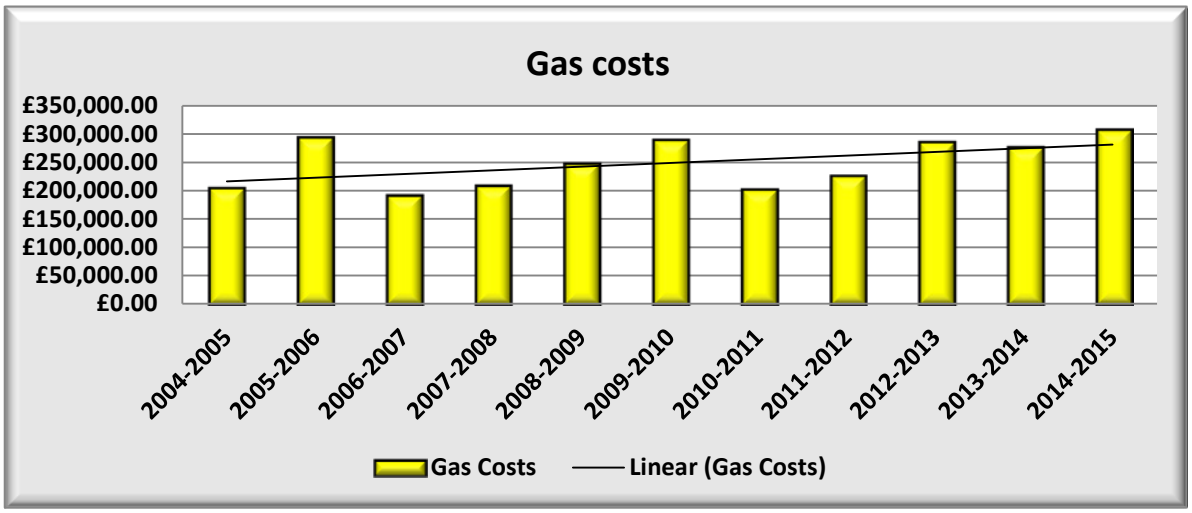
There is a clear indicator that electrical efficiency at PHE's Colindale site is improving as the number of cooling degree days (shown in blue) has increased, as the temperature is clearly rising for longer periods of the day. However, the amount of electricity to complete the function has reduced proportionately.

Gas energy

The graph below shows the use of gas at PHE's Colindale site during the past ten years, with the 2009/10 greening government commitment baseline indicated.

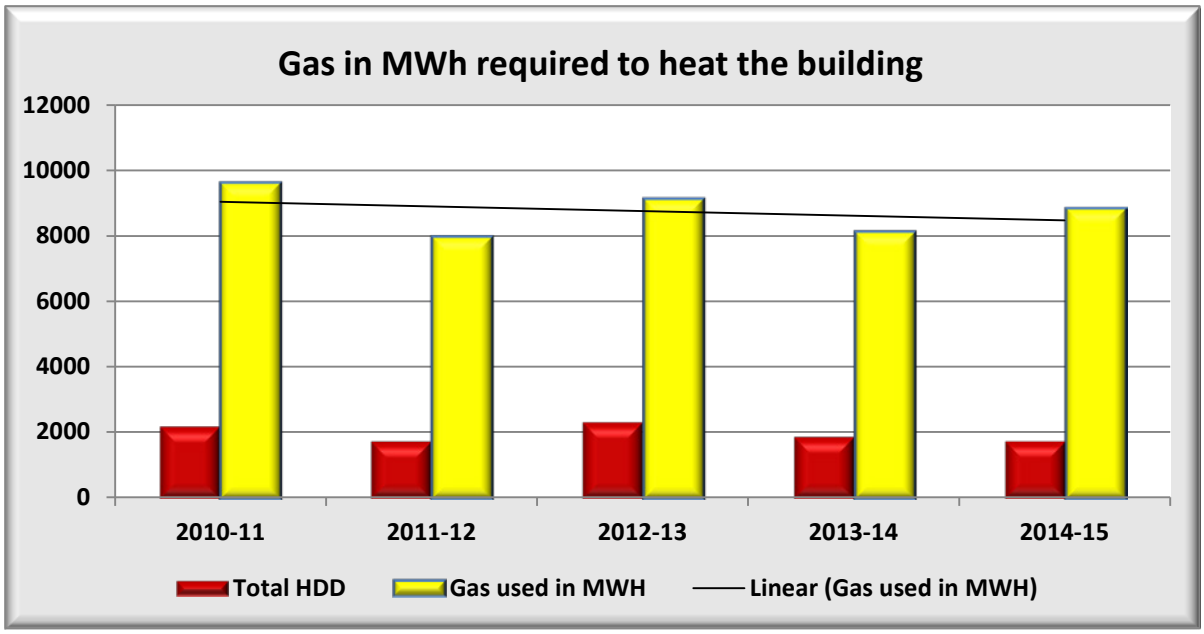


Gas consumption has increased during the past year by 8% although gas usage between 2009/10 and 2014/15 has reduced overall by 1%. Gas is used for steam production in order to heat buildings, to produce hot water, and for sterilization in autoclaves. The graph below shows the overall cost of gas during the past ten years between 2005 and 2015.



The following graph shows the number of heating degree days (HDD) compared to the gas used between 2010 and 2015.

There have been minor changes in gas used during the past five years compared to the number of hours required to heat the building based on the outside air temperature**.** However, wind speeds have increased in the South East and this may have been a factor in the amount of gas used. The buildings will need to become more airtight in order to reduce this impact (see Appendix 1 for graphs of wind velocities across the UK).


Gas in MWh required to heat the building
12000
10000
8000
6000
4000
2000
0
2010-11
2011-12
2012-13
2013-14
2014-15
Total HDD
Gas used in MWH
Linear (Gas used in MWH)

Energy projects completed during 2014/15

PHE Target	Reduce carbon production and greenhouse gases	Capital/ revenue cost (£)	Financial savings (£)	kWh Savings	tCO_2e savings
Replacement lighting to HQ phase I, Offices, Level 2 Corporate Services building	Electric use/m^2	39,600.00	4000	20,304	12.50
Estates corridor and room 1B 34 fluorescent lighting has been changed to LED low-energy lighting with sensors that dim without movement and switch off automatically	Electric use/m^2	15,000.00	403*	2,234	1.00
4C and 3C corridors have had lighting changed as above.	Electric use/m^2	35,000.00	1,342*	7,446	4.00
BMS / Controls upgrades - phase 3	Reduced energy use; reduced maintenance; fewer issues	15,000.00	1,773	22,447	10.00
Upgrading of HVAC mixing boxes for A zone	Electric use/m^2	23,600.00	2,000*	10,000	6.25
Double glazing - Phase 2 (refectory)	Gas use/m^2 of usable area	20,000.00	148*	1,853	0.40
Replacement of perimeter vane convector heater units 1E33 - 38 (Finance & Operations)	Gas use (kWh per year)	39,204.00	2,000*	10,000	6.25

* Financial savings have not always been shown as projects are often holistic and cannot be clearly broken down. Also, projects have been installed at different times of the year.

Waste

Target 2: Reduce overall waste quantities by 2%

Our target is to reduce overall waste quantities by 2% and increase waste that is recycled by 2%. We will do this by:

- cutting paper use by 10%
- using closed-loop recycled paper
- ensuring that redundant ICT equipment is responsibly recycled

Year	Clinical waste	Energy from waste	WEEE	Reuse or recycle	Recycle on-site	Recycle off-site	Totals (kg)	% change
Quantity (kg)								
2011/12	32,537	101,142	15,865	50,590			117,007	
2012/13	58,304	122,420	92,063	60,510			333,297	65%
2013/14	77,970	96,456	14,365	79,920	1,540	4,250	274,501	-21%
2014/15	102,079	90,029	7,496	79,590	5,500	3,844	288,538	5%
Costs £								
Year	**Clinical waste**	**Energy from waste**	**WEEE**	**Reuse or recycle**	**Recycle on-site**	**Reused off-site**	**Total cost**	**% change**
2011/12	23,717	14,408	355	12,638			51,118	
2012/13	78,338	27,187	1,810	20,197			127,532	60%
2013/14	84,566	58,597	2,140	52,633			197,936	36%
2014/15	94,802	22,329	3,639	19,253	0	0	140,024	-41%

Worst disposal — Best – end of life

During 2013/14, there was a sharp reduction in waste of 21%. We have not been able to continue this trend and almost 300 tonnes of waste were produced at Colindale during 2014/15. We have recycled and reused more waste than in previous years, with almost nine tonnes of waste being recycled or reused on site. All ICT equipment was recycled or reused, via a government procurement contract.

Wherever possible, PHE subscribes to the waste hierarchy of 'waste management legislation 2011'. In line with this, we have increased the level of recycling of our non-hazardous waste over the last year.

Recently, the Colindale site has implemented closed-loop recycling for its paper requirements and we expect to realise the benefits of lower cost and lower waste in the coming year. This will help to minimise our level of waste and the emissions associated with paper usage.

Waste projects implemented during 2014/15

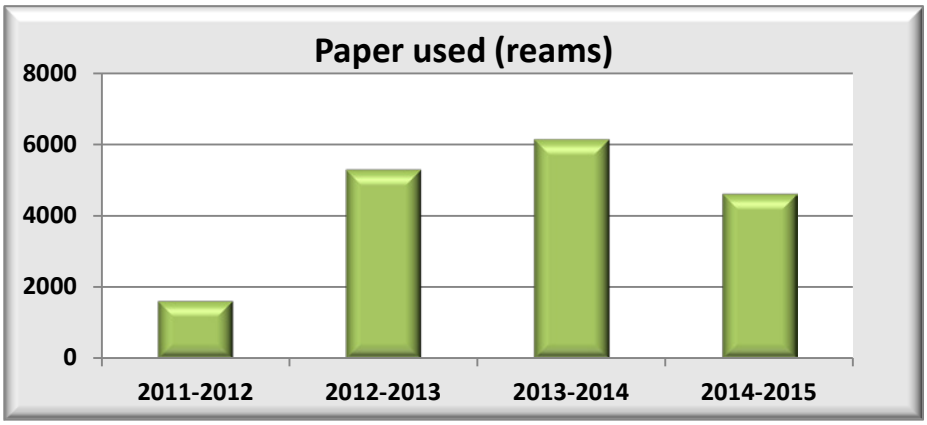
PHE Target	Reduce waste production and increase recycling rates	Project cost	Financial savings £	Waste savings in tonnes	tCO_2e savings
Replace disposable cups with reusable cups in refectory	Using paper waste will reduce waste and waste costs	£521	£2,915	1	8
Replace paper towels with automated hand driers	Paper towel waste produced and electric used.	£0.00*	£3,472*	14	-1.6**
Develop a waste minimisation and management programme with waste campaign	Accurate figures for various waste components.	N/A	£10,000	1	-

*No cost to PHE of installing driers; cost savings relate to savings on waste disposal
**Increase in carbon is due to electricity usage to run electric hand driers

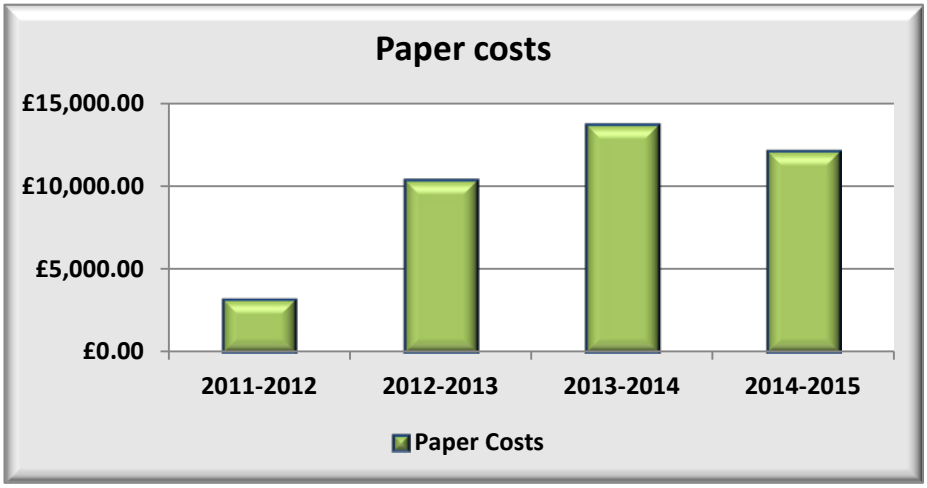
A waste initiative is currently underway to investigate whether Colindale can improve on best practice methodologies by looking into the collection times, container sizes, container types, or altering our environmental permit to identify where further savings can be made.

Paper use

The Colindale site has a target to reduce paper use by 10%. The graph below shows the number of reams of paper used by PHE's Colindale site



Paper use has been reduced by 25% since last year and simultaneously there has been a reduction in costs by 12%.



Water

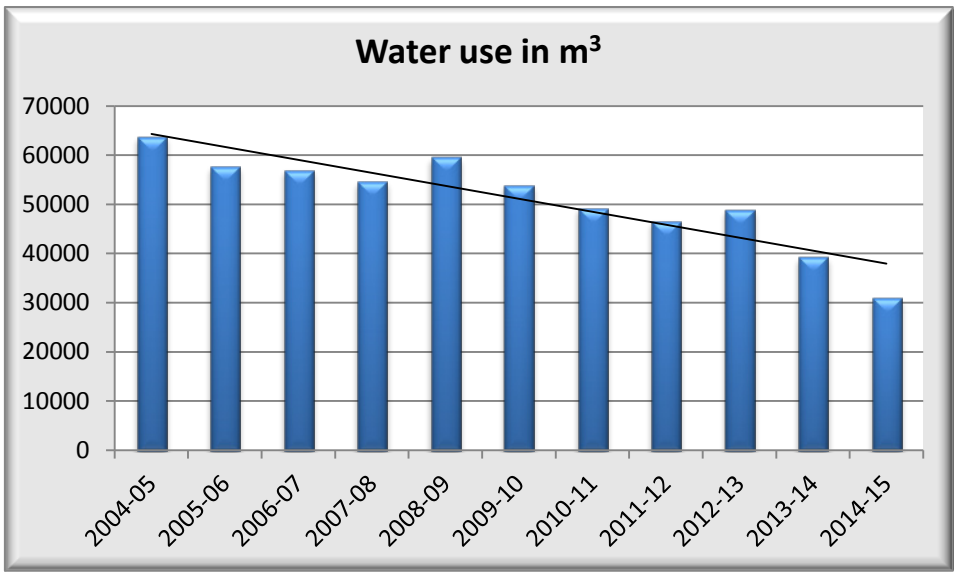
Target 3: Reduce water consumption by 2% annually

Our target is to reduce water consumption from a 2009/10 baseline and report on office water-use using best practice benchmarks:

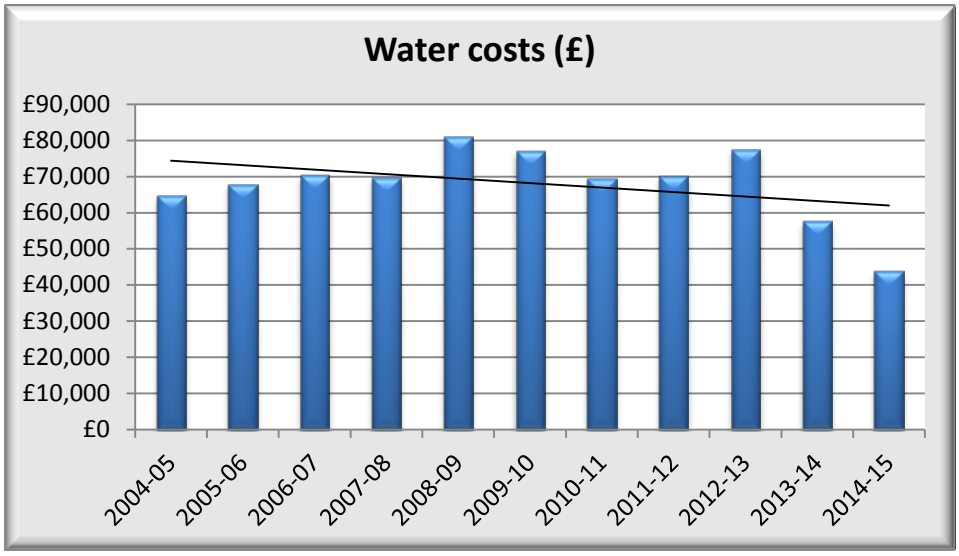
- ≥6m³ water consumption per FTE (Full-time equivalent) poor practice
- 4m³ to 6m³ per FTE good practice
- ≤4m³ per FTE best practice

Where this is not practicable, a target of a reduction of 2% annually has been set.

Water-use has been reduced quite dramatically at Colindale with a 21.2% reduction over the year.



This reduction is due to a combination of an increased use of disposable plastic consumables instead of glass (which require less washing for reuse) and projects such as the installation water-less urinals. Other efficiency projects include changing settings on equipment to improve their usage efficiency and fixing of leaks. This has led to with a substantial cost saving of £13,893.



Water projects implemented during 2014/15

The following projects water-related projects were carried out during the year.

PHE Target	Impact	Project costs (£)	Financial savings (£)	Water saved (m^3)	tCO_2e saved
Water-less urinal	Amount of water used. Quantity of detergent used.	3,500	1,071	750	0.26
Sustainability days	Water use in m^3; (also energy use; mileage; waste produced)	3,000	10,518	3,922	1.34

Procurement

Target 4: Ensure that government buys more sustainable and efficient products and engages with its suppliers to understand and reduce the impacts of its supply chain

In order for Colindale to meet this target, items purchased need to be procured through suppliers that have been assessed as suitable under the government procurement regulations and policy objectives. Colindale uses various means of preparing business cases, but always includes a government-preferred supplier. Throughout the business case, factors such as social and environmental aspects are included to ensure that sustainability is taken into account. Recent sustainable development business cases have included the following.

Sustainable Business Cases	2013/14	2014/15
Closed-loop paper		✓
Disposable versus reusable cups.		✓
Dishwasher for refectory	✓	
Cooker for refectory	✓	
Replace hand paper towels in restrooms to an electric hand-drier		✓
Food waste (1st composter)	✓	
Food waste (2nd composter)		✓
Food waste (wooden composters)		✓
Food waste to water	✓	
Water-less Urinals	✓	

Target 5: To show leadership, all government departments will be open and transparent on the steps they are taking to address the following areas

Climate change adaptation

Steps taken to adapt the Colindale estate to a changing climate include planting more trees to produce more shade and to shield the buildings against the raised temperatures. Trees will also help to protect buildings against harsh winters and reduce the impact of wind. During sustainability promotional days, the impact of climate change has been demonstrated.

Biodiversity and the natural environment

PHE has taken action to promote, conserve and enhance biodiversity by keeping bee hives. However, in spite of tripling their numbers during the year, the colony subsequently died. DEFRA had heard about our success with bees and used our site as a case study (see Appendix 2).

Staff have been encouraged during the year to participate in the ‘allotment group’ and to bring their excess plants from outside to plant on site. As a result, we have many new flowering plants that attract bees and other wildlife. During the summer, a vegetable sale was held in the refectory and we held a competition to guess the weight of the pumpkin. The winner won a cash price and the pumpkin was used by our catering staff to make a pumpkin curry.

Procurement of food and catering services

PHE’s Colindale site has a food forum group that meets monthly to discuss improvements in the catering services, supplied by Catering Academy and EMCOR. This has led to further carbon savings with the additional benefit of nutritional improvements in the staff restaurant. This has been highlighted by signage around the refectory.

Sustainable construction

Contractors are expected to deal with the small quantities of construction waste produced on site to best practice standards, using reputable and licensed carriers who ensure waste is disposed of correctly.

People

Our sustainability programme includes measures to promote staff wellbeing and volunteering. PHE has funded training for 60 members of staff to become mental health first aid trainers. This is aimed at reducing the number of staff sickness days due to mental ill health and stress-related disorders. The training helps managers to identify a person who is beginning to suffer from mental health problems and they can be encouraged to obtain professional help from health practitioners.

Environmental communications

Colindale managers have encouraged staff to volunteer as ‘green champions’ to promote sustainable behaviour in the workplace, such as switching off lights and recycling as much as possible. Overall, the Colindale operations team take a holistic approach to sustainability, embedding it into the site’s environmental management system and periodically holding sustainability days on site to raise awareness. Those who work as green champions participate in these promotional days (see Appendix 3).

Appendices

1. Wind speeds for the six regions of the UK

The graphs show that wind velocity has been increasing in the South East over the past few years and reducing in the rest of the country.

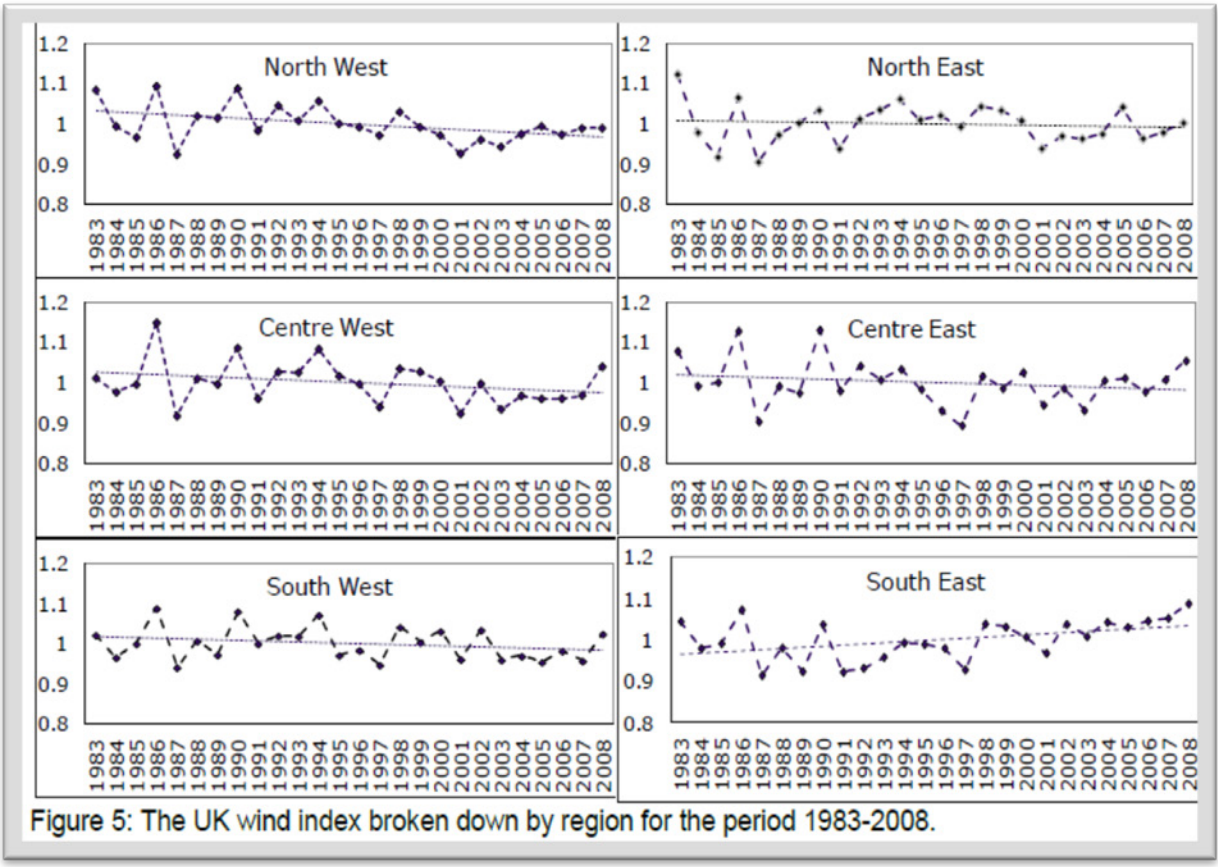


Figure 5: The UK wind index broken down by region for the period 1983-2008.

For more information, see: Simon Watson CREST, School of Electronic, Electrical and Systems Engineering Loughborough University; Petros Kritharas CREST, School of Electronic, Electrical and Systems Engineering Loughborough University (2012) – 'Long Term Wind Speed Variability in the UK'.

2. Case study by Defra on biodiversity at PHE Colindale

Case study: Public Health England site, Colindale

BACKGROUND

In Colindale, northwest London, Public Health England has been exploring the link between pollinators and wellbeing as part of a programme to improve biodiversity on site and the wellbeing of its staff. A 'Health and Wellbeing' programme is being followed across PHE sites and at Colindale they have run a number of talks and events linking wellbeing with the environment from a holistic perspective. They are also a member of NHS Forest, which encourages NHS estates to improve access to green space.

Exploring the wellbeing agenda has led PHE Colindale to make various changes to its land management practices. Three years ago bee hives were introduced to the site and in order to make the area more pollinator-friendly, the bank around the bees was left to grow wild. This wild area includes thistles, ivy, dyer's rocket, and willow-herb, providing food, forage and habitat for both the managed and wild pollinators. In addition, staff were encouraged to bring in any spare flowering shrubs whilst they were preparing their gardens for the summer and these were placed all across the site. This initiative provided additional sources of nectar and pollen and helped raise awareness among the staff as to how to support pollinators.

Second, allotments were introduced on site by several volunteers with the help of the 'Site Services Department'. This became a permaculture area available for staff with limited access to green spaces. Site services constructed raised beds using recycled scaffolding planks and a standpipe was installed to help the watering programme. Through money raised at sustainability events, they were able to purchase hose pipes, tools, a greenhouse, seeds, compost and other items required to run allotments. A variety of plants are grown including 24 tomato plants grown to 4feet high, squash, various herbs, raspberries and strawberries.

PHE holds regular sustainability days, highlighting the work that has been done on the Colindale site and how this has increased habitat for pollinators.

SUCCESSES

Now, the numbers of wild and managed pollinators on the site has visibly increased and according to the PHE beekeeper, the bees hives are in the best condition. After losing bees in the previous two years, the remaining hive is thriving with vast quantities of honey which is being sold to staff members.

CHALLENGES

LOOKING AHEAD

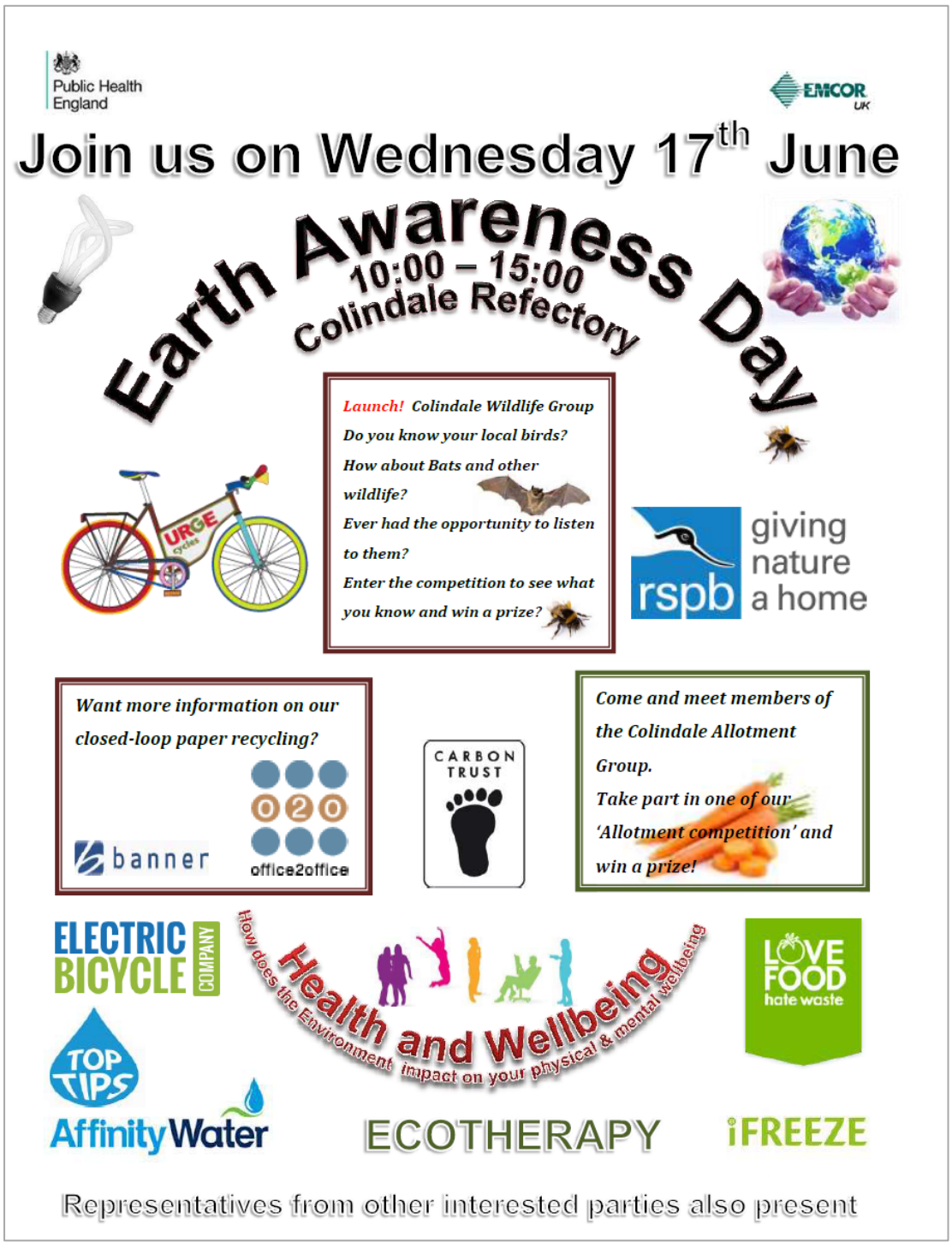
With the money generated from the sale of honey, the site beekeeper is planning to purchase further hives.

[Type text]

Top tips:

- **Allow areas to become wild even when there is a temptation to tidy the landscape**
- **If you keep bees, be prepared to feed them during spring to ensure that they do not have to venture out during unpredictable weather**

3. Advertisement for one of the sustainability days held at Colindale



Management and governance

PHE has taken steps to improve reporting and knowledge of the social, environmental and financial impacts of PHE's operations. A Sustainable Development Programme Board was established to oversee our work on sustainable development and to help formulate and coordinate advice to local authorities when required. PHE continued to work with the Sustainable Development Unit on the implementation of the public health and social care sustainable development strategy. Work has also continued on delivering health advice about a changing climate through PHE's commitment to the national adaptation programme.

PHE was highly commended in the 2014 Public Sector Sustainability Awards for its work on travel reduction, and the greening of its office and laboratory estate. Three members of staff were also commended.

Sustainable Development & Environmental Management Group

Carbon emissions and associated activities are managed through the Sustainable Development & Environmental Management Group, which reports to PHE's Sustainable Development Programme Board. Membership in 2014/15 was:

Steve Owens	Head of Sustainable Development
Angie Bone	Climate Change & Extreme Events
Alyson Gibbens	Centre for Radiation Chemical & Environmental Hazards
Peter Gidman	Head of Estates
Brigitte Guile	Environmental Manager, Colindale
Peter Hammond	Head of Security & Sustainability
Jim McLauchlin	Microbiology Services (Laboratories)
Karen Martin	Sustainability Coordinator
Lizzy Staincliffe	Environmental Manager, Porton
Moira Thompson	Procurement

The following people also served on the group during the year:

Anna Crossley	Climate Change & Extreme Events
Alison Finn	Procurement
Natalie Glover	Operations Directorate (and regional lead)
Colin Hawkins	Chief Knowledge Officer Directorate
Peter Jackson	Specialist Microbiology Network
Jessica Jubb	Operations Directorate (regional lead)
Chris Smith	Procurement