Public Health England

Protecting and improving the nation's health

Sustainability in Public Health England 2014

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 annual report on sustainability, describing the work we have undertaken over the last year and a half.

The scientific evidence is now clear that our climate continues to change more rapidly than before, as confirmed by a report issued this year by the Intergovernmental Panel on Climate Change. This brings many challenges and raises the question of what PHE can do to respond to this threat. Our work is aimed at making people's lives better and we work with many others across the health sector to achieve this. We have a significant programme on climate change and extreme events. We have also advised on the health impacts of such events and helped other countries cope with devastating natural disasters arising from them.

In relation to our own activities, we continue to monitor PHE's effect on the environment. Understanding how we can mitigate our impact is an important factor, for example by putting in place interventions to minimise our use of resources such as electricity, gas, oil and water. Our waste minimisation programme also continues apace, with our aim to send no waste to landfill.

In the last year we have introduced videoconferencing via Lync,™ reducing our need to travel for face to face meetings. When we must travel, we endeavour to use public transport wherever possible, We have also developed a number of health initiatives, with associated co-benefits for our staff, such as encouraging more cycling and walking to work, and provision of healthier food options in our restaurants.

As healthcare professionals ourselves, we must lead by example and do everything we can to reduce our own impact on the environment, thus realising the co-benefits that a healthy environment has for everyone.

By embedding sustainability into our daily lives we can create a healthier workplace for our staff, continue to drive down our carbon footprint and bring a greater clarity of understanding about the environment in which we live.

Dr Paul Cosford
PHE National Executive Lead for Sustainability

Executive summary

PHE's first year of operation closed in April 2014 and for carbon reporting principles, forms our baseline year. Sustainability is an important part of our work and our chief executive Duncan Selbie gave a message of support on behalf of the UK health sector to a recent UN climate change meeting:

> *'We know that how we act today has an impact on the future, and we're taking that extraordinarily seriously. We know there's a lot to do, but we are committed and we are accountable for making sure that our plan gets implemented.'*

We believe it is important to lead by example and this report details our work relating to sustainable development. It 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 our work on other aspects of sustainability, such as health and wellbeing and the health effects of climate change.

Our total carbon emissions for 2013/14 were 26,161 tCO_2e. This footprint comprises our reportable (owned) estate and non-reportable sites (those facilities that are being reported separately by the landlord or host Trust).

In order to meet our obligations under the greening government commitment, we have set in place a number of carbon reduction targets. Our strategy is set out in our sustainable development management plan. We have introduced the following targets, compared to our baseline year of 2013/14:

- to reduce our overall carbon emissions by 3% annually
- to reduce business travel by at least 2% annually
- to reduce water consumption by 2% annually
- to reduce our total waste by 2% annually

Energy use accounts for the largest part of our carbon emissions. Those from natural gas usage in the first two quarters of 2014/15 have fallen by some 18% compared to the same period last year, notwithstanding a predictable variance between the seasons.

In 2013/14, our reportable estate used 172,000 m^3 of water, with a further 17,350 m^3 being used by our non-reportable sites. We have a number of

projects underway to reduce water usage, and anticipate further savings in the current year.

In 2013/14 we produced 941 tonnes waste. After introducing a rigorous programme to minimise waste, the amount sent to landfill has been reduced by 25%. Of our ICT waste, 100% was reused or recycled. We also diverted waste to other uses (including to 'energy from waste') and expect to make further savings in the future, with an ultimate target of zero waste to landfill.

To meet our travel commitments, our staff are encouraged to travel only when necessary and when they must travel, to use the most sustainable modes of transport. Air travel produces the highest carbon footprint and reducing domestic air travel is a government priority. Our latest figures indicate a fall in domestic air travel of about a third. During 2013/14, our staff travelled almost 9,350,000 km by train. Train travel has also been projected to increase by some 12% over the coming year, in part through encouraging staff to travel by train instead of by car. Where car travel cannot be avoided, staff are encouraged to use hire cars, saving not only on carbon emissions, but also significantly reducing financial costs.

To help our staff understand their obligations concerning sustainability, and the necessity to reduce our carbon impact, we provide a sustainability e-learning training course, which all staff are required to undertake on a three-year cycle.

PHE continues to strengthen its commitment to green procurement initiatives, utilising the government approved 'CAESER' software tool with our suppliers.

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 which are relevant to sustainability.

We have also contributed to the UK Climate Change Risk Assessment (CCRA), and have submitted evidence for the next assessment in 2017. This obligation was born out of the Climate Change Act (2008) which requires government departments to *'report on how they assessed the risks of climate change to their work, and what they are doing to address these risks'*.

Introduction

PHE came into being on 1 April 2013 and the first year of its operations comprises its baseline year in relation to its carbon footprint and its commitments under the greening government initiative. As PHE was created by combining a number of other organisations and departments, it is not possible to correlate this directly with carbon data from the original sender bodies. Many of these were embedded organisations and did not gather sufficient data for this to be reliable. Moreover, PHE is a very different organisation to any of its precursors and direct comparisons would therefore not be appropriate.

The meaning of sustainable development has evolved over recent years and it no longer relates only to the management of those activities which impact directly on the environment, such as carbon and other greenhouse gas emissions. Although these remain an important focus (particularly in relation to the greening government initiative and targets agreed internationally by the UK under the Kyoto agreement[1]) in July 2013, the government published its response to a new set of sustainable development indicators. These provide an overview of national progress in the UK towards a more sustainable economy, society and environment.[2]

Sustainable development in PHE

During the 2014 United Nations Climate Summit in New York in September 2014, the health sector in England was the first such group globally to issue a collective statement of intent to deliver climate friendly services. The Cross System Group joint statement[3], which was issued at the Climate Summit on 23 September, was the first example of one country's health sector committing to combat climate change together.

1 *Kyoto Protocol Summit* – Report of the UN World Summit on Sustainable Development (2002).
2 Sustainable Development Indicators: DEFRA, 2013. See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223992/0_SDIs_final__2_.pdf
3 UN Climate Summit, 23 September 2014; Collective Statement of Intent. See: http://www.sduhealth.org.uk/news/307/un-climate-summit--cross-system-statement/

Sustainability is an important part of PHE's work and our chief executive, Duncan Selbie, gave a message of support to this collective statement,[4] speaking on behalf of the UK health sector:

> *'We know that how we act today has an impact on the future, and we're taking that extraordinarily seriously. We know there's a lot to do, but we are committed and we are accountable for making sure that our plan gets implemented.'*

We believe it is important that we strive to lead by example. This report presents PHE's work relating to the way in which we behave as an organisation and outlines our carbon management, particularly in relation to the impact we have through greenhouse gas emissions, use of energy and water, production and management of waste, and the travel we undertake for business purposes.

There are many strands of work in PHE which encompass our work on sustainable development. These include:

- understanding the science relating to climate change and health
- supporting adaptation to the impact of climate change upon health
- advocacy on matters associated with climate change and the impacts on health, as they are affected by national policy
- helping to implement changes at the front line, by translating behaviours into actions
- helping to ensure that the public health system in the UK leads the way in matters relating to sustainability
- ensuring that PHE continues to meet or exceeds its obligations under the greening government commitment, and leads by example as a sustainable organisation

We will continue to build on the work we inherited in relation to our carbon reduction programmes and strive to reduce further our impact on the environment in which we live, through more efficient use of energy, reduced travel and by minimising our carbon footprint while still delivering the required level of service and support to our partners, to government and to the community.

4 See https://www.youtube.com/watch?feature=player_embedded&v=uWzsPax26N0

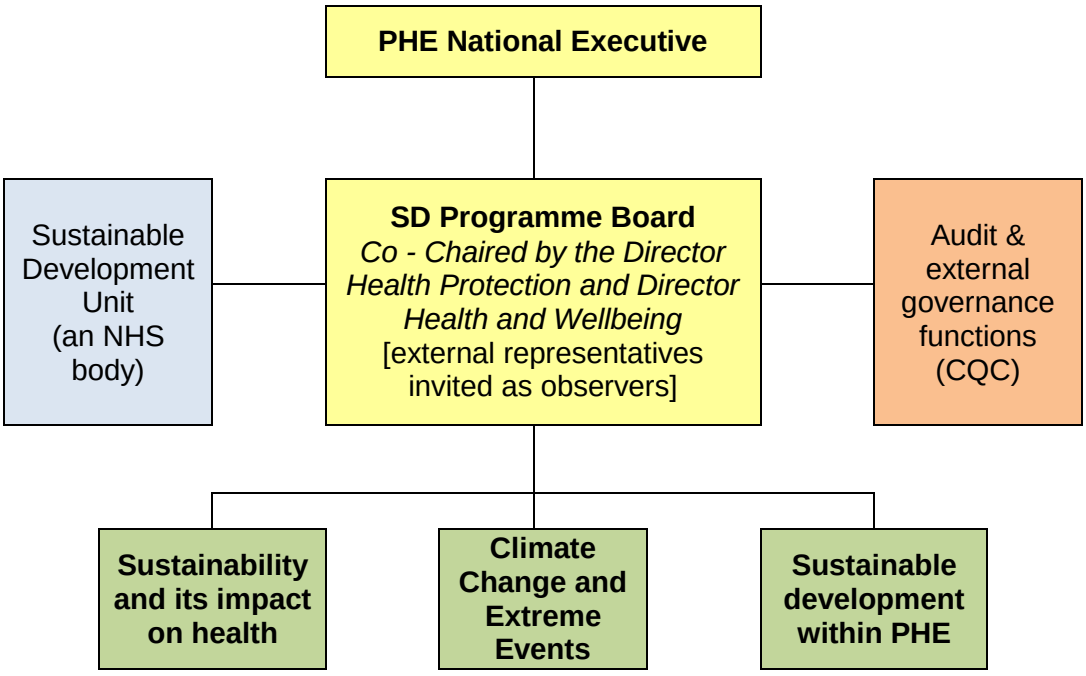
Governance

Sustainable development in Public Health England (PHE) is coordinated via a programme board which reports to the National Executive. This group also interacts with the Sustainable Development Unit (SDU) of the NHS and with other external bodies, such as those with governance or audit functions relating to our operations. This is supported by a number of operational units which provide a focus for three principal areas of sustainable development in the organisation.

Work on sustainability and its impact on health is coordinated within PHE's Health and Wellbeing Directorate, which works with organisations such as local authorities to deliver agreed objectives.

Work on climate change and extreme events is coordinated by a separate programme board within the Centre for Radiation, Chemical & Environmental Hazards division, and includes work on the National Adaptation Plan.

Finally, sustainable development within PHE, including carbon and energy management and our work to reduce our business travel footprint is managed through a Sustainable Development & Environmental Management Group.



The sustainable development programme board is co-chaired by the Director of Health Protection and Medical Directorate and the Director of the Health and Wellbeing Directorate. This ensures that sustainability is on the agenda at the highest level of the organisation and matters can be raised at PHE's national executive as appropriate.

PHE is the expert national public health agency that fulfils the Secretary of State's statutory duty to protect health and address health inequalities, to promote the health and wellbeing of the nation. Sustainability is an important part of our work in achieving this

Sustainable development in health and wellbeing

A sustainable health system based on prevention 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 all have adverse health effects). It there were fewer people leading unhealthy lives, the burden of demand on the health system would reduce, which in turn could reduce its carbon footprint and lead to us living within acceptable environmental limits.

The 'Healthy People, Healthy Places' Programme's Vision Statement is:

> *'A future where everyone, wherever they live, is able to live, work and play in a place that promotes health and wellbeing, sustains the development of supportive and active communities and helps reduce health inequalities. In short, ''Healthy places to grow up and grow old in'.*

Although there are challenges in supporting behaviour change to a healthier lifestyle, reflecting on the wider determinants of health across sectors, through sustainable approaches, is key. Engagement with builders, planners, developers, local authorities and the public regarding transport and sport and leisure infrastructure, outlining the scale of change needed for positive social transformation, is a vital step for sustainable development in health and wellbeing.

PHE supported the following guidance and evidence during 2014.

1 The Department for Communities and Local Government's National Planning Practice Guidance (NPPG), published in March, on the important links between health and town planning. The framework provides encouragement for public health teams and planning departments within local government to work together in developing healthier communities.

2. University College London Institute of Health Equity, with PHE, produced a series of evidence reviews published in September 2014. Briefings on health inequalities were also published and together, these create a practical resource for public health professionals to use

in their work. The documents demonstrate the effective, practical local actions that can be taken on a range of social determinants of health, of which two reviews are very relevant to sustainability.

a) Fuel poverty and cold home-related health problems[5] demonstrates that insulation reduces CO_2 emissions; reduces fuel poverty and increases income; improves resilience to cold and hot weather; reduces excess seasonal deaths and health inequalities; and promotes health and well-being.

   The associated *Evidence Review 7* and its summary briefing note[6] examine the evidence relating to the impact of fuel poverty on health and health inequalities (cold home-related health problems) and set out some areas for action.

b) Green spaces and open spaces increase cooling in heat-waves; aid flood absorption; improve air quality, including reduced CO_2; improves mental wellbeing; and increases safety, social cohesion and activity levels.

   The associated *Evidence Review 8* and its summary briefing note examines the evidence relating to the impact of Green Space, and the report on Natural Solutions to Tackling Health Inequalities[7] highlights evidence of the benefits of the natural environment to health outcomes, in particular for those communities of people with the greatest need. It identified large variations between local authorities in the proportion of people using green space for health and exercise.

3. Physical activity through active transport - walking and cycling reduces CO_2 levels, reduces obesity, improves mental wellbeing and social cohesion, and reduces air pollution. PHE launched the Everybody Active, Every Day framework[8] and this was followed by What Works[9]

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5 See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/357409/Review7_Fuel_poverty_health_inequalities.pdf

6 See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/355790/Briefing7_Fuel_poverty_health_inequalities.pdf

7 See: http://www.instituteofhealthequity.org/projects/natural-solutions-to-tackling-health-inequalities/natural-solutions-to-tackling-health-inequalities.pdf

8 See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/366112/Framework_23_Oct.pdf

(in October 2014), an evidence-based approach to increase physical activity in local communities.

The implementation and evidence guide highlights the cost to the UK with the current trajectory of lack of physical inactivity being unsustainable. This report makes it clear to those of us who are not active enough that there is a risk of developing a series of conditions: depression, dementia, obesity, heart disease, cancer and more. One in four people in the UK are classed as 'inactive', that is they do less than 30 minutes activity a week. PHE developed a summary of the tools[10] that make the case for investment, and of the guidance on what local authorities and commissioners can do. PHE will also publish a definitive review of the return-on-investment data (in costs to the NHS and wider costs to communities) explaining the origin, components and robustness of figures.

PHE provides evidence about different dimensions of health and the built environment, and tools to inform local good practice and supports better frameworks for evaluation of infrastructure and built environment interventions, to help develop the evidence base. PHE is also developing capacity within the local public health workforce and those in spatial planning, housing and transport planning, to maximise the impact of health and wellbeing from their work, for example through secondments and joint training.[11, 12]

Through the Healthy People and Healthy Places initiative, PHE supports the health and wellbeing of the nation by embedding sustainable development actions. Sustainable development aligns with addressing the health inequalities ethos by investing in the synergies and co-benefits of promoting personal wellbeing, such as social cohesion and inclusion, and creating equal opportunity.

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9 See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/366113/Evidence_layout_23_Oct.pdf

10 PHE(2014) Summary of online tools for obesity and physical activity. See: http://www.noo.org.uk/securefiles/141105_1131//online_tools_briefing_300914_FINAL.pdf

11 Department of Health (2014) Healthy lives, healthy people: update on the public health workforce strategy. See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324989/workforce_strategy.pdf

12 Ross A, Chang M (2013) Planning healthier places: Report from the Reuniting Health with Planning project. London: Town and Country Planning Association. See: http://www.tcpa.org.uk/data/files/Health_and_planning/Health_Phase_2/Planning_Healthier_Places.pdf

Climate change and extreme events

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[13] (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 of the UK CCRA, and has submitted evidence for the next risk assessment in 2017.

National Adaptation Programme

The National Adaptation Programme[14] (NAP) was published in July 2013, as a response to the UK CCRA. This 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:

- 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

- 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.

13 See: http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15747#RelatedDocuments

14 See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209866/pb13942-nap-20130701.pdf

PHE's own internal NAP steering group brings directorates together to agree how PHE may best contribute to the NAP, to highlight opportunities for cross directorate collaboration, to share knowledge, and identify and address research gaps. A PHE-wide two-day workshop to explore PHE's role in the NAP was held in February 2014 and a report from this workshop is due to be published shortly.

A report on how the health and care system is adapting to climate change has been requested by government under the Adaptation Reporting Power (ARP) component of the Climate Change Act (2008). This report is due for submission in May 2015 and is being coordinated by the Sustainable Development Unit with the support of PHE, NHS England and further organisations relevant to the health & care system.

Heat-wave and cold weather plans

The UK CCRA identified the health impacts from heat and floods as among the most significant. PHE coordinates the cross-system Heat-wave Plan for England[15] and Cold Weather Plan for England.[16] 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 improving home insulation and promoting urban green space can have wider benefits on helping to reduce carbon emissions and improving physical and mental health.

National Flood Emergency Framework

The National Flood Emergency Framework[17] 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.[18] Outputs of the 3-year project (2011-2014) Public Health Adaptation Strategies to Extreme Weather Events (PHASE) include a user evaluation of flood health advice materials and a health register protocol for floods to be published shortly. Following the

15 See: https://www.gov.uk/government/publications/heatwave-plan-for-england
16 See: https://www.gov.uk/government/publications/cold-weather-plan-for-england-2013
17 See: https://www.gov.uk/government/publications/the-national-flood-emergency-framework-for-england
18 See: https://www.gov.uk/government/collections/flooding-health-guidance-and-advice

extensive flooding of winter 2013/14, PHE is undertaking a prospective cohort study to determine the medium to long term effects of flooding on mental health. 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.

Health effects of climate change

PHE has developed a research programme to assess the health effects of climate change in the UK.[19] Recent publications include assessment of the mortality impacts of hot and cold weather in the UK[20] and in other countries as well as modelling of the urban heat island effect.[21] 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, known as Healthy-Polis,[22] 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 (NIHR HPRU) in Environmental Change and Health.[23] 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 focusses on the health effects of green spaces, airborne exposures, such as pollen, and the ecology of infectious diseases.

19 See: http://www.hpa.org.uk/hecc2012
20 See: http://ehp.niehs.nih.gov/1307524/
21 See: http://onlinelibrary.wiley.com/doi/10.1002/qj.2452/abstract
22 See: http://www.healthy-polis.org
23 See: http://blogs.lshtm.ac.uk/news/2014/05/07/new-climate-change-research-partnership-launches/

PHE regularly reviews the scientific evidence on the health effects of air pollution and supports the Committee on the Medical Effects of Air Pollutants[24] (COMEAP). In 2014, PHE published a report estimating local mortality burdens associated with particulate air pollution[25] 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.

The Adaptation Sub-Committee (ASC) of the UK Climate Change Committee provides independent advice on preparing for climate change in England. As part of a series of publications ahead of the ASC's first statutory report to Parliament in July 2015, PHE teams contributed to their report *Managing climate risks to well-being and the economy*[26] and were commissioned to assess indicators in health and emergency planning[27] under four sub themes: overheating; emergency planning; social equity; and other climate-related risks to health. PHE provides a number of indicators relevant to sustainability and climate change adaptation to the Public Health Outcome Framework for England.[28] 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, utilisation of outdoor space.

PHE has contributed to technical reports for the Living with Environmental Change (LWEC) report card for health. These climate change impact report cards are a quick, easy-to-use, and pull-together the latest evidence on climate impacts. They are useful for policy advisors, ministers, local authorities and decision-makers at any level of society/organisation.

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

24 See: https://www.gov.uk/government/groups/committee-on-the-medical-effects-of-air-pollutants-comeap
25 See: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf
26 See: http://www.theccc.org.uk/wp-content/uploads/2014/07/Final_ASC-2014_web-version-4.pdf
27 See: http://www.theccc.org.uk/wp-content/uploads/2014/07/4-2014-03-31-health-and-emergency-planning-indicators-final.pdf
28 See: http://www.phoutcomes.info/

goals of the sustainable development strategy.[29] The first of these workshops was held by the south region sustainability network on 1 October 2014 with further workshops proposed in other regions.

Over recent winters, Britain has seen significant problems related to flooding

29 See: http://www.sduhealth.org.uk/policy-strategy/engagement-resources.aspx

Carbon management in PHE

PHE's overall carbon footprint is complex and arises from a number of areas of the business which cannot easily be compared with other organisations. For example, although much of the estate is office-based, a significant proportion includes laboratories; the PHE estate at Porton also includes manufacturing facilities, which is unusual for government. Some of the targets in the greening government commitment, such as those for water usage, therefore cannot be directly applied to PHE facilities as these targets relate to office estate only.

In order to address this, PHE has developed a number of carbon related reduction targets for its estate. These include utility use, business travel, water consumption and total waste arisings. Monitoring processes have been put in place to allow PHE to evaluate and develop reduction strategies to meet these targets and these in turn, will facilitate year on year comparison in the future.

To allow meaningful metrics to be developed, in addition to measuring our total carbon footprint, data are considered in terms of tCO_2e (tonnes of CO_2 equivalent) per m^2 net internal area for our estate, and tCO_2e per headcount for emissions related to our business travel.

Many of PHE's facilities include laboratories and its estate is not easy to compare directly with other office-based government departments

Managing the PHE estate

PHE's Property Asset Management Board approved the PHE estates strategy on 18 September 2013. This will guide property decisions taken during the period 1 April 2013 to 31 March 2018, ensuring that the estate remains fit for purpose, whilst allowing sufficient flexibility to respond to the developing requirements of the organisation. The vision for the estate is:

> *'To have the right property of the right standard, in the right place, at the right time, at the right cost'*

Thus, our activities and staff will be supported by an estate that is integrated, flexible and resilient, and which is both sustainable and represents value for money. In support of the vision, we have identified the following aims for the estate strategy:

> *'To have a core of efficiently used, flexible property, housing modern, high-tech facilities, meeting environmental standards and changing business needs, which provide healthy, secure and safe, productive places for our people to work.'*

In order to deliver the vision and aims of the estates strategy, PHE has set itself a number of objectives. In addition to endorsing PHE's overall sustainability objectives, the estate strategy states:

> *'Subject to achieving value for money, new buildings and major refurbishments to achieve a BREEAM 'excellent' rating, and all other refurbishments to achieve a BREEAM rating of 'very good', unless it is more appropriate to use the Royal Institute of Chartered Surveyors' 'SKA assessment' method – in which case, a refurbishment should achieve a minimum SKA rating of silver.'*

These values and objectives will apply not only to our existing estate, but also to any new premises into which we move, whether these are properties where we are tenants, or properties which we own.

Reporting initiatives

Greening government

The *greening government* initiative sets out four areas of commitment.

1. To reduce greenhouse gas emissions by 25% from a 2009/10 baseline from the whole estate and business-related transport

    a) reduce carbon emissions from central government offices by 10% in 2010/11 and all ministerial HQs to publish online real time energy use information
    b) reduce domestic business travel flights by 20% by 2015 from a 2009/10 baseline.

2. To reduce the amount of waste generated by 25% from a 2009/10 baseline

    a) Cut our paper use by 10% in 2011/12

    b) Informed by a feasibility study to be published in 2011, government will go to market with a requirement for 'closed loop' recycled paper in 2011

    c) Ensure that redundant ICT equipment is re-used (within government, the public sector or wider society) or responsibly recycled

3. Reduce water consumption from a 2009/10 baseline, and report on office water use against best practice benchmarks[30]

    a) ≥6 m^3 water consumption per FTE poor practice

    b) 4 m^3 to 6 m^3 per FTE good practice

    c) ≤4 m^3 per FTE best practice

30 For non-office water use departments will be expected to set their own water reduction targets, focusing firstly on areas which are subject to water stress. Many PHE sites are laboratory-based facilities and the greening government targets for offices cannot be easily applied.

d) % offices meeting best/good/poor practice benchmark.

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

   a) Embed the government buying standards in departmental and centralised procurement contracts, within the context of government's overarching priorities of value for money and streamlining procurement processes

   b) Improve and publish data on our supply chain impacts, initially focusing on carbon, but also water and waste – setting detailed baselines for reducing these impacts.

The Carbon Reduction Commitment Energy Efficiency Scheme

The government's Carbon Reduction commitment Energy Efficiency Scheme is a mandatory scheme designed to improve the energy efficiency of organisations and to drive down carbon emissions in both the public and the private sector. It is divided into a number of phases and participation is mandatory if the necessary qualifying criteria are met. The initial phase of the CRC scheme was based on the usage of electricity in the qualifying year of 2008; all organisations with at least one meter settled on the half-hourly market and using at least 6,000 MWh of electricity through these meters, or through dynamic supplies, became mandatory members of the scheme.

PHE as a newly created body from 1 April 2013 did not exist during the qualifying period for Phase 2 of the Scheme. The Environment Agency has therefore agreed that PHE will not be required to become part of the CRC scheme until Phase 3 begins in 2019. Although we will maintain appropriate data in the intervening period, we will review our energy usage (and any other qualifying criteria) in 2018/19, to determine whether we qualify to become a member of this mandatory scheme at that time. We will therefore continue to gather data and work to further reduce our carbon footprint, minimising our energy consumption and the associated emissions wherever we can.

HM Treasury reporting

All organisations required to produce an annual report and accounts under the government's Financial Reporting Model (FReM) have been obliged since 2012 to include a full report on their carbon emissions in their annual report. This requirement is aligned with the greening government commitments guidance, applicable to central government bodies, to ensure consistency and with the ambition to develop a single reporting mechanism in the future.

HM Treasury guidance[31] also encourages organisations to go beyond this requirement and to report in greater detail, wherever this might help the reader to better understand the approach being taken to sustainability. Examples include reporting on economic, social and environmental impacts and how these relate to policy, procurement and operations.

We have used this format later in this report, to present overall data on greenhouse gas emissions, business travel, water usage and waste. These data are supported by further analysis and breakdown wherever possible.

Reporting to the Department of Health

Since 2007/08 all central government departments and their executive agencies, non-departmental public bodies and arm's length bodies have had to report on their carbon emissions annually as part of the Sustainable Operations on the Government Estate (SOGE) initiative.

In 2010, the government reviewed this initiative and developed another reporting strategy which is known as the 'greening government commitment'. Though very similar, this initiative set new carbon reduction targets for the public sector.

As a consequence, as an Executive Agency of the Department of Health, PHE is legally bound to report on its carbon emissions (in a set format) every quarter, which meets the requirements as set out in the 2010 greening government commitment initiative. This report is combined with other reporting by DH and allows the Department for the Environment, Food and Rural Affairs to benchmark across all appropriate government departments. (It should be noted that the NHS do not report into DH for GGC reporting.)

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31 Public sector annual reports: sustainability reporting guidance 2013/14. HM Treasury, February 2014. ISBN 978-1-909790-73-5.

PHE has a specific methodology for collating carbon emissions data from across the estate, which has been approved by DH and DEFRA. We collect data from all of our owned sites via their facilities management teams, who have a bespoke *pro forma* to fill out on a quarterly basis.

Reporting boundaries

Although the reporting requirement for our annual report and accounts relates primarily to our owned estate, we recognise the value of collecting additional data in relation to our overall operations and thus, we have included additional non-reportable data wherever we have that information. This means that effectively, PHE endeavours to report on the emissions resulting from all of its operations, across the whole organisation. This includes gathering and reporting data for those parts of PHE which are tenants in NHS facilities (which themselves are outside the greening government commitment).

In some instances, it has not been possible to gather precise data and in such cases, we have made estimates based on formulae provided by DEFRA.

PHE sustainable development targets

PHE's sustainable development targets are summarised here.

- PHE has set a target to reduce its overall carbon emissions by 3% annually for the period to March 2020, compared to its baseline year of 2013/14, to meet its obligations under the greening government commitment

- PHE set a target to reduce business travel by at least 2% annually for the period to March 2020, compared to its baseline year of 2013/14. Staff are encouraged to minimise journeys by using alternatives (such as teleconferencing) wherever possible and when they must travel, to use more sustainable modes of transport

- PHE set a target to reduce its water consumption by 2% annually for the period to March 2020, compared to its baseline year of 2013/14

- PHE set a total waste reduction target of 2% annually for the period to March 2020, compared to its baseline year of 2013/14.

- PHE will ensure that redundant ICT equipment is re-used (within government, the public sector or wider society) or responsibly recycled

Although PHE reports to government in accordance with the requirements of the greening government commitment, we also gather additional data to help us to understand our impact on the environment in which we live and work

Green procurement in PHE

PHE has a procurement department which is divided into categories, with specialised managers to ensure that the most cost effective and sustainable items are purchased.

Sustainability has become 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 requirements.

Our tendering is all 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 documents can be adapted to include specific questions relevant to a particular tender, which will then be scored to ensure that the companies who recognise 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 IT hardware, software and telecommunications equipment is sourced though 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 government's closed loop recycling scheme.

Ink cartridges

In the new procurement guidance for our 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 practicable.

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 to continuously improve its environmental and sustainability performance.

Equipment

When our suppliers tender, we ask them to provide details of the energy efficiency 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 and sustainability issues should have 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 maximum. If no such system is in place, tenderers 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, for example refurbishment works. The use of environmentally friendly products is specified wherever possible.

Cleaning

Cleaning contractors are encouraged to use environmentally friendly products and the contractor responsible for providing cleaning services at PHE's three main owned sites uses microfiber cleaning methods where possible, to minimise the use of chemical products.

Food and catering services

Most food and catering services used by PHE have been sourced though on-site suppliers under agreed contracts. In our restaurants, we meet the *'government buying standards for food'* for sites where we provided catering.

Transport (vehicles)

The small fleet of vehicles which PHE has is either leased through ALD Automotive, who have now gained accreditation to the ISO 9001:2008 quality management system standard. ALD Automotive has also achieved the environmental standard, ISO 14,001. When specifying vehicles for use, in addition to considerations of cost-effectiveness, there must be a clear demonstration that sustainability has been considered.

Vehicle hire

Most vehicle hire is done through Enterprise Rent-A-Car and PHE takes account of their sustainability credentials when hiring vehicles from them. Enterprise has initiated a '20/20 Vision and Enterprise Sustainable Construction Protocol' and since 2010, has achieved an energy consumption reduction of 282,697 gigajoules at their premises. To support local businesses they consider vendors who share the same standards and beliefs as we do, both in their business operations and in their ethical conduct. Their internal ethics committee is preparing to launch the Enterprise Holdings Supplier Code of Conduct which their suppliers will be encouraged to follow.

Travel procurement

Staff are encouraged to use public transport solutions whenever possible. All business travel by PHE staff must be booked through Redfern Travel, an approved government supplier which is certified to ISO 9001.2000 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 is currently working towards ISO 14,004:2004 environmental management and sustainable development accreditation as well as using the 'make your event sustainable' guidelines from BS 8901.

Calders actively off-sets 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.

Couriers

All PHE courier services are currently being re-procured via the Crown Commercial Service (CCS) framework RM1006; new contracts will commence from 1 March 2015. Suppliers must have a sustainability policy which highlights what actions they take, on an on-going basis, to minimise the environmental impact of their operations and their commitment to meeting sustainability targets. Suppliers will submit reports to CCS on vehicle usage, mileage and achievements on reduction of carbon emissions. This information will also be sent to PHE. Management review meetings between suppliers, CCS representatives and PHE will take place every quarter, with sustainability as a standing agenda item.

The living wage

PHE is currently going through the process of identifying whether or not its suppliers meet the requirements of the living wage initiative. Most of the responses received to date are positive although some additional costs required to meet this initiative have been identified in some rare instances. The Living Wage Foundation was created to promote the payment to all employees of a living wage of £9.15 in London and £7.85 elsewhere.

Small to medium enterprises

Each of PHE's procurement expenditure category managers is producing a strategy for their area of expenditure that will include details of how they intend to increase opportunities for small to medium enterprises.

Future developments

We are currently investigating use of reconditioned cartridges and looking to move PHE over to using exclusively recycled cartridges (where these are available) by the end of the year.

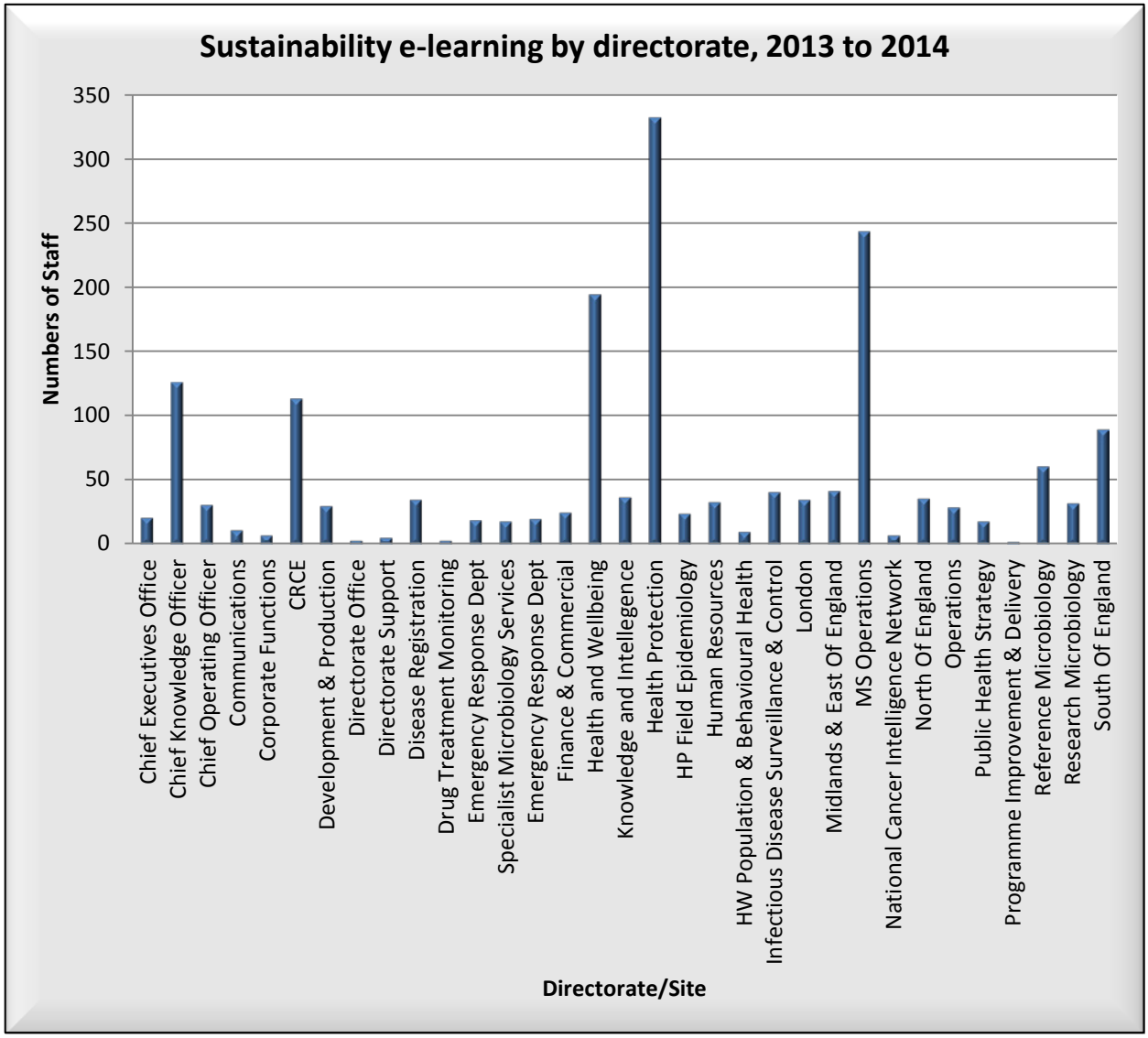
In relation to the Social Value Act, PHE is working with various third sector organisations, particularly charities. We are therefore considering how the projects we commission can contribute to the Social Value Act, and looking at ways to incorporate these elements into specifications by allocating appropriate scoring as part of the evaluation process.

PHE is working with its suppliers to improve sustainability, as part of its work on green procurement

Informing our staff

PHE provides a sustainability e-learning training course which all staff are required to undertake, on a three-year cycle. This has been customised to PHE and its own carbon management needs, and offers a good basic training in sustainability. For those members of staff who need additional training which is job related, we offer a series of specialist courses through an external provider.

Between April 2013 and September 2014, a total of 1,724 staff completed the online sustainability e-learning training.



PHE's overall carbon footprint

PHE has set a target to reduce carbon its overall emissions by 3% annually for the period to March 2020, compared to its baseline year of 2013/14, to meet its obligations under the greening government commitment.

Analysis indicates that PHE's total carbon emissions for 2013/14 were 26,161 tCO_2e; this includes the organisation's reportable and non-reportable sites. (Non-reportable sites are those offices and/or laboratories that are being reported separately by the landlord).

As PHE was formed in April 2013, it has not been possible to draw direct comparisons with earlier years. Estimated emissions for the previous year were 24,096 tCO_2e. The variance is mostly due to changes in the nature of the PHE estate and an increase in operational activities over the year as appointments were made to the large number of posts that were vacant when PHE became operational.

PHE introduced a number of strategies to help reduce its carbon burden from these impacts. The organisation aims to engage staff through its mandatory e-learning training programme on sustainable development, which includes a module on carbon management. This training will ensure that members of staff are aware of the need to minimise their carbon footprint and act in a sustainable manner, taking into account their impact on the environment.

PHE continues to strengthen its commitment to its green procurement initiatives, by utilising the government approved 'CAESER' software tool with our suppliers, including SME's. This software tool has helped to ensure a robust approach to sustainability through the supply chain. PHE continues to embed sustainability into contracts, which has helped to highlight risks to the organisation arising from its procurement activities.

PHE is fully committed to sustainable development in all its activities. A Sustainable Development Management Plan, which includes a section on carbon reduction, helps to set out PHE's aims for future work in this area, ensuring that its operations become more sustainable. A number of capital projects intended to improve the efficiency of future energy usage were started at PHE-owned sites. Sub-metering of utility supplies was introduced in many areas so that greater local control could be achieved.

PHE owns six of its premises and has a direct relationship with the utility provider at a further four. The organisation 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 relating to carbon emissions from these properties, they have been identified separately for reporting purposes.

Our energy use accounts for a large proportion of our carbon footprint

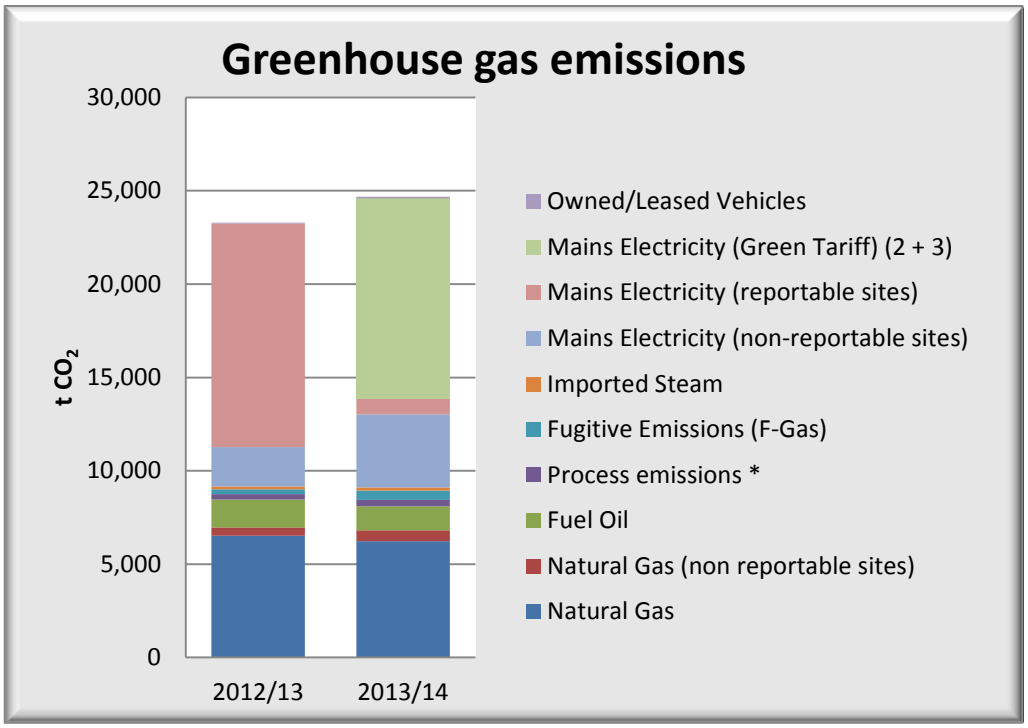
Our energy footprint

The overall electricity usage for PHE's owned estate, along with the estimated usage for our non-reportable sites is approximately 32 MWh. A large proportion of this is from our Porton site.

Natural gas usage for the PHE estate has been calculated as 37 MWh; again the largest user of natural gas is the main site at PHE Porton.

Gas oil is used as a secondary power source for some of our boiler systems. The Fermentation Pilot Plant (FPP) based at Porton, relies primarily on gas oil for its heating and process steam. Gas Oil accounts for some 4.7 MWh of energy.

Our overall greenhouse gas emissions are illustrated below and are summarised in more detail on the following page.



Our *'scope 1 and 2'* emissions are shown below.

GREENHOUSE GAS EMISSIONS		2012/13	2013/14
SCOPE 1 + 2			
Non-financial indicators (tCO_2)	Natural gas	6,521	6,229
	Natural gas (non-reportable sites)	453	577
	Fuel oil	1,480	1,290
	Process emissions *	296	342
	Fugitive emissions (F-Gas)	253	504
	Imported steam	166	161
	Mains electricity (non-reportable sites)	2,110	3,924
	Mains electricity (reportable sites)	11,955	847
	Mains electricity (green tariff) (2 + 3)	N/A	10,723
	Owned/leased vehicles	52	92
Related energy consumption (kWh)	Natural gas	48,841,887	34,087,464
	Natural gas (non-reportable sites)	2,445,438	3,133,382
	Fuel oil	5,272,190	4,747,646
	Process emissions *	1,608,696	1,858,695
	Imported steam	907,778	874,444
	Electricity (non-reportable sites)	4,107,217	7,790,559
	Electricity (reportable sites non green tariff)	31,351,452	2,075,589
	Electricity (green tariff)	N/A	22,174,537
Related consumption (kg)	Fugitive emissions (F-Gas)	335,000	***504,038
Related Scope 1 travel (km)	Owned/leased vehicles	259,181	433,108
Financial indicators (£)	Natural gas	1,481,428	1,353,637
	Fuel oil	356,223	326,155
	Owned/lease vehicles (fuel/*i*-expenses)	18,293	18,551
	Fugitive emissions (F-Gas)	64,287	**32,682
	Imported steam	68,589	70,124
	Mains electricity (reportable)	2,272,659	2,576,149
Total Emissions Scope 1 + 2 (tCO_2)		20,723	20,188
Total gross emissions from non-reportable sites Scope 1 + 2 (tCO_2)		2,563	4,501

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

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

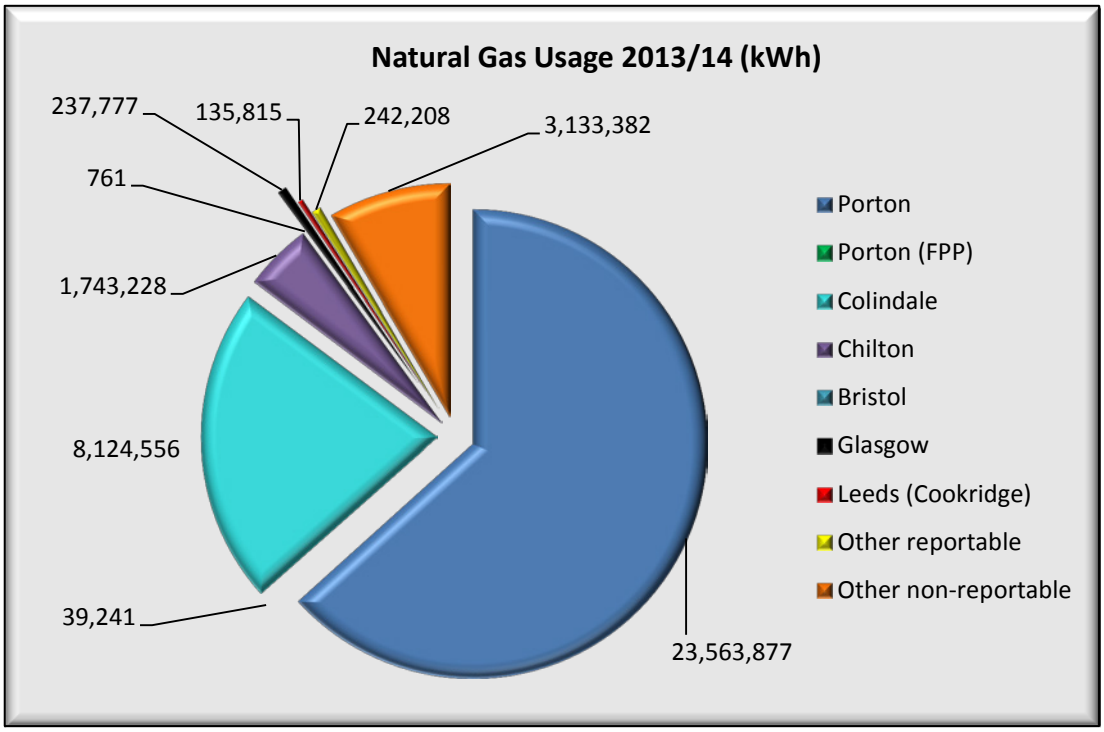
*** F-Fas emissions have been revised since PHE's Annual Report & Accounts was produced. The updated data are presented in the refrigerant data section.

Natural gas, gas oil and electricity usage

Our use of natural gas, gas oil and electricity across the PHE estate is shown in the table below. The owned estate is shown by location, along with the non-reportable estate (where our landlord reports the data to government).

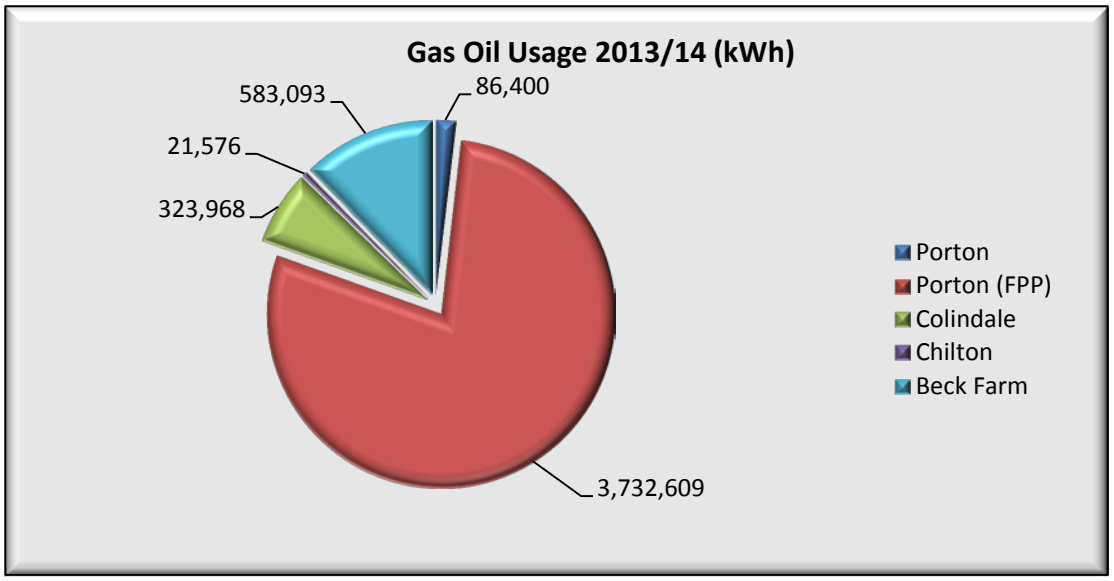
Energy use (kWh)	Electricity	Natural Gas	Gas Oil
Porton	13,592,546	23,563,877	86,400
Porton (FPP)	1,157,649	39,241	3,732,609
Colindale	6,770,820	8,124,556	323,968
Chilton	1,457,394	1,743,228	21,576
Bristol	352,956	761	0
Glasgow	257,265	237,777	0
Leeds (Cookridge)	87,767	135,815	0
Other reportable	323,748	242,208	583,093
Other non-reportable	7,790,559	3,133,382	0
Beck Farm	No data	No data	No data
TOTAL	31,790,704	37,220,845	4,747,646

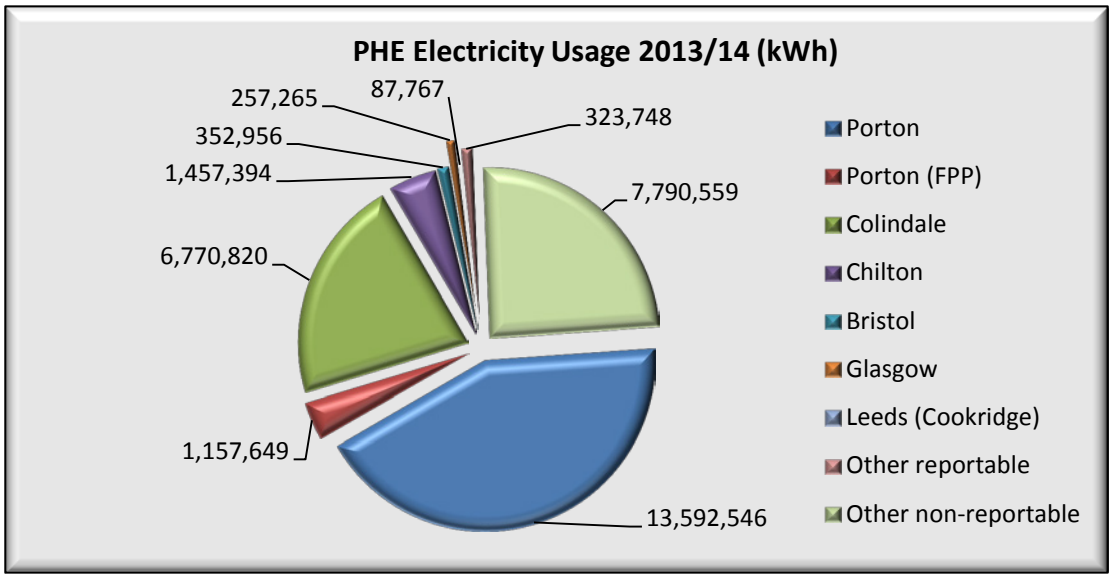
Natural gas usage (by location) is shown below.



Segments for Porton FPP and Bristol are too small to show in the above chart.

Gas oil and electricity usage are shown below, again by location.





The PHE estate is diverse, with 6 properties being directly owned by us, but the majority are leased from other government departments, local authorities, NHS Trusts or private landlords. We have 12 leased premises where we have a direct relationship with the energy provider – for these sites, we report their energy usage directly as part of our greening government commitment return to central government.

The tables below show the energy usage at PHE's major sites

Energy emissions: chief operating officer's directorate

The Chief Operating Officer's directorate comprises the majority of PHE's owned estate, which includes the large campus sites at Porton and Colindale. There are also a number of sites, which are not owned by PHE where we have a direct relationship with the energy supplier. The sites marked 'other' contribute to the overall footprint but these are sites where the landlord reports emissions to another government body. The overall footprint for the CCO directorate, (excluding emissions from business travel and landfill waste) are 20,457 tCO_2e.

Chief Operating Officer 2013/14		Porton (Main)	Porton (FPP)	Beck Farm	Colindale	Victoria	Exeter
Emissions	**Emissions Source**	**tCO_2e**	**tCO_2e**	**tCO_2e**	**tCO2e**	**tCO2e**	**tCO2e**
Emissions from our properties and the operations carried out therein	Natural Gas	4336.700	7.200	0.000	1495.200	18.300	2.590
	Gas Oil	23.150	1014.400	158.500	88.000	0.000	0.000
	Emissions from Purchase of Electricity (S2)	6055.200	515.700	111.000	3016.300	258.400	8.270
	Emissions from Transmission and Loss (S3)	517.740	44.090	9.490	257.900	22.090	0.710
	Emissions from Import of Heat or Steam	0.000	0.000	0.000	0.000	0.000	0.000
	Process Emissions (Refrigeration)	322.286	0.000	0.000	110.500	0.000	0.000
	Water supply	27.330	14.540	0.360	13.570	0.580	0.030
	Water (Waste)	54.210	28.440	0.710	27.210	0.800	0.054
	Sub Total	**11336.616**	**1624.370**	**280.060**	**5008.680**	**300.170**	**11.654**

Chief Operating Officer Directorate 2013/14		Fareham	Letchworth	Sheffield	Bristol	Kidderminster	Other[1]	Total
Emissions	**Emissions Source**	**tCO2e**	**tCO2e**	**tCO2e**	**tCO2e**	**tCO2e**	**tCO_2e**	**tCO_2e**
Emissions from our properties and the operations carried out therein	Natural Gas	5.090	5.180	4.030	0.100	5.180	364.890	6244.460
	Gas Oil	0.000	0.000	0.000	0.000	0.000	0.000	1284.050
	Emissions from Purchase of Electricity (S2)	4.480	16.540	12.887	157.200	16.540	1019.300	11191.817
	Emissions from Transmission and Loss (S3)	0.380	1.410	1.102	13.440	1.410	92.000	961.762
	Emissions from Import of Heat or Steam	0.000	0.000	0.000	161.000	0.000	0.000	161.000
	Process Emissions (Refrigeration)	0.000	0.000	0.000	0.000	0.000	0.000	432.786
	Water supply	0.020	0.030	0.016	0.440	0.020	4.120	61.056
	Water (Waste)	0.041	0.051	0.031	0.870	0.046	8.074	120.537
	Sub Total	**10.011**	**23.211**	**18.066**	**333.050**	**23.196**	**1488.384**	**20457.468**

Energy emissions: health protection & medical directorate

The Health Protection directorate is predominantly made up of sites that are owned by PHE. The overall carbon footprint for this directorate is 1,382 tCO_2e. The largest proportion of this figure is from the Chilton site at some 75%.

Health Protection & Medical Directorate 2013/14		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	320.820	43.800	25.000	29.670	419.290
	Gas Oil	5.860	0.000	0.000	0.000	5.860
	Emissions from Purchase of Electricity (S2)	649.240	114.600	39.100	69.220	872.160
	Emissions from Transmission and Loss (S3)	55.510	9.800	3.340	5.919	74.569
	Emissions from Import of Heat or Steam	0.000	0.000	0.000	0.000	0.000
	Process Emissions (Refrigeration)	2.190	0.000	0.000	0.000	2.190
	Water supply	2.630	0.210	0.100	0.050	2.990
	Water (Waste)	3.860	0.420	0.200	0.096	4.576
	Sub Total	**1040.110**	**168.830**	**67.740**	**104.955**	**1381.635**

Energy emissions: chief knowledge officer's directorate

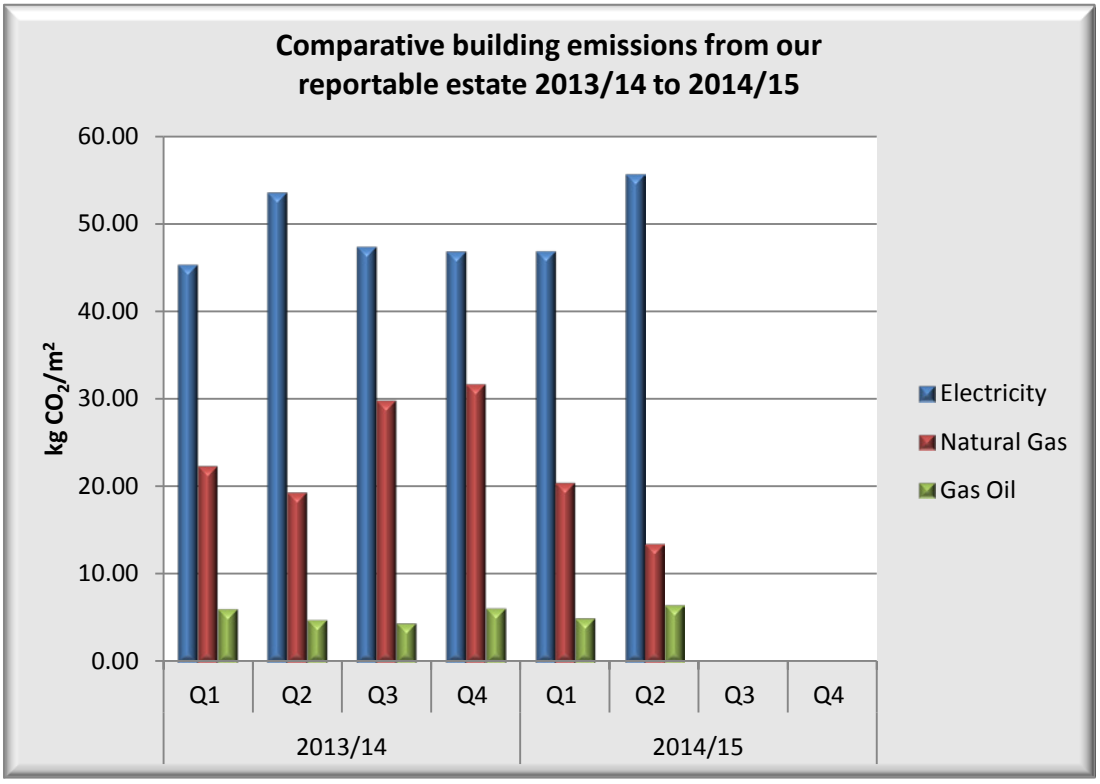
The CKO directorate has no premises directly owned by PHE, with all of their staff being accommodated in rented premises. The methodology used to calculate the carbon footprint of this part of the estate has been derived using the BRE's best practice model for energy usage in government buildings. The estimated carbon footprint for the CKO directorate is 931 tCO2e. The largest contributor to this figure is our headquarters at Wellington House, in London, which has some 153 members of staff.

Chief Knowledge Officer Directorate 2013/14		Oxford	Salisbury	Battle	Birmingham	York	Wellington House	Leicester	Other[3]	Skipton House	Total
Emissions	**Emissions Source**	**tCO_2e**	**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	3.530	6.640	2.430	4.090	5.820	43.670	0.360	151.280	28.820	246.640
	Gas Oil	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Emissions from Purchase of Electricity (S2)	11.290	21.210	7.750	13.060	18.589	34.870	1.140	483.220	34.870	625.999
	Emissions from Transmission and Loss (S3)	0.970	1.810	0.660	1.120	1.589	2.980	0.100	41.360	2.980	53.569
	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	0.000
	Process Emissions (Refrigeration)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Water supply	0.010	0.040	0.020	0.020	0.041	0.190	0.000	1.010	0.130	1.461
	Water (Waste)	0.012	0.079	0.031	0.034	0.080	0.368	0.004	1.977	0.252	2.837
	Sub Total	**15.812**	**29.779**	**10.891**	**18.324**	**26.119**	**82.078**	**1.604**	**678.847**	**67.052**	**930.506**

Trend in reportable building emissions, April 2013 to September 2014
Carbon emissions from natural gas usage in the first two quarters of 2014/15 have fallen by some 18% compared to the same period last year, although as expected, there is a predictable variance between the seasons.

Data for the reportable emissions from PHE's estate for electricity and gas oil show little change over the same period although again, as expected, there is a seasonal variation.

These changes are illustrated below.

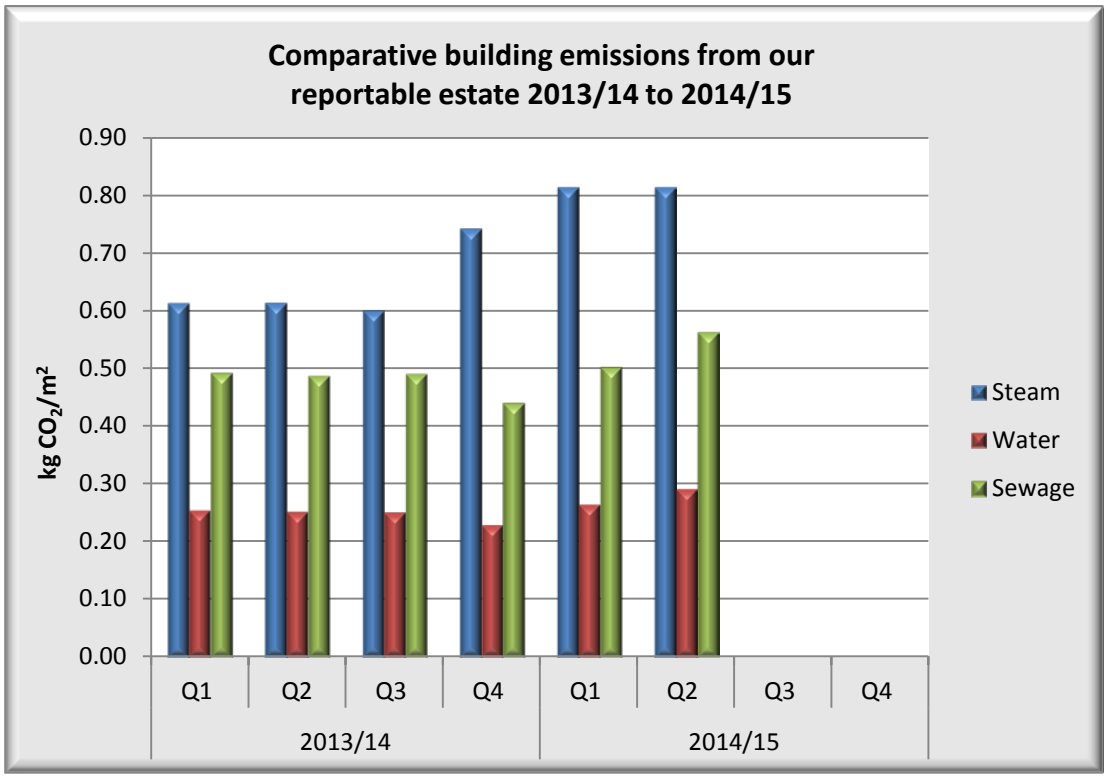


DEFRA carbon conversion factors for 2014/15 were published in June 2014; those for electricity have been increased by 11%. This means that future greenhouse gas emissions will therefore increase by 11% for each kWh consumed, regardless of whether actual consumption has increased.
Source: Carbon Smart, October 2014: http://www.carbonsmart.co.uk/2014-conversion-factors-beware-increased-electricity-values/

Steam usage is only monitored at our Bristol Laboratories as this is the only site using imported steam. Data for the first two quarters of 2014/15 have been estimated due to third party billing issues.

There are a number of projects across the PHE estate to reduce water usage, especially at our larger campus sites; we anticipate this will lead to a reduction in demand for water over the coming year. However, between April 2013 and September 2014, there has been an increase in manufacturing

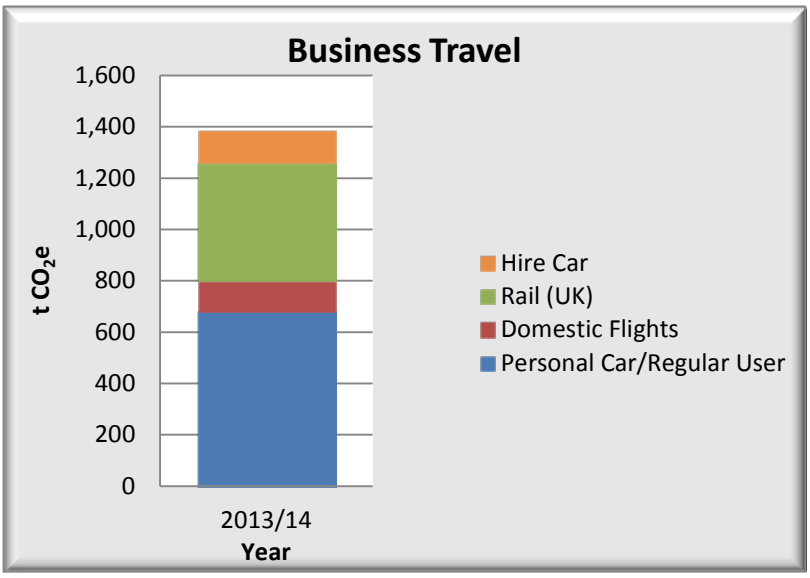
activity at the PHE Porton site and this has led to an increase in water usage. As a result, there has been a concomitant increase in sewage output. Data for emissions relating to steam, water and sewage are illustrated below.



Water used in PHE's laboratories and manufacturing facility at Porton is treated locally

Our travel footprint

PHE set a target to reduce business travel by at least 2% annually for the period to March 2020, compared to its baseline year of 2013/14. Staff are encouraged to minimise journeys by using alternatives (such as teleconferencing) wherever possible and when they must travel, to use more sustainable modes of transport. A reduction in PHE's business travel would not only improve local air quality, but also support PHE's plan to reduce carbon and benefit the organisation financially. Travel data relate only to in-year travel; of the 12 'sender bodies' which came together to form PHE, only the former HPA had historical data relating to business travel emissions and it was not possible to estimate travel for other bodies during 2012/13.



Data for travel by bus, taxi and underground are not shown due to their low carbon values.

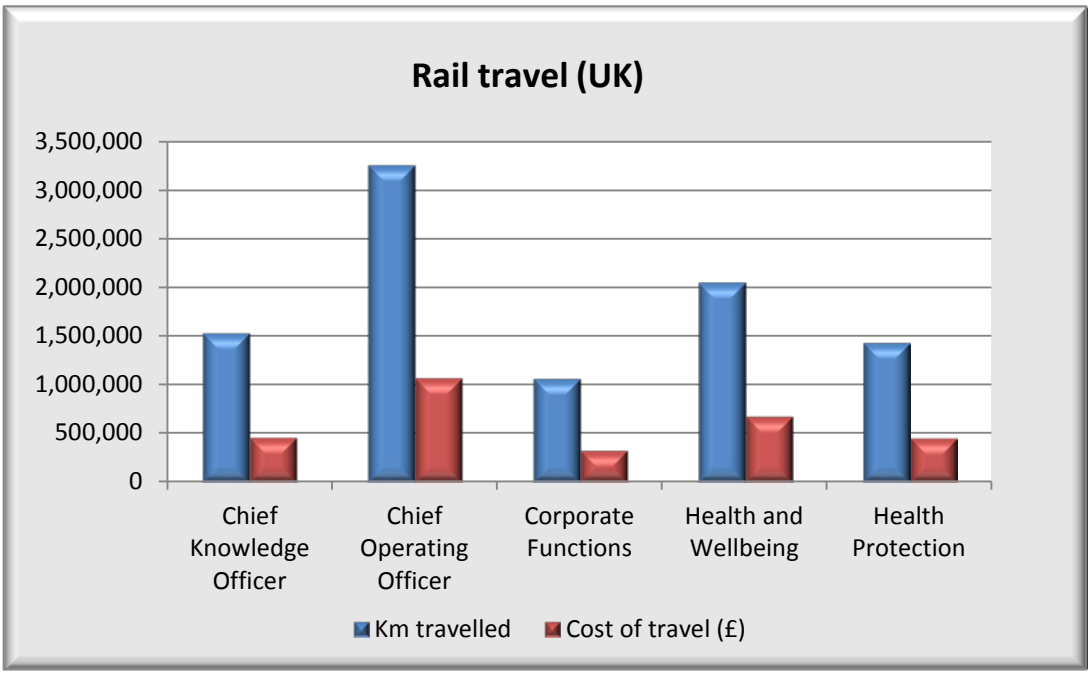
Steps were taken to ensure all members of staff recognise the benefits of travelling in a more sustainable manner. During 2013/14, PHE staff made 440 domestic return flights. While it is not always practicable because of time constraints to take other means of transport, PHE is introducing increased controls to reduce this. PHE focused on sustainable business travel for NHS Sustainability Day and a number of other local initiatives were introduced to monitor business travel more closely. A breakdown is given below.

Business Travel		2013/14
SCOPE 3		
Non-financial indicators (tCO_2)	Personal car/regular user	681
	Domestic flights	120
	Rail (UK)	458
	Taxi	5
	Bus/coach/PTR	4
	Hire car	122
	Underground	1
	Total	1,392
Related Scope 3 travel (km)	Personal car/regular user	3,580,880
	Domestic flights	366,392
	Rail (UK)	9,346,189
	Taxi*	36,830
	Bus/coach*/PTR	39,822
	Hire car*	641,065
	Underground*	7,962
	Total	14,019,139
Financial indicators (£)	Personal car/regular user	1,022,687
	Domestic flights	66,494
	Rail (UK)	2,970,871
	Taxi	79,901
	Bus/coach/PTR	19,739
	Hire car	87,639
	Underground	45,625
	Total	4,292,956
Other business travel (km)	Short haul international average	1,918,087
	Long haul international average	4,370,326
	Rail: Eurostar	113,679
Total	Total Gross Emissions Scope 3 Business Travel	1,392
	Total Financial Cost Scope 3 Business Travel	4,292,956
	Total Other Financial Cost	497,078

*Figures calculated using our own conversion table

Rail travel

During 2013-14, PHE staff travelled almost 9,346,188 kilometres on the train. The Chief Operating Officer's directorate undertook the most travel by rail, at over 3.25m km travelled.



The annual cost to the organisation for rail travel in the UK amounted to £2,970,871, whilst the impact on the environment was 458.3 tonnes of carbon. In order to facilitate comparisons across the organisation, PHE uses CO_2e per WTE as a measure.

	Worked WTE	tCO_2	tCO_2/WTE
Chief Knowledge Officer	502.72	75.30	0.15
Health and Wellbeing	462.30	100.64	0.22
Health Protection	862.95	70.36	0.08
Chief Operating Officer	2761.26	159.79	0.06
Corporate Functions	452.73	52.24	0.12
TOTAL	5041.95	458.34	-

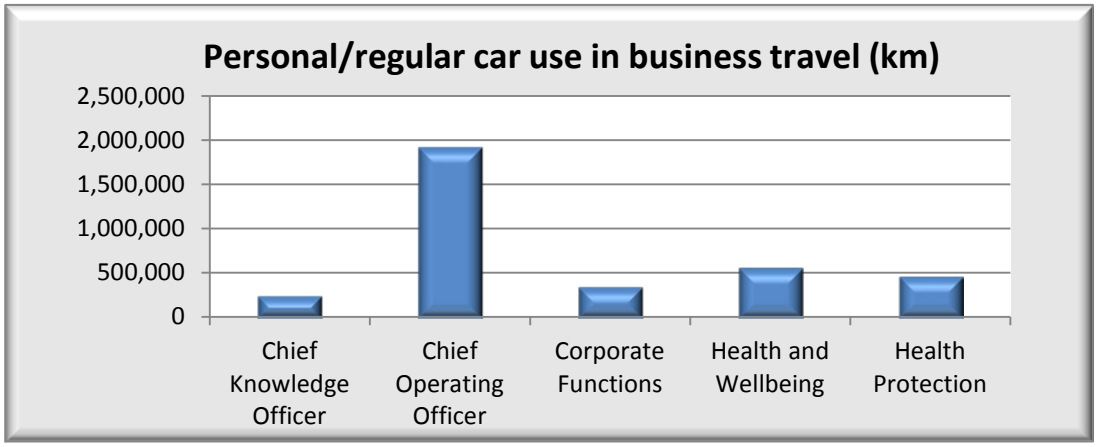
As 2013/14 will be PHE's baseline year, this metric will be used in subsequent years to monitor performance in each area of the business, allowing us to better understand which areas of the business travel the most, and where potential savings might be made. For example, staff in the Health and Wellbeing directorate generated the most CO_2 per person (0.22 tCO_2e/WTE) as a result of rail travel. This compares with staff in the Chief Operating Officer's directorate, who generated 0.06 tCO_2e/WTE.

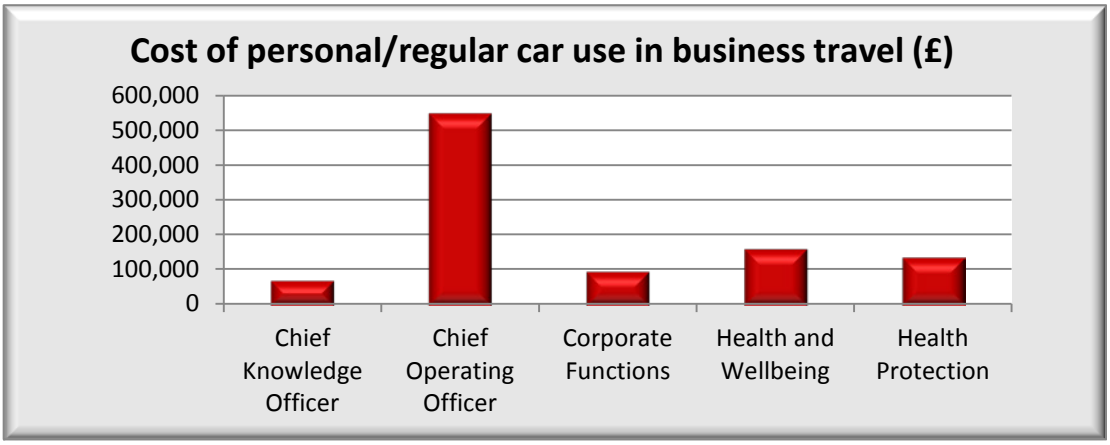
Use of trains is a more sustainable way to travel than the use of cars

Car use for business travel

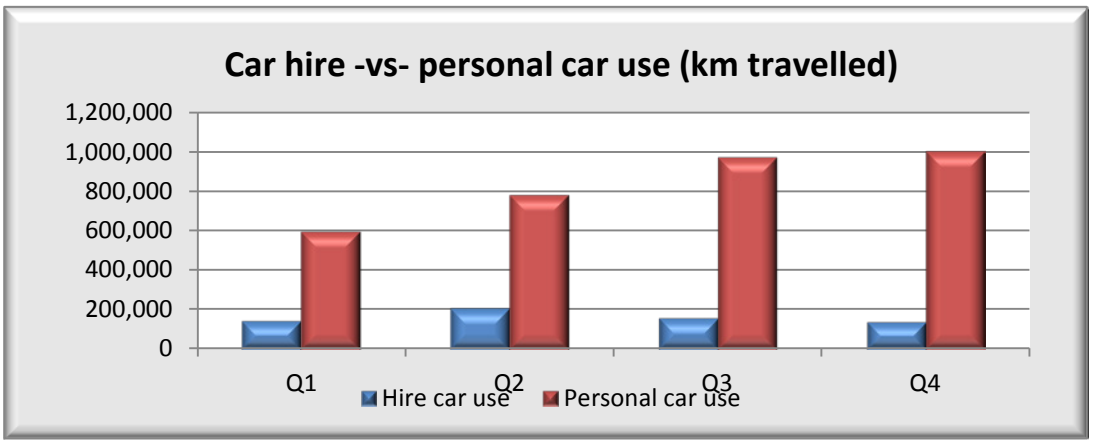
PHE undertakes significant business travel, much of it in personal cars, This costs more than hire cars for journeys above 64 miles (data from Enterprise). Personal car use by directorate (with associated cost) is shown below.

Directorate	Distance travelled (km)				Year Total	Annual cost (£)
	Q1	Q2	Q3	Q4		
Chief Knowledge Officer	37,821	65,976	75,197	72,578	251,572	72,020
Chief Operating Officer	319,290	455,731	561,117	590,666	1,926,804	551,661
Corporate Functions	83,108	70,664	95,828	103,831	353,431	97,805
Health and Wellbeing	85,431	128,210	165,399	194,216	573,256	162,601
Health Protection	126,923	121,327	131,894	95,473	475,617	138,599
TOTAL	596,235	782,716	974,230	1,004,698	3,580,680	1,022,686





By comparison, PHE used hire cars for only 641,065 miles of business travel, despite the potential carbon savings. We recognise we have more to do to encourage our staff to use hire vehicles whenever their business travel cannot be done by public transport.



The use of private cars for business travel to PHE in 2013/14 cost £1,022,686, for a distance travelled of 3,580,680 km. For each £1 spent, PHE travelled 3.501 km in a private car. The total cost of hire car use was £87,639. The cost of fuel was estimated as £35,456, making a total cost for hire vehicles of £123,095, for a distance travelled of 641,065 km. For each £1 spent, PHE travelled 5.207 km.

PHE therefore travelled a total of 4,221,745 km on business using a car. If the 3,580,680 km undertaken in private cars had been done using hire cars, the cost would have been £687,666. Thus, if all business travel by car had been in a hire vehicle, PHE would have saved £335,022. All managers are strongly encouraged to ensure there staff use hire cars wherever possible.

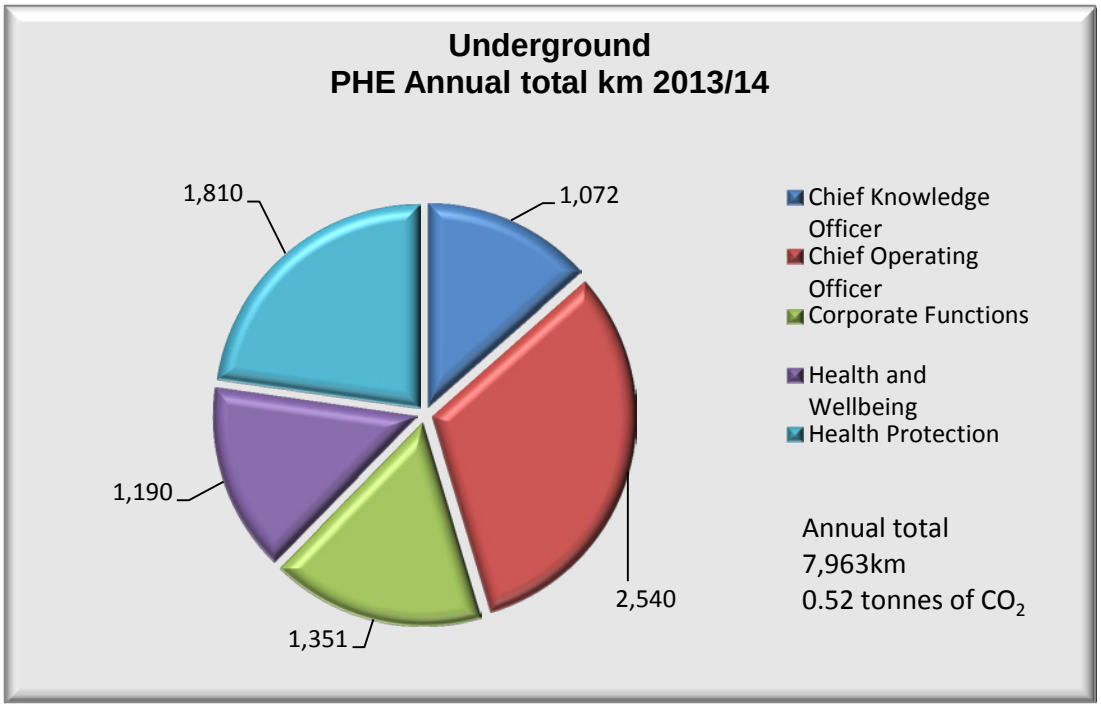
The use of cars for business travel adds significantly to PHE's overall carbon emissions

Underground, bus and taxi travel

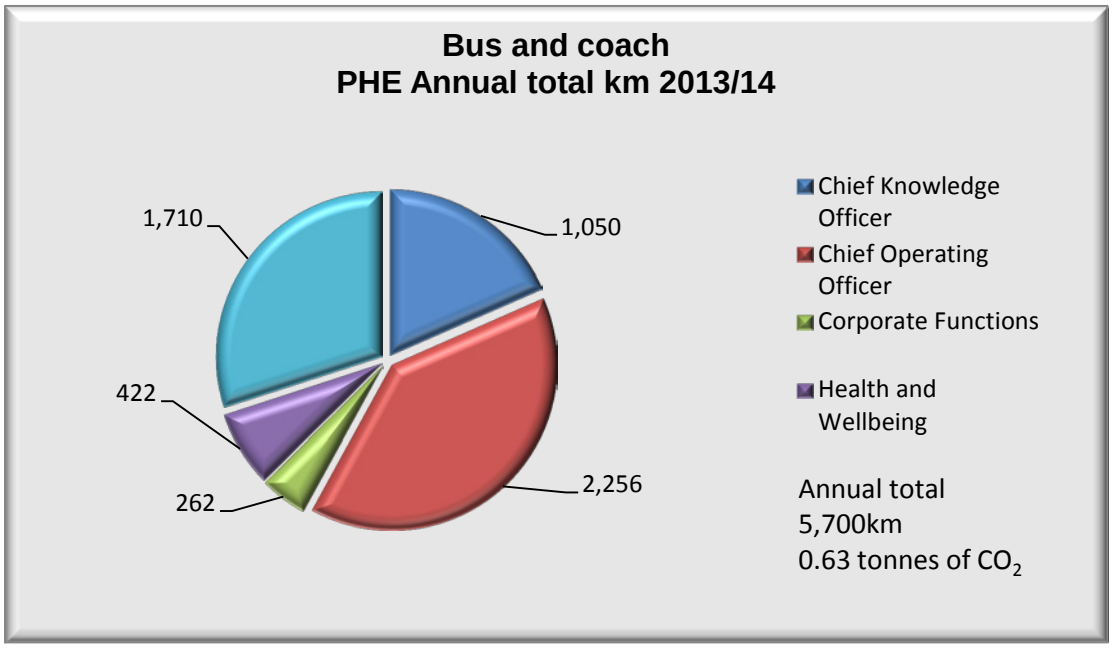
Wherever possible, PHE encourages those of its staff who need to travel for business purposes to do so by public transport. Not only is this usually more cost effective, but it is generally more carbon efficient too.

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.

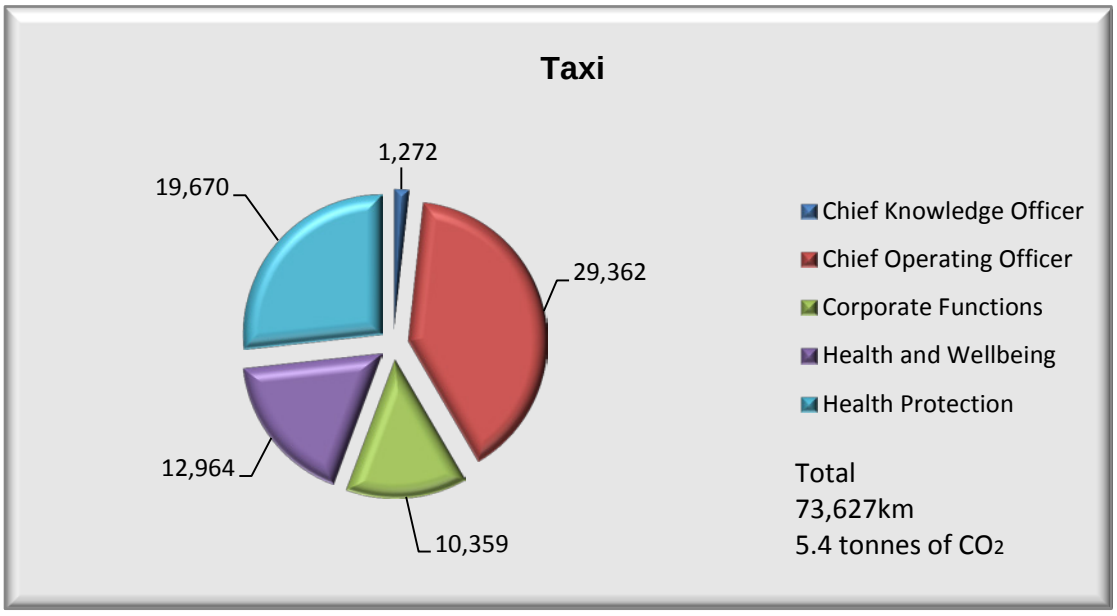
For journeys specifically identified as being by bus or underground, the data are presented below, but for the above reasons, this is almost certainly under-reported.



PHE's carbon footprint due to travel by bus is shown below, by directorate. This is believed to be an under-estimate, for the reasons given above.



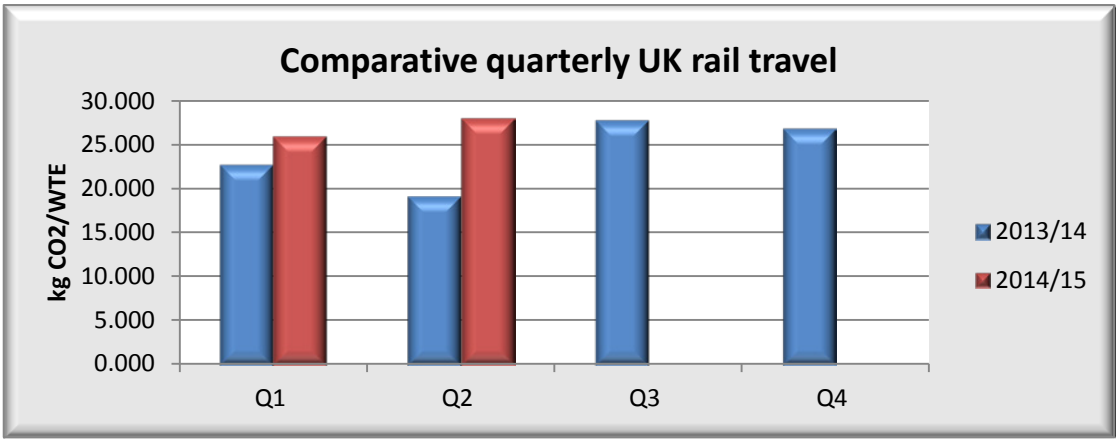
PHE's carbon footprint due to travel by taxi is shown below, by directorate.

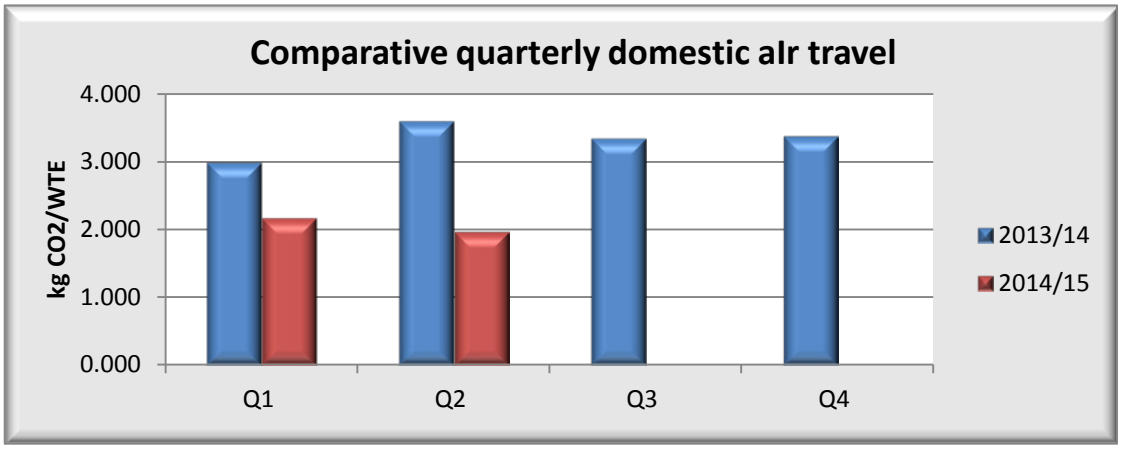


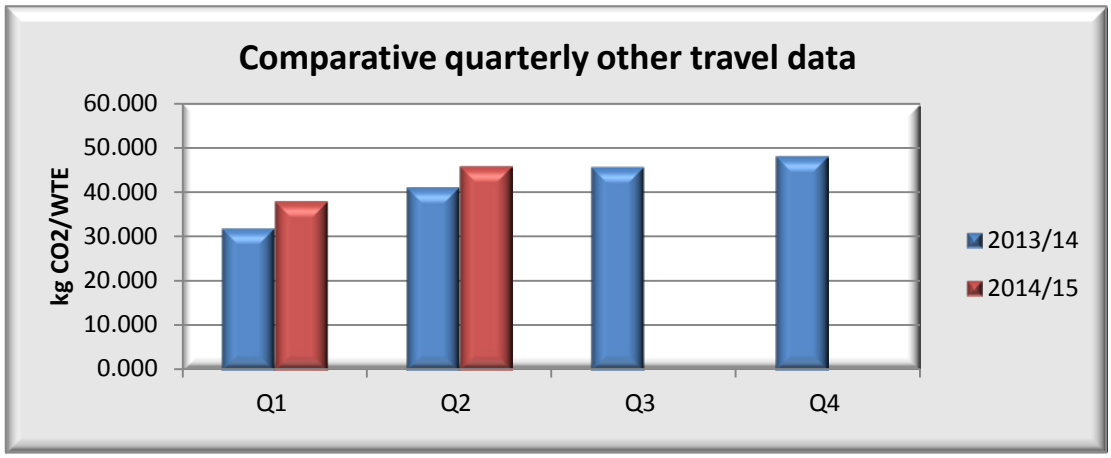
Although not specifically reported here, we are aware that significant travel within London is undertaken by taxi and we are working to encourage our staff to use public transport wherever possible.

Trend in transport emissions April 2013 to September 2014

There has been a 9.88% increase in WTE figures from September 2013 to September 2014, and this has had an impact on the amount of business travel undertaken. In the figures below we compare data from 2013/14 with that from the first two quarters of 2014/15.







There is a projected rise in general forms of travel by 0.37% if the current trend continues on its present trajectory. UK train travel has also been projected to increase by some 12% over the coming year. In part this may be due to PHE encouraging its staff to use train travel instead of travelling by car.

It is pleasing to note that data show that carbon emissions due to domestic air travel in the first two quarters of 2014/15 are lower than those for the same period last year. If this trend continues for the remainder of 2014/15, emissions due to domestic air travel are projected to reduce by 37% year-on-year. Even though the WTE numbers have risen, this indicates that PHE's policies to reduce its carbon emissions are working, helping us to meet our obligations under the greening government commitment.

A move to more sustainable transport not only reduces PHE's carbon footprint for travel, but is less damaging for the environment

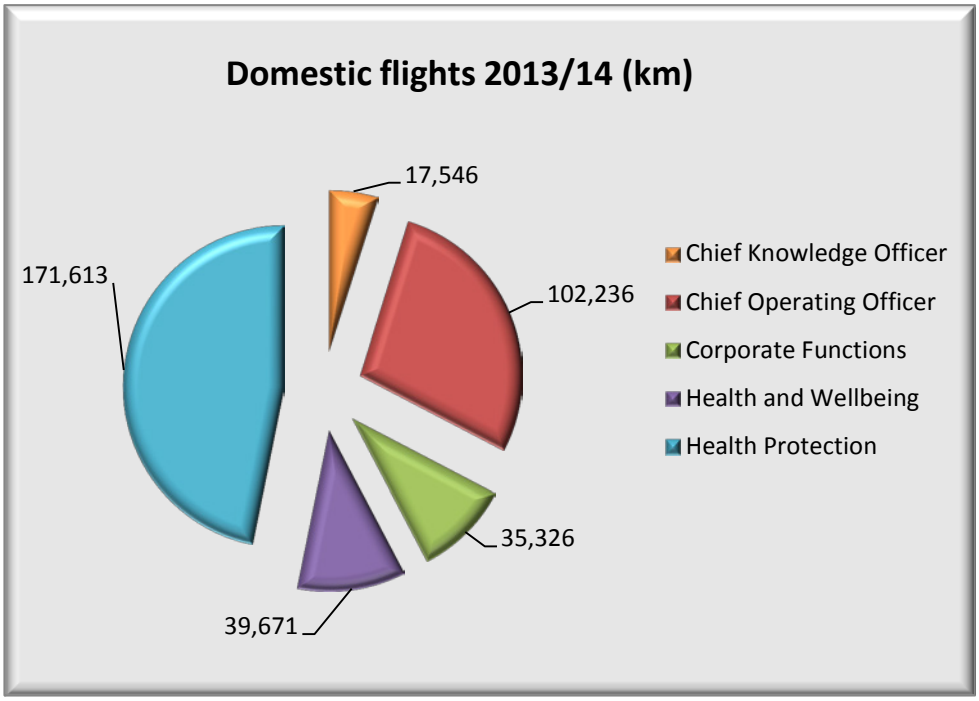
Air travel

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. However, we have a duty to minimise our domestic air travel wherever possible and this can also include western Europe. Destinations such as Paris and Brussels can be reached just as quickly by Eurostar from London, particularly when taking into account the extra time required to undergo airport check-in and security screening. Our air travel in 2013/14 is summarised below.

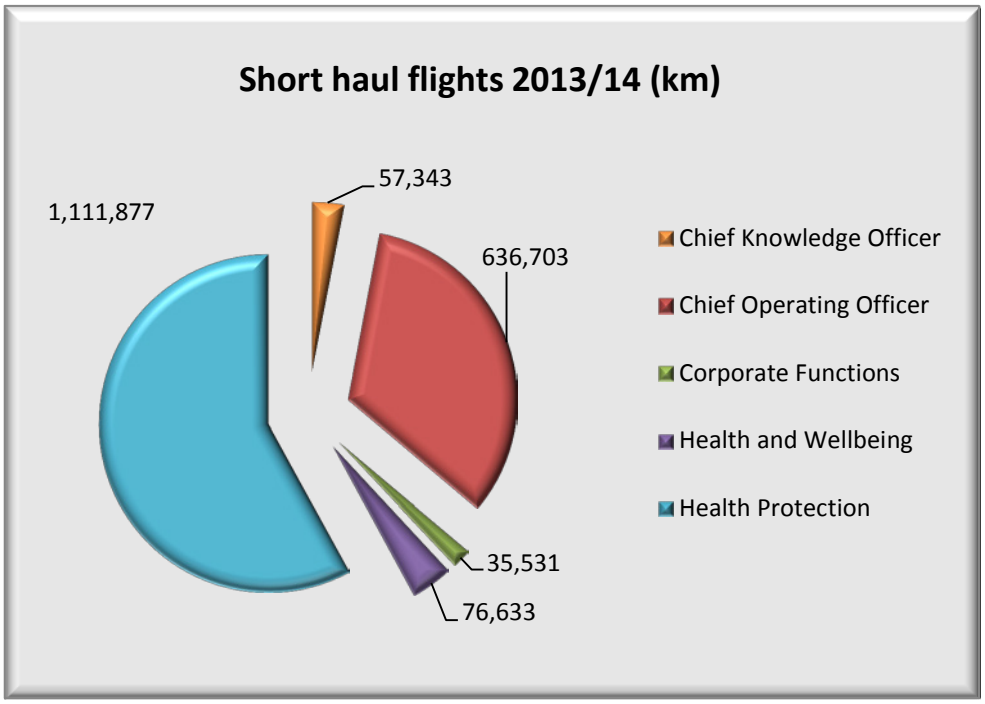
Directorate	Distance travelled (km's)				
	Q1	Q2	Q3	Q4	Annual total
Domestic flights (<500 km)					
Chief Knowledge Officer	3,017	2,470	5,907	6,152	**17,546**
Chief Operating Officer	16,683	27,930	28,880	28,743	**102,236**
Corporate Functions	17,174	10,063	4,051	4,039	**35,327**
Health and Wellbeing	2,795	9,040	12,782	15,054	**39,671**
Health Protection	42,660	49,549	40,451	38,952	**171,612**
Total domestic flights	**82,329**	**99,052**	**92,071**	**92,940**	**366,392**
Short haul flights (500-3,700 km)					
Chief Knowledge Officer	5,385	21,052	14,818	16,087	**57,342**
Chief Operating Officer	118,198	142,511	259,459	116,535	**636,703**
Corporate Functions	16,319	7,288	4,904	7,020	**35,531**
Health and Wellbeing	14,751	21,769	31,268	8,845	**76,633**
Health Protection	299,420	256,017	314,658	241,782	**1,111,877**
Total short haul flights	**454,073**	**448,637**	**625,107**	**390,269**	**1,918,086**
Long haul flights (>3,700 km)					
Chief Knowledge Officer	48,257	79,904	77,937	27,100	**233,198**
Chief Operating Officer	142,694	800,128	565,434	541,552	**2,049,808**
Corporate Functions	40,873	16,886	39,991	33,477	**131,227**
Health and Wellbeing	0	16,797	55,287	0	**72,084**
Health Protection	283,693	475,584	642,921	481,810	**1,884,008**
Total long haul flights	**515,517**	**1,389,299**	**1,381,570**	**1,083,939**	**4,370,325**
TOTAL FLIGHTS	**1,051,919**	**1,936,988**	**2,098,748**	**1,567,148**	**6,654,803**

Quarterly flight data, by PHE directorate

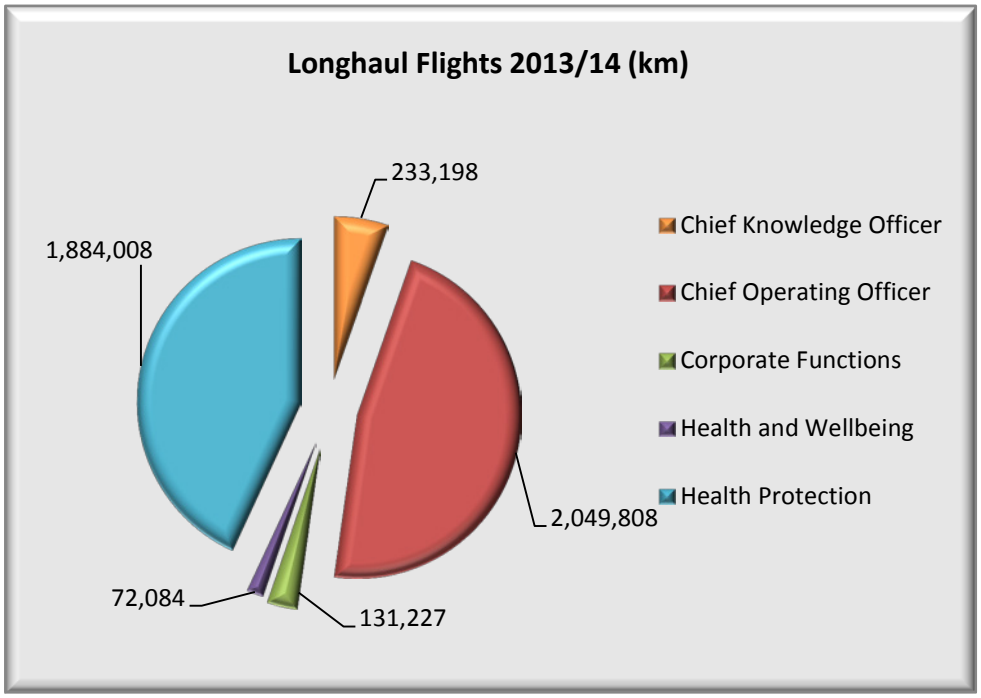


'Corporate functions' account for those areas of the organisation not individually identified.

- during 2013-14, PHE staff travelled 366,392 kilometres on domestic flights (defined as under 500 km)
- the annual cost to the organisation using domestic air flights amounted to £66,491, whilst the impact on the environment was 63.3 tCO_2e
- the Health Protection and Medical Directorate was the highest user of domestic flights, travelling 171,613 kilometres (47% of the total)
- the Chief Operating Officer's Directorate was the second highest user of domestic flights, travelling 102,236 kilometres (28% of the total)



- during 2013-14, PHE staff travelled 1,918,086 kilometres on short haul flights (defined as between 500 and 3,700 km)
- the annual cost to the organisation using short haul air flights amounted to £203,739, whilst the impact on the environment was 195.3 tCO_2e
- the Health Protection and Medical Directorate was the highest user of short haul flights, travelling 171,613 kilometres (57% of the total)
- the Chief Operating Officer's Directorate was the second highest user of short haul flights, travelling 102,236 kilometres (34% of the total)



- during 2013-14, PHE staff travelled 4,370,325 kilometres on long haul flights (defined as over 3,700 km)

- the annual cost to the organisation using long haul air flights amounted to £259,763, whilst the impact on the environment was 523.6 tCO_2e

- the Chief Operating Officer's Directorate was the highest user of long haul flights, travelling 2,049,808 kilometres (47% of the total)

- the Health Protection and Medical Directorate was the second highest user of long haul flights, travelling 1,884,008 kilometres (43% of the total)

Water usage

The greening government targets for water are difficult to apply to much of the PHE estate as they relate to best practice for office use, and a lot of our water use relates to laboratories. As water provided to such premises is not supplied through separate ring mains to laboratories and to offices, the destination of the supply cannot be separately monitored in most instances. Historically, we have therefore set our own reduction targets for water usage, and have made significant progress with this over recent years.

PHE set a target to reduce its water consumption by 2% annually for the period to March 2020, compared to its baseline year of 2013/14. The reportable usage of water for the estate was 172,157 m^3, with a further estimated 17,318 m^3 being used by its non-reportable sites.

Water		2012/13	2013/14
SCOPE 3 (Water)			
Non-financial indicators (m^3)	Water from office estate (reportable)	83	684
	Water from office estate (non-reportable)*	3,936	6,971
	Water from whole estate (reportable)	175,824	172,757
	Water from whole estate (non-reportable)*	10,613	17,318
	TOTALS	190,456	197,730
Financial indicators (£)	Water supply costs**	159,738	169,947

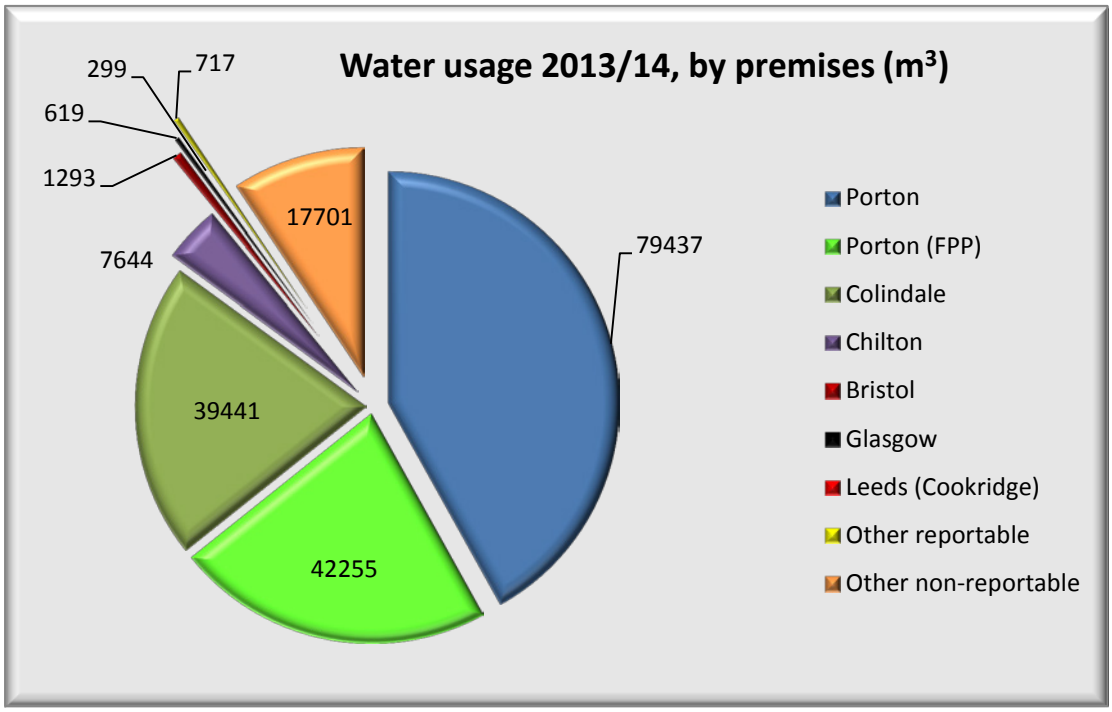
* Estimated usage

** Water costs from owned sites

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

A number of projects were identified to reduce the organisation's water consumption. Several of PHE's sites have a mixture of office and non-office facilities; it was therefore not possible to split the two categories into any viable dataset.

Water usage in 2013/14, by premises, is shown below.



In terms of water consumption, PHE's major impacts on the environment were from its main campus sites, which house a large number of laboratories. The water supply to PHE's campus sites was monitored and measured, and therefore the pattern of daily usage was known. Senior managers have used this information to refine strategies that will help towards meeting future water reduction targets. Water that was consumed at offices and laboratories embedded in tenanted accommodation was estimated using a recognised benchmarking algorithm. For much of the estate, given that PHE was formed on 1 April 2013, there are no historical data, but some data do exist for these major owned sites within the PHE estate. For these locations, water usage over the last four years is shown below.

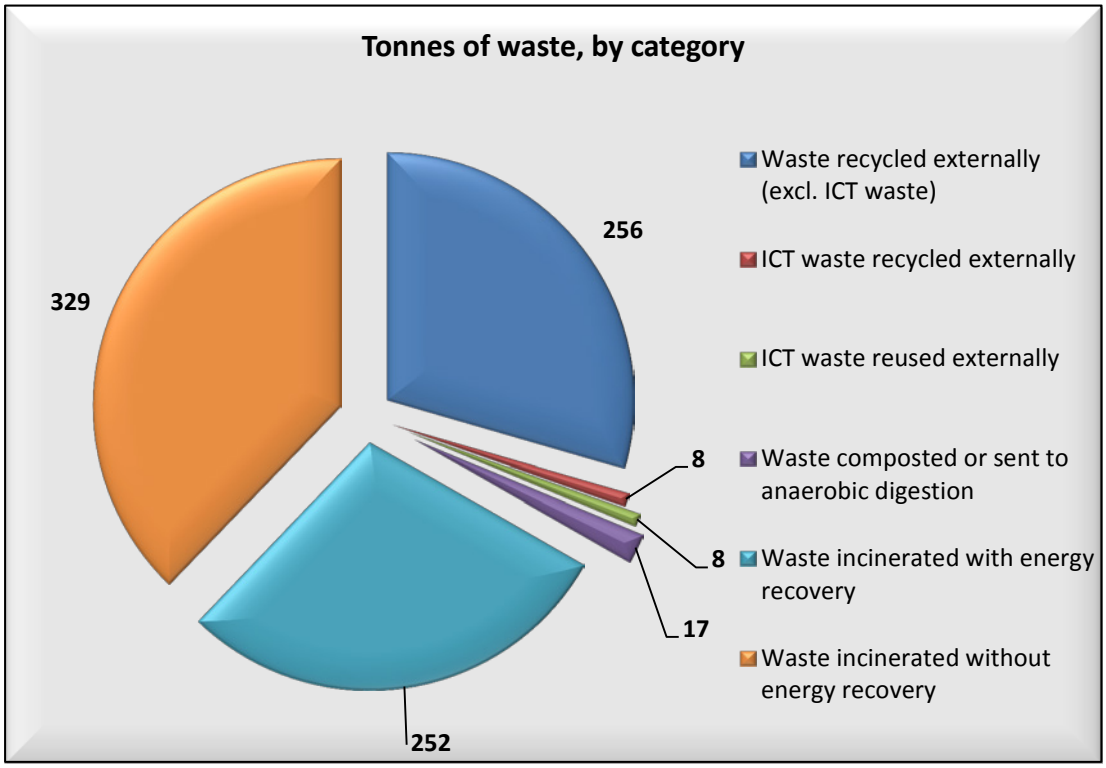
Water usage (m^3)	2010/11	2011/12	2012/13	2013/14
Porton	109,631	85,173	84,265	79,437
Porton (FPP)	24,939	29,793	34,191	42,255
Colindale	49,348	47,270	49,676	39,441
Chilton	7,600	3,241	4,616	7,644
Bristol	2,023	3,983	1,545	1,293
Glasgow	713	461	532	619
Leeds (Cookridge)	434	403	378	299
TOTALS	194,688	170,324	175,203	170,988

Total water usage across the PHE estate for 2013/14, which includes estimates for our non-reportable sites was 190,075 m^3. A large proportion of this was at our Porton site, though the trend is down on the previous 3 years usage, as is the case at the majority of our owned estate premises. One of the main reasons why Porton has such a high water usage is because of the manufacturing facilities it has on-site, alongside the large number of laboratories. Colindale also has a significant number of laboratories.

Water reduction is a specific target of the UK's greening government commitment

Waste

PHE set a total waste reduction target of 2% annually for the period to March 2020, compared to its baseline year of 2013/14. Preliminary analysis indicated a 25% reduction of waste going to landfill over the year. PHE's total waste figure for 2013/14 was 941 tonnes, compared to the estimated figure for 2012/13 of 948 tonnes.



PHE introduced a rigorous programme to reduce, wherever practicable, its total waste, especially to landfill. The trend was positive, with a number of projects being implemented to divert waste from landfill to other waste streams, principally to energy from waste. This markedly reduced the landfill disposal, with significant social, financial and environmental benefits for the organisation. In addition, the need to increase PHE's level of recycling was emphasised, which is also reflected in the figures below.

Waste	2012/13	2013/14
SCOPE 3 (Waste)		
Non-financial indicators (tonnes)		
Waste recycled externally (non-ICT equipment)	331	254
Waste reused externally (non-ICT equipment)	1	0
Waste recycled externally (ICT equipment)	8	8
Waste reused externally (ICT equipment)	4	8
Waste composted or sent to anaerobic digestion	22	17
Waste incinerated with energy recovery	217	252
Waste incinerated without energy recovery (clinical waste)	287	329
Total ICT waste	12	15
Total waste not to landfill	870	867
Total waste sent to landfill	60	45
Total waste	948	941
Total landfill waste deemed hazardous (including clinical waste)	18	29
Financial indicators (£)		
Waste recycled externally (non-ICT equipment)	53,263	55,939
Waste reused externally (non-ICT equipment)	705	0
Waste recycled externally (ICT equipment)	3,874	7,504
Waste reused externally (ICT equipment)	*0	*0
Waste composted or sent to anaerobic digestion	2,823	2,175
Waste incinerated with energy recovery	58,378	50,957
Waste incinerated without energy recovery (clinical waste)	178,292	446,758
Total waste sent to landfill	34,112	9,761
Total waste	349,087	617,691
Total landfill waste deemed hazardous (including clinical waste)	17,640	44,598

*Data not available

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

As part of initiatives to reduce waste at all locations (covering both offices and laboratories), contractors working at PHE sites were informed of the requirement to reduce their waste wherever possible. This is in line with PHE's waste policy and the associated management arrangements.

The total waste figure for PHE for this first year of its operation was 943 tonnes. This figure is made up of a number of different categories: ICT waste that has been both recycled or reused; non-ICT waste that has been either recycled or reused; waste that has been composted or sent for anaerobic digestion; waste that has been sent for energy recovery; and waste that has been incinerated without energy recovery. The main waste route that PHE has been targeting is the amount of waste sent to landfill. This can be either hazardous or non-hazardous waste. The hazardous portion of this waste is derived from the incinerator process at Porton and is made up of waste incinerator ash; due to its composition it is deemed hazardous and has to be disposed of at a hazardous waste landfill site. The total amount of waste sent to landfill was 74 tonnes, some 8% of the total waste produced. Total waste not sent to landfill makes up some 869 tonnes, 92% of the total, which is a great step forward for the organisation. Zero waste to landfill is our overall objective, something we hope to achieve in the future.

Waste that has been recycled makes up some 27% of the total at some 256 tonnes, this does not take into account the ICT waste that was recycled or re-used, which was also an additional 15 tonnes. (ICT waste is discussed separately).

PHE's target is to increase reuse and recycling and to reduce its total waste output by 2% each year to 2020

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ICT waste

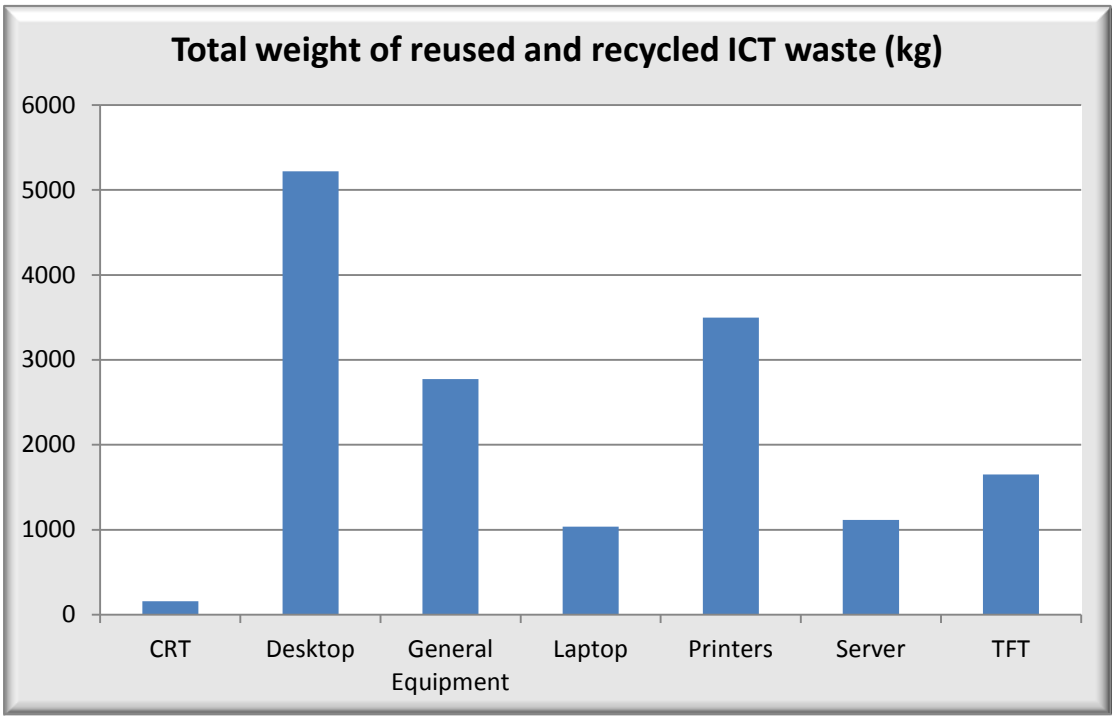
We are required by government to ensure that redundant ICT equipment is re-used (within government, the public sector or wider society) or responsibly recycled. Our other waste electrical and electronic equipment, when it reaches the end of its useful life, is treated in the same way. All of our waste electrical and electronic equipment was disposed of via a specialist contractor for either reuse or recycling and none was sent to landfill.

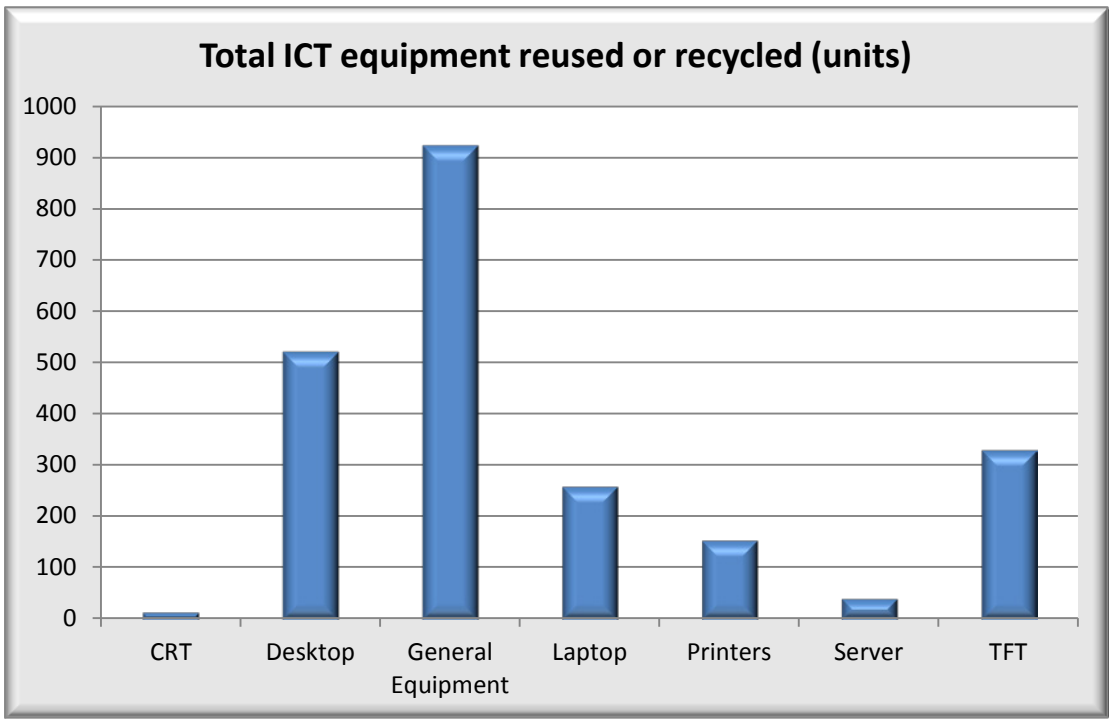
A third-party provider is engaged to recycle and, wherever possible, reuse all redundant ICT equipment. This approach continues to be an effective method of disposal for this waste stream, and is in line with government policy. The total amount of ICT waste that was collected by our ICT waste contractor (CDL) during 2013/14, which was either recycled or reused, was 2,245 items amounting to 15,463 tonnes. Of this, 7,917 kg of waste equipment was recycled and 7,546 kg was reused. This was approximately 2% of PHE's total waste output.

During the year, there was a major programme to replace much of the organisation’s redundant and aging computing equipment with standardised units, including a laptop roll-out. This led to a higher level of ICT waste than is anticipated for future years, which is accounted for as follows.

Item	No of items Reused	Weight of items reused kg	No of items recycled	Weight of items recycled kg	Total weight of hazardous items kg
Combi PC	0	0.00	1	10.00	10.00
CRT	6	68.16	8	90.88	159.04
Desktop	297	2,970.00	225	2,250.00	5,220.00
General equipment	0	0.00	924	2,772.00	2,772.00
Laptop	0	0.00	259	1,036.00	1,036.00
Printers	154	3,498.88	0	0.00	3,498.88
Server	4	108.96	37	1,007.96	1,116.92
TFT	180	900.00	150	750.00	1,650.00
TOTALS	641	7546.00	1,604	7,916.84	15,462.84

The nature of our ICT waste disposal is illustrated below.


Total weight of reused and recycled ICT waste (kg)
6000
5000
4000
3000
2000
1000
0
CRT
Desktop
General Equipment
Laptop
Printers
Server
TFT


Total ICT equipment reused or recycled (units)
1000
900
800
700
600
500
400
300
200
100
0
CRT
Desktop
General Equipment
Laptop
Printers
Server
TFT

Paper usage

Paper usage is an area where government believes it can make significant savings through coordinated recycling. ‘Closed loop’ is a cross-government initiative led by HMRC on behalf of the Government Procurement Service which aims to create both economic and environmental benefits by recycling government waste paper into paper products.

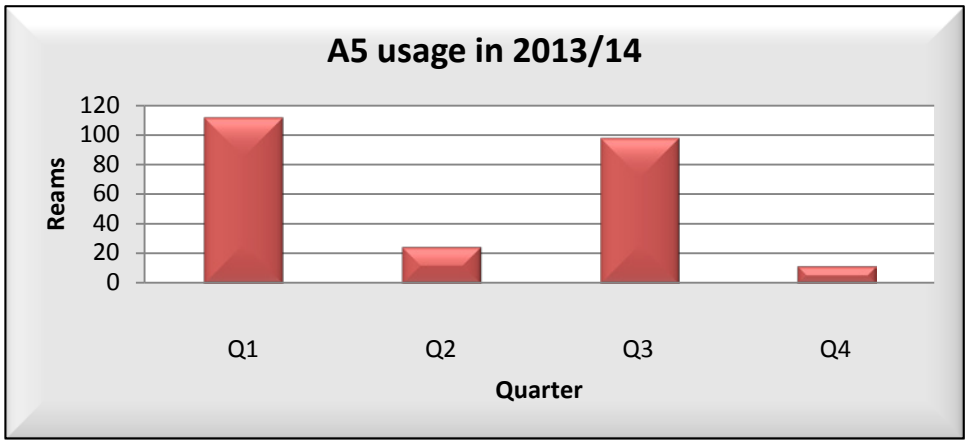
Under the ‘closed loop’ scheme, ‘white paper waste’ is securely collected and shredded. The waste is then pulped and recycled into ‘closed loop’ copier paper and provided back to government as a competitive, quality end product. PHE has moved to use of multi-functional devices (which copy, print, scan and email) wherever possible for printing and is discontinuing use of individual desk-top printers once existing equipment reaches the end of its useful life. The use of a PIN is further helping to ensure that only printouts which are collected are actually printed. (This is a system available on most such devices where the print command also carries a security PIN, which must be entered at the printer to ensure the printing actually commences.) This has the added advantage of increasing document security, ensuring information is not left on the printer.

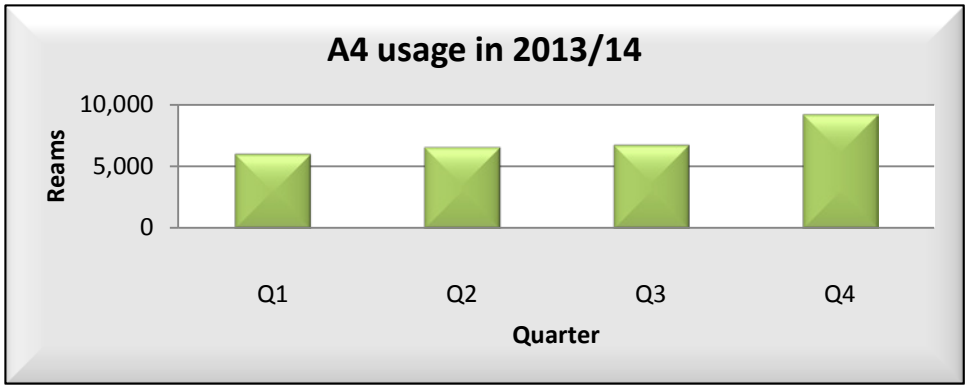
Our facilities in central London are now wholly based on use of multi-functional devices and we have started to introduce ‘follow me’ printing in other locations, whereby electronic control cards are used to produce a printout via a print server from whichever is the nearest or most conveniently located machine. Our paper usage over 2013/14 is summarised below and these data will comprise our baseline figures for paper consumption.

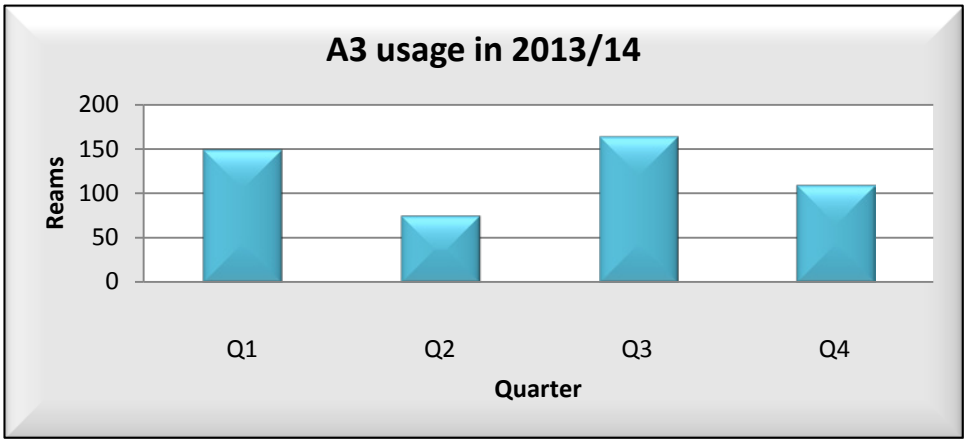
Quarter	A5 Reams	A4 Reams	A3 Reams
Q1	112	6,046	150
Q2	25	6,592	76
Q3	98	6779	165
Q4	12	9,243	110
TOTALS	247	28,660	501

In 2013/14, PHE used 247 reams of A5 paper, 28,660 reams of A4 paper and 501 reams of A3 paper. Of the A4 paper consumed, 34 % was

purchased through the Closed Loop Recycling scheme. It is anticipated that as the closed loop recycling scheme is further rolled out across PHE the uptake for this paper will increase, and controls have been placed on the purchasing aspect of paper from other (non-closed loop) sources.
PHE's paper consumption is illustrated below.







The facts about closed loop recycled paper

Closed Loop paper is compliant with government buying standards for recycled copier paper and is compliant to DIN 6738 which guarantees the paper for performance with a life expectancy of at least 100 years.

It is Blue Angel and Nordic Swan accredited and it also complies with the latest EC Eco-label guidelines of 2009 for copying and graphic papers (registered EC No: 66/2010).

The closed loop has saved an estimated 267,732 trees since the start of the contract in September 2011 and continues to save 17 mature trees per tonne when compared to virgin paper produced from pulped wood.

Closed loop paper uses:

- 50% less water (and to date 20 million litres of water saved, equivalent to eight Olympic sized swimming pools)
- 60% less energy (and to date 156 million kWh of electricity saved, enough to power over 46,000 homes for a year)
- 70% less air pollution (diverting waste paper away from entering landfill has also saved nearly 38,000 cubic metres of landfill space, helping to reduce methane gas emissions)

Pulp for Closed Loop paper is produced without the use of any chemicals or bleach and waste created from the pulping process is used as an energy source for the mill.

Use of paper recycled through the government closed loop system saves 17 mature trees per tonne

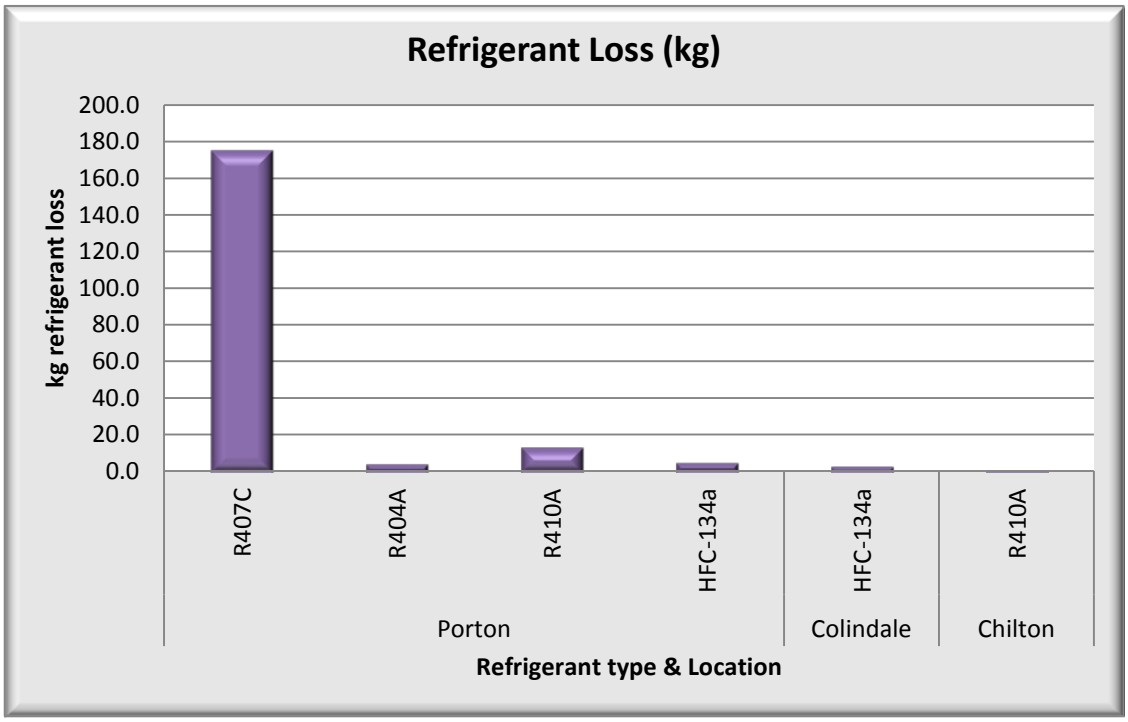
Refrigerants

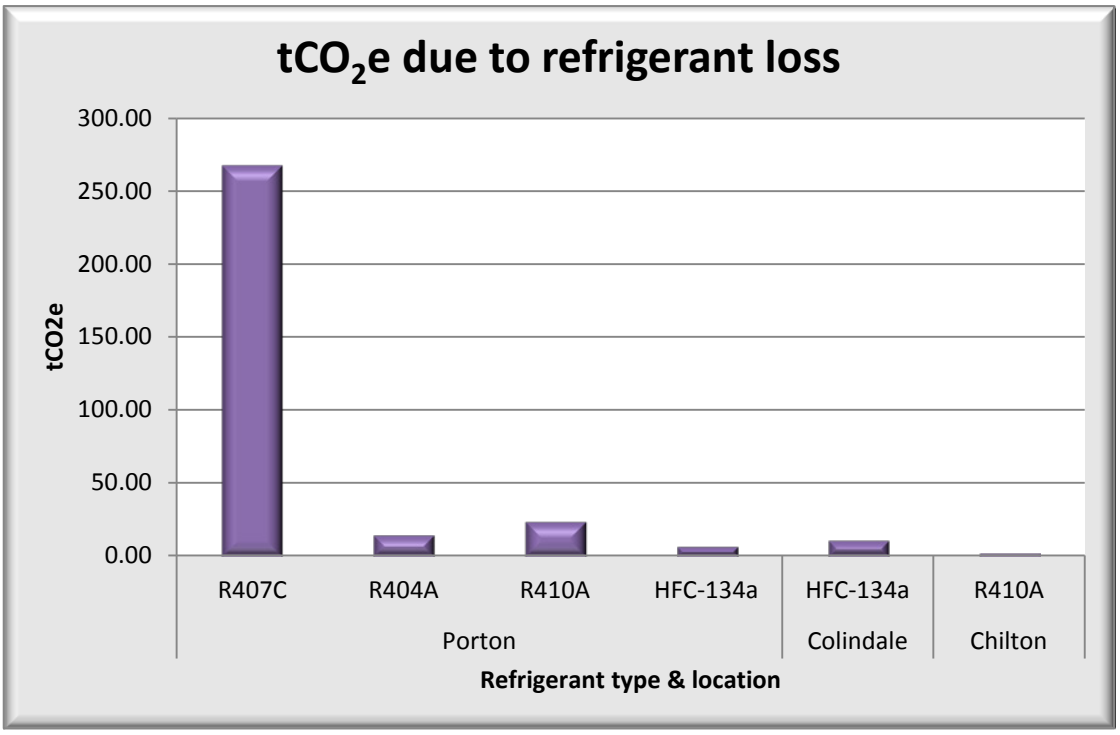
There is a legal requirement to monitor and measure the amount of refrigerants (F-gases) that are lost to atmosphere from the operation of cooling and air handling systems fitted on our owned estate. As such, at each of our properties where these types of equipment are fitted, an F-gas log is maintained by the local estates team which details how much of each particular gas has had to be topped up, due to losses. This information is collated and sent quarterly to DH as part of our greening government commitment return.

As can be seen from the data below, due to the global warming potential (GWP) of each specific gas emitted, the carbon equivalent of each kg of gas emitted is significantly higher. It is hoped that in the near future some of the more damaging CFC gases will be replaced with less harmful equivalents.

Facility / source description	Type of Refrigerant	Refrigerant Loss (kg)	GWP of refrigerant (CO_2e)	CO_2 emissions (tonnes $CO_{2)}$
Porton	R407C	175.7	1,526	268.03
	R404A	4.5	3,260	14.67
	R410A	13.9	1,725	23.98
	HFC-134a	5.2	1,300	6.76
Colindale	HFC-134a	3.4	3,260	11.08
Chilton	R410A	1.3	1,725	2.19

The refrigerant loss is illustrated in the charts below, by type, together with the tCO_2e this represents in relation to the impact of greenhouse gases.





Biodiversity and wellbeing

Although PHE does not own any estate which is classified as a Site of Special Scientific Interest (SSSI) or Area of Outstanding Natural Beauty (AONB) it fully recognises the importance of biodiversity. PHE also understands the value of living sustainable lifestyles and the importance of this to health and wellbeing.

We have developed allotments on our Colindale site, run by staff in their lunch breaks, to grow a wide range of vegetables. At the Colindale and Porton sites we have planted trees to mark NHS Sustainability Day 2014.

PHE staff at Colindale also continue to maintain their bee hives, providing a small but useful contribution to biodiversity in a built up area.

PHE manages a number of bee hives at its Colindale site in north-west London

Sustainability in Specialist Microbiology Services

The Specialist Microbiology Services (SMS) comprise a network of laboratories located at strategic sites within England. These sites are our front line clinical and food water and environmental microbiology laboratories as well as providing 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.

SMS has continued with sustainability champions and monthly meetings of the Environmental Sustainability Group. Because most of the laboratories are embedded in Colindale and Porton, as well as Host NHS Trusts or other public service sites, there are constraints on our ability to influence environmental sustainability. However staff travel has been an on-going focus over the past year, with investment in video conferencing facilities at the peripheral sites as well as implementation and training on the use of the *Lync* system through the existing IT network.

SMS does have one managed site at the Myrtle Road site in Bristol. This site houses part of the Bristol Public Health Laboratory and was purpose built for the (then) PHLS in 1968. This building is no longer fit for purpose and a new laboratory is being built in North Bristol, and should be completed early in 2015.

In the meantime, maintenance at Myrtle Road is an on-going issue. One of the biggest problems that has been faced over the last few years is related to steam consumption. Steam for heating, hot water and the autoclaves is provided by UH Bristol Trust from their hospital boiler house.

Consumption of steam had remained steady until 2010 when a sharp increase in consumption was noticed. This was eventually traced to a faulty steam pressure relief valve on one of the autoclaves, but even when this was repaired, consumption remained higher than previously.

A survey of the Myrtle Road plant room showed multiple leaks from the steam plant and thus, a complete overhaul of the system was required. This work was started in 2013 and finished in early 2014. A big improvement in the condition of the plant room is now evident. Whereas previously the leaks meant that the floor was permanently wet and the atmosphere resembled a

steam bath, the room is now dry and there is no evidence of leaks. Steam consumption is now steady and it is to be hoped that the plant room will remain in a reasonable condition until PHE moves into its new building.

Investment in the existing infrastructure plant and machinery is being combined with utility monitoring, and were possible, management for the remaining life of this site.

PHE's Specialist Microbiology Services network of laboratories across the country provides clinical diagnostic services to the National Health Service

Sustainability in the regions

Approaches to sustainability networks and partnership engagement

Each of the four Public Health England regions has its own approach to sustainability networks and partnership engagement. All regions have developed networks across their region and in addition to these networks, all PHE centres have a sustainability lead. In many cases there are often centre level networks in place as well.

Regions are developing links with partners such as NHS England (NHSE), directors of public health, academia and other agencies and each region has held or is planning a regional sustainability event. These events are designed to promote sustainable development, share good practice and support all those working on the sustainability agenda in the health economy. Regions are also developing action plans from this.

Some examples of the networks and events that have taken place (or are planned) are highlighted below.

- the South Region held a regional conference in October 2014 to share good practice, support, inspire and encourage those working on the sustainability agenda

- the East Midlands Centre held an event in April 2014 that covered a wide range of public-health related sustainability issues including food, housing and sustainable communities

- the London integrated region and centre organised two events. The first was an engagement event held jointly with NHSE London in November 2014. The second will look at establishing a standardised system to share contact information between partners for Londoners who may need advice about keeping themselves safe during a heat wave or cold weather

- the North Region is planning a sustainability conference in March 2015, promoting why sustainable development is good for the economy and supporting a collaborative approach to this agenda. This will include sharing experiences both locally and with other sectors, to demonstrate how the benefits and outcomes could prove useful elsewhere

Internal initiatives

The top four areas that regions and centres are focusing on in terms of internal sustainability are travel, IT, energy usage and recycling.
All regions and centre teams now have videoconferencing facilities and this, together with improved teleconferencing and the installation of Microsoft Lync, will decrease the frequency of travel thus reducing PHE's overall carbon emissions. Some regions and centres have developed a travel check list for staff to encourage them to consider all options prior to travelling, and work will continue to scrutinise travel data and help to make further reductions in this area.

A number of IT based initiatives across PHE are been put into place including default settings to encourage black and white, and double sided printing. Laptops recently rolled out across the regions are ten times more energy efficient than previous laptops.

Most premises occupied by regional and centre teams are not PHE owned. As a result of this, the regional and centre teams are working with their landlords and facilities teams to receive and monitor energy data, with a view to reducing energy costs

Regions and centres are also keen to integrate sustainability with staff health improvement. Health and wellbeing champions are in place across the country within regions and centres, and various initiatives are being implemented in respect to this. For example, to promote walking as opposed to use of the underground in London, route cards are provided to people travelling to PHE premises.

Work on co-benefits

Work is also taking place across regions and centres to link sustainability to wider public health goals. Some examples are highlighted below.

- improving air quality – staff in West Yorkshire are developing an active travel strategy as a means of reducing particulate pollution and staff in London have a number of initiatives including green screens and a cycling policy

- sustainability and economic development – staff in The Humber have a strategy to support higher value jobs as part of developing their off-shore renewable energy sector

- heat-wave and cold weather plans – there are opportunities in both of these areas to improve health and sustainability such as the design of the built environment to reduce indoor temperatures without the need for air conditioning and reducing fuel poverty by improving home energy efficiency in social housing

We are working with our staff and others to promote healthy lifestyles

Sustainability at Porton

PHE Porton is a large operational site with a remit that includes specialist and reference microbiology services for high containment pathogens, translational research programmes and the manufacture of biopharmaceutical products. Given the varied and complex activities that take place on this site, PHE Porton's day to day operations are intensive in natural resources and contribute a substantial part to PHE's overall environmental impact.

With longstanding ambitions to become a more sustainable site, in the last few years successful projects have been delivered by the site's facilities and engineering teams to operate both our facilities and equipment more efficiently. The site has also continued to expand in this time, with new facilities constructed and staff joining the site. Despite this growth in size and scale, PHE's commitment to sustainability has enabled the site to reduce its electricity consumption by 14%, and gas consumption by 4.8%, since 2011.

It is clear however that with over 900 staff working at PHE Porton, it is not just the facilities themselves that will contribute to our impact, but how our staff use them. For this reason, in July 2013, we started an environmental communications programme. This programme aimed to raise awareness of both general and on-site environmental issues and provide opportunities for staff to keep informed of and get involved in initiatives to improve the environmental impact of 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

Sub-metering

In June 2014 a project to install 56 sub-meters around the site commenced. The installation is being timed when shutdowns allow, with all programmed to be connected by the end of November. The accompanying software will provide PHE Porton the ability to interrogate the site's electricity usage, identifying areas for improvement in energy efficiency.

Independent cooling system for IT server room

Historically the site's cooling system required it to remain on in the winter to provide sufficient cooling to the IT server room. In 2014 PHE Porton has installed an independent cooling system for the server room. This will enable the main site system to be switched off in winter enabling significant energy savings.

Reducing carbon emissions from business travel

PHE Porton is in a rural setting with staff commuting from a wide radius. The nearest towns are several miles away and buses to the site are irregular. Promoting sustainable travel to work is therefore challenging but we remain committed to achieving the site's travel plan.

Promoting sustainable travel

In March 2014, in support of NHS Sustainability Day, PHE Porton held an event to promote a number of sustainable travel options available to staff on site. The exhibition included: representation from the local bus company to promote and receive customer feedback on their bus services; promotion of the free local shuttle bus service; cycle safety checks, promotions and discounts courtesy of a local bike company; the resurrection of the site's Bicycle User Group (BUG); and prize draws for car-sharers.

Shuttle bus

Working with a neighbouring organisation, we offer a free peak time shuttle bus travelling to and from the nearby town of Amesbury for staff commuting from this direction. At the Sustainability Day we launched a six month trial to extend the operation of the bus throughout the day, aiming to make the case to limit the number of taxis used to get to Salisbury station.

Bicycle user group

At the Sustainability Day we recruited over 30 keen cyclists to join the site's Bicycle User Group (BUG). The purpose of the group is to provide a forum for the site's bicycle users: keeping updated with Wiltshire's safe cycle route plans; reporting issues with on-site facilities and involvement in

improvements; and sharing information on cycling activities taking place locally.

The group mainly keeps in touch by email but bi-monthly meetings are also organized. The formation of the group has already enabled new equipment to be added to the cycle store, including a bike repair stand, tool kit and pump. A cycle loyalty scheme has also been introduced; with free breakfasts for regular cyclists.

In September 2014, monthly lunchtime cycle surgeries were introduced. Staff may now book in with the resident bike doctor for safety checks and minor adjustments.

Connecting with the Wiltshire travel challenge

Throughout September 2014, Wiltshire Council is running a challenge for businesses and organisations based in Wiltshire to get as many people as possible commuting to work (and back) by walking, cycling, motor cycling, using public transport and lift-sharing.

PHE Porton took part in the challenge, encouraging staff to log their journeys to work. Just 3% of the staff on site took part but between them they logged 511 more sustainable journeys, covering a distance of 5719.3 miles, saving 782kg carbon dioxide.

Site travel plan and survey

As part of PHE Porton's commitment to the Area Travel Plan a staff travel survey was undertaken in March 2014. The survey asked staff about their current commute and also about other travel modes and tried to gain an understanding of what the drivers may be for shifts to more sustainable modes. The results of this survey are being used to inform the review of the site's five-year travel plan, due to be published by the end of the year.

Reducing total waste arisings

Promoting waste reduction

In 2013/14 PHE Porton produced over 500 tonnes of waste. Over 96% of this waste was either recycled or recovered for energy; but we are keen to reduce the waste we produce at source. We have therefore organised a number of

initiatives throughout the last year to get staff to consider the waste they produce; providing them with opportunities to reduce their impact both at home and at work. In December 2013, we worked in partnership with Love Food Hate Waste, our facilities management provider, EMCOR and our catering provider, Catering Academy to promote the principles of Love Food Hate Waste.

The canteen produced tasty food made with leftovers whilst EMCOR provided an eye-catching and interactive display for staff to explore highlighting ways staff could reduce food waste both at home and at work. Tying in with the run up to Christmas, recipe booklets filled with ideas for Christmas leftovers were handed out.

PHE Porton's first 'Swishing' event to promote waste reduction

In January, we installed a Salvation Army Clothing Bank on site and launched it with a 'Swishing' clothes swap event, with an opportunity for the Salvation Army to promote what they do with the donated clothes. This event received much positive feedback from those that took part, with over 150 items swapped in two hours. It was so successful that we have been asked by staff to hold them regularly.

Site waste management procedure

The promotional events held during the year enabled us to open dialogue with staff about waste; and discussions highlighted some confusion with regards to segregation for recycling on site, particularly from those who had joined from other locations. In June 2014, we therefore published a new standard operating procedure for waste management on site.

The procedure aimed to clearly identify all waste segregation and responsibilities at PHE Porton and has now been trained to over 600 staff in over 20 training sessions. The response to this training has again been very positive and is already triggering much more discussion about how staff can reduce their waste. It has delivered an improvement in waste segregation and has seen an increase in requests for office mixed recycling bins.

Tours of waste facility

PHE Porton has an incinerator onsite to manage waste generated from laboratory and manufacturing areas. As part of the roll-out of the new waste procedure, PHE Porton has worked with its principle maintenance contractor to develop a series of tours of the facility for those staff that produce waste destined for incineration.

These tours, starting in October 2014, take them through the process of incinerating their waste and explain the controls and monitoring in place to prevent pollution. The tour aims to highlight the importance of managing waste and the responsibility of the waste producer on controlling the impact on the environment.

Promoting sustainability

Sustainability day

On 27 March 2014, PHE along with organisations across the NHS took part in the first national Sustainability Day for the health service. PHE chose to focus their events on travel this year and Porton arranged various exhibitions and activities in the canteen on the day to promote sustainable travel.

The exhibition included: representation from MoreBus to promote and receive customer feedback on their bus services; promotion of the free shuttle bus service; cycle safety checks, promotions and discounts courtesy of BikePro

Servicing; the resurrection of the site's Bicycle User Group; and prize draws for car-sharers.

Planting fruit trees for the NHS Forests Programme

Along with other organisations across the country, PHE Porton also marked the occasion by the planting of two fruit trees at 2pm, in support of the NHS Forests Programme.

Regular communications

PHE Porton continues to produce its environmental bulletin, 'Porton's Planet Pages' or 'The 3Ps'. This is a four page newsletter sent to all staff via email every couple of months. It reports progress towards environmental targets, highlights environmental projects and improvements to facilities, promotes upcoming environmental events and seeks participation in new initiatives. This regular bulletin is complimented by an environmental noticeboard located outside the entrance to the staff canteen. Feedback to the newsletter has been positive with many staff following up on articles and responding to calls for involvement.

The 3Ps Bulletin, an environmental newsletter published at PHE Porton

Environmental working group

PHE Porton's environmental working group (EWG) meet periodically to discuss environmental issues and initiatives on site. The group has cross-departmental representation.

Connecting with the environment

PHE Porton is fortunate to be set in the heart of Salisbury Plain, with a rich natural environment on our doorstep, which we often take for granted. To support both the area's rich wildlife and the organisation's aims to encourage staff wellbeing, we have been promoting their access to nature in the lunchtimes, away from their desks.

Since February 2014, we have installed benches in the quiet corners of the site, with views across the surrounding landscape for staff to enjoy. We have safeguarded an area to the west of the site, approximately 2 hectares in size, as a nature area and over the next few years we will make improvements to this area to promote wildlife. This summer we have installed planters across the site and run a 'PHE in Bloom' competition where eight teams have grown and maintained wildlife promoting flowers and plants.

The flowering planters, entered by staff for the PHE in Bloom competition

To encourage further outside activity at lunchtime, we have gathered together a group of keen green-fingered volunteers who are helping to plan and develop food growing spaces on the site, to be introduced later in the year.

Sustainability at Colindale

Additional Resources

PHE's Colindale site had had an Energy and Environment Manager in post since September 2013

Energy-reduction measures

A number of initiatives have been undertaken to better manage our energy use on the PHE Colindale site. These include the following projects.

- installation of 20 x 1kW Photovoltaic solar cells: September and October 2013. After a year of being in place, a combined total of 13,280 kWh electrical power been produced which has offset 5tCO_2e used through processes and £1,457 in costs

- during the year, we had 2 switch-off weekends and joined the world-wide Earth hour calling for staff to switch-off their electric lights for an hour during March

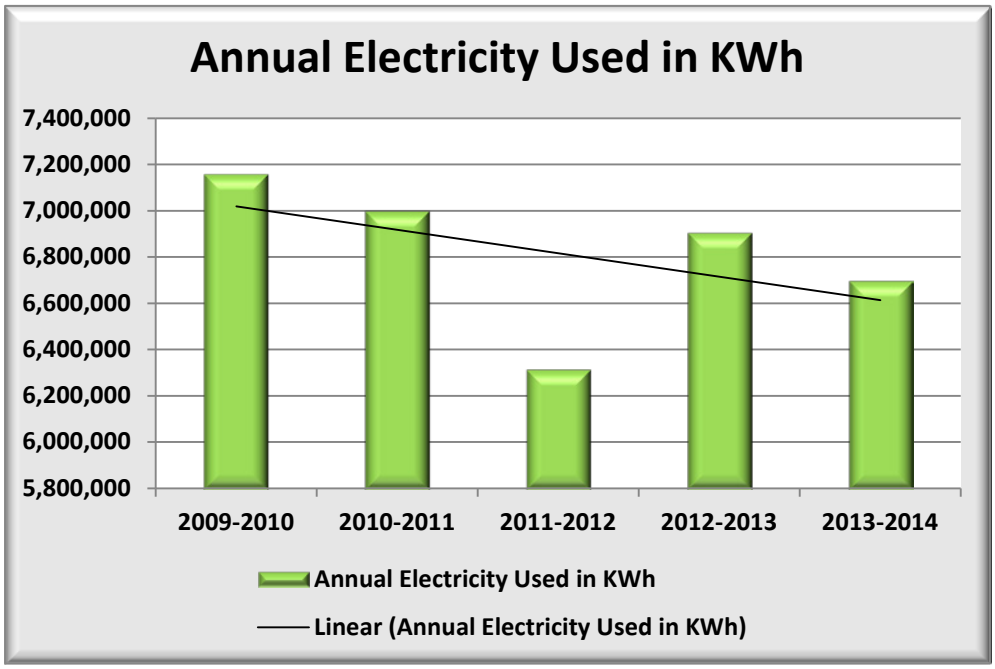
- replaced two adiabatic coolers and 2 York screw coolers with two energy-efficient McQuay coolers; they were installed in March 2014 so their benefits will be realized during 2014-2015. So far, results have been very positive, illustrating that cooling is being accomplished effectively with far less energy required in spite of more cooling degree days required and measured by the meteorological office

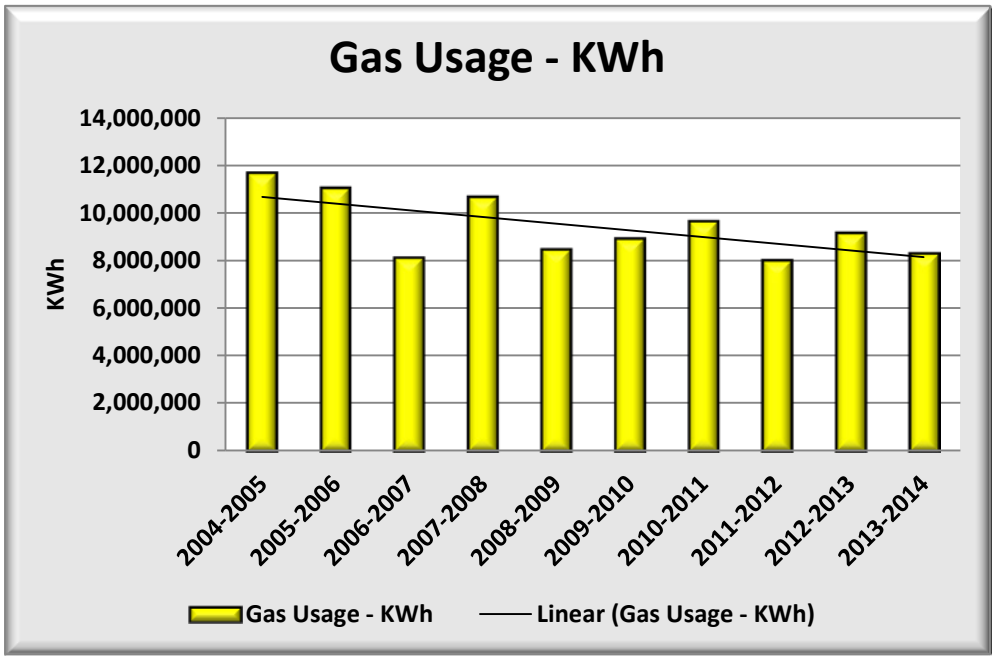
- a new 'Controlled Environment Facility' (CEF) has been installed at Colindale to deliver the 'Next Genome Sequencing (NGS) Project which is expected to demand 27% more electric. This project was installed in March 2014 so the results of this installation will only be appreciated during the following financial year and subsequent years as the 'NGS' reaches capacity

- a programme to replace energy-intensive flood lights and bollard lighting with LEDs has been undertaken across site. Altogether, the new lighting has saved 20 tCO2e and £4876.00 during the year but is expected to save more than £8,000 annually

The benefits of these projects are summarised below, followed by graphs illustrating electricity and gas usage.

Project (updated July 2014)	Metrics	Actual costs	Projected financial Savings £	Financial savings: projects complete in 2013-14	Actual tCO_2 saved
LED Office Lighting - Site Operations, FMD, HPS, MS	Electric use/m^2, Reduced waste & reduced maintenance figures	91,600	8,225	6,774.73	27
LED Office Lighting - zone 1A (to Be integrated within refurbishments)	Electric use/m^2, & reduced waste	57,400	3,988	2,205.27	9
Upgrading of Heating, Ventilation & Air Conditioning for B zone	Electric use/m^2 & reduced waste	501,000	4,500	5,583.69	31
Solar panels on stores	Electric production in kWh/year	19,400	2,811	724.37	3
Controlled Environment facility	Extra capacity for Resilience of IT equipment	638,000	129,566	8,231.49	33
Provide New Power Supply to New Controlled Environment Facility	Extra capacity for Resilience of IT equipment	385,000	N/A	?	?
Replacement of kitchen equipment: Dishwasher by government preferred supplier	Water use/cycle & Electric use/cycle	42,000	2,332	1,334.27	5
Replacement of kitchen equipment: Steam Oven and deep fat fryer	Electric use per cycle	40,000	1,696	13.17	0.05
Replace 2 adiabatic coolers and 2 York-screw coolers with 2 McQuay coolers	Electric use /m^2	635,000	30,000	72,583.49	190
Climate Change promotional week	Environmental awareness in staff.	1,900	2,000	2,195.06	9
BSD plant room led lighting & controls	Electric use /m^2	20,000	3,403	1,895.22	8
	TOTALS	2,431,300	74,003	85,051	249





Climate Change Week, 3-7 March 2014

- several activities took place during climate change week with the aim to reduce climate change air pollutants through energy-use, transport-use, water-use and waste production. Activities included cycling and walking competitions with a prize for the man and women who cycled the furthest over a three minute period

- other activities included promoting car-sharing through joining the PHE car-share scheme and a straw poll to request staff participation in the parking dilemma with a 4-1 ratio of staff to parking spaces

- the ‘Cycle to Work’ scheme was promoted with local bicycle shops asked to demonstrate what they have to offer as members on the list of ‘Cycle to Work’ Scheme bicycle providers. This also included an electric bicycles retailer and ‘URGE’ who provide a service to maintain cycles. Breakfast tokens were also given to staff that cycled to work on specific days as they entered the premises

Climate change week at Colindale, March 2014

NHS Sustainability Day 27 March 2014

- to show our support for ‘NHS Sustainability Day’ on 27 March 2014, we planted two more indigenous trees with the help of Matthew Offord, local MP for Hendon and Richard Gleave, Chief Operating Officer for Public Health England. As Colindale is a member of NHS Forests, we were able to obtain two willow trees donated by ‘The Great Outdoors Gym Company Ltd

- over time, the trees will help to reduce global warming through offsetting atmospheric carbon dioxide produced during burning of fossil fuels. Seven trees are required to remove the carbon dioxide emitted from a regular car driving 10,000 miles. A large tree also supplies a day's supply of oxygen for four people which also aids the health and wellbeing of ‘PHE’ staff

- the trees will also provide shade during the summer months thereby reducing the need for cooling and shelter during the winter months from strong winds and driving rains

Tree planting at Colindale by
Matthew Offord MP (left) and Mr Richard Gleave from PHE

Colindale Sustainability Event

On 26 and 27 September 2014, Colindale raised the profile of its direct impact on the environment and the indirect impact on public health through, a ‘sustainability day’. With help from suppliers, contractors and staff, stalls were set-up in the main refectory to highlight cost advantages in taking action on reducing our resource-use. From maintaining beehives to using timers to perform simple actions such as taking a shower, these illustrated the benefits to everyone on a personal level in addition to the cost advantages for PHE.

This event was followed by a visit from David Pencheon OBE, (Head of the NHS Sustainability Development Unit). David gave a presentation to Colindale staff on *‘Climate Change and the effects on Public Health’* to emphasize the correlation. He stressed that the aims of sustainability are undoubtedly in line with the public health objectives and as such, should be primarily considered when conducting our business. To complete the day, David officially opened our allotments and helped to plant trees in aid of membership to ‘NHS Forests’.

Top: David Pencheon (right) and Colindale staff plant trees
Bottom: raised beds at the Colindale allotments

Colindale Christmas Charity Event

'PHE' Staff at Colindale organized a Christmas Charity Event to raise funds for the local elderly folk who often require extra help at Christmas. The focus of the campaign was 'sustainability at Christmas' and with help from EMCOR, stalls were established in the refectory to reflect the theme.

A Christmas tree was decorated with hand-made decorations made almost entirely from recycled materials: paper, foil, cardboard and plastic bottles as shown in the photograph. EMCOR produced Christmas menus that depicted recipes with left-over food and 'Catering Academy' fashioned Christmas lollypops with a recipe tailored around Christmas pudding mixture.

Table decorations were made using woodland debris collected from a forest and EMCOR staffed a table to instruct and illustrate to staff how to make the decorations using templates EMCOR produced for children and adults alike. The Estates department received orders for 7 bird boxes, made using materials from used pallets. Altogether, Colindale PHE raised £210.00 for 'Age UK' by raffling donated plants from EMCOR, soft toys and recyclable hand-made gift bags.

In addition, a shoe-box appeal was instigated by the 'Sustainability and Environmental Working Group' (SEWG) to enable 'Age UK' recipients the opportunity to receive a gift of food items, clothing, cosmetic creams & stationery. It was decided to aid this charity during the winter season as the elderly can become very lonely and isolated, often forced into make a choice between food and heat!

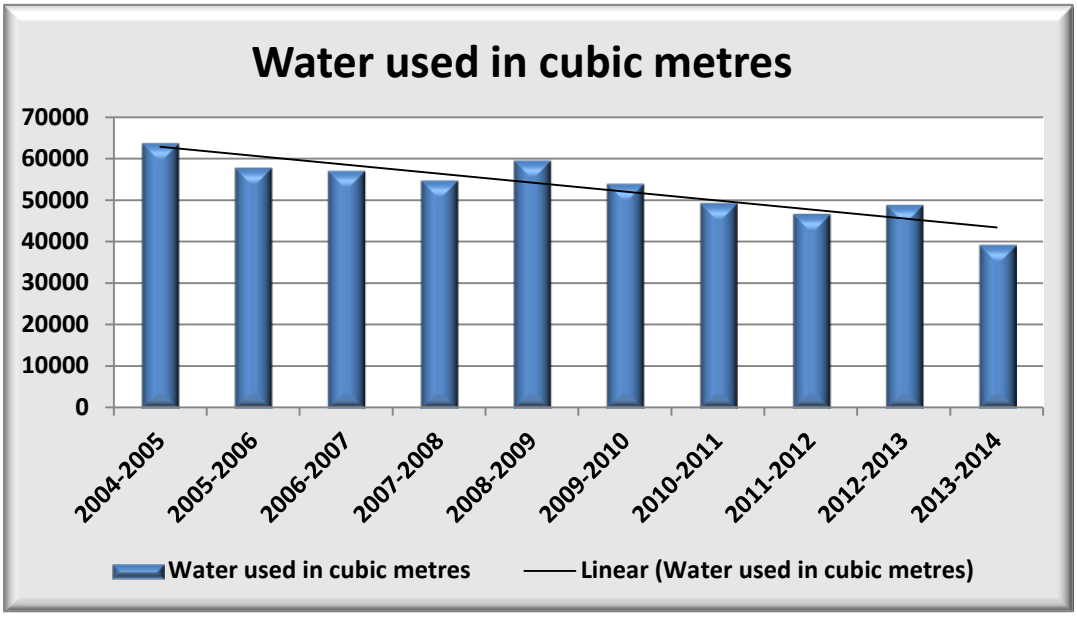
Jo Southern talks to beneficiaries
as she presents recipients with decorated shoeboxes

On Thursday 12 December 2013, we presented the decorated boxes to some of the beneficiaries at ‘Age UK’ in Harrow during their Christmas dinner that ‘Age UK’ had provided. Everyone thanked us gracefully and in good spirit, asked us to come again next year!

Water reduction measures

Nine waterless urinals have been installed at Colindale during 2013-2014 and have proved to be very successful, with actual financial water savings of £20,005 even though waterless urinals were only installed during September 2013 and December 2013.

Project (updated July 2014)	Metric	Actual costs	Projected financial Savings £	Financial savings: projects complete 2013-14	Actual tCO_2 saved
7 Water-less Urinal Installation	Amount of water used. Quantity of detergent used.	£5,940	3,749	3,749	1.03
2 Water-less Urinal Installation during refit	Amount of water used. Quantity of detergent used.	£3,450	1,071	1,071	0.26
Sustainability days	Water use in m^3; Energy use; Mileage; waste produced	£2,800	0	15,185	1.34



Transport Measures

Apart from Climate change week, a sustainability day was held in September 2013, which promoted all aspects of sustainability and video conferencing facilities were installed in meeting rooms across site.

Project (updated July 2014)	Metric	Actual costs	Projected financial Savings £	Financial savings: projects complete 2013-14	Actual tCO_2 saved
Replace and upgrade video conferencing, telecommunications, implement Microsoft Link	No of video conferencing facility. No of business miles travelled reduced. No domestic flights.	£98,400	TBC	TBC	TBC
		£98,400	TBC	TBC	TBC

Waste Projects

Waste is managed by EMCOR at Colindale however during the past year, we have separated food waste from general waste by installing food waste collection containers in the 26 kitchens on site. As food waste is collected separately, EMCOR places the food waste in one of 3 in-vessel composters where it breaks down aerobically producing compost for the site vegetation. In addition, 6 composters have been constructed from used wooden pallets for green plant waste.

Although, the amount of waste was reduced, the costs of the waste increased by £73,003 since 2012-2013 however we have been re-evaluating the waste disposal methods in line with the waste hierarchy of the Waste (England & Wales) Regulations 2011, to divert disposal methods which have less impact on the triple bottom line (social, environmental & economic).

Project (updated July 2014)	Metric	Actual costs	Projected financial Savings £	Financial savings: projects complete 2013-14	Actual tCO_2 saved
A composter with maturing box installation	Amount of organic waste diverted from offsite disposal	3,500	1,366	3,035	0.11
Two new in vessel composters and a shredder	Amount of organic waste diverted from offsite disposal	5,000	2,732	6,070	0.22
Six wooden composters and standpipe	Amount of organic waste diverted from offsite disposal	4,500	4,856	9,105	1.70
Food waste separate collection	Food collection containers in place in kitchens on site.	3,400	N/A	N/A	N/A
Christmas recycling promotional event & other promotional events	Reduced waste and increased recycling figures	2,810	£0	3,035	0.11
		19,210	8,953	21,245	2

Results for 2013/2014 projects	Budgeted project cost	2013-2014 project savings	Projects tCO_2e saved	Actual cost difference between 2012/13 - 2013/14	tCO_2e saved 2012/13 to 2013/14
All waste except chemical	30,790	21,245	2	73,003	31.84

Waste Summary at Colindale 2013/2014							
	Incinerated without energy recovery	Incinerated with Energy from waste	WEEE	Recycled offsite	Recycled onsite	Reused offsite	Total
Quarterly 2013-2014							
April-June	10560	32,086	2,719	16340	0	0	61705
July-September	10095	23,686	2,578	15660	0	0	52019
Oct-Dec	8920	18,614	4,195	25720	1250	0	58699
Jan-March	11700	22,070	4,873	22200	3000	1540	65383
Total	41275	96,456	14,365	79920	4250	1540	237,806
Worst							Best

Sustainability in CRCE

Work undertaken by CRCE in the 2013/14 financial year

In PHE's Centre for Radiation, Chemical & Environmental Hazards (CRCE), environmental and sustainability activities are overseen by its Environmental Working Group. This past year, the group has focused on prioritising how environmental impact is identified and has allocated resource where the greatest influence on reduction of impact is believed to be possible.

Environmental aspects and impacts in CRCE

Following on from the 2011/2012 review of the environmental aspects and impacts registers, work continued to address the three year action plan for the specific areas that were highlighted. This action plan is under the control of an Aspects and Impacts Sub-group of the CRCE Environmental Working Group and is closely monitored by the Working Group. Progress is reported to the CRCE Centre Management Team meetings as appropriate.

During 2013/14 actions undertaken included the following:

- improvements in the recording process for future aspects and impacts reviews have been evaluated and improvements made to the template
- environmental champion nominations were received from CRCE departments and sections
- printer toner recycling information has been developed and issued to staff
- an analysis of laboratory packaging waste, to identify further opportunities for re-use or recycling, was undertaken

CRCE maintains sub-groups of its Environmental Working Group which lead on evaluating the centre's activities in areas such as paper usage and travel, along with proposing and monitoring improvements in environmental performance.

Investment in premises

CRCE has made significant investment in high efficiency lighting and building services equipment. Following this, work has continued to ensure that energy efficiency was taken into account, especially in all building refurbishment

work undertaken during 2013/14. The centre at Chilton was prioritised as the largest energy user within CRCE, and photovoltaic (PV) electricity capture and solar hot water systems were considered for capital investment. These are proposed for installation in 2015 when it is hoped that advanced technology will offset any recent cost increases.

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 (through flicker. These studies were undertaken by CRCE's Laser and Optical Radiation Dosimetry Group, However, careful selection of the right products can provide long term energy savings without risk.

Aged areas of roof covering were replaced at Chilton, providing the opportunity to benefit from upgrading to current standards of insulation. Other aged plant replaced at Chilton included a number of small gas-fired boilers which have been replaced with high efficiency fully condensing boilers, and 18 year old heating system pump-sets which have been replaced with inverter controlled high efficiency demand-controlled circulator pumps.

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 guide CRCE laboratory and office refurbishments. The minimum standard achieved is 'silver' with some facilities exceeding this and achieving 'gold' ratings. CRCE continues to work with RICS to develop the system for laboratory refurbishments. In 2014, CRCE's work on *'Using the RICS SKA assessment scheme to guide refurbishment of PHE laboratories'* was presented at the National S-Labs Conference.

Training

Environmental training remains a priority at CRCE; it is actively monitored and is a standing agenda item at our Environmental Working Group meetings. By mid-May 2014, all CRCE staff had undertaken PHE's mandatory sustainability e-learning module. Staff members are actively encouraged to undertake appropriate sustainability training through quarterly reports to heads of departments and sections. The administration of targeted sustainability training courses for more specialist audiences was devolved to division and centres during the latter part of 2012. CRCE has allocated this role to the Compliance Support Team and is currently awaiting administrative support to expand this further.

CRCE Scotland

The environmental management system at CRCE's facility in Scotland continues to mature and retained its ISO 14001 status after successfully undergoing a re-certification and surveillance audit during 2013-14.

Targets and objectives for CRCE Scotland were reviewed and updated in July 2013 and measures identified to improve the environmental performance of the department. The following areas were identified for increase focus: waste; procurement; travel; energy usage; and water usage. Targets in these areas are in line with PHE's corporate sustainability objectives.

CRCE Scotland reviewed waste arrangements during 2013 when planning for its compliance with the Waste (Scotland) Regulations 2012. Additional glass and food waste streams were added to the existing arrangements.

Paper use in CRCE

CRCE has worked to reduce its paper usage, in line with the requirements of the greening government initiative.

The table below shows figures obtained for the years following the baseline (2009/10) year. The 2013/14 figures are for CRCE Chilton and represent paper bought through the central purchasing function provide by the facilities section.

CRCE has further reduced the combined paper use by 14% for the financial year 2013/14 compared to the previous year, with the majority of this reduction from in-house printing.

Financial year	Chilton in-house printing*	Chilton building printers	Additional Chilton building requirements	Total boxes ordered	Percentage reduction from previous year
2010/2011	285 boxes	520 boxes	95 boxes	900 boxes	3 (estimated)
2011/2012	313 boxes	450 boxes	53 boxes	816 boxes	9
2012/2013	200 boxes	420 boxes	43 boxes	663 boxes	19
2013/2014	146 boxes	377 boxes	59 boxes	582 boxes	14

* This figure may vary if CRCE UK-wide needs are locally met rather than through Chilton
One box = 5 reams

As a result of a change of paper supplier, CRCE has moved to a single type of paper for in-house multi-functional devices and CRCE local printers used by the staff. The paper bought from Banner is ‘closed loop’ paper and is 100% recycled; when combined with the closed loop shredding service this offers a comprehensive, secure and sustainable provision.

Radiation protection field studies

Public sector sustainability awards 2014

In November 2014, PHE's sustainable development work was recognised by the Energy Managers Association, at the Public Sector Sustainability Awards held at the Energy Management Exhibition at the Excel Centre in London.

Three members of PHE staff received certificates for their work on different aspects of sustainability:

- Brigitte Guile at PHE Colindale received a certificate in the category of 'most sustainable public sector health organisation'
- Lizzy Staincliffe at PHE Porton received a certificate in the category of best green office
- Steve Owens in the corporate office received a certificate for development of a travel calculator for evaluating the carbon footprint of business journeys undertaken by our staff on various types of transport

PHE staff at the 2014 Public Sector Sustainability Awards. (From the left) Lizzy Staincliffe, Lidia Majchrzak, Peter Hammond, David Allen, Steve Owens, Belinda Fernandez, Brigitte Guile (Gwyn Morris was behind the camera!)

PHE's Sustainable Development & Environmental Management Group

Sustainable Development across the PHE estate, particularly in relation to how we behave as an organisation, was managed at a corporate level during 2013/14 through the Sustainable Development & Environmental Management Group. It comprises representation from the major executive 'property owners' in the organisation. Operational activities were undertaken through the facilities and estates managers. Its members provided professional advice to their respective senior management teams and to staff in general, on all matters relating to sustainable development.

During 2013/14, the Sustainable Development & Environmental Management Group reported to the Director of PHE's Health Protection & Medical Directorate and to the Sustainable Development Programme Board. In addition, the group compiles quarterly reports for the Department of Health and reports various sustainability information under HM Treasury requirements in PHE's Annual Report & Accounts.

Current members of the Group are given below. A Health & Wellbeing representative will be included in 2014/15 to broaden the scope of the group.

Angie Bone	Extreme Events, Health Protection & Medical Directorate
Alison Finn	Procurement
Alyson Gibbens	CRCE
Peter Gidman	PHE Estates
Natalie Glover	PHE North
Brigitte Guile	Microbiology Services, Colindale
Peter Hammond	Health Protection & Medical Directorate (corporate)
Colin Hawkins	Chief Knowledge Officer's Directorate
Peter Jackson	MS, Specialist Microbiology Services
Jim McLauchlin	MS, Specialist Microbiology Network
Karen Martin	Health Protection & Medical Directorate (corporate)
Steve Owens	Health Protection & Medical Directorate (corporate)
Lizzy Staincliffe	Microbiology Services, Porton

The following staff also served on the former Sustainability Strategy Group during the 2013/14 year: David Allen; Hameet Chandar; Agnes Guedje; Paul Steventon; and Lesley Swift.