



# Carbon Footprint Report 2007/08 - 2016/17

## 1. Glossary

**Carbon:** Throughout this report the word carbon is used as a generic term for carbon dioxide equivalent emissions (CO<sub>2</sub>e), otherwise known as greenhouse gases.

**CO<sub>2</sub>e:** Carbon dioxide equivalent. It is a way of measuring six different greenhouse gases using one standard unit by comparing them on a like for like basis relative to one unit of carbon dioxide (CO<sub>2</sub>).

**Greenhouse gases:** A greenhouse gas is one of several gases that can absorb and emit longwave (infrared) radiation in a planetary atmosphere. This phenomenon is often termed the greenhouse effect. Greenhouse gases includes: Controlled gases - Carbon Dioxide (CO<sub>2</sub>), Nitrous Oxide (N<sub>2</sub>O), Perfluorocarbons (PFCs), HFC's, Sulphur Hexafluoride (SF<sub>6</sub>) and Uncontrolled gases - Water vapour (H<sub>2</sub>O gas), Ozone (O<sub>3</sub>).

**Anthropogenic Emissions:** Emissions made by people or resulting from human activities.

**Climate Change:** Climate change is defined as any change in global temperatures and precipitation over a period of time due to natural variability or as a result of human activity.

**Climate Change Act:** The Climate Change Act (2008) was introduced to ensure the UK cuts its carbon emissions by 80% by 2050 (against a 1990 baseline) and to ensure that the Government's programme for adaptation enables the UK to prepare effectively for the impacts of climate change.

**Global Warming Potential:** The global warming potential of a gas refers to the total contribution to global warming; it's calculated from the emission of one unit of gas relative to one unit of reference gas, carbon dioxide, which is assigned a value of 1.

**Scope 1 emissions:** Emissions attributable to activities directly owned or controlled by the organisation: includes electricity (non-renewable and renewable), gas, liquefied petroleum gas (LPG).

**Scope 2 emissions:** Indirect emissions from the consumption of purchased electricity, or the delivery of energy via hot water, heat or steam.

**Scope 3 emissions:** Other indirect emissions such as procurement, travel related activities, outsourced activity, waste disposal and any other emissions not reported in Scope 1 and 2.

**Sustainable development:** Bruntland Report (2009) - "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

**Sustainable Development Management Plan (SDMP):** A board approved plan to clarify organisational objectives on sustainable development, including carbon reduction.

## 2. Introduction

Climate change is the biggest global health threat of the 21<sup>st</sup> Century, and without action now it will continue to affect the health and wellbeing of people around the world. All organisations have corporate responsibility to progress the sustainable agenda in aiding to negate the risks of climate change associated emissions. In 2008, the UK adopted **The UK Climate Change Act**, setting out ambitious targets for all national organisations to meet.

Internationally, further advances to restrict anthropogenic emissions came in **2015 when the Paris Agreement** was adopted at the United Nations Climate Change Conference. This agreement, signed by 175 countries and the European Union sets out a **global ambition to limit climate temperature increase to no higher than 2°C**. Additionally, the agreement aims to increase the ability of countries to deal with the impacts of climate change, and making finance flows consistent with a low greenhouse gas emissions and climate-resilient pathway. It supports legally binding commitments which are aimed at every organisation to **achieve a reduction of 80% of greenhouse gas emissions by 2050**, as set out in the Climate Change Act (2008).

In the NHS, this mitigating responsibility is likewise taken seriously, with the NHS Sustainable Development Unit (SDU) publishing the **NHS Carbon Reduction Strategy - Saving Carbon, Improving Health** to ensure that the National Health Service reduces its emissions in line with legal requirements. The NHS Carbon Reduction Strategy required all NHS organisations to reduce their carbon emissions by 10% by 2015 based on the 2007 baseline, as well as **working towards an 80% reduction by 2050, with an intermediate target of 34% by 2020**.



The NHS SDU published their latest Carbon Footprint Report in January 2016; based on 2015 data. It states that the NHS carbon footprint in England is 22.8 million tonnes of carbon dioxide equivalents (MtCO<sub>2</sub>e). However, **between 2007 and 2015 the NHS England footprint has reduced by 11%**.

Even though this is an encouraging achievement from the largest single organisation in the UK, all NHS organisations have a duty to continue reducing their impact on the environment, mitigating against the effects of climate change (including extreme weather events and humanitarian crises). Being directly responsible for the health of the nation, this further compels the NHS to take this agenda seriously, making significant local changes that will contribute to the overall challenge.

## 3. Background to Carbon Footprint Analysis at MEHT

The Trust Board at Mid-Essex Hospital Services NHS Trust (MEHT) takes its corporate responsibilities seriously, and is fully committed to tackling anthropogenic emissions by ensuring sustainable development in all activities.

The Trust's climate change agenda advanced in 2010 when an environmental research company, Trucost, was commissioned to identify the Trust's Scope 1 & 2 emissions impact through a measurement programme covering the financial year 2008-2009. The resulting report provided a baseline analysis on the Trust's direct emissions and indirect associated supply chain emissions.



Annual carbon emission reporting has since been undertaken by the Trust, in line with the requirements set out in the 2010 order **CRC Energy Efficiency Scheme** (the CRC, formerly the

Carbon Reduction Commitment), mandatory for large energy-intensive organisations in the UK, within both private and public sectors. CRC participants are required to buy allowances from the Government to cover these reported emissions, providing incentive by emission decreases resulting in lower costs. MEHT has taken this responsibility further, producing carbon footprint reports on an annual basis as encouraged by the NHS SDU best practice. The results of the previous footprint reports aided in forming the Trust’s Sustainable Development Management Plan (SDMP) for 2014-2020 and highlighted areas in need of improvement moving forward.

This report highlights the Trust’s carbon emissions performance between 2007/08 and 2016/17, identifying progress against the NHS carbon reduction target of achieving a 34% reduction by 2020.

#### 4. MEHT Reporting Methodology

In order to maintain consistency and reporting structure, extensive research has been conducted to establish supported and suitable methods. The SDU provides guidance informed by The Technical Briefing from Public Health and Defra which informs guidance on sustainability performance indicators and emission factors.

Directly measured data from all the Trust sites have been used where available, with no estimations made. Estates Returned Information Collection (ERIC) reporting figures have been used where appropriate to ensure that data correlates with the NHS footprint data. Procurement and operational spend data has been extracted from Trust annual financial reports.

Areas including refrigerant gases and a newly established Midwifery leased car fleet do not currently have sufficient data sets to populate overall calculations. These areas have therefore not been included to sustain a comparable dataset to previous years, though can be included when accurate records become available.

For refrigerant gases, the Trust recognises that whilst they are not damaging to the atmospheric ozone layer, they are powerful greenhouse gases with EU reports stating up to 23,000 times more warming potency than carbon dioxide depending on the type of fluorinated gas (F-Gas) in use. Calculations in this area are currently in their infancy, and whilst the Trust establishes appropriate accuracy refrigerant gases are not included.

In line with international reporting guidelines, carbon emissions have been categorised and reported under three scopes. The nature of the Trust’s energy consumption allows for collective reporting under Scope 1 & 2, see Figure 1.

Scope:	Emission type:	Element reported within:
<b>Scope 1 &amp; 2</b>	<b>Direct</b> Emissions (including Indirect energy emissions)	<ul style="list-style-type: none"> <li>• <b>Consumption of energy</b> (Purchased electricity, gas and oil)</li> <li>• <b>Vehicle mileage</b> (Trust owned vehicles)</li> <li>• <b>Medical Gases</b> (Desoflurane, Isoflurane, Sevoflurane, Nitrous Oxide)</li> </ul>
<b>Scope 3</b>	Other <b>Indirect</b>	<ul style="list-style-type: none"> <li>• <b>Procurement &amp; Operational Services</b> (Goods &amp; services)</li> <li>• <b>Administrative Travel</b> (Business Mileage – staff own vehicles)</li> <li>• <b>Water</b></li> <li>• <b>Sewage</b></li> <li>• <b>Waste</b> (Including recycling)</li> </ul>

*Figure 1: MEHT carbon emissions reporting framework*

## 5. MEHT Carbon Footprint

### 5.1. Total Trust Emissions

Scope: (tonnes CO <sub>2</sub> e)	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	Last year % change
Scope 1 & 2	15,390	16,108	15,057	17,567	16,027	16,783	17,016	15,914	16,117	14,338	11.04% ↓
Scope 3	19,391	22,247	24,135	25,910	26,870	26,688	30,892	32,830	33,001	36,149	9.54% ↑
<b>Total: Scope 1,2 and 3</b>	<b>34,781</b>	<b>38,355</b>	<b>39,192</b>	<b>43,477</b>	<b>42,897</b>	<b>43,471</b>	<b>47,908</b>	<b>48,744</b>	<b>49,118</b>	<b>50,487</b>	<b>2.79% ↑</b>

**Figure 2:** MEHT Total CO<sub>2</sub>e emissions from the baseline 2007/08 year to 2016/17

Taking Figure 2, a positive reduction can be seen between the 2015/16 and 2016/17 **Scope 1 & 2 emissions, a 11.04% decrease**, the biggest decrease thus far on record. Though inflation can cause utility cost fluctuations, areas of energy production are also becoming more sustainable, with reduced DEFRA emission factors per unit each year. Energy efficient appliance replacements may have likewise contributed to the positive decrease.

However, **Scope 3 has seen a further increase of 9.54%**, with only the 2011/12 – 12/13 years seeing a small decrease in Scope 3 CO<sub>2</sub>e emissions. **The total scope emissions for 2016/17 equates to ~50,000tCO<sub>2</sub>e, 2.79% greater than the 2015/16 figure.**

Since the baseline year of 2007/08, the Trust's carbon footprint has increased by 38.90%; an average of 4.31%, or ~700tCO<sub>2</sub>e increase per year emitted to the atmosphere. On reflection alone, these figures may read negatively, however this does not take into consideration the increasing patient and site activities that are likewise annually increasing.

When analysing in further detail, positive trends can be seen to evidence the Trust's continued commitment in tackling anthropogenic carbon emissions, and can be studied in the corresponding sections below.

### 5.2. Total Trust Emissions – Analysis

In 2010, the Trust welcomed the new PFI wing construction at Broomfield Hospital, providing additional specialist facilities and improving patient care. This building supported patient care closer to home and created an increased workforce to facilitate this care. It also enabled the Trust to centralise the majority of its services onto the Broomfield Hospital site, reducing several small scale associated emission areas. The overall emission increase can be explained in part by rising patient figures following the PFI wing construction and improved facilities providing additional local care services.

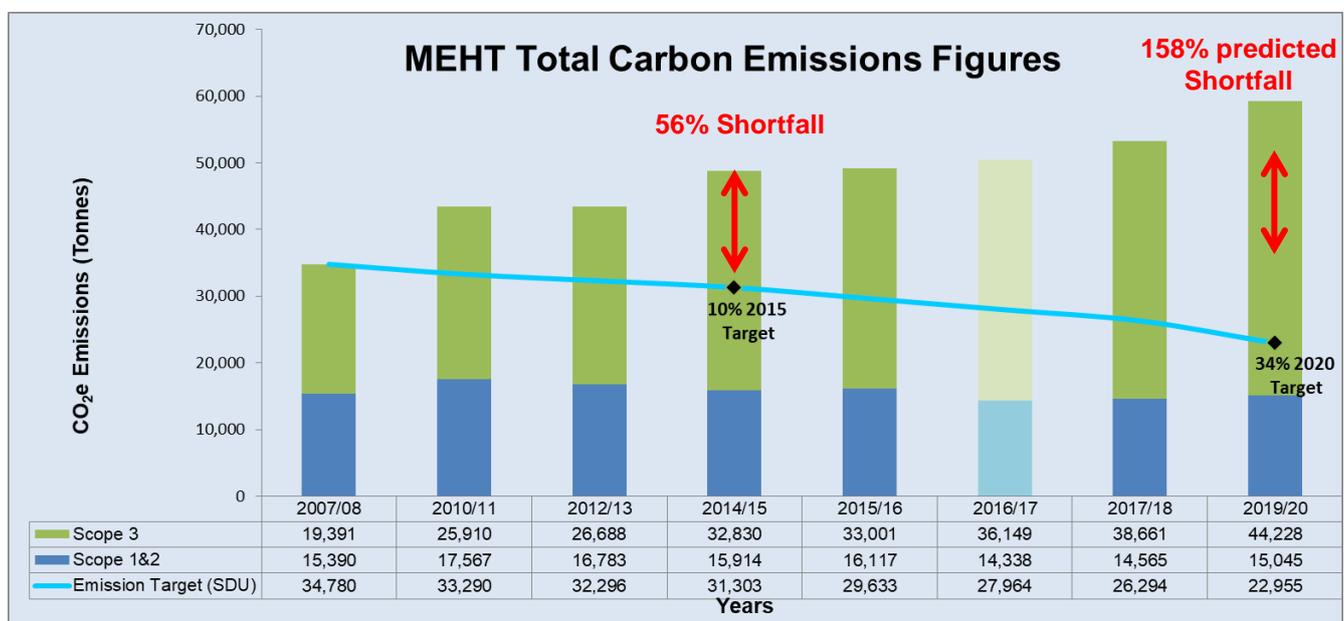
Scope: (tonnes CO <sub>2</sub> e)	2007/08	2010/11	2014/15	2015/16	2016/17	2019/20 (Predicted)
Total: Scope 1,2 and 3	34,781	43,477	48,744	49,118	50,487	59,272
SDU Target (07/08 baseline) 10% reduction target by 2015 34% reduction target by 2020	—	33,290	31,303	29,633	26,294	22,955
Percentage shortfall	—	31%	56%	66%	81%	158%

**Figure 3:** MEHT's total emissions, the SDU calculated target reduction, and the shortfall for a selected number of years.

The NHS Carbon Reduction Strategy required all NHS organisations to reduce their carbon emissions by 10% by 2015 based on a 2007 baseline (see Figure 3); for MEHT that meant prior to the PFI wing construction and the subsequent activity change associated with that opening which attributes to the large statistical trends related from 2007.

The Trust's 10% emission reduction target by 2015 equated to 31,303tCO<sub>2</sub>e, with a 34% reduction by 2020 to ~23,000tCO<sub>2</sub>e centred on the 2007/08 baseline. In 2014/15 (see Figures 2 – 4) the Trust's carbon footprint was ~49,000tCO<sub>2</sub>e, a **56% shortfall on the NHS's carbon 2014/15 target**. Though this presents an overall shortcoming, significant environmental benefits can be seen with Scopes 1 & 2 falling for the first time since the PFI wing was first complete, illustrating sustainable influences in reducing resource consumption. These figures must also be balanced against patient activity, with annual figures presenting an increase (see Figure 5).

To establish the Trust's focal areas going towards 2020, predictions must be calculated to forecast the total emissions within each scope and any shortfall of the 34% target. These predictions were formed by calculating the annual average percentage changes within each scope, implementing that value to future years. Through calculations, the annual decrease target in emissions can also be observed, leading to the 34% 2020 target (see Figure 4).



**Figure 4:** MEHT total carbon emissions, split into scope 1&2, and 3, plotted against the NHS SDU national reduction targets for selected years. The 2016/17 totals are the faded bar, with target shortfalls also illustrated.

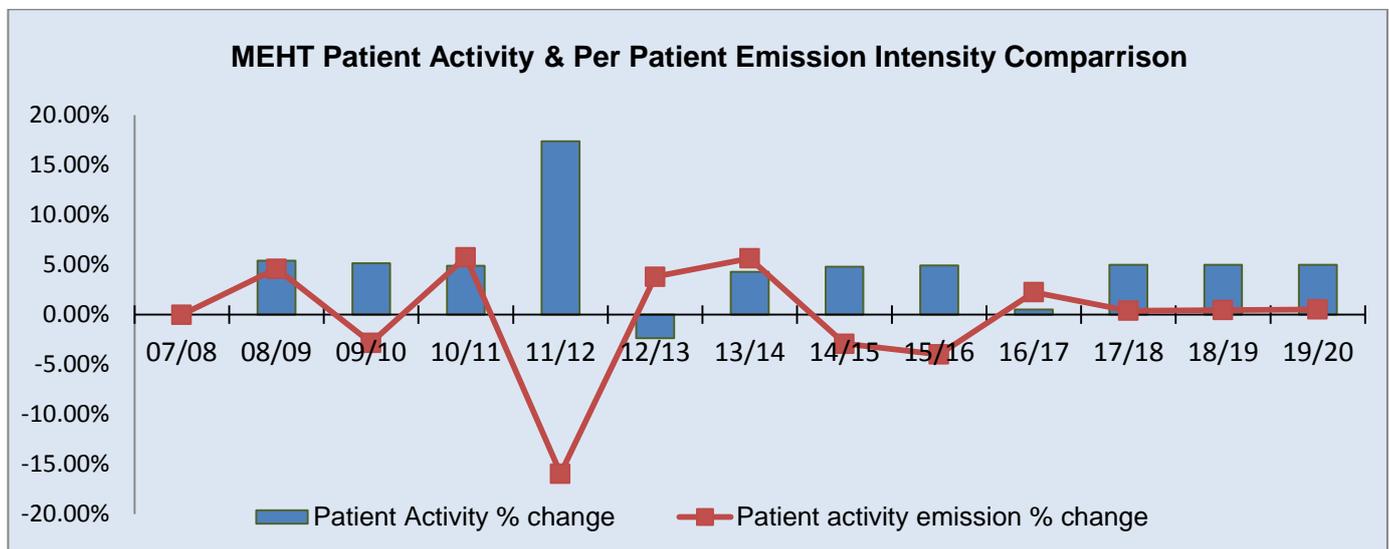
Predicted calculations estimate significant shortfalls leading up to 2020, with a **final shortfall of 158%; 59,272tCO<sub>2</sub> compared to the 22,955tCO<sub>2</sub> emission target**. It is worth noting however that if current trends of Scope 1&2 continue a reduction will be observed in future years, therefore creating a reduced shortfall than that predicted. The Energy Innovation Centre, a combined heat and power plant (CHP) has been proposed at Broomfield Hospital, with site anticipation May 2018 and completion April 2019. This CHP has a projected Scope 1 emission reduction in excess of 35%, which has not been factored into the total predictions, but could result in a significant decrease that would again bring about a reduced shortfall to target.

Annual inflations since 2007 are also likely to have an effect on sectors where emissions are calculated through unit of carbon dioxide against cost, including procurement that is a significant contributor to total emissions.

### 5.3. Patient Activity Emissions – Analysis

Though the predicted shortfalls are significant, they are misleading; **it is important to compare these figures to the Trust’s ever increasing site activity and patient numbers** to obtain a per patient emission standard (see Figure 5). Increasing site activity has direct impacts resulting in a higher carbon footprint, but through sustainable agendas could lead to per patient carbon reduction and therefore a more accurate representation of Trust innovations. Patient activity has increased by 78% since 2007. Though it cannot be confirmed, the closure of William Julian Courtauld Hospital in 2011 may have contributed to the 2% drop in patient activity during 2012/13.

MEHT implemented its Sustainable Development Management Plan (SDMP) in 2013/14, and **per patient emissions have decreased against that year (average of -1.5% annually)**. From current trends, the predicted figures to 2020 are likewise going to remain below the 2013/14 emission level, highlighting the SDMP achievements against the reduction of Trust emissions. Patient figures are also expected to rise, with Essex County Council predicting a 7% population increase within the Chelmsford area alone by 2025. A continued per patient emission reduction therefore becomes progressively significant with Trust patient admittances causing a likely overall emission increase.



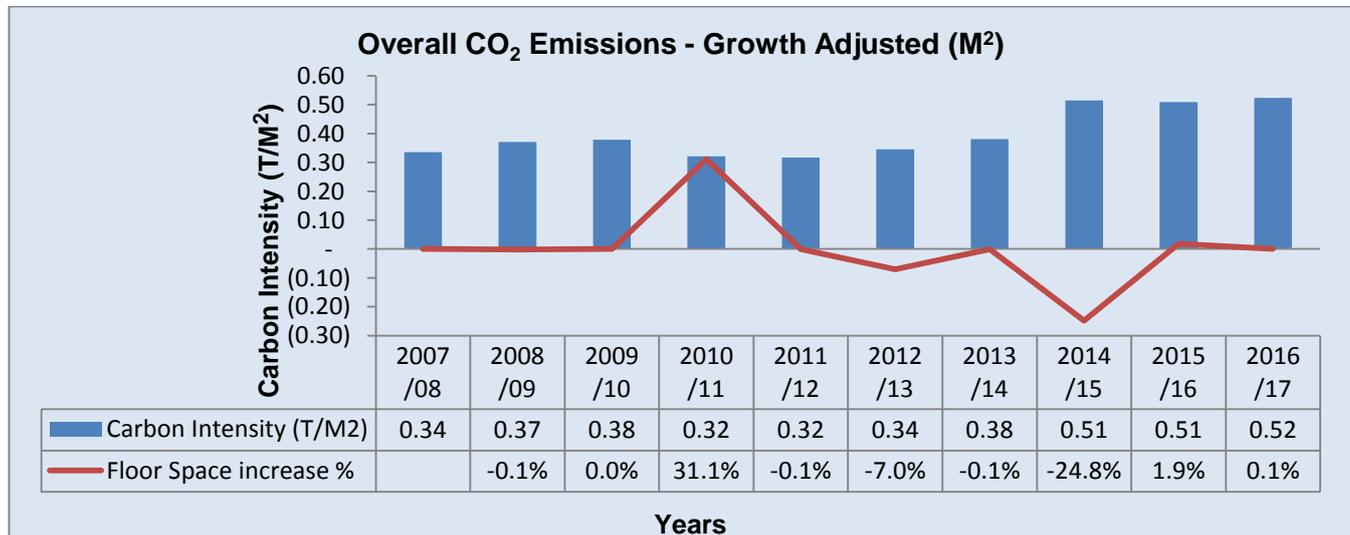
**Figure 5:** MEHT patient activity change compared to patient emission change per year. Since the SDMP was implemented a positive trend of per patient emissions decreases can be seen.

### 5.4. Occupied Floor Place Emissions – Analysis

All departments and areas within the NHS are dedicated to patient care in some capacity, and though calculating emissions per patient provides an insight to site activity, it may however lead to the incorrect assumption that patients are physically present within all areas calculated. A different approach is that of analysing the total emissions against occupied floor space to establish the carbon intensity per m<sup>2</sup> for all Trust activities, which subsequently leads to patient care. It would also allow for any site alterations to be observed, and combined with patient figures can identify whether those modifications have an environmental impact.

Following the PFI wing construction at Broomfield Hospital in 2010, the Trust’s floor space increased by 31.1%, whilst the patient numbers increased by 5% (see Figure 5 & 6). With the space increased, one may be inclined to believe that the carbon intensity would also comparatively increase with the additional people, equipment and resources required. However, carbon intensity actually fell by 15.4% highlighting its innovative design to minimise the impact of its activity on the environment.

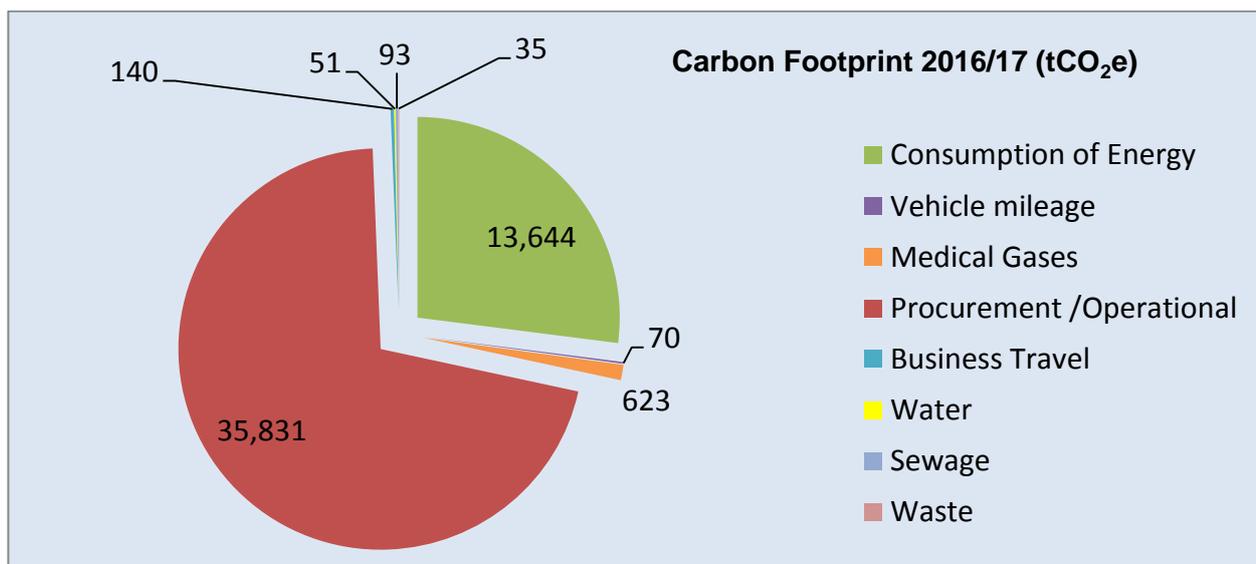
Alongside the William Julian Courtauld site closure, the Trust's Rationalisation Strategy took place in years after the PFI wing's construction, leading to the 2014/15 floor reduction. In 2015/16, the Trust took management of Braintree Community Hospital, attributing to the 1.9% increase. Overall, a positive message can be taken in terms of carbon intensities per estate development, and management taking environmental impacts under consideration.



**Figure 6:** MEHT overall emissions against growth adjusted to floor space to calculate per m<sup>2</sup> carbon intensity.

### 5.6. Contributors to the Total Emissions – Analysis

Taking a breakdown of the Trust's emissions (see Figure 7) Procurement/Operational and Consumption of Energy are the two largest contributors with ~36,000 and ~14,000 tCO<sub>2</sub>e, equating to 71% and 27% respectively. This is similar to the 2015/16 year with those two areas again contributing 66% and 31% respectively. These sectors can be directly attributable to Trust site activity, with fluctuations generating demands on procurement/operational needs and consumption of energy; the more patients are seen the higher procurement/operational requirement and energy consumption.



**Figure 7:** MEHT's emission breakdown, with all Scope 1, 2 & 3 sources included as the amount of the total footprint in tCO<sub>2</sub>e.

### 5.6.1. Procurement Emissions

The main MEHT footprint contributor remains as procurement/operational activities, however this is not uncommon within the NHS, as the Public Health and Social Care carbon Footprint Breakdown (2012) highlighted emissions from procurement/operational as 72% of overall emissions. It is recognised that suppliers are becoming increasingly conscious of the environment.

### 5.6.2. Energy Consumption Emissions

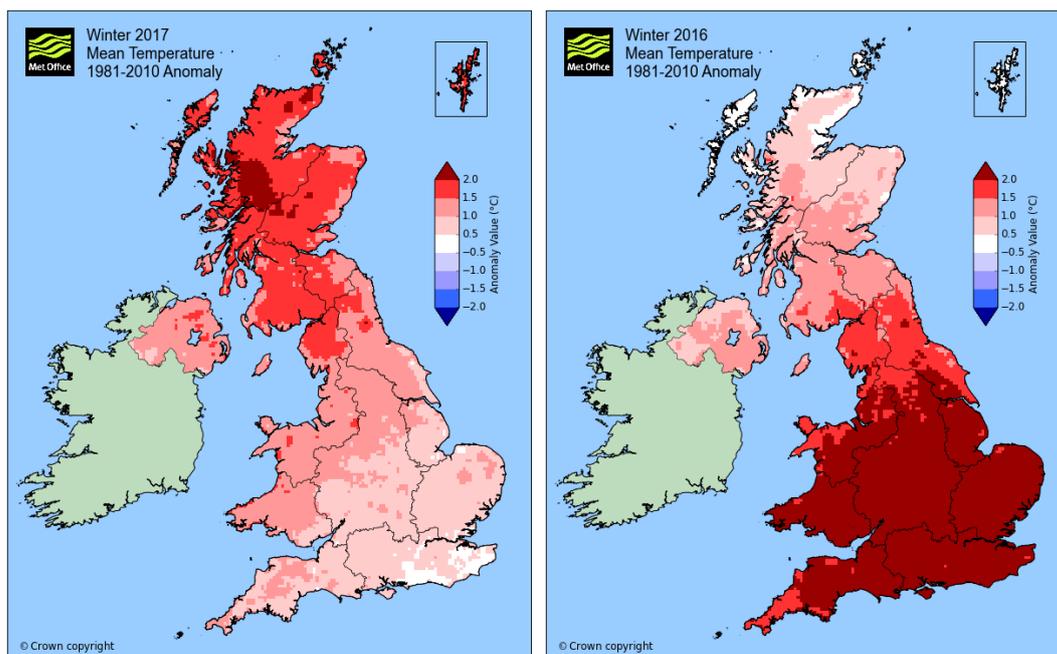
There is a greater disparity however between the energy consumption data, as currently the Trust has **12% more emissions from energy consumption** than the NHS Carbon Footprint Breakdown figure (which highlights a 15% overall contribution from energy consumption). However, in 2015/16 this was 16% greater, so again illustrating the achievements in reducing consumption whilst site activity is continuing to rise.

### 5.6.1. Medical Gas Emissions

**Medical gases counts towards only 1% of the overall emissions (compared to 3% in 2015/16)** and this figure relates favourably against other acute organisations which is currently estimated at 5% (2014 publication – Sustainable Development Unit: Carbon Footprint from Anaesthetic gas use). Nitrous oxide use in operating rooms is declining due to health impacts of patients, with MEHT witnessing a 42% drop between 2015/16 and 2016/17. The offset gas to this is Entanox and Equanox, however there is not adequate data in previous years so this has not been included in reporting at present. Intravenous anaesthesia is another alternative for some patients, and has a low CO<sub>2</sub> footprint.

### 5.8. Weather Conditions – Analysis

**Another important factor to consider is that of changing weather conditions on a variety of emitting resources.** According to Met Office analysis, England experienced the warmest, but wettest winter in a series since 1910 during 2015/2016 (see Figure 8). However, in winter 2016/17 it was 2<sup>o</sup>C degrees cooler and drier. Differences also occurred between summers, with 2015 experiencing a mean temperature of 0.3<sup>o</sup>C below the 1981-2010 average, and 2016 temperatures 0.6<sup>o</sup>C above the average.



**Figure 8:** Taken from the MET Office, temperature maps for winter 2016/17 (left) & winter 2015/16 (right) illustrating areas that experienced conditions above the 1981-2010 average.

Though appearing slight, these conditions and differences can cause a variety of Trust impacts. Energy required at differing densities to heat or cool systems, adverse conditions generating heightened patient admittances or weather impacted travel are but a few of the possible scenarios. With climate change becoming increasingly central on agendas it is important that these complexities are within the analysis of overall trends.

## 6. Conclusion of Progress

In 2014/15, the Trust did not manage to reach the target of a 10% reduction from the baseline year of 2007/08, with a shortfall of 56%. The target for 2020 is 34% reduction of the 2007/08 baseline year, with predicted emissions equating to an increased significant shortfall.

However, when analysing in further detail, positive trends can be seen to evidence the Trust's continued commitment in tackling anthropogenic carbon emissions and are to be taken as encouraging achievements moving forwards. Scope 1 & 2 emissions have fallen by 11.04%, and through Scope 3 emissions have risen by 9.54%, advances in sustainable methods such as procurement are taking place with a reduced impact.

In 2010 Broomfield Hospital opened its new PFI wing, which has influenced site activity; increasing workforce and numbers of residents able seek medical care closer to home, raising annual patient figures. Significant increases in the carbon footprint have occurred since this time, and could be attributed to this PFI wing construction.

**To take this into consideration, if the Trust was to shift the 10% reduction to a post PFI 2010/11 baseline**, taking the SDU's 8 years for first target achievement it would sit within the predicted 2018/19 year, **producing a shortfall of 41%. This is 14% closer than the currently calculated 2014/15 shortfall**, and is better positioned to highlight the positive Trust implementations. The 34% target, this time by 2022/23 would be another predicted shortfall, but would be 50% significantly closer than the current predictions from a 2007 baseline and before PFI construction. Though these calculations can be taken under consideration, it is important to note that they are not the national targets or reporting.

The Trust can also demonstrate that since the inception of the SDMP in 2013/14, carbon emissions per patient have **decreased annually by an average of 1.5%, with predictions set to continue moving forwards**. Carbon intensity per metre squared has also remained stable despite estate developments illustrating the Trust's commitment to ensure sustainable development in all activities.

By continuing to deliver sustainable projects MEHT should be able to demonstrate further reduction of relative emissions in future years.

## 7. Plans for Further Emission Reduction

Progress continues to be made with understanding and developing the Trust's carbon footprint. The methodology has been adopted to develop this footprint and a robust process is now in place to capture and report on annual progress. For further footprint reductions, areas have been targeted with various action plans on how reductions can be achieved.

Organisational partnerships are pivotal for future sustainability with knowledge distribution and coordinated approaches. The MSB Essex Trust partnership between MEHT, SUH (Southend University Hospital) and BTUH (Basildon & Thurrock University Hospital) offers encouraging opportunities to align sustainable ideals throughout the county, setting the example for others to follow.



Aligning with the Trust's seven sustainability work-streams, areas and plans include;

### 7.1. Facilities Management

#### Waste

- A walking aid reuse/return system is in operation, with 2016 and 2017 calendar year audits calculated. 2016 had a 19% and 70% return on crutches and walking frames respectively, equating to a total return of £26k. Figures remained stable in 2017, with a 21% return on crutches and 61% of frames producing a total return of £25k. Implementation across the MSB partnership could result in an established return system county wide.
- The Trust's waste retender specification will include a 'zero waste to landfill' prerogative alongside a diverse waste segregation system, reducing expenditure and associated emissions. Building from MSB engagement, a multi-disciplinary waste segregation approach will be engaged.
- The Trust held promising discussions with retailers and main coffee seller Costa and Fontanella, relating to the disposable and unrecyclable coffee cup. Reusable travel flasks are now available, with further staff incentives and promotions aimed at reducing the disposable coffee cup waste and consequent MSB Trust uptake.

#### Energy

- The Trust's proposed Combined Heat & Power Plant at Broomfield Hospital has a site completion estimation of April 2019, with a projected Scope 1 emission reduction in excess of 35% and associated utility bill decrease.
- The Trust's energy awareness campaign; *Energy Aware = Better Care* is in operation, providing incentives and relatable material to staff whilst investing in modernised equipment where appropriate. MSB involvement has occurred; with a cross Trust awareness campaign proposed to align communications and reported research.



### 7.2. Workforce

- MEHT has over 140 Sustainability Champions, dedicated to promoting sustainable ideals throughout their wider teams and Trust. Engagement and recruitment of further champions are key to achieving 'bottom up approaches', including behavioural change success. Reviews into MSB wide champions are proposed, aiming to deliver on the ground communications to staff across the Essex region.

### 7.3. Community Engagement

- Positive staff health & wellbeing can produce a variety of documented benefits including reduced sickness and increased productivity. Various garden volunteering days are available throughout the Trust, promoting the benefits of outdoors whilst providing opportunity to assist in direct management of the sites' natural space. The Natural Health Service Project is the inspirational initiative that underpins all



volunteering activities for the community.

#### 7.4. Models of Care

- MSB collaboration will enable further inroads to models of care, including sustainable pharmacy management, care closer to home to reduce hospital admissions that can be dealt with through alternative approaches without compromising care or safety. Reporting structures can improve, with feasibility research into recent lines of technology including inhalers from increasingly sustainable sources.

#### Medical gases

- Amsorb beads are now being utilised within anaesthetic gases, reducing the amount of sevoflurane per dosage, a potent greenhouse gas.

#### 7.5. Procurement

##### Suppliers

- Across MSB, Trust specific and collaborative engagement with suppliers can ensure sustainable development is under consideration with expenditure. Development of a Procurement Sustainability Policy, aligned throughout Trusts can aid appropriate decisions.

##### Furniture Reuse

- The Trust's Furniture Reuse Scheme has been in operation since August 2017, it has;
  - Avoided a further £32k from procurement purchases and waste disposal
  - Avoided a further excess of 18tCO<sub>2</sub> emissions from procurement processes and waste transportation
  - A reduction of 4.5t from the Trust's waste stream, by reusing items
  - All figures estimated
- Determining the exact value and weight of each reusable item is not possible due to the number of limitations. NHS Supply Chain data alongside online supplier research, however has produced average estimated costs and weights, and is used to populate avoidance figures. Carbon procurement emissions are calculated through the SDU's Procuring for Carbon Reduction SCO<sub>2</sub>PE Tool, the carbon intensity per pound sterling of items can be determined.
- Interest from SUH & BTUH has been received over the possibility of established a cross Trust scheme to benefit all.

##### Sustainable Procurement Working Groups

- A Sustainable Procurement working group is in operation, discussing arising sectors and maintain sustainable ideals in all processes. Expansion across MSB would allow knowledge flows to increase, tapping into more areas of care and procurement.

#### 7.6. Travel & Transport

##### Green Travel Plan

- Guidance from BUH has enabled the Trust to initiate the creation of its green travel plan, focussing on the encouragement of alternative forms of sustainable travel with reducing one person journeys. The Trust's plan will align with BUH's, the possibility of joint ventures going forwards.

##### Business Miles

- Sustainable modes of transport are available for journeys to Trust sites, however are not directly contributing to Scope 3 Trust emissions. Business trips from staff on the other hand are within the reporting scope, with an electric vehicle leased fleet a possibility in reducing business emissions. Knowledge is being obtained from NHS Trusts elsewhere who have successfully implemented electric fleets, with proposals launched to establish MEHT's sites feasibility.

## 7.7. Building & Adaptation Adaptation

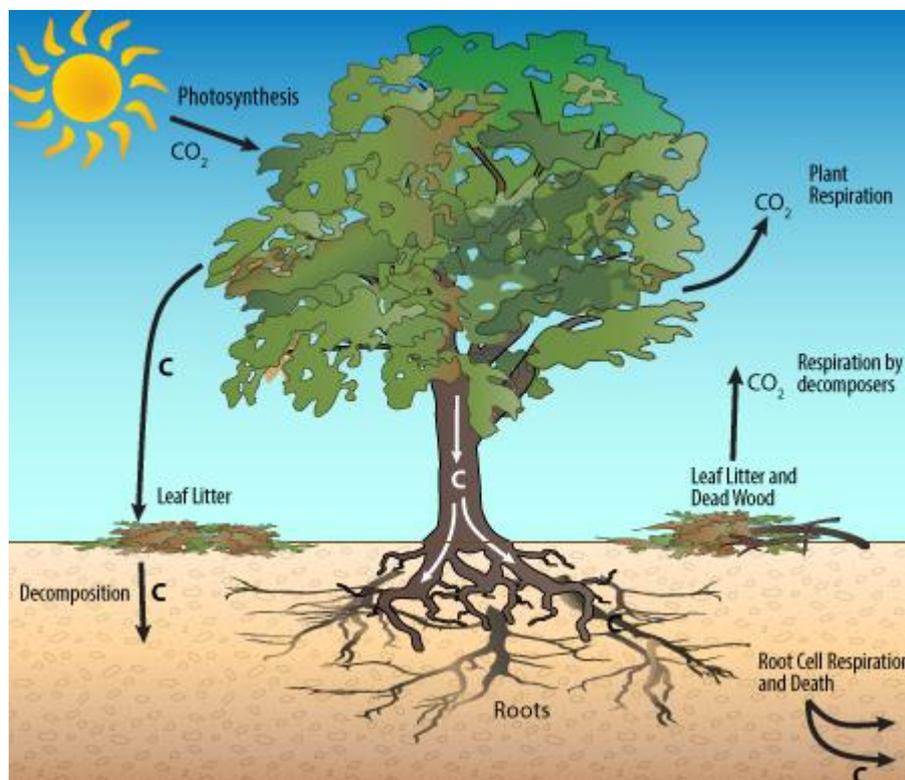
- Risks associated with climate change are to be incorporated in the adaptation plan, ensuring appropriate measures are taken if further climate changes occur and how the Trust can stand resilient against possible adverse conditions and health scenarios.

## 8. Tree Carbon Sequestration

Two areas of woodland are within the Broomfield Hospital site, in addition to further green space on, and within St. Peter's Hospital. Trees play an important role in the removal of carbon dioxide from the atmosphere, through the biochemical process of photosynthesis. Carbon is stored within a tree's trunk, branches, leaves and roots, and thereby providing an offset to anthropogenic emissions (see Figure 9).

Annual tree surveys have provided data on an excess of **400 trees, with calculations producing an annual uptake of 5tCO<sub>2</sub>, thereby an offset of 5tonnes to the Trust's footprint.** MEHT is the first Trust to undertake such calculations, providing renewed quantifiable benefits into having green space. The total tree figure is yet to be established, with the additional vegetation, grasses, leaf litter and soil also having significant carbon sequestration. The total carbon offset is therefore predicted to be increasingly significant; once calculated further in-depth analysis is planned. The Forestry Commission, Field Studies Council and OPAL tree survey have enabled these equations to be calculated. An opportunity for university student engagement can occur for this offsetting figure to be established.

Communication with NHS Forest has also been received, establishing incentives for how suitable enhancement can occur to increase the therapeutic effects of natural space whilst continuing to offset carbon footprint. A second woodland management plan is to be implemented, providing 10 year guidance on how these areas can be conserved and habitat enhanced.



**Figure 9:** Diagram illustrating the carbon cycle. Carbon can be stored in a tree's trunk, branches, leaves and roots. Carbon is also stored in the soil and indeed this is a major sink for carbon in the forest. Decay of the organic material eventually releases the CO<sub>2</sub> back to the atmosphere

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