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**Board of Directors Meeting  
Tuesday 21 December 2021**

**Draft Green Plan**

<b>Agenda Item Number:</b>	<b>13.0</b>
<b>Presented for:</b>	Discussion
<b>Report of:</b>	Chief Executive
<b>Author (s):</b>	Sustainability Director
<b>Report History:</b>	None
<b>Publication Under Freedom of Information Act:</b>	This paper can be made available under the Freedom of Information Act 2000 if requested.
<b>Links to HIF's Objectives</b>	
<b>Deliver an efficient and effective service offering to Harrogate and District Foundation Trust</b>	√
<b>Create strong sustainable partnerships</b>	√
<b>Develop sustainable organisational systems</b>	√
<b>Develop and maintain a strong, efficient and agile workforce</b>	
<b>Strengthen the local community through collaboration</b>	
<b>Recommendation:</b>	
The Board is asked to approve the draft green plan, and note that the introduction and minor formatting changes will be undertaken in early January.	

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**Harrogate and District NHS Foundation Trust  
Harrogate Integrated Facilities**

**Green Plan 2022/23**

**December 2021**

Draft

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## **1.0 FOREWORD**

To be provided by Deputy CEO or CEO

Include – first do no harm. Sustainability objectives align with health improvement objectives (reduce pollutants, walking/cycling, green space all improve health and reduce carbon). Recycle money as well as waste – financial benefits reinvested in the next schemes.

Reduce activity, and the activity we do needs to be lower carbon intensity

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## 2.0 INTRODUCTION

### 2.1 Our Commitment to Sustainability

***Our aim is to be a net-zero organisation by 2040, having reduced our carbon footprint by 80% by the end of this decade. We intend to deliver sustainable healthcare for the benefit of the population that we serve.***

At Harrogate District Foundation NHS Trust, we recognise the huge challenges that climate change, air pollution and waste present in our district. As a major healthcare provider in North Yorkshire, it is essential that we reduce our contribution to climate change and embed sustainability throughout each aspect of our organisation to mitigate the risks to the health of our population. This Green Plan sets out our strategic objectives for delivering sustainable healthcare within the Harrogate District.

This Green Plan will build upon the successes of our previous Carbon Management Plan and set more ambitious targets for the future, in line with national and local objectives. The Plan will stand as an organisation-wide strategy, which will guide the implementation of a collection of actions to improve our sustainability credentials and meet NHS targets. The Green Plan will act as the core document pertaining to sustainable development at the Trust over the next 5 years and will act as a framework against which we will use to reduce our environmental impact and improve the health of our community.

### 2.2 Sustainability at a National level

Climate change is considered the greatest environmental threat to global health of the 21<sup>st</sup> century by many organisations including, but not limited to, the World Health Organisation, British Medical Association, the Royal College of Physicians, and the Royal College of Nursing.

In line with the Climate Change Act 2008, the UK has set a legally binding target to reduce carbon emissions to net-zero by 2050. In its Net Zero Strategy, published in October 2020, the NHS set out a vision to become the world's first net zero carbon health service and respond to climate change, improving health now and for future generations. Every part of the NHS will need to act both in the short- and long-term to meet this ambition.

In 2020, NHS England announced the For a Greener NHS campaign. This campaign aims to provide top-level support for NHS Trust's to implement sustainable measures to minimise the NHS's contribution to climate change. As part of this campaign the NHS has commissioned a panel of experts who will assess how quickly net-zero emissions can be achieved in the NHS. The Trust will review the findings of the panel often and use any relevant findings to inform future updates of this Green Plan. To become a net-zero health service, reduce air pollution and reduce our waste the NHS will require the support of all Trusts, staff, and partner organisations.

### 2.3 Sustainability at a Local and Regional level

The Trust commit to a partnership working approach. We work closely with West Yorkshire and Harrogate ICS and Humber Coast and Vale ICS and as such, we aim to align our Trust's ambitions with their commitments to climate change, sustainability, air pollution and waste management. These partnerships facilitate collaborative action between Clinical

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Commissioning Groups, local councils, care providers and third sector organisations from around the Yorkshire and Humber region.

The West Yorkshire and Harrogate ICS and Humber Coast and Vale ICS aspire to become global leaders in responding to the climate emergency. To achieve this, they plan to increase mitigation, invest in sustainable solutions, and encourage a culture change throughout the health and care system in our region. The partnerships will also work to increase preparedness to deal with the impact of climate change on public health.

The specific targets set by our partners, which we will adopt, are set out in section 4 *Targets and Drivers*.

## 2.4 Key Areas of Focus

This Green Plan will act as the framework for sustainability strategies across the Trust. The Plan will deliver the ambitions of the NHS Long Term Plan, ensure that the Trust is compliant with the latest legislation and enable the Trust to become a more sustainable organisation. The Green Plan will be valid for 3 years and focus on 9 main aspects:

- People and leadership
- Sustainable models of care
- Digital transformation
- Travel and transport
- Estates and facilities
- Medicines
- Supply chain and procurement
- Food and Nutrition
- Adaption

## 2.5 Carbon Net-Zero

A key aim of national and local policy and a key driver of this Green Plan is to achieve net-zero carbon emissions. Carbon net-zero, often referred to as Carbon Neutral, is defined as the state in which an organisation avoids emitting greenhouse gases (GHGs) through its generation and use of energy. To achieve this state the organisation must be powered by 100% renewable energy and not produce any carbon emissions. Where carbon emissions cannot be reduced to zero, then carbon offsetting through investment into bio sequestration (e.g., planting trees) and technology-based carbon capture and storage can be sought to offset the residual emissions and achieve carbon neutrality.

## 2.6 Format of the Green Plan

Section 3 *Drivers and Targets* outlines the key policies, objectives and targets which drive sustainable development in the NHS, and which have been used to shape the targets and strategies established in this Green Plan.

Section 4 *Our Carbon Footprint* details how we have calculated our carbon baseline, which will be used as the year against which our emissions reductions are compared. This section also explains our progress in reducing our emissions so far, and the steps that have been taken to achieve these reductions.

Some of the national and local measures that will help us to achieve net-zero in addition to our internal actions are set out in Section 5 *The Pathway to Net-Zero*.

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Finally, our Sustainable Action Plan is set out in Section 6. This section explains how our action plan was developed and provides a summary of the actions we plan to implement to achieve our targets.

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## 3.0 DRIVERS AND TARGETS

This section outlines the national legislation and health sector specific policies that will drive sustainable development within the UK over the next 5 years. This section also outlines the targets and ambitions of our partner organisations and the targets and objectives we will adopt.

### 3.1 Sustainability Drivers

The UK Government has committed to achieving carbon net-zero emissions by 2050. This is a mandatory target as set by the Climate Change Act 2008. The NHS has acknowledged its significant contribution to UK carbon emissions and has therefore set a target to become carbon net-zero by 2040.

Substantial progress has already been made in improving sustainability within the NHS. A 62% reduction in the NHS carbon footprint was achieved between the years 1990 and 2020. This reduction was achieved by several measures to reduce carbon dioxide equivalent (CO<sub>2e</sub>) and air pollution emissions and improve waste management.

The drivers for sustainable development in the NHS are set out in four key NHS specific documents:

- NHS Long Term Plan
- NHS Standard Service Contract 2021/22
- NHS Operational Planning and Contracting Guidance
- Delivering a Net Zero National Health Service

The *NHS Long Term Plan* sets out how the NHS will develop and improve until 2030 and considers sustainability, new models of care developed will be aligned to the plan. The *NHS Standard Service Contract* outlines several targets and objectives pertaining to sustainability. To assist the NHS in achieving the carbon reduction targets set by the government and ensure the organisation is resilient in the future, the *NHS Operational Planning and Contracting Guidance* provides guidance on the actions required.

The *Delivering a Net Zero National Healthcare Service* report establishes the actions the NHS will take to reduce emissions. This report explains the modelling and analytics that have been used to establish the NHS carbon footprint and future projections. Outlined in the report are the immediate actions the NHS is required to implement to meet the 2040 carbon net-zero target. This report will be continuously reviewed to ensure the NHS is on track to meet its long-term commitments and that the report provides the correct level of ambition.

These documents establish the following targets and objectives:

- For carbon emissions controlled directly by the NHS (the NHS Carbon Footprint), achieve net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032.
- For carbon emissions the NHS can influence (the NHS Carbon Footprint Plus), achieve net zero by 2045, with an ambition to reach 80% reduction by 2036 to 2039.
- Deliver a 4% reduction (in carbon emissions) by shifting to lower carbon inhalers
- Deliver a 2% reduction (in carbon emissions) by transforming anaesthetic practices and reduce the percentage of Desflurane used in surgeries by volume to 10%.
- Purchase 100% renewable electricity at all NHS organisations by April 2021

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- Transition to zero-emissions vehicles by 2032
- Adopt the single use plastics pledge

## **3.2 Our Partnerships**

Our local authority and local partnerships have committed to taking action on climate change. The Trust will aim to align our Targets with the Targets of our local partnerships and will continue to work collaboratively to help achieve a reduction in environmental impacts throughout our region.

Local targets that have been established in our region have been outlined below:

### **West Yorkshire and Harrogate Health Care Partnership:**

- Achieve net-zero carbon emissions by 2038

### **Humber Coast and Vale:**

- Achieve net-zero carbon emissions by 2035

### **Harrogate Borough Council:**

- Achieve net-zero carbon emissions in the council by 2038
- Promote and support activity within the region to help Harrogate District as a whole to be net-zero by 2038

## **3.3 Our Commitment and Targets**

In line with national and local drivers, the Trust will adopt the following targets:

### **3.3.1 Carbon Reduction**

- We will achieve a 100% reduction of direct carbon dioxide equivalent (CO<sub>2</sub>e) emissions by 2035. An 80% reduction will be achieved by 2030 at the latest.
- We will achieve a 100% reduction of indirect CO<sub>2</sub>e emissions by 2045. An 80% reduction will be achieved by 2039 at the latest.

### **3.3.2 Air Pollution**

- We will convert 90% of our fleet to low, ultra-low and zero-emission vehicles by 2028.
- We will cut air pollution emissions from business mileage and fleet by 20% by March 2024.
- We will work with Yorkshire Ambulance Service to understand the appropriate number of electric vehicle charging points we should install to accommodate their ambulances.

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### **3.3.3 Waste**

- We will send no waste to landfill
- We will increase our percentage of recycled waste to 25% by 2025

### **3.3.4 Procurement**

- The Trust will work to adopt the West Yorkshire and Harrogate Sustainable Procurement practices
- The Trust will seek to reduce our indirect emissions through our supply chain
- The Trust will work to embed sustainability within our procurement decisions and practices

### **3.3.5 Clinical Services**

- The Trust will work to reduce emissions through provision of our clinical services
- The Trust will work to embed sustainability within our clinical care models
- The Trust will work to eliminate unnecessary single use plastic items from our service delivery, where clinically appropriate

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## 4.0 OUR CARBON FOOTPRINT

To monitor the reduction in our carbon emissions we have created a Carbon Baseline against which we will compare our annual CO<sub>2</sub>e emissions. This section details the methods used to establish the Carbon Baseline, the scope of our baseline and the changes in our emissions we have achieved so far across each aspect of our emissions.

### 4.1 Developing our Carbon Baseline

The Trust's Carbon Baseline is measured by reporting the annual emissions of carbon dioxide equivalent (CO<sub>2</sub>e) emissions. We have used 2013/14 as our baseline year, in line with NHS Sustainable Development Unit (SDU) guidance, this will be the year against which all subsequent annual CO<sub>2</sub>e emissions will be compared.

To calculate our carbon emissions, we have multiplied our annual consumption data (e.g. kWh for gas consumption) by carbon conversion factors. Carbon conversion factors are produced annually by the Department for Business, Energy, and Industrial Strategy (BEIS) for greenhouse gas reporting. This gives us the annual CO<sub>2</sub>e emissions for each aspect monitored.

#### 4.1.1 Scope of the Carbon Baseline

The following key aspects of operating the Trust which produce carbon emissions are included in our carbon baseline:

- Electricity consumption
- Gas consumption
- Water consumption
- Waste arisings and disposal
- Business Travel
- Anaesthetic Gases

The Trust is made up of several sites within our district, a number of these sites are owned or leased by the Trust from external landlords which means they fall outside the scope of the Estates Returns Information Collection (ERIC) data which was used to create the baseline.

For the purposes of producing an accurate and meaningful baseline the only sites included in the baseline are Harrogate District Hospital, Ripon Community Hospital and Lascelles Neurological Rehabilitation Unit. We will work to expand our carbon baseline in the future to ensure that we are monitoring the full scope of our emissions.

The Trust began monitoring the consumption of anaesthetic gases in 2016. For the purposes of this baseline the 2016 level of emissions from anaesthetic gases has been used as the baseline emission.

### 4.2 Our Overall Carbon Baseline

In 2013, the baseline year, we produced 8,553 tonnes of CO<sub>2</sub>e (tCO<sub>2</sub>e). Energy consumption at the Trust was the largest contributor to emissions in the baseline year with 56% of CO<sub>2</sub>e emissions from gas consumption and 27% from electricity consumption. The emissions from the use of anaesthetic gases contributed 10% of the Trust's total CO<sub>2</sub>e emissions in 2013 followed by business travel which produced 6% of emissions. The emissions of oil, water and waste combined contributed to less than 2% of emissions.

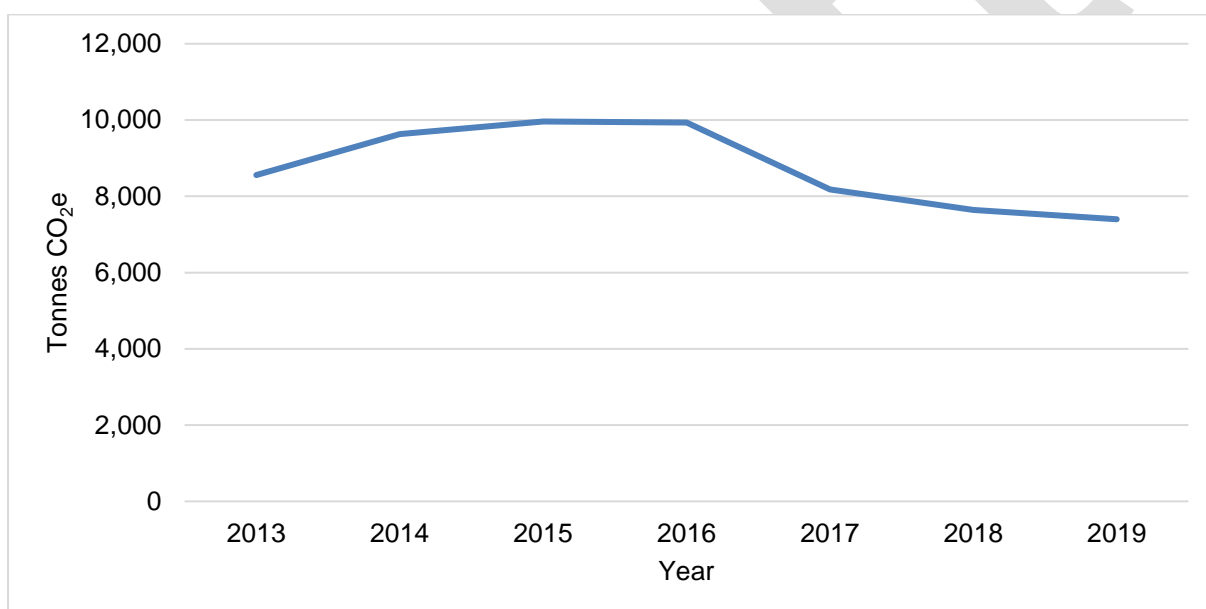
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**Table 1 - Carbon Baseline for Harrogate and District Foundation Trust based on 2013 data (tCO<sub>2</sub>e)**

Year	Electricity	Gas	Oil	Water	Waste Arisings and Disposal	Business Travel	Anaesthetic Gases	Total
2013-14	2,273	4,770	6	104	46	499	856	8,553

### 4.3 Progress against the Baseline

As shown in Figure 1, the Trust has reduced carbon emissions from the baseline. In the six years since the baseline year a 14% reduction in CO<sub>2</sub>e emissions has been achieved with annual emissions decreasing by 1,156 tCO<sub>2</sub>e.



**Figure 1 - Total annual CO<sub>2</sub>e emissions from the Trust**

This reduction falls short of the 2020 interim target set by the Climate Change Act 2008 which specified a 28% reduction in emissions from the 2013 baseline. The Trust will ensure that we meet the next interim target of an 80% reduction in emissions by 2032 which will require a further 5,686 tCO<sub>2</sub>e reduction. We will then work to reduce our emissions to net-zero by 2040. Section 6 *Pathway to Net Zero* details how we will achieve our next target and the trajectory we will follow to reach net-zero carbon emissions.

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**Table 2 - Comparison of CO<sub>2</sub>e emissions in the baseline year and most recent year**

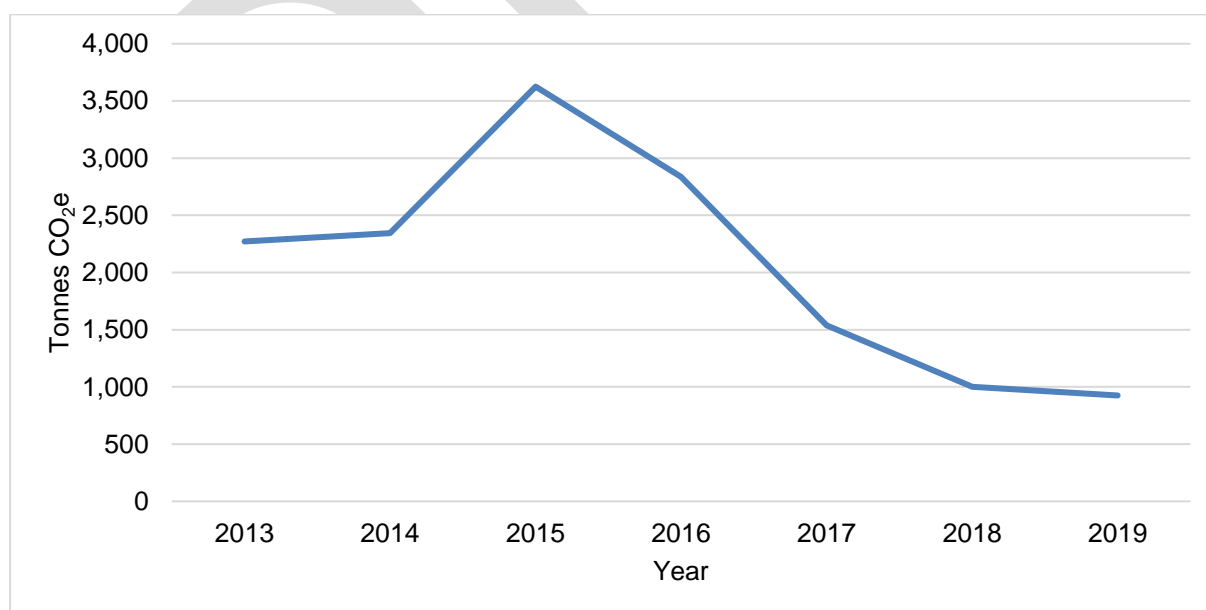
Year	Electricity	Gas	Oil	Water	Waste Arisings and Disposal	Business Travel	Anaesthetic Gases	Total
Baseline	2,273	4,770	6	104	46	499	856	8,553
2019/20	926	5,039	23	105	16	669	619	7,397
Reduction	1,347	-270	-17	-1	29	-170	237	1,156

Emissions have been reduced from electricity consumption and waste arisings and disposal; this has resulted in a total reduction of 1,156 tCO<sub>2</sub>e despite an increase in emissions from some aspects. The actions responsible for the changes in emissions for each aspect are detailed in section 5.3.

## 4.4 Key Aspects

### 4.4.1 Electricity

Electricity consumption is the second largest contributor to carbon emissions at the Trust, making up 27% of carbon emissions in the baseline year. The Trust have reduced carbon emissions from electricity by 59% since the baseline year a reduction of 1,347 tCO<sub>2</sub>e, as shown in Figure 2.



**Figure 2 tCO<sub>2</sub>e from Trust electricity consumption from the grid**

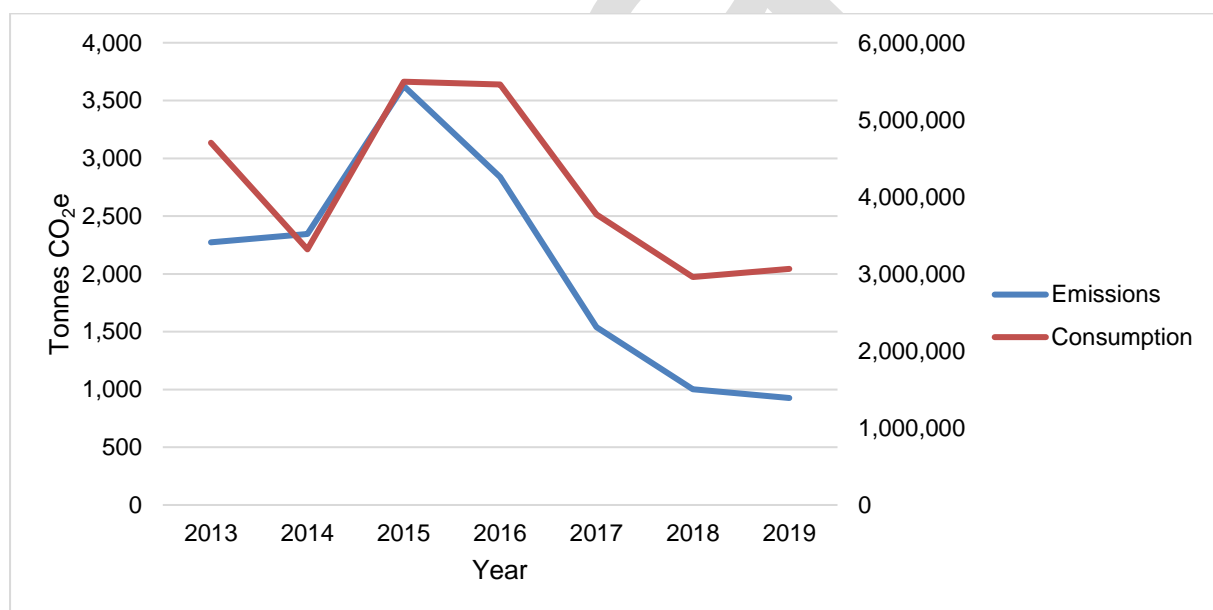
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Consumption of electricity at the Trust has decreased by 35% since the baseline year, as shown in Figure 2. This reduction has been achieved through a series of measures implemented by the Trust since 2015. The Trust have upgraded electrical infrastructure, several items of electrical equipment were installed upgraded and commissioned. This included a new high-voltage power supply to Strayside, servicing a new substation and generator. The Trust also upgraded transformers, switchgear, and section boards. The Trust also upgraded the BMS to improve efficiency.

The Trust has also improved the energy efficiency of lighting. Since this project was implemented in 2016, 7000 light fittings have been replaced with LED daylight lighting and are occupancy controlled. LEDs are being installed site-wide to replace inefficient lighting. It is estimated that this scheme has resulted in an annual saving of 154 tCO<sub>2</sub>e.

In 2013, Microsoft Power Down was installed on all computers at the Trust. This ensures that computers are not left on when not in use, which reduces the amount of electricity wasted. This is estimated to have saved 144 tCO<sub>2</sub>e annually.

The reduction in emissions has also partially been due to the reduction in carbon intensity of imported electricity since the baseline year, 2013. Electricity used in the National Grid is generated through a mix of sources including gas, coal, nuclear and renewable source such as wind. Every year the proportion of renewable energy sources which contribute towards the UK's energy mix increases, which reduces the carbon intensity of the electricity supplied by the Grid. The reduction in carbon intensity to produce the UK's electricity results in a reduction in the associated emissions.



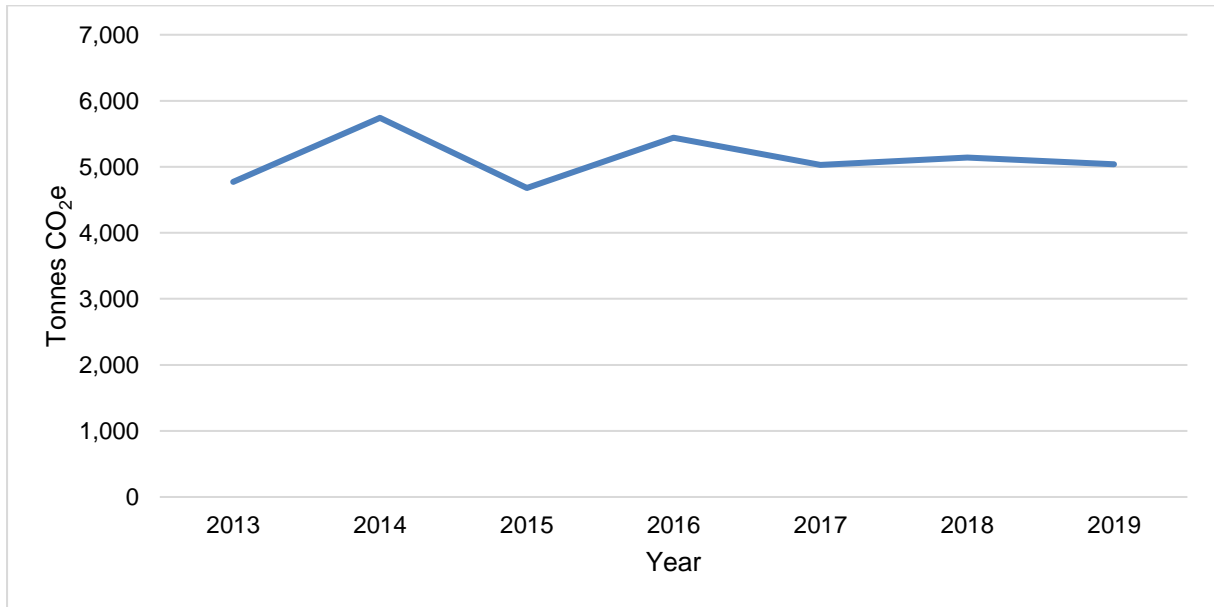
**Figure 3 - Comparison between electricity consumption (kWh) and emissions (CO<sub>2</sub>e)**

The carbon intensity of electricity is calculated and published by the Department for Business, Energy, and Industrial Strategy (BEIS) each year. In the baseline year (2013), the carbon intensity was 0.48 kg CO<sub>2</sub>e; this means that for every kWh of electricity consumed, 0.48 kg of CO<sub>2</sub>e was produced. By 2019-20 this carbon intensity had decreased by 42% to 0.28 kg CO<sub>2</sub>e, resulting in lower annual emissions from electricity. This has enabled the Trust to achieve a 59% reduction in emissions with only a 35% reduction in consumption.

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## 4.5 Gas

As shown in Figure 4, a decrease in emissions from gas consumption at the Trust has not been achieved. This is due to the use of the CHP (Combined Heat & Power) which uses gas to generate electricity onsite at Harrogate District Hospital. This has meant that there has been an increase in the gas consumed at the Trust and a decrease in the electricity imported from the National Grid.

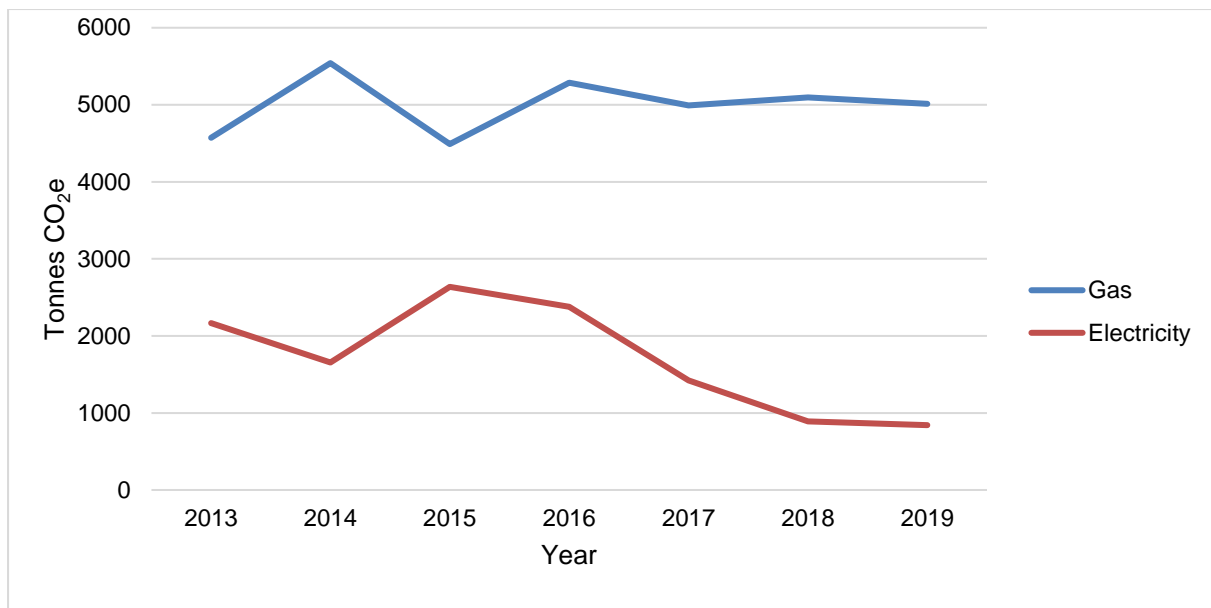


**Figure 4 - tCO<sub>2</sub>e from gas consumption at the Trust**

At the Trust's main site, Harrogate District Hospital, a combined heat power (CHP) station is utilised to generate electricity and heat from natural gas. As part of the Trust's Carbon Management Plan published in 2014 it was recommended that the Trust improved the efficiency of the CHP and the maximised of a number of downstream energy management projects. The CHP has now been optimised to act as the primary heat source for the Harrogate site. The heat from the CHP is used to reduce the consumption of gas in the heating boilers and serve as an absorption chiller. In the winter months, surplus heat it utilised onsite to keep the car park free of frost and snow.



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**Figure 5 - CO<sub>2</sub>e emissions from gas and electricity at Harrogate District Hospital**

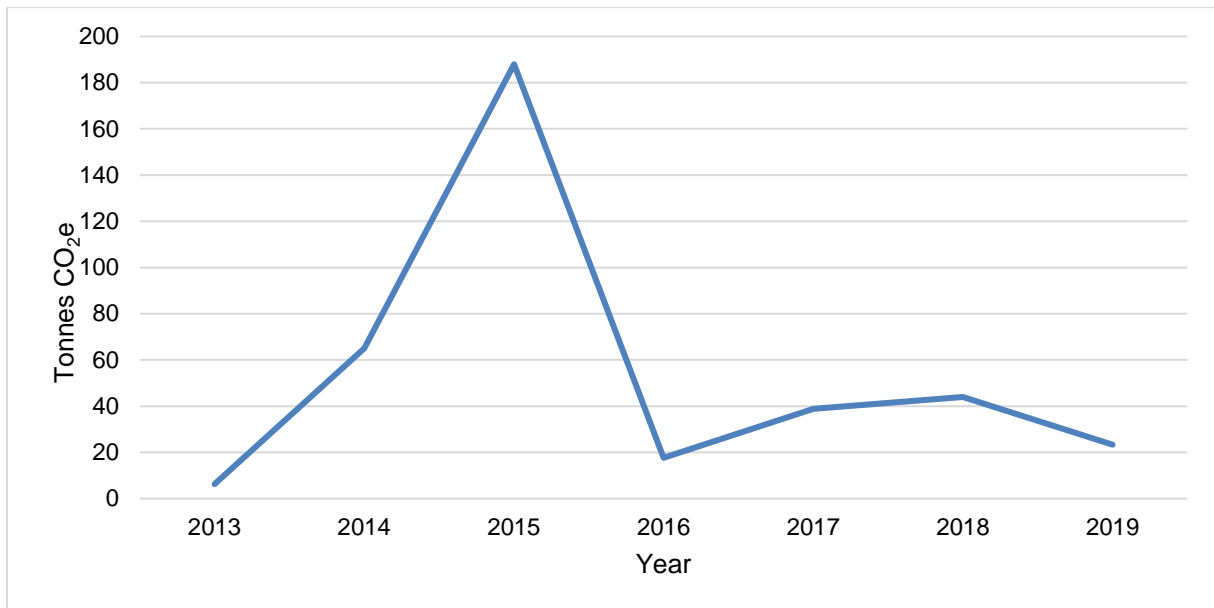
Measures have been implemented at the Trust to reduce the CO<sub>2</sub>e emissions from gas, this has resulted in a significantly smaller increase in gas emissions (10%) than the decrease in electricity consumption from the grid (35%). This increase in gas emissions could also be attributed to the 7.5% increase in the total heated volume at Harrogate District Hospital.

The fulltime operation of the CHP has required an increase in gas consumption at the Harrogate site, this has resulted in a 10% increase in CO<sub>2</sub>e emissions from gas consumption at the Hospital, however the use of the CHP has also delivered a 59% reduction in CO<sub>2</sub>e emissions from electricity. Overall, at Harrogate District Hospital 884 tCO<sub>2</sub>e has been saved from gas and electricity consumption since the baseline year, a 13% reduction. In total, a 16% reduction in CO<sub>2</sub>e emissions from gas and electricity has been achieved at the Trust, despite the increase in gas emissions.

#### **4.6 Oil**

As seen in Figure 6, oil consumption at the Trust has fluctuated significantly. This is because oil is not a primary energy source at the Trust it is only used as a backup source in the event that either the electricity or gas supply is disrupted.

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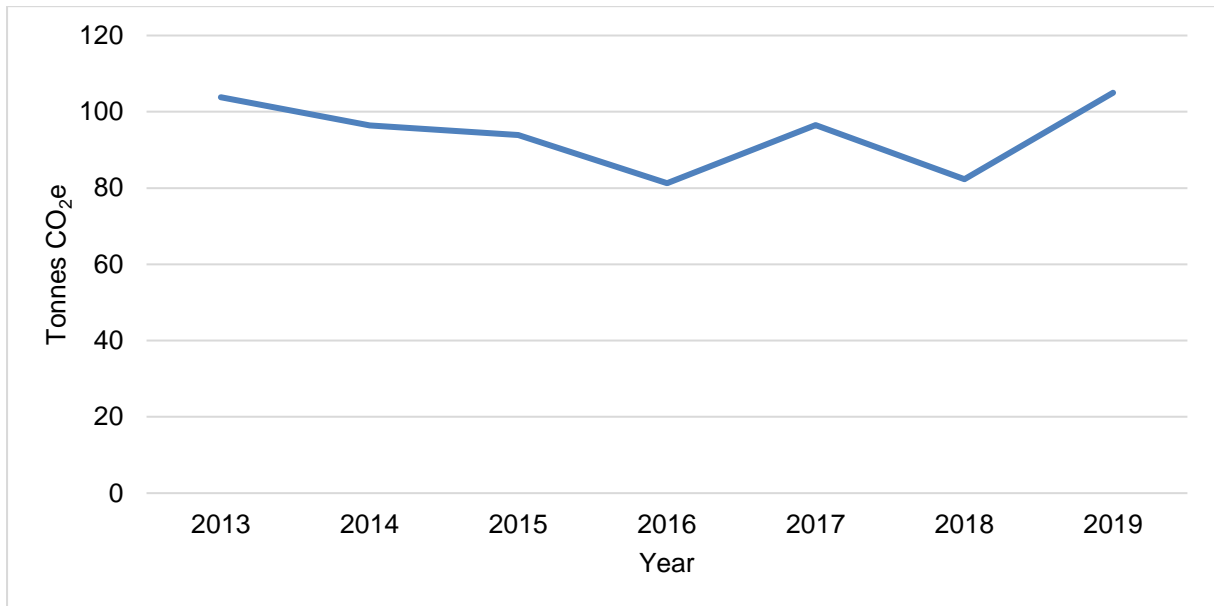
**Figure 6 tCO<sub>2</sub>e emissions from oil consumption at the Trust**

Having oil as a backup energy source is mandated by the Healthcare Technical Memoranda (HTM). The Trust chooses not to use oil as a primary energy source as it produces 1.4 times more CO<sub>2</sub>e per kWh than natural gas. Oil is only used in the event of an emergency when gas or electricity supplies fail. As shown in Table 1 - Carbon Baseline for Harrogate and District Foundation Trust based on 2013 data (tCO<sub>2</sub>e) Table 1, oil only contributes a small percentage of the total carbon baseline. To try to avoid the use of oil the Trust aims to maintain our primary energy sources and equipment to reduce the risk of these events occurring.

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## 4.7 Water

The emissions from water at the Trust have increased by approximately 1% since the baseline year. This is due to a sharp increase in water consumption in 2019 as shown in Figure 7.



**Figure 7 - CO<sub>2</sub>e emissions from water consumption at the Trust.**

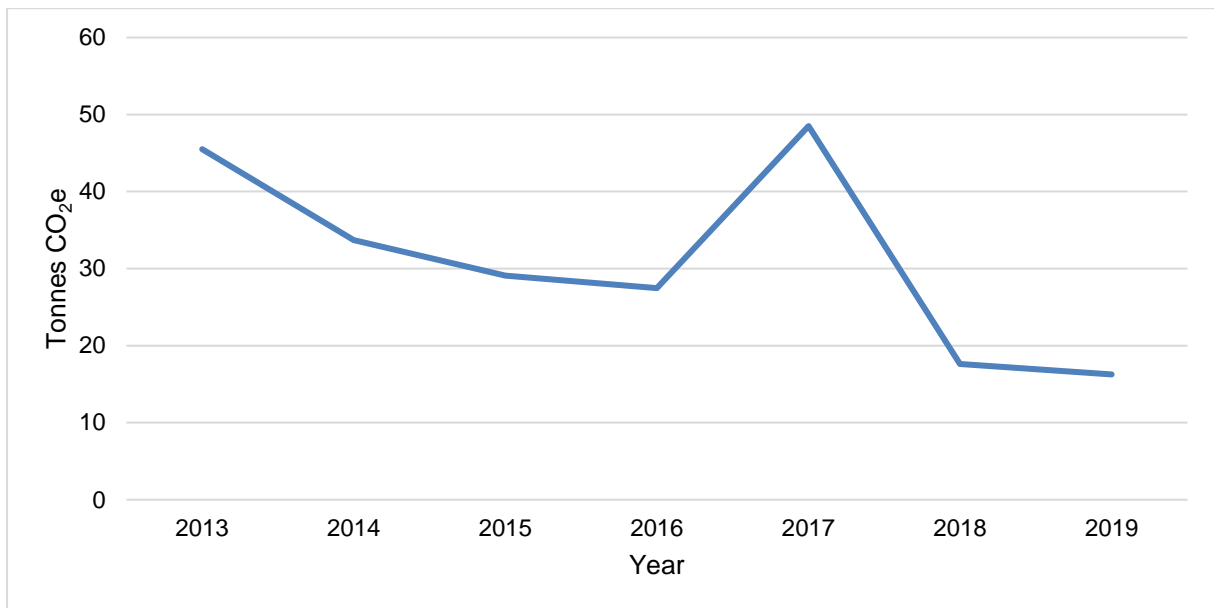
In 2019 the Trust's sterile services underwent and extension, this resulted in an increase in water consumption during this year.

Although emissions from water consumption only make up a very small percentage of our carbon baseline (1.3%) it is important that we aim to use our resources efficiently to save water and reduce costs. We will work to improve the monitoring of water consumption at the Trust so that we can detect any leaks quickly to reduce unnecessary water loss. We will use the data we gather to identify strategic actions that can be implemented to reduce our water consumption.

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## 4.8 Waste

Despite a spike in waste in 2017/18 the Trust have achieved a 65% reduction in the CO<sub>2</sub>e emissions from waste disposal since the baseline year as seen in Figure 8.



**Figure 8 – CO<sub>2</sub> e emissions from waste disposal at the Trust**

This is a significant reduction which has been achieved due to the Trust using the most efficient methods of disposal. The quantity of waste produced by the Trust has increased by 12% since the baseline year due to an increase in patient numbers.

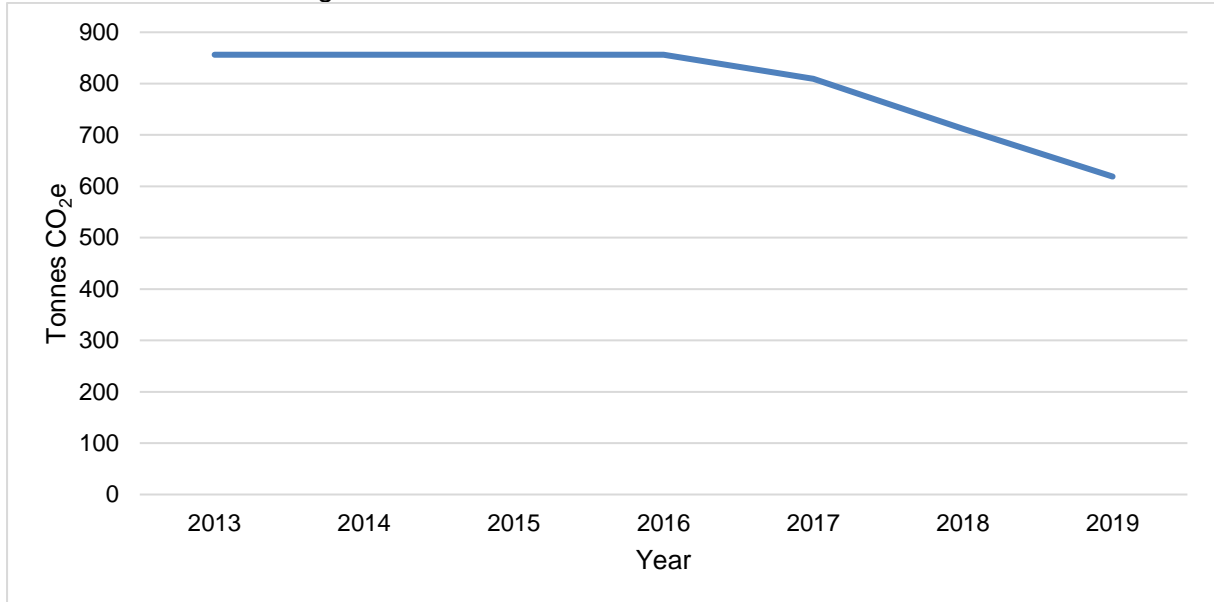
In 2018 the Trust stopped sending waste to landfill, resulting in a large reduction in emissions. The Trust now use incineration, alternative treatment, and recycling to dispose of waste which have a lower carbon impact. The Trust also have a dedicated Waste Manager and use a waste reuse scheme to reduce the amount of waste requiring disposal.

To reduce these emissions further the Trust will implement several actions, guided by the waste hierarchy which will look to reuse the creation of waste in the first instance, increase the amount of waste recycled or recovered and then dispose of our remaining waste in the most efficient ways possible.

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## 4.9 Anaesthetic Gases

Many medical procedures carried out at the Trust require the use of anaesthetic gases, most commonly the volatile agents Desflurane, Sevoflurane and Isoflurane. Between the year 2016 and 2019 the Trust have reduced emissions from anaesthetic gases by 28%, a reduction of 237 tCO<sub>2</sub>e as seen in Figure 9.



**Figure 9 - CO<sub>2</sub>e emissions from anaesthetic gases at the Trust**

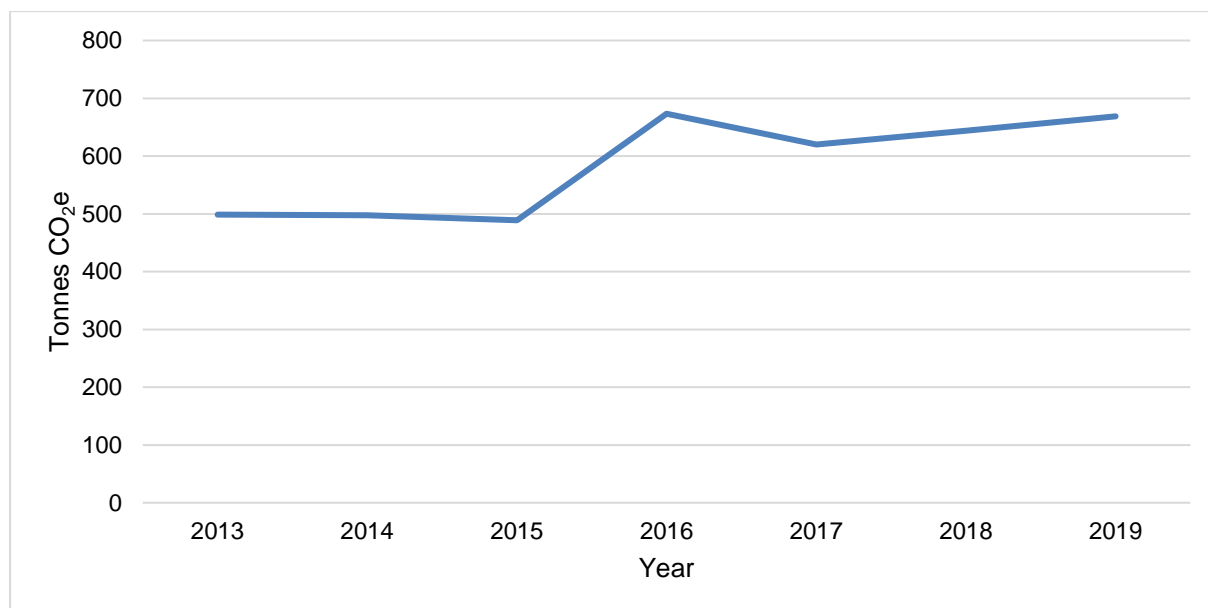
This reduction has been achieved by favouring the use of Sevoflurane in favour of Desflurane where clinically appropriate. Desflurane has a Global Warming Potential (GWP) of 6,810, compared to Sevoflurane which has a GWP of only 440. Therefore, using Desflurane produces approximately 15 times more emissions than using Sevoflurane.

The use of anaesthetic gases is essential at the Trust so these emissions will not be reduced to zero. **The Trust has already removed Desflurane from its approved anaesthetic gases.**

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## 4.10 Travel

Since the baseline year annual emissions from the Trust fleet have increased by 25% as shown in Figure 10. This is due to an increase in the milage travelled since the baseline year.



**Figure 10 - CO<sub>2</sub>e emissions from fleet travel at the Trust**

In 2019/20 an additional 733,295 miles were travelled by the Trust than in the baseline year. As the Trust's fleet is comprised of petrol and diesel vehicles this has led to an increase in CO<sub>2</sub>e emissions.

It is expected that emissions for 2020/21 will be significantly lower than in 2019/20. So far in 2020/21 there has been a 26% reduction in the average monthly mileage travelled compared to the baseline year. This is a 50% reduction from the previous year. If the amount of business travel continues at the current level, we predict that there will be a 35% reduction in CO<sub>2</sub>e emissions from the baseline year by April 2021. This reduction has been achieved as a result of the restrictions due to the COVID-19 pandemic.

During the pandemic, staff who were not required to work at the Trust were able to work remotely from home. This reduced the need for commuting. Meetings were also conducted remotely which minimised business travel. To continue to provide services during the COVID-19 pandemic the Trust used *Attend Anywhere*, a secure web-based platform for patients which enables video consultations. This platform enables the Trust to provide remote services and has therefore reduced the requirement for patients and staff to travel. Despite being introduced out of necessity, adopting the Attend Anywhere platform has enabled the Trust to reduce emissions, air pollution. Introducing this platform has also made our services more flexible and resilient.

The Trust intend to continue providing the option of remote consultations where appropriate when face to face services can resume to enable patients to access our services from home and reduce the impacts of travel. The Trust will continue to utilise technology to facilitate remote working and services following the pandemic to reduce travel. We will also implement a number of other measures to reduce the environmental impacts of our travel, such as transitioning to a low carbon fleet and encouraging active travel.

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## 5.0 A PATHWAY TO CARBON NET ZERO

To date the Trust has achieved a reduction in total annual CO<sub>2</sub>e emissions. However, achieving our ultimate target of reducing our emissions to net-zero will require a sustained effort. This section will outline the trajectory the Trust will need to follow to become carbon net-zero by 2040. This section will also detail some of the National measures that are expected to be implemented that will assist the Trust in reducing residual emissions.

In addition to the 2040 net-zero carbon emissions target, the NHS have set an interim target for an 80% reduction in scope 1 emissions by 2028 to 2032. These targets are given in Section 4 *Drivers and Targets*. These targets are not legally binding but have been set as a national commitment by NHS England to ensure that the NHS achieves net-zero emissions as soon as possible and achieves the mandatory national 2050 net-zero target.

The level of emissions the Trust will need to achieve to meet these targets are set out in the Table 3. The Trust will monitor our emissions against these targets and publish our emissions annually.

Table 3 - NHS carbon emissions targets in percentage terms and tCO<sub>2</sub>e

Year	Baseline	2020	2032	2040
Target Emission Reduction (%)	n/a	28	80	100
Target Emissions (tCO <sub>2</sub> e)	8,553	6,843	1,711	0

Figure 11 shows the Trust's carbon footprint since 2013 baseline against the NHS's CO<sub>2</sub>e target reductions. As shown, the Trust did not meet the 2020 28% reduction target but have achieved an annual reduction in carbon emissions since 2015.

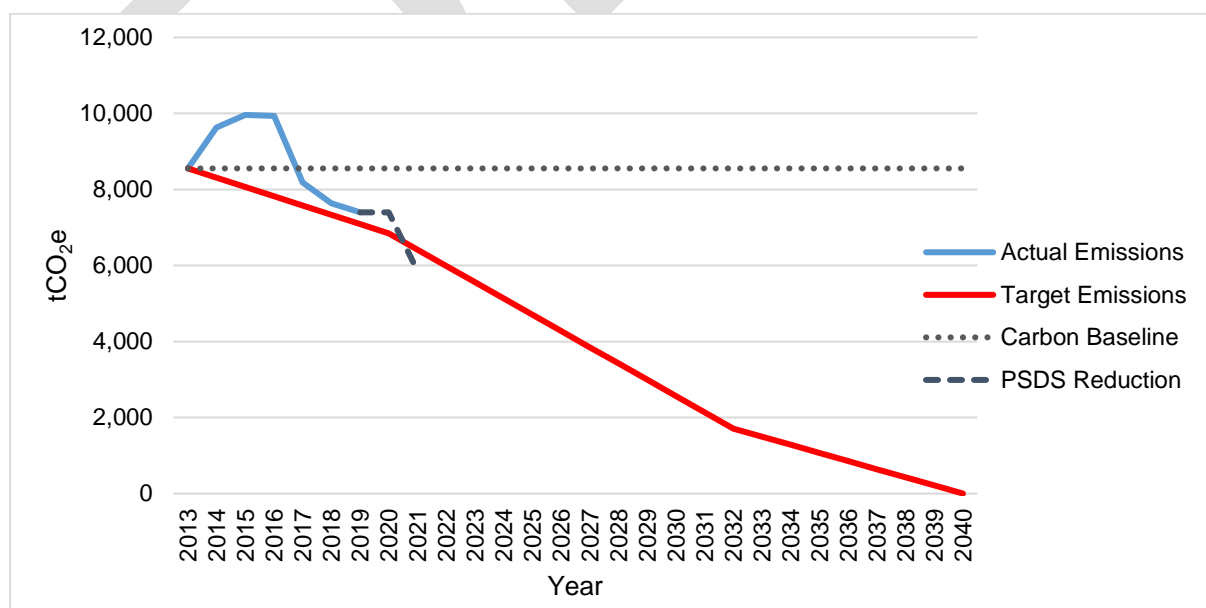


Figure 11 - Trust emissions against the NHS CO<sub>2</sub>e emissions targets

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To reduce our residual 7,397 tCO<sub>2</sub>e of emissions to net-zero will require actions to be taken across all aspects of the Trust to improve efficiency. Our Sustainable Action Plan, outlined in Section 8, will be used as a framework to monitor the implementation and effectiveness of the actions we will take over the next 5 years to reduce carbon emissions, air pollution and waste. When the Trust has successfully implemented all practicable actions and achieved the maximum reduction in emissions, we will then rely on national schemes to help reduce our residual emissions in the long-term.

## 5.1 Public Sector Decarbonisation Grant

The Public Sector Decarbonisation Scheme (PSDS) was set up as part of the government's 'Plan for Jobs 2020' to provide grants to public sector organisations to fund heat decarbonisation and energy efficiency projects. The scheme supports the UK's carbon net-zero ambition by encouraging the public sector to transition from fossil fuel heating systems to greener energy.

£1 billion was available as part of the scheme, the Trust have been granted **xxxxxxx** of funding to support a range of decarbonisation schemes.

The Trust will implement a number of upgrades to the Harrogate District Hospital site to decarbonise heating and electricity and improve the efficiency of the estate. The planned interventions and the carbon reductions they will deliver are outlined in Table 4. As shown in Figure 11, the interventions and upgrades implemented as part of this scheme will bring the Trust ahead of 2040 net-zero trajectory by reducing emissions to approximately 5,850 tCO<sub>2</sub>e annually. These measures will also provide the Trust with a £192,390 annual financial saving.

**Table 4 - Public Sector Decarbonisation Scheme interventions at Harrogate District Hospital**

Area of Intervention	Intervention	Annual Financial Saving	Annual tCO <sub>2</sub> e Saving
Heating	Air-source heat pump - Gas	£76,809	549.10
	Air-source heat pump - Electricity	+£77,403	56.09
	Ground-source heat pump - Gas	£21,823	176.93
	Ground-source heat pump - Electric	£22,641	14.50
	Desteaming	£25,603	183.03
Cooling	Air conditioning units	£11,095	8.04
Insulation building fabric	Window replacement	£10,461	76.07
	Roof insulation	£2,866	20.49
Renewable energy	Photovoltaics	£12,381	8.97
Ventilation	AHU Ventilation	£60,571	433.01
Motor Controls	Pumping	£25,543	18.51
Metering	BMS upgrades	-	-
<b>Total</b>		<b>£192,390</b>	<b>1,544.75</b>

To reduce reliance on gas for heating, the Trust will install a 300-kW air source heat pump to preheat the domestic water system and provide electricity. In Phase 2 of the project, we will also install a ground-source heat pump which will eventually replace the CHP at the Harrogate site and reduce the Trust's gas and electricity emissions. We will also replace the steam calorifier with a plate heat exchanger. The heating projects implemented will save approximately 980 tCO<sub>2</sub>e annually at the Trust and generate an annual financial saving of £69,473.

To produce renewable energy onsite and reduce our reliance on electricity from the national grid we will install solar photovoltaics. This will save 140,125 kWh of electricity annually and



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avoid the emission of approximately 9 tCO<sub>2</sub>e. The Trust will also update cooling systems which will be remote controlled and will prevent excessive heating or cooling and maintain comfort levels in rooms.

To improve efficiency across our estate we will improve the insulation of our building fabric. We have identified flat roofs on our site which will be updated with increased insulation to improve the thermal performance of the building and reduce the escape of heat. We will also replace single glazed windows at the Harrogate site and repair any failed seals or hinges on the newer double glazing to reduce heat loss. These improvements will save the Trust 96.6 tCO<sub>2</sub>e a year.

To produce renewable energy onsite and reduce our reliance on electricity from the national grid we will install solar photovoltaics. This will save 140,125 kWh of electricity annually and avoid the emission of approximately 9 tCO<sub>2</sub>e.

We will upgrade our Buildings Management Systems (BMS) to allow detailed metering across the site. The upgrade will enable remote monitoring and logging to optimise the operation of all current equipment at the site. Although we are unable to quantify the direct carbon reduction that will result from this project, introducing additional sub metering will enable the Trust to identify carbon hotspots across the estate. By identifying carbon hotspots, we can target future measures to ensure that we achieve carbon net-zero by 2040.

This project will also strive to procure equipment, materials, and labour from local and regional sources. This is to support local businesses, many of which will have been negatively impacted by the COVID-19 pandemic. As part of project, we will provide 102 manufacturing jobs and 98 installation jobs which support SMEs and local businesses.

## **5.2 National Considerations**

The UK Government considers achieving carbon net-zero a national priority. The Trust will implement actions to reduce our carbon emissions, air pollution and waste as much as possible but, will rely on national schemes to reduce the residual emissions to net-zero. This section will outline some of the key national schemes that are planned to reduce emissions and air pollution over the next 30 years which should help the Trust achieve net-zero by 2040.

To act as a framework to guide the UK's transition to a net-zero economy the Government have set out their Ten Point Plan. The Plan will be supported by £5 billion in funding to kickstart the Green Industrial Revolution in the UK. The Government aims to create 250,000 new jobs by 2030 in green energy and zero-carbon technologies including offshore wind farms, nuclear plants, hydrogen power technologies and carbon capture to support a green recovery from the COVID-19 pandemic.

### ***5.2.1 Renewable Energy***

As outlined in section 5, the percentage of UK electricity generated from renewable sources increases each year which reduces the carbon intensity of electricity in the UK. To enable the UK to achieve net-zero by 2050 and decarbonise electricity, the Government plans to increase the amount of renewable energy generated. 40 GW of energy is expected to be generated through offshore wind which will be coupled with carbon capture technologies and battery storage so this energy can meet demands, this is enough energy to power every home in the UK. There will also be an increase in low-carbon nuclear energy.

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The increase in renewable electricity will make a significant difference to our carbon emissions from electricity. **The Trust currently procures 100% renewable electricity at our main site Harrogate District Hospital**, the increase in renewables would make the greatest difference in areas of the estate which are managed by NHS Property Services.

### ***5.2.2 Emerging Technologies and Opportunities***

The Ten Point Plan outlines the government's plans to drive the growth of low-carbon hydrogen to decarbonise heating. The transition to hydrogen technologies will be supported by the Net Zero Hydrogen Fund which will provide £240 million of capital co-investment by 2024/25.

The use of hydrogen for heating, would provide an alternative to fossil fuels such as natural gas and oil. Converting the gas grid to hydrogen could reduce UK carbon emissions by an estimated 73%. The Government intend to create 5GW of low-carbon hydrogen production capacity by 2030.

The government intends for large village heating trials to be carried out by 2025 with a potential Hydrogen Town by 2030. This is in addition to privately funded schemes such as the H21 City Gate Project which seeks to begin converting the gas grid to hydrogen within this decade.

The Government will consult on the role of 'hydrogen ready appliances' in 2021 in preparation for any future conversion of the gas grid. Subject to testing and successful trials the Government will also work the Health and Safety Executive to enable up to 20% hydrogen blending in the gas grid by 2023.

Carbon capture will be utilised to ensure that hydrogen heating can be implemented across the UK and can be delivered at costs that can rival natural gas heating. If the UK can successfully transition to hydrogen heating it would significantly reduce the Trust's carbon emissions from gas in the long term. This would dramatically reduce our overall carbon footprint as gas is our largest contributor to emissions.

Viable new technologies are constantly emerging. The Trust has 19 years to reduce carbon emissions to net-zero. It is crucial that the Trust remains up to date with emerging technologies to ensure that we are using the best possible methods to decarbonise our Trust by 2040.

### ***5.2.3 Transport***

As part of the Ten Point Plan, the Government will encourage the use of public transport and active travel to continue to achieve a reduction in air pollution, as was observed during the COVID-19 pandemic.

The Government have promised funding to improve rail and bus networks across the UK. To upgrade and renew these networks more rail lines will be electrified, and bus and rail networks will be integrated, with the introduction of smart ticketing to make travelling by bus and rail more convenient. To accompany this plan, a National Bus Strategy will be published. This strategy will detail plans to create more zero emissions buses and super buses which will provide a cheaper, more frequent bus service. It is expected that these schemes will facilitate easier travel by public transport and will therefore reduce the number of people who are reliant on cars.

Schemes are also planned to encourage active travel. To enable more people to cycle safely the Government plans to build thousands of miles of segregated cycle lanes across England. To monitor the implementation of active travel schemes an Active Travel body has been set up. This body will be responsible for assessing the active travel performance of local

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authorities and distribute funding accordingly. Encouraging active travel across England will not only help to reduce the Trust's emissions from staff and patient travel but will improve air quality and improve the health and wellbeing of the local population.

The Ten Point Plan also addresses emissions from private vehicles. From 2030 the sale of new petrol and diesel vehicles will be banned, followed by a ban on hybrid models by 2035. This ban has been brought forward by 10 years to accelerate the transition to electric vehicles. To support this transition the Government will develop 'Gigafactories' to produce batteries to accommodate the expected increase in electric vehicle manufacturing. Electric vehicle charging points will also become more readily available.

Together these schemes will assist the Trust in reducing Scope 3 emissions. Scope 3 emissions are the most difficult to quantify and reduce as they are outside of the Trust's direct control. The shift towards public and active travel will help to reduce our emissions from staff and patient travel and the transition to electric vehicles will reduce both travel and procurement emissions.

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## 6.0 OUR SUSTAINABLE ACTION PLAN

As an organisation we are committing to the following;

**We will achieve a 100% reduction of direct carbon dioxide equivalent (CO<sub>2</sub>e) emissions by 2035. An 80% reduction will be achieved by 2032 at the latest.**

**We will achieve a 100% reduction of indirect CO<sub>2</sub>e emissions by 2045. An 80% reduction will be achieved by 2039 at the latest.**

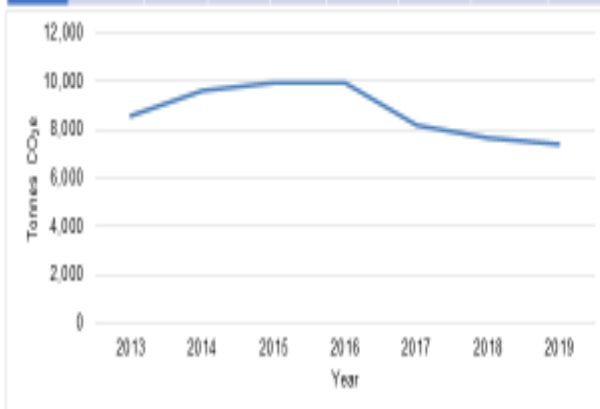
We know the scale of the challenge:



### The journey so far

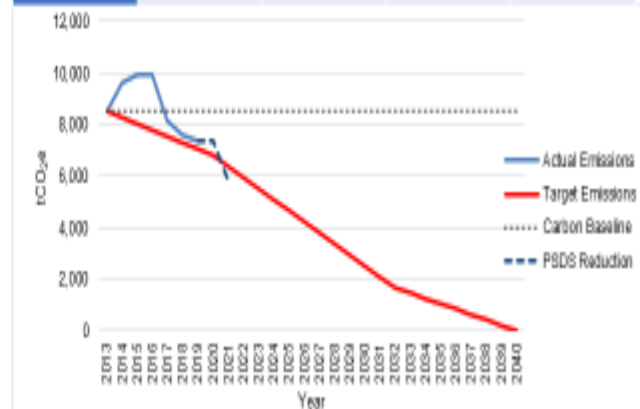
The Trust has reduced carbon emissions from the baseline. In the six years since the baseline year a 14% reduction in CO<sub>2</sub>e emissions has been achieved with annual emissions decreasing by 1,156 tCO<sub>2</sub>e

Year	Electricity	Gas	Oil	Water	Waste Arisings and Disposal	Business Travel	Anaesthetic Gases	Total
2013-14	2,273	4,770	6	104	46	499	856	8,553



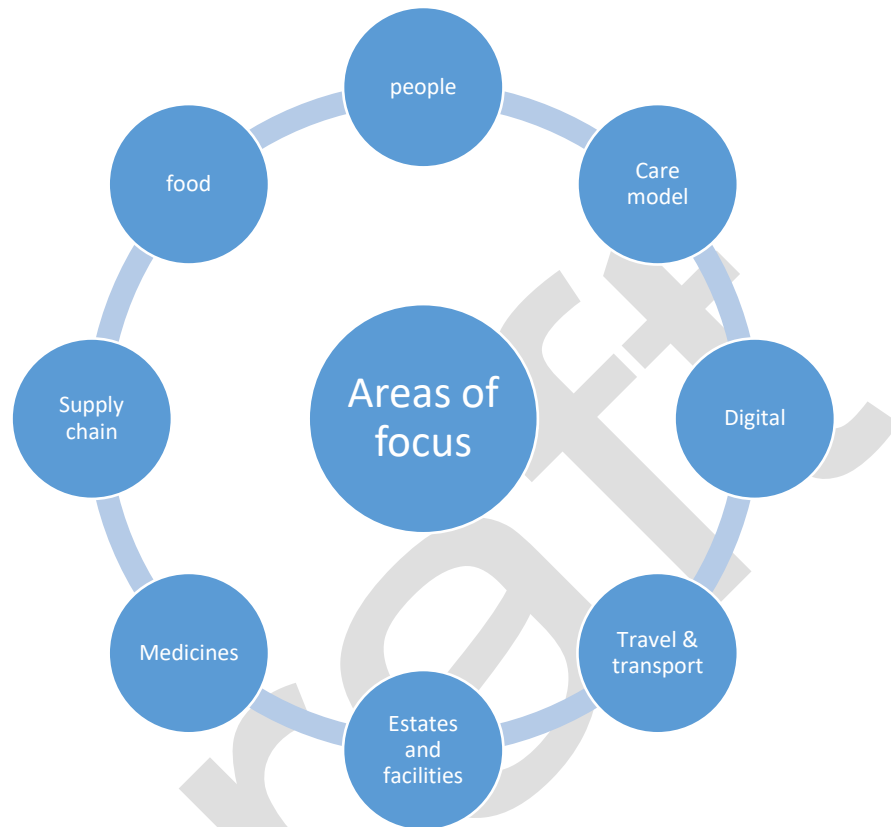
### The future challenge

Year	Baseline	2020	2032	2040
Target Emission Reduction (%)	n/a	28	80	100
Target Emissions (tCO <sub>2</sub> e)	8,553	6,043	1,711	0



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To meet this challenge we are focusing on the following:



- People & leadership – create the governance infrastructure and engage with our colleagues and partners to deliver our green objectives.
- Sustainable models of care - embedding net zero principles across all clinical services, considering carbon reduction opportunities in the way care is delivered.
- Digital transformation – harness digital technology and systems to streamline service delivery and supporting functions.
- Travel and transport - to reduce the carbon emissions arising from the travel and transport associated with our Trust.
- Estates and facilities - focus on reducing the carbon emissions arising from our buildings and infrastructure.
- Medicines - to reduce the carbon emissions related to our prescribing and use of medicines and medical products.
- Supply chain and procurement - consider how we may use its individual or collective purchasing power and decisions to reduce carbon embedded in their supply chains.

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- Food and nutrition - consider ways to reduce the carbon emissions from the food made, processed or served within the organisation.
- Governance – how we plan to ensure sustainability is embedded in our programmes and reporting structure.

Our Green Plan covers will cover a 3 year period but will be reviewed and updated annually, with this in mind the following sets out our planned actions for the first year.

The following two pages outline what we will be focusing on in year one.

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Area of work	Action
People and leadership	<ul style="list-style-type: none"><li>• Sustainability board created</li><li>• Green working group to deliver the programme of work</li><li>• Green 'colleague panel' to engage and generate ideas</li><li>• Carbon Literacy training for key colleagues</li><li>• Develop a communications strategy and work with partners to develop a strong and cohesive narrative</li></ul>
Sustainable models of care	<ul style="list-style-type: none"><li>• Understand the opportunities to deliver care in a more sustainable way</li><li>• Connect the development of new models of OP care to reduction in carbon</li><li>• Include carbon reduction as a criteria within service change decisions</li></ul>
Digital transformation	<ul style="list-style-type: none"><li>• Support delivery of virtual / telephone clinics</li><li>• Paper-free outpatients in line with digital strategy</li><li>• Test digital roadmap against carbon usage and include carbon reduction within investment decisions</li></ul>
Travel & transport	<ul style="list-style-type: none"><li>• Develop a new Travel Plan</li><li>• Work with partners to introduce incentives to utilise public transport</li><li>• Any lease cars will be ultra-low / zero emission only</li><li>• Install electric charging points on the hospital site</li><li>• Liaise with landlords of properties to develop charging point options</li></ul>
Estates & facilities	<ul style="list-style-type: none"><li>• Deliver the <b>xxxxxxx</b> programme and reduce energy usage</li><li>• Ensure all building designs / refurbishments are environmentally considerate</li></ul>
Medicines	<ul style="list-style-type: none"><li>• Link the Scan 4 Safety project and Omnicell roll out to reduction of waste</li><li>• Explore opportunities to reduce use of high use inhalers</li><li>• Ensure continued compliance with agreed anaesthetic gas formulary</li></ul>
Supply chain & procurement	<ul style="list-style-type: none"><li>• All contracts with suppliers to include carbon reduction clause</li><li>• Understand best practice and develop a procurement plan as part of WYAAT, using collaborative procurement to drive change</li></ul>
Food	<ul style="list-style-type: none"><li>• Achieve Soil Association gold standard</li><li>• Ensure food is locally sourced</li><li>• Undertake review of provisions to reduce food waste</li></ul>

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We will underpin this work by:

## Governance / Reporting

