NHS
Yorkshire Ambulance Service
NHS Trust

Yorkshire Ambulance Service's
Green Plan

2020 - 2025

Yorkshire Ambulance Service's Green Plan

A plan for the future

The NHS is the largest employer in the UK and the fifth in the world. The impact that the NHS has on the environment is enormous; from contributing to 7% of road traffic, to procurement, to emissions from our utilities. Around 7% of all NHS estate is located in areas susceptible to flooding. We are already suffering the outcomes of climate change's extreme events that are occurring now. The NHS has a moral responsibility to eliminate the health service's carbon emissions. We must lead society towards sustainability, circularity and carbon neutrality. The consequences of extreme weather events are already being felt across the NHS with an increase in pressures due to extreme heat and cold as well as health conditions associated with flooding and air pollution.

The Lancet Commission has called climate change "the biggest global health threat of the 21st century" but rapid, comprehensive action to tackle climate change "could be the greatest global health opportunity of the 21st century." They have also warned that "on the basis of current emission trajectories, temperature rises in the next 85 years may be incompatible with an organised global community". Along with an increased possibility of global pandemics occurring more often we are facing an uncertain future.

Our Green Plan for 2020 to 2025 is bold in our ambitions to play our role in reducing the impact that the NHS has on the UK and the world's carbon emissions. By collaborating with other organisations across the region we can work to reduce our impact in conjunction with local requirements.

By leading by example, we can work to eliminate our emissions and create a more sustainable ambulance service for the future. The Yorkshire Ambulance Service Trust's Green Plan is fully endorsed and supported by the Board of the Trust and we look forward collectively to reaping the environmental, health, social and financial benefits.

Rod Barnes
Chief Executive Officer
Net Zero Board Lead
Yorkshire Ambulance Service NHS Trust

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1. Sustainable Development Introduction

A significant proportion of health and social care carbon emissions come from the estimated £52bn of health-based non-pay spend. Improving the impact of health and care delivery on the environment, society and the economy can generate direct financial benefits to organisations as well as impact wider economic improvements, all of which contribute to the wider determinants of health.

1.1 Yorkshire Ambulance Service

Yorkshire Ambulance Service NHS Trust (YAS) was formed as an emergency service with patient transport services on 1 July 2006 when the county's three former services merged.

We cover nearly 6,000 square miles of varied terrain, from isolated moors and dales to urban areas, coastline and inner cities. We serve a population of over five million people across Yorkshire and the Humber and strive to ensure that patients receive the right response to their care needs as quickly as possible, wherever they live.

We employ more than 5,700 staff, who together with over 1,150 volunteers, enable us to provide a vital 24-hour, seven-days-a-week, emergency and healthcare service.

We receive an average of over 2,500 emergency and routine calls a day. In 2017-18 we responded to a total of 780,383 incidents through either a vehicle arriving on scene or by telephone advice. Clinicians based in our Clinical Hub which operates within the Emergency Operations Centre (EOC) triaged and helped just under 140,000 callers with their healthcare needs.

Our Patient Transport Service made over 944,000 journeys in 2017-18, transporting patients to and from hospital and treatment centre appointments.

Our NHS 111 service helped 1.6 million patients across Yorkshire and the Humber, Bassetlaw, North Lincolnshire and North East Lincolnshire during 2017-18.

1.2 YAS Background

YAS runs over 1200 vehicles as part of its fleet as well as maintaining over 60 ambulance stations with more than 20 stand by locations across the Yorkshire region.

The vehicles within the fleet vary from small petrol vehicles to large diesel ambulances. The vehicles types include ambulances, RRV (rapid response vehicles), out of hours doctors and PTS (Patient Transport Services). With the exception of eleven vehicles, the entire fleet is at present diesel.

1.3 History

The Government set a target to reduce the UK's emissions by 80% by 2050 and 34% by 2020, which was laid down in law through the Energy Act. The NHS Sustainable Development Unit carbon strategy sets a target of 10% reduction between 2007 and 2015. They also mandated that every NHS Trust must have a carbon reduction strategy in place.

In 2009, YAS committed to reducing its carbon emissions in line with the Kyoto Protocol through the Board-approved Carbon Management Plan. This Plan identified that in 2020, 60% of the Trust's emissions would be generated by the fleet. The Carbon Trust NHS Carbon Management Programme was a five year programme.

This Green Plan lays out the targets up to 2025 and lays out longer term goals to achieve the net zero carbon targets in line with a 1.5 degree world.

Previous carbon management plans and updates can be read in conjunction with this report.

1.4 Stakeholder consultation

In order to collate the information for this report, several stakeholders were consulted to provide input and visions for the future. These include representatives from the departments detailed below:

- Estates
- Fleet
- Procurement

- Medical Devices
- ICT
- Unions

External stakeholders include:

- NHS England and the Greener NHS
- Integrated Care Systems across the region
- Clinical Commissioning Groups
- Civic Partners
- Third sector

2 Our Sustainable Vision

2.1 Carbon Footprint

The carbon footprint of Scope 1, 2 and some Scope 3 emissions at YAS have been tracked since 2009 providing at least a 10 year assessment of the emissions from the service.

Details of the Scope emissions that are monitored are presented below.

Table 1 Scope of emissions

Emissions category	
Electricity	Employee commuting
Fossil fuels	Refrigerant & other gas losses (e.g. N_2O)
Water	Procurement
Transport	Anaesthetic gases
Waste	

As can be seen from Graph 1, the CO2 emissions from the fuel use have decreased over the past 10 years.

There has been a decrease in the amount of vehicles on the fleet as well as an increase in mpg. The mileage covered annually has increase and the number of journeys undertaken have increased annually by around 5%.

Graph 1 to show the CO2 emissions from fuel used by Yorkshire Ambulance Service between 2009 and 2019

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
CO2 (t)	11517	* No data	14050	15499	13861	13900	13712	13632	12368	12041
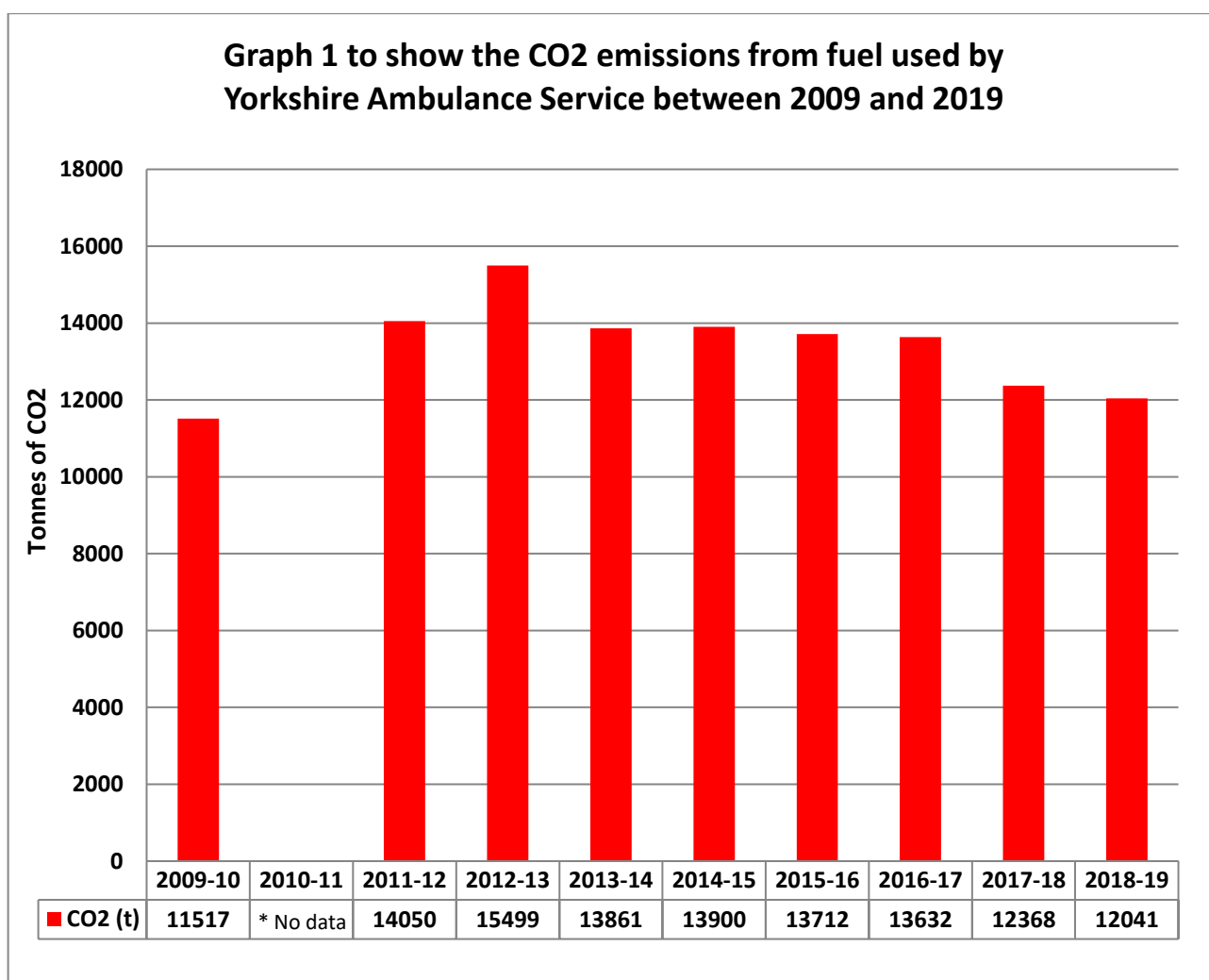
The graph below shows the emissions from the Yorkshire Ambulance Service estate through utility consumption.

Graph 2 to show emissions from energy use in buildings between 2007 and 2019

Emissions (kg)

- Emissions from gas consumption
- Emissions from oil consumption
- Emissions from electricity
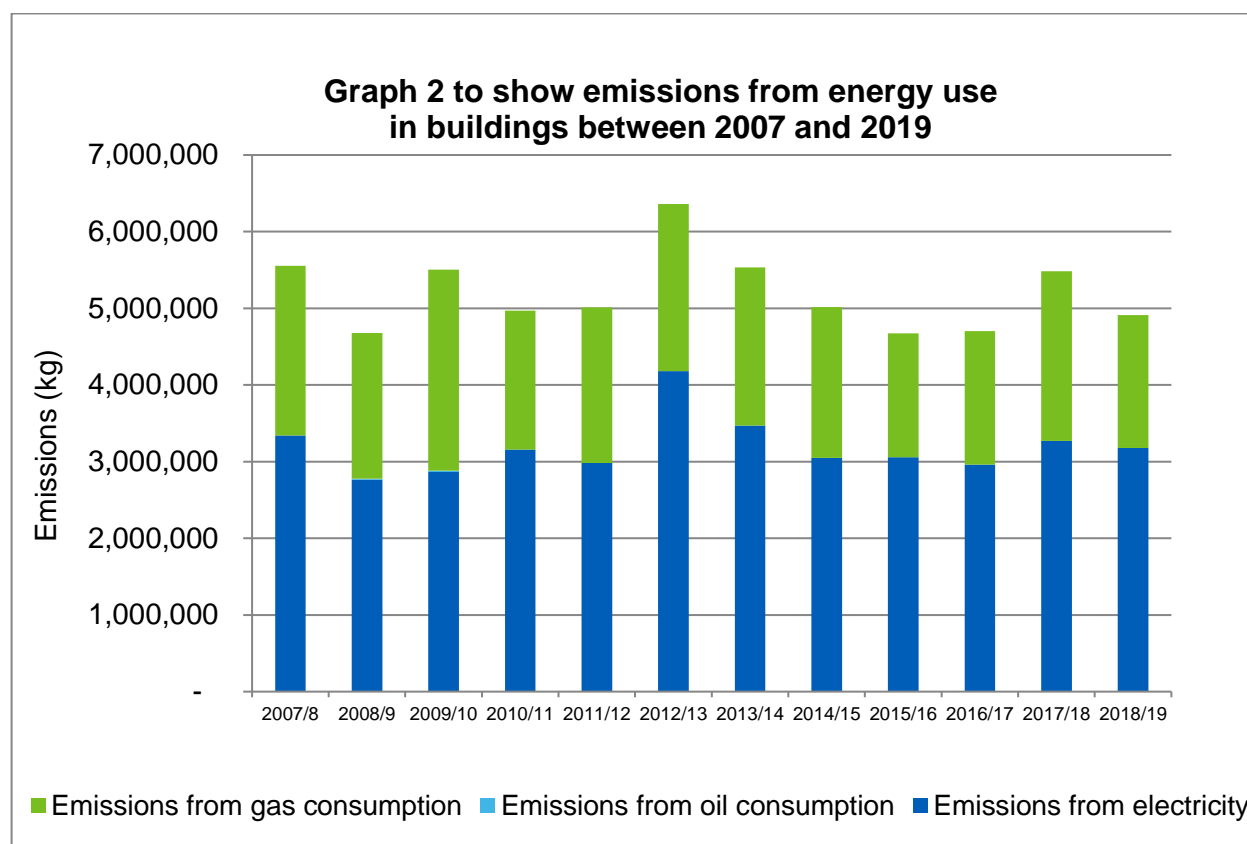
The graph below shows the total emissions from the Yorkshire Ambulance Service. There was a decrease in the emissions from our operations since 2012. This has been due to the decrease in the size our fleet, increase in fuel efficiency with newer vehicles and better energy efficiency within our estate.

The YAS carbon footprint in 2018/19 was 16,900 tonnes. There has been a 25% overall reduction in emissions since 2012/13, as can be seen in the graph below. This has been due to reducing the amount of inefficient vehicles, but it has been countered by an increase in mileage and demand on our service.

Graph 3 to show the CO2 emissions from all sources from 2009 to 2019

Emissions from waste, water and refrigerant gas (tonnes)
Emissions from transport fuel use (tonnes)
Emissions from building (tonnes)
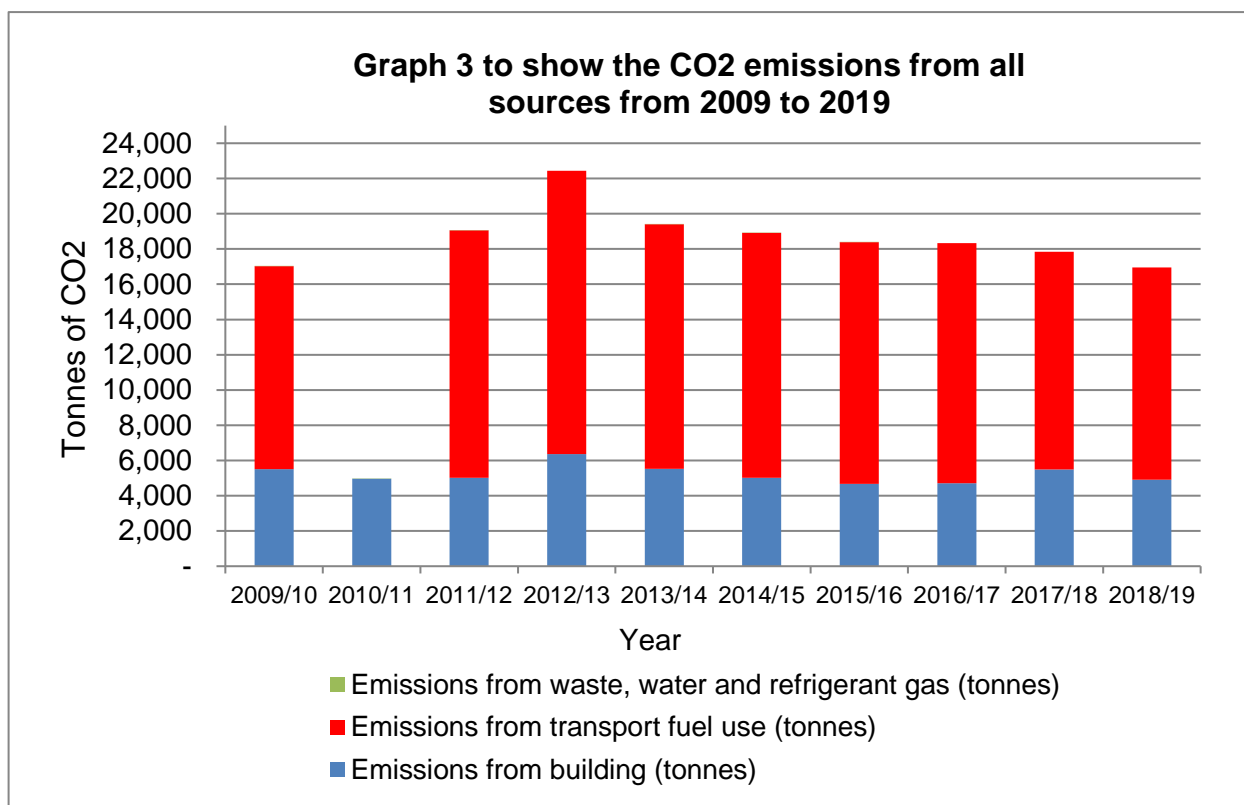
2.2   Targets

The reduction targets are aligned with the Sustainable Development Unit's targets, Greener NHS and the Carbon Targets laid down by the Climate Change Act.

The aspirational figures for climate emergency targets are aligned with the requirements of the climate emergencies that have been declared by councils around the country.

Metric	Year					
	2020	2025	2030	2032	2040	2050
Reduction Target from 1990 baseline (SDU targets/ Carbon Targets)	34%	50%	64%			80%
Amended Climate Change Act Net Zero target			85%			100%
Greener NHS targets				80%	100%	
YAS Climate Emergency targets			85%		100%	

The graph below shows how YAS are performing against the targets laid down in the Climate Change Act with the potential emissions from business as usual.

Graph 4 to show the legal Carbon Reduction Targets up to 2050 with business as usual emissions and YAS's emissions

Legend:
- Actual Emissions
- BAU Emissions
- Target (10%) (2015)
- Target (34%) (2020)
- Target (50%) (2025)
- Target (57%) (2030)
- Target 80% (2050)
- Net Zero (2040)
- Net Zero (2050)
- ▲ Target reductions
- Targets laid down in the Climate Change Act
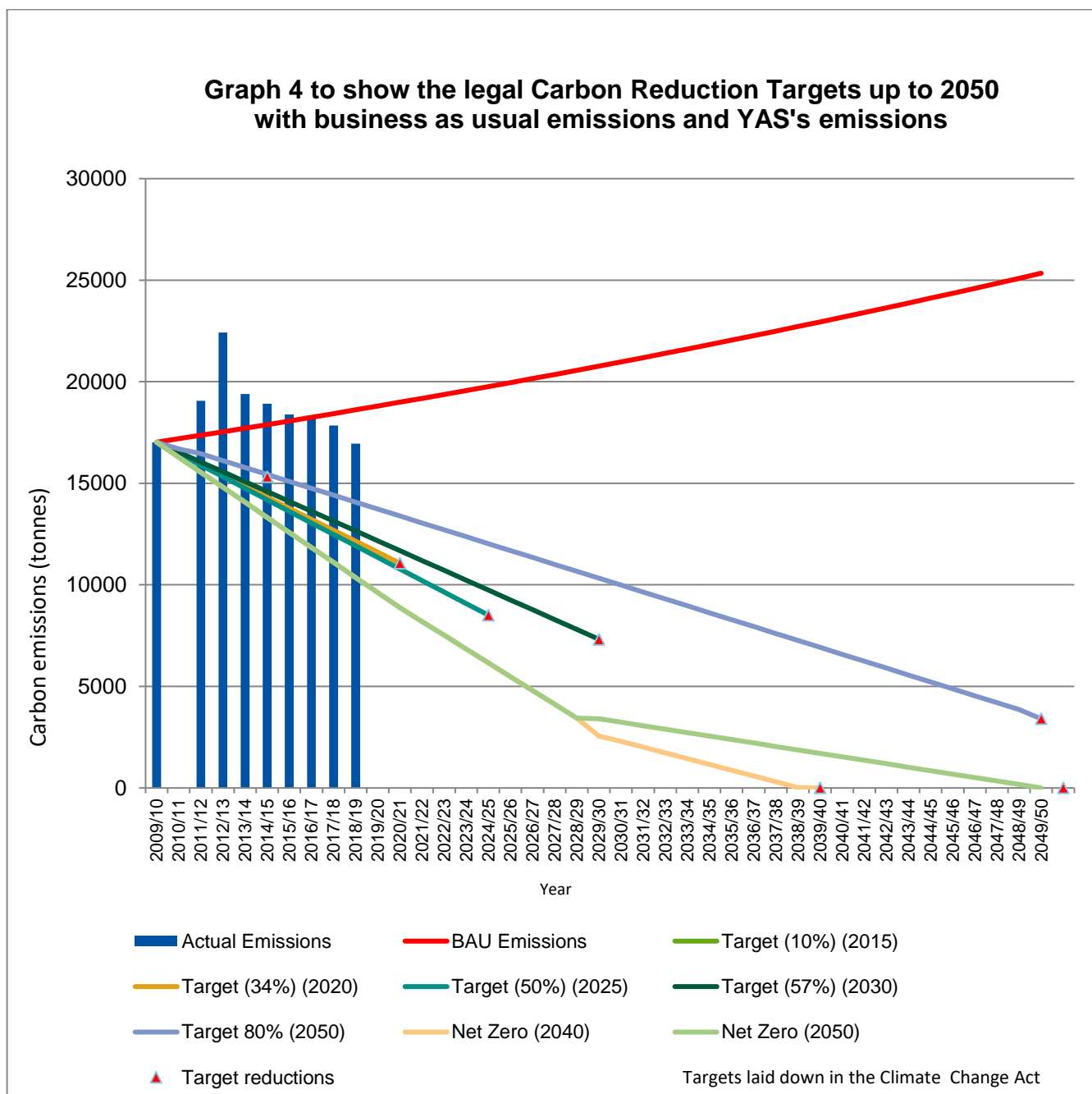
The graph shows the challenge that we have in order to reduce our emissions in line with the Climate Change Act Net Zero target and the new Greener NHS target of 2040.

In order to achieve our climate emergency targets, we will need to achieve a Net Zero target by 2040 at the latest, 10 years ahead of the government's Net Zero target. This will require an assessment and implementation of how we can eliminate diesel from our fleet as well as work to implement a net zero estate and establish a green supply chain.

2.3 Net Zero Vision

We have committed to the Net Zero targets.

Our Net Zero Board Lead is our Chief Executive Officer, Rod Barnes. Our Net Zero Lead is our Environmental and Sustainability Manager, Alexis Percival. They will guide the organisation through the targets and push to decarbonise the Yorkshire Ambulance Service.

2.3.1 Net Zero Governance

The structure identified below will be the reporting governance structure for the Net Zero Green Plan programme.
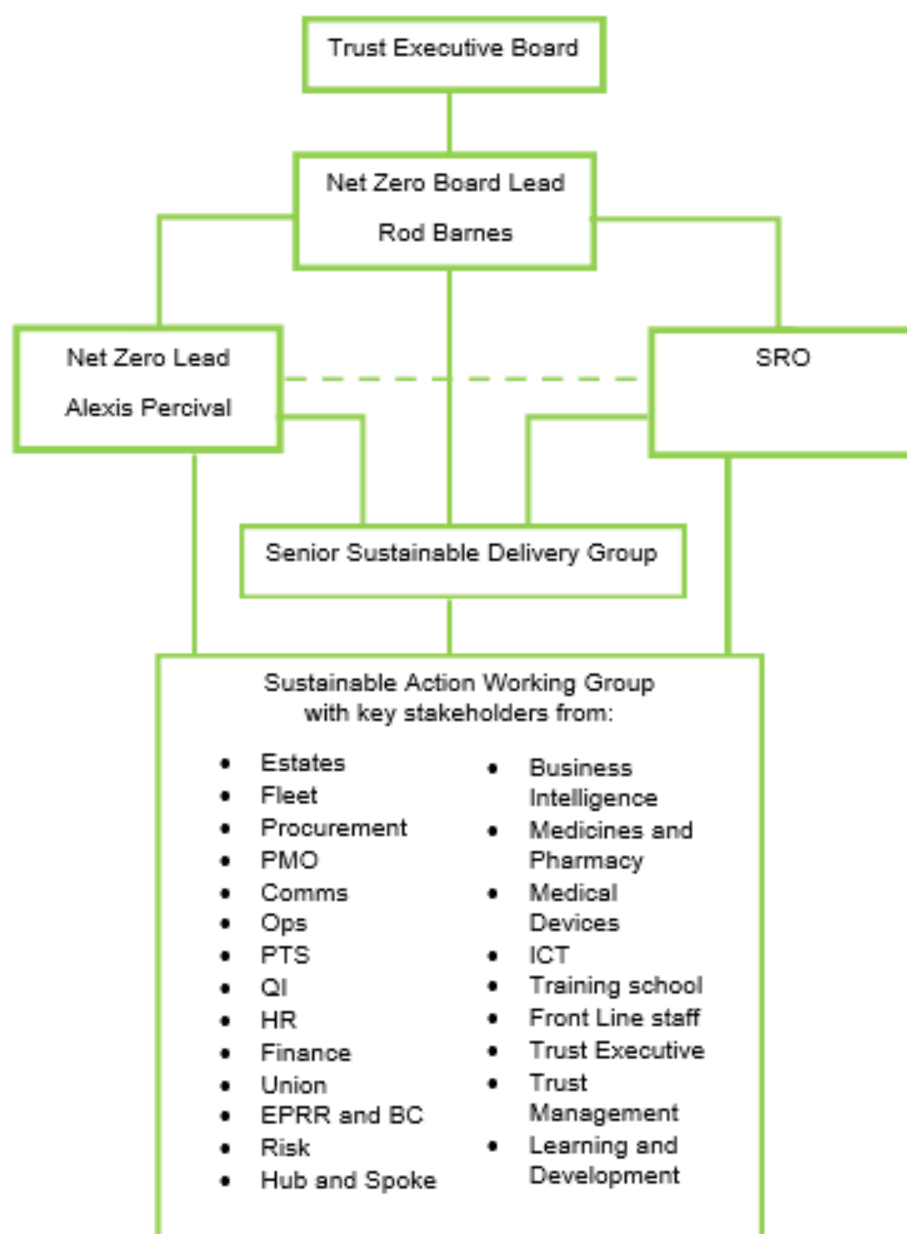
3   Legislation and Guidance

3.1   Legislation

There is a wide range of legislation that covers a Green Plan:

Legislative

List of the key legislative drivers (as of April 2020)

- Civil Contingencies Act 2004
- Public Services (Social Values) Act 2012
- Climate Change Act 2008
- Climate Change Act 2008 (2050 Target Amendment) Order 2019 enacting a Net Zero target by 2050

Further legislation and guidance references are found in the Appendix.

3.2   Sustainable Development Unit

All NHS organisations are required to have a Green Plan to support the NHS's carbon reduction strategy, 'Saving Carbon, Improving Health' published in 2009 by the Sustainable Development Unit (SDU). It is considered best practice to have and implement a Green Plan with an established baseline for data assessment of 2009.

The NHS Sustainable Development Unit's SDATs (Sustainable Development Assessment Tool) correlates with the UN Sustainable Development Goals and can allow all the Trust's that participate to be compared to their comparative organisations.

3.2.1 Greener NHS

The Greener NHS[1] was launched in February 2020 to ask the NHS to tackle climate change and come up with solutions to resolve the challenges. The consultation was run until mid 2020 and a final report was issued in October 2020.

This bold vision report lays out targets for decarbonising the NHS by 2045 at the latest:

- For the emissions controlled directly by the NHS (the 'NHS carbon footprint'): net-zero by 2040, with an ambition to reach an 80% reduction by 2028–32;

- For an extended set of emissions including those that can be influenced in the supply chain (the 'NHS carbon footprint plus'): net-zero by 2045, with an ambition to reach an 80% reduction by 2036–39

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[1] https://www.england.nhs.uk/greenernhs/
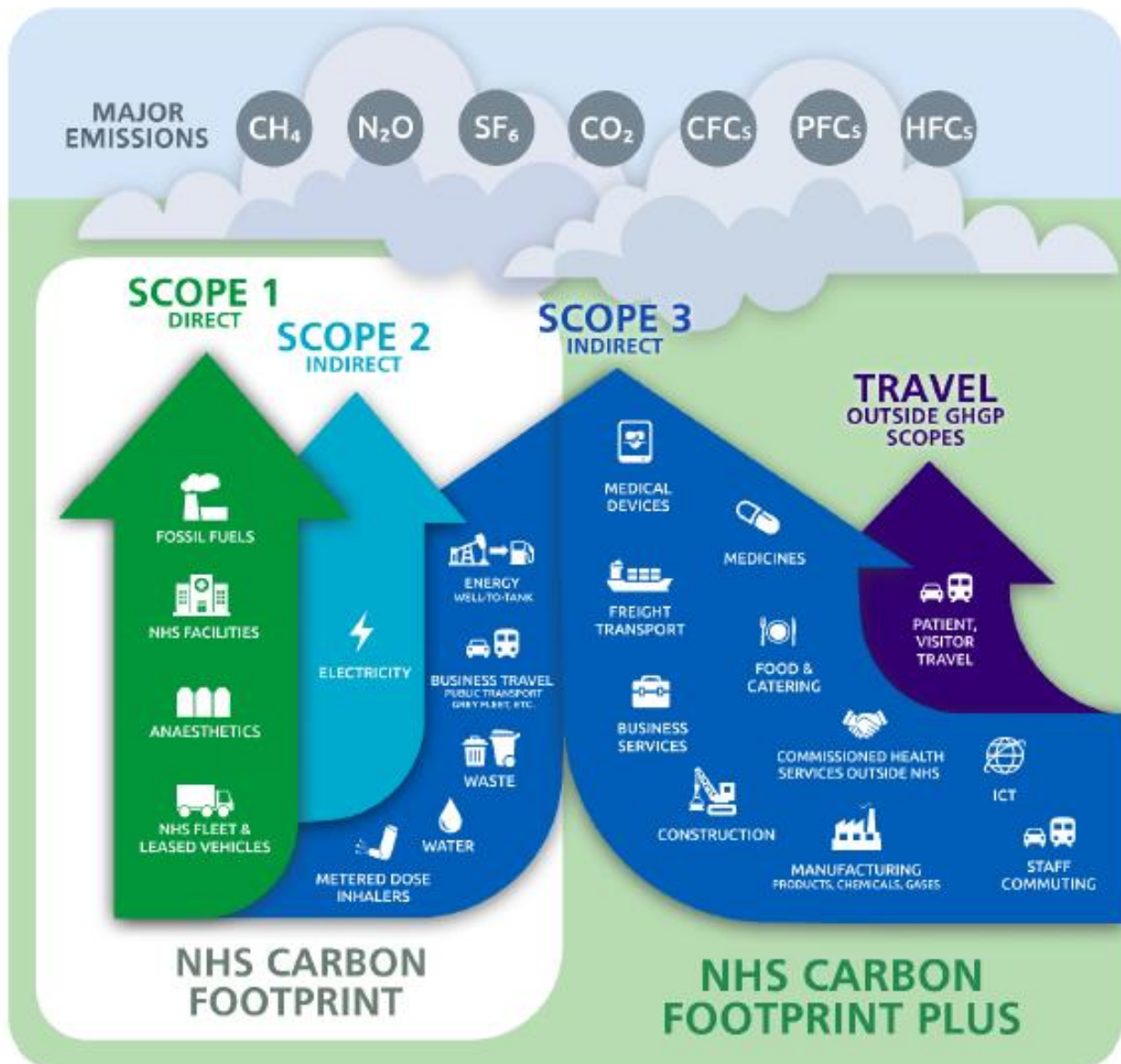
3.3 UN Sustainable Development Goals

The 2030 Agenda for Sustainable Development[2], adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth whilst tackling climate change and working to preserve our oceans and forests.

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[2] https://sustainabledevelopment.un.org/post2015/transformingourworld

The Sustainable Development Goals are identified below:

To date, under the SDAT (Sustainable Development Assessment Tool) classification, YAS have been identified as having a score of 48% and contributing to the Sustainability Goals identified below:

4.   Sustainable Road Map

4.1   Sustainable Fleet Road Map

Yorkshire Ambulance Service has identified a five year Sustainable Fleet Road Map to reduce the impact of carbon emissions from the ambulance service. This aligns with the carbon reductions required nationally and internationally. In order to be in line with a science based carbon targets of 1.5°C by 2030, we will need to strive to achieve the carbon reduction targets in order to mitigate climate change impacts.

4.1.1   Road to Zero Vehicle Vision

Our vision is to have a world class zero emission fleet by 2050, but we may be able to achieve this earlier by having a bold low emission rollout vision. We will have a phased implementation for different sections of the fleet. It is anticipated that we can achieve a zero emission fleet under 3.5 tonnes by 2028 in line with the Clean Van Commitment. This would present three quarters of our fleet to be zero emission by 2028. Due to the slow development of the light goods van (LGV) market over the past few years, there will be a delay in a vehicle

that could be fully applicable as a front line vehicle. It is anticipated that there will be zero emission LGV market from 2022 that could apply to our front line vehicles. It could be possible to have an entirely zero emission fleet by 2035.

4.1.2 Where have we come from?

Yorkshire Ambulance Service NHS Trust has been on the Road to Zero path for the past 10 years. We have looked at the best available technologies and trialled them to see how we can fit them into our vehicles and our fleet. If the technology hasn't been available, we have worked to develop it so it fits our needs.

In the past decade, we have trialled and implemented a variety of different technologies on our vehicles including:

- Methanol fuel cells
- Eco Driving
- Greener tyres
- LED lighting inside and outside vehicles
- Telematics
- Aerodynamic assessment and implementation of light bars
- Solar panels installed on the roof of our ambulance fleet
- Introduction in 2013 of a lease car policy that stipulated vehicles must be below 110 g/km
- Lithium batteries
- Weight reduction of vehicles
- Make Ready – reducing medical carry on weight
- Installed electric charging points at key locations within the estate
- Expansion of the number of electric vehicle charging points
- Trialled hybrid vehicles
- Trialled electric vehicles
- Implemented two electric-hydrogen vehicles as fleet support vehicles
- Developed a hydrogen-diesel patient transport vehicle

Diesel was classified as a carcinogenic fuel by the WHO (World Health Organisation) in the 1980s. As an ambulance service and health organisation, we should be moving away from diesel to low and zero emission vehicles to protect our patients and our staff. Over 40,000 people's early deaths a year can be attributed in part to the poor air quality of the UK. Poor air quality is mainly from vehicular emissions and the particulate matter (PM2.5 and PM10) that internal combustion engines (diesel/petrol) produce.

Within the Yorkshire region, there are set to be several Clean Air Zones (CAZ), some of which will be chargeable if you have non-compliant vehicles. In order to comply with these CAZs, Yorkshire Ambulance Service needs to have Euro 6 vehicles. At present, less than 95 vehicles will not be compliant (ie they are not Euro 6) by January 2021. Early indications state that the compliance for vehicles within CAZs will become more prescriptive and hybrid

to zero emission vehicles will be required within these zones in the future. As YAS operates across the Yorkshire region with many of our vehicles having to enter the CAZs we have to assess the impact our vehicles are having on air quality and human health

4.1.3 Road to Zero vision

Our Road to Zero vision is to have a zero emission fleet by 2050. We will have a phased implementation for different sections of the fleet. It is anticipated that we can achieve a zero emission fleet under 3.5 tonnes by 2028 in line with the Clean Van Commitment. Due to the slow development of the light goods van (LGV) market over the past few years, there will be a delay of a vehicle that could be fully applicable as a front line vehicle and some of our patient transport vehicles. It is anticipated that there will be zero emission LGV market from 2022 that could apply to our front line vehicles. We have developed a 'Road to Zero strategy' that encompasses an Electric Vehicle Strategy and a Hydrogen Strategy (see below). We have also developed the 'Fleet for the Future' document. Both of these documents identify the challenges that we face in order to roll out low and zero emission vehicles in our fleet and the infrastructure to support them.

The government is currently planning to phase out the sale of diesel and petrol vehicles in 2040. A consultation is presently out to bring this date forwards to 2035 or 2032. As 99% of our fleet are diesel we will need to develop a diesel phase out strategy. This will incorporate a replacement programme for the fleet as well as replacing the bunkered fuel on site.

4.1.4 Fleet replacement

We will look to replace appropriate vehicles with the greener vehicles available. If the vehicles are not ready for market, we are working with national ambulance networks to help to create prototypes that would be applicable to our industry and run long term trials. The infrastructure at ambulance stations will allow a phased roll out and the vehicles to be utilised in the most appropriate manner at the best locations. As the technology improves and range anxiety is eliminated, we can apply electric or hydrogen-electric hybrids to the entire fleet. The Road to Zero for Vehicle Emissions diagram below demonstrates the route that we need to implement in order to achieve a zero emission fleet.

4.1.5 Finance

In general, at present zero emission vehicles are more expensive to procure than diesel or petrol. They are however cheaper to run and can be run on zero emission fuel sources like solar and electricity stored in batteries. Financial proposals are being drawn together to support a whole life cost of the vehicles proposed. The Fleet department will need financial pump priming for vehicle procurement to achieve a low and zero emission fleet.

4.1.6 Infrastructure

By rolling out supporting infrastructure over the next few years, we can substitute diesel vehicles with hybrids and electric vehicles as replacement programmes progress. We need

to have a robust electric and hydrogen infrastructure installed at our sites in order to reduce risk to our fleet and patient care. The additional supporting infrastructure that is required at our stations will require investment to implement electric vehicle charging points and battery storage to support electric charging requirements. In order to completely decarbonise our point of use fleet on our sites, we will need to transition to renewable energy suppliers as well as implement solar panels on more of our sites. We also need to work with our public sector and NHS networks to look at what we can do to implement an infrastructure to support our transition to EV.

Diesel infrastructure

At a point in the future, we will be able to remove the diesel bunkered fuel located on our sites as well as all the associated delivery infrastructure (interceptors, pipework, diesel delivery) therefore mitigating any litigation and contamination issues. This will not however be in the lifespan of this Strategy.

EV charging infrastructure

The public electric charging infrastructure is set to increase dramatically in the next few years and there are opportunities to work with our service users at hospitals and care homes to implement electric charging points. We are developing a programme to roll out electric vehicle charging points across our estate. By implementing smart microgrids and electrical arrays (energy balancing systems) we can implement larger EV charging systems across stations that are compromised electrically.

Hydrogen infrastructure

As more public hydrogen infrastructure is constructed around the country, hydrogen vehicles will become viable across the region. At present there is one hydrogen refuelling station but more are planned.

Both hydrogen and electric 'fuel' technologies will be applicable to our vehicles and will be required for range and speed in some cases.

Smart Microgrid

By co-ordinating the Estates and Fleet Strategy, we can implement an internal 'bunkered fuel' system. As part of the ambulance station for the future project (see the Estates project), fuel system resilience will be built in to the system by implementing solar and battery storage to ensure resilience for our vehicles and fast charging for dispatch.

Alternative Fuels

LPG (liquid petroleum gas) and CNG (compressed natural gas) vehicles may be an option as an intermediate low carbon technology for heavier vehicles. This, however, is not a zero emission option and would have to phased out in due course.

ELECTRIC VEHICLE STRATEGY 2018

- Train mechanics on EV maintenance
- Service EV external to the Trust
- EV Fleet support
- Equipment energy demand
- Hydrogen (see H2 Strategy)
- Range Extender
- Downtime required for charging
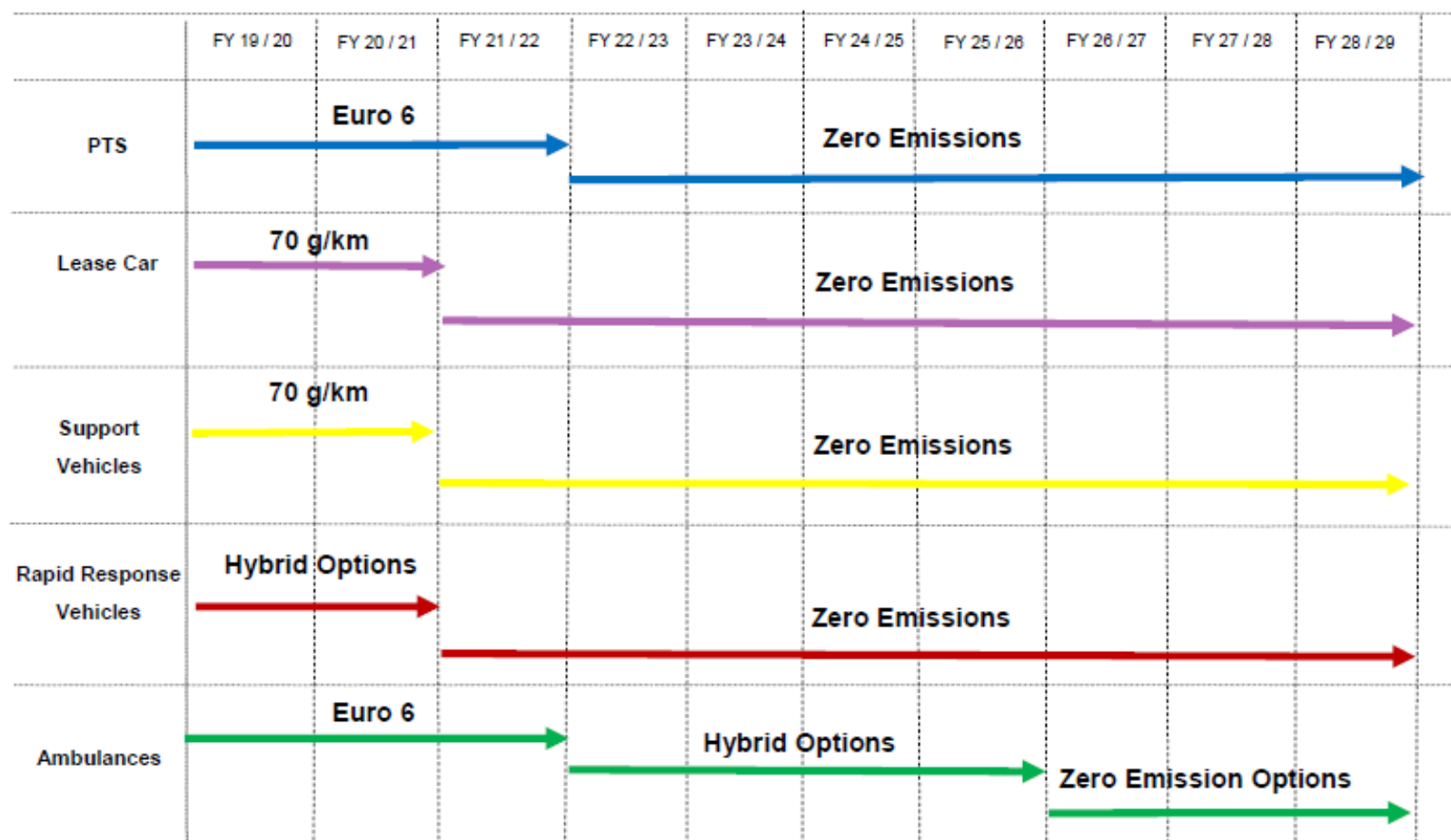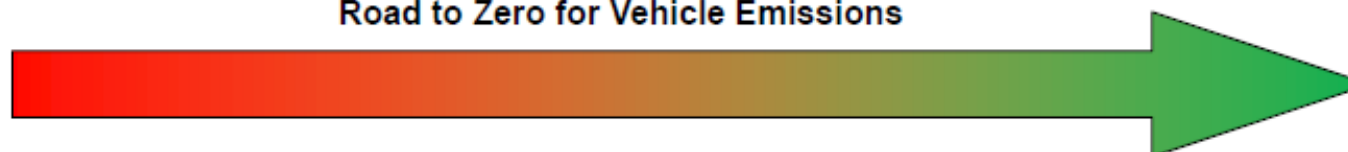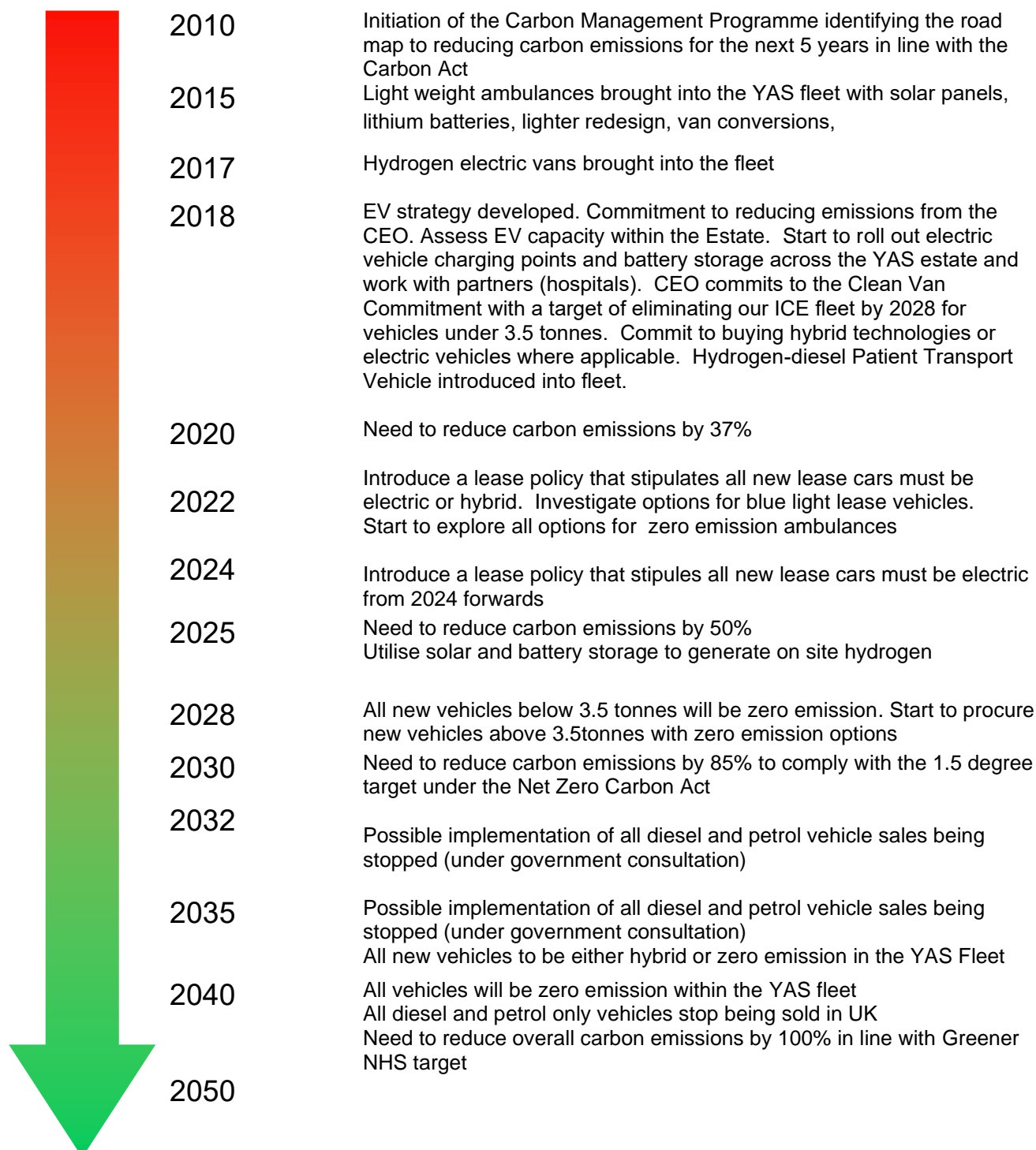- Wireless charging
- Type 1/CCS
- Type 2/CHAdeMO
- RRV
- A&E
- HART
- Battery size
- Impact on journey
- 13amp, Slow, Fast or Rapid
- Charging point type
- Single or three phase
- PTS van
- PTS cars
- Vehicle Type
- Range
- Mileage data collection
- Swipe card/ pin/ fob access
- Pool cars
- Charging time
- Type of charging
- App
- Lease cars
- Back office connection
- Swipe card/fob
- Recharging
- Vehicles
- Risk Assessment
- Monitoring
- Recovering EV that have run out of electric
- Financial investment
- Training
- Energy consumption
- Fleet
- EV business case
- EV charging infrastructure business case
- EV Charging
- Charging point demarcation
- Fuel bill
- Move fuel bills to Estates
- Assess electricity capacity of buildings
- Hatching
- Policy
- Operational EV Charging
- Staff EV Charging
- Visitor EV Charging
- Lease Car EV Charging
- Installation of EV points
- Location of charging points
- EV sign on wall
- Protective Barrier
- Payment for Charging?
- Staff EV charging
- EV sign on the floor
- External
- Hydrogen refuelling station
- Estates
- Landlord permission?
- Planning permission?
- Install EV charging points at hospitals
- Feed in Tariff
- Solar
- Battery storage
- Number of points
- Dual or single charging points
- Internal, wall, podium, lamp post or wireless
- Swipe card/ pin/ fob access
- Sub-station upgrades
- Vehicle-to-Grid
- Energy balancing
- Groundworks?
- Install EV charging points at care homes
- Public charging infrastructure

HYDROGEN VEHICLE STRATEGY 2018

Road to Zero for Vehicle Emissions

4.1.8 Timescales

Yorkshire Ambulance Service NHS Trust has made a commitment to reduce carbon emissions and technological advances are making it easier to procure low to zero carbon vehicles within this timescale. The aspirational diagram below demonstrates the potential that YAS has to achieve a hybrid or zero emission fleet by 2035 and a zero emission fleet by 2040.

Year	Detail
2010	Initiation of the Carbon Management Programme identifying the road map to reducing carbon emissions for the next 5 years in line with the Carbon Act
2015	Light weight ambulances brought into the YAS fleet with solar panels, lithium batteries, lighter redesign, van conversions,
2017	Hydrogen electric vans brought into the fleet
2018	EV strategy developed. Commitment to reducing emissions from the CEO. Assess EV capacity within the Estate. Start to roll out electric vehicle charging points and battery storage across the YAS estate and work with partners (hospitals). CEO commits to the Clean Van Commitment with a target of eliminating our ICE fleet by 2028 for vehicles under 3.5 tonnes. Commit to buying hybrid technologies or electric vehicles where applicable. Hydrogen-diesel Patient Transport Vehicle introduced into fleet.
2020	Need to reduce carbon emissions by 37%
2022	Introduce a lease policy that stipulates all new lease cars must be electric or hybrid. Investigate options for blue light lease vehicles. Start to explore all options for zero emission ambulances
2024	Introduce a lease policy that stipules all new lease cars must be electric from 2024 forwards
2025	Need to reduce carbon emissions by 50% Utilise solar and battery storage to generate on site hydrogen
2028	All new vehicles below 3.5 tonnes will be zero emission. Start to procure new vehicles above 3.5tonnes with zero emission options
2030	Need to reduce carbon emissions by 85% to comply with the 1.5 degree target under the Net Zero Carbon Act
2032	Possible implementation of all diesel and petrol vehicle sales being stopped (under government consultation)
2035	Possible implementation of all diesel and petrol vehicle sales being stopped (under government consultation) All new vehicles to be either hybrid or zero emission in the YAS Fleet
2040	All vehicles will be zero emission within the YAS fleet All diesel and petrol only vehicles stop being sold in UK Need to reduce overall carbon emissions by 100% in line with Greener NHS target
2050	

4.2 Low Carbon Estate

4.2.1 Where have we come from?

Our first Carbon Management Plan identified an estate that needed upgrades to utility supplies, insulation, lighting upgrades and a renewable roll out programme. Through different energy reducing measures over the past 10 years, the carbon footprint of utilities has reduced from 5,553, tonnes in 2009/10 to 4,913 tonnes in 2018/19.

The measures that we have implemented include:

- Lighting upgrades including LED lighting and motion sensors
- Boiler upgrades
- Air conditioning upgrades
- Building management systems
- Installation of solar panels
- Insulation
- Double glazing
- Water saving devices including low flow toilets, waterless urinals and push stop taps

4.2.2 Utilities

We monitor our utilities through an online system, allowing us to track our energy and water systems, identifying where there is high consumption and look for areas where we need to reduce energy and water use. It also allows us to look at degree days showing where there is a high energy use in comparison to external temperatures.

Electricity

In the past 10 year, technology for lighting has leapt forwards requiring a rolling programme to take advantage of efficient lighting. In recent years, YAS has had a LED lighting upgrade programme which is nearing completion, reaping efficiency savings of more than 60% over the energy hungry lighting counterparts of 10 years ago.

We have installed BMS (building management systems) at our large sites which enable the control of electrical appliances. Air conditioning units have been upgraded dramatically reducing energy consumption at large sites. By installing motion sensors in areas that are rarely used, lighting is turned off and energy saved.

Looking forwards, we need to continue to reduce electricity use and roll out renewables with battery storage systems. Utilising a storage and generation system for our sites, we can have an integrated hydrogen- electricity generation system that can feed back into

vehicles, collect energy from vehicles and solar/wind or feed back into the grid (with over generation).

We have committed to procuring electricity only from renewable sources from April 2020, if procured from the grid. Where possible, we will look to generate our own electricity on site. We have to also ensure that all new builds and retrofits are compliant with the Net Zero Agenda.

Gas

In the past 10 years, we have been upgrading our boilers to more efficient installations and ensuring better controls are in place including BMS (building management systems). We have been working to ensure our gas boilers are as efficient as they can be in conjunction with upgrading insulation.

Gas, by its very nature, is a hydrocarbon based fuel and at present there are no alternatives except for converting to electric heating.

It is possible that by 2025, the Yorkshire region will be on the road to a point of use zero emission gas network. Northern Gas Network (NGN) is working to implement a hydrogen project through the H21 City Gate project that will revolutionise the gas industry. By supplying hydrogen to houses and businesses, in Leeds initially and then expanding to other areas like Hull and York, gas utilisation will become zero emission at the point of use. Through steam methane reformation, hydrogen will be generated and pumped to the end users. Carbon dioxide will be pumped offshore into carbon capture systems (CCS). In the longer term, NGN are looking to see how they can eliminate emissions altogether by generating hydrogen through renewables.

Oil

We are looking to phase out oil fired heating at three of our sites. This will occur in the next two years.

Water

Water will become valuable commodity and it is likely that there will be water shortages in a warmer climate. It is therefore crucial that we implement measures to mitigate unessential water use and store water where possible. We have been installing water saving devices at our major sites including low flow toilets, waterless urinals and push stop taps. We need to investigate viability for rainwater collection systems to feed in to grey water systems and implement grey water recycling (water from taps and showers for toilet flushing use).

4.2.3 Renewables

We have installed solar systems on six locations to date. In many of these sites, the solar system provides between 30% and nearly 100% of the energy requirements. We are looking to install more solar systems at our sites paired with battery storage systems. This will provide us with resilience in an era of vehicles that are set to run on electric and hydrogen. By providing a renewable system that supports electric vehicle charging, we can reduce our reliance on the grid but also green our fleet through a direct green energy supply. It will also provide us with the capability of creating smart microgrids to provide fast charging to our fleet when required.

We are looking to reassess the viability of wind within our estate.

4.2.4 Estate and Fleet

By rolling out electric charging points to support our own fleet and the vehicles of our staff, we can transition to a greener fleet and a greener grey fleet (the vehicles of our staff).

The estate of the future will be directly interlinked with the fleet through electric charging/generation and/or hydrogen storage/generation. Visitor's and staff vehicles could become battery charging systems to provide support to rapid and fast charging systems as well as smart microgrid support to our vehicles. This may be an option in the next five years.

4.2.5 Waste

YAS has made positive changes to our waste processes in the past ten years with the introduction of a standardised waste collection and mixed waste recycling.

We are putting together a plastic strategy under the 'Pl'yas'tic free' initiative to look at how we can eliminate single use plastic within the organisation.

Waste to landfill has already been eliminated with waste incinerated if it is not recycled. We have eliminated single use plastic from our canteen.

We are looking to reinvigorate our waste programme to ensure that we minimise waste production and maximise waste recycling. A full waste awareness campaign will be launched to make staff aware of the correct disposal method.

4.2.6 Low carbon estate

Future estate refurbishments and new builds will comply with the BREEAM[3] accreditation. The Department of Health supports the Government's commitment to the sustainable development agenda and recognises the importance of delivering on this agenda through

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[3] https://kb.breeam.com/knowledgebase/the-nhs-breeam/

the design and build process. As the successors to NEAT BREEAM Healthcare 2008, and going forward with BREEAM New Construction (which incorporates Healthcare buildings), supports that process to ensure standards continue to improve. From 1 July 2008, all health authorities in the UK (Department of Health, NHS Wales, NHS Scotland and the Department of Health Social Services and Public Safety of Northern Ireland) require new healthcare buildings seeking Outline of Business Case (OBC) approval to commit to an EXCELLENT rating (assessed against BREEAM New Construction) and all refurbishments (assessed against BREEAM Non-Domestic refurbishment and fit-out) to commit to a VERY GOOD rating.

BREEAM is a Government requirement under:

- Government Construction Clients- Achieving Sustainability in construction procurement- Sustainability Action Plan 2012-2015, November 2012

- UK Government Sustainable Procurement Action Plan

- BIS Strategy for Sustainable Construction

- Government Buying Standards

- Common Minimum Standards for the procurement of built environments in the public sector

- Sustainable Procurement in Government: guidance to the flexible framework

A BREEAM assessment will be undertaken for every capital project over £2 million. Where the capital cost falls below £2million, a Pre-Assessment should still be undertaken (at the outline business case stage) to determine whether BREEAM certification is appropriate to that project.

4.2.6 Ambulance Station of the Future

The Estates team with consultation with the ambulance service employees have identified potential designs for future ambulance stations that would incorporate energy efficiency measures and resilience designs to ensure that a station could be self sustaining and capable of supporting an EV fleet with hydrogen capability for the future.

With a potential electric powered fleet in the future, an ambulance station needs to be able to provide power to all vehicles requiring electric recharge. Many of our stations are at grid capacity so are unable to provide electrical charge to the fleet that we will need to power in the future.

The diagram below shows the technologies available now that should be installed as retrofits to stations but also for new build stations, offices and hub and spoke facilities in order to create the 'Ambulance Station for the Future'.

Ambulance Station of the Future

Compost facilities

Double glazing

Trees for shading and cooling

Green space: Wildflower and vegetable growing, green roof, fruit trees, outdoor area for health and wellbeing

Solar panels/ solar canopies for generating electricity and hot water

Solar panels on the roof of operational vehicles for battery top up and auxiliary power charging for electric/ hydrogen vehicles

Skylights and sun tubes

Recycled/ Eco building materials

Roof, wall and floor insulation

Trigen or micro CHP

Battery and/or hydrogen generation and storage from solar energy and from the grid

Vehicle washing with water recycling system

Dual flush toilets using rainwater and grey water from hand washing

Building orientation to take advantage of sun

LED lighting

Low flow taps

Motion sensors

Voltage optimisation

Boiler optimisation

Flood protection, if required: flood barriers, toilet backflow

Washing water recycled for grey water

Free cooling air conditioning. Ambient temperature air used for cooling

Wind turbine or small roof top turbines

Air source/ground source heat pump

Rainwater collection and underground storage. Rainwater from roof and porous paving on car parking area used for toilet flushing and vehicle washing

Secure bike storage with e-bike charging

Electric vehicle charging points for staff and operational vehicles

Staff electric cars to be used as a grid balancing through V2V (vehicle to vehicle) or V2I (vehicle to infrastructure) charging

4.3   Procurement

Amounting to in excess of £9 billion spend annually, the NHS has a large potential influence to the green economy.   Yorkshire Ambulance's sphere of influence within the Yorkshire region through procurement is enormous. Yorkshire Ambulance Service spend around £84 million a year.

4.3.1 Sustainable Procurement

Local Procurement

We are looking to procure as many products as possible through local suppliers and identify where we can influence greening of the local economy.

Stock control

By working to initiate a just in time programme with a stock control process, YAS will ensure that there is no excessive stock retained on site and therefore no waste.

Green Procurement Strategy

A Green Procurement Strategy will be developed over the next 5 years identifying the route to a zero emission supply chain. It will also identify the Scope 3 emissions from procurement.

4.3.2 Packaging
Reusable packaging

YAS is part of the Leeds Anchors Network Plastics group who are looking to create a knowledge base of plastic reduction through case studies, information sharing and innovation. Through this network YAS are looking to work on some innovative projects to identify ways in which we can create reusable packaging that can be integrated into our supply chain and returned to the supplier to be reused, therefore creating no waste.

Bulk buying

By bulk buying products, there is potential to reduce our packaging use and waste production.

Plastic reduction

In 2018, YAS set up the Pl'YAS'tic free campaign. Working with our canteen managers, we have worked to eliminate over 200,000 pieces of plastic from our canteen.

YAS is looking to reduce the amount of packaging received into the Trust by working with our suppliers to see what additional measures can be implemented in order to ensure that the circular economy of packaging.

We are developing a Plastics Strategy in the next few years that can identify areas that we can eliminate single use plastics where possible.

4.3.3 Supplier engagement

YAS is looking to engage with our suppliers to drive innovation in development of alternative packaging as well as inspire product development that decreases waste production and minimises the impact of the products and their delivery to and within our estate. We have started to engage with our supply chain to work on innovative packaging.

We have started to engage with our suppliers within our supply chain as to their own fleets and encourage them to move to greener vehicles by supporting their move by supplying EV charging points.

4.3.4 Reuse

By reusing products that we have within our estate, we can work to reduce our procurement, reducing costs and reusing assets we already have.

We have implemented a reuse programme for furniture within the estate through the Warp-it scheme. To date (2019), we have saved over £70,000 of furniture from landfill by being repurposed within our estate, reused within the public estate and reused by charities.

4.4 Green ICT

We are working with NHS Digital to develop a national roadmap for the NHS to ensure that we start to develop a green ICT programme. By assessing our technology use and how it can work to mitigate the impact of our transport on health care as well as enable initial triaging.

We are also working to ensure that any telehealth systems we implement have the minimal footprint. We are looking to assess the impact of our data storage systems through cloud, servers and data centres. By ensuring we have a robust VOIP (voice over internet protocol) system in place we can reduce transport – fleet and grey fleet consumption. ICT is set to become a large energy consumer so we need to assess the procurement of green ICT products in order to reduce energy consumption and the ways

in which we store data. We are developing a Green ICT strategy that will lay out a greener ICT roadmap.

4.5 Behavioural Change

Behavioural change is key to the implementation of carbon cutting measures. Over the past 10 years we have ensured that staff are kept up to date and aware of changes to the estate and fleet. We are looking to roll out more engagement measures and campaigns to ensure that we can get green issues embedded across the organisation.

4.5.1 Awareness Campaigns

Historical awareness campaigns included poster campaigns, team building exercises, carbon champion network, the Carbon Copy (carbo champion newsletter), vehicle trial days and training sessions.

4.5.2 Big Climate Conversation

As part of YAS's renewed YAS Environmental Strategy (YES), the Big Climate Conversation was launched in March 2020 to engage with staff. This will continue to work to raise awareness of the issues that we face and engage to look at solutions.

4.6 Collaboration

4.6.1 Work with stakeholders

In order to implement and roll out many of our sustainable plans, we need to work collaboratively with other emergency services, councils, hospitals and our healthcare partners. If we work with anchor institutes we can make direct impacts within the cities that we operate.

To have a functional zero emission fleet, we need to work with councils to implement electric charging points in public locations that fit our operational models, as well as theirs, we need to work with hospitals, GP networks and care homes to install electric charging points to boost our range and we need to work with infrastructure and refuelling operators for them to understand our needs. We need to have a collaborative working strategy to work with the NHS as a whole to enable change.

The stakeholders that we will involve as part of our work will include:

- Clinical Commissioning groups
- Councils
- Environment Agency
- Internal groups and committees (YAS Board/Trust Executive Group/Trust Management Group)
- Landlords

- LEPs (Local Enterprise Partnerships)
- NHS England
- NHS Improvement
- NHS Sustainable Development Unit
- NHS Supply Chain

- Other ambulance services
- Other NHS Trusts within Yorkshire
- Patients
- Public Health England

- Public
- Staff
- Suppliers and sub-contractors
- Taxi firms

Innovation

We will be working with NHS Improvements through the Ambulance Innovation Hub on the innovation project to drive forwards the emission reductions for the ambulance design, working to achieve a zero emission vehicle fleet. We will look to work with the NHS Innovation Hub as well on other innovations that are going on around the NHS.

Supply chain

By working with our supply chain, we can work to green the products that we use and we can also eliminate the waste that is generated from delivery and packaging. In addition, the Trust's procurement team is looking at a single centralised warehouse facility, which should reduce our carbon footprint by maximising the efficiency of the procurement's logistics function.

5.0 Climate Change and Adaptation Planning

5.1 Climate Emergency

In May 2019, the English, Scottish and Welsh government all declared climate emergencies. Many requirements to drive down emissions are likely to come from government with more ambitious targets set in the next few years but it is seen that Councils that are declaring Climate Emergencies are demanding that NHS organisations – some of the largest employers, energy consumers and air polluters – drive down their emissions in line with their Council obligations to slash carbon emissions. Citizen's assemblies are being created to enable the community to be involved in the carbon reduction programme of the country.

This is an opportunity for Yorkshire Ambulance Service to collaborate on a revolutionary reduction in carbon across the county through a technological advancement.

Yorkshire Ambulance Service understands the impact that climate change already has and is likely to have on our operations. In the past 10 years, we have already experienced flooding, droughts, heatwaves, moorland wildfires and extreme snow storms that have directly affected the way that we can respond within these scenarios. There has been an

increase in calls during these extreme weather events but also the impact of these events can have long reaching effects on health and mental health many days to weeks after the incidents, increasing ambulance call outs with subsequent hospital admissions and PTS call outs.

We have carried out assessments that have looked at the impact on our service and climate change is having a direct impact on the way we respond and the types of situations that we respond to. We understand the urgency of the climate emergency and are acting to reduce our impact.

5.1   Adaptation

Adaptation is required to respond to both the projected and current impacts of climate change. For Yorkshire Ambulance Service, the climate change impacts could:

1. Negatively impact the health and wellbeing of the UK population. The health system needs to be prepared for different volumes and patterns of demand.

2. Impact the operational delivery of the NHS and YAS. The health system infrastructure (buildings, emergency services vehicles, models of care) and supply chain (e.g. fuel, food) need to be prepared for, and be resilient to, adverse weather events.

Adaptation planning is an opportunity to ensure a cohesive approach to future planning. The process of developing the plan should integrate with the development and refinement of emergency preparedness and business continuity plans.

5.1.1   What will we have to adapt to?

According to the UK Climate Change Risk Assessment (UK CCRA 2012) and the UK Climate Projections 2018 (UKCP18), the UK is projected to see an increase in the frequency and intensity of weather-related hazards including heat waves and floods. While winters are projected to become warmer and wetter, cold spells will still occur. Summers will become hotter with more adverse and extreme wet weather events leading to flash flooding and extreme heat waves.

The NHS, health and social care organisations must adapt to a range of scenarios so they can be prepared for future climate change. The UK CCRA 2012 and UKCP18 have highlighted several key health risks from climate change including:

- Heat (increased summer temperatures / heat wave events)
- Cold (reduced deaths and illness but with continued risk from cold 'snaps')
- Increase in extreme weather events

- Increase in wildfires and droughts
- Ground level ozone
- Flooding and Storms (resilience and continuity of health and social care services, mental health impacts and injuries)
- Rising sea levels and inundation
- Changing patterns of disease and air quality
- Food shortages
- Incidence and exposure to marine and freshwater pathogens
- Sunlight (UV risk)
- Population increase and migration

Wildfires on Ilkley Moor, Ilkley, 2019

The predicted impacts of climate change are already being felt differently across the Yorkshire region. On the coast, there is already significant coastal erosion. There has been an increase in flooding of low lying areas with more frequent flooding in cities. Storm surges have created flooding further inland than previously experienced. There has been a dramatic increase in drought and moorland fires. Areas of large populations are also suffering from the 'urban heat island effect' due to the concentration of buildings in one place.

These changes are having an impact on individuals, services and society as a whole. This is a key concern to YAS and the delivery of its services, which is why the preparation of a climate change adaptation plan will ensure the Trust is designing the future use of its assets, estate and supply chain, for resilience against the effects of climate change.

The types of measures of adaptation that YAS are working on include:

Estates preparation

In order to prepare our estate buildings for adaptation to be climate resilient, they must:

- Have capacity to cope with rising temperatures, designed to deal with surface water drainage and flooding, minimising the risk to individuals (both patients and staff)
- Install flood protection in areas required
- Be built with sustainability in mind
- Retrofit to green standards and ensure buildings are insulated
- Utilise water efficiently to reduce vulnerability to droughts

- Change behaviour for working patterns and locations, to reflect the changing landscape and social needs of the area served
- Preparation in the event of a flooding event within the estate – flood barriers, sand bags, reverse flow stops for toilets etc
- Provide resilience to the shortage of energy and water

Bentley Ambulance Station
November 2019 Floods

Fleet preparation

Our staff will have to deal with more and more extreme situations as we move into a more uncertain climatic future. In order to ensure that our staff are prepared, we will:

- Ensure that staff do not drive through flood waters
- Have an understanding of roads that are closed due to flooding and communicate this to staff
- Communicate the danger of climatic issues to staff – air quality, flooding, excessive rain, snow, moorland fires, cold and heatwaves through continued communication plans
- Understand the impact of climate change on the supply chain
- Build in resilience for a zero emission fleet in the event of power cuts through battery storage, renewables and hydrogen generation on site

Operational preparation

In order to prepare our operations centre, 111 call centre and operational response to be climate resilient, we must:

- Understand the impact that extreme weather events will have on the operation of the service from an A&E and PTS perspective
- Understand the impact that extreme weather events will have on the operation of the service from a staff perspective
- Understand the increase in calls on our service
- Understand the reasons behind the calls and work collaboratively with partners to identify ways in which we can mitigate the increase i.e. increase in calls from breathing problems, asthma, COPD etc due to air quality problems
- Understand the danger of climatic issues to patients – water shortages, flooding, excessive rain, snow, moorland fires, cold, heatwaves through clinical alerts

Working with the ops team and through our adaptation plan we will identify the challenges to the service and the public.

Procurement

In order to prepare our procurement and supply chain to be climate resilient, they must:

- Understand the impact of climate change on the supply chain
- Identify the critical path within the supply chain and any issues that may arise with an extreme weather event

5.2 Collaborative working and guidance

YAS have a well-established Emergency Planning and Resilience department with excellent business continuity plans to respond to a range of major incidents, from terrorist attacks, to prolonged snow and ice conditions and flooding incidents. Each plan was prepared with the involvement of local authorities, other local NHS organisations, emergency services, and voluntary groups. However, these plans are for responding to an immediate need as they occur, and not to future proofing the service to the slower, but progressive effects, of climate change.

Therefore, Sustainability Group and the Emergency Planning department have agreed to work together and follow the recommend steps from the NHS SDU Adaptation Guidance to ensure a robust plan is prepared.

The 5 steps are:

- **Step 1:** Identify the key people to involve.
- **Step 2:** Identify the key information to help with climate adaptation and resilience planning
- **Step 3:** Assess the most locally important climate impacts and parts of the system which will need to be adapted to be resilient to climate change
- **Step 4:** Decide the focus of work and the priorities for your area
- **Step 5:** Develop plans, review and monitor on yearly basis

Resources have been identified to support steps 2 and 3 of the process:

- UKCIP who support adaptation to the unavoidable impacts of a changing climate and have produced an [Adaptation Wizard](#) which takes organisations through a process to determine their vulnerability to climate change, identify key climate risks, and develop a an adaptation plan.
- Environment Agency provide a support service through their website to help organisations adapt to climate change, it includes region specific, and health specific challenges.
- Met Office provide updates on severe weather warnings
- iCASP (Yorkshire Integrated Catchment Solutions Programme) are working to identify the challenges to the catchment areas for the region
- Local resilience forums who understand the local area and can provide local information to the Trust

5.3 Preparing the YAS Adaptation plan

A sub group, headed by Sustainability and Emergency Planning and involving key internal departments, will be formed to develop the Adaptation plan. The group will also need to

engage with a range of external stakeholders including; utility companies, transport providers, other emergency services, other government departments, and other local NHS organisations.

The plan is about mitigating the risks to the Trust of Climate change. Table 6.3 lists a number of risks to different categories, each will have to be considered by the group and assessed for mitigating responses. Adaptation is about ensuring that the Trust is resilient and prepared for the future. Much of what is included under adaptation will already be in place, for example flooding preparedness and heatwave plans. It is therefore vital that a climate change dialogue is in place to check alignment with the whole organisation and to ensure longer term planning implications.

Table Risks to YAS through climate change		
Category	**Risk**	**Potential adaptive response**
Infrastructure	• Estate • Roads • Utilities • Telecommunications • Refuelling infrastructure	• Providing natural ventilation instead of air conditioning as heat wave temperatures become more frequent • Cool spots within buildings are identified for staff • Use of trees, shade & other green infrastructure to provide cooling • Sustainable drainage systems to help reduce risk of localised flooding • Solar panels and battery storage • Hydrogen storage
Resource use, scarcity and continuity	• Increase in fuel, energy, and water costs • Availability of fuel, energy and water • Effects on the supply chain and transport network	• Resilience of fuel and water and sewerage, power and other key resources • Grey water recycling • Solar panels and battery storage • Increase supplier database to spread supply risk
Service delivery and workforce	• Impact on staff • Changes in vector disease migration • Clinical issues which may require changes to structure or service models	• Access for staff to work and services to patients • Training requirements and guidance on how to respond to extreme weather events and previously unseen diseases/ viruses • Planning transport requirements for future models of care • Inclusion in current emergency preparedness plans and business continuity • Impact on public health and commissioning requirements
Social and community impacts	• Social impacts of climate change and impacts on vulnerable communities e.g. migration, transient populations or community resilience • Need for enhanced preparedness, resilience and recovery to extreme weather events and pandemics	• Information, targeted warning systems, support to individuals who may be most at risk, to help them take basic action to be more resilient to climate change • Influencing fundamental changes in behaviours • Collaboration with leading health agencies in understanding threats from emerging diseases • Work with Local Resilience Forums to identify local risks
Health risks affecting operational activities	• Heat and heat related illnesses • Cold • Flooding • Storms • Sunburn and skin cancer • Incidence and exposure to marine and freshwater pathogens	• Identify buildings at risk and locate the estate away from flood zones • Flood protection for estate that cannot be relocated • Insulation • Inform staff of risks • Increase in calls due to climatic changes

6.0   2050 plan

In line with a science based approach to carbon reduction and the goals of the Kyoto Protocol, Yorkshire Ambulance Service must be a net zero emission, carbon neutral organisation by 2050. Under the Greener NHS targets, Yorkshire Ambulance Service must now aim to be net zero by 2040. This lays down large targets that need to be achieved in the next few years. The aspirations to achieve a net zero carbon organisation will lead to an organisation that is carbon neutral, climate ready, has a zero emission estate and fleet, low emission healthcare and low waste production.
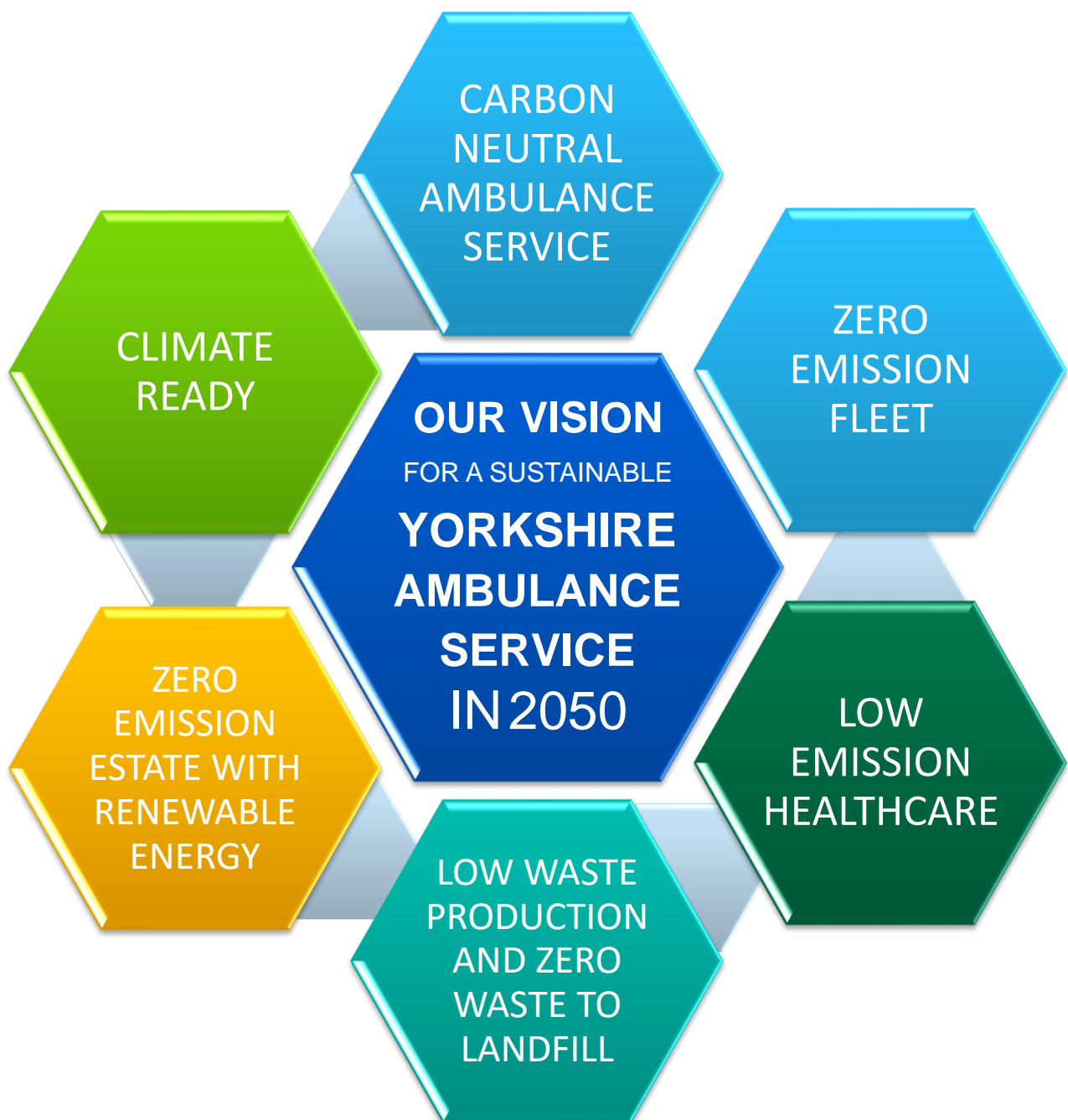
Appendix

Legislation

List of the key legislative drivers (as of April 2020)

- Civil Contingencies Act 2004
- Public Services (Social Values) Act 2012
- Climate Change Act 2008
- Climate Change Act 2008 (2050 Target Amendment) Order 2019 enacting a Net Zero target by 2050

Mandatory
Legislation mandated within the NHS Standard Form Contract requirements for Sustainable Development 2017-19

- HM Treasury's Sustainability Reporting Framework
- Public Health Outcomes Framework

International
Legislation driven by International Guidance Intergovernmental Panel on Climate Change (IPCC) AR5 2013

- United Nations (UN) Sustainable Development Goals (SDG's) 2016
- World Health Organisation (WHO) toward environmentally sustainable health systems in Europe 2016
- World Health Organisation (WHO) Health 2020; European policy for Health and Wellbeing
- World Health Organisation (WHO) Europe – Social Determinants and the Health Divide
- The Global Climate and Health Alliance; Mitigation and Co-benefits of Climate Change

UK guidance
Driven by UK Guidance National Policy and Planning Framework 2012

- Department of Environment, Food and Rural Affairs (DEFRA) The Economics of Climate Resilience 2013
- Department for Environment, Food and Rural Affairs (DEFRA) Government Buying Standards for Sustainable Procurement 2016
- The Stern Review 2006; the Economics of Climate Change
- Health Protection Agency (HPA) Health Effects of Climate Change 2012
- The National Adaptation Programme 2013: Making the country resilient to the changing climate
- Department of Environment, Food and Rural Affairs (DEFRA) 25 Year Plan

Health Specific Requirements
- The Marmot Review 2010: Fair Society, Healthy? Lives

- NHS Standard Contract Sustainable Development requirements
- Five Year Forward View 2014
- Sustainable Development Strategy for the Health and Social Care System 2014-2020
- Saving Carbon, Improving Health: a NHS carbon reduction strategy
- Adaptation to climate change for health and social care organisations
- The Carter Review 2016
- National Institute for Clinical Excellence (NICE) Physical Activity: walking and cycling 2012
- Health Technical Memoranda (HTM)'s and Health Building Notes (HBN)'s
- Social Value Act 2012
- NHS Long Term Plan aims to reduce fleet air pollutant emissions by 20% by 2023/24 and to support the government's target to reduce emissions by 80% by 2050
- Principle 6 – NHS Constitution
- Public Health Outcome Framework
- Sustainable Transformation Partnerships (STP) Plans
- Lord Carter's review into unwarranted variation in NHS ambulance trusts 2018
- NHS Operational Planning and Contract Guidance 2020/21

Sustainable Road Map

In order to reduce carbon emissions and be an environmentally responsible organisation, Yorkshire Ambulance Service NHS Trust has identified a Sustainable Road Map, creating SMART targets within the 2020-2025 time period.

Longer term goals to dramatically reduce carbon footprints are laid out, highlighting that Yorkshire Ambulance Service NHS Trust have ambitious goals to eliminate their carbon emissions.

Sustainable Road Map

Yorkshire Ambulance Service's Green Plan - SMART Targets for 2020-2025

Develop Management Plan

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Carbon target - Identify realistic targets achievable on an annual basis and identify target that correlate with projects - Comply with the HM Treasury and DH sustainability annual report guidance - Identify Carbon reduction savings - Board approval for the Green Plan Reduce YAS's carbon footprint by 10%, achieving the 34% target based on the 2009 baseline - Identify new carbon reduction projects - Identify carbon reduction targets in line with the Climate Emergency Complete the SDAT to compare against other similar organisations Set a 2025 target with a 50% reduction in carbon emissions but work to decrease emissions with a target above 50%	Reduce YAS's overall carbon footprint by 5% through the implementation of the Green Plan Identify new carbon reduction projects Complete the SDAT to compare against other similar organisations Look to develop a Science Based Carbon Target	Reduce YAS's overall carbon footprint by a further 5% through the implementation of the Green Plan Identify new carbon reduction projects Complete the SDAT to compare against other similar organisations	Reduce YAS's overall carbon footprint by a further 5% through the implementation of the Green Plan Identify new carbon reduction projects Complete the SDAT to compare against other similar organisations	Achieve a 50% reduction in YAS's overall Carbon Footprint by 2025 in line with the Carbon Budgets through the implementation of the Green Plan Identify new carbon reduction projects in line with Climate Emergency targets Complete the SDAT to compare against other similar organisations Set a 2030 target in line with the Carbon Budget Set a 2040 target in line with the Carbon Budget and the Greener NHS agenda	Environmental and Sustainability Manager to co-ordinate all parties
Corporate Social Responsibility	- Commence a CSR programme with sustainability and environmental elements included	- Create CSR partnerships	- Create CSR partnerships	- Create CSR partnerships	Environmental and Sustainability Manager and CSR team
Compliance and Policy - Review all policies to identify where sustainability can be included - Include in Annual report - Update the Environmental Policy - Develop a Green ICT policy or incorporate green sustainable ICT into Data Management and Data Centre Policy	- Include carbon reduction and Sustainable development in Annual report - Update the waste policy - Update the electric vehicle charging policy	- Include carbon reduction and Sustainable development in Annual report - Update the Green ICT policy	- Include carbon reduction and Sustainable development in Annual report - Update the waste policy - Update the electric vehicle charging policy	- Include carbon reduction and Sustainable development in Annual report - Update the Green ICT policy	Environmental and Sustainability Manager with the IT manager
Climate change adaptation and risk assessment - Identify risks to YAS from climate change	- Review Climate Change Risk Assessment - Review Climate Change Adaptation Plan		- Review Climate Change Risk Assessment - Review Climate Change Adaptation Plan		Environmental and Sustainability Manager with project managers, estates, fleet, operation, gold cell

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
- Update YAS risk register with climate change risks - Identify sites that need flood risk assessments - Identify sites that would benefit - from climate protection – overheating/flooding/ - Develop an Climate Change Adaptation Plan for YAS - Implement a Climate Emergency	- Assess inclusion of climate change in Business Continuity plans				
Climate Emergency - Recognise the Climate Emergency and implement a YAS Climate Emergency - Put climate change risks on the risk register - Identify targets for reducing carbon emissions - Set up a climate emergency panel (CEP) to identify risks and challenges and ways in which we can work to eliminate our own emissions - Biannual meeting of the CEP	Biannual meeting of the CEP	Biannual meeting of the CEP	Biannual meeting of the CEP	Biannual meeting of the CEP	Environmental and Sustainability Manager
Zero Emission Hub and Spoke ambulance station - Develop a plan to establish a zero emission blue print for a Hub and Spoke ambulance station with a zero emissions - Identify technologies needed for energy requirements - Identify future proofing technologies required for Hubs and Spokes - Identify battery storage and hydrogen technologies required - Assess BREEAM standards and requirements	Design and develop Zero Emission Hub and Spoke ambulance station creating a blue print for all future stations				Environmental and Sustainability Manager with project managers, estates and fleet

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Green Plan Management Programme - Identify a full range of projects to be undertaken as part of the carbon reduction process - Produce an action plan with required investment for the roll out of the Green Plan 2020-2025 - Provide Board updates for the Green Plan annually - Identify a MAC (Marginal Abatement Cost) curve associated with the projects as well as a financial savings if projects are implemented	Implement the Sustainable Road Map as detailed Provide Board updates for the Green Plan annually	Implement the Sustainable Road Map as detailed Provide Board updates for the Green Plan annually	Implement the Sustainable Road Map as detailed Provide Board updates for the Green Plan annually	Implement the Sustainable Road Map as detailed Provide Board updates for the Green Plan annually	Environmental and Sustainability Manager

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Behavioural Change programme - Email, webpage, blog and poster campaign - Rejuvenate carbon champions campaign to engage staff - Internal awareness campaigns - Staff engagement Campaigns - NHS Sustainability Day 2020 - Launch the Big Climate Conversation - Re-establish an internal Sustainability webpage - Post regular updates in the Staff Update Continue the Carbon Copy newsletter	- Update intranet pages with sustainability information - Include Sustainability in HR process for recruitment and in job descriptions - Awareness campaigns - NHS Sustainability Day 2021 - Energy and water reduction campaign	- Update page for sustainability - Include Sustainability in HR process for recruitment and in job descriptions - Awareness campaigns - Sustainability Day 2022 - Energy and water reduction campaign	- Update page for sustainability - Include Sustainability in HR process for recruitment and in job descriptions - Awareness campaigns - Sustainability Day 2023 - Energy and water reduction campaign	- Update page for sustainability - Include Sustainability in HR process for recruitment and in job descriptions - Awareness campaigns - Sustainability Day 2024 - Energy and water reduction campaign	Environmental and Sustainability Manager working with the Internal communications team
Culture Change Programme - Initiate a cultural change programme to interlink all strands of action to empower staff - Monthly/Annual themes - Integrate into PDRs and job descriptions - Challenge departments to develop sustainability strands					Environmental and Sustainability Manager working with the HR and comms team as well as TMG and Board
External Awareness Campaigns - Raise awareness of YAS's Green Plan and the work that they are intending to do to reduce emissions - Publish the Green Plan on line - Press releases - Newspaper and magazine articles - Work with the SDU and NHS Digital to develop an IT awareness campaign for the NHS - Work with NHS England and SDU on plastic reduction projects	- Carry out a survey with all external suppliers to identify areas of sustainability that can be improved and support provided by YAS - Press releases - Newspaper and magazine articles	- Press releases - Newspaper and magazine articles	- Press releases - Newspaper and magazine articles	- Press releases - Newspaper and magazine articles	Environmental and Sustainability Manager working with the External communications team

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Estates **Electricity** - Calculate electricity consumption across the estate - Ensure that all electricity is sourced from renewable sources - Complete LED replacement programme at owned sites - Commence negotiations with landlords in relation to lighting upgrades (if required) - Evaluate solar programme for owned buildings with solar panels, solar heating and solar window film - Identify key sites for solar roll out - Assess BMS systems - Change the contract to specify we contract only green electricity - Reduce Electricity use by 10% based on 2009 figures - Assess the server room consumption	- Rolling LED replacement programme with motion sensors and timers for lighting - Work with landlords to implement solar panels on locations with long leases - Upgrade hand dryers with more efficient ones and eliminate paper towel use - Reduce Electricity use by a further 10% based on 2009 figures - Implement voltage optimisation across the estate	- Install battery storage associated with the solar panels - Reduce electricity use by a further 10% based on 2009 figures - Implement voltage optimisation across the Estate -	- Reduce electricity use by 10% to a total of 30% based on 2009 figures - Install solar panels on 10% of the estate - Assess air conditioning technologies that can help to reduce the consumption	- Install solar panels on 50% of the estate	Estates Team
Gas - Baseline Assessment to be carried out for gas use across the estate - Assessment of heating assets within the entire estate - Commit to biogas procurement for the estate - Implement a summer heating shut down across the estate	- Implement a gas optimisation on boilers across the estate - Summer heating shut down - Create a heat decarbonisation plan	- Implement a gas optimisation on boilers across the estate - Summer heating shut down	- Reduce gas use by 10% to a total of 30% based on 2009 figures - Summer heating shut down	- Phase out gas boilers at new sites - Install/retrofit hydrogen boilers and heating in conjunction with the H21 project for Leeds - Summer heating shut down	Environmental team Estates Team
Hydrogen			- Investigate how hydrogen can be part of our larger refuelling infrastructure	- Preparation for the conversion of the Leeds estate buildings to run on hydrogen as part of the H21 Citygate project - Preparation for the conversion of Hull to run with hydrogen	Environmental team Estates Team Fleet Team Operational Team PTS Team
EV Charging point installation - Assess capacity for EV charging points within the YAS estate - Start a roll out programme of electric vehicle charging points across the county	- Assess the viability for battery storage and locations requiring it to support - Implement EV charging points across the estate - Identify YAS estate that would benefit from smart microgrid networks	- Roll out battery storage - Implement EV charging points across the estate	- Install battery storage - Implement EV charging points across the estate	- Install battery storage	Environmental Estates Team Fleet Team Operational Team PTS Team

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
- Start work with CCGs, hospitals, doctor's surgeries and care homes to install on their sites. Identify locations to allow taxi firms to recharge at our stations - Identify public locations that can provide support	- Trial V2G (vehicle to grid) systems				
Waste - Conduct a waste audit with assessment of waste types including batteries, carpet - Conduct a waste audit of fleet waste and assess how we can reduce - Commence a waste campaign with renewal of posters for the waste bins - Create a waste reduction programme and education programme - Replace waste bins across the estate that are identifiable from one building to another - Assess compliance with battery act - Assess waste to landfill and routes for recycling - Assess ICT WEEE waste and work to recycle and reduce the waste generated - Eliminate Waste to Landfill - Continue to recycle furniture within the estate and with external organisations through Warp It	- Ensure Battery waste is recycled - Work to reduce plastic waste through supply chains - Continue to recycle furniture within the estate and with external organisations through Warp It	- Ensure Battery waste is recycled - Work to reduce plastic waste through supply chains - Continue to recycle furniture within the estate and with external organisations through Warp It	- Ensure Battery waste is recycled - Work to reduce plastic waste through supply chains - Continue to recycle furniture within the estate and with external organisations through Warp It	- Ensure Battery waste is recycled - Work to reduce plastic waste through supply chains - Continue to recycle furniture within the estate and with external organisations through Warp It	Environmental and Sustainability Manager Estates Team ICT team
Plastic reduction - Create a plastic strategy to tackle single use plastic - Devise a #2023plasticfree pledge through the Pl'YAS'tic Free initiative for single use plastic - Launch a YAS wide Pl'YAStic free initiative - Identify quantities and map plastic use within YAS - Work with the supply chain - Work with Anchor institutes on plastic reduction - Eliminate plastic cups	- Produce case studies - Work with Anchor institutes to identify innovation in plastic substitutes - Look at single use clinical plastic replacements	- Trial at single use clinical plastic replacements	- Elimination of non clinical single use plastic from YAS as identified in the Single Use Plastics directive and NHS Plastics Pledge		Environmental and Sustainability Manager Procurement Fleet Staff input

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Water Reduce the amount of water used through water saving devices: - Waterless urinals - Low flow toilets - Push stop taps - Low flow taps - Low flow showers			- Rain water collection systems to be installed at sites - Grey water recycling to be installed at larger sites		Environmental and Sustainability Manager Estates Team
Insulation - Review and assess the wall insulation in the estate - Review and assess the pipe insulation in the estate - Review and assess the underfloor insulation in the estate	- Install insulation where required				Environmental and Sustainability Manager Estates Team
Air conditioning - Assess air conditioning requirements across the estate - Assess potential for free cooling	- Install free cooling at HQ - Install free cooling at Callflex				Environmental and Sustainability Manager Estates Team
Biodiversity - Assess the biodiversity across the estate i.e. green spaces, trees, outside areas - Assess the shading capacity from trees - Assess capability of tree planting on the estate	- Assessment of the adverse effects on biodiversity from our necessary operations - Ensure that all members of staff are aware of their responsibilities towards protecting and enhancing biodiversity - Introduce systems that ensure that biodiversity considerations are taken into account in all site developments, relocations and refurbishments	- Tree planting in the estate for offsetting and shade	- Tree planting in the estate for offsetting and shade	- Tree planting in the estate for offsetting and shade	Environmental and Sustainability Manager Estates Team
Paperless 2020 - Identify internal targets	- Assess paper reduction potential by assessing where it is used - Educate staff as to alternatives required to reduce paper - Assess technology required and implement		- Save 50% reduction in amount of paper used (GGC) - Work towards a complete paper elimination		Environmental and Sustainability Manager and ICT
Buildings Implement a Net Zero building agenda for retrofits and new builds in line with the NHS Operational Planning and Contract Guidance 2020/21					Estate and project management teams
BREEAM assessment - Conduct a BREEAM assessment with every new build to achieve an Excellent rating - Conduct a BREEAM assessment for retrofits to achieve a Very Good standard for projects over £2million Undertake a BREEAM assessment for every refurbishment					Project Management teams

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2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Transport **Fleet** - Publicise the Road to Zero Strategy - Identify a long term zero emission strategy for our fleet - Identify a roll out programme for zero emission vehicles - Create a diesel phase out strategy - Roll out EV charging points across the estate - Work with CCGs, hospitals and care homes to roll out EV charging points to support the ambulance and NHS fleet	- Work with CCGs, hospitals and care homes to roll out EV charging points to support the ambulance and NHS fleet				Travel Team working with the Environmental and Sustainability Manager
PTS fleet - Introduction of new electric cars into the PTS car fleet		- Introduction of new zero emission PTS vans onto fleet			Fleet working with the PTS team
A&E fleet - Work with NHS Improvement and Ambulance Innovation Hub to develop a zero emission front line ambulance	- Work with the Ambulance Innovation Hub to develop innovation in front line ambulances	- Trial hybrid and zero emission front line ambulances →			Fleet working with Ops
Lease car fleet - Assessment of Lease car policy and requirement to implement a change in the policy that states that all vehicles must be hybrid and then electric with timescales - Change Lease Car policy to reduce the maximum CO2 emissions (g/km) to 70 g/km CO2 - Recommend Euro VI to all Lease car drivers that ensure they have vehicles they can drive in Leeds, Bradford, Sheffield, London, Oxford and Birmingham without charge (chargeable Clean Air Zone implemented in 2019 for London and 2021 everywhere else)	- All new lease cars to be zero emission vehicles and run on electric or hydrogen - Develop a lease car strategy for new blue light vehicles to become hybrid and zero emission - Implement a change in the policy that states that all vehicles must be electric or hybrid and all vehicles will be electric from 2024 →				Fleet
Pool car fleet - All new pool cars to be zero emission vehicles →					Fleet
Support vehicles - Assess the needs for developing valid support vehicles - Assess the capability of support vehicles to recharge electric vehicle	- Support vehicles to be hybrid and zero emission vehicles →				Fleet

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Grey Fleet - Carry out a Grey fleet assessment (staff's own vehicles) with the Energy Saving Trust - Encourage staff to work from home, using technology to reduce travel requirements - Encourage agile working - Publicise the salary sacrifice car scheme	- Incentivise zero emission grey fleet vehicle use through Salary sacrifice car scheme				Fleet
Taxi services - Identify needs of taxi firms to move to zero emission vehicles - Look to support zero emission infrastructure input across the region - Identify sites that EV taxis can recharge on YAS sites - Specify in all YAS contracts that all taxis must be on a hybrid or electric trajectory	- Roll out taxi EV services - Specify in all YAS contracts that all taxis must be on a hybrid or electric trajectory	- Specify in all YAS contracts that all taxis must be on a hybrid or electric trajectory	- Specify in all YAS contracts that all taxis must be on a hybrid or electric trajectory	- Specify in all YAS contracts that all taxis must be on a hybrid or electric trajectory	Patient transport team with procurement team
Zero emission vehicle development and trials - Work with NHS Improvement and Ambulance Innovation Hub to develop a national specification for a zero emission front line ambulance - Pilot trials for PTS vehicles with zero emission and hybrid vehicles	- Work with NHS Improvement and Ambulance Innovation Hub to develop a zero emission ambulance - Pilot trials for PTS vehicles with zero emission and hybrid vehicles	- Run trials of PTS zero emission vehicles	- Run trials of zero emission ambulance - Run trials of PTS zero emission vehicles		Fleet team
EV charging points - See estates section					
EV use - Work with the Operational team to understand the - Roll out EV training for drivers through the Driver Training School -	- EV training for drivers through the Driver Training School	- EV training for drivers through the Driver Training School	- EV training for drivers through the Driver Training School	- EV training for drivers through the Driver Training School	Fleet Team Operational Team Driver training Team
Hydrogen refuelling infrastructure - Work with organisations across the region to provide support for public hydrogen refuelling infrastructure			- Investigate hydrogen infrastructure on YAS sites - Understand energy and storage requirements	- Implement hydrogen refuelling infrastructure on YAS sites	Environmental and Sustainability Manager Estates Team Fleet Work with external organisations
Collaboration - Work with CCGs across the region to roll out NHS charging points - Establish a NHS working party to identify a network of NHS charging point locations - Identify hospitals to implement EV charging points - Identify GP surgeries to implement EV charging points					Environmental and Sustainability Manager Fleet Team

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Mechanic training	- Train staff on electric vehicle maintenance		- Train staff on hydrogen vehicle maintenance		Fleet Team
Travel - Assessment of train travel - Assessment of air travel - Assessment of hire car use - Assessment of grey fleet - Identify the impact of Yorkshire Ambulance Service on air pollution through the SDU HOTT tool - Implement more ICT (VOIP, Skype etc) to enable zero travel - Launch travel pages to encourage active travel to stations	- Reduce train travel by 10% - Reduce domestic flights by 10% - Implement more ICT to enable zero travel - Implement a Metro card system for West Yorkshire - Identify a way to offset any international flights undertaken	- Reduce domestic flights by a further 10%	- A total reduction in domestic flights by 30% (GGC requirement)	- Prohibit domestic flights	Environmental and Sustainability Manager HR Board
Clean Air Zones - Raise awareness of the implementation of Leeds' Clean Air Zone with no idling areas - Raise awareness of implementation of no idling areas at Leeds Teaching hospitals - Assess impact of Clean Air Zones - Assess YAS impact on Clean Air Zones	- Raise awareness of implementation of Sheffield's Clean Air Zone - Assessment impact of Sheffield's Clean Air Zone - Implementation of Bradford's Clean Air Zone - Assessment impact of Bradford's Clean Air Zone				Environmental and Sustainability Manager Fleet Team

Reduce Procurement Emissions

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
Procurement - Assess products and services procured by Yorkshire Ambulance Service - Develop a supplier and tender assessment for sustainable development - Work with framework providers to reduce their carbon emissions by 30% by 2025 - Work with suppliers to reduce packaging - Work with suppliers to eliminate single use packaging	- Work with providers to reduce their carbon emissions by 30% by 2025 based on a 2009 baseline - Assessment of the social impact of products procured - Assess carbon footprint of products and identify where products can be procured locally	- Work with providers to reduce their carbon emissions by 30% by 2025 based on a 2009 baseline	- Work with providers to reduce their carbon emissions by 30% by 2020 based on a 2009 baseline	- Achieve a 30% carbon reduction based on a 2009 baseline for all providers	Procurement team to work with Environmental and Sustainability Manager
Green Procurement Strategy - Develop a green procurement policy and strategy incorporating Modern Slavery, Public Services Social Value Act and Fairtrade - Identify energy reduction through a Green ICT procurement process	- Identify a NHS Carbon Footprint plus target - Identify a process to engage with suppliers - Identify local suppliers - Identify circular economy opportunities				Procurement
Supply Chain - Assessment of critical path that may be affected by climatic changes - Identify areas that can reduce packaging - Create a Logistics centre with stock control - Reduce delivery packaging - Consolidate deliveries	- Work with suppliers to incentivise innovative packaging	- Work with suppliers to incentivise innovative packaging	- Work with suppliers to incentivise innovative packaging	- Achieve a 50% reduction in plastic waste	Procurement
Local Procurement - Identify local suppliers - Engage with local suppliers	- Identify where supply chains could be procured just from local suppliers				Procurement
Anchor Plastic Network - Work with Leeds Anchor network to reduce plastic use - Identify plastic innovation projects to be undertaken	- Work with universities to reduce and identify ways to eliminate plastic packaging - Identify a circular economy route for reusable packaging				Environmental and Sustainability Manager Procurement Team
Food - Stipulate no plastic waste in canteen - Implement vegetarian and vegan options on the menu daily - Implement a vegan only day on the menu					Procurement Estates

2020-21	2021-22	2022-23	2023-24	2024-25	Person to deliver
ICT - Assess number of ICT assets within YAS - Identify where energy consumption of ICT assets can be reduced and improved - Identify energy reduction through a Green ICT procurement process - Work with NHS Digital to develop an NHS Green ICT framework - Identify elements of the Greening Government ICT strategy that can be used in YAS - Conduct an assessment of storage rationalisation - Assess multifunctional assets - Print reduction strategy developed and adopted - Apply low power energy settings to devices - Assess virtualisation and implement where appropriate, removing/reducing hardware dependencies	- Conduct an ICT lifecycle assessment - Identify redundant ICT and turn off/recycle and track reuse - Assess Energy consumption for all ICT assets - Assess network rationalisation - Look into app rationalisation - Identify ICT areas that need to be consolidated by reducing device intensity through sharing and device reduction initiatives, adopting	- New desktops to conform to Government Buying standards, promoting equipment with power management capabilities - Use and populate an application asset register enabling reuse and identification of duplication where applications may be decommissioned - Improve device: employee ratios - Reuse and share devices across public sector - Redundant circuits should be responsibly decommissioned and ensure network resilience and fault tolerance is not over specified - Identify redundant ICT and turn off/recycle - Conduct supply chain assessment and work to reduce carbon footprint of products upstream	- Identify redundant ICT and turn off/recycle - Reuse and share devices across public sector	- Identify redundant ICT and turn off/recycle - Reuse and share devices across public sector	ICT team to work with Environmental and Sustainability Manager and Procurement team
VOIP - Assess, make accessible and publicise guidance on webex and video conferencing, provide training as required - Ensure that VOIP technologies are prioritised over travel to meetings	- Ensure that VOIP technologies are prioritised over travel to meetings	- Ensure that VOIP technologies are prioritised over travel to meetings	- Ensure that VOIP technologies are prioritised over travel to meetings	- Ensure that VOIP technologies are prioritised over travel to meetings	ICT team
Cloud/Data Centres/Servers - Assess Data Centre and server room energy use - Assess energy differences between server rooms, data centres and cloud services. - Ensure data centres comply with EU Code of Conduct. Ensure best practice energy efficient initiatives are carried out	- Work with Data Centres to reduce energy use - Identify Data Centre requirements for future contracts to minimise energy consumption and storage - Consolidate onto fewer servers that are loaded to maximum levels of utilisation with due regard to resilience needs	- Work towards transferring to the Cloud			ICT team
Green ICT strategy - Develop a Green ICT strategy looking at all procurement processes and the full life cycle analysis of ICT products with energy consumption - Develop a Green ICT procurement strategy as part of the Green ICT strategy					ICT team

Long term Goals

In order to set targets to work towards, we have identified some initial target

By 2030	2035	2040	2050
- Achieve a carbon reduction by 85% in line with the carbon act - Reduce emissions from the fleet by three quarters - Potential elimination of diesel and petrol vehicles procured for the fleet (dependant on the change in legislation) - Have carbon reductions in line with the Carbon targets of the Climate Change Act (85%) - Implement climate ready retrofits to all ambulance stations and buildings within the estate. - Have a renewables contract for utilities in place by 2021 - Divest from fossil fuels for our estate	- Aim to have a zero emission fleet	- Elimination of diesel and petrol vehicles procured for the fleet (as per government stipulation) - Divest from fossil fuels for our fleet - Achieve a net zero climate emergency target - Achieve a net zero target in line with the Greener NHS programme	- Achieve a net zero emission Yorkshire Ambulance Service with the NHS supply chain - Be a Carbon Neutral Ambulance Service - Zero Emission Fleet with zero emission infrastructure to support 'refuelling' - Be climate ready - Provide low emission healthcare - Zero emission estate with renewable energy - Low waste production and zero waste to landfill - Offset any emissions that cannot be eliminated

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