

Reference Number: FOI2021/421
From: Other
Date: 22 December 2021
Subject: Energy Consumption

Q1 Does your Trust measure its total carbon footprint? If yes, what is the carbon footprint of your Trust? (Please provide in tCO₂e and specify the date of measurement)

A1 No. The Trust is one of three organisations on the Broadgreen site and we are unable to disaggregate carbon usage at this juncture.

Q2 What steps has your Trust taken towards meeting the Greener NHS target of Net Zero by 2045?

A2 The Trust has, in response to the sustainability challenge, developed a Green Plan

Q3 What percentage of your Trust energy consumption comes from fossil fuels?

A3 All energy consumed is provided through National Gas and Energy suppliers

Q4 What steps is your Trust taking to reduce its fossil fuel consumption?

A4 Please see the *421 LHCH Green Plan* attached

Q5 How many vehicles are in your Trust's fleet?

A5 One

Q6 How many of your Trust's fleet uses:

- a. Petrol/Diesel
- b. Hybrid
- c. Electric

A6 Petrol/Diesel

Q7 Does your Trust have a policy on reducing the use of single-use plastics (including for clinical and/or non-clinical items)? If yes, please provide details of this policy and the reduction achieved to date.

A7 Please see *421 LHCH Green Plan Update* attached

Q8 Has your Trust received funding to spend specifically on sustainability and decarbonisation? If yes, please provide details on how much and over what time period

A8 No

Q9 How much has your Trust spent in 2021 (including specific funding received and any other expenditure) on activities related to sustainability and decarbonisation?

A9 *Please see 421 LHCH Green Plan Update attached*

Name of Board/Committee (In Public)

Item 3.2a

Subject: Green Review 2021

Date of Meeting: 30th November 2021

Prepared by: Tom White, Sustainability Lead, Management Trainee Flexi Placement

Presented by: Jonathan Develing, Director of Strategic Partnerships & Green Executive Lead

Purpose of Report: Note

BAF Ref	Impact on BAF
BAF 9	Demonstration of Progress in the delivery of the Trust Green Plan

1. Executive Summary

The purpose of this report is to review Liverpool Heart and Chest Hospital's (LHCH) approach to sustainability – as agreed in the March 2020 Green Plan - and produce appropriate recommendations to further our Green Ambition.

In summary this report demonstrates progress made against the Trusts Green Plan and savings, environmental and financial, that have been realised through our October Green Month Initiative.

Environmental Savings

1. 1,073,217 kg CO₂e is being saved from being released into the atmosphere every year, the equivalent of powering 1,233 homes for a whole year.¹

Financial Savings

2. LHCH is saving £163,710 per annum due to the range of sustainability initiatives outlined in this paper.

¹ [Average Electricity Usage in the UK: How Many kWh Does Your Home Use? | OVO Energy](#)
[KWH-to- CO2 \(rensmart.com\)](#)

2. Background

In October 2020 the NHS Chief Executive said “...as the largest employer in Britain, responsible for around 4% of the nation's carbon emissions, if this country is to succeed in its overarching climate goals the NHS has to be a major part of the solution. It is for this reason that we are committing to tackle climate change by reducing our emissions to ‘net zero’. In doing so, our aim is to be the world’s first 'net zero' national health service.”² Two clear and feasible targets are outlined in the Delivering a ‘Net Zero’ National Health Service report:

- The NHS Carbon Footprint: for the emissions we control directly, net zero by 2040
- The NHS Carbon Footprint Plus: for the emissions we can influence, net zero by 2045.

In March 2020, the LHCH Board agreed to a Sustainable Development Management Plan (Green Plan). Since that date initiatives have been brought forward but not coordinated and captured in a systematic way.

At the request of the Director of Strategic Partnerships, a Graduate Management Trainee was recruited for a short-term flexible placement as a Sustainability Lead, with three clear objectives:

- Produce an initiative repository which documents the green, sustainable projects the Trust has undertaken following the approval of the March 2020 Green Plan and calculate their cost and environmental impacts.
- Review and refresh the Trust’s Green Plan.
- Run a ‘Green Awareness Month’ in October to coincide with the Conference of the Parties (COP26) and the anniversary of the NHS’ pledge to net-zero (October, 2020).

3. Context

The March 2020 Green Plan had several objectives which can be summarised as follows:

- reducing energy costs
- improving waste management and recycling
- sustainable procurement
- active and efficient travel
- developing links within the community and other NHS organisations.

These provided the structure for the October 2021 Green review, recognising that some of these activities are direct interventions – that is, within the scope of the Trust and indirect

² <https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf>

Delivering a ‘Net Zero’ National Health Service. [delivering-a-net-zero-national-health-service.pdf](https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf) (england.nhs.uk). 2020.

interventions – that being external interventions such as reduced travel arising from the Trust approach to agile working.

3.1 October Green Awareness Month

In October 2021, we facilitated a Green awareness month.

The purpose was to celebrate the sustainability initiatives that LHCH have undertaken in the last two years, discuss the NHS' role in climate change, and highlight our responsibilities in achieving the NHS' net-zero ambition.

It consisted of daily communications on different topics, incorporating LHCH's green projects as well as key climate dates, such as, but not limited to: The UN Biodiversity Conference, Conference of Parties (COP26), World Mental Health Day and the International Day of Climate Action.

In summary the following initiatives took place during October 2021:

- The hospital was lit Green.
- Two webinars took place on Electric Vehicles and the Cycle to Work scheme, facilitated by our salary-sacrifice partners: NHS Fleet Solutions and Cyclescheme. We had over 50 viewers across the two events, demonstrating LHCH's passion for sustainability.
- To increase biodiversity, staff members volunteered to plant wildflowers and install bird boxes during their lunch break (pictured below). The ambition is to create a 'Green Space' for patients and staff to enjoy, sit and reflect.
- A pod cast was also presented through 'Heart and Chest Matters' so as to align with the COP 26 and the anniversary of the NHS' 'One Year On' NHS net-zero pledge.
- A sustainability initiative competition was held, where staff were encouraged to submit sustainability ideas. The best idea was selected by a panel and the winner was awarded an electric bike (donated through our associated charity). 49 submissions, containing nearly 70 ideas from 31 different areas across the Trust were received. The winning idea challenged the Trust to swap metered-dose inhalers to dry-powder inhalers which have a lower carbon footprint.
- The Trust registered for the Queens Green Canopy (Tree planting initiatives celebrating Her Majesty the Queens Platinum jubilee in 2022). This will result in 20 new trees and shrubs being planted on the LHCH site, with tree varieties being aligned to the respective names of each of our clinical/ward areas. (Elm, Birch, Maple, Rowan, Cherry etc.)
- A recurrent emergent theme from staff was the subject of recycling and waste segregation initiatives. Currently, our waste is recycled off-site by Veolia, however only 11% is graded as appropriate to be recycled.

- Successful applications for Grants have been realised through the Low Carbon Skills Fund (£30k) and Salix (£57k) which have funded projects such as reviewing heat decarbonisation with theatres and plant rooms.

Specific Green Initiatives

Energy

- Low level energy lighting.
 - The replacement of LED lighting has been ongoing, and LEDs are included in the development of any new building program, such as the catheter labs. However, there are still areas using older lighting that should be considered as part of the Trust's capital plan.
- Reduction in energy usage.
 - Passive infrared sensors (PIR) light sensors have been installed in office areas to reduce energy use, automatically switching lights off unless motion is detected. These sensors will soon be expanded to the theatre air-filtration systems, which currently run 24 hours a day. This is expected to yield a significant reduction in energy use.
 - Personal accountability - all laptop, desktop and personal computer screens are fitted with protocols to power down to standby mode when not in use.
 - Energy alternatives. Exploration of alternative power sources (solar and wind) required a bespoke survey as this is an area of intent that is highly specialised. This was included within the Six Facet Surveys (property appraisal).
 - The installation of smart meters to better understand, monitor and reduce energy consumptions and costs does not currently feature in capital plans due to the prioritisation process. Whilst there is a potential long-term return on investment the capital cost of installation is circa £44k inclusive of VAT. This is an important monitoring tool, as it is not currently possible to monitor the geographical use of our energy, and thereby target areas to improve efficiency. This should be considered as a priority for future capital programmes.

LHCH achieved energy efficiency savings of 804,099 kWh when compared to the 2018/19 period. Based on a price of £0.12p per kWh, this resulted in a cost-saving of £96,491 and prevented 187,468kg CO₂e from being released into the atmosphere.

- Reduction in gas usage.
 - Improvement to building management systems, installation of new boilers, smart system upgrades and a replacement protocol boiler system (heat-synchronisers).
 - This work was partly supported by £30k from the Low Carbon Skills Fund to support the development of a Heat Decarbonisation Plan.

- **LHCH achieved efficiencies resulting in a 765,909 kWh savings when compared to the 2018/19 period. Based on a price of £0.12p per kWh, this resulted in a cost-saving of £91,909 and prevented 178,564kg CO2e from being released into the atmosphere.**

Recycle – [indirect emissions]

- New waste systems.
 - The introduction of Clinismart a waste segregation system includes specifically designed procedures, education tools and products to ensure optimisation of waste disposal processes at point of care. This provides cost effective, compliant, and safe management of healthcare waste whilst contributing to a cleaner patient environment. Typical results following installation of the Clinismart system would provide 50-80% reduction in clinical waste volumes and between 20-30% reduction in waste management costs. This will be implemented at the end of October.
- Recycling initiatives.
 - Reduction in single use plastic items. Known as the 'Steady cycle' initiative the use of single use items has increased during the covid-19 period because of the demand for personal protective equipment (PPE). Data provided by the Broadgreen Sustainability team indicates that only 11% of our waste is recycled by Veolia, with 89% being incinerated to produce energy.
 -
 - Whilst there will be a benefit of incineration to produce energy, quantifying this for LHCH within a wider agreement of waste provider across site has not been feasible at the time of this report. There is a widespread appetite to introduce recycling bins in all areas, this option should be explored with a cost and environmental appraisal.
- Waste Reduction.
 - Intent to undertake an audit following the disposal of waste on and off site so providing assurances that recycling off site is fully compliant with standards.
 - **LHCH achieved efficiencies when compared to 2019/20, of £22,708 saving in waste costs. However, with increased use of PPE and other single use plastics during Covid there have been an additional 1,995kg CO2e per annum.**
- Re-usable gowns
 - From 1st April 2021 (following a successful trial) LHCH operating theatres signed a deal with Elis to provide re-usable gowns. This has reduced Trust clinical waste by approximately 8 tonnes a year. The Catheter labs intend to follow this pilot.
 - **This has resulted in total savings of £22,200 and 23,520kg CO2e per annum.**

- Intranet Based eBay system

- The WARP IT pilot, a system by which surplus items can be sold to staff rather than put into landfill has been implemented but has not yet reached its full potential.

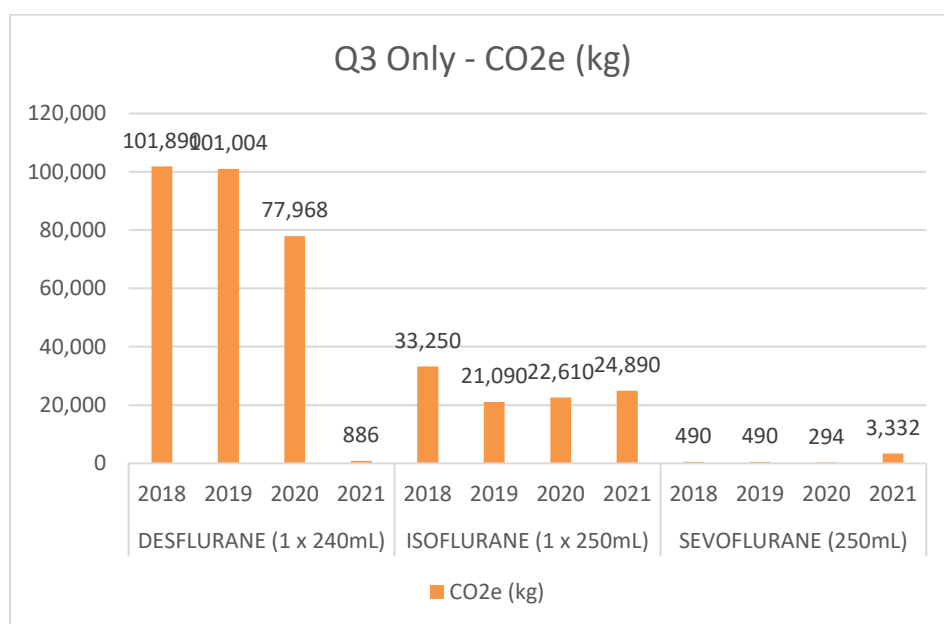
Procurement – [Direct emissions]

- Approvals and Procurement

- Specialised provider alliance. Harmonisation of approach across the four specialist providers to ensure that Green policies are developed as the first principle of procurement. This will evolve policy and approach in sourcing goods locally, which will reduce LHCH's carbon footprint and support the local economy.

- Anaesthetic gases – Desflurane

- The Anaesthetic team recently removed Desflurane vaporisers from use in June 2021. This has resulted in a significant impact and accounts for a quarter of our success to date. In Q3 alone, this has saved 71,764kg CO2e.
- **The projected per annum saving is 287,056kg CO2e and an estimated recurring cost-saving of at least £17,283.**



Travel – [indirect emissions]

It is worth noting as background that approximately 3.5% (9.5 billion miles) of all road travel in England relates to patients, visitors, staff, and suppliers to the NHS, contributing around 14% of the system's total emissions.³ This includes approximately 4% for business travel and fleet transport, 5% for patient travel, 4% for staff commutes and 1% for visitor travel.

³ NHS Sustainable Development Unit. [Reducing the use of natural resources in health and social care](#). 2018.

- Agile working

- Staff survey indicated opportunities for more agile working, thereby reducing the overall carbon footprint of the Trust. Cycle work to work policies have been updated following the latest guidance. New walking routes across the trust planned as part of a charitable funds application. Overall, Agile working policies have resulted in a significant decrease in staff commuting miles.
- **On average, 1,185,018.9 commuting miles are saved per year, resulting in a 367,360kg CO2e reduction per annum.**

- Electric Vehicle Charging Stations

- Ten new electric vehicle (EV) charging stations were installed this year which supports staff, encourages sustainable travel, and generates income. 62% of staff that have outstanding orders with the salary sacrifice scheme have selected EV cars, with 13% opting for hybrids, for a total of 75% of staff choosing a battery powered or supported vehicle (below). This demonstrates that there is an increasing trend towards battery-powered vehicles.

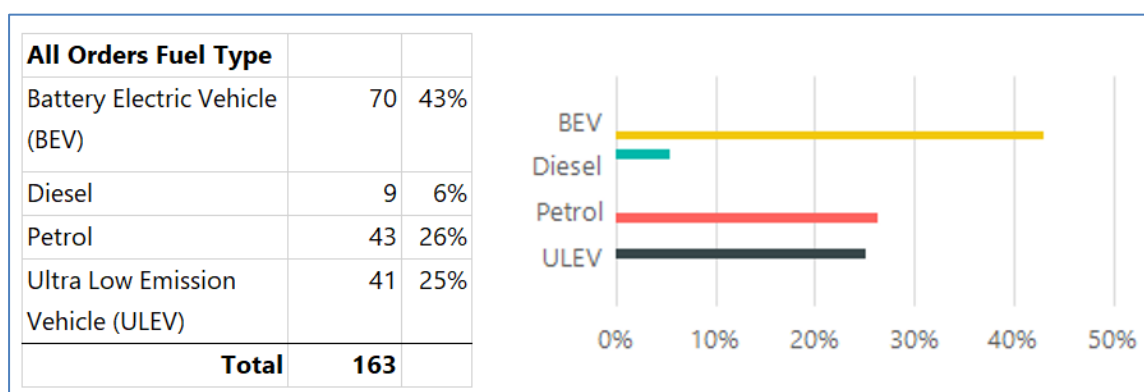
Vehicles On Order		
Battery Electric Vehicle	16	62%
Petrol	3	12%
Ultra Low Emission Vehicle (ULEV)	7	27%
Total	26	



- Based on the period July to September and extrapolated, the Trust can expect a **recurring income of at least £3,278 with 23,244kg CO2e saved per annum** (when compared to combustion engines).
- There is a willingness to expand electric-vehicle parking to other areas on-site.
- The Trust will review tariffs for EV charging on a regular basis to track current energy prices and ensure competitive rates for staff.
- The Trust recently hosted a webinar, run by our provider NHS Fleet Solutions to discuss the benefits of the salary sacrifice scheme, as well as to discuss the advantages of battery-powered vehicles.
- The table below shows the breakdown of staff who have engaged with the salary sacrifice scheme, which constitutes 10% of all staff (163). Combining battery electric vehicle and ultra-low emission vehicles, 68% of staff on the scheme chose an electrically powered (or supported) vehicle. Considering the table above which shows current orders, of which 89% of staff chose an electric or hybrid, there is a general trend towards battery-powered vehicles amongst LHCH staff. This should be

considered when reviewing the amount of electric charging stations available to staff.

Figure 10:



Go Green – Corporate and Culture – [indirect emissions]

All aspects including community engagement, veteran’s covenant, championing personal accountability opportunity and awareness raising will be taken into consideration within the People Strategy.

The Trust is currently applying for the Social Value Award ([Social Value Business](#)), with the long-term aim of developing LHCH into an anchor institution.

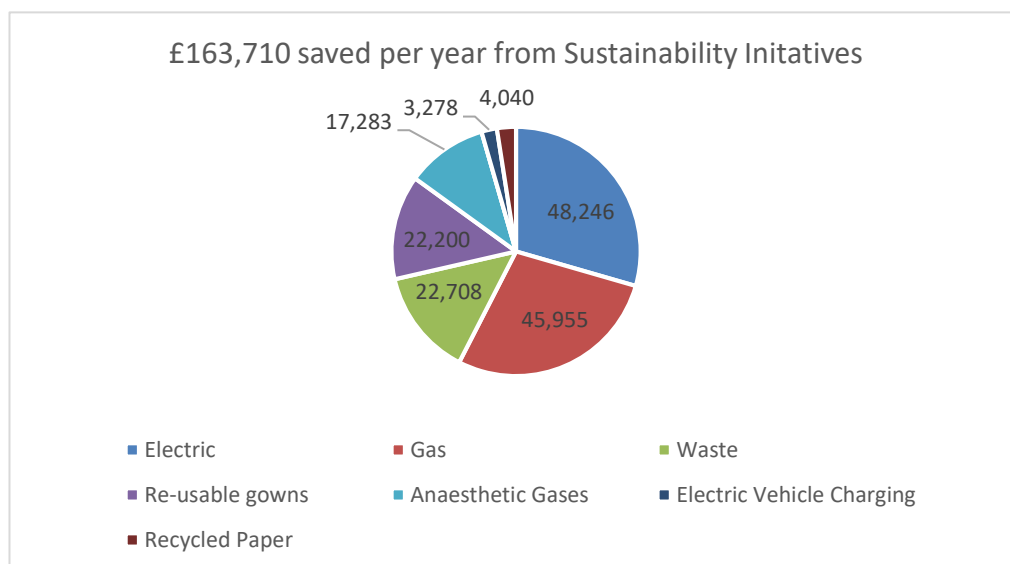
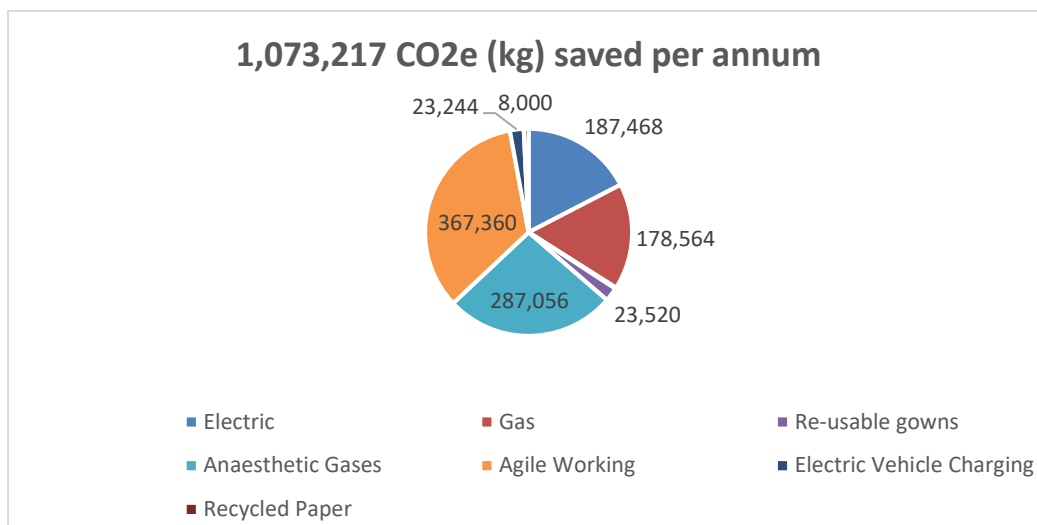
Green Space

- The last 18 months have demonstrated the importance of being out, and exercising in, nature. Research has shown that being in nature can reduce stress levels, boost our mood, as well as be beneficial for our social relationships. The evidence is so strong that spending time in nature can be medically prescribed for its wellbeing benefits, and science continues to try to understand what it might do for our physical health.⁴
- The Trust is creating a ‘Green Space’ for staff by planting up to twenty new trees and shrubs, three wildflower patches and installing four bird boxes to increase biodiversity and create a wellbeing centre for staff to enjoy.
- The trees will be a part of the NHS Forest Project ([Welcome | NHS Forest](#)) and the Queen’s Green Canopy initiative ([The Queen’s Green Canopy \(queensgreencanopy.org\)](#)). The species have been selected to coincide with the names of our clinical areas. The carbon offset of these new trees, and how it benefits the local air pollution, are yet to be explored.

⁴ Visiting green space is associated with mental health and vitality: A cross-sectional study in four European cities. [Visiting green space is associated with mental health and vitality: A cross-sectional study in four european cities - ScienceDirect](#), 2016.

4. Conclusion

- **LHCH is saving £163,710 per year when compared to 2018** due to the range of sustainable initiatives outlined in the review.
- **LHCH is saving 1,073,217 kg CO₂e** from being released into the atmosphere. If converted back into electricity, that could power **1,233 homes for a whole year**.⁵



⁵ [Average Electricity Usage in the UK: How Many kWh Does Your Home Use? | OVO Energy](#)
[KWH-to- CO2 \(rensmart.com\)](#)

5. Recommendations

As we aspire to improve population health and become an anchor institution the Trust will continue to accelerate our Green plan. For information, Appendix 1 provides a summary of further ambitions and opportunities for further consideration.

The Board of Directors are asked to note the progress and success of the Green Plan review and October awareness raising initiative during October 2021.

Tom White (Management Trainee)

Sustainability Lead

Jon Develing

Director of Strategic Partnerships (Executive Green Lead)

Appendix

Energy – [direct emissions]

- Additional low energy lighting rollout to older areas of the estate, PIR sensors installed in all areas (including in the theatre air-filtration systems)
- Installation of SMART meterage across the full site circa £44k
- Reduction of site footprint – improved cycling facilities and showers to encourage active commuting, continuing virtual outpatient follow-ups and cementing agile working practices wherever appropriate
- Continued improvement to building management systems
- Green energy procurement (100% of energy used would be from a renewable source)
- Personal accountabilities – turning off equipment at source, estimated to save £0.7p per device, per night.
- Energy alternatives – solar and wind survey bespoke site survey of alternative power usage. If not included within the six-facet site survey, then it would cost circa £5k.
- Further utilisation of the Salix Public Sector De-Carbonisation scheme.

Recycle & Waste – [indirect emissions]

Waste takes many forms across, and it is an aspect that most staff seem to focus and anchor onto. LHCH has enthusiastic and willing staff, but the infrastructure does not support their ideals. During Green Awareness month, recycling was the most common idea cited in the sustainability competition, with 21 submissions asking for recycling or better waste segregation. It is clearly an area that staff are passionate about and requires further examination.

- Single use plastics – requires investigation to determine what must be single-use and what could be recycled. Procurement should then seek reusable items where possible
- Recycling bins – currently Veoila recycles 11% of waste and incinerates 89% to create green energy. Broadgreen have recently changed contracts to a new provider. This should be followed-up and a lifecycle of our waste should be recorded and audited. If the new provider does not recycle in sufficient quantities, then LHCH should work with Broadgreen to procure a new, sustainable provider. Installing recycling bins in all areas should be considered as a viable and visible waste strategy, but this is only feasible if a provider is willing to collect recyclable material. I recommend that a full waste review be conducted and shared with staff, to alleviate their concerns and investigate the most appropriate, effective green waste solutions.

- Recycling of Medical Devices – the same investigation could examine which devices could be washed, cleaned, and reused. The water and energy cost of this process should be assessed against the potential benefits.
- Anaesthetic Gases – continue to utilise sevoflurane instead of desflurane and isoflurane. No recommendations necessary.
- Recycled Paper – from the 1st November, 2021, the Trust will move to only procuring recycled paper. This is projected to save £4,040 recurrently and 8,000kg CO₂e. This has been included in the overall calculations provided in the conclusion.

Procurement – [indirect emissions]

Procurement is one of the biggest influences on how the NHS produces carbon, and it needs to be embedded across the whole of the hospital.

- An Environmental Impact Assessment akin to an Equality Impact Assessment should be a priority for every procurement decision. This must be done as part of changes to services / major projects.
- The new Specialist Provider Alliance joint-procurement team should demand sustainable methods of production and supply, for example for reduction in plastics, to reduction in vehicle emissions for delivery, to sourcing sustainable and environmentally friendly components. There is also further opportunity to explore a medium-term joint vision

Travel – [indirect emissions]

An LHCH Travel Plan should be devised that seeks to reduce the health and environmental impact of fossil-fuelled vehicles to-and-from LHCH by providing better alternatives, incentives to reduce car travel and a switch to greener, cleaner, and healthier forms of transport.

The main benefits that can be expected from an associated Travel Plan are:

- Help make LHCH an environmentally responsible institution
- Deliver on sustainability commitments by reducing CO₂ emissions
- Deliver health benefits to staff, children, young people, families, and visitors, through an increase in exercise and reduced conflicts between traffic and pedestrians.

The objectives of the Green Travel Plan should be:

- Increase the level of walking, cycling and public transport use to our sites.
- Reduce the Trust's environmental impact and the impact upon the local community by encouraging alternatives to driving alone.
- Promote electric and hybrid vehicles including an expansion of electric-vehicle parking on-site.
- Encourage staff to lead a healthy lifestyle by promoting active travel modes such as walking and cycling.

- Offer an improved choice of travel options to all patients, staff, and visitors.

In implementing this plan, LHCH need to not only concentrate on the hospital and associated buildings, but also other sites outside of the immediate main footprint. Everywhere that LHCH staff are required to travel to work to should be considered for its implications on its contribution to becoming net zero.

Additionally, there is a wider opportunity to collaborate with local NHS partners, e.g., from the Broadgreen and Alder-Hey sites, to develop a vision for travel for the whole area, that improves access to the local rail station, public transport services, walking and cycling routes in a fundamental way. This should be a medium-term view of what travel and the environment could look like that fundamentally challenges assumptions and practices around car usage, in favour of delivering a green alternative that changes the space we work and commute in permanently and radically.

Resources

There needs to be a clear shared programme for LHCH to follow with a regular steering group led by a Sustainability Lead. It should be noted that there are funds and grants available to NHS organisations that could support this work. LHCH has been successful in two grants funded by the Low Carbon Skills Fund and Salix's Public Sector Decarbonisation Scheme ([Public Sector Decarbonisation Scheme \[now Phase 1\] | Salix Finance](#)). The £30k from the Low Carbon Skills Fund was used to support the development of a Heat Decarbonisation Plan in 2020, and £57k from the Public Sector Scheme is being used to conduct a full energy survey in 2021.

This paper has outlined the potential savings and environmental impact of accelerating the Green Plan. To achieve this, we will explore a specific role dedicated to pursuing sustainability initiatives that focuses on project management, administrative support, and acquiring funds and grants to support workstreams.

Crucially, the Sustainability Manager would benchmark the Trust's carbon footprint. This is important so that all future improvements can be assessed against that baseline. This would allow the Trust to create a long-term map to net-zero carbon emissions. Completing this project internally will save on external professional fees.

Useful reading:

1. NHS England and NHS Improvement. [Greener NHS campaign to tackle climate 'health emergency'](#). 2020.
2. Delivering a 'Net Zero' National Health Service. [delivering-a-net-zero-national-health-service.pdf \(england.nhs.uk\)](#). 2020.
3. NHS Net Carbon plan <https://www.england.nhs.uk/greenernhs/a-net-zero-nhs/>
4. Royal College of Physicians. [Breaking the fever: Sustainability and climate change in the NHS](#). 2017.
5. NHS England. [The NHS Long Term Plan](#). 2019.
6. NHS Sustainable Development Unit. [Reducing the use of natural resources in health and social care](#). 2018.
7. NHS Sustainable Development Unit. [Workforce insights study](#). 2018.
8. NHS England and NHS Improvement. [We are the NHS: People Plan for 2020/2021 – action for us all](#). 2020.
9. Defra. [UK's carbon footprint](#). 2020.
10. Department for Transport. [National Travel Survey](#). 2020.
11. A4S Chief Financial Officer Leadership Network. CAPEX: [A practical guide to embedding sustainability into capital investment appraisal](#).
12. <https://www.mycarbonplan.org/post/uk-carbon-offset-providers-and-schemes>
13. <https://www.iucn-uk-peatlandprogramme.org/funding-finance/introduction-peatland-code>
14. <https://www.woodlandtrust.org.uk/partnerships/how-our-partnerships-work/>
15. <https://environmentagency.blog.gov.uk/2021/05/10/carbon-offsetting-reviewing-the-evidence/>

Board of Directors (in Public)

Item 3.2

Subject: Sustainable Development Management Plan (Green Plan)
Date of Meeting: Tuesday 31st March 2020
Prepared by: Jon Develing, Director of Strategic Partnerships
Presented by: Jon Develing, Director of Strategic Partnerships
Purpose of Report: For Approval

BAF Ref	Impact on BAF
2.4	Production of a Sustainable Development Management Plan (Green Plan)

1. Executive Summary

The purpose of this report is to present an approach to a more sustainable estate. The report takes the required format as promoted by the Sustainable Development unit and NHS Improvement.

2. Background

The climate change act (2008) was introduced to ensure that the UK cuts 80% of carbon emission by 2050. This target, set from the 1990 baseline applies to all sectors. As the largest public sector emitter of carbon the health system has a duty of care to identify its contribution and make a positive change for the greater good of the population.

3. Sustainable Development Management Plan (SDMP) Green Plan

This paper describes the context, drivers for change, organisational vision, areas of focus and the project approach to the development of the SDMP.

The format of the report follows national guidance and is prepared in such a way as to be developed into a public facing document.

4. Overview

Liverpool Heart and Chest Hospital is one of the largest single site specialist heart and chest hospitals in the UK, providing specialist services in cardiothoracic surgery, cardiology, respiratory medicine including adult cystic fibrosis and diagnostic imaging.

The Trust serves a population of 2.8million spanning Merseyside, Cheshire, North Wales and the Isle of Man. The Trust also receives referrals from outside of its core population base for some of its highly specialised services. We also provide a number of national services in particular quaternary aortic surgery services and robotic cardiac and thoracic surgery.

The Trust has 195 beds.

In 2018/19, it treated:

- 2,117 cardiac surgery inpatients
- 8,061 cardiology inpatients
- 734 respiratory inpatients
- 1,232 thoracic surgery inpatients
- 547 other inpatients (including cystic fibrosis)
- 70,247 outpatients

As at 31st March 2019, the Trust employed 1,643. There were also 22 senior managers – being those persons in senior positions having authority or responsibility for directing or controlling the major activities of the NHS foundation trust.

LHCH recognises that as an anchor institution it has a duty of care to our patients, partners and population to continually improve health and wellbeing, and deliver the highest quality health care whilst minimising negative impacts on the environment. As such this approach is fundamentally different to the traditional role of a tertiary centre and places us as a leader of transformational change

In order to fulfil this role and deliver our new Five Year Strategy 'Patients, Partnerships and Populations' we have developed a bespoke strategy to describe our contribution to the Green agenda.

This 'Green Plan' is a mechanism for organisations to take a coordinated, strategic and action-orientated approach to sustainability. Green Plans form a key part in sustainable healthcare delivery ensuring that services remain fit for purpose today and for the future.

1. Estates Return Information Collection (ERIC)

The 2018/19 Estates Return (ERIC) is a mandatory collection for all NHS trusts including Ambulance trusts. It comprises information relating to the costs of providing and maintaining the NHS Estate including buildings, maintaining and equipping hospitals.

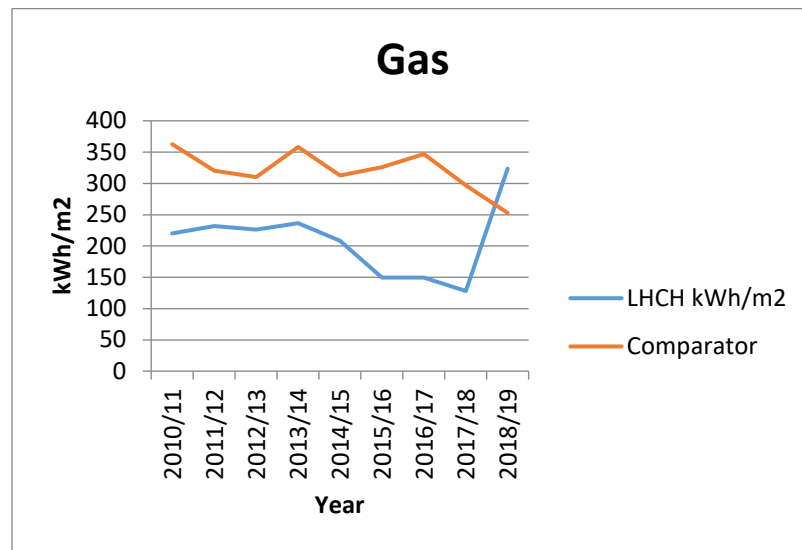
The baseline year for the climate control act is 1990 however systems for capturing granular data on regular basis did not develop for this period, hence the use of ERIC data is widely accepted as a measure of progress.

Key Statistics for the calculation of the LHCH carbon footprint

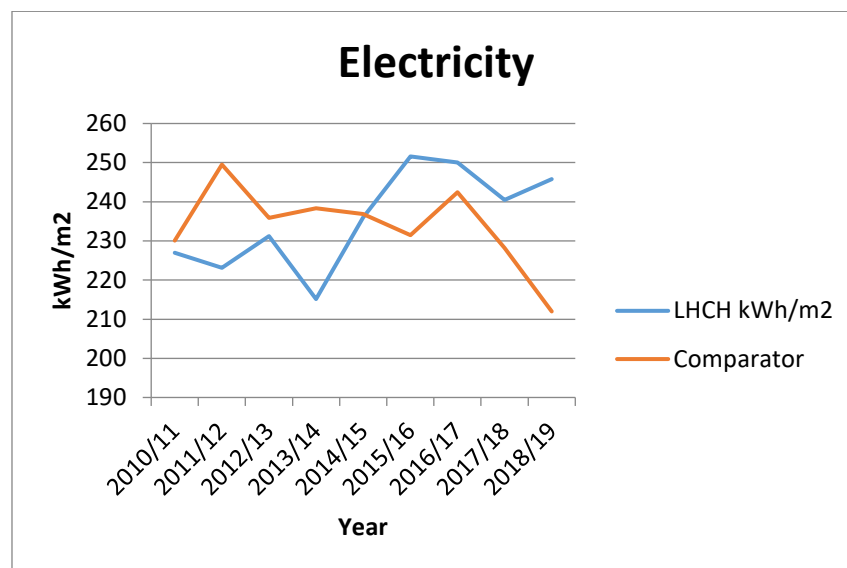
	Gas		Electricity		Water	
Year	kwh	LHCH kWh/m2	kwh	LHCH kWh/m2	m3	LHCH m3/m2
2010/11	5920587	220	6100638	227	43697	1.63
2011/12	6227068	232	5999183	223	49466	1.84
2012/13	6087919	226	6214989	231	48967	1.82
2013/14	6349859	236	5783695	215	48012	1.79
2014/15	5605545	209	6344241	236	52280	1.94

2015/16	4021463	150	6763383	252	49776	1.85
2016/17	4021463	150	6721388	250	44735	1.66
2017/18	3442717	128	6464887	240	47336	1.76
2018/19	8701080	324	6606605	246	44302	1.65

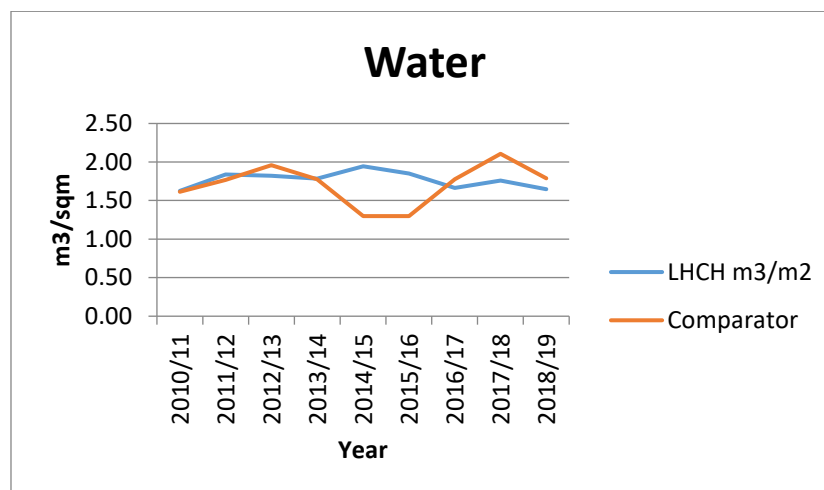
For comparative purposes only the following charts have been developed as a benchmark against a similar sized organisation providing a similar clinical portfolio.



This chart demonstrates significantly lower utilisation when compared to the, most like for like peer organisation. The sharp spike in 2018/19 appears to be an anomaly and is being explored further as there have been no fundamental changes in estate or service demands.



This chart demonstrates significantly higher utilisation when compared to the, most like for like peer organisation. The increase from 2013/14 and sustained use is most likely associated with developments.



This chart demonstrates lower utilisation when compared to the, most like for like peer organisation over the same period.

2. Drivers for Change

Drivers for change can be broadly categorised into five key categories; legislative requirements; mandatory requirements; International guidance; UK Guidance; and Health specific requirements.

Legislative; a list of the key legislative drivers [as of March 2018] is detailed below:

- Civil Contingencies Act 2004
- Climate Change Act 2008
- Public Services (Social Values) Act 2012

Mandatory; those mandated within the NHS

- Standard Form Contract requirements for Sustainable Development 2017-19
- HM Treasury's Sustainability Reporting Framework
- Public Health Outcomes Framework

International; those 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
- The Global Climate and Health Alliance; Mitigation and Co-benefits of Climate Change

UK guidance; those 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
- Five Year Forward View 2014
- Sustainable Development Strategy for the Health and Social Care System 2014-2020
- Adaptation Report for the Healthcare System 2015
- 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
- Cheshire and Merseyside Health and Care partnership 'Better Lives now'
- Liverpool City Growth Action Plan
- Liverpool Integrated Care Partnership Plan 'One Liverpool'

3. Organisational Vision

Liverpool Heart and Chest NHS Foundation Trust (LHCH) has developed a new five year strategy.

This strategy outlines our ambition to deliver world class care, advance outcomes and innovation, increase our value, develop our people, lead through collaboration and improve our population health.

This ambitious approach will continue our pursuit of outstanding care within the Hospital whilst developing new collaborations across our health and care system in such a way as to maximise our collective impact. This approach will be visible in a variety of forms and contribute toward earlier prevention and intervention, sustaining local services and in supporting other system wide at scale initiatives.

The Trust Strategy is known as Patients, Partnership and Populations.

Our vision, is *'to be the best - leading and delivering outstanding heart and chest care and research'.*

Our Mission, every day, is *to provide 'excellent, compassionate and safe care for our patients and our populations'.*

Our Values underpin our model of care for our 1,700 staff

- Patient and family centred care
- Accountability
- Continuous improvement
- Teamwork

As a clinically-led organisation, these values shape our work and the outstanding care that we provide to our patients and families on a daily basis.

Our strategy is underpinned by six new objectives.

- Delivering World Class Care
- Advancing Quality and Outcomes
- Increasing Value
- Developing People
- Leading through Collaboration
- Improving our Population Health

These objectives, demonstrate our commitment to the patients we serve, the healthcare partners with whom we work, and to our wider populations.

The first four objectives focus on the highest quality of patient and family experience. Thanks to our national and international recognition as a leader in patient safety, clinical quality and patient experience.

Objective 5 focuses on our leadership role.

Objective 6 demonstrates the passion of our teams to use their expertise for the benefit of the wider population.

Sustainability has been identified as a key deliverable within our new strategy and applies to each of the six strategic objectives specifically referenced within 'Improving value' and 'Improving the health of our Population' chapters.

4. The Green Context - NHS Long Term Plan

In 2007 the NHS England carbon footprint rose to 21 million tonnes of CO₂e (MtCO₂e).

This figure is calculated using the most recent data available and is an update to earlier foot printing reports and to the NHS Carbon Reduction Strategy for England's (CRS) carbon emissions graph.

There are three key changes:

1. NHS England now reports on greenhouse gas (GHG) emissions, displayed in CO₂ equivalent (CO₂e). This means that CO₂ is not the only GHG measured. This is consistent with the 2008 Climate Change Act⁵ and also the 2009 Defra GHG reporting convention.
2. Procurement data has also been updated from 2004 to 2007. It confirms an increase in emissions over this period. This is composed of 59% procurement, 24% building energy and 17% travel sector emissions.
3. The 2020 target has been altered in line with the amendment (May 2009) to the Climate Change Act.⁷ The target is now a reduction of 34% rather than 26% based on 1990 baseline.

Reporting GHG emissions has made a significant change to the shape of the curve in the decade 1990 to 2000. This is primarily due to international action to reduce non-CO₂ GHGs over this period. After 2000 and up to 2020 the CO₂e actual and projected emissions trajectory follows the same upward trend as the original CO₂ projection in the CRS.

Hence it is no surprise find that the NHS Long Term Plan, operating guidance and contractual process all now sets out the following deliverables for environmental sustainability in the NHS.

- Reduce carbon, waste and water: including phasing out coal and oil fuel as primary heating
- Switching to lower carbon asthma inhalers
- Reducing the carbon footprint from anaesthetic gases
- Improve Air quality by cutting business mileages and fleet air pollutant emissions by 20%
- Reduce the use of avoidable single-use plastics

The Long Term Plan for the NHS sets out the following deliverables for environmental sustainability in the NHS.

5. Our Approach

The awareness of Green issues has become more prominent in recent months with activists, climate change related incidents, high profile campaigns and the more recent world economic forum held in Davos, Switzerland.

In respect of the public health impact several conditions such as heart disease, stroke and lung cancer have been partly attributed to air pollution. These three conditions alone are estimated to contribute to around 36,000 deaths in the UK annually.

Sir Simon Stevens, head of the NHS, said:

"With almost 700 people dying potentially avoidable deaths due to air pollution every week, we are facing a health emergency as well as a climate emergency."

The Liverpool the City Region has also declared a climate emergency and there is now a broad-church of support from the British Medical Association, Royal Colleges, and staff side and from members of our LHCH team.

6. Health Care sustainability

The aim of sustainable healthcare is to provide better care for patients today without compromising health and care provision in the future.

Considering the sustainability of healthcare delivery is as important as considering the financial viability of services.

Without a sustainable environment, healthcare costs will rise and delivery will be made more difficult by the changing climate.

Within the 2020 NHS contract the NHS is proposing a new standard contract that encouraging staff to take action. Staff suggestions include;

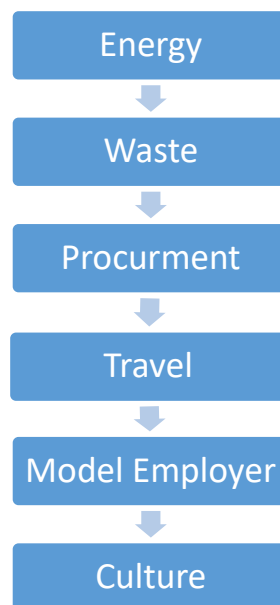
- Cut back on driving to work
- Walking and cycling incentives schemes
- Zero emission Lease car offers
- Better use of public transport
- Car sharing

- Refillable water bottles
- Turning off monitors, printers and photocopiers.

7. Going further

In developing our Green plan, through awareness raising sessions, a risk appetite workshop and drop in sessions, our staff team believe we can go further than that of that described.

Hence the following seven step framework been developed which, subject to Board of Directors Approval, will be developed into the Green plan.



1. Utilities – Gas / Electricity / Water
 - Additional low energy lighting
 - Reduction in energy usage
 - Reduction of site footprint
 - Improvement to building management systems
 - Use of green energy systems
 - Personal accountabilities
 - Energy alternatives
2. Waste – Single use plastics, recycling, re-use schemes
 - Assurance of waste disposal off site
 - Recycling initiatives
 - Waste reduction in procurement practices.
 - Re-use schemes
 - Intranet based ebay systems for disposal of excess stock
 - Carbon offset disposal schemes

3. Procurement
 - Introduction of secondary approvals
 - Include a green approach in every procurement decision
 - Re-use first scheme before purchasing new items
4. Travel
 - Patient transport
 - Staff transport – including cycle to work, car sharing etc.
5. Model employer
 - Supporting local opportunities and apprenticeships
 - Implementation of the veterans covenant
6. Culture
 - Awareness raising
 - Personal accountabilities
 - Sponsorship's
 - Visibility of recycling opportunities

For each of step of the plan an approach of mapping, baseline data gathering and improvement will be undertaken. Rated using RAG systems - Red, Amber, and Green. Appendix A (in development) maps progress to date and considers stretch targets.

8. Examples

Energy - During the last two years a replacement program for lighting has been in place. LED Lighting now covers approximately 65% of the estate with an intent to achieve 85% by year end 2021.

Intent – achieve a minimum of 85% LED light installations.

Energy - Reduction on Energy Use age. The interdependency of LHCH with the rest of the Broadgreen site has challenges with utility expenditure being attributed not on usage but on square meterage. Hence there has been no incentive to reduce energy consumption as it would have no impact on energy bills. This is no longer acceptable and we believe that as an anchor institution and as stated within our new Trust strategy, we would want to reduce our carbon footprint regardless. In relation to this specific action we will install smart metres to identified areas so we can validate and monitor energy consumption.

Intent – Installation of smart meterage.

Intent – we will scope the opportunity for the installation of solar panels on flat roof areas across the organisation.

Waste – Staff sessions have particularly highlighted waste as an issue. The lack of visible recycling, use of single use plastics, re-use of items and needless of use of plastics have all been highlighted as areas of concern. There appears to be limited opportunity on our estate to recycle and whilst all waste is sorted off site and recycled we believe there is merit in a) Following the waste – seeking assurance from the supplier that waste is sorted and recycled appropriately off site and b) more visible recycling stations are introduces a key places across the estate.

Intent – Assurance of recycling process by `Follow the Waste` initiative

Intent – Installation of Recycling stations at strategic points across the organisation.

Procurement – The opportunities to purchase differently are significant. We believe that a green approach should be a forefront of all procurement policies and approach. Many regular purchased items are reordered as standard practice or off shelf items with no consideration for green consideration.

Intent – Ensure the Green issues are at the forefront of purchasing decisions

Travel - As part of the exploration of strategic partnerships with other specialised providers, sustainability has been discussed. There is a strategic intent to look at these issues and develop a more integrated approach to areas of travel, staff travel, and joint car parking solutions.

Intent – We will explore car sharing, and other travel incentive schemes.

Culture - This is a significant new addition to our Green Plan. Staff sessions identified changes in behaviours and approach as principle driver for change. Enablers for behavioural change will need to be supported and staff are supported of

Intent – We will instigate a number of enabling projects including

- Climate Control Champions
- Communications – examples “We support climate awareness please do not place non-recyclable items here”. More visible examples of recycling are needed as staff want to do more.
- Understanding – common theme through sessions held has been a common understanding of what can be done. There is a lack of knowledge of key data – how much does it cost to run an area, ward, department, personal computer. For example, to leave a personal computer on overnight costs 70p. Staff are keen to turn data into changes in behaviour.

9. Conclusion

The trust recognises the importance leadership role it has in reducing its carbon footprint.

Through this process of review we have undertaken risk assessments and developed a sustainable development management plan (Green Plan) which takes account of UK Climate Projections 2018 (UKCP18).

The trust ensures that its obligations under the Climate Change Act and the Adaptation Reporting requirements are complied with.

10. Recommendation

The Board of Directors are asked to:

- Note the development of the Green Plan in line with agreed timescales.
- Provide insight and comment as appropriate
- Adopt the SDMP as a bespoke strategy for the Trust
- Approve production of the public facing document.

			Status RAG	Impact	Further Work	Impact	Timetable
 ENERGY	DM	Additional Low Energy Lighting		65%	Replace lighting on an ongoing basis and explore funding opportunities	85%	2020/21
	DM	Reduction in Energy Usage		10%	Obtain funding for installation of energy meters	90%	2020/21
	DM	Reduction of Site Footprint		10%	Identify surplus building and land and prioritise redevelopments	50%	2020/21
	AH	Improvements to Building Management Systems		10%	Boiler replacements have already made significant contributions. Reporting of such benefit needs to be established	20%	2020/21
	DM	Green Energy Systems		75%	Replacement of boiler serving nucleus plantroom (Elm Ward and Birch Ward)	100%	2020/21
	GH	Personal Accountability	NEW	0%	Digital System to implement process and group PC's for shutdown overnight	75%	2020/21
		Energy Alternatives	NEW	0%	Work with partner organisations	50%	2020/21
		Energy Alternatives	NEW	100%	Work with partner organisations	150%	2020/22
 RECYCLE	SH	New Waste Streams to ensure compliance		30%	Implementation of the bag to bed system in all ward areas	100%	2020/21
	SH	Recycling Initiative		60%	Awareness of what is recycled by Waste companies - Introduce local (site wide) recycling initiative "Follow the waste" awareness engage with staff to develop waste champions	90%	2020/21
	SD	Waste Reduction - in line with procurement changes	NEW		Seek to install new recycling points	25%	2020/21
	SH	Re-use scheme	NEW	0%	Sustainability day attended by Facilities staff - Networking with other Trusts	50%	2020/21
	Steve Doran	Intranet Based eBay system - more sustainable use of current resources	NEW	0%	WARP IT profile, pilot		2020/22
 PROCUREMENT	Steve Doran	Secondary Approvals	NEW	0%	New Policy		2020/22
	Steve Doran	Procurement	NEW	0%	New Policy		2020/22
 Eco Travel	SHOD	Travel	NEW	0%	New initiative required to review - Cycling buying scheme, bus routes walking into work Matt Back Comms, OD	50%	2020/21
	SHOD	Patient transport	NEW	0%	Engage LUHFT and SABA to explore opportunity	50%	2020/21
 GOGREEN	SHOD	Community Engagement/Model Employer		0%	Link with the Trust People strategy and apprenticeship opportunities		2020/22
	SHOD	Veterans Covenant Accreditation		0%	Will liaise with OD - We currently have a Veterans group within the Trust that has been relaunched - SH to link in with OD		2020/21
 Go Green CULTURE	SHOD	Personal Accountability	NEW	0%	Raising awareness campaign will include personal accountability	50%	2020/21
	SHOD	Sponsors	NEW	0%	Raising awareness campaign will include promotion for climate champions	100%	2020/21
	SHOD	Opportunity	NEW	0%	Raising awareness campaign will and engagement with Waste providers will identify opportunities	50%	2020/21
	SHOD	Awareness	NEW	0%	Issue regular communications	100%	2020/21
	SH	Recycle	NEW	0%	Raising awareness campaign will and engagement with Waste providers will identify opportunities	100%	2020/21