



NHS
Sustainable Development
Impact Report
2018



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Introduction

Welcome to the third NHS Sustainability Impact report. The Report provides an overview of UK progress on improving sustainable development. Featured case studies within featured at the 2017 NHS Sustainability Awards. The Campaign team have condensed them and summarized the key achievements within the Report. We have then calculated, per region, the carbon and finance saved. Alongside this, and new for 2018, we have included a snapshot of sustainable drivers including employment benefits, health benefits and travel impact. As we are all aware, sustainability encompasses so many aspects, therefore we have tried to encapsulate the benefits it can bring not only within the NHS but wider community.

In 2016-17 we witnessed fewer carbon and energy savings projects submitted for the awards, not surprising, perhaps, as these are general longer-term projects with high capacity and many have been reported in previous impact reports. Low hanging fruit has been achieved for many, but doubtless other projects are in the pipeline, awaiting completion.

It has been more difficult to determine the exact savings per annum, as large project reports cover several years as the projects come to fruition. We have captured savings within the years 16/17 in-line with our award entry rules. In some cases, like the introduction of paperless committees, the measurable savings on paper, printing and waste are relatively small but the impact in terms of effectiveness is very large. This is also true in reuse initiatives, whereby procurement of new items and waste disposal costs are avoided, creating savings in embedded carbon relating to new procurement.

This year there is a marked emphasis on projects which contribute to better patient care e.g. food provision. The outcomes from these are seldom measurable in terms of finance or carbon footprint but do have a major contribution to sustainable health. Additionally, there were many applications involving sustainable travel and transport which do produce substantial savings for the organisation in terms of carbon and finance. These often enable large savings for commuting staff and patients, together with a decrease in engine emissions, which contribute to the general health and well-being of the community but do not produce direct savings to the NHS Trust.

There is a very encouraging increase in interest from CCGs. Although achievements may appear small compared to those in large NHS Trust, they are significant at the scale of CCGs activities and there is an increase in applications coming from clinical areas rather than just EFM. We hope you find the Impact Report a valuable source of information and we would like to congratulate those featured and all the NHS for continuing to drive sustainable development forward. As we all know, action speaks louder than words and we are proud to showcase this action in practice whilst continuing to drive sustainable development for the NHS.

Enjoy!

Scott Buckler

Campaign Manager

NHS Sustainability Day

CARBON CHAPTER

Manchester University NHS Foundation Trust (MFT)

As a large NHS trust located close to the Manchester city Centre with over 13,000 members of staff, and over 1.5 million patient contacts a year, it is essential that we take proactive action to reduce our carbon footprint.

In 2012-13 we recorded a direct carbon footprint of 56,000 tonnes. We developed our Sustainable Development Management Plan (SDMP 2014-2020) and an annual update on our detailed action plan to deliver this strategy. Key elements of the strategy are; Energy & Carbon Management, Low Carbon travel, Transport & Access and Waste and Procurement.

“We have achieved a 16% decrease in emissions from waste since 2014”

We set an annual carbon reduction target of 2% per year – including direct and indirect emissions. This would be achieved by investment in energy efficient technology and infrastructure underpinned by a Trust wide staff awareness and behaviour change programme.

We worked to cut down our energy usage through a series of proven energy efficiency measures including; Boiler flue gas economisers, BMS optimization, Steam trap replacement, PC monitor power down, High efficiency lighting, Plant room insulation, and Variable speed drives.

The third year of our NUS led Green Impact programme was extremely successful and we have committed to a 4th year. The procurement carbon footprint has reduced by over 12% since 2014, primarily through reduced spend. Since 2013/14 our carbon footprint has decreased from over 215,600 tCO₂ to 203,600 tCO₂- a decrease of 5.58%.

This decrease in our carbon footprint becomes more impressive when it has occurred despite a 3%+ increase in patient contacts year on year. With the normalised figures, our carbon footprint per patient contact has fallen by 12.1%. Through energy related carbon emissions (Gas, Electric, Oil) we have seen an 8.5% reduction in our usage when normalised against patient contact figures. This is exceeding our targets of reducing consumption of 2% per year.

Our boiler flue gas economising work exceeded our targets, saving approximately 6.6% of gas consumption - the equivalent of 1,490 tonnes CO₂e and over £160,000 off the annual energy bill. The NUS Green Impact report states that it saved the Trust over 350 tonnes of CO₂ throughout the last programme, and cost savings of £65,000.

Since 2015, when our travel plan was set out, we have achieved:

- 4.3% decrease in single occupancy car travel (target 10%)
- 0.7% increase in bus travel (target 5%)
- 5% increase in active travel (target 4%)

To achieve these targets, we have promoted and communicated initiatives such as travel discounts, interest free loans and excellent cycling facilities, whilst also taking advantage of the fantastic public transport links available to us. Therefore, we are well on course to achieve our targets set for 2020.

Over the years we have built a strong relationship with TfGM – they have provided us with assistance to communicate alternative and lower carbon methods of travel for our staff members as well as providing £27,000 of grant funding to improve our sustainable travel facilities such as additional EV charging points and improvements to our cycling facilities.

We have also forged strong relationships with both bus companies which operate around site; First and Stagecoach, allowing us to receive discounts and offers on bus tickets and travel. Our travel plans have also been helped through the combined efforts of the Corridor Manchester group.

We have also achieved a 16% decrease in emissions from waste since 2014. This has also resulted in a cost saving for the Trust of around £40,000 comparing the expenditure on waste in 2014 and 2016.

Lancashire Teaching Hospitals NHS Foundation Trust

In a 3-month period 29 return journeys were prevented using remote monitoring. This equated to 1029.3km (623miles), 249kgCO₂e (0.24tCO₂e) *saved over 28 hours in commuting time and £255 in mileage costs (40p per mile). It also had a positive impact on patient experience and no hospital admissions or clinic visits were necessary after remote consultation. 62% (n=18) patients required use of rescue packs including antibiotics and mucolytics as well as remote ventilator changes.

ENERGY CHAPTER

North East Ambulance Service NHS Foundation Trust

The NEAS is committed to ensuring our impact on the environmental is minimised within all our key areas of operation. We are now almost three financial years through a 7-year Carbon Management Plan (CMP). The CMP, endorsed by the Carbon Trust and the NEAS Chief Executive commits the Trust to a challenging reduction in CO₂; 30% by 2020 from a 2012/13 baseline. The projects identified to reduce the NEAS footprint, once complete will save around £1.2 million per year in electricity, gas and diesel. Over the lifetime of the Carbon Management Plan these savings amount to £10.6 million. The plan outlines our systematic approach to tackling energy reduction projects across the entire NEAS estate; 57 Trust owned properties.

In the first year (2013/14) the plan low cost / no-cost and 'good housekeeping' projects were completed. These consisted of various projects including improving heating controls, switching off heating in garage areas, and improved insulation and draft proofing. These projects had exceptionally quick paybacks and created 'buy in' within our Finance Department and Executive Team for producing further savings with higher cost invest to save schemes.

The 'buy in' and dedicated capital through an invest to save budget allowed the Trust to deliver higher cost projects which had relatively short back such as LED lighting, variable speed drives and mini BMS systems along with renewable power in the form of solar PV. By the end of the 14/15 financial year, NEAS had accounted for a 15% reduction in electricity and a massive 38% reduction in gas against our 12/13 baseline and total cost savings of £161,000 since the baseline year, with the average payback of projects less than 4 years.

In 2015/16 the estates team identified that our impressive gas savings to date would start to flat line unless it was possible to install renewable heat into some of our properties. The Trust has a large estate with many properties on old gas fired boilers. There would be a need to renew many of these systems; however, updated efficient traditional gas fired combi-boilers would not produce the level of savings in either cash or carbon to make them a sustainable investment. Through our commitment in the CMP the Trust wished to reduce reliance on fossil fuels however renewable heat also needed to stack up as an excellent investment as well as being environmentally beneficial.

Renewable heat technologies considered were biomass and ground source heat pumps, however space for storing fuel and plant were the respective drawbacks for both technologies. Air source heating appealed due to that fact that it takes up very little space and that it is not dependent on any renewable fuel deliveries. Advice from a mechanical

consultant ensured that the design and specification was appropriate, along with confirming the savings and income we hoped to achieve.

An Ambulance station at Hexham in Northumberland was chosen to pilot the technology. The property was already equipped with 13KwP of Solar PV, which would help to power the 14kW pump, as well LED lighting which kept the rest of the building load relatively low. Upon successful tendering of the work, a report to the Trusts Executive Team was produced to outline the plans for Hexham and get their early buy in for possible further installations once proved successful.

“Reducing consumption of fossil fuels not only has a positive environmental impact but it also contributes to the Trust’s Cost Improvement Plan”

The specified Air Source Heat Pump (ASHP) was double the price of a conventional combi-boiler. The aging pipework and radiators needed replacing at a cost of £17,000 and this was excluded from the pay back calculations of both a combi-boiler and the ASHP.

Around a 15-20% reduction in gas would have been seen with a new combi-boiler, compared to a 100% reduction if the ASHP option is chosen, along with a RHI income. The paybacks based on the cost of both the boiler and the ASHP (minus the pipework and rads) is shown in the table below. A combi-boiler has a much longer payback compared to the most sustainable ASHP option. It was also identified that the payback of the combi-boiler was based on our current cost of gas and didn't include increases over time.

As air will not increase in price at all, it provides a far more sustainable choice.

| Option | cost | Annual savings in consumption | Income through RHI | Total savings pa | Payback(yrs.) | Co2 saving |
|--------------|---------|-------------------------------|--------------------|------------------|---------------|------------|
| Combi-Boiler | £10,000 | £212 | 0 | £212 | 47 | 1 |
| ASHP | £20,000 | £1034 | £1051 | £2086 | 9.6 | 7 |

The Executive Team approved the installation in August 2015 which was successfully installed in the September. Due to the successes at Hexham, the Trust have gone on to invest in three further schemes in 2016/17, 14KW systems have been installed at Peterlee and Coulby Newham, with an 8.5kW system replacing oil fired heating at Fishburn Ambulance Station, saving nearly £5000 pa[MA1] .

An investment of £78,000 was made for Hexham Peterlee, Coulby Newham & Fishburn. The savings in terms of fossil fuel reductions at the four completed properties are £10,675 in year 1, with income generated through RHI totaling a further £8000 per annum. The carbon emissions reductions at all four properties are just less than 50 tonnes which is a significant contributor to the Trust's CMP.

A good example of reducing costs and consumption is that of Coulby Newham Ambulance Station. This property had a running cost of around £10,000 year (gas and electricity) back in 2011/12. This was before solar PV was installed. After installing 25kWp of solar PV and the Trust turning off garage heating we reduced the running costs to around £6000 with an income through the feed in tariff (FIT) of just under £2000 per annum. Now the Air Source Heat Pump has been installed there is no gas consumption, and we have recently had planning approval for a 6kW wind turbine which will reduce the electricity costs to around £3,500 per annum. However, with FIT and RHI income of around £3,579 the property should be cost neutral from summer 2017.

Feedback from users at Hexham showed marked improvements in temperature control and a consequent improvement in staff wellbeing. The ASHP projects were highlighted in the Carbon Saver Standard Gold audit in August 2016 as an area of good practice and the Trust went on to gain accreditation after proving 3 years of energy reductions.

Reducing consumption of fossil fuels not only has a positive environmental impact but it also contributes to the Trust's Cost Improvement Plan, resulting in more finances being available to deliver front line emergency care and a positive patient experience.



FINANCE CHAPTER

Nottinghamshire Healthcare NHS Foundation Trust

Nottinghamshire Healthcare NHS Foundation Trust employs 8,800 staff in a variety of settings within the East Midlands and South Yorkshire including prisons and secure units, mental health and acute hospitals, health centres and directly within the community. Having effective and efficient information and communications technology (ICT) is vital for the Trust to deliver safe, secure and unobstructed services.

A review of ICT services identified that the existing data centre would not be able to support the anticipated growth of the Trust's complex system requirements. It was therefore agreed that an additional data centre would be built to provide a cost effective, in-house solution rather than adopting cloud technology. It was concluded that the best site for this would be Rampton High Secure Hospital, which is one of the UK's three high secure mental health facilities.

Although not the easiest site to develop, given the security restrictions and requirements, it was thought that having the data centre there would firstly improve the resilience of the existing ICT infrastructure. It would also improve the system for the hospital, as services could be delivered directly into the high secure environment instead of relying on a direct communications link.

Two proposals were considered for the key issue of cooling. The first, a traditional mainstream DX chiller system, the second, included an innovative 'wetted media' adiabatic chiller.

Financial and environmental sustainability factors featured highly in the tender specification and process. The chosen solution was the adiabatic cooling system, a first in the NHS for the company 2BM, who was the successful supplier. This solution primarily uses wetted media adiabatic evaporative cooling ('free cooling') as opposed to traditional 100% compressed refrigerant based systems.

There are several advantages to this type of system:

- Significantly reduces the risk of legionella as there is no aerosol production or carry over into discharge air
- Utilises outdoor air with low temperatures, as a free cooling source, to assist in chilling water
- Virtually no chemical water treatment which offers cost and environmental benefits
- Water usage reduced by up to 90% compared to adiabatic spray solution

- No disposable air filters to change every quarter – waste reduction
- No outside air directly introduced to data centre – less risk of external air pollutants and humidity shortening the lifespan of server equipment
- Minimal maintenance
- Reduced operating costs
- Short payback period

When compared to the 'business as usual' scenario i.e. traditional cooling system, the adiabatic cooling solution is expected to deliver an annual energy cost saving of £30,122.07, offer a reduction of 301,220.75 kWh, save 158 tonnes of carbon and have a return on investment of just 1.16 years.

The system, which was fully financed by the Trust, has been managed, installed and commissioned in a series of phases. The Construction Phase commenced in August 2016 and was completed in November 2016. The Commissioning and Testing Phase followed and completed in December 2016.

The system is now operational and the outputs both financially and in terms of carbon, will be monitored over the coming year. The chosen system will provide further value for money, if as predicted, energy prices increase, as the business case calculations are based on paying 10p per kWh. The adiabatic system will help to reduce the Trust's carbon footprint by approximately 158 tonnes of carbon.

North East Ambulance Service NHS Foundation Trust

Collaborative working between Finance, Estates and Environmental has allowed the Trust to integrate environmental sustainability into business as usual financial planning and reap tangible savings.

The Trust has managed to do this in 3 ways:

- The development of an Invest to Save (ItS) budget – progressive capital investment in energy reduction schemes. Initially £100k, doubling in 2010/11 with a projected £230k for 2017/18
- Integrating sustainability into all business case proposals
- Projects with environmental & sustainability benefits are key parts of the Trust's Cost Improvement Programme (CIP) The early development of an 'ItS budget has been fundamental to reducing the overall running cost of the

estate, ensuring a leaner operation. Trust wide upgrade from T12 light fittings to T8 was the first time an ItS project had been incorporated into the capital plan. A more collaborative approach between Estates and Financial Development was forged; the average payback of schemes was set to 5 years and a collaborative approach to developing the ItS capital investment plan began.

All potential ItS projects are calculated for payback, CO2, £ and kWh saved, and any income generated through FITs or RHI by the Estates team early in quarter 4 of each financial year.

In 2014/15 LED lighting created huge electricity savings for the Trust with an average payback of 36 months meant that an additional £115k was released to bring forward the LED projects and obtain the electricity savings earlier. A similar situation occurred towards the end of 2015 and additional capital was pumped into solar PV installations to ensure the investment was made before the FIT was cut severely.

Introducing good housekeeping / lower cost projects in 2013/14 meant that 15 projects were completed within the £20,000 budget, in comparison to three in the previous financial year.

The three projects in 2012/13 had generated £35,000 worth of cost avoidance and income with carbon savings of 88 tonnes. Comparing this with 2013/14 the 15 projects created £59,000 of savings and income and 203 tonnes of carbon; a combination of smaller scale solar PV projects along with the good housekeeping / lower cost projects. [MA2]

Since 2012/13 a cumulative total of £286,469 has been saved in electricity and gas consumption from rolling out the ItS projects. The Trust has invested just over £1,000,000 + Vat, with average payback across the year of just shy of 4 years. Within these savings we also have guaranteed income generated through both FIT and RHI schemes for 20 years.

Integrating sustainability and environmental management into business as usual financial development has only been possible due to consistent tri-partite working between Finance, Estates and Environmental. This has been led from the top by the Director of Finance and Resources and endorsed through the Carbon Management Plan by the NEAS Chief Executive.

The Green Environmental Ambulance Network (GrEAN) was set up in May 2011 to unite and share work carried out in ambulance services across the UK. Approved minutes are sent to the GrEAN Sustainability managers as well as the Directors of Finance Group to ensure linkage between the two portfolios of work.

FOOD CHAPTER

Newcastle Upon Tyne Hospitals NHS Trust

Improving the sustainability of the Catering Department at Freeman Hospital has been a long running project. The introduction of two anaerobic digesters for plate waste have saved over 3 Olympic sized swimming pools worth of water annually (versus the macerators they replaced). Additionally, the catering department have introduced their own waste compactor; reducing the volume of the recyclable waste, this reduces transport costs and CO2. The Freeman Hospital now also has two large compactors which compact all the general and dry mixed recycling waste.

“24% of food spend is on UK produced meat, fish, eggs, dairy products, fruit and vegetables, oil, sugar and flour.”

The new Carbon Trust Catering Standard provided the opportunity to improve the wider sustainability of the department with clear actions for continuing improvement. As a pilot site, not only are we one of the first hospital catering departments to achieve it, but we have been able to shape the way the standard is delivered to other catering facilities for the future.

We have improved communications of environmental initiatives and performance through posters, graphs and information on a notice board, prominently displayed in the entrance to the restaurant, posters and info by ‘features’ (i.e. free water fountain and reusable take away containers), training catering staff (including cleaners, servers and chefs), included information on our success in induction materials given to all new starters and in the quarterly Green News newsletter.

We had a programme of engagement for 2017, which ties into the Hospital’s Sustainable Development Management Plan. We were the first hospital in the Shelford Group of elite specialist NHS teaching Hospital Trusts to achieve the Silver Food for Life Catering Mark.

24% of food spend is on UK produced meat, fish, eggs, dairy products, fruit and vegetables, oil, sugar and flour.
15.7% of food spend is on food produced in region or adjacent county. (There is additional spend on local suppliers, who do not produce the food locally, not included in this figure but has benefits for the local economy).

7.1% of food spend is on organic food.

3.6% of the food spend is on Fairtrade certified products.

The majority of this comes from tea and coffee which is purchased from a local supplier

Additionally, on our menus there are:

- No genetically modified ingredients
- No undesirable additives or artificial trans fats
- Eggs from free range hens (only)
- No fish are served from the Marine Conservation Society ‘fish to avoid’ list
- All meat is from farms which satisfy UK animal welfare standards
- At least 75% of dishes on the menu are freshly prepared (on site or at a local hub kitchen) from unprocessed ingredients
- Drinking water is also prominently available, and free

We are now in discussions with suppliers to look at how we can increase the provision of local, organic, seasonal and Fairtrade food to achieve gold in 2017/18. At Freeman Restaurant, we have monthly meat-free days on the last Wednesday of each month. The monthly meat-free days build on our commitment to provide more seasonal, organic and locally sourced food for our patient and staff menus. The Freeman Hospital Catering Department has achieved the Silver Award in the Soil Association’s Food for Life Scheme.



The Catering department has supported the Better Health at Work Award by helping with initiatives such as the hydration day by supplying water, and providing a fruit and veg box for staff to purchase each month. The NHS sustainability campaign helps us to deliver two key goals of the Trust; to be more sustainable and to improve the health and wellbeing of our staff. We have increased the number of local producers and suppliers and thereby have reduced the number of food miles. This has reduced the carbon intensity of each meal, as well as reducing the other pollutants associated with road travel, such as carbon monoxide and nitrogen oxides.

A Food Waste Minimisation plan has been created as part of the Sustainable Catering Standard submission, to reduce the amount of food waste produced in catering. By reducing the amount of food wasted, we can reduce the carbon hidden in its procurement, storage and production.

In 2015 the refrigeration was updated and a more energy efficient refrigeration system installed. The total energy and carbon savings have reached around 50% due to the improved thermally-insulated walls, increased evaporator and condenser control as well as improved internal lighting. The ovens have also been replaced with more energy efficient ones.

Training provided to all our staff informed them of their responsibilities with regards to waste, water and energy and how they can report any issues they see. Engaged staff can help reduce the amount of wastage as they feel empowered to make a change, are aware of the behaviours to avoid, and know common areas wastage occurs in a kitchen to watch out for in the future.

Nottinghamshire Healthcare NHS Foundation Trust

The Trust has a Food and Drink Strategy and is working towards the Soil Association's Food for Life Catering Mark[MA3] .

It has worked in partnership with a local supplier to develop a range of low cost menu options produced from what is technically 'food waste'. These 'food waste' items which comprised off cuts of vegetables - broccoli stalks rather than florets for example, which would have been destined for landfill; were developed as part of a healthy and sustainable 'food taster event' for the patients of the Wells Road Centre, a low secure hospital which provides low secure inpatient services to adult men and women with mental disorder and for men with a learning disability.

Our catering Teams developed a three-course menu from vegetables and fruit delivered by the local supplier, which

cost just £32. The costs charged covered packaging and delivery of the chosen items.

This included cubed butternut squash, chopped leeks and onions, sliced potatoes, carrot and sweet potato, all of which were used to create such culinary delights as butternut squash dahl, carrot and sweet potato fritters, cheese and potato pie and the most delicious carrot cake ever!

Approximately 85 patients (from all five hospital wards) visited the dining room, which is linked directly to the catering kitchen, to taste and comment on the food. The project has the capacity to deliver significant savings. The food taster confirmed that cost savings do not always equal a compromise on quality.

Following on from this taster event, it has been agreed that these products will be purchased on a routine basis, replacing the normal products, guaranteeing continual savings to the bottom line.



INNOVATION & DIGITAL CHAPTER

The Shrewsbury and Telford Hospital NHS Trust

When one day the CEO announces that the Trust Board should go paperless, it's not something that can just happen overnight. But SaTH has achieved just that through good planning, personal commitment and cultural change.

The CEO's pledge proved to be the operational shove that the admin team behind the Trust Board had been wanting for some time. The monthly Trust Board meetings are unenviably complex and generate several hundred pages in a single typical meeting pack.

“the switch to e-readers for the Board saved £6k over five years.”

The Co Sec set to work mobilizing the team to make it happen. The Head of IT acquired an off-the-shelf solution in Citrix ShareFile which offered a secure and reliable cloud based way circulating documents. A business case was produced for electronic document readers, in this case iPads, for the 15 strong Trust Board members to use. These standardised devices around the table were important for the Chair of the Board, particularly for meetings in public.

The equipment was justified on cost grounds over their lifespan against print costs alone. The Corporate Governance Manager undertook the role of senior administrator for the system, issuing the equipment and rolling out training to the Board members and PAs. This was not a simple task, particularly convincing non-executive directors of the benefits of eschewing pen and ink. The Governance Manager oversaw the procurement of appropriate software so meeting papers were optimized for reading devices.

Within a month, everything was in place and the first 'Paperless Board' meeting went ahead – and it was an incredible success! So much so that all the Chairs of Committees reporting to the Board immediately requested access to this fantastic paperless system. We have since rolled this out across the Trust to include operational and local governance meetings plus general information dissemination.

There is also the ability to upload/download large and sensitive information in a secure environment with notification to selected individuals that info is available through their preferred device. Each administrator has personal responsibility for their own area, and housekeeping

rules have been set up so that all information on the system is standardised and current. It works well because the Corporate Governance Manager is always there to help and advise, eliminating the requirement for support from IT.

From the get-go, the Trust achieved a cost savings from mass avoidance of printed paper, plus delivery spend and associated disposal costs. The uptake has been so widespread, all areas are using the system. Infrastructure impact has been minimal, reducing the need for large emailed attachments and notifications.

A single meeting of the Trust Board would typically consume 12,000 sheets of paper (nearly 2 trees-worth), together with the energy required to produce hard copy. Exponential savings and resource reductions have subsequently been realised through roll-out of the paperless system across the Trust for meetings and information sharing.

For our own staff, we have reduced printer emissions and staff exposure to toner, polymer resin, ozone, light and ultraviolet light, noise and heat, and lasers through this initiative. We have realised further intangible benefits through the reduction in potential stress levels as any 'last minute' document changes can quickly be incorporated into electronic documentation; errors are effectively resolved, and physical effort reduced.

The initial aim of this scheme was to streamline the Trust Board meeting. To this extent, the switch to e-readers for the Board saved £6k over five years. Paper and printing costs for this meeting alone amounts to savings of £2,000 per annum plus a reduction of 545kg/CO2 emissions/1464 litres of water (paper production) and 6kg of potential landfill waste – all now avoided!

The admin time saved across the Trust for the 40+ committee meetings within the corporate structure alone amounts to savings equating to c. £10,000 pa.

Aneurin Bevan University Health Board

In November 2015 Aneurin Bevan University Health Board (ABUHB) commenced a trial with the Thermal Compaction Group (TCG) to collect and process polypropylene instrument wrap from the Hospital Sterilisation and Disinfection Unit (HSDU) for recycling. The project is a 'world first' as it is the first time that polypropylene wrap has been processed on site using a Sterimelt machine.

Initially, TCG worked closely with Kimberley Clarke (now Halyard Health) to find a sustainable solution for processing clinical sterilisation 'Blue' wrap, which is extremely light and when in large volumes is difficult to control. The machine was successful working in a factory environment using new,

unused wrap from packs supplied by Kimberley Clarke, but it needed to be installed in what would be its natural working environment in the confines of a hospital.

An agreement was reached with TCG to install a Sterimelt machine (in fact the prototype machine) into St Woolos Hospital as a trial, as it had a waste compound ideal for processing the wrap. This would enable the hospital waste operatives and the environmental team from ABUHB to fully evaluate the machine and the process. It also provided the Health Board with the relevant data relating to disposal costs saved against revenue achieved.

Before the introduction of the trial all the polypropylene wrap from HSDU was being collected into Orange Hazardous Waste bags and consigned as Infectious Waste at a cost of £412/tonne. Most of the material which comes back from theatres wrapped around the instruments is clean and uncontaminated so is suitable for recycling and reprocessing into new materials.

If any items of wrap are received in HSDU that are heavily contaminated with blood or bodily fluids they will still be disposed of as infectious waste in line with WHTM 07/01.

The Sterimelt machine reverses the manufacturing process by applying carefully controlled heat to re-melt the Blue Wrap material and converts it into a liquid that will flow into a mould cavity to create a block of material that is dense and sterile.

The operating temperature needed to melt the material is significantly higher than normal sterilization thresholds but lower than the carbonisation or deterioration level of the material so the end block of solidified material, based on current commodity markets, should have a recycle value. The machine produces one 12 - 15Kg block of sterilised polypropylene during each cycle with a volumetric reduction of 85%.

As polypropylene is naturally 'aromatic', the issue of external odour needed to be addressed within the hospital confines and neighbouring domestic residences. This was achieved through several modifications to the machine changing the activated carbon filtration media and adding an electrostatic scrubber to capture and remove any odour and fume from the process.

There was an initial challenge to overcome, that of objections to operational change and to get the co-operation of the hospitals HSDU teams to segregate the wrap out into a single identifiable stream that could be taken to the Sterimelt's working location. These changes needed the manipulation and alteration of some waste protocols and the final quality control was provided by the machine loading operative. The involvement and approval of Natural Resources Wales (formerly the Environment Agency in Wales) would also

need to be considered to maintain operational compliance.

From the start of this project communication was key so we setup a working group made up of key stakeholders from within the Health Board this included (Facilities Manager, Waste Operatives, Environmental Team, HSDU staff, Fire Safety Officer, Estates Manager, Health & Safety Advisor and representatives from TCG).

The purpose of this group was to engage with all staff right from the start as there was no template or start-up guide to use as we were the first! Every part of the process was mapped to make sure that we had considered everything from fire safety to manual handling.

This clear communication process has continued throughout the project supplemented by regular 'Toolbox Talks' attended by all the Health Board Stakeholders including Director of Facilities, TCG team, and all the operational waste team staff at the hospital. This regular communication has fostered good working relationships and assisted in the development of the 'world first' innovation.

Moving forward there is great potential to scale the Sterimelt concept up both within Wales, the UK and throughout public and private hospitals across the world. There has been extensive interest across the UK already with visits from large London based acute Trusts and Health Boards in Scotland. Interest has also been received from South Africa, Australia, Europe and the USA.

•'World first' within the healthcare sector using innovative technology

•Reduction in Hazardous Infectious Waste (reduction of 6 x 770 litre clinical waste bins per day from HSDU at Royal Gwent Hospital) - 2 tonnes per month

•Cost savings related to the reduction in clinical waste - £1,000/month

•Income generation potential as the reprocessed blocks of polypropylene have a rebate value – between £150 - £300/tonne (depending on market conditions)

•Environmental benefit associated with the recycling and reprocessing of the material instead of consigning the material as infectious waste and sending it for processing through a carbon intensive heat treatment process

•Volumetric material reduction of 85%

•Future potential for closed loop recycling within the NHS via 3D printing technology

•Creates a closed loop recycling model and benefits the circular economy[MA4]

University Hospitals of North Midlands NHS Trust (UHNM)

This landmark waste project is based on the mixing of two non-hazardous waste streams and disposing of them together with approval from the local waste to energy plant and the Environment Agency (EA). This radical new approach has declassified a large proportion of waste to 'non-hazardous', therefore, the Trust does not now need to use a specialist, clinical (hazardous) waste disposal contractor.

The project is innovative but simple and low risk. Any local transport company can transport non-hazardous waste. This allows access to a wider market and competitive pricing. Use of a local disposal plant reduces large transport costs imposed by waste contractors who dispose of the waste further afield. Using a local transport company means fewer transport emissions and use of local transport and local waste management bolsters the local economy.

“A Royal College of nursing study showed a possible £5.5 million saving to the NHS”

Due to two non-hazardous waste streams being disposed together (by incineration at a Waste to Energy plant), the EA has approved for these wastes to be stored together in one compactor and dual consigned with European Waste Catalogue code 19 12 12 'other wastes (including mixtures of materials)' which will cover both Domestic and Offensive waste streams.

This is a landmark approval by the EA due to Waste Storage regulations specifying that wastes should be segregated by type when stored and each consigned separately (as is currently happening at UHNM; Domestic waste 20 03 01 and Offensive waste 18 01 04).

The Waste team have currently achieved a huge [MA5] ~75% diversion and declassification of the hazardous waste stream to the cheaper Non-Hazardous waste stream. The offensive waste stream represents the Trusts largest and default waste stream unless a known infectious patient is being treated. The waste team has further rolled out the domestic and recyclable waste streams to facilitate a diversion of clean waste from the expensive clinical waste streams.

The waste project is forecasting [MA6] £100,000 recurrent

efficiency savings made by segregation systems and diversion from clinical to offensive.

Potential carbon reduction by the proposed route is large due to the reduction in transportation required. The weekly mileage will be reduced to around 42 miles from 1064 miles per week, a huge 96% reduction. Disposal by incineration and not landfill is environmentally more favourable.

Approval to store the waste as 'mixed' will mean that the waste can be carried together in one compactor, meaning fewer transport trips and so fewer emissions. Approval to store the waste as 'mixed' means easier handling of waste and efficient use of space with the Service Yards.

A Royal College of nursing study showed a possible £5.5 million saving to the NHS if only 20% of Orange bag was diverted to offensive, UHNM are currently safely and compliantly diverting around 75%. The World Health Organisation indicated that at least 85% of Healthcare waste was non-hazardous.

It was decided to create a cost saving system which was both simple yet comprehensive allowing the UHNM to divert waste with minimal disruption, and at the same time creating a sustainable, compliant and safer patient environment and a culture of empowered staff.

West Lancashire Clinical Commissioning Group

West Lancashire Clinical Commissioning Group (CCG), Liverpool Community Health and Southport and Ormskirk NHS Hospitals Trust have been working together to introduce a Short Message Service (SMS) Telehealth System called Florence or FLO to help enhance how care is delivered and to help our local citizens suffering with Heart Failure, improve their overall Health and Wellbeing.

The pilot supported by the Innovation Agency for the North-West Coast went Live last year (2016) and has been used to remotely support and monitor patients with Heart Failure condition.

Quite simply, FLO is an effortless service designed and developed to provide support and advice for patient to manage their own health condition. FLO combines the expertise of health professionals/designated patient team and the convenience of their own mobile phone to send their health professionals their vital readings and corresponding advice to act on.

If the patient needs a little more assistance, FLO helps them to monitor their vital signs such as Blood Pressure (BP), Pulse, Oxygen levels and many others.

With personalised protocols designed (to suit the needs of individual patients) by healthcare professionals, FLO can also pick up readings that may show patients would need urgent care and attention, thereby assisting in early intervention which can sometimes avoid unnecessary hospital admissions.

This has recently been evidenced in a recent case of an 85-year-old patient (illustrated under Economic, Health and Carbon footprint).

The technology allows health professionals (Doctors or other healthcare professionals such as Nurses & Community Matrons) to design specific protocols (define messages, set up parameters and alerts, etc.) on FLO for their patients. FLO enables Clinicians to capture real time information about their patients at any time via a simple messaging interface.

The solution prompts the patients to submit their vital readings. Depending on the readings, prompt advice & guidance is given to the patients; Clinical alerts (if any) are sent to the Clinicians.

Recent feedback captured from patients using FLO, following its implementation, have shown:

- Significant reduction in the number of face-to-face Clinician-Patient contact, thereby reducing hospital admissions/unnecessary visits
- Empowered patients to manage their health conditions better
- Freed up Clinician's time to see other patients who need urgent care
- Delivered positive patient experience due to a sense of personal support and flexibility offered by the Tele Health solution
- Patients felt more confident co-managing their condition
Patients have said to us:

"I feel more in control and can check my observations before contacting my Community Matron."

"It is reassuring to know that someone is checking my 'vitals' regularly."



PROCUREMENT CHAPTER

The Shrewsbury and Telford Hospital NHS Trust

Our board Sustainable Procurement Strategy approved by the Trust Board in 2016 and accepted the business case for ethical procurement. The policy has been communicated to all relevant staff and suppliers.

We have undertaken labour standards risk assessments for all our major procurements. Our suppliers understand our expectations on labour standards and fair working practices. Our key suppliers provide detailed information on measures they take to ensure our standards are upheld within their supply chains.

“The Trust has calculated a baseline carbon footprint of 36,378 tonnes of carbon (including Pharmacy) as a result of the Trust’s procurement activities in the financial year 2015/16.”

There is a requirement for suppliers to demonstrate management information as part of ongoing contract awards, management and reviews. We collect data on the impacts of our ethical procurement processes and report on these to our Board. Where appropriate, clinical staff and patient groups are consulted on ethical issues to inform future procurement approaches.

A sustainability questionnaire is issued annually to the Trust Top 20 suppliers with high carbon usage. This approach influences suppliers to align to our sustainability objectives.

•‘Contracts Finder’ is used to advertise all projects over £25k to allow SMEs to bid for contracts to encourage support of local businesses

•Sustainability was one of the evaluation criteria on the recent major contracts for Linen & Laundry, Managed Print Service, and the Pathology Managed Service. These suppliers are required to assist in the monitoring of impacts of their services on the environment

•Active participation in Good Corporate Citizen model and

contribution to the NHS Sustainable Procurement Forum to improve current carbon assessment techniques related to procurement

- Increase in locally sourced products, particularly in catering
We have set ambitious targets to minimise the environmental impacts associated with travel to our sites and delivery of goods and services by increasing stores capacity with bulk buy and stocking of the most popular Top 100 items thus reducing singular deliveries to our hospitals. Stores are now including Path Lab issues which harmonises deliveries to just one delivery location rather than two.

We monitor and report on the sustainability impacts of the key procurement decisions in our organisation and we review spend against the Sustainable Development Unit E-class prioritisation tool. We are continually reducing distributors by consolidating items to NHS Supply Chain or Bunzl.

The product list is changing regularly with new product implementations and standardisation across the Trust and constant reviewing of ordering patterns to consolidate spend. Specific impacts to the environment are included in the evaluation criteria for contracts and are included in contract KPI's where applicable.

Our catering, laundry and facilities contracts all specify low water use. The Trust has calculated a baseline carbon footprint of 36,378 tonnes of carbon (including Pharmacy) as a result of the Trust's procurement activities in the financial year 2015/16. This equates to a 22% compared with 2012/13 and an overall reduction of 13% relative to total spend.



PUBLIC HEALTH CHAPTER

Lancashire Teaching Hospitals NHS Foundation Trust

There are many studies detailing the benefit of telemonitoring in reducing carbon footprint within NHS services. Within the Lancashire and South Cumbria Long Term Ventilation Service (LSCLTVS) we have invested in a home ventilator remote monitoring system (EncoreAnywhere TM).

Lancashire and South Cumbria is a geographically diverse area in the north west of England. There are many remote areas and patients living in isolation. The region is subject to heavy rain fall and natural disasters including flooding and power cuts. This not only makes it difficult to access patients but difficult for patients to access healthcare.

Over a 3-month period we analysed the telephone consultations of all 138 patients under the care of the LSCLTVS (80 patients on remote monitoring systems). Patients or carers that called reporting deterioration in a clinical condition that could not be rectified over the telephone were identified.

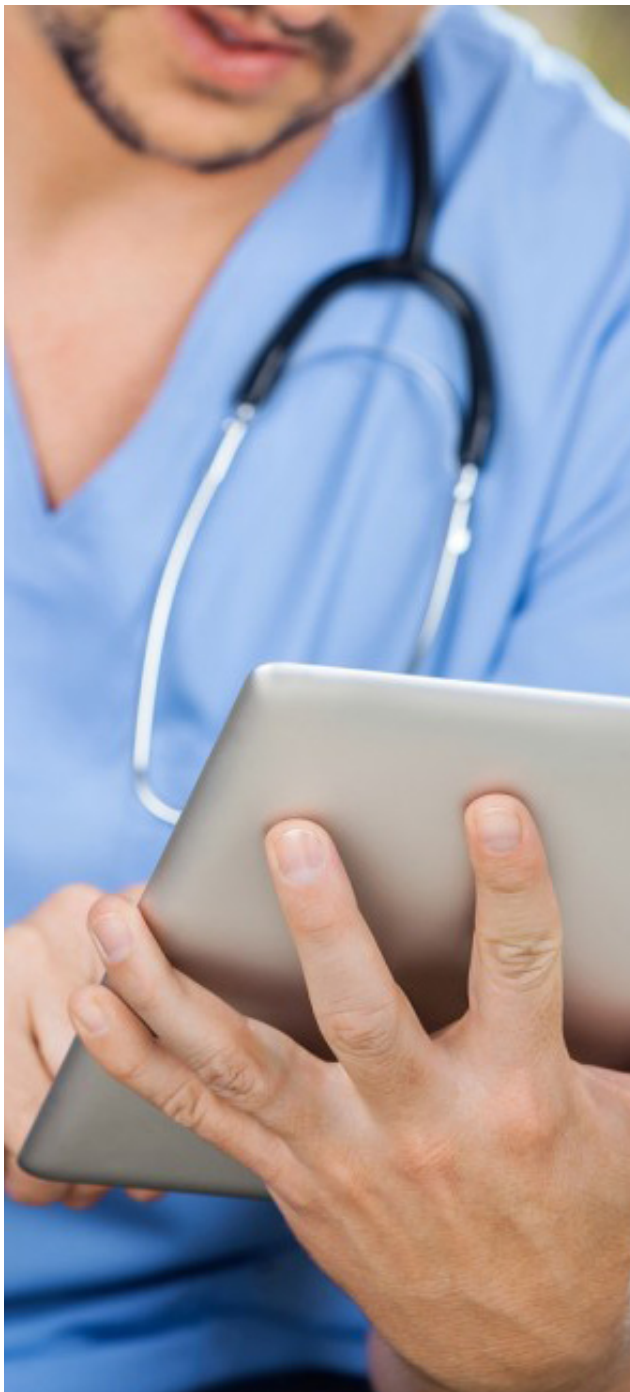
The normal intervention that would follow would be a visit from the GP or community respiratory team, hospital admission, clinic visit or home visit from the ventilation team. A ventilator review was indicated in 29 patients which would normally necessitate either a clinic visit to Royal Preston Hospital or a consultation at home. However, as these patients had remote ventilator monitoring via the Encore Anywhere operating platform we were able to review data and make changes remotely.

Patients also reported improved satisfaction and compliance with home ventilation. Home mechanical ventilation (HMV) is a recognised evidence-based intervention for patients in chronic respiratory failure (CRF). However, there is a paucity of evidence on the adherence to this treatment. This study examined the adherence of HMV and evaluated the clinical outcomes associated with adherence in a variety of patient populations – namely neuromuscular disease, chest wall disease, obesity hypoventilation syndrome and chronic obstructive pulmonary disease (COPD).

Adherence data was downloaded through remote monitoring. Primary outcomes included changes in blood gases at 3 and 6 months, and hospital admissions 12 months pre- and post-ventilation. Qualitative outcomes were obtained through a questionnaire conducted via telephone interviews.

Patients undertaking remote monitoring of HMV demonstrated an adherence rate of 90.3%, defined as more than 4 hours of ventilator use/night (mean [SD] = 7h17min [2h53min]). No significant difference in adherence was found between patients of different aetiologies. The

blood gases improved significantly at 3 months compared to baseline ($p < 0.05$). However, there was universal trend for these parameters to return to baseline at 6 months regardless of the underlying disease. HMV reduced hospital admissions by 1.07(1.27) per individual ($p < 0.0001$) and was most significant in the COPD group ($p = 0.005$). All patient groups indicated that HMV improved their quality of life.



REUSE CHAPTER

Great Ormond Street Hospital for Children NHS Foundation Trust

The Trust dispose of over five (5) tonnes of bulk waste and WEEE materials every month. By implementing a strategy to reuse high quality items, the Trust is able to divert a significant amount of these items from being disposed of each month.

REyooz is an innovative application whereby registered user take a photo of an unwanted item. When the photo is uploaded to the REyooz app, image recognition software cleverly recognises the item and generates a description. REyooz then posts details of unwanted items to interested parties. There is no limit to the size, shape or type of item. This means beneficiaries such as charities and the Trust's internal staff can save money on items they would otherwise have bought, and donors i.e. the Trust can save money on waste disposal costs.

If the Trust continues to build on this pattern of reuse and re-distribution to divert materials from bulk waste, they will potentially be able to save £15,000 - £20,000 a year on disposal costs (a saving of £1,500 per month)!

Newcastle Upon Tyne Hospitals NHS Foundation Trust

In total 126 tonnes of furniture was either donated to 3rd parties (5 tonnes) or broken into component parts and recycled (121 tonnes). The Trust saved £6,500 in waste costs.

100% of dismantled items were recycled; 42 tonnes of wood, 77 tonnes of metal, 2 tonnes of plastic and even 0.5 tonne of fabric was recycled. The wood was recycled by a local board manufacturer into new board. The same company also took the plastics. Metal was collected and stored locally for onward recycling.

Procurement: £77,044. (This is money not spent on new furniture or equipment.)

CO2: 33.602 tonnes. (This is carbon emissions associated with new procurement.)

Waste: 16.950 tonnes. (This is waste not sent for bulky waste disposal.)

Waste Costs: £2,262 (This is money not spent on bulky waste disposal.)

CO2e Cars: 14 (CO2 emissions equivalent to taking this no of cars off the road)

It should be noted in addition that because of these waste movements the Trust was able to demonstrate that it recycled-reused 42% of its non-clinical waste in 2015/16. This is the first time the Trust has recycled more than 40% of waste and was an increase on 38% the previous year.

The total cost for the removal, dismantling of furniture and the onward recycling of all materials was £10,332.60. As previously stated this saved £6,500 (39%) on anticipated waste costs had the trust used established routines for bulky waste.

5 Boroughs Partnership

A patient-centred initiative has supported furniture reuse and brought about a real shift in the view afforded to unwanted furniture and what was automatically viewed as waste previously.

The 'Shabby Chic' project was started two years ago by two activity coordinators, Sarah McKeown and Laura Lockhart, from the Trust's mental health inpatient wards in Warrington. They select old items of furniture from our second-hand furniture store and then work on restoring the items during activity sessions with the patients, teaching them skills to refurbish the items.

When they have a stock of around 20 to 30 finished pieces they then arrange a display and auction day which is open to all staff in the hospital, enabling them to bid on the finished items

The benefits are multiple - patients learn new skills whilst enjoying the therapeutic benefits of restoring the furniture, the wards generate funds for future activities, the items are saved from being sent to the skip and everyone involved learns the value of these items beyond being just waste.

Public Health Wales

During 2016 Public Health Wales (PHW) relocated from several smaller satellite offices across Wales to one new large open plan office in Cardiff Bay (51,000sft over 4 floors) incorporating the transfer of around 550 staff. PHW vision was to create a unique workplace environment designed to encourage a collaborative, social and learning focused work place which embedded sustainability as a core principle.

The brief produced for furnishing the building emphasised the need for environmental, economic and social sustainability to be demonstrated throughout the refit. To achieve this PHW took a new and innovative approach to procuring office equipment, furnishings and flooring using as much reused / remanufactured equipment and products as possible. PHW wanted the successful bidder to use as much of the existing office furniture as was reasonable:

repairing and refurbishing where necessary and adding new elements as required.

The exercise was based on a collaborative approach to securing a required outcome rather than a detailed specification of numbers and needs. Suppliers were invited to provide tenders which, in a variety of means, would meet the client's design and supply needs.

PHW, as an organisation is dedicated to improving public health and well-being, felt that this objective should extend across all their activities, including procurement of goods and services, and the refit was identified as an opportunity to demonstrate this approach.

We already had many quality furniture and fittings in our existing offices across Wales and it was felt that these items, with some cleaning, refurbishment and re-design, could repurposed for use at the new office space in Cardiff Bay instead of being sent to landfill, and could be combined with other new or re-used items in a cohesive and functional style appropriate for the new office space.

The tender brief stipulated the need to combine re-used and remanufactured items as a core requirement, along with a design concept fitting with PHW's aspirations for a work space incorporating goals for collaboration, socialisation, learning and focus, whilst meeting the functionality of the space required to enable delivery of day to day aspects of their work.

Plans also needed to take in account the sustainability challenges for the public sector in Wales with proposals taking in to account the requirements of the Welsh Government's Wellbeing and Future Generations Act 2015.

The bulk of the furniture, used for the new office was either reused/re-manufactured from existing furniture or sourced from elsewhere, many of these items, had they not been reused, would have been destined for landfill. In the refit 1,143 individual items were reused, these items were recovered and cleaned, in addition a further 1,270 pieces were re-manufactured (where parts are repaired, reconditioned, or replaced).

Desk tops were repaired or resurfaced, with the main metal structures just requiring general cleaning or repainting and chairs and soft furnishings being recovered with new fabrics, items included:

- Office chairs, canteen and meeting chairs*
- Carpet tiles*
- Office pedestals*
- Desk high storage cabinets

- Sofas, white boards and coat stands

Key Facts

Around 2,563 items were used for the office refit:

- 45% of the items being re-used
- 49% being re-made
- 6% of the items were sourced from new stock.

A mix of new and reused carpet tiles were used to carpet the offices floor areas; in total 4685 sqm of carpet tiles were installed with 670 sqm (14%) of these being re-used. The percentage of re-used carpets was relatively low due to consistency of re-used stock rather than general availability.

“The C02 saving achieved is equivalent to traveling around 400,000 miles by car, or taking 41 cars off the road for an entire year.”

In addition, the flooring concept was designed to be accessible to all users with many the walkways designed with bespoke colour contrasts; this design feature meant that a greater percentage of carpet tiles needed to be sourced from new stock to meet the design needs.

Although the ratio of recycled to new was lower than first anticipated the use of reused tiles supplied and fitted by Greenstream, made a significant contribution to the project as it aligned closely with PHW’s overarching aims and objectives of extended community benefits.

Based on the reuse of 729 office/meeting room desks – 50.04 tonnes of C02 has been saved

Based on the reuse of 979 office/meeting room chairs – 57.70 tonnes of C02 has been saved

Based on the reuse of 522 office pedestals – 20.67 tonnes of C02 has been saved

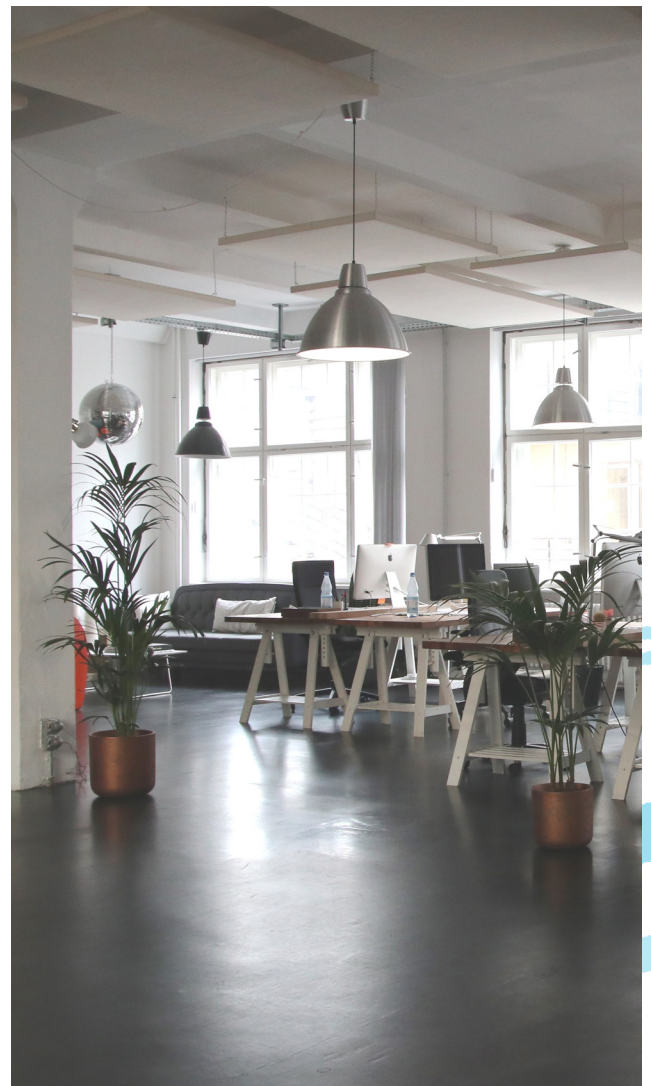
Based on 670sqm of re-used carpet tiles – 5.7 tonnes of C02 has been saved

In total the project saved around 134 tonnes of C02 which

could fill up 804 double decker buses or 130 hot air balloons. The C02 saving achieved is equivalent to traveling around 400,000 miles by car, or taking 41 cars off the road for an entire year. Waste to landfill Waste to Landfill - 41 tonnes of waste has been diverted from landfill.

PHW completed the project and began moving staff into their new building No 2 Capital Quarter, Tyndall St, Cardiff in September 2016. The move was completed by the end of October 2016 and has been a resounding success with staff. So much so that we have implemented our ethos on sustainability with we have done in Cardiff across the rest of Wales.

Staff in Newport will be moving into their new premises at the end of March and staff in one part of South West Wales staff will be moving into their new premises at the end of the Summer 2017.



TRAVEL & TRANSPORT CHAPTER

The Shrewsbury and Telford Hospital NHS Trust

In partnership with our two local authorities, the Trust jointly appointed a Sustainable Travel Plan coordinator who has made significant progress in influencing our staff to travel more sustainably, particularly cycling, and walking, through a number of initiatives. We re-branded the bicycle user group, “Greener Travels” and grew this from 6 to nearly 200 staff users.

A site audit monitored both the location and manner of cyclists’ parking. After wide staff consultation four locations were chosen to improve cycle parking at the Royal Shrewsbury Hospital. Our objective of giving cyclists the opportunity to park as close to their workplace as possible, it an easy choice of cycling to work and reducing the perceived barriers (“nowhere to lock bike, close to my workplace, in a visible location”).

These shelters went up in late September 2015 and we have seen an upward trend in people using them with a 12% increase over the winter months. Refurbishment and conversion of existing a changing room into a male and female shower and changing areas was also undertaken. We now average a daily rate of 60-80 staff cyclists visiting the hospital site. This initiative won a ‘Gold Medal’ in the Built Environment category in the Green Apple Awards in 2016.

For the Trust to be fully sustainable, a suite of measures has been rolled out including;

- Up to 20% off seasonal bus fares was negotiated with our local bus company and being sold on site through our cash offices: over £11k worth of tickets have been bought by our staff
- A new footpath was installed, funded via our local authority, connecting a vital walking and cycling traffic - free route to the Hospital site
- Workplace Challenge – the Trust is taking part in the workplace challenge for a fourth consecutive year, with a key focus on promoting physical activity in the workplace and/or commuting to work as an active traveler. Hundreds of members of staff have taken part and certificates were presented to top performers in 2016.
- Dr Bike sessions – five Doctor bike sessions held on site, giving staff the opportunity to check and maintain their cycles for free, whether they cycle to work or cycle for leisure.
- Cycle Security marking – working with West Mercia

Police and British Transport Police, both forces came on site and offered free Cycle security marking and advice on locking your cycles.

- Active travel roadshows continue to be held regularly on the Hospital Trust sites
- Refurbishment of bridleway and the creation of link connecting the PRH to Wellington town centre with a safer cycling and walking route. Wayfinding routes to each site are now being promoted by both LAs and after lobbying, Network Rail has even changed their station map to highlight hospital sites within walking distance of the train station
- Eighty cyclists cycle to our sites every day, which saves the Trust the expense of creating 60 parking spaces costing £150,000.

University Hospitals of North Midlands NHS Trust (UHNM)

Our Transport Department are keen to take a lead on reducing the impact of their travel on the environment and on our costs. An extensive review of the fleet showed that when replacing our vans, electric vehicles were a better choice as running costs are lower and purchase costs included a government grant, making them even more cost effective.

Other vehicles in the fleet have been updated to lower emission vehicles, further reducing the CO2 footprint of the fleet. UHNM has recently taken delivery of 9 new fully electric vehicles. The vans (Nissan’s ENV-200s) have a range of around 100 miles, making them ideal for our high frequency but short journeys, for example notes deliveries.

Reducing diesel use for this type of journey in our fleet makes a positive contribution to the local community and the environment through the reduction in CO2 and particulate emissions which have been shown to have adverse health outcomes.

They are noiseless – in fact at speeds of under 19 miles per hour the vans produce their own artificial white noise so that they can be heard by pedestrians!

Alongside these improvements to our range of fleet vehicles we have set up publicly accessible charging points for electric vehicles. There are four points now on site that are part of a nationwide network. The points are visible to network members which means that they are accessible to staff and the wider public to use

York Teaching Hospital NHS Foundation Trust

In May 2016, the Trust and York City Council reached an agreement to share the role of Travel Planning Coordinator. This has seen productive links being forged for the benefit of both. A staff survey in 2016 received 1050 responses, providing invaluable data for projects and innovations to benefit staff travel, reduce costs and lessen CO2 emissions. Thus far the work has seen the following successful projects take place:

- Nine electric vehicles and 11 charging points introduced to the Trust's estates repairs and delivery fleet. The charging points are located throughout the region to ensure seamless operation

- Liftshare -The relaunch of the scheme through promotional events and staff communications increased the numbers registered on the scheme by 30%. As of March 2017, the scheme has 467 members, 74 Liftshare 'teams'.

- Staff pool car system (Enterprise) -Since May 2014, when the scheme was first launched at York Hospital (subsequently this was expanded in 2016 to Scarborough and Malton hospital sites) has had over 500 staff members sign up to the pool car system (across 5 locations) and make the following savings:

- £70,000 savings (enough money to pay for 3 health care assistants per annum)

- 40% reduction in CO2 emissions as compared to the emissions from staff using their own cars

- 1.5 million miles removed from 'grey fleet' travel

- Many new staff pool cars added to the existing fleet at the York and Scarborough hospitals Over 1000 journeys per month transferred from costly staff mileage claims to economical cars. The pool cars all have 1 litre petrol engines which are no more than 2 years old ensuring that they run at 99gm CO2 per km.

New Taxi Contracts included environmental commitments and many bidders were keen to advise the Trust of a range of measures that they had introduced to reduce emissions, including using hybrid vehicles for the Trust's requirements and logistics software to plan the optimum/ lowest mileage route for their vehicles.



Yorkshire Ambulance Service NHS Trust

Over the past few years YAS has been at the cutting edge of ambulance design to reduce the impact of our vehicles in relation to air pollution and carbon emissions.

We have been working hard to cut fuel use to achieve cost savings and reduce our carbon footprint. We have assessed and consolidated our fleet to ensure that the correct number of vehicles are used for the correct purpose.

The vehicle type is essential to ensure fuel efficiency. Our vehicles are serviced up to six times a year to ensure that they are always running to the best of their capability.

“we have managed to reduce our fleet emissions by 15% since 2012.”

We have increased our bunkered fuel use on our ambulance stations, which has reduced the miles travelled to local refueling stations. We have run trials with a variety of different electric and hybrid vehicles.

We tried a methanol fuel cell to eliminate the issue of idling within the fleet, but the project identified that it wasn't economic enough to warrant implementing. YAS will have electric-hydrogen vans in the fleet from June 2017. These have been financed by the Office of Low Emission Vehicles (OLEV) through its hydrogen Fuel Cell Electric Vehicle (FEV) Fleet Support Scheme.

YAS will be using the ITM Power hydrogen refueling station located in Sheffield, one of the most northerly English hydrogen stations at present. Through our proactive way of reducing our carbon emissions in a climate where our staff should drive at speed without thinking of carbon reduction, we have managed to reduce our fleet emissions by 15% since 2012.

NHS SUSTAINABLE DEVELOPMENT IMPACT MAP



Total Savings
 2016/17 Impact Report Organisations

Finance = £824,975

Carbon Tonnes = 699,038

| Wales | North West | Midlands | Yorkshire & North East | South West | South East |
|--|--|---|---|--|---|
| Public Health Wales | Lancashire Teaching Hospitals NHS Foundation Trust | Nottinghamshire Healthcare NHS Foundation Trust | York Teaching Hospital NHS Foundation Trust | Royal United Hospitals Bath NHS Foundation Trust | University College London Hospital Foundation Trust |
| "We used a supplier that directly supports low-income and long-term unemployed people in an area of high social deprivation ensuring that commercial flooring services provided to clients leads to direct benefits in the local community." | "In a 3-month period 29 return journeys were prevented using remote monitoring. This equated to 1029.3km (623miles), 249kgCO2e (0.24tCO2e) *saved over 28 hours in commuting time and £255 in mileage costs (40p per mile)." | "The adiabatic cooling solution is expected to deliver an annual energy cost saving of £30,122.07, offer a reduction of 301,220.75 kWh, save 158 tonnes of carbon and have a return on investment of just 1.16 years" | "£70,000 savings, enough money to pay for 3 health care assistants per annum" | "The leak busting campaign has delivered a 13% year to date reduction in consumption and it is estimated that full year savings will be £56,000 for 2016/17" | "UCLH reused more than 750 items of redundant office furniture. This equated to a saving of £84,000 and avoided sending 14 tonnes of waste to landfill" |

WASTE MANAGEMENT CHAPTER

Manchester University NHS Foundation Trust (MFT)

Prior to the introduction of HTM 07-01: Safe Management of Healthcare waste in October 2006, most clinical areas disposed of all waste in either a yellow bag or a yellow sharps bin. The only exception was the use of purple sharps bins for chemotherapy (cytotoxic) medicines. It was the norm to dispose of general domestic waste in healthcare bags and sharps bins.

The HTM was first incorporated in the Trust Waste Management policy in 2007, and was most recently revised in 2015 to keep up to date with changes both to the guidance and the Trust. This was circulated to all divisional directors on ratification and is available to all staff on our intranet page. The Trust waste steering group meets quarterly, covering all issues, and cascading any updates from the group across the Trust.

Training on the Waste Management policy has evolved significantly over the years. In early 2016 an e-learning module was launched. This is not mandatory but has proved useful as staff can complete as time allows. We also have a tool we can recommend for use following a non-compliance, or poor findings at audit, or simply if a member of staff has a long list of queries about waste segregation.

We have also undertaken a Pack It in Campaign, to publicise and reduce the amount of packaging, hand towels and other general domestic waste that is incorrectly disposed of in healthcare bags.

We have a robust rolling programme of waste audits in line with EA specifications. 1/3 of departments producing healthcare waste are audited every year, so all are covered over the course of 3 years. Although not required as part of a pre-acceptance audit, we also include general domestic waste bins in the audit.

We report both on issues where waste is being undertreated (such as medicinal waste in offensive waste bags) as well as waste being over treated

Comparing segregation of healthcare waste from 2007/08 with predicted segregation for 2016/17, based on year to date, clear improvements in segregation can be seen, as we started with only 2 waste streams [94% of which was yellow] and we now have 8 healthcare waste streams [yellow now only accounts for 11% of all waste disposal].

In addition, the ratio of healthcare waste to domestic waste has changed; from 56% healthcare waste in 2008, to 43% healthcare waste in 2016/17.

Waste porters and domestics are trained in correct segregation, and report if they note non-compliances with policy. In addition, we work with our waste contractors to deal swiftly with any non-compliances they identify. We have implemented a system of sealing healthcare waste bags with tape printed with the department's name, so the source of any issues can be identified.

Much of our healthcare waste that requires incineration is disposed of in rigid plastic containers, such as sharps bins or Griff@Bin type containers. Reducing the weight and/or number of containers required will reduce the overall weight of waste, saving money and improving carbon, as well as reducing the amount of virgin plastic products being incinerated.

Initiatives already undergoing trial at the Trust include:

- Reusable sharps bins – made from a robust plastic, the contents of the sharps bins can be emptied out and incinerated, while the bins themselves are sterilised and reused again up to 500 times
- Lighter, more sustainable rigid containers – several manufacturers now make lined cardboard alternatives to rigid plastic containers. These are lighter, considerably cheaper to purchase, made largely of a renewable resource, and recycled cardboard is used in the manufacture

There is also on-going audit work, which identifies wastes that are unnecessarily being disposed of in rigid plastic containers, and we work with departmental staff to encourage use of bin bags instead where appropriate.

Healthcare waste comprises of a lot of recyclable material. In the past, there has been some reluctance in the waste industry to deal with healthcare waste, however, this is starting to change with the recognition that resources are being unnecessarily landfilled or incinerated.

The Trust is already involved with a scheme to collect and recycle PVC anesthetic masks and tubing from Theatres. If successful, there is potential to expand to other PVC products, and to other departments.

We are also investigating a separate stream for single use metal instruments, which could then be sterilised and the metal content recycled. With far less healthcare waste being incinerated, there is now the potential to get some extra value from the flock from treated healthcare waste, or from offensive waste streams, including using as refuse derived fuel-SRF [Solid recovered Fuel] We are planning on working with our contractors to explore this and other options for our "orange" and "tiger" waste streams.

WATER CHAPTER

Imperial College Healthcare NHS Trust

As part of its commitment to improving their water efficiency and reducing their environmental impacts, the Trust partnered with water conservation company, ADSM, to access grant funding coupled with specialist advice and interventions aimed at driving down their water consumption, achieving best practice across the trust's portfolio; and without any necessity for capital investment from the trust.

The initiative takes a fully comprehensive approach to water management; aiming to reduce water consumption through the installation of water saving technologies; the reduction of tariffs and charges; the prevention of leaks; data analysis and monitoring; sustainability reporting; and the promotion of water education.

The AquaFund grant scheme is built upon a pre-tendered government framework and was born out of the HM Treasury's original "Invest to Save" scheme which is set to save public sector organisations millions of pounds every year. In the first year of the project the Trust reduced their water consumption by 15%, which equates to over 100 million litres of water. This was prominently achieved by two larger consumption issues being identified which had a combined saving of 110,000 m³ per annum. This equates to 230,000 kg of CO₂ emissions.

In total, since the AquaFund project begun, the Trust have achieved a year on year saving of 20% - that's 460 million litres of water every year. Additionally, savings were also made through the installation of water saving technologies around the Trust. These technologies also allowed the trust to increase their rate of their leak identification from a few months to within 24-48 hours. This has helped the trust save thousands of pounds in water leaks. Financial savings of around 17% were also achieved in the first year. Due to this, the Trust could then invest more budget in other areas that were currently under funded.

Furthermore, the AquaFund project donates 1% of its revenue to WaterAid, a charity who are working on alleviating water poverty across the world. Every year the AquaFund project donates to a different WaterAid charity programme. By taking part in the AquaFund project the trust have helped over 150,000 people in third world countries gain access to clean and safe water.

The AquaFund project is an exclusive collaboration between Imperial College Healthcare NHS Trust and ADSM (Advanced Demand Side Management). The Trust and ADSM work collaboratively with one another across the many various aspects of water management. Due to the complexity of the trust's water infrastructure the relationship between them and ADSM is paramount to the success of the project.

Royal United Hospitals Bath NHS Foundation Trust

The Royal United Hospitals Bath NHS Foundation Trust launched a 'leak busting' campaign in its 2014/15. In the first year of the campaign a lot of effort was made to engage staff regarding the opportunity to reduce water consumption, and during 2015/16 the Trust achieved a 1% reduction in water consumption. This was impressive, given that in the two previous years the Trust had experienced increases in consumption of 18% in 2013/14 and 7% in 2014/15.

Our whole water bill is only equivalent to leaving 40 taps continuously running for a year. This means that any seemingly 'small' leak is worth a lot to the Trust. In its second year, the leak busting campaign has delivered a 13% year to date reduction in consumption. This is worth £35,000 to the end of January for the financial year 2016/17 and it is estimated that full year savings will be £56,000 for 2016/17.

The following initiatives have been the primary means by which we have achieved this:

- IMPROVED MONITORING & TARGETING
- UPGRADES TO SITE WATER INFRASTRUCTURE
Over 50% of the water ring main around the site has been replaced, along with multiple valve nests.
- REDUCED LEAK RESPONSE TIMES: This is linked to the active monitoring and targeting, which assists in notifying leaks to the team., more leaks have been reported as staff have realised that even small leaks have a high value.
- IMPLEMENTATION OF LOCAL PROJECTS
- URINAL CONTROLS
- HYDROTHERAPY POOL UPGRADES: to ensure the chemical levels are kept within the appropriate limits, meaning less water is disposed of to adjust the dilution levels.
- BOILER HOUSE WATER BALANCE: installation of 3 new steam meters and 4 new condensates return meters.



WORKFORCE CHAPTER

The Royal Bournemouth & Christchurch Hospitals NHS Foundation

Within our trust we have found that embedding sustainability principals within all levels of the organisations has helped to improve the patient experience, creates a better environment for staff and has helped us to deliver financial efficiencies. Richard Renaut, Chief Operation Officer, is the board level lead for sustainability. This ensures that sustainability issues have visibility and ownership at the highest level of the organisation.

Green Impact is a departmental environmental accreditation scheme aimed at promoting and celebrating sustainability.+ This is one of the ways in which the Trust is ensuring all levels of staff and all departments are engaged in the sustainability agenda.

“In 2012 - 2013, the Trust saved £23,600 through enacting Green Impact initiatives”

These actions are bespoke to the Trust and thematically categorized:

- Health and Wellbeing
- Embedding and Communication
- Travel
- Procurement
- Waste and Recycling
- Energy

A comprehensive Carbon Engagement and Communications Plan has also been inherent to the success of our workforce engagement. The plan has been produced to fully engage and encourage support for sustainability within the Trust from staff, patients, visitors, suppliers and the wider community.

Communications methods include:

- Regular publicised awareness events, covering national

events such as NHS Sustainability Day, Recycle Week, NHS Change Day, Climate Week

- Sustainability stands at the Trust Annual Open Day
- Regular articles in the staff internal publications
- Comprehensive sustainability intranet and external internet pages
- Development of promotional films, notably the Green Impact 2016 Film - <https://www.youtube.com/watch?v=Zav-kKVG0qs>
- Programme of key messages through screen savers on staff computers
- Regular updates on social media including a bespoke ‘SustainRBCH’ twitter and Instagram account

Below are some economic and carbon savings of Green Impact since its launch;

- In 2012 - 2013, the trust saved £23,600 through enacting Green Impact initiatives, equivalent to one band five nurse
- In 2013 – 2014 - an estimated 351 people were reached by teams encouraging recycling paper and printing double-sided, saving up to an estimated 18,954 kg CO₂ / £7,020
- In 2014 – 2015 - an estimated 403 people were reached by teams running ‘Switch Off Campaigns’, encouraging staff to switch off lights and equipment at the end of the day. It is estimated that this saved 78 tonnes CO₂ / £12,349 in 2014-2015
- In 2015-2016, through enacting Green Impact, the trust saved 97,723kg of CO₂, equivalent to the greenhouse gas emissions of 234, 208 miles driven by an average passenger vehicle

Moreover, some Green Impact workbook actions aim to improve patient health care.

Staff are encouraged to inform and recommend sustainable travel to patients, either using public transport, cycling, or walking. Information of bus routes are provided on patient slips and cycle maps of the local area at department receptions.

Health and wellbeing is also encouraged by staff and disseminated to patients through spreading awareness of local exercise classes. Staff at Christchurch Day hospital OPAL have proved innovative with their walls space, using their notice board to promote health and exercise classes locally, contributing to the completion of the health and wellbeing criteria in the Green Impact workbook.

Green Impact has acted as a staff engagement tool to promote the biodiversity and benefits of the natural environment for staff and patient health and wellbeing. It also encourages staff to sustain the work of the grounds men and instill behavioural change in the trusts workforce emphasising the link between patient environment and health and wellbeing.

Events and achievements are published and promoted in the monthly sustainability newsletter for staff, with a dedicated Green Impact section containing support and progress reports.

Green Impact also encourages the voice of patients and visitors to support the scheme to improve their health and economic interests.

The Eye Unit invited patient and visitor feedback on their experience at the hospital. A few mentioned that the draught in the waiting room should be reduced. Automatic doors have been installed in the Eye Unit, not only improving the patient environment, but at the same time, conserving energy/carbon and money.

We have encouraged the involvement of various partners and supporters such as:

- Bournemouth Sustainable Food City. We have introduced a monthly fruit and vegetable stall to visit Bournemouth Hospital during staff lunch times. This has proved a great success for promoting healthy eating, as well as reducing food miles, carbon emissions and supporting and promoting local businesses
- Bournemouth University. To ensure progress in audited, the trust has teamed up with Bournemouth University. Students visit Bournemouth hospital and experience environmental auditing first hand

Innovation is highly encouraged as part of Green Impact, evidenced in the special 'innovation for engagement' and 'innovation for improvement' awards. Here are a few examples of how Green Impact has encouraged innovation in sustainable healthcare and staff support;

- The Stroke Unit offices removed all personal bins from their office, replaced with a single domestic and recycling point. This encourages staff to leave their desks and to question what can/ can't be recycled.
- Pharmacy have developed a system whereby, if it hasn't left the hospital, medications are counted and booked back for re use, saving money, resources and waste.

Derby Teaching Hospitals NHS Foundation Trust

The Environmental Champions scheme in 2009 aimed to engage staff in the sustainable ambitions of the organisation. The objective behind the scheme was to help embed environmental messages with staff at a grassroots level, helping all colleagues to appreciate the need to reduce, reuse and recycle for the good of the Trust and the wider environment.

Each staff member who takes on the role attends a half-day training session to help them gain an understanding of the Trust's environmental ideology and what they can do to support that. We work with partners to deliver interesting and engaging information about the sustainable efforts of the Trust and its ambitions. Champions also learn about sustainable transport and waste. These sessions are bespeaking for each site run by the Trust.

More than 250 Environmental Champions have now been trained across the Trust, including Modern Housekeepers, Trust Governors, Nurses and staff from our contracted services. These colleagues will be able to implement the objectives of the scheme into their everyday work in wards and departments, sharing them with colleagues, ensuring the outreach of these important messages.





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