

Cwm Taf Morgannwg University Health Board (CTMUHB) – Joanne Sullivan

Repurposing NHS Cardboard Packaging into Pet Bedding in partnership with a local social enterprise company



Topic Area

Please identify (more than one option may be selected)

Adaptation <input type="checkbox"/>	Communications and engagement <input type="checkbox"/>	Estates and facilities (energy, waste, water) <input checked="" type="checkbox"/>	Food, catering and nutrition <input type="checkbox"/>
Funding and financial mechanisms <input type="checkbox"/>	Medicines <input type="checkbox"/>	Research, innovation and offsetting <input type="checkbox"/>	Strategic ambition <input type="checkbox"/>
Supply chain and procurement <input type="checkbox"/>	Sustainable models of care <input type="checkbox"/>	Travel and transport <input type="checkbox"/>	Workforce, networks and system leadership <input type="checkbox"/>
Green/blue space and biodiversity <input type="checkbox"/>	Digital transformation <input type="checkbox"/>	Sustainability education <input type="checkbox"/>	
Other (please specify):			

**Topics aligned with the 12 Greener NHS workstreams (NHS England) are shaded.*

Key message / aim:

Clean cardboard is currently collected at cost from our hospital sites by a large multinational waste disposal company, Veolia. Using the Centre for Sustainable Healthcare sustainable value equation:

$$\text{Value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$$

The aim was to identify and potentially reduce the financial and environmental impacts to the Health Board of this practice, alongside identifying and potentially improving the social and population impact of supporting a local social enterprise, Elite Paper Solutions. Elite repurposes clean cardboard into pet bedding.

What was the problem?

Currently, cardboard collection across CTMUHB estate is undertaken at cost by Veolia, a multinational waste disposal firm with a plant sited in Treforest, South Wales. Separated cardboard is classed as waste.

The Royal Glamorgan Hospital (RGH) was chosen as a pilot site. Currently, an empty HGV lorry carrying an empty roll on roll off (RORO) skip visits RGH twice a week, and cardboard is transported from RGH in a skip carried by an HGV lorry to the processing plant in where it is hand sorted at a picking line. Clean cardboard is transported for reprocessing to the South of England, North Wales or as a “back load” to China. (This means that the cardboard is taken in an empty container ship returning to China after depositing its load of goods to the UK.)

Using data from October 2021 provided by CTM UHB Estates Management approximately 0.44 tonnes of cardboard is collected from RGH each month. This average collection corresponds to approximately 5.28 tonnes per year.

My role

I sit within the CTM Regional Innovation and Coordination Hub (RIC Hub). The RIC Hub is hosted by CTM UHB and reports directly to Welsh Government. The aim of the RIC Hub is to align, support and share innovation across CTM, working with Health, Local Authority, Third Sector, business and academia. The RIC Hub is ideally suited to this project as we are in the position to negotiate and initiate conversations across sectors, and source funding and support from local and national organisations.

What was the solution?

Following training through the Intensive Sustainable Innovation Scholars programme, run by the Centre of Sustainable Health, I chose a hospital site within CTM UHB and initiated a pilot programme in RGH from November 2022 to February 2023.

I met with the Waste and Fleet cover Manager in CTMUHB. He provided me with the data on cardboard waste in our Estate. Cardboard was separated from other recyclables at each site and collected by Veolia, as stated earlier.

I researched local social enterprises in the area that recycle cardboard. Elite Paper Solutions is a social enterprise in Merthyr Tydfil, which means that they are a business with a social or environmental purpose. Elite employs staff who are disadvantaged or disabled.

Currently, an Elite van visits RGH twice a week to deliver empty confidential waste bins and exchange them with full bins of confidential waste. The full bins are then taken back to Elite where their contents are shredded. (Appendix 2)

I contacted the Elite Group Enterprises Manager (Production) and he proposed that that Elite picks up cardboard from RGH at the same time they pick up full bins of confidential waste. He stated that Elite would not charge to remove cardboard but for storage on site, they would require a skip. Cardboard would then be shredded on site at Elite, and then baled. This would be sold to the public as pet bedding, creating revenue and jobs for Elite.

Timescales and staffing: From the initial contact with the Waste Manager to date is 4 months. Staffing – Me - one day per week. RIC colleague - 1 day per month –. RIC manager - ½ day a month , Elite Manager - ½ day per month, Waste manager CTM UHB – ½ day per month.

What were the challenges?

Cardboard can be classed as “dirty” or “clean”.

Dirty cardboard has staples and/or tape whilst “clean” cardboard is without.

Both Veolia and Elite would separate the “clean” from the “dirty” cardboard. It is difficult to assess what proportions Veolia would separate compared to Elite. For the purposes of the pilot, I have proposed that the whole weight of cardboard is “clean” and will discuss this further in Next Steps.

Weight of cardboard

The tonnage of cardboard per year was calculated using data from the month of October. This weight was then multiplied by 12 to give an annual estimate. This meant that the actual weight of cardboard may be more or less than estimated.

Contract with Veolia

The contract to collect cardboard by Veolia is agreed with NHS Procurement Services, and is Wales wide, covering all Health Boards in Wales. This means that Veolia is contracted to collect cardboard from each site in CTMUHB, including RGH.

The CTM UHB Waste and Fleet Manager is currently in negotiation with Veolia and Procurement to progress this proposal, with this report considered as support from the CSH Scholar.

There are two possible positive options:

1. An agreement with Veolia commences where, as part of the business social responsibility, includes enabling all cardboard to be collected by Elite.
2. If the contract is required to continue, Elite can sort and collect “clean” cardboard at RGH, and the Veolia contract is adjusted in line with a reduction in “dirty” cardboard removed, and consequent reduction in costs to CTMUHB.

Discussions I held to date with Veolia suggested that Option 1 may be viable, and that option 2 is not. This may change over the life of the pilot.

Staffing considerations

At the start of the pilot, the full information and therefore the implications, of the contract with Veolia was not available. It transpired that CTM UHB Waste and Fleet manager had already taken initial steps to set up the project with Elite prior to my involvement.

The implications of this were that my role in the pilot changed from leading to supporting management.

What were the results/Impact?

The sustainable value of the pilot was calculated using the Sustainable Value equation:

$$\text{Value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$$

Environmental impact:Method – Please see Excel Spreadsheet for calculations.

I compared the current position with the proposed position.

Current position:

A HGV RORO 7.5 – 17 tonnes travels empty from Veolia, Treforest, 13 km away, to RGH.

Using the UK Government GHG Conversion Factors for company reporting: [Greenhouse gas reporting: conversion factors 2022 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022) I calculated the annual emissions rate for the lorry travelling twice a week with an empty 20 yard long skip, and then the emissions rate for the lorry, with a cardboard load in the 20 yard long skip travelling twice a week to Veolia. Adding these together resulted in a carbon footprint of **666.00 kgCO₂e annually**.

Proposed position:

Currently Elite uses a Luton van to drop 10 confidential waste bins from Merthyr Tydfil to RGH, 32.8 km away. The Luton Van then transports 10 full bins back to Elite.

It is proposed that cardboard is taken away twice a week by the Luton van at the same time as the full bins. Using [Greenhouse gas reporting: conversion factors 2022 - GOV.UK \(www.gov.uk\)](#) I calculated the annual emissions of a Luton van travelling to RGH twice a week, and the annual emissions of a laden Luton van travelling twice a week to Elite from RGH. This resulted in a carbon footprint of **133.66 kgCO₂e annually**.

The proposal also includes the one off provision of a 20 yard skip on RGH to collect cardboard. I have calculated the emissions rate for a skip to be taken to RGH by HGV, and for the HGV to return to base – Dainton portable Buildings, Newport, South Wales. Adding these together results in a carbon footprint of **30.32 kgCO₂e**.

Therefore the total emissions rate for the proposed position is $133.66 + 30.32 = 163.98\text{kgCO}_2\text{e}$

In conclusion, the proposed position of collection of cardboard by Elite, as opposed to the current position of collection of cardboard by Veolia, would reduce the annual carbon footprint by $666.0 - 163.98 = 502.02\text{kgCO}_2\text{e}$

Social Impact

The Welsh Index of Multiple Deprivation (WIMD) is the agreed measure of relative deprivation for small areas in Wales (1.). It identifies areas with the highest concentrations of different types of deprivation including income, health and education. Data is broken down into Lower layer Super Output Areas (LSOAs) comprised of 1,500 people.

Merthyr Tydfil has a higher percentage of LSOAs in Deep-Rooted Deprivation in comparison with Rhondda Cynon Taf.

The majority of Elite staff are employed from the Merthyr Tydfil area. It is uncertain where staff employed by Veolia reside. I can estimate that more staff in Veolia are travelling from areas in RCT, Caerphilly or north Cardiff which are areas of less deprivation.

The disability rights organisation, Scope, states that the employment rate of disabled people is 53% compared to 82% of non-disabled people (2.). Disabled people are almost twice as likely to be unemployed as non-disabled people, and 3 times as likely to be economically inactive.

Elite Paper Solutions is based in Merthyr Tydfil and offers volunteering and employment opportunities for local disadvantaged and disabled individuals. Currently, the Elite staff profile consist of 66 disadvantaged/disabled people: 43 staff are paid and 23 are volunteers and pupils from Additional Learning Needs schools/colleges on work experience. Many of the individuals starting as volunteers move on to paid employment at Elite and elsewhere, with the effect of improving life chances and reducing local unemployment.

Financial Impact

Current position:

Veolia provide a RORO (roll on roll off) skip, at £15 per month (£180 annually). The skip is exchanged once a week and transported on a HGV lorry to the recycling plant in Treforest. In the month of October the cost of removal of cardboard was £57.11. Assuming the weight of cardboard collected in October is typical of an average monthly weight, the cost of picking cardboard up would be £685.32 annually.

Therefore, the estimated total cost to CTM UHB of removal of cardboard in RGH is $£180 + £685.32 = \mathbf{£865.32}$ annually.

Proposed position

Elite have offered to pick up cardboard at no cost to CTMUHB.

CTM RIC Hub have offered to purchase a skip and donate to CTMUHB, in line with supporting work plan sustainability targets. It is proposed that Elite would collect cardboard from the skip, but not own it.

Elite requires a skip to collect cardboard at RGH. The Manager obtained quotes. To purchase a **20 foot enclosed skip, including delivery and VAT = £2766**. It is proposed that costs would be met through underspend of RIC Hub, and owned by CTM UHB.

The current and proposed costs to CTMUHB of cardboard collection in RGH are outlined below.

Status	Company	Cost of skip hire per month /one off (£)	Cost of Skip hire annually (£)	Cost of collection/month (£)	Cost of collection/annual (average) (£)	Annual/one off cost (£)
Current	Veolia	15/month	180	57.11	685.32	865.32
Proposed	Elite	0	0	0	0	0
Proposed	RIC Hub	£2766/one off	0	0	0	£2766/one off

Next steps

As stated earlier, it is difficult to ascertain what proportions Veolia would separate “clean” from “dirty” cardboard compared with Elite. If both parties were willing, we would need to work with them to look at their processes and sorting.

Also, the weight of cardboard was estimated from just one month – October 2022. To more accurately determine the weight annually, we would need to look at the average monthly rate over a full year.

Finally, as this project supports the role of NHS Wales as an Anchor Institution (Appendix 3), there may be bursaries available from the Green Group or Decarbonisation Group within the Health Board, or through the Third Sector. If the project was to be expanded across the Health Board, the costs would be required to be researched.

What the team and/or patients and carers had to say

All names have been changed to protect identity

“The best thing about Elite is the support – everyone is really nice. I was recommended to join Elite through the Job Centre after I left college. I joined a Kickstarter scheme, then went into a Welsh Government Apprentice Scheme. I’ve taken up lots of training including Level 1 Warehousing. Ill be looking for employment after the scheme ends”.

Sue, Troed y Rhiw

“I’m a supervisor and I love working here. I’ve been here six years now – I started at 7 hours a week, and progressed to 37 hours a week. I’ve a forklift truck training, and training to supervisor level. Elite gives me a challenge – you don’t know what you’ll have to sort out each day, but you know you have the support to get it done”.

Tim, Abervan

“I have weak bones and have tinnitus. Elite is super – accommodating. I can’t stand for too long, so they put me into an office job. They are happy for me to wear earbuds that helps with the tinnitus. I was anxious taking phone calls, but my confidence has improved massively and I’m now very productive”.

“Again – during Covid the buses weren’t running properly, and the managers were understanding. You wouldn’t get all this support in a commercial company”.

Samuel, Nelson

“Elite! We’re good for the animals! We make them bedding!”

Kyle, Treforest

“I’ve been here three years. I’ve had work experience, travel training, interview preparation and manual handling training and much more. The Elite team is honest, helpful and everything”.

Ian, Merthyr Tydfil

“I was the first female to join, eight years ago. I started on an unpaid Job Centre scheme for six months, then got a job as a mentor, and now I am supervising up to 16 people a day. I’ve done presentations, inductions, benefits talks and funding applications as well as lots of other stuff. It’s helped me gain a lot of confidence, and independence inside and outside work. Instead of travelling for 2 and a half hours on the train – I learned to drive, and it takes me 30 minutes if that. The best thing about Elite is watching people progress”.

Maria, Aberdare

Resources and references

1. [Welsh Index of Multiple Deprivation 2019: analysis relating to areas of deep-rooted deprivation | GOV.WALES](#) accessed 20.03.2023
2. <https://www.scope.org.uk> accessed 20.03.23

Want to know more?

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Case Study Template – Centre for Sustainable Healthcare (2022).

Partner organisations involved: **Cwm Taf Morgannwg University Health Board, Rhondda Cynon Taf, Wales**

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Has this project or story been made public in any form before? **No**

Appendix 1

Cardboard calculations for current and proposed positions



Final Royal
Glamorgan Hospital_c

JS Feb 2023

Appendix 2


ELITE PAPER SOLUTIONS, MERTHYR TYDFIL – SOCIAL ENTERPRISE, REPURPOSING CARDBOARD AS PET BEDDING



Appendix 3


What makes the NHS an anchor institution?

NHS organisations are rooted in their communities. Through its size and scale, the NHS can positively contribute to local areas in many ways beyond providing health care. The NHS can make a difference to local people by:



- Purchasing more locally and for social benefit**
In England alone, the NHS spends £27bn every year on goods and services.
- Using buildings and spaces to support communities**
The NHS occupies 8,253 sites across England on 6,500 hectares of land.
- Working more closely with local partners**
The NHS can learn from others, spread good ideas and model civic responsibility.
- Widening access to quality work**
The NHS is the UK's biggest employer, with 1.6 million staff.
- Reducing its environmental impact**
The NHS is responsible for 40% of the public sector's carbon footprint.

As an anchor institution, the NHS influences the health and wellbeing of communities simply by being there. But by choosing to invest in and work with others locally and responsibly, the NHS can have an even greater impact on the wider factors that make us healthy.

 The Health Foundation

References available at www.health.org.uk/anchor-institutions
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