2035 Net Zero Operational Roadmap

Hart District Council

eunomia

Report For

Hart District Council

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1.0

Introduction

Hart District Council (HDC) commissioned Eunomia Research and Consulting Ltd. ('Eunomia') to produce a detailed carbon reduction operational action plan, to assist the Council with ascertaining how to meet HDC's target for becoming a Net Zero council by 2035.

HDC declared a climate emergency in April 2021. One of the key commitments as part of this declaration is to become a Net Zero council by 2035. Since the declaration, the Council has taken several steps to reduce greenhouse gas (GHG) emissions. For example:

- Baselining GHG emissions;
- Requiring all reports to incorporate climate change considerations;
- Recruitment of a Climate Change Communication and Engagement Officer;
- Establishing renewable electricity generation through installing solar PV panels on Council offices roof;
- Completing the Bramshott Wetlands nature-based carbon sequestration project; and
- Establishing working groups of Officers and Councillors to consider issues in detail and drive change.

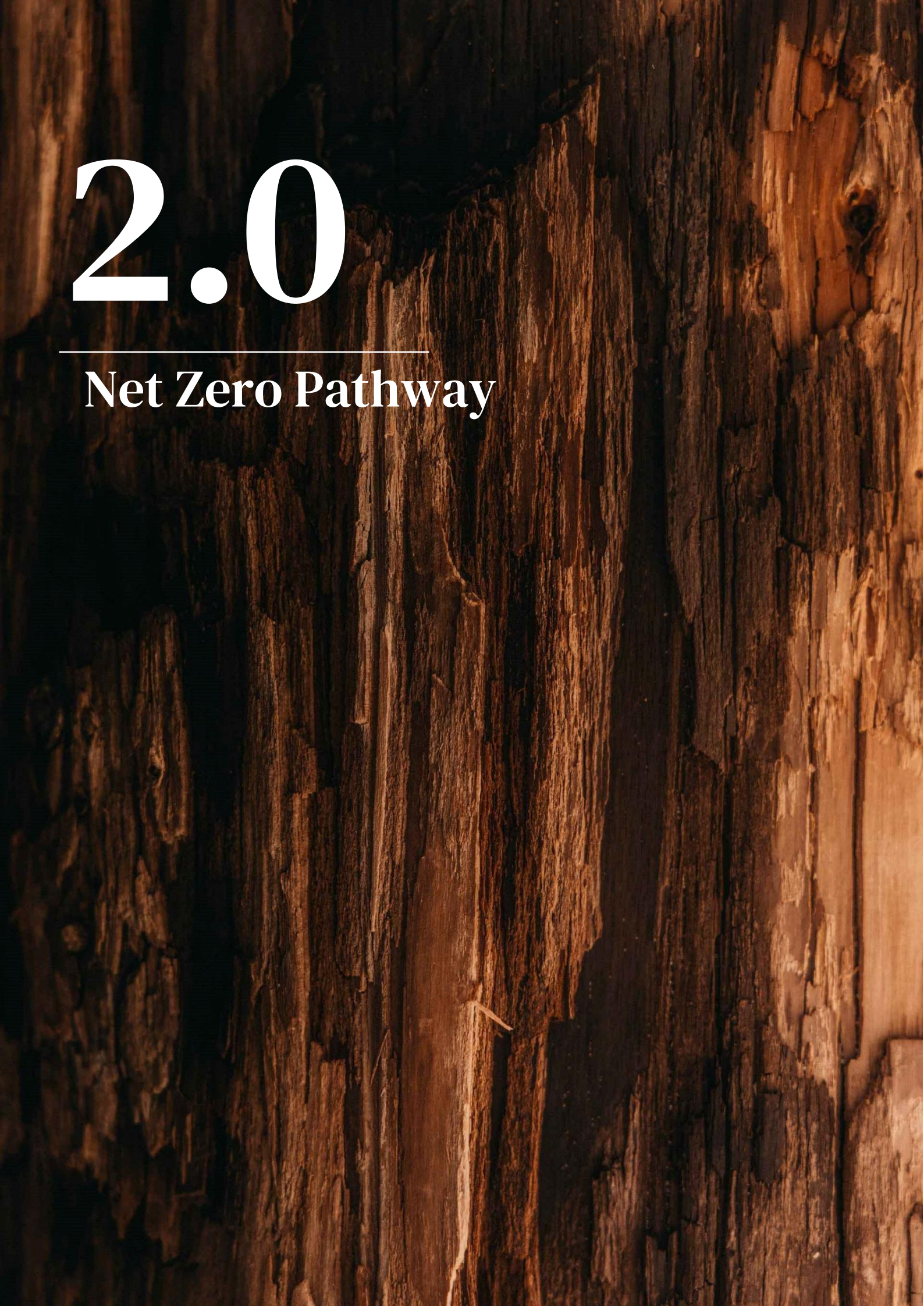
This document aims to build on the work done to date, providing an overarching Net Zero Pathway with key interventions required to achieve HDC's operational Net Zero 2035 target, and a Net Zero Roadmap of priority interventions and associated actions, to direct HDC's initial actions in the short term.

This roadmap sets out the following:

- **Section 2.0 – A Net Zero Pathway for HDC to achieve Net Zero by 2035**
  - An indicative pathway demonstrating how HDC could reach Net Zero in 2035; and
  - A summary of recommended interventions associated with the Net Zero Pathway, required to decarbonise each key GHG emissions sector.
- **Section 3.0 – A Net Zero Roadmap of priority interventions and actions**
  - A priority pathway of chosen interventions with indicative GHG emissions reductions and associated capital costs; and
  - The accompanying priority actions required to deliver the priority interventions, with key objectives, timeframe, and co-benefits provided.

Two documents accompany this roadmap:

- A detailed action plan – developed by mapping HDC's existing action plan to the operational GHG footprint, holding workshops with stakeholders and key officers, and using Eunomia's expertise in decarbonisation; and
- A summary of financing opportunities.



2.0

Net Zero Pathway

This section contains an indicative pathway which demonstrates how HDC could reach Net Zero in 2035, and a summary of recommended interventions associated with the Net Zero Pathway, split by GHG emissions sector. The indicative pathway is a high-level demonstration of the decarbonisation trajectory required between now and 2035 to reach Net Zero. The key interventions outline, for each GHG emissions sector:

- The overarching steps required to reach Net Zero by 2035;
- Associated costs;
- Potential GHG emissions reduction;
- Timeframe; and
- Co-benefits.

A full action plan to deliver these interventions is provided in a separate document.

2.1 Indicative Pathway

HDC's footprint in 2019/2020 was 1500 tCO_2e. This was calculated through Carbon Footprint Ltd.'s SUSTRAX: Sustainability Tracking tool and includes land management (i.e. street care and grounds maintenance), waste collections, transport (from staff and operational vehicles), and buildings and energy (including operational buildings and the leisure centres). Buildings and energy account for the largest proportion of emissions at 1100 tCO_2e; 80% of which is from the leisure centres. HDC's operational footprint accounts for approximately 0.3% of GHG emissions from the district as a whole.

The SUSTRAX tool (and therefore this footprint) excludes aspects of HDC's operational GHG emissions including staff commuting, leased assets, waste management, and procurement.[1] It is recommended that HDC calculates and includes GHG emissions from these sources to be aligned with best practise. However, it is HDC's prerogative to determine which emissions sources to include within its reporting boundary. Factors such as data availability should be considered. The scale of the challenge for HDC to reach its Net Zero target would be larger if the GHG emissions from these additional activities were taken into account.

HDC's 2019/2020 footprint is shown in Figure 2-1, along with an **indicative** pathway to reach Net Zero by 2035. The indicative pathway follows a Science Based Targets (SBT) trajectory, although it goes beyond the minimum reductions required.[2] SBT requires that organisations reduce their GHG emissions by **a minimum of 4.2% per year compared to baseline in the 'near-term'**, i.e. over the next 10 years. This means reducing from 1500 tCO_2e in 2020 to at least **890 tCO_2e in 2030**. SBT requires that organisations reduce their GHG emissions by **at least 90% compared to baseline in the 'long-term'**, i.e. for any period longer than 10 years. For HDC, this means reducing from 1500 tCO_2e in 2020 to **150 tCO_2e in 2035**. To achieve Net Zero as defined by SBT, the remaining 10% of GHG emissions need to be offset/ balanced. This means that nature-based

[1] Staff commuting has been purposefully excluded as these have varied widely during Covid-19.
[2] Science Based Targets (2021) *SBTI Corporate Net-Zero Standard*, https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf

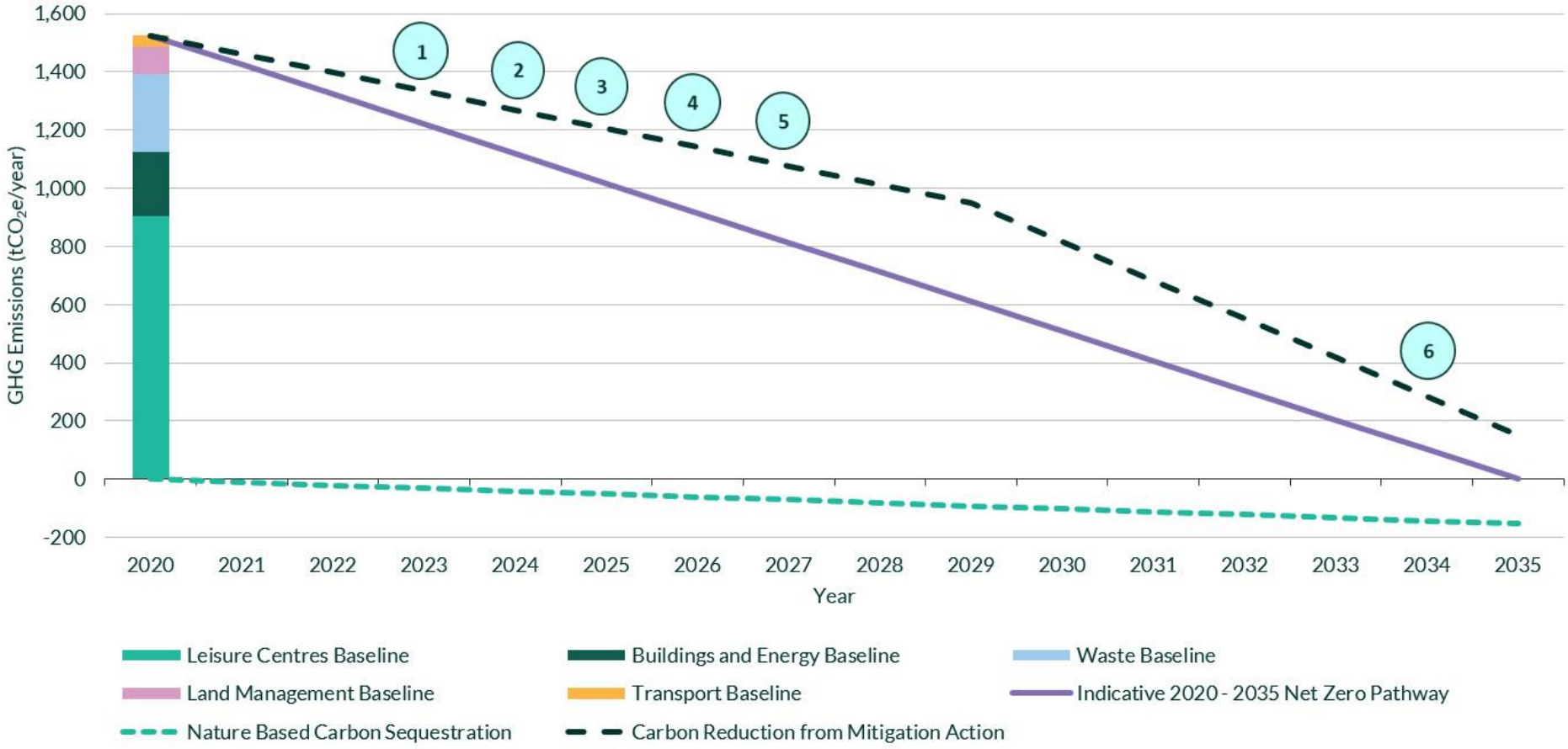
carbon sequestration needs to increase to 150 tCO_2e in 2035. At this point, net GHG emissions will be zero. This is shown in Figure 2-1 as follows:

- The **black** dashed line shows the **minimum** emission reductions required from mitigation action for HDC to reach Net Zero emissions by 2035, as per the SBTi definition.[3]
    - The circled numbers indicate to key decision points relating to priority interventions. These are discussed in Section 3.1.2.
- The **teal** dashed line shows the **maximum** nature-based carbon sequestration required for HDC to reach Net Zero emissions by 2035, as per the SBTi definition. This is an increase to **150 $ktCO_2e$ in 2035**.
- The **solid purple** line shows the indicative Net Zero Pathway 2020-2035 recommended.
- Each **coloured segment** demonstrates HDC's 2019/2020 baseline emissions for each core GHG emissions source.

The pathway is purely illustrative to demonstrate both the scale of change required for HDC to reach Net Zero by 2035 and how HDC could reach Net Zero.

[3] A steady reduction has been assumed.

Figure 2-1 Indicative Net Zero pathway[4]



[4] The land management footprint includes GHG emissions from Street Care and Grounds Maintenance.

2.2 Key Interventions

The key interventions recommended to decarbonise each GHG emissions sector (buildings and energy, transport, procurement and waste) and measures to offset remaining GHG emissions in line with the indicative Net Zero pathway shown in Figure 2-1, are summarised in the tables below.[5] Delivering each decarbonisation intervention requires one or more action(s) to be taken. A detailed action plan demonstrating the actions the Council can take are outlined in a separate document. To deliver Net Zero for HDC's operations, it is important for HDC to work with current partners and stakeholders in their decarbonisation. For example. HDC will need to work collaboratively with the waste collection provider and leisure centre operators moving forwards.

Priority interventions, and their associated actions, have been identified and are explored in more detail in Section 3.0. For the priority interventions, detail on GHG emissions reduction potential and associated cost is provided. For other interventions, indicative GHG emissions reduction and associated cost ranges are given. This is because decarbonisation interventions are highly context-dependent, and all the information needed to understand this context is not available within the scope of this project. Furthermore, HDC's target is to reach Net Zero, meaning that (very nearly) all GHG emissions must be reduced, reducing the benefit of specific comparative GHG emissions reduction potentials and associated costs.

The tables below present the 'indicative cost' of each intervention. The tables also present the 'indicative potential reduction in GHG emissions', categorised into low, medium, and high values:

- Low = <2% emissions;
- Medium =2-20% emissions; and
- High = >20% emissions.

Interventions which are enabling and are not associated with direct GHG emission savings, for example improving data collection, are labelled as 'enabling'. Although their direct GHG emission savings could be classed as 'low', they are a key enabler to 'unlock' significant GHG emissions savings in other areas. Likewise, some interventions will not lead to any GHG emissions savings, such as the development of an offsetting strategy but are vital to achieving a Net Zero target. These interventions are listed as 'none', although their importance should not be dismissed.

[5] GHG emissions from procurement (i.e. purchasing goods and services e.g. IT equipment, professional contractors) are not shown in Figure 2-1 as they are not currently calculated by HDC. Procurement typically makes up a large proportion of an organisation's GHG footprint. Suitable interventions to decarbonise procurement have therefore been included.

2.2.1 Buildings and Energy

Table 2-1 Buildings and Energy Recommended Interventions

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Decarbonising heating and improving energy efficiency	Insulation and other energy efficiency measures reduce the total amount of energy required. This can reduce GHG emissions in itself, but also is a prerequisite for low carbon heating installations, i.e. heat pumps. Actions include implementing known energy efficiency measures and carrying out a feasibility study for low carbon heating.	>£100,000[6]	High[7]	2022-2035

[6] The capital cost of making energy efficiency improvements to eligible buildings is approximately £300,000. The capital cost of installing heat pumps to decarbonise heating is approximately £2,000,000. Ongoing costs are likely to change following the implementation of this intervention but are difficult to calculate due to the volatile cost of electricity.
[7] The GHG emissions reduction potential of improve energy efficiency is approximately 60 tCO_2e per year. The GHG emissions reduction potential of installing heat pumps, which can only be carried out once energy efficiency improvements have been carried out, is approximately 230 tCO_2e per year.

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Decarbonising electricity supply	Decarbonising heating predominantly involves switching from fossil fuels to electricity. This electricity then needs to be decarbonised to reduce GHG emissions to near zero. The UK Government has committed to decarbonise the electricity grid by 2035,[8] however there is the risk that this target is not met with implications for Hart's progress. Actions therefore include procuring and generating renewable electricity.	<£10,000 - £100,000 (per building)	High[9]	2022-2027
Increasing data availability	Greater data availability can facilitate more targeted actions and increased awareness of energy consumption may elicit behaviour change. Actions include increasing metering and reporting.	<£10,000 (per building)	Enabling	2022-2023

[8] Department for Business, Energy & Industrial Strategy (2021) *Plans unveiled to decarbonise UK power system by 2035*, https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035

[9] The GHG emissions reduction potential of decarbonising electricity is approximately 550 tCO_2e per year, or 450 tCO_2e per year if HDC chooses to offset 10% of its baseline footprint.

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Co-benefits: • **Reducing gas combustion through decarbonising heating and improving energy efficiency will improve air quality by reducing emissions of nitrous oxide and carbon monoxide** • **Improving energy efficiency will reduce operational costs and improve working conditions by keeping buildings cool in summer and warm in winter, reducing the use of air conditioning and heating** • **Decarbonising heating and electricity and improving energy efficiency will promote local economic growth in these sectors e.g. heat pump supply chains**				

2.2.1.1 Case Study Examples

Newcastle-Upon-Tyne City Council's Public Building Decarbonisation

Newcastle-Upon-Tyne City Council gained £27,500,000 in **funding** under the Government's Public Sector Decarbonisation Scheme to decarbonise several public buildings through 6 projects.[10] Buildings to be decarbonised through the work include schools, leisure centres, offices, and depots. The buildings will undergo a significant number of improvements, including:

- Insulation – wall, roof, pipework; and double glazing;
- Low-carbon heating and heat pumps;
- LED lighting;
- Energy storage; and
- Connections to a local heat network.

The **impact** of these improvements will be an expected reduction in GHG emissions by over 4,000 tCO_2e per year, as well as **co-benefits** for job creation and saving money on operational costs. **Newcastle City Council notes that** gaining this government funding will be pivotal in the city reaching its climate aspirations.

Stroud District Council's Water Source Heat Pumps

Stroud District Council has installed two water source heat pumps at former woollen mills to power two of the council's operational buildings.[11] The buildings were used as offices and decarbonising their gas heating was essential for the council to reach Net Zero. A feasibility study was carried out in March 2019, the project was procured in June 2020, and works commenced in April 2021, completing in December 2021. The project was **funded** by the council itself, costing £1,385,000 - £700,000 for the heat pumps, £234,000 for the alteration to existing heating systems, and £6,200 for the feasibility study. The **impact** of the heat pumps was expected to be a saving of 100-160 tCO_2e per year, with **co-benefits** for staff's comfort levels, fuel certainty in the face of rising costs, and longevity of the Grade II listed woollen mills. **Stroud District Council notes that** concerns were raised that the heat pumps may not be effective, but that publicity and effective communication alleviated these concerns and may encourages others to consider heat pumps as an option.

Cambridgeshire County Council's Solar Farm

Cambridgeshire County Council constructed a 70-acre solar farm in Soham, with a capacity of 12 MW – enough to power 3,000 homes.[12] The 25-year lifespan of the solar farm means it will provide income to the council. It currently raises £350,000 revenue per year, this is expected to increase to £1,000,000 after the capital borrowing is repaid. The solar farm was **funded** by a £10,000,000

[10] Brown, M. (2021) *Newcastle successful in bid for £27.5m to decarbonise public buildings*, https://www.newcastle.gov.uk/citylife-news/newcastle-successful-bid-ps275m-decarbonise-public-buildings
[11] UK100 (2022) *Stroud District Council: Water Source Pump Projects at Port Mill and Ebley Mill*, https://www.uk100.org/projects/knowledgehub/stroud-district-council-water-source-pump-projects-port-mill-and-ebley-mill
[12] Climate Action (2022) *How Cambridgeshire Council is raising revenue with solar farms*, https://takeclimateaction.uk/climate-action/how-cambridgeshire-council-raising-revenue-solar-farms

loan from the Public Works Loan Board. The **impact** of the solar farm will be a saving of around 3,800 tCO_2 per year. **Cambridgeshire County Council notes that** upskilling council officers can increase their "appetite for risk" – by enabling council officers to work closely with politicians, their level of understanding increased and they feel more comfortable taking risks.

For more case study examples, see below:

- Lancaster City Council's leisure centre solar farm

2.2.2 Transport

Table 2-2 Transport Recommended Interventions

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Developing internal resource for decarbonising transport	HDC has identified a need for an individual to take ownership for decarbonising HDC's fleet. Actions include reviewing internal capacity, skills, and expertise to deliver the work required, and the possibility of existing roles taking on this responsibility.	<£10,000 (per building)	Enabling	2022-2023
Reducing travel demand	In the first instance, limiting the number of journeys people take can reduce GHG emissions. Actions include more support for remote working and updating the travel policy.	<£10,000	Medium	2022-2027
Increasing use of active travel	Active travel, i.e. cycling and walking, has zero associated GHG emissions. Facilitating active travel therefore has significant GHG emissions reduction potential. Actions include improving provision of facilities for cycling (e.g. repair and maintenance services) and reviewing current barriers to uptake.	<£10,000	Medium	2022-2027

Recommended	Description	Indicative	Indicative	Timeframe
Increasing use of public transport	Public transport has considerably lower GHG emissions than private transport and can extend the geographic spread of low-carbon travel beyond that afforded by walking. Actions include reviewing incentivisation options (e.g. discounted tickets) and engaging with public transport providers.	<£10,000	Medium	2022-2027

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Electrifying transport	Where private transport is unavoidable, e.g. in the case of fleet vehicles, these can be electrified to reduce GHG emissions (note – this intervention does not apply to waste vehicles). Actions include reviewing the feasibility of charge point installations, running a pilot study, and working with Basingstoke and Deane to decarbonise street care and ground maintenance vehicles. This action should be taken with consideration of renewal points (see Section 3.1.2 for further discussion).	>£100,000 (**net** cost)[13]	Medium[14]	2022-2027

[13] The **net** capital cost of electrifying HDC's operational fleet (i.e. the difference between purchasing like-for-like internal combustion engine vehicles and purchasing similar electric vehicles) is approximately £100,000. The ongoing costs of an electric fleet are likely to differ from a petrol and diesel fleet but are difficult to calculate due to the volatile cost of electricity and the unknown requirements for associated infrastructure (i.e. charge points). However, maintenance costs are likely to reduce for an electric fleet compared to a conventional petrol/ diesel fleet (https://www.fleetnews.co.uk/news/fleet-industry-news/2018/10/16/electric-vehicles-cost-23-less-to-maintain-than-petrols-says-cap-hpi?gutid=2613).

[14] The GHG emissions reduction potential of electrifying HDC's operational fleet is 20 tCO_2e per year.

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Decarbonising waste collection service	Decarbonising waste collection relates to the vehicles used to collect waste (note – this intervention does not apply to fleet vehicles). Actions include working with waste contractors to assess feasibility of converting to electric vehicles, installing chargepoints and investigating alternative fuel types (e.g. HVO fuel).	>£100,000 (**net** cost)[15,16]	Medium[17]	2022-2027

Co-benefits:

- **Agile working can improve staff satisfaction by facilitating flexibility and promoting work-life balance**
- **Improving public transport and active travel will reduce private transport use, making active travel safer and improving local air quality by reducing emissions of particulates, nitrous oxide, and ozone**
- **Increasing the use of active travel can promote better mental health through spending time outside and better wellbeing through being active**
- **Increasing the use of active travel and public transport can generate more equity between staff because each individual can have equal access to transport modes and routes**

[15] The **net** capital cost of one electric waste collection vehicle (i.e. the difference between purchasing a like-for-like internal combustion engine vehicles and purchasing a similar electric vehicle) is approximately £200,000. Operational costs of electric waste collection vehicles are likely to differ from diesel or petrol waste collection vehicles but are difficult to calculate due to the volatile cost of electricity.
[16] HDC to confirm number of waste collection vehicles in use.
[17] The GHG emissions reduction poential of converting to electric waste collection vehicles is approximately 90 tCO_2e per year.

2.2.2.1 Transport Case Study Examples

Leeds City Council's Transition to an All-Electric Fleet

As of 2021, Leeds City Council has 335 electric fleet vehicles, 119 depot electric vehicle charge points, and 95 employees' homes with electric vehicle charge points.[18] It has recently started switching its waste vehicles over to electric, and also has plans to tackle the council's 'grey fleet', i.e. staff vehicles used for operations. The electric vehicles have been primarily **funded** by the council itself but has also been supported through £340,000 from the government's Clean Air Zones Early Measures in 2018, and £2,000,000 from Highways England. The expected **impact** of the switches between 2018 and 2025 is a reduction of 1,200 tCO_2e, or 235 tCO_2e per year. The project also had **co-benefits** for data availability, with each electric vehicle gathering journey data through a device, and higher-than-national-average electric vehicle take-up in the city as a whole due to the council's "positive reputation". **Leeds City Council notes that** starting with replacing small, low-mileage vans was easier because the market was well-developed; meanwhile, the council carried out a survey of the fleet's size and mileage range to facilitate advanced planning for the rest of the project.

Lancaster City Council's Electric Pool Cars

Lancaster City Council has developed a business case for the council to increase its fleet of electric pool cars, including innovative booking, keyless entry, and use by the public when not required by the council.[19] The council has partnered with Co-Wheels to deliver these pool cars at a cost of £184,000 (covering six vehicles and necessary infrastructure). This was **funded** by capital borrowing, which will be paid back through the avoided mileage claims from council staff – around £50,000 per year. The **impact** of the pool cars will be to avoid 30 tCO_2e per year from staff travel. **Lancaster City Council notes that** a key barrier to pool car use in the past, and therefore critical to the scheme's success now, is the perceived convenience, i.e. the booking system and keyless entry technology.

For more case study examples, see below:

- Lancaster City Council's fleet electrification programme
- Kingston Council's electric refuse vehicle fleet

[18] Climate Action (2022) *How Leeds is making all council vehicles electric*, https://takeclimateaction.uk/climate-action/how-leeds-making-all-council-vehicles-electric
[19] UK100 (2020) *Co-Wheels car club scheme*, https://www.uk100.org/projects/knowledgehub/co-wheels-car-club-scheme

2.2.3 Procurement

Table 2-3 Procurement Recommended Interventions

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Suppliers decarbonising in line with HDC's target	HDC is to some extent dependent on its suppliers to reduce procurement-related GHG emissions. Actions include reviewing current procurement approaches and developing a supplier engagement plan.	<£10,000	Low	2022-2027
Encouraging re-use	Procuring reusable goods is a way to reduce GHG emissions from procurement, as less needs to be purchased, and from waste, as end-of-life treatments are limited. Actions include engaging with community groups and analysing current equipment.	<£10,000	Low	2022-2027

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Minimising the use of single-use plastics	Single-use plastics are a source of GHG emissions both from procurement and from waste, as their lifespans are typically short and their management costs concurrently high. Actions include implementing low waste initiatives and engaging with suppliers.	<£10,000	Low	2022-2027
Low carbon construction	Construction, including retrofit and renovation, is a potentially significant source of GHG emissions. GHG emissions occur both onsite and are embodied in the materials used. Actions include trialling low carbon construction and updating procurement policy.	>£100,000	Medium	2022-2027

Co-benefits:

- **Decarbonising procurement offers the opportunity to work collaboratively with suppliers, with the potential to build and encourage the development of low carbon supply chains**
- **Encouraging re-use can reduce overall operational costs by reducing the quantity of goods purchased**
- **Encouraging purchasing reusable goods offers the opportunity to engage with small businesses, supporting the local economy**

2.2.3.1 Procurement Case Study Examples

Dorset Council's Single Use Plastic Policy

Dorset Council has developed a Single Use Plastic Policy to reduce the use of single use plastics in the council's operations.[20] The policy supports the council's wider Waste Action Plan, of which Objective 1 is to become a low waste council by 2040.[21] The policy will be delivered by the council's Single Use Plastic task group, formed of procurement, facilities, communications, waste, and environmental representatives within the council; and in collaboration with Litter Free Dorset. Developing the policy used only internal budget, so no additional **funding** was required. The policy will have **co-benefits** for social value – including facilitating charitable donations of single use plastics like milk tops and crisp packets – and waste management – by reducing the quantity of plastic the council procures, and therefore has to manage. **Dorset Council notes that** reducing single use plastic procurement is supported by wider national policy, in particular the government's 25-year Environmental Plan.

Durham County Council's Work with Suppliers

Durham County Council has developed a single use plastic pledge for organisations to sign up to, thereby committing to: reducing and eliminating the procurement of single use plastics; supporting schools, communities, and residents in doing the same; and supporting a single use plastics network within the county.[22] Following its plastic pledge, the council surveyed its suppliers to ensure future contracts will utilise alternatives to single use plastics, and is working with North East Procurement Organisation to engage further with its suppliers. Developing the pledge used only internal budget, so no additional **funding** was required. The **impact** of the project thus far has been a reduction in single use plastics for catering by 90% and avoiding 2.4 tonnes of waste a year from the leisure centres. **Durham County Council notes that** partnership working with local and national organisations was key to the pledge's success.

For more case study examples, see below:

- Islington Council's single-use plastic reduction efforts

[20] Dorset Council (2020) *Single Use Plastic Policy*, https://moderngov.dorsetcouncil.gov.uk/documents/s18342/Appendix%201%20-%20The%20Single%20Use%20Plastic%20Policy.pdf
[21] Dorset Council (2020) *Waste action plan*, https://www.dorsetcouncil.gov.uk/w/waste-action-plan?p_l_back_url=%2Fsearch%3Fq%3Dplastics
[22] Climate Action (2022) *How Durham used a plastic pledge to cut waste and inspire community*, https://takeclimateaction.uk/climate-action/how-durham-used-plastic-pledge-cut-waste-and-inspire-community

2.2.4 Managing Operational Waste

Table 2-4 Waste Recommended Interventions

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Improving data collection	Better waste data can facilitate more targeted actions, depending on the types and quantities of waste produced. Actions include a waste compositional study and identifying key product categories.	£10,000-£100,000	Enabling	2022-2027
Decarbonising waste from operational buildings	Decarbonising waste requires reducing its production and ensuring its management is low carbon. Actions include training staff and expanding recycling opportunities (e.g. separating materials and reducing size of general waste bins).	<£10,000 - >£100,000 (depending on action)	Low-Medium	2022-2027

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Co-benefits: • **Improving data collection offers the opportunity to improve understanding of waste, enabling improvement to be tracked through time** • **Reducing the quantity of waste produced can incur lower costs due to less waste requiring collection** • **Increasing recycling, especially of plastics, can improve air quality by reducing incineration and associated emissions of GHGs**				

2.2.4.1 Waste Case Study Example

Councils Working to Go Paper-Free

Both Wolverhampton City Council and Winchester City Council have launched paperless systems for councillors' meetings – Wolverhampton initially for a trial period, and Winchester following a successful one-month trial.[23, 24] The councils are working on a wider shift to digital service delivery using the Modern.Gov app (developed by Civica). The **impact** of shifting to paperless meetings is expected to save £10,000 for Wolverhampton by avoiding printing and posting papers, with **co-benefits** for improving councillors' use of IT, improving security, and improving the councils' service delivery to their constituents. **Both councils note that** the move to digital is essential for the councils to keep up with the "digital world" and introduce new ways of working.

For more case study examples, see below:

- Cheltenham Borough Council's recycling and food waste collection

[23] Public Technology (2019) *Wolverhampton councillors approve paperless meetings*, https://www.publictechnology.net/articles/news/wolverhampton-councillors-approve-paperless-meetings
[24] Winchester City Council (2018) *Winchester City Council launches 'paperless' system for councillors*, https://www.winchester.gov.uk/news/2018/may/winchester-city-council-launches-paperless-system-for-councillors

2.2.5 Land Management

Table 2-5 Land Management Recommended Interventions

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Balancing residual GHG emissions	To meet Net Zero in line with SBT's definition, HDC needs to offset up to 10% of its GHG emissions. This can be done through tree planting, urban greening, and other habitat creation/ restoration projects. Actions include tree planting and developing offsetting principles, both of which are in ongoing development through the Tree Strategy and Biodiversity Strategy. Consideration should be paid to the prevalence of heathland in the district.	£10,000 - >£100,000	None	2022-2035
Decarbonising countryside rangers' tools and machinery	HDC has already taken action to switch countryside rangers' tools to electric. Actions include carbon foot printing the tools to ensure this intervention's ongoing success.	<£10,000	Medium	2022-2023

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Adapting to climate change	HDC has identified a desire to adapt to climate change, as well as to mitigate it. This intervention therefore captures non-mitigation measures, including risk assessments and a wider adaptation plan.	<£10,000 - >£100,000 (depending on project)	None	2022-2027

Co-benefits:

- **Creating habitats for the purposes of climate change adaptation and carbon offsetting can improve biodiversity and urban safety for wildlife**
- **Climate change adaptation can lead to increased connectivity of parks through green corridors**
- **Improved biodiversity, carbon offsetting approaches, and green corridors can produce more resilient pollinators**
- **Tree planting for carbon offsetting and climate change adaptation can result in urban cooling through increased tree canopy coverage**

2.2.5.1 Land Management Case Study Examples

Wirral Council's Tree Protection and Planting Strategy

Wirral Council has developed a Tree, Hedgerow and Woodland strategy which includes an aim of planting 21,000 trees a year on the council's own land for 10 years.[25] After coming into force in 2020, planting began in January 2021 – the earliest planting seasons after the strategy became official. The council is already ahead of target, having planted over 24,000 trees in the first year, despite the difficulties of the pandemic. Writing the strategy needed no funding, and its implementation is being **funded** by £250,000 from the government's Urban Tree Challenge Fund (which the council also matched), and £24,000 from the Mersey Forest Trees for Climate budget. The **impact** of the project will be to increase tree canopy cover in the Wirral from 13% to 25%, sequestering 222 tonnes of carbon. The project is already having **co-benefits** by improving community links – several groups have sprung up associated with the planting, including Wirral Tree Wardens, Friends of Wirral Parks Forum, and The Wirral Society – and will have further benefits in future for physical and mental health, reduced noise pollution, and increased house values. **Wirral Council notes that** the right tree needs to be planted in the right place, and existing trees store considerably more carbon than new saplings, so protection is as, if not more, important as planting.

Burnley Borough Council's Park Management

Burnley Borough Council has replaced previously intensive management of public parks with meadow creation, perennial planting and other biodiversity- and climate-friendly management techniques.[26] The project was first implemented in 2014/15, saving over £67,000 in its first year and saving £122,000 to date. £99,000 to get the project running was funded by the Rethinking Parks programme, run by Nesta, the Heritage Lottery Fund and the Big Lottery Fund England. The impact of the project has been a rise in biodiversity following the creation of urban bee farms in the new park meadows, with co-benefits for improvements in physical and mental health of volunteers involved in the project's delivery and the wider community. **Burnley Borough Council notes** that a significant amount of volunteer time was needed to deliver the new park management – they overcame this challenge by investing in Better Impact volunteer management software. Using volunteers rather than council staff has saved the council £34,000 in this project's delivery.

[25] Climate Action (2022) *How Wirral's tree strategy will plant 210,000 trees by 2030*, https://takeclimateaction.uk/climate-action/how-wirrals-tree-strategy-will-plant-210000-trees-2030
[26] Climate Action (2022) *How Burnley manages parks to bring environmental and financial benefits*, https://takeclimateaction.uk/climate-action/how-burnley-manages-parks-bring-environmental-and-financial-benefits

2.2.6 Monitoring, Reporting and Communications

Table 2-6 Monitoring, Reporting and Communications Recommended Interventions

Recommended Intervention	Description	Indicative Cost	Indicative Potential Reduction in Emissions	Timeframe
Overall strategy management	To successfully follow this roadmap, HDC will need to address some common barriers to implementation. Actions include establishing a sign-off process from senior staff members and updating service plans with key actions.	<£10,000	Enabling	2022-2023
Develop an internal climate change communications strategy	Develop a climate change communications strategy and behaviour change communications campaign to share advice and expertise with Council staff members and encourage climate action.	£10,000 - £100,000	Enabling	2022-2023
Co-benefit: • **Internal communication and strategy management can improve communication between Council departments**				

2.2.6.1 Monitoring, Reporting and Communications Case Study Examples

Lancaster City Council's CO_2 Dashboard

Lancaster City Council has developed a CO_2 dashboard to display its Scope 1, 2, and 3 GHG emissions, with the goal of providing an overview of the footprint to councillors, identifying key areas for action, and communicating the council's progress to the public.[27] The **impact** of the dashboard is that it has allowed the council to identify its leisure centre and the single biggest source of GHG emissions, as well as improving data accessibility for contractors and consultants. **Lancaster City Council notes that** the dashboard was a crucial first step in their progress to Net Zero, by instigating project development and educating staff.

Cornwall Council's Environmental Impact Decision Wheel

Cornwall Council has developed a decision wheel with social and economic issues in the centre and environmental issues around the outside.[28] The purpose of the wheel is to embed climate change and biodiversity into operational decision-making. The **impact** thus far has been that many council officers are using the wheel and including it in reports accompanying operational decision-making processes. **Cornwall Council notes that** the tool was developed in collaboration with Carbon Neutral Cornwall and other Cabinet members to ensure the wheel is useful for its purpose and has been refined using feedback after its initial implementation.

Cotswold District Council's Climate Champions

Cotswold District Council has developed three new staff positions to act as Climate Champions, with the responsibility for reducing GHG emissions, enabling stakeholder and community engagement, and shaping the authority's Local Plan.[29] £240,000 was **funded** from the council's budget for these positions – which has been offset by the new staff obtaining £1,200,000 from the government's Public Sector Decarbonisation Fund. **Cotswold District Council notes that** climate reporting, applying for government funding, and updating Local Plans have all been made easier and more streamlined by the creation of these roles.

For more case study examples, see below:

- Bath and North East Somerset Council's cross-department climate governance group

[27] UK100 (2020) *Lancaster City Council's CO_2 Dashboard*, https://www.uk100.org/projects/knowledgehub/lancaster-city-councils-co2-dashboard
[28] UK100 (2020) *Cornwall Council Decision Wheel*, https://www.uk100.org/projects/knowledgehub/cornwall-council-decision-wheel
[29] Climate Action (2022) *How Cotswold District Council appointed climate champions*, https://takeclimateaction.uk/climate-action/how-cotswold-district-council-appointed-climate-champions

2.2.7 Note on Offsetting

Under an SBT trajectory, HDC would need to balance a maximum of 10% of GHG emissions by 2035 through "the permanent removal and storage of carbon from the atmosphere". This can take place through, for example, tree planting. HDC has already given some thought to the potential for tree planting on the council's own land (known as insetting).[30] However, HDC owns limited land, and investigation to date has identified that much of the space that is theoretically available for tree planting is required to remain green for the purposes of recreation, leisure, and wellbeing. This presents a challenge in HDC reaching its Net Zero target, and wider offsetting such as purchasing carbon credits on the open market may need to be considered.

Current carbon market prices range from approximately £10 - £100+ per tCO_2e depending on whether the projects would be UK based or international, and the type of technology/approach being delivered in the project. It is important to note that market prices are evolving quickly as a result of high levels of demand for carbon credits. Given the uncertainties regarding definitions of Net Zero and expected rates of decarbonisation, it is difficult to give a detailed prediction of how prices will evolve; however, it is safe to say that demand will increase substantially, and accordingly prices will likely increase.

Several studies point to potential **future** carbon offsetting prices of £100+ per tCO_2e, and the Government's own projected carbon prices (not strictly for carbon offsetting but a reasonable proxy) going beyond £300 per tCO_2e by 2040. The Council should therefore work on the basis that carbon offsetting is unlikely to offer a solution to Net Zero at a substantially lower cost to delivering direct reductions to the organisation's footprint.

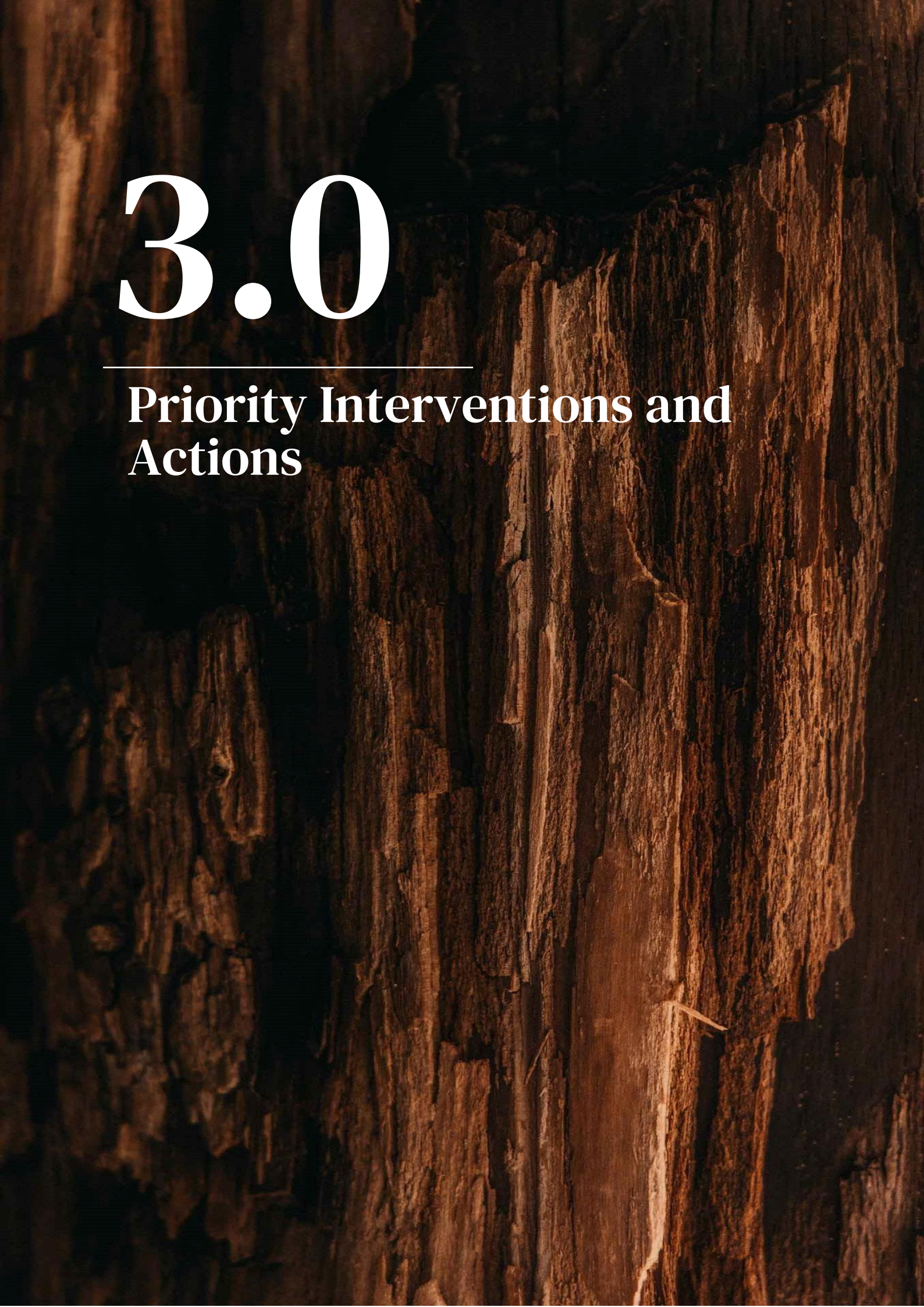
Using an indicative price of £50 per tCO_2e, the cost of offsetting 10% of the Council's 2019/20 baseline emissions (150 $ktCO_2e$) would be in the region of £7.5 million per annum. Whilst there is considerable uncertainty around this figure, it will help contextualise discussions regarding the relative prioritisation of direct reductions vs. carbon offsetting for the Council. It should be noted that this will be an annual ongoing cost which will change according to how prices change and the total quantity of GHGs reduced by the Council.

It may be the case that the Council could deliver GHG removals through woodland creation and other habitat restoration on some of its sites (despite the limitations outlined above). It is unlikely however that the scale of potential on-site GHG removals will be in the order of magnitude of the Council's residual GHG emissions in 2035. Regardless, habitat restoration could help to assuage some of the carbon credit purchases required, whilst delivering local benefits such as biodiversity and wellbeing enhancement through the creation of green spaces.

Achieving Net Zero will therefore require the Council to financially support or physically deliver GHG removal projects. This is a quickly evolving area of environmental activity, which means simple answers are not immediately available regarding the best solutions to pursue. The

[30] It is important to note that offsetting is within the current Serco waste contract and therefore some of the emissions relating to the waste collection service could be offset, rather than reduced.

approach HDC ultimately takes to balancing residual GHG emissions will require weighing up a range of factors, such as the type of projects supported, their locations, costs, and reputations.



3.0

Priority Interventions and Actions

Hart District Council has limited resources to implement the key interventions identified in Section 2.2. Additionally, not all interventions can be undertaken at once. Consequently, a set of four priority interventions have been investigated in more detail. These are interventions which either have the greatest potential to reduce GHG emissions, or tackle GHG emissions sources over which HDC has the greatest control. The selected priority interventions are:

- Improving energy efficiency in buildings;
- Decarbonising heating in buildings;
- Decarbonising electricity supply; and
- Electrifying fleet and waste vehicles.[31]

Section 3.1 outlines indicative GHG emissions reductions and associated capital costs for the chosen priority interventions. Section 3.1.2 outlines the priority actions associated with each intervention.

[31] It is important to note that Basingstoke and Dean Borough Council are the administration authority for the Joint Waste team and therefore would need to be involved in the setting of actions with regards to decarbonising the waste collection service.

3.1 Priority Interventions

3.1.1 GHG Emission and Cost Impacts of Interventions

This section gives indicative GHG emissions reductions and associated capital costs for the priority interventions described in Section 3.0. For the purposes of modelling indicative GHG emissions reductions and capital costs, the chosen priority interventions are split into:

- **Energy efficiency** in operational buildings including (but not limited to) the Leisure Centres, Workshop, and the Civic Offices;
- Decarbonising heating in operational buildings by installing **heat pumps**;
- **Electrifying** fleet including waste **vehicles;** and
- Decarbonising electricity either through **grid decarbonisation** or **other measures**.

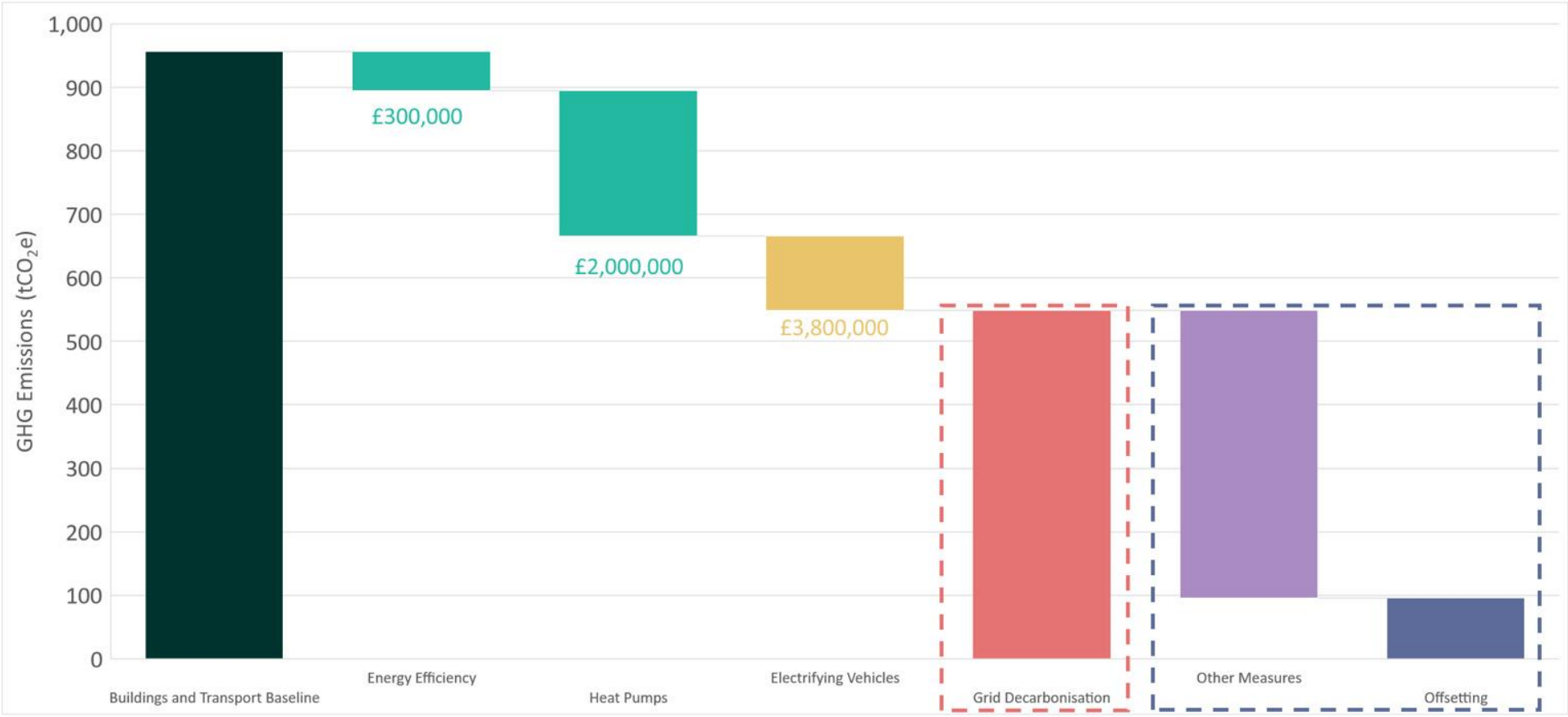
It should be noted that the indicative GHG emissions reductions relating to operational buildings do not take into account the priority action of carrying out a comparative assessment of moving to new office premises. See Section 3.2.1 for more information on this action.

The estimated impact of these interventions on HDC's operational footprint is shown in Figure 3-1. Baseline 2020/2021 GHG emissions from buildings and transport are shown in **dark green**. This does not include GHG emissions from procurement, waste, or land management. The impacts of energy efficiency and heat pumps in buildings are shown in **teal**. GHG emissions reductions from electrifying fleet and waste vehicles are shown in **yellow**. Two scenarios are shown in the dashed boxes:

1. The National Grid decarbonises in line with the UK government's commitment to Net Zero electricity by 2035[32], shown in **pink**; and
2. The national grid does not decarbonise to Net Zero by 2035 and GHG emissions reductions are achieved through other measures such as procuring a Power Purchase Agreement (PPA) with a renewable electricity generator, in **light purple**, with a proportion of GHG emissions to be offset under the SBTi's definition of Net Zero (see Section 2.1), in **dark purple**.

[32] Department for Business, Energy & Industrial Strategy (2021) *Plans unveiled to decarbonise UK power system by 2035*, https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035

Figure 3-1 Priority interventions required to reach Net Zero and associated capital costs (energy efficiency and heat pumps) or additional costs (i.e. compared to business-as-usual – electrifying vehicles)



The results of this indicative assessment are shown in Table 3-1.

Table 3-1 Summary of priority interventions' GHG emissions reduction potential, capital costs, and cost effectiveness

Priority Intervention	Indicative GHG Emissions Reduction (tCO_2e per year)	Associated Capital Cost (£)	Cost Effectiveness (£/ tCO_2e per year reduced)[33]
Energy Efficiency	60	300,000	280
Heat Pumps	230	2,000,000	480
Electrifying Vehicles	120	3,800,000	220
Decarbonising Electricity	550 (or 450 if HDC opts to offset 10% of baseline GHG emissions)	Unknown – depends on HDC's chosen decarbonisation route	

The following subsections summarise the assumptions, results, and risks and interdependencies of the priority interventions. The results presented in Figure 3-1, summarised in Table 3-1, and explained below should be treated as highly indicative. There is significant uncertainty associated with modelling GHG emissions reductions and associated capital costs without real-world assessments of the feasibility of the measures presented. They should therefore be used as a guide to the relative magnitude of the impact of the priority interventions and should not replace dedicated analysis of their applicability.

Energy Efficiency

Assumptions:

- Four energy efficiency measures are included in this intervention: wall insulation, floor insulation, roof insulation and double glazing. The use of these interventions for the purposes of modelling does not preclude other interventions in reality, e.g. triple glazing, deeper retrofit. However, modelling further interventions would not change the overall results – the relative magnitude of energy efficiency compared to other priority interventions would remain the same.
- Embodied carbon is not modelled here – a priority action is to assess the relative impact of energy efficiency measures in an existing building compared to the embodied carbon of a new building. This should not be overlooked, as embodied carbon of a new building is likely to be substantial in comparison to retrofitting an existing building.
- HDC's operational buildings were considered for the applicability of each of these four measures. Each measure is associated with a percentage reduction in energy consumption which is applied if the measure is deemed applicable.

Results and Discussion:

Energy efficiency measures (wall, roof and floor insulation, and double glazing) are estimated to contribute relatively small GHG emissions reductions. It is estimated that applying energy

efficiency measures has the potential to reduce HDC's operational GHG emissions by approximately 60 tCO_2e per year. However, improving energy efficiency is imperative to installing heat pumps, so this small reduction in GHG emissions will enable larger reductions later.

Applying energy efficiency measures has an estimated capital cost of approximately £300,000. With an assumed lifetime of 20 years, the cost effectiveness of energy efficiency measures is estimated to be £280 per tCO_2e reduced per year. Ongoing operational costs will reduce after the application of this intervention, because better-insulated buildings require less energy to heat them.

Risks and Interdependencies:

- Individual assessments of HDC's operational buildings are required in order to fully understand the potential applicability of energy efficiency measures. The GHG emissions reductions potential may differ from what is estimated in this analysis, which is based on Eunomia's prior experience of these types of properties.
- 'Fabric first' measures, i.e. improving energy efficiency, are essential to installing a heat pump in a building to ensure its efficacy. Therefore, the relatively small GHG emissions reductions indicated by energy efficiency measures should not be dismissed.
- The reduction in ongoing operational costs will be dependent on the scale of the energy efficiency measures deemed to be feasible in actuality.

Heat Pumps

Assumptions:

- It is assumed that all operational buildings that consume gas are eligible for a heat pump.
- Heat pumps use approximately 1/3rd of the energy of a gas boiler.
- Heat pumps use exclusively electricity.

Results and Discussion:

Of the priority interventions to be delivered by HDC (i.e. excluding decarbonisation of the national grid), it is estimated that the installation of heat pumps will deliver the largest reduction in GHG emissions. Installing heat pumps, after carrying out the applicable energy efficiency measures, has the potential to reduce HDC's operational GHG emissions by 230 tCO_2e per year.

Installing heat pumps in operational buildings has an estimated capital cost of approximately £2,000,000. This is a large cost, especially for buildings of considerable sizes such as the leisure centres. This cost has been benchmarked against other leisure centres but should nonetheless be treated as highly indicative.[34] With an assumed lifetime of 20 years, the cost effectiveness of installing heat pumps is £480 per tCO_2e reduced per year. Ongoing operational costs are likely to change after the application of this intervention but are difficult to calculate because the price of electricity is highly volatile and therefore difficult to predict.

In order to reach Net Zero, HDC needs to decarbonise heating in its operational buildings. Heat pumps are chosen here for modelling purposes because they are a proven technology, with supply chains that can already operate at scale. Hydrogen, especially "green hydrogen" produced using renewably generated electricity, may also be considered to decarbonise heating in the future. However, at present, hydrogen is more likely to be used to decarbonise industry and heavy transport. This is because the availability of hydrogen for heating is currently unknown. It

[34] Hambleton District Council assessed the feasibility of installing heat pumps into three leisure centres at a cost of £2,100,000, coming to approximately £700,000 each. The assessment presented here calculates the cost of heat pumps in the leisure centres at approximately £650,000 each. http://greenfieldspenrith.com/hambleton-considering-heat-pumps-for-leisure-centres/

is therefore recommended that HDC relies on heat pumps and other proven technologies, rather than taking the technological and financial risk of relying on hydrogen.

Risks and Interdependencies:

- It is essential that energy efficiency measures are carried out prior to installing heat pumps.
- HDC will have to investigate the feasibility of installing heat pumps; if in certain buildings heat pumps are impractical, an alternative low carbon heating system will be required to reach the same level of GHG emissions reduction.
- Heat pumps are estimated to be the most expensive priority intervention – even more so when combined with the prerequisite energy efficiency measures.

Electrifying Fleet and Waste Vehicles

Assumptions:

- HDC owns 10 vehicles that form the operational fleet, and also contracts a waste collection service with a separate vehicle fleet owned by Serco. It is important to note that some of the waste collection fleet vehicles are shared with Basingstoke and Dean. It is assumed that all operational vehicles are eligible to be converted to electric vehicles.[35]

Results and Discussion:

Electrifying fleet and waste collection vehicles has considerable potential to reduce HDC's operational GHG emissions. Converting to electric fleet and waste vehicles has the potential to reduce HDC's operational GHG emissions by 120 tCO_2e per year. Although electrifying fleet and waste collection vehicles are estimated to result in substantial GHG emissions reductions, when decarbonising transport, HDC should follow the sustainable transport hierarchy. The hierarchy prioritises minimising demand for travel, optimising transport (i.e. favouring active travel and public transport over private vehicles), and decarbonising transport (i.e. through electrification). The actions required to decarbonise transport presented in Section 3.2.2 therefore focus on implementing this hierarchy.

Net capital cost is used to demonstrate the difference to HDC between repurchasing the same fleet vehicles and purchasing like for like electric vehicles. Electrifying vehicles is estimated to be comparatively cheaper than installing heat pumps. Converting HDC's operational fleet to electric vehicles has an estimated net capital cost of approximately £100,000. Electric waste collection vehicles have a net capital cost of approximately £200,000 each. With an assumed lifetime of 12 years, the cost effectiveness of electrifying vehicles is £220 per tCO_2e reduced per year. The net capital cost does not include the ongoing operational costs, which will be dependent on the cost of electricity required for charging but are likely to decrease, nor the cost of associated charging infrastructure which varies significantly depending on the type of charging point installed.[36] The installation of these charge points does not directly cause a reduction in GHG emissions and, as such, their cost has not been estimated.

As explained in regard to Heat Pumps, hydrogen as a fuel may be considered in the future to decarbonise transport. However, at present, hydrogen fuel comes with a considerable premium cost, which means it is likely to be used for heavy transport rather than for e.g. HDC's operational fleet. It is therefore recommended that HDC relies on electric vehicles and other

[35] However, it is important to note that this may not be the case, especially for the waste collection vehicles. The decarbonisation of the waste collection service will be strongly linked with the new contract.
[36] For example, slow charging points (which take 4-8 hours) can cost £500-£1,000. Fast charging points (which take 2-4 hours) can cost £2,000-£3,000. Rapid charging points (which take 25-40 minutes) can cost £20,000-£40,000. With such a range, the overall costs of installing the requisite number of charge points will therefore depend on the number of charging points and their composition.

proven technologies, rather than taking the technological and financial risk of relying on hydrogen.

Risks and Interdependencies:

- HDC will have to investigate the feasibility and transition period to switch to electric vehicles. It may be that not all vehicles can be feasibly converted to electric, in which case the GHG emissions reduction potential will decrease.
- Despite the larger portion of the cost being for electric waste vehicles, a cost which will be directly borne by the waste contractor, it is likely that the ongoing cost of the waste collection service may increase to mitigate the burden on the contractor.

After applying interventions to reduce GHG emissions from buildings and transport, all of HDC's operational energy requirements will have been converted to electricity. The remaining electricity consumption is estimated to amount to 550 tCO2e per year. Figure 3-1 contains two 'scenarios' of how these residual GHG emissions could be addressed.

Grid Decarbonisation

Assumptions:

- The first scenario to address residual GHG emissions from electricity relies on the national grid decarbonising in line with the UK government's commitment to decarbonise GHG emissions from electricity to Net Zero by 2035.

Results and Discussion:

If electricity from the national grid is decarbonised by 2035, and the above transport and buildings interventions are applied, this would bring HDC's residual operational GHG emissions from buildings and transport to Net Zero. Of the four interventions considered, this is estimated to be the greatest indicative GHG emissions reduction, with approximately 550 tCO_2e per year reduced.

The underlying decarbonisation of the national grid may be delivered independently of HDC, and therefore has no associated cost because grid decarbonisation will take place at a national level.

Risks and Interdependencies:

- Relying on the national grid to decarbonise in order to bring HDC's operational GHG emissions to Net Zero by 2035 comes with the risk that the government will not deliver on its target, resulting in HDC also missing its target.
- This risk can be somewhat remediated by applying other measures.

Other Measures and Offsetting

Assumptions:

- The second scenario to address residual GHG emissions from electricity combines 'other measures' with offsetting.
- As described in Section 2.1, under the SBTi's definition of Net Zero, HDC can offset up to 10% of its GHG emissions. This amounts to approximately 100 tCO_2e, leaving 450 tCO_2e residual GHG emissions from buildings and transport to be tackled through other measures.

Results and Discussion:

To reduce reliance on the national grid decarbonising, and thus mitigate the risk that HDC will miss its Net Zero target, HDC could take other measures to decarbonise electricity. For example, HDC could procure a Power Purchase Agreement (PPA) with a renewable electricity generator.[37] HDC could invest in renewable electricity generation capacity within the district, and/ or procure a 'true green' tariff (i.e. from a supplier that generates its own renewable electricity). These other measures effectively reduce GHG emissions from electricity to zero. This could be combined with offsetting approximately 100 tCO_2e per year to reduce the pressure on HDC to deliver these other measures.

Risks and Interdependencies:

- These other measures need not exist in isolation from grid decarbonisation – indeed, it is likely that even if the UK government misses its 2035 Net Zero electricity target, some GHG emissions reductions will be achieved. This will reduce the quantity of residual GHG emissions HDC needs to tackle through other measures.

Box 3-1: Summary

- **Energy efficiency:** Applicability of energy efficiency measures is based on Eunomia's experience, not real-world assessment of the applicability of the measures to specific buildings. GHG emissions reductions may therefore differ from the indicative figures given.
- **Heat pumps:** It is assumed that all buildings that consume gas are suitable for a heat pump. The reality may be that some heat pumps are not feasible in all circumstances, and other low-carbon heat sources will need to be found.
- **Electrifying vehicles:** It is assumed that all fleet and waste vehicles can be converted to electric. The reality may be that electric vehicles are not a feasible replacement in all circumstances (this can be the case for refuse collection vehicles in rural settings), and alternative low carbon fuels will need to be found.
- **Decarbonising electricity:** There is a risk that the national grid does not decarbonise at the pace or scale required for HDC to meet its Net Zero target by 2035. HDC therefore may need to consider taking steps to limit the reliance on the national grid decarbonising in order to reach Net Zero.
- **Overall:** Buildings and transport represent relatively easy to decarbonise sectors. Procurement, waste, and land management (not shown in this section) may prove more challenging to decarbonise.
  - To reach Net Zero by 2035, HDC will have to tackle all GHG emissions (regardless of their priority);
  - Many interventions will require preparatory actions to be taken in the short to medium term to enable decarbonisation at a later stage; therefore
  - HDC's focus on priority actions and quick wins should not deter action (especially preparatory action) being taken in other sectors.

[37] A PPA is an arrangement whereby HDC would purchase renewably generated electricity directly from a supplier which installs, owns, and operates renewable energy generation capacity on HDC's land.

3.1.2 Indicative Step-Changes as a Result of Priority Interventions

This section outlines the key decision points for HDC from 2022-2035. In discussion with HDC key opportunities to implement priority interventions by 2035 have been identified. These have been determined based on one of the following criteria:

- Heating system due for replacement;
- Vehicles due for replacement; or
- Contract expiry/renewal.

The key decision points identified are shown in Figure 3-2 by the circled numbers. These decision points are described in Table 3-1. The timing for these priority interventions has been determined based on relevant information provided by Hart District Council.

Figure 3-2 shows the indicative step change in GHG emissions over time as a result of implementing the priority interventions in line with the key opportunity points identified. With regards to the decarbonisation of electricity supply, scenario 1 from Figure 3-1 has been assumed, with the National Grid decarbonising in line with the UK government's commitment to Net Zero electricity by 2035.

The results presented in Figure 3-2, summarised in Table 3-2, and explained below should be treated as highly indicative. There is significant uncertainty associated with modelling GHG emissions reductions without real-world assessments of how the measures presented could be implemented on the HDC estate. The results should therefore be used as a guide to the relative magnitude of the impact of the priority interventions over time and should not replace dedicated analysis of their applicability.

Furthermore, taking action in line with normal contract renewal or product replacement cycles, as displayed in Figure 3-2, is just one option that HDC may take. The Council could equally take action in accordance with budget and staffing availability, which may not align with product lifespans. The latter option should nonetheless take into account embodied carbon in these products and aim to avoid disposing of functioning materials for the purposes of decarbonisation.

Figure 3-2 Indicative step-changes in GHG emissions as a result of priority interventions (not modelled)

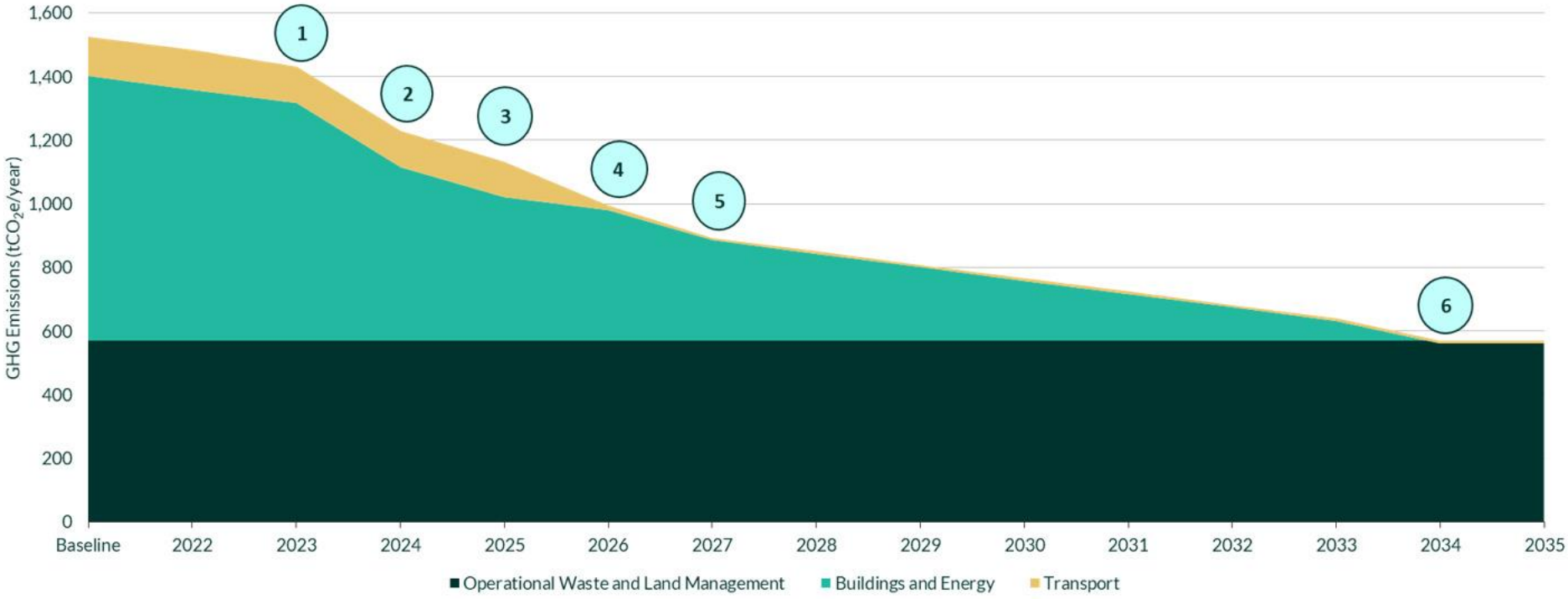


Table 3-2 Key decision points and associated GHG emission reduction potentials

Year	Key Decision Point	Key Decision(s)	GHG Emission Reduction Potential (tCO_2e/year)	Residual GHG Emissions (tCO_2e/year)	Cumulative GHG Emission Reductions as a Result of Linear Grid Decarbonisation (tCO_2e/year)	Residual GHG Emissions (tCO_2e/year)
Baseline 2019/20				1525		1525
2023	**1**	5 fleet vehicles converted to electric	11	1514	42	1472
2024	**2**	1 fleet vehicle converted to electric, energy efficiency improvements in all operational buildings (excluding leisure centres), and heat pumps installed in all operational buildings (excluding leisure centres)	160	1354	84	1270
2025	**3**	1 leisure centre fitted with a heat pump	52	1302	127	1175
2026	**4**	All waste vehicles converted to electric	95	1206	169	1038
2027	**5**	4 fleet vehicles converted to electric and 1 leisure centre fitted with a heat pump	61	1146	211	934
2034	**6**	Energy efficiency improvements in leisure centres	28	1118	507	611
2035				1118	549	569

HDC's footprint in 2019/2020 was 1525 tCO_2e. As Figure 3-2 demonstrates HDC could potentially reduce its operational footprint to 569 tCO_2e by 2035 if it was to implement the priority interventions discussed in Section 3.1. This equates to an emission reduction of 63% (956 tCO_2e) compared to HDC's baseline (2019/20). In accordance with the Science Based Target Initiative, HDC would therefore need to reduce its emissions by a further 27% from the baseline (90% total reduction in emissions) by 2035 to reach its Net Zero target. The remaining 10% of emissions would need to be offset. This highlights that although HDC has the potential to substantially reduce its emissions by focusing on the priority interventions listed in Section 3.1 to tackle emissions from buildings, energy and transport, action must be taken to reduce **all emissions** (including taking action to reduce emissions from **waste and land management**) in order for HDC to reach its 2035 Net Zero target.

Figure 3-2 and Table 3-2 shows that the majority of key decision points for HDC associated with implementing the priority interventions lie between 2022-2027. HDC therefore has the potential to substantially reduce its emissions in the short-term (next 5 years) if it was to take advantage of the key opportunities presented. For example, purchasing electric fleet vehicles when current vehicles are due for replacement and replacing boilers in operational buildings with heat pumps when they reach end of life. If these opportunities were utilised HDC could reduce its emissions to 934 tCO_2e by 2027, a reduction of 39% from the baseline (2019/20). However, it is important to note that in order to take these opportunities there are many preliminary actions which the Council must take to prepare for the implementation of such interventions. For example, an energy audit of operational buildings, a heat pump feasibility study, and staff engagement with regards to the use of electric vehicles. Please see Section 3.2 Priority Actions and the accompanying detailed action plan for more information.

It is also important to note that the key decision points identified above are based on pre-determined criteria. In reality, their order of implementation may need to differ. For example, energy efficiency improvements within the leisure centres should be delivered before heat pumps are installed. The point at which HDC can ensure this happens (at the point of contract renewal) is after the point at which the heating system is due for replacement. This would therefore require work to deliver the energy efficiency measures in partnership with Everyone Active – which is something they could reject.

Figure 3-2 and Table 3-2 ultimately demonstrates that there is a strong opportunity for change in the near future and highlights the key decision points for the Council to consider. Almost all of the decision points are within the next 5 years, and it is therefore important that HDC takes these key decision points into consideration as soon as possible so the suitable preparatory actions can be planned for.

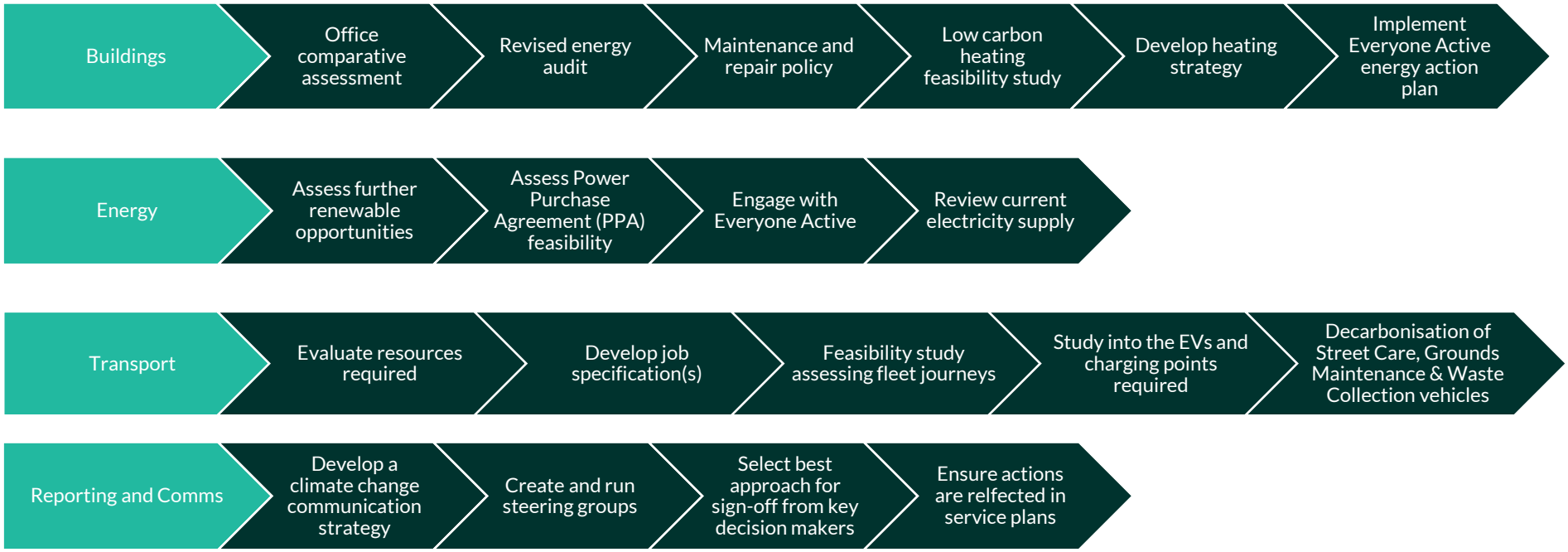
3.2 Priority Actions

This section outlines the priority actions associated with each priority intervention. The key objectives, KPIs, resource implications, costs, co-benefits, and timeframe are clearly outlined for each action. The reference number for each priority action is provided – this corresponds to the detailed action plan provided separately. It is important to note that the following actions do not include actions related to procurement, waste or land management. In order to reach Net Zero it is important that HDC takes action to address all GHG emissions sources. Actions to address emissions from these sources can be found in the detailed action plan, provided separately.

A flowchart is provided in Figure 3-2 which demonstrates the priority order for these actions over time.

Figure 3-3: Flowchart of priority order for actions over time

The dates provided indicate when the Council should aim for the associated action to be **completed**, in order to achieve Net Zero by 2035. The year provided should be viewed as a **deadline** and work should commence on each action ahead of this.



3.2.1 Buildings and Energy

Decarbonising heating and improving energy efficiency

1) **Carry out a comparative assessment of moving to new office premises (B.E.1.1)**

   Uncertainty regarding the longevity of HDC's current office premises is causing inaction, as HDC does not want to invest in improving property it will not reap the benefits of. A comparative assessment of the financial and climate impacts, including the embodied and ongoing GHG emissions, of moving to a new site vs. decarbonising the existing site should be commissioned in the first instance. This should commence after September 2022 once the new tenants are residing in the property so the building is at its 'normal' occupancy before energy consumption is evaluated.
   Objective/KPI: Ascertain whether it is more financially and environmentally beneficial to move to a new site or decarbonise the existing civic office premises
   Resource Implications/Costs: £10,000 - £100,000 (commission)
   Timeframe: Short term, <5 years
   Co-benefits: Long term operational cost savings, leading by example

2) **Revision of energy audit of HDC operational buildings (civic offices and workshop) (B.E.1.2)**

   An energy audit of HDC's operational buildings has already been carried out but lacks sufficient detail to create a plan identifying potential energy saving with associated costs and timeframe to implement and estimated payback. Revision of the report will give more detail of energy efficiency measures.

   Objective/KPI: Revised energy audit for civic offices and workshop
   Resource Implications/Costs: <£10,000 - £100,000 (commission)
   Timeframe: Short term, < 5 years
   Co-benefits: Better air quality through decreased gas combustion; lower running costs and better comfort for staff in warmer buildings

3) **Review and revise internal maintenance and repair policies to limit future reliance on fossil fuels in operational buildings (civic offices and workshop) (B.E.1.7)**

   Develop a policy that prevents, in particular, the installation/ replacement of new gas boilers. This policy should also ensure repairs favour low-carbon replacements e.g. upgrading glazing.

   Objective/KPI: Revised internal maintenance and repair policy for civic office and workshop
   Resource Implications/Costs: <£10,000 (internal – revenue)

Timeframe: Short term, < 5 years
Co-benefits: Better air quality from decreased gas combustion; investment in local businesses for fabric improvements

4) **Assess the feasibility of using low carbon heat sources for buildings (B.E.1.14)**

Heat pumps, including air source, ground source, or water source, produce heat using electricity rather than fossil fuels like gas or oil. These can be used to decarbonise heat in buildings, and air source heat pumps in particular require minimal engineering works. A feasibility study should identify cost effectiveness, technical applicability, and carbon reduction potential of installing heat pumps in civic offices and the workshop. HDC should also work with Everyone Active to investigate the feasibility for using heat pumps for space heating in the leisure centres.

Objective/KPI: Completed feasibility study investigating heat pump installations in civic offices, the workshop, and leisure centres
Resource Implications/Costs: £10,000 - £100,000 (commission)
Timeframe: Short term, < 5 years
Co-benefits: Better air quality from decreased gas combustion; investment in local heat pump supply chain

5) **Develop overall heating strategy for operational buildings (civic offices and workshop) (B.E.1.4)**

In order to decarbonise HDC's buildings by 2035 (and considering the outcome of action BE.1.1), a dedicated buildings strategy should be commissioned. This will assess each of the buildings in HDC's operational boundary and present a bespoke series of solutions for decarbonising. This can be applied in conjunction with, for example, the upcoming adaptation action plan and should use findings of energy audits.

Objective/KPI: Low carbon heating strategy for civic office and workshop
Resource Implications/Costs: £10,000 - £100,000 (commission)
Timeframe: Medium term, 5-8 years
Co-benefits: Better air quality from decreased gas combustion

6) **Finalise and implement Everyone Active energy action plan (B.E.1.21)**

An energy action plan is already in train for Everyone Active. Work with Everyone Active to finalise and implement this. HDC should also encourage Everyone Active to commission a broader energy strategy to present projected future demand, and proposed actions to reduce demand and reduce the carbon intensity of supply. Everyone Active will require capital investment from the Council and HDC should prepare for Everyone Active to come to the Council with options.

Objective/KPI: Finalised energy action plan for the leisure centres; measures identified in the action plan implemented; broader energy strategy commissioned
Resource Implications/Costs: £10,000 - £100,000 (external)
Timeframe: Medium term, 5-8 years
Co-benefits: Better air quality from decreased gas combustion; lower running costs in better insulated buildings and increased comfort for staff and users of the leisure centre

Decarbonising electricity supply

1) **Assess further opportunities for renewable electricity generation across HDC's operational buildings, including rooftop solar PV, micro wind, and energy storage (B.E.2.2)**

   Installation of solar PV on civic office roofs is currently in progress. Considering the outcome of action BE.1.1, a full assessment of potential sites, capacity, and costs to increase supply of on-site renewable electricity generation is required. This should include the consideration of solar PV at the grounds depot and other operational buildings
   Objective/KPI: Assessment of renewable electricity generation opportunities commissioned; assessment completed
   Resource Implications/Costs: £10,000 - £100,000 (commission)
   Timeframe: Short term, <5 years
   Co-benefits: Greater autonomy over electricity supply; visible demonstration of HDC's commitment to decarbonisation

2) **Assess feasibility of a Power Purchase Agreement (PPA) (B.E.2.5)**

   Using internal resource, HDC should assess the feasibility of contracting a PPA to directly supply HDC with 100% renewable electricity. HDC should identify potential renewable generators and initiate discussions on the costs and benefits. HDC may rely on frameworks to procure a PPA and could link with larger organisations to do so e.g. Hampshire CC. This could also link with the new solar farm development in the district that HDC has approved. It is important to consider the current electricity market and commercial implications of switching suppliers at the present time (June 2022).
   Objective/KPI: potential renewable generators identified; full feasibility study, including consideration of frameworks, new solar farm, and costs and benefits completed
   Resource Implications/Costs: <£10,000 (internal – revenue)
   Timeframe: Short term, <5 years
   Co-benefits: Greater autonomy over electricity supply

3) **Engage with Everyone Active on renewable electricity supply for leisure centres (B.E.2.6)**

   The leisure centres' electricity is currently supplied by SSE and some solar PV panels. This decision is made on a financial basis at a high level. HDC

should schedule discussion with Everyone Active to understand the current electricity generation capacity of the existing solar PV panels, and to investigate the potential of procuring electricity which drives increased renewable electricity generation. This could include Everyone Active requesting SSE's 5-year renewable development plan and the Council investigating true green tariff options to present to Everyone Active. It is important to consider the current electricity market and commercial implications of switching suppliers at the present time (June 2022).
Objective/KPI: Meeting held with Everyone Active to discuss electricity supply
Resource Implications/Costs: <£10,000 (external)
Timeframe: Short term, <5 years
Co-benefits: Potential to improve communication with Everyone Active for other areas of the action plan

4) **Review current electricity supply to understand whether existing contracts drive increased renewable electricity generation on the grid (B.E.2.7)**

HDC's current electricity tariff is supplied by Hampshire Laser. A REGO-backed electricity supplier has been investigated but was not selected. HDC should consider changing to a provider that generates the renewable electricity they supply at next contract renewal. It is important to consider the current electricity market and commercial implications of switching suppliers at the present time (June 2022).

Objective/KPI: Renewable electricity suppliers investigated; switched to appropriate identified renewable electricity supplier
Resource Implications/Costs: <£10,000 (internal – revenue)
Timeframe: Short term, <5 years
Co-benefits: Contribution to wider decarbonisation of the national grid, decreasing pressure on HDC directly

3.2.2 Transport

Electrifying fleet and waste vehicles

1) **Evaluate the resource requirement for delivering the decarbonisation of transport (T.1.1)**

   There is a need for internal capacity, skills, and expertise to deliver the work required to achieve Net Zero goals within transport. Consideration should be taken of the possibility of consolidating this work into existing roles, and the level of additional support required.

   Objective/KPI: Internal resource availability and constraints for delivering transport decarbonisation fully understood
   Resource Implications/Costs: <£10,000 (internal – revenue)
   Timeframe: Short term, <5 years
   Co-benefits: Staff satisfaction and potential for career development from some individuals; greater oversight of operational fleet

2) **Develop job specification(s) or internal purchase policy (T.1.2)**

   If it is determined that additional resource is required to deliver transport decarbonisation following action T.1.1, develop job description for hiring new resource. Ensure that the key skills required, that are not currently available within HDC's current staff resource, are captured within job descriptions. Currently, no individual person has oversight of all fleet vehicles – this role should include this responsibility. Alternatively, a policy could be created which requires all vehicle purchases/loans to go through a central officer ensure an alternative fuel vehicle, such as electric, has been fully considered.

   Objective/KPI: Job description developed and advertised
   Resource Implications/Costs: <£10,000 (internal – revenue)
   Timeframe: Short term, <5 years
   Co-benefits: investment in local economy by creating new job opportunity

3) **Conduct feasibility study assessing fleet journeys (T.5.3)**

   Following action T.2.4, assess journey types/ trip purpose and determine what proportion of fleet journeys could be performed by EVs.

   Objective/KPI: Potential for fleet journeys to be carried out by EVs assessed
   Resource Implications/Costs: £10,000 - £100,000 (internal – revenue)
   Timeframe: Short term, <5 years
   Co-benefits: greater oversight of operational fleet; improved air quality by decreasing petrol and diesel use

4) Commission study for EV charge points and EVs required to electrify HDC's fleet. Produce a costed proposal and develop installation plan (T.5.5)

   Charge points are currently being considered for use by staff at civic offices, with the option to be available to the public at weekends (albeit fleet vehicles would remain in place over weekends). A separate civic offices report has already been produced, and site visits are planned to confirm costs. HDC should commission a study to determine the number of charge points that are required; what sites are viable; whether additional work is required (e.g. upgrading electricity systems); and a timeline for fleet replacement. The costed proposal should reflect a study of possible financial models for the funding of charge points. This could fall under the role of a dedicated transport officer, identified in T.1.1.

   Objective/KPI: EV charge point and EV requirement study commissioned; fully costs proposal developed; installation plan developed
   Resource Implications/Costs: £10,000 - £100,000 (commission)
   Timeframe: Medium term, 5-8 years
   Co-benefits: Better air quality by decreasing petrol and diesel use

5) **Decarbonise predominantly diesel street care and ground maintenance vehicles (T.5.6)**

   Joint working with Basingstoke and Deane to develop a specific decarbonisation strategy for street care and ground maintenance vehicles. The strategy should cover the whole fleet, mapping out opportunities and associated timescales, considering new contract details. The strategy should continually consider the cost and wait times for electric road sweepers and work buggies, which have been identified as being too expensive and too long. It should be noted that road sweepers have recently been replaced and will now be operational for approximately 10 years. 'Risk' vehicles should be identified which will not require replacing until close to/after the 2035 Net Zero target date.

   Objective/KPI: Strategy for decarbonising street care and ground maintenance vehicles developed
   Resource Implications/Costs: £10,000 - £100,000 (internal – revenue)
   Timeframe: Medium term, 5-8 years
   Co-benefits: Better air quality by decreasing petrol and diesel use, leading by example

6) **Assess potential for waste contractors to use electric or low emissions fuels for vehicles (T.5.9)**

   Refuse vehicles currently have Euro 6 engines and electric bins lifts, with further changes unlikely until 2026. HDC has also identified HVO (hydrotreated vegetable oil) as a key decision point for the contract with

Serco. Prior to contact renewal, HDC should investigate the potential for further decarbonising waste collection vehicles.

Objective/KPI: Investigate decarbonising waste collection vehicles
Resource Implications/Costs: £10,000-100,000 (internal)
Timeframe: Medium term, 5-8 years
Co-benefits: Better air quality by decreasing petrol and diesel use, leading by example

3.2.3 Monitoring, Reporting and Communications

Monitoring and Reporting

1) **Create and run steering group(s) to oversee delivery and ensure accountability (MRC 1.1)**

   Alterations to buildings, transport, procurement, waste, and land management have the potential to disrupt day-to-day operations. It is critical that key internal departmental stakeholders are involved in the planning and management of any improvement works. Establish a cross services climate action working group. More communication between service areas and teams is required to enable a holistic and efficient approach to climate action. This action applies organisation wide and should be led by a senior-level officer. Based on learnings from previous working groups the vision of the steering groups needs to be clear and set out from the offset.

   Objective/KPI: Steering group created; communication patterns between group established
   Resource Implications/Costs: <£10,000 (internal)
   Timeframe: Short term, <5 years
   Co-benefits: Better communication between different departments

2) **Select best approach for getting sign-off from key decision makers (MRC 1.3)**

   Many actions surrounding HDC's operations will require sign-off from relevant management and staff members. Establish a system by which heads of service can propose new climate actions/ projects monthly for sign off and approval. This system would include the bi-monthly update of existing projects/ actions through a RAG rating, i.e. green – progressing as planned, amber – some issues encountered but still on track, red – not started and/ or significant hurdles encountered, not progressing as planned.

   Objective/KPI: Sign-off approach established
   Resource Implications/Costs: <£10,000 (internal)
   Timeframe: Short term, <5 years
   Co-benefits: Better communication between staff members and key decision makers; improved staff satisfaction as a result

3) **Ensure relevant actions are reflected in service plans (MRC 1.4)**

   As raised in manager and leadership meetings, service plans to be updated and reviewed annually to reflect relevant climate action. This will enable clear ownership for delivery of actions, and prevent actions being missed. In particular, this will address difficulties identified in transferring information between officers and the Comms team.

Objective/KPI: Service plans updated with climate actions
Resource Implications/Costs: <£10,000 (internal)
Timeframe: Short term, <5 years
Co-benefits: Improved staff satisfaction by understanding when, where, and how they are expected to carry out actions identified; potential for career development for those taking ownership of actions

Communications

1) **Develop a climate change communication strategy** (**MRC 1.10**)

Develop a climate change communications strategy and behaviour change communications campaign to share advice and expertise with staff and encourage climate action. Promote climate change and sustainability in the Council through improved website, events and Council communications. Adapt existing Council climate change webpage to become an information hub, showcasing action by HDC, climate targets and plans and signposting resources and funding opportunities to staff.

Objective/KPI: Climate change communication strategy developed; Council webpage adapted
Resource Implications/Costs: £10,000 - £100,000 (internal – revenue)
Timeframe: Ongoing
Co-benefits: Upskilling of staff on the topic of climate change; motivate wider action in the Council; more accessible webpage