

Springwood Community Centre

Decarbonisation Feasibility Study

March 2026



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Executive Summary



Executive summary

This report presents the findings of the energy and Net Zero feasibility assessment conducted at Springwood Centre, Havant Borough Council.

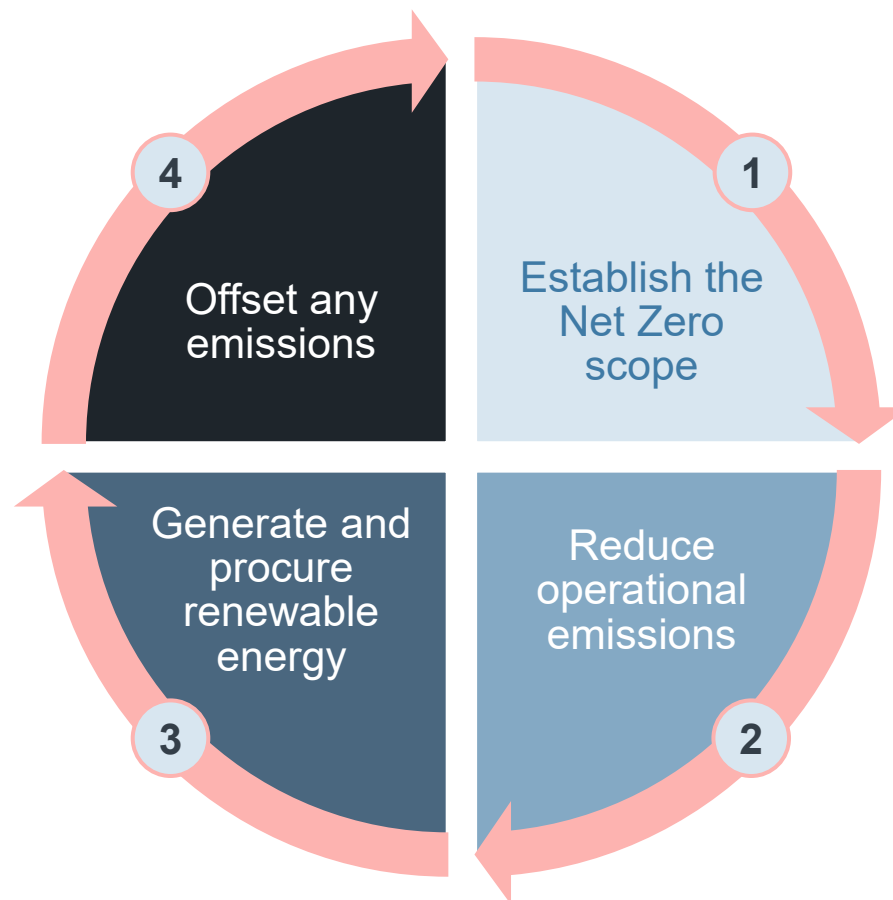
Baseline: Calendar year 2025

- ❖ Energy consumption: 86,200 kWh
- ❖ Energy costs: £12,200
- ❖ Carbon emissions: 19.4 tCO₂e
- ❖ The energy baseline includes electricity imports and natural gas.

Key findings:

- ❖ Install solar Photovoltaic (PV) to generate clean energy on site.
- ❖ Replace gas boilers for Air Source Heat Pumps (ASHPs) to complete site degasification
- ❖ Optimise main hall Air Handling Unit (AHU) operation.

Net Zero Pathway



Executive summary



Summary of recommendations

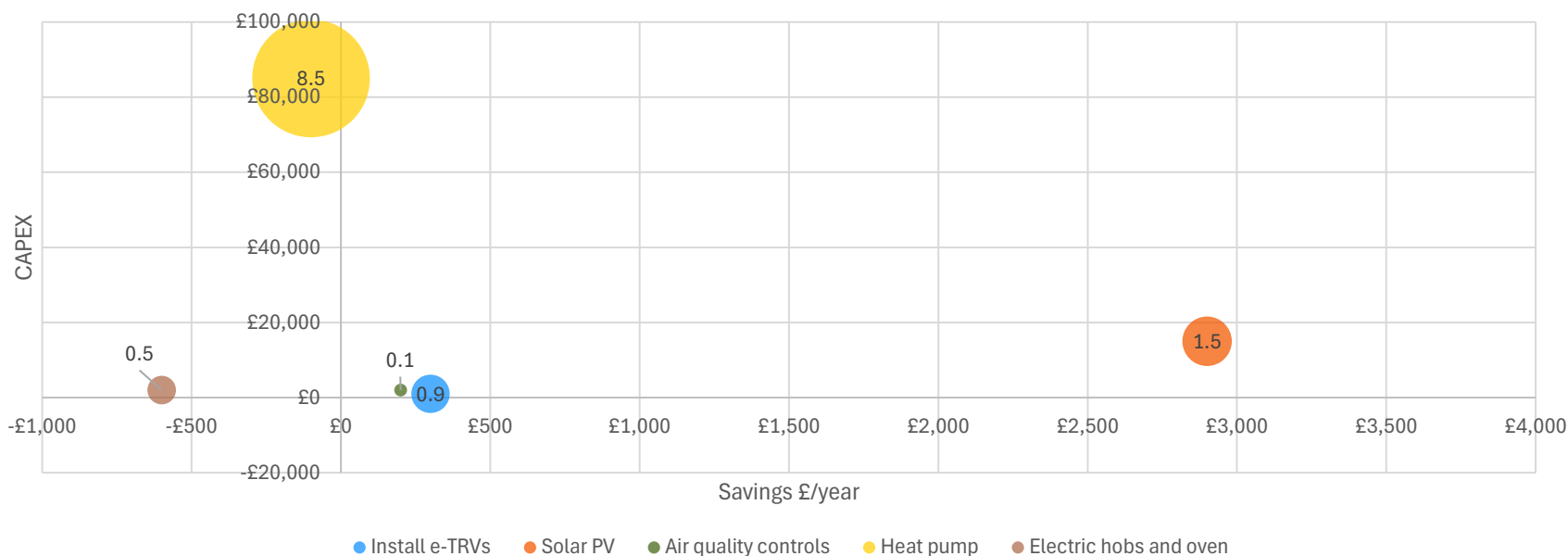
Note: The solar PV recommendation does not result in any energy savings, as the generation of renewable energy on site does not affect the overall energy consumption of the site.

#	Recommendation	Implementation year	Savings			Capital cost	Payback period	Cost to Carbon Savings Ratio	RAG rating for payback timing
			kWh	tCO ₂ e	£	£	years	£/tCO ₂ e	Quick wins
									Medium-term
									Long-term
1	Install e-TRVs	2026	4,270	0.9	£300	£1,000	3.3	£1,111	
2	Solar PV	2027	0	1.5	£2,900	£15,000	5.2	£10,000	
3	Air quality controls	2027	810	0.1	£200	£2,000	10.0	£20,000	
4	Heat pump	2030	32,540	8.5	-£100	£85,000	No payback	£10,000	
5	Electric hobs and oven	2026	2,000	0.5	-£600	£2,000	No payback	£4,000	
Total			39,620	11.5	£2,700	£105,000	>15 years		
Total - short and medium term			5,080	2.5	£3,400	£18,000	5.3		
Total - long term and carbon focused measures			34,540	9.0	-£7,000	£87,000	No payback		

The cost to carbon savings ratio (£/tCO₂e) compares upfront capital investment against annual carbon savings. This is also referred to as carbon abatement cost. Measures with low carbon abatement costs are the most cost effective in reducing carbon emissions, while higher-cost measures may still be required to achieve Net Zero.

Bubble chart of recommendations

The bubble chart below shows how the identified measures compare in terms of capital investment and energy savings. The annual carbon savings per measure is reflected by the bubble size (also given by the value within or near each bubble). Therefore, a larger bubble represents a larger annual reduction in carbon emissions.



Disclaimer: Energy auditing methodology suggests assessment of life-cycle costs where possible, but this is complex to calculate and involves assessment of taxation and asset depreciation by a Qualified Accountant. However, it has been assumed that [Client]'s financial investment criteria are based on simple payback time and so this has been used here. Some measures may qualify for capital allowance; however, it is recommended to take advice from an accountant to assess the individual cases. All calculations are based on average utility prices from Springwood Community Centre and payback times will reduce if prices rise in the future.

Caution: It is emphasised that these savings figures have been built up from the estimated impact of individual, discrete projects, and implementing projects in parallel may reduce the overall savings figure achievable, due to the aggregated impact of the measures. WSP recommends that Havant Borough Council checks the data, calculations and assumptions for each energy saving measure before making any investment decisions. All costs presented are estimates to allow the relative benefits of each opportunity to be assessed. Further detailed design and costing of options should be carried out by Havant Borough Council to verify payback times.

Introduction



Havant Borough Council's Net Zero Strategy



Havant Borough Council have committed to reducing its operational greenhouse gas emissions by 68% by 2030 (baseline year 2021/22), through their Climate Change Strategy and Action Plan. It also acts as an interim target to support HBC's aim of having zero carbon associated with its own operations by 2035 and across the Borough by 2045.

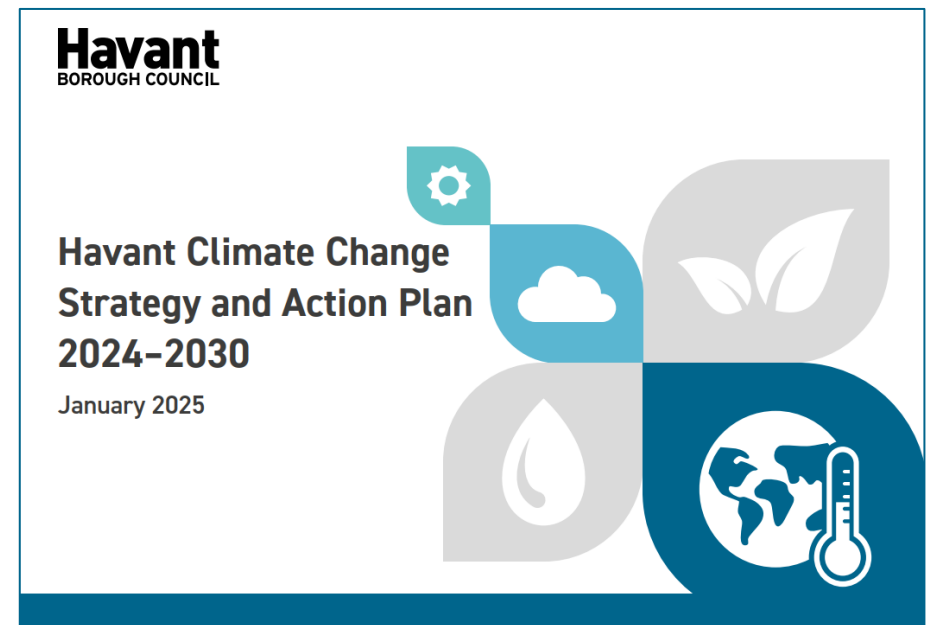
HBC reports emissions in line with the Greenhouse Gas Protocol, covering Scopes 1, 2 and 3. Due to data limitations, Scope 3 reporting is currently limited to Transmission and Distribution (T&D) losses and emissions from outsourced services and leased properties, with coverage expected to expand over time.

These commitments are set out in the Climate Change Strategy & Action Plan 2024–2030 which establishes the council's emissions baseline and a framework for ongoing monitoring, transparency, and targeted decarbonisation.

HBC have used 2021/22 as the baseline year to calculate their emissions reduction target. HBC have also set an acceptable residual emissions level for 2030 as 25 tCO₂e.

HBC are also developing a Decarbonisation Roadmap that will set out the sequenced steps, costs, carbon savings and practical measures required to decarbonise its operations and the wider Borough - providing a clear, evidence-based pathway to meet its 2030, 2035 and 2045 Net Zero targets.

To translate these strategic commitments into practical, evidence-based action, HBC is now undertaking a programme of decarbonisation feasibility studies to understand how individual sites can contribute effectively to the council's wider Net Zero pathway.



Decarbonisation Feasibility Study Project Aims and Scope

To underpin the Council's Net Zero pathway, this feasibility study delivers the site-specific technical insight necessary to inform prioritisation and investment decisions within HBC's wider decarbonisation programme. The aim is to provide HBC with a robust understanding of Springwood Community Centre's current performance, including its energy consumption, carbon emissions, and alignment with Net Zero benchmarks. The report identifies practical decarbonisation and efficiency measures that would enable Springwood Community Centre to contribute meaningfully to the Council's Net Zero goals. Overall, the findings will support the Council in tracking progress, planning investment, and taking coordinated action across its estate.

This report presents the findings of the energy and Net Zero feasibility assessment conducted at Springwood Community Centre. The report provides the following:

- Analysis of energy consumption at Springwood Community Centre, including an overview of the site and its energy users,
- Recommendations to reduce the site's energy consumption and operational carbon emissions,
- Guidance on how Springwood Community Centre can achieve Net Zero operational carbon emissions, tailored to Havant Borough Council's targets and wider decarbonisation ambitions.

The energy and Net Zero feasibility assessment follows the methodology detailed in BS EN 16247 (2012) – Energy Audits. Please refer to Appendix A for WSP's Methodology and Limitations. The Net Zero elements of this study follow best practice, using UK Green Building Council (UKGBC) guidance, The Carbon Trust, and the *UK Net Zero Carbon Buildings Standard* (UKNZCBS, Sept 2024). The Standard has been used to frame Net Zero pathways for the operational carbon emissions at Springwood Community Centre, while noting that formal verification is not awarded as part of this study.



Site Context



Site overview

Site:	Springwood Community Centre
Address:	110 Springwood Avenue Waterloo Hampshire PO7 8BJ
Floor area:	524 m ²
Survey date:	17/12/2025



The Springwood Community Centre belongs to Havant Borough Council and is currently run by Springwood Foundation Charity. It offers a wide and diverse range of activities including dance classes, toddler/baby groups, martial arts, social clubs, sports and educational events for all ages and interests. Further to regular activities, the halls and rooms of the venue can be hired out for parties, conferences, workshops, classes, meetings etc.

The site was constructed in the 1980's and comprises a single storey ground floor building with pitched roofs. It is assumed that walls are of brick insulated cavity construction. Windows are opening double-glazed type.

Main building's areas include a lobby and reception office, a small hall (commonly used as children's nursery), the main hall (for kids and adults' indoor activities/ weekend parties), the conference suite, a small coffee/treats shop, welfare facilities, plantroom, stores and a kitchen.

Further to electricity, natural gas is used on site, for space heating, hot water generation and in catering facilities.

Typical occupancy hours of the building are weekdays 8:30-17:00. Evening activities tend to take place on Monday to Thursday between 17:00-20:00.

Lighting across the building has been upgraded to LED and is in good condition. Lighting controls are predominantly manual, apart from welfare facilities, storage rooms and main entry pre-hall that are equipped with presence sensors. External lighting is controlled via a timer switch.

Space heating is achieved by means of 2no. Hoval gas condensing boilers (duty-standby), each rated at 50kW. During the site survey it was mentioned that the boilers underwent repairs in 2025. These boilers feed into the wet radiators, equipped with Thermostatic Radiator Valves (TRVs), across all building areas. Similarly, the air handling unit (AHU) the delivers space heating to the main hall, is also connected to the said boilers.

Hot water is generated via the aforementioned gas boilers and is stored in a cylinder on the loft.

In terms of **ventilation**, all rooms other than the main hall, rely on natural ventilation via opening windows. The main hall, has a dedicated AHU with supply and extract fans and air recirculation capability. The fans were upgraded or April 2025 to high efficiency Electronically Commutated (EC) type units.

Control of main plant relies on a recently installed building management system (**BMS**). This dictates operating hours for space heating, hot water generation and the AHU. However, the site managers seem to have limited access and operating knowledge of the BMS.

No mechanical **cooling** plant exists on site.

Energy management matrix



WSP has assessed the energy management approach of the site against the matrix shown below (highlighted cells show the current status). This has been derived based on discussions with site managers and observations made during the energy survey. The higher the level, the better a site is performing in terms of the respective energy management category.

Level	Energy Policy	Organising	Training	Performance Measurement	Communication	Investment
4 (excellent)	Energy policy, Action Plan and regular review have active commitment of top management	Fully integrated into management structure with clear accountability for energy consumption	Appropriate and comprehensive staff training tailored to identified needs, with evaluation	Comprehensive performance measurement against targets with effective management reporting	Extensive communication of energy issues within and outside of organisation	Resources routinely committed to energy efficiency in support of business objectives
	Formal policy but no active commitment from top management	Clear line management accountability for consumption and responsibility for improvement	Energy training targeted at major users following training needs analysis	Weekly performance measurement for each process, unit, or building	Regular staff briefings, performance reporting and energy promotion	Same appraisal criteria used as for other cost reduction projects
	Un-adopted Policy	Some delegation of responsibility but line management and responsibility unclear	Ad-Hoc internal training for selected people as required	Monthly monitoring by fuel type	Some use of company communication mechanisms to promote energy efficiency	Low or medium cost measures considered if short payback period
	An unwritten set of guidelines	Informal, mostly focused on energy supply	Technical staff occasionally attend specialist courses	Invoice checking only	Ad-Hoc informal contacts used to promote energy efficiency	Only low or no cost measures taken
	No explicit energy Policy	No delegation of responsibility for managing energy	No energy related staff training provided	No measurement of energy costs or consumptions	No communication or promotion of energy issues	No investment in improving energy efficiency
3						
2						
1						
0 (poor)						

Energy Analysis



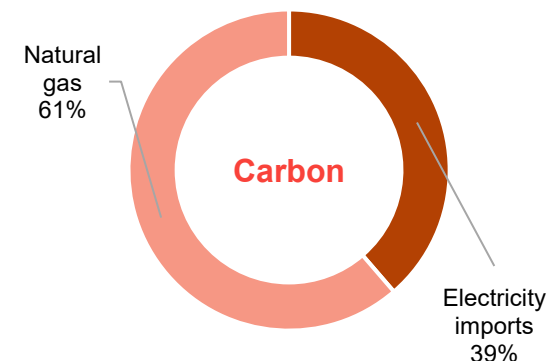
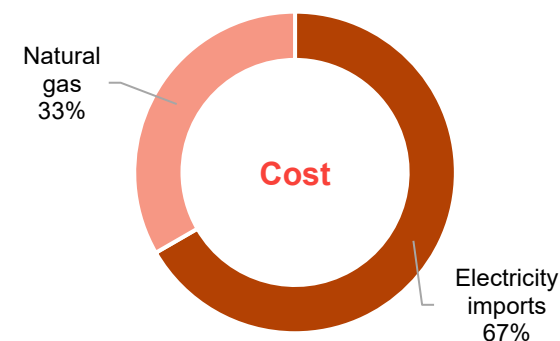
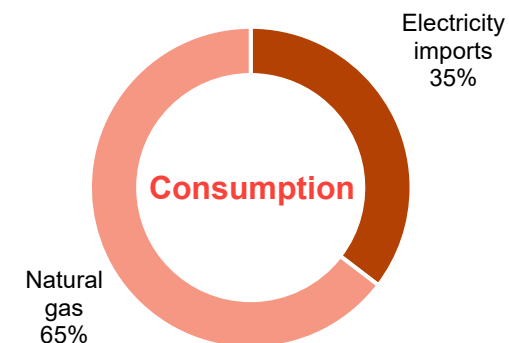
Energy baseline

Springwood Community Centre has provided energy consumption and cost data for the Jan–Dec 2025 period, and the analysis in the following pages is based on this data. Annual consumption for the site is shown in the table below, which represents energy usage from the 1st of January 2025 to the 31st of December 2025. Unit costs and carbon factors are detailed in the below as well. Unit costs are sourced from the provided utility bills. The carbon factor is sourced from DESNZ Greenhouse Gas Conversion Factors 2025.

Fuel type	Consumption		Costs		Emissions	
	kWh	%	£	%	tCO ₂ e	%
Electricity imports	30,506	35.4%	£8,107	66.7%	7.49	38.7%
Renewable energy 1	0	0.0%	-	-	-	-
Total electricity	30,506	35.4%	£8,107	66.7%	7.49	38.7%
Natural gas	55,694	64.6%	£4,052	33.3%	11.87	61.3%
Total	86,200	100.0%	£12,159	100.0%	19.36	100.0%

Energy tariffs	£/kWh
Electricity imports day rate	£0.27
Natural gas	£0.07

Carbon factors	kgCO ₂ e/kWh
Electricity imports	0.245
Natural gas	0.213



* <https://assets.publishing.service.gov.uk/media/6846a4f55e92539572806125/ghg-conversion-factors-2025-full-set.xlsx>

Energy benchmarks and targets



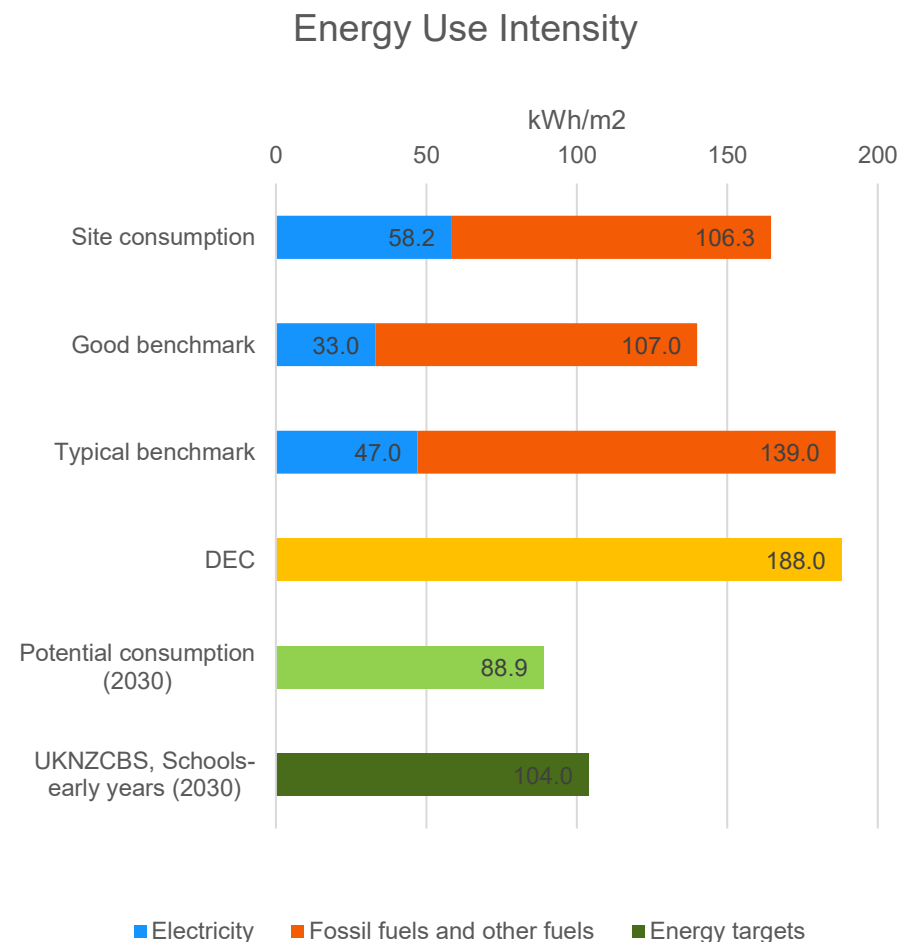
To assess the site's performance, the energy intensity was compared to benchmarks and targets for similar buildings. The site's energy intensity as captured on its display energy certificate (DEC) has been included to the bar chart. It should be noted however, that it reflects historic measured energy use based on a different baseline year to this decarbonisation feasibility study.

The CIBSE benchmarks¹ for local authority community centres (2021) has been used to assess the current energy performance of the site. These give the typical energy consumption per square meter per year for community centres and are derived from actual operational buildings.

Springwood Centre is performing better than the typical benchmarks for these building types. This is likely due to the adoption of efficient lighting systems (LED) and the independent main hall heating.

Yet significant potential remains for the site to further reduce its energy use intensity and go from 164.5 kWh/m² to 88.9 kWh/m², should the identified energy saving opportunities become implemented.

Comparing the potential consumption to the UKNZCBS 2030 target² for early years school, reveals that the site can outperform this target.



1. <https://www.cibse.org/knowledge-research/knowledge-portal/guide-f-energy-efficiency-in-buildings-2012>

2. https://8f2d86b0-7c72-4129-a02b-72f5adfae419.filesusr.com/ugd/790941_f53e6b4b6dc04fd3aeb4b122a1b95b15.pdf

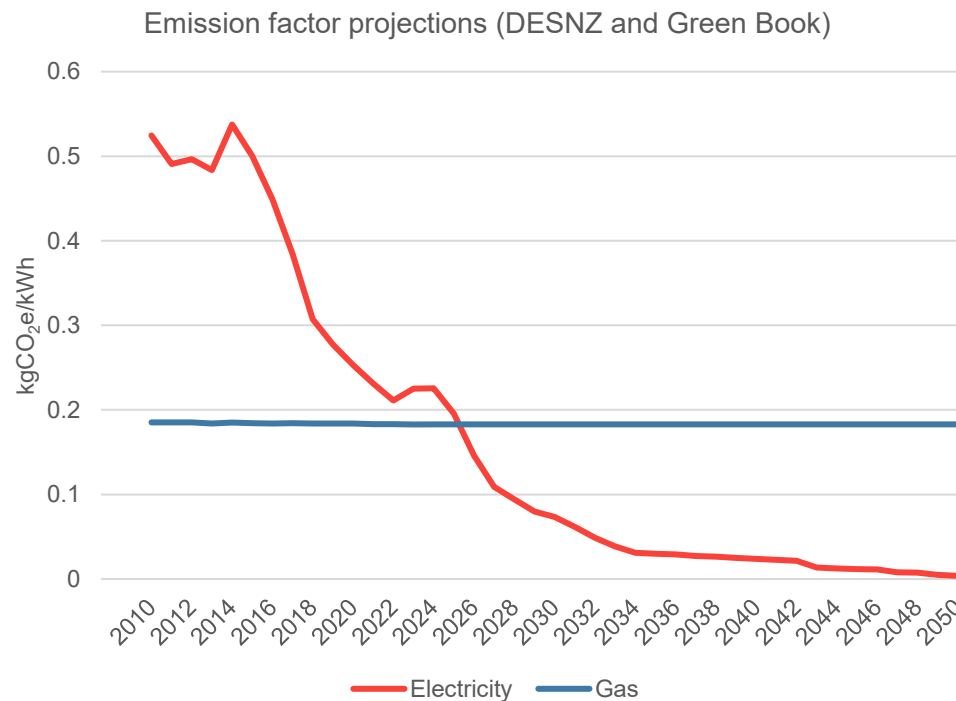
Energy carbon emission projections



Carbon factor projections have been developed using the Green Book published by HM Treasury (November 2023 update), following the methodology detailed by DESNZ on energy carbon projections.

To model carbon factor projections, DESNZ carbon factors up to 2025 have been used alongside the Green Book* projections.

Carbon factor projections are used in the Net Zero assessment to calculate emissions for interim and final targets.



As can be observed on the graph, the electricity carbon factor is decreasing, and is set to continue decreasing until it reaches near zero emissions. However, the gas carbon factor will remain stable as natural gas is a fossil fuel and is not generated by renewables. Therefore, the removal of gas and electrification of operational processes will allow for Net Zero to be achieved.

It is expected that the electricity generation in the UK will decarbonise by 2050. The UK's energy mix has changed substantially in recent years, becoming noticeably more reliant on clean energy sources and much less reliant on polluting and carbon emitting fuels such as coal.

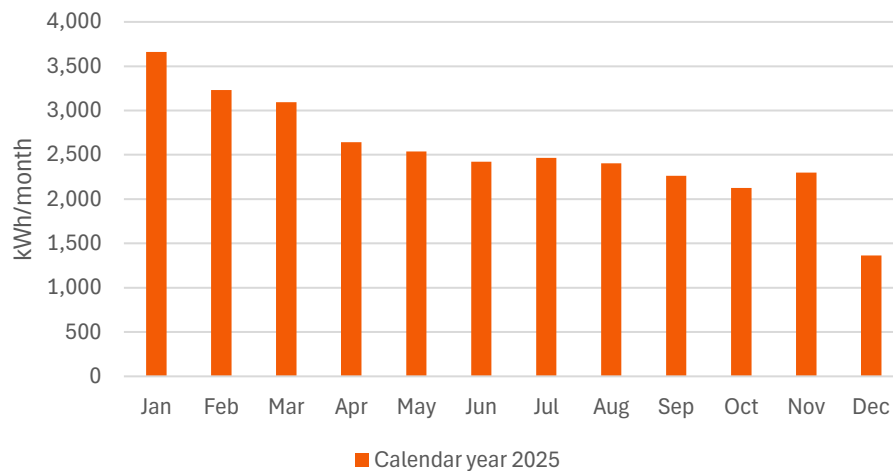
* <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

Energy analysis - Electricity

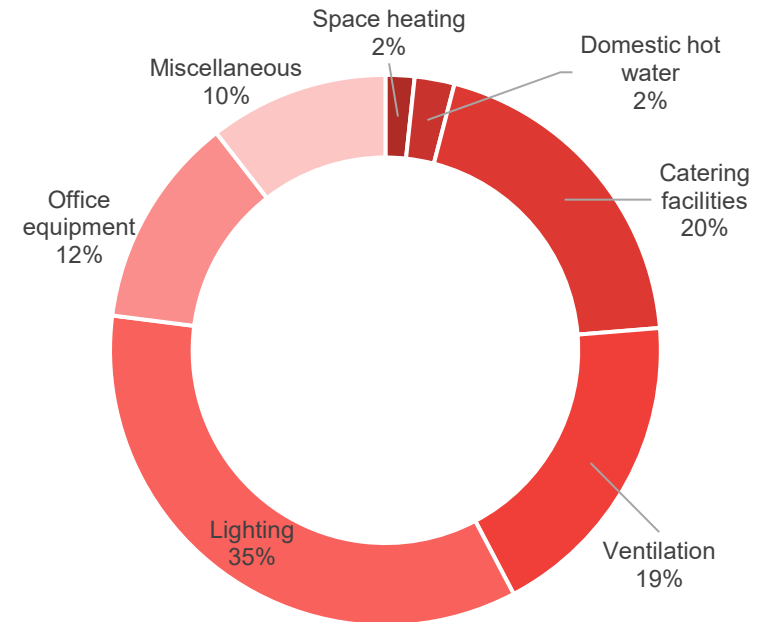


The below left chart, demonstrates the monthly electricity demand for Springwood Community Centre, across the 2025 calendar year. It can be observed that colder months (Nov-Mar) tend to have higher power consumption. This can be attributed mainly to longer hours per day that lighting is in use compared to summer months. The drop in December is assumed to be largely attributed to lower occupancy because of holidays period break. (It should be noted that the monthly breakdown heavily relies on estimated readings and may not be fully representative of actual demand. Nov and Dec monthly demand represents actual readings following the installation of smart meter in Oct 2025).

Total electricity consumption



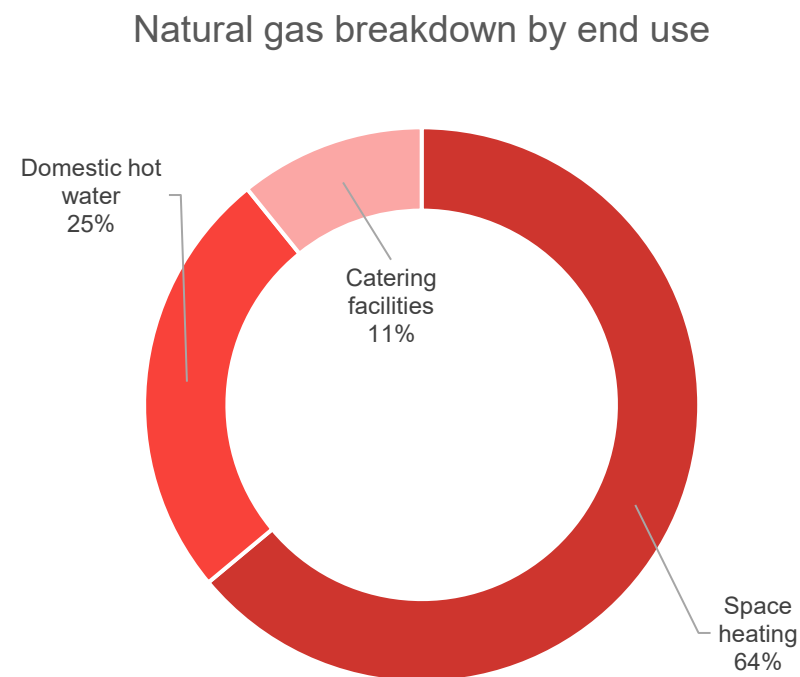
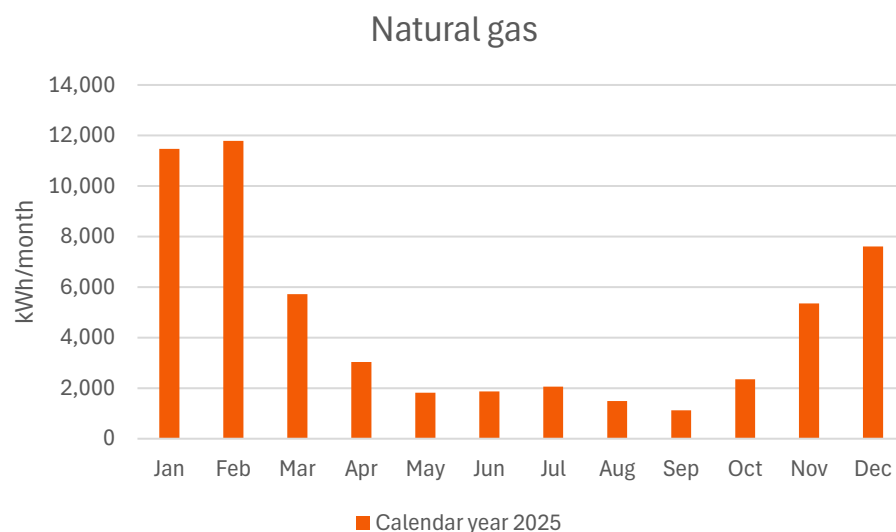
Electricity imports breakdown by end use



The electricity breakdown graph (right) relies on estimations of the energy consumption of the various items of plant, equipment and systems, calculated using the power rating, hours of use and utilisation diversities where applicable. As such, the figures should be taken as an indication only. However, the chart can be used to focus efforts on those areas with the largest energy consumption, and the best potential for making savings.

Energy analysis – Natural gas

The left chart below, captures the monthly natural gas demand for Springwood Community Centre, across the 2025 calendar year. Natural gas consumption is dominated by space heating and therefore the monthly profile aligns with high gas demand during colder months of the year. Gas is also used for hot water generation, and to a much lesser extent in catering, which explains the gas demand during warmer months (May-Aug).



The natural gas breakdown graph (right) uses metered data and estimations of the energy consumption of the various items of plant, equipment and systems, calculated using the power rating, hours of use and utilisation diversities. As such, the figures should be taken as an indication only. However, the chart can be used to focus efforts on those areas with the largest energy consumption, and the best potential for making savings.

Heating degree day analysis

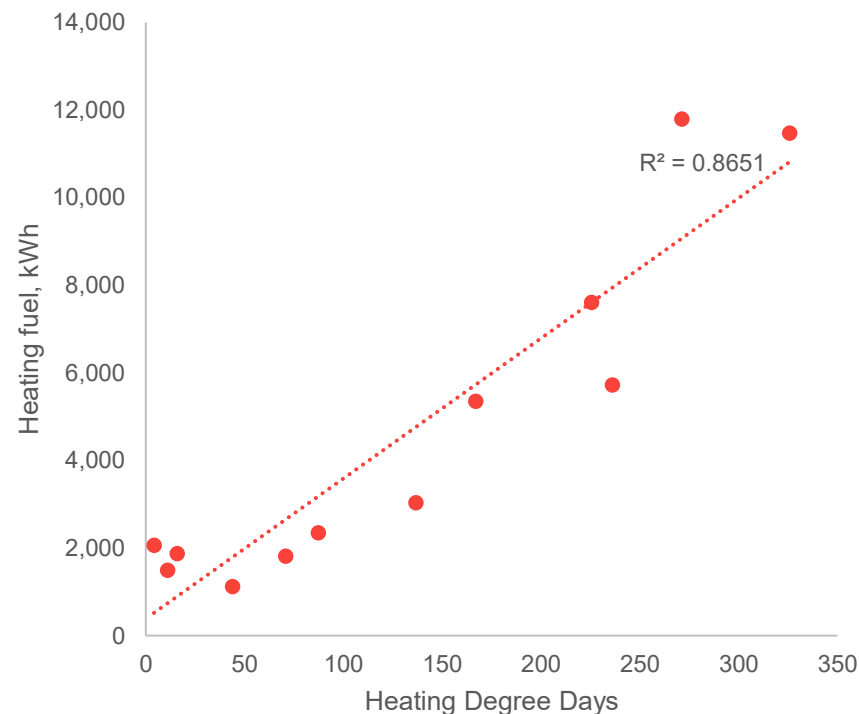
Energy consumption can be compared against external temperatures to assess the impact of temperature on energy consumption.

This metric is the degree day. The heating degree day provides the heating requirement of a building, representing a fall in the external average of one degree below a specified base temperature for one day.

The base temperature is the minimum external temperature at which there is no requirement for additional heating. The figures on the right shows the total site gas usage for those months when heating is generally required, compared with heating degree days. A base temperature of 15.5°C has been selected – this should be the external temperature below which heating needs to be provided to the building.

Within the degree days analysis, R^2 should be as close as possible to 1 to represent a perfect correlation.

In this case, $R^2=0.865$, indicating an average correlation between gas consumption and heating degree days. As the gas consumption accounts for hot water and catering as well, this is to be expected. Yet, there may be opportunity to further optimise current heating controls.



Net Zero Pathway



Net Zero Pathway – Operational emissions



This report focuses on operational emissions and does not consider construction emissions (for new assets, retrofit projects or reportable works), or whole life emissions (for the installation of new equipment). The Net Zero Pathway for operational emissions covered is shown below.



1. Establish the Net Zero scope

- Establish the operational emission baseline, and report emissions,
- Establish Net Zero and interim targets.



2. Reduce operational emissions

- Identify energy and carbon saving opportunities,
- Implement any feasible opportunities, focusing on fossil fuel removal,
- Consider any emissions associated with the implementation of the opportunities, for example:
 - Emissions from any construction work required,
 - Refrigerant global warming potential (GWP) for heat pumps.



3. Generate and procure renewable energy

- Generate renewable energy on site wherever possible,
- Procure renewable electricity for remaining electricity demand.



4. Offset any remaining emissions

- Offset remaining emissions using a recognised offsetting framework,
- Disclose the offset emissions.

The above steps should be followed for all assets, and for all energy consumers, including tenant areas where Havant Borough Council has some level of operational control, or ownership of any energy consumers. This includes building fabric upgrades, plant upgrades, or lighting upgrades.

1. Establish the Net Zero Scope



Operational Emissions Boundary for This Assessment



This assessment focuses on operational greenhouse gas emissions associated with energy use at Springwood Community Centre, consistent with HBC's established reporting approach and the Greenhouse Gas Protocol. The operational boundary includes Scopes 1, 2 and relevant Scope 3 sources, with the following considerations:

Included in Scope 1 & 2

- Scope 1: Direct fuel combustion, for example, associated with on-site heating systems.
Note: Emissions from the authority's fleet and fuel use are excluded from this study.
- Scope 2: Purchased electricity consumed at Springwood Community Centre.

Included in Scope 3 (Operational-level sources relevant to the building)

- Transmission & distribution (T&D) losses
- Well-to-Tank emissions (WTT)

Excluded Scope 3 Sources

The following Scope 3 categories sit outside the boundary of this feasibility assessment as they fall beyond the operational control of the site-level energy Net Zero feasibility assessment:

- Outsourced operations associated with the building (e.g., energy use for leased areas where applicable)
- Staff commuting
- Staff business travel
- Staff working from home
- Water consumption (see note below)
- Material use
- Waste
- Wider outsourcing activities unrelated to on-site energy use

Water Consumption Note

Water consumption is reviewed qualitatively at a high level to identify efficiency opportunities. Associated emissions are not included in the overall net-zero emissions total for this report.

Net Zero Baseline



The Springwood Community Centre energy baseline for the 2025 calendar year is given below, including carbon factors, energy rates, energy intensity and carbon intensity.

Energy consumption	kWh/year	£/year	tCO ₂ e/year
Electricity imports	30,506	£8,107	7.49
Renewable electricity 1	0	-	-
Total electricity	30,506	8,107	7.49
Natural gas	55,694	£4,052	11.87
Total energy consumption	86,200	£12,159	19.36

The site's baseline energy consumption amounts to 86,200kWh, with the majority attributed to natural gas. The baseline emissions from energy use are of 19.4 tCO₂e; 11.9 tCO₂e from natural gas and the remaining 7.5 tCO₂e from electricity imports.

Energy and carbon intensity	Energy intensity (kWh/m ²)	Carbon intensity - baseline year (kgCO ₂ e/m ²)
Electricity imports	58.2	14.3
Renewable electricity 1	0.0	0.0
Total electricity	58.2	14.3
Natural gas	106.3	22.7
Total energy consumption	164.5	36.9

2. Reduce Operational Emissions



Reduce operational emissions



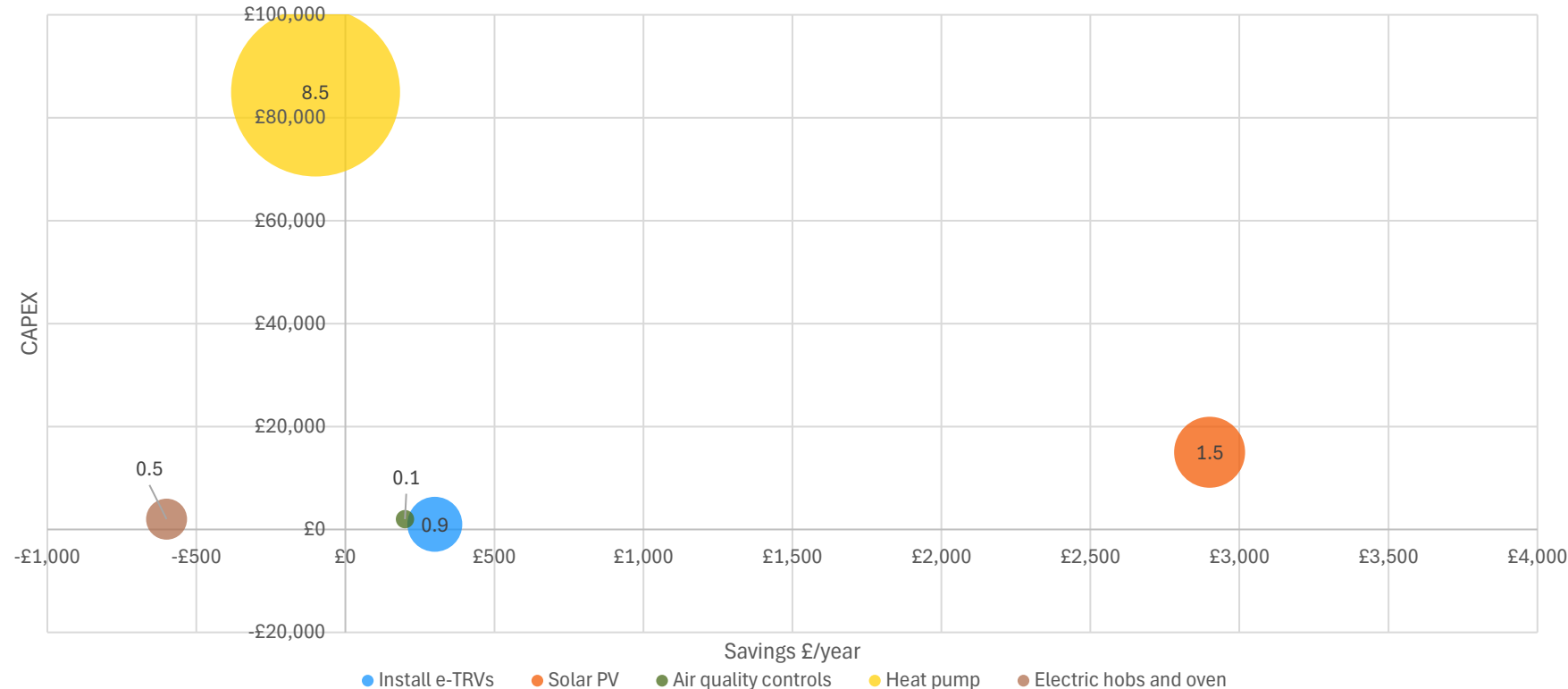
This section of the report outlines the opportunities for decarbonisation and reduction in operational energy emissions. It covers the key actions needed to progress towards Net Zero operational carbon at Springwood Centre. The findings and further details for each opportunity can be found in Section 2.1 and 2.2:

#	Recommendation	Implementation year	Savings			Capital cost	Payback period	Cost to Carbon Savings Ratio	RAG rating for payback timing
			kWh	tCO ₂ e	£	£	years	£/tCO ₂ e	Quick wins
									Medium-term
									Long-term
1	Install e-TRVs	2026	4,270	0.9	£300	£1,000	3.3	£1,111	
2	Solar PV	2027	0	1.5	£2,900	£15,000	5.2	£10,000	
3	Air quality controls	2027	810	0.1	£200	£2,000	10.0	£20,000	
4	Heat pump	2030	32,540	8.5	-£100	£85,000	No payback	£10,000	
5	Electric hobs and oven	2026	2,000	0.5	-£600	£2,000	No payback	£4,000	
Total			39,620	11.5	£2,700	£105,000	>15 years		
Total - short and medium term			5,080	2.5	£3,400	£18,000	5.3		
Total - long term and carbon focused measures			34,540	9.0	-£7,000	£87,000	No payback		

For the purpose of the Net Zero feasibility assessment, recommended implementation years have been assigned to each recommendation, based on the ease of implementation, and allowing for planning permissions and feasibility studies to be conducted where necessary. Recommendations are detailed further in the previous section of the report. The solar PV recommendation savings are applied to electricity imports and do not affect the total electricity consumption or intensity. The two recommendations with no payback relate to the site degasification and are key to reaching Net Zero.

Cost to carbon savings ratio

The bubble chart below shows how the identified measures compare in terms of capital investment and energy savings. The annual carbon savings per measure is reflected by the bubble size (also given by the value within or near each bubble). Therefore, a larger bubble represents a larger annual reduction in carbon emissions.



Options appraisal – action plan



The timeline below sets out a potential action plan where measures have been prioritised considering carbon impact, capital intensity, payback and feasibility. Early actions typically focus on low-cost and operational measures while later actions typically focus on more strategic, longer-term investments which are likely to be required to achieve Net Zero.

2025 - 2026	2027 - 2029	2030 onwards
Install eTRVs: implement over the next 6 months. Low disruption, set temperature levels per area to match typical activities schedule. Electric hobs and oven: can be implemented immediately, low disruption.	Solar PV: 2-4 years. Medium site disruption, proceed subject to roof condition and feasibility study. Air Quality controls: implement within 12-24 months, medium site disruption, subject to space constraints.	Air source heat pump: implement within 4-6 years. High capital cost, enabling measure for achieving Net Zero.

Energy Saving Recommendations – LCCA



Life Cycle Cost Analysis (LCCA) is a method used to assess the lifetime costs and benefits of a measure. LCCA considers the costs and savings of a measure, the time over which this measure is considered, hence its predicted lifespan, and the discount rate applied to future costs and savings, equating these to present day value.

LCCA was conducted for each measure implemented, considering the capital investment required, the energy costs or savings over the lifetime and the maintenance costs or savings over the lifetime.

The discount rate has been considered at 3%.

For the LCCA, the capital cost has been adjusted from the values shown in the original energy saving recommendation, which are for the baseline year, to account for the predicted implementation year. The electricity and gas costs are based on the actual tariffs paid by Springwood Community Centre for the baseline year and have been adjusted over time using the Green Book electricity and gas projections. The maintenance costs are based on the assumed cost to maintain the measure implemented (e.g. maintenance costs for a heat pump), compared to maintenance costs prior to the implementation (e.g. maintenance costs for the previous heating and/or cooling systems). These are adjusted year-on-year using the discount rate, and the costs are for the measure lifespan.

Energy Saving Recommendations – LCCA



The results of the LCCA are presented in the table below. Negative figures indicate cost savings. Maintenance costs or savings represent costs or savings compared to existing systems (if applicable).

Overall, the capital cost for all measures combined is circa £95,000 with energy cost savings of £51,400 and maintenance costs increase of about £4,300.

Recommendation	Implementation year	Recommendation lifespan	Capital cost (£)	Energy costs or savings (£)	Maintenance costs or savings (£)	Total costs or savings (£)	Total energy savings (kWh)
Install e-TRVs	2026	10	£1,440	£-2,472	£439	£-593	42,738
Solar PV	2027	25	£14,714	£-46,192	£3,831	£-27,648	0
Air quality controls	2027	30	£1,456	£-4,056	£0	£-2,600	24,252
Heat pump	2030	20	£75,521	£-6,021	£0	£69,500	650,680
Electric hobs and oven	2026	20	£1,900	£7,337	£0	£9,237	40,157
Total	-	-	£95,032	£-51,405	£4,270	£47,897	757,826

2.1. Operational Energy



eTRV controls for radiators



Implementation in 2026	Annual Savings			Cost (£)	Payback (years)
	£	tCO ₂ e	kWh		
			Gas		
Heating					
Controls improvement	£300	0.9	4,270	£1,000	3.3



TRV at max setting on reception office radiator

Current status:

Space heating throughout the site is achieved via radiators which are fed by the central gas boilers. These have local manual TRVs for adjusting room temperature level. Most TRVs were found at maximum temperature settings. Additionally, a central timer thermostat exists and which dictates the gas boiler operation.

Recommendation:

It is recommended to install electronic thermostatic radiator valves (eTRVs) to the radiators which allow for localised temperature and timer controls on each radiator. The eTRVs are added to a central control application to allow for remote control and improved energy management. Each radiator can be controlled individually or as a group to create 'zones' which can have schedules and temperature setpoints independent of each other.

Savings of 12% have been assumed on the site heating consumption from the implementation of eTRVs, at a cost of £120 per eTRV (including installation and software integration costs). It is assumed that eTRVs should be installed on circa 12 radiators.

Next Steps and Additional Support Required:

- Liaise with competent contractors to investigate options to install eTRVs on the radiators.
- Upon installation, define zones and schedule temperature levels based on anticipated activities per room/area.



Example of eTRV

Air quality controls

Implementation in 2027	Annual Savings			Cost (£)	Payback (years)
	£	tCO ₂ e	kWh		
			Electricity		
Heating					
Controls improvement	£200	0.2	810	£2,000	10.0

Current status:

Space heating and ventilation for the main hall at Springwood Centre is achieved via a dedicated AHU. This unit was recently refurbished with high efficiency fans and features air recirculation capability. It is thought that air recirculation is set at fixed ratio. This means that the volume of air supplied and extracted remains constant, regardless of actual indoor air quality which could result in higher than required ventilation rates. This in turn leads to energy waste as higher volume of air than necessary undergoes treatment.

Recommendation:

It is recommended to install an air quality sensors to the AHU, to enable extract air CO₂ levels monitoring. The supply and extract fan speeds could then be as well as the recirculation ratio, for maintaining a CO₂ target of 800-1000ppm CO₂. It should be noted that even a 10% reduction in fan speed can return up to 27% savings in fans' power consumption.

In this case it has been estimated that 14% reduction in ventilation electrical demand can be achieved from a modest 5% reduction in fan speeds.

The investment cost presented above, accounts for the provision and installation of a CO₂ sensor and two motorised recirculation dampers, should it be required to upgrade the existing recirculation dampers.

Next Steps and Additional Support Required:

- Liaise with AHU supplier/maintenance contractor to confirm existing recirculation dampers compatibility.
- Source quotations for hardware and installation work costs.
- Ensure compatibility with existing BMS and integrate controls.
- Downtime of AHUs would be required, works should be planned around site's operation.



Example of motorised damper.

Heat pump

Implementation in 2030	Annual Savings				Cost (£)	Payback (years)
Heating	£	tCO ₂ e	kWh			
			Elec imports	Natural gas		
Long term capital investment	-100	8.5	-12,860	45,400	85,000	>15 years



Existing 50kWth gas boilers for space heating and DHW.

Current status:

Space heating and domestic hot water (DHW) generation are achieved via two (master-slave) Hoval natural gas boilers, each rated at 50kWth. This is common practice and traditionally cost effective. However, carbon emissions from this plant will remain significantly higher compared to an electrified solution based on heat pumps. This is because grid electricity emissions are expected to continue reducing in line with the grid decarbonisation target of 2050.

At the time of the survey, only one boiler was enabled. Therefore, it is assumed that 50kWth is sufficient to meet the site's thermal load.

Recommendation:

It is recommended to replace the gas boilers with an equivalent air source heat pump (ASHP).

While the installation of an ASHP has no viable payback due to the high upfront costs, replacement should still be considered as it is the primary method for decarbonising the site. Additional savings not quantified will arise from the removal of gas supply to the site.

Savings are based on an assumed efficiency of 85% for the gas boiler compared to a coefficient of performance (COP) of 3.0 for the replacement ASHP. Costs are based on the replacement of the boilers and associated plant for a 50 kWth heat pump, matching the existing boiler rating. The heat pump should be capable of delivering high flow temperatures to accommodate DHW generation thus displacing the respective gas demand.

ASHPs can also provide cooling, if this is an option that Springwood Centre seeks to explore for occupant comfort.

Next Steps and Additional Support Required:

- Liaise with a competent contractor to obtain quotes for the replacement of the gas boiler with an ASHP.
- ASHP solution for replacing current gas boilers should accommodate DHW generation.
- Ensure controls are compatible with existing BMS and integrate.

Electric hobs and oven

Implementation in 2026	Annual Savings				Cost (£)	Payback (years)
Catering equipment	£	tCO ₂ e	kWh			
			Elec	Gas		
Other measures	-600	0.5	-4,000	6,000	2,000	No Payback



Existing hobs and oven natural gas unit in the main kitchen.

Current Status:

The main kitchen at Springwood Centre, currently employs a natural gas commercial oven and hobs unit. Although cost effective, carbon emissions from this unit will remain significantly higher compared to an electric equivalent, especially as grid electricity continues to decarbonise.

Recommendation:

It is recommended to replace the unit with an equivalent electric hobs and oven unit. This will alleviate the use of natural gas for catering and contribute to fully decarbonising the site.

Catering gas demand is assumed at 11% of total 2025 gas baseline. Savings are based on 60% efficiency for existing gas unit versus a 90% efficient electric unit.

Next Steps and Additional Support Required:

- Review gas oven and hobs future usage to determine if catering could be outsourced.
- Procure an electric unit from reputable manufacturers.
- Adjust extraction fan controls.

2.2. On-site Renewable Electricity Generation



On-site renewable electricity generation



Generating renewable electricity on-site will reduce Springwood Centre's electricity import consumption and costs and its reliance on the electricity grid.

Any on-site generated renewable electricity consumed by Springwood Centre has zero operational emissions, and any exported electricity shall be metered and reported to provide carbon emission benefits. Renewable electricity generated on-site shall be included in Springwood Centre's baseline energy consumption and energy use intensity.

Installing solar Photovoltaic (PV) arrays would allow the building to generate some of its own electricity. Other solutions such as wind and hydroelectric are not feasible at this site.

How does solar PV work

- Solar PV systems use cells to convert solar radiation into electricity. The PV cell consists of one or two layers of a semi conducting material, which is usually silicon. When solar radiation hits the cell, it creates an electric field across the layers causing electricity to flow. This solar radiation is still present on cloudy days but is less intense. The greater the intensity of the light, the greater flow of electricity, which means sunny days provide a greater opportunity for generating electricity on site.
- On days where the electricity generation from the solar PV system exceeds the building's demand, any excess generation can be exported to the electricity grid for a financial benefit to [client].



Suggested implementation in 2027	Annual Savings				Cost (£)	Payback (years)
Energy Generation	£	tCO ₂ e	kWh			
			Elec imports	Renewable Elec		
Long term capital investment (with payback over 3 years)	£2,600	1.3	10,940	-10,940	£15,000	5.2

Current Status:

Presently Springwood Centre does not benefit from onsite renewable energy generation. Power generated locally can be used to partly offset grid imports and assist in reducing energy cost impacts arising from volatile electricity price.

Solution:

Subject to favourable structural assessments, the southwest facing pitched roof top, as highlighted with the yellow frame on the picture to the left, could be used for installing a solar PV system. This area corresponds to about 160m² and could house an installation of circa 30kWp. Yet, the size of the system has been kept at 11kWp to maximise self-consumption (assumed at 100%) and achieve optimum payback. This system would be capable of generating circa 11,000kWh .

Next Steps and Additional Support Required:

- Obtain and review additional solar PV options from high standard contractors.
- Consider system size (or future expansion), in conjunction with heat pumps installation.
- Investigate shading impact from nearby trees and any structural or grid connection constraints.
- Review any government/local incentives that are available.



2.3. Energy and Carbon Projections



Reduce operational emissions



Implementing all the recommendations detailed previously would lead to energy savings of 46%, from 164.5 kWh/m² to 88.9 kWh/m².

The carbon intensity would drop by 83.0% in 2030, 93.1% in 2035, and 99.1% in 2050. This drop is largely attributed to the decarbonisation of the electricity grid, as it is assumed that the site would be free of fossil fuels by 2030, following the replacement of gas-powered kitchen appliances and the gas boilers.

At present, Springwood Centre would have to offset 19.4 tCO₂e to reach Net Zero. By 2030, assuming all opportunities are implemented, 3.3 tCO₂e would remain to offset, and by 2035 this becomes just 1.2 tCO₂e.

Offsets would still be required to reach Net Zero, even if electricity is purchased from a renewable or green tariff.

The graphs in the following slides show the following:

- Impact of the recommendations on the site's energy intensity upon implementation,
- Impact of the recommendations on the site's carbon emissions in 2035,
- Projected building operational carbon emissions from 2025 to 2050.

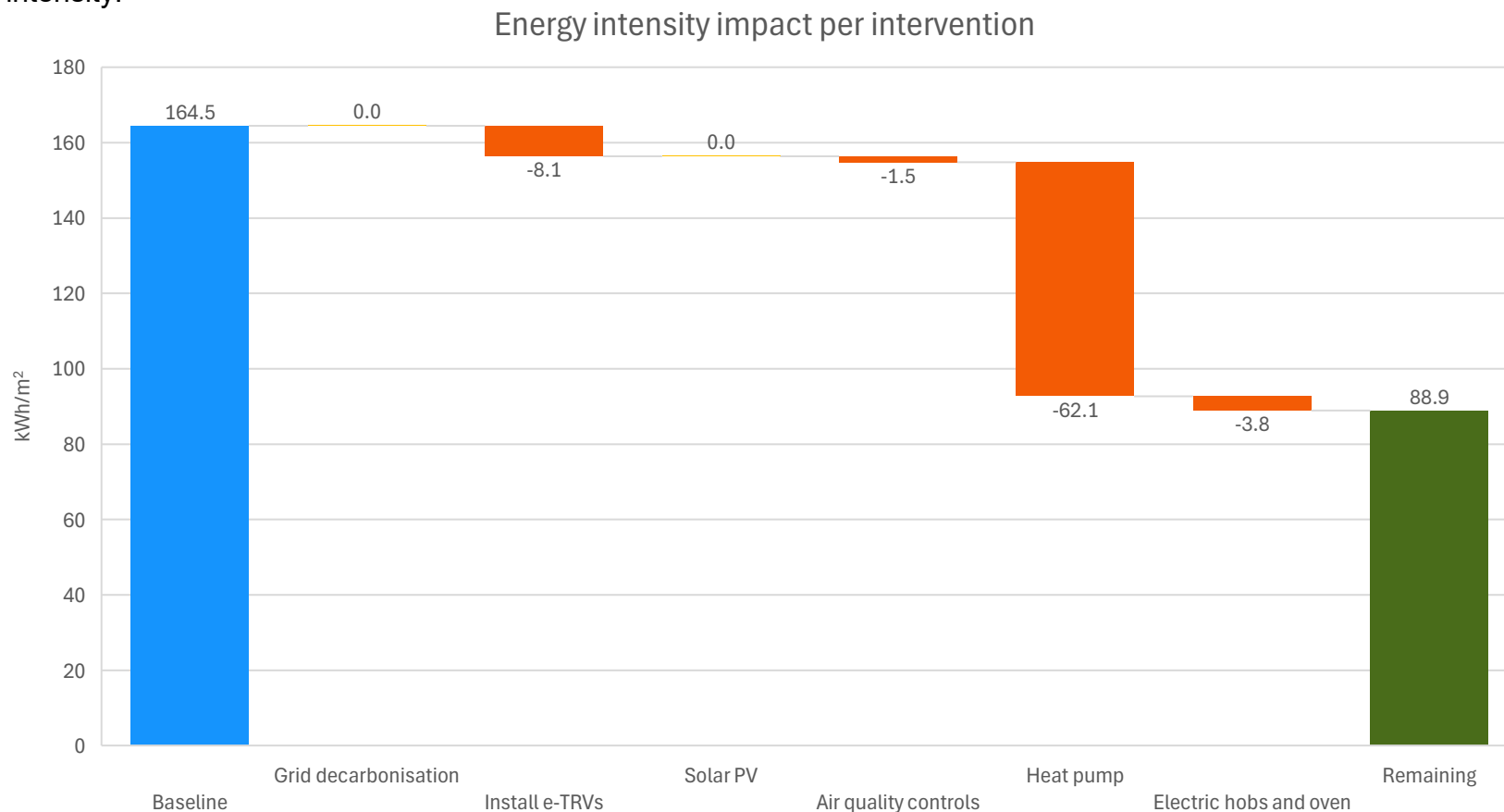
As can be observed from the graphs, the bulk of the energy and emissions reduction is from the replacement of the gas boiler with a heat pump.

The grid decarbonisation will also have a large impact on emissions reduction. If natural gas use is continued in the building, the impact will be greatly reduced, and the carbon intensity of the building will remain high.

Energy intensity impact per recommendation

The waterfall graph below shows the baseline energy intensity of the site and the impact of each energy saving measure. (Blue= baseline, orange= decrease from measures, green= remaining post measures implementation)

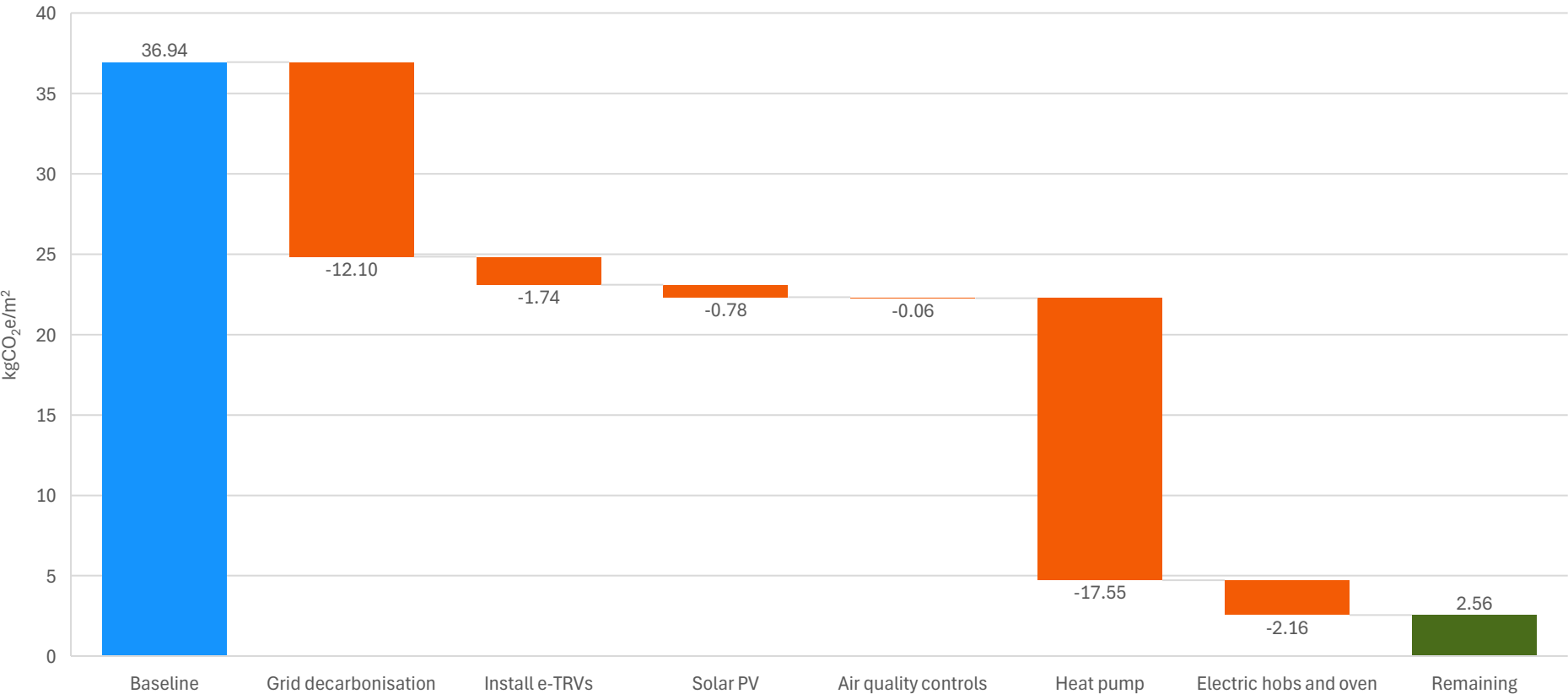
As already mentioned, the introduction of heat pump bears the highest potential reduction to the site's energy intensity, followed by the eTRV controls measure. The solar PV measure does not contribute to energy reduction hence has no impact to site's energy intensity.



Carbon intensity impact per recommendation – 2035

The projected carbon intensity impact of each recommendation in 2035, is shown in the graph below. This compares the carbon impact of reductions against the Havant Borough Council Net Zero aspirational target. The heat pump measure carries the highest impact followed by eTRV controls. HBC's Net Zero aspirational target of 68% emissions reduction by 2035 can be met (and surpassed) if all measures are implemented. (Blue= baseline, orange= decrease from measures, green= remaining post measures implementation)

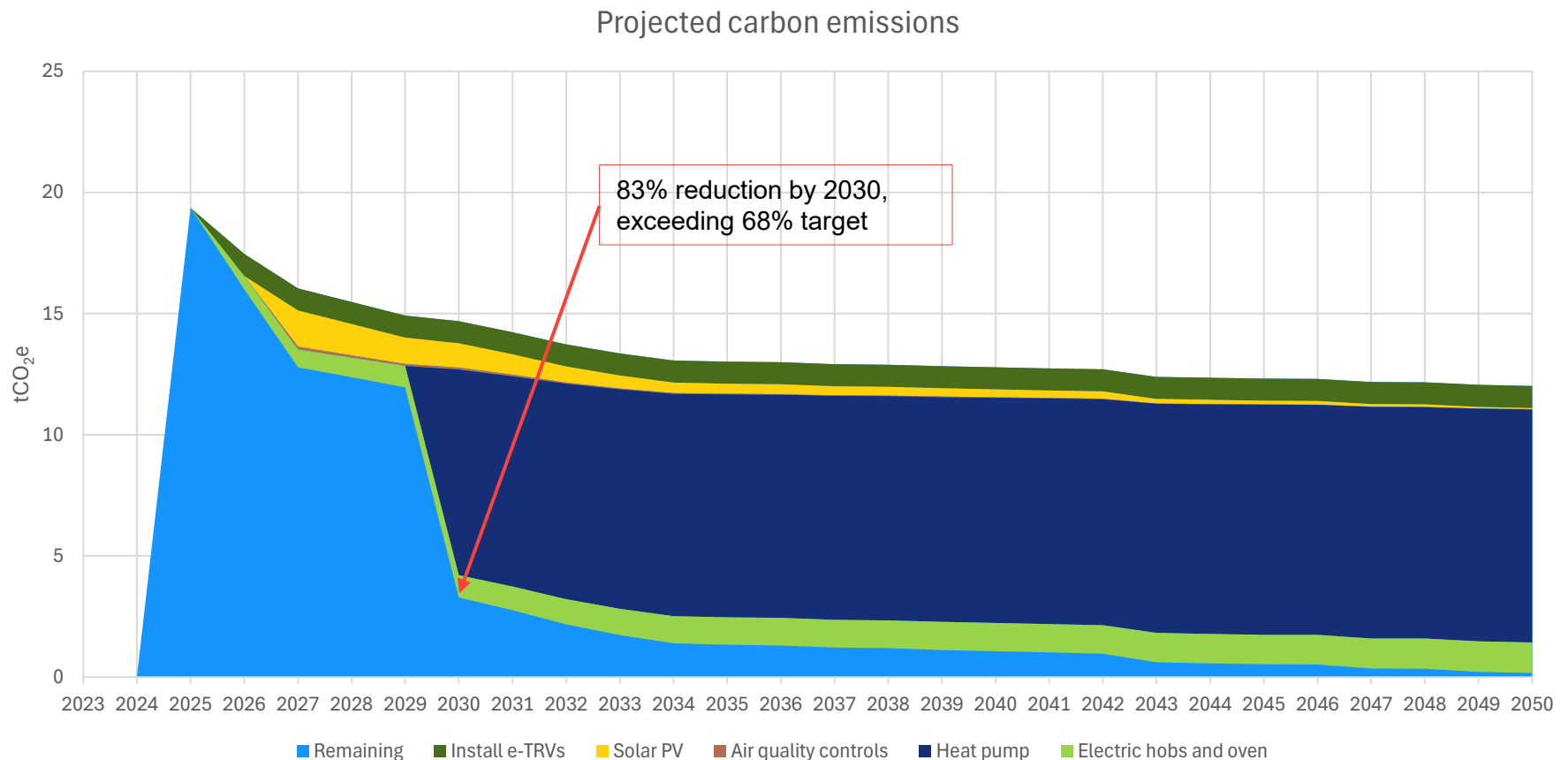
Carbon intensity impact per intervention (2035)



Projected site operational carbon emissions

The projected building operational carbon emissions and impacts of each recommendation is shown below.

According to this projection, carbon emissions by 2030 can potentially drop by 83% , surpassing the HBC target for 68% reduction. Similarly, the drop by 2035 would become 91.3%, resulting in 1.2 tCO₂e of residual emissions to be offset, for HBC to achieve its 2035 operations Net Zero target.



2.4. Operational Water Use



How does operational water use relate to emissions?

Although water use typically represents a smaller proportion of a site's overall carbon footprint compared to energy, it is still an important operational metric. Energy is required to abstract, treat, heat, distribute and ultimately dispose of water, meaning that reductions in water use directly contribute to lower operational carbon emissions. Understanding water consumption also supports resilience, resource efficiency and compliance with emerging sustainability expectations.

The importance of reducing operational water use to reach Net Zero

Although water itself is not a direct carbon emissions source, the processes behind supply and treatment do contribute to emissions. Every cubic metre of water used on site contributes to emissions through energy-intensive pumping and treatment, while hot water use adds further emissions from energy consumption. As a result, improving water efficiency helps to reduce operational carbon and supports progress toward NetZero, particularly where large volumes of water are used on site.



Operational water use



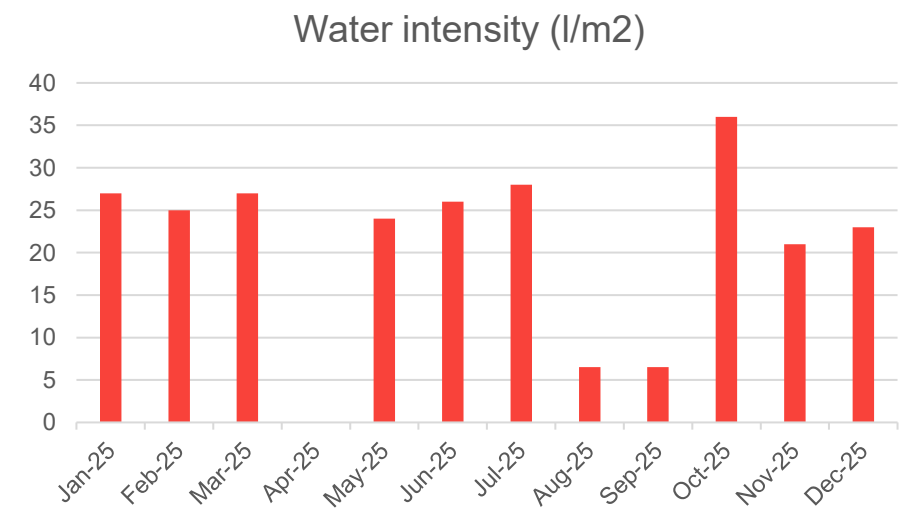
This section presents Springwood Community Centre’s water consumption, associated costs and carbon emissions alongside recommendations for operational water use reductions.

Water use on site is measured via manual meter readings where available and carbon has been calculated using standard water supply carbon factor (0.1913 kgCO₂e/m³) and treatment carbon factor (0.17088 kgCO₂e/m³ for all water disposed of via the network supplier’s drains. The table to the right provides an overview of Springwood Community Centre’s annual water consumption for 2025.

Water consumption intensity has been calculated (see graph to the right) and the annual intensity metric has been compared against local and regional benchmarks (see table below). The Real Estate Environmental Benchmark* (REEB) from Better Buildings Partnership (BBP) for offices in the UK from 2024 was used. It is noted that Springwood Centre does not operate as an office, but water benchmarks are limited in scope, hence this benchmark was deemed the closest match.

Springwood Centre water performance is currently slightly better than the typical benchmark for offices, indicating that there is potential for water demand reduction.

Water Consumption	Annual Usage m ³	Annual Cost £	Annual CO ₂ e Tonnes
Consumption 2025	250	£267	88.41



Note: Water intensity profile is based on water consumption as captured by the respective monthly water invoices. Since most of these contain estimate readings, actual water demand may vary significantly.

	Actual Performance	Typical Performance	Good Performance
Water consumption (m ³ /m ² pa)	477	479	298

As part of this Net Zero feasibility assessment, the current operational use was evaluated and is summarised in a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis below.

Strengths

- Existing infrastructure includes low-flow devices.

Weaknesses

- Incomplete water data limits the ability to accurately compare the data to industry benchmarks
- Potential inefficiencies in hot water systems likely increase water use and therefore carbon emissions

Opportunities

- Install or improve access to water meters and ensure data is logged to enable accurate future baselining and monthly and seasonal monitoring.
- Reducing hot water use by introducing non-concussive taps in toilets.
- Install half/full water volume flush systems to toilets.
- Repair/replace dishwasher to enable water savings.

Threats

- Regulatory requirements around water-efficiency and reporting could mean that metering and submetering becomes mandatory
- Operational risks from leaks, particularly where hot water is heavily used
- High water tariffs could mean reducing water consumption becomes a necessity for cost saving

Operational water use opportunities



This section provides opportunities for decarbonisation and reduction in operational water use which will support progress towards Net Zero operational carbon at Springwood Community Centre. The following have been identified:

- **Monthly meter and submeter reads:** Monthly meter reads and submeter reads should be taken and recorded. This will enable HBC to identify whether the invoices are correct which could lead to cost savings. It will also enable more effective monitoring which will help to identify any data anomalies and identify potential areas for reducing water consumption and targeting efforts for reducing water consumption.
- **Non-concussive taps:** Upgrade taps to automated type to minimise water usage and ensure taps are not accidentally left running.
- **Sensor flush controls upgrade:** Sensor flush controls could be installed for the toilets allowing for a controlled volume of water used for flushing toilets and reducing the likelihood of continual flushing occurring.
- **Water saving behaviours and awareness training:** Carrying out staff awareness programmes on water consumption can reduce excessive water misuse and reduce bad habits such as leaving a tap running when not required.
- **Rainwater harvesting:** Installing a rainwater harvesting system would allow for collection of rainwater for use on site. This will reduce main water consumption, bringing about cost and carbon savings.

3. Offset Remaining Emissions



What is carbon offsetting?

Carbon offsetting is the process of compensating for carbon dioxide emissions by investing in projects that reduce, avoid or remove an equivalent amount of carbon dioxide elsewhere, such as tree planting, renewable energy and waste gas avoidance.

Why is carbon offsetting important for achieving Net Zero?

Even after reducing emissions as far as possible, through maximising energy efficiency, switching to renewable energy and minimising all operational emissions, some unavoidable emissions will remain. Carbon offsetting provides a method of removing or preventing emissions that are hard to eliminate, enabling organisations to truly reach Net Zero.

Why does offsetting come last?

The ultimate goal of Net Zero is to stop emissions from entering the atmosphere in the first place, not to compensate for them afterwards. Reducing emissions at the source delivers real, permanent decarbonisation, whereas offsetting only balances out emissions that have already occurred. Relying on offsets means greenhouse gases continue to be released into the atmosphere, which is the opposite of what Net Zero aims to achieve. Offsetting should therefore be reserved solely for the small proportion of residual emissions that cannot be eliminated through technology, operational changes, or design improvements.

What does ‘good’ offsetting look like?

All offsets should be high quality to ensure transparency, efficacy and legitimacy. High quality offsets should be:

- Accredited under trusted standards (e.g. ICROA-endorsed¹, ICVCM Core Carbon Principles²),
- Additional (the project only delivers that carbon benefit because the investment made it possible, it would not have occurred otherwise),
- Verified by an independent body,
- Linked to projects with clear climate benefits (e.g. tree planting, carbon capture storage, methane capture).

¹ <https://icroa.org/>

² <https://icvcm.org/core-carbon-principles/>

Appendices



Appendix A: Methodology and limitations

Methodology:

This Assessment of Energy Saving Opportunities has been designed to provide information relating to:

- The current energy consumption, management and site operation;
- Potential savings with regard to occupational behaviour, plant operation, feasibility of plant upgrade and site energy management.
- Identifying the potential for renewable resources to aid with energy efficiency.
- Any relevant information provided by the Client has been reviewed, with action taken to ensure this information is taken into account and/or verified where necessary. All information is then assessed to define the potential for energy savings and/or cost savings, where applicable. Recommendations are made for additional work where this is necessary to fully define the implementation and cost estimates for further detailed assessment that is recommended can be provided under separate cover, where appropriate.

Limitations:

WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from WSP UK Limited.

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The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client) and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any recommendations identified in this report are based on information provided by the Client and as gathered during the site survey. In some cases, access cannot be granted to all areas of the site, in these instances and in the absence of information to the contrary, WSP will use the information provided to complete the report.

Before relying upon this assessment of energy saving options and capital and operating cost estimates, it is recommended that the Client should review these initial results and compare them with other energy and technology costs data and literature that is available. WSP have produced these ball-park estimates of capital and operating costs for the purposes of initial feasibility assessment only using the limited data and assumptions provided by the Client at this time. A full front-end engineering and design (FEED) study would be required to confirm and refine the technology cost estimates and determine the true payback time and NPV.

Appendix B: List of abbreviations



HBC	Havant Borough Council
AHU	Air Handling Unit
ASHP	Air Source Heat Pump
BMS	Building Management System
DHW	Domestic Hot Water
EC fan	Electrotonically Commutated Fan
GHG	Greenhouse Gas
GWP	Global Warming Potential
HVAC	Heating, Ventilation and Air Conditioning
kWp	Kilowatt Peak
kW	Kilowatt
W	Watt
LED	Light-Emitting Diode
PIR	Passive InfraRed (sensor)
PoU	Point-of-Use (water heaters)
Solar PV	Solar PhotoVoltaic

UKGBC	UK Green Building Council
UKNZCBS	UK Net Zero Carbon Buildings Standard
TRV	Thermostatic Radiator Valve
DESNZ	Department for Energy Security and Net Zero
CIBSE	Chartered Institution of Building Services Engineers
LCCA	Life cycle cost analysis
eTRV	Electronic Thermostatic Radiator Valve
VSD	Variable Speed Drive
IR	Infrared
SWOT	Strengths Weaknesses Opportunities and Threats
REEB	Real Estate Environmental Benchmark
BBP	Better Buildings Partnership



70 Chancery Lane
London
WC2A 1AF
wsp.com

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