

Hayling Island 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 Hayling Island Community Centre.

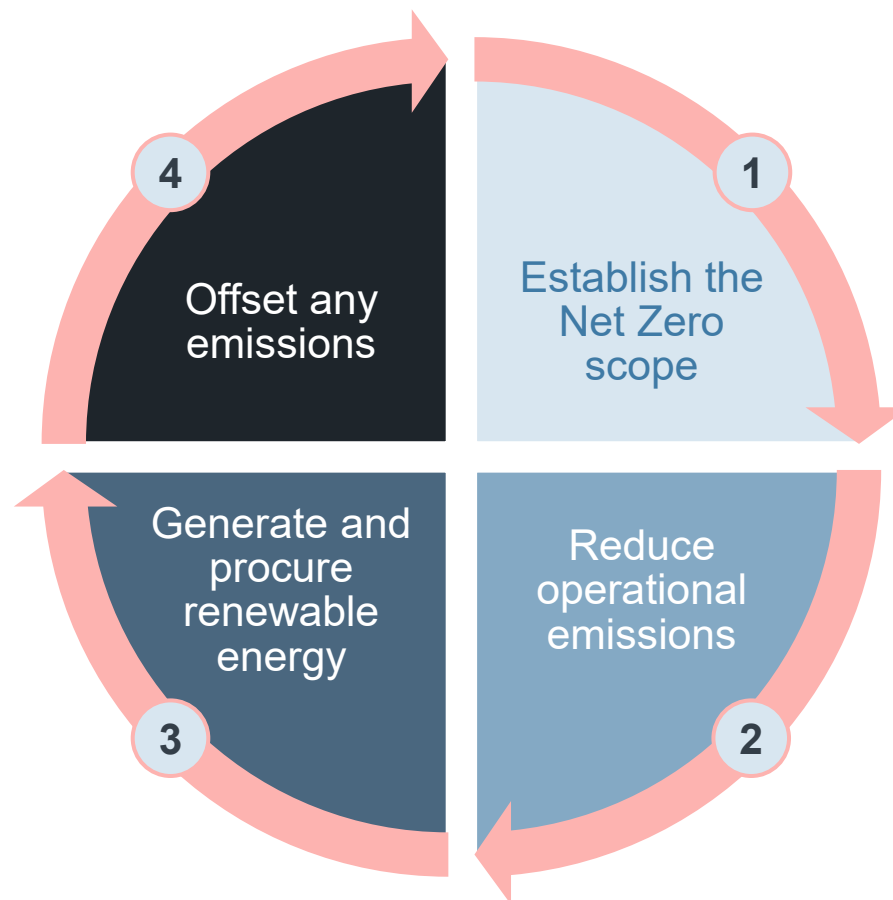
Baseline: Calendar year 2024

- ❖ Energy consumption: 172,131 kWh
- ❖ Energy costs: £23,574
- ❖ Carbon emissions: 40.1 tCO₂e
- ❖ The energy baseline includes electricity imports and natural gas

Key findings:

- ❖ Improve operational controls with electronic thermostatic radiator valves (eTRVs).
- ❖ To achieve site degasification, replace gas boilers for ASHPs and IR heaters; replace gas hobs and ovens.
- ❖ Install solar Photovoltaic to generate clean energy on site.

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	Energy management practices	2026	5,700	1.2	£200	£0	0.0	£0	
2	Solar PV	2027	0	4.5	£11,500	£41,000	3.6	£9,100	
3	eTRV controls for radiators	2026	7,800	1.7	£300	£2,000	6.7	£1,200	
4	Lighting	2027	2,400	0.3	£800	£11,000	13.8	£36,700	
5	ASHP to replace gas boilers	2027	60,000	12.8	£2,100	£250,000	Over 15 years	£19,500	
6	Replace main hall fan convectors with IR heaters	2027	7,700	4.2	£9,900	£12,000	No payback	£2,900	
7	Electric hobs and ovens	2026	1,000	0.3	£600	£4,000	No payback	£13,300	
Total			84,600	25.0	£4,400	£320,000	Over 15 years		
Total - short and medium term			5,700	5.7	£11,700	£41,000	3.5		
Total - long term and carbon focused measures			78,900	17.3	£7,300	£279,000	No payback		

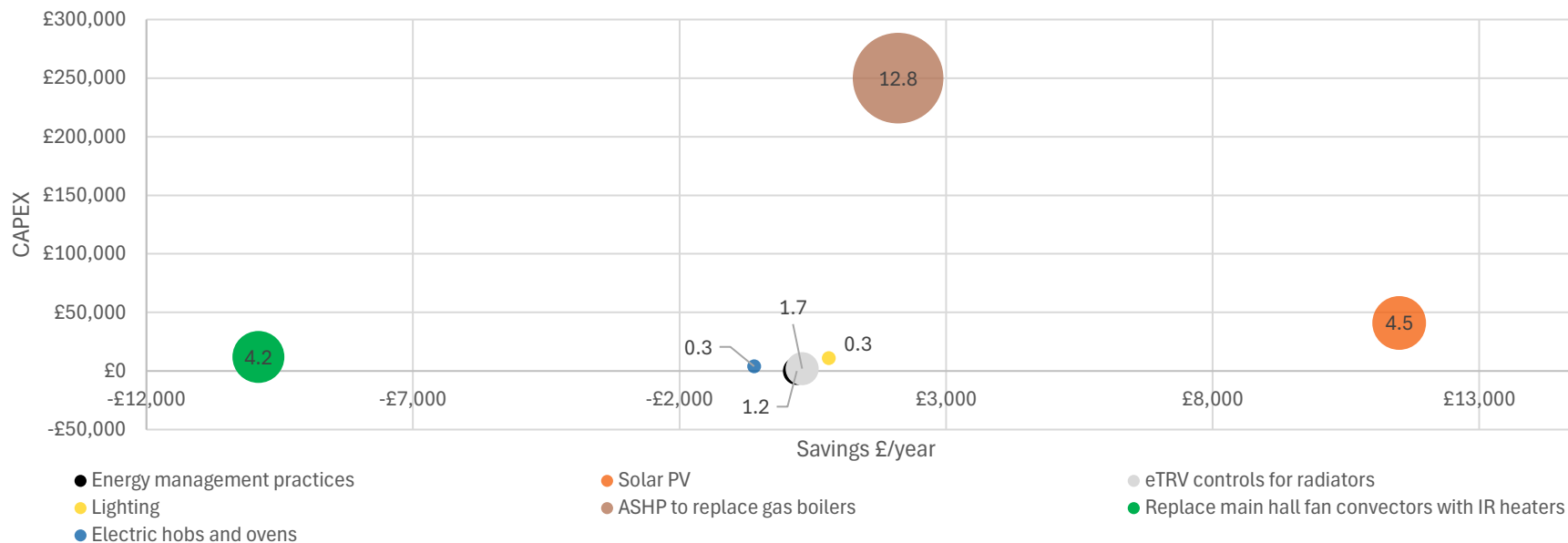
The cost to carbon savings ratio (£/tCO₂e) compares upfront capital investment against annual carbon savings. This is also referred to as carbon abatement cost. Measures with low carbon abatement costs are the most cost effective in reducing carbon emissions, while higher-cost measures may still be required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

Executive summary



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 Havant Borough Council'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 Havant Borough Council, 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.

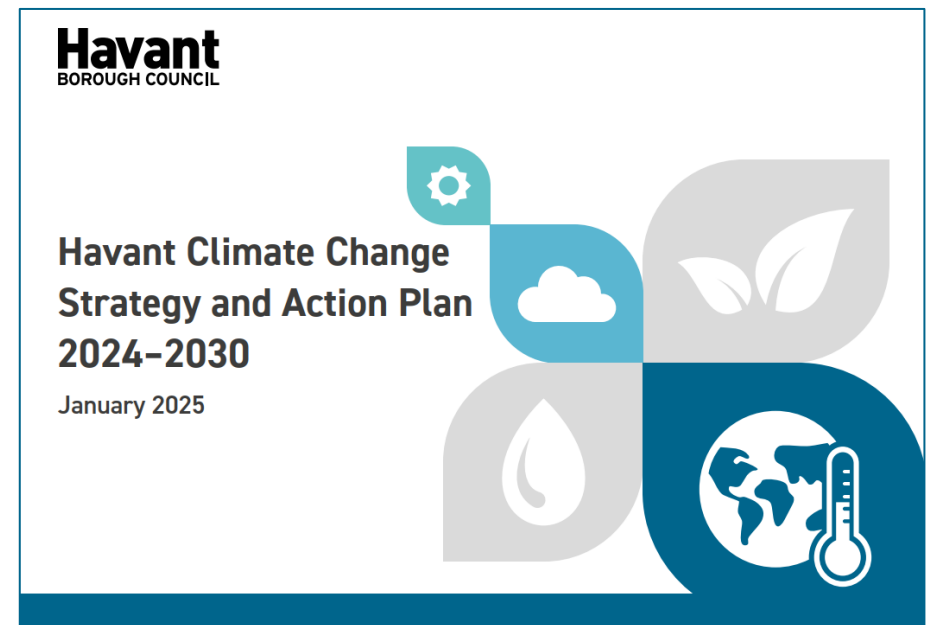
HBC reports emissions in line with the Greenhouse Gas Protocol, covering Scopes 1, 2 and 3. Due to data limitations, Scope 3 reporting is currently limited to Transmission & Distribution (T&D) losses and emissions from outsourced services and leased properties, with coverage expected to expand over time.

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.



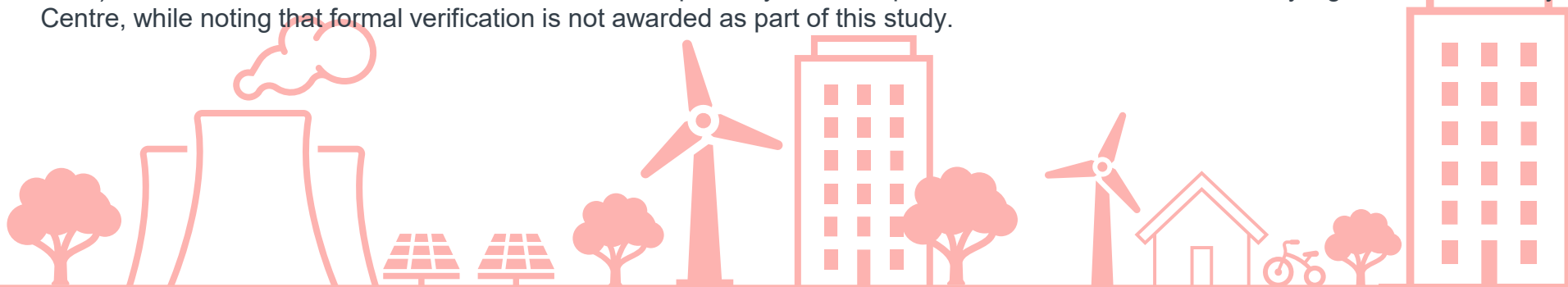
Decarbonisation Feasibility Study Project Aims and Scope

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 Hayling Island 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 Hayling Island 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 Hayling Island Community Centre. The report provides the following:

- Analysis of energy consumption at Hayling Island Community Centre, including an overview of the site and its energy users,
- Recommendations to reduce Hayling Island Community Centre's energy consumption and operational carbon emissions,
- Guidance on how Hayling Island 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 Hayling Island Community Centre, while noting that formal verification is not awarded as part of this study.



Site Context



Site overview



Site:	Hayling Island Community Centre
Address:	Station Road, Hayling Island, PO11 0HB
Floor area:	1,356 m ² (of which 1,149 m ² is audited)
Survey date:	20/01/2026



Hayling Island Community Centre was built in the 1980s. While the site is owned by Havant Borough Council, it is currently operated by the Hayling Island Community Centre Association charity.

The site uses electricity from the grid and natural gas. There are two main electricity income meters serving the site: one for the main building area and for the annex which does not fall in scope for this audit. There is also a submeter for the bowls club, yet its power demand is captured under the main building meter.

Typical occupancy hours are as follows:

Monday	8:30 AM to 10:30 PM
Tuesday	8:30 AM to 9:30 PM
Wednesday	8 AM to 9 PM
Thursday	8 AM to 10:30 PM
Friday	8 AM to 10 PM
Saturday	8 AM to 3 PM (up to 10 PM if events are held)
Sunday	8 AM to 2 PM (up to 10 PM if events are held)

Site context

The main building comprises office areas, catering facilities, the main hall and the bowls club room. An annex was constructed around 2015 which houses a café on the ground floor and an office space on the 1st floor which is hired out. Energy consumption in the annex does not fall within the scope of this audit as energy consumption is recharged to the tenants.

Walls are assumed to be brick cavity with insulation levels adhering to the building regulations at the time of construction. The building roofs are pitched, with varying slopes, and covered by corrugated metal sheets. Windows are doubled glazed with aluminium frames.

Space heating is achieved by two gas condensing boilers, each rated at 91 kW output. The boilers feed into wet radiators which are fitted with thermostatic radiator valves (TRVs). The boilers are enabled from October to April, normally from 8 AM to 10 PM all days of the week. The main hall, stage and activity rooms 1&2 have fan convectors connecting to the gas boilers, and are controlled by local thermostats, as observed in the main hall.

Domestic hot water (DHW) is generated via local point-of-use (PoU) water heaters.



Site context

In terms of **cooling**, the main building does not benefit from any space cooling. Equally there is no central mechanical ventilation, but rather localised extraction fans in kitchen and welfare facilities areas.

Lighting throughout is a mix of fluorescent and LED. Controls are a mix of manual and automatic presence controls (in toilets and changing rooms).

The stage lights remain fluorescent. However, due to the high capital cost and low operating hours, replacement with LEDs is recommended as they fail.

Catering facilities include the main kitchen, the bowls club kitchen and the bar area. The main kitchen is equipped with two gas hob and oven units. The bar includes cold storage units for drinks.

Waste is separated into general waste, recycling (glass, hard plastics, paper and cans) and organic waste. Waste is managed by a third-party contractor.

Annex

The annex is fully electric, with space heating and cooling delivered by air source heat pumps (ASHPs). DHW is generated by an additional ASHP which is connected to a 125L water cylinder, supplemented by immersion heaters.

The energy consumption of the annex is not included in the scope of this audit.



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
0 (poor)						

Energy Analysis



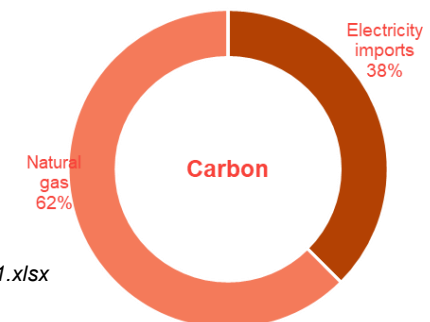
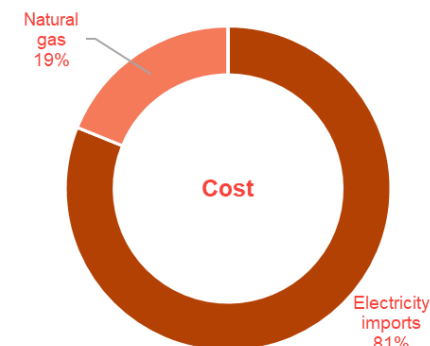
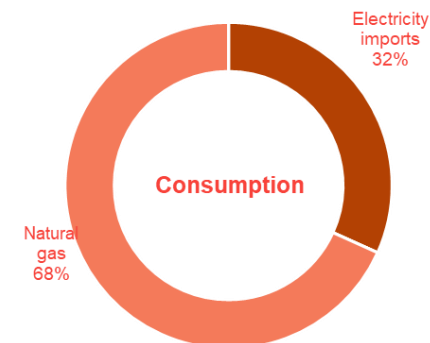
Energy baseline

Havant Borough Council has provided energy consumption and cost data for the **calendar year 2024 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 2024 to the 31st of December 2024. 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 2024¹.

Fuel type	Consumption		Costs		Emissions	
	kWh	%	£	%	tCO ₂ e	%
Electricity imports	54,654	31.8%	£19,129	81.1%	15.0	37.5%
Natural gas	117,477	68.2%	£4,445	18.9%	25.0	62.5%
Total	172,131	100.0%	£23,574	100.0%	40.1²	100.0%

Energy tariffs	£/kWh
Electricity	£0.35
Natural gas	£0.04

Carbon factors	kgCO ₂ e/kWh
Electricity imports	0.275
Natural gas	0.213



1. https://assets.publishing.service.gov.uk/media/6722567487df31a87d8c497e/ghg-conversion-factors-2024-full_set_for_advanced_users_v1_1.xlsx

2. The sum of the emissions does not add up due to rounding of figures

Energy benchmarks and targets



To assess the site's performance, the energy intensity was compared to benchmarks and targets for similar buildings

The CIBSE benchmark¹ for local authority community centres was used to assess the current energy performance of the site. This benchmark uses data from DEC's from 2021. This gives the typical energy consumption per square meter per year for community centres and are derived from actual operational buildings.

The site is performing better than typical benchmark for these building types, but worst than the good benchmark. The fossil fuel consumption is better than both benchmarks, likely due to improved plant efficiency, while the electricity consumption is worse than both benchmarks. This is likely due to the inefficient lighting on site, as well as higher demand for DHW, which is likely generate using fossil fuels for benchmark sites.

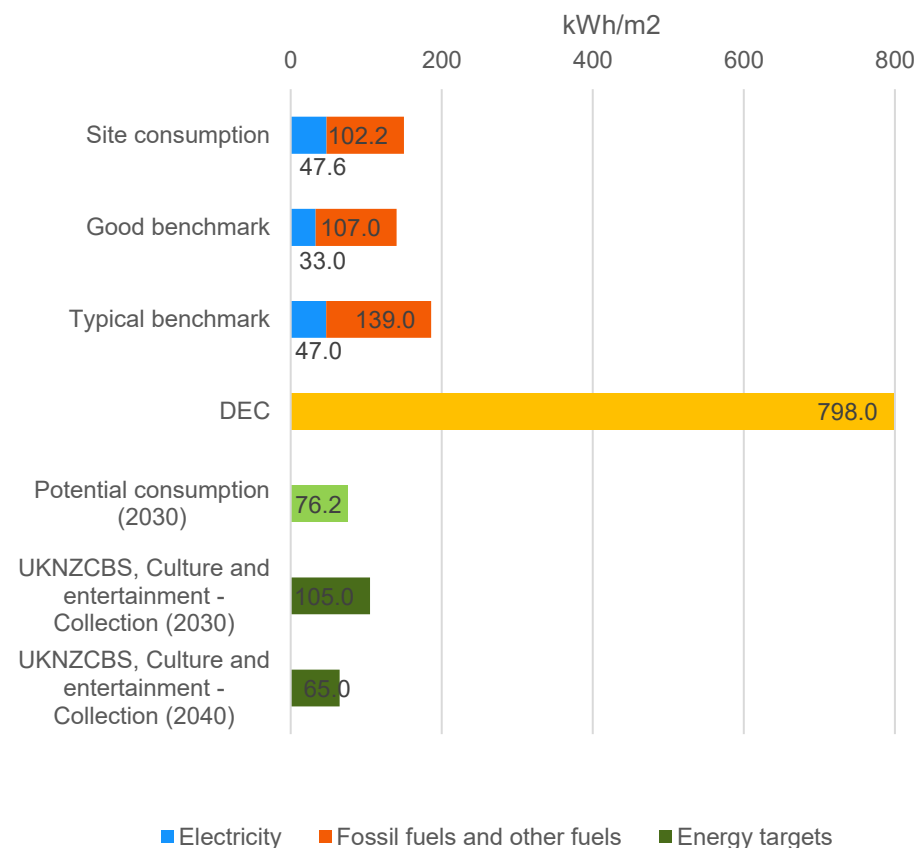
The site's potential energy intensity, based on current baseline energy consumption and the identified energy saving opportunities, is 76.2 kWh/m², about 50% lower than the current performance (149.8 kWh/m²).

This outperforms the UKNZCBS, culture and entertainment (collection) target² for 2030, which is of 105 kWh/m², but does not meet the 2040 target of 65 kWh/m². It is noted that this target does not align with the use of the site, and a more appropriate target may be used should the UKNZCBS release targets for a wider range of sites.

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 Use Intensity



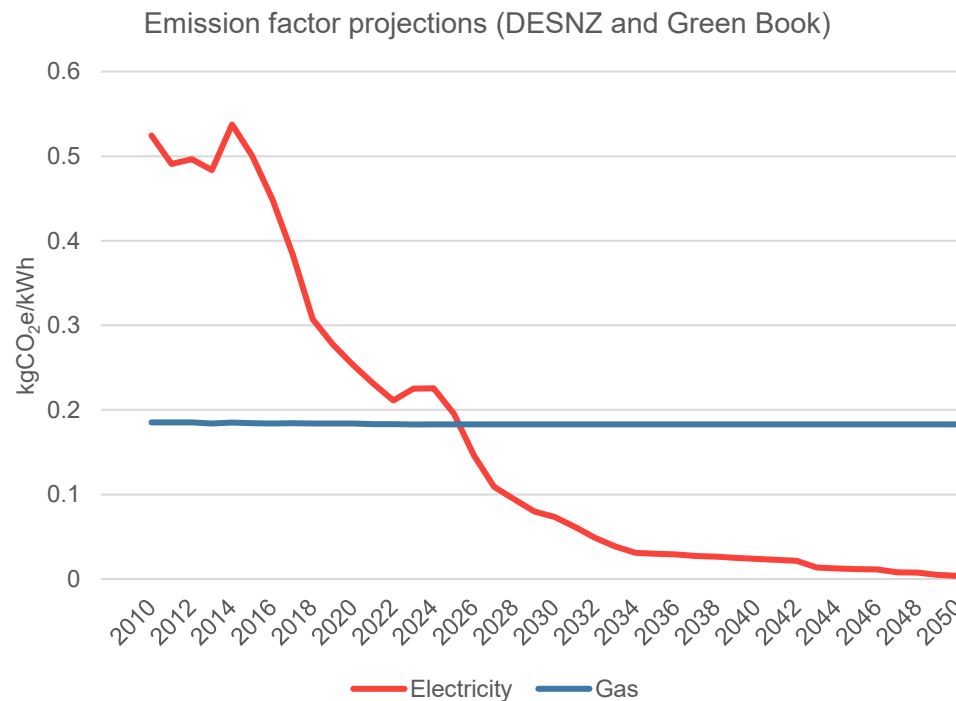
Energy carbon emission projections



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>

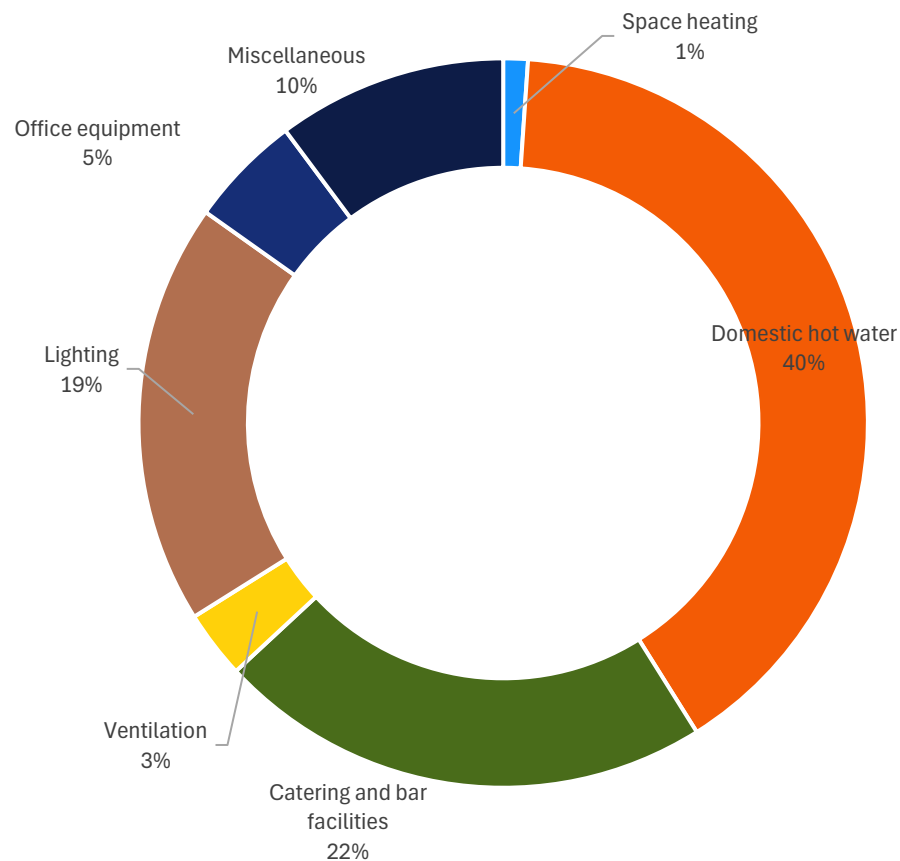
Energy analysis - Electricity

As electricity invoices have not been provided on a monthly basis, the monthly consumption profiles cannot be analysed. Energy consumption was extrapolated over 2024 based on 11 months of data. It is noted that these are based on estimates by the electricity supplier as meter readings are not taken on a monthly basis.

Based on the auditor's observations, the largest electricity consumers on site would likely be from DHW as there are showers in the changing rooms, followed by catering and bar facilities. Lighting is expected to make up a large amount of the consumption, as well as miscellaneous users, notably from equipment and lighting used when the space is rented out. This can include musical apparatus, additional stage lighting etc.

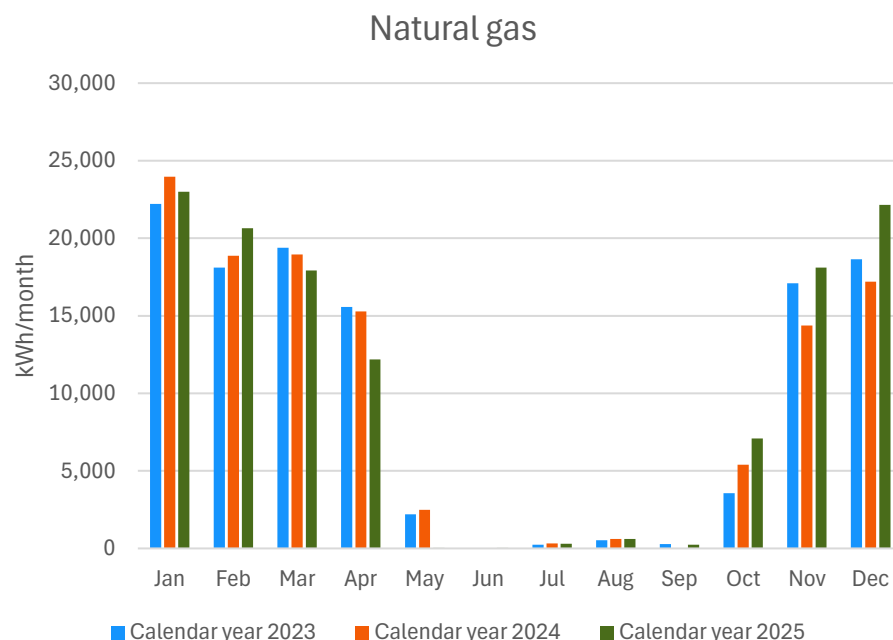
The electricity breakdown graph uses metered data and estimations of the energy consumption of the various items of plant, equipment and systems, calculated using the power rating, hours of use and utilisation. As such, the figures should be taken as an indication only. Although best used as a guide only given that it is based upon usage estimations, the chart can be used to focus efforts on those areas with the largest energy consumption, and the best potential for making savings.

Electricity imports breakdown by end use

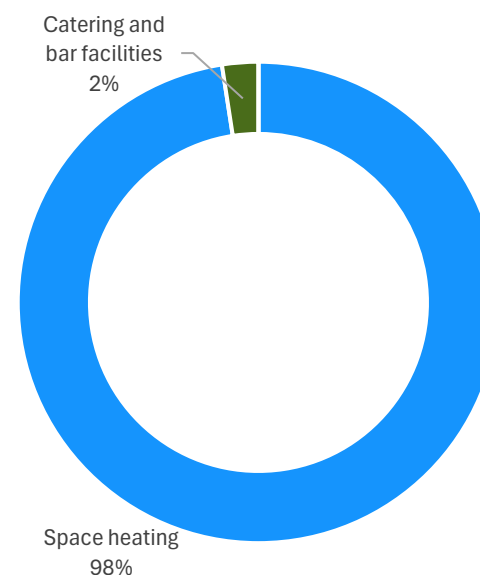


Energy analysis – Natural gas

The graph below (left) shows the monthly gas consumption from calendar year 2023 to 2025. Consumption over the three years is consistent and very seasonal, with very low consumption over summer months and consumption increasing as external temperatures drop. As the majority of gas consumption is for space heating, this is aligned with the auditor's expectations. Based on the monthly profiles, space heating is expected to make up around 98% of the gas consumption with catering accounting for the remaining 2%. It is therefore expected that the gas hobs and ovens are used very infrequently.



Natural gas breakdown by end use



The natural gas breakdown graph 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. As such, the figures should be taken as an indication only. Although best used as a guide only given that it is based upon usage estimations, 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

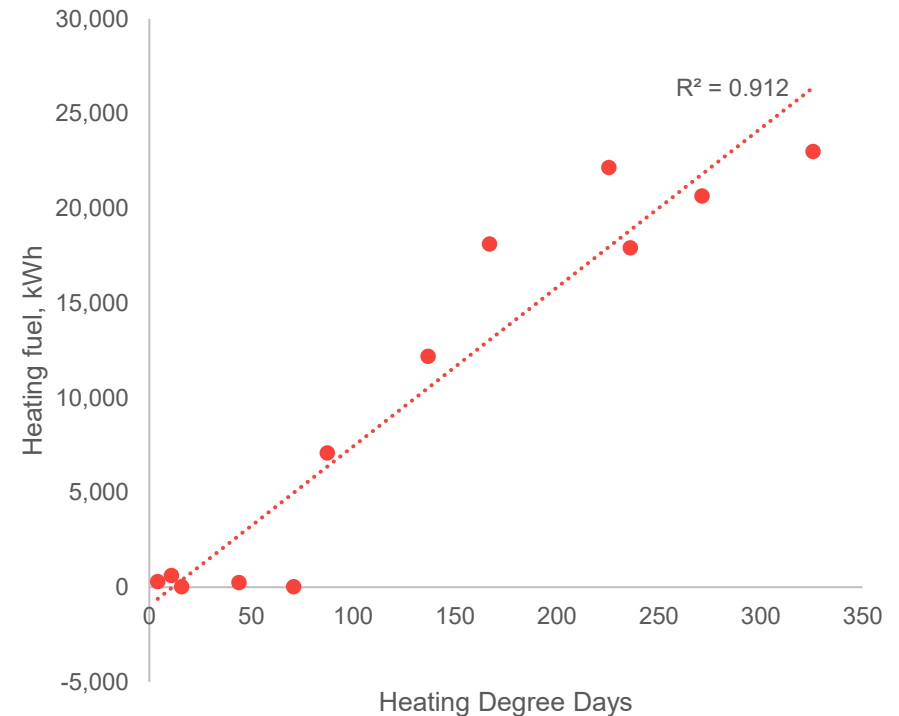
Energy consumption can be compared against external temperatures to assess the impact of temperature on energy consumption.

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 at 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, $R^2=0.912$, indicating good correlation between gas consumption and heating degree days. This is anticipated since the majority of gas consumption is used for space heating, as previously highlighted.



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 Hayling Island 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 Hayling Island 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 Hayling Island Community Centre energy baseline for calendar year 2025 is given below, including carbon factors, energy rates, energy intensity and carbon intensity.

Energy consumption	kWh/year	£/year	tCO ₂ e/year
Electricity imports	54,654	£19,129	15.0
Natural gas	117,477	£4,445	25.0
Total energy consumption	172,131	£23,574	40.1*

The site's baseline energy consumption is of 172,131 kWh, with the majority attributed to natural gas. The energy baseline emissions are of 40.1 tCO₂e; 15 tCO₂e from electricity and 25 tCO₂e natural gas.

To achieve net zero, removal of all fossil fuels on site is required.

Energy and carbon intensity	Energy intensity (kWh/m ²)	Carbon intensity - baseline year (kgCO ₂ e/m ²)
Electricity imports	47.6	13.1
Natural gas	102.2	21.8
Total energy consumption	149.8	34.9

** Note: The sum of the emissions does not add up due to rounding of figures*

2. Reduce Operational Emissions



Reduce operational emissions



This section of the report provides opportunities for decarbonisation and reduction in operational energy emissions. It covers the key actions needed to progress towards Net Zero operational carbon at Hayling Island Community Centre. From the Net Zero Decarbonisation Study at Hayling Island Community Centre, the following opportunities were identified, and further detail for each opportunity can be found in Section 2.1 and 2.2.

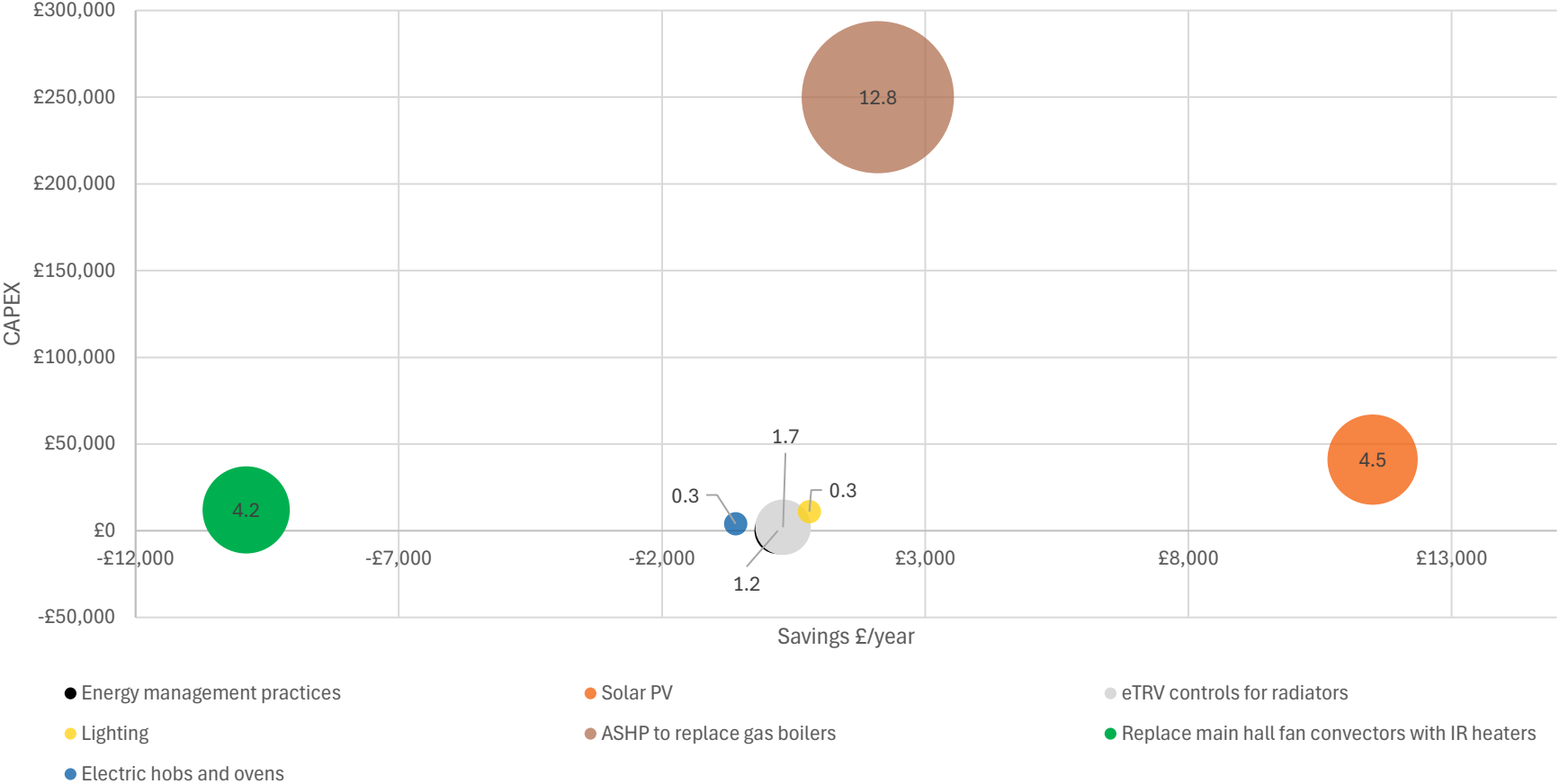
#	Recommendation	Implementation year	Savings			Capital cost	Payback period	Cost to Carbon Savings Ratio	RAG rating for payback timing
			kWh	tCO ₂ e	£	£	years	£/tCO ₂ e	Quick wins
									Medium-term
									Long-term
1	Energy management practices	2026	5,700	1.2	£200	£0	0.0	£0	
2	Solar PV	2027	0	4.5	£11,500	£41,000	3.6	£9,100	
3	eTRV controls for radiators	2026	7,800	1.7	£300	£2,000	6.7	£1,200	
4	Lighting	2027	2,400	0.3	£800	£11,000	13.8	£36,700	
5	ASHP to replace gas boilers	2027	60,000	12.8	£2,100	£250,000	Over 15 years	£19,500	
6	Replace main hall fan convectors with IR heaters	2027	7,700	4.2	-£9,900	£12,000	No payback	£2,900	
7	Electric hobs and ovens	2026	1,000	0.3	-£600	£4,000	No payback	£13,300	
Total			84,600	25.0	£4,400	£320,000	Over 15 years		
Total - short and medium term			5,700	5.7	£11,700	£41,000	3.5		
Total - long term and carbon focused measures			78,900	17.3	-£7,300	£279,000	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 following 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.

2026 - 2027	2027 - 2030	2030 onwards
Energy management practices: Implement over the next 6 months. Involvement of staff and site users. eTRVs: Implement over the next 6 months. Low disruption, set temperature levels per area to match typical activities schedule. Electric hobs and ovens: Review use of current hobs and ovens and replace or remove by end of the year.	Solar PV: implement within 2-3 years. Subject to roof condition and feasibility study. Lighting upgrade: implement over the next 6-12 months. Medium disruption but could be planned around venue's activities. ASHP to replace gas boilers and replace main hall fan convectors with IR heater: Implement when replacing the gas boilers which are at end-of-life. High capital cost, enabling measure for achieving Net Zero.	Continue reviewing schedules and setpoints. Offset remaining emissions.

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 taken as 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 for by Havant Borough Council for Hayling Island 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 £300,000, with energy cost savings of around £82,000 and maintenance costs of around £1,500.

Recommendation	Implementation year	Recommendation lifespan	Capital cost (£)	Energy costs or savings (£)	Maintenance costs or savings (£)	Total costs or savings (£)	Total energy savings (kWh)
Energy management practices	2026	30	£0	-£9,900	£0	-£9,900	343,900
Solar PV	2027	30	£40,000	-£217,600	£3,900	-£173,600	0
Lighting	2027	30	£7,000	-£15,500	£0	-£8,200	70,300
eTRV controls for radiators	2026	10	£1,000	-£1,100	£0	£100	37,100
ASHP to replace gas boilers	2027	20	£243,000	-£32,500	£1,500	£211,700	1,186,400
Replace main hall fan convectors with IR heaters	2027	30	£8,000	£187,400	-£3,900	£191,200	188,400
Electric hobs and ovens	2026	20	£2,000	£7,100	£0	£9,000	19,000
Total	-	-	£301,000	-£82,100	£1,500	£220,300	1,845,100

2.1. Operational Energy



Energy management practices

Implementation in 2026	Annual Savings			Cost (£)	Payback (years)
	£	tCO ₂ e	kWh		
			Gas		
Heating					
Energy management practices	£200	1.2	5,700	-	-



Door left open
in bowls room

Current status:

During the site visit, some instances of substandard energy management practices were observed:

- The bowls room was occupied, and while the heating was turned on, the door leading to the green court was kept open.
- The cricket room, which was not occupied, had the heating turned on. This area is south facing with significant heat gains; hence tighter heating controls can reduce heating demand.

Recommendation:

It is recommended to add signage around the site to remind occupants to turn off heating if not required and to not open external windows or doors when heating is turned on. When heating is left on and windows or doors are left open, the excessive heat losses lead to a higher drop in radiator temperatures and therefore higher heating consumption.

Savings of 10% have been assumed on heating consumption. These savings are based on the auditor's observations on the day of the visit and may differ depending on general energy management.

Next Steps and Additional Support Required:

- Add signage in rooms which are likely to have poor energy management.
- Send reminders and information on best practice (for example via email or newsletters) to the site users.
- Site managers to turn off heating to areas not in use (eTRVs suggested next can enable this).

eTRV controls for radiators

Implementation in 2026	Annual Savings			Cost (£)	Payback (years)
	£	tCO ₂ e	kWh		
			Gas		
Heating					
Controls improvement	£300	1.7	7,800	£2,000	6.7 years



Example of TRV on radiator in Bowls Club



Example of eTRV

Current status:

Space heating throughout the site is achieved via radiators and fan convectors which are fed by the central gas boilers. The radiators have local manual thermostatic radiator valves (TRVs) for adjusting room temperature level. Most TRVs were found at maximum temperature settings. The fan convectors are controlled via local thermostats.

Recommendation:

It is recommended to install electronic thermostatic radiator valves (eTRVs) to the wet radiators which allow for localised temperature and timer control of each radiator. The eTRVs are added to a central control application via which each radiator can be controlled individually or as a group to create 'zones'. This enables introducing independent schedules and temperature setpoints to better match heat delivery with scheduled activities.

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 20 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.

Implementation in 2027	Annual Savings			Cost (£)	Payback (years)
Lighting	£	tCO ₂ e	kWh		
			Elec		
Long term capital investment	£800	0.3	2,400	£11,000	13.8 years

Current status:

Most of the site's lighting is fluorescent and should be upgraded to LED. Controls tend to be manual switches in most areas, and there are presence sensors in changing rooms and toilets.

Recommendation:

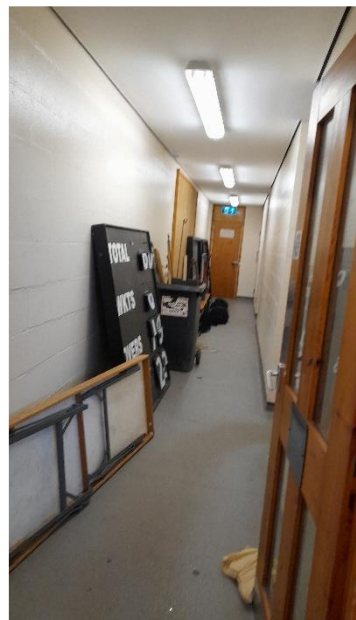
It is recommended to replace non-LED lights to LED, which are more energy efficient and require replacement less frequently than LED.

Replacement can also be undertaken as lights fail.

Savings have been calculated based on the fittings observed on site, the assumed hours of occupancy of each area and assumed usage rates. A cost of £100 per fitting has been assumed based on standard electrician rates and fittings costs.

Next Steps and Additional Support Required:

- Carry out a lighting survey to establish replacement cost and prioritise areas with long operating hours.
- Source quotations and proceed with replacements using reputable contractors.
- Out of hours works may be required to reduce site activities disruption.



Examples of fluorescent lights in the changing rooms corridors (left) and main kitchen (right).

ASHP to replace gas boilers



Implementation in 2027	Annual Savings				Cost (£)	Payback (years)
Heating	£	tCO ₂ e	kWh			
			Elec imports	Natural gas		
Long term capital investment	£2,100	12.8	-600	60,600	£250,000	Over 15 years

Current status:

Heating is currently achieved via gas boilers which feed into radiators and fan convectors. While gas boilers are cost effective, they will not decarbonise in line with the electricity grid as they are powered by fossil fuels.

Recommendation:

It is recommended to replace the gas boilers with an air source heat pump (ASHP) system. The existing gas boilers were installed in 2005 and are therefore approaching end-of-life.

While the installation of an ASHP has no viable payback due to the high upfront costs and current high electricity to gas rate ratio, 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, as standing charges will no longer apply.

Savings are based on an assumed efficiency of 80% for the gas boiler compared to a coefficient of performance (COP) of 3.5 for the replacement ASHP. Costs are based on the replacement of the boiler and associated plant for a 110kWth heat pump. Sizing is based on the existing boiler rating (considering n+1 configuration), assuming that 60% of the boiler capacity feeds into the wet radiators. Since modern heat pumps can achieve high flow temperatures while maintaining high efficiency levels, it is recommended to explore a solution that could generate domestic hot water as well. Therefore, additional electricity savings would be possible compared to the current PoU water heaters. These savings have been included above and assume POU efficiencies at 98% versus a COP of 2.5 for DHW generation from the ASHP.

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

Next Steps and Additional Support Required:

- Source quotations from reputable contractors and assess space requirements and structural loads limitations.
- Establish if increase in electrical connection capacity is required.
- Consider measure in conjunction with solar PV installation to maximise offset of electrical demand.
- Explore applicable local/government financial incentives.



Gas boiler



Wet radiator

Replace main hall fan convectors with IR heaters



Implementation in 2027	Annual Savings			Cost (£)	Payback (years)
Heating	£	tCO ₂ e	kWh		
			Elec imports Natural gas		
Long term capital investment	-£10,200	3.9	-33,500 39,800	£12,000	No payback

Current status:

Heating to the main hall is currently achieved via gas boilers which feed into fan convectors. While gas boilers are cost effective, the associated emissions are not expected to reduce in the future compared to an electrified solution that would decarbonise in line with grid electricity.

Recommendation:

Given the size and use of the main hall, it is recommended to replace the fan convectors with infrared (IR) heaters rather than a heat pump system. IR heaters work by heating the object they are directed at rather than the air, therefore reducing heat losses in large areas.

While replacing the fan convectors with IR heater has no viable payback due to the current high electricity to gas rate ratio, 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, as standing charges will no longer apply.

Savings are based on an assumed efficiency of 80% for the gas boiler compared to efficiencies of 99% for IR heaters. Costs assume that heating to the main hall could be achieved with 8 IR heaters, each rated at 3.6 kW and account for their supply and installation.

Next Steps and Additional Support Required:

- Consider using heat meters to monitor current heat demand to the main hall. This will enable a more accurate sizing of electric IR replacements.
- The increase in electricity demand should be modelled and considered in the design of the solar PV system.
- Source quotations from reputable contractors and carry out replacements.



Existing wall concealed fan convectors in main hall.



Example of electric IR heaters in high ceiling venues.

Electric hobs and ovens

Implementation in 2026	Annual Savings				Cost (£)	Payback (years)
Catering equipment	£	tCO ₂ e	kWh			
			Elec	Gas		
Long term capital investment	-£600	0.3	-1,900	2,900	£4,000	No payback



Existing gas hob and oven units in main kitchen

Current status:

There is a commercial oven and hob unit which is fed by gas. While these are cheaper to run than the electric equivalents, they will not decarbonise in line with the electricity grid.

Recommendation:

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

Catering gas demand is assumed at around 2% of total 2024 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 Hayling Island Community Centre's electricity import consumption and costs and will reduce its reliance on the electricity grid.

Any on-site generated renewable electricity consumed by Hayling Island Community 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 Hayling Island Community 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

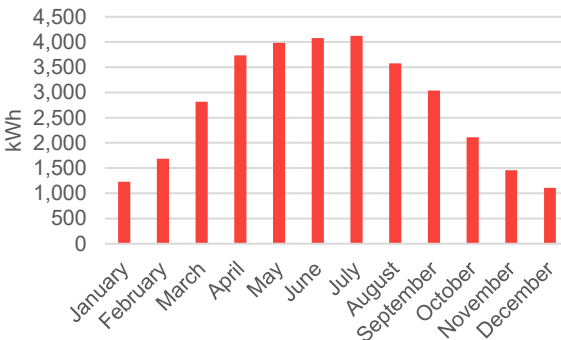
- Solar PV systems use cells to convert solar radiation into electricity. The PV cell consists of one or two layers of a semi conducting material, which is usually silicon. When solar radiation hits the cell, it creates an electric field across the layers causing electricity to flow. This solar radiation 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 Havant Borough Council.



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)	£11,500	4.5	32,900	-32,900	£41,000	3.6 years



Potential solar PV generation



Issue:

Presently Hayling Island Community Centre does not benefit from renewable energy generation systems. Power generated locally can be used to partly offset grid imports and assist in reducing energy cost impacts arising from volatile electricity price. Existing building roofs could be used for deploying solar PV arrays and generate electricity.

Solution:

It is recommended to install solar PV on the south facing roof. Based on the available roof space (marked with the red frame to the left), it is assumed that around 30 kWp of solar PV capacity could be installed. This would generate roughly 33,000 kWh per year all of which is considered to be absorbed by HICCA (0% grid export). Given Hayling Island Community Centre's high electricity tariff, the cost of the solar PV system would be offset in under 4 years. Capital costs have been sourced from the UK average solar PV installation costs from 2024 for installations between 10 to 50 kWp.

The monthly solar PV generation potential is provided to the left.

Next Steps and Additional Support Required:

- Gather proposal from solar PV suppliers/contractors.
- Asses the optimum size and location of the PV array. Consider electricity increase demand from heat electrification (Annex roof could be used to extend system).
- Carry out a full structural survey to assess if the roofs can withstand the additional loads.
- Investigate available connection capacity with the district network operator (DNO).
- 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 49.1%, from 149.8 kWh/m² to 76.2 kWh/m².

The carbon intensity would drop by 87.4% in 2030, 94.8% in 2035, and 99.3% 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 2027, following the replacement of gas-powered kitchen appliances and the gas boilers.

At present, Havant Borough Council would have to offset 40.1 tCO₂e to reach Net Zero. By 2030, assuming all opportunities are implemented, 5.1 tCO₂e would remain to offset, and by 2035 this becomes just 2.0 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 2024 to 2050.

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

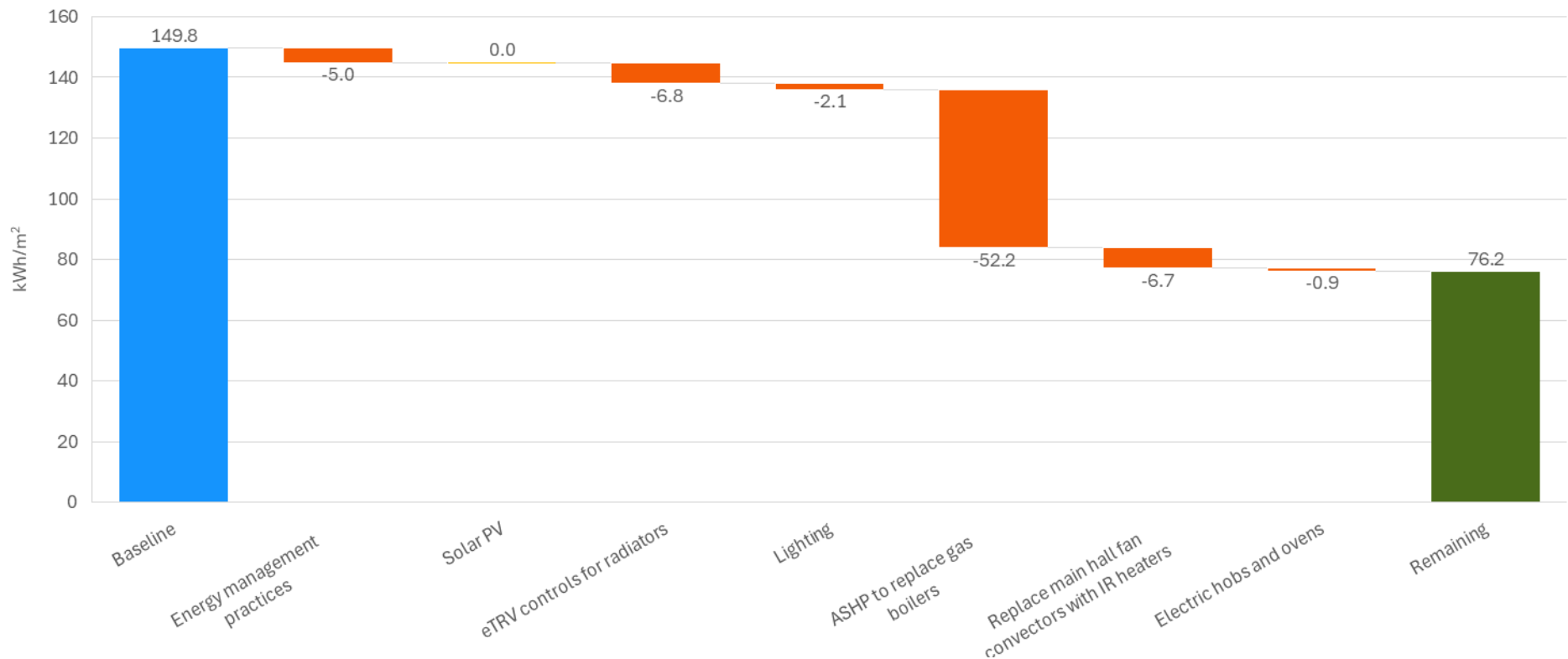
The grid decarbonisation will also have a large impact on emissions reduction. If fossil fuel remains in the building, the impact will be lessened greatly, and the carbon intensity of the building will remain high.

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)

Replacing the gas boiler for heat pumps, installation of eTRVs and IR heaters are the top 3 measures in terms of energy intensity impact. The solar PV measure does not contribute to energy reduction hence has no impact on the site's energy intensity. (Blue= baseline, orange= decrease from measures, green= remaining post measures implementation)

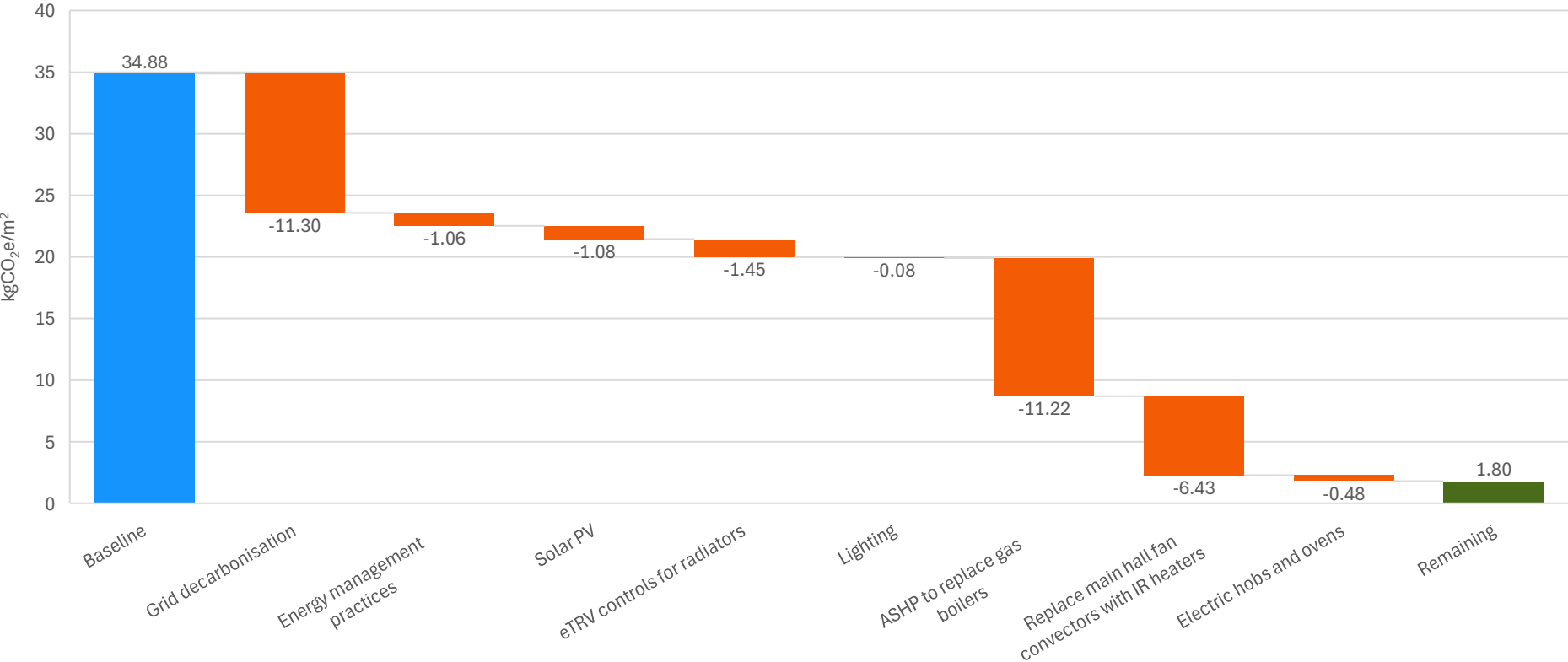
Energy intensity impact per intervention



Carbon intensity impact per recommendation – 2035

The projected carbon intensity impact of each recommendation for 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 the IR heaters installation. Grid decarbonisation will also play a crucial role in the decarbonisation. 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)

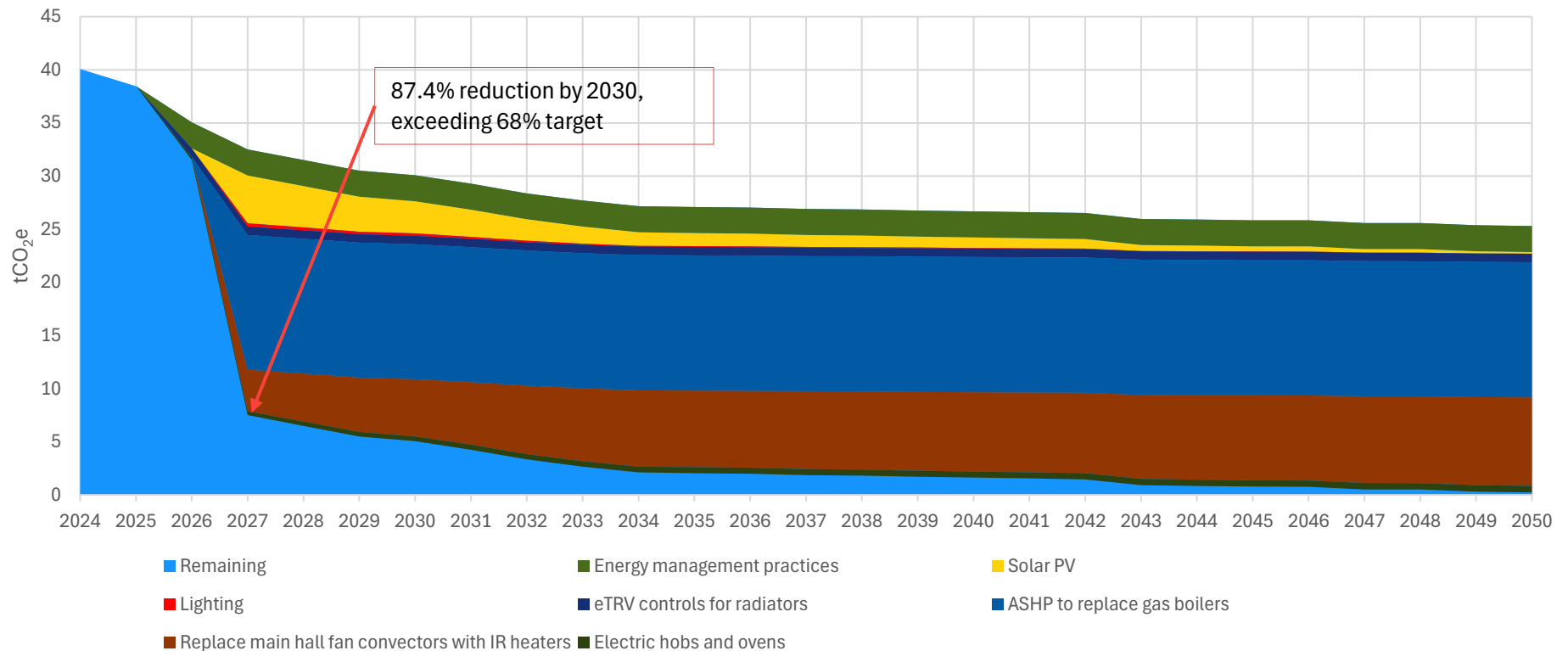


Projected site operational carbon emissions

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 87.4% , surpassing the HBC target for 68% reduction. Similarly, the drop by 2035 would become 94.9%, leaving a small amount of residual emissions to be offset for HBC to achieve its 2035 operations Net Zero target.

Projected carbon emissions



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.



During the Net Zero feasibility assessment, despite water meter data for Hayling Island Community Centre being unavailable at the time, current operational use was evaluated and is summarised in a SWOT analysis below.

Strengths

- Non-concussive taps in changing rooms.

Opportunities

- Replace toilet single-volume flush systems.
- Replace manual taps in toilets.

Weaknesses

- Unavailability of water data limits the ability to accurately compare the data to industry benchmarks.
- Manual taps in toilets.
- Single volume flush systems.

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 Hayling Island Community Centre. From the Net Zero feasibility study at Hayling Island Community Centre, the following opportunities were identified:

- **Monthly meter and submeter reads:** Monthly meter reads and submeter reads should be taken and recorded. This will enable Havant Borough Council 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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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
COP	Coefficient of Performance
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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