



Sandwell Metropolitan Borough Council Energy Proposal

Haden Hill Leisure Centre
Hadley Stadium
Harry Mitchell Leisure Centre
Tipton Leisure Centre
Tipton Sports Academy
Wednesday Leisure Centre
Portway Lifestyle Centre
Sandwell Aquatics Centre
West Bromwich Leisure Centre

4th July 2023

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A Site summaries:

Haden Hill Leisure Centre
 Hadley Stadium
 Harry Mitchell Leisure Centre
 Tipton Leisure Centre
 Tipton Sports Academy
 Wednesbury Leisure Centre
 Portway Lifestyle Centre
 Sandwell Aquatics Centre
 West Bromwich Leisure Centre

B Leisure Energy Team

Introduction

Leisure Energy is an award-winning energy consultancy and principal contractor, who specialise in identifying and delivering energy conservation solutions to the leisure sector. Leisure Energy have been appointed to support Sandwell Metropolitan Borough Council (SMBC) by reviewing the energy consumption at the following facilities to identify sustainable savings and reduce carbon emissions:

Haden Hill Leisure Centre

Hadley Stadium

Harry Mitchell Leisure Centre

Tipton Leisure Centre

Tipton Sports Academy

Wednesbury Leisure Centre

Portway Lifestyle Centre

West Bromwich Leisure Centre and Sandwell Aquatics Centre were not surveyed but have been included in the Additional Projects section.

The solutions suggested within this report provide a basis to help Sandwell Council in formulating their strategy to achieve reductions and assist in delivering an action plan and funding strategy.

Sandwell Metropolitan Borough Council

In March 2020 SMBC declared a Climate Emergency, with their members agreeing that greenhouse gas (GHG) emissions need to be reduced to a level that is compatible with keeping global warming below 1.5C above pre-industrial levels. Subsequently the Council has developed a Corporate Climate Change Action Plan (2022 – 2025) to meet their 2030 and 2041 targets, in which leisure facilities are included.

Executive Summary

Energy surveys have been completed at Portway Lifestyle Centre, Tipton Leisure Centre, Tipton Sports Academy, Wednesbury Leisure Centre, West Bromwich Leisure Centre, Harry Mitchell Leisure Centre, Hadley Stadium, Haden Hill Leisure Centre and Sandwell Aquatics Centre. The surveys were completed by Leisure Energy on behalf of Sandwell Metropolitan Borough Council.

The sites varied significantly in condition and levels of control which is reflected within the report by how many and the type of projects identified. For example, West Bromwich Leisure Centre and Sandwell Aquatics Centre were both new sites and in the case of Sandwell Aquatics Centre, yet to be handed over for public use (at the time of the survey). The only opportunities identified at these two sites were to expand on solar PV coverage and to decarbonise or plan to decarbonise the fossil fuel boilers in the coming years. The buildings were in excellent condition. It should be noted that there were some minor observations made at Sandwell Aquatics Centre such as some heaters left on in cooled spaces. However, these are to be picked up on the Building Energy Management System when handed over. It was also noted that there were no pool covers but these have been ordered for installation before hand-over.

For each site, energy and carbon saving projects have been identified in the form of Energy Conservation Measures (ECMs). In addition to the ECMs, options for decarbonising the facilities has also been provided. The specific findings and recommendations are discussed in detail in subsequent paragraphs but summarised below.

Recommendations	Estimated Annual Savings				Estimated Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	Electricity (kWh)	Gas (kWh)		
Lighting Improvements	55,975	59	306,366	0	320,040	5.7
Pool pump controls	10,671	14	71,000	0	180,600	16.9
Insulation Improvement	1,200	7	0	40,856	5,250	4.4
Hydrotherapy and changing rooms temperature control	1,329	8.6	0	46,855	-	0.0
AHU controls	7,190	8.6	44,454	-	48,000	6.7
Microfiltration	79,166	13	31,889	38,546	1,000,000	12.6
Solar PV	84,029	100.5	519,580		995,400	11.8
Total	239,559	211.3	973,289	126,257	2,549,290	10.6

Table 1: Energy Conservation Measures

Based on information gathered during the surveys opportunities for Public Sector Decarbonisation Scheme phase 3c have been identified and tabulated below:

Recommendation	Estimated Annual Savings				Grant potential (£)
	(£)	CO ₂ (te)	Electricity (kWh)	Gas (kWh)	
Solar PV	44,416	52.5	271,550		541,800
ASHP	37,359	1,038.0	-1,441,186	7,213,270	8,041,992
Total	81,775	1,090.5	-1,169,636	7,213,270	8,583,792

Table 2: PSDS Phase 3c – proposed funding application

Eligibility is based on the fossil fuel energy that can be replaced. Therefore, the sites that we believe are eligible for funding with fossil fuel heating systems are:

Portway Lifestyles Centre

- Main boilers

Tipton Leisure Centre

- Wet side boilers
- Combined Heat and Power unit
- Andrews water heaters

Tipton Sports Academy

- Main boilers
- Although the water heaters have not been included, they are considerably damaged and should at least be repaired.

Hadley Stadium

- Main boilers

Haden Hill Leisure Centre

- Main boilers
- Combined Heat and Power unit

Later sections of the report offer outlines of viable Air-Source Heat Pump installations for each site. Below are the costs and benefits of fully decarbonising the fossil fuel heating systems via Air Source Heat Pumps (ASHPs) at each site. These figures are independent of what is recommended in the PSDS 3c table.

Recommendations	Estimated Annual Savings				Estimated Project Cost (£)
	(£)	CO ₂ (te)	Electricity (kWh)	Gas (kWh)	
Portway Lifestyle Centre	-4,066	217.9	-303,868	1,515,540	2,028,000
Tipton Leisure Centre	-5,749	226.0	-356,392	1,615,912	2,028,000
Tipton Sports Academy	-10,760	160.2	-241,514	1,133,694	1,521,000
Wednesbury Leisure Centre	-3,192	196.8	-274,498	1,369,057	2,028,000
Harry Mitchell Leisure Centre	9,325	6.5	-9,060	45,189	507,000
Hadley Stadium	2,930	21.4	-29,895	149,103	195,000
Haden Hill Leisure Centre	55,003	402.4	-561,207	2,799,021	3,380,000
West Bromwich Leisure Centre	66,075	292.9	-408,533	2,037,559	1,629,026
Aquatics Centre	85,128	879.3	-1,226,244	6,115,893	5,000,000

Table 3: ASHP summary

Additional opportunities for more modest savings have been identified at the sites. These are opportunities that should be considered but do not offer the payback, reduce the considerable amounts of carbon or have high capital costs. The opportunities are listed below and are explained in more detail in the report.

Portway Lifestyles Centre

- Lobby area de-stratification
- Panel heaters control

Tipton Leisure Centre

- Pool hall heat loss

Tipton Sports Academy

- General heat loss
- House keeping

Sandwell Aquatics Centre

- Pool covers – It has been noted that these have been ordered. However, this has been highlighted due to the potential heat losses that could be reduced.

Economic payback periods

There is a clear economic benefit for the centre, not only are we reducing the current running costs, but we are also ensuring this facility remains viable by future proofing the centre's second highest cost – energy. On a like-for-like basis, the proposed energy conservation measures across the buildings, including solar PV but not ASHPs for decarbonisation, will generate **estimated annual savings of £239,599 equivalent to £2,395,591 over ten years.**

Given that energy costs over the last 20 years have increased by 300% and are currently rising, by reducing consumption now, this will lessen the effect of large increases in the future, delivering an even greater economic benefit. Building in a conservative 5% compounded increase in energy costs will result in a **saving of £3,013,148 without decarbonisation over the ten years.** Furthermore, the Council, as owner of the assets will have much improved leisure facilities that should remain viable and operational for many years to come. These figures do not account for the expected change in utility tariff levies from electricity to gas, as mentioned in the 'Decarbonisation' section.

Carbon emission savings

The energy proposal significantly reduces carbon emissions for the leisure facility by a total of **211 tCO₂** from the initial energy conservation measures including solar. There will be an estimated reduction in carbon emissions of **2,113 tonnes over a ten-year term**.

Next steps

The given report identifies project opportunities to reduce energy waste and running costs and most importantly carbon. The ECMs and solar PV can be ranked by payback and the decarbonisation can be supported by the solar PV. It is recommended that a strategy be developed for all of the projects identified and Leisure Energy can help develop detailed design and deliver the project. We recommend the below as priorities:

1. Complete a PSDS phase 3c applications to **decarbonise five** of the Leisure Centres and include solar PV.
2. Install projects grouped for economies of scale:
 - a. Portway Lifestyles Centre
 - i. Lighting upgrades
 - ii. Pump upgrades
 - iii. Microfiltration
 - iv. Hydrotherapy and changing rooms temperature control
 - v. Air Handling Unit controls
 - b. Tipton Leisure Centre
 - i. Lighting upgrades
 - ii. Pump upgrades
 - iii. Microfiltration
 - c. Tipton Sports Academy
 - i. Lighting
 - ii. Insulation upgrades
 - d. Wednesbury Leisure Centre
 - i. Pump upgrades
 - ii. Microfiltration
 - iii. Insulation upgrades
 - e. Harry Mitchell Leisure Centre
 - i. Lighting
 - ii. Insulation upgrades
 - f. Hadley Stadium
 - i. Lighting
 - g. Haden Hill Leisure Centre
 - i. Lighting upgrades
 - ii. Microfiltration
3. Complete detailed design of:
 - a. Roof mounted solar PV arrays at West Bromwich Leisure Centre and Sandwell Aquatics Centre.
4. Create a Heat Decarbonisation Plan (HDP) for future decarbonisation of the remaining fossil fuel heating systems that fall outside of PSDS funding.

Leisure Energy can support in all aspects of the recommended next steps.

Energy Management: Current Position

The baseline data received from SMBC, and current position for the sites are summarised below:

Baseline Data					
Site	Portway Lifestyle Centre	Tipton Leisure Centre	Tipton Sports Academy	Wednesbury Leisure Centre	
Baseline Period - Electricity	Calendar Year 2022				
Baseline Period - Gas	Calendar Year 2022				
Grid electricity weighted average unit cost including Climate Change Levy (p/kWh)	0.1549	0.1417	0.1830	0.1551	
Natural Gas p/kWh	0.0284	0.0277	0.0295	0.0288	
Electricity grid CO ₂ (kg/kWh)	0.19338				
Gas grid CO ₂ (kg/kWh)	0.18254				
Baseline grid electricity kWh	820,503	482,927	385,086	587,777	
Baseline electricity £	£127,062	£68,440	£70,475	£91,166	
Baseline gas kWh	1,515,540	1,615,912	1,133,694	1,369,057	
Baseline gas £	£42,991	£44,759	£33,440	£39,383	
Baseline CO ₂ (T)	435	388	281	364	
Total baseline utilities £	£170,053	£113,199	£103,915	£130,549	
Baseline Data					
Site	West Bromwich Leisure Centre	Harry Mitchell Leisure Centre	Hadley Stadium	Haden Hill Leisure Centre	Aquatics Centre
Baseline Period - Electricity	Calendar Year 2022				
Baseline Period - Gas	Calendar Year 2022				
Grid electricity weighted average unit cost including Climate Change Levy (p/kWh)	0.1715	0.2100	0.1960	0.1960	0.1597
Natural Gas p/kWh	0.0668	0.2485	0.0589	0.0589	0.0459
Electricity grid CO ₂ (kg/kWh)	0.19338				
Gas grid CO ₂ (kg/kWh)	0.18254				
Baseline grid electricity kWh	251,430	77,931	138,853	245,057	2,692,315
Baseline electricity £	£43,117	£16,367	£27,213	£48,027	£429,989
Baseline gas kWh	2,037,559	45,189	149,103	2,799,021	6,115,893
Baseline gas £	£136,133	£11,228	£8,789	£164,991	£280,971
Baseline CO ₂ (T)	421	23	54	558	1,637
Total baseline utilities £	£179,250	£27,595	£36,002	£213,018	£710,961

Table 4: Baseline Data

Baseline Utility Data – data was received from Sandwell Metropolitan Borough Council in the form of a 2022 energy utility bills which broadly accorded with verified consumption levels on which the site's 2019 Display Energy Certificate (DEC) was based.

Carbon factors for 2022 are used through this document. For more information see

<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>

Public Sector Decarbonisation Scheme (PSDS)

Eligible to the public sector in England, the scheme first opened in September 2020. Funded by the Department for Business Energy and Industrial Strategy, the Phase 1 Public Sector Decarbonisation Scheme allocated £1 billion of grant funding to the public sector. The scheme allowed organisations to deliver stimulus to the energy efficiency and heat decarbonisation sectors, supporting jobs and delivering significant carbon savings during the height of COVID-19.

- Phase 2 – April 2021 allocated £75million (now closed). 100% grant funding.
- Phase 3a – October 2021 (now closed). £613 million of funding. 12% match funding required.
- Phase 3b – October 2022. (now closed) £409million of funding. 12% match funding required.
- **Phase 3c** – Expected to open to new applications October 2023 (date and details to be confirmed; *minimum* 12% match funding requirement expected)

Leisure Energy have already secured and are delivering £34M of PSDS funded projects as part of the first three phases, and in October 2022, as part of PSDS 3b submitted applications for a further £39M (grant value) across 21 leisure facilities on behalf of 11 local authorities, which will be delivered 2023 – 2025.

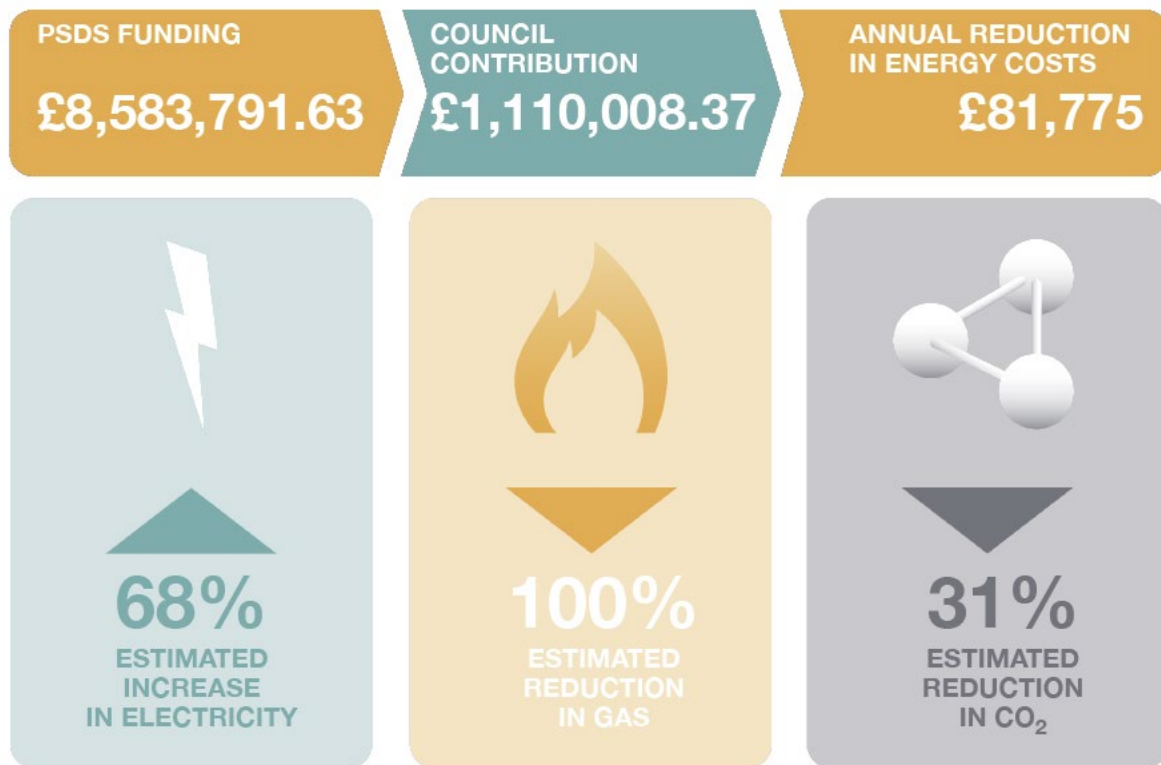
PSDS - Phase 3c

It is recommended that the qualifying initiatives identified during this survey, form the basis of an application for PSDS 3c support funding when the scheme ‘opens’; these being:

Recommendation	Estimated Annual Savings			Grant potential (£)
	(£)	CO ₂ (te)	Electricity (kWh)	
Solar PV	44,416	52.5	271,550	541,800
ASHP	37,359	1,038.0	-1,441,186	8,041,992
Total	81,775	1,090.5	-1,169,636	8,583,792

Table 5: PSDS Phase 3c – proposed funding application

To qualify for the PSDS grant, Sandwell Metropolitan Borough Council will be required to provide a minimum of 12% match funding. The graphic below shows the total capital investment from both the PSDS grant and the council contribution together with the expected savings derived from the above projects. This contribution figure is subject to full cost certainty and technical design and therefore a higher contribution could be required.



The sites we believe will qualify for the next phase of PSDS funding, due to age of the heating systems, and the heating systems that would need to be replaced are:

Portway Lifestyle Leisure Centre

- Main boilers

Tipton Leisure Centre

- Main boilers
- CHP unit
- Andrews water heaters

Tipton Sports Academy

- Main boilers

Hadley Stadium

- Main boilers

Haden Hill Leisure Centre

- Main boilers
- CHP unit

Energy Conservation Measures: Summary

We have produced projected results for the facilities below, followed by a detailed breakdown of the suggested energy measures.

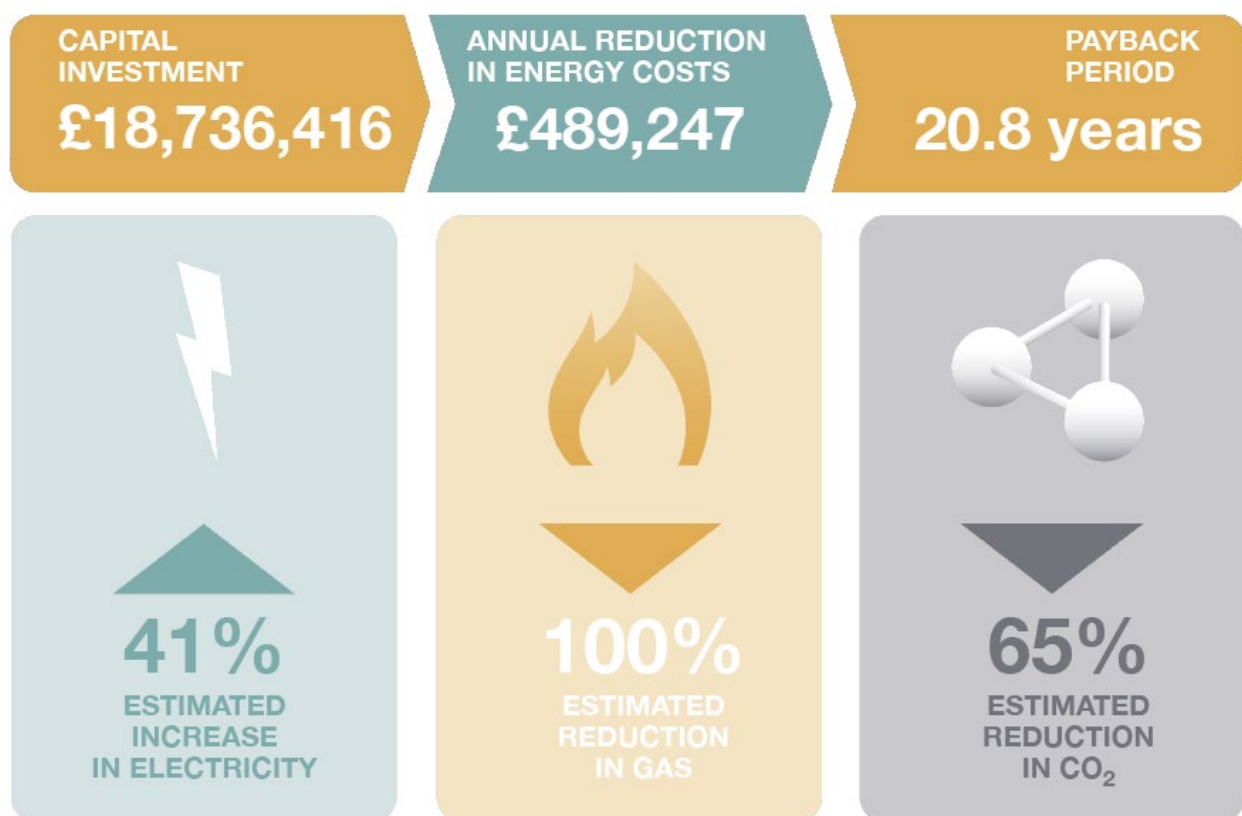
Additionally, we have produced 'site summaries' for the facilities attached as an appendix. These summarises the energy conservation solutions and provide an overview of the proposals.

The simple payback* has been calculated using forecasted utility tariffs provided by SMBC (*Simple payback is defined as the total cost of the project, divided by the estimated first year savings). Payback periods would be significantly shorter if natural end-of-life replacement were considered.

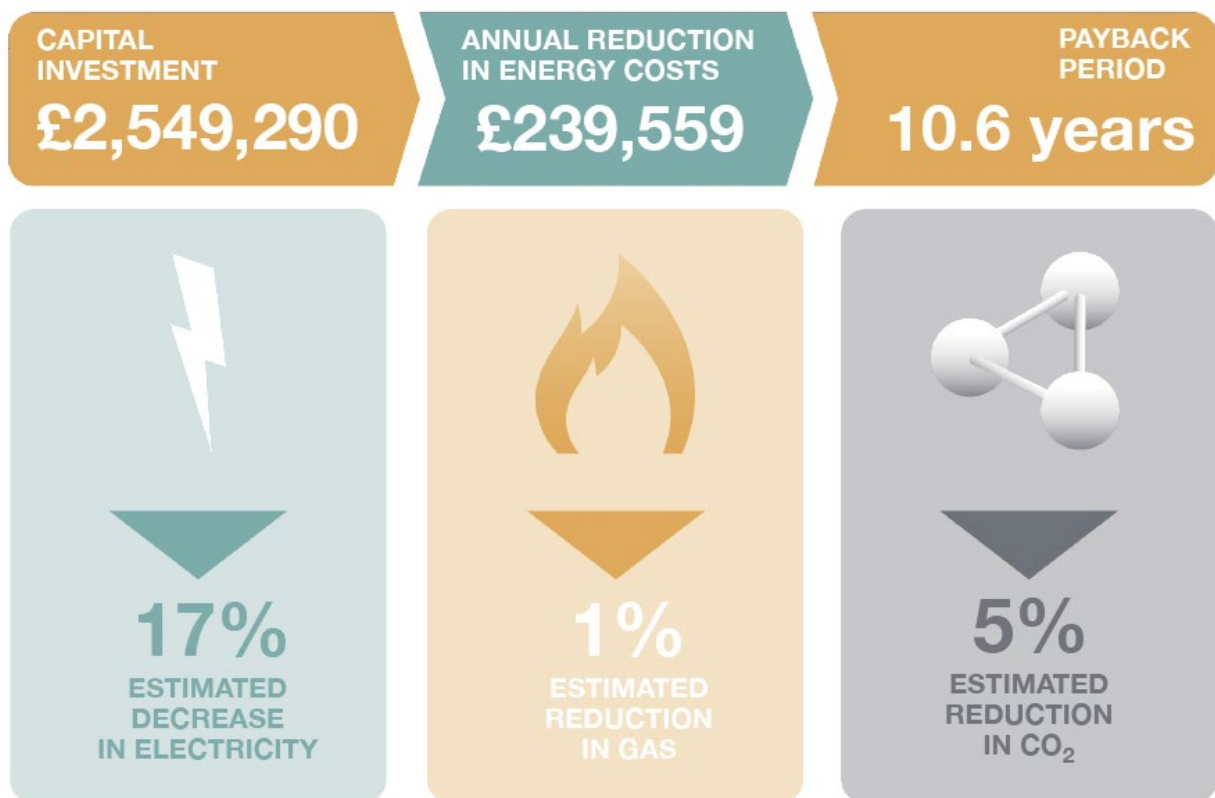
All costs are budget costs based on information obtained during the site survey and experience in similar applications. Additional costs for large projects, such as CDM costs, have not been included in this report.

All energy saving calculations in this proposal are based on engineering calculations with assumed rather than measured variables. The assumed variables are based on a combination of visual inspection (where possible), onsite plans and documentation (where available), experience and specific expertise, direct verbal reports from site staff and publicly available information – e.g. operational hours – available online. It is suggested that SMBC together with Leisure Energy review the engineering calculations and specific variables used, prior to installation.

The graphics below denote the savings derived from the installation of all Energy Conservation Measures (ECMs), solar and decarbonisation projects.



The graphics below denote the combined savings derived from the installation of Energy Conservation Measures (ECMs) and Solar Photovoltaic Panels at the facilities.



Energy Conservation Measures summary table

The table below provides a summary of the various ECMs; described in detail in subsequent paragraphs:

Recommendations	Estimated Annual Savings				Estimated Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	Electricity (kWh)	Gas (kWh)		
Lighting Improvements	55,975	59	306,366	0	320,040	5.7
Pool pump controls	10,671	14	71,000	0	180,600	16.9
Insulation Improvement	1,200	7	0	40,856	5,250	4.4
Hydrotherapy and changing rooms temperature control	1,329	8.6	0	46,855	-	0.0
AHU controls	7,190	8.6	44,454	-	48,000	6.7
Microfiltration	79,166	13	31,889	38,546	1,000,000	12.6
Solar PV	84,029	100.5	519,580		995,400	11.8
Total	239,559	211.3	973,289	126,257	2,549,290	10.6

Table 6: Energy Conservation Measures

Lighting Improvements

Location	Estimated Annual Savings			Customer Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	(kWh)		
Portway Lifestyle Centre	11,116	13.9	71,783	75,040	6.8
Tipton Leisure Centre	2,383	3.3	16,813	26,880	11.3
Tipton Sports Academy	13,313	14.1	72,746	82,600	6.2
Harry Mitchell Leisure Centre	11,077	10.2	52,742	76,440	6.9
Hadley Stadium	391	0.4	1,997	1,680	4.3
Haden Hill Leisure Centre	17,695	17.5	90,285	57,400	3.2

Table 7: Lighting Measures

Although it was noted that considerable progress had already been made in replacing fluorescent/discharge light sources with more energy-efficient LED alternatives, we propose completing the transition – to realise the benefit of reduction in both energy *and* maintenance costs. This will further yield improved lighting quality and thus enhance the visitor experience.

Our tabled improvements are based on one-for-one replacement with LED equivalent, but since it was noted that several areas had been significantly re-ordered and re-purposed, it is suggested that, for these areas, serious consideration be given to commissioning bespoke new lighting designs to maximise benefit. Whilst all areas in the facilities were surveyed, new lighting has been excluded from areas where the existing lighting is reasonably efficient and providing sufficiently good lighting quality and where replacement would have a longer simple payback period.

Emergency lighting will be replaced on a like-for-like basis. This proposal is intended to preserve and not improve existing emergency lighting provision.

We have made no inclusion within the energy payback calculations for the anticipated reduction in maintenance costs resulting from the use of LED light sources, as this is difficult to accurately quantify.

Pump Improvements

Location	Estimated Annual Savings			Customer Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	(kWh)		
Portway Lifestyle Centre	4,522	5.6	29,204	40,600	9.0
Tipton Leisure Centre	3,536	4.8	24,953	70,000	19.8
Harry Mitchell Leisure Centre	2,612	3.3	16,843	70,000	26.8

Table 8: Pumping Measures

It was noted during the survey that some pumps and pump controls could clearly be improved. The Pool Circulation pumps should be replaced with more efficient units, and it is further recommended that the Variable Speed Drives (VSDs) be linked to the dosing control system to optimise control and improve efficiency. This will enable the pump speed to be automatically varied to accord with correct pool chemistry.

Significant savings can be realised, as due to the cubic relationship between speed and power, a typical 20% reduction in speed (From 50Hz to 40Hz) will reduce the power requirement by almost 50%.

Insulation Improvements

Location	Estimated Annual Savings			Customer Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	(kWh)		
Tipton Sports Academy	1,003	6.2	34,011	3,750	3.7
Wednesbury Leisure Centre	197	1.2	6,845	1,500	7.6

Table 9: Insulation Measures

Although the insulation of the HVAC pipework and fittings was generally considered to be 'good', in some areas of the plantroom, there *were* obvious shortcomings, and coverage of pipework & fittings could be improved. Sub-optimal insulation clearly leads to unwarranted fuel expenditure but also increases operating costs by imposing needless wear on the various mechanical components of the heating system.

However, energy savings are predicted to be modest, and our recommendation is that, ideally, the work be undertaken in conjunction with the AHU improvements suggested later in the report.

Microfiltration

Location	Estimated Annual Savings			Customer Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	(kWh)		
Portway Lifestyle Centre	19,195	2.7	12,555	250,000	13.0
Tipton Leisure Centre	20,772	4.9	9,194	250,000	12.0
Wednesbury Leisure Centre	18,509	1.9	6,761	250,000	13.5

Table 10: Microfiltration Measures

Currently the pools are served by a sand filtration system. Replacing this with microfiltration units could lead to significant savings.

Microfiltration offers the dual advantage of improved water quality **and** reduced operating costs, in comparison to traditional sand-filtration. The Microfiltration process sees pool water forced through a ceramic membrane that filters down to as low as 3 microns, rather than the 10-20 microns achieved by a sand bed. As particulates are collected in the pores, the pressure across the membrane increases, and at a pre-set pressure a washing process is automatically activated.

High pressure air (5 bar) is used initially to dislodge particulates, which are then flushed out to drain with a backwash, using only 60 litres of fresh, non-pool, water (i.e. water that has **not** been heated or chemically treated) – a process that would typically occur 4-6 times a day, whilst the pool remains in use. An additional automatic injection system intermittently (typically twice a month) cleanses the system with a detergent, returning the ceramic to its original state – indeed the membrane has a lifetime guarantee with **NO** programmed maintenance beyond the cleaning cycles described.

Overall, it offers significant financial savings on the cost of:

- Chemical dosing (through reduced water consumption)
- Water (through reduced backwash volumes)
- Electricity (through reduced pressure drop across the filter, and thus pump loading)
- Gas/alternative Heating Fuel (through reduced heating load)

Beyond this there is a peripheral saving in operator time (as the process is fully automated) and the consequent reduction in carbon emissions resulting from the reduction in energy usage. We have case study examples which can be visited to fully understand this potential solution which we are happy to facilitate.

Ventilation (AHU) Improvements

Location	Estimated Annual Savings			Customer Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	(kWh)		
Portway Lifestyle Centre – Air leakage	1,329	8.6	46,855	0	0.0
Portway Lifestyle Centre – AHU controls	7,190	8.6	44,454	48,000	6.7

Table 11: Ventilation (AHU) Measures

Air leakage

It was noticed during the survey that the doors were left open between the hydrotherapy pool room and the changing rooms. This causes a conflict between the Air Handling Units as they work against each other when trying to achieve different temperatures. This means the warm air from the hydrotherapy pool room ingresses into the changing room and must be cooled to maintain the desired temperature. See images below:

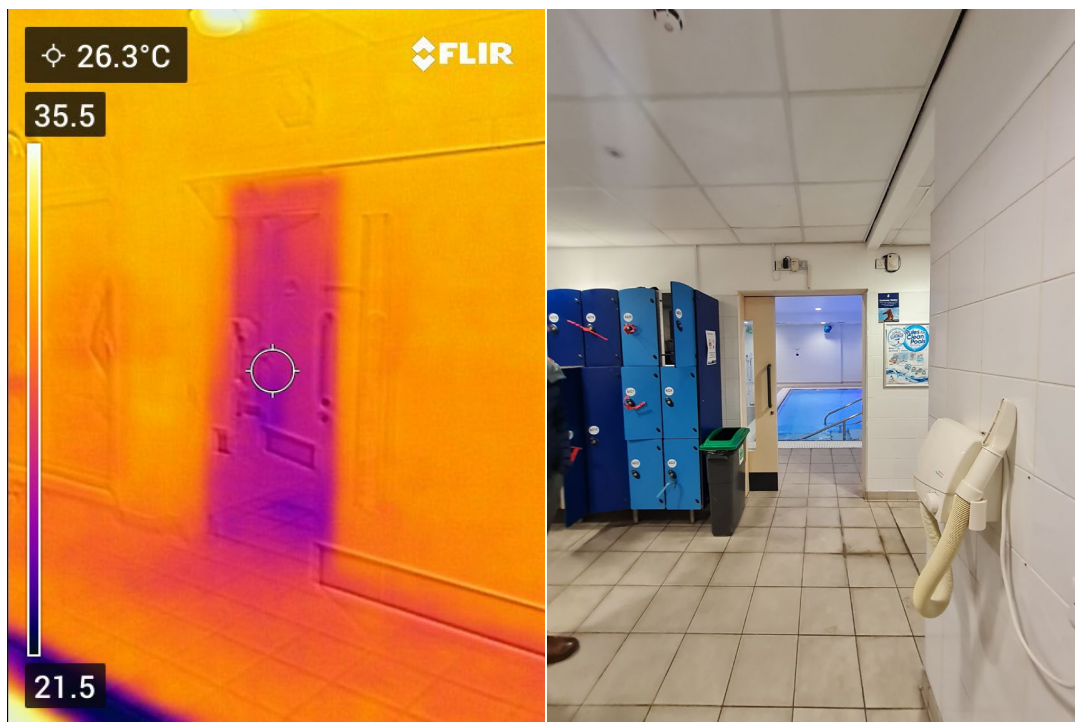


Figure 1: Thermal images of doors between the hydrotherapy pool and the changing rooms

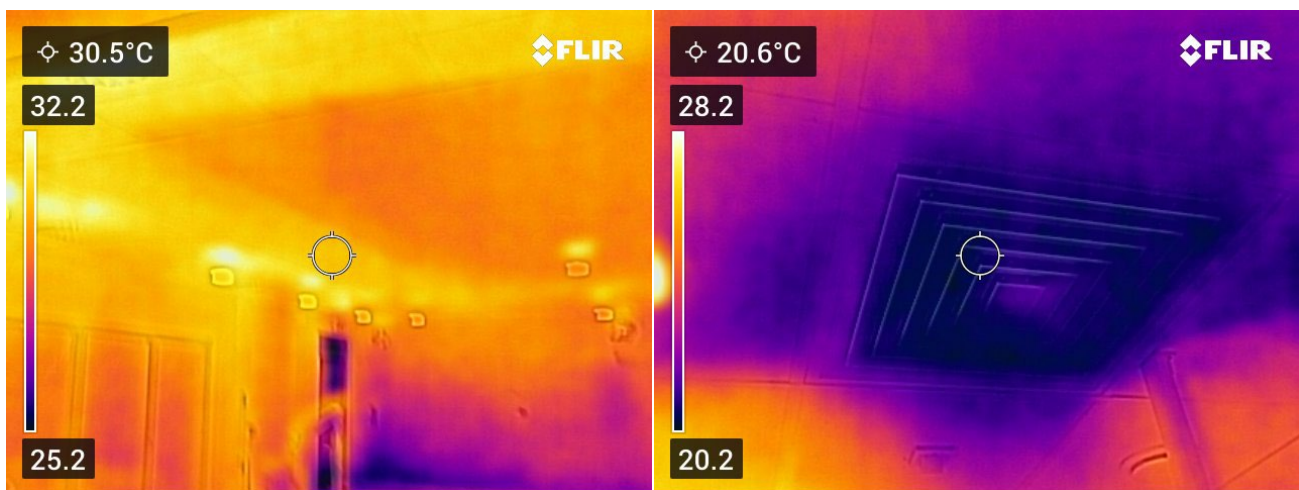


Figure 2: Thermal images of the AHU ducting heat loss

It is recommended that the doors be left closed or automatic doors be put in place to reduce the thermal heat transfer between rooms.

AHU controls

It was noted during the surveys that at the Portway Lifestyle Centre all of the Air Handling Units (AHUs) HAD Variable Speed Drives (VSDs). However, there was no evidence of any modulation, the VSDs ran at a fixed frequency continuously. In most cases the VSDs were set at 40Hz. See image below:



Figure 3: Multiple AHU VSD readouts

As stated in the pump controls project significant savings can be realised with a VSD, due to the cubic relationship between speed and power, a typical 20% reduction in speed (From 50Hz to 40Hz) will reduce the power requirement by almost 50%. But, the advantages of a VSD is to improve control whilst reducing energy consumption in the process and having the capability to vary the speed of the motor/fan automatically does not seem to be being utilised. The frequency of the VSD and speed of the motor/fan should vary based on demand using feedback from control sensors. By doing so the frequency may vary between 30-50Hz depending on demand.

The benefits of improving the control strategy of the AHUs is:

- Potentially more energy and cost savings
- Reduced load on the equipment leading to improved maintenance

Solar PV

Solar PV summary table

The table below provides a summary of the Renewable Technology considered appropriate for site; described in detail in subsequent paragraphs:

Recommendations	Estimated Annual Savings			Estimated Project Cost (£)	Project Payback (years)
	(£)	CO ₂ (te)	(kWh)		
Portway Lifestyle Centre	8,068	10.1	52,100	100,800	12.5
Tipton Leisure Centre	15,453	21.1	109,040	199,500	12.9
Tipton Sports Academy	10,496	11.1	57,350	130,200	12.4
West Bromwich Leisure Centre*	10,577	11.9	61,680	132,300	12.5
Hadley Stadium	5,703	5.6	29,100	60,900	10.7
Haden Hill Leisure Centre	4,696	4.6	23,960	50,400	10.7
Aquatics Centre	39,613	48.0	248,030	453,600	11.5

Table 12: Renewable Technology summary

*Not included in ECMS summary figures


Solar PV was identified as an opportunity at six of the sites. At the six sites the buildings appeared to have adequate roof space for effective Solar Photovoltaic systems, the cost of PV has dropped dramatically over the last 5 years, while tariffs for grid electricity are sharply rising. These circumstances have seen PV installations become financially viable even *without* grant support. Detailed above are the costs and benefits of installing solar PV arrays at each site.

Although the government have removed Feed in Tariff subsidy for Solar Photo Voltaic systems, the cost of PV has dropped dramatically over the last 5 years, while tariffs for grid electricity are sharply rising. This will see PV installations become increasingly financially viable *without* grant support.




All costs are estimated budget costs based on information obtained during the site surveys and experience in similar applications. Additional costs associated with large projects, such as CDM costs or other costs associated to enabling works and surveys, have not been included in this report.

Layout and orientation of the initial designs for the solar PV systems are highlighted below:

PORTWAY LEISURE CENTRE
 Newbury Lane, Oldbury, B69 1HE, United Kingdom | 18 Apr 2023




SYSTEM OVERVIEW


 140 PV modules		 1 Inverter		 140 Optimizers
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SIMULATION RESULTS

 Installed DC Power 63.70 kWp	 Max Achieved AC Power 47.50 kW	 Annual Energy Production 52.10 MWh	 CO2 Emission Saved 10.08 t	 Equivalent Trees Planted 463
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Figure 4: Portway Lifestyles Centre solar PV design layout and information

TIPTON LEISURE CENTRE
 Tipton, DY4 8TA, United Kingdom | 18 Apr 2023




SYSTEM OVERVIEW

 292 PV modules		 1 Inverter		 292 Optimizers
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SIMULATION RESULTS

 Installed DC Power 132.86 kWp	 Max Achieved AC Power 94.91 kW	 Annual Energy Production 109.04 MWh	 CO2 Emission Saved 21.09 t	 Equivalent Trees Planted 968
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Figure 5: Tipton Leisure Centre solar PV design layout and information

TIPTON SPORTS ACADEMY
 Bilston Road 1, Tipton, DY4 0BS, United Kingdom | 18 Apr 2023



SYSTEM OVERVIEW

154 PV modules

1 Inverter

154 Optimizers

SIMULATION RESULTS

Installed DC Power
70.07 kWp

Max Achieved AC Power
61.63 kW

Annual Energy Production
57.35 MWh

CO2 Emission Saved
11.09 t

Equivalent Trees Planted
509

Figure 6: Tipton Sports Academy solar PV design layout and information

WEST BROMWICH LEISURE CENTRE
 Moor Street 380, West Bromwich, B70 7AU, United Kingdom | 18 Apr 2023



SYSTEM OVERVIEW

165 PV modules

1 Inverter

165 Optimizers

SIMULATION RESULTS

Installed DC Power
75.08 kWp

Max Achieved AC Power
63.27 kW

Annual Energy Production
61.68 MWh

CO2 Emission Saved
11.93 t

Equivalent Trees Planted
548

Figure 7: West Bromwich Leisure Centre solar PV design layout and information

HADLEY STADIUM
Sycamore Road 1B, Smethwick, B66 4NL, United Kingdom | 18 Apr 2023




SYSTEM OVERVIEW

 78 PV modules		 1 Inverter		 78 Optimizers
--	--	---	--	--

SIMULATION RESULTS



 Installed DC Power 35.49 kWp	 Max Achieved AC Power 28.50 kW	 Annual Energy Production 29.10 MWh	 CO2 Emission Saved 5.63 t	 Equivalent Trees Planted 258
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Figure 8: Hadley Stadium solar PV design layout and information

HADEN HILL LEISURE CENTRE
Barrs Road 147, Cradley Heath, B64 7EX, United Kingdom | 18 Apr 2023




SYSTEM OVERVIEW

 64 PV modules		 1 Inverter		 64 Optimizers
--	--	---	--	--

SIMULATION RESULTS

 Installed DC Power 29.12 kWp	 Max Achieved AC Power 23.75 kW	 Annual Energy Production 23.96 MWh	 CO2 Emission Saved 4.63 t	 Equivalent Trees Planted 213
---	---	---	---	---

Figure 9: Haden Hill Leisure Centre solar PV design layout and information

SANDWELL AQUATICS CENTRE

Francis Road 37A, Smethwick, B67 7HU, United Kingdom | 3 Jul 2023

LeisureEnergy
Sustainable savings**SYSTEM OVERVIEW**
 **656 PV modules**
 **3 Inverters**
 **328 Optimizers**
SIMULATION RESULTS

Installed DC Power

298.48 kWp

Max Achieved AC Power

215.81 kW

Annual Energy Production

248.03 MWh

CO2 Emission Saved

47.96 t

Equivalent Trees Planted

2,203

Figure 10: Sandwell Aquatics Centre solar PV design layout and information

Although, there are already solar PV panels at the Aquatics Centre it is believed that there is additional capacity could be installed. There is ample roof space and the design shown in Figure 9 produces an estimated 9% of what would be the onsite electricity consumption. With future decarbonisation, potential expansion of EV charge points and projected tariff increases more solar PV to generate electricity is recommended as an option worth considering following a structural assessment.

Decarbonisation

To achieve the Council's target of zero carbon, all-natural gas consumption will need to be replaced. This can be readily achieved through utilising Heat Pump technology – whether Air Source, Ground Source, or Water Source. Given the current cost structure of the utilities (i.e. electricity is circa 5 times more expensive than gas) there may not be a cost saving from the installation of a Heat Pump unit as they will reduce the natural gas consumption but increase the electricity consumption. Due to the high efficiencies of heat pumps, there is a net reduction in energy consumption and carbon emissions. However, with the electricity tariff currently being approximately 25p/kWh higher than natural gas tariffs, the running costs of the site may well increase in the short term. However, we believe that Government intervention regarding the environmental levies on these utilities is likely to shift and be rebalanced over the next five years to assist with the drive for decarbonisation – currently circa 35% of electricity costs are environmental levies as opposed to just 18% for gas. This will see implemented decarbonisation projects become profitable in the future.

Air Source Heat Pumps (ASHP)

Recommendations	Estimated Annual Savings				Estimated Project Cost (£)
	(£)	CO ₂ (te)	Electricity (kWh)	Gas (kWh)	
Portway Lifestyle Centre	-4,066	217.9	-303,868	1,515,540	2,028,000
Tipton Leisure Centre	-5,749	226.0	-356,392	1,615,912	2,028,000
Tipton Sports Academy	-10,760	160.2	-241,514	1,133,694	1,521,000
Wednesbury Leisure Centre	-3,192	196.8	-274,498	1,369,057	2,028,000
Harry Mitchell Leisure Centre	9,325	6.5	-9,060	45,189	507,000
Hadley Stadium	2,930	21.4	-29,895	149,103	195,000
Haden Hill Leisure Centre	55,003	402.4	-561,207	2,799,021	3,380,000
West Bromwich Leisure Centre	66,075	292.9	-408,533	2,037,559	1,629,026
Aquatics Centre	85,128	879.3	-1,226,244	6,115,893	5,000,000

Table 13: ASHP summary

(project costs do not include overhead and project management costs)

Decarbonisation can be achieved via heat pumps for the Sandwell facilities. For the facilities surveyed it is recommended that Air to Water – Air Source Heat Pumps (ASHPs) be installed to replace the fossil fuel fired boilers. Each site could be decarbonised using ASHPs using cascading systems with low temperature heat pumps and booster units or high temperature ASHPs, depending on the application.

Detailed above are the costs and benefits of installing ASHP technology to serve both Plantrooms; with the technical outline of the installation proposed, being outlined below:

Please note that detailed design has not been completed for the replacement heating system and the information provided offers budget figures for potential replacements.

To enable fullest assessment of the potential benefit of installing ASHP technology, we would respectfully remind that (as outlined earlier) there is clear potential to considerably increase the site's Solar PV generation capacity to significantly offset the increased electrical load that would be introduced, should the proposal be considered attractive.

Additional projects

Additional potential projects were identified during the survey which have not been included in the recommended findings due to long paybacks, but are offered as a very worthwhile enhancement which would significantly improve user comfort level:

Location	Estimated Annual Losses (kWh)	Potential Annual cost £
Portway Lifestyle Centre – Lobby area stratification	70,080	1,988
Portway Lifestyle Centre – Panel heaters control		
Tipton Leisure Centre – Pool Hall Heat Loss	17,851	618
Tipton Sports Academy – Heat loss	-	-
Tipton Sports Academy – House keeping	-	-
Aquatics Centre – Pool covers	434,046	29,626

Table 14: Additional project losses and costs at current tariffs

Portway Lifestyle Centre

The lobby area at Portway Lifestyle Centre has very high ceilings with a heating unit over the entrance on. Heat rises and the sensor and controls for the heaters are at low level. This means the heat is stratifying in the ceiling area. If de-stratification fans were installed at ceiling level they would blow the warm air back down which could be detected by sensors and lead to a reduced load on heating systems in the area. This would save energy, carbon and cost. See image of lobby area below



Figure 11: Portway reception lobby

Tipton Leisure Centre

Pool Hall Heat Loss

When conducting the survey at Tipton Leisure Centre damp markings we noticed on the beams supporting the roof in the Swimming Pool where the beams exit the building. Thermal imaging showed heat loss at these points. The cold ingress or thermal bridging causes the air near the area to cool and condense which then leads to a build-up of moisture. Not only is this heat loss causing more energy to be consumed to maintain temperature is it very likely causing damaged to the roof structure ie members and structure. See images below:

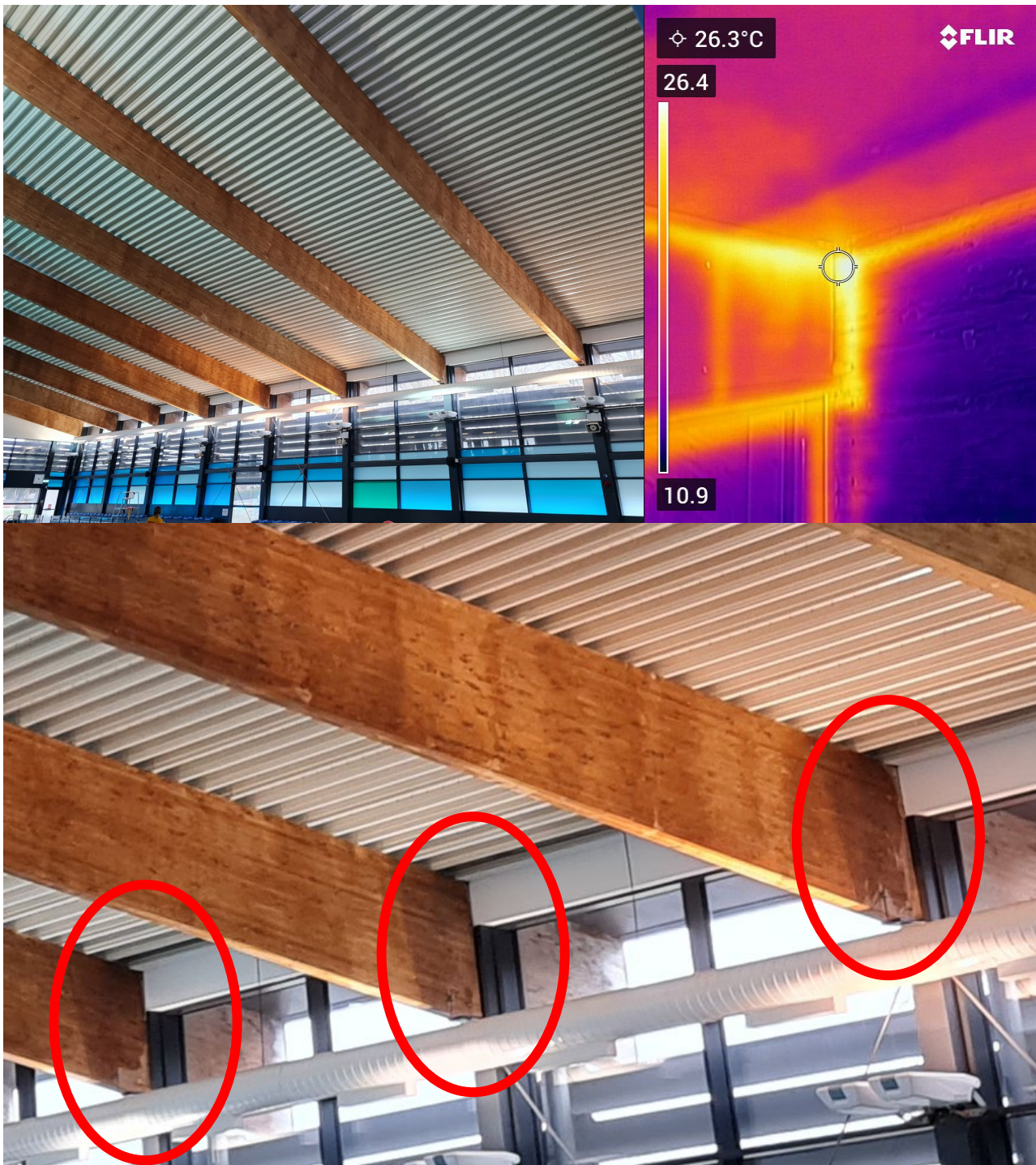


Figure 12: Pool hall heat loss through thermal bridging

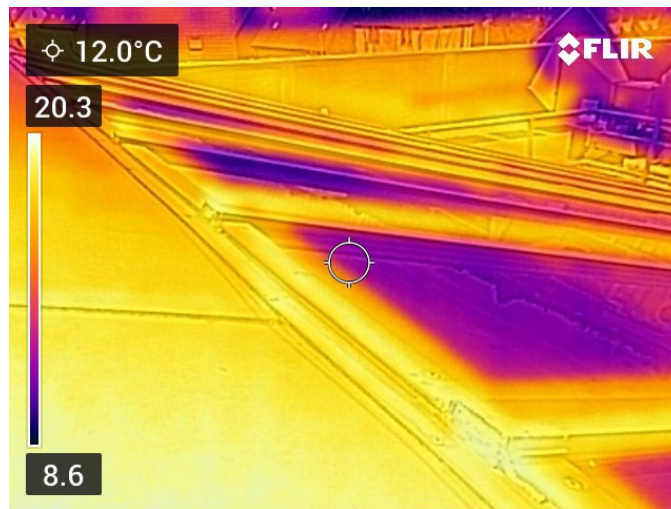


Figure 13: Pool hall sky lights heat loss

It is recommended that the areas around the beams, along the roof top and around the outside windows and any other penetrations to outside be examined, sealed and potentially insulated.

Tipton Sports Academy

Heat loss

It was noted during the survey of the Tipton Sports Academy that some areas had the heating systems on when not in use. One example of this was the Sports Hall, as seen in the images below, the heating systems were on. In this case the heating system design seems inefficient, in a large hall such as the Sports Hall heat rises and will escape by conduction through the roof fabric and by convection through any ventilation in place. The heaters, which span the perimeter of the Sports Hall, are situated at high level making them largely ineffective and certainly inefficient as it will be difficult to reach the desired temperature at low level where needed. It can be seen from the thermal image below that the spot temperature on the heaters is approximately 16 degrees Celsius whereas the temperature at ground level, where customers would be playing sports, is roughly 6 degrees Celsius.

There is a substantial inefficiency in the design with likely a large thermal loss. We suggest this be investigated and re-designed to better meet the heating requirements more efficiently. This could be achieved with an AHU or with destratification fans and controls.



Figure 14: Thermal imaging of heated areas during periods of no use



Figure 15: Under bench heating in sports changing rooms left on when not in use

House Keeping

It was noted during the survey of the Tipton Sports Academy that many areas had the heating systems on when not in use. The areas identified during the survey were open windows in heated rooms, the doors by reception having a significant temperature gradient and under seat/bench heaters being switched on or not isolated in changing rooms when not in use. See thermal images below.

There is a substantial inefficiency in the design with likely a large thermal loss. We suggest this be investigated and re-designed to better meet the heating requirements more efficiently.

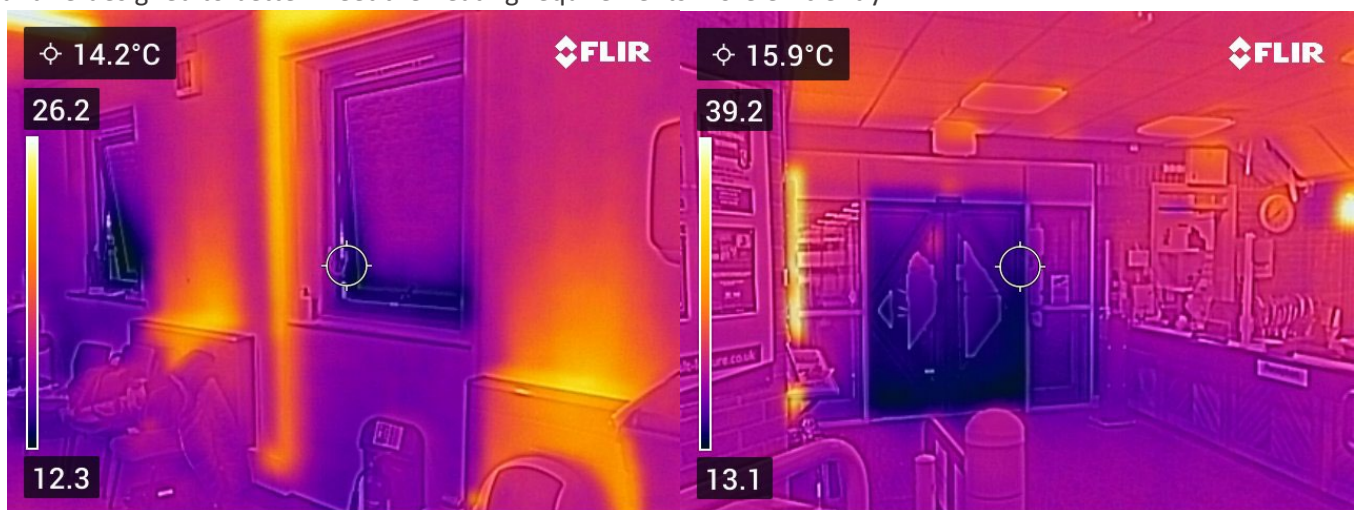


Figure 16: Areas of heat loss due to open windows and doors

Heat loss can be reduced by ensuring all windows and doors remain closed when the heating is on and valves/area not in use are isolated.

This can be achieved automatically by:

- Installing controls that link the windows to the heating system so that when the windows are opened the heating is switched off.
- Installing valves and linking the changing rooms to the BEMS.
- A draft lobby could be installed by reception to reduce heat loss.

Sandwell Aquatics Centre

Pool covers

It was noted during the survey that there were no pool covers in place. But we were informed that these had been ordered and are to be installed before the centre is open to the public. There is a potential annual energy saving of circa 434,046 kWh and a cost saving of £29,626. These figures are provided to highlight the importance of installing the pool covers.

Other observations

Combined Heat and Power (CHP)

At Tipton Leisure Centre and Haden Hill Leisure Centre there were a 49kW_e and a 70kW_e CHP units respectively. In both cases the CHPs are old and experiencing issues. Due to the age of the CHP units these can be replaced under the PSDS phase 3c grant scheme due to the potential carbon savings from removing the fossil fuel consumption.

Solar thermal

At Portway Lifestyles Centre there was an operational solar thermal array feeding 60-degree Celsius water into a buffer tank. This is no doubt saving on gas consumption and helping to decarbonise the site.

Solar PV

There is already a substantial solar PV array at Wednesbury Leisure Centre. Therefore, there have been no recommendations to install more panels.

Next steps

The given report identifies project opportunities to reduce energy waste and running costs and most importantly carbon. The ECMs and solar PV can be ranked by payback and the decarbonisation can be supported by the solar PV. It is recommended that a strategy be developed for all of the projects identified and Leisure Energy can help develop detailed design and deliver the project. We recommend the below as priorities:

1. Complete a PSDS applications to **decarbonise five** of the Leisure Centres and include solar PV.
2. Install projects grouped for economies of scale:
 - a. Portway Lifestyles Centre
 - i. Lighting upgrades
 - ii. Pump upgrades
 - iii. Microfiltration
 - iv. Hydrotherapy and changing rooms temperature control
 - v. Air Handling Unit controls
 - b. Tipton Leisure Centre
 - i. Lighting upgrades
 - ii. Pump upgrades
 - iii. Microfiltration

- c. Tipton Sports Academy
 - i. Lighting
 - ii. Insulation upgrades
 - d. Wednesbury Leisure Centre
 - i. Pump upgrades
 - ii. Microfiltration
 - iii. Insulation upgrades
 - e. Harry Mitchell Leisure Centre
 - i. Lighting
 - ii. Insulation upgrades
 - f. Hadley Stadium
 - i. Lighting
 - g. Haden Hill Leisure Centre
 - i. Lighting upgrades
 - ii. Microfiltration
3. Complete detailed design of:
 - a. Roof mounted solar PV arrays at West Bromwich Leisure Centre and Sandwell Aquatics Centre.
 4. Create a Heat Decarbonisation Plan (HDP) for future decarbonisation of the remaining fossil fuel heating systems that fall outside of PSDS funding.

Leisure Energy can support in all aspects of the recommended next steps.

VAT/Maintenance savings

For the facility, the proposed works and corresponding utility reductions will bring further financial savings in not incurring irrecoverable VAT on the energy saved.

Forecasts of savings due to reduced Maintenance costs are highlighted – where considered significant and applicable – within the individual sections of the report.

The Public Services (Social Value) Act 2012

Environmental

The energy proposal significantly reduces carbon emissions for the leisure facility by a total of **211 tCO₂** from the initial energy conservation measures including solar. There will be an estimated reduction in carbon emissions of **2,113 tonnes over a ten-year term**.

Social Value

Leisure Energy is committed to delivering projects in accordance with the aims of The Public Services (Social Value) Act 2012 through the delivery of health, economic, social and environmental benefits. Whilst the projects that we work on with our clients will themselves significantly contribute to reducing the Councils Carbon Footprint, we also add and generate further social value through the initiatives highlighted below:

- o Net Zero

Leisure Energy is committed to achieving Net Zero as a business. As part of this, we work with Ecologi.com and fund carbon avoidance and reforestation projects. This is used to offset our team and their work for each project we deliver and we also endorse this approach with our supply chain too.

- Leisure Energy Community Grant

We launched the Leisure Energy Community Grant in 2022 which is used locally to help fund or support a community project. This could be a sports, arts or culture project, event or initiative. This could be a single, or multiple grants.

An example of a recent grant we provided was in partnership with Walsall Council. We are delivering a PSDS project at Darlaston Swimming and Fitness Centre and have provided support to Darlaston Town Football Club who have a long history and community focused approach to developing youth and girls football to improve their facilities.

- Carbon Communication

We also provide an Information Board which can be displayed in each facility, explaining what decarbonisation works and renewable technology has been delivered and explaining it in simple terms so the local community can see and understand the impact on reducing the carbon footprint of the community assets.

Implementation and training

Leisure Energy recognises the importance of staff training at all levels for the successful implementation and continued benefits of any energy project.

As part of the delivery of these works, all staff will receive training on the new energy works. This will involve an overview of the works together with the part staff will play in their delivery. This will be supported by bespoke training for the technical teams, where there will be pre-installation training to explain the principles of, for example, night-time environmental settings. After the project's installation, there will be specific training / handover in respect of technical innovations such as the water treatment. This is to ensure the staff understand the new technology and how it operates on a proactive rather than reactive basis i.e. through modulation.

Promoting savings

Our proposed energy works make a significant commitment to the local community and carbon emissions reduction, however as most of these works are often unseen i.e. water controllers / AHU / controls they do not get the recognition they deserve.

Leisure Energy, in conjunction with Sandwell Council would propose to actively promote the energy / carbon reduction measures by installing 'energy banners' before the works start. The aim is to raise awareness of these largely inconspicuous works by demonstrating the savings in simple recognisable terms e.g. electricity savings equivalent to number of TVs. Typically, the banner will be located around the centre e.g. front entrance, pool hall etc. An example of how the banner will look is shown below.

Risk Register - PSDS Pre-Construction

Risk ID	Risk Description	Impact Description	Risk status	Mitigation Description	Action owner	Severity	Likelihood	Score	Comments
001	Procurement / Contract delays	12 Month project and risk to Salix Grant utilisation.	16	Direct appointment through leisure partner or recognised public sector framework such as: Everything FM or UK Leisure Framework.	Client	2	1	2	
002	Procurement lead times and delays	12 Month project and risk to Salix Grant utilisation.	16	Direct appointment through leisure partner or recognised public sector framework such as: Everything FM or UK Leisure Framework.	Client	2	1	2	
003	Poor design integration into existing building	Cold building, carbon savings not achieved and ongoing increased operating costs.	12	Leisure Energy has detailed understanding of Leisure Centres and equipment installed. In house design team will complete all calculations and detailed design for construction.	LE	2	2	4	
004	Poor understanding of Leisure Centre operation	Cold building, savings not achieved and ongoing OPEX costs increase	12	Leisure Energy has detailed understanding of Leisure Centres and equipment installed. In house design team will complete all calculations and detailed design for construction.	LE	2	1	2	
005	Revenue loss due to installation works	Building needing to close due to construction works	12	Leisure Energy have experience of delivering Leisure projects and can phase works to reduce the impact on the centre and reduce the loss of revenue.	LE	2	2	4	
006	Lack of understanding of low temperature heating systems and legionella controls	Cold building, savings not achieved and ongoing OPEX costs increase	15	Leisure Energy has detailed understanding of Leisure Centres and equipment installed. In house design team will complete all calculations and detailed design to ensure correct sizing of all equipment	LE	2	1	2	
007	Energy Costs	OPEX costs rise and reduce viability of centre.	12	Leisure Energy will deliver a smart system designed to optimise the system performance.	LE	2	1	2	

Appendices:

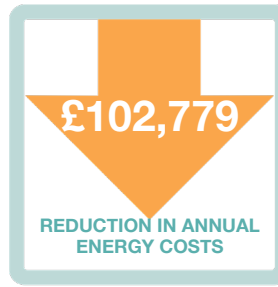
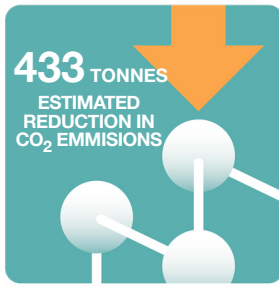
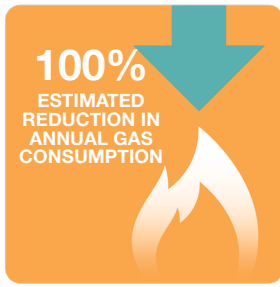
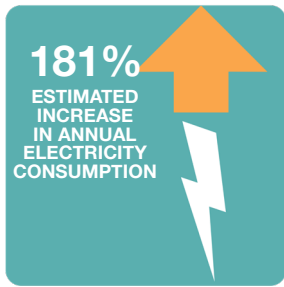
A Site Summary:

- Haden Hill Leisure Centre
- Hadley Stadium
- Harry Mitchell Leisure Centre
- Tipton Leisure Centre
- Tipton Sports Academy
- Wednesbury Leisure Centre
- Portway Lifestyle Centre
- Sandwell Aquatics Centre
- West Bromwich Leisure Centre

B Leisure Energy Team

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE HADEN HILL LEISURE CENTRE

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 5,081 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	YES
SMALL POOL	YES
SPA POOL, FLUME, BEACH AREA	NO
GYM	YES
STUDIO	YES X 3
SAUNA & STEAM	YES
SPORTS HALL	NO
SQUASH COURTS	YES
INDOOR TENNIS COURTS	YES
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	NO
RECEPTION & OFFICES	YES
ATHLETICS TRACK	NO
OUTDOOR TENNIS COURTS	NO
FOOTBALL PITCHES	NO

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION: PLANT ROOM	x
LIGHTING	✓
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	✓
POOL COVER	x
POOL PUMP OPTIMISATION	✓
POOL PUMP MOTORS	✓
SOLAR PHOTOVOLTAIC	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	✓



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Haden Hill Leisure Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 78% with a Council capital investment of £457,365 and PSDS funding of £3,330,835.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	2,799,021 kWh	0 kWh	2,799,021 kWh	100%
Electricity	245,057 kWh	688,640 kWh	-443,583 kWh	-181%
CO ₂	558 tonnes	125 tonnes	433 tonnes	78%

Energy Conservation Measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Lighting	£17,695	17.5	90,285	£57,400	3.2
Pumps	£102	0.1	531	£35,000	341.8
Microfiltration	£20,690	3.6	19,758	£250,000	12.1
Total	£38,487	21.2	110,574	£342,400	

Renewables Technologies

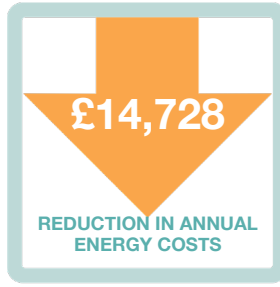
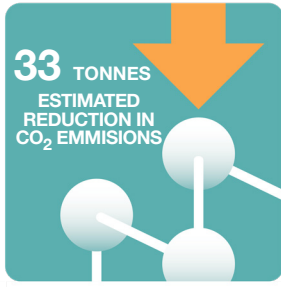
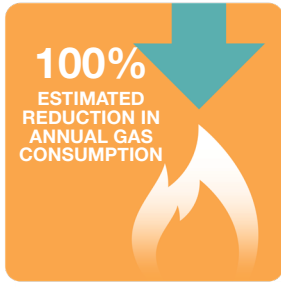
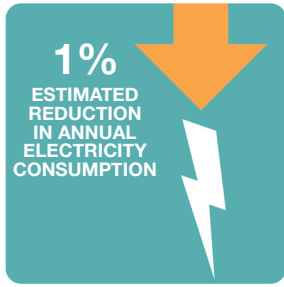
Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Solar	£4,696	4.6	23,960	£50,400	10.7

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
ASHP	£55,003	402.4	2,237,814	£3,380,000	61.5

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE HADLEY STADIUM

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 6,567 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	NO
SMALL POOL	NO
SPA POOL, FLUME, BEACH AREA	NO
GYM	NO
MULTIPURPOSE ROOM	YES
SAUNA & STEAM	NO
SPORTS HALL	YES
SQUASH COURTS	NO
MEETING ROOMS	NO
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	NO
RECEPTION & OFFICES	YES
ATHLETICS TRACK	YES
OUTDOOR TENNIS COURTS	NO
3G PITCHES	YES

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION: PLANT ROOM	x
LIGHTING	✓
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	x
POOL COVER	x
POOL PUMP OPTIMISATION	x
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	✓

Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Hadley Stadium can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 61% with a Council capital investment of £141,047 and PSDS funding of £177,433.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	149,103 kWh	kWh	kWh	100%
Electricity	138,853 kWh	kWh	kWh	-%
CO ₂	54 tonnes	tonnes	tonnes	%

Energy Conservation Measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Lighting	£391	0.4	1,997	£1680	4.3

Renewables Technologies

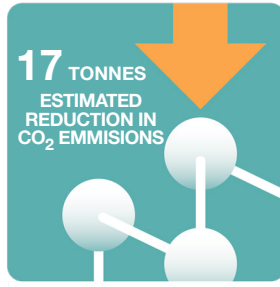
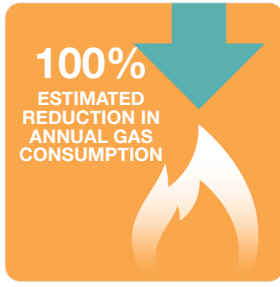
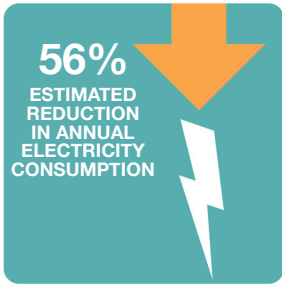
Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Solar	£5,703	5.6	29,100	£60,900	10.7

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
ASHP	£ 2,930	21.4	119,208	£195,000	66.6

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE HARRY MITCHELL LEISURE CENTRE

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 6,567 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	NO
SMALL POOL	NO
SPA POOL, FLUME, BEACH AREA	NO
GYM	YES
STUDIO	YES
SAUNA & STEAM	NO
SPORTS HALL	YES X 2
SQUASH COURTS	NO
MEETING ROOMS	YES
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	NO
RECEPTION & OFFICES	YES
ATHLETICS TRACK	NO
OUTDOOR TENNIS COURTS	NO
FOOTBALL PITCHES	NO

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION: PLANT ROOM	x
LIGHTING	✓
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	x
POOL COVER	x
POOL PUMP OPTIMISATION	x
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	x
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	x



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Harry Mitchell Leisure Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 72% with a Council capital investment of £583,440.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	45,189 kWh	0 kWh	45,189 kWh	100%
Electricity	77,931 kWh	34,681 kWh	43,681 kWh	56%
CO ₂	23 tonnes	6 tonnes	17 tonnes	72%

Energy Conservation Measures

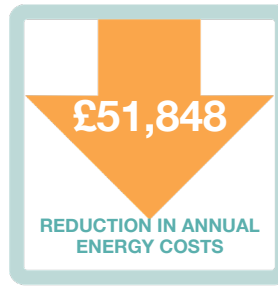
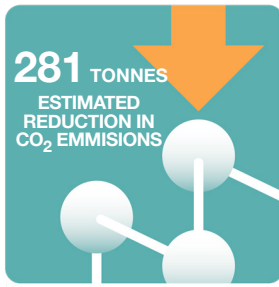
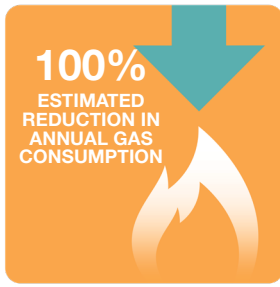
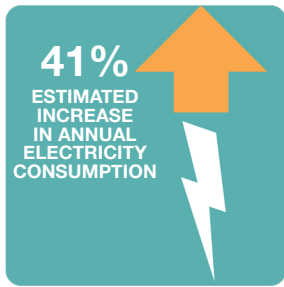
Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Lighting	£11,077	10.2	52,742	£76,440	6.9

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
ASHP	£9,325	6.5	36,129	£507,000	54.4

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE TIPTON LEISURE CENTRE

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 2,424 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	YES
SMALL POOL	YES
SPA POOL, FLUME, BEACH AREA	NO
GYM	YES
STUDIO	YES
SAUNA & STEAM	NO
SPORTS HALL	NO
SQUASH COURTS	NO
TREATMENT ROOM	NO
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	NO
RECEPTION & OFFICES	YES
MEETING ROOM	NO
OUTDOOR COURTS	NO

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION	x
LIGHTING	✓
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	✓
POOL COVER	x
POOL PUMP OPTIMISATION	✓
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	✓



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Tipton Leisure Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 72% with a Council capital investment of £850,945 and PSDS funding of £1,922,935.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	1,615,912 kWh	0 kWh	1,615,912 kWh	100%
Electricity	482,927 kWh	679,318 kWh	-196,391 kWh	-41%
CO ₂	388 tonnes	107 tonnes	281 tonnes	72%

Energy Conservation Measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Lighting	£2,383	3.3	16,813	£26,880	11.3
Pumps	£3,536	4.8	24,953	£70,000	19.8
Microfiltration	£20,771	4.9	26,523	£250,000	12.0
Total	£26,690	13.0	68,289	£346,880	

Renewables Technologies

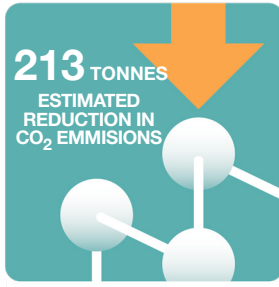
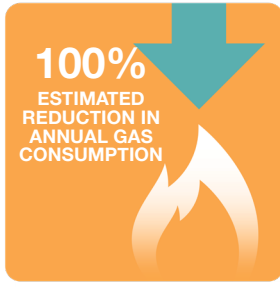
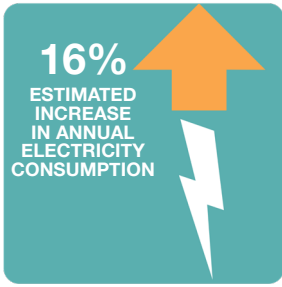
Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Solar	£15,453	21.1	109,040	£199,500	12.9

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment
ASHP	£-5,479	226.0	1,259,520	£2,028,000

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE TIPTON SPORTS ACADEMY

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 6,567 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	NO
SMALL POOL	NO
SPA POOL, FLUME, BEACH AREA	NO
GYM	YES
STUDIO	YES
SAUNA & STEAM	NO
SPORTS HALL	YES
SQUASH COURTS	NO
INDOOR TENNIS HALL	YES
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	NO
RECEPTION & OFFICES	YES
ATHLETICS TRACK	YES
OUTDOOR TENNIS COURTS	YES
FOOTBALL PITCHES	YES

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION: PLANT ROOM	✓
LIGHTING	✓
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	x
POOL COVER	x
POOL PUMP OPTIMISATION	x
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIBILITY/OPPORTUNITIES	✓



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Tipton Leisure Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 76% with a Council capital investment of £518,654 and PSDS funding of £1,349,096.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	1,133,694 kWh	0 kWh	1,133,694 kWh	100%
Electricity	385,086 kWh	444,814 kWh	-59,728 kWh	-16%
CO ₂	281 tonnes	68 tonnes	213 tonnes	76%

Energy Conservation Measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Lighting	£13,313	14.1	72,746	£82,600	6.2
Insulation	£1,003	6.2	34,011	£3,750	3.7
Total	£3,579	20.3	106,756	£86,350	

Renewables Technologies

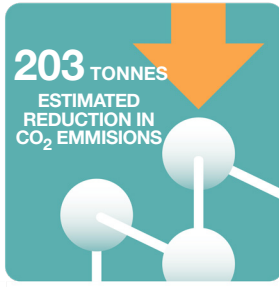
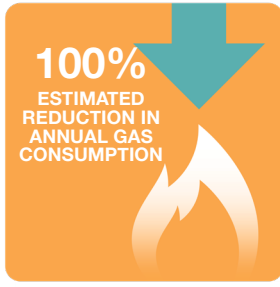
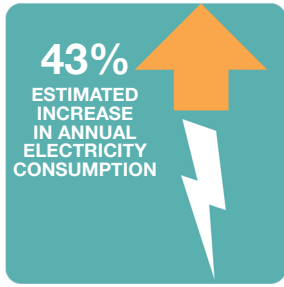
Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Solar	£10,946	11.1	57,350	£130,200	12.4

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment
ASHP	£-10,760	160.2	892,180	£1,521,000

CLIENT **SANDWELL METROPOLITAN BOROUGH COUNCIL**
PROJECT TITLE **WEDNESBURY LEISURE CENTRE**

DATE **JUNE 2023**
PREPARED BY **JAMIE HARRIS**



CENTRE DETAILS

USEFUL FLOOR AREA **2,424 m³**
(according to display energy certificate)

FACILITIES

MAIN POOL	YES
SMALL POOL	YES
SPA POOL, FLUME, BEACH AREA	NO
GYM	YES
STUDIO	YES x3
SAUNA & STEAM	NO
SPORTS HALL	YES
SQUASH COURTS	NO
TREATMENT ROOM	NO
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	NO
RECEPTION & OFFICES	YES
MEETING ROOMS	YES
OUTDOOR COURTS	NO

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION	✓
LIGHTING	x
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	✓
POOL COVER	x
POOL PUMP OPTIMISATION	✓
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	x
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	x



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Wednesbury Leisure Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 72% with a Council capital investment of £850,945 and PSDS funding of £1,922,935.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	1,369,057 kWh	0 kWh	1,369,057 kWh	100%
Electricity	587,777 kWh	838,672 kWh	-250,895 kWh	-43%
CO ₂	364 tonnes	161 tonnes	203 tonnes	56%

Energy Conservation Measures

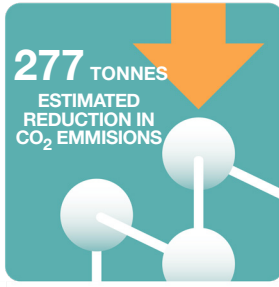
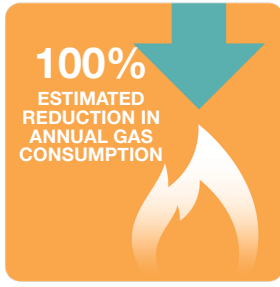
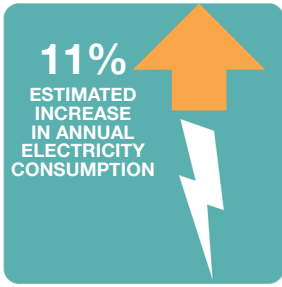
Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment	Payback (Yrs)
Pumps	£2,612	3.3	16,843	£70,000	11.3
Microfiltration	£18,509	1.9	9,891	£250,000	26.8
Insulation	£197	1.2	6,845	£1,500	7.6
Total	£21,318	6.4	33,578	£321,500	

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	Savings kwh	Capital Investment
ASHP	£-3,192	196.8	1,094,559	£2,028,000

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE TIPTON LEISURE CENTRE

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 4,155 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	NO
SMALL POOL	NO
HYDROTHERAPY POOL	YES
GYM	YES
STUDIO	YES
SPORTS HALL	YES
MULTI-PURPOSE ACTIVITY ROOM	YES
SQUASH COURTS	NO
TREATMENT ROOM	NO
CHANGING ROOMS	YES
CAFE	NO
RECEPTION & OFFICES	YES
MEETING ROOMS	YES
OUTDOOR PITCHES & LIFE TRAIL	YES
GP SURGERY	YES

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION	x
LIGHTING	✓
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	✓
POOL COVER	x
POOL PUMP OPTIMISATION	✓
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	✓
TEMPERATURE CONTROLS	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	✓

Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Portway Lifestyle Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 64% with a Council capital investment of £839,747 and PSDS funding of £1,803,493.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	1,515,540 kWh	0 kWh	1,515,540 kWh	100%
Electricity	820,503 kWh	913,275 kWh	-93,772 kWh	-11%
CO ₂	435 tonnes	158 tonnes	277 tonnes	64%

Energy Conservation Measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Lighting	£11,116	13.9	71,783	£75,040	6.8
Pumps	£4,522	5.6	29,204	£40,600	9.0
Microfiltration	£19,195	2.7	14,263	£250,000	13.0
Temperature controls	£1,329	8.6	46,855	£0	0.0
AHU Controls	£7,190	8.6	44,454	£48,000	6.7
Total	£43,353	39.4	206,558	£413,640	

Renewables Technologies

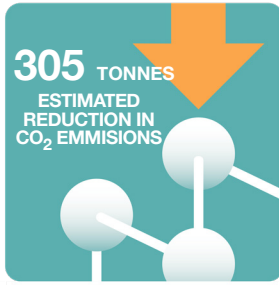
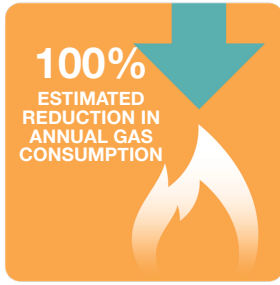
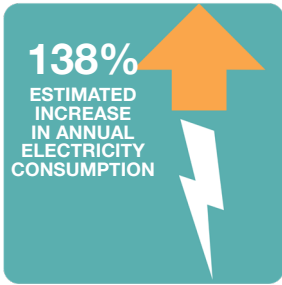
Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Solar	£8,068	10.1	52,100	£100,800	12.5

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment
ASHP	£-4,066	217.9	1,211,672	£2,028,000

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE WEST BROMWICH LEISURE CENTRE

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA 5,061 m³
(according to display energy certificate)

FACILITIES

MAIN POOL	YES
SMALL POOL	YES
SPA POOL, FLUME, BEACH AREA	NO
GYM	YES
STUDIOS	YES
SAUNA & STEAM	YES
SPORTS HALL	YES
SQUASH COURTS	NO
MEETING ROOMS	NO
CHANGING ROOMS	YES
SOFT PLAY	YES
CAFE	YES
RECEPTION & OFFICES	YES
ATHLETICS TRACK	NO
OUTDOOR TENNIS COURTS	NO
3G PITCHES	NO

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION: PLANT ROOM	x
LIGHTING	x
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	x
POOL COVER	x
POOL PUMP OPTIMISATION	x
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	x



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at West Bromwich Leisure Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Places Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 72% with a Council capital investment of £1,761,326.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	2,037,559 kWh	0 kWh	2,037,559 kWh	100%
Electricity	251,430 kWh	598,283 kWh	-346,853 kWh	-138%
CO ₂	421 tonnes	116 tonnes	305 tonnes	72%

Renewables Technologies

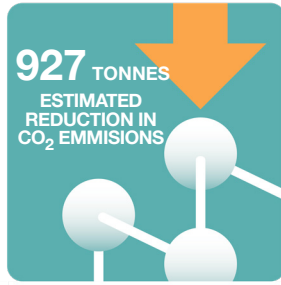
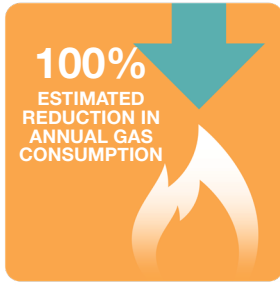
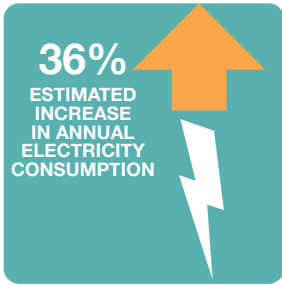
Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Solar	£10,577	11.9	61,880	£132,300	12.5

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment
ASHP	£ 66,075	292.9	1,629,026	£1,629,026

CLIENT SANDWELL METROPOLITAN BOROUGH COUNCIL
PROJECT TITLE SANDWELL AQUATICS CENTRE

DATE JUNE 2023
PREPARED BY JAMIE HARRIS



CENTRE DETAILS

USEFUL FLOOR AREA m³
(according to display energy certificate)

FACILITIES

50M POOL	YES
SMALL POOL	YES
DIVING POOL	YES
GYM	YES x 2
STUDIO	YES x 4
SAUNA & STEAM	YES
SPORTS HALL	YES x 2
SQUASH COURTS	NO
TREATMENT ROOM	NO
CHANGING ROOMS	YES
SOFT PLAY	NO
CAFE	YES
RECEPTION & OFFICES	YES
MEETING ROOMS	YES
SPECTATOR SEATING	YES

IMPROVEMENT DETAILS

AIR HANDLING UNITS	x
AIR HANDLING OPTIMISATION	x
AIR SOURCE HEAT PUMP	✓
BUILDING ENERGY MANAGEMENT SYSTEM	x
ELECTRICITY AND GAS AMR SUB-METERING	x
GROUND SOURCE HEAT PUMP	x
HOT WATER PUMP CONTROLS	x
INSULATION	x
LIGHTING	x
LIGHTING CONTROLS	x
LOW FLOW SHOWERS	x
MICROFILTRATION	x
POOL COVER	x
POOL PUMP OPTIMISATION	x
POOL PUMP MOTORS	x
SOLAR PHOTOVOLTAIC	✓
WATER SOURCE HEAT PUMP	x
PSDS ELIGIBILITY/OPPORTUNITIES	x



Overview of proposed energy conservation measures

Leisure Energy, an award winning energy specialist for leisure centres, has reviewed the energy consumption at the facility and proposes that the annual carbon emissions at Sandwell Aquatics Centre can be reduced by proven and 'targeted' energy interventions using energy efficient technologies.

Working in partnership with Sandwell Metropolitan Borough Council and Sandwell Leisure Trust we can deliver these proposed energy conservation measures, estimated to reduce the annual carbon emissions by 57% with a Council capital investment of £2,650,600.

Annual and estimated consumption

	Current	Estimated	Savings	% Savings
Gas	6,115,893 kWh	0 kWh	6,115,893 kWh	100%
Electricity	2,692,315 kWh	3,670,529 kWh	-978,214 kWh	-36%
CO ₂	1,637 tonnes	710 tonnes	927 tonnes	57%

Renewables Technologies

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment	Payback (Yrs)
Solar	£39,613	48.0	248,030	£453,600	11.5

Decarbonisation measures

Project	Estimated Annual Savings £	CO ₂ te	kwh	Capital Investment
ASHP	£85,128	879.3	4,889,649	£2,197,000

Leisure Energy are an award-winning energy consultancy and principal contractor, who specialise in identifying and delivering energy conservation measures for the leisure sector. Our unique solution is to identify long term energy savings, reduce 'waste' whilst improving the water and air quality of the pool environment.

Leisure Energy provides an end to end solution: our proposal included within this submission is based upon an energy audit, the findings will be delivered by Leisure Energy who acts as principal contractor.

Sustainability

We believe that sustainability is as much about making a positive commitment to the environment as it is to the wider community where we work.

Wherever possible, we will support and promote sustainable communities by using local labour and local suppliers. We understand the importance of the fabric first approach; our supply chain aims to ensure that we improve the fabric after we have left – not make it worse.

What We Do

Our unique approach originates from:

- Working to maximise a building's performance through improved energy management, monitoring and effective controls.
- The design and project management of the installation of energy conservation measures (ECMs), which use the latest proven technologies to reduce consumption and the organisation's carbon footprint.
- Improving internal environmental conditions for customers and staff

We also help with energy training to explain how systems work and the financial benefits of energy saving technology.

Energy Conservation Measures

- Air Source Heat Pumps
- Ground Source Heat Pumps
- Water Source Heat Pumps
- Low energy lighting and controls
- Solar energy systems
- Water control and microfiltration systems
- High pressure, low volume showers
- Air handling units & air handling controls
- High efficiency water pumps and motors
- EV charge points
- CHP
- Pool covers
- Building energy controls and submetering

For our full staff team, please click the link:
<https://www.leisure-energy.com/about-us/>

Our expert team

Neil Bland, Managing Director

Neil has worked in the energy industry for over 20 years and has vast experience of energy projects in all types of retail, public sector, commercial and industrial buildings. Notable blue chip businesses he has worked directly for include the University of Manchester, Tesco, Centrica and Viridor. He has also worked as a consultant to many companies such as Sainsbury's, Pret a Manger, Prezzo and various NHS Trusts. As well as energy reduction projects, Neil has also run an energy procurement consultancy team, data analytics teams and maintenance teams. He has been in the role as Managing Director at Leisure Energy since 2017 and is responsible for directing the activities of the business in implementing our vision, mission and long term goals of the company.

Mike Worsnop, Strategic Director

Mike has over 20 years' experience across the sport, leisure and cultural sectors. He joined Leisure Energy from the Board of Parkwood Leisure. Before that he was at Freedom Leisure where he was instrumental in leading their significant business growth which included leading the way in reducing energy consumption and carbon footprint across their portfolio of 100+ sites. Having held leadership and board roles in the public, third and private sectors he is particularly skilled in the outsourcing and public sector procurement of Leisure and Culture Management contracts, and delivering large complex and strategic capital schemes, including decarbonisation and energy reduction. Mike is responsible for shaping the direction and growth of the company; developing the client base and new business, driving innovation, creating strategic and commercial partnerships and exploring wider Leisure Energy services to take the company forward.

Georgina Hyde, Projects Director

Georgina has an engineering and energy background, having worked as a Project/Contract Manager for several companies including Avanti Gas, Orona and SCX Special Projects and being responsible for large scale bespoke installations. This has involved site management on nuclear power stations and large gas depots. Additionally, she has been involved in the production of CDM and Health & Safety documentation introducing new structures and systems. She is responsible for leading the project management team to ensure successful completion of our energy installations. Georgina also oversees the finance function.

Mike Ardis, Technical Director

Mike is an experienced multi disciplined engineer with over 12 years' experience of retrofitting heat pump solutions into commercial buildings. Having previously worked with companies within the energy industry with many large blue chip commercial clients, he brings a wide knowledge of mechanical, heat pump, refrigeration and electrical design, software, controls and commissioning experience to Leisure Energy. Mike is responsible for the energy team, which conduct feasibility studies, energy audits, public sector decarbonisation (PSDS) applications and carbon footprint savings, technology suitability and integration. He is also responsible for developing new technologies and applications within the leisure sector.