

Agenda Item No:	11	
Committee:	Cabinet	
Date:	11 September 2023	
Report Title:	Freedom Leisure - Energy Support	

This item comprises EXEMPT INFORMATION within Schedule 17 which is not for publication by virtue of Paragraphs 5 of Part 1 of Schedule 12A of the Local Government Act, 1972 (as amended).

1 Summary

- 1.1 Freedom Leisure has asked the Council to consider providing financial support to cover the increase in excess energy costs to run the four leisure facilities.
- 1.2 Additionally, this report highlights information from a third-party assessment of leisure centre energy use.
- 1.3 The report also covers FDC's submission to the Sport England Swimming pool Support fund (revenue running costs – excess energy costs) as well as highlighting FDC's anticipated focus for a submission to Sport England's Swimming Pool Support Fund (capital) to support the installation of energy efficient plant to mitigate future energy costs.

2 Key Issues

- 2.1 Leisure centres play a significant role in supporting health and wellbeing, tackling health inequalities and encouraging social cohesion. Fenland's leisure centres offer the community the opportunity to maintain or improve their activity levels, improving their health and reducing their risk of ill health. The leisure centres also offer children the opportunity to learn the important life skill of swimming.
- 2.2 We have always known that sport and physical activity strengthens our communities and contributes to the health and wellbeing of the nation, but only recently has [evidence](#) been developed attributing a financial value to sport and physical activity. Every £1 spent on sport and physical activity in England generates a £4 return across health and wellbeing, stronger communities and the economy.
- 2.3 In December 2018 Freedom Leisure, a charitable trust and not for profit organisation, took over the operation and management of the Council's four leisure centres with a 15 year and 4 month agreement. This arrangement is saving FDC £351,000¹ p.a. Additionally, the Council is saving a further £49,000 p.a. by combining some staffing roles as a result of the Freedom contract. The total saving equates to approximately £5.6 million of savings over the contract period.

¹ At 2018 prices

- 2.4 The energy crisis that the country is currently experiencing has added unavoidable costs into the leisure sector. In the period October 2022 – March 2023 Fenland's leisure centre excess energy costs (i.e. the cost above what was expected to be paid without inflated energy costs) was £285,000. FDC supported this excess cost with a £281,000 loan.
- 2.5 Whilst Cabinet has committed to support excess energy costs up to £250,000 for the first 6 months of 2023/24, the revised anticipated cost is now much lower due to revisions in wholesale electricity and gas costs. Current estimates are of a cost to FDC of £101,536. This sum is net of a grant of £16,630 received by FDC that is paid to Freedom.
- 2.6 Excess energy costs are affecting the whole leisure sector regardless of whether services are delivered in house or through a contract partner. In fact if the service was still in house the Council would be in a worse position because as well as having to bear the excess energy costs directly, the Council would be responsible for all other operational costs of running the centres.
- 2.7 Cabinet should note that this paper covers the final 6 months expected excess energy costs for 2023/24. Whilst those costs are better than we have seen in the recent past, they remain elevated and this is expected to remain the norm for the next 24 months.
- 2.8 Cabinet is asked to consider whether to continue to financially support Freedom Leisure with excess energy costs. The financial support is expected to be lower than the maximum support cost indicated in paragraph 3.7 if the additional solar PV and CHP replacement unit are fitted in the current financial year.
- 2.9 Evidence of the energy use within the Fenland leisure centres is highlighted in the attached appendix. This third-party report was supported financially by Sport England and provided free to FDC / Freedom.
- 2.10 Any request for financial assistance is conducted on an open book basis with evidence supplied and provided to the Chief Accountant for scrutiny.
- 2.11 Freedom continues to pay the annual management fee due to the Council.

3 Recommendations

It is recommended that Cabinet;

- 3.1 Notes the impact that the energy crisis continues to have on the leisure sector;
- 3.2 Notes the continued good operational performance of the Fenland group of leisure centres managed by Freedom and notes the Sport England and Government funded energy assessment report regarding the facilities in Fenland;
- 3.3 Recognises the £4 return on investment that every £1 invested in sport and physical activity generates in England and as part of that return recognises the essential role that the Council's leisure facilities play in helping to maintain the physical and mental health of our community as highlighted in the attached

- 3.4 **Attached**
- 3.5 Appendix I;
- 3.6 Recognises the significant financial challenges that the Council itself is facing;
- 3.7 Considers, and delegates to the Section 151 Officer, working in consultation with the Portfolio Holders for Finance and Leisure, to offer direct financial support to Freedom Leisure in the form of a repayable loan, on an open book basis, **up to** a maximum sum of £100,000² for the period 1 October 2023 to 31 March 2024;

This represents 85% of the expected maximum excess energy cost, with the sum anticipated to be reduced by the continuing implementation of the mitigating measures put in place to reduce operating costs and energy consumption;

Any repayable loan shall become payable through an annual deduction of any profit generated in excess of the levels predicted in the Leisure Operators Base Trading Account (LOBTA). This is a change from the current 50/50 profit share and will be subject to the performance of the business over the remaining contract period. The past three years have been particularly difficult for businesses across the country. Whilst the operational business has recovered well, there remains no certainty that excess profits will be made in the future;

- 3.8 Notes the swimming pool support fund (revenue) bid information;
- 3.9 Notes the anticipated bid to the swimming pool support fund (capital) for energy mitigating measures.

² See section 9.9

Wards Affected	All Wards
Portfolio Holders	Cllr Alex Miscandlon Portfolio Holder for Leisure Cllr Chris Boden Leader of the Council and Portfolio Holder for Finance
Report Originators	Phil Hughes Head of Leisure Services Carol Pilson Corporate Director
Contact Officers	Paul Medd Chief Executive paulmedd@fenland.gov.uk Carol Pilson Corporate Director cpilson@fenland.gov.uk Peter Catchpole Corporate Director and Section 151 Officer petercatchpole@fenland.gov.uk Mark Saunders Chief Accountant msaunders@fenland.gov.uk Phil Hughes Head of Leisure Services phughes@fenland.gov.uk Amy Brown Assistant Director and Deputy Monitoring Officer abrown@fenland.gov.uk
Background Papers	See Attached Appendix I Previous Cabinet papers regarding Freedom energy support costs

1 Introduction

- 1.1 In December 2018 Freedom Leisure, a charitable trust, took over the operation and management of the Council's four leisure centres with a 15 year, 4 month agreement. This arrangement will save the Council £351,000³ p.a., with the added staffing cost savings at the Council as a result of the change meaning a total of £5.6 million of savings over the life of the contract.
- 1.2 The first 15 months of the contract (prior to the covid pandemic) proceeded as well as either partner could have anticipated. Customer feedback, as well as income growth, demonstrated that Freedom had been doing a very good job managing the facilities on the Council's behalf. Following Covid, the Freedom operational team has worked tirelessly to attract customers back into the leisure centres and income levels are now approaching pre-covid levels.
- 1.3 The Council financially supported Freedom Leisure during Covid 19 due to its contractual obligations. In financial years 2020/21 and 2021/22, this support amounted to £636,808. Of this amount, £164,988 was non-repayable. The remaining support of £471,820 becomes repayable through an annual deduction of 75% of any profit generated in excess of the levels predicted in the LOBTA (Leisure Operators Base Trading Account – the expected financial performance that Freedom submitted as part of their bid to manage the facilities on behalf of the Council). This is a change from the contractual 50/50 profit share and will be subject to the performance of the business over the contract period.

In the period September 2022 to March 2023 FDC has supported Freedom's excess energy costs with a £281,000 loan.
- 1.4 Since April 2022, the contract has returned to its pre Covid 19 position with Freedom paying FDC a management fee, demonstrating the viability of the business and the recovery from the impact of Covid 19.
- 1.5 Fenland has a 15-year contract with Freedom Leisure that is now in year 5. The significant increase in user numbers, particularly in swimming lessons, operational efficiencies and cashable savings that Freedom has made since Covid 19 has enabled the contract to return to its pre Covid 19 position, with Freedom paying FDC the full management fee in the current year to date.

2 The impact of sport and physical activity

- 2.1 Being physically active is a 'miracle cure' for many of the health issues that afflict a large number of people across wealthier countries. In England it is recommended that 150 minutes of physical activity is undertaken per adult per week. This does not have to be in a formal environment such as a leisure centre, but many people do use local, affordable leisure facilities as places to enjoy physical activity, build up a good activity habit and enjoy the support of other people doing similar, with friendly staff and the social environment that group activity in leisure facilities encourages.
- 2.2 Until recently the economic benefits of physical activity were unclear. Sport England has carried out research with Sheffield Hallam University's Sport

³ At 2018 prices

Industry Research Centre⁴. This work has highlighted the following information that represents the benefit of sport and physical activity in England across several domains, namely;

- Physical and mental health
- Mental wellbeing
- Individual development
- Social and community development
- Employment
- Gross Value Added

⁴ To view the full document, please see the embedded document in

Attached

Appendix I

The social and economic value of being active

For every £1 spent on community sport and physical activity in England
£3.91 worth of impacts are generated...

Physical & mental health

150,000 cases

Heart disease and stroke prevented
Value: £1 billion

900,000 cases

Diabetes prevented
Value: £3.6 billion

8,500 cases

Cancer prevented
Value: £460 million

93,000 cases

Dementia prevented
Value: £3.5 billion

375,000 cases

Depression prevented
Value: £110 million

30,000,000

Fewer GP visits
Value: £450 million

33,000,000

Reduced use of psychotherapy services
Value: £670 million

21,000

Hip fractures prevented
Value: £800 million

1,500,000

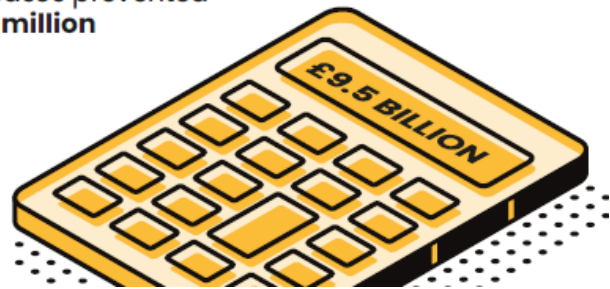
Back pain cases prevented
Value £410 million

280,000

Sports injuries caused
Cost -£1.5 billion

£9.5 billion

Physical & mental health impact generated



The social and economic value of being active

For every £1 spent on community sport and physical activity in England
£3.91 worth of impacts are generated...

Mental wellbeing

Improved life satisfaction through participation for 24 million people

Value: £31.2 billion

Improved life satisfaction through volunteering for 3.9 million people

Value: £10.5 billion

£42 billion

Mental wellbeing impact generated

Individual development

Improved educational attainment

Value: £4.5 million

Increased earnings

Value: £277.5 million

£282 million

Individual development impact generated

Social & community development

10,000 fewer crime incidents

Value: £38.6 million

The replacement value of work by volunteers

Value: £5.7 billion

Enhanced social capital

Value: £14.2 billion

£20 billion

Social community development impact generated



The social and economic value of being active

For every £1 spent on community sport and physical activity in England **£3.91 worth of impacts are generated...**

Employment

Community sport and physical activity supports **285,000 jobs** in England:

Commercial sector
139,000 jobs

Public sector
102,000 jobs

Voluntary / Third sector
45,000 jobs

285,000
jobs supported

Gross Value Added

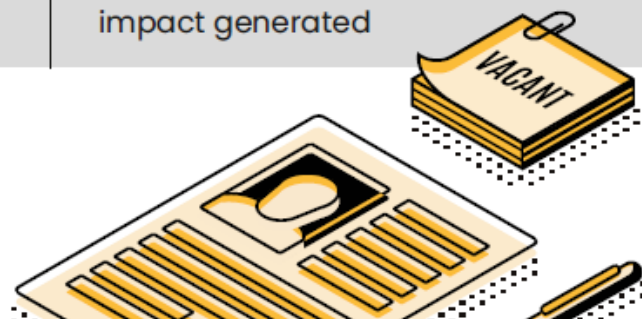
Community sport and physical activity contributes **£13.8 billion** to the economy annually in England:

Commercial sector
Value: £7.0 billion

Public sector
Value: £3.7 billion

Voluntary / Third sector
Value: £3.1 billion

£13.8 billion
impact generated



3 The Impact of the ongoing Energy Crisis

- 3.1 At a time when the recovery from Covid is in sight, leisure providers across the UK are being hit hard by both rising utility costs and household cost of living pressures that may impact participation rates.
- 3.2 Freedom Leisure has asked the Council to consider continuing to provide financial support to cover the increase in energy costs. The excessive scale of these costs was not built into the bid submission when the contract was let. Without a form of intervention from the Council, the operation of leisure centres, as currently delivered, will be placed at risk.

- 3.3 The energy crisis has added exceptional and unavoidable operating costs into the leisure sector. Estimated excess energy costs of £144,402 (net of a grant of £16,630) are anticipated in the final 6 months of 2023/24.
- 3.4 As a large organisation, Freedom has the capacity to absorb typical market fluctuations and respond in a more agile manner than a Council might. However, the current situation in terms of excess energy costs is untypical. These costs are not affordable for Freedom within the current contractual arrangement with the Council.
- 3.5 Since October 2022 energy prices paid by Freedom have increased significantly. In the period October 2022 to January 2023 the average gas price increase is 369%. Electricity prices rose between November and December by an average of 240%.
- 3.6 The table below highlights the impact compared to expected costs contained within the LOBTA (leisure operators base trading account – submitted during the procurement process for a leisure partner) for the current financial year:

Fenland Utilities 2023-24 against LOBTA											
	LOBTA 2023-24	Projection 2023-24	Variation to LOBTA		LOBTA April-Sept	Projection April-Sept	Variation to LOBTA		LOBTA Oct- March	Projection Oct-March	Variation to LOBTA
Hudson											
Gas	42,955	73,459	30,505		15,965	27,302	11,337		26,990	46,157	19,167
Electricity	20,240	89,288	69,048		9,639	42,519	32,881		10,602	46,769	36,167
George Campbell											
Gas	25,266	64,055	38,790		10,541	26,725	16,184		14,724	37,330	22,606
Electricity	23,806	38,875	15,069		11,038	18,025	6,987		12,768	20,850	8,082
Manor											
Gas	26,627	98,972	72,346		8,354	31,050	22,697		18,273	67,922	49,649
Electricity	32,606	80,738	48,132		17,088	42,312	25,224		15,519	38,426	22,908
Chatteris											
Gas	0	-	-	0		-				-	
Electricity	12,815	18,124	5,309		6,894	9,750	2,856		5,921	8,374	2,453
Fenland TOTAL	LOBTA 2023-24	Projection 2023-24	Variation to LOBTA		LOBTA April-Sept	Projection April-Sept	Variation to LOBTA		LOBTA Oct-March	Projection Oct-March	Variation to LOBTA
Gas	94,848	236,487	141,639		34,860	85,078	50,218		59,988	151,409	91,422
Electricity	89,468	227,026	137,558		44,658	112,606	67,948		44,810	114,420	69,610
TOTAL	184,316	463,513	279,197		79,518	197,684	118,166		104,797	265,829	161,032

4 Are there alternative options to supporting Freedom Leisure?

- 4.1 Members should note that if FDC was still managing the leisure centres directly, the Council would not be benefitting from the annual reduction in cost (£400,000⁵ p.a.) that the Freedom contract offers, nor the increased performance in terms of admissions that Freedom has generated from the leisure centres.
- 4.2 However, the Council would be in a similar position with regards to paying the current excess energy costs. If the Council took the centres back in-house, costs would rise by both the excess energy costs **AND** the £400,000⁶ p.a. saving being made annually.

⁵ Note this value is at 2018 prices when the contract was originally let

⁶ Note this value is at 2018 prices when the contract was originally let

- 4.3 The Council could also consider retendering the contract (with Freedom's approval in order not to breach the contract with Freedom). However, another operator is unlikely to offer to cover excess energy costs and is also unlikely to offer an arrangement that betters the one that the Council has in place with Freedom – given the turmoil and uncertainty in the economy and particularly the leisure industry. This approach would only increase FDC's costs on top of the current excess energy support consideration that Freedom may be offered by the Council.
- 4.4 This places the Council in a difficult position. Any alternative arrangement, [that does not take the significant step to close leisure facilities] to the current arrangement with Freedom and the support that the Council may offer Freedom to mitigate excess energy costs, will put the Council in a worse financial position than supporting Freedom with the current energy situation.
- 4.5 Cabinet should recognise that the current situation is not a short-term situation, and consideration of a longer-term strategy to address on-going excess energy costs should be considered during 2023/24.

5 Energy mitigation measures already implemented

- 5.1 Since taking on the management of the facilities, Freedom has implemented a further suite of measures to reduce costs and increase income. These include;
- Income generating interventions such as targeted price rises that reflect current and future inflation rates;
 - Staff structure reviews;
 - Increased efficiency of internal processes aligned to income generation;
 - Improved membership acquisition, improved membership retention and a subsequently improved membership yield;
 - A complete review of swimming lesson management leading to an increase of children on learn to swim courses of 61% - an additional 1,235 children learning to swim every week in Fenland pools. The total number of children on the learn to swim programme is in excess of 3,000 per week;
 - Improved rate of collecting income derived by Direct Debit, linked to an improved debt collection scheme;
 - Electrical system upgrades;
 - Energy metering upgrades and energy monitoring software upgrades;
 - Building management system (BEMS) upgrades, including air handling systems and regular review of system schedules to reduce energy use.
- 5.2 More recent interventions include;
- Staff and customer awareness campaigns of energy usage;
 - Reduction in stored hot water temperatures by 1 degree, with a reduction in boiler temperatures by 2 degrees;
 - Pool water temperatures have been reduced gradually where possible, whilst noting the potential adverse effect this could have on participation;
 - Air conditioning minimum set points have been increased to 20 degrees;
 - Closure of the sauna and steam rooms at the Manor Leisure Centre.

- Additional plant room interventions to reduce energy costs.
- Freedom has applied for and received 100% NNDR hardship relief for 2022/23 and the current year.

6 Energy mitigation measures planned for short term delivery

- 6.1 FDC is working within the County Council's framework for delivery of energy efficient plant to install additional solar PV panels on each leisure centre roofs. Expected cost of this works is in the region of £350,000. FDC has a grant from CPCA to support the work on the Manor Leisure Centre. FDC has paused this work and will be applying to the Sport England Swimming Pool support fund for the £350,000 capital cost of this project.
- 6.2 Energy efficient lighting is due to be fitting in the pool halls at the Hudson and George Campbell. Again – this capital work at a cost in the region of £30,000 will be included in the bid to the Swimming pool Support Fund.
- 6.3 Replacement of the end of life combined heating and power unit at the Manor Leisure Centre will take place in the current financial year. This unit will cost in the region of £40,000 and again FDC anticipates adding this into a bid to the Swimming Pool Support Fund.
- 6.4 Cabinet has agreed the capital expenditure for both the lighting and the solar PV. It is considered that waiting a few months to see if the Council is successful with any bid to the Swimming Pool Support Fund (capital) for the above items is the best approach for the Council..

7 Sport England Swimming Pool Support Fund

- 7.1 The Council has applied to this Sport England fund for £176,853 revenue support with the excess energy costs. It is expected that any announcement regarding this funding will be late in this calendar year. Due to the fund's criteria and that it will be oversubscribed, a successful outcome is unlikely.

8 FMG Energy report regarding Fenland's Leisure Centres

- 8.1 Sport England offered financial support to local authorities to access specific consultancy support regarding energy use in leisure centres. The resulting report regarding the leisure centres may be found in the Appendix.
- Points of note;
- 8.2 Section 3.3 highlights Fenland leisure centre energy usage against benchmarked best practice usage. All facilities fair very well in this comparison with the exception of gas consumption at the Manor facility which is at 175% of best practice.
- 8.3 The combined heating and power units (CHP) were out of action when assessed, due to servicing requirement. Both the George Campbell and Hudson are back in use, with the Manor unit beyond useful life requiring replacement. It is anticipated to add this requirement into a bid to the Swimming Pool Support Fund in September. These actions reduce the potential cost savings identified in the report considerably, down to far smaller sums than it initially seems.

- 8.4 The report highlights the impact of solar panels and also demonstrates clearly the cost of electricity. Additional solar panels are planned for the three swimming pool buildings to further mitigate costs.
- 8.5 Freedom has reduced pool temperatures. Further consideration is being given to additional minor adjustments. This should be undertaken cautiously as a cooler pool may reduce income and visitor numbers, counterproductive to reduced costs.
- 8.6 The air handling unit at the Manor Leisure Centre swimming pool is currently being assessed for engineering suitability for ground or air sourced heat pumps. Again, any capital cost would be applied for through the Swimming Pool Support Fund.
- 8.7 Minor pool insulation concerns will be addressed.

9 Anticipated estimated excess cost to FDC in the period 1 October 2023 to 31 March 2023.

- 9.1 Excess energy costs are estimated at £161,032 for this period.
- 9.2 A grant received by FDC and passed to Freedom for leisure centres of £16,630 for the period reduces the net cost to £144,402.
- 9.3 A reduction in NNDR costs of £24,250 following Freedom's receipt of 100% relief further reduces the net cost to £120,152.
- 9.4 Staffing cost reductions for the period add another reduction of £3,125 for the period further reduce the excess costs to £117,027
- 9.5 Additionally, the mitigation measures planned to be implemented in the current financial year are anticipated to further reduce this cost.
- Mitigation impacts include estimated reductions in cost as follows;
- -£10,000 solar PV implementation from December 2023
 - -£1,500 5 months of energy efficient pool lighting (Hudson / George Campbell)
- 9.6 The best-case savings identified above, if realised in the 6-month period to March, reduces the expected excess cost over the period down to £105,527 and with it the support that FDC may need to offer.
- 9.7 These calculations are estimates and should be treated as such.
- 9.8 The maximum anticipated cost that Freedom anticipates excess energy to cost in the period October – March 2024 is a net £117,027 after grant / NNDR relief / staff savings.
- 9.9 This report recommends supporting a maximum of approximately 85% of this cost, a sum for the final 6 months of the year of approximately £100,000.

10 Risks and Financial Assessment

- 10.1 Members agreed, prior to the leisure centre management outsourcing process, that they wished leisure centres to continue to remain in each town.
- 10.2 FDC is not managing the leisure centres - it is Freedom's business, but it is very much a partnership, and it is in FDC's interests that the Freedom

management contract continues if Members wish to continue the provision of leisure centres for the Fenland community.

If Freedom breaks the contract with FDC or the company fails as a result of unsupportive clients, then FDC's short term costs by bringing the service back in house will increase by at least £400,000⁷ p.a. FDC would be taking back the health and safety risk, staff management, accountancy and payroll functions, administrative functions and human resources of over 160 different staff. Staff restructures took place in FDC's back-office teams to reflect leisure being outsourced. These additional costs would have to be added back into the FDC revenue budget to support necessary change. It will not be possible to find an alternative provider of the Service at short notice.

- 10.3 If FDC was to take the facilities back in-house, then the current excess energy costs would be payable by the Council directly. There would be no way of avoiding these costs. This would be a similar case if another contractor took on the contract; any revised contract would include the current energy costs and the Council would not be able to avoid these costs.
- 10.4 Should the contract with Freedom not continue as a result of the energy cost crisis, FDC will not realise the £4.1m of savings over the outstanding period of the contract. Taking a long-term view, putting in place supportive operational changes in conjunction with Freedom, alongside potential financial support, is considered to be in FDC's best interests.
- 10.5 FDC's current MTFs highlights a potential shortfall of £1.748m by the end of 2027/28 as well as consideration of the added uncertainty of fairer funding, new homes bonus and business rates retention as well as current inflationary pressures which may mean this figure rises through the budget setting process. If the Freedom contract ceases and FDC brings the service in-house this will add a minimum additional base revenue cost of £400,000 (at 2018 costs) per annum to the Council. Additionally, added to this sum are the excess energy cost increases.
- 10.6 If the Council's contract with Freedom were broken, the planned savings of the Freedom contract will then not be possible leaving the Council to reconsider the strategic approach to leisure centre provision in Fenland, with financial pressures inviting a reassessment of the current level of provision across the four towns to balance the Council's budget.

11 Governance Implications

- 11.1 Subject to the recommendations agreed within this report, financial support would be managed and provided on the same basis as during COVID-19 via an open-book arrangement with payments made to cover excess energy costs, less the financial value of mitigating measures that reduces the cost to Freedom.
- 11.2 There was clear provision within the contract between FDC and Freedom to provide financial support when Covid occurred. The Government changed the law, requiring closure of facilities and staff to remain at home. This meant

⁷ At 2018 prices on contract procurement

that the change in law clause within our contract highlighted the Council's contractual requirement to support Freedom.

- 11.3 The energy crisis is very different in that there is no change in law. The Council has no contractual responsibility to support Freedom and any supportive arrangement is very much in the spirit of the contract being a partnership arrangement, with the benefit of that support being in both parties' interests - and more importantly, in the interests of the community in Fenland who enjoy the use of excellent leisure facilities. The legal issues regarding any support offered are explored in the exempt Appendix C **Error! Reference source not found.**
- 11.4 Should the package of support devised by Freedom and FDC be insufficient to meet the challenge of the excess energy costs then the contract with FDC could become unviable. If Freedom took this view and wished to break the contract with FDC, our contractual terms are clear in regard to compensation due to FDC;
- a) Where the Authority carries out a Retendering Process, the Retendering Costs;
 - b) where the Authority carries out a Retendering Process, an amount equal to the aggregate of the Retendered Annual Payment less the Current Annual Payment where it is a positive number
 - c) All other Direct Losses which the Authority suffers or incurs arising out of any breach of this Agreement or as a result of the termination of this Agreement including (without limitation) any liability to any third party,
- 11.5 These terms are clear, with item b) above having a potential of incurring significant costs on Freedom should they break the contract. Retendering the contract with the current state of the economy, Covid recovery and the excess energy costs is likely to return tenders that incur the excess energy costs within the contract itself, with the overall contract unlikely to be as favourable to FDC as the Freedom contract - if a contractor did tender.

Attached

12 Appendix I

Sport England; Social and economic value of community sport and physical activity in England

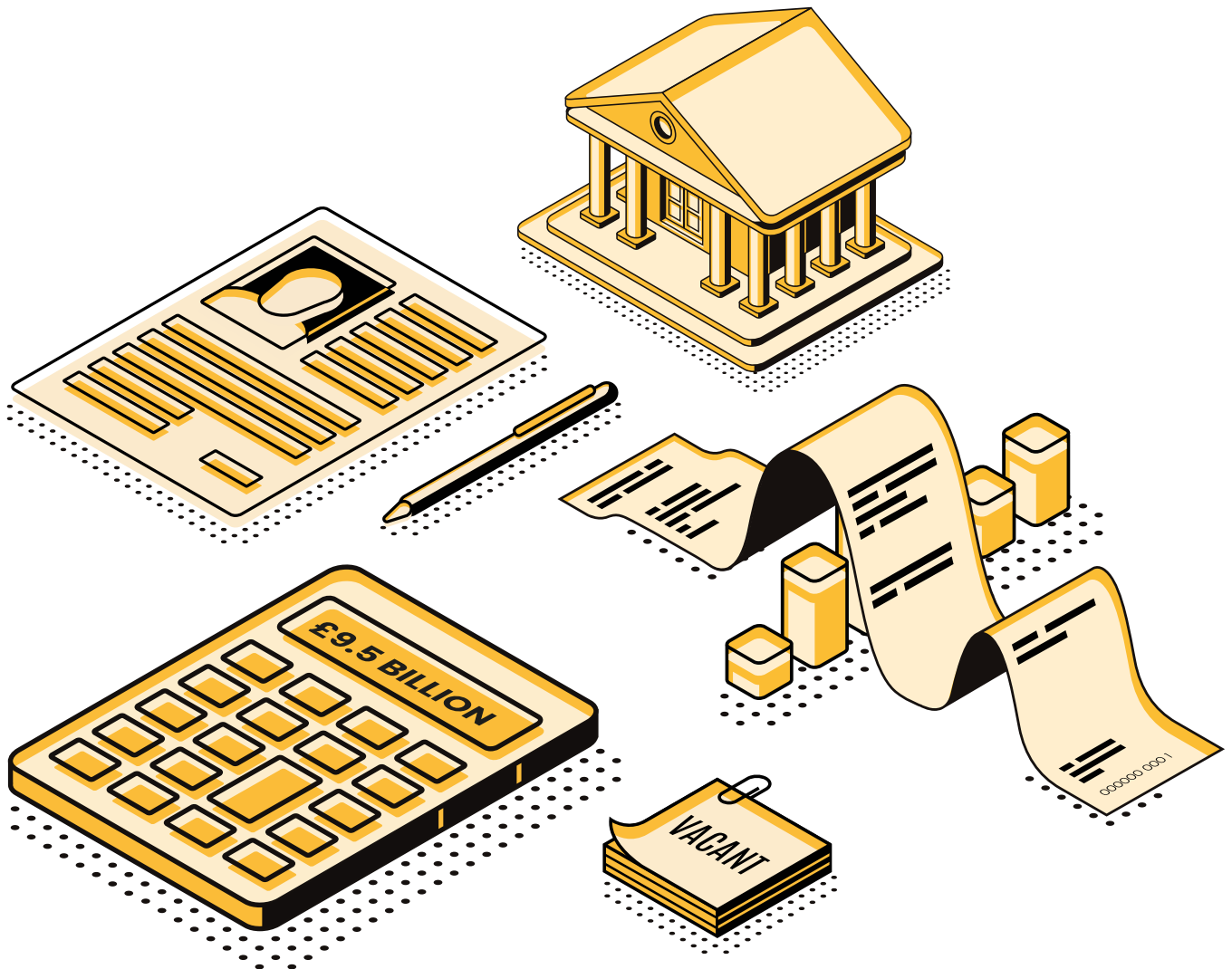
13 Appendix II

FMG report regarding leisure centre energy use in Fenland.

Measuring the Social and Economic Impact
of Sport in England

Summary:

Social and economic value of community sport and physical activity in England



This summary is based on work by the Sport Industry Research Centre at Sheffield Hallam University for Sport England.

Welcome from Tim Hollingsworth

Chief Executive



The contribution that sport and physical activity makes to our national life has never been clearer than in recent months.

The temporary closure of large parts of the sector during lockdown highlighted just how much we had come not just to rely on sport to deliver physical and mental wellbeing benefits to our lives, but also on how it uniquely brings our communities together. It is an understatement to say that its absence has been keenly felt.

And while we have always known that sport and physical activity strengthens our communities and contributes enormously to the health and wellbeing of the nation, until now there hasn't been a figure attributed to the value it contributes to our society and economy.

We recently commissioned economists at the Sport Industry Research Centre at Sheffield Hallam University to quantify the economic and social return on investment for sport and physical activity.

The findings of this report show that for every £1 spent on community sport and physical activity in England, an economic and social return on investment of £3.91 is generated. Taking into account physical health benefits, mental wellbeing uplifts and economic development – the contribution was found to benefit some £85.5 billion to the English economy and society.

The report details exactly how sport and physical activity adds value – from the prevention of 900,000 cases of diabetes and 30 million fewer GP visits due to improved health, as well as helping to deliver stronger and safer communities with fewer crime incidents, and the 285,000 jobs that community sport supports.

In keeping with a key government priority, this report also highlights how sport has a pivotal role to play in levelling up communities by bridging the gap between the 'have and have not's.'

It is perhaps no coincidence the people who are the least likely to be active in England are often the most likely to have ill-health and be affected by unemployment. Many people want to be active but are held back by where they live in the country, their income, their ethnicity, their gender or the fact they are disabled. Helping these groups take part in sport and physical activity so that everyone in society can share equally in its benefits is Sport England's primary mission.

We would encourage organisations to use this research to better understand the impact that being active can have on the lives of individuals and communities, the delivery of public services and our economy.

Organisations can also do their own modelling of social and economic value, for specific local areas, activities or audiences. To help, we have developed some guiding principles that sit alongside this document to enable a consistent approach when making the case for the value of sport and physical activity.

Tim Hollingsworth
Chief Executive

Executive summary

Over the last three years, Sport England has focused on bringing together evidence on the contribution of community sport and physical activity to the five outcomes identified in the Government's strategy Sporting Future. These are physical wellbeing, mental wellbeing, individual development, social and community development, and economic development.

Sport England's aim was to assess the evidence base with a view to demonstrating the contribution of community sport and physical activity to the outcomes. Building on this foundation and other previous work, Sport England commissioned the Sport Industry Research Centre (SIRC) at Sheffield Hallam University to quantify the social and economic impact of community sport and physical activity.

There are two complementary parts to the research. Part one measures the social impact (including physical and mental health) of sport and physical activity while part two measures the economic importance. Together, both parts enable Sport England to demonstrate the contribution of sport and physical activity to the five government outcomes. The research revealed that the combined social and economic value of taking part (participating and volunteering) in community sport and physical activity in England in 2017/18 was £85.5bn.

When measured against the £21.85 billion costs of engagement and providing sport and physical activity opportunities, for every £1 spent on community sport and physical activity, a return on investment (ROI) of £3.91 was created for individuals and society in 2017/18.

How was this calculated?

Part 1: Social return on investment in community sport and physical activity in England

The social value model measures the value of social outcomes generated through engagement in sport and physical activity and the cost (inputs) of providing opportunities for engagement. It provides values for England in 2017/18 and expresses the total value of social outcomes as a proportion of inputs.

The model estimates the value of sixteen social outcomes related to physical and mental health, mental (subjective) wellbeing, individual development and social and community development. The model measures the value of participating and volunteering in sport but excludes watching sport as this is beyond the scope of Sport England's work. The model reveals that £71.61bn of social value was generated from engagement in community sport and physical activity from £21.85bn of inputs, giving an SROI value of 3.28.

This means that for every £1 invested in community sport and physical activity in England (financial and non-financial), £3.28 worth of social impact was created for individuals and society in 2017/18. The largest amount of social value (58.3%) was generated through mental wellbeing (£41.76bn).

Considerable social value was also created by social and community development outcomes, in particular enhanced social capital (social trust, belonging and community engagement), which was valued at £14.22bn. Approximately £9.59bn was generated by improved physical and mental health.

As with previous SROI sport-related studies, the estimates in the model are conservative. We have included the social outcomes for which there is sufficient evidence of impact and sport and physical activity participation, and data available to enable the valuation of these outcomes. Moreover, we have excluded other outcomes (positive and negative) on the basis of insufficient evidence. As such, the findings of this research are likely to underestimate the true social value of sport and physical activity in England.

Return on Investment

for community sport and physical activity in England

The social and economic value of being active

For every £1 spent on community sport and physical activity in England
£3.91 worth of impacts are generated...

Physical & mental health

150,000 cases

Heart disease and stroke prevented
Value: £1 billion

900,000 cases

Diabetes prevented
Value: £3.6 billion

8,500 cases

Cancer prevented
Value: £460 million

93,000 cases

Dementia prevented
Value: £3.5 billion

375,000 cases

Depression prevented
Value: £110 million

30,000,000

Fewer GP visits
Value: £450 million

33,000,000

Reduced use of psychotherapy services
Value: £670 million

21,000

Hip fractures prevented
Value: £800 million

1,500,000

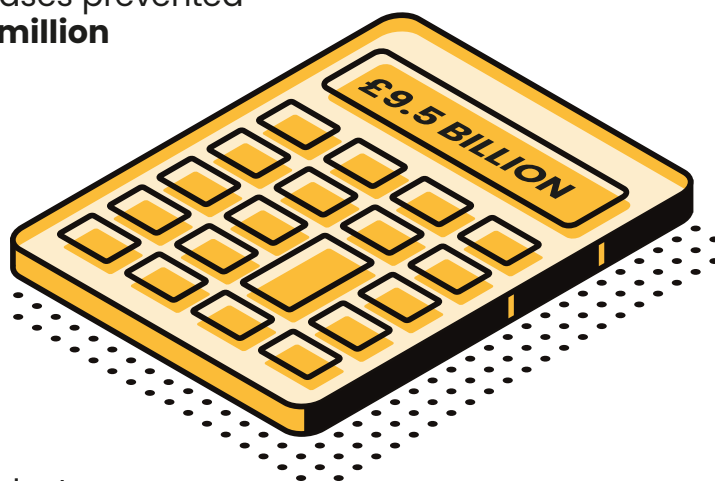
Back pain cases prevented
Value £410 million

280,000

Sports injuries caused
Cost -£1.5 billion

£9.5 billion

Physical & mental health impact generated



Results

Explore the Sport England / Sport Industry Research Centre (SIRC) at Sheffield Hallam University report, for more detail of the **£85.5 billion** social and economic impact of sport and physical activity in England.

Social Value

- Physical & mental health **£9.5 billion**
- Mental wellbeing **£42 billion**
- Individual development **£282 million**
- Social & community dev. **£20 billion**

Economic Value

Community sport-related economic activity **£13.8 billion**

Total Value

£85.5 billion

Return on Investment

for community sport and physical activity in England

The social and economic value of being active

For every £1 spent on community sport and physical activity in England
£3.91 worth of impacts are generated...

Mental wellbeing

Improved life satisfaction through participation for 24 million people

Value: £31.2 billion

Improved life satisfaction through volunteering for 3.9 million people

Value: £10.5 billion

£42 billion

Mental wellbeing impact generated

Individual development

Improved educational attainment

Value: £4.5 million

Increased earnings

Value: £277.5 million

£282 million

Individual development impact generated

Social & community development

10,000 fewer crime incidents

Value: £38.6 million

The replacement value of work by volunteers

Value: £5.7 billion

Enhanced social capital

Value: £14.2 billion

£20 billion

Social community development impact generated

Results

Explore the Sport England / Sport Industry Research Centre (SIRC) at Sheffield Hallam University report, for more detail of the **£85.5 billion** social and economic impact of sport and physical activity in England.

Social Value

Physical & mental health

£9.5 billion

• Mental wellbeing

£42 billion

• Individual development

£282 million

• Social & community dev.

£20 billion

Economic Value

Community sport-related economic activity

£13.8 billion

Total Value

£85.5 billion



Part 2: Economic importance of community sport and physical activity in England

The economic importance of sport and physical activity in England was measured using a National Income Accounting (NIA) framework. The research provides a 'snapshot' of the role and significance of sport in England in 2017/18 and includes sports participation, volunteering and spectating. It measures three key indicators of economic activity; consumer expenditure on sport, sport-related Gross Value Added (GVA) and sport-related employment.

In 2017/18, consumers in England spent £25,144m on sport and physical activity, of which 54% or £13,693m was related to community participation. Since 2010, this represents an increase of 24% (current prices) and 7% (constant prices).

Sport-related economic activity generated £23,894m GVA in 2017/18, of which **58% or £13,887m was related to community participation**. Since 2010, the value of all sport-related GVA has increased 18% in current prices. This represents an increase of 2% in real terms (constant prices) over this period.

The sport economy in England generated **287,874 jobs in community sport**, which is 60% of the total amount of jobs created in sport – 479,530 in total in 2017/18. Overall, sport-related employment accounts for 2.4% of total employment in England. It has increased by 9% since 2010. The share of sport-related employment has increased from 2.3% in 2010, to 2.4% in 2017/18.

The combined value of taking part in sport and physical activity

In conclusion, the combined economic and social value of taking part in sport and physical activity in England in 2017/18 was £85.5bn. When measured against the costs of engagement and providing sport and physical activity opportunities (£21.85 billion), for every £1 spent on sport and physical activity, a return on investment (ROI) of £3.91 was created for individuals and society in 2017/18.

Return on Investment

for community sport and physical activity in England

The social and economic value of being active

For every £1 spent on community sport and physical activity in England **£3.91 worth of impacts are generated...**

Employment

Community sport and physical activity supports **285,000 jobs** in England:

Commercial sector
139,000 jobs

Public sector
102,000 jobs

Voluntary / Third sector
45,000 jobs

285,000
jobs supported

Gross Value Added

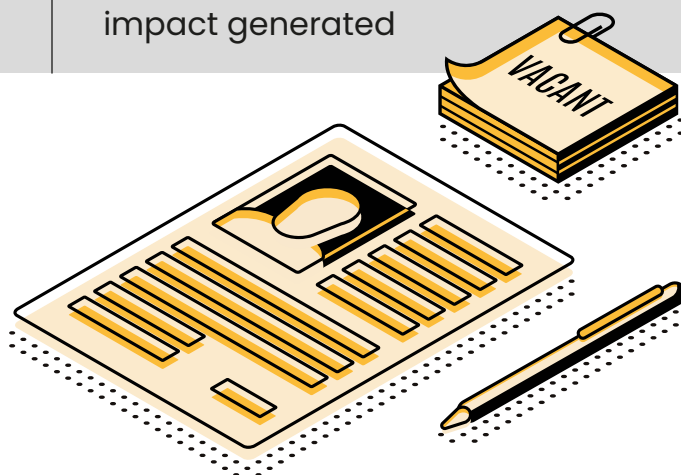
Community sport and physical activity contributes **£13.8 billion** to the economy annually in England:

Commercial sector
Value: £7.0 billion

Public sector
Value: £3.7 billion

Voluntary / Third sector
Value: £3.1 billion

£13.8 billion
impact generated



Results

Explore the Sport England / Sport Industry Research Centre (SIRC) at Sheffield Hallam University report, for more detail of the **£85.5 billion** social and economic impact of sport and physical activity in England.

Social Value

Physical & mental health	£9.5 billion
Mental wellbeing	£42 billion
Individual development	£282 million
Social & community dev.	£20 billion

Economic Value

- Community sport-related economic activity £13.8 billion

Total Value **£85.5 billion**

Recommendations

The findings of this research demonstrate that community sport and physical activity generate significant social and economic value to England, and in doing so contribute to the five government outcomes identified in Sporting Future.

This is a powerful message to share with stakeholders, including government, to demonstrate and broaden understanding of the contribution of sport and physical activity to society.

We believe that the SROI analysis for sport and physical activity should be reviewed and updated periodically to reflect the latest evidence. This work should also provide a basis to identify where evidence building is needed and to inform future research and insight priorities.

Although it provides a national, overarching picture, this model will not meet the needs of all our partners and stakeholders with their specific responsibilities (for particular local areas, activities or audiences).

However, it is important that the sector presents coherent and consistent arguments about its contribution to social and economic value. Without coordination, inconsistency of approach could also lead to inefficient duplication of effort.

For these reasons, we have developed some guiding principles we urge partners to consider when undertaking similar work. We hope this enables the sport and physical activity to make the most compelling case for sport for the benefit of everyone.

August 2020

APPENDIX 2



Sport England Energy Support Fund



A REPORT BY FMG CONSULTING LTD



IN PARTNERSHIP WITH
REDDING ASSOCIATES



August 2023

Table of Contents

1. Introduction	1
2. Consultation and Site Visit	3
3. Energy Performance & Opportunities	6
4. Risks and Mitigation Strategy	16
5. Summary and Recommendations	18

Appendices

Appendix A – Effect of Set Points on Swimming Pool Energy Loss

Appendix B – Site Visit Images

Basis of Information

It is not possible to guarantee the fulfilment of any estimates or forecasts contained within this report, although they have been conscientiously prepared on the basis of our research and information made available to us at the time of the study. Neither FMG as a company, nor the authors, will be held liable to any party for any direct or indirect losses, financial or otherwise, associated with any contents of this report. We have relied in a number of areas on information provided by the client and have not undertaken additional independent verification of this data.

1. Introduction

Introduction

- 1.1 Fenland District Council (“the Council”) have appointed FMG Consulting (“FMG”) in association with Paul Redding of Redding Associates (“Paul Redding”) to support the Council in understanding key issues and risks relating to utilities consumption and tariff to help manage to manage the impact of high energy costs on its leisure facilities.
- 1.2 This appointment has been funded through Sport England’s Energy Support Fund which provided support for local authorities to improve the energy efficiency of leisure facilities and reduce their carbon footprint. The Energy Support Fund is part of Sport England’s ongoing efforts to promote sustainability and support a greener future for sports facilities in the UK.

Context

- 1.3 Sport and leisure centres are facing significant challenges due to high energy costs. These facilities require a significant amount of energy to operate, from lighting and heating to swimming pool pumps and ventilation systems. As a result, the cost of energy can make up a significant portion of a centre’s operating expenses, putting a strain on their finances and making it difficult to maintain and improve facilities.
- 1.4 One of the biggest challenges is the unpredictable nature of energy costs. Energy prices can fluctuate dramatically, making it difficult for centres to plan and budget effectively. This can make it difficult to invest in energy-efficient technologies or to make long-term plans for the centre’s operations.
- 1.5 Another challenge is the need for energy-intensive equipment, such as heating and cooling systems, lighting, and ventilation systems. These systems are necessary to maintain a comfortable and safe environment for users, but they can also be expensive to operate. Older equipment may be less energy-efficient and more expensive to run, but upgrading to more efficient systems can be costly.
- 1.6 There are also challenges related to user behaviour. For example, users may leave lights or equipment on when they are not using them, leading to unnecessary energy consumption. Staff may also be reluctant to turn off equipment or adjust temperature settings to save energy, for fear of disrupting users’ experiences.
- 1.7 To address these challenges, sports and leisure centres are increasingly turning to energy-efficient technologies and practices. For example, they may invest in LED lighting, which is more energy-efficient and longer-lasting than traditional lighting. They may also install solar panels or other renewable energy systems to generate their own electricity. Additionally, staff may be trained to encourage users to adopt energy-efficient behaviours, such as turning off equipment when not in use or dressing appropriately for the temperature in the facility.
- 1.8 Despite these challenges, there are also opportunities for sport and leisure centres to become more energy-efficient and reduce their energy costs. By investing in energy-efficient technologies and encouraging users to adopt energy-saving behaviours, these centres can reduce their environmental impact while also saving money and improving their financial sustainability.

1.9 The objectives for this report are as follows:

1. Provide an assessment of the key issues and risks relating to utilities consumption and tariff;
2. Identify potential risk mitigations aimed at ensuring the service can be retained and protected moving forward including consideration of:
 - a. Potential 'invest to save' opportunities;
 - b. A commentary on the operator's systems and current energy performance efficiency and areas where potential operational efficiencies could be introduced that are not currently being implemented.
 - c. Performance benchmarking of the service and review of the operator's management accounts from an energy perspective and comparison with their original bid.

1.10 To meet the brief, the remainder of the report is set out as follows:

- Section 2: Consultation and Site Visit;
- Section 3: Energy Performance (Previous, Current and Projected);
- Section 4: Risks and Mitigation Strategy;
- Section 5: Summary and Recommendations.

Contact

1.11 Any queries relating to this paper should be made to Damien Adams, Director, FMG Consulting Ltd on damienadams@fmgconsulting.co.uk or 07917 615 425.

2. Consultation and Site Visit

- 2.1 An initial consultation meeting was undertaken with the client on the 4th April 2023 to discuss the sites to be reviewed, proposed future investments and any energy related issues.
- 2.2 Site visits took place on the 20th April 2023 with representatives of the Council and the operator, Freedom Leisure. The site visits were a walk round survey to note current energy using plant and equipment, operational practices and control and opportunities for reducing energy use through operational modifications and/or investment.
- 2.3 Data requests were sent covering energy consumption, usage profiles, costs and operation/maintenance practices.
- 2.4 A summary of the buildings reviewed is as follows:

Site	Floor Area (sq. mtrs)	Year Built	Main Facilities
Chatteris Leisure Centre	629	2012	Dry sports centre with Gym and Dance Studio
George Campbell Leisure Centre	1989	1984	25m, 6 lane pool Gym 2 x multi activity studios
Hudson Leisure Centre	2279	1972	25m, 6 lane pool plus teaching pool Gym Sports Hall Fitness studio
Manor Leisure Centre	2768	1974	25m, 6 lane pool plus teaching pool Gym Sports Hall Fitness studio

- 2.5 From the survey, the key energy using services were as follows:

Site	Main Energy Services Description	Notes
Chatteris Leisure Centre	Air handling units, lighting	All electric
George Campbell Leisure Centre	Gas boilers, CHP, circulation pumps, air handling units, air conditioning, lighting	Pool and gym refurbished 2015 with new boilers.
Hudson Leisure Centre	Gas boilers, CHP, circulation pumps, air handling units, air conditioning, lighting	Pool refurbished 2003 and dry side 2010.
Manor Leisure Centre	Gas boilers, CHP, air handling units, air conditioning, lighting	Two buildings. Swimming pool originally open air. Refurbished 1984 and new boilers 2015. Dry side refurbished 2011 and 2014 and new boilers recently.

Energy Saving Investments

Site	Low carbon investment
Chatteris Leisure Centre	Solar PV, some LED lighting
George Campbell Leisure Centre	Solar PV, CHP, Inverter speed controls, BMS, some LED lighting
Hudson Leisure Centre	Solar PV, CHP, Inverter speed controls, BMS, some LED lighting
Manor Leisure Centre	Solar PV, CHP, Inverter speed controls, BMS, some LED lighting

2.6 Additional solar PV is being considered at all sites.

2.7 Pool hall lighting upgrades are being considered for George Campbell and Hudson.

2.8 Utility Purchasing is undertaken by the operator Freedom Leisure. The energy unit rates used in this report are shown below.

Date	Rate per kWh	
	Gas	Electricity
June 2023	£ 0.12	£ 0.306

(Electricity as per March 2023 inc FIT and CCL; Gas unit rate estimated based on similar sites)

2.9 The table below summarises the overall energy management approach by the operator.

Item	Response
Policy and targets	The council does not have a net zero policy or specific energy reduction targets but the operator has committed to net zero carbon from operations by 2030. Some site managers reported a 10% target had been set.
Responsibility	The operating company has an energy lead and area managers to check on site performance.
Performance measurement	The site energy use is monitored by a smart metering system, which can be accessed by site managers. This appears to be mainly electricity.
Training and communication	Site staff were aware of the need to reduce energy usage but were not aware of specific training.
Investment	Projects being considered are additional solar and upgrades to pool hall lighting
Operational	There have been no significant changes in the temperature parameters by which the operator delivers the services, for example, the main pools are set at 28-29°C and the gyms are set at c19°C. The operator recognises that it could further develop general operational staff more in the process of carbon reduction through bespoke energy training.

2.10 Whilst there are energy systems in place there were also some areas for development including a better understanding and access to data for site staff from existing energy monitoring and building management systems e.g. knowing the % overnight usage compared to total.

Summary

- The four buildings surveyed have different challenges owing to age and condition;
- A range of energy saving technologies have been employed to date;
- Unit energy costs for gas and electricity have risen significantly in the last 18 months. Gas prices at time of the survey were significantly below those in the market;
- The operator has some systems in place to manage energy.

3. Energy Performance & Opportunities

Site Energy Use (2022/23 consumption)

Name	Gas/DH		Electricity	
	kWh	£	kWh	£
Chatteris Leisure Centre			60,891	18,633
George Campbell Leisure Centre	915,326	49,428	144,799	44,308
Hudson Leisure Centre	841,218	45,426	353,999	108,324
Manor Leisure Centre	1,768,791	95,515	281,198	86,047
Total	3,525,335	190,368	840,887	257,311

- 3.1 The energy use is based on April 2022 - March 2023 consumption figures. Gas costs have been estimated based on a unit rate of 5.4p/kWh and electricity costs are based on a unit rate of 30.6p/kWh. These represent the average unit rates including CCL at the time of the site visit.

Site Energy Use (Future prediction)

Name	Gas/DH		Electricity	
	kWh	£	kWh	£
Chatteris Leisure Centre			60891	18,633
George Campbell Leisure Centre	801,806	96,217	210,799	64,504
Hudson Leisure Centre	557,418	66,890	518,999	158,814
Manor Leisure Centre	1,655,271	198,633	347,198	106,243
Total	3,014,495	361,739	1,137,887	348,193

- 3.2 The three sites with pools have CHP plant that was not operational and was stated to have last been operational 3 months previously. In order to give an indication of the future energy usage and costs with no changes we have re-calculated the figures without any contribution from CHP and with the gas cost at 12p/kWh in line with current market expectations. Without intervention, annual energy costs are likely to rise further by over £250,000 per annum.

Comparison with benchmarks

3.3 The site energy usage per square metre was compared to CIBSE benchmarks:

Name	Best Practice		Actual		% Best Practice	
	kWh/m ²		kWh/m ²		Electricity	Gas
	Electricity	Gas	Electricity	Gas		
Chatteris Leisure Centre	222	n/a	97	0	44%	n/a
George Campbell Leisure Centre	164	573	73	460	44%	80%
Hudson Leisure Centre	164	573	155	369	95%	64%
Manor Leisure Centre	114	366	102	639	89%	175%

3.4 The solar panels and some contribution from the CHP plant have reduced the electricity use.

3.5 Manor Leisure centre performs worse with significantly high gas use even after taking account of the CHP.

3.6 George Campbell and Hudson are a similar size although Hudson has a teaching pool which may have led to higher electricity use.

3.7 Only recent energy data were available so the effect of changes over the COVID pandemic cannot be seen. Data from energy certificates appears to show a worse position compared to pre-COVID but only 2015 ratings were available to compare.

Energy Profiles

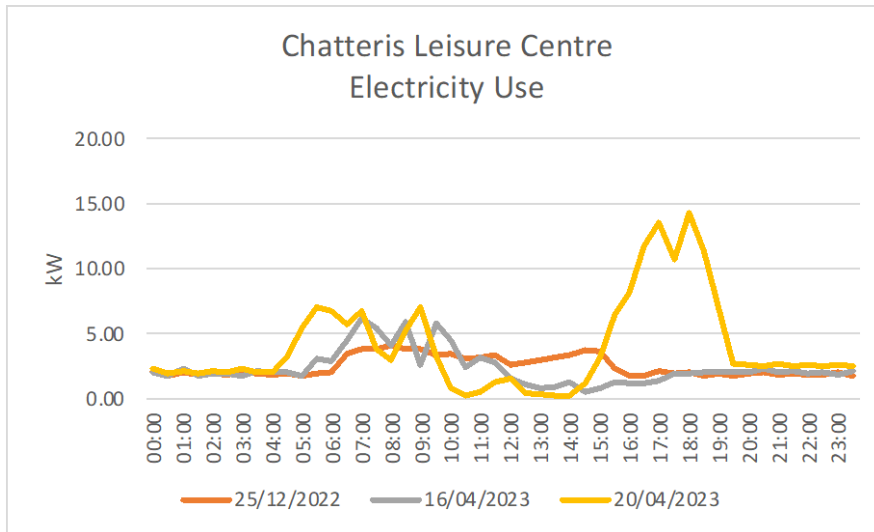
3.8 Half hourly electricity data profiles were available for all three sites. We have analysed the most recent 12 months (April 2022- March 2023) data and compared actual use and the estimated use without the contribution from CHP and Solar PV. The following table shows the results for the overnight tariff period of 12midnight to 7am.

Name	% of total use		Average use
	Electricity	Excluding Solar/CHP	kW
Chatteris Leisure Centre	18%	15%	2
George Campbell Leisure Centre	27%	15%	16
Hudson Leisure Centre	27%	17%	30
Manor Leisure Centre – dry side	21%	21%	5
Manor Leisure Centre – wet side	27%	19%	25

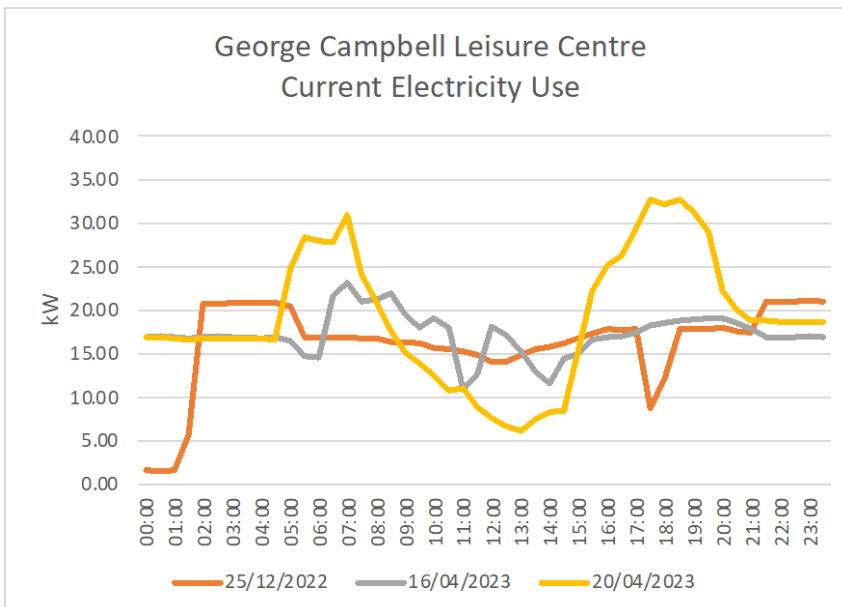
3.9 For good practice we look for overnight usage to be less than 10% for swimming pool centres and less than 5% for dry sports centre. This shows there are opportunities for control out of hours.

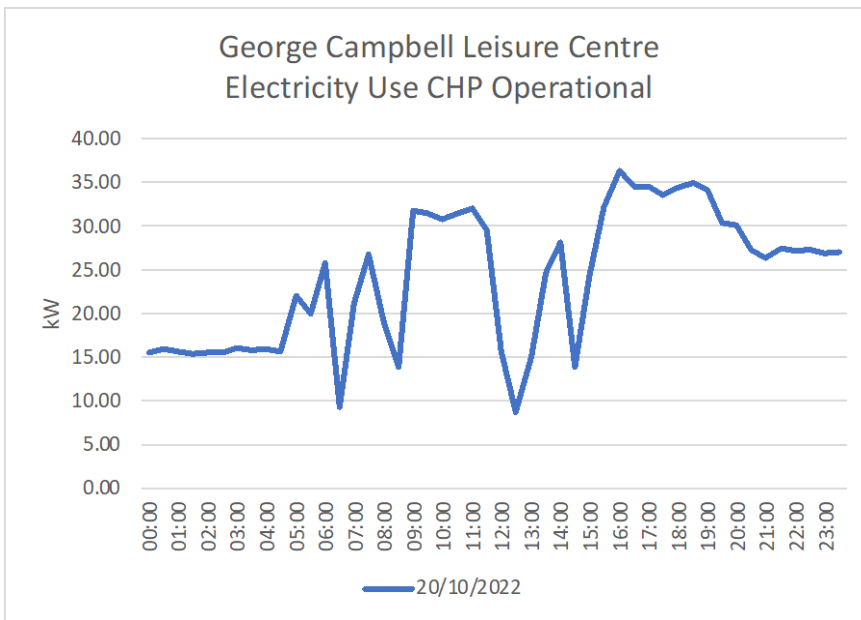
3.10 From half hourly electricity data, we have produced graphs that show recent energy use profiles for weekend and weekday operation in April 2023 plus a comparison with the non-operational day of 25/12/2022. For the sites with CHP we have also looked at a day in 2022 when the CHP was assumed to be operational.

3.11 Chatteris electricity profile shows a constant night usage of around 2kW and a reduced day usage consistent with the output from the solar panels. Some electrical equipment appears to be coming on at 4am which should be investigated.

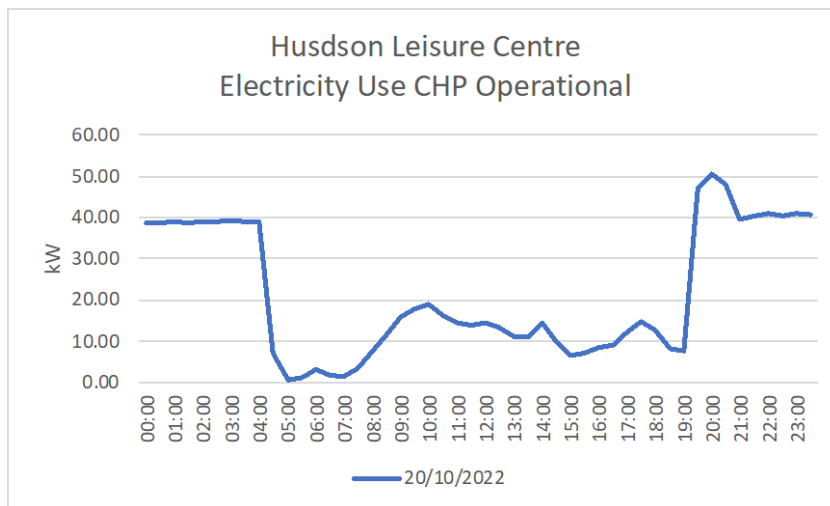
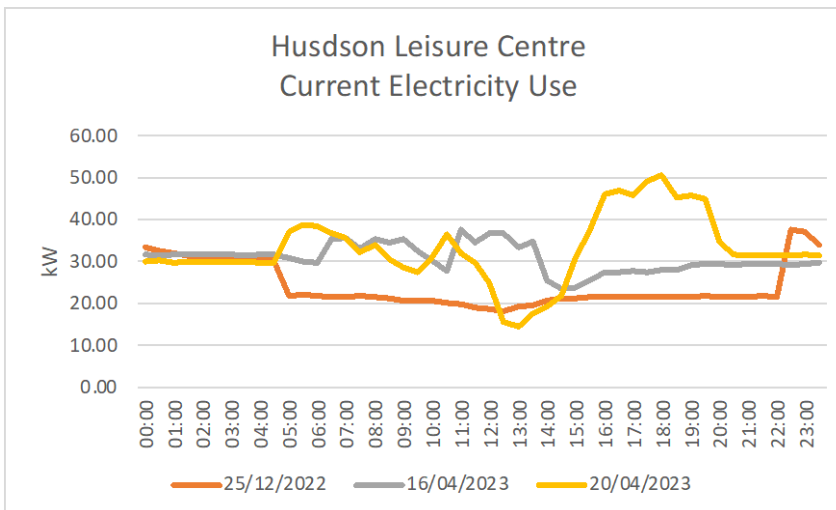


3.12 George Campbell electricity use shows a similar daytime dip from the solar panels providing the electricity. Plant and equipment is coming on at 5am and there is a significant base load of 15-20kW. When the CHP was operational it appeared to be switching on/off which indicates a control issue.

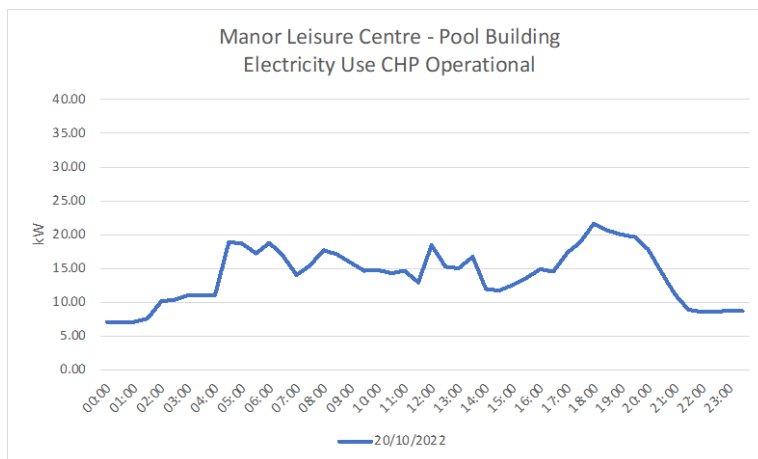
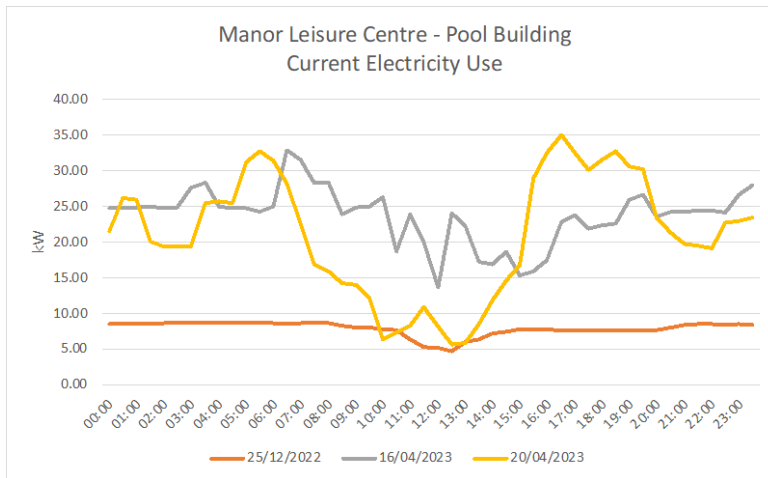




3.13 Hudson electricity use shows a similar daytime dip from the solar panels providing the electricity. Plant and equipment is coming on at 4am and there is a significant based load of around 30kW. When the CHP was operational it appeared to be on from 4am to 7pm but was making a significant difference to electricity use.



3.14 The Manor swimming pool building electricity use shows a daytime dip from the solar panels providing the electricity. Plant and equipment is coming on and off during the night at 4am and there is a significant based load of around 20-25kW. When the CHP was operational it appeared to be on 24 hours a day.



3.15 Overall the profiles confirm that there appears to be unnecessary night usage; that the CHP when operational makes a difference; and that there are some issues with time settings.

Operational Opportunities

- 3.16 Improving energy information and analysis is an important first step for all sites. There is a good level of information obtained from the main site metering and this is used to review performance. However, this does not take into account a number of issues that can hide the real performance such as:
- **Profiles:** the energy information was not highlighting issues with out of hours usage
 - **Targets:** site managers did not appear to have a specific target energy use to work towards
 - **Gas use:** it is not clear whether the gas use is compared regularly.
 - **Excessive energy use in one area:** any overall energy reduction may mask a significant energy increase in a specific piece of equipment. Sub-metering of the large energy using equipment should be used to determine energy efficiency at this level. Sub-metering should be considered for pool circulation pump motors, air handling plant fan motors and the gas supply to boilers. Some of this may be possible from readings on variable speed drive inverters. In the medium term this data can be collected automatically via the BMS or a separate energy monitoring system.
 - **Effect of weather, occupancy, operating hours:** analysis should include adjustments so that the effect of these variables is taken account.
- 3.17 An initial 3% saving against the reported energy use for all sites should be achievable from some basic analysis of out of hours usage and comparing profiles to timetables.
- 3.18 There is potential to improve the energy efficiency of the buildings through optimising the pool area control settings. In particular savings could be made by:
- Reducing pool water circulation out of hours at Hudson and Manor. Although the motors controlling the pumps have variable speed control, these do not appear to change overnight when the centres are shut. This is confirmed by the high overnight electricity usage. Circulation is required to control water quality (by moving water through filters/dosing system) and to replace heat but out of hours this is not an issue. It is recommended that circulation rates of 50% or below are the initial aim for out of hours usage.
 - At all pools the options for reducing pool water circulation during the day should also be explored, initially as a result of timetabling. There are also systems that link pool circulation to water quality monitoring (through the dosing equipment). There is limited published material on performance of such systems but they should be reviewed as an option.
 - Pool hall ventilation systems should also be turned down out of hours. Ventilation systems are required to provide for the pool hall temperatures and to remove evaporated water. Once pool covers are fitted and used and there are no bathers, evaporation rates will be significantly reduced and hence the ventilation systems can be turned down – a regime of turning off pool hall supply and linking extract to humidity to ensure it remains below 60% has been seen to work at a number of centres. It was reported that this was being done intermittently at Hudson but at the Manor there were issues with the extract system.
 - Adjustments to pool water and air temperatures. Although current guidance is to maintain pool hall temperatures 1°C above pool water for energy efficiency, we have not seen significant research undertaken in operating environments that backs up the guidance. Appendix A shows monitoring from the BMS at a similar site, which indicates that humidity and hence water loss is more affected by whether there are bathers in rather than temperature settings. We have seen elsewhere that air temperatures at or slightly below water temperatures save significant

energy without compromising user experience or humidity levels. We therefore recommend that pool water temperatures are reduced and pool hall temperatures are set at or slightly below the pool water setting. Out of hours settings can also be lower but balanced with the time to get back up to temperature.

- 3.19 The environments for the dry side activities are controlled by a combination of central air systems and local heat pump (air conditioning) systems. It was noted that most were set at 19°C. In general the following should be considered:
- Make use of ventilation plant to delivery cooling to areas when outside temperature is below 18°C. Ventilation air tends to be heating only and so a heating set point of 14-16°C would make best use of free cooling. When outside temperatures are likely to be above 20°C during the day the ventilation system should be operated earlier in the morning to provide some pre-cooling.
 - Local heat pumps (air conditioning) systems should be kept in ventilation only mode for as long as possible. Their set point should be a minimum 22°C on cooling.
 - Reducing slightly all centre heating set points and adjusting internal set points seasonally/to external temperatures.
 - Introducing air quality sensing to control dry side ventilation plant.
- 3.20 At Chatteris there didn't appear to be any timer control for the main central air system. This could be contributing to the overnight load.
- 3.21 Improving air tightness between areas requiring different temperatures (such as the pool hall and reception) should be considered:
- Seals to doors into the pool hall spectators area George Campbell need address as does the closure mechanism.
 - Seals to the pool hall door at Hudson and Manor need replacing.
 - There should be an annual review of external walls to address sealing of windows, doors and external wall openings.
- 3.22 At Hudson a number of valves on the heating system were not insulated.
- 3.23 Most of the above operational opportunities may be carried out in-house but it may be beneficial to make use of control specialists for the changes to settings; the cost estimated includes for a number of days of their time plus time for energy training. However it may also be possible for the current operators to make a number of the changes using existing staff.

Investment Opportunities

- 3.24 There are opportunities for improvements to lighting:
- Change the main corridor and gym/hall lighting from fluorescent to LED.
 - Change the pool hall lighting at George Campbell and Hudson from induction to LED.
 - Install a movement sensor to the dry side corridor lighting at Hudson.
 - Replace the studio lighting at Manor with LED.
- 3.25 The energy profile data demonstrated the contribution of CHP to reducing electricity use. The savings from CHP rely on the difference between gas and electricity prices and at the time of the survey this was significant. Even with the predicted increases in gas prices, CHP will still lead to savings. It is not clear why all of the CHP units were non-operational but at least one was identified as requiring replacement (George Campbell). Costs will need to be obtained for repairs and any changes to operational control to ensure output is maximised.
- 3.26 At Hudson the ventilation/cooling systems for the Yoga/Spin/Soft play need to be reviewed as the control settings appear to be common for all of them.
- 3.27 At the Manor dry side building there is an issue with the corridor heating dictating the soft play area heating. It is recommended that the corridor control circuit is disconnected and radiators are fitted with electronic thermostatic valves (known as eTRV or smartTRV). The individual radiators can then be controlled by an app based system.

Summary of Recommendations

- 3.29 The tables below summarise the target energy savings and budget costs for the measures detailed in this section. The energy savings are minimum targets and we are confident that additional savings are possible. Costs are high-level estimates and for the operational measures may be achievable within current maintenance budgets and using existing staff.

Operation/Management Measures	Energy Saving kWh		Cost Saving £		Budget Cost	Payback
	Electricity	Gas	Electricity	Gas	£	Years
All sites						
<i>Improve energy monitoring</i>	36,387	61,984	11,134	7,438		
<i>Turn down circulating pumps</i>	79,789	288,998	24,415	34,680		
<i>Turn down other motors at night</i>	36,866	54,357				
<i>Review temperature set points for pools</i>		131,717		15,806		
<i>Review cooling settings</i>	12,000		3,672			
Sub total	165,042	537,056	39,222	57,924	5,000	0.1
<i>Operational Measures - Chatteris</i>						
<i>Ensure ventilation plant is off at night</i>	2,044		625			
Sub total	2,044		625	0	750	1.2
<i>Operational Measures - George Campbell</i>						
<i>Improve door seals/closures</i>		16,307		1,957		
Sub total		16,307		1,957	1,500	0.8
<i>Operational Measures - Hudson</i>						
<i>Improve insulation to valves and ductwork</i>		10,387		1,246		
<i>Improve door seals</i>		10,387		1,246		
Sub total		20,773		2,493	4,000	1.6
<i>Operation/Management Measures - Manor</i>						
<i>Improve door seals</i>		32,694		3,923		
Sub total		32,694		3,923	1,500	0.4
Operational Total	167,086	606,830	39,847	66,297	12,750	0.1

Investment Opportunities	Energy Saving kWh		Cost Saving £		Budget Cost	Payback
	Electricity	Gas	Electricity	Gas	£	Years
<i>Chatteris Leisure Centre</i>						
Upgrade corridor lighting	1,348		412		1,440	3.5
Upgrade gym lighting	2,419		740		2,400	3.2
<i>George Campbell Leisure Centre</i>						
Repair CHP	88,000	-151,360	26,928	-18,163	20,000	2.3
Upgrade pool hall lighting	3,528		1,080	0	4,900	4.5
<i>Hudson Leisure Centre</i>						
Repair CHP	220,000	-378,400	67,320	-45,408	20,000	0.9
Improve controls to Yoga/Spin/Soft play ventilation	2,400		734	0	3,000	4.1
Install controls to dry side corridor lighting	1,134		347	0	500	1.4
Upgrade pool hall lighting	3,528		1,080	0	3,500	3.2
<i>Manor Leisure Centre</i>						
Repair CHP	88,000	-151,360	26,928	-18,163	20,000	2.3
Turn off dry side corridor heating zone		8,299	0	996	500	0.5
Install e-TRVs to control radiators		8,299	0	996	1,000	1.0
Upgrade studio lighting	764		234	0	750	3.2
Investment Total	411,121	-664,523	125,803	-79,743	77,990	1.7

Summary

- The four sites have future estimated energy costs of over £700,000;
- Energy performance is helped by solar energy;
- Profiles show most energy using plant operating during unoccupied times;
- There has been some investment by the operator and future planned schemes;
- Current systems could be operated more efficiently by changes to set points and operational practices leading to between 10 and 20% savings;
- There are some opportunities for further capital investment particularly in reinstating the CHP plant.
- Target energy cost savings of over £150,000 are realistic.

4. Risks and Mitigation Strategy

- 4.1 The future energy operational costs for the centre will be affected by the following:
- Changes to energy tariffs;
 - Operational practices;
 - Age of facilities;
 - Investments.
- 4.2 In the last 12-18 months most operators have seen unit price rises in excess of 100%. The tariffs used in this report are those expected to be applicable at the next contract renewal. There is therefore a short term risk of future rises, especially in gas prices.
- 4.3 The current industry outlook is for retail prices to level off and then reduce over the summer. Wholesale gas and electricity prices (as of 30/4/2023) have reduced by 75% compared to their peak in August 2022 although they are still 30% higher than levels prior to the Russian invasion of Ukraine. Government support depends on whether the wholesale tariffs are above a threshold, which they currently are not. How this affects the retail price, depends on when the contracts were taken out and when they are renewed.
- 4.4 In the short term, the current energy costs can only be reduced by changes to operational practices as discussed in section 3. These should be implemented within 3 months.
- 4.5 In the medium term, capital investment will further reduce exposure to future market price rises. Investment decisions should be based on the following hierarchy:
- Investment that improves energy efficiency such as improved controls, more efficient air handling units, heat recovery, improved insulation and air tightness, pool covers, more efficient lighting.
 - Investment that improves the efficiency of on-site energy conversion, such as more efficient motors and boilers or more use of heat pumps (depending on the relative gas/electricity prices).
 - Investment that replaces imported energy sources with renewable energy such as solar and wind power.
 - On site generation of heat and power using CHP, although this depends on the relative prices of gas and electricity.
- 4.6 Investment will depend on future demands, energy prices and availability of grants or other funding.
- 4.7 The remaining life of plant and equipment can have an effect on future operational costs and the value for money in installing efficiency upgrades. However, at current energy prices, payback periods are much reduced and hence efficiency retrofits should not be dismissed even if replacement is being considered in the medium term. Replacement should always consider energy efficiency as a priority and lifecycle costing used rather than lowest capital cost.

Summary

- There is a risk of further rises in energy prices;
- The short term strategy for risk avoidance would be operational changes;
- Medium term risk avoidance will require capital investment;
- Investment should concentrate on reducing demand and renewable energy supply.

5. Summary and Recommendations

- 5.1 Swimming pools and leisure centres are significant consumers of energy, and reducing energy usage can lead to significant cost savings while also benefiting the environment
- 5.2 The four buildings surveyed for Fenland District Council have a current estimated energy cost of over £447,000 per annum. Without action these costs are likely to be more than £700,000 per annum.
- 5.3 The buildings surveyed have different challenges owing to age and condition and although a range of energy saving technologies have been employed to date, there are opportunities to further reduce energy usage and hence cost.
- 5.4 There has been some investment by the operator and future schemes proposed should be made a priority.
- 5.5 Current systems could be operated more efficiently by changes to set points and operational practices. The most significant changes would be to out of hours operation and reductions in pool water and air set points. These changes should be considered and implemented within the next 3 months and should provide a minimum 10% and possibly up to 20% energy consumption savings. Most should be achievable by the current operator but may require some input from controls experts.
- 5.6 There are some opportunities for further capital investment particularly in reinstating the CHP plant. Solar energy is currently providing a good contribution to energy costs and additional planned investment in this area would be worthwhile.
- 5.7 At current prices a £150,000 per annum cost saving target is realistic.

Appendices

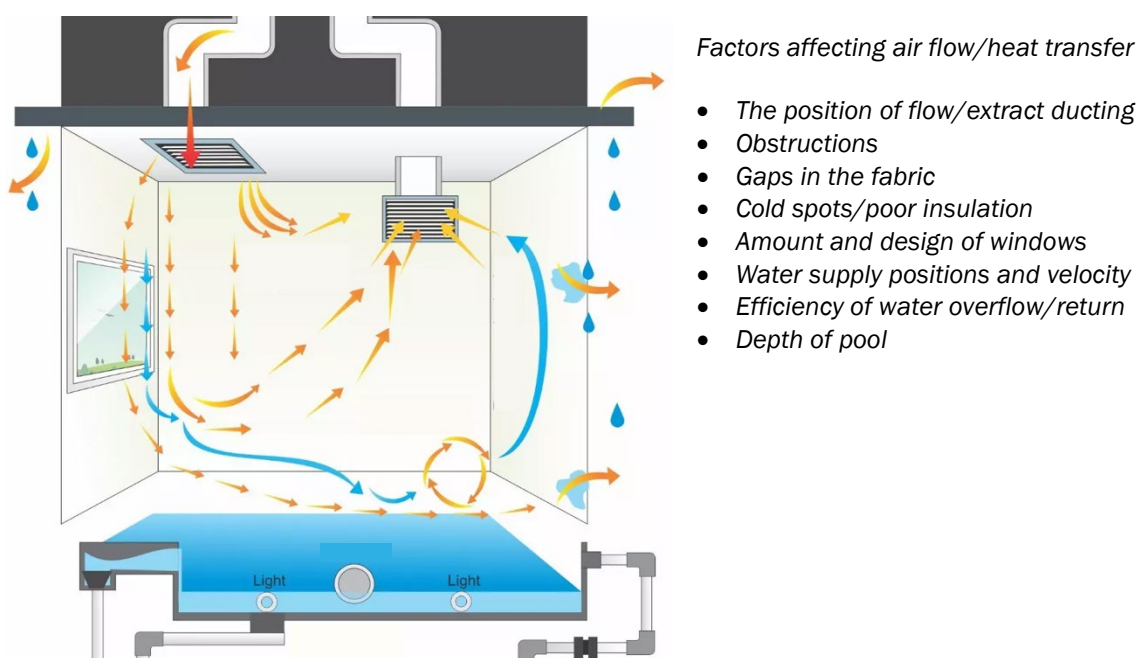
Appendix A – Effect of Set Points on Swimming Pool Heat Loss

Energy losses from swimming pools are a product of heat lost in evaporation and heat lost in water/filtration systems.

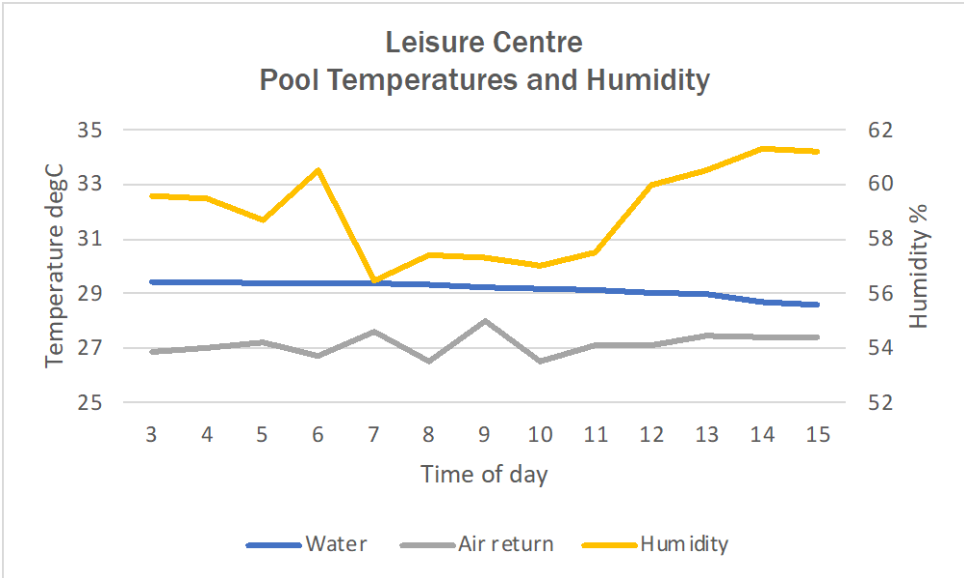
Evaporation from an undisturbed water surface happens when a thin layer of air just above the surface becomes saturated due to molecular movement at the air-water interface. If there is no air movement at all, further evaporation proceeds by the slow process of molecular diffusion. Air movement carries away the water vapour and heat is lost more rapidly. Temperature differences between the pool water and air affect mainly the initial saturation rate. This explains why using a pool cover and reducing ventilation are more effective ways to reduce heat loss during unoccupied periods.

During occupied times, research has shown that disturbance of the water surface from occupants and the wetting of other surfaces provide the most significant amount of water vapour and hence energy losses. Again the air temperature set point has less effect although if too cold it can lead to condensation on poorly insulated surfaces.

The diagram below shows how the design of the pool hall and systems affect air flow and heat loss in the air. Th



The above can be demonstrated by monitoring of pool conditions. The graph below is taken from the building management systems at a leisure centre.



As can be seen the humidity is below the recommended 60% overnight and in the morning in spite of the air temperature being 2°C below the pool water temperature. It is affected more by the time of day with highest levels during the afternoon public swimming session.

Appendix B – Site Visit Images – Thursday 20th April 2023

Chatteris Leisure Centre



Exterior of building



Heated Air System

George Campbell Leisure Centre



Exterior of building



Boiler and uninsulated valve



Non operational CHP



Circulating Pumps

Hudson Leisure Centre



Exterior of building



Boilers



Non operational CHP



Circulating Pumps Inverter Control



Main pool



Uninsulated valve

Manor Leisure Centre



Exterior of pool building



Exterior of dry side building



Non operational CHP



Pool Boilers



Gym lighting to be replaced



Pool filter