

**Teignbridge District Council**  
**Full Council**  
**30<sup>th</sup> July 2024**  
**Part i**

**Carbon Action Plan Projects**

**Purpose of Report**

To gain budgetary approvals covering a series of energy efficiency projects at Newton Abbot Leisure Centre, Dawlish Leisure Centre, and the Teignmouth Lido.

**Recommendation(s)**

The Committee RESOLVES to:

- (1) Approve a project budget of £393,226 including the Sport England Swimming Pool Support Fund Grant of £168,775 and £224,451 of borrowing to deliver the package of energy efficiency measures at Dawlish Leisure Centre as described in Section 2.1 of the report;
- (2) Approve a project budget of £515,625 to deliver a package of energy efficiency measures at Newton Abbot Leisure Centre as described in Section 2.2 of the report;
- (3) Approve a project budget of £57,000 to deliver a package of energy efficiency measures at the Teignmouth Lido as described in Section 2.3 of the report.

**Financial Implications**

Financial implications are set out in Section 3.1 of the report.

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**Legal Implications**

Legal implications are set out in Section 3.2 of the report.

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## **Risk Assessment**

Project risks are discussed in Section 3.3 of the report.

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## **Environmental/ Climate Change Implications**

Environmental implications are discussed in Section 3.4 of the report.

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## **Executive Member**

Councillor Jackie Hook, Member for Climate Change, Trees, Coast, & Flood Risk Management

Councillor John Nutley, Member for Open Spaces, Leisure, Sport, Resorts & Tourism

## **Appendices/Background Papers**

Appendix A - Description of Proposed Measures

[Capital Programme](#)

[Carbon Action Plan](#)

[Sport England Swimming Pool support Fund](#)

## 1. Introduction

Following adoption of our Part 1 Carbon Action Plan in July 2022, the Authority has progressed a series of high-impact carbon reduction projects covering our vehicle fleet and four of our most energy-intensive buildings. The projects include an ongoing exercise to replace diesel fleet vehicles with electric equivalents, and a series of heat decarbonisation projects involving the replacement of gas-fired heating systems with heat pumps and supporting measures; two such projects have reached completion at Forde House and the Lido, a third project is in construction at Newton Abbot Leisure Centre, and a fourth project has reached the post-tender stage at Broadmeadow Sports Centre.

With this portfolio of projects tending towards completion, there is an emerging need to create a pipeline of new projects, should the council wish to continue its carbon descent towards net zero emissions. This report therefore proposes three new capital projects in Section 2 to increase energy efficiency standards across our three swimming pool sites including Newton Abbot Leisure Centre, Dawlish Leisure Centre, and the Teignmouth Lido. The projects work towards *Action 1* and *Target 2* of the Carbon Action Plan to implement an energy efficiency programme and to increase the supply of on-site generation.

## 2. Leisure Sites Energy Efficiency Projects

Following the unprecedented energy price increases experienced over the last two years, Sport England launched the Swimming Pool Support Fund (SPSF) in 2023. The fund was established following recognition that the viability of swimming facilities is particularly sensitive to energy price increases given their high energy needs and given that eligibility criteria prevented some swimming pools from benefiting from the government Energy Bill Relief Scheme<sup>1</sup>.

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<sup>1</sup> [\[Withdrawn\] Energy Bill Relief Scheme: help for businesses and other non-domestic customers - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/energy-bill-relief-scheme-help-for-businesses-and-other-non-domestic-customers)

The Authority submitted a series of joint funding applications under the SPSF representing our three in-house swimming pools and several community-run pools. A successful application under the first phase of funding provided £8,783 of energy bill relief supporting three community pools, whilst a second application secured £182,682 and £168,775 of capital funding for energy efficiency measures covering three community pools and Dawlish Leisure Centre respectively.

Despite being unsuccessful in securing funding for energy efficiency projects at Newton Abbot Leisure Centre and the Teignmouth Lido, there is an opportunity to gain economies of scale by progressing a multi-site project funded through a combination of grant and borrowing to achieve cost and carbon savings at all three sites.

The project co-benefits include to reduce centre running costs, improve temperature and humidity regulation thereby improving customer comfort levels, enabling our centres to respond dynamically to how they are used from one moment to the next, and to increase real-time monitoring thereby ensuring performance and reliability. The anticipated energy savings for each site are shown in Table 1 below.

*Table 1: Indicative energy demand reductions by site*

Site	Reduction in heating demand	Reduction in electricity demand (non-heating loads)
<b>Newton Abbot Leisure Centre</b>	31%	14%
<b>Dawlish Leisure Centre</b>	43%	33%
<b>Teignmouth Lido</b>	32%	42%

## **2.1 Dawlish Leisure Centre**

The project at Dawlish Leisure Centre is anticipated to cost £393,226, of which £168,775 will be funded by the Sport England Swimming Pool Support Fund, with the remaining budget being funded from borrowing. The proposed measures include:

- Replacing the pool air handling unit to increase heat recovery and control.
- Improving pool water circulation pump controls to reduce energy wastage.
- Hot water efficiency measures to reduce water and heating demands.
- Solar photovoltaics to generate low-cost electricity on-site.
- Heat and electricity sub-metering to enable real-time performance monitoring.

£10,000 has been allowed for a replacement solar PV inverter at year 10.

## **2.2 Newton Abbot Leisure Centre**

The project at Newton Abbot Leisure Centre is anticipated to cost £515,625 and is proposed to be funded from borrowing. The proposed measures include:

- Replacing the pool air handling unit to increase heat recovery.
- Replacing the changing room air handling unit to increase heat recovery.
- Improving pool water circulation pump controls to reduce energy wastage.
- Hot water efficiency measures to reduce water and heating demands.
- Heat and electricity sub-metering to enable real-time performance monitoring.

## **2.3 Teignmouth Lido**

The project at the Lido is anticipated to cost £57,000 and is proposed to be funded from borrowing. The proposed measures include:

- Improving pool water circulation pump controls to reduce energy wastage.
- Hot water efficiency measures to reduce water and heating demands.
- Installing a pool cover to reduce overnight heat loss.

Energy efficiency measures for the Lido have been assessed against a ten-year period to align with the expected pool cover design life.

### **3. Implications, Risk Management and Climate Change Impact**

#### **3.1 Financial**

The overall project budget will be funded through £168,775 of Sport England Swimming Pool Support Fund grant, with the remaining contribution of £797,076 being sourced from borrowing.

Costs to be funded from borrowing will draw upon the provisional allocation listed on line three of the Capital Programme, which was approved by members earlier in the year as part of the budget setting process for Carbon Action Plan Projects.

The emerging Leisure Needs Assessment indicates an ongoing need to increase indoor swimming and sports facilities to support the district's increasing population. As such, the project business case has been tested against 10 year and 20 year borrowing repayment periods to consider the short and long-term risk on investment owing to possible leisure centre replacement or renewal.

The results of a sensitivity analysis are presented in Table 2 and Table 3, which shows the impact of varying levels of energy cost escalation over 10-year and 20-year borrowing repayment periods. Under the central scenario with 3% energy cost escalation, the project return is 1.2% and 8.0% for 10-year and 20-year borrowing repayment periods respectively, which achieves the minimum 1% return on investment.

Under low (1%) and high (4%) energy cost escalation scenarios, the project return over a 10-year borrowing repayment period is -0.5% and +2.2% respectively, whilst over a 20-year borrowing repayment period, the returns are 4.4% and 10.2% respectively.

A review of S106 funding is underway to determine which funds and associated conditions align with project deliverables; should suitable S106 funds be applied to the project, the overall need for borrowing will decrease, which will thereby increase the project return and mitigate scenarios where energy prices remain low over the next ten to twenty years.

*Table 2: Energy price escalation sensitivity analysis (10 year borrowing repayment period)*

Energy Cost Escalation Rate	Dawlish	Newton Abbot	Lido	All Sites
<b>1%</b>	3.4%	-2.2%	0.1%	-0.5%
<b>2%</b>	4.9%	-1.6%	0.7%	0.4%
<b>3%</b>	6.4%	-1.1%	1.3%	1.2%
<b>4%</b>	8.1%	-0.4%	2.0%	2.2%

*Table 3: Energy price escalation sensitivity analysis (20 year borrowing repayment period)*

Energy Cost Escalation Rate	Dawlish	Newton Abbot	Lido	All Sites
<b>1%</b>	8.3%	3.2%	0.1%	4.4%
<b>2%</b>	11.4%	4.4%	0.7%	6.1%
<b>3%</b>	14.8%	5.7%	1.3%	8.0%
<b>4%</b>	18.8%	7.3%	2.0%	10.2%

According to the CPI index for gas and electricity<sup>2</sup> the price of energy increased by 3.8% year-on-year between 2010 and 2020, and according to data published for medium sized electricity consumers<sup>3</sup>, retail electricity prices increased by an average of 7.6% over the same period.

### 3.2 Legal

The projects funded through grants are subject to the terms and conditions of the Swimming Pool Support Fund. There are no further significant legal implications associated with this report.

<sup>2</sup> [CPI INDEX: Electricity, gas & misc. energy \(G\) 2015=100 - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk)

<sup>3</sup> [Gas and electricity prices in the non-domestic sector - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

### **3.3 Risks**

A series of risks are identified in Sections 3.3.1 to 3.3.4 relating to the project proposals and risks relating to the “do nothing” scenario where existing systems are maintained without replacement.

#### **3.3.1 Centre Impacts**

The installation of new air handling units and energy sub metering will need to be considered in such a way as to prevent centre disruption and customer impacts. This risk will be mitigated where possible through design, the construction phasing plan, and by communicating potential impacts with customers ahead of time.

Conversely, if the project is not progressed, there is a risk of life-expired equipment failing, which will limit our ability to control pool hall temperature and humidity. Due to the age of existing air handling units, it is difficult to source or fabricate spare parts, which could contribute to prolonged system downtime in the future. On average, the Authority spends approximately £3,368 between Dawlish Leisure Centre and Newton Abbot leisure Centre per annum.

Due to limited humidity control functionality on the existing air handling units and the need to prevent humidity-driven steelwork corrosion at Newton Abbot Leisure Centre, there is a need to operate the existing units on a 24/7 basis with a limited over-night setback function. The proposed new air handling units will alleviate this issue through enhanced humidity control and fresh air mixing systems.

#### **3.3.2 Grant Spend Deadline**

The Sport England Swimming Pool Support Fund grant will need to be spent by March 31<sup>st</sup> 2025. This risk will be mitigated by prioritising the delivery of grant funded works at Dawlish Leisure Centre, and by building grant milestones and conditions into the project tender specification.

### **3.3.3 Energy Price Assumptions**

With energy prices being influenced strongly by global geopolitical issues, supply chain constraints, and changes to the UK energy supply system expected over the project life, there is uncertainty over future energy costs, and therefore, there is a risk to the return on investment. As such, a sensitivity analysis has been used to determine how different rates of energy cost escalation impact on the project return; to this effect, all scenarios show that the minimum 1% return on borrowing will be achieved over a 20-year borrowing repayment period. The minimum 1% return on borrowing is not achieved where energy cost escalation rates are 2% or less over a ten-year borrowing repayment period.

### **3.3.4 Energy Saving Assumptions**

Uncertainty in energy savings and budget costs has been mitigated through a series of energy modelling assessments, by gaining budget quotations on main equipment items, and through consultancy support to determine project delivery costs. Reviews will be held on completion of tender specifications and again prior to contractor appointment to confirm the project business and supporting assumptions.

An Energy Management Group will be established upon completion of the projects consisting of key staff. The remit of the group will provide long-term governance working to achieve or outperform the project business case.

## **3.4 Environmental/Climate Change Impact**

The efficiency projects set out in Section 2 will reduce the Authority's demand for electricity by the equivalent of powering 74 average UK homes, whilst also reducing our demand for heat by the equivalent heating 80 average UK homes.

Collectively, the projects will achieve an annual carbon reduction of 80 tonnes CO<sub>2</sub> representing circa 10% of our buildings' 2022/23 scope 1 and scope 2 carbon footprint. The buoyant financial rate of return set out in Section 3.1 of the report for a

20-year project period reflects the significant energy savings anticipated upon completion of the projects.

#### **4. Alternative Options**

The projects identified in Section 2 represent some of the most impactful measures available to reduce centre running costs and to increase energy efficiency. As such, there are limited alternative options for consideration.

Should the council wish to consider a “do nothing” approach, the Authority can expect:

- A higher risk of reactive repairs due to the potential breakdown of antiquated air handling units.
- The potential reputational risk due to centres being shut at short notice on a regular basis to allow for repairs.
- Increased energy bills where opportunities for energy efficiency and on-site generation are missed.
- Limited ability to implement a continual energy efficiency programme, where proposals to install energy sub-metering are not progressed.
- Reputational risk where the awarded Sport England Swimming Pool Support fund will need to be returned.

#### **5. Conclusion**

The above report contains a series of recommendations requesting the mandate to deliver three high-impact carbon reduction projects aligning with our Carbon Action Plan. The return on investment meets the minimum 1% return on borrowing when projects at all three sites are considered collectively using central estimates on future energy prices. As such, members are asked to consider recommendations one to three of the report requesting the mandate to deliver the projects.

## **Appendix A – Description of Proposed Measures**

### **Air Handling Units**

Air handling unit upgrades have been proposed for Newton Abbot Leisure Centre and Dawlish Leisure Centre.

Air handling units are commonly used in commercial buildings to provide heating and ventilation. They incorporate a series of fans to draw fresh air into the buildings whilst simultaneously extracting stale air to the buildings' exterior.

The existing air handling units feature a heat recuperation system, which provides a basic level of heat recovery to recapture heat from warm exhaust air before it leaves the buildings.

The recovered heat is used to temper the incoming fresh cool air before a final heating stage is used to achieve the target air supply temperature to maintain comfortable internal temperatures.

The proposed replacement units will carry out the same functions as the existing units, albeit with superior heat recovery efficiency, fan efficiency, humidity control capabilities, and advanced scheduling controls.

The heat recovery efficiency alone is expected to increase from circa 40% to 80% whilst we can also expect additional reductions in electricity consumption at the same time.

### **Solar photovoltaics**

Solar photovoltaics have been proposed for Dawlish Leisure Centre to supply the site with low carbon energy and to reduce how much energy we draw from the National Grid via our energy supplier.

We anticipate using 90% of new generation on site, and exporting the remaining 10% to the grid, as reflected within the project business case.

### **Pool Pump Controls**

Pool water circulation pumps are used to circulate water through the pool, filtration system, heat exchanger, and chemical dosing systems. Due to their round-the-clock operation and high-power specification, they represent a significant proportion of our leisure sites energy needs.

Proposals to upgrade existing pool pump controls will increase the scheduling frequency such that pool pump speeds can be varied on a session-by-session basis to reduce their energy demand. We anticipate an average pump load reduction from about 85% to 55%.

## **Pool Cover**

A pool cover has been proposed at the Teignmouth Lido. This will reduce over-night wind-driven and evaporative heat losses, which represent the most significant sources of heat loss associated with outdoor pools. We anticipate that a pool cover will reduce the site's demand for heat by about one third.

## **Hot Water Efficiency Measures**

Basic hot water efficiency measures are proposed to reduce water consumption and hot water heating loads by restricting water flow rates on taps and shower heads.

## **Heat and electricity sub-metering**

Newton Abbot Leisure Centre and Dawlish Leisure Centre are currently metered for heat and electricity at whole-site level, meaning that it is difficult to correlate the performance of energy efficiency measures with site energy consumption.

Heat and electricity sub-metering is therefore proposed to provide high-resolution half-hourly data covering significant equipment items. This will support a continual "plan, do, check, act" approach to energy management, which will enable changes in energy use to be observed in response to new energy efficient equipment or subtle changes to system set points.