CABINET

Report subject	**2Riversmeet Leisure Centre: Energy Improvements Business Case**
Meeting date	8 March 2023
Status	Public Report
Executive summary	This application to the Green Futures Fund (as previously approved by the Future Infrastructure Board on 2 December 2022) is for replacement of plant, installation of controls, energy monitoring system and replacement of pool covers at 2Riversmeet Leisure Centre. These urgent works will ensure the ongoing operation of a valued corporate and community asset, whilst achieving reduced energy consumption and therefore reduced carbon emissions in line with the commitment of this Council under the Climate and Ecological Emergency declaration (2019). The funds being sought for the project are £478,500 and the energy savings per annum are estimated at £63,000.
Recommendations	**It is RECOMMENDED that:** **The application to the Green Futures Fund (as previously approved by the Future Infrastructure Board) for replacement of plant, installation of controls, energy monitoring system and replacement of pool covers at 2Riversmeet Leisure Centre for the sum of £478,500, be approved.**
Reason for recommendations	Recent plant failures due to age and poor condition have jeopardised the operational capacity of the building to heat the areas of the centre and both pools. Further plant failures will potentially lead to the centre being unable to operate and loss of revenue. Replacing existing plant with modern, more efficient plant will also save money in running costs and reduce the amount of greenhouse gas emissions contributing to climate change. Furthermore, new plant provides the opportunity for more long-term low carbon solutions to be added in future, such as heat pumps, which the existing plant does not.

Portfolio Holder(s):	Councillor Jane Kelly - Portfolio Holder for Communities, Health and Leisure
Corporate Director	Jess Gibbons – Chief Operating Officer
Report Authors	Dan Stone - Leisure Commissioning Manager, Simon Percival - Asset Investment Manager, Neil Short – Sustainability Manager
Wards	Christchurch Town;
Classification	For Decision

Background

1. For full details please see Appendix A: Business Case for Plant Refurbishment and energy savings measures at Two Riversmeet Leisure Centre (2RMLC) Ref: BCPDR-Asset0002, as previously approved by the Future Infrastructure Board on 2 December 2022.

Options Appraisal

Option 1: (Recommended) Full plantroom upgrade and connection of energy centre, providing reduced energy costs, complete control of plant to match operational need at a cost of £478,500.

Option 2: (Not Recommended) Connection of energy centre only - a temporary option - will not give any control of the systems and high utility costs will continue. Cost: £38,500.

Option 3: (Not Recommended) Do nothing and run the risk that further plant failure will compromise the operation of the centre, leading to complete closure.

Summary of financial implications

2. A total of £478,500 is requested, which will impact the MTFP with borrowing costs of £56,000 per annum over 15 years. However, the estimated annual energy savings resulting from the project are £63,000 or greater if energy costs rise further.

Summary of legal implications

3. The Council's Law and Governance team commented that: The proposed equipment upgrade is in line with the UK government's Climate Control commitment under Paris Agreement 2016 to reduce Global Warming through various measures including reduction of carbon emissions. The request also enables the Council to attain its own climate control commitment under the Climate and Ecological Emergency declaration (2019). The added advantage of the proposal would be recovering of the cost and achieving additional benefits in terms of improved efficiency and better energy mix and control. The request finds support in the Council policies and there are no adverse legal implications.

Summary of human resources implications

4. No human resources implications are associated with this project.

Summary of sustainability impact

5. Decision Impact Assessment ref. 518 has been completed and resulted in a Low carbon footprint rating for this project, indicating that it will be of benefit to the Council's climate change emergency commitments.

Summary of public health implications

6. Continued operation of this facility provides the public with the means to participate in activities and sport which will benefit their physical and mental health and reduce health inequalities.

Summary of equality implications

7. An EIA conversation/screening document has been completed. No negative impacts have been identified for this proposal. The Impact assessment summary concluded that the project allowed continued operation of the community asset with no altered equality implications, including accessibility requirements while works took place.

Summary of risk assessment

8. Greatest risk is associated with the 'do nothing' option, which could see the existing plant fail and the facility being forced to close with resulting loss of revenue. By approving this application, that risk is eliminated. Remaining risk is that the cost of equipment increases, however a 10% contingency has been included to mitigate this occurrence.

Background papers

None.

Appendices

Appendix A: Business Case for Plant Refurbishment and energy savings measures at Two Riversmeet Leisure Centre (2RMLC) Ref: BCPDR-Asset0002

Appendix A: Business Case for Plant Refurbishment and energy savings measures at Two Riversmeet Leisure Centre (2RMLC)

Ref: BCPDR-Asset0002

Senior Responsible Officer: Matti Raudsepp

Project Manager: Simon Percival

1. Brief Description of Project:

Replacement of plant, installation of controls and energy monitoring system and replacement of pool covers at 2RMLC

2. Background:

Recent plant failures due to age and poor condition has jeopardised the operational capacity of the building to heat the areas of the centre and both pools, further plant failures will potentially lead to the centre being unable to operate. The FM team have a mobile energy centre which can be connected to the existing plant to temporarily overcome this problem in the short term.

Following the unprecedented rise in energy costs, the recent failure of plant items together with their inherent inefficiencies compared to modern alternatives, this report sets out a need to refurbish the plant room at the 2RMLC and to install new controls and monitoring to enable full control of all the operational plant within the centre to reduce overall energy consumption but also create a platform whereby renewable technology will be utilised, using existing and new technologies to further reduced energy consumption and therefore reduce carbon omissions which is a clear commitment of this Council under the Climate and Ecological Emergency declaration (2019).

These urgent works will ensure the ongoing operation of a valued corporate and community asset; however, they will not prohibit the delivery of a long-term sustainable solution for the site. Working across council services and with the support of external partners, these works constitute Phase 1 of a long-term investment and modernisation plan that will ensure safe and efficient operation whilst delivering value for money.

Existing Plant

The existing gas fired boilers are non-condensing and considered to be at the end of their economic life, 1 of the 4 boilers has already failed. The FM team are planning to install mobile energy centre to overcome the immediate problem of the condemned boiler and to facilitate the installation of the new plant, keeping the building operational, should this proposal be approved. This is a temporary solution in order to keep the centre operating.

Domestic hot water is provided from 2 gas fired indirect storage water heaters. These water heaters are non-condensing and whilst still available they are old technology using permanent pilot ignition and therefore have in built cost and energy inefficiencies when compared to modern alternatives

Both Large Pool and Learner Pool are independently heated by non-storage calorifier heat exchangers to transfer heat from the primary hot water source to both pools. These items are life expired, inefficient and need replacement.

Proposed Solution

The existing boilers are noncondensing with an efficiency of 70% based on gross calorific value changing to condensing boilers will improve the efficiency to 96%, an efficiency saving of 26%.

The existing boilers will be replaced with condensing boilers running at low temperature as often as possible. The central control system will interrogate the various systems to set an economic running temperature. New flues will be required together with new boiler room pipework to allow minimum operational temperatures. Twin pumps will be provided on the various circuits, speed controlled from the Building Management System (BMS) to further reduce energy consumption.

The existing gas water heaters are non-condensing with a water heating efficiency of 66%. The proposal is to install high efficiency plate heat exchangers, (efficiency 96%) heated from the new modulating condensing boilers. Together with buffer vessels that deal with immediate demand. The buffer vessel has the benefit of being heated from alternative forms of heat source now in into the future. This type of system reduces the amount of stored hot water and as a result reducing the risk of legionella bacteria forming. The above work would an efficiency saving of 30%.

A full BMS will be installed to easily access, change and manage parameters to run the equipment at their optimum efficiency, thus reducing energy demands. The new BMS will be a centre wide control, monitor and display system brought back to a central location thus allowing a comprehensive, co-ordinated system.

The existing Grundfos fixed speed pumps will be changed to Grundfos Magna 3 pumps which can fully speed controlled and have the ability measure pump flow rate. The new pumps will be installed with the new condensing boilers. Variable speed pumps allow

remote control giving closer load matching and hence power reduction. The existing pool water circulating pumps will be speed controlled from the BMS according to temperature and occupancy again improving the overall efficiency of the system.

The Pool System Air Handling Unit will be added to the new BMS thus enabling closer monitoring, control, and adjustment to run at minimum speed necessary to maintain Pool Hall conditions all the while maintaining the minimum air flow necessary across the air handling unit gas burners.

The Hall Air Handling Unit will be added to the BMS, as the existing control system is end of life and runs 24/7, this will bring about overall efficiencies in running the building.

The existing Bar air handling unit has an electric heater battery and thus is expensive to run and has a high carbon output. The unit will be replaced using an AHS air handling unit with heat pump/chiller to provide tempered air both Summer and Winter. Control would be from the central BMS control pane.

The Gym is heated and cooled by Daikin split heat pumps. The existing full fresh air ventilation system will be replaced with mechanical ventilation units which will include heat recovery. These units will be mounted in the Gym ceiling void. The ventilation and heat pump units will be under central BEMS control.

In additional to the above it is also proposed to replace the pool cover to both pools with a modern version which are easy to operate to ensure the heat of the water is retained and humidity within the Pool Hall controlled, again bringing about immediate financial and energy savings.

The work would be delivered utilising existing term contractors who have the necessary expertise and experience to undertake this work.

The FM budget does not it have sufficient capacity to undertake this work without facing an overspend.

3. Key benefits from the project:

Reduction in annual energy costs as result of improved control of the system and reduction in carbon emissions.

The attached document is an example of what the efficiencies should generate using some basic consumption information and utilising the efficiencies of the elements of plant that are proposed to be installed.

The energy savings per annum are estimated at £63K

This table does not include the efficiencies generated from the replacement of the pool cover or the installation of the energy centre as this is required to keep the centre running whilst the plant is replaced.

The project creates a platform whereby further renewable technology can be utilised to further improve efficiency, reduce cost and carbon emissions.

The centre is included within a number of sites earmarked for the provision of PV, undertaking this upgrade of plant and more importantly controls will be able to support the introduction of PV to help support the running costs of the centre and reduce further its reliance of fossil fuels.

Improves plant redundancy of equipment should future problems occur

Provides absolute control of energy usage via the BMS providing the ability to optimise the system to match the operational requirements of the centre.

Improved compliance through monitoring of the whole system ie water temperature / quality

The quality of the environment will certainly improve and therefore consideration could be made to increasing the charges to the public using the centre, as a result of the work being undertaken

4. Strategic alignment:

Improved energy efficiency, reducing reliance of fossil fuel and reduced utilities cost

Ensuring the facility remains open to help support the wellbeing of residents

6. Options Appraisal:

	Option 1	Option 2	Option 3 – Do Nothing
In Scope Consult, procure, regulatory permission, build, etc	Full plantroom upgrade and connection of energy centre	Connection of energy centre	Do nothing Run the risk that further plant failure will compromise the operation of the centre
Out of Scope		Full plant room upgrade	Full plantroom upgrade and connection of energy centre
Benefits	Reduced energy costs, complete control of plant to match operational need	The centre will continue to operate Energy centre is very much a temporary option, it will not give any control of the systems and high utility costs will continue	
Total Summary Costs	£478,500 inc 10% contingency	£38,500 inc 10% contingency	
Risks of delivering	Rising materials costs therefore 10% contingency added		

7. Support from other services

HR, ICT, Procurement, Legal, Finance etc

Service	Estimated Time
Procurement	Procurement Decision Records Required- ½ day

8. Milestones:

Consider the key milestone points for each of the scope elements

Key Milestone	Date Due
Budget approval	Dec 2022
Procurement	Jan 2023
Installation	Mar 2023
Commissioning and completion	Aug 2023

9. Project Level Governance:

- Low Level – Installation and commissioning of the plant room and associated controls would be managed by the Senior Mechanical and Electrical Surveyor within the FM team
- This Business Case is supported by the Chair of the Operational Corporate Property Group Chris Sheppard as well as the Councils Strategic Asset Manager Martin Wilkins

10. Financial Assessment:

	Description	2022/23 £`s	2023/24 £`s	2024/25 £`s	Total £`s
Feasibility	N/A				
Equipment	N/A				
Staff	Managed through FM team				
External Resource	Work undertaken through existing term contractors				
Moving Costs	N/A				
Construction Costs	Connection of Mobile Energy centre Replacement of boilers Replacement of direct fired water heaters with plate and buffer vessel Replacement of pumps, valves Installation of controls and monitoring (BMS) Replacement calorifiers for pool Installation of Gym MHVR system Bar AHU replacement Replacement of pool cover	35,000 120,000 40,000 40,000 80,000 40,000	 25,000 25,000 30,000		35,000 120,000 40,000 40,000 80,000 40,000 25,000 25,000 30,000
Fees	N/A				
Other	N/A				
Sub-Total		355,000	80,000		435,000
Contingency@10%		35,500	8,000		43,500
TOTAL COSTS		**390,500**	**88,000**		**478,500**

BENEFIT (£) Impact on MTFP	Borrowing costs per annum for 15 years 56K confirmed by Paul Whittles 24.11.22	56,000	56,000	56,000	56,000
NET BENEFIT (Cashable benefit less costs)					
Funding Source (£)	Green Futures Fund				
Ongoing impact (£)	Whole Life Costs/Ongoing Maintenance Costs of delivering project, funded from within existing FM revenue budgets for servicing and maintenance				

11. Supporting documents:

Appendix 1 - Estimate of Efficiency saving for 2RMLC Plant replacement project

12. Document version control:

Version	Comments
V0.1	*Contributions from Chris Sheppard, Martin Wilkins, Matthew Montgomery and Paul Whittles – 25.11.2022*