

7th July 2023

Dear Sir or Madam,

I am writing to you to find out whether there is prospect for the creation of collaboration between Cambridge City Council and Peterhouse (my college within the University) on a sustainability project which would help reduce the carbon footprint of Cambridge City and Peterhouse.

My hope is that this letter will simply lead to is a chat between us.

The idea I wish to discuss with you does not yet come with any “official” backing from the College. It is currently only at the very early stages of being discussed between those of us within Peterhouse (mostly engineers and scientists) who are tasked with finding ways of help the College become more sustainable. This approach to you is therefore very informal and preliminary in nature. We neither expect nor need any firm commitments from you, but merely wish to explore with you what the bounds of the possible might be. To explain the idea, I will refer to a map of part of the Cambridge City Centre which I have annotated, and which is shown below.



The idea concerns the possibility of our implementing small green hydro energy scheme at Bishop's Mill Sluice between Laundress Green and Sheep's Green.

This sluice is labelled “3” on the map and stands (so far as we understand) on Common Land owned by the City Council. The sluice is immediately adjacent to land owned by Peterhouse (labelled “2”) which was originally occupied by the King's and Bishop's Mills after which the sluice is named. Those mills were taken down in the 1920 and their footprint land is now partly occupied by a hotel which, when the lease expires, will revert to Peterhouse, whose main site is next door (“1”) and adjacent to a large supply of engineers (“5”) many of whom base themselves in Peterhouse due to its proximity.

At present, the Bishop's Mill Sluice is used to regulate the level of the Cam above it and below it.

This important activity comes at some significant cost to the City Council in running costs, maintenance, and development. Indeed, in the last few months the City Council issues a £90k tender seeking companies willing to automate the weir (see image on next page).

Our observation is that instead of being a drain on the City Council finances, the weir ought to be cost-neutral and or generate income while also reduce the City's carbon footprint.

That is to say, instead of simply throwing away the energy of the water that has to overtop the weir, that water **ought** to be directed through an energy recovery device of some kind (e.g. a turbine) to generate green energy in the process.

Such an approach would harness energy that is currently being wasted. It would not change any river flow rates or have any ecological considerations because that water already flows over the weir, and indeed its flow is already being controlled by the City Council (at some cost to itself) as part of its river level management responsibilities. The only difference that a small hydro scheme would introduce is that energy would be recovered that would otherwise be wasted.

Indeed, the energy source that would be recovered is the very energy source that powered the King's and Bishop's Mills that were on that site until the 1920s. What we propose is, in essence, a re-harnessing of an energy source that was harnessed up until the 1920s and only went out of use because of the rise of oil/petrol at that time.

Cambridge City Council - Automation of Bishop's Mill Sluice

A Tender Notice by CAMBRIDGE CITY COUNCIL

Source
[Contracts Finder](#)

Type
Contract (Works)

Duration
4 month

Value
£90K

Sector
CONSTRUCTION

Published

27 Apr 2023

Delivery

04 Jul 2023 to 31 Oct 2023

Deadline

13 Jun 2023 11:00



Modern turbines and generating devices of the type which might be appropriate on this site would be very small. Some could be installed invisibly in ducts or within the weir structure itself. Others would be partially visible as modifications to the weir. None would resemble this large historic mills on the site whose size was necessitated by flour storage and machinery requirements of the time. The choices between the different options would depend on trade-offs between how much energy one wished to produce, how maintainable the infrastructure should be, how much one was willing to spend, and so on.

The reasons I believe that Peterhouse has a role to play in a project that would be on Council Land are a mixture of (a) our long term interest in the stewardship of this neighbouring site, (b) our desire to reduce our own Carbon footprint, but most importantly (c) our access to a large number of Engineers

and Student Engineers who would have the time and willingness to take a project forward if our own interests and those of the City Council could be aligned.

For example: while there would be nothing to stop the City Council tomorrow creating a tender requesting that third parties create a small hydro scheme on that site – I would presume that the council would have to put a lot of money behind such a scheme to get it started. Worse: it would seem likely that the long-term benefits of that scheme would take large hit from professional fees that would be absorbed by the for-profit organisations that would bid for those contracts. In contrast the College could potentially get a lot of consultative effort “for free” from the engineers to which it has access – and if ways were found of proceeding it could potentially put up some of the cash for infrastructure if it new it has secure access to the site and would benefit from the results.

I would take it as very clear to all parties at the outset that as the Weir is on common land and in an area of recreational and environmental importance to all members of the City, that any/all material progress would require all the relevant planning and environmental agencies to be involved. It is self evident that any outcome must preserve the beauty and utility of the land for the town and for those with rights of common, etc.

However, notwithstanding the above, there are presumably many ways that leases over the weir or the water or sale of the land could be created that would preserve those features while finding a way forward.

For example: suppose that maintenance of the weir and the costs associated with operating it for the preservation of water levels are generally seen to be, a net burden on the City Council’s finances to the tune of, say, X pounds per year. Then one route for the Council to remove that recurring cost from its accounts in perpetuity could be to pay Peterhouse, say, “50 times X” pounds to take ownership of the weir. This would transfer to Peterhouse responsibilities and costs associated with operating and maintaining the weir in perpetuity, albeit thereby allowing the Peterhouse to benefit from green power extracted from the water. This route could be cost-effective to the Council imagined that it would be paying those fees for more than 50 years. You can, of course, replace “50” with a different straw figure.

That’s just one idea of how to structure things. It may be foolish and there may be much better ways of making things work. However, it’s to explore whether there are any ways (or better ways) of proceeding, that I would hope to meet you.

I hope that this letter finds you well,

With all best wishes

A handwritten signature in black ink, appearing to read 'C Lester', written in a cursive style.

Dr Christopher Lester