



Finance and Performance Sub-Committee 8th July 2019

Stanwick Lakes – Replacement of Sluice Gates

Purpose of report

The purpose of this report is to provide an update to the position presented at Finance and Performance SubCommittee on 11th February 2019 and to obtain Councillors' approval for the proposed hydropower scheme at Stanwick Lakes replacing the existing sluice gates now that the conditions from a previous sub committee meeting have been met.

Appendices

Appendix 1 – Rockingham Forest Trust Business Case

1.0 Background and current position

- 1.1 At the Finance & Performance Sub Committee held on 11th February 2019 the Head of Customer and Community Services presented a report requesting consideration of whether the council should take on the responsibility for the sluice gates at Stanwick Lakes, in order to allow a hydropower project to be implemented.
- 1.2 The proposal involves the transfer of the existing sluice gates from the Environment Agency (EA) to ENC as the landowners, together with funding to repair the sluice gates and to provide for on-going maintenance for a period of 20 years.
- 1.3 It is also proposed that, once the sluice gates have transferred to ENC, there will be a simultaneous agreement to transfer the responsibility for the gates to Rockingham Forest Trust (RFT), which will also receive the funding from the EA.
- 1.4 RFT is seeking permission from ENC to replace the sluice gates with an Archimedes Screw that will generate electricity to the site and create a surplus, which will be sold back to the grid providing RFT with cost savings and an income stream.
- 1.5 Subject to ENC's approval of the transfer, the EA will also be providing funding that covers the cost of the construction of the foundations for the Archimedes Screw by the installation of a concrete plinth; RFT will raise the balance through crowd funding and/or bank loan.
- 1.6 At the February Sub Committee meeting it was resolved that:
 - a) this council will, in principle, accept the responsibility for the sluice gates
 - b) authority be delegated to the Chief Finance Officer, following consultation with the Chairman of Finance and Performance Sub-Committee, to legally accept responsibility for the sluice gates once the following conditions have been met:
 - The Environment Agency confirm the value of sums to be commuted in respect of the sluice gates
 - Legal and professional assurance has been obtained that this sum is sufficient to cover all liabilities associated with the gates over the next 20 years
 - Legal agreement has been obtained that ENC nor Rockingham Forest Trust will not be liable for any flooding in other areas of the valley
 - Confirmation that no other liabilities will transfer to ENC as a result of this agreement;

- c) on taking on responsibility, the liability for the gates be transferred to Rockingham Forest Trust in a back to back agreement;
- d) authority be delegated to the Head of Customer and Community Services following consultation with Stanwick Lakes Board members to sign the updated lease once satisfied with the relevant legal documentation;
- e) this council agrees, in principle, to support the Archimedes Screw project, and therefore supports Rockingham Forest Trust in its application to access the feed in tariff.
- f) authority be delegated to the Head of Customer and Community Services and Chief Finance Officer, following consultation with the Chairman of Finance and Performance Sub Committee, to work with Rockingham Forest Trust to develop a robust business case and to report back to Finance and Performance Sub committee before a final decision is made as to whether to progress with the scheme.

(Reason – to support Stanwick Lakes and its future sustainability)

2.0 Updates on Actions

2.1 Where further action was required

- b) *“The Environment Agency (EA) has confirmed the value of sums to be commuted in respect of the sluice gates”.*
 - The EA has confirmed it will be providing a total of £265,000; £245,000 to cover the cost of repairs to the existing sluice gates, which includes the installation of a concrete plinth in the river (this plinth will provide the foundation required for the Archimedes Screw). The sum was agreed in 2017 and is based on an historical cost estimate of works, however, once the tender for the contractor is closed a clearer estimate will be available. RFT propose to revert to the EA should the funding not be sufficient. A verbal update of costs and funding will be provided.
Status: In Progress This will be completed once the tender for the contractor is completed and the EA agrees to fund any variation on cost arising from the tender.

“Legal and professional assurance has been obtained that this sum is sufficient to cover all liabilities associated with the gates over the next 20 years”.

 - The EA is proposing to commute £20,000 to cover maintenance costs for a period of 20 years. The maintenance work will be performed by existing RFT resources and training and support will be provided by the EA.
 - It is understood that the useful economic life of an Archimedes Screw is expected to be 20 years and the investment appraisal demonstrates payback is 10 years therefore it is assessed that the sum is adequate for 20 years.
Status: Completed based on structural engineer’s report

“Legal agreement has been obtained that ENC nor Rockingham Forest Trust will not be liable for any flooding in other areas of the valley”

 - The Environment Agency has confirmed that this will be detailed in the legal agreement. This will finalised within the legal agreement.
Status: In Progress This will be finalised as part of the legal agreement with the EA
 -

“Confirmation that no other liabilities will transfer to ENC as a result of this agreement”

 - To avoid there being any liabilities to ENC, the legal agreement that transfers the sluice gates from the EA to ENC will be executed simultaneously with a transfer to RFT in a back to back transaction.
Status: In Progress This will be finalised once the back to back legal agreements have been completed

c) *“The liability for the gates will be transferred to RFT in a back to back agreement”*

- The lawyer for RFT has provided the following statement for inclusion into the Heads of Terms; this statement will be ratified by District Law acting on behalf of ENC:

- The arrangements on the sluice gates have been carefully constructed with the Environment Agency to ensure that ENC does not incur any liability as a result. Whilst the Environment Agency insist that ownership of the gates must pass from them to ENC, they are aware and are happy that immediately on “receipt” of the gates, ENC would then transfer ownership over to RFT, along with the payment from the Environment Agency as their contribution to the upkeep costs. RFT’s lawyers, Howes Percival LLP will be instructed to ensure that the transfer of the gates to RFT occurs simultaneously with their transfer to ENC which we are told is perfectly achievable with a 3 way telephone call being made by the lawyers for the Environment Agency, for ENC and for RFT.

Status: In Progress This will be finalised once the back to back legal agreements have been completed

f) *“authority be delegated to the Head of Customer and Community Services and Chief Finance Officer, following consultation with the Chairman of Finance and Performance Sub Committee, to work with Rockingham Forest Trust to develop a robust business case and report back to Finance and Performance Sub Committee before a final decision is made as to whether to progress with the scheme”*

- ENC and RFT have worked together to produce a detailed business case and due diligence is fulfilled. See Appendix 1 for the detailed business case

Status: Completed

Additional requirements for the business case to include details relating to contributions and Value for Money have been completed.

Status: Completed

Subject to a review of the conditions ENC will confirm with RFT that the funding is in place and the legal requirements are met.

Status: Completed

2.2 As part of the works to upgrade the concrete plinth in the river below the larger sluice gate, the hydro’s Archimedes Screw is dropped into place, removing the need for separate costly engineering works and reducing the cost of the hydro by around £40,000.

3.0 Equality and Diversity Implications

3.1 An equalities impact assessment has been completed and there are only positive implications associated with the continued funding of Stanwick Lakes.

4.0 Privacy Impact Implications

4.1 There are no privacy implications arising from the contents of this report.

5.0 Legal Implications

5.1 There are no legal implications apart from our legal responsibilities already highlighted arising as a result of this report.

6.0 Risk Management

- 6.1 There are risks associated with the hydro power proposal, however, these are minimised with the back to back legal agreement to transfer the sluice gates immediately to RFT.
- 6.2 Any financial risks that may be associated with the responsibility for the sluice gates are mitigated by the fact that the on-going operation passes to RFT. The alternative is not risk-free: the EA has proposed installing a fixed weir, and as such the ability to control flood risk to the site would be lost.
- 6.3 Risks were included in detail in the previous report; there are no new risks identified from the Business Case.

7.0 Resource and Financial Implications

- 7.1 The funding that comes with taking on the responsibility for the sluice gates would go directly to RFT. The financial risk associated with this needs to be balanced with the financial risks related to the costs of future flood damage, and the lost opportunity to generate hydropower and control energy costs at the site.
- 7.2 The indicated financial contributions to Stanwick Lakes can only be committed one year at a time through the budgetary process. The Business Case demonstrates that this project is financially sustainable and may have a positive contribution.

8.0 Constitutional implications

- 8.1 There are no constitutional implications arising directly from this report.

9.0 Implications for our customers

- 9.1 The revised funding agreement will have no implications for our customers other than continuing to enable them to use Stanwick Lakes.

10.0 Corporate Outcomes



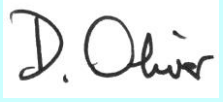
- 10.1 The investment in the site will contribute to the achievement of the following corporate outcomes:
- **Good Value for Money:** To ensure we are clear on our financial obligations for Stanwick Lakes and can effectively plan for the future finances at Stanwick Lakes.
 - **Effective Partnership Working:** Supporting and enabling our partnership arrangement with Rockingham Forest Trust to develop.

11.0 Recommendations

- 11.1 The Sub Committee is recommended to:
- a) Note progress with the delegations resolved at FPSC on 11th February 2019;
 - b) Delegate authority to the Chief Finance Officer, following consultation with the Chair of Finance and Performance Sub Committee to legally accept responsibility for the sluice gates upon confirmation that the final commuted sums are confirmed and deemed to be adequate, all funding is in place and verified;
 - c) Delegate to the Head of Customer and Community Services following consultation with the Chair of Finance and Performance Sub Committee to sign the updated lease with RFT once satisfied with the relevant legal documentation and all other delegations have

been implemented.

(Reason: To ensure ongoing maintenance of one of the council's main assets)

Legal	Power: Local Government Act 2000				
	Other considerations:				
Background Papers: 11 February 2019\Stanwick Lakes Sluice Gates Final.docx					
Person Originating Report: Sandie Williams Project Finance Manager swilliams@east-northamptonshire.gov.uk 01832 742082					
Date: 27/06/19					
CFO 27/06/19		MO (Deputy) 27/06/19		CX 27/06/19	

Purpose of Document: to share information with ENC, the landowner to provide assurance that all options are carefully considered and that the recommended option is the best for financial, community, environmental and long term sustainability reasons

Overview

RFT and the council, via the Stanwick Management Board, have for the last four years been looking into the benefits of installing a hydropower unit on the back channel of the River Nene as it flows through Stanwick Lakes. This would fit with the site's environmental ethos, and both organisations' aspirations for sustainable development: a flagship renewable energy project, which would also reduce or eliminate the site's current electric bill, which is currently c£30,000 pa and index linked for 20 years

An opportunity has arisen to reduce the costs of installing the scheme, which, when combined with RFT's having now secured the majority of the private funding required for the project means it is now within reach (private money is necessary to enable it to qualify for Feed-in Tariff).

The Environment Agency currently has responsibility for maintaining and operating the sluice gates along the Nene Valley, including those at Stanwick Lakes, but under a new national strategy is looking to transfer this responsibility to the appropriate landowners. In each case they are required to bring the structures into good repair, before handing them over. The sluice gates area is where the hydro scheme would be sited.

The business case below shows how any perceived risk to the council and the Trust is mitigated, and needs to be balanced with the opportunity to make Stanwick Lakes more financially sustainable for the future.

Objectives

- To generate renewable energy at Stanwick Lakes in a way to be reflective of the original aims and objectives for Stanwick Lakes
(‘To create an economically sustainable facility which will have a commercial edge and therefore support itself through income generation,’ ‘To provide a site and facilities that will be conducive to environmental activity and which will educate visitors about their local environment in an innovative and creative manner,’ ‘To create an environmentally sustainable facility’)
- To reduce significantly the site's carbon footprint.
- To improve the site's financial resilience through drastic reduction of its costs (the electric bill)
- To educate the public, and school children in particular, about the need for renewable energy and how it can work at the local level
- To reduce the risk of flood damage by retaining the ability to control water levels through the sluice gates

Summary Reasons for Project

- Although Stanwick Lakes has exceeded all expectations in terms of its popularity, scope, and the trading profit it generates, its financial success is still significantly weather-dependent. Recognising this, the strategy pursued by RFT and the Stanwick Lakes Board is to diversify into new income streams which are not affected by the need for good weather at key times (Easter and August).
- This approach is yielding good results, but as the site ages and running costs continue to rise, reducing overheads remains a priority. The hydropower scheme represents an opportunity to reduce one of the most significant running costs- the electric bill – whilst at the same time decisively cutting the site’s carbon footprint. The hydro scheme would generate between 140,000 and 170,000 units of renewable electricity per year, equivalent to the consumption of 35 to 40 average homes, and saving over 100 tonnes per year of CO2 from coal-fired power stations. Given the high profile effects of climate change this can only be a positive move and one that a responsible operator should make
- An opportunity has arisen to reduce the installation cost of the hydropower scheme (set out in more detail below), by taking over the ownership and operation of the sluice gates on the back channel of the River Nene
- At the same time this secures the future ability to control on-site flooding. The alternative, an EA-installed fixed weir, would prevent hydropower whilst increasing flood damage and associated costs
- For the community this project would be an interesting new development, and one which is a good fit with the current concerns around reducing CO2 emissions. Our attempts to do something positive at the local level would reflect well on both the Council and the Trust (which is an environmental charity).The Archimedes screw would be visible as it turns, and interpretation boards would explain its operation and significance to visitors.
- There are tourism benefits, for the same reasons

Stakeholders

- East Northamptonshire Council – as the landowner, and the partner with whom RFT works most closely
- The local community – as explained above
- Local schools – more than 1,500 school children visit each year, and for those studying rivers and environmental change this would be a valuable local case study. Publicly accessible hydropower schemes like this are rare in the region
- The Environment Agency – they are keen to hand over the sluice gates, and since the hydro scheme and the gates go hand-in-hand they are supportive of the project. They have given the necessary permissions
- Natural England – the final arbiters of what can and cannot happen in a SSSI/Ramsar site. They have given their permission and see no negative effects to the local ecology

The detail of the business case

The taking over of the sluice gates has already been agreed at a Council Finance Sub Committee meeting on 11 February 2019, but for completeness the business case is included again here. Since that date all required EA permissions have been received and Feed-In Tariff has successfully been registered for.

- The EA have decided that the Stanwick Lakes sluices are not important to them in terms of managing flood risk, and therefore to reduce their on-going maintenance costs they propose to have them made good and transfer responsibility for them to ENC/RFT. The Council already owns the structures, following the transfer of the milling rights to the landowner many years previously.
- Responsibility and liability for the sluice gates would immediately be passed to RFT, in a back-to-back agreement, thereby removing any liability to the Council.
- Should the Council and RFT refuse to take them on, the EA will simply put in a fixed weir, as a cheaper option. This would effectively prevent the introduction of the hydropower scheme – a scheme which would generate c£30,000 per annum for the site, based on the more pessimistic of the hydro flow forecasts.

- It would also mean that RFT would have no means of controlling flooding on the site by opening and shutting gates, resulting in increased flood damage following high rainfall, particularly to the paths. The repair costs would be £5,000 - £10,000 per year. In 2012, the most severe flood year since opening, the cost was over £20,000.
- The EA will draw up Heads of Terms which will include confirmation that neither the Council nor RFT will be held responsible for any flooding either at Stanwick Lakes or elsewhere in the valley, including the navigation, as a result of 'incorrect' operation of the sluice gates. They cannot do otherwise, given their assertion that sluice gates only affect/benefit Stanwick Lakes.
- The structures will be brought into a good state of repair before transfer – the EA have had a detailed report produced by an engineering consultancy (in April 2017), and thus know exactly what is required. They have based their offer on the consultants' estimate of costs, informed by similar works elsewhere in Autumn 2018, but in any case these costs will be tested during the tender process for the works. Once the works have been done, at the EA's expense, the structures will represent no greater risk than the seven railway bridges, some of which are multi-span, all along the old railway line which forms part of the Stanwick Lakes landholding.

The mechanics of how the process would work:

- The EA commute the agreed sum of £265,000 to RFT, as soon as Heads of Terms agreement has been formalised and signed, and the Trust engages the appropriate contractors to undertake the work highlighted in the engineers' report, to make the necessary repairs to the sluice gates. The project managers will be Saturn, who managed the visitor centre's construction
- The advantage to this approach is that RFT are, by the EA's own admission, likely to get better value for money from the works than the EA would do as a large government organisation
- As part of the works to upgrade the concrete plinth in the river below the larger sluice gate, the hydro's Archimedes Screw is dropped into place, removing the need for separate and costly civil engineering works, and thus reducing the cost of the hydro project by up to £40,000
- The EA train the RFT ranger team in how to work the sluice gates before handover, including providing a manual to guide decisions and operation.
- Prior to the works beginning RFT applies for planning permission and EA impoundment license & flood risk consent (process already underway), then registers for Feed-in Tariff (FIT) by March 2019. This is the last deadline before FIT is withdrawn for hydro schemes, which will halve their value. Once registered, FIT payments are secured for the Stanwick hydro for twenty years and index-linked.

- RFT then has up to two years (to March 2021) to raise the rest of the money for the hydro scheme, get the sluice gate works done and the hydro installed. The aim is to have the scheme installed by the end of 2020.
- A sum of £170,000 has already been raised, and RFT plans to raise the remaining amount through crowd-funding (in the region of £80,000 - £90,000).
- Once up and running the hydropower scheme will save the site c£30,000 per year, the value of the current electric bill, making Stanwick Lakes more sustainable in the future.

Scope

The project involves the installation of a new 25kW micro-hydro scheme at Stanwick sluices on the River Nene near Irthlingborough. Stanwick sluices are located on the site of the old Hollands Mill, demolished in the 1960s, and now part of the Stanwick Lakes site. The old waterwheel pits were converted into 2 sluice gates, operated by the Environment Agency. The EA have confirmed that one of the 2 sluices could be utilised for hydropower generation, and will hand them over with a commuted sum of £265,000 to bring them into good repair. The works to be undertaken comprise of the consolidation, repair and remedial works to the existing sluices on the River Nene all as defined by the Environment Agency, and the structural and other construction and services works to facilitate the installation by others of a hydro turbine screw. Once installed the hydro scheme would generate between 140,000 and 170,000 units of renewable electricity per year, equivalent to the consumption of 35 to 40 average homes, and saving over 100 tonnes per year of CO2 from coal-fired power stations.

Timescales

- Contractor tender process for works: April – end June 2019
- Legal agreements finalised between EA/ENC/RFT for handing over of sluice gates – October 2019
- RFT Fundraising for remaining funds begins - August 2019
- Contractors start on site – July 2020
- Works completed and hydro generation begins – December 2020

Options with costs and benefits

Option	Cost	Benefit/disadvantage
<p>Option 1 – do nothing. Do not take on the sluice gates, do not install hydropower</p> <p>EA install fixed weir</p>	<p>RFT have already spent over £20,000 getting to this point which will be wasted, undermining RFT’s financial viability</p> <p>Annual cost of £5-10,000 per year to site from flooding damage</p>	<p>None</p> <p>RFT lose ability to control flooding on site and are stuck with ever rising electricity bill</p>
<p>Option 2 – take on sluice gates but do <i>not</i> install hydropower</p>	<p>£20,000 already committed, as above, plus additional project management cost for civils works</p> <p>Cost for both ENC and RFT of legal agreements</p> <p>The £265,000 cost of bringing sluice gates into repair is provided by EA</p>	<p>Retain ability to open and close sluice gates and retain control of flooding</p> <p>Cost of electricity bill remains. Maintenance cost of sluice gates not mitigated by income from hydropower generation</p> <p>Takes on the risks related to sluice gates without the benefits hydropower brings. Not an option to pursue</p>
<p>Option 3 - take on sluice gates, install hydropower</p>	<p>The £265,000 cost of bringing sluice gates into repair is provided by EA, and it reduces the cost of the hydropower installation by c£40,000 since both works are tackled simultaneously.</p> <p>Site running costs reduced by c £30,000 pa</p>	<p>Retain ability to open and close sluice gates and retain control of flooding</p> <p>Hydropower reduces electric bill and site becomes almost carbon neutral</p> <p>Stanwick Lakes seen as a beacon of good practice</p>

Value for Money

- The sluice gates will be brought into good repair using the EA's money. Their offer of £265,000 will be tested against the tenders which come back from contractors. The EA believe RFT stands a better chance of getting value for money for the civil engineering works than they will as a large government agency. If the amount offered proves insufficient then we will go back to them and negotiate for more. If the amount should prove more than ample, they are not asking for a refund of the difference.
- By undertaking the sluice gate works simultaneously with the hydro work there is a saving to be made (for example the river will only have to be dammed off once), and as such the whole scheme represents good value for money
- RFT has already raised a significant proportion of the funding needed for the hydro scheme and plans to raise the rest through crowd-funding. The whole scheme will therefore be largely be funded by other people's money, not public finance. It will not cost the Council anything, beyond a little legal advice for the agreement with the EA.

Benefits

The wider benefits have already been set out earlier in the document, but in essence by installing the hydro scheme *now* there is a potential to save around £40,000 on the capital cost of a hydropower installation, by sitting the structure on a concrete plinth which is due to be reinforced as part of the sluice gate repair work, instead of undertaking the more costly civil engineering works originally envisaged for the scheme.

Recommendation

It is recommended that the hydropower project and associated sluice gate works should go ahead. If lost, this opportunity will not return. Feed-in Tariff for hydro has now ceased, but the project was registered just in time.

References to Reports from consultants (in Appendices)

Appendix A – Original hydropower scheme report from hydro consultant

Appendix B – Revised hydropower scheme report from consultant, as submitted to planners and the Environment Agency

Risk	Likelihood	Impact	Mitigation measure
<p>Sluice gates not taken on, EA install fixed weir, leaving sluice gates to deteriorate & ultimately collapse. Hydro scheme opportunity thus lost Site floods uncontrollably Risk owner: RFT & ENC</p>	High	High	RFT would have to set aside additional budget for frequent flood damage repairs. Over 20 years this could cost as much as £200,000
<p>EA's commuted sum fails to cover actual cost of sluice gate works Risk owner: RFT</p>	Moderate	Moderate	EA have had a full condition survey done & subsequently costed, and are doing this along the valley. RFT would obtain competitive quotes before works started and would flag up any shortfall with EA
<p>The actual hydro scheme within the works costs more than anticipated Risk owner: RFT</p>	Moderate	Moderate	Full up-to-date costings are to be provided through the tender process, which includes the hydro consultant who has adapted original scheme to fit new opportunity & who will be involved throughout
<p>RFT fails to raise remaining money for hydro Risk owner: RFT</p>	Moderate	High	<p>RFT has good track record for fundraising & already has nearly 70% of the sum required. Crowd-funding likely to be effective (lots of people contributing who visit & love site) Still get sluice gates brought into good repair with EA money, retaining ability to better control flood risk</p>
<p>Flooding caused by inexperience in operating sluice gates Risk owner : RFT</p>	Low	High	<p>Having full control of sluice gates for first time will actually improve ability to control flooding. EA will advise & train RFT staff, and absolve them from any off-site flooding, including affecting the navigation. . In addition, (a) a new flood gate alongside the Screw will be fully automated to respond immediately to high river levels, (b) having electricity on site will enable the 2nd (hinged) gate to be automated as well.</p>

Rising & on-going maintenance costs Risk owner: RFT	Low	Moderate	EA's costs for this are known, RFT can undertake maintenance more cost-effectively as already on site. A sum will be set aside each year from hydro income for maintenance
Fatality from drowning affects site's reputation Risk owner: ENC & RFT	Low	High	This could happen now. Landowner already 'owns' sluice gates. Area is off beaten track and securely fenced. The site will be safer than at present, with automated lighting and the facility for webcams, alarms, etc. to be added.
Wildlife disturbance Risk owner: RFT	Low	Moderate	RFT have consulted Natural England, who are relaxed about the project. Their specific advice to limit impact during construction will be followed. Hydro scheme no noisier than current sluice gates.
Hydro fails to generate predicted income Risk owner: RFT	Low	Moderate	Will use proven technology which is generating power elsewhere. Careful best & worst case scenarios mapped based on river flow readings
Brexit causes price fluctuations for the construction works	Medium	Moderate	Contingency is built into the tender process to allow for this and other variations

Capital

Original cost of hydro scheme installation	£296,600
Cost benefit of undertaking hydro concurrently with sluice repairs	-£40,000
Revised cost of hydro scheme installation as part of sluice gate repair	£256,600
Funding sources	Amount
Initial EA commuted sum for sluice gates	£265,000
Capital amount raised for hydropower (through fundraising)	£256,600
Total funding	£521,600
Capital Expenditure	
Repairs to sluice gates	£265,000
Installation of hydro scheme	£256,600
Total capital expenditure	£521,600

Income & Expenditure Summary

Income	Amount
Hydropower : direct electricity generation value	£17,500 per annum
Hydropower : Feed-in Tariff value	£11,900 per annum
Total income generation over 20 years	£588,000
Expenditure	
Current annual site electricity bill	£32,000
Total electricity bill over 20 years (inflation adjusted)	£672,000 (a)
Annual maintenance of hydro & sluice gate area	£3,500 per annum
Total running costs over 20 years	£70,000
Total value of hydro's electricity generation, less running costs over 20 years	£518,000 (b)
Total amount electricity bill is reduced to over 20 years	£154,000 (a) minus(b) a 77% reduction
Future annual site electricity bill reduced to:	£7,700 (£154,000 divided by 20)

Note: The above figures do not include VAT because the commuted sum from the EA will not attract vat, and RFT will be able to reclaim the vat related to the construction expenditure. Depreciation is not included, nor is the total income generated reduced by the initial capital outlay: in both cases this is because the scheme will be paid for using externally-raised funds.

Costs for both the sluice gate repairs and the hydro works will be obtained at tender stage before the project starts, so any price fluctuations (eg as a result of Brexit) can be taken into account.

NB : There will be no cost to the Council for either the sluice gate repairs or the hydro installation.

Investment Appraisal

Business Case 20 Years			Sensitivity	Sensitivity	Sensitivity	Sensitivity	
Performance Measure	Base Costs	Base Costs with Loan	Operating Costs/Income +/- 5%	Capital Cost +£60k	Operating Costs/Income +/- 5% AND Capital +£60k	Gross Costs (excl EA funding)	EA Installs Fixed Weir (Do Nothing)
<i>Note: Total Development Cost incl EA (not included in appraisal)</i>	£537,600	£537,600	£537,600	£597,600	£597,600		
RFT Development Cost	£272,600	£272,600	£272,600	£332,600	£332,600	£537,600	N/A
Net Operating Cashflows (excl. depreciation)	£356,702	£348,602	£308,633	£288,602	£248,633	£91,702	(£85,041)
Payback Years (Excl Depreciation)	10	10	11	10	13	18	N/A
Net Present Value	£164,615	£157,133	£129,364	£97,133	£69,364	(£100,385)	(£59,083)
Profitability Index	1.604	1.576	1.475	1.292	1.209	1.171	
Average Rate of Return	13.1%	12.8%	11.3%	8.7%	7.5%	1.7%	
IRR	9.0%	8.7%	7.8%	6.3%	5.5%	1.5%	

Performance monitoring and ongoing maintenance/service requirements

- The hydro consultant will make an annual visit for the first couple of years to check everything is working optimally.
- Overall, the hydro installation will come with a 1-year installer's warranty, and the same will apply to the sluice gate works
- The turbine itself should have a 2-year warranty.
- RFT will monitor the installation regularly, checking that it is generating the predicted power. The installer will specify any service requirements and if special expertise is needed they will be brought back to carry them out. Straightforward adjustments can be made by on-site staff
- The schedule for minor maintenance works to the sluice gates will be provided by the EA, and carried out by RFT staff
- Regular tasks such as mowing the grass and cutting back vegetation will be undertaken by RFT staff, as part of their regular site maintenance tasks
- To make provision for any technical problems with the hydro after the warranty period has expired RFT will keep a maintenance fund to cover unforeseen eventualities, and will also keep in contact with the hydro installer & consultant to help troubleshoot any problems
- After Feed-in Tariff finishes at the end of the 20 years it is likely the hydro screw will still be turning and generating electricity to the value of around £11,700 per year
- If and when the hydro screw needs to be replaced in Year 21 the cost would only be around £120,000 as the original civils works would not need repeating

RFT v3 June 2019