Report to the Cabinet

Report reference: Date of meeting: C-078-2013/14 3 March 2014



Portfolio:	Asset Management and Economic Development					
Subject:	Civic Offices Installation of Solar Panels - Feasibility					
Responsible Officer:		Mike Tipping	(01992 564280).			
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Recommendations/Decisions Required:

(1) That a scheme to install photovoltaic solar panels to two roof elevations of the Civic Offices complex proceeds in 2014/15 provided this can be achieved within the load factors identified in the structural survey;

(2) That the necessary remedial works/replacement works to the roofs of the main Civic and Conder buildings be carried out as part of the solar panel scheme;

(3) That the Council purchase the solar panels and associated equipment as the option that provides the best rate of financial return on the investment, together with ongoing savings on energy costs and income from the feed in tariff;

(4) That British Gas be appointed to provide a turnkey solution for the supply and installation of the solar panels under a framework agreement in accordance with contract standing orders;

(5) That Contract Standing Orders be waived in relation to seeking competitive quotations and Stace LLP be appointed as project Manager for the solar panels project, including the remedial roof works and roof covering replacement works;

(6) That approval be given to make all necessary planning and building regulations applications to enable this project to proceed; and

(7) That, if the Cabinet decides not to proceed with the Solar Panel scheme, then remedial works/replacement works to the roof of the main Civic Offices and Conder buildings be carried out in any event.

Executive Summary:

This report considers the feasibility of installing photovoltaic solar panels on the Civic Offices Buildings, including options, budget costs, payback periods and the benefits to enable Cabinet to decide whether they wish to proceed with this project.

Adequate budget provision exists for this project therefore no additional financial provision or supplementary estimates will be required.

Reasons for Proposed Decision:

To provide a further opportunity to reduce the Council's energy consumption and costs from commercial suppliers, reduce carbon emissions and to undertake a further initiative to demonstrate a community lead under the Safer Cleaner Greener agenda.

Other Options for Action:

Not to proceed with this scheme and forego the savings that could be achieved in energy consumption and costs and reduction in carbon emissions but with the resultant savings in the Capital Programme during 2014/15.

Report:

1. The Cabinet at its meeting on 21 October 2013 as part of its consideration of the Planned and Preventative Maintenance Programme for 2014/15 received an update on the current market position in relation to solar panel technology, likely installation costs, benefits and pay back periods.

2. Cabinet was reminded that this project was previously removed from the Planned and Preventative Maintenance Programme although financial provision was retained in the Capital Programme.

3. As a result Cabinet resolved "That a detailed feasibility study into the installation of Solar Panels at the Civic Offices be conducted during 2013/14, with a detailed report on the outcome submitted to a future meeting of the Cabinet to determine whether the project should be implemented during 2014/15."

4. The feasibility study is divided into a number of elements as follows.

Structural Considerations

5. The first consideration is whether or not the roof structures could withstand the weight of solar panel arrays without the need for strengthening and if strengthening was required what would be involved and how much would it cost?

6. Stace LLP were therefore instructed to carry out structural surveys of the roofs of the main civic office building, the Conder building and Homefield House. The roofs of the rear extension and 323 house have been discounted because of access difficulties and the lack of usable space to mount solar panels.

7. The diagram below shows the two main roof elevations concerned.



8. The results of the structural survey were positive in that it has confirmed that the two large roof elevations on the two main buildings are capable of accepting solar panel arrays without the need for strengthening provided that the loading does not exceed 15Kg per square metre.

9. As part of the survey the condition of the existing roof coverings has also been examined.

Main Building – Roof A

10. The roof covering of the main building is of stainless steel construction with a lead coating. The life expectancy of the stainless steel covering is estimated at 20 to 25 years. However the lead coating is showing visible signs of weathering/localised surface corrosion which shows as discolouration.

11. The Survey report recommends that the roof and valley gutters be coated to extend the life expectancy before installing the solar panels as a precaution against further corrosion and /or water ingress.

12. Clearly attempting this type of remedial work after the solar panels are installed would be complicated and more costly than undertaking the work beforehand.

13. It would only be necessary to coat the elevation that will receive the panels at this stage. The other elevation could be dealt with at a later date by including provision in a future planned and preventative maintenance programme.

14. The estimated cost of a liquid applied coating is £45,000

Conder Building – Roof B

15. The Conder building was originally constructed with a flat metal deck roof. This was later converted to a 30 degree pitched roof constructed of engineered timber roof trusses

which is supported by both a ring beam around the perimeter of the building and a central spine beam running the length of the roof. The pitched roof covering is constructed of artificial slates with half round clay tiles for ridge and hip details. The slates are underlined with bitumen felt and fixed into timber battens.

16. The survey report finds as follows:

"Roof area B is generally found to be in poor condition. The roof covering of Eternit slates has tiles lifting and/or slipped in various locations. It is evident the two large localised repairs have been completed at a more recent date. The first repair located along the hip end and the second located beneath the aerial. This could be a result of wind uplift or poor fixing details.

Within the roof area the bitumen underlay roofing felt has become brittle and torn in many locations causing the roof to suffer with water ingress which in turn presents an on-going maintenance issue as various patch repairs have made carried out. You would expect the bitumen underlay felt to have a life expectancy in line with the roof covering, however the expectancy may have been jeopardised by lack of ventilation to the roof or the felt being fixed tort across the rafters.

Within the product literature it states the artificial slates have a 40 year life expectancy. Whilst the slates have not quite reached the intended life expectancy, the amount of isolated repairs indicates the covering in place may not be most suited to the environment. This along with the number of slipped and/or damaged tiles along with the brittle bitumen underlay felt provides a susceptible inlet for water."

17. This conclusion does not come as a surprise. In previous years bids have been made in the Planned and Preventative Maintenance Programme for capital funds to replace the roof covering but financial pressures at the time prevented this. Instead an ongoing programme of repairs and patching has taken place.

18. Works to replace the roof covering with new felt and similar artificial slates or new felt and a metal panel system with tile effect is estimated to cost between £80,500 and £81,700. These budget estimates also include provisional sums for renewal of facia and guttering, access, a contingency sum and temporary removal and reinstatement of the lightning protection.

19. It would be possible to phase the work but this approach would increase the cost due to reduced scale, possible duplication on work stages and need to re-establish the site set up.

20. In summary therefore the roof covering of the Conder Building is in poor condition and will continue to deteriorate. The roof covering of the main civic building is in better condition but remedial works are required before further deterioration occurs. It is clear that these remedial and replacement works will need to be carried out irrespective of whether the installation of the solar panels proceeds or not.

Homefield House

21. The roof was found to be generally in a fair condition but appears to be close to the design limit. On inspection of the property and roof construction it was evident it was suffering with tension cracking appearing within the two internal cross walls. The survey report advises that no additional loading is applied to the roof area until remedial works have been carried out to resolve the tension cracking. These works should be carried out irrespective of whether solar panels are installed or not.

22. Further inspection would then be required to ascertain whether the roof could sustain additional loading. However in view of this uncertainty and the relatively small area of roof it is not considered worthwhile to pursue solar panels on this roof.

23 Facilities Management will be arranging for remedial works to resolve the tension cracking to be carried out from within existing maintenance budget resources.

Other Works

24. In addition to the remedial works/roof replacement referred to above, some other work will be necessary to facilitate the installation of solar panels.

25. Firstly on the Conder Building the aerial mast and Private Mobile Radio (PMR) aerials will need to be dismantled and removed.

26. It is not proposed to reinstate the mast and aerial back on the Conder roof once the roof covering replacement and solar panel installation has been completed.

27. It is proposed to re-site the PMR aerial elsewhere within the Civic Offices complex. This will improve the visual appearance of the Conder Roof.

28. The cost of these works will be funded out of existing radio maintenance and building maintenance budgets.

29. Secondly, as mentioned earlier, it be will necessary to temporarily remove lightning protection equipment from the Conder building and reinstate it after completion of the roof covering replacement and solar panel installation works.

30. Some modifications to the lightning protection equipment on the main Civic roof will also be required.

Planning Consent and Building Regulations Approval

31. Because the front (High Street) elevation of the main building is within a designated area (Conservation Area) planning permission will be required. The informal views of the Planning Officer and Conservation Officer is that they cannot see any objection to the proposal although a formal application will have to be made.

32. The south/west facing elevation of the Conder Building will not require planning permission as it outside of the Conservation Area. Planning permission would however be required if as part of any installation it was proposed to change the shape, height or the appearance of the roof.

33. There are also certain conditions that must be adhered to during the installation works, relating to clearance distances and positioning of the panels on the roof elevations.

34. A Building Regulations application will be required in respect of both installations.

Other Consents

35. An Energy Performance Certificate (EPC) is required at a rating of D or better (i.e. A, B or C) for the Civic Offices complex to ensure that the Council receives the highest possible rate of feed in tariff. The EPC is different to the Display Energy Certificate that the complex currently has and renews annually.

36 Without the EPC at the required rating the Council will receive a lower level of feed in tariff for the energy generated by the solar panels as defined in the relevant legislation.

37. An assessment of the complex has been undertaken by an assessor approved and authorised by The Chartered Institute of Building Services Engineers using the approved Government matrix. Taking into account additional lighting conversion works currently being undertaken and including the proposed solar PV installation will in his opinion ensure the Council receives a D rating or better.

38. However because of the inclusion of the solar PV installation in the calculations, the EPC cannot be issued until after the installation has been completed.

39. A Distribution Network Operative (DNO) certificate is also required which is effectively approval from the National Grid to connect onto their network.

Installation Options

40. There are essentially two options available, (A) outright purchase of the equipment and (B) renting out the roof space.

Option A – Outright Purchase

41 Under this option the Council would, through a procurement process, purchase all of the equipment and arrange and carry out the installation, including all the connections to the internal power network and if required the National Grid.

42 The main benefit of this option is that the Council receives all of the feed in tariff for the electricity generated together with any income that might be generated for surplus energy fed back into the National Grid. The Council also benefits from savings achieved through having to purchase less energy from a commercial supplier. A reduction in carbon emissions will also be achieved through the carbon reduction arrangements.

43. The main disadvantage of this option is the capital outlay for the purchase and installation of the equipment.

Option B – Rent out the Roof

44. Under this option the Council would commission a provider to supply and install all of the equipment including connections to the internal power network and if required the National Grid.

45. The main benefit with this option is that there would be no capital outlay for the solar panels and associated equipment.

46. The disadvantages are that the Council would be entering into a 20 year agreement with the supplier.

47. The supplier would charge an annual operating rental to the Council which should be offset by the income received from the feed in tariff which the supplier would receive and the savings the Council would make on its purchased energy. The only direct benefit to the Council would be in reduced carbon emissions through the carbon offset arrangements.

48. Whilst these systems require little or no maintenance there is concern that having a third party's equipment installed on the Council's buildings could lead to complications if ongoing maintenance is required to the roof, possible disputes in the event of damage to the

third party equipment and potential loss of flexibility in terms of the ongoing management of the buildings.

49. Whichever of the two options is chosen the Council will still have to carry out the remedial works to the two roof elevations.

50. Taking all these factors into account it is recommended that the Council should pursue option A – outright purchase.

Potential Suppliers

51. Several potential suppliers have been reviewed. Some will supply a turnkey solution, i.e. offer a complete supply and installation service, others supply the equipment but do not carry out installations.

52. In order to comply with contract standing orders the focus has also been on finding suppliers within a recognised framework agreement. Two major energy suppliers were identified and approached. One considered the project to small and the other British Gas showed clear interest.

53. British Gas through its subsidiary British Gas Solar are able to offer a turnkey solution within a recognised framework agreement and it is therefore recommended that this be the chosen procurement route.

	Roof A - Civic	Roof B - Conder	Totals
Total price (ex VAT) £	37,226	42,463	79,689
PV System size (kWp)	23.92	24.44	48.36
Estimated annual output (kWh)	21,600	22,314	43,914
FiT tariff per kWh	12.57	12.57	
FiT revenue – year 1 (£)	2,715	2,805	5,520
Export Revenue – Year 1 (£)	501	518	1,019
Energy cost savings – year 1	1,361	1,406	2,767
(£)			
Total revenue & Benefits year	4,577	4,729	9,306
1 (£)			
Simple payback (years)	7.4	8	8
Return (%)	13.6	12.2	12.9 average
Annual Co2 offset (kg)	11,426	11,804	23,230

British Gas Proposal Summary

54 The performance of solar PV panels is impossible to predict with certainty due to the variability in the amount of solar radiation (sunlight) from location to location and from year to year. The above estimate is based upon the standard MCS procedure and is provided by British Gas for guidance only. It should not be considered as a guarantee of performance.

55 MCS stands for Microgeneration Certification Scheme, an internationally accepted quality assurance scheme recognised by the Department of Energy and Climate Change.

Project Management

56. Whilst British Gas will provide a turnkey solution for the supply and installation of the solar panels, the Council will have to project manage the remedial works, new roof covering, lightning protection and aerial mast works, make the necessary planning and building

regulation applications as well as client supervision of the solar panel installation.

57. These aspects would normally be the responsibility of the Facilities Management (FM) Team. However, subject to final Council approval of the budget for 2014/15 the FM team will have a full programme of work with the Planned and Preventative Maintenance Programme and routine maintenance programme and will have little or no capacity to take on additional projects.

58. In order to avoid delaying the solar panel project and/or the remedial/replacement works to the roofs it is recommended that external resources be engaged to provide the required project management.

59. It is further recommended that Stace LLP be engaged as project managers in view of the work already undertaken in providing the structural survey and their familiarisation with the complex.

60. This will be a departure from the normal procurement process and therefore it will be necessary to waive contract standing orders in relation to either using a company on a recognised framework agreement, or seeking quotations either through Constructionline or by compiling an ad hoc list.

Overall Financial Summary

61. The table below shows the various cost elements that would be required should Cabinet accept the recommendation to proceed with this scheme. It should be noted that all prices for the remedial works to the Civic Roof, the replacement of the Conder roof covering, and the lightning protection works are budget estimates and would be subject to a competitive procurement exercise.

	Activity	Budget	Capital	Capital
		estimate	Provision	provision
			2013/14 (£)	2014/15 (£)
1.	Structural Survey	2,800		
2.	EPC Certificate	1,000		
3.	Applied liquid coating to Civic Roof	45,000		
4.	Recovering Conder roof	81,700		
5.	Solar Panel Installation	79,689		
6.	External Project Management	12,728		
	including CDM			
	Total estimated project cost	219,117		
	Capital Programme		3,800	196,200
	Planned & Preventative Maintenance			25,000
	Programme – Gutters/soffits and			
	facias and replacement of slipped			
	slates			
	Total Budget Provision		3,800	221,200

Overall Summary

62. If the Council agrees to proceed with the solar panels project, based on current data the Council will:

- receive an estimated average return on its capital investment of 12.1%.
- achieve a simple payback period of 8 years on a life expectancy of the panels of 20 years.
- generate an estimated 43,914 kWh of energy per annum.
- achieve estimated benefits/savings in year 1 of £9,306.
- achieve CO2 offset of 23,230kg per annum.
- visibly demonstrate its community lead on safer, greener and cleaner issues.

63. Outright purchase of the solar panels and associated equipment offers a more beneficial solution than system rental.

64. Remedial/replacement works to the roofs of the main Civic building and Conder buildings at an estimated value £139,428 including external project management fees would have to undertaken irrespective of whether the solar panel scheme proceeds or not.

Resource Implications:

Finance: Capital provision of £221,200 in 2014/15.

Legal and Governance Implications:

Procurement of the supply and installation of the solar panels through a recognised framework agreement. Proposed departure from contract standing orders relating to the proposed method for procuring external project management resources.

Safer, Cleaner and Greener Implications:

This will be a high profile scheme providing a visible demonstration that the Council is taking a community lead to promote the Safer, Cleaner and Greener agenda.

Estimated annual energy generation of 43,914kWh Estimated annual CO₂ offset of 23,230kg

Consultation Undertaken:

None

Background Papers:

Structural Survey of the Civic Offices roofs Solar PV proposal provided by British Gas

Impact Assessments:

Risk Management

The remedial works to the Civic Roof and the recovering of the Conder Building roof will prolong the life of the buildings, decrease the likelihood of water penetration and minimise ongoing maintenance works and costs.