

Report title: Solar PV Investment Programme

Wards affected: citywide

Strategic Director: Nicola Yates - City Director

Report Author: William Edrich – Commercial Director, Energy

RECOMMENDATION for the Mayor's approval:

1. To note an EU compliant procurement process for a Framework Agreement with a total investment of up to £47m over 4 years. A Prior Information Notice has been published to start the procurement process. This will allow for the programme to be delivered within the time frames of the European Local Energy Assistance (ELENA) Programme and Bristol becoming the European Green Capital in 2015.
2. To note the installation of Solar PV Panels of a total value of up to £5.96m on a range of properties for Phase 1 of the Framework Agreement – social housing, corporate buildings, public buildings and demonstration projects. This will be funded via prudential borrowing from the General Fund.
3. To delegate authority to the Commercial Director – Energy and the Service Director – Finance, in consultation with the Assistant Mayor responsible for Low Carbon and Energy and the Deputy Mayor for Finance to allow them to approve the purchase and installation of the Solar PV panels for these identified phase 1 properties, once the exact costs are provided at the end of the tender process and to assign responsibility for individual projects to associated project managers.
4. To agree to pre-notify industry that a significant investment in Solar PV is forthcoming enabling them to undertake preliminary scheduling of resources.

Key background / detail:

The report sets out the proposal for the supply, installation and ownership of a large-scale domestic and non-domestic Solar Photovoltaic (PV) programme across a wide range of council-owned and public-sector assets which will be included in the capital budget for 2014/15.

b. Key details:

1. Following detailed preparatory work to establish the financial and technical viability of a Solar PV Programme, a number of project strands have been established for the overall programme. These are social housing, corporate property, public buildings, demonstration projects and ground mounted PV.
2. It is planned that the Council invests into a £5.96m phase 1 contract to be procured through the framework and financed via prudential borrowing into the General Fund in the first instance.
3. The proposed delivery route is for the Council to prudentially borrow the funding for the overall programme and to deliver the installations via a private sector partner.

4. A procurement framework agreement of a total value of up to £47m to deliver the overall programme at speed will be established.

**BRISTOL CITY COUNCIL
CABINET
3 October 2013**

REPORT TITLE: Solar PV Investment Programme

Ward(s) affected by this report: citywide

Strategic Director: Nicola Yates - City Director

Report author: William Edrich – Commercial Director, Energy

Contact telephone no. & e-mail address: 0117 92 24991
bill.edrich@bristol.gov.uk

Purpose of the report:

The report sets out the proposal for the supply, installation and ownership of a large-scale domestic and non-domestic Solar Photovoltaic (PV) programme across a wide range of council-owned and public-sector assets which will be included in the capital budget for 2014/15.

Recommendations for the Mayor's approval:

1. To note an EU compliant procurement process for a Framework Agreement with a total investment of up to £47m over 4 years. A Prior Information Notice has been published to start the procurement process. This will allow for the programme to be delivered within the time frames of the European Local Energy Assistance (ELENA) Programme and Bristol becoming the European Green Capital in 2015.
2. To note the proposed installation of Solar PV Panels of a total value of up to £5.96m on a range of properties for Phase 1 of the Framework Agreement – social housing, corporate buildings, public buildings and demonstration projects. This will be funded via prudential borrowing from the General Fund.
3. To delegate authority to the Commercial Director – Energy and the Service Director – Finance, in consultation with the Assistant Mayor responsible for Low Carbon and Energy and the Deputy Mayor for Finance to allow them to approve the purchase and installation of the Solar PV panels for these identified phase 1 properties, once the exact costs are provided at the end of the tender process and to assign responsibility for individual projects to associated project managers.
4. To agree to pre-notify industry that a significant investment in Solar PV is forthcoming enabling them to undertake preliminary scheduling of resources.

The proposal:

Summary and overall benefits of the programme:

1. It is proposed that the Council installs Solar PV panels on a wide range of council – owned and public sector assets to produce the following benefits:
 - It will reduce the city's carbon emissions by approx. 18,100 tonnes of carbon per annum
 - It will reduce each tenants' electricity bills by £130 to £260 per year, depending on the roof size, which can be re-invested in the city's economy
 - It will reduce the Council's energy costs by generating its own electricity
 - The Council will earn a guaranteed revenue stream for 20 years for all programme strands
 - The programme will stimulate demand for installations and maintain jobs in the solar PV industry in the UK
2. The programme will be implemented in several phases with an EU procurement framework agreement being put in place to facilitate this process and to speed up delivery.

Background and progress to date:

3. In February 2010 the Cabinet agreed the Climate Change and Energy Security Framework which aims to improve Bristol's energy security and to reduce the Council's and city's carbon dioxide emissions. In that context, an application was submitted to the European Investment Bank (EIB) under the European Local Energy Assistance (ELENA) Programme to secure £2.5m of grant funding to establish a large scale investment programme of up to £140m. At the time the Council committed, in principle, to the establishment of an energy company and delivery of a large scale investment programme subject to findings of the technical study programme.
4. A detailed initial feasibility study including financial modelling, market testing, contracting structures, delivery models and a detailed risk analysis has been undertaken by consultants from Ernst & Young to determine the technical and financial viability of the solar PV Programme as well as the preferred delivery and financing routes.
5. As part of the initial feasibility work, a roof-top analysis was also carried out to identify suitable sites on the Council's social housing stock. The roof-top-analysis was based on a number of factors including orientation, the risk of 'overshadowing', security, and sufficient roof space. One of the conditions set within the procurement agreement will be a request for detailed surveys that will confirm that these sites are suitable.
6. Research has been undertaken into procurement framework agreements set up by other local authorities and registered social housing providers to establish whether it would be possible to use an existing one as this would allow the Council to speed up delivery and save significant procurement staff costs. However, as the market is developing very fast in this area of work, which results in pricing and specification

being out of date by the time the Council is implementing this programme, it was decided that the Council would procure its own framework agreement.

Completed and live projects:

7. Solar PV Programmes have been successfully implemented by a wide range of local authorities and registered social landlords over the last couple of years: 3,000 roofs by Wrexham Council in 2011/12; up to 10,000 roofs by Birmingham's Energy Savers scheme; 2500 roofs by Riverside Housing in the North of England in 2013.
8. Bristol City Council has already successfully financed and delivered a number of renewable energy schemes including: a £1.5 – 2m biomass boiler programme using income from the Renewable Heat Incentive; a £1m solar PV Programme on 36 primary schools and an additional project on 33 social housing properties using income from the Feed-In-Tariff scheme. The Council is also currently in the process of installing 2 x 2.5MW wind turbines of a total value of £9.4m on a former Shell Tank site in Avonmouth. Prudential borrowing is repaid via the ROO-FIT (Renewable Obligation Order-Feed in Tariff scheme).

Feed-In-Tariffs (FITs):

9. Feed-In-Tariffs became available in the UK on 1st April 2010 as a way of encouraging micro-generation and installation of renewable technology. Under this scheme energy suppliers have to make regular payments to householders and communities who generate their own electricity from renewable or low carbon sources such as solar PV or wind turbines.
10. The Feed-In-Tariff scheme is composed of 2 separate components and allows for an additional saving on the energy bills. (Refer to Appendix 5 for a pictorial example).
 - Generation tariff: The energy supplier will pay the Council a set rate for each unit (kWh) of electricity that the system generates. Rates depend on the technology that is used and the system sizes (a smaller system always earns a higher tariff than a larger system). This is linked to the retail price index.
 - Export tariff: The energy supplier will pay the Council an additional rate for each unit (kWh) of electricity that is exported back to the grid. This rate is the same for all technologies and size of system. This rate is paid irrespective of the amount of electricity actually used in the property, and is deemed (estimated) to be 50% of the total electricity generated. This rate is also linked to the retail price index.
 - Energy bill savings: In addition, the Council (or Council tenants) will make savings on electricity bills since the amount of electricity that needs to be bought from the grid is reduced.
11. The Government will guarantee the Feed-In-Tariffs as set out in current legislation for 20 years according to the levels set when the installation is being completed. It has also been confirmed in a Supreme Court Hearing at the High Court that government is legally obliged to pay the agreed Feed-In-Tariff levels so cannot change levels of support retrospectively once the installation has been completed.

12. As a result of falling solar PV panel costs, which resulted in very high returns for investors and householders, the Feed-in Tariff policy was reviewed at the end of 2011 by the Department for Energy and Climate Change (DECC).
13. A subsequent DECC consultation in summer 2012 now delivers a secure roadmap of incremental tariff digressions based on actual uptake rates of the previous quarter. With falling costs in equipment system owners such as Bristol City Council can again enjoy good returns on investment.
14. It is also important to note that the industry is currently attracting large volumes of inward investment from finance companies that see the long-term worth and stability of the PV market in the UK. In the first quarter of 2013, the UK was the fifth largest PV market in the world.

There are a total of 5 proposed investment strands:

15. **Social Housing:** As mentioned in points 4 and 5, an initial desk top survey has been undertaken and has identified that *up to potentially* 10,000 domestic BCC housing properties are 'solar suitable', taking into account orientation, roof area and shading. In practice, officers are in agreement that it could be less than this maybe in the 3,000 to 4,000 range at a conservative estimate depending on tenant take up and technical reasons – for example, structural integrity, electrical, asbestos and the load on the electricity distribution network. However, it is envisaged that this programme of work will possibly require investment of up to £21.5m for a total volume of installations of 7,000 properties as a more ambitious figure and will be delivered over a four year time line.
16. It is proposed that up to **300 Walk-up blocks** to be included in the solar PV programme, to be connected to the communal supply rather than individual tenant flats. A Walk-up block is generally defined as a 4-storey, or lower, block of multiple flats, usually with stairwells rather than lift access. Investment is estimated to be up to £3.5m. The final number of roofs will be determined by condition, structure and other surveying criteria.
17. It is proposed that a number of **Public Sector buildings** are suitable for solar PV including University of Bristol and University Hospital (UH) buildings. For example, University Hospital Bristol must install on-site renewable energy to satisfy planning targets for new-build projects. These are flat, un-shaded roofs which make them suitable for large-scale solar PV. Bristol City Council will earn an income from the generation tariff plus from the export tariff plus from a Power Purchase Agreement (PPA). A PPA is a long-term contract between the system owner (Bristol City Council) and the building occupier (UH Bristol) that guarantees a payment for on-site use of the solar units. Total investment estimated at between £0.5m and £3m.
18. It is proposed that a number of **Corporate Properties** are suitable for solar PV installations as a means of earning an investment return, reducing dependency on imported electricity, reducing corporate utility charges and reducing the Council's carbon emissions. The total number is 120 buildings, with an investment of up to £3m required for this. The property list will be further reviewed for long-term investment as the Bristol Workplace Programme progresses.

19. A number of **demonstration projects** are currently under consideration, as a means of showcasing new or untested applications for PV. Bristol City Council is committed to supporting local stakeholders of the Bristol Solar City group, united by the goal of seeing Bristol become the UK's solar capital. Feasibility studies are being undertaken within the ELENA team and with external consultation. This could be of a value of ca. £0.5 -1m.
20. A number of sites for **ground mounted PV** are currently being explored. At this stage the potential scale is in the range of 5 – 15MW, equating to an investment of £5m to £15m. The final scale of such schemes is currently being explored via initial feasibility and scoping studies which are incorporating land use, planning and grid issues. Other local authorities have also expressed an interest in using Bristol City Council's framework agreement for ground mounted PV which means that the volumes of the framework agreement might be increased to accommodate for this.

Delivery options:

21. Rent-a-roof model: The roofs are leased to a contractor who funds and owns the PV system for 20 years and receives all the FIT payments, and the Council would effectively lease its buildings to the contractor and only get electricity and carbon savings as a result of the installations. The Council would not have to borrow any capital; however this would mean that all of the financial benefits (income from FIT and sale of surplus energy to the grid) would be enjoyed by the rent-a-roof provider and not the Council. The Council would also only have minimal control over quality, process and tenant engagement. Additionally, the investment target for a rent-a-roof company is much higher and would effectively target a smaller number of the highest earning roofs.
22. Leasing model: For the Housing strand, the Council allows Council tenants to install the measures themselves and to receive all of the FIT incomes as well as free electricity. This approach is not recommended as many Council tenants would not be in the position to afford the costs of an installation and opportunities to achieve economies of scale in terms of the price of the installations would be lost. Tenants would also be unable to assess the quality of their contractor's work and find difficulty in transferring ownership at the end of their tenancy.
23. Public borrowing and private sector delivery (Hybrid model): The Council takes out its own loan and/or uses reserves as required to cover the costs of the scheme. With the preferential borrowing rates available to the Council, this would be cheaper than the rent-a-roof or leasing models and the Council would receive all of the FIT payments. For the Housing strand the tenants will still receive the electricity savings. For the Corporate strand, Bristol City Council will still benefit from the utility savings. The combined savings should pay for the cost of the PV systems over the lifetime of the installation, depending on revenue and borrowing costs.
24. Public sector delivery and public borrowing. The Council exercises greater control over the installation process, reduces reputational risk and ensures an income stream into the general funds. However, planned and response maintenance teams would need to up-skill and recruit and be awarded the relevant accreditations which would postpone the start of the project delivery.

Preferred Delivery Model:

25. The Hybrid model (public borrowing/ private sector delivery) option provides the most efficient use of investment and provides the greatest savings and income generation to the Council as a whole subject to successfully tendering the solar PV Programme via an EU compliant process. On-going Operation & Maintenance will be provided by the contractor for a specified period following installation and by BCC (with recruitment and training) in the longer term.

Financial modelling:

26. The financial modelling has been developed internally by our Finance team and is based on good practice from both the Ernst & Young financial model and the Centre for Sustainable Energy (CSE). This has been extensively worked on by the Finance team, and has allowed for a range of sensitivities to be tested. Within the model, prudent assumptions were used and tested to see how much they would have to change before the projects would no longer pay back by year 20. See Appendix 1.

27. Overall the financial modelling of the initially proposed projects based on the assumptions explained in the report shows that they all produce a positive revenue to the Council due to both the receipt of feed-in tariffs and savings in electricity costs. These positive revenue receipts would then be available for use within the council over the years to come. Within the domestic solar project strand there are considerable savings to tenants in properties where solar panels are fitted of potentially £4.7m over 20 years, assuming electricity prices continue to rise as the predicted retail price index plus 3% per annum.

28. Key financial risks before the implementation of the programme are:

- The cost of borrowing could rise during the duration of the procurement process of the programme
- The supply and installation costs rise beyond what we have assumed
- The Feed-In-Tariff falls significantly before we install the equipment

All of these financial risks can be assessed again once the procurement process has been completed which will ensure that the schemes are still financially viable.

29. Key financial risks once the solar PV panels are installed are:

- The anticipated electricity outputs are not generated as predicted as a result of low irradiation level. An industry standard prudent assumption was used in the modelling which is based on historic trends in the Bristol area and have been tested.
- The technical performance of the Solar PV panels is not according to the specifications in the procurement documentation. It is intended to use monitoring equipment which will be able to track the performance of Solar PV panels. Manufacturers will also have to comply with specific warranties to ensure the correct standard. Staff costs for an officer have been built into the model to perform this monitoring role and maximise use of the warranty. There will also be a maintenance contract in place that will carry the risk of call outs and repairs.

30. Installing a smaller number of Solar PV systems in phase 1 of the programme as proposed in this report will allow us to test these assumptions and build up knowledge of issues around installing on our Council houses and reduce project costs for the future. This understanding can then be fed into future financial modelling to increase confidence on the costs and benefits.

Source of Finance:

31. As each subsequent contract under the framework agreement is let, a decision will have to be taken by the Service Director, Finance to ascertain which of the finance options at that moment of time are most beneficial to the Council. These options range from using reserves to taking prudential borrowing into the General Fund or the HRA. It is recognized that we may defer borrowing as long as possible if reserves and views of interest rates allow this.

32. Having conducted comprehensive financial modelling for the phase 1 contract for all sources of finance, the financial returns of these projects differ depending on whether it is decided to use prudential borrowing or reserves. Whilst the returns are better if reserves are used (the loss of investment income that could be earned by holding this cash has been modelled), it would mean that this money would be tied up and not available for the Council or the HRA for other purposes. Prudential borrowing is available if our prudential indicators are met. These are that the investment is affordable and sustainable. Given the positive income stream and payback before the end of the 20 years this project is estimated to meet this. The HRA are close to their borrowing ceiling and using prudential borrowing for this would mean that they might have to forgo other activities (such as new build or investment in their current stock). However, given that prudential borrowing is available to the General Fund, this could be used. This would mean that future income streams can be used to support other General Fund activities.

33. Borrowing for the phase 1 project will therefore be via the Public Works Loan Board (PWLB) into the General Fund at preferential rates.

Procurement Strategy:

34. A 4 year EU compliant Framework Agreement will be established for the full solar programme. Neighbouring Local Authorities (West of England) will be invited to be named in the procurement documents so that they may engage with the same appointed contractor(s). A Bristol City Council Solar PV Framework will cement the reputation of Bristol as European Green Capital and reflect the vision of the Mayor during the launch of Bristol Solar City in 2013.

35. A number of lots will be specified and contractor(s) appointed to meet the demands and volumes of each work strand: Social Housing, Walk-up blocks, Public sector, Corporate properties, Demonstration projects and ground mounted PV.

36. The form of contract and preferred programme phasing is to be established following further procurement workshops with officers in Landlord and Corporate Services.

37. It is planned that the delivery programme will commence from the second quarter 2014.

Consultation and scrutiny input:

a. Internal consultation:

- Energy Management Unit
- Landlord Services
 - Planned maintenance
 - Response maintenance
 - Asset Management and Review Team
- Legal
- Finance
- Procurement
- Economy, Enterprise and Inclusion
- Planning
- Building Control

b. External consultation:

- Tenant consultation has started, with presentation to Service User Groups. A communication strategy will be drafted shortly, following feedback from these groups.
- Ernst and Young
 - Market testing, contracting structures, delivery models, risk analysis.

Risk Assessment

1. A risk assessment has been completed for the Solar PV programme and mitigation measures put in place. Details are included at Appendix 2.
Significant remaining risks are:
 - The Solar PV Programme is dependent on the Solar PV Tariffs providing the income to pay back the prudential borrowing. Whilst tariff levels are guaranteed for 20 years once the installation has been completed, there is a risk that the Council's solar PV programme could become unviable at some point if the feed-in-tariff digressions are not in line with price developments. It is therefore recommended to start the procurement process as soon as possible and to review the financial model before further contracts are let.
 - The solar PV programme is dependent on wider buy-in from Council tenants. It has therefore been decided to adopt an "Opt Out" strategy whereby it is assumed that Council tenants will receive the installations unless they decide not to. However, there remains a significant risk that Council tenants might not agree to this in some cases.
2. The main risks of not agreeing to this course of action are:
 - Higher energy costs for Council tenants, the Council itself, exacerbated with the anticipated trend of rising energy prices over the coming decade.

- Damage to the City Council's leadership role in helping to create a low carbon future for the city and its status as European Green Capital if it fails to achieve its stated ambitions.
- Failure to develop the local supply chain for renewable energy that would otherwise help to stimulate the local economy.

Risk management / assessment:

FIGURE 1

The risks associated with the implementation of the (subject) decision :

No.	RISK Threat to achievement of the key objectives of the report	INHERENT RISK (Before controls)		RISK CONTROL MEASURES Mitigation (ie controls) and Evaluation (ie effectiveness of mitigation).	CURRENT RISK (After controls)		RISK OWNER
		Impact	Probability		Impact	Probability	
		1	Financial Risks Sudden changes to material pricing (e.g. Solar PV panel import duties imposed by EU), underestimating operational costs or Feed-in-Tariff digression		High	Medium	
2	Operation/ Maintenance costs	Medium	Medium	Canvassing of experience from other Authorities and social landlords provides accurate costings for BCC operations. The procurement documentations will specify performance thresholds and quality specifications.	Low	Low	Richard Lowe
3	Access to properties	Medium	Medium	A well-resourced tenant engagement team will update contact details and liaise with all tenants in advance of the installation with written/ electronic/ verbal confirmations being in place before installations are going ahead	Low	Low	LLS
4	Grid connection permission. The network may not be able to absorb a high volume of solar installations	High	Medium	Pre-installation applications (known as G83/2) to Western Power Distribution. In some cases a solution might not be possible in which case specific properties might have to be removed from the programme	Medium	Low	Richard Lowe
5	Issues with building stock/roofs. Not all properties may be suitable due to poor roof/ wiring conditions/ or Energy Performance levels that are too low	High	Medium	The surveys will identify issues with specific construction types, some of which may then need to be removed from the final programme. A structural and roof condition report for each installation to update the Keystone stock database.	Medium	Medium	Richard Lowe Major Projects, LLS
6	Low numbers of tenants sign-up to the scheme which could affect the installation schedule	High	Low	An opt-out strategy will maximise uptake by social housing tenants. Any opt-outs are likely to respond favourably to a second installation phase once systems go up on neighbour's house. Undergoing consultation with tenant service user groups	Low	Low	Richard Lowe LLS tenant liaison officer
7	Inaccurate data monitoring	High	Medium	Remote metering that offers reliable data transfer and low failure rates (eg SIM cards dropping out). Monthly reporting and exemption reports after commissioning. Monitor and respond quickly to	Medium	Medium	Richard Lowe Energy Management Unit

				avoid unreliable Tariff payments			
8	Asbestos containing materials. Disturbing such materials requires specialist equipment and additional time	High	High	Some ACM surveys exist (eg recent re-roofs). Pilot surveys to identify any trends with construction types. Contractors method statement to state that any ACMs to be surveyed and dealt with appropriately (Licenced contractors)	High	Medium	Richard Lowe Major Project, LLS
9	Right To Buy. An increased uptake in 2013, with houses being more attractive than flats, following increases to the tenant discount.	High	Medium	PV systems will be added to the purchase price of the property and tenants then receive the Feed-In-Tariff or the Council leases the system from the new owner whilst receiving the Feed-In-Tariff.	Low	Medium	Richard Lowe
10	Implementation delays. Installation rate cannot be met due to resource restrictions from contractor or Council's Project Management team	High	Medium	An accurate project plan: service and material resource, contract administration, cost control, quality checks. Performance analysis following mini-tenders of each work package	High	Low	Richard Lowe Major Projects, LLS

A full Risk Analysis to be found in ANNEX 1

FIGURE 2							
The risks associated with <u>not</u> implementing the (<i>subject</i>) decision:							
No.	RISK Threat to achievement of the key objectives of the report	INHERENT RISK (Before controls)		RISK CONTROL MEASURES Mitigation (ie controls) and Evaluation (ie effectiveness of mitigation).	CURRENT RISK (After controls)		RISK OWNER
		Impact	Probability		Impact	Probability	
1	City does not meet its domestic CO2 savings target	Low	High	Focus on other energy saving strategies, for example solid wall insulation	Low	Medium	Alex Minshull, Gillian Durden
2	The Council misses out on a significant on-going revenue stream	High	High	There is no mitigation	High	High	Peter Robinson
3	More families remain in or enter the 'fuel poor' category	Medium	Medium	Potentially develop an energy awareness campaign, for example social tenants as energy champions. Potentially install smart metering with home displays	Medium	Medium	Gillian Durden
4	ELENA team does not meet the leverage factor set by the European Investment Bank	High	Medium	Target PV investments that will offer a lower risk so as better meet with service team engagement and Cabinet approval	Medium	Low	Mareike Schmidt

Public sector equality duties:

See Appendix 3 for the Equalities Impact Assessment. This has been circulated for comment to the Voice and Influence Groups, including an invitation to present the programme aims. Up to now, no responses have been received.

Eco impact assessment

The significant impacts of this proposal are....

- Anticipated generation of 37.6 GWh of electricity per year which equates to a saving of some 18,100 tonnes of carbon.
- Emissions and consumption of raw materials from production and transport of the

- solar panels.
- Waste from packaging and installation

The proposals include the following measures to mitigate the impacts ...

- The tendering process will assess the environmental impacts of manufacturing, transport and waste management arrangements. Scoring from the assessment will form part of the overall evaluation.
- Scheme will be project-managed to schedule installations in clusters so as to reduce the period in which a single street or neighbourhood is affected.
- Submit planning applications for listed properties.

The net effects of the proposals are....

A positive net effect: a short period of construction (normally less than 48 hours per property) leads to long-term reductions in electricity consumption for tenants and CO₂ savings for the city.

Resource and legal implications:

Finance

Summary

Financial modelling of the initially proposed projects of a total of £5.3m has been undertaken (plus £0.2m required for demonstration projects). Based on the assumptions explained in the report, this shows that the costs for the installations can all be paid back within a certain amount of time and generate an income in addition to this due to the receipt of generation tariffs, export tariffs and savings in electricity costs. These positive revenue receipts would then be available for use within the Council over the years to come.

There is a range of payback periods: the quickest at 9 years is for Solar on Corporate buildings from an initial investment of £0.4m. Walk up flats have a pay back of 14 years with an initial investment of £0.6m, and social housing of 17 on an investment of £4.2m.

These figures are based on prudentially borrowing the money which could be borrowed by either the General Fund or the HRA. The General Fund is able to borrow money as long as it meets its own prudential indicators. However, within the HRA there is a limit to how much can be borrowed. The HRA is close to its ceiling for borrowing and if their 'spare' borrowing capacity is used for this it can't be used for other purposes such as new built, to which the HRA is already committed.

If the Council used its own reserves the paybacks would be shorter (8,12 and 14 respectively.) However, there are opportunity costs of this form of financing. Whilst both the General Fund and HRA have reserves these are planned to be drawn down before this investment would pay the money back. The HRA has a commitment to build more houses with available reserves. Potentially the cost of investment into Solar PV could have been used to build around 35 houses within the HRA.

Within the Solar PV housing domestic solar strand there are considerable savings to tenants in properties where solar panels are fitted of potentially £4.7m over 20 years,

assuming electricity prices continue to rise 3% above inflation. Whilst these are not savings that are available to the Council it does increase the overall worth of the investment to the city as a whole and if this could be included within the calculation would bring the payback period down to 11 years.

Given the current financial assumptions and using prudential borrowing within the General Fund, the scheme pays for itself and generates positive income streams as well as strongly contributing to our environmental obligations.

This is therefore the recommended proposal for the projects in phase 1.

The overall success of the schemes is very dependent on the initial cost of the supply and installation of the equipment, the level of tariffs, and the energy produced by the panels. Sensitivity modelling has been carried out on these to see the implication of changes on our base assumptions. These financial models will be re-run at the end of the procurement process to ensure that the projects are still financially viable. By initially starting out with a smaller number of installations as proposed in this report it will allow us to test these assumptions and build up expertise and skills around installing Solar PV on our Council houses and public sector buildings. This understanding can then be fed into future financial modelling to increase our confidence on the costs and benefits, which would then have to come back to Cabinet.

Revenue Implications:

If either prudential borrowing or using our reserves is used, the phase 1 project will generate enough income to cover its operational costs, loan and interest repayments. There will also be surpluses which can contribute to the General Fund.

The officer costs of working up the feasibility of these projects are already included within our establishment with the exception of procurement and legal costs. The costs related to the phase 1 project have been included within the project costings. This means that if the project does not go ahead, these would have to be found from within the Corporate budget. These come to approximately £47k.

Capital Implications:

The capital costs are dependent on the final costs of the supply and fit of the panels and the overall project costs. These have been included in the financial modelling and have been explained above.

Advice given by Claire Burston – Finance Business Partner
Date 08th August 2013

c. Legal implications:

The Council must ensure that contracts under this programme are let in accordance with the Public Contracts Regulations 2006 and its own procurement rules. It should be noted that the Council's public sector equality duties under section 149 of the Equality Act 2010 are continuing duties and must be considered throughout the procurement process.

From a Right to Buy perspective, there are three areas which will be affected by this decision. These are: (i) the rights of owners who have exercised Right to Buy in blocks of flats; (ii) , tenants who wish to exercise their Right to Buy; and (iii) the terms of the tenancy agreement. These will need to be considered in detail as there will be far reaching implications for Council tenants, especially those who have exercised or are considering exercising the Right to buy.

Property law issues will need to be considered on a case-by-case basis.

Advice given by Phil Roberts – Contracts Solicitor
Date 31st May 2013 and 08th August 2013

d. Land / property implications:

The City Council is proposing to invest in existing buildings and infrastructure. Operating costs of these facilities will be reduced following the installation of a solar PV system. All related building control, structural and electrical issues will be accounted for as appropriate.

Due consideration will be given to the implications of energy bill savings to the revenue of the Energy Management Unit. The detailed cost savings to the property operators will depend on the standard utilities billing protocol and related charges by the Energy Management Unit.

Advice given by Jeremy Screen – Corporate Property Manager
Date 08th August 2013

e. Human resources implications:

- During the programme delivery there will be a requirement to recruit a number of new officers to support Landlord Services: Project manager(s), Project surveyors, Tenant liaison officers, Quantity Surveyor, Health and Safety officer (CDM Co-ordinator). Duration – 48 months for the total duration of the framework agreement
- During the operational phase, post-construction, there will be a requirement to recruit a number of new officers to support Landlord Services beyond the contractor's warranty period. These posts will include a Solar Response team supervisor, response engineers for electrical and roof maintenance (supported by apprentices where possible). Duration – up to year 20.
- During the operational phase there will be a requirement to recruit 1 energy administrator in the Energy Management Unit for monitoring services.
- During the programme delivery there will be a requirement to recruit a number of new officers within the Energy Management Unit: Project manager, surveyors, health and safety officer(s).
- The costs of these new roles are being considered, worked into the overall costs and verified by the relevant Service Teams.
- 1 Direct job leads to approximately 1.5 indirect jobs
- Economic multiplier effect is estimated at a spending of £1.50 in the local economy for every £1 of new salary.

Advice given by Jill Mikkelson–Human Resources Manager
Date 29th May 2013

APPENDICES

APPENDIX 1 (exempt) – Input assumptions and base case results financial modelling – contains commercially sensitive information

APPENDIX 2 (exempt) – contains commercially sensitive information

APPENDIX 3 – Equalities Impact Assessment

Name of policy, project, service, contract, review or strategy being assessed (from now on called ‘the proposal’)

Solar PV Investment Programme

Directorate and Service:

Lead officer (author of the proposal): EIA author Sarah Spicer, cabinet report author Richard Lowe.

Additional people completing the form (including job title):

Start date for EqIA: 22nd May 2013

Estimated completion date:

Step 1 – Use the following checklist to consider whether the proposal requires an EqIA			
<p>1. What is the purpose of the proposal? Please summarise what is planned.</p> <p>Large scale domestic and non-domestic citywide solar PV programme. This Equalities Impact Assessment concentrates on the impact of the provision for domestic properties only as follows.</p> <p>To install solar PV panels on up to 7000 ‘council houses’ (social housing properties owned and managed by BCCs Landlord Services). Tenants to benefit from some free units of solar electricity during the day and the income received from the feed in tariff (a % of the electricity generated is feed back into the grid) to cover the loan and generate a small income.</p>			
	High	Medium	Low
<p>2. Could this be relevant to our public sector equality duty to:</p> <p>a) Promote equality of opportunity</p> <p>b) Eliminate discrimination</p> <p>c) Promote good relations between different equalities communities?</p>		X X	X
If you have answered ‘low relevance’ to question 2, please describe your reasons			
3. Could the proposal have a positive effect on equalities communities?			

Please describe your initial thoughts as to the proposal's positive impact

Solar PV panels will generate some free units of solar electricity during the day that is expected to reduce tenants' electricity bills by approximately £120 per annum thus reducing the impact of fuel poverty.

A significant percentage of council tenants will be affected by fuel poverty as:

- Most are on low incomes, approximately two-thirds are in receipt of housing benefit; and/or
- Significant percentages belong to vulnerable groups (see Appendix A Tenant Profiles which compare the profile of BCC tenants with the profile of Bristol residents).
- Vulnerable groups: 24% of BCC tenants are aged 65+, 19% are disabled.
- Most equalities groups are over-represented as % of council tenants.

The attached map of Bristol (Appendix B) shows the lower super output areas (LSOA) in the lowest percentage as measured by the Index of Multiple Deprivation. The majority of council homes identified as suitable for PV fall within the most deprived LSOAs in Bristol.

4. Could the proposal have a negative effect on equalities communities?

Less than 25% of council homes are being considered for PV. Panels will be installed on those council homes most suitable for PV (factors that dictate suitability include the size, incline and orientation of the roof) rather than provided for those households most in need. Additionally tenants in houses will benefit more than those living in flats (PV panels are being considered for some blocks of flats but the solar electricity will be fed into the communal supply rather than individual homes).

At this time it is not known exactly which homes will, and will not, be fitted with solar PV panels. This makes identifying negative impacts on specific groups problematic.

Selection process:

- Solar suitability: Remote survey for roof area, pitch, orientation, shading
- Technical suitability: Construction type (structural/ electrical issues), asbestos, roof access issues.
- Grid connection: permission to connect to the grid network
- Tenants: an engagement strategy that encourages sign-up and promotes the long-term benefits of reduced bills.

Please describe your initial thoughts as to the proposal's negative impact

To identify potential impacts comparisons have been made between the profiles of BCC tenants living in houses, bungalows, flats and maisonettes. As PV is more likely to be fitted onto houses this will identify groups who are more and less likely to benefit from PV.

See Appendix C for full details. (NB - there are some discrepancies between the profiles of BCC tenants in Appendix A and C - this is because they are generated by 2 different reports. The overall trends remain the same).

Difference in profile of BCC tenants living on houses compared with overall profile of BCC tenants:

Gender: Female 69.25% (+7.97%)	Disabled: 12.86% (-6.12%)
Age: 16-24 1.52% (-2.88%)	Ethnicity: BME 10.8% (-4.97%)
65-74 (-1.66%)	Wh Other: 2.55% (-0.97%)
75+ (-2.13%)	

A number of equalities groups are less likely to benefit from the investment in solar PV onto BCC social housing.

If the proposal has low relevance and you do not anticipate it will have a negative impact, please sign off now. Otherwise proceed to complete the full equalities impact assessment

Service director.....Equalities officer



Date 25th July 2013

Step 2	Describe the Proposal
2.1	<p>Briefly describe the proposal and its aims? What are the main activities, whose needs is it designed to meet, etc.</p> <p>To install solar PV panel on up to 7,000 domestic properties (council homes) which will:</p> <ul style="list-style-type: none"> • Reduced fuel poverty amongst our tenants. • Reduced energy bills may help to mitigate the predicted increase in hardship and arrears amongst tenants as a result of Welfare Reform. • Help meet ambitious National and Citywide carbon reduction targets.
2.2	<p>If there is more than one service* affected, please list these:</p> <p>The primary impact would be on Landlord Services who would be responsible for managing and maintaining the PV.</p> <p>The ELENA team are currently leading the project planning work.</p>
2.3	<p>Which staff or teams will carry out this proposal?</p>

	<p>Some details are still under investigation but it is assumed that the following responsibilities lie with:</p> <p>ELENA team: project planning, business case/governance, securing prudential borrowing, planning implementation.</p> <p>Planned Programmes: project managing the installation of the PV panels including tenant liaison, arranging removal/refitting during roof replacements etc</p> <p>Response Repairs: maintenance and arranging removal/refitting during roof repairs etc</p> <p>Right to buy: considering and implementing arrangements for when tenants with PV panels submits a right to buy application.</p>
--	---

Step 3	Current position: What information and data by equalities community do you have on service uptake, service satisfaction, service outcomes, or your workforce (if relevant)?
3.1	<p>Summarise how equalities communities are currently benefiting from your service* here (& add an electronic link to the information if possible).</p> <p>See Appendix A for full details and comparison with Bristol residents. Data shown is for all tenants. Note there are approx 28,200 homes but 32849 tenants as some tenancies are joint tenancies between 2 or more people.</p> <p>Gender: Male 12811 (39%), female 20,038 (61%)</p> <p>Age: 16-24 1554 (4%), 24-44 10853 (33%) 45-64 11816 (36%) 65-74 3863 (12%) 75+ 3994 (12%) Not known 765 (2%)</p> <p>Disability: Disabled 5965 (19%), Long term illness 13%.</p> <p>Ethnicity: White British 74%, BME 16%, White other 4%, not known 6%</p> <p>Religion: Christian 40%, none 28%, not recorded 22%, Muslim 6%, Other 4%</p> <p>Sexual orientation: Heterosexual 70%, not recorded 29%, LGB 1% Other</p>
3.2	<p>Then compare to the relevant benchmark (eg. the % of people from each community who use your services* with the % of people within the relevant equalities community who live in your local area or in the city of Bristol).</p> <p>2011 Census shows:</p> <p>Gender: Male (49.75%), female (50.25%)</p>

	<p>Age: 16-24 20%, 25-44 38%, 45-64 26%, 65-74 8%, 75+ 8%</p> <p>Disability: DisabledN/K, Long term illness 17.8%</p> <p>Ethnicity: White British 83%, BME 13%, White other 4%, not known 0%</p> <p>Religion: Christian 62%, none 25%, not recorded 9%, Muslim 2%, Other 2%</p>
3.3	<p>Evaluate what the data in 3.1 & 3.2 tells you about how the current position affects people from equalities communities (see Guidance for further information and examples).</p> <p>When compared to the profile of Bristol the profile of BCC tenants show that certain groups are over-represented (women, older people, BME groups, disabled).</p> <p>However comparison between the profile of all BCC tenants and the profile of those tenants living in houses (where tenants will most benefit from the instalment of solar PV panels) show that a number of groups are under-represented (age groups 16-24 and 65+, BME groups and disabled tenants).</p> <p>These groups are less likely to receive the benefits of solar PV panels.</p>
<p>Please note, your evaluation in 3.3 will be built upon in Step 5 where you will set out what you plan to do to address any issues for equalities communities</p>	

Step 4	Ensure adequate consultation is carried out on the proposal and that all relevant information is considered and included in the EqIA
<p>This section refers to the proposal as described in step 2. When we propose changes to services*, it is important that we consult with service users, and staff or equalities community groups where relevant. Your proposal may be based on service users suggestions that have been made in the past.</p>	
4.1	<p>Describe any consultations that have taken place on the proposal. Please include information on when you consulted, how many people attended, and what each equalities community had to say (& provide a web link to the detailed consultation if possible).</p> <p>As identified in the cabinet report consultation with service users to be carried out after the Cabinet report is considered.</p>
4.2	<p>Please include when and how the outcome of the consultation was fed back to the people whom you consulted.</p> <p>As identified in the cabinet report consultation with service users to be carried out after the Cabinet report is considered.</p>
<p>Please note details of the consultation findings in 4.1 will be built upon in Step 5 where you will set out what you plan to do to address any issues for equalities communities.</p>	

Step 5	Giving due regard to the impact of your proposal on equalities communities
<p>In step 4 we identified a number of equalities groups who are less likely to benefit from the installation of PV. Further regard has to be given to this issue, namely:</p> <ol style="list-style-type: none"> 1) One assumed mitigation is that tenants living in flats already benefit from homes that are better insulated and cheaper to heat. It is believed that the average SAP (a simple means of reliably estimating the energy efficiency performance of dwellings) rating for houses is lower than for flats. However the system that records this information is due to be upgraded and this information is not currently available. It will be explored further as part of the ongoing research and consultation. 2) Further mitigation: if solar panels are fitted to up to 7000 council homes this will be a significant investment (up to £23million). However, there are other energy efficiency measures being undertaken (external cladding for blocks and individual properties, loft and cavity wall insulation, double glazing, pilots to trial new technologies such as bio-mass, district heating, new NSH, boiler replacements). It is recommended that these actions are first targeted at homes that will not benefit from solar PV. 3) Lessen the impact of stress/inconvenience caused to tenants while works are carried out: EIAs have previously been carried out to identify how Planned Programmes teams can lessen the impact of major works on vulnerable tenants. These issues need to be considered when more is known about who will carry out the works to install the solar PV panels. 	

Possible Impact on Equalities Communities, whether or not you will address the impact	Actions to be included in the proposal
Age	Younger and older tenants are under-represented as a % of tenants occupying homes likely to benefit from PV. Further measure of actual impact still to be explored (step 5, point 2 re SAP ratings). Potential mitigation by targeting other energy efficiency measures at homes that won't benefit from solar panels.
Disability	Disabled tenants are under-represented as a % of tenants occupying homes likely to benefit from PV. See mitigations identified above.
Ethnicity	BME groups are under-represented as a % of tenants occupying homes likely to benefit from PV. See mitigations identified above.

Possible Impact on Equalities Communities, whether or not you will address the impact	Actions to be included in the proposal
Gender	Men are under-represented as a % of tenants occupying homes likely to benefit from PV. See mitigations identified above.
Pregnancy & maternity	Women are over-represented as a % of tenants who may benefit. Reducing energy bills for women with/expecting a child is a positive impact.
Religion and belief	No impact anticipated.
Sexual orientation	No impact anticipated.
Transgender	Information only recently started to be collected information not statistically reliable at this stage.
Any other relevant specific groups	

5.2	Next Steps
	<ol style="list-style-type: none"> 1) Further work to consult with service users to ensure all negative/positive impacts considered and mitigated. 2) Further exploration of the assumption that tenants in flats already benefit from higher SAP ratings than tenants in houses. 3) Consider future energy efficiency investment and explore opportunities to target these at properties that will not benefit from the installation of solar PV. 4) When planning the installation of solar PV panels consider the issues this may cause for existing tenants (disruption, stress/anxiety etc) and plan customer liaison/communication etc to lessen the impact.

Step 6	Meeting the aims of the public sector equality duty
	<p>In this section you should summarise the relevant equality issues (including significant adverse impacts that you are unable to mitigate) and set out how consideration of the public sector equality duty aims has been taken into account in developing the proposal.</p>

Step 6	Meeting the aims of the public sector equality duty
6.1	<p>Describe how, in completing steps 1-5, you have given due regard to the three aims of the public sector equality duty (a-c above).</p> <p>Solar PV will provide some free units of electricity during the day for social housing tenants helping to alleviate fuel poverty. Social housing tenants will predominantly be households on low/very low incomes with many equalities groups over-represented as % of tenants.</p> <p>We will seek to lessen the impact of any disruption installation works cause to tenants by the use of targeted communication and by considering the needs of vulnerable tenants and targeting them for support/advice.</p> <p>As solar PV can only be installed based on the properties suitability, not targeted at those households most in need, other energy efficiency measures will first be targeted at properties not benefiting from solar PV to address any imbalance.</p>
<p>This section serves as an executive summary of the proposal and can be duplicated into any reports for decision-makers with an electronic link to the full equalities impact assessment (or include full EqIA as an appendix if needed).</p>	

Step 7	Monitoring arrangements
7.1	<p>If your proposal is agreed, how do you plan to measure whether it has achieved its aims as described in 2.1. Please include how you will ensure you measure its actual impact on equalities communities?</p> <p>Annual equalities digest of all Landlord Services customer/activity satisfaction.</p> <p>Regular monitoring of tenants in arrears, served notice, referred for specialist debt advice (as assisting tenants out of fuel poverty should positively impact on their financial capabilities).</p> <p>The PV system of each property will be monitored remotely to assess its performance. This allows Landlord Services to respond to faulty or low performing systems and deliver the forecast energy savings.</p> <p>A follow-up visit 1 to 3 months post installation by a Tenant Liaison Officer with a hand-over pack, reinforce training in using the energy display and general energy awareness issues.</p>

Step 8	Publish your EqIA
8.1	<p>Ensure the EqIA is signed off by a Service Director and the directorate equalities officer.</p> <p>Signed Signed</p> <p>Service Director Equalities officer Andrew McLean</p> <p style="text-align: center;"></p> <p>Date 25th July 2013 Date 22nd May 2013</p>
8.2	<p>Can this EqIA can be published on the web. <input type="checkbox"/> Yes/<input checked="" type="checkbox"/> No</p> <p>If no, please explain why the proposal is confidential and cannot be published</p>
<p>Contact Communications and Marketing Team or your directorate equalities officer to arrange to publish the equalities impact assessment on the Equality and Diversity web pages.</p>	

Thank you for completing this document. We hope you found it useful to improve the overall quality of your proposal.

If you have any feedback on this process please contact the corporate equalities team at equalities.team@bristol.gov.uk

Directorate Equalities Contacts

Children and Young People Services – Su Coombes

City Development – Jane Hamill

Health and Social care – Jan Youngs

Human Resources – Jo McDonald

Neighbourhoods – Simon Nelson & Anneke van Eijkern

Corporate Resources – Anne James & Joanna Roberts

APPENDIX 4 – Eco Impact Assessment

Eco Impact Checklist

Title of report: Solar PV Investment Programme

Report author: William Edrich

Anticipated date of key decision: 5th September 2013

Summary of proposals:

Investment in up to 7000 domestic properties, up to 300 Walk-up blocks and other Corporate, Community and non-domestic properties as appropriate

Will the proposal impact on...	Yes/ No	+ive or -ive	If yes... Briefly describe impact	Briefly describe Mitigation measures
Emission of Climate Changing Gases?	Yes	+ve	CO ₂ savings of approx.18,100 tonnes/ year. For context, this is equivalent to 50% of BCC's annual carbon emissions from its buildings.	
		-ve	Climate changing gases will be produced during the manufacture, transport and installation of the panels.	See summary
Bristol's vulnerability to the effects of climate change?	Yes	+ve	Reduced dependency on fossil fuel generation	N/a
Consumption of non-renewable resources?	Yes	+ve	Reduced consumption of fossil fuel generation power, by generating an estimated 37.6 GWh/ year of electricity	N/a
		-ve	Transport activities during construction;	Tender specification to score for reduced carbon/

			manufacturer of components	energy footprint and life-cycle impact assessment of the supply chain.
Production, recycling or disposal of waste	Yes	-ve	Packaging (cardboard) and aluminium rail off-cuts	Packaging and waste materials from installation will be recycled where possible.
The appearance of the city?	Yes	-ve	Change in colour of roofs and potentially high numbers in a single street. A few properties are Listed.	Where possible, same contractor and same product in one neighbourhood. Panels to be of uniform arrangement eg portrait, block arrays. Installation on Listed properties is subject to Planning approval.
Pollution to land, water, or air?	Yes	-ve	Some local air pollutants will be produced from transport.	Transport arrangements will be considered within the tender process.
Wildlife and habitats?	No			

Consulted with: Steve Ransom

Summary of impacts and Mitigation - to go into the main Cabinet/ Council Report

The significant impacts of this proposal are....

- Anticipated generation of 37.6 GWh of electricity per year and related CO₂ offset savings of some 18,100 tonnes.
- Emissions and consumption of raw materials from production and transport of the solar panels.
- Waste from packaging and installation

The proposals include the following measures to mitigate the impacts ...

- The tendering process will assess the environmental impacts of manufacturing, transport and waste management arrangements. Scoring from the assessment will form part of the overall evaluation.
- Scheme will be project-managed to schedule installations in clusters so as to reduce the period in which a single street or neighbourhood is affected.
- Submit planning applications for listed properties.

The net effects of the proposals are....

A positive net effect: a short period of construction (normally less than 48 hours per property) leads to long-term reductions in electricity consumption for tenants and CO₂savings for the City.

Checklist completed by:

Name: Richard Lowe
Dept.: Bristol Futures
Extension: 24576
Date: 13th May 2013
Verified by Steve Ransom
Sustainable City Group

Durability of Solar PV Panels:

Each solar PV system will earn a guaranteed income for 20 years from its date of commissioning, under the government's Feed-in Tariff scheme. At the end of this period, payments to Bristol City Council will be stopped. However, it is high likely that the solar panels will be still be operating beyond 20 years. There are many systems still in operation which are over 20 years old. However, it is anticipated that panels will eventually fail due to environmental degradation or the system will be 're-powered' with new generation technology. Currently, many panel producers (manufacturers and/ or distributors) are signed up to a voluntary scheme called PVcycle which requires that its members collect end of life product from its collection points to be safely disposed of or recycled. From the 1st January 2014, the Waste Electrical and Electronic (WEEE) regulations will have a new category dealing with PV panels. A Producer Compliance Code is shortly to be issued which will describe how a producer should meet its legal requirements under the new regulations.

The procurement specification will require that any contractor expressing an interest in the contract will install panels from a producer that is both signed up with PVcycle and can comply with the WEEE regulations 2014. There will be an additional requirement in the specification that panels do not contain cadmium. The most common panel type is crystalline silicon which contains no heavy metal components.

Any systems, before or beyond 20 years, that fail to meet the manufacturer's minimum performance warranty will be removed and replaced at no cost to the system owner/Bristol City Council.

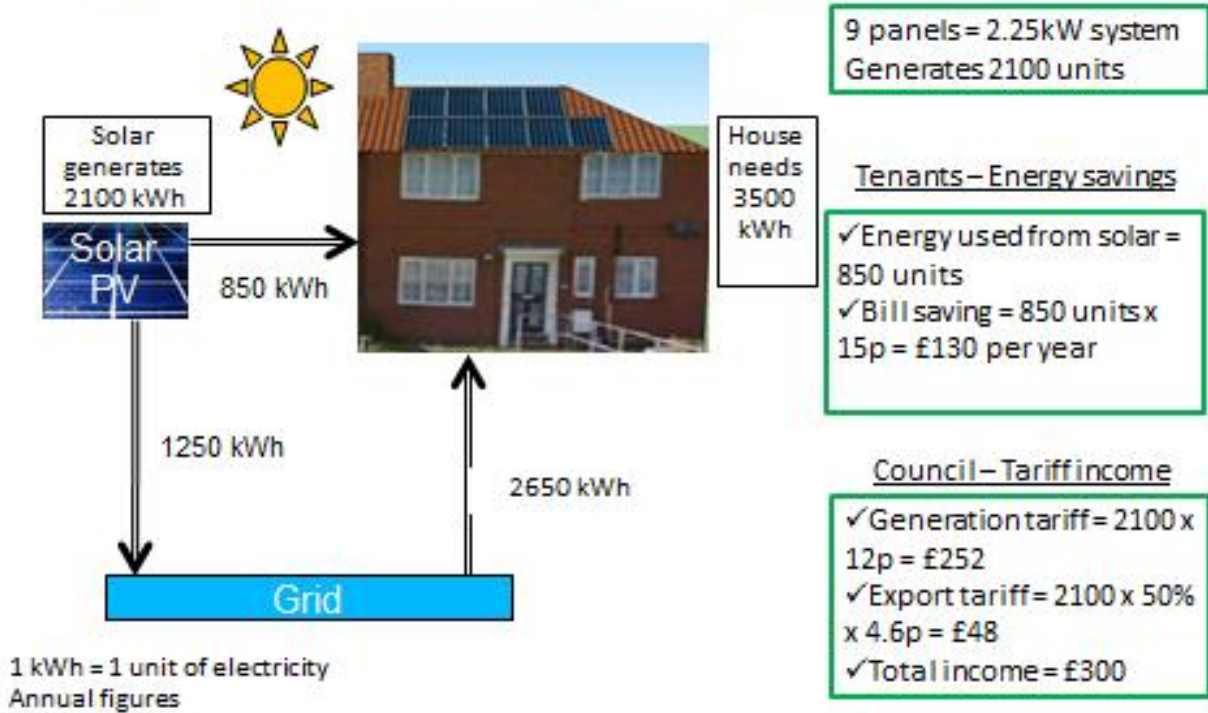
In common with many electronic products, the manufacture of Solar Pv panels includes the extraction, use and generation of hazardous materials, for example acids for used cleaning and possible inhalation of silicon dust. Hazardous materials may also be used and generated through the recycling of panels once they have reached the end of their useful life. These hazards are not associated with the installation and use of panels.

Consulted with Steve Ransom, 22nd August 2013

APPENDIX 5 – Feed in Tariff and Energy Saving example

Tariffs and energy savings

- No export meter (normally) – tenant uses as many solar units as possible



S:\Reports\2011-12\Executives 2011-2012\Cabinet\general\decision making\cabinet report format.odt