



SUBJECT:	SOLAR FARM BUSINESS CASE REPORT
MEETING:	Full Council
DATE:	30th JULY 2015
DIVISION/WARDS AFFECTED:	ALL

1. PURPOSE:

1.1 To secure financial approval for the construction of an Authority owned solar farm at Oak Grove Farm, Crick.

2. RECOMMENDATIONS:

2.1 To construct a 5MW solar farm at Oak Grove Farm, on the basis of the information outlined in the Business Plan.

2.2 That the project cost is funded by prudential borrowing and added to the Authority's capital programme, and revenue budgets are created for the operating and maintenance costs.

2.3 To authorise an initial payment of £350,000 to commence work on the electricity grid connection as soon as possible, thereby confirming completion timescales allowing preferential FIT rates to be secured.

3. KEY ISSUES:

Why develop a solar farm?

- 3.1 The Council needs to identify new revenue funding streams that do not impact on front line service provision, but do maximise the value of the Councils land holdings. As part of the budget setting process an income target of £175,575 was allocated to renewable technologies. The Estates team has now installed PV systems on roofs where it is financially prudent to do so. This amounts to a total of 21 retrofit schemes and 5 new build schemes, generating 381,135 kWh in 2014/15, with a further 61,951 kWh from the new build schemes. Gross income and savings from the 21 installations was £101,992 in 2014/15 (£78,714 income, £23,278 savings) with a further £13,735 (£10,257 income and £3,478 savings) from new build schemes.
- 3.2 In order to meet the income, other renewable schemes were explored which has resulted in the identification of the solar farm proposal. The proposal is to site the solar farm on 25 acres of a Council owned agricultural holding and the tenant of the holding has been involved in the discussions from the start of the process. The technology proposed is a tried and tested and once the solar farm is up and running the FIT income stream is guaranteed.
- 3.3 The 5MWp solar farm proposed is projected to generate 4,990 MWh of electricity p.a. This is the equivalent of providing electricity for approximately 4,000 homes and saves 2,395 tonnes of CO₂ emissions every year. It is also more than 4 times the capacity of all renewable energy technologies installed by the Authority to date.

Risks

3.4 Income Streams

Renewable energy installations accredited with the UK Government Feed In Tariff (FIT) scheme receive quarterly a FIT payment for all electricity generated and an export payment for the electricity exported into the grid network. Once accredited, the FIT rate and a standard export rate are guaranteed for a 20-year-period, increasing annually with RPI. It is also possible to negotiate a Power Purchase Agreement (PPA) directly with energy suppliers for a higher export rate, although negotiations cannot begin until grid connection works are commenced.

The solar farm could be pre-accredited with the FIT scheme 6 months before completion following planning approval and commencement of the grid connection process, thereby securing FIT rates at that time and protecting the project from potential reductions in FIT rates for new projects. Existing FIT rates are fixed to the end of September 2015 and rates for October to December 2015 will be published at the end of July 2015. Although the business case has been based on existing FIT rates, sensitivity analysis has been conducted on potential reductions in rates to confirm the viability of the scheme under those scenarios, as illustrated below:

Scenario	FIT	RPI	Export	Average Net Income p.a.	20-Year Net Income Total	20-Year Yield	Simple Net Return p.a.
Existing FIT rates to end September 2015	4.44	2.88	4.85	£117,692	£2,353,834	52.0%	2.6%
3.5% FIT reduction	4.28	2.88	4.85	£108,217	£2,164,349	47.8%	2.4%
7% FIT reduction	4.13	2.88	4.85	£98,743	£1,974,863	43.6%	2.2%
14% FIT reduction	3.82	2.88	4.85	£79,795	£1,595,893	35.2%	1.8%
28% FIT reduction	3.20	2.88	4.85	£41,898	£837,951	18.5%	0.9%

3.5 Operating Costs

Operating and maintenance costs, including the replacement of inverters, have been included in the business case based on the feasibility study undertaken by experts and analysis of historic project costs. However, updated expert advice cited examples of operating and maintenance contracts at £15,000 p.a. less than original estimates and extended inverter warranties available to reduce the cost of replacement by £215,000 (these reductions have not been factored into the conservative case).

3.6 Expert Advice

Independent experts have to date produced reports to confirm the planning, technical and financial feasibility of the project, and to secure a confirmed grid connection quotation and submit a planning application. This advice has been regularly updated to ensure the assumptions made in the business case reflect latest market information. The business case includes further costs for procuring a project management service with a proven track record in successfully delivering solar farm projects to manage the procurement, construction and accreditation of the solar farm, and to monitor and evaluate operation in the first year.

3.7 Other Authorities

Wrexham are the first LA in Wales to own and operate a solar farm on council-owned land, a 2.64MWp installation completed in May 2015 and accredited with the FIT scheme. It appears that the business case made by Wrexham was less conservative than the Oak Grove Farm proposal, if we applied comparable assumptions we would add a further £1,000,000 to the 'conservative' scenario used for the business case.

Telford & Wrekin completed a 4MWp solar farm towards the end of 2014 funded by PWLB borrowing. To date, it has generated 2.94 GWh of electricity, equivalent to £273,126 income based on current FIT and standard export rates. Although FIT rates and construction costs have reduced considerably since, the general assumptions made in the Telford business case were far less conservative than the Oak Grove Farm business case and more in line with the 'realistic' scenario quoted. As a comparison our conservative estimate for a 5MWp installation over 6 months has estimated £225,000 gross income. Their 4MWp installation has generated £273,000 over the same period.

At the end of March 2015, there were 97 FIT accredited stand-alone systems of 1MW or larger installed throughout the UK. 28 of these are 4-5MW sites, similar in size to the solar farm proposed, with the majority of these having negotiated PPA for the electricity exported.

To the end of March 2015, MCC has installed 21 solar PV systems funded by prudential borrowing and approved using a similar finance model as that used to produce the solar farm business case. The total FIT income and energy savings achieved across all these installations has exceeded that predicted.

At a recent CLAW meeting, it was reported that 8 other LAs in Wales are at various stages of potential solar farm projects.

3.8 WPD Connections

A confirmed grid connection timescale cannot be obtained from the Distribution Network Operator (DNO) until the next payment of £350,000 is made to pre-order switchgear. Expert advice based on projects undertaken by others, however, indicates the works could potentially be undertaken within 7-8 months, allowing pre-accreditation within the published FIT tariff period. Although it is not possible to confirm the exact amount, it is likely that much of this could be recoverable if the Authority did not proceed with the project through refund of the remaining £150,000 and resale of the switchgear. Alternatively, all costs to date and a rental income for 20 years could potentially be recovered by selling the rights to the scheme to a private developer if the Authority deems any risk too high to fund the project itself...

Oak Grove Farm

3.9 The Estates team worked with a planning expert to determine the potential for solar development at a number of sites. From the sites investigated during the pre-feasibility stage Oak Grove Farm was considered the most suitable site based on the various planning considerations. The site is not within a protected landscape and lies outside of the nearest designation being the Historic Landscape Area 1.4km to the east. There are no ecological designations that would preclude development and the soil quality is not considered to be of best and most versatile land. Further work has been undertaken by a PV specialist that confirmed the viability of the site.

3.10 Landscape

This site was chosen as the fields were determined to be reasonably well hidden in respect of the vistas/visual impacts from neighbouring land, other property and the highway. While the landscape character of the site itself will change significantly, it is considered that the overall effect on the surrounding landscape will not be significant. The arrays will be effectively temporary structures; the site could revert to its original landscape state at the end of the operational life of the development. In order to reduce visibility further the existing boundary and internal hedgerows are all to be retained and promoted where necessary, and supplementary hedgerow planting will take place on the eastern boundary of the development site.

3.11 Ecology

An extensive phase 1 habitat survey has been undertaken which concluded that the site was suitable for development in the manner proposed and would be unlikely to entail any significant loss of wildlife features, or adverse impacts to habitats or species of

ecological value in the vicinity. Habitats within the site boundary, although subject to high levels of disturbance during construction, are assessed as being of no greater than high local value to wildlife and any adverse impacts therefore of relatively minor significance. It is considered the proposed development of this site is not unacceptably constrained by biodiversity issues. Hedgerows will not be damaged throughout the construction and a new hedgerow will be planted to maintain and enhance the value of existing and newly created habitats within the site. A 5m buffer between the panels and the hedgerows has been incorporated into the design as a precautionary approach to ensure habitats are protected throughout construction and operation of the development.

3.12 Agricultural Grade

An agricultural land classification report was produced to determine the grade of the land at Oak Grove Farm. The majority of the site has been graded as Subgrade 3a (94.7%) with the remainder of the site graded as Subgrade 3b (5.3%). It was the opinion of the agricultural expert that the development of a solar farm does not involve irreversible loss of that land to agriculture and therefore there is no need for significant weight to be afforded to agricultural land quality. This conclusion was also reached by an Inspector considering an appeal regarding installation of a solar farm on agricultural land in Monmouthshire where the inspector concluded that “the development (23.5ha of Grade 2 agricultural land) would temporarily change the use of the land rather than its quality and would not affect its long-term potential for resumed agricultural use” (Ref: APP/E6840/A/14/2212987).

3.13 The tenant

While the existing tenant will retain limited use of the grazing land within the curtilage of the solar farm, an amended tenancy agreement will provide him with an increased holding size to compensate for the effective loss of land. The new farm business tenancy (149 acres) will come into effect should planning consent be granted. The new tenancy will be a fixed term 16 year farm business tenancy which will replace the tenants existing lifetime tenancy. The Estates team have liaised with the tenant throughout the design process to determine how best to maintain the farm’s current level of productivity alongside the solar farm.

3.14 Power Connection

A crucial consideration is the ability to access a grid connection. The site was confirmed as a viable option by Utility Management & Energy Consultants (UPL) following the undertaking of an electricity connection study. UPL determined that the site was within 160m of the required three-phase 33kV overhead line and was therefore an appropriate site for connection, subject to grid connection works. UPL were able to determine that the site was feasible and, following this feedback, the Estates team submitted a request to make a new electricity connection. The local Distribution Network Operator (DNO) have provided a formal offer to carry out the connection works and will commence work on the electricity grid connection following payment of the initial instalment of non-contestable works.

COSTINGS

3.15 Evidence

The 'Conservative' Business Case Assumptions as outlined in the Business Case have been built up as follows:

- The construction, operation, and maintenance costs and generation of the solar farm have been based on the feasibility study undertaken by independent experts, figures having been confirmed and updated regularly.
- The FIT rate of 4.44 p/kWh and export rate of 4.85 p/kwh is based on rates published to the end of September 2015.
- Interest rates and annuity loan repayments are based on PWLB rates current at the time of writing the business case in July 2015.
- An average RPI figure over 20 years of 1.40% has been applied. 1.6% RPI was applied to FIT and standard export rates in April 2015. (Although we are currently in a state of deflation, it is unlikely RPI will remain at or below 0% for 20 years and so the average RPI applied has been based conservatively at 50% of the average RPI over the last 20 years.)

Telford & Wrekin submitted a cabinet report for their now completed solar farm project in September 2014. The business case was based on PWLB rates at the time, an assumed 2.5% RPI, a contingency of 5% of income, a FIT rate of 6.38 p/kWh, and a negotiated PPA higher than the standard export rate. Although FIT rates and construction costs have reduced considerably since then, the other assumptions made are less conservative than the Oak Grove Farm business case and more in line with the 'realistic' scenario quoted.

3.17 Sensitivity Analysis

A sensitivity analysis has been conducted to demonstrate the effect of realistic variations to RPI, operation and maintenance costs, PPA export rates and FIT reductions. PPA export rates have been based on initial discussions with energy suppliers and expert advice on rates achieved by others. Reductions in FIT rates have been based on the potential reductions allowable under current OFGEM guidance.

Results of a range of scenarios are included in item 6.4 of the exempt report and Appendix B. An additional analysis on the effect of reductions in the FIT on a scenario using an average RPI of 2.88% and standard export rate of 4.85 p/kWh demonstrate that the project could still remain viable despite delays, for example, in completing planning or grid connection.

Scenario	FIT	RPI	Export	Average Net Income p.a.	20-Year Net Income Total
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3.18 Income Range & Commentary

The business case presented has been based on conservative assumptions. However, comparison with similar projects quoted and the result of the sensitivity analysis would indicate that the returns are likely to be much greater. A brief summary of the range of potential net income achievable as indicated in the report is as follows:

Scenario	RPI	Export	Average Net Income p.a	20-Year Net Income Total	20-Year Gross Income Total	20-Year Yield	Simple Net Return p.a.
Low (as per business case): - Half average RPI over last 20 years - Original operation & maintenance cost estimate - Standard export rate	1.40	4.85	£59,531	£1,190,610	£9,808,815	26.3%	1.3%

Scenario	RPI	Export	Average Net Income p.a	20-Year Net Income Total	20-Year Gross Income Total	20-Year Yield	Simple Net Return p.a.
Medium: - As Low scenario, but with average RPI over last 20 years	2.88	4.85	£117,692	£2,353,834	£11,327,663	52.0%	2.6%
High: - Average RPI over last 20 years - Operating and maintenance costs reduced according to updated expert advice - PPA export rate based on recent supplier and expert advice	2.88	5.50	£177,229	£3,544,576	£12,120,233	78.2%	3.9%

3.19 Community Fund

An expenditure of £5,000 p.a. has been built into the business case to establish a fund for local community projects, totalling £100,000 over the 20-year project. The fund will be available 6 months from completion of the solar farm, once the system is generating and the first generation payments have been received.

The Department for Energy and Climate Change support the provision of community benefits to communities hosting renewable energy developments, and the figure of £1,000 per MWp per annum is consistent with industry good practice. Both Cornwall and Wrexham are examples of authorities who have offered such funds to local community councils. However, the amount proposed by MCC is considerably larger than that contributed by other authorities and will be made available for wider ranging projects.

INCOME OPTIONS

- 3.20 Self-ownership and management of the solar farm will generate an estimated gross income of between £9.8M and £12.1M over 20 years. Subtracting loan repayments and all operating costs, the projected net income is between £1.2M and £3.5M over 20 years, equivalent to an average net income of between £60,000 and £177,000 p.a. The main risk to the actual income achievable relates to initial delays to completion.
- 3.21 The Council could lease the land with the benefit of a planning consent (if achieved) to a private developer who could then build out the scheme. This is likely to achieve a total rental income of between £500,000 and £750,000 over 20 years, equivalent to between £25,000 to £37,500 p.a. There would also be a small capital income to at least cover all costs incurred to date. Although the potential income is greatly reduced, the risk to the Authority and further commitment of resources is minimal and the option does provide a fall-back position if self-ownership and management becomes unviable.
- 3.22 The other alternative would be for the Council to construct the solar farm and then sell the completed development as an investment opportunity. This would yield a capital receipt as opposed to a revenue stream and the value achieved would be dependent on the FIT and export rates.

4. REASONS:

- 4.1 The Councils adopted Asset Management Plan highlights the need to maximise both the revenue and capital income streams of its property portfolio. The ability to generate revenue through renewable technology is a key consideration when reviewing options. The proposal involves the temporary (20 years) re-allocation of the land from agricultural purposes, albeit that sheep will still graze underneath the panels. The average County Farms rental charge per acre is £62 per annum. The prudent proposal yields a net annual income of £59,531 providing an annual uplift of £57,981. Best case scenario would result in an annual uplift of £175,679.
- 4.2 Oak Grove Farm was selected on the basis that it has a limited impact on the landscape, thereby mitigating the impact of the proposal on other competing priorities particularly around the promotion of tourism.

4.3 The site forms part of the proposed Mount Ballan settlement that was submitted as a candidate site to the recent Local Development Plan (LDP) call for sites process. The site was not allocated in the current LDP and given the temporary use of a solar farm we do not consider that it will impact on any future development opportunities.

4.4 As with all technologies it is acknowledged that over the 20 year period the productivity of the panels will diminish and this has been factored into the business plan. We will also have regard to the changes in the market, particularly technologies and will review their potential for any future opportunities.

6. RESOURCE IMPLICATIONS:

6.1 The proposal involves the prudential borrowing of capital to fund the construction costs of the solar farm as detailed in the Business Plan. Revenue income will be dependent on the FIT and export rates, RPI as well operating and maintenance costs. The rate of return based on the initial capital value ranges for 1.3% per annum to 3.9% dependent on the above variables. The cost of borrowing and all revenue expenditure will be funded from the gross income generated by the solar farm.

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8. SUSTAINABLE DEVELOPMENT AND EQUALITY IMPLICATIONS:

8.1 The significant equality and sustainable development impacts identified in the assessment (Appendix D) are summarised below for members' consideration:

8.1.1 There are no equality impacts.

8.1.2 UK Carbon dioxide emissions will be reduced by approximately 2,395 tonnes p.a. or 47,900 tonnes over 20 years by the generation of electricity from a renewable source.

8.1.3 Community participation/action and voluntary work will be encouraged by the creation of a £5,000 p.a. community fund, totalling £100,000 over 20 years, and a community lead group to identify projects to be funded locally.

8.2 Project plans and feedback to the appropriate select committee for monitoring will be arranged.

9. SAFEGUARDING AND CORPORATE PARENTING IMPLICATIONS

There are no Safeguarding and Corporate Parenting implications

10. CONSULTEES:

Estates

Finance

Procurement

11. BACKGROUND PAPERS:

Exempt Business Case – Solar Farm at Oak Grove, Crick

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