Manchester City Council
Report for Resolution

Report to:	Environment & Climate Change Scrutiny Committee –13 January 2022 Executive – 19 January 2022 Council – 2 February 2022
Subject:	Large Scale Renewable Energy Generation Outline Business Case
Report of:	The Deputy Chief Executive and City Treasurer

Summary

The purpose of this report is to seek a decision to support the proposal to secure delegation from Executive for the Council to enter commercial negotiations to progress the purchase of a suitable solution with options being a solar asset and / or a Power Purchase Agreement (PPA).

The Council's Climate Change Action Plan (CCAP) has a target to reduce direct emissions of CO_2 by 50% over the five-year period of 2020-25. In addition, the Council has committed to be zero carbon by 2038.

Action 1.4 of the CCAP targets 7,000 tonnes of annual CO_2 reductions by 2025 with savings to be delivered by a, "feasibility and business case for a large-scale energy generation scheme from large scale Solar PV or Onshore or Offshore Wind on Council land and buildings, or sites in third party ownership".

Local Partnerships (LP) were appointed in November 2020 to deliver the feasibility study. The, "Feasibility Study and Options Appraisal for Large Scale Energy Generation for Manchester City Council" was completed in April 2021. It concluded that the Council has two options: purchase a solar PV facility or negotiate a power purchase agreement (PPA). Both options were assessed to be better than the "do nothing" option.

In October 2021, Executive approved a recommendation for the Deputy Chief Executive and City Treasurer to establish a delivery team to develop the options, with a view to returning to the Executive with a proposal to progress the work. This proposal and associated recommendations are contained in this report.

Recommendations

The Environment and Climate Change Scrutiny Committee is:

1. Invited to comment on the report and note the options in Section 4 available to the Council.

2. Endorse the recommendations made to Executive to grant delegation for the Deputy Chief Executive and City Treasurer to enter into negotiations for the purchase of a solar asset / PPA to meet the Council's 2020-25 CO_2 emissions reduction target and contribute positively to our longer term zero carbon 2038 target through:

    - development / purchase of a suitable large-scale solar PV facility
    - a suitable direct PPA of renewable energy

The Executive is asked to:

1. Note the options in Section 4 available to the Council.

2. Note that should the direct purchase of a solar asset be pursued this will be funded via borrowing and require Council approval.

3. Agree to grant delegation for the Deputy Chief Executive and City Treasurer, in consultation with the Leader, Executive Member for Finance and the Executive Member for Environment to negotiate for the purchase of a solar asset / PPA and any associated corporate documentation to establish a Special Purpose Vehicle if required, to meet the Council's 2020-25 CO_2 emissions reduction target and contribute positively to our longer term zero carbon 2038 target through:

    - development / purchase of a suitable large-scale solar PV facility
    - a suitable direct PPA of renewable energy

Wards Affected: All

Environmental Impact Assessment - the impact of the decisions proposed in this report on achieving the zero-carbon target for the city
Action 1.4 of the Council's Climate Change Action Plan 2020-25 targets 7,000 tonnes of annual CO_2 savings by 2025. The Plan sets out the actions that will be delivered to ensure that the Council plays its full part in delivering the city's Climate Change Framework 2020-25 which aims to half the city's CO_2 emissions over the next 5 years.

Our Manchester Strategy outcomes	Contribution to the strategy
A thriving and sustainable city: supporting a diverse and distinctive economy that creates jobs and opportunities	The transition to a zero carbon city will help the city's economy become more sustainable and will generate jobs within the low carbon energy and goods sector. This will support the implementation of the Our Manchester Industrial Strategy and Manchester Economic Recovery and Investment Plan.
A highly skilled city: world class and home grown talent sustaining the city's economic success	Manchester is one of a small number of UK cities that have agreed a science-based target and is leading the way in transitioning to a zero carbon city. It is envisaged that this may give the city opportunities in the green technology and services sector.
A progressive and equitable city: making a positive contribution by unlocking the potential of our communities	Transitioning to a zero-carbon city can help to tackle fuel poverty by reducing energy bills. Health outcomes will also be improved through the promotion of more sustainable modes of transport and improved air quality.
A liveable and low carbon city: a destination of choice to live, visit, work	Becoming a zero carbon city can help to make the city a more attractive place for people to live, work, visit and study.
A connected city: world class infrastructure and connectivity to drive growth	A zero carbon transport system would create a world class business environment to drive sustainable economic growth.

Full details are in the body of the report, along with any implications for

- Equal Opportunities Policy
- Risk Management
- Legal Considerations

Financial Consequences – Revenue

It is expected that the revenue requirements needed to take this forward will be met from existing directorate budgets; if this is not possible, the financial consequences will be that an additional funding requirement is needed to establish a delivery team, including the cost of engaging the necessary external technical support.

Financial Consequences – Capital

It is not expected that there will be any immediate financial consequences to the capital budget from the content of this report. However, it should be recognised that the outcome of the report options will have capital cost implications.

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Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

Feasibility Study and Options Appraisal for Large Scale Energy Generation for Manchester City Council – Local Partnerships (April 2021)

Large Scale Renewable Energy Generation Feasibility Summary Study - Report to Environment and Climate Change Scrutiny Committee, 14 October 2021 and Executive, 20 October 2021

1.0 Introduction

1.1 The purpose of this report is to seek a decision to support the proposal to secure delegation from Executive for the Council to enter commercial negotiations to progress the purchase of a suitable solution with options being a solar asset and / or a Power Purchase Agreement (PPA).

1.2 The Council's Climate Change Action Plan (CCAP) has a target to reduce direct emissions of CO_2 by 50% over the five-year period of 2020-25. In addition, the Council has committed to be carbon zero by 2038.

1.3 Action 1.4 of the CCAP targets 7,000 tonnes of annual CO_2 by 2025 savings to be delivered by a "feasibility and business case for a large-scale energy generation scheme from large scale Solar PV or Onshore or Offshore Wind on Council land and buildings, or sites in third party ownership".

1.4 Local Partnerships (LP) were appointed in November 2020 to deliver the feasibility study. The study, "Feasibility Study and Options Appraisal for Large Scale Energy Generation for Manchester City Council" was completed in April 2021. It concluded that the Council has two options: purchase a solar PV facility or negotiate a power purchase agreement (PPA). Both options were assessed to be better than the "do nothing" option.

1.5 In October 2021, Executive approved a recommendation for Deputy Chief Executive and City Treasurer to establish a delivery team to develop the options, with a view to returning to the Executive with a proposal to progress the work.

2.0 Key findings of the Feasibility Study

2.1 Solar PV is recommended as the most appropriate renewable technology. Onshore wind developments are very limited in availability and are often subject to planning challenges. Offshore wind is generally too large a scale and requiring much longer lead in times to be suitable for our needs.

2.2 The size of requirement needed to deliver 7,000 tonnes CO_2 annual savings is equivalent to ~33MW of solar PV. To deliver benefits beyond this point and to contribute more significantly to the Council meeting its target to be zero carbon by 2038, then ~45-50MW of solar PV would be required. The Council should consider adopting this size of requirement to future-proof residual emissions through to 2038, facilitating an earlier reduction of a greater proportion of the Council's (Scope 2) electricity emissions and maximising the potential for carbon reduction through renewable energy.

2.3 An area of ~100 Ha of land is required to deliver the 7,000 tonnes CO_2 requirement. The Council has already deployed significant renewable energy generation capacity on its own buildings and is developing proposals to maximise this as part of the ongoing carbon reduction programme. There is no suitable land in Council ownership to deploy 45-50MW of solar capacity. No opportunities were identified within Manchester for a partnership project but we will continue to work with GMCA to identify local opportunities if possible.

2.4 The GMCA Go Neutral project has assessed opportunities for small-scale renewable energy assets across the city-region. Based on initial findings it is estimated that ~7-14MW of additional capacity could be available on Council-owned buildings and small parcels of land in Manchester. This is insufficient to meet our requirements.

2.5 The feasibility study concluded that the Council needs to look out of area to deliver the required size of generation, given there are no local opportunities for solar PV at the required scale. Additionally, the study noted that where levels of irradiance are higher, solar PV schemes deliver a better return on investment (ROI). Irradiance levels are potentially 13% higher in the south of the UK compared to Manchester and hence generate a higher return on investment or ROI.

2.6 To provide the Council with a deeper understanding of the available options, LP used data from Aurora Energy Research (provider of commercial modelling and forecasting data for renewable technologies). The data was used to generate an options appraisal based on current and forecasted pricing. Net Present Value (NPV) calculations were appraised over an 8 year and a 25-year period and were compared to a 'do nothing' scenario, i.e., the Council's current green electricity tariff.

2.7 This calculation showed that all options have positive NPV outcomes compared with 'do nothing'. There is a solid value for money basis to either enter a suitable PPA or asset purchase agreement and the Council should therefore seek to change its current supply arrangements.

2.8 The report concluded that a budget of £27m–£30m was the estimated cost for an asset purchase. A solar asset is anticipated to have a life of 35-40 years. Should this option be selected, and a suitable facility identified, the Council would need to be able to move at speed since projects of this nature coming to market are relatively few and are likely to be in high demand.

3.0 Establishing a Working Group

3.1 In October 2021, the Deputy Chief Executive established a working group and project team. The project team appointed LP to support further project development. This includes updating the findings of the feasibility study to reflect current prices and market availability, to carry out future energy demand analysis and to further explore financing options.

3.2 The team have been progressing the two agreed options to purchase a solar facility twin-tracked with a PPA. This approach allows us to progress the two recommended options in line with the findings of the feasibility study and is necessary to allow us to make the correct purchase decision to meet the CO_2 targets, and timescales as set in the Council's CCAP.

4.0 Updated Market Availability Assessment & Pricing

4.1 There are several potential sites currently available to purchase. At this stage there is sufficient information to model two different scenarios, with more to follow. The Council is in the process of entering into Non-Disclosure Agreements (NDAs) with the developers for two sites in order to progress discussions:

- **Option 1** – 45.3 MW scheme (south of England). This is the same scheme that the Council reviewed in the feasibility report. Some of the numbers have changed slightly. Irradiance is 1077 kwh/kwp and the scheme is due to connect in June 2023.

- **Option 2** – Two schemes (58 MW total) comprising of 21 MW with an irradiance of 1091kwh/kwp and 37 MW (Southern England). Irradiance of 1019kwh/kwp. The 21 MW scheme connects in March 2022 and the 37MW scheme connects in June 2022.

4.2 There are still no potential schemes identified within the Council boundary or local surrounding areas. Officers have been in contact with the GMCA Environment Team, and they have advised that the launch of their Go Neutral procurement framework is scheduled for early 2022. This will provide us with an additional route to make our needs known to potential suppliers.

4.3 The market has changed significantly since the initial feasibility report was produced (April 2021). Assets have continued to be brought forward and investor confidence in merchant assets i.e., those not supported by subsidy such as Feed in Tariff (FiT) or Renewables Obligation Certificate (ROC) have increased. There has also been an announcement of further funding rounds for Contract for Difference, although it is likely that most of this will support offshore wind and Scottish wind projects.

4.4 Changes in global supply chains and energy markets have impacted on the economics of solar and there is an increase in capital build costs and in the PPA prices achieved at market. In common with many other local authorities, the Council has felt their exposure to the volatile energy markets in recent months and is keen to obtain a more secure energy pricing framework.

4.5 Council officers have met with GMCA colleagues and shared our latest position. The GMCA are launching their Go Neutral energy procurement framework early in 2022 and this will be considered as an additional potential route to market.

5.0 Updated Energy Demand Assessment

5.1 The Council's Energy Management Team, with input from the project team, has assessed the Council's future energy needs considering a range of factors affecting future energy demand and the Council's CO_2 reduction needs.

5.2 Based on the Council's projected future energy demand, LP's assessment of the Council's needs is a solar generation asset of between 45MW and 60MW at current market rates costs of c. £30m – to £39m. This would be sufficient to meet our current target to reduce emissions by 7,000 tonnes CO_2 by 2025 and to contribute to our overall target to be Zero Carbon by 2038.

5.3 The exact size of the requirement is a function of both the electrical demand of the Council over time and the location of generation. Irradiance levels mean that if a scheme is bought in the south, it could be smaller than a scheme in the north. As there are only a limited number of viable options available on the market, there will be a need to review schemes in a range of 45 MW and 60 MW, depending on location. Schemes with higher irradiance attract a higher value. It is possible that to achieve the required levels of CO_2 savings, a scheme may need to be oversized, with any surplus power generated being sold.

5.4 With reference to the two options detailed in Section 4, an assessment has been carried out to consider the alignment between the production from the asset and consumption by MCC. The advantage of these options is they are scheduled to be available by the June 2022 target. The decarbonisation assessment for each option looks at the available carbon savings from a base year of 2025 until the decarbonisation date of 2038.

- **Option 1** – 45.3 MW (southern England) would provide sufficient CO_2e savings above the Council's demand in the early years and will meet the 2025 target. However, from 2035 onwards, the Council's forecast Scope 2 emissions exceed the available CO_2e savings from the asset. It would offer 95% of the 2038 target.

- **Option 2** – 58MW across two sites (southern England) offers additional capacity for CO_2e savings above the Council's demand in the early years. The 2038 target is met in full. Whilst production means the supply and demand become closer in the later years, the assets always produce more electricity than the forecast demand and surplus could be supplied to third parties locally (e.g., schools) or traded directly.

Other options will be considered as discussions move forward with developers.

6.0 Financing

6.1 The implications for both revenue and capital budgets would be as follows:

- revenue for the specialist advice needed in 2022/23 (within existing budgets)
- capital for the purchase itself in 2022/23 or 2023/24 if the direct purchase of an asset is approved. This would be funded from borrowing and require Council approval.
- revenue in the long term for the electricity consumption costs of a solar asset / PPA versus the current tariffs and budget.

The quantum of these implications will be determined during the next stage of the process i.e., when NDAs are in place and allow for detailed negotiations and analysis of the business models for individual schemes.

6.2 Purchasing a scheme has the potential to offer value for money by reducing the net cost of each unit of electricity used by the Council as well as providing protection from market price volatility.

6.3 A direct purchase has a longer-term benefit, and the 25 year period is aimed at capturing the different values over time. The final overall life of an acquired project is likely to be in the range of 25-35 years.

6.4 Our feasibility study and business case development work to date demonstrates that the direct purchase of the solar generation asset delivers a stronger Net Present Value (NPV) than a PPA, although all options demonstrate a positive return versus do nothing. Both an asset purchase and a PPA should also deliver revenue savings. As negotiations move forward and actual costs become known, a full financial model will be constructed and the NPV calculations updated accordingly.

6.5 Should the direct purchase of a solar asset be pursued this will be funded via borrowing and require Council approval in due course.

7.0 Current Energy Purchasing Policy

7.1 The Council currently purchases electricity via a green energy tariff. The supplier promises to match all or some of the electricity used with renewable energy, which feeds back into the National Grid. A green energy tariff means the electricity still comes from the grid. As only a proportion of grid electricity comes from renewable green sources, the energy currently purchased by the Council cannot be reported as a reduction in carbon emissions. Our current contracts are as follows:

- Gas – Current contract ends 31st March 2022. The new gas procurement framework commences January 2022 (1 year agreement with 3 year option to extend).
- Electric – Current contract and framework expires September 2022.

The contract periods have been adjusted to secure competitive prices and consider longer term energy generation and PPA options.

7.2 Most schools and academies in Manchester currently source their electricity via the Council's supply arrangements. For the baseline year 2019/20, this amounted to approximately 28GWh of additional load. If and when heat decarbonisation is delivered to the school estates, demand will increase significantly. Schools and academies gas usage is currently ~ 54GWh annually.

7.3 The Council's Energy Management Unit also purchases energy for Bolton Council. The current electricity demand for their operational estate is 22GWh with an additional 13GWh for schools and academies in that area.

7.4 Moving to direct energy generation through an owned asset or PPA(s) of renewable energy impacts on the existing energy purchasing approach. Whilst the joint purchasing of energy achieves better pricing for all parties, there is currently no contractual agreement or long-term commitment with the above parties to tie them into the Council's procurement arrangements. It is unviable within the timescales to include within either the sizing of this asset or an associated PPA.

8.0 Accounting for Emissions

8.1 The objective of the project is to generate / purchase electricity from a direct renewable energy source to deliver a direct reduction in the Council's CO_2 emissions. To achieve the reduction, the energy must be from a source which is traceable, permanent, and net additional renewable energy. We believe that the purchase of a solar asset / PPA of the kind proposed meets these requirements.

8.2 There are some complexities around the reporting of emissions and emissions reductions when scaled up to sub-regional and national level and we need to be mindful of these.

8.3 In accounting for their own emissions, organisations such as the Council should draw a boundary around their emissions which represents either their area of operational control or their area of financial control. In this case, a solar asset or other generation assets linked to supply for a PPA would be deemed to be within our boundary of control.

9.0 Recommendations

9.1 The recommendations are detailed on the cover page of this report.

10.0 Contributing to a Zero-Carbon City

10.1 Action 1.4 of the CCAP targets 7,000 tonnes of annual CO_2 savings by 2025 and is a key action to ensure that the Council plays its full part in delivering the city's Climate Change Framework 2020-25 which aims to halve the city's CO_2 emissions over the next 5 years.

11.0 Contributing to the Our Manchester Strategy

(a) A thriving and sustainable city

11.1 The transition to a zero carbon city will help the city's economy become more sustainable and will generate jobs within the low carbon energy and goods sector. This will support the implementation of the Our Manchester Industrial Strategy and Manchester Economic Recovery and Investment Plan.

(b) A highly skilled city

11.2 Manchester is one of a small number of UK cities that have agreed a science-based target and is leading the way in transitioning to a zero carbon city. It is envisaged that this may give the city opportunities in the green technology and services sector.

(c) A progressive and equitable city

11.3 Transitioning to a zero-carbon city can help to tackle fuel poverty by reducing energy bills. Health outcomes will also be improved through the promotion of more sustainable modes of transport and improved air quality.

(d) A liveable and low carbon city

11.4 Becoming a zero carbon city can help to make the city a more attractive place for people to live, work, visit and study.

(e) A connected city

11.5 A zero carbon transport system would create a world class business environment to drive sustainable economic growth.

12.0 Key Policies and Considerations

(a) Equal Opportunities

12.1 There are no equal opportunity issues to note that should arise from the content of this report.

(b) Risk Management

12.2 The key risk is to successful delivery of the Council's Climate Change Action Plan as action 1.4 is targeted to generate 7,000 tonnes of annual CO_2 savings by 2025 and the earlier this is delivered, the greater the contribution to staying within the carbon budget for the five year period.

(c) Legal Considerations

12.3 The legal issues to note from the content of this report are that in regard to an asset purchase, PPA or a hybrid it will be necessary to consider the relevant public contracts regulations and the Council's own Contractual Standing Orders in regard to procurement and the processes associated with procurement and associated decision making along with relevant decision making processes for the acquisition of an asset and any agreements entered into in association with any proposal. In this regard appropriate delegated decision making powers and approvals will also need to be considered.

12.4 Legal Services will provide support and advice in regard to such matters and also in regard to the recommendations in this report seeking such appropriate expert technical and professional support and advice as shall be appropriate.

12.0 **Appendices**

Appendix 1 - Feasibility Study and Options Appraisal for Large Scale Energy Generation for Manchester City Council – Local Partnerships (April 2021)

Appendix 2 - Large Scale Renewable Energy Generation Feasibility Summary Study - Report to Environment and Climate Change Scrutiny Committee, 14 October 2021 and Executive, 20 October 2021