

# WATERBEACH RENEWABLE ENERGY NETWORK (WREN) SOLAR PROJECT



## To:

Councillor Rosy Moore, Executive Councillor for Climate Change,  
Environment and City Centre  
Environment & Community Scrutiny Committee 06/10/2022

## Report by:

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## Wards affected:

All

Key Decision

## 1. Executive Summary

- 1.1 The Greater Cambridge Shared Waste Service (GCSWS) for Cambridge City Council (CCC) and South Cambridgeshire District Council (SCDC) has firm policy commitments to decarbonise the fleet of refuse collection vehicles by 2030 and CCC has set a target to reduce its direct carbon emissions from corporate buildings, fleet vehicles and business travel to net zero carbon emissions by 2030.
- 1.2 A key part of the decarbonisation programme is to replace the fleet of existing diesel refuse collection vehicles (RCVs) as the current stock accounts for 1,800 tonnes of CO<sub>2</sub> per year. The total estimated carbon savings for the project is 1,104.39 tCO<sub>2</sub>, subject to the final Investment Grade Proposal (IGP).
- 1.3 The local electricity network at Waterbeach Depot has insufficient capacity to meet the charging requirements of an electric fleet as the maximum grid capacity will be reached now the two electric RCVs (eRCV) are operational.

- 1.4 In order to continue the fleet decarbonisation programme to meet the Council's 2030 net zero target, there is an urgent need for an on-site renewable energy solution to enable charging of eRCVs. The Waterbeach Renewable Energy Network (WREN) Solar Project is how this need will be met.
- 1.5 This is a partnership between CCC, SCDC and Cambridgeshire and Peterborough Combined Authority (CPCA) and the scheme helps each to achieve and contribute to their respective emissions and sustainability targets. Each partner is currently seeking funding approval subject to the Investment Grade Proposal (IGP) for the scheme being completed.
- 1.6 The IGP is being developed which further verifies the feasibility of the project and this will be approved by CCC, SCDC and the CPCA before the scheme progresses to full design and implementation.

## **2. Recommendations**

The Executive Councillor is recommended to:

- 2.1 Approve the council's participation in the WREN Solar Project to develop an integrated renewable energy and storage solution including a ground-mounted solar photovoltaic array and battery storage on land adjacent to the Greater Cambridge Shared Waste Service Depot at Waterbeach depot.
- 2.2 Support the inclusion of a capital proposal within the council's General Fund Medium Term Financial Strategy for a contribution of £1.3m towards the capital delivery cost, funded by a £0.1m contribution from the council's Climate Change Fund and £1.2m from General Fund reserves.
- 2.3 Note that the contribution of £0.1m from the Council's Climate Change Fund is match-funding to the contribution being made from the existing GCSWS budget towards the project.
- 2.4 Delegate authority to the Strategic Director in consultation with the Head of Legal Practice and Head of Property Services to approve necessary contracts and leases to enable the implementation of the WREN project.

### **3. Background**

- 3.1 The Greater Cambridge Shared Waste Service (GCSWS) for CCC and SCDC has firm policy commitments to decarbonise the fleet of RCVs by 2030.
- 3.2 A key part of the decarbonisation programme to reduce CCC's direct carbon emissions to net zero carbon emissions by 2030 is to replace the fleet of existing diesel RCVs. The current stock is responsible for an estimated 1,800 tonnes of CO<sub>2</sub> per year.
- 3.3 The Shared Waste Service operates from Waterbeach Depot, Dickerson Industrial Estate, off the A10 in between the Cambridge Research Park and Waterbeach Waste Management Park. The local electricity network has insufficient capacity to meet the charging requirements of the GCSWS' fleet – the maximum grid capacity will be reached now the two existing eRCVs are operational.
- 3.4 Meeting the net zero target for CCC's emissions by 2030 and the Cambridgeshire & Peterborough Independent Commission on Climate recommendations requires radical change to how we deliver public sector services. The decarbonisation of fleet requires electrification and reinforcement of energy infrastructure. The WREN project enables SCDC and CCC to significantly reduce their Scope 1 emissions and showcase local grid deployment as well as energy cost/availability resilience.
- 3.5 In June 2020 the CCC committed: "To procure Ultra Low Emission Vehicles (ULEV) when replacing vans and trucks in the Council's fleet (where there is a suitable ULEV alternative, and the infrastructure allows. This could lead to a fully electric van and truck fleet by 2028; Will seek to replace all RCVs with low carbon alternatives (electric or hydrogen) at the point when they are due for replacement". In order to continue the Council's fleet decarbonisation programme to meet the 2030 net zero target, there is an urgent need for an on-site renewable energy solution to enable charging of electric Refuse Collection Vehicles (eRCVs).
- 3.6 The existing 'business as usual' is that the RCV fleet consumes circa 695,000 litres of diesel fuel a year resulting in 1,800 tonnes of CO<sub>2</sub> a year. The long-term goal of the project is full replacement of the fleet – this would thus result in total avoided emissions of up to 1,800 tonnes of CO<sub>2</sub> a year. These avoided emissions, Scope 1 for both Councils,

would be a major milestone achievement for their climate action goals. From the circa 50 vehicles within the fleet, the project will focus on approximately 35 vehicles transitioning to eRCVs. The other vehicles are likely to require alternative fuel sources as their operations are not suitable for the current eRCVs available.

3.7 Without the WREN Project, the programme will stall due to unavailability of electricity capacity from the local grid to charge the eRCVs. The detailed design will seek to ensure that the generation of renewable energy and the operational deployment reflects the fleet replacement programme as well as the energy demand. Not doing so would prevent the Council’s carbon emissions reducing by approximately 552.20 tonnes of CO<sub>2</sub> per year (which is City’s 50% share of the total estimated carbon savings for the project of 1,104.39 tCO<sub>2</sub>) as a result of replacing the current diesel vehicles with electric RCVs, subject to the final IGP.

3.8 Table 1, below, details the Fleet Replacement Programme for the GCSWS. Please note, the profile over the programme period is subject to change, due to lead-in times for purchase of e-RCV vehicles, change in options available of e-RCVs, and availability of supply of electricity/charging infrastructure (which is the issue that the WREN project is aiming to address).

	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Totals
Existing Fleet Replacement (No. vehicles)	1	0	4	6	14	13	3	5	46
New vehicles – to accommodate growth (No. of vehicles)	0	0	1	1	1	0	0	1	3
e-RCVs	1	0	2	2	11	13	3	3	35
Total vehicles replaced pa	1	0	4	7	15	13	3	6	49

Table 1: GCSWS Fleet Replacement Programme, correct July 2022

3.9 By providing the on-site renewable energy solution to charge the vehicles, it enables the GCSWS to charge more than 2 eRCVs and so replace more of the 54 current diesel RCVs with electric versions until they are all replaced. The design of WREN will be such that it uses

minimal electricity imported from the grid, it will maximise the electricity generated by the solar PV array and will require minimal export of electricity to the grid (which is constrained). These design principles maximise the use of renewable energy and decrease carbon emissions from the operation and charging of the eRCVs.

- 3.10 SCDC is leading the client-side project management and is utilising the Cambridgeshire Local Authorities Energy Performance Services Contract, a Framework Agreement with Bouygues E&S Solutions Limited.
- 3.11 An Investment Grade Proposal (IGP) is being developed which verifies the feasibility of the project, refines the options for a renewable energy grid; qualifies and assesses major project risks; and develops a clear scope and approach for the development of the project utilising an Energy Performance Contract model. It is requirement that the IGP is approved by the CCC, SCDC and the Cambridgeshire and Peterborough Combined Authority (CPCA) before the scheme progresses to full design and implementation.
- 3.12 The initial business case indicates that the renewable energy network to service approximately 35 eRCVs will deliver a positive net present value over the 30-year lifespan of the project compared with the financial outcomes and carbon emissions of the counterfactual option of grid connection and reinforcement only (i.e. importing electricity for charging from the Grid if and when available due to reinforcement needed, excludes the costs of the battery, solar PV array and local grid/ power management system). This takes into consideration initial capital expenditure as well as the cost of energy. The renewable energy network would comprise of the following infrastructure:
  - a ground-mounted solar photovoltaic (PV) array (1MWp) on adjacent land to the depot,
  - an Energy Storage System (ESS) “battery” to maximise the use of renewable energy from the solar PV array,
  - a Power Management system to control the energy resources and optimise performance,
  - electric vehicle charging infrastructure,
  - and a point of connection to the electricity distribution network
- 3.13 The next steps for the project team are to complete the IGP which includes full business case and design; finalise the land lease with the landowner; discharge pre-commencement planning conditions and secure the grid connection. Following the completion of these tasks,

officers will review the IGP to check it meets the key performance parameters and investment criteria and will then make recommendations to SCDC's Cabinet in December 2022. A Director with delegated authority at CCC will approve the final scheme and any associated contracts after completion of the IGP and SCDC (as lead authority for GCSWS and this project) approval. Subject to approval, the build out would be programmed to start in early 2023.

- 3.14 The project team is working with the Cambridgeshire and Peterborough Combined Authority (CPCA) to secure funding of £2.7m towards the project which has an estimated value of £5.3m. The Council's share of the remaining cost is £1.3m. Provision is being made for the inclusion of a capital proposal within the council's General Fund Medium Term Financial Strategy for the Council's contribution of £1.3m towards the capital delivery cost.
- 3.15 It is proposed that a contribution of £0.1m from the Council's Climate Change Fund is made towards the project costs, as match-funding to the contribution being made from the existing GCSWS budget towards the project, which will mean the remaining contribution from General Fund reserves is £1.2m.
- 3.16 The Climate Change Fund has already contributed to the initial costs £37,004 of the project to fund the initial feasibility study and preliminary works related to the land lease and grid connections.

## **4. Implications**

### **a) Financial Implications**

The capital cost of the project is £5.3m with a £2.7m bid in with the CPCA and the remaining £2.6m to be split between the respective GCSWS partners. CCS's contribution will be £1.2m from the capital programme and £100k from the Climate Change Fund. A capital proposal is being made within the council's General Fund Medium Term Financial Strategy for a contribution of £1.3m towards the capital delivery cost, funded by a £0.1m contribution from the council's Climate Change Fund and £1.2m from General Fund reserves.

Final commitment to detailed design and implementation will be after the IGP is approved by CCC, SCDC and CPCA. This funding and approval request is being brought forward now for the whole scheme given the opportunity for co-funding, partnership working and support from the CPCA.

## **b) Staffing Implications**

The project is being managed as follows, with no additional cost implications:

- Alex Snelling-Day, Green Investment Manager of SCDC is leading the client-side project management
- Bouygues E&S Solutions Limited are providing services under Cambridgeshire Local Authorities Energy Performance Services Contract Framework Agreement
- Dave Prinsep, Head of Property Services is Project Sponsor with support from Janet Fogg, Climate Change Officer
- 3C ICT will do required legal work or will be outsourced as part of project costs

## **c) Equality and Poverty Implications**

An Equalities Impact Assessment (EqIA) of the WREN project has been carried out by South Cambridgeshire District Council as the host authority for the Greater Cambridge Shared Waste Service. The EqIA did not identify any negative equality impacts from the WREN project. The EqIA is published on the City Council's website: [www.cambridge.gov.uk/equality-impact-assessments](http://www.cambridge.gov.uk/equality-impact-assessments)

## **d) Net Zero Carbon, Climate Change and Environmental Implications**

High positive rating – the project will enable the fleet of existing fossil-fuel powered diesel RCVs to be replaced with eRCVs by providing an on-site renewable energy solution to enable them to be charged.

## **e) Procurement Implications**

The project is utilising the Cambridgeshire Local Authorities Energy Performance Services Contract, a Framework Agreement with Bouygues E&S Solutions Limited.

## **f) Community Safety Implications**

None.

## **5. Consultation and communication considerations**

Residents will be kept informed about progress of the scheme through news releases and articles in Cambridge Matters.

## **6. Background papers**

Background papers used in the preparation of this report:

Business Case: Waterbeach Renewable Energy Network (WREN) Solar Project

## **7. Appendices**

None.

## **8. Inspection of papers**

To inspect the background papers or if you have a query on the report please contact Janet Fogg, Climate Change Officer, tel: 01223 - 457176, email: [janet.fogg@cambridge.gov.uk](mailto:janet.fogg@cambridge.gov.uk).