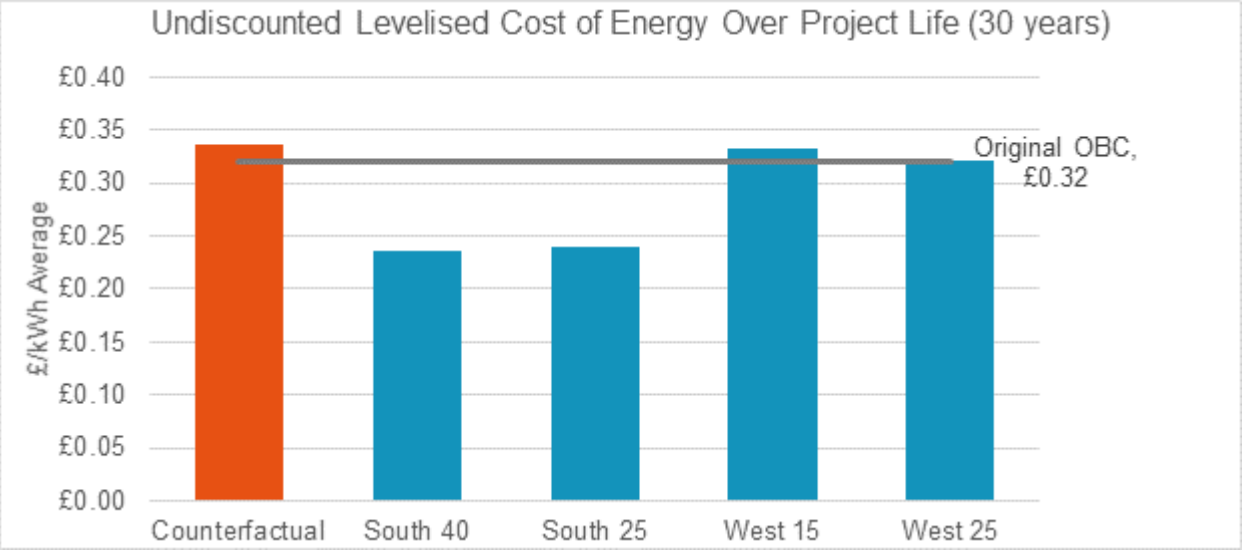
27 July Combined Authority Board project update

Waterbeach Renewable Energy Network (WREN)

- Decarbonisation at scale and pace requires us to move the Greater Cambridge Shared Waste Service fleet away from diesel, with significant investment in electric bin lorries and the infrastructure required for charging
- However, there is a constrained electricity grid capacity which requires significant grid reinforcement or innovative renewable energy network solutions
- The WREN business case reviews these options and puts forward the case for a renewable energy network comprising of solar photovoltaic energy generation, battery storage, charging infrastructure and power optimisation
- The initial business case findings show that the renewable energy network option outperforms the grid reinforcement only option when you consider the cost of energy of the project lifespan. This means it is more cost effective to deliver the solar pv, battery storage, charging infrastructure and power optimisation system, than the grid reinforcement options. It also means we are not beholden to long timescales for decarbonisation of the national grid. This innovative project will look to be a blueprint for other Councils and provide charging opportunities for other local public sector organisations.
- The indicative project budget is £4.9m (subject to FBC) with a fixed CPCA contribution (subject to final approval) of £2.7m and the remainder from Cambridge City and South Cambs District Councils.
- The indicative timeline is Full Business Case Development complete Q3 22/23; Project approvals/work contract Q4 22/23; Start on site Q1 23/24; Commissioning/Handover Q3 23/24.
- The project team looks forward to bringing the Final Business Case to the CPCA Board in Oct/Nov 2022.



Waterbeach Renewable Energy Network Outline Business Case

Business Case template (optional) to be used as guidance for structuring business cases for the Combined Authority

Version 2: 25 March 2022

VERSION CONTROL

Document version	Publication date	Description of changes	Modified by
1	25 March 2022	Refresh of template based on feedback	Programme Office
2	19 April 2022	Version 1	South Cambridgeshire DC – Alex Snelling-Day
3	8 July 2022	Version 2	South Cambridgeshire DC – Alex Snelling-Day
4	15 July 2022	Final Version	South Cambridgeshire DC – Alex Snelling-Day

CONTENTS

EXECUTIVE SUMMARY

STRATEGIC CASE

Meeting Net Zero by 2050 and Cambridgeshire and Peterborough Combined Authority's Independent Commission on Climate's recommendations requires radical change to how we deliver public sector services. The decarbonisation of the refuse vehicle fleet (the highest contributor to South Cambridgeshire District and Cambridge City Councils' emissions) requires electrification and reinforcement of energy infrastructure.

The WREN project will enable SCDC and Cambridge City Councils to significantly reduce their Scope 1 emissions and showcase renewable energy micro grid deployment. In order to continue their fleet decarbonisation programme to meet the Councils' 2028 and 2030 net zero targets, there is an urgent need for an on-site renewable energy solution to enable charging of electric RCVs. Without the WREN project, SCDC and CCC will be unable to meet the Independent Commission on Climate's key recommendation for the waste sector to "roll out zero carbon collection vehicles" and their own net zero goals.

ECONOMIC CASE

The project team has reviewed a number of conceptual options including relocation, which for a number of reasons has been discounted. The on-site proposal options look at the do minimum /counterfactual of grid reinforcement without renewable energy regeneration, energy storage and power management. With that option, a number of technical alternatives have been sought to use minimal electricity imported from the grid, maximise the electricity generated by the solar pv array and require minimal export of electricity to the grid.

The offset costs of existing fuel costs has been included alongside the different operational costs as well as resilience to fluctuating grid electricity cost changes. The preferred technical option outperforms the counterfactual / do minimum option. This situation is not expected to alter significantly however the full Investment Grade Proposal/Business Case targeted for Q4 22/23 will provide further detail of economic outcomes.

FINANCIAL CASE

With the current business case information, the project total is £5m, with £2.7m requested from CPCA and residual £2.3m from SCDC and Cambridge City Councils' respectively. The business case / Investment Grade Proposal stage is being completed as quickly as possible in order to safeguard against further inflationary and price increases.

COMMERCIAL CASE

The project will be managed client-side by SCDC with the design and delivery team coordinated by Bouygues E&S Limited, procured via the Energy Perfromances Services contract, established by Cambridgeshire County Council and Partner authorities (including SCDC and Cambridge City)

MANAGEMENT CASE

The project will be managed through SCDC's Transformation: Green to our Core Programme Management:
Programme Management Sponsor: Bode Esan

Project Sponsor: Dave Prinsep
Project Manager: Alex Snelling-Day
Deputy Project Manager: Luke Waddington
Indicative Timeline: Investment Grade Proposal/Full Business Case Development complete Q4 22/23; build out and commissioning complete Q2 23/24

INTRODUCTION

PROJECT BACKGROUND

The Greater Cambridge Shared Waste Service (GCSWS) for Cambridge City Council and South Cambridgeshire District Council (SCDC) has made a firm policy commitment to decarbonise the fleet of refuse collection vehicles by 2030. Both Cambridge City and SCDC have declared a Climate Emergency, and each has established targets and an Action Plan to reach zero carbon by 2050. A key part of the decarbonisation programme is to replace the fleet of existing diesel RCVs (Refuse Collection Vehicles) as the current stock accounts for 1,800 tonnes of CO2 per year. The first electric RCV has been in operation since 2020 and the Councils have ordered two further vehicles to be delivered in Q1 and Q2 2022/23.

This is in alignment with the recommendation of the Independent Commission on Climate, established by CPCA, for the waste sector to “roll out zero carbon collection vehicles... aiming for full replacement by 2030.”

The Shared Waste Service operates from Waterbeach Depot, Dickerson Industrial Estate, Cambridge CB5 0PG, 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 Councils’ fleet – the maximum grid capacity will be reached once the two new eRCVS are operational by Q2 2022/23.

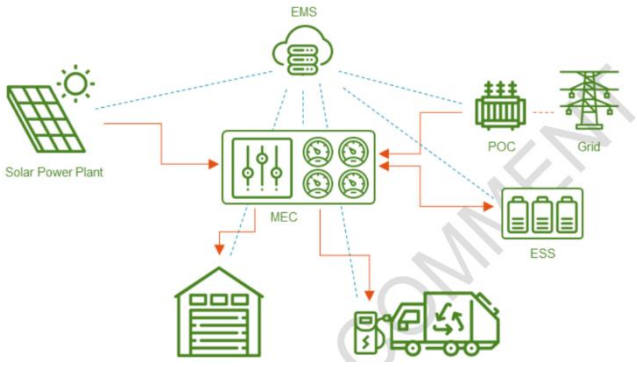
In order to continue the fleet decarbonisation programme to meet the Councils’ 2028 and 2030 net zero targets, there is an urgent need for an on-site renewable energy solution to enable charging of electric RCVs.

PROJECT SCOPE

The project scope is to develop an integrated renewable energy and storage solution to serve the electric Refuse Collection Vehicles (eRCVs) within the overall fleet at Greater Cambridge Shared Waste Service (GCSWS) Depot at Waterbeach.

This includes the implementation of the following:

- Solar Photovoltaic Array 1MWp ground-mounted solar
- Local grid infrastructure including Microgrid energy Centre (MEC)
- Electric Refuse Vehicle chargers (ERVCs), subject to final vehicle specification
- Energy/Power Management system (EMS)
- Energy Storage System (ESS) 1MWh / 500kW
- Mains Point of Connection to the UKPN electricity distribution network (POC)



ABOUT THE BUSINESS CASE

The project team are developing a business case which progresses from the initial optioneering during the concept stage i.e. alternatives to the proposed WREN local grid option, to the development of a Full Investment Grade proposal which tests technical options for delivery against defined performance parameters.

The Investment Grade Proposal / business case development is within three phases:

Development Stage	Description of Work	Target Deliverables	Owner	Acid Tests	Status
IGP S1	To prepare concept designs and define outline quality specifications, qualify critical risks and third-party dependencies, quantify project budgets, prepare milestone construction programmes.	Concept Design Report	Bouygues E&S	Concept design feasibility	Fully Achieved
		Outline Business Case	Bouygues E&S	Project budget established	Fully Achieved
		Permitted Development Opinion	Bouygues E&S	No objections raised by LPA	Partially Achieved
		G99 Budget Application for Connection	Bouygues E&S	G99 Budget Offer received	Deferred
		Draft Leasehold Agreement	GCSW	Leaseholder Agreement draft in place	In Progress
		Risk Register	All	All critical risks qualified / controlled	Fully Achieved
IGP S2	To prepare coordinated design of selected solution and define performance specifications, qualify residual major risks and third-party dependencies, prepare relevant consent applications, prepare procurement plans.	Design Development Report	Bouygues E&S	Developed design feasibility	Not started
		Procurement Plan	Bouygues E&S	Agreed procurement plans	Not started
		Conditions Discharge Application / Non-Material Amendment	Bouygues E&S	CDA / NMA validated	Not started
		G99 Application for Connection	Bouygues E&S	G99 Application validated	Not started
		Finalise Leasehold Agreement	GCSW	Signed Leaseholder Agreement	Not started
		Updated Risk Register	All	All residual risks identified and controlled	Not started

IGP S3	To acquire all relevant statutory and third-party consents / agreements, undertake all relevant procurements and prepare a full Investment Grade Proposal. To prepare a full set of coordinated developed designs (Stage 3).	Investment Grade Proposal	Bouygues E&S	Achieves key success criteria	Not started
		Contractor's Proposal Documents	Bouygues E&S	Acceptable design and build proposals	Not started
		Conditions Discharge Consent / Non-Material Amendment Approval	Bouygues E&S	CDA / NMA Approved	Not started
		G99 Connection Offer	Bouygues E&S	Acceptable G99 offer received	Not started

The business case is focused on Defined Performance Parameters which are the minimum quantitative requirements that must be achieved at the completion of the Investment Grade Proposal. These Defined Performance Parameters are:

- Minimum Average Projected Renewable energy Generation 897,202kWp per annum over the first 15 years of the project's operation
- Minimum Net Present Value of +£521,293 at the 30th anniversary of project commencement date
- Maximum total charges of £5m, excluding any agreed changes to the scope of the project and accounting for the risks and assumptions
- Minimum CO2e savings of 1104.39 tCO2e per annum over the first 15 years of the project's operation

STRATEGIC CASE

INTRODUCTION

The project is tested against the CPCA's strategic priorities and Sustainable Growth Ambition Statement, as well as local, regional and national policy alignment.

STRATEGIC PRIORITY

The Cambridgeshire & Peterborough Independent Commission on Climate (CPICC 2021) includes the following recommendation:

Roll-out of zero carbon collection vehicles should start in urban areas, as existing vehicles need replacement, aiming for full replacement by 2030. This will be aided by Government development of a national framework for the procurement of zero carbon collection vehicles, providing information on suppliers who can meet requirements (in the same way it currently has such a framework for diesel vehicles).

This project aligns with the Sustainable Growth Ambition Statement as it reflects "the increased awareness of the need to protect our environment and the impact our actions are having on the climate." The project positively contributes to the following dimensions:

- Climate and Nature – address the impact of climate changes and develops a solution to reducing the carbon emissions associated with waste and recycling collection vehicles, given the current refuse collection fleet accounts for 1800 tonnes of Co2 emissions per year

- Infrastructure – showcases an example of a local energy grid to support successful future electrification of key systems and processes, in this instance, waste and recycling collection.

The Waterbeach Depot's local electricity network has insufficient capacity to meet the charging requirements of the Councils' fleet – the grid capacity will be reached once the two new eRCVS are operational by Q2 22/23. There is an urgent need for on-site renewable energy supply to enable charging of electric RCVs and continuation of the fleet decarbonisation program. The Commission's recommendation cannot be met without this project.

The project will benefit the wider CPCA area as the WREN project will provide facilities at Waterbeach which can be accessed by East Cambridgeshire District Council, who currently also use the Waste Treatment Park and vehicle garage services at Waterbeach. The charging facilities will be available to all other Cambridgeshire Councils. Furthermore, lessons learned, and expertise gained by GCSWS will be shared across the region, to assist other Authorities seeking to implement similar schemes.

The purpose of the renewable energy network is to locally generate renewable energy from solar and then 'private wire' it into the GCSWS Depot in order to maximise the use of renewable energy and ensure transparency. The network design will distribute electricity into the Depot from the solar array and form its own microgrid distinct from existing infrastructure across the Dickersons Industrial Estate.

The network will also include a battery storage system so that when electricity is generated at times when we aren't charging it can be retained for use within the Depot i.e. for eRCV charging once collection rounds are finished. Access to the electricity generated is for GCSWS Depot users, as well as local public sector partners as mentioned within the PID, however it is not openly available for other organisations located in the vicinity of the Depot.

CASE FOR CHANGE

The existing 'business as usual' is that the RCV fleet consumes circa 695,000 litres of diesel fuel / year resulting in 1,800 tonnes of CO2 / year. The long-term goal of the project, all phases, is full replacement of the fleet – this would thus result in total avoided emissions of up to 1,800 tonnes of CO2 / 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 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.

Both Greater Cambridge Shared Waste Service Councils have made policy commitments which are their key drivers for change to decarbonise their RCV fleet as below:

SCDC (May 2020): "For our estate and operations, over which we have direct control, we aim to deliver a reduction on 2018-19 levels of at least 45% by 2025, and at least 75% by 2030; this includes for our fleet of vehicles, a 50% reduction by 2025 and a 90% reduction by 2030".

Cambridge City (June 2020): "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".

Both Councils were the first to embark on a RCV fleet replacement program in the CA area. Without the WREN Project, the program 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. There is a committed programme for replacement which can be shared with the CPCA when required.

The following information 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

CLIMATE CONSIDERATIONS

The Independent Climate Commission established by CPCA made a key recommendation for the waste sector (W4) to "roll out zero carbon collection vehicles". The WREN project is fundamental in meeting this regional aim and the net zero goals of SCDC and Cambridge City Council

The RCV fleet consumes circa 695,000 litres of diesel fuel / year resulting in 1,800 tonnes of CO2 / year. The long-term goal of the project, all phases, is full replacement of the fleet with eRCVs – this would thus result in total avoided emissions of up to 1,800 tonnes of CO2 / year. These avoided emissions, Scope 1 for both Councils, would be a major milestone achievement for their climate action goals and complying with the recommendations of the ICC regarding fleet decarbonisation.

Using HMT's Greenbook (June 2021) Valuation for Energy Use & Greenhouse Gas Emissions, an estimate of the monetary value of worldwide damage done by carbon dioxide emissions can be reached. Using the factors in tables 1 and 3 of the Greenbook, the carbon value of renewable energy generation associated with WREN has been calculated as £438,768 across the lifetime of the project.

If granted, funding would enable both Councils to reach these emissions goals sooner and so decarbonise further than would otherwise be the case. Should the Councils need to find other sources of funding or divert additional funding to the WREN project, then as a minimum the project would be delayed, and the opportunity for further avoidance of carbon emissions missed.

Diversion of funds may also have the effect of slowing down the acquisition of eRCVs and the overall decarbonisation of the GCSWS refuse vehicle fleet. Given the leading role that GCSWS are playing in this field within the region, acceleration of the WREN project would bring forward these benefits and the wider knowledge sharing by GCSWS, in turn assisting the earlier decarbonisation of refuse fleets elsewhere in the region.

The project will include a biodiversity enhancement plan to maximise opportunities for doubling nature and achieving biodiversity net gain within the site where possible, through grassland habitat enhancement and other biodiversity enhancement measures surrounding the solar PV array site.

SMART OBJECTIVES

1. Discharge Planning Consent conditions and secure any further consents/variations, once scheme design finalised, from the Local Planning Authority by Q4 22/23
2. Agree Heads of Terms draft land leasehold with landowner by Q4 22/23
3. Submit a G99 application to UKPN for grid connection and receive offer/response by Q4 22/23
4. Approval to draw down funding from the committed funds for the residual project costs from Cambridge City and SCDC respectively by Q3 22/23
5. Review and approve a Full Business Case with fully designed local grid solution by Q3 2022 with implementation from Q4 22/23

SPECIFIC DELIVERABLES/OUTPUTS

- Full Business Case / Investment Grade Proposal
- Contractor's Proposal Documents
- Conditions Discharge Consent / Non-Material Amendment Approval
- G99 Connection Offer (UKPN)
- Solar Power Plant 988 kWp / 860 kWAC ground-mounted solar
- Microgrid infrastructure including Microgrid energy Centre (MEC)
- Electric Refuse Vehicle chargers (ERVCs), subject to final vehicle specification
- Power Management system (PMS)
- Energy Storage System (ESS) 1MWh / 500kW
- Mains Point of Connection (POC)
- Operations & Maintenance Plan
- Measurement & Verification Plan – part of the Energy Performance Contract including energy performance guarantees.

PROJECT OUTCOMES/IMPACTS

See attached Project Outcome Profile Tool.

The Defined Performance Parameters for the business case are:

- Minimum Average Projected Renewable energy Generation 897,202kWp per annum over the first 15 years of the project's operation

- Minimum Net Present Value of +£521,293 at the 30th anniversary of project commencement date

- Maximum total charges of £5m, excluding any agreed changes to the scope of the project and accounting for the risks and assumptions

- Minimum CO2e savings of 1104.39 tCO2e per annum over the first 15 years of the project's operation

The key measures of success will be ability to generate the renewable energy generation and deploy energy storage in order to service electricity requirements for 35 eRCVs year-round that achieves the carbon abatement within the funding envelope of £5m and with financial performance for lifecycle cost analysis.

In the medium term the project will enable the significant reduction in carbon emissions from refuse collection function across the Greater Cambridge area and enable the fleet transition to electric RCVs. In the longer term, the project will enable both SCDC and City to achieve their net zero plans and their interim milestones in 2030 and ultimate target of 2050.

The project has been assessed against the CPCA's key metrics:

CPCA criteria	Score from prioritisation assessment	Rationale
GVA	3	Procured contractors has commitments to local sourcing of goods and services during the construction phase and operation/maintenance phase
Climate Change	4	Significant reduction in carbon emissions and enables authorities to meet 2030 and 2050 net zero targets.
Nature	2	Net zero contribution to natural capital. However, opportunities will be sought to enhance in accordance with SCDC Doubling Nature strategy.
Manufactured capital / infrastructure	3	Improve the electrical infrastructure capacity and addresses significant capacity issues across Cambridgeshire.
Human capital / health	2	Improved environmental air quality and reduced noise pollution due to facilitating the transition to electric RCVs.
Human capital / skills	2	Moderate improvement in skill of knowledge for small group of individuals involved in project delivery, operation and maintenance. Opportunity to provide replication workshops to other collection authorities across CA area.
Social capital / inequalities	3	Improvement to public sector delivery of the waste/refuse function resulting in greater service efficiency.
Financial capital / finance and systems	3	Generating electricity on-site will facilitate greater resilience in terms of the supply and cost of energy. The cost of energy will be known across lifespan of project and enable greater resilience against fluctuations in energy prices.

DESIGNS

The overarching concept remains largely unchanged from that originally proposed – the core solution comprises the following key components:

1) A ground-mounted solar photovoltaic (PV) array, to be located on a parcel of land to the Northwest of the depot site. This system is to be the main source of renewable electricity
2) An Energy Storage System (ESS), to balance electricity generation with site electricity demands
3) A Power Management System (PMS), to control distributed energy resources, optimise performance and monitor equipment
4) An array of Electric Vehicle Chargers (EVC), to serve the proposed Electric Refuse Collection Vehicle (ERCV) fleet
5) Associated electricity distribution, communications and civil infrastructure
6) A new / upgraded point of connection to the electricity distribution network

The first phase of detailed design and business case development has offered the opportunity to explore design and technology options to:
1) Maximise the utilisation of renewable electricity generated on site
2) Conversely, minimise import of grid-based electricity and critically, peak tariff electricity (notionally, daytime electricity demands)
3) Meet 100% of the Electric Refuse Collection Vehicle's demands through both renewable and grid-based electricity
4) Accommodate for local electricity network constraints, including both power import and export restrictions
5) Establish an economic, safe and operationally feasible layout for the Electric Vehicle Charging infrastructure, contemplating spatial constraints, vehicle transit routes, future site expansion possibilities
6) Ability to accommodate future demands and generation sources.

The emerging review of the solar array design options shows that the final design is likely to be a solar pv array south facing with inclination of 40degrees to align with the fleet electricity demand profile:

Table 2 Assessment of electricity production and utilisation of different solar orientations

	South Inc40	South Inc25	West Inc15	West Inc25	West Inc40	Southwest Inc25	Mixed
Electricity produced by units (kWh)	1	2	5	6	7	3	4
Exported electricity (kWh)	2	1	4	6	7	3	5
Imported Electricity (kWh)	1	2	5	6	7	3	4
Revenues – Export (£)	2	1	4	6	7	3	5
Electricity – Import cost (£)	1	2	5	6	7	3	4
Total	**7**	**8**	**23**	**30**	**35**	**15**	**22**

This option is shown overlayed on to the site map:

RISKS

See attached Risk Register generated at the beginning of the project. Risk Register and Issue Log reviews take place every two weeks.

CONSTRAINTS

The Investment Grade Proposal needs to be completed by Q4 2022/23, subject to approval, delivery will occur Q1 23/24 so that the solar array is operational by Q3 23/24. The design team has been working to the constraint of providing electricity for 35 eRCVS and their associated collection round patterns. The project will need to be delivered while the Depot remains operational. Early construction phase plans are been drafted to ensure a long lead in to finalise buildout that will incorporate the on-going operational needs of the site and service.

DEPENDENCIES

The WREN project is linked to the Fleet Replacement Strategy for GCSWS. Mike Parsons who is part of the operational team overseeing fleet replacement is also part of the WREN Project Team, as the Senior User. Also, our accountant for the GCSWS is part of the WREN Project Team to also provide information pertinent to both WREN project and Fleet Replacement activity.

WREN project is located adjacent to the GCSWS depot at Dickerson Industrial Estate off the A10. The CPCA's A10 Upgrade Project Manager, Robert Jones, has made contact to identify dependencies and sensitivities. Within the A10 Upgrade OBC, the WREN project has been identified as a committed interfacing project. The scheme options are being developed and managed by Cambridgeshire County Council Highways and the team is in contact with SCDC and GCSWS representatives.

The current advertised timeline for A10 Upgrades to start on site is not before 2026 whilst WREN is targeting a buildout to be completed by end of Q2 23/24. The A10 Upgrade team will be in contact with WREN team (and wider GCSWS representatives) regarding road traffic generation and other impacts during construction as well as in operation.

ECONOMIC CASE

In 2020, Cambridgeshire County Council in partnership with SCDC, Cambridge City and other local authorities, an OJEU tender process was completed to establish the Framework Agreement for Energy Performance Services. This process tested value for money from potential providers across the Energy Performance Contracting sector. The tender was awarded to Bouygues E&S Solutions Limited and TESGL Limited (trading as SSE Enterprise Energy Solutions) who demonstrated the best value for money through the tender scoring and evaluation process.

Bouygues E&S solutions is large multi-national organisation operating globally. With that order book value comes the ability to competitively secure goods and services utilising this bulk purchasing power, and knowledge of global supply chain that can help manage inflationary increases. All procurement via Bouygues involves open book and therefore value for money as be checked at granular detail in addition the checks completed throughout the framework/tender process. Benefit Cost Ratios will be included for options within the Full Business Case.

Following presentation of the Investment Grade Proposal / Full Business Case, the costings will be benchmarked against similar projects delivered by the Delivery partner as well as other public sector partners. Whilst the overall project is exemplar, the elements within the network involve established technology and therefore the cost of these components can be checked. The costs will follow those outlined as part of the competitive tendering process undertaken when establishing the framework agreement.

INTRODUCTION

APPROACH TO ECONOMIC CASE

The business case / Investment Grade Proposal has tested 7 technical designs against the counterfactual which is solely grid connection/reinforcement option without renewable energy generation, energy storage or a power management system. A review of the capital cost estimates of the project has been undertaken, to establish any significant shifts in project budget estimates. This exercise is based on a revision to account for evolutions to the project's design, as well as factoring for price and technology movements. The scenarios are based on 30 year project life span with key parameter of returns within 15 years from year 1 of project operation.

Importantly assumptions have been included for price and carbon footprint of electricity from the grid, factoring in decarbonization of the electricity network. The economic case and sensitivity also relies on modeling the electricity demands from actual and up-to-date data from the rounds and data collected from the eRCVs onboard monitoring systems.

In order to compare options, the cost of energy over the lifespan of the project has been shown, which takes in to consideration capex and opex, and reflects cost of grid export energy and cost of energy generated from the solar pv array maximized by energy storage and optimizes by the power management system.

OPTIONS ASSESSMENT

Do Nothing
Without intervention, there will be no means to charge the ordered eRCVs and implement the next stages of the fleet decarbonization (further ordering of vehicles as per the forward plan). The maximum electricity grid capacity will be reached, and with our grid reinforcement, no further export from the grid will be possible. The Do-Nothing scenario would result in the inability to meet net zero / climate action goals including the 2028 (Cambridge City) and 2030 (SCDC) targets. This would show a failure of leadership on net zero and climate action.

Do Minimum
An option to look at solely increasing electricity grid capacity, without renewable energy generation, energy storage or power management, appears to be a 'do minimum' option. However, in reality, seeking an export connection for the capacity required for 35 eRCVs would mean a large upfront capital cost due to the high grid export requirements. The offset from the reduced diesel costs would be overshadowed by the up front capital for the grid connection. For the proposed scheme, all options will be tested against this option, and initial analysis shows that the proposed local grid scheme surpasses this grid connection only option.

Relocation
The relocation scenario has been reviewed and it is highly unlikely that there is another site in Greater Cambridgeshire that meets the operational needs of the waste and recycling operations, has unconstrained electricity capacity, could be operational within the timeframe required to meet net zero targets and could deliver the current co-location benefits.

Firstly, the local electricity distribution network operator, UKPN, is behind schedule with grid upgrades across the whole of the Greater Cambridge area. Therefore, most other locations would be highly

constrained (i.e. no guaranteed capacity at the times when operationally it would be needed for charging) and as the fleet replacement programme progresses would also require the new renewable energy network infrastructure.

Secondly, it is highly unlikely that another location could be found that meets the site requirements and is on brownfield land or outside of designated green belt. Therefore, this would mean very low likelihood of securing planning permission at an alternative location.

Thirdly, and most importantly, the current depot location at Waterbeach provides significant environmental, operational and cost benefits, enabling GCSWS to reduce its overall carbon footprint by minimizing travel cost and time to garage services and treatment facilities. The vehicle parking, cleaning, and charging is co-located adjacent to the waste collection, recycling and treatment operations as well as the vehicle maintenance garage.

Furthermore, there is an opportunity at the current location to explore further deployment of renewable energy sources including feasibility of landfill gas as an energy source, viability of wind energy (subject to planning policy) and expanding the solar PV plant generation capacity.

In summary, the existing Depot location is strategically important and there would be significant disbenefits moving to an alternative location, if one could be found.

APPRAISAL SUMMARY

The key conclusions reached by Bouygues E&S through this first phase of the project are set out below.

- No issues have been identified that would impact the ability to achieve the success criteria for the project
- The capital cost of the project has marginally increased, though the projected revenue has increased by a greater extent, thus balancing / improving the economic outcomes
- Bouygues E&S has been unable to progress in engagement with UK Power Networks. This hence remains as a strategic risk. However, desktop analysis of the local network has aided in understanding local network constraints (There is also now a meeting scheduled with UKPN on 29 June, and G99 application is being prepared)
- There are several decisions and assumptions to clarify with GSCW to verify and validate the proposed solution.

Capital Cost

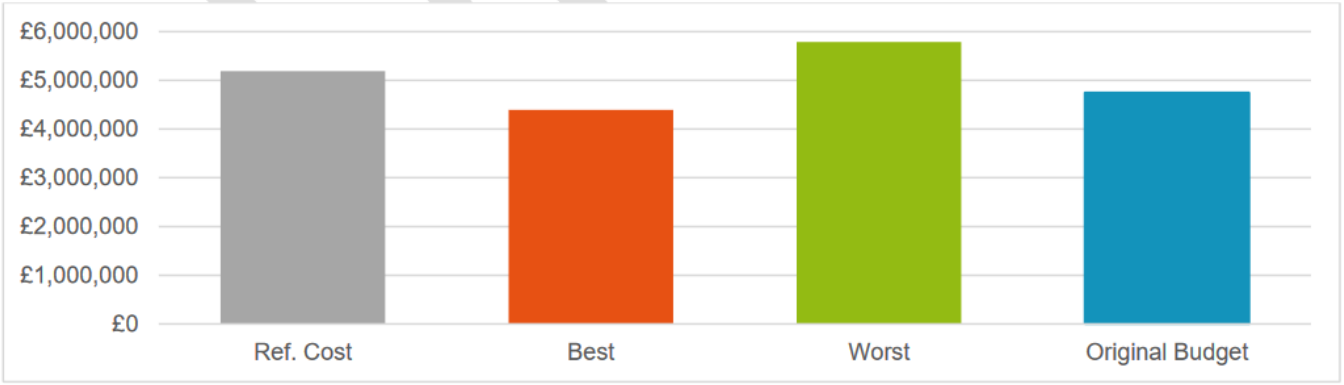
A basic review of the capital cost estimates of the project has been undertaken, to establish any significant shifts in project budget estimates. This exercise is based on a revision to account for evolutions to the project's design, as well as factoring for price and technology movements.

It is however acknowledged that the design is still in conceptual development and not at a level that permits full cost assessment or tender procurement with prospective suppliers. Hence, this is an estimate, using best available resources, such as recent prices for similar projects, supplier estimates and benchmarks.

The estimated capital cost of the project has generally increased by approximately 9%. Despite design rationalisation and value engineering, significant recent market shifts and increasing inflation have outstripped the benefits.

A further sensitivity analysis exercise has been conducted to establish the potential maximum and minimum capital cost. This is based on anticipated price fluctuations on materials and further evolution of design between the completion of Phase 1 and the Phase 3 tender procurement window. This indicates that the overall project capital cost could decrease by approximately 15% (compared to the updated capital cost), or increase by approximately 15%.

The below bar chart illustrates the prospective anticipated sensitivities in capital cost.



Revenue / Saving Projection

The economic benefit is driven principally through the avoidance of import of grid-based electricity, compared with a counterfactual grid-connected solution. In other words, the power generated by the solar PV array and distributed by the microgrid is used to serve the ERCVs – the counterfactual option is based on a conventional grid-connected solution with no on-site generation, thus the entire electricity demand of ERCVs is met through import from the grid.

The avoidance of cost associated with the grid-based import gradually repays the additional capital and operational costs of the microgrid, compared with the counterfactual.

Consequently, the level of import offset achieved by the microgrid holds a direct relationship with the economic outcome of the project. The higher the offset achieved, the greater the economic benefit and hence, the stronger the business case and vice versa.

In addition, the 'tariff' paid for each unit of grid-based electricity is also of key importance. The higher the tariff, the higher the level of saving through offset avoidance and vice versa. This is of particular relevance given the present rise in tariffs linked to rise in fossil fuel prices, which is likely to continue. In addition, the outcomes of the more detailed simulation modelling has revealed a that the developments taken in design are likely to result in a substantial increase in the level of import offset achieved by the microgrid.

Whereas the original outline business case projected that between ~430MWh and 710MWh of offset would be achieved through the microgrid, the revised model suggests that between 650MWh and 900MWh of offset may be achieved. This is principally driven through refined modelling inputs, increase in energy storage capacities and optimisation of the solar PV design.

The above outputs require further validation through ongoing detailed engineering and design work and thus should not be relied upon at this stage – they are not guaranteed. However, this provides reasonable confidence that the improvement in revenue / saving will outweigh the projected potential increase in the capital cost.

Economic Outcomes

Further work is required to refine the economic outcomes through ongoing detailed design, which will clarify the capital costs. Therefore, economic outcomes will be specified at a later date in a complete business case and IGP, which will be subject to due consideration through the appropriate committee and board processes within both Councils and CPCA.

OUTCOME PROFILE TOOL

Add screenshot from excel

LOGIC MODEL

To be completed

ECONOMIC BENEFITS

The WREN project enables the GCSWS to deliver the following economic benefits:

- Reduced reliance on fossil fuel pricing which is likely to continue to rise
- Reduced reliance on imported grid electricity with pricing also linked to fossil fuel pricing
- On-site renewable energy generation, reduced requirement for to import grid electricity with the initial modelling above showing the cost of energy will be lower for the local grid preferred option

DISPLACEMENT AND DEADWEIGHT

Given the maximum grid capacity having been reached, and the localized need for electricity in the Depot location, the WREN project would not displace benefits from elsewhere. The main rationale is to increase capacity and deliver a new source of energy generating asset. There are no other local energy generating assets that would deliver the capacity required, that could guarantee supply and compete economically with the local grid option.

ECONOMIC COSTS

A full cost analysis will be provided once the business case development is complete showing the high, low and medium options with the ‘reference’ case taken for the final business case. An open book appraisal of the costs will be provided and evidence of benchmarking against similar schemes will be provided.

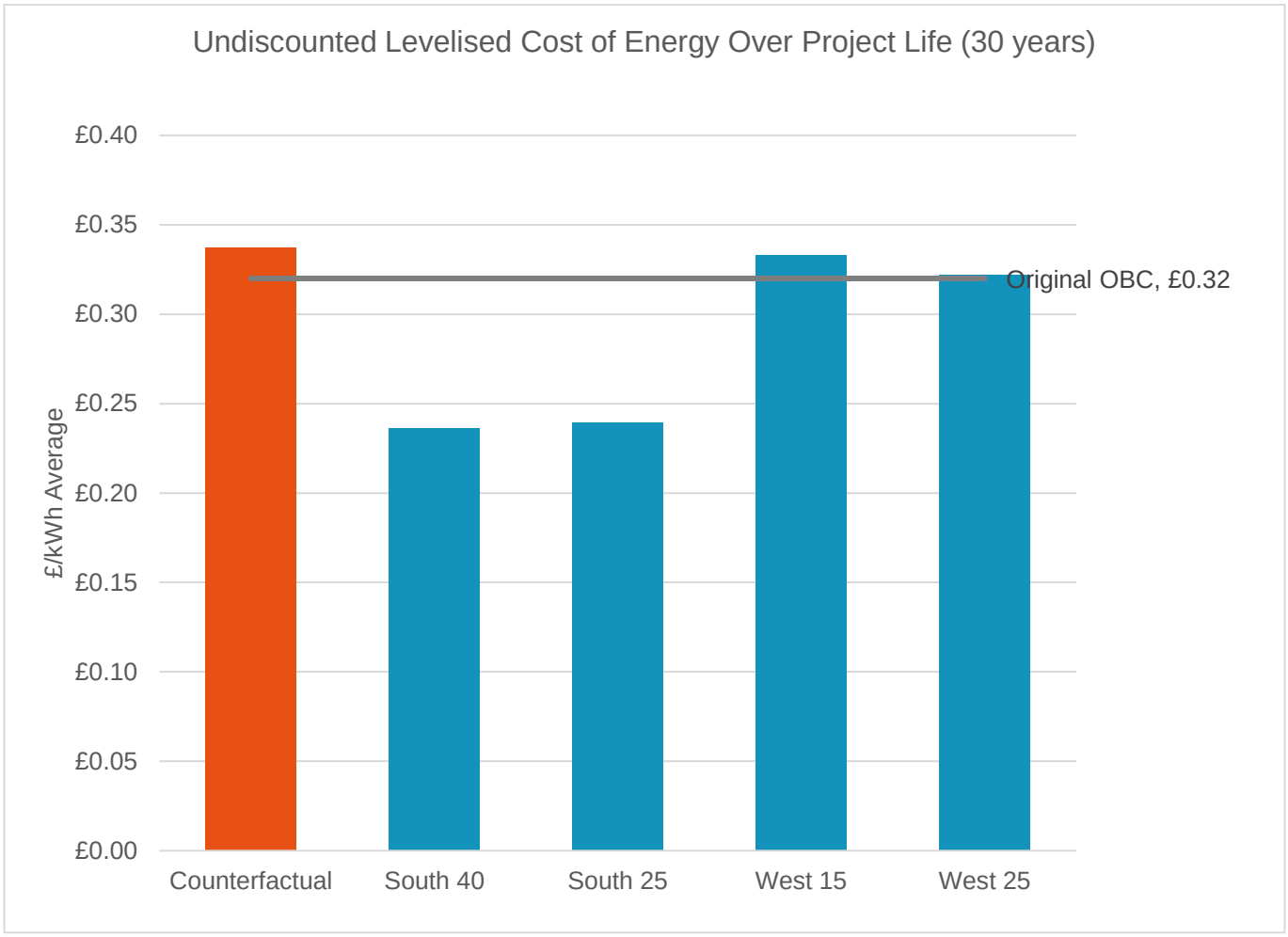
NON-QUANTIFIABLE BENEFITS

These benefits are to be determined however include environmental improvements to the working conditions in and around the Waterbeach Depot in response to increased eRCVs and the resulting reduction in noise and emissions. Additional biodiversity measures such as biodiverse grass and flower species will be provided on the solar PV site adjacent to the Depot, to provide Biodiversity Net Gain in accordance with Greater Cambridge Planning policies. The solar PV site is adjacent to Landbeach Pits Willow Wood County Wildlife Site, and there is an opportunity to further support species at that site through appropriate biodiversity net gain measures at the solar PV site.

There may also be an improvement to the air quality around the Depot location, which although directly a result of the eRCVs, would be curtailed without the WREN project.

In terms of region-wide benefits, the lessons learned and expertise developed within GCSW as a result of the WREN Project will be shared with other Local Authorities in the region to assist their own fleet decarbonisation programmes. There is also potential for the eRCV charging facilities to be used by other Local Authorities in the region that have compatible fleet vehicles. In addition, pressure that would otherwise be placed on the electricity network through a grid connection, would be alleviated through use of the micro grid, relieving capacity on the local network for others to use.

SUMMARY



The graph shows that against the counterfactual, the grid connection/reinforcement option, there are technical options for the local grid that significantly outperform the do minimum/counterfactual option. The local grid option with solar PV array southern orientation and 40degree incline is the best performing option based on the analysis to date.

COMMERCIAL CASE

INTRODUCTION

With global and national goals to reach net zero carbon, this project is attractive for the growing energy services and project delivery sector. With the value of projects in Cambridgeshire alone valued at £Xm, this demonstrates the need for market to deliver these services. The Commercial Case sets out the development and utilisation of the Energy Services and Project Delivery Constracting Framework, established by Cambridgeshire County Counci land Partner Authorities (including SCDC and Cambridge City).

PROCUREMENT OPTIONS

The project will be delivered with an established delivery partner consortium who have been pre-selected by Cambridgeshire County Council and Partner Authorities (including SCDC and Cambridge City) via the Cambridgeshire Energy Performance Services Contracting Framework following an OJEU competitive tender selection process. The consortium is led by Bouygues E&S Solutions with TESGL (trading as SSE Enterprise Energy Solutions).

City Council, SCDC and County have delivered previous energy schemes with the delivery partner Bouygues, including several solar Photo Voltaic (PV) projects for the County Council and a major programme for SCDC at the main offices, South Cambs Hall, which includes a solar PV plant and several energy efficiency improvement retrofits.

DELIVERY OF THE PROJECT

The project is collaboration between Cambridge City and SCDC together as the Greater Cambridge Shared Waste Service. SCDC is the lead authority for the shared service operating in the Greater Cambridge area on behalf of SCDC and Cambridge City Council. In addition to initial budget provision (which has come from existing shared service budget) residual funding will be secured from City and SCDC respectively. CPCA will be a funding partner.

Project delivery will be by SCDC, as the Shared Service Lead for GCSWS, using Bouygues E&S Solutions as the Delivery Partner for end-to-end project design, development and delivery. An Operations and Maintenance contract will also be in place for the lifetime of the project and is fully committed to in the on-going budget for GCSWS.

The Client-Side Project Manager will be Alex Snelling-Day from SCDC. Alex is PRINCE2 trained and has experience of developing and delivering energy projects including South Cambs Hall Greening Project. To ensure this project has robust management and direction as well as collaboration from all partners, Dave Prinsep from Cambridge City will be Project Sponsor/Director with Bode Esan, SCDC and GCSWS, as Programme Level Director.

The project team will include senior users and technical managers, including Waste Operations Manager from GCSWS and Corporate Energy Manager from City Council. The project team will also include a programme manager, Chris Bolton, represented from the Combined Authority.

PROCUREMENT STRATEGY

The majority of the project can be procured utilising the aforementioned Energy Services framework, utilising a call off contract 1 and 2 for the investment grade proposal and then the works contracts, respectively. Legal services for review of call off contract 2, utilising JCT form of contracts, will be procured by 3C Legals Lawshare framework.

Both procurement exercises will include requirements to deliver social value in the form of supporting local economy, making subcontracting opportunities available for local businesses, declaring their own carbon reduction initiatives supporting net zero and sustainable policies.

WIDER CONSIDERATIONS

Not applicable

FINANCIAL CASE

INTRODUCTION

The financial case outlines the budget provision to date and the rationale for financial investment at this stage.

APPROACH TO FINANCIAL CASE

There is currently no government allocated funding for pilot schemes or development funding for similar local grid and fleet schemes. Therefore, both SCDC and Cambridge City Council have sought CPCA funding in order to complement their own capital contributions and accelerate development of the WREN project. The development in the Investment Grade Proposal will be completed in the shortest time period possible to avoid impacts from inflation. In additional procurement exercises will be undertaken in a timely way to ensure prices can be locked in. As delivery partner Bouygues are a global operator with worldwide supply chains and are consequently able to advise and take action to manage inflationary risks, and have delivered successful similar projects in the UK and Cambridgeshire. An optimism bias has been factored into the costs with every scenario and option having a high, medium and low cost options.

FINANCIAL OPTIONS ASSESSMENT

The project is on behalf of GCSWS and therefore the respective councils of SCDC and City Council will be providing capital contributions. As this project aims to showcase best practice in local grid infrastructure to accompany fleet decarbonization, and it meets several local strategic objectives, the project has been put forward for CPCA funding.

PROJECT COSTING TABLE

	Financial Year	2020-21	2021-22	2022-23	2023-24
Project Costs	**Revenue**				
	Capital			£3,100,000	£1,900,000
	Total			**£3,100,000**	**£1,900,000**

	Financial Year	2020-21	2021-22	2022-23	2023-24
Funding Stream	*Gainshare*			2,000,000	700,000
Medium Term Financial Plan	*Approved to spend*				
	Subject to approval			2,000,000	700,000

Table 3: Project Costing table showing project costs and CPCA funding information.

Committed Cambridge City and SCDC to Project Budget

After the CPCA capital funding of £2.7m this leaves a residual project cost of £2.3m capital.
SCDC, as the lead authority for the shared service, has fully committed the total residual funding in the forward programme and all expenditure will initially be incurred by SCDC. SCDC will be utilising funds from the Renewables Reserve, which is ring-fenced income from business rates paid by owners of

renewable energy projects across the District. CPCA funding is expected to be fixed at £2.7m and SCDC and Cambridge City Council will meet any shortfall.

Upon approval of the costed business case, and funding commitment from the CPCA, a further joint paper will be sent to Members of both SCDC and Cambridge City Council obtaining formal budget approval for Cambridge City Council for their 50% contribution to residual project cost; noting the Combined Authority's contribution to the initiative; and updating SCDC members of the net contribution that they will release for the project from the Renewables Reserve budget. This is planned to take place end Q2 / beginning Q3 2022/23, the project team are targeting meetings dates in September/October 2022.

Land leasehold costs
The land lease costs are in addition to the capital project costs as they relate to existing and on-going lease arrangements. The costs are estimated as £3,000 pa. These costs are fully committed in the forward programme for GCSWS.

WREN Operations and Maintenance Programme
The Full Business Case will include options for the operations and maintenance contract. These costs will be from the committed operations budget for GCSWS.

Fleet Replacement Programme
The costs relating to the fleet replacement are not part of this project. Both councils are fully committed to the fleet replacement programme and have committed funding to an on-going programme which started in 2020/2021. Further information relation to the timeline and costs can be shared when required.

PROJECT COST BREAKDOWN TABLE

Sources	Value	Uses	Value
Combined Authority	£2.7xm	Operating Costs and Management Fees	£(4.85)m
Public sector co-funding	£2.3m	Development Costs	£(0.15)m
Private sector co-funding	£0m	PWLB Interest Paid	£(0)m
Revenue	£0m	PWLB Loan Repayment	£(0)m
PWLB Drawdown for capital costs (if applicable)	£0m	…	
…	£0m	Total Uses	**£(5)m**
	£0m	Retained Cash Balance	£(0)m
Total Sources	**£5m**	**Total Uses less Retained Cash Balance**	**£(0)m**

AFFORDABILITY ASSESSMENT

To be completed once full business case information provided. However, key point relates to financing mechanism for both Councils. SCDC will be utilizing capital reserves, without borrowing and therefore no constraints regarding cost flow. NPV is being utilized in the business case analysis and is a key performance parameter for the business case.
The project team includes David Hill, the GCSWS Accountant, who will provide commentary of the business case once completed.

MANAGEMENT CASE

INTRODUCTION

The following information shows how the project will be delivered to budget, programme and agreed quality acceptance criteria.

PROJECT TIMELINE

Project 113 Waterbeach Renewable Energy Network WREN

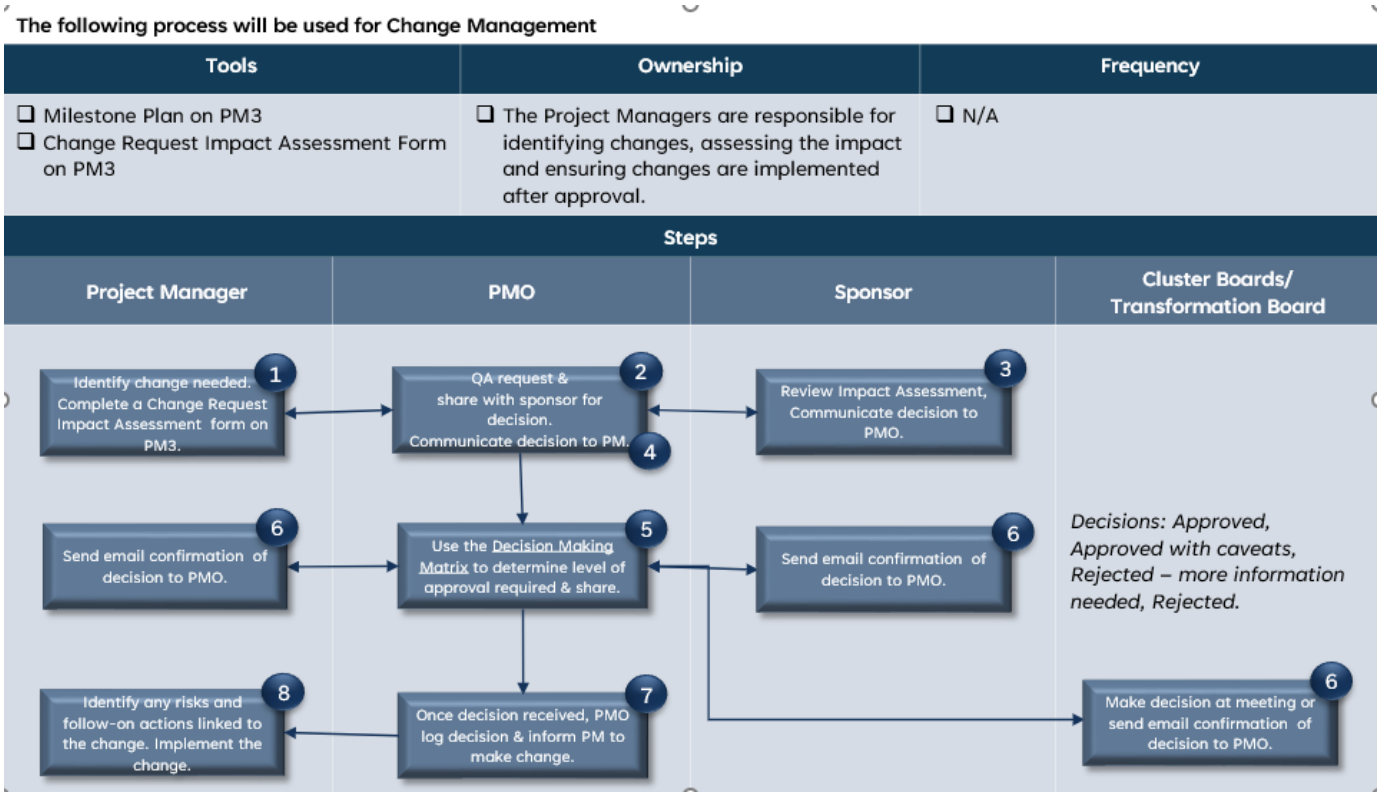
Headline Activity	21/22				22/23				23/24			
Key Deliverable milestone	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
OBC / IGP Development												
Consents												
Permitted Development (Cert. of Law)												
Pre-Comm Conditions Discharge												
Non-material Amendment												
G99 Budget Application												
G99 Connection agreement												
ANM Feasibility Study												
Leasehold Agreement												
IGP / OBC Deliverables												
Concept Design Report												
Outline Business Case												
Permitted Development Opinion												
G99 Budget Application for Connection												
Draft Leasehold Heads of Terms												
Risk register												
Design Development Report												
Procurement Plan												
Conditions Discharge Application / Non material Amendment												
G99 Application for Connection												
Leasehold Heads of Terms												
Updated Risk Register												
Investment Grade Proposal												
Contractor's Proposal Documents												
Conditions Discharge / Non material Amendment Approval												
G99 Connection Offer												
Draft Leaseholder Agreement												
Capital Build												
Solar Power Plant												
Microgrid Infrastructure including Microgrid energy centre MEC												
Electric Refuse Vehicle chargers												
Energy Management System												
Energy Storage System												
Mains Point of Connection												
Comissining												
Client Handover												
O & M contract start												

EXIT STRATEGY

The first part of the Exit Strategy is to ensure that the Senior User / End User is part of the Project Team during the initiation, Full business Case and Delivery phases of the project. Principally this will be Mike Parsons, Waste Operations Manager at GCSWS. This will enable visibility throughout from the operational team to help shape the design, avoid unnecessary costs/impacts and ensure that during commissioning and handover there is a well-developed level of knowledge about the technology involved in the project. GCSWS have an existing annual budget for operation and maintenance of the fleet, the new costs for the renewable energy network and the new e-RCVs replace the previous costs and therefore are covered in the existing budget allocation.

The approach to be taken with Bouygues E&S Services will be to follow a Commissioning Method Statement including pre-commissioning checks and notices. Upon satisfactory completion inspections, a handover meeting will be held covering all elements of the project with accompanying documentation. Following build out and commissioning, there will be an Energy Performance Contract in place to ensure the performance of the renewable energy network. There will also be an operations and maintenance plan in place which will ensure end users have access to a dedicated specialist team. Costs associated with this post-commissioning activity have been factored into GCSWS annual budgets and will not form part of the capital project costs and therefore will be wholly funded by GCSWS and not CPCA funding.

CHANGE MANAGEMENT



The tolerances are included in the Decision-Making Matrix:

	Formal Decision-Making			
	Project Manager	Project Sponsor	Cluster Board	Transformation Board
Schedule	Changes to Project Activities.	Approve changes to delivery timeline up to 10%, where no impact to overall project timeline.	Approve changes to delivery timeline up to 20%, where no major impact to overall project timeline.	Approve changes to delivery timeline up to 50%, where there is a major impact to overall project timeline.
Scope	n/a	Approve any changes to project Outputs/Deliverables of up to 10% variance from the delivery of the business objectives.	Approve any changes to project Outputs/Deliverables of up to 20% variance from the delivery of the business objectives.	Approve any changes to project Outputs/Deliverables of up to 50% variance from the delivery of the business objectives.
Cost	Approve any changes up to 5% over agreed budget or up to £5,000 in any financial year.	Approve any changes up to 10% over agreed budget or up to £50,000 in any financial year.	Approve any changes up to 20% over agreed budget or up to £300,000 in any financial year.	Approve any changes up to 50% over agreed budget or up to £500,000 in any financial year.
Benefits	n/a	Approve overall Success Criteria and measures for Projects.	Approve any small changes to overall business case benefits.	Approve any major changes to overall business case benefits.

Any cost changes above 51% of the agreed budget or more than £500,000 in any financial year, with changes impacting the overall scope, timeline, quality and outweighing the benefits of the project business objectives will be escalated to Leadership Team.

PROJECT MANAGEMENT

Programme Sponsor/Director: Bode Esan, GCSWS and SCDC
Project Sponsor/Director: Dave Prinsep, Cambridge City Council
Project Manager: Alex Snelling-Day, SCDC
Supplier: Miles Messenger from Bouygues E&S Solutions

The Waterbeach Renewable Energy Network (WREN) will be administered by SCDC as a “Green to Our Core” (Cluster Project) under the Transformation Programme. The Cluster Board will drive operational delivery by generating a clear focus on project deliverables and making key decisions required to ensure successful project adoption into relevant service areas. The Cluster Board is in turn under the direct supervision and oversight of a Transformation Board.

The Transformation Programme Team is made up of the Management Team (Head of Transformation & Transformation Programme Manager) and a Project Management Office Team (PMO). The PMO govern the project delivery lifecycle and provide portfolio level reporting to the Transformation Board and Leadership Team. The Transformation Board is chaired by SCDC’s Chief Operating Officer, and the Board reports directly to SCDC’s Leadership Team.

The PMO sets, maintains and ensures standards for project management across the organisation, including best practices, project status, efficiency in planning, tracking progress and direction, etc. The PMO Team consists of The PMO Manager, Project Managers, Business Analysts, Interaction Designers and a Project Support Office.

The Transformation Programme utilises a customised Project Management Methodology based on the Prince2 Methodology and is aligned to the Portfolio Project Management Tool PM3.

R = Responsible A = Accountable C = Consulted I = Informed **Organisational Role** **Decisions/Activities**	**Director (Senior Responsible Officer) Bode Esan**	**Project Director Dave Prinsep**	**Project Manager Alex Snelling-Day**	**Consultant Team Miles Messenger - BYES**	**Project Board**	**Members Group Steering Committee**
Project initiation	A	A	R	R	C	C
Delivery of the project	A	A	R	R	C	I
Changes to cost and programme (subject to Decision Making Matrix)	A	A	R	R	C	I
Compliance and assurance of operational data	A	A	R	R	C	I
Technical assurance of the content and quality of data throughout the life of the project	A	A	R	R	C	I
Content and quality of information data on a day to day basis			R	R	C	
Project closure	A	A	R	R	C	I

STAKEHOLDER PLAN

Stakeholder Analysis			
Role & Name	Power/Influence (High or Low)	Interest/Impact (High or Low)	Engagement
Project Manager	High	High	Project Board Project Team Meetings Green to Our Core Cluster Board GCSWS Steering Group
Combined Authority	High	High	Project Board Performance and Risk Committee Monthly Highlight and Finance Reporting
Greater Cambridge Shared Waste Service Steering Committee (Members and Senior Officers)	High	High	Updates to/Project Manager to attend GCSWS Steering Committee
SCDC Members	High	High	Climate & Environment Advisory Committee
Landlord – Alboro Development	High	Interest High	Update via established Liaison Meeting and further special meetings where required.
Waterbeach Parish Council	Low	High	Pre-construction and during construction re impacts

AMEY/Waterbeach Community Liaison Group Members[1]	Low	High	Attend / give updates at established Forum. Maintain clear communication channel.

Communications Plan

Meeting & Purpose	Delivery method	Owner/ communicator	Frequency	Audience/Stakeholders
Project Team	IRL / Teams	Project Manager	Bi-weekly	Project Manager Project Team Members Senior Users Project Support Consultancy Team Representatives
Project Board	IRL/ Teams	Project Manager	Monthly	Project Team (as above) Project Sponsor
Combined Authority		Project Manager	Monthly	Highlight and Finance Reporting
Green to Our Core Cluster Board	IRL/ Teams	Project Manager	Monthly	Cluster Board – Programme Level Director
Transformation Board	IRL/ Teams	Programme /Project Directors supported by Project Manager	Monthly	SCDC Leadership Team
SCDC Leadership Team	IRL/ Teams	Programme/Project Directors/ Manager	Monthly	SCDC Leadership Team
SCDC Climate and Environment Advisory Committee (CEAC)	IRL/ Teams / Public Meeting	Project Manager	Quarterly	Elected South Cambs Members
Greater Cambridge Shared Waste Steering Committee	IRL / Teams	Programme / Project Directors / Manager		Elected Member representatives from City and SCDC alongside senior leadership officers from City and South Cambs.
CPCA Board and Committees	IRL / Teams	Project Director / Manager	As directed by CPCA	CPCA

[1] The proposed solar PV project in Waterbeach will be located adjacent to an existing Waste Treatment Park, operated by Amey. The waste park has an established local community engagement forum, the Waterbeach Community Liaison Group (CLG) which meets regularly to discuss topics of interest. The meetings are organised by Amey.

ASSURANCE

The project will follow SCDC project assurance processes, including review of the business case information provided by third party/independent party.

SUPPLY SIDE CAPACITY AND CAPABILITY

None

KEY CONTRACTUAL AGREEMENTS

Consent Required	Authority	Stage Required	Responsible Organisation	Description	Risk of Refusal	Status	Action
Permitted Development (Cert. of Law)	Greater Cambridge Shared Planning	2	Bouygues E&S	Required for the works within the depot site to verify compliance with the GDPO.	Low	Preparation	TBC
Pre-Comm. Conditions Discharge	Greater Cambridge Shared Planning	3	Bouygues E&S	Solar farm planning consent includes conditions that must be discharged.	Low	Preparation	TBC
Section 73 Application	Greater Cambridge Shared Planning	3	Bouygues E&S	Required to accommodate for the changes to the originally consented solar farm.	Low	Preparation	TBC
G99 Budget Application (no longer required)	UK Power Networks	N/A	N/A	N/A	N/A	N/A	N/A
G99 Connection Agreement	UK Power Networks	3	Bouygues E&S	For the connection of the microgrid to the Distribution Network	High	Preparation	TBC
ANM Feasibility Study (no longer required)	UK Power Networks	N/A	N/A	N/A	N/A	N/A	N/A
Leasehold Agreement	Alboro Developments	3	GCSW	TBC	TBC	TBC	TBC

In addition, the design and delivery by Bouygues is subject to Call Off Contract 1 and a Call Off Contract 2. CoC1 is currently in place for the delivery of the Investment Grade Proposal and CoC2 will be drafted for close in Q4 22/23 following successful completion and approval of the final business case.

MONITORING AND EVALUATION

Benefits Realisation Plan will be developed, as set out by SCDC PMO. In addition, the project will use a logic model, as outlined by CPCA, after the project is initiated.

An integrate part of the plan will be the Defined Performance Parameters which are set out in the Full Business Case (Investment Grade Proposal). This is a key part of the Energy Performance Contract with the delivery partners. To evaluate performance against the parameters an Annual Monitoring Report is produced by the Delivery Partner. The Benefits Realisation Plan will also include measuring impact of the project on our GHG reporting and carbon footprint for both SCDC and Cambridge City Council.

The plan will measure against the 6 capitals scoring

The Benefits Realisation Team at SCDC will have oversight and responsibility for checking the evaluation is completed. The Project Manager is responsible for checking the Defined Performance Parameters are maintained or improved through the project delivery with the Senior User once the solution is commissioned. Bouygues E&S Solutions will Measurement and Verification Team will undertake the Annual Monitoring Reports.

The project is delivered with an Energy Performance Contract (EPC). In the Investment Grade Proposals, equivalent to Full Business Case, will include Key Performance Outcomes which will form the EPC:

- Project Maximum Capital Cost (£)
- Maximum Payback Period (years)
- Renewable Energy Generation (kWh/yr)
- Carbon Emissions Saving (TCO2/yr)
- Minimum Savings Guarantee (kWh/yr)

The following process will be used to identify, capture and manage Benefits that pertain to programme and project delivery.

<table>
<tr><th colspan="2">Tools</th><th colspan="2">Ownership</th><th>Frequency</th></tr>
<tr><td colspan="2">• Benefits Realisation & Transition Plan
• Business Case
• Project Initiation Document (PID)</td><td colspan="2">• The Project Manager for the lifecycle of the project
• The Senior User for the project
• Benefits Realisation resource
• Policy & Performance</td><td>• Throughout the duration of the project
• Benefit Realisation review after project closure</td></tr>
<tr><th colspan="2">Definition & Types</th><th colspan="3">Process</th></tr>
<tr><td colspan="2" rowspan="2">A Benefit is a positive and measurable impact of change.</td><td>Define</td><td colspan="2">High level discussions around project benefits are documented in the business case by the project manager & senior user.</td></tr>
<tr><td>Initiation & Planning</td><td colspan="2" rowspan="3">All known benefits (incl. measures and targets) are identified and signed-off by the project manager and senior user alongside Policy & Performance.
The project manager and senior user start to populate the Benefits Realisation & Transition Plan for unknown benefits and conversations around targets & measures commence and are documented here.
This goes on for the rest of the project lifecycle.</td></tr>
<tr><td colspan="2">Benefits Management is the identification, definition, planning, tracking and realisation of benefits.</td><td>Delivery (Execution/Monitoring & Control)</td></tr>
<tr><td colspan="2">Benefits Realisation is the process for the identification, definition, tracking, realisation and optimisation of benefits ensuring that potential benefits arising from a programme of change are actually realised.</td><td>Close</td></tr>
<tr><th>Global Benefits</th><th>Local Benefits</th><td colspan="3"></td></tr>
</table>

Benefits that will be delivered through multiple current or future projects. Closely aligned to strategic objectives.	Benefits that are likely to be specific to one or a very small number of projects. Less closely aligned to strategic objectives.	**Benefits Realisation**	The project manager and senior user alongside Policy & Performance, complete and sign off the Benefits Realisation & Transition Plan, with active involvement from the stakeholders who are the benefit recipients. Once targets & measurements have been agreed by Policy & Performance, the project manager & the senior user, benefits will monitored and reported on by Policy & Performance on PM3. Targets & measurements cannot be changed without all 3 parties in agreement.