

**Report to Councillor Deborah Urquhart, Cabinet Member for
Environment and Climate Change**

March 2022

Halewick Lane Battery Storage Project – Revised Scheme

Report by Assistant Director (Environment and Public Protection)

Electoral division: Sompting and North Lancing

Summary

In June 2019, the Cabinet Member for Environment approved a business case for the development of a 20MW “second life” battery storage installation on a former waste disposal site at Halewick Lane, Sompting.

In March 2021, the business case was revised owing to the loss of Innovate UK grant funding. Following the presentation of several options to the Communities, Highways and Environment Scrutiny Committee, the Cabinet Member for Environment [approved](#) a 12 MW second life battery system. This would have permitted the installation of up to 12MW additional capacity at a later stage in the light of experience with the initial scheme.

A procurement process was commenced in accordance with the decision but the cost of the second life batteries was unexpectedly high. Bidders indicated that a scheme could be delivered more cost effectively using new batteries.

It is therefore recommended that further amendments are made to the previously approved business case, using first life batteries and at a scale that maximises use of available capacity in one process. This is expected to lead to development cost savings and earlier benefit of income versus the two-phase approach. Given the County Council’s existing experience with a proven first life battery scheme, the risk associated with full development of the site is considered low.

The project makes a lasting contribution toward meeting the ambitions of the County Council’s objectives within its Corporate Plan (Our Council Plan 2021- 25). In directly supporting the cross-cutting challenge of climate change, it is in addition supporting the key priority of making best use of available resources.

Recommendations

It is recommended that, for the Halewick Lane, Sompting, Battery Storage Project, the Cabinet Member for Environment and Climate Change:

- 1) Approves a re-procurement process increasing the system size to 24MW with the specification of first life batteries as set out in section 2 of the report

- 2) Approves the increase of £12.063m to give a total budget of £23.600m, funded from the Your Energy Sussex – Solar Farms and Battery Storage line in the approved capital programme as set out in section 5 of the report.
- 3) Delegates authority to the Assistant Director (Environment and Public Protection) to, at the conclusion of the procurement process, award the pre-construction contract, and design and build contract for the scheme provided that the scheme can be delivered within the budget as outlined in the Business Case.

Proposal

1 Background and context

- 1.1 This business case for the Battery Energy Storage System at Halewick Lane, Sompting builds on the previously approved Strategic Outline Case for developing the pipeline of energy projects as part of the Energy Services Team. That Strategic Outline Case supports the integration of low-carbon energy generation and infrastructure into the development of West Sussex County Council assets.
- 1.2 The procurement process for the main design and build contract for the project completed in October 2021.
- 1.3 The outcome from this process highlighted several reasons to re-examine the existing approved business case (approved January 2021) to maximise available benefits from the site.
- 1.4 The procurement process demonstrated how the second-life battery storage market has not matured over the previous 12 months; with capital costs per MW increasing by 25%.
- 1.5 An increase in ancillary works costs by around 50% were also observed.
- 1.6 These increases follow the trend of significantly inflated costs across the wider construction sector. In relation to this project in particular, the immaturity of the 2nd life battery sector has also been attributed to the increased costs. The case was therefore made for re-examining the approved business case with consideration for a more conventional 1st life commercial battery system.
- 1.7 The following assumptions included in the financial model of the (previously approved) business case have been reviewed and updated:
- 1.8 **Capital Expenditure** - within the updated financial model an average of both battery capital expenditure and ancillary costs from the recent procurement process was used. In addition, the Council's Multi-Disciplinary Consultant Faithful and Gould have updated a pre-tender estimate for the design and build phase of the project. The cost per MW now being used is therefore reflective of the market costs currently being observed.
- 1.9 **Ancillary works costs** - included ancillary works costs within the updated budget that are reflective of what is now being reported nationally.

- 1.10 **Electricity market prices** – E.ON, the county council’s energy aggregator and supplier has refreshed its projections for wholesale electricity market prices and the value of Demand Side Response services to take account of the recent price increases. The outcome from the modelling undertaken by E.ON was consistent with national projections of UK energy prices remaining high for a number of years before then beginning to level. This is due to a number of global factors including Covid-19 economic recovery, intermittent renewable energy dependence, energy price cap changes and most recently the Ukraine conflict.
- 1.11 **Lifecycle costs** - two elements of the project lifecycle costs have been updated: budget for the inverter replacements across the life of the scheme and the battery replacements. It is now commonplace to purchase extended warranties for commercial size battery inverters. It is therefore proposed that a warranty is secured for 15 years, and a full replacement budgeted for in year 16. A budget for replacement of the batteries remains in year 11 which follows the current industry standard. A full battery replacement is therefore budgeted for in year 21, which will reflect the longer overall project life of the system noted below (1.12).
- 1.12 **Contingency** - given the significant market uncertainty the project-wide contingency has been increased. Across the two contracts (grid connection and design and build) standard construction contingency has also been applied.
- 1.13 **Project life** - given that the existing planning approval is not time limited and to maximise the use of all assets it is proposed that the project life is extended to 30 years from the original 25. This approach, which aligns with a single inverter replacement and two battery storage system replacements (with associated extended warranties), will ensure that the county council will have received most value from the installation before it is decommissioned.

2.0 Proposal details

- 2.1 It is proposed to amend the technical solution to a first-life battery storage solution. A first-life system will allow longer-term performance warranties to be purchased with any risks associated with faults or under-performance being substantially mitigated.
- 2.2 It is recommended that WSCC approves the changes to the previously approved business case, increasing the system size to 24MW.
- 2.3 Developing the project in a single phase will have the impact of realising the total financial benefits from the site much sooner. The overall preliminary/development costs will also be significantly less in comparison to developing a second phase at a later stage.
- 2.4 The increased size of the scheme requires that the current capital allocation of £11.553M is increased by £12.063M to account for the projected full cost of the system (£23.6M).
- 2.5 The projected income after financing costs, from the recommended system size is £1.8M for year 1 and £46.7 M (net) over the lifetime of the project.

2.6 Recommendation 3 allows the Director of Environment and Public Protection to approve the recommended outcome of the procurement process and award contracts for the design and construction of the scheme subject to it being within the overall budget envelope. These processes will be undertaken in accordance with the Council's Standing Orders on Procurement and Contracts. The full cost of the system, along with all development and professional fees and adequate contingency is £23.6 M.

3.0 Other options considered (and reasons for not proposing)

3.1 **WSCC obtains planning for the site but then leases the whole site to a third party to operate a battery storage scheme with WSCC simply taking a rent.**

3.2 Advantages:

3.3 WSCC would simply take a rent from the site for an agreed period. The risk associated with generating an income from the site would then sit with the site operator.

3.4 The option presents a much lower capital cost to WSCC, enabling it to divert expenditures to other areas.

3.5 Disadvantages:

3.6 The low projected income derived from leasing this entire site to a third party would make a project of this size unviable. Leasing a corporately owned site and its grid connection to a third party is a legitimate consideration for many energy sites of this nature. However, the grid connection cost for this site is substantial, and a leased site alone would therefore not pay back on this investment. Please refer to Table 1 to illustrate the inadequate payback and IRR by simply leasing the site.

3.7 **WSCC obtains planning for the site, owns, and operates a 12 MW battery site and plans a subsequent 12 MW within 2-3 years of commissioning of the first phase.**

3.8 Advantages:

3.9 Whilst the site grid connection cost and enabling works would remain unchanged, the overall capital cost for the site would be significantly less.

3.10 Developing a second phase at the site would be very straight forward in that most of the enabling works will have been completed in phase 1.

3.11 Disadvantages:

3.12 If WSCC were to divide the 24MW export potential from the site into two phases the full operational potential, and associated revenue from the project would be realised much later.

3.13 Splitting the site into phases has a heavy energy services team resource requirement and would prevent prioritising other projects on the capital programme pipeline.

- 3.14 There would be increased risk with a separate phase as a subsequent application would trigger a new planning amendment which may or may not be approved.
- 3.15 There would be fewer opportunities for cost reductions in procuring a smaller system.
- 3.16 In assuming that a subsequent phase would be developed in circa 3-5 years it is likely that supply-chain costs are then likely to be higher.
- 3.17 **Recommended Option: WSCC wholly owned 24 MW energy storage scheme (developed in a single phase)**
- 3.18 **Advantages:**
- 3.19 In developing a 24 MW energy storage scheme in a single phase WSCC would maximise the income generation capability from the site much sooner. Retaining full ownership of the site will in addition mean that it will be able to respond to any further market changes and opportunities in the future.
- 3.20 All development costs included in a single phase would result in significant savings for design, project management, planning, and any survey requirements
- 3.21 All revenue benefits are realised within 1 year of awarding contract in developing a larger system.
- 3.22 Economies of scale would be expected if a procurement were to be undertaken for a 24 MW battery system.
- 3.23 Developing the site as a single phase would be an efficient use of Energy Services team resource. This would enable the team to complete this project and dedicate more resource to other projects in the capital programme pipeline.
- 3.24 Completing the 24MW site in a single phase would mean that all operation and maintenance requirements would be easier to manage with the entire system being one operational design.
- 3.25 Battery storage is a rapidly growing industry and will remain a key contributor to supporting electricity network challenges across the country. By developing this battery storage site, the council will maintain a position of leadership in this Sector.
- 3.26 **Disadvantages:**
- 3.27 A wholly owned 24 MW project would involve significant capital cost. The previous business case included an Innovate UK discount which is no longer available to the project.
- 3.28 The capacity market income streams on which the system relies are undergoing some changes. Therefore, any future changes could affect the business-modelling that has been undertaken to date. With all revenue generated from the site coming from the sale of power the project is exposed

to any market changes but can still be expected to generate higher income than any other option.

4.0 Consultation, engagement, and advice

- 4.1 The Capital and Assets Board (part of the Council's internal governance process for capital projects) has considered and supports the Business Case options previously presented, and comments from the Board have been incorporated into the final proposal and recommendations. Further sensitivity analysis on the financial model was requested. This has since been undertaken and included within this paper.
- 4.2 During the early stages of the project extensive local consultation was undertaken with the local community. Throughout the planning application stage there were no objections received. The Parish Council has in addition been kept fully up to date with the project as it has progressed.

5.0 Finance

- 5.1 The business case requires that the current capital allocation of £11.553M is increased by £12.063M to account for the projected full cost of the system (£23.6M). The increased capital for the project is proposed to be drawn from the existing Your Energy Sussex – Solar Farms and Battery Storage line in the approved capital programme. This proposal is included in the updated business case for the project and was presented and approved to proceed at Capital and Assets Board (as stated in 4.1).
- 5.2 The key assumptions applied in the financial model for the project have been reviewed and explained in sections 1.8 - 1.12 of this report.
- 5.3 As set out earlier in the report the costs for construction have been updated and the cost per MW is now reflective of the current market conditions. In addition, the budget includes a construction contingency of £2.1m to further mitigate against any market fluctuations.
- 5.4 As noted above, E.ON, the county council's energy aggregator and supplier has refreshed its projections for wholesale electricity market prices and the value of Demand Side Response services to take account of the recent price increases. Assumptions in terms of the year 1 income to be achieved from the sale of grid services have been updated by E.ON and reflects national projections of UK energy prices remaining high. E.ON have assessed a range of markets including Dynamic Containment, Capacity Markets and Market Access to build the revenue projection for the project.
- 5.5 For additional due diligence the council recently commissioned independent energy consultants Cornwall Insight as an independent third-party specialist to assess E.ON's projections for the system. The outcome from this exercise confirmed that the E.ON's approach to market was in line with best practice.
- 5.6 Within the model a prudent view of the increase in income from grid services has been included with income only increasing in line with long term CPI projections of 2%. Should energy prices continue to increase as we have seen over recent months then this would have a positive impact on the level of income predicted in the business case. Additional sensitivity analysis has been

provided in Table 1 to assess the impact of a greater fluctuation to the CPI on the project.

- 5.7 The other long-term sensitivity to the model would be the productivity of the system itself and the impact of detrimental performance is set out in paragraph 5.13 below.
- 5.8 The financial model has in addition been subjected to a number of tests to assess its financial sensitivity (section 5.9 - 5.16).
- 5.9 The updated budget for the system takes full account of all spend on the project to date (£1.478M).
- 5.10 Over the 30-year life of the project it is estimated that the site will generate a net £46.7m to the County Council, with year 1 gross income expected to be in the region of £81M.
- 5.11 The tables 1 and 2 below demonstrate the income and expenditure across the life of the project and a detailed cashflow over the first 4 years of the project. The capital financing interest rate used for modelling purposes 3%.

Table 1:

	Proposed approval of 24MW Battery Scheme- Income and Expenditure over 30 years	Previously approved 12MW Scheme- Income and Expenditure over 25 years
	£'000s	£'000s
Income		
Grid Services	-91,269	-22,136
Expenditure		
Capital Financing Charges	35,093	11,455
Maintenance, Lifecycle and Rates	9,442	4,817
Total Expenditure	44,535	16,272
Net Income	- 46,734	- £5,864
Payback Period	9.6 years	15.2 years
IRR	9.93%	4.83%

Table 2:

Contract Year	1 £'000s	2 £000s	3 £000s	4 £000s	5 £000s
Income	-3,040	-2,800	-2,548	-2,720	-2,196
Maintenance, Lifecycle & Rates	30	49	50	50	50
Capital Financing	1,170	1,170	1,170	1,170	1,170
Net Income	1,840	1,581	1,329	1,500	976

Table 3: High-level Project Budget

Item	Estimate Cost
Phase 1 stage:	
Demolition Stage and Prep Stage	197,561
Grid connection costs (UKPN, DNO, and MDC support)	964,000
Sub total	1,162,000
Phase 3 Construction Phase:	
24 MW batteries & ancillary works	17,903,000
LECSea contribution	-
Grid connection with ICP discount	2,643,203
UKPN costs (including variation)	344,537
Sub total	20,355,447
Contingency	2,098,944
Total	23,615,953

5.12 Table 4: Capital consequences:

	Year 2 2021/22 £m
Capital budget required	£23.616M
Approved Capital budget allocated in Capital Programme	£11.553M
Variance	(£12.063M)

5.13 The effect of the proposal:

5.14 How the cost represents good value

5.15 The projected income after financing costs, from the recommended system size is £1.9M for year 1 and £48.8M (net) over the lifetime of the project.

5.16 The scheme will generate an income that will mitigate WSCC energy budget exposure to future energy price increases.

5.17 The land has very limited alternative development potential and presents a scheme that is entirely removable. A budget estimate for full decommissioning has also been included within the financial model.

5.18 **Sensitivity analysis:**

5.19 The projected financial model has been subjected to a number of tests in order to assess its sensitivity.

Table 5: Project Assumptions and Sensitivity

No.	Assumption	Base value	Sensitivity	Outcome	Notes
1	The lifetime income calculation supplied by E.ON is an accurate reflection of the market.	£127K per MW per annum Generating £46.7m Net income	10% increase	IRR increases to 11.31% Net income to increases to £56.8M	Prices in the energy services markets are volatile and, while projected to remain high, the council is exposed to this merchant risk. This risk is mitigated through a contract with a competent 'Demand Side Response' contractor (E.ON).
			10% decrease	IRR drops to 8.51% and generates £36.7m Net income	
2	System performance is expected to deliver the full 20Mwh's as per the business case	£127K per MW per annum Generating £46.7m Net income	10% increase	IRR increases to 11.18% Net income to increases to £55.8M	Any possible losses in performance will be mitigated against through performance warranties and insurance to protect against loss of revenue. O&M will be provided by the contractor for the first 2 years.
			10% decrease	IRR drops to 8.65% and generates £37.6m Net income	
3	The interest rate for borrowing remains the same	3% generating £46.7m Net income	Increased to 3.5%	IRR stays at 9.93% and generates £44.6m Net income	
			Decreased to 2.5%	IRR remains at 9.93%. Net Income increases to £48.8M	

4	The interest rate for borrowing remains the same and the income expectation remains the same	3% - generating £46.7m Net income	3.5% and 30% Loss of income	IRR drops to 5.9% and generates £17.2 Net income	
5	CPI continues at a prevailing rate	2%	If CPI were to increase to 2.5%	IRR increases to 14.6% Net Income increases to £219M	
			If CPI were to decrease to 1.5%	IRR decreases to 5.17% Net Income reduces to £4.6M	

5.20 Future savings/efficiencies being delivered

5.21 The project contributes to protecting the County Council from energy price inflation and projects a net income for WSCC of £46.7M over the lifetime of the project.

5.21 Human Resources, IT and Assets Impact

5.22 No additional HR or IT resources are required for the scheme. There is no impact on WSCC assets

6 Risk implications and mitigations

Risk	Mitigating Actions (in place or planned)
(A) Due to global supply-chain issues across multiple areas on construction projects the capital costs for the project may increase beyond the budget.	<p>Efforts to mitigate the impact of supply-chain issues will be covered by multiple means:</p> <ul style="list-style-type: none"> • During the moderation stage of the procurement potential contractors will be directly scored against how they can demonstrate their ability to mitigate the impact of supply-chain issues disrupting the project. • In re-visiting the budget for the scheme it is considered that a significant contingency budget is available to absorb a reasonable degree of change to the budget. • Once the main contract has been awarded plans will be made to pay for and secure all major key components for the project. Vesting agreements will be in place to confirm ownership of the items which will then provide programme and cost certainty.
(B) The battery solution procured for the site either incurs problems within	1. The final design of the system is heavily influenced by the protections that can be purchased and

Risk	Mitigating Actions (in place or planned)
the lifetime of the warranty or after it has expired	<p>designed-into the final project. The battery storage system purchased will have a 10-year performance warranty as a minimum. This will ensure recourse to the battery system designer in the event of any reduction in overall performance of the system. Full replacements of the battery inverters are also budgeted for within the scheme (as noted above the inverter warranties procured for the project will be increased to 15 years).</p> <p>2. Within the financial model for the scheme a full battery replacement will be budgeted for every 10 years.</p> <p>3. As has been secured with the Westhampnett solar farm, insurance will also be included against loss of income in the unlikely event of system failure. Whilst the batteries will be under a 10 year warranty (as a minimum) , the lead-in time to obtain any replacement components under warranty will be insured against.</p>
(C) Income from the battery system is reduced due to Government policy changes	<p>1. The income from this scheme does not rely in any form upon any Government subsidy such as Feed-In Tariff. Whilst there is some uncertainty and potential for change with regards to the income streams available to energy generating assets, the overall trend is unchanged. The urgent need for grid balancing and local generations assets such as this project is needed nationally (as has been documented in the strategic case) and this has been demonstrated in the financial modelling below</p> <p>2. The proposed system configuration of the site is for a battery system that will be flexible enough to support national grid with all known challenges that it faces which tally with the available income streams. The council also receives regular specialist advice from E.ON Business Services to support decision-making in how the assets are monetised and how any such policy changes can be managed</p> <p>3. A 1-hour (1C) battery will be used for this development as the previously proposed 2 hour (0.5C) battery has been shown through peer review to be less financially efficient and so no longer the optimal system for the market.</p>
(D) The development receives negative press coverage and is objected to by the local community	<p>On 3 April 2019, the South Downs National Park Authority granted full <u>planning permission</u> to develop the site. During the planning application phase, the project received no objections at all. The conditions placed upon the planning permission are also fully budgeted for. As part of the Design and Build contract a planning amendment will be required to outline the final designs for the site. This is not expected to impact the project due to the changes needed being purely in relation to the configuration of items on the site.</p>

7 Policy alignment and compliance

Our Council Plan 2021-25 Priorities

The recommendation supports Our Council Plan 2021-2025 priorities by:

- making the best use of resources
- supporting a sustainable and prosperous economy
- assisting with the underpinning theme of Tackling Climate Change

The proposal also helps to support the following outcomes:

- Outcome 3 - Maximising the productivity of our assets
- Outcome 4 – Value for money
- Outcome 5 – A sustainable economy that adapts to climate change

7.1 The project is developing a county council site with little development value into key electrical infrastructure to support local sustainable energy generation. This is making a lasting contribution to making best use of available resources across the county.

7.2 Investing and supporting local grid infrastructure in the county directly supports the priorities for having a prosperous economy that is resilient to changes in the future.

7.3 The project directly supports the overarching priority of tackling climate change by proactively supporting the electricity grid to manage further growth and expansion of renewable energy.

7.4 **Legal Implications**

The procurement of the main contractor is being led by the internal procurement team and fully aligned to the corporate procurement policy. Adequate insurances will be secured from the successful tenderer in order to provide robust protections from design, product and/ or contract disputes.

7.5 **Equality duty and Human Rights Assessment**

There are no foreseeable impacts of the project for groups with protected characteristics. However, the council will ensure that the project complies with public sector equality duties in the procurement, construction, and operational phases of the project.

7.6 **Climate Change**

The project will remain to be a landmark development for use of utility- scale battery storage, actively supporting the growth and expansion of local energy generation and improving energy resilience in the long-term.

7.7 Investment and support for the roll-out of battery storage system projects as supportive infrastructure is fully aligned to the County Council's existing Energy Strategy; in particular priority 2; to integrate low-carbon energy generation and infrastructure into the development of West Sussex County Council assets.

7.8 The scheme will be fully aligned to the ambitions of the Council Plan 2021-25. The Climate Change challenge underpins all other objectives and priorities within *Our Council Plan 2021-25*. As noted above (section 7.0) the scheme is closely aligned to several Key Priorities and Outcomes within the document.

7.9 There will be ecological enhancements made to the site through significant native hedge and tree planting. This will benefit local wildlife populations particularly on the northern, eastern and southern boundaries of the site.

8.0 **Crime and Disorder**

The site in question has become a target for anti-social behaviour and vandalism in the local community. This project will turn what has been a derelict site with little development potential into a safe and secure site, generating revenue for the County Council.

8.1 **Public Health**

This project has a minimal impact with regards to health and wellbeing of West Sussex residents.

8.2 **Social Value**

The scheme will support local industry where possible, by employing local businesses both prior to, and on completion of the project where practicable and subject to public procurement regulations.

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Background documents – none

Appendices - none