

OUTLINE BUSINESS CASES FOR CLEAN ENERGY PROJECTS AT WOODSTON AND STANGROUND CLOSED LANDFILL SITES

To: **Commercial and Investment Committee**

Meeting Date: **14th September 2018**

From: **Graham Hughes, Executive Director, Place and Economy**

Electoral division(s): **All**

Forward Plan ref: **N/a** *Key decision:* **No**

Purpose: **To consider the high level assessments of Stanground and Woodston Closed Landfill sites for clean energy projects**

Recommendation: **Members are asked to:**

a) agree the outline business cases; and

b) support the development budget of £150,000 for each site (totalling £300,000) to fund the development costs to the first stage of an Investment Grade Proposal.

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1. BACKGROUND

- 1.1 The County Council's corporate energy strategy sets out the need for a more ambitious and innovative approach in using and improving the efficient use of council assets. Improvements need to be made not only in the way energy is used, but also in the way it is supplied. The County Council has the opportunity to use those assets to generate or store electricity while generating revenues.
- 1.2 Across Cambridgeshire and Peterborough there are five County Council owned closed landfills located at Stanground, Woodston, Conington, Godmanchester and Thriplow. The Council is unable to repurpose the sites for development without significant investment to ensure the sites are no longer contaminated land. However, these sites have undergone initial screening for their potential to host clean energy projects. Of these sites the two closed landfill sites at Stanground and Woodston, located in Peterborough, are best placed in terms of topography, access to substations and proximity to customers for energy projects.

2. MAIN ISSUES

- 2.1 The Council's Service Provider, Bouygues Energies & Services, has provided us with High Level Assessments and are proposing the following for the two closed landfills:
- 2.2 Stanground closed landfill-closed 1992
- 2.3 The site is roughly 11 hectares including a body of water to the south of the site, of this Bouygues estimate that only 3 hectares is usable land for an energy generation scheme. This is further reduced again by the pre-existing gas wells/vents. (See **Appendix A** for a map of the site).
- 2.4 Bouygues propose a 2.25MWp Solar PV ground mounted array on the site together with a 10MW 2C battery storage system for demand side response. The battery energy storage can be housed in containers which could be mounted on shallow depth foundations, lending themselves to installation on a sensitive site such as a closed landfill. It is proposed that the Solar PV will be mounted on pad foundations for minimal disruption.
- 2.5 Woodston Closed Landfill-closed 1985
- 2.6 The site is roughly 2.8 hectares, of which only 1.5 hectares is usable land available for a project (see **Appendix B** for a map of the site). The nearest grid connection is also relatively low capacity and therefore a tailored 3MW 2C Battery Storage for Demand Side Response (DSR) services is proposed. This would provide a steady revenue stream, while being respectful of the local environment in terms of disruption and visual amenity. The current grazing arrangement on site and associated revenue can still continue, as only a small proportion of the site will be utilised for this project.
- 2.7 Battery Storage Revenue
- 2.7 Battery storage is a cell used to facilitate local supply and demand of electrical energy. It is seen as crucial to the transition from fossil fuels to renewable energy. Battery storage

absorbs surplus electricity at times of excess generation and releases this when needed. The battery storage allows us to provide grid services to the National Grid to assist in their management of supply and demand of electricity. As additional renewable energy is exported to the grid, these services will be in more demand due to the intermittency of solar and wind against fossil-fuel powered generation.

- 2.8 The vast majority of the revenue from Stanground (£1.4M in year one) and all of the revenue for Woodston (£380,000 in year one) are derived from supplying these grid services.
- 2.9 It's important to note that grid services are an evolving market with uncertain revenue streams. However, market reports confirm that with a growing proportion of renewable energy on the grid, the necessity for a response to balance periods of high demand or high penetration of renewables is increasing. Thus, while there is some uncertainty about the timing and quantum of income that would be derived from grid services in the short term, there is a high degree of confidence that the need for grid services will continue in the longer term. National Grid are also proposing reforms to make the market to supply grid services more transparent and easier to tender. Ofgem has recently approved a change in regulation to make it easier to participate in the Balancing Mechanism (one of the sources of potential revenue).
- 2.10 When successfully delivered the utilisation of the two closed landfill sites have the potential to hit four of the six priorities for the Corporate Energy Strategy: energy generation, energy supply, selling energy and supporting sustainable growth.
- 2.11 Summary of business cases
- 2.12 A summary of the outline business case is included in Table 1 below and identifies the financial position for the two clean energy projects at this stage, ahead of further development work. The design of these schemes was intentionally developed without the requirements for a grant or subsidy, thus presenting a baseline financial position. This means, should grant schemes become available or funding contributions secured for the projects, the business cases would improve. The project at Stanground is predicated on selling electricity generated to the grid for a wholesale tariff. Should the electricity produced be sold to a customer, the tariff negotiated would be higher.

2.13 Table 1. Business case summary

	Capital value	Payback period (years)	IRR (Internal Rate of Return)	NPV (Net Present Value) 4.4% discount rate	25 year Net Return
Woodston CLF Battery storage	£2.5M	9.4	12.5%	£3.5M	£9.0M
Stanground CLF Solar and battery storage	£9.7M	8.9	13.1%	£14.8M	£36.9M

Based on 21 August 2018 models.

2.14 There are a number of challenges facing this project which will impact on the final decision of whether to proceed to contract and these are outlined in Table 2.

2.15 Table 2. Key Risks

Risk	Mitigation strategy
Securing a grid connection in a constrained area.	An application will be made to UK Power Networks to determine the basis on which a connection to the grid can be made. This connection is necessary in order to offer grid balancing services. UKPN will provide the cost of the connection and whether any reinforcement is required, which could impact the revenues and scale of the project.
Building an energy project on contaminated land	Geotechnical surveys will be completed to inform the design. The foundations for both batteries and Solar PV will be designed with a shallow depth as to avoid disrupting buried waste.
Uncertainty of future revenues from providing grid services	Bouygues Energies & Services Ltd are consulting with Aggregators, these are companies that will seek the best revenues from our projects.
Planning permission is not granted for all necessary components	Pre-application discussions will be held with the Local Planning Authority and with local residents.

2.16 Design options

2.17 The development of clean energy projects is complex. The sizing of different elements of a scheme is dependent on a number of variables including:

- availability of a suitable grid connection;
- (if selling to customers) the energy demand of local consumers and interest from businesses to buy electricity directly from the scheme;
- the size of battery storage needed to manage supply and demand;
- regulatory restrictions;
- planning constraints; and
- community support.

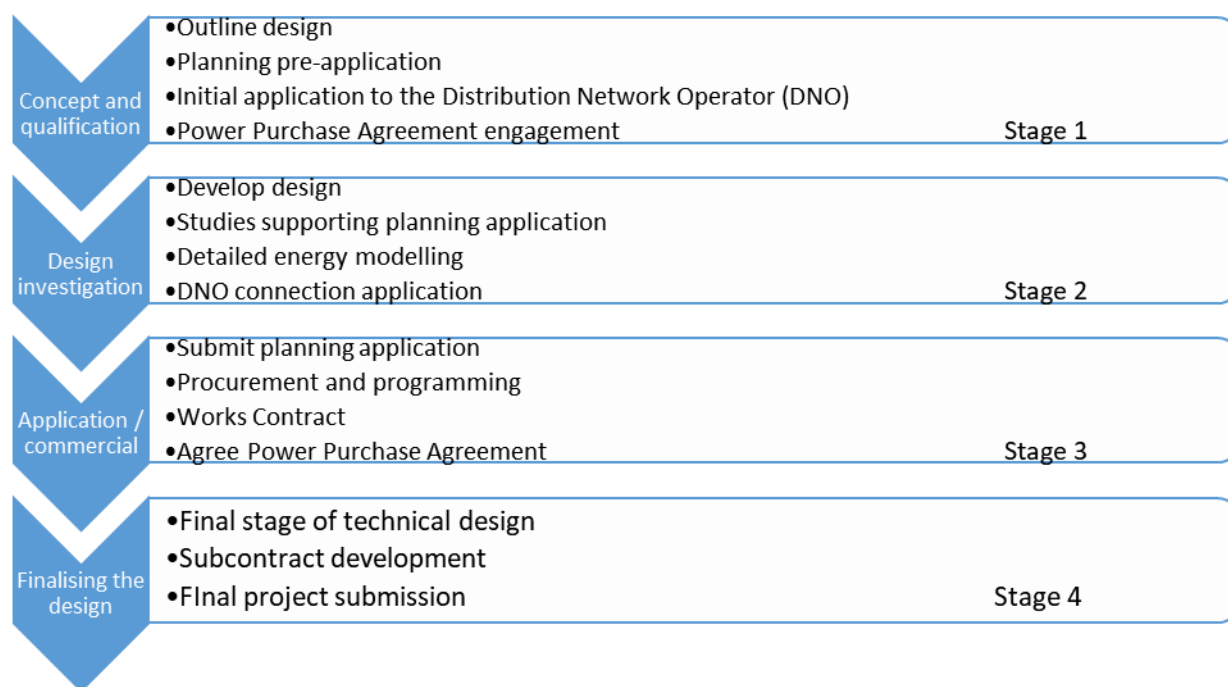
2.18 These options will become clear as further development work is undertaken and engagement with the Local Authorities, businesses, distribution network operator and communities is progressed in more detail. Further investigative works are required to determine the optimal combination and technology sizes for the schemes before a final design can be fully costed.

2.19 Development Approach

2.20 In previous Committee papers, the Energy Investment Unit (EIU) has requested permission to proceed to develop a full Investment Grade Proposal (IGP). For the schemes noted in this report, however, it is proposed to follow the same methodology used for the Babraham

and Trumpington Park & Ride projects. That is to split the IGP development into four phases as described in Diagram 1. The intention is to obtain the maximum level of certainty and security at the earliest stage of the development, in terms of cost and commitment. It is proposed that a prescribed scope of work is set for each stage of development, with a decision gateway between the stages.

2.21 Diagram 1. Investment Grade Proposal stages



2.22 Given the uncertainties at this early stage of development, we are requesting a budget of £150,000 for each project to proceed to the first stage of the IGP (Concept and Qualification). This is a way to de-risk the approach. This will cover internal staff and legal costs, pre-planning application discussion, and grid connection investigations. If the project proceeds this cost would be recovered as part of the overall project costs, but if the Council chose not to proceed to the next stage, this cost would be paid from the profits from other EIU energy projects.

2.23 If approved, the project will return to Committee at the end of Stage 1 to request funds to finalise the IGP. The EIU will manage the process to move through IGP stages 2 – 4. Assuming the final IGP is acceptable, the EIU will return to Committee a third time to request authorisation to proceed to the implementation phase. It is expected that the development of the full IGP for Stanground will take close to a year and 9 months for Woodston. Once the IGP is completed and accepted, the County Council could then enter into implementation contracts. The exact construction length is unknown at this stage.

3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 Developing the local economy for the benefit of all

3.2 In many parts of Cambridgeshire, decentralised energy cannot connect to the local grid as it has reached capacity; also fault levels on existing networks are in danger of being breached. Without significant investment in Super Grid Transformers (approximately £10

million) and localised network upgrades, some decentralised energy projects cannot afford to connect to the grid. This is a significant market barrier for cleantech companies. New thinking and business models must be developed to overcome this challenge and to bring forward investment. In addition, the investment returns over the medium to long term will input finance to support Council services.

- 3.3 Locally generated electricity improves our energy security by reducing our reliance on imported energy and helps build a local energy economy that can benefit our communities.

3.4 Helping people live healthy and independent lives

- 3.5 The generation of low carbon electricity offsets dirtier forms of fossil-fuel generation and the associated impacts on air quality.

3.6 Supporting and protecting vulnerable people

- 3.7 There are no significant implications for this priority.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

- 4.2 If, following the development of the detailed business case, CCC decide not to invest in one or both projects, the funding for the development of the detailed business cases will have to be paid. A buffer to protect against the failure of any individual project is managed through the development of a pipeline of projects. The current proposition is to offset any sunk costs against the revenues generated from the wider program of energy projects on our assets excluding the schools and corporate building energy projects.

- 4.3 There are no implications for Information and Communications Technologies or data ownership.

- 4.4 Impact on human resources: The costs for County Council staff involvement to deliver the project are included in the requested development budget.

- 4.5 Sustainable Resources: The project's goal is to generate low-carbon electricity and provide solutions to the grid capacity problems experienced across Cambridgeshire.

4.6 Procurement/Contractual/Council Contract Procedure Rules Implications

- 4.7 Bouygues Energies & Services was procured under a mini-competition run under the Refit 3 Framework. As the Framework does not expire until April 2020, there are no significant implications from a procurement or contractual standpoint.

4.8 Statutory, Legal and Risk Implications

- 4.9 There is the potential for State Aid implications even if we do not pursue grant funding. The EIU would need to demonstrate that neither Bouygues nor the potential customers received non-commercial treatment. At the moment, the business cases are not predicated on selling to a customer, instead electricity is fed onto the grid. Should the EIU contract to sell

electricity generated to a customer, it would improve the business case.

4.10 Equality and Diversity Implications

4.11 There are no significant implications.

4.12 Engagement and Communications Implications

4.13 The EIU has discussed the project with:

- Waste team staff;
- Peterborough planner Alan Jones;
- Peterborough staff Annette Joyce, Service Director – Environment and Economy, Growth and Regeneration; Peter Carpenter, Director of Finance and Resources; Richard Pearn, Head of Waste, Resources and Energy; and
- Local Councillors covering Woodston and Stanground.

4.14 Localism and Local Member Involvement

4.15 The Peterborough City Council Local Plan supports renewable and low carbon energy projects which produce energy. The Local Plan also provides guidance on projects sited on contaminated land which will be followed.

4.16 A meeting was held on 28 August with Local Members for Stanground where the projects, likely barrier and approach to community engagement was discussed.

4.17 Public Health Implications

4.18 There are no significant implications.

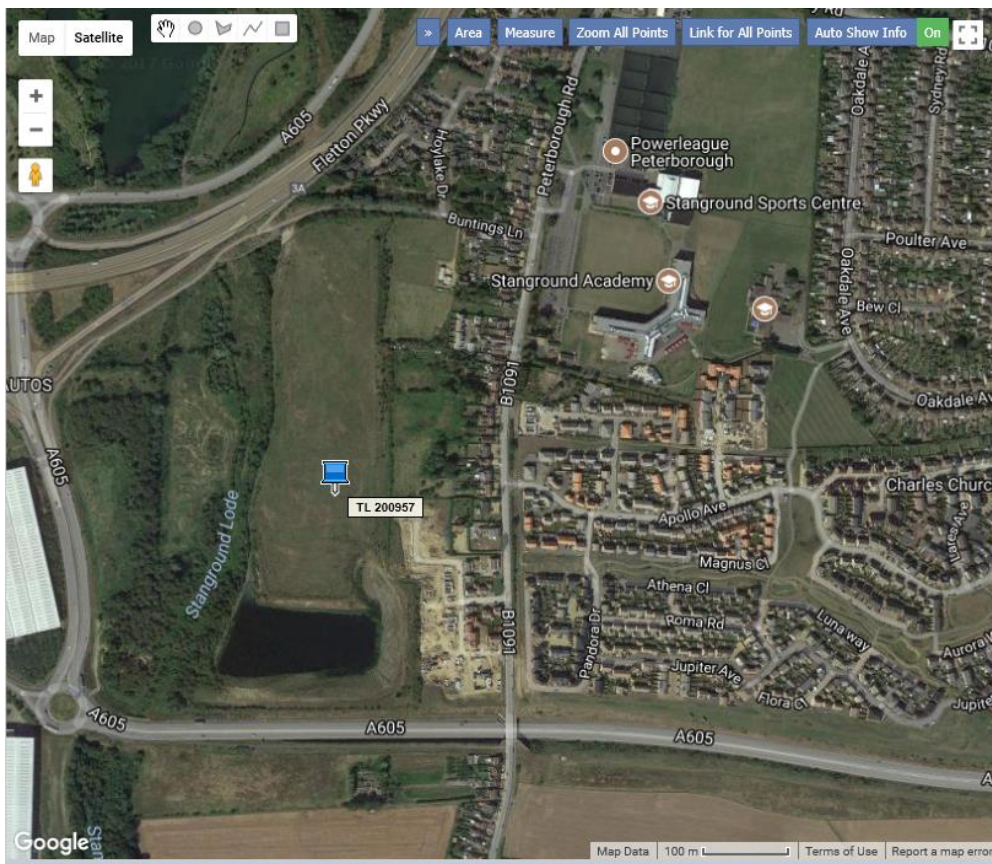
Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Sarah Heywood
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	Yes Name of Officer: Paul White
Has the impact on statutory, legal and risk implications been cleared by LGSS Law?	Yes Name of Legal Officer: Debbie Carter-Hughes
Have the equality and diversity implications been cleared by your Service Contact?	Yes Name of Officer: Tamar Oviatt-Ham
Have any engagement and	Yes

communication implications been cleared by Communications?	Name of Officer: Joanna Shilton
Have any localism and Local Member involvement issues been cleared by your Service Contact?	Yes Name of Officer: Tamar Oviatt-Ham
Have any Public Health implications been cleared by Public Health	Yes Name of Officer: Stuart Keeble

Source Documents	Location
<ol style="list-style-type: none"> 1. High Level Assessment (business case), Woodston Closed Landfill site, July 2018 2. High Level Assessment (business case), Stanground Closed Landfill site, July 2018 3. High Level Assessment – Energy Opportunities with Cambridgeshire County Council Closed Landfill Sites, July 2018 4. Peterborough City Council, Peterborough Local Plan (Proposed Submission), January 2018 	<ol style="list-style-type: none"> 1. Energy Investment Unit 2. Energy Investment Unit 3. Energy Investment Unit 4. https://drive.google.com/file/d/1ZwkIR2mdq3nO-DrOWi5B0U05f_njxYeb/view

Appendix A

Aerial image of Stanground Closed Landfill



Appendix B

Aerial image of Woodston Closed Landfill

