

**OUTLINE BUSINESS CASE FOR SOLAR FARM ON RURAL ESTATE LAND AT
MERE FARM**

To: Commercial and Investment Committee

Meeting Date: 18th January 2019

From: Graham Hughes, Executive Director, Place and Economy
Chris Malyon, Deputy Chief Executive

Electoral division(s): Soham South & Haddenham

Forward Plan ref: 2019/004 **Key decision:** Yes

Purpose: To consider the high level assessment for a 37MW solar farm to be sited at North Angle Farm, Soham

Recommendation: Members are asked to:

- a) agree the outline business case;
- b) provide in-principle support for a budget of £600,000 (as set out in Table 3) to fund the development costs of an Investment Grade Proposal (IGP); and
- c) approve work commencing on the first phase of the IGP.

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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 council assets to generate income.
- 1.2 An examination of Rural Estate property has revealed that about 80 hectares of land located southwest of Soham would be suitable for the development of a large-scale solar farm. As shown in **Appendix A**, the majority of the site is classified as Grade 3 agricultural land, with a small section classified as Grade 2. Grade 1 is the highest agricultural land classification. The Triangle Farm solar farm in Soham was built on Grade 3 land.

2. MAIN ISSUES

- 2.1 The Council's Service Provider, Bouygues Energies & Services, has developed a High Level Assessment (HLA) to build a 37MW solar farm covering 76 hectares on a segment of North Angle Farm. The whole of the Soham Estate covers 1,060 hectares; the parcels chosen are predominately Grade 3 agricultural land within a farm let to October 2020, which would allow sufficient time to develop the project. The tenancy currently generates an annual revenue of £37,000.
- 2.2 It is estimated that the 76 hectare site could generate nearly the same amount of electricity as used by 9,000 households annually and would prevent the emission of more than 230,000 tonnes of CO₂ over the project's lifetime through offsetting fossil fuel electricity generation.
- 2.3 The costs used in the business case for North Angle Farm were benchmarked from a 16MW solar farm Bouygues will be installing next year for another client, as well as costs incurred for the Triangle Farm solar project.
- 2.4 When successfully delivered the project has the potential to hit four of the six priorities for the Corporate Energy Strategy: energy generation, energy supply, selling energy and supporting sustainable growth.

Summary of business case

- 2.5 A summary of the 25 year outline business case is included in Table 1a below, which identifies the current financial position for the project, Table 1b includes comparative figures for renewing the tenancy, ahead of further development work.
- 2.6 The existing solar farm at Triangle Farm in Soham was built with the financial support of Contracts for Difference. In its first year of operation, Triangle over-performed estimated generation by 5% raising an additional £50,000 over projections. There is no longer government support available for large scale solar developments. However, due to economies of scale and a drop in photovoltaic module prices (an estimated 35%), the business case for North Angle Farm is potentially viable without the need for subsidy. The same internal and external teams that worked on the Triangle Farm Solar Farm are involved in this project.

- 2.7 The business case assumes electricity generated would be sold at wholesale prices. There are opportunities to improve potential returns by selling electricity at retail prices through a 'sleeving' arrangement with a licensed electricity supply company with the County Council as the beneficiary. These opportunities will be explored during the development of the project.

Table 1a. 25 Year Business case summary

	Capital cost	Payback period (years)	IRR (Internal Rate of Return)	NPV (Net Present Value) 5.73% discount rate	25 year Net Return
Modelled energy generation	£22,777,260*	14.18**	6.56%	£2,365,600	£32.9M

*Includes all development costs, equipment, DNO connection costs, securing planning permission, internal staff, legal costs and fees.

** The business case assumes (a) equipment prices will not change appreciably (b) known technical challenges on-site, and (c) no major additional costs will be incurred due to unfavourable site conditions.

Table 2b. Comparative figures – Renewing the Tenancy

Capital cost	Payback period (years)	IRR (Internal Rate of Return)	NPV (Net Present Value) 5.73% discount rate	25 year Net Return
£0	0	N/A	£633,800	£1.3M

- 2.8 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. The table also indicates a quantification of the funds at risk for each risk identified, representing the total cost of the IGP phases (therefore taking into account surveying, design, planning permission, grid connection, project management and consulting). As these are discreet costs they will not add up to £600,000, however the maximum funds at risk are £600,000.

Table 2. Key Risks

Timeline for resolution	Risk	Likelihood (1-5)	Impact (1-5)	Risk Score	RAG Status	Mitigation strategy	Maximum funds at risk (discreet amount per risk)
IGP Phase 1	Securing a grid connection in a constrained area. Another 72 hectare solar farm at Burwell secured planning permission in April 2018 from East Cambs. They are still in preconstruction, however it is presumed that they have secured a grid connection which will further constrain available capacity in this area.	2	5	10		An application will be made to UK Power Networks (UKPN) to determine the basis on which a connection to the grid can be made. UKPN will provide the cost of the connection, the capacity available and whether any reinforcement is required, which could impact the revenues and scale of the project. In the meantime, an estimated cost of connection of £1.75M has been included in the business case.	£70,000
	Grid management Soham sits in a flexible distributed generation area meaning that UK Power Networks may request up to 5% annual curtailment (stopping generation) in exchange for a connection	2	2	4		The business case assumes 4% curtailment is requested per annum. If the curtailment raises to 5%, then payback will increase to 14.35 years.	£70,000

Timeline for resolution	Risk	Likelihood (1-5)	Impact (1-5)	Risk Score	RAG Status	Mitigation strategy	Maximum funds at risk (discreet amount per risk)
	agreement. ¹						
	State Aid Funding the project is challenged on the basis of State Aid. State Aid is concerned where public funds distort competition.	1	1	1		As we are selling into the national grid for this project, there is no competition to distort.	minimal
IGP Phase 2	Planning permissions Planning permission is not granted for all necessary areas or components ²	2	2	4		Pre-application discussions will be held with the Local Planning Authority during the first phase of the IGP. As the site is adjacent to the existing Triangle Farm solar farm, much is already known about ground conditions, visual impact, glint and glare, etc. that would impact granting planning permission, therefore this is considered a low risk. Cambridgeshire County	£390,000

Timeline for resolution	Risk	Likelihood (1-5)	Impact (1-5)	Risk Score	RAG Status	Mitigation strategy	Maximum funds at risk (discreet amount per risk)
						Council will be the Local Planning Authority for this project as the site is on Council owned land. See Appendix B.	
	General Common risks associated with building solar farms, i.e. ground conditions are unfavourable for supporting structures, a large expanse of solar panels are under flight corridors, an overhead electrical line running through the site presents a risk of electrocution. ³	2	2	4		Given the proximity to an existing solar farm on Rural Estate, these risks are manageable. Height restrictions or clearance distances will be imposed to mitigate the risk of electrocution. Local airfields have been consulted to gauge any impact on pilots from glint and glare and no issues have been highlighted.	
Construction phase (procurement of equipment)	Changes in exchange rates The majority of equipment for this project would be imported. Should the pound to euro exchange rate becomes unfavourable (due to Brexit or other factors) resulting in increases in the cost of the imported equipment and the	4	3	12		Procurement could be delayed to await more advantageous exchange rates. The works contract could include a maximum agreed contract price as was done with St Ives. Should the price exceed the maximum agreed, we could take a decision not	£600,000 (maximum) e.g. A 5% increase in the cost of solar modules would result in an

Timeline for resolution	Risk	Likelihood (1-5)	Impact (1-5)	Risk Score	RAG Status	Mitigation strategy	Maximum funds at risk (discreet amount per risk)
	overall cost of the project, therefore decreasing the internal rate of return to the point where the project is no longer viable.					to proceed. In the worst case scenario, the drop in the pound could make the project potentially financially unsustainable resulting in the project ending and a need to recover development costs. Should this occur, the Project Team would return to C&I for a decision on how to proceed.	additional £450,000 in capital value.
All phases	Volatility in the wholesale market At present all revenue is based on selling the electricity to the grid at the wholesale tariff. Therefore there is risk if the future wholesale price of electricity is actually lower than predicted.	4	1	4		Bouygues used projections published by the Department for Business, Energy & Industrial Strategy (BEIS) for the wholesale tariff. To improve the business case work is underway scoping 'sleeving options' for selling electricity at retail prices but this work is outside the scope of this paper.	minimal

Timeline for resolution	Risk	Likelihood (1-5)	Impact (1-5)	Risk Score	RAG Status	Mitigation strategy	Maximum funds at risk (discreet amount per risk)
	General The business case worsens over the course of development	1	2	2		In the event the business case worsens over the course of the phases, as per the terms of our contract with Bouygues, the Council will not be liable to pay Bouygues' costs. However internal staff and legal costs and any external fees paid will not be recoverable.	Dependent on progress, maximum of £144k

1. The application to UK Power Networks will cost about £11,000, however work will happen in parallel for planning, design, etc. therefore should UKPN state that the grid connection is unaffordable, those other costs will still be incurred.
2. The actual cost of preparing and applying for planning advice, both pre- and full application, is estimated at £150,000.
3. These factors will be mitigated during design which is concentrated in the second phase of the IGP.

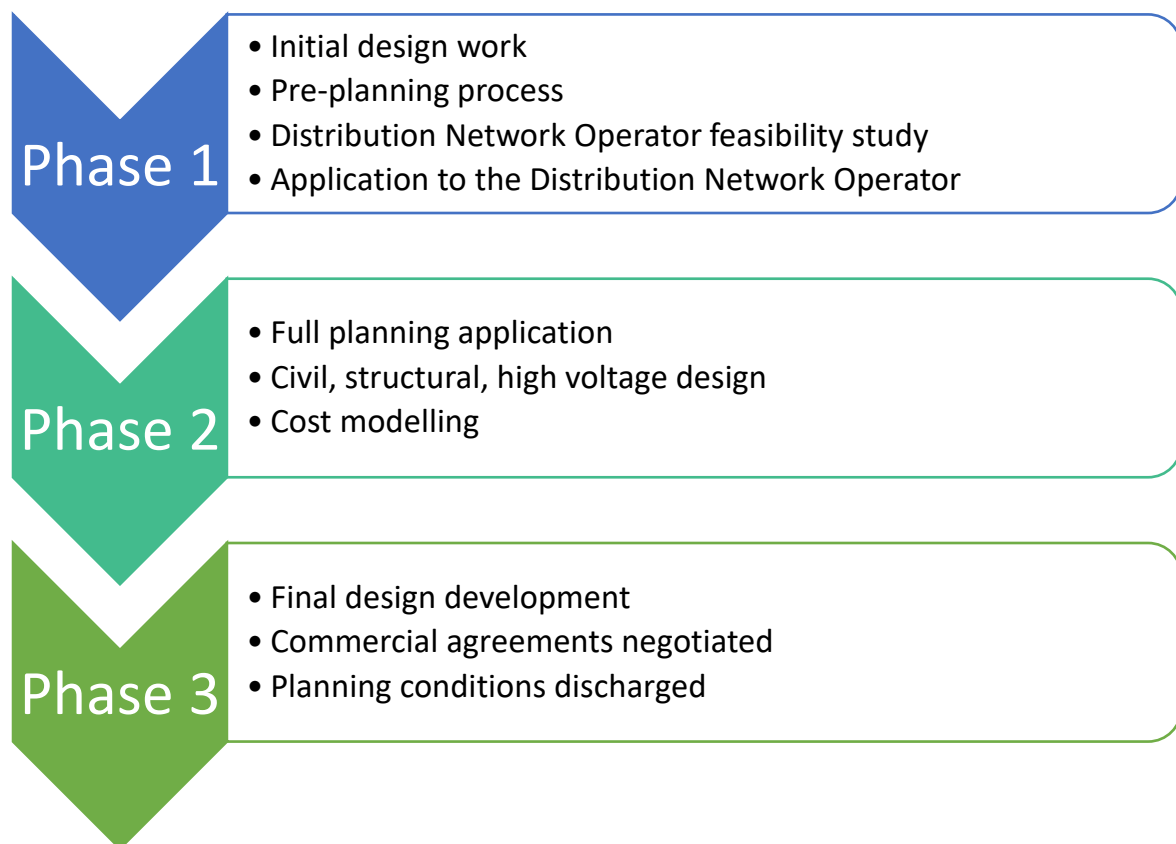
Design options

- 2.9 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;
 - regulatory restrictions;
 - planning constraints; and
 - community support.
- 2.10 These options will become clear as further development work is undertaken and engagement with the Local Authorities, distribution network operator and communities is progressed in more detail.

Development Approach

- 2.11 It is proposed to split the IGP development into three phases as described in Diagram 1 below. The intention is to obtain the maximum level of certainty and security at the earliest phase of the development, in terms of cost and commitment. A prescribed scope of work has been set for each phase of development, with a decision gateway between the phases:

Diagram 1. IGP phases



- 2.12 We are requesting a total budget of £600,000 to develop the IGP. This will cover internal staff and legal costs, external consultants (including extensive design costs, cost modelling,

and grid connection investigations) securing planning permission, and Framework fees. A table of the major elements is included in Table 3 below.

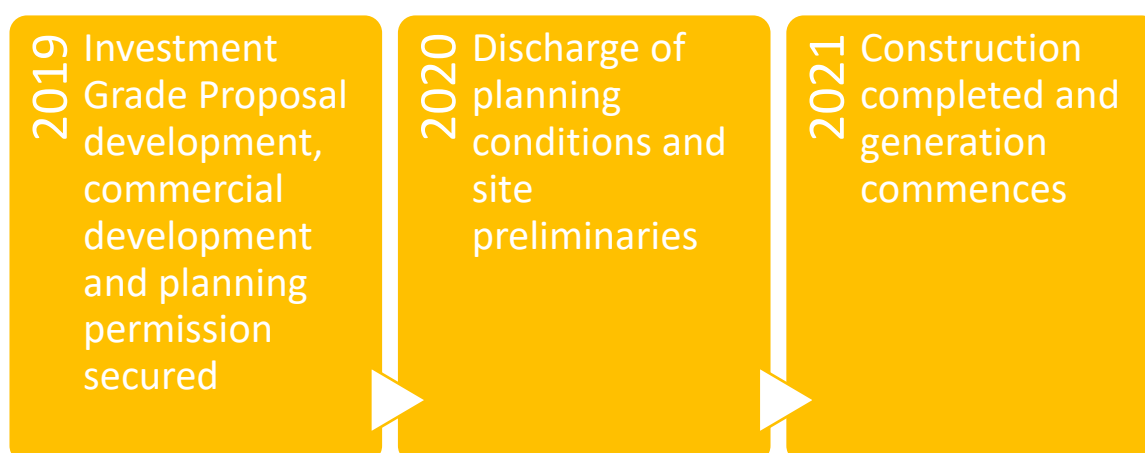
Table 3. Breakdown of major elements of development budget

Element	Estimated cost*
Investment Grade Proposal – phase 1 <ul style="list-style-type: none"> • RIBA Design Stage 1-2** • UK Power Network Feasibility Studies • Pre-planning application process • UK Power Network Application 	£70,000
Return to Commercial and Investment Committee	
Investment Grade Proposal – phase 2 <ul style="list-style-type: none"> • RIBA Design Stage 3 • Planning application documentation and fee • Cost modelling • Payment to Local Partnerships to assist in technical development / Framework compliance 	£390,000
Investment Grade Proposal – phase 3 <ul style="list-style-type: none"> • RIBA Design Stage 4 • Measurement & Verification planning • IGP finalisation • Commercial documentation • Discharge of planning conditions • Construction programme planning 	£140,000
Return to Commercial and Investment Committee	
	£600,000
*For each phase, costs for internal staff, legal and financial services are included above.	
** A description of RIBA Plan of Work stages is included in Appendix C .	

- 2.13 The Energy Investment Unit (EIU) and Rural Assets Team will manage the process to move through the IGP phases. The HLA has established benchmarks against which the IGP will be assessed. Should the project be halted at any point, the Council is only responsible to recompense costs incurred to that date. Also, under the terms of the Refit Framework, should the resultant IGP not meet the benchmarks set in the HLA, the Council will not be liable to pay for its production nor be required to proceed to implementation. Fees to outside bodies, such as the Local Planning Authority (£75,000), Local Partnerships (£50,000), and Crown Commercial Services (£51,000) and UK Power Networks (£11,000), as well as internal costs incurred will be lost.
- 2.14 At the conclusion of phase 1 of the IGP, the Project Team will return to Committee to report on outcomes, expenditure and risk management with the intention to seek guidance and ongoing support for the project through the remaining phases.
- 2.15 At the conclusion of the third and final phase, assuming the final IGP is acceptable, the Project Team will return to Committee to request authorisation to proceed to implementation. It is expected that the development of the full IGP will take until late 2019 / early 2020. Once the IGP is completed and accepted, the County Council could then enter

into an implementation contract. The expected construction length is 16 – 20 weeks. A rough timeline is included in Diagram 2 below:

Diagram 2. Indicative timeline of activities



3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 Developing the local economy for the benefit of all

Locally generated electricity improves our energy security by reducing our reliance on imported energy. It can also provide a crucial revenue stream to support frontline services. Design, development, planning and construction services will return benefits to the local economy.

3.2 Helping people live healthy and independent lives

The generation of low carbon electricity offsets dirtier forms of fossil-fuel generation and the associated impacts on air quality. The project is predicted to avoid the release of over 230,000 tonnes of CO₂ over its lifetime. For comparison, the average car releases 5.4 tonnes per year, therefore this project will have the equivalent impact of removing over 1700 cars in its first year of operation.

3.3 Supporting and protecting vulnerable people

There are no significant implications for this priority.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

If, following the development of the detailed business case, the Council decides not to invest, the funding for the development of the detailed business case 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 being developed on our assets (excluding the schools and corporate building energy projects). However, now that we have a proof of concept business case for a subsidy-free solar farm, the likelihood of not building a solar farm on any portion of our Rural Estate is slim.

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

Impact on human resources: The costs for County Council staff involvement to deliver the project are included in the requested development budget. The Special Projects team may need to add resources to manage the growing portfolio of projects.

Sustainable Resources: The project's goal is to generate low-carbon electricity.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications

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. Any resulting construction contract would only need to be in place before the expiration of the Framework.

4.3 Statutory, Legal and Risk Implications

All projects have to demonstrate compliance with State Aid requirements, even where there is no grant funding. The main way of doing that for this project will be to demonstrate that the Authority is acting commercially when generating and selling electricity.

The Council has power to sell electricity under section 11 of the Local Government (Miscellaneous Provisions) Act 1976 (as amended) and under the Sale of Electricity by Local Authorities (England and Wales) Regulations 2010 which specifically refers to solar energy. The power is subject to the requirements of the Electricity Act 1989 in regard to a distribution or supply licence, which in turn are subject to exceptions under the Electricity (Class Exemptions from the requirement for a Licence) Order 2001.

4.4 Equality and Diversity Implications

There are no significant implications.

4.5 Engagement and Communications Implications

The project team has discussed the project with Rural Estate staff, Capital Program Board, the tenant farmer, the local councillor and the Chair and Vice Chair of Commercial and Investment Committee.

4.6 Localism and Local Member Involvement

The East Cambridgeshire Local Plan supports solar renewable energy generation. Concerns at loss of productive agricultural land is mitigated by focussing the development on Grade 3 agricultural land.

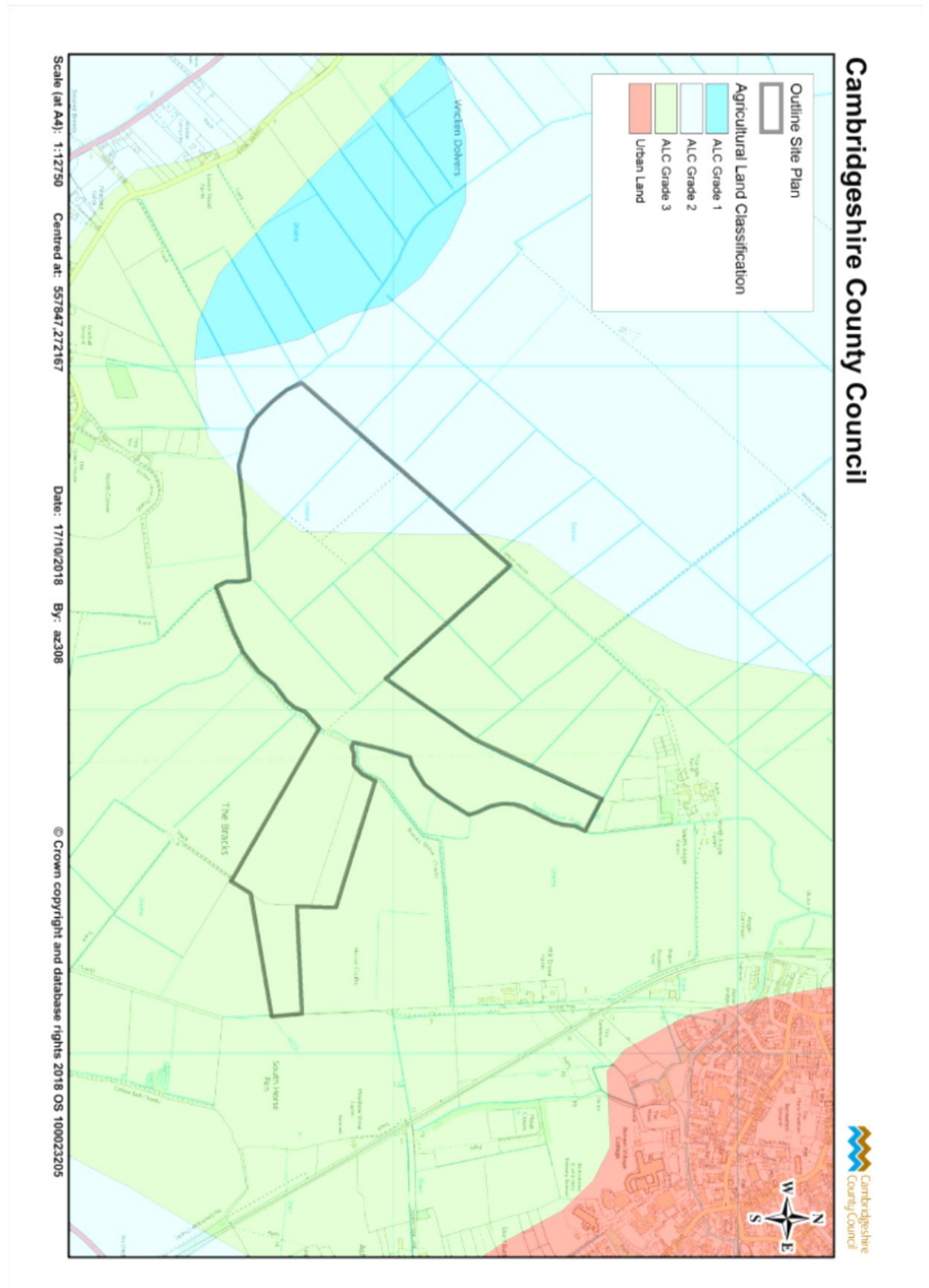
4.7 Public Health Implications

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: Fiona McMillan
Have the equality and diversity implications been cleared by your Service Contact?	Yes Name of Officer: Elsa Evans
Have any engagement and communication implications been cleared by Communications?	Yes Name of Officer: Joanna Shilton
Have any localism and Local Member involvement issues been cleared by your Service Contact?	Yes Name of Officer: Emma Fitch
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. Corporate Energy Strategy 2. High Level Assessment (business case), Mere Farm site, December 2018 3. East Cambridgeshire District Council Local Plan 4. Email communication between the project manager and planners on the question of which body should serve as the Local Planning Authority 	<ol style="list-style-type: none"> 1. https://www.mlei.co.uk/section-1/ccc-energy-strategy/ 2. Energy Investment Unit 3. http://www.eastcambs.gov.uk/sites/default/files/CD05A%20Proposed%20Submission%20Local%20Plan.pdf 4. Energy Investment Unit

Appendix A – map of the site with agricultural grade overlaid



Appendix B – Local Planning Authority (LPA) responsibility for planning application

Regulation 3 of the Town and Country Planning Act allows for a local authority to determine planning applications where the same local authority is the developer. EIU sought advice from East Cambridgeshire District Council and County Council planning officers, as well as LGSS Law on which body should determine the application.

Karen White, LGSS Law advises that the application should be determined by County planners but advised the EIU to consult County planning staff. Emma Fitch, Joint interim Assistant Director Environment & Commercial Services, agrees that County should be the LPA. Rebecca Staunt, Planning Manager of ECDC, in consultation with their Planning Solicitor, agree that as County will be the developer and sole owner, then County should be the LPA determining the planning application.

Appendix C – Description of RIBA stages

The RIBA Plan of Work organises the process of briefing, designing, constructing and operating building projects into eight stages and details the tasks and outputs required at each stage.

Stages

The stages are represented by numbers to avoid confusion with the stages in the RIBA Outline Plan of Work 2007, which were represented by letters.

The shift to numbers also allows the stages to be aligned with a set of unified industry stages agreed through the Construction Industry Council (CIC). Aligning the stage numbers in the RIBA Plan of Work 2013 with this structure helps to achieve one of the core objectives of the RIBA Plan of Work 2013, namely greater cohesion within the construction industry.

The eight stages of the RIBA Plan of Work 2013 are derived as follows:



Stage 0 Strategic Definition is a new stage in which a project is strategically appraised and defined before a detailed brief is created. This is particularly relevant in the context of sustainability, when a refurbishment or extension, or indeed a rationalised space plan, may be more appropriate than a new building. Certain activities in Stage 0 are derived from the former (RIBA Outline Plan of Work 2007) Stage A – Appraisal.



Stage 1 Preparation and Brief merges the residual tasks from the former Stage A – Appraisal – with the Stage B – Design Brief – tasks that relate to carrying out preparation activities and briefing in tandem.



Stage 2 Concept Design maps exactly to the former Stage C – Concept.



Stage 3 Developed Design maps broadly to the former Stage D – Design Development – and part of Stage E – Technical Design. The strategic difference is that in the RIBA Plan of Work 2013 the Developed Design will be coordinated and aligned with the **Cost Information** by the end of Stage 3. This may not increase the amount of design work required, but extra time will be needed to review information and implement any changes that arise from comments made before all the outputs are coordinated prior to the **Information Exchange** at the end of Stage 3.



Stage 4 Technical Design comprises the residual technical work of the core design team members. At the end of Stage 4, the design work of these designers will be completed, although they may have to respond to **Design Queries** that arise from work undertaken on site during Stage 5. This stage also includes and recognises the importance of design work undertaken by specialist subcontractors and/or suppliers employed by the contractor (Performance Specified Work in JCT contracts) and the need to define this work early in the process in the **Design Responsibility Matrix**.



Stage 5 Construction maps to the former Stage K – Construction to Practical Completion – but also includes Stage J – Mobilisation.



Stage 6 Handover and Close Out maps broadly to the former Stage L – Post Practical Completion – services.



Stage 7 In Use is a new stage which includes **Post-occupancy Evaluation** and review of **Project Performance** as well as new duties that can be undertaken during the In Use period of a building.

Procurement and tendering

Although the RIBA Plan of Work 2013 does not include a stage corresponding to Stages G, H and J of the RIBA Outline Plan of Work 2007, which relate to the tendering activities associated with traditional procurement, it includes these activities in the Procurement task bar.

