Agenda Item No: 9

OUTLINE BUSINESS CASE FOR A SOLAR CAR PORT AND ELECTRIC VEHICLE CHARGING AT THE CIVIC HUB

To:	**Commercial and Investment Committee**
Meeting Date:	**21 February 2020**
From:	**Steve Cox, Executive Director, Place and Economy**
Electoral division(s):	**Warboys and the Stukeleys**
Forward Plan ref:	**N/a** *Key decision:* **No**
Purpose:	**To share two outline business cases for a Solar Carport and electric vehicle (EV) charging infrastructure Project to be located at the car park of the new Civic Hub in Alconbury.**
Recommendation:	**Committee is asked to:** **a) Note the issues surrounding timing of decision making and of construction works;** **b) Agree to progress a Solar Carport and EV Project for the Civic Hub as described in paragraph 2.3 and prepare an Investment Grade Proposal; and** **c) Approve a development budget of £200,000 to further assess the two options set out in the paper and any other hybrid options that could come forward.**

	Officer contact:		***Member contact:***
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1. BACKGROUND

1.1. In May 2019, the Council declared a Climate Emergency as a result of Cllr Steve Count's Environment Motion and committed the Council to develop a Climate Change and Environment Strategy and accompanying Action Plan. At Council in December 2019, a Draft Strategy, Action Plan and targets were approved for public consultation during January 2020 with the view that a final strategy is presented to full Council in March 2020 for approval. The Strategy includes ambitious targets for reducing the Council's carbon footprint.

1.2 A change to Building Regulations came into force on 1 January 2019 requiring all new buildings owned and occupied by public authorities to be 'Nearly Zero Energy Buildings'. In December 2019, General Purposes Committee approved the setting of 'Near Zero Energy Standards' for all new buildings it owns and occupies.

1.3 Work has recently started on site to build the Council's new Civic Hub building in Alconbury Weald. The 3600m^2 building is set in four acres of former brownfield land and has been designed to have a low environmental impact. The building will seek to maximise energy efficiency and use renewable energy as far as possible. The design of the building includes renewable energy from air source heat pumps plus solar photovoltaic (PV) panels on the roof. To improve the carbon footprint of the building even further it has been suggested to develop a solar canopy over the car park that will charge electric vehicles (EVs) on site and that can be used directly by the building to offset the use of grid electricity. It should be noted that the Alconbury Civic Hub will not include a gas supply; demonstrating the Council's commitment to reducing its carbon footprint.

2. MAIN ISSUES

2.1. *Timing*. There is a very tight timescale for this project, to complete design work, produce an Investment Grade Proposal, secure planning permission and complete all necessary preparations to start work as early as possible. The aim is to carefully manage the integration of the solar carport and EV project with the main construction project to be ready for March 2021. If this can be delivered it will reduce disruption to site users after moving in to the office as the car park will be available. If the project cannot be finalised for the end of March, evening and weekend construction will be planned subject to planning permission approval.

2.2. This paper presents outline business cases for two options based on the existing car park designs for the Civic Hub as work has already started on site, including laying tarmac.

2.3. *Design options*. Two indicative options for possible designs of a solar carport have been proposed. See Appendix A for details. It should be noted that they are very high-level options and significantly more design work is required to establish the optimum design, which can maximise carbon reductions for the Civic Hub, offset the purchase of grid electricity and optimise the business case. It is not yet clear if either of these two designs will provide the best overall scheme. The key factors that will affect the final design of the scheme are the capacity of the grid network at Alconbury and whether electricity can be exported, coupled with the profiled demand for electricity usage on site which will determine the level of generation required. Finally, the aesthetics of the arrangement will also need to be considered. In the context of the designs provided, it should be noted that the design for option 1 will look more aesthetically pleasing than option 2.

2.4. A summary of the two options is shown in table 1 below.

Table 1

Option	Car park layout	Carport type	Estimated Total contract cost	Estimated Payback (years)	Electricity Generation Capacity (kWp)	Expected annual generation (kWh)	Carbon savings T CO2e
1	Existing	Single bay	£ 1,366,102	24	528	465,995	129
2	Existing	Double bay	£ 637,520	16	281	251,016	70

2.5. *Finance.* Option 1 is expected to cost around £1.366m, whereas option 2 would cost around £0.637m. Option 1 is more expensive because it covers a larger area of the car park. The arrangement of pv coverage set out in option 2 is for every other row of car parking spaces. This is due to shading. Work is currently underway to identify the level of electricity demand needed on site, to better understand whether option 2 would generate sufficient electricity or whether option 1 is needed. It is expected that the site would use all or most of the electricity generated and this needs to be verified. Significant savings on the Council's electricity bills would result from generating more electricity on site as this reduces the volume purchased through the grid.

2.6. *Electricity usage and generation*. The addition of the carport would significantly increase the volume of clean electricity generated on site and increase carbon reductions targets working towards the policy standards agreed in December 2019 at General Purposes Committee. The annual electricity consumption of the building (excluding EV charging) is modelled to be 579,539 kWh per year. The design calculations are that the electricity consumption of EV charging is expected to be an additional 286,000 kWh per year. The proportions of electricity usage generated from on-site renewables for the current carport options is set out below:

Table 2

Option	Proportion of predicted annual electricity usage generated from on-site renewables
Building usage (no EV charging) & option no carport	7%
Building usage (no EV charging) & option 1 carport	87%
Building usage (no EV charging) & option 2 carport	50%
Building usage (plus EV charging) & option no carport	5%

Building usage (plus EV charging) & option 1 carport	57%
Building usage (plus EV charging) & option 2 carport	34%

2.7. *Payback period*. The design options presented offer an approximate payback of 24 and 16 years. This is based on an assumption that the capital works would be funded through borrowing from the Public Works Loan Board. The payback could be reduced if there was an upfront injection of capital funds.

2.8. *Cost of carbon*. HM Treasury values carbon at £74 per tonne of carbon dioxide equivalent emissions. It is the intention to use this value to calculate the emissions reduction savings and provide this as part of our Investment Grade Proposal.

2.9. *Potential savings*. Some savings to project costs might be possible through managing the two projects (the office building and the solar carport) together, for example by only having to dig trenches once.

2.10. *Development budget*: To progress the solar carport project will require a development budget currently estimated up to £200,000. This will cover the development of the investment grade proposal, securing planning permission, securing grid connections and project management fees. These costs will be included in the overall business case.

2.11. *Contractor*. Bouygues Energies and Services Ltd is the contractor for the solar Carport Project. Clear delineation of contractor responsibilities (e.g. Principal Designer) and liabilities between the two projects will need to be worked through and agreed in advance.

3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 A good quality of life for everyone

There are no significant implications for this priority.

3.2 Thriving places for people to live

The ambitions of the Council to support the development of clean energy projects will reduce carbon emissions and help mitigate the impact of climate change on our communities. The solar carport and EV charging facilities will also enhance the Civic Hub building making it a more attractive place to work.

3.3 The best start for Cambridgeshire's children

There are no significant implications for this priority.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

The report above sets out details of significant implications in paragraphs 2.4 and 2.6.

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

Planning permission will be required.

4.4 Equality and Diversity Implications

There are no significant implications within this category. An equality impact screening has been completed and confirmed there are no potential negative impact.

4.5 Engagement and Communications Implications

The development of this potential project has been mentioned in previous press releases regarding the new Civic Hub.
Initial discussions have taken place between the Civic Hub Project Board and the Energy Investment Unit.

4.6 Localism and Local Member Involvement

There are no significant implications within this category.

4.7 Public Health Implications

There are no significant implications within this category.

Implications	**Officer Clearance**
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Ellie Tod
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	Yes Name of Officer: Gus Da Silva
Has the impact on statutory, legal and risk implications been cleared by LGSS Law?	Yes Name of Legal Officer: Fiona MacMillan
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: Eleanor Bell

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 or No Name of Officer: Iain Green

Source Documents	**Location**
Cambridgeshire County Council Draft Climate Change and Environment Strategy and Action Plan	https://consultcambs.uk.engagementhq.com/
CCC-Alco-Byes Initial Economic Assessment	EIU team folders

Appendix A – Design Options

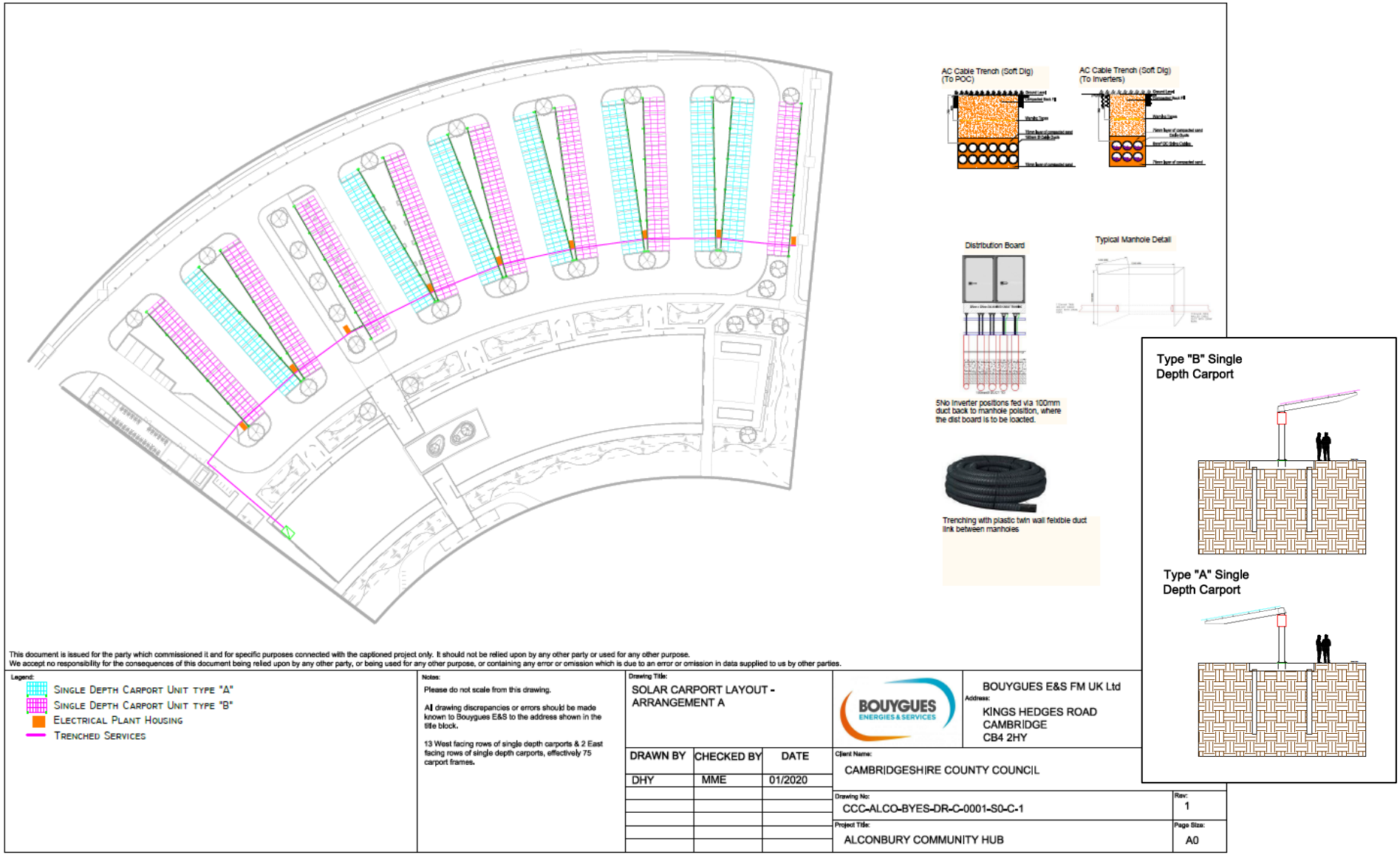

Figure 1: Option 1 design

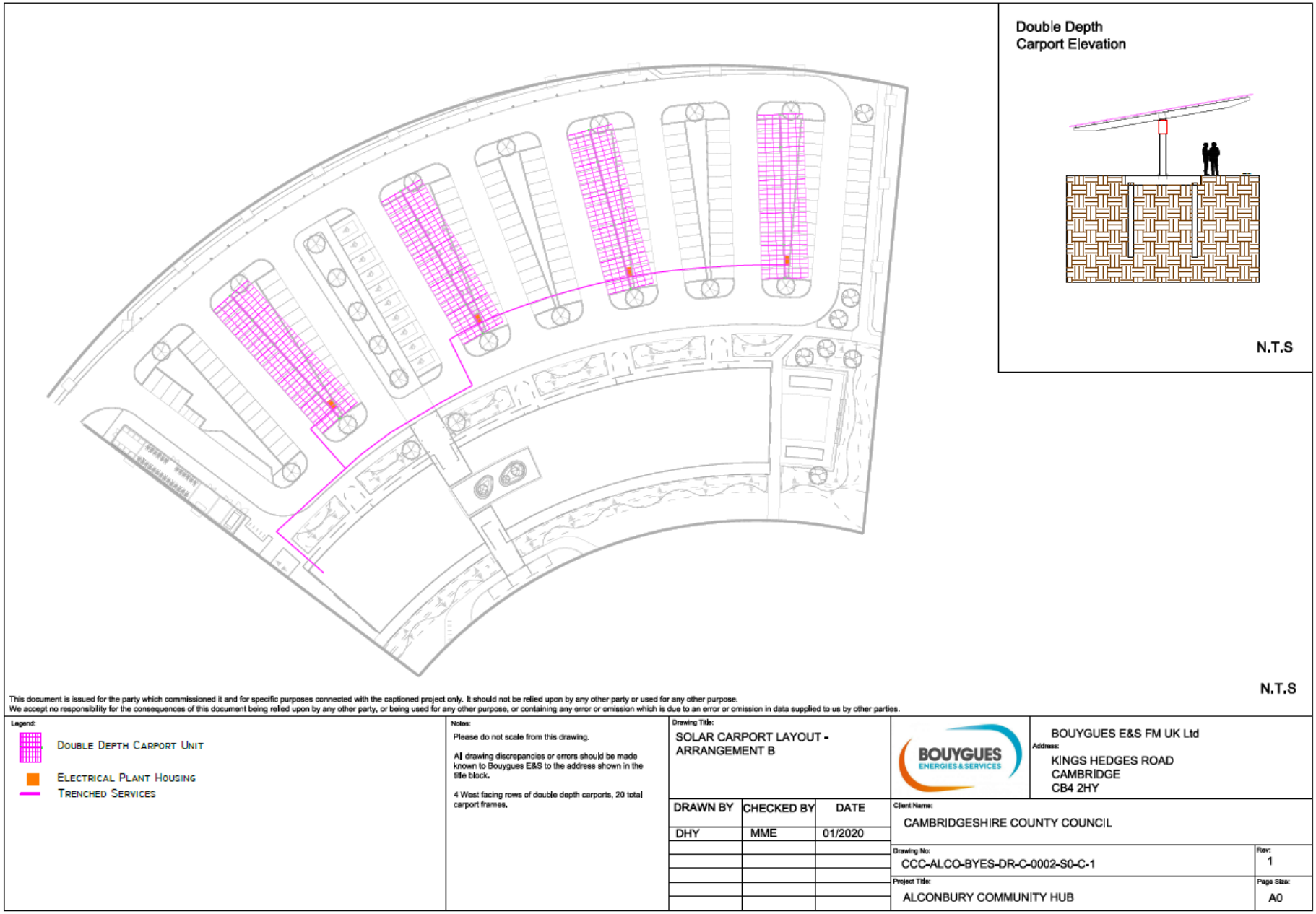

Figure 2: Option 2 design