

**COMBERTON VILLAGE COLLEGE LOW CARBON HEAT NETWORK AND OTHER
SCHOOL HEAT PUMP PROJECTS**

To: Commercial & Investment Committee

Meeting Date: 22nd May 2020

From: Executive Director, Place & Economy

Electoral division(s): Abbey; Hardwick; Histon & Impington

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

Outcome: Agreeing a development budget for a low carbon heat network project at Comberton Village College and developing planning applications for smaller heat pump projects at other academy schools, in order to capture Renewable Heat Incentive (RHI) revenues.

Recommendation: The Committee is being asked to agree:

a) a development budget of £213,406 for a low carbon heat network project at Comberton Village College and for smaller heat pump projects at Impington Village College & The Galfrid school; and

b) the development of a model Heat Purchase Agreement for use with academies and confirming the acceptability of this with the Education & Skills Funding Agency.

<i>Officer contact:</i>		<i>Member contact:</i>	
Name:	Chris Parkin	Name:	Councillor Joshua Schumann
Post:	Energy Project Managers, Energy Investment Unit	Post:	Committee Chairman
Email:	Christopher.parkin@cambridgeshire.gov.uk	Email:	Joshua.schumann@cambridgeshire.gov.uk
Tel:	01223 715909	Tel:	01223 706398

1. BACKGROUND

- 1.1 In December 2019 General Purposes Committee agreed that fossil fuel boilers at the end of their life in Council buildings should be replaced with low carbon heating systems^{1, 2}. Target 4 of the Council's Climate Change and Environment Strategy Action Plan³, scheduled for adoption by full Council on 19 May 2020, extends this commitment to include lifecycle replacement of heating and hot water systems at maintained schools.
- 1.2 The Council's schools energy efficiency programme is working with several academy schools where there is an opportunity to replace fossil fuel heating with low carbon heating.
- 1.3 The Government's non-domestic Renewable Heat Incentive (RHI) scheme subsidises low carbon heating systems such as Air Source and Ground Source Heat Pumps (ASHPs and GSHPs). Developers apply for the RHI once the system is commissioned and revenue is received for every unit of heat supplied over a 20 year period.
- 1.4 The RHI closes to new applications on 31st March 2021, however Budget 2020 announced limited flexibility for installations commissioning after this date to still receive the RHI in the form of "tariff guarantees". On 28th April 2020 Government launched its consultation on the closure of the RHI scheme^{4,5} confirming that this new allocation of "tariff guarantees" will be in keeping with current tariff guarantee rules⁶, meaning in particular that:
 - Tariff guarantees will be available for GSHPs larger than 100kW (but not for ASHPs);
 - The deadline for pre-applications to access tariff guarantees will be 31st March 2021;
 - Planning consent and independently verified proof of financial close (an independent auditor's report confirming that funds are available for construction and committed by a contract) will be required to access a tariff guarantee; and
 - Plant must commission within 12 months of the date of financial close.
- 1.5 On the same date the Government published a consultation on a partial successor to the RHI, called the Clean Heat Grant scheme⁷. This will provide an upfront grant of £4k for heat pumps up to 45 kW in domestic or non-domestic settings and will be available for two years from April 2022. The 45kW limit is too small for most schools and Council buildings and a £4k grant is only sufficient for small installations. The consultation refers to the Clean Growth Strategy's commitment to regulate to ban installation of fossil fuel heating in the 2020s, reaffirming that the direction of travel is away from subsidy and towards regulation.
- 1.6 Tariff guarantees allowing GSHPs to commission up to 12 months after the closure of the RHI provides an opportunity to develop GSHP projects with academies. This is likely to be the last opportunity to capture subsidies for low carbon heating projects at large schools.
- 1.7 This paper seeks approval for a £213,406 development budget for GSHP projects at Comberton Village College, Impington Village College & The Galfrid school. It also requests

¹ Nearly Zero Energy Buildings Requirements For New Public Buildings, GPC committee paper

² 17th December General Purposes Committee Decision Statement

³ Cambridgeshire County Council Climate Change and Environment Strategy Action Plan

⁴ Non-domestic Renewable Heat Incentive: ensuring a sustainable scheme, Government consultation

⁵ Changes to RHI Support and COVID-19 Response, Gov.uk webpage

⁶ Non-Domestic Renewable Heat Incentive – Guide to Tariff Guarantees, Ofgem guidance

⁷ Future Support for Low Carbon Heat, Government consultation

approval to develop a model academy Heat Purchase Agreement and to engage with the Education & Skills Funding Agency to confirm the acceptability of this type of agreement.

2. MAIN ISSUES

Comberton Village College Low Carbon Heat Network

- 2.1 We are nearing completion of an energy efficiency project at Comberton Village College that implements solar photovoltaic (PV), efficient lighting and smart heating controls. We are in discussions with the Cam Academy Trust on a further project to decarbonise the heating, which is currently mainly oil-fired, at the school. This would involve installing a heat network fed by GSHPs supplying most of the site. Although GSHP capacity can, in principle, be expanded incrementally at a later date to supply other heat demands, plant room space constraints and space for boreholes probably limit this to new on-site demands.
- 2.2 This is a very different project to a normal academy energy efficiency project for the following reasons:
- i) **Capital costs:** these are currently estimated to be £2.4 million;
 - ii) **Contractual Arrangements:** ordinarily the Council provides academies with an operating lease on equipment, with an option to purchase the equipment at the end of the lease term. This contractual model relies on the equipment being recoverable and having a residual value at the end of the lease. In the case of GSHPs and heat networks this is not the case, as the majority of the cost is in boreholes, ground loops and heating pipework which are not reusable elsewhere. Consequently this project would involve the Council owning and operating the equipment and selling heat to the academy via a long term (e.g. 20 year) Heat Purchase Agreement (HPA);
 - iii) **Long Payback:** the project payback is much longer than a normal project, currently estimated at 19 years. Although within the 20 year payback agreed by Committee for “deeper retrofits” involving heating replacement, the project is primarily a decarbonisation opportunity that will cover its own cost, rather than a net revenue generation opportunity. It is estimated to reduce direct carbon emissions from the school’s heating by 95% (1,615 tCO₂e saving over 20 years, valued at £158,000 in present value) and act as an exemplar for decarbonising heating in schools and off gas-grid communities. The heat network lifetime exceeds 20 years, enabling replacement of the heat pumps at the end of their life at lower project cost than in point (i).
 - iv) **Development Risk:** the project would require project design, a full planning application and confirmation from the Education & Skills Funding Agency (ESFA) that academies to may enter into HPAs. Critically the business case is dependent on securing the Renewable Heat Incentive (RHI), which requires us to have planning consent and the Committee to have made an investment decision in advance of 31st March 2021. Project plans (**Appendix 1**) show this to be achievable, but only just. GSHPs will also need to have been commissioned in advance of 31st March 2022, although this is less challenging. Project deliverability is subject to: geological study results, planning outcomes; ESFA decisions; timely decisions from the academy trust; and a successful application for an RHI tariff guarantee. It is a significant challenge to achieve the RHI deadlines, but the reward in terms of decarbonisation, and delivering an exemplar project is substantial. This is the delivery team’s first GSHP project which brings risk.

Risks, impacts, existing and planned mitigating action are set out in **Appendix 2**. We will email a short fortnightly report to the Energy Investment Programme Member Working Group to keep them informed of progress and the latest assessment of viability of meeting the 31st March 2021 RHI pre-application deadline.

- 2.3 For these reasons the project is much more akin to an Energy Investment Programme project, requiring upfront investment on project development at the Council's risk. Committee's agreement is therefore sought for both a budget to develop an IGP and agreement to develop a model HPA to use with academies. To enable academies to sign up to such an HPA we would need to obtain confirmation from the ESFA that such an arrangement is acceptable. Subject to the Committee's approval we therefore propose to procure legal drafting of HPA terms and engage with the ESFA.

Impington Village College GSHP

- 2.4 We are nearing completion of an energy efficiency project at Impington Village College. The outstanding energy conservation measures, in the scope of work agreed with the college a year ago, include a natural gas fired Combined Heat & Power (CHP) unit to supply heat and electricity to their leisure centre. This is no longer a comfortable fit with the Council's Climate Change policies or with the UK's net zero carbon by 2050 objective. As a result we have discussed with the college and obtained their agreement to investigate delivering a GSHP instead of a CHP. Although smaller scale and simpler than the above Comberton project, this would also require a full planning application, an HPA, agreement from the Morris Education Trust, or the trust that results from its merger with the Cambridgeshire Education Trust, a successful application for an RHI tariff guarantee by 31st March 2021 and commissioning by 31st March 2022. Capital costs, carbon savings and payback are in preparation at the time of writing, a verbal update will be given at the Committee meeting.
- 2.5 A GSHP is only deliverable if we commence work on a planning application now. This will require the Council to invest in design work, consultancy studies and planning fees (albeit the planning fees are paid to itself) at risk, ahead of decisions from the Trust, the ESFA and from the Office of Gas and Electricity Markets (Ofgem), who administer the RHI. A high level programme is shown in Appendix 1. Although the project is less complex than the Comberton project, the timeline is similar, as the critical path in both cases is defined by planning timescales. Actions to manage risk are also as per Appendix 2.
- 2.6 An added sensitivity is that Impington are currently using temporary heating boilers to heat their leisure centre and are incurring high costs and a reduction in custom as a result. They require urgent replacement of their failed boilers to resolve this. The proposed approach is to replace the boilers this summer with minimum boiler capacity, initially supply the heat from these under the HPA and switch them off once the GSHP is commissioned. The boilers would be left in situ and used for emergency standby operation only.

The Galfrid Primary School GSHP

- 2.7 The Energy Investment Unit are about to deliver an initial High Level Assessment (HLA) for an energy efficiency project at The Galfrid Primary School. This school has recently joined the United Learning academy trust and as part of the Deed of Transfer of the site from the Council to the Trust CCC agreed to make significant condition improvements to the site. The budget for this included an estimated £300k for the cost of refurbishing a plant room and replacing gas boilers. In discussion with the Education Capital team this funding has been included in the HLA as a capital contribution from CCC towards installing a GSHP instead of gas boilers. Capital costs, carbon savings and payback are in preparation at the time of writing, a verbal report on these will be given at the Committee meeting.

- 2.8 As with the above projects this proposal would require a planning application, an HPA, agreement from the Trust, a successful application for an RHI tariff guarantee by 31st March 2021 and commissioning by 31st March 2022. As with the Impington project we are seeking the Committee's approval to commence work on design and consultancy studies to inform a planning application, at CCC's risk, in order to meet the RHI tariff guarantee deadline. The high level programme attached in Appendix 1 is essentially identical to that for Impington as is the risk management approach (**Appendix 3**).

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

There are no significant implications for this priority.

3.3 The best start for Cambridgeshire's children

The following bullet points set out details of implications identified by officers:

- The projects will help schools manage their heating costs by providing certainty over heating costs and reducing heating and maintenance costs slightly. This will in turn reduce pressure on school budgets helping improve educational delivery.
- The projects have the potential to help children at the schools learn about tackling climate change.

3.4 Net zero carbon emissions for Cambridgeshire by 2050

The following bullet points set out details of implications identified by officers:

- In the absence of a development budget for the Comberton Low Carbon Heat Network the school is likely to continue to operate on oil-fired boilers, replacing boilers (there are 16 separate plantrooms on-site) on a piecemeal basis as they wear out for as long as legislation permits continued installation of oil-fired boilers. Some of these replacement boilers are still likely to be in service in 2050 and the opportunity for a more strategic, wholesale decarbonisation of the site's heating will have been missed.
- Both Impington and The Galfrid have gas boilers which have reached the end of their useful lives. In the absence of these projects going forward the schools are likely to install new gas boilers as the most cost effective heating option. These boilers would have a lifespan of 20+ years and could still be in operation emitting carbon in 2050.
- The business case for GSHPs at all three sites depends on securing RHI revenue. This requires planning consent and an investment decision to be made ahead of 31st March 2021, which is only achievable if we commence work on planning applications now.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

The following bullet points set out details of significant implications identified by officers:

- Project development budgets are estimated to total £213,406. These include significant allowances for specialist planning studies and some contingency so actual

costs may come in below this. The estimate is broken down below and a projected cost profile is included in Appendix 3.

Cost element	Comberton	Galfrid	Impington	Total
IGP including design & planning consultant	£83,024	£25,000	£33,175	£141,199
Specialist planning studies	£15,000	£5,652	£7,500	£28,152
Pre-app fees	£1,129	£1,129	£1,129	£3,387
Planning fees	£9,240	£4,620	£4,620	£18,480
EIU staff cost	£7,812	£3,906	£3,906	£15,624
Contingency	£3,318	£1,531	£1,716	£6,564
TOTAL	£119,523	£41,838	£52,045	£213,406

- It is proposed to fund the expenditure set out above from prudential borrowing at a total cost of £264,000 over 20 years. Costs for drafting a model HPA are estimated at up to £15,000 in addition to the above costs and will be funded by Transformation funding approved by General Purposes Committee in May 2019⁸. Whilst these costs can be recovered from Heat Purchase Agreement revenues over the project lifetimes if the projects go ahead, there is a risk of sunk costs if some or all projects do not proceed.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications

The following bullet points set out details of significant implications identified by officers:

- Project development including planning consultancy studies will be delivered under our existing contract with Bouygues Energies & Services.

4.3 Statutory, Legal and Risk Implications

The following bullet points set out details of significant implications identified by officers:

- Securing planning consent and an investment decision on the above projects by 31st March 2021 is very tight. High level programme plans have planning consent being achieved in January 2021 and an investment decision in February 2021, enabling submission of an RHI tariff guarantee pre-application a month ahead of the 31st March 2021 deadline.
- The financial viability of the projects is dependent on securing the tariff guarantee and on decisions outside the direct control of the project team i.e. planning outcomes, an ESFA decision on the acceptability of an HPA and Trust decisions to sign-up to HPAs. There is therefore a significant risk of some, or all, projects not progressing to construction and of sunk development costs.

⁸ General Purposes Committee, May 2019 – Decision Statement

- These risks will be managed by the actions set out in Appendix 2.
- Covid-19 related risk is anticipated to be minor at this stage as the near-term activity is engineering design and desktop studies for planning, which are unlikely to be impacted. There is a risk that the longer term impacts of Covid-19 disruption may lengthen equipment lead times. However, project planning shows that, allowing 5 months for equipment leadtime, installation works can be completed 4 months ahead of the commissioning deadline, so such delays can be accommodated.

4.4 Equality and Diversity Implications

There are no significant implications within this category.

4.5 Engagement and Communications Implications

There are no significant implications within this category.

4.6 Localism and Local Member Involvement

The following bullet point sets out details of implications identified by officers:

- Councillor Nieto is aware of the Comberton project and assisted in arranging a meeting with the Trust's Chief Executive to kickstart the activity.

4.7 Public Health Implications

The following bullet point sets out details of implications identified by officers:

- There will be a small positive impact in reducing air pollutant emissions as a result of moving away from combustion based heating to heat pumps.

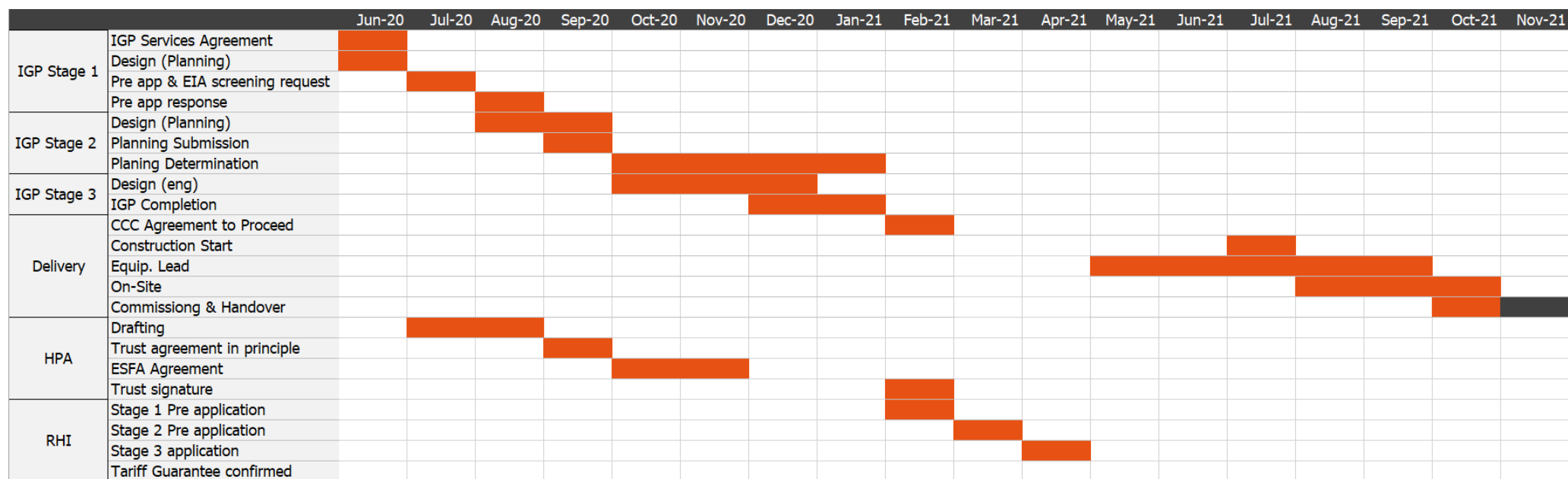
Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Ellie Tod
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	Yes Name of Officer: Gus de Silva
Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or 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: 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 Name of Officer: Iain Green

Source Documents	Location
1. Nearly Zero Energy Buildings Requirements For New Public Buildings	https://tinyurl.com/y8ghd442
2. 17th December General Purposes Committee Decision Statement	https://tinyurl.com/ya68b8c9
3. Climate Change and Environment Strategy Action Plan	https://consultcambs.uk.engage/hq.com/3017/widgets/9927/documents/3608
4. Non-domestic Renewable Heat Incentive: ensuring a sustainable scheme	https://www.gov.uk/government/consultations/non-domestic-renewable-heat-incentive-ensuring-a-sustainable-scheme
5. Changes to RHI Support and COVID-19 Response	https://www.gov.uk/government/publications/changes-to-the-renewable-heat-incentive-rhi-schemes/changes-to-rhi-support-and-covid-19-response
6. Non-Domestic Renewable Heat Incentive – Guide to Tariff Guarantees	https://www.gov.uk/government/publications/changes-to-the-renewable-heat-incentive-rhi-schemes/changes-to-rhi-support-and-covid-19-response
7. Future Support for Low Carbon Heat	https://www.gov.uk/government/consultations/future-support-for-low-carbon-heat
8. General Purposes Committee, May 2019 – Decision Statement	https://tinyurl.com/yb239unz

Appendix 1 – Project Plans

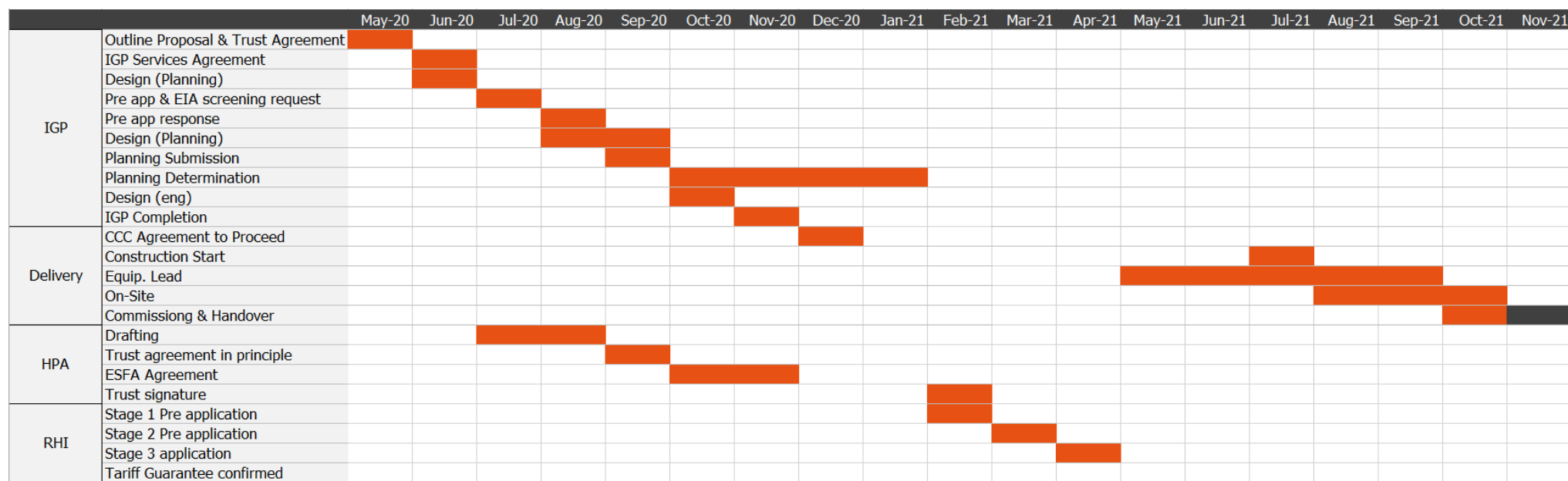
Comberton Low Carbon Heat Network High Level Programme



The Galfrid High Level Programme

[illegible]

Impington Village College High Level Programme



Appendix 2 – Risks & Risk Management

Risk	Impact	Existing Mitigation	Planned Mitigation
Ground conditions unsuitable for GSHP boreholes	<ul style="list-style-type: none"> Project not viable Development costs spent up to this point are sunk costs 		<ul style="list-style-type: none"> Initial IGP activity will include geological desktop assessment to confirm suitability of ground conditions GSHP design will be based on worst case ground conditions Revise GSHP design to optimise specification and cost based on Thermal Response Tests from first two boreholes drilled during installation works
Slow decision making from academy trusts	<ul style="list-style-type: none"> Failure to meet 31/03/21 RHI pre-application deadline Project ceases to be financially viable Development costs spent up to this point are sunk costs 	<ul style="list-style-type: none"> Trusts agreement to examine GSHP agreed Time constraints and RHI dependency emphasised to trusts (Comberton) Met with trust Chief Exec to agree examining project and engaging with ESFA (Comberton) HLA shared with trust and next steps agreed (Impington & Galfrid) HLAs in preparation to share with trusts 	<ul style="list-style-type: none"> Share programme timelines with trusts, emphasising decision points and criticality of meeting RHI deadline At start of IGP development request trusts seek Trustee confirmation of their decision criteria Maintain dialogue with trusts throughout IGP development asking them to report to Trustees on progress & status Seek decision in principle based on draft HPA terms in September
Insufficient Bouygues resource to progress to required timescales	<ul style="list-style-type: none"> Failure to meet 31/03/21 RHI pre-application deadline Project ceases to be financially viable Development costs spent up to this point are sunk costs 	<ul style="list-style-type: none"> Graduate engineer with experience on Swaffham Prior heat network project brought in to provide project support GSHP engineer, based in Cambridgeshire, brought in to support team 	<ul style="list-style-type: none"> Weekly monitoring of delivery v programme Escalation of any delays/resource concerns within Bouygues
Lack of GSHP project development experience	<ul style="list-style-type: none"> Required tasks are not identified in a timely fashion resulting in 	<ul style="list-style-type: none"> GSHP project expert, based in Cambridgeshire, brought in to support team 	

	<p>failure to meet 31/03/21 RHI pre-application deadline</p> <ul style="list-style-type: none"> • Project ceases to be financially viable • Development costs spent up to this point are sunk costs 		
Insufficient EIU resource to progress to required timescales	<ul style="list-style-type: none"> • Failure to meet 31/03/21 RHI pre-application deadline • Project ceases to be financially viable • Development costs spent up to this point are sunk costs 		<ul style="list-style-type: none"> • Re-allocate Stanground project to Delivery Manager • Allocate 1 day per week to managing these projects • Prioritise GSHP projects over other school projects
Insufficient planning resource to turn around planning decision in standard timescales	<ul style="list-style-type: none"> • Failure to meet 31/03/21 RHI pre-application deadline • Project ceases to be financially viable • Development costs spent up to this point are sunk costs 	<ul style="list-style-type: none"> • Additional planning officer resource being brought in from District and consultants 	
Long term HPA not acceptable to ESFA	<ul style="list-style-type: none"> • All GSHP projects cease to be viable • Development costs spent up to this point are sunk costs 		<ul style="list-style-type: none"> • Seek <u>joint</u> ESFA & BEIS meeting at start of IGP development • Outline necessity for HPAs to enable capital constrained academies to decarbonise heat, in line with BEIS objectives, and benefit to academy of long term certainty over heat pricing • Share draft HPA terms with ESFA as soon as available

Appendix 3 - Estimated Spend Profile

