

Carbon Offset Fund Briefing

27th July 2010

Executive Summary & Case Studies

Cambridgeshire Horizons

In partnership with the Local Authorities of Cambridgeshire



A Carbon Offset Mechanism for Cambridgeshire:

Executive Summary

1 Summary

This study explores the role that a Carbon Offset Fund (COF) could play in delivering low carbon growth within Cambridgeshire.

The COF provides a mechanism to collect investment in carbon reduction from developers of new developments within Cambridgeshire and channel it into those low carbon energy projects that are most cost-effective and deliver the greatest benefit to the region.

Delivering high levels of carbon reduction in certain types of sites can be technically very challenging and highly costly. The operation of a COF allows developers of those sites where high levels of carbon reduction are difficult to achieve to pay into a fund, effectively to purchase offset credits, rather than meet their whole carbon reduction obligation through onsite measures. The COF is then able to pool these payments and invest the funds that accrue into priority carbon reduction projects in the region.

Cambridgeshire is expected to experience significant growth in the coming decades. This growth will be split between a limited number of large developments and a dispersion of many small sites. The large developments provide opportunities for large-scale low carbon energy infrastructures that can deliver high levels of CO₂ emissions reduction in a relatively cost-effective manner. However, the high capital outlay and risks associated with these energy projects deter investment and may lead to less optimised solutions being delivered. The COF could provide crucial seed-finance to de-risk these large-scale projects for private sector investment, using funds collected from the multiplicity of smaller sites, where high levels of CO₂ reduction are not cost-effective. In so doing, the COF limits the exposure of developers of small sites to the costs associated with meeting carbon reduction obligations, which will be imposed by national and, potentially, local policy.

The activities of the COF may not be limited to investment in energy projects in new developments. There is a wide-range of potential CO₂ reduction initiatives that the COF could invest in. Improving the energy efficiency of the existing stock has been identified as a potential priority for the COF. This is explored in this report.

In its initial phase, the COF is likely to be primarily a vehicle to collect funds from developers in relation to the CO₂ emissions arising from new developments. There is a longer term ambition, however, that once established the COF could become attractive to other types of investor, for example private or institutional investors. Procurement of private sector investment partners to match the public sector funding would significantly increase the size of the COF and its ambition in terms of the scale of projects it invests in. The prospects for the COF to attract private sector investments are also considered in this report.

1.1 Interaction with national policy

A carbon reduction obligation on developers is required to create an opportunity for a carbon offset fund. The policy that imposes this obligation must include flexibility on how the

obligation is met, in terms of whether it is through onsite carbon reduction measures or through a commuted payment into a fund.

Carbon reduction obligations on new developments can be set by both national regulations, i.e. the Building Regulations, or local planning policy. The Building Regulations set a minimum requirement for the level of carbon reduction that must be achieved, without flexibility for this requirement to be offset by a payment. Local planning authorities, however, have a remit to set targets for sites in their areas in terms of carbon reduction or renewable energy generation, provided these targets are justified by a sound evidence base. The local policy could provide for a payment into an offset fund, rather than meeting the target on-site, if the developer can demonstrate that achieving the target on-site is not technically feasible or jeopardises the commercial viability of the site.

Government is committed to the introduction of zero carbon policy for homes and non-domestic buildings. The zero carbon policy will require that all emissions from a development are eliminated, by reducing energy demand or providing a low carbon supply, or mitigated by other means. The measures that developers can adopt to mitigate the remaining emissions, once energy efficiency and low carbon generation have been accounted for, are collectively described as 'allowable solutions'.

The range of measures that will be included as allowable solutions is currently being considered by government. In order for the COF to have an opportunity to collect investment from developers post the introduction of zero carbon policy – 2016 for domestic buildings and 2019 for non-domestic buildings – it is key that it is included as an Allowable Solution.

Government recently consulted on the definition of zero carbon domestic and non-domestic buildings, including what measures should be included as allowable solutions. This consultation sought views on whether S106 obligations or Community Infrastructure Levy (CIL) contributions, which could act as mechanisms to collect funds into the COF, are appropriate as allowable solutions. The consultation responses provided only limited support for the use of planning obligations or CIL as allowable solutions and these mechanisms were not identified in the government's response to the consultation as measures that had received broad support.

To enable the carbon offset fund to play a significant, ongoing role in carbon reduction in the region, we recommend that Cambridgeshire Horizons and appropriate local stakeholders, lobby government for a broad definition of allowable solutions. This should include financial contributions into a locally administered offset fund.

1.2 Planning mechanisms for collection of funds

Following a review of the existing and emerging legislation related to the use of S106 obligations and CIL, it is concluded that either mechanism could be used to collect funds for a COF.

CIL is intended to enable the pooling of contributions to provide funding for infrastructure to support the development of an area. The charging schedule that forms the basis of requests for funds from developers must be supported by an evidence base that provides details of specific projects or purposes for which funds are being sought. They should be identified in the integrated development plan and local infrastructure framework. The integrated development plan for Cambridgeshire has been adopted, but currently includes one initiative related to low carbon development.

CIL regulations more narrowly define how Section 106 can be used such that contributions sought through this mechanism are generally related to development specific impacts. It is

intended that after 2014 or following adoption of CIL by a local planning authority, Section 106 will no longer be able to be used for the pooling of five or more contributions towards a project or type of infrastructure. Given the nature of development in Cambridgeshire, it is considered more likely that S106 will be used to collect funds into the COF, where it is not intended to pool such contributions towards specific projects or types of infrastructure and prior to 2014. After this date it will be necessary for each of the local authorities to progress CIL if they are to progress strategic infrastructure projects that contribute towards carbon emissions reductions or wish to pool contributions from a larger number of developments.

The concerns regarding the use of S106 mainly relate to the limitation of the use of obligations following the introduction of CIL. One of the concerns relating to the use of S106 as a mechanism to collect funds is the requirement that planning obligations should be directly related to the development, including a 'geographical or functional link' between the development and the item being provided. Although a functional link between the effect of the development, in CO₂ terms, and the purpose of the fund to reduce CO₂ emissions can be demonstrated, it would need to be argued that geographical proximity is not critical to achieving the aim of the obligation, which is delivering CO₂ emissions.

In order to create the opportunity for the COF to generate funds, an appropriate local policy framework must be put in place. This policy framework must not only seek to reduce carbon emissions, but also provide scope for developers to deliver carbon reduction by payment into an offset fund, where appropriate.

All local authority planning teams in Cambridge must be made aware of the potential for a Carbon Offset Fund to be developed in the County, so that this can be taken into account when formulating policy.

Where Local Development Documents (LDDs) are already adopted these should be reviewed and updated at the earliest opportunity, to enable updated policies to be put in place that will enable the collection of funds.

If supported by appropriate policies in the LDF, Supplementary Planning Documents (SPDs) could be used to provide details of a local authorities requirement to contribute to a COF.

1.3 Structure of the Fund

A variety of potential vehicles for the fund-holding body have been assessed, including the contractual or partnership approach and the special purpose vehicle or SPV approach. The principal advantage of the SPV approach is that the legal entity is separate from its members and contract in its own name.

The most appropriate vehicle for the COF appears to be the company limited by guarantee (CLG). These vehicles are commonly incorporated for non-profit making functions, with no share capital and members rather than shareholders. The CLG offers the advantages of limited liability status, a flexible membership structure and constitutional flexibility, required by the COF vehicle.

1.4 Scale and impact of the fund

An analysis of potential tariff levels – purchase price of CO₂ offsets (£/tCO₂) – has indicated that a tariff level of 100 £/tCO₂ provides an appropriate mix of limiting the costs incurred in meeting carbon reduction obligations, while providing an incentive for developers to exploit cost-effective onsite CO₂ reduction opportunities (this assumes that the tariff is paid for 30 years of emissions from the property). This is in the mid-range of capped cost for Allowable Solutions being considered by government.

The greatest opportunity for the fund to generate income will be once zero carbon policy is in effect, assuming that payment into the fund is considered an Allowable Solution. Payments into the COF prior to the operation of allowable solutions will be generated only where developers contribute to the COF rather than achieving a level of onsite CO₂ reduction that must be set within the local authority planning policy framework.

Based on the forecast levels of development and assuming a tariff of 100 £/tCO₂, the fund is estimated to generate an annual income of £15m to £23m per year over the period from 2017/18 to 2021 (beyond this point the fund income is forecast to drop, but data on the quantity of new completions is expected to be less reliable, i.e. sites that are not currently envisaged in the annual monitoring reports (AMRs) will be brought forward).

The impact of potential fund investments have been assessed, in particular the use of fund investments to improve the investment proposition of district heating systems and the opportunities for energy efficiency improvements..

1.4.1 District heating

The specific opportunity for installation of a biomass fuelled CHP system and district heating system at Northstowe, sized to provide net zero CO₂ emissions on site, has been assessed. Prior financial modelling has shown that in order for investment in the district heating system at Northstowe to make a reasonable financial return (IRR of 7.5%), a connection cost of £14.2k per dwelling is required. An analysis of the cost of compliance with zero carbon policy in the absence of a district heating network has shown that the onsite biomass CHP/DH system is only marginally more costly. However, the risks associated with investment in D infrastructure and very modest financial return may deter investment.

The COF can provide initial finance to the project, helping to attract further investors and potentially to reduce connection costs. The COF could provide finance in terms of a grant, low cost debt or an equity stake. For example, the cases of a £10 million up-front grant and a low cost loan covering 50% of the district heating system capital cost have been assessed. Assuming the same level of IRR is to be maintained, these investments could reduce the connection costs per dwelling by £1.4k and £1.9k respectively. The impact of the renewable heat incentive, not included in the original financial model, has been estimated to provide a further £1k reduction in the connection cost. Taken together, these reductions in the connection cost would provide a significant financial incentive for development of the onsite biomass CHP & DH strategy.

The onsite carbon reduction delivered by the biomass CHP/DH system at Northstowe, compared to the alternative of meeting zero carbon policy, has been estimated at 25,000 tCO₂/yr. This represents highly cost-effective CO₂ saving for the COF, particularly in the case of the low cost loan, as a relatively small overall cost to the COF is expected to leverage substantial further investment. A similar investment model could be used at Cambridgeshires other large sites, e.g. the urban extensions around Cambridge, where there are opportunities for high levels of CO₂ reduction to be delivered onsite at marginal additional costs. In total, around 25,000 homes are expected to be delivered in these sites, together with substantial supporting uses, so the opportunity for additional CO₂ reduction (beyond meeting policy), is very large.

1.4.2 Energy efficiency

Energy efficiency improvements provide a highly cost-effective means of CO₂ reduction. The Cambridgeshire local authorities have identified £255 million of potential energy efficiency improvements across their existing stock. Taking the cost of CO₂ saving in Cambridge City

Council¹ as a proxy for the cost of CO₂ saving through energy efficiency across the County, this implies the potential or 1.4MtCO₂ saving over the lifetime of measures applied.

The level of grant required from the COF to capture these CO₂ savings would not be required to fully fund the measures (i.e. the full £255m). Based on the experience of the Supplier Obligation and CERT, grant levels in the range of 50% to 75% of the capital cost are highly effective at stimulating uptake of simple energy efficiency measures (higher levels of grant are required for 'priority group' households, e.g. those receiving income support).

Assuming the full income into the Fund, around £20m/yr, were invested in energy efficiency improvements, an estimated 165,000 tCO₂ (over the lifetime of the measures) would be delivered by the measures applied each year. The opportunity for carbon saving through energy efficiency would reduce over time due to the action of the fund and the cost of remaining CO₂ saving measures would be likely to increase (as low cost measures, such as cavity wall insulation, become saturated).

The opportunity for investment in energy efficiency improvements to be leveraged by, for example, combining with CERT grants should be investigated.

¹ Estimated at £185/tCO₂, based on data included in the Cambridge Housing Condition Survey

Appendix: Case Studies

Case study 1: St Neots

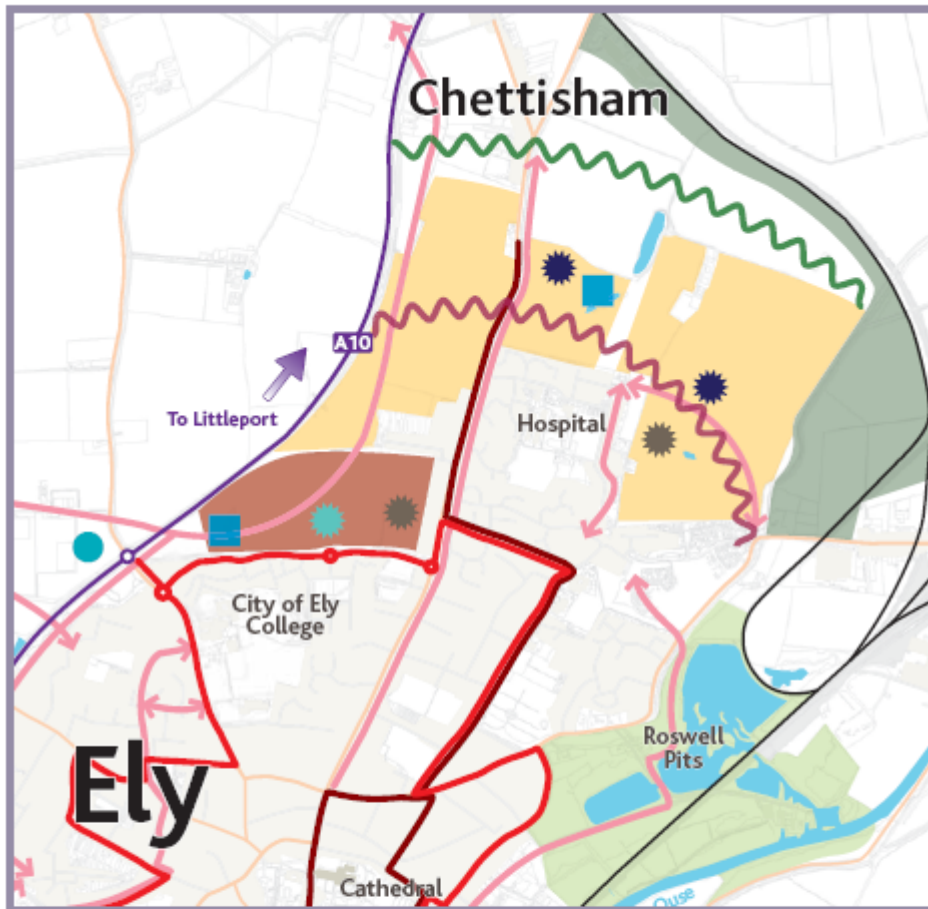
St Neots is in a unique position to use low carbon heat, as an urban extension of 5000 homes is planned close to the existing power station at Little Barford. This power station produces enough waste heat to theoretically provide for the whole of St Neots. The 5000-home extension, as well as a further 2000 new homes planned in the vicinity, could generate £17 million in allowable solutions for investment. The Carbon Offset Fund could help fund the heat network and retrofit existing housing in St Neots, potentially generating massive emissions savings for the local area.



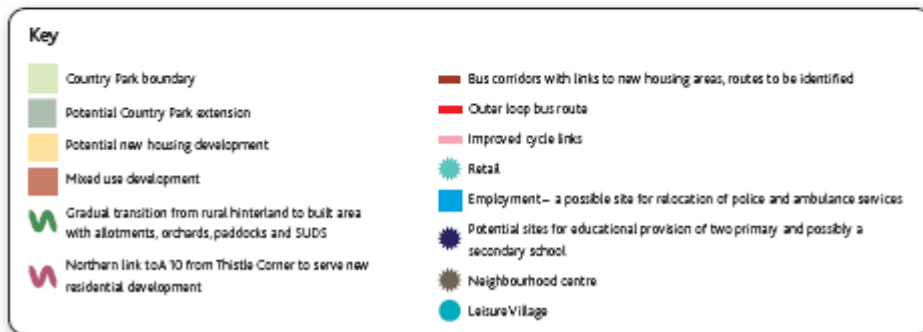
Case study 2: Ely

The draft Ely Masterplan includes proposals for a Northern Extension, which will provide around 3,000 homes. The draft Masterplan suggests, *'Development to be exemplar eco friendly and as self sufficient as possible in energy and power use. All new developments to be 'zero' or 'low carbon' and to exceed established standards of resource efficiency.'* To meet these requirements, the extension will need to provide renewable energy. The Carbon Offset Fund could take a role in facilitating this, once planning for the site is at a more advanced stage.

The concept for development in North Ely:



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Case study 3: Shaping Fenland

Fenland District Council is currently undertaking a high-level planning exercise called 'Shaping Fenland', which will suggest a suitable spatial configuration of growth within the area. Once this spatial planning is further advanced, the Carbon Offset Fund could support low carbon growth within the district.


Case study 4: Northstowe

Northstowe will be an eco-town in South Cambridgeshire, providing 9,500 new homes and 9,000 jobs. The vision is to create an exemplar of sustainable development at Northstowe and, in particular, to ensure that the new town's energy requirements are derived from low carbon sources and meet the highest level of the Code for Sustainable Homes. To this end, Renewables East and Cambridgeshire Horizons have jointly commissioned a number of studies into the options for provision of low carbon energy at Northstowe. The current business case promotes a 5MW biomass CHP plant, district heating network and microrenewables. It also can include allowable solutions to retrofit nearby settlements.

The COF could help by:

- ⇒ Providing seed finance to deliver a larger than 5MW CHP plant, offsetting emissions from other smaller developments.
- ⇒ Meeting up-front capital costs to develop a district heating system, as these are very high.

Case study 4: North West Cambridge



- Up to 3,000 homes, accommodation for 2,000 students, 100,000 sqm of academic and R&D floorspace, hotel and community facilities.
- Carbon reduction through mixture of micro-renewables and community scale CHP, potentially biomass.

Carbon Offset Fund could assist delivery of a scheme like this by:

- providing up-front finance to lower the risk of developing community scale measures in advance of a guaranteed market to provide a return on investment.
- expanding a district heat network: providing finance sourced from smaller developments unable to achieve zero carbon elsewhere, and verifying carbon reduction achieved in this scheme but financed by non-connected developments.

Case study 5: Anglia Ruskin University/Cambridge City Centre



- Redevelopment of Anglia Ruskin University's Cambridge campus incorporating CHP district heating. Opportunities exist to increase the carbon saving potential of this scheme by expanding it to other developments in the vicinity, which the Carbon Offset Fund could assist by:
 - providing finance for expansion in advance of any revenue generated from connected developments.
 - verifying carbon reduction achieved by this scheme but financed by other developments for which on-site carbon reduction is less viable.