

Date: 26<sup>th</sup> February 2010



Henry Cleary  
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Dear Henry,

### **Re: Northstowe Eco Town Demonstrator Project**

Following our correspondence last week regarding the conclusions of the first stage of the 'gap analysis' work and our proposal for studies, we are pleased to submit a proposal for a two element demonstrator project for Northstowe.

As you know, Northstowe has always been envisaged as an exemplar for low-carbon living, with a particular focus on energy efficient homes, sustainable transport mode, combined heat and power to provide site-wide renewable energy, sustainable urban drainage and innovative waste systems, and a focus on local production of food. Consistent with this, our demonstrator proposal centres on facilitating low-carbon lifestyles.

### **Brief description of project, timetable and funding bids**

Our proposal consists of two elements, both within the footprint of Northstowe:

- The primary element of our proposal is for a retrofit scheme for homes in the existing community of Rampton Drift.
- The secondary element of our proposal is for a highly visible exhibition and learning facility, incorporating sustainable building techniques.

The proposal will demonstrate approaches to the nationally significant agenda around low carbon living. The fact that the project encompasses both existing and new buildings means we can capture the main options for achieving low carbon outcomes. The timing of delivering these projects on the site of an eco-town, along with plans for collection and analysis of sustainability performance data, will also allow learning to be transferred to future developments in other locations.

Currently around 6.5 million tonnes of CO<sub>2</sub> are emitted per annum in Cambridgeshire, with approximately 1.4 million tonnes of this coming from existing housing stock and 2 million from current road transport travel habits. This equates to over half of Cambridgeshire's per annum CO<sub>2</sub> emissions originating from these two sources – our proposal will illustrate approaches to tackling both of these key contributors.

### **Rampton Drift Retrofit – promoted by South Cambridgeshire District Council**

Rampton Drift is an existing community of 86 privately owned homes that were formerly owned by the Ministry of Defence. The houses are a mixture of detached, semi-detached and terrace houses constructed in two stages between 1950 and 1980. They are built in brickwork with tiled, pitched roofs. The quality of the housing stock means that they currently have low energy ratings.

Unusually, several homes at Rampton Drift are currently on the market. We intend to purchase two of these properties to use as retrofit demonstrators.

- One house would be used as a demonstration house and public exhibition space in the first instance. It would be used to show residents and the wider public the recommended improvements, offering a menu of retrofit technology options. The menu would enable individual choice, and would mean that vulnerable groups such as older people or those with young children would be able to improve their homes without necessarily using those options that cause the greatest disruption.
- The other house would be retrofitted and then occupied. The residents would have volunteered to have their behaviour monitored including energy usage, and the performance of new technologies. Data collected would be used to inform the planning and delivery of Northstowe and other developments and retrofitting programmes.

This element of the project would:

- Show the residents and the wider public how increased sustainability levels in existing properties can be achieved, and the benefits they can expect to get from this.
- Showcase innovative technologies which could be used in the wider existing community.
- Demonstrate how behaviours could change, both in the building industry and in the way we live in properties.
- Establish on the Northstowe site a community already committed to sustainable living to support the development of the same for the new town

There is the potential eventually to sell one or both of the houses and to re-invest the funds back into the wider Northstowe project. This would maintain the tenure of Rampton Drift and demonstrate the impact of environmental improvements on market value of the homes.

A retrofitting project elsewhere in the country is anticipated to reduce carbon emission in similar properties by 68% and 71%.

We also want to deliver improvements for the wider Rampton Drift community through this project by providing funding assistance to help other residents retrofit their homes. Appendix 1 indicates the works that would have the most efficient impact on carbon reduction. In view of the work involved in projects with owner occupiers, we are seeking funds to cover the full cost of improvements for 20 houses. We will set up a scheme that meets state aid requirements, and is fair and equitable.

The final element for Rampton Drift is the introduction of renewable energy technologies. We propose to invest £150,000 in technologies such as solar photovoltaic panels and wind turbines. The technologies would be owned by the public sector or a community trust. They would be deployed on houses within Rampton Drift. The homeowners would receive free electricity and

the public body or community trust would have the benefit of retaining surpluses generated through the Feed in Tariff. The money collected could be reinvested in more units to connect up every house in Rampton Drift. In the longer term, the surplus could be invested in Solar Thermal technologies with the managing body collecting the Heat Incentive Tariff should that be introduced. This would be an innovative way of using up-front investment in technology to create an income stream that could be used to further drive lower carbon solutions. Furthermore, there is an excellent opportunity to compare and contrast, through the monitoring programme, the successes of different technologies in providing clean energy. This complements proposals for the nearby major development at the north west of Cambridge, where the University of Cambridge also intends to investigate the merits of different technologies.

Local people expressed support for the Rampton Drift project at a meeting of the Northstowe Parishes Forum earlier this month.

### **Exhibition and Learning Facility – promoted by Cambridgeshire County Council**

We propose to construct an exhibition and learning facility that will be used to showcase the Rampton Drift retrofit and other eco-town related projects, as well as demonstrating highly sustainable construction techniques and features for the facility itself. It provides a valuable opportunity to educate the wider public on Northstowe's ambition for greener living, and will foster the behavioural shift that forms a key part of the eco town approach.

Given the benefits offered by a strong public access dimension, we are proposing to provide the facility at the Cambridgeshire Guided Busway Park & Ride site immediately adjacent to the new town. This location represents the earliest point of congregation associated with Northstowe. Forecasting shows that an estimated 1,500 members of the public will pass through the facility each day once The Busway is open. The exhibition element of the facility will allow us to communicate the eco-town ambition and associated projects to this sizeable audience. In addition to Busway passengers, this demonstrator project is expected to attract visitors from further afield who wish to examine the sustainable approaches on display, hence becoming a destination in its own right. As Northstowe develops, the number of trips from the Park & Ride is expected to increase to more than 4,000 in the morning peak hour each day, with the enhanced facility providing long-term benefits to these people.

The facility could educate the public about our sustainability vision through a number of measures including permanent information displays, interactive exhibits and by providing a base for sustainability learning events. To complement and enhance the exhibition measures, we will also investigate the development and launch of a downloadable application for mobile technology. The application could:

- Promote the eco-town ambition and guide people around the retrofitting projects, giving information on technologies used.
- Give real-time bus information – including departure times, estimated arrival times, etc.
- Act as a 'tour guide' along the route of The Busway, showing features such as the RSPB Fen Drayton Lakes, Northstowe eco-town and its history, and local community information
- Give information on connectivity, including footpaths and cycleways which link with The Busway, to encourage changes in travel behaviour towards more active travel and encourage use of the Busway for leisure purposes
- Form part of the welcome package for new residents, providing community information and advice on sustainable living in the town.

Based on our experiences providing other highly sustainable public buildings, we propose that the facility will demonstrate a wide range of sustainability measures, for instance using a Ground Source Heat Pump to provide under-floor heating, and with photo-thermal solar water heating and significant levels of insulation. This will keep emissions and energy use to a minimum. The building could also house a small office, toilets and bike lockers to encourage cycling journeys to the facility.

Further, the aim is to design the facility to make the best use of the site conditions, to use local, renewable materials with low levels of embedded carbon, and to construct the building using modern methods of construction that minimise on site works, maximise resource efficiency and enhance construction quality.

Locating the new facility at the Park & Ride site will make The Busway more attractive to residents of Northstowe and existing residents of the surrounding area, encouraging the use and raising awareness of sustainable modes of travel in accordance with the eco towns PPS.

The demonstrator projects will have a symbiotic relationship with innovative local projects including the SmartLIFE, the Hive and the Parish Energy Project. These initiatives are described in Appendix 2.

## Timetable

The proposed timetable for the demonstrator project is:

<i>Community Engagement with Rampton Drift residents</i>	<i>April onwards</i>
<i>Complete purchase of two Rampton Drift houses</i>	<i>June</i>
<i>Retro Fit demonstrator houses</i>	<i>July- November</i>
<i>Open Exhibition House pre-works</i>	<i>July</i>
<i>Open Exhibition House post-works</i>	<i>November</i>
<i>Residents move into one demonstrator house</i>	<i>December</i>
<i>Install improvements to participating homes</i>	<i>June – March</i>
<i>Secure planning permission for micro-renewables (if required)</i>	<i>August - October</i>
<i>Install PV Tech</i>	<i>November - February</i>
<i>Design, planning and construction of the exhibition and learning facility</i>	<i>April – March</i>

## Total Cost of Project

Purchase and Retrofitting of two houses	£470,000
Retrofitting pot for residents	£300,000
Micro renewables fund	£150,000
Exhibition and learning facility	£580,000
<b>Total</b>	<b>£1,500,000</b>

## Links to PPS standards, Innovation and Behaviour Change

Our demonstrator projects have strong links to the PPS standards as shown below.

ET 7 – Zero carbon in eco-towns. The overarching theme of Northstowe is low-carbon living, and retrofitting of Rampton Drift homes would greatly reduce domestic energy use and emissions. In addition, the projects provide benefits to existing residents in the Northstowe site and contribute to all residents of the eco-town living in low carbon homes. There is also an element of educating residents to reduce carbon emissions by using sustainable transport.

ET8 – Climate Change and adaptation. The project will involve some adaptation and mitigation measures at the exhibition and learning facility and also in the homes at Rampton Drift.

ET 9 – Homes. Every aspect of the proposed retrofit is designed to improve the environmental performance of the existing homes at Rampton Drift, bringing them in line with the code-level 4 standard or above.

ET10 – Employment. The links with the Hive and SmartLIFE will enable the demonstrator project to increase skill levels of local contractors, support apprenticeships. There will also be an inter-relationship with the Northstowe economic strategy and the Sub Regional Economic Strategy that includes strategic objectives to:

- Grow a world class knowledge-based low carbon economy
- Encourage resource efficient growth of a diverse and robust economy
- Develop sustainable infrastructure and a high quality of life

ET 11 – Transport. The Guided Busway is a project of national significance, using bio fuel buses. Constructing the facility at the Park & Ride site will make The Busway more attractive to residents of Northstowe and the surrounding area, encouraging the use of sustainable transport. Bike lockers within the facility will encourage cycling to the Park & Ride site and use of the cycleway alongside The Busway route. This will also link in with ET 12 – promoting healthy lifestyles.

ET 12 – Healthy lifestyles. The exhibition and learning facility will encourage healthy lifestyles by providing information on local Rights of Way, walking and cycling routes, and by encouraging use of sustainable modes of travel.

ET 17 – Water. The retrofit measures will reduce water use in these homes, including rainwater collection, grey-water systems and toilets that use less water. The education and learning facility will include rainwater harvesting.

ET 21 – Transition. The presence of retrofitted code-level 4 homes at Rampton Drift before the beginning of construction at Northstowe will stimulate interest locally in the exemplar environmental standards that will be achieved at Northstowe. It will also ensure that Rampton Drift does not stand out as a less environmentally friendly area of the proposed eco-town. The exhibition and learning facility also plays a key role in supporting this PPS standard.

## **Public access/exhibition dimension**

Public access and exhibition are integral to the demonstrator project. The exhibition and learning facility at the Park & Ride site will be a permanent public resource for promoting green lifestyles; and there will be a retro-fit house open to the public for the period of the demonstrator project. These resources will be promoted to all residents of South Cambridgeshire and interested groups from further afield. The highly accessible location of the facility will support this.

In addition, we would expect that the residents participating in the retrofitting project would give occasional access to both the public and also to the public sector as retrofit demonstrators and to allow research to be carried out into the carbon and cost savings, complementing the aforementioned University of Cambridge development plans.

Throughout the period of the project, and during the build out of Northstowe, we will run workshops to educate and inform the residents not only of this scheme but of the many things they can do to reduce carbon emissions without spending large sums of money.

Formal relationships will be established between the demonstrator project and the Hive, SmartLIFE and Parish Energy projects. These will further facilitate promotion of the project, and ensure it is embedded in existing local low-carbon networks. The retro-fit homes will be of particular interest to the Parish Energy network as they will allow members to see, in operation, the measures they are considering.

## **Management and Delivery**

We have a range of options for the delivery and management of the project within our established partnership arrangements in South Cambridgeshire. South Cambridgeshire District Council, Cambridgeshire County Council and Cambridgeshire Horizons, have worked together to develop this proposal and will remain the lead agencies responsible for ensuring the effective delivery and management of the project.

For the Rampton Drift aspect of the project, we may involve Cambridgeshire Partnerships Limited (CPL), the Registered Social Landlord for the first phase of Northstowe. CPL have expressed agreement to this. We will also involve Renewables East and SmartLIFE. Considerable benefit will be gained from linking the retrofit project with SmartLIFE. The project will give opportunity for new innovative technologies to be trialled and monitored; the houses could be used to train both existing professionals and the young in the latest retrofitting techniques, building on their experiences gained with SmartLIFE. It will also be possible to make comparisons with similar projects in neighbouring districts

The exhibition and learning facility project would be managed within the existing transport infrastructure delivery mechanisms of the County Council and would be delivered by a tendered contractor, as selected from the tendering and procurement process.

There is also the potential for these homes to be part of the BRE demonstrator homes element of the Hive project at Cambridge Regional College (CRC). This is particularly the case given that Rampton Drift is around ten minutes from, and therefore easily accessible from, CRC via The Busway. BRE involvement would also increase the rigour with which improved sustainability performance is monitored, providing greater credibility for transferring learning nationwide.

The Parish Energy Project has a well established group of parish councils and volunteers delivering locally tailored projects to reduce carbon emissions in our villages. This highly motivated group will help to disseminate learning and strengthen the outcomes of this project.

## **Other committed/potential funding**

This project has significant actual and potential match funding.

The actual funding includes investment in:

- Earlier design work for a building on the Park & Ride site by the County Council (£15,000 of work that could transfer to the exhibition facility proposal)
- £2,000,000 invested in the Hive from Housing Growth Fund.

Potential match funding includes funding from the Energy Saving Trust and business sponsorship. The County Council has previously been awarded an Energy Savings Trust grant of £5500 for solar heating of public facility at another Park & Ride site. The EST may make up to £100,000 available.

Sponsorship by way of contributed materials and technologies will also be sought from the private sector. Based on contributions to the SmartLIFE project, we estimate that, with the high

profile attached to the eco town agenda and funding for residents to retrofit their homes, we will achieve £20,000 of equipment for each element of the project from five companies totalling £200,000. This will of course be sensitive to the market conditions pertaining.

### **Planning Status/Site Ownership and Ease of Delivery**

The Park & Ride site will pass into the ownership of the County Council when The Busway is handed over, and the proposed building may need to obtain planning permission if the design changes significantly from that originally included in the Transport And Works Act order which granted planning permission for the Guided Bus scheme. A planning application has been included in the timetable for the project, and is not expected to be a hindrance to the project.

The homes at Rampton Drift are owned by individual home-owners. The project will purchase two of the houses currently on the market in order to ensure deliverability of the project. Planning permission may be required for the micro-renewables. This would take 8 weeks and could be applied for whilst building work commenced. We have consulted with local residents within the constraints of this bidding process and believe there will be considerable support for this project.

We are confident that this demonstrator project is practical and deliverable, will help to provide greater confidence in the Northstowe project more widely, and provide transferable lessons for other low-carbon developments in the UK.

We look forward to hearing from you.

Yours sincerely,



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Cambridgeshire County Council



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## **Northstowe Eco-town Demonstrator Project**

## **Appendix 1**



SmartLIFE™ is a an initiative in public ownership (Cambridgeshire County Council) that promotes and delivers a sustainable built environment through training, awareness, knowledge

No.	Element	Existing Assumptions	Proposed Improvement	Budget Cost
1	Roof	Pitched roof with concrete tiles on felt on timber structure with 50mm glass fibre insulation	Additional 200mm insulation	£325
2	Walls	Brick & Block with 50mm cavity & 12.5mm plaster, total thickness assumed 265mm no insulation x 50%	Insert Cavity insulation to external walls	£250
		Block with tiles on battens & 12.5mm plaster & no insulation x 50%	Remove tiles & battens, add insulated render 75mm thick	£425
3	Windows	Doubled glazed / UPVC windows	Replace with high performance triple glazed windows	£5,000
4	External Doors	UPVC Doors	Replace with high performance doors & glazing etc	£1,500
5	Thermal bridging	No insulation at head/ cills / jambs of openings	Add insulation to window & door reveals	£1,200
6	Ground Floor	Solid ground bearing concrete slab with 50mm sand cement screed & plastic floor tiles	Remove screed & install insulated floating floor with under floor heating & carpets in living area	£750
7	Air tightness	No additional measures taken	Seal round windows / doors/ eaves etc	£300
8	Ventilation	Extract fan in bathroom	Mechanical Ventilation Heat Recovery System MVHR	£1,000
9	Heating System	Gas Fired Boiler	New combi boiler	£3,000
10	Water Heating	Gas Fired Boiler / lagged cylinder	Included with item 9	
11	Lighting	Standard Fittings	Low energy light fittings	£50
12	Water	Mains Supply / surface water to soak away	Rainwater collection & use in toilets etc	£500
				<b>£14,300</b>
	<b>Usage Issues</b>	Educate users		
1	Internal temp	Ave 22 deg C	Ave 21 deg C	
2	Reduce hot water usage			
3	Fridge Rating		Install Band A	£250
4	Washing Machine		Install Band A	£350
5	Water consumption		Install 2 No.2.6 l dual flush toilets & tapmagic inserts to taps to give 50% savings	£100
				<b>£700</b>

transfer and innovative partnership solutions. It has been at the vanguard of promoting skills, qualifications and facilities for Innovative Methods of Construction (IMC), for students of 14-19 yrs and industry. SmartLIFE is delivering services to other parts of the UK – to schools, industry and local government.

CCC works locally with Cambridge Regional College at the SmartLIFE Centre on the College's Cambridge campus. In addition to IMC, SmartLIFE delivers training and skills development on renewable energy technology and is currently working to develop skills and training courses for retrofitting of existing residential and commercial buildings. SmartLIFE works locally and nationally with leading partners to bring about successful interventions to support products, skills and market-led approaches. A CCC/BRE SmartLIFE partnership agreement brings forward partnership activities in an effort to maximize the impact of available grant and other funding in this area.

Part of the SmartLIFE project is SmartLIFE retrofit. This is working with the Building Research Establishment and others on residential and commercial schemes to retrofit materials and technologies to make energy and carbon savings. SmartLIFE will extend its business and education in Innovative Methods of Construction to retrofitting. SmartLIFE will set up training and qualification routes for students and industry and work with tenants, home owners and building operators in the installation and operation of technologies.

A number of local showcase buildings will build awareness and demand for communities and industry to take up retrofitting energy efficiency measures.

**The Hive** will be an enterprise and education park (to be built 2010-2011). It is a partnership between Cambridgeshire County Council, Cambridge Regional College, Citylife and BRE. It has a primary focus on the supply chain for low carbon living: sustainable homes, products, services and skills. It consolidates the successful SmartLIFE training, skills and business in innovative methods of construction and extends the reach into low carbon and resource efficiency education, skills and business incubation. Alongside the showcase commercial buildings, the Hive will provide demonstrator homes showcasing affordable IMC, renewables, retrofit materials and technologies required to build and refit to carbon neutral standards of build and occupancy.

The Hive will work with:

- Professionals, technicians and businesses working in construction designers, engineers, builders, plumbers, electricians and the like who want to update their skills to adapt to a low-carbon economy
- Young people looking for vocational training in modern, sustainable construction techniques

The inherently available links between the Rampton Drift retrofitting project and The Hive and SmartLIFE can only serve to strengthen the exhibition element of this project.

### **Sustainable Parish Energy Partnership**

A partnership of commitment, experience and confidence that can really help to deliver what parishes feel will work locally to cut fuel bills and reduce the carbon emissions

It is open to all parish councils who;

- are concerned about the implications of local energy issues and climate change,
- feel that there is sufficient community interest to work-up and co-ordinate local activities and projects that will directly contribute to reducing energy bills and tackling climate change

The SPEP can support the Rampton drift project by;

- Specialist energy advice - queries, signposting, reference and information Training - visits, workshops and seminars
- Grant support - government/supplier funds, grant-finder and match-funding
- Parish Energy Leaflet - for communities to tailor for their villages
- Home energy questionnaires - surveys and village mapping
- Village events and showcases - carbon foot printing, DIY projects and meet installers
- Energy saving - low-energy light bulbs and computer powerdowns
- Energy awareness - energy monitors and thermal imaging
- Bulk purchase options - insulation, draft proofing and renewable energy technology
- Community Carbon Counter - parish energy/carbon spreadsheet for setting targets
- On-line network support - information bank, project publicity and experience sharing