

ZERO CARBON FOR NEW NON-DOMESTIC BUILDINGS – CONSULTATION ON POLICY OPTIONS

To: Cabinet

Date: 23rd February 2010

From: Executive Director: Environment Services
Corporate Director: Finance, Property and Performance

Electoral division(s): All

Forward Plan ref: Not applicable *Key decision:* No

Purpose: - To inform Cabinet of consultation proposals from the Department of Communities and Local Government for achieving Zero Carbon in new non-domestic buildings.

Recommendation: That Cabinet agrees:

the draft Council response set out in Appendix 1 of this report and delegates to the Portfolio Holder for Growth, Infrastructure and Strategic Planning in consultation with the Executive Director: Environment Services and the Corporate Director: Finance, Property & Performance, the authority to amend the response in line with comments made by Cabinet prior to submission to the Department of Communities and Local Government.

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1.0 Background:

- 1.1 The Government has set a target to reduce UK carbon emissions by 80% against 1990 levels by 2050. Currently 17% of UK emissions are from heating, cooling and power use in non-domestic buildings and 27% from homes. In 2007, the Government policy document *Building a Greener Future* set out a target for all new homes to be zero carbon from 2016 and various measures have been put in place to enable this target to be achieved.
- 1.2 The Government's Budget in 2008 set out an ambition for all new non-domestic buildings to be zero carbon from 2019. The current consultation considers policy options to achieve that objective. This includes the following aspirational timetable for all new buildings to be zero carbon:
 - Homes - 2016
 - Schools - 2016
 - Public sector buildings including central (but not local) government estate, hospitals, defence estate, prisons, courts - 2018
 - All other non-domestic buildings, including County Council non-school buildings - 2019
- 1.3 The consultation document was published by the Department of Communities and Local Government (CLG) on 24 November 2009 and the consultation closes on 26 February 2010. The purpose of the consultation is to seek views on the evidence base, policy options and proposals for further work towards the Government's zero carbon ambition for new non-domestic buildings. There are 13 specific questions posed within the documents, which are set out in Appendix 1 together with the draft response.
- 1.4 Cambridgeshire Horizons are intending to coordinate and send back a joint response to CLG on behalf of a number of Cambridgeshire organisations. The agreed County Council response will therefore feed into Horizons work and form part of the wider, joint response.
- 1.5 CLG is aiming to publish a summary of responses within three months of the closing date. A further statement on the direction of policy will be made later in 2010. It is anticipated that there will also be clarification on when the various non-domestic buildings need to be built to zero carbon specifications and whether these are statutory targets.
- 1.6 The consultation documentation and further information can be found at the following website
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/1391110.pdf>.

2.0 Defining Zero Carbon:

- 2.1 As a minimum, the zero carbon target for non-domestic buildings will cover 100% of regulated emissions (from systems integral to the function of the building that are controlled through Building Regulations e.g. heating and cooling, lighting, water heating). The consultation is seeking views (consultation Questions 7 and 8) on requirements for non-domestic buildings to in addition achieve a reduction in a proportion of unregulated emissions (energy not used by the building fabric and fixed building services e.g. energy used by computers, machinery or other processes carried out day-to-day in the building).
- 2.2 This definition is similar to the broad framework for zero carbon that has been developed by the Government for new homes. However, the non-domestic building policy proposals have been adapted to reflect the differences in the commercial building market and the variation of non-domestic buildings which can impact on both potential solutions and costs. The main delivery mechanism for the zero carbon standards will be the Building Regulations which control the structural attributes of new buildings and are enforced by District Councils. It is proposed that any progression towards a zero carbon standard will be realised through step change increases in Building Regulation Standards.

3.0 Zero Carbon Hierarchy:

- 3.1 In order to achieve zero carbon the consultation suggests the following hierarchy of priority (similar to that developed for homes) (see fig 1):
- 1) Maximising Energy Efficiency
 - 2) On-site low and zero carbon technologies (Carbon Compliance)
 - 3) Off-Site (Allowable) Solutions

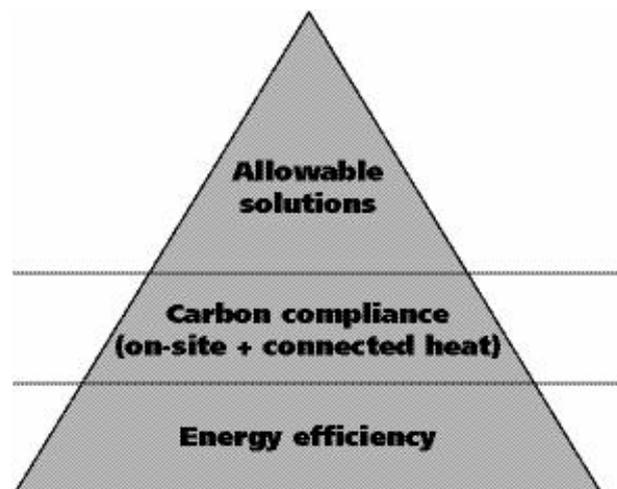


Fig 1: Broad zero carbon hierarchy (Zero Carbon for new non-domestic buildings consultation, CLG)

Maximising Energy Efficiency:

- 3.2 The first aim is to reduce the demand for energy (e.g. through high levels of insulation and aspects of building design such as orientation and shading). This provides a number of potential advantages over the installation of low and zero carbon technologies, including; lower whole life costs and being less dependent upon occupants' behaviour to realise carbon savings.
- 3.3 How far energy efficiency measures can reduce carbon emissions in non-domestic buildings depends on the building's use (e.g. the potential for this ranges from 10% in large supermarkets to 55% in distribution warehouses). Work in relation to establishing energy efficiency standards for new homes is further advanced and was presented to Government in November 2009. The consultation proposes that standards for non-domestic buildings should be consistent with those for residential development, adjusted to reflect the range of building type. Since this work is still ongoing, no minimum energy efficiency standard is proposed through this consultation.

On-site low and zero carbon technologies:

- 3.4 The Government proposes that once challenging energy efficiency standards have been met, regulatory levels for on-site carbon abatement, termed as 'carbon compliance', will also be required to be achieved.
- 3.5 The precise combination of measures for on-site or linked low and zero carbon technologies for non-domestic buildings has not been specified in the consultation. However, measures could include; further energy efficiency measures, low and zero carbon generation technologies (e.g. roof mounted solar panels), and low and zero energy installations built within the development (e.g. development-scale combined heat and power plant).

Off-site/allowable solutions:

- 3.6 Since it may not be possible to fully reduce or meet all the needs of every building through on-site low and zero carbon technologies, a menu of options for reducing the remaining carbon emissions will be developed. These include:
- Further carbon reductions on-site beyond regulatory standard;
 - Energy efficient appliances meeting a high standard;
 - Advanced forms of building control systems which reduce the level of energy use;
 - Exports of low carbon or renewable heat from the development to other developments;
 - Investments in low and zero carbon community heat infrastructure;

3.7 Consultation Questions 4, 5 and 6 seek views on allowable solutions, including whether proposals to introduce an element of allowable solutions for non-domestic buildings should come into force from 2016.

4.0 Regulated Emissions – Balancing on-site and off-site measures:

4.1 The consultation puts forward three scenarios for dealing with carbon reduction from regulated building emissions (in order to achieve a 100% improvement of regulated building emissions on 2006 standards by 2019). These three scenarios vary between the use of on-site measures compared to the use of off-site measures.

- *Scenario 1 (Referred to in the Consultation as “Off Site Rich”)* – This scenario prioritises off-site measures (requires a 56% improvement on 2006 emissions by 2019 through off-site measures and 44% improvement by on-site measures).
- *Scenario 2 (Referred to in the Consultation as “Balancing on and off site”)* – This scenario has a more equal share of on-site/off-site measures (requires a 46% improvement on 2006 emissions by 2019 through off-site measures and 54% improvement by on-site measures). This provides a greater potential for onsite renewables while still reflecting the more significant role non-domestic buildings can play in encouraging the establishment of community scale off-site solutions, for example a district heating scheme.
- *Scenario 3 (Referred to in the Consultation as “On-site Rich”)* – This scenario prioritises on-site measures (aims towards a 37% improvement on 2006 emissions by 2019 using off-site measures and 63% through on-site measures) and is likely to be the most expensive option.

4.2 An impact assessment, analysing the detailed costs and benefits for the three scenarios, has been undertaken. This can be found at the following website - <http://www.communities.gov.uk/publications/planningandbuilding/newnondomesticbuilddimpact>. The consultation asks which of the three scenarios are preferred (consultation Question 2).

5.0 Unregulated Emissions:

5.1 Since non-domestic buildings cover a range of different uses which have a wide range of energy-intensity, the definition of zero carbon is not expected to cover all unregulated emissions. This differs from the domestic building standard which applies to 100% of unregulated emissions as well as all regulated emissions.

5.2 However, the consultation considers that there may still be a case for reducing unregulated energy in order to further incentivise on-site activity

and reflect the 'polluter pays' principle by relating the measure directly to an individual building. The consultation therefore asks whether a flat rate requirement for unregulated emissions across building types is favoured and if so whether this should be a flat 10% or 20% improvement (consultation Questions 7 and 8).

- 5.3 Unregulated energy allowance would be met (as for homes) through allowable solutions.
- 5.4 The proposed response to the consultation is set down in Appendix 1.

6.0 SIGNIFICANT IMPLICATIONS

Resources and Performance

- 6.1 One of the most significant impacts for the County Council in providing public buildings to zero carbon standards is the upfront capital costs. The issue of Central Government funding has therefore been raised in the proposed response. In particular until the technology has become more established there may be additional costs and risks attached with pioneering these new technologies.
- 6.2 Officers will be required to have appropriate skills to design or commission new buildings to meet zero carbon standards which have a cost implication, both financial and in additional time required for research, learning and monitoring.
- 6.3 Where developer contributions are required to meet growth-driven demand for new facilities, these "additional" building costs will need to be included in Community Infrastructure Levy charging schedules from an early stage. More work is required to better understand these costs and associated issues.
- 6.4 Challenges to the public sector identified in the consultation include:
 - Finding ways to finance the additional up-front capital costs.
 - Managing the financial implications of risks associated with the zero carbon deadlines (including risks arising from deployment of new technology).
 - Managing new procurement and contractual processes, required in the context of public sector buildings becoming producers of energy.
 - Understanding how energy elements of PFI contracts might relate to community scale projects.
- 6.5 The consultation currently proposes that the public sector should be building zero carbon non-domestic buildings in advance of the commercial sector. The consultation notes that there are opportunities for local authorities to play an important role in this process, including:

- Early adoption of higher standards of exemplars amongst their own new buildings.
 - Influencing the development of higher standards or exemplar buildings by other public sector parties in their area.
 - Planning and facilitating links into community energy networks.
- 6.6 Cambridgeshire Horizons are currently leading on a piece of work undertaking cost/benefit analysis for bringing forward zero carbon standards for new public buildings in Cambridgeshire in advance of the proposed deadlines. This work will help to inform the Council's decision making process in terms of early achievement of zero carbon standards.
- 6.7 The Carbon Reduction Commitment (CRC) is acknowledged in the consultation. Early indications show that occupiers of more efficient buildings will use less energy and therefore will make a saving from needing to purchase fewer CRC allowances. However, there are also concerns over energy being paid for twice through two different government initiatives. Further work is being undertaken by the Departments of Communities and Local Government and Environment and Climate Change to fully understand how the two programmes can complement each other.
- 6.8 Further issues that have been raised by County officers for inclusion in the response to the consultation include:
- Implications for existing building stock (which make up the majority of the carbon footprint), particularly given funding pressures to build new buildings to zero carbon standards.
 - Expertise is required to make progress towards zero carbon. There is currently a skills gap in terms of designing, commissioning and building to zero carbon specifications, and building control and planning staff handling applications. Assistance is therefore required.
 - The consultation concentrates on capital cost. More information is required on whole life costing for buildings.

Statutory Requirements and Partnership Working

- 6.9 It is currently proposed that any zero carbon requirements will apply to all buildings covered by Building Regulation and thus will be a legal requirement for all new non-domestic buildings. There will be a greater need to work with both District Councils and with developers to achieve zero carbon compliance using both on and off-site solutions.
- 6.10 The consultation document emphasizes the significant role of the public sector in supporting the development of zero carbon buildings. This includes; acting as pioneers and showing leadership, creating demand and providing a market for developing technologies, and acting as reliable, long term anchor loads necessary to facilitate community/district heating schemes.

Climate Change

- 6.11 The purpose of the proposed standard is to respond to the requirement for 80% reduction in greenhouse gas emissions. If successfully implemented it will help Cambridgeshire County Council and other developers of non-domestic buildings to contribute to the national target.

Access and Inclusion

- 6.12 It is not anticipated that the implementation of the Zero Carbon requirements will have significant implications for access and inclusion. However, care will be needed to ensure that where decisions are made with a view to saving energy they do not adversely affect disabled access.

Engagement and Consultation

- 6.13 The County Council is a consultee in the wider Government consultation on its proposals for achieving the target of every new non-domestic building being zero carbon from 2019. The draft response to the consultation was discussed at a meeting with partners including the Primary Care Trust, Police and District Councils. They were given the opportunity to contribute and indicated that they would wish to be signatories to the joint response to be co-ordinated through Cambridgeshire Horizons.
- 6.14 An earlier consultation which took place in December 2008 on zero carbon homes also touched on ambitions for non-domestic buildings. Respondents to that consultation are reported to have been supportive of the Government's ambitions and for consistency of approach between residential and non-domestic buildings.

Source Documents	Location
http://www.communities.gov.uk/documents/planningandbuilding/pdf/1391110.pdf	Environment Services A2 Castle Court
http://www.communities.gov.uk/publications/planningandbuilding/newnon domesticbuildimpact	

Zero Carbon for New Non-Domestic Buildings - Proposed Consultation Response

PREAMBLE:

Cambridgeshire County Council strongly supports the principle of regulating emissions for new non-domestic buildings, and accepts that market mechanisms alone will not secure a reduction of emissions in the short term. There is also an obligation on those responsible for new development, both in the public and private sector, to ensure that growth does not add an additional emissions burden on society. There are seen to be benefits to the public purse in “designing in” zero carbon prior to construction, as retrofit measures at a later date are likely to be more costly.

However, there is a need to define more precisely what the regulations will cover. For example, clarification is needed on when new extensions to existing buildings, particularly those of significant size, are to be covered by the policy. Similarly, there needs to be clarification on buildings that combine domestic and non-domestic uses, or buildings that contain a variety of non-domestic uses.

The County Council recognises the significant role that it and other public bodies can perform in championing the move to zero carbon. This needs to be balanced against the risk and associated costs for which central Government support is requested.

SUGGESTED RESPONSE TO CONSULTATION QUESTIONS:

Q1. Do consultees agree that we should establish challenging energy efficiency standards for non-domestic buildings covering space heating and cooling, and measured on a kWh/m²/year basis? If not, why not, and what approach to setting energy efficiency standards would you prefer?

The County Council has a concern that this suggested metric could adversely affect those buildings with extended opening hours, particularly those in the public sector. This could lead to energy efficient buildings, designed to high environmental standards, still exceeding their annual kWh quota through having to carry out their statutory functions. The requirements for Archives and Records Office, in particular, is an issue given the requirement for 24/7 air conditioning. However, we also acknowledge that setting a quota at a level to reflect this could lead to less energy efficient buildings with shorter opening hours appearing to perform better than they actually are. It would therefore be useful to vary the metrics according to different, broad building types.

Q2. Which of the three scenarios would you favour as a basis for setting onsite aggregate targets for zero carbon trajectories and why?

The single biggest barrier to the implementation of zero carbon is the capital cost associated with building to these higher standards. It is important that this is fully considered in order to ensure that building to higher environmental standards does not adversely affect the viability and economic feasibility of buildings to such an extent that it prohibits them from coming forward or places an unacceptable financial burden on the requirements of new developments.

However, it is also important that the policy is sufficiently aspirational, reflecting the urgency and importance of emissions reductions, and ensuring that those commissioning and designing buildings recognise the critical role they have to play in meeting emissions targets.

Of the options provided in the consultation we favour option 2 (balancing on-site and off-site). Option 2 still provides stretching on-site targets but has lower capital costs per building than option 3, which may mean that realistically it is more achievable. In addition option 2 provides the opportunity for community heat networks to be supported, whilst still recognising that these may not always be suitable solutions.

A key concern that we have is that the building types used for the scenarios in the consultation paper do not adequately represent the many building types for which local authorities are responsible, particularly primary and secondary schools. For example, Cambridgeshire County Council has up to 25 new schools planned in Cambridgeshire in the next 11 years. Designing and building these to zero carbon will have serious implications for the organisation. Therefore more information is required as to estimated technical possibilities and cost implications for other building types, particularly primary and secondary schools.

Q3. What views do you have on the impact of the costs of building to zero carbon standards in different sectors? How and why does sensitivity to new build costs differ between sectors?

As noted above, the capital cost of building to zero carbon standards is the key issue. In particular the public sector is already facing severe financial pressures. Building new facilities such as schools and community library and learning facilities to zero carbon standards will only add to these costs. Without central government funding to achieve zero carbon standards this will mean cutting other key facilities/services. For example, in a new housing development the additional cost of building a primary school to zero carbon standards could mean reducing and/or omitting other community facilities in order to make the development financially viable.

We would therefore welcome further information on costs of building to zero carbon standards, and the proposed funding from central government in order to build zero carbon buildings and for the Government to realise its zero carbon

ambitions.

Cost is a particular barrier when the zero carbon initiative first starts. The reason being that technologies are still being trialled and since they have yet to be produced en masse by the market they will still be relatively expensive. In addition, the cost for achieving the final percentages of zero carbon standards can often be disproportionate to the previous percentage reductions, and can result in the building not being financially viable. There needs to be careful consideration of measures and solutions that can help achieve the final percentages, particularly whilst the initiative is still in its infancy.

Although the consultation is aimed at new non-domestic buildings there are serious implications for existing non-domestic buildings. Funding pressures will mean that there is a risk that in trying to achieve the standards for new buildings that money will not be used on carbon reduction measures to existing properties. The overwhelming majority of the public sector's carbon footprint comes from existing buildings, and if this is not being addressed through funding this will result in additional financial costs through schemes such as the Carbon Reduction Commitment. The links between existing and new buildings and implications of this policy to them therefore need to be considered further.

The consultation refers to the need to better understand the impacts of different building types, and the appropriate steps to reach the 100% carbon reduction. As noted above, Cambridgeshire County Council considers that further information on technical possibilities and cost implications for a wider range of building types is essential, in order that all local authority buildings are included in this work. In particular given the significance of new school buildings, additional information should be provided on primary and secondary schools.

It is worth noting that Cambridgeshire's local authorities have already taken steps to start identifying the costs and benefits of building to zero carbon. The results of this study and ongoing work may provide a useful contribution to the wider zero carbon work.

A further issue that needs consideration is the voluntary sector and how these organisations are able to achieve zero carbon buildings (e.g. church halls, scout huts, community centres, voluntary providers of early years and childcare provision), particularly with their available resources.

Q4. Do you agree that we should adopt the same measures and approaches for allowable solutions for non-domestic buildings as those for homes?

The advantage of adopting a common approach to measures for both residential and non-residential developments is that it simplifies implementation in multi-use buildings containing both residential and non-residential elements. For example, one of the County Councils newest library buildings (located in Great Shelford) is a product of partnership working with a housing provider resulting in a new dual-use building containing both a public library facility and

housing. This model of investing in public services linked to social housing will be one that is likely to be replicated as a model for future new build in the county. Therefore a common approach to allowable solutions simplifies implementation and maximises the opportunities for market investment. Given their potential importance in leading on the zero carbon building programme, local authorities should have a greater role in agreeing the choice of allowable solutions for all non-domestic buildings, commenting on any other options which may come forward and monitoring their performance.

Q5. Are there any extra allowable solutions that should be used specifically for non-domestic buildings?

The number of allowable solutions is fewer than in the consultation paper for the definition of zero carbon. Some important allowable solutions have been omitted, such as the offsite renewable electricity generation. This is an important omission as the current allowable solutions list will make it difficult to achieve zero carbon.

Installation of micro renewables or building integrated renewable technology on existing buildings should be an option for an allowable solution (e.g. PV on roof of existing warehouse - not necessarily directly linked to new development), although this solution could be difficult to administer.

As suggested by the UK GBC, allowing payment into a 'Community Energy Fund' to facilitate delivery of larger-scale low and zero carbon energy generation schemes and associated facilitating infrastructure should also be an allowable solution. This would enable projects such as a community wind farm to be built, which is otherwise too small scale to be of interest to large energy companies.

Q6. Do you agree with the proposal to introduce an element of allowable solutions for non-domestic buildings at 2016? What views do you have on the level at which this should be set, and the impact this will have?

The proposal is valid and has a number of benefits as outlined in the consultation document. The level chosen should be lower or as a maximum equal to the cost of carbon saved in 2019 to ensure that this proposal does not penalise 2016 developments (vis a vis those meeting 2019 requirements).

Where this would support a mixed use development and enable a more financially viable off-site contribution towards achieving zero carbon this would be helpful.

Q7. Do you favour an approach of setting a flat rate requirement above 100 per cent regulated emissions to account for unregulated emissions?

A flat rate would dilute the principle of the zero carbon concept and is a very poor approach. A flat rate would unduly penalise some building types. Target %

should be based on planning classes for example and perhaps even differentiate between high energy and low energy variants (e.g. a 5 hotel with leisure facilities such as spas and pools and a basic 2* hotel).*

We would want unregulated emissions figures to adequately reflect the process energy used by the relevant planning class (large industry processes can be excluded but the figures should include smaller process energy such as refrigeration by supermarkets). Unregulated energy use such as energy used by IT in a recent study of financial firms' office energy used was three times that of indicative benchmark. This shows the need to adequately research realistic unregulated emission levels for different building types and uses.

Instead of the SBEM percentages which as the consultation paper admits were developed simply for heat gain calculation purposes, the DECC benchmarks should be used. The model has the best available benchmarks (total emissions: regulated and unregulated) for 237 building types and aggregates these into 29 building categories. The SBEM figures for the regulated part could be used to work out the unregulated part, and using this on a per building category basis to set not a flat but a variable reduction target.

The rate should vary to reflect the type of activity within the building. Whilst recognising that the proposal set out in paragraph 5.11 of the consultation would result in a very complex system, the aim should be to arrive at a measure which is generally seen to be fair but at the same time is reasonably simple to operate.

Q8. Would you favour the 10 per cent allowance, the 20 per cent allowance or another rate? Why?

See above. A flat rate is not acceptable, not fair and is not consistent with the variable rate already proposed for carbon compliance. 10% and 20% are both less than the level of true unregulated emissions and therefore not adequate for a true zero carbon aspiration

Q9. Do you agree with the overall work programme we have outlined for the public sector?

Yes, Cambridgeshire County Council agrees with the overall work programme. Although this is predicated on the issue of funding being resolved, without which it will be difficult for the public sector to provide new buildings to zero carbon standards.

Clarification is sought as to how the deadlines set will be applied, for example would all buildings completed from the set date be zero carbon or will the requirement be applied to any proposals submitted to a planning authority at the target date? Given the long lead times for some non residential building such as schools and community learning and library buildings this will have significant

implications particularly with regard to the availability of the necessary design skills.

We believe that it is important that the public sector leads the way in demonstrating viability and the potential for low and zero carbon design and technology. In particular it is important that the public sector shares the lessons learnt – successes as well as failures – with the commercial sector in advance of policy implementation in 2019. The sharing of information should allow for the speeding up and developing of new technology into the market.

We welcome reference being made in the consultation to the Carbon Reduction Commitment, and the need for the different Government agencies to work together. However, we require further information on how exactly they will interact.

Q10. Are there other ways in which you think the public sector could usefully provide leadership for the move to zero carbon?

The County Council supports the public sector providing leadership and championing the move to zero carbon, but only with the required financial support from central government. In particular new technologies have a much greater cost when they are first trialled. Without the financial support there is a risk of public buildings becoming financially unviable and either not being provided or another key services having to be cut.

The phased approach to zero carbon suggested by the consultation will allow the public sector to demonstrate the inroads that are being made into the obligations.

Experience suggests that there is a high level of risk associated with large scale low carbon infrastructure that has to be developed to comply with regulation and public sector support is vital for achieving this, via financial mechanism or supply chain development for example. There is a specific role for the public sector in terms of procurement, for example through the links between community wide on-site solutions, the establishment of ESCOs, and the potential to bring alongside other utilities.

Within Cambridgeshire, the County Council has taken a lead role in addressing obstacles to innovative and sustainable construction through SmartLIFE a pioneering project led by the County Council in partnership with Cambridge Regional College which aims to deliver strategic solutions to sustainable skills levels of the industry through training and promotion of innovative methods of construction.

The role of the public sector in adopting planning policies which support and enable both on and off-site measures to assist the move to zero carbon should also be recognised.

Concerns regarding the security of supply of biomass fuel could be met by use

of public sector land being set aside for the purpose.

Q.11. Do you agree that the public sector should start trialling allowable solutions from 2015?

Although the County Council supports the trialling of allowable solutions from 2015 in order for the public sector to lead and help develop new technology into the market, this should only be done with the help of central government funding.

Q12. What role(s) do you think local government can play in contributing to public sector leadership on zero carbon buildings?

The role of local government (and delivery vehicles such as Cambridgeshire Horizons) is fundamental to ensuring that we are fully prepared for implementation of zero carbon, and for setting an example to other developers. In particular, in terms of large scale schemes, there is a specific role for local authorities in the removal of initial risk from these projects. For example, off-site measures such as heat schemes have particularly high capital costs, which may mean that these are financially unviable in the short term. This may require new innovative solutions through partnership working in order to make them affordable as part of infrastructure projects.

However, we are particularly interested in understanding the support and reward available to early adopters as suggested in the consultation as this could be a meaningful incentive to offset the costs and risks of trialling new technology. The availability of funding for trial projects needs to be confirmed. Also would this be available to the public sector as a whole, or just central government departments? Clarification is required on these issues.

Recognising the lead role that local government can play, Cambridgeshire County Council is already committed to looking at the implications of delivering to low/zero carbon standards in advance of policy change. Since 2008 Cambridgeshire County Council has been undertaking work to assess the challenges and opportunities of building to zero carbon. This has now become a public sector partnership project led by Cambridgeshire Horizons, and work is ongoing to compare costs and benefits associated with delivery to different levels of carbon reduction.

It is particularly important that local government continues to work in partnership to establish the pathway towards zero carbon. There are many benefits from joint service delivery through combined building use, but this also has implications for balancing of on-site and off-site measures, provision of base heat loads etc.

Local government can also be well placed to share lessons learned and thus assist the wider commercial sector in its take up of new technology.

Q13. Does this package of measures and proposals for next steps address the key delivery issues to make progress towards the zero carbon ambitions? If not, what action is needed and by whom?

We believe that the package of measures does broadly address the key issues, although much more work is required to develop them into a usable system. In addition, for the Government to achieve its challenging targets it is imperative that additional support is given to local authorities for developing the expertise required to making progress towards zero carbon. For example, there is currently a skills gap in terms of designing, commissioning and building to zero carbon specifications, and therefore assistance is required for training asset managers and building commissioners. Cambridgeshire has started to address the skills gap through establishment of The Hive, which offers training in sustainable construction methods appropriate to the low carbon economy. Training is also needed for building control and planning staff handling applications, in order for them to fully understand and assess planning material from developers.

Another issue that is not adequately addressed in the consultation is that of whole life costing for buildings. Clearly there is an up front capital cost to building to zero carbon standards which may differ between the various scenarios. However, when the ongoing, long-term costs (e.g. taking into account the heating of buildings) are considered then this may produce a different result. More information is therefore required on the comparative whole life costs for the different low and zero carbon solutions.

On-site technologies need to be cost-efficient, and only efficient technology should be compulsory. For example, the consultation uses photovoltaics (PV) as an example of on-site renewable, which currently have a pay back period greater than their life expectancy. Organisations would therefore require additional funding to implement PV installations in order that they make a meaningful contribution to zero carbon targets. In addition, it should be ensured that the cost of producing on-site technologies is not at a higher overall carbon cost (e.g. the carbon used to manufacture the technology is not more than will be saved in their useful lifetime). For these reasons it would be useful if there were standards for renewable technologies to ensure that they were as environmentally efficient and cost-effective.

Lastly, it would be helpful to receive clarification on whether there is to be a Code for Sustainable non-domestic buildings. Although this would ensure a holistic approach to sustainability and ensure that adaptation to climate change was taken into account, there is a concern that it could be viewed as a distraction from the emphasis on carbon reduction.