Agenda Item No:7

NEARLY ZERO ENERGY BUILDINGS REQUIREMENTS FOR NEW PUBLIC BUILDINGS

To:	**General Purposes Committee**
Meeting Date:	**17th December 2019**
From:	**Chief Executive**
Electoral division(s):	**All**
Forward Plan ref:	**2019/039** *Key decision:* **Yes**
Purpose:	**To share the requirement for new buildings owned and occupied by public authorities to be 'Nearly Zero Energy Buildings' from January 2019 and to consider the implications of this on current and future building works undertaken by the Council.**
Recommendation:	**The Committee is asked to:**

a) Note the requirements of the Nearly Zero Energy Buildings (NZEB) regulation;

b) Approve the development of a pilot school new build project as set out in paragraph 3.4 at energy standards set out in paragraph 2.6;

c) Approve the recommendation for energy standards in paragraph 2.6 as policy for all new public buildings (where appropriate) to be built, owned or occupied by the Council from now, with the exception of schools (see (b) above);

d) Approve work to review all procurement frameworks and new procurements to ensure that they reflect the new energy standards;

e) Require that all business cases for new and existing building construction projects include whole life cycle costs;

f) Install low carbon heating systems for any refurbishments and boiler replacements (set out in paragraph 2.8) to reduce the Council's carbon footprint and maximise energy benefits to the Council.

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1. BACKGROUND

1.1 Cambridgeshire County Council has a range of new buildings and refurbishments in development or planned for the future, including the schools capital programme and a range of community facilities.

1.2 A change to the Building Regulations which came into force on 1 January 2019 means that all new buildings owned and occupied by public authorities must be 'Nearly Zero Energy Buildings'. This regulation will come into force for all other new buildings, irrespective of owner or occupier, from 31 December 2020.

1.3 The legal definition of 'Nearly Zero Energy Building' is a building that has '*a very high energy performance…, where the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby."*.

1.4 Energy use in buildings (including direct emissions from burning gas or oil for heating etc., and indirect emissions from electricity usage) still accounts for a significant proportion of UK greenhouse gas emissions. The UK's commitments under the Climate Change Act and subsequent Paris Agreement are driving regulation change for buildings. These changes are a positive step to reducing carbon emissions and providing greater energy security for our communities. The benefits include:

- Very low operational costs of running new buildings;
- Opportunity to create innovative and pioneering buildings leading the way in energy efficiency and use of renewables;
- Supporting Cambridgeshire's vision for a sustainable and prosperous place to live;
- Helping the UK to meet its carbon commitments under the Climate Change Act and support clean growth.

1.5 In October 2019, this Committee adopted Cambridge University's Science and Policy Exchange (CUSPE) report, *Net-Zero Cambridgeshire – What actions must Cambridgeshire County Council take to support net-zero carbon emissions by 2050*, as an evidence base for its emerging Climate Change and Environment Strategy. The CUSPE report highlights that all buildings, non-domestic and domestic, will need substantial improvements in energy efficiency and 90% of all buildings, new and existing, (exceptions include heritage buildings, temporary buildings, farm and household waste recycling facilities) to come off gas through the roll out of low carbon heating and other renewable energy.

2. MAIN ISSUES

2.1 Interpretation of the legislation. The definition of 'Nearly Zero Energy Building' (see paragraph 1.3 above) is challenging as it is very broad. There is no stated definition of 'very high' energy performance, nor of 'very significant extent'. A circular letter from the Ministry of Housing, Communities and Local Government (MHCLG) states that "following the existing Building Regulations guidance and relevant Government procurement policies would be an adequate way to demonstrate compliance with the nearly zero energy buildings requirement". However, the relevant 'Approved Document' which provides guidance on the Building Regulations (Document L2A), has not yet been updated to reflect the amended regulation. The MHCLG letter does also say that "where an assessment has been undertaken using BREEAM or an equivalent methodology, a demonstration that energy credits have been achieved can be used as further evidence that [this regulation]

has been met." To ensure that all our new buildings could reasonably be said to be 'Nearly Zero Energy' under the definition in paragraph 1.3 we need to be able to demonstrate compliance with the two parts of the definition, namely:

- *A very high energy performance; and*
- *Energy needs met to a very significant extent from renewable sources.*

2.2 *Energy standards set through adopted Local Plans*. Development of all new CCC buildings will still be subject to compliance with relevant city / district local plan standards on energy. These vary from Plan to Plan but compliance with the Building Regulations will be required in any case.

2.3 *Council's current position for new build projects* is to meet the BREEAM 'Very Good' standard. BREEAM is a scheme that rates the sustainability of buildings, ranging from Pass, Good, Very Good, Excellent to Outstanding, by meeting various technical criteria. Sustainability is measured across ten categories including energy, health and wellbeing, innovation, land use, materials, management, pollution, transport, waste and water. The ratings are determined by a scoring system summing total 'credits' awarded from all categories. The BREEAM Very Good rating requires a score of ≥55%, with no specific minimum in the Energy category and this standard will no longer guarantee that we meet regulatory requirements for energy for new buildings. In some cases you can deliver high energy consumption buildings using fossil fuels and still achieve the 'Very Good' standard. We will need to set a minimum number of energy credits to demonstrate compliance with the Regulations. The Civic Hub will now achieve **8 BREEAM ENE01 of which 4 credits are energy performance credits**, achieving an equivalent BREEAM Excellent rating in energy. The Civic Hub will also not connect to the gas grid and solar canopies are being designed for the car park to generate renewable electricity to support on-site electric vehicle charging and any residual energy needs.

2.4 *Financial impacts.* Creating a 'Nearly Zero Energy Building' may incur greater upfront capital cost than one of higher energy usage (though not in all cases), but the building is likely to be considerably cheaper to run. It is also known that designing in energy efficiency measures from the start is much cheaper than retrofitting later on. Therefore total expenditure over the lifetime of the building is likely to be reduced through the implementation of these regulations. The value of reduced operational and maintenance costs is likely to increase over the years as energy prices increase, making energy savings even more worthwhile. The challenge delivering increased standards is not with those buildings the Council owns and occupies as additional upfront costs can be recouped via lower revenue costs over time but with those buildings, e.g. schools, community buildings where S106 contributions for the new build costs have been agreed with developers based on current specifications. The Council may need to borrow additional funding for higher energy standards for schools but the benefit of lower bills will sit with the school operator.

2.5 To comply with the new Regulation, the Council will need to amend its policy and specifications to require that all our new buildings (where appropriate) will be Nearly Zero Energy Buildings (NZEB). This must cover both parts of the definition (in para 1.4 above), i.e. i) a 'very high' energy performance, and ii) the energy required to be covered to 'a very significant extent' from renewable sources.

2.6 There are several different potential ways to achieve compliance. Please see **Appendix A** detailing the options considered at a workshop held on 24th May with Members and Officers. The workshop explored which of these options would best support the Council to

achieve compliance. As a result of the workshop, the preferred policy is a combination of different mechanisms including:

- Achieving at least 6 BREEAM energy performance “Ene01” credits;
- Designing buildings to achieve an EPC rating of A or better,
- Installing on-site renewable energy generation sized to meet a significant proportion (>80%) of the building’s expected energy use.

2.7 The workshop also identified that a new business model is needed for financing NZEB for new schools. This is an opportunity to engage with government departments such as Department for Education (DfE), MHCLG and Department for Business Energy and Industrial Strategy (BEIS) to set up a pilot to develop a new business model where the benefit of installing higher energy standards can be shared between the school operator and the Council. The proposition will be to test whether heat and electricity can be charged as a ‘service’ to the school operators. This could build on the existing energy performance contracting services for both maintained and academy schools and could also encourage a review of modern methods of construction to reduce overall carbon emissions in our drive towards net-zero carbon emissions by 2050.

2.8 *Opportunities to upgrade existing buildings*. Although these Building Regulations amendments do not impose requirements on existing buildings, if the Council is to reduce its organisational carbon footprint, refurbishing or upgrading assets within existing buildings should consider energy policy and low carbon heating solutions. Business cases will need to be developed using life cycle costs and encouraged to access incentives such as the Renewable Heat Incentive until March 2021 to inform investment decisions. As heating plants typically have long lifetimes e.g. 20 years or more for boilers, there will be only one or two opportunities between now and 2050 to replace both gas and oil heating systems, at the end of their lives, with low carbon heating solutions. Integrating heat pumps into existing buildings does have some challenges as energy efficiency improvements may also be required to retrofit low carbon heating in existing buildings. The current Energy Efficiency Fund could help support these changes.

3. NEXT STEPS

3.1 *Update existing procurements.* The legislative change will have implications on existing procured frameworks for all our capital building works, and also on the specifications for current and future new buildings projects. For example, the design and build procurement framework used for the schools building programme currently specifies BREEAM ‘Very Good’. This and other frameworks will need to be reviewed and updated to reflect paragraph 2.6 above.

3.2 *Support Whole life cycle costing*. To help understand the operational savings that can be delivered for NZEB and provide the context for any additional upfront capital that may be required, all new business cases should look to provide the data to enable whole life cycle costs for energy to be calculated. An agreed methodology and template can be developed and used to compare whole life cycle costs between different design options.

3.3 *Review all current building projects***.** For build projects currently underway, where appropriate, upgrade specifications to reflect the new regulations, similar to that achieved by the Civic Hub and assess any additional upfront costs on the basis of life cycle costing and access to finance incentives.

3.4 *School Pilot project.* Work with Government and school operators to test new business models at the higher energy standards to provide the opportunity to share the benefit of the financial investments into higher school energy standards. Strategic Education Schools Capital Programme Manager has identified Eastfield/Westfield school redevelopment as the potential pilot.

4. ALIGNMENT WITH CORPORATE PRIORITIES

4.1 **A good quality of life for everyone**
There are no significant implications for this priority.

4.2 **Thriving places for people to live**
The new building regulations for public buildings and future buildings to be nearly zero energy will benefit the local economy in a number of ways including: shifting reliance locally from fossil fuels, designing in lower running costs for buildings and securing local renewable energy supplies. This improves local energy security and manages the cost of energy for business and our communities. Reducing energy consumption and the generation of low carbon electricity also reduces and offsets fossil-fuel generation providing air quality benefits for all.

4.3 **The best start for Cambridgeshire's children**
There are no significant implications for this priority.

5. SIGNIFICANT IMPLICATIONS

5.1 **Resource Implications**
There are likely to be increased capital costs of creating a Nearly Zero Energy Building but these are likely to be offset over the lifetime of the building by reduced revenue costs. It is also worth noting that buildings with lower energy standards will be a carbon liability in the future and costs for retrofitting at a future point will be needed to deliver the Government net-zero carbon 2050 target. There will be some work required to implement the recommendations in the short term.

5.2 **Procurement/Contractual/Council Contract Procedure Rules Implications**
The Council's working standard of BREEAM 'Very Good' will need to be updated to specify a set number of energy credits under BREEAM ENE01, EPC rating and installation of renewables as set out in paragraph 2.6. Procurement frameworks for the design and construction of public buildings will also need to be updated to reflect higher energy standards.

5.3 **Statutory, Legal and Risk Implications**
This is a change to the Building Regulations 2010 adding Regulation 25B. The amendment came into force on 1 January 2019 for new buildings owned and occupied by public authorities. A public authority is defined as *any government or other public administration, including public advisory bodies, at national, regional or local level*'. This definition is likely to include academy schools. In any case, the regulation will come into force on 31 December 2020 for *all* new buildings, irrespective of owner or occupier. In the absence of updated Guidance Documents, we are taking a risk averse approach to ensure compliance with the legislation and to work alongside this Council's May 2019 Climate emergency declaration. Please see paragraph 2.4 on potential for increased costs due to the change in specifications.

5.4 **Equality and Diversity Implications**
There are no significant implications within this category. An Equality Impact Assessment screening has been carried out to confirm this.

5.5 **Engagement and Communications Implications**
All new (built after 1 January 2019) buildings owned and occupied by the Council including the Civic Hub, community facilities and new schools will be impacted by this regulation. It will be important to ensure that communications on these schemes can detail compliance with the building regulations once a new policy position is agreed.

5.6 **Localism and Local Member Involvement**
A workshop was held with Members and officers on 24 May to explain the regulation and explore options for achieving compliance.

5.7 **Public Health Implications**
The proposed measures are expected to benefit public health by reducing future harms from climate change.

Implications	**Officer Clearance**
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Ellie Tod
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	Yes Name of Officer: Gus Da Silva
Has the impact on statutory, legal and risk implications been cleared by LGSS Law?	Yes Name of Legal Officer: Fiona MacMillan
Have the equality and diversity implications been cleared by your Service Contact?	Yes Name of Officer: Elsa Evans
Have any engagement and communication implications been cleared by Communications?	Yes Name of Officer: Jo Shilton
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: James Smith

Source Documents		Location
1	**Circular Letter from Ministry of Housing, Communities and Local Government on Nearly zero energy buildings requirements for new public buildings**	1. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770809/nZEBS_circular_letter.pdf
2	**Building Regulations 2010 (as amended), regulations 25B and 35**	2. http://www.legislation.gov.uk/uksi/2010/2214/regulation/25B and http://www.legislation.gov.uk/uksi/2010/2214/regulation/35
3	**Energy Performance of Buildings Directive (2010/31/EU)**	3. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010L0031
4	**European Commission Recommendation (EU) 2016/1318**	4. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016H1318
5	**Building Regulations Approved Document L2A**	5. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540328/BR_PDF_AD_L2A_2013_with_2016_amendments.pdf
6	**BREEAM Technical Manual for new construction of non-domestic buildings**	6. https://www.breeam.com/NC2018/Default.htm
7	**Reducing UK Emissions 2018 Progress Report to Parliament (Committee on Climate Change, June 2018)**	7. https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/
8	**A Future Framework for Heat in Buildings: Government Response, December 2018**	8. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762546/Future_Framework_for_Heat_in_Buildings_Govt_Response__2_.pdf
9	**Clean Growth Strategy**	9. https://www.gov.uk/government/publications/clean-growth-strategy
10	**MHCLG EPB certs statistics Q4 2018**	10. https://www.gov.uk/government/statistics/energy-performance-of-buildings-certificates-in-england-and-wales-2008-to-december-2018

Appendix A: Policy options considered by Members and Officers at their 24th May workshop on NZEB compliance

1. BREEAM Excellent or Outstanding. Upgrade Council policy and specifications to require BREEAM 'Excellent' or 'Outstanding' ratings for new buildings. This is a widely recognised methodology to create more sustainable buildings, however it entails numerous additional and unrelated requirements (other than energy) which in some cases may be difficult to meet and/or incur greater upfront costs. This option has been considered but is **not** currently recommended as policy.

2. PassivHaus. The 'Passivhaus' standard is another option. It produces buildings that provide a high level of thermal comfort while using very little energy for heating or cooling. Instead, Passivhaus designs make use of passive heat sources such as the sun, people, equipment and extracting air. However, Passivhaus buildings may have higher upfront construction costs, go beyond the minimus compliance level and the standard may be very difficult to achieve for some buildings. This option has been considered but is **not** currently recommended as policy.

3. BREEAM Energy Credits. An alternative approach to ensure compliance with the Nearly Zero Energy Buildings definition would be to include in Council policy a specific additional requirement for a design to achieve ≥6 BREEAM Energy credits (without upgrading the overall sustainability level from 'Very Good'). Energy performance (Ene01") credits are awarded for achieving an energy performance ratio (EPR) exceeding benchmark levels. (To understand the EPR credits, 4 credits is the minimum requirement for BREEAM Excellent on energy, ≥6 credits is required at the 'Outstanding' level, and 9 credits requires zero net carbon emissions as well as a very high EPR.) This approach **is** recommended because it has the advantage of being more focussed specifically on energy, without changing any other unrelated requirements. This option would enable us to meet the first part of the Nearly Zero Energy Buildings definition, namely; a very high energy performance.

4. Energy Performance Certificate 'A' Rating. Another simple way to demonstrate that we are meeting the definition of Nearly Zero Energy Buildings would be to specify that all our new buildings must achieve at least an 'A' rating, in the Energy Performance Certificate (EPC). EPCs are already required for all new buildings. (As a guide, 'B' ratings are now commonly achieved for new-build housing stock, although C and D ratings are still the most common levels for older housing and for non-domestic buildings[1]. An 'A' rating = a very high energy performance, and beyond that an 'A+' = zero carbon.) The calculation of EPC ratings is complex but better scores can be achieved for buildings with good insulation, high performance glazing, very efficient heating/ cooling/ ventilation systems, LED lighting and on-site renewable energy generation. The advantages of this approach are that EPCs will need to be obtained anyway, and the result is presented in a way that is easy to understand. This approach **is** recommended. This option would also enable us to meet the first part of the Nearly Zero Energy Buildings definition, namely; a very high energy performance.

5. Renewables. In order to address the second part of the NZEB definition, i.e. energy sourced 'to a very significant extent' from renewable sources, it is recommended that Council should specify that all new buildings must have on-site renewable energy generation of a size to meet 'a significant proportion' (for example, at least 80%) of the building's expected total energy use. Renewable energy sources could include a range of technologies such as rooftop solar PV electricity generation, ground source or air source heat pumps for space heating, and solar thermal for hot water. This approach has the added benefits of reducing the need for expensive

[1] Source: MHCLG EPB Certs statistics Q4 2018

energy bought in from the grid, reducing whole life operational costs, becoming more self-sufficient, and reducing our carbon footprint. It also fits in with Council's Corporate Energy Strategy, makes good use of our property assets, and meets the second part of the Nearly Zero Energy Buildings definition. This approach **is** recommended.