

EXECUTIVE SUMMARY

Introduction

There is now compelling scientific consensus that human activity is changing the world's climate. Evidence compiled by the Intergovernmental Panel on Climate Change (IPCC) shows that climate change is happening and that man made emissions are the main cause.

The City of Portsmouth is expected to suffer greatly from the effects of climate change, as highlighted in the Council's forthcoming climate change strategy.

80,000 new homes are to be built in the South Hampshire area by 2026, with 14,700 homes being developed in Portsmouth. This growth will result in increased environmental impacts, in particular an overall rise in carbon dioxide emissions and increased demand on water supplies.

As outlined in section 3.0 of this report, there are a number of national and regional climate change legislative drivers and associated carbon dioxide emission reduction targets. In particular Portsmouth City Council has included the following sustainable energy-related national indicator as part of its Local Area Agreement (LAA):

- ❑ NI 186 - a percentage reduction of the per capita carbon dioxide emissions in the local authority area.

This requires the Council to take actions to reduce carbon dioxide emissions across its local area, including those emissions associated with new development. While this will only make up a relatively small proportion of buildings in Portsmouth, it is important that it is built to low carbon standards. This will help the Council in its progress to reduce emissions across the city, as well as ensuring low energy bills for future occupiers.

In addition to water scarcity across the South East region and the predicted effects of climate change that are expected to aggravate this issue, the City is also affected by the lack of additional waste water treatment facilities. The planned new development across the City will exacerbate this problem. In order to help lessen water scarcity and reduce loads on water treatment facilities, Portsmouth City Council aims to improve water efficiency in new development. This could potentially remove the need or simply reduce the scale of new water treatment facilities within the City.

This report supports the development of a robust policy framework for Portsmouth City Council. It reviews draft Policy PCS9: SUSTAINABLE DEVELOPMENT and makes recommendations for a more resilient planning and sustainable development policy, in order to minimise these environmental impacts.

In order for Policy PCS9 to be considered sound by the Planning Inspectorate, Impetus Consulting and Greenlight Construction have developed an evidence base analysing the cost and technical issues of meeting standards within the Code for Sustainable Homes and the Building Research Establishment's Environmental Assessment Method (BREEAM). An assessment of the feasibility of renewable energy and low carbon technologies across the City has also been undertaken.



This study therefore assesses the viability of meeting sustainability targets, in terms of financial impact and whether such standards can be met in Portsmouth. It then makes recommendations on the final policy that should be introduced.

Findings

Justification for Policy PCS9

As highlighted above, the City is expected to suffer greatly from the effects of climate change and this situation will be exacerbated by a rapidly growing urban population in the South East. Chronic summer droughts, warmer and wetter winters, increased frequency and events of extreme weather, and rising sea levels are expected to result from the Earth's changing climate.

Water scarcity is also a pressing concern across the South East region, with the predicted effects of climate change and levels of growth expected to aggravate this issue. The City is also affected by the lack of additional waste water treatment facilities, and planned new development across the City will only exacerbate this problem. In order to help lessen water scarcity and reduce loads on existing water treatment facilities, water efficiency in new development should be improved. This could potentially remove the need or simply reduce the scale of new water treatment facilities within the City.

There are also a number of national legislative drivers that call for sustainability planning policies from local planning authorities. National planning guidance documents, including PPS 1, PPS 22 and the PPS 1 supplement, recommend that development plans should contribute to global sustainability by addressing the causes and potential impacts of climate change. They can do this through policies which reduce energy use, reduce emissions and promote the development of renewable energy resources.

The South East Plan also places responsibility on local authorities to achieve low carbon building standards in advance of changes to the Building Regulations. In particular, Policy NRM11 allows local authorities to require higher levels of decentralised and renewable or low-carbon energy in new development. In addition, the PUSH Sustainability Policy Framework states that developers incorporate sustainable building standards (BREEAM and the Code for Sustainable Homes) and renewable energy and low carbon technologies into their developments.

As part of the development of its Core Strategy, Portsmouth City Council introduced Policy PCS9 in order to satisfy the requirements of national and regional legislative drivers, to reduce the environmental impact of new development across the City and to respond to the aspirations of local residents for a more sustainable City.

Portsmouth characteristics

There are specific development issues within Portsmouth that could influence the effective implementation of Policy PCS9. For example:

- ❑ A large proportion of the sites for both domestic and non-domestic properties are relatively small. There are often issues associated with small city infill developments, including developers being unable to take advantage of economies of scale in relation to costs or to

deploy site-wide renewable energy and low carbon technologies, e.g. combined heat and power (CHP);

- ❑ Developers are also required to meet affordable housing targets within individual developments; and
- ❑ The unlikely prospect of land owners, including Portsmouth City Council, lowering land values to lessen the financial burden on developers meeting the Council's sustainability requirements.

It is important to recognise that the economic recession has had considerable effect on the construction industry with development levels significantly reduced across the whole of the UK. Land values in particular are expected to fall further or even become negative, which could result in landowners choosing not selling land for development. While anecdotal evidence from developers across England suggests that they have access to enough land for development within their short term plans, this issue could become more apparent in the medium- to long-term should land values continue to decline. In addition, house and commercial property prices continue to fall, while costs of construction materials such as steel have increased, thus reducing the potential profit value of a development, or in extreme cases making the development unviable.

In light of these circumstances it is imperative that this report considered the issue of financial viability. However, it is also important to highlight that even if Portsmouth City Council were not to require any sustainability standards, the construction industry operating in Portsmouth would not simply return to the levels of development seen before the recession.

Analysis

Code for Sustainable Homes

Table A shows the original PCS9 requirements relating to the Code for Sustainable Homes for domestic development.

Table A: Policy PCS9 requirements relating to the Code for Sustainable Homes.

Year	Local requirements
2008	
2009	
2010	
2011	Level 4
2012	
2013	Level 5
2014	
2015	
2016	Level 6

The implementation of Policy PCS9 has been deferred until 2011, as shown in table B.



Table B: Deferred policy implementation timeframe relating to the Code for Sustainable Homes.

Year	Local requirements
2008	
2009	
2010	
2011	Level 4
2012	Level 5
2013	
2014	
2015	Level 6
2016	

Impetus Consulting and Greenlight Construction found that Policy PCS9 resulted in undue financial burden¹ on developers for domestic properties. This was not diminished with the deferred implementation of the policy to 2011.

In light of these findings, we analysed several options open to the Council to ensure that the sustainability aims of Policy PCS9 would still be met:

- ❑ Option 1: Reduce the overall Code for Sustainable Homes rating on new developments from Level 4 to Level 3;
- ❑ Option 2: Reduce the overall Code for Sustainable Homes rating on new developments from Level 4 to Level 3, but still require the higher energy standards associated with higher Levels of the Code; or
- ❑ Option 3: Reduce the overall Code for Sustainable Homes rating on new developments from Level 4 to Level 3, but still require the higher energy and water standards associated with higher Levels of the Code.

The average cost per unit for the different policy options are outlined in table C below.

¹ Please note that there is currently no recognised definition of undue burden in national policy or guidance. Anecdotal evidence suggests that an increase in costs of over 10% is undue. PPS 22 simply requires that policies "should not be framed in such a way as to place an undue burden on developers". The issue of cost is currently being looked at as part of the consultation on the definition of zero carbon, however this will only relate to the Code for Sustainable Homes, and not developments incorporating BREEAM standards and/or renewable energy requirements. The government is looking at setting a figure of £ per tonne of carbon within the Code as part of 'allowable solutions'.

Table C: Comparison of policy options.

Policy option	Average cost per unit (£) ²
Original proposed Policy PCS9	£7,183
Deferred proposed Policy PCS9	£6,344
Option 1: Reduce the overall Code for Sustainable Homes rating on new developments from Level 4 to Level 3	£620
Option 2: Reduce the overall Code for Sustainable Homes rating on new developments from Level 4 to Level 3, but still require higher energy standards associated with higher Levels of the Code	£3,702
Option 3: Reduce the overall Code for Sustainable Homes rating on new developments from Level 4 to Level 3, but still require higher energy and water standards associated with higher Levels of the Code.	£4,368

Impetus and Greenlight Construction believe that:

- ❑ The original proposed policy, whilst admirable, is too ambitious and will put an undue burden on developers;
- ❑ Deferring the introduction of the policy does not remove this undue burden on developers;
- ❑ The lowering of the Code for Sustainable Homes standards (option 1) does dramatically reduce the financial burden on developers; however the policy is too weak. This does not fulfil the aim of Policy PCS9 of being at the 'forefront' of sustainable development;
- ❑ Either of the final two options (2 or 3), which would require developers to meet higher energy and water standards, would seem to be the most sensible way forward. While the additional financial burden on developers is not as high as the financial impact of the original proposed policy, raising energy and water standards fulfils the sustainability aims of Policy PCS9.

It is also important to recognise that the additional cost to publicly funded development is less than privately funded development. This is due to Policy PCS9 matching national policy requirements for publicly funded development.

BREEAM

Table D shows the original PCS9 requirements relating to BREEAM for non-domestic development.

Table D: PCS9 requirements relating to BREEAM.

Year	Local requirement
2010	Very good
2011	
2012	Excellent
2013	
2014	
2015	
2016	

² Please note that the basis for the cost analysis is the Code for Sustainable Homes Technical Guidance document, which is dated September 2007. This guidance will be continuously updated in the future.



The deferred implementation of Policy PCS9 means that developers will now have to meet BREEAM 'Very Good' standards until the end of 2011 and 'Excellent' from 2012. The updated implementation timetable is shown in table E.

Table E: Deferred policy implementation timeframe relating to BREEAM.

BREEAM implementation	Local requirement
Year	All development (above threshold level)
2011	Very good
2012	Excellent
2013	
2014	
2015	
2016	

The additional cost to developers, even in poor locations, is between 2% for 'Very Good' and between 2.5% and 3.4% for 'Excellent'. Impetus and Greenlight Construction have concluded that this would not put an undue burden on developers.

Feasibility of renewables

The review of renewable energy and low carbon technologies focussed on the following technologies:

- Solar photovoltaics;
- Wind energy;
- Hydro electricity;
- Solar hot water;
- Ground and air source heat pumps;
- Biomass – wood burning stoves and boilers; and
- Biomass CHP.

While no specific technology was discounted as part of this review, it is likely that the low availability of suitable sites for hydro-electricity and medium- to large-scale wind turbines may mean that these technologies are not viable for Portsmouth. Both of these technologies may prove to be viable, but further investigation with a site-specific assessment would be required. In addition, site-specific assessments would also be required for biomass CHP systems. All other technologies are considered viable in the Portsmouth area.

As well as Code for Sustainable Homes and BREEAM requirements, Policy PCS9 includes a renewable energy requirement for major development. Since there are no specific data available on cost implications for this type of policy, we developed a series of renewable energy and low carbon technology scenarios. Each scenario produced an estimate of the typical cost to developers of installing the technologies. Scenarios include:

- Scenario 1 – 10 homes;
- Scenario 2 – 20 homes; and
- Scenario 3 – 50 homes.

The additional cost increase of meeting the renewable energy requirement for developments with 10 homes built within 2010 and 2011 averages out at £35,583, or 5.36% of the overall construction costs. This is reduced to

£21,667 or 3.27% of the overall construction costs when Code Level 5 is reached between 2012 and 2014. This is due to higher carbon reduction targets being met at higher Code levels, thus reducing the overall emissions to be reduced from this additional policy requirement. This is also why there are no residual emissions to be offset from dwellings built to Code for Sustainable Homes Level 6.

The additional cost increase of meeting the renewable energy requirement for developments with 20 homes built within 2010 and 2011 averages out at £60,917, or 3.78% of the overall construction costs. This is reduced to £31,633 or 1.96% of the overall construction costs when Code Level 5 is reached between 2012 and 2014.

The additional cost increase of meeting the renewable energy requirement for developments with 50 homes built within 2010 and 2011 averages out at £150,417, or 9.34% of the overall construction costs. This is reduced to £83,333 or 5.17% of the overall construction costs when Code Level 5 is reached between 2012 and 2014.

Please note that the cost information presented here relates to overall build cost, which increases with the size of development. In addition, costs have been averaged between three different technology options for each scenario (see appendix D for further information). It should also be highlighted that these figures are based on a number of assumptions, and are unable to take into account the technologies already installed under the Code for Sustainable Homes. In addition, developers could install a wide variety of technology combinations for both policy requirements, leading to variations in the overall cost to developments. This broad brush analysis simply gives an indication of the additional financial burden on developers. It is also important to recognise that significant savings can be made through economies of scale, especially on larger sites. Bulk purchase agreements or discounts agreed with manufacturers and suppliers will assist in reducing the financial burden on developers.

Impetus and Greenlight Construction concluded that assessing a domestic development's baseline emissions in terms of regulated and unregulated emissions and then seeking further reductions through renewable energy and low carbon technologies would potentially place an undue burden on developers. For example, to achieve Code Level 5, developers will need to include a significant element of renewable energy and low carbon technology. To then expect further carbon emission reductions through additional renewable energy and low carbon technologies would constitute a considerable technical and financial undertaking.

Non-domestic developments were not assessed as part of the renewable energy and low carbon technologies scenarios. This is due to the variability of energy consumption in speculative developments and the fact that data relating to non-domestic renewable energy and low carbon technologies is highly variable and not readily available. However, this planning requirement has been applied widely across the UK and we do not see issues with its implementation in Portsmouth.

Recommendations

After analysing the financial and technical viability issues of meeting the standards set out in proposed Policy PCS9, Impetus and Greenlight



Construction would recommend that Portsmouth City Council introduce the following requirements into Policy PCS9.

Domestic developments

Code for Sustainable Homes

After analysing a number of alternative Code for Sustainable Homes policy scenarios, we would recommend that the Council implement a requirement for all new build developments to meet Level 3 of the Code for Sustainable Homes, while meeting the more demanding energy and water standards associated with higher Levels of the Code (as set out in policy option 3, covered in chapter 6). The implementation of the Code for Sustainable Homes in Portsmouth would follow the timeline shown in table F below.

Table F: Policy PCS9 implementation timeframe relating to the Code for Sustainable Homes.

Year	National requirement		Local requirement		
	Public sector	Private sector (energy)	Overall Code requirement	Energy requirement	Water requirement
2008	Code Level 3				
2009					
2010					
2011		Code Level 3	Level 3	Level 4	Level 3/4
2012	Code Level 4				
2013			Level 4	Level 5	Level 5/6
2014		Code Level 4	Level 5		
2015					
2016	Code Level 6	Code Level 6	Level 6	Level 6	

Renewable energy requirement for major development

After analysing the complex technical and financial issues surrounding the implementation of a 'Merton Rule' requirement to reduce carbon dioxide emissions by a certain percentage through the use of renewable energy and low carbon technologies, we have recommended an alternative approach to the Council.

The renewable energy requirement of Policy PCS9 should require compliance with Code for Sustainable Homes Credit Ene7 (low or zero carbon technologies). We would also suggest the following adoption levels for major development:

- ❑ A minimum of one credit to be achieved whilst the general policy is to reach Code Level 3; and
- ❑ A minimum of two credits to be achieved at Code Levels 4 and above.

This method ensures that the Code requirements and the additional carbon reduction targets are all based on Code compliance. This ensures that the policy is robust and not open to interpretation.

Non-domestic developments

BREEAM

The implementation of BREEAM would follow the timeline shown in table G.

Table G: Policy PCS9 implementation timeframe relating to BREEAM.

BREEAM implementation	Local requirement
Year	All development (above threshold level)
2011	Very good
2012	Excellent
2013	
2014	
2015	
2016	

Renewable energy requirement for major development

Developers of non-domestic developments would also be obligated to meet a percentage reduction of carbon dioxide emissions through the use of renewable energy and low carbon technologies.

While the original Policy PCS9 required developments to meet a 25% reduction of carbon dioxide emissions through the use of renewable energy and low carbon technologies, this is considerably higher than other planning policies in the UK. Due to the lack of data and uncertainty associated with costs, we would recommend that the Council reduce this to a 10% reduction in carbon dioxide emissions, as set out in Policy NRM11 of the South East Plan. We would therefore recommend that Council staff reassess and update this policy in the future, once policy on zero-carbon non-domestic buildings is published by the department for Communities and Local Government (CLG).

Additional requirements

In addition to the sustainability standards and renewable energy elements of Policy PCS9, the Council also requires developers to meet a number of additional requirements. Impetus and Greenlight Construction have made specific recommendations and comments in relation to the requirements currently included within the policy. We have also made recommendations on further requirements that could be introduced. These include:

- ❑ That developments should consider district heating and / or combined heat and power (CHP); and
- ❑ That developments accommodate future-proofing methods where renewable energy or low carbon technologies are not incorporated.

Finally, we have also outlined a number of recommendations to be reviewed and taken forward by the Council's planning department. We recommend that:

- ❑ Policy PCS9 include reference to both renewable energy and low carbon technologies and that the policy should not specify the types of renewable energy and low carbon technologies to be incorporated;
- ❑ The Council should be actively encouraging the development of decentralised strategic energy facilities;
- ❑ The Council should consider setting up a city-wide Energy Services Company (ESCO) in order to manage and operate decentralised energy systems once developers have completed sites. This could also be expanded to include other renewable energy and low carbon technologies to maximise sustainable energy generation potential;



- ❑ The Council should take a strategic approach to biomass. This would include establishing working supply chains to prove biomass heating as a viable and well understood option in the marketplace;
- ❑ The Council should investigate the application of finance mechanisms to reduce the financial impact on developers and to ensure that renewable energy, low carbon technologies and decentralised energy schemes are incorporated within developments across the City; and
- ❑ The Council should keep up to date with changes to national policy and sustainability standards, especially in relation to the definition of zero carbon and changes to the Code for Sustainable Homes and BREEAM.

We believe that the policies that we have recommended do not place an undue burden on developers. However, we would recommend that the Council be open to negotiating with developers in the area, through the application of a Carbon Offset Contribution.

We have recommended that Portsmouth City Council, in partnership with PUSH, investigate the type of carbon offset fund that it wishes to introduce. Consideration should be given to whether:

- ❑ The focus of the offset fund is to finance energy efficiency or renewable energy and low carbon technologies;
- ❑ The focus of the offset fund is for new or existing properties;
- ❑ The fund would finance small- or large-scale projects;
- ❑ The fund would be used to support local businesses to reduce their carbon emissions; and
- ❑ The value of pounds per tonne of carbon dioxide (£/tCO₂).