The Royal Academy of Engineering

Eco Towns: living a greener future

Response to the Department for Communities and Local Government

June 2008

Executive Summary

The Academy welcomes the potential of Eco Towns to improve standards of housing design and increase the supply of affordable housing. However we have many reservations about the Department for Communities and Local Government (DCLG) Eco Towns initiative. These are summarised below.

1. The Academy is extremely concerned and disappointed that there is no engineering expertise on the Eco Towns Challenge Panel. The Panel will not be sufficiently qualified to address the engineering and technological considerations that strongly underpin the ultimate target of sustainability.

2. The DCLG initiative draws attention from the fact that more energy savings would be made by improving existing buildings than by building Eco Towns. In addition we believe that the DCLG's definition of zero-carbon developments sets an impossible target. Low-carbon buildings should be properly monitored to validate their low-carbon status.

3. All new towns and settlements need economic infrastructure in order to exist and thrive, including employment opportunities and social infrastructure. The perception that Eco Towns will attract economic activity merely by existing is not strongly supported by evidence from past developments.

4. Eco Town proposals are receptive to the use of new technologies, without employing close engineering scrutiny or providing the financial structure to ensure that the systems will work. This could have a huge negative impact for any proposed site where the local economy is so weak that financial reserves cannot be adequately built up to handle future problems. Innovative technologies should be tightly managed.

5. In order to be successful, Eco Towns will require an appropriate level of investment for long-term monitoring and maintenance. We recommend that the Government take responsibility for Eco Towns and their consequences in the long-term, to ensure that Eco Towns do not decline as other similar New Towns have.

Response to the Department for Communities and Local Government's consultation on 'Eco Towns: living a greener future'

The Royal Academy of Engineering is pleased to submit evidence to the Department for Communities and Local Government (DCLG) consultation on 'Eco Towns: living a greener future'. We have chosen to comment on the DCLG's overall Eco Towns initiative rather than focus on specific proposed sites.

This response has been compiled using contributions from appropriately knowledgeable Fellows of the Academy. The Academy is content for its input into this consultation to be made public and would be pleased to provide supplementary evidence if required.

Our response covers the following:

1. The Eco Towns Challenge Panel
2. Evaluation requirements
3. Innovation and economic risks
4. Learning from experience

1. The Eco Towns Challenge Panel

1.1 The Academy is extremely disappointed and concerned that the Eco Towns Challenge Panel[1] does not include any engineering expertise. The Panel has been asked to 'recommend potential improvements to each developer for their eco-town proposals' and 'play an important role in challenging the developers to meet the highest standards possible for sustainability and design in their final proposals'1. We believe the Panel is well qualified to address many issues, but will not be sufficiently qualified to address the engineering and technological considerations that strongly underpin the ultimate target of sustainability.

1.2 Eco Towns are not simply about communities committed to living in a sustainable way. They must also be regarded as major civil, structural and services engineering projects. The Academy believes that a lack of engineering scrutiny will severely weaken the viability of all individual eco-town proposals as well as the overall initiative.

2. Evaluation requirements

2.1 The Academy believes that truly zero-carbon homes as defined by the DLCG Eco Towns consultation document are impossible. Following the definition of 'zero-carbon development' in Annex C, buildings in Eco Towns would be unable to use gas or any other fossil fuel for heating. This means that any heating required must come from electricity. The use of green tariffs to meet this need will not result in zero-carbon electricity as the emissions from the general mix of grid electricity sources are simply passed on to other users with no net reduction in

[1] http://www.communities.gov.uk/news/corporate/742095

emissions. We are therefore concerned that the Eco Towns initiative is based on unrealistic targets for building zero-carbon homes. We welcome the enthusiasm for low-carbon homes and would expect that at least the first developments would be evaluated and monitored rigorously to validate their low-carbon status.

2.2 The DCLG has set an ambitious target of delivering up to 10 Eco Towns with up to 20,000 homes. It is clear that many of the proposals need significant improvements to make them more viable with regards to local consultation and planning. We believe it would be prudent only to develop two or three Eco Towns initially, to enable better understanding of all the inherent challenges.

2.3 The Academy believes that at least the first Eco Town project should undergo robust and thorough evaluation; from start to finish. Evaluation should start from the day the proposal is approved and finish several years after the final building is complete. It should include a strong focus on engineering integrity, social cohesion and sustainability.

2.4 Each Eco Town proposal should:

- be scrutinised to ensure it is sustainable in the long-term
- demonstrate strong environmental credentials, including understanding of design and challenges of building to proposed standards
- include procedures for local consultation
- recommend formation of a town council that enables residents to have ownership of the project
- justify economic reasons for the town's existence

2.5 The new draft planning guidance in the unpublished Town and Country Planning Association (TCPA) Eco Town worksheet on housing will focus on the need for effective use of planning obligations and on the need to ensure that affordable homes provision is properly linked to employment opportunities. The guidance covers transport, infrastructure, biodiversity, zero carbon developments, community trusts, housing, water, waste and recycling among others. This guidance will be important in successful evaluation of proposals and development of Eco Towns.

2.6 It is important that the Housing Corporation work together with English Partnerships, the Advisory Team for Large Applications (ATLAS), the Homes and Communities Agency (HCA) and the DCLG to inform their selection processes in a way that ensures that the HCA inherits a viable and deliverable programme that will be supported locally.

2.7 All new towns and settlements need an economic infrastructure in order to exist and thrive. This includes employment opportunities and social infrastructure. The perception that Eco Towns will attract economic activity merely by existing is not strongly supported by evidence or past developments. It is likely that communities that cannot

accumulate wealth will lose wealth. For example, many post-war 'overspill' developments degenerated because their main purpose was simply to move populations out of overcrowded cities, rather than meet new demands for labour (for example).

2.8 Any Eco Town development that becomes a long range commuting satellite because it lacks a vibrant local economy will fail in its aspirations towards local sustainable transport, and will lose environmental credibility.

3. Innovation and economic risks

3.1 The Academy is a strong champion of innovation as a major driver of wealth creation. However we would encourage any technological innovation for Eco Towns to be tightly managed.

3.2 There are inherent risks in using new innovations and systems. If novel systems fail, the vibrancy of the local economy will strongly affect the severity of the consequences. Towns with an economically vibrant community can overcome difficulties with major systems or building defects more easily. In civil engineering, innovations tend to be proven first in projects with substantial budgets, and then as knowledge accrues, those innovations are used in projects with tighter budgets. Eco Towns will have relatively low, limited budgets, so experimenting with new, unproven technologies is therefore questionable. In addition, the reputation of failed novel technologies could be unfairly tarnished where better resources could have prevented failure. An extra element of uncertainty is introduced when innovations are used in communities that have not fully assembled, i.e. where it is unknown how the residents will live, travel and work.

3.3 The DCLG are commissioning a review of technologies from abroad that might be deployed in the selected Eco Towns. While technologies may be proven in one situation, there is no guarantee of success in other situations; this is particularly true for construction (low or zero carbon buildings are an example of this). High performance, low energy buildings require substantial commissioning and tuning, and resources should be allocated to trials.

3.4 Some of the failures of past communities were a direct consequence of the costs of correcting ill-conceived novel approaches. An example is the Hulme suburb in Manchester, where innovative heating technology was adapted from Europe, with no resources available to modify potential failings. As the technology failed and living conditions deteriorated, there was consequent migration of those who could afford to move, resulting in further decline.

3.5 We understand the value of design in developing Eco Towns. However, the need for design novelty should not divert attention from proper management of innovation risks.

4. Learning from Experience

4.1 There were 25-30 New Towns built in the second half of the last century, which have had mixed outcomes. Some have thrived successfully, while others have required premature regeneration, further funding or intervention from government.

4.2 In order to be successful, Eco Towns will require an appropriate level of investment for long-term monitoring and maintenance. We recommend that the Government take responsibility for Eco Towns and their consequences in the long-term, to ensure that Eco Towns do not decline as other similar New Towns have.

4.3 Eco towns and similar initiatives abroad (e.g. China) can provide valuable lessons about issues such as design, build and planning.

Submitted by:
Phillip Greenish CBE
Chief Executive
The Royal Academy of Engineering
30 June 2008

Prepared by:
Xameerah Malik
Policy Advisor
The Royal Academy of Engineering